BIDDING AND CONTRACT DOCUMENTS

FOR

SKYE HALL HVAC REPLACEMENT
PROJECT NO. 950583
CONTRACT NO. 950583-LF-2022-36

UC RIVERSIDE | Planning, Design & Construction

City of Riverside, County of Riverside
California

October 18, 2021

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CERTIFICATION

Skye Hall HVAC Replacement

Bidding Documents Prepared By:

Company Name: Goss Engineering, Inc

255 E Rincon St., Suite 301
(Street Address)

Corona, CA 92879
(City, State & Zip Code)

Signed: ______________________ Date: 10/18/21
(Signature of an Officer of the Firm Named Above)

Nicholas Ubrun, Principal
(Print Name & Title)

Certification:

REGISTERED PROFESSIONAL ENGINEER
NICHOLAS DEAN UBRUN
No. M35378
Exp. 6-30-23
MECHANICAL
STATE OF CALIFORNIA

(Affix professional registration stamp of the person named above with signature and expiration date.)

ADVERTISEMENT FOR BIDS

Subject to conditions prescribed by the University of California, Riverside, sealed bids for a lump sum contract are invited for the following Project:

SKYE HALL HVAC REPLACEMENT
PROJECT NO. 950583
CONTRACT NO. 950583-LF-2020-100
UNIVERSITY OF CALIFORNIA, RIVERSIDE
RIVERSIDE, CALIFORNIA

Project Description: Replacement of seventeen (17) existing roof-mounted RTUs, replacement of ten (10) existing 10 VVT boxes with replacement of actuators on eighty-seven (87) existing VVT boxes, upgrade of existing controls to ALC [Automated Logic Controls] standard, new thermostats throughout the building.

Bidding and Contract Documents will be available on **Monday, October 18, 2021** upon request by sending an email to kara.longtin@ucr.edu. Interested parties must use the following in the subject header:

950583 Skye Hall HVAC Replacement – Request for Bid Documents

PRE-BID CONFERENCE & SITE VISIT

A mandatory Pre-Bid Zoom conference call will take place on **Wednesday, October 27, 2021** beginning promptly at **2:00 PM**. Only bidders who participate in the Pre-Bid conference will be allowed to bid on the Project as prime contractors. For further information, including the Zoom Meeting ID, interested bidders must contact the Project's Contract Administrator, Kara Longtin via email, at kara.longtin@ucr.edu and must use the project's number and name in the subject header to request the Zoom information.

At this time, there are no plans for a site visit, if a bidder would like access to the site, this will be done by appointment only and through the coordination of the Contract Administrator noted above. Do not contact the project manager directly.

Any bidder who joins the Pre-Bid Conference after 2:05 PM will be precluded from bidding as a prime contractor and may only bid as a subcontractor. Subcontractors are not required to attend; however we encourage their attendance.

BID DEADLINE

Bids must be received at or before **Tuesday, November 16, 2021** at **2:00 PM** for furnishing all labor, materials, services, and equipment to complete the Work described below in accordance with the enclosed Bidding Documents. Due to COVID-19 restrictions, all bids will be received electronically only at the email address above; the low bidder must produce the original bid, bid bond, notary acknowledgement and surety notice within 24 hours of making an announcement of who the low bidder is.

Bids are to be submitted to The Regents of the University of California ("University") **via email only** at:

Email: kara.longtin@ucr.edu

Immediately following the Bid Deadline, bids will be opened and posted on the University's website. Bids will be made available to be reviewed by bidders shortly after bids have been validated. Efforts will be made to accommodate and observe all typical procedures during COVID-19 restrictions.

Bid Security in the amount of 10% of the Lump Sum Base Bid shall accompany each Bid. The Surety issuing the Bid Bond shall be, on the Bid Deadline, an admitted surety insurer (as defined in California Code of Civil Procedure Section 995.120).

The successful Bidder and its subcontractors will be required to follow the nondiscrimination requirements set forth in the Bidding and Contract Documents and to pay prevailing wage rates at the location of the

Work.

Every effort will be made to ensure that all persons have equal access to contracts and other business opportunities with the University within the limits imposed by law or University policy. Each Bidder may be required to show evidence of its equal employment opportunity policy. The successful Bidder and its subcontractors will be required to follow the nondiscrimination requirements set forth in the Bidding Documents and to pay prevailing wage at the location of the work.

The successful Bidder must have the following State of California Contractor's license current and active at the time of submission of the Bid: **C-20, Warm-Air Heating, Ventilating and Air Conditioning Contractor**.

The work described in the contract is a public work subject to section 1771 of the California Labor Code.

The successful Bidder shall pay all persons providing construction services and/or any labor on site, including any University location, no less than the UC Fair Wage (defined as $13 per hour as of 10/1/15, $14 per hour as of 10/1/16, and $15 per hour as of 10/1/17) and shall comply with all applicable federal, state and local working condition requirements.

Estimated construction cost: **$1,600,000.00**

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
University of California, Riverside
Publication Dates: October 11, 2021 – October 26, 2021

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PROJECT DIRECTORY

Project Name:	**Skye Hall HVAC Replacement**
Project Number:	**950583**
Location:	**University of California, Riverside**
University:	**The Regents of the University of California**
University's Representative:	**Tameesha D. Hayes** **Project Manager** Planning, Design & Construction University of California, Riverside 1223 University Avenue, Suite 240 Riverside, CA 92507 Tel: (951) 827-4706 Email: Scott.donnell@ucr.edu
	Kara Longtin **Contract Administrator** Planning, Design & Construction University of California, Riverside 1223 University Avenue, Suite 240 Riverside, CA 92507 Tel: (951) 827-2610 Email: kara.longtin@ucr.edu
	Charles Blumer **Senior Construction Inspector** Planning, Design & Construction University of California, Riverside 1223 University Avenue, Suite 240 Riverside, CA 92521 Tel: (951) 827-1535 Email: Charles.blumer@ucr.edu
Design Professional:	**Nick Ubrun** **Principal Engineer** Goss Engineering 255 E. Main Street, Suite 301 Corona, CA. 92879 Tel: 951-363-4797 Email: nurbrun@goss-eng.com
Address for Stop Notices:	University of California, Riverside Accounting Office -002 Riverside, CA 92521-0123

Address for Demand for Arbitration:	Western Case Management Center 6795 N. Palm Avenue, 2nd Floor Fresno, CA 93704
A copy of the Demand for Arbitration must be sent to:	University of California Office of the General Counsel 1111 Franklin Street, 8th Floor Oakland, CA 94607-5200

END OF PROJECT DIRECTORY

INSTRUCTIONS TO BIDDERS

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ARTICLE 1

DEFINITIONS

1.1 Except as otherwise specifically provided, definitions set forth in the General Conditions or in other Contract Documents are applicable to all Bidding Documents.

1.2 The term “Addenda” means written or graphic instruments issued by University prior to the Bid Deadline which modify or interpret the Bidding Documents by additions, deletions, clarifications, or corrections.

1.3 The term “Alternate” means a proposed change in the Work, as described in the Bidding Documents which, if accepted, may result in a change to either the Contract Sum or the Contract Time, or both.

1.4 The term “Bid Deadline” means the date and time on or before which Bids must be received, as designated in the Advertisement for Bids and which may be revised by Addenda.

1.5 The term “Bidder” means a person or firm that submits a Bid.

1.6 The term “Bidding Documents” means the construction documents prepared and issued for bidding purposes including all Addenda thereto.

1.7 The term “Estimated Quantity” means the estimated quantity of an item of Unit Price Work.

1.8 As used in these Instructions to Bidders, the term “Facility” means the University's Facility office issuing the Bidding Documents.

1.9 The term “Lump Sum Base Bid” means the sum stated in the Bid for which Bidder offers to perform the Work described in the Bidding Documents, but not including Unit Price items or Alternates.

1.10 The term “Planholder” means a person or entity known by the Facility to have received a complete set of Bidding Documents and who has provided a street address for receipt of any written pre-bid communications.

1.11 The term “Unit Price” means an amount stated in the Bid for which Bidder offers to perform an item of Unit Price Work for a fixed price per unit of measurement.

1.12 As used in these Instructions to Bidders, the term “Business Day” means any day other than a Saturday, a Sunday, and the holidays specified herein, and to the extent provided herein, if the Facility or applicable office of the University is closed for the whole of any day, insofar as the business of that office is concerned, that day shall be considered as a holiday for the purposes of computing time in these Instructions to Bidders. Holidays include January 1st, the third Monday in January, the third Monday in February, the last Monday in May, July 4th, the first Monday in September, November 11th, Thanksgiving Day, December 25th, and every day designated by the University as a holiday**.**

ARTICLE 2

BIDDER'S REPRESENTATIONS

2.1 Bidder, by making a Bid, represents that:

2.1.1 Bidder has read, understood, and made the Bid in accordance with the provisions of the Bidding Documents.

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2.1.2 Bidder has visited the Project site and is familiar with the conditions under which the Work is to be performed and the local conditions as related to the requirements of the Contract Documents.

2.1.3 The Bid is based upon the materials, equipment, and systems required by the Bidding Documents without exception.

2.1.4 At the time of submission of the Bid, Bidder and all Subcontractors, regardless of tier, have the appropriate current and active licenses issued by the State of California Contractors State License Board for the Work to be performed and any licenses specifically required by the Bidding Documents. If Bidder is a joint venture, at the time of submission of the Bid, Bidder shall have the licenses required by the preceding sentence in the name of the joint venture itself. The State of California Business and Professions Code, Division 3, Chapter 9, known as the "Contractor's License Law," establishes licensing requirements for contractors.

2.1.5 Bidder has read and shall abide by the nondiscrimination requirements contained in the Bidding Documents.

2.1.6 Bidder has the expertise and financial capacity to perform and complete all obligations under the Bidding Documents.

2.1.7 The person executing the Bid Form is duly authorized and empowered to execute the Bid Form on behalf of Bidder.

2.1.8 Bidder is aware of and, if awarded the Contract, will comply with Applicable Code Requirements in its performance of the Work.

ARTICLE 3

BIDDING DOCUMENTS

3.1 COPIES

3.1.1 Bidders may obtain complete sets of the Bidding Documents from the issuing office designated in the Advertisement for Bids for the sum stated therein, if any. Documents are only available in full sets and shall not be returned.

3.1.2 Bidders shall use a complete set of Bidding Documents in preparing Bids.

3.1.3 University makes copies of the Bidding Documents available, on the above terms, for the sole purpose of obtaining Bids for the Work and does not confer a license or grant permission for any other use of the Bidding Documents.

3.2 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

3.2.1 Bidder shall, before submitting its Bid, carefully study and compare the components of the Bidding Documents and compare them with any other work being bid concurrently or presently under construction which relates to the Work for which the Bid is submitted; shall examine the Project site, the conditions under which the Work is to be performed, and the local conditions; and shall at once report to University's Representative errors, inconsistencies, or ambiguities discovered. If Bidder is awarded the Contract, Bidder waives any claim arising from any errors, inconsistencies or ambiguities, that Bidder, its subcontractors or suppliers, or any person or entity under Bidder on the Contract became aware of, or reasonably should have become aware of, prior to Bidder's submission of its Bid.

3.2.2 Requests for clarification or interpretation of the Bidding Documents shall be addressed only to the person or firm designated in the Supplementary Instructions to Bidders.

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3.2.3 Clarifications, interpretations, corrections, and changes to the Bidding Documents will be made by Addenda issued as provided in Article 3.5. Clarifications, interpretations, corrections, and changes to the Bidding Documents made in any other manner shall not be binding and Bidders shall not rely upon them.

3.3 PRODUCT SUBSTITUTIONS

3.3.1 No substitutions will be considered prior to award of Contract. Substitutions will only be considered after award of the Contract and as provided for in the Contract Documents.

3.4 SUBCONTRACTORS

3.4.1 Each Bidder shall list in the Bid Form all first-tier Subcontractors that will perform work, labor or render such services as defined in Article 9 of the Bid Form. The Bid Form contains spaces for the following information when listing Subcontractors: (1) portion of the Work; (2) name of Subcontractor; (3) city of Subcontractor's business location. The failure to list, on the Bid Form, any one of the items set forth above will result in the University treating the Bid as if no Subcontractor was listed for that portion of the Work and Bidder will thereby represent to University that Bidder agrees that it is fully qualified to perform that portion of the Work and shall perform that portion of the Work.

3.4.2 Subcontractors listed in the Bid Form shall only be substituted after the Bid Deadline with the written consent of University and in accordance with the State of California "Subletting and Subcontracting Fair Practices Act."

3.5 ADDENDA

3.5.1 Addenda will be issued only by University and only in writing. Addenda will be identified as such and will be mailed or delivered to all Planholders. At its sole discretion, the University may elect to deliver Addenda via facsimile to Planholders who have provided a facsimile number for receipt of Addenda.

3.5.2 Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for inspection.

3.5.3 Addenda will be issued such that Planholders should receive them no later than 3 full business days prior to the Bid Deadline. Addenda withdrawing the request for Bids or postponing the Bid Deadline may be issued anytime prior to the Bid Deadline.

3.5.4 Each Bidder shall be responsible for ascertaining, prior to submitting a Bid, that it has received all issued Addenda.

3.6 BUILDER'S RISK PROPERTY INSURANCE

3.6.1 University will provide builder's risk property insurance subject to the deductibles in the policy as required by the General Conditions if the Contract Sum exceeds $200,000 at the time of award and the requirements of the Project are not excluded by such coverage. A summary of the provisions of the policy is included as an Exhibit to the Contract; the policy may be reviewed at the Facility's office. Bidder agrees that the University's provision of builder's risk property insurance containing said provisions meets the University's obligation to provide builder's risk property insurance under the Contract and, in the event of a conflict between the provisions of the policy and any summary or description of the provisions contained herein or otherwise, the provisions of the policy shall control and shall be conclusively presumed to fulfill the University's obligation to provide such insurance.

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ARTICLE 4

PRE-BID CONFERENCE

4.1 Bidder shall attend the Pre-Bid Conference at which the requirements of the Bidding Documents are reviewed by University, comments and questions are received from Bidders, and a Project site visit is conducted. University requires all Pre-Bid Conference attendees to arrive for the meeting on time and to sign an attendance list, which in turn is used to determine if Bidders meet this requirement. Any Bidder not attending the Pre-Bid Conference in its entirety will be deemed to have not complied with the requirements of the Bidding Documents and its Bid will be rejected.

ARTICLE 5

BIDDING PROCEDURES

5.1 FORM AND STYLE OF BIDS

5.1.1 Bids shall be submitted on the Bid Form included with the Bidding Documents. Bids not submitted on the University's Bid Form shall be rejected.

5.1.2 The Bid Form shall be filled in legibly in ink or by typewriter. All portions of the Bid Form must be completed and the Bid Form must be signed before the Bid is submitted. Failure to comply with the requirements of this Article 5.1.2 will result in the Bid being rejected as nonresponsive.

5.1.3 Bidder's failure to submit a price for any Alternate or Unit Price will result in the Bid being considered as nonresponsive. If Alternates are called for and no change in the Lump Sum Base Bid is required, indicate “No Change” by marking the appropriate box.

5.1.4 Bidder shall make no stipulations on the Bid Form nor qualify the Bid in any manner.

5.1.5 The Bid Form shall be signed by a person or persons legally authorized to bind Bidder to a contract. Bidder's Representative shall sign and date the Declaration included in the Bid Form. Failure to sign and date the declaration will cause the Bid to be rejected.

5.2 BID SECURITY

5.2.1 Each Bid shall be accompanied by Bid Security in the amount of 10% of the Lump Sum Base Bid as security for Bidder's obligation to enter into a Contract with University on the terms stated in the Bid Form and to furnish all items required by the Bidding Documents. Bid Security shall be a Bid Bond on the form provided by University and included herein, or a certified check made payable to “The Regents of the University of California.” When a Bid Bond is used for Bid Security, failure to use University's Bid Bond form will result in the rejection of the Bid. Bidder must use the Bid Bond form provided by the University or an exact, true and correct photocopy of such form. The Bid Bond form may not be retyped, reformatted, transcribed onto another form, or altered in any manner except for the purpose of completing the form.

5.2.2 If the apparent lowest responsible Bidder fails to sign the Agreement and furnish all items required by the Bidding Documents within the time limits specified in these Instructions to Bidders, University may reject such Bidder’s Bid and select the next apparent lowest responsible Bidder until all Bids have been exhausted or University may reject all Bids. The Bidder whose Bid is rejected for such failure(s) shall be liable for and forfeit to University the amount of the difference, not to exceed the amount of the Bid Security, between the amount of the Bid of the Bidder so rejected and the greater amount for which University procures the Work.

5.2.3 If a Bid Bond is submitted, the signature of the person executing the Bid Bond must be notarized. If an attorney-in-fact executes the Bid Bond on behalf of the surety, a copy of the current power of attorney bearing the notarized signature of the appropriate corporate officer shall be included with the Bid Bond. Additionally, the surety issuing the Bid Bond shall be, on the Bid Deadline, an admitted surety insurer (as defined in the California Code of Civil Procedure Section 995.120).

5.2.4 Bid Security will be returned after the contract has been awarded. Notwithstanding the preceding, if a Bidder fails or refuses, within 10 days after receipt of notice of selection, to sign the Agreement or submit to University all of the items required by the Bidding Documents, the University will retain that Bidder's Bid Security. If the Bid Security is in the form of a Bid Bond, the Bid Security will be retained until the University has been appropriately compensated; if the Bid Security is in the form of certified check, the University will negotiate said check and after deducting its damages, return any balance to Bidder.

5.3 SUBMISSION OF BIDS

5.3.1 The Bid Form, Bid Security, and all other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the office designated in the Supplementary Instructions to Bidders for receipt of Bids. The envelope shall be identified with the Project name, Bidder's name and address, and, if applicable, the designated portion of the Project for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.

5.3.2 Bids shall be deposited at the designated location on or before the Bid Deadline. A Bid received after the Bid Deadline will be returned to Bidder unopened.

5.3.3 Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

5.3.4 Oral, telephonic, electronic mail (e-mail), facsimile, or telegraphic Bids are invalid and will not be accepted.

5.4 MODIFICATION OR WITHDRAWAL OF BID

5.4.1 Prior to the Bid Deadline, a submitted Bid may be modified or withdrawn by notice to the Facility receiving Bids at the location designated for receipt of Bids. Such notice shall be in writing over the signature of Bidder and, in order to be effective, must be received on or before the Bid Deadline. A modification so made shall be worded so as not to reveal the amount of the original Bid.

5.4.2 A withdrawn Bid may be resubmitted on or before the Bid Deadline, provided that it then fully complies with the Bidding Requirements.

5.4.3 Bid Security shall be in an amount sufficient for the Bid as modified or resubmitted.

5.4.4 Bids may not be modified, withdrawn, or canceled within 60 days after the Bid Deadline unless otherwise provided in Supplementary Instructions to Bidders.

ARTICLE 6

CONSIDERATION OF BIDS

6.1 OPENING OF BIDS

6.1.1 Bids which have the required identification as stipulated in Article 5.3.1 and are received on or before the Bid Deadline will be opened publicly.

6.2 REJECTION OF BIDS

6.2.1 University will have the right to reject all Bids.

6.2.2 University will have the right to reject any Bid not accompanied by the required Bid Security or any other item required by the Bidding Documents, or a Bid which is in any other way incomplete or irregular.

6.3 AWARD

6.3.1 University will have the right, but is not required, to waive nonmaterial irregularities in a Bid. If the University awards the Contract, it will be awarded to the responsible Bidder submitting the lowest responsive Bid as determined by University and who is not rejected by University for failing or refusing, within 10 days after receipt of notice of selection, to sign the Agreement or submit to University all of the items required by the Bidding Documents.

6.3.2 University will have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents. The opening of Bids and evaluation of Alternates will be conducted in accordance with a procedure that, at University's option, either (i) prescribes, prior to the time of Bid opening, the order in which Alternates will be selected or (ii) prevents, before the determination of the apparent low Bidder has been made, information that would identify which Bid belongs to which Bidder from being revealed to the representative of the University selecting the Alternates to be used in determining the low Bidder. After determination of the apparent low Bidder has been made, University will publicly disclose the identity of each Bidder that submitted a Bid and the amount of each such Bid.

6.3.3 University will determine the low Bidder on the basis of the sum of the Lump Sum Base Bid plus all Unit Prices multiplied by their respective Estimated Quantities as stated in the Bid Form, if any, plus the daily rate for Compensable Delay multiplied by the "multiplier" as stated in the Bid Form, plus the amounts of all Alternates to be included in the Contract Sum at the time of award. The Contract Sum will be the sum of the Lump Sum Base Bid and the additive or deductive amounts for all Alternates that University has elected to be included in the Contract Sum as of the time of award.

6.3.4 The University will post the Bid results in a public place at the address where the Bids are received (unless another address is specified in the Bidding Documents).

6.3.5 University will select the apparent lowest responsive and responsible Bidder and notify such Bidder on University's form within 50 days (unless the number of days is modified in Supplementary Instructions to Bidders) after the Bid Deadline or reject all Bids. Within 10 days after receipt of notice of selection as the apparent lowest responsive and responsible Bidder, Bidder shall submit to University all of the following items:

.1 Three originals of the Agreement signed by Bidder.

.2 Three originals of the Payment Bond required under Article 11 of the General Conditions.

.3 Three originals of the Performance Bond required under Article 11 of the General Conditions.

.4 Certificates of Insurance on form provided by University required under Article 11 of the General Conditions.

.5 Name of, qualifications of, and references for the Superintendent proposed for the Work.

.6 Names of all Subcontractors, with their addresses, telephone number, facsimile number, contact person, portion of the Work and designation of any Subcontractor as a Small Business Enterprise (SBE), Disadvantaged Business Enterprise (DBE), Women-owned Business Enterprise (WBE) and Disabled Veteran Business Enterprise (DVBE) on Report of Subcontractor Information in the form contained in the Exhibits. Evidence, as required by University, of the reliability and responsibility of the proposed Subcontractors such as statements of experience, statements of financial condition, and references.

.7 Preliminary Contract Schedule as required under Article 3 of the General Conditions.

.8 If Bidder wishes to utilize securities in lieu of retention beginning with the first Application for Payment, Selection of Retention Options accompanied by a completed Escrow Agreement for Deposit of Securities in Lieu of Retention and Deposit of Retention in the form contained in the Exhibits.

.9 Cost Breakdown as required by Article 9 of the General Conditions.

6.3.6 Prior to award of the Contract, University will notify Bidder in writing, if University, after due investigation, objects to a Subcontractor or Superintendent proposed by Bidder, in which case Bidder shall propose a substitute acceptable to University. Substitution of Superintendent shall be made in accordance with Article 3 of the General Conditions. Substitution of a Subcontractor shall be made in accordance with Article 5 of the General Conditions. Failure of University to object to a proposed Superintendent or Subcontractor prior to award shall not preclude University from requiring replacement of Superintendent or any Subcontractor based upon information received subsequent to award, information which cannot be properly evaluated prior to award due to time constraints, or information relating to a failure to comply with the requirements of the Contract.

6.3.7 If Bidder submits three originals of the signed Agreement and all other items required to be submitted to University within 10 days after receipt of notice of selection as the apparent lowest responsive and responsible Bidder, and if all such items comply with the requirements of the Bidding Documents and are acceptable to University, University will award the Contract to Bidder by signing the Agreement and returning a signed copy of the Agreement to Bidder.

6.3.8 If University consents to the withdrawal of the Bid of the apparent lowest responsive and responsible Bidder, or the apparent lowest responsive and responsible Bidder fails or refuses to sign the Agreement or submit to University all of the items required by the Bidding Documents, within 10 days after receipt of notice of selection, or that Bidder is not financially or otherwise qualified to perform the Contract, University may reject such Bidder's Bid and select the next apparent lowest responsible Bidder, until all Bids are exhausted, or reject all Bids. Any Bidder whose Bid is rejected because the Bidder has failed or refused, within 10 days after receipt of notice of selection, to sign the Agreement or submit to University all of the items required by the Bidding Documents, shall be liable to the University for all resulting damages.

ARTICLE 7

BID PROTEST

7.1 FILING A BID PROTEST

7.1.1 Any Bidder, person, or entity may file a Bid protest. The protest shall specify the reasons and facts upon which the protest is based and shall be in writing and received by with the Facility not later than 5:00 PM on the 3rd business day following:

.1 if the Bid Form does not contain any Alternate(s), the date of the Bid opening;

.2 if the Bid Form contains any Alternate(s), the date of posting in a public place of Bid results.

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7.1.2 If a Bid is rejected by the Facility, and such rejection is not in response to a Bid protest, any Bidder, person or entity may dispute that rejection by filing a Bid protest (limited to the rejection) in writing and received by the Facility not later than 5:00 PM on the 3rd business day following the rejected Bidder's receipt of the notice of rejection.

7.1.3 For the purpose of computing any time period in this Article 7, the date of receipt of any notice shall be the date on which the intended recipient of such notice actually received it. Delivery of any notice may be by any means, with verbal or written confirmation of receipt by the intended recipient.

7.2 RESOLUTION OF BID CONTROVERSY

7.2.1 Facility will investigate the basis for the Bid protest and analyze the facts. Facility will notify Bidder whose Bid is the subject of the Bid protest of evidence presented in the Bid protest and evidence found as a result of the investigation, and, if deemed appropriate, afford Bidder an opportunity to rebut such evidence, and permit Bidder to present evidence that it should be allowed to perform the Work. If deemed appropriate by Facility, an informal hearing will be held. Facility will issue a written decision within 15 days following receipt of the Bid protest, unless factors beyond Facility's reasonable control prevent such a resolution, in which event such decision will be issued as expeditiously as circumstances reasonably permit. The decision will state the reasons for the action taken by Facility. A written copy of the decision will be furnished to the protestor, the Bidder whose Bid is the subject of the Bid protest, and all Bidders affected by the decision. As used in this Article 7, a Bidder is affected by the decision on a Bid protest if a decision on the protest could have resulted in the Bidder not being the lowest responsible and responsive Bidder for the Contract. A written copy of the Facility's decision must be received by the protester, the Bidder whose Bid is the subject of the Bid protest, and all Bidders affected by the decision no later than 3 business days prior to award of the contract.

7.2.2 Notwithstanding the provisions of Article 7.2.1, at the election of Facility, a Bid protest may be referred directly to University's Construction Review Board without prior investigation and review by Facility. The Chair of the Construction Review Board will either decide the Bid protest or appoint a Hearing Officer. If a Hearing Officer is appointed, the Hearing Officer will review the Bid protest in accordance with the provisions of Article 7.2.4.

7.2.3 Bidder whose Bid is the subject of the protest, all Bidders affected by the Facility's decision on the protest, and the protestor have the right to appeal to the Construction Review Board if not satisfied with Facility's decision. The appeal must be in writing and shall specify the decision being appealed and all the facts and circumstances relied upon in support of the appeal. A copy of the appeal must be received by the Chair, Construction Review Board, not later than 5:00 pm on the 3rd business day following appellant's receipt of the written decision of Facility, at the following address:

Chair, Construction Review Board
University of California
Office of the President
1111 Franklin Street, 6th Floor
Oakland, CA 94607-5200
Attention: Associate Director, Design & Construction Policy

And, by email to:

constructionreviewboard@ucop.edu

A copy of the appeal must be sent to all parties involved in the Bid protest and to Facility, to the same address and in the same manner as the original protest. An appeal received after 5:00 pm is considered received as of the next business day. If the final date for receipt of an appeal falls on a Saturday, Sunday, or University holiday, the appeal will be considered timely only if received by 5:00 pm on the following business day. The burden of proving timely receipt of the appeal is on the appealing party.

7.2.4 The Chair of the Construction Review Board will review the Facility's decision and the appeal, and issue a written decision, or if appropriate, appoint a Hearing Officer to conduct a hearing and issue a written decision. If a hearing is held, the hearing shall be held not later than the 10th day following the appointment of the Hearing Officer unless the Hearing Officer for good cause determines otherwise. The written decision of the Chair or Hearing Officer will state the basis of the decision, and the decision will be final and not subject to any further appeal to University. The Chair or Hearing Officer may consult with the University's Office of the General Counsel on the decision as to legal form. The University will complete its internal Bid protest procedures before award of the Contract.

END OF INSTRUCTIONS TO BIDDERS

SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

1. Contract Time: As specified in Section 1 of the Bid Form.

2. List of Subcontractors (Bid Form Paragraph 9.0) and List of Changes in Subcontractors Due to Alternates (Bid Form Paragraph 10.0).

   The default rule is that, if a Bidder lists one subcontractor for a Work Activity (such as "Electrical") under Bid Form Paragraph 9.0 and a different subcontractor for the same Work Activity (such as "Electrical") for the Alternate Work under Bid Form Paragraph 10.0 without reference to the Alternate, then it is deemed that the second subcontractor listed in Paragraph 10.0 will perform the Base Bid Work and the Alternate Work, unless the Bidder expressly writes otherwise.

   A Bidder may list more than one subcontractor per trade, provided that the Work Activity to be performed by each listed subcontractor is adequately described on the spaces provided on the Bid Form, so that which subcontractor will perform which Work Activity can be determined.

   For example, in case of Alternates, if a Bidder wants one subcontractor to perform the electrical Base Bid Work and another subcontractor to perform the electrical Alternate Work, then the Bidder should list the first subcontractor under Bid Form Paragraph 9.0 as performing the "Electrical" Work Activity, and list the second subcontractor under Bid Form Paragraph 10.0 (for listing changes in subcontractors due to Alternates) as performing the "Electrical Alt" or "Electrical Alt Work" or "Electrical Alt Only" or similarly to define the Alternate Work Activity separately to be performed.

3. Requests for clarification or interpretation of the Bidding Documents must be submitted in writing, and shall be addressed only to:

   Kara Longtin
   Email: kara.longtin@ucr.edu
   Tel: 951.827.2610

   The deadline to submit requests for clarification or interpretation is on or before 2:00 PM, on Wednesday, November 3, 2021.

4. A mandatory Pre-Bid Zoom conference call will take place on **Wednesday, October 27, 2021** beginning promptly at **2:00 PM**. Only bidders who participate in the Pre-Bid conference will be allowed to bid on the Project as prime contractors. For further information, including the Zoom Meeting ID, interested bidders must contact the Project's Contract Administrator, **Kara Longtin** via email**,** at kara.longtin@ucr.edu. And must use the project's number and name in the subject header to request the Zoom information.

   Due to COVID-19 restrictions, there will be no mandatory site visit. However, if a contractor would like to visit the site, it will be by appointment only; please contact Kara Longtin to schedule a time.

5. Bids must be received on or before the Bid Deadline and only at the location specified in the **ADVERTISEMENT FOR BIDS**.

6. Bids will be opened at the same location specified in the **ADVERTISEMENT FOR BIDS** for the receipt of bids. Apparent Low Bidder must deliver to the University, the original bid and bid bond (if required in the bid) within 24 hours of being determined as the low bidder.

7. Contractor will be assessed as liquidated damages the sum of **$500.00** for each day the Work remains incomplete beyond the expiration of the Contract Time. After Substantial Completion, the rate for liquidated damages shall be reduced to the sum of **$250.00** per day. See Article 5 of the Agreement for detailed requirements

8. Replace the existing Paragraph 1.4 with the following:

1.4 The term “Bid Deadline” means the date and time on or before which Bids must be received, as designated in the **ADVERTISEMENT FOR BIDS** and which may be revised by Addenda.

9. Replace the existing Paragraph 3.1.1 with the following:

3.1.1 Bidders may obtain complete sets of the Bidding Documents from the issuing office designated in the **ADVERTISEMENT FOR BIDS**.

10. Replace the existing Paragraph 3.5.1 with the following:

3.5.1 Addenda will be issued only by University and only in writing. Addenda will be identified as such and will be mailed or delivered to all Planholders. At its sole discretion, the University may elect to deliver Addenda via facsimile or email to Planholders who have provided a facsimile number or email address for receipt of Addenda or communications.

11. Replace the existing Paragraph 3.5.3 with the following:

3.5.3 Addenda will be issued such that Planholders should receive them no later than 72 hours prior to the Bid Deadline. Addenda withdrawing the request for Bids or postponing the Bid Deadline may be issued anytime prior to the Bid Deadline.

12. Replace the existing Paragraph 5.2.4 with the following:

5.2.4 Bid Security will be returned after the contract has been awarded. Notwithstanding the preceding, if a Bidder fails or refuses, within **10** days after receipt of notice of selection, to sign the Agreement or submit to University all of the items required by the Bidding Documents, the University will retain that Bidder’s Bid Security. If the Bid Security is in the form of a Bid Bond, the Bid Security will be retained until the University has been appropriately compensated; if the Bid Security is in the form of certified check, the University will negotiate said check and after deducting its damages, return any balance to Bidder.

13. Add the following as Paragraph 5.3.5:

5.3.5 As specified in the **ADVERTISEMENT FOR BIDS**, the University has determined that bidders who submit bids for this Project must be prequalified.

14. Replace the existing Paragraph 5.4.4 with the following:

5.4.4 Bids may not be modified, withdrawn, or canceled within **60** days after the Bid Deadline.

15. Replace the existing Paragraph 6.3.1 with the following:

6.3.1 University will have the right, but is not required, to waive nonmaterial irregularities in a Bid. If the University awards the Contract, it will be awarded to the responsible Bidder submitting the lowest responsive Bid as determined by University and who is not rejected by University for failing or refusing, within **10** days after receipt of notice of selection, to sign the Agreement or submit to University all of the items required by the Bidding Documents.

16. Replace the existing Paragraph 6.3.5 with the following:

6.3.5 University will select the apparent lowest responsive and responsible Bidder and notify such Bidder on University's form within **50** days (unless the number of days is modified in Supplementary Instructions to Bidders) after the Bid Deadline or reject all Bids. Within **10** days after receipt of notice of selection as the apparent lowest responsive and responsible Bidder, Bidder shall submit to University all of the following items:

.1 One original of the Agreement signed by Bidder.

.2 One original of the Payment Bond required under Article 11 of the General Conditions.

.3 One original of the Performance Bond required under Article 11 of the General Conditions.

.4 Certificates of Insurance on form provided by University required under Article 11 of the General Conditions.

.5 Names of all Subcontractors, with their addresses, telephone and facsimile numbers, contact persons, portions of the Work and designation of any Subcontractor as a Small Business Enterprise (SBE), Disadvantaged Business Enterprise (DBE), Women-owned Business Enterprise (WBE) and Disabled Veteran Business Enterprise (DVBE) on the Report of Subcontractor Information form, along with a completed Self-Certification form, contained in the Exhibits. Evidence, as required by University, of the reliability and responsibility of the proposed Subcontractors such as statements of experience, statements of financial condition, and references.

.6 Preliminary Contract Schedule as required under Article 3 of the General Conditions.

.7 If Bidder wishes to utilize securities in lieu of retention beginning with the first Application for Payment, a completed Selection of Retention Options form accompanied by a completed Escrow Agreement for Deposit of Securities in Lieu of Retention and Deposit of Retention in the form contained in the Exhibits.

.8 Cost Breakdown as required by Article 9 of the General Conditions.

17. Replace the existing Paragraph 6.3.7 with the following:

6.3.7 If Bidder submits three originals of the signed Agreement and all other items required to be submitted to University within **10** days after receipt of notice of selection as the apparent lowest responsive and responsible Bidder, and if all such items comply with the requirements of the Bidding Documents and are acceptable to University, University will award the Contract to Bidder by signing the Agreement and returning a signed copy of the Agreement to Bidder.

18. Replace the existing Paragraph 6.3.8 with the following:

6.3.8 If University consents to the withdrawal of the Bid of the apparent lowest responsive and responsible Bidder, or the apparent lowest responsive and responsible Bidder fails or refuses to sign the Agreement or submit to University all of the items required by the Bidding Documents, within **10** days after receipt of notice of selection, or that Bidder is not financially or otherwise qualified to perform the Contract, University may reject such Bidder's Bid and select the next apparent lowest responsible Bidder, until all Bids are exhausted, or reject all Bids. Any Bidder whose Bid is rejected because the Bidder has failed or refused, within **10** days after receipt of notice of selection, to sign the Agreement or submit to University all of the items required by the Bidding Documents, shall be liable to the University for all resulting damages.

19. The University has negotiated contracts with certain suppliers (listed in the “Information Available to Bidders”) to supply materials to University construction projects. Bidders may be able to obtain favorable pricing from the listed suppliers for materials required for this Contract. Bidders are not obligated to obtain any required materials from the listed suppliers. Use of any of the listed suppliers is at the Bidder’s risk, and the University does provide any warranties, express or implied, with respect to the listed suppliers, their products and/or services. In particular, University does not warrant that the listed suppliers, their products and/or services are suitable for this Project.

20. **PREVAILING WAGE INFORMATION:** A bidder can obtain the prevailing wage information through the internet at www.dir.ca.gov or at http://www.dir.ca.gov/DLSR/PWD.

END OF SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

INFORMATION AVAILABLE TO BIDDERS

The following information is made available for the convenience of bidders and is not a part of the Contract. The information is provided subject to the provisions of Article 3 of the General Conditions.

1. The University of California has contracts for materials, equipment and/or services with the suppliers listed on the Office of the President Procurement Services website at: http://www.ucop.edu/procurement-services/for-suppliers/ucop-designated-construction-agreements.html

   General Contractors or others submitting bids for University construction projects may enter into agreements with these suppliers that utilize the pricing and terms contained in the University-supplier agreements. The university does not represent or warrant that materials/equipment/services of these suppliers meet the requirements of the University's construction contracts.

   Use of such suppliers shall not relieve Contractor from its obligation to meet all contractual requirements in any contracts with the University. The university will not be a party to any agreements with such suppliers and accepts no performance obligations or liability with respect to such agreements.

2. Reports:

   None

3. Record Documents and As-Builts:

   Surge Building Record Drawings

END OF INFORMATION AVAILABLE TO BIDDERS

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SHEET No.	DESCRIPTION	BID SET No. 3 DATE ISSUED: 23 OCT 00	BID SET No. 3 (REVISIONS) DATE ISSUED: 29 NOV 00	A/V BID SET DATE ISSUED: 27 APR 01	ISSUE No. 8 DATE
PLUMBING					
P-1	PLUMBING NOTES AND SCHEDULES	O	O		
P-2	PLUMBING DETAILS AND WATER CALCULATIONS	O	O		
P-3	PLUMBING FIRST FLOOR PLAN	O	O		
P-4	PLUMBING SECOND FLOOR PLAN	O	O		
P-5	PLUMBING THIRD FLOOR PLAN	O	O		
P-6	PLUMBING AUDITORIUM FLOOR PLAN	O	O		
P-7	ROOF PLAN	O	O		
P-8	PLUMBING AUDITORIUM ROOF PLAN	O	O		
MECHANICAL					
M-1	MECHANICAL NOTES, LEGEND AND ABBREVIATION	O	O		
M-2	MECHANICAL SCHEDULES AND DETAILS	O	O		
M-3	SCHEDULES AND DETAILS	O	O		
M-4	MECHANICAL FIRST FLOOR PLAN	O	O		
M-5	MECHANICAL SECOND FLOOR PLAN	O	O		
M-6	MECHANICAL THIRD FLOOR PLAN	O	O		
M-7	MECHANICAL AUDITORIUM FLOOR PLAN	O	O		
M-8	MECHANICAL ROOF PLAN	O	O		
M-9	MECHANICAL CONTROL SCHEMATICS	O	O		
ELECTRICAL					
E-1	SYMBOLS, NOTES AND SCHEDULES	O	O		
E-2	SITE PLAN	O	O		
E-3	SINGLE LINE DIAGRAM AND FEEDER SCHEDULE	O	O		
E-4	TITLE 24	O	O		
E-5	LIGHTING FIRST FLOOR PLAN	O	O		
E-6	POWER FIRST FLOOR PLAN	O	O		
E-7	SIGNAL FIRST FLOOR PLAN	O	O		
E-8	LIGHTING AUDITORIUM FIRST FLOOR PLAN	O	O		
E-9	POWER AUDITORIUM FIRST FLOOR PLAN	O	O		
E-10	SIGNAL AUDITORIUM FIRST FLOOR PLAN	O	O		
E-11	LIGHTING SECOND FLOOR PLAN	O	O		
E-12	POWER SECOND FLOOR PLAN	O	O		
E-13	SIGNAL SECOND FLOOR PLAN	O	O		
E-14	LIGHTING THIRD FLOOR PLAN	O	O		
E-15	POWER THIRD FLOOR PLAN	O	O		
E-16	SIGNAL THIRD FLOOR PLAN	O	O		
E-17	ROOF PLAN	O	O		
E-18	PANEL SCHEDULES	O	O		
E-19	PANEL SCHEDULES	O	O		
E-20	PANEL SCHEDULES	O	O		
E-21	PANEL SCHEDULES	O	O		
E-22	DETAILS	O	O		
E-23	DETAILS	O	O		
LANDSCAPE					
L-1.00	TREE AND GROUNDCOVER PLAN	O	O		
L-1.01	SHRUB AND VINE PLAN	O			
L-2.00	PLANT SCHEDULE AND NOTES	O	O		
L-3.00	PLANTING DETAILS	O			
L-4.00	IRRIGATION PLAN	O	O		
L-4.01	IRRIGATION DETAILS AND LEGEND	O	O		
CONSTRUCTION MANAGEMENT					
CM1.0	CONSTRUCTION LOGISTICS PLAN	O			
CM2.0	SECTIONS	O			
CM3.0	CAMPUS ACCESS PLAN	O			
AUDIO / VISUAL					
AV100	GENERAL NOTES, SYMBOLS & ABBREVIATIONS			O	
AV101	AV FACILITY FLOOR PLAN			O	
AV201	AV FACILITY CEILING PLAN			O	
AV251	AVRISER DIAGRAM			O	
AV300	AVSINGLE LINE SYMBOL KEY			O	
AV301	AUDIO SINGLE LINE DIAGRAM			O	
AV302	AUDIO SINGLE LINE DIAGRAM			O	
AV351	VIDEO SINGLE LINE DIAGRAM			O	
AV401	AV ROOM & CONTROL ROOM LAYOUTS			O	
AV402	PREP ROOM LAYOUT			O	
AV451	AV SECTIONS			O	
AV452	AV SECTIONS			O	
AV501	AV EQUIPMENT RACK ELEVATIONS			O	
AV601	AV MISCELLANEOUS DETAILS			O	
AV602	AV MISCELLANEOUS DETAILS			O	
AV603	AV PODIUM DETAILS			O	
AV651	AV FACILITY PANEL LAYOUTS			O	
AV701	AV GENERIC DETAILS			O	
	END OF INDEX				

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ARCHITECTURAL (CONT)					
A8.4.1	INTERIOR ELEVATIONS AUDITORIUM	O	O	O	
A8.4.2	INTERIOR ELEVATIONS AUDITORIUM	O	O	O	
A8.4.3	INTERIOR ELEVATIONS AUDITORIUM	O	O	O	
A8.4.4	INTERIOR ELEVATIONS SURGE BUILDING	O	O		
A8.5.1	SURGE BUILDING ENLARGED TOILET ELEVATIONS	O	O		
A8.5.2	SURGE BUILDING ENLARGED TOILET ELEVATIONS	O	O		
A8.5.3	AUDITORIUM ENLARGED TOILET ELEVATIONS	O	O		
A9.0.1A	PARTITION TYPES	O	O		
A9.0.1B	PARTITION TYPES	O	O		
A9.0.2	TYPICAL PARTITION FRAMING ELEVATIONS	O	O		
A9.0.3	TYPICAL METAL FRAMED PARTITION DETAILS	O	O		
A9.0.4	TYPICAL METAL FRAMED PARTITION DETAILS	O	O		
A9.0.5	TYPICAL METAL FRAMED PARTITION DETAILS	O	O		
A9.0.6	TYPICAL METAL FRAMED PARTITION DETAILS	O	O		
A9.1.1	FIRST & SECOND FLOOR FINISH SCHEDULE (SURGE)	O	O		
A9.1.2	FINISH SCHEDULE (SURGE + AUDITORIUM)	O	O		
A9.4.1	DOOR SCHEDULE	O	O		
A9.4.2	DOOR TYPES & INTERIOR OPENING FRAME TYPES	O	O		
A9.4.3	DOOR DETAILS	O	O		
A9.4.4	DOOR TYPES & TYPICAL DOOR DETAILS	O	O		
A9.4.5	DOOR DETAILS	O	O		
A9.5.1	WINDOW SCHEDULE (SURGE)	O	O		
A9.5.2	WINDOW SCHEDULE (SURGE)	O	O		
A9.5.3	WINDOW SCHEDULE (SURGE)	O	O		
A9.5.4	WINDOW SCHEDULE (SURGE)	O	O		
A9.5.5	WINDOW SCHEDULE (AUDITORIUM)	O	O		
A9.5.6	WINDOW DETAILS	O	O		
A9.5.7	WINDOW DETAILS	O	O		
A9.5.8	WINDOW DETAILS	O	O		
A9.5.9	WINDOW DETAILS	O	O		
A9.7.1	CEILING DETAILS (SURGE)	O	O		
A9.7.2	CEILING DETAILS	O	O		
A9.7.3	CEILING DETAILS	O	O		
A9.8.1	CABINETRY DETAILS	O	O		
A9.8.2	TOILET DETAILS	O	O		
STRUCTURAL					
S0.1	GENERAL NOTES	O			
S2.1.1	PARTIAL FIRST FLOOR PLAN FOUNDATION PLAN (SURGE BUILDING)	O			
S2.1.2	PARTIAL FIRST FLOOR PLAN FOUNDATION PLAN (SURGE BUILDING)	O			
S2.1.3	AUDITORIUM FIRST FLOOR FRAMING / FOUNDATION PLAN	O	O		
S2.2.1	PARTIAL SECOND FLOOR FRAMING PLAN OF SURGE BUILDING	O			
S2.2.1A	PARTIAL SECOND FLOOR FRAMING PLAN OF SURGE BUILDING (TOP REINFORCEMENT)	O			
S2.2.1B	PARTIAL SECOND FLOOR FRAMING PLAN OF SURGE BUILDING (BOTTOM REINFORCEMENT)	O			
S2.2.2	PARTIAL SECOND FLOOR FRAMING PLAN OF (SURGE BUILDING)	O			
S2.2.2A	PARTIAL SECOND FLOOR FRAMING PLAN OF (SURGE BULDING TOP REINFORCEMENT)	O			
S2.2.2B	PARTIAL SECOND FLOOR FRAMING PLAN OF (SURGE BUILDING BOTTOM REINFORCEMENT)	O			
S2.2.3	ROOF FRAMING PLAN AUDITORIUM	O	O		
S2.3.1	PARTIAL THIRD FLOOR FRAMING PLAN (SURGE BUILDING)	O			
S2.3.1A	PARTIAL THIRD FLOOR FRAMING PLAN (SURGE BUILDING) (TOP REINFORCEMENT)	O			
S2.3.1B	PARTIAL THIRD FLOOR FRAMING PLAN OF SURGE BUILDING (BOTTOM REINFORCEMENT)	O			
S2.3.2	PARTIAL THIRD FLOOR PLAN OF SURGE BUILDING	O			
S2.3.2A	PARTIAL THIRD FLOOR PLAN OF SURGE BULDING (TOP REINFORCEMENT)	O			
S2.3.2B	PARTIAL THIRD FLOOR PLAN OF SURGE BUILDING (BOTTOM REINFORCEMENT)	O			
S2.4.1	PARTIAL ROOF FRAMING PLAN (SURGE BUILDING)	O			
S2.4.2	PARTIAL ROOF FRAMING PLAN (SURGE BUILDING)	O			
S2.5.1	PARTIAL TRELLIS FRAMING PLAN (SURGE BUILDING)	O			
S2.5.2	PARTIAL TRELLIS FRAMING PLAN (SURGE BUILDING)	O			
S3.1	FRAME WALL ELEVATIONS SURGE BUILDING	O			
S3.2	FRAME WALL ELEVATIONS SURGE BUILDING	O			
S3.3	FRAME WALL ELEVATIONS	O			
S4.1	COLUMN SCHEDULE AND DETAILS	O			
S5.1	TYPICAL STEEL DETAILS	O			
S5.2	TYPICAL STEEL DETAILS	O			
S5.3	STEEL DETAILS	O			
S5.4	STEEL DETAILS	O			
S5.5	STEEL DETAILS	O	O		
S6.1	TYPICAL CONCRETE DETAILS	O			
S6.2	CONCRETE DETAILS	O			
S6.3	CONCRETE DETAILS	O			
S6.4	PILE AND PILECAP DETAILS	O			
S8.1	RETAINING WALLS AND SITE WALL DETAILS	O			
S8.2	RETAINING WALLS AND SITE WALL DETAILS	O			
S8.3	CONCRETE DETAILS	O			
S9.1	EXTERIOR WALLS SECTIONS & SUPPORT DETAILS	O			
S10.1	STAIR PLAN AND DETAILS	O			

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ARCHITECTURAL (GENERAL)					
	COVER SHEET	O	O	O	
A0.01	SHEET INDEX	O	O	O	
A0.02	PROJ SUMMARY & MAP, GENERAL NOTES	O	O	O	
A0.03	GENERAL NOTES & ABBREVIATIONS	O	O	O	
A0.04	ARCHITECTURAL SYMBOLS	O	O	O	
A0.05	TYPICAL MOUNTING HEIGHTS & MOUNTING CONFIGURATION DIAGRAMS	O	O		
A0.6	UCR ACCESSIBILITY PLAN	O	O		
A0.7	FIRST FLOOR FIRE PROTECTION PLAN SURGE & AUDITORIUM	O	O		
A0.8	SECOND & THIRD FLOOR FIRE PROTECTION PLANS SURGE BLDG	O	O		
L-1	REVISED PARKING LOT UNIVERSITY CALIFORNIA RIVERSIDE				
CIVIL					
C0.01	TITLE SHEET	O	O		
C1.01	SURVEY	O			
C2.01	DEMOLITION PLAN	O			
C3.01	GRADING PLAN	O	O		
C4.01	UTILITY PLAN	O	O		
C4.02	UTILITY REFERENCE PLAN				
C5.01	HORIZONTAL CONTROL AND PAVING PLAN	O	O		
C6.01	DETAILS	O			
C6.02	DETAILS	O			
C6.03	DETAILS	O	O		
C6.04	DETAILS	O	O		
C6.05	DETAILS	O	O		
ARCHITECTURAL					
A1.1	SITE PLAN	O	O		
A1.3	SITE DETAILS	O	O		
A2.1.1	PARTIAL FIRST FLOOR PLAN (SURGE BUILDING)	O	O		
A2.1.2	PARTIAL FIRST FLOOR PLAN (SURGE BUILDING)	O	O		
A2.1.3	FIRST FLOOR PLAN (AUDITORIUM)	O	O	O	
A2.1.3B	AUDITORIUM SALB AND CURB PLAN		O		
A2.2.1	PARTIAL SECOND FLOOR PLAN (SURGE BUILDING)	O	O		
A2.2.2	PARTIAL SECOND FLOOR PLAN (SURGE BUILDING)	O	O		
A2.2.3	ROOF PLAN (AUDITORIUM)	O	O		
A2.3.1	PARTIAL THIRD FLOOR PLAN (SURGE BUILDING)	O	O		
A2.3.2	PARTIAL THIRD FLOOR PLAN (SURGE BUILDING)	O	O		
A2.4.1	PARTIAL ROOF PLAN (SURGE BUILDING)	O	O		
A2.4.2	PARTIAL ROOF PLAN (SURGE BUILDING)	O	O		
A2.4.3	PARTIAL ROOF TRELLIS PLAN (SURGE BUILDING SOUTH)	O	O		
A2.4.4	PARTIAL ROOF TRELLIS PLAN (SURGE BUILDING NORTH)	O	O		
A3.1.1	PARTIAL FIRST FLOOR REFLECTED CEILING PLAN (SURGE BUILDING)	O	O		
A3.1.2	PARTIAL FIRST FLOOR REFLECTED CEILING PLAN (SURGE BUILDING)	O	O		
A3.1.3	REFLECTED CEILING PLAN (AUDITORIUM)	O	O	O	
A3.2.1	PARTIAL SECOND FLOOR REFLECTED CEILING PLAN (SURGE BUILDING)	O	O		
A3.2.2	PARTIAL SECOND FLOOR REFLECTED CEILING PLAN (SURGE BUILDING)	O	O		
A3.3.1	PARTIAL THIRD FLOOR REFLECTED CEILING PLAN (SURGE BUILDING)	O	O		
A3.3.2	PARTIAL THIRD FLOOR REFLECTED CEILING PLAN (SURGE BUILDING)	O	O		
A4.1.1	EXTERIOR REFERENCE ELEVATIONS (SURGE BUILDING)	O	O		
A4.1.2	NORTH ELEVATION (SURGE BUILDING)	O	O		
A4.1.3	PARTIAL EAST ELEVATION (SURGE BUILDING)	O	O		
A4.1.4	PARTIAL EAST ELEVATION (SURGE BUILDING)	O	O		
A4.1.5	SOUTH ELEVATION (SURGE BUILDING)	O	O		
A4.1.6	PARTIAL WEST ELEVATION (SURGE BUILDING)	O	O		
A4.1.7	PARTIAL WEST ELEVATIONS (SURGE BUILDING)	O	O		
A4.1.8	PARTIAL WEST ELEVATION (SURGE BUILDING)	O	O		
A4.1.9	EXTERIOR REFERENCE ELEVATIONS (AUDITORIUM)	O	O		
A4.1.10	PARTIAL NORTH ELEVATIONS (AUDITORIUM)	O	O		
A4.1.11	EXTERIOR ELEVATIONS (AUDITORIUM)	O	O		
A4.1.12	PARTIAL SOUTH ELEVATIONS (AUDITORIUM)	O	O		
A4.1.13	PARTIAL ELEVATIONS	O	O		
A4.2.1	BUILDING SECTIONS SURGE BUILDING	O	O		
A4.2.2	BUILDING SECTIONS AUDITORIUM	O	O	O	
A4.2.3	BUILDING SECTIONS AUDITORIUM	O	O	O	
A4.3.1	WALL SECTIONS SURGE BUILDING	O	O		
A4.3.2	WALL SECTIONS SURGE BUILDING	O	O		
A4.3.3	WALL SECTIONS SURGE BUILDING	O	O		
A4.3.4	WALL SECTIONS AUDITORIUM	O	O		
A4.3.5	WALL SECTIONS AUDITORIUM	O	O		
A4.3.6	WALL SECTIONS AUDITORIUM	O	O		
A4.4.1	ENLARGED WALL SECTIONS	O	O		
A5.1.1	DETAILS	O	O		
A5.1.2	DETAILS	O	O		
A5.1.3	DETAILS	O	O		
A5.1.4	DETAILS	O	O		
A5.2.1	DETAILS AUDITORIUM	O	O		
A5.2.2	INTERIOR DETAILS AUDITORIUM	O	O	O	
A5.2.3	INTERIOR DETAILS AUDITORIUM	O	O	O	
A5.3.1	VERTICAL DETAILS SURGE BUILDING	O	O		
A5.3.2	VERTICAL DETAILS SURGE BUILDING	O	O		
A5.4.1	DETAILS AUDITORIUM	O	O		
A5.4.2	EXTERIOR WALL DETAILS AUDITORIUM	O	O		
A5.5.1	MISCELLANEOUS DETAILS	O	O		
A6.1.1	STAIR PLANS & SECTIONS	O	O		
A6.1.2	STAIR DETAILS	O	O		
A7.4.1	ENLARGED FIRST AND SECOND FLOOR CORE AND TOILET PLANS	O	O		
A7.4.2	ENLARGED CORE & TOILET PLANS	O	O		
A8.2.1	FIRST, SECOND & THIRD FLOOR FINISH PLANS (SURGE BUILDING)	O	O		
A8.2.2	FIRST FLOOR FINISH PLAN (AUDITORIUM)	O	O		

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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A/V BID SET	8	27APR01
BULLETIN #3	5	30JAN01
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BID #3 CONST. DOC. SUBMITTAL		23OCT00
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CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

Key Plan

Drawing Title

SHEET INDEX

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Scale

3193000

Project Number

06OCT00

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A0.01

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APPLICABLE CODES

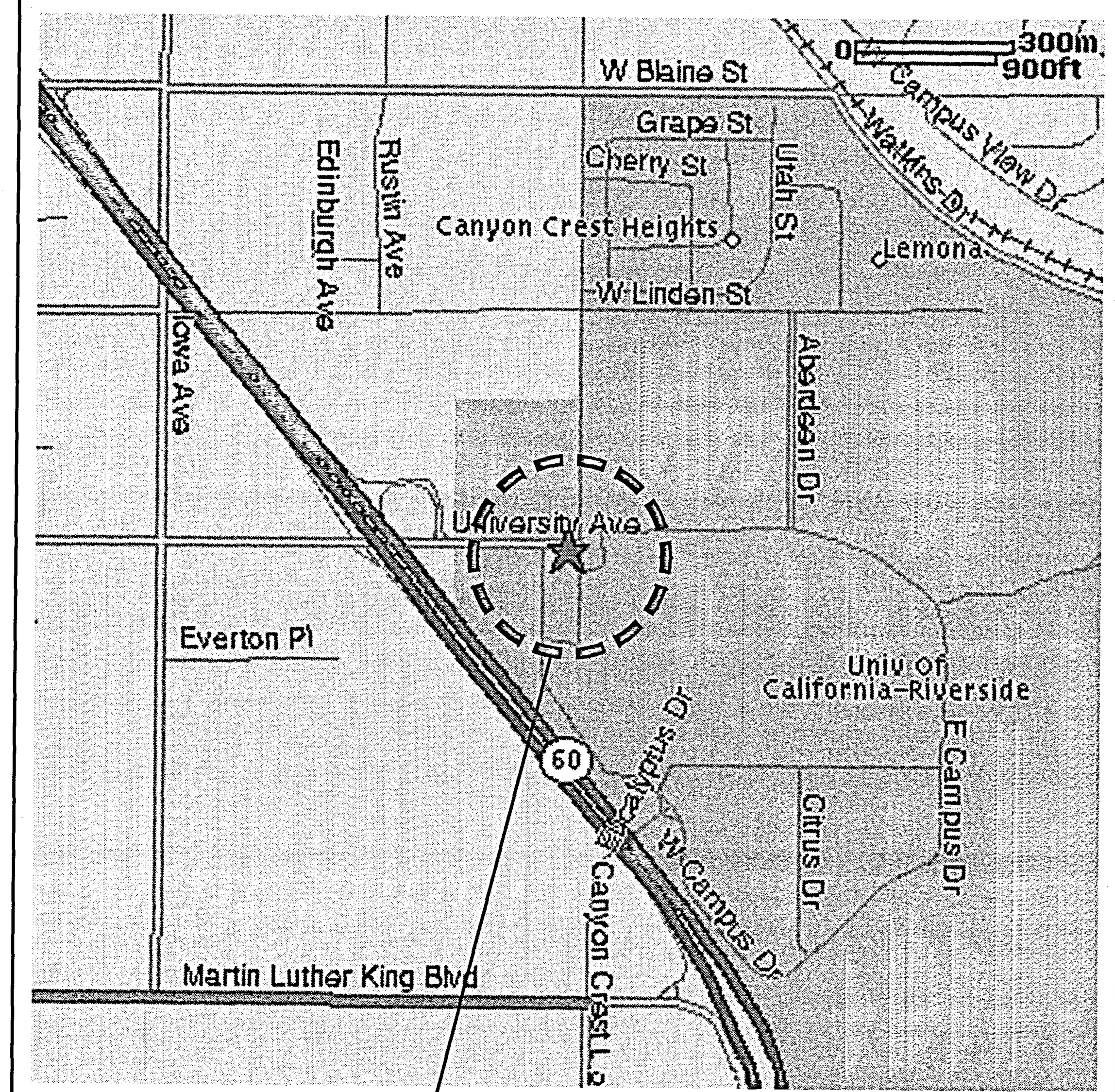
LIST OF 1999 CALIFORNIA CODE OF REGULATIONS

1. 1998 BUILDING STANDARDS ADMINISTRATIVE CODE, PART I, TITLE 24 C.C.R
2. 1998 CALIFORNIA BUILDING CODE (CBC) PART 2, TITLE 24 C.C.R.
3. (1997 UNIFORM BUILDING CODE VOLUMES 1-3 AND 1998 CALIFORNIA AMENDMENTS)
4. 1998 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R.
5. (1996 NATIONAL ELECTRICAL CODE AND 1998 CALIFORNIA AMENDMENTS)
6. 1998 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24 C.C.R.
7. (1997 UNIFORM MECHANICAL CODE AND 1998 CALIFORNIA AMENDMENTS)
8. 1998 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 C.C.R.
9. (1997 UNIFORM PLUMBING CODE AND 1998 CALIFORNIA AMENDMENTS)
10. 1998 CALIFORNIA FIRE CODE, PART 9, TITLE 24 C.C.R.
11. (1997 UNIFORM FIRE CODE AND 1998 CALIFORNIA AMENDMENTS)
12. 1998 CALIFORNIA REFERENCED STANDARDS, PART 12, TITLE 24 C.C.R.
13. 1990 TITLE 19 C.C.R., PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS

PARTIAL LIST OF APPLICABLE STANDARDS

14. AMERICAN CONCRETE INSTITUTE (ACI), LATEST REVISION.
15. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), LATEST REVISION.
16. FEDERAL SPECIFICATIONS (FS), LATEST REVISION.
17. ACCESS COMPLIANCE UNIT, OFFICE OF STATE ARCHITECT (OSA).
18. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM), LATEST REVISION.
19. AMERICAN WOOD PRESERVERS ASSOCIATION (AWPA), LATEST REVISION.
20. NATIONAL FOREST PRODUCTS ASSOCIATION (NFPA), LATEST REVISION.
21. AMERICAN PLYWOOD ASSOCIATION (APA), LATEST REVISION.
22. SHEET METAL AND AIR CONDITIONING CONTRACTOR NATIONAL ASSOCIATION (SMACNA), LATEST REVISION.
23. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), LATEST REVISION.
24. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), LATEST REVISION.
25. AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS (ASHRAE), LATEST REVISION.
26. UNDERWRITER'S LABORATORIES (UL).
27. ELECTRICAL TESTING LABORATORIES (ETL).
28. CALIFORNIA BOILER CODE.
29. AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME).
30. AMERICAN WELDING SOCIETY (AWS).
31. INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS (IAPMO).
32. NATIONAL BUREAU OF STANDARDS PRODUCT STANDARDS (NBS).
33. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA).
34. INSULATED POWER CABLE ENGINEERS ASSOCIATION (IPCEA).
35. AMERICANS WITH DISABILITIES ACT (ADA).
36. NFPA 13, AUTOMATIC SPRINKLER SYSTEMS 1996 EDITION
37. NFPA 14, STANDPIPE SYSTEMS 1996 EDITION
38. NFPA 17a, WET CHEMICAL SYSTEMS 1994 EDITION
39. NFPA 24, PRIVATE FIRE MAINS 1996 EDITION
40. NFPA 72, NATIONAL FIRE ALARM CODE (CALIFORNIA AMENDED) 1996 EDITION (NOTE SEE UL STANDARD 1971 FOR "VISUAL DEVICES")
41. NFPA 253, CRITICAL RADIANT FLUX OF FLOOR COVERING SYSTEMS 1984 EDITION
42. NFPA 2001, CLEAN AGENT FIRE EXTINGUISHING SYSTEMS 1994 EDITION
REFERENCE CODE SECTION FOR NFPA STANDARDS - CBC (SFM) 3504.1

VICINITY MAP



SITE LOCATION

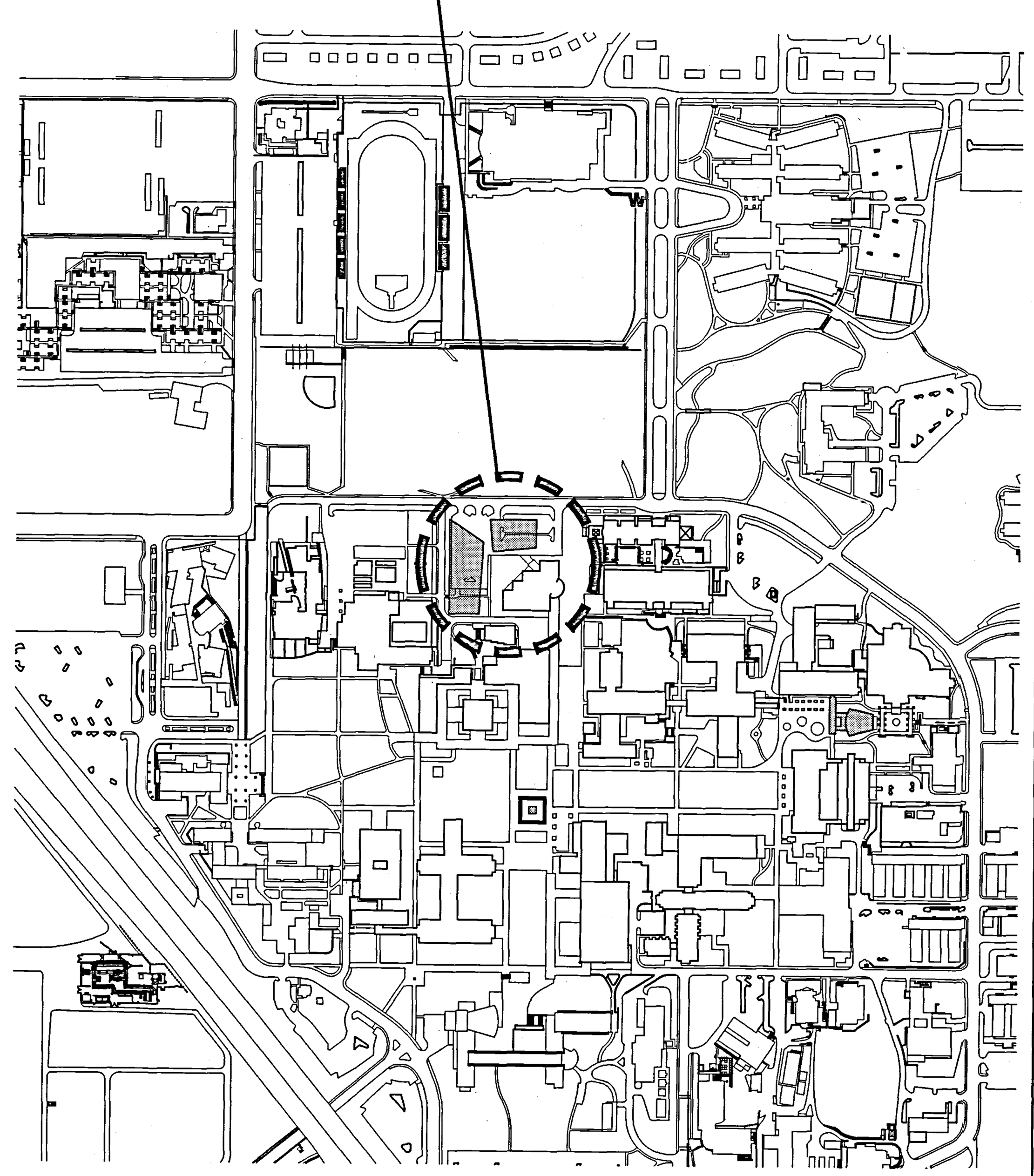
North

GENERAL NOTES

1. THE PROJECT MANUAL SHALL BE USED TOGETHER WITH THESE DRAWINGS; PROJECT CONTRACT DOCUMENTS ARE COMPLEMENTARY.
2. THE CONTRACTOR SHALL MAINTAIN PROPER ACCESS FOR FIRE DEPARTMENT VECHICLES AND EQUIPMENT AT ALL TIMES. ANY CHANGES MADE TO FIRE DEPARTMENT ACCESS ROUTES SHALL BE REVIEWED BY FIRE DEPARTMENT AUTHORITIES HAVING JURISDICTION PRIOR TO CHANGING ACCESS ROUTING.
3. THE CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS AND NOTIFY THE PROPER AUTHORITIES HAVING JURISDICTION OVER THE WORK PRIOR TO STARTING. SAID PERMITS AND CERTIFICATIONS SHALL BE KEPT ON THE SITE AT ALL TIMES.
4. PRIOR TO START OF WORK, THE CONTRACTOR SHALL CAREFULLY INSPECT AND VERIFY ALL CONDITIONS SHOWN ON THE CONTRACT DRAWINGS. IF WORK CAN NOT BE PERFORMED AS SHOWN, THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER IMMEDIATELY. WORK PERFORMED AFTER SUCH DISCOVERY, UNLESS AUTHORIZED BY THE CONSTRUCTION MANAGER, SHALL BE DONE AT THE CONTRACTOR'S RISK.
5. THE CONTRACTOR SHALL NOT INTERRUPT EXISTING UTILITIES SERVING EXISTING FACILITIES, EXCEPT WHEN AUTHORIZED IN WRITING BY THE OWNER AND ALL AUTHORITIES HAVING JURISDICTION. PROVIDE TEMPORARY SERVICES DURING CONSTRUCTION ACTIVITIES ACCEPTABLE TO OWNER AND GOVERNING AUTHORITIES.
6. THE WORK SHALL INCLUDE ALL REMOVALS NOT SPECIFICALLY INDICATED ON DRAWINGS BUT NECESSARY FOR THE COMPLETION OF THE WORK.
7. THE CONTRACTOR SHALL COORDINATE ANY AND ALL REQUIREMENTS FOR OFF SITE IMPROVEMENTS INCLUDING, BUT NOT LIMITED TO SIDEWALKS, DRIVEWAYS, CURBS, GUTTERS, UTILITIES, ETC.. OFF-SITE IMPROVEMENTS SHALL MEET THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
8. THE CONTRACTOR SHALL PROVIDE PROTECTIVE BARRICADES WHERE REQUIRED DURING CONSTRUCTION.
9. THE CONTRACTOR SHALL KEEP ALL EXITS READILY ACCESSIBLE AND UNOBSTRUCTED AT ALL TIMES.
10. WHERE FIRE EXTINGUISHER CABINETS AND / OR ANY OTHER EQUIPMENT ARE RECESSED IN PARTITIONS OF FIRE RATED CONSTRUCTION, THE CONTRACTOR SHALL MODIFY THE PARTITION AS REQUIRED TO PROVIDE CONTINUOUS ENCLOSURE TO ENSURE UNINTERRUPTED FIRE RATING.
11. ELEVATIONS ARE TO TOP OF CONCRETE, NOT TO TOP OF FLOOR COVERING OR ROOFING.
12. DO NOT SCALE DRAWINGS. USE DIMENSIONS INDICATED.
13. WHEN A DETAIL IS IDENTIFIED AS TYPICAL, THE CONTRACTOR SHALL APPLY THIS DETAIL TO EVERY LIKE CONDITION WHETHER OR NOT THE REFERENCE IS REPEATED IN EVERY INSTANCE.
14. DRAWINGS HAVE BEEN DETAILED IN COMPLIANCE WITH UNDERWRITERS LABORATORIES (U.L), WARNOCK HERSEY AND /OR OTHER RECOGNIZED TESTING LABORATORY LISTING REQUIREMENTS AND WITH ICBO REPORTS FOR THE MATERIALS SPECIFIED.
15. THE SIZES, LOCATION FOR MOUNTINGS AND ATTACHMENTS AND LOCATIONS OF UTILITY CONNECTIONS FOR EACH ITEM OF EQUIPMENT SHOWN ON THE DRAWINGS ARE FOR ILLUSTRATION ONLY. ALL CAN VARY FROM MANUFACTURER TO MANUFACTURER AND ARE DEPENDENT ON THE EXACT MANUFACTURER'S MODEL FURNISHED. THE CONTRACTOR SHALL PROVIDE AND COORDINATE EXACT DIMENSIONS RELATING TO THE SIZE OF EACH ITEM OF EQUIPMENT, THE LOCATIONS OF ALL MEETINGS AND ATTACHMENTS FOR EACH ITEM OF EQUIPMENT AND FOR ALL UTILITY CONNECTIONS TO EACH ITEM OF EQUIPMENT.
16. THE CONTRACTOR SHALL PROVIDE AND COORDINATE THE EXACT DIMENSIONS, SIZES AND POSITIONS OF ALL OPENINGS IN FLOOR AND WALL CONSTRUCTION NECESSARY FOR THE INSTALLATION OF THE WORK.
17. ALL WOOD USED FOR BLOCKING, NAILERS AND / OR FRAMING USED FOR PERMANENT CONSTRUCTION SHALL BE FIRE RETARDANT PRESURE TREATED AND SHALL BEAR AN APPROVED INSPECTION AGENCY LABEL.
18. ALL PIPING AND DUCT WORK VALVES, DAMPERS, CONTROLS AND TERMINATIONS SHALL BE INSTALLED AT LOCATIONS WHICH PROVIDE SAFE, DIRECT AND EASY ACCESS.
19. ALL ATTACHMENTS TO AND PENETRATIONS THROUGH CONCRETE NOTED ON THE DRAWINGS TO BE WATERPROOFED SHALL BE MADE PRIOR TO APPLICATION OF THE WATERPROOF MATERIAL.
20. PROVIDE LABELS ON DOORS, FRAMES AND OTHER ASSEMBLIES AT OPENINGS IN FIRE RATED CONSTRUCTION.
21. THE INTENT OF THE DRAWINGS AND SPECIFICATIONS IS TO EXECUTE THE WORK IN ACCORDANCE WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS. SHOULD ANY CONDITIONS DEVELOP NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH SAID TITLE 24, CALIFORNIA CODE OF REGULATIONS, A CHANGE ORDER DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BEFORE PROCEEDING WITH THE WORK AS REQUIRED BY SECTION 7-125 (b)(2), PART 1, TITLE 24.

LOCATION MAP

SURGE BUILDING LOCATION



NORTH

PROJECT SUMMARY

OCCUPANCY

BUILDING	GROUP	USAGE	OCCUPANT LOAD	FLOOR AREA
SURGE BUILDING	B	OFFICES & RESEARCH LABORATORIES	1,308	71,534
AUDITORIUM	A.2.1	AUDITORIUM	604	10,075
TOTAL				81,609

CONSTRUCTION

TYPE II - ONE HOUR WITH FULLY AUTOMATIC SPRINKLER SYSTEM THROUGHOUT

ALLOWABLE BUILDING HEIGHT AND FLOOR AREA

SURGE BUILDING	ALLOWABLE PER TABLE 5B	ACTUAL PROPOSED
HEIGHT	65'	49'
STORIES	4	3
AREA OF LARGEST FLOOR	36,000 (3,4)	25,326
AREA OF TOTAL BUILDING	72,000 (3,4)	71,534

AUDITORIUM	ALLOWABLE PER TABLE 5B	ACTUAL PROPOSED
HEIGHT	65'	25'
STORIES	2	1
AREA OF LARGEST FLOOR	13,500	10,075

NOTES:

(1) HEIGHT MEASURED FROM HIGHEST ADJOINING GROUND SURFACE WITHIN 5' DISTANCE FROM EXTERIOR WALL TO TOP OF PARAPET AROUND ROOF, NOT INCLUDING MECHANICAL EQUIPMENT ROOF SCREEN
(2) TABLE VALUE X 2 FOR MULTI-STORY, PER CBC 504.2
(3) TABLE VALUE X 2 FOR SEPARATION 3 SIDES PER CBC 505.1.2
(4) TABLE VALUE X 2 FOR SPRINKLERS PER CBC 505.3

FLOOR AREA TABLE

FLOOR	AREA
1	21,277
2	25,425
3	24,832
SUB-TOTAL	71,534
AUDITORIUM	10,075
TOTAL	81,609

PROJECT DIRECTORY

CLIENT :	UNIVERSITY OF CALIFORNIA RIVERSIDE 900 UNIVERSITY AVENUE RIVERSIDE, CA 92521 CONTACT: THEODORE CHIU (909) 787-4201 EXT. 1396
ARCHITECT :	SMITHGROUP INCORPORATED 1919 SANTA MONICA BOULEVARD, 4TH FLOOR SANTA MONICA, CA 90404 (310)586-5400 CONTACT: JOHN GORMLEY
CIVIL: STRUCTURAL	KPFF CONSULTING ENGINEERS 2401 COLORADO AVENUE, SUITE 315 SANTA MONICA, CA 90404-3500 (310)828-1536 CONTACT: BRUCE BAYNE, P.E. (CIVIL) RAMZI HODALI, S.E. (STRUCTURAL)
MEP:	HENRIKSON OWENS & ASSOCIATES 5 GOODYEAR STREET IRVINE, CA 92618 (949)860-4900 CONTACT: CARLO KEISSEH, P.E.
LANDSCAPE:	KATHERINE SPITZ ASSOCIATES, INC 4212-1/2 GLENCOE AVENUE MARINA DEL REY, CA 90292 (310)574-4460 CONTACT: KATHERINE SPITZ, AIA
TELECOM:	HENRIKSON OWENS & ASSOCIATES 5 GOODYEAR STREET IRVINE, CA 92618 (949)860-4900 CONTACT: CARLO KEISSEH, P.E.
ACOUSTICAL:	VENEKLAUSEN ASSOCIATES 1711 16TH STREET SANTA MONICA, CA 90404 (310)450-1733 CONTACT: JERRY CHRISTOFF
SPECS:	EILEEN KOPELSON, AIA 1729 PARKER STREET BERKELEY, CA 94703-1917 (510)649-8150 CONTACT: EILEEN KOPELSON, AIA

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

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1919 Santa Monica Boulevard
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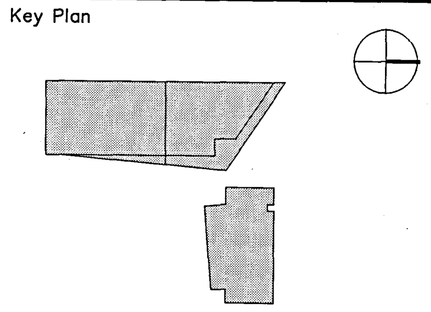
CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

Key Plan



Drawing Title

PROJ SUMMARY & MAP
GENERAL NOTES

NOT TO SCALE

Scale

3193000

Project Number

06OCT00

Baseline Date

A0.02

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Plot Date: 04/28/01 16:46 Plot View:

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ARCHITECTURAL ABBREVIATIONS

A

AB	ANCHOR BOLT
ABV	ABOVE
AC	ASPHALT CONCRETE
ACOUS	ACOUSTICAL
ACT	ACOUSTICAL CEILING TILE
AD	AREA DRAIN
ADDL	ADDITIONAL
ADH	ADHESIVE
ADJ	ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AFS	ABOVE FINISH SLAB
AGGR	AGGREGATE
AHR	ANCHOR
AL	ALUMINUM
ALT	ALTERNATE
ANOD	ANODIZED
AO	ACCESS PANEL
AP	AUTOMATIC DOOR OPENER
APPROX	APPROXIMATE(LY)
ARCH	ARCHITECT(URAL)
ASPH	ASPHALT
AUTO	AUTOMATIC

B

BB	BULLETIN BOARD
BD	BOARD
BET	BETWEEN
BG	BUMPER GUARD
BITUM	BITUMINOUS
BKG	BACKING
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BLW	BELOW
BM	BEAM
BOT	BOTTOM
BRKT	BRACKET
BSMT	BASEMENT
BURS	BUILT UP ROOFING SYSTEM

C

CAB	CABINET
CARP	CARPET
CB	CATCH BASIN
CCT	CUBICLE CURTAIN TRACK
CCTV	CLOSE CIRCUIT TELEVISION
CG	CORNER GUARD
CEM	CEMENT
CEM PLAS	CEMENT PLASTER
CER	CERAMIC
CER TILE	CERAMIC TILE
CFE	CONTRACTOR FURNISHED EQUIPMENT
CH BD	CHALKBOARD
CI	CAST IRON
CL	CENTER LINE
CLG	CEILING
CLJ	CONTROL JOINT
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CNTR	COUNTER
CO	CASED OPENING
COL	COLUMN
CONC	CONCRETE
CONF	CONFERENCE
CONN	CONNECTION
CONSTR	CONSTRUCTION
CONT	CONTINUOUS
CORR	CORRIDOR
CR	CARD READER
CSK	CONTERSUNK
CSP	COMBINATION STANDPIPE
CSWK	CASEWORK
CUST	CUSTOM
CW	COLD WATER

D

D-W	DISTILLED WATER
DI-W	DEIONIZED WATER
DBL	DOUBLE
DBL ACT	DOUBLE ACTING
DEMO	DEMOLISH
DET	DETAIL
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIAG	DIAGONAL
DIFF	DIFFUSER
DIM	DIMENSION
DIM PT	DIMENSION POINT
DISP	DISPENSER
DIST	DISTANCE
DLV	DOOR LOUVER
DMPF	DAMPPROOFING
DN	DOWN
DOP	DOOR OPENING
DR	DRAIN
DS	DOWNSPOUT
DSP	DRY STANDPIPE
DT	DRAIN TILE, DRAPERY TRACK
DWG	DRAWING
DWGS	DRAWINGS
DWR	DRAWER
DWTR	DUMBWAITER

E

(E)	EXISTING
E	EAST
EA	EACH
ECAB	ELECTRICAL CABINET
EDR	EQUIPMENT DRAIN
EF	EACH FACE
EG	EDGE GUARD
EIFS	EXTERIOR INSULATION FINISH SYSTEM
EL	ELEVATION
ELAST	ELASTOMERIC
ELEC	ELECTRICAL
ELEV	ELEVATOR
EMER	EMERGENCY
EMR SHR	EMERGENCY SHOWER
ENCL	ENCLOSURE
ENGR	ENGINEER
EO	ELECTRICAL OUTLET
EOS	EDGE OF SLAB
EP	ELECTRICAL PANEL
EPDM	ETHYLENE PROPYLENE DIENE MONOMER
EPRF	EXPLOSION PROOF
EQ	EQUAL
EQL SP	EQUALLY SPACED
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ESCAL	ESCALATOR
EWC	ELECTRIC WATER COOLER
EXP	EXPANSION
EXP BT	EXPANSION BOLT
EXP JT	EXPANSION JOINT
EXPO	EXPOSED
EXST	EXISTING
EXST GR	EXISTING GRADE
EXT	EXTERIOR
EXTR	EXTRUSION

F

F/F	FACE TO FACE
FA	FIRE ALARM
FAWS	FLUID-APPLIED WATERPROOFING SYSTEM
FB	FLAT BAR
FBD	FIBERBOARD
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FDN	FOUNDATION
FDV	FIRE DEPARTMENT VALVE
FEB	FIRE EXTINGUISHER BRACKET
FEC	FIRE EXTINGUISHER CABINET
FEXT	FIRE EXTINGUISHER
FHC	FIRE HOSE CABINET
FH/FEC	FIRE HOSE/FIRE EXTINGUISHER CABINET
FHMS	FLAT HEAD MACHINE SCREW
FHWS	FLAT HEAD WOOD SCREW
FHV	FIRE HOSE VALVE
FHY	FIRE HYDRANT
FIN	FINISH
FIN FL	FINISH FLOOR
FIN GR	FINISH GRADE
FL	FLOOR(ING)
FLAM	FLAMMABLE
FLASH	FLASHING
FLEX	FLEXIBLE
FLR SK	FLOOR SINK
FLUOR	FLUORESCENT
FNR	FEMININE NAPKIN RECEPTACLE
FNTD	FEMININE NAPKIN-TAMPON DISPENSER
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOP	FACE OF PARTITION ASSEMBLY
FOS	FACE OF STUDS
FRPF	FIREPROOFING
FRZR	FREEZER
FR SNK	FLUSHING RIM SINK
FS	FULL SIZE
FSB	FOLDING SHOWER BENCH
FSTNR	FASTENER
FT	FOOT, FEET
FTG	FOOTING
FURN	FURNITURE
FURR	FURRING
FUS	FOLDING UTILITY SEAT
FUT	FUTURE
FXTR	FIXTURE

G

G	GAS
GA	GAUGE, GAGE
GALV	GALVANIZED
GALVI	GALVANIZED IRON
GALVS	GALVANIZED STEEL
GB	GRAB BAR
GC	GENERAL CONTRACTOR
GFRC	GLASS-FIBER REINFORCED CONCRETE
GFRG	GLASS-FIBER REINFORCED GYPSUM
GL	GLASS
GL BLK	GLASS BLOCK
GLU LAM	GLUE LAMINATED
GLZ	GLAZING
GND	GROUND
GR	GRADE OR GRADING
GRV	GRAVITY ROOF VENTILATOR
GVL	GRAVEL
GYP BD	GYPSUM BOARD
GYP PLAS	GYPSUM PLASTER

H

H	HIGH
HAGL	HEAT ABSORBING GLASS
HB	HOSE BIBB
HC	HOLLOW CORE
HCP	HANDICAP, HANDICAPPED
HD	HEAD
HDBD	HARDBOARD
HDWD	HARDWOOD
HDWE	HARDWARE
HGT	HEIGHT
HM	HOLLOW METAL
HNDRL	HANDRAIL
HORIZ	HORIZONTAL
HPT	HIGH POINT
HR	HOUR
HVAC	HEATING-VENTILATION-AIR CONDITIONING
HVP	HARDWOOD VENEER PLYWOOD
HW	HOT WATER

I - J - K

ID	INSIDE DIAMETER
INCAND	INCANDESCENT
INCL	INCLUDE, INCLUDING
INFO	INFORMATION
INSTL	INTERSTITIAL
INSUL	INSULATION
INTR	INTERIOR
IPS	INSIDE PIPE SIZE
IVT	INTRAVENOUS TRACK
JAN	JANITOR
JB	JUNCTION BOX
JT	JOINT
KCP	KEENE'S CEMENT PLASTER
KIT	KITCHEN
KPL	KICK PLATE
KS	KNEE SPACE

L

LAB	LABORATORY
LAM	LAMINATION
LAV	LAVATORY
LB	POUND
LC	LINEN CHUTE
LCD	LINEAR CEILING DIFFUSER
LF	LINEAR FOOT
LG	LENGTH
LGL	LEADED GLASS
LH	LEFT HAND
LIN	LINEAR
LKR	LOCKER
LL	LEAD LINED
LONG	LONGITUDINAL
LP	LIGHT PROOF
LPT	LOW POINT
LT	LIGHT
LT WT	LIGHT WEIGHT
LTG	LIGHTING

M

M-AIR	MEDICAL GAS SYSTEM - AIR
M-VAC	MEDICAL GAS SYSTEM - VACUUM
M-G	MEDICAL GAS SYSTEM - GAS
MACH	MACHINE
MAN	MANUAL
MATL	MATERIAL
MATV	MASTER ANTENNA TELEVISION SYSTEM
MAX	MAXIMUM
MB	MACHINE BOLT
MC	MEDICINE CABINET
MDO	MEDIUM DENSITY OVERLAY
MECH	MECHANICAL
MEMB	MEMBRANE
MET	METAL
MFR	MANUFACTURER
MGVB	MEDICAL GAS SHUTOFF & ALARM BOX
MH	MANHOLE
MH/S	MOP HOLDER WITH SHELF
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
ML	METAL LATH
MO	MASONRY OPENING
MOD	MODULE, MODULAR
MTD	MOUNTED
MTG	MOUNTING
MULL	MULLION

N

(N)	NEW
N	NORTH
NA	NOT APPLICABLE
NAT	NATURAL
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NPS	NOMINAL PIPE SIZE
NRC	NOISE REDUCTION COEFFICIENT
NTS	NOT TO SCALE

O

OA	OVERALL
OB	OBSCURE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFCI	OWNER FURNISHED-CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED-OWNER INSTALLED
OH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
ORD	OVERFLOW ROOF DRAIN
OVHD	OVERHEAD
OXY	OXYGEN

P

PA	PUBLIC ADDRESS
PBD	PARTICLEBOARD
PBX	PRIVATE TELEPHONE EXCHANGE
PC	PORTLAND CEMENT
PCD	PAPER CUP DISPENSER
PCF	POUNDS PER CUBIC FOOT
PDF	POWDER DRIVEN FASTENER
PE	PORCELAIN ENAMEL
PERF	PERFORATED
PERIM	PERIMETER
PERM	PERMANENT
PERP	PERPENDICULAR
PH	PANIC HARDWARE
PI	POINT OF INTERSECTION
PL	PLATE OR PROPERTY LINE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLAT	PLATFORM
PLBG	PLUMBING
PLF	POUNDS PER LINEAR FOOT
PLYWD	PLYWOOD
PMRS	PREFORMED METAL ROOFING SYSTEM
PNEU	PNEUMATIC
PNL	PANEL
PNL BD	PANEL BOARD
PORT	PORTABLE
PP	PUSH PLATE
PPM	PARTS PER MILLION
PR	PAIR
PREFAB	PREFABRICATED
PRKG	PARKING
PROJ	PROJECT
PROP	PROPERTY
PS CONC	PRESTRESSED CONCRETE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT
PTD	PAPER TOWEL DISPENSER
PTD/R	PAPER TOWEL DISPENSER & RECEPTACLE
PTN	PARTITION
PTR	PAPER TOWEL RECEPTACLE
PTS	PNEUMATIC TUBE SYSTEM
PVC	POLYVINYL CHLORIDE
PVG	PAVING
PVMT	PAVEMENT
PWR	POWER

Q - R

QT	QUARRY TILE
QTR	QUARTER
QTY	QUANTITY
R	RISER
RA	RETURN AIR
RAD	RADIUS
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REF	REFERENCE
REFR	REFRIGERATOR
REG	REGISTER
REINF	REINFORCE (D) (ING) (MENT)
REQD	REQUIRED
RESIL	RESILIENT
RET	RETURN
REV	REVISION
RH	RIGHT HAND
RHMS	ROUND HEAD MACHINE SCREW
RHWS	ROUND HEAD WOOD SCREW
RM	ROOM
RND	ROUND
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RWL	RAIN WATER LEADER

S

S	SOUTH
SA	SUPPLY AIR
SB	SPLASH BLOCK
SC	SOLID CORE
SCD	SEAT COVER DISPENSER
SCHED	SCHEDULE
SCR	SHOWER CURTAIN ROD
SCRN	SCREEN
SD	SOAP DISH
SDL	SOAP DISPENSER, LIQUID
SDP	SOAP DISPENSER, POWDER
SECT	SECTION
SEG	SEGMENT
SEP	SEPARATION OR SEPARATE
SEP JT	SEPARATION JOINT
SHR	SHOWER
SHT	SHEET, SHEETING
SHV	SHELVES, SHELVING
SIM	SIMILAR
SK	SINK
SMS	SHEET METAL SCREW
SP	SPACE, SPACED, SPACING
SPEC	SPECIFICATION
SPKLR	SPRINKLER
SPKR	SPEAKER
SQ	SQUARE
SQ FT	SQUARE FOOT
SQ IN	SQUARE INCH
SS	SANITARY SEWER
SSK	SERVICE SINK
SST	STAINLESS STEEL
ST	STREET
STAG	STAGGERED
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURAL
STRUCT STL	STRUCTURAL STEEL
STS	SELF-TAPPING SCREW
SUSP	SUSPENDED
SUSP CLG	SUSPENDED CEILING
SVCE	SERVICE
SYMM	SYMMETRICAL

T

T	TREAD
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
TB	TOWEL BAR
TC	TOP OF CONCRETE, TOP OF CURB
TEL	TELEPHONE
TEMP	TEMPORARY
TER	TERRAZZO
THERM	THERMAL
THK	THICK, THICKNESS
THRES	THRESHOLD
THRU	THROUGH
TK BD	TACK BOARD
TMPD GL	TEMPERED GLASS
TOL	TOLERANCE
TOT	TOTAL
TP	TOP OF PAVEMENT
TPD	TOILET PAPER DISPENSER
TPH	TOILET PAPER HOLDER
TSL	TOP OF SLAB
TST	TOP OF STEEL
TTB	TELEPHONE TERMINAL BOARD
TV	TELEVISION
TW	TOP OF WALL
TYP	TYPICAL

U

UC	UNDER COUNTER
UNEX	UNEXCAVATED
UNFIN	UNFINISHED
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
UR	URINAL
UTIL	UTILITY

V

VAC	VACUUM
VB	VINYL BASE, VALVE BOX
VCO	VACUUM CLEANER OUTLET
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VEST	VESTIBULE
VFAT	VINYL FACED ACOUSTIC TILE
VIF	VERIFY IN FIELD
VNR	VENEER
VNR PLAS	VENEER PLASTER
VOL	VOLUME
VWC	VINYL WALL COVERING

W

W	WEST
W/	WITH
W/O	WITH OUT
W/W	WALL TO WALL
WAU	WALL ASH URN
WC	WATER CLOSET
WD	WOOD
WDW	WINDOW
WF	WIDE FLANGE
WGL	WIRE GLASS
WHCH	WHEELCHAIR
WO	WHERE OCCURS
WP	WORKING POINT
WR	WATER RESISTANT
WSCT	WAINSCOT
WSP	WET STANDPIPE
WT	WEIGHT
WTRPRF	WATERPROOFING
WVF	WELDED SHEET VINYL FLOORING
WWF	WELDED WIRE FABRIC

X - Y - Z

XFMR	TRANSFORMER

SYMBOLS AS ABBREVIATIONS

∠	ANGLE
@	AT
℄	CENTER LINE
°	DEGREE(S) OF ANGULAR MEASURE
ø	DIAMETER
=	EQUAL
>	GREATER THAN
<	LESS THAN
‖	PARALLEL
⊥	PERPENDICULAR
±	PLUS OR MINUS (TOLERANCE)
#	POUND(S)
℘	PROPERTY LINE
'	FOOT OR FEET
"	INCH OR INCHES

ARCHITECTURAL GENERAL NOTES

1. THE FOLLOWING GENERAL NOTES APPLY TO ALL ARCHITECTURAL DRAWINGS. FOR NOTES APPLICABLE TO ALL DRAWINGS OF ALL DISCIPLINES, REFER TO THE "PROJECT GENERAL NOTES" - SEE INDEX OF DRAWINGS.

2. ALL PARTS OF THE WORK - INCLUDING MATERIALS, METHODS, ASSEMBLIES, ETC - MUST COMPLY WITH THE MIN REQUIREMENTS OF THE GOVERNING REGULATIONS OF ALL FEDERAL, STATE, DISTRICT, AND LOCAL AUTHORITIES HAVING JURISDICTION OVER THE PROJECT AS WELL AS THOSE GREATER REQUIREMENTS INDICATED BY THE CONTRACT DOCUMENTS. NO PART OF THE CONTRACT DOCUMENTS MAY BE CONSTRUED TO REQUIRE OR PERMIT WORK CONTRARY TO A GOVERNING REGULATION.

3. THE ARCHITECTURAL DRAWINGS ARE A PART OF A LARGER SET OF DRAWINGS WHICH, WHEN COMPLETE, CONSISTS OF ALL DRAWINGS LISTED BY THE INDEX OF DRAWINGS. THE WORK DESCRIBED BY THE DRAWINGS OF ANY ONE DISCIPLINE MAY BE AFFECTED BY THE WORK DESCRIBED ON DRAWINGS OF ANOTHER DISCIPLINE AND MAY REQUIRE REFERENCE TO THE DRAWINGS OF ANOTHER DISCIPLINE. PARTIAL SETS OF DRAWINGS ARE INCOMPLETE AND SHOULD NOT BE DISTRIBUTED OR UTILIZED BY THE CONTRACTOR. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW AND COORDINATE THE WORK OF ALL SUB-CONTRACTORS, TRADES, AND SUPPLIERS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS BEFORE COMMENCING CONSTRUCTION, AND TO ASSURE THAT ALL PARTIES ARE AWARE OF ALL REQUIREMENTS, REGARDLESS OF WHERE THE REQUIREMENTS OCCUR IN THE CONTRACT DOCUMENTS, WHICH MIGHT AFFECT THE WORK OF THAT PARTY.

4. AS PART OF THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE THE WORK OF ALL SUB-CONTRACTORS, TRADES, AND SUPPLIERS, THE CONTRACTOR SHALL ENDEAVOR TO IDENTIFY AND NOTIFY THE ARCHITECT OF ANY CONFLICTS BETWEEN THE WORK OF DIFFERENT PARTIES AT THE EARLIEST POSSIBLE DATE SO AS TO ALLOW REASONABLE AND ADEQUATE TIME FOR THE CONFLICT TO BE RESOLVED WITHOUT DELAYING THE WORK. ALL DEVIATIONS FROM THAT WHICH IS REQUIRED BY THE CONTRACT DOCUMENTS MUST BE APPROVED IN ADVANCE BY THE ARCHITECT.

5. THE ARCHITECTURAL DRAWINGS ESTABLISH AND COORDINATE THE FINISHED APPEARANCE AND EXACT LOCATION OF ALL EXPOSED ELEMENTS OF THE WORK OF ALL TRADES, INCLUDING THAT WORK WHICH IS ILLUSTRATED PRIMARILY ON DRAWINGS OF OTHER DISCIPLINES. LOCATIONS SHOWN ON OTHER DRAWINGS ARE SCHEMATIC, UNLESS OTHERWISE NOTED ON THE

5. CONTINUED:

ARCHITECTURAL DRAWINGS. THE ARCHITECTURAL DRAWINGS TAKE PRECEDENCE FOR THE FINISHED APPEARANCE AND EXACT LOCATION OF ALL PARTS OF THE WORK.

EXCEPTION: DIMENSIONED LOCATIONS SHOWN ON ON DRAWINGS OF OTHER DISCIPLINES SHALL GOVERN ONLY WHERE:

A. SPECIFICALLY AND INDIVIDUALLY INDICATED BY SYMBOL, KEYED NOTE, OR NOTATION ON THE ARCHITECTURAL DRAWINGS.

B. OCCURING WITHIN A ROOM OR OTHER IDENTIFIED SPACE FOR WHICH ARCH SHEET OR SCHEDULE NOTES INDICATE THAT DIMENSIONS PROVIDED ELSEWHERE SHALL GOVERN.

6. THE ARCHITECTURAL FLOOR PLANS, REFLECTED CEILING PLANS, SECTIONS, AND ELEVATIONS ILLUSTRATE THE EXACT LOCATION OF MANY, BUT NOT ALL, EXPOSED PARTS OF THE WORK. APPLY THE RULES INDICATED BY THE DRAWING "TYPICAL RULES FOR DETERMINING MOUNTING HEIGHTS AND LOCATIONS" TO DETERMINE THE EXACT LOCATION OF EACH EXPOSED PART OF THE WORK.

7. REFER TO THE STRUCTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR THE DETAILED DESIGN OF STRUCTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING SYSTEMS, OF WHICH PORTIONS MAY BE SHOWN ON THE ARCHITECTURAL DRAWINGS.

8. SEE THE DRAWING "SURVEY CONTROL" FOR THE RELATIONSHIP OF SITE ELEVATIONS TO CONTROL POINTS AND BENCHMARKS.

9. FINISH FLOOR ELEVATIONS ARE TO TOP OF CONCRETE FLOOR SLAB, UON. WHERE THE CONCRETE IS DEPRESSED TO ACCOMMODATE MORTAR BEDS, SETTING BEDS, RAISED ACCESS FLOORS, AND OTHER SIMILAR FLOOR ASSEMBLIES, FINISHED FLOOR ELEVATIONS ARE TO TOP OF FINISH FLOOR ASSEMBLY INDICATED.

10. CEILING HEIGHT DIMENSIONS ARE TO FINISHED SURFACES, UNLESS OTHERWISE NOTED.

11. FOR TYPICAL DIMENSIONING CONVENTIONS, INCLUDING RULES FOR LOCATING DOORS WHICH HAVE NOT BEEN DIMENSIONED, REFER TO THE "DIMENSIONING CONVENTIONS" NOTES ON THIS SHEET.

12. FOR ILLUSTRATION AND DEFINITION OF TYP SYMBOLS USED ON THE ARCHITECTURAL DRAWINGS, SEE THE DRAWING "ARCHITECTURAL SYMBOLS".

13. ADDITIONAL SYMBOLS, NOT SHOWN OR DEFINED ON THE DRAWING "ARCHITECTURAL SYMBOLS", MAY OCCUR AND ARE DEFINED ON OTHER ARCH DRAWINGS.

14. BASIC FIRE PROTECTION AND EXITING CONCEPTS ARE ILLUSTRATED BY "KEY PLAN AND FIRE PROTECTION" DRAWINGS. REFER TO THE INDEX OF DRAWINGS FOR THE LOCATION OF ADDITIONAL FLOOR PLANS, CEILING PLANS, BUILDING SECTIONS, WALL SECTIONS, ELEVATIONS, SCHEDULES, AND DETAILS.

15. GRID LINES IDENTIFIED WITH A LETTER DESIGNATION ARE PARALLEL, UNLESS OTHERWISE NOTED. GRID LINES IDENTIFIED WITH A NUMBER DESIGNATION ARE PARALLEL AND ARE PERPENDICULAR TO THOSE WITH LETTER DESIGNATIONS, UON.

ARCHITECTURAL DIMENSIONING CONVENTIONS

1. EXCEPT WHERE DIRECTED TO PLACE ITEMS OF THE WORK AT THE "APPROXIMATE LOCATION SHOWN," DO NOT SCALE DRAWINGS FOR DIMENSIONAL INFORMATION. ALL ELEMENTS OF THE DRAWINGS MAY NOT BE DRAWN TO EXACT SCALE. ALL DIMENSIONS REQUIRED ARE SHOWN, OR MAY BE DERIVED FROM THOSE SHOWN, ON THE FLOOR PLANS, DETAIL PLANS, ELEVATIONS, SECTIONS, DETAILS, SCHEDULES, AND SPECIFICATIONS. SEE NOTES ON THIS SHEET AND SYMBOLS ON THE "ARCHITECTURAL SYMBOLS" DRAWING FOR DIMENSIONS CONVENTIONS USED ON THIS PROJECT.

2. EXCEPT WHERE SPECIFICALLY NOTED TO THE CONTRARY, ALL DIMENSIONS SHOWN ON THE ARCHITECTURAL DRAWINGS CONFORM TO THE FOLLOWING CONVENTIONS:

A. DIMENSIONS UTILIZING THE "CENTERLINE" SYMBOL ARE MEASURED TO:

- STRUCTURAL OR DIMENSIONAL GRID LINES.
- CENTERLINE OF CONCRETE OR CONC MASONRY UNIT WALL (EXCLUSIVE OF APPLIED FINISHES HAVING THICKNESS OR FURRING). REFER TO THE ARCHITECTURAL PLANS AND SECTIONS, THE STRUCTURAL DRAWINGS, OR THE PARTITION SCHEDULE TO DETERMINE THE THICKNESS OF CONCRETE OR CONCRETE MASONRY UNIT WALLS.
- CENTERLINE OF PARTITION ASSEMBLY (EXCLUSIVE OF ANY APPLIED FINISHES HAVING THICKNESS WHICH MAY BE ADDED TO SUCH WALLS) AT PARTITIONS FRAMED WITH METAL STUDS. REFER TO "PARTITION SCHEDULE" TO DETERMINE THE THICKNESS OF EACH PARTITION ASSEMBLY TYPE.
- CENTERLINE OF DOOR, WINDOW, OR LOUVER OPENING.
- CENTERLINE OF EQUIPMENT OR FURNISHING.
- CENTERLINE OF OTHER FEATURES AS INDICATED.

B. REFER TO SHEET A0.3 FOR ILLUSTRATION OF SYMBOL USED TO INDICATE CENTERLINE DIMENSION.

C. DIMENSIONS UTILIZING THE "FACE OF" SYMBOL ARE MEASURED TO:

- FACE OF CONCRETE OR CONC MASONRY UNIT WALL (EXCLUSIVE OF APPLIED FINISHES HAVING THICKNESS OR FURRING WHICH MAY BE ADDED TO THE FACE OF SUCH WALLS).
- FACE OF PARTITION ASSEMBLY (EXCLUSIVE OF APPLIED FINISHES HAVING THICKNESS WHICH MAY BE ADDED TO SUCH WALLS) AS DEFINED BY THE PARTITION SCHEDULE. UNLESS NOTED AS A "FACE OF FINISH" OR "CLEAR" DIMENSION (SEE NOTES BELOW), DIM ARE NOT MEASURED TO THE FACE OF APPLIED FINISH. REFER TO THE "PARTION SCHEDULE" TO DETERMINE THE THICKNESS OF EACH PARTITION ASSEMBLY TYPE.
- INSIDE EDGE OF FINISHED DOOR OPENING. REFER TO "DOOR SCHEDULE" FOR ADDL INFORMATION.
- DIMENSION OR WORK POINT AS INDICATED ON RELATED ARCHITECTURAL DETAIL PLAN, SECTION, ELEVATION, CONFIGURATION DETAIL, OR CONSTRUCTION DETAIL.

D. REFER TO SHEET A0.3 FOR ILLUSTRATION OF SYMBOL USED TO INDICATE "FACE OF" DIMENSION.

E. WHERE "FACE OF FINISH" OR "CLEAR" DIMENSIONS ARE SPECIFICALLY NOTED, DIMENSION IS MEASURED TO:

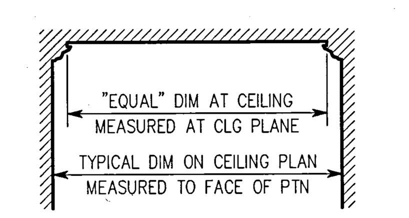
- FINISH FACES AT THE MOST NARROW OR CONSTRICTED POINTS OF THE SECTION WHERE DIMENSION IS SHOWN WHEN THE DIMENSION OCCURS ACROSS AN OPEN SPACE. IN THIS CASE, A "FACE OF FINISH" DIM IS EQUIVALENT TO A "CLEAR" DIMENSION.

2. SUB-PARAGRAPH E CONTINUED

- FIN FACES AT THE WIDEST OR MOST EXPANSIVE POINTS OF THE SECTION WHERE THE DIM IS SHOWN WHEN THE DIMENSION OCCURS ACROSS AN OBJECT OR GROUP OF OBJECTS.

F. WHERE "EQUAL" DIMENSIONS ARE USED ON REFLECTED CEILING PLANS TO LOCATE CEILING GRID WORK POINTS, MEASURE DIMENSIONS TO:

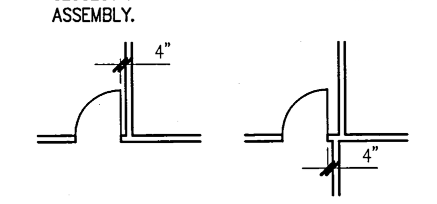
- EDGE OF THE INDICATED CEILING AT THE FACE OF THE ADJ APPLIED FIN MEASURED AT THE PLANE OF THE CEILING. CAUTION: DUE TO POSSIBLE APPLICATION OF APPLIED FINISHES WHOSE THICKNESS MAY VARY BETWEEN FLOOR AND CEILING AND WHOSE THICKNESS IS NOT ACCOUNTED FOR (EXCEPT AS INDICATED BY "FOF" OR "CLEAR") BY DIM SHOWN ON THE FLOOR PLANS, THE CONTRACTOR MUST ADJUST, AS NECESSARY, THE FLOOR PLAN DIMENSIONS TO REFLECT CONDITIONS AT PLANE OF THE CEILING.



3. WHERE DIMENSIONS ARE NOT PROVIDED ON THE FLOOR PLANS TO LOCATE DOOR OPENINGS, APPLY THE FOLLOWING RULES, IN ORDER, TO DETERMINE THE LOCATION OF DOOR OPENINGS:

A. DOOR OPENINGS MAY BE DIMENSIONED ON DWGS OTHER THAN THE FLOOR PLANS. REFER TO THE SECTIONS, ELEVATIONS, DETAILS, AND DOOR SCHED NOTES FOR ADDITIONAL DIMENSIONAL INFORMATION.

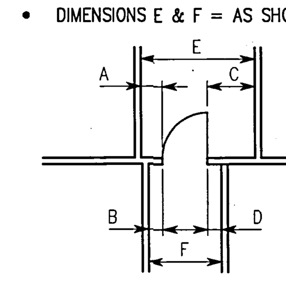
B. WHERE THE HINGE-SIDE OF A DOOR IS SHOWN ADJACENT TO A WALL, OR WALLS, PERPENDICULAR TO THE WALL IN WHICH THE DOOR OPENING OCCURS, LOCATE THE HINGE-SIDE FINISHED EDGE OF THE DOOR OPENING 4 INCHES FROM THE FACE (EXCLUSIVE OF ANY APPLIED FINISH) OF THE CLOSEST PERPENDICULAR WALL OR PARTITION ASSEMBLY.



3. CONTINUED

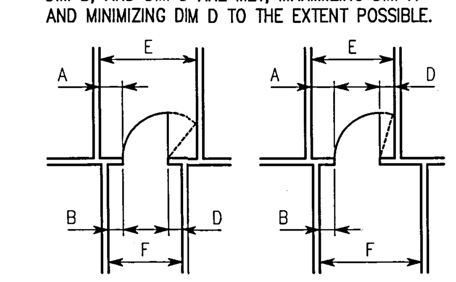
C. WHERE DOOR IS NOT SHOWN ADJACENT TO A PERPENDICULAR WALL AND EITHER DIM E OR DIM F IS 16'-0" OR LESS, LOCATE DOOR NOT LESS THAN THE FOLLOWING MIN DIMENSIONS:

- DIMENSION A = 18 INCHES MIN. INTERIOR COND. 24 INCHES MIN. EXTERIOR COND.
- DIMENSION B = 12 INCHES MIN. IF LATCH AND CLOSER
- DIMENSION C = DOOR WIDTH + 2 INCHES MIN.
- DIMENSION D = 4 INCHES MIN.
- DIMENSIONS E & F = AS SHOWN ON PLANS.

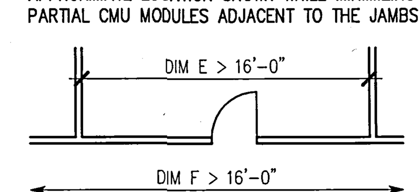


- IF SPACE ALLOWS, CENTER DOOR IN WALL SHOWN ON THE DRAWINGS SO THAT EITHER DIM A EQUALS DIM C OR DIM B EQUALS DIM D.

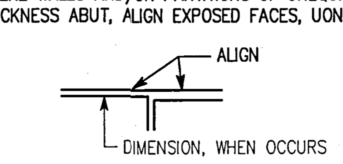
D. IF DIM E IS LESS THAN THE SUM OF 2 TIMES THE DOOR WIDTH PLUS 20 INCHES, LOCATE DOOR SO THAT MINIMUMS STATED ABOVE FOR DIM A, DIM B, AND DIM D ARE MET, MAXIMIZING DIM A AND MINIMIZING DIM D TO THE EXTENT POSSIBLE.



E. WHERE DOOR IS SHOWN LOCATED IN A LARGE EXPANSE OF OPEN WALL (DIM E AND DIM F IN DIAGRAMS BOTH EXCEED 16'-0"), PLACE DOOR AT APPROXIMATE LOCATION SHOWN ON THE PLANS. WHERE DOOR OCCURS IN CMU WALL, PLACE DOOR AT APPROXIMATE LOCATION SHOWN WHILE MINIMIZING PARTIAL CMU MODULES ADJACENT TO THE JAMBS.



4. WHERE WALLS AND/OR PARTITIONS OF UNEQUAL THICKNESS ABUT, ALIGN EXPOSED FACES, UON.



UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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90% CONST. DOC. SUBMITTAL		12SEP00
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CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

Key Plan

Drawing Title

GENERAL NOTES & ABBREVIATIONS

NOT TO SCALE

Scale

3193000

Project Number

06OCT00

Baseline Date

A0.03

Drawing Number

Plot Sheet Filename: J:\Jobs\3193000\SHT\A0003.dwg
XREF Filename(s): UCR_tblk ucABBREV
Plot Setup Script: Plot View:
Plot Date:04/28/01 16:48

06/21/00

ARCHITECTURAL REFLECTED CEILING PLAN SYMBOLS

3H4 HALLWAY 10'-0" — ROOM NAME AND NUMBER WITH CEILING HEIGHT
OCCURS ONLY ON CEILING PLANS WHEN NOT SHOWN ON FLOOR PLANS

GRID-TYPE FINISH CEILING, *SEE FINISH SCHEDULE FOR TYPE AND GRID MODULE DIMENSIONS*

ACCESS PANEL

CEILING DIMENSION WORK POINT *DISTANCE FROM NEAREST WALL*

GYPSUM BOARD CEILING, SEE FINISH SCHEDULE FOR ADDL INFORMATION
TYPICALLY USED ONLY TO CLARIFY EXTENT OF GYP BD

SPRINKLER HEAD *SEE SHEET A0.5 FOR TOLERANCE REQUIREMENTS*

ACCESS PANEL, TYPE AS DESIGNATED BY LETTER. 24" X 24" UON

CEILING DIFFUSER *SEE ALSO MECH DRAWINGS.*

LINEAR DIFFUSER *SEE ALSO MECH DRAWINGS.*

SIDEWALL DIFFUSER *SEE ALSO MECH DRAWINGS.*

2' X 4' FLUORESCENT LIGHT FIXTURE

1' X 4' FLUORESCENT LIGHT FIXTURE

2' X 2' FLUORESCENT LIGHT FIXTURE

JUNCTION BOX, CEILING-MOUNTED

TV — RECESSED TELEVISION OUTLET, CLG-MOUNTED

BRKT TV — RECESSED TELEVISION OUTLET WITH SUPPORT BRACKET, CLG-MOUNTED

PROJ TV — RECESSED TELEVISION OUTLET WITH PROJECTION TV SUPPORT BRACKET, CLG-MOUNTED

VISIBLE AND AUDIBLE FIRE ALARM, CEILING-MOUNTED

SURFACE-MOUNTED LIGHT FIXTURE

SURFACE-MOUNTED DARK ROOM SAFE LIGHT

P 12'-0" — PENDANT LIGHT FIXTURE, *DIM INDICATES HEIGHT AFF*

RECESSED DOWN-LIGHT FIXTURE

WALL WASHER LIGHT FIXTURE *SHADING INDICATES LIGHTED FACE*

SPOT LIGHT FIXTURE, *ARROW INDICATES DIRECTION OF FOCUS*

TRACK LIGHT FIXTURE

P 9'-6" — STRIP LIGHT FIXTURE *"P" (WO) INDICATES PENDANT MOUNTED. DIM INDICATES HEIGHT AFF*

P 9'-0" — CLOCK, PENDANT-MOUNTED. *NUMBER INDICATES NUMBER OF CLOCK FACES*

CAMERA

7'-6" — EXIT SIGN, WALL-MOUNTED

8'-0" — LIGHT FIXTURE, WALL-MOUNTED

8'-6" — SPEAKER, WALL-MOUNTED

SIDEWALL SPRINKLER HEAD

7'-6" — TELEVISION OUTLET, WALL-MOUNTED

BRKT TV 7'-6" — TELEVISION OUTLET WITH SUPPORT BRACKET, WALL-MOUNTED

PA — SPEAKER, FLUSH WITH CLG *ABBREVIATION INDICATES TYPE*

PA 9'-0" — SPEAKER, PENDANT-MOUNTED *ABBREVIATION INDICATES TYPE*

SMOKE DETECTOR *SEE ELEC DWGS FOR TYPE*

HEAT DETECTOR

MOTION DETECTOR, *SEE SECURITY DRAWINGS*

OCCUPANCY DETECTOR, *SEE ELECTRICAL DRAWINGS*

FLASHING PANIC ALARM, *SEE SECURITY DRAWINGS*

EXIT SIGN, SINGLE-SIDED. *SHADING INDICATES LIGHTED SIDE*

EXIT SIGN, DOUBLE-SIDED. *SHADING INDICATES LIGHTED SIDES*

P 8'-6" — EXIT SIGN, PENDANT, SINGLE-SIDED *SHADING INDICATES LIGHTED SIDE*

P 8'-0" — EXIT SIGN, PENDANT, DOUBLE-SIDED *SHADING INDICATES LIGHTED SIDE*

ARCHITECTURAL FLOOR PLAN SYMBOLS

GENERAL PLAN SYMBOLS & LEGEND:

NEW CONSTRUCTION

EXISTING CONSTRUCTION TO REMAIN

EXISTING CONSTRUCTION TO BE DEMOLISHED

NOT-IN-CONTRACT ITEMS *(SHOWN DASHED-DOT)*

TOILET PARTITION AND DOOR

7'-0" — ALCOVE, SOFFIT: DIMENSION INDICATES SOFFIT HEIGHT, AFF

4-108 4-112 — INDICATES DIVIDING LINE IN OPEN AREAS THAT ARE DIVIDED INTO SEPARATE ROOM NUMBERS.

OVER-HEAD ITEMS (I.E. CEILING-MOUNTED EQUIPMENT, WALL-MOUNTED CASEWORK ETC.)

UNDER-COUNTER OR CONCEALED ITEMS, AS DESIGNATED

CG CG — CORNER GUARD (CG)

EG — EDGE GUARD (EG)

BG — BUMPER GUARD AND/OR RUB RAIL, AS INDICATED

GUARDRAIL OR HANDRAIL, AS INDICATED

FIRE PROTECTION

F — FIRE ALARM PULL STATION,

F — FIRE ALARM HORN/STROBE, ABOVE PULL STATION.

FEB — FIRE EXTINGUISHER BRACKET, SURFACE-MOUNTED

FEC FEC — FIRE EXTINGUISHER CABINET, RECESSED OR SURFACE-MOUNTED

FHC FHC — FIRE HOSE CABINET, RECESSED OR SURFACE-MOUNTED

FH/FEC FH/FEC — FIRE HOSE / FIRE EXTINGUISHER CABINET, RECESSED OR SURFACE-MOUNTED

FHV FHV — FIRE HOSE VALVE CABINET, RECESSED OR SURFACE-MOUNTED

CSP — STANDPIPE (COMBINATION STANDPIPE SHOWN).

DIMENSION SYMBOLS

DIMENSION SHOWN TO:
- CENTERLINE OF ASSEMBLY
- CENTER OF OPENING
- CENTERLINE OF EQUIPMENT/FURNISHINGS

CENTERLINE SYMBOL

DIMENSION SHOWN TO FACE OF:
- PARTITION ASSEMBLY
- EDGE OF DOOR OPENING
- OTHER ASSEMBLY
- WORK POINT INDICATED ON DETAILS

FOR ADDITIONAL INFORMATION REGARDING TYPICAL METHODS OF DIMENSIONING USED ON THE ARCHITECTURAL DRAWINGS, REFER TO "ARCHITECTURAL DIMENSIONING CONVENTIONS" (SHEET A0.2) AND THE "PARTITION SCHEDULE NOTES" (SEE THE "INDEX OF DRAWINGS" FOR SHEET NUMBER).

SPECIALTY PIPED SYSTEMS

NOT USED

PLUMBING FIXTURES

TOILET, TANK TYPE

TOILET, WALL-HUNG

URINAL (UR), WALL-HUNG

LAVATORY, PEDESTAL OR WALL-HUNG

LAVATORY, COUNTER-TOP *ACCESSIBLE TO THE DISABLED, TYPICAL.*

SINK, COUNTER-TOP. *ABBREVIATION (WO) INDICATES TYPE OF SINK*

SINK, PEDESTAL OR WALL-HUNG. ABBREVIATION (WO) INDICATES TYPE OF SINK

SERVICE SINK

DF or EWC — DRINKING FOUNTAIN *ACCESSIBLE TO THE DISABLED, TYPICAL.*

HB — HOSE BIBB

JANITOR'S RECEPTOR

BATHTUB

SHOWER *SHOWER CONTROLS AND HEAD ABOVE.*

FD — FLOOR DRAIN (SHOWN), ROOF, OR AREA DRAIN *LINE OF VALLEY IN SLOPING FLOOR (OR ROOF)*

ELECTRICAL AND SYSTEMS

WHEN SHOWN ON THE ARCH DRAWINGS, THE FOLLOWING ARE PROVIDED FOR EXACT LOCATION AND FINISHED APPEARANCE COORDINATION – SEE THE ELECTRICAL OR MECHANICAL DRAWINGS FOR THE DETAILED DESIGN OF EACH SYSTEM.

\$ — LIGHT SWITCH *SEE ELEC DRAWINGS FOR TYPE.*

ELECTRICAL OUTLET, *SEE ELEC DRAWINGS FOR TYPE.*

ECAB ECAB — ELECTRICAL CABINET, RECESSED OR SURFACE-MOUNTED

TTB — TELEPHONE TERMINAL BD, SURFACE-MOUNTED

VOICE/DATA OUTLET, WALL-MOUNTED

DIGITAL DATA OUTLET, WALL-MOUNTED

VOICE/DATA OUTLET, FLOOR-MOUNTED

DIGITAL DATA OUTLET, FLOOR-MOUNTED

7'-6" — CLOCK, MASTER SYSTEM *HEIGHT WHERE NOT TYPICAL*

7'-0" — CLOCK RECEPTACLE *HEIGHT WHERE NOT TYPICAL*

4'-0" — JUNCTION BOX, WALL-MOUNTED

M M — MAGNETIC HOLD-OPEN DEVICE, WALL-MOUNTED OR FLOOR-MOUNTED

L — LOW LEVEL EXIT SIGN

CCTV — CCTV CAMERA, WALL-MOUNTED *SEE SECURITY DRAWINGS*

T — THERMOSTAT *SEE MECHANICAL DRAWINGS FOR TYPE.*

ARCHITECTURAL REFERENCE SYMBOLS

DETAIL

24 / A9.2 — DETAIL NUMBER; DRAWING WHERE DETAIL IS FOUND; AREA OF DETAIL CUT PERPENDICULAR TO VIEW

DETAIL ON SAME SHEET

12 — DETAIL NUMBER; HYPHENS INDICATE DETAIL IS SHOWN ON SAME SHEET AS WHERE REFERENCED

DETAIL

35 / A9.2 — AREA OF DETAIL CUT PARALLEL TO VIEW

DETAIL PLAN / ELEVATION

8 / A4.2 — AREA OF ENLARGED PLAN OR ENLARGED ELEVATION

SINGLE ELEVATION

5 / A8.3 — DIRECTION OF VIEW; ELEVATION NUMBER; DRAWING WHERE ELEVATION IS FOUND

MULTIPLE ELEVATIONS

B / 5 / A8.3 / C — NAME OF VIEW; DIRECTION OF VIEW(S)

SECTION

23 / A6.8 — SECTION NUMBER; DRAWING WHERE SECTION IS FOUND.; LINE OF SECTION CUT; DIRECTION OF VIEW

WINDOW AND LOUVER MARK

P-3 — EXTERIOR WINDOW OR LOUVER IDENTIFYING MARK, SEE CORRESPONDING NUMBER ON SCHEDULE

EQUIPMENT MARK

B056 — EQUIPMENT ITEM MARK – SEE CORRESPONDING MARK IN SPECIFICATIONS

REVISION

5 — REVISION NUMBER – SEE REVISION HISTORY ON TITLE BLOCK OF EACH SHEET.

EXTENT OF REVISION

REVISION SYMBOL IS INSIDE INSIDE EXTENT OF CURRENT REVISION AND REFERENCED TO IT.

MATCH LINE

A2.3.5 — DRAWING WHERE CONTINUATION IS FOUND.; DRAWING SIDE

MODULAR CASEWORK MARK

C16U — SEE "MODULAR CASEWORK SCHEDULE" (SEE "INDEX OF DRAWINGS" FOR SHEET NUMBER) FOR ADDITIONAL INFORMATION REGARDING THIS SYMBOL

KEY NOTE

12 — SEE CORRESPONDING NUMBERED KEYED NOTE DEFINED ON THE SAME SHEET WHERE THE REFERENCE OCCURS

LEVEL LINE

SECOND LEVEL EL 15'-6" — INDICATES HEIGHT ABOVE PROJECT DATUM. SEE "ARCHITECTURAL GENERAL NOTES" (SHEET A0.1) FOR DEFINITION OF DATUM.

DIMENSION POINT

INDICATES POINT ON DIMENSION STRING TO WHICH A POINT ON RELATED DRAWING IS ALSO DIMENSIONED.

PARTITION TYPE MARK

2A4 — SEE "PARTITION SCHEDULE" FOR ADDITIONAL INFORMATION

GRID OR COLUMN LINES

B, B.4, 5 — MAJOR GRID LINE; INTERMEDIATE GRID LINE; GRID LINE DEFINING NEW CONSTRUCTION (CIRCLE SHAPE)

90° TYP, UON

GENERAL SYMBOLS NOTES

A. THE PURPOSE OF THIS SHEET IS TO ILLUSTRATE AND DEFINE TYPICAL GRAPHIC SYMBOLS AND SYSTEMS OF GRAPHIC SYMBOLS WHICH MAY OCCUR ON THE ARCHITECTURAL DRAWINGS.

B. ADDITIONAL SYMBOLS, NOT SHOWN OR DEFINED ON THIS SHEET, MAY BE USED ON THE ARCH DRAWINGS AND ARE TYPICALLY DEFINED ON OTHER SHEETS. WHERE SUCH SYMBOLS OR SYMBOLIC SYSTEMS ARE NOT DEFINED BY THE ARCH DRAWINGS, THE MEANING OF SUCH SYMBOLS SHALL BE AS DEFINED BY "STANDARD REFERENCE SYMBOLS FOR CONSTRUCTION DOCUMENTS" PUBLISHED OCTOBER 1991 BY THE CONSTRUCTION SPECIFICATIONS INSTITUTE.

C. THE ILLUSTRATION OF A SYMBOL OR SYSTEM OF SYMBOLS ON THIS SHEET DOES NOT NECESSARILY INDICATE THAT THE BUILDING ITEM OF SYSTEM DESCRIBED BY THE SYMBOL IS USED AS PART OF THIS PROJECT. REFER TO THE PLANS, ELEVATIONS, SECTIONS, SCHEDULES, DETAILS, AND SPECIFICATIONS TO DETERMINE THE SCOPE OF THE WORK.

D. MOUNTING HEIGHTS, WHERE INDICATED ADJ TO THE SYMBOLS SHOWN ON THIS SHEET, ARE PROVIDED ONLY FOR THE PURPOSE OF ILLUSTRATING THE FORMAT OF THE SYMBOL. ON DRAWINGS OTHER THAN THIS SHEET, MOUNTING HEIGHTS ARE INDICATED ADJ TO THE SYMBOL, ONLY WHERE THE MOUNTING HEIGHT IS NOT TYPICAL. WHERE THE HEIGHT IS TYPICAL, NO HEIGHT IS SHOWN. TO DETERMINE THE TYPICAL MOUNTING HEIGHT FOR EACH ELEMENT, REFER TO SHEET A0.05 – "TYPICAL MOUNTING HEIGHT AND CLEARANCES" – AND OTHER DRAWINGS AS INDICATED.

MOUNTING HEIGHT IS OMITTED WHERE HEIGHT IS TYPICAL.

7'-0" — HEIGHT IS SHOWN WHERE HEIGHT IS NOT TYPICAL.

E. SYMBOLS ARE NOT DRAWN TO SCALE. TO DETERMINE THE ACTUAL SIZES OF ELEMENTS REPRESENTED BY SYMBOLS, REFER TO THE SPECIFICATIONS AND OTHER DRAWINGS AS MAY APPLY.

F. FOR ADDITIONAL INFORMATION REGARDING DIMENSIONING STANDARDS USED ON THIS PROJECT, REFER TO THE "ARCHITECTURAL DIMENSIONING CONVENTIONS" ON SHEET A0.03

G. FOR INFORMATION REGARDING SYMBOLS WHICH ARE USED AS ABBREVIATIONS, REFER TO THE "ARCHITECTURAL ABBREVIATIONS" SHOWN ON SHEET A0.03.

H. CERTAIN SYMBOLS MAY INCORPORATE SPECIAL ABBREVIATIONS AS PART OF THE SYMBOL. SUCH SPECIAL ABBREVIATIONS ARE AS DEFINED ON THIS SHEET.

PARTITION TYPE SYMBOL

BASIC PARTITION TYPE AND ADDITIONAL PARTITION COMPONENTS, IF ANY, ARE INDICATED ON THE FLOOR PLANS BY THE FOLLOWING SYMBOL INCORPORATING A FOUR DIGIT NOTATION. SYMBOLS APPEAR ON THE LARGEST SCALE PLAN PROVIDED FOR ANY GIVEN AREA.

FIRST THREE DIGITS INDICATE BASIC PARTITION TYPE – SEE "PARTITION SCHEDULE" AND THE DETAILS ILLUSTRATING BASIC PARTITION TYPES ON THE SHEETS FOLLOWING THE SCHEDULE (SEE THE "INDEX OF DRAWINGS" FOR SHEET NUMBERS).

FINAL ONE OR TWO DIGITS INDICATE ADDITIONAL COMPONENTS GROUP – SEE "ADDL PARTITION COMPONENTS MATRIX" (SEE THE "INDEX OF DRAWINGS" FOR SHEET NUMBER).

OR 2C4AZ

2 C 4 A Z

FRAMING UNIT SIZE CATEGORY
1 = 1-5/8" FRAMING UNIT
2 = 2-1/2" FRAMING UNIT
3 = 3-5/8" FRAMING UNIT
4 = 4" FRAMING UNIT
6 = 6" FRAMING UNIT

BASIC PARTITION ASSEMBLY CATEGORY

FIRE-RATING OF PARTITION IN HOURS. RATING MAY EXCEED REQUIREMENTS OF APPLICABLE BUILDING CODE(S).

ROOM IDENTIFICATION

ROOM NUMBERS ARE SHOWN ON 1/8" SCALE FLOOR PLANS. WHERE DUPLICATED ON PLANS OF OTHER SCALES (SUCH AS 1/16" SCALE OR 1/4" ENLARGED PLANS) OR ON OTHER PLANS OF DIFFERENT TYPES (SUCH AS 1/8" SCALE REFLECTED CEILING PLANS), THESE DESIGNATIONS ARE PROVIDED FOR REFERENCE ONLY.

172 — ROOM NUMBER

OFFICE — ROOM NAME

ARCHITECTURAL SITE DEVELOPMENT SYMBOLS

370 — NEW FINISH CONTOUR *ELEVATION SHOWN ON HIGH SIDE*

370 — EXISTING CONTOUR *ELEVATION SHOWN ON HIGH SIDE*

371.50 (E) — SPOT ELEVATION, EXISTING.

322.00 (N) — SPOT ELEVATION, NEW FINISH GRADE.

SEE "ARCH GENERAL NOTES" FOR DEFINITION OF DATUM UPON WHICH ELEVATIONS ARE BASED.

PROPERTY LINE.

EASEMENT OR SETBACK LINE.

LIMIT OF WORK CONSTRUCTION BOUNDARY.

FENCE, NEW.

FENCE, EXISTING TO REMAIN.

FLOW LINE TOWARD DRAIN.

FOOTPRINT OF BUILDING TO BE DEMOLISHED

FOOTPRINT OF EXISTING BUILDING.

FOOTPRINT OF NEW BUILDING

LIGHT STANDARD.

CB — CATCH BASIN *SEE ALSO CIVIL DRAWINGS.*

AD — AREA DRAIN.

FHY — FIRE HYDRANT (FHY).

FIRE DEPT CONNECTION (FDC), FREE-STANDING.

PARKING STALL RESERVED FOR THE DISABLED.

MH — MANHOLE.

TYPE — POWER AND/OR TELEPHONE POLE, NEW.

DOOR OPENING AND INTERIOR GLAZED PARTITION SYMBOLS

SINGLE DOOR *DOOR OPENING MARK (TYPICAL) – SEE SCHEDULE*

RADIO FREQUENCY BOOTH DOOR

VAULT, WALK-IN REFRIG, OR AUDIO BOOTH DOOR, AS DESIGNATED

DOUBLE ACTING DOOR *AT PAIRS LESS THAN 6'-0" WIDE, LARGER LEAF IS 3'-0" WIDE (UON)*

PAIR DOORS: UNEQUAL SIZES *DOOR MARK ALWAYS SHOWN ON LARGER AND ACTIVE LEAF (UON) – SEE SCHED*

PAIR DOORS: EQUAL SIZES *DOOR MARK ALWAYS SHOWN ON ACTIVE LEAF*

PAIR DOORS: EQUAL SIZES, DOUBLE EGRESS

AUTOMATIC DOORS: PUSH PAD ACTUATED

822A — CASED OPENING

681A — SLIDING DOOR

176C — SLIDING POCKET DOOR

907A — SLIDING DOOR *(SHOWN WITH ONE FIXED PANEL)*

88A — ACCORDION DOOR

218B — BIFOLD DOOR

772A — PAIR: BIFOLD DOORS

525B — FOLDING DOOR

907A — SLIDING DOOR/BREAK-AWAY

266B — ROLL-UP DOOR, FACE-OF-WALL MOUNTED

399A — ROLL-UP DOOR, BET JAMBS MOUNTED

566A — INTERIOR GLAZED PARTITION *OPENING NUMBER (TYP) SEE SCHEDULE*

291A — PASS-THROUGH OPENING

425A — GLAZED PASS-THROUGH WINDOW

488A — PASS-THRU WINDOW WITH ROLL-UP DOOR

278 — GLAZED PASS-THRU WINDOW WITH ROLL-UP DOOR

INTERIOR GLAZED PARTITIONS AND PASS-THRU ARE NUMBERED WITH AND SCHEDULED WITH DOOR OPENINGS. FOR ADDL INFORMATION, REFER TO THE DOOR SCHEDULE – SEE "INDEX OF DRAWINGS."

ARCHITECTURAL MATERIALS INDICATIONS

LARGE SCALES / INTERMEDIATE SCALES / SMALL SCALES

EARTH *SHOWN IN SECTION*

ROCK FILL, GRAVEL *SHOWN IN SECTION*

CAST-IN-PLACE CONC *PLAN OR SECTION*

PRECAST CONCRETE *PLAN OR SECTION*

BRICK MASONRY *PLAN OR SECTION*

CONC MASONRY UNITS *PLAN OR SECTION*

STONE: GRANITE, MARBLE, OR AS NOTED

METAL: TYPE AS NOTED *PLAN OR SECTION*

METAL: ROLLED SHAPES *PLAN OR SECTION*

SHEET METAL: AS NOTED *PLAN OR SECTION*

WOOD FRAMING, CONT *SHOWN IN SECTION*

WOOD BLOCKING *SHOWN IN SECTION*

FINISHED WOOD *SECTION OR ELEVATION*

LARGE SCALES / INTERMEDIATE SCALES / SMALL SCALES

PLYWOOD *SHOWN IN SECTION*

PARTICLEBOARD *SHOWN IN SECTION*

SPRAYED FIREPROOFING *SHOWN IN SECTION*

BATT INSULATION: THERMAL OR ACOUS, UON

RIGID INSULATION: THERM, ACOUS, OR SAFING

GLASS *PLAN OR SECTION*

PLASTER ON METAL LATH *SHOWN IN SECTION*

GYPSUM BOARD *SHOWN IN SECTION*

TILE: MOSAIC, CERAMIC, QUARRY, UON

RESINOUS FLOORING: TERRAZO, TROWEL-ON, UON

ACOUSTICAL TILE *SHOWN IN SECTION*

RESILIENT FLOORING: VCT, SHEET VINYL, UON

CARPET, CARPET TILE *SHOWN IN SECTION*

DETAIL NUMBERING SYSTEM

DETAIL MODULE LAYOUT

36	31	26	21	16	11	6	1
37	32	27	22	17	12	7	2
38	33	28	23	18	13	8	3
39	34	29	24	19	14	9	4
40	35	30	25	20	15	10	5

DETAIL NUMBERING EXAMPLE

37, 38, 23, 13, 29, 24, 4, 40, 30, 25, 15, 5

DETAILS ARE NUMBERED ACCORDING TO THEIR LOCATION ON EACH SHEET, AND ARE NOT NUMBERED CONSECUTIVELY.

DETAIL PLANS, ELEVATIONS, SECTIONS, AND DETAILS ARE NUMBERED ACCORDING TO THE MODULE SYSTEM SHOWN IN THE ILLUSTRATION AT LEFT.

EACH DETAIL MAY OCCUPY ONE OR MORE WHOLE MODULES – OR REGULAR FRACTIONS OF A WHOLE MODULE (IE, 1-1/3 MODULES WIDE BY 2-1/2 MODULES HIGH). THE DETAIL MODULE IS USED TO ESTABLISH THE IDENTIFYING LABEL FOR EACH DETAIL, NOT TO LIMIT THE SIZE OF THE DETAIL.

THE NUMBER OF THE MODULE (IE, 15 OR 18) WHICH OCCURS IN THE LOWER LEFT CORNER OF THE MODULE – OR SEVERAL MODULES GROUPED TOGETHER TO COMPRISE A SINGLE DETAIL – DETERMINES THE NUMBER OF THE DETAIL PLAN, ELEVATIONS, SECTION, OR DETAIL (AS SHOWN IN THE ILLUSTRATION AT LEFT). ALTHOUGH THE MODULES NUMBERS OCCUR IN CONSECUTIVE ORDER, NOT ALL NUMBERS ARE NECESSARILY USED ON EACH SHEET.

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for / Rev / Date

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90% CONST. DOC. SUBMITTAL		12SEP00
50% CONSTR. DOC. SUBMITTAL		15JUL00
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DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

Key Plan

Drawing Title

ARCHITECTURAL SYMBOLS

Scale NOT TO SCALE

Project Number 3193000

Baseline Date 06OCT00

Drawing Number **A0.04**

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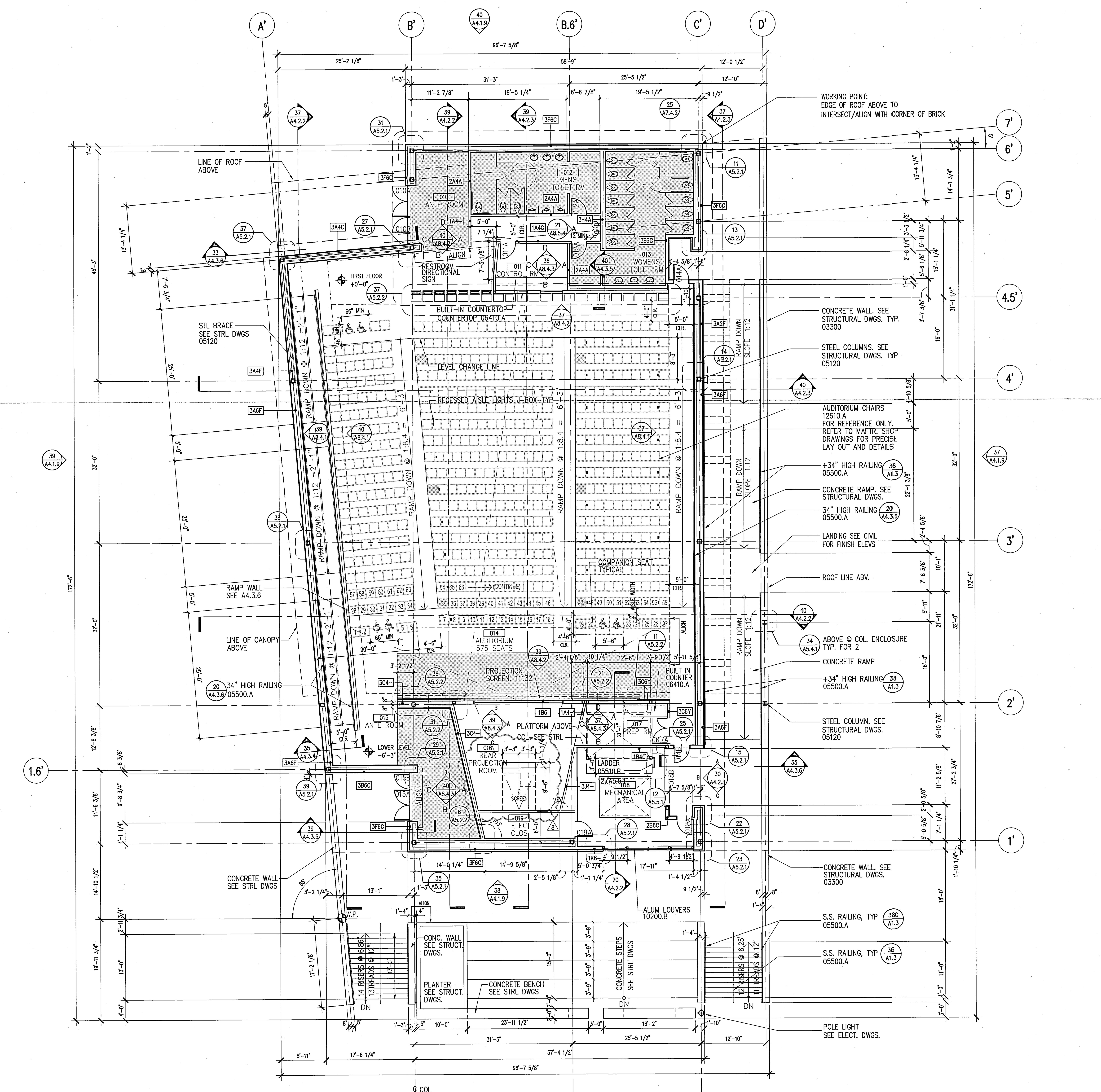

KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

GENERAL NOTES

1. SEE STRUCTURAL DWGS. FOR TOP OF STEEL (TOS) ELEVATIONS.
2. TYPICAL CONDITIONS APPLY AT ALL DETAILS.
3. CALL-OUTS SHOWN ON ONE DETAIL SHALL APPLY TO ALL WHERE SAME CONDITIONS EXIST, U.O.N.
4. CASE WORK (N.I.C.). ALL BUILT IN CASE WORK PROVIDING WORK STATIONS ARE TO BE SUBMITTED TO DSA PRIOR TO FABRICATION. 5% MIN. TO BE PROVIDED SHALL BE ACCESSIBLE.
5. 5 % OF ALL FURNITURE PROVIDED SHALL BE ACCESSIBLE.
6. PROVIDE STAIR SIGNAGE AT BOTH SIDES OF DOORS 133A; 103A; 240A; 203A; 338A & 303A AS PER SEC. 1117B.5.2. THE INFORMATION SHALL BE PRESENTED USING RAISED ARABIC NUMERALS AND RAISED BRAILLE SYMBOLS. THE SIGN SHALL BE LOCATED 5 FT. A.F.F.. THE SIGN SHALL BE LOCATED IMMEDIATELY ADJACENT TO THE DOOR ON THE STRIKE SIDE. (SEC. 1133B.4.3.).
7. PROVIDE PORTABLE ASSISTIVE LISTENING DEVICES IN ALL CONFERENCE AND MEETING ROOMS WHERE REQUIRED – MINIMUM NUMBER SHALL BE EQUAL TO 4% OF SEATING BUT NOT LESS THAN 2

WALL LEGEND

SHADED AREA DENOTES DROPPED SLAB, SEE STRUCTURAL DWGS AND SECTIONS

SEATS WITH REMOVABLE ARMREST (1% MIN OF TOTAL SEATING) 575 SEATSx1%=5.75 (6 SEATS)

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1919 Santa Monica Boulevard
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100% BID #2 CD SUBMITTAL		06OCT00
90% CONST. DOC. SUBMITTAL		12SEP00
50% CONSTR. DOC. SUBMITTAL		15JULY00
CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

Key Plan

Project North

Drawing Title

FIRST FLOOR PLAN (AUDITORIUM)

1/8" = 1'-0"

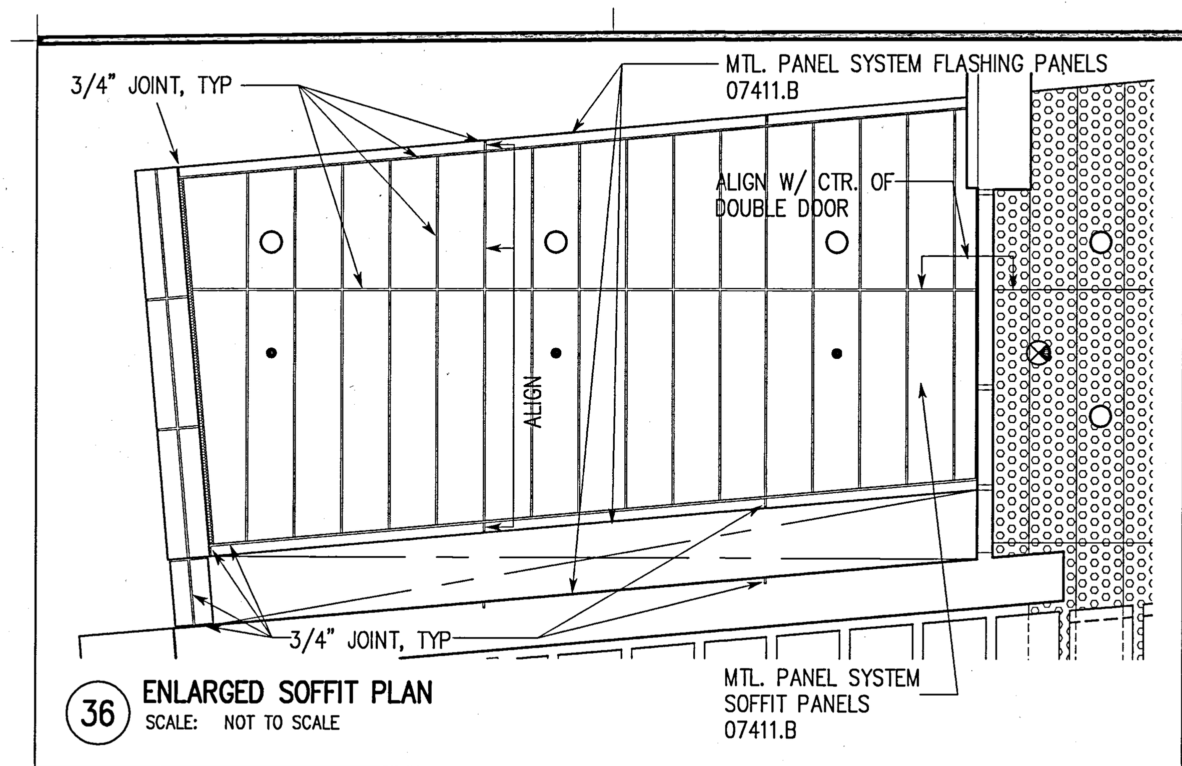
Scale
3193000

Project Number
06OCT00

Baseline Date

A2.1.3

Drawing Number



36 ENLARGED SOFFIT PLAN
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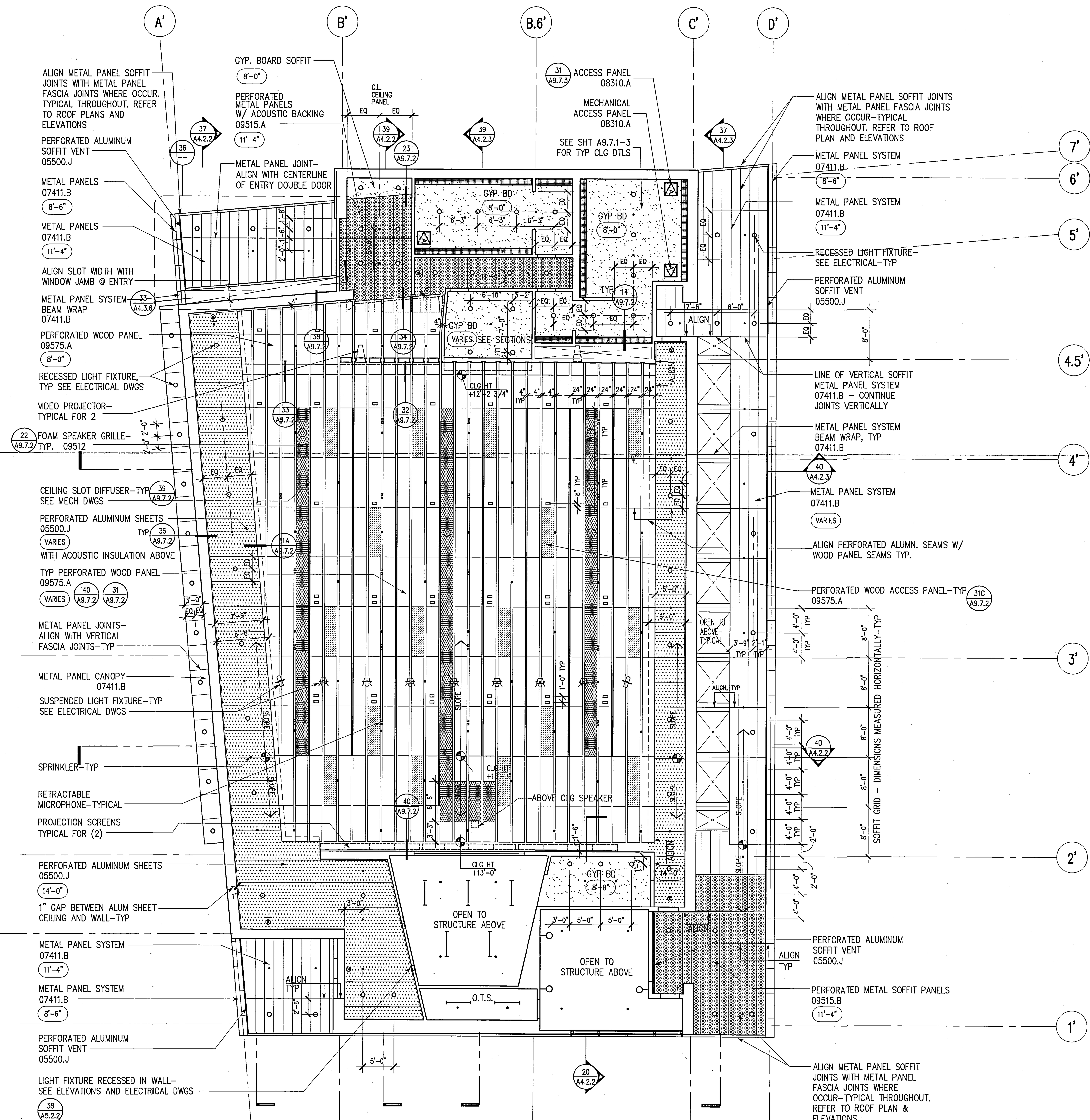

KEY NOTES

SEE FLOOR PLANS FOR FULL KEY NOTES LIST

LEGEND

- RECESSED DOWN - LIGHT FIXTURE
- WALL MOUNTED LIGHT FIXTURE
- WALL WASHER LIGHT FIXTURE (SHADING INDICATES LIGHTED FACE)
- 2' X 4' RECESSED FLUORESCENT FIXTURE
- 1' X 4' FLUORESCENT POLYCARBONATE HIGH ABUSE FIXTURE
- 2' X 2' FLUORESCENT TROFFER
- FLUORESCENT STRIP LIGHT FIXTURE
- NOT USED
- NOT USED
- NOT USED
- CEILING DIFFUSER - SUPPLY AIR (SEE MECH.DWGS.)
- CEILING DIFFUSER - RETURN AIR (SEE MECH.DWGS.)
- CEILING DIFFUSER - EXHAUST (SEE MECH.DWGS.)
- NOT USED
- NOT USED
- NOT USED
- EXIT SIGN, DOUBLE - SIDED. (SHADING INDICATES LIGHTED SIDES) (ARROWS INDICATE DIRECTION)
- EXIT SIGN, SINGLE SIDED. (SHADING INDICATES LIGHTED SIDE) (ARROW INDICATE DIRECTION)
- EXIT SIGN, WALL - MOUNTED.
- GYP. BD CEILING
- 2'X4' ACOUSTICAL PANEL
- ACCESS PANEL
- SPRINKLER (SEE SHEET NOTES BELOW)
- SHAFTWALL CEILING
- (ARROWS INDICATE DIRECTION) CEILING GRID WORK POINT (NUMBERS INDICATE DISTANCE TO WALL)
- PERFORATED WOOD ACCESS PANEL 09575.A
- FOAM SPEAKER GRILLE 09512
- PERFORATED ALUMINUM SHEETS 05500.J
- PERFORATED METAL SOFFIT PANELS 09515.B
- CEILING HEIGHT ELEVATION ABOVE FIRST FLOOR 0'-0"

SHEET NOTES

1. SPRINKLERS ARE SHOWN AS DESIGN INTENT ONLY. CONTRACTOR TO FOLLOW CODE REQUIREMENTS AS DESCRIBED IN THE PROJECT SPECIFICATIONS, SECTION 15300, AND ARCHITECT'S DESIGN INTENT.
2. SURGE INTERIOR FINISHED CEILING HEIGHT IS 9'-0" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE.
3. PROVIDE LATERAL BRACING AND COMPRESSION STRUTS AS REQUIRED. SEE SHEET A9.7.1 FOR TYPICAL DETAILS AND ADDITIONAL INFORMATION

REFER TO SHEETS A9.7.1 TO A9.7.3 FOR TYPICAL SUSPENDED CEILING TILE AND GYPSUM BOARD CEILING DETAILS

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CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

Key Plan

Project North

Drawing Title
REFLECTED CEILING PLAN (AUDITORIUM)

1/8" = 1'-0"
Scale

3193000
Project Number

06OCT00
Baseline Date

A3.1.3
Drawing Number

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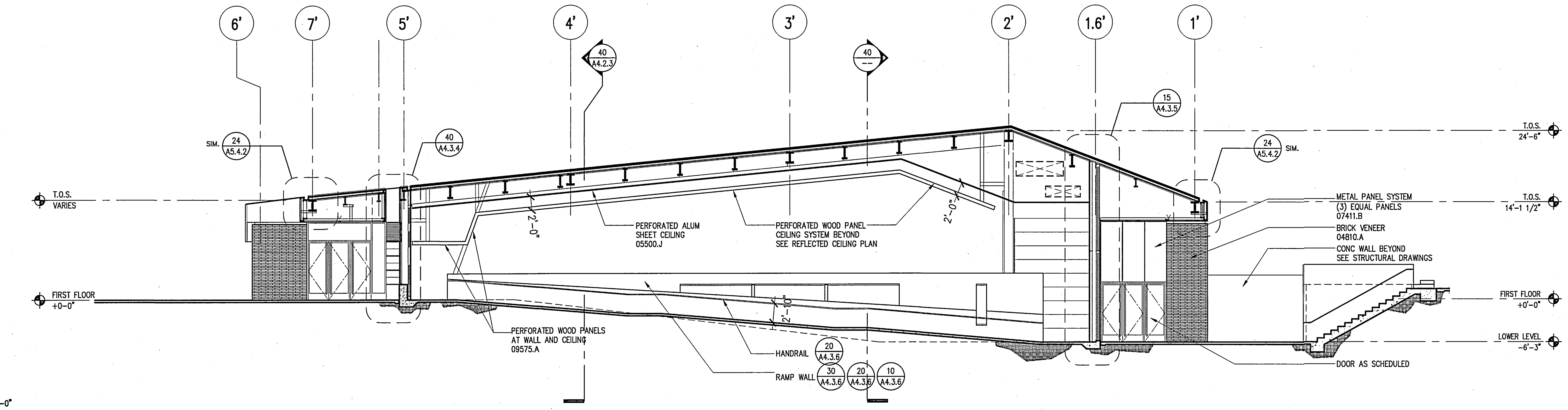
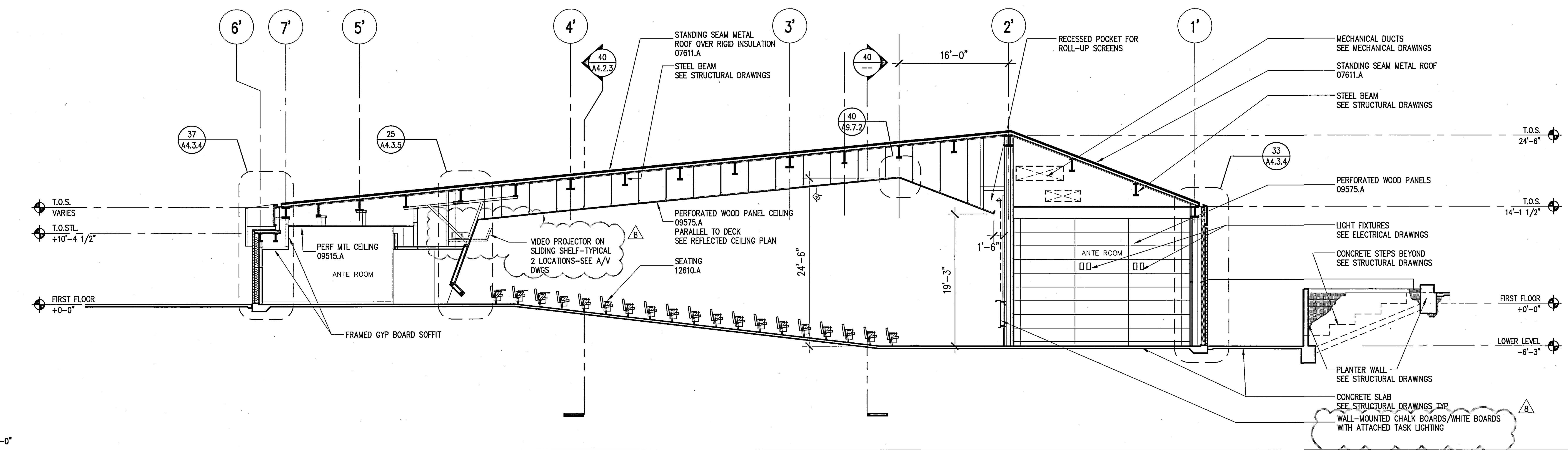
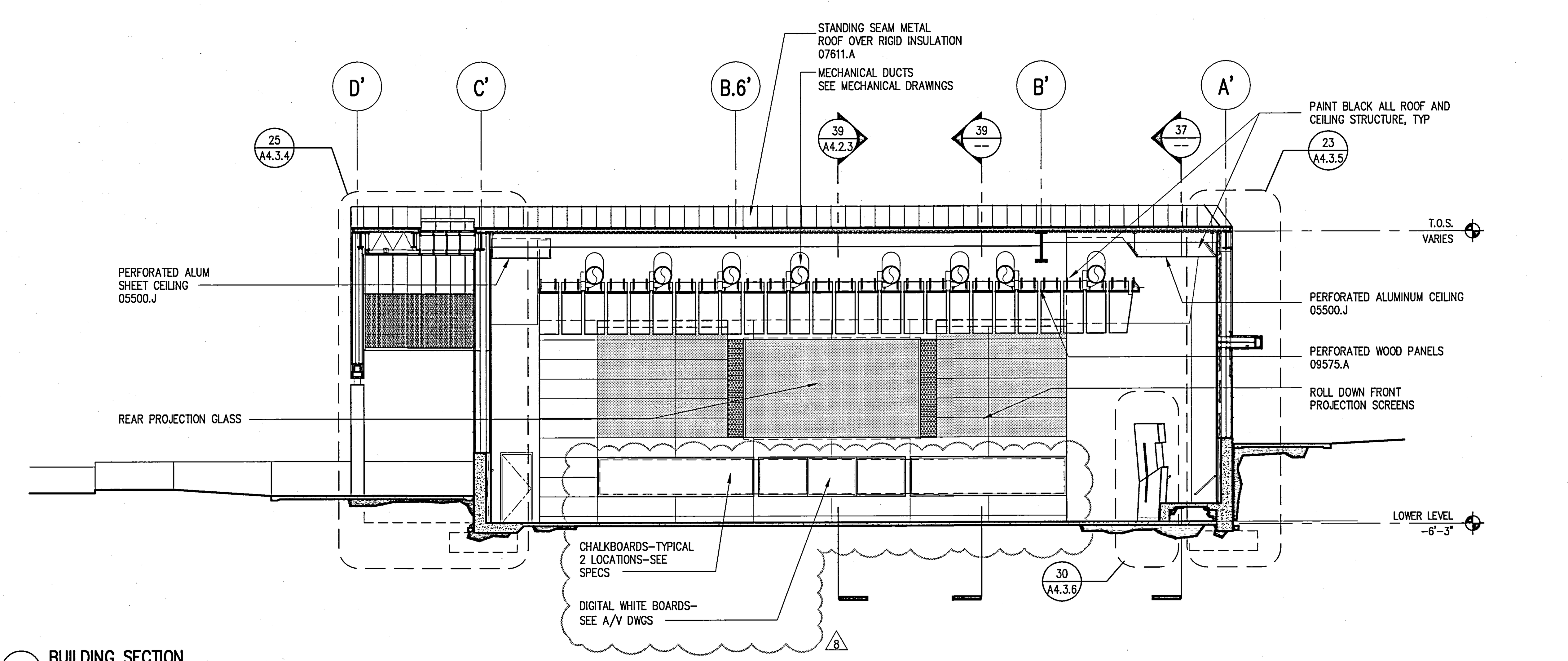


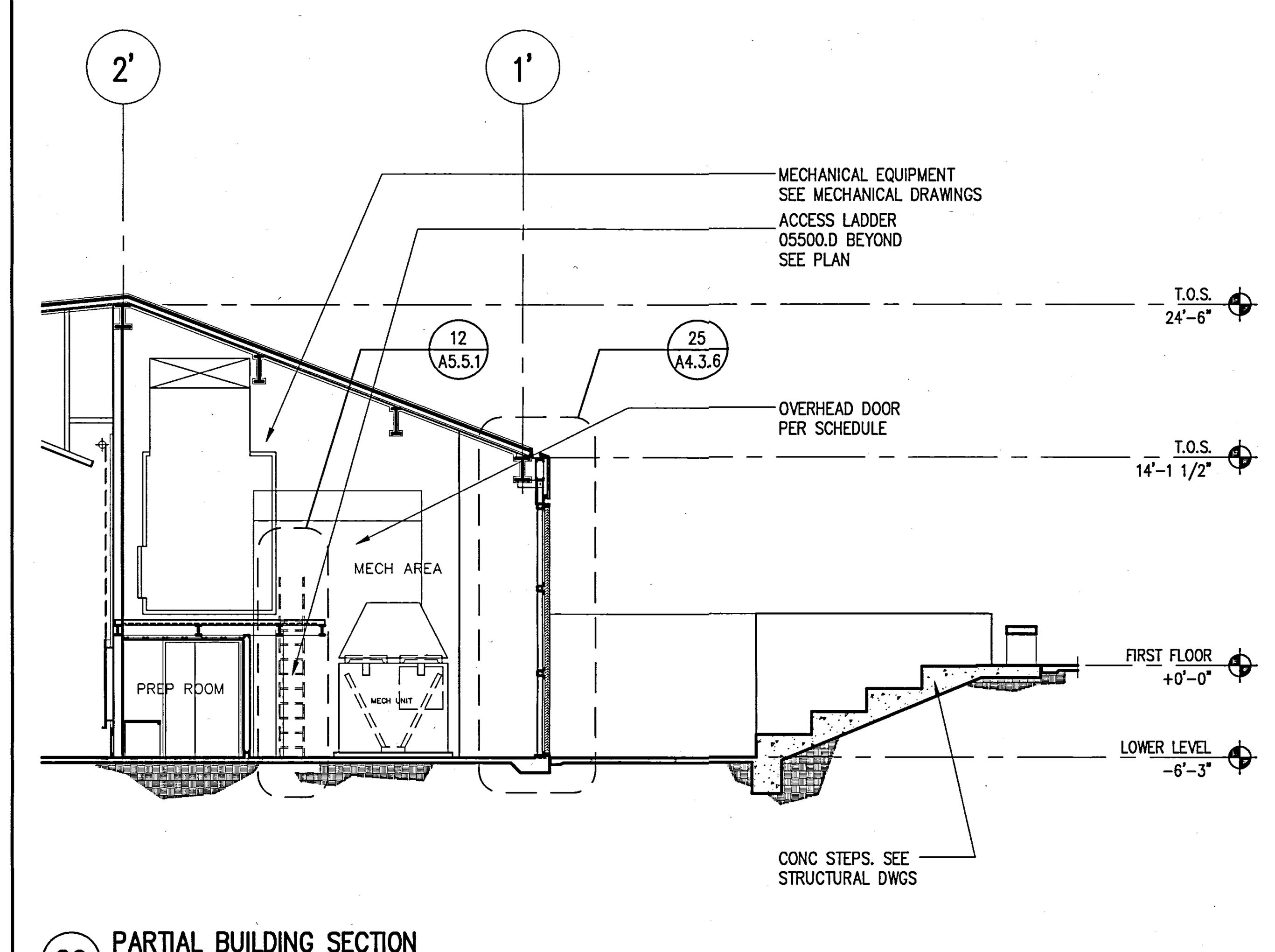
37 BUILDING SECTION
AUDITORIUM BUILDING
SCALE: SCALE: 1/8" = 1'-0"



39 BUILDING SECTION
AUDITORIUM BUILDING
SCALE: SCALE: 1/8" = 1'-0"



40 BUILDING SECTION
AUDITORIUM BUILDING
SCALE: SCALE: 1/8" = 1'-0"



20 PARTIAL BUILDING SECTION
AUDITORIUM BUILDING
SCALE: SCALE: 1/8" = 1'-0"

KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

GENERAL NOTES

1. SEE STRUCTURAL DWGS. FOR TOP OF STEEL (TOS) ELEVATIONS.
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310.586.5400
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Issued for	Rev	Date
A/V BID RELEASE	8	27APR01
DSA PLAN REVIEW	7	23FEB01
BID #3 CONST. DOC. SUBMITTAL		23OCT00
100% BID #2 CD SUBMITTAL		06OCT00
90% CONST. DOC. SUBMITTAL		12SEP00
50% CONSTR. DOC. SUBMITTAL		15JULY00
CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

Key Plan

Project North

Drawing Title

BUILDING SECTIONS
AUDITORIUM

1/8" = 1'-0"
Scale

3193000
Project Number

06OCT00
Baseline Date

A4.2.2
Drawing Number

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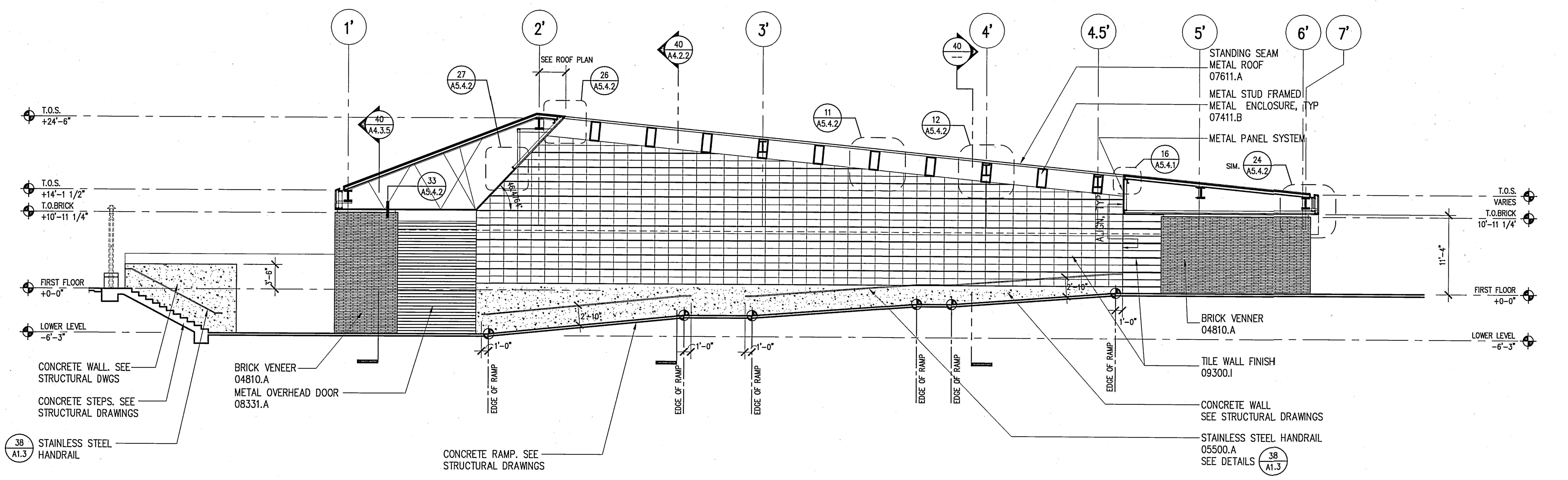
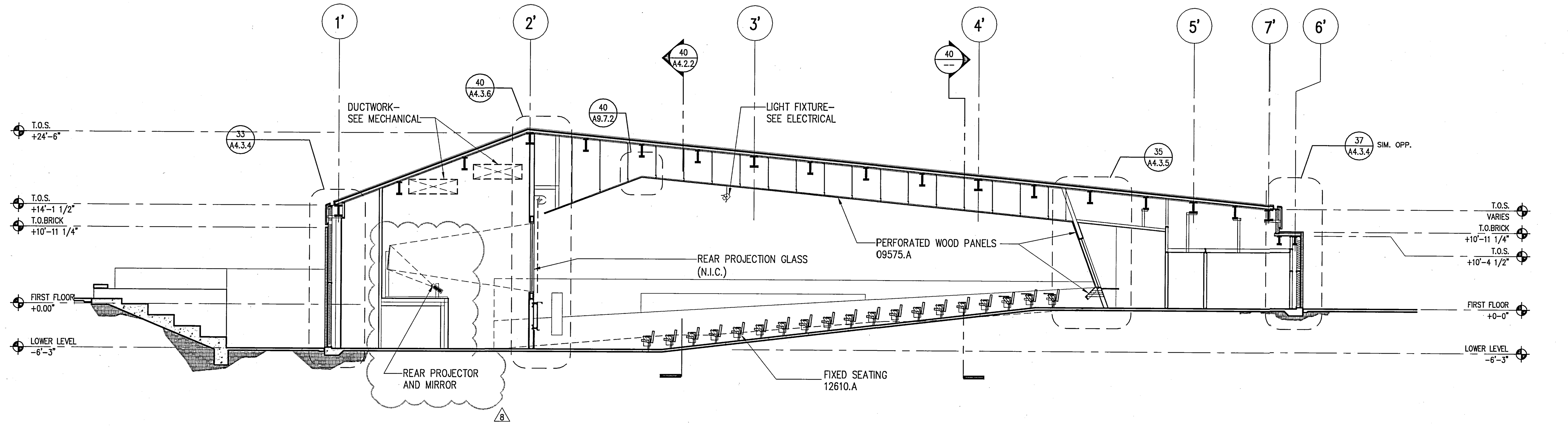
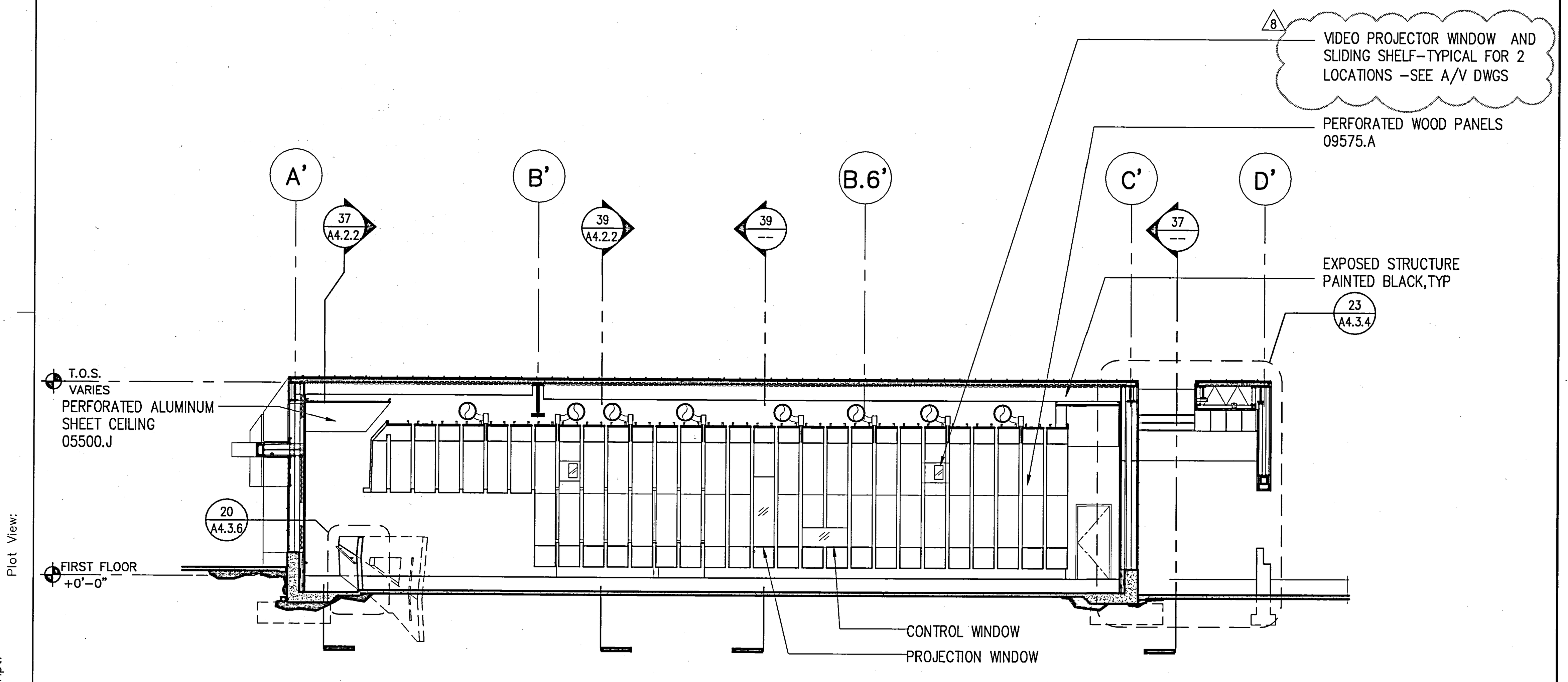
06/21/00



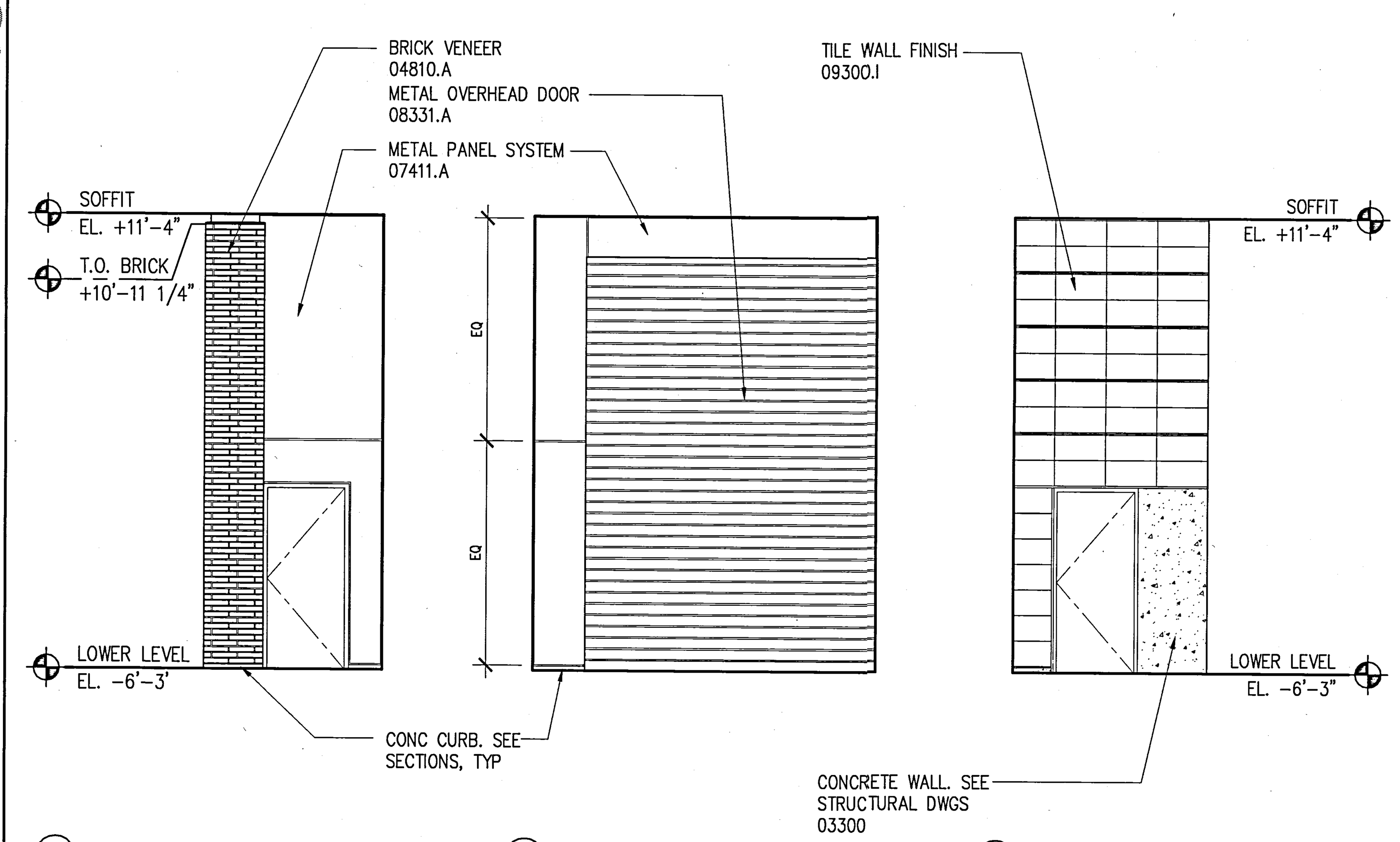
37 BUILDING SECTION
AUDITORIUM BUILDING
SCALE: SCALE: 1/8" = 1'-0"



39 BUILDING SECTION
AUDITORIUM BUILDING
SCALE: SCALE: 1/8" = 1'-0"



40 BUILDING SECTION
AUDITORIUM BUILDING
SCALE: SCALE: 1/8" = 1'-0"



20 BUILDING ELEVATION
AUDITORIUM OUTSIDE MECHANICAL ROOM
SCALE: SCALE: 1/4" = 1'-0"

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07510.C – WALKING PADS
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07811.A – FIREPROOFING
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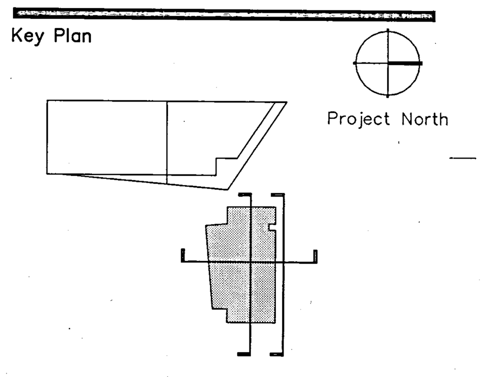
CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

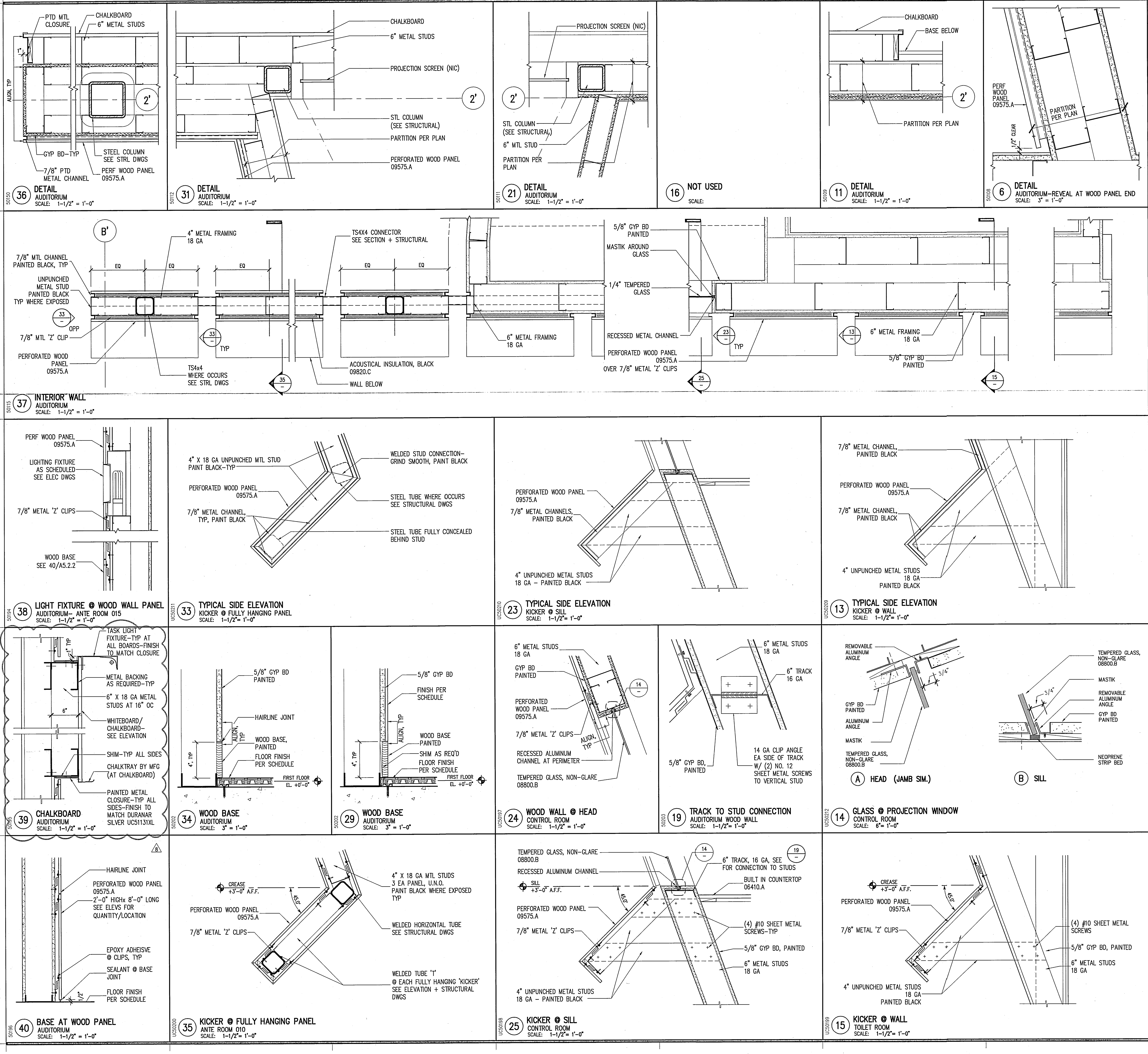
Key Plan



Drawing Title
BUILDING SECTIONS
AUDITORIUM

Scale AS SHOWN
Project Number 3193000
Baseline Date 06OCT00
Drawing Number A4.2.3

06/21/00



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09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
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DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

Key Plan

Project North

Drawing Title
INTERIOR DETAILS
AUDITORIUM

AS NOTED
Scale
3193000
Project Number
06OCT00
Baseline Date
A5.2.2
Drawing Number

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36 NOT USED
SCALE:

31 NOT USED
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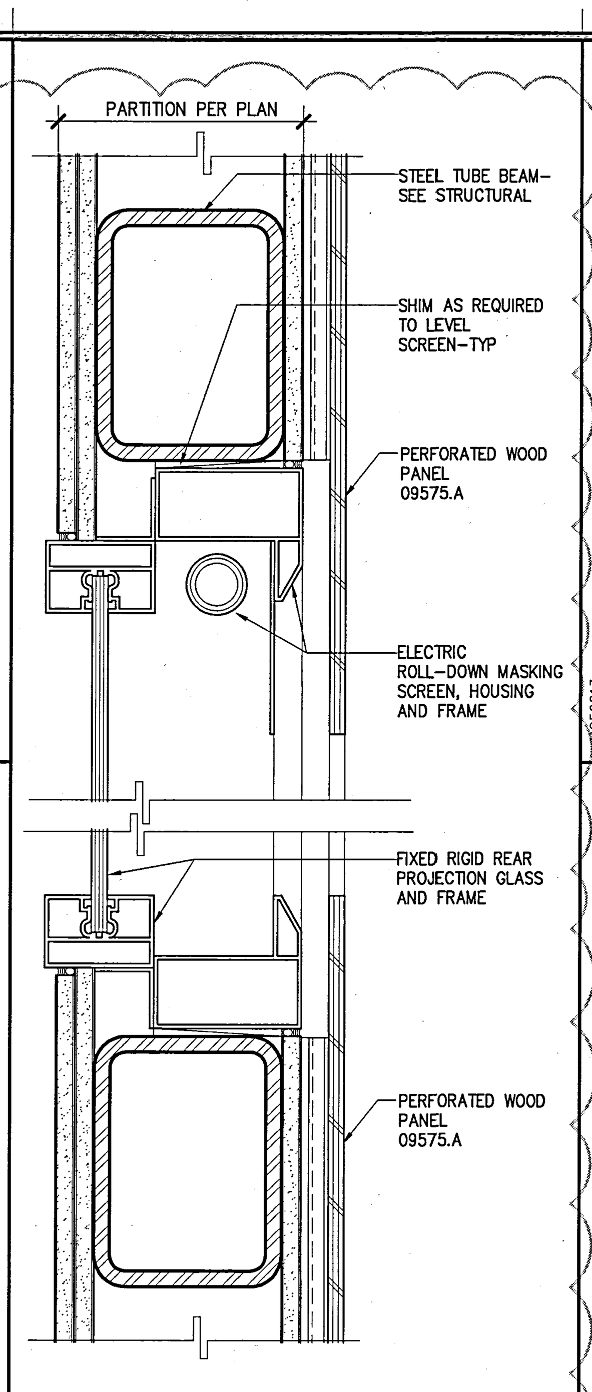
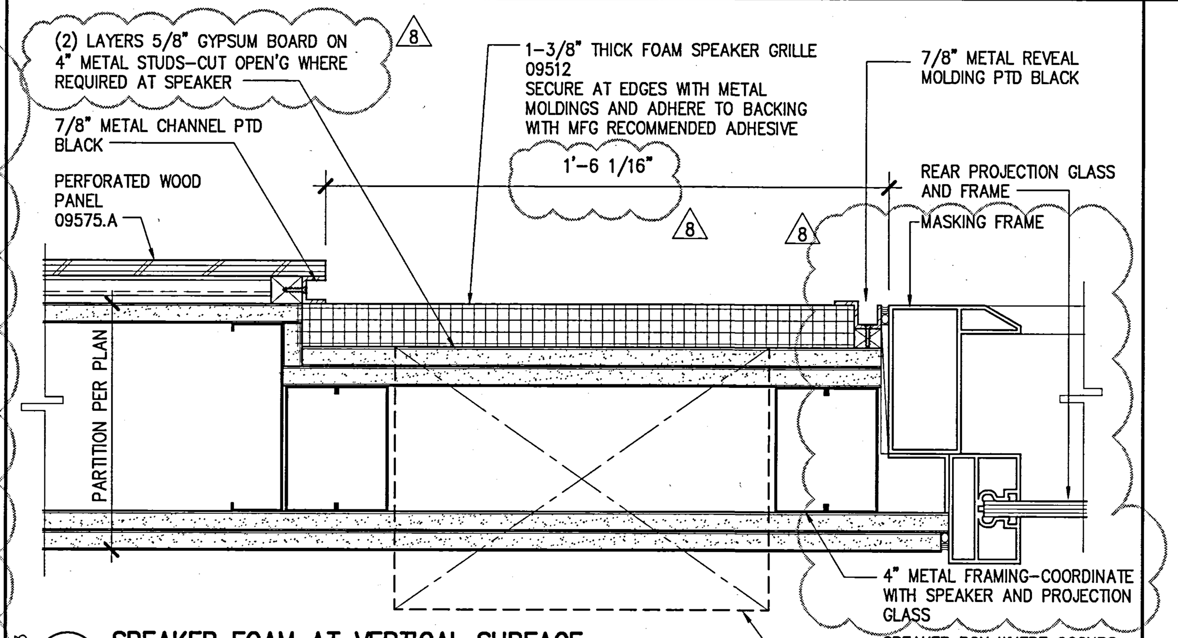
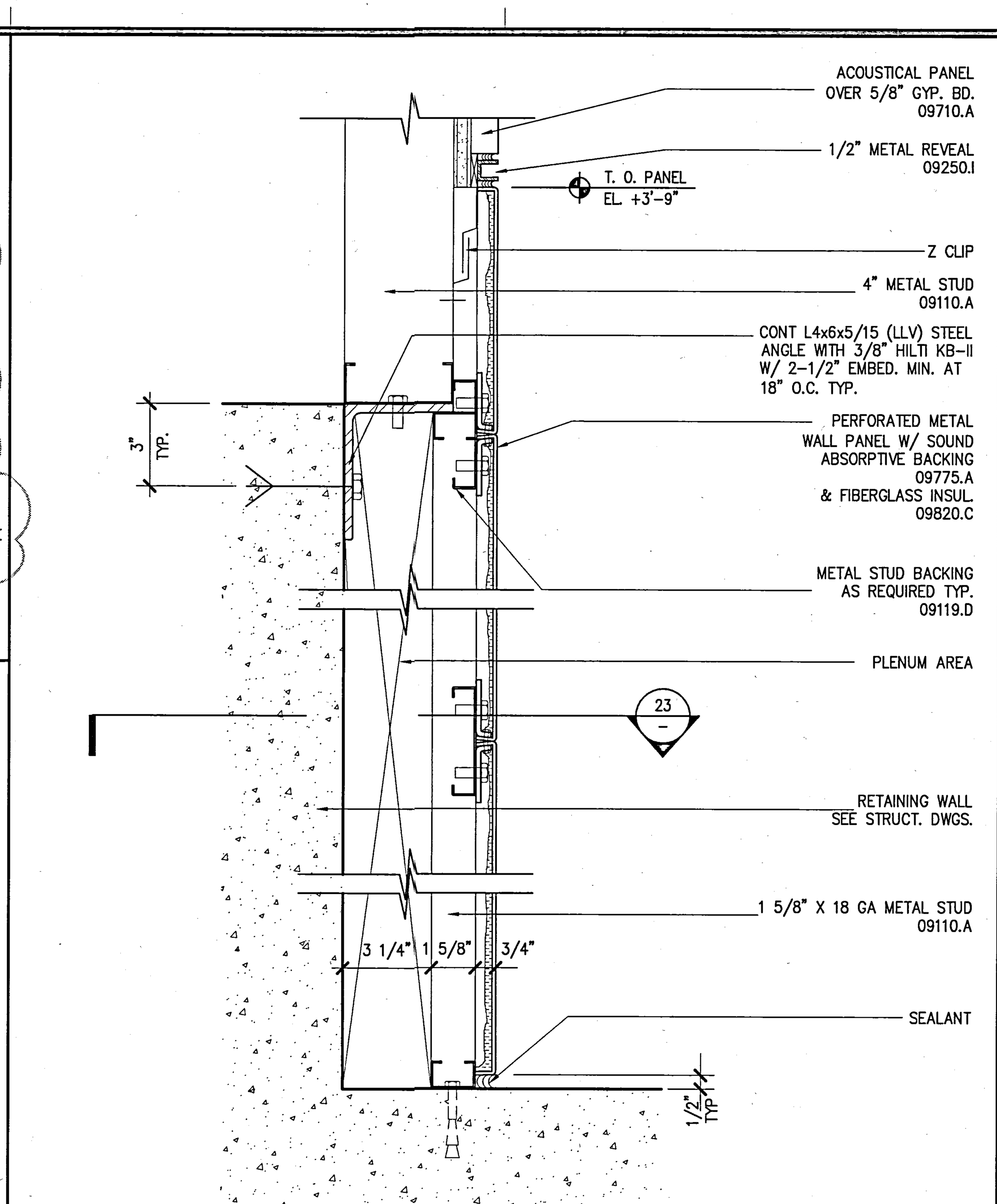


27 FRAME AT REAR PROJECTION GLASS
HEAD AND SILL
SCALE: 3" = 1'-0"



21 SPEAKER FOAM AT VERTICAL SURFACE
PLAN SECTION
SCALE: 3" = 1'-0"



12 DETAIL
SECTION THROUGH PLENUM
SCALE: 3" = 1'-0"

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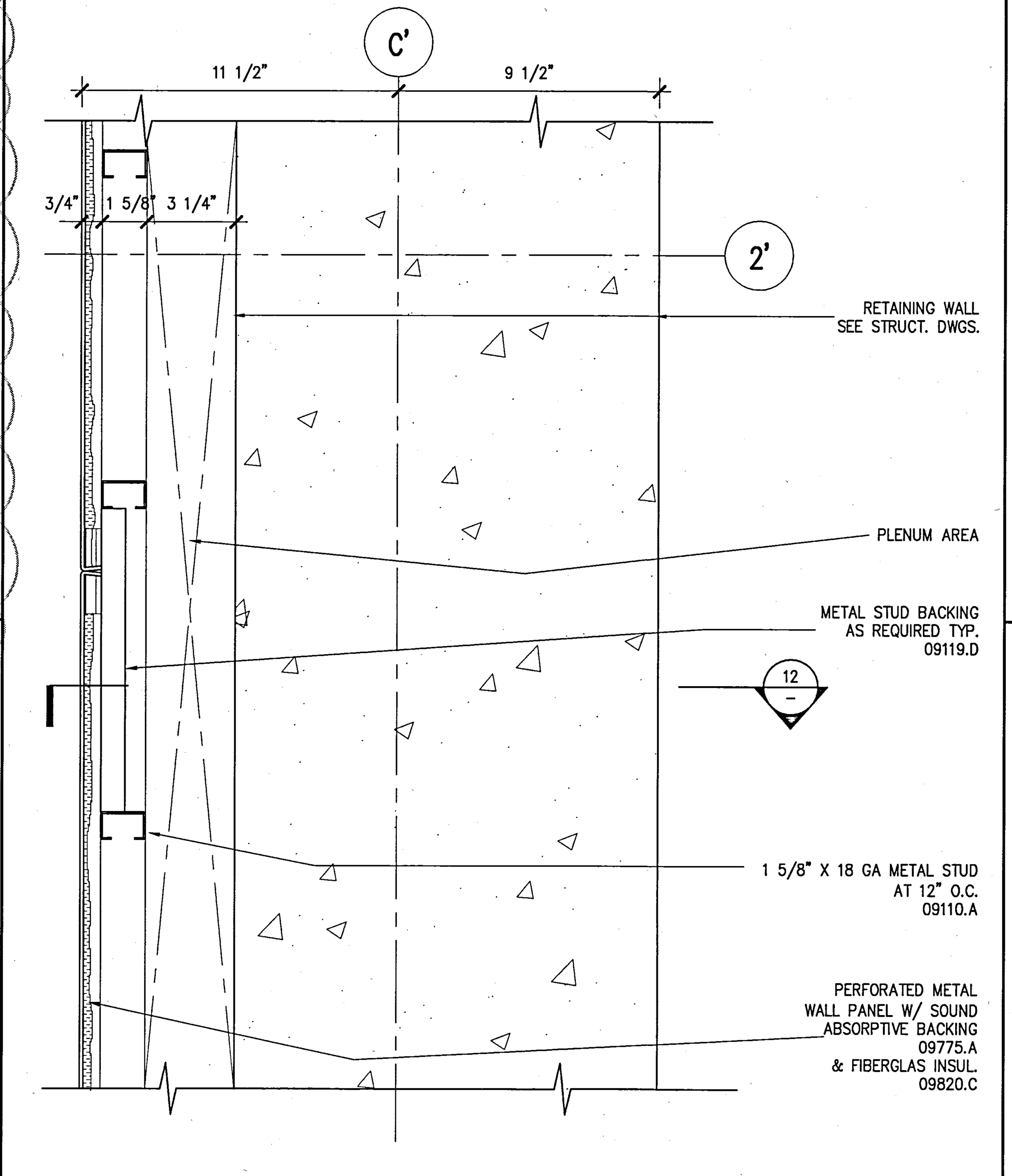
37 NOT USED
SCALE:

32 NOT USED
SCALE:

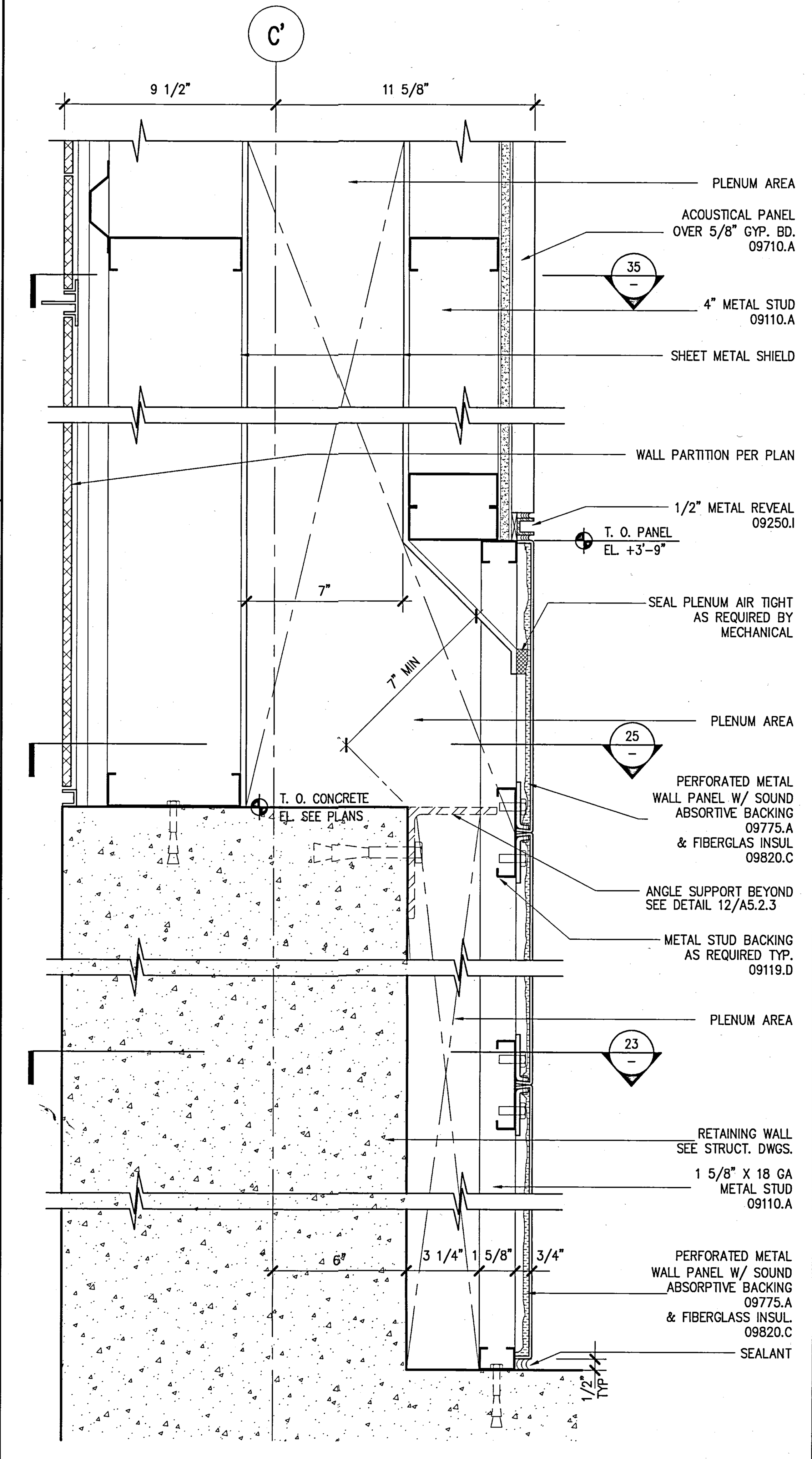


23 SECTION THROUGH PLENUM
PLAN VIEW
SCALE: 3" = 1'-0"

38 NOT USED
SCALE:

33 NOT USED
SCALE:

28 NOT USED
SCALE:



15 DETAIL
SECTION THROUGH PLENUM
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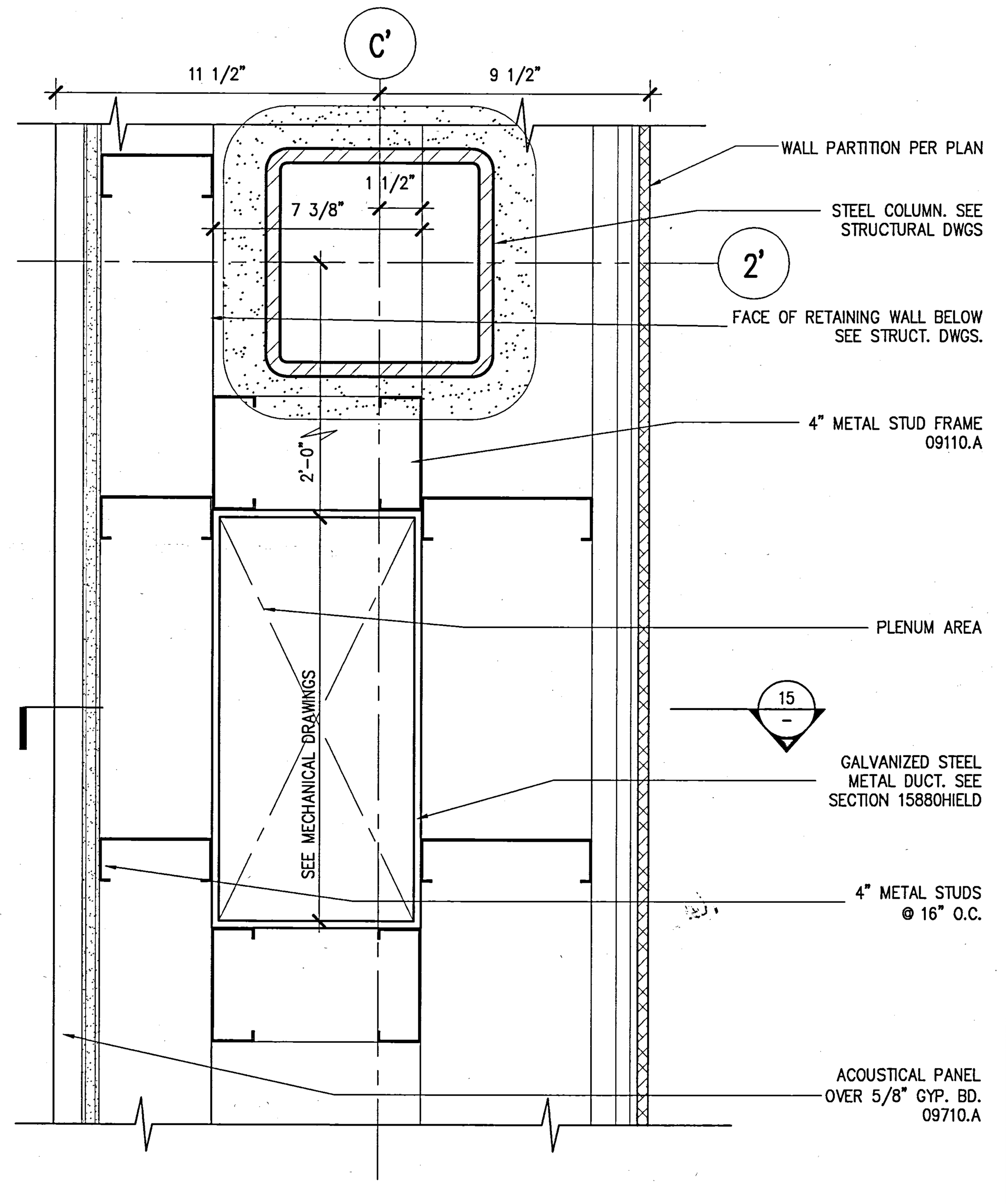
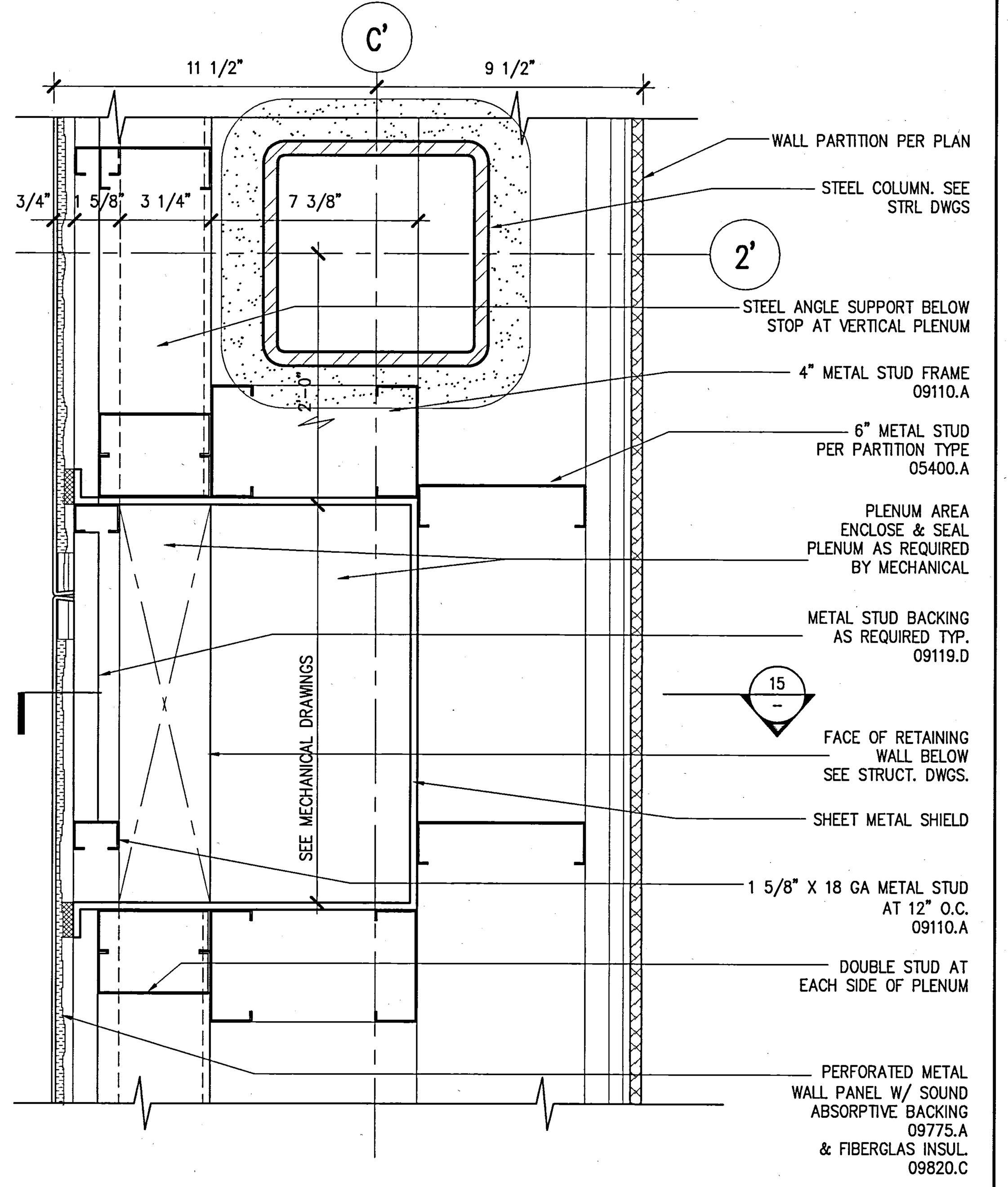
39 NOT USED
SCALE:



35 SECTION THROUGH VERT PLENUM
PLAN VIEW
SCALE: 3" = 1'-0"



25 SECTION THROUGH PLENUM
PLAN VIEW
SCALE: 3" = 1'-0"

40 NOT USED
SCALE:

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XREF Filename(s): UCR_Tblk UC50187 UC50186 UC50188 UC50189 UC50190 keynotes UC50213 UC50214
Plot Setup Script:
Plot Date: 05/15/01 13:00 Plot View:

UC50214 UC50213 UC50186 UC50189 UC50190 UC50188 UC50187

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1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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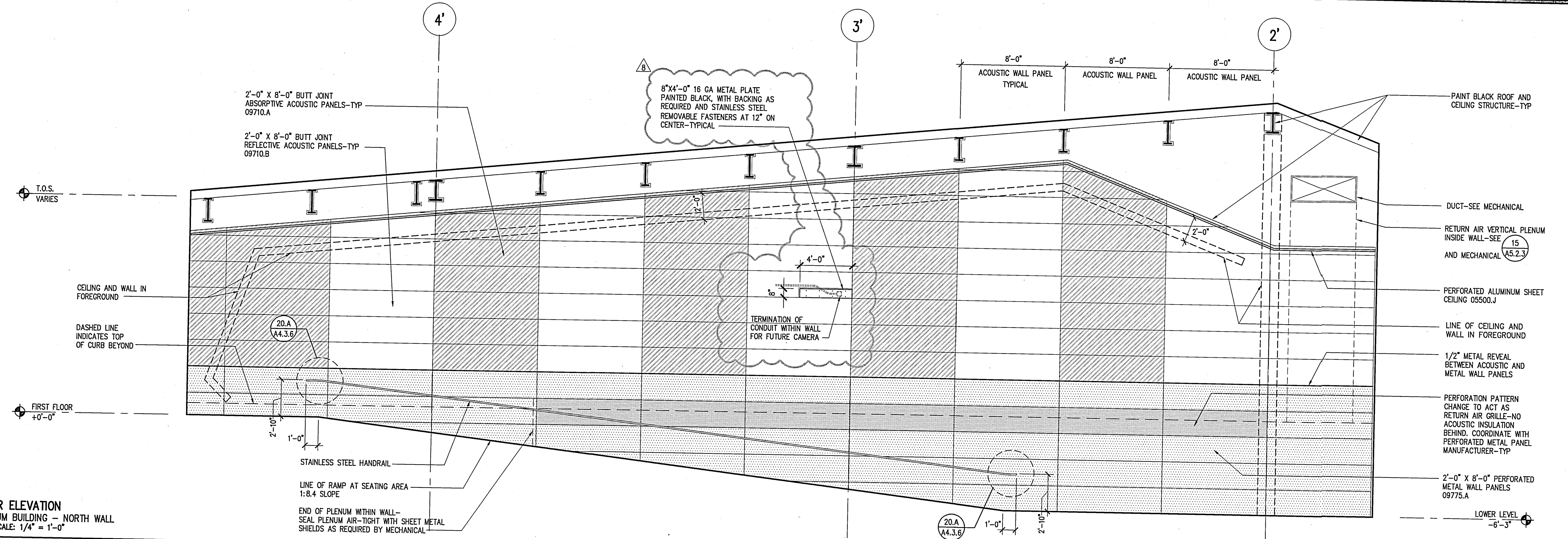
CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

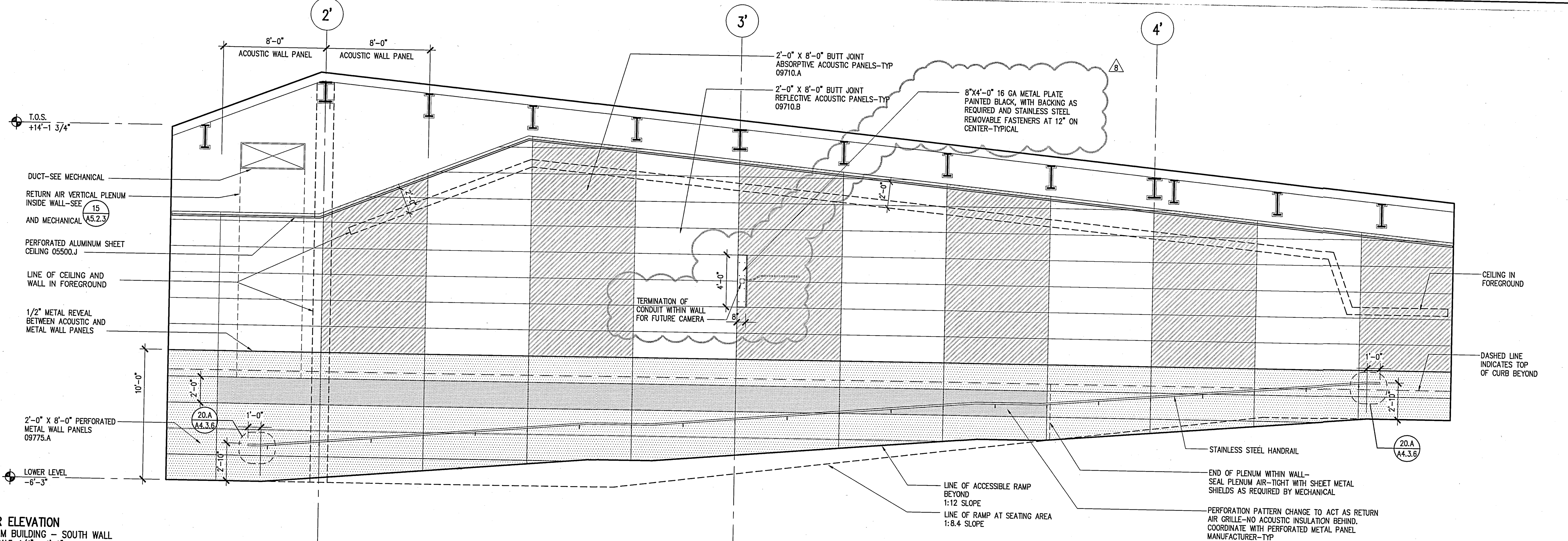
Key Plan

Drawing Title
INTERIOR DETAILS
AUDITORIUM

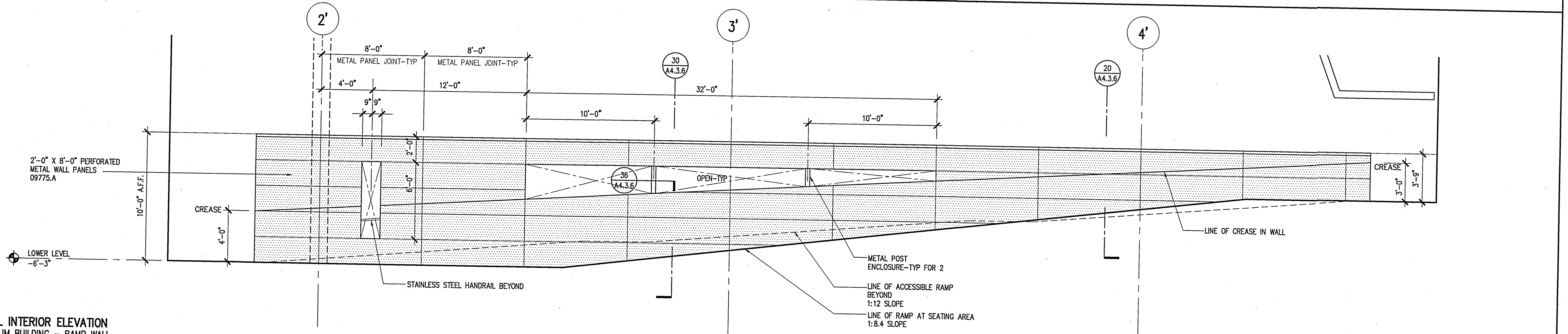
AS NOTED
Scale
3193000
Project Number
06OCT00
Baseline Date
A5.2.3
Drawing Number



37 INTERIOR ELEVATION
AUDITORIUM BUILDING – NORTH WALL
SCALE: SCALE: 1/4" = 1'-0"



39 INTERIOR ELEVATION
AUDITORIUM BUILDING – SOUTH WALL
SCALE: SCALE: 1/4" = 1'-0"



40 PARTIAL INTERIOR ELEVATION
AUDITORIUM BUILDING – RAMP WALL
SCALE: SCALE: 1/4" = 1'-0"

XREF Filename(s): UCR_tbk ucs3EJ keynotes uca-93A
Plot Setup Script: Plot View:
Plot Date: 04/28/01 17:57

KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

GENERAL NOTES

1. SEE STRUCTURAL DWGS. FOR TOP OF STEEL (TOS) ELEVATIONS.
2. TYPICAL CONDITIONS APPLY AT ALL DETAILS.
3. CALL-OUTS SHOWN ON ONE DETAIL SHALL APPLY TO ALL WHERE SAME CONDITIONS EXIST, U.O.N.
4. CASE WORK (N.I.C.). ALL BUILT IN CASE WORK PROVIDING WORK STATIONS ARE TO BE SUBMITTED TO DSA PRIOR TO FABRICATION. 5% MIN. TO BE PROVIDED SHALL BE ACCESSIBLE.
5. 5 % OF ALL FURNITURE PROVIDED SHALL BE ACCESSIBLE.
6. PROVIDE STAIR SIGNAGE AT BOTH SIDES OF DOORS 133A; 103A; 240A; 203A; 338A & 303A AS PER SEC. 1117B.5.2. THE INFORMATION SHALL BE PRESENTED USING RAISED ARABIC NUMERALS AND RAISED BRAILLE SYMBOLS. THE SIGN SHALL BE LOCATED 5 FT. A.F.F.. THE SIGN SHALL BE LOCATED IMMEDIATELY ADJACENT TO THE DOOR ON THE STRIKE SIDE. (SEC. 1133B.4.3.).
7. PROVIDE PORTABLE ASSISTIVE LISTENING DEVICES IN ALL CONFERENCE AND MEETING ROOMS WHERE REQUIRED – MINIMUM NUMBER SHALL BE EQUAL TO 4% OF SEATING BUT NOT LESS THAN 2

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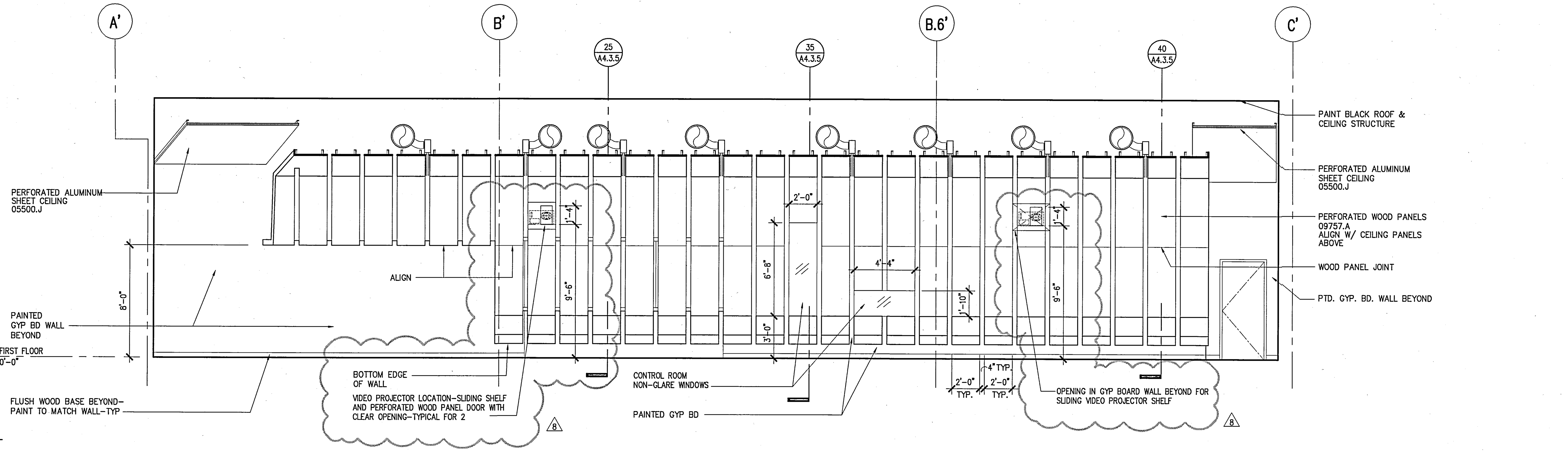
Seals and Signatures

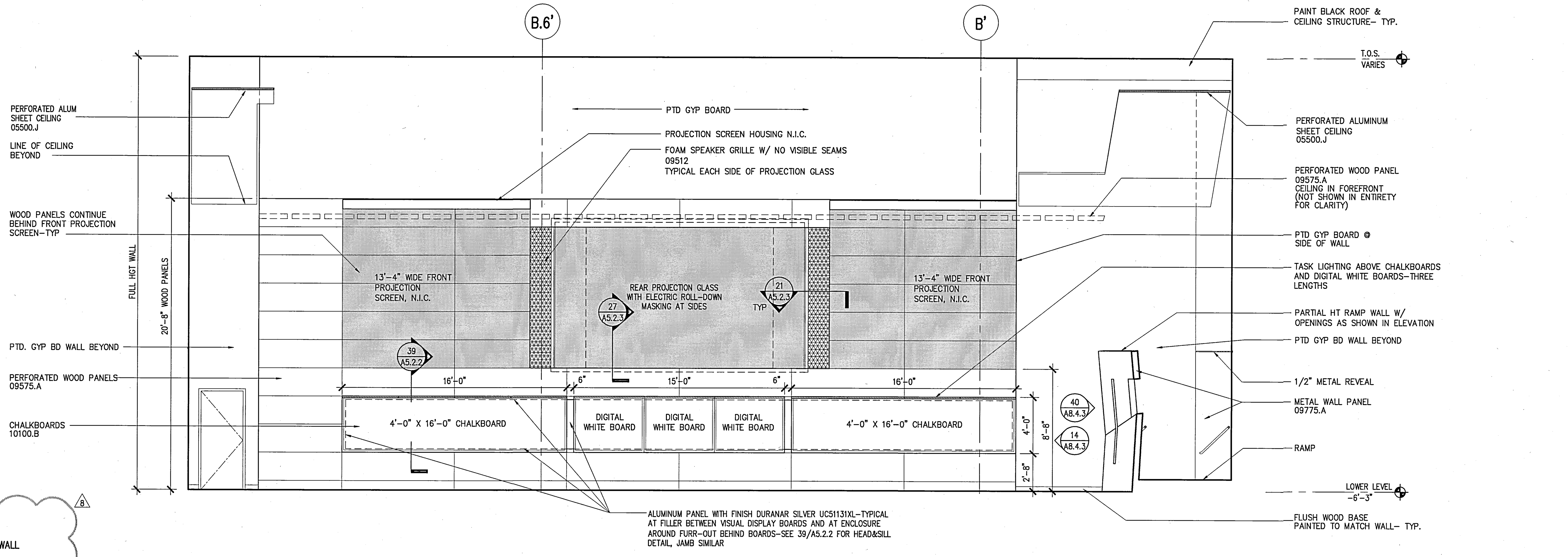
Key Plan
Project North

Drawing Title
INTERIOR ELEVATIONS
AUDITORIUM

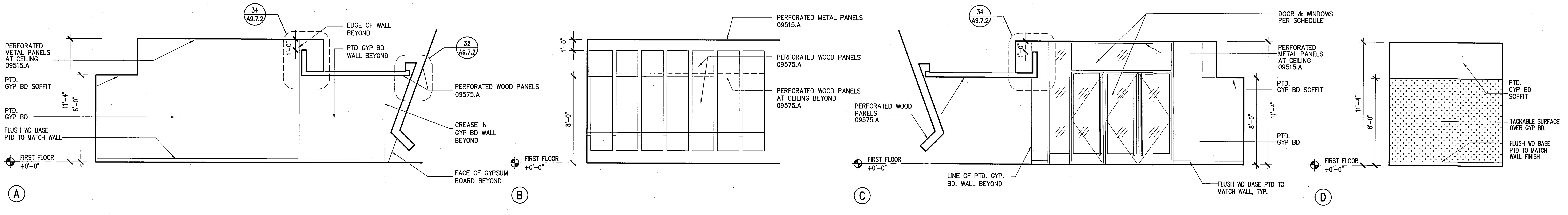
1/4" = 1'-0"
Scale
3193000
Project Number
06OCT00
Baseline Date
A8.4.1
Drawing Number



37 INTERIOR ELEVATION
AUDITORIUM BUILDING – WEST WALL
SCALE: 1/4" = 1'-0"



39 INTERIOR ELEVATION
AUDITORIUM BUILDING- EAST WALL
SCALE: 1/4" = 1'-0"



40 INTERIOR ELEVATION
ANTEROOMS #010
SCALE: 1/4" = 1'-0"

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08310.A – ACCESS PANEL
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Key Plan

Project North

Drawing Title

INTERIOR ELEVATIONS
AUDITORIUM

1/4" = 1'-0"
Scale
3193000
Project Number
06OCT00
Baseline Date
A8.4.2
Drawing Number

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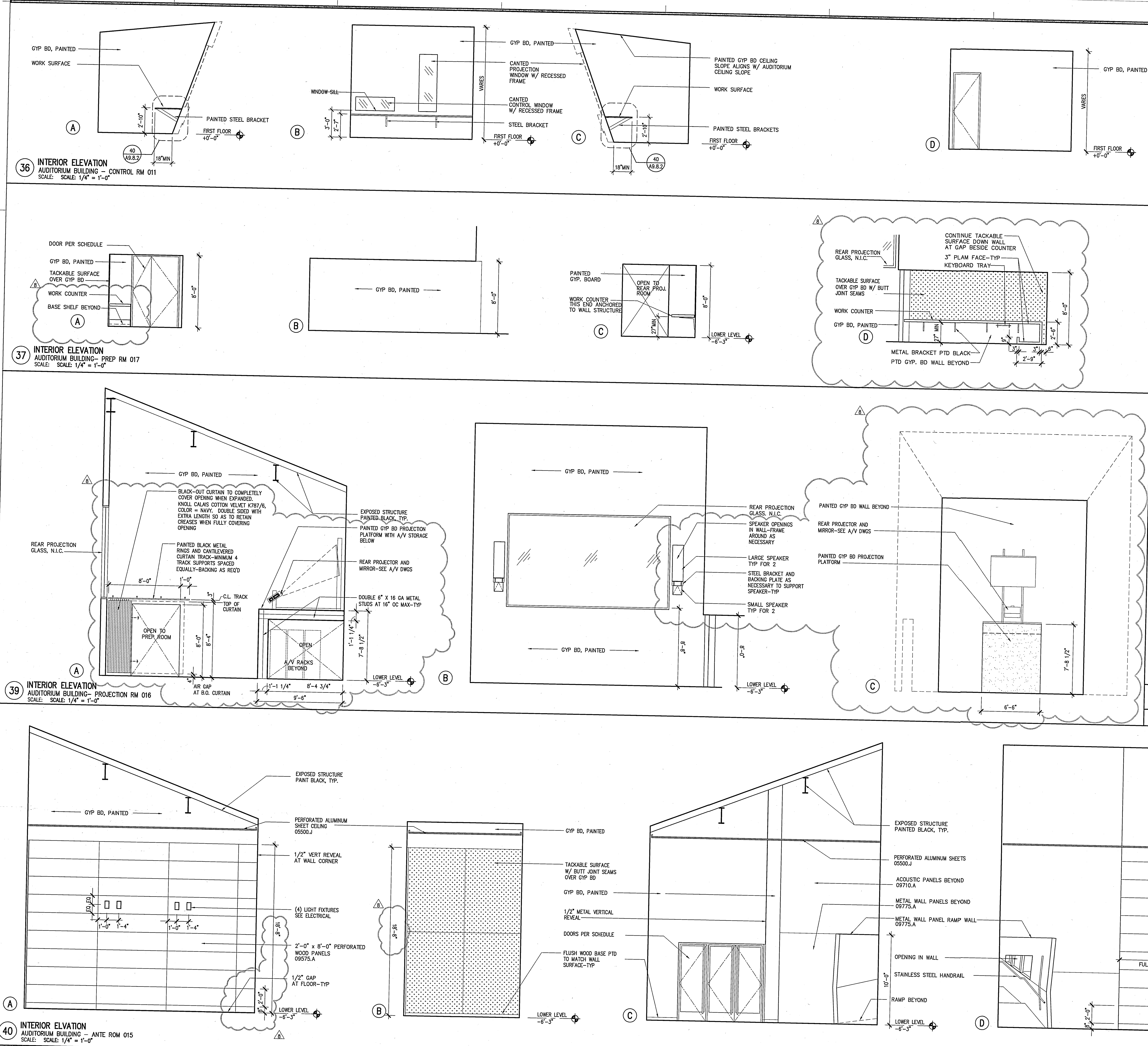

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Key Plan

Project North

Drawing Title

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AUDITORIUM

1/4" = 1'-0"
Scale

3193000
Project Number

06OCT00
Baseline Date

A8.4.3
Drawing Number

Plot Sheet Filename: J:\data\3193000\SHT\A8403.dwg
XREF Filename(s): UCR_Blk ucr3EU keyedes ucr-tp1A
Plot Setup Script:
Plot Date: 05/15/01 13:16 Plot View:

SHEET INDEX

BOX SCHEDULE

NUMBER	DESCRIPTION	FUNCTION	MFR	MODEL	SIZE (INCHES)	NEMA	MOUNTING	NOTES
AMS	AUDIO MONITOR SPEAKER	SPEAKER J-BOX	HOFFMAN	4SQ. DEEP W/SGMR	4x4x2.5		6" BFC	
ATN	ATTENUATOR	DEVICE J-BOX	HOFFMAN	4SQ. DEEP W/SGMR	4x4x2.5		48" AFF	
AVD1	AUDIO VIDEO DISTRIBUTION	DISTRIBUTION BOX AVR1 & AVR2	HOFFMAN	C-SD60X36X10	36x36x8	TYPE 1	48" AFF	
AVD2	AUDIO VIDEO DISTRIBUTION	DISTRIBUTION BOX AVR4	HOFFMAN	A-SE12X12X4	12x10x4	TYPE 1	24" AFF	FLUSH MOUNT COVER
CAM	CAMERA	VIDEO J-BOX CAMERA	RACO	4-11/16" DEEP W/2GMR	5x5x2.5	TYPE 1	18" A Ø	FOR FUTURE CAMERA VLWA
CMIC	CEILING MICROPHONE	CEILING MIC J-BOX	RACO	4SQ. DEEP W/2GMR	4x4x2.5	TYPE 1	ABOVE CEILING	
CT1	CONTROL	VIDEO SCREEN BREAK OUT BOX	RACO	4SQ. DEEP W/SGMR	4x4x2.5	TYPE 1	VERIFY	
CT2	CONTROL	PUSH BUTTON BREAK OUT BOX	RACO	4SQ. DEEP W/SGMR	4x4x2.5	TYPE 1	48" AFF	
CT3	CONTROL	ELECTRI MASK BREAK OUT BOX	RACO	4SQ. DEEP W/SGMR	4x4x2.5	TYPE 1	VERIFY	
FMTA "RFT"	FM TRANSMITTING ANTENNA	FM TRANSMITTING ANTENNA J-BOX	RACO	4SQ. DEEP	4x4x2.5	TYPE 1	ABOVE CEILING	
FP1	FACILITY PANEL	PODIUM CONNECTION	FSR	FL-600P	13.5x12x6	TYPE 1	FLOOR	
FP2	FACILITY PANEL	VIDEO CASSETTE REC. STATION	ANY	3 GANG BOX x 3" DEEP	4.5x6.375x3		12" ACT	
FP3	FACILITY PANEL	WHITE BOARD BREAK OUT BOX	ANY	A-SE6X6X4	6x6x4		56" AFF	FLUSH MOUNT COVER
FP4	JUNCTION BOX	"MMRCPU" CONNECTION	ANY	4SQ. DEEP	4x4x2.5		24" AFF	
FP5	JUNCTION BOX	PREP ROOM CPU CONNECTION	ANY	3 GANG BOX	4.5x6.375x3			
JB	JUNCTION BOX	SPARE	HOFFMAN	A-SE6X6X4	6X6X4			
IC1	INTERCOM STATION	INTERCOM	ANY	4SQ. DEEP W/2GMR	4x4x2.5	TYPE 1	12" ACT	
IC2	INTERCOM STATION	INTERCOM	ANY	4SQ. DEEP W/2GMR	4x4x2.5	TYPE 1	48" AFF	
SC	CEILING SPEAKER	SPEAKER BACK BOX	ANY	4SQ. DEEP	4x4x2.5	TYPE 1	CEILING	SUPPLIED BY AV CONTRACTOR
SC1	SPEAKER	SPEAKER BACK BOX	ANY	4SQ. DEEP	4x4x2.5	TYPE 1		
SC2	SPEAKER	SPEAKER BACK BOX	ATLAS SOUND	FA97-4(NK)	-		CEILING	
SPCL	SPEAKER CLUSTER	SPEAKER JUNCTION BOX	ANY	4SQ. DEEP	4x4x2.5	TYPE 1		
SVI	SLIDE TO VIDEO INTERFACE	SLIDE TO VIDEO J-BOX	ANY	4-11/16 DEEP W/2GMR	4-11/16x4-11/16x2-1/8	TYPE 1	12" ACT	
TP	TOUCH PANEL	TOUCH PANEL J-BOX	ANY	4SQ. DEEP W/SGMR	4x4x2.5	TYPE 1	24" AFF	
VPJ1	VIDEO PROJECTOR	VIDEO PROJECTOR J-BOX	ANY	A-SE6X6X4	6x6x4	TYPE 1	7'-4" AFF	
VPJ2	VIDEO PROJECTOR	VIDEO PROJECTOR J-BOX	ANY	A-SE6X6X4	6x6x4	TYPE 1	VERIFY	
WMA	WIRELESS MIC ANTENNA	MIC J-BOX	ANY	4SQ. DEEP W/SGMR	4x4x2.5	TYPE 1	24'-5" AFB	
WKMA	WIRELESS KEYBOARD MOUSE ANTENNA	KEYBOARD MOUSE J-BOX	ANY	4SQ. DEEP W/SGMR	4x4x2.5	TYPE 1	23'-9" AFB	

* ALL FLUSH MOUNTED BOXES MUST COME WITH FLUSH COVERS.

SYMBOL SCHEDULE

SPEAKER SYMBOL LEGEND

- GRADE MOUNTED LOUDSPEAKER
- POLE MOUNTED LOUDSPEAKER
- WALL MOUNTED LOUDSPEAKER
- SET INTEGRATED LOUDSPEAKER
- CEILING MOUNTED LOUDSPEAKER
- OVERHEAD MOUNTED LOUDSPEAKER
- LOUDSPEAKER CLUSTER

J-BOX SYMBOL LEGEND

- SPEAKER LEVEL AUDIO
- LINE LEVEL AUDIO
- MULTI BOX
- MICROPHONE LEVEL AUDIO
- INTERCOM
- VIDEO
- WIRELESS
- HEARING IMPAIRED
- CONTROL
- JUNCTION BOX

GENERAL NOTES

1. REFER TO SPECIFICATIONS FOR COMPLETE REQUIREMENTS.
2. COORDINATE:
   A. COORDINATE WITH THE WORK OF ALL SECTIONS. COORDINATE THE LOCATION OF BLOCKING AND BACKING REQUIRED BY THIS SECTION. MAKE REASONABLE MINOR MOVES TO PRESERVE ARCHITECTURAL SYMMETRY AND ALIGNMENT WITH ADJACENT FEATURES AT NO CLAIM FOR ADDITIONAL COST OR TIME. PRESENT CONFLICTS IN TIMELY MANNER FOR RESOLUTION.
   B. RELOCATION, REVISION OR CORRECTION CAUSED BY FAILURE OF THE SUBCONTRACTOR TO COORDINATE THE WORK SHALL NOT BE SUBJECT TO CLAIM FOR ADDITIONAL COST OR TIME.
   C. POWER RECEPTACLES SHOWN ON THE AV DRAWINGS OUTSIDE OF EQUIPMENT RACKS ARE SHOWN FOR COORDINATION INFORMATION ONLY. REFER TO DIVISION 16 DOCUMENTS FOR CONSTRUCTION.
   D. CONDUIT, BACK BOXES AND PULL BOXES SUPPLIED AND INSTALLED BY ELECTRICAL CONTRACTOR UNDER SUPERVISION OF AV CONTRACTOR
   E. WIRE SUPPLIED & INSTALLED BY AV CONTRACTOR.
3. LOCATIONS AND DIMENSIONS:
   A. LOCATIONS AND DIMENSIONS SHOWN ON ARCHITECTURAL DRAWINGS TAKE PRECEDENCE OVER THESE AV DRAWINGS. IN CASE OF APPARENT CONFLICT OR AMBIGUITY, SUBMIT TO THE DESIGN/BUILDER IN TIMELY MANNER FOR RESOLUTION.
   B. DIMENSIONS TAKE PRECEDENCE OVER SCALE. LARGE SCALE DRAWINGS TAKE PRECEDENCE OVER SMALL.
   C. UNLESS OTHERWISE NOTED, DIMENSIONS ARE SHOWN HEIGHT X WIDTH X DEPTH.
   D. VERIFY ALL DIMENSIONS, LOCATIONS AND CONDITIONS IN THE FIELD PRIOR TO STARTING WORK. NOTIFY DESIGN/BUILDER OF ANY APPARENT DISCREPANCIES.
4. SUPPORT:
   PROVIDE ALL BLOCKING, BRIDGING, TIES, FASTENERS AND RELATED SUPPORT PROVISIONS FOR ALL WORK OF THIS SECTION. COMPLY WITH APPLICABLE CODE REQUIREMENTS FOR MEANS OF SUPPORT OF ELECTRICAL EQUIPMENT OF THE SAME WEIGHT UNDER THE SAME MOUNTING CONDITIONS. DO NOT APPLY ANY LOAD TO BUILDING STRUCTURE WITHOUT FIRST OBTAINING WRITTEN APPROVAL OF THE PROJECT STRUCTURAL ENGINEER. OBTAIN PER PROJECT PROCEDURES.
5. BOX, PANEL, AND ENCLOSURE INSTALLATION:
   A. COORDINATE: COORDINATE THE LOCATION OF ALL BOXES, PANELS, ENCLOSURES AND RELATED RACEWAY WITH THE WORK OF OTHER SECTIONS.
   B. ACCESS: VERIFY ACCESS TO BOXES, PANELS AND ENCLOSURES COMPLIES WITH APPLICABLE CODE.
   C. LOUDSPEAKER LOCATIONS: COORDINATE AND CORRECT ALL CONDITIONS OF OCCLUSION OF ALL LOUDSPEAKER ASSEMBLIES. WHERE MORE THAN ONE (1) FLUSH MOUNTED CEILING LOUDSPEAKER HAS BEEN SCHEDULED, NONE SHALL BE LOCATED CLOSER TO ANY FIXED WALL THAN ONE-HALF (1/2) OF THE ADJACENT CLEAR HEIGHT, EXCEPT AT CEILING DISCONTINUITIES, OR WHERE SPECIFICALLY SHOWN ON THE DRAWINGS.
   D. ALIGNMENT: INSTALL BOXES, PANELS, AND ENCLOSURES SQUARE AND PLUMB. SET FLUSH MOUNTED UNITS SO THAT THE FACE OF THE COVER, BEZEL, OR ESCUTCHEON, IS IN THE SAME PLANE AS THE SURROUNDING FINISHED SURFACE. MOUNT BOXES, PANELS, AND TRIM SO THAT THERE ARE NO GAPS, CRACKS, OR OBVIOUS LINES BETWEEN THE TRIM AND THE ADJACENT FINISHED SURFACE.
   E. TYPE: UNLESS OTHERWISE NOTED, PROVIDE STEEL BOXES, PANELS AND ENCLOSURES. COMPLY WITH DIVISION 16 REQUIREMENTS AND APPLICABLE CODE.
   F. SIZE: UNLESS OTHERWISE NOTED, BOXES AND ENCLOSURES SHALL BE NOT LESS THAN 2-1/8 INCHES DEEP. PROVIDE THE LARGER OF THE SIZE REQUIRED BY APPLICABLE CODE OR AS SHOWN ON DRAWINGS. COORDINATE WIRE AND CABLE BEND RADIUS WITH BOX AND ENCLOSURE SIZE.
6. RACEWAY:
   A. RACEWAY FOR ALL WIRING FOR WORK OF SECTION 11800 EXCEPT LOUDSPEAKER WIRING SHALL BE STEEL. RACEWAY FOR LOUDSPEAKER WIRING SHALL BE ANY TYPE PERMITTED UNDER DIVISION 16 FOR WIRING OF THE APPLICABLE SIGNAL IN THE APPLICABLE LOCATION.
   B. RACEWAY SHALL BE 3/4 INCH DIAMETER TRADE SIZE UNLESS OTHERWISE NOTED.
   C. PULL BOXES: PROVIDE AS REQUIRED BY THE MOST RESTRICTIVE OF APPLICABLE CODE OR THE PROVISIONS OF DIVISION 16. COORDINATE WITH WIRE AND CABLE BEND RADIUS.
7. GROUNDING AND BONDING:
   COMPLY WITH ALL APPLICABLE CODES AND ORDINANCES. REFER TO NATIONAL ELECTRICAL CODE SECTION 250-74, EXCEPTION NO. 4 AND RELATED.
   A. BOND RACEWAY AND RELATED BOXES, PANELS, ENCLOSURES AND CABINETS AS REQUIRED BY APPLICABLE CODE AND DIVISION 16.
   B. MAKE RACEWAY CONNECTIONS TO EQUIPMENT RACKS AND SIMILAR EQUIPMENT ENCLOSURES CONTAINING POWERED EQUIPMENT WITH ISOLATED FITTINGS.
   C. GROUND AND BOND EQUIPMENT RACKS AND SIMILAR EQUIPMENT ENCLOSURES CONTAINING POWERED EQUIPMENT EXCLUSIVELY VIA THE ISOLATED EQUIPMENT GROUNDING CONDUCTORS PROVIDED UNDER DIVISION 16. SIZE SUCH CONDUCTORS ACCORDING TO APPLICABLE CODE. FOR EACH TECHNICAL BRANCH CIRCUIT, THE ISOLATED EQUIPMENT GROUNDING CONDUCTOR SHALL BE COPPER OF THE SAME GAUGE AS SUPPLY AND NEUTRAL CONDUCTORS. MAIN ISOLATED EQUIPMENT GROUNDING CONDUCTOR TO EACH ENSEMBLE OF EQUIPMENT RACKS SHALL BE COPPER, THE LARGER OF #4 AWG OR AS REQUIRED BY APPLICABLE CODE.
   D. D.C. RESISTANCE BETWEEN THE ISOLATED EQUIPMENT GROUNDING BUS AT EQUIPMENT ROOM TECHNICAL POWER PANELS AND THE MAIN PROJECT GROUND FIELD SHALL NOT EXCEED 0.15 OHMS.
   E. FOR COMMUNITY ANTENNA TELEVISION AND MASTER ANTENNA TELEVISION SYSTEMS AND RELATED PROVISIONS, COMPLY WITH ARTICLE 800, NATIONAL ELECTRICAL CODE.

DEVICE ID

ABA	Audio Buffer Amplifier
AC	Audio Combinder
ADA	Audio Distribution Amplifier
ADB	Audio Distribution Box
ADI	Analog To Digital Input
ADK	Audio Ducker
AFA	AM/FM Antenna
AFT	AM/FM Tuner
AIB	Analog Input Bridge
ALBC	Assistive Listening Battery Charger
ALR	Assistive Listening Receiver
ALT	Assistive Listening Transmitter
AMS	Audio Monitor Speaker
AMX	Auto Mixer
ANH	Analog Network Hub
AOB	Analog Output Bridge
APB	Audio Patch Bay
APD	Antenna Power Distribution
ASW	Audio Switcher
AT	Auto Transformer
ATI	Audio Teleconference Interface
ATN	Attenuator
AVBB	Audio Video Break Out Box
AVC	Audio Video Controller
AVD	Audio Video Distribution
AVR	Audio Video Rack
AVSC	Audio Video System Controller
AVSS	Audio Video System Switcher
BC	Battery Charge
BOB	Break Out Box
BOB	Battery Pack
CAM	Video Camera
CAS	Cassette Deck
CCC	Contact Closure Card
CCD	CD/Cassette Deck
CCF	Card Cage Frame
CCM	Central Control Master
CCS	Central Control Slave
CCSS	Central Control System Server
CCU	Camera Control Unit
CDP	Compact Disc Player
CDC	CD Changer
CIU	Computer Interface Unit
CMIC	Ceiling Microphone
COM	Intercom Equipment
CON	Converter
CPL	Compressor/Limiter
CPP	Central Processing Paging
CPU	Central Processing Unit
CT	Control
CVM	Computer Video Monitor
DA	Distribution Amp
DAO	Digital to Analog Output
DAS	Digital Audio Source
DAT	Digital Audio Tape Unit
DC	Document Camera
DCA	Digital Controlled Amplifier
DCC	Data Control Card
DCDP	Dual Compact Disc Player
DCM	Digital Cart Machine
DCN	Divider Combinder Network
DCP4	Digital CP4
DCPU-1	Digital Central Processing Unit
DCPU-2	Digital Central Processing Unit
DDC	Digital Document Camera
DDL	Digital Delay
DEQ	Dynamic Equalizer
DIU	Digital InterFace Unit
DPU	Digital Processing Unit
DPUCN	Digital Processing Unit Cobra Net
DRC	Door Control
DSP	Digital Signal Processor
DSPC	Digital Signal Processing Computer
DSPU	Digital Signal Processing Unit
DSS	Digital Satellite System
DVD	Digital Versatile Device
DVS	Digital Video Scaler
ECAS	Existing Cassette Deck
ECPU	Existing Centpre&Bsocessiitgr Unit
EDB	Electrical Distribution
EFX	Effects Processor
EPS	Existing Power Supply
EREV	Existing Reverb
EQ	Equalizer
EXG	Expander/Gate
FB	Floor Box
FBS	Feed Back Suppresser
FLM	Floor Monitor
FMA	FM Antenna
FMR	FM Receiver
FMT	FM Tuner
FMTA	FM Transmitting Antenna
FMTR	FM Transmitter
FP	Facility Panel
FPL	Floor Panel
GEQ	Graphic Equalizer
GNM	Gooseneck Microphone
HDTV	High Definition Television
HFS	High Frequency Speaker
HHM	Hand Held Microphone
HST	Handset
IAA	Integrated Audio Amplifier
IC	Intercom Station
IRB	IR Broadcast
IRE	IR Emitter
IRM	IR Modulator
IRR	IR Repeater
IRT	IR Transmitter
ITR	Isolator Transformer
KB	Keyboard
KM	Keyboard & Mouse
KVM	Keyboard, Video & Mouse
KVME	Keyboard, Video & Mouse Extender
LCDP	LCD Projector
LD	Line Doubler
LDP	Laser Disc Player
LDR	Line Driver
LFS	Low Frequency Speaker
LM	Line Module
LP	Lightning Protector
LRR	Lightning Room Rack
LTP	LCD Touch Panel
M	Mouse
M2	2 Input Microphone Panel
MA	Mixer Amplifier
MCS	Main Control System
MCS-AX3	Main Control System
MCV	Media Converter
MD	Mini Disc
MDCF	Matrix Digital Card Frame
MFS	Mid Frequency Speaker
MI	Midi Interface
MIC	Microphone
MIX	Mixer
MM	Microphone Module
MMCPU	Media Matrix Computer
MMPA	Measurement Mic Pre Amplifier
MMRCPU	Media Matrix Remote Computer
MPA	Microphone Pre-Amplifier
MPN	Monitor Panel
MPS	Motorized Video Screen
MRP	MD Recorder Player
MSC	Miscellaneous
MSW	Multi-Media Switcher
MTX	Switching Matrix
MXP	Mixer Pre-Amplifier
NADU	Network Audio Distribution Amp
NIC	Network Interface Card
NMCPU	Network Manager CPU
NSG	Noise Gate
NSSS	Network Source Selector Switch
NWS	Network Switch
OPJ	Optical Projector
PA100	100w Power Amplifier
PA200	200w Power Amplifier
PA300	300w Power Amplifier
PA400	400w Power Amplifier
PA500	500w Power Amplifier
PB	Push Button
PBR	PlayBack Rack
PC	Power Conditioner
PCLD	Projector Controller With Line Doubler
PD	Plasma Display
PDL	Plasma Display Lift
PDM	Podium
PEQ	Parametric Equalizer
PJL	Projector Lift
PJS	Projector Screen
PPS	Phantom Power Supply
PRE	Pre Amplifier
PSD	Paging Station Desk Mount
PSLR	Program Select & Level Remote
PSR	Paging Station Rack mount
PSU	Power Supply
PSW	Paging Station Wall Mount
PVM	Preview Video Monitor
RCVS	Remote Control Video Selector
REM	Remote Control
REV	Reverb
RFA	RF Amplifier
RFDA	RF Distribution Amp.
RFS	RF Splitter
RFT	RF Transmitter
RGBAS	RGB Auto Switcher
RGBDA12	RGB Distribution Amp 1 in 2 out
RGBMS	RGB Matrix Switcher
RGBS	RGB Switcher 6X1
RGBSI	RGB Switching Interface
RK	Rack Lites
RPN	Rack Panel
SAT	Satellite
SB	Bass Speaker
SC	Ceiling Speaker
SCB	Cinema Speaker Bass
SCN	Cinema Speaker
SFF	Front Fill Speaker
SG	Grade Speaker
SH	Horn Speaker
SMS	Surface Mouted Speaker
SMX	Splitter Mixer
SPG	Program Speaker
SPJ	Slide Projector
SPK	Full Range Speaker
SPP	Speaker Patch Panel
SRA	Stereo Receiver Amp
SS	Selector Switch
SSA	Solid State Audio Source
SSP	Surround Sound Processor
SSS	Surround Sound Speaker
SSW	Serve Switch
STU	Satellite Tuner
SVC	Slide to Video Converter
SVDA	S-Video Distribution Amp
SVHS	S-Video Cassette Recorder
SVI	Slide to Video Interface
SVMS	S-Video Matrix Switcher
SVS	S-Video Switcher
SVSS	S-Video Separator switcher
SW	Wall Mounted Speaker
SWH	Sound Web Hub
TBC	Time Base Corrector
TCS	Teleconferencing System
TP	Touch Panel
TST	Test Set
TVT	TV/RF Tuner
UPS	Uninterruptible Power Supply
VCA	Voltage Controlled Amplifier
VCU	Video Conferencing Unit
VDA	Video Distribution Amplifier
VFX	Video Effects Processor
VHS	Video Cassette Recorder
VL	Voice Lift
VLCF	Voice Lift Card Cage Frame
VM	Video Monitor
VMS	Video Matrix Switcher
VOL	Volume Control
VPB	Video Patch Bay
VPJ	Video Projector
VSC	Video Scan Converter
VSPC	Video Screen Panel Control
VSS	Video System Switcher
VSS1	Video System Switcher
VSW	Video Switcher
WLM	Wireless Microphone
WLU	Wireless Unit
WMA	Wireless Mic Antenna
WMKS	Wireless Mouse Keyboard System
WMR	Wireless Mic Receiver
WPN	Wall Panel
WTA	Wireless Touch Panel Adapter
WTR	Wireless Transmitter Receiver
XFR	Transformer
XKVM	Extended KVM
XLRP	XLR Panel
XOV	Crossover
YCVS	YC & V Switcher

ABBREVIATIONS

2GMR	2 GANG MUD RING
3GMR	3 GANG MUD RING
4GMR	4 GANG MUD RING
A Ø	ABOVE ZERO FLOOR LEVEL
ACT	ABOVE COUNTER TOP
AFB	ABOVE FLOOR BELOW
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
BFC	BELOW FINISHED CEILING
BGM	BACKGROUND MUSIC
BOH	BACK OF HOUSE
C	CONDUIT
CAB	CABINET
CLG	CEILING
CTL	CONTROL
CO	CONDUIT ONLY
DIA	DIAMETER
EOL	END OF LINE
EQUIP	EQUIPMENT
FBO	FURNISHED BY OWNER
FIN	FINISHED
FOH	FRONT OF HOUSE
FUT	FUTURE
HR	HOME RUN
HT	HEIGHT
JB	JUNCTION BOX
MOM	MOMENTARY
MTD	MOUNTED
MTL	METAL
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
OFE	OWNER FURNISHED EQUIPMENT
PGM	PROGRAM
PROJ	PROJECT
PSRH	PROJECT STANDARD RECEPTACLE HEIGHT, REFER TO DIVISION 16
PSSWH	PROJECT STANDARD SWITCH HEIGHT, REFER TO DIVISION 16
PWR	POWER
REC	RECORDED
SGMR	SINGLE GANG MUD RING
SND	SOUND
SL	STAGE LEFT
SR	STAGE RIGHT
SP	SHIELDED PAIR – SEE 11800 SPECIFICATION
SPKR	SPEAKER
STD	STANDARD
TEL	TELEPHONE
TERM	TERMINAL
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VLWA	VERIFY LOCATION WITH ARCHITECT
WP	WEATHER PROOF
Ø	REFERENCE POINT FOR FLOOR LEVEL ZERO

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UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1918 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1051

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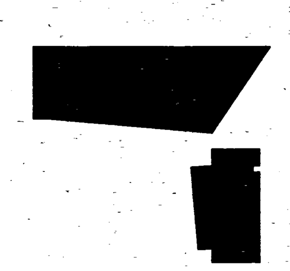
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

Key Plan



Drawing Title
General Notes, Symbols & Abbreviations

Scale NTS
Project Number 3193000
Baseline Date 11MAY01
Drawing Number AV100

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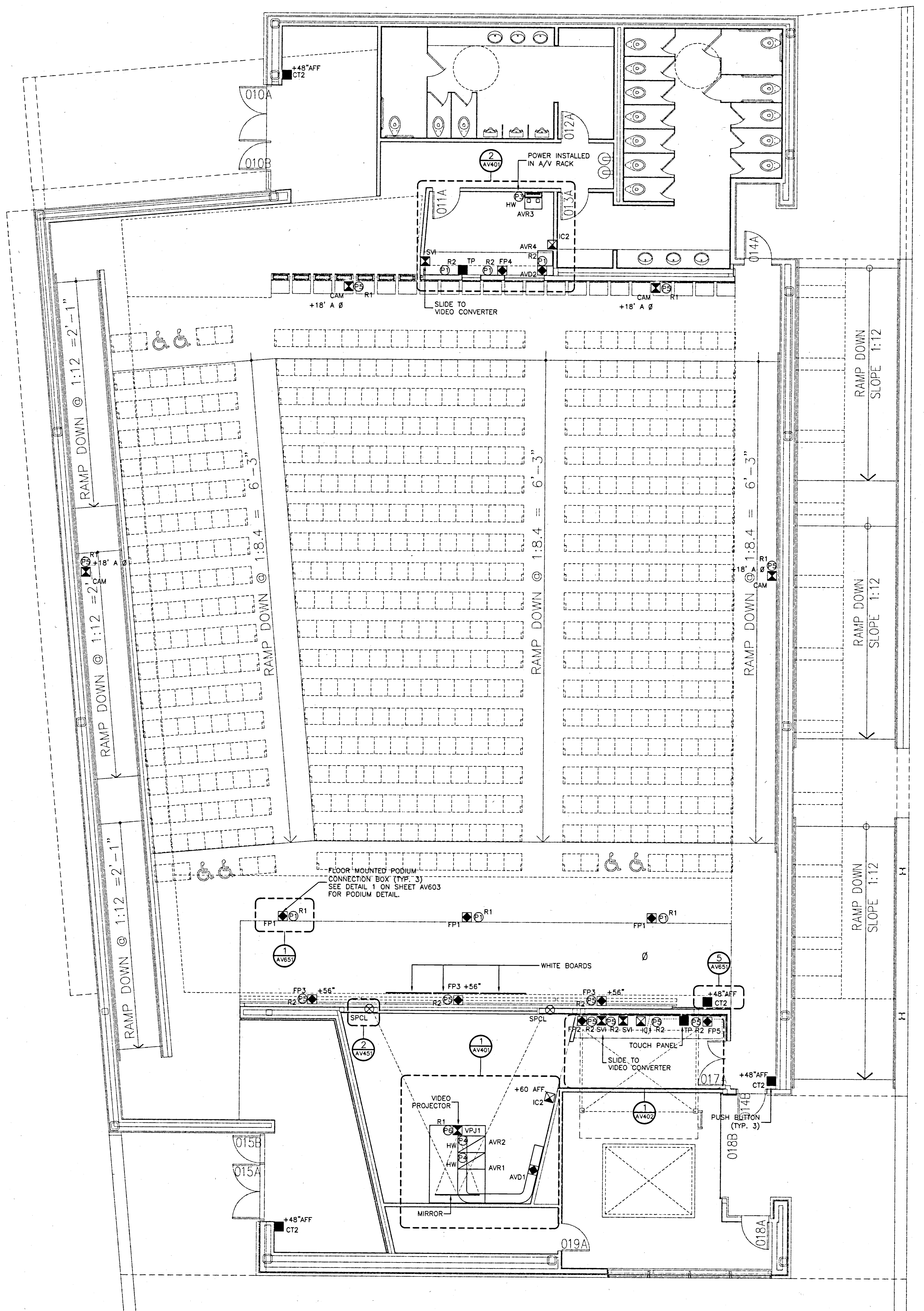

POWER SCHEDULE:

P1	(P1)	= (1) 120VAC. 20 AMP ISO GROUND CIRCUITS.
P2	(P2)	= (2) 120VAC. 20 AMP ISO GROUND CIRCUITS.
P3	(P3)	= (3) 120VAC. 20 AMP ISO GROUND CIRCUITS.
P4	(P4)	= (5) 120VAC. 20 AMP ISO GROUND CIRCUITS.
P5	(P5)	= 120VAC. 400 WATTS ISO. GROUND.
P6	(P6)	= 220VAC. 1500 WATTS ISO. GROUND.
P7	(P7)	= 208 – 240VAC. 3000 WATTS ISO. GROUND.
"	(")	= CONTINUE CIRCUIT
	HWR	= HARD WIRE WITH RELAY ENCLOSED.
	HW	= HARD WIRED.
	R1	= DUPLEX RECEPTACLE.
	R2	= QUAD RECEPTACLE.
	R	= RECEPTACLE.

POWER REQUIRED

P# ## DENOTES POWER LOCATED IN AV BOX.

TYPE OF TERMINATION

P# ## DENOTES POWER ADJACENT TO AV BOX.

POWER REQUIRED

Plot Sheet Filename: G:\Smith group (SMP-SHG)\uc riverside\surge building\AV\AV101.dwg
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900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1918 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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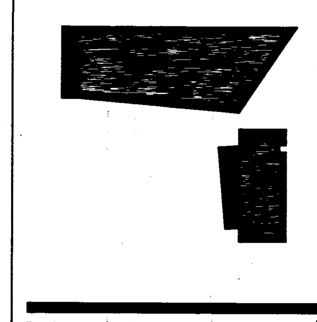
Seals and Signatures

Key Plan



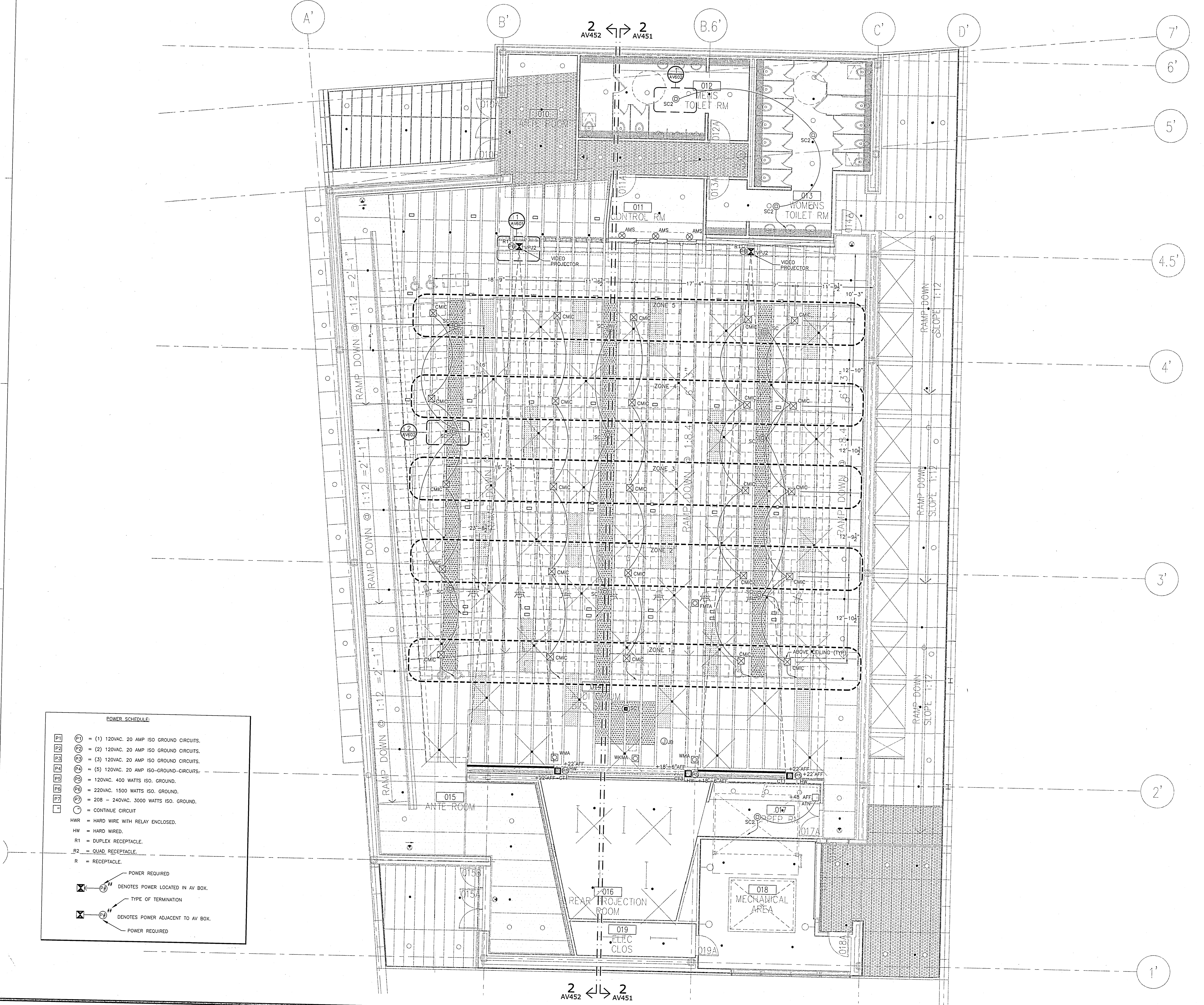
Drawing Title
AV FACILITY
FLOOR PLAN

3/16" = 1'-0"
Scale

3193000
Project Number

11MAY01
Baseline Date

AV101
Drawing Number



POWER SCHEDULE:

P1	P1	= (1) 120VAC. 20 AMP ISO GROUND CIRCUITS.
P2	P2	= (2) 120VAC. 20 AMP ISO GROUND CIRCUITS.
P3	P3	= (3) 120VAC. 20 AMP ISO GROUND CIRCUITS.
P4	P4	= (5) 120VAC. 20 AMP ISO GROUND CIRCUITS.
P5	P5	= 120VAC. 400 WATTS ISO. GROUND.
P6	P6	= 220VAC. 1500 WATTS ISO. GROUND.
P7	P7	= 208 – 240VAC. 3000 WATTS ISO. GROUND.
"	"	= CONTINUE CIRCUIT
	HWR	= HARD WIRE WITH RELAY ENCLOSED.
	HW	= HARD WIRED.
	R1	= DUPLEX RECEPTACLE.
	R2	= QUAD RECEPTACLE.
	R	= RECEPTACLE.

POWER REQUIRED
P# ## DENOTES POWER LOCATED IN AV BOX.
TYPE OF TERMINATION
P# ## DENOTES POWER ADJACENT TO AV BOX.
POWER REQUIRED

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Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1918 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

Key Plan

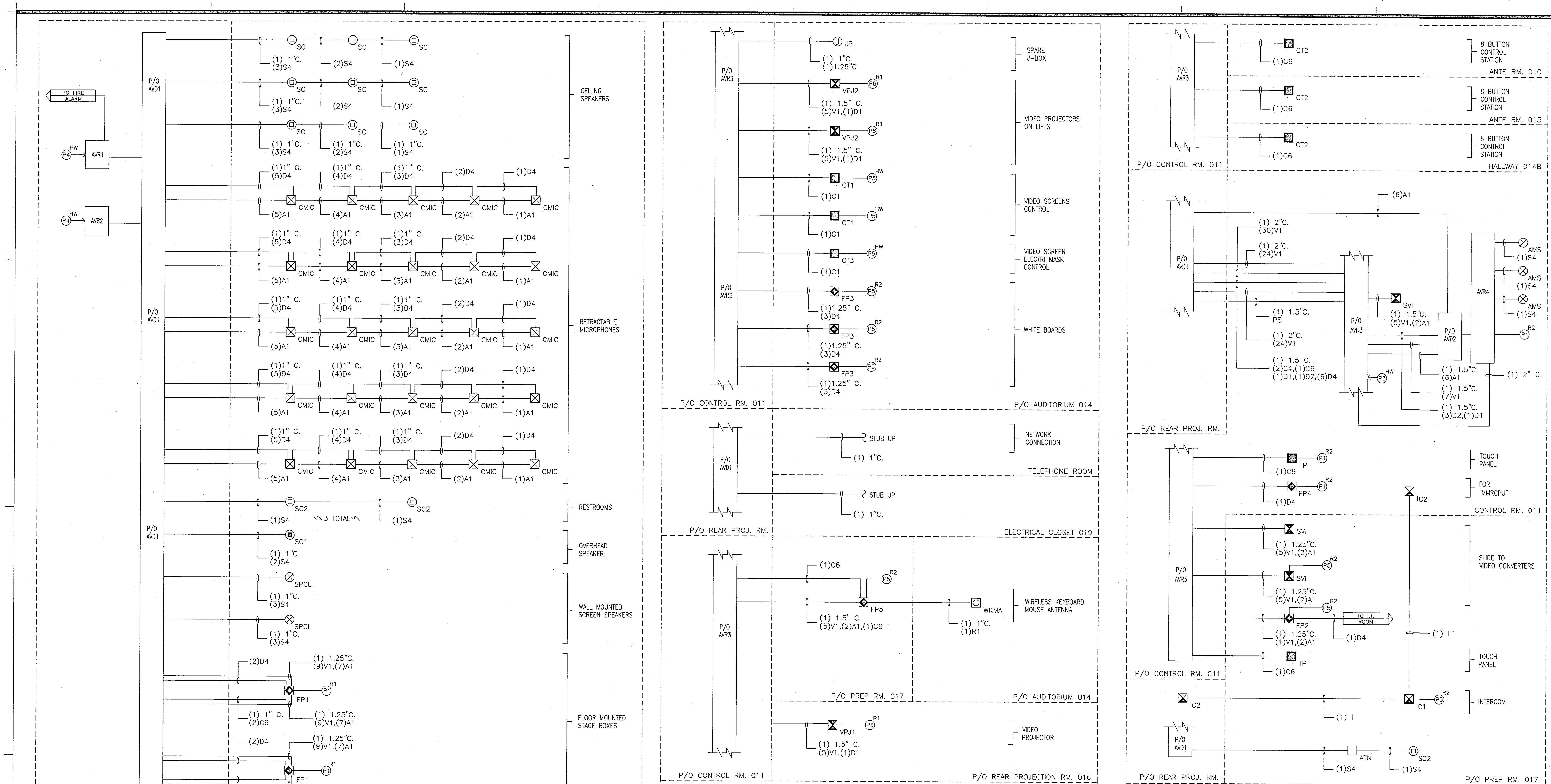
Drawing Title
AV FACILITY
CEILING PLAN

Scale 3/16" = 1'-0"

Project Number 3193000

Baseline Date 11MAY01

Drawing Number AV201

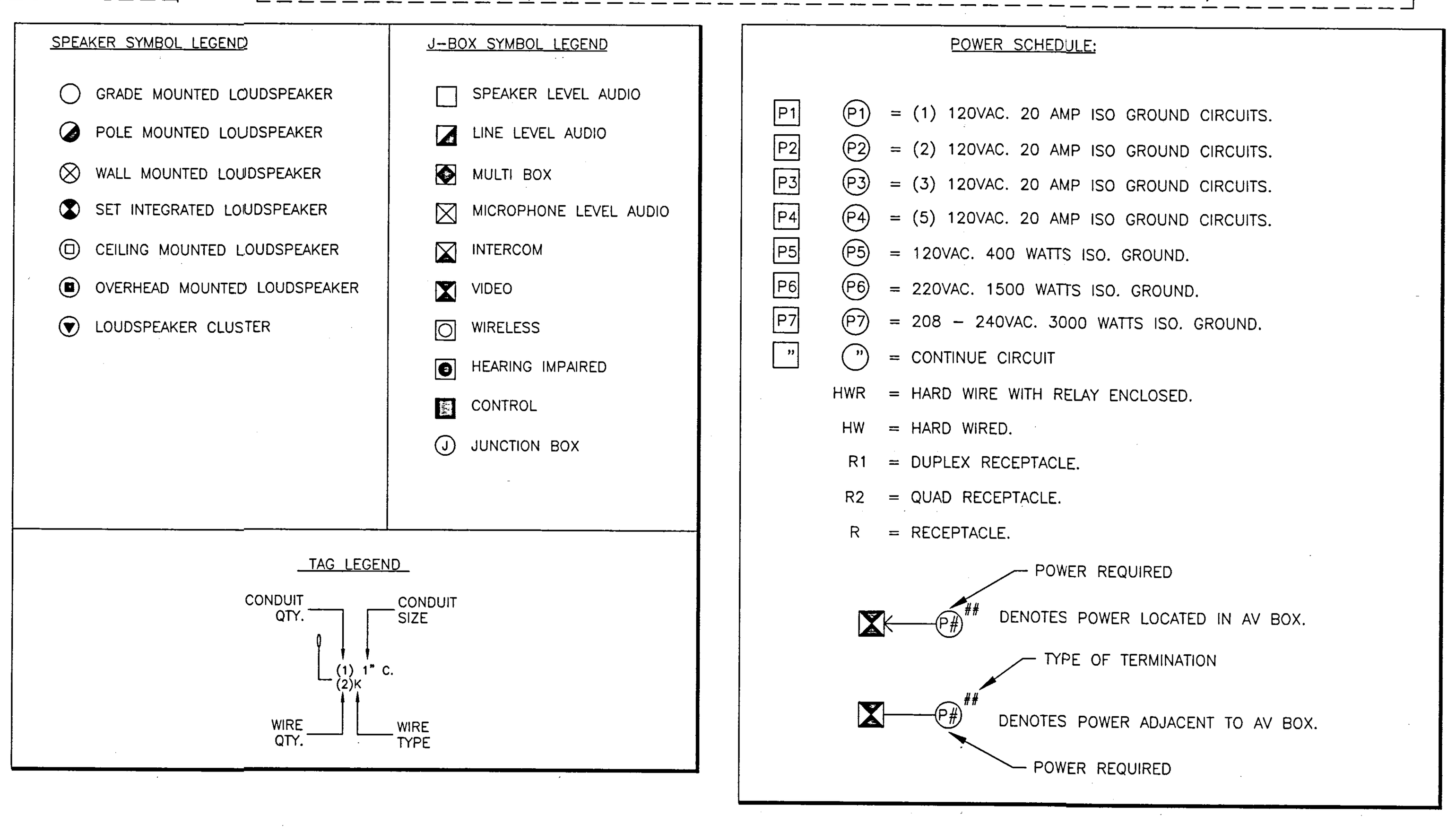


NOTE:

- THE WIRE SHOWN HERE IS FOR BID PURPOSE ONLY. AV CONTRACTOR TO CREATE HIS OWN WIRE RUN SCHEDULE & RISER DIAGRAM.
- ALL CONDUIT TO BE SUPPLIED WITH PULL STRING UON.
- ALL CONDUIT 3/4" UON.
- ALL WIRE DISTRIBUTION TO EQUIPMENT RACK TO BE PLENUM RATED.
- DASHED LINE = PORTABLE CABLE SUPPLIED BY AV CONTRACTOR.
- ALL ELECTRICAL CIRCUITS SHOWN IN THIS PLAN SET ARE TO ORIGINATE FROM A DEDICATED AV LOAD CENTER WITH ISOLATION GROUND.
- USE PLENUM RATED WIRE WHERE REQUIRED BY CODE.
- P/O = PART OF.

COOLING REQUIREMENTS:

- AVR1 = TBD. BTU. HR.
- AVR2 = TBD. BTU. HR.
- AVR3 = TBD. BTU. HR.
- AVR4 = TBD. BTU. HR.



A/V CABLE TYPE LEGEND

GRP #	DESCRIPTION	O.D.	MANUF.	PART NO.	APPLICATION
A1	22 AWG, PVC JACKET, SHIELDED STRANDED TWISTED PAIR, CM RATED	0.135	BELDEN	9451	MIC/LINE
C1	2 PAIR, 22 GAGE, TINNED COPPER, PVC INSULATED, TWISTED PAIR.	0.244	BELDEN	9744	CONTROL
C4	9 PAIR, 22 GAGE, TINNED COPPER, PVC INSULATED, TWISTED PAIR.	0.429	BELDEN	9752	CONTROL
C5	12 PAIR, 22 GAGE, TINNED COPPER, PVC INSULATED, TWISTED PAIR.	0.425	BELDEN	9747	CONTROL
C6	1 PAIR, 24 AWG, 2 COND. 18 AWG, PVC JACKET , CL2 RATED	0.250	LIBERTY	22/18-1PSH/2C	CONTROL AMX AXLINK
D1	24 GAGE, TINNED COPPER, PVC JACKET SHIELDED TWISTED 2 PAIR, CM RATED	0.270	BELDEN	8102	RS232 - RS422
D2	24 GAGE, TINNED COPPER, PVC JACKET SHIELDED TWISTED 4 PAIR, CM RATED	0.302	BELDEN	8104	RS232 - RS422
D4	4 PAIR, 24 GAGE, PVC JACKET TWISTED PAIR, CM RATED	0.214	BELDEN	1583A	CAT 5
I	20 AWG, PVC JACKET, SHIELDED STRANDED TWISTED PAIR, CM RATED	0.196	BELDEN	8762	INTERCOM UNDER 1000 FT
	18 AWG, PVC JACKET, SHIELDED STRANDED TWISTED PAIR, CM RATED	0.222	BELDEN	8760	INTERCOM OVER 1000 FT
R1	RG-8/U, 50 OHM, DUOBOND II +90% TINNED COPPER BRAID, PVC JACKET	0.286	BELDEN	9913	50 OHM TRANSMISSION
S4	12 AWG, STRANDED, TWISTED PAIR	0.270	BELDEN	1860A	SPEAKER
T1	2 PAIR, 22 AWG, SOLID, TWISSTED PAIR, PVC JACKET, CMG RATED	0.199	BELDEN	9562	TELEPHONE
V1	RG-59 75 OHM PRECISION VIDEO CABLE ANALOG & DIGITAL, CMR RATED	0.235	BELDEN	1505A	SDI VIDEO TRAY

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SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
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CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

Key Plan

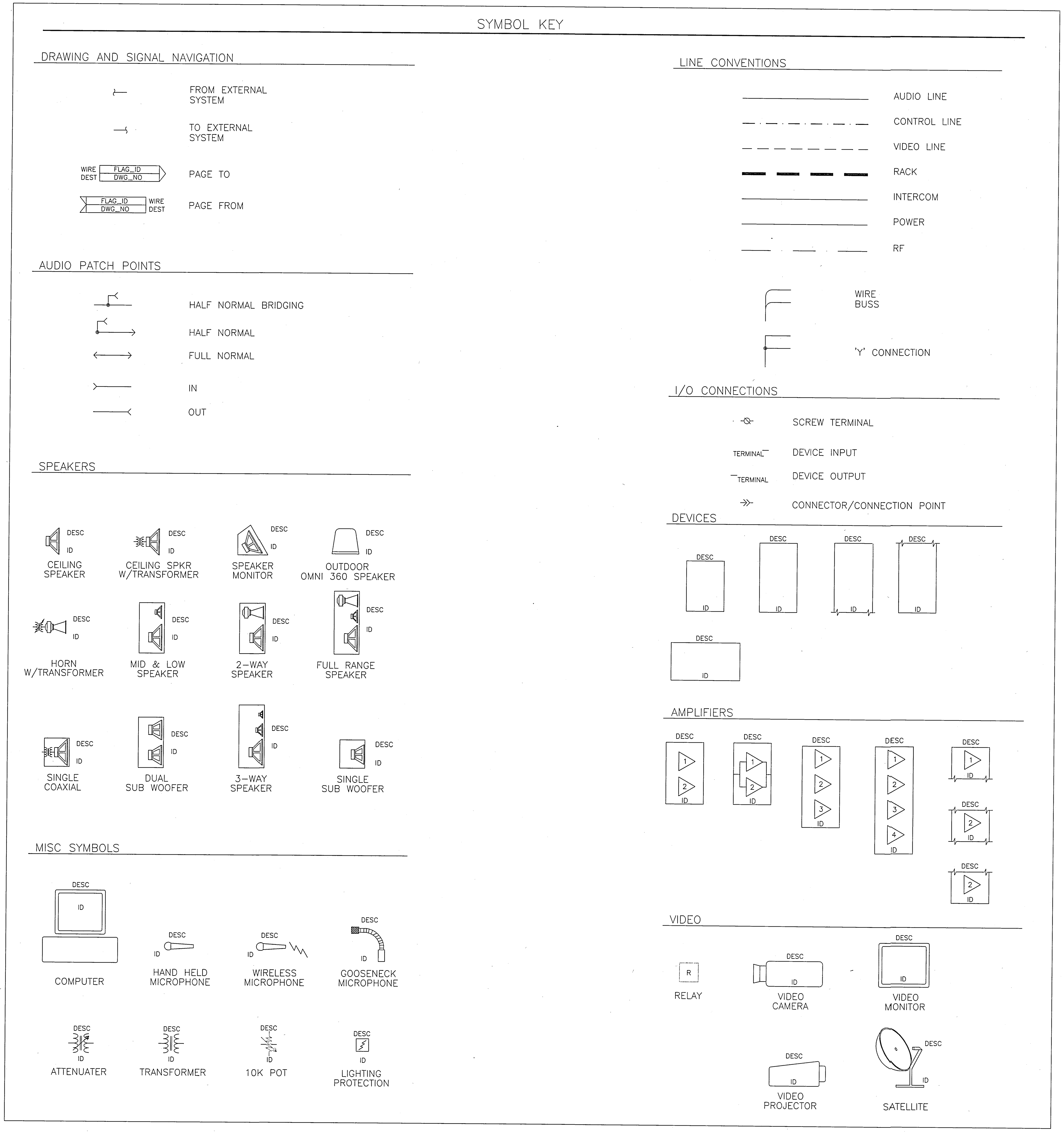
Drawing Title
AV RISER DIAGRAM

NONE
Scale

3193000
Project Number

11MAY01
Baseline Date

AV251
Drawing Number



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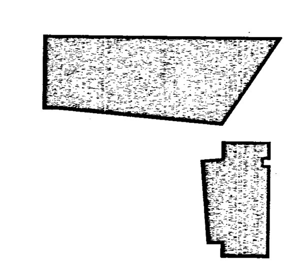
CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

Key Plan



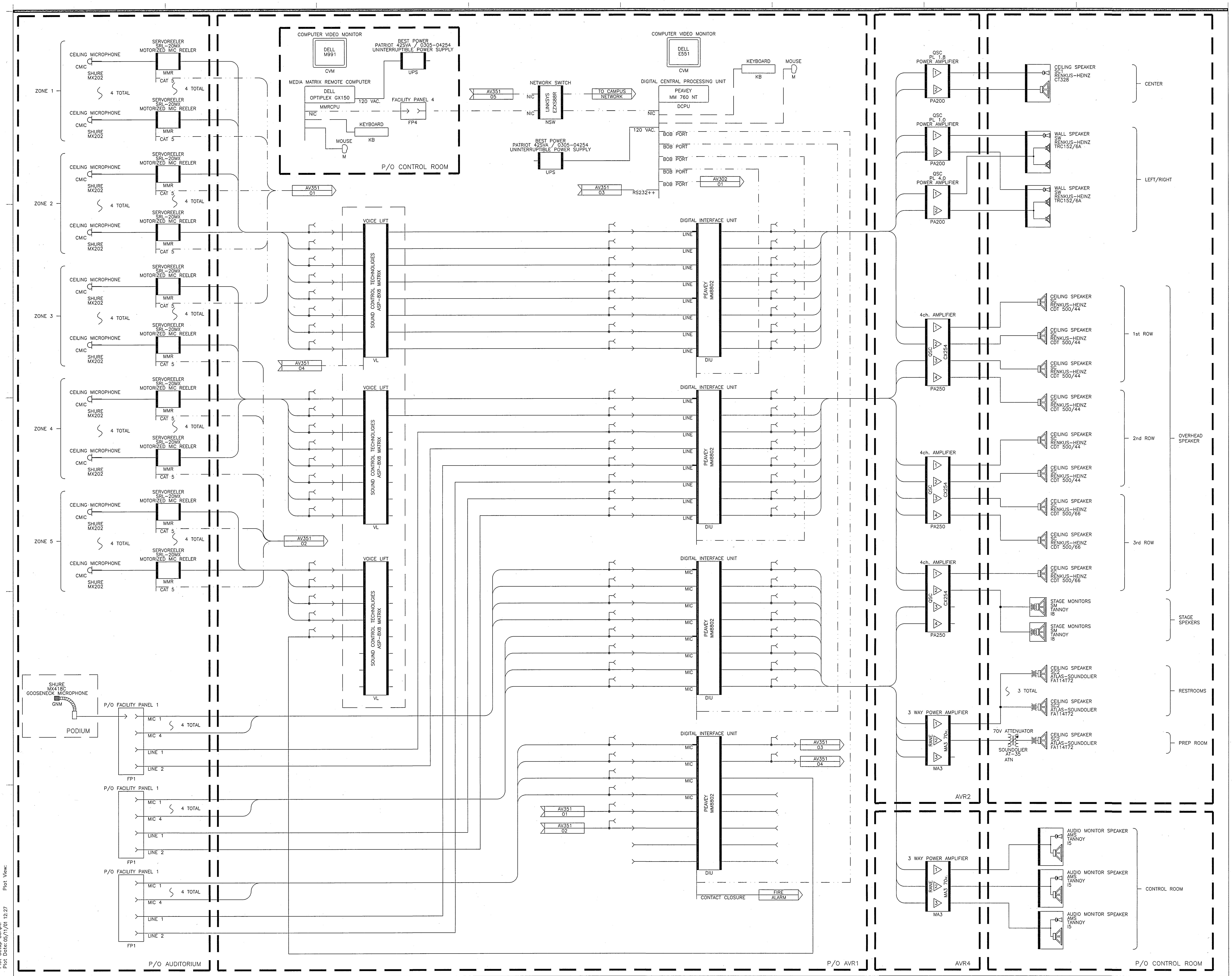
Drawing Title
AV SINGLE LINE SYMBOL KEY

Scale: NTS

Project Number: 3193000

Baseline Date: 11MAY01

Drawing Number: AV300



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50% CONSTR. DOC. SUBMITTAL		15JULY00
CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

Key Plan

Drawing Title
AUDIO SINGLE LINE DIAGRAM

NTS
Scale

3193000
Project Number

11MAY01
Baseline Date

AV301
Drawing Number

Plot Sheet Filename: G:\Smith group (SMP-SHG)\uc riverside\surge building\AV\AV301.dwg
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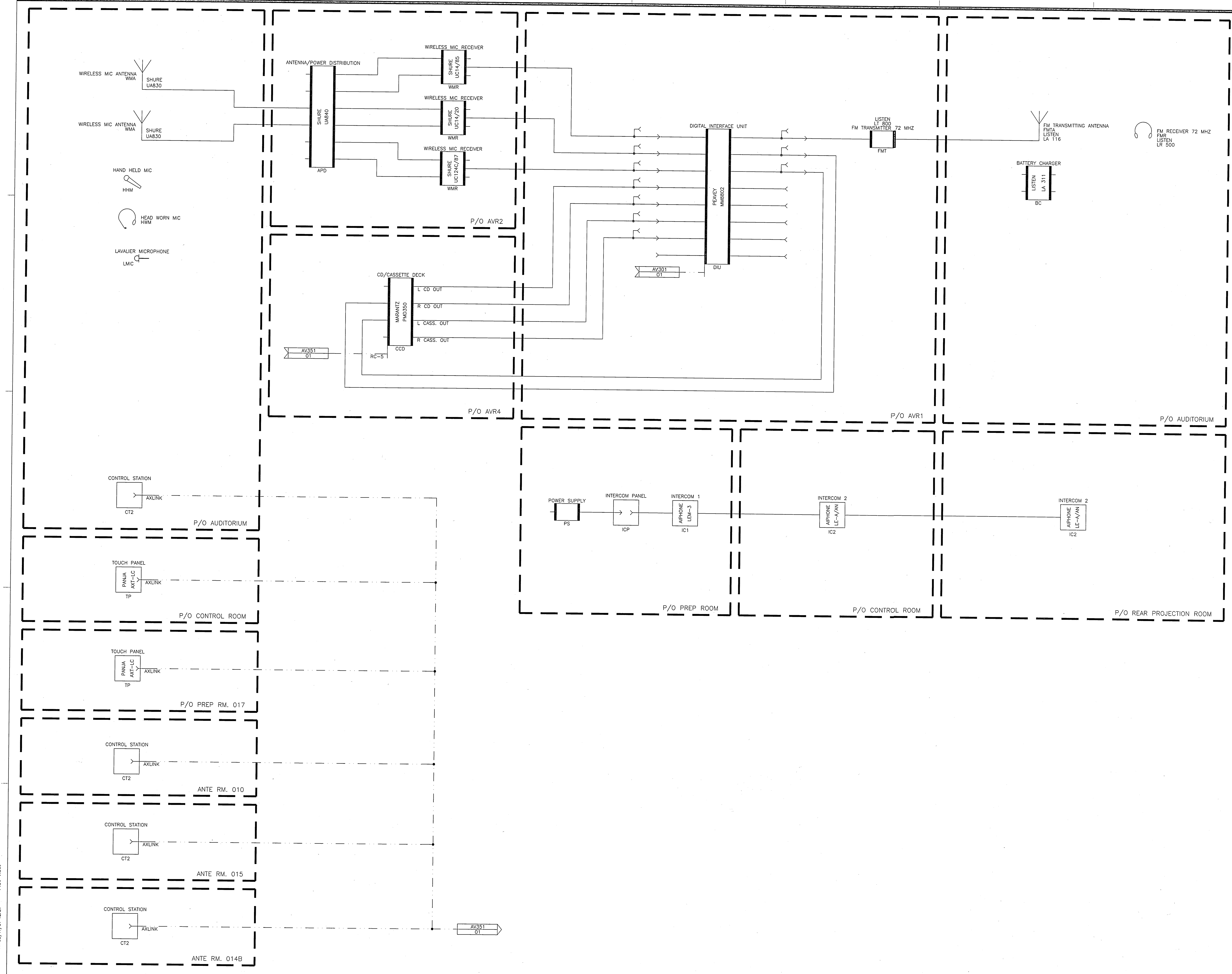
Plot Setup Script:
Plot Date: 05/11/01 12:27 Plot View:



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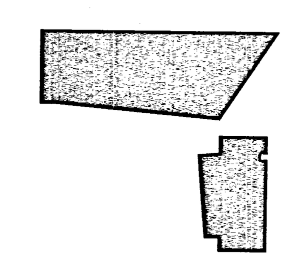
50% CONSTR. DOC. SUBMITTAL		15JULY00
CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

Key Plan



Drawing Title
AUDIO SINGLE LINE DIAGRAM

NTS
Scale

3193000
Project Number

11MAY01
Baseline Date

AV302
Drawing Number

Plot Sheet Filename: G:\Smith group (SMP-SHG)\uc riverside\surge building\AV\AV302.dwg
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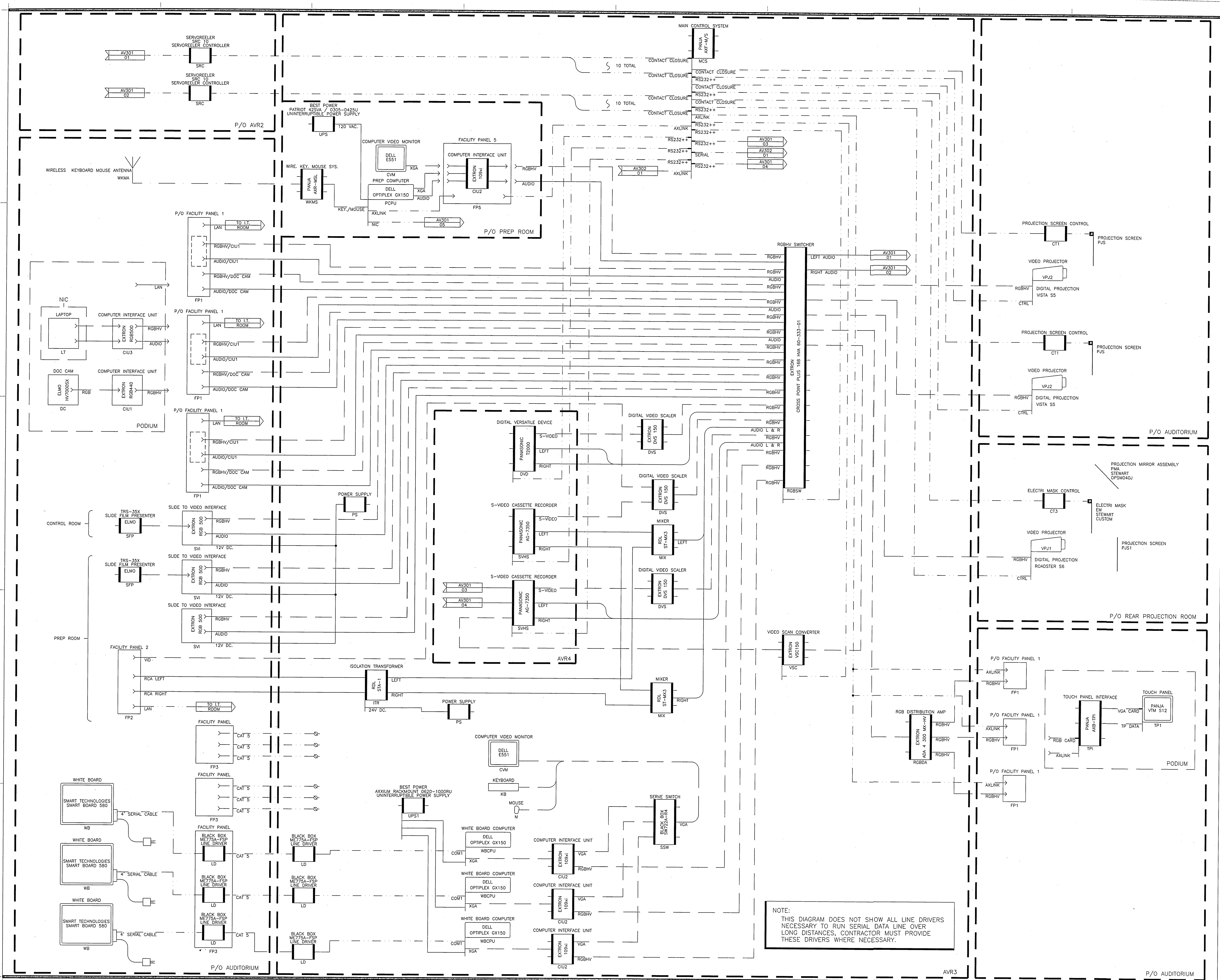
Plot Setup Script:
Plot Date: 05/11/01 12:27 Plot View:



NOTE:
THIS DIAGRAM DOES NOT SHOW ALL LINE DRIVERS NECESSARY TO RUN SERIAL DATA LINE OVER LONG DISTANCES. CONTRACTOR MUST PROVIDE THESE DRIVERS WHERE NECESSARY.

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Fourth Floor
Santa Monica, California 90404
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90% CONST. DOC. SUBMITTAL		12SEP00
50% CONSTR. DOC. SUBMITTAL		15JULY00
CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

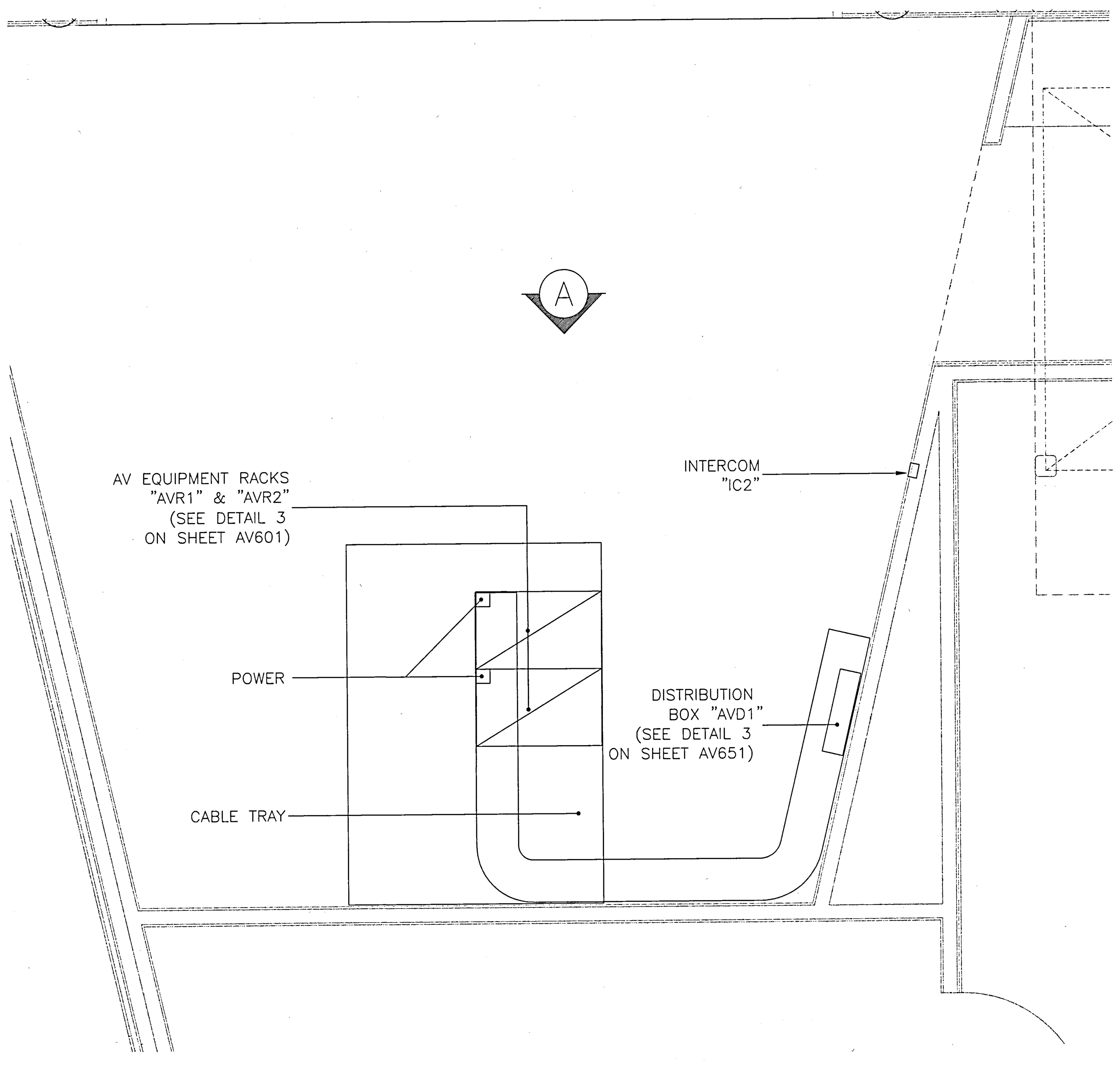
Seals and Signatures

Key Plan

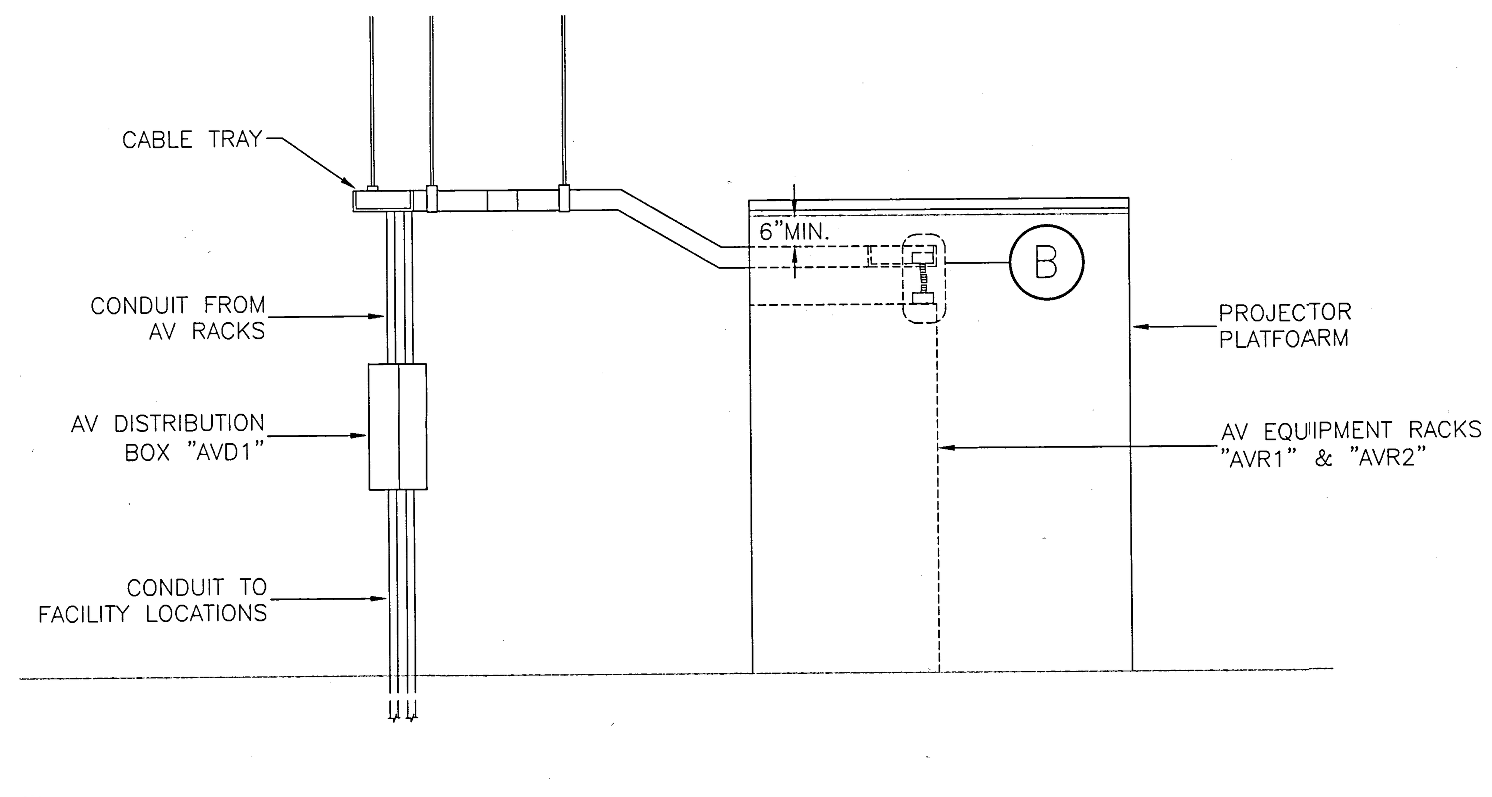
Drawing Title
VIDEO SINGLE LINE DIAGRAM

NTS
Scale
3193000
Project Number
11MAY01
Baseline Date
AV351
Drawing Number

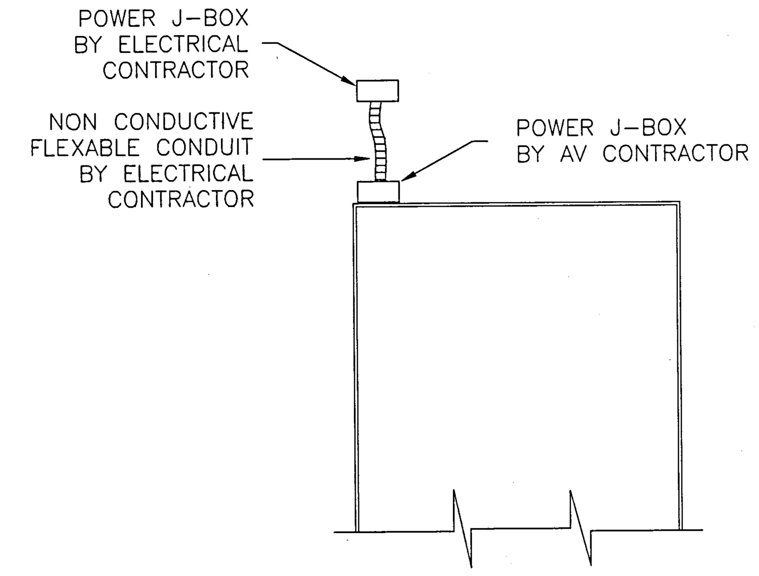
Plot Sheet Filename: c:\smith group (SMP-SHG)\uc riverside\surge building\AV\AV351.dwg
XREF Filename(s): UCR_blk X-AUDIO-ONELINE
Plot Setup Script: Plot View:
Plot Date: 05/11/01 12:27



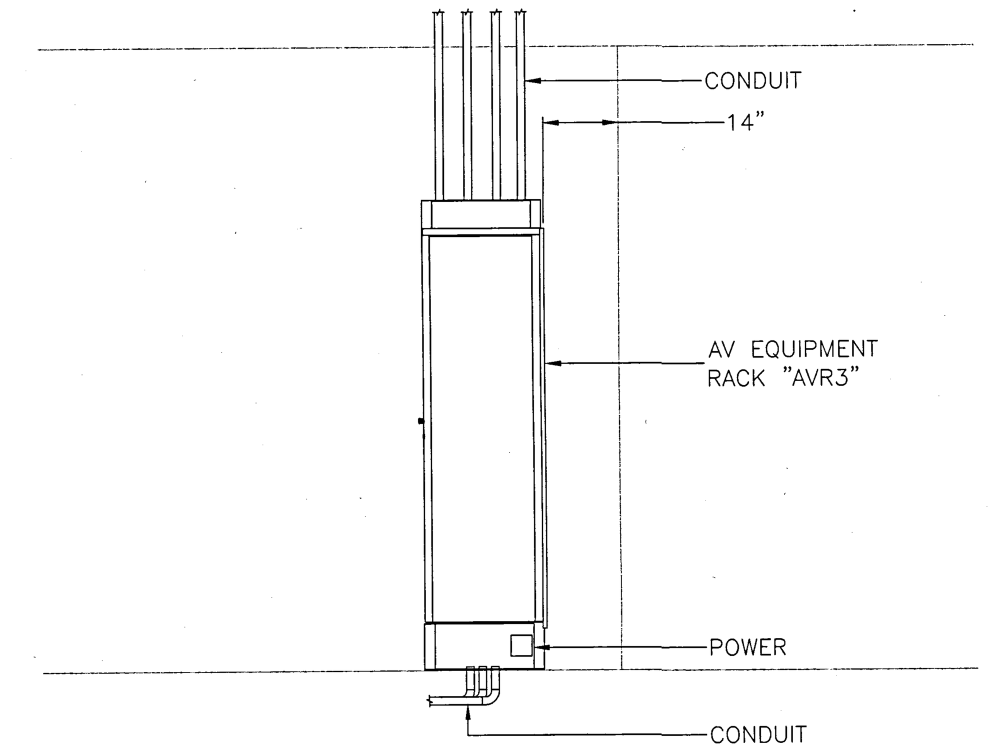
1 AV ROOM LAYOUT 1/2" = 1'-0"



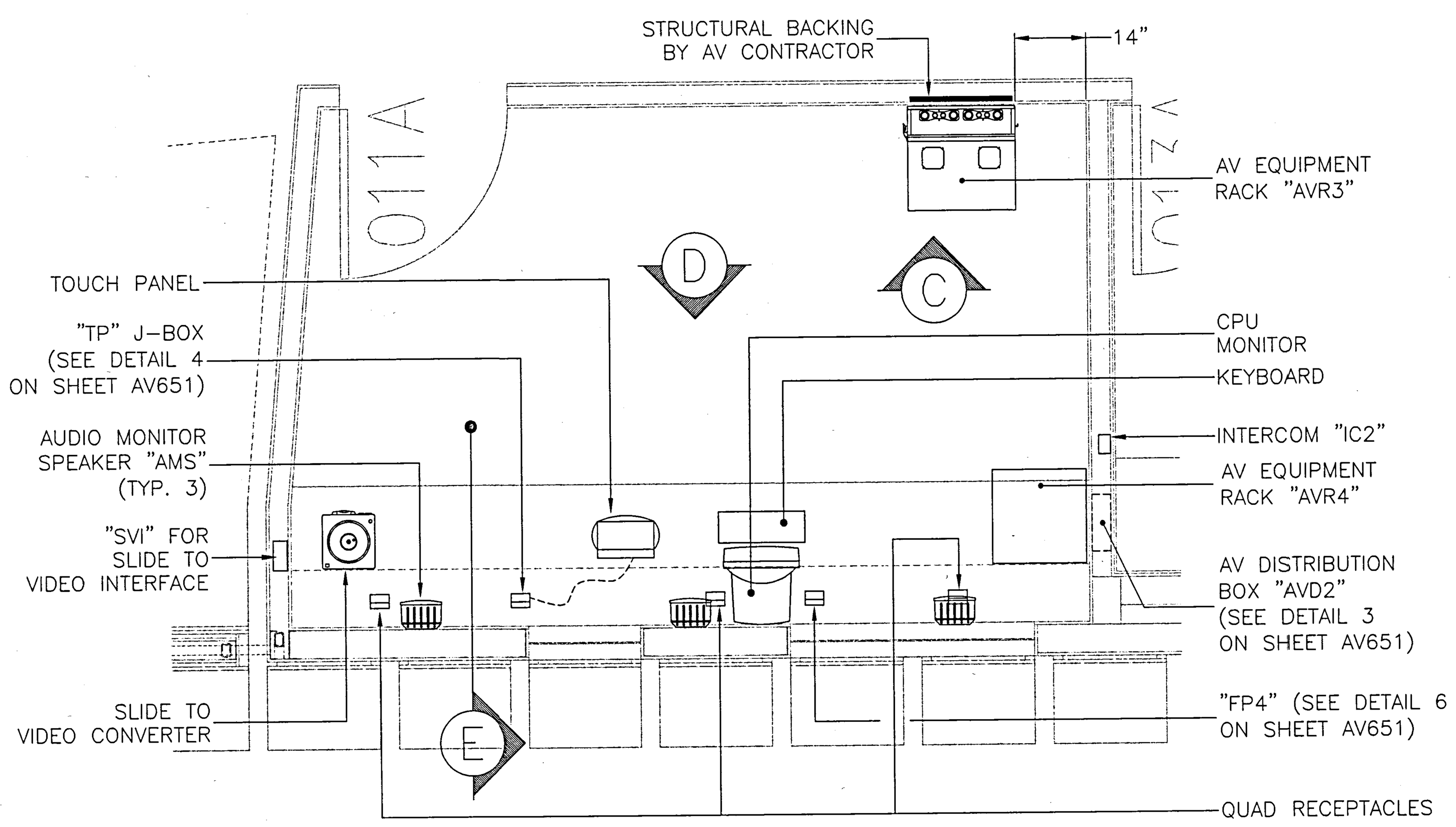
A AV ROOM ELEVATION 1/2" = 1'-0"



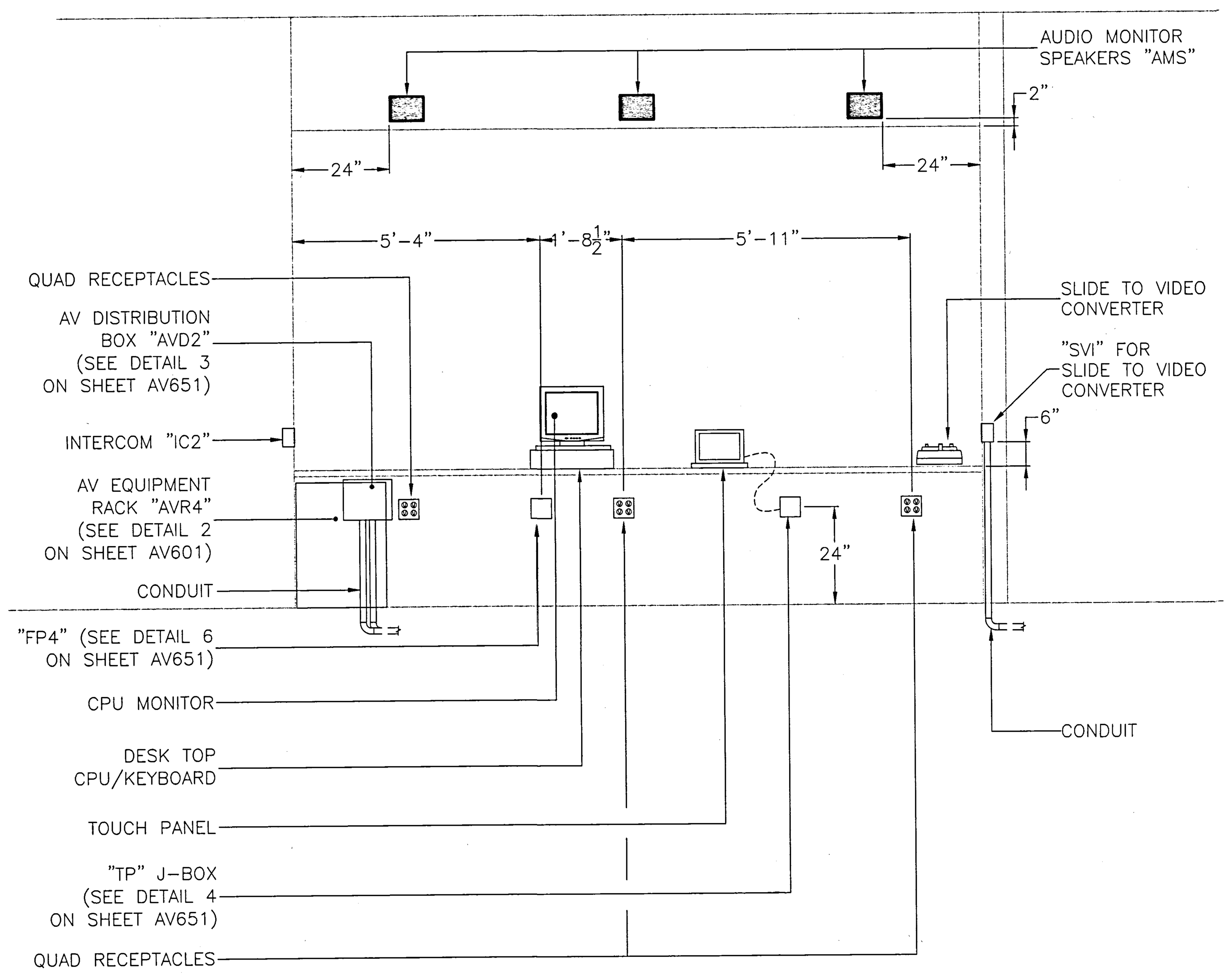
B CLOSE UP OF POWER J-BOX 1/2" = 1'-0"



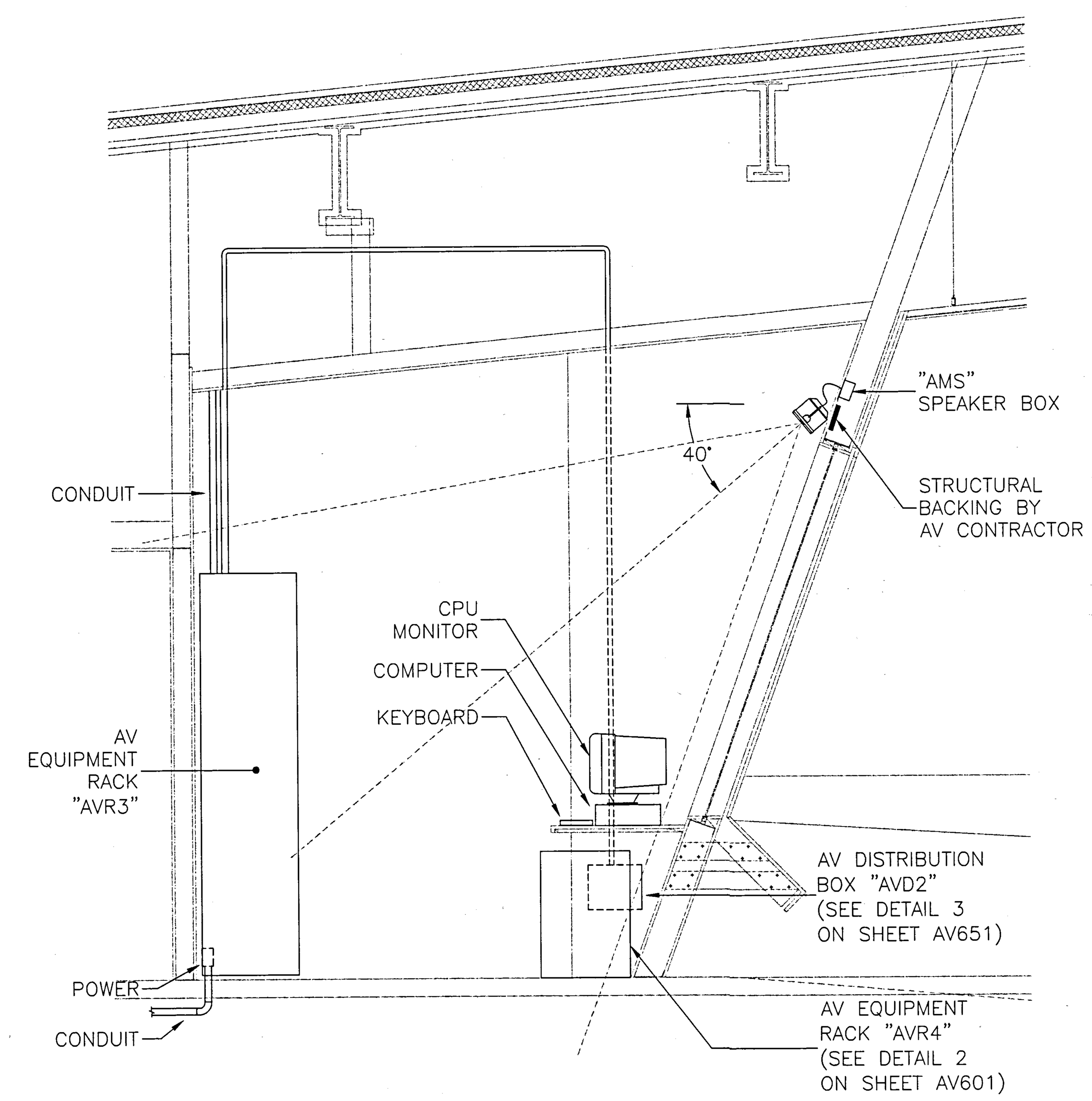
C AV CONTROL ROOM "AVR3" ELEVATION 1/2" = 1'-0"



2 AV CONTROL ROOM LAYOUT 1/2" = 1'-0"



D AV CONTROL ROOM ELEVATION 1/2" = 1'-0"



E AV CONTROL ROOM SPEAKER AIM ANGLE 1/2" = 1'-0"

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SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
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50% CONSTR. DOC. SUBMITTAL		15JULY00
CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

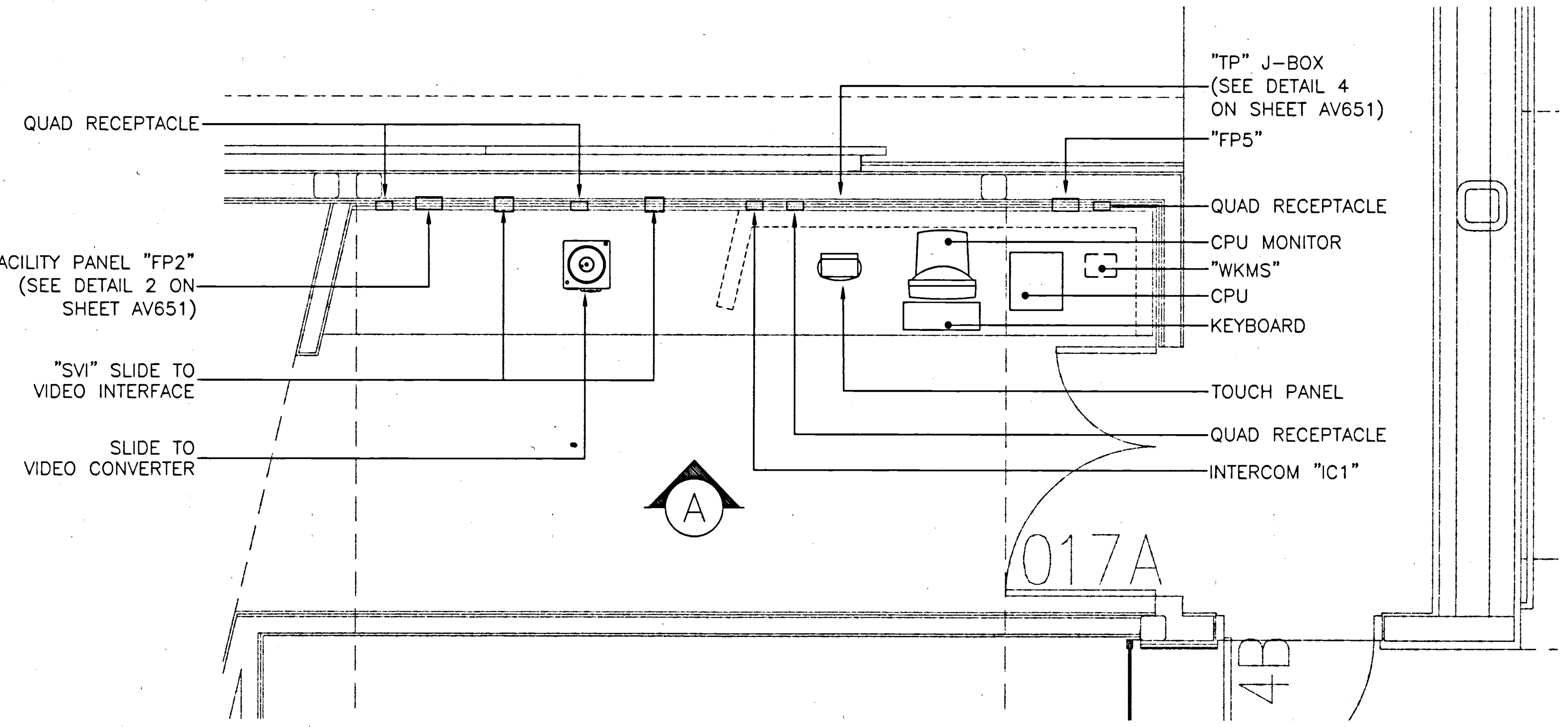
Seals and Signatures

Key Plan

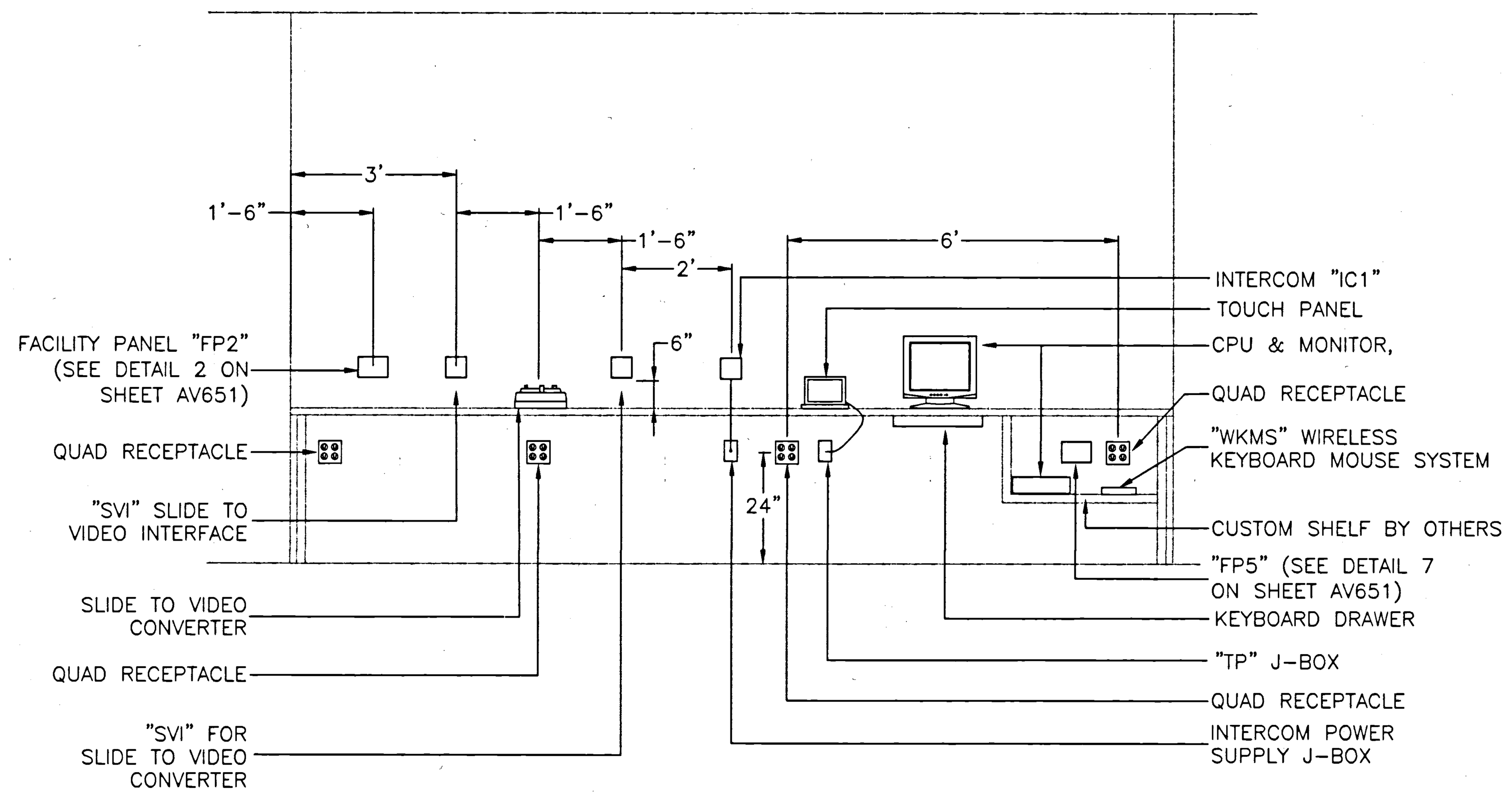
Drawing Title
AV ROOM & CONTROL ROOM LAYOUTS

AS NOTED
Scale
31930
Project Number
11MAY01
Baseline Date
AV401
Drawing Number

Plot Sheet Filename: G:\Smith group (SMP-SHO)\uc riverside\surge building\AV\AV401.dwg
XREF Filename(s): AV101 uco-fp1A x-power UCR_Tblk
Plot Setup Script: Plot View:
Plot Date: 05/14/01 11:03



1 PREP ROOM EQUIPMENT LAYOUT PLAN
1/2" = 1'-0"



A PREP ROOM EQUIPMENT LAYOUT ELEVATION
1/2" = 1'-0"

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SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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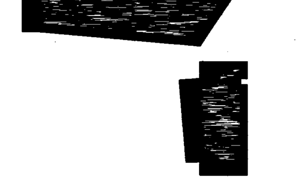
50% CONSTR. DOC. SUBMITTAL		15JULY00
CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

Key Plan



Drawing Title
PREP ROOM LAYOUT

Scale: AS NOTED
Project Number: 3193000
Baseline Date: 11MAY01
Drawing Number: AV402

Plot Sheet Filename: G:\Smith group (SMP-SHG)\uc riverside\surge building\AV\AV402.dwg
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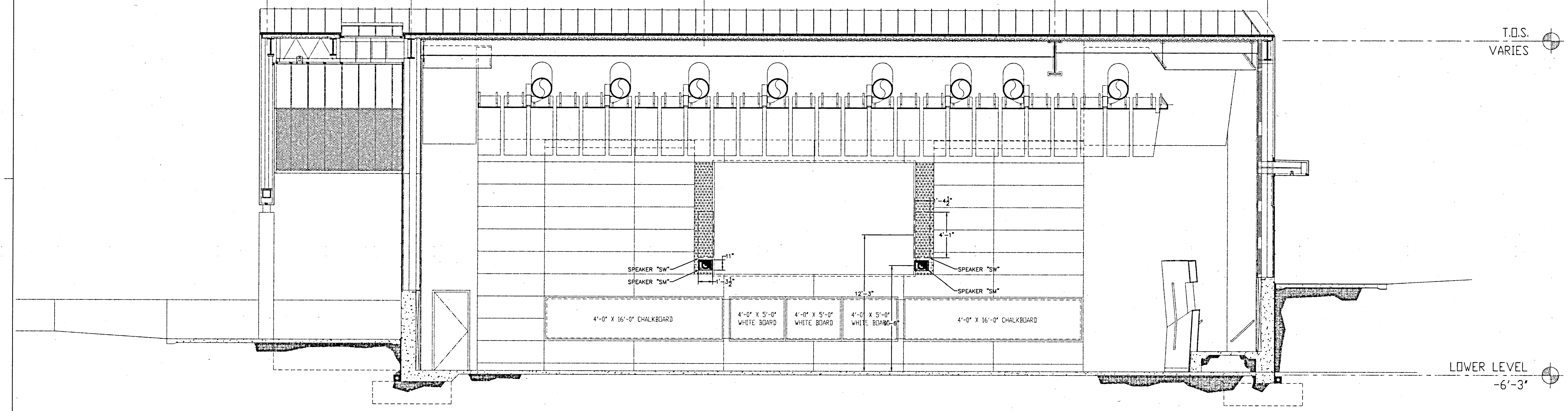
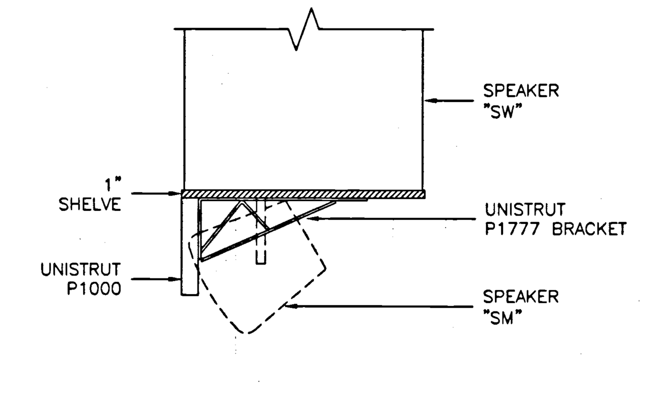
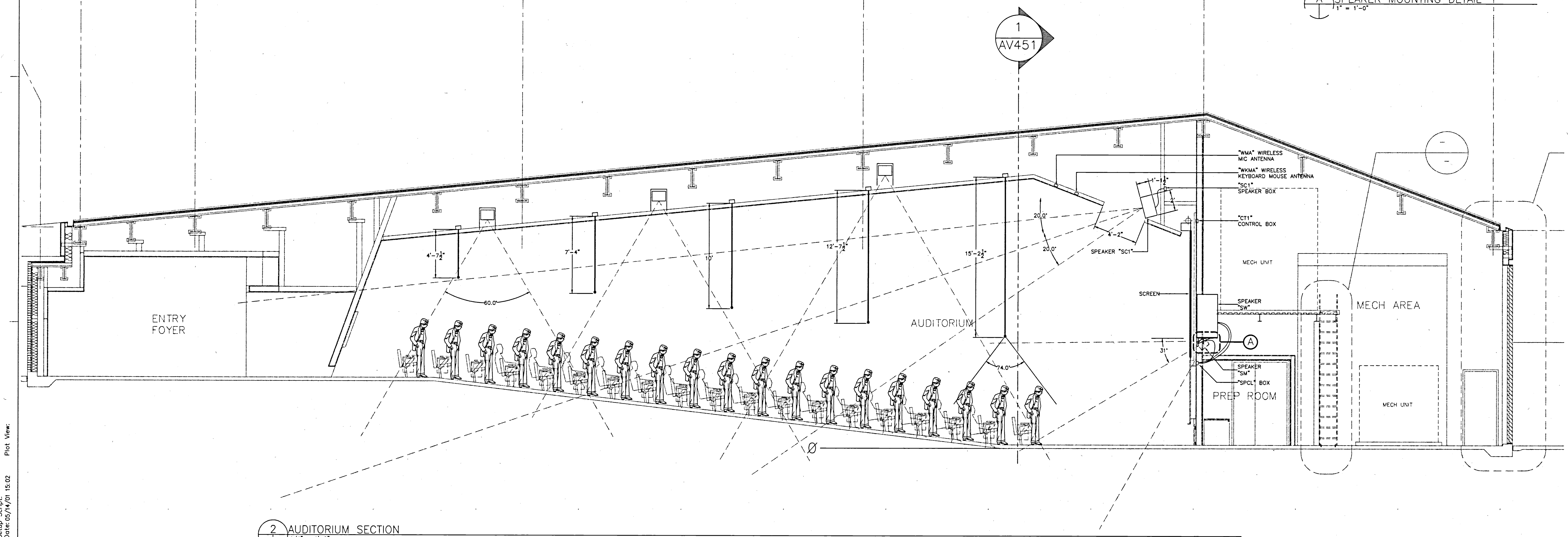
Plot Setup Script:
Plot Date: 05/14/01 11:53 Plot View:



1 FRONT SCREEN ELEVATION
1/4" = 1'-0"



A SPEAKER MOUNTING DETAIL
1" = 1'-0"



2 AUDITORIUM SECTION
1/4" = 1'-0"

Plot Sheet Filename: G:\Smith group (SMP-SHG)\uc riverside\surge building\AV\AV451.dwg
XREF Filename(s): X-SECTION X-FRONELEV1 SCREEN-SEC UCR_Tblk uca3se1
Plot Setup Script:
Plot Date: 05/14/01 15:02 Plot View:

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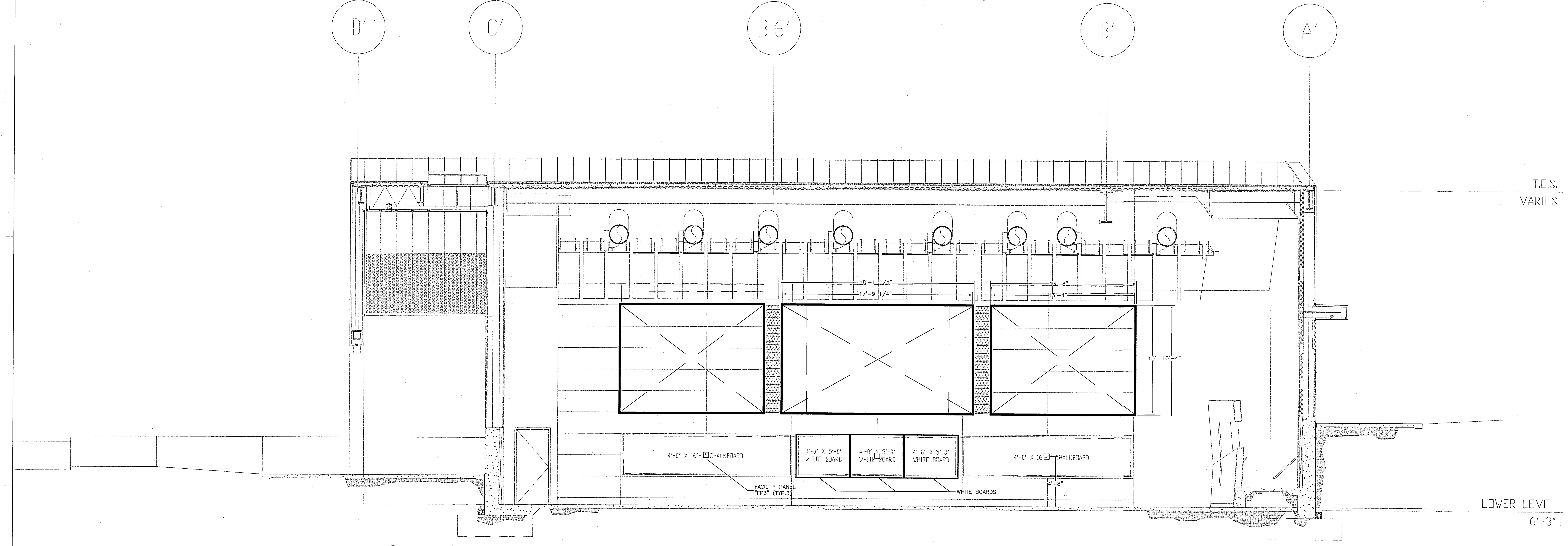
90% CONST. DOC. SUBMITTAL		12SEP00
50% CONSTR. DOC. SUBMITTAL		15JULY00
CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

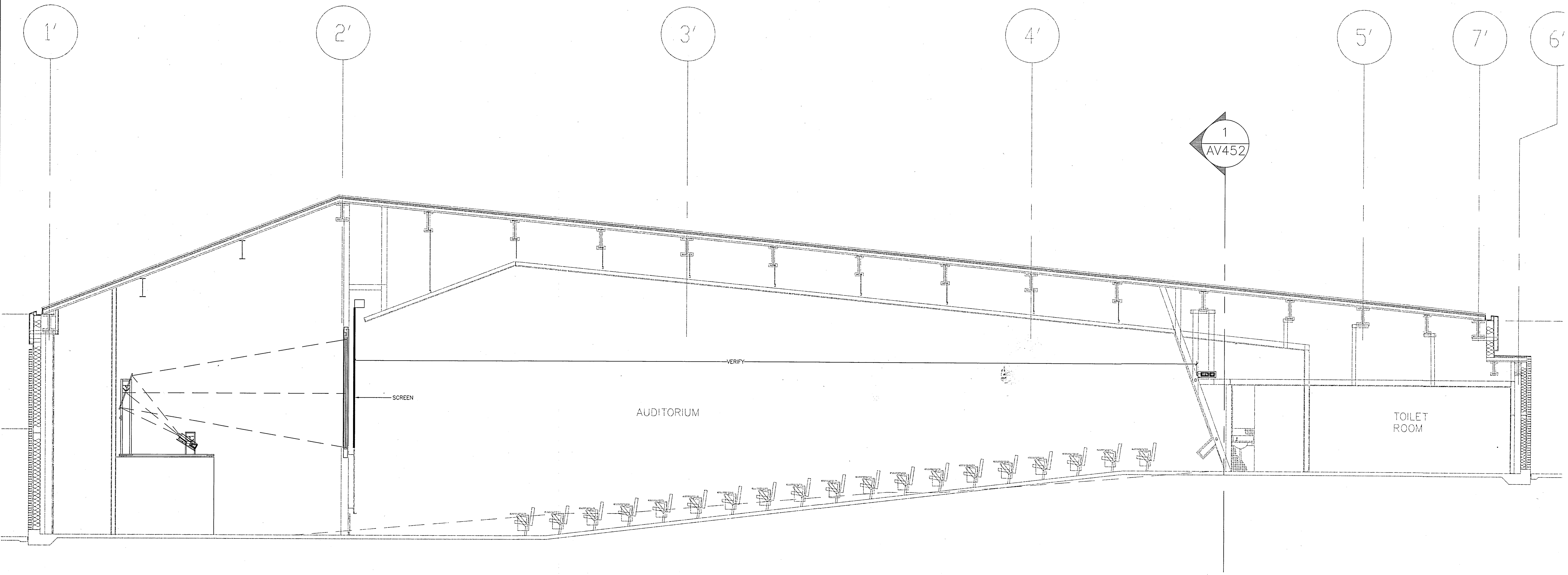
Key Plan

Drawing Title
AV SECTIONS

Scale: AS NOTED 1/4"=1'-0"
Project Number: 3193000
Baseline Date: 11MAY01
Drawing Number: AV451



1 SCREEN FRONT ELEVATION
1/4" = 1'-0"



2 SCREEN & PROJECTOR SECTION
1/4" = 1'-0"

Plot Sheet Filename: G:\Smith group (SMP-SHG)\uc riverside\surge building\AV\AV452.dwg
XREF Filename(s): X-SECTION TRAP-X-CLSTR X-FRONELEV1 SCREEN-SEC UCR_Tblk uca3set
Plot Setup Script: Plot View:
Plot Date: 05/11/01 13:13

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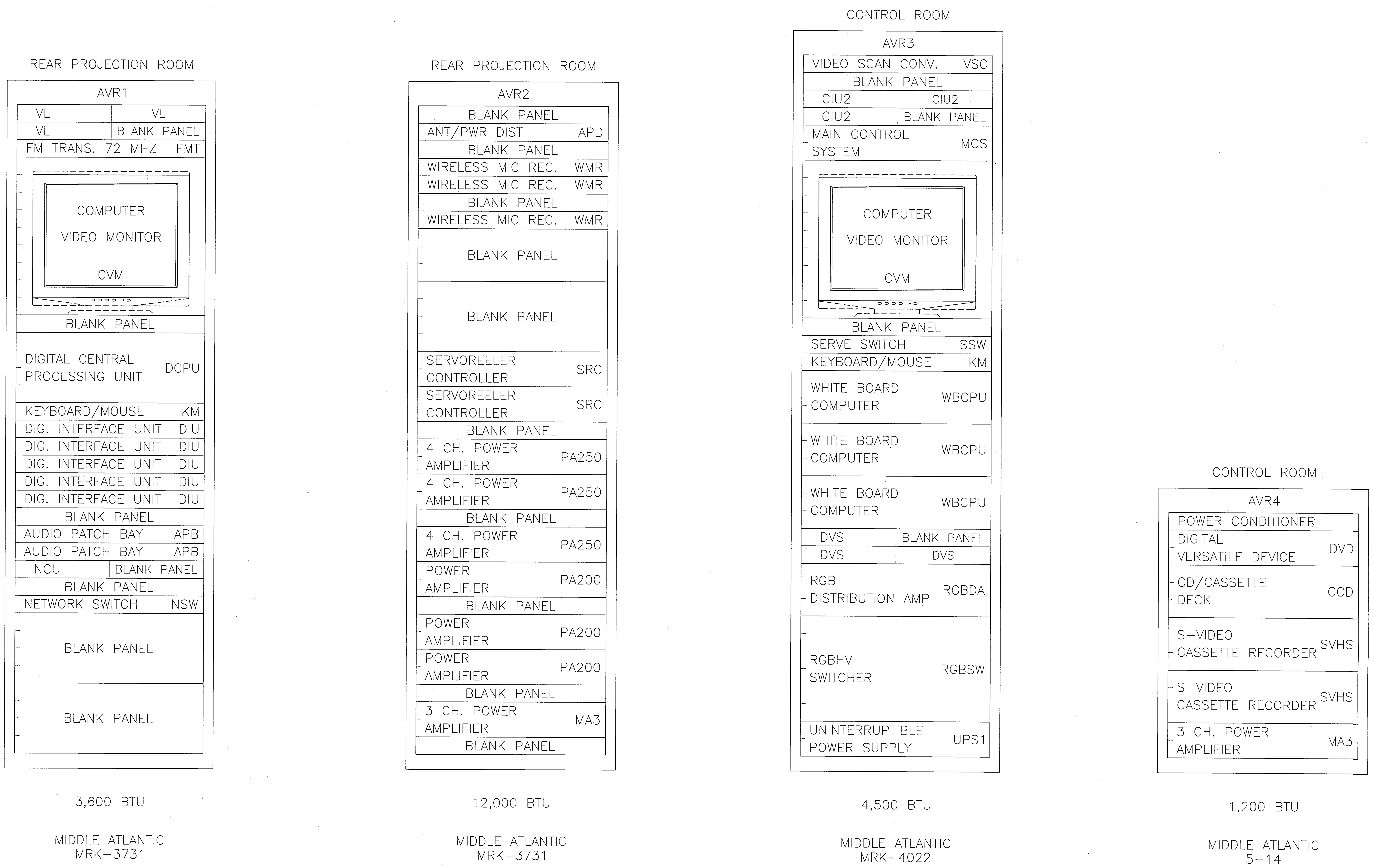
90% CONST. DOC. SUBMITTAL		12SEP00
50% CONSTR. DOC. SUBMITTAL		15JULY00
CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

Key Plan

Drawing Title
AV SECTIONS

Scale AS NOTED
1/4"=1'-0"
Project Number 3193000
Baseline Date 11MAY01
Drawing Number AV452



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XREF Filename(s): UCR_Tblk
Plot Setup Script:
Plot Date: 05/14/01 12:05 Plot View:

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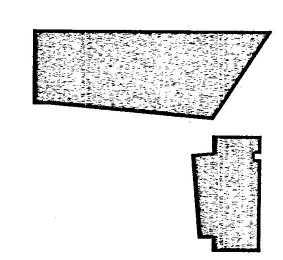
CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

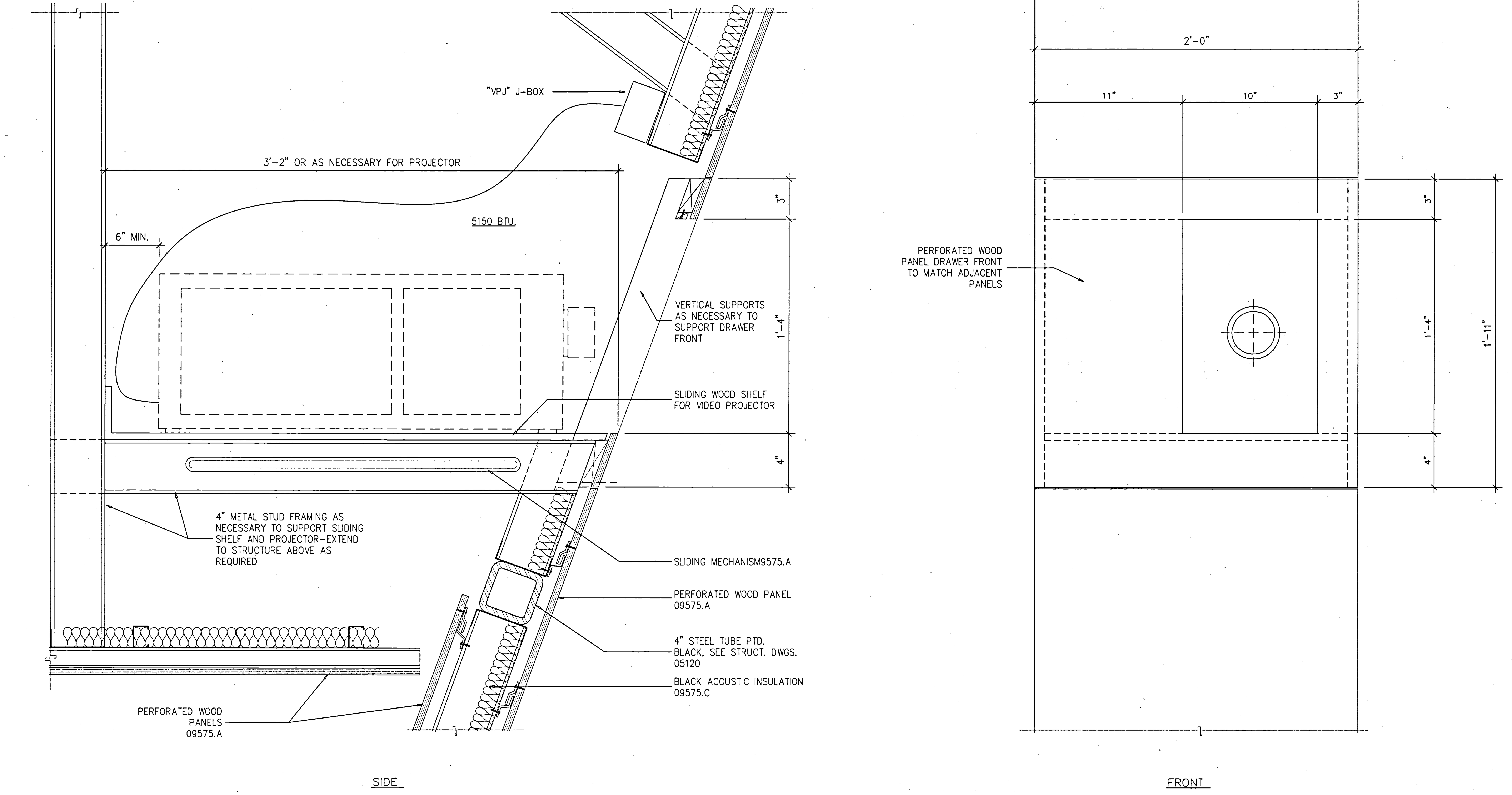
Seals and Signatures

Key Plan



Drawing Title
AV EQUIPMENT RACK ELEVATIONS

NONE
Scale
3193000
Project Number
11MAY01
Baseline Date
AV501
Drawing Number



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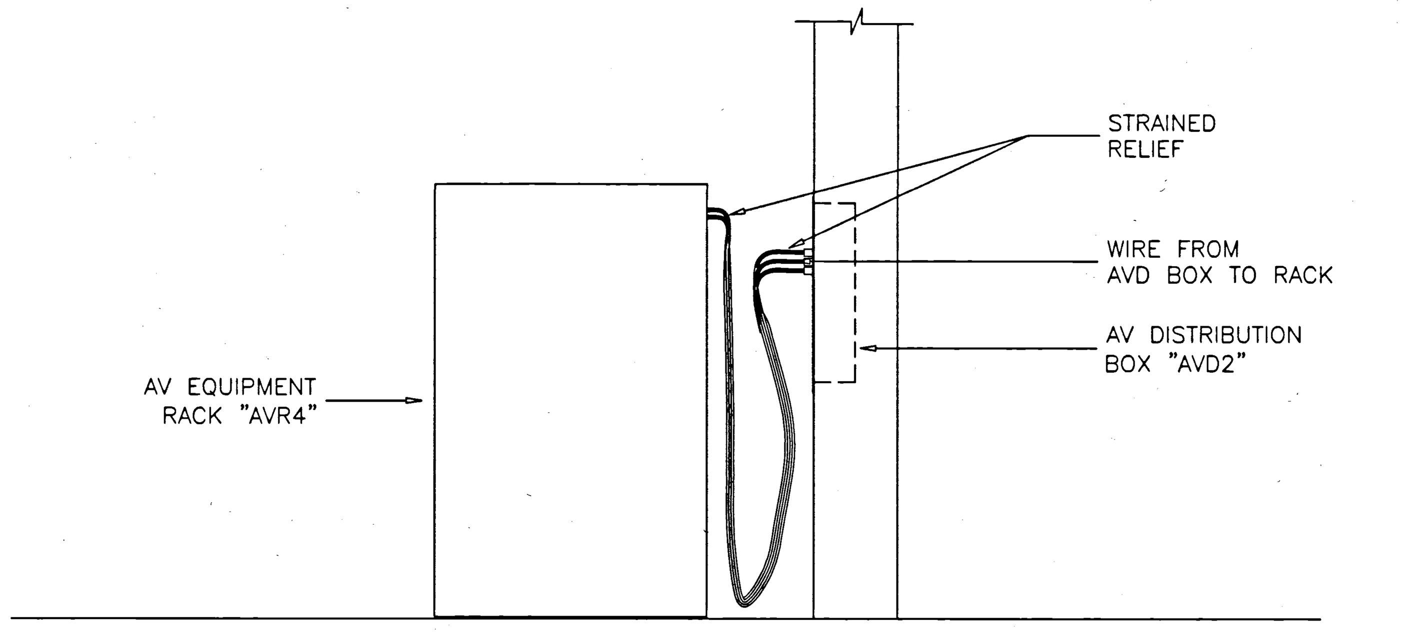
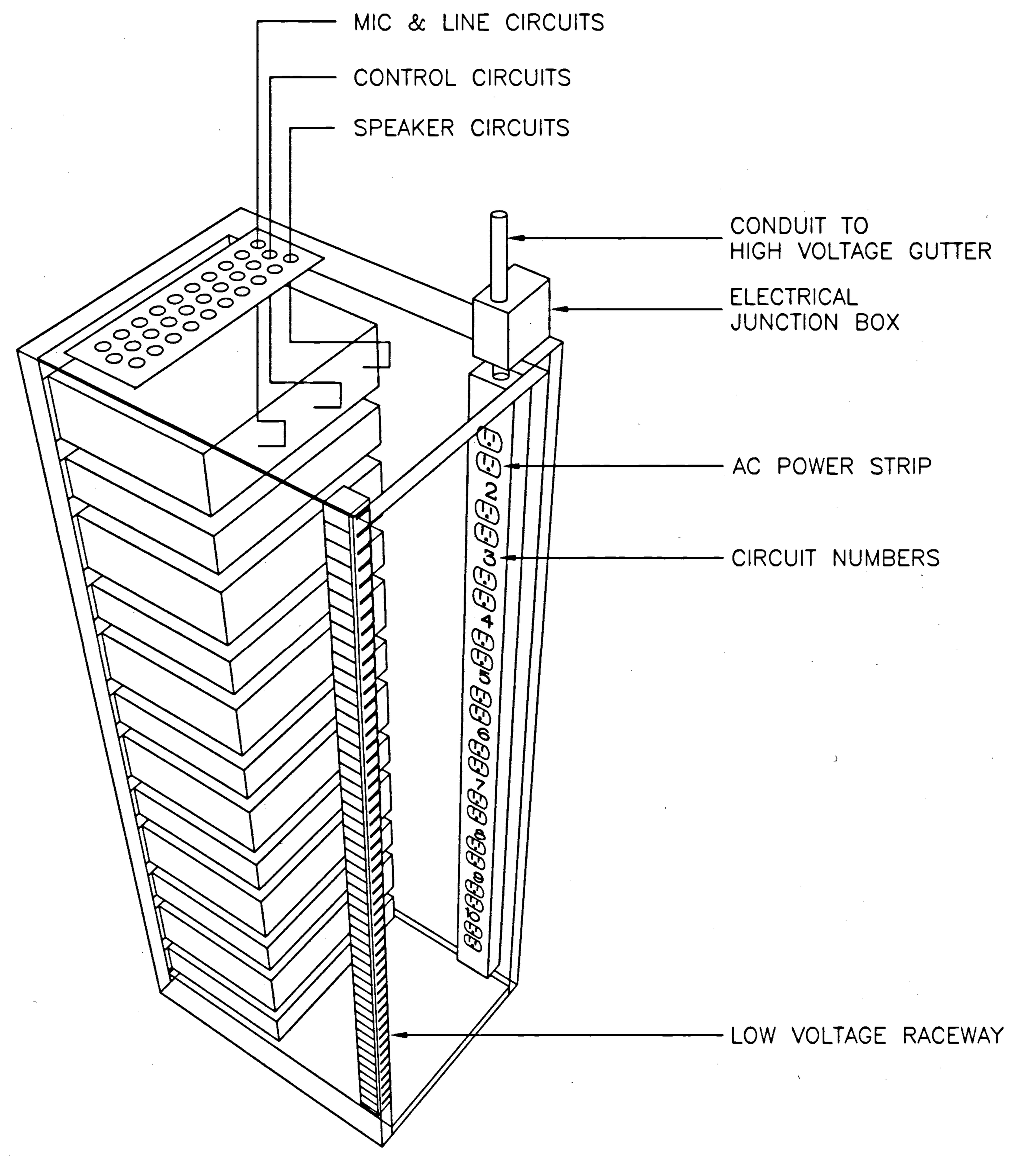


2 NTS TYPICAL UNDER COUNTER RACK CONNECTION



3 NTS AV EQUIPMENT RACK ISOMETRIC DETAIL

Plot Sheet Filename: G:\Smith group (SMP-SHG)\uc riverside\surge building\AV\AV601.dwg
XREF Filename(s): UCR_Tblk x-PROJ_SHELF
Plot Setup Script:
Plot Date: 05/11/01 12:32 Plot View:

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100% BID #2 CD SUBMITTAL		06OCT00
90% CONST. DOC. SUBMITTAL		12SEP00
50% CONSTR. DOC. SUBMITTAL		15JULY00
CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

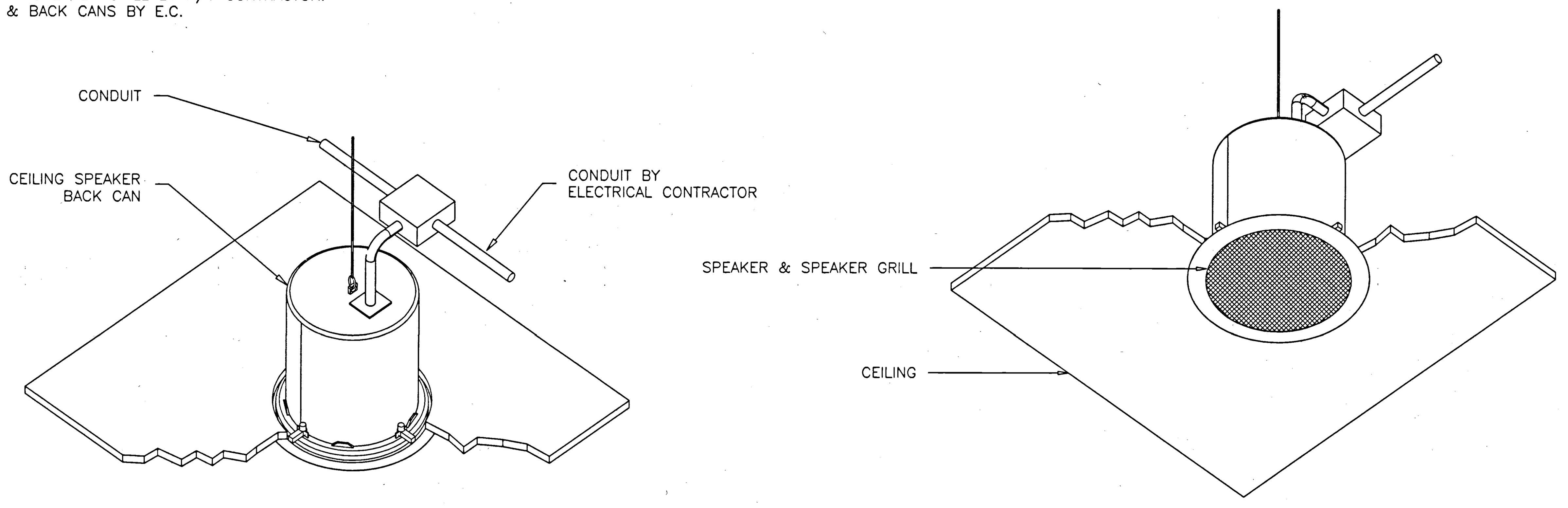
Seals and Signatures

Key Plan

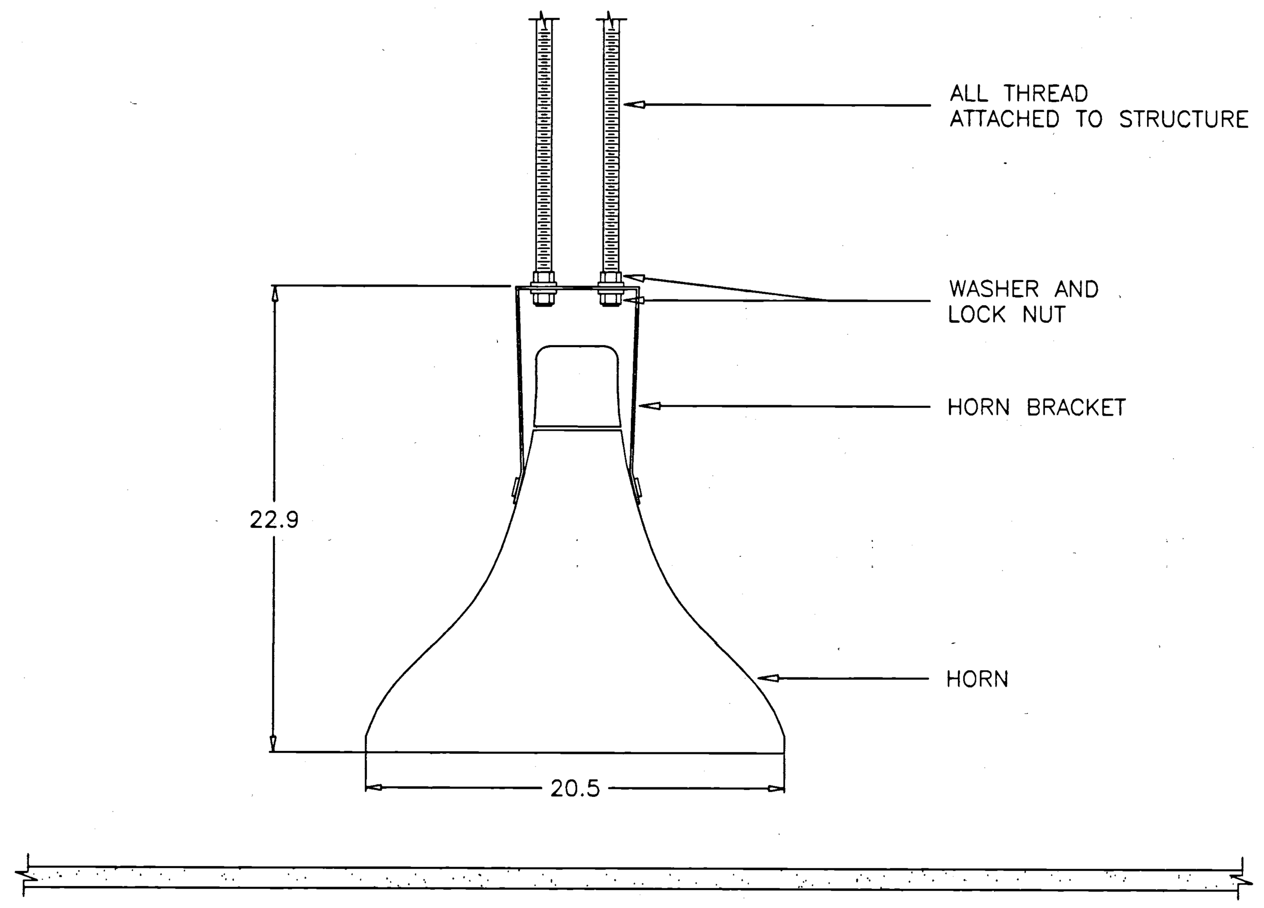
Drawing Title
AV MISCELLANEOUS DETAILS

AS NOTED
Scale
3193000
Project Number
11MAY01
Baseline Date
AV601
Drawing Number

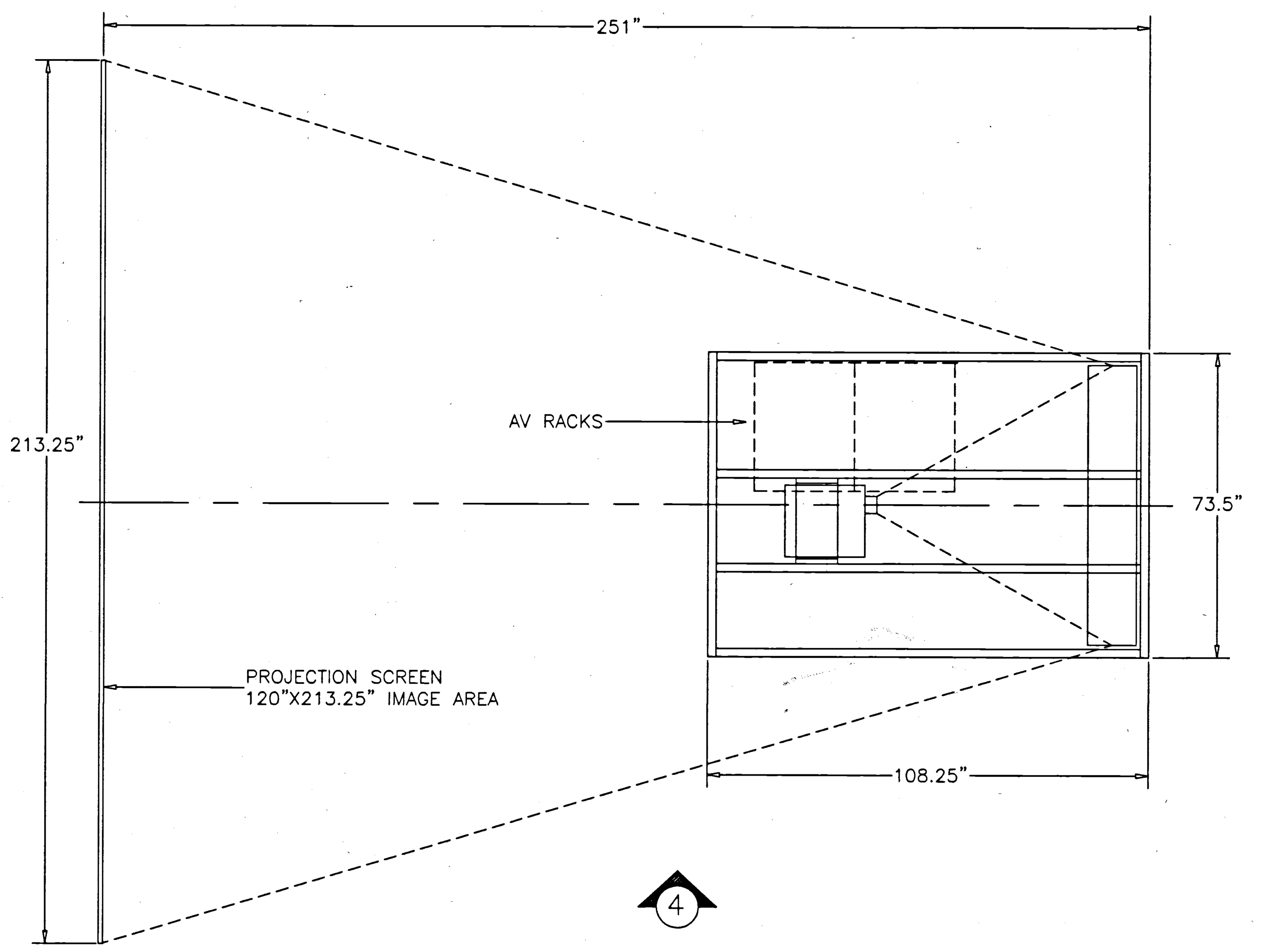
NOTE:
-SPEAKER & SPEAKER GRILL BY A/V CONTRACTOR.
-CONDUIT & BACK CANS BY E.C.



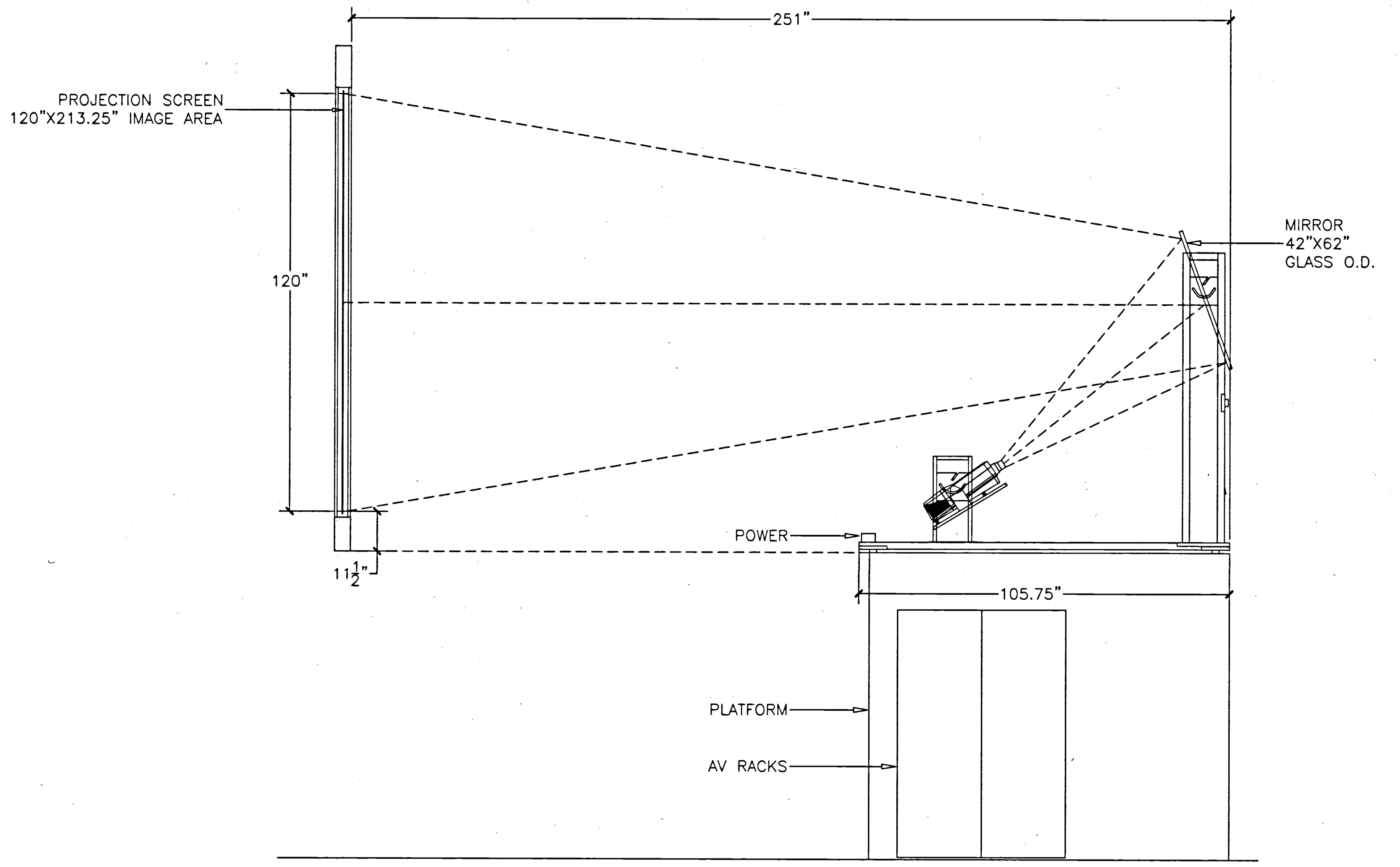
1 TYPICAL SPEAKER CAN DETAIL
NTS



2 "SC" HORN DETAIL
NTS



3 REAR SCREEN PROJECTION SYSTEM TOP VIEW
NTS



4 REAR SCREEN PROJECTION SYSTEM SIDE VIEW
NTS

Plot Sheet Filename: G:\Smith group (SMP-SHG)\uc riverside\surge building\AV\AV602.dwg
XREF Filename(s): UCR_Tblk
Plot Setup Script:
Plot Date: 05/11/01 13:25 Plot View:

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1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
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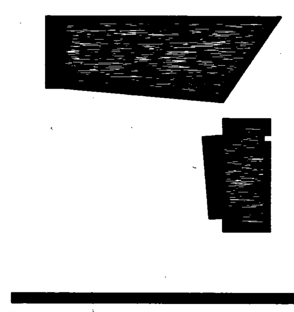
CONSULTANTS IN ACOUSTICS
1711 SIXTEENTH STREET, SANTA MONICA, CA 90404 (310) 450-1733

FOR BID ONLY

Issued for	Rev	Date
BID SET		11MAY01
FOR COORDINATION		26MAR01
BULLETIN # 3	5	30JAN01
BID #3 CONST. DOC. SUBMITTAL		23OCT00
100% BID #2 CD SUBMITTAL		06OCT00
90% CONST. DOC. SUBMITTAL		12SEP00
50% CONSTR. DOC. SUBMITTAL		15JULY00
CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

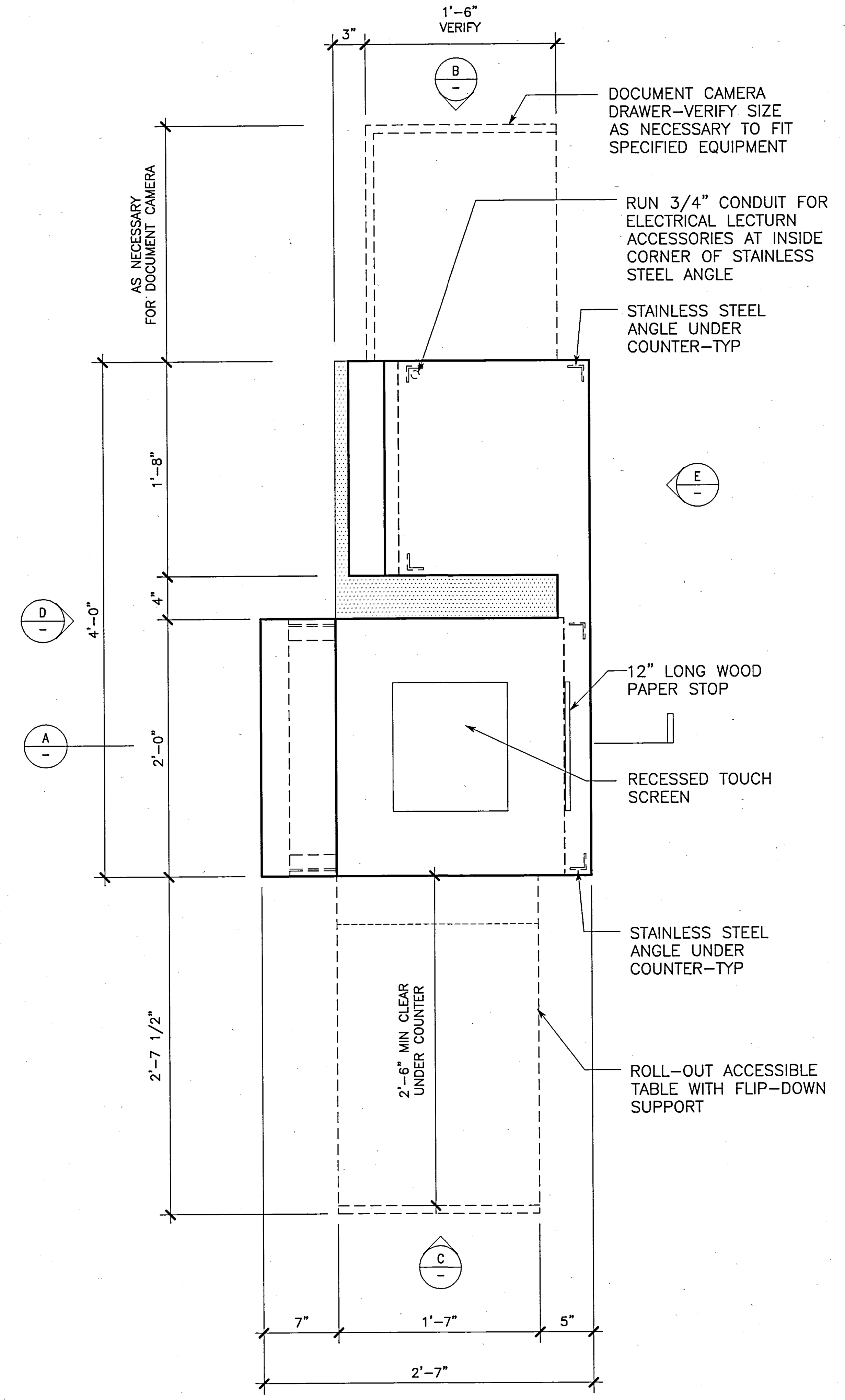
Key Plan



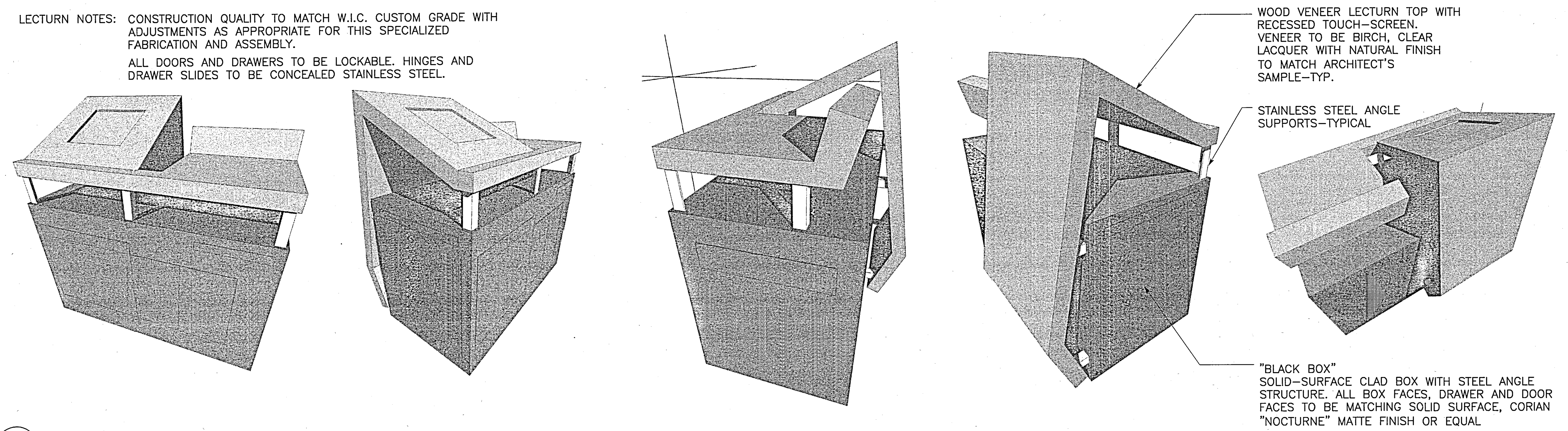
Drawing Title
AV MISCELLANEOUS DETAILS

AS NOTED
Scale
3193000
Project Number
11MAY01
Baseline Date
AV602
Drawing Number

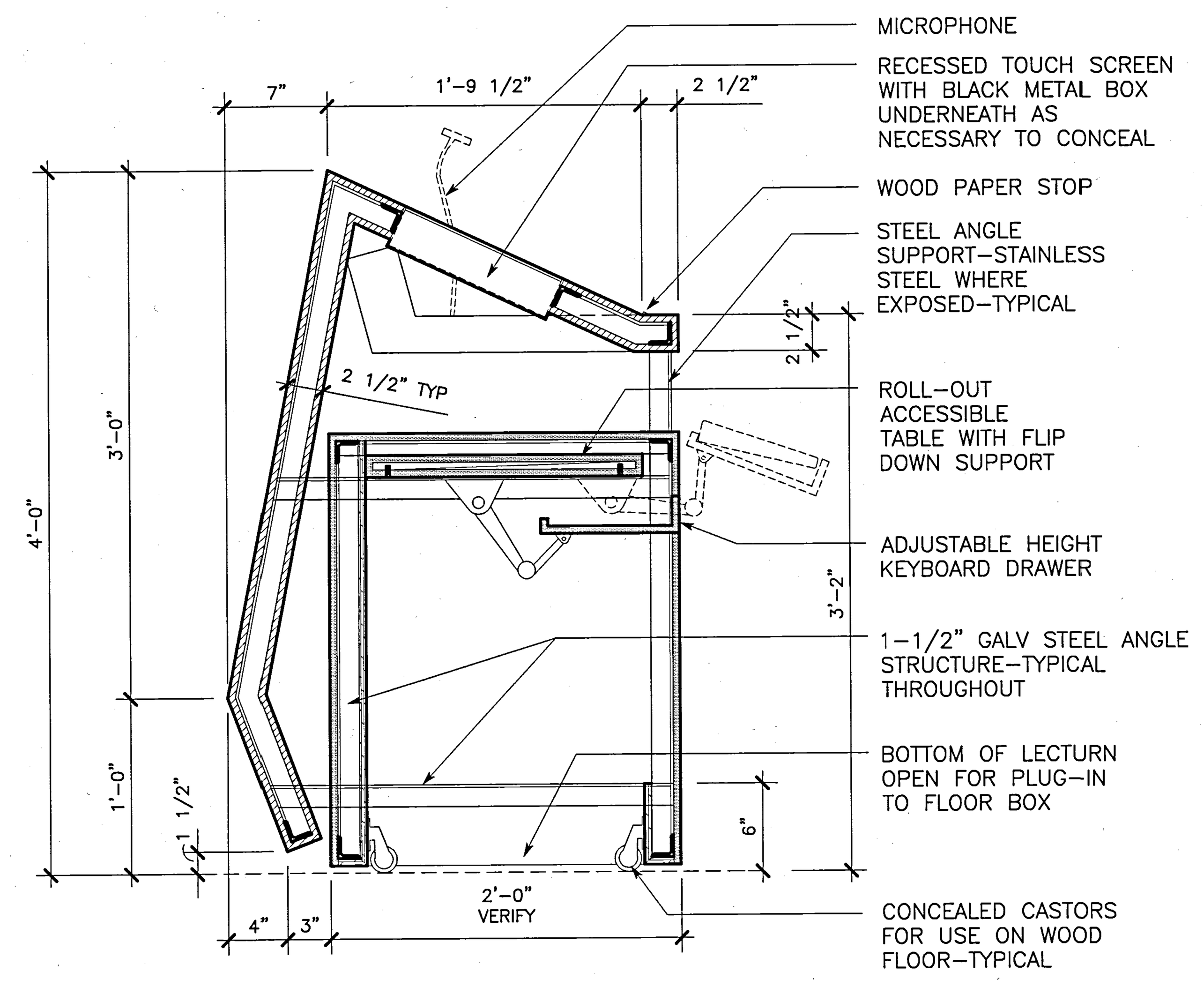
LECTURN NOTES: CONSTRUCTION QUALITY TO MATCH W.I.C. CUSTOM GRADE WITH ADJUSTMENTS AS APPROPRIATE FOR THIS SPECIALIZED FABRICATION AND ASSEMBLY.
ALL DOORS AND DRAWERS TO BE LOCKABLE. HINGES AND DRAWER SLIDES TO BE CONCEALED STAINLESS STEEL.



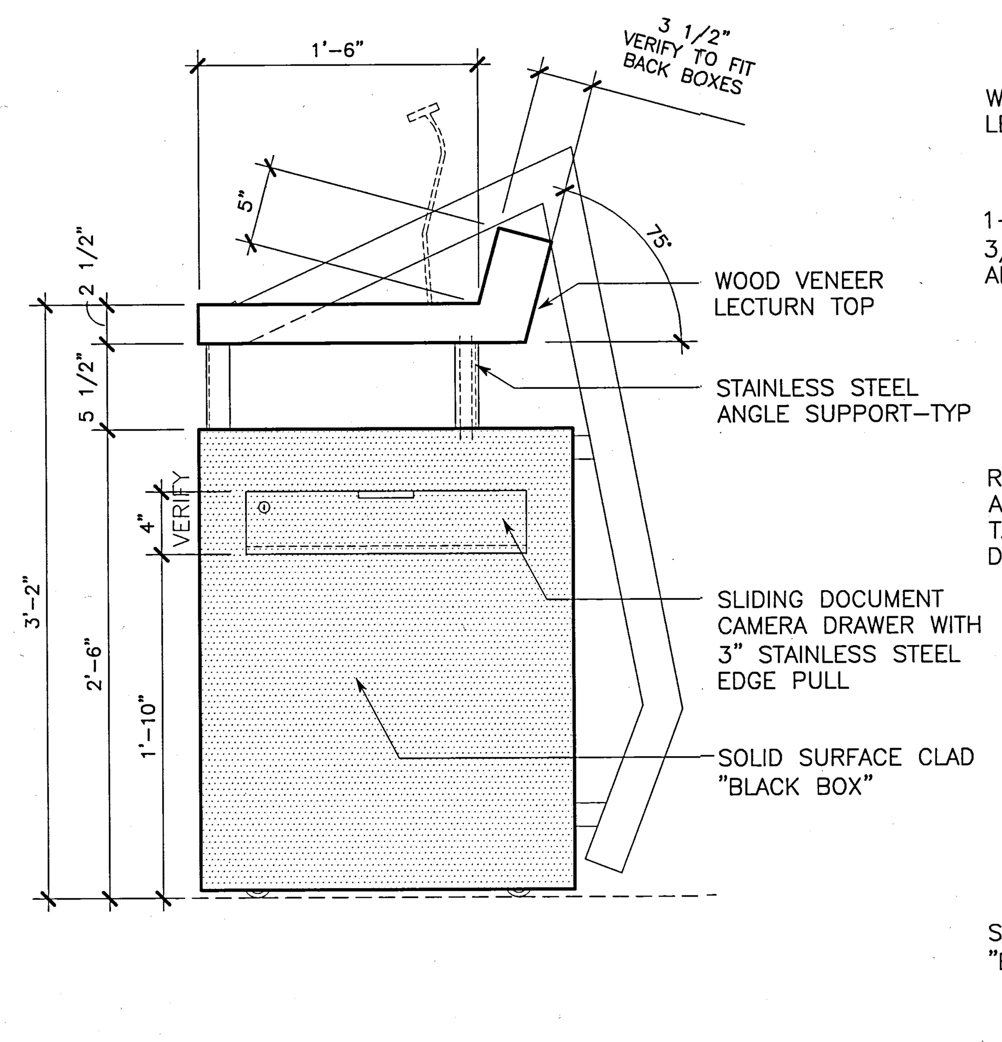
1 AV FACILITY PODIUM PLAN DETAIL "PDM"
1 1/2" = 1'-0"



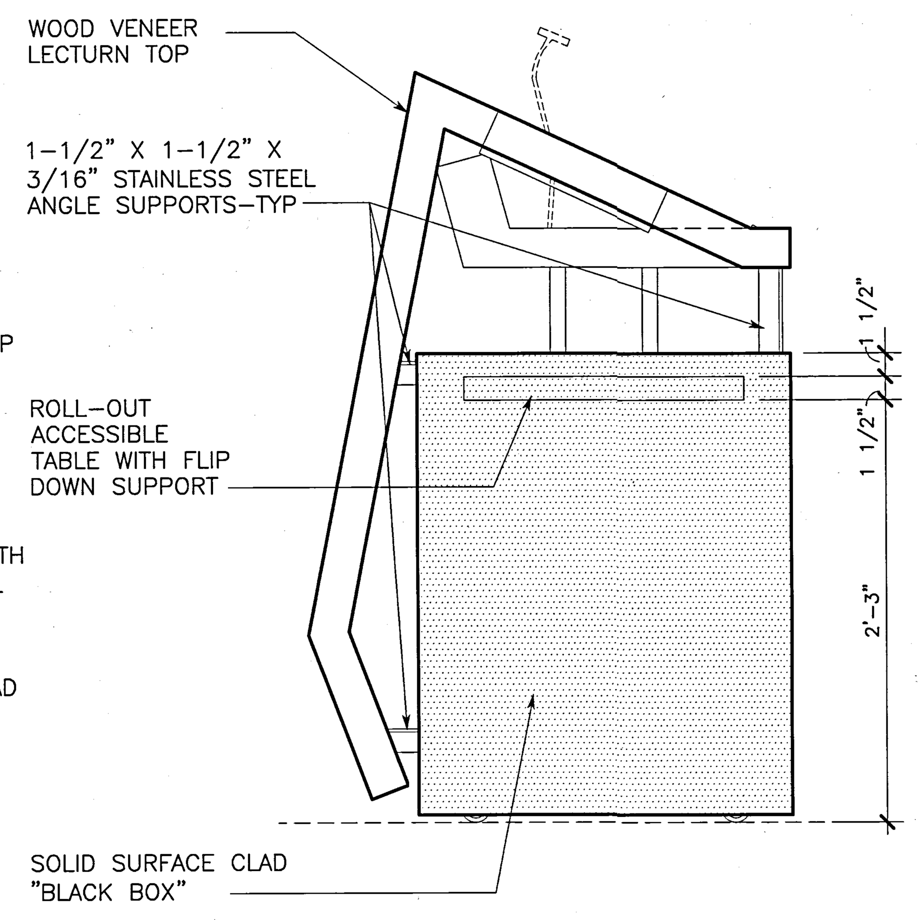
2 PERSPECTIVE VIEWS



A SECTION AT TOUCH SCREEN
1 1/2" = 1'-0"



B SIDE ELEVATION
1 1/2" = 1'-0"



C SIDE ELEVATION
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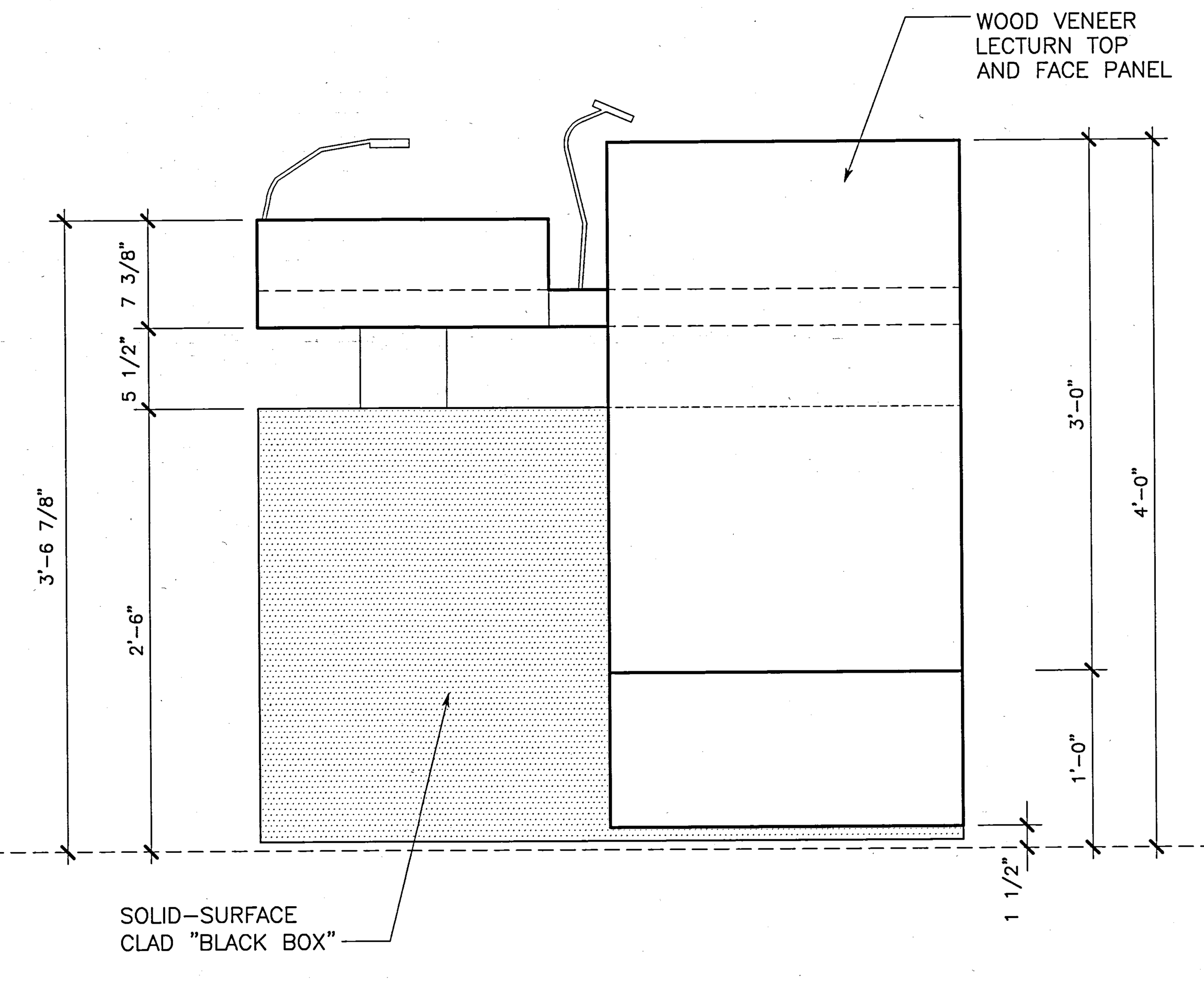
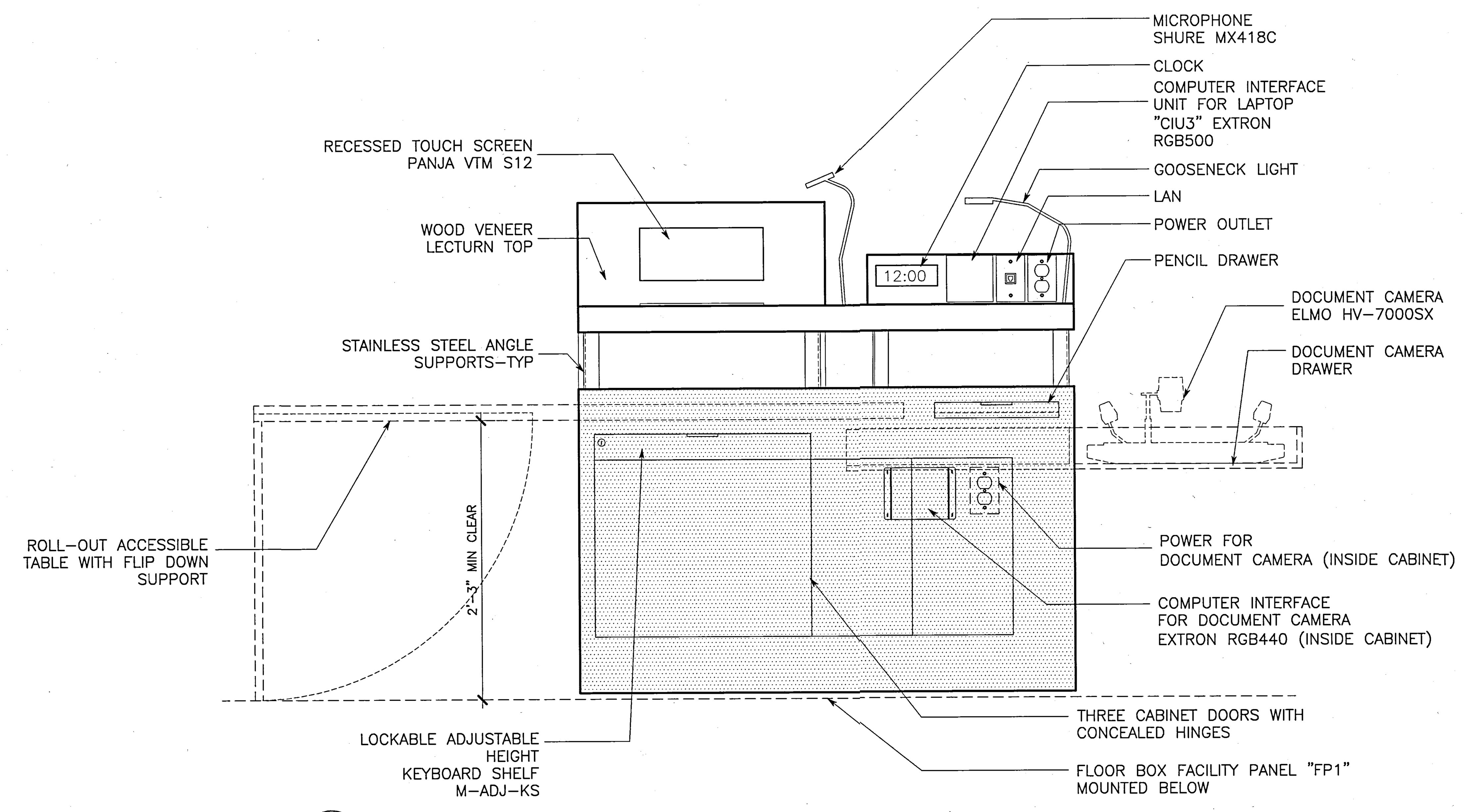


D FRONT ELEVATION
1 1/2" = 1'-0"



E BACK ELEVATION
1 1/2" = 1'-0"

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XREF Filename(s): UCR_Tblk
Plot Setup Script:
Plot Date: 05/14/01 16:33
Plot View:

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for	Rev	Date
BID SET		11MAY01
DSA PLAN REVIEW	7	23FEB01
BID #3 CONST. DOC. SUBMITTAL		23OCT00
100% BID #2 CD SUBMITTAL		06OCT00
90% CONST. DOC. SUBMITTAL		12SEP00
50% CONSTR. DOC. SUBMITTAL		15JULY00
CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

Seals and Signatures

Key Plan

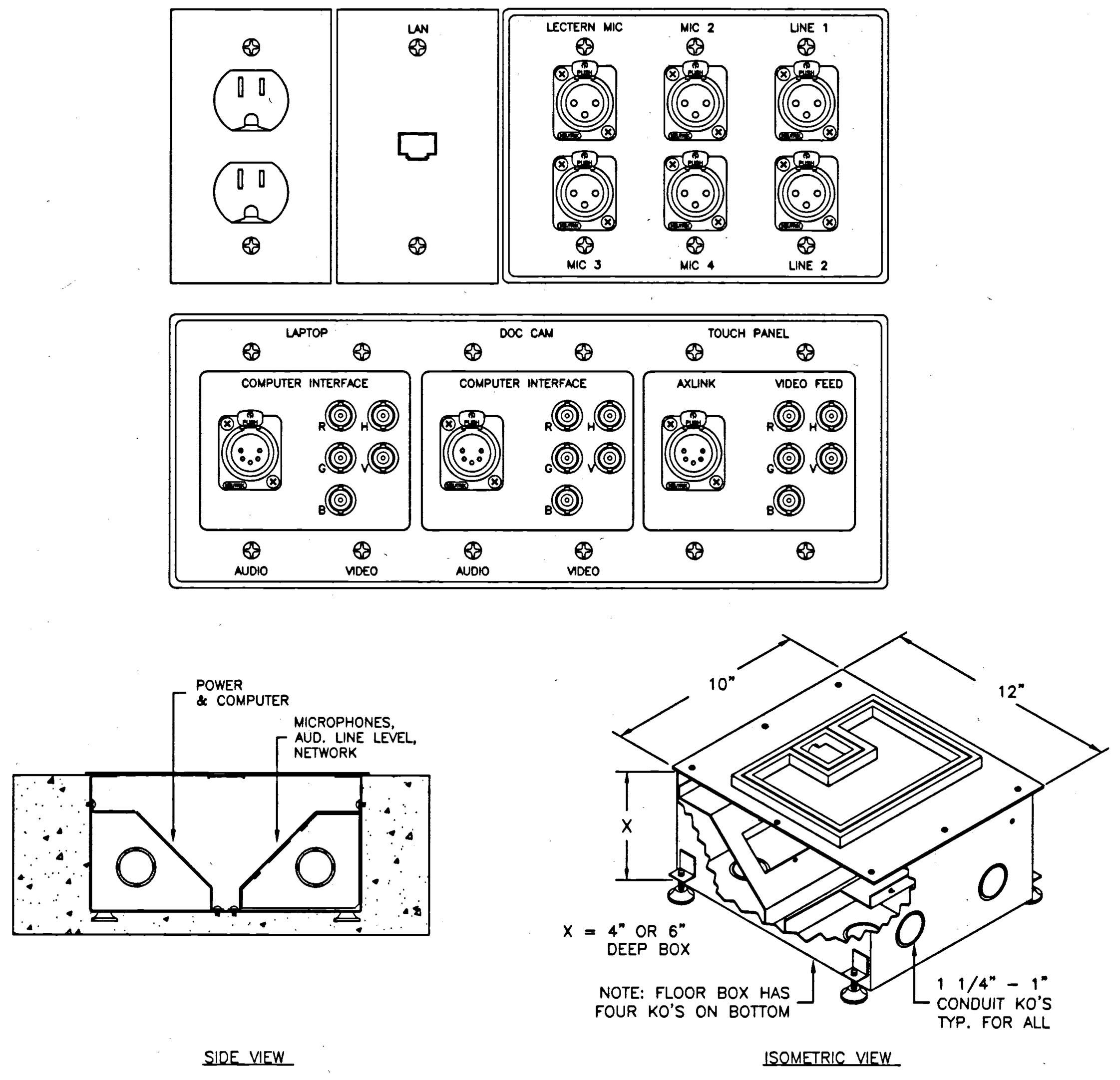
Drawing Title
AV PODIUM DETAILS

AS NOTED
Scale

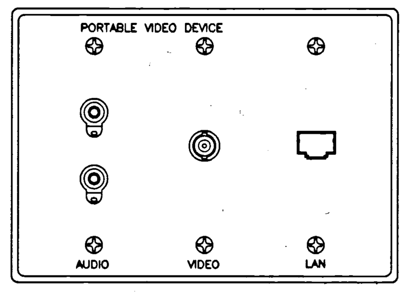
3193000
Project Number

06OCT00
Baseline Date

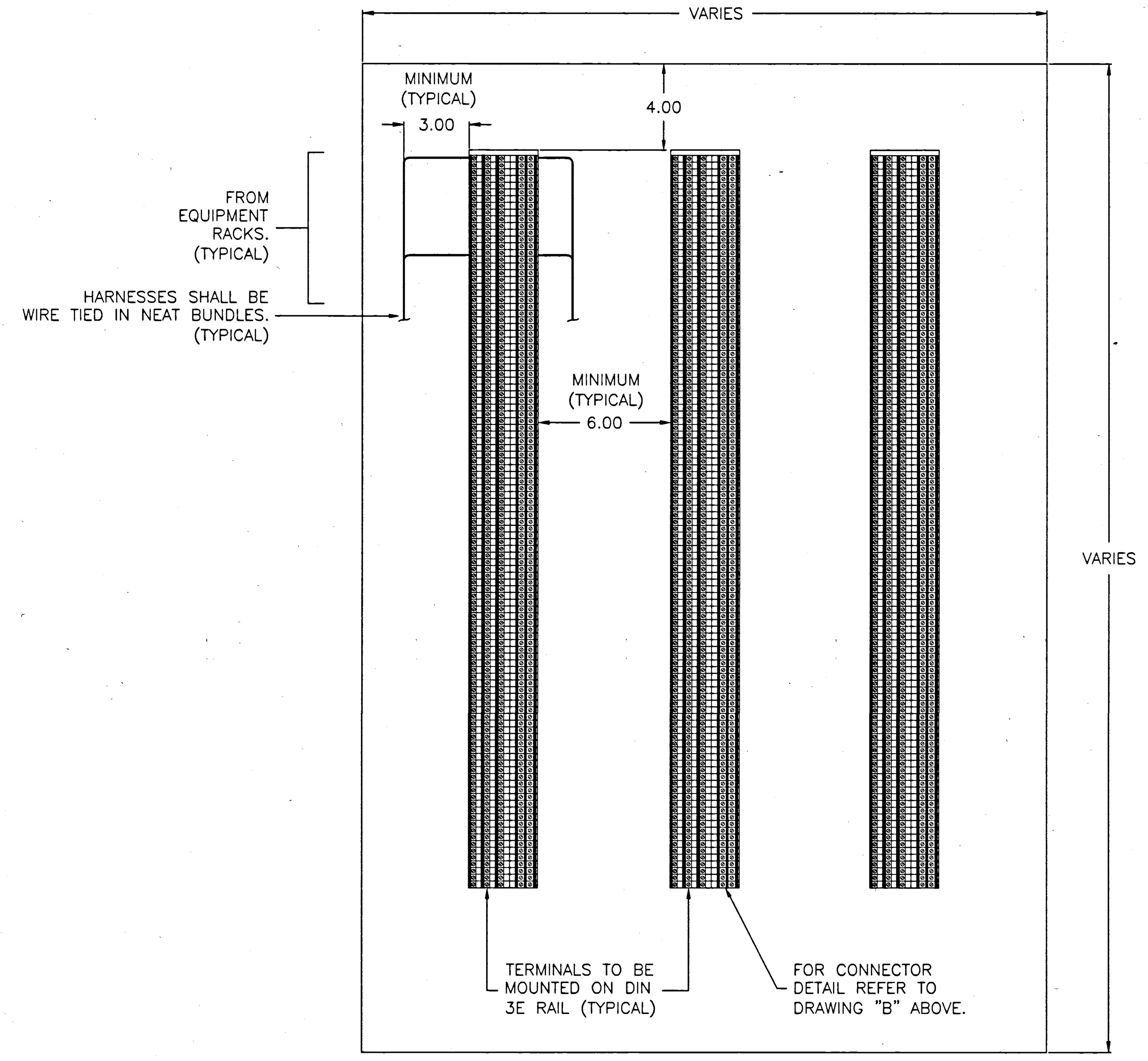
AV603
Drawing Number



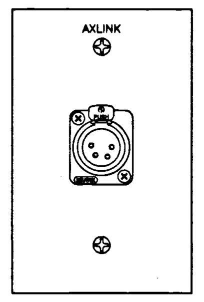
1 FACILITY PANEL "FP1" AUDITORIUM FLOOR
NTS



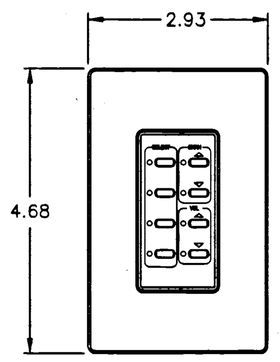
2 FACILITY PANEL "FP2"
HALF SCALE



3 TYP. AUDIO VIDEO DISTRIBUTION BOX "AVD#"
3" = 1'-0"

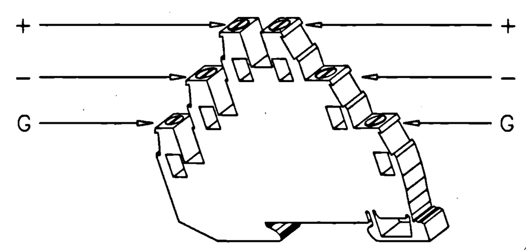


4 TOUCH PANEL "TP"
HALF SCALE

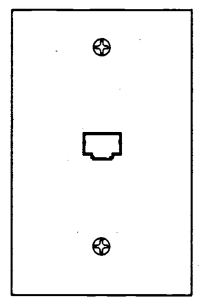


5 CONTROL PANEL "CT2"
HALF SCALE

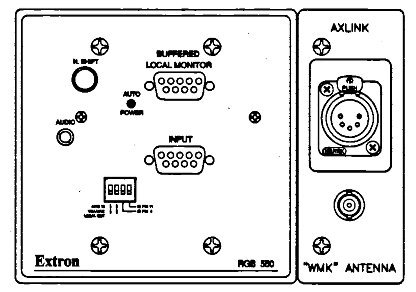
ENTRELEC TERMINAL STRIP
TYPE: D2,5/6.DA
P/N: 115 541.11



B ENTRELEC TERMINAL STRIP
NTS

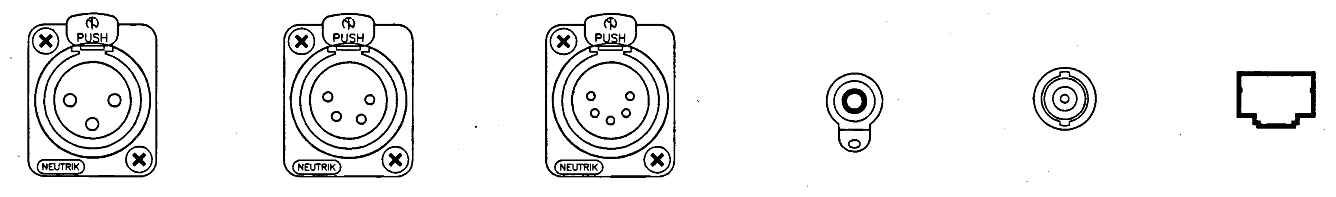


6 FACILITY PANEL "FP4"
HALF SCALE



7 FACILITY PANEL "FP5"
HALF SCALE

SYMBOLS



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XREF Filename(s): UCR_Tblk
Plot Setup Script:
Plot Date: 05/11/01 12:34 Plot View:

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

VENEKLASEN ASSOCIATES
CONSULTANTS IN ACOUSTICS

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50% CONSTR. DOC. SUBMITTAL		15JULY00
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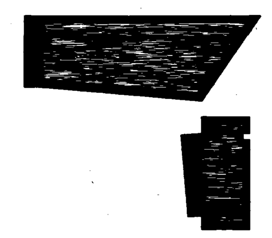
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

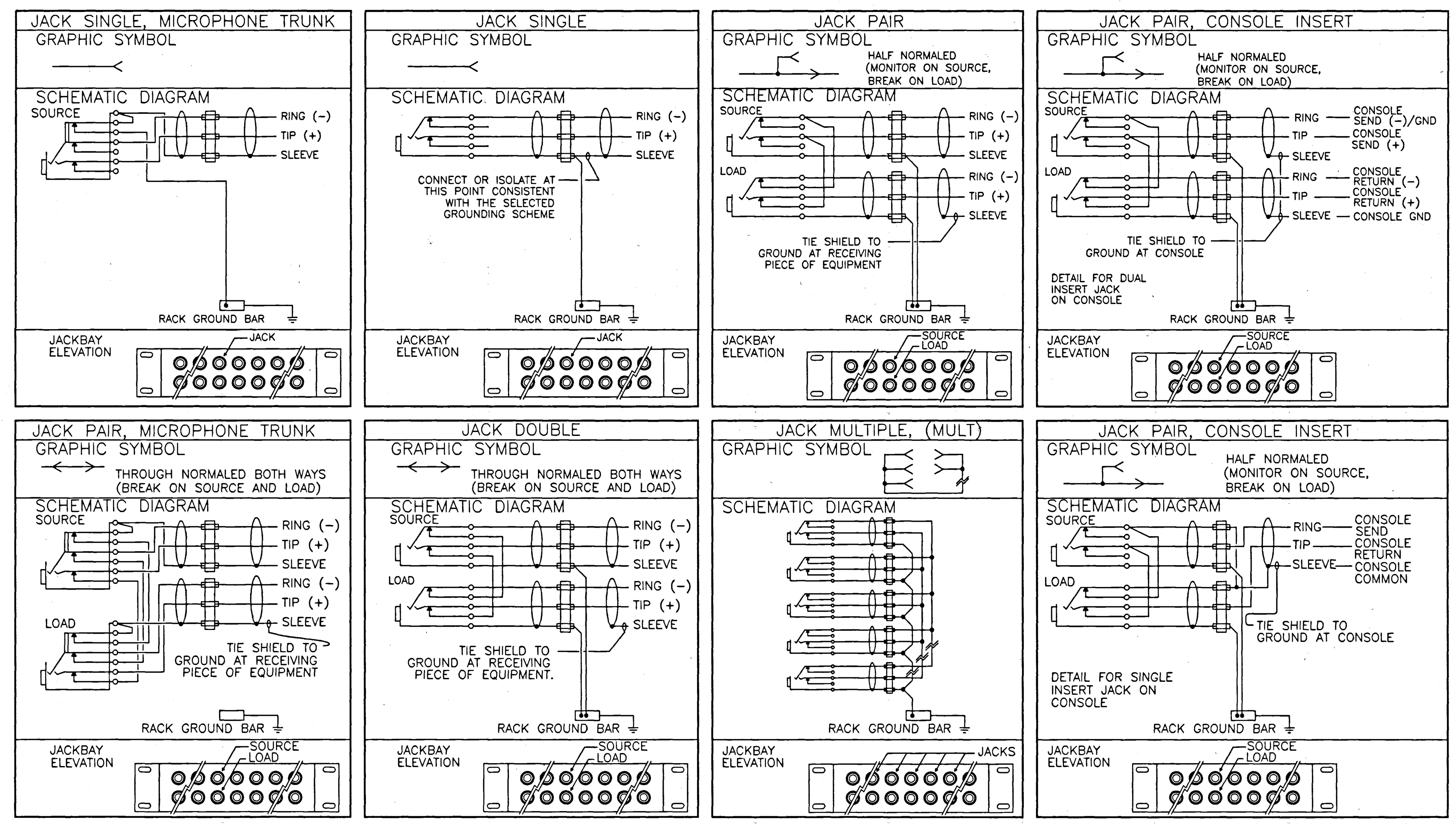
Seals and Signatures

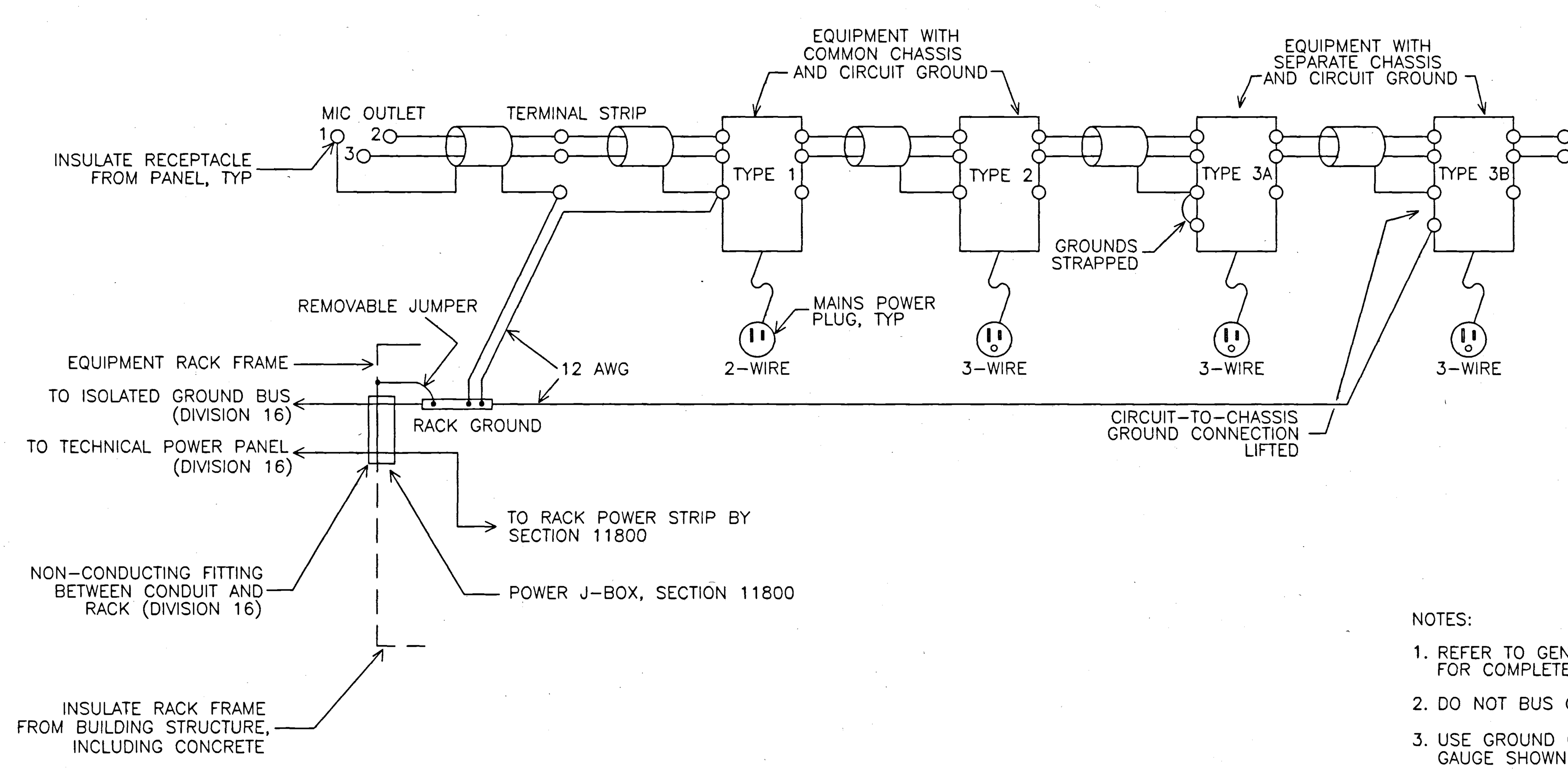
Key Plan



Drawing Title
AV FACILITY
PANEL LAYOUTS

Scale: AS NOTED
Project Number: 3193000
Baseline Date: 11MAY01
Drawing Number: AV651





NOTES:

1. REFER TO GENERAL NOTES AND SPECIFICATIONS FOR COMPLETE REQUIREMENTS.
2. DO NOT BUS GROUND LINES EXCEPT AS SHOWN.
3. USE GROUND CONDUCTORS OF INSULATED COPPER OF GAUGE SHOWN OR LARGER.
4. DO NOT CONNECT SHIELDS TO DEVICE CHASSIS IF SHIELDS ARE GROUNDED ELSEWHERE AS SHOWN.
5. DEVICES WITH 3-WIRE MAINS CORDS GROUND TO THE ISOLATED GROUND BUS VIA THE ISOLATED GROUND TECHNICAL POWER SYSTEM.

Plot Sheet Filename: G:\Smith group (SMP-SHG)\uc riverside\surge building\AV\AV701.dwg
XREF Filename(s): UCR_tblk
Plot Setup Script:
Plot Date: 05/11/01 12:34 Plot View:

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UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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CONSULTANTS IN ACOUSTICS

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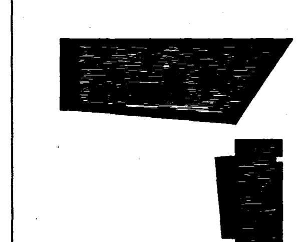
CONSTRUCTION DOC. SUBMITTAL		
DESIGN DEVELOPMENT SUBMITTAL		10JULY00

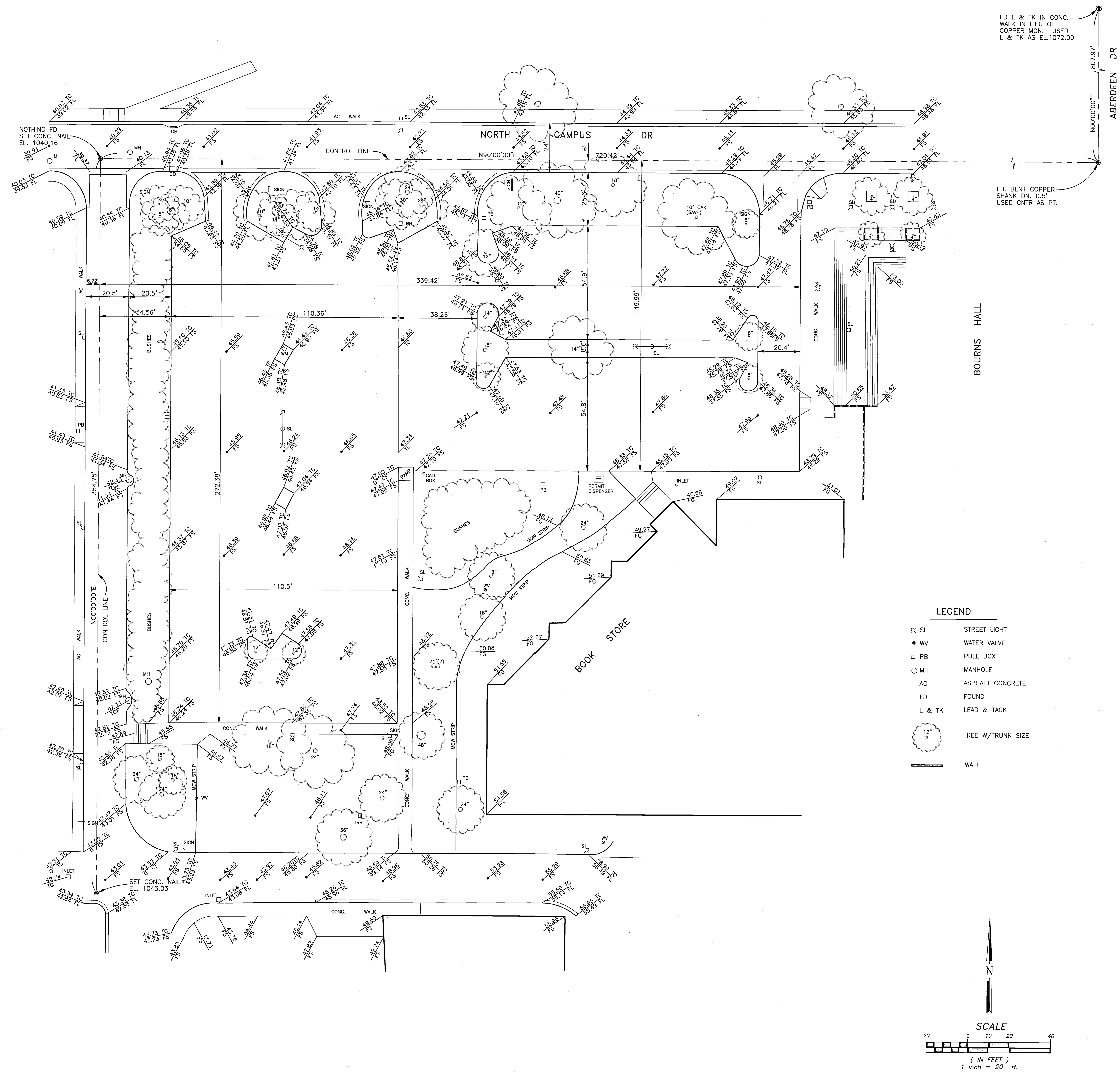
Seals and Signatures

Key Plan



Drawing Title
AV GENERIC DETAILS

NONE
Scale
3193000
Project Number
11MAY01
Baseline Date
AV701
Drawing Number



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UNIVERSITY OF CALIFORNIA RIVERSIDE

OFFICE OF:
DESIGN & CONSTRUCTION

3615 CANYON CREST DRIVE – 0102
RIVERSIDE, CA. 92507
TEL:(909) 787-4201 FAX:(909) 787-3890

MECHANICAL & PLUMBING ENGINEERS:

ELECTRICAL ENGINEERS:

GFB–FRIEDRICH & ASSOC., INC.
CONSULTING CIVIL ENGINEERS
6529 RIVERSIDE AVENUE, STE. 230
RIVERSIDE, CA 92506
(909) 781-0811

STRUCTURAL ENGINEERS:

ARCHITECT'S STAMP:

CONSULTANT:

AGENCY APPROVAL:

REVISION: DESCRIPTION: DATE:

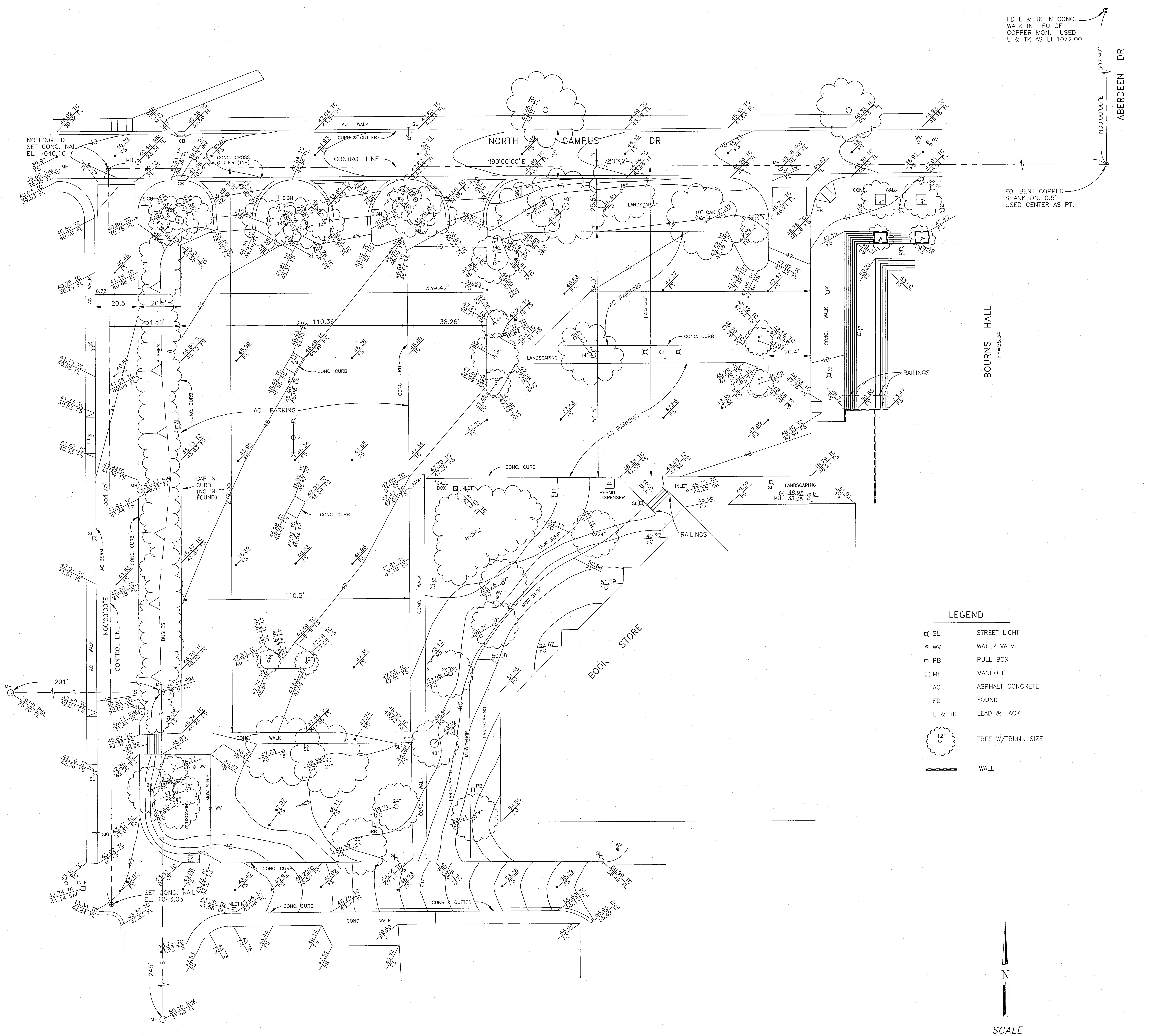
CAMPUS SURGE BUILDING
(PARKING LOTS 17 & 18)

PROJECT NO: 950424

SHEET NO:

DATE: 4–2000

NAME: LOT171B.DWG.DWG DATE: APR 06, 2000 TIME: 3:11 PM



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MECHANICAL & PLUMBING ENGINEERS: | ELECTRICAL ENGINEERS:

STRUCTURAL ENGINEERS:

GFB–FRIEDRICH & ASSOC., INC.
CONSULTING CIVIL ENGINEERS
6529 RIVERSIDE AVENUE, STE. 230
RIVERSIDE, CA 92506
(909) 781–0811

REGISTERED PROFESSIONAL ENGINEER
JOHN A. FRIEDRICH
No. C27861
Exp. 3/31/02
CIVIL
STATE OF CALIFORNIA

ARCHITECT'S STAMP: | CONSULTANT:

AGENCY APPROVAL:

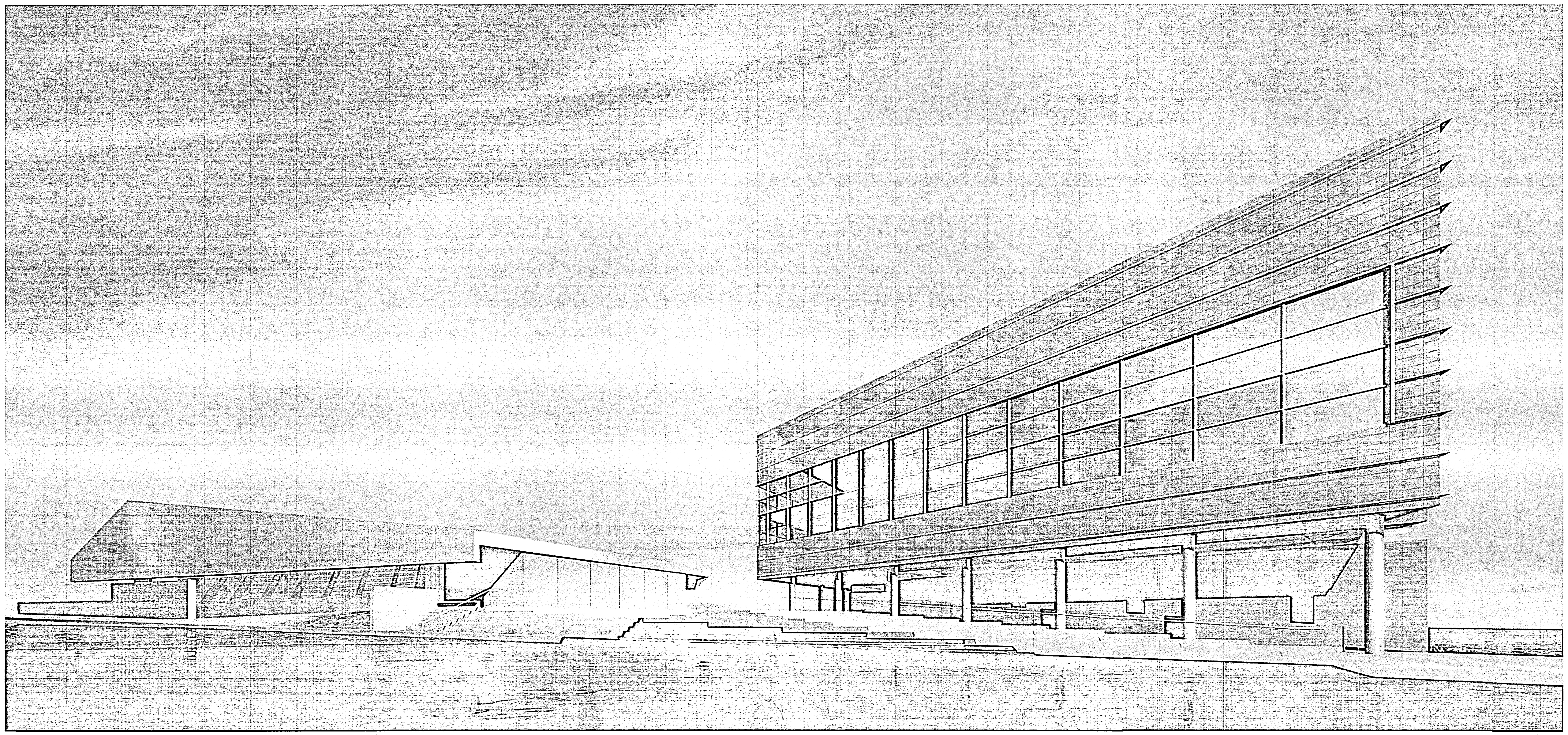
REVISION:	DESCRIPTION:	DATE:

CAMPUS SURGE BUILDING
(PARKING LOTS 17 & 18)

SURVEY

PROJECT NO:	SHEET NO:
950424	C1.01
DATE: 4–2000	

NAME: LOT1718.DWG.DWG DATE: APR 06, 2000 TIME: 3:11 PM



UCR

UNIVERSITY OF CALIFORNIA RIVERSIDE

900 University Avenue
Riverside, CA 92521

Campus Surge Building

University of California, Riverside
UCR Project No. 950424

RECORD DRAWINGS

CONTENTS :
CIVIL
ARCHITECTURAL
STRUCTURAL
PLUMBING
MECHANICAL
ELECTRICAL
LANDSCAPE

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Plot Sheet Filename: J:\Jobs\3193000\SHT\A0000_032002.dwg
XREF Filename(s):
Plot Setup Script:
Plot Date: 03/20/02 18:19 Plot View:

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E-17	ROOF PLAN
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L-3.00	PLANTING DETAILS
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S10.1	STAIR PLAN AND DETAILS
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S11.3	DETAILS
S11.4	DETAILS
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SHEET No.	DESCRIPTION
ARCHITECTURAL (GENERAL)	
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A0.6	UCR ACCESSIBILITY PLAN
A0.7	FIRST FLOOR FIRE PROTECTION PLAN SURGE & AUDITORIUM
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C6.03	DETAILS
C6.04	DETAILS
C6.05	DETAILS
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A3.2.2	PARTIAL SECOND FLOOR REFLECTED CEILING PLAN (SURGE BUILDING)
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UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for | Rev | Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Drawing Title
SHEET INDEX

NOT TO SCALE
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3193000
Project Number

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A0.01
Drawing Number

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APPLICABLE CODES

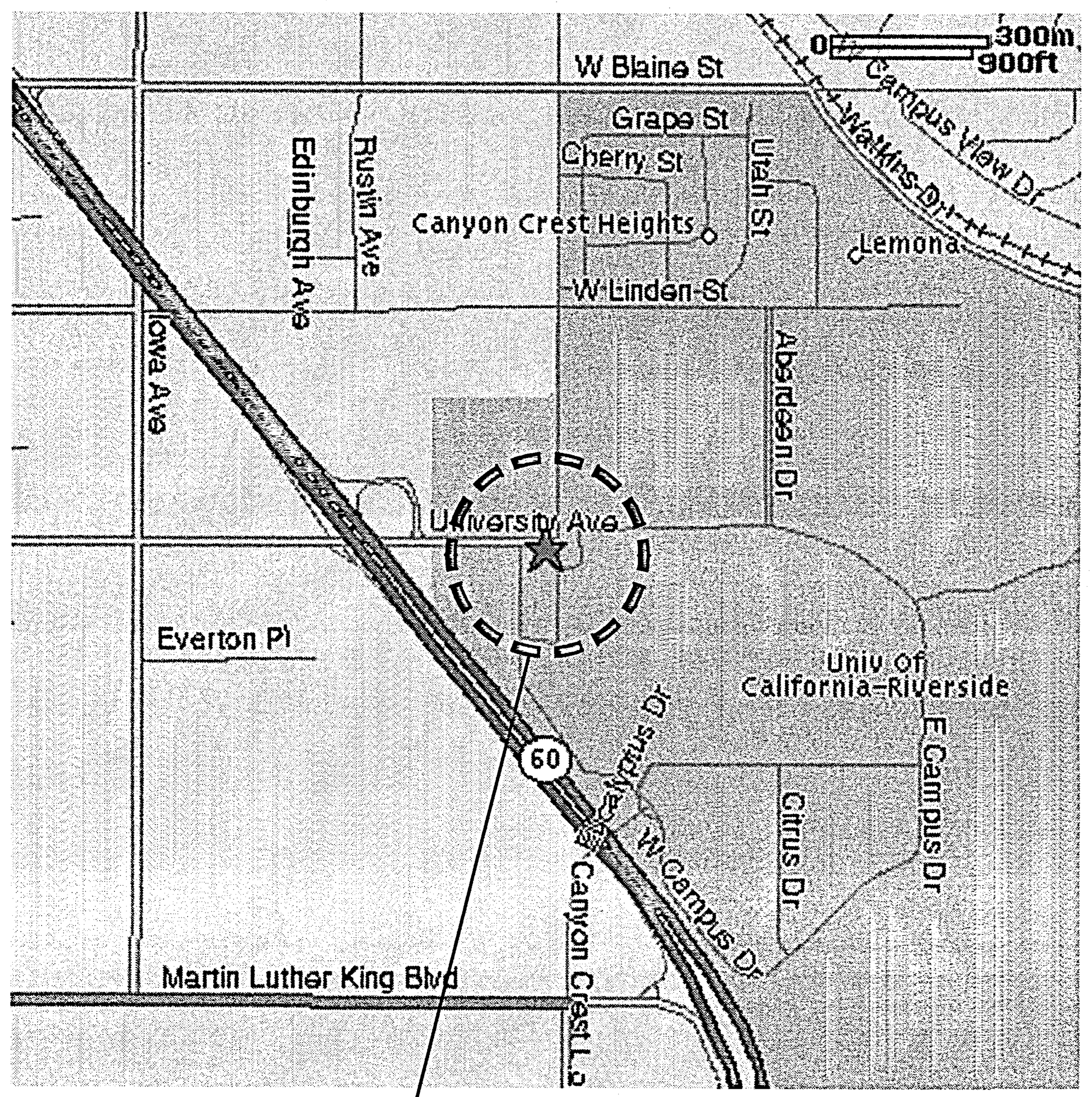
LIST OF 1999 CALIFORNIA CODE OF REGULATIONS

1. 1998 BUILDING STANDARDS ADMINISTRATIVE CODE, PART I, TITLE 24 C.C.R
2. 1998 CALIFORNIA BUILDING CODE (CBC) PART 2, TITLE 24 C.C.R.
3. (1997 UNIFORM BUILDING CODE VOLUMES 1–3 AND 1998 CALIFORNIA AMENDMENTS)
4. 1998 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R.
5. (1996 NATIONAL ELECTRICAL CODE AND 1998 CALIFORNIA AMENDMENTS)
6. 1998 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24 C.C.R.
7. (1997 UNIFORM MECHANICAL CODE AND 1998 CALIFORNIA AMENDMENTS)
8. 1998 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 C.C.R.
9. (1997 UNIFORM PLUMBING CODE AND 1998 CALIFORNIA AMENDMENTS)
10. 1998 CALIFORNIA FIRE CODE, PART 9, TITLE 24 C.C.R.
11. (1997 UNIFORM FIRE CODE AND 1998 CALIFORNIA AMENDMENTS)
12. 1998 CALIFORNIA REFERENCED STANDARDS, PART 12, TITLE 24 C.C.R.
13. 1990 TITLE 19 C.C.R., PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS

PARTIAL LIST OF APPLICABLE STANDARDS

14. AMERICAN CONCRETE INSTITUTE (ACI), LATEST REVISION.
15. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), LATEST REVISION.
16. FEDERAL SPECIFICATIONS (FS), LATEST REVISION.
17. ACCESS COMPLIANCE UNIT, OFFICE OF STATE ARCHITECT (OSA).
18. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM), LATEST REVISION.
19. AMERICAN WOOD PRESERVERS ASSOCIATION (AWPA), LATEST REVISION.
20. NATIONAL FOREST PRODUCTS ASSOCIATION (NFPA), LATEST REVISION.
21. AMERICAN PLYWOOD ASSOCIATION (APA), LATEST REVISION.
22. SHEET METAL AND AIR CONDITIONING CONTRACTOR NATIONAL ASSOCIATION (SMACNA), LATEST REVISION.
23. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), LATEST REVISION.
24. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), LATEST REVISION.
25. AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS (ASHRAE), LATEST REVISION.
26. UNDERWRITER'S LABORATORIES (UL).
27. ELECTRICAL TESTING LABORATORIES (ETL).
28. CALIFORNIA BOILER CODE.
29. AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME).
30. AMERICAN WELDING SOCIETY (AWS).
31. INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS (IAPMO).
32. NATIONAL BUREAU OF STANDARDS PRODUCT STANDARDS (NBS).
33. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA).
34. INSULATED POWER CABLE ENGINEERS ASSOCIATION (IPCEA).
35. AMERICANS WITH DISABILITIES ACT (ADA).
36. NFPA 13, AUTOMATIC SPRINKLER SYSTEMS 1996 EDITION
37. NFPA 14, STANDPIPE SYSTEMS 1996 EDITION
38. NFPA 17a, WET CHEMICAL SYSTEMS 1994 EDITION
39. NFPA 24, PRIVATE FIRE MAINS 1996 EDITION
40. NFPA 72, NATIONAL FIRE ALARM CODE (CALIFORNIA AMENDED) 1996 EDITION (NOTE SEE UL STANDARD 1971 FOR "VISUAL DEVICES")
41. NFPA 253, CRITICAL RADIANT FLUX OF FLOOR COVERING SYSTEMS 1984 EDITION
42. NFPA 2001, CLEAN AGENT FIRE EXTINGUISHING SYSTEMS 1994 EDITION
REFERENCE CODE SECTION FOR NFPA STANDARDS – CBC (SFM) 3504.1

VICINITY MAP



SITE LOCATION

North

PROJECT SUMMARY

OCCUPANCY

BUILDING	GROUP	USAGE	OCCUPANT LOAD	FLOOR AREA
SURGE BUILDING	B	OFFICES & RESEARCH LABORATORIES	1,308	71,534
AUDITORIUM	A.2.1	AUDITORIUM	604	10,075
TOTAL				81,609

CONSTRUCTION

TYPE II – ONE HOUR WITH FULLY AUTOMATIC SPRINKLER SYSTEM THROUGHOUT

ALLOWABLE BUILDING HEIGHT AND FLOOR AREA

SURGE BUILDING	ALLOWABLE PER TABLE 5B	ACTUAL PROPOSED
HEIGHT	65'	49'
STORIES	4	3
AREA OF LARGEST FLOOR	36,000 (3,4)	25,326
AREA OF TOTAL BUILDING	72,000 (3,4)	71,534

AUDITORIUM	ALLOWABLE PER TABLE 5B	ACTUAL PROPOSED
HEIGHT	65'	25'
STORIES	2	1
AREA OF LARGEST FLOOR	13,500	10,075

NOTES:

(1) HEIGHT MEASURED FROM HIGHEST ADJOINING GROUND SURFACE WITHIN 5' DISTANCE FROM EXTERIOR WALL TO TOP OF PARAPET AROUND ROOF, NOT INCLUDING MECHANICAL EQUIPMENT ROOF SCREEN
(2) TABLE VALUE X 2 FOR MULTI–STORY, PER CBC 504.2
(3) TABLE VALUE X 2 FOR SEPARATION 3 SIDES PER CBC 505.1.2
(4) TABLE VALUE X 2 FOR SPRINKLERS PER CBC 505.3

FLOOR AREA TABLE

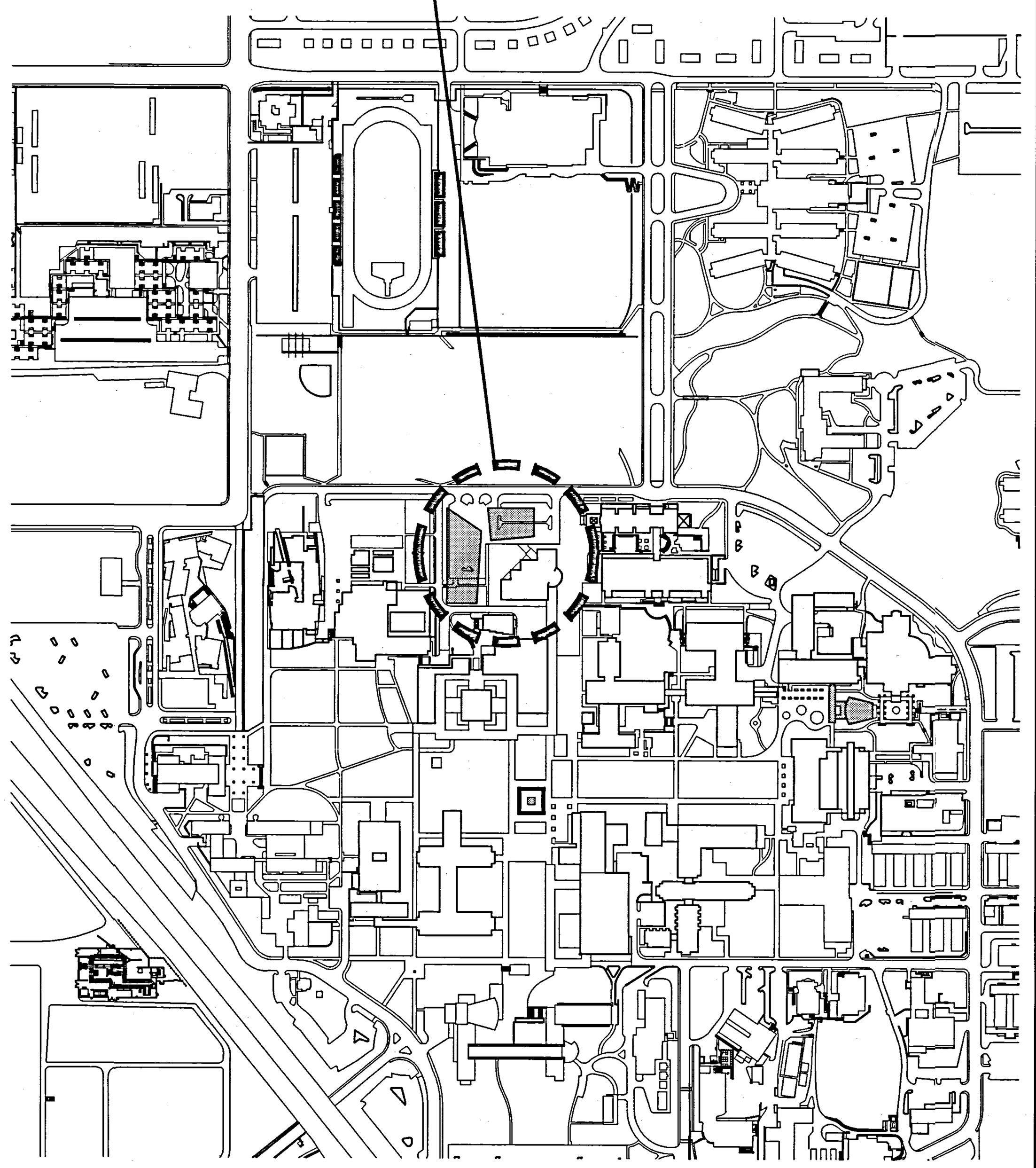
FLOOR	AREA
1	21,277
2	25,425
3	24,832
SUB–TOTAL	71,534
AUDITORIUM	10,075
TOTAL	81,609

GENERAL NOTES

1. THE PROJECT MANUAL SHALL BE USED TOGETHER WITH THESE DRAWINGS; PROJECT CONTRACT DOCUMENTS ARE COMPLEMENTARY.
2. THE CONTRACTOR SHALL MAINTAIN PROPER ACCESS FOR FIRE DEPARTMENT VECHICLES AND EQUIPMENT AT ALL TIMES. ANY CHANGES MADE TO FIRE DEPARTMENT ACCESS ROUTES SHALL BE REVIEWED BY FIRE DEPARTMENT AUTHORITIES HAVING JURISDICTION PRIOR TO CHANGING ACCESS ROUTING.
3. THE CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS AND NOTIFY THE PROPER AUTHORITIES HAVING JURISDICTION OVER THE WORK PRIOR TO STARTING. SAID PERMITS AND CERTIFICATIONS SHALL BE KEPT ON THE SITE AT ALL TIMES.
4. PRIOR TO START OF WORK, THE CONTRACTOR SHALL CAREFULLY INSPECT AND VERIFY ALL CONDITIONS SHOWN ON THE CONTRACT DRAWINGS. IF WORK CAN NOT BE PERFORMED AS SHOWN, THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER IMMEDIATELY. WORK PERFORMED AFTER SUCH DISCOVERY, UNLESS AUTHORIZED BY THE CONSTRUCTION MANAGER, SHALL BE DONE AT THE CONTRACTOR'S RISK.
5. THE CONTRACTOR SHALL NOT INTERRUPT EXISTING UTILITIES SERVING EXISTING FACILITIES, EXCEPT WHEN AUTHORIZED IN WRITING BY THE OWNER AND ALL AUTHORITIES HAVING JURISDICTION. PROVIDE TEMPORARY SERVICES DURING CONSTRUCTION ACTIVITIES ACCEPTABLE TO OWNER AND GOVERNING AUTHORITIES.
6. THE WORK SHALL INCLUDE ALL REMOVALS NOT SPECIFICALLY INDICATED ON DRAWINGS BUT NECESSARY FOR THE COMPLETION OF THE WORK.
7. THE CONTRACTOR SHALL COORDINATE ANY AND ALL REQUIREMENTS FOR OFF SITE IMPROVEMENTS INCLUDING, BUT NOT LIMITED TO SIDEWALKS, DRIVEWAYS, CURBS, GUTTERS, UTILITIES, ETC.. OFF–SITE IMPROVEMENTS SHALL MEET THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
8. THE CONTRACTOR SHALL PROVIDE PROTECTIVE BARRICADES WHERE REQUIRED DURING CONSTRUCTION.
9. THE CONTRACTOR SHALL KEEP ALL EXITS READILY ACCESSIBLE AND UNOBSTRUCTED AT ALL TIMES.
10. WHERE FIRE EXTINGUISHER CABINETS AND / OR ANY OTHER EQUIPMENT ARE RECESSED IN PARTITIONS OF FIRE RATED CONSTRUCTION, THE CONTRACTOR SHALL MODIFY THE PARTITION AS REQUIRED TO PROVIDE CONTINUOUS ENCLOSURE TO ENSURE UNINTERRUPTED FIRE RATING.
11. ELEVATIONS ARE TO TOP OF CONCRETE, NOT TO TOP OF FLOOR COVERING OR ROOFING.
12. DO NOT SCALE DRAWINGS. USE DIMENSIONS INDICATED.
13. WHEN A DETAIL IS IDENTIFIED AS TYPICAL, THE CONTRACTOR SHALL APPLY THIS DETAIL TO EVERY LIKE CONDITION WHETHER OR NOT THE REFERENCE IS REPEATED IN EVERY INSTANCE.
14. DRAWINGS HAVE BEEN DETAILED IN COMPLIANCE WITH UNDERWRITERS LABORATORIES (U.L), WARNOCK HERSEY AND /OR OTHER RECOGNIZED TESTING LABORATORY LISTING REQUIREMENTS AND WITH ICBO REPORTS FOR THE MATERIALS SPECIFIED.
15. THE SIZES, LOCATION FOR MOUNTINGS AND ATTACHMENTS AND LOCATIONS OF UTILITY CONNECTIONS FOR EACH ITEM OF EQUIPMENT SHOWN ON THE DRAWINGS ARE FOR ILLUSTRATION ONLY. ALL CAN VARY FROM MANUFACTURER TO MANUFACTURER AND ARE DEPENDENT ON THE EXACT MANUFACTURER'S MODEL FURNISHED. THE CONTRACTOR SHALL PROVIDE AND COORDINATE EXACT DIMENSIONS RELATING TO THE SIZE OF EACH ITEM OF EQUIPMENT, THE LOCATIONS OF ALL MEETINGS AND ATTACHMENTS FOR EACH ITEM OF EQUIPMENT AND FOR ALL UTILITY CONNECTIONS TO EACH ITEM OF EQUIPMENT.
16. THE CONTRACTOR SHALL PROVIDE AND COORDINATE THE EXACT DIMENSIONS, SIZES AND POSITIONS OF ALL OPENINGS IN FLOOR AND WALL CONSTRUCTION NECESSARY FOR THE INSTALLATION OF THE WORK.
17. ALL WOOD USED FOR BLOCKING, NAILERS AND / OR FRAMING USED FOR PERMANENT CONSTRUCTION SHALL BE FIRE RETARDANT PRESURE TREATED AND SHALL BEAR AN APPROVED INSPECTION AGENCY LABEL.
18. ALL PIPING AND DUCT WORK VALVES, DAMPERS, CONTROLS AND TERMINATIONS SHALL BE INSTALLED AT LOCATIONS WHICH PROVIDE SAFE, DIRECT AND EASY ACCESS.
19. ALL ATTACHMENTS TO AND PENETRATIONS THROUGH CONCRETE NOTED ON THE DRAWINGS TO BE WATERPROOFED SHALL BE MADE PRIOR TO APPLICATION OF THE WATERPROOF MATERIAL.
20. PROVIDE LABELS ON DOORS, FRAMES AND OTHER ASSEMBLIES AT OPENINGS IN FIRE RATED CONSTRUCTION.
21. THE INTENT OF THE DRAWINGS AND SPECIFICATIONS IS TO EXECUTE THE WORK IN ACCORDANCE WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS. SHOULD ANY CONDITIONS DEVELOP NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH SAID TITLE 24, CALIFORNIA CODE OF REGULATIONS, A CHANGE ORDER DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BEFORE PROCEEDING WITH THE WORK AS REQUIRED BY SECTION 7–125 (b)(2), PART 1, TITLE 24.

LOCATION MAP

SURGE BUILDING LOCATION



NORTH

PROJECT DIRECTORY

CLIENT :
UNIVERSITY OF CALIFORNIA RIVERSIDE
900 UNIVERSITY AVENUE
RIVERSIDE, CA 92521
CONTACT: THEODORE CHIU
(909) 787–4201 EXT. 1396

ARCHITECT :
SMITHGROUP INCORPORATED
1919 SANTA MONICA BOULEVARD, 4TH FLOOR
SANTA MONICA, CA 90404
(310)586–5400
CONTACT: JOHN GORMLEY

CIVIL: STRUCTURAL
KPFF CONSULTING ENGINEERS
2401 COLORADO AVENUE, SUITE 315
SANTA MONICA, CA 90404–3500
(310)828–1536
CONTACT: BRUCE BAYNE, P.E. (CIVIL)
RAMZI HODALI, S.E. (STRUCTURAL)

MEP:
HENRIKSON OWENS & ASSOCIATES
5 GOODYEAR STREET
IRVINE, CA 92618
(949)860–4900
CONTACT: CARLO KEISSEH, P.E.

LANDSCAPE:
KATHERINE SPITZ ASSOCIATES, INC
4212–1/2 GLENCOE AVENUE
MARINA DEL REY, CA 90292
(310)574–4460
CONTACT: KATHERINE SPITZ, AIA

TELECOM:
HENRIKSON OWENS & ASSOCIATES
5 GOODYEAR STREET
IRVINE, CA 92618
(949)860–4900
CONTACT: CARLO KEISSEH, P.E.

ACOUSTICAL:
VENEKLAUSEN ASSOCIATES
1711 16TH STREET
SANTA MONICA, CA 90404
(310)450–1733
CONTACT: JERRY CHRISTOFF

SPECS:
EILEEN KOPELSON, AIA
1729 PARKER STREET
BERKELEY, CA 94703–1917
(510)649–8150
CONTACT: EILEEN KOPELSON, AIA

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

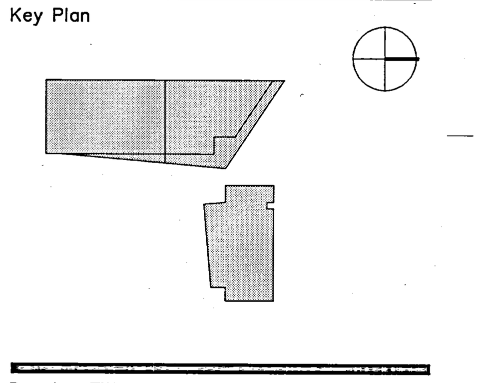
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for | Rev | Date

Seals and Signatures

RECORD DRAWINGS

Key Plan



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PROJ SUMMARY & MAP GENERAL NOTES

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3193000

Project Number

06OCT00

Baseline Date

A0.02

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06/21/00

ARCHITECTURAL ABBREVIATIONS

A

AB	ANCHOR BOLT
ABV	ABOVE
AC	ASPHALT CONCRETE
ACOUS	ACOUSTICAL
ACT	ACOUSTICAL CEILING TILE
AD	AREA DRAIN
ADDL	ADDITIONAL
ADH	ADHESIVE
ADJ	ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AFS	ABOVE FINISH SLAB
AGGR	AGGREGATE
AHR	ANCHOR
AL	ALUMINUM
ALT	ALTERNATE
ANOD	ANODIZED
AO	ACCESS PANEL
AP	AUTOMATIC DOOR OPENER
APPROX	APPROXIMATE(LY)
ARCH	ARCHITECT(URAL)
ASPH	ASPHALT
AUTO	AUTOMATIC

B

BB	BULLETIN BOARD
BD	BOARD
BET	BETWEEN
BG	BUMPER GUARD
BITUM	BITUMINOUS
BKG	BACKING
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BLW	BELOW
BM	BEAM
BOT	BOTTOM
BRKT	BRACKET
BSMT	BASEMENT
BURS	BUILT UP ROOFING SYSTEM

C

CAB	CABINET
CARP	CARPET
CB	CATCH BASIN
CCT	CUBICLE CURTAIN TRACK
CCTV	CLOSE CIRCUIT TELEVISION
CG	CORNER GUARD
CEM	CEMENT
CEM PLAS	CEMENT PLASTER
CER	CERAMIC
CER TILE	CERAMIC TILE
CFE	CONTRACTOR FURNISHED EQUIPMENT
CH BD	CHALKBOARD
CI	CAST IRON
CL	CENTER LINE
CLG	CEILING
CLJ	CONTROL JOINT
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CNTR	COUNTER
CO	CASED OPENING
COL	COLUMN
CONC	CONCRETE
CONF	CONFERENCE
CONN	CONNECTION
CONSTR	CONSTRUCTION
CONT	CONTINUOUS
CORR	CORRIDOR
CR	CARD READER
CSK	CONTERSUNK
CSP	COMBINATION STANDPIPE
CSWK	CASEWORK
CUST	CUSTOM
CW	COLD WATER

D

D-W	DISTILLED WATER
DI-W	DEIONIZED WATER
DBL	DOUBLE
DBL ACT	DOUBLE ACTING
DEMO	DEMOLISH
DET	DETAIL
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIAG	DIAGONAL
DIFF	DIFFUSER
DIM	DIMENSION
DIM PT	DIMENSION POINT
DISP	DISPENSER
DIST	DISTANCE
DLV	DOOR LOUVER
DMPF	DAMPPROOFING
DN	DOWN
DOP	DOOR OPENING
DR	DRAIN
DS	DOWNSPOUT
DSP	DRY STANDPIPE
DT	DRAIN TILE, DRAPERY TRACK
DWG	DRAWING
DWGS	DRAWINGS
DWR	DRAWER
DWTR	DUMBWAITER

E

(E)	EXISTING
E	EAST
EA	EACH
ECAB	ELECTRICAL CABINET
EDR	EQUIPMENT DRAIN
EF	EACH FACE
EG	EDGE GUARD
EIFS	EXTERIOR INSULATION FINISH SYSTEM
EL	ELEVATION
ELAST	ELASTOMERIC
ELEC	ELECTRICAL
ELEV	ELEVATOR
EMER	EMERGENCY
EMR SHR	EMERGENCY SHOWER
ENCL	ENCLOSURE
ENGR	ENGINEER
EO	ELECTRICAL OUTLET
EOS	EDGE OF SLAB
EP	ELECTRICAL PANEL
EPDM	ETHYLENE PROPYLENE DIENE MONOMER
EPRF	EXPLOSION PROOF
EQ	EQUAL
EQL SP	EQUALLY SPACED
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ESCAL	ESCALATOR
EWC	ELECTRIC WATER COOLER
EXP	EXPANSION
EXP BT	EXPANSION BOLT
EXP JT	EXPANSION JOINT
EXPO	EXPOSED
EXST	EXISTING
EXST GR	EXISTING GRADE
EXT	EXTERIOR
EXTR	EXTRUSION

F

F/F	FACE TO FACE
FA	FIRE ALARM
FAWS	FLUID-APPLIED WATERPROOFING SYSTEM
FB	FLAT BAR
FBD	FIBERBOARD
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FDN	FOUNDATION
FDV	FIRE DEPARTMENT VALVE
FEB	FIRE EXTINGUISHER BRACKET
FEC	FIRE EXTINGUISHER CABINET
FEXT	FIRE EXTINGUISHER
FHC	FIRE HOSE CABINET
FH/FEC	FIRE HOSE/FIRE EXTINGUISHER CABINET
FHMS	FLAT HEAD MACHINE SCREW
FHWS	FLAT HEAD WOOD SCREW
FHV	FIRE HOSE VALVE
FHY	FIRE HYDRANT
FIN	FINISH
FIN FL	FINISH FLOOR
FIN GR	FINISH GRADE
FL	FLOOR(ING)
FLAM	FLAMMABLE
FLASH	FLASHING
FLEX	FLEXIBLE
FLR SK	FLOOR SINK
FLUOR	FLUORESCENT
FNR	FEMININE NAPKIN RECEPTACLE
FNTD	FEMININE NAPKIN-TAMPON DISPENSER
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOP	FACE OF PARTITION ASSEMBLY
FOS	FACE OF STUDS
FRPF	FIREPROOFING
FRZR	FREEZER
FR SNK	FLUSHING RIM SINK
FS	FULL SIZE
FSB	FOLDING SHOWER BENCH
FSTNR	FASTENER
FT	FOOT, FEET
FTG	FOOTING
FURN	FURNITURE
FURR	FURRING
FUS	FOLDING UTILITY SEAT
FUT	FUTURE
FXTR	FIXTURE

G

G	GAS
GA	GAUGE, GAGE
GALV	GALVANIZED
GALVI	GALVANIZED IRON
GALVS	GALVANIZED STEEL
GB	GRAB BAR
GC	GENERAL CONTRACTOR
GFRC	GLASS-FIBER REINFORCED CONCRETE
GFRG	GLASS-FIBER REINFORCED GYPSUM
GL	GLASS
GL BLK	GLASS BLOCK
GLU LAM	GLUE LAMINATED
GLZ	GLAZING
GND	GROUND
GR	GRADE OR GRADING
GRV	GRAVITY ROOF VENTILATOR
GVL	GRAVEL
GYP BD	GYPSUM BOARD
GYP PLAS	GYPSUM PLASTER

H

H	HIGH
HAGL	HEAT ABSORBING GLASS
HB	HOSE BIBB
HC	HOLLOW CORE
HCP	HANDICAP, HANDICAPPED
HD	HEAD
HDBD	HARDBOARD
HDWD	HARDWOOD
HDWE	HARDWARE
HGT	HEIGHT
HM	HOLLOW METAL
HNDRL	HANDRAIL
HORIZ	HORIZONTAL
HPT	HIGH POINT
HR	HOUR
HVAC	HEATING-VENTILATION-AIR CONDITIONING
HVP	HARDWOOD VENEER PLYWOOD
HW	HOT WATER

I – J – K

ID	INSIDE DIAMETER
INCAND	INCANDESCENT
INCL	INCLUDE, INCLUDING
INFO	INFORMATION
INSTL	INTERSTITIAL
INSUL	INSULATION
INTR	INTERIOR
IPS	INSIDE PIPE SIZE
IVT	INTRAVENOUS TRACK
JAN	JANITOR
JB	JUNCTION BOX
JT	JOINT
KCP	KEENE'S CEMENT PLASTER
KIT	KITCHEN
KPL	KICK PLATE
KS	KNEE SPACE

L

LAB	LABORATORY
LAM	LAMINATION
LAV	LAVATORY
LB	POUND
LC	LINEN CHUTE
LCD	LINEAR CEILING DIFFUSER
LF	LINEAR FOOT
LG	LENGTH
LGL	LEADED GLASS
LH	LEFT HAND
LIN	LINEAR
LKR	LOCKER
LL	LEAD LINED
LONG	LONGITUDINAL
LP	LIGHT PROOF
LPT	LOW POINT
LT	LIGHT
LT WT	LIGHT WEIGHT
LTG	LIGHTING

M

M-AIR	MEDICAL GAS SYSTEM – AIR
M-VAC	MEDICAL GAS SYSTEM – VACUUM
M-G	MEDICAL GAS SYSTEM – GAS
MACH	MACHINE
MAN	MANUAL
MATL	MATERIAL
MATV	MASTER ANTENNA TELEVISION SYSTEM
MAX	MAXIMUM
MB	MACHINE BOLT
MC	MEDICINE CABINET
MDO	MEDIUM DENSITY OVERLAY
MECH	MECHANICAL
MEMB	MEMBRANE
MET	METAL
MFR	MANUFACTURER
MGVB	MEDICAL GAS SHUTOFF & ALARM BOX
MH	MANHOLE
MH/S	MOP HOLDER WITH SHELF
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
ML	METAL LATH
MO	MASONRY OPENING
MOD	MODULE, MODULAR
MTD	MOUNTED
MTG	MOUNTING
MULL	MULLION

N

(N)	NEW
N	NORTH
NA	NOT APPLICABLE
NAT	NATURAL
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NPS	NOMINAL PIPE SIZE
NRC	NOISE REDUCTION COEFFICIENT
NTS	NOT TO SCALE

O

OA	OVERALL
OB	OBSCURE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFCI	OWNER FURNISHED-CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED-OWNER INSTALLED
OH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
ORD	OVERFLOW ROOF DRAIN
OVHD	OVERHEAD
OXY	OXYGEN

P

PA	PUBLIC ADDRESS
PBD	PARTICLEBOARD
PBX	PRIVATE TELEPHONE EXCHANGE
PC	PORTLAND CEMENT
PCD	PAPER CUP DISPENSER
PCF	POUNDS PER CUBIC FOOT
PDF	POWDER DRIVEN FASTENER
PE	PORCELAIN ENAMEL
PERF	PERFORATED
PERIM	PERIMETER
PERM	PERMANENT
PERP	PERPENDICULAR
PH	PANIC HARDWARE
PI	POINT OF INTERSECTION
PL	PLATE OR PROPERTY LINE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLAT	PLATFORM
PLBG	PLUMBING
PLF	POUNDS PER LINEAR FOOT
PLYWD	PLYWOOD
PMRS	PREFORMED METAL ROOFING SYSTEM
PNEU	PNEUMATIC
PNL	PANEL
PNL BD	PANEL BOARD
PORT	PORTABLE
PP	PUSH PLATE
PPM	PARTS PER MILLION
PR	PAIR
PREFAB	PREFABRICATED
PRKG	PARKING
PROJ	PROJECT
PROP	PROPERTY
PS CONC	PRESTRESSED CONCRETE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT
PTD	PAPER TOWEL DISPENSER
PTD/R	PAPER TOWEL DISPENSER & RECEPTACLE
PTN	PARTITION
PTR	PAPER TOWEL RECEPTACLE
PTS	PNEUMATIC TUBE SYSTEM
PVC	POLYVINYL CHLORIDE
PVG	PAVING
PVMT	PAVEMENT
PWR	POWER

Q – R

QT	QUARRY TILE
QTR	QUARTER
QTY	QUANTITY
R	RISER
RA	RETURN AIR
RAD	RADIUS
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REF	REFERENCE
REFR	REFRIGERATOR
REG	REGISTER
REINF	REINFORCE (D) (ING) (MENT)
REQD	REQUIRED
RESIL	RESILIENT
RET	RETURN
REV	REVISION
RH	RIGHT HAND
RHMS	ROUND HEAD MACHINE SCREW
RHWS	ROUND HEAD WOOD SCREW
RM	ROOM
RND	ROUND
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RWL	RAIN WATER LEADER

S

S	SOUTH
SA	SUPPLY AIR
SB	SPLASH BLOCK
SC	SOLID CORE
SCD	SEAT COVER DISPENSER
SCHED	SCHEDULE
SCR	SHOWER CURTAIN ROD
SCRN	SCREEN
SD	SOAP DISH
SDL	SOAP DISPENSER, LIQUID
SDP	SOAP DISPENSER, POWDER
SECT	SECTION
SEG	SEGMENT
SEP	SEPARATION OR SEPARATE
SEP JT	SEPARATION JOINT
SHR	SHOWER
SHT	SHEET, SHEETING
SHV	SHELVES, SHELVING
SIM	SIMILAR
SK	SINK
SMS	SHEET METAL SCREW
SP	SPACE, SPACED, SPACING
SPEC	SPECIFICATION
SPKLR	SPRINKLER
SPKR	SPEAKER
SQ	SQUARE
SQ FT	SQUARE FOOT
SQ IN	SQUARE INCH
SS	SANITARY SEWER
SSK	SERVICE SINK
SST	STAINLESS STEEL
ST	STREET
STAG	STAGGERED
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURAL
STRUCT STL	STRUCTURAL STEEL
STS	SELF-TAPPING SCREW
SUSP	SUSPENDED
SUSP CLG	SUSPENDED CEILING
SVCE	SERVICE
SYMM	SYMMETRICAL

T

T	TREAD
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
TB	TOWEL BAR
TC	TOP OF CONCRETE, TOP OF CURB
TEL	TELEPHONE
TEMP	TEMPORARY
TER	TERRAZZO
THERM	THERMAL
THK	THICK, THICKNESS
THRES	THRESHOLD
THRU	THROUGH
TK BD	TACK BOARD
TMPD GL	TEMPERED GLASS
TOL	TOLERANCE
TOT	TOTAL
TP	TOP OF PAVEMENT
TPD	TOILET PAPER DISPENSER
TPH	TOILET PAPER HOLDER
TSL	TOP OF SLAB
TST	TOP OF STEEL
TTB	TELEPHONE TERMINAL BOARD
TV	TELEVISION
TW	TOP OF WALL
TYP	TYPICAL

U

UC	UNDER COUNTER
UNEX	UNEXCAVATED
UNFIN	UNFINISHED
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
UR	URINAL
UTIL	UTILITY

V

VAC	VACUUM
VB	VINYL BASE, VALVE BOX
VCO	VACUUM CLEANER OUTLET
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VEST	VESTIBULE
VFAT	VINYL FACED ACOUSTIC TILE
VIF	VERIFY IN FIELD
VNR	VENEER
VNR PLAS	VENEER PLASTER
VOL	VOLUME
VWC	VINYL WALL COVERING

W

W	WEST
W/	WITH
W/O	WITH OUT
W/W	WALL TO WALL
WAU	WALL ASH URN
WC	WATER CLOSET
WD	WOOD
WDW	WINDOW
WF	WIDE FLANGE
WGL	WIRE GLASS
WHCH	WHEELCHAIR
WO	WHERE OCCURS
WP	WORKING POINT
WR	WATER RESISTANT
WSCT	WAINSCOT
WSP	WET STANDPIPE
WT	WEIGHT
WTRPRF	WATERPROOFING
WVF	WELDED SHEET VINYL FLOORING
WWF	WELDED WIRE FABRIC

X – Y – Z

XFMR	TRANSFORMER

SYMBOLS AS ABBREVIATIONS

∠	ANGLE
@	AT
℄	CENTER LINE
°	DEGREE(S) OF ANGULAR MEASURE
ø	DIAMETER
=	EQUAL
>	GREATER THAN
<	LESS THAN
‖	PARALLEL
⊥	PERPENDICULAR
±	PLUS OR MINUS (TOLERANCE)
#	POUND(S)
P̶L	PROPERTY LINE
'	FOOT OR FEET
"	INCH OR INCHES

ARCHITECTURAL GENERAL NOTES

1. THE FOLLOWING GENERAL NOTES APPLY TO ALL ARCHITECTURAL DRAWINGS. FOR NOTES APPLICABLE TO ALL DRAWINGS OF ALL DISCIPLINES, REFER TO THE "PROJECT GENERAL NOTES" – SEE INDEX OF DRAWINGS.
2. ALL PARTS OF THE WORK – INCLUDING MATERIALS, METHODS, ASSEMBLIES, ETC – MUST COMPLY WITH THE MIN REQUIREMENTS OF THE GOVERNING REGULATIONS OF ALL FEDERAL, STATE, DISTRICT, AND LOCAL AUTHORITIES HAVING JURISDICTION OVER THE PROJECT AS WELL AS THOSE GREATER REQUIREMENTS INDICATED BY THE CONTRACT DOCUMENTS. NO PART OF THE CONTRACT DOCUMENTS MAY BE CONSTRUED TO REQUIRE OR PERMIT WORK CONTRARY TO A GOVERNING REGULATION.
3. THE ARCHITECTURAL DRAWINGS ARE A PART OF A LARGER SET OF DRAWINGS WHICH, WHEN COMPLETE, CONSISTS OF ALL DRAWINGS LISTED BY THE INDEX OF DRAWINGS. THE WORK DESCRIBED BY THE DRAWINGS OF ANY ONE DISCIPLINE MAY BE AFFECTED BY THE WORK DESCRIBED ON DRAWINGS OF ANOTHER DISCIPLINE AND MAY REQUIRE REFERENCE TO THE DRAWINGS OF ANOTHER DISCIPLINE. PARTIAL SETS OF DRAWINGS ARE INCOMPLETE AND SHOULD NOT BE DISTRIBUTED OR UTILIZED BY THE CONTRACTOR. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW AND COORDINATE THE WORK OF ALL SUB-CONTRACTORS, TRADES, AND SUPPLIERS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS BEFORE COMMENCING CONSTRUCTION, AND TO ASSURE THAT ALL PARTIES ARE AWARE OF ALL REQUIREMENTS, REGARDLESS OF WHERE THE REQUIREMENTS ARE LOCATED IN THE CONTRACT DOCUMENTS, WHICH MIGHT AFFECT THE WORK OF THAT PARTY.
4. AS PART OF THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE THE WORK OF ALL SUB-CONTRACTORS, TRADES, AND SUPPLIERS, THE CONTRACTOR SHALL ENDEAVOR TO IDENTIFY AND NOTIFY THE ARCHITECT OF ANY CONFLICTS BETWEEN THE WORK OF DIFFERENT PARTIES AT THE EARLIEST POSSIBLE DATE SO AS TO ALLOW REASONABLE AND ADEQUATE TIME FOR THE CONFLICT TO BE RESOLVED WITHOUT DELAYING THE WORK. ALL DEVIATIONS FROM THAT WHICH IS REQUIRED BY THE CONTRACT DOCUMENTS MUST BE APPROVED IN ADVANCE BY THE ARCHITECT.
5. THE ARCHITECTURAL DRAWINGS ESTABLISH AND COORDINATE THE FINISHED APPEARANCE AND EXACT LOCATION OF ALL EXPOSED ELEMENTS OF THE WORK OF ALL TRADES, INCLUDING THAT WORK WHICH IS ILLUSTRATED PRIMARILY ON DRAWINGS OF OTHER DISCIPLINES. LOCATIONS SHOWN ON OTHER DRAWINGS ARE SCHEMATIC, UNLESS OTHERWISE NOTED ON THE

5. CONTINUED:

   ARCHITECTURAL DRAWINGS. THE ARCHITECTURAL DRAWINGS TAKE PRECEDENCE FOR THE FINISHED APPEARANCE AND EXACT LOCATION OF ALL PARTS OF THE WORK.

   EXCEPTION: DIMENSIONED LOCATIONS SHOWN ON ON DRAWINGS OF OTHER DISCIPLINES SHALL GOVERN ONLY WHERE:

   A. SPECIFICALLY AND INDIVIDUALLY INDICATED BY SYMBOL, KEYED NOTE, OR NOTATION ON THE ARCHITECTURAL DRAWINGS.

   B. OCCURING WITHIN A ROOM OR OTHER IDENTIFIED SPACE FOR WHICH ARCH SHEET OR SCHEDULE NOTES INDICATE THAT DIMENSIONS PROVIDED ELSEWHERE SHALL GOVERN.
6. THE ARCHITECTURAL FLOOR PLANS, REFLECTED CEILING PLANS, SECTIONS, AND ELEVATIONS ILLUSTRATE THE EXACT LOCATION OF MANY, BUT NOT ALL, EXPOSED PARTS OF THE WORK. APPLY THE RULES INDICATED BY THE DRAWING "TYPICAL RULES FOR DETERMINING MOUNTING HEIGHTS AND LOCATIONS" TO DETERMINE THE EXACT LOCATION OF EACH EXPOSED PART OF THE WORK.
7. REFER TO THE STRUCTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR THE DETAILED DESIGN OF STRUCTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING SYSTEMS, OF WHICH PORTIONS MAY BE SHOWN ON THE ARCHITECTURAL DRAWINGS.
8. SEE THE DRAWING "SURVEY CONTROL" FOR THE RELATIONSHIP OF SITE ELEVATIONS TO CONTROL POINTS AND BENCHMARKS.
9. FINISH FLOOR ELEVATIONS ARE TO TOP OF CONCRETE FLOOR SLAB, UON. WHERE THE CONCRETE IS DEPRESSED TO ACCOMMODATE MORTAR BEDS, SETTING BEDS, RAISED ACCESS FLOORS, AND OTHER SIMILAR FLOOR ASSEMBLIES, FINISHED FLOOR ELEVATIONS ARE TO TOP OF FINISH FLOOR ASSEMBLY INDICATED.
10. CEILING HEIGHT DIMENSIONS ARE TO FINISHED SURFACES, UNLESS OTHERWISE NOTED.
11. FOR TYPICAL DIMENSIONING CONVENTIONS, INCLUDING RULES FOR LOCATING DOORS WHICH HAVE NOT BEEN DIMENSIONED, REFER TO THE "DIMENSIONING CONVENTIONS" NOTES ON THIS SHEET.
12. FOR ILLUSTRATION AND DEFINITION OF TYP SYMBOLS USED ON THE ARCHITECTURAL DRAWINGS, SEE THE DRAWING "ARCHITECTURAL SYMBOLS".
13. ADDITIONAL SYMBOLS, NOT SHOWN OR DEFINED ON THE DRAWING "ARCHITECTURAL SYMBOLS", MAY OCCUR AND ARE DEFINED ON OTHER ARCH DRAWINGS.
14. BASIC FIRE PROTECTION AND EXITING CONCEPTS ARE ILLUSTRATED BY "KEY PLAN AND FIRE PROTECTION" DRAWINGS. REFER TO THE INDEX OF DRAWINGS FOR THE LOCATION OF ADDITIONAL FLOOR PLANS, CEILING PLANS, BUILDING SECTIONS, WALL SECTIONS, ELEVATIONS, SCHEDULES, AND DETAILS.
15. GRID LINES IDENTIFIED WITH A LETTER DESIGNATION ARE PARALLEL, UNLESS OTHERWISE NOTED. GRID LINES IDENTIFIED WITH A NUMBER DESIGNATION ARE PARALLEL AND ARE PERPENDICULAR TO THOSE WITH LETTER DESIGNATIONS, UON.

ARCHITECTURAL DIMENSIONING CONVENTIONS

1. EXCEPT WHERE DIRECTED TO PLACE ITEMS OF THE WORK AT THE "APPROXIMATE LOCATION SHOWN," DO NOT SCALE DRAWINGS FOR DIMENSIONAL INFORMATION. ALL ELEMENTS OF THE DRAWINGS MAY NOT BE DRAWN TO EXACT SCALE. ALL DIMENSIONS REQUIRED ARE SHOWN, OR MAY BE DERIVED FROM THOSE SHOWN, ON THE FLOOR PLANS, DETAIL PLANS, ELEVATIONS, SECTIONS, DETAILS, SCHEDULES, AND SPECIFICATIONS. SEE NOTES ON THIS SHEET AND SYMBOLS ON THE "ARCHITECTURAL SYMBOLS" DRAWING FOR DIMENSIONS CONVENTIONS USED ON THIS PROJECT.

2. EXCEPT WHERE SPECIFICALLY NOTED TO THE CONTRARY, ALL DIMENSIONS SHOWN ON THE ARCHITECTURAL DRAWINGS CONFORM TO THE FOLLOWING CONVENTIONS:

   A. DIMENSIONS UTILIZING THE "CENTERLINE" SYMBOL ARE MEASURED TO:
   - STRUCTURAL OR DIMENSIONAL GRID LINES.
   - CENTERLINE OF CONCRETE OR CONC MASONRY UNIT WALL (EXCLUSIVE OF APPLIED FINISHES HAVING THICKNESS OR FURRING). REFER TO THE ARCHITECTURAL PLANS AND SECTIONS, THE STRUCTURAL DRAWINGS, OR THE PARTITION SCHEDULE TO DETERMINE THE THICKNESS OF CONCRETE OR CONCRETE MASONRY UNIT WALLS.
   - CENTERLINE OF PARTITION ASSEMBLY (EXCLUSIVE OF ANY APPLIED FINISHES HAVING THICKNESS WHICH MAY BE ADDED TO SUCH WALLS) AT PARTITIONS FRAMED WITH METAL STUDS. REFER TO "PARTITION SCHEDULE" TO DETERMINE THE THICKNESS OF EACH PARTITION ASSEMBLY TYPE.
   - CENTERLINE OF DOOR, WINDOW, OR LOUVER OPENING.
   - CENTERLINE OF EQUIPMENT OR FURNISHING.
   - CENTERLINE OF OTHER FEATURES AS INDICATED.

   B. REFER TO SHEET A0.3 FOR ILLUSTRATION OF SYMBOL USED TO INDICATE CENTERLINE DIMENSION.

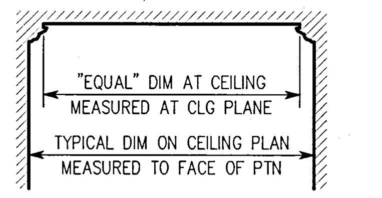
   C. DIMENSIONS UTILIZING THE "FACE OF" SYMBOL ARE MEASURED TO:
   - FACE OF CONCRETE OR CONC MASONRY UNIT WALL (EXCLUSIVE OF APPLIED FINISHES HAVING THICKNESS OR FURRING WHICH MAY BE ADDED TO THE FACE OF SUCH WALLS).
   - FACE OF PARTITION ASSEMBLY (EXCLUSIVE OF APPLIED FINISHES HAVING THICKNESS WHICH MAY BE ADDED TO SUCH WALLS) AS DEFINED BY THE PARTITION SCHEDULE. UNLESS NOTED AS A "FACE OF FINISH" OR "CLEAR" DIMENSION (SEE NOTES BELOW), DIM ARE NOT MEASURED TO THE FACE OF APPLIED FINISH. REFER TO THE "PARTION SCHEDULE" TO DETERMINE THE THICKNESS OF EACH PARTITION ASSEMBLY TYPE.
   - INSIDE EDGE OF FINISHED DOOR OPENING. REFER TO "DOOR SCHEDULE" FOR ADDL INFORMATION.
   - DIMENSION OR WORK POINT AS INDICATED ON RELATED ARCHITECTURAL DETAIL PLAN, SECTION, ELEVATION, CONFIGURATION DETAIL, OR CONSTRUCTION DETAIL.

   D. REFER TO SHEET A0.3 FOR ILLUSTRATION OF SYMBOL USED TO INDICATE "FACE OF" DIMENSION.

   E. WHERE "FACE OF FINISH" OR "CLEAR" DIMENSIONS ARE SPECIFICALLY NOTED, DIMENSION IS MEASURED TO:
   - FINISH FACES AT THE MOST NARROW OR CONSTRICTED POINTS OF THE SECTION WHERE DIMENSION IS SHOWN WHEN THE DIMENSION OCCURS ACROSS AN OPEN SPACE. IN THIS CASE, A "FACE OF FINISH" DIM IS EQUIVALENT TO A "CLEAR" DIMENSION.

2. SUB-PARAGRAPH E CONTINUED
   - FIN FACES AT THE WIDEST OR MOST EXPANSIVE POINTS OF THE SECTION WHERE THE DIM IS SHOWN WHEN THE DIMENSION OCCURS ACROSS AN OBJECT OR GROUP OF OBJECTS.

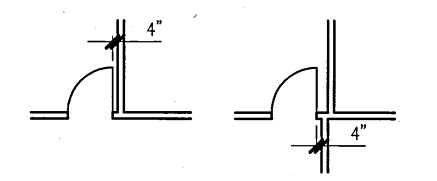
   F. WHERE "EQUAL" DIMENSIONS ARE USED ON REFLECTED CEILING PLANS TO LOCATE CEILING GRID WORK POINTS, MEASURE DIMENSIONS TO:
   - EDGE OF THE INDICATED CEILING AT THE FACE OF THE ADJ APPLIED FIN MEASURED AT THE PLANE OF THE CEILING. CAUTION: DUE TO POSSIBLE APPLICATION OF APPLIED FINISHES WHOSE THICKNESS MAY VARY BETWEEN FLOOR AND CEILING AND WHOSE THICKNESS IS NOT ACCOUNTED FOR (EXCEPT AS INDICATED BY "FOF" OR "CLEAR") BY DIM SHOWN ON THE FLOOR PLANS, THE CONTRACTOR MUST ADJUST, AS NECESSARY, THE FLOOR PLAN DIMENSIONS TO REFLECT CONDITIONS AT PLANE OF THE CEILING.



3. WHERE DIMENSIONS ARE NOT PROVIDED ON THE FLOOR PLANS TO LOCATE DOOR OPENINGS, APPLY THE FOLLOWING RULES, IN ORDER, TO DETERMINE THE LOCATION OF DOOR OPENINGS:

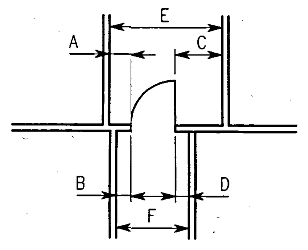
   A. DOOR OPENINGS MAY BE DIMENSIONED ON DWGS OTHER THAN THE FLOOR PLANS. REFER TO THE SECTIONS, ELEVATIONS, DETAILS, AND DOOR SCHED NOTES FOR ADDITIONAL DIMENSIONAL INFORMATION.

   B. WHERE THE HINGE-SIDE OF A DOOR IS SHOWN ADJACENT TO A WALL, OR WALLS, PERPENDICULAR TO THE WALL IN WHICH THE DOOR OPENING OCCURS, LOCATE THE HINGE-SIDE FINISHED EDGE OF THE DOOR OPENING 4 INCHES FROM THE FACE (EXCLUSIVE OF ANY APPLIED FINISH) OF THE CLOSEST PERPENDICULAR WALL OR PARTITION ASSEMBLY.



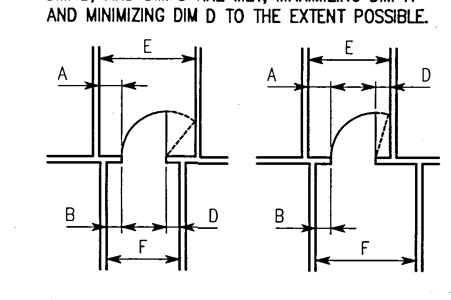
3. CONTINUED

   C. WHERE DOOR IS NOT SHOWN ADJACENT TO A PERPENDICULAR WALL AND EITHER DIM E OR DIM F IS 16'-0" OR LESS, LOCATE DOOR NOT LESS THAN THE FOLLOWING MIN DIMENSIONS:
   - DIMENSION A = 18 INCHES MIN. INTERIOR COND. 24 INCHES MIN. EXTERIOR COND.
   - DIMENSION B = 12 INCHES MIN. IF LATCH AND CLOSER
   - DIMENSION C = DOOR WIDTH + 2 INCHES MIN.
   - DIMENSION D = 4 INCHES MIN.
   - DIMENSIONS E & F = AS SHOWN ON PLANS.

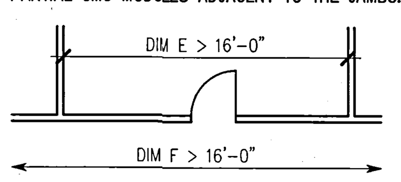


   - IF SPACE ALLOWS, CENTER DOOR IN WALL SHOWN ON THE DRAWINGS SO THAT EITHER DIM A EQUALS DIM C OR DIM B EQUALS DIM D.

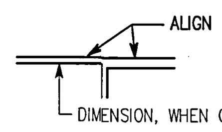
   D. IF DIM E IS LESS THAN THE SUM OF 2 TIMES THE DOOR WIDTH PLUS 20 INCHES, LOCATE DOOR SO THAT MINIMUMS STATED ABOVE FOR DIM A, DIM B, AND DIM D ARE MET, MAXIMIZING DIM A AND MINIMIZING DIM D TO THE EXTENT POSSIBLE.



   E. WHERE DOOR IS SHOWN LOCATED IN A LARGE EXPANSE OF OPEN WALL (DIM E AND DIM F IN DIAGRAMS BOTH EXCEED 16'-0"), PLACE DOOR AT APPROXIMATE LOCATION SHOWN ON THE PLANS. WHERE DOOR OCCURS IN CMU WALL, PLACE DOOR AT APPROXIMATE LOCATION SHOWN WHILE MINIMIZING PARTIAL CMU MODULES ADJACENT TO THE JAMBS.



4. WHERE WALLS AND/OR PARTITIONS OF UNEQUAL THICKNESS ABUT, ALIGN EXPOSED FACES, UON.



UCR

UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for	Rev	Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Drawing Title

GENERAL NOTES & ABBREVIATIONS

NOT TO SCALE
Scale

3193000
Project Number

06OCT00
Baseline Date

A0.03
Drawing Number

Plot Sheet Filename: I:\...\3193000\SHT\A0003.dwg
XREF Filename(s): UCR_Tblk ucABBREV
Plot Setup Script:
Plot Date: 03/11/02 16:14
Plot View:

06/21/00

ARCHITECTURAL REFLECTED CEILING PLAN SYMBOLS

3H4 HALLWAY 10'-0" — ROOM NAME AND NUMBER WITH CEILING HEIGHT
OCCURS ONLY ON CEILING PLANS WHEN NOT SHOWN ON FLOOR PLANS

GRID-TYPE FINISH CEILING, *SEE FINISH SCHEDULE FOR TYPE AND GRID MODULE DIMENSIONS*

ACCESS PANEL.

CEILING DIMENSION WORK POINT *DISTANCE FROM NEAREST WALL*

GYPSUM BOARD CEILING, SEE FINISH SCHEDULE FOR ADDL INFORMATION *TYPICALLY USED ONLY TO CLARIFY EXTENT OF GYP BD*

SPRINKLER HEAD *SEE SHEET A0.5 FOR TOLERANCE REQUIREMENTS*

ACCESS PANEL, TYPE AS DESIGNATED BY LETTER. 24" X 24" UON

CEILING DIFFUSER *SEE ALSO MECH DRAWINGS.*

LINEAR DIFFUSER *SEE ALSO MECH DRAWINGS.*

SIDEWALL DIFFUSER *SEE ALSO MECH DRAWINGS.*

2' X 4' FLUORESCENT LIGHT FIXTURE

1' X 4' FLUORESCENT LIGHT FIXTURE

2' X 2' FLUORESCENT LIGHT FIXTURE

JUNCTION BOX, CEILING-MOUNTED

RECESSED TELEVISION OUTLET, CLG-MOUNTED

BRKT — RECESSED TELEVISION OUTLET WITH SUPPORT BRACKET, CLG-MOUNTED

PROJ — RECESSED TELEVISION OUTLET WITH PROJECTION TV SUPPORT BRACKET, CLG-MOUNTED

VISIBLE AND AUDIBLE FIRE ALARM, CEILING-MOUNTED

SURFACE-MOUNTED LIGHT FIXTURE

SURFACE-MOUNTED DARK ROOM SAFE LIGHT

P 12'-0" — PENDANT LIGHT FIXTURE, *DIM INDICATES HEIGHT AFF*

RECESSED DOWN-LIGHT FIXTURE

WALL WASHER LIGHT FIXTURE *SHADING INDICATES LIGHTED FACE*

SPOT LIGHT FIXTURE, *ARROW INDICATES DIRECTION OF FOCUS*

TRACK LIGHT FIXTURE

P 9'-6" — STRIP LIGHT FIXTURE *"P" (WO) INDICATES PENDANT MOUNTED. DIM INDICATES HEIGHT AFF*

2 P 9'-0" — CLOCK, PENDANT-MOUNTED. *NUMBER INDICATES NUMBER OF CLOCK FACES*

CAMERA

7'-6" — EXIT SIGN, WALL-MOUNTED

8'-0" — LIGHT FIXTURE, WALL-MOUNTED

8'-6" — SPEAKER, WALL-MOUNTED

SIDEWALL SPRINKLER HEAD

7'-6" — TELEVISION OUTLET, WALL-MOUNTED

BRKT 7'-6" — TELEVISION OUTLET WITH SUPPORT BRACKET, WALL-MOUNTED

PA — SPEAKER, FLUSH WITH CLG *ABBREVIATION INDICATES TYPE*

PA 9'-0" — SPEAKER, PENDANT-MOUNTED *ABBREVIATION INDICATES TYPE*

SMOKE DETECTOR *SEE ELEC DWGS FOR TYPE*

HEAT DETECTOR

MOTION DETECTOR, *SEE SECURITY DRAWINGS*

OCCUPANCY DETECTOR, *SEE ELECTRICAL DRAWINGS*

FLASHING PANIC ALARM, *SEE SECURITY DRAWINGS*

EXIT SIGN, SINGLE-SIDED. *SHADING INDICATES LIGHTED SIDE*

EXIT SIGN, DOUBLE-SIDED. *SHADING INDICATES LIGHTED SIDES*

P 8'-6" — EXIT SIGN, PENDANT, SINGLE-SIDED *SHADING INDICATES LIGHTED SIDE*

P 8'-0" — EXIT SIGN, PENDANT, DOUBLE-SIDED *SHADING INDICATES LIGHTED SIDE*

ARCHITECTURAL FLOOR PLAN SYMBOLS

GENERAL PLAN SYMBOLS & LEGEND:

NEW CONSTRUCTION

EXISTING CONSTRUCTION TO REMAIN

EXISTING CONSTRUCTION TO BE DEMOLISHED

NOT-IN-CONTRACT ITEMS *(SHOWN DASHED-DOT)*

TOILET PARTITION AND DOOR

7'-0" — ALCOVE, SOFFIT: DIMENSION INDICATES SOFFIT HEIGHT, AFF

4-108 | 4-112 — INDICATES DIVIDING LINE IN OPEN AREAS THAT ARE DIVIDED INTO SEPARATE ROOM NUMBERS.

OVER-HEAD ITEMS (I.E. CEILING-MOUNTED EQUIPMENT, WALL-MOUNTED CASEWORK ETC.)

UNDER-COUNTER OR CONCEALED ITEMS, AS DESIGNATED

CG CG — CORNER GUARD (CG)

EG — EDGE GUARD (EG)

BG — BUMPER GUARD AND/OR RUB RAIL, AS INDICATED

GUARDRAIL OR HANDRAIL, AS INDICATED

FIRE PROTECTION

F — FIRE ALARM PULL STATION,

F — FIRE ALARM HORN/STROBE, ABOVE PULL STATION.

FEB — FIRE EXTINGUISHER BRACKET, SURFACE-MOUNTED

FEC FEC — FIRE EXTINGUISHER CABINET, RECESSED OR SURFACE-MOUNTED

FHC FHC — FIRE HOSE CABINET, RECESSED OR SURFACE-MOUNTED

FH/FEC FH/FEC — FIRE HOSE / FIRE EXTINGUISHER CABINET, RECESSED OR SURFACE-MOUNTED

FHV FHV — FIRE HOSE VALVE CABINET, RECESSED OR SURFACE-MOUNTED

CSP — STANDPIPE (COMBINATION STANDPIPE SHOWN).

DIMENSION SYMBOLS

DIMENSION SHOWN TO:
- CENTERLINE OF ASSEMBLY
- CENTER OF OPENING
- CENTERLINE OF EQUIPMENT/FURNISHINGS

CENTERLINE SYMBOL

DIMENSION SHOWN TO FACE OF:
- PARTITION ASSEMBLY
- EDGE OF DOOR OPENING
- OTHER ASSEMBLY
- WORK POINT INDICATED ON DETAILS

FOR ADDITIONAL INFORMATION REGARDING TYPICAL METHODS OF DIMENSIONING USED ON THE ARCHITECTURAL DRAWINGS, REFER TO "ARCHITECTURAL DIMENSIONING CONVENTIONS" (SHEET A0.2) AND THE "PARTITION SCHEDULE NOTES" (SEE THE "INDEX OF DRAWINGS" FOR SHEET NUMBER).

SPECIALTY PIPED SYSTEMS

NOT USED

PLUMBING FIXTURES

TOILET, TANK TYPE

TOILET, WALL-HUNG

URINAL (UR), WALL-HUNG

LAVATORY, PEDESTAL OR WALL-HUNG

LAVATORY, COUNTER-TOP *ACCESSIBLE TO THE DISABLED, TYPICAL.*

SINK, COUNTER-TOP. *ABBREVIATION (WO) INDICATES TYPE OF SINK*

SINK, PEDESTAL OR WALL-HUNG. ABBREVIATION (WO) INDICATES TYPE OF SINK

SERVICE SINK

DF or EWC — DRINKING FOUNTAIN *ACCESSIBLE TO THE DISABLED, TYPICAL.*

HB — HOSE BIBB

JANITOR'S RECEPTOR

BATHTUB

SHOWER *SHOWER CONTROLS AND HEAD ABOVE.*

FD — FLOOR DRAIN (SHOWN), ROOF, OR AREA DRAIN *LINE OF VALLEY IN SLOPING FLOOR (OR ROOF)*

ELECTRICAL AND SYSTEMS

WHEN SHOWN ON THE ARCH DRAWINGS, THE FOLLOWING ARE PROVIDED FOR EXACT LOCATION AND FINISHED APPEARANCE COORDINATION - SEE THE ELECTRICAL OR MECHANICAL DRAWINGS FOR THE DETAILED DESIGN OF EACH SYSTEM.

LIGHT SWITCH *SEE ELEC DRAWINGS FOR TYPE.*

ELECTRICAL OUTLET, *SEE ELEC DRAWINGS FOR TYPE.*

ECAB ECAB — ELECTRICAL CABINET, RECESSED OR SURFACE-MOUNTED

TTB — TELEPHONE TERMINAL BD, SURFACE-MOUNTED

VOICE/DATA OUTLET, WALL-MOUNTED

DIGITAL DATA OUTLET, WALL-MOUNTED

VOICE/DATA OUTLET, FLOOR-MOUNTED

DIGITAL DATA OUTLET, FLOOR-MOUNTED

7'-6" — CLOCK, MASTER SYSTEM *HEIGHT WHERE NOT TYPICAL*

7'-0" — CLOCK RECEPTACLE *HEIGHT WHERE NOT TYPICAL*

4'-0" — JUNCTION BOX, WALL-MOUNTED

M M — MAGNETIC HOLD-OPEN DEVICE, WALL-MOUNTED OR FLOOR-MOUNTED

L — LOW LEVEL EXIT SIGN

CCTV — CCTV CAMERA, WALL-MOUNTED *SEE SECURITY DRAWINGS*

T — THERMOSTAT *SEE MECHANICAL DRAWINGS FOR TYPE.*

ARCHITECTURAL REFERENCE SYMBOLS

DETAIL

24 / A9.2 — DETAIL NUMBER; DRAWING WHERE DETAIL IS FOUND; AREA OF DETAIL CUT PERPENDICULAR TO VIEW

DETAIL ON SAME SHEET

12 — DETAIL NUMBER; HYPHENS INDICATE DETAIL IS SHOWN ON SAME SHEET AS WHERE REFERENCED

DETAIL

35 / A9.2 — AREA OF DETAIL CUT PARALLEL TO VIEW

DETAIL PLAN / ELEVATION

8 / A4.2 — AREA OF ENLARGED PLAN OR ENLARGED ELEVATION

SINGLE ELEVATION

5 / A8.3 — DIRECTION OF VIEW; ELEVATION NUMBER; DRAWING WHERE ELEVATION IS FOUND

MULTIPLE ELEVATIONS

B, C / A8.3 — NAME OF VIEW; DIRECTION OF VIEW(S)

SECTION

23 / A6.8 — SECTION NUMBER; DRAWING WHERE SECTION IS FOUND.; LINE OF SECTION CUT; DIRECTION OF VIEW

WINDOW AND LOUVER MARK

P-3 — EXTERIOR WINDOW OR LOUVER IDENTIFYING MARK, SEE CORRESPONDING NUMBER ON SCHEDULE

EQUIPMENT MARK

B056 — EQUIPMENT ITEM MARK - SEE CORRESPONDING MARK IN SPECIFICATIONS

REVISION

REVISION NUMBER - SEE REVISION HISTORY ON TITLE BLOCK OF EACH SHEET.

EXTENT OF REVISION

REVISION SYMBOL IS INSIDE INSIDE EXTENT OF CURRENT REVISION AND REFERENCED TO IT.

MATCH LINE

A2.3.5 — DRAWING WHERE CONTINUATION IS FOUND.; DRAWING SIDE

MODULAR CASEWORK MARK

C16U — SEE "MODULAR CASEWORK SCHEDULE" (SEE "INDEX OF DRAWINGS" FOR SHEET NUMBER) FOR ADDITIONAL INFORMATION REGARDING THIS SYMBOL

KEY NOTE

12 — SEE CORRESPONDING NUMBERED KEYED NOTE DEFINED ON THE SAME SHEET WHERE THE REFERENCE OCCURS

LEVEL LINE

SECOND LEVEL EL 15'-6" — INDICATES HEIGHT ABOVE PROJECT DATUM. SEE "ARCHITECTURAL GENERAL NOTES" (SHEET A0.1) FOR DEFINITION OF DATUM.

DIMENSION POINT

INDICATES POINT ON DIMENSION STRING TO WHICH A POINT ON RELATED DRAWING IS ALSO DIMENSIONED.

PARTITION TYPE MARK

2A4 — SEE "PARTITION SCHEDULE" FOR ADDITIONAL INFORMATION

GRID OR COLUMN LINES

B — MAJOR GRID LINE

B.4 — INTERMEDIATE GRID LINE

5 — GRID LINE DEFINING NEW CONSTRUCTION (CIRCLE SHAPE)

90° TYP, UON

GENERAL SYMBOLS NOTES

A. THE PURPOSE OF THIS SHEET IS TO ILLUSTRATE AND DEFINE TYPICAL GRAPHIC SYMBOLS AND SYSTEMS OF GRAPHIC SYMBOLS WHICH MAY OCCUR ON THE ARCHITECTURAL DRAWINGS.

B. ADDITIONAL SYMBOLS, NOT SHOWN OR DEFINED ON THIS SHEET, MAY BE USED ON THE ARCH DRAWINGS AND ARE TYPICALLY DEFINED ON OTHER SHEETS. WHERE SUCH SYMBOLS OR SYMBOLIC SYSTEMS ARE NOT DEFINED BY THE ARCH DRAWINGS, THE MEANING OF SUCH SYMBOLS SHALL BE AS DEFINED BY "STANDARD REFERENCE SYMBOLS FOR CONSTRUCTION DOCUMENTS" PUBLISHED OCTOBER 1991 BY THE CONSTRUCTION SPECIFICATIONS INSTITUTE.

C. THE ILLUSTRATION OF A SYMBOL OR SYSTEM OF SYMBOLS ON THIS SHEET DOES NOT NECESSARILY INDICATE THAT THE BUILDING ITEM OF SYSTEM DESCRIBED BY THE SYMBOL IS USED AS PART OF THIS PROJECT. REFER TO THE PLANS, ELEVATIONS, SECTIONS, SCHEDULES, DETAILS, AND SPECIFICATIONS TO DETERMINE THE SCOPE OF THE WORK.

D. MOUNTING HEIGHTS, WHERE INDICATED ADJ TO THE SYMBOLS SHOWN ON THIS SHEET, ARE PROVIDED ONLY FOR THE PURPOSE OF ILLUSTRATING THE FORMAT OF THE SYMBOL. ON DRAWINGS OTHER THAN THIS SHEET, MOUNTING HEIGHTS ARE INDICATED ADJ TO THE SYMBOL ONLY WHERE THE MOUNTING HEIGHT IS NOT TYPICAL. WHERE THE HEIGHT IS TYPICAL, NO HEIGHT IS SHOWN. TO DETERMINE THE TYPICAL MOUNTING HEIGHT FOR EACH ELEMENT, REFER TO SHEET A0.05 - "TYPICAL MOUNTING HEIGHT AND CLEARANCES" - AND OTHER DRAWINGS AS INDICATED.

C — MOUNTING HEIGHT IS OMITTED WHERE HEIGHT IS TYPICAL.

C 7'-0" — HEIGHT IS SHOWN WHERE HEIGHT IS NOT TYPICAL.

E. SYMBOLS ARE NOT DRAWN TO SCALE. TO DETERMINE THE ACTUAL SIZES OF ELEMENTS REPRESENTED BY SYMBOLS, REFER TO THE SPECIFICATIONS AND OTHER DRAWINGS AS MAY APPLY.

F. FOR ADDITIONAL INFORMATION REGARDING DIMENSIONING DIMENSIONS USED ON THIS PROJECT, REFER TO THE "ARCHITECTURAL DIMENSIONING CONVENTIONS" ON SHEET A0.03

G. FOR INFORMATION REGARDING SYMBOLS WHICH ARE USED AS ABBREVIATIONS, REFER TO THE "ARCHITECTURAL ABBREVIATIONS" SHOWN ON SHEET A0.03.

H. CERTAIN SYMBOLS MAY INCORPORATE SPECIAL ABBREVIATIONS AS PART OF THE SYMBOL. SUCH SPECIAL ABBREVIATIONS ARE AS DEFINED ON THIS SHEET.

PARTITION TYPE SYMBOL

BASIC PARTITION TYPE AND ADDITIONAL PARTITION COMPONENTS, IF ANY, ARE INDICATED ON THE FLOOR PLANS BY THE FOLLOWING SYMBOL INCORPORATING A FOUR DIGIT NOTATION. SYMBOLS APPEAR ON THE LARGEST SCALE PLAN PROVIDED FOR ANY GIVEN AREA.

FIRST THREE DIGITS INDICATE BASIC PARTITION TYPE - SEE "PARTITION SCHEDULE" AND THE DETAILS ILLUSTRATING BASIC PARTITION TYPES ON THE SHEETS FOLLOWING THE SCHEDULE (SEE THE "INDEX OF DRAWINGS" FOR SHEET NUMBERS).

FINAL ONE OR TWO DIGITS INDICATE ADDITIONAL COMPONENTS GROUP - SEE "ADDL PARTITION COMPONENTS MATRIX" (SEE THE "INDEX OF DRAWINGS" FOR SHEET NUMBER).

OR — 2C4AZ

2 C 4 A Z

FRAMING UNIT SIZE CATEGORY
1 = 1-5/8" FRAMING UNIT
2 = 2-1/2" FRAMING UNIT
3 = 3-5/8" FRAMING UNIT
4 = 4" FRAMING UNIT
6 = 6" FRAMING UNIT

BASIC PARTITION ASSEMBLY CATEGORY

FIRE-RATING OF PARTITION IN HOURS. RATING MAY EXCEED REQUIREMENTS OF APPLICABLE BUILDING CODE(S).

ROOM IDENTIFICATION

ROOM NUMBERS ARE SHOWN ON 1/8" SCALE FLOOR PLANS. WHERE DUPLICATED ON PLANS OF OTHER SCALES (SUCH AS 1/16" SCALE OR 1/4" ENLARGED PLANS) OR ON OTHER PLANS OF DIFFERENT TYPES (SUCH AS 1/8" SCALE REFLECTED CEILING PLANS), THESE DESIGNATIONS ARE PROVIDED FOR REFERENCE ONLY.

172 — ROOM NUMBER

OFFICE — ROOM NAME

ARCHITECTURAL SITE DEVELOPMENT SYMBOLS

370 — NEW FINISH CONTOUR *ELEVATION SHOWN ON HIGH SIDE.*

370 — EXISTING CONTOUR *ELEVATION SHOWN ON HIGH SIDE.*

371.50 (E) — SPOT ELEVATION, EXISTING.

322.00 (N) — SPOT ELEVATION, NEW FINISH GRADE.

SEE "ARCH GENERAL NOTES" FOR DEFINITION OF DATUM UPON WHICH ELEVATIONS ARE BASED.

PROPERTY LINE.

EASEMENT OR SETBACK LINE.

LIMIT OF WORK CONSTRUCTION BOUNDARY.

FENCE, NEW.

FENCE, EXISTING TO REMAIN.

FLOW LINE TOWARD DRAIN.

FOOTPRINT OF BUILDING TO BE DEMOLISHED

FOOTPRINT OF EXISTING BUILDING.

FOOTPRINT OF NEW BUILDING

LIGHT STANDARD.

CB — CATCH BASIN *SEE ALSO CIVIL DRAWINGS.*

AD — AREA DRAIN.

FHY — FIRE HYDRANT (FHY).

FIRE DEPT CONNECTION (FDC), FREE-STANDING.

PARKING STALL RESERVED FOR THE DISABLED.

MH — MANHOLE.

TYPE — POWER AND/OR TELEPHONE POLE, NEW.

DOOR OPENING AND INTERIOR GLAZED PARTITION SYMBOLS

SINGLE DOOR *DOOR OPENING MARK (TYPICAL) - SEE SCHEDULE*

RADIO FREQUENCY BOOTH DOOR

VAULT, WALK-IN REFRIG, OR AUDIO BOOTH DOOR, AS DESIGNATED

DOUBLE ACTING DOOR

PAIR DOORS: UNEQUAL SIZES *AT PAIRS LESS THAN 6'-0" WIDE, LARGER LEAF IS 3'-0" WIDE (UON)* *DOOR MARK ALWAYS SHOWN ON LARGER AND ACTIVE LEAF (UON) - SEE SCHED*

PAIR DOORS: EQUAL SIZES *DOOR MARK ALWAYS SHOWN ON ACTIVE LEAF*

PAIR DOORS: EQUAL SIZES, DOUBLE EGRESS

AUTOMATIC DOORS: PUSH PAD ACTUATED

822A — CASED OPENING

681A — SLIDING DOOR

176C — SLIDING POCKET DOOR

907A — SLIDING DOOR *(SHOWN WITH ONE FIXED PANEL)*

88A — ACCORDION DOOR

218B — BIFOLD DOOR

772A — PAIR: BIFOLD DOORS

525B — FOLDING DOOR

907A — SLIDING DOOR/BREAK-AWAY

266B — ROLL-UP DOOR, FACE-OF-WALL MOUNTED

399A — ROLL-UP DOOR, BET JAMBS MOUNTED

566A — INTERIOR GLAZED PARTITION *OPENING NUMBER (TYP) SEE SCHEDULE*

291A — PASS-THROUGH OPENING

425A — GLAZED PASS-THROUGH WINDOW

488A — PASS-THRU WINDOW WITH ROLL-UP DOOR

278 — GLAZED PASS-THRU WINDOW WITH ROLL-UP DOOR

INTERIOR GLAZED PARTITIONS AND PASS-THRU ARE NUMBERED WITH AND SCHEDULED WITH DOOR OPENINGS. FOR ADDL INFORMATION, REFER TO THE DOOR SCHEDULE - SEE "INDEX OF DRAWINGS."

ARCHITECTURAL MATERIALS INDICATIONS

LARGE SCALES	INTERMEDIATE SCALES	SMALL SCALES	
			EARTH *SHOWN IN SECTION*
			ROCK FILL, GRAVEL *SHOWN IN SECTION*
			CAST-IN-PLACE CONC *PLAN OR SECTION*
			PRECAST CONCRETE *PLAN OR SECTION*
			BRICK MASONRY *PLAN OR SECTION*
			CONC MASONRY UNITS *PLAN OR SECTION*
			STONE: GRANITE, MARBLE, OR AS NOTED
			METAL: TYPE AS NOTED *PLAN OR SECTION*
			METAL: ROLLED SHAPES *PLAN OR SECTION*
			SHEET METAL: AS NOTED *PLAN OR SECTION*
			WOOD FRAMING, CONT *SHOWN IN SECTION*
			WOOD BLOCKING *SHOWN IN SECTION*
			FINISHED WOOD *SECTION OR ELEVATION*

LARGE SCALES	INTERMEDIATE SCALES	SMALL SCALES	
			PLYWOOD *SHOWN IN SECTION*
			PARTICLEBOARD *SHOWN IN SECTION*
			SPRAYED FIREPROOFING *SHOWN IN SECTION*
			BATT INSULATION: THERMAL OR ACOUS, UON
			RIGID INSULATION: THERM, ACOUS, OR SAFING
			GLASS *PLAN OR SECTION*
			PLASTER ON METAL LATH *SHOWN IN SECTION*
			GYPSUM BOARD *SHOWN IN SECTION*
			TILE: MOSAIC, CERAMIC, QUARRY, UON
			RESINOUS FLOORING: TERRAZO, TROWEL-ON, UON
			ACOUSTICAL TILE *SHOWN IN SECTION*
			RESILIENT FLOORING: VCT, SHEET VINYL, UON
			CARPET, CARPET TILE *SHOWN IN SECTION*

DETAIL NUMBERING SYSTEM

DETAIL MODULE LAYOUT

36	31	26	21	16	11	6	1
37	32	27	22	17	12	7	2
38	33	28	23	18	13	8	3
39	34	29	24	19	14	9	4
40	35	30	25	20	15	10	5

DETAILS ARE NUMBERED ACCORDING TO THEIR LOCATION ON EACH SHEET, AND ARE NOT NUMBERED CONSECUTIVELY.

DETAIL PLANS, ELEVATIONS, SECTIONS, AND DETAILS ARE NUMBERED ACCORDING TO THE MODULE SYSTEM SHOWN IN THE ILLUSTRATION AT LEFT.

EACH DETAIL MAY OCCUPY ONE OR MORE WHOLE MODULES -- OR REGULAR FRACTIONS OF A WHOLE MODULE (IE, 1-1/3 MODULES WIDE BY 2-1/2 MODULES HIGH). THE DETAIL MODULE IS USED TO ESTABLISH THE IDENTIFYING LABEL FOR EACH DETAIL, NOT TO LIMIT THE SIZE OF THE DETAIL.

DETAIL NUMBERING EXAMPLE

37, 38, 23, 13, 29, 24, 4, 40, 30, 25, 15, 5

THE NUMBER OF THE MODULE (IE, 15 OR 18) WHICH OCCURS IN THE LOWER LEFT CORNER OF THE MODULE -- OR SEVERAL MODULES GROUPED TOGETHER TO COMPRISE A SINGLE DETAIL -- DETERMINES THE NUMBER OF THE DETAIL PLAN, ELEVATIONS, SECTION, OR DETAIL (AS SHOWN IN THE ILLUSTRATION AT LEFT). ALTHOUGH THE MODULES NUMBERS OCCUR IN CONSECUTIVE ORDER, NOT ALL NUMBERS ARE NECESSARILY USED ON EACH SHEET.

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for | Rev Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Drawing Title
ARCHITECTURAL SYMBOLS

NOT TO SCALE

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Project Number
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Baseline Date
A0.04
Drawing Number

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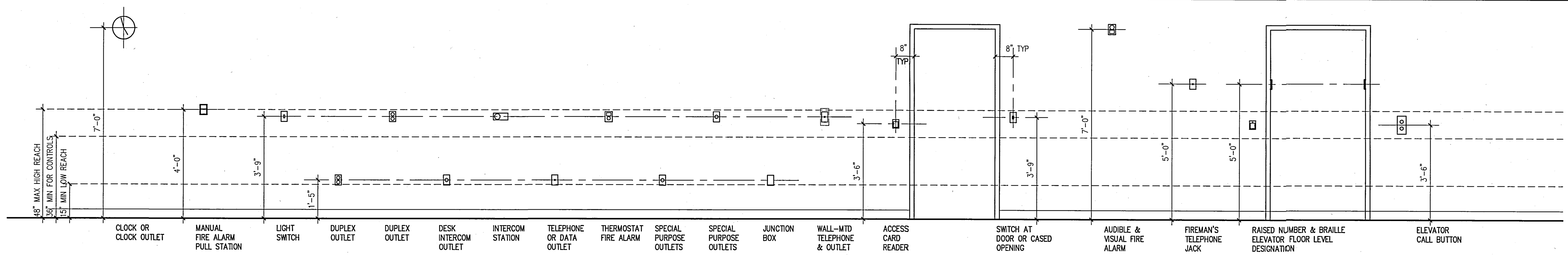
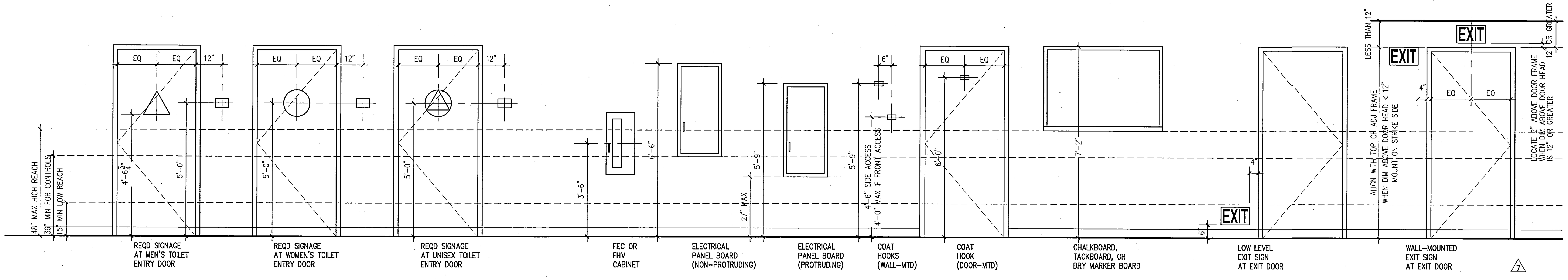
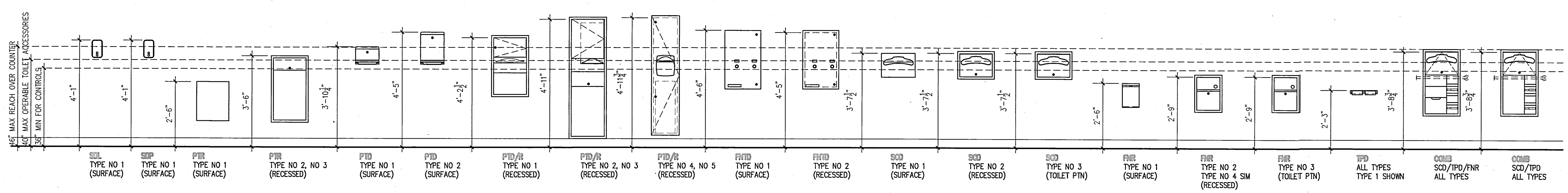
TYPICAL MOUNTING HEIGHTS AND CLEARANCES







SHEET NOTES

1. IT IS THE INTENT OF THE DESIGN THAT ALL ITEMS SHOWN MOUNTED AT TYPICAL HEIGHTS BE ACCESSIBLE TO PERSONS WITH DISABILITIES.

2. THE PURPOSE OF THIS SHEET IS TO ILLUSTRATE TYPICAL MOUNTING HEIGHTS AND, WHERE APPLICABLE, TYPICAL MINIMUM OR MAXIMUM CLEARANCES, AND/OR TYPICAL MOUNTING CONFIGURATIONS FOR A VARIETY OF ITEMS. ATTENTION: THIS SHEET MAY ILLUSTRATE ITEMS OR CONFIGURATIONS WHICH DO NOT OCCUR AS PART OF THE WORK OF THIS PROJECT. REFER TO THE PLANS, ELEVATIONS, SECTIONS, DETAILS, AND SCHEDULES TO DETERMINE WHICH ITEMS AND CONFIGURATIONS APPLY TO THE WORK OF THIS PROJECT.

3. THE HEIGHTS, CLEARANCES, AND CONFIGURATIONS SHOWN ON THIS SHEET ARE TYPICAL AND SHALL APPLY TO ALL INSTANCES OF THE ITEM (OR GROUP OF ITEMS) SHOWN UNLESS SPECIFICALLY NOTED OR DIMENSIONED OTHERWISE. THE TYPICAL DIMENSIONS SHOWN ON THIS SHEET TAKE PRECEDENCE OVER TYPICAL DIMENSIONS SHOWN ON THE ELECTRICAL OR MECHANICAL DRAWINGS FOR THE MOUNTING OF ITEMS INSTALLED BY THE ELECTRICAL OR MECHANICAL TRADES.

4. SPECIAL OR NON-TYPICAL MOUNTING HEIGHTS OCCUR ONLY WHERE INDICATED BY ANNOTATED SYMBOLS; BY KEY NOTES; BY NOTES ON PLANS, ELEVATIONS, OR DETAILS; OR BY UNIQUE DIMENSIONS ON ELEVATIONS OR DETAILS.

5. FOR ADDL INFORMATION REGARDING THE PRECEDENCE OF DRAWINGS FOR DETERMINING THE EXACT LOCATION OF EACH EXPOSED PART OF THE WORK, REFER TO THE "ARCHITECTURAL GENERAL NOTES" AND TO THE "TYP RULES FOR DETERMINING MOUNTING HEIGHTS AND LOCATIONS" – SEE THE INDEX OF DRAWINGS FOR SHEET NUMBERS.

6. TYPICAL MOUNTING HEIGHTS FOR ADDITIONAL ITEMS NOT SHOWN ON THIS SHEET MAY BE ILLUSTRATED BY OTHER SHEETS. REFER TO THE INDEX OF DRAWINGS FOR ADDITIONAL INFORMATION.

7. MOUNTING CONFIGURATION DIAGRAMS ARE ELEVATIONS WHICH ILLUSTRATE TYPICAL RULES GOVERNING THE RELATIONSHIPS BETWEEN, AND PLACEMENT OF, ITEMS WHICH OCCUR IN GROUPS OF RELATED ITEMS (SUCH AS TOILET ACCESSORIES) OR IN CLOSE PROXIMITY TO OTHER PARTS OF THE WORK (SUCH AS SWITCHES AND DOOR FRAMES). UNLESS OTHER MOUNTING CONFIGURATIONS ARE SPECIFICALLY NOTED, DIMENSIONED, OR ELEVATED, THE TYPICAL RELATIONSHIPS, ARRANGEMENTS, AND DIMENSIONS SHOWN BY THE TYPICAL CONFIGURATION DIAGRAMS APPLY THROUGHOUT THE WORK OF THIS PROJECT.

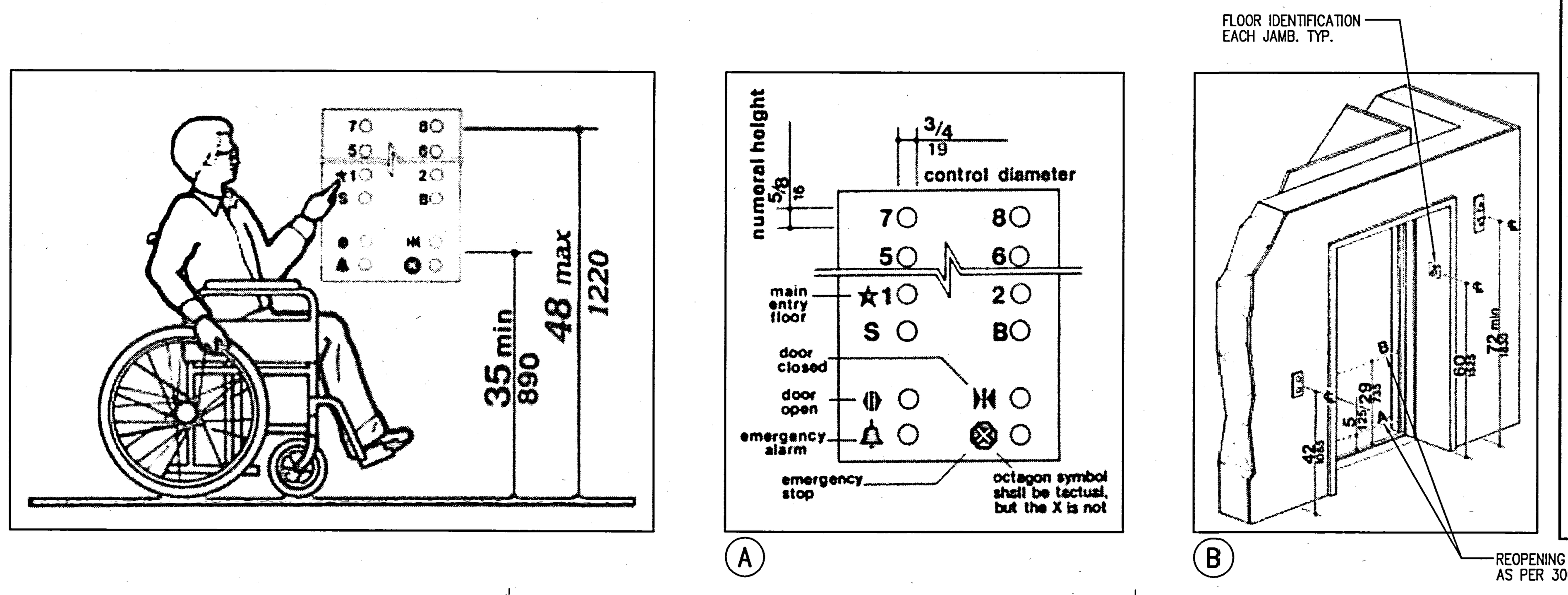
8. TYPICAL MOUNTING CONFIGURATIONS FOR ADDITIONAL GROUPINGS NOT SHOWN ON THIS SHEET MAY BE SHOWN ON OTHER SHEETS. REFER TO THE INDEX OF DRAWINGS FOR ADDITIONAL INFORMATION.

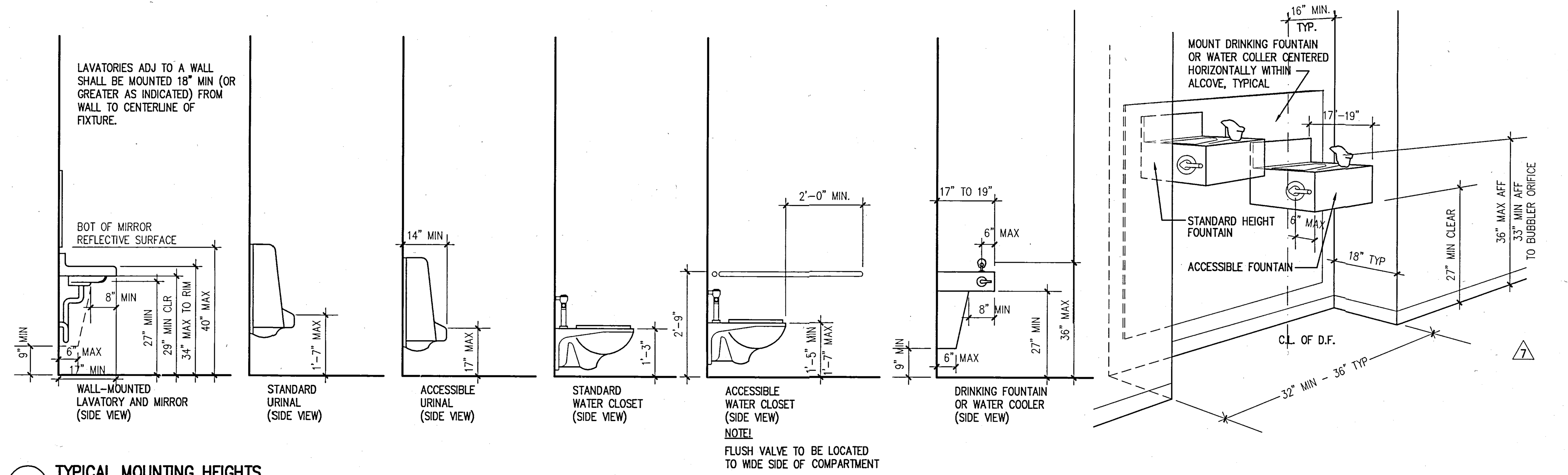
9. MOUNTING HEIGHTS, DIMENSIONS, CLEARANCES, AND ACCESS REQUIREMENTS FOR TOILET ACCESSORIES SHOWN ON THIS SHEET ARE BASED UPON SPECIFIC MANUFACTURERS AND MODELS AS INDICATED BY THE "TOILET ACCESSORY SCHEDULE." WHEN SIMILAR ACCESSORIES OF OTHER SPECIFIED AND ACCEPTABLE MANUFACTURERS (IF ANY) ARE UTILIZED, MOUNTING HEIGHTS, DIMENSIONS, CLEARANCES, AND ACCESS

10. REQUIREMENTS OF THE SIMILAR ACCESSORIES MAY VARY FROM THOSE SHOWN. WHEN SIMILAR ACCESSORIES ARE UTILIZED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION REQUIRED TO ACHIEVE THE SAME AESTHETIC AND FUNCTIONAL DESIGN INTENT ILLUSTRATED BY THAT SHOWN ON THE DRAWINGS.

FOR CBC SIGNAGE, REFER TO A9.40

HYDRAULIC ELEVATOR REFERENCE PLAN ,ELEVATIONS & MOUNTING HEIGHTS





24 **TYPICAL MOUNTING HEIGHTS**
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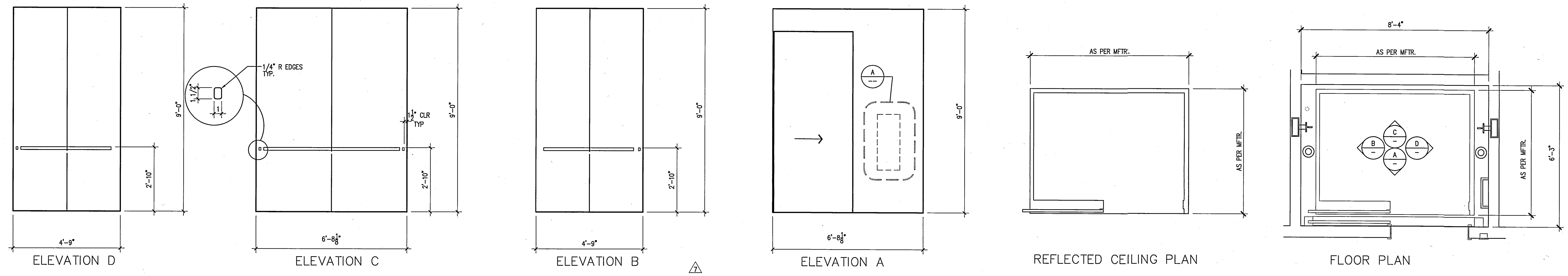

40 **TYPICAL ELEVATOR DETAILS**
SCALE: NOT TO SCALE

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title
TYPICAL MOUNTING HEIGHTS & MOUNTING CONFIGURATION DIAGRAMS

NOT TO SCALE

Scale
3193000

Project Number
060CT00

Baseline Date

A0.05

Drawing Number

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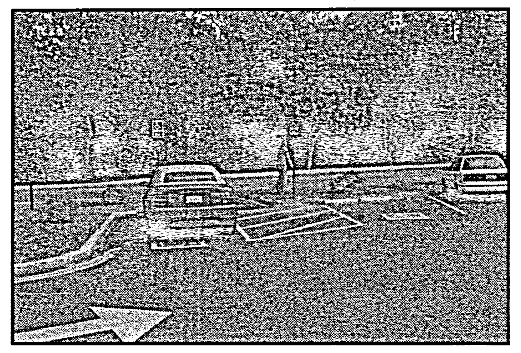

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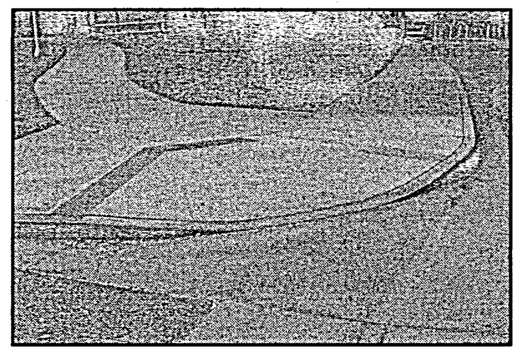

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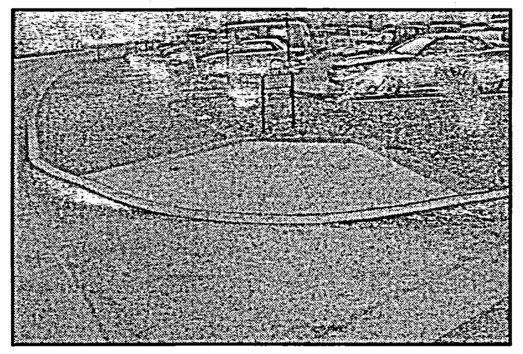

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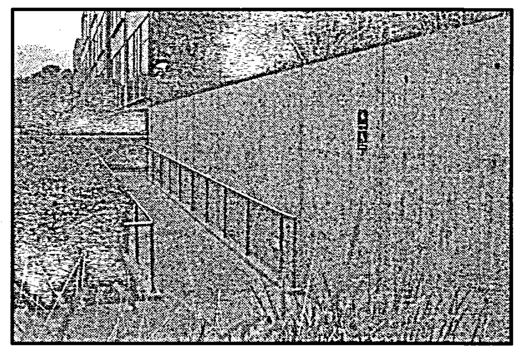

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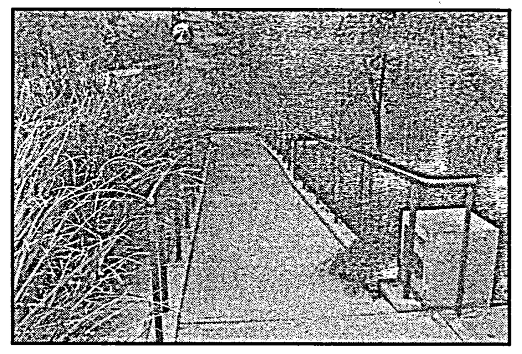

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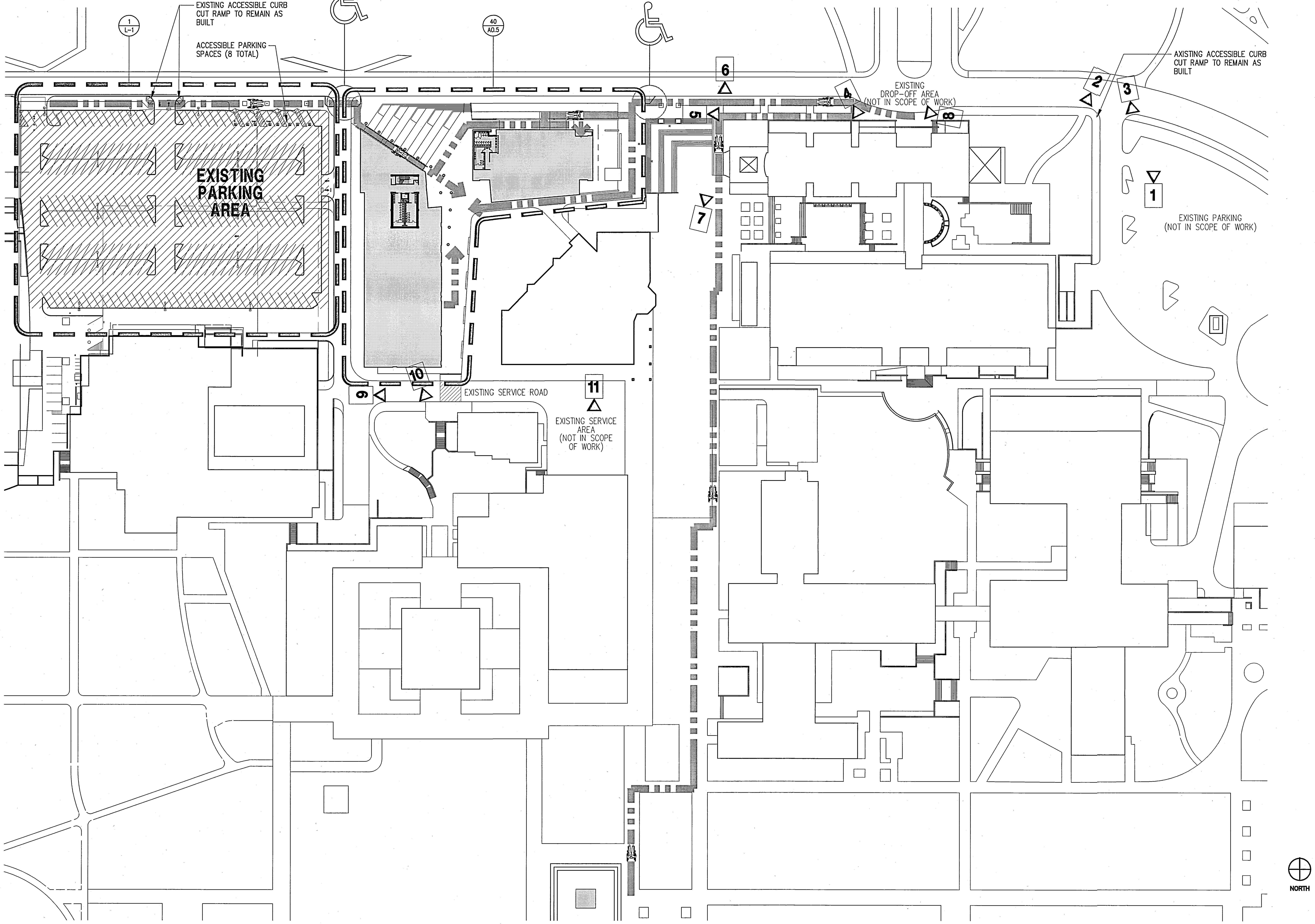

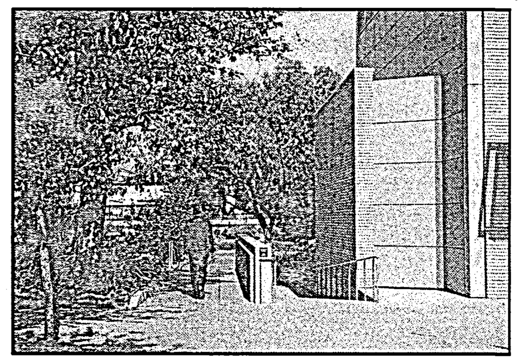

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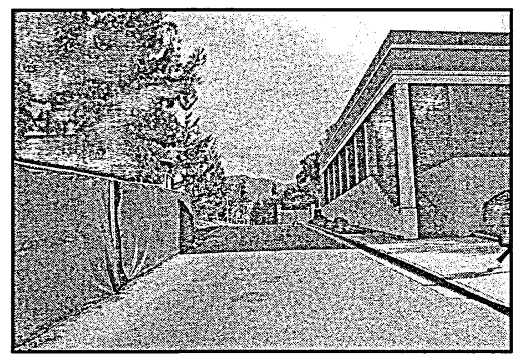

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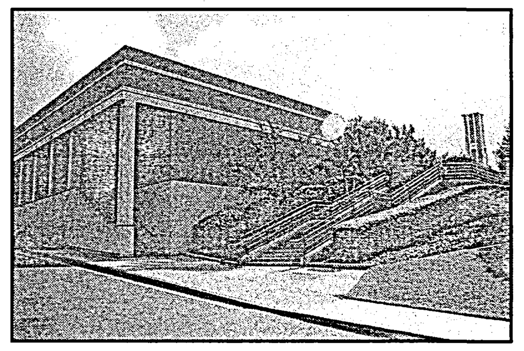

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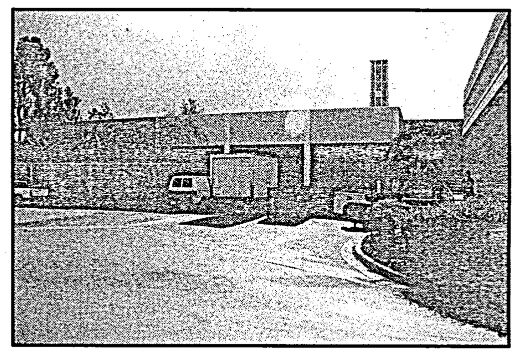

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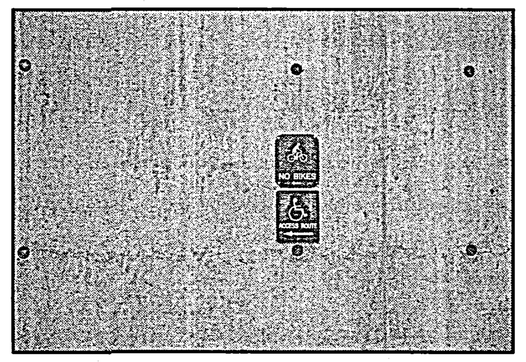

TYPICAL EXISTING DIRECTIONAL SIGNAGE

LEGEND

NEW WHEEL CHAIR ACCESSIBLE CURB CUT ROUTE. SEE CIVIL DWGS. FOR CONSTRUCTION DETAILS

EXISTING ACCESSIBLE PATH OF TRAVEL

EXISTING PARKING AREA SERVING PROJECT SITE

PICTURE NUMBER AND ORIENTATION

GENERAL NOTES

1. PATH OF TRAVEL (P.O.T.) AS INDICATED IS A BARRIER FREE ACCESS WITHOUT ANY ABRUPT VERTICAL CHANGES EXCEEDING 1/2" AT 1:2 MAXIMUN SLOPE, EXCEPT THAT LEVEL CHANGES DO NOT EXCEED 1/4" VERTICAL. MAXIMUN CROSS-SLOPE 2% TYPICAL. THE CONTRACTOR SHALL VERIFY THAT ALL BARRIERS ON THE INDICATED PATH OF TRAVEL HAVE BEEN REMOVED.

2. PROVIDE TOW-AWAY SIGNS AT EACH ENTRY OF EXISTING PARKING LOT IF NON EXISTING PER SECTION 1129B.5. IF EXISTING, VERIFY THAT SIGNS DO NOT CONTAIN THE WORD "HANDICAPPED", IF SO, REPLACE WITH NEW COMPLIANT SIGN. SEE DETAIL 3/L-1

3. PROVIDE ACCESSIBILITY REFLECTORIZED SIGN PERMANENTLY POSTED INMEDIATELY ADJACENT TO AND VISIBLE FROM EACH STALL OR SPACE AS PER SECTION 1129B.5 SEE DETAIL 3/L-1

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for | Rev Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Drawing Title
UCR ACCESSIBILITY PLAN

1"=50'-0"
Scale
3193000
Project Number
06OCT00
Baseline Date

A0.6
Drawing Number

Plot Sheet Filename: I:\JOBS\3193000\SHT\A0006.dwg
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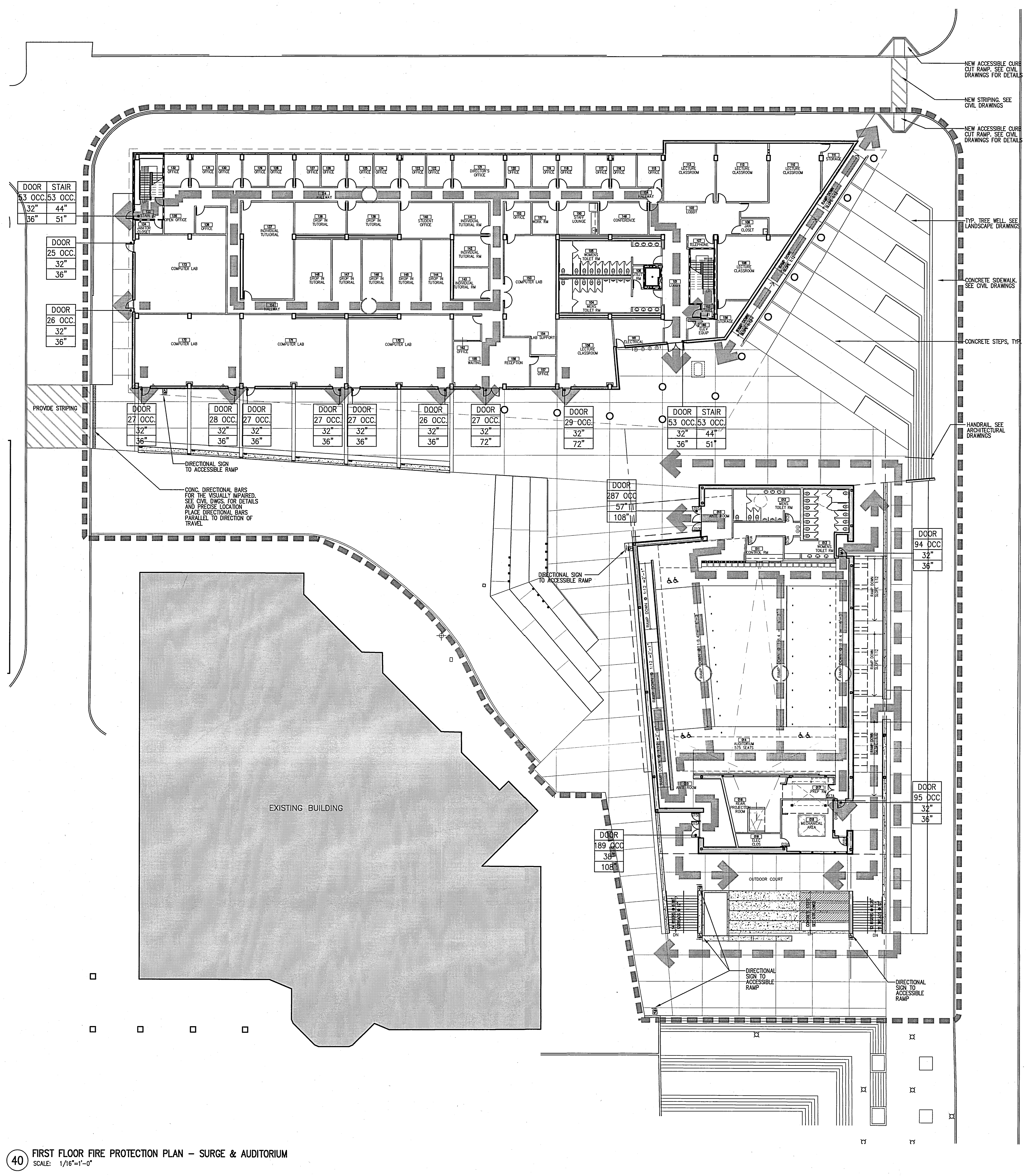


(40) FIRST FLOOR FIRE PROTECTION PLAN – SURGE & AUDITORIUM
SCALE: 1/16"=1'-0"

SURGE BUILDING

USE	OCCUPANT LOAD FACTOR	TOTAL AREA	TOTAL OCCUPANTS
OFFICE	100	9502	95
CLASSROOM	20	1977	99
STORAGE	300	281	1
			195

AUDITORIUM

USE	OCCUPANT LOAD FACTOR	TOTAL AREA	TOTAL OCCUPANTS
OFFICE	100	246	2
CLASSROOM*	20		575
STORAGE	300	616	2
			579

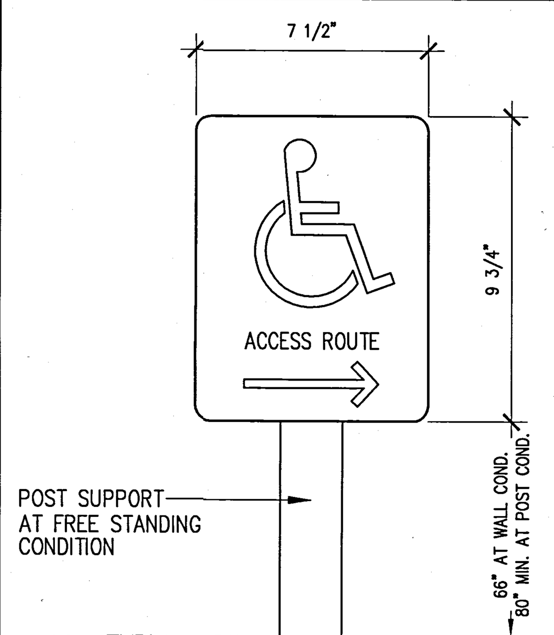
* CLASSROOM IS FIXED SEATING

LEGEND

- 1 HOUR FIRE RATED WALL W/60 MIN. OPENINGS
- 2 HOUR FIRE RATED WALL W/ 90MIN. OPENING
- 3 HOUR FIRE RATED WALL W/ 180MIN. OPENING
- EXIT PATH 75 FEET MAXIMUM TRAVEL DISTANCE

DOOR	EGRESS COMPONENT
44 OCC.	NUMBER OF PEOPLE SERVED
32"	REQUIRED EXIT WIDTH
72"	PROVIDED EXIT WIDTH

DIRECTIONAL SIGN SEE DETAIL 5/A0.7



(5) TYPICAL DIRECTIONAL SIGN
SCALE: 3"=1'-0"

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1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
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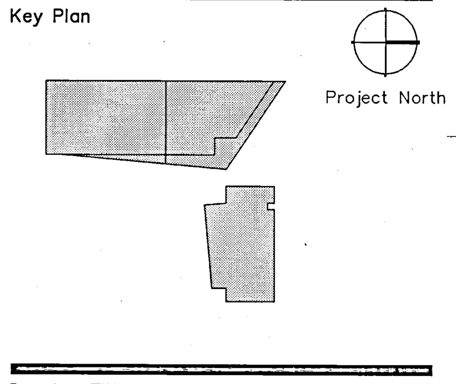
RECORD DRAWINGS

Key Plan



Drawing Title
FIRST FLOOR FIRE PROTECTION PLAN SURGE & ADITORIUM
1/16" = 1'-0"
Scale
3193000
Project Number
06OCT00
Baseline Date
A0.7
Drawing Number

Plot Sheet Filename: I:\JOBS\3193000\SHT\A0007.dwg
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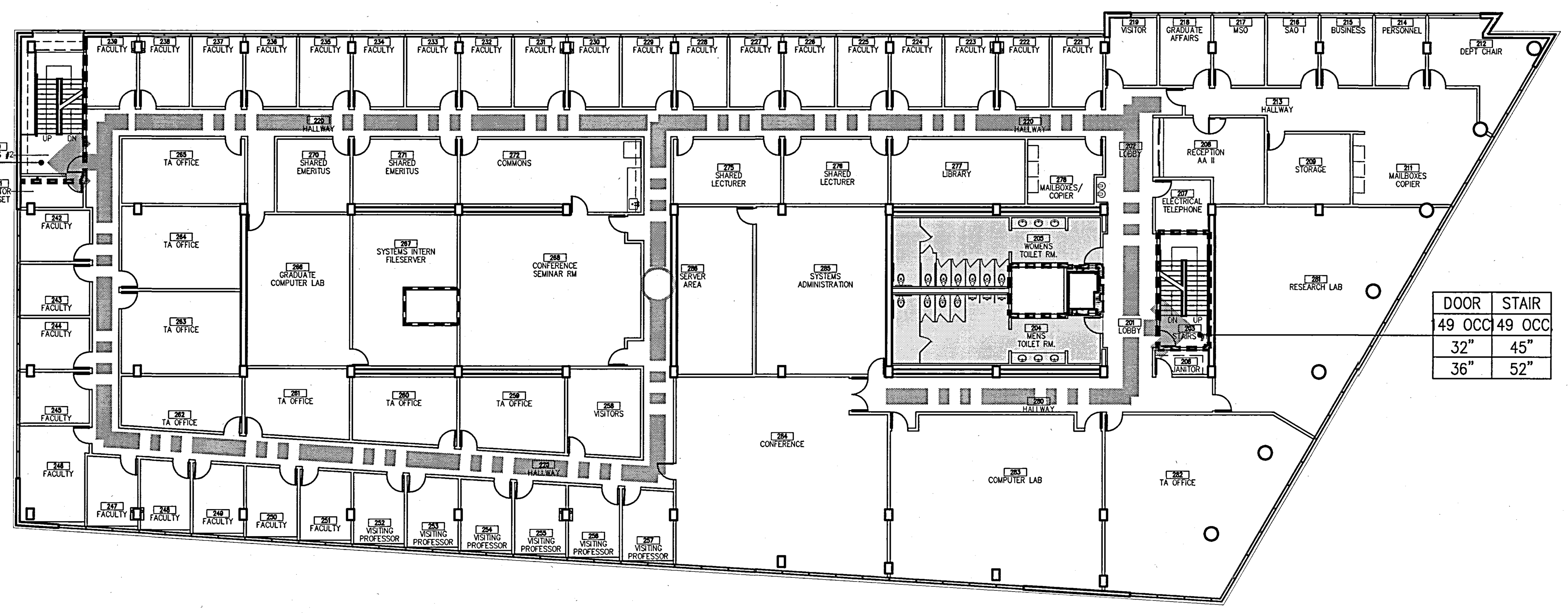
06/21/00



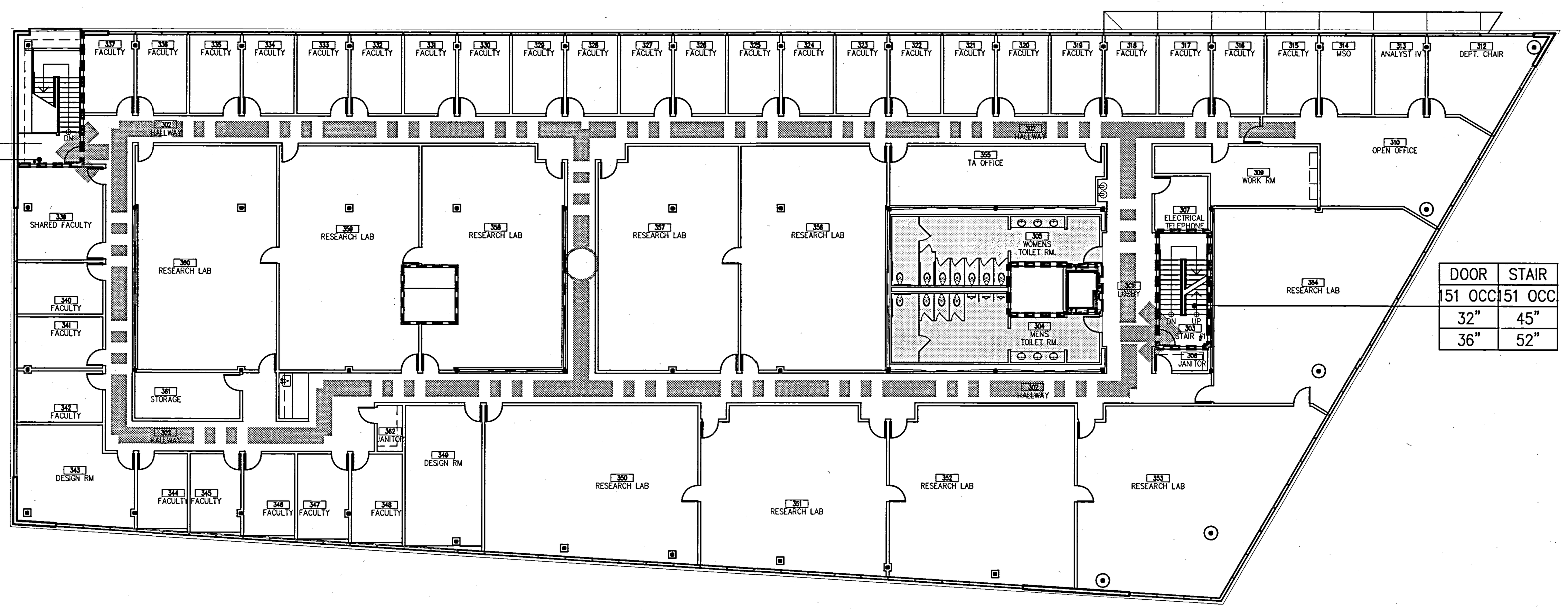
DOOR	STAIR
149 OCC	149 OCC
32"	45"
36"	52"

DOOR	STAIR
149 OCC	149 OCC
32"	45"
36"	52"

SURGE BUILDING SECOND FLOOR

USE	OCCUPANT LOAD FACTOR	TOTAL AREA	TOTAL OCCUPANTS
OFFICE	100	13909	139
CONFERENCE	15	2297	153
STORAGE	300	1783	6
			298

(38) SECOND FLOOR PLAN
SCALE: 1/16" = 1'-0"



DOOR	STAIR
151 OCC	151 OCC
32"	45"
36"	52"

DOOR	STAIR
151 OCC	151 OCC
32"	45"
36"	52"

SURGE BUILDING THIRD FLOOR

USE	OCCUPANT LOAD FACTOR	TOTAL AREA	TOTAL OCCUPANTS
OFFICE	100	13674	137
CLASSROOM	20	3253	163
STORAGE	300	492	2
			302

(40) THIRD FLOOR PLAN
SCALE: 1/16" = 1'-0"

LEGEND

1 HOUR FIRE RATED WALL W/60 MIN. OPENINGS

2 HOUR FIRE RATED WALL W/ 90MIN. OPENING

3 HOUR FIRE RATED WALL W/ 180MIN. OPENING

EXIT PATH 75 FEET MAXIMUM TRAVEL DISTANCE

DOOR	EGRESS COMPONENT
44 OCC.	NUMBER OF PEOPLE SERVED
32"	REQUIRED EXIT WIDTH
72"	PROVIDED EXIT WIDTH

DIRECTIONAL SIGN SEE DETAIL 5/A0.7

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

SECOND & THIRD FLOOR FIRE PROTECTION PLANS SURGE BUILDING

1/16" = 1'-0"
Scale

3193000
Project Number

06OCT00
Baseline Date

A0.8
Drawing Number

Plot Sheet Filename: I:\JOBS\3193000\SHT\A0008.dwg
XREF Filename(s): UCR_Tbk ucs-fp2 ucs-fp3 ucFPNOTE
Plot Setup Script:
Plot Date: 03/11/02 16:18 Plot View:

06/21/00

GENERAL NOTES:

1. WORK SHOWN HEREON SHALL BE DONE IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION", LATEST EDITION AND SUPPLEMENTS, CHAPTER 33 VOLUME 1 OF THE UNIFORM BUILDING CODE (EXCAVATION AND GRADING).
2. EXISTING TOPOGRAPHY SHOWN HEREON WAS TAKEN FROM SURVEY:
   A. SURVEY BY GFB-FRIEDRICT & ASSOC., INC. DATED 4-2000
   BENCH MARK:
   FOUND LEAD & TACK IN CONCRETE MOUNMENT.
   LEAD & TACK ASSUMED EL. 1072.00
3. THE GEOTECHNICAL REPORT PREPARED BY C.H.J. INCORPORATED, DATED MARCH 24, 2000 AND ADDENDA SHALL ME MADE A PART OF THESE DRAWINGS.
4. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY, AND SHALL NOT BE LIMITED TO NORMAL WORKING HOURS.
5. PRIOR TO COMMENCING CONSTRUCTION, THE CONTRACTOR SHALL FIELD VERIFY ALL JOIN CONDITIONS FOR GRADING, DRAINAGE AND UNDERGROUND UTILITIES. IF CONDITIONS DIFFER FROM THOSE SHOWN ON THE PLANS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND SHALL NOT BEGIN CONSTRUCTION UNTIL THE CHANGED CONDITIONS HAVE BEEN EVALUATED.
6. THE DRAWINGS ARE CONSIDERED TO BE A PART OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REVIEW AND COORDINATION OF ALL DRAWINGS AND SPECIFICATIONS PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES THAT OCCUR SHALL BE BROUGHT TO THE ATTENTION OF THE UNIVERSITY OR UNIVERSITY'S REPRESENTATIVE PRIOR TO START OF CONSTRUCTION SO THAT A CLARIFICATION CAN BE ISSUED. ANY WORK PERFORMED IN CONFLICT WITH THE CONTRACT DOCUMENTS OR ANY CODE REQUIREMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT THE CONTRACTOR'S OWN EXPENSE AND AT NO EXPENSE TO THE OWNER OR ARCHITECT.
7. THE EXISTENCE, LOCATION AND CHARACTERISTICS OF UNDERGROUND UTILITY INFORMATION SHOWN ON THESE PLANS HAS BEEN OBTAINED FROM A REVIEW OF AVAILABLE RECORD DATA. NO REPRESENTATION IS MADE AS TO THE ACCURACY OR COMPLETENESS OF SAID UTILITY INFORMATION. THE CONTRACTOR SHALL TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS.
8. THE CONTRACTOR SHALL OBTAIN AN O.S.H.A. PERMIT FROM THE CALIFORNIA DIVISION OF INDUSTRIAL SAFETY PRIOR TO THE CONSTRUCTION OF TRENCHES OR EXCAVATIONS WHICH ARE FIVE FEET OR DEEPER.
9. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE GIVEN, CONSTRUCTION SHALL BE AS SHOWN FOR SIMILAR WORK.
10. WATER SHALL BE PROVIDED ON SITE AND USED TO CONTROL DUST DURING OPERATIONS.
11. DIMENSIONS TO PIPELINES ARE TO CENTERLINE UNLESS OTHERWISE NOTED.
12. ALL WATERLINES SHALL BE INSTALLED WITH 36" MINIMUM COVER FROM TOP OF PIPE TO FINISHED GRADE OR AS SPECIFIED UNLESS OTHERWISE SHOWN ON PLAN.
13. ALL STORM DRAIN AND SANITARY SEWER PIPE, FITTINGS AND JOINTS SHALL BE POLYVINYL CHLORIDE SDR 35 IN ACCORDANCE WITH SECTION 207-17 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
14. ALL WATER LINES SHALL BE POLYVINYL CHLORIDE CLASS 200 AND SHALL MEET THE REQUIREMENTS OF AWWA C900 PVC PRESSURE PIPE.
15. CONTRACTOR TO FORWARD ANY APPLICATIONS, DECLARATIONS, OR FORMS THAT REQUIRE UNIVERSITY SIGNATURES TO UNIVERSITY REPRESENTATIVE.
16. ALL EXISTING REMAINING UTILITIES AND REMAINING IMPROVEMENTS THAT BECOME DAMAGED DURING CONSTRUCTION SHALL BE COMPLETELY RESTORED TO THE SATISFACTION OF THE UNIVERSITY, AT THE CONTRACTOR'S SOLE EXPENSE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DOCUMENT PRIOR DAMAGES.
17. IF ARCHAEOLOGICAL MATERIALS ARE UNCOVERED DURING GRADING, TRENCHING OR OTHER EXCAVATION, EARTHWORK WITHIN 100 FEET OF THESE MATERIALS SHALL BE STOPPED UNTIL A PROFESSIONAL ARCHAEOLOGIST WHO IS CERTIFIED BY THE SOCIETY OF PROFESSIONAL ARCHAEOLOGY (SOPA) HAS HAD AN OPPORTUNITY TO EVALUATE THE SIGNIFICANCE OF THE FIND AND SUGGEST APPROPRIATE MITIGATION MEASURES, IF THEY ARE DEEMED NECESSARY.

GENERAL DEMOLITION NOTES:

1. DEMOLITION NOTES ARE INTENDED TO INCLUDE DEMOLITION, REMOVAL OF CONSTRUCTION INDICATED AND DISCONNECTION, CAPPING AND/OR REMOVAL OF AFFECTED UTILITIES.
2. CALL UNIVERSITY FOR INSPECTION AT REQUIRED TIMES INCLUDING PRE-DEMOLITION, PEDESTRIAN PROTECTION, FIRE ACCESS, UTILITY CAPPING, BACKFILLING, FINAL INSPECTION, ETC.
3. DEMOLISH INDICATED STRUCTURES AND APPURTENANCES IN AN ORDERLY AND CAREFUL MANNER.
4. REMOVE DEMOLISHED MATERIALS FROM SITE AS WORK PROGRESSES. LEAVE SITE IN CLEAN CONDITION. CONTACT UNIVERSITY FOR REQUIREMENTS FOR DISPOSAL OF DEMOLITION DEBRIS.
5. DISCONNECT, CAP AND/OR REMOVE AND IDENTIFY EXISTING UTILITIES PER DRAWINGS. COORDINATE WITH UNIVERSITY'S REPRESENTATIVE BEFORE COMMENCING WORK.
6. COMPLY WITH ANSI A10.6 "SAFETY CONDITIONS FOR DEMOLITION" PUBLISHED BY THE AMERICAN STANDARDS INSTITUTE.
7. CONDUCT DEMOLITION TO MINIMIZE INTERFERENCE WITH ADJACENT STRUCTURES.
8. PROVIDE, ERECT, AND MAINTAIN TEMPORARY BARRIERS AND SECURITY DEVICES AS REQUIRED BY CODE.
9. CONDUCT OPERATIONS WITH MINIMUM INTERFERENCE TO THOROUGHFARES. MAINTAIN PROTECTED INGRESS AND EGRESS AT ALL TIMES. DO NOT CLOSE OR OBSTRUCT ROADWAYS OR SIDEWALKS WITHOUT UNIVERSITY APPROVAL. CONTRACTOR SHALL SUBMIT WRITTEN NOTIFICATION TO UNIVERSITY 7 DAYS PRIOR TO THE START OF SITE DEMOLITION AND UTILITY DEMOLITION. NOTIFICATION SHALL INCLUDE THE FOLLOWING: SCHEDULE OF DEMOLITION, TEMPORARY FACILITIES/EGRESS, SECURITY DEVICES AND TEMPORARY BARRIERS. NO WORK SHALL BE DONE UNTIL SUCH PLANS AND SCHEDULE ARE APPROVED.
10. PREVENT MOVEMENT OR SETTLEMENT TO ADJACENT STRUCTURES.
11. DIMENSIONS AND CONDITIONS AT THE JOB SITE SHALL BE VERIFIED BY ALL CONTRACTORS. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO EXAMINE THE EXISTING BUILDINGS AND ALL THE CONDITIONS PRIOR TO SUBMITTING BIDS. PROPOSAL MUST TAKE INTO CONSIDERATION ALL THE DISCREPANCIES IN THE DRAWINGS AND THE DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT PRIOR TO ANY WORK.
12. MARK LOCATION OF DISCONNECTED UTILITIES. IDENTIFY UTILITIES AND INDICATE WITH COORDINATE AND INVERT ELEVATION CAPPING LOCATIONS ON PROJECT RECORD DOCUMENTS.
13. CEASE OPERATIONS AND NOTIFY UNIVERSITY OR UNIVERSITY'S REPRESENTATIVE IMMEDIATELY IF ADJACENT STRUCTURES APPEAR TO BE ENDANGERED. DO NOT RESUME OPERATIONS UNTIL CORRECTIVE MEASURES HAVE BEEN TAKEN.
14. BACKFILL EXCAVATED OPEN PITS AND HOLES CAUSED AS A RESULT OF DEMOLITION TO GRADES SHOWN ON PLAN. BACKFILL MATERIAL AND COMPACTION PER CONTRACT DRAWINGS UNDER THE DIRECTION OF THE GEOTECHNICAL ENGINEER.

GENERAL DEMOLITION NOTES (CONT.)

15. IF CONTAMINATED OR VERMIN INFECTED MATERIALS ARE ENCOUNTERED CONTACT THE UNIVERSITY IMMEDIATELY AND WAIT FOR DIRECTIONS.
16. KEEP WORK SPRINKLERED TO MINIMIZE DUST. PROVIDE HOSES AND WATER MAIN OR HYDRANT CONNECTIONS FOR THIS PURPOSE. ALL CONNECTIONS MUST HAVE AN APPROVED USC APPROVED BACKFLOW DEVICE.
17. NOTWITHSTANDING PLUMBING CODE REQUIREMENTS FOR PERMITS, ALL SEWER, GAS, LAB UTILITIES AND WATER CONNECTIONS MUST BE CAPPED AND APPROVAL OBTAINED FROM THE UNIVERSITY PRIOR TO COVERING SUCH CONNECTIONS. SEWER, GAS, LAB UTILITIES, AND WATER LINE CAPPING SHALL BE PERFORMED IN THE MANNER PRESCRIBED BY THE UNIFORM BUILDING CODE.
18. ELECTRIC OR GAS CUTTING SHALL NOT BE DONE ON SITE WITHOUT A WRITTEN PERMIT ISSUED BY THE FIRE MARSHAL.
19. REMOVE ROCKS LARGER THAN 6" DIAMETER, ROOTS AND DEBRIS.
20. BURNING OF MATERIALS AND/OR USE OF EXPLOSIVES ARE NOT PERMITTED.
21. DEMOLITION IS LIMITED TO WITHIN LIMITS OF WORK, UNLESS NOTED OTHERWISE.

HEIGHT OF CONSTRUCTION	DISTANCE FROM CONSTRUCTION	PROTECTION REQUIRED
8 FEET OR LESS	LESS THAN 6 FEET	RAILING
	6 FEET OR MORE	NONE
MORE THAN 8 FEET	LESS THAN 6 FEET	FENCE & CANOPY
	6 FEET OR MORE BUT NOT MORE THAN 1/4 THE HEIGHT OF CONSTRUCTION.	FENCE & CANOPY
	6 FEET OR MORE BUT BETWEEN 1/4 TO 1/2 THE HEIGHT OF CONSTRUCTION.	FENCE
	6 FEET OR MORE BUT EXCEEDING 1/2 THE CONSTRUCTION HEIGHT	NONE

22. CONTRACTOR SHALL CONTACT ENGINEER IMMEDIATELY TO DETERMINE ANY ITEMS NOT SHOWN ON THE PLANS THAT MAY REQUIRE REMOVAL. FAILURE TO DO SO DOES NOT RELIEVE CONTRACTOR OF RESPONSIBILITY AND COST FOR REMOVING ITEMS REQUIRED.
23. CONTRACTOR IS RESPONSIBLE FOR REVIEWING (IF APPLICABLE) ALL KNOWN ENVIRONMENTAL INVESTIGATION STUDIES AND REPORTS PRIOR TO BIDDING. REPORTS ARE INCLUDED IN PROJECT SPECIFICATIONS. CONTRACTOR TO COORDINATE WITH ENVIRONMENTAL ENGINEER ON EXACT AREAS OF CONTAMINATION, IF ANY.
24. LOCATION OF ALL UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE CAUSED TO EXISTING UTILITIES AND UTILITY STRUCTURES THAT ARE TO REMAIN.
25. CONTRACTOR SHALL OBTAIN A COPY OF THE UCR AS-BUILT UTILITY DRAWINGS. INFORMATION AS SHOWN IS APPROXIMATE AND MUST BE FIELD VERIFIED BY THE CONTRACTOR.
26. CONTRACTOR TO REMOVE ALL EXISTING CONCRETE SLABS, WALLS, FLOORS, FOOTINGS AND UTILITIES IN THEIR ENTIRETY, UNLESS OTHERWISE NOTED.
27. ALL DEMOLISHED ASPHALTIC CONCRETE AND PORTLAND CEMENT CONCRETE IS EXPECTED TO BE REMOVED FROM THE SITE, UNLESS OTHERWISE NOTED.
28. CONTRACTOR TO INSTALL SECURITY FENCE WITH GREEN FABRIC, REINFORCED TOP AND BOTTOM WITH GROMENT. SEE DEMOLITION PLAN.
29. THE CONTRACTOR SHALL TAKE EFFECTIVE ACTION TO PREVENT THE FORMATION OF ANY AIRBORNE DUST NUISANCE AND SHALL BE RESPONSIBLE FOR ANY DAMAGE RESULTING FROM FAILURE TO FOLLOW UNIVERSITY CITY AND COUNTRY. GUIDELINES. DUST SHALL BE CONTROLLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SOUTH COAST AIR QUANTITY MANAGEMENT DISTRICT AND APPLICABLE COUNTY AND STATE LAWS.
30. EXISTING UNDERGROUND UTILITIES AND IMPROVEMENTS ARE SHOWN IN THEIR APPROXIMATE LOCATIONS BASED UPON RECORD INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF PLANS. NO GUARANTEE IS MADE AS TO THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL COORDINATE WITH THE UNIVERSITY CONCERNING THE REMOVAL OF UTILITIES IN ADVANCE OF DEMOLITION CONSTRUCTION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE EXISTENCE AND LOCATION OF THOSE UTILITIES SHOWN ON THESE PLANS. ANY ADDITIONAL COSTS INCURRED AS A RESULT OF CONTRACTOR'S FAILURE TO VERIFY LOCATIONS OF EXISTING UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION IN THEIR VICINITY SHALL BE BORNE BY THE CONTRACTOR AND ASSUMED INCLUDED IN THE CONTRACT.
33. DEMOLITION WORK SHALL NOT START UNLESS REQUIRED PEDESTRIAN PROTECTION STRUCTURES (IF REQUIRED) ARE IN PLACE.
34. ALL MATERIALS SHALL BE HANDLED WITHIN THE BUILDING AREA OR WITHIN AN AREA BOUNDED BY A BARRICADE. SEE DEMOLITION PLAN.
35. NO STRUCTURAL MEMBER IN ANY STORY SHALL BE DEMOLISHED OR REMOVED UNTIL THE STORY IMMEDIATELY ABOVE IS COMPLETELY REMOVED.
36. WHENEVER THERE IS EVIDENCE OF PROBABLE DANGER TO LIFE, LIMB, OR ADJACENT PROPERTY, THE CONTRACTOR SHALL SUBMIT A PLAN OR SCHEDULE OF OPERATION, AND NO FURTHER WORK SHALL BE DONE UNTIL SUCH PLAN OR SCHEDULE IS APPROVED BY THE UNIVERSITY.
37. DEMOLITION OF BUILDINGS WHERE ASBESTOS IS PRESENT SHALL COMPLY WITH THE RULES, REGULATIONS AND CONDITIONS AS SET FORTH BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.
38. ALL DEMOLITION OF UTILITY LINES INCLUDE PIPE VALVES AND APPURTENANCES.

GENERAL GRADING NOTES:

1. IF AT ANY TIME DURING GRADING OPERATIONS, ANY UNFAVORABLE GEOLOGICAL CONDITIONS ARE ENCOUNTERED, GRADING IN THAT AREA WILL STOP UNTIL APPROVED CORRECTIVE MEASURES ARE OBTAINED.
2. THE PROPOSED GRADE IS THE FINAL GRADE AND NOT THE ROUGH GRADE. THE CONTRACTOR SHALL SUBTRACT THE THICKNESS OF THE PAVED SECTION TO ARRIVE AT THE ROUGH GRADE ELEVATION.
3. STRAIGHT GRADE SHALL BE MAINTAINED BETWEEN CONTOUR LINES AND SPOT ELEVATIONS UNLESS OTHERWISE SHOWN ON THE PLANS.
4. ALL DEBRIS AND FOREIGN MATERIAL SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT DISPOSAL SITES TO BE APPROVED BY THE UNIVERSITY. THE CONTRACTOR SHALL OBTAIN NECESSARY PERMITS FOR THE TRANSPORTATION OF MATERIAL TO AND FROM THE SITE.
5. ALL FILL SOILS OR SOILS DISTURBED OR OVER-EXCAVATED DURING CONSTRUCTION SHALL BE COMPACTED PER THE REQUIREMENTS OF THE GEOTECHNICAL ENGINEER BUT NOT LESS THAN 95% MAXIMUM DENSITY AS DETERMINED BY A.S.T.M. SOIL COMPACTION TEST D-1557-91. ALL FILL SHOULD BE PLACED IN HORIZONTAL LIFTS NOT MORE THAN 6 INCHES IN THICKNESS.
6. PERMANENT CUT AND FILL SLOPES SHALL BE NO STEEPER THAN THREE (3) FEET HORIZONTAL TO ONE (1) FOOT VERTICAL (3:1) UNLESS OTHERWISE SHOWN ON PLAN.
7. PRIOR TO START OF CLEARING AND/OR GRADING OPERATIONS AN ON-SITE PRE-JOB MEETING SHALL OCCUR WITH THE UNIVERSITY, CONTRACTOR AND SOILS ENGINEER.
8. TEMPORARY CUT & FILL SLOPES SHALL BE BASED ON THE RECOMMENDATIONS PROVIDED BY THE GEOTECH C.H.J.

ABBREVIATIONS:

AC	ASPHALTIC CONCRETE	MIN.	MINIMUM
ACC.	ACCESSIBLE	MH	MANHOLE
BW	BACK OF WALK	NTS	NOT TO SCALE
BLDG	BUILDING	PA	PLANTER AREA
BM	BENCH MARK	POC	POINT OF CONNECTION
CB	CATCH BASIN	PIV	POST INDICATOR VALVE
CI	CAST IRON	PCC	PORTLAND CEMENT CONCRETE
CL	CENTER LINE	PRV	PRESSURE REDUCING VALVE
CMU	CONCRETE MASONRY UNIT	PVC	POLYVINYL CHLORIDE
CO	CLEANOUT	R OR RAD	RADIUS
CONC	CONCRETE	RD	ROOF DRAIN
CF	CURB FACE	SD	STORM DRAIN
EL. OR ELEV	ELEVATION	SSMH	SANITARY SEWER MANHOLE
ELEC	ELECTRIC, ELECTRICAL	SS	SANITARY SEWER
EX. OR EXIST.	EXISTING	STD	STANDARD
FD	FOUND	SDMH	STORM DRAIN MANHOLE
FF	FINISHED FLOOR	TC	TOP OF CURB
FG	FINISHED GRADE (LANDSCAPE)	TEL	TELEPHONE
FS	FINISHED SURFACE (HARDSCAPE)	TG	TOP OF GRATE
FH	FIRE HYDRANT	TW	TOP OF WALL
FL	FLOW LINE	TS	TRAFFIC SIGNAL
FT	FOOT OR FEET	TSB	TRAFFIC SIGNAL BOX
GV	GATE VALVE	TYP	TYPICAL
HP	HIGH POINT	TV	TELEVISION
INV.	INVERT	VLT	VAULT
IW	IRRIGATION WATER	VCP	VITRIFIED CLAY PIPE
L & TK	LEAD & TACK	W	WATER
LP	LOW POINT	WM	WATER METER
MAX.	MAXIMUM	WV	WATER VALVE

LEGEND:

415	PROPOSED CONTOUR
414	EXISTING CONTOUR
415.50 FS	PROPOSED SPOT ELEVATION
415.50 FS	EXISITNG SPOT ELEVATION
	WALL
SS	SANITARY SEWER
W	WATER
SD	STORM DRAIN
G	GAS
E	ELECTRIC
IW	IRRIGATION WATER
R	RIDGE
GB	GRADE BREAK
TOP / TOE	GRADED SLOPE
	FLOW LINE
—X—X—X—	CHAIN LINK FENCE
SL	STREET LIGHT
WV	WATER VALVE
PB	PULL BOX
MH	MANHOLE
IRR	IRRIGATION BOX
WM	WATER METER
12"	TREE W/TRUNK SIZE
	FIRE HYDRANT

SHEET INDEX:

C0.01	TITLE SHEET
C1.01	SURVEY
C2.01	DEMOLITION PLAN
C3.01	GRADING PLAN
C4.01	UTILITY PLAN
C4.02	UTILITY PLAN (GAS LINE)
C5.01	HORIZONTAL CONTROL AND PAVING PLAN
C6.01	DETAILS
C6.02	DETAILS
C6.03	DETAILS
C6.04	DETAILS
C6.05	DETAILS

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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KPFF Consulting Engineers
2400 Broadway Avenue, Suite 230
Santa Monica, California 90404
(310) 828-1536 Fax (310) 829-6025

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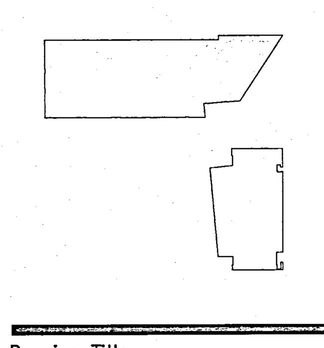
RECORD DRAWINGS

Key Plan



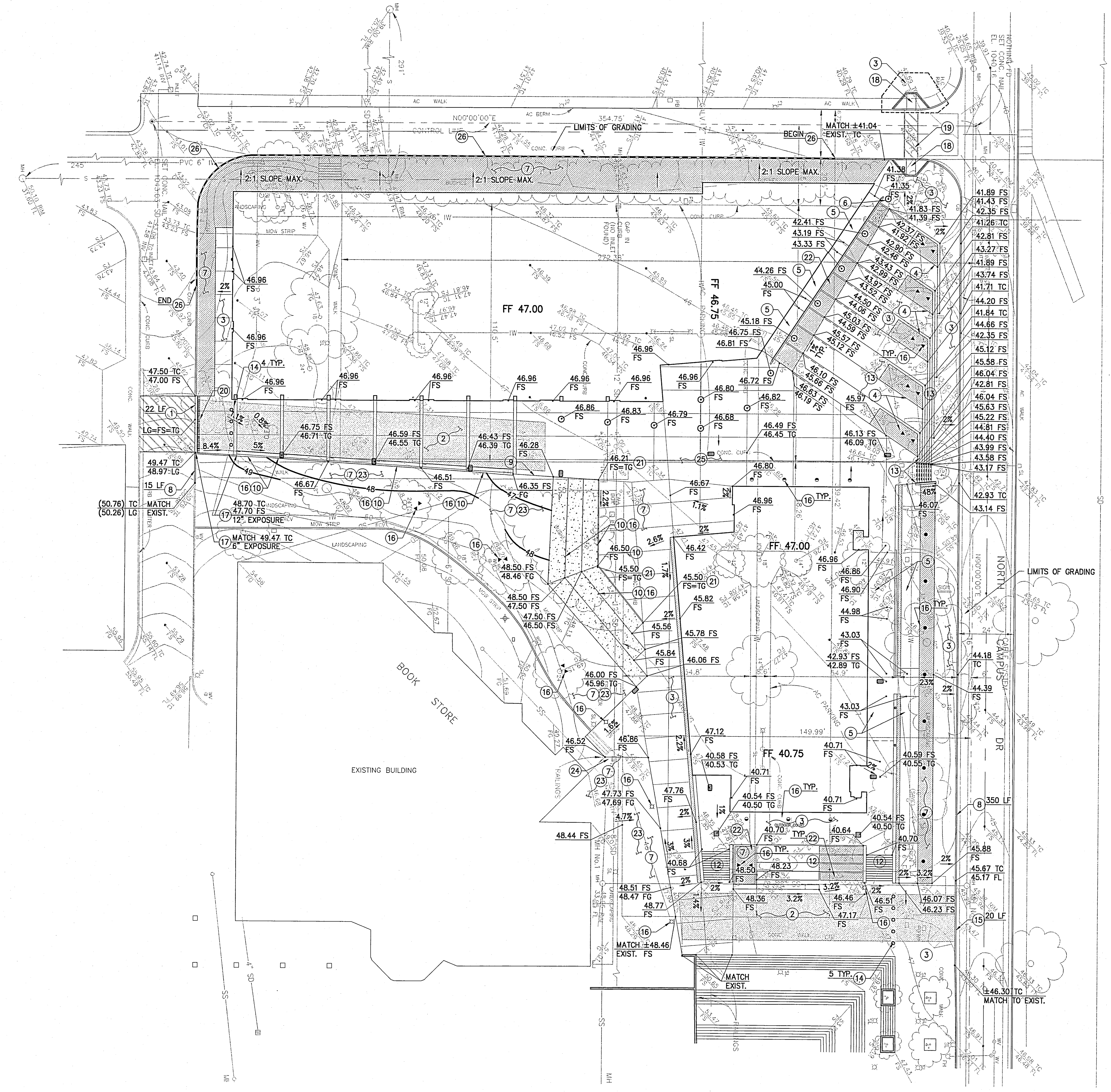
Drawing Title

TITLE SHEET

Scale
3193000
Project Number
07NOV00
Baseline Date
C0.01
Drawing Number

JOB NAME	FILE PATH & NAME	PLOTTED DATE & TIME	UPDATED BY	PLOT SCALE	PROG.MG.	DRAFTER
UCRIVERSIDE	P:\2000\1001636 - UCR SURGE BLDG\CURRENT\C0-01.DWG	MAR. 06, 2002 9:17:55 AM	B.B.	1=1	B.B.	K.H.

NOTES:
JOB #: 1001636
XREFS: T-B



CONSTRUCTION NOTES:

1. INSTALL 3' WIDE VALLEY GUTTER PER DETAIL 14/C6.03. LENGTH AS SHOWN.
2. INSTALL CONCRETE FIRE LANE (SHADED AREA ONLY). INSTALL JOINTING PER DETAILS 18,19,21 AND GEOTECH REPORT.
3. INSTALL CONCRETE SIDEWALK. INSTALL JOINTS PER DETAILS 18,19,21 AND GEOTECH REPORT.
4. INSTALL TREE WELL PER DETAIL 25/C6.04.
5. INSTALL CONCRETE RAMP PER ARCHITECTURAL PLANS.
6. SITE PLAN WORK REFERENCE POINT IS ℄ OF THIS COLUMN. REFER TO HORIZONTAL CONTROL PLAN C5.01.
7. INSTALL LANDSCAPING PER LANDSCAPE PLAN.
8. INSTALL 6" CURB AND GUTTER PER DETAIL 4/C6.01. LENGTH AS SHOWN.
9. INSTALL BIKE RACK PER ARCHITECTURAL PLANS AND DETAILS.
10. INSTALL CONCRETE BENCH PER ARCHITECTURAL PLANS.
11. INSTALL CONCRETE THICKENED EDGE PER DETAIL 22/C6.04. AT ALL CONCRETE SURFACE JOIN CONDITIONS.
12. INSTALL CONCRETE STEP PER ARCHITECTURAL & STRUCTURAL PLANS.
13. INSTALL CONCRETE STEP PER DETAIL 26/C6.04.
14. INSTALL PRO STOP COLLAPSIBLE BOLLARDS AT 5' SPACING OR ENGINEER APPROVED EQUIVALENT.
15. INSTALL ROLLED CURB PER DETAIL 17/C6.03. LENGTH AS SHOWN.
16. INSTALL LIGHTS PER ELECTRICAL AND ARCHITECTURAL PLANS.
17. INSTALL CURB PER DETAIL 1/C6.01.
18. INSTALL ACCESSIBLE CURB RAMP PER (APWA STANDARD DETAIL 111-2, CASE E, TYPE 1) DETAIL 27/C6.05.
19. INSTALL ACCESSIBLE STRIPING.
20. INSTALL WALKWAY GROOVING PER DETAIL 20/C6.04.
21. INSTALL TRENCH DRAIN PER STRUCTURAL & ARCHITECTURAL PLANS.
22. INSTALL PLANTERS PER LANDSCAPE & ARCHITECTURAL PLANS.
23. REGRADE SLOPE TO DRAIN TO SIDEWALK AND/OR DRAIN.
24. MODIFY INLET AS REQUIRED TO PROPOSED FINISHED GRADE.
25. INSTALL CONCRETE PAVERS PER DETAIL 24/C6.04.
26. INSTALL MAX. 24" HIGH RETAINING WALL PER ARCHITECTURAL SKETCHES ASK-072, 073, 077 AND 078.

LEGEND

20' CLEAR FIRE LANE. TRUCK LOADING PER DETAIL 3b/C6.01. 40,000 POUND LOADING CAPACITY.

TRUCK LOADING AREA PER DETAIL 3b/C6.01.

LIMIT OF GRADING

RETAINING WALL

PLAN

SCALE: 1" = 20'

20' 10' 0' 20' 40'

GRAPHIC SCALE

UCR

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RECORD DRAWINGS

Key Plan

Drawing Title

GRADING PLAN

Scale

3193000

Project Number

07NOV00

Baseline Date

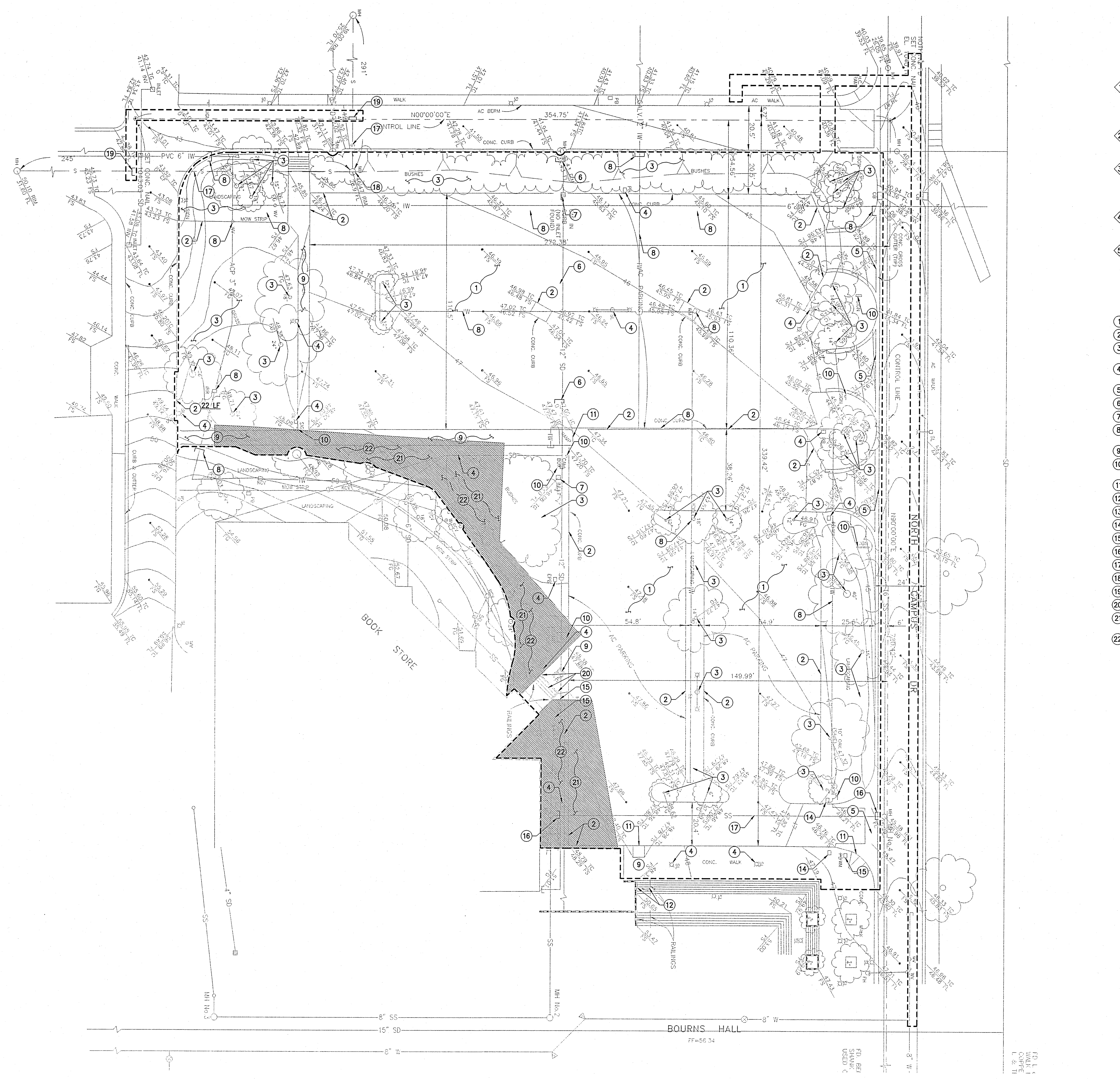
C3.01

Drawing Number

NOTES:

JOB #	JOB NAME	FILE PATH & NAME	PLOTTED DATE & TIME	UPDATED BY	PLOT SCALE	PROG.MG.	DRAFTER
1001636	UCRIVERSIDE	P:\2000\1001636 - UCR SURGE BLDG\CURRENT\C3-01.DWG	APR. 01, 2002 9:45:52 AM	B.B.	1=1	B.B.	K.H.

XREFS: T-B, UCASITE, CB, EX-UTIL, SURVEY,



PLAN
SCALE: 1" = 20'
20' 10' 0' 20' 40'
GRAPHIC SCALE

PROJECT DEMOLITION NOTES:

1. IT IS THE OWNER'S GENERAL INTENTION TO CLEAR THE SITE. THE CONTRACTOR SHALL DEMOLISH AND REMOVE FROM THE SITE ALL EXISTING BUILDINGS, STRUCTURES, TREES, WALKS, DRIVEWAYS, WALLS, FENCES, STAIRS, EXT., AND ALL OTHER IMPROVEMENTS WITHIN THE DEMOLITION LIMIT LINE.
2. DEMOLITION OF THE SIDEWALK, THE CURB, AND GUTTER SHALL BE DELAYED UNTIL NEAR THE END OF THE CONSTRUCTION SCHEDULE IN ORDER TO REMAIN AVAILABLE FOR PEDESTRIAN ACCESS.
3. PRIOR TO EXCAVATION IN PUBLIC RIGHT-OF-WAY, THE CONTRACTOR SHALL POT HOLE AND LOCATE ALL UNDERGROUND UTILITIES. CONTRACTOR SHALL IDENTIFY UTILITIES AND NOTIFY APPROPRIATE CONTACT PRIOR TO REMOVAL OR RELOCATION OF UTILITY. SEE SHEET C0.01 FOR PERMIT REQUIREMENTS.
4. REMOVE EXISTING LANDSCAPE IRRIGATION INSIDE DEMO LIMITS. REROUTE EXISTING SYSTEM AS REQUIRED TO MAINTAIN EXISTING LANDSCAPE IRRIGATION OUTSIDE DEMO LIMITS.
5. BUILD PROPOSED SANITARY SEWER LINES BEFORE DEMOLITION OF EXISTING SANITARY SEWER LINES.

DEMOLITION NOTES:

1. REMOVE A.C. PAVEMENT.
2. REMOVE CONCRETE CURB.
3. REMOVE TREES, LANDSCAPE FEATURE AND LANDSCAPING, PER LANDSCAPE PLANS.
4. REMOVE LIGHT POLE, BASE AND ASSOCIATED WIRING. REROUTE WIRING AS REQUIRED TO MAINTAIN EXISTING LIGHTING TO REMAIN.
5. REMOVE DRIVEWAY.
6. REMOVE STORM DRAIN. CAP LINE AS SHOWN.
7. REMOVE CATCH BASIN.
8. REMOVE EXISTING WATER LINE FEATURES AND EXISTING WATER LINE. CAP WATER LINE AS SHOWN.
9. REMOVE SIDEWALK.
10. REMOVE SIGNS, PARKING FEATURES AND CALL BOX TO BE RETURNED TO OWNER PER UNIVERSITY REPRESENTATIVE DIRECTION.
11. REMOVE HANDICAP RAMP.
12. EXISTING HANDRAILS TO REMAIN.
13. CURB TO REMAIN.
14. REMOVE POST.
15. ADJUST EXISTING FEATURE TO PROPOSED GRADE.
16. PLUG EXISTING SEWER LINE AT EXISTING MANHOLE.
17. FILL EXISTING SEWER LINE WITH CONCRETE GROUT.
18. REMOVE EXISTING MANHOLE.
19. PLUG EXISTING SEWER LINE OUTSIDE PROPOSED MANHOLE.
20. REMOVE HANDRAILS AND STAIRS.
21. REGRADE SLOPE (IN SHADED AREA AS SHOWN) TO DRAIN TO PROPOSED SIDEWALK.
22. REMOVE LANDSCAPE IRRIGATION TO COMPLETE GRADING WORK. AFTER GRADING IS COMPLETE RE-ESTABLISH LANDSCAPE IRRIGATION IN DISTURBED AREAS.

NOTES:						
JOB #	JOB NAME	FILE PATH & NAME	PLOTTED DATE & TIME	UPDATED BY	PLOT SCALE	PROGMG.	DRAFTER
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XREFS: T-B, EX-UTIL, SURVEY.

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Drawing Title

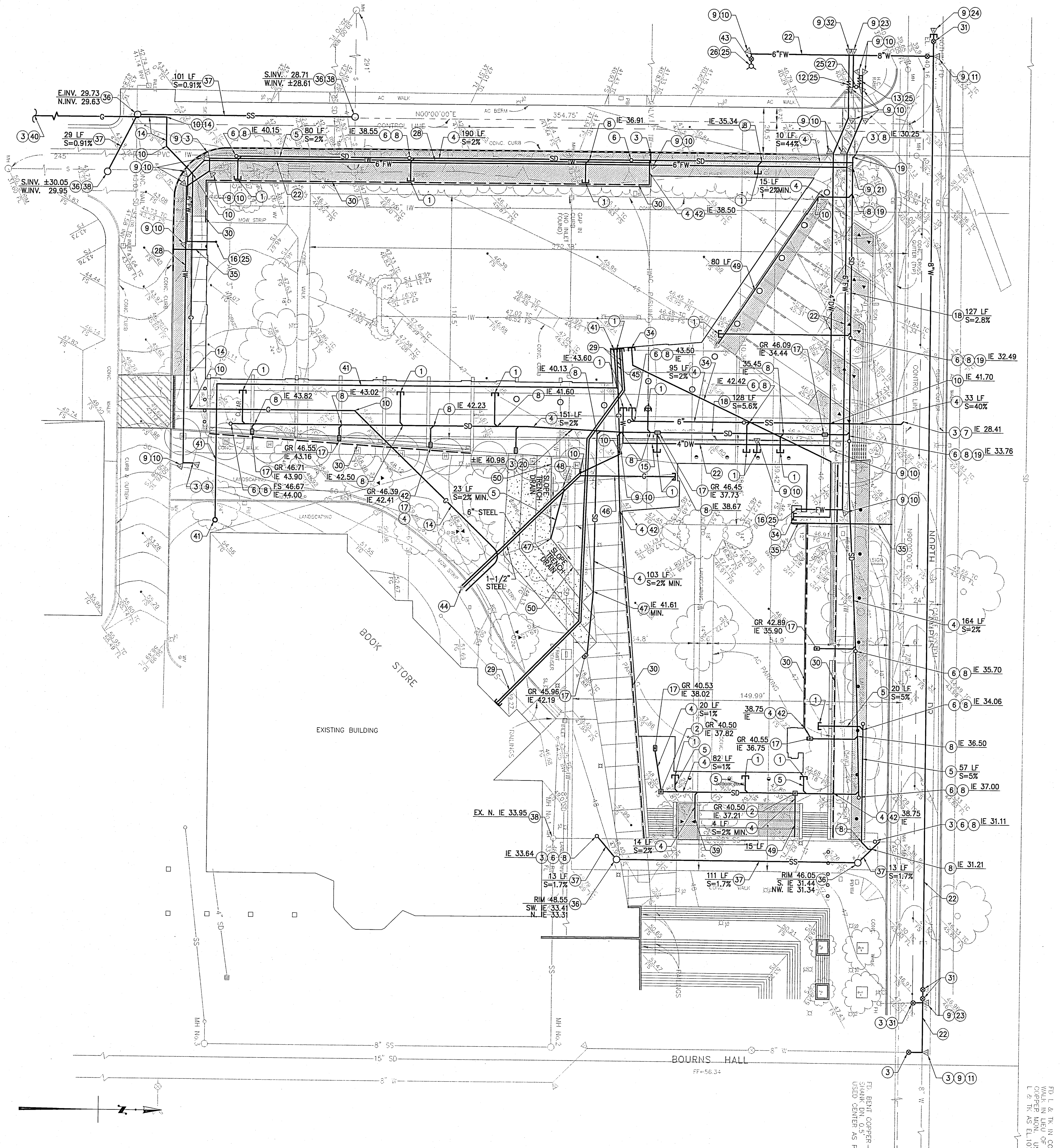
DEMOLITION PLAN

Scale

Project Number 3193000

Baseline Date 07NOV00

Drawing Number C2.01



PLAN
SCALE: 1" = 20'
GRAPHIC SCALE

UTILITY CONSTRUCTION NOTES:

1. TERMINATE ALL UTILITY LINES 5' FROM BUILDING LINE. REFER TO PLUMBING PLANS FOR CONNECTION.
2. INSTALL 24"x24" CATCH BASIN PER DETAIL 13/C6.03.
3. CONNECT TO EXISTING UTILITY LINE. USE APPROPRIATE COUPLER PER PIPE TYPES.
4. INSTALL 6" PVC, SDR-35, UTILITY LINE. LENGTH AND SLOPE AS SHOWN.
5. INSTALL 4" PVC, SDR-35, UTILITY LINE. LENGTH AND SLOPE AS SHOWN.
6. INSTALL UTILITY CLEANOUT PER DETAIL 6/C6.01.
7. INSTALL SEWER CONNECTION PER DETAIL 9/C6.02.
8. INSTALL LINE SIZE WYE.
9. INSTALL THRUST BLOCK PER DETAIL 7/C6.01.
10. INSTALL LINE SIZE BEND.
11. INSTALL 8"x8" TAPPING SLEEVE AND VALVE.
12. INSTALL 4" REDUCE PRESSURE ASSEMBLY PER DETAIL 15/C6.03.
13. INSTALL 6" SINGLE DETECTOR CHECK VALVE AND FIRE DEPARTMENT CONNECTION PER DETAIL 16/C6.03.
14. INSTALL 2" GAS LINE PER PLUMBING PLANS.
15. INSTALL 6" PVC, CLASS C900 WATER LINE. LENGTH AS SHOWN..
16. INSTALL FIRE RISER PER PLUMBING PLANS.
17. INSTALL AREA DRAIN PER DETAIL 31/C6.05.
18. INSTALL 18" PVC, SDR-35, STORM DRAIN LINE. LENGTH AND SLOPE AS SHOWN.
19. INSTALL 6"x18"x18" WYE.
20. INSTALL 6"x12"x18" WYE.
21. INSTALL LINE SIZE TEE.
22. INSTALL LINE SIZE C900, CLASS 200 PVC WATER LINE.
23. INSTALL 8"x8"x6" TEE.
24. INSTALL VALVE AND CAP 8" WATER LINE FOR FUTURE SERVICE.
25. TRANSITION FROM PVC TO METAL PIPE BELOW GRADE.
26. INSTALL FIRE HYDRANT.
27. INSTALL POST INDICATOR VALVE.
28. INSTALL LINE PER IRRIGATION PLANS.
29. COORDINATE WITH UCR REPRESENTATIVE FOR 4x4" UNDERGROUND CONDUITS. LOCATION FOR TIE IN FROM BOOK STORE TO SURGE BUILDING AND/OR AUDITORIUM IS CURRENTLY UNKNOWN. LOCATION AS SHOWN PRESENTLY IS APPROXIMATE ONLY.
30. SEE ARCHITECTURAL PLANS FOR FOUNDATION DRAINAGE.
31. INSTALL WATER LINE VALVE PER DETAIL 29/C6.05.
32. INSTALL 8"x6"X4" TEE.
33. NOT USED.
34. COORDINATE WITH UCR REPRESENTATIVE FOR 1x4" UNDERGROUND CONDUIT.
35. INSTALL A CURB FACE DRAIN FOR FIRE FLOW TEST ONLY. COORDINATE LOCATION AND SIZE WITH PLUMBING PLANS. CURB DRAIN PER DETAIL 28/C6.05.
36. INSTALL A SEWER MANHOLE PER DETAIL 30/C6.05.
37. INSTALL 8" PVC, SDR-35, SEWER LINE. LENGTH AND SLOPE AS SHOWN. INVERT ELEVATIONS ARE ONLY APPROXIMATE AS SHOWN. CONTRACTOR TO INFORM ENGINEER OF ACTUAL INVERT ELEVATIONS AT LEAST 5 DAYS BEFORE CONSTRUCTION FOR COORDINATION PURPOSES.
38. CONNECT PROPOSED SEWER SYSTEM TO EXISTING SEWER SYSTEM.
39. INSTALL PLANTER DRAIN PER LANDSCAPE PLANS.
40. EXACT GAS TIE-IN POINT TO BE DETERMINED BY UCR REPRESENTATIVE. SEE SKETCH ON C4.02 FOR APPROXIMATE ROUTING OF CONTINUATION OF GAS LINE.
41. REFER TO ELECTRICAL PLANS AND COORDINATE WITH UCR REPRESENTATIVE FOR TIE IN AND UNDERGROUND CONDUITS EXACT LOCATION. LOCATION FOR TIE IN FROM TRANSFORMER TO SURGE BUILDING AND/OR AUDITORIUM AS PRESENTLY SHOWN IS APPROXIMATE ONLY.
42. CONNECT FOUNDATION DRAINS TO PROPOSED STORM DRAIN SYSTEM. INVERT ELEVATION IS AT CONNECTION TO FOUNDATION DRAIN. SLOPE TO DRAIN.
43. INSTALL NOW-RISING STEM CONTROL VALVE FOR FIRE HYDRANT PER DETAIL 29/C6.05.
44. INSTALL 5" GAS REGULATOR PER PLUMBING PLANS. INSTALL OUT FROM DRIP LINE OF EXISTING TREES.
45. INSTALL 6" STEEL GAS LINE PER PLUMBING PLANS. LOCATION AS SHOWN IS APPROXIMATE ONLY. REFER TO PLUMBING PLANS AND COORDINATE WITH UCR REPRESENTATIVE FOR TIE IN AND UNDERGROUND PIPING EXACT LOCATION.
46. INSTALL 2-1/2" STEEL GAS LINE PER PLUMBING PLANS.
47. CONNECT STORM DRAIN LINE TO TRENCH DRAIN. TRENCH DRAIN TO BE ACO-K100S. SLOPE AS SHOWN TO K900 IN-LINE CATCH BASIN OUTLET.
48. REMOVE EXISTING STORM DRAIN INLET. CONNECT PROPOSED 4" STORM DRAIN LINE TO EXISTING STORM DRAIN INLET.
49. INSTALL 6" PERFORATED PIPE SURROUNDED BY 6" CLEAN GRAVEL ALL SIDES WRAPPED IN FILTER FABRIC. PLACE AT BASE OF WALL ON EXISTING FOOTING IN PLANTER AREA.
50. INSTALL ACO, PERFORATED GALVANIZED STEEL, CLASS A (PART #410) TRENCH DRAIN.

UTILITY GENERAL NOTES:

1. ALL LOCATIONS OR EXISTING UTILITY LINES AS SHOWN ARE APPROXIMATE ONLY. CONTRACTOR TO VERIFY EXACT LOCATIONS AND INVERTS BEFORE PROCEEDING WITH THE PROPOSED CONSTRUCTION. CONTRACTOR TO NOTIFY THE ENGINEER IF UTILITY LOCATIONS OR INVERTS ARE OTHER THAN AS SHOWN ON THESE PLANS. SURVEYED INVERTS ARE AS SHOWN.
2. ALL SITE IRRIGATION LINES ARE NOT SHOWN ON THESE PLANS. CONTRACTOR TO MAINTAIN EXISTING IRRIGATION OFF-SITE UNTIL PROPOSED IRRIGATION LINES ARE INSTALLED.

NOTES:	JOB #	JOB NAME	FILE PATH & NAME	PLOTTED DATE & TIME	UPDATED BY	PLOT SCALE	PROG.MG.	DRAFTER
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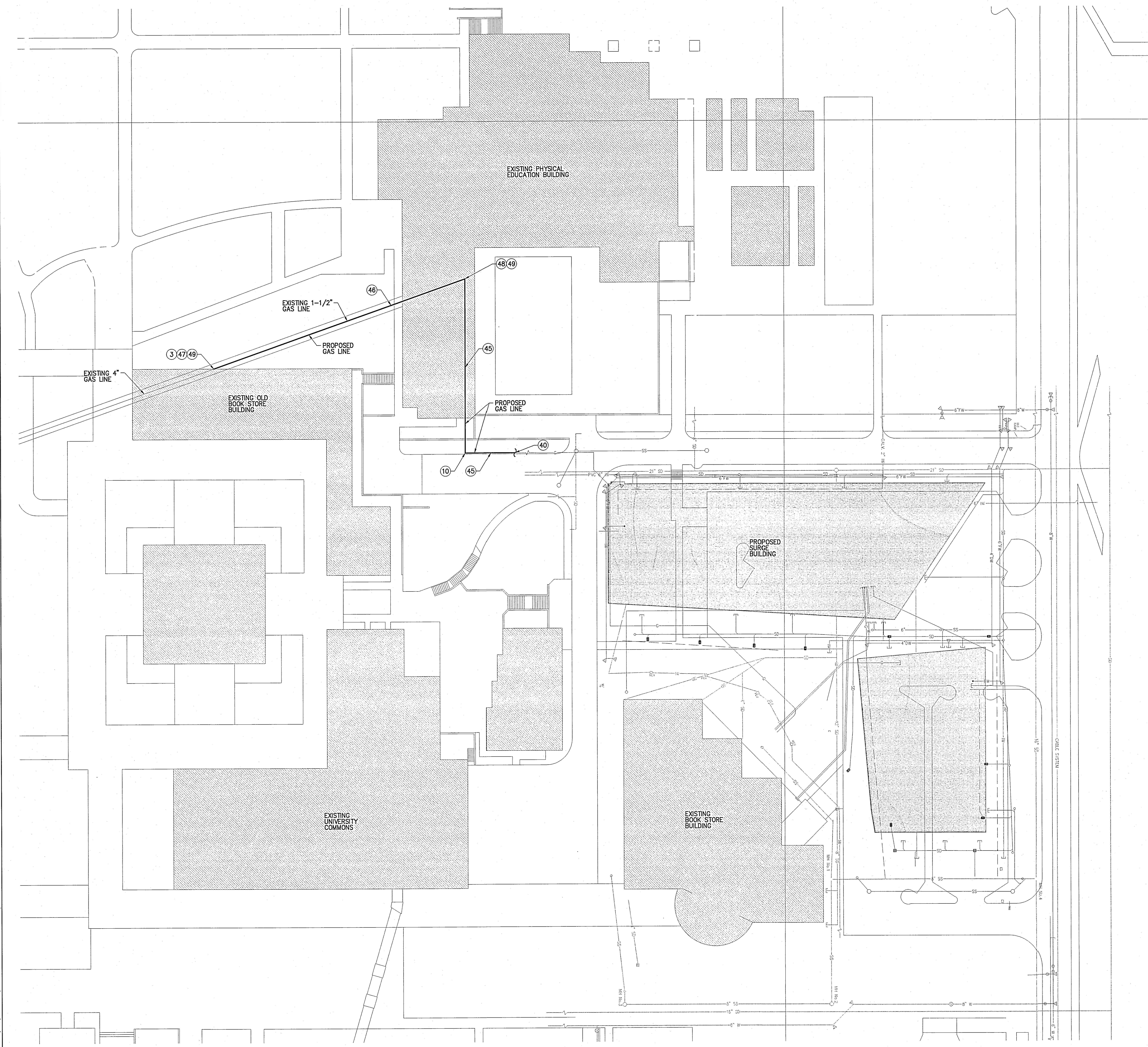
RECORD DRAWINGS

Key Plan

Drawing Title

UTILITY PLAN

Scale
3193000
Project Number
05JAN01
Baseline Date
C4.01
Drawing Number



GAS LINE CONSTRUCTION NOTES:

(3) CONNECT TO EXISTING UTILITY LINE.

(10) INSTALL LINE SIZE BEND.

(40) EXACT GAS TIE-IN POINT TO BE DETERMINED BY UCR REPRESENTATIVE. SEE PLAN SHEET C4.01 FOR ROUTING OF CONTINUATION OF GAS LINE.

(45) CONSTRUCT PROPOSED 2" GAS LINE.

(46) REPLACE EXISTING 1-1/2" WITH 2-1/2" GAS LINE.

(47) PROPOSED POINT OF CONNECTION OF 2-1/2" GAS LINE TO EXISTING 4" GAS LINE.

(48) PROPOSED POINT OF CONNECTION OF 2" GAS LINE TO PROPOSED 2-1/2" GAS LINE.

(49) EXACT POINT OF CONNECTION TO BE PER UCR REPRESENTATIVE.

GAS LINE GENERAL NOTES:

1. GAS LINE ROUTING IS SHOWN FOR COORDINATION PURPOSES AND IS BASED ON INFORMATION RECEIVED FROM THE UNIVERSITY. REFER TO PLUMBING PLANS FOR FURTHER DETAILS AND SPECIFICATIONS.
2. ALL GAS LINE CONSTRUCTION ON THIS PLAN SHEET IS TO BE VERIFIED ON SITE WITH THE UNIVERSITY REPRESENTATIVE BEFORE CONSTRUCTION COMMENCES.
3. ALL LOCATIONS OR EXISTING UTILITY LINES AS SHOWN ARE APPROXIMATE ONLY. CONTRACTOR TO VERIFY EXACT LOCATIONS AND INVERTS BEFORE PROCEEDING WITH THE PROPOSED CONSTRUCTION. CONTRACTOR TO NOTIFY THE ENGINEER IF UTILITY LOCATIONS OR INVERTS ARE OTHER THAN AS SHOWN ON THESE PLANS. SURVEYED INVERTS ARE AS SHOWN.
4. ALL GAS LINE SIZE ARE FOR REFERENCE ONLY, AND TO BE COORDINATED WITH PLUMBING ENGINEER AND UNIVERSITY REPRESENTATIVE BEFORE CONSTRUCTION COMMENCES.
5. EXACT GAS LINE ROUTING TO BE DETERMINED AND COORDINATED BY UNIVERSITY REPRESENTATIVE BEFORE CONSTRUCTION COMMENCES.
6. NO OTHER EXISTING UTILITIES ARE SHOWN, HOWEVER OTHER EXISTING UTILITIES ARE PRESENT. CONSTRUCTOR TO LOCATE ALL EXISTING UTILITIES BEFORE CONSTRUCTION AND COORDINATE THEIR CROSSING WITH UNIVERSITY REPRESENTATIVE.
7. ALL EXISTING UTILITIES ARE TO BE MAINTAINED IN SERVICE DURING CONSTRUCTION, COORDINATE WITH THE UNIVERSITY REPRESENTATIVE FOR SHUT DOWN AT TIME OFF TIE-IN.

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RECORD DRAWINGS

Key Plan

Drawing Title

UTILITY PLAN
(GAS LINE)

Scale

3193000

Project Number

05JAN01

Baseline Date

C4.02

Drawing Number

NOTES:

JOB #	JOB NAME	FILE PATH & NAME	PLOTTED DATE & TIME	UPDATED BY	PLOT SCALE	PROG.MG.	DRAFTER
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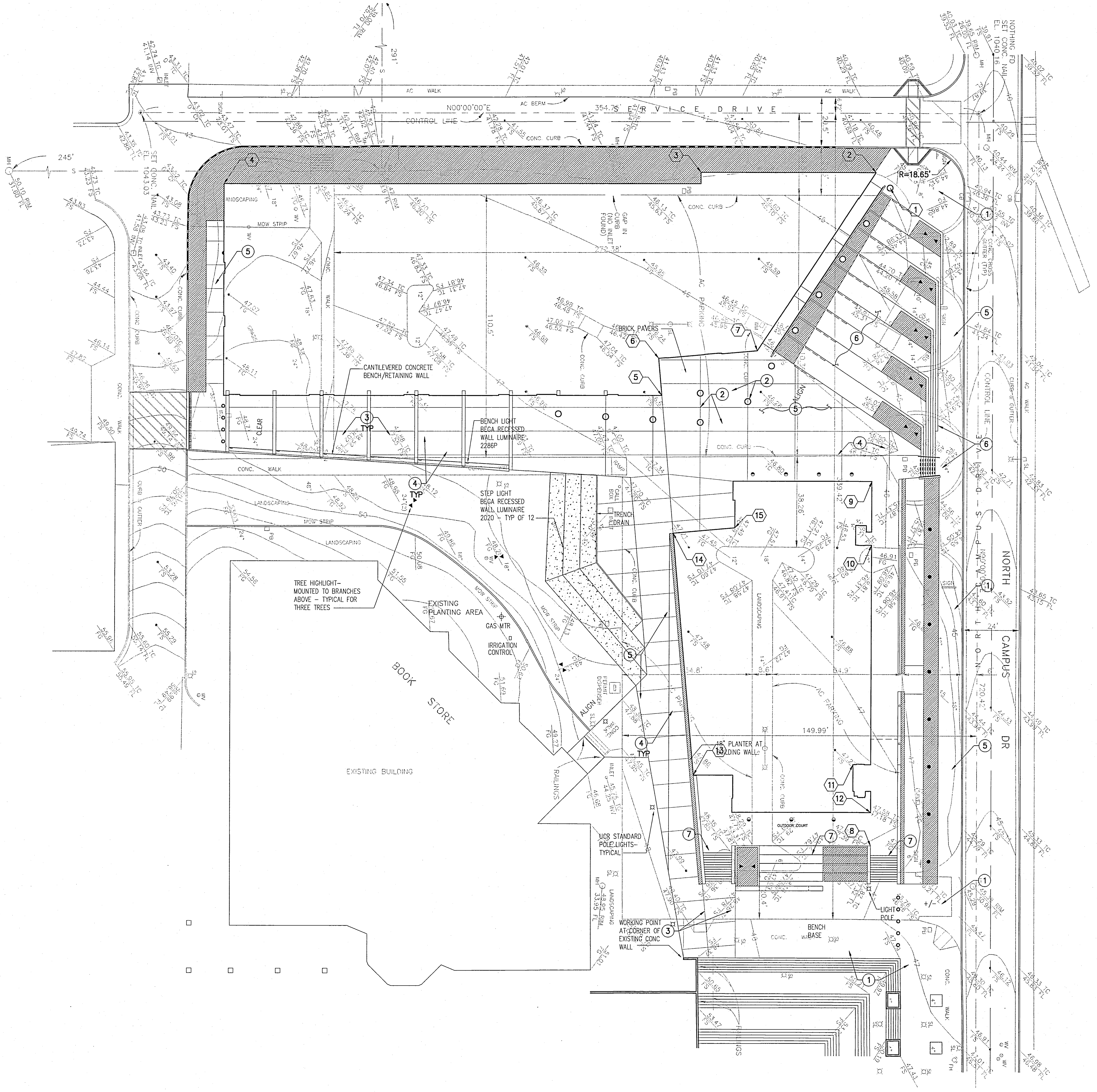
XREFS: P-UTIL, CAMPUS, TBC401, CB, EX-UTIL,



POINT NO.	NORTHING	EASTING	COMMENT
1	4962.45	5031.43	℄ COLUMN
2	4956.48	5024.93	CORNER OF BUILDING
3	4882.51	5024.93	CORNER OF BUILDING
4	4680.78	5029.77	CORNER OF BUILDING
5	4866.21	5118.93	CORNER OF BUILDING
6	4864.84	5103.28	CORNER OF BUILDING
7	4906.38	5100.08	CORNER OF BUILDING
8	4955.12	5308.48	CORNER OF WALL
9	4955.12	5154.98	CORNER OF BUILDING
10	4955.12	5181.78	CORNER OF BUILDING
11	4947.69	5274.30	CORNER OF BUILDING
12	4955.12	5294.48	CORNER OF BUILDING
13	4880.11	5278.79	CORNER OF BUILDING
14	4871.18	5176.82	CORNER OF BUILDING
15	4897.25	5174.54	CORNER OF BUILDING

CONSTRUCTION NOTES:

1. PAVEMENT CONTROL AND TOOL JOINT SPACING TO MATCH AND ALIGN WITH ADJACENT EXISTING CONCRETE SIDEWALK(S)– COORDINATE WITH ARCHITECT.
2. ALIGN CONCRETE JOINT WITH CENTERLINE OF COLUMN – TYPICAL WHERE SHOWN.
3. EXPANSION JOINT – TYPICAL BETWEEN DISSIMILAR CONCRETE COLORS/POURS. SEE CIVIL DRAWINGS.
4. CONTROL JOINT – TYPICAL. SEE CIVIL DETAILS.
5. SIDEWALK SECTION PER DETAIL 2/C6.01.
6. STEPS PER DETAIL 26/C6.04.
7. STEPS PER ARCHITECTURAL AND STRUCTURAL PLANS.

LEGEND:

TRUCK LOADING AREA PER DETAIL 3b/C6.01.

CONCRETE W/ INTEGRAL COLOR– ADMIXTURES, INC. COLOR .A

CONCRETE W/ INTEGRAL COLOR– ADMIXTURES, INC. COLOR .B

CONCRETE COLOR TO MATCH EXISTING ADJACENT

P.A. PLANTING AREA SEE LANDSCAPE PLANS

PLAN
SCALE: 1" = 20'
20' 10' 0' 20' 40'
GRAPHIC SCALE

NOTES:						
JOB #	JOB NAME	FILE PATH & NAME	PLOTTED DATE & TIME	UPDATED BY	PLOT SCALE	PROJ.MG.	DRAFTER
10C1636	UCRIVERSIDE	P:\2000\10C1636 – UCR SURGE BLDG\CURRENT\C5-01.DWG	APR. 01, 2002 9:46:39 AM	B.B.	1=1	B.B.	K.H.

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RECORD DRAWINGS

Key Plan

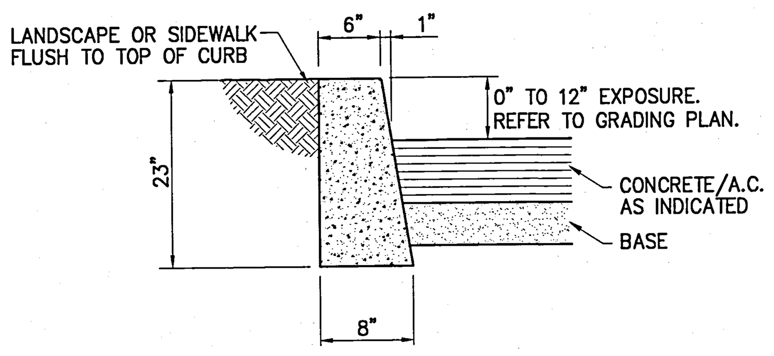
Drawing Title

HORIZONTAL CONTROL AND PAVING PLAN

Scale
3193000
Project Number
07NOV00
Baseline Date

C5.01

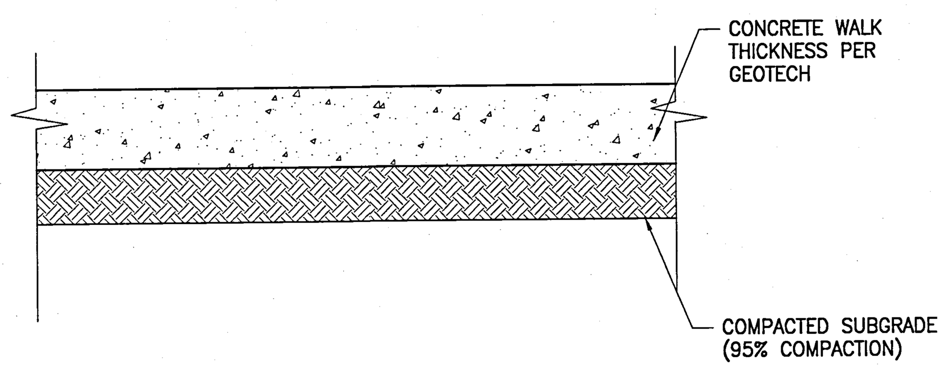
Drawing Number



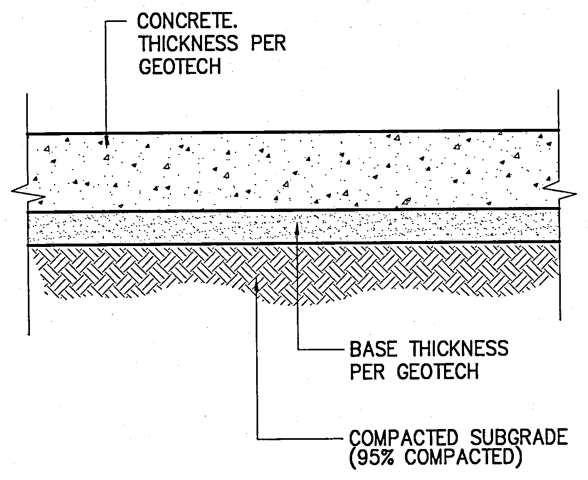
NOTES:

1. CONCRETE SHALL BE 3000 PSI.
2. ISOLATION JOINTS SHALL BE PLACED ONLY AS SPECIFIED
3. CONTRACTION JOINTS CONSISTING OF 1-1/2" DEEP SCORES SHALL ALIGN WITH JOINT OF CURB.
4. WHERE A WALK IS ADJACENT TO THE CURB THE JOINTS SHALL ALIGN WITH JOINTS IN THE WALK.

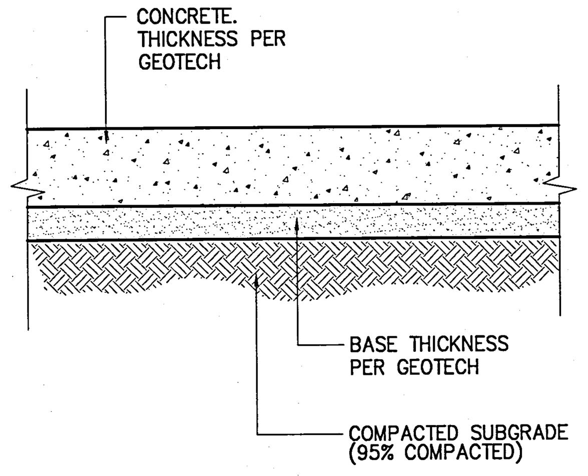
CONCRETE CURB (TYPE "A") — 1 / C6.01
N.T.S.



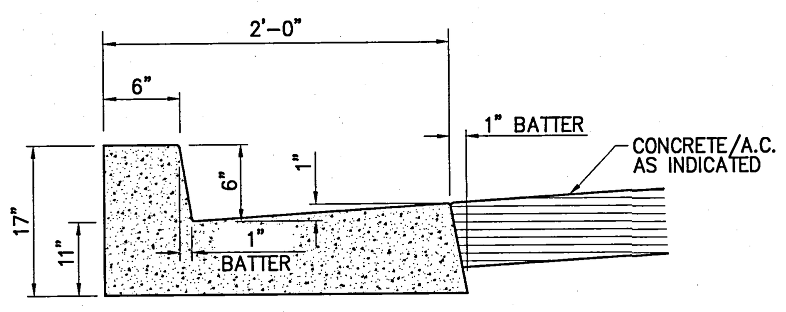
CONCRETE WALK — 2 / C6.01
N.T.S.



CONCRETE PAVEMENT — 3a / C6.01
N.T.S.



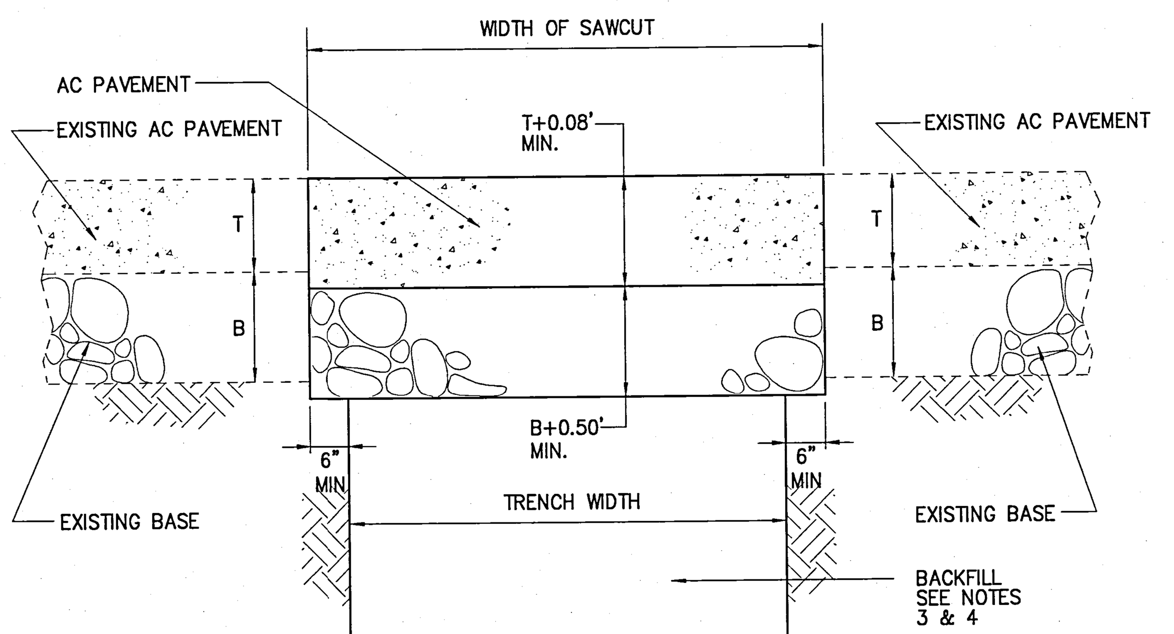
TRUCK LOADING CONCRETE PAVEMENT — 3b / C6.01
N.T.S.



NOTES:

1. CONCRETE SHALL BE 3000 PSI.
2. ISOLATION JOINTS SHALL BE PLACED ONLY AS SPECIFIED
3. CONTRACTION JOINTS CONSISTING OF 1-1/2" DEEP SCORES SHALL BE PLACED AT 5' INTERVALS O.C. ALIGNED WITH ADJACENT CONCRETE SLAB.
4. WHERE A WALK IS ADJACENT TO THE CURB THE JOINTS SHALL ALIGN WITH JOINTS IN THE WALK.

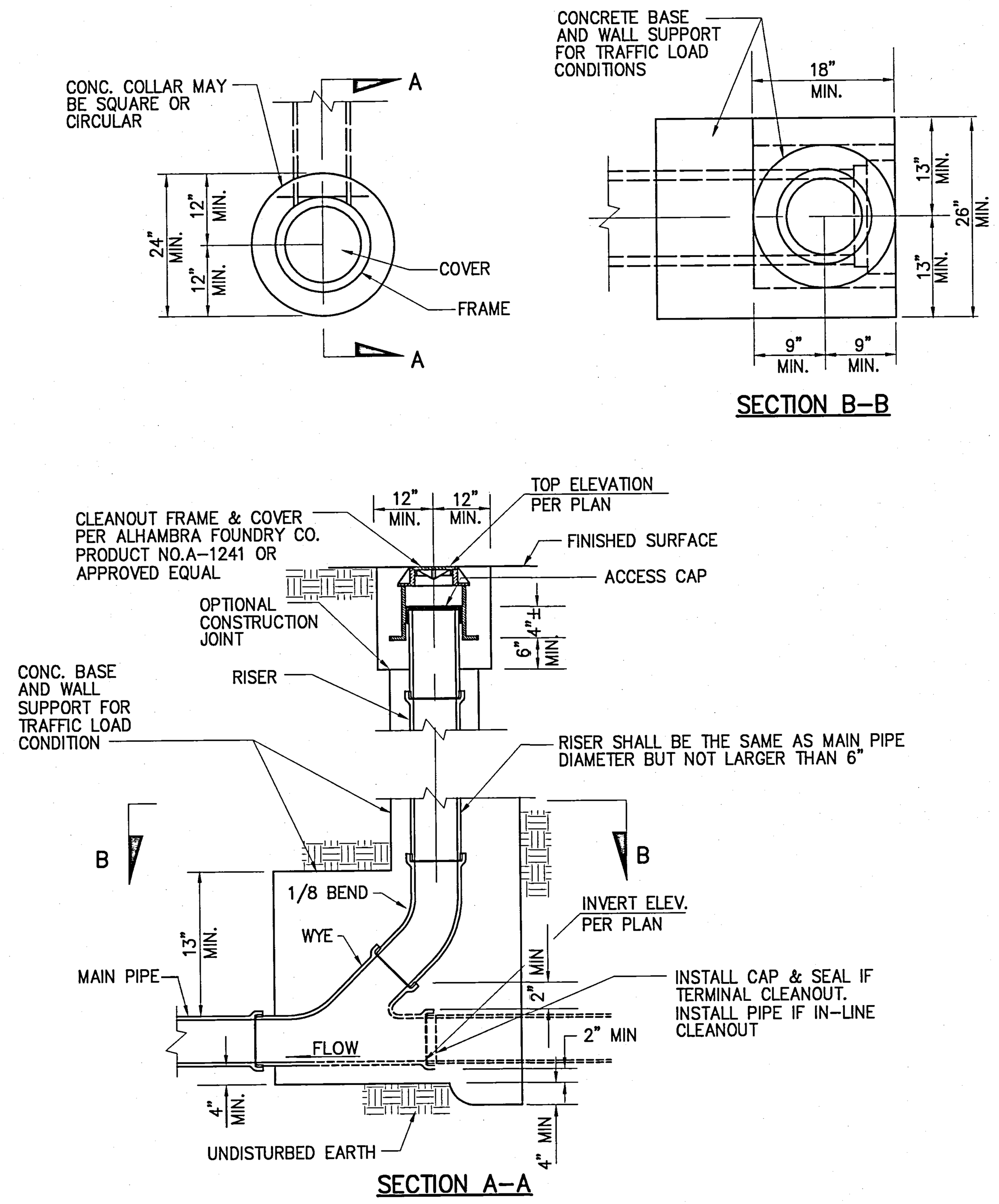
CONCRETE CURB AND GUTTER — 4 / C6.01
N.T.S.



NOTES:

1. DURING EXCAVATION AND SUBGRADE PREPARATION, THE CONTRACTOR SHALL TAKE ALL NECESSARY STEPS TO ENSURE THE PROTECTION OF ALL IMPROVEMENTS, WHETHER PUBLIC OR PRIVATE, INCLUDING UTILITIES AND THEIR SERVICES, FROM ANY DAMAGE THAT COULD OCCUR DUE TO CONTRACTOR'S OPERATION.
2. BACKFILL AND DENSIFICATION SHALL BE DONE IN CONFORMANCE WITH SUBSECTION 306-1.3 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, EXCEPT AS FOLLOWS:
   A) TRENCH BACKFILL SHALL BE DENSIFIED TO A MINIMUM OF 90 PERCENT RELATIVE COMPACTION.
3. TEMPORARY PAVEMENT REPLACEMENT SHALL BE PLACED AT THE CONTRACTOR'S EXPENSE, UNLESS OTHERWISE SPECIFIED BY THE ENGINEER. IT SHALL BE PLACED LEVEL WITH THE EXISTING PAVEMENT ON COMPACTED TRENCH BACKFILL AND SHALL BE A MINIMUM OF 2" THICK.
4. PERMANENT PAVEMENT RESURFACING SHALL BE DONE WITHIN TWO (2) WEEKS AFTER BACKFILLING OF TRENCHES HAS BEEN COMPLETED, AND ONLY AFTER SETTLEMENT HAS TAKEN PLACE AND THE FILL SURFACE HAS SUFFICIENTLY DRIED. ALL CUTS SHALL BE CLEAN AND STRAIGHT.
5. CONTACT SURFACES OF EXISTING PAVEMENT, MANHOLES FRAMES AND SHAFTS AND CONCRETE SURFACES SHALL BE GIVEN A TACK COAT BEFORE PERMANENT ASPHALT TRENCH RESURFACING IS PLACED.
6. ASPHALT CONCRETE PAVEMENT SHALL BE C2-AR-4000.

ASPHALT CONCRETE PAVEMENT REPLACEMENT WITH BASE — 5 / C6.01
N.T.S.



CLEANOUT STRUCTURE — 6 / C6.01
N.T.S.

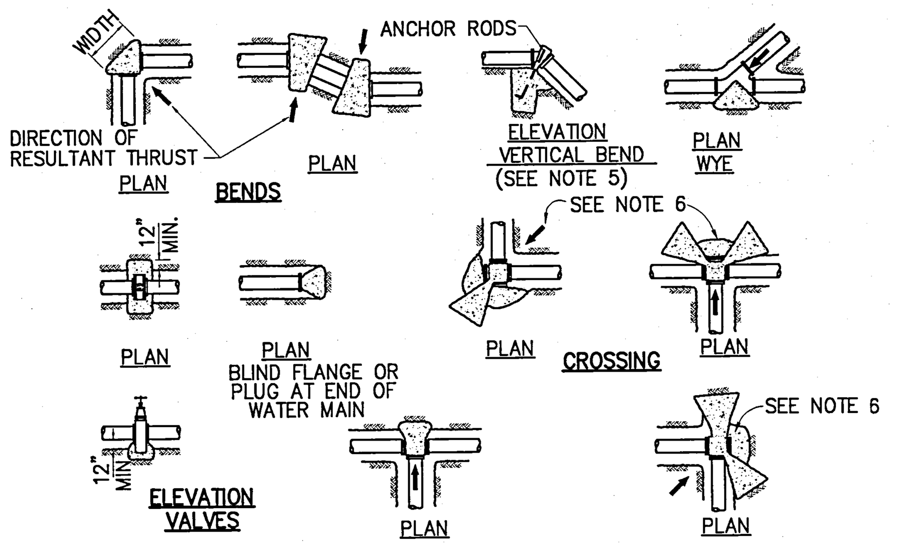


TABLE I

MINIMUM BEARING AREAS IN SQ. FT. *					
MAIN SIZE	TEE **	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
6"	4	5.5	3	1.5	1
8"	6.5	9.5	5	3	1.5
10"	11	15.5	8.5	4.5	2.5
12"	15.5	22	12	6	3.0

TABLE II

*** SOIL TYPE	MAX. ALLOWABLE SOIL BEARING VALUES	FACTORS FOR INCREASING AREAS IN TABLE 1
LOOSE SAND	500 PSF	4
SOFT SANDY CLAY	1000 PSF	2
ADOBE	1000 PSF	2
COMPACT FINE SAND	2000 PSF	1
COMPACT COARSE SAND	2000 PSF	1
MEDIUM STIFF CLAY	2000 PSF	1

* BASED ON 150 PSI W.W.P. PRESSURE & SOIL BEARING VALUES OF 2000 PSF. THE RATIO OF WIDTH TO HEIGHT SHALL NOT EXCEED 1 1/2 TO 1.
** TEES: PLUGS, CAPS AND HYDRANTS.
*** THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE SAFE SOIL BEARING VALUES, AND THE POSITION AND SIZE OF BEARING AREAS.

NOTES:

1. ALL ANCHOR AND THRUST BLOCKS SHALL BE 5 SACKS PER CUBIC YARD CONCRETE POURED AGAINST UNDISTURBED SOIL.
2. MINIMUM ALLOWABLE WATER PRESSURE FOR DESIGN OF THRUST BLOCKS IS 150 PSI. BEARING AREA INCREASES DIRECTLY WITH INCREASE IN PRESSURE.
3. ALL CONCRETE USED IN THRUST BLOCKS SHALL ATTAIN 2000 PSI STRENGTH.
4. ALL ANCHOR RODS SHALL BE REINFORCING STEEL, AND A MINIMUM OF 1/2 INCH IN DIAMETER.
5. USE ANCHOR BLOCKS AT VERTICAL BENDS WHEN PIPE IS ABOVE OR BELOW GROUND. SIZE OF BLOCK AND ROD SHALL BE AS SHOWN ON THE PLANS, OR AS DETERMINED BY THE ENGINEER IN THE FIELD.
6. USE 30 POUND FELT TO INSURE COLD JOINT.
7. CONTRACTOR TO REDUCE BEARING AREAS PROPORTIONATELY FOR PIPE SIZES LESS THAN 6".

THURST BLOCK FOR PLASTIC PIPES — 7 / C6.01
N.T.S.

NOTES:						
JOB #	JOB NAME	FILE PATH & NAME	PLOTTED DATE & TIME	UPDATED BY	PLOT SCALE	PROG.MG.	DRAFTER
1001636	UCRIVERSIDE	P:\2000\1001636 - UCR SURGE BLDG\CURRENT\C6-01.DWG	MAR. 06, 2002 9:19:40 AM	B.B.	1=1	B.B.	K.H.

XREFS: T-B,

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

THIS RECORD DRAWING IS BASED ON CONTRACTOR PROVIDED INFORMATION. THE ACCURACY OF THE INFORMATION HAS NOT BEEN VERIFIED BY KPFF.

kpff Consulting Engineers
2400 Broadway Avenue, Suite 230
Santa Monica, California 90404
(310) 828-1536 Fax (310) 828-6025

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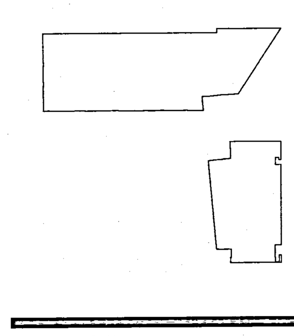
RECORD DRAWINGS

Key Plan



Drawing Title

DETAILS

Scale
3193000

Project Number
07NOV00

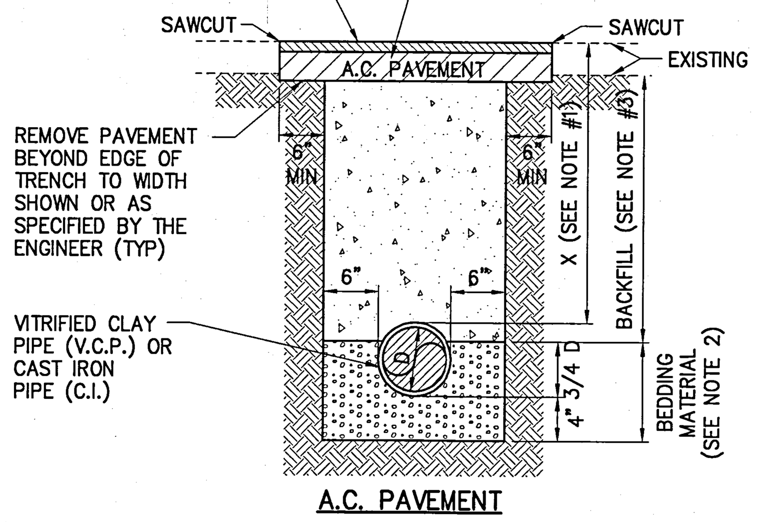
Baseline Date

C6.01

Drawing Number

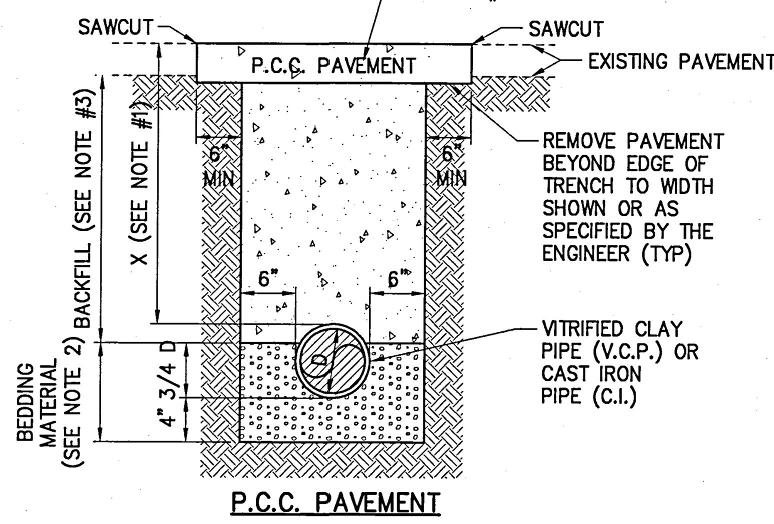
PAVE 1-1/2" WEARING COURSE WITH C2-AR-4000 A.C. FLUSH WITH EXISTING FINISH GRADE. WITHIN 15 TO 20 DAYS AFTER THE BASE COURSE IS COMPLETED.

PAVE 5" (OR EXISTING PAVEMENT THICKNESS PLUS 1", WHICHEVER IS GREATER). BASE COURSE WITH C2-AR-4000 A.C.



A.C. PAVEMENT

PLACE 7" P.C.C. CLASS 520-C-2500 (OR EXISTING PAVEMENT THICKNESS, WHICHEVER IS GREATER) TO NEAREST SCORELINE. FOR SCORE LINE PATTERN. REFER TO CITY DWG # 4369. BROOM FINISHED.



P.C.C. PAVEMENT

NOTES:

1. IF COVER TO NEW PIPE (X) IS LESS THAN 24", CITY ENGINEER WILL SPECIFY SPECIAL BACKFILL REQUIREMENTS.
2. BEDDING MATERIAL:
   VCP SEWER MAIN LESS THAN 27"ø: 1/2" CRUSHED ROCK
   VCP SEWER MAIN MORE THAN 27"ø: 3/4" CRUSHED ROCK
   RCP STORM DRAIN: WASHED SAND
3. BACKFILL MATERIAL:
   VCP SEWER MAIN: DECOMPOSED GRANITE OR 1 SACK SAND-CEMENT SLURRY AS SPECIFIED BY THE ENGINEER.
   RCP STORM DRAIN: CRUSHED MISC. ROCK OR 1 SACK SAND-CEMENT SLURRY AS SPECIFIED BY THE ENGINEER.

PIPE TYPES — FOR ON-SITE GRAVITY FLOW SAN. SEWERS AND STORM DRAINAGE USE P.V.C. CONFORMING TO A.S.T.M. D-3034 MAXIMUM SDR 35, GASKETED JOINTS. IN PUBLIC RIGHT-OF-WAY, USE VITRIFIED CLAY PIPE FOR SEWER PIPE AND CAST IRON FOR STORM DRAIN PIPE.

LOAD COMPACTION	COVER	TYPE "B" MATERIAL
ON-SITE NON-TRAFFIC	1.0' MIN. TO 18'	CLEAN COARSE SAND

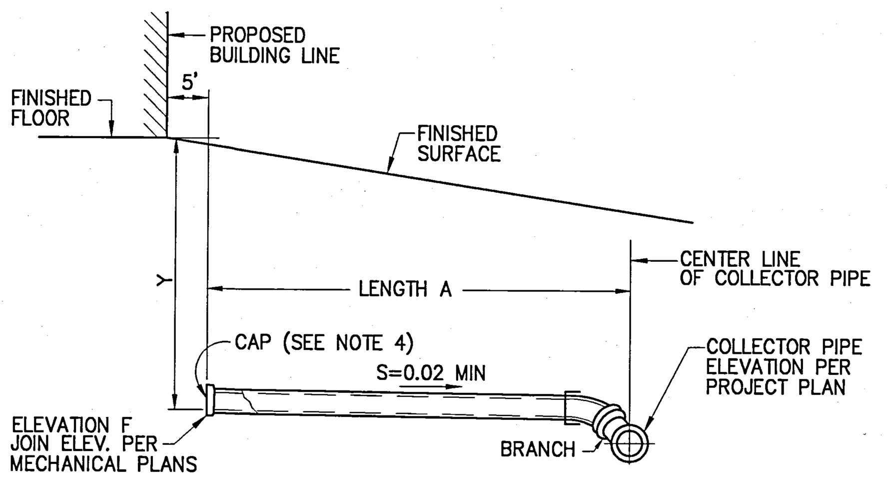
CLEAN COARSE SAND — SHALL CONFORM TO THE REQUIREMENTS OF SAND FOR PORTLAND CEMENT CONCRETE AS SPECIFIED IN SECTION 200-1.5.5 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST ADDITION.

ON-SITE COMPACTION: — PIPE EMBEDMENT AND TRENCH BACKFILL SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 306-1.3 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION. WATER DENSIFIED BACKFILL SHALL NOT BE USED.

NOTE A — EXCAVATE FOR BELLS OR HUBS SO FULL LOAD IS CARRIED BY PIPE BARRELS.

NOTE B — FIFTH ST.: A 10 FOOT WIDTH OF PAVEMENT SHALL BE GROUND DOWN 1.5" AND BE REPAVED, SEE ABOVE.

FLEXIBLE PIPE BEDDING TRENCH DETAIL
N.T.S.
8 C6.02

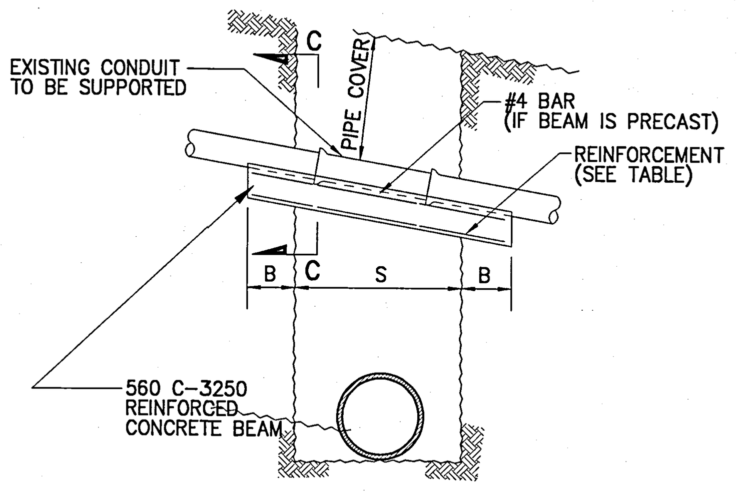


PROFILE

NOTES:

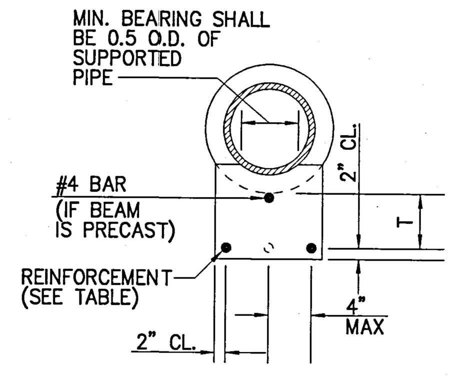
1. EXCEPT AS OTHERWISE INDICATED ON THE PROJECT PLANS, ALL SEWERS SHALL BE CONSTRUCTED ON STRAIGHT LINES AND GRADES BETWEEN CONTROL POINTS AND ELEVATIONS.
2. DIMENSIONS:
   A. Y = VARIES - JOIN ELEVATION PER MECHANICAL PLANS
   B. LENGTHS "A" - SEE PROJECT PLANS
   C. ELEVATIONS "F" AND "Y" - SEE MECHANICAL PLANS
3. ALL CONNECTION SEWER PIPE SHALL BE 6 INCH UNLESS OTHERWISE INDICATED.
4. THE UPPER END OF THE SEWER CONNECTION SHALL BE SEALED BY INSTALLING A CAP AND SEALING THE CAP WITH 1" THICK TYPE "F" MORTAR AROUND THE CIRCUMFERENCE OF THE CAP.
5. EXCEPT AS CONTROLLED BY ELEVATIONS INDICATED ON THE PROJECT PLANS, THE MINIMUM SLOPE FOR ALL PIPES SHALL BE 2 PERCENT (S=0.02 MINIMUM)
6. BRANCHES SHALL BE EITHER TEES OR WYES AND SHALL BE ROTATED UPWARD FROM THE HORIZONTAL TO AN ANGLE OF 22-1/2 DEGREES TO 45 DEGREES WHEN TEES ARE USED. BENDS ARE NOT REQUIRED BUT MAY BE USED AT THE OPTION OF THE CONTRACTOR. WHEN THE BRANCH ROTATION DOES NOT CONFORM TO THE SLOPE OF THE HOUSE CONNECTION SEWER, PULLED JOINTS MAY BE USED FOR ADJUSTMENT.
7. CONNECTION OF A BUILDING SEWER SMALLER THAN 6 INCHES TO A 6 INCH CONNECTION SEWER SHALL BE MADE USING AN APPROVED INCREASER-TEE OR AN INCREASE FOLLOWED BY A TEE.

TYPICAL WYE CONNECTION
N.T.S.
9 C6.02



REINFORCED CONCRETE BEAM (DIMENSIONS AND REINFORCEMENT)

S	PIPE COVER 0" TO 8'-0" T	BARS	B
0" TO 4'-0"	8"	No. 4	1'-6"
4'-0" TO 5'-0"	8"	No. 4	1'-6"
5'-0" TO 6'-0"	9"	No. 4	1'-6"
6'-0" TO 7'-0"	10"	No. 5	1'-6"
7'-0" TO 8'-0"	11"	No. 5	1'-6"
8'-0" TO 9'-0"	12 1/2"	No.5	2'-0"
9'-0" TO 10'-0"	13 1/2"	No.6	2'-0"
10'-0" TO 11'-0"	14 1/2"	No.6	2'-6"
11'-0" TO 12'-0"	15 1/2"	No.6	2'-6"
12'-0" TO 13'-0"	17"	No.6	3'-0"
13'-0" TO 14'-0"	18"	No.7	3'-0"
14'-0" TO 15'-0"	19"	No.7	3'-0"
15'-0" TO 16'-0"	20 1/2"	No.7	3'-6"
16'-0" TO 17'-0"	21 1/2"	No.7	3'-6"
17'-0" TO 18'-0"	22 1/2"	No.7	4'-6"

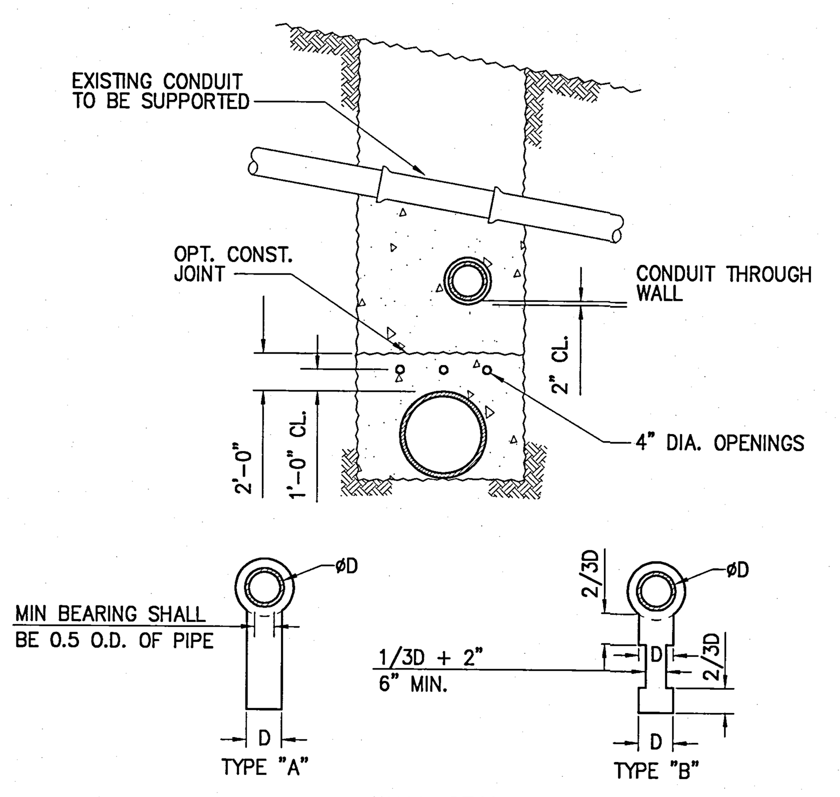


SECTION C-C

NOTES:

1. WIDTH OF BEAM SHALL EQUAL O.D. OF SUPPORTED PIPE. MINIMUM WIDTH SHALL BE 6 IN.
2. IF SUPPORTED PIPE IS BEDDED IN CONCRETE. BEAM WIDTH SHALL EQUAL BEDDING WIDTH.
3. IF BEAM IS PRECAST, ENDS OF BEAM SHALL BE FULLY BEDDED IN 450-C-2000 CONCRETE FOR LENGTH "B". THE BEDDING SHALL HAVE A MINIMUM THICKNESS OF 4 IN. CLASS "C" MORTAR SHALL BE PLACED BETWEEN TOP OF BEAM AND SUPPORTED PIPE TO PROVIDE MINIMUM BEARING SHOWN.
4. THIS CASE IS PERMITTED ONLY IF THE TRENCH WALLS ARE FIRM AND UNYIELDING.
5. MAXIMUM SPACING OF BARS SHALL BE 4 IN. O.C.

CASE 1
REINFORCED CONCRETE BEAM

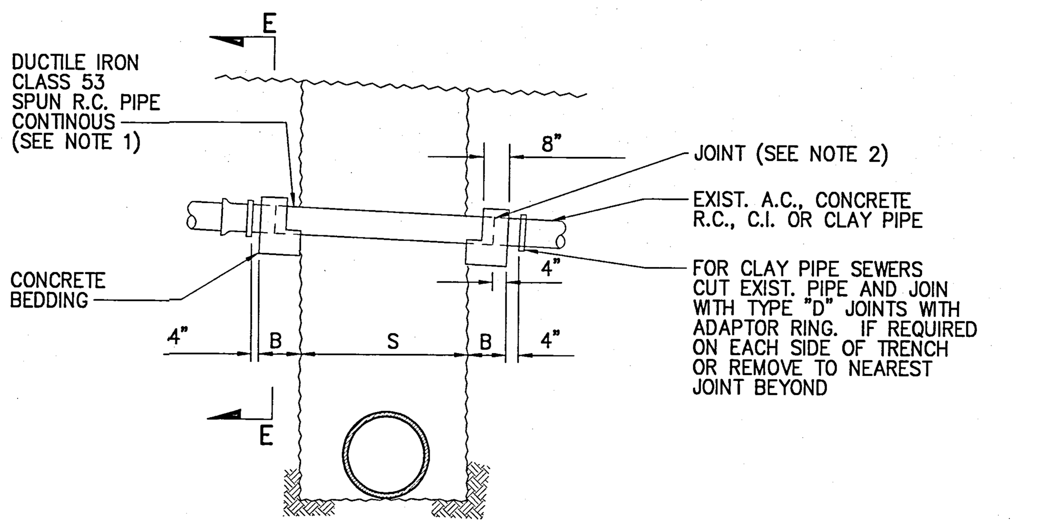


WALL SECTION

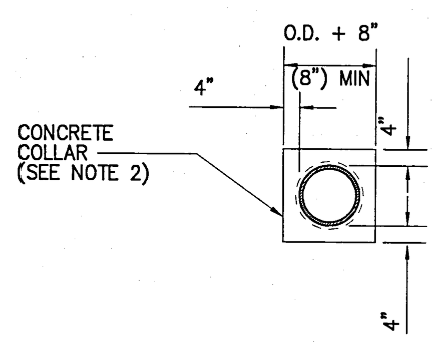
NOTES:

1. THE SUPPORTING WALL SHALL HAVE A FIRM BEARING ON THE SUBGRADE AND AGAINST THE SIDES OF THE EXCAVATION.
2. ANY CONDUIT PASSING THROUGH THE WALL SHALL HAVE 2 IN CLEARANCE FROM THE WALL
3. 4 IN DIA. OPENING THROUGH THE WALL AT 2 FT O.C. HORIZONTALLY AND AT 5 FT P.C. VERTICALLY SHALL BE PROVIDED TO PREVENT UNEQUAL PRESSURE RESULTING FROM JETTED BACKFILL.
4. IF SUPPORTED PIPE IS BEDDED IN CONCRETE, MINIMUM THICKNESS OF WALL SHALL EQUAL BEDDING WIDTH.
5. BRICK WITH MORTAR JOINTS MAY BE USED IN LIEU OF CONCRETE FOR WALLS UP TO 5 FT IN HEIGHT OR LENGTH.

CASE 2
CONCRETE WALL



CASE 3
DUCTILE IRON PIPE



SECTION E-E

NOTES:

1. 2000-D SPUN R.C. PIPE OF SAME DIAMETER AS THE EXISTING PIPE MAY BE USED ONLY WHEN THE EXISTING PIPE IS A.C., CONCRETE OR R.C. PIPE AND THE TRENCH WIDTH IS 5 FT OR LESS.
2. THE CONCRETE COLLAR JOINT SHALL BE USED FOR JOINTS IN STORM DRAIN PIPE.

DEPTH OF COVER	6" PIPE S (Max)	6" PIPE B (Min)	8" PIPE S (Max)	8" PIPE B (Min)	10" PIPE S (Max)	10" PIPE B (Min)
0" TO 8'-0"	11'-0"	1'-6"	13'-6"	1'-6"	16'-6"	2'-0"
8'-0" TO 16'-0"	8'-0"	1'-6"	10'-0"	2'-0"	12'-0"	2'-0"
16'-0" TO 25'-0"	7'-0"	1'-6"	9'-0"	2'-0"	10'-6"	2'-6"

GENERAL NOTES:

1. "S" IS THE SPAN OF THE PIPE SUPPORT MESURED ALONG ITS CENTERLINE.
2. "B" IS THE LENGTH OF BEARING OF THE SUPPORT AGAINST UNDISTURBED EARTH MEASURED ALONG THE PIPE CENTERLINE.
3. CASE 2 SHALL BE USED FOR PARTIAL CROSSINGS, EXCEPT THAT WHERE THE DISTANCE FROM A SEWER CHIMNEY TO UNDISTURBED EARTH IS 18 IN. OR LESS, THE TRENCH BACKFILL MAY BE DENSIFIED TO 18 IN. ABOVE A HOUSE CONNECTION SEWER AND THEN RE-EXCAVATED FOR THE PIPE INSTALLATION.
4. ANY SEWER OR STORM DRAIN EXPOSED OR PARTIALLY EXPOSED IN A TUNNEL EXCAVATION SHALL BE SUPPORTED WITH A WALL, CASE 2.
5. IF BEDDING IS REMOVED FROM THE EXISTING PIPE THAT WILL REMAIN IN PLACE, THE PIPE SHALL BE EMBEDDED WITH CONCRETE AT THE CONTRACTOR'S SOLE EXPENCE.
6. UNLESS OTHERWISE INDICATED CONCRETE SHALL BE CLASS 450-C-2000.

SUPPORT FOR CONDUITS ACROSS TRENCHES
N.T.S.
10 C6.02

NOTES:	JOB NAME	FILE PATH & NAME	PLOTTED DATE & TIME	UPDATED BY	PLOT SCALE	PROG.MG.	DRAFTER
JOB # 1001636 XREFS: T-B.	UCRIVERSIDE	P:\2000\1001636 - UCR SURGE BLDG\CURRENT\C6-02.DWG	MAR. 06, 2002 9:19:50 AM	B.B.	1=1	B.B.	K.H.

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UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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kpff Consulting Engineers
2400 Broadway Avenue, Suite 230
Santa Monica, California 90404
(310) 828-1536 Fax (310) 829-6025

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RECORD DRAWINGS

Key Plan

Drawing Title

DETAILS

Scale
3193000
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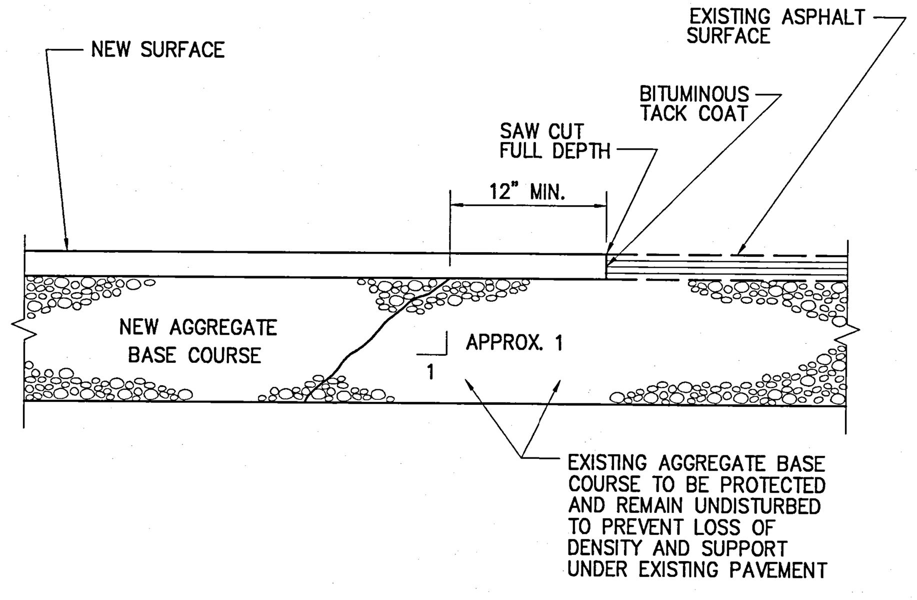
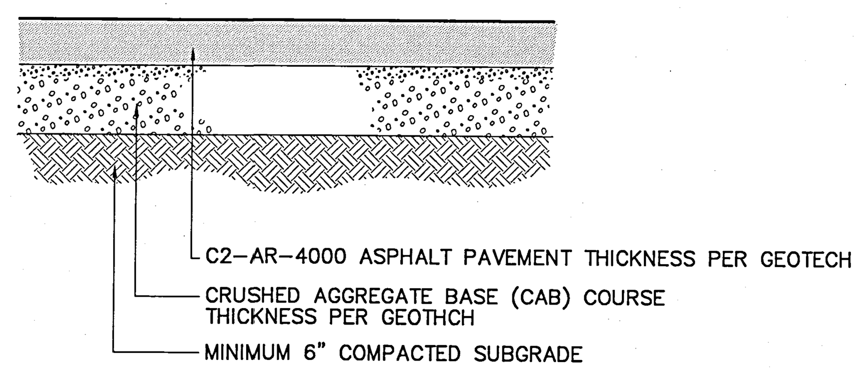
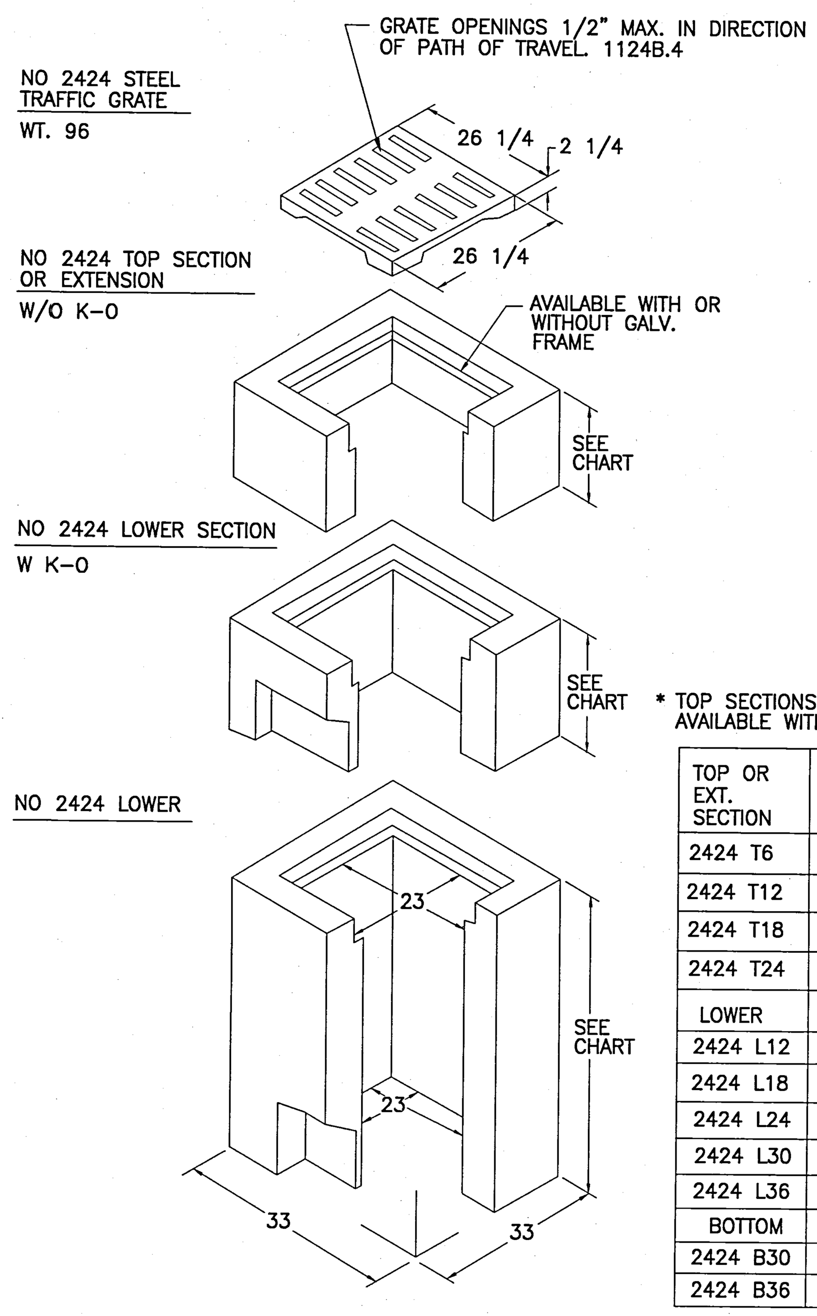


ASPHALT PAVEMENT JOIN DETAIL (11 / C6.03)
N.T.S.



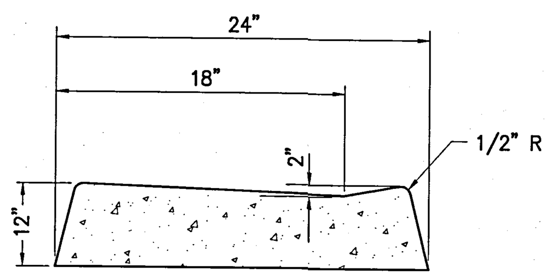
TYPICAL ASPHALT PAVEMENT SECTION (12 / C6.03)
N.T.S.



* TOP SECTIONS AND BOTTOM SECTIONS AVAILABLE WITH FRAME

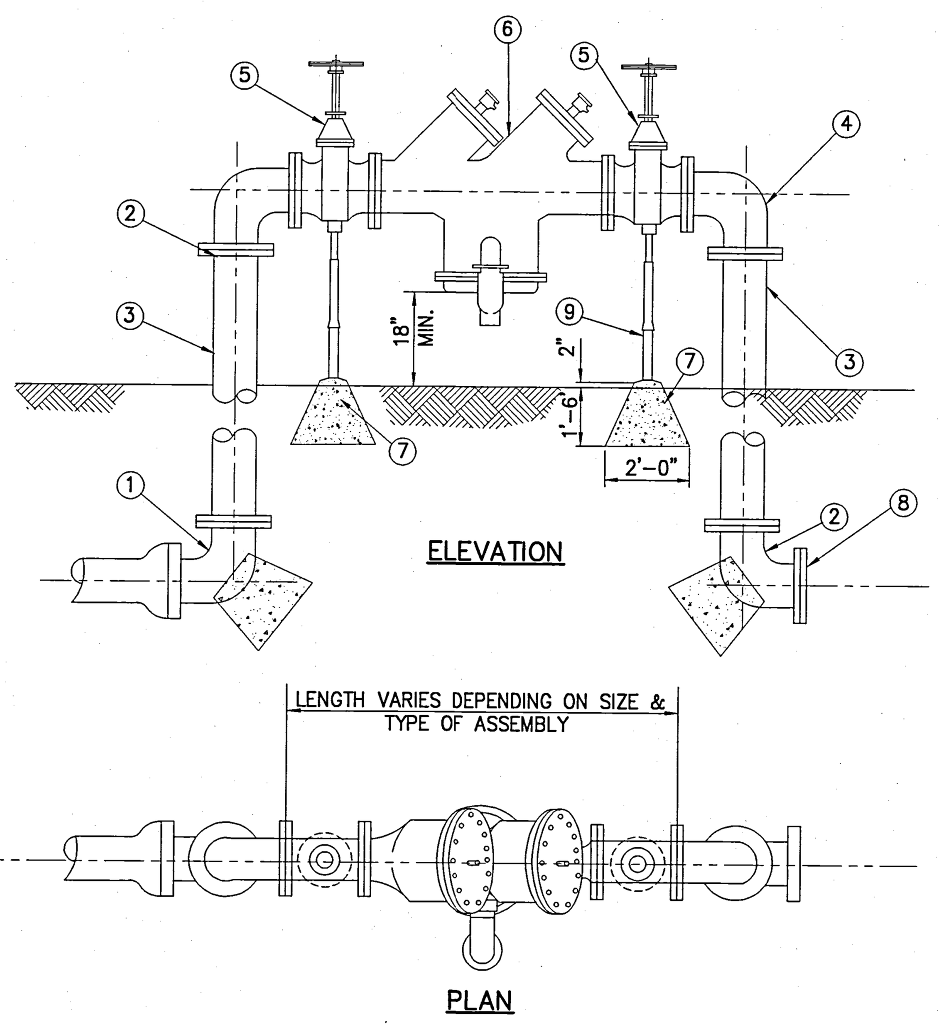
TOP OR EXT. SECTION	HT	LBS.	AVAILABLE
2424 T6	6	303	NO K-O
2424 T12	12	606	" " " " " "
2424 T18	18	909	" " " " " "
2424 T24	24	1030	W/2 14x14 K-O
LOWER	HT	LBS.	AVAILABLE
2424 L12	12	606	W/2 5x14 K-O
2424 L18	18	909	W/2 8x14 K-O
2424 L24	24	606	W/2 14x14 K-O
2424 L30	30	2030	" " " " " "
2424 L36	36	2300	" " " " " "
BOTTOM	HT	LBS.	AVAILABLE
2424 B30	30	2408	W/2 14x14 K-O
2424 B36	36	2678	" " " " " "

PRECAST CATCH BASIN (13 / C6.03)
N.T.S.



NOTES:
1. CONCRETE SHALL BE 3,500 PSI.
2. ISOLATION JOINTS SHALL BE PLACED ONLY HAS SPECIFIED.
3. CONTRACTION JOINTS CONSISTING OF 1" DEEP SCORES SHALL BE PLACED AT 15' INTERVALS O.C.

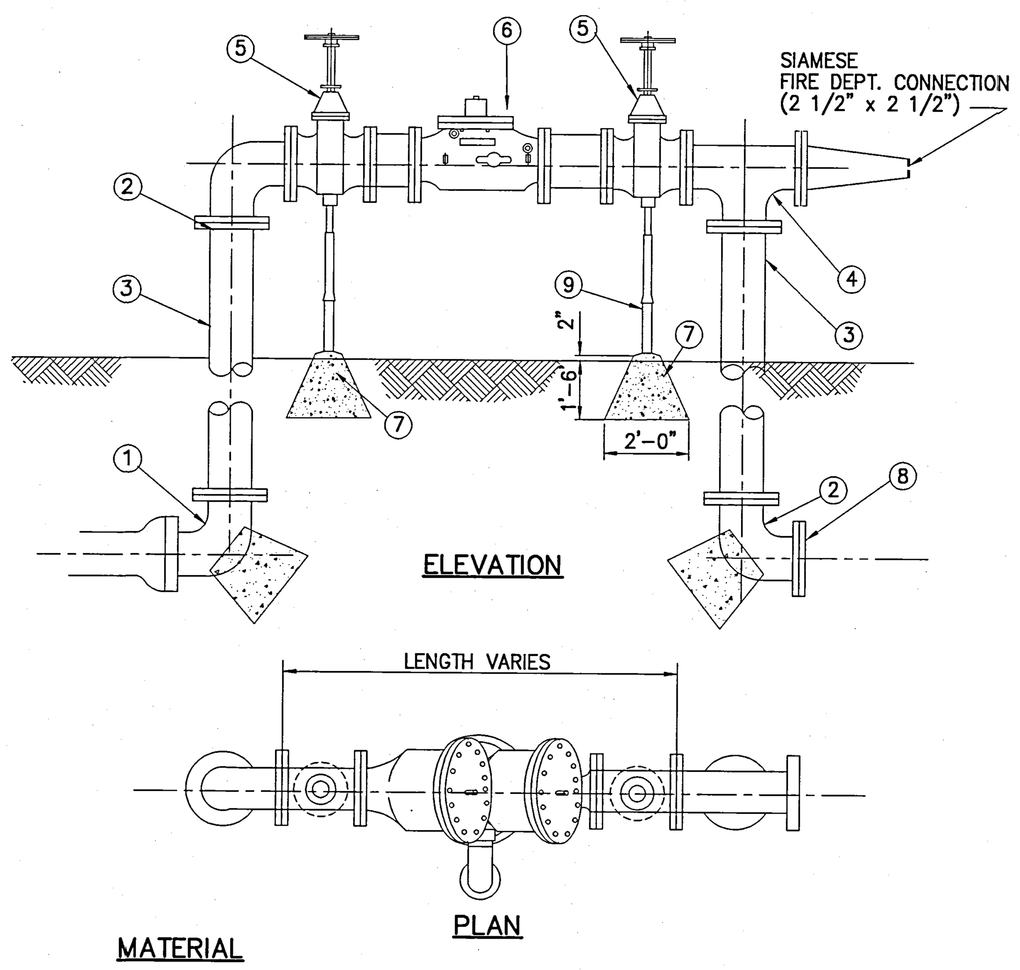
VALLEY GUTTER (14 / C6.03)
N.T.S.



MATERIAL
1 ---- 90° DI ELL FLG x PUSH-ON
2 ---- 90° DI ELL FLG x FLG
3 ---- DI SPOOL FLG x FLG
4 ---- 90° DI ELL FLG x FGL
5 ---- USC-APPROVED SHUT-OFF VALVES. SEE SPECIFICATIONS
6 ---- DOMESTIC WATER: HERSEY/GRINNEL, 6CM 4" REDUCED PRESSURE ASSEMBLY OR USC APPROVED EQUAL.
7 ---- CONCRETE FOOTING
8 ---- DI BLIND FLANGE
9 ---- GALVANIZED ADJUSTABLE PIPE SUPPORT.

NOTES:
1. INSTALLATION SHALL COMPLY WITH THE LATEST PLUMBING CODES AND APPLICABLE LOCAL AGENCY REQUIREMENTS.

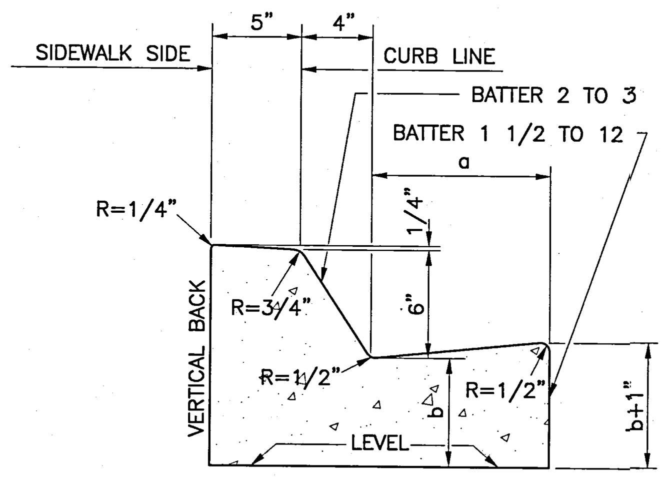
TYPICAL REDUCED PRESSURE ASSEMBLY (15 / C6.03)
N.T.S.



MATERIAL
1 ---- 90° DI ELL FLG x PUSH-ON
2 ---- 90° DI ELL FLG x FLG
3 ---- DI SPOOL FLG x FLG
4 ---- DI TEE FLG x FLG x FLG
5 ---- USC-APPROVED SHUT-OFF VALVES.
6 ---- FIRE WATER: HERSEY/ GRINNEL, E-1, 6" DOUBLE CHECK VALVE OR USC APPROVED EQUAL.
7 ---- CONCRETE FOOTING
8 ---- DI BLIND FLANGE
9 ---- GALVANIZED ADJUSTABLE PIPE SUPPORT.

NOTES:
1. NOTIFY UCR PRIOR TO INSLTALLATION OF UNIT.
2. INSTALLATION SHALL COMPLY WITH THE LATEST PLUMBING CODES AND APPLICABLE LOCAL AGENCY REQUIREMENTS.

TYPICAL SINGLE DETECTOR CHECK VALVE (16 / C6.03)
N.T.S.



NOTES
1. CURBS AND GUTTERS SHALL BE CONSTRUCTED OF PCC CONFORMING TO SUBSECTION 201-1 AND 303-5.
2. WEAKENED-PLANE JOINTS IN CURB AND GUTTER SHALL CONFORM TO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION SUBSECTION 303-5.4.3 (C) OR SHALL BE 1-1/2 INCH DEEP SAWCUTS MADE WITHIN 10 TO 24 HOURS AFTER CONCRETE IS PLACED AND SHALL BE PLACED AT LOCATIONS SHOWN ON THE TYPICAL JOINT PLAN HEREON AND AT REGULAR INTERVALS NOT EXCEEDING 20 FEET BETWEEN RETURNS. THEY SHALL ALSO BE LOCATED AT THE E.C. OF ALLEY RETURNS WHERE WALK IS FULL WIDTH. WHERE CROSS GUTTER TRANSITION EXTENDS BEYOND THE CURB RETURN, THE JOINTS SHALL NORMALLY BE PLACED AT THE ENDS OF THE TRANSITION. HOWEVER, JOINTS SHALL ALSO BE PLACED AT THE ENDS OF THE CURB RETURN WHEN THE CROSS GUTTER TRANSITION EXTENDS MORE THAN 5 FEET BEYOND THE RETURN. WHERE GUTTER IS ADJACENT TO CONCRETE PAVEMENT, THE JOINT SHALL BE ALIGNED WITH THE PAVEMENT JOINTS WHERE PRACTICAL.
3. A CONTACT JOINT SHALL BE PLACED IN LONGITUDINAL ALLEY GUTTER WHERE IT JOINS CURB AND GUTTER.
4. CURBS CONSTRUCTED ADJACENT TO EXISTING CURBS HAVING A BATTER OTHER THAN SPECIFIED FOR THE NEW CURBS SHALL BE CONSTRUCTED WITH A TRANSITION SECTION BETWEEN THE CURBS HAVING DIFFERENT BATTERS. THE MINIMUM TRANSITION LENGTH SHALL BE:

TYPE OF CURB	MINIMUM TRANSITION LENGTH
BARRIER CURB TO BARRIER CURB	5'
MOUNTABLE CURB TO MOUNTABLE CURB	10'
BARRIER CURB TO MOUNTABLE CURB	20'

5. THE DOWELS IN THE DOWELED CURB MAY BE DELETED AND THE CURB BONDED TO THE SURFACE BY A BONDING AGENT APPROVED BY THE ENGINEER.
6. DIMENSIONS: (UNLESS OTHERWISE SPECIFIED)
a = 1'-3"
b = 0'-11"
c = 10'-0"

ROLLED CURB AND GUTTER (17 / C6.03)
N.T.S.

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CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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2400 Broadway Avenue, Suite 230
Santa Monica, California 90404
(310) 828-1536 Fax (310) 829-6025

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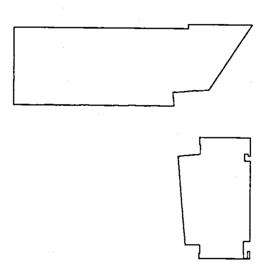
RECORD DRAWINGS

Key Plan



Drawing Title
DETAILS

Scale
3193000
Project Number
07NOV00
Baseline Date
C6.03
Drawing Number

NOTES: | JOB # 10016.36 | XREFS: T-B, | JOB NAME UC-RIVERSIDE | FILE PATH & NAME P:\2000\10016.36 - UCR SURGE BLDG\CURRENT\C6-03.DWG | PLOTTED DATE & TIME MAR. 06, 2002 9:20:00 AM | UPDATED BY B.B. | PLOT SCALE 1=1 | PROJ.MG. B.B. | DRAFTER K.H.

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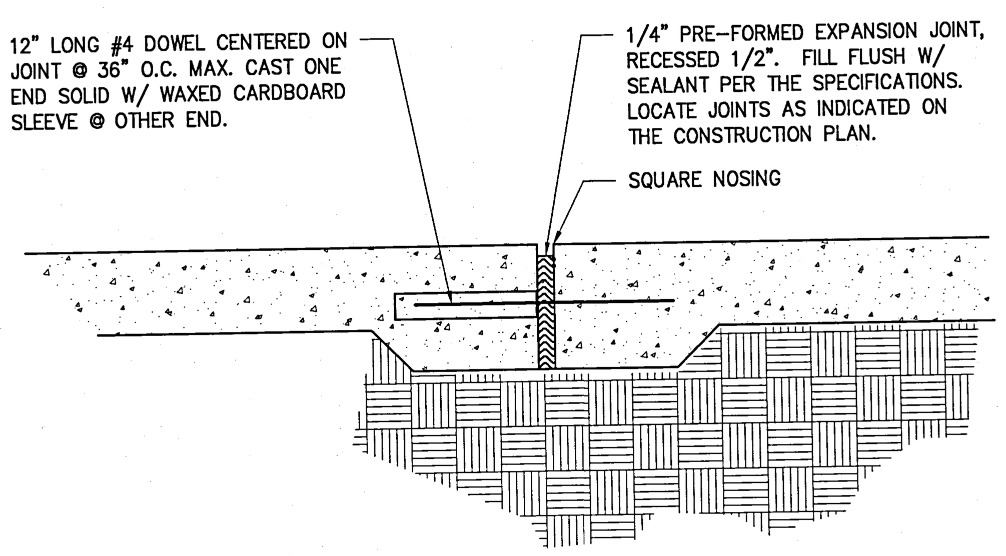
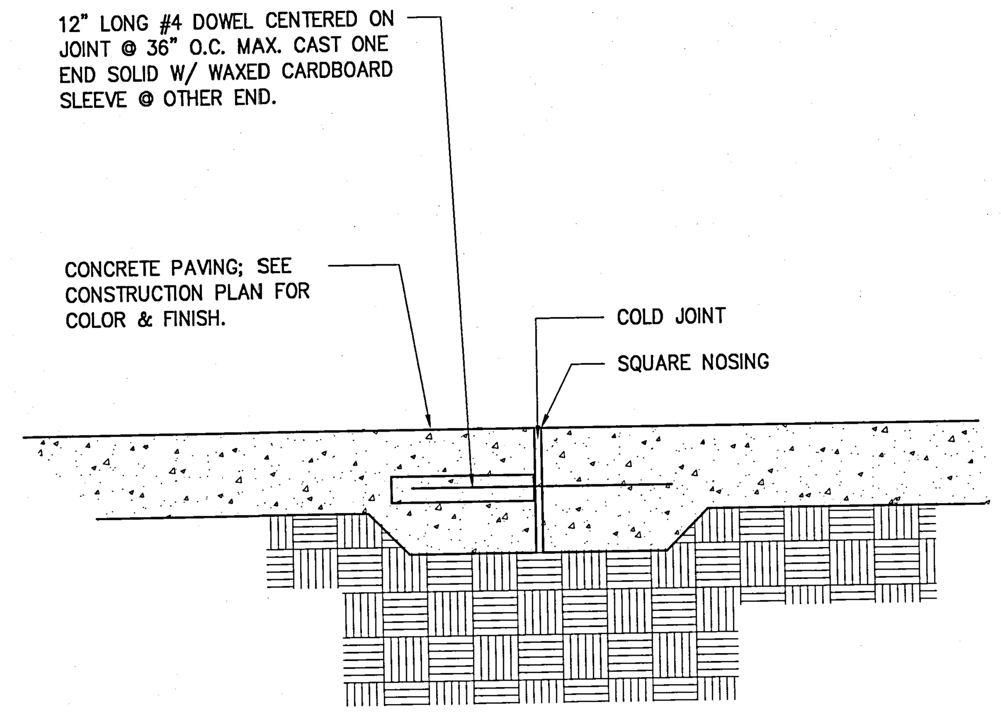


NOTES:

1. ALL EXPANSION JOINTS ARE TO BE DOWELED.
2. DEEPEN ALL PAVING EDGES WHERE EXPANSION JOINTS OCCUR, PER THE DETAILS THIS SHEET AND AS INDICATED.

REINFORCED EXPANSION JOINTS

N.T.S. — 18 / C6.04

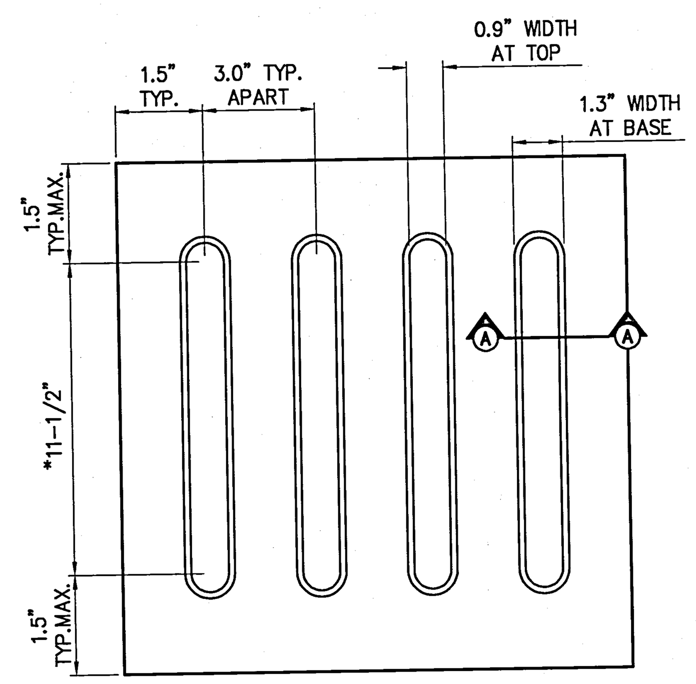


NOTES:

1. ALL COLD JOINTS ARE TO BE DOWELED.
2. DEEPEN ALL PAVING EDGES WHERE COLD JOINTS OCCUR, PER THE DETAILS THIS SHEET AND AS INDICATED.

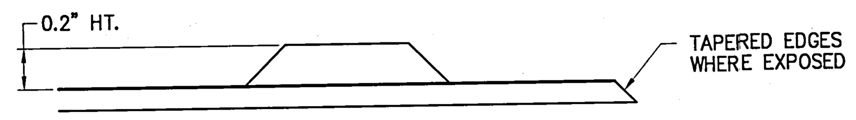
REINFORCED COLD JOINT

N.T.S. — 19 / C6.04



TYPICAL PLAN

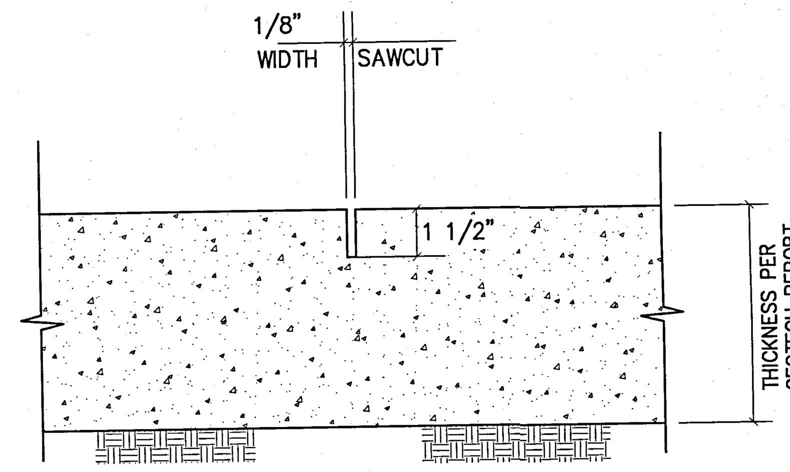
*NOTE: INDUSTRY STANDARD FOR OVERALL BAR LENGTH IS 11-1/4" TO 11-1/2"



TYPICAL SECTION A-A

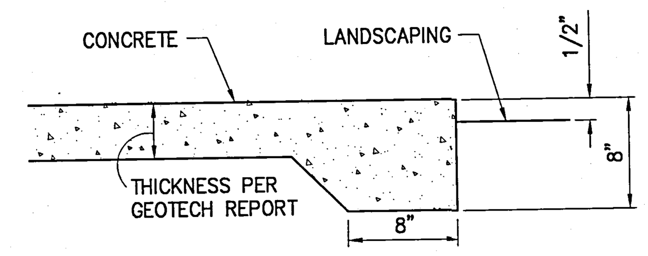
DIRECTIONAL BARS

N.T.S. — 20 / C6.04



CONTROL JOINT

N.T.S. — 21 / C6.04



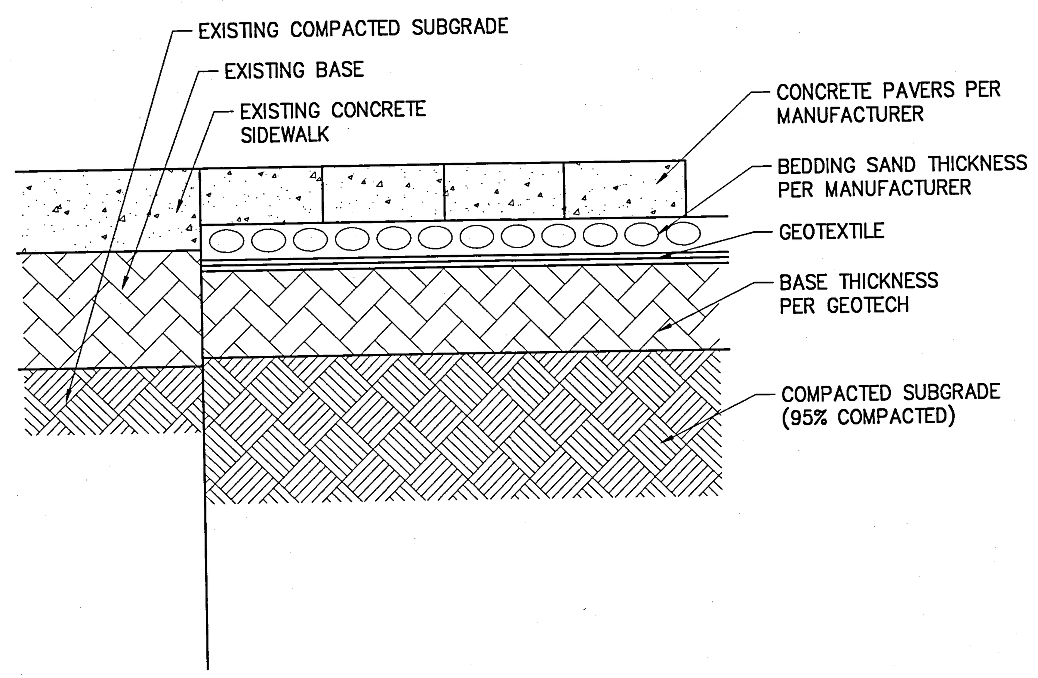
CONCRETE THICKENED EDGE

N.T.S. — 22 / C6.04

1. SAWCUTTING IS TO BE DONE WITHIN 24 HOURS OF CONCRETE PLACEMENT PRIOR TO APPLYING ACID WASH.
2. SAW BLADES WILL BE REPLACED AS NECESSARY TO ENSURE THAT THERE WILL BE NO SPALLING AT THE CUTS OR ANY NOTICABLE VARIATIONS IN THE WIDTH OF THE CUTS.
3. THE MAXIMUM ALLOWABLE DEVIATION FOR SAWCUTS WILL BE 1/8" FROM THE CENTER LINE IN 10 L.F.
4. CLEAN-UP RESIDUE FOLLOWING SAWCUTTING AND ALLOW SURFACE TO DRY.

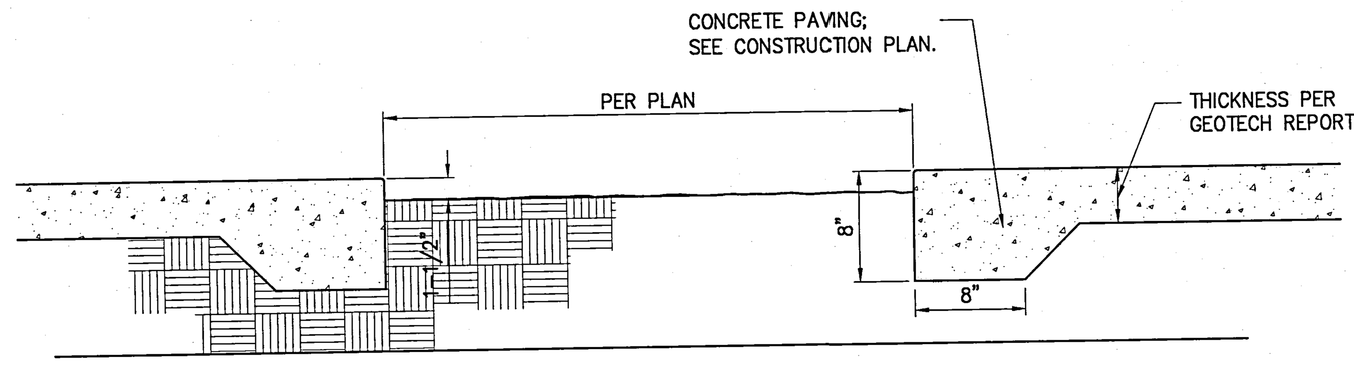
SAWCUT CONTROL JOINT NOTES

N.T.S. — 23 / C6.04



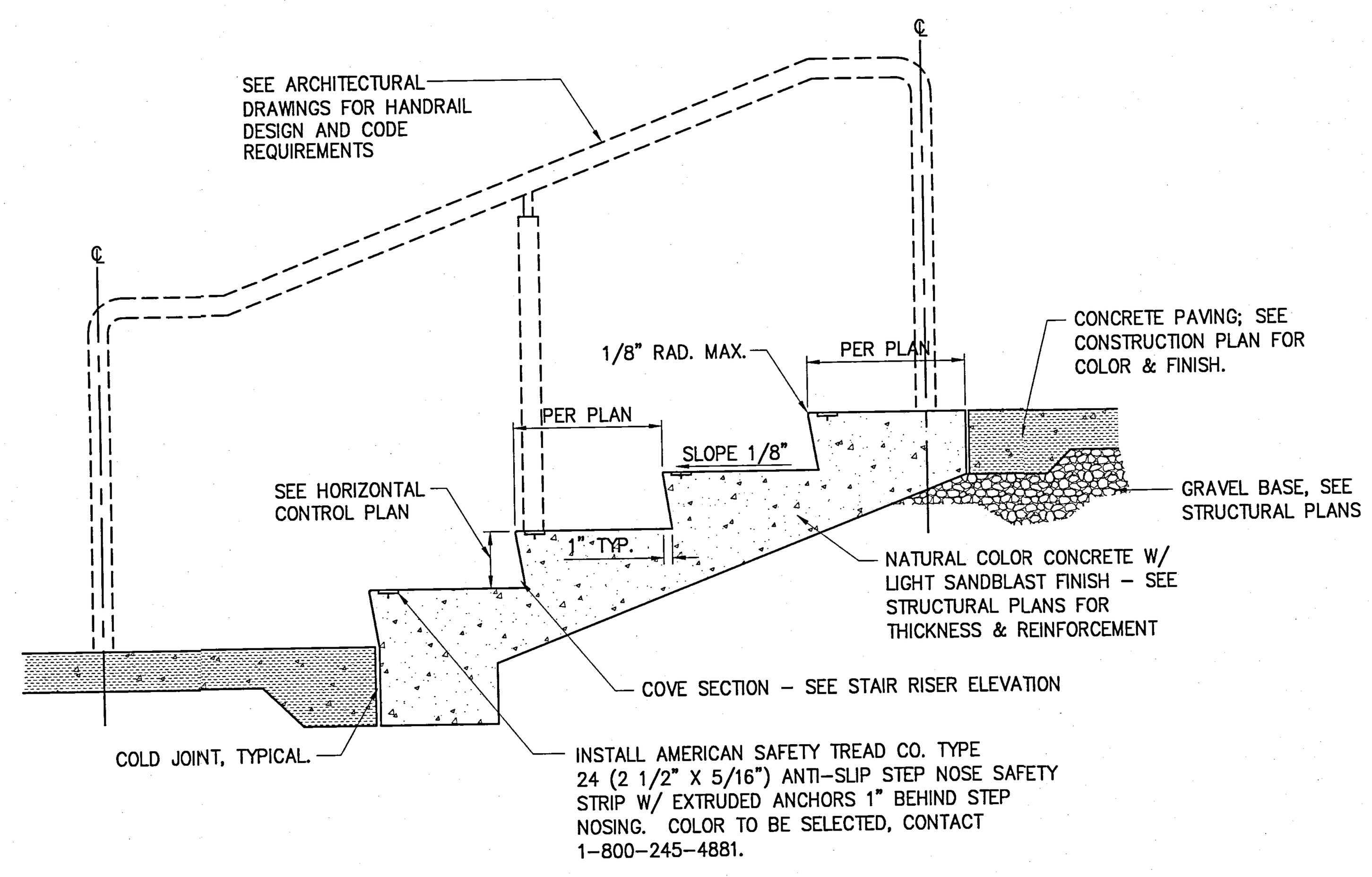
CONCRETE BRICK PAVER DETAIL

N.T.S. — 24 / C6.04



TREE PLANTER WELL

N.T.S. — 25 / C6.04



CONCRETE STEPS

N.T.S. — 26 / C6.04

NOTES:	JOB NAME	FILE PATH & NAME	PLOTTED DATE & TIME	UPDATED BY	PLOT SCALE	PROG.MG.	DRAFTER
JOB # 1001636 XREFS: T-B.	UC-RIVERSIDE	P:\2000\1001636 - UCR SURGE BLDG\CURRENT\C6-04.DWG	MAR. 06, 2002 9:20:10 AM	B.B.	1=1	B.B.	K.H.

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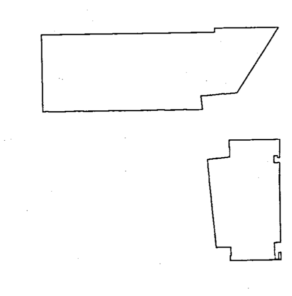
RECORD DRAWINGS

Key Plan



Drawing Title

DETAILS

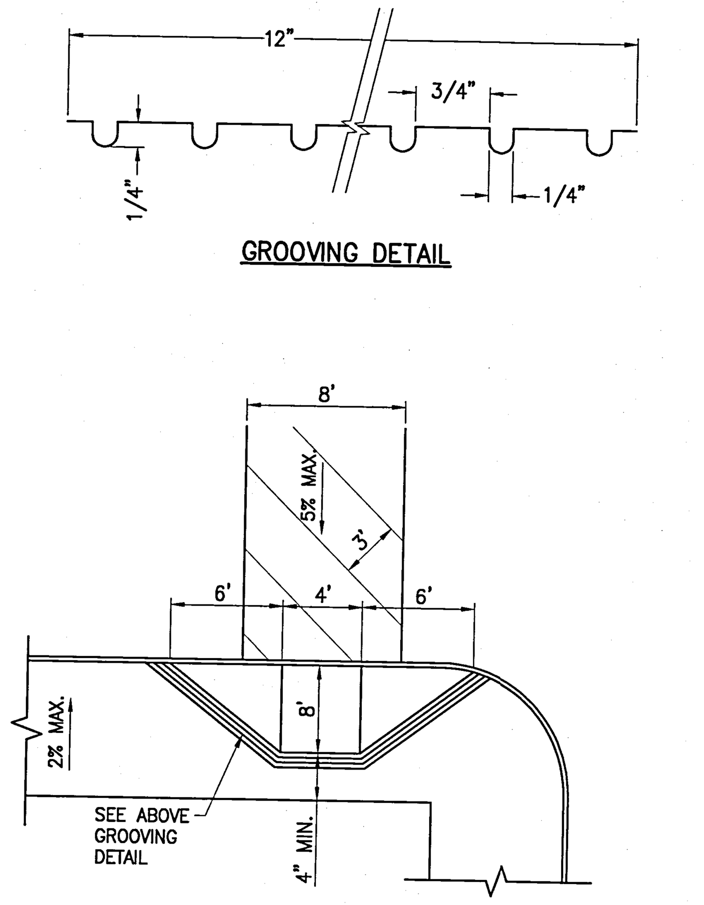
Scale

Project Number 3193000

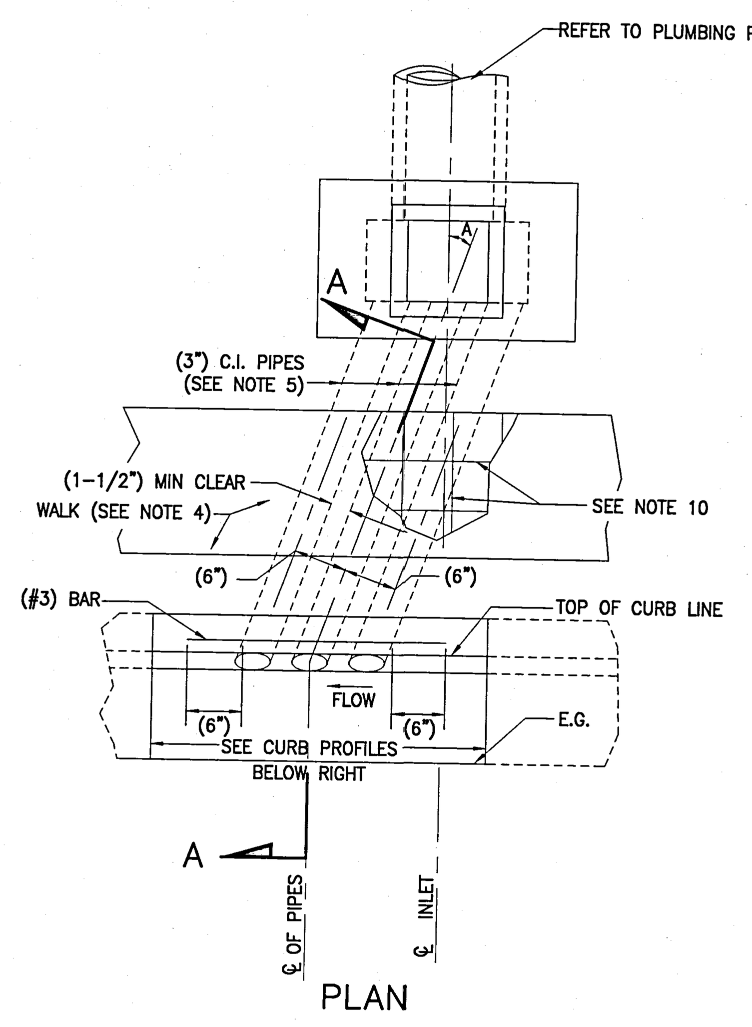
Baseline Date 07NOV00

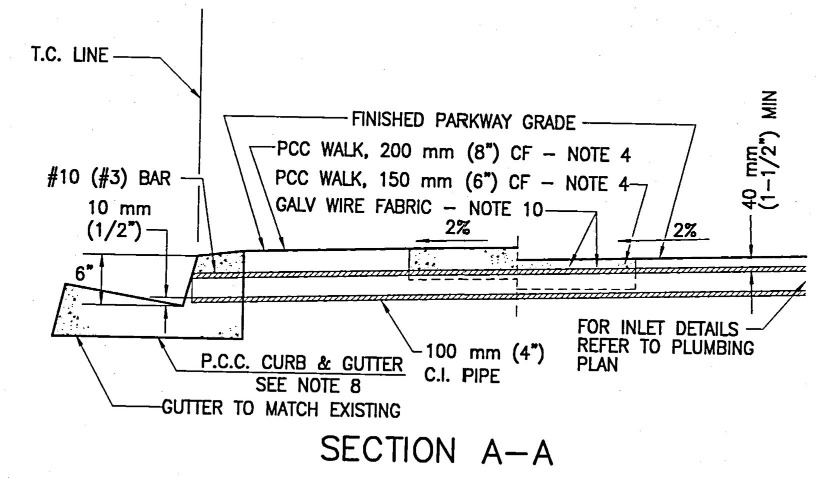
C6.04

Drawing Number



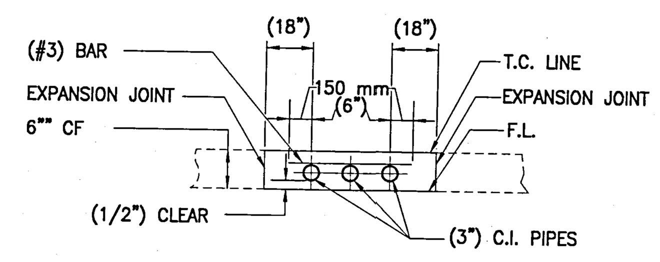
CURB RAMP
N.T.S.
27
C6.05





NOTES:

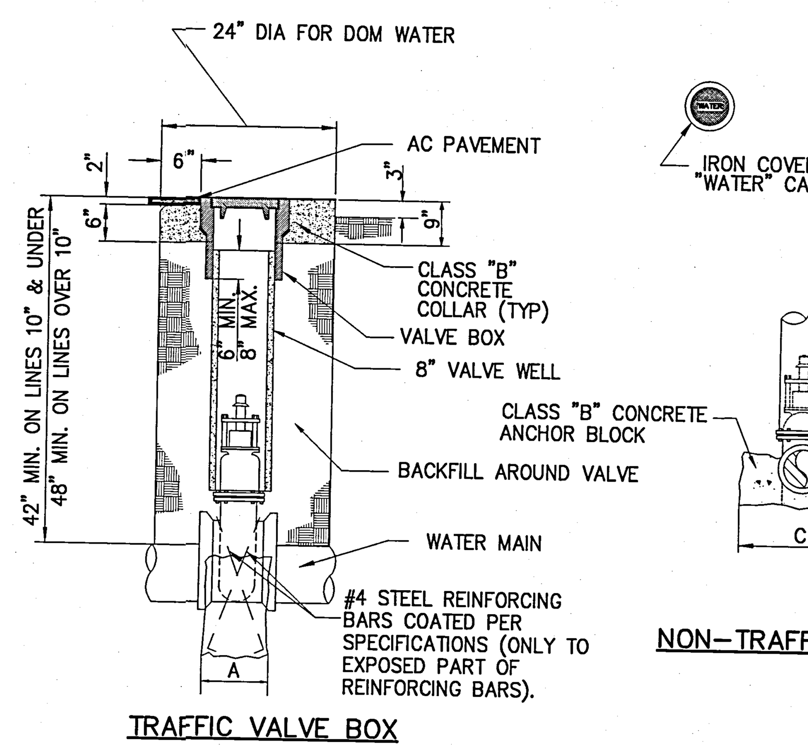
1. IF THE TOE OF SLOPE IS ALLOWED WITHIN THE R/W, INLET CASE I BEGINS AT THE TOE RATHER THAN THE R/W LINE.
2. NOT USED
3. NOT USED
4. CONSTRUCT P.C.C. WALK WHEN SPECIFIED ON PLAN. THE CONTRACT PRICE PAID FOR P.C.C. WALK ITEM SHALL INCLUDE WALK CONSTRUCTED IN CONJUNCTION WITH PARKWAY CULVERT.
5. "N" EQUALS NUMBER OF PIPES (MAXIMUM OF THREE) AS SPECIFIED ON PLAN.
6. INLET CASE TO BE SPECIFIED ON IMPROVEMENT OR GRADING PLAN.
7. ANGLE A EQUALS 0, UNLESS OTHERWISE SPECIFIED.
8. TYPE, DIMENSIONS AND ELEVATIONS OF P.C.C. CURB AND GUTTER PER IMPROVEMENT PLAN.

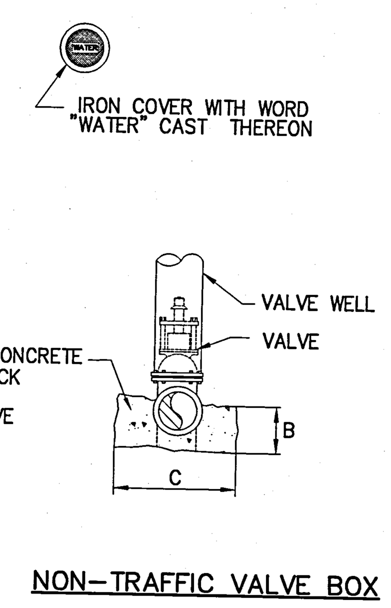


NOTE: APPLIES TO ANY NUMBER OF PIPES

CURB PROFILE
6" CURB FACE

CURB DRAIN
N.T.S.
28
C6.05





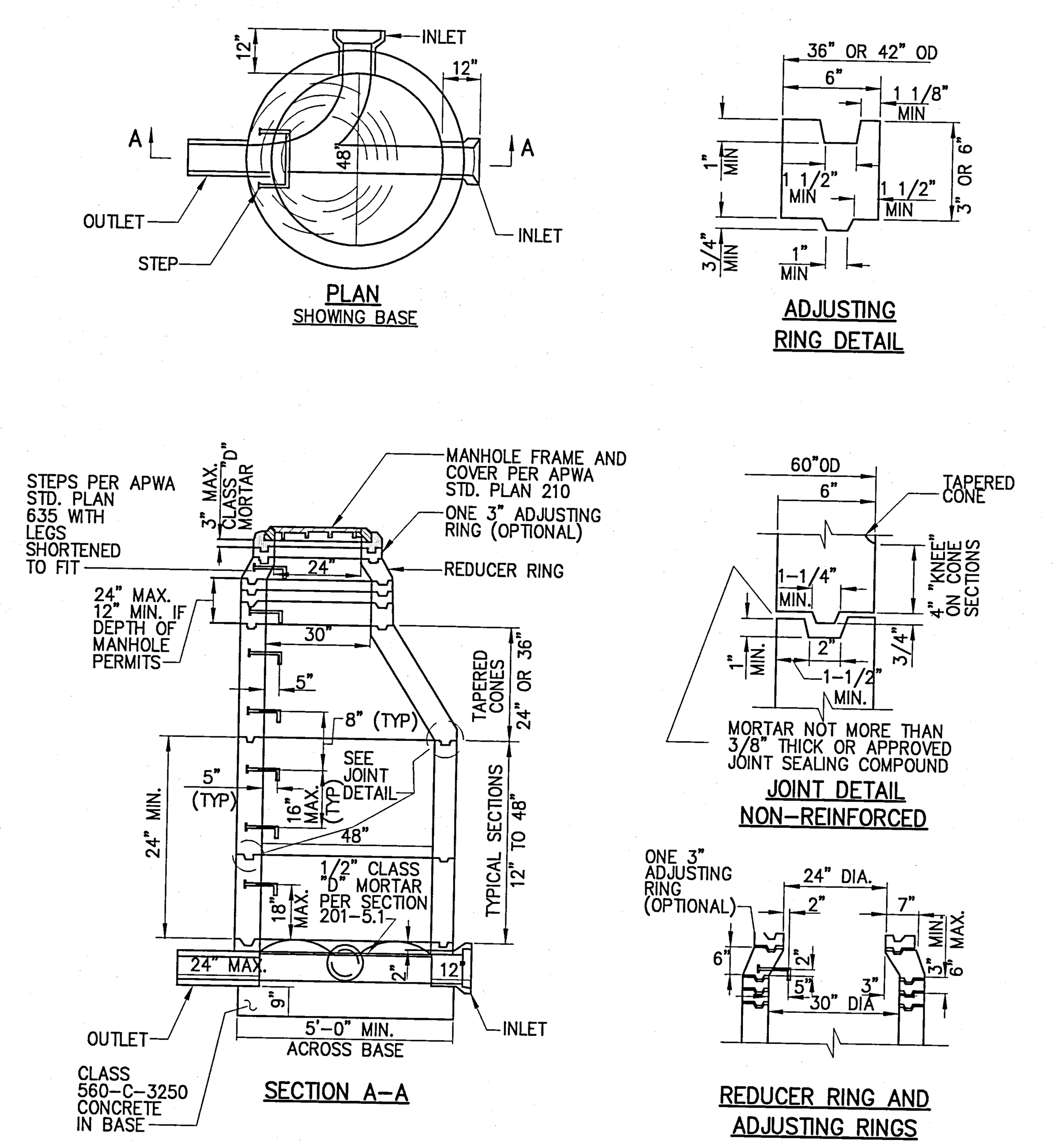
NOTE:
SET VALVE BOX TO FINAL FINISHED GRADE OR 6" ABOVE GRADE IN UNIMPROVED EASEMENT AREA.

NOTES:
1. PROVIDE VALVE STEM EXTENSION IF DEPTH TO VALVE NUT EXCEEDS 4 FEET.
2. BUTTERFLY VALVE OPERATORS SHALL BE LOCATED ON THE LEFT-HAND SIDE OF THE VALVE (AT THE TEE OR CROSS), LOOKING THROUGH THE VALVE TOWARD THE PIPE END.
3. VALVES TO BE LOCATED ADJACENT TO FITTINGS WHEREVER POSSIBLE.
4. VALVES BOLTED TO FITTINGS WILL NOT REQUIRE ANCHOR BLOCKS.

VALVE SIZE	DIMENSION A	DIMENSION B
6" OR SMALLER	12"	12"
8"	13"	14"
10"	14"	16"
12'	14"	18"

DIMENSION "C" TRENCH WIDTH PLUS 2X PIPE DIAMETER

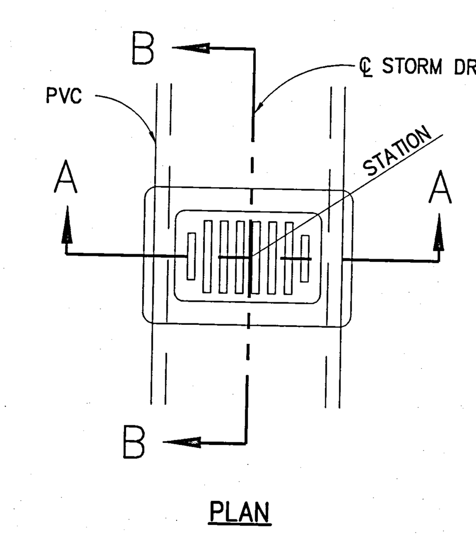
VALVE & VALVE BOX INSTALLATION
N.T.S.
29
C6.05

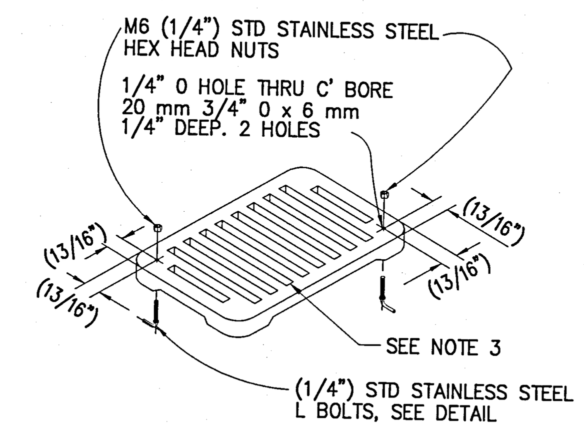


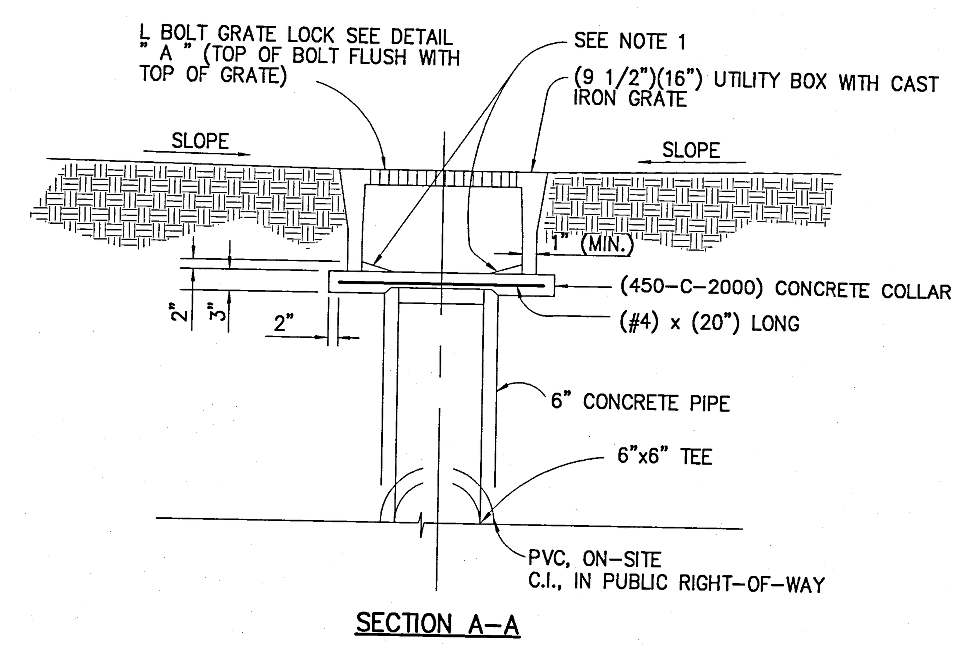
NOTES:

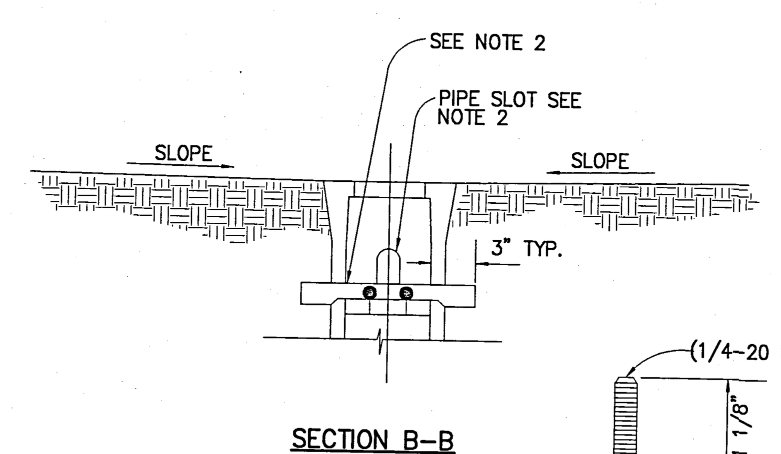
1. EXCEPT AS NOTED HEREON, THE PRECAST UNITS SHALL BE MANUFACTURED AND TESTED IN ACCORDANCE WITH ASTM C 478. AS AN ALTERNATE CURING METHOD, THE UNITS MAY BE CURED USING SATURATED STEAM FOR A MINIMUM OF 12 HOURS FOLLOWED BY 6 DAYS OF WATER CURING OR MEMBRANE CURING. IF THE UNITS ARE CURED BY THE ALTERNATE METHOD, THEY SHALL NOT BE SHIPPED PRIOR TO 8 DAYS AFTER CASTING NOR UNTIL THE CONCRETE HAS ATTAINED A STRENGTH OF 3500 PSI.
2. MANHOLE STEPS SHALL CONFORM WITH APWA STANDARD PLAN 635 TYPE 1 OR 3 OR STANDARD PLAN 636. THE MANHOLE STEPS SHALL BE UNIFORMLY SPACED AT A MAXIMUM OF 16". THE LOWEST STEP SHALL BE PLACED NOT LESS THAN 8" NOR MORE THAN 18" ABOVE THE SHELF. THE STEPS SHALL PROJECT 5" INSIDE THE MANHOLE.
3. RISER SECTIONS MAY BE REINFORCED OR UNREINFORCED. REINFORCED SECTIONS SHALL BE REINFORCED IN ACCORDANCE WITH ASTM C 478 AND SHALL HAVE A MINIMUM WALL THICKNESS OF 5". UNREINFORCED RISER SECTIONS SHALL HAVE A MINIMUM WALL THICKNESS OF 6".
4. THE 24"X 48" ECCENTRIC CONES MAY BE REINFORCED OF UNREINFORCED. IF REINFORCED, THE WALL THICKNESS SHALL NOT BE LESS THAN 5". IF UNREINFORCED, THE WALL THICKNESS SHALL NOT BE LESS THAN 6".
5. JOINTS SHALL BE TONGUE AND GROOVE. JOINTS FOR REINFORCED STRUCTURES SHALL CONFORM WITH ASTM C478 SECTION 14.
6. PRECAST UNITS SHALL BE ASSEMBLED USING CLASS "B" MORTAR.
7. IF 30" DIAMETER MANHOLE FRAME AND COVER IS REQUIRED, IT SHALL BE INSTALLED WHERE THE REDUCER RING IS SHOWN IN THE SECTION.
8. FOR REINFORCED PRECAST STRUCTURES, ALL REINFORCEMENT SHALL HAVE A MINIMUM OF 2" OF COVER OVER THE STEEL ON THE INSIDE FACE.
9. THE TOP OPENING OF THE MANHOLE AND THE STEPS SHALL BE PLACED DIRECTLY OVER THE OUTLET OF THE STRUCTURE EXCEPT AS OTHERWISE NOTED ON PLANS.
10. CONCRETE BASE AND STUB WALLS SHALL BE POURED IN ONE OPERATION TO A POINT 2" ABOVE THE INLET AND OUTLET PIPES. ALL PIPES SHALL BE RIGIDLY SUPPORTED BY TEMPORARY PIERS OR OTHER METHODS DURING THE OPERATION. CONCRETE SHALL SET FOR 24 HOURS BEFORE PLACING PRECAST UNITS.

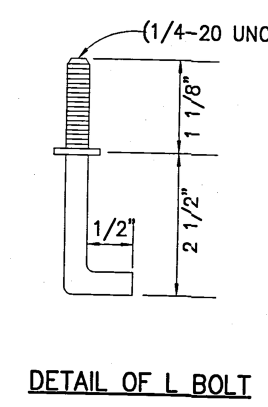
PRECAST CONCRETE SEWER MANHOLE (APWA 200-2)
N.T.S.
30
C6.05











NOTES
1. FLOOR OF BASIN SHALL SLOPE FROM ALL WALLS TO THE OUTLET AND SHALL BE GIVEN A STEEL TROWELED SURFACE FINISH.
2. GRATING AND BASIN MUST BE DESIGNED FOR VEHICULAR TRAFFIC AND ARE LOCATED WHERE SUCH TRAFFIC WILL OCCUR. EMBED UTILITY BOX 1/2-IN INTO CONCRETE COLLAR SEAL PIPE SLOT IN UTILITY BOX WALLS WITH CONCRETE.
3. GRATE OPENINGS 1/2" MAX. IN DIRECTION OF PATH OF TRAVEL. 1124B.4

AREA DRAIN (APWA 350-0)
N.T.S.
31
C6.05

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RECORD DRAWINGS

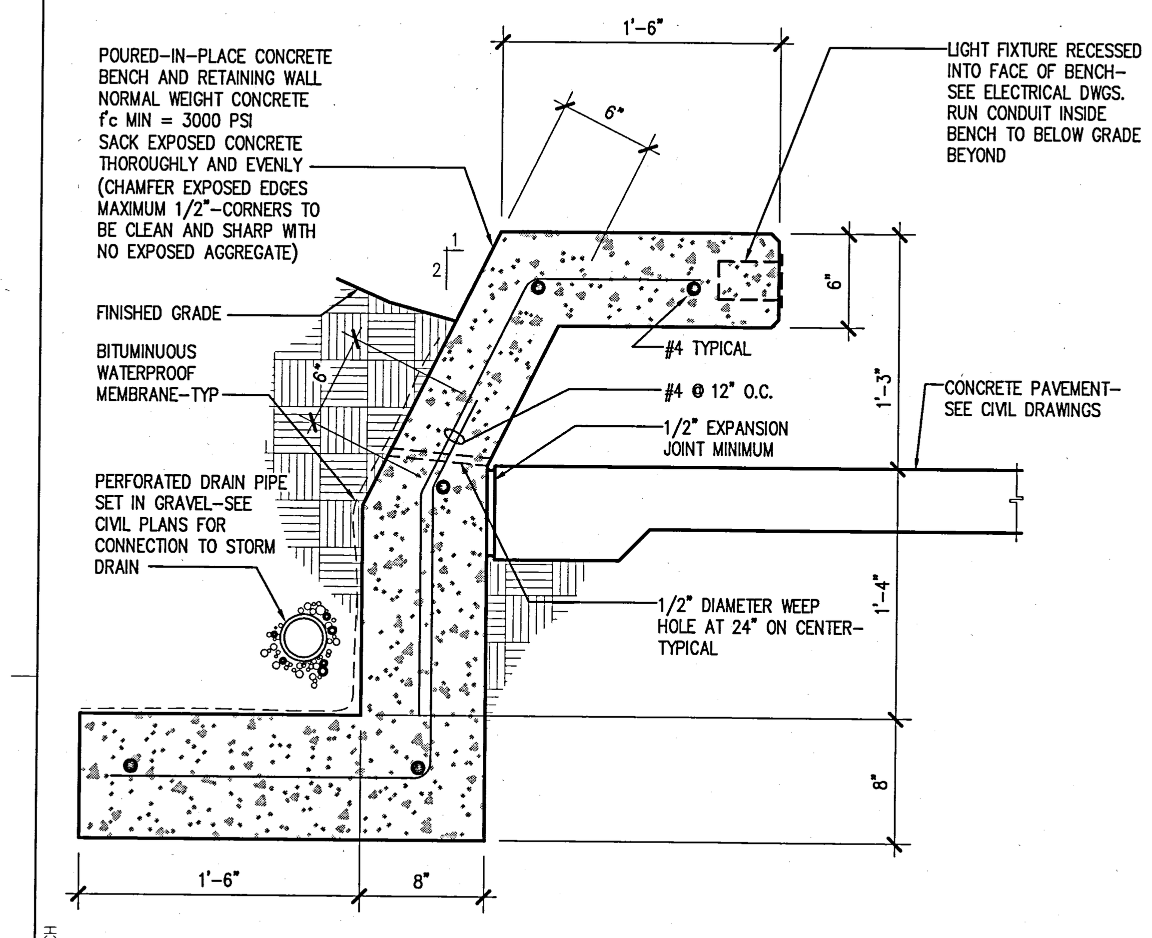
Key Plan

Drawing Title

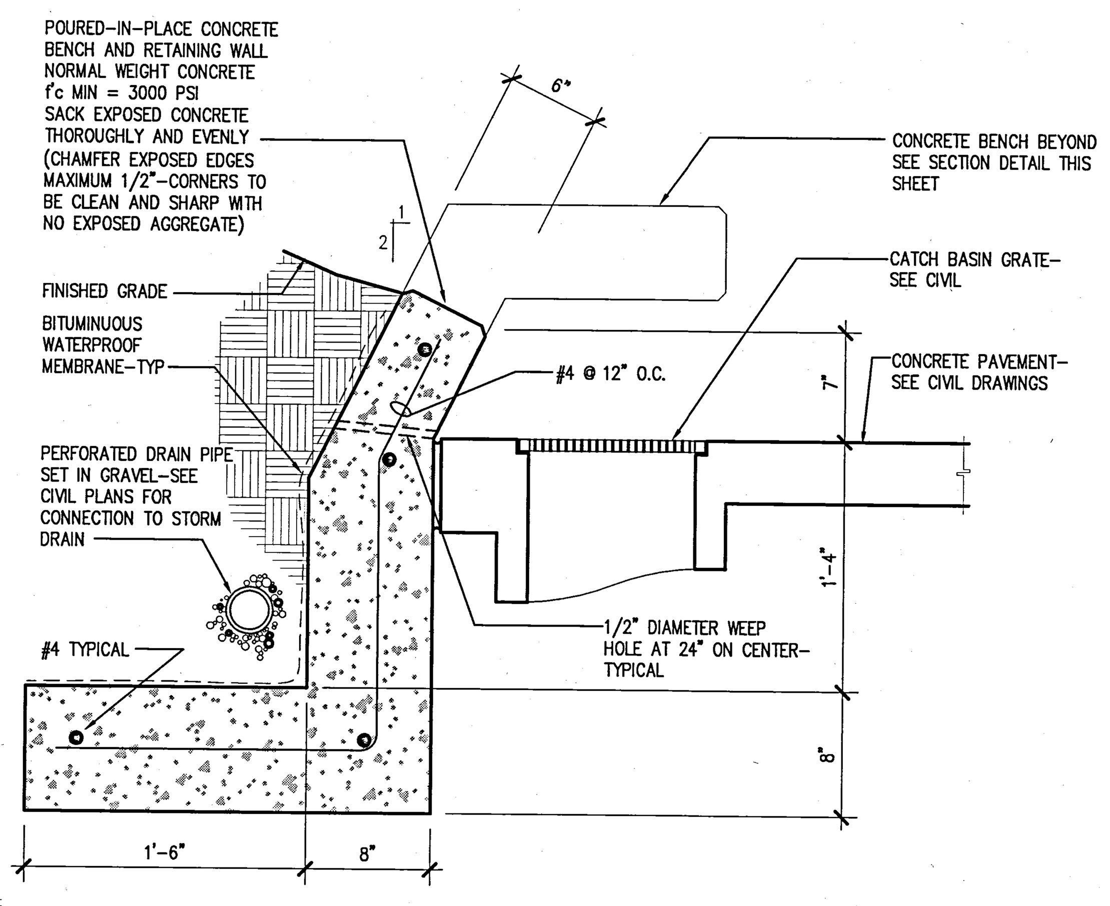
DETAILS

Scale
3193000
Project Number
07NOV00
Baseline Date
C6.05
Drawing Number

NOTES:	JOB #	JOB NAME	FILE PATH & NAME	PLOTTED DATE & TIME	UPDATED BY	PLOT SCALE	PROG.MG.	DRAFTER
XREFS: T-B.	1001636	UCRIVERSIDE	P:\2000\1001636 – UCR SURGE BLDG\CURRENT\C6-05.DWG	MAR. 06, 2002 9:20:22 AM	B.B.	1=1	B.B.	K.H.

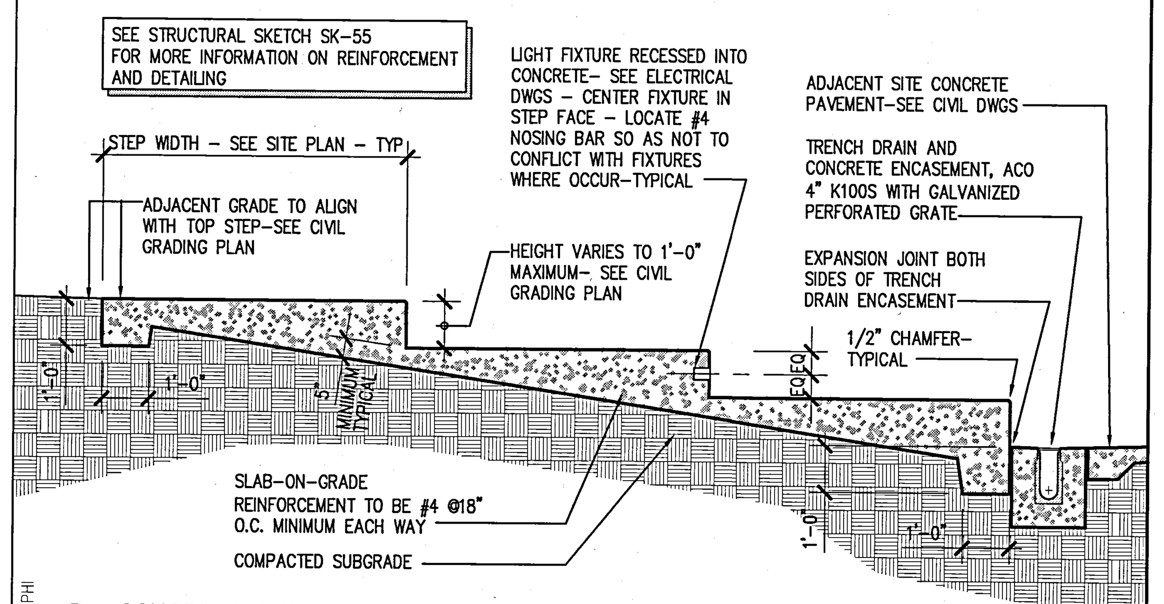


37 BENCH/RETAINING WALL
SECTION AT CANTILEVERED BENCH
SCALE: 1-1/2" = 1'-0"

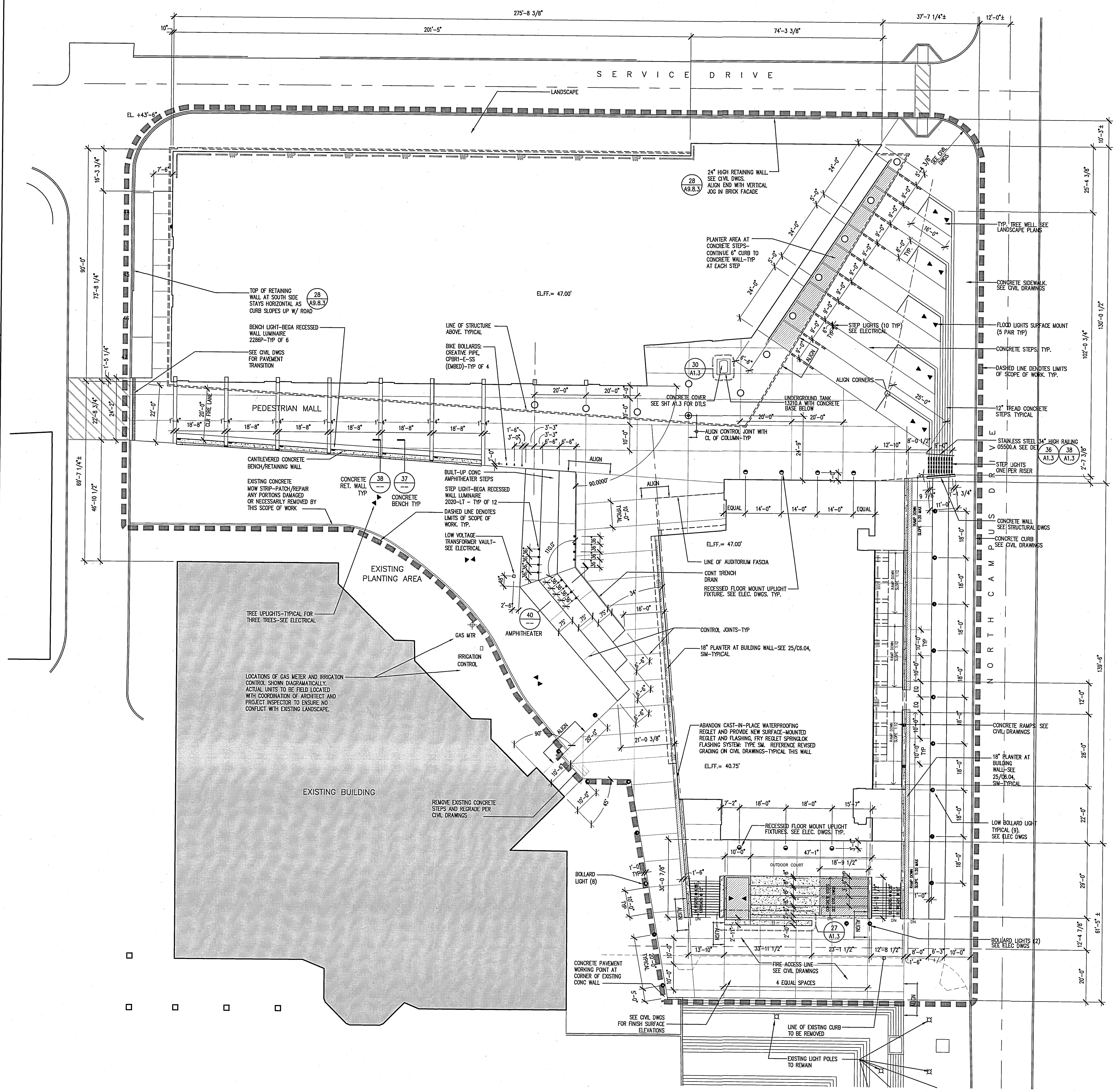


38 BENCH/RETAINING WALL
SECTION CUT AT WALL ONLY
SCALE: 1-1/2" = 1'-0"

39 NOT USED
SCALE:



40 CONCRETE AMPHITHEATER
SCALE: 3/8" = 1'-0"



LEGEND

—WP— EXTENT OF WATERPROOFING. SEE DETAILS 27,36/A5.3.1

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title
SITE PLAN

1/16" = 1'-0"
Scale
3193000
Project Number
060CT00
Baseline Date
A1.1
Drawing Number

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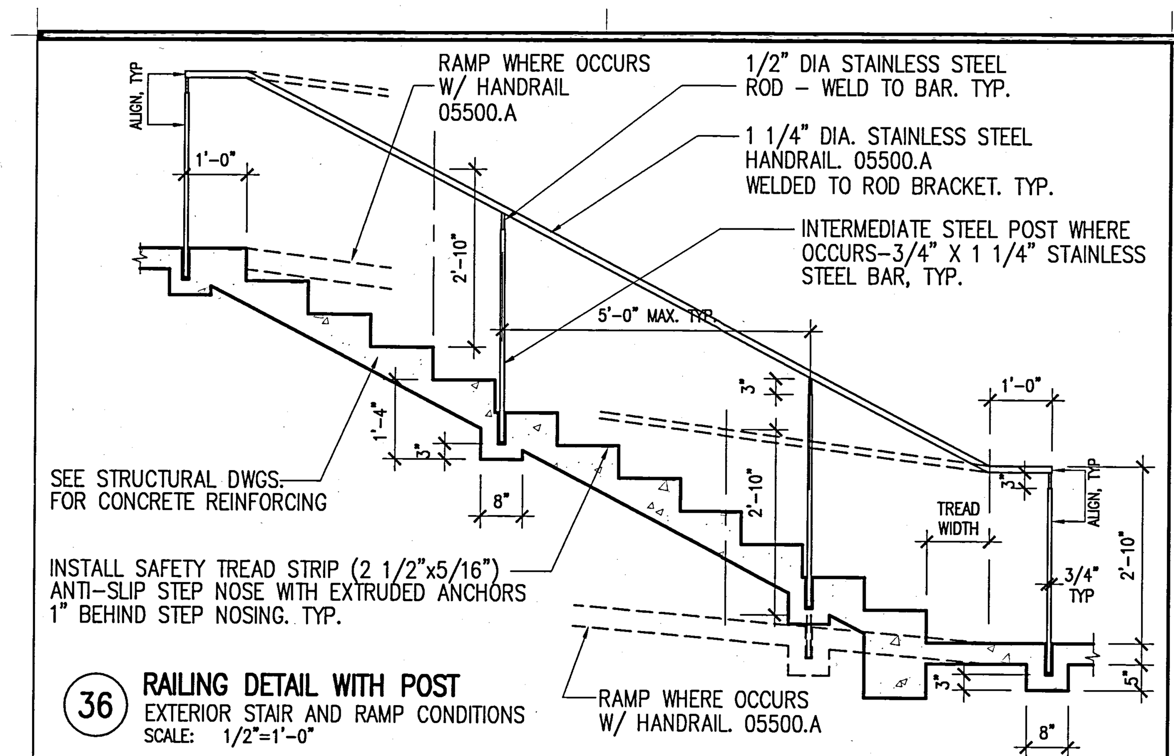
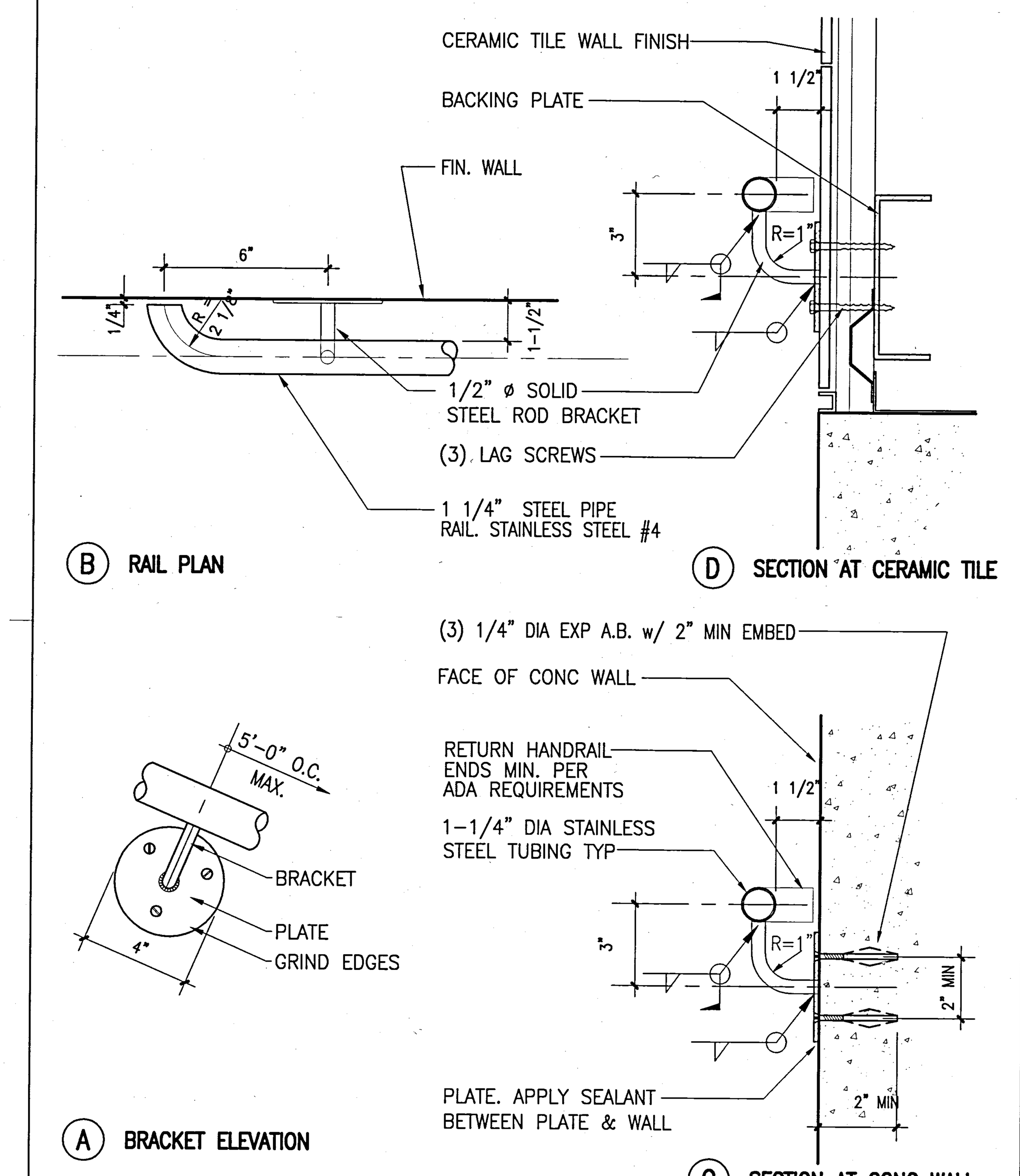
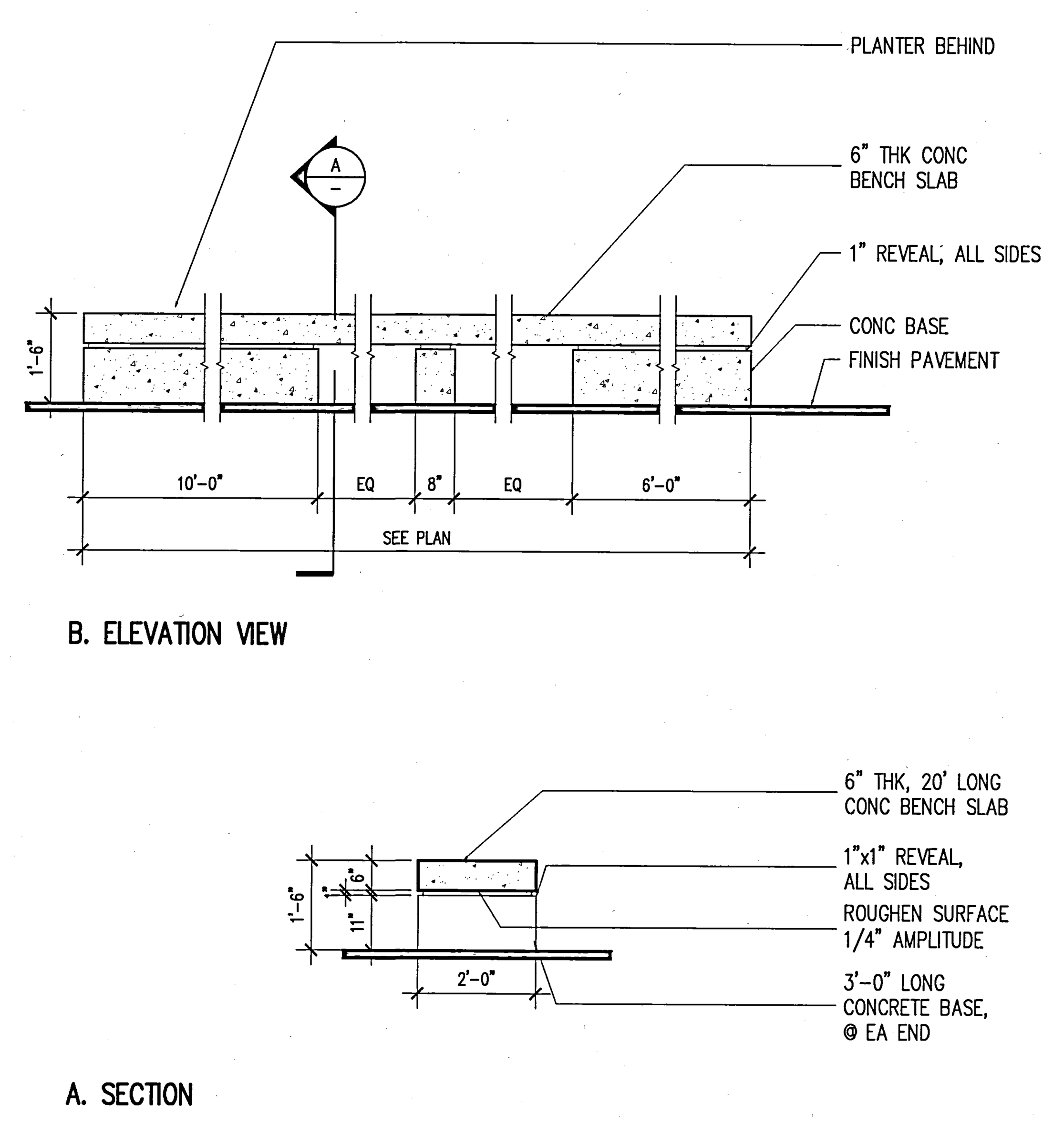


36 RAILING DETAIL WITH POST
EXTERIOR STAIR AND RAMP CONDITIONS
SCALE: 1/2"=1'-0"

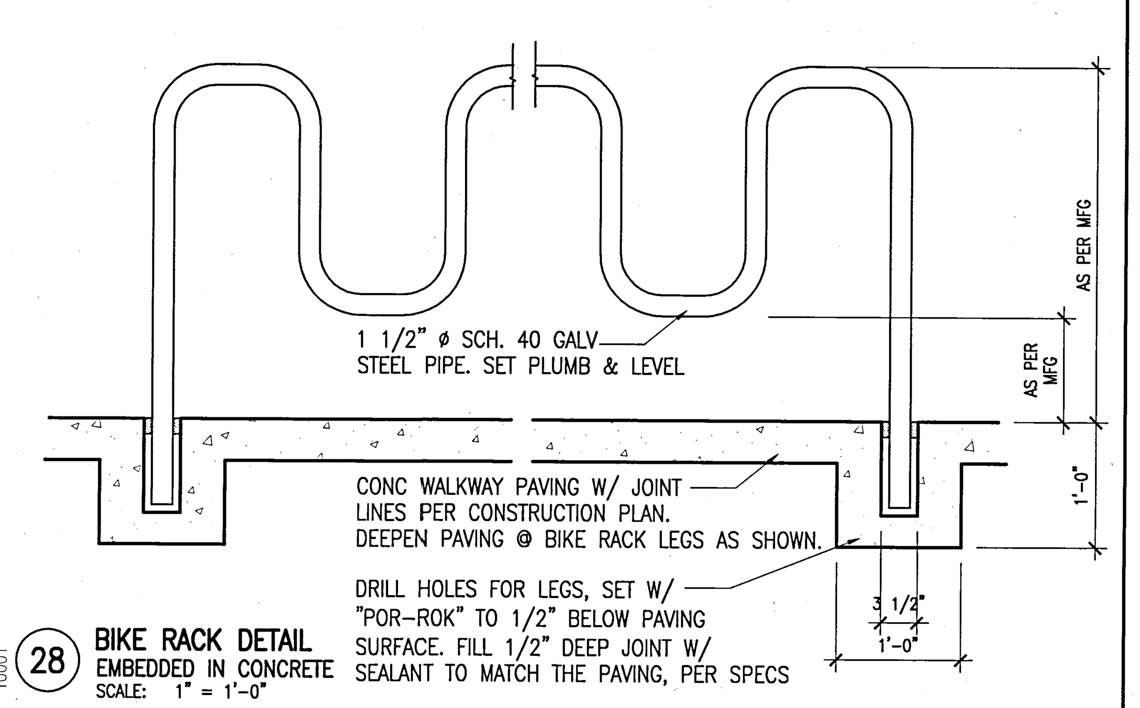


38 HANDRAIL AT WALL
SCALE: 3" = 1'-0'



NOTE:
SEE STRUCTURAL DRAWINGS FOR CONCRETE REINFORCING

27 TYPICAL CONCRETE BENCH
SCALE: 1/2" = 1'-0"



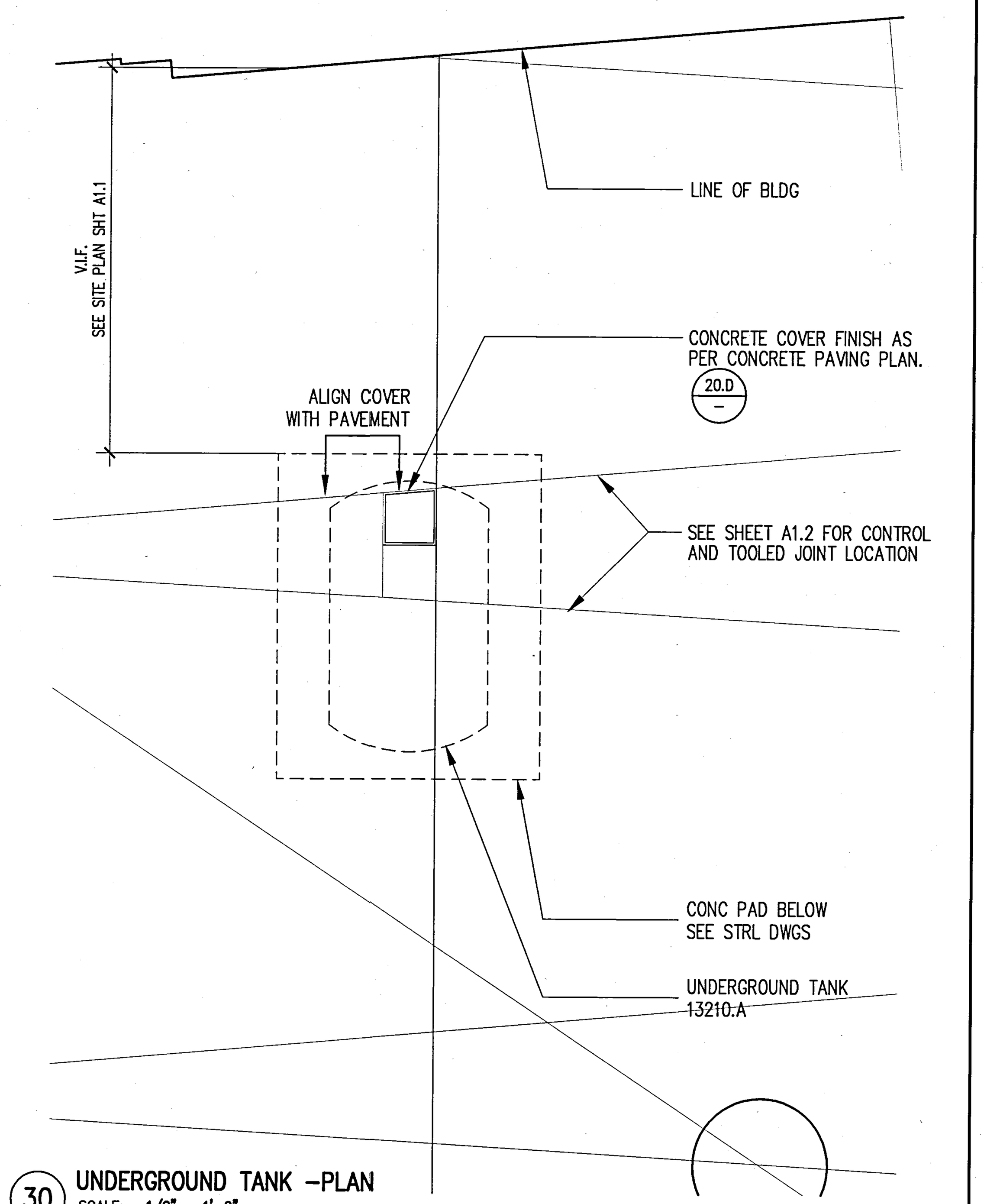
28 BIKE RACK DETAIL
EMBEDDED IN CONCRETE
SCALE: 1" = 1'-0"

39 NOT USED
SCALE: 1/2" = 1'-0"

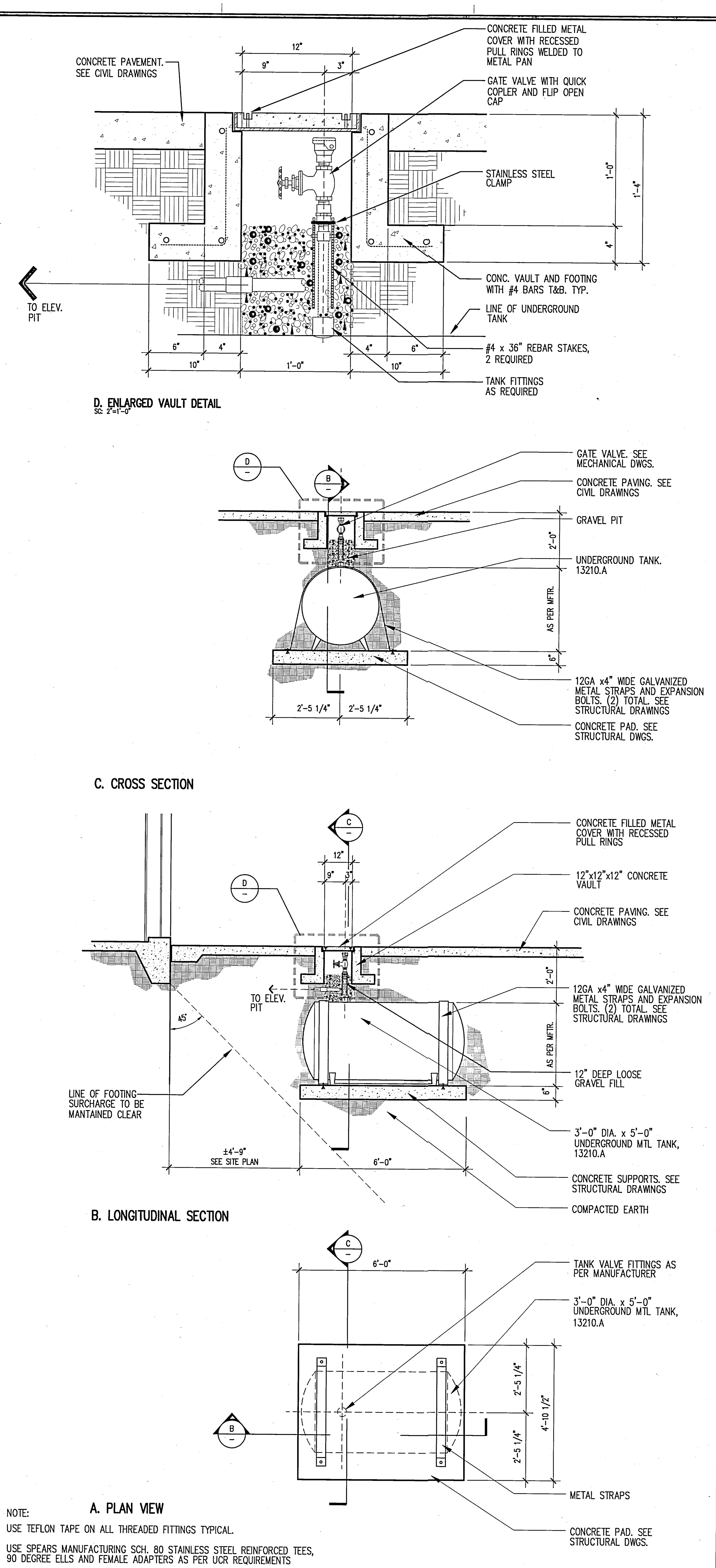
34 NOT USED
SCALE: 1/2" = 1'-0"

40 NOT USED
SCALE: 1/2" = 1'-0"

35 NOT USED
SCALE: 1/2" = 1'-0"



30 UNDERGROUND TANK -PLAN
SCALE: 1/2" = 1'-0"



NOTE:
USE TEFLON TAPE ON ALL THREADED FITTINGS TYPICAL.
USE SPEARS MANUFACTURING SCH. 80 STAINLESS STEEL REINFORCED TEES, 90 DEGREE ELLS AND FEMALE ADAPTERS AS PER UCR REQUIREMENTS

20 UNDERGROUND TANK
SCALE: 1/2" = 1'-0"

KEYED NOTES

03300 - CAST IN PLACE CONCRETE
04810.A - BRICK VENEER
04810.B - BRICK VENEER ANCHORS
05120 - STRUCTURAL STEEL
05315 - METAL DECKING
05400 - STRUCTURAL STEEL STUD
05500.A - STEEL RAILINGS & HANDRAILS
05500.I - METAL MESH
05500.J - PERFORATED ALUMINUM SHEET
05510.A - METAL STAIR/HANDRAIL
05700.A - ALUMINUM EXTRUSION - 4" FIN
05700.B - ALUMINUM EXTRUSION - 1" FIN
06200.A - WOOD WINDOW SILL
07130.A - WATERPROOF MEMBRANE
07130.B - DRAINAGE BOARD
07135.A - AIR AND VAPOR BARRIER
07210.A - BATT INSULATION
07411.A - METAL PANEL SYSTEM (SILVER)
07411.B - METAL PANEL SYSTEM (GRAY)
07510.A - ROOFING SYSTEM
07510.C - WALKING PADS
07510.D - CANT STRIP & FLASHING SCREED
07600.A - SHEET METAL FLASHING
07600.D - METAL PARAPET CAP
07600.F - METAL DOWNSPOUT
07600.I - FLEXIBLE MEMBRANE
07600.J - SHEET METAL ROOFING
07600.K - RIGID INSULATION
07611.A - STANDING SEAM METAL ROOFING
07611.B - METAL FASCIA
07730.B - PENTHOUSE VENT
07811.A - FIREPROOFING
07840.E - FIRE STOPPING
07900 - SEALANT AND BACKER ROD
08310.A - ACCESS PANEL
08410.A - ALUMINUM WINDOW WALL SYSTEM
08410.B - ALUMINUM STOREFRONT
08410.C - ALUMINUM DOOR
08520.A - ALUMINUM WINDOW SYSTEM
08800 - GLAZING
09110.A - NON-BEARING METAL STUD
09110.B - METAL SHAFTWALL STUD
09120.B - SUSPENDED CEILING SYSTEM
09200.A - CEMENT PLASTER
09200.G - METAL REVEAL AT CEMENT PLASTER
09250.A - 5/8" GYP. BOARD
09250.C - 1" SHAFT LINER
09250.D - 5/8" WATER RESISTANT GYP BD
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09300.B - GLAZED CERAMIC TILE
09300.D - WATERPROOF MEMBRANE
09300.H - 1/2" CEMENTITIOUS BACKER BOARD
09300.I - CERAMIC TILE WALL FINISH
09510.A - SUSPENDED CEILING SYSTEM
09515.A - PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B - PERFORATED METAL PANEL
09575.A - PERFORATED WOOD PANEL
09575.B - ACOUSTICAL BACKING
09710.A - ACOUSTICAL PANEL
09775.A - METAL WALL PANEL
09820.A - ACOUSTICAL INSULATION - BATT
09820.C - ACOUSTICAL INSULATION - BLACK
10100.A - CHALK BOARD
10200.A - FALSE ALUMINUM LOUVER
10200.B - ALUMINUM LOUVER
14240.A - ELEVATOR

GENERAL NOTES

1. SEE STRUCTURAL DWGS. FOR TOP OF STEEL (TOS) ELEVATIONS.
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UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title
SITE DETAILS

Scale: AS NOTED
Project Number: 3193000
Baseline Date: 06OCT00
Drawing Number: A1.3

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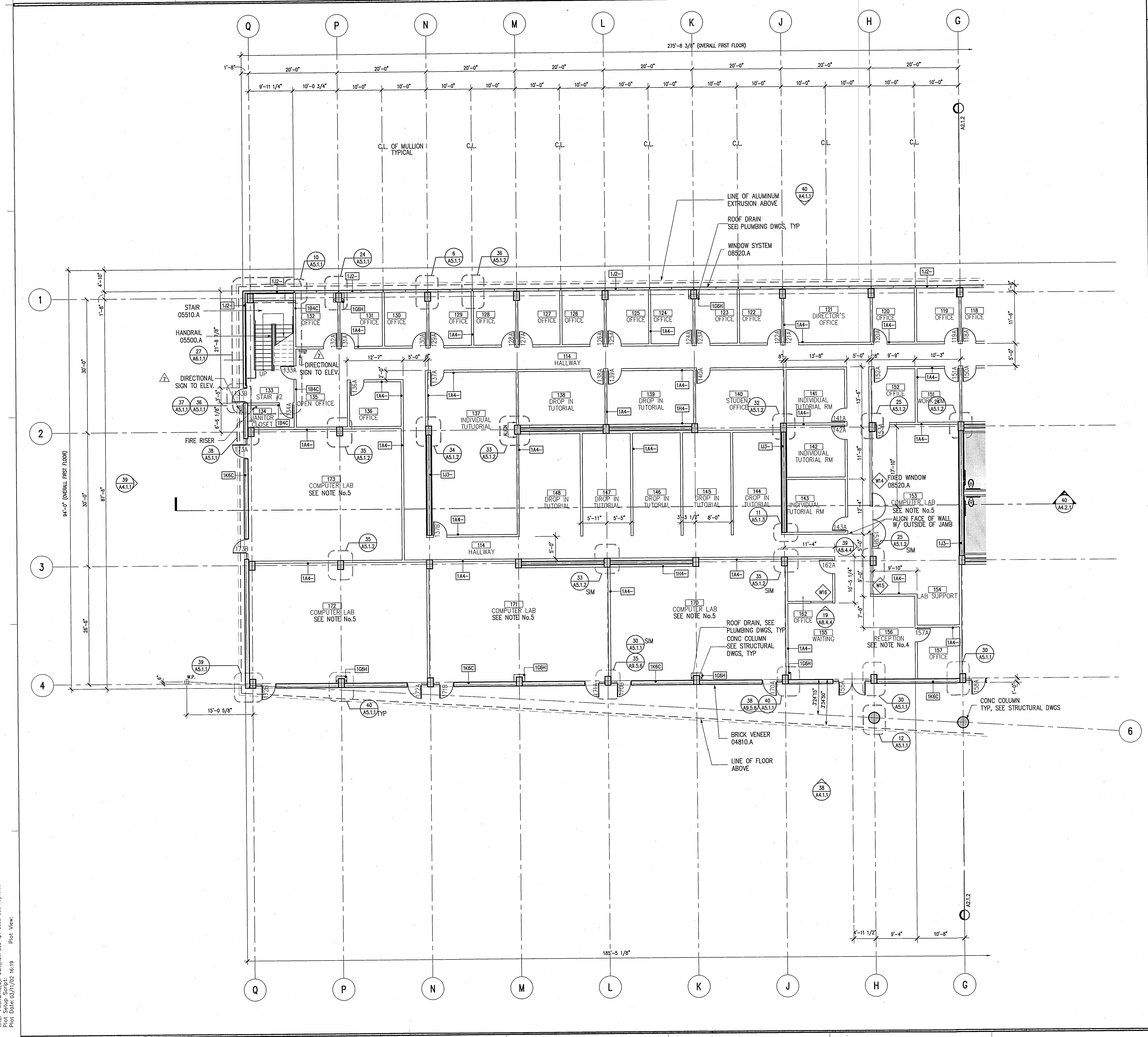

KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
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WALL LEGEND

SHADED AREA DENOTES DROPPED SLAB, SEE STRUCTURAL DWGS AND SECTIONS

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

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900 University Avenue
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SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
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Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for | Rev | Date

Seals and Signatures

RECORD DRAWINGS

Key Plan
Project North

Drawing Title
PARTIAL FIRST FLOOR PLAN (SURGE BUILDING)
1/8" = 1'-0"

Scale
3193000
Project Number
060CT00
Baseline Date
A2.1.1
Drawing Number

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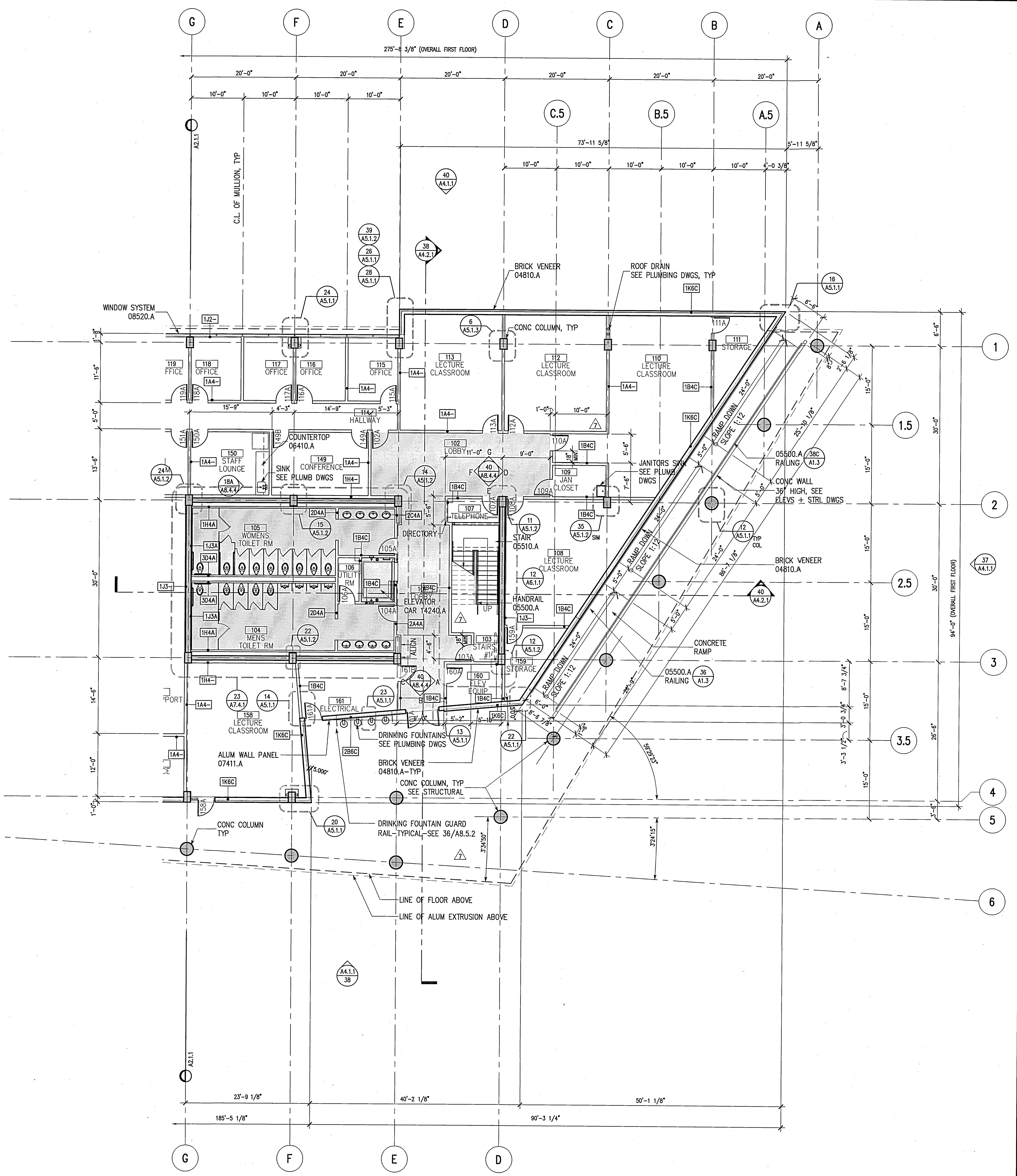

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09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
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WALL LEGEND

SHADED AREA DENOTES DROPPED SLAB, SEE STRUCTURAL DWGS AND SECTIONS

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for | Rev | Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL FIRST FLOOR PLAN (SURGE BUILDING)

1/8" = 1'-0"

Scale

3193000

Project Number

06OCT00

Baseline Date

A2.1.2

Drawing Number

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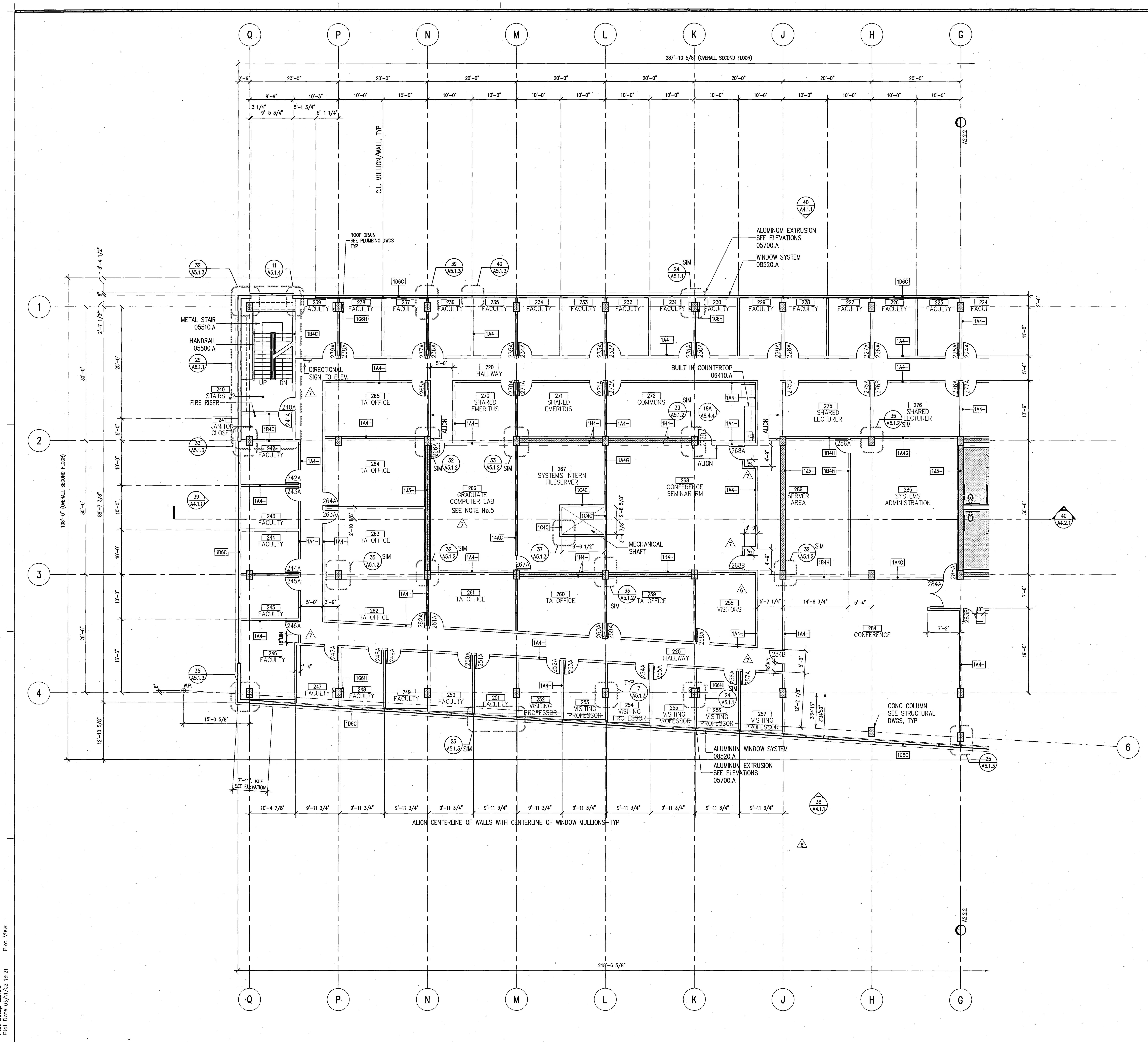

KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
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05120 – STRUCTURAL STEEL
05315 – METAL DECKING
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Issued for | Rev | Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL SECOND FLOOR PLAN (SURGE BUILDING)

1/8" = 1'-0"

Scale

3193000

Project Number

06OCT00

Baseline Date

A2.2.1

Drawing Number

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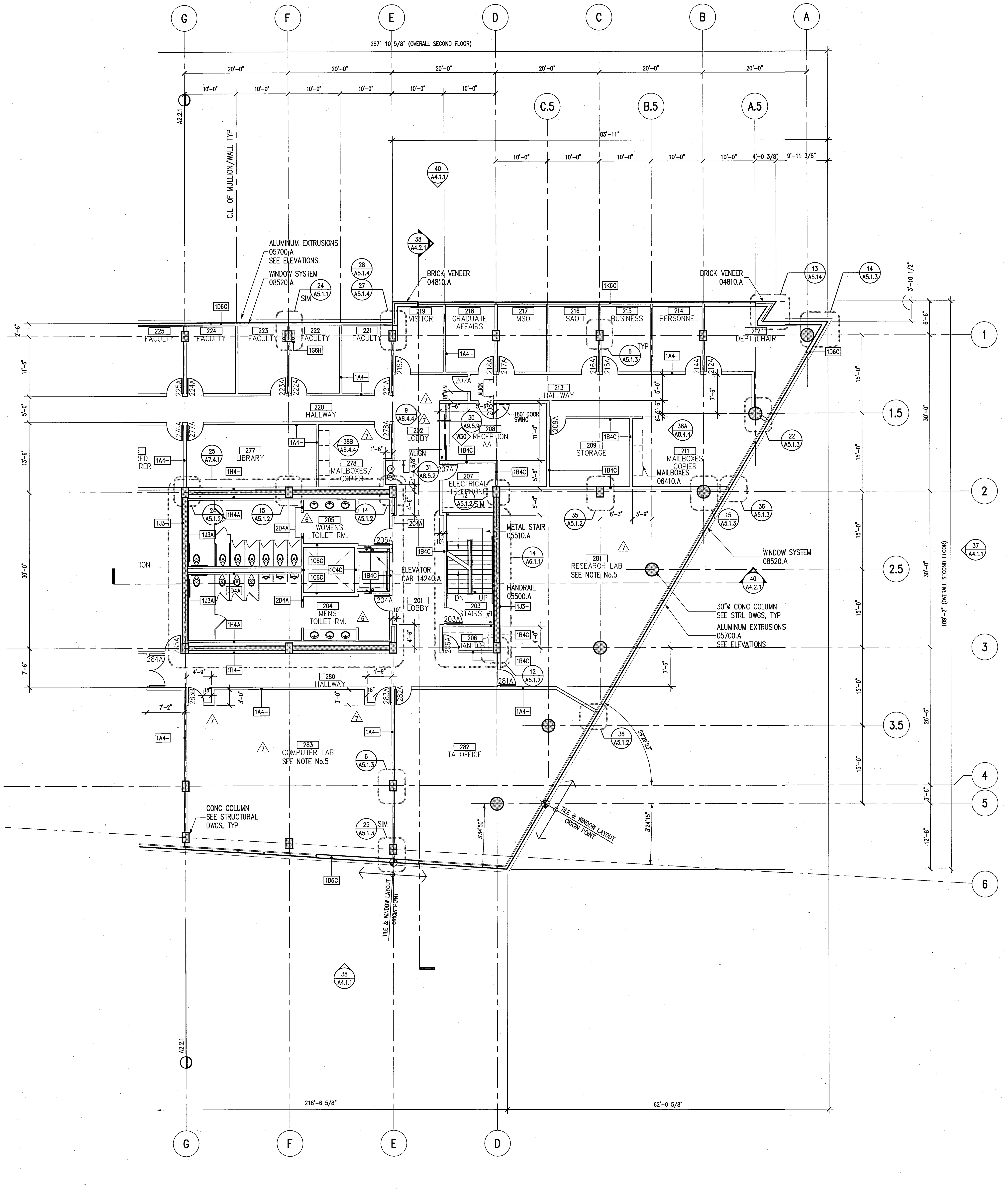

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SHADED AREA DENOTES DROPPED SLAB, SEE STRUCTURAL DWGS AND SECTIONS

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for	Rev	Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL SECOND FLOOR PLAN (SURGE BUILDING)

1/8" = 1'-0"

Scale

3193000

Project Number

06OCT00

Baseline Date

A2.2.2

Drawing Number

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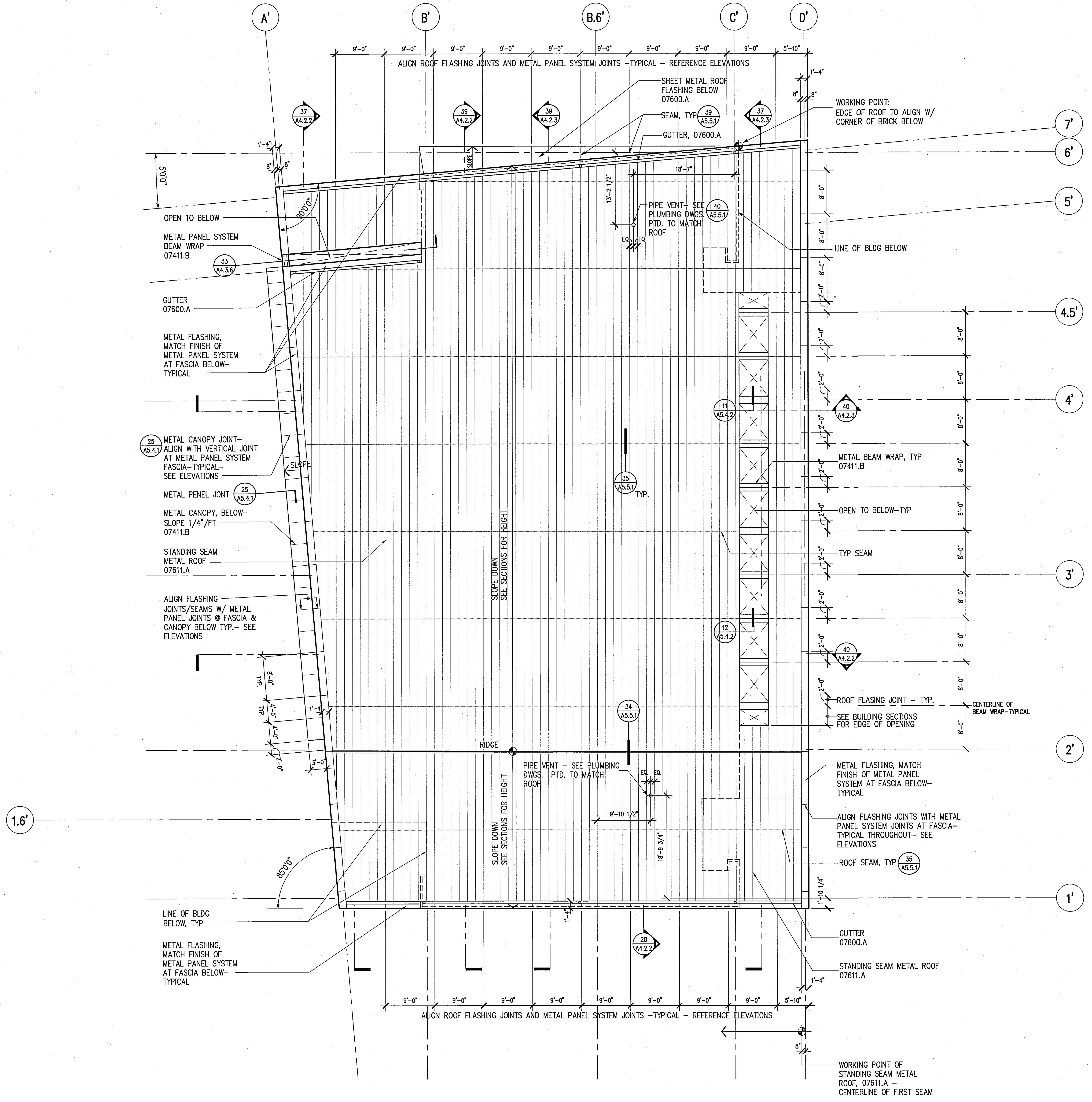

KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

GENERAL NOTES

1. SEE STRUCTURAL DWGS. FOR TOP OF STEEL (TOS) ELEVATIONS.
2. TYPICAL CONDITIONS APPLY AT ALL DETAILS.
3. CALL-OUTS SHOWN ON ONE DETAIL SHALL APPLY TO ALL WHERE SAME CONDITIONS EXIST, U.O.N.
4. CASE WORK (N.I.C.). ALL BUILT IN CASE WORK PROVIDING WORK STATIONS ARE TO BE SUBMITTED TO DSA PRIOR TO FABRICATION. 5% MIN. TO BE PROVIDED SHALL BE ACCESSIBLE.
5. 5 % OF ALL FURNITURE PROVIDED SHALL BE ACCESSIBLE.
6. PROVIDE STAIR SIGNAGE AT BOTH SIDES OF DOORS 133A; 163A; 240A; 203A; 338A & 303A AS PER SEC. 1117B.5.2. THE INFORMATION SHALL BE PRESENTED USING RAISED ARABIC NUMERALS AND RAISED BRAILLE SYMBOLS. THE SIGN SHALL BE LOCATED 5 FT. A.F.F.. THE SIGN SHALL BE LOCATED IMMEDIATELY ADJACENT TO THE DOOR ON THE STRIKE SIDE. (SEC. 1133B.4.3.).
7. PROVIDE PORTABLE ASSISTIVE LISTENING DEVICES IN ALL CONFERENCE AND MEETING ROOMS WHERE REQUIRED – MINIMUM NUMBER SHALL BE EQUAL TO 4% OF SEATING BUT NOT LESS THAN 2

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

ROOF PLAN
(AUDITORIUM)

Scale: 1/8" = 1'–0"

Project Number: 3193000

Baseline Date: 06OCT00

Drawing Number: A2.2.3

Plot Sheet Filename: I:\J08S\3193000\SHT\A2203.dwg
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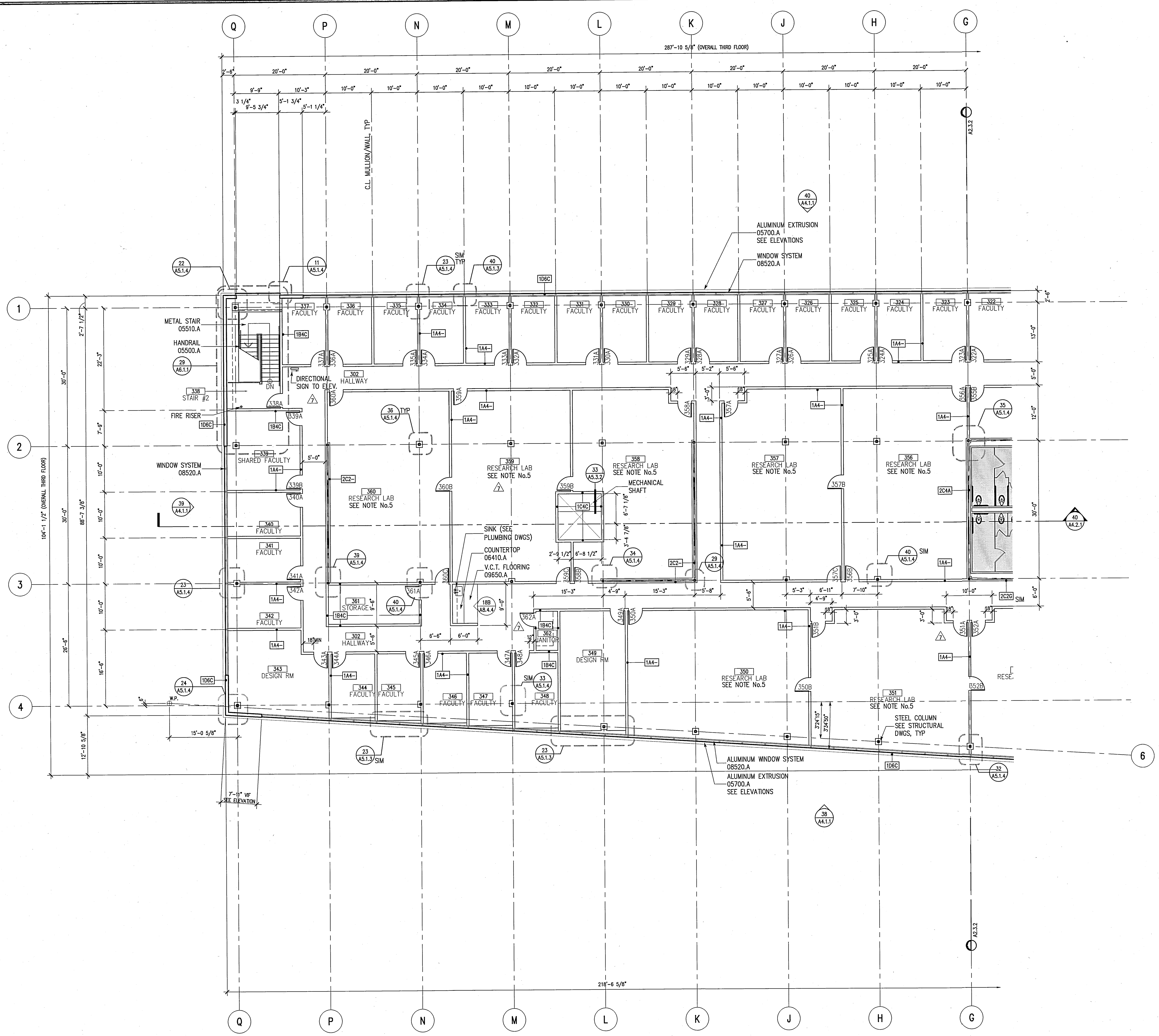
06/21/00



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WALL LEGEND

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL THIRD FLOOR PLAN (SURGE BUILDING)

1/8" = 1'-0"

Scale

3193000

Project Number

06OCT00

Baseline Date

A2.3.1

Drawing Number

Plot Sheet Filename: I:\JOBS\3193000\SHT\A2301.dwg
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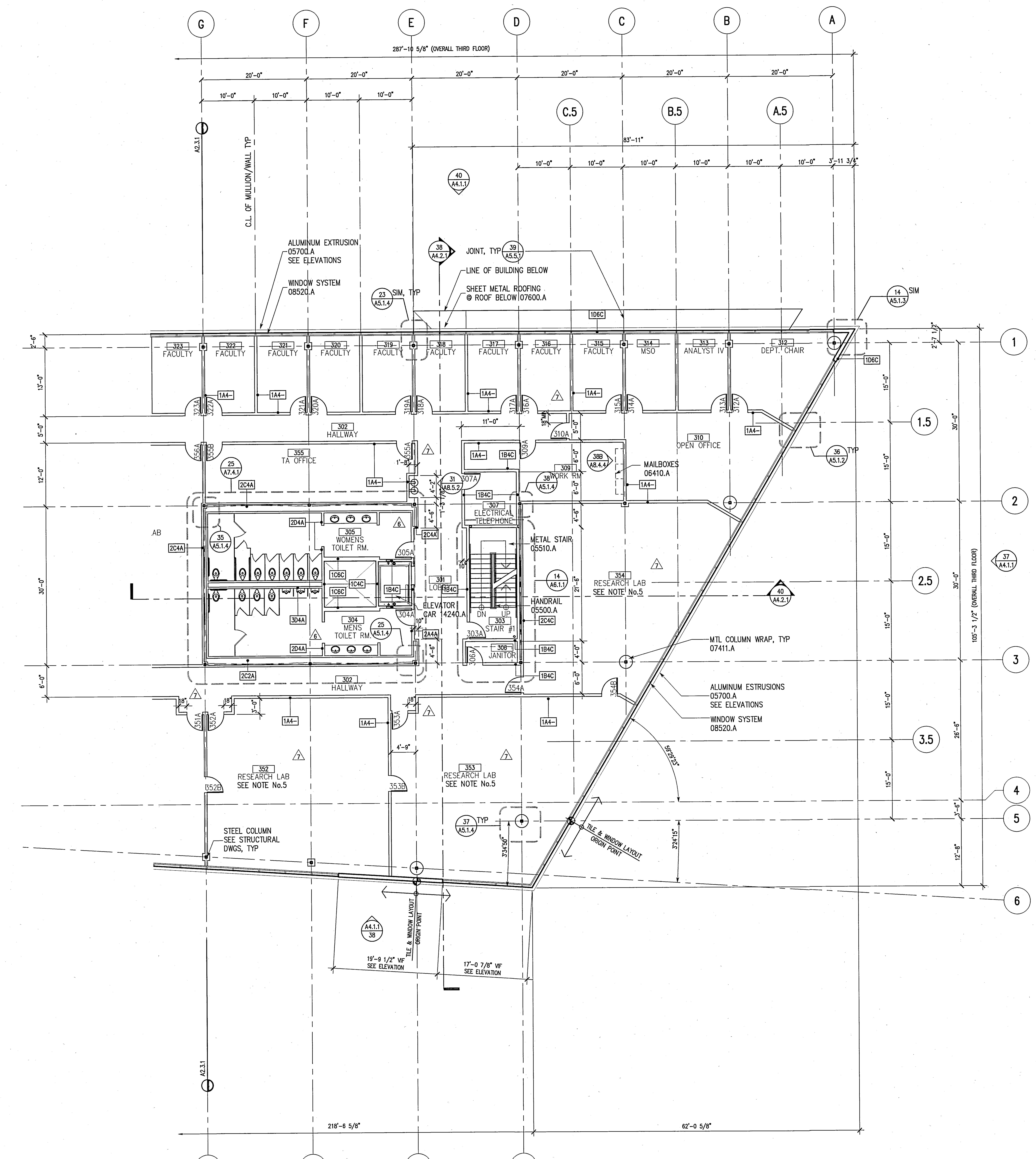

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL THIRD FLOOR PLAN (SURGE BUILDING)

1/8" = 1'-0"

Scale

3193000

Project Number

06OCT00

Baseline Date

A2.3.2

Drawing Number

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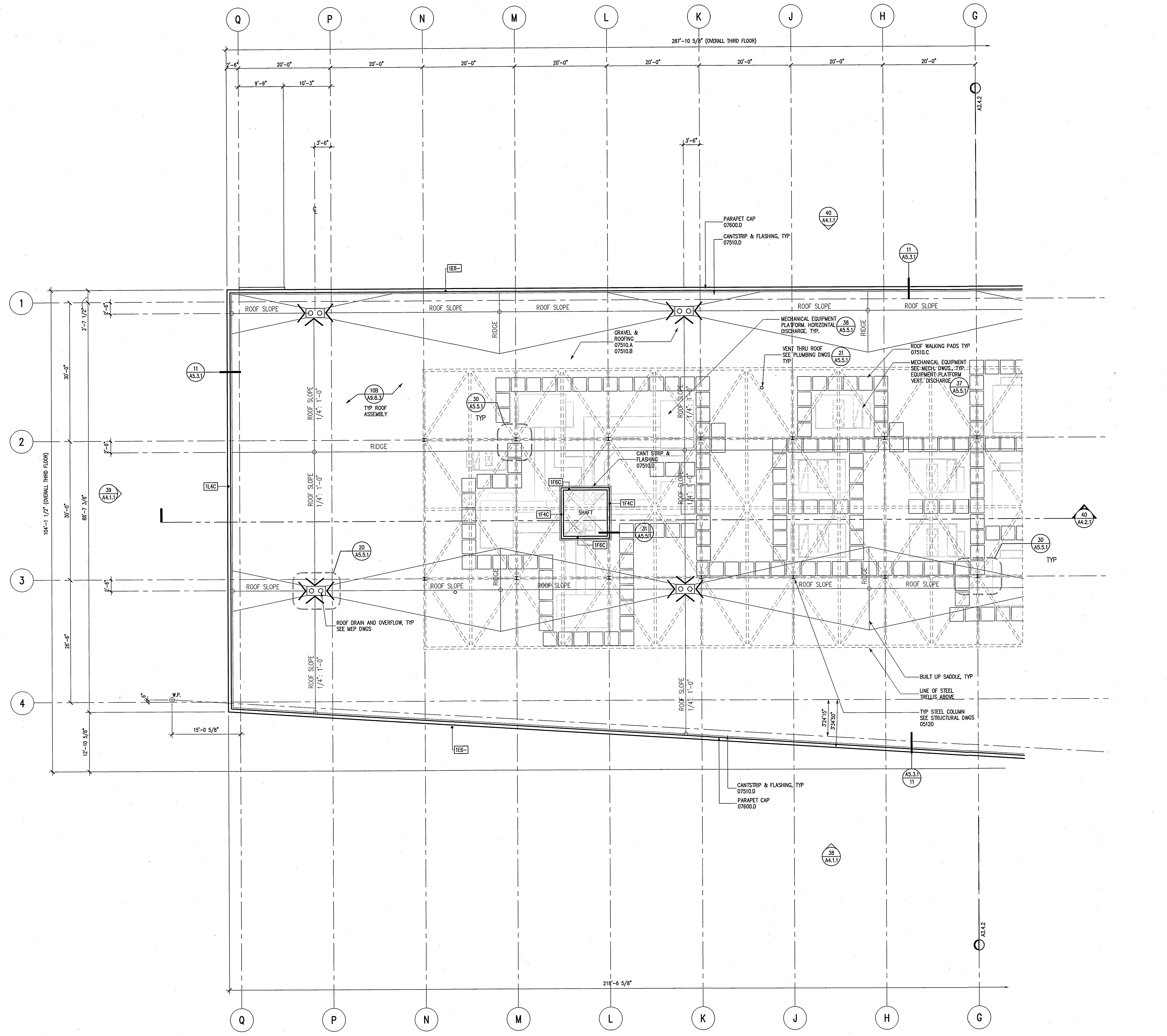

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Key Plan

Project North

Drawing Title

PARTIAL ROOF PLAN (SURGE BUILDING)

1/8" = 1'-0"
Scale

3193000
Project Number

06OCT00
Baseline Date

A2.4.1
Drawing Number

Plot Sheet Filename: I:\JOBS\3193000\SHT\A241r.dwg
XREF Filename(s): UCR_Tblk uco-rp uco0F008 keynotes
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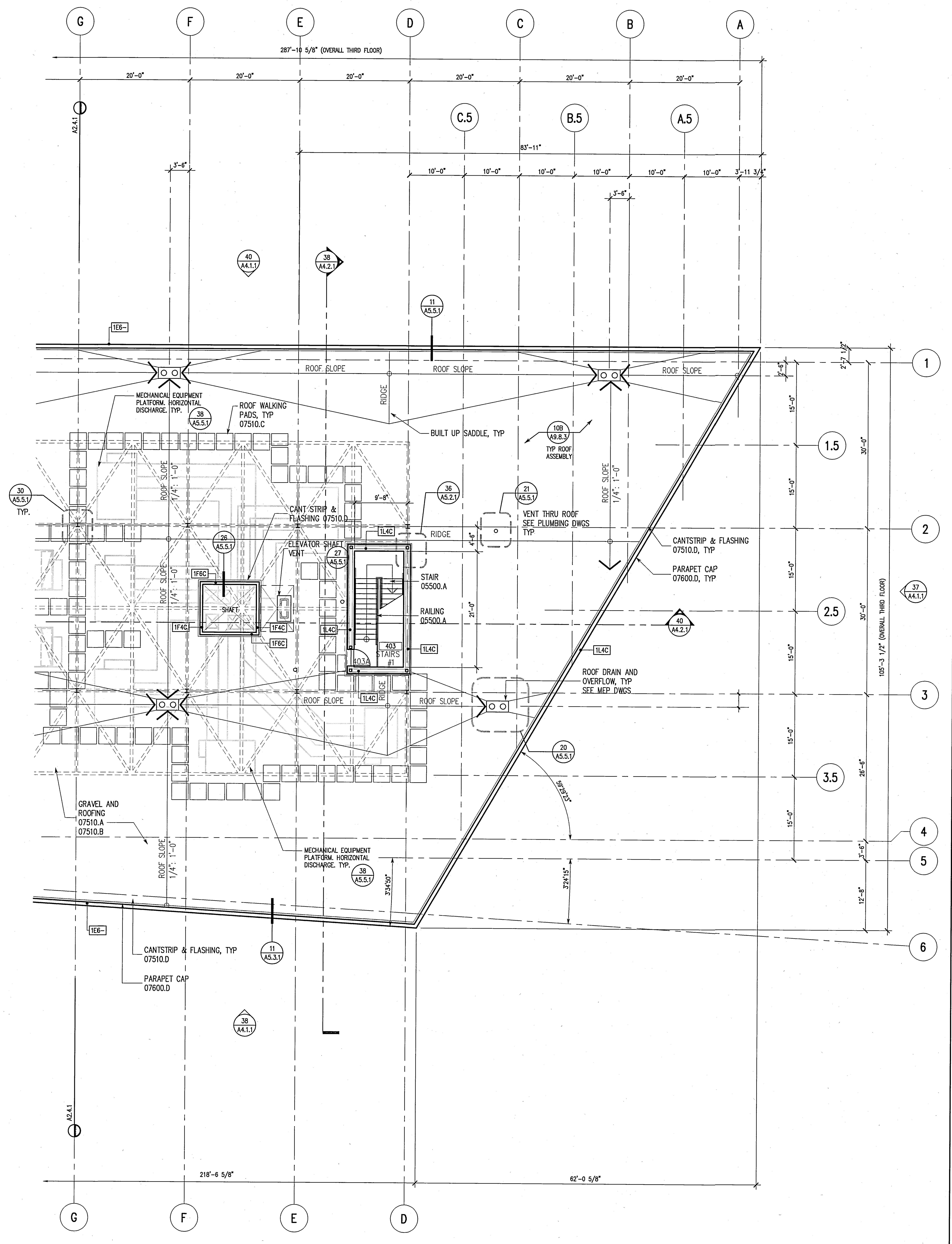
Plot Date: 03/11/02 16:23

06/21/00



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09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

GENERAL NOTES

1. SEE STRUCTURAL DWGS. FOR TOP OF STEEL (TOS) ELEVATIONS.
2. TYPICAL CONDITIONS APPLY AT ALL DETAILS.
3. CALL-OUTS SHOWN ON ONE DETAIL SHALL APPLY TO ALL WHERE SAME CONDITIONS EXIST, U.O.N.
4. CASE WORK (N.I.C.). ALL BUILT IN CASE WORK PROVIDING WORK STATIONS ARE TO BE SUBMITTED TO DSA PRIOR TO FABRICATION. 5% MIN. TO BE PROVIDED SHALL BE ACCESSIBLE.
5. 5 % OF ALL FURNITURE PROVIDED SHALL BE ACCESSIBLE.
6. PROVIDE STAIR SIGNAGE AT BOTH SIDES OF DOORS 133A; 103A; 240A; 203A; 338A & 303A AS PER SEC. 1117B.5.2. THE INFORMATION SHALL BE PRESENTED USING RAISED ARABIC NUMERALS AND RAISED BRAILLE SYMBOLS. THE SIGN SHALL BE LOCATED 5 FT. A.F.F.. THE SIGN SHALL BE LOCATED IMMEDIATELY ADJACENT TO THE DOOR ON THE STRIKE SIDE. (SEC. 1133B.4.3.).
7. PROVIDE PORTABLE ASSISTIVE LISTENING DEVICES IN ALL CONFERENCE AND MEETING ROOMS WHERE REQUIRED – MINIMUM NUMBER SHALL BE EQUAL TO 4% OF SEATING BUT NOT LESS THAN 2

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for | Rev | Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL ROOF PLAN (SURGE BUILDING)

1/8" = 1'-0"
Scale

3193000
Project Number

06OCT00
Baseline Date

A2.4.2
Drawing Number

Plot Sheet Filename: I:\JOBS\3193000\SHT\A2402.dwg
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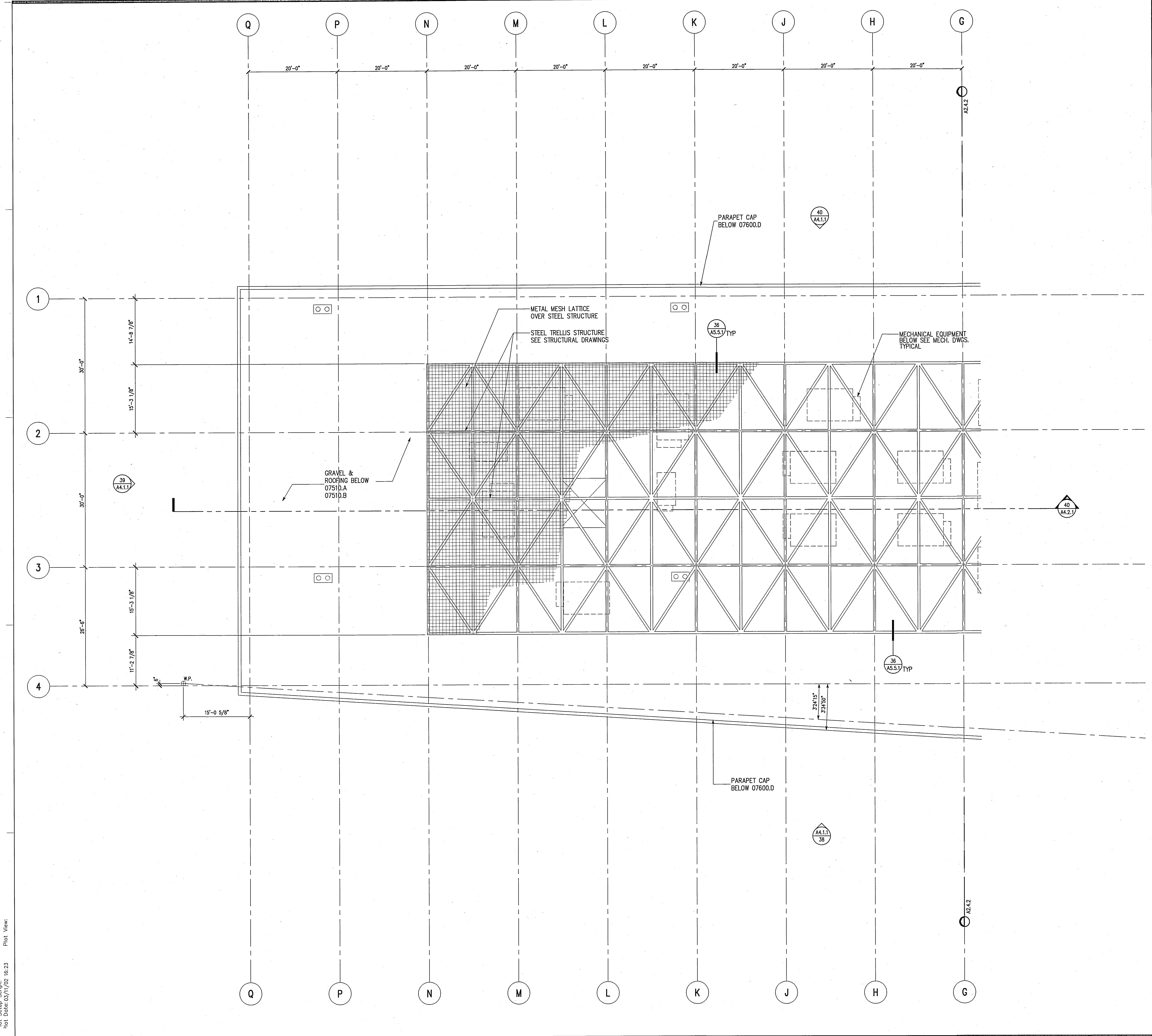
06/21/00



KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMNUM EXTRUSION – 4" FIN
05700.B – ALUMNUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMNUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMNUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

GENERAL NOTES

1. SEE STRUCTURAL DWGS. FOR TOP OF STEEL (TOS) ELEVATIONS.
2. TYPICAL CONDITIONS APPLY AT ALL DETAILS.
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Riverside, CA 92521

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1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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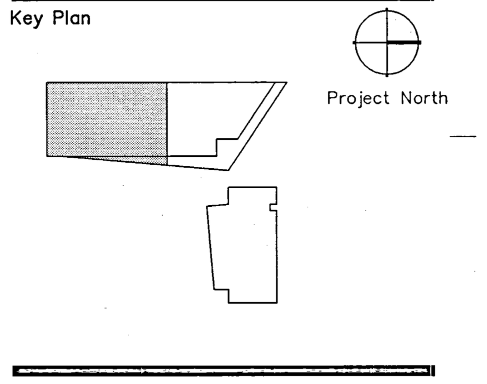
Seals and Signatures

RECORD DRAWINGS

Key Plan



Drawing Title

PARTIAL ROOF TRELLIS PLAN (SURGE BUILDING SOUTH)

1/8" = 1'-0"
Scale

3193000
Project Number

06OCT00
Baseline Date

A2.4.3
Drawing Number

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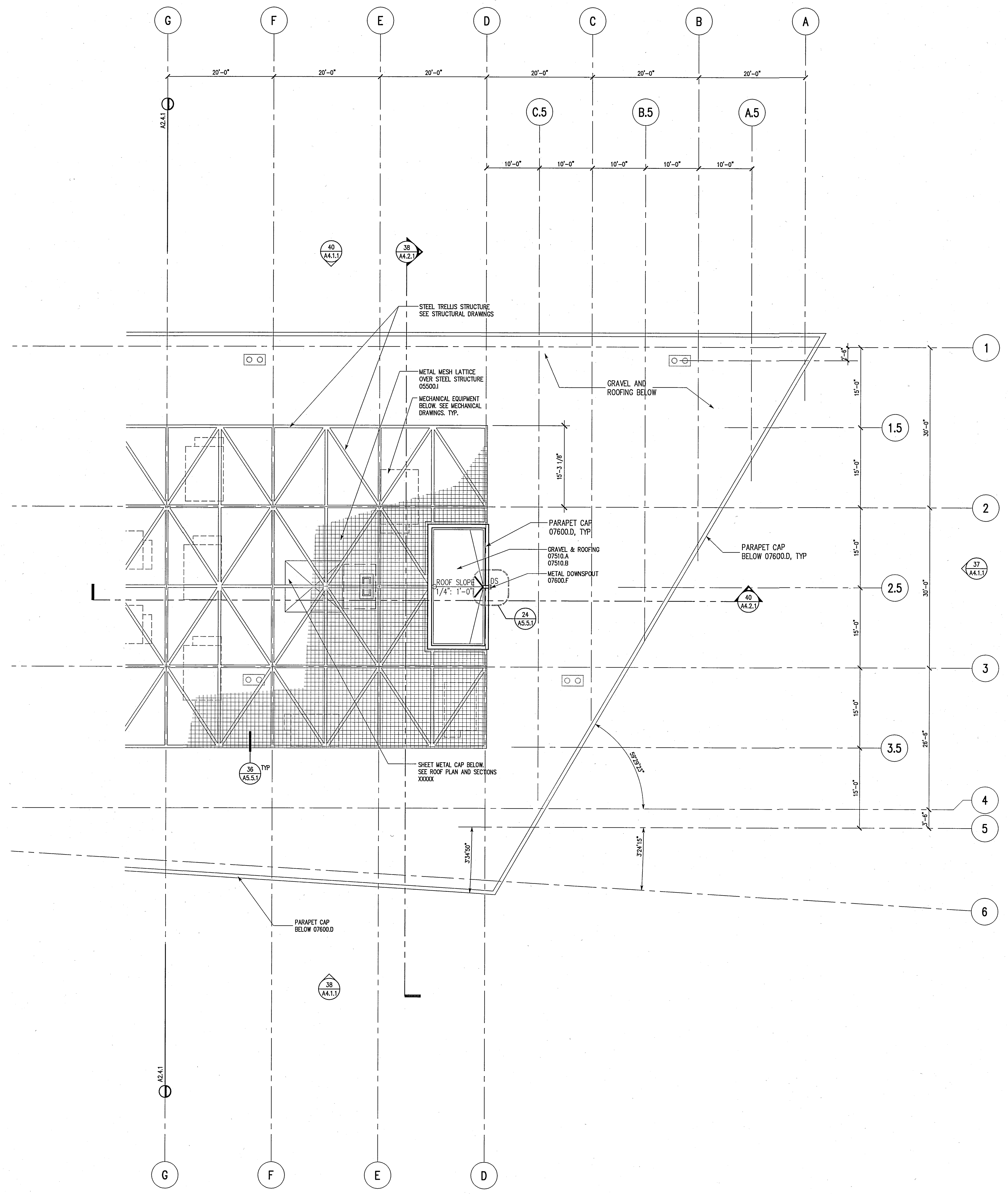

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04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
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05400 – STRUCTURAL STEEL STUD
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05500.I – METAL MESH
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07600.F – METAL DOWNSPOUT
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07611.A – STANDING SEAM METAL ROOFING
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08310.A – ACCESS PANEL
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08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
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09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
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09250.A – 5/8" GYP. BOARD
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09250.I – METAL REVEAL AT GYP. BOARD
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09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
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10200.A – FALSE ALUMINUM LOUVER
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14240.A – ELEVATOR

GENERAL NOTES

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UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL ROOF TRELLIS PLAN (SURGE BUILDING NORTH)

1/8" = 1'-0"
Scale
3193000
Project Number
06OCT00
Baseline Date
A2.4.4
Drawing Number

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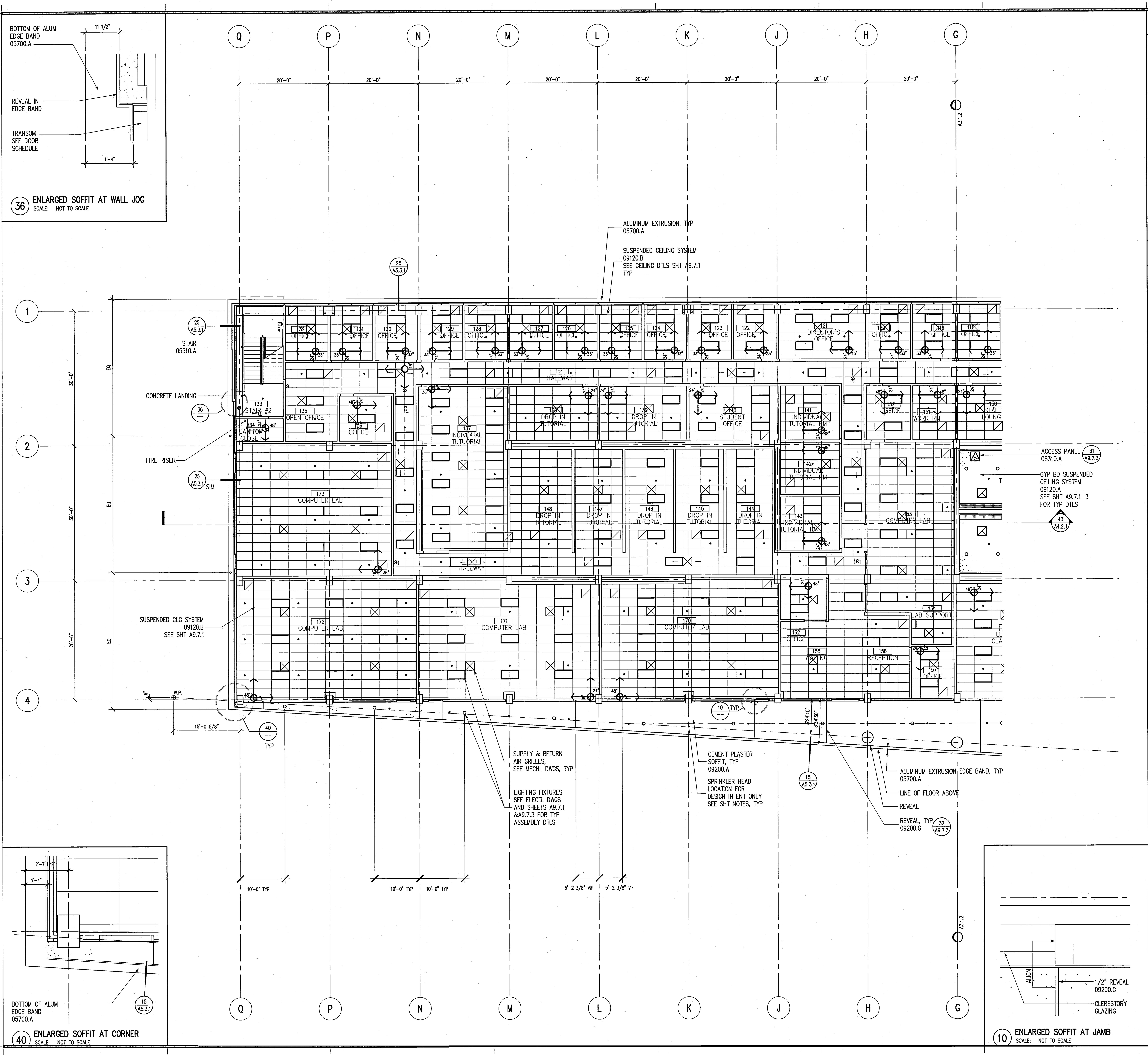
06/21/00



KEY NOTES

SEE FLOOR PLANS FOR FULL KEY NOTES LIST

LEGEND

- RECESSED DOWN - LIGHT FIXTURE
- WALL MOUNTED LIGHT FIXTURE
- WALL WASHER LIGHT FIXTURE (SHADING INDICATES LIGHTED FACE)
- 2' X 4' RECESSED FLUORESCENT FIXTURE
- 1' X 4' FLUORESCENT POLYCARBONATE HIGH ABUSE FIXTURE
- 2' X 2' FLUORESCENT TROFFER
- FLUORESCENT STRIP LIGHT FIXTURE
- NOT USED
- NOT USED
- NOT USED
- CEILING DIFFUSER - SUPPLY AIR (SEE MECH.DWGS.)
- CEILING DIFFUSER - RETURN AIR (SEE MECH.DWGS.)
- CEILING DIFFUSER - EXHAUST (SEE MECH.DWGS.)
- NOT USED
- NOT USED
- NOT USED
- EXIT SIGN, DOUBLE - SIDED. (SHADING INDICATES LIGHTED SIDES) (ARROWS INDICATE DIRECTION)
- EXIT SIGN, SINGLE SIDED. (SHADING INDICATES LIGHTED SIDE) (ARROW INDICATE DIRECTION)
- EXIT SIGN, WALL - MOUNTED.
- GYP. BD CEILING
- 2'X4' ACOUSTICAL PANEL
- ACCESS PANEL
- SPRINKLER (SEE SHEET NOTES BELOW)
- SHAFTWALL CEILING
- (ARROWS INDICATE DIRECTION) CEILING GRID WORK POINT (NUMBERS INDICATE DISTANCE TO WALL)
- PERFORATED WOOD ACCESS PANEL 09575.A
- FOAM SPEAKER GRILLE 09512
- PERFORATED ALUMINUM SHEETS 05500.J
- PERFORATED METAL SOFFIT PANELS 09515.B
- CEILING HEIGHT ELEVATION ABOVE FIRST FLOOR 0'-0"

SHEET NOTES

1. SPRINKLERS ARE SHOWN AS DESIGN INTENT ONLY. CONTRACTOR TO FOLLOW CODE REQUIREMENTS AS DESCRIBED IN THE PROJECT SPECIFICATIONS, SECTION 15300, AND ARCHITECT'S DESIGN INTENT.
2. SURGE INTERIOR FINISHED CEILING HEIGHT IS 9'-0" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE.
3. PROVIDE LATERAL BRACING AND COMPRESSION STRUTS AS REQUIRED. SEE SHEET A9.7: FOR TYPICAL DETAILS AND ADDITIONAL INFORMATION

REFER TO SHEETS A9.7.1 TO A9.7.3 FOR TYPICAL SUSPENDED CEILING TILE AND GYPSUM BOARD CEILING DETAILS

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900 University Avenue
Riverside, CA 92521

SmithGroup
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1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL FIRST FLOOR REFLECTED CEILING PLAN (SURGE BUILDING)

1/8" = 1'-0"

Scale

3193000

Project Number

06OCT00

Baseline Date

A3.1.1

Drawing Number

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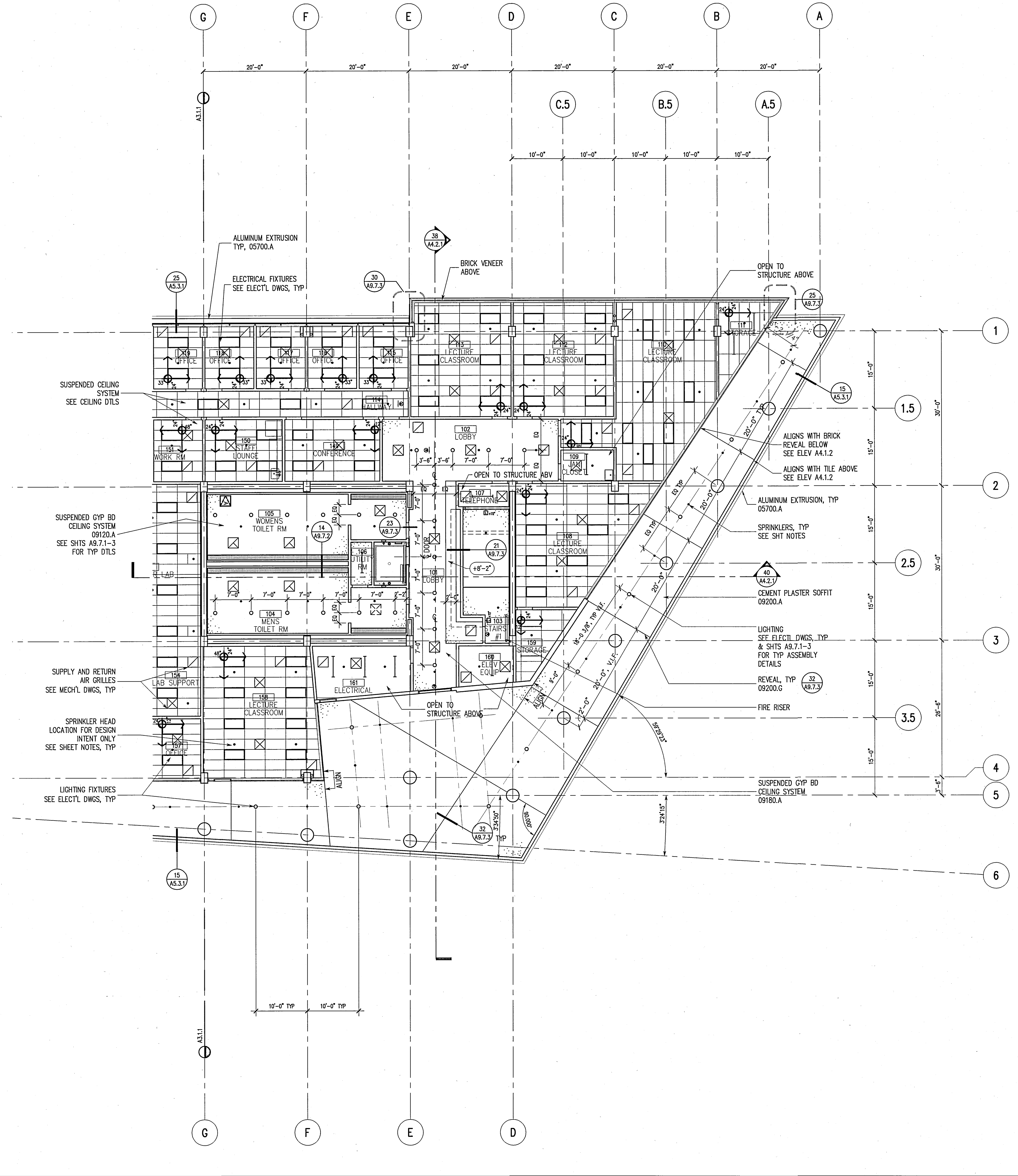

KEY NOTES

SEE FLOOR PLANS FOR FULL KEY NOTES LIST

LEGEND

- RECESSED DOWN – LIGHT FIXTURE
- WALL MOUNTED LIGHT FIXTURE
- WALL WASHER LIGHT FIXTURE (SHADING INDICATES LIGHTED FACE)
- 2' X 4' RECESSED FLUORESCENT FIXTURE
- 1' X 4' FLUORESCENT POLYCARBONATE HIGH ABUSE FIXTURE
- 2' X 2' FLUORESCENT TROFFER
- FLUORESCENT STRIP LIGHT FIXTURE
- NOT USED
- NOT USED
- NOT USED
- CEILING DIFFUSER – SUPPLY AIR (SEE MECH.DWGS.)
- CEILING DIFFUSER – RETURN AIR (SEE MECH.DWGS.)
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- NOT USED
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- EXIT SIGN, SINGLE SIDED. (SHADING INDICATES LIGHTED SIDE) (ARROW INDICATE DIRECTION)
- EXIT SIGN, WALL – MOUNTED.
- GYP. BD CEILING
- 2'X4' ACOUSTICAL PANEL
- ACCESS PANEL
- SPRINKLER (SEE SHEET NOTES BELOW)
- SHAFTWALL CEILING
- (ARROWS INDICATE DIRECTION) CEILING GRID WORK POINT (NUMBERS INDICATE DISTANCE TO WALL)
- PERFORATED WOOD ACCESS PANEL 09575.A
- FOAM SPEAKER GRILLE 09512
- PERFORATED ALUMINUM SHEETS 05500.J
- PERFORATED METAL SOFFIT PANELS 09515.B
- CEILING HEIGHT ELEVATION ABOVE FIRST FLOOR 0'-0"

SHEET NOTES

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Issued for	Rev	Date

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL FIRST FLOOR REFLECTED CEILING PLAN (SURGE BUILDING)

1/8" = 1'-0"

Scale

3193000

Project Number

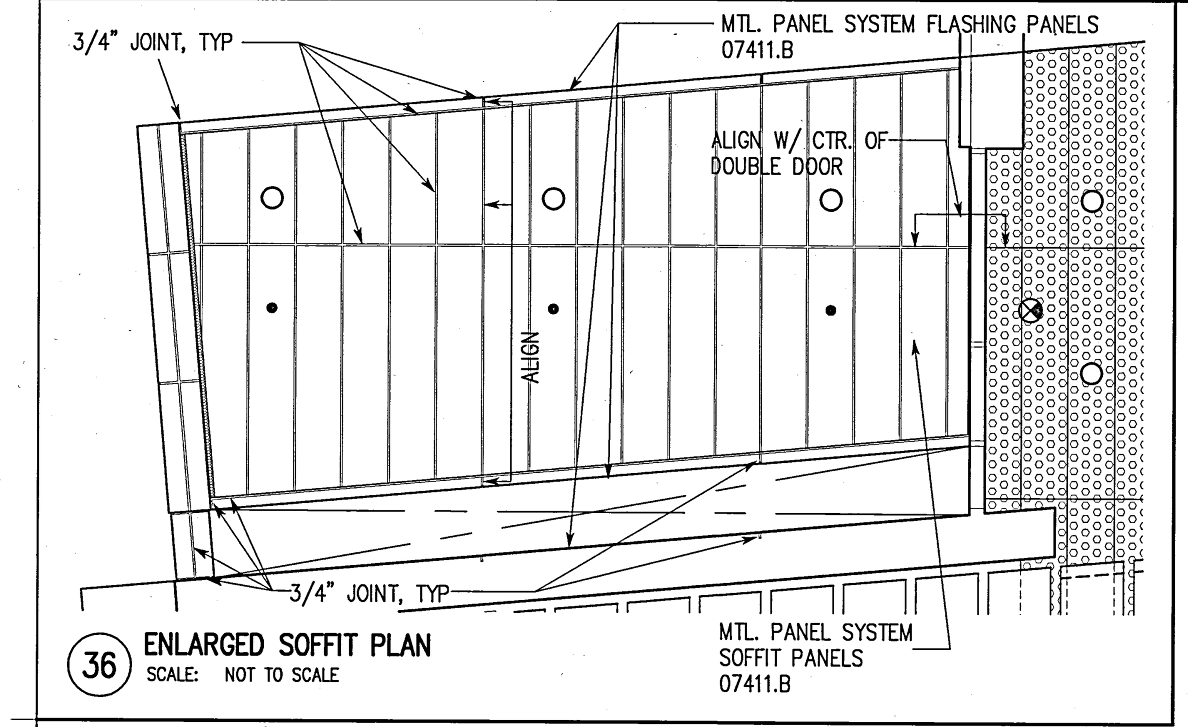
06OCT00

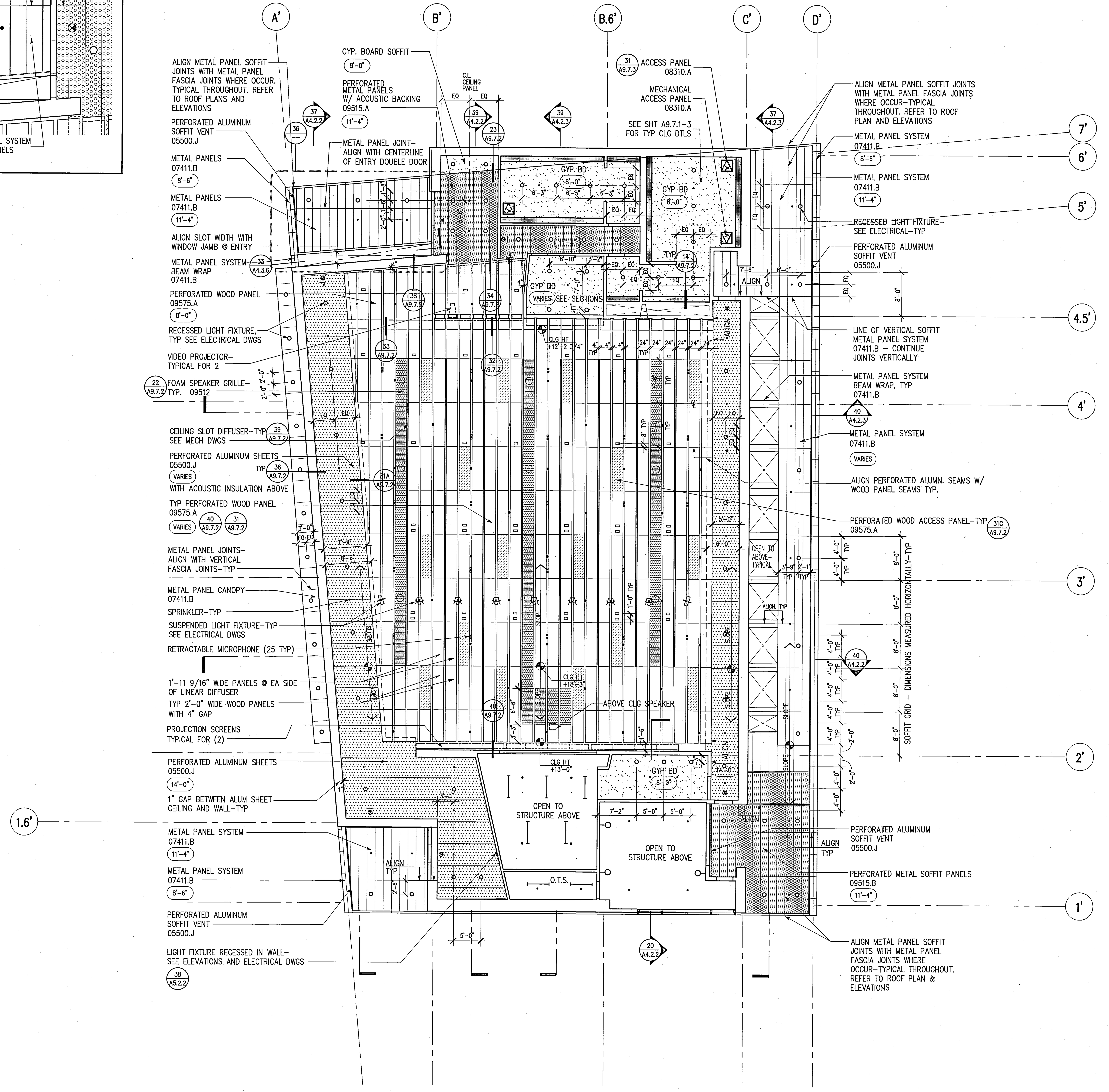
Baseline Date

A3.1.2

Drawing Number

40 SCALE:





KEY NOTES

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LEGEND

RECESSED DOWN - LIGHT FIXTURE
WALL MOUNTED LIGHT FIXTURE
WALL WASHER LIGHT FIXTURE (SHADING INDICATES LIGHTED FACE)
2' X 4' RECESSED FLUORESCENT FIXTURE
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EXIT SIGN, SINGLE SIDED. (SHADING INDICATES LIGHTED SIDE) (ARROW INDICATE DIRECTION)
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GYP. BD CEILING
2'X4' ACOUSTICAL PANEL
ACCESS PANEL
SPRINKLER (SEE SHEET NOTES BELOW)
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(ARROWS INDICATE DIRECTION)
CEILING GRID WORK POINT
(NUMBERS INDICATE DISTANCE TO WALL)
PERFORATED WOOD ACCESS PANEL 09575.A
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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title
REFLECTED CEILING PLAN (AUDITORIUM)

1/8" = 1'-0"
Scale

3193000
Project Number

06OCT00
Baseline Date

A3.1.3

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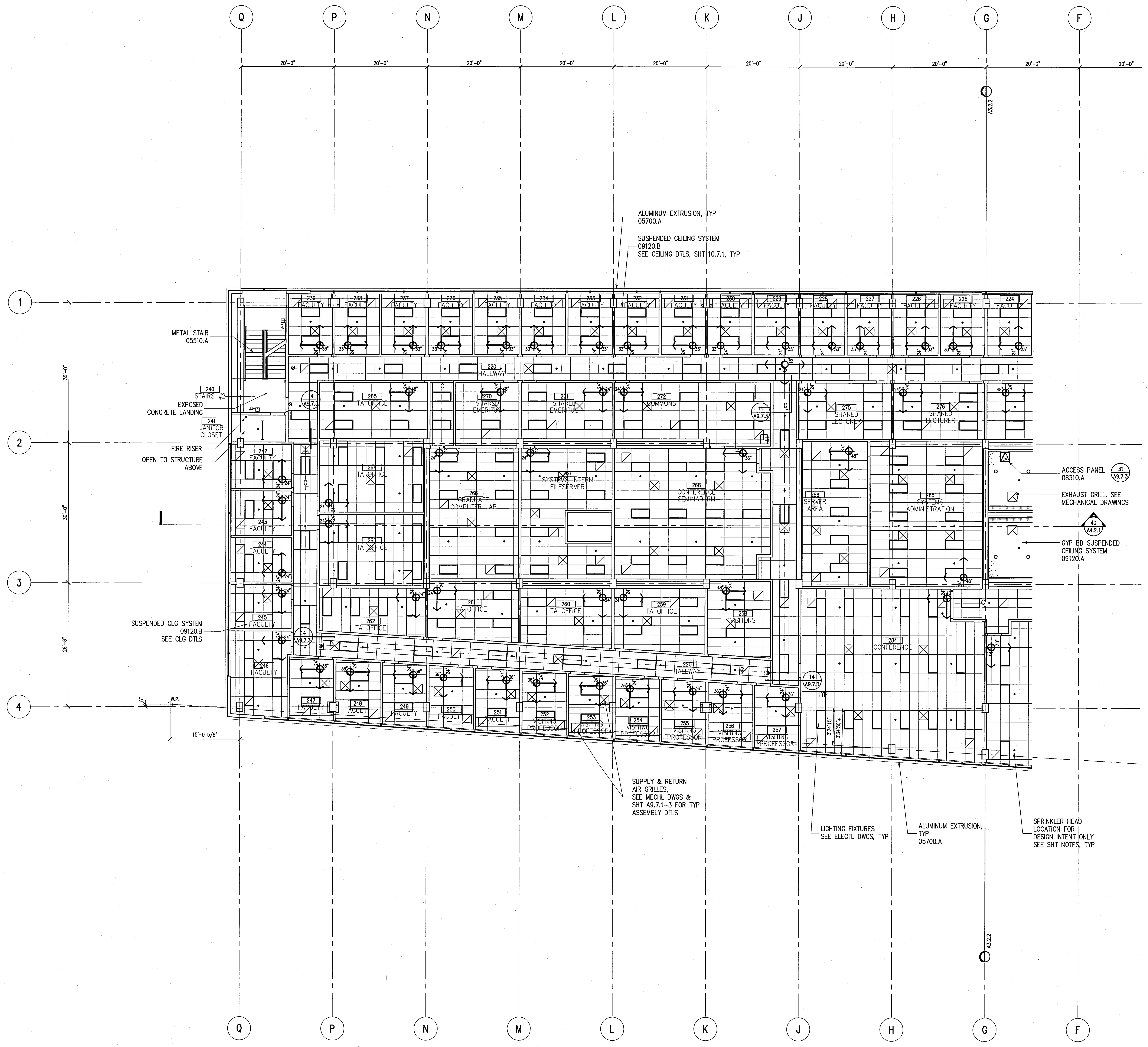

KEY NOTES

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- SHAFTWALL CEILING
- (ARROWS INDICATE DIRECTION) CEILING GRID WORK POINT (NUMBERS INDICATE DISTANCE TO WALL)
- PERFORATED WOOD ACCESS PANEL 09575.A
- FOAM SPEAKER GRILLE 09512
- PERFORATED ALUMINUM SHEETS 05500.J
- PERFORATED METAL SOFFIT PANELS 09515.B
- CEILING HEIGHT ELEVATION ABOVE FIRST FLOOR 0'-0"

SHEET NOTES

1. SPRINKLERS ARE SHOWN AS DESIGN INTENT ONLY. CONTRACTOR TO FOLLOW CODE REQUIREMENTS AS DESCRIBED IN THE PROJECT SPECIFICATIONS, SECTION 15300, AND ARCHITECT'S DESIGN INTENT.
2. SURGE INTERIOR FINISHED CEILING HEIGHT IS 9'-0" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE.
3. PROVIDE LATERAL BRACING AND COMPRESSION STRUTS AS REQUIRED. SEE SHEET A9.7.1 FOR TYPICAL DETAILS AND ADDITIONAL INFORMATION

REFER TO SHEETS A9.7.1 TO A9.7.3 FOR TYPICAL SUSPENDED CEILING TILE AND GYPSUM BOARD CEILING DETAILS

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL SECOND FLOOR REFLECTED CEILING PLAN (SURGE BUILDING)

1/8" = 1'-0"

Scale

Project Number 3193000

Baseline Date 06OCT00

A3.2.1

Plot Sheet Filename: J:\Jobs\3193000\SHT\a3201.dwg
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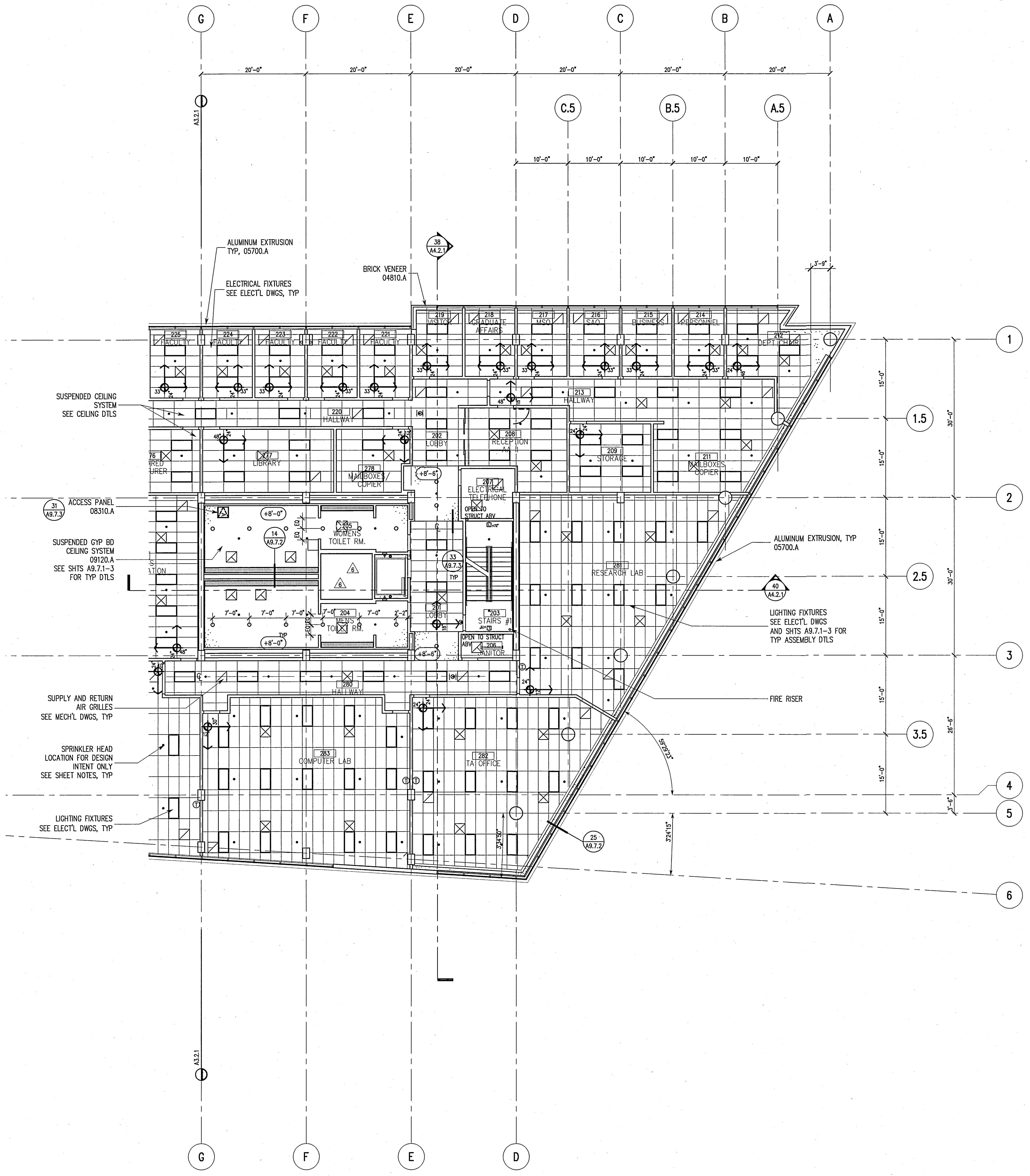

KEY NOTES

SEE FLOOR PLANS FOR FULL KEY NOTES LIST

LEGEND

- RECESSED DOWN – LIGHT FIXTURE
- WALL MOUNTED LIGHT FIXTURE
- WALL WASHER LIGHT FIXTURE (SHADING INDICATES LIGHTED FACE)
- 2' X 4' RECESSED FLUORESCENT FIXTURE
- 1' X 4' FLUORESCENT POLYCARBONATE HIGH ABUSE FIXTURE
- 2' X 2' FLUORESCENT TROFFER
- FLUORESCENT STRIP LIGHT FIXTURE
- NOT USED
- NOT USED
- NOT USED
- CEILING DIFFUSER – SUPPLY AIR (SEE MECH.DWGS.)
- CEILING DIFFUSER – RETURN AIR (SEE MECH.DWGS.)
- CEILING DIFFUSER – EXHAUST (SEE MECH.DWGS.)
- NOT USED
- NOT USED
- NOT USED
- EXIT SIGN, DOUBLE – SIDED. (SHADING INDICATES LIGHTED SIDES) (ARROWS INDICATE DIRECTION)
- EXIT SIGN, SINGLE SIDED. (SHADING INDICATES LIGHTED SIDE) (ARROW INDICATE DIRECTION)
- EXIT SIGN, WALL – MOUNTED.
- GYP. BD CEILING
- 2'X4' ACOUSTICAL PANEL
- ACCESS PANEL
- SPRINKLER (SEE SHEET NOTES BELOW)
- SHAFTWALL CEILING
- (ARROWS INDICATE DIRECTION) CEILING GRID WORK POINT (NUMBERS INDICATE DISTANCE TO WALL)
- PERFORATED WOOD ACCESS PANEL 09575.A
- FOAM SPEAKER GRILLE 09512
- PERFORATED ALUMINUM SHEETS 05500.J
- PERFORATED METAL SOFFIT PANELS 09515.B
- CEILING HEIGHT ELEVATION ABOVE FIRST FLOOR 0'-0"

SHEET NOTES

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REFER TO SHEETS A9.7.1 TO A9.7.3 FOR TYPICAL SUSPENDED CEILING TILE AND GYPSUM BOARD CEILING DETAILS

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UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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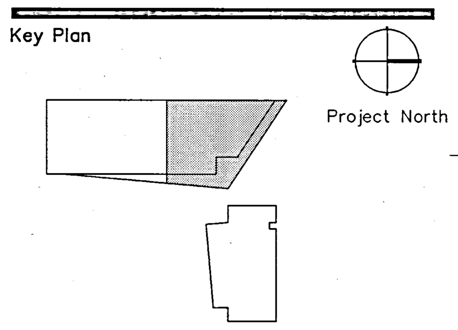
RECORD DRAWINGS

Key Plan



Drawing Title

PARTIAL SECOND FLOOR REFLECTED CEILING PLAN (SURGE BUILDING)

Scale 1/8" = 1'-0"

Project Number 3193000

Baseline Date 06OCT00

Drawing Number A3.2.2

Plot Sheet Filename: J:\Jobs\3193000\SHT\a3202.dwg
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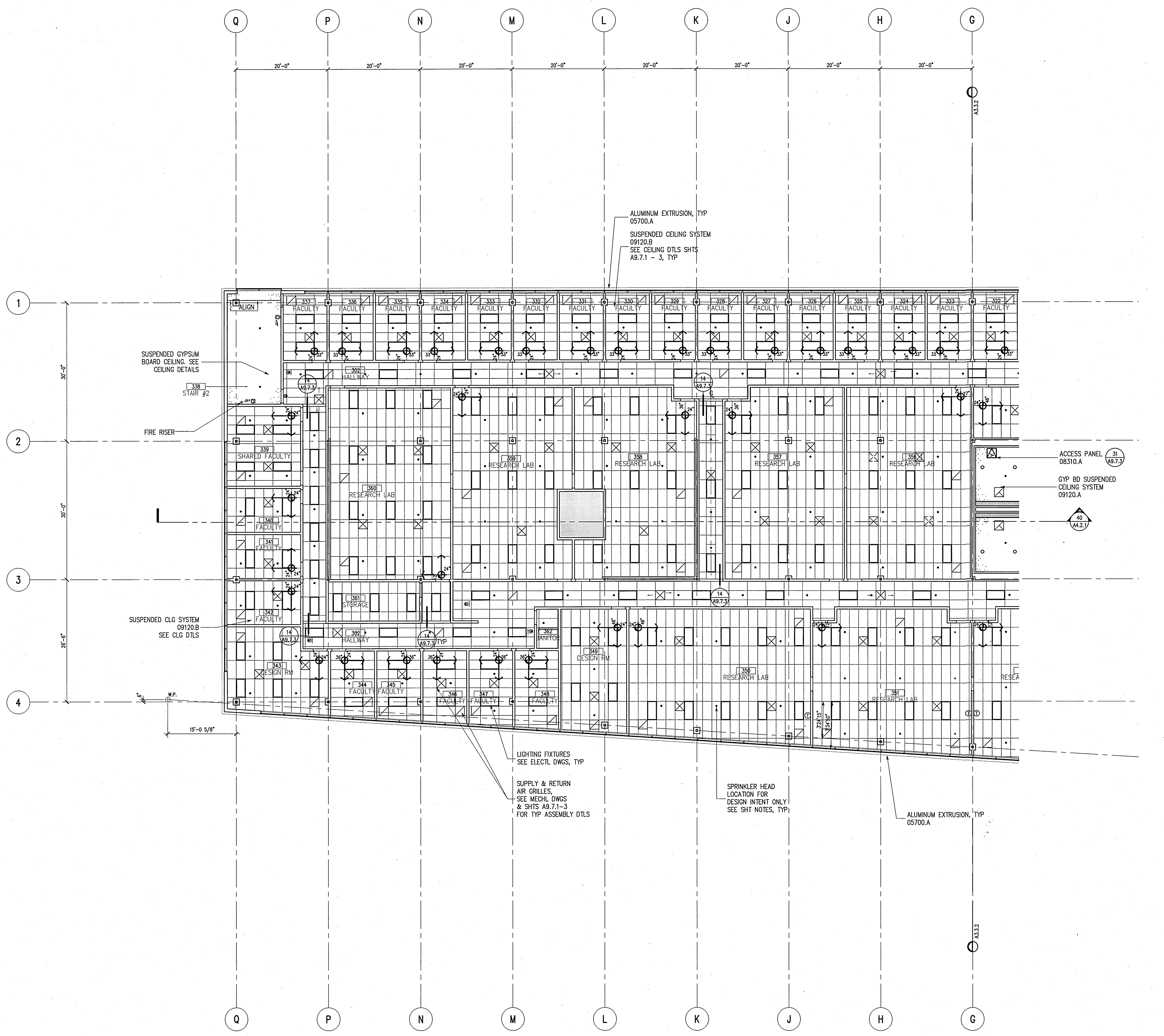

KEY NOTES

SEE FLOOR PLANS FOR FULL KEY NOTES LIST

LEGEND

- RECESSED DOWN – LIGHT FIXTURE
- WALL MOUNTED LIGHT FIXTURE
- WALL WASHER LIGHT FIXTURE (SHADING INDICATES LIGHTED FACE)
- 2' X 4' RECESSED FLUORESCENT FIXTURE
- 1' X 4' FLUORESCENT POLYCARBONATE HIGH ABUSE FIXTURE
- 2' X 2' FLUORESCENT TROFFER
- FLUORESCENT STRIP LIGHT FIXTURE
- NOT USED
- NOT USED
- NOT USED
- CEILING DIFFUSER – SUPPLY AIR (SEE MECH.DWGS.)
- CEILING DIFFUSER – RETURN AIR (SEE MECH.DWGS.)
- CEILING DIFFUSER – EXHAUST (SEE MECH.DWGS.)
- NOT USED
- NOT USED
- NOT USED
- EXIT SIGN, DOUBLE – SIDED. (SHADING INDICATES LIGHTED SIDES) (ARROWS NDICATE DIRECTION)
- EXIT SIGN, SINGLE SIDED. (SHADING INDICATES LIGHTED SIDE) (ARROW INDICATE DIRECTION)
- EXIT SIGN, WALL – MOUNTED.
- GYP. BD CEILING
- 2'X4' ACOUSTICAL PANEL
- ACCESS PANEL
- SPRINKLER (SEE SHEET NOTES BELOW)
- SHAFTWALL CEILING
- (ARROWS NDICATE DIRECTION) CEILING GRID WORK POINT (NUMBERS INDICATE DISTANCE TO WALL)
- PERFORATED WOOD ACCESS PANEL 09575.A
- FOAM SPEAKER GRILLE 09512
- PERFORATED ALUMINUM SHEETS 05500.J
- PERFORATED METAL SOFFIT PANELS 09515.B
- CEILING HEIGHT ELEVATION ABOVE FIRST FLOOR 0'-0"

SHEET NOTES

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REFER TO SHEETS A9.7.1 TO A9.7.3 FOR TYPICAL SUSPENDED CEILING TILE AND GYPSUM BOARD CEILING DETAILS

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UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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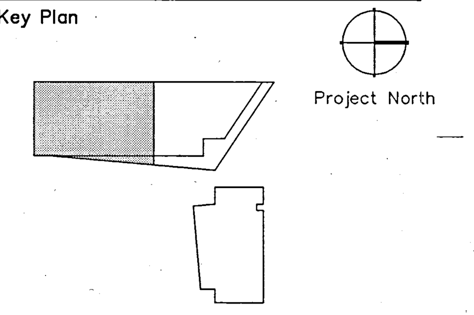
RECORD DRAWINGS

Key Plan



Drawing Title

PARTIAL THIRD FLOOR REFLECTED CEILING PLAN (SURGE BUILDING)

1/8" = 1'-0"
Scale

3193000
Project Number

060CT00
Baseline Date

A3.3.1
Drawing Number

Plot Sheet Filename: J:\Jobs\3193000\SHT\a3301.dwg
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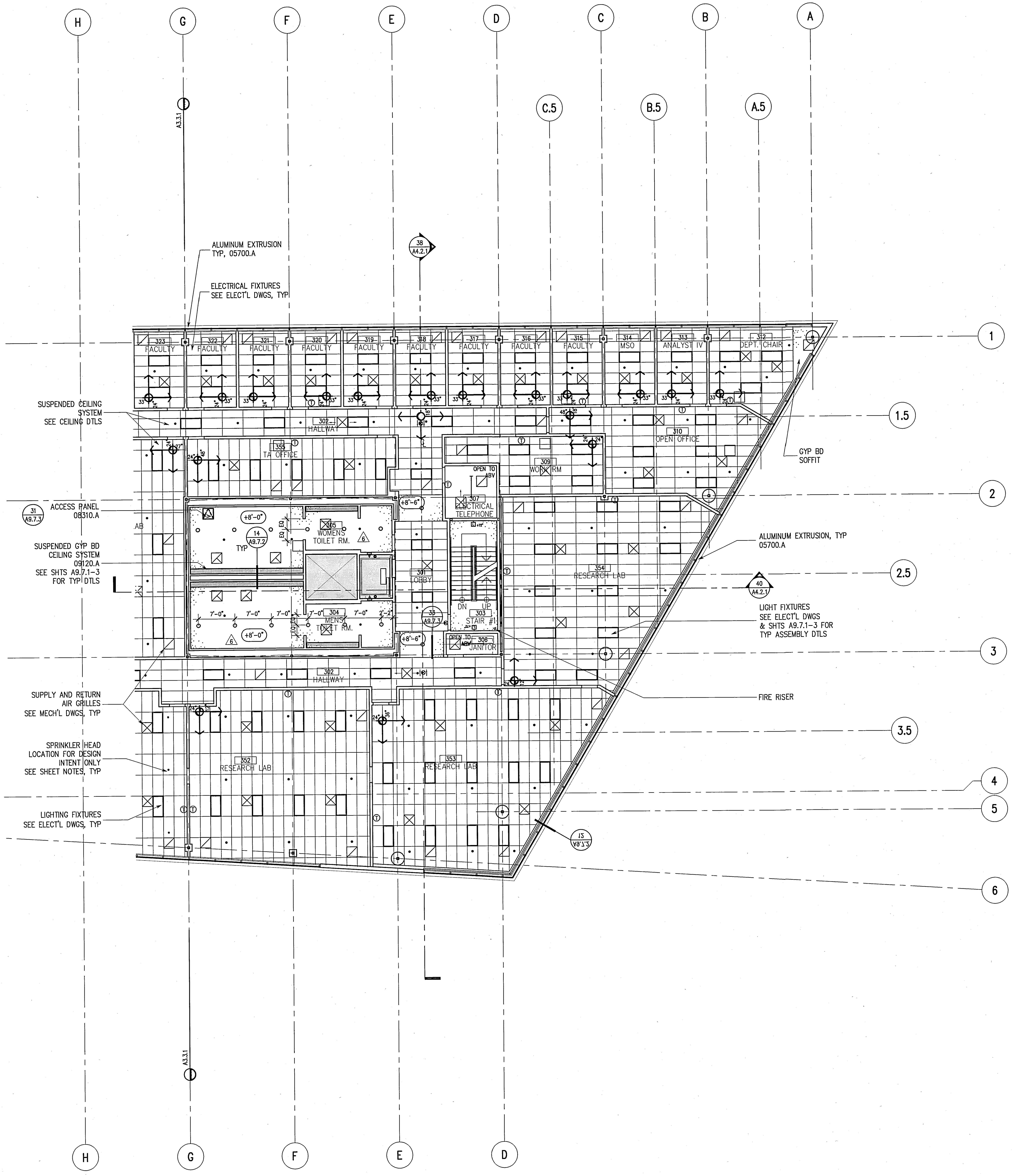

KEY NOTES

SEE FLOOR PLANS FOR FULL KEY NOTES LIST

LEGEND

- RECESSED DOWN – LIGHT FIXTURE
- WALL MOUNTED LIGHT FIXTURE
- WALL WASHER LIGHT FIXTURE (SHADING INDICATES LIGHTED FACE)
- 2' X 4' RECESSED FLUORESCENT FIXTURE
- 1' X 4' FLUORESCENT POLYCARBONATE HIGH ABUSE FIXTURE
- 2' X 2' FLUORESCENT TROFFER
- FLUORESCENT STRIP LIGHT FIXTURE
- NOT USED
- NOT USED
- NOT USED
- CEILING DIFFUSER – SUPPLY AIR (SEE MECH.DWGS.)
- CEILING DIFFUSER – RETURN AIR (SEE MECH.DWGS.)
- CEILING DIFFUSER – EXHAUST (SEE MECH.DWGS.)
- NOT USED
- NOT USED
- NOT USED
- EXIT SIGN, DOUBLE – SIDED. (SHADING INDICATES LIGHTED SIDES) (ARROWS INDICATE DIRECTION)
- EXIT SIGN, SINGLE SIDED. (SHADING INDICATES LIGHTED SIDE) (ARROW INDICATE DIRECTION)
- EXIT SIGN, WALL – MOUNTED.
- GYP. BD CEILING
- 2'X4' ACOUSTICAL PANEL
- ACCESS PANEL
- SPRINKLER (SEE SHEET NOTES BELOW)
- SHAFTWALL CEILING
- (ARROWS INDICATE DIRECTION) CEILING GRID WORK POINT (NUMBERS INDICATE DISTANCE TO WALL)
- PERFORATED WOOD ACCESS PANEL 09575.A
- FOAM SPEAKER GRILLE 09512
- PERFORATED ALUMINUM SHEETS 05500.J
- PERFORATED METAL SOFFIT PANELS 09515.B
- CEILING HEIGHT ELEVATION ABOVE FIRST FLOOR 0'-0"

SHEET NOTES

1. SPRINKLERS ARE SHOWN AS DESIGN INTENT ONLY. CONTRACTOR TO FOLLOW CODE REQUIREMENTS AS DESCRIBED IN THE PROJECT SPECIFICATIONS, SECTION 15300, AND ARCHITECT'S DESIGN INTENT.
2. SURGE INTERIOR FINISHED CEILING HEIGHT IS 9'-0" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE.
3. PROVIDE LATERAL BRACING AND COMPRESSION STRUTS AS REQUIRED. SEE SHEET A5.7.1 FOR TYPICAL DETAILS AND ADDITIONAL INFORMATION

REFER TO SHEETS A9.7.1 TO A9.7.3 FOR TYPICAL SUSPENDED CEILING TILE AND GYPSUM BOARD CEILING DETAILS

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

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UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL THIRD FLOOR REFLECTED CEILING PLAN SURGE BUILDING

1/8" = 1'-0"

Scale

Project Number 3193000

Baseline Date 06OCT00

Drawing Number A3.3.2

lot Sheet Filename: J:\Jobs\3193000\SHT\a3302.dwg
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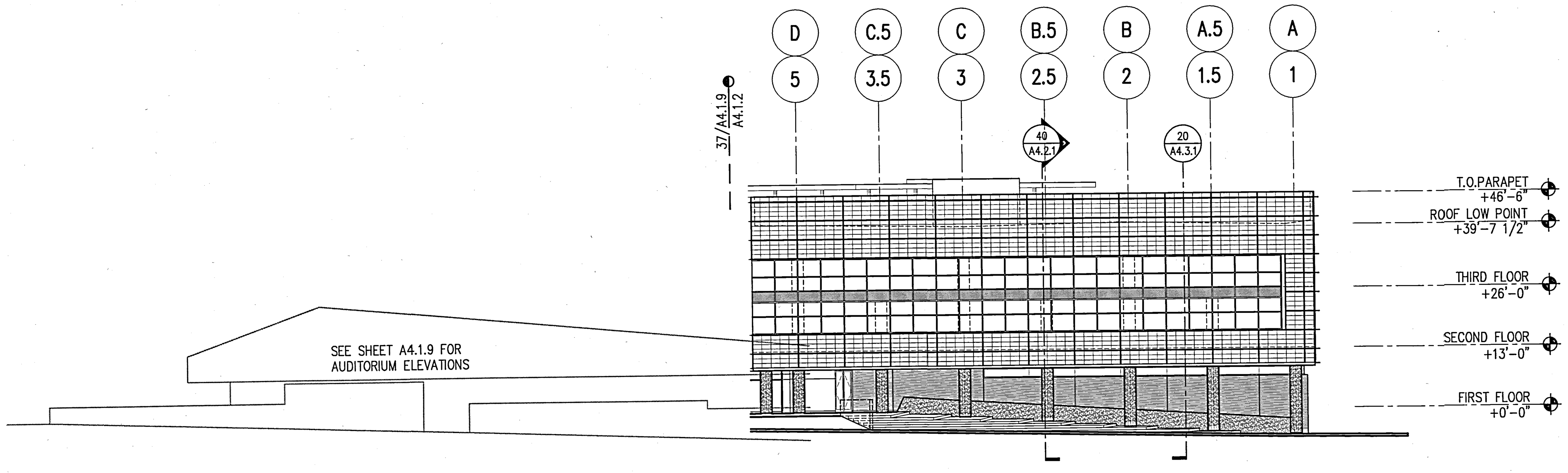
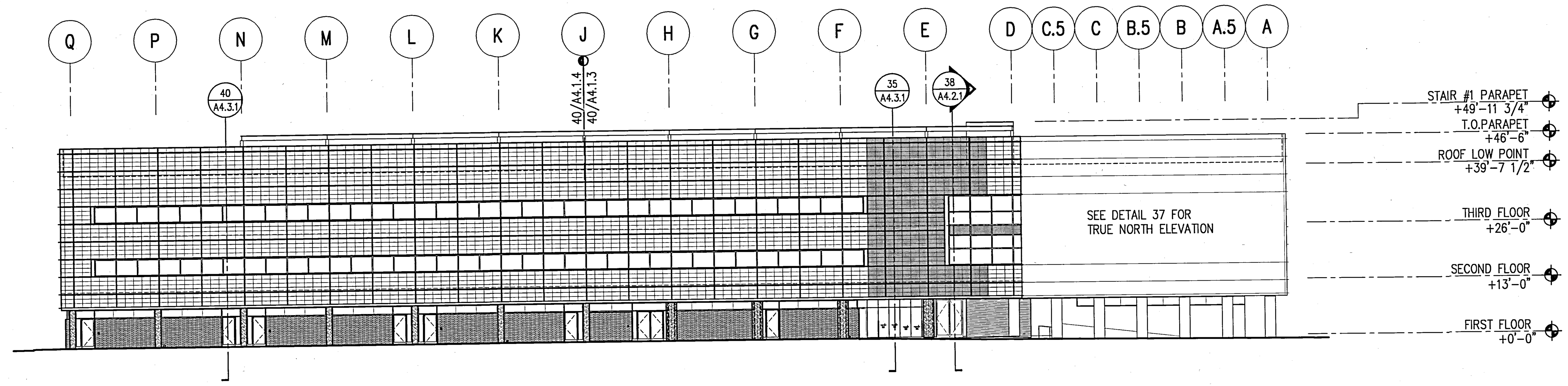
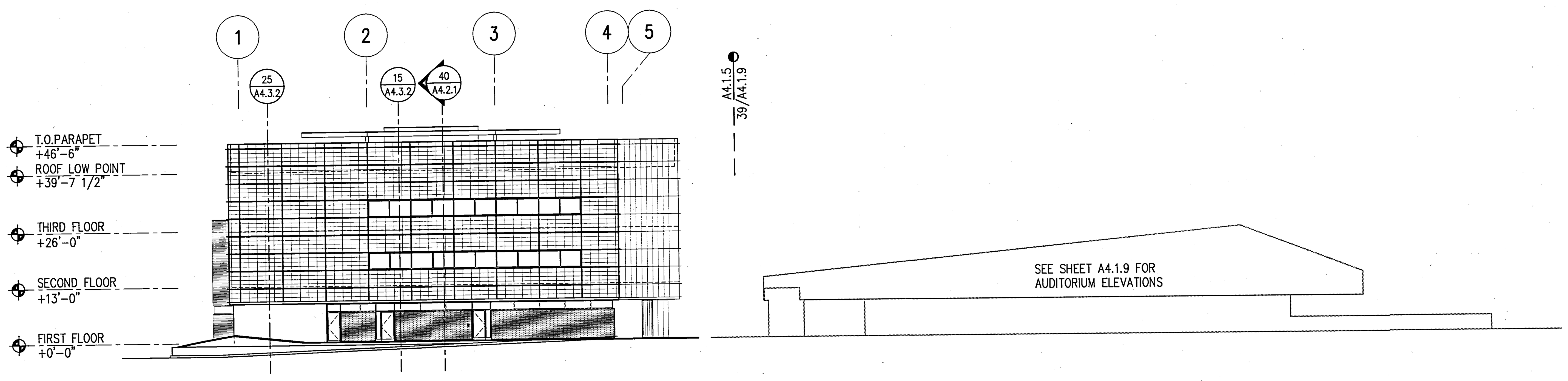
lot Date:03/20/02 11:47 Plot View:



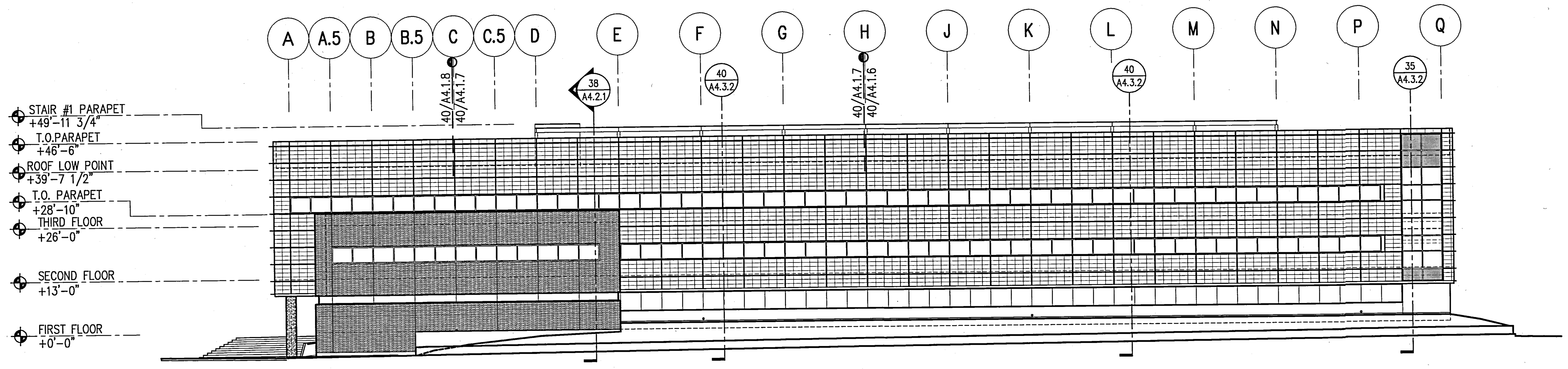
37 NORTH ELEVATION
SURGE BUILDING
SCALE: SCALE: 1/16" = 1'-0"



38 EAST ELEVATION
SURGE BUILDING
SCALE: SCALE: 1/16" = 1'-0"



39 SOUTH ELEVATION
SURGE BUILDING
SCALE: SCALE: 1/16" = 1'-0"



WEST ELEVATION
SCALE: SCALE: 1/16" = 1'-0"

KEYED NOTES

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CAMPUS SURGE BUILDING
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900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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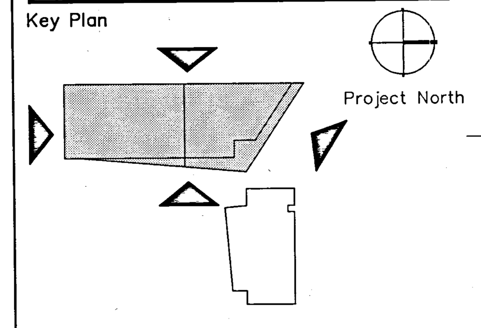
RECORD DRAWINGS

Key Plan



Drawing Title
EXTERIOR REFERENCE ELEVATIONS (SURGE BUILDING)

1/16" = 1'-0"
Scale

3193000
Project Number

06OCT00
Baseline Date

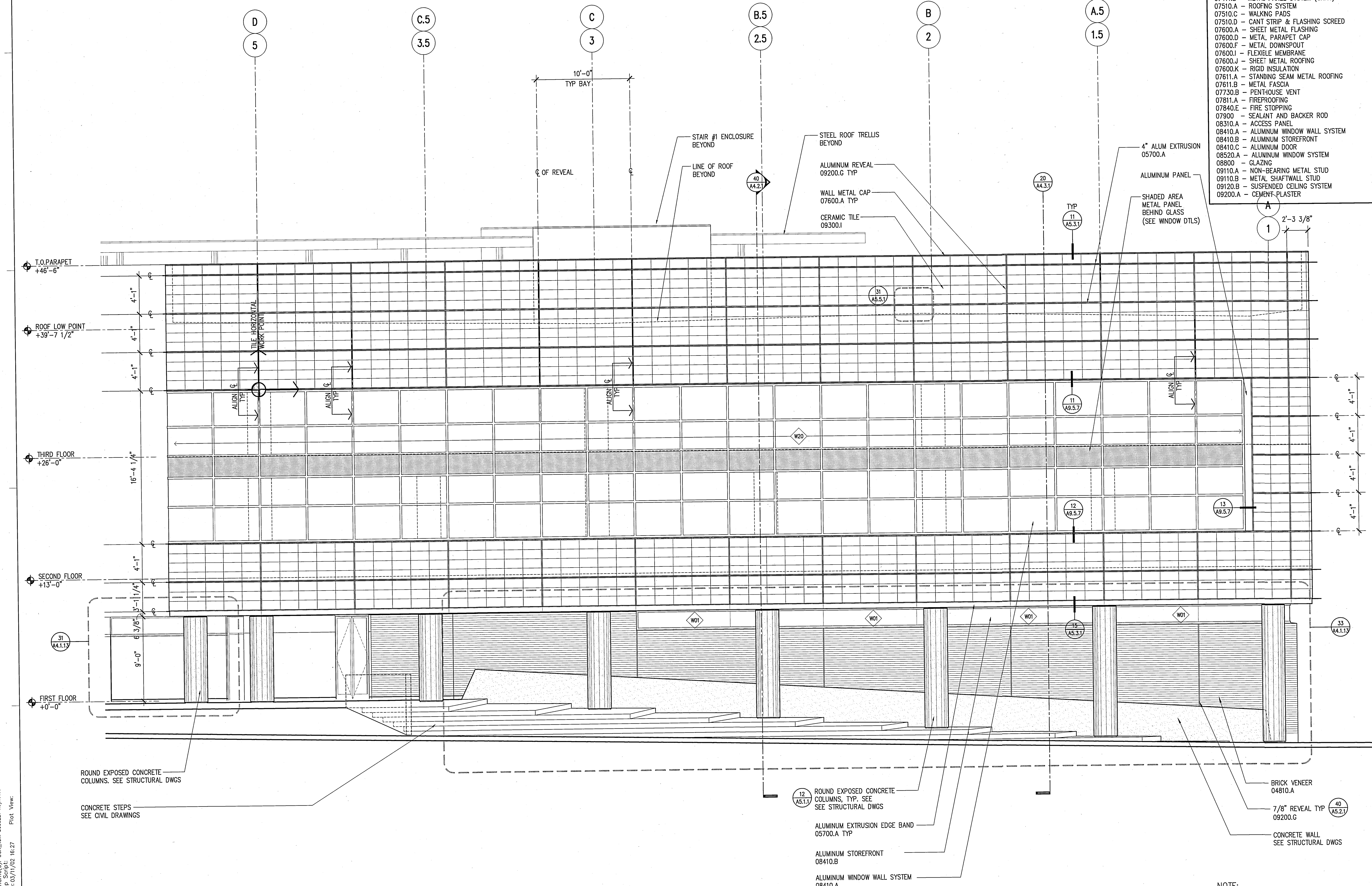
A4.1.1
Drawing Number

Sheet Filename: I:\JOBS\3193000\SHT\A4101.dwg
EF Filename(s): UCR_Tblk uca0EL1 uca3EL1
Setup Script:
Date: 03/11/02 16:26 Plot View:

06/21/00

KEYED NOTES

03300 – CAST N PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER



NORTH ELEVATION
SCALE: 1/4" = 1'-0"

NOTE:
SEE SHEETS A9.5.1 – A9.5.5

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900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title
NORTH ELEVATION (SURGE BUILDING)

1/4" = 1'-0"
Scale

3193000
Project Number

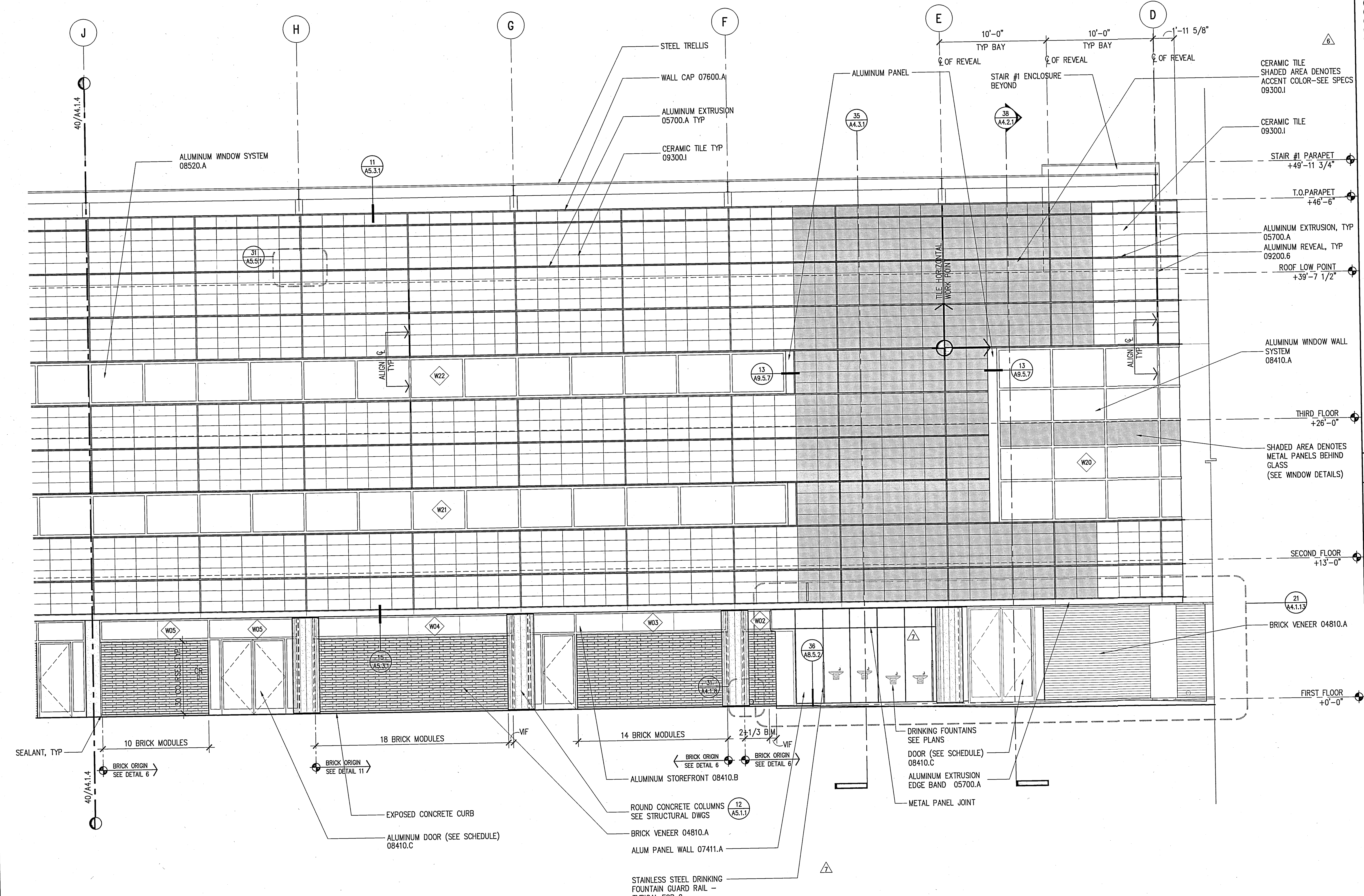
060CT00
Baseline Date

A4.1.2
Drawing Number

06/21/00

KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR



40 **PARTIAL EAST ELEVATION**
SURGE BUILDING (SECOND AND THIRD FLOOR NOT IN TRUE ELEVATION)
SCALE: SCALE: 1/4" = 1'-0"

GENERAL NOTES

1. SEE STRUCTURAL DWGS. FOR TOP OF STEEL (TOS) ELEVATIONS.
2. TYPICAL CONDITIONS APPLY AT ALL DETAILS.
3. CALL-OUTS SHOWN ON ONE DETAIL SHALL APPLY TO ALL WHERE SAME CONDITIONS EXIST, U.O.N.
4. CASE WORK (N.I.C.). ALL BUILT IN CASE WORK PROVIDING WORK STATIONS ARE TO BE SUBMITTED TO DSA PRIOR TO FABRICATION. 5% MIN. TO BE PROVIDED SHALL BE ACCESSIBLE.
5. 5 % OF ALL FURNITURE PROVIDED SHALL BE ACCESSIBLE
6. PROVIDE STAIR SIGNAGE AT BOTH SIDES OF DOORS 133A; 103A; 240A; 203A; 338A & 303A AS PER SEC. 1117B.5.2. THE INFORMATION SHALL BE PRESENTED USING RAISED ARABIC NUMERALS AND RAISED BRAILLE SYMBOLS. THE SIGN SHALL BE LOCATED 5 FT. A.F.F.. THE SIGN SHALL BE LOCATED IMMEDIATELY ADJACENT TO THE DOOR ON THE STRIKE SIDE. (SEC. 1133B.4.3.).
7. PROVIDE PORTABLE ASSISTIVE LISTENING DEVICES IN ALL CONFERENCE AND MEETING ROOMS WHERE REQUIRED – MINIMUM NUMBER SHALL BE EQUAL TO 4% OF SEATING BUT NOT LESS THAN 2

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900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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RECORD DRAWINGS

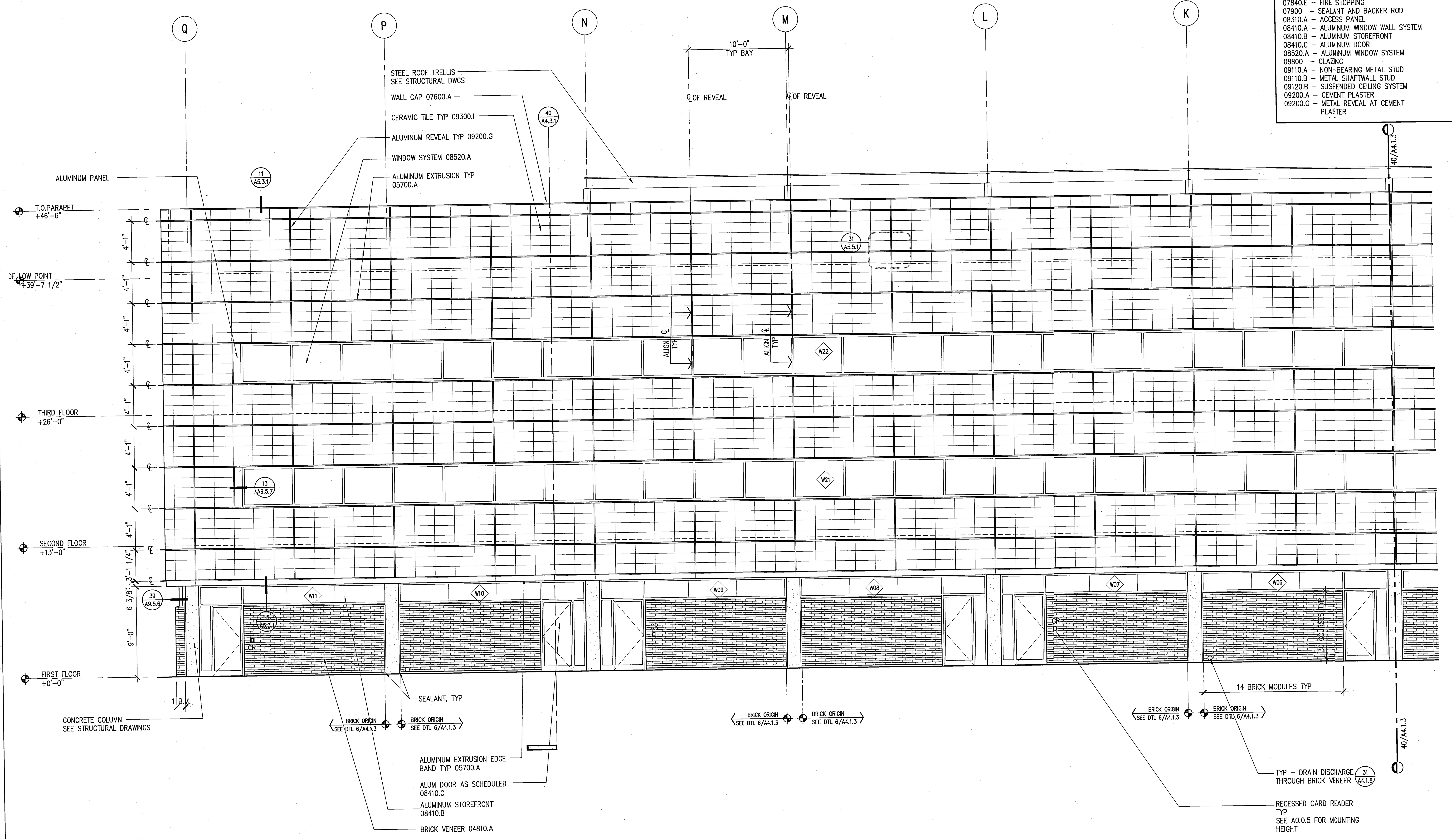
Key Plan
Project North

Drawing Title
PARTIAL EAST ELEVATION (SURGE BUILDING)
1/4" = 1'-0"

Scale 3193000
Project Number 06OCT00
Baseline Date
A4.1.3
Drawing Number

KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER



4U PARTIAL EAST ELEVATION
SURGE BUILDING (SECOND AND THIRD FLOOR NOT IN TRUE ELEVATION)
SCALE: SCALE: 1/4" = 1'-0"

Plt: Sheet Filename: I:\JOBS\3193000\SHT\A4104.dwg
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Plt Setup Script: Plot View:
Plt Date: 03/11/02 16:29

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CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

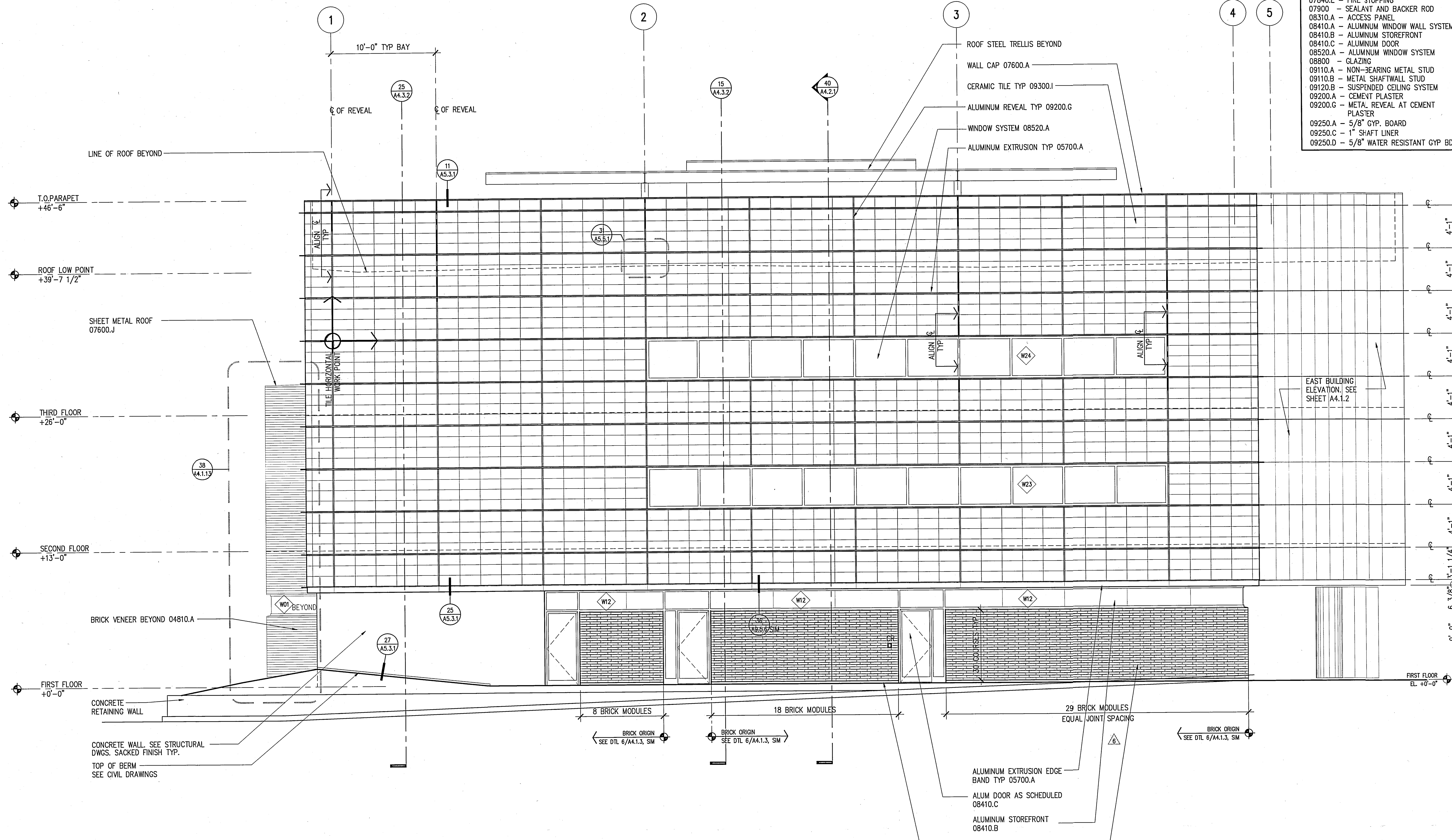
Drawing Title

PARTIAL EAST ELEVATION (SURGE BUILDING)

1/4" = 1'-0"
Scale
3193000
Project Number
060CT00
Baseline Date
A4.1.4
Drawing Number

KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD



40 SOUTH ELEVATION
SURGE BUILDING (TRUE ELEVATION)
SCALE: SCALE: 1/4" = 1'-0"

Plot Sheet Filename: I:\JOBS\3193000\SHT\A4105.dwg
XREF Filename(s): UCR_tblk ucsDEL1 keynotes
Plot Setup Script:
Plot Date: 03/11/02 16:30 Plot View:

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Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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Seals and Signatures

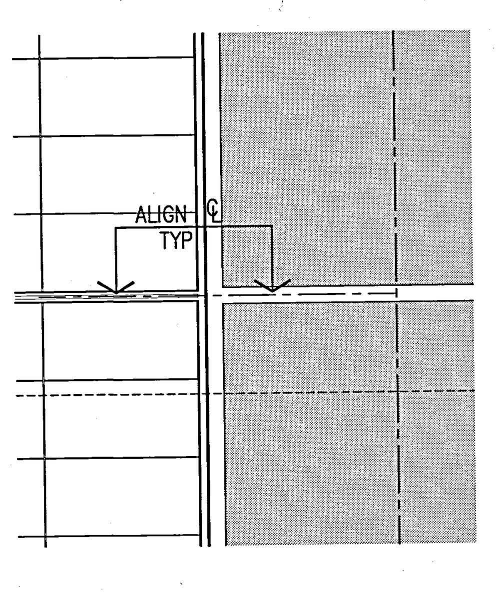
RECORD DRAWINGS

Key Plan

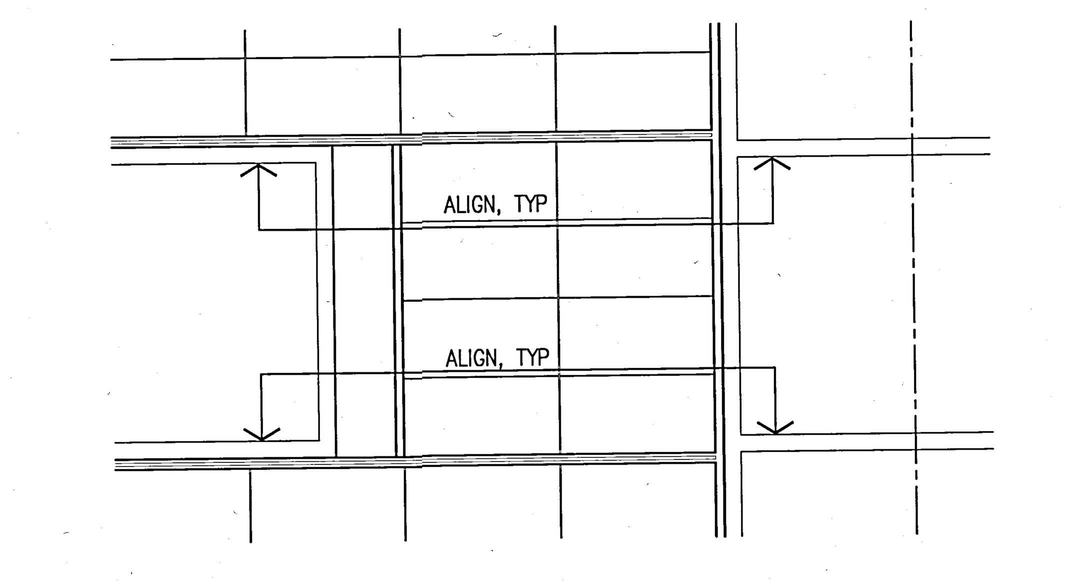
Project North

Drawing Title
SOUTH ELEVATION
(SURGE BUILDING)

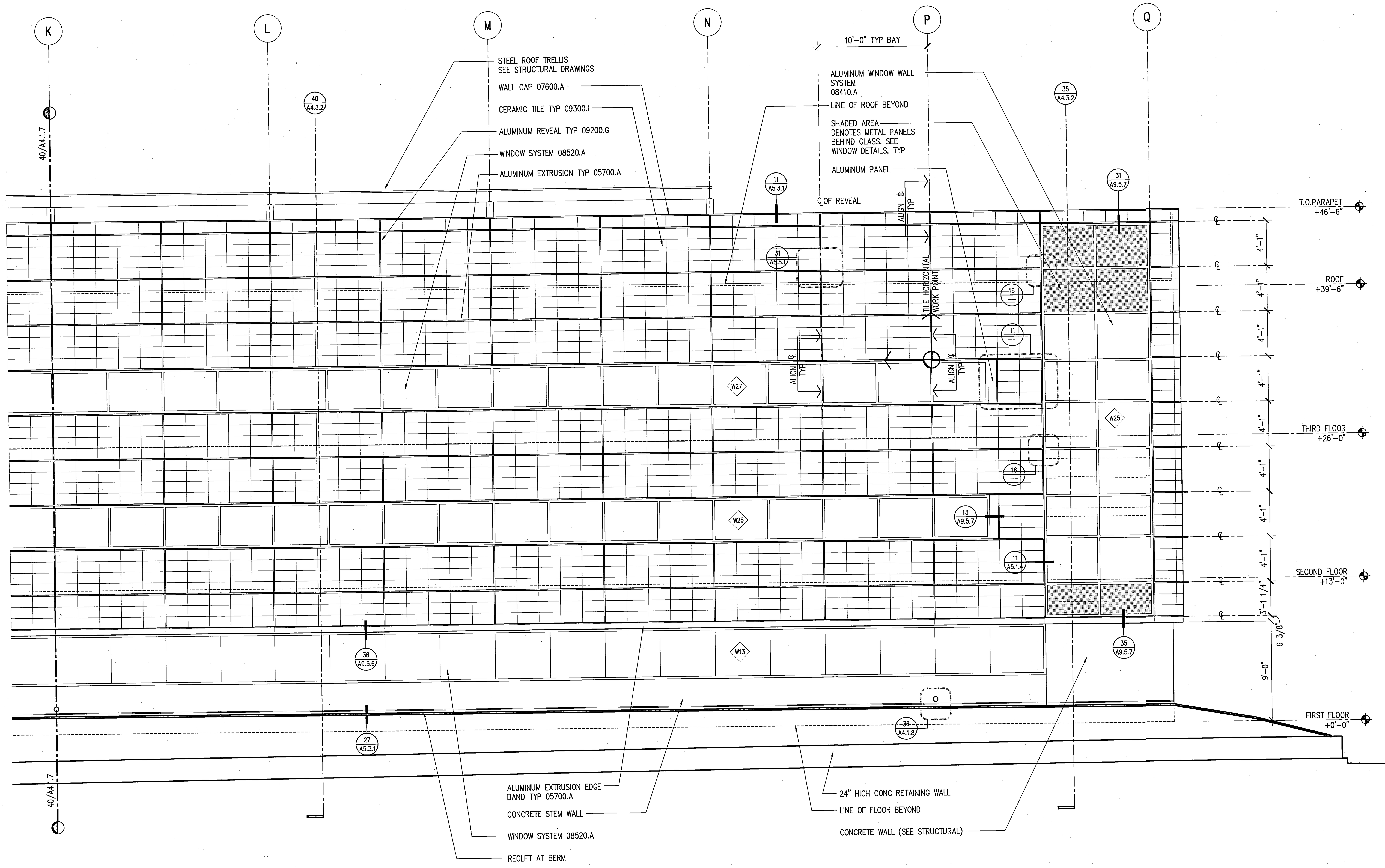
1/4" = 1'-0"
Scale
3193000
Project Number
06OCT00
Baseline Date
A4.1.5
Drawing Number



(16) WINDOW TO EXTRUSION ALIGNMENT
SCALE: 1/2" = 1'-0"



(11) WINDOW MULLION ALIGNMENT
SCALE: 1/2" = 1'-0"



(40) PARTIAL WEST ELEVATION
SURGE BUILDING
SCALE: 1/4" = 1'-0"

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XREF Filename(s): UCR_Tblk ucdEL1 keynotes
Plot Setup Script:
Plot Date: 03/11/02 16:31 Plot View:

KEYED NOTES

03300 – CAST N PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACCUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

GENERAL NOTES

1. SEE STRUCTURAL DWGS. FOR TOP OF STEEL (TOS) ELEVATIONS.
2. TYPICAL CONDITIONS APPLY AT ALL DETAILS.
3. CALL-OUTS SHOWN ON ONE DETAIL SHALL APPLY TO ALL WHERE SAME CONDITIONS EXIST, U.O.N.
4. CASE WORK (N.I.C.). ALL BUILT IN CASE WORK PROVIDING WORK STATIONS ARE TO BE SUBMITTED TO DSA PRIOR TO FABRICATION. 5% MIN. TO BE PROVIDED SHALL BE ACCESSIBLE.
5. 5 % OF ALL FURNITURE PROVIDED SHALL BE ACCESSIBLE.
6. PROVIDE STAIR SIGNAGE AT BOTH SIDES OF DOORS 133A; 103A; 240A; 203A; 338A & 303A AS PER SEC. 1117B.5.2. THE INFORMATION SHALL BE PRESENTED USING RAISED ARABIC NUMERALS AND RAISED BRAILLE SYMBOLS. THE SIGN SHALL BE LOCATED 5 FT. A.F.F.. THE SIGN SHALL BE LOCATED IMMEDIATELY ADJACENT TO THE DOOR ON THE STRIKE SIDE. (SEC. 1133B.4.3.).
7. PROVIDE PORTABLE ASSISTIVE LISTENING DEVICES IN ALL CONFERENCE AND MEETING ROOMS WHERE REQUIRED – MINIMUM NUMBER SHALL BE EQUAL TO 4% OF SEATING BUT NOT LESS THAN 2

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UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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Seals and Signatures

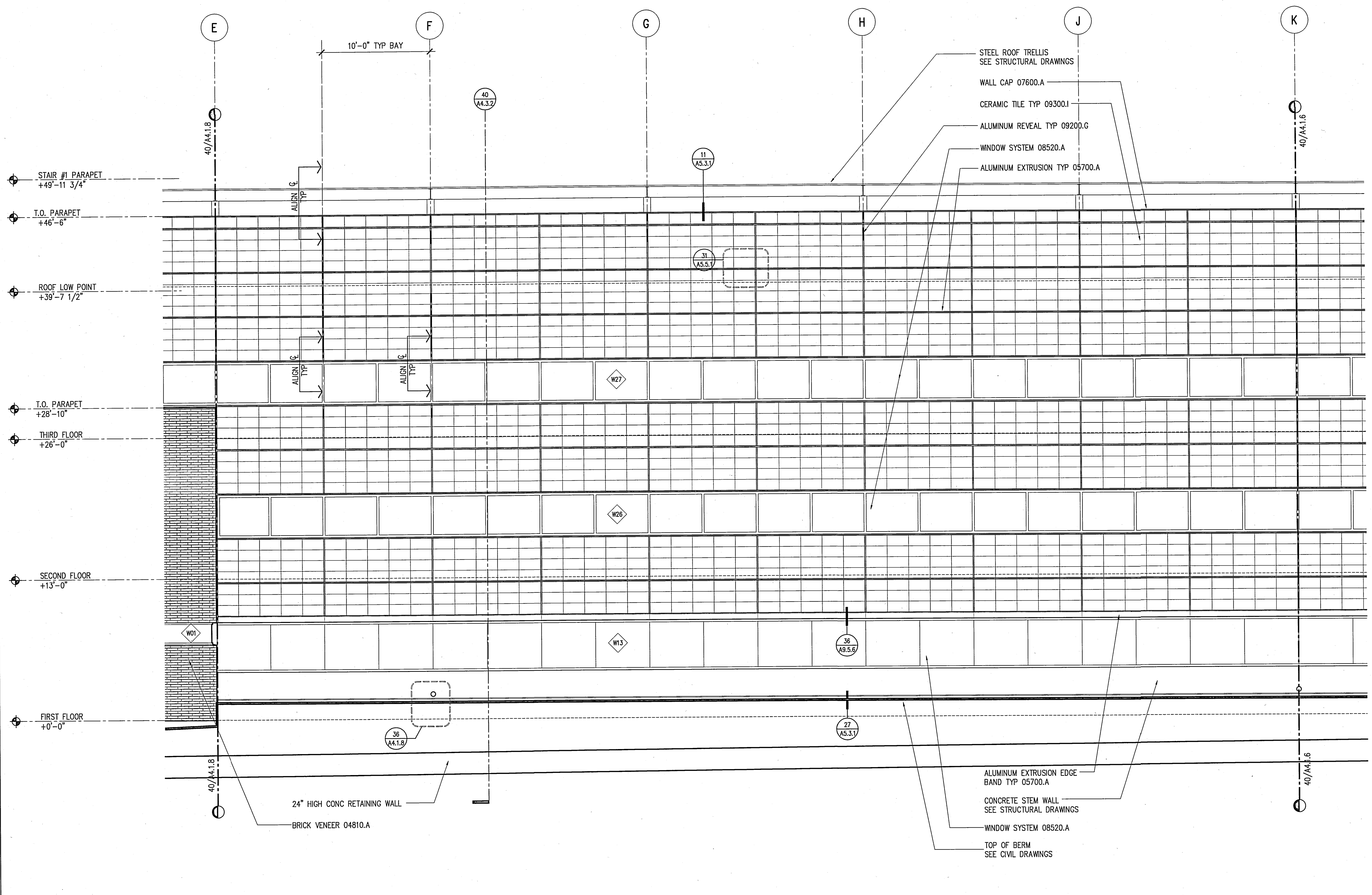
RECORD DRAWINGS

Key Plan

Project North

Drawing Title
PARTIAL WEST ELEVATION (SURGE BUILDING)

1/4" = 1'-0"
Scale
3193000
Project Number
060CT00
Baseline Date
A4.1.6
Drawing Number



40 PARTIAL WEST ELEVATION
SURGE BUILDING
SCALE: SCALE: 1/4" = 1'-0"

Plot Sheet Filename: I:\JOBS\3193000\SHT\A4107.dwg
XREF Filename(s): UCR_tblk ucdEL1 keynotes
Plot Setup Script: Plot View:
Plot Date: 03/11/02 16:32

KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

GENERAL NOTES

1. SEE STRUCTURAL DWGS. FOR TOP OF STEEL (TOS) ELEVATIONS.
2. TYPICAL CONDITIONS APPLY AT ALL DETAILS.
3. CALL-OUTS SHOWN ON ONE DETAIL SHALL APPLY TO ALL WHERE SAME CONDITIONS EXIST, U.O.N.
4. CASE WORK (N.I.C.). ALL BUILT IN CASE WORK PROVIDING WORK STATIONS ARE TO BE SUBMITTED TO DSA PRIOR TO FABRICATION. 5% MIN. TO BE PROVIDED SHALL BE ACCESSIBLE.
5. 5 % OF ALL FURNITURE PROVIDED SHALL BE ACCESSIBLE.
6. PROVIDE STAIR SIGNAGE AT BOTH SIDES OF DOORS 133A; 103A; 240A; 203A; 338A & 303A AS PER SEC. 1117B.5.2. THE INFORMATION SHALL BE PRESENTED USING RAISED ARABIC NUMERALS AND RAISED BRAILLE SYMBOLS. THE SIGN SHALL BE LOCATED 5 FT. A.F.F.. THE SIGN SHALL BE LOCATED IMMEDIATELY ADJACENT TO THE DOOR ON THE STRIKE SIDE. (SEC. 1133B.4.3.).
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900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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Seals and Signatures

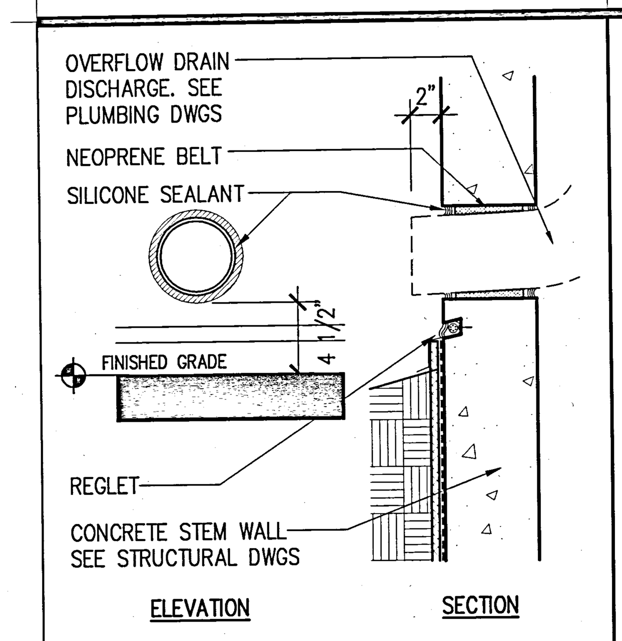
RECORD DRAWINGS

Key Plan

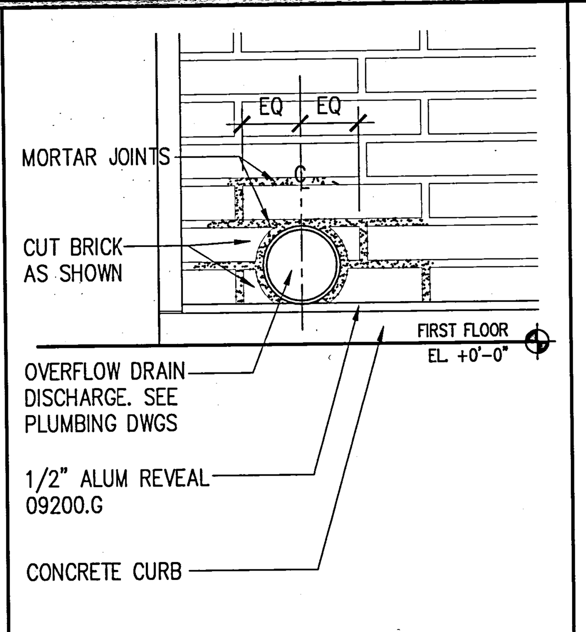
Project North

Drawing Title
PARTIAL WEST ELEVATIONS (SURGE BUILDING)

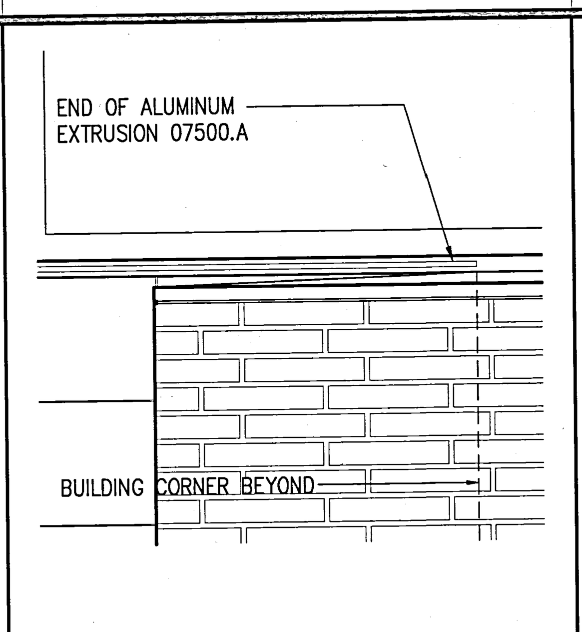
1/4" = 1'-0"
Scale
3193000
Project Number
060CT00
Baseline Date
A4.1.7
Drawing Number



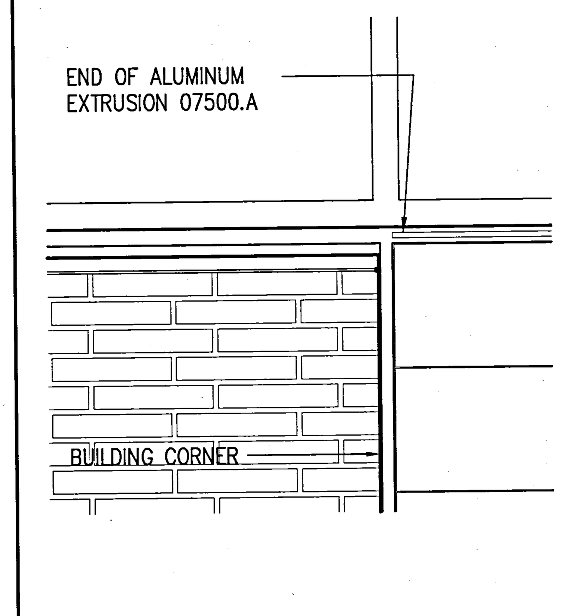
36 TYP DRAIN DISCHARGE AT CONCRETE WALL SCALE: SCALE: 1 1/2" = 1'-0"



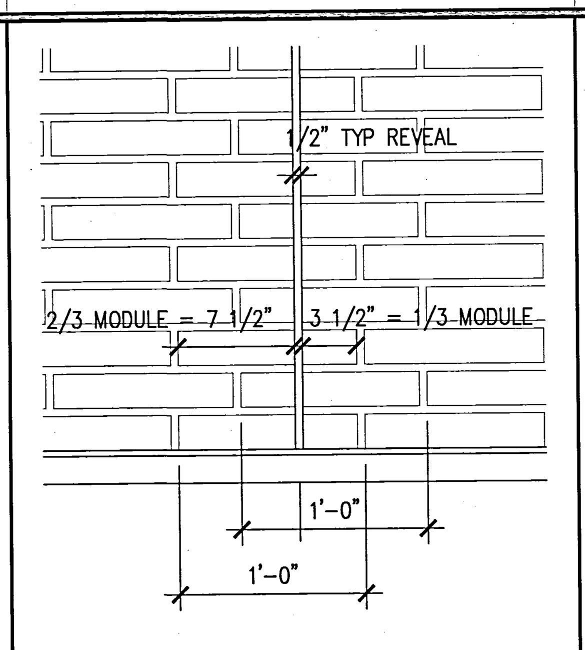
31 TYP DRAIN DISCHARGE AT BRICK VENEER SCALE: SCALE: 1 1/2" = 1'-0"



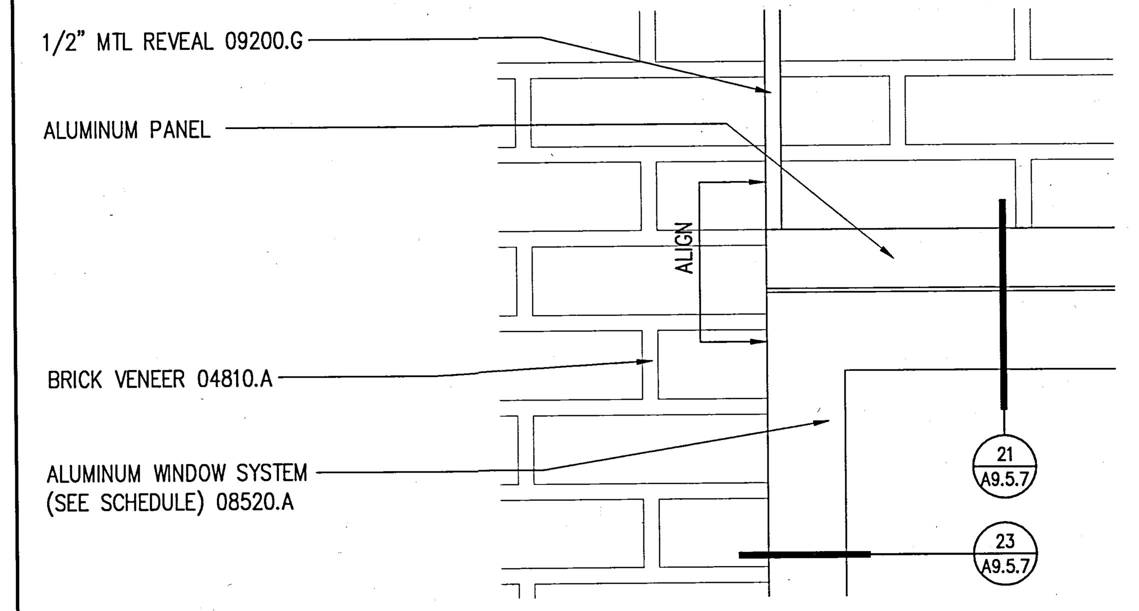
27 ALUM EXTRUSION TERMINATION SCALE: SCALE: 1" = 1'-0"



21 ALUM EXTRUSION TERMINATION SCALE: SCALE: 1" = 1'-0"



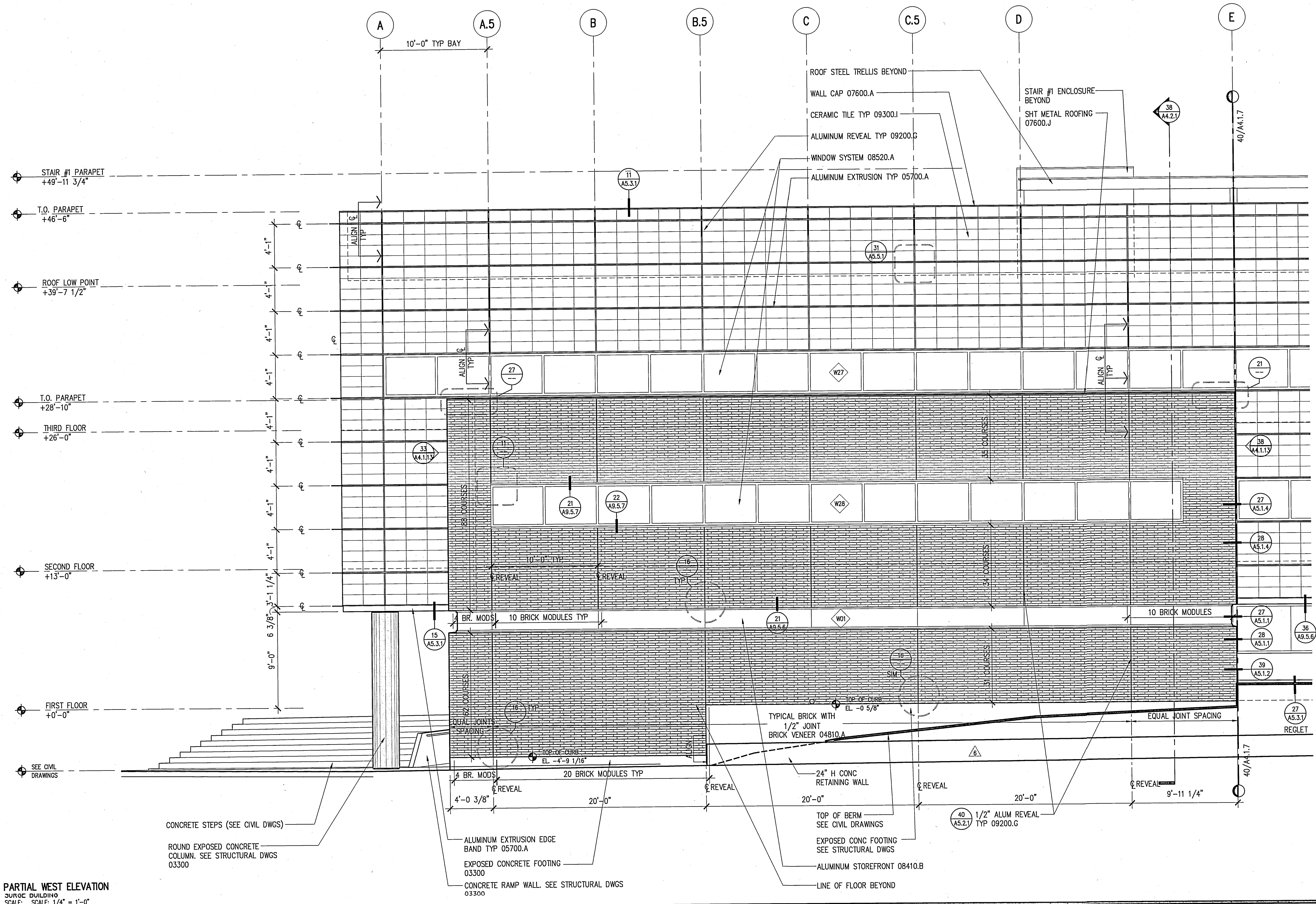
16 BRICK AT REVEAL TYPICAL SCALE: SCALE: 1 1/2" = 1'-0"



11 ENLARGED ELEVATION REVEAL AT WINDOW FRAME SCALE: SCALE: 3" = 1'-0"

KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR



10 PARTIAL WEST ELEVATION SURGE BUILDING SCALE: SCALE: 1/4" = 1'-0"

GENERAL NOTES

1. SEE STRUCTURAL DWGS. FOR TOP OF STEEL (TOS) ELEVATIONS.
2. TYPICAL CONDITIONS APPLY AT ALL DETAILS.
3. CALL-OUTS SHOWN ON ONE DETAIL SHALL APPLY TO ALL WHERE SAME CONDITIONS EXIST, U.O.N.
4. CASE WORK (N.I.C.). ALL BUILT IN CASE WORK PROVIDING WORK STATIONS ARE TO BE SUBMITTED TO DSA PRIOR TO FABRICATION. 5% MIN. TO BE PROVIDED SHALL BE ACCESSIBLE.
5. 5 % OF ALL FURNITURE PROVIDED SHALL BE ACCESSIBLE.
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SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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Seals and Signatures

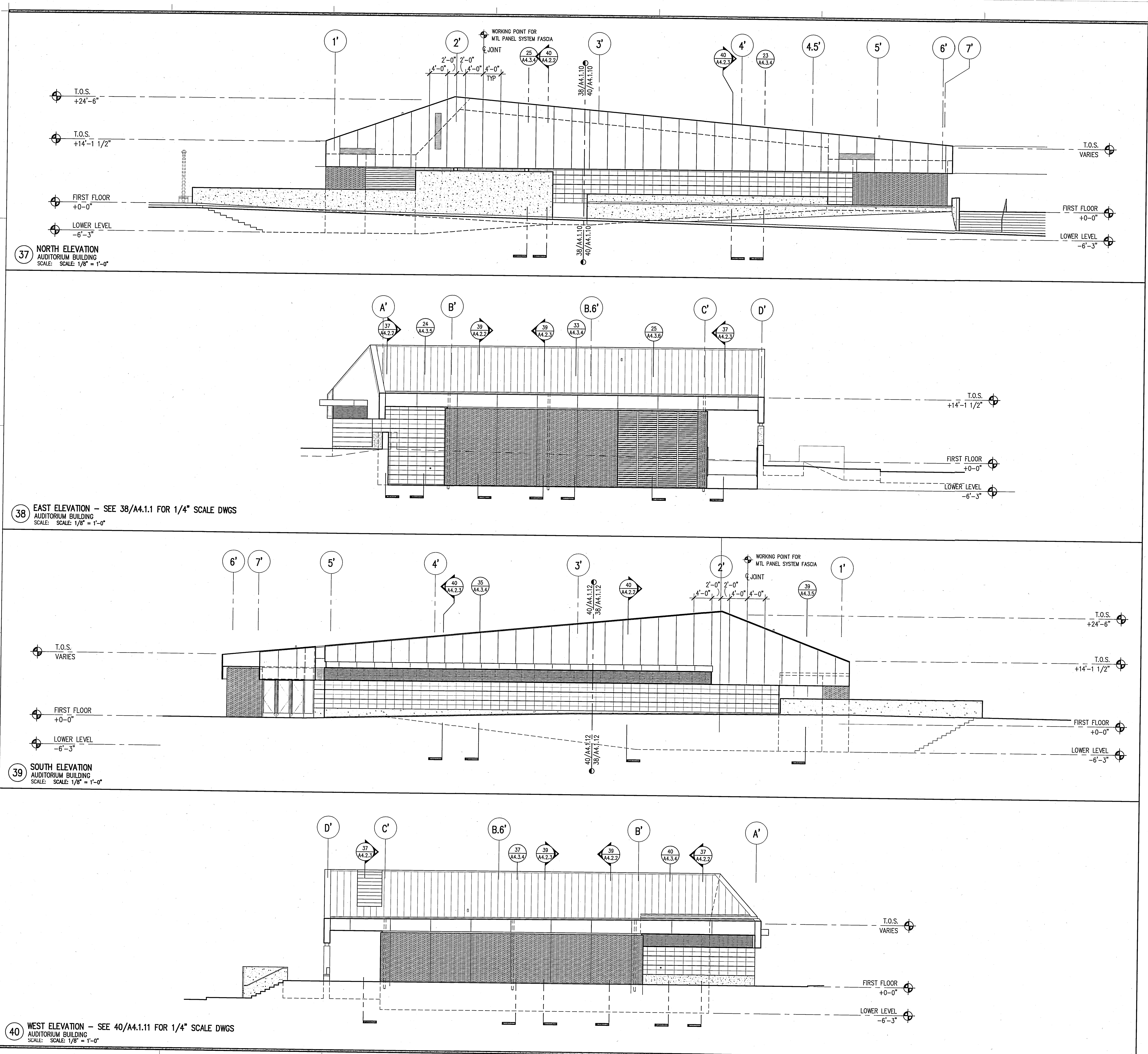
RECORD DRAWINGS

Key Plan
Project North

Drawing Title
PARTIAL WEST ELEVATION (SURGE BUILDING)

1/4" = 1'-0"
Scale
3193000
Project Number
06OCT00
Baseline Date
A4.1.8
Drawing Number

Plot Sheet Filename: I:\JOBS\3193000\SHT\A4108.dwg
XREF Filename(s): UCR_tblk ucdEL1 keynotes
Plot Setup Script: Plot View:
Plot Date: 03/11/02 16:33



KEYED NOTES

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CAMPUS SURGE BUILDING

UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for | Rev Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

EXTERIOR REFERENCE ELEVATIONS (AUDITORIUM)

1/8" = 1'-0"

Scale

3193000

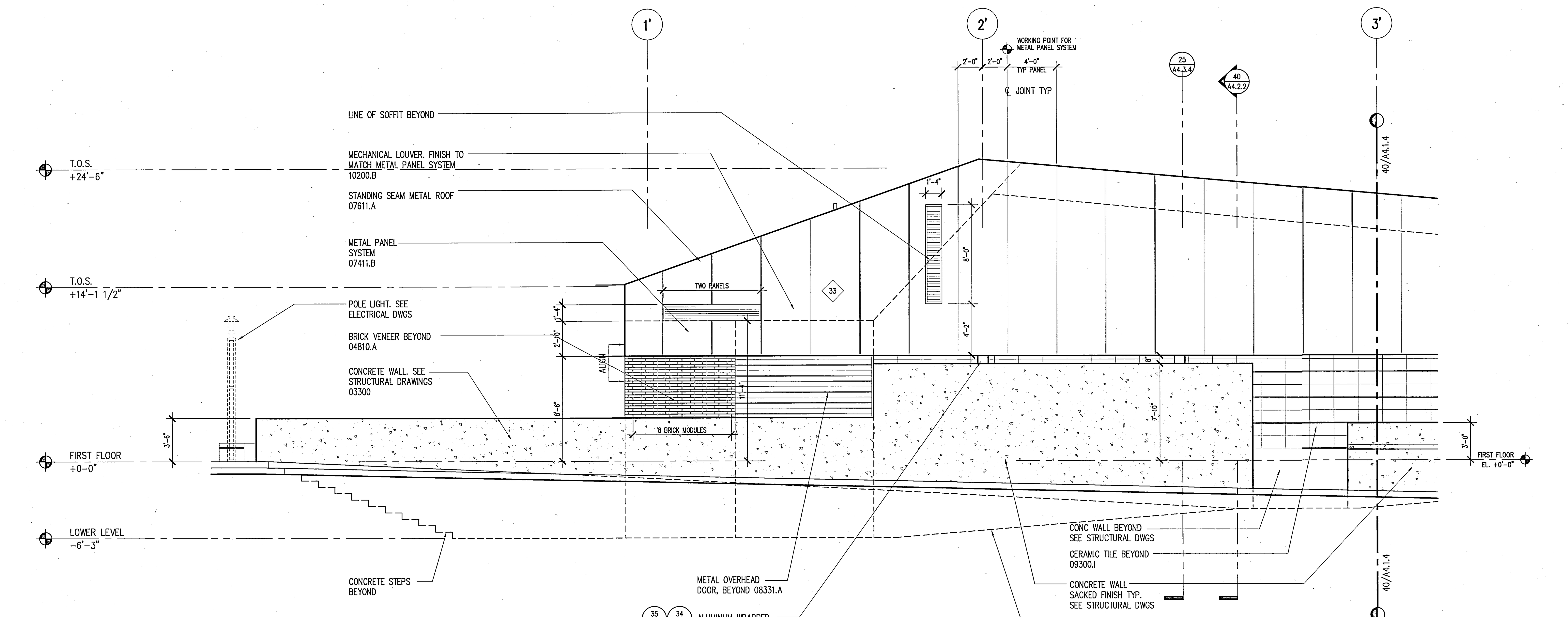
Project Number

06OCT00

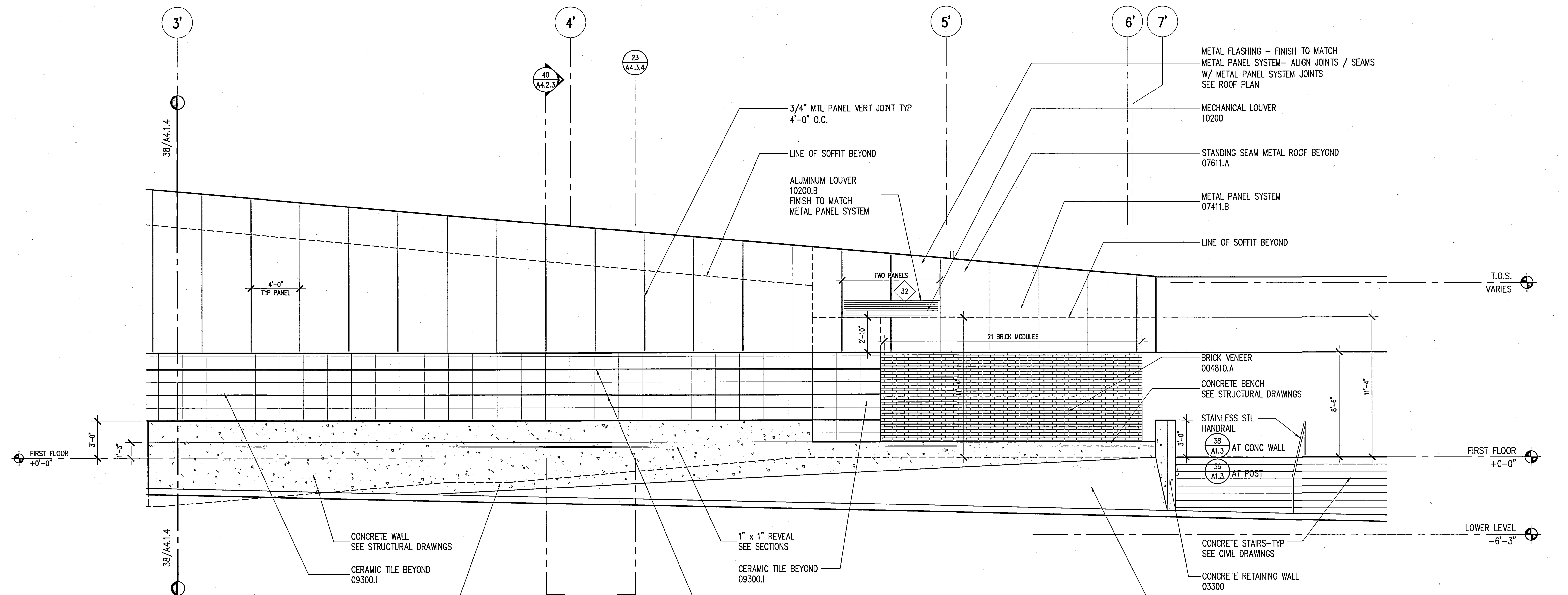
Baseline Date

A4.1.9

Drawing Number



38 PARTIAL NORTH ELEVATION
AUDITORIUM BUILDING
SCALE: 1/4" = 1'-0"



40 PARTIAL NORTH ELEVATION
AUDITORIUM BUILDING

KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

GENERAL NOTES

1. SEE STRUCTURAL DWGS. FOR TOP OF STEEL (TOS) ELEVATIONS.
2. TYPICAL CONDITIONS APPLY AT ALL DETAILS.
3. CALL-OUTS SHOWN ON ONE DETAIL SHALL APPLY TO ALL WHERE SAME CONDITIONS EXIST, U.O.N.
4. CASE WORK (N.I.C.). ALL BUILT IN CASE WORK PROVIDING WORK STATIONS ARE TO BE SUBMITTED TO DSA PRIOR TO FABRICATION. 5% MIN. TO BE PROVIDED SHALL BE ACCESSIBLE.
5. 5 % OF ALL FURNITURE PROVIDED SHALL BE ACCESSIBLE.
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7. PROVIDE PORTABLE ASSISTIVE LISTENING DEVICES IN ALL CONFERENCE AND MEETING ROOMS WHERE REQUIRED – MINIMUM NUMBER SHALL BE EQUAL TO 4% OF SEATING BUT NOT LESS THAN 2

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Key Plan

Project North

Drawing Title

PARTIAL NORTH ELEVATIONS (AUDITORIUM)

1/4" = 1'-0"

Scale

3193000

Project Number

06OCT00

Baseline Date

A4.1.10

Drawing Number

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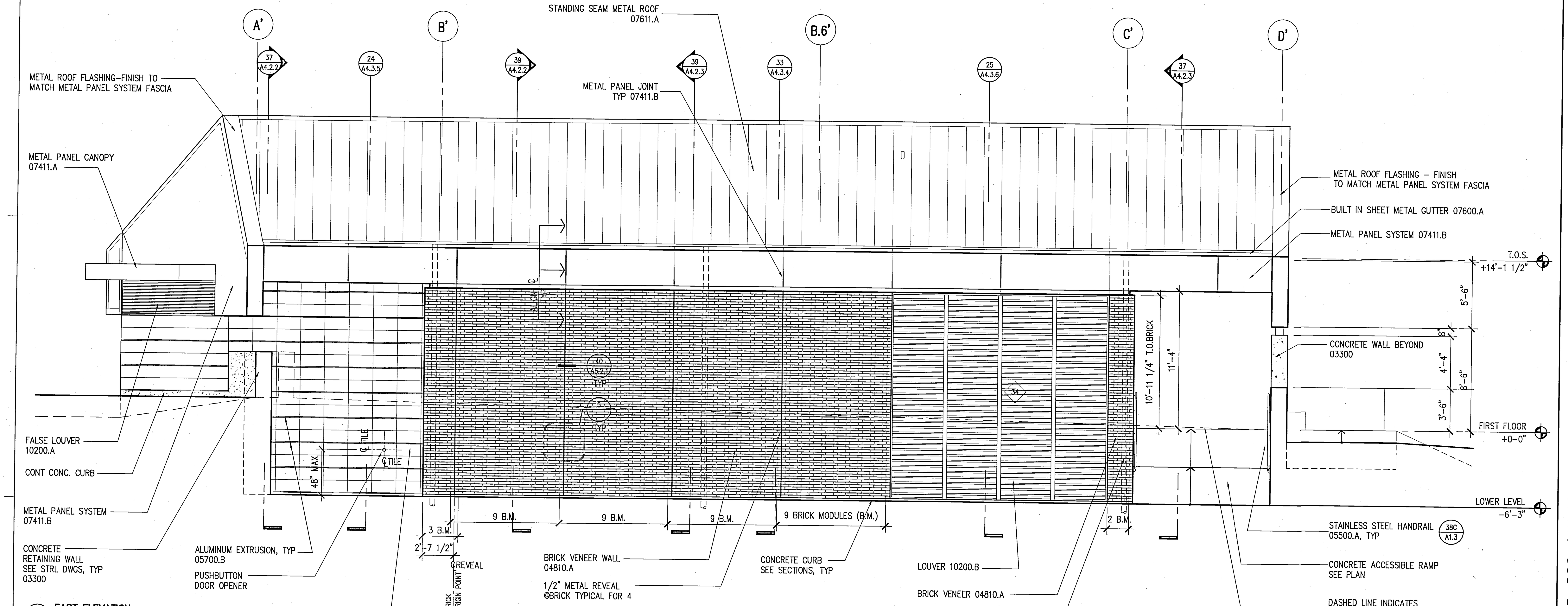
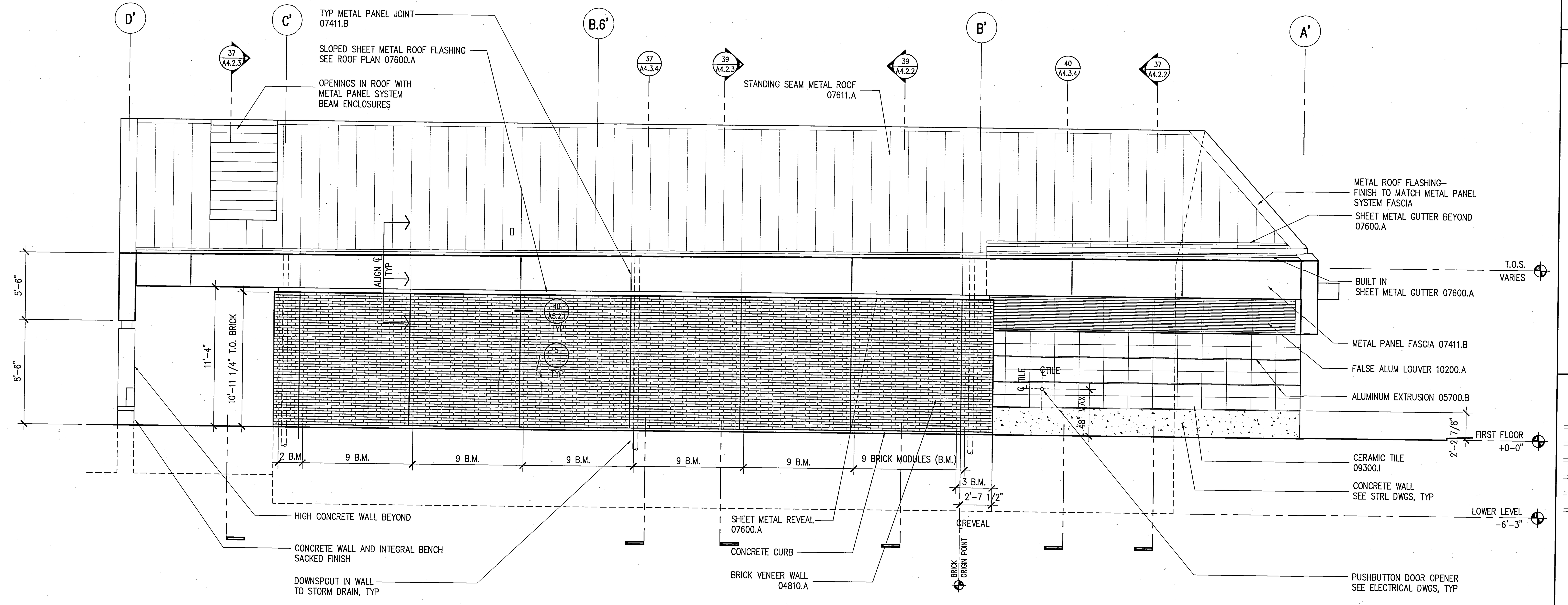
06/21/00



38 EAST ELEVATION
AUDITORIUM BUILDING
SCALE: 1/4" = 1'-0"



40 WEST ELEVATION
AUDITORIUM BUILDING
SCALE: 1/4" = 1'-0"

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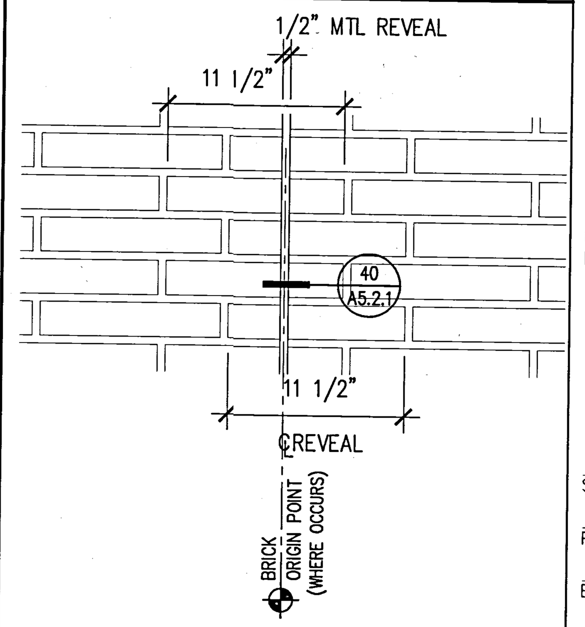

5 TYP BRICK PATTERN AT REVEAL
AUDITORIUM BUILDING
SCALE: 1 1/2" = 1'-0"

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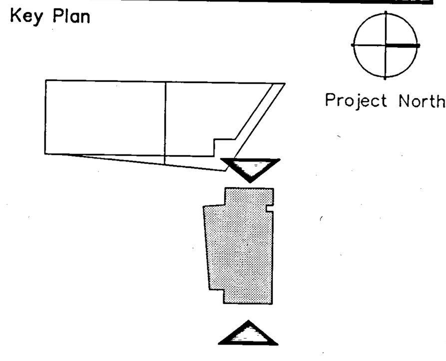
RECORD DRAWINGS

Key Plan



Drawing Title
EXTERIOR ELEVATIONS
(AUDITORIUM)

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1/4" = 1'-0"
Project Number
3193000
Baseline Date
06OCT00
Drawing Number
A4.1.11

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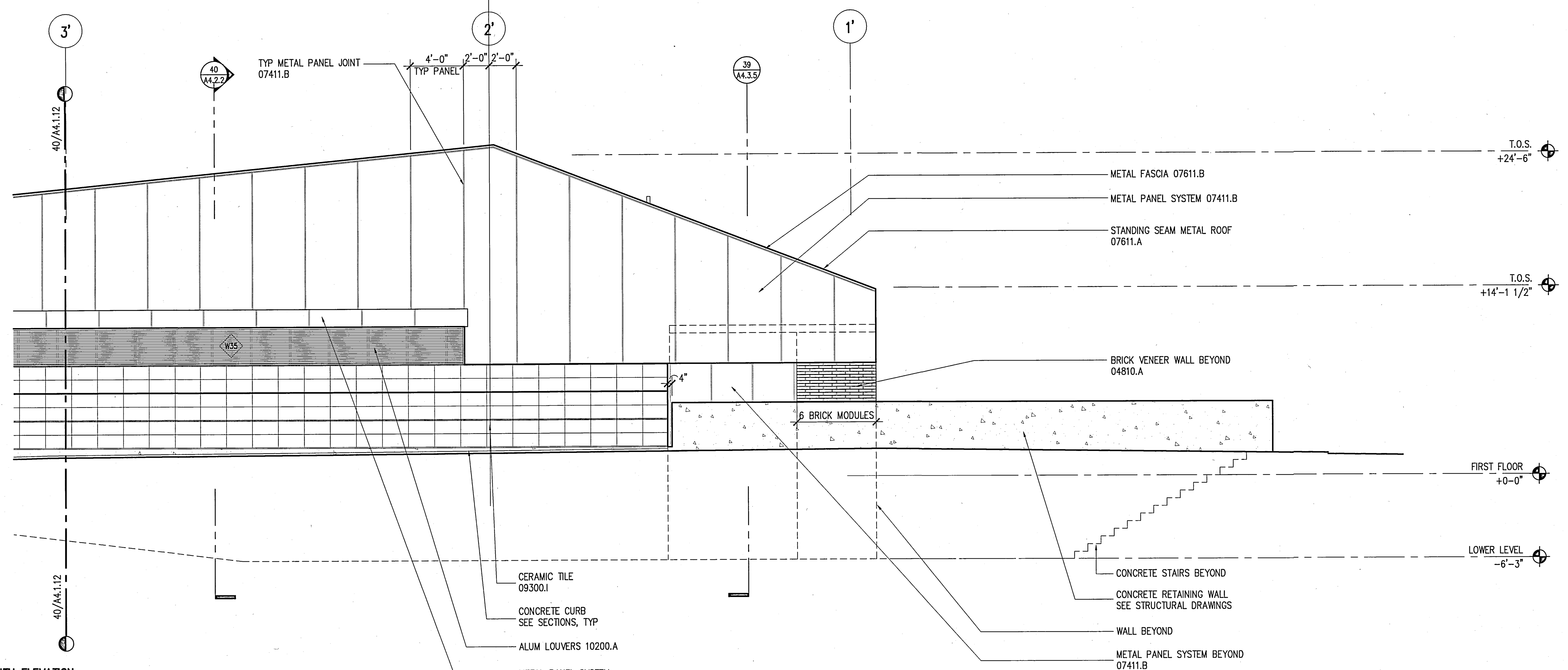
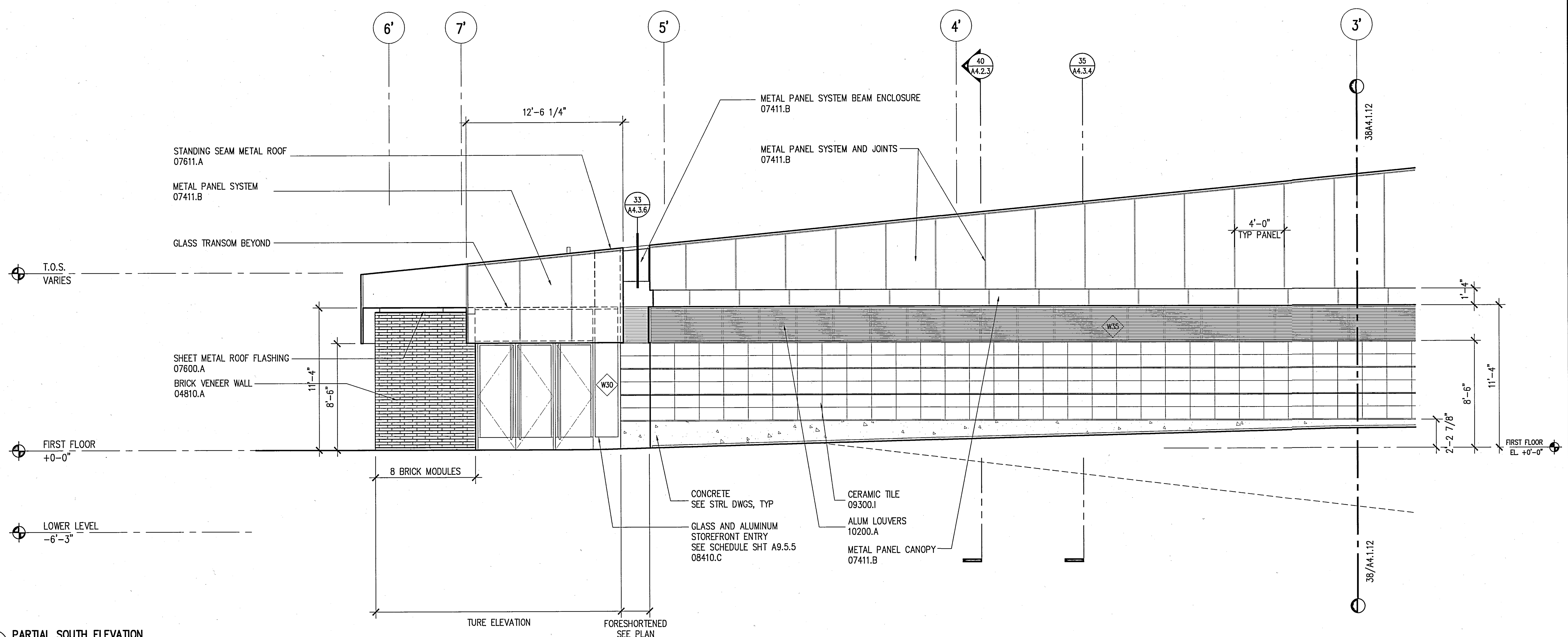
06/21/00



38 PARTIAL SOUTH ELEVATION
AUDITORIUM BUILDING (NOT A TRUE ELEVATION U.O.N.)
SCALE: SCALE: 1/4" = 1'-0"



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AUDITORIUM BUILDING (NOT A TRUE ELEVATION U.O.N.)
SCALE: SCALE: 1/4" = 1'-0"

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09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
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GENERAL NOTES

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL SOUTH ELEVATIONS (AUDITORIUM)

1/4" = 1'-0"

Scale

3193000

Project Number

06OCT00

Baseline Date

A4.1.12

Drawing Number

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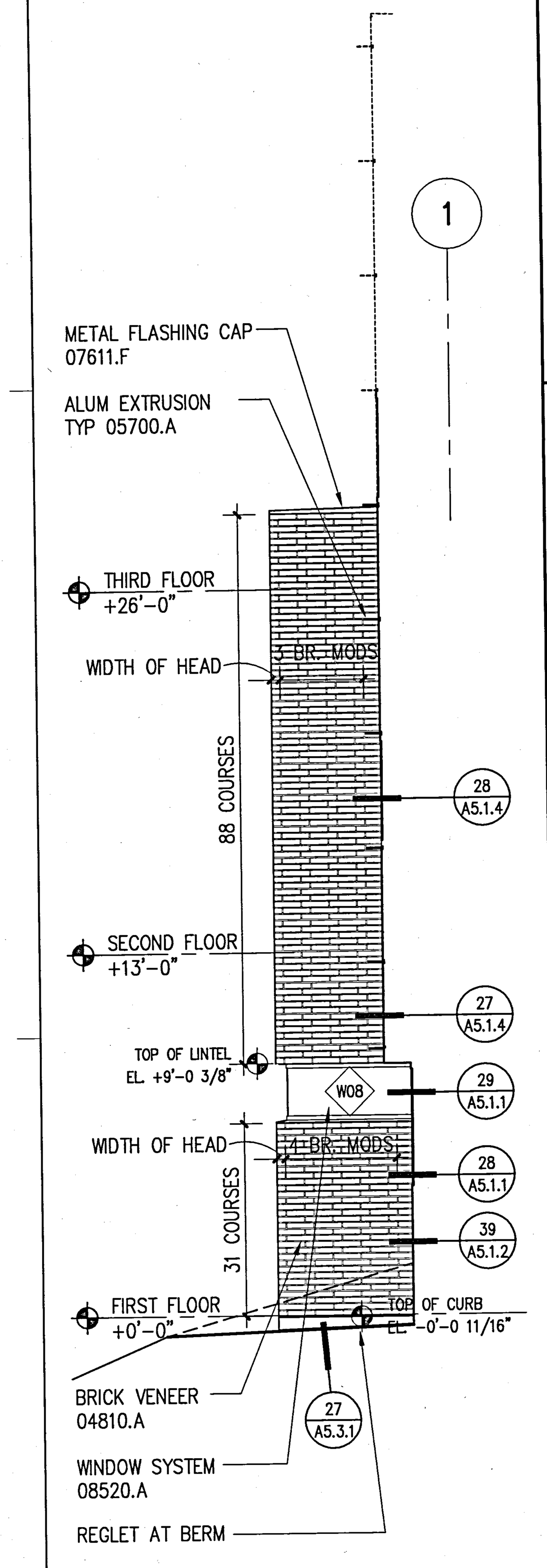
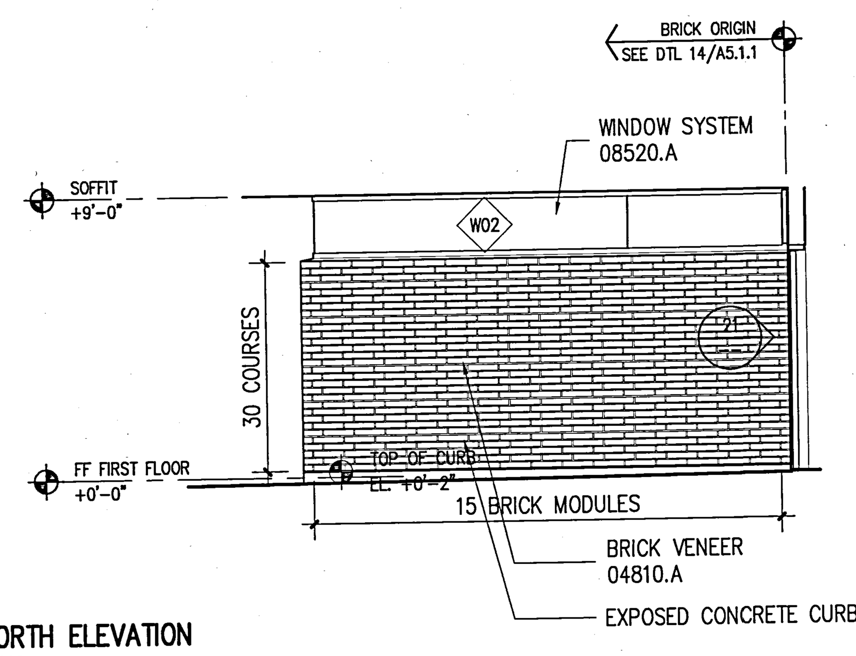
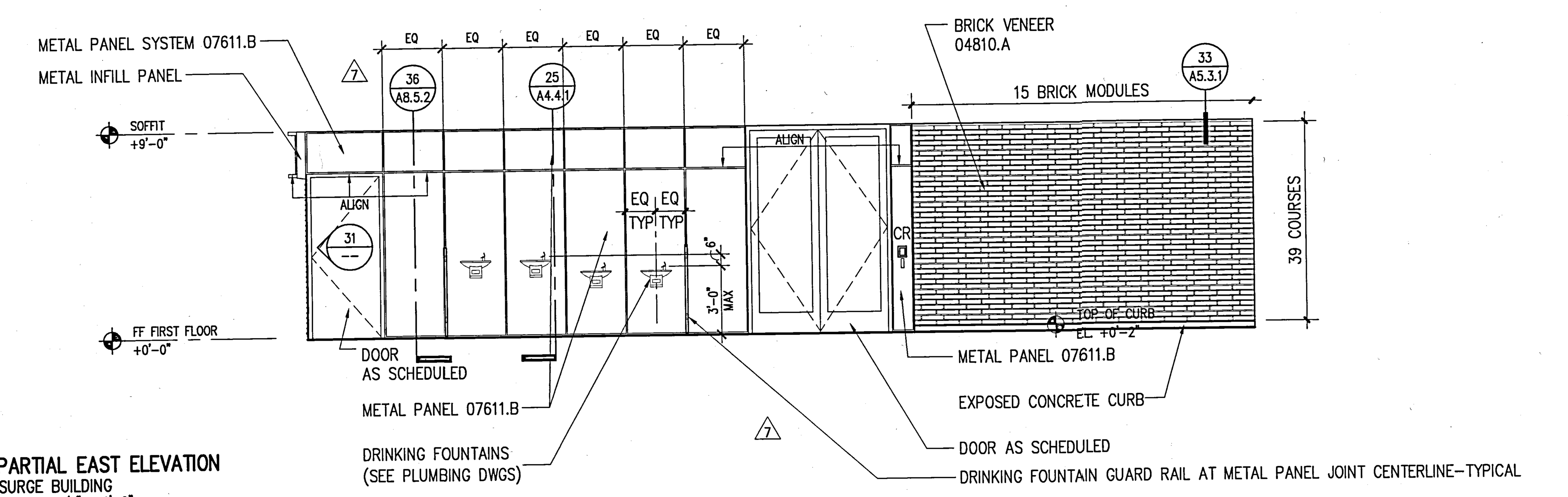
06/21/00



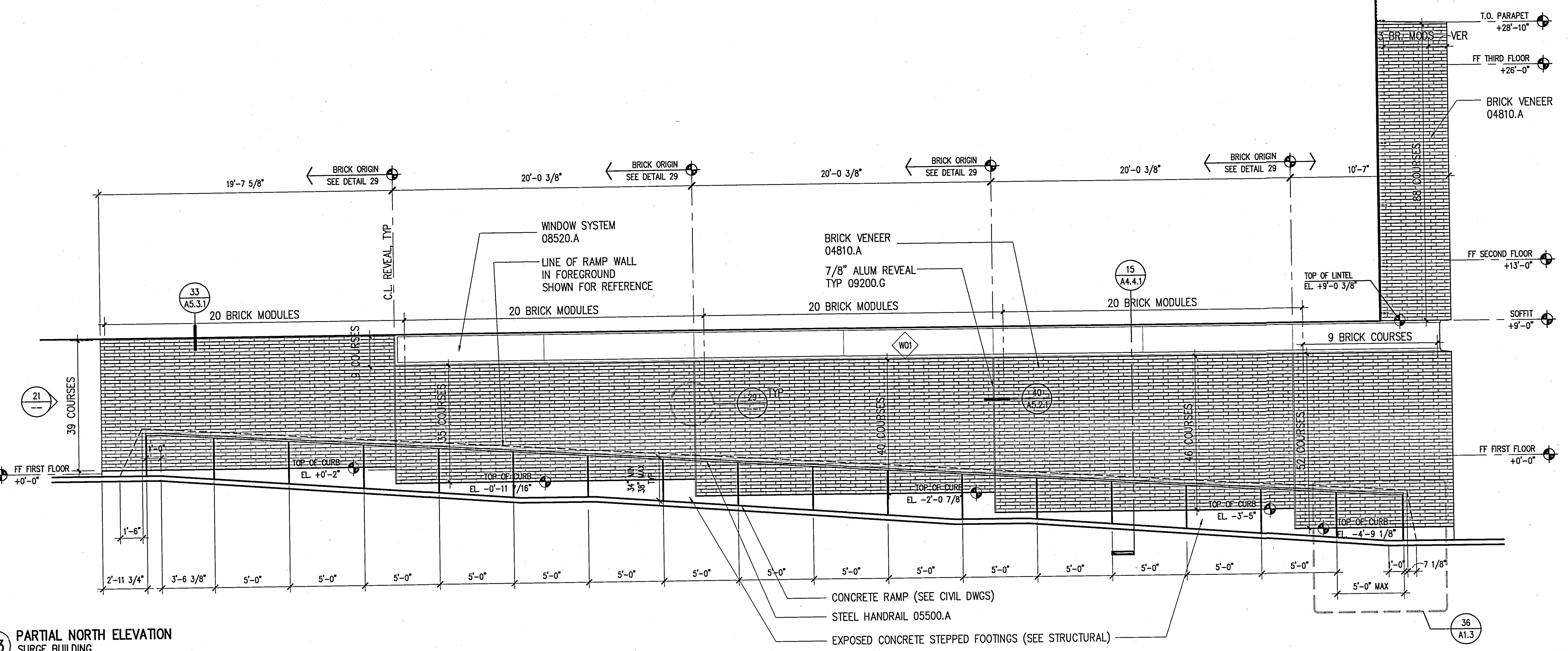
38 PARTIAL SOUTH ELEVATION
SURGE BUILDING
SCALE: 1/4" = 1'-0"



31 PARTIAL NORTH ELEVATION
SURGE BUILDING
SCALE: 1/4" = 1'-0"



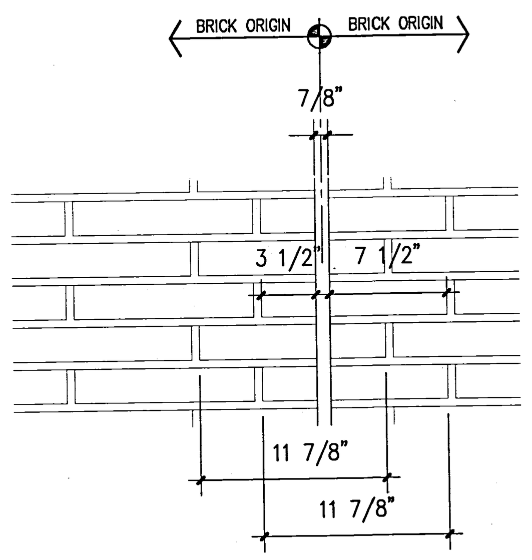
21 PARTIAL EAST ELEVATION
SURGE BUILDING
SCALE: 1/4" = 1'-0"



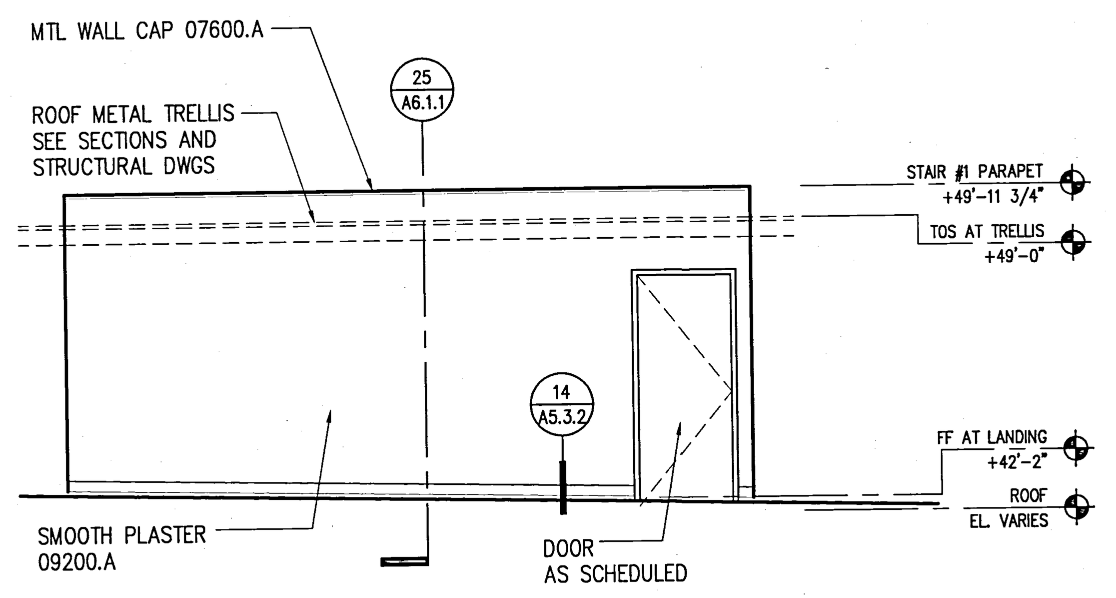
33 PARTIAL NORTH ELEVATION
SURGE BUILDING
SCALE: 1/4" = 1'-0"

39 NOT USED
SCALE:

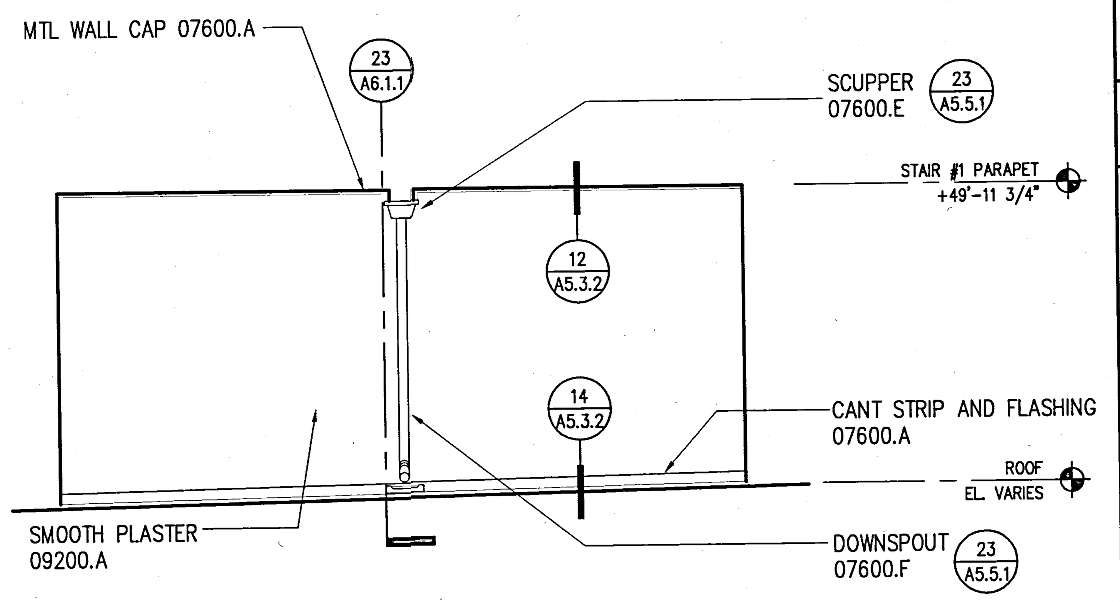
34 NOT USED
SCALE:



29 BRICK PATTERN AT REVEAL
SCALE: 1 1/2" = 1'-0"



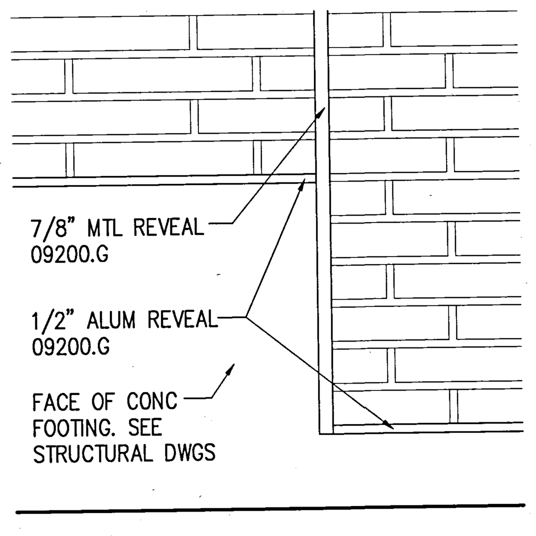
24 DOGHOUSE SOUTH ELEVATION
SURGE BUILDING
SCALE: 1/4" = 1'-0"



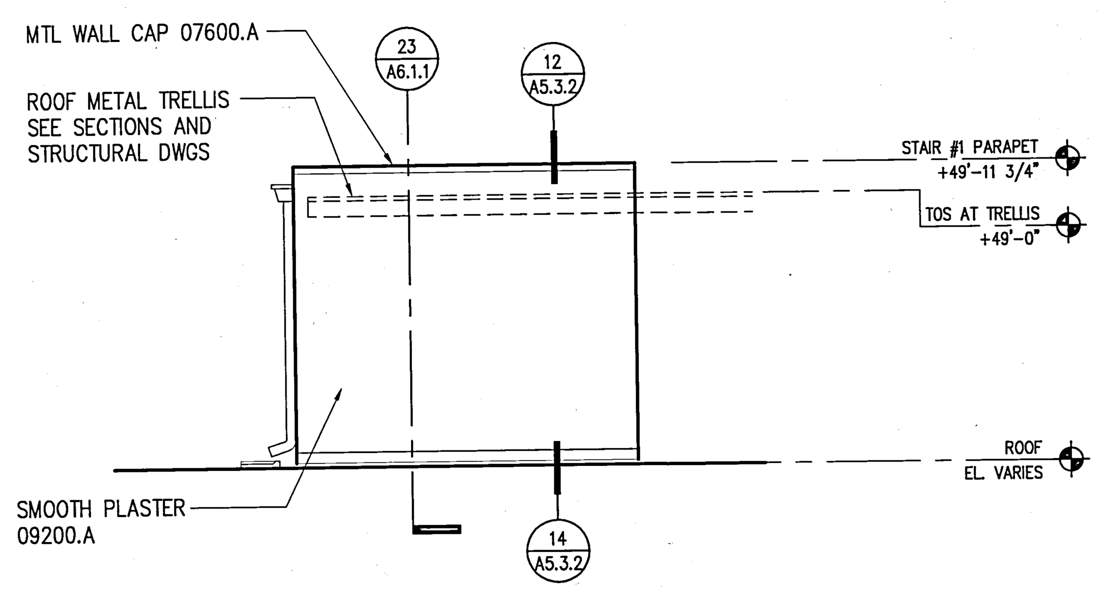
14 DOGHOUSE NORTH ELEVATION
SURGE BUILDING
SCALE: 1/4" = 1'-0"

40 NOT USED
SCALE:

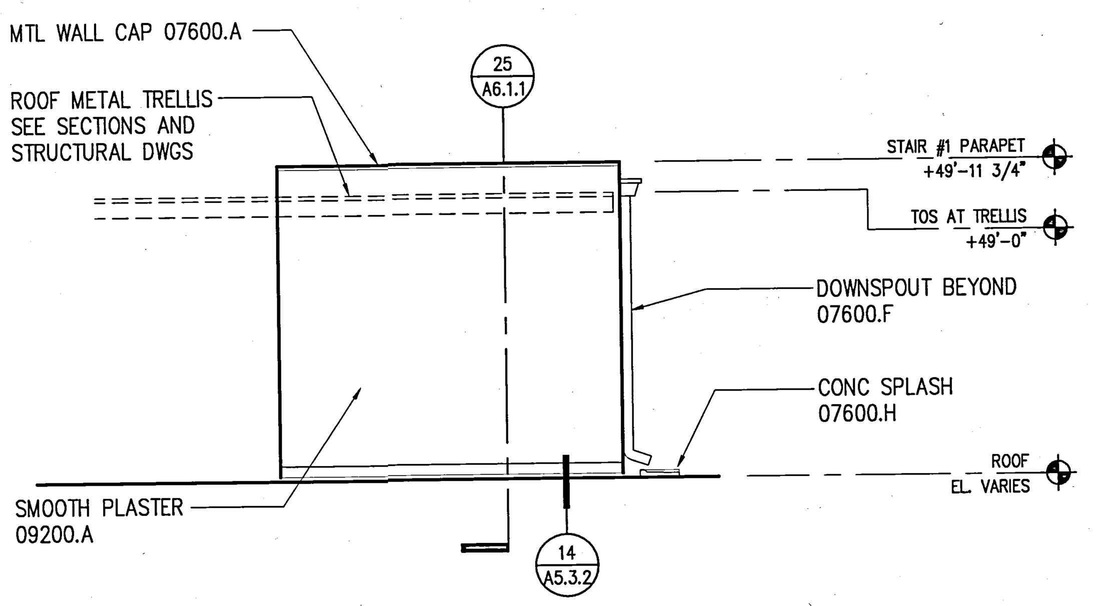
35 NOT USED
SCALE:



30 BRICK REVEAL AT STEPPED FOOTING
SCALE: 1 1/2" = 1'-0"



25 DOGHOUSE WEST ELEVATION
SURGE BUILDING
SCALE: 1/4" = 1'-0"



15 DOGHOUSE EAST ELEVATION
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09250.J – GYPSUM SHEATHING
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09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACCUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

GENERAL NOTES

1. SEE STRUCTURAL DWGS. FOR TOP OF STEEL (TOS) ELEVATIONS.
2. TYPICAL CONDITIONS APPLY AT ALL DETAILS.
3. CALL-OUTS SHOWN ON ONE DETAIL SHALL APPLY TO ALL WHERE SAME CONDITIONS EXIST, U.O.N.
4. CASE WORK (N.I.C.).
ALL BUILT IN CASE WORK PROVIDING WORK STATIONS ARE TO BE SUBMITTED TO DSA PRIOR TO FABRICATION. 5% MIN. TO BE PROVIDED SHALL BE ACCESSIBLE.
5. 5 % OF ALL FURNITURE PROVIDED SHALL BE ACCESSIBLE.
6. PROVIDE STAIR SIGNAGE AT BOTH SIDES OF DOORS 133A; 103A; 240A; 203A; 338A & 303A AS PER SEC. 1117B.5.2. THE INFORMATION SHALL BE PRESENTED USING RAISED ARABIC NUMERALS AND RAISED BRAILLE SYMBOLS. THE SIGN SHALL BE LOCATED 5 FT. A.F.F.. THE SIGN SHALL BE LOCATED INMEDIATELY ADJACENT TO THE DOOR ON THE STRIKE SIDE. (SEC. 1133B.4.3.).
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SmithGroup
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Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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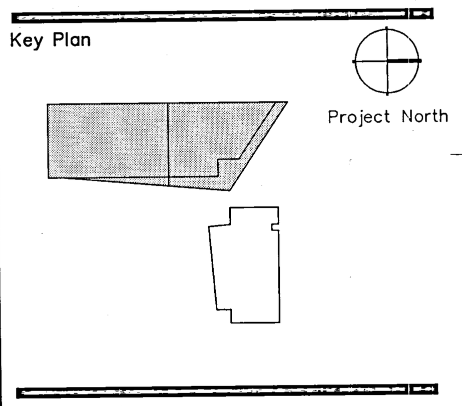
Seals and Signatures

RECORD DRAWINGS

Key Plan



Drawing Title
PARTIAL ELEVATIONS

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Scale
3193000
Project Number
06OCT00
Baseline Date
A4.1.13
Drawing Number

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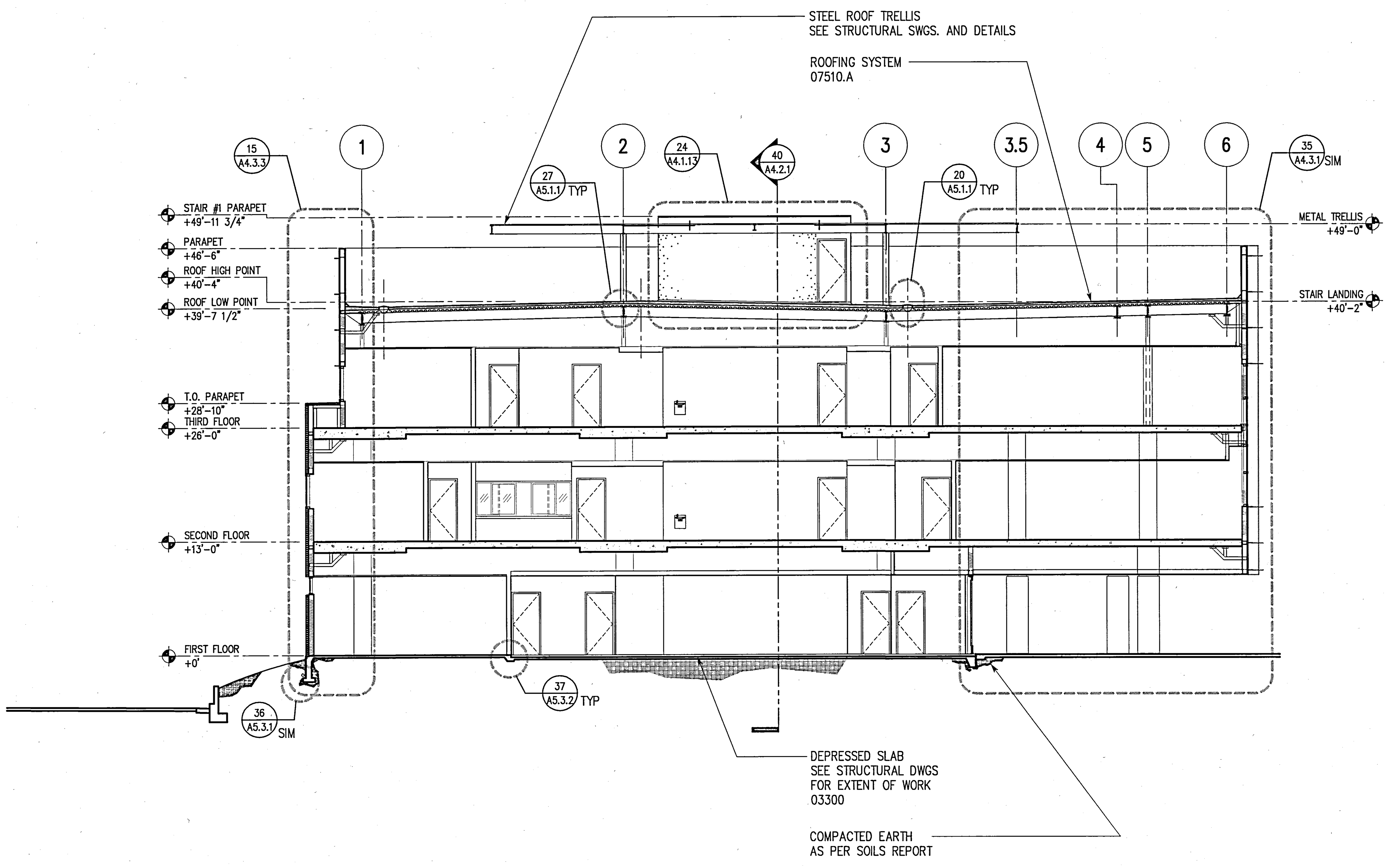
06/21/00



(38) BUILDING SECTION
SURGE BUILDING
SCALE: SCALE: 1/8" = 1'-0"

GENERAL NOTES

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03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMNUM EXTRUSION – 4" FIN
05700.B – ALUMNUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMNUM WINDOW WALL SYSTEM
08410.B – ALUMNUM STOREFRONT
08410.C – ALUMNUM DOOR
08520.A – ALUMNUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
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09300.D – WATERPROOF MEMBRANE
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09515.B – PERFORATED METAL PANEL
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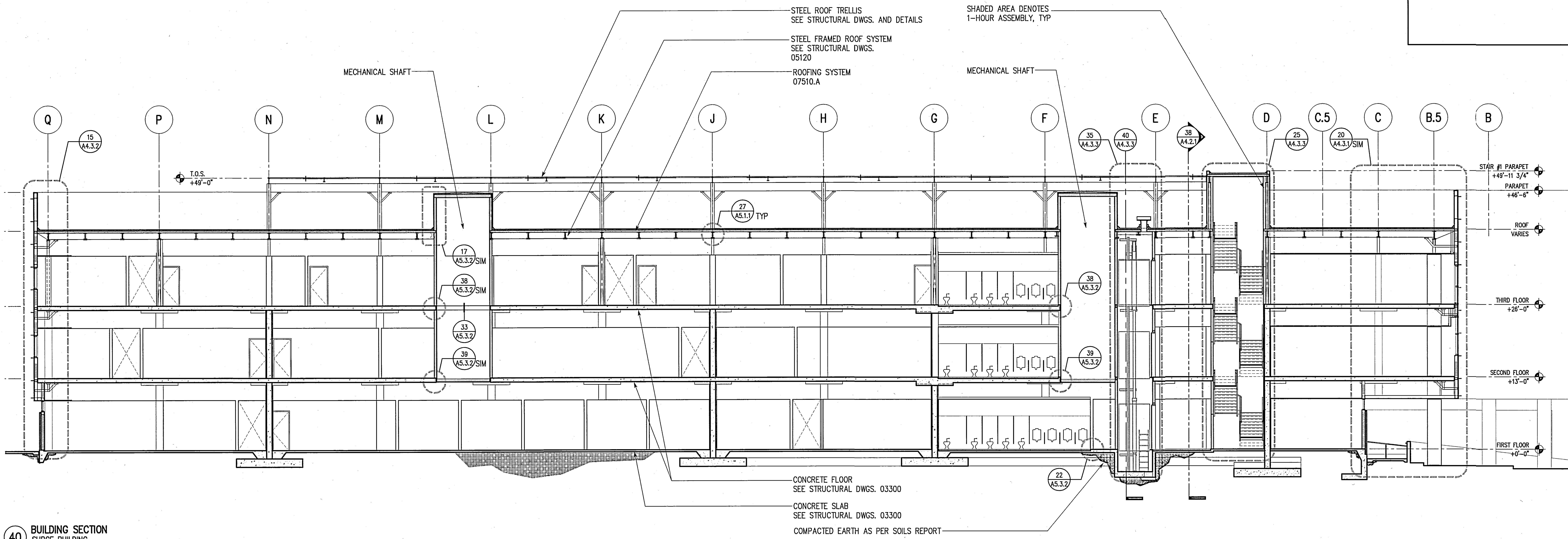
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMNUM LOUVER
14240.A – ELEVATOR



(40) BUILDING SECTION
SURGE BUILDING
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Seals and Signatures

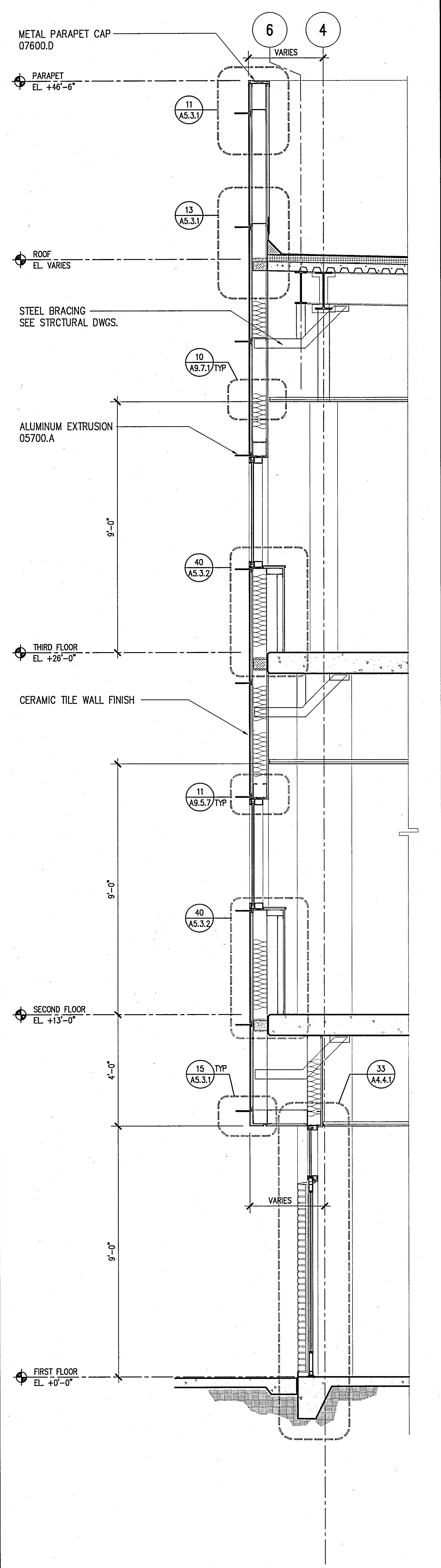
RECORD DRAWINGS

Key Plan

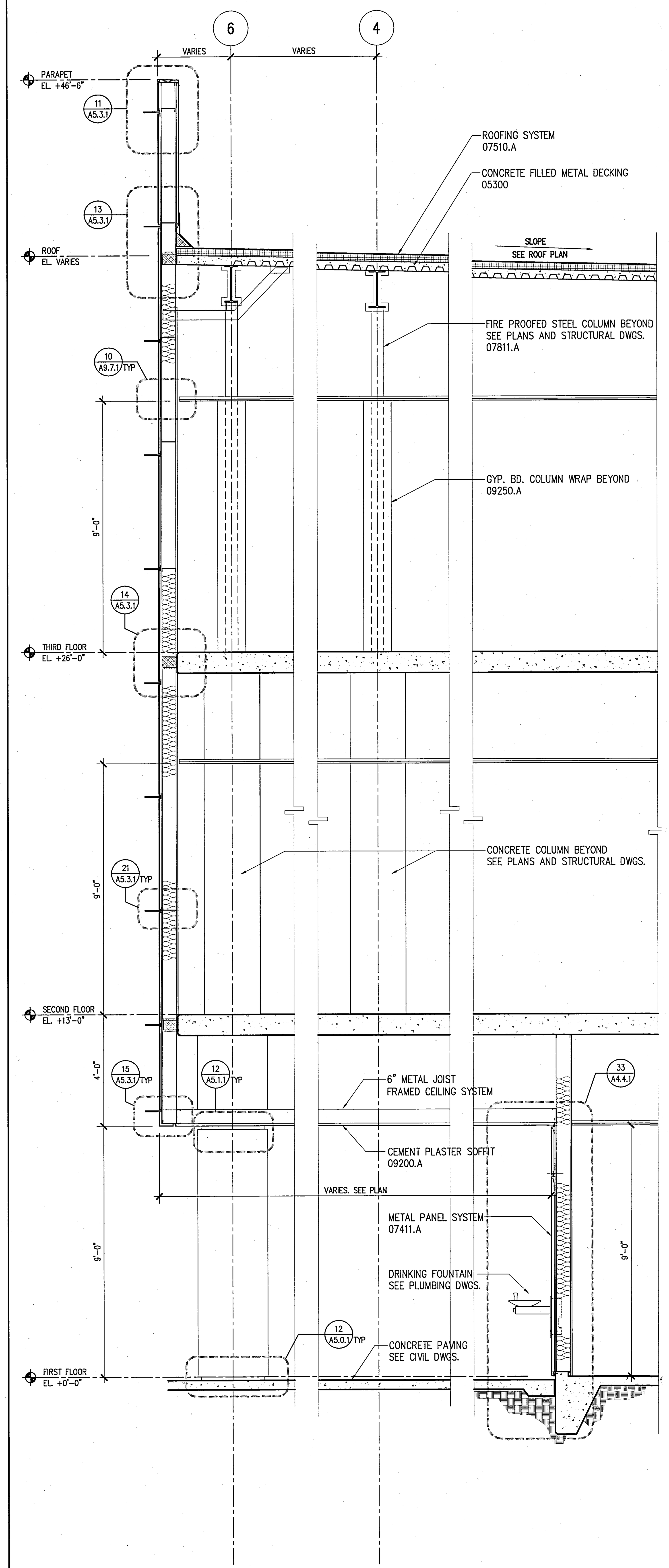
Project North

Drawing Title
BUILDING SECTIONS
SURGE BUILDING

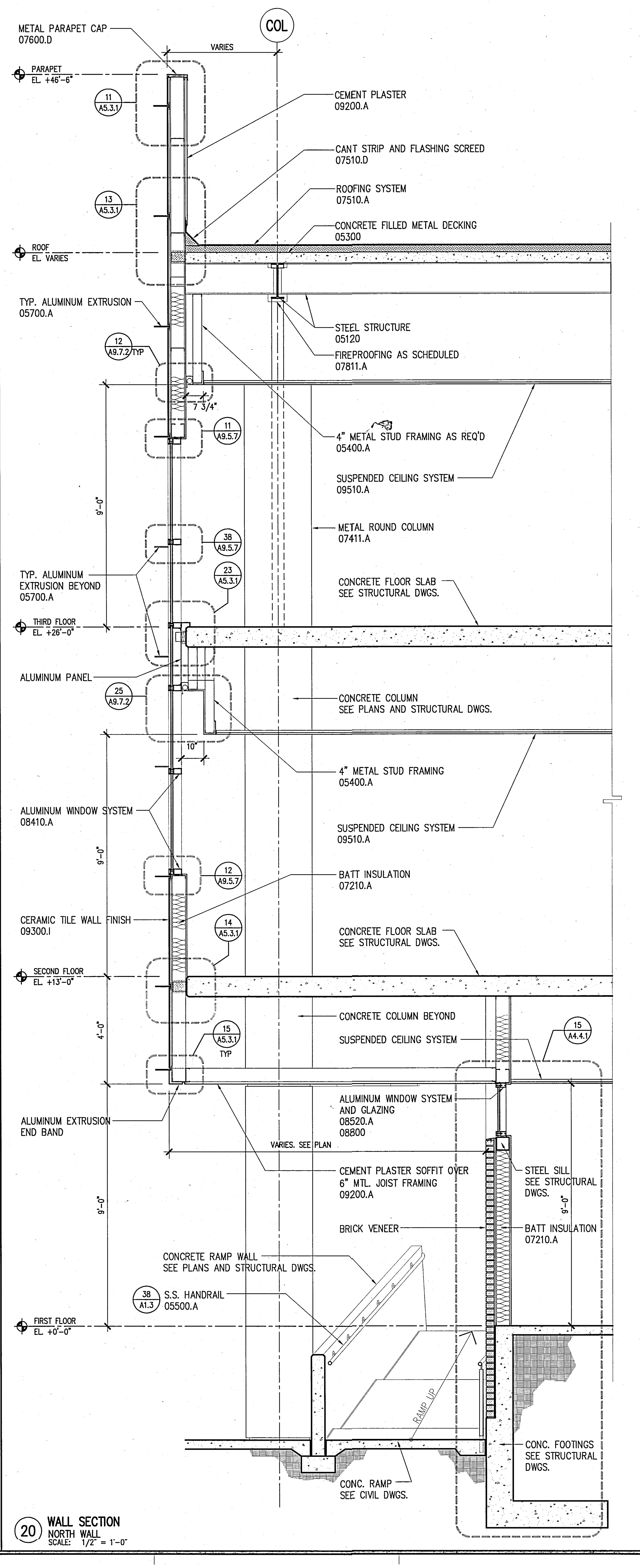
1/8" = 1'-0"
Scale
3193000
Project Number
06OCT00
Baseline Date
A4.2.1
Drawing Number



40 WALL SECTION
EAST WALL
SCALE: 1/2" = 1'-0"



35 WALL SECTION
EAST WALL
SCALE: 1/2" = 1'-0"



20 WALL SECTION
NORTH WALL
SCALE: 1/2" = 1'-0"

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07510.C – WALKING PADS
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07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
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08410.C – ALUMINUM DOOR
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09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
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10200.B – ALUMINUM LOUVER
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GENERAL NOTES

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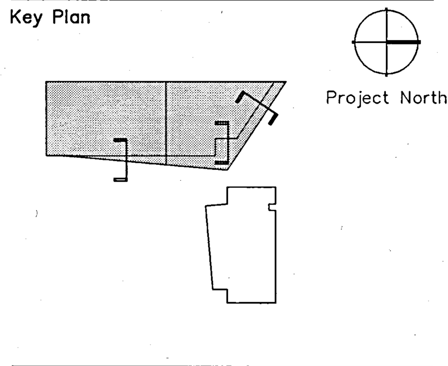
Seals and Signatures

RECORD DRAWINGS

Key Plan



Drawing Title
WALL SECTIONS
SURGE BUILDING

SCALE AS NOTED
Scale
3193000
Project Number
06OCT00
Baseline Date
A4.3.1
Drawing Number

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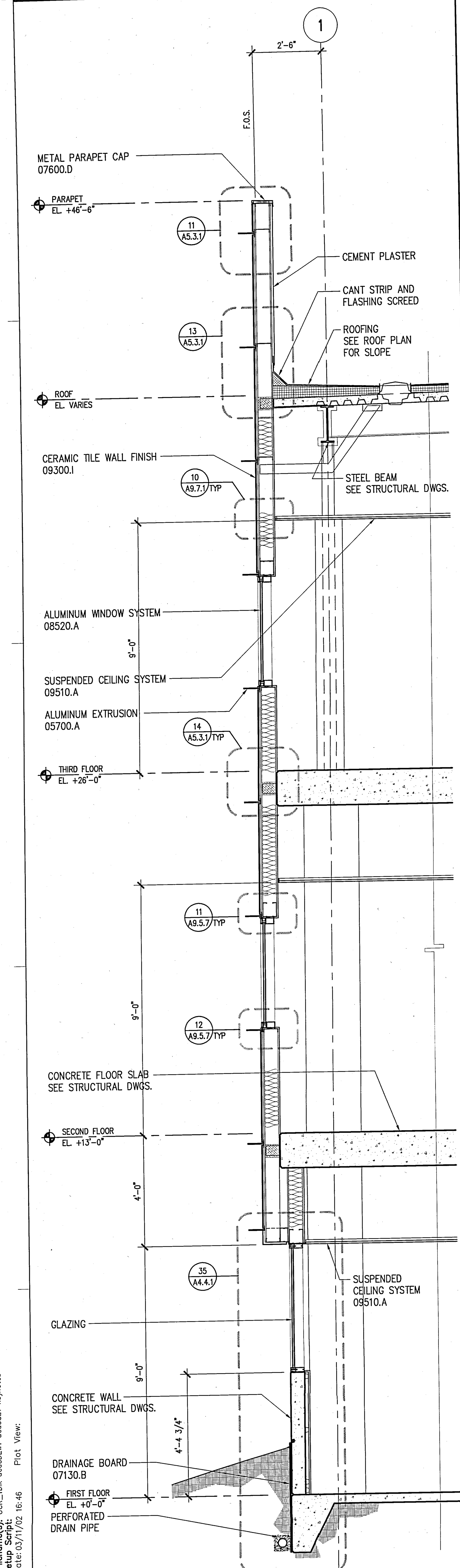
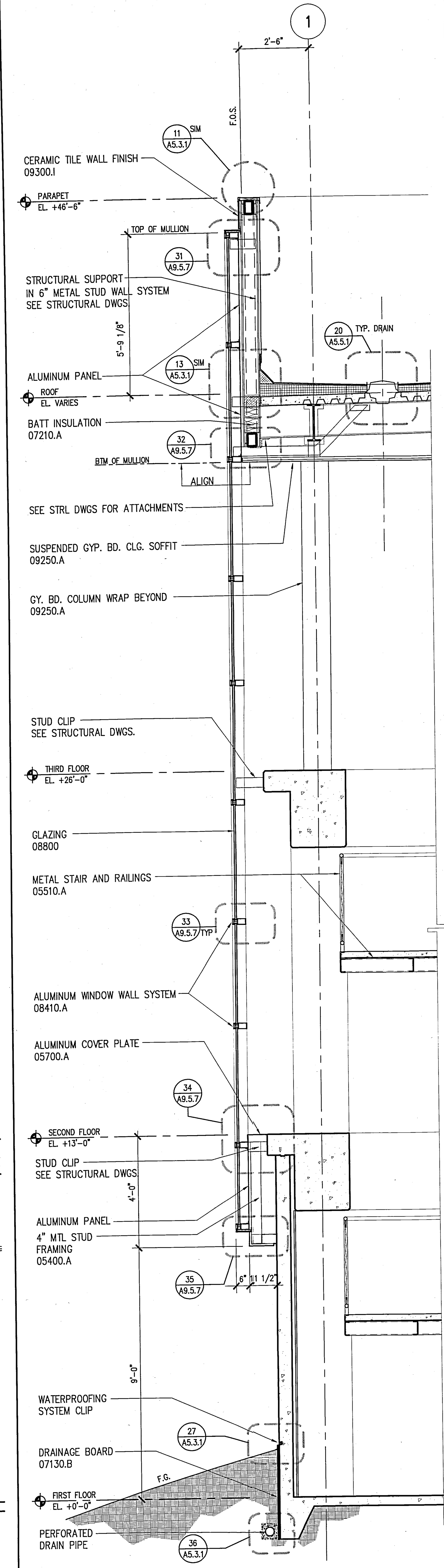
06/21/00



40 WALL SECTION
WEST WALL
SCALE: 1/2" = 1'-0"



35 WALL SECTION
WEST WALL AT SW STAIRWELL
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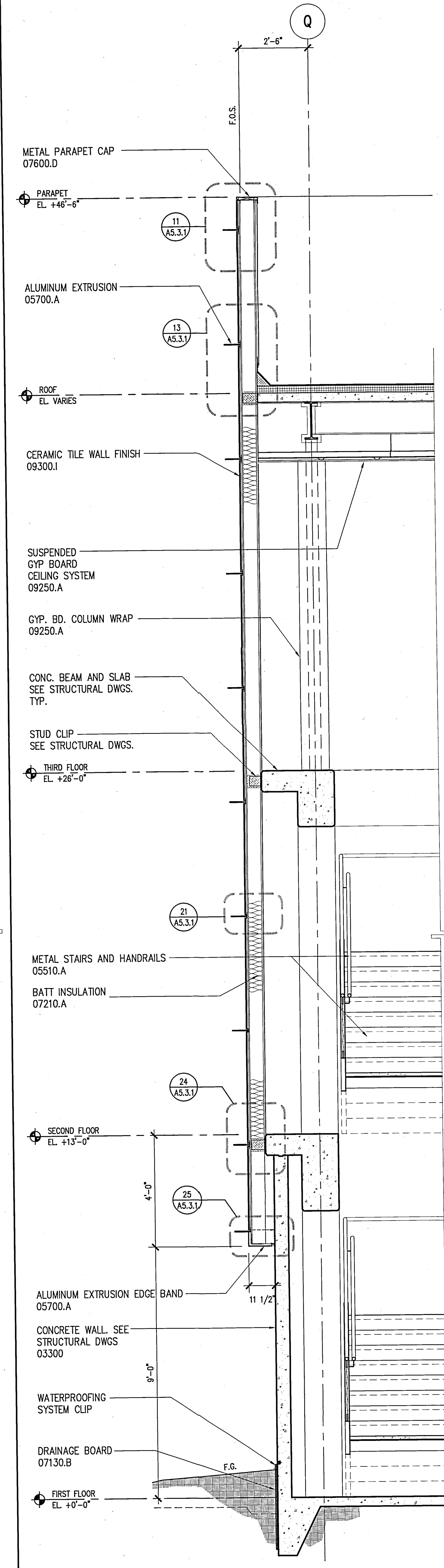
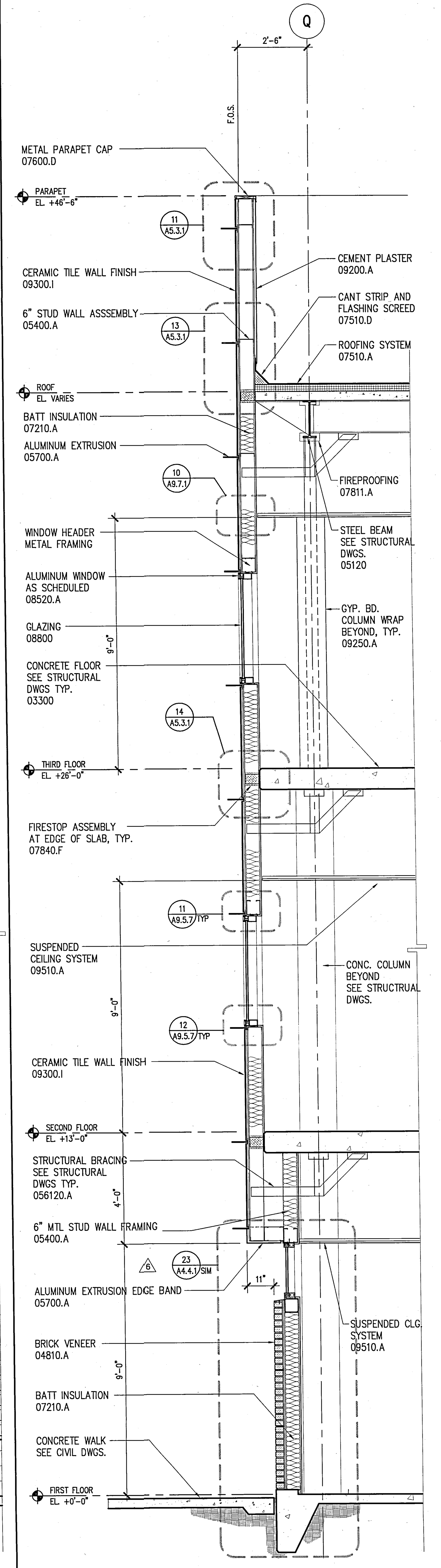


25 WALL SECTION
SOUTH WALL AT SW STAIRWELL
SCALE: 1/2" = 1'-0"



15 WALL SECTION
SOUTH WALL
SCALE: 1/2" = 1'-0"

KEYED NOTES

- 03300 – CAST IN PLACE CONCRETE
- 04810.A – BRICK VENEER
- 04810.B – BRICK VENEER ANCHORS
- 05120 – STRUCTURAL STEEL
- 05315 – METAL DECKING
- 05400 – STRUCTURAL STEEL STUD
- 05500.A – STEEL RAILINGS & HANDRAILS
- 05500.I – METAL MESH
- 05500.J – PERFORATED ALUMINUM SHEET
- 05510.A – METAL STAIR/HANDRAIL
- 05700.A – ALUMINUM EXTRUSION – 4" FIN
- 05700.B – ALUMINUM EXTRUSION – 1" FIN
- 06200.A – WOOD WINDOW SILL
- 07130.A – WATERPROOF MEMBRANE
- 07130.B – DRAINAGE BOARD
- 07135.A – AIR AND VAPOR BARRIER
- 07210.A – BATT INSULATION
- 07411.A – METAL PANEL SYSTEM (SILVER)
- 07411.B – METAL PANEL SYSTEM (GRAY)
- 07510.A – ROOFING SYSTEM
- 07510.C – WALKING PADS
- 07510.D – CANT STRIP & FLASHING SCREED
- 07600.A – SHEET METAL FLASHING
- 07600.D – METAL PARAPET CAP
- 07600.F – METAL DOWNSPOUT
- 07600.I – FLEXIBLE MEMBRANE
- 07600.J – SHEET METAL ROOFING
- 07600.K – RIGID INSULATION
- 07611.A – STANDING SEAM METAL ROOFING
- 07611.B – METAL FASCIA
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- 07900 – SEALANT AND BACKER ROD
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- 08410.B – ALUMINUM STOREFRONT
- 08410.C – ALUMINUM DOOR
- 08520.A – ALUMINUM WINDOW SYSTEM
- 08800 – GLAZING
- 09110.A – NON-BEARING METAL STUD
- 09110.B – METAL SHAFTWALL STUD
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- 09775.A – METAL WALL PANEL
- 09820.A – ACOUSTICAL INSULATION – BATT
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- 10200.A – FALSE ALUMINUM LOUVER
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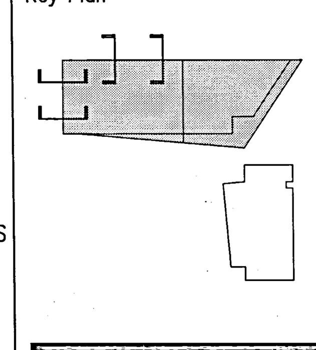

Project North

Drawing Title
WALL SECTIONS
SURGE BUILDING

SCALE AS NOTED
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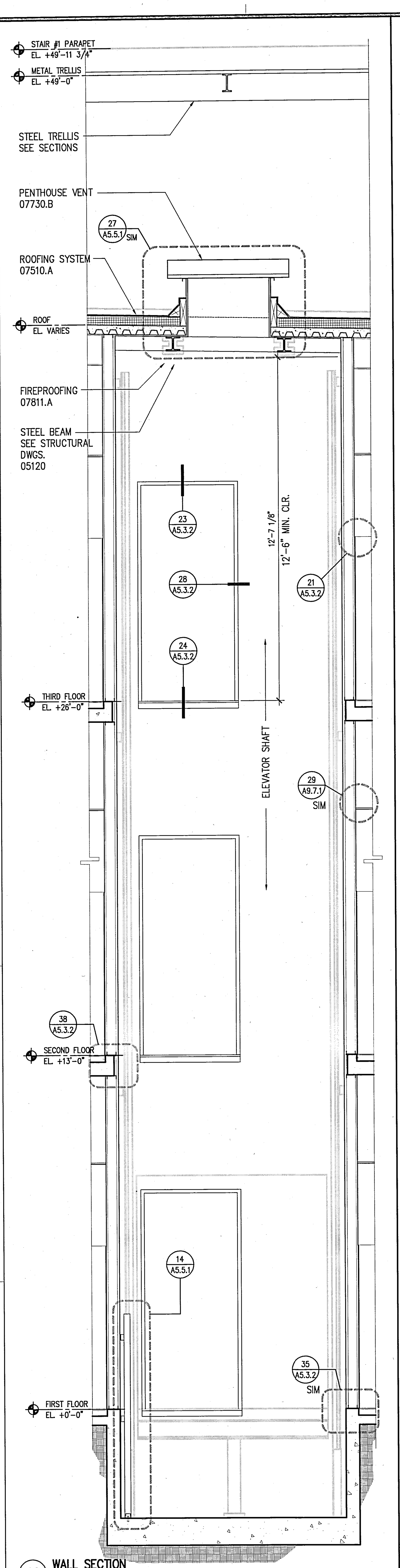
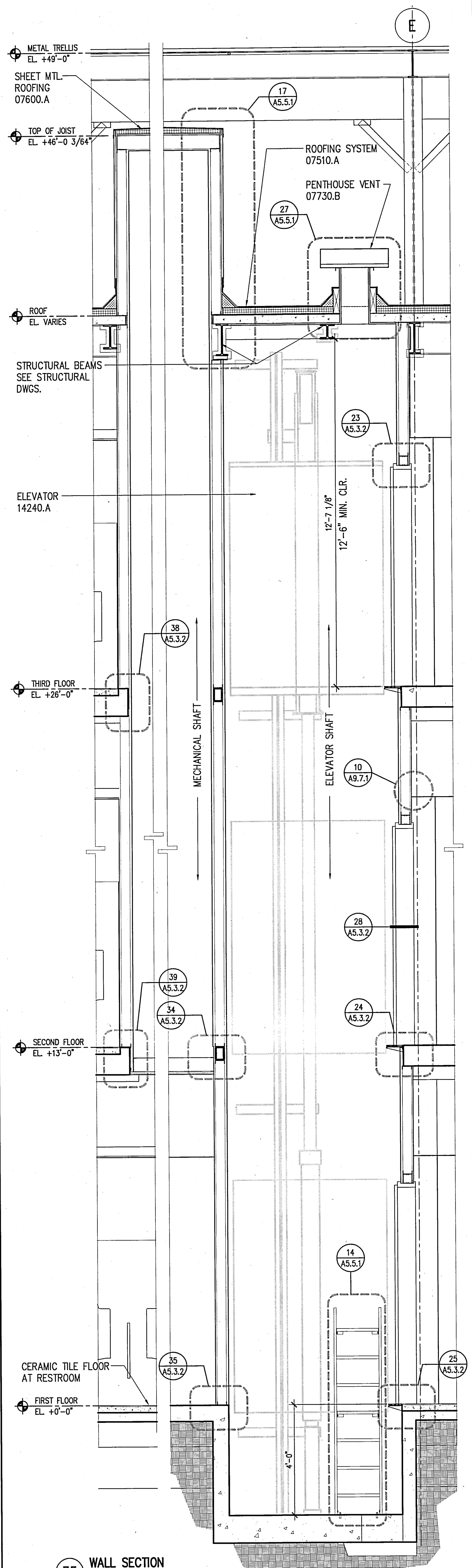
Project Number 3193000
Baseline Date 060CT00
Drawing Number
A4.3.2



40 WALL SECTION
ELEVATOR SHAFT (E-W)
SCALE: 1/2" = 1'-0"



35 WALL SECTION
ELEVATOR & MECHANICAL SHAFTS (N-S)
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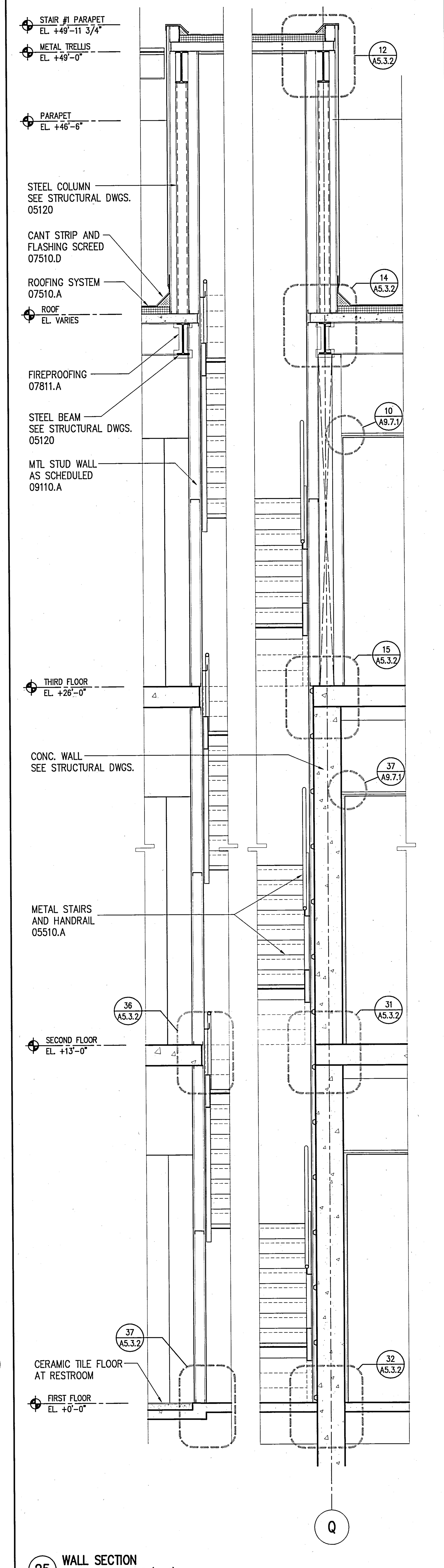

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NORTH STAIR CORE (N-S)
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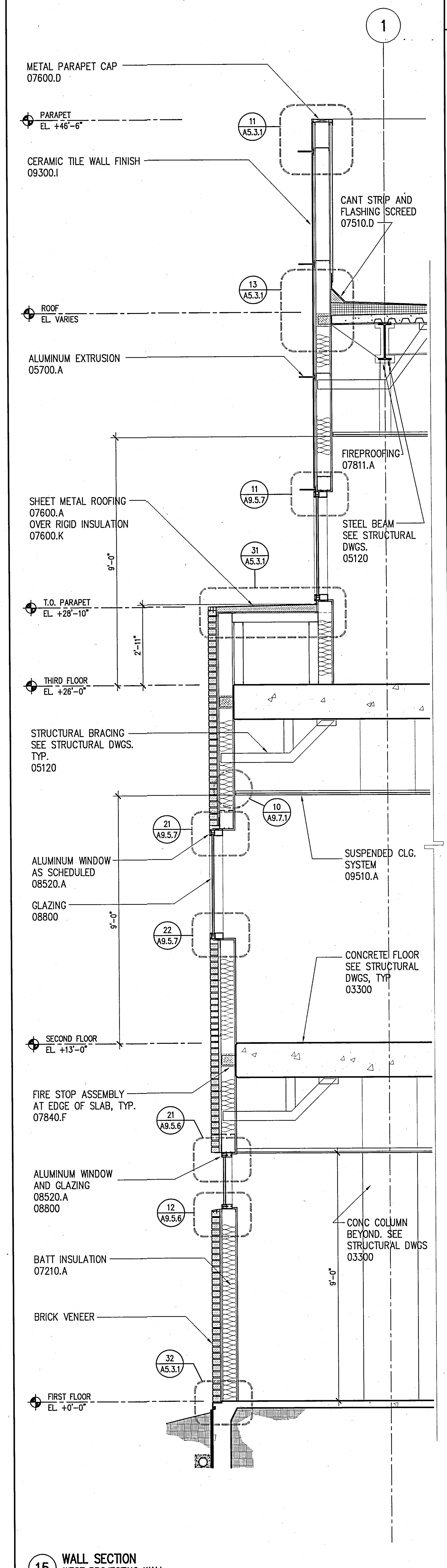

15 WALL SECTION
WEST PROJECTING WALL
SCALE: 1/2" = 1'-0"

KEYED NOTES

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07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
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310.586.5400
310.586.1091

Issued for	Rev	Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

WALL SECTIONS
SURGE BUILDING

SCALE AS NOTED

Scale

3193000

Project Number

060CT00

Baseline Date

A4.3.3

Drawing Number

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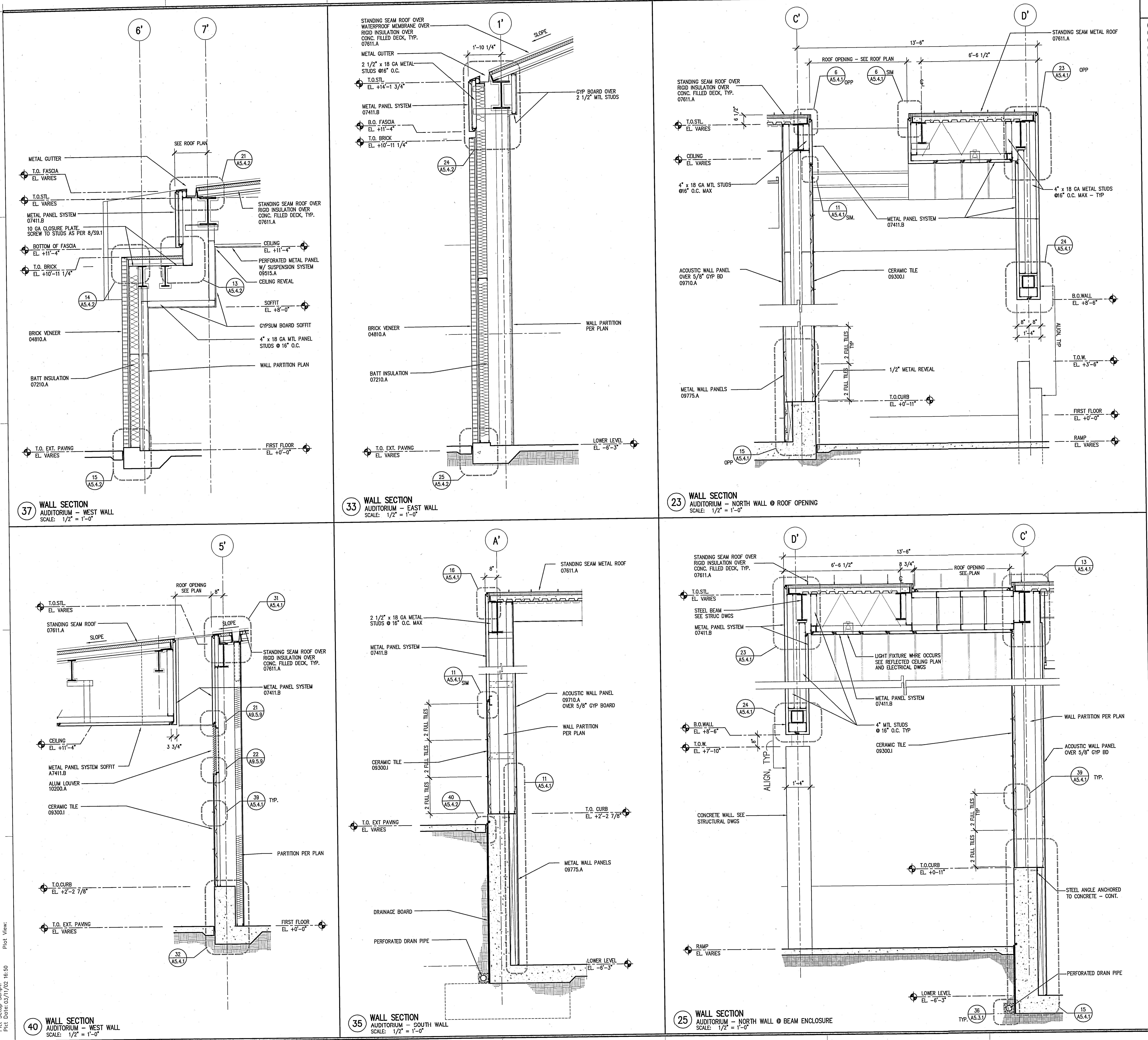

KEYED NOTES

03300 – CAST IN PLACE CONCRETE
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05120 – STRUCTURAL STEEL
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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

WALL SECTIONS
AUDITORIUM

SCALE AS NOTED

Scale
3193000
Project Number
060CT00
Baseline Date
A4.3.4
Drawing Number

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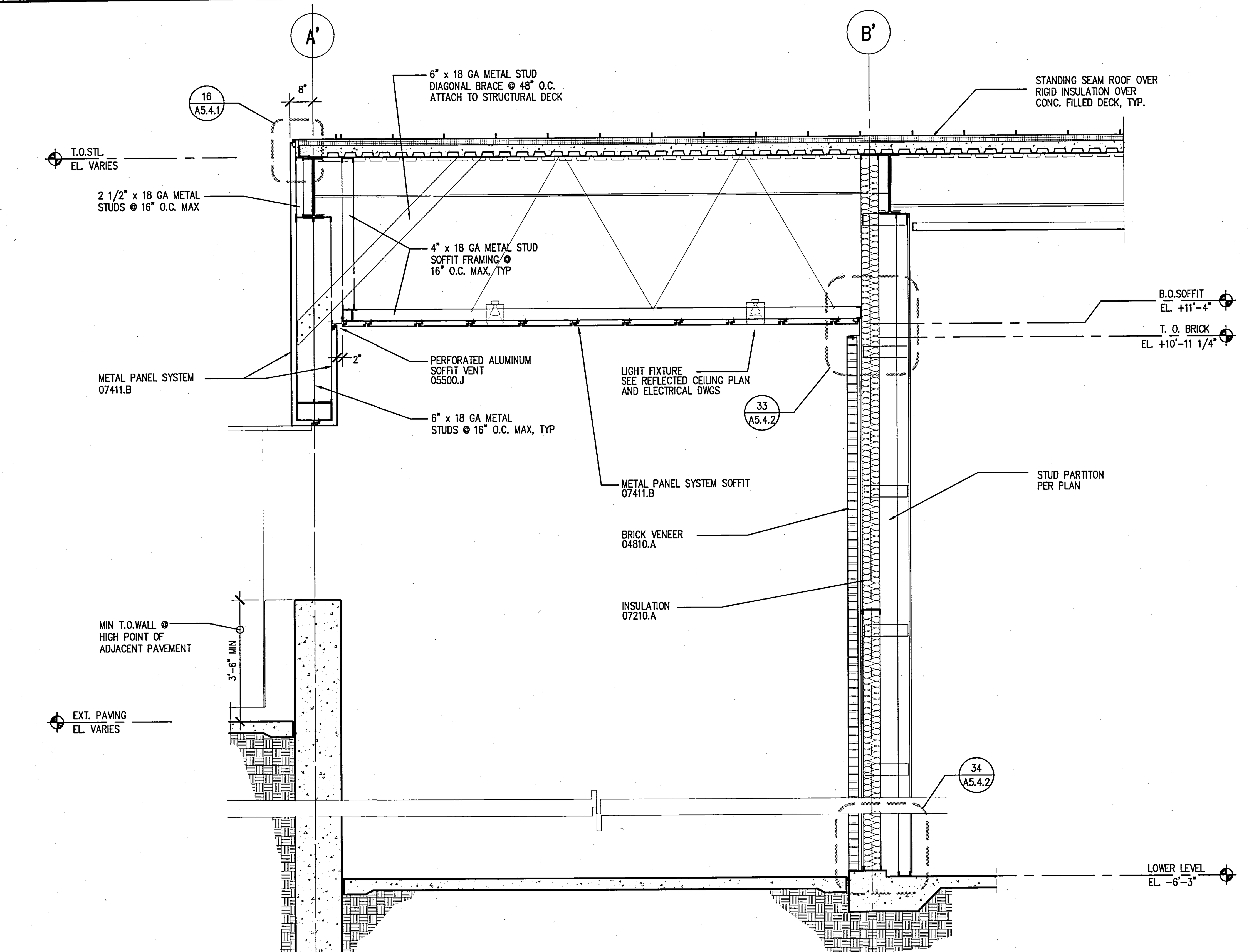
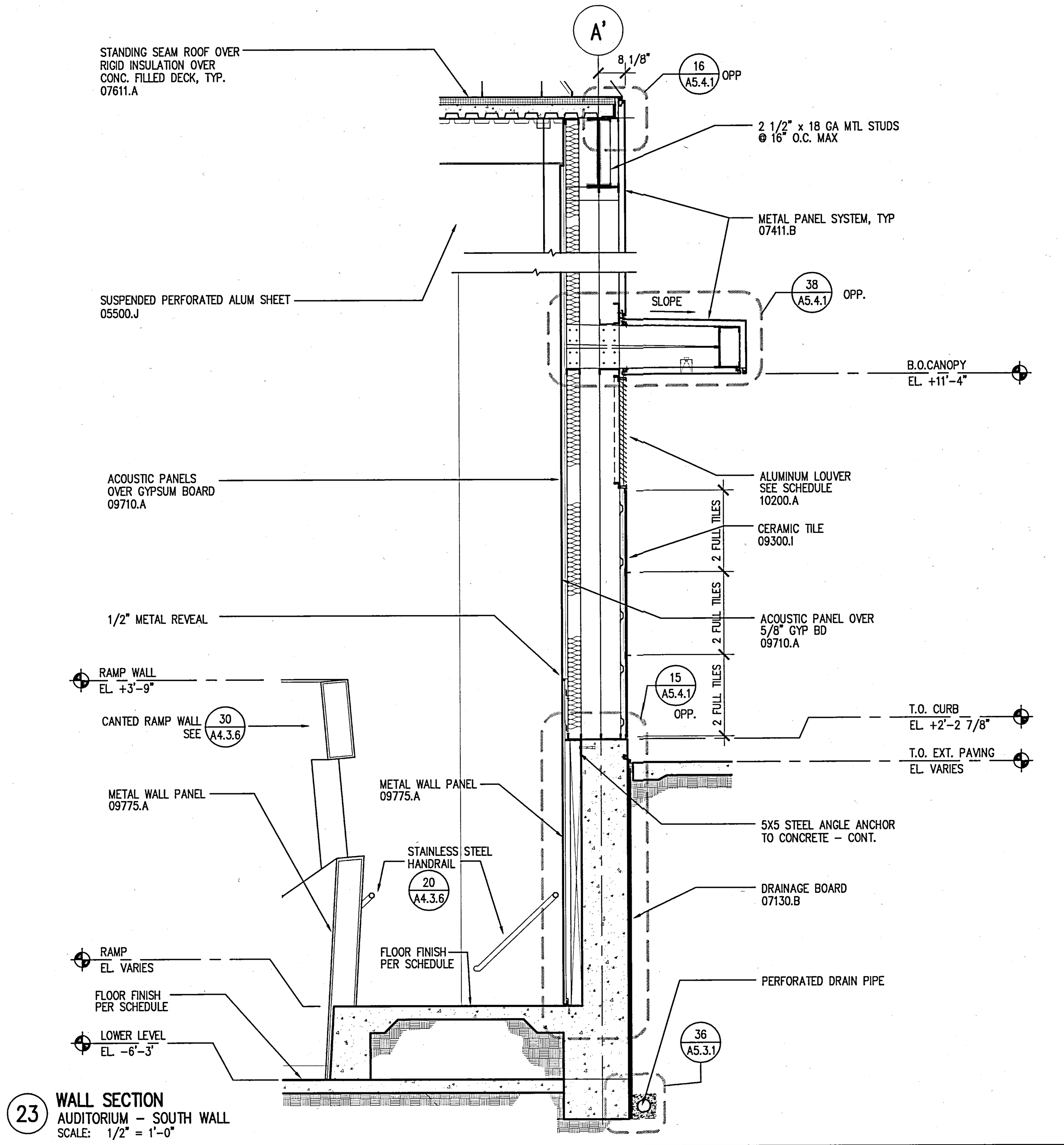


39 **WALL SECTION**
AUDITORIUM – SOUTH WALL AT EAST ENTRANCE
SCALE: 1/2" = 1'-0"



23 **WALL SECTION**
AUDITORIUM – SOUTH WALL
SCALE: 1/2" = 1'-0"

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09515.B – PERFORATED METAL PANEL
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09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
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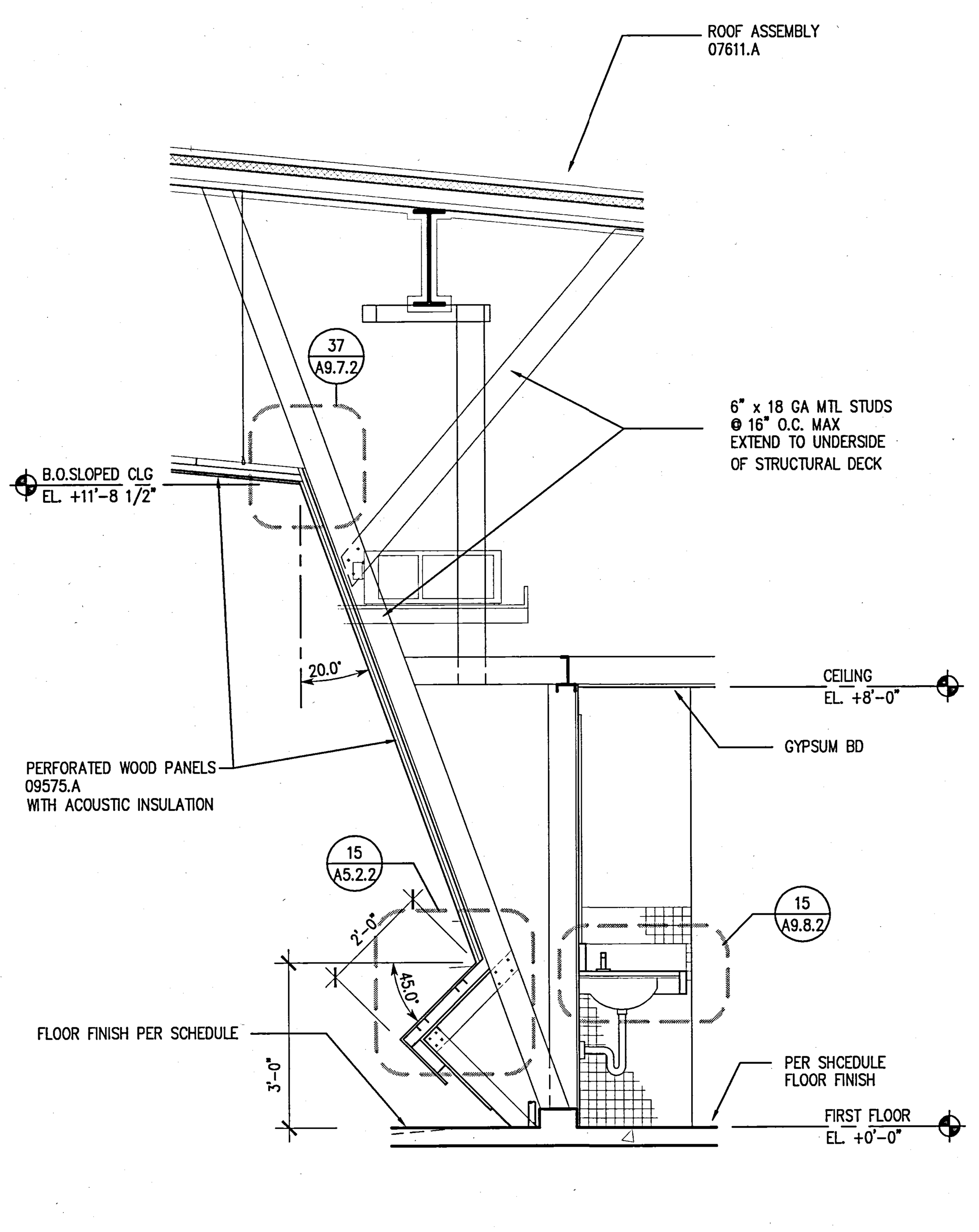
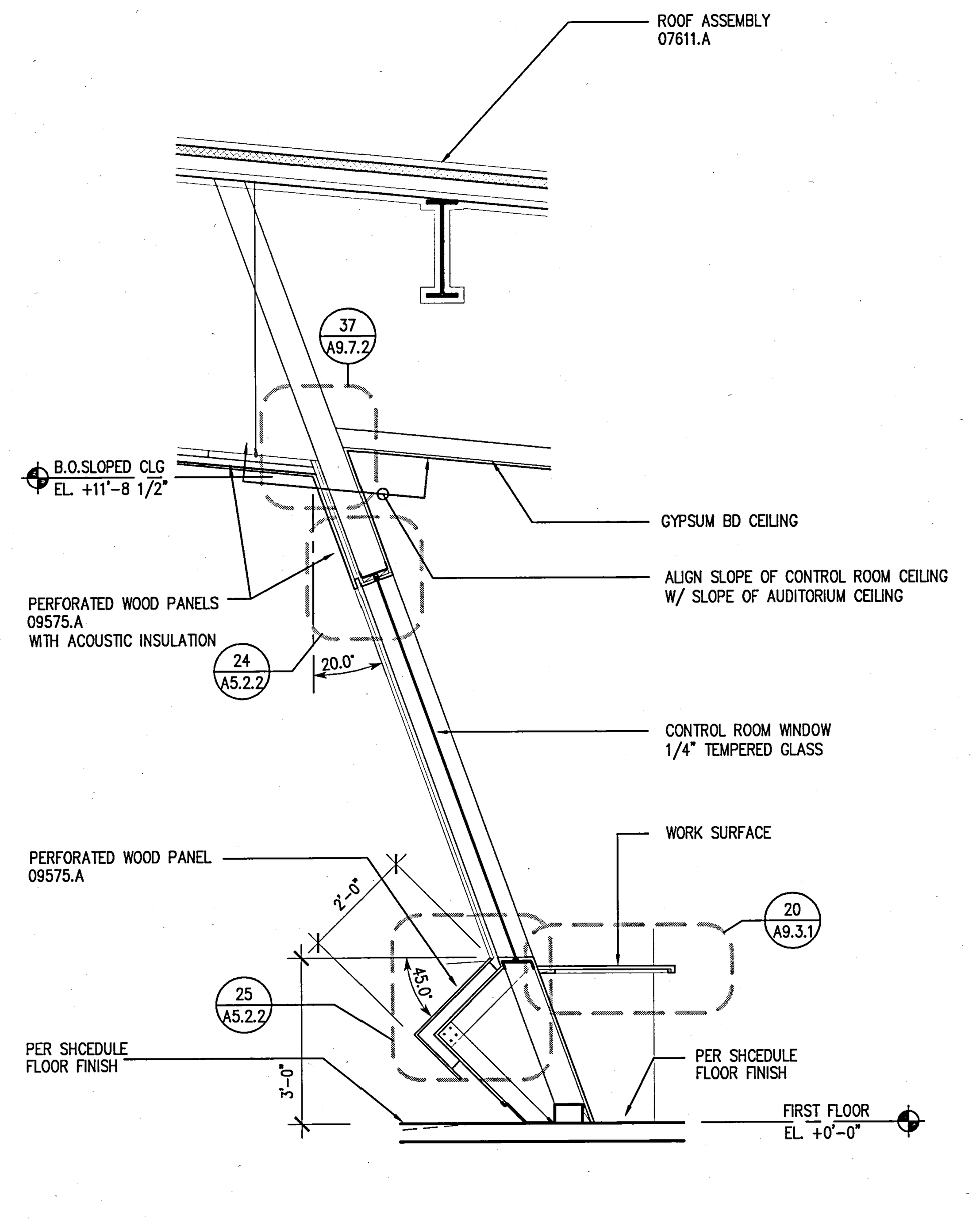
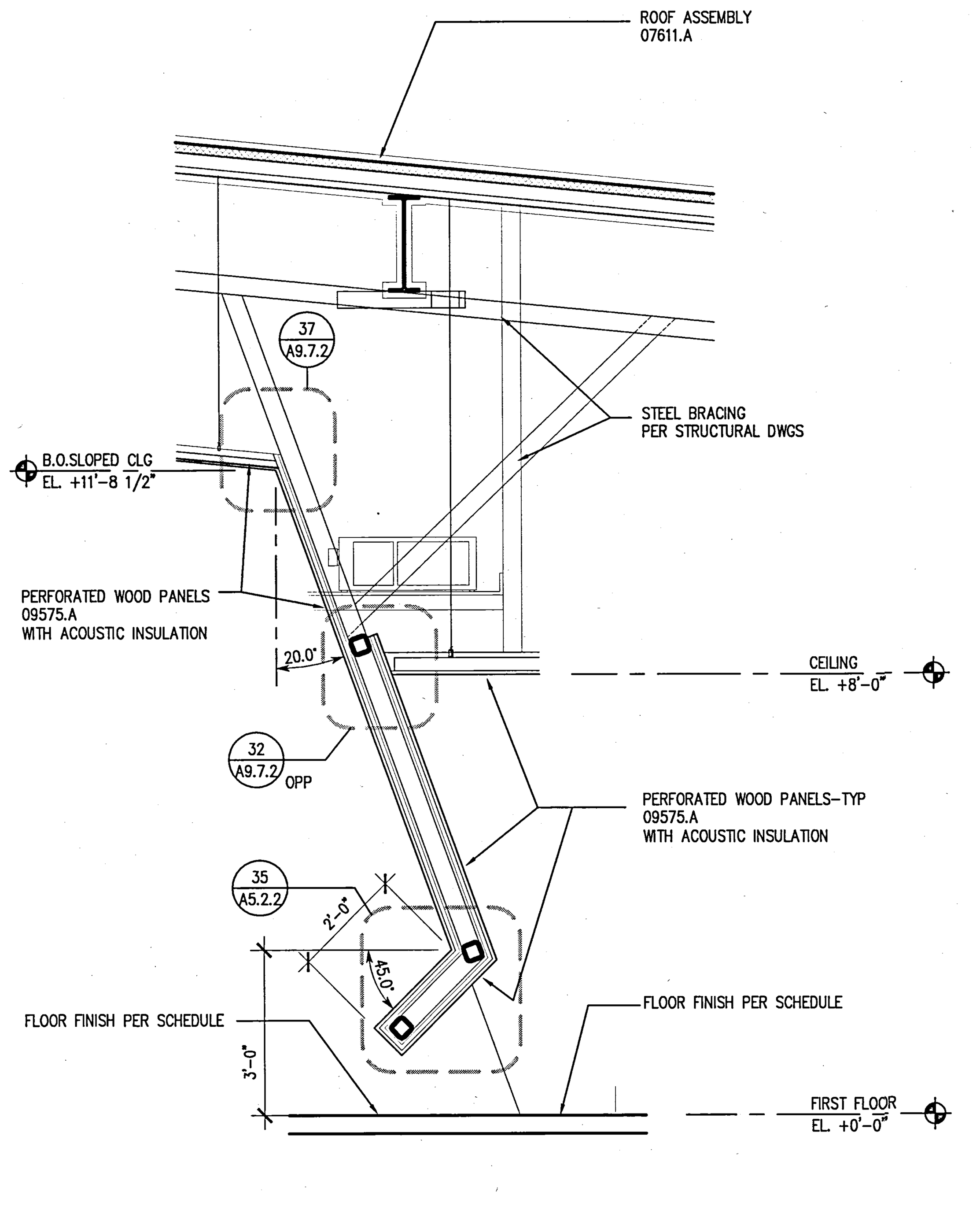
09820.A – ACOUSTICAL INSULATION – BATT



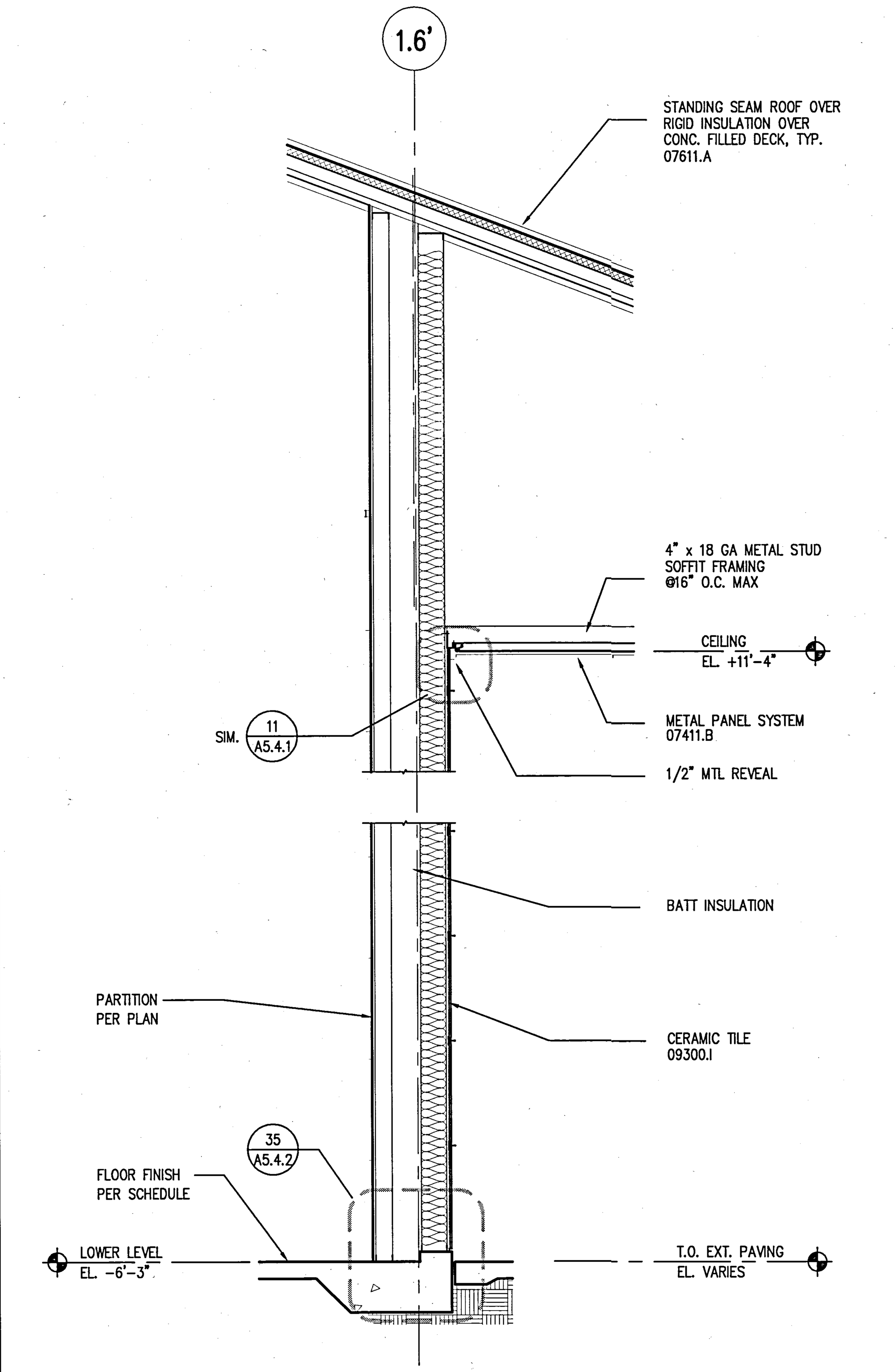
40 **WALL SECTION**
AUDITORIUM – WOMEN'S TOILET EAST WALL
SCALE: 1/2" = 1'-0"



35 **WALL SECTION**
AUDITORIUM – CONTROL ROOM EAST WALL
SCALE: 1/2" = 1'-0"



25 **WALL SECTION**
AUDITORIUM – ANTE ROOM #010 SOUTH EAST WALL
SCALE: 1/2" = 1'-0"



15 **WALL SECTION**
AUDITORIUM – EAST WALL @ SOUTH ENTRANCE
SCALE: 1/2" = 1'-0"

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Key Plan

Project North

Drawing Title

WALL SECTIONS
AUDITORIUM

Scale: SCALE AS NOTED

Project Number: 3193000

Baseline Date: 06OCT00

Drawing Number: **A4.3.5**

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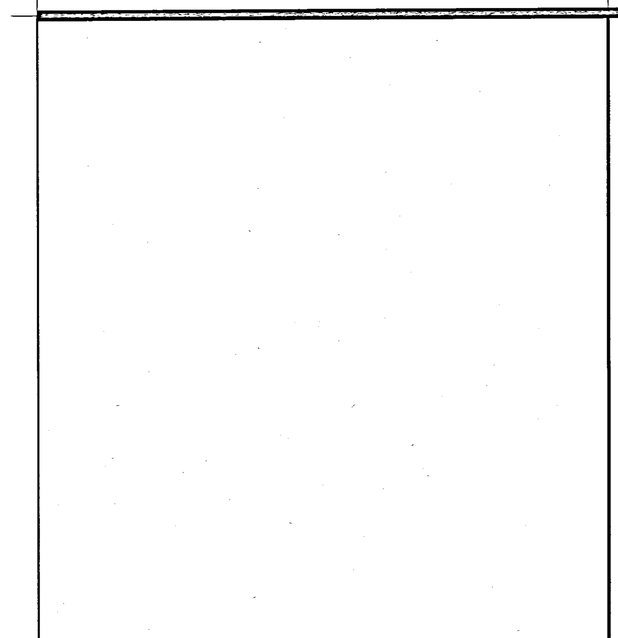
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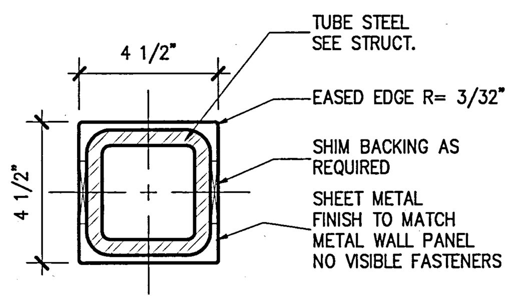
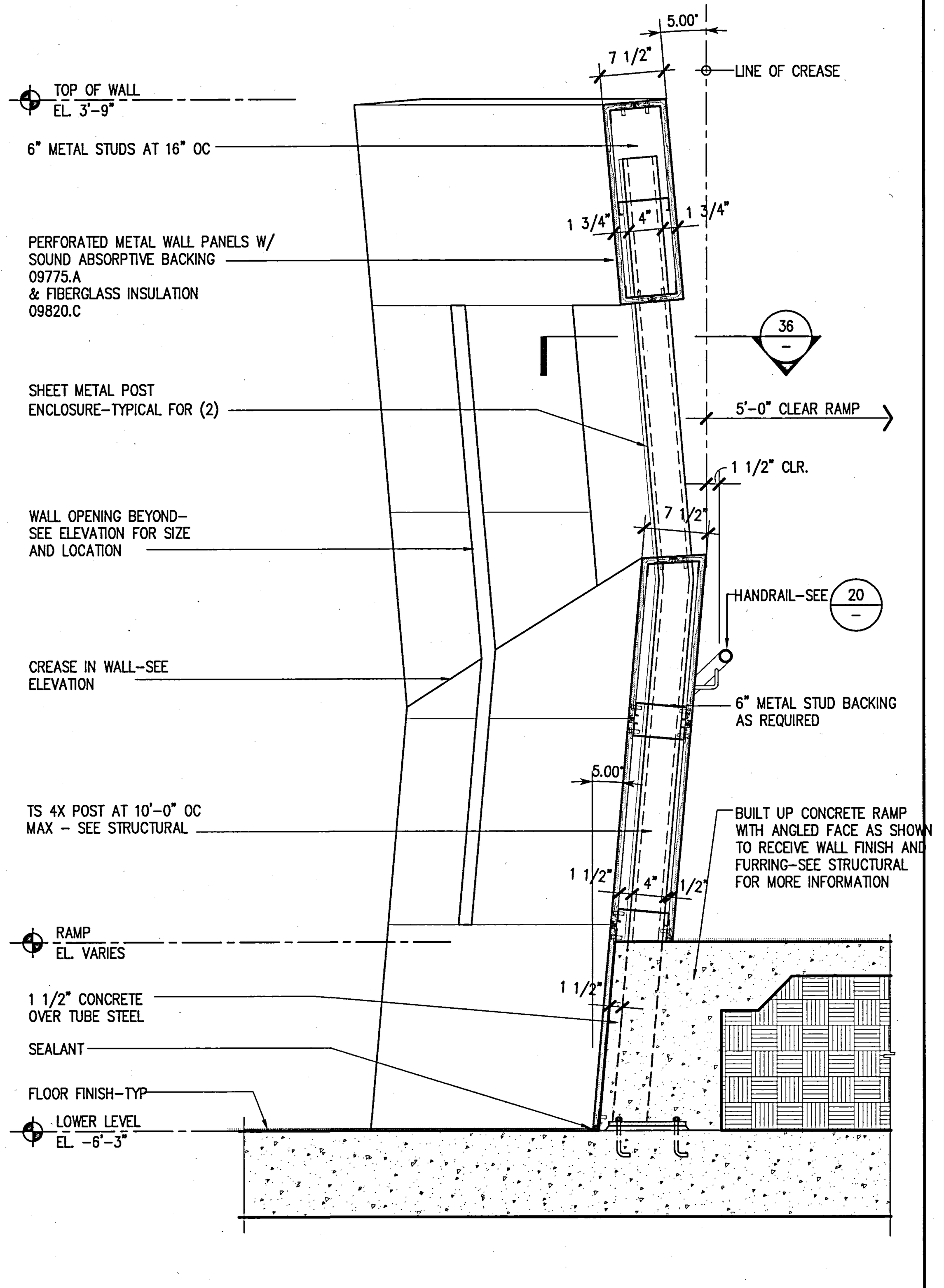
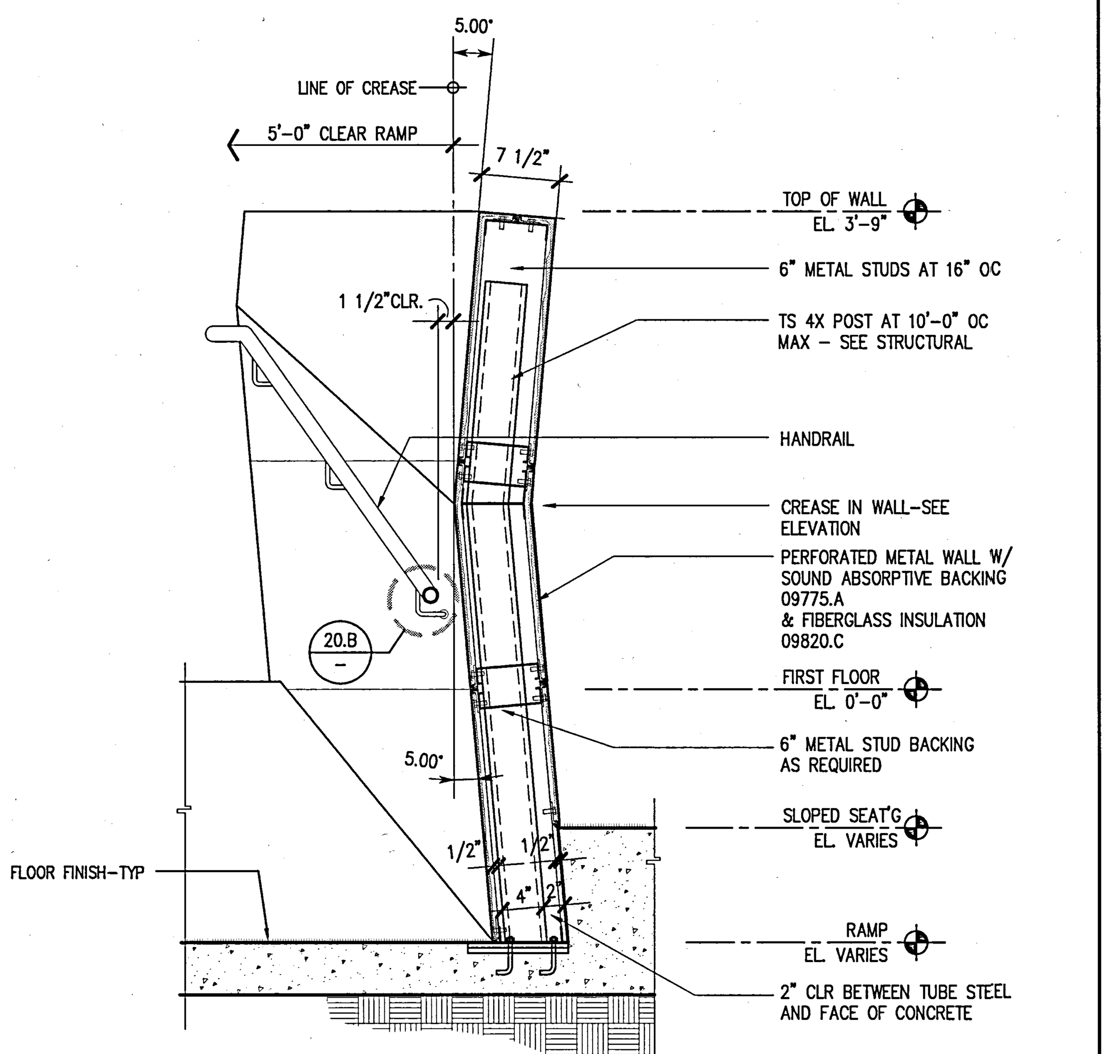
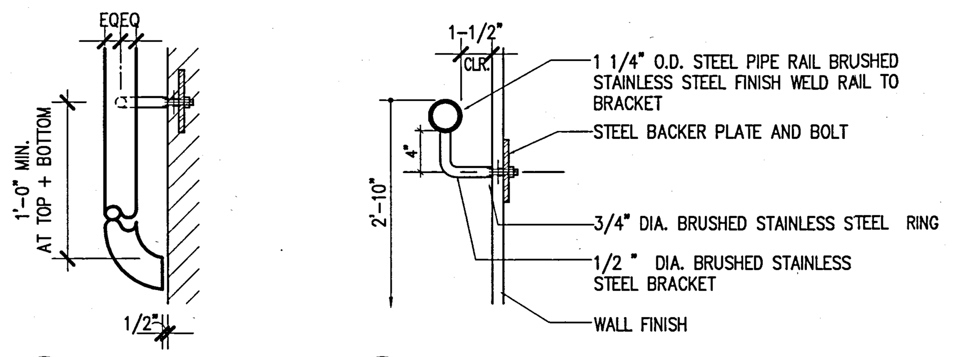


36 STEEL POST ENCLOSURE
TYPICAL
SCALE: 3" = 1'-0"



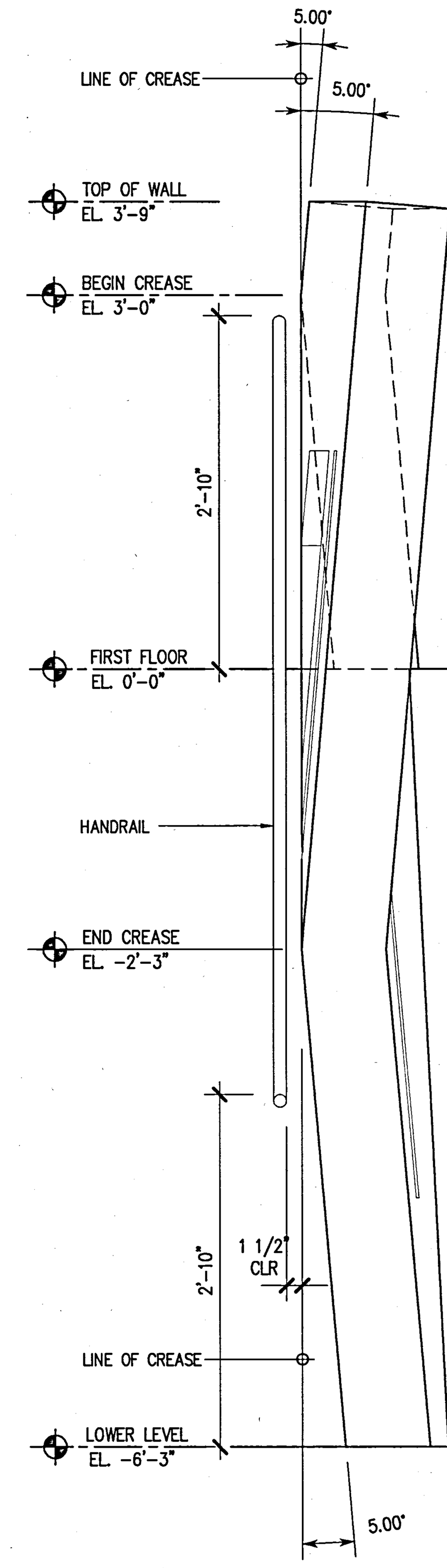
30 WALL SECTION
AUDITORIUM - RAMP WALL AT OPENING
SCALE: 1" = 1'-0"



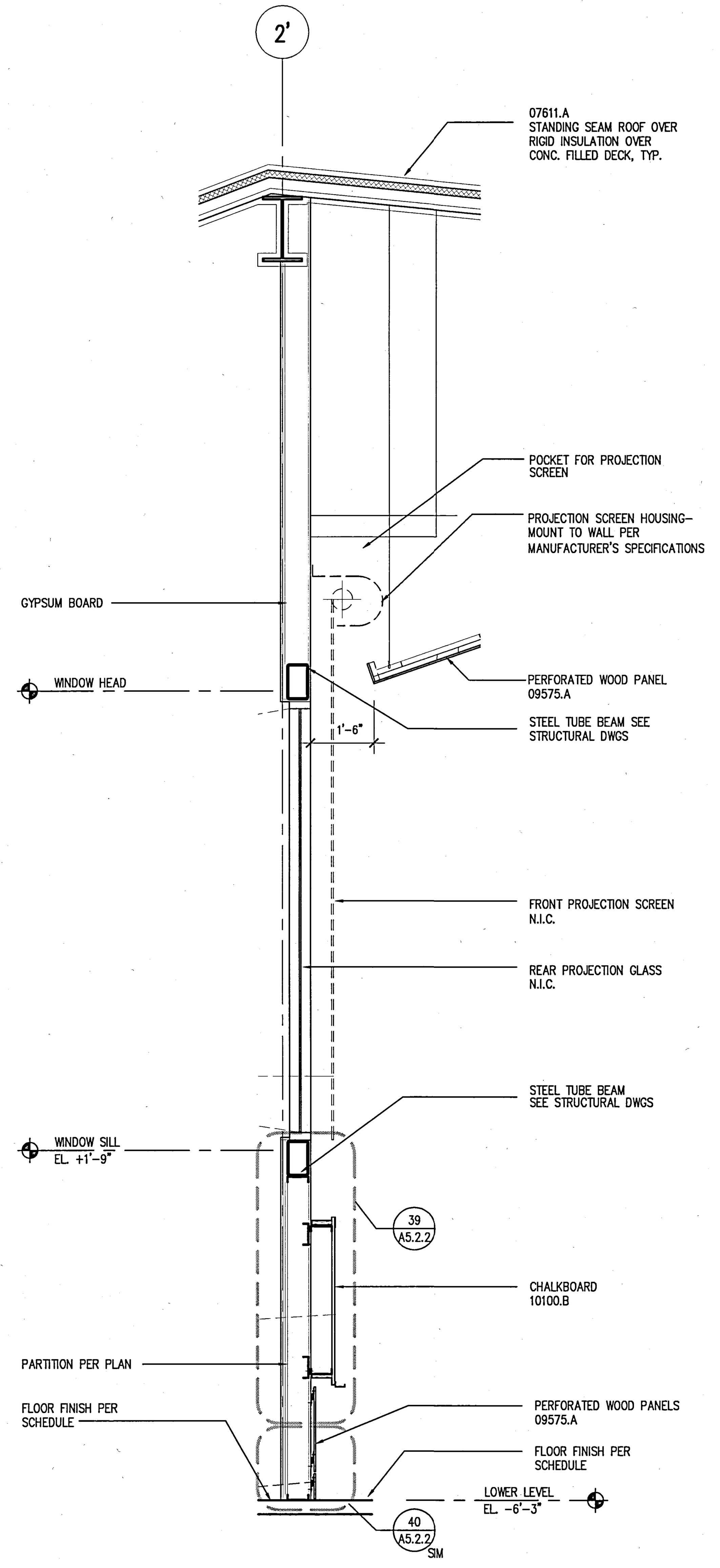


A PLAN
B SECTION

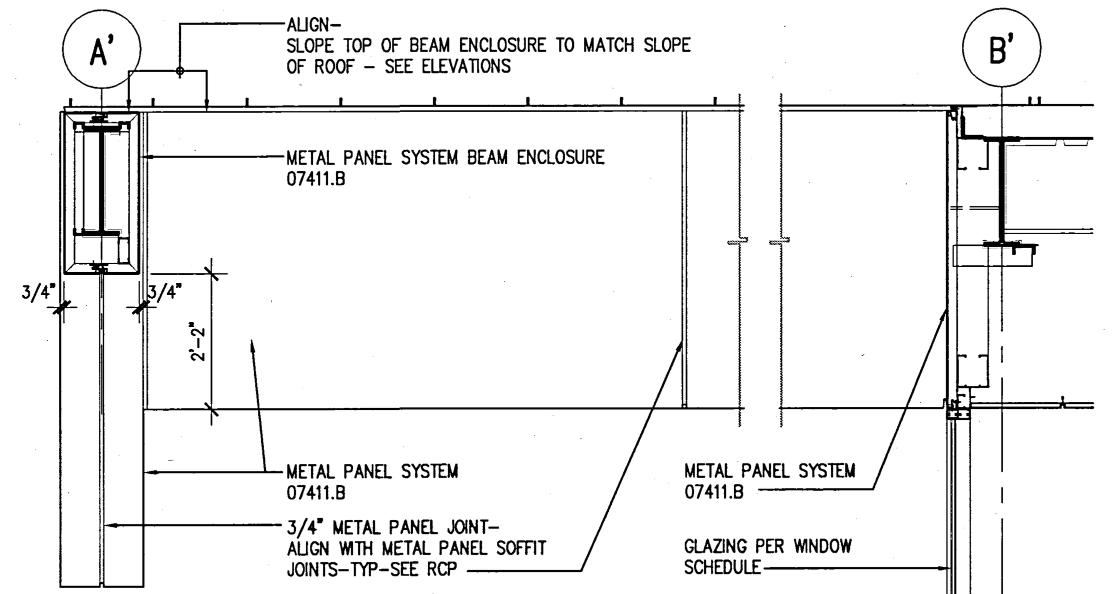
20 WALL SECTION
AUDITORIUM - RAMP WALL
SCALE: 1" = 1'-0"



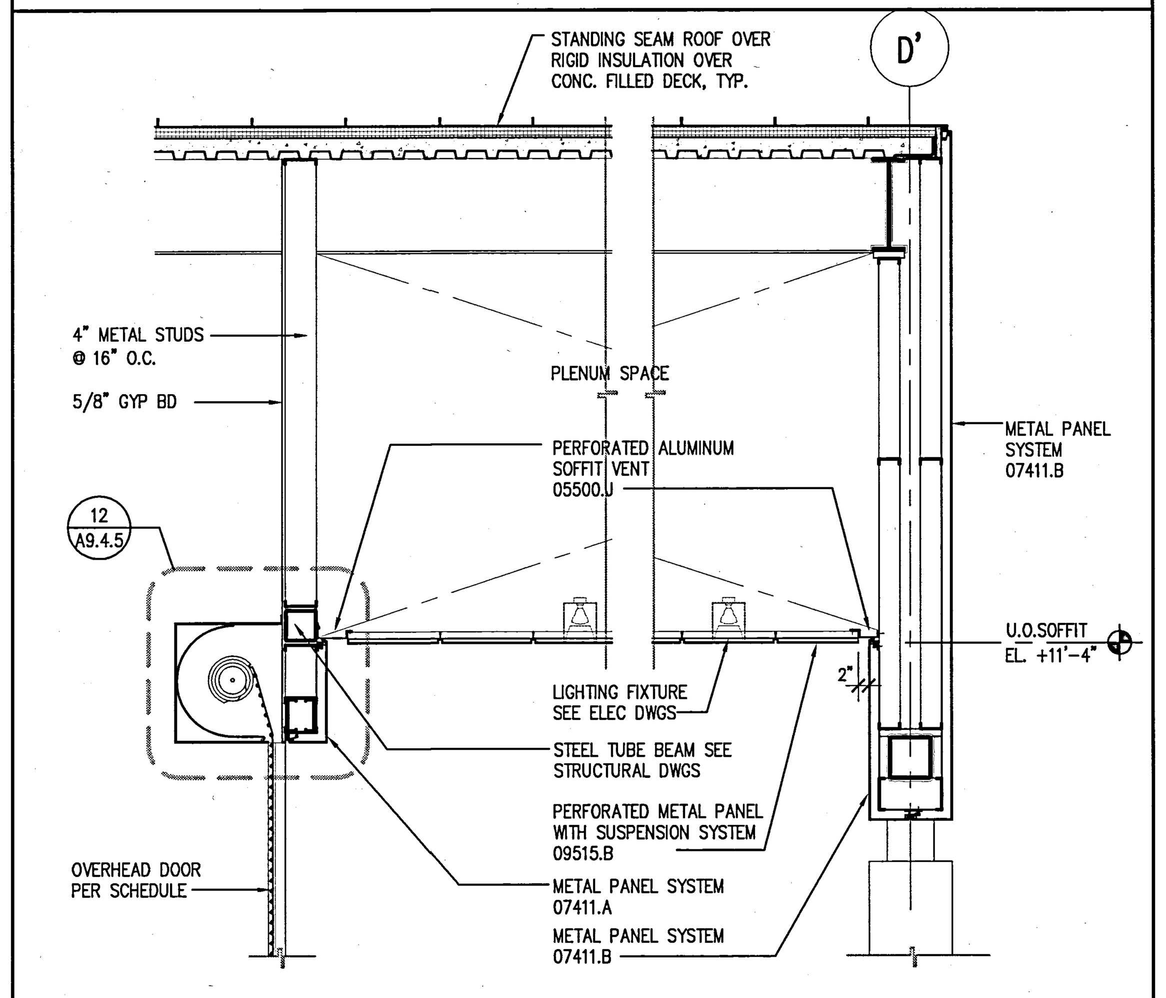
10 WALL SCHEMATIC
AUDITORIUM - RAMP WALL
SCALE: 1" = 1'-0"



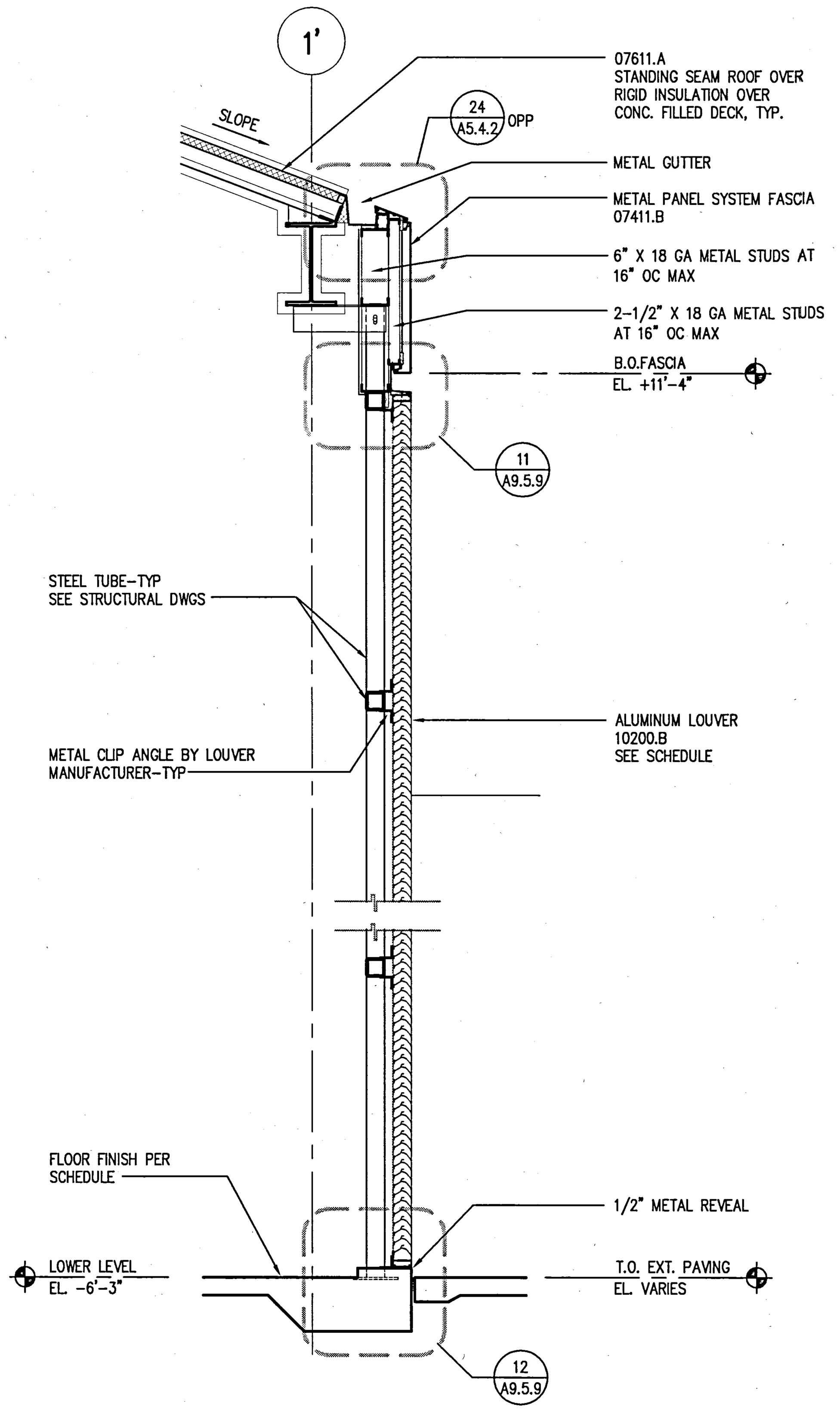
40 WALL SECTION
AUDITORIUM - PROJECTION SCREEN WALL
SCALE: 1/2" = 1'-0"



33 SECTION @ SLOT IN ROOF
AUDITORIUM
SCALE: 1/2" = 1'-0"



35 WALL SECTION
AUDITORIUM - ROLL DOWN DOOR @ MECHANICAL AREA
SCALE: 1/2" = 1'-0"



25 WALL SECTION
AUDITORIUM -EAST WALL
SCALE: 1/2" = 1'-0"

NOT USED
SCALE:

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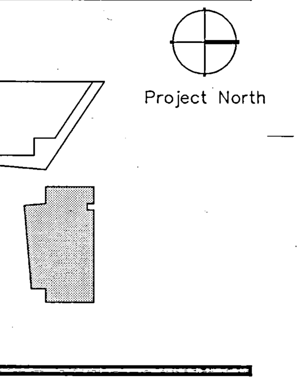

Drawing Title
WALL SECTIONS AUDITORIUM

SCALE AS NOTED
Scale
3193000
Project Number
06OCT00
Baseline Date
A4.3.6
Drawing Number

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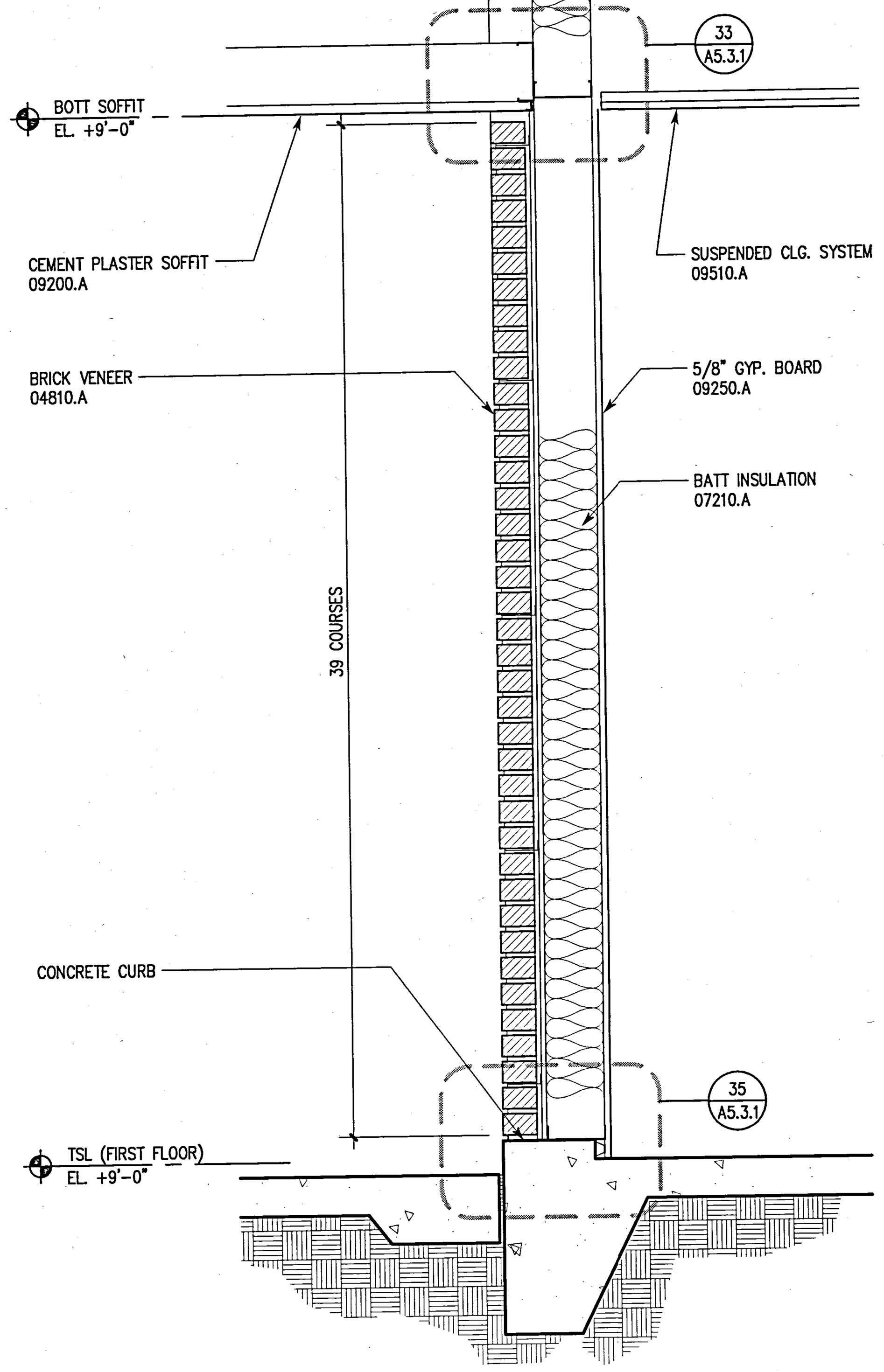
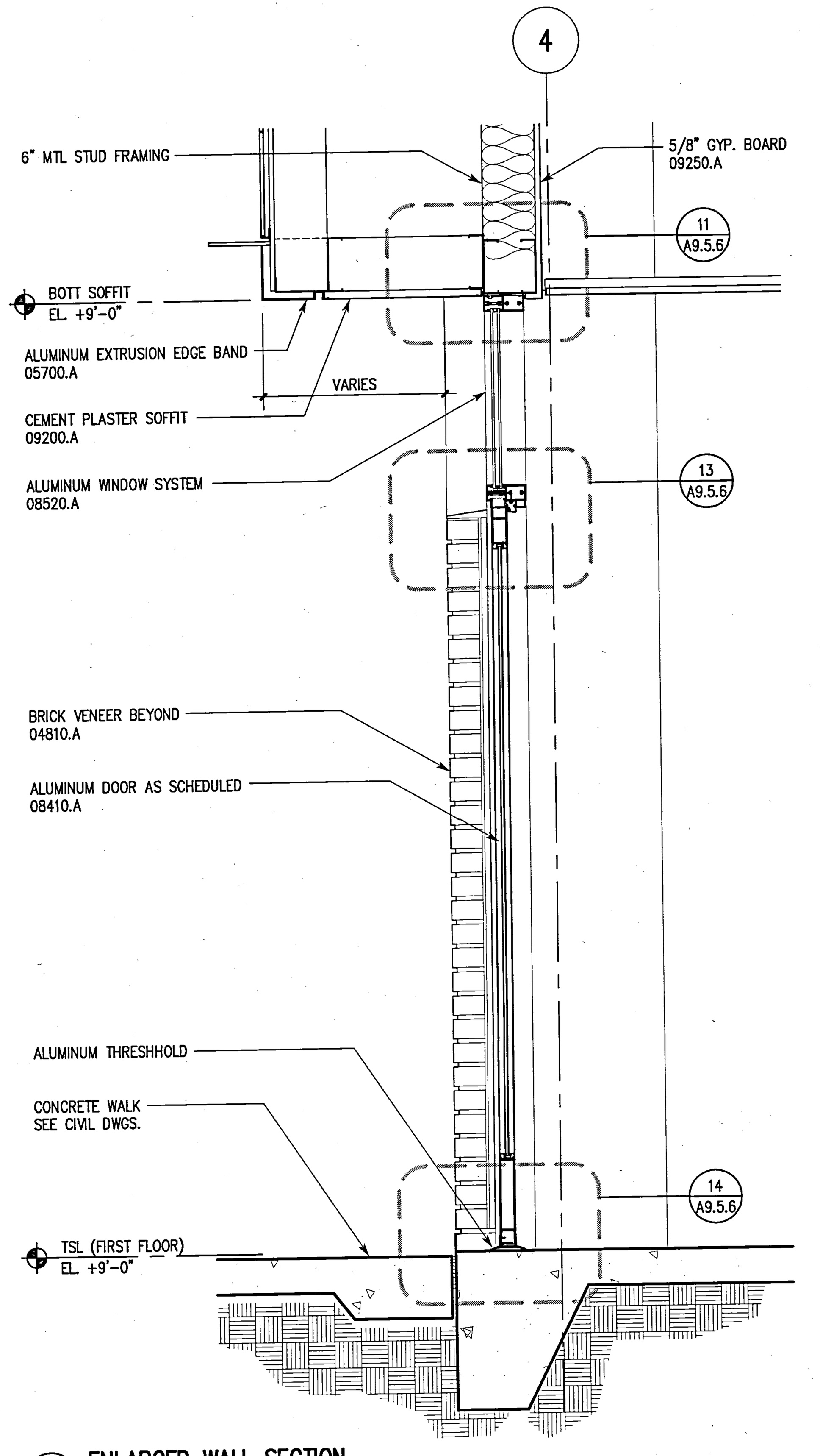
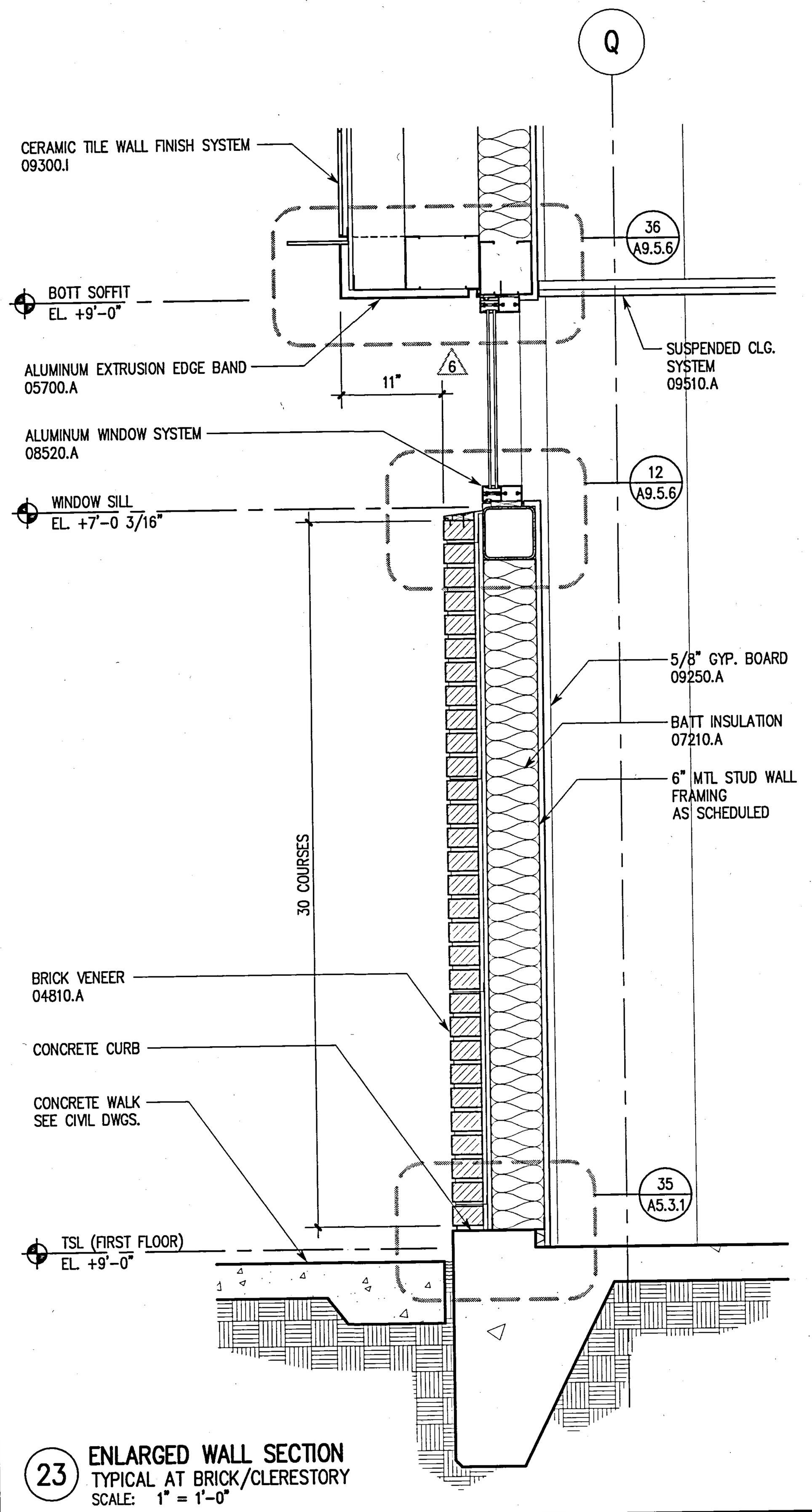


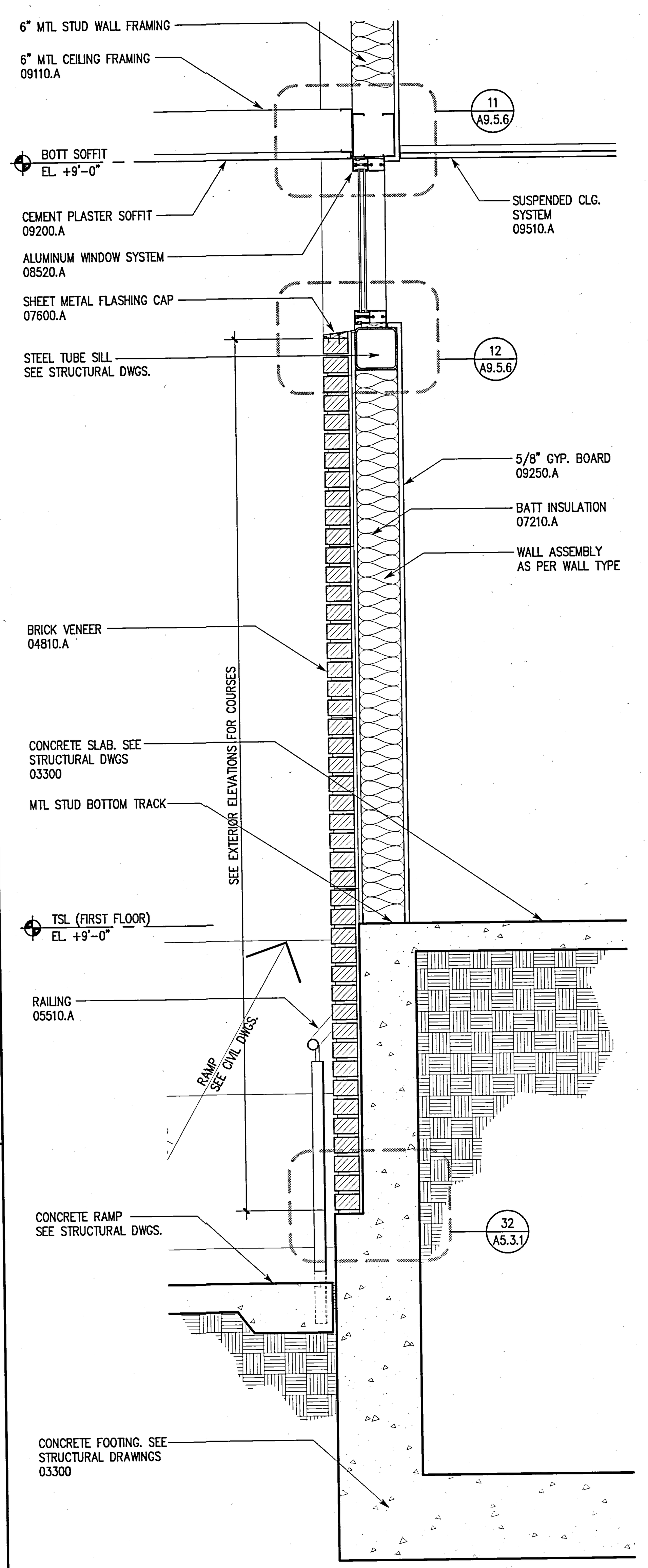
38 ENLARGED WALL SECTION
AT FULL HEIGHT BRICK
SCALE: 1" = 1'-0"



33 ENLARGED WALL SECTION
TYPICAL AT DOOR/CLERESTORY
SCALE: 1" = 1'-0"

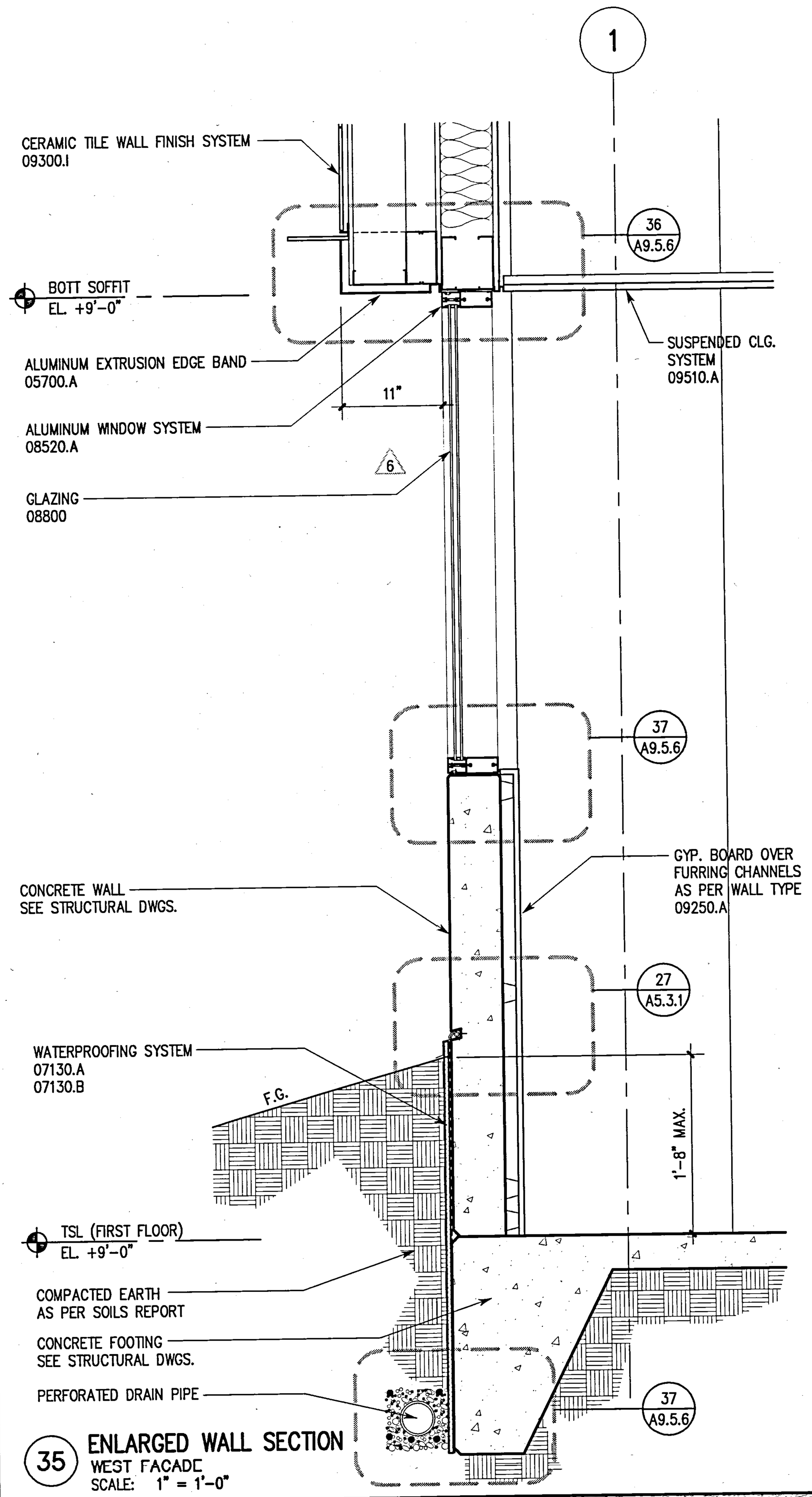


23 ENLARGED WALL SECTION
TYPICAL AT BRICK/CLERESTORY
SCALE: 1" = 1'-0"

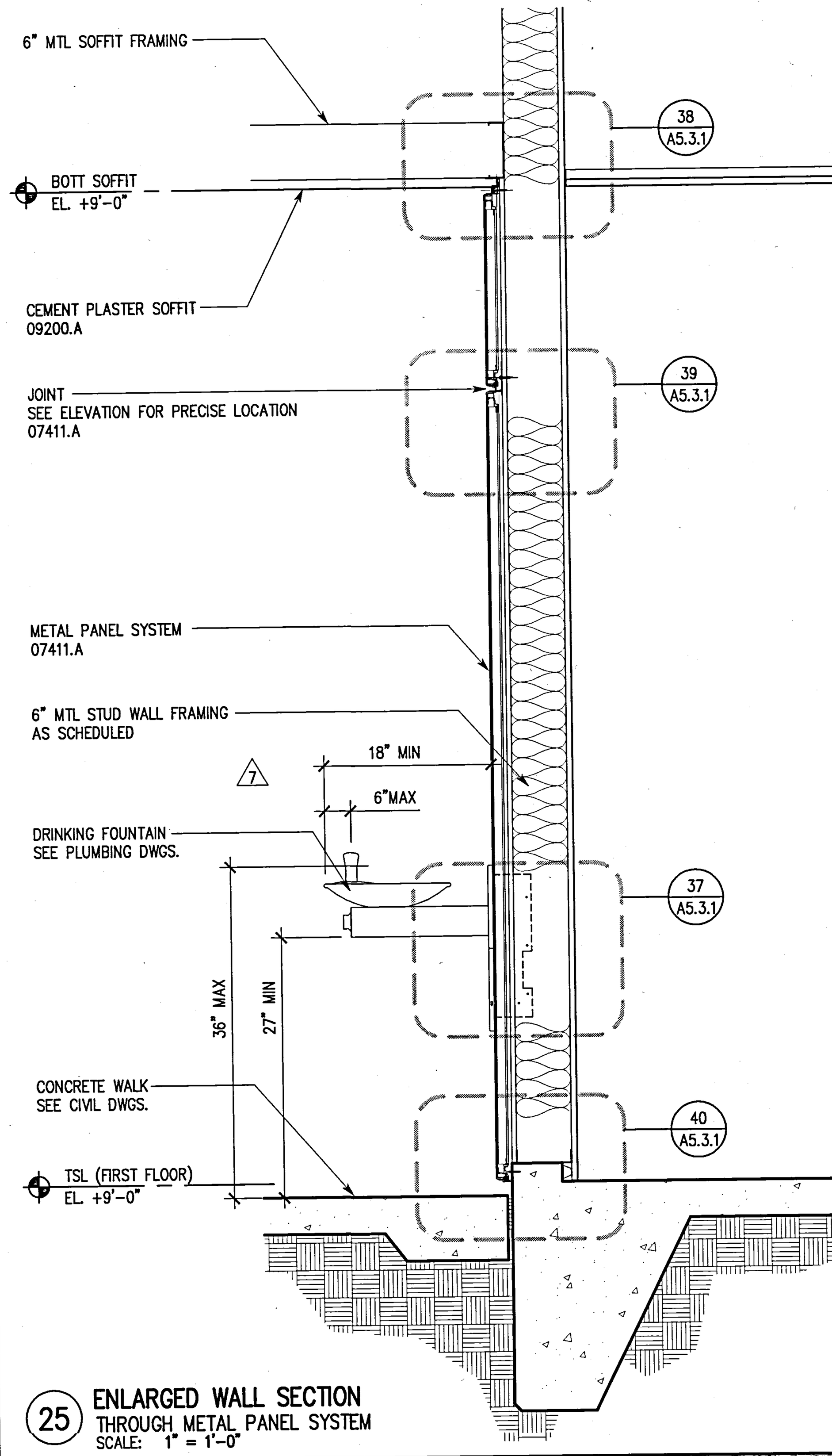


15 ENLARGED WALL SECTION
TYPICAL
SCALE: 1" = 1'-0"

40 NOT USED
SCALE:



35 ENLARGED WALL SECTION
WEST FACADE
SCALE: 1" = 1'-0"



25 ENLARGED WALL SECTION
THROUGH METAL PANEL SYSTEM
SCALE: 1" = 1'-0"

KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

GENERAL NOTES

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900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for	Rev	Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

ENLARGED
WALL SECTIONS

SCALE AS SHOWN

Scale
3193000
Project Number
06OCT00
Baseline Date

A4.4.1
Drawing Number

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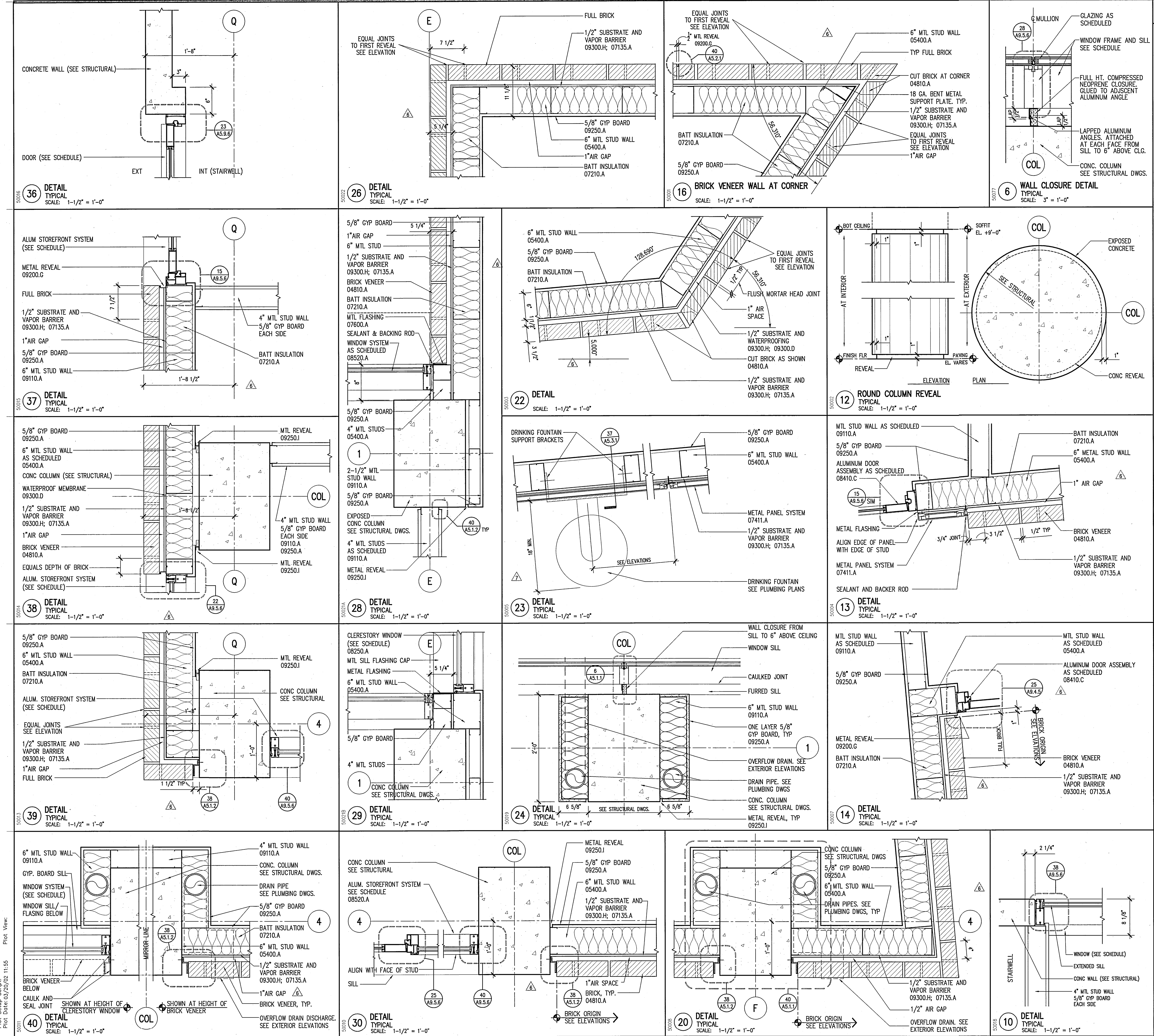

KEYED NOTES

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05120 – STRUCTURAL STEEL
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05400 – STRUCTURAL STEEL STUD
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07411.B – METAL PANEL SYSTEM (GRAY)
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07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
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09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
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09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
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09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

GENERAL NOTES

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SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title
DETAILS

Scale: AS NOTED
Project Number: 3193000
Baseline Date: 06OCT00
Drawing Number: A5.1.1

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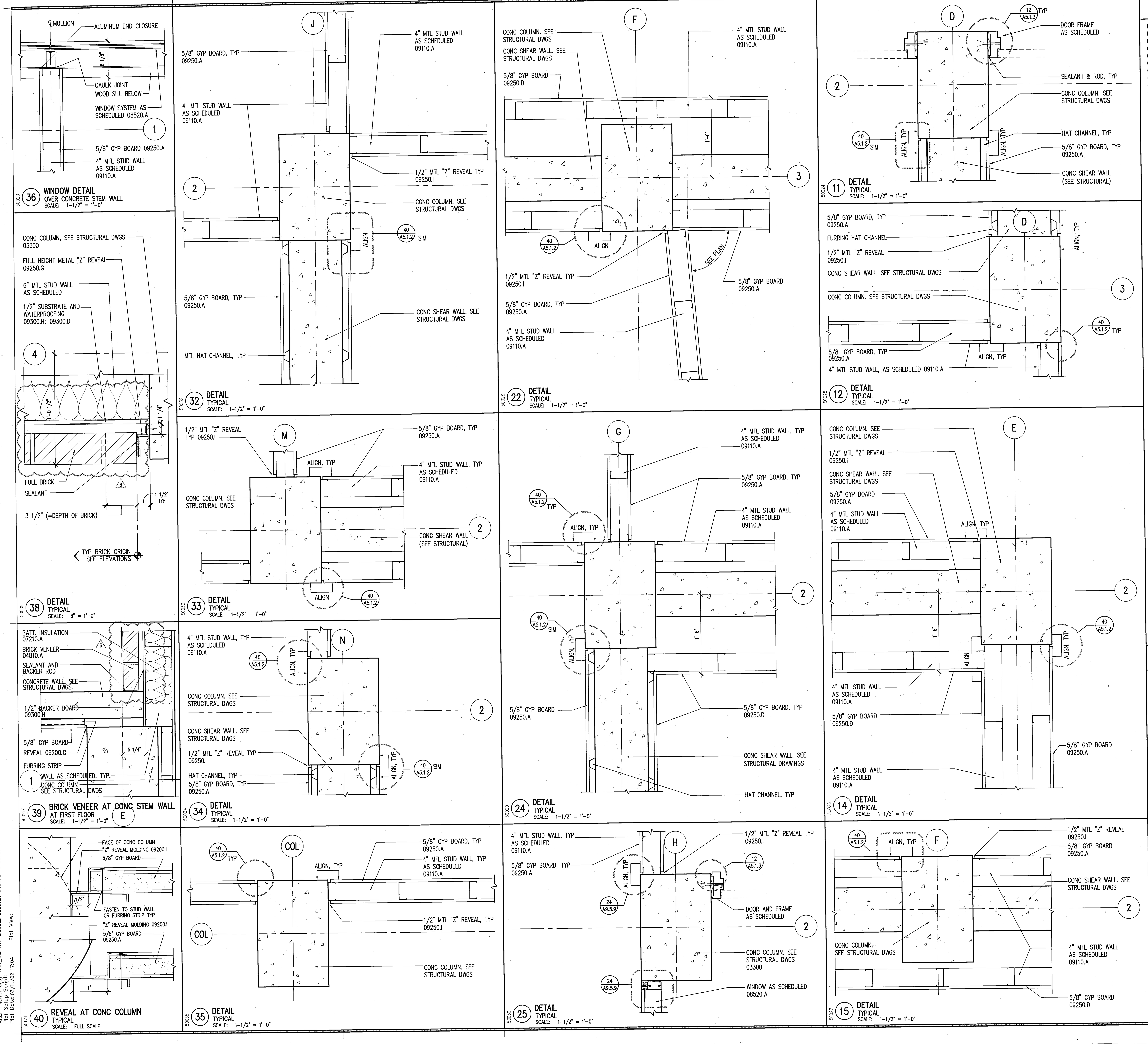

KEYED NOTES

- 03300 – CAST IN PLACE CONCRETE
- 04810.A – BRICK VENEER
- 04810.B – BRICK VENEER ANCHORS
- 05120 – STRUCTURAL STEEL
- 05315 – METAL DECKING
- 05400 – STRUCTURAL STEEL STUD
- 05500.A – STEEL RAILINGS & HANDRAILS
- 05500.I – METAL MESH
- 05500.J – PERFORATED ALUMINUM SHEET
- 05510.A – METAL STAIR/HANDRAIL
- 05700.A – ALUMINUM EXTRUSION – 4" FIN
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- 07135.A – AIR AND VAPOR BARRIER
- 07210.A – BATT INSULATION
- 07411.A – METAL PANEL SYSTEM (SILVER)
- 07411.B – METAL PANEL SYSTEM (GRAY)
- 07510.A – ROOFING SYSTEM
- 07510.C – WALKING PADS
- 07510.D – CANT STRIP & FLASHING SCREED
- 07600.A – SHEET METAL FLASHING
- 07600.D – METAL PARAPET CAP
- 07600.F – METAL DOWNSPOUT
- 07600.I – FLEXIBLE MEMBRANE
- 07600.J – SHEET METAL ROOFING
- 07600.K – RIGID INSULATION
- 07611.A – STANDING SEAM METAL ROOFING
- 07611.B – METAL FASCIA
- 07730.B – PENTHOUSE VENT
- 07811.A – FIREPROOFING
- 07840.E – FIRE STOPPING
- 07900 – SEALANT AND BACKER ROD
- 08310.A – ACCESS PANEL
- 08410.A – ALUMINUM WINDOW WALL SYSTEM
- 08410.B – ALUMINUM STOREFRONT
- 08410.C – ALUMINUM DOOR
- 08520.A – ALUMINUM WINDOW SYSTEM
- 08800 – GLAZING
- 09110.A – NON-BEARING METAL STUD
- 09110.B – METAL SHAFTWALL STUD
- 09120.B – SUSPENDED CEILING SYSTEM
- 09200.A – CEMENT PLASTER
- 09200.G – METAL REVEAL AT CEMENT PLASTER
- 09250.A – 5/8" GYP. BOARD
- 09250.C – 1" SHAFT LINER
- 09250.D – 5/8" WATER RESISTANT GYP BD
- 09250.I – METAL REVEAL AT GYP. BOARD
- 09250.J – GYPSUM SHEATHING
- 09300.B – GLAZED CERAMIC TILE
- 09300.D – WATERPROOF MEMBRANE
- 09300.H – 1/2" CEMENTITIOUS BACKER BOARD
- 09300.I – CERAMIC TILE WALL FINISH
- 09510.A – SUSPENDED CEILING SYSTEM
- 09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
- 09515.B – PERFORATED METAL PANEL
- 09575.A – PERFORATED WOOD PANEL
- 09575.B – ACOUSTICAL BACKING
- 09710.A – ACOUSTICAL PANEL
- 09775.A – METAL WALL PANEL
- 09820.A – ACOUSTICAL INSULATION – BATT
- 09820.C – ACOUSTICAL INSULATION – BLACK
- 10100.A – CHALK BOARD
- 10200.A – FALSE ALUMINUM LOUVER
- 10200.B – ALUMINUM LOUVER
- 14240.A – ELEVATOR

GENERAL NOTES

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310.586.5400
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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

DETAILS

Scale: AS NOTED

Project Number: 3193000

Baseline Date: 06OCT00

Drawing Number: A5.1.2

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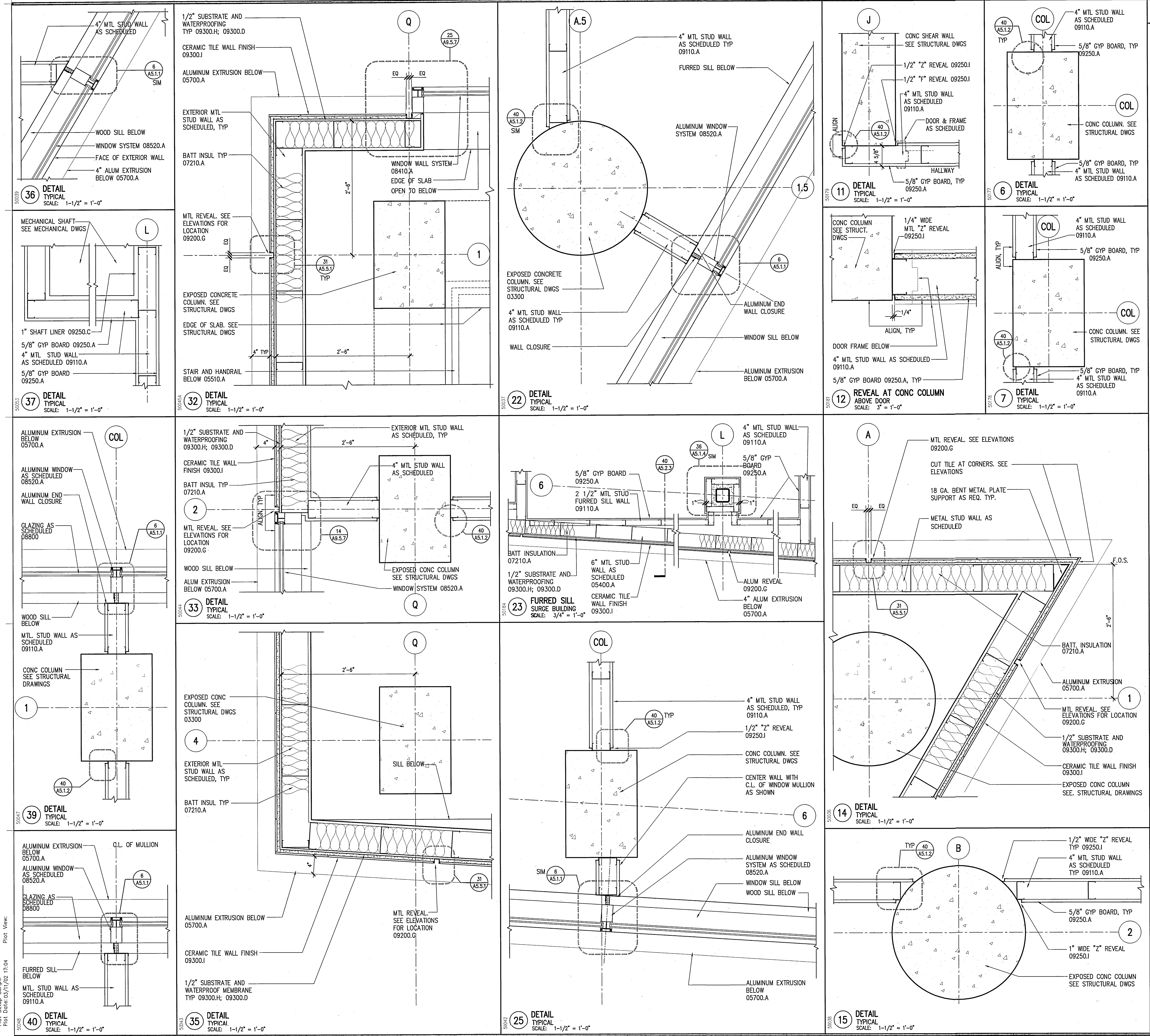

KEYED NOTES

03300	CAST IN PLACE CONCRETE
04810.A	BRICK VENEER
04810.B	BRICK VENEER ANCHORS
05120	STRUCTURAL STEEL
05315	METAL DECKING
05400	STRUCTURAL STEEL STUD
05500.A	STEEL RAILINGS & HANDRAILS
05500.I	METAL MESH
05500.J	PERFORATED ALUMINUM SHEET
05510.A	METAL STAIR/HANDRAIL
05700.A	ALUMINUM EXTRUSION – 4" FIN
05700.B	ALUMINUM EXTRUSION – 1" FIN
06200.A	WOOD WINDOW SILL
07130.A	WATERPROOF MEMBRANE
07130.B	DRAINAGE BOARD
07135.A	AIR AND VAPOR BARRIER
07210.A	BATT INSULATION
07411.A	METAL PANEL SYSTEM (SILVER)
07411.B	METAL PANEL SYSTEM (GRAY)
07510.A	ROOFING SYSTEM
07510.C	WALKING PADS
07510.D	CANT STRIP & FLASHING SCREED
07600.A	SHEET METAL FLASHING
07600.D	METAL PARAPET CAP
07600.F	METAL DOWNSPOUT
07600.I	FLEXIBLE MEMBRANE
07600.J	SHEET METAL ROOFING
07600.K	RIGID INSULATION
07611.A	STANDING SEAM METAL ROOFING
07611.B	METAL FASCIA
07730.B	PENTHOUSE VENT
07811.A	FIREPROOFING
07840.E	FIRE STOPPING
07900	SEALANT AND BACKER ROD
08310.A	ACCESS PANEL
08410.A	ALUMINUM WINDOW WALL SYSTEM
08410.B	ALUMINUM STOREFRONT
08410.C	ALUMINUM DOOR
08520.A	ALUMINUM WINDOW SYSTEM
08800	GLAZING
09110.A	NON-BEARING METAL STUD
09110.B	METAL SHAFTWALL STUD
09120.B	SUSPENDED CEILING SYSTEM
09200.A	CEMENT PLASTER
09200.G	METAL REVEAL AT CEMENT PLASTER
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09250.C	1" SHAFT LINER
09250.D	5/8" WATER RESISTANT GYP BD
09250.I	METAL REVEAL AT GYP. BOARD
09250.J	GYPSUM SHEATHING
09300.B	GLAZED CERAMIC TILE
09300.D	WATERPROOF MEMBRANE
09300.H	1/2" CEMENTITIOUS BACKER BOARD
09300.I	CERAMIC TILE WALL FINISH
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09515.A	PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B	PERFORATED METAL PANEL
09575.A	PERFORATED WOOD PANEL
09575.B	ACOUSTICAL BACKING
09710.A	ACOUSTICAL PANEL
09775.A	METAL WALL PANEL
09820.A	ACOUSTICAL INSULATION – BATT
09820.C	ACOUSTICAL INSULATION – BLACK
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10200.A	FALSE ALUMINUM LOUVER
10200.B	ALUMINUM LOUVER
14240.A	ELEVATOR

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Issued for	Rev	Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title
DETAILS

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Baseline Date: 06OCT00
Drawing Number: A5.1.3

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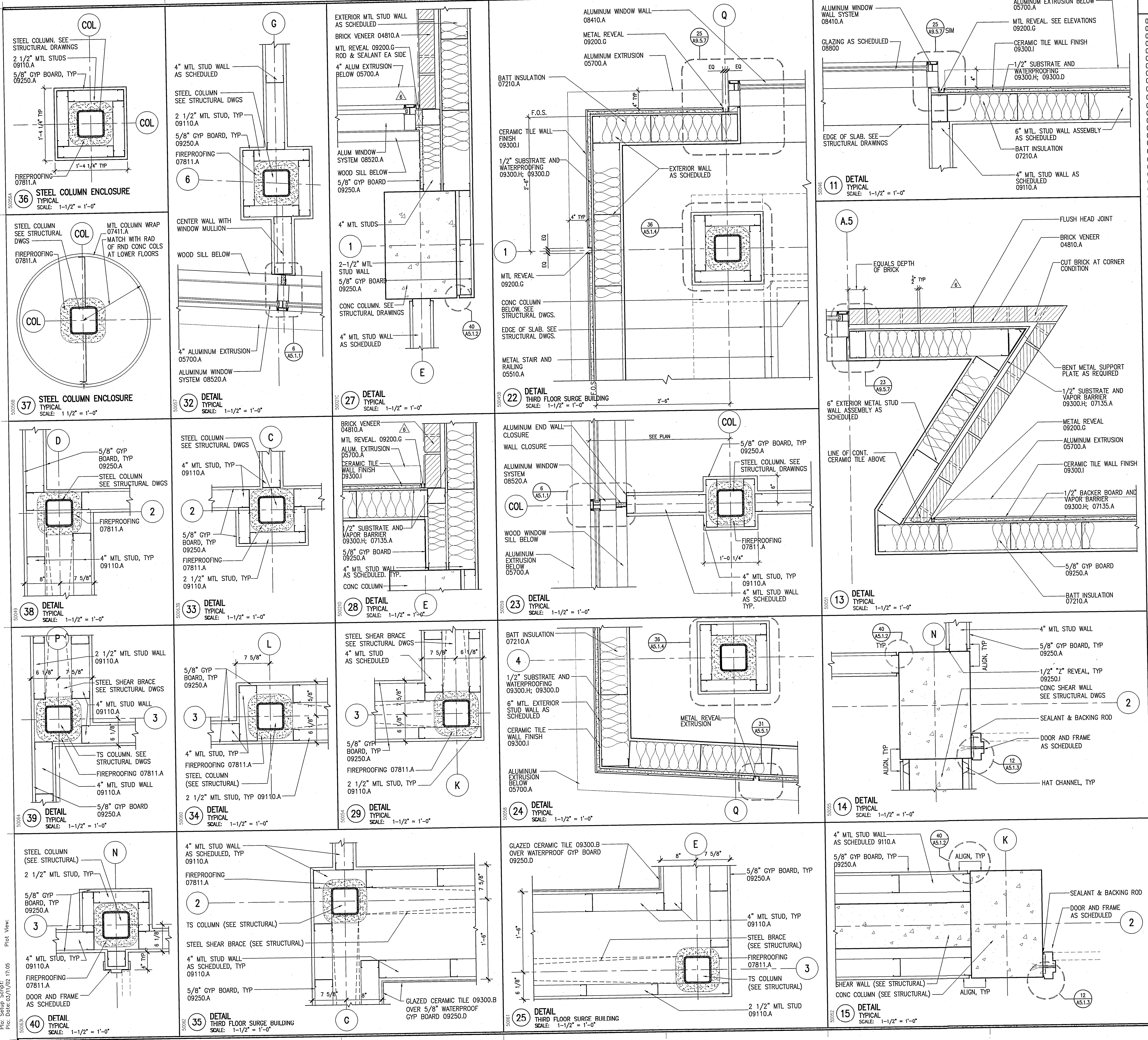
Plot Date: 03/11/02 17:04



KEYED NOTES

- 03300 – CAST IN PLACE CONCRETE
- 04810.A – BRICK VENEER
- 04810.B – BRICK VENEER ANCHORS
- 05120 – STRUCTURAL STEEL
- 05315 – METAL DECKING
- 05400 – STRUCTURAL STEEL STUD
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- 07611.B – METAL FASCIA
- 07730.B – PENTHOUSE VENT
- 07811.A – FIREPROOFING
- 07840.E – FIRE STOPPING
- 07900 – SEALANT AND BACKER ROD
- 08310.A – ACCESS PANEL
- 08410.A – ALUMINUM WINDOW WALL SYSTEM
- 08410.B – ALUMINUM STOREFRONT
- 08410.C – ALUMINUM DOOR
- 08520.A – ALUMINUM WINDOW SYSTEM
- 08800 – GLAZING
- 09110.A – NON-BEARING METAL STUD
- 09110.B – METAL SHAFTWALL STUD
- 09120.B – SUSPENDED CEILING SYSTEM
- 09200.A – CEMENT PLASTER
- 09200.G – METAL REVEAL AT CEMENT PLASTER
- 09250.A – 5/8" GYP. BOARD
- 09250.C – 1" SHAFT LINER
- 09250.D – 5/8" WATER RESISTANT GYP BD
- 09250.I – METAL REVEAL AT GYP. BOARD
- 09250.J – GYPSUM SHEATHING
- 09300.B – GLAZED CERAMIC TILE
- 09300.D – WATERPROOF MEMBRANE
- 09300.H – 1/2" CEMENTITIOUS BACKER BOARD
- 09300.I – CERAMIC TILE WALL FINISH
- 09510.A – SUSPENDED CEILING SYSTEM
- 09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
- 09515.B – PERFORATED METAL PANEL
- 09575.A – PERFORATED WOOD PANEL
- 09575.B – ACOUSTICAL BACKING
- 09710.A – ACOUSTICAL PANEL
- 09775.A – METAL WALL PANEL
- 09820.A – ACOUSTICAL INSULATION – BATT
- 09820.C – ACOUSTICAL INSULATION – BLACK
- 10100.A – CHALK BOARD
- 10200.A – FALSE ALUMINUM LOUVER
- 10200.B – ALUMINUM LOUVER
- 14240.A – ELEVATOR

GENERAL NOTES

1. SEE STRUCTURAL DWGS. FOR TOP OF STEEL (TOS) ELEVATIONS.
2. TYPICAL CONDITIONS APPLY AT ALL DETAILS.
3. CALL-OUTS SHOWN ON ONE DETAIL SHALL APPLY TO ALL WHERE SAME CONDITIONS EXIST, U.O.N.
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310.586.1091

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

DETAILS

Scale: AS NOTED

Project Number: 3193000

Baseline Date: 06OCT00

Drawing Number: A5.1.4

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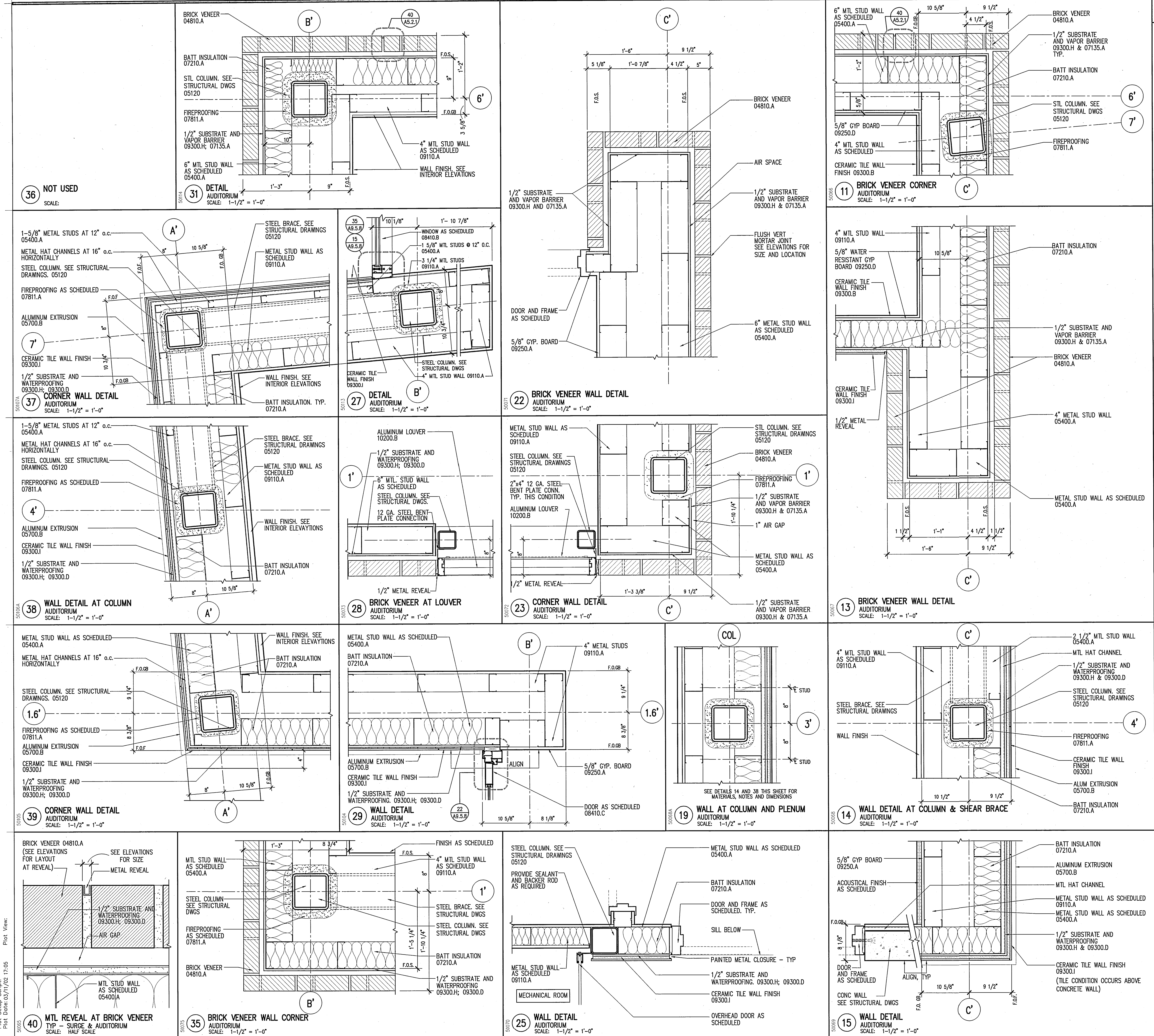

KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
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09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
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09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
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RECORD DRAWINGS

Key Plan

Project North

Drawing Title
DETAILS
AUDITORIUM

Scale: AS NOTED
Project Number: 3193000
Baseline Date: 06OCT00
Drawing Number: A5.2.1

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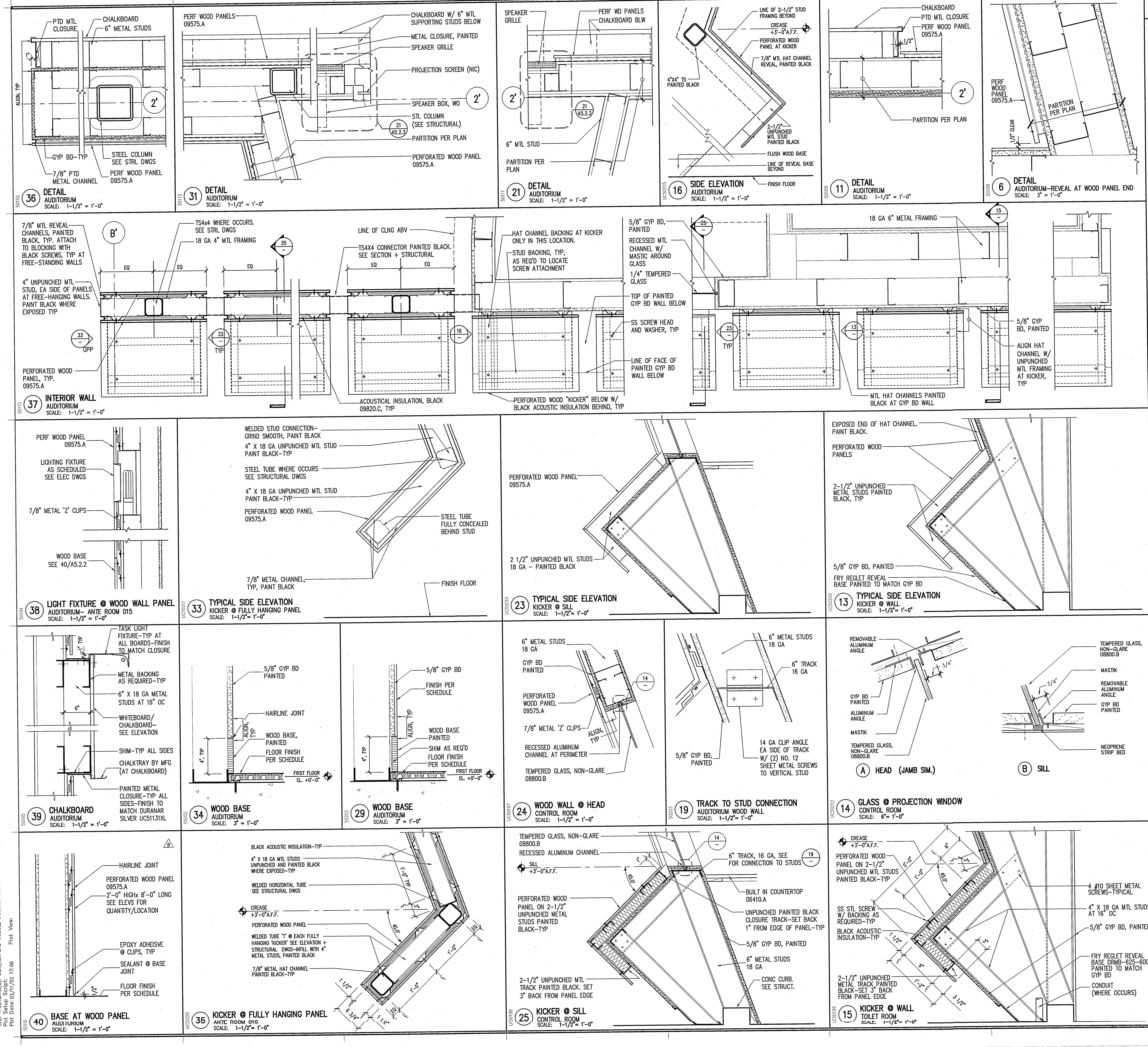
Plot View:



KEYED NOTES

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05120 – STRUCTURAL STEEL
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07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
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09200.G – METAL REVEAL AT CEMENT PLASTER
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09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
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10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

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Key Plan

Project North

Drawing Title

INTERIOR DETAILS AUDITORIUM

AS NOTED

Scale
3193000

Project Number
06OCT00

Baseline Date

A5.2.2

Drawing Number

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SCALE:

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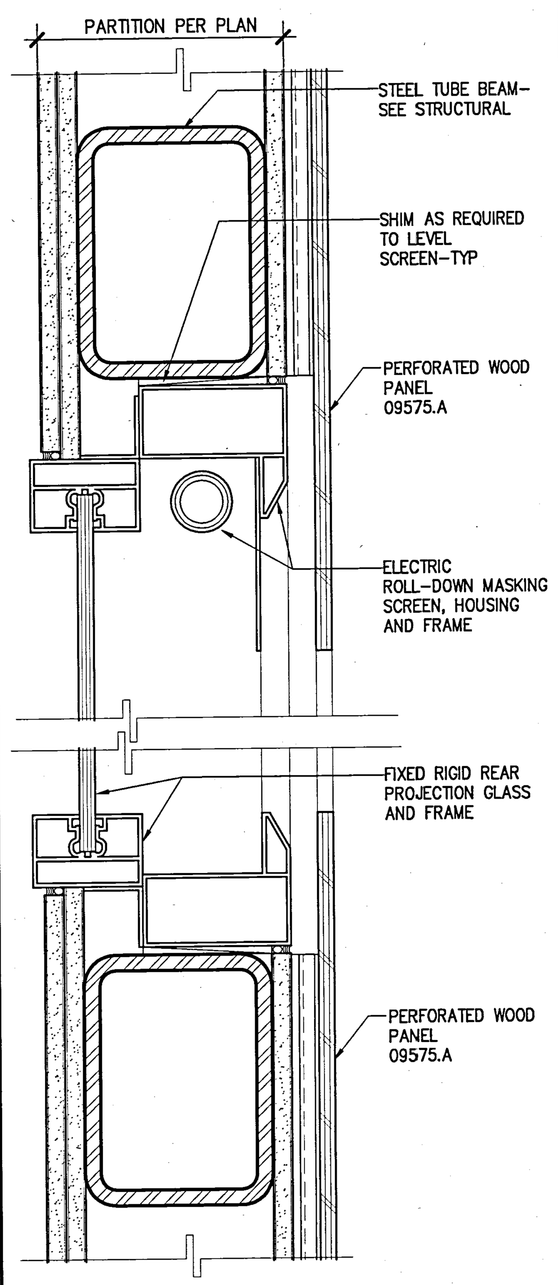

UC50214
27 FRAME AT REAR PROJECTION GLASS
HEAD AND SILL
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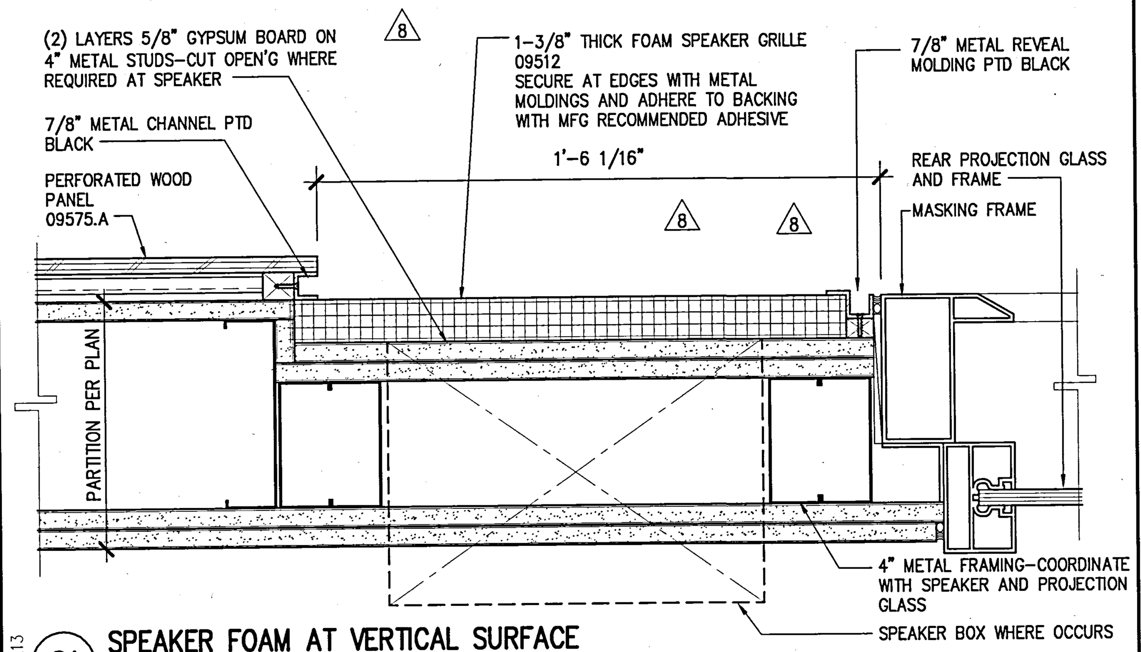

UC50213
21 SPEAKER FOAM AT VERTICAL SURFACE
PLAN SECTION
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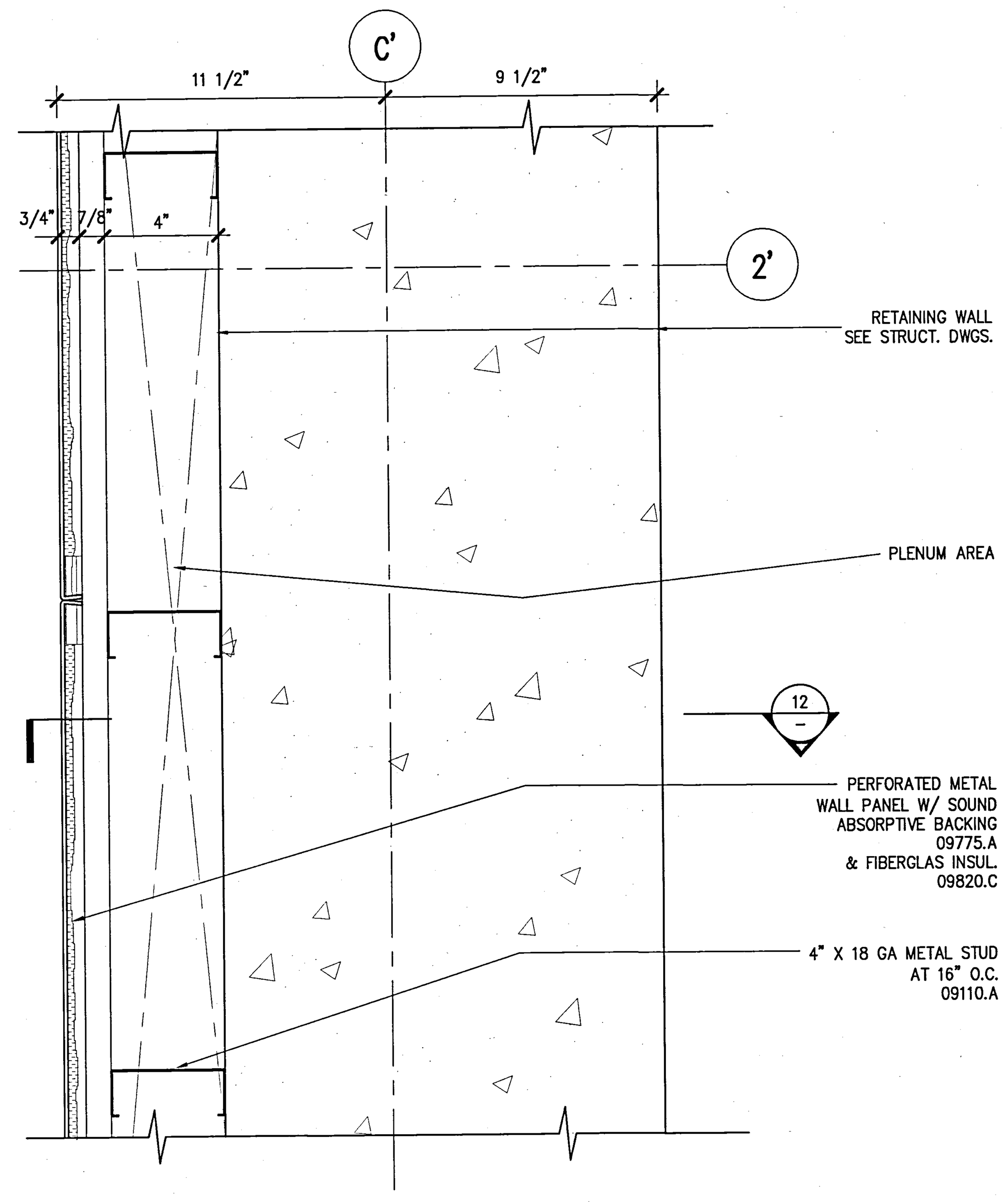

UC50189
23 SECTION THROUGH PLENUM
PLAN VIEW
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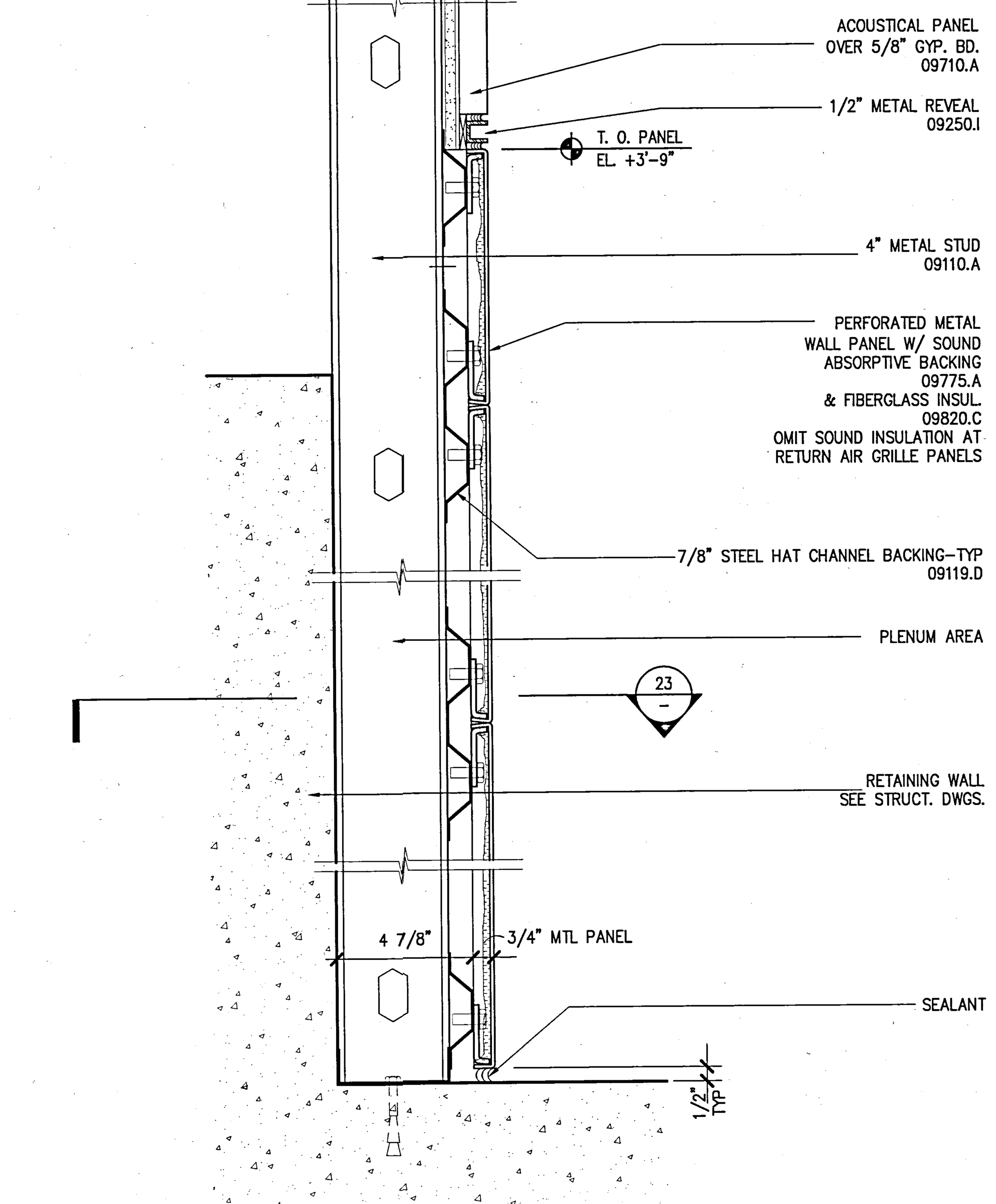

UC50186
12 DETAIL
SECTION THROUGH PLENUM
SCALE: 3" = 1'-0"

37 NOT USED
SCALE:

32 NOT USED
SCALE:

38 NOT USED
SCALE:

33 NOT USED
SCALE:

28 NOT USED
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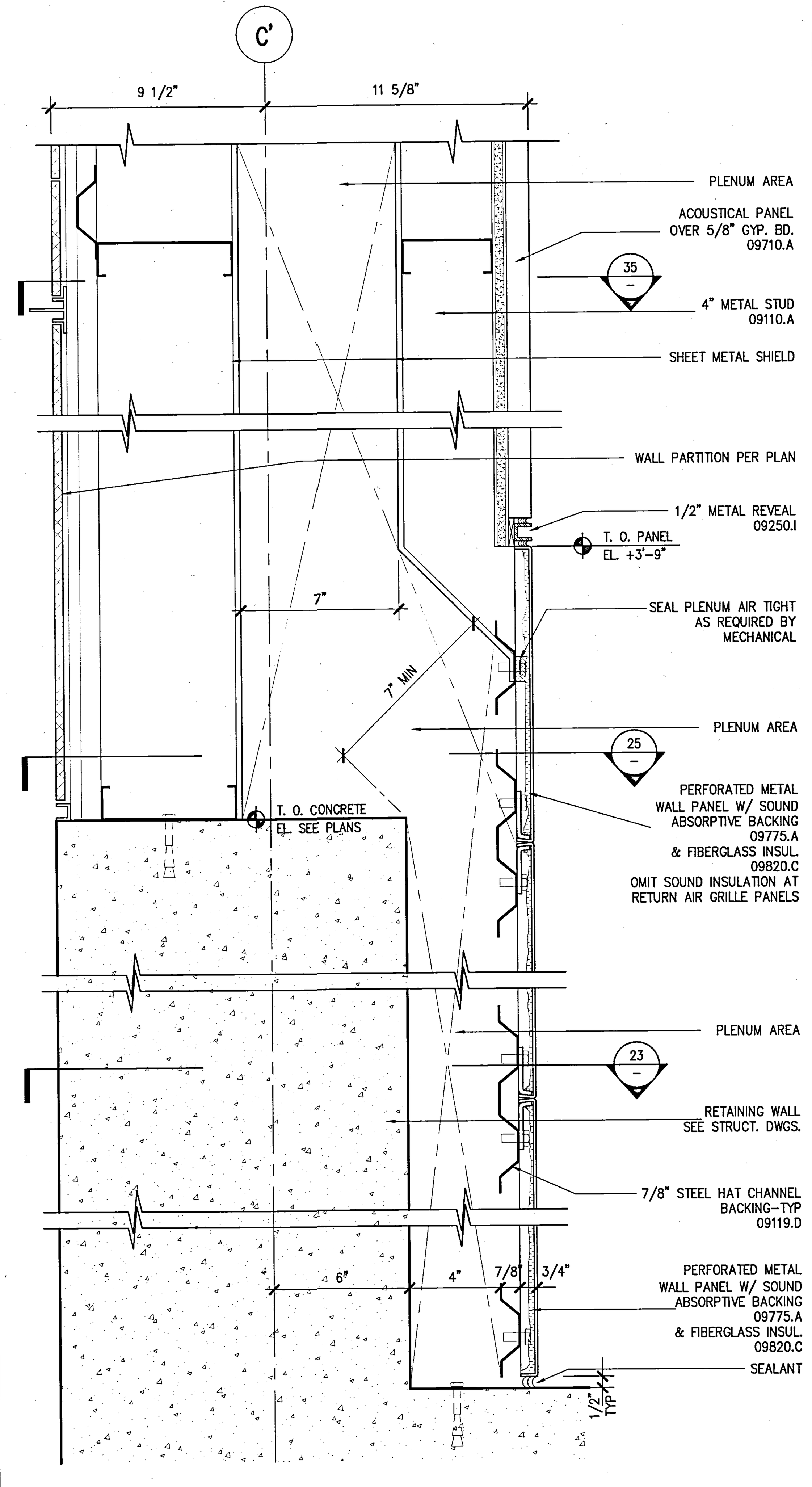

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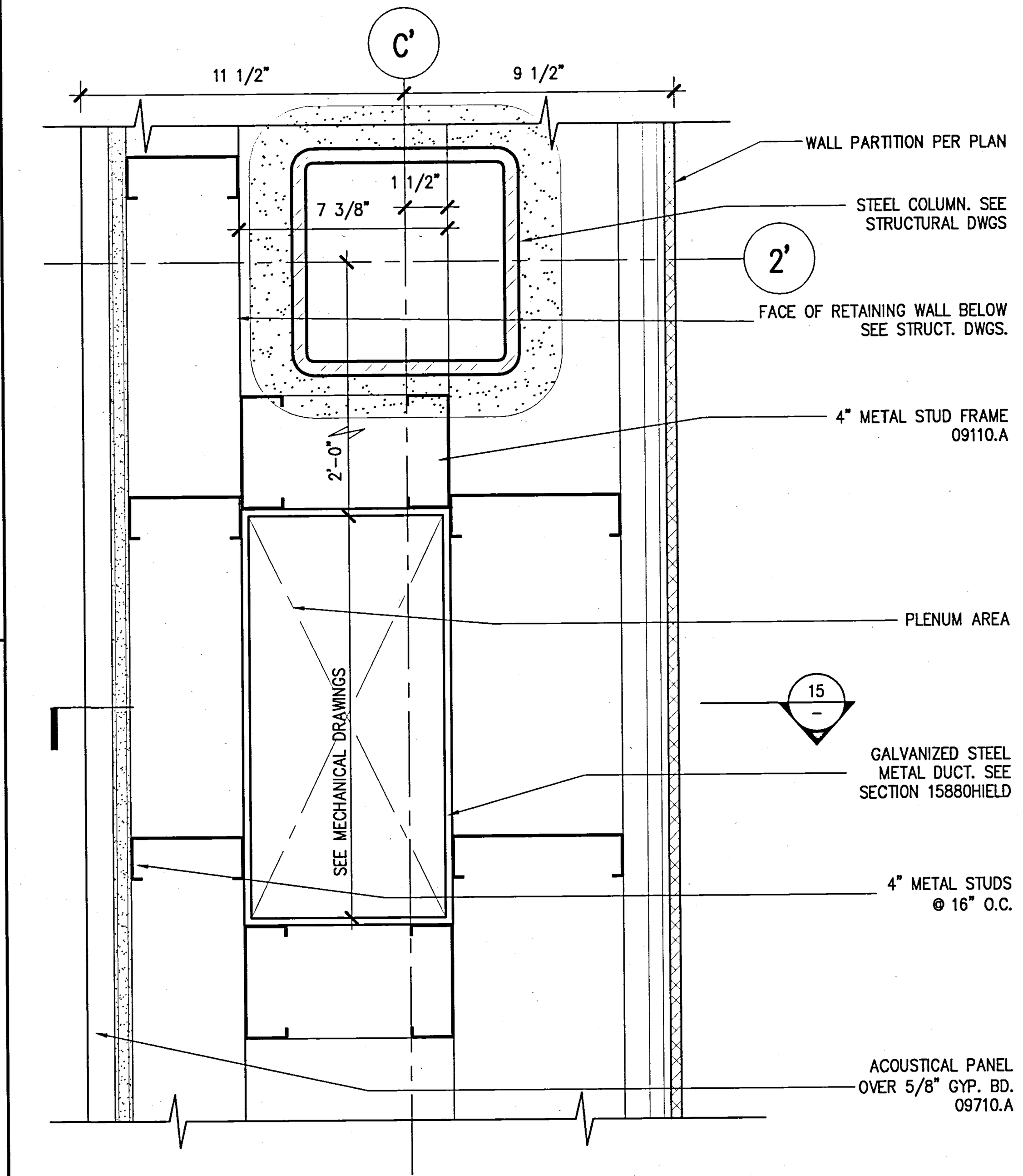

UC50190
35 SECTION THROUGH VERT PLENUM
PLAN VIEW
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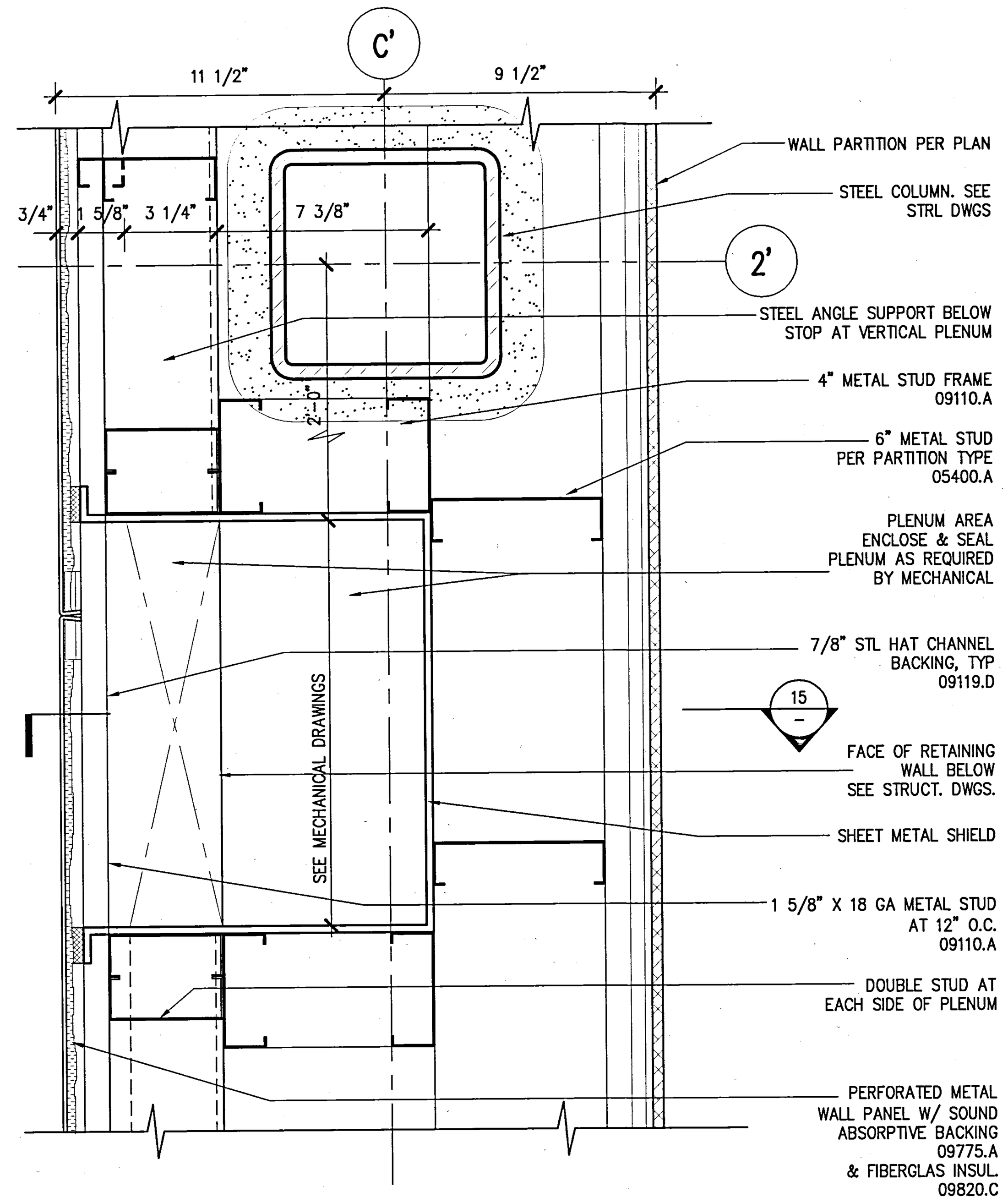

UC50188
25 SECTION THROUGH PLENUM
PLAN VIEW
SCALE: 3" = 1'-0"

UC50187
15 DETAIL
SECTION THROUGH PLENUM
SCALE: 3" = 1'-0"

40 NOT USED
SCALE:

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XREF Filename(s): UCR_Tblk UC50187 UC50186 UC50188 UC50189 UC50190 keynotes UC50213 UC50214
Plot Setup Script: Plot View:
Plot Date: 03/11/02 17:06

KEYED NOTES

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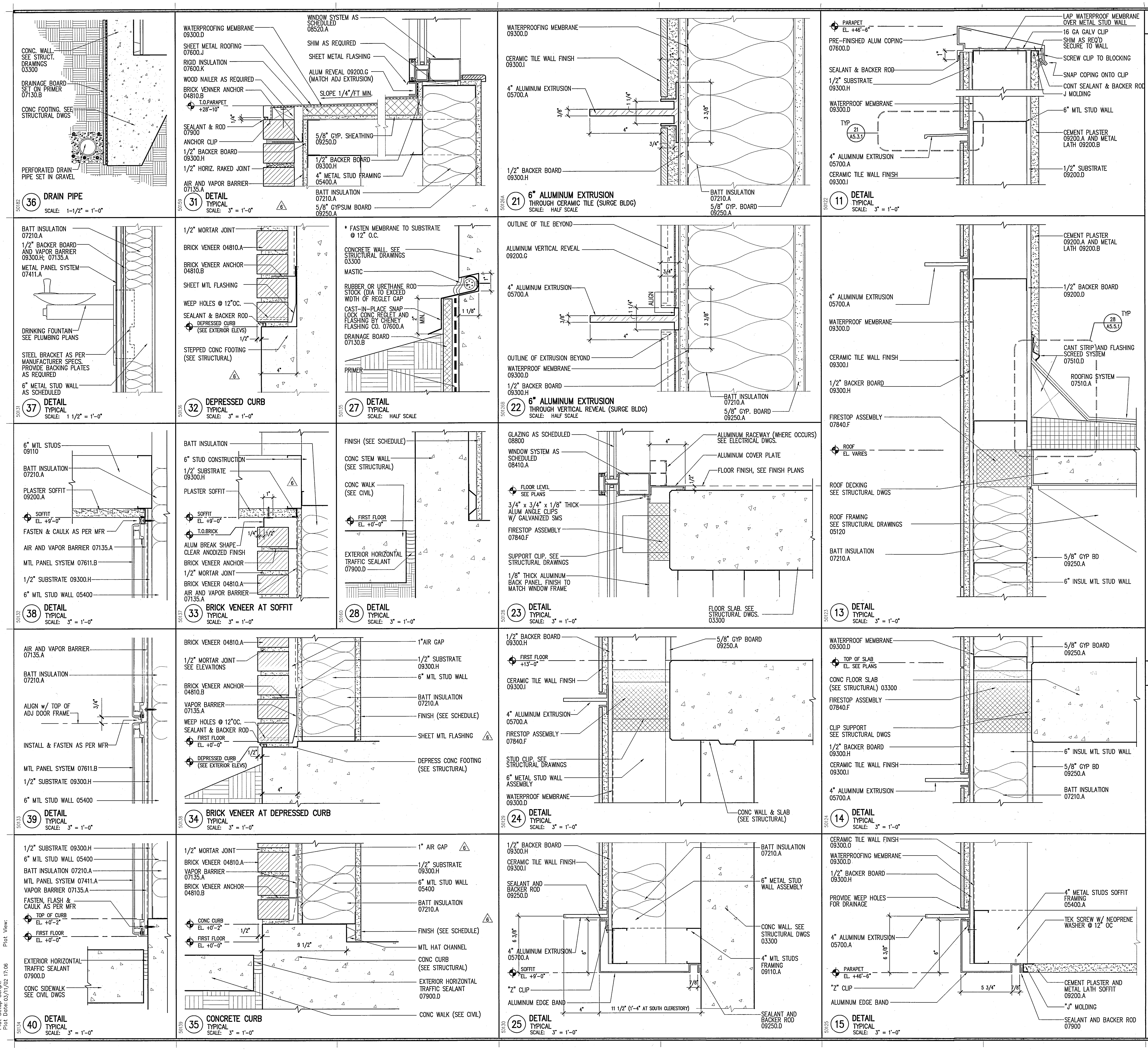
AUDITORIUM

AS NOTED
Scale 3193000
Project Number 06OCT00
Baseline Date
A5.2.3
Drawing Number



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03300 – CAST IN PLACE CONCRETE
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09250.C – 1" SHAFT LINER
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09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
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UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

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310.586.1091

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

VERTICAL DETAILS
SURGE BUILDING

SCALE AS SHOWN

Scale

Project Number 3193000

Baseline Date 06OCT00

Drawing Number A5.3.1

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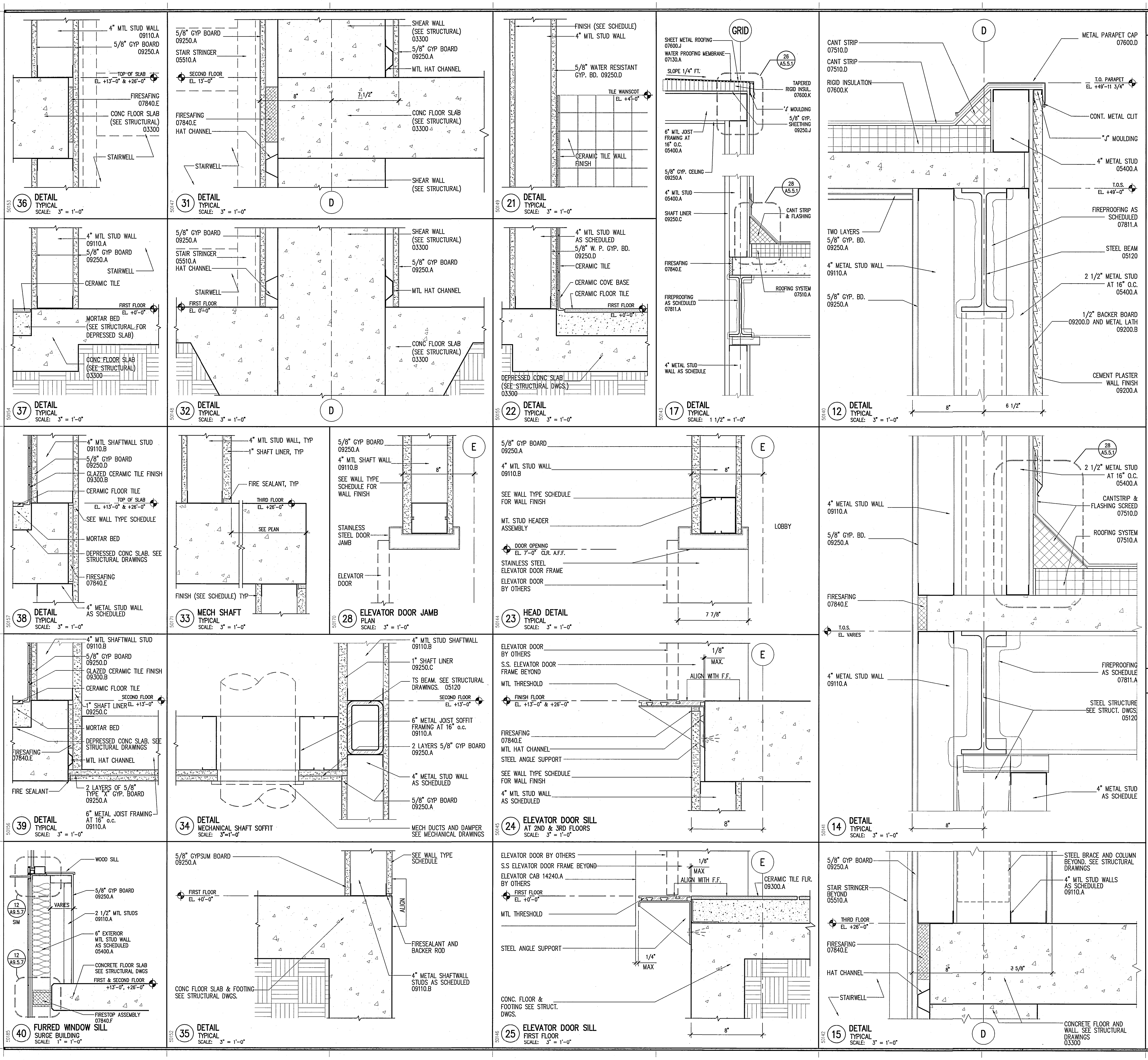

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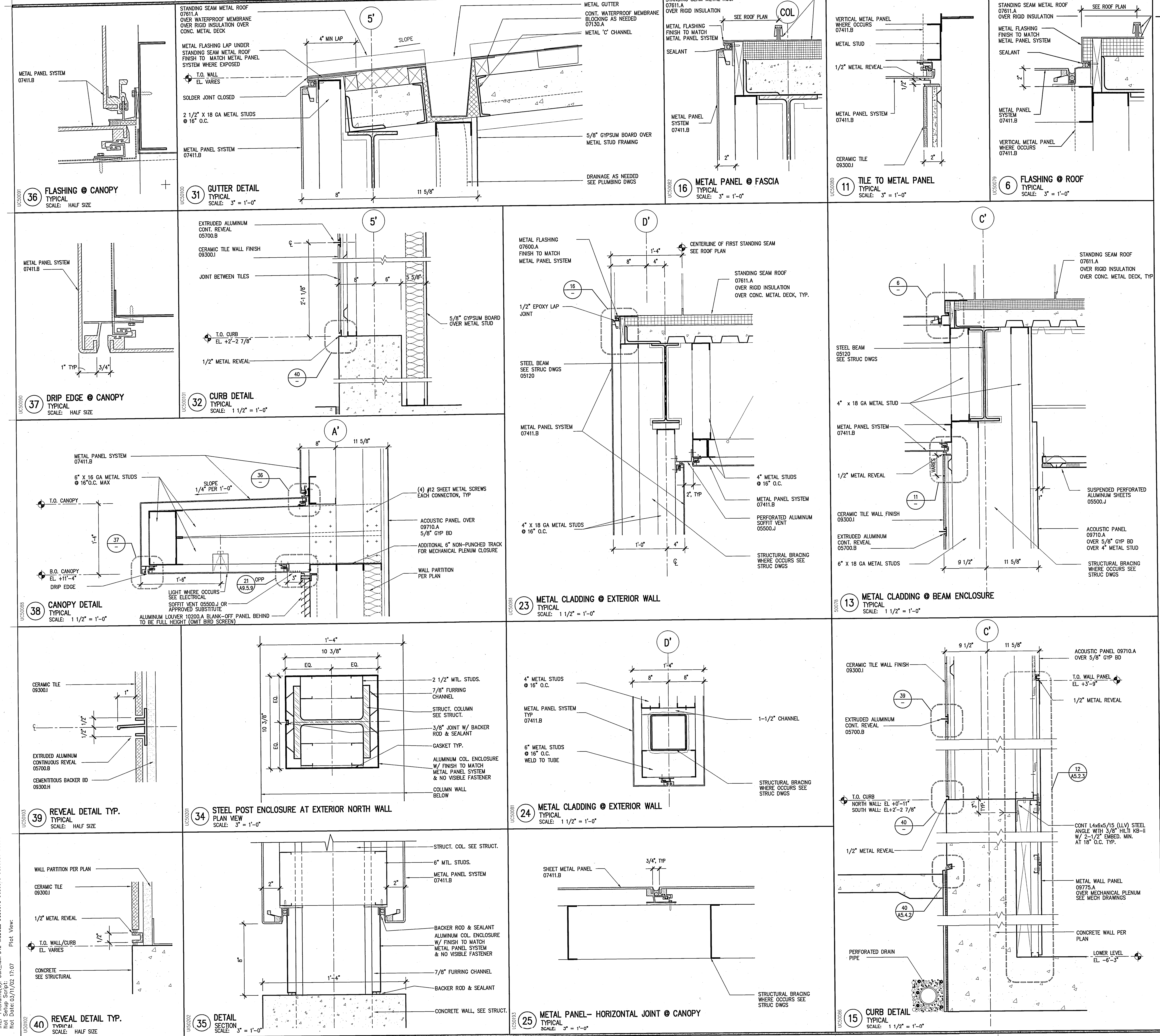
06OCT00
Baseline Date
A5.3.2
Drawing Number



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Drawing Title

DETAILS
AUDITORIUM

Scale
AS NOTED

Project Number
3193000

Baseline Date
06OCT00

Drawing Number
A5.4.1

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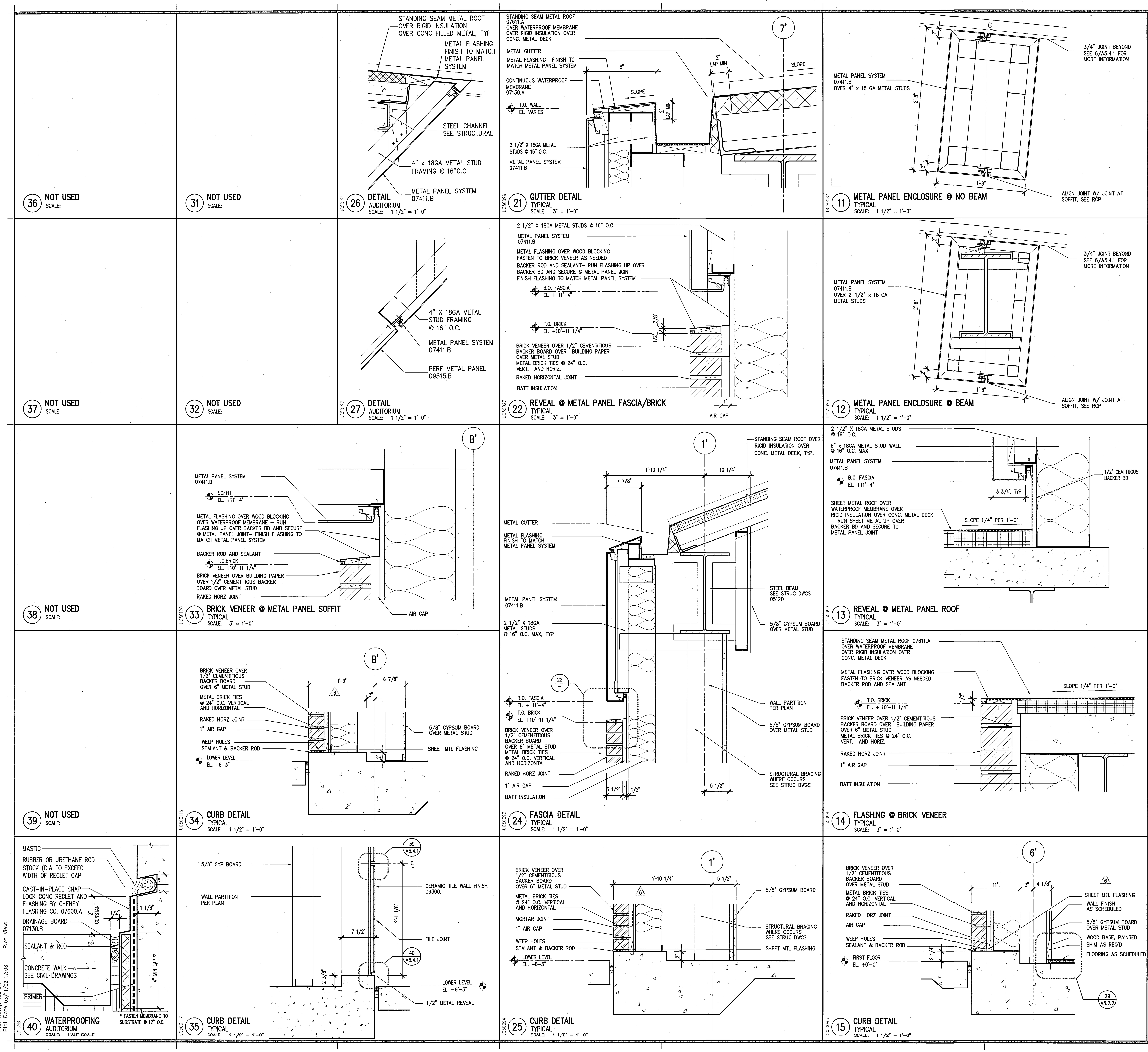

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EXTERIOR WALL DETAILS AUDITORIUM

AS NOTED
Scale

3193000
Project Number

06OCT00
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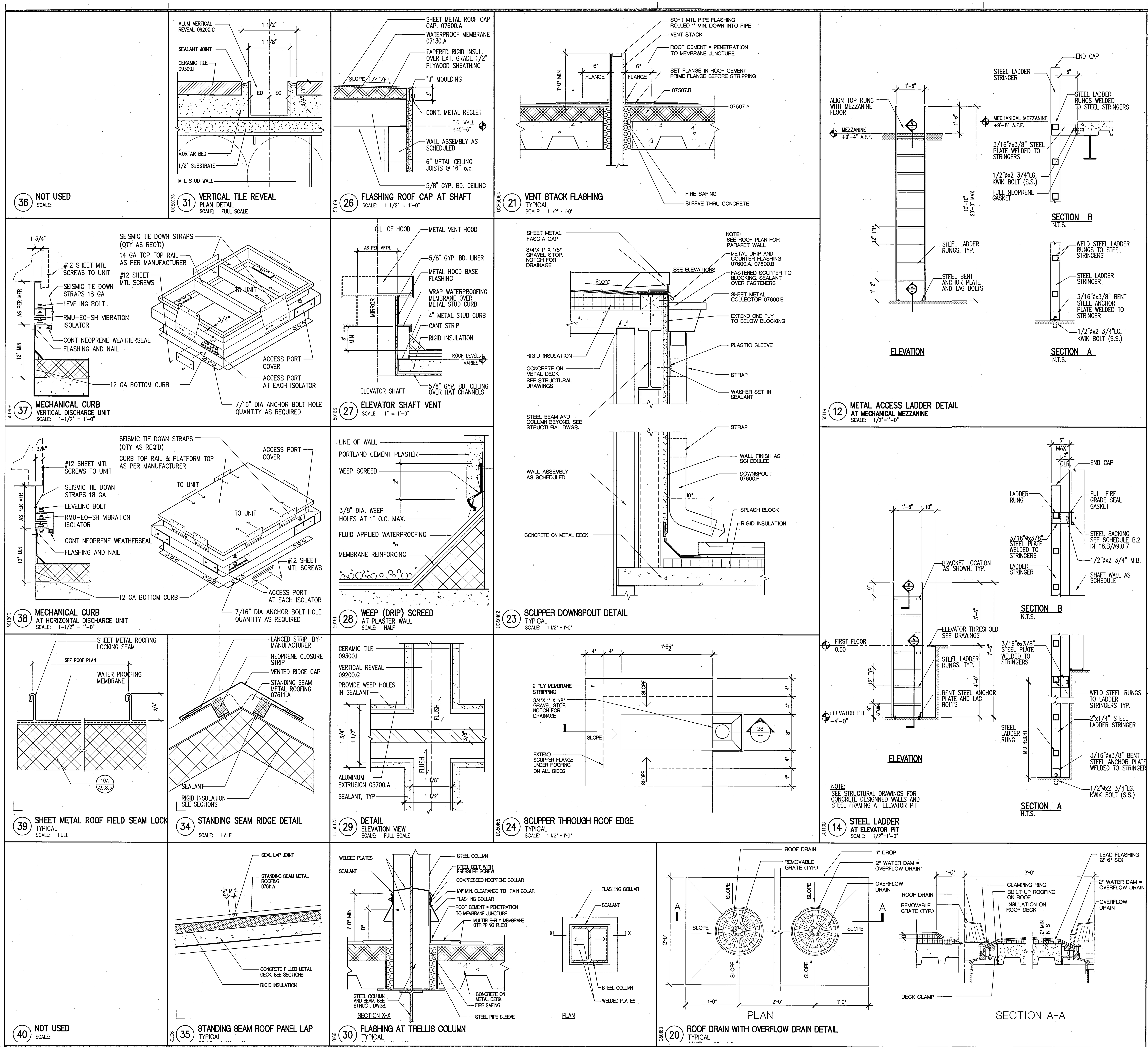

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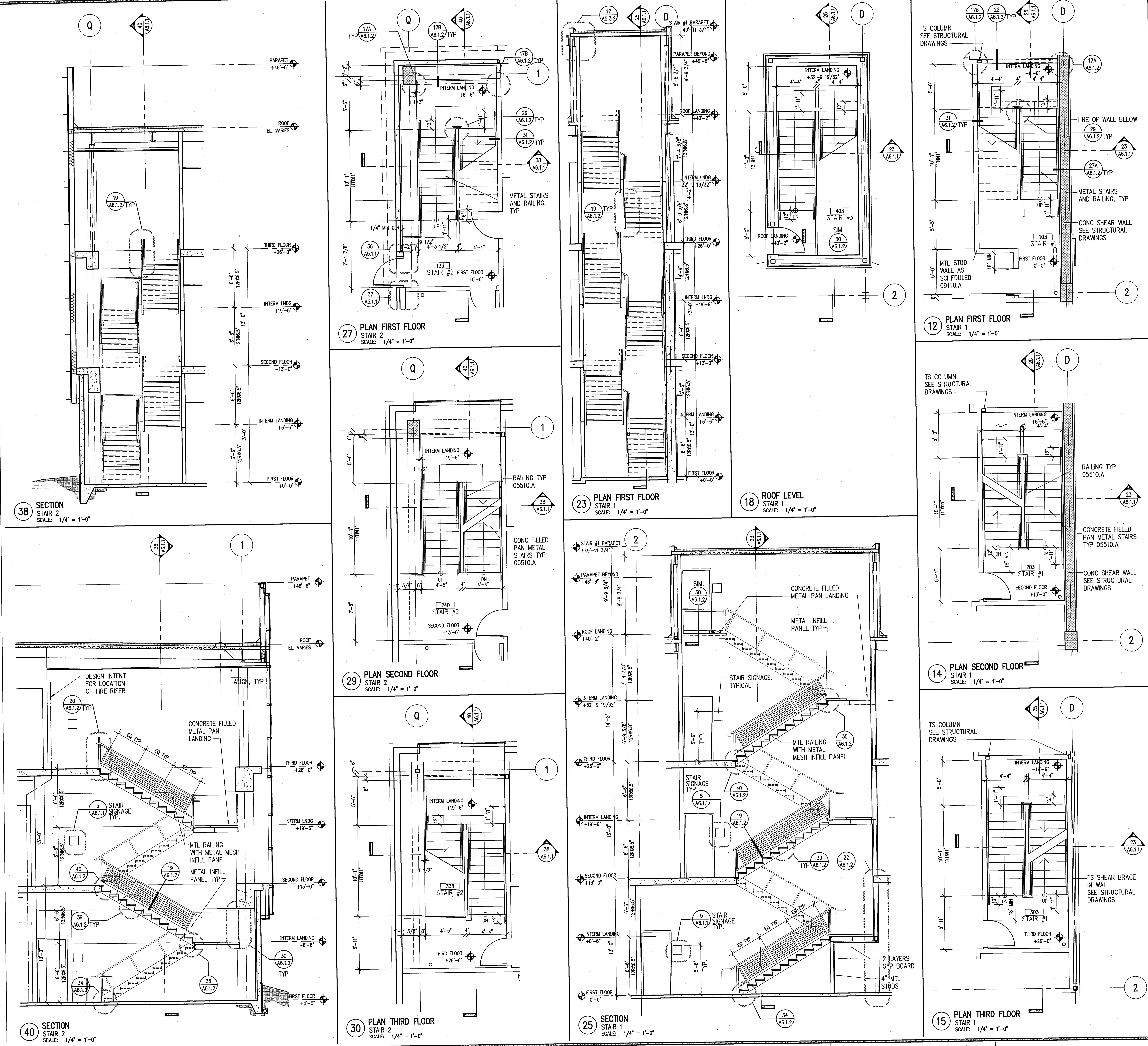

38 SECTION STAIR 2 SCALE: 1/4" = 1'-0"

27 PLAN FIRST FLOOR STAIR 2 SCALE: 1/4" = 1'-0"

29 PLAN SECOND FLOOR STAIR 2 SCALE: 1/4" = 1'-0"

30 PLAN THIRD FLOOR STAIR 2 SCALE: 1/4" = 1'-0"

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23 PLAN FIRST FLOOR STAIR 1 SCALE: 1/4" = 1'-0"

18 ROOF LEVEL STAIR 1 SCALE: 1/4" = 1'-0"

25 SECTION STAIR 1 SCALE: 1/4" = 1'-0"

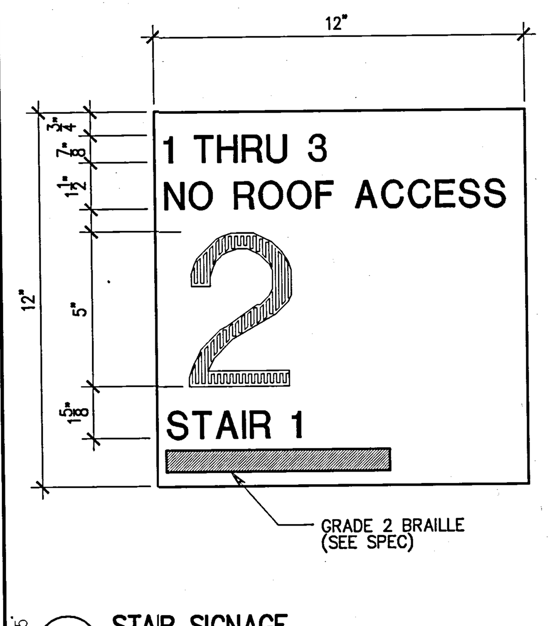
12 PLAN FIRST FLOOR STAIR 1 SCALE: 1/4" = 1'-0"

14 PLAN SECOND FLOOR STAIR 1 SCALE: 1/4" = 1'-0"

15 PLAN THIRD FLOOR STAIR 1 SCALE: 1/4" = 1'-0"

KEYED NOTES

03300 – CAST N PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMNUN EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACCUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACCUSTICAL INSULATION – BATT
09820.C – ACCUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR



5 STAIR SIGNAGE TYPICAL SCALE: 3" = 1'-0"

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SmithGroup
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1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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Seals and Signatures

RECORD DRAWINGS

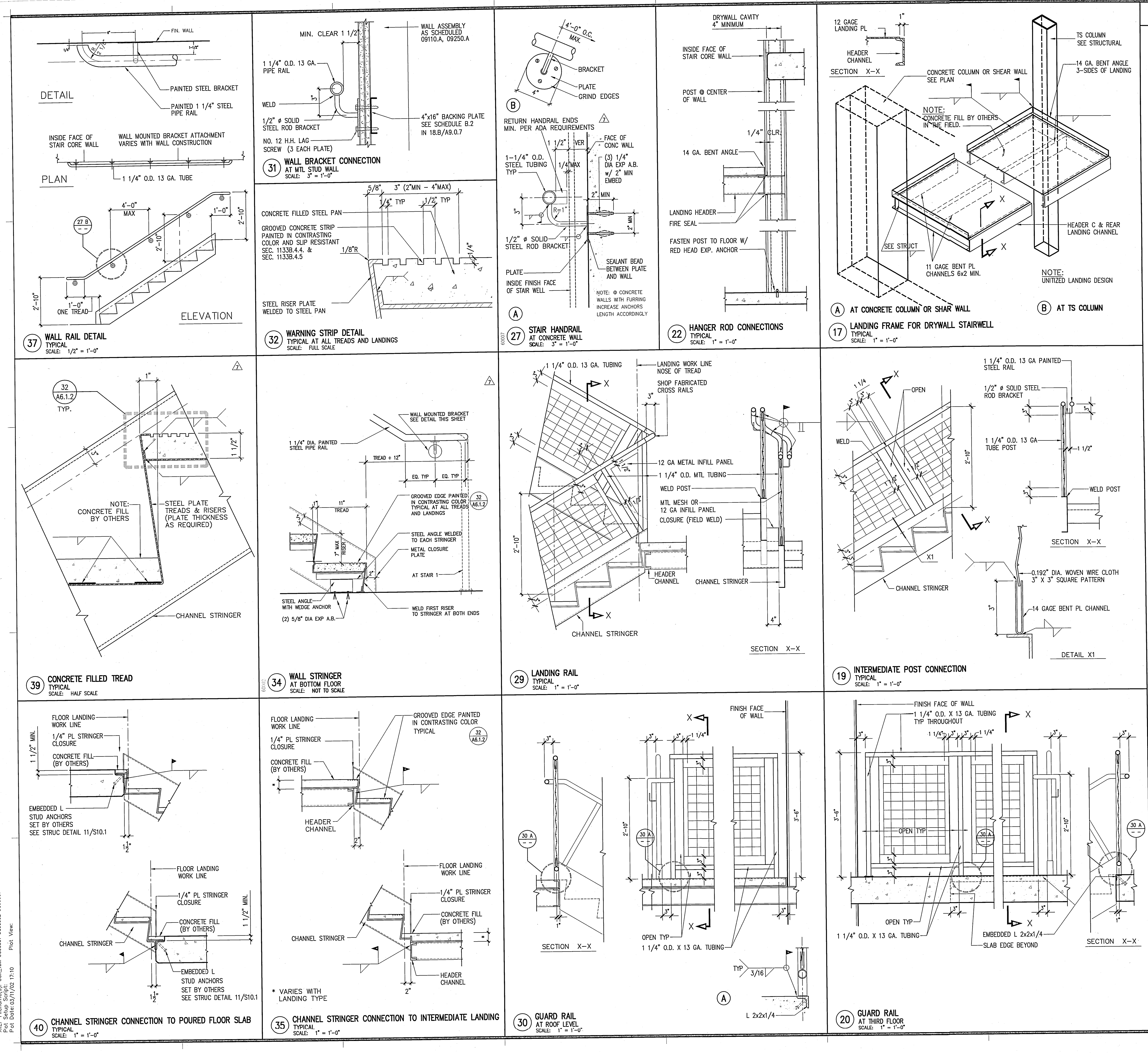
Key Plan

Project North

Drawing Title
STAIR PLANS & SECTIONS

1/4" = 1'-0"
Scale
3193000
Project Number
06OCT00
Baseline Date
A6.1.1
Drawing Number

Plot Sheet Filename: I:\095\3193000\SHT\A6101.dwg
Plot Date: 03/11/02 17:09



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XREF Filename(s): UCR_Tblk UC60001 UC60002 UC60007
Plot Setup Script:
Plot Date: 02/11/02 17:10 Plot View:

KEYED NOTES

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Fourth Floor
Santa Monica, California 90404
310.586.5400
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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

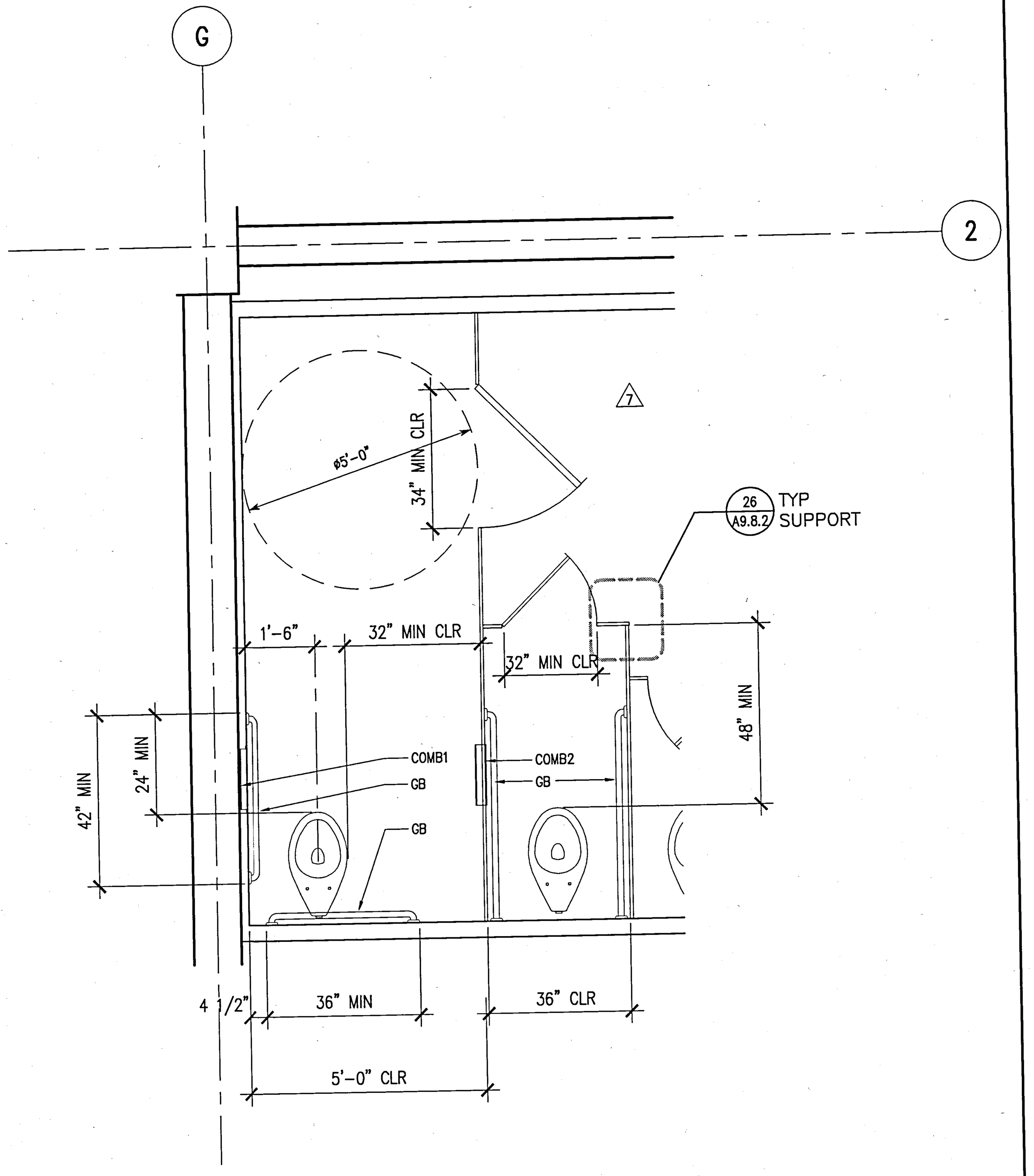
STAIR DETAILS

SCALE AS NOTED

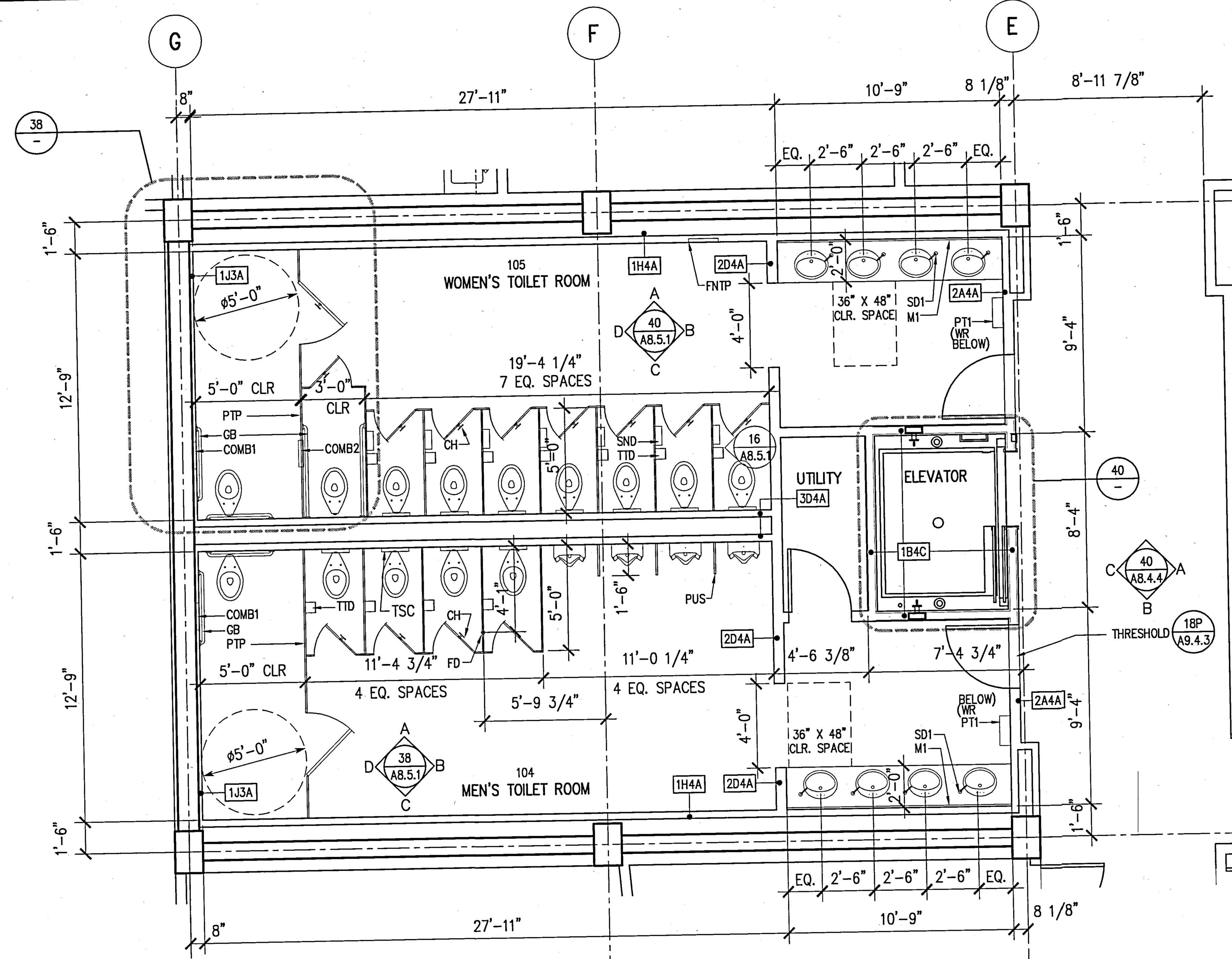
Scale
3193000
Project Number
060CT00
Baseline Date

A6.1.2

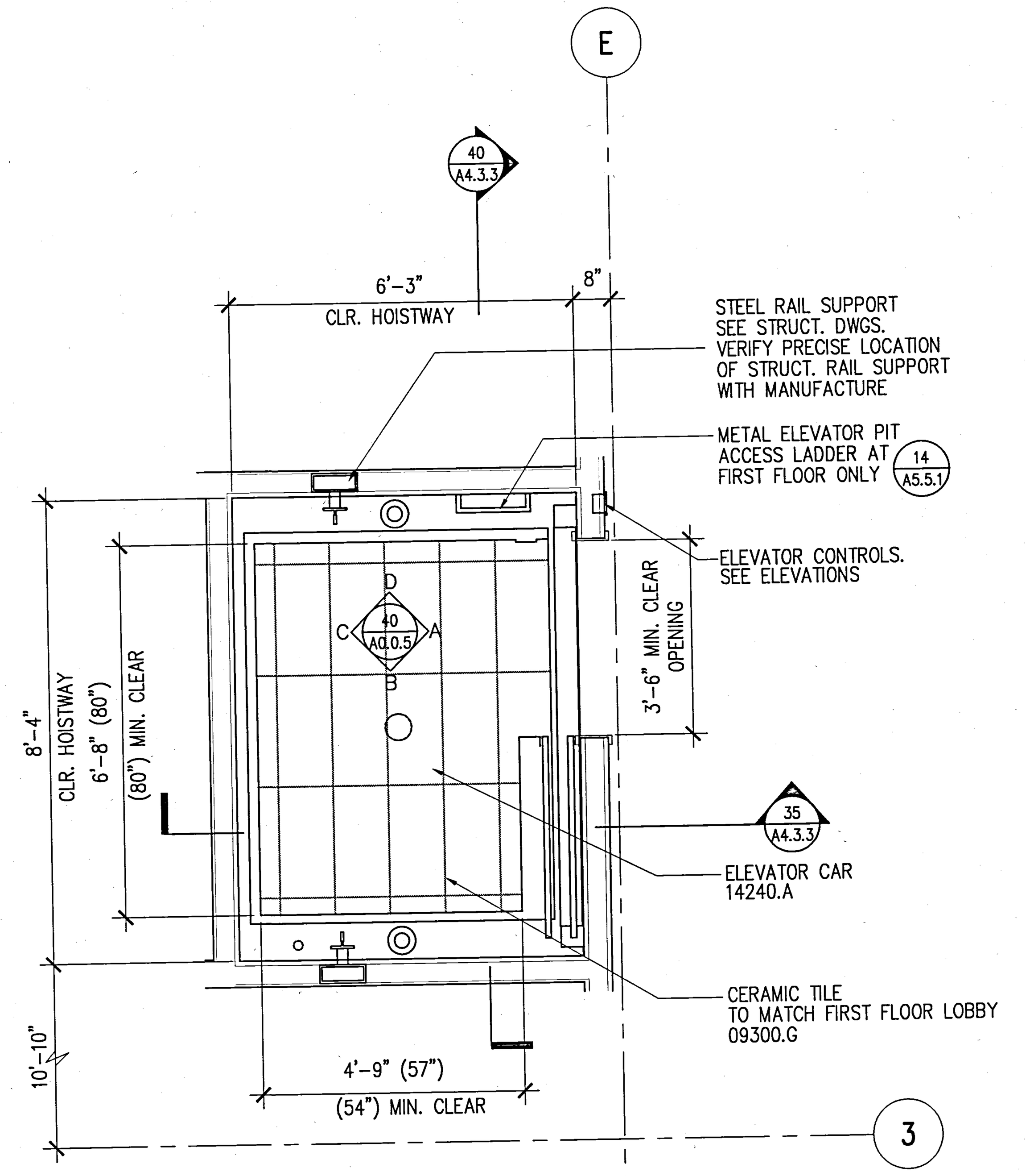
Drawing Number



38 ENLARGED ACCESSIBLE TOILET COMPARTMENT
SURGE BUILDING
SCALE: 1/2" = 1'-0"

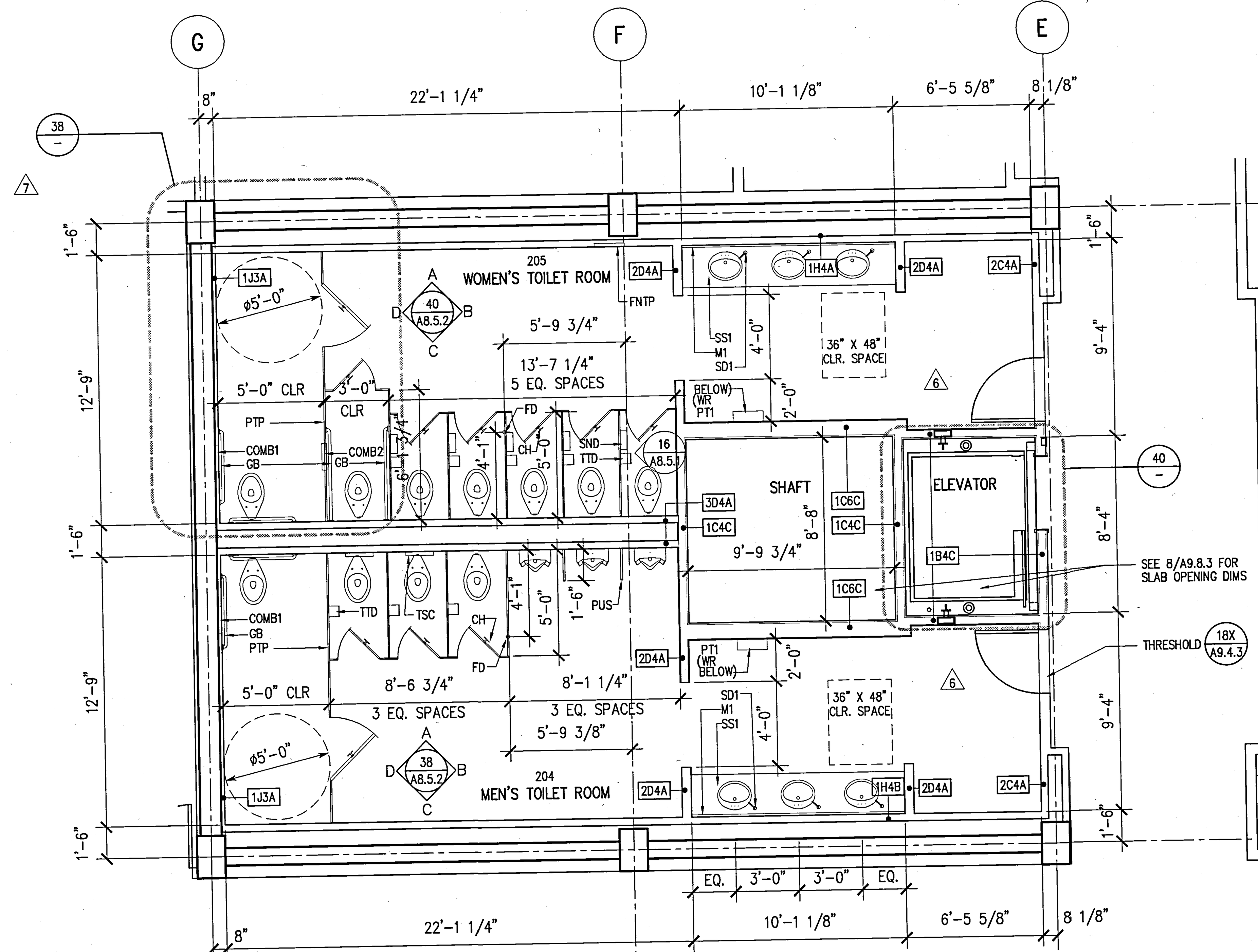


23 FIRST FLOOR CORE AND TOILET ROOM PLAN
SURGE BUILDING
SCALE: 1/4" = 1'-0"



NOTE:
MINIMUN CLEAR DIMENTIONS FOR THE ELEVATOR CAR SHALL BE IN COMPLIANCE WITH CBC CHAPTER 30 SECTION 3003.5.3a

40 TYPICAL ELEVATOR SHAFT
SURGE BUILDING
SCALE: 1/2" = 1'-0"



25 SECOND FLOOR CORE AND TOILET ROOM PLAN
SURGE BUILDING
SCALE: 1/4" = 1'-0"

KEYED NOTES

1. FOR TOILET ACCESSORY SCHEDULE, SEE INTERIOR ELEVATIONS, SHT A8.5.1 – A8.5.3
2. FIXTURES PER SCHEDULE
SEE PLUMBING DRAWINGS

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Santa Monica, California 90404
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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title
ENLARGED FIRST AND SECOND CORE AND TOILET PLANS

AS NOTED
Scale
3193000
Project Number
06OCT00
Baseline Date
A7.4.1
Drawing Number

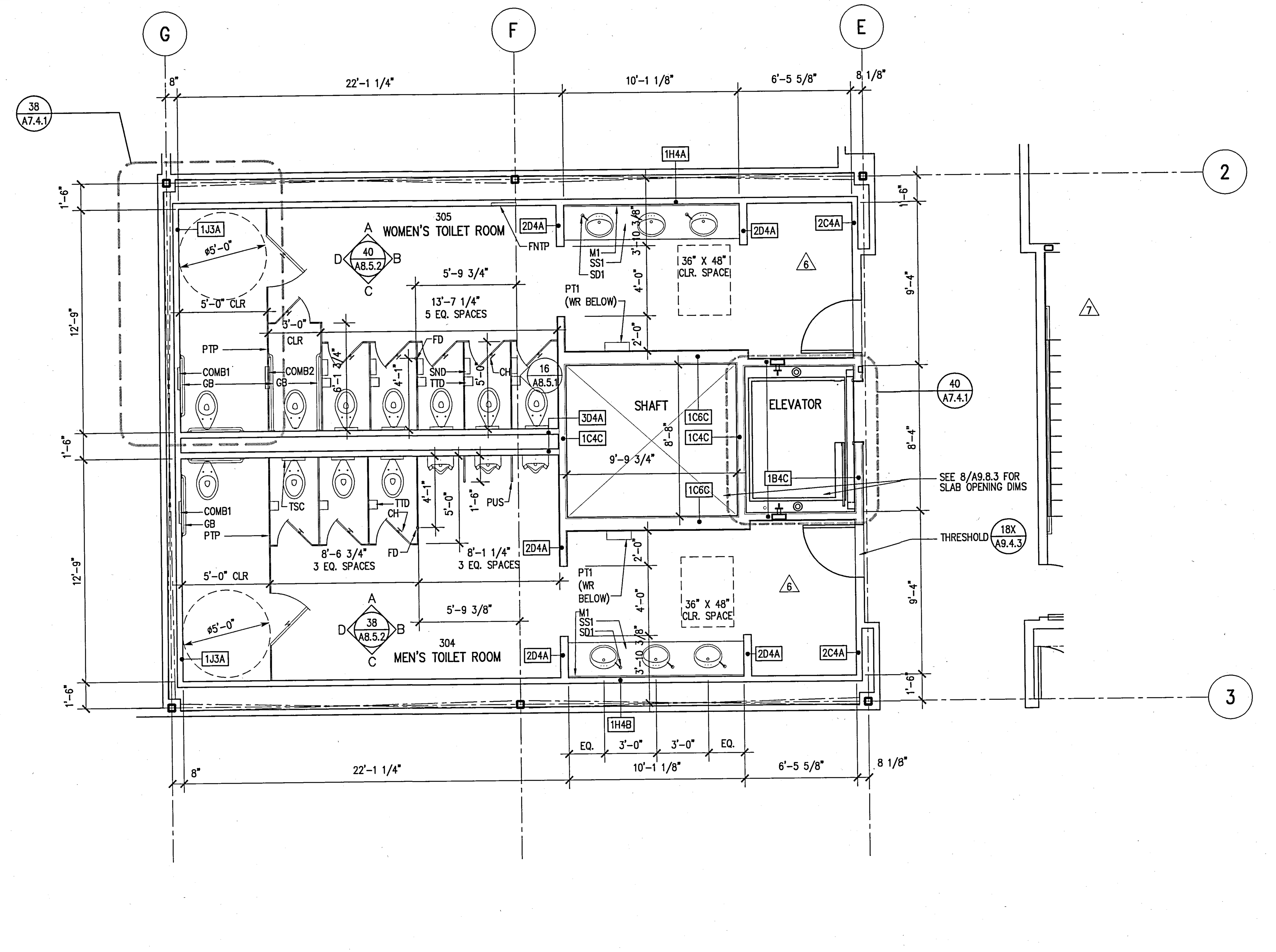
Plot Sheet Filename: I:\JOBS\3193000\SHT\A7401.dwg
XREF Filename(s): UCR_tbk ucoPLc1 uco-fp1 uco-fp2 ucoPLc3
Plot Setup Script:
Plot Date: 03/11/02 17:10 Plot View:

06/21/00

NOTES

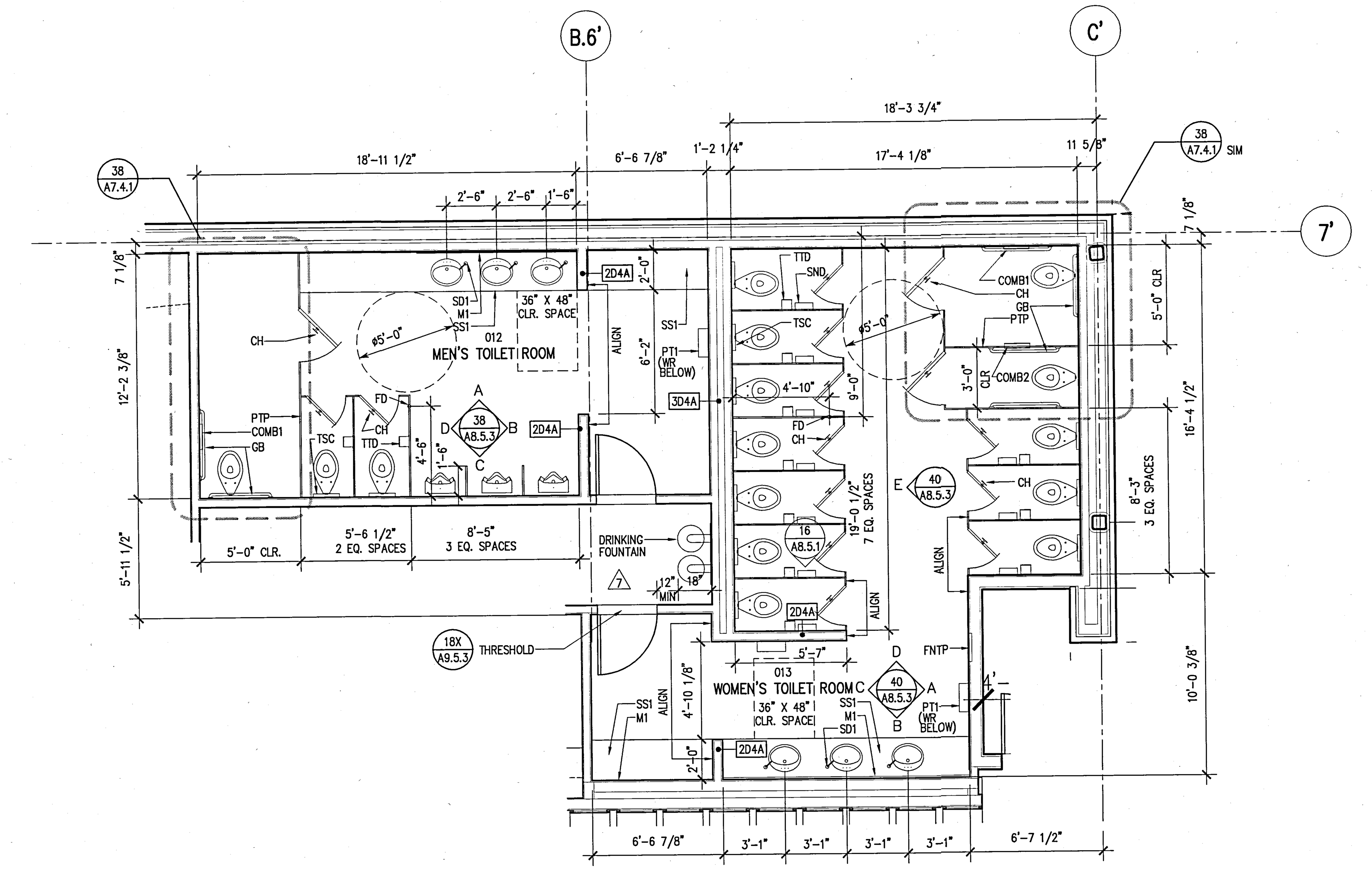
1. FOR TOILET ACCESSORY SCHEDULE, SEE INTERIOR ELEVATIONS, SHT A8.5.1 – A8.5.3
2. FIXTURES PER SCHEDULE SEE PLUMBING DRAWINGS

(38) NOT USED
SCALE:



(23) THIRD FLOOR CORE AND TOILET ROOM PLAN
SURGE BUILDING
SCALE: 1/4" = 1'-0"

(40) NOT USED
SCALE:



(25) FIRST FLOOR CORE AND TOILET ROOM PLAN
AUDITORIUM
SCALE: 1/4" = 1'-0"

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

ENLARGED CORE & TOILET PLANS

1/4" = 1'-0"
Scale

3193000
Project Number

06OCT00
Baseline Date

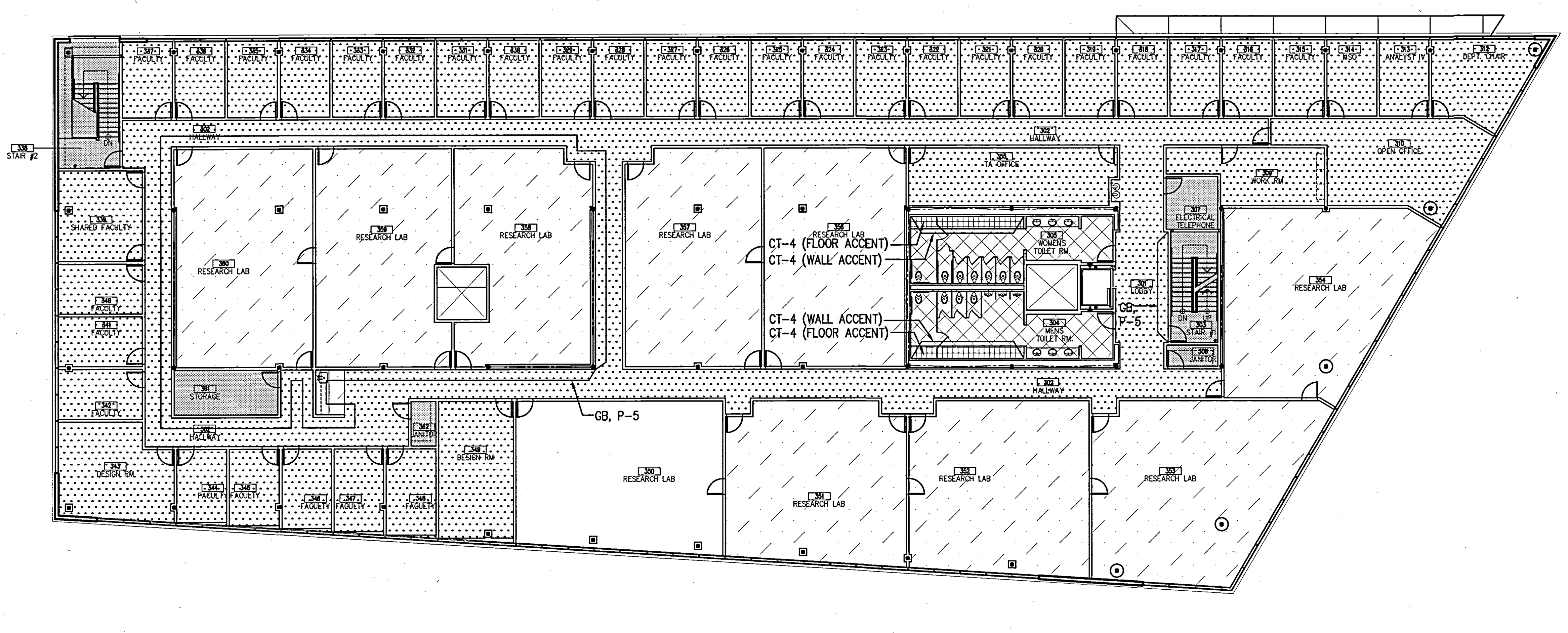
A7.4.2
Drawing Number

Plot Sheet Filename: I:\JOBS\3193000\SHT\A7402.dwg
XREF Filename(s): UCR_tbk ucoP1c2 uco-fp3 UCA3PQ08 uco-fp1a
Plot Setup Script:
Plot Date: 03/11/02 17:11 Plot View:

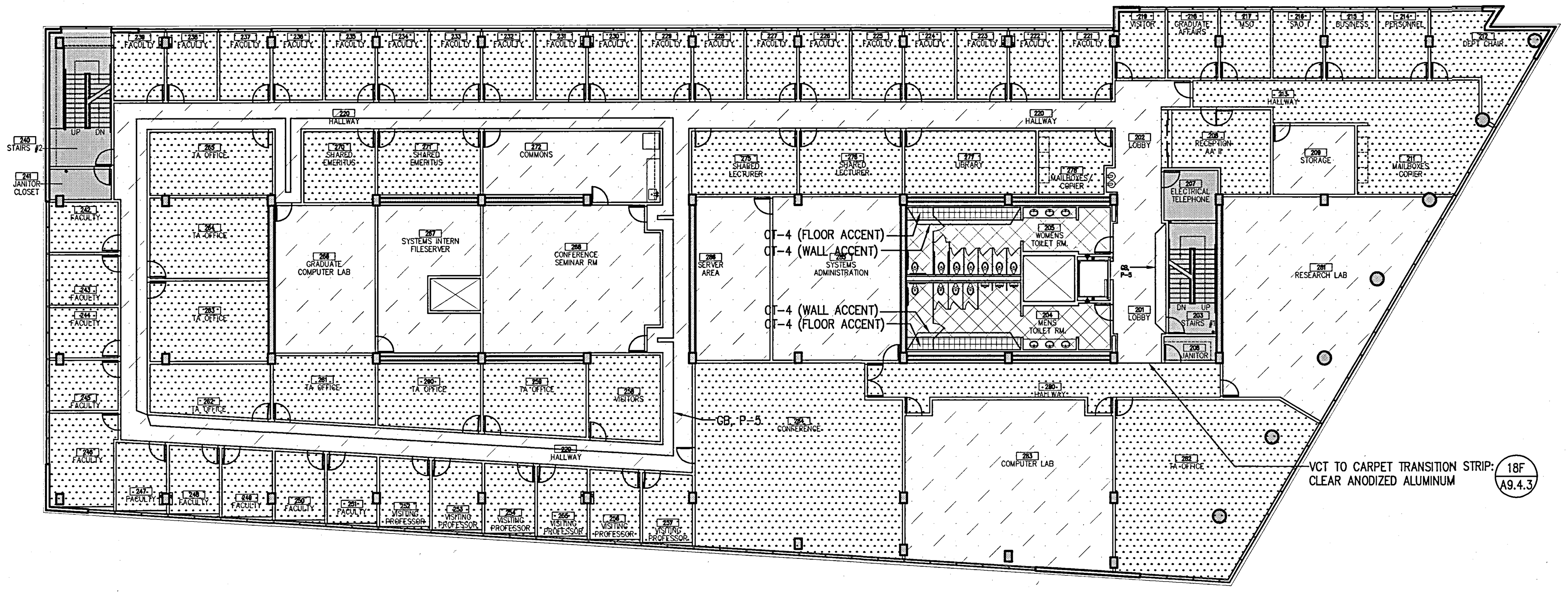
KEYED NOTES

FINISH LEGEND

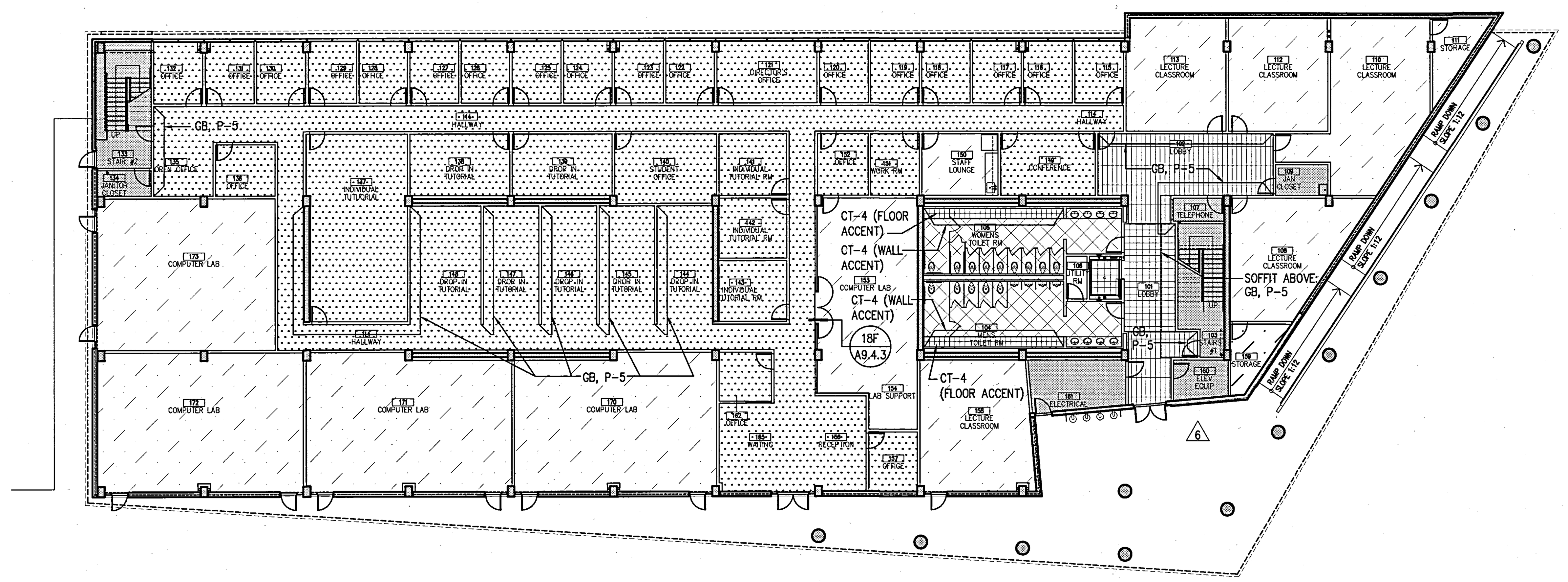
- CARPET
- FLOOR GRATE
- WOOD
- CERAMIC TILE
- CERAMIC TILE ACCENT COLOR
- CERAMIC TILE FIELD COLOR
- VINYL TILE
- EXPOSED CONCRETE



27 FINISH PLAN
THIRD FLOOR
SCALE: 1/16" = 1'-0"



28 FINISH PLAN
SECOND FLOOR
SCALE: 1/16" = 1'-0"



30 FINISH PLAN
FIRST FLOOR
SCALE: 1/16" = 1'-0"

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Plot Setup Script:
Plot Date: 03/11/02 17:11 Plot View:

SHEET NOTES

1 SEE FINISH SCHEDULE, SHT A9.1.1 TO A9.1.2 FOR ADDITIONAL INFORMATION.

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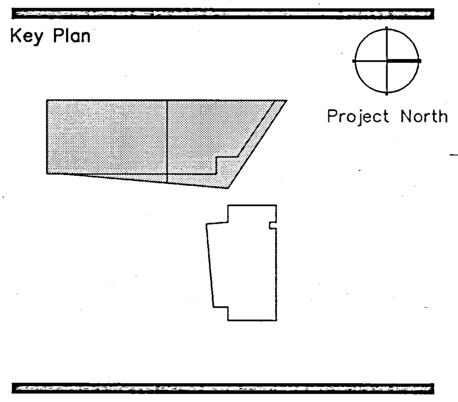
RECORD DRAWINGS

Key Plan



Drawing Title

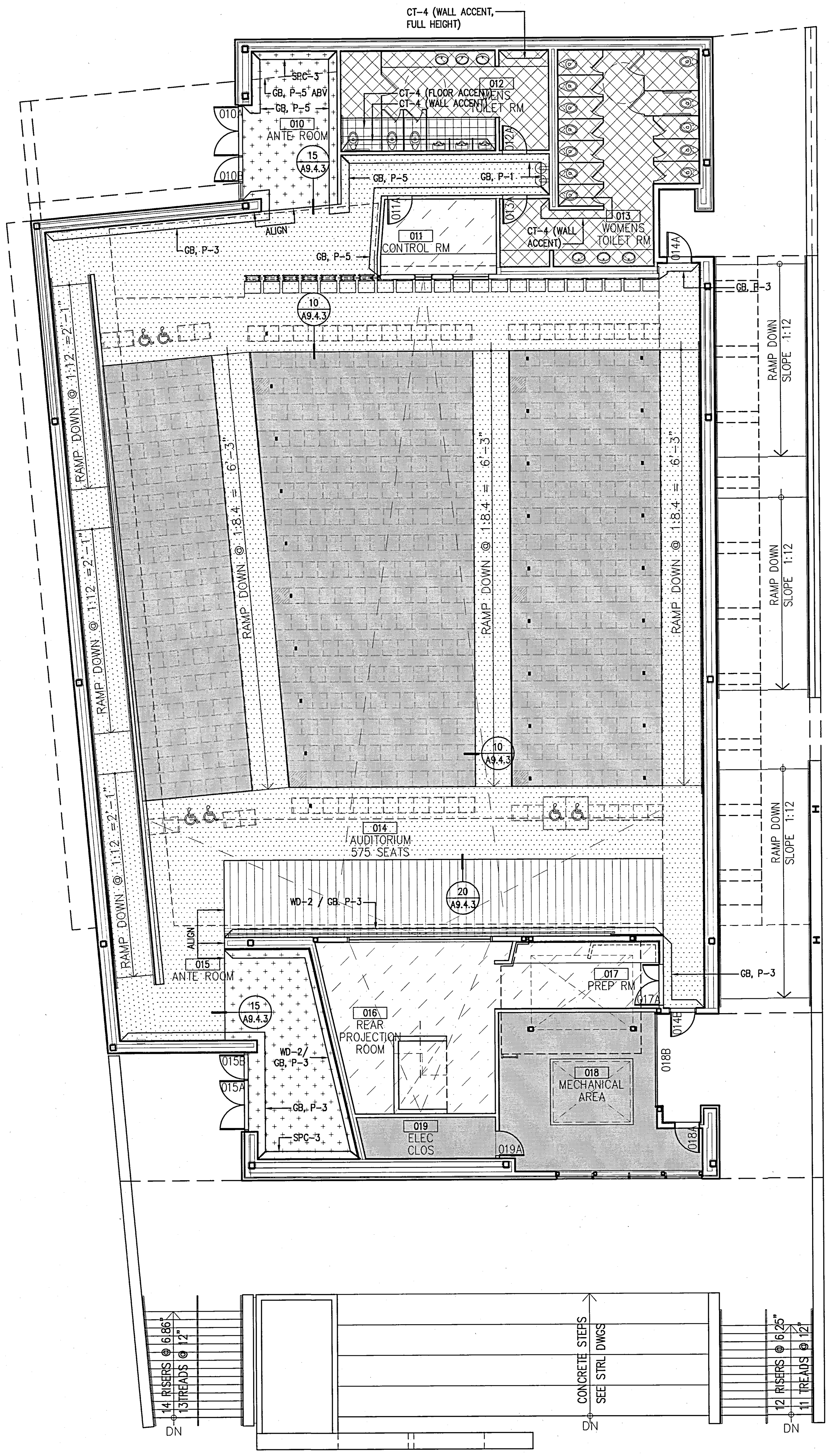
FIRST, SECOND & THIRD FLOOR FINISH PLANS (SURGE BUILDING)

Scale: AS NOTED

Project Number: 3193000

Baseline Date: 06OCT00

Drawing Number: A8.2.1



KEYED NOTES

FINISH LEGEND

- CARPET
- FLOOR GRATE
- WOOD
- CERAMIC TILE
- CERAMIC TILE ACCENT COLOR
- CERAMIC TILE FIELD COLOR
- VINYL TILE
- EXPOSED CONCRETE

SHEET NOTES

1 SEE FINISH SCHEDULE, SHT A9.1.1 TO A9.1.2 FOR ADDITIONAL INFORMATION.

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title
FIRST FLOOR FINISH PLAN (AUDITORIUM)

1/8" = 1'-0"
Scale

3193000
Project Number

06OCT00
Baseline Date

A8.2.2
Drawing Number

Plot Sheet Filename: J:\Jobs\3193000\SHT\a8202.dwg
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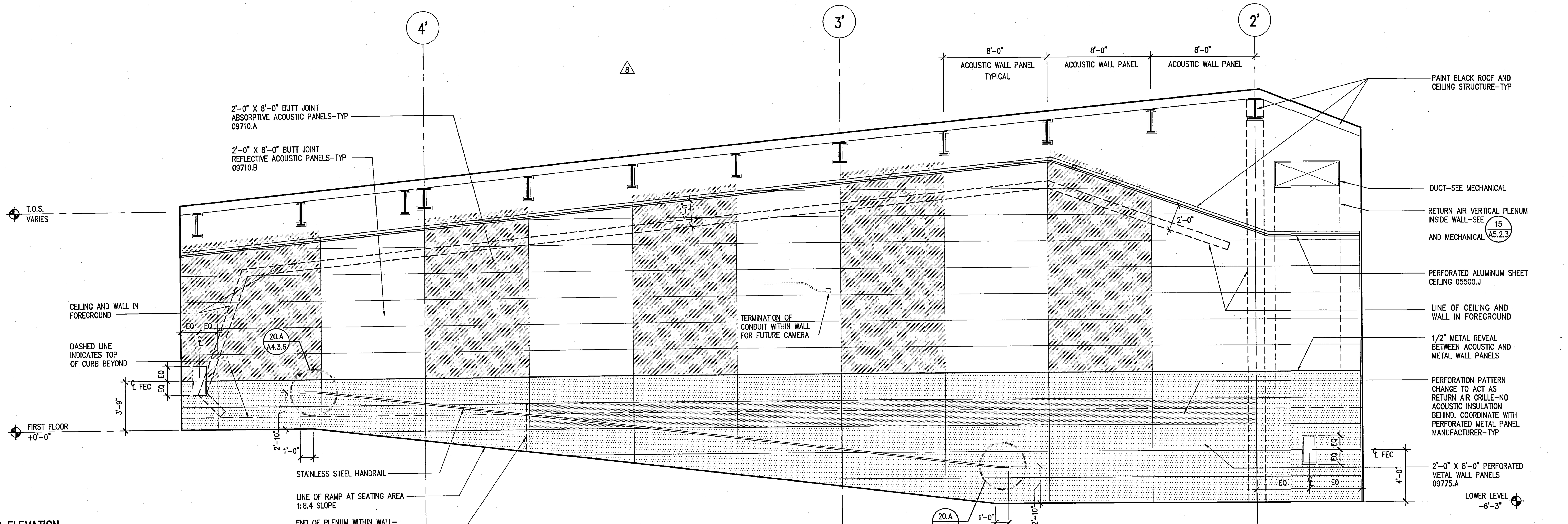
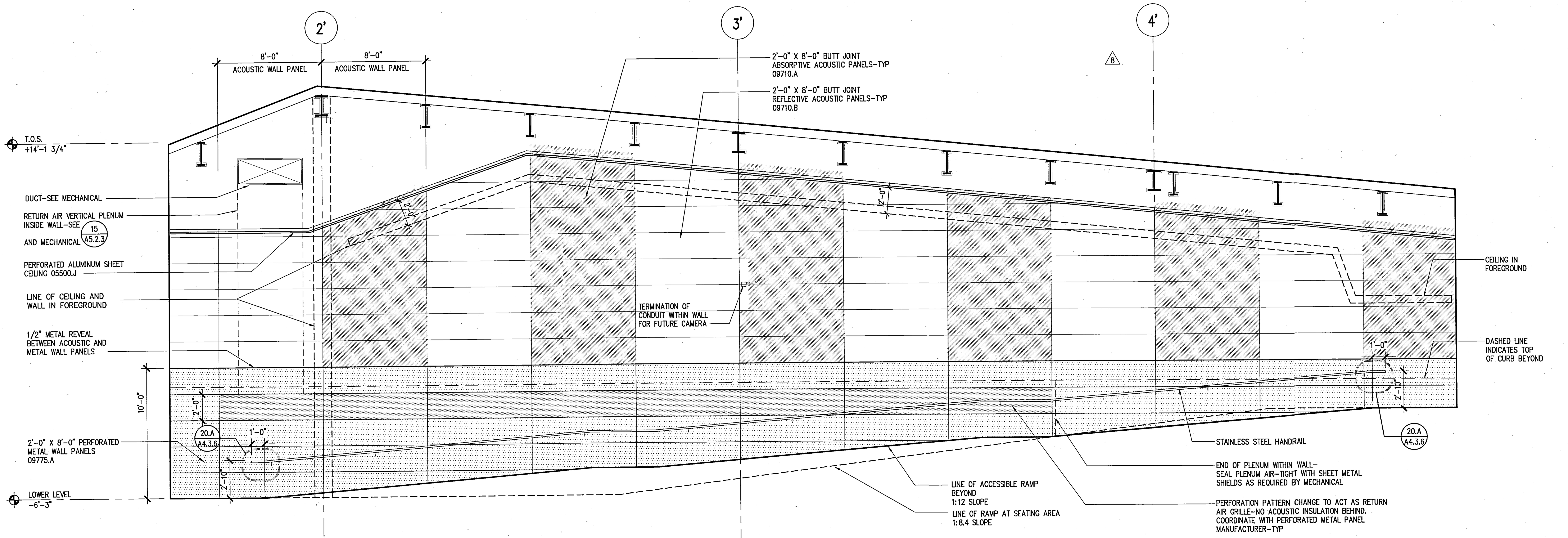
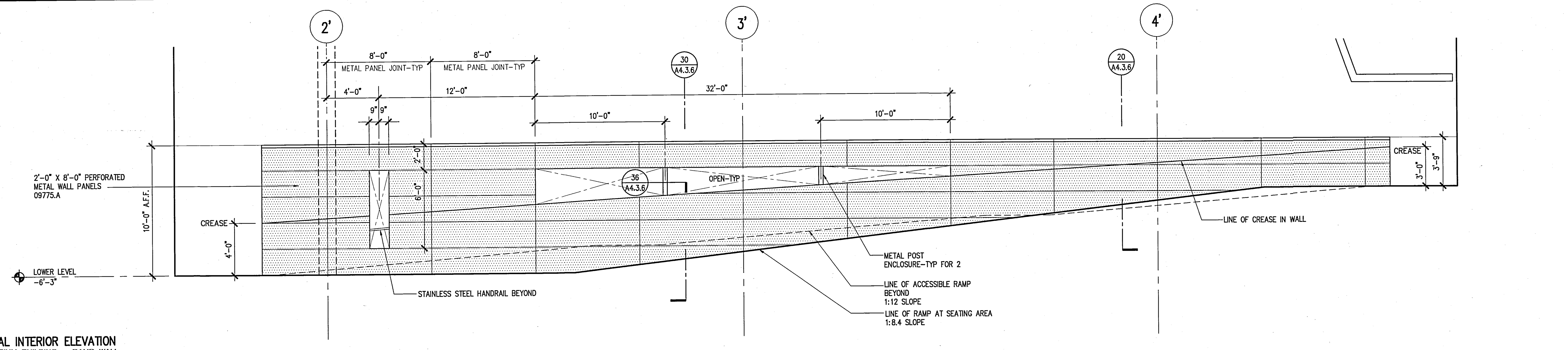


37 INTERIOR ELEVATION
AUDITORIUM BUILDING – NORTH WALL
SCALE: SCALE: 1/4" = 1'-0"



39 INTERIOR ELEVATION
AUDITORIUM BUILDING – SOUTH WALL
SCALE: SCALE: 1/4" = 1'-0"



40 PARTIAL INTERIOR ELEVATION
AUDITORIUM BUILDING – RAMP WALL
SCALE: SCALE: 1/4" = 1'-0"

KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMNUM LOUVER
14240.A – ELEVATOR

GENERAL NOTES

1. SEE STRUCTURAL DWGS. FOR TOP OF STEEL (TOS) ELEVATIONS.
2. TYPICAL CONDITIONS APPLY AT ALL DETAILS.
3. CALL-OUTS SHOWN ON ONE DETAIL SHALL APPLY TO ALL WHERE SAME CONDITIONS EXIST, U.O.N.
4. CASE WORK (N.I.C.). ALL BUILT IN CASE WORK PROVIDING WORK STATIONS ARE TO BE SUBMITTED TO DSA PRIOR TO FABRICATION. 5% MIN. TO BE PROVIDED SHALL BE ACCESSIBLE.
5. 5 % OF ALL FURNITURE PROVIDED SHALL BE ACCESSIBLE.
6. PROVIDE STAIR SIGNAGE AT BOTH SIDES OF DOORS 133A; 103A; 240A; 203A; 338A & 303A AS PER SEC. 1117B.5.2. THE INFORMATION SHALL BE PRESENTED USING RAISED ARABIC NUMERALS AND RAISED BRAILLE SYMBOLS. THE SIGN SHALL BE LOCATED 5 FT. A.F.F.. THE SIGN SHALL BE LOCATED IMMEDIATELY ADJACENT TO THE DOOR ON THE STRIKE SIDE. (SEC. 1133B.4.3.).
7. PROVIDE PORTABLE ASSISTIVE LISTENING DEVICES IN ALL CONFERENCE AND MEETING ROOMS WHERE REQUIRED – MINIMUM NUMBER SHALL BE EQUAL TO 4% OF SEATING BUT NOT LESS THAN 2

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title
INTERIOR ELEVATIONS AUDITORIUM

1/4" = 1'-0"
Scale

3193000
Project Number

060CT00
Baseline Date

A8.4.1
Drawing Number

Plot Sheet Filename: J:\Jobs\3193000\SHT\a8401.dwg
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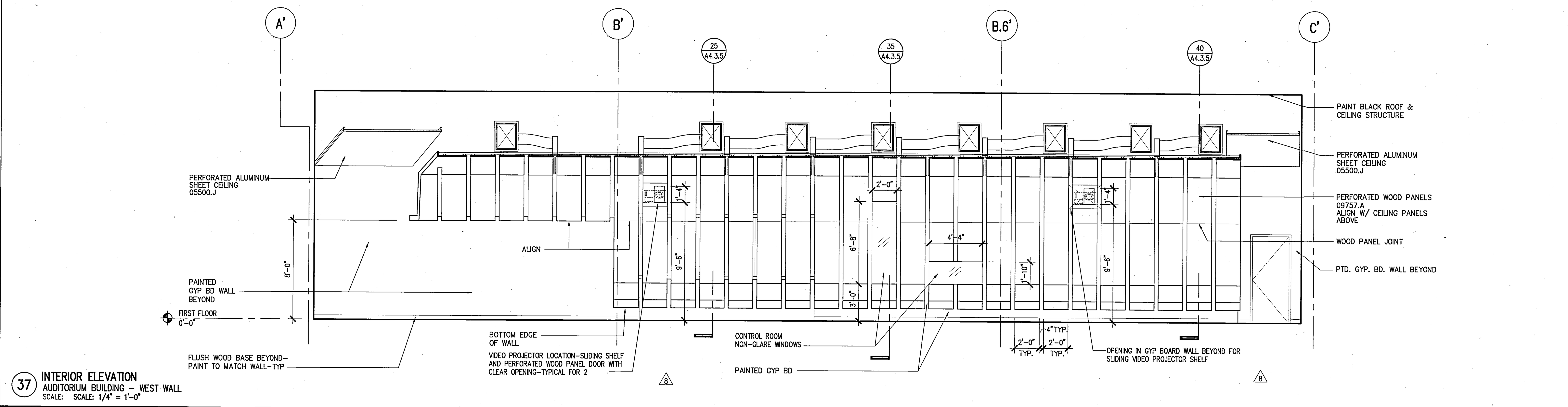
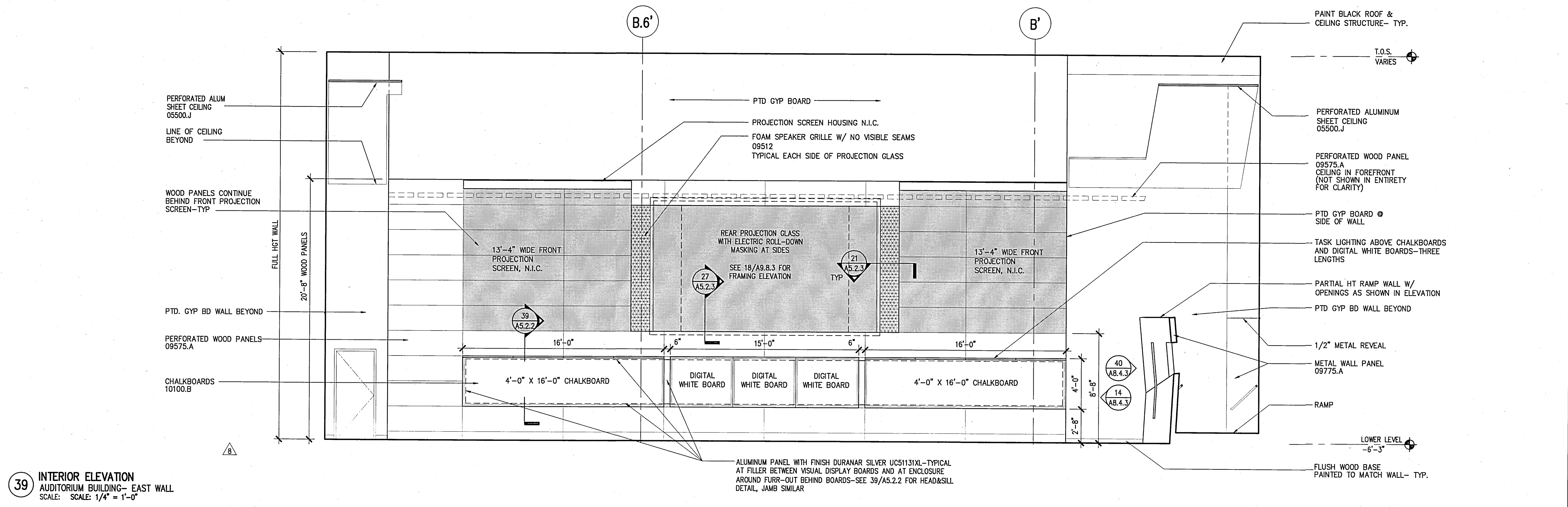
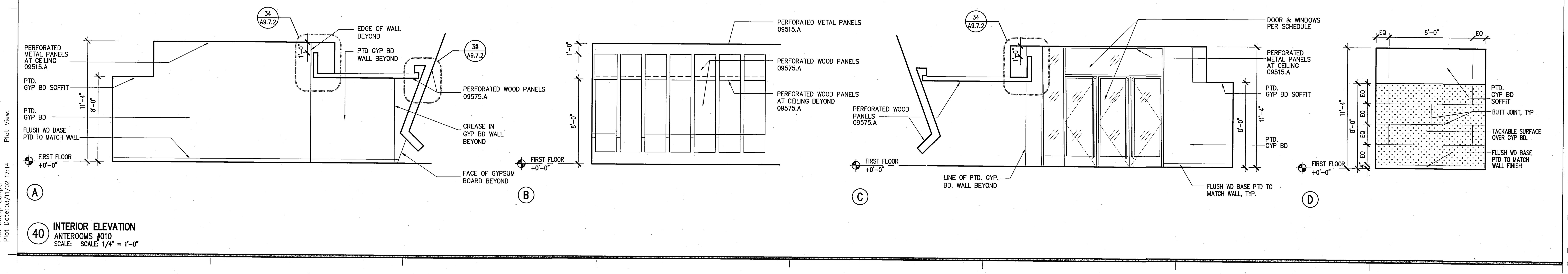


37 INTERIOR ELEVATION
AUDITORIUM BUILDING – WEST WALL
SCALE: SCALE: 1/4" = 1'-0"



39 INTERIOR ELEVATION
AUDITORIUM BUILDING– EAST WALL
SCALE: SCALE: 1/4" = 1'-0"



40 INTERIOR ELEVATION
ANTEROOMS #010
SCALE: SCALE: 1/4" = 1'-0"

Plot Sheet Filename: I:\JOBS\3193000\SHT\A8402.dwg
XREF Filename(s): UCR_tblk ucs3EU keynotes ucs-fp1A
Plot Setup Script: Plot View:
Plot Date: 03/11/02 17:14

KEYED NOTES

03300 – CAST N PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
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05700.B – ALUMINUM EXTRUSION – 1" FIN
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07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
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07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

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Santa Monica, California 90404
310.586.5400
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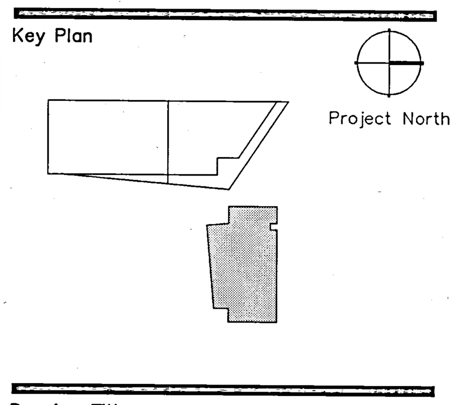
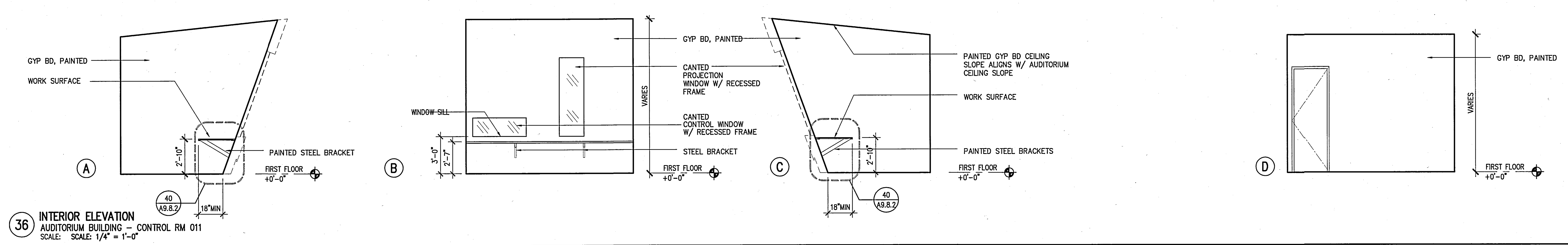
RECORD DRAWINGS

Key Plan

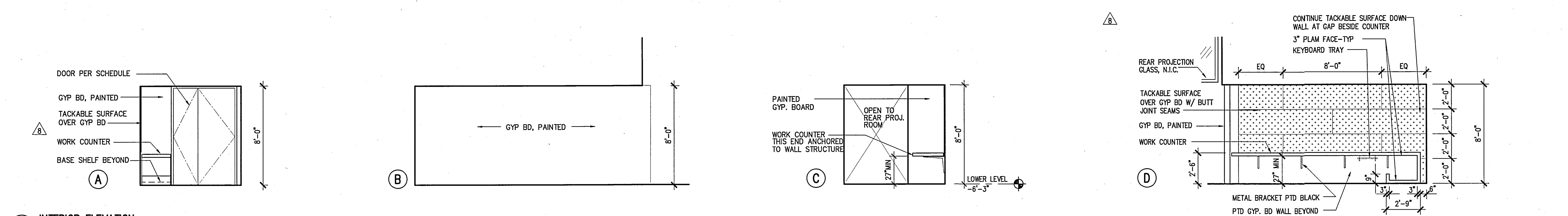


Drawing Title
INTERIOR ELEVATIONS
AUDITORIUM

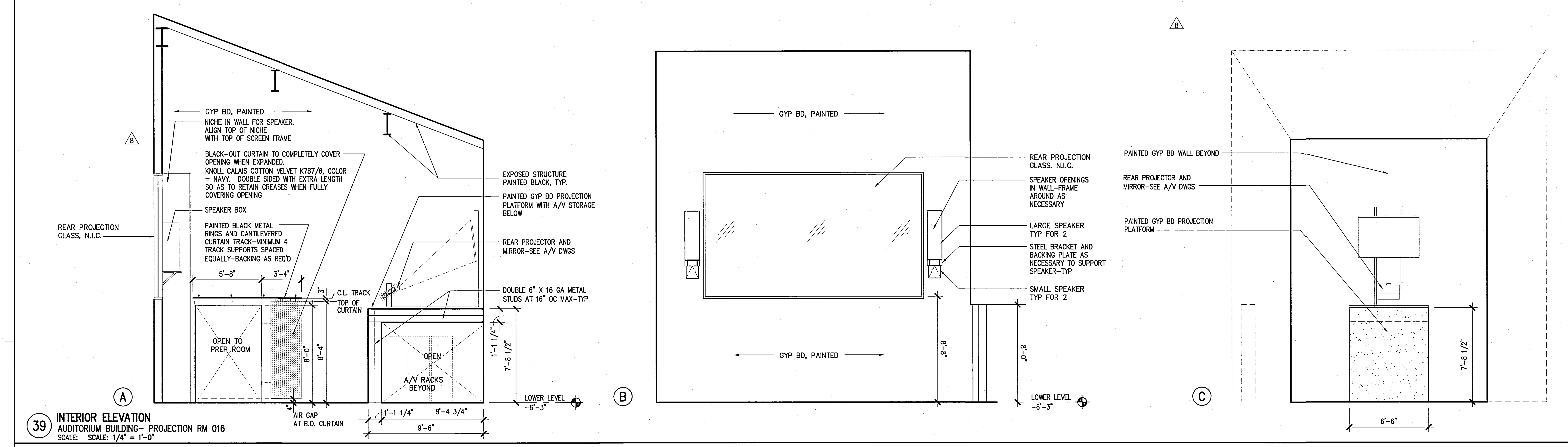
Scale: 1/4" = 1'-0"
Project Number: 3193000
Baseline Date: 06OCT00
Drawing Number: A8.4.2



36 INTERIOR ELEVATION
AUDITORIUM BUILDING – CONTROL RM 011
SCALE: SCALE: 1/4" = 1'-0"



37 INTERIOR ELEVATION
AUDITORIUM BUILDING– PREP RM 017
SCALE: SCALE: 1/4" = 1'-0"



39 INTERIOR ELEVATION
AUDITORIUM BUILDING– PROJECTION RM 016
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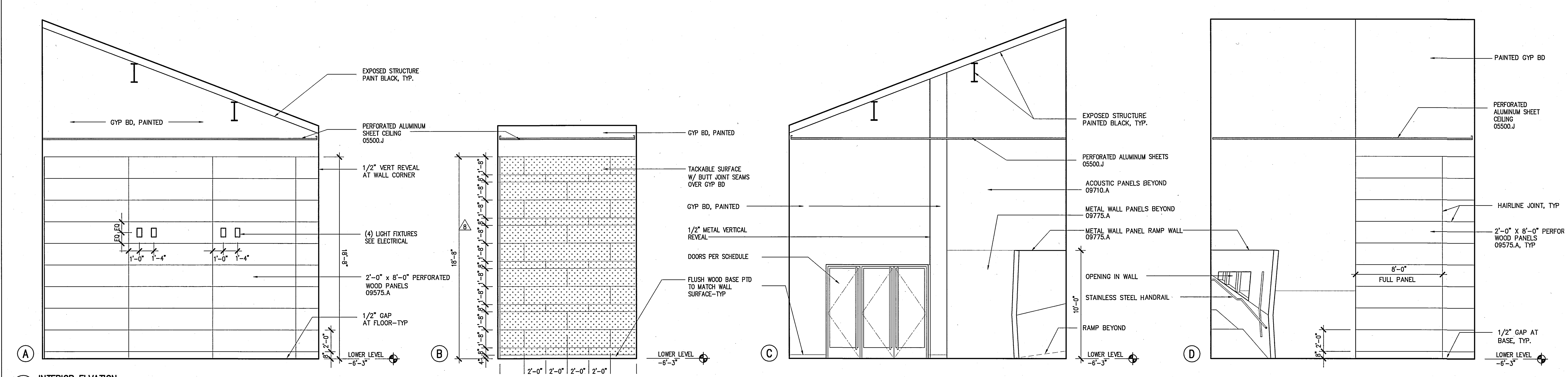

40 INTERIOR ELVATION
AUDITORIUM BUILDING – ANTE ROM 015
SCALE: SCALE: 1/4" = 1'-0"

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Plot Setup Script: Plot View:
Plot Date:03/11/02 17:15

KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

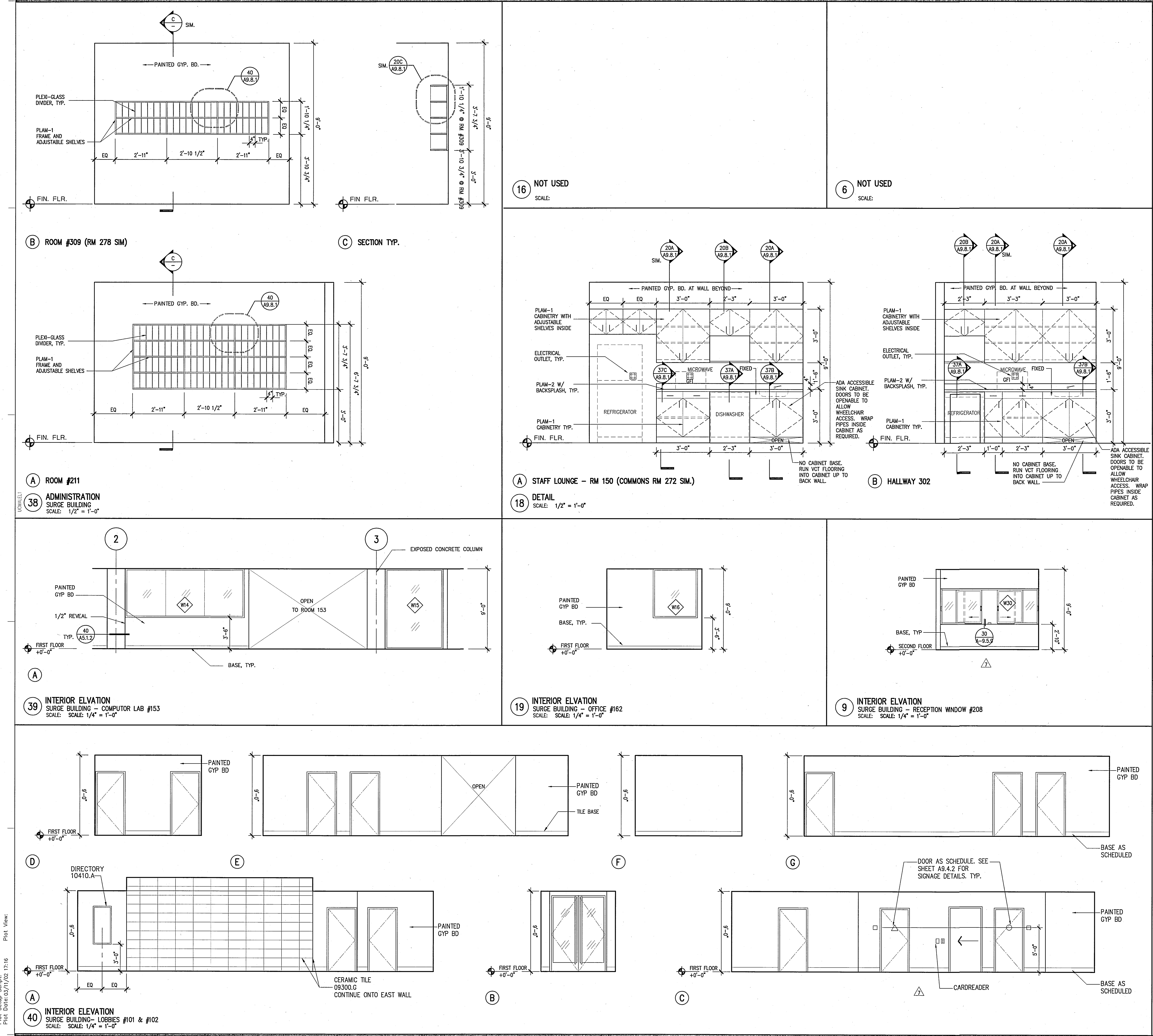
INTERIOR ELEVATIONS
AUDITORIUM

1/4" = 1'-0"
Scale

3193000
Project Number

06OCT00
Baseline Date

A8.4.3
Drawing Number



KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.J – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

GENERAL NOTES

1. SEE STRUCTURAL DWGS. FOR TOP OF STEEL (TOS) ELEVATIONS.
2. TYPICAL CONDITIONS APPLY AT ALL DETAILS.
3. CALL-OUTS SHOWN ON ONE DETAIL SHALL APPLY TO ALL WHERE SAME CONDITIONS EXIST, U.O.N.
4. CASE WORK (N.I.C.). ALL BUILT IN CASE WORK PROVIDING WORK STATIONS ARE TO BE SUBMITTED TO DSA PRIOR TO FABRICATION 5% MIN. TO BE PROVIDED SHALL BE ACCESSIBLE.
5. 5 % OF ALL FURNITURE PROVIDED SHALL BE ACCESSIBLE.
6. PROVIDE STAIR SIGNAGE AT BOTH SIDES OF DOORS 133A; 103A; 240A; 203A; 338A & 303A AS PER SEC. 1117B.5.2. THE INFORMATION SHALL BE PRESENTED USING RAISED ARABIC NUMERALS AND RAISED BRAILLE SYMBOLS. THE SIGN SHALL BE LOCATED 5 FT. A.F.F.. THE SIGN SHALL BE LOCATED IMMEDIATELY ADJACENT TO THE DOOR ON THE STRIKE SIDE. (SEC. 1133B.4.3.).
7. PROVIDE PORTABLE ASSISTIVE LISTENING DEVICES IN ALL CONFERENCE AND MEETING ROOMS WHERE REQUIRED – MINIMUM NUMBER SHALL BE EQUAL TO 4% OF SEATING BUT NOT LESS THAN 2

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

INTERIOR ELEVATIONS
SURGE BUILDING

AS NOTED
Scale

3193000
Project Number

06OCT00
Baseline Date

A8.4.4
Drawing Number

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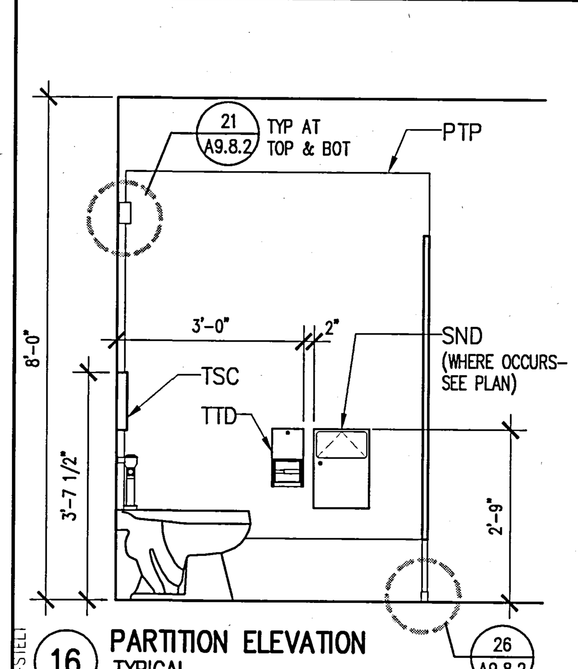


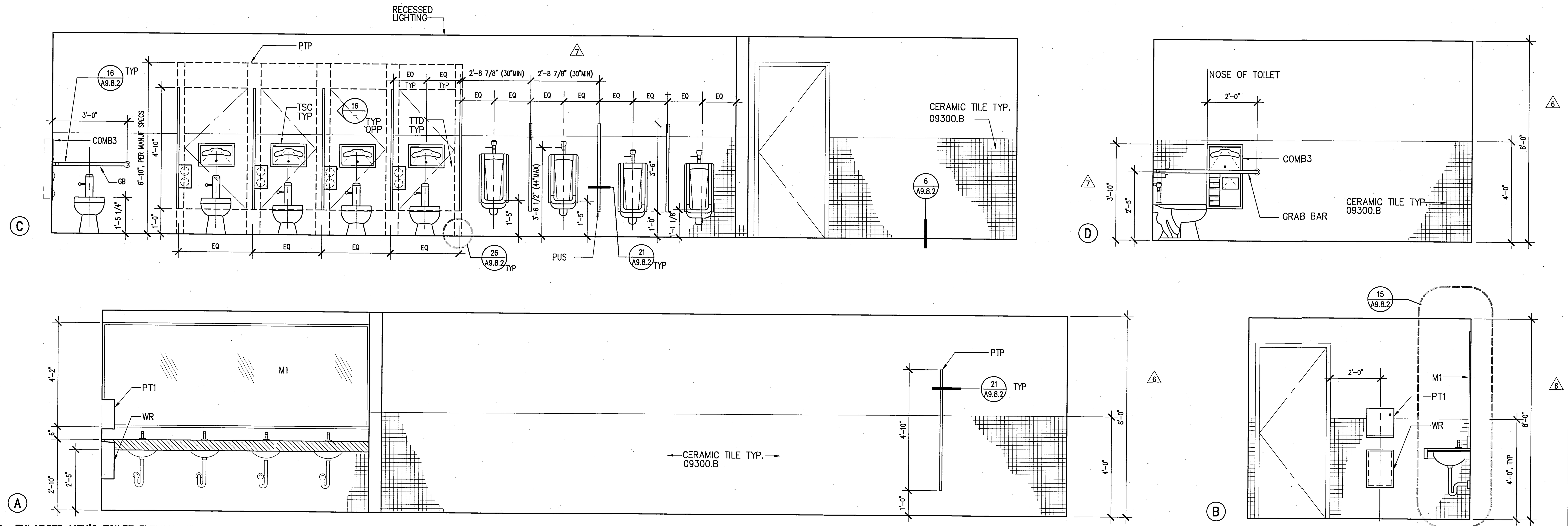
16 PARTITION ELEVATION
TYPICAL
SCALE: 1/2" = 1'-0"

TOILET ACCESSORY SCHEDULE

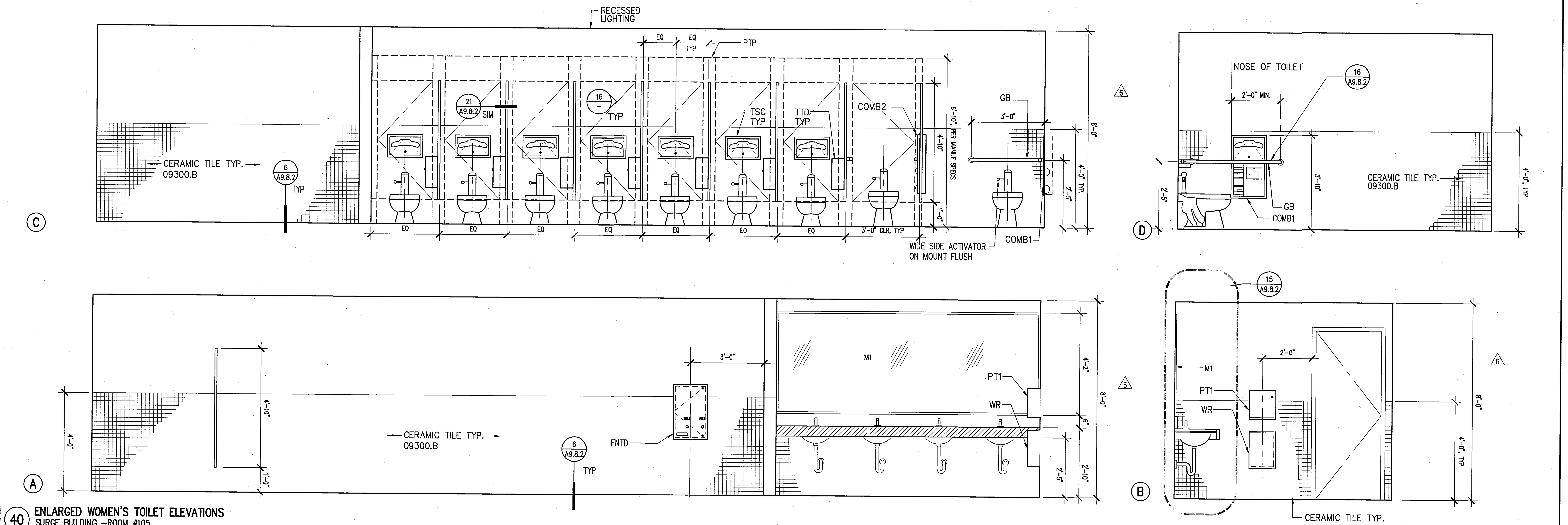
NAME OF TOILET ACCESSORY	ABBREV.	SPEC.	DETAIL
CLOTHES HOOK	CH	10810.G	–
COMBINATION UNIT, TYPE 1: FEMALE	COMB1	10810.C	–
COMBINATION UNIT, TYPE 2: FEMALE	COMB2	10810.D	–
COMBINATION UNIT, TYPE 1: MALE	COMB3	10810.F	–
FEMININE NAPKIN – TAMPON DISPENSER	FNTP	10810.J	–
GRAB BAR	GB	10810.I	16/A9.8.2
MIRROR	M1	08800.H	–
PAPER TOWEL DISPENSER (UF–CI)	PT1	10810.B	–
PLASTIC TOILET PARTITION	PTP	10170.A	–
PLASTIC URINAL SCREEN	PUS	10170.B	33/A9.8.2
PIPE WRAP	PW	10810.L	–
SANITARY NAPKIIN DISPOSAL	SND	10810.M	–
SOAP DISPENSER (UF–CI)	SD1	10810.H	–
TOILET SEAT COVER DISPENSER	TSC	10810.A	–
TOILET TISSUE DISPENSER (UF–CI)	TTD	10810.E	–
UTILITY SHELF & MOP STRIP	USM	10810.K	–
WASTE RECEPTACLE	WR	10810.N	–

SHEET NOTES

1. FOR INTERIOR FINISHES SEE FINISH SCHEDULE SHEETS A9.1.1– A9.1.2
2. SEE SHEET A0.5 FOR FIXTURE MOUNTING HEIGHTS.
3. FIXTURES PER SCHEDULE SEE PLUMBING DRAWINGS
4. UF–CI = UNIVERSITY FURNISHED, CONTRACTOR INSTALLED SEE SPECIFICATION SECTION 10810



38 ENLARGED MEN'S TOILET ELEVATIONS
SURGE BUILDING –ROOM #104
SCALE: 1/2" = 1'-0"



40 ENLARGED WOMEN'S TOILET ELEVATIONS
SURGE BUILDING –ROOM #105
SCALE: 1/2" = 1'-0"

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Plot Setup Script:
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RECORD DRAWINGS

Key Plan

Project North

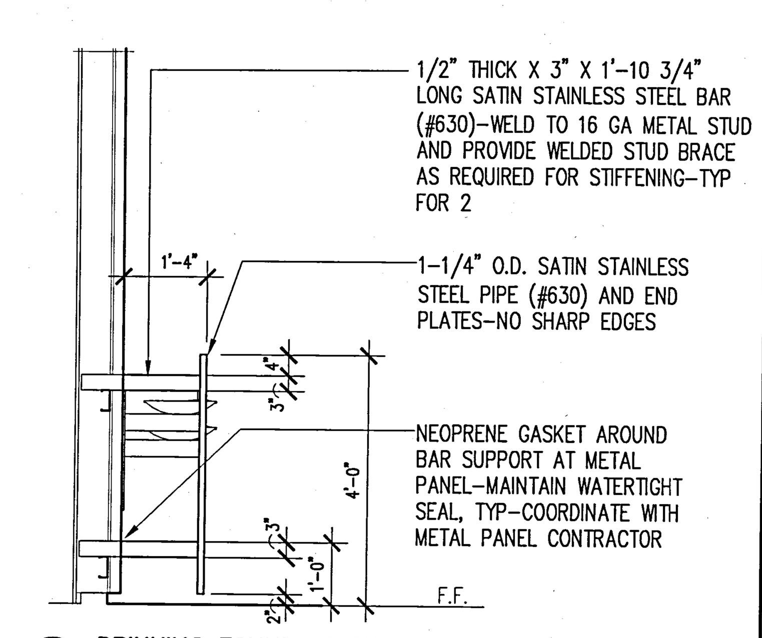
Drawing Title
SURGE BUILDING
ENLARGED TOILET
ELEVATIONS

Scale: 1/2" = 1'-0"

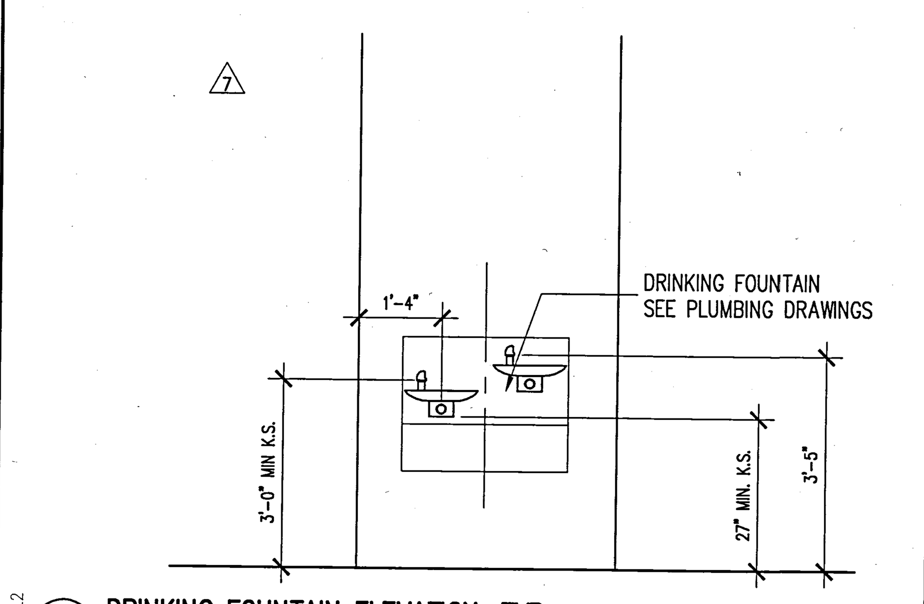
Project Number: 3193000

Baseline Date: 06OCT00

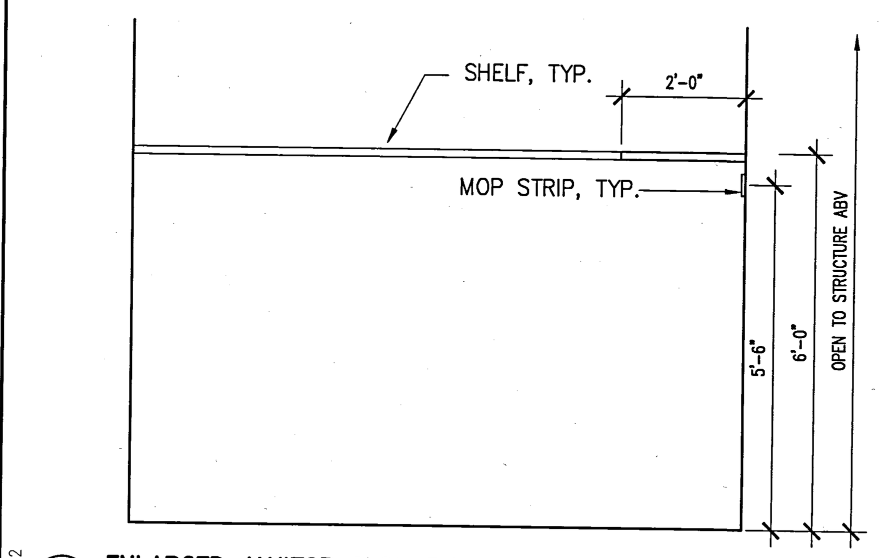
Drawing Number: A8.5.1



36 DRINKING FOUNTAIN GUARD RAIL
SURGE BUILDING @ EXT METAL PANEL
SCALE: 1/2" = 1'-0"



31 DRINKING FOUNTAIN ELEVATION, TYP
SURGE BUILDING
SCALE: 1/2" = 1'-0"



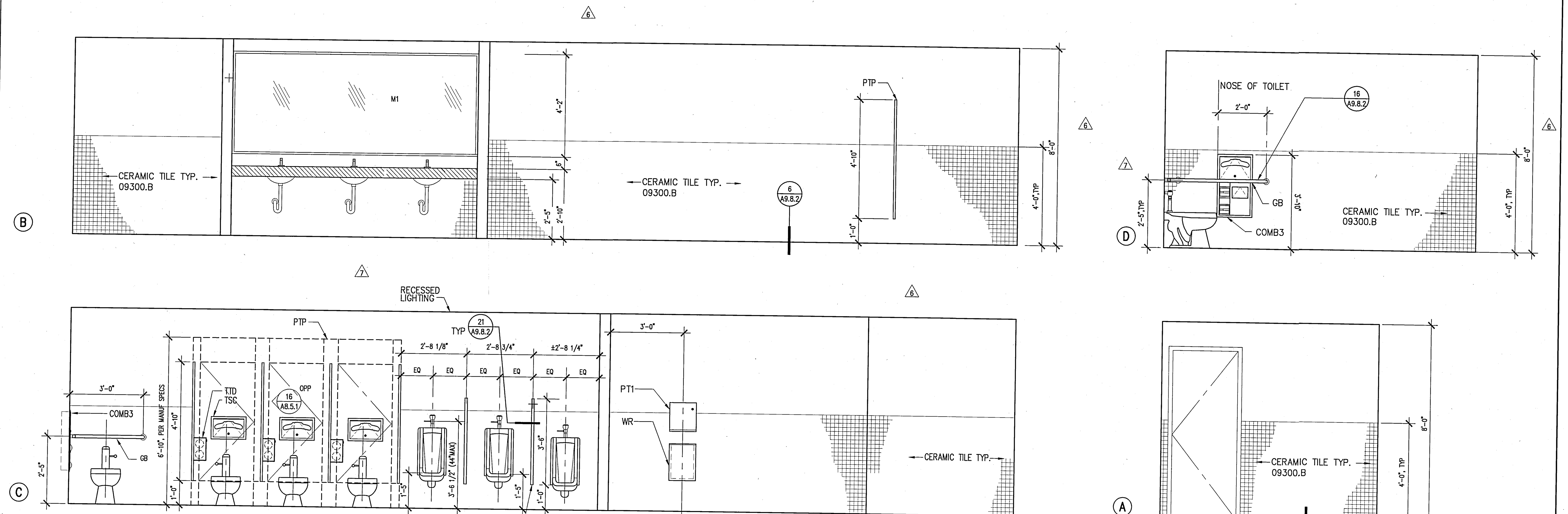
21 ENLARGED JANITOR CLOSET ELEVATION, TYP
SURGE BUILDING
SCALE: 1/2" = 1'-0"

TOILET ACCESSORY SCHEDULE

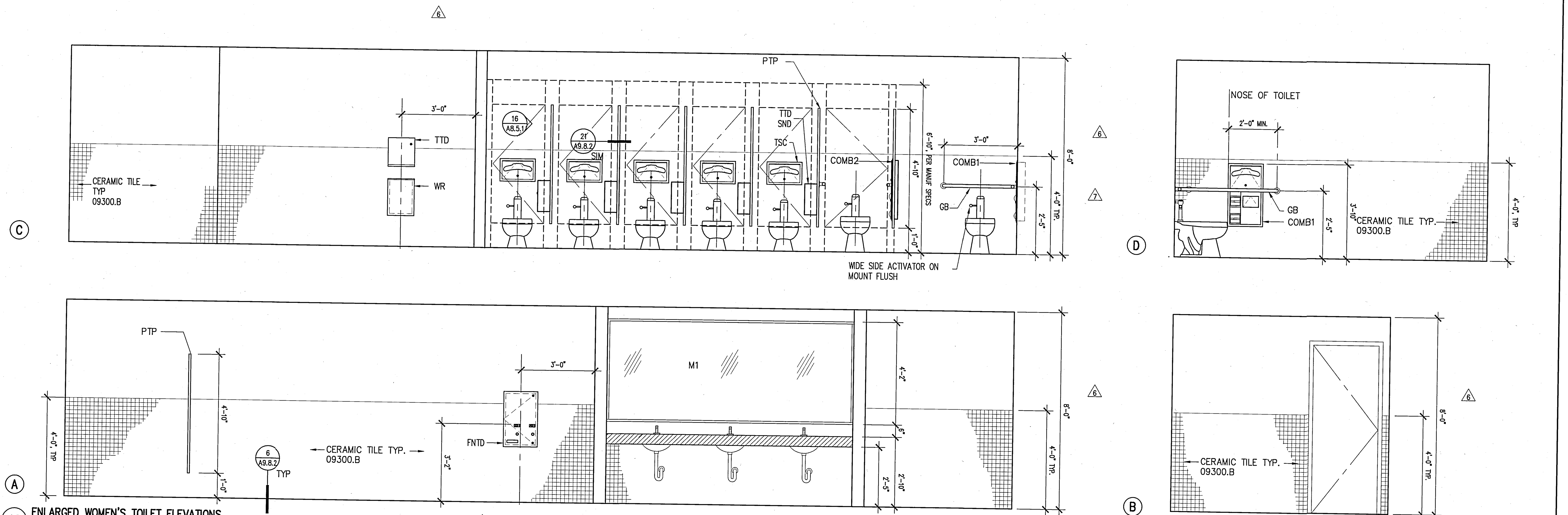
NAME OF TOILET ACCESSORY	ABBREV.	SPEC.	DETAIL
CLOTHES HOOK	CH	10810.G	–
COMBINATION UNIT, TYPE 1: FEMALE	COMB1	10810.C	–
COMBINATION UNIT, TYPE 2: FEMALE	COMB2	10810.D	–
COMBINATION UNIT, TYPE 1: MALE	COMB3	10810.F	–
FEMININE NAPKIN – TAMPON DISPENSER	FNTP	10810.J	–
GRAB BAR	GB	10810.I	16/A9.8.2
MIRROR	M1	08800.H	–
PAPER TOWEL DISPENSER (UF–CI)	PT1	10810.B	–
PLASTIC TOILET PARTITION	PTP	10170.A	–
PLASTIC URINAL SCREEN	PUS	10170.B	33/A9.8.2
PIPE WRAP	PW	10810.L	–
SANITARY NAPKIIN DISPOSAL	SND	10810.M	–
SOAP DISPENSER (UF–CI)	SD1	10810.H	–
TOILET SEAT COVER DISPENSER	TSC	10810.A	–
TOILET TISSUE DISPENSER (UF–CI)	TTD	10810.E	–
UTILITY SHELF & MOP STRIP	USM	10810.K	–
WASTE RECEPTACLE	WR	10810.N	–

SHEET NOTES

1. FOR INTERIOR FINISHES SEE FINISH SCHEDULE SHEETS A9.1.1– A9.1.2
2. SEE SHEET A0.5 FOR FIXTURE MOUNTING HEIGHTS.
3. FIXTURES PER SCHEDULE SEE PLUMBING DRAWINGS
4. UF–CI = UNIVERSITY FURNISHED, CONTRACTOR INSTALLED SEE SPECIFICATION SECTION 10810



38 ENLARGED MEN'S TOILET ELEVATIONS
SURGE –ROOM #204 (#304 SIM)
SCALE: 1/2" = 1'-0"



40 ENLARGED WOMEN'S TOILET ELEVATIONS
SURGE –ROOM #205 (#305 SIM)
SCALE: 1/2" = 1'-0"

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title
SURGE BUILDING ENLARGED TOILET ELEVATIONS

Scale 1/2" = 1'-0"
Project Number 3193000
Baseline Date 06OCT00
Drawing Number A8.5.2

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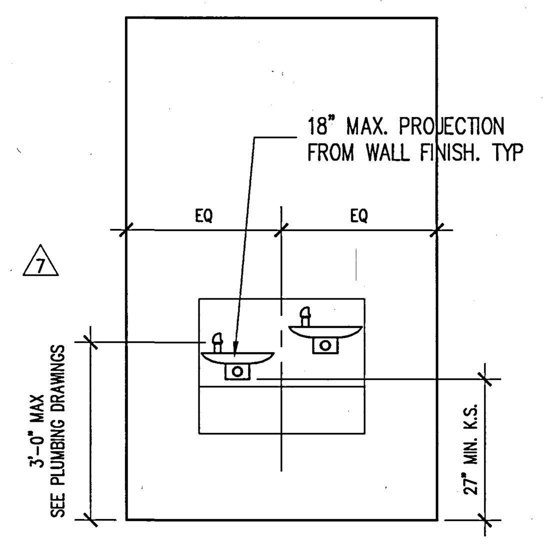


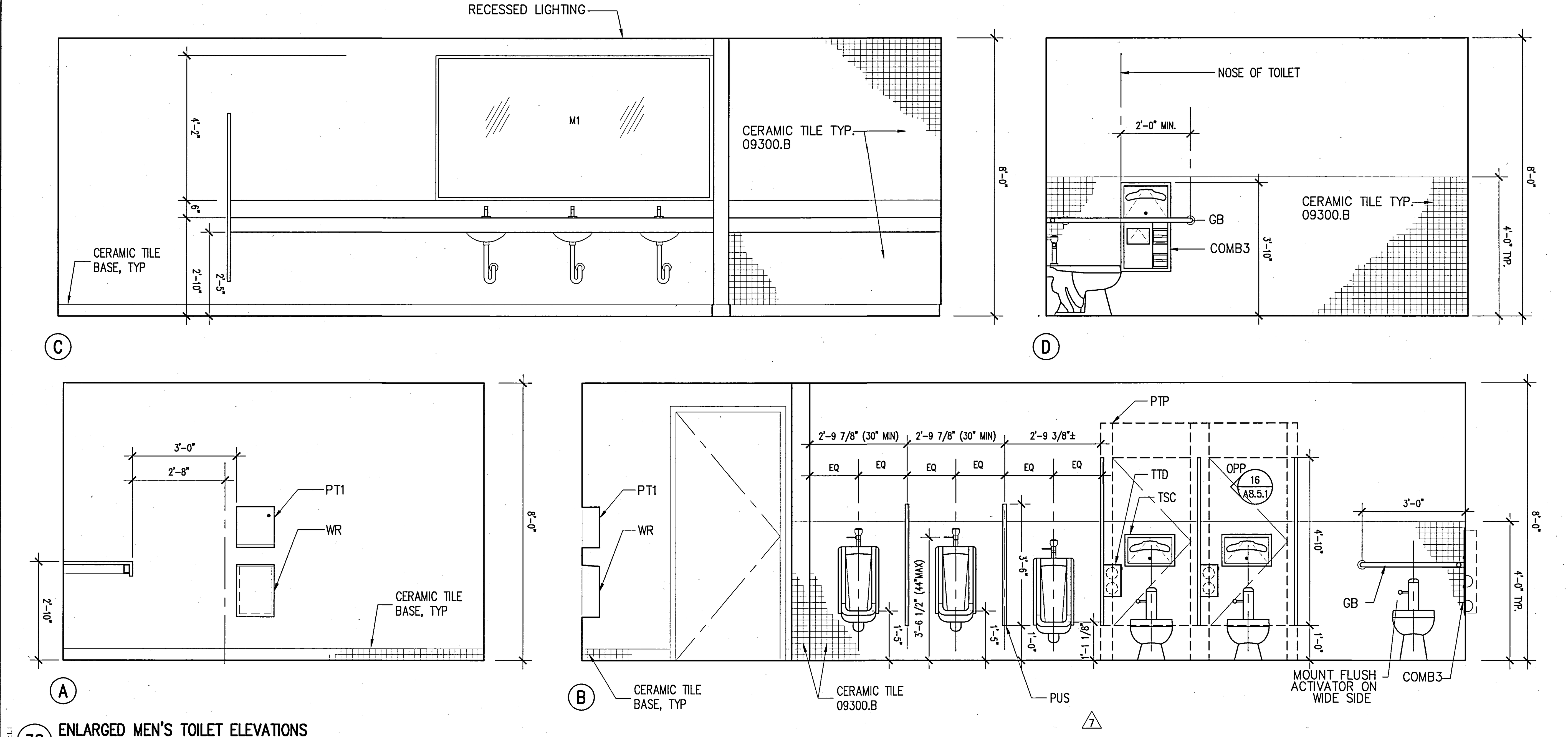
21 DRINKING FOUNTAIN ELEVATION
AUDITORIUM
SCALE: 1/2" = 1'-0"

TOILET ACCESSORY SCHEDULE

NAME OF TOILET ACCESSORY	ABBREV.	SPEC.	DETAIL
CLOTHES HOOK	CH	10810.G	–
COMBINATION UNIT, TYPE 1: FEMALE	COMB1	10810.C	–
COMBINATION UNIT, TYPE 2: FEMALE	COMB2	10810.D	–
COMBINATION UNIT, TYPE 1: MALE	COMB3	10810.F	–
FEMININE NAPKIN – TAMPON DISPENSER	FNTP	10810.J	–
GRAB BAR	GB	10810.I	16/A9.8.2
MIRROR	M1	08800.H	–
PAPER TOWEL DISPENSER (UF–CI)	PT1	10810.B	–
PLASTIC TOILET PARTITION	PTP	10170.A	–
PLASTIC URINAL SCREEN	PUS	10170.B	33/A9.8.2
PIPE WRAP	PW	10810.L	–
SANITARY NAPKIIN DISPOSAL	SND	10810.M	–
SOAP DISPENSER (UF–CI)	SD1	10810.H	–
TOILET SEAT COVER DISPENSER	TSC	10810.A	–
TOILET TISSUE DISPENSER (UF–CI)	TTD	10810.E	–
UTILITY SHELF & MOP STRIP	USM	10810.K	–
WASTE RECEPTACLE	WR	10810.N	–

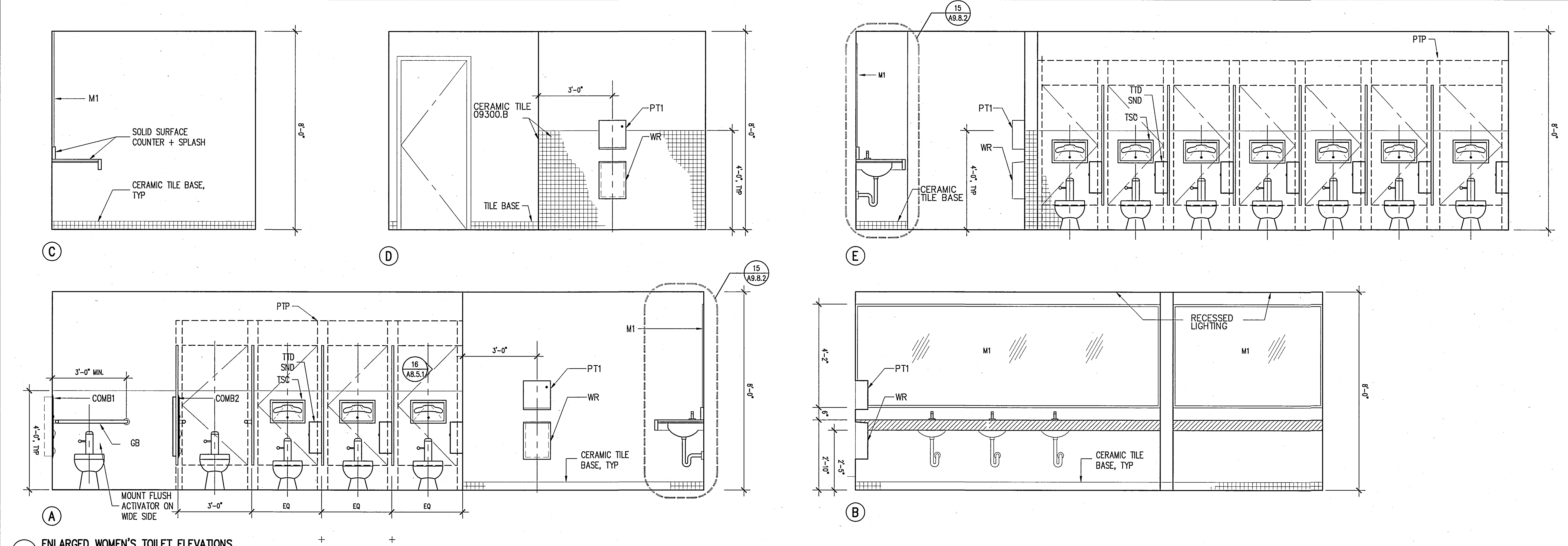
SHEET NOTES

1. FOR INTERIOR FINISHES SEE FINISH SCHEDULE SHEETS A9.1.1– A9.1.2
2. SEE SHEET A0.5 FOR FIXTURE MOUNTING HEIGHTS.
3. FIXTURES PER SCHEDULE SEE PLUMBING DRAWINGS
4. UF–CI = UNIVERSITY FURNISHED, CONTRACTOR INSTALLED SEE SPECIFICATION SECTION 10810



38 ENLARGED MEN'S TOILET ELEVATIONS
AUDITORIUM –ROOM #012
SCALE: 1/2" = 1'-0"

18 NOT USED
SCALE:



40 ENLARGED WOMEN'S TOILET ELEVATIONS
AUDITORIUM – ROOM #013
SCALE: 1/2" = 1'-0"

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Plot Setup Script:
Plot Date: 03/11/02 17:17 Plot View:

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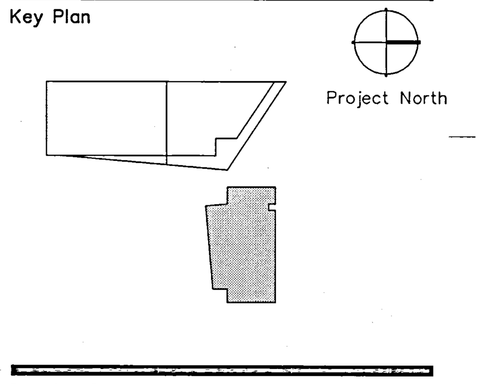
RECORD DRAWINGS

Key Plan



Drawing Title
AUDITORIUM ENLARGED TOILET ELEVATIONS

Scale: 1/2" = 1'-0"
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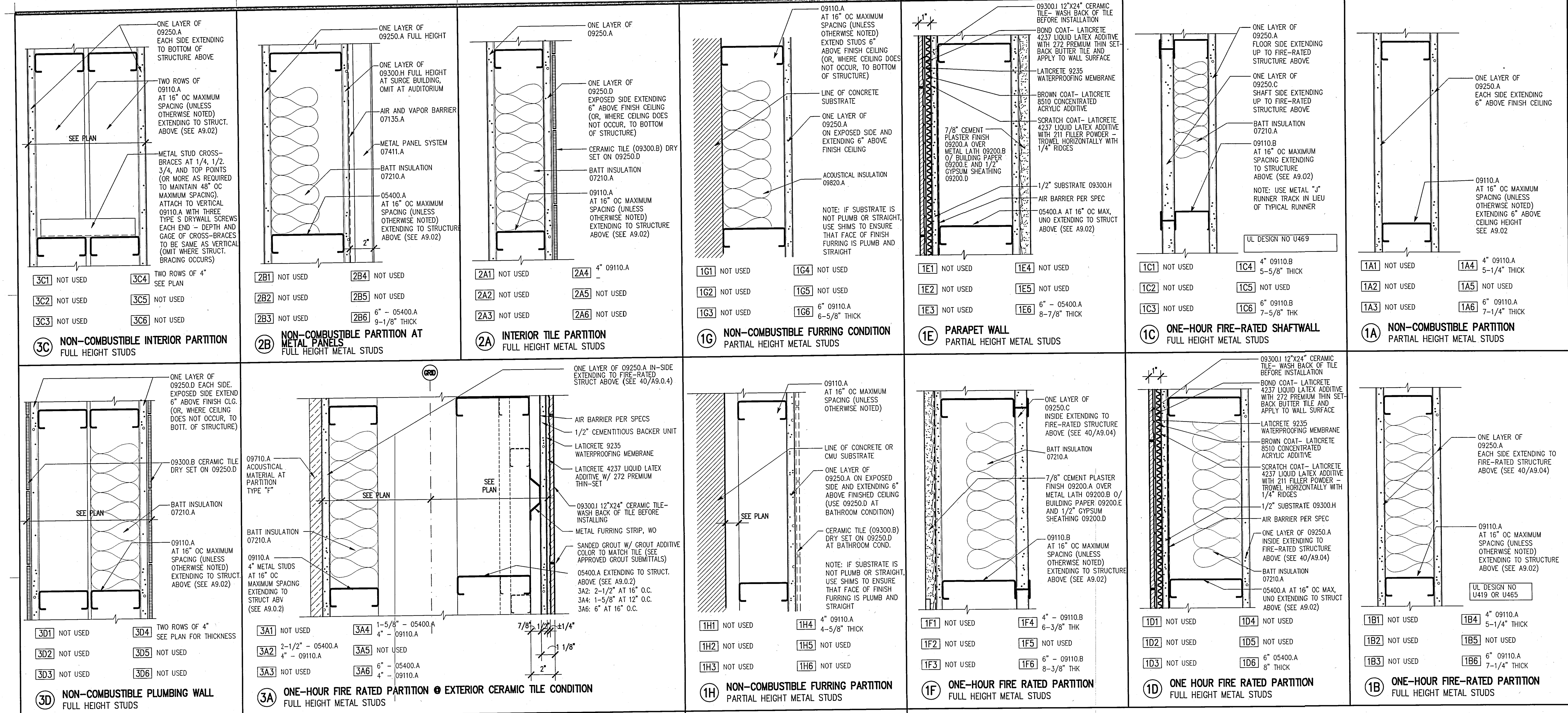
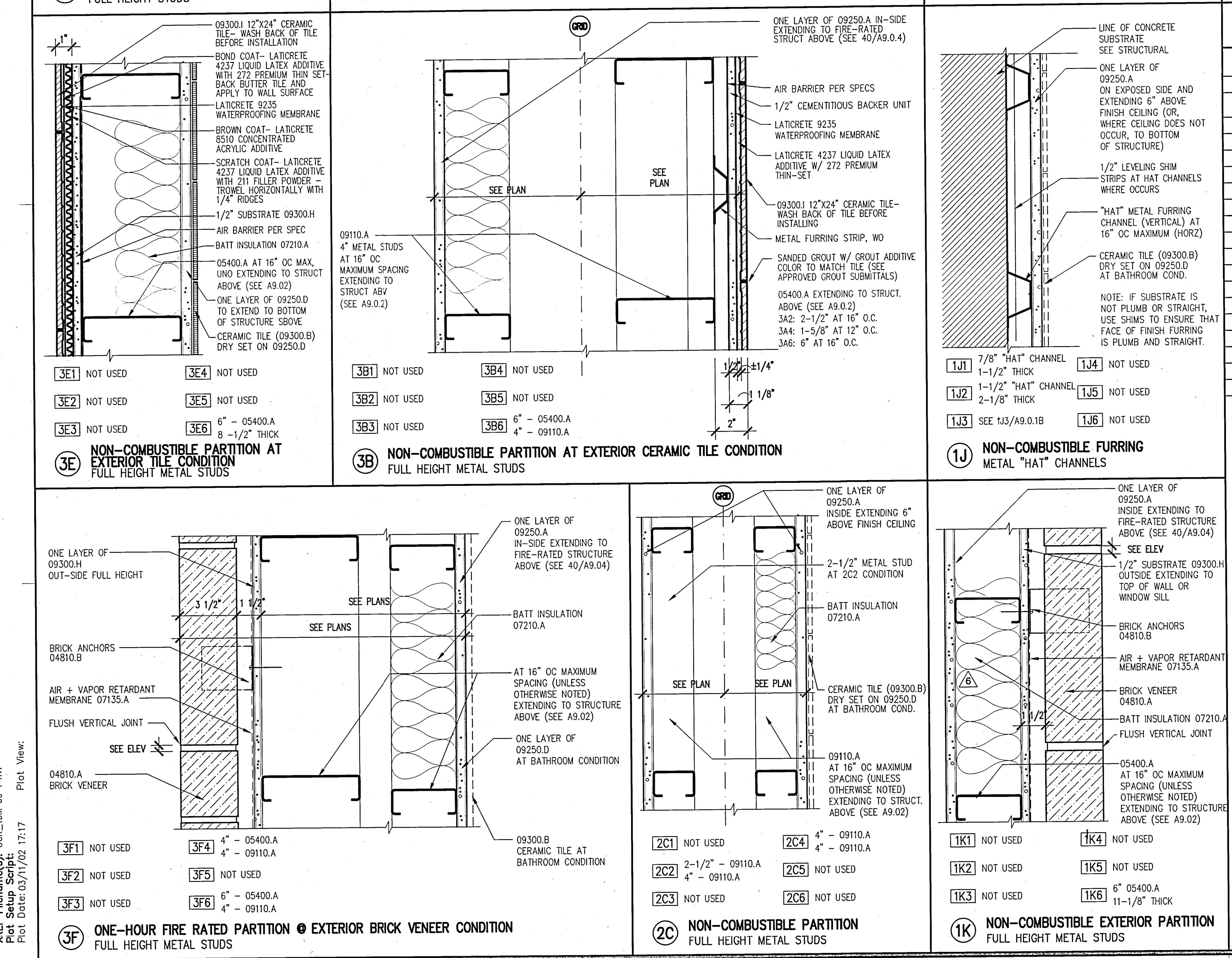
Baseline Date: 06OCT00
Drawing Number: A8.5.3





ADDITIONAL PARTITION COMPONENTS MATRIX

ADDITIONAL COMPONENTS GROUPS	–	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z	AA	BB	NOTES
NO ADDITIONAL COMPONENTS	●																											
NO 1: ADD ACOUSTIC SEALANT																												SEE NOTE NO 1 BELOW
NO 2: ADD OUTLET BOX ACOUSTIC PADS						●																						SEE NOTE NO 2 BELOW
NO 3: ADD ACOUSTIC INSULATION		●																										SEE NOTE NO 3 BELOW
NO 4: WATER RESISTANT WALL		●	●																									SEE NOTE NO 4 BELOW
NO 5: ACOUSTICAL WALL																												SEE NOTE NO 5 BELOW
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NO 8: ACOUSTICAL WALL																												SEE NOTE NO 8 BELOW
NO 9: EXTEND GYPSUM BOARD TO STRUCTURE ABOVE				●																								SEE NOTE NO 9 BELOW
NO 10: ADD THERMAL INSULATION				●			●																		●			SEE NOTE NO 10 BELOW
NO 11: ADD ACOUSTICAL INSULATION									●																			SEE NOTE NO 3 BELOW
NO 12: PARTIAL HEIGHT WALL																												SEE NOTE NO 12 BELOW
NO 13: ACOUSTICAL WALL			●				●	●																				SEE NOTE NO 13 BELOW
NO 14: ACOUSTICAL WALL																								●				SEE NOTE NO 14 BELOW
NO 15: ACOUSTICAL WALL																												SEE NOTE NO 15 BELOW
NO 16: ACOUSTICAL WALL																												SEE NOTE NO 16 BELOW
NO 17: ACOUSTICAL WALL																									●			SEE NOTE NO 17 BELOW
NO 18: EPOXY COATING WALL																												SEE NOTE NO 18 BELOW

FOR NON-RATED PARTITIONS

1. SEAL PERIMETER OF PARTITION WITH CONTINUOUS BEAD OF ACOUSTICAL SEALANT (07920.D). CLOSE OFF ALL SOUND-FLANKING PATHS THROUGH OR AROUND PARTITION BY SEALING ALL JOINTS, GAPS AT OUTLET BOXES AND FIXTURES, AND PENETRATIONS INCLUDING THOSE ABOVE FINISH CEILINGS. SEAL ALL DUCT, PIPE AND CONDUIT PENETRATIONS PER MECHANICAL DRAWINGS.
PARTITION TO SEAL TO METAL DECK FLUTES; REFER TO DETAIL 22/A9.04. PARTITION TO SEAL TO STEEL BEAMS, REFER TO DETAIL 18/A9.05. FOR PARTITIONS HAVING DOUBLE LAYERS OF GYPSUM WALLBOARD, INSTALL FACE LAYER PERPENDICULAR TO BASE LAYER AND STAGGER JOINTS OF EACH LAYER. SEAL JOINTS OF BOTH BASE AND FACE LAYER WITH TAPE AND JOINT COMPOUND.
2. PROVIDE ACOUSTICAL OUTLET BOX PADS (-----.-) AT ALL ELECTRICAL, TELEPHONE, AND DATA OUTLET BOXES AND ALL SWITCH BOXES. MOLD ACOUSTICAL OUTLET BOX PAD (-----.-) CAREFULLY AROUND BOX AFTER BOX IS SECURELY ATTACHED TO STUD AND BEFORE GYPSUM WALLBOARD IS INSTALLED. SEAL ALL OPENINGS WITH ACOUSTICAL SEALANT (07921.D).
3. ACOUSTIC INSULATION TYPE A (NON-FACED, FRICTION FIT) (-----.-) IN STUD CAVITY. PROVIDE 2-1/2" THICK INSULATION WHERE STUD DEPTH IS 2-1/2"; PROVIDE 3-1/2" THICK INSULATION WHERE STUD IS 3-5/8" OR GREATER. INSULATION TO EXTEND FROM BOTTOM OF PARTITION TO UNDERSIDE OF METAL DECK.
4. 5/8" THICK WATER RESISTANT GYPSUM WALL BOARD (09250.D) FROM TOP TO FINISH FLOOR. SEALANT AT ALL JOINTS.
5. ACOUSTICAL WALL MUNIMUM REQUIREMENT (STC 40-44): ONE LAYER OF 5/8" THICK TYPE X GYPSUM WALLBOARD (09250.A) TO EXTEND TO UNDERSIDE OF STRUCTURE ABOVE ON ONE SIDE OF PARTITION. ONE LAYER OF 5/8" THICK TYPE X GYPSUM BOARD (09250.A) TO EXTEND 6" ABOVE CEILING ON OTHER SIDE OF PARTITION.
6. ACOUSTICAL WALL MINIMUM REQUIREMENT (STC 45-49): TWO LAYERS OF 5/8" THICK TYPE X GYPSUM WALLBOARD (09250.A) TO EXTEND TO UNDERSIDE OF STRUCTURE ABOVE ON SAME SIDE OR OPPOSITE SIDE OF PARTITION. ONE LAYER OF 5/8" THICK TYPE X GYPSUM BOARD (09250.A) TO EXTEND 6" ABOVE CEILING ON ONE SIDE OF PARTITION.
7. ACOUSTICAL WALL MUNIMUM REQUIREMENT (STC 50-54): ONE LAYER OF 5/8" THICK TYPE X GYPSUM WALLBOARD (09250.A) TO EXTEND TO UNDERSIDE OF STRUCTURE ABOVE ON BOTH SIDES OF PARTION.
8. ACOUSTICAL WALL MINIMUM REQUIREMENT: SEE PARTITION TYPE DETAIL "OH". NO MECHANICAL EQUIPMENT OR CONTROL PANELS CAN BE MOUNTED ON THIS ACOUSTICAL WALL. THIS WALL MUST NOT BE PENETRATED EXCEPT WHERE NECESSARY FOR DUCTWORK, PIPEWORK, AND CABLING. WHERE DUCT, PIPE, AND CABLING PENETRATIONS ARE MADE, THEY MUST BE SEALED ACCORDING TO ADDITIONAL COMPONENT NO 1.
9. EXTEND 5/8" THICK TYPE X GYPSUM WALLBOARD (09250.A) UP TO UNDERSIDE OF STRUCTURE ABOVE ON BOTH SIDES OF NON-COMBUSTIBLE PARTITION AND EXPOSED SIDE OF FURRING. SEE DETAIL 37/A9.04 AND 22/A9.04 (WHERE APPLICABLE) FOR ADDITIONAL REQUIREMENTS.
10. THERMAL BATT INSULATION R-19 (-----.-) FRICTION FIT IN STUD CAVITY.
11. NOT USED
12. PARTIAL HEIGHT WALL, SEE DETAIL 39G/A9.02. TOP SURFACE OF TOP TRACK TO RECEIVE GYPSUM WALLBOARD FINISH. NO EXPOSED FRAMING ALLOWED.
13. ACOUSTICAL WALL MINIMUM REQUIREMENT (STC 55-56): ONE LAYER OF 5/8" THICK TYPE X GYPSUM WALLBOARD (09250.A) TO EXTEND TO UNDERSIDE OF STRUCTURE AND 1" ACOUSTICAL MATERIAL (09710.A) AT IN-SIDE, ONE LAYER 1/2" THICK BACKER BOARD (09300.H) FULL HEIGHT AT OUT-SIDE OF WALL
14. ACOUSTICAL WALL MINIMUM REQUIREMENT (STC 60): THREE LAYERS OF 5/8" THICK TYPE X GYPSUM WALLBOARD (09250.A) TO EXTEND TO UNDERSIDE OF STRUCTURE ABOVE ON BOTH SIDES OF PARTITION. PROVIDE INSULATION (09820.A) IN BOTH METAL STUDS.
15. ACOUSTICAL WALL MINIMUM REQUIREMENT (STC 55-56): ALL LAYERS OF 5/8" THICK TYPE X GYPSUM WALLBOARD (09250.A) TO EXTEND TO UNDERSIDE OF STRUCTURE ABOVE ON BOTH SIDES OF PARTITION.
16. ACOUSTICAL WALL MINIMUM REQUIREMENT (STC 40-44): ALL LAYERS OF 5/8" THICK TYPE X GYPSUM WALLBOARD (09250.A) TO EXTEND 6" ABOVE CEILING ON BOTH SIDES OF PARTITION.
17. 1" ACOUSTICAL WALL FINISH MATERIAL AT AUDITORIUM SIDE OF WALL. 09710.A
18. SIDE OF WALL FACING OFFICE, STAIR, MECHANICAL ELECTRICAL, RESTROOMS, LOCKER ROOMS AND JANITOR ROOM TO REMAIN GYPSUM BOARD.

* ABUSE RESISTIVE DRYWALL SEE SPECS.

KEYNOTE LEGEND

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.J – PERFORATED ALUMINUM SHEET
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR & VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09200.A – CEMENT PLASTER
09200.D – 1/2" GYPSUM SHEATHING
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.C – PORTLAND CEMENT MORTAR
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK

SHEET NOTES

A. THE PURPOSE OF THIS SHEET IS TO DESCRIBE THE SYSTEM PARTITION TYPES WHICH IS UTILIZED ON THIS PROJECT. REFER TO THE 1/8" SCALE FLOOR PLANS TO DETERMINE THE LOCATIONS AND EXTENT OF PARTITION TYPES REQUIRED.

B. REFER TO SHEET A9.02 FOR TYPICAL PARTITION FRAMING ELEVATIONS AND REFERENCES TO TYPICAL METAL FRAMING DETAILS.

C. REFER TO SHEET A9.04 FOR TYPICAL METAL FRAMED PARTITION DETAILS ILLUSTRATING CONDITIONS WHICH OCCUR WHERE THE PARTITION HEAD MEETS THE FLOOR OR ROOF STRUCTURE ABOVE.

D. REFER TO SHEET A9.05 FOR TYPICAL METAL FRAMED PARTITION DETAILS ILLUSTRATING CONDITIONS WHICH OCCUR WHERE THE PARTITION OCCURS BELOW, OR IS PENETRATED BY, BEAMS OR OTHER STRUCTURAL FRAMING MEMBERS.

E. REFER TO SHEET A9.06 FOR TYPICAL METAL FRAMED PARTITION DETAILS ILLUSTRATING PARTITION INTERSECTION CONDITIONS AND TYPICAL COLUMN FURRING DETAILS.

F. REFER TO SHEET A9.07 FOR BACKING PLATE SCHEDULE AND MISCELLANEOUS PARTITION DETAILS.

G. THE TYPICAL METAL STUDS UNLESS OTHERWISE NOTED ARE AS FOLLOWS:

ALL 1 5/8" STUDS ARE 18 GAGE, U.N.O.;
ALL 2 1/2" STUDS ARE 18 GAGE, U.N.O.;
ALL 4" AND 6" STUDS ARE 20 GAGE UNLESS NOTED OTHERWISE.

THE TYPICAL METAL SHAFT WALL STUDS (09111.B) UNLESS OTHERWISE NOTED ARE AS FOLLOWS:

ALL 4" STUDS ARE 20 GAGE;
ALL 6" STUDS ARE 20 GAGE;

H. PARTITIONS AND FURRING ARE DIMENSIONED ON THE FLOOR PLANS TO THE FACE OF APPLIED FINISH, TYPICAL UNLESS OTHERWISE NOTED. SEE ALSO "DIMENSIONING CONVENTIONS" ON SHEET A0.2

J. THE THICKNESS OF EACH PARTITION ASSEMBLY (EXCLUDING ANY APPLIED FINISHES) IS INDICATED BY THE DETAIL ILLUSTRATING EACH PARTITION TYPE. CAUTION: APPLIED FINISHES AND CERTAIN ADDITIONAL PARTITION COMPONENTS MAY INCREASE (OR DECREASE) THE PARTITION THICKNESS INDICATED BY THE DETAILS ON THIS SHEET. REFER TO THE "INTERIOR FINISHES" IN THE A9.1.1 SHEET SERIES AND THE "ADDITIONAL PARTITION COMPONENTS MATRIX" ON THIS SHEET FOR ADDITIONAL INFORMATION.

K. WHERE PARTITION TYPE DESIGNATION ON FLOOR PLANS IS INTERRUPTED BY DOOR OPENING, GLAZED PARTITION, ETC, CONSTRUCTION ABOVE INTERRUPTION (AND WHERE APPLICABLE BELOW) IS TO BE THE SAME AS THAT DESIGNATED FOR THE PARTITION IN WHICH THE INTERRUPTION OCCURED.

L. IF NO ADDITIONAL PARTITION COMPONENT HAS BEEN ADDED TO PARTITION TYPE SYMBOL, THEN INSTALL THE GYPSUM WALLBOARD 6" ABOVE CEILING AT NON-COMBUSTIBLE PARTITION, TYP.

M. THE SOUND-RATED CONSTRUCTION LEVEL TO BE ACHIEVED IS DETERMINED BY WHICH, IF ANY, ADDITIONAL PARTITION COMPONENTS ARE APPLIED. REFER TO "ADDITIONAL PARTITION COMPONENTS MATRIX" TO DETERMINE WHICH LEVEL OF SOUND-RATED CONSTRUCTION APPLIES.

N. TYPICAL PARTITION TYPE UNLESS OTHERWISE NOTED IS "1A4-" ON FIRST FLOOR AND ABOVE. TYPICAL FURRING TYPE UNLESS OTHERWISE NOTED IS "1J--" SERIES

P. INSTALL ONE LAYER OF 5/8" THICK TYPE X WATER RESISTANT GYPSUM BOARD (09260.E) IN LIEU OF FACE LAYER OF GYPSUM WALLBOARD (WHERE GYPSUM WALLBOARD OCCURS) OF BASIC PARTITION AT THE FOLLOWING LOCATIONS:
JANITOR ROOMS, TOILET ROOMS, KITCHEN

Q. NOT USED

R. PROVIDE SMOKE SEAL AT ALL RATED PARTITIONS. AS NOTED ON SHEET A9.04. SEAL PERIMETER OF PARTITION WITH CONTINUOUS BEAD OF FIRE BARRIER SEALANT (07921.G). CLOSE ALL GAPS THROUGH OR AROUND PARTITION BY SEALING ALL JOINTS, GAPS AROUND OUTLET BOXES, AND PENETRATIONS, INCLUDING THOSE ABOVE FINISH CEILINGS WITH AN APPROVED THROUGH PENETRATION FIRE STOP SYSTEM.

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for | Rev | Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Drawing Title

PARTITION TYPES

Scale: N. T. S.

Project Number: 3193000

Baseline Date: 06OCT00

Drawing Number: A9.0.1A

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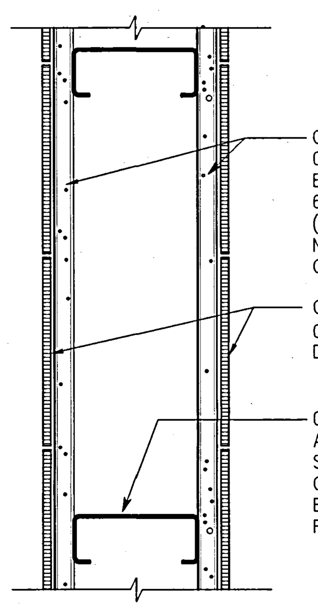
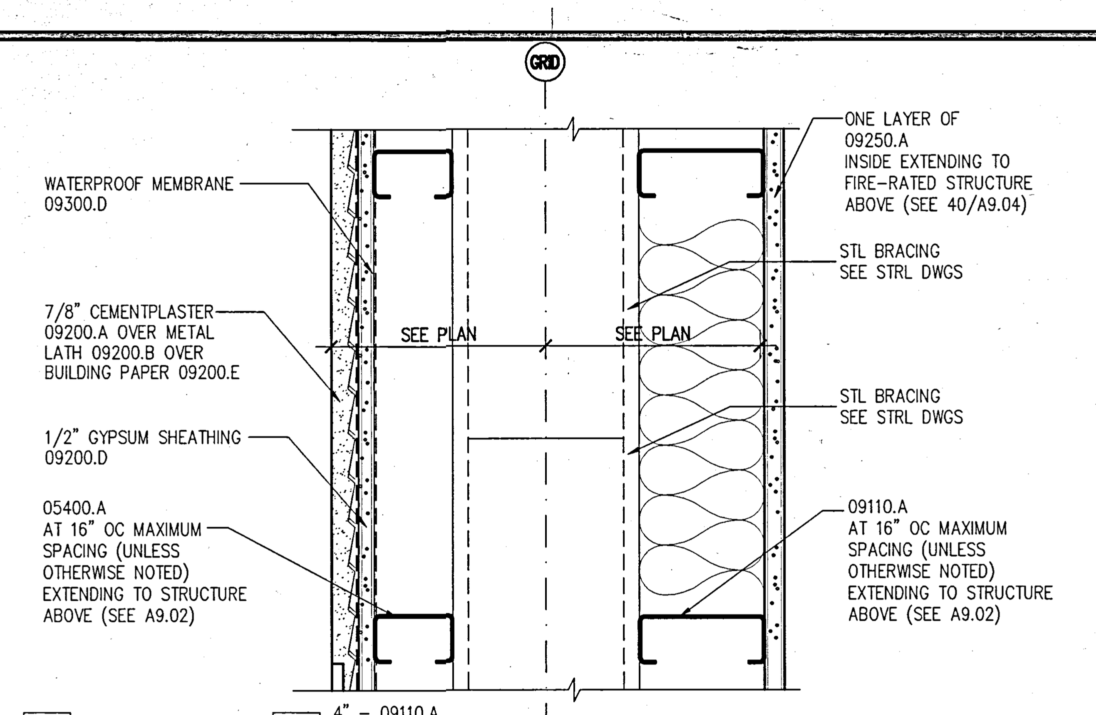


2D1 NOT USED | 2D4 4" 09110.A
2D2 NOT USED | 2D5 NOT USED
2D3 NOT USED | 2D6 NOT USED

(2D) INTERIOR TILE PARTITION
PARTIAL HEIGHT METAL STUDS



1L1 NOT USED | 1L4 4" - 09110.A 2-1/2" - 05400.A
1L2 NOT USED | 1L5 NOT USED
1L3 NOT USED | 1L6 NOT USED

(1L) ONE-HOUR FIRE-RATED PARTITION
FULL HEIGHT METAL STUDS

KEYNOTE LEGEND

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07600.K – RIGID INSULATION
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09200.D – 1/2" GYPSUM SHEATHING
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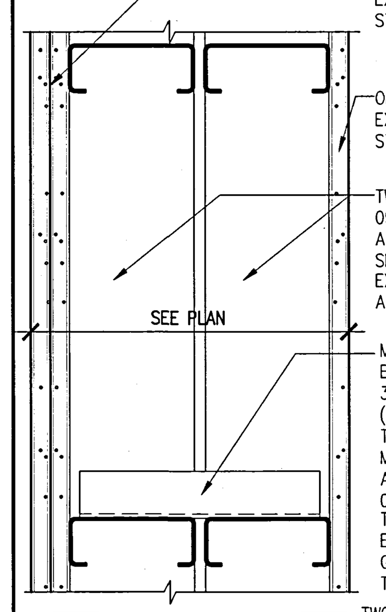
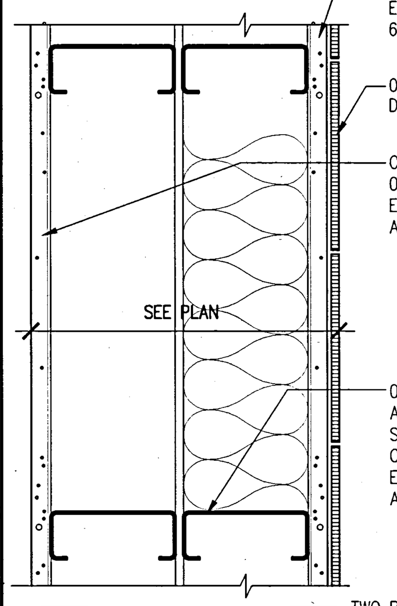


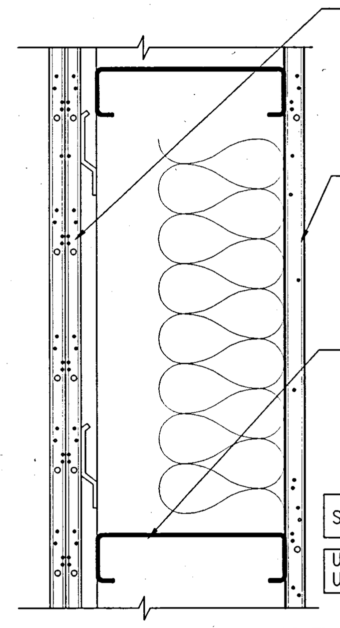
3J1 NOT USED | 3J4 TWO ROWS OF 4" SEE PLAN
3J2 NOT USED | 3J5 NOT USED
3J3 NOT USED | 3C6 NOT USED

(3J) NON-COMBUSTIBLE INTERIOR PARTITION
FULL HEIGHT STUDS



3H1 NOT USED | 3H4 TWO ROWS OF 4" SEE PLAN FOR THICKNESS
3H2 NOT USED | 3H5 NOT USED
3H3 NOT USED | 3H6 NOT USED

(3H) NON-COMBUSTIBLE PLUMBING WALL
FULL HEIGHT STUDS



STC = 60
UL DESIGN NO U453

3G1 NOT USED | 3G4 NOT USED
3G2 NOT USED | 3G5 NOT USED
3G3 NOT USED | 3G6 6" 09110.A 8-3/8" THICK

(3G) ACOUSTIC PARTITION
FULL HEIGHT METAL STUDS

SHEET NOTES

A. THE PURPOSE OF THIS SHEET IS TO DESCRIBE THE SYSTEM OF INTERIOR PARTITION TYPES WHICH IS UTILIZED ON THIS PROJECT. REFER TO THE 1/8" SCALE FLOOR PLANS TO DETERMINE THE LOCATIONS AND EXTENT OF PARTITION TYPES REQUIRED.

B. REFER TO SHEET A9.02 FOR TYPICAL PARTITION FRAMING ELEVATIONS AND REFERENCES TO TYPICAL METAL FRAMING DETAILS.

C. REFER TO SHEET A9.04 FOR TYPICAL METAL FRAMED PARTITION DETAILS ILLUSTRATING CONDITIONS WHICH OCCUR WHERE THE PARTITION HEAD MEETS THE FLOOR OR ROOF STRUCTURE ABOVE.

D. REFER TO SHEET A9.05 FOR TYPICAL METAL FRAMED PARTITION DETAILS ILLUSTRATING CONDITIONS WHICH OCCUR WHERE THE PARTITION OCCURS BELOW, OR IS PENETRATED BY, BEAMS OR OTHER STRUCTURAL FRAMING MEMBERS.

E. REFER TO SHEET A9.06 FOR TYPICAL METAL FRAMED PARTITION DETAILS ILLUSTRATING PARTITION INTERSECTION CONDITIONS AND TYPICAL COLUMN FURRING DETAILS.

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THE TYPICAL METAL SHAFT WALL STUDS (09111.B) UNLESS OTHERWISE NOTED ARE AS FOLLOWS:

ALL 4" STUDS ARE 20 GAGE;
ALL 6" STUDS ARE 20 GAGE;

H. PARTITIONS AND FURRING ARE DIMENSIONED ON THE FLOOR PLANS TO THE FACE OF APPLIED FINISH, TYPICAL UNLESS OTHERWISE NOTED. SEE ALSO "DIMENSIONING CONVENTIONS' ON SHEET A0.2

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K. WHERE PARTITION TYPE DESIGNATION ON FLOOR PLANS IS INTERRUPTED BY DOOR OPENING, GLAZED PARTITION, ETC, CONSTRUCTION ABOVE INTERRUPTION (AND WHERE APPLICABLE BELOW) IS TO BE THE SAME AS THAT DESIGNATED FOR THE PARTITION IN WHICH THE INTERRUPTION OCCURED.

L. IF NO ADDITIONAL PARTITION COMPONENT HAS BEEN ADDED TO PARTITION TYPE SYMBOL, THEN INSTALL THE GYPSUM WALLBOARD 6" ABOVE CEILING AT NON-COMBUSTIBLE PARTITION, TYP.

M. THE SOUND-RATED CONSTRUCTION LEVEL TO BE ACHIEVED IS DETERMINED BY WHICH, IF ANY, ADDITIONAL PARTITION COMPONENTS ARE APPLIED. REFER TO "ADDITIONAL PARTITION COMPONENTS MATRIX" TO DETERMINE WHICH LEVEL OF SOUND-RATED CONSTRUCTION APPLIES.

N. TYPICAL PARTITION TYPE UNLESS OTHERWISE NOTED IS "1A4-" ON FIRST FLOOR AND ABOVE. TYPICAL FURRING TYPE UNLESS OTHERWISE NOTED IS "1J--" SERIES

P. INSTALL ONE LAYER OF 5/8" THICK TYPE X WATER RESISTANT GYPSUM BOARD (09260.E) IN LIEU OF FACE LAYER OF GYPSUM WALLBOARD (WHERE GYPSUM WALLBOARD OCCURS) OF BASIC PARTITION AT THE FOLLOWING LOCATIONS:
JANITOR ROOMS, TOILET ROOMS, KITCHEN

Q. NOT USED

R. PROVIDE SMOKE SEAL AT ALL RATED PARTITIONS. AS NOTED ON SHEET A9.04. SEAL PERIMETER OF PARTITION WITH CONTINUOUS BEAD OF FIRE BARRIER SEALANT (07921.G). CLOSE ALL GAPS THROUGH OR AROUND PARTITION BY SEALING ALL JOINTS, GAPS AROUND OUTLET BOXES, AND PENETRATIONS, INCLUDING THOSE ABOVE FINISH CEILINGS WITH AN APPROVED THROUGH PENETRATION FIRE STOP SYSTEM.

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Seals and Signatures

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ADDITIONAL PARTITION COMPONENTS MATRIX

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NO 18: EPOXY COATING WALL																												SEE NOTE NO 18 BELOW

FOR NON-RATED PARTITIONS

1. SEAL PERIMETER OF PARTITION WITH CONTINUOUS BEAD OF ACOUSTICAL SEALANT (07920.D). CLOSE OFF ALL SOUND-FLANKING PATHS THROUGH OR AROUND PARTITION BY SEALING ALL JOINTS, GAPS AT OUTLET BOXES AND FIXTURES, AND PENETRATIONS INCLUDING THOSE ABOVE FINISH CEILINGS. SEAL ALL DUCT, PIPE AND CONDUIT PENETRATIONS PER MECHANICAL DRAWINGS.
PARTITION TO SEAL TO METAL DECK FLUTES; REFER TO DETAIL 22/A9.04. PARTITION TO SEAL TO STEEL BEAMS, REFER TO DETAIL 18/A9.05. FOR PARTITIONS HAVING DOUBLE LAYERS OF GYPSUM WALLBOARD, INSTALL FACE LAYER PERPENDICULAR TO BASE LAYER AND STAGGER JOINTS OF EACH LAYER. SEAL JOINTS OF BOTH BASE AND FACE LAYER WITH TAPE AND JOINT COMPOUND.

2. PROVIDE ACOUSTICAL OUTLET BOX PADS (------.-) AT ALL ELECTRICAL, TELEPHONE, AND DATA OUTLET BOXES AND ALL SWITCH BOXES. MOLD ACOUSTICAL OUTLET BOX PAD (------.-) CAREFULLY AROUND BOX AFTER BOX IS SECURELY ATTACHED TO STUD AND BEFORE GYPSUM WALLBOARD IS INSTALLED. SEAL ALL OPENINGS WITH ACOUSTICAL SEALANT (07921.D).

3. ACOUSTIC INSULATION TYPE A (NON-FACED, FRICTION FIT) (------.-) IN STUD CAVITY. PROVIDE 2-1/2" THICK INSULATION WHERE STUD DEPTH IS 2-1/2"; PROVIDE 3-1/2" THICK INSULATION WHERE STUD IS 3-5/8" OR GREATER. INSULATION TO EXTEND FROM BOTTOM OF PARTITION TO UNDERSIDE OF METAL DECK.

4. 5/8" THICK WATER RESISTANT GYPSUM WALL BOARD (09250.D) FROM TOP TO FINISH FLOOR.
SEALANT AT ALL JOINTS.

5. ACOUSTICAL WALL MUNIMUM REQUIREMENT (STC 40-44): ONE LAYER OF 5/8" THICK TYPE X GYPSUM WALLBOARD (09250.A) TO EXTEND TO UNDERSIDE OF STRUCTURE ABOVE ON ONE SIDE OF PARTITION. ONE LAYER OF 5/8" THICK TYPE X GYPSUM BOARD (09250.A) TO EXTEND 6" ABOVE CEILING ON OTHER SIDE OF PARTITION.

6. ACOUSTICAL WALL MINIMUM REQUIREMENT (STC 45-49): TWO LAYERS OF 5/8" THICK TYPE X GYPSUM WALLBOARD (09250.A) TO EXTEND TO UNDERSIDE OF STRUCTURE ABOVE ON SAME SIDE OR OPPOSITE SIDE OF PARTITION. ONE LAYER OF 5/8" THICK TYPE X GYPSUM BOARD (09250.A) TO EXTEND 6" ABOVE CEILING ON ONE SIDE OF PARTITION.

7. ACOUSTICAL WALL MUNIMUM REQUIREMENT (STC 50-54): ONE LAYER OF 5/8" THICK TYPE X GYPSUM WALLBOARD (09250.A) TO EXTEND TO UNDERSIDE OF STRUCTURE ABOVE ON BOTH SIDES OF PARTION.

8. ACOUSTICAL WALL MINIMUM REQUIREMENT: SEE PARTITION TYPE DETAIL "OH". NO MECHANICAL EQUIPMENT OR CONTROL PANELS CAN BE MOUNTED ON THIS ACOUSTICAL WALL. THIS WALL MUST NOT BE PENETRATED EXCEPT WHERE NECESSARY FOR DUCTWORK, PIPEWORK, AND CABLING. WHERE DUCT, PIPE, AND CABLING PENETRATIONS ARE MADE, THEY MUST BE SEALED ACCORDING TO ADDITIONAL COMPONENT NO 1.

9. EXTEND 5/8" THICK TYPE X GYPSUM WALLBOARD (09250.A) UP TO UNDERSIDE OF STRUCTURE ABOVE ON BOTH SIDES OF NON-COMBUSTIBLE PARTITION AND EXPOSED SIDE OF FURRING. SEE DETAIL 37/A9.04 AND 22/A9.04 (WHERE APPLICABLE) FOR ADDITIONAL REQUIREMENTS.

10. THERMAL BATT INSULATION R-19 (------.-) FRICTION FIT IN STUD CAVITY.

11. NOT USED

12. PARTIAL HEIGHT WALL, SEE DETAIL 39G/A9.02. TOP SURFACE OF TOP TRACK TO RECEIVE GYPSUM WALLBOARD FINISH. NO EXPOSED FRAMING ALLOWED.

13. ACOUSTICAL WALL MINIMUM REQUIREMENT (STC 55-56): ONE LAYER OF 5/8" THICK TYPE X GYPSUM WALLBOARD (09250.A) TO EXTEND TO UNDERSIDE OF STRUCTURE AND 1" ACOUSTICAL MATERIAL (09710.A) AT IN-SIDE, ONE LAYER 1/2" THICK BACKER BOARD (09300.H) FULL HEIGHT AT OUT-SIDE OF WALL

14. ACOUSTICAL WALL MINIMUM REQUIREMENT (STC 60): THREE LAYERS OF 5/8" THICK TYPE X GYPSUM WALLBOARD (09250.A) TO EXTEND TO UNDERSIDE OF STRUCTURE ABOVE ON BOTH SIDES OF PARTITION. PROVIDE INSULATION (09820.A) IN BOTH METAL STUDS.

15. ACOUSTICAL WALL MINIMUM REQUIREMENT (STC 55-56): ALL LAYERS OF 5/8" THICK TYPE X GYPSUM WALLBOARD (09250.A) TO EXTEND TO UNDERSIDE OF STRUCTURE ABOVE ON BOTH SIDES OF PARTITION.

16. ACOUSTICAL WALL MINIMUM REQUIREMENT (STC 40-44): ALL LAYERS OF 5/8" THICK TYPE X GYPSUM WALLBOARD (09250.A) TO EXTEND 6" ABOVE CEILING ON BOTH SIDES OF PARTITION.

17. 1" ACOUSTICAL WALL FINISH MATERIAL AT AUDITORIUM SIDE OF WALL. 09710.A

18. SIDE OF WALL FACING OFFICE, STAIR, MECHANICAL ELECTRICAL, RESTROOMS, LOCKER ROOMS AND JANITOR ROOM TO REMAIN GYPSUM BOARD.

* ABUSE RESISTIVE DRYWALL SEE SPECS.

NOT USED | NOT USED
NOT USED | NOT USED
NOT USED | NOT USED

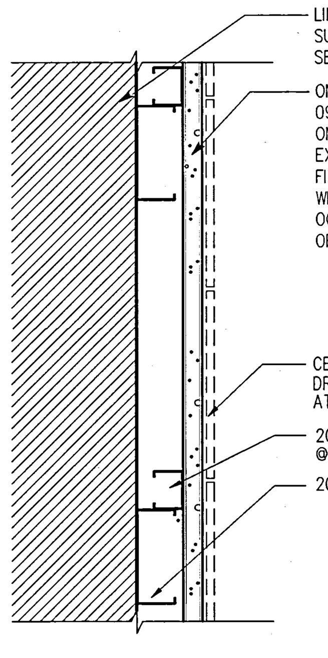
NOT USED

NOT USED | NOT USED
NOT USED | NOT USED
NOT USED | NOT USED

NOT USED

NOT USED | NOT USED
NOT USED | NOT USED
NOT USED | NOT USED

NOT USED



1J3 2" THICK | NOT USED
NOT USED | NOT USED
NOT USED | NOT USED

(1J3) NON-COMBUSTIBLE FURRING

RECORD DRAWINGS

Key Plan

Drawing Title
PARTITION TYPES

N. T. S.
Scale
3193000
Project Number
06OCT00
Baseline Date
A9.0.1B
Drawing Number

Plot Sheet Filename: I:\...\A9001B.dwg
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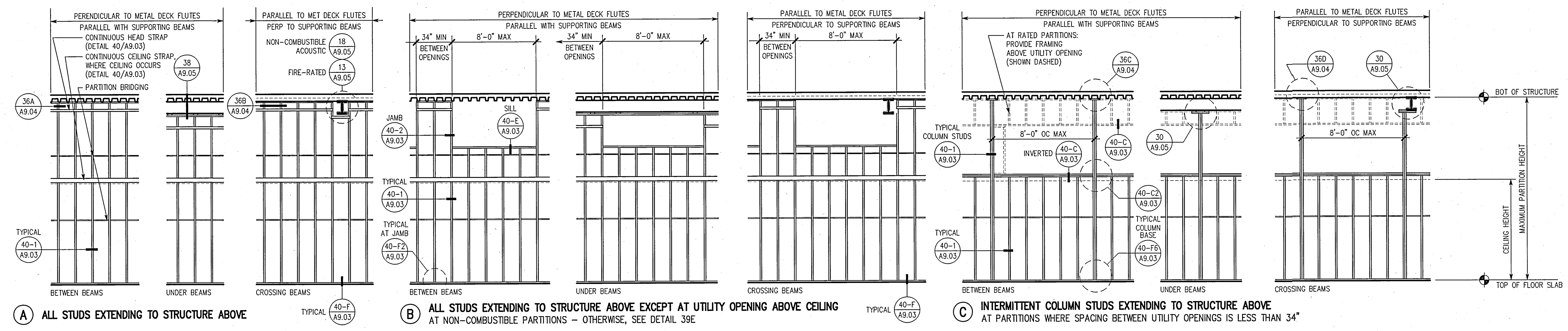
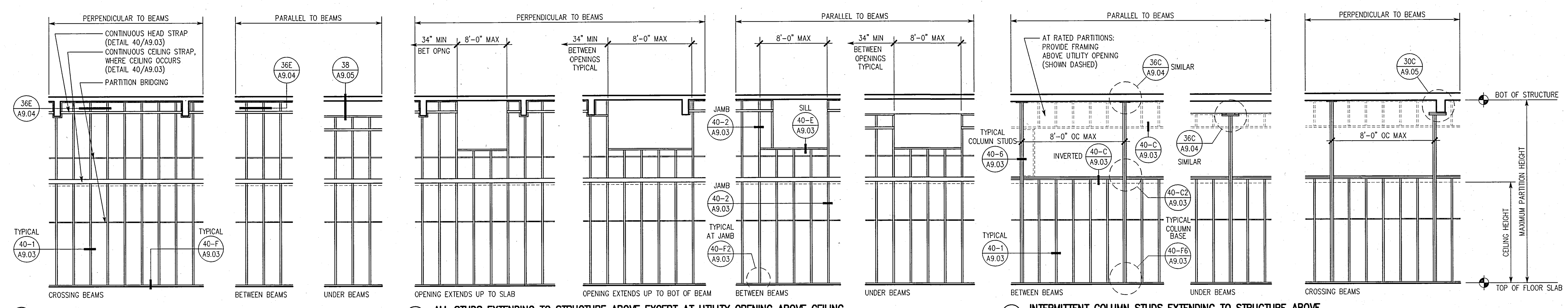


Ⓐ ALL STUDS EXTENDING TO STRUCTURE ABOVE

Ⓑ ALL STUDS EXTENDING TO STRUCTURE ABOVE EXCEPT AT UTILITY OPENING ABOVE CEILING
AT NON-COMBUSTIBLE PARTITIONS – OTHERWISE, SEE DETAIL 39E

Ⓒ INTERMITTENT COLUMN STUDS EXTENDING TO STRUCTURE ABOVE
AT PARTITIONS WHERE SPACING BETWEEN UTILITY OPENINGS IS LESS THAN 34"

(37) TYPICAL FRAMING ELEVATIONS
TYPICAL WHERE PARTITIONS OCCUR BELOW METAL DECK AND STEEL BEAMS
SCALE: 1/4" = 1'-0"

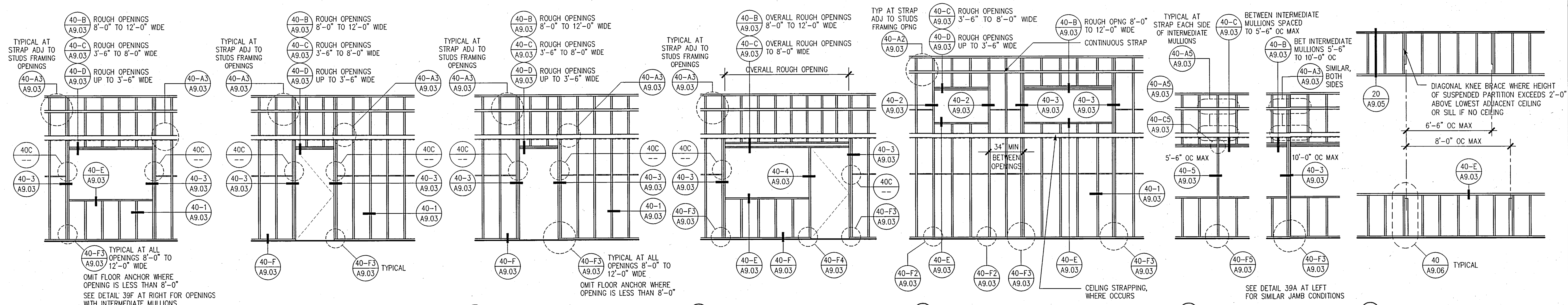


Ⓐ ALL STUDS EXTENDING TO STRUCTURE ABOVE

Ⓑ ALL STUDS EXTENDING TO STRUCTURE ABOVE EXCEPT AT UTILITY OPENING ABOVE CEILING
AT NON-COMBUSTIBLE PARTITIONS – OTHERWISE, SEE DETAIL 39E

Ⓒ INTERMITTENT COLUMN STUDS EXTENDING TO STRUCTURE ABOVE
AT PARTITIONS WHERE SPACING BETWEEN UTILITY OPENINGS IS LESS THAN 34"

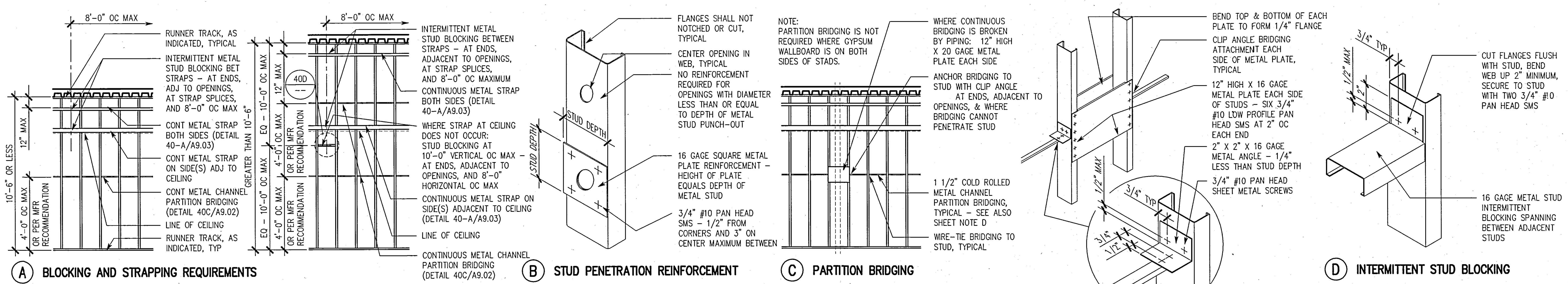
(38) TYPICAL FRAMING ELEVATIONS
TYPICAL WHERE PARTITIONS OCCUR BELOW CONCRETE SLABS, CONCRETE BEAMS, AND CONCRETE WALL OPENINGS
SCALE: 1/4" = 1'-0"



Ⓐ GLAZED OPENINGS/PASS-THROUGHS
Ⓑ DOOR OPENINGS
Ⓒ CASED/UNCASED OPENINGS
Ⓓ COMBINATION DOOR/GLAZED OPENINGS
Ⓔ UTILITY SERVICE OPENINGS
Ⓕ INTERMEDIATE MULLIONS
Ⓖ SUSPENDED AND PARTIAL HGT PTNS

(39) TYPICAL FRAMING ELEVATIONS
TYPICAL AT ALL METAL STUD FRAMING, UNLESS OTHERWISE NOTED
SCALE: 1/4" = 1'-0"

(40) NOT USED
SCALE:



Ⓐ BLOCKING AND STRAPPING REQUIREMENTS
Ⓑ STUD PENETRATION REINFORCEMENT
Ⓒ PARTITION BRIDGING
Ⓓ INTERMITTENT STUD BLOCKING

(35) TYPICAL BLOCKING, BRIDGING, STRAPPING, AND REINFORCEMENT REQUIREMENTS FOR METAL STUD FRAMING
ADDITIONAL BLOCKING, BRIDGING, AND STRAPPING NOT SHOWN HERE MAY ALSO BE REQUIRED – SEE SHEET NOTE C
SCALE: 1/4" = 1'-0"

SHEET NOTES

A. THE PURPOSE OF THIS SHEET IS TO DESCRIBE THE METAL STUD FRAMING SYSTEM REQUIRED FOR INTERIOR PARTITIONS. SEE SPECIFICATIONS SECTION 09111 FOR ADDITIONAL INFORMATION

B. USE FRAMING MEMBERS OF TYPE AND DEPTH SHOWN BY THE "PARTITON TYPES" ON A9.01.

C. SEE DETAIL 40 ON THIS SHEET FOR TYPICAL BLOCKING, BRIDGING, AND REINFORCEMENT REQUIREMENTS. SUPPLEMENTARY FRAMING, ADDITIONAL BLOCKING, ADDTIONAL BRIDGING, PARTITION STIFFENERS, HORIZONTAL BRACING, AND CHANNEL REINFORCEMENT NOT INDICATED HERE MAY ALSO BE NECESSARY AND SHALL BE PROVIDED AS REQUIRED. REFER TO THE SPECIFICATIONS.

D. PROVIDE 1-1/2" COLD ROLLED METAL CHANNEL BRIDGING AT PARTITION FRAMING UTILIZING 16 GAGE METAL STUDS, TYPICAL. AT 20 GAGE STUDS, PROVIDE 3/4" COLD ROLLED METAL CHANNEL BRIDGING.

E. EXCEPT WHERE SPECIFIC EXTERIOR PERIMETER FRAMING ELEVATIONS HAVE BEEN PROVIDED, THE PARTITION FRAMING ELEVATIONS SHOWN ON THIS SHEET ALSO APPLY TO METAL STUD FRAMING AT THE EXTERIOR PERIMETER.

F. FOR ALL METAL STUD FRAMING, ISOLATE FRAMING FROM TRANSFER OF STRUCT LOADING TO FRAMING, BOTH HORIZONTAL AND VERTICAL. SEE INDICATED DETAILS.

G. WHERE FIRE AND/OR SMOKE DAMPERS ARE REQUIRED (SEE MECHANICAL DRAWINGS), FRAME AROUND UTILITY OPENINGS AS ILLUSTRATED BY DETAIL 39E.

H. SUSPENDED METAL STUD FRAMING OCCURS WHERE:

- FRAMING AT HEAD OF OPENING CANNOT SPAN BETWEEN FLOOR-SUPPORTED STUDS AT EACH END DUE TO INTERRUPTION BY STRUCTURAL MEMBER
- AT LOCATIONS ISOLATED WITHIN CEILINGS WHERE NO ADJACENT FLOOR-SUPPORTED FRAMING OCCURS (SEE ALSO CEILING SYSTEM DETAILS)
- LENGTH OF SPAN AT HEAD OF OPENING IS GREATER THAN 12'-0"

FOR ADDITIONAL SUSPENDED PARTITION FRAMING REQUIREMENTS, REFER TO DETAIL 20/A9.05

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900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title
TYPICAL PARTITION FRAMING ELEVATIONS

N. T. S.
Scale

3193000
Project Number

06OCT00
Baseline Date

A9.0.2
Drawing Number

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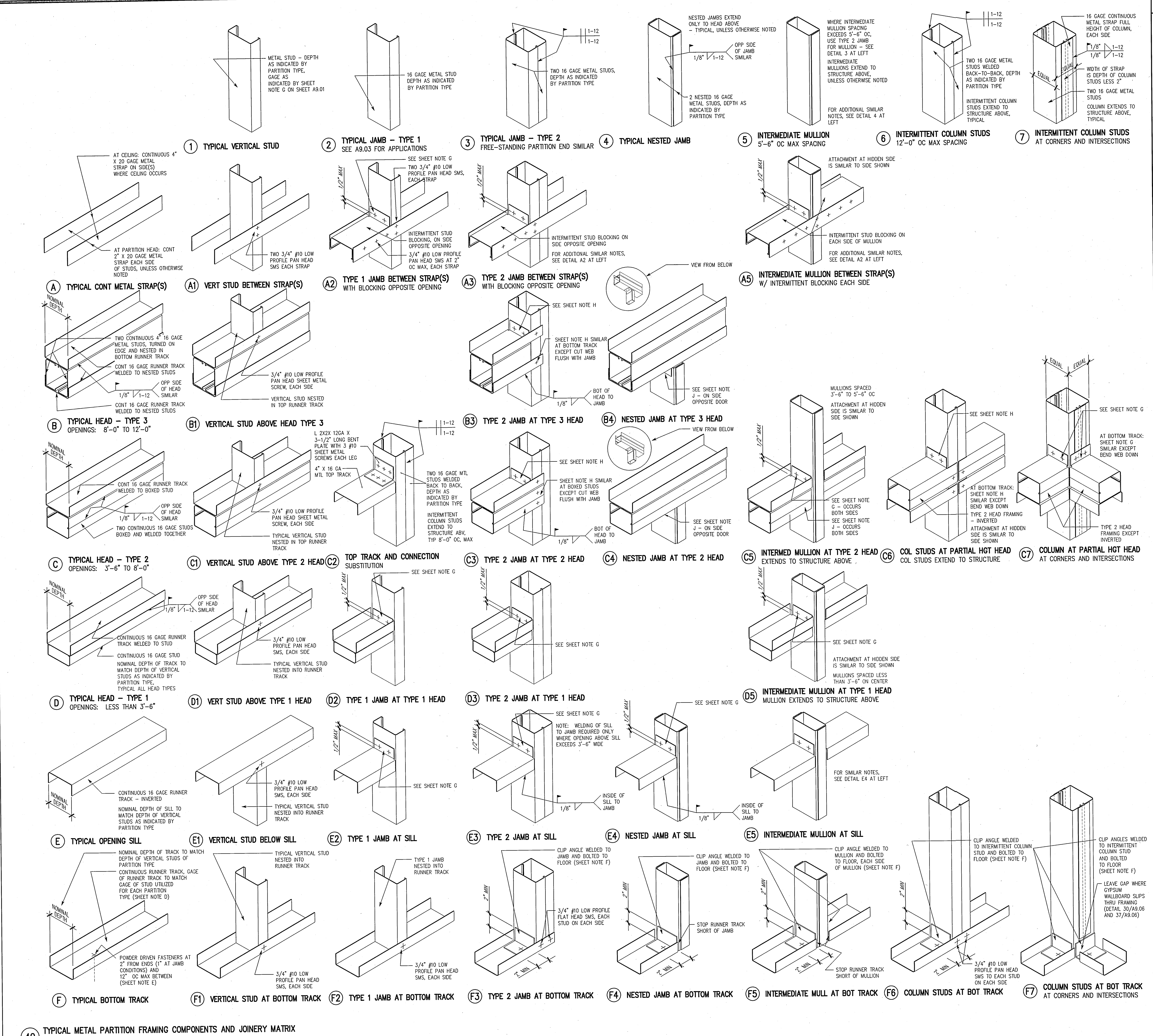
06/21/00



40 TYPICAL METAL PARTITION FRAMING COMPONENTS AND JOINERY MATRIX
SCALE: NOT TO SCALE

SHEET NOTES

A. THE PURPOSE OF THIS SHEET IS TO DESCRIBE TYPICAL DETAILS USED IN CONJUNCTION WITH THE METAL FRAMED PARTITION SYSTEM. SEE SPECIFICATIONS SECTION 09111 FOR ADDITIONAL INFORMATION.

B. DETAILS ON THIS SHEET ARE ORGANIZED IN A MATRIX FORMAT. DETAILS 40-1, 40-2, 40-3, 40-4, 40-5, 40-6, AND 40-7 ACROSS THE TOP OF THE SHEET ARE TYPICAL. THE REQUIREMENTS NOTED THEREIN APPLY TO EACH DETAIL IN THE COLUMN BELOW, UNLESS OTHERWISE NOTED. DETAILS 40-A, 40-B, 40-C, 40-D, 40-E, AND 40-F ALONG THE LEFT SIDE OF THE SHEET ARE ALSO TYPICAL. THE REQUIREMENTS NOTED THEREIN APPLY TO EACH DETAIL IN THE ROW TO THE RIGHT, UNLESS OTHERWISE NOTED.

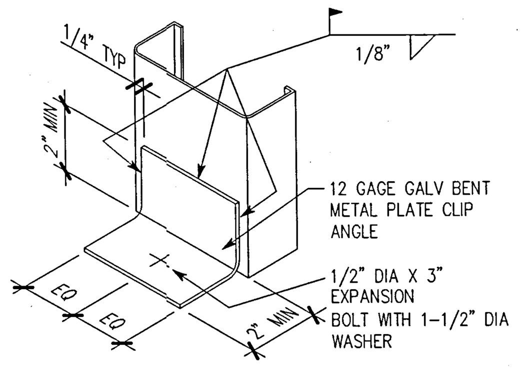
C. NOT USED

D. THE GAGE OF RUNNER TRACK UTILIZED (SEE DETAIL 40-F) SHALL MATCH GAGE OF STUD UTILIZED FOR EACH PARTITION TYPE.

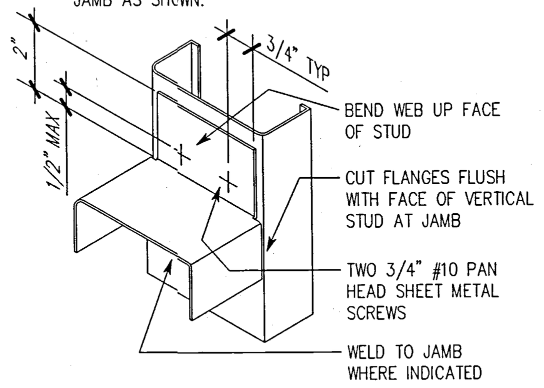
E. USE OF POWDER DRIVEN FASTENERS:

- FOR APPLICATIONS SHOWN ON THIS SHEET, POWDER DRIVEN FASTENERS SHALL BE HILTI X-DNI 0.145" MINIMUM SHANK DIAMETER, WITH A MINIMUM EMBEDMENT OF 1 1/2" (ICBO # 2388), UNLESS LARGER FASTENER IS NOTED.
- FOR APPLICATIONS SHOWN ON THIS SHEET, POWDER DRIVEN FASTENERS SHALL BE UTILIZED FOR ATTACHMENT TO CONCRETE.
- POWDER DRIVEN FASTENERS MAY ONLY BE USED WHERE THE DEPTH OF CONCRETE EXCEEDS THREE (3) TIMES THE PENETRATION DEPTH OF THE FASTENER AND THERE IS AT LEAST 1-1/2" OF CONCRETE COVER MEASURED LATERALLY IN ALL DIRECTIONS FROM THE FASTENER. WHERE ADEQUATE CONCRETE DOES NOT OCCUR, USE #10 SHEET METAL SCREWS TO ATTACH TO METAL DECKING.

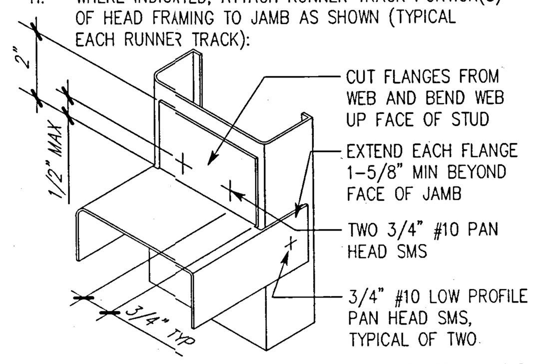
F. WHERE INDICATED, PROVIDE CLIP ANGLE WELDED TO BASE OF JAMBS AND INTERMEDIATE MULLIONS AND BOLTED THRU RUNNER TRACK TO CONCRETE SLAB AS SHOWN:



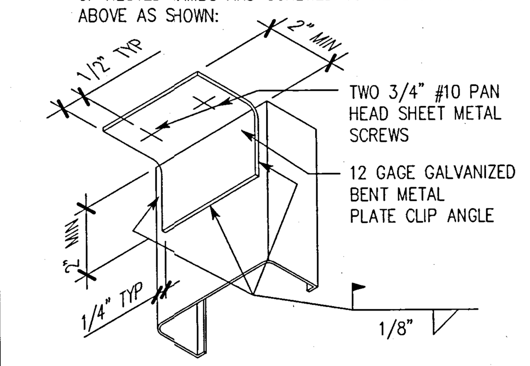
G. WHERE INDICATED, ATTACH SILL OR HEAD FRAMING TO JAMB AS SHOWN:



H. WHERE INDICATED, ATTACH RUNNER TRACK PORTION(S) OF HEAD FRAMING TO JAMB AS SHOWN (TYPICAL EACH RUNNER TRACK):



J. WHERE INDICATED, PROVIDE CLIP ANGLE WELDED TO HEAD OF NESTED JAMBS AND SCREWED TO HEAD FRAMING ABOVE AS SHOWN:



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900 University Avenue
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SmithGroup
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1919 Santa Monica Boulevard
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Santa Monica, California 90404
310.586.5400
310.586.1091

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title
TYPICAL METAL FRAMED PARTITION DETAILS

Scale
N. T. S.
Project Number
3193000
Baseline Date
06OCT00
Drawing Number
A9.0.3

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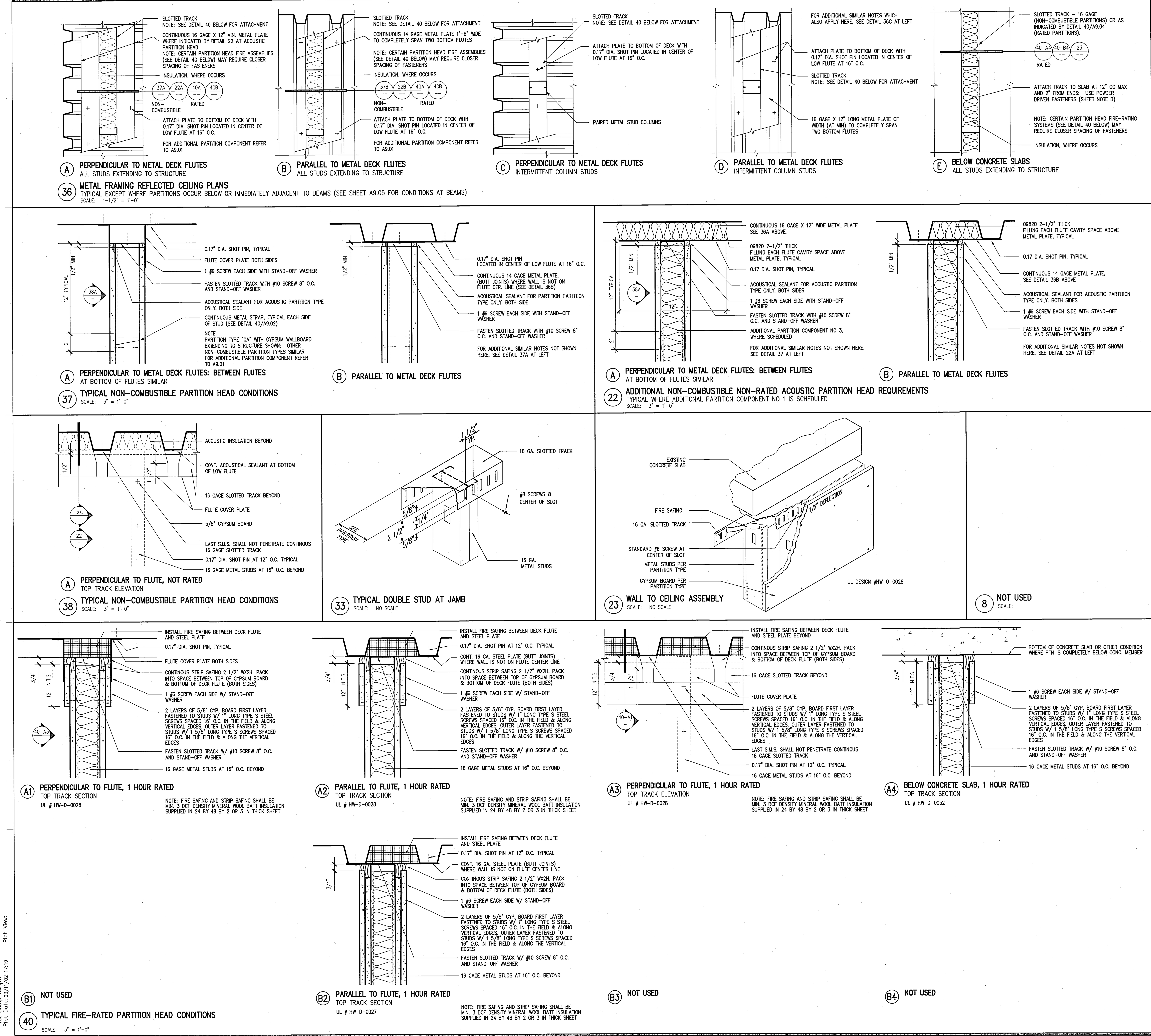

MATERIAL KEYNOTE LEGEND

SHEET NOTES

A. THE PURPOSE OF THIS SHEET IS TO DESCRIBE TYPICAL DETAILS USED IN CONJUNCTION WITH THE METAL FRAMED PARTITION SYSTEM. SEE SPECIFICATION SECTIONS 09111 AND 09250 FOR ADDITIONAL INFORMATION.

B. FOR REQUIREMENTS AND LIMITATIONS REGARDING THE USE OF POWDER DRIVEN FASTENERS AT CONDITIONS ILLUSTRATED BY THIS SHEET, REFER TO SHEET NOTE E ON SHEET A9.33.

C. DETAIL 40 ON THIS SHEET ILLUSTRATES SYSTEMS PROVIDING FIRE-RATED CLOSURE AT NON-BEARING PARTITION HEAD CONDITIONS.

D. EACH OF THE FIRE-RATED SLOTTED TRACK PARTITION HEAD SYSTEMS ILLUSTRATED BY DETAIL 40 UTILIZES ONE OF MORE PROPRIETARY PRODUCTS. AS INDICATED ON DETAILS, THE TEST REPORTS, FIRE ASSEMBLY LISTINGS, AND/OR AGENCY APPROVALS FOR EACH OF THESE SYSTEMS ARE PRODUCT-SPECIFIC; SUBSTITUTIONS WILL BE REVIEWED AND ACCEPTED ONLY IF THEY HAVE BEEN TESTED AND LISTED BY AN APPROVED TESTING LABORATORY AND ARE ACCEPTED BY THE ARCHITECT AND OSHPD.

E. NOTE: ALL STRUCTURAL FLOORS INDICATED ON THESE DRAWINGS ARE EXISTING U.O.N.

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900 University Avenue
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1919 Santa Monica Boulevard
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310.586.5400
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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

TYPICAL METAL FRAMED PARTITION DETAILS

N. T. S.

Scale

3193000

Project Number

06OCT00

Baseline Date

A9.0.4

Drawing Number

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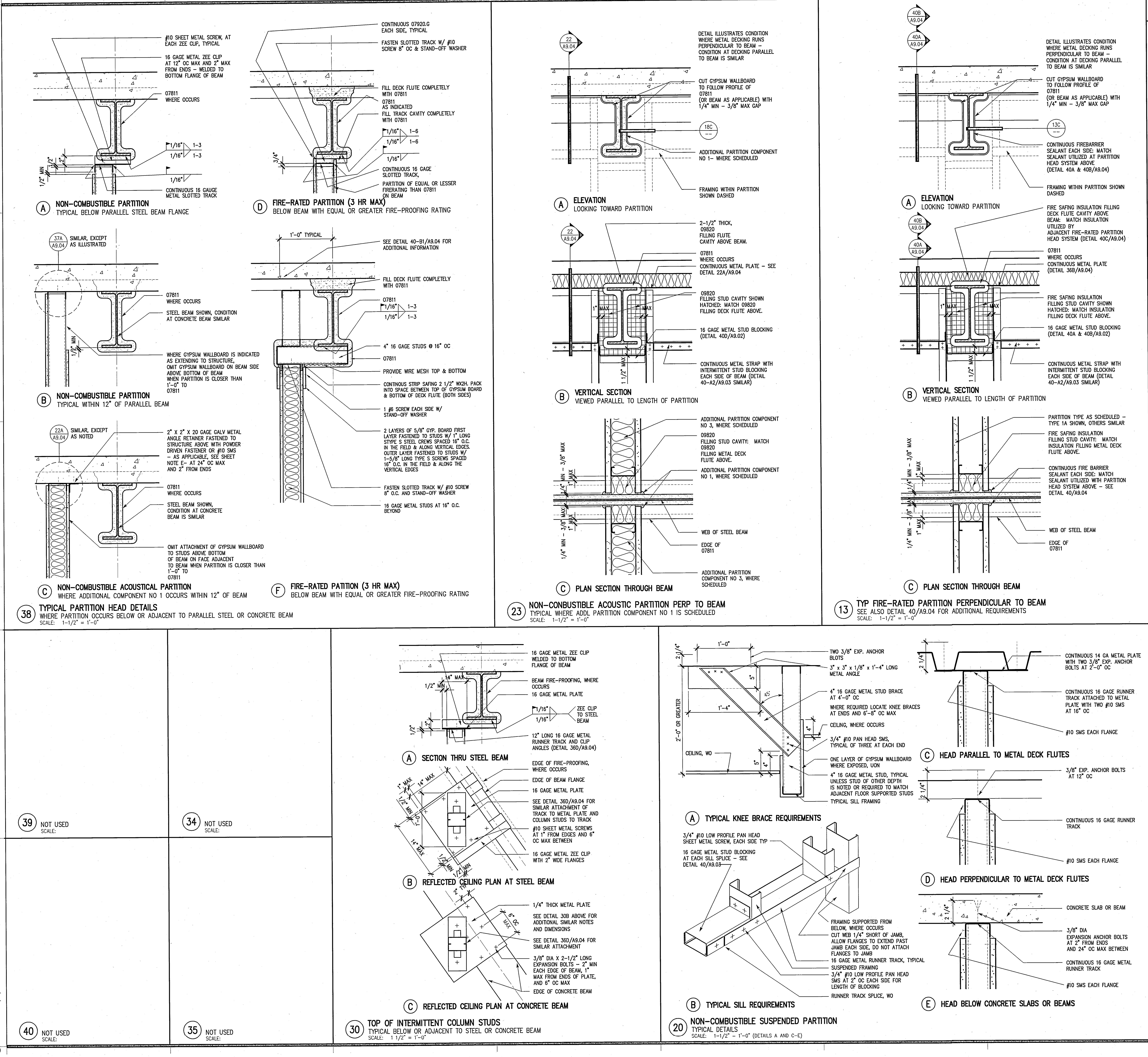
06/21/00



MATERIAL KEYNOTE LEGEND

SHEET NOTES

A. THE PURPOSE OF THIS SHEET IS TO DESCRIBE TYPICAL DETAILS USED IN CONJUNCTION WITH THE METAL FRAMED PARTITION SYSTEM.

B. FOR REQUIRENENTS AND LIMITATIONS REGARDING THE USE OF POWDER DRIVEN FASTENERS AT CONDITIONS ILLUSTRATED BY THIS SHEET, REFER TO SHEET NOTE E ON SHEET A9.03.

C. NOT USED

D. NOT USED

E. DETAILS 13 AND 18 ON THIS SHEET ARE DRAWN SHOWING CONDITION WHERE METAL DECKING AND STEEL BEAM OCCUR. REQUIREMENTS WHERE CONCRETE SLAB AND BEAM OCCUR ARE SIMILAR.

F. REFER TO THE SHEET NOTES ON SHEET A9.01 FOR ADDITIONAL NOTES WHICH MAY APPLY TO THE TYPICAL PARTITION DETAILS SHOWN ON THIS SHEET.

G. REFER TO THE "ARCHITECTURAL GENERAL NOTES" ON SHEET A0.4 FOR ADDITIONAL NOTES WHICH MAY BE APPLICABLE TO THE WORK SHOWN ON THIS SHEET.

NOTE: ALL STRUCTURAL STEEL BEAMS AND FIREPROOFING SHOWN ON THIS SHEET ARE EXISTING CONDITION, U.O.N. GENERAL CONTRACTOR INSTALL NEW PARTITIONS AS INDICATED ON FRAMED PARTITION DETAILS.
AFTER INSTALLATION APPLY SPRAYED ON FIREPROOFING WHERE (E) FIREPROOFING WAS DISTURBED BY NEW WORK, TO RESTORE FIREPROOFING TO ORIGINAL RATING.

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Riverside, CA 92521

SmithGroup

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1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

TYPICAL METAL FRAMED PARTITION DETAILS

N. T. S.

Scale

3193000

Project Number

06OCT00

Baseline Date

A9.0.5

Drawing Number

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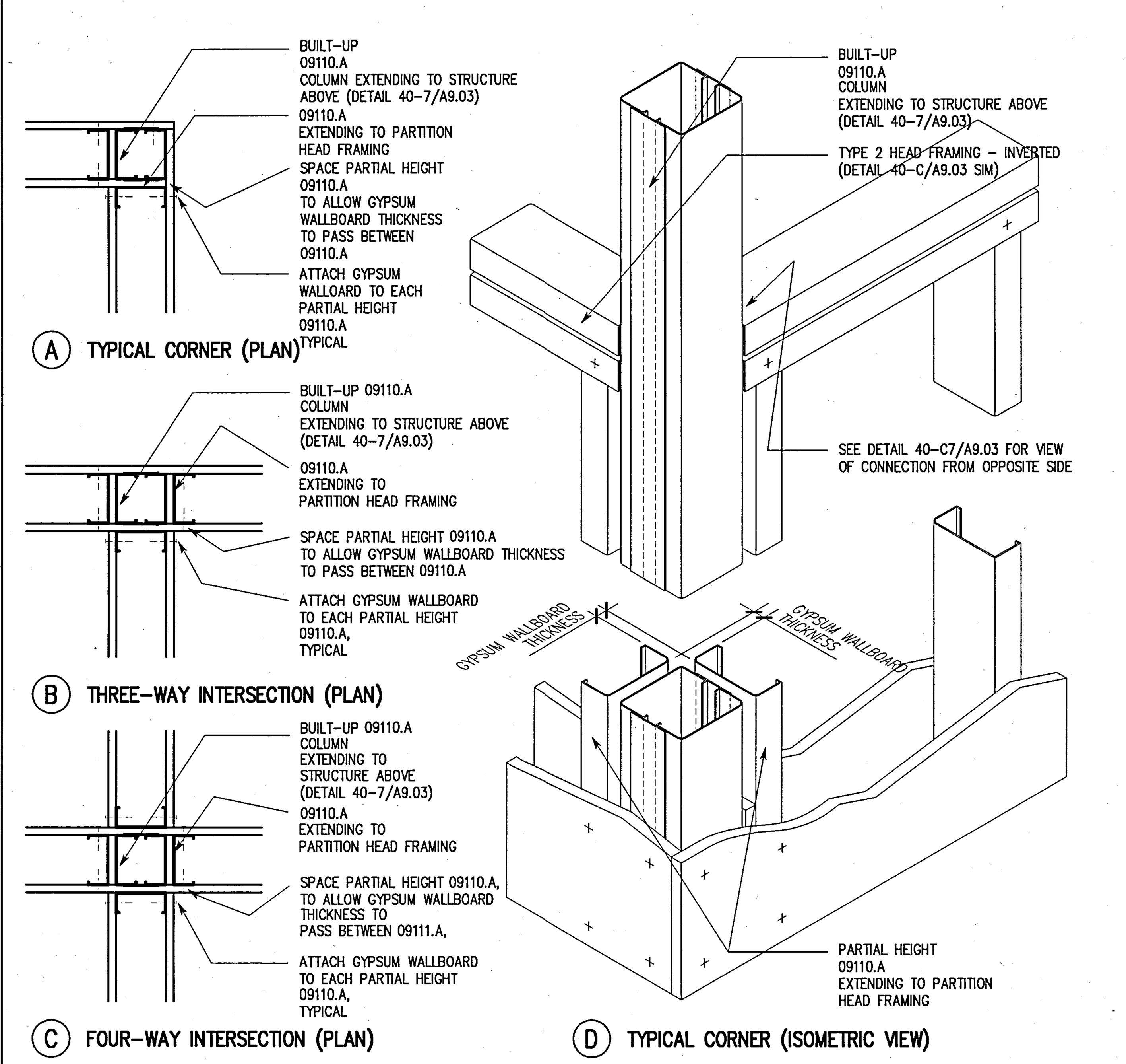


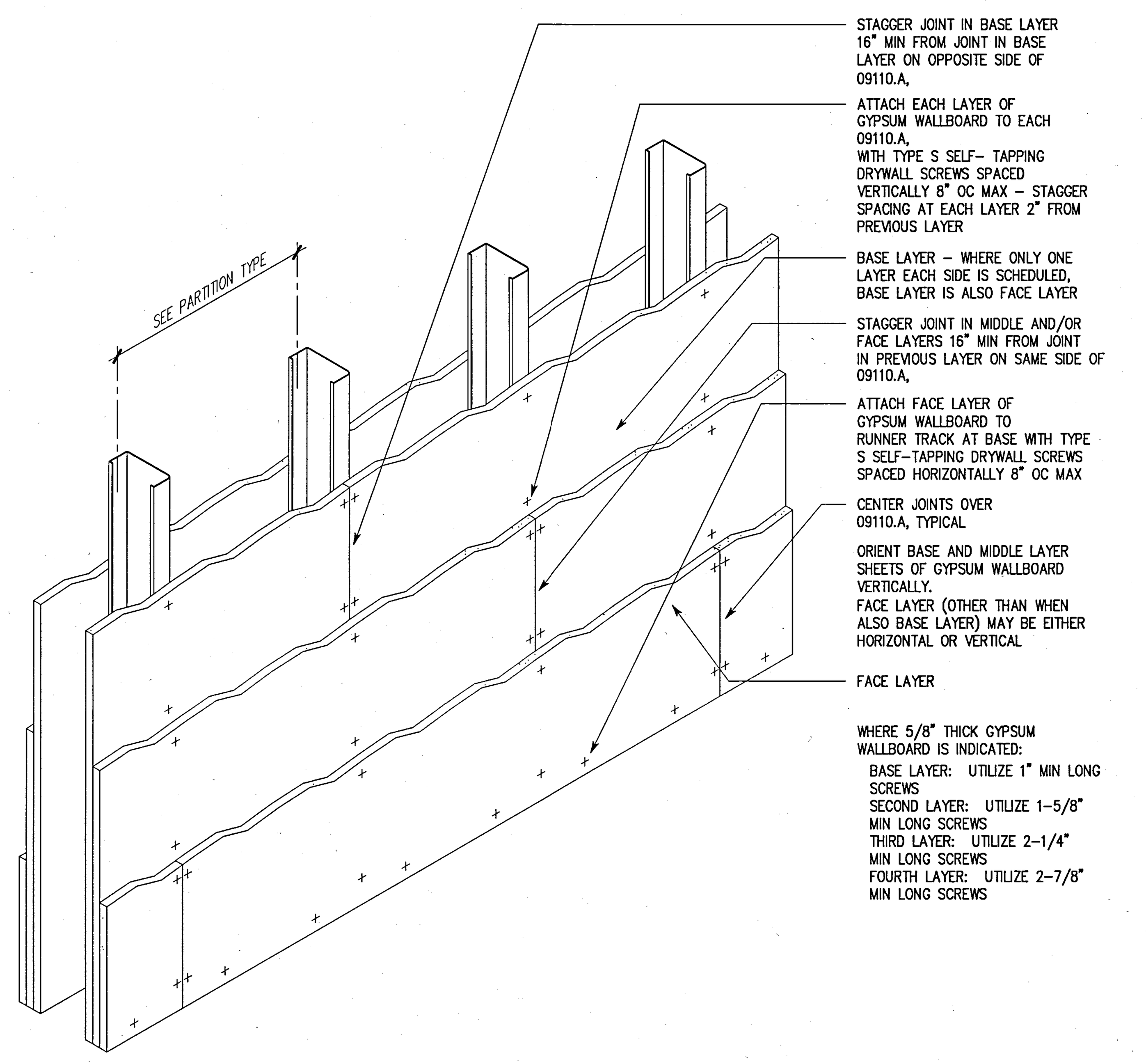
A TYPICAL CORNER (PLAN)

B THREE-WAY INTERSECTION (PLAN)

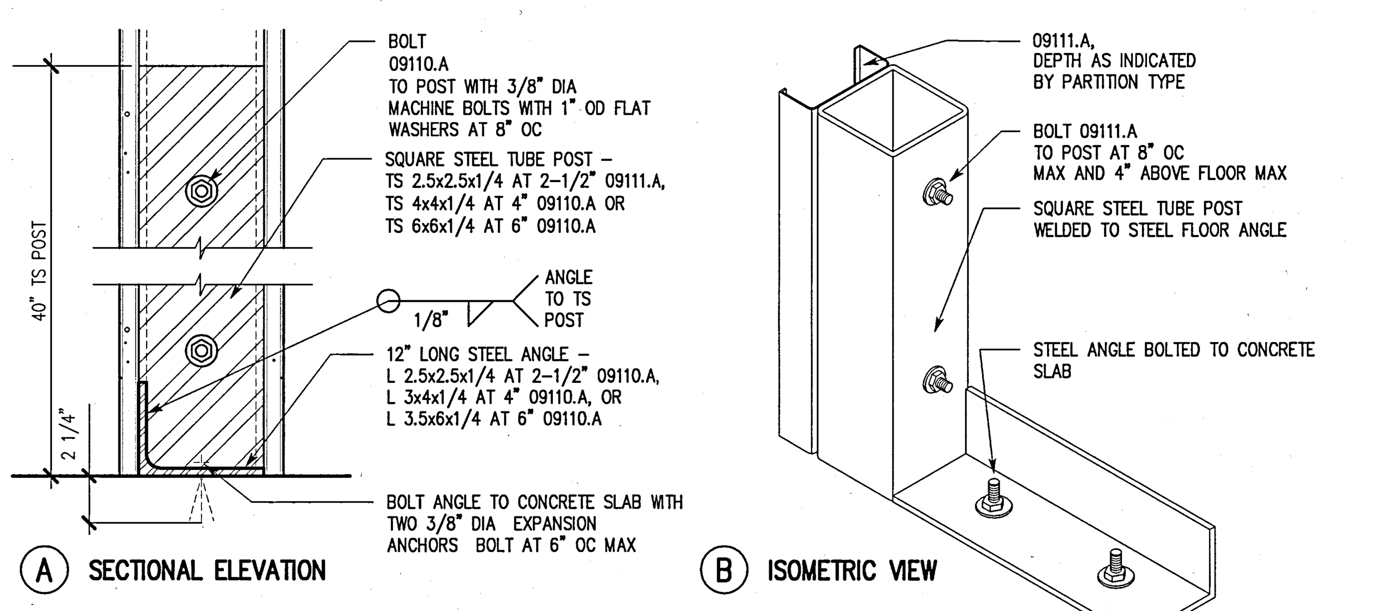
C FOUR-WAY INTERSECTION (PLAN)

D TYPICAL CORNER (ISOMETRIC VIEW)

37 CORNER AND INTERSECTION FRAMING
TYPICAL AT INTERMITTENT COLUMN STUD FRAMING (WHERE INDICATED BY SHEET A9.02)
SCALE: 1-1/2" = 1'-0" (ISOMETRIC VIEW NOT TO SCALE)



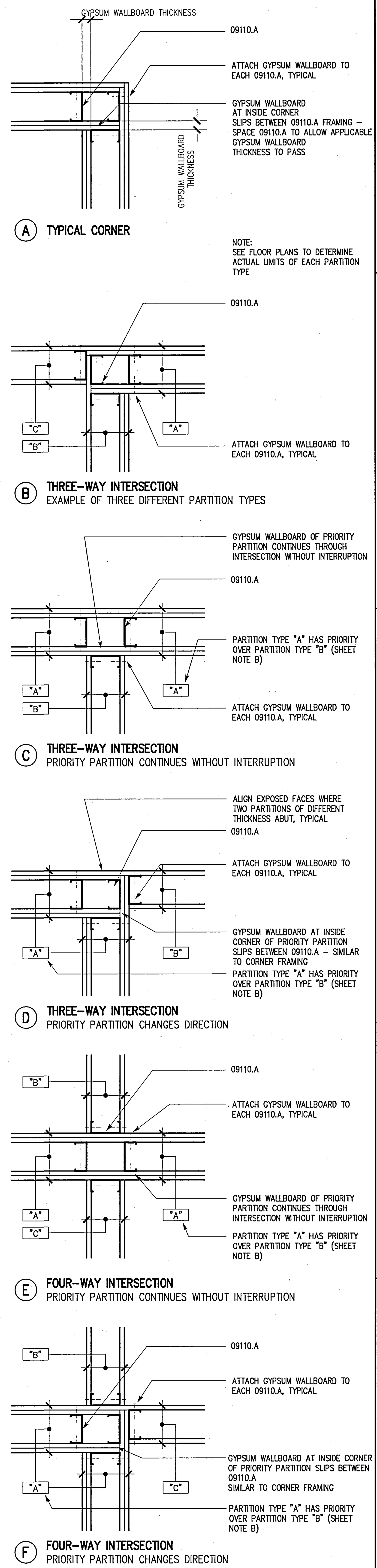
39 GYPSUM BOARD ATTACHMENT REQUIREMENTS
TYPICAL (UNLESS MORE RESTRICTIVE REQUIREMENTS ARE NOTED BY FIRE-RATING REFERENCED ON PARTITION TYPES ON A9.01)
SCALE: NOT TO SCALE



A SECTIONAL ELEVATION

B ISOMETRIC VIEW

40 PARTIAL HEIGHT PARTITION BRACING AND ANCHORAGE
TYPICAL AT CORNERS, ENDS, AND AT 4'-0" OC MAX BETWEEN
SCALE: 3" = 1'-0" (ISOMETRIC NOT TO SCALE)



A TYPICAL CORNER

B THREE-WAY INTERSECTION
EXAMPLE OF THREE DIFFERENT PARTITION TYPES

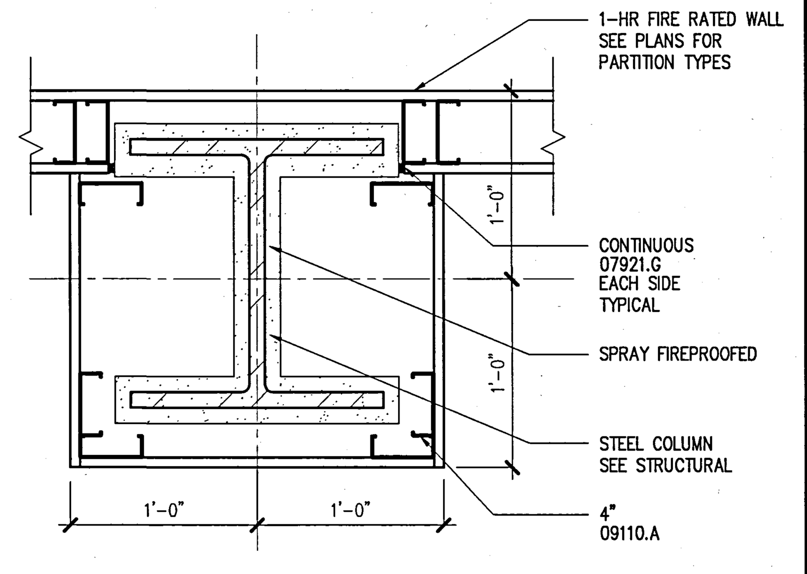
C THREE-WAY INTERSECTION
PRIORITY PARTITION CONTINUES WITHOUT INTERRUPTION

D THREE-WAY INTERSECTION
PRIORITY PARTITION CHANGES DIRECTION

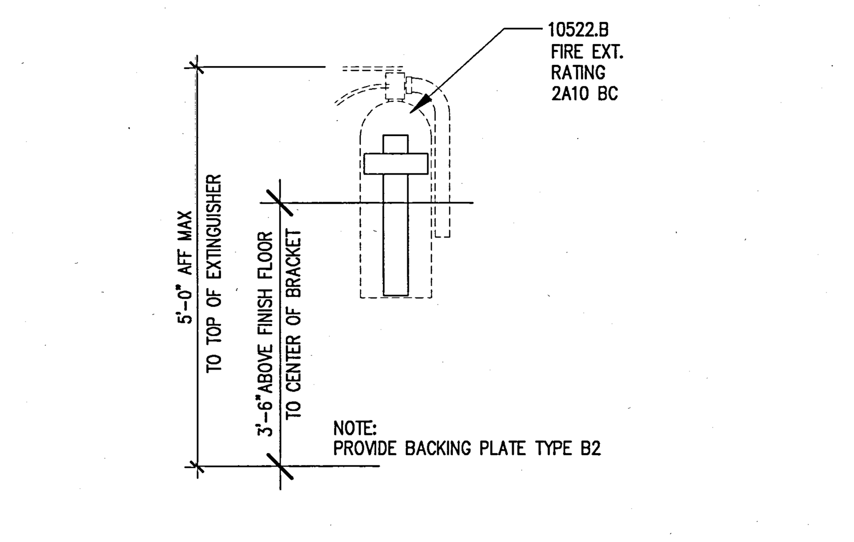
E FOUR-WAY INTERSECTION
PRIORITY PARTITION CONTINUES WITHOUT INTERRUPTION

F FOUR-WAY INTERSECTION
PRIORITY PARTITION CHANGES DIRECTION

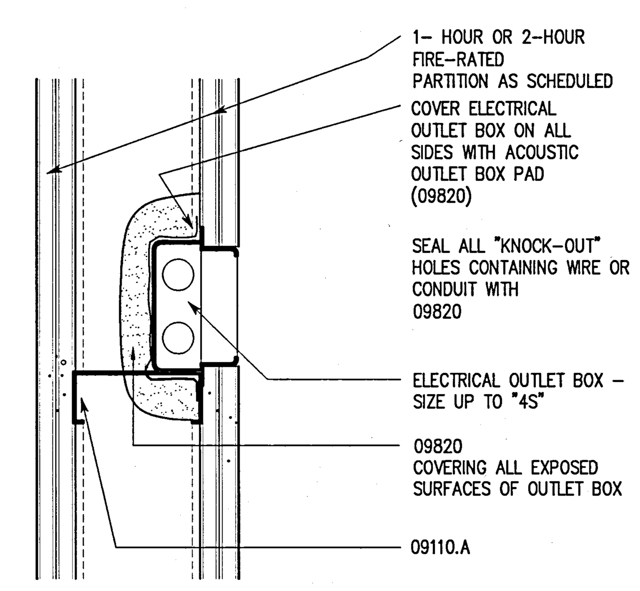
30 CORNER AND INTERSECTION FRAMING
TYPICAL, UNLESS OTHERWISE NOTED
SCALE: 1-1/2" = 1'-0"



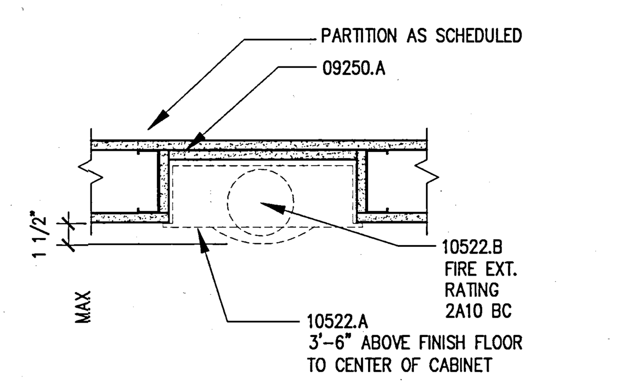
16 1-HR COLUMN FURRING
TYPICAL, UNLESS OTHERWISE NOTED
SCALE: 1-1/2" = 1'-0"



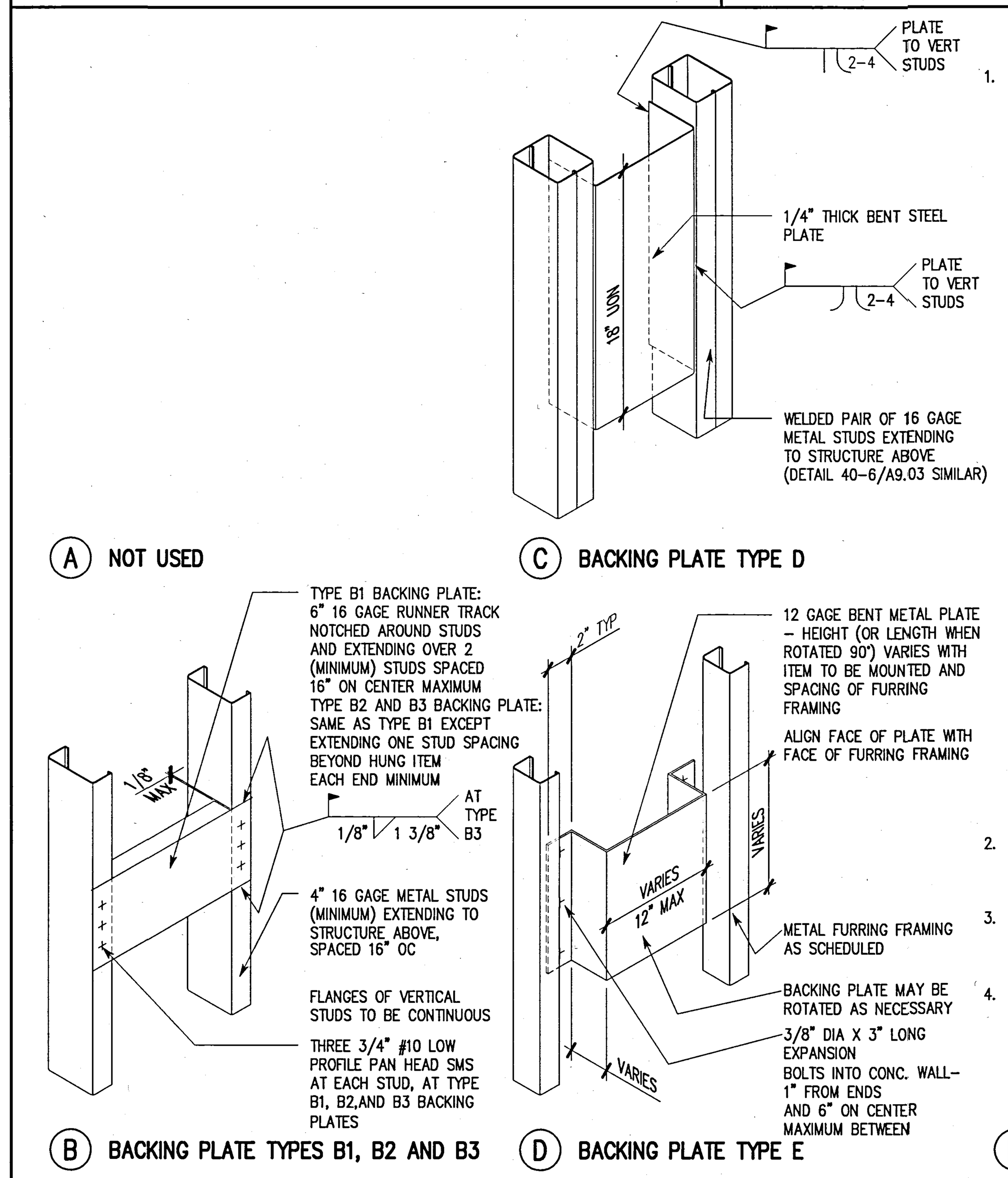
11 FIRE EXTINGUISHER BRACKET
MOUNTING HEIGHT
SCALE: NTS



17 OUTLET BOX (1-HR & 2-HR PER UL R9700 & R10764)
SEE SHEET NOTE C FOR LOCATIONS WHERE REQUIRED
SCALE: 3" = 1'-0"



12 FIRE EXTINGUISHER CABINET
SCALE: 3" = 1'-0"



A NOT USED

C BACKING PLATE TYPE D

B BACKING PLATE TYPES B1, B2 AND B3

D BACKING PLATE TYPE E

E GENERAL BACKING PLATE NOTES

1. PROVIDE BACKING PLATES AS INDICATED ON THE DRAWINGS OR, WHERE NOT INDICATED, ACCORDING TO THE FOLLOWING SCHEDULE:

TYPE B1 BACKING PLATE:
- AT SMALL ITEMS (SUCH AS TOILET ACCESSORIES, MIRRORS, CLOTHES HOOKS, DOOR STOPS ETC) WHICH WEIGH OR SUPPORT WEIGHTS OF LESS THAN 50 POUNDS

TYPE B2 BACKING PLATE:
- AT ALL UPPER WALL-HUNG CABINETS
- AT ALL BASE CABINETS
- AT ALL FULL HEIGHT CABINETS
- AT ALL WALL-MOUNTED HANDRAILS, GUARDRAILS, GRAB BARS, BUMPER RAILS, CRASH RAILS
- AT WALL-MOUNTED ADJUSTABLE SHELVING

TYPE B3 BACKING PLATE:
- AT WALL-MOUNTED ITEMS AS INDICATED ON ANCHORAGE DETAILS

TYPE D BACKING PLATE:
- AT WALL-MOUNTED EQUIPMENT AS INDICATED ON THE DRAWINGS

TYPE E BACKING PLATE:
- IN LIEU OF BACKING PLATE TYPES B THRU D WHERE DEPTH OF METAL FRAMING AT FURRING OVER CONCRETE OR CMU WALL IS LESS THAN 4".

2. COORDINATE LOCATION, LENGTH, HEIGHT, AND NUMBER OF BACKING PLATES REQUIRED WITH ITEM TO BE MOUNTED.
3. FOR METHOD OF ATTACHMENT OF ITEM TO BE MOUNTED, REFER TO THE APPLICABLE DETAIL OR, IF NOT DETAILED, THE INSTRUCTIONS PROVIDED BY THE MANUFACTURER.
4. SEE SPECIFICATIONS SECTION 09110 FOR ADDITIONAL INFORMATION

19 OUTLET BOX (1-HR & 2-HR PER UL R9700 & R10764)
SEE SHEET NOTE C FOR LOCATIONS WHERE REQUIRED
SCALE: 3" = 1'-0"

20 NOT USED
SCALE:

15 NOT USED
SCALE:

10 NOT USED
SCALE:

SHEET NOTES

A. THE PURPOSE OF THIS SHEET IS TO DESCRIBE TYPICAL DETAILS USED IN CONJUNCTION WITH THE METAL FRAMED PARTITION SYSTEM. SEE SPECIFICATIONS 09111 AND 09260 FOR ADDITIONAL INFORMATION WHICH APPLIES TO THE TYPICAL PARTITION DETAILS SHOWN ON THIS SHEET.

B. THE "PRIORITY" OF PARTITIONS OF DIFFERENT TYPES IS DETERMINED AS FOLLOWS:

FIRE-RATED PARTITIONS HAVE PRIORITY OVER NON-COMBUSTIBLE PARTITIONS.

PARTITIONS WITH GREATER FIRE-RATINGS HAVE PRIORITY OVER PARTITIONS WITH LESSER FIRE-RATINGS. FOR EXAMPLE, TWO-HOUR FIRE-RATED PARTITIONS HAVE PRIORITY OVER ONE-HOUR FIRE-RATED PARTITIONS.

SEE DETAIL 30 ON THIS SHEET FOR INTERSECTION FRAMING REQUIREMENTS RESULTING FROM THE PRIORITY OF PARTITION TYPE.

C. PROVIDE OUTLET BOX MOLDABLE FIRESTOPPING PUTTY (07210.F), DETAIL 20 ON THIS SHEET, WHERE:

AGGREGATE SURFACE AREA OF OUTLET BOXES EXCEEDS 100 SQUARE INCHES IN ANY 100 SQUARE FEET OF CONTIGUOUS WALL SURFACE.

OUTLET BOXES ON OPPOSITE SIDES ON PARTITION ARE SEPARATED (HORIZ DIM) BY LESS THAN 24 INCHES.

INDICATED BY THE DRAWINGS OR SPECIFICATIONS.

D. REFER TO THE SHEET NOTES ON SHEET A9.01 FOR ADDITIONAL NOTES WHICH MAY APPLY TO THE TYPICAL PARTITION DETAILS SHOWN ON THIS SHEET.

E. REFER TO THE "ARCHITECTURAL GENERAL NOTES" ON SHEET A0.4 FOR ADDITIONAL NOTES WHICH MAY BE APPLICABLE TO THE WORK SHOWN ON THIS SHEET.

F. USE HILTI-KWIK BOLT II (ICBO #4627) OR RAMSET/REDHEAD TRUBOLT (ICBO # 1372) WHERE WEDGE ANCHORS OR EXPANSION BOLTS ARE NOTED TO BE INSTALLED

NOTE: ALL STRUCTURAL STEEL COLUMNS AND FIREPROOFING SHOWN ON THIS SHEET ARE EXISTING.
IF EXISTING SPRAYED-ON FIREPROOFING IS REMOVED OR DAMAGED DURING CONSTRUCTION, APPLY NEW SPRAYED ON FIREPROOFING TO RESTORE ORIGINAL RATING.

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for	Rev	Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

TYPICAL METAL FRAMED PARTITION DETAILS

N. T. S.
Scale

3193000
Project Number

06OCT00
Baseline Date

A9.0.6
Drawing Number

Plot Sheet Filename: J:\JOBS\3193000\SHT\A9006.dwg
XREF Filename(s): UCR_Tblk uc-PTN6
Plot Setup Script:
Plot Date:03/11/02 17:20 Plot View:
06/21/00

FINISH SCHEDULE

FLOOR LEVEL	ROOM NUMBER	ROOM NAME	FLOOR	BASE	WALL NORTH	WALL EAST	WALL SOUTH	WALL WEST	CEILING	REMARKS (SEE FINISH NOTES)
SECOND FLOOR SURGE	201	ELEVATOR LOBBY	VCT-1	B-2	GB, P-2/P-5	GB, P-2	GB, P-2	GB, P-2	ACT-1/GB, P-2	7
	202	LOBBY	VCT-1	B-2	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	203	STAIRS #1	CONC-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	(-)
	204	MENS TOILET RM	CT-1/CT-4	CT-3	CT-3/GB,P-1	CT-3/CT-4/GB,P-1	CT-3/GB,P-1	CT-3/GB,P-1	GB, P-1	1, 2, 6, 7
	205	WOMENS TOILET RM	CT-1/CT-4	CT-3	CT-3/GB,P-1	CT-3/GB,P-1	CT-3/GB,P-1	CT-3/CT-4/GB,P-1	GB, P-1	1, 2, 6, 7
	206	JANITOR	CONC-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	–	(-)
	207	ELEC TELEPHONE	CONC-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	–	(-)
	208	RECEPTION	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	4
	209	STORAGE	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	211	MAILBOXES COPIER	CPT-2	B-2	GB, P-2	GB, P-2	GB, P-2	GB, P-2	ACT-1	4
	212	DEPT CHAIR	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1/GB, P-1	(-)
	213	HALLWAY	CPT-2	B-2	GB, P-2	GB, P-2	GB, P-2	GB, P-2	ACT-1	(-)
	214	PERSONNEL	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	215	BUSINESS	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	216	SAO I	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	217	MSO	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	218	GRADUATE AFFAIRS	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	219	VISITOR	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	220	HALLWAY	VCT-1	B-2	GB, P-2/P-5	GB, P-2/P-5	GB, P-2/P-5	GB, P-2/P-5	ACT-1	7
	221	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	222	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	223	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	224	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	225	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	226	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	227	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	228	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	229	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	230	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	231	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	232	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	233	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	234	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	235	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	236	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	237	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	238	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	239	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	240	STAIRS #2	CONC-1	B-1	GB, P-1	GB, P-1	N/A	N/A	GB, P-1	(-)
	241	JANITOR CLOSET	CONC-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	–	(-)
	242	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	243	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	244	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	245	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	246	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	247	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	248	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	249	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	250	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	251	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	252	VISITING PROFESSOR	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	253	VISITING PROFESSOR	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	254	VISITING PROFESSOR	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	255	VISITING PROFESSOR	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	256	VISITING PROFESSOR	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	257	VISITING PROFESSOR	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	258	VISITORS	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	259	TA OFFICE	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	260	TA OFFICE	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	261	TA OFFICE	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	262	TA OFFICE	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	263	TA OFFICE	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	264	TA OFFICE	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	265	TA OFFICE	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	266	GRAD COMPUTER LAB	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	267	SYSTEMS INTERN FILESERVER	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	268	CONFERENCE SEMINAR RM	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	270	SHARED EMERITUS	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	271	SHARED EMERITUS	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	272	COMMONS	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	4
	275	SHARED LECTURER	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	276	SHARED LECTURER	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	277	LIBRARY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	278	MAILBOXES/COPIER	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	4
	280	HALLWAY	CPT-2	B-2	GB, P-2	GB, P-2	GB, P-2	GB, P-2	ACT-1	(-)
	281	RESEARCH LAB	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	282	TA OFFICE	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	283	COMPUTER LAB	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	284	CONFERENCE	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	285	SYSTEMS ADMIN	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	286	SERVER AREA	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)

FINISH SCHEDULE

FLOOR LEVEL	ROOM NUMBER	ROOM NAME	FLOOR	BASE	WALL NORTH	WALL EAST	WALL SOUTH	WALL WEST	CEILING	REMARKS (SEE FINISH NOTES)
FIRST FLOOR-SURGE	101	LOBBY	CT-2	CT-2	GB, P-1/P-5/CT-2	GB, P-1	GB, P-1	GB, P-1/P-5	GB, P-1/P-5	4, 7, 8
	102	LOBBY	CT-2	CT-2	GB, P-1	GB, P-1/P-5	GB, P-1	GB, P-5	GB, P-1	4, 7
	103	STAIRS #1	CONC-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	(-)
	104	MENS TOILET RM	CT-1/CT-4	CT-3	CT-3/GB, P-1	CT-3/CT-4/GB,P-1	CT-3/GB, P-1	CT-3/GB, P-1	GB, P-1	1, 2, 6, 7
	105	WOMENS TOILET RM	CT-1/CT-4	CT-3	CT-3/ GB, P-1	CT-3/ GB, P-1	CT-3/ GB, P-1	CT-3/CT-4/GB,P-1	GB, P-1	1, 2, 6, 7
	106	UTILITY RM	CONC-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	GB,P-1	(-)
	107	TELEPHONE RM	CONC-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	–	(-)
	108	LECTURE CLASSRM	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	109	JANITOR CLOSET	CONC-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	–	(-)
	110	LECTURE CLASSRM	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	111	STORAGE	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	112	LECTURE CLASSRM	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	113	LECTURE CLASSRM	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	114	HALLWAY	CPT-5	B-2	GB,P-1/P-2/P-5	GB, P-1/P-2	GB,P-1/P-2/P-5	GB,P-1/P-2/P-5	ACT-1	7
	115	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	116	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	117	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	118	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	119	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	120	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	121	DIRECTORS OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	122	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	123	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	124	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	125	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	126	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	127	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	128	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	129	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	130	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	131	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	132	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	133	STAIR #2	CONC-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	(-)
	134	JANITOR CLOS	CONC-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	135	OPEN OFFICE	CPT-5	B-2	GB, P-1	GB, P-1	GB, P-5	GB, P-1	ACT-1	7
	136	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	137	INDIV. TUTORIAL	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	138	DROP IN TUTORTIAL	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	139	DROP IN TUTORTIAL	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	140	STUDENT OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	141	INDIV. TUTORIAL	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	142	INDIV. TUTORIAL	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	143	INDIV. TUTORIAL	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	144	DROP IN TUTORIAL	CPT-5	B-2	GB, P-1	N/A	GB, P-5	GB, P-1	ACT-1	7
	145	DROP IN TUTORIAL	CPT-5	B-2	GB, P-1	N/A	GB, P-5	GB, P-1	ACT-1	7
	146	DROP IN TUTORIAL	CPT-5	B-2	GB, P-1	N/A	GB, P-5	GB, P-1	ACT-1	7
	147	DROP IN TUTORIAL	CPT-5	B-2	GB, P-1	N/A	GB, P-5	GB, P-1	ACT-1	7
	148	DROP IN TUTORIAL	CPT-5	B-2	GB, P-1	N/A	GB, P-5	GB, P-1	ACT-1	7
	149	CONFERENCE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	150	STAFF LOUNGE	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	4
	151	WORK RM	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	152	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	153	COMPUTER LAB	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	4
	154	LAB SUPPORT	VCT-1	B-3	GB, P-1	GB, P-1	N/A	GB, P-1	ACT-1	(-)
	155	WAITING	CPT-5	B-2	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	156	RECEPTION	CPT-5	B-2	GB, P-1	GB, P-1	N/A	GB, P-1	ACT-1	(-)
	157	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	158	LECTURE CLASSRM	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	159	STORAGE	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	160	ELEV EQUIP	CONC-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	–	(-)
	161	ELECTRICAL	CONC-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	–	(-)
	162	OFFICE	CPT-4	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	4
	170	COMPUTER LAB	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	171	COMPUTER LAB	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	172	COMPUTER LAB	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	173	COMPUTER LAB	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)

FINISH LEGEND

ACOUSTICAL TILE

SYMBOL	SPECIFICATION	DESCRIPTION
ACT-1	09510.A ARMSTRONG	"ULTIMA", 24"x 48"
ACT-2		
ACT-3		

BASE

SYMBOL	SPECIFICATION	DESCRIPTION
B-1	09650.C JOHNSONITE	VINYL, STRAIGHT
B-2	09650.C JOHNSONITE	VINYL, STRAIGHT
B-3	09650.C JOHNSONITE	VINYL, COVED
B-4	09650.C JOHNSONITE	VINYL, COVED
B-5	09300.G CERAMICHE	CERAMIC COVE BASE
B-6	–	PAINTED WOOD BASE

CARPET

SYMBOL	SPECIFICATION	DESCRIPTION
CPT-1	09680.A DURKAN	WINDFALL 5474
CPT-2	09680.B DURKAN	EDGEWATER 40-412
CPT-3	09680.C DURKAN	WINDFALL 5475
CPT-4	09680.D DURKAN	WINDFALL TOO 12625
CPT-5	09680.E DURKAN	EDGEWATER 40-410

CERAMIC TILE

SYMBOL	SPECIFICATION	DESCRIPTION
CT-1	09300.A DAL TILE	MOSAIC FLOOR TILE
CT-2	09300.G CHROMTECH	CHARBON + ROC ARGENT
CT-3	09300.B DAL TILE	GLAZED WALL TILE
CT-4	09300.A, 09300.B DAL TILE	ACCENT WALL AND FLOOR TILE SEE FLOOR FINISH PLANS

CONCRETE

SYMBOL	SPECIFICATION	DESCRIPTION
CONC-1	03300 CONCRETE	W/ SEALER
CONC-2		
CONC-3		

PAINT

SYMBOL	SPECIFICATION	DESCRIPTION
P-1	09900 DUNN EDWARDS	SWISS COFFEE
P-2	09900 DUNN EDWARDS	IROGON SP2060
P-3	09900 DUNN EDWARDS	STORMWATCH DE3013
P-4	09900 DUNN EDWARDS	SIDEIRON SP2110
P-5	09900 DUNN EDWARDS	IROGON SP2060
P-6	09900 DUNN EDWARDS	BLACK SP-2

PLASTIC LAMINATE

SYMBOL	SPECIFICATION	DESCRIPTION
PLAM-1	06410.A ABETLAMINATI	#1039, FIBER
PLAM-2	06410.B ABETLAMINATI	#879, SEI
PLAM-3	06410.C ABETLAMINATI	#1670, SOFT

SOLID SURFACE

SYMBOL	SPECIFICATION	DESCRIPTION
SS-1	06410.D AVONITE	SKYGLASS, MATTE
SS-2		

SPECIAL FINISHES FOR WALLS AND CEILING

SYMBOL	SPECIFICATION	DESCRIPTION
SPC-1	09515.A INTERFINISH	PERF METAL PANEL
SPC-2	09710.A CONWED	ACOUSTICAL WALL PANEL
SPC-3	10100.A FORBO	TACKABLE SURFACE
SPC-4	05500.J MCNICHOLS	PERF ALUMINUM SHEET
SPC-5	09775.A DESIGNINSIGHTS	PERF MTL WALL PANEL

SPECIAL FLOORING

SYMBOL	SPECIFICATION	DESCRIPTION
SPF-1	12485.A C/S GROUP	FLOOR GRATE
SPF-2		
SPF-3		

VINYL COMPOSITE FLOORING

SYMBOL	SPECIFICATION	DESCRIPTION
VCT-1	09650.A ARMSTRONG	LUNAR BLUE
VCT-2	09650.B ARMSTRONG	CLASSIC BLACK
VCT-3	09650.C ARMSTRONG	MELLOW GOLD

WOOD

SYMBOL	SPECIFICATION	DESCRIPTION
WD-1	09640.A PERMAGRAIN	WOOD FLOORING
WD-2	09575.A WILHELMI	PERF WOOD PANEL
WD-3		

ABBREVIATION

ACT	ACOUSTICAL TILE
B	BASE
CONC	CONCRETE
CPT	CARPET
CT	CERAMIC TILE
GB	GYPSUM BOARD
P	PAINT
PREFAB	PREFABRICATION
SHV	SHEET VINYL
SPC	SPECIAL COATING FOR WALLS AND CEILING
SPF	SPECIAL FLOORING
STN	STONE
TERR	TERRAZZO
VCT	VINYL COMPOSITE TILE

FINISH NOTES

1. CERAMIC TILE UP TO 4'-0" ABOVE FINISH FLOOR, UNO.
2. SEE SHEETS A8.5.1 THROUGH A8.5.3 FOR ADDITIONAL INTERIOR FINISHES.
3. SEE SHEETS A8.4.1 THROUGH A8.4.3 FOR ADDITIONAL INTERIOR FINISHES.
4. SEE SHEETS A8.4.4 FOR ADDITIONAL INTERIOR FINISHES.
5. V.C.T. FLOORING AT OPEN KITCHEN AREA SEE PLAN A2.5.1
6. SEE SHEETS A8.2.1 AND A8.2.2 FOR FLOOR ACCENT COLOR LOCATIONS
7. SEE SHEETS A8.2.1 AND A8.2.2 FOR WALL ACCENT COLOR LOCATIONS
8. SEE SHEETS A8.2.1 AND A8.2.2 FOR CEILING ACCENT COLOR LOCATIONS

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for | Rev Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

FIRST & SECOND FLOOR FINISH SCHEDULE (SURGE)

NOT TO SCALE

Scale 3193000

Project Number 06OCT00

Baseline Date

A9.1.1

Drawing Number

Plot Sheet Filename: I:\JOBS\3193000\SHT\A9101.dwg
XREF Filename(s): UCR_Tblk UCrmhd FIN-NOTE uc-Rm01 uc-Rm02
Plot Setup Script:
Plot Date: 03/11/02 17:20 Plot View:

FINISH SCHEDULE

FLOOR LEVEL	ROOM NUMBER	ROOM NAME	FLOOR	BASE	WALL NORTH	WALL EAST	WALL SOUTH	WALL WEST	CEILING	REMARKS (SEE FINISH NOTES)

FINISH SCHEDULE

FLOOR LEVEL	ROOM NUMBER	ROOM NAME	FLOOR	BASE	WALL NORTH	WALL EAST	WALL SOUTH	WALL WEST	CEILING	REMARKS (SEE FINISH NOTES)
THIRD FLOOR - SURGE	301	LOBBY	CPT-2	B-2	GB, P-2/P-5	GB, P-2	GB, P-2	GB, P-2	ACT-1/GB, P-1	7
	302	HALLWAY	CPT-2	B-2	GB, P-2/P-5	GB, P-2/P-5	GB, P-2/P-5	GB, P-2/P-5	ACT-1	4, 5, 7
	303	STAIR #1	CONC-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	(-)
	304	MENS TOILET RM	CT-1/CT-4	CT-3	CT-3/GB,P-1	CT-3/CT-4/GB,P-1	CT-3/GB,P-1	CT-3/GB,P-1	GB, P-1	1, 2, 6, 7
	305	WOMENS TOILET RM	CT-1/CT-4	CT-3	CT-3/GB,P-1	CT-3/GB,P-1	CT-3/GB,P-1	CT-3/CT-4/GB,P-1	GB, P-1	1, 2, 6, 7
	306	JANITOR	CONC-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	-	(-)
	307	ELECTRICAL TELEPHONE	CONC-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	-	(-)
	309	WORK RM	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	4
	310	OPEN OFFICE	CPT-2	B-2	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	312	DEPT. CHAIR	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1/GB, P-1	(-)
	313	ANALYST IV	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	314	MSO	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	315	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	316	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	317	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	318	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	319	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	320	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	321	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	322	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	323	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	324	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	325	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	326	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	327	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	328	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	329	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	330	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	331	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	332	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	333	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	334	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	335	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	336	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	337	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	338	STAIR #2	CONC-1	B-1	GB, P-1	GB, P-1	N/A	N/A	GB, P-1	(-)
	339	SHARED FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	340	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	341	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	342	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	343	DESIGN RM	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	344	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	345	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	346	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	347	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	348	FACULTY	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	349	DESIGN RM	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	350	RESEARCH LAB	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	351	RESEARCH LAB	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	352	RESEARCH LAB	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	353	RESEARCH LAB	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	354	RESEARCH LAB	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	355	TA OFFICE	CPT-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	356	RESEARCH LAB	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	357	RESEARCH LAB	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	358	RESEARCH LAB	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	359	RESEARCH LAB	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	360	RESEARCH LAB	VCT-1	B-3	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	361	STORAGE	CONC-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
	362	JANITOR	CONC-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	ACT-1	(-)
ROOF - SURGE	403	STAIRS #1	CONC-1	B-1	GP, P-1	GP, P-1	GP, P-1	GP, P-1	GB, P-1	(-)
FIRST FLOOR - AUDITORIUM	010	ANTE ROOM	SPF-1	B-6	GB, P-5	WD-2	GB, P-4	SPC-3/GB, P-5	SPC-1	2, 3
	011	CONTROL RM	VCT-2	B-4	GB, P-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	3
	012	MENS TOILET RM	CT-1/CT-4	CT-3	CT-3/GB,P-4	CT-3/CT-4/GB,P-4	CT-3/GB,P-4	CT-3/CT-4/GB,P-4	GB, P-1	1, 2, 6, 7
	013	WOMENS TOILET RM	CT-1/CT-4	CT-3	CT-3/CT-4/GB,P-4	CT-3/CT-4/GB,P-4	CT-3/CT-4/GB,P-4	CT-3/CT-4/GB,P-4	GB, P-1	1, 2, 6, 7
	014	AUDITORIUM	CONC-1/CPT-3	N/A	SPC-2/SPC-5	GB, P-3/WD-2	SPC-2/SPC-5	WD-2/GB, P-3	WD-2/SPC-4	3
	015	ANTE ROOM	SPF-1	B-6	GB, P-3/WD-2	SPC-3/GB, P-3	GB, P-4/SPC-2+5	WD-2/GB, P-3	SPC-4	3
	016	REAR PROJECTION RM	VCT-2	B-4	GB, P-3	GB, P-3	GB, P-3	GB, P-3	N/A	3
	017	PREP RM	VCT-2/VCT-3	B-4	GB, P-3	GB, P-3	GB, P-3	GB, P-3/SPC-3	GB, P-3	3
	018	MECHANICAL AREA	CONC-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	N/A	(-)
	019	ELEC CLOS	CONC-1	B-1	GB, P-1	GB, P-1	GB, P-1	GB, P-1	N/A	(-)

FINISH LEGEND

ACOUSTICAL TILE

SYMBOL	SPECIFICATION	DESCRIPTION
ACT-1	09510.A ARMSTRONG	"ULTIMA", 24"x 48"
ACT-2		
ACT-3		

BASE

SYMBOL	SPECIFICATION	DESCRIPTION
B-1	09650.C JOHNSONITE	VINYL, STRAIGHT
B-2	09650.C JOHNSONITE	VINYL, STRAIGHT
B-3	09650.C JOHNSONITE	VINYL, COVED
B-4	09650.C JOHNSONITE	VINYL, COVED
B-5	09300.G CERAMICHE	CERAMIC COVE BASE
B-6	-	PAINTED WOOD BASE

CARPET

SYMBOL	SPECIFICATION	DESCRIPTION
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CPT-2	09680.B DURKAN	EDGEWATER 40-412
CPT-3	09680.C DURKAN	WINDFALL 5475
CPT-4	09680.D DURKAN	WINDFALL TOO 12625
CPT-5	09680.E DURKAN	EDGEWATER 40-410

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CT-1	09300.A DAL TILE	MOSAIC FLOOR TILE
CT-2	09300.G CHROMTECH	CHARBON + ROC ARGENT
CT-3	09300.B DAL TILE	GLAZED WALL TILE
CT-4	09300.A, 09300.B DAL TILE	ACCENT WALL AND FLOOR TILE SEE FLOOR FINISH PLANS

CONCRETE

SYMBOL	SPECIFICATION	DESCRIPTION
CONC-1	03300 CONCRETE	W/ SEALER
CONC-2		
CONC-3		

PAINT

SYMBOL	SPECIFICATION	DESCRIPTION
P-1	09900 DUNN EDWARDS	SWISS COFFEE
P-2	09900 DUNN EDWARDS	IROGON SP2060
P-3	09900 DUNN EDWARDS	STORMWATCH DE3013
P-4	09900 DUNN EDWARDS	SIDEIRON SP2110
P-5	09900 DUNN EDWARDS	IROGON SP2060
P-6	09900 DUNN EDWARDS	BLACK SP-2

PLASTIC LAMINATE

SYMBOL	SPECIFICATION	DESCRIPTION
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PLAM-2	06410.B ABETLAMINATI	#879, SEI
PLAM-3	06410.C ABETLAMINATI	#1670, SOFT

SOLID SURFACE

SYMBOL	SPECIFICATION	DESCRIPTION
SS-1	06410.D AVONITE	SKYGLASS, MATTE
SS-2		

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SYMBOL	SPECIFICATION	DESCRIPTION
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SPC-5	09775.A DESIGNINSIGHTS	PERF MTL WALL PANEL

SPECIAL FLOORING

SYMBOL	SPECIFICATION	DESCRIPTION
SPF-1	12485.A C/S GROUP	FLOOR GRATE
SPF-2		
SPF-3		

VINYL COMPOSITE FLOORING

SYMBOL	SPECIFICATION	DESCRIPTION
VCT-1	09650.A ARMSTRONG	LUNAR BLUE
VCT-2	09650.B ARMSTRONG	CLASSIC BLACK
VCT-3	09650.C ARMSTRONG	MELLOW GOLD

WOOD

SYMBOL	SPECIFICATION	DESCRIPTION
WD-1	09640.A PERMAGRAIN	WOOD FLOORING
WD-2	09575.A WILHELMI	PERF WOOD PANEL
WD-3		

ABBREVIATION

ACT	ACOUSTICAL TILE
B	BASE
CONC	CONCRETE
CPT	CARPET
CT	CERAMIC TILE
GB	GYPSUM BOARD
P	PAINT
PREFAB	PREFABRICATION
SHV	SHEET VINYL
SPC	SPECIAL COATING FOR WALLS AND CEILING
SPF	SPECIAL FLOORING
STN	STONE
TERR	TERRAZZO
VCT	VINYL COMPOSITE TILE

KEYED NOTES

1. CERAMIC TILE UP TO 4'-0" ABOVE FINISH FLOOR, UNO.
2. SEE SHEETS A8.5.1 THROUGH A8.5.3 FOR ADDITIONAL INTERIOR FINISHES.
3. SEE SHEETS A8.4.1 THROUGH A8.4.3 FOR ADDITIONAL INTERIOR FINISHES.
4. SEE SHEETS A8.4.4 FOR ADDITIONAL INTERIOR FINISHES.
5. V.C.T. FLOORING AT OPEN KITCHEN AREA SEE PLAN A2.3.1
6. SEE SHEETS A8.2.1 AND A8.2.2 FOR FLOOR ACCENT COLOR LOCATIONS
7. SEE SHEETS A8.2.1 AND A8.2.2 FOR WALL ACCENT COLOR LOCATIONS
8. SEE SHEETS A8.2.1 AND A8.2.2 FOR CEILING ACCENT COLOR LOCATIONS

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

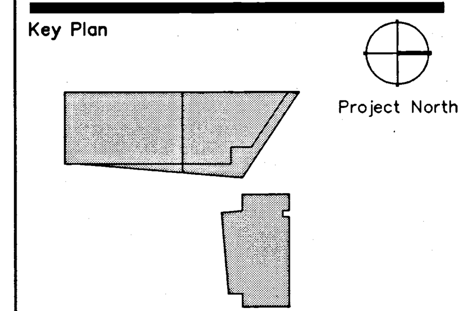
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for | Rev Date

Seals and Signatures

RECORD DRAWINGS

Key Plan



Drawing Title
FINISH SCHEDULE
(SURGE + AUDITORIUM)

NOT TO SCALE

Scale
3193000

Project Number
06OCT00

Baseline Date
A9.1.2

Drawing Number

Plot Sheet Filename: I:\JOBS\3193000\SHT\A9102.dwg
XREF Filename(s): UCR_Tblk UCrmhd FIN-NOTE uc-Rm03 uc-Rm31 uc-Rm04
Plot Setup Script:
Plot Date: 03/11/02 17:21 Plot View:

DOOR SCHEDULE

LEVEL	DOOR NUMBER	FIRE-RATING	DOOR SIZE WIDTH X HEIGHT	DOOR TYPE (SEE SHEET A9.4.3)	DOOR MATERIAL	DOOR FINISH	FRAME TYPE (SEE SHEET 30/A9.4.3)	FRAME MATERIAL	FRAME FINISH	HEAD DETAIL (JAMB SIMILAR)	THRESHOLD DETAIL (DOORS ONLY)	SECURITY	HARDWARE GROUP	SCHEDULE KEY NOTES
THIRD FLOOR CONT.	318A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	319A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	320A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	321A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	322A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	323A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	324A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	325A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	326A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	327A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	328A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	329A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	330A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	331A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	332A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	333A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	334A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	335A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	336A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	337A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	338A	60	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	8/A9.4.4	18E/A9.4.3	–	5	
	339A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	339B	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	340A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	341A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	342A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	343A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	01	6	
	344A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	345A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	346A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	347A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	348A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	349A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	01	6	
	350A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	01	6	
	350B	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18H/A9.4.3	–	15	
	351A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	01	6	
	351B	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	01	6	
	352A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	01	6	
	352B	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18H/A9.4.3	–	15	
	353A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	01	6	
	353B	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18H/A9.4.3	–	15	
	354A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	01	6	
	354B	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18H/A9.4.3	–	15	
	355A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	355B	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	356A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	01	6	
	356B	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	01	6	
	357A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	01	6	
	357B	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18H/A9.4.3	–	15	
	357C	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	01	6	
	358A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	01	6	
	358B	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	01	6	
ROOF	403A	60	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	31/A9.4.5	18R/A9.4.3	–	7	–
AUDITORIUM FIRST FLOOR	010A	NR	6'-0" x 8'-6"	G	AL	AL	2	AL	AL	13/A956&13/A958	18Z/A9.4.3	–	19	9, SEE 11/A9.5.5
	010B	NR	3'-0" x 8'-6"	F	AL	AL	1	AL	AL	13&25/A956	18Z/A9.4.3	03	11C	7,9, SEE 11/A9.5.5
	011A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18X/A9.4.3	–	3	–
	012A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18X/A9.4.3	–	2	–
	013A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18X/A9.4.3	–	2	–
	014A	NR	3'-0" x 7'-0"	A	HM	PT	1	HM	PT	21/A9.4.5	18D/A9.4.3	–	8	9
	014B	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	21&22/A9.4.5	18D/A9.4.3	–	9	9
	015A	NR	6'-0" x 8'-6"	G	AL	AL	2	AL	AL	21&22/A9.5.8	18Z/A9.4.3	–	19	9, SEE 12/A9.5.5
	015B	NR	3'-0" x 8'-6"	F	AL	AL	1	AL	AL	21&22/A9.5.8	18Z/A9.4.3	03	11C	7,9, SEE 12/A9.5.5
	017A	NR	5'-0" x 7'-10"	H	SC	PT	2	HM	PT	7/A9.4.4	18F/A9.4.3	–	10	–
	018A	NR	3'-0" x 7'-0"	A	HM	PT	1	HM	PT	14&24/A9.4.5	18H/A9.4.3	–	7	–
	018B	NR	11'-3" x 16'-0"	J	SST	BR	3	SST	BR	12,13&23/A9.4.5	18R/A9.4.3	–	20	–
	019A	45	3'-0" x 7'-0"	C	HM	PT	1	HM	PT	8/A9.4.4	18J/A9.4.3	–	21	–

DOOR SCHEDULE

LEVEL	DOOR NUMBER	FIRE-RATING	DOOR SIZE WIDTH X HEIGHT	DOOR TYPE (SEE SHEET A9.4.3)	DOOR MATERIAL	DOOR FINISH	FRAME TYPE (SEE SHEET 30/A9.4.3)	FRAME MATERIAL	FRAME FINISH	HEAD DETAIL (JAMB SIMILAR)	THRESHOLD DETAIL (DOORS ONLY)	SECURITY	HARDWARE GROUP	SCHEDULE KEY NOTES
SECOND FLOOR CONT.	223A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	224A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	225A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	226A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	227A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	228A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	229A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	230A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	231A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	232A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	233A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	234A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	235A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	236A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	237A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	238A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	239A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	240A	60	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	8/A9.4.4	18E/A9.4.3	–	5A	9
	241A	45	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	8/A9.4.4	18J/A9.4.3	–	12A	–
	242A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	243A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	244A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	245A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	246A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	247A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	248A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	249A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	250A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	251A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	252A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	253A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	254A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	255A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	256A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	257A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	258A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	259A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	260A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	261A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	262A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	263A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	264A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	265A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	266A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	01	6	–
	267A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18H/A9.4.3	–	4	–
	268A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	268B	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	270A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	271A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	271A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	272A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	–	3	–
	272B	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	–	3	–
	275A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	275B	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	276A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	276B	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	277A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	4	–
	278A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	4	–
	281A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	01	6	–
	282A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	01	6	–
	283A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	01	6	–
	283B	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	01	6	–
	284A	NR	6'-0" x 7'-0"	C	SC	PT	2	HM	PT	7/A9.4.4	18D/A9.4.3	01	22	–
	284B	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	6A	9
	285A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	01	6	–
	286A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18H/A9.4.3	01	6	–
THIRD FLOOR	303A	60	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	8/A9.4.4	18E/A9.4.3	–	5	
	304A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18X/A9.4.3	–	1	
	305A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18X/A9.4.3	–	1	
	306A	45	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	8/A9.4.4	18E/A9.4.3	–	12A	
	307A	45	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	8/A9.4.4	18E/A9.4.3	–	12	
	309A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	01	6	
	310A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	01	6	
	312A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	313A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	314A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	315A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	316A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	
	317A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	

DOOR SCHEDULE

LEVEL	DOOR NUMBER	FIRE-RATING	DOOR SIZE WIDTH X HEIGHT	DOOR TYPE (SEE SHEET A9.4.3)	DOOR MATERIAL	DOOR FINISH	FRAME TYPE (SEE SHEET 30/A9.4.3)	FRAME MATERIAL	FRAME FINISH	HEAD DETAIL (JAMB SIMILAR)	THRESHOLD DETAIL (DOORS ONLY)	SECURITY	HARDWARE GROUP	SCHEDULE KEY NOTES
FIRST FLOOR	101A	NR	6'-0" x 8'-9 1/2"	E	AL/GL	AL	2	AL	AL	39+40/A9.5.9	18S/A9.4.3	02	18	7, 9
	102A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A.9.4.4	18N/A9.4.3	–	4	–
	103A	60	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	8/A9.4.4	18L/A9.4.3	–	5	9
	104A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18P/A9.4.3	–	1	–
	105A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18P/A9.4.3	–	1	–
	106A	45	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	8/A9.4.4	18L/A9.4.3	–	12	–
	107A	45	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	8/A9.4.4	18L/A9.4.3	–	12	–
	108A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18M/A9.4.3	–	4	– 13
	109A	45	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	8/A9.4.4	18L/A9.4.3	–	12A	–
	110A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18M/A9.4.3	–	4	– 13
	111A	45	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	8/A9.4.4	18G/A9.4.3	–	13	–
	112A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18M/A9.4.3	–	3	– 13
	113A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18M/A9.4.3	–	3	– 13
	115A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	116A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	117A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	118A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	119A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	120A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	121A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	122A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	123A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	124A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	125A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	126A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	127A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	128A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	129A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	130A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	131A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	132A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	133A	60	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	8/A9.4.4	18E/A9.4.3	–	5	9
	133B	NR	3'-0" x 7'-0"	D	AL/GL	AL	1	AL	AL	13&23/A9.5.6	18R/A9.4.3	–	11A	9, SEE 30/A9.5.1
	134A	45	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	8/A9.4.4	18J/A9.4.3	–	12A	–
	136A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	137A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	137B	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	138A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	139A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	140A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	141A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	142A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	143A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	149A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	149B	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	150A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	–	4	–
	151A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	152A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	153A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18F/A9.4.3	–	3A	–
	155A	NR	6'-0" x 7'-0"	E	AL/GL	AL	2	AL	AL	13&25/A9.5.6	18Q/A9.4.3	03	17	7, SEE 24/A9.5.1
	157A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	158A	NR	3'-0" x 7'-0"	D	AL/GL	AL	1	AL	AL	13&15/A9.5.6	18T/A9.4.3	–	11B	SEE 23/A9.5.1 13
	159A	45	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	8/A9.4.4	18G/A9.4.3	–	13	–
	160A	45	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	8/A9.4.4	18L/A9.4.3	–	12	–
	161A	45	3'-0" x 7'-0"	B	HM	PT	1	HM	PT	14,15&25/A9.4.5	18R/A9.4.3	–	7	–
	161B	45	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	8/A9.4.4	18L/A9.4.3	–	12	–
	162A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	170A	NR	3'-0" x 7'-0"	D	AL/GL	AL	1	AL	AL	13&15/A9.5.6	18T/A9.4.3	–	11B	SEE 23/A9.5.1
	170B	NR	3'-0" x 7'-0"	D	AL/GL	AL	1	AL	AL	13&15/A9.5.6	18T/A9.4.3	01	11	SEE 23/A9.5.1 13
	171A	NR	3'-0" x 7'-0"	D	AL/GL	AL	1	AL	AL	13&15/A9.5.6	18T/A9.4.3	–	11B	SEE 23/A9.5.1
	171B	NR	3'-0" x 7'-0"	D	AL/GL	AL	1	AL	AL	13&15/A9.5.6	18T/A9.4.3	01	11	SEE 23/A9.5.1 13
	172A	NR	3'-0" x 7'-0"	D	AL/GL	AL	1	AL	AL	13&15/A9.5.6	18T/A9.4.3	–	11B	SEE 23/A9.5.1
	172B	NR	3'-0" x 7'-0"	D	AL/GL	AL	1	AL	AL	13&15/A9.5.6	18T/A9.4.3	01	11	SEE 23/A9.5.1 13
	173A	NR	3'-0" x 7'-0"	D	AL/GL	AL	1	AL	AL	13&15/A9.5.6	18T/A9.4.3	–	11B	SEE 30/A9.5.1 13
	173B	NR	3'-0" x 7'-0"	D	AL/GL	AL	1	AL	AL	13&15/A9.5.6	18T/A9.4.3	01	11	SEE 30/A9.5.1
SECOND FLOOR	202A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	203A	60	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	8/A9.4.4	18E/A9.4.3	–	5	9
	204A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18X/A9.4.3	–	1	–
	205A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18X/A9.4.3	–	1	–
	206A	45	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	8/A9.4.4	18E/A9.4.3	–	12A	–
	207A	45	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	8/A9.4.4	18E/A9.4.3	–	12	–
	208A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	209A	45	3'-0" x 7'-0"	B	SC	PT	1	HM	PT	8/A9.4.4	18F/A9.4.3	–	13	–
	212A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	214A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	215A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	216A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	217A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	218A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	219A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	221A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–
	222A	NR	3'-0" x 7'-0"	A	SC	PT	1	HM	PT	7/A9.4.4	18D/A9.4.3	–	3	–

SHEET NOTES

A. SEE "ARCHITECTURAL SYMBOLS" ON SHEET A0.3 FOR SYMBOLS USED AT INTERIOR OPENINGS ON 1/8" SCALE FLOOR PLANS. TO USE THIS DOOR AND INTERIOR OPENING SCHEDULE, LOCATE OPENING NUMBER ASSOCIATED WITH OPENING ON 1/8" SCALE FLOOR PLANS (SERIES A2.2.0*). OPENING NUMBERS ARE LOCATED ON PARTIAL PLAN WITH CORRESPONDING ROOM NUMBER, AND MAY APPEAR ACROSS MATCH LINES. CORRESPONDING ROOM NUMBER, AND MAY APPEAR ACROSS MATCH LINES. LOCATE OPENING NUMBER ON SCHEDULE. READ ACROSS.

B. FRAME TYPE: SEE SHEET A9.4.2 FOR ELEVATION OF EACH FRAME TYPE.

C. FRAME ATTACHMENT: INDICATED DETAIL SHOWS METHOD OF ATTACHMENT. FRAMES ARE SHOWN GENERICALLY AND DO NOT SHOW REQUIRED FRAME PROFILE. FRAME PROFILES ARE REFERENCED FROM THE FRAME TYPE.

D. HARDWARE GROUP: REFER TO SPECIFICATIONS SECTION 08710

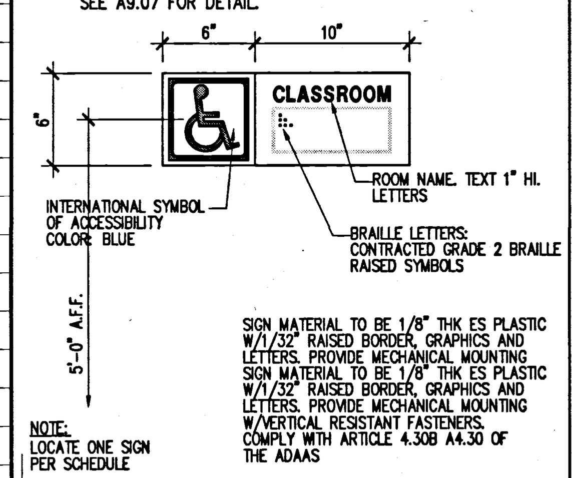
E. SEE SCHEDULE KEY NOTES @ SCHEDULE TO DETERMINE GLAZING TYPES

F. FOR ADDITIONAL INFORMATION REGARDING DOORS, SEE THIS SHEET. REGARDING FRAMES, SEE SHEETS A9.4.4 AND A9.4.5.

G. ALL FIRE-RATED DOORS ARE TO BE POSITIVE LATCHING.

H. IDENTIFICATION ACCESS SYMBOLS ON DOORS LEADING TO ALL SANITARY FACILITIES SHALL COMPLY WITH CBC SEC. 1115B.5. – SEE SHEET A9.4.2

I. PROVIDE BACKING PLATE FOR DOOR STOPS, SEE A9.07 FOR DETAIL.



2 SIGNAGE DETAIL
TO BE LOCATED AT MAIN ROOMS
SCALE: 1 1/2"=1/-0"
7

ABBREVIATIONS

NR NON-RATED

ABBREVIATIONS USED IN THE "MATERIAL" COLUMNS:

- AL ALUMINIUM
- CL CHAIN LINK
- GL GLAZING – SEE KEY NOTES FOR TYPES
- HM HOLLOW METAL
- NA NOT APPLICABLE
- HC HOLLOW CORE WOOD
- SC SOLID CORE WOOD
- SC1 SOLID CORE WOOD, LEAD-LINED
- SST STAINLESS STEEL

ABBREVIATIONS USED IN THE "FINISH" COLUMN:

- AL COATED ALUMINUM
- AN ANODIZED ALUMINUM
- BR BRUSHED
- NA NOT APPLICABLE
- PL PLASTIC LAMINATED
- PT PAINTED
- SP SPECIAL
- ST STAIN
- WD WOOD VENEER
- TF TRANSPARENT FINISH
- MT METAL

SCHEDULE KEY NOTES

1. 3'-0" WIDE LEAF IS ACTIVE
2. PRE-MANUFACTURE, BY OTHERS.
3. REVERSE OPENING
4. PART OF THE EXTERIOR CURTAIN WALL SYSTEM
5. SUPPLY & INSTALLATION BY COLD ROOM MANUFACTURE
6. STAINLESS STEEL AND GLASS DOOR
7. AUTOMATIC OPENER
8. DESIGN TO BE DETERMINED
9. PANIC HARDWARE
10. FINISH TO MATCH ADJACENT WALL
11. MAGNETIC HOLD OPEN
12. STAINLESS STEEL ARMOR PLATE ON PUSH SIDE.
13. PROVIDE CLASSROOM SIGNAGE AT WALL BESIDE DOOR-COORDINATE WITH ARCHITECT SEE DETAIL 2/- ABOVE

7

SECURITY

01 – CARD READER
02 – CARD READER + AUTOMATIC OPENER
03 – AUTOMATIC OPENER

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
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310.586.1091

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title
DOOR SCHEDULE

NOT TO SCALE
Scale
3193000
Project Number
060CT00
Baseline Date
A9.4.1
Drawing Number

Plot Sheet Filename: I:\UCR\3193000\SHT\A941.dwg
XREF Filename(s): UCR_tbk ucRNOTE UCRbold uc-Dr01 uc-Dr02 uc-Dr03 uc-Dr04
Plot Setup Script:
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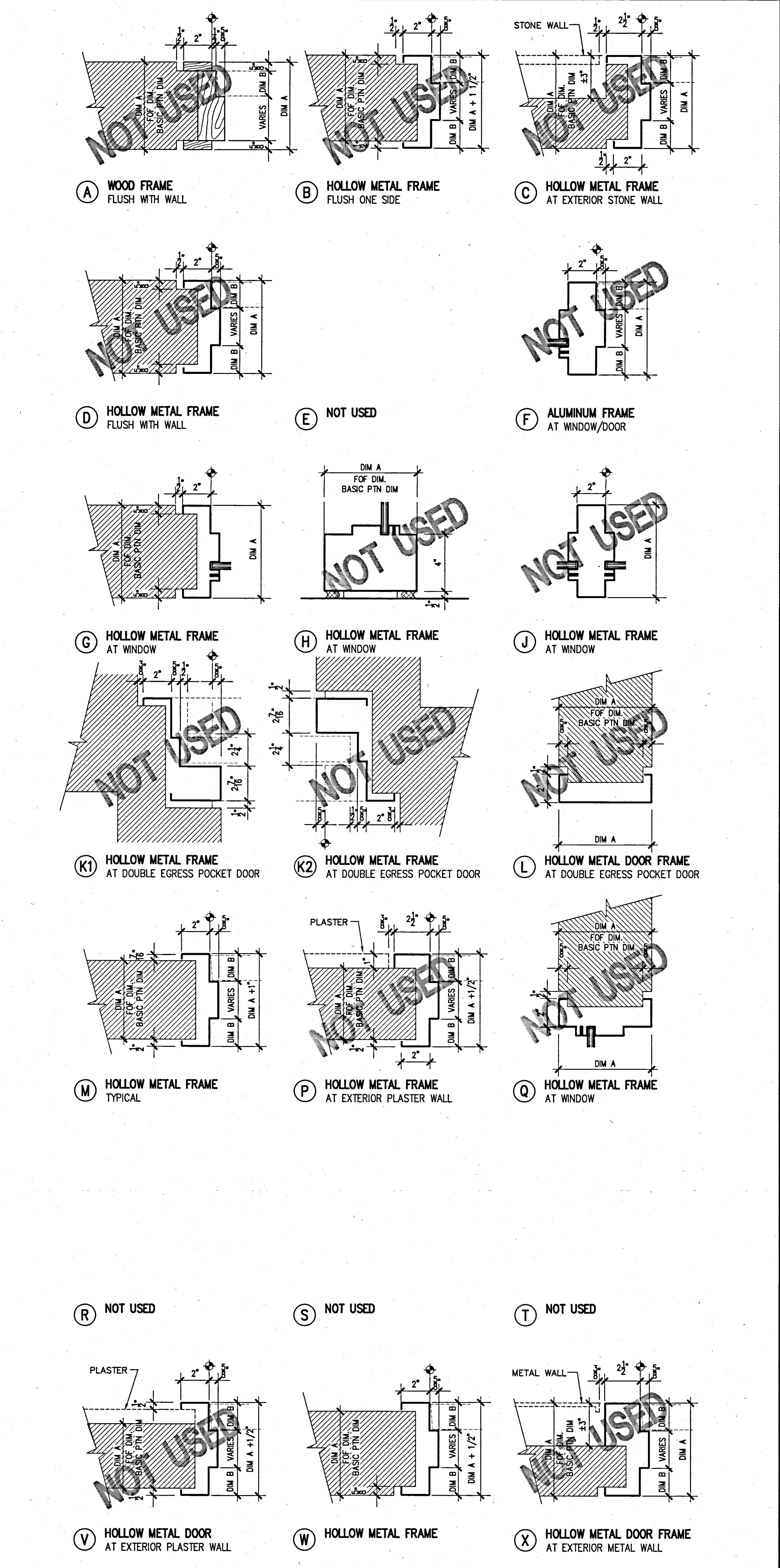
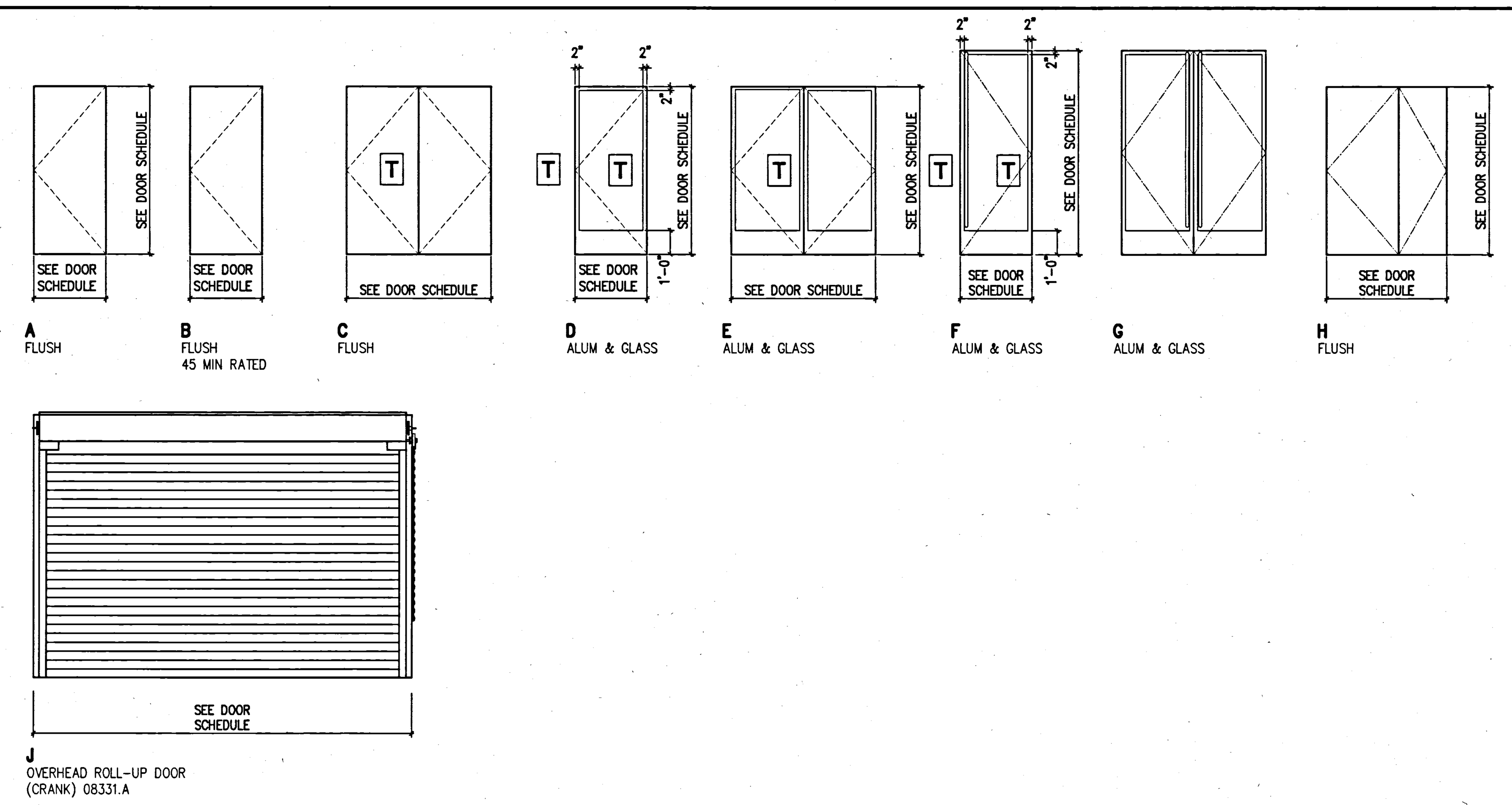
HOLLOW METAL FRAME PROFILES

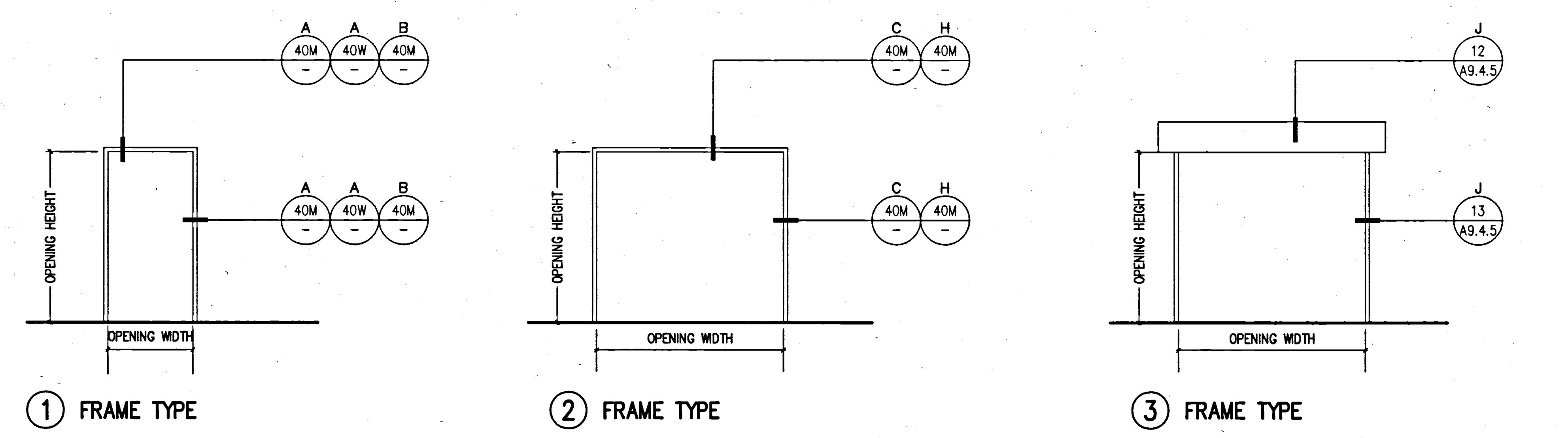


(40) HOLLOW METAL FRAME PROFILES
TYPICAL (SEE FRAME TYPES FOR REFERENCES)
SCALE: 3" = 1'-0"

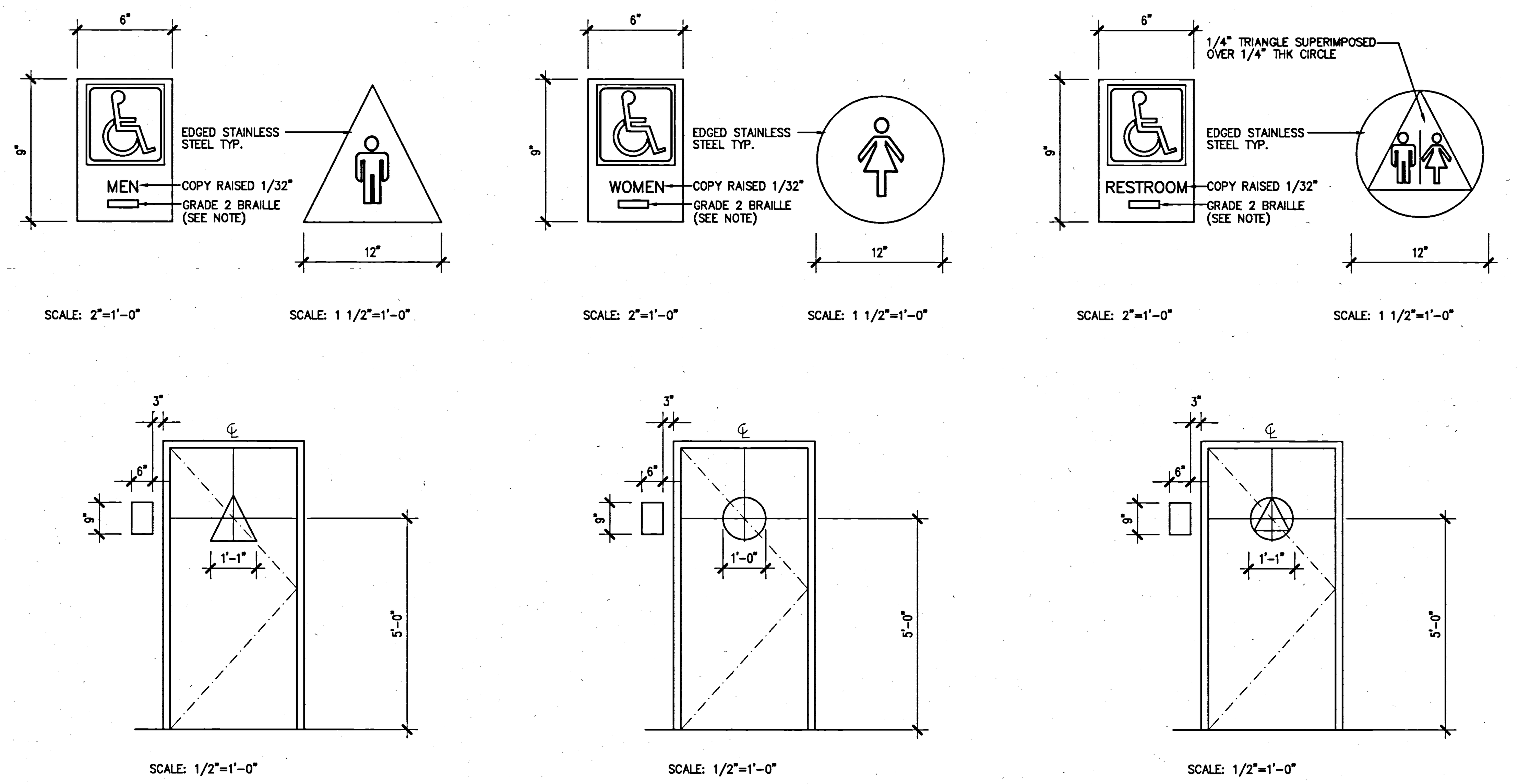
DOOR TYPES



FRAME TYPES



(28) DOOR AND FRAME DETAILS
SCALE: 1/4"=1'-0"



NOTE:
BRAILLE SYMBOLS. CONTRACTED GRADE 2BRAILLE SHALL BE USED WHEREVER BRAILLE SYMBOLS ARE SPECIFICALLY REQUIRED IN OTHER PORTIONS OF THIS STANDARDS. DOTS SHALL BE 1/10 INCH (2.54 mm) ON CENTER IN EACH CELL WITH 2/10 INCH (5.08 mm) SPACE BETWEEN CELLS. DOTS SHALL BE RAISED A MINIMUM OF 1/40 INCH (0.635 mm) ABOVE BACKGROUND.

(30) RESTROOM SIGNAGE
TYPICAL
SCALE: N.T.S.

SHEET NOTES

A. THE PURPOSE OF THIS SHEET IS TO DESCRIBE AND ILLUSTRATE DOOR TYPES WHICH APPEAR ON THE "DOOR AND INTERIOR OPENING SCHEDULE" (SHEET A-9.4.1) AS WELL AS OTHER GENERAL INFORMATION REGARDING DOORS AND FINISH HARDWARE.

B. ALL INTERIOR DOORS WITH FIRE-RATINGS GREATER THAN 20 MINUTE SHALL HAVE A NONCOMBUSTIBLE SILL WITH AN UNDERCUT OF 3/8" MAXIMUM ABOVE THE SILL. ALL 20 MINUTE AND NON-RATED INTERIOR DOORS SHALL DOORS SHALL HAVE AN UNDERCUT OF 3/4" MAXIMUM ABOVE FINISH FLOOR UNLESS OTHERWISE NOTED.

C. WOOD, PLASTIC FACED WOOD AND HOLLOW METAL DOORS ARE 1-3/4" THICK, TYPICAL. FOR THICKNESS OF ACOUSTICALLY INSULATED DOORS, OVERHEAD ROLL-UP DOORS, LEAD LINEN, ALUMINUM AND GLASS DOORS, SEE INDICATED DETAILS AND THE SPECIFICATIONS.

D. WHERE GLAZING OCCURS FOR DOOR TYPES AT INTERIOR LOCATIONS:

1. GLAZING TYPE 08800.G (1/4" THICK CLEAR FULLY TEMPERED GLAZING) TYPICAL UNLESS OTHERWISE NOTED.
2. GLAZING TYPE 08800.H (1/4" THICK CLEAR WIRED GLAZING) AT RATED DOORS.

E. WHERE GLAZING OCCURS FOR DOOR TYPES AT EXTERIOR LOCATIONS, SEE EXTERIOR ELEVATIONS FOR SCHEDULED SAFETY GLAZING.

F. FOR DOOR TYPES WHERE GLAZING IS SHOWN: ALL GLAZING TO BE FACTORY-INSTALLED; DO NOT INSTALL GLAZING IN THE FIELD.

H. WEIGHT OF LEAD-LINED DOORS, LEAD STRIPS IN DOOR FRAMES, AND LEAD GLAZING WHERE OCCURS SHALL MATCH WEIGHT OF LEAD IN ADJACENT PARTITION UNLESS OTHERWISE NOTED. LEAD LINING SHALL BE INSTALLED SUCH THAT SHIELDING IS CONTINUOUS IN INSTALLED DOORWAY.

J. TO DETERMINE THE METHOD OF ATTACHING THE ILLUSTRATED FRAMES TO THE SURROUNDING CONSTRUCTION, REFER TO THE COLUMN "FRAME ATTACHMENT" IN THE "DOOR AND INTERIOR OPENING SCHEDULE" (SHEETS A-9.31 THRU A-9.32).

K. LEAD STRIPS IN DOOR FRAMES IN LEAD-LINED DOORS ARE TO MATCH WEIGHT OF LEAD IN ADJACENT PARTITION UNLESS OTHERWISE NOTED.

L PAINT ALL HOLLOW METAL FRAMES. SEE D9.XX SERIES SHEETS TO DETERMINE COLOR.

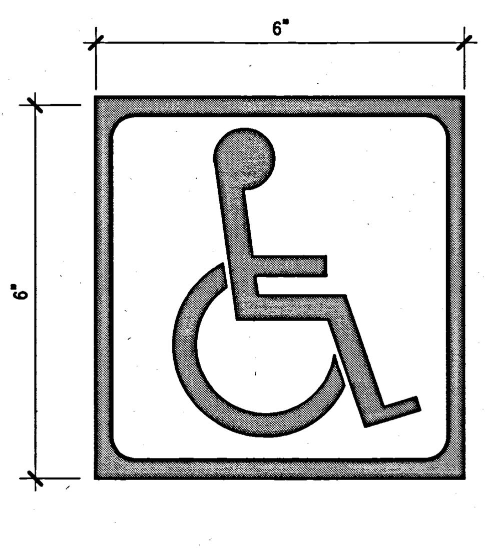
M. WHERE FRAMES OF SPECIAL CONSTRUCTION ARE SCHEDULED, FINISH AS INDICATED BY THE APPLICABLE DETAIL OR, IF NOT NOTED BY DETAIL, AS INDICATED BY THE SPECIFICATIONS.

N. WHERE GLAZING OCCURS FOR FRAME TYPES, REFER TO THE "DOOR AND INTERIOR OPENING SCHEDULE" ON SHEETS A9.14 THRU A9.18 TO DETERMINE GLAZING TYPE.

P. FOR ADDITIONAL INFORMATION REGARDING FRAMES, SEE SHEET A9.34.

Q. AT DETAIL 40 ON THIS SHEET, DIMENSION "A" REPRESENTS THCKNESS OF SCHEDULED PARTITION OR WALL TYPE. REFER TO SHEET A9.01 TO DETERMINE THICKNESS. CAUTION: WHERE ADDITIONAL PARTITION COMPONENTS ARE SCHEDULED, THE APPLICATION OF SUCH COMPONENTS MAY MODIFY THE PARTITION THICKNESS INDICATED ON SHEET A9.01 (SEE ALSO SHEET NOTE "J" ON SHEET A9.01).

R. AT DETAIL 40 ON THIS SHEET, DIMENSION "B" REPRESENTS THICKNESS OF DOOR PLUS 3/16".



NOTE: SEE CBC FIGURE 11B-6 FOR MORE DETAILS

(5) ACCESSIBILITY SINAGE
TYPICAL
SCALE: 1-1/2" = 1'-0"

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1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title
DOOR TYPES & INTERIOR OPENING FRAME TYPES

SCALE AS NOTED

Scale
3193000
Project Number
060CT00
Baseline Date

A9.4.2

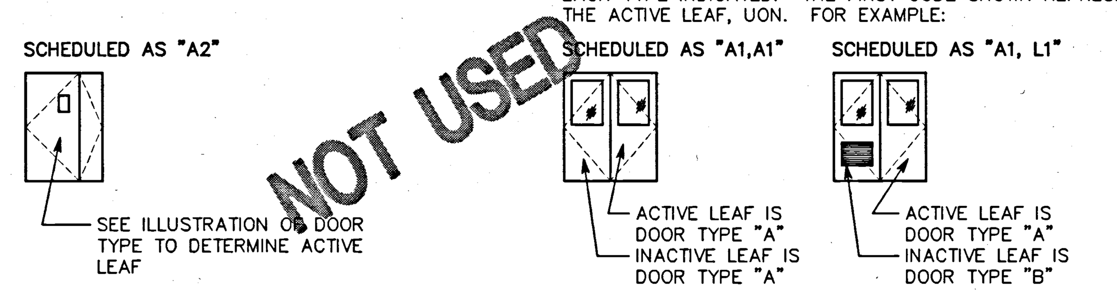
Drawing Number

Plot Sheet Filename: I:\JOBS\3193000\SHT\A9402.dwg
XREF Filename(s): UCR_Tblk ucDOOR42 UC90030 UC90031
Plot Setup Script:
Plot Date: 03/11/02 17:22 Plot View:

DOOR PAIRS AND THE TYPE OF LEAFS UTILIZED BY DOOR PAIRS ARE INDICATED BY ONE OF TWO METHODS:

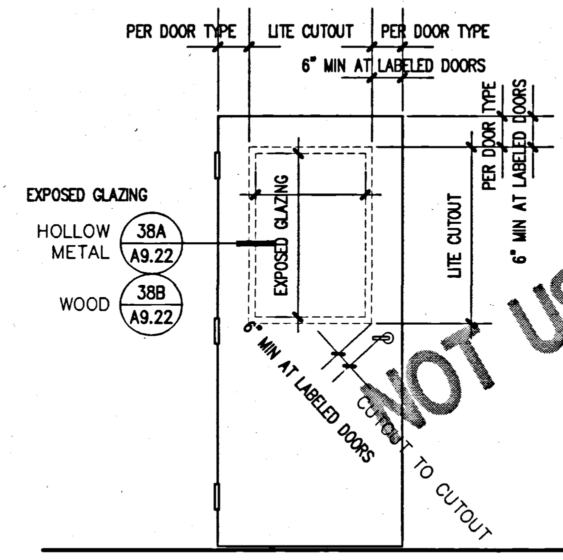
METHOD NO 1:
BY DOOR TYPE CODE – WHERE THE CORRESPONDING DOOR TYPE ELEVATION ON THIS SHEET ILLUSTRATES A PAIR OF DOOR LEAFS TOGETHER AS A SINGLE UNIT. FOR EXAMPLE:

METHOD NO 2:
BY COMBINING TWO DOOR TYPE CODES ON THE SCHEDULE – WHERE EACH OF THE TWO DOOR TYPE CODES REPRESENTS A SINGLE LEAF DOOR, THE COMBINATION OF THE TWO DOOR TYPE CODES REPRESENTS A DOOR PAIR WITH A LEAF OF EACH TYPE INDICATED. THE FIRST CODE SHOWN REPRESENTS THE ACTIVE LEAF, UON. FOR EXAMPLE:



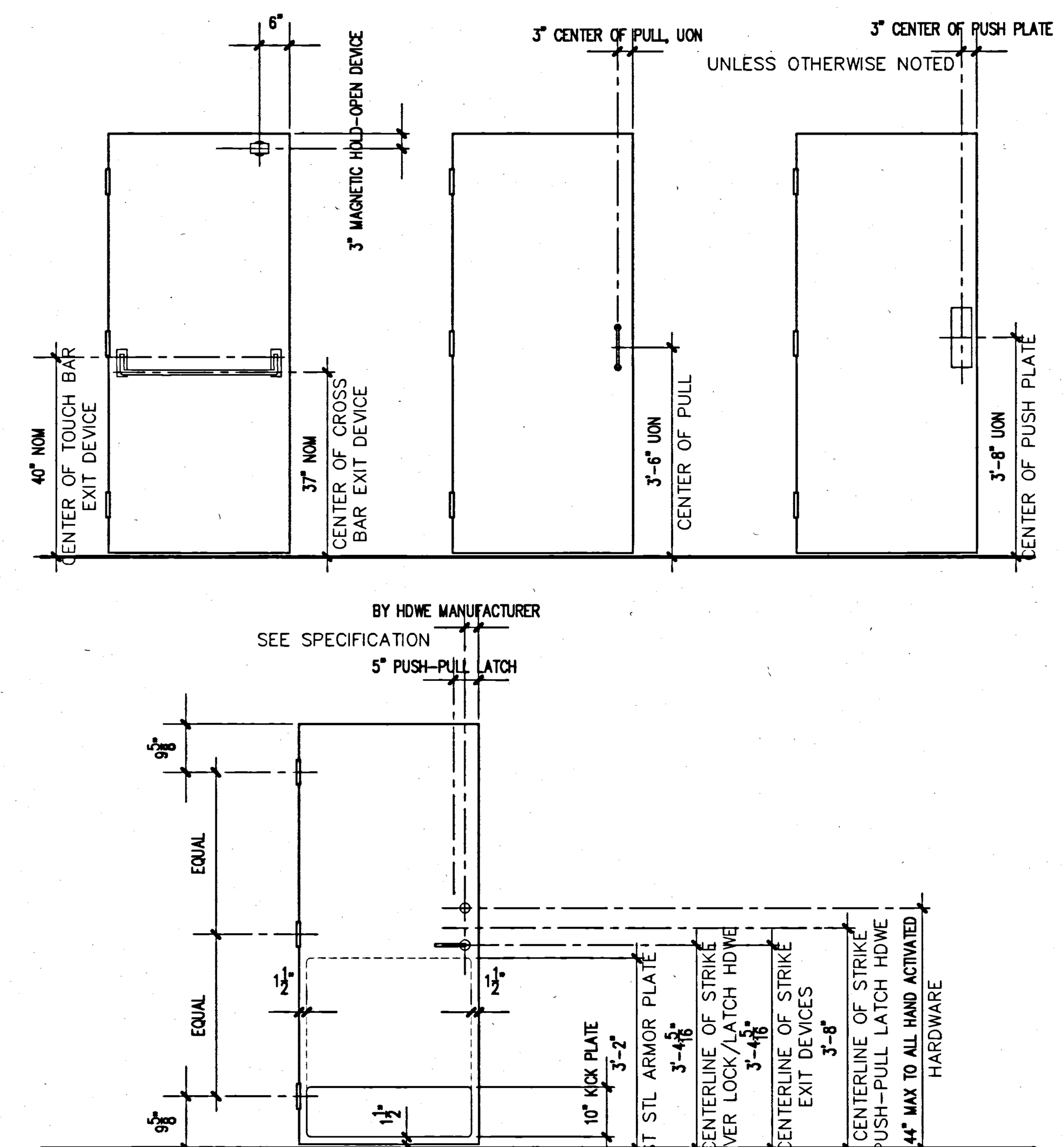
TO DETERMINE THE SIZE OF INDIVIDUAL LEAFS IN A DOOR PAIR, SEE DETAIL 40 BELOW FOR TYPICAL DIMENSIONS AND THE NOTES AND REMARKS ON THE DOOR SCHEDULE FOR SPECIAL DIMENSIONS.

36 INDICATIONS USED FOR PAIRS OF DOORS
SEE DOOR SCHEDULE NOTES FOR ADDITIONAL INFORMATION
SCALE: NOT TO SCALE

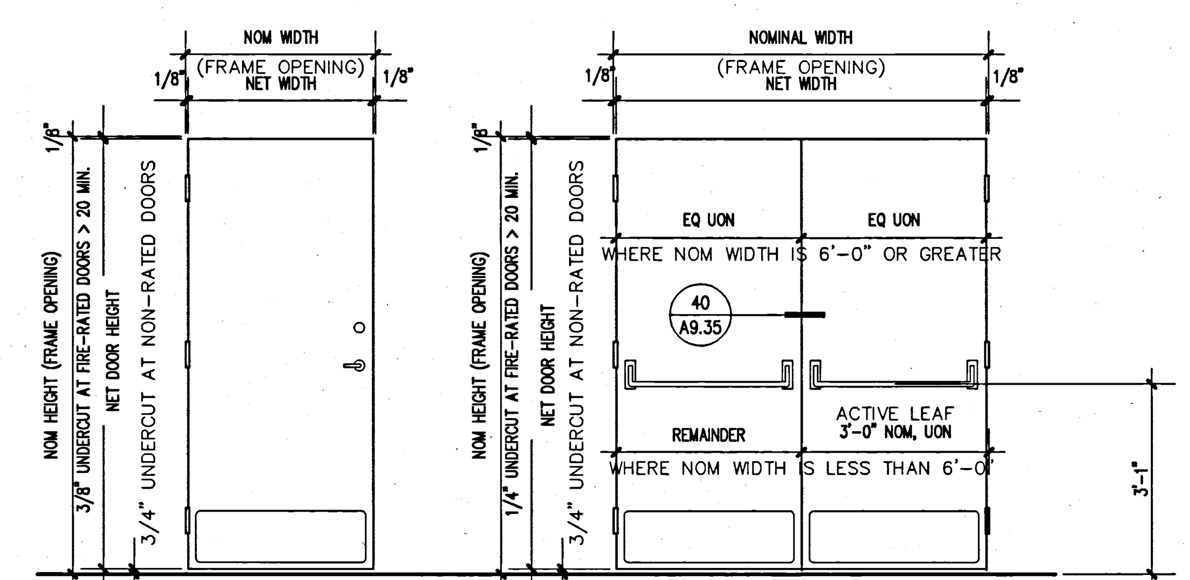


1. DOORS WITH 3/4 HOUR LABELS: THE TOTAL AREA OF EXPOSED GLAZING IN ANY LEAF SHALL NOT EXCEED 1296 SQUARE INCHES. THE MAX WIDTH OF EXPOSED GLAZING IN ANY LITE SHALL NOT EXCEED 30 INCHES. THE MAX HEIGHT OF EXPOSED GLAZING IN ANY LITE SHALL NOT EXCEED 54 INCHES.
2. DOORS WITH 1 OR 1–1/2 HOUR LABELS: THE TOTAL AREA OF EXPOSED GLAZING IN ANY LEAF SHALL NOT EXCEED 100 SQUARE INCHES. THE MIN DIM OF EXPOSED GLAZING IN ANY LITE SHALL NOT BE LESS THAN 4 INCHES.
3. LITE CUTOUTS SHALL BE NO CLOSER THAN 6 INCHES TO ANY EDGE OF THE DOOR OR TO THE EDGE OF ANY HARDWARE CUTOUT.
4. WHERE MULTIPLE LITES OCCUR, EACH LITE CUTOUT SHALL BE SEPARATED BY 6 INCHES OR GREATER.

37 TYPICAL WOOD AND HOLLOW METAL DOOR LITE DETAILS AND NOTES
SEE SPECIFIC DOOR TYPES FOR ADDITIONAL INFORMATION
SCALE: 1/2" = 1'-0"



39 TYPICAL FINISH HARDWARE LOCATIONS
SCALE: 1/2" = 1'-0"



40 TYPICAL DOOR DIMENSIONS
SCALE: 1/2" = 1'-0"

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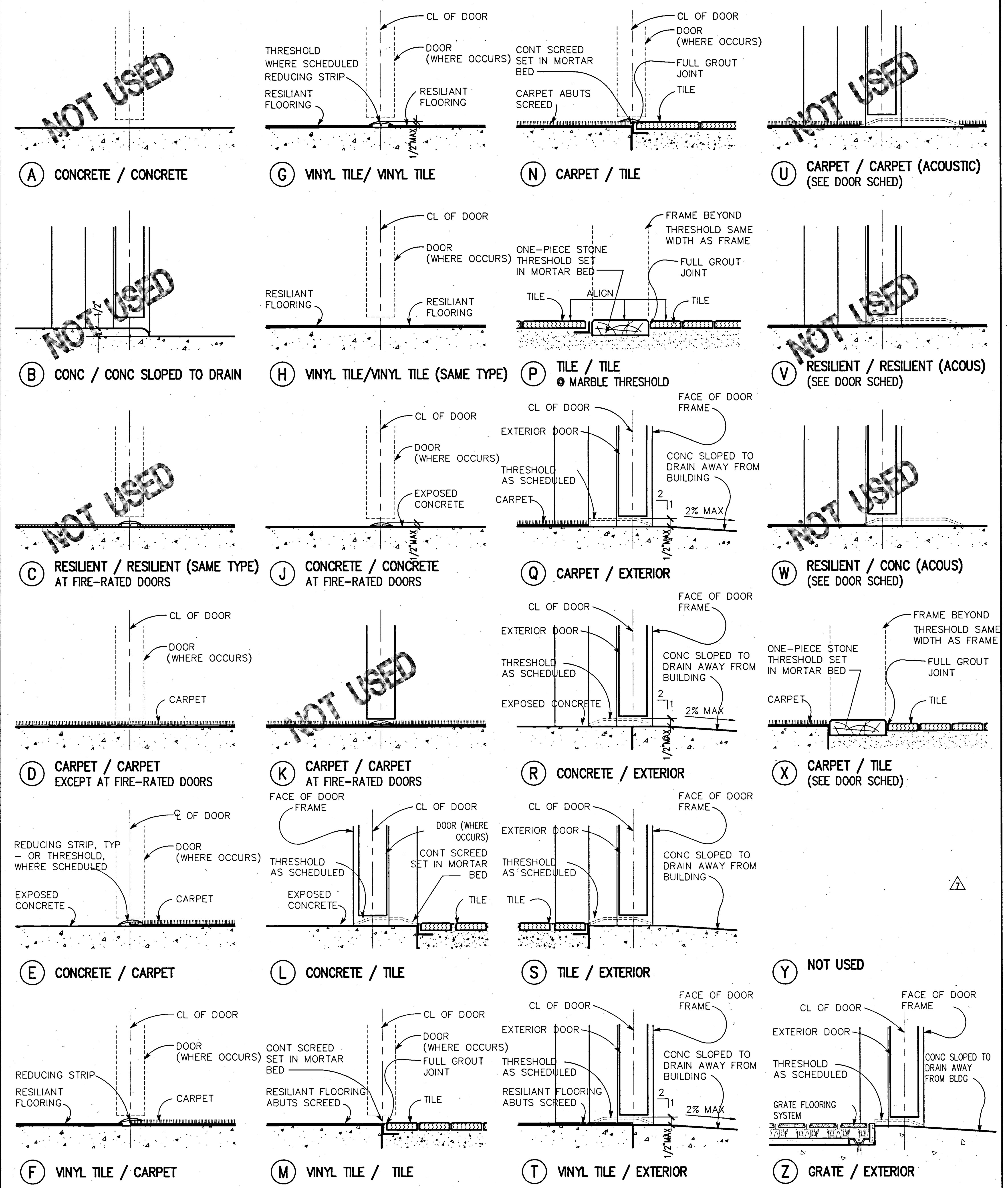
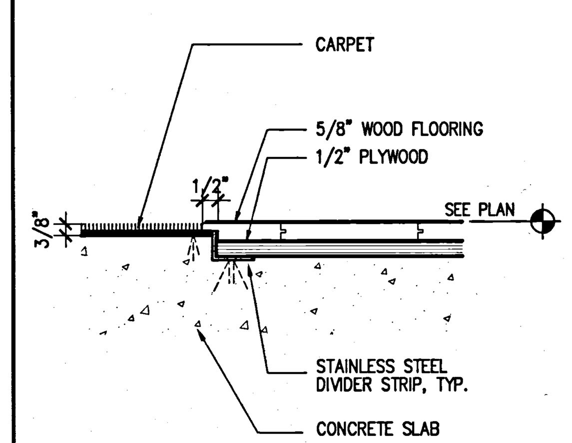
XREF Filename(s): UCR_TBA uc00R43 UC90181 UC90182 UC90183
Plot Setup Script: Plot View:
Plot Date: 03/11/02 17:22

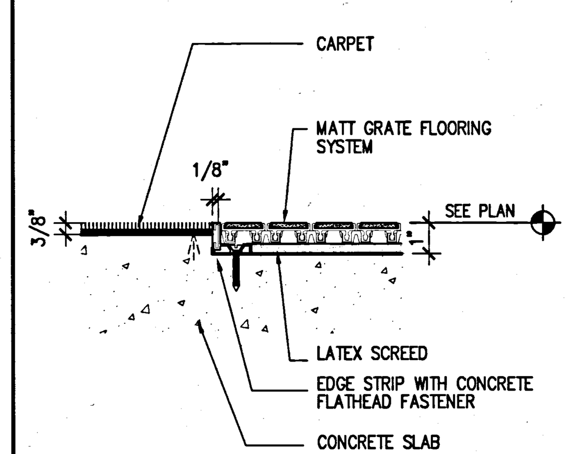


18 APPLIED FLOOR FINISH TRANSITION DETAILS
TYPICAL BETWEEN INTERIOR FINISHES, UNLESS OTHERWISE NOTED
SCALE: NOT TO SCALE

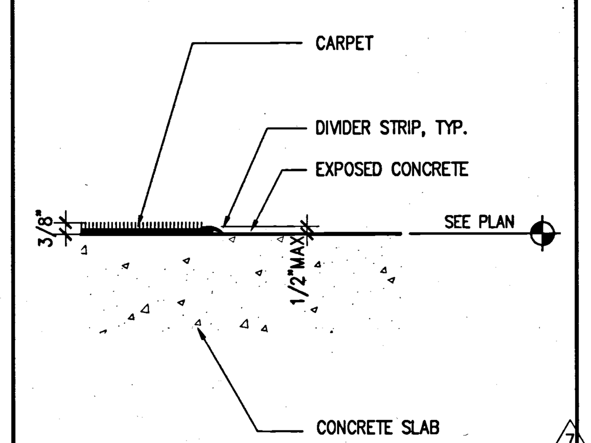
25 NOT USED
SCALE:



20 CARPET TO WOOD
TYPICAL
SCALE: 3" = 1'-0"



15 CARPET TO GRATE
TYPICAL
SCALE: 3" = 1'-0"



10 CARPET TO CONCRETE
TYPICAL
SCALE: 3" = 1'-0"

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1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
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RECORD DRAWINGS

Key Plan

Project North

Drawing Title
DOOR DETAILS

SCALE AS NOTED
Scale
3193000
Project Number
060CT00
Baseline Date
A9.4.3
Drawing Number

36 NOT USED
SCALE:

31 NOT USED
SCALE:

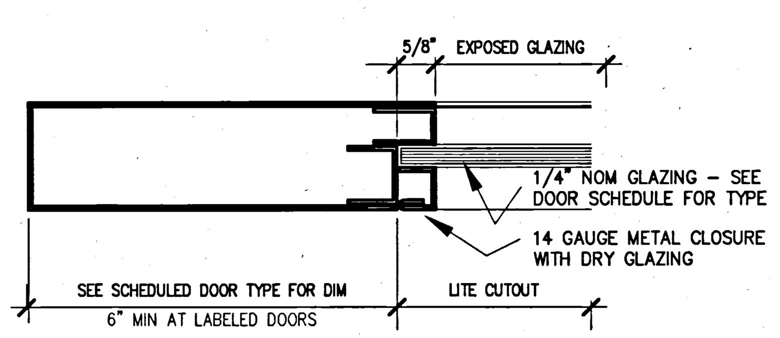
26 NOT USED
SCALE:

37 NOT USED
SCALE:

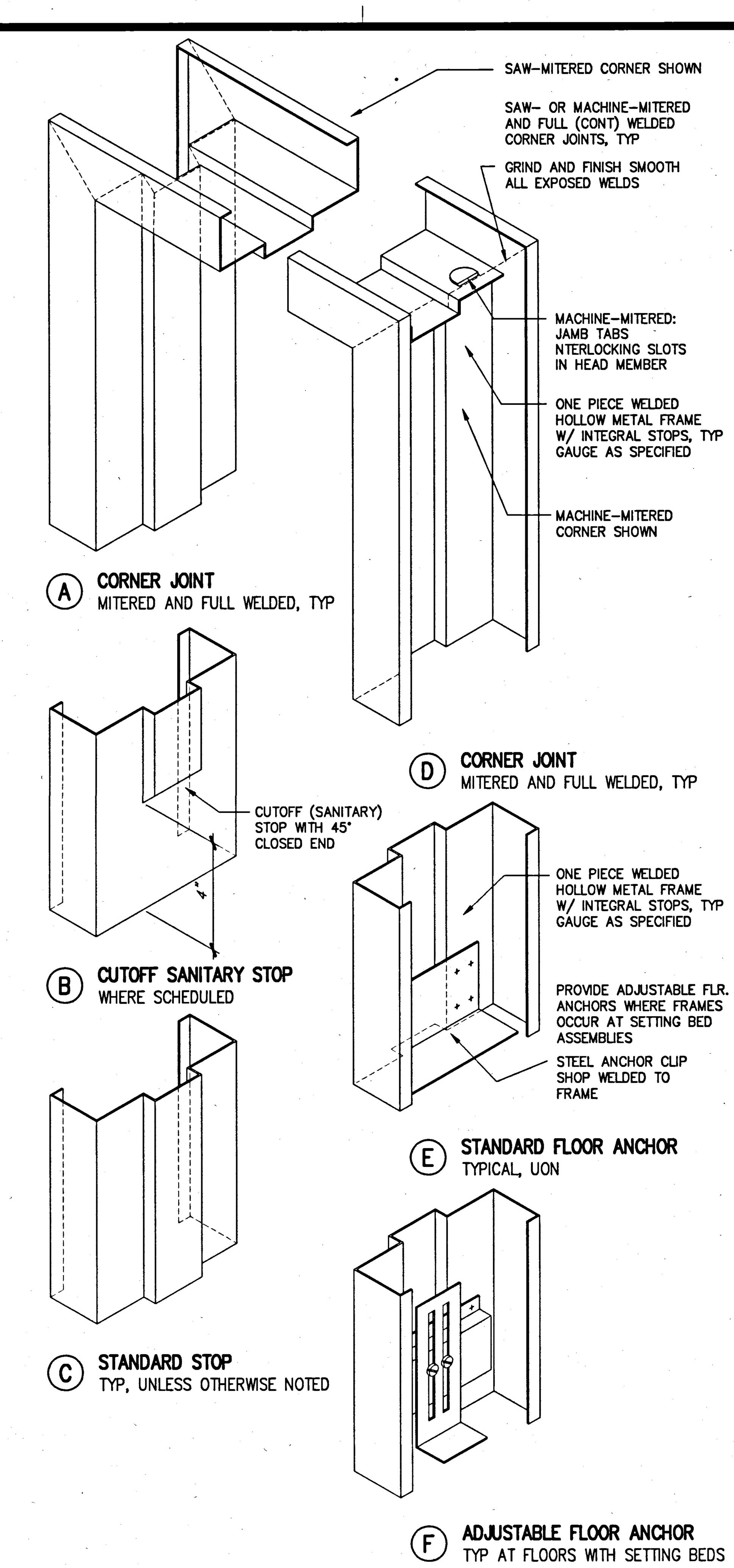
32 NOT USED
SCALE:

27 NOT USED
SCALE:

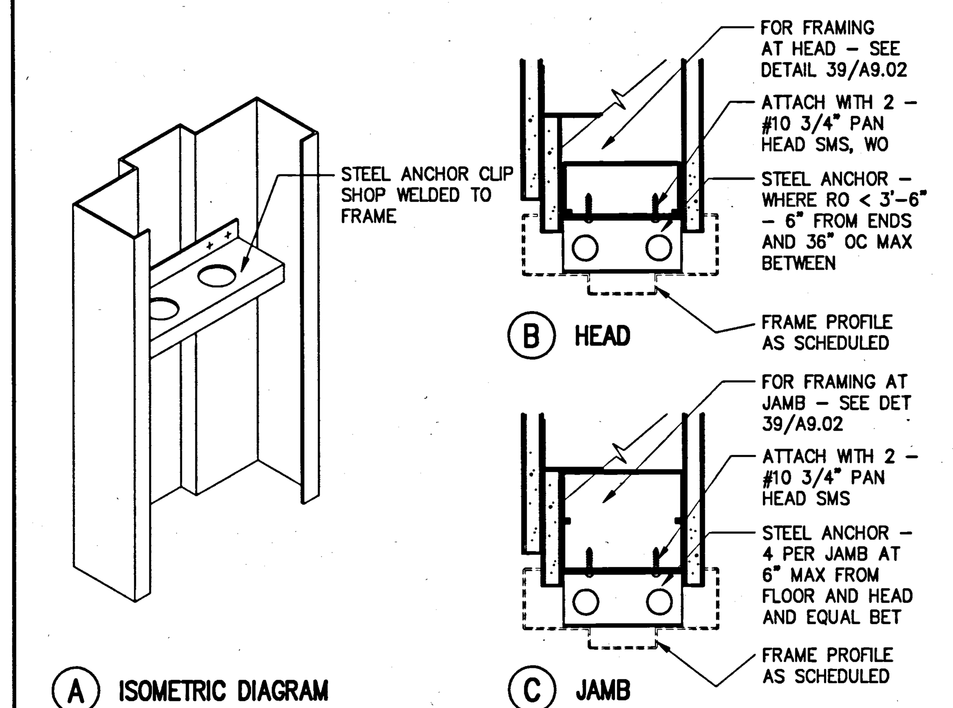
38 NOT USED
SCALE:



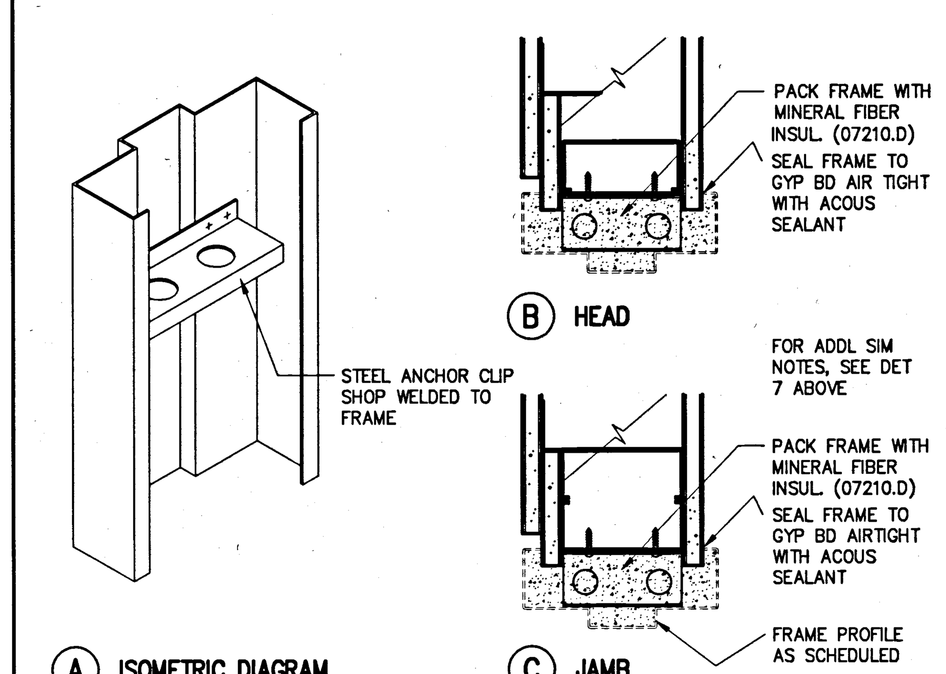
33 INTERIOR DOOR GLAZING DETAILS
TYPICAL, WHERE SCHEDULED
SCALE: HALF SIZE



23 HOLLOW METAL FRAMES
TYPICAL DETAILS (DOOR FRAME SHOWN, WINDOW FRAME SIMILAR)
SCALE: 3"=1'-0"

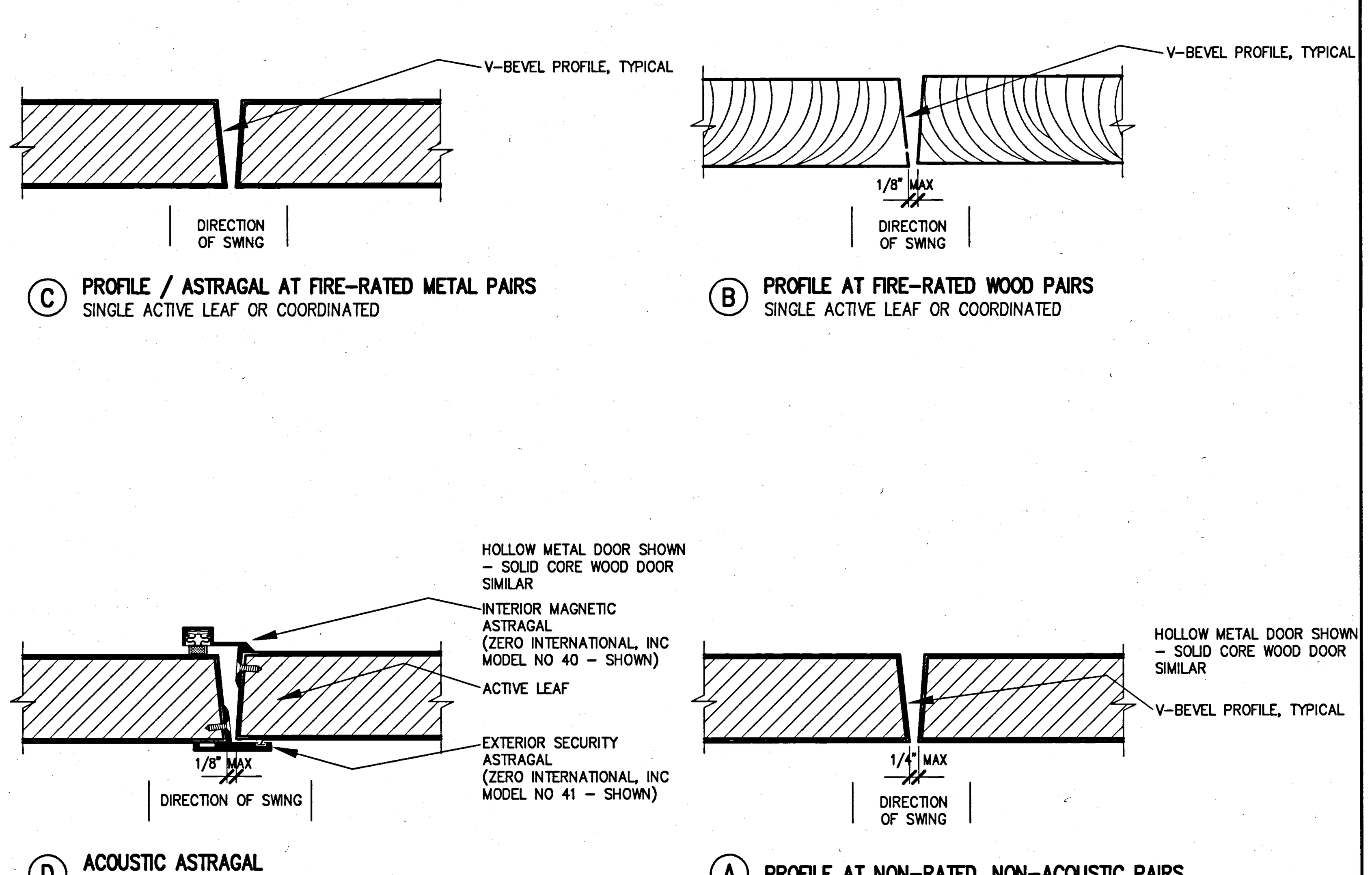


11 FRAME ATTACHMENT
PRE-SET AT METAL FRAMED OPENINGS
SCALE: 3"=1'-0"

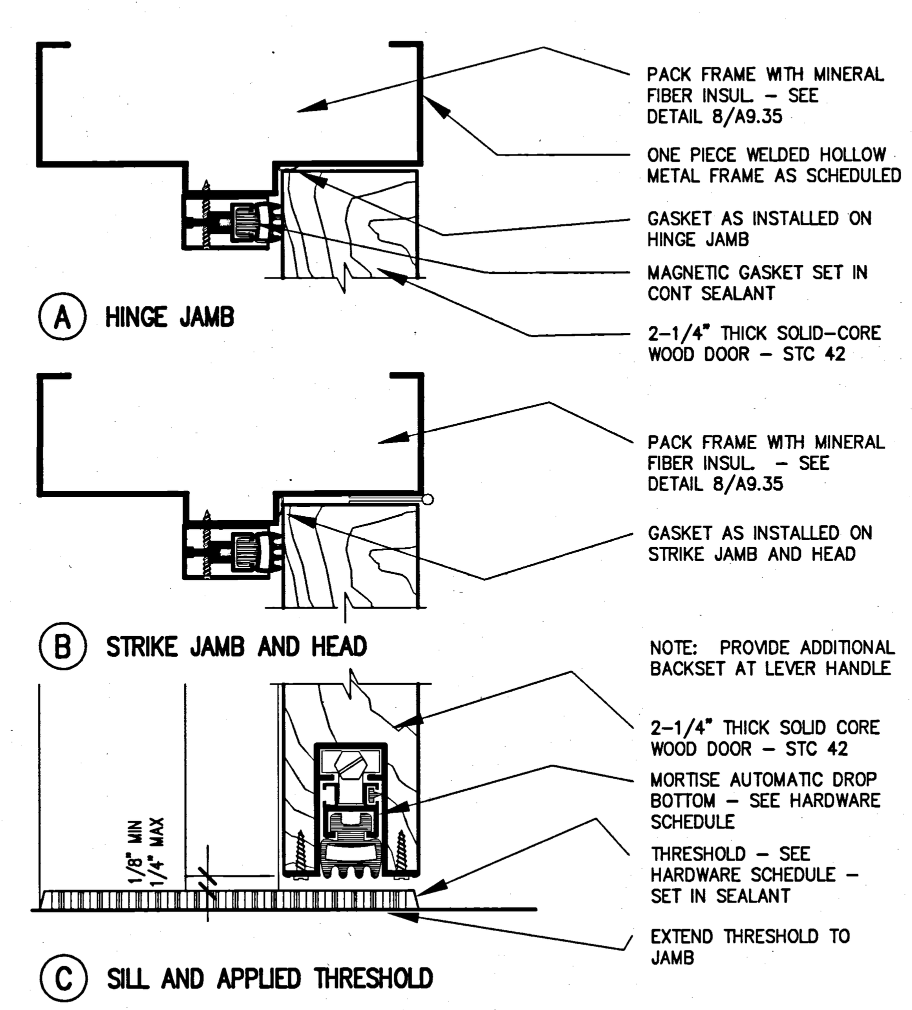


13 FRAME ATTACHMENT
PRE-SET AT METAL FRAMED OPENINGS - RATED
SCALE: 3"=1'-0"

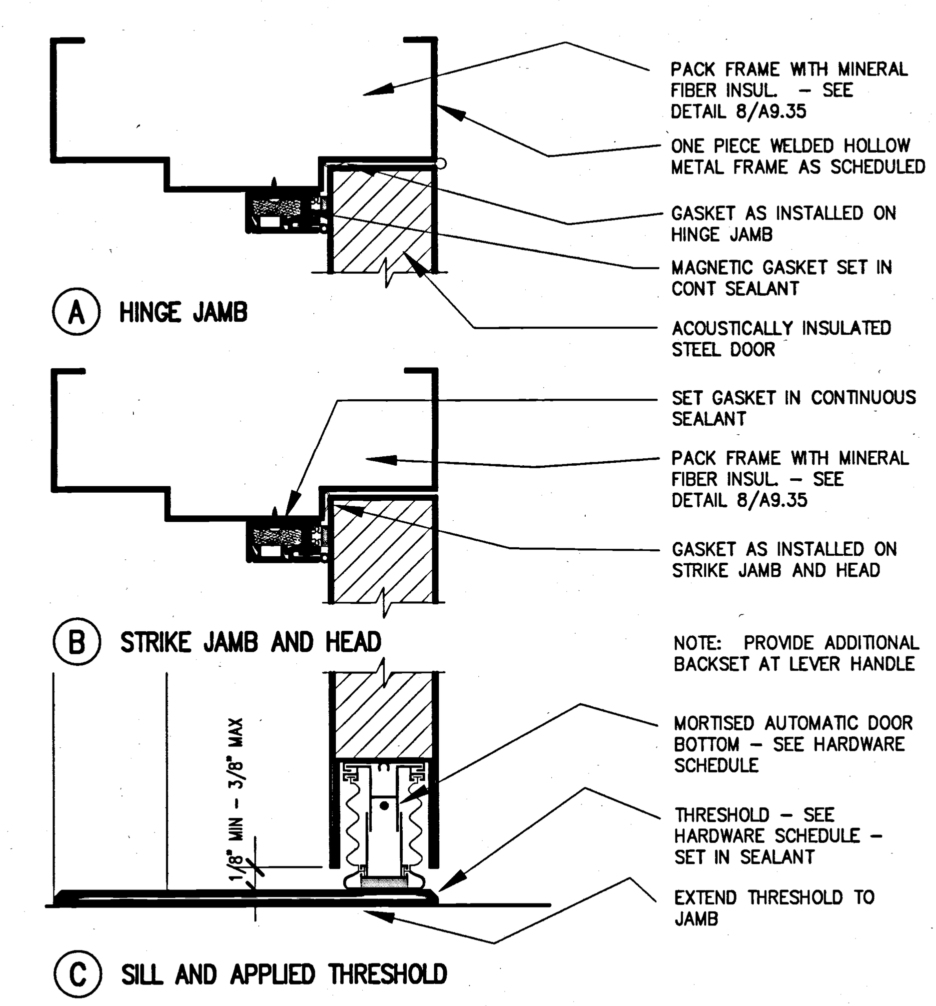
KEYED NOTES



40 MEETING STILE EDGE AT PAIRED DOORS
TYPICAL
SCALE: HALF SIZE



25 GASKETED STC-40-45 WOOD DOOR
TYPICAL, WHERE SCHEDULED (NOT FOR USE WHERE FIRE RATED DOOR IS REQUIRED)
SCALE: HALF SIZE



15 ACOUSTICALLY INSULATED STEEL DOOR - STC 40-45
TYPICAL, WHERE SCHEDULED
SCALE: HALF SIZE

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1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
T 310.586.5400
F 310.586.1091

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title
DOOR TYPES & TYPICAL DOOR DETAILS

SCALE AS NOTED
Scale
3193000
Project Number
06OCT00
Baseline Date
A9.4.4
Drawing Number

Plot Sheet Filename: I:\JOBS\3193000\SHT\A9404.dwg
XREF Filename(s): UCR_tbk ucD00R44
Plot Setup Script:
Plot Date: 03/11/02 17:22
Plot View:
06/21/00

(36) NOT USED
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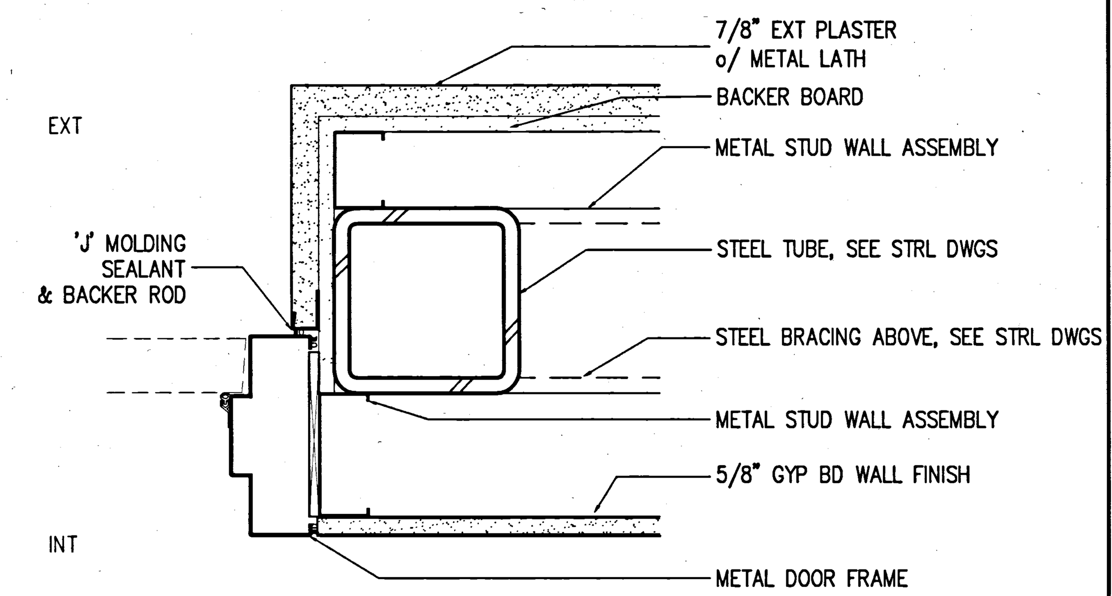
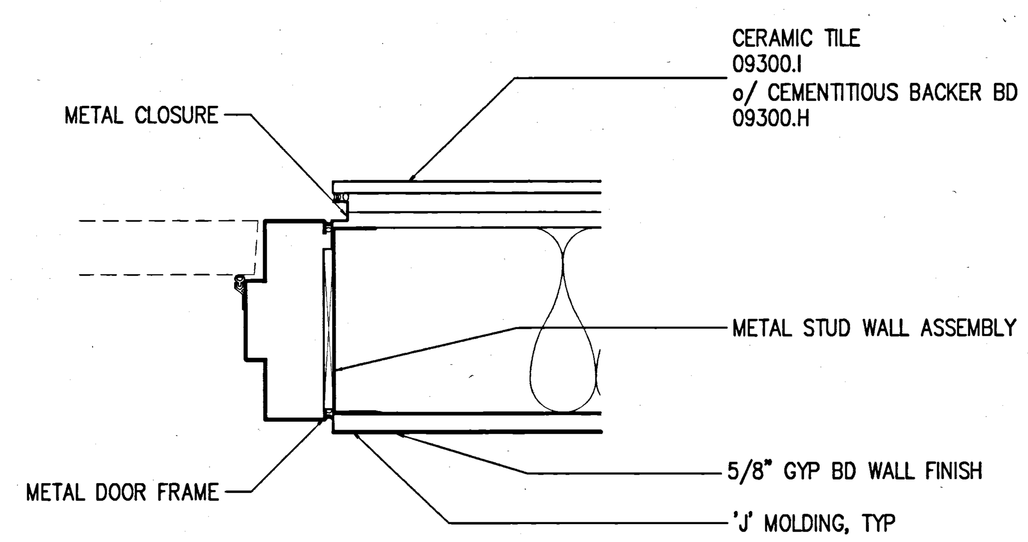
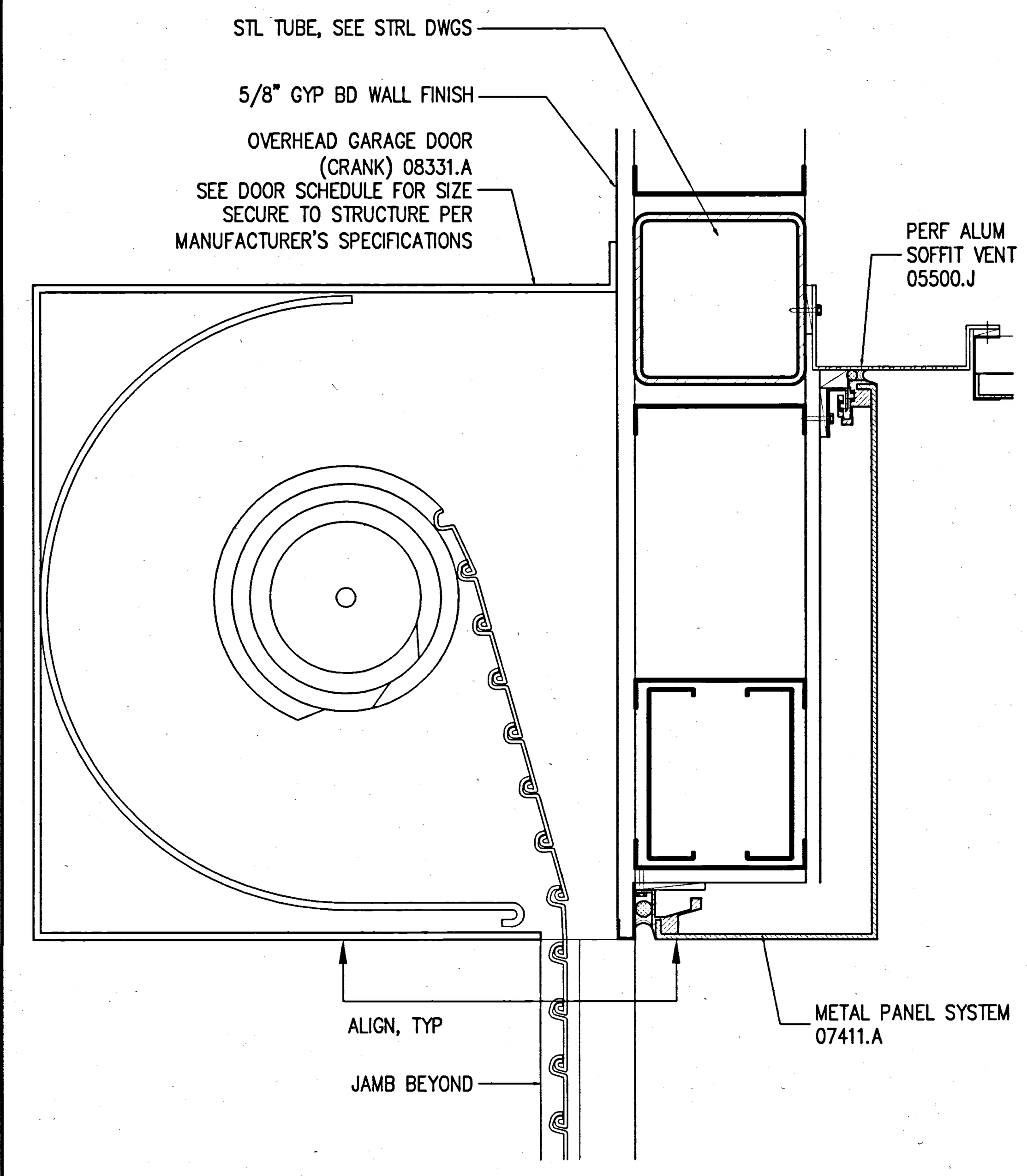


(31) EXT DOOR JAMB @ CEMENT PLASTER (HEAD SIM)
SCALE: 3" = 1'-0"



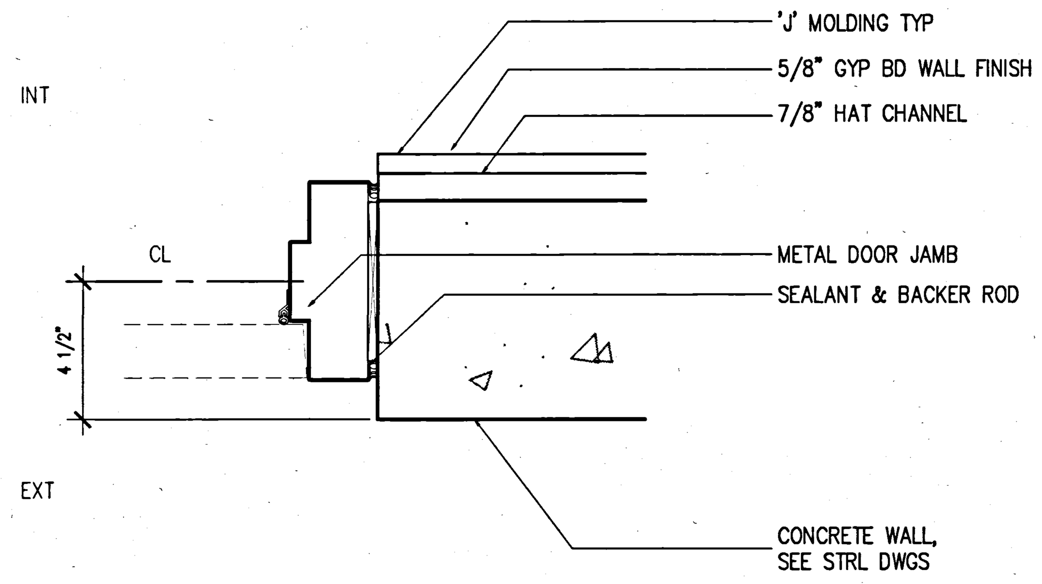
(21) EXT DOOR JAMB @ TILE (HEAD SIM)
SCALE: 3" = 1'-0"



(12) OVERHEAD DOOR -HEAD
SCALE: 3" = 1'-0"

(37) NOT USED
SCALE:

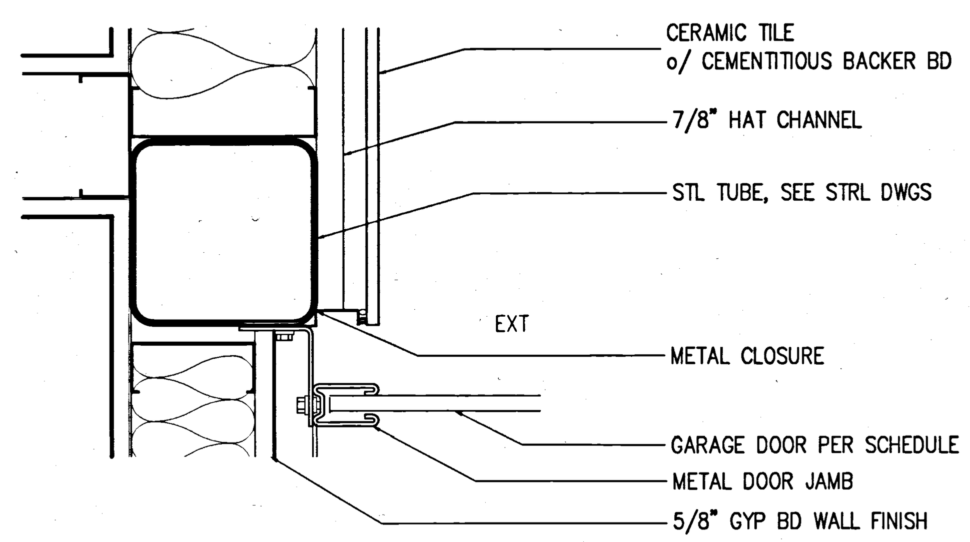
(32) NOT USED
SCALE:



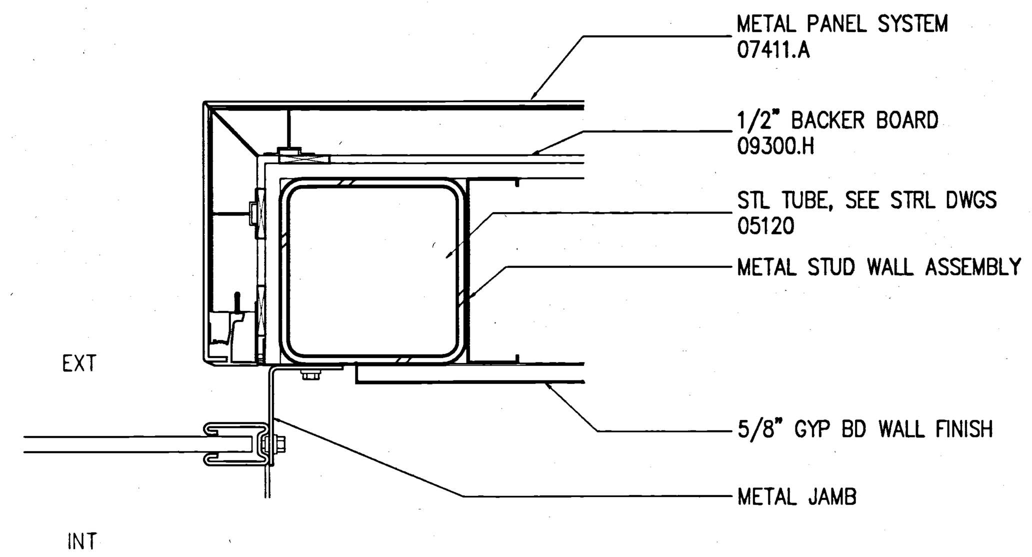
(22) EXT DOOR JAMB @ CONC
SCALE: 3" = 1'-0"

(38) NOT USED
SCALE:

(33) NOT USED
SCALE:



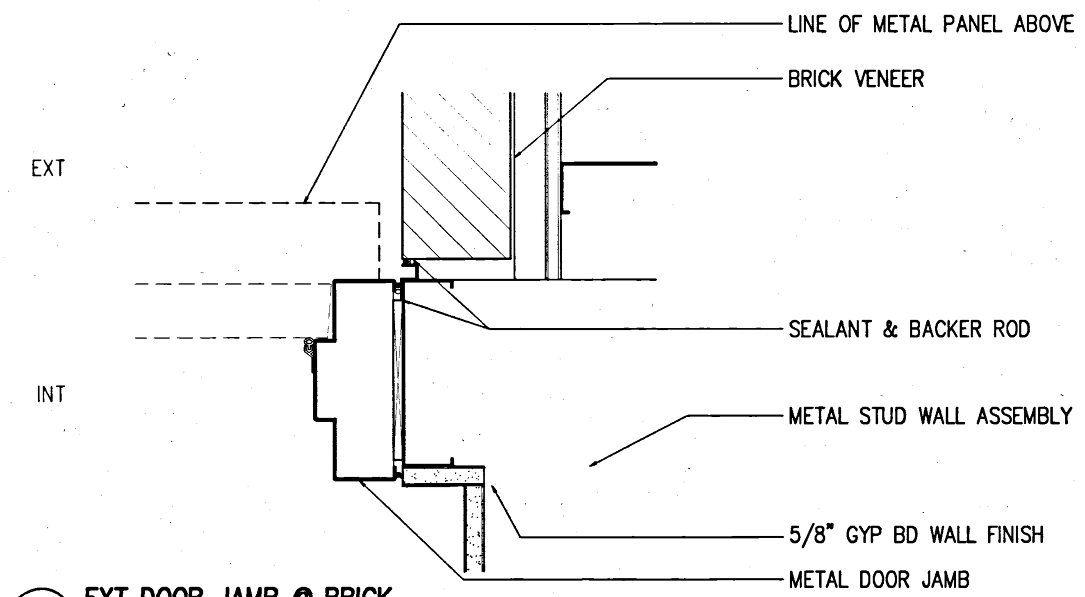
(23) OVERHEAD DOOR JAMB @ CERAMIC TILE
SCALE: 3" = 1'-0"



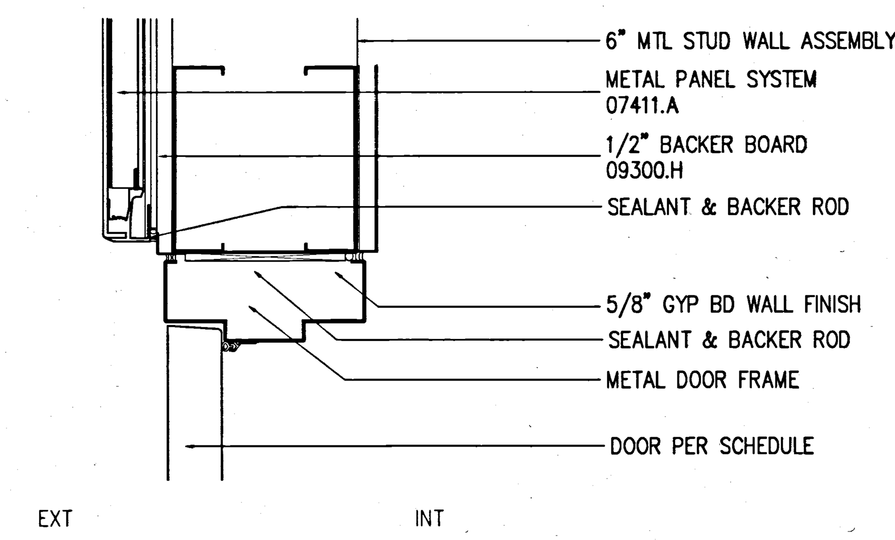
(13) OVERHEAD DOOR JAMB @ METAL PANEL
SCALE: 3" = 1'-0"

(39) NOT USED
SCALE:

(34) NOT USED
SCALE:



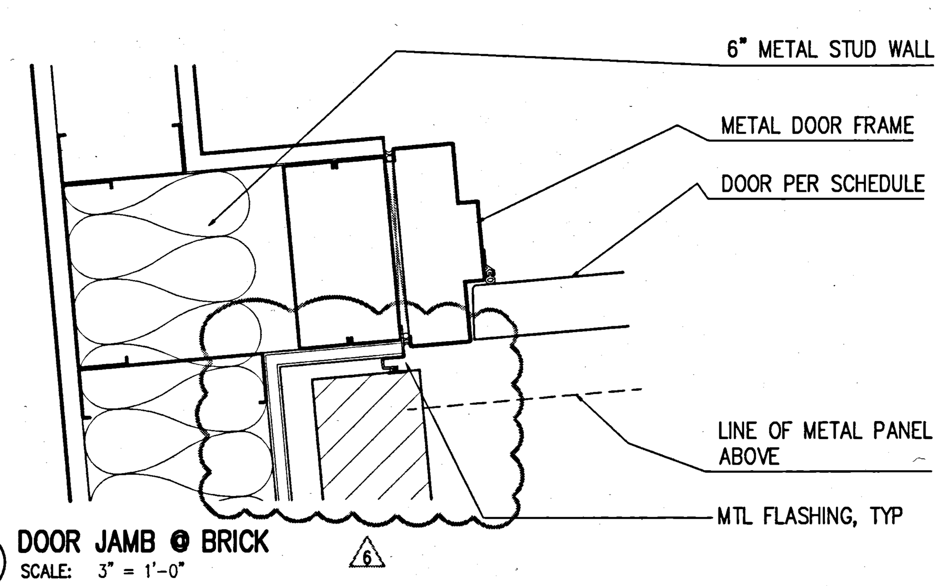
(24) EXT DOOR JAMB @ BRICK
SCALE: 3" = 1'-0"



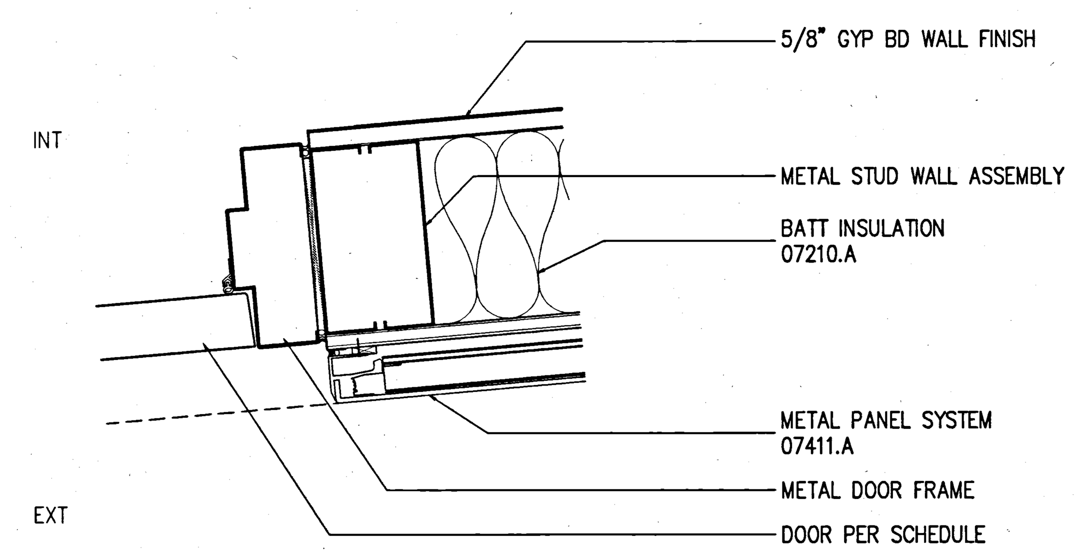
(14) DOOR HEAD @ METAL PANEL
SCALE: 3" = 1'-0"

(40) NOT USED
SCALE:

(35) NOT USED
SCALE:



(25) DOOR JAMB @ BRICK
SCALE: 3" = 1'-0"



(15) DOOR JAMB @ METAL PANEL SYSTEM
SCALE: 3" = 1'-0"

KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

GENERAL NOTES

1. SEE STRUCTURAL DWGS. FOR TOP OF STEEL (TOS) ELEVATIONS.
2. TYPICAL CONDITIONS APPLY AT ALL DETAILS.
3. CALL-OUTS SHOWN ON ONE DETAIL SHALL APPLY TO ALL WHERE SAME CONDITIONS EXIST, U.O.N.
4. CASE WORK (N.I.C.). ALL BUILT IN CASE WORK PROVIDING WORK STATIONS ARE TO BE SUBMITTED TO DSA PRIOR TO FABRICATION. 5% MIN. TO BE PROVIDED SHALL BE ACCESSIBLE.
5. 5 % OF ALL FURNITURE PROVIDED SHALL BE ACCESSIBLE.
6. PROVIDE STAIR SIGNAGE AT BOTH SIDES OF DOORS 133A; 103A; 240A; 203A; 338A & 303A AS PER SEC. 1117B.5.2. THE INFORMATION SHALL BE PRESENTED USING RAISED ARABIC NUMERALS AND RAISED BRAILLE SYMBOLS. THE SIGN SHALL BE LOCATED 5 FT. A.F.F.. THE SIGN SHALL BE LOCATED INMEDIATELY ADJACENT TO THE DOOR ON THE STRIKE SIDE. (SEC. 1133B.4.3.).
7. PROVIDE PORTABLE ASSISTIVE LISTENING DEVICES IN ALL CONFERENCE AND MEETING ROOMS WHERE REQUIRED – MINIMUM NUMBER SHALL BE EQUAL TO 4% OF SEATING BUT NOT LESS THAN 2

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1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
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F 310.586.1091

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title
DOOR DETAILS

SCALE AS SHOWN
Scale

3193000
Project Number

060CT00
Baseline Date

A9.4.5
Drawing Number

Plot Sheet Filename: I:\VBRS\3193000\Dsn\A9405.dwg
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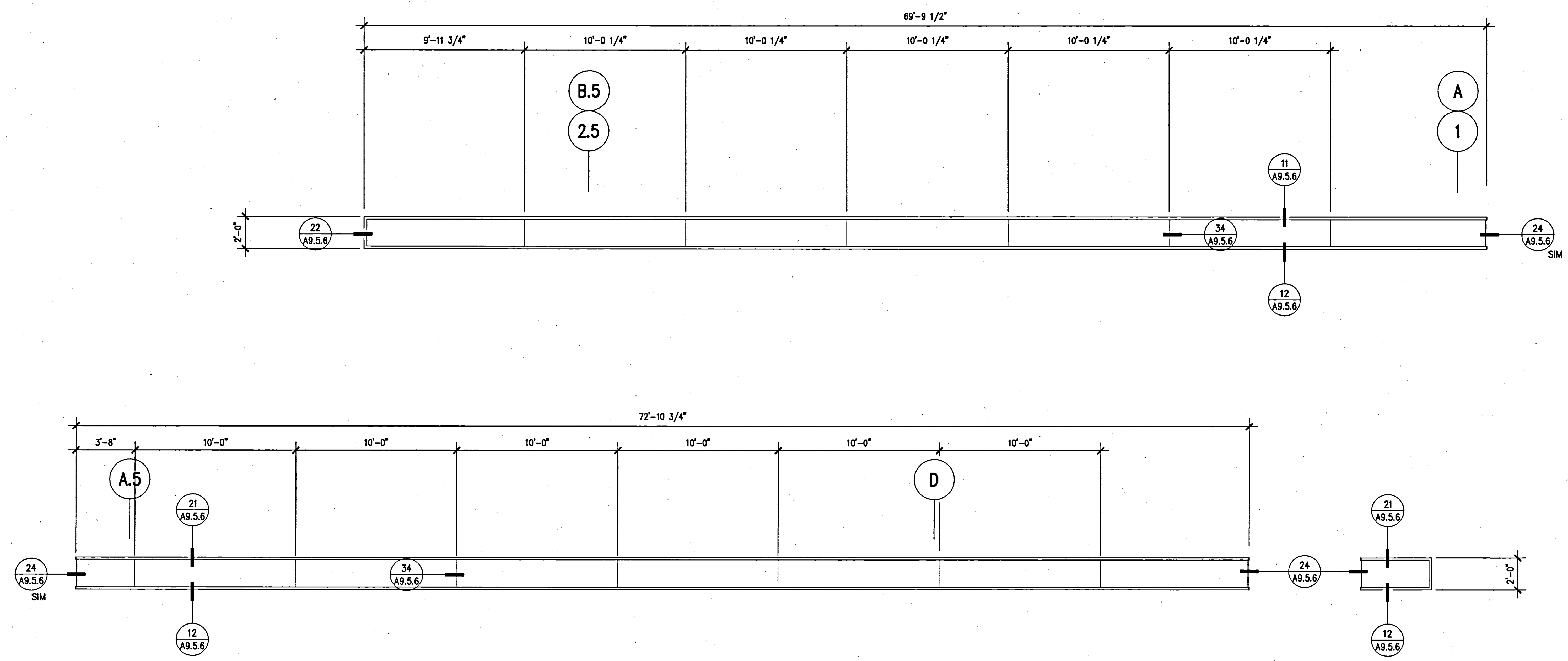
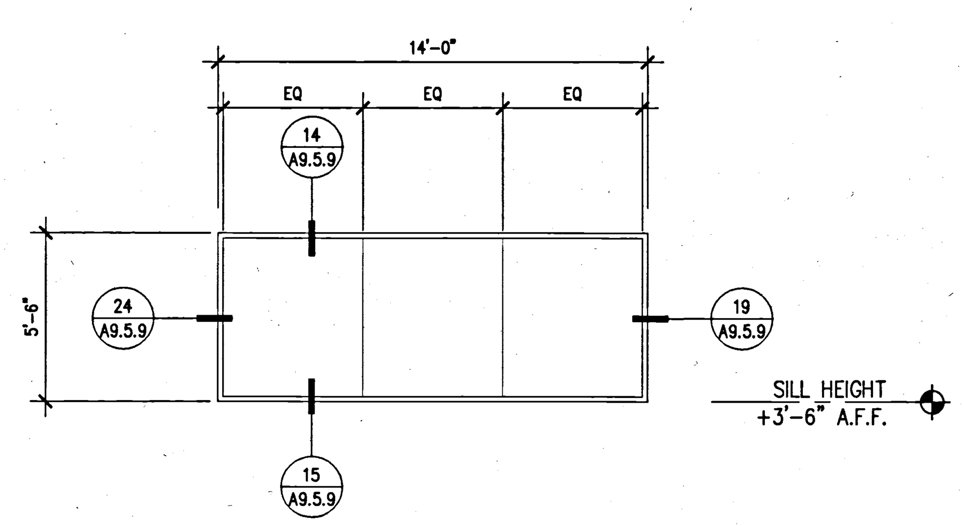
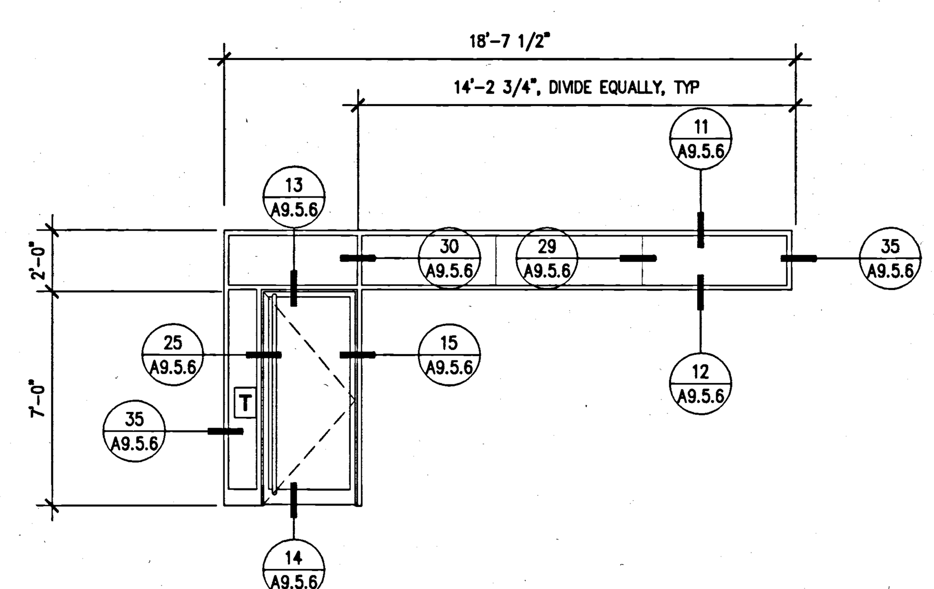
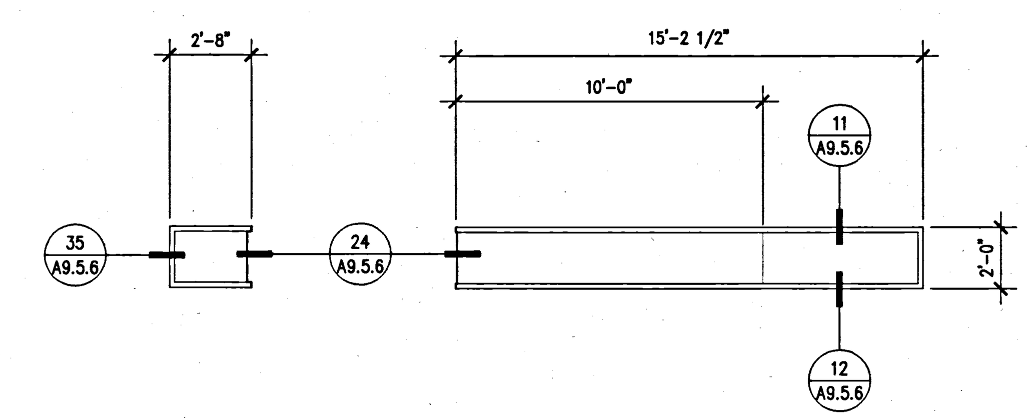


(37) NOT USED
SCALE:

(32) WINDOW TYPE W01
SCALE: 1/4" = 1'-0"





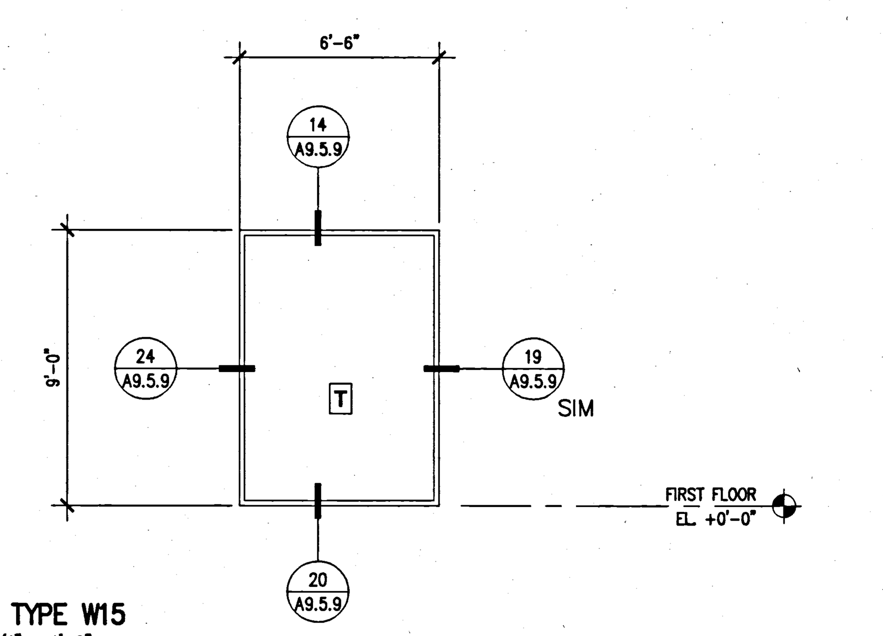


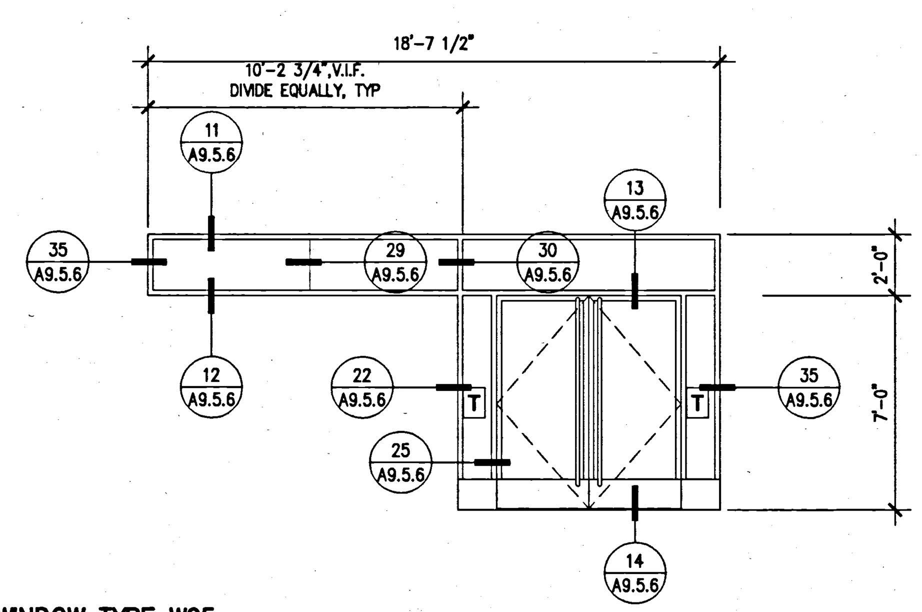
(38) NOT USED
SCALE:

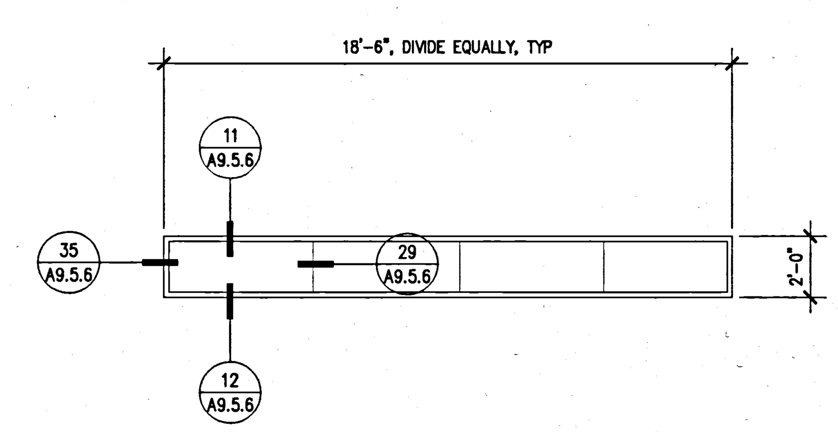
(33) WINDOW TYPE W14
SCALE: 1/4" = 1'-0"

(23) WINDOW TYPE W03, W08, W09 & W11 MIRROR W06, W08 & W10
SCALE: 1/4" = 1'-0"

(13) WINDOW TYPE W02
SCALE: 1/4" = 1'-0"





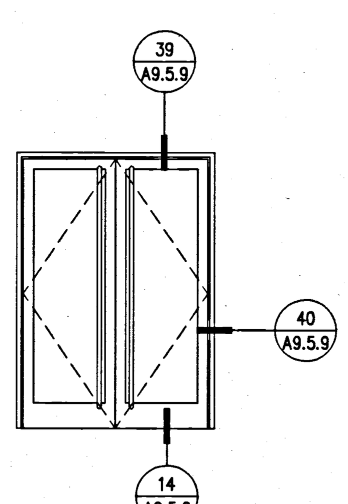


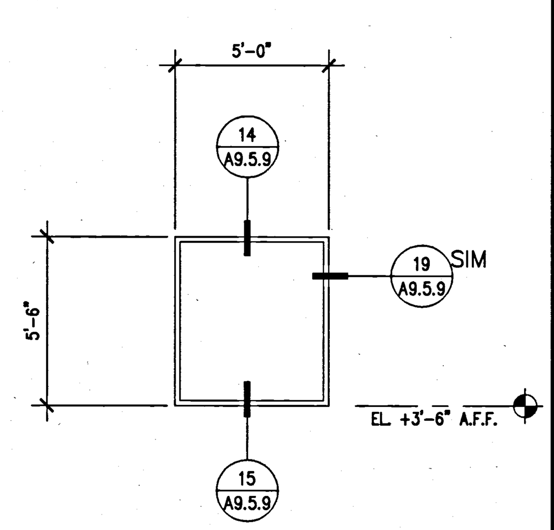
(39) NOT USED
SCALE:

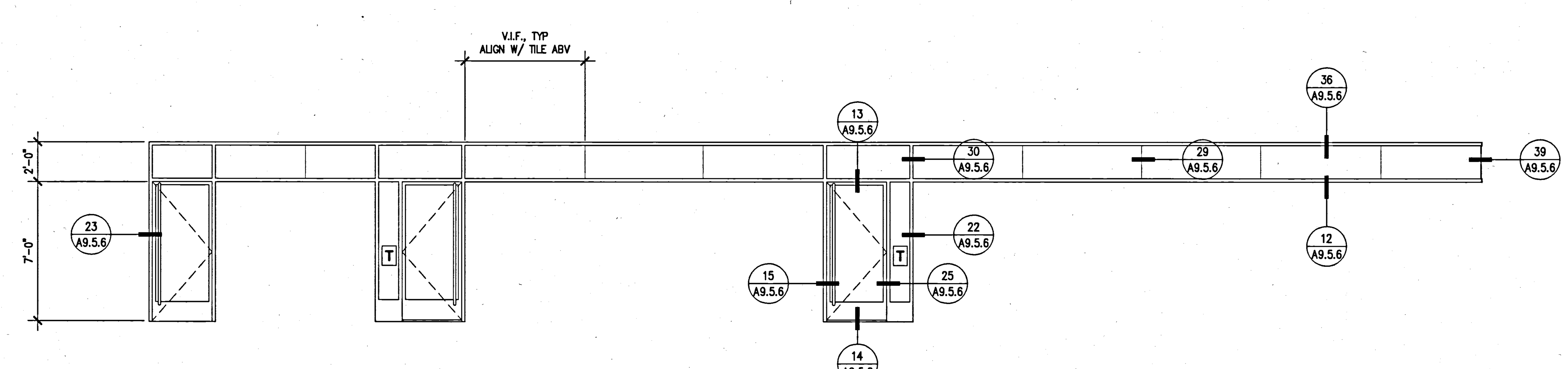
(34) WINDOW TYPE W15
SCALE: 1/4" = 1'-0"

(24) WINDOW TYPE W05
SCALE: 1/4" = 1'-0"

(14) WINDOW TYPE W04
SCALE: 1/4" = 1'-0"







(40) DOOR 101A
SCALE: 1/4" = 1'-0"

(35) WINDOW TYPE W16
SCALE: 1/4" = 1'-0"

(30) WINDOW TYPE W12
SCALE: 1/4" = 1'-0"

Plot Sheet Filename: c:\jobs\3193000\sht\A9501.dwg
XREF Filename(s): UCR_2bk WH-NOTE uc-Wn01
Plot Setup Script: Plot View:
Plot Date: 03/11/02 17:23

KEY NOTES

LEGEND

08800A – VISION GLASS

08800A – GLASS W/ SHADOW BOX

T 08800B – TEMPERED GLASS

SHEET NOTES

1. INTERMEDIATE MULLIONS ARE DIMENSIONED TO CENTER LINE OF MULLION
2. DETAIL BUBBLE REFERENCE SHOW TYPICAL CONDITIONS

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1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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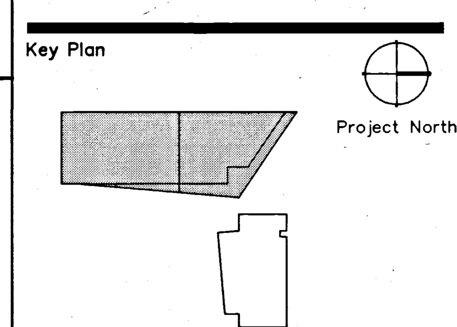
Seals and Signatures

RECORD DRAWINGS

Key Plan



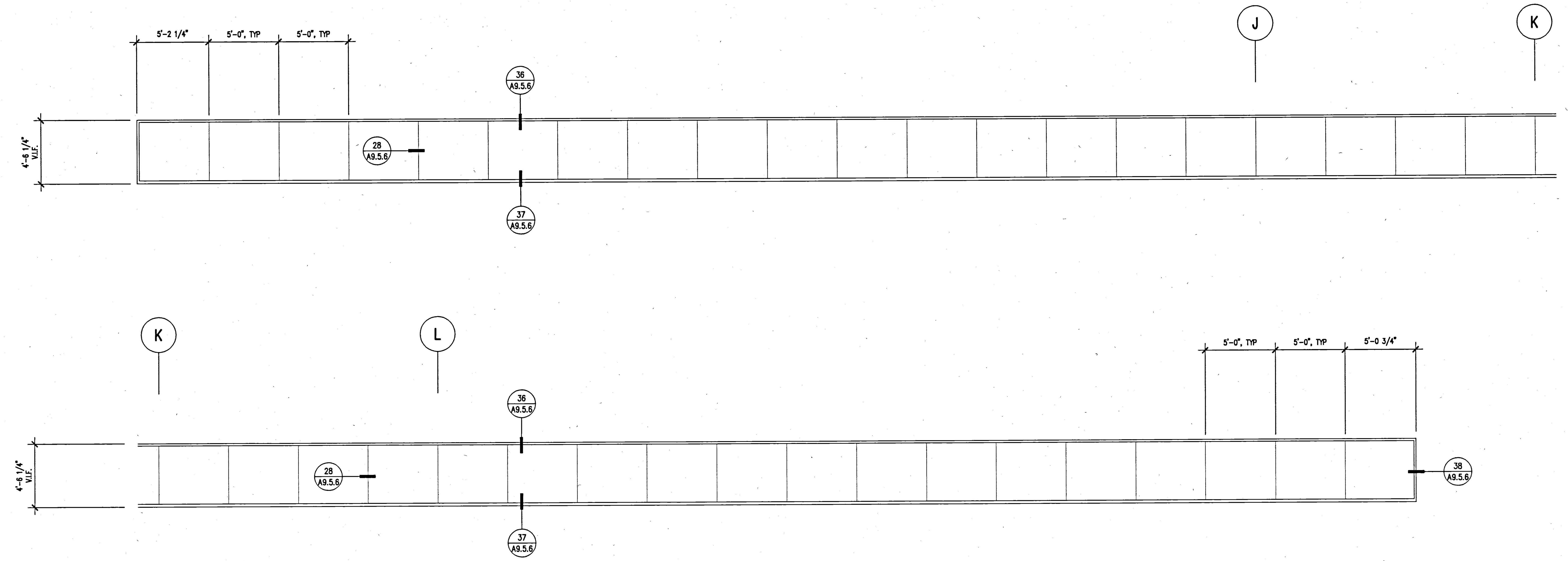
Drawing Title
WINDOW SCHEDULE (SURGE)

Scale: 1/4" = 1'-0"

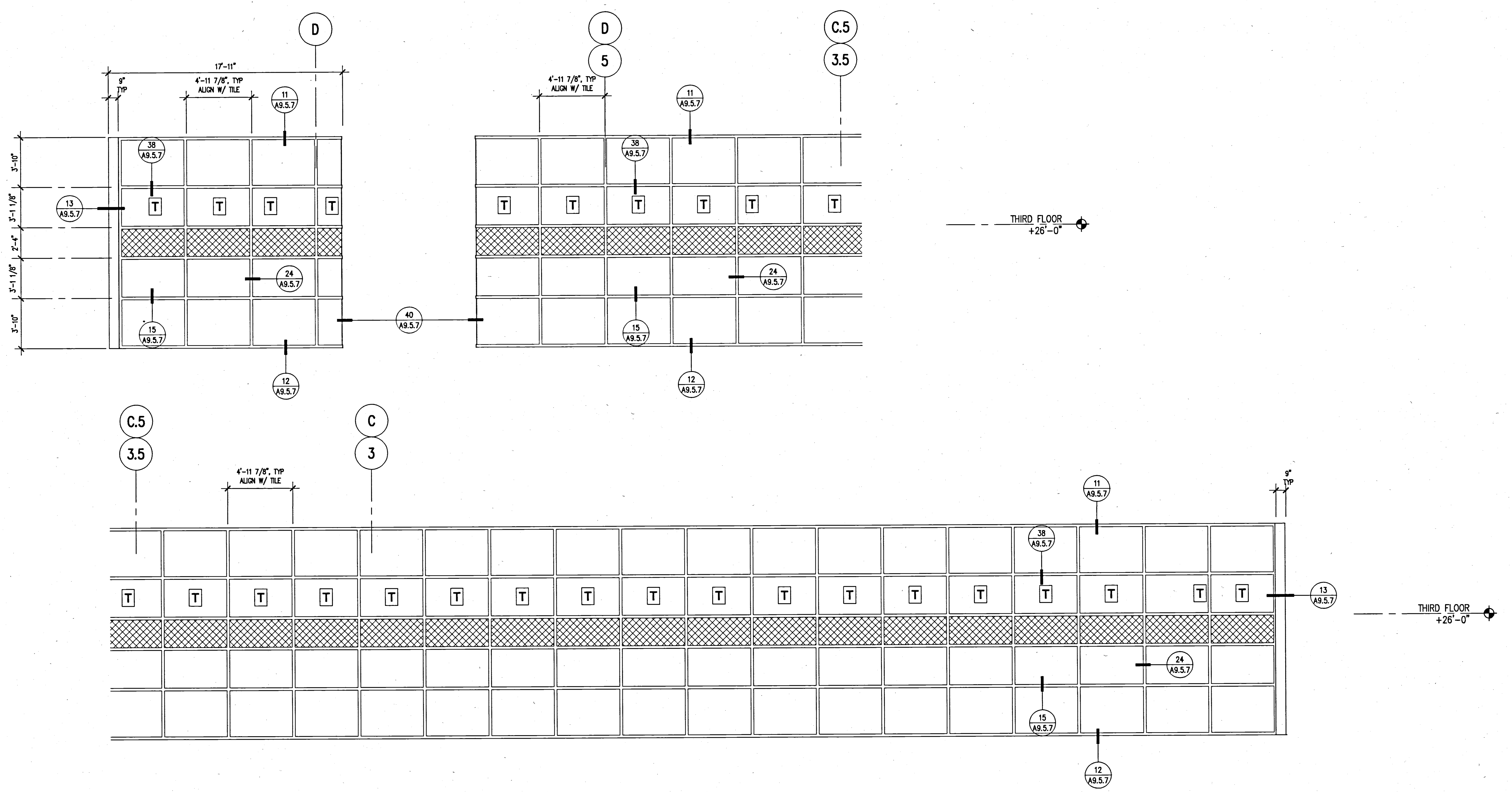
Project Number: 3193000

Baseline Date: 06OCT00

Drawing Number: A9.5.1



(37) WINDOW TYPE W13
SCALE: 1/4" = 1'-0"



(40) WINDOW TYPE W20
SCALE: 1/4" = 1'-0"

KEY NOTES

LEGEND

08800A - VISION GLASS

08800A - GLASS W/ SHADOW BOX

T 08800B - TEMPERED GLASS

SHEET NOTES

1. INTERMEDIATE MULLIONS ARE DIMENSIONED TO CENTER LINE OF MULLION
2. DETAIL BUBBLE REFERENCE SHOW TYPICAL CONDITIONS

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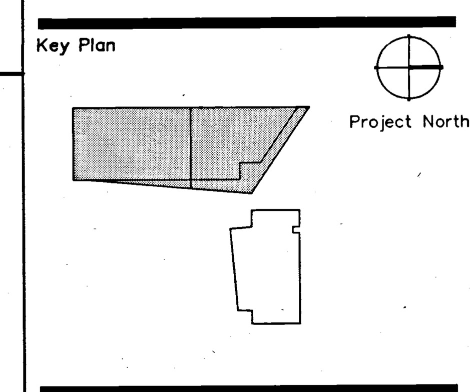
RECORD DRAWINGS

Key Plan



Drawing Title

WINDOW SCHEDULE (SURGE)

1/4" = 1'-0"

Scale

3193000

Project Number

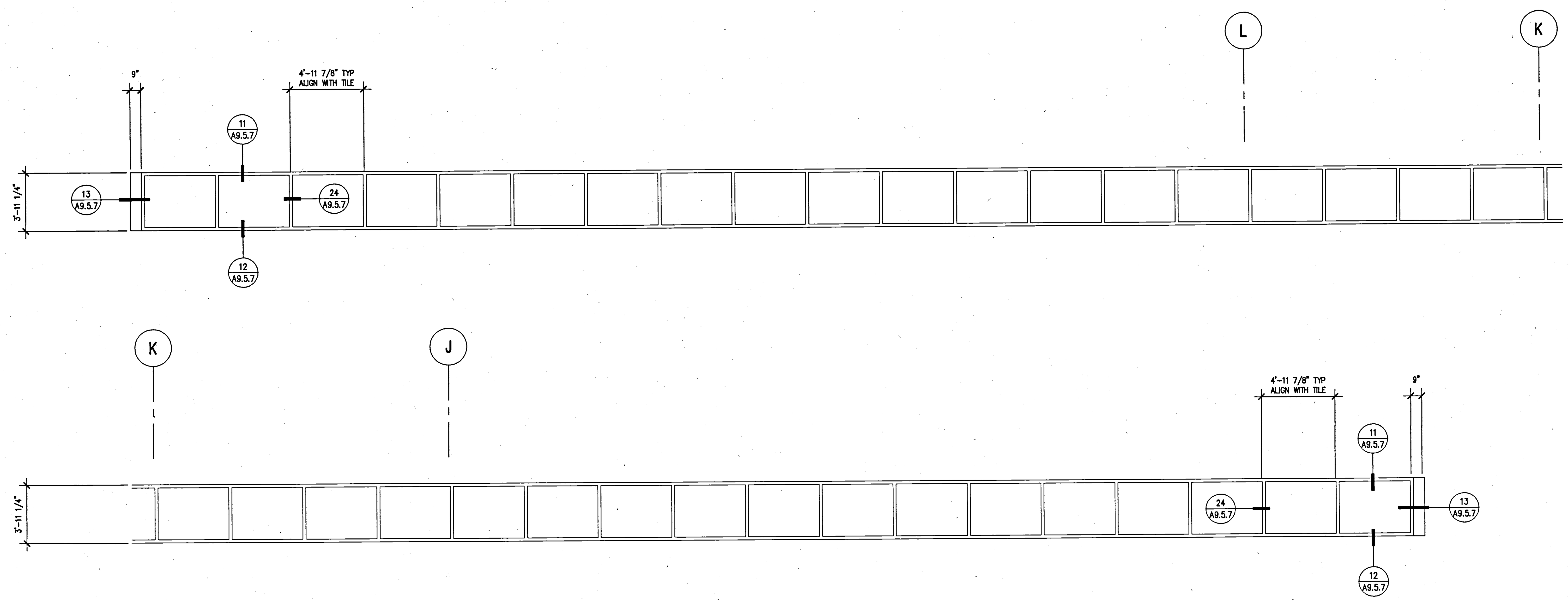
06OCT00

Baseline Date

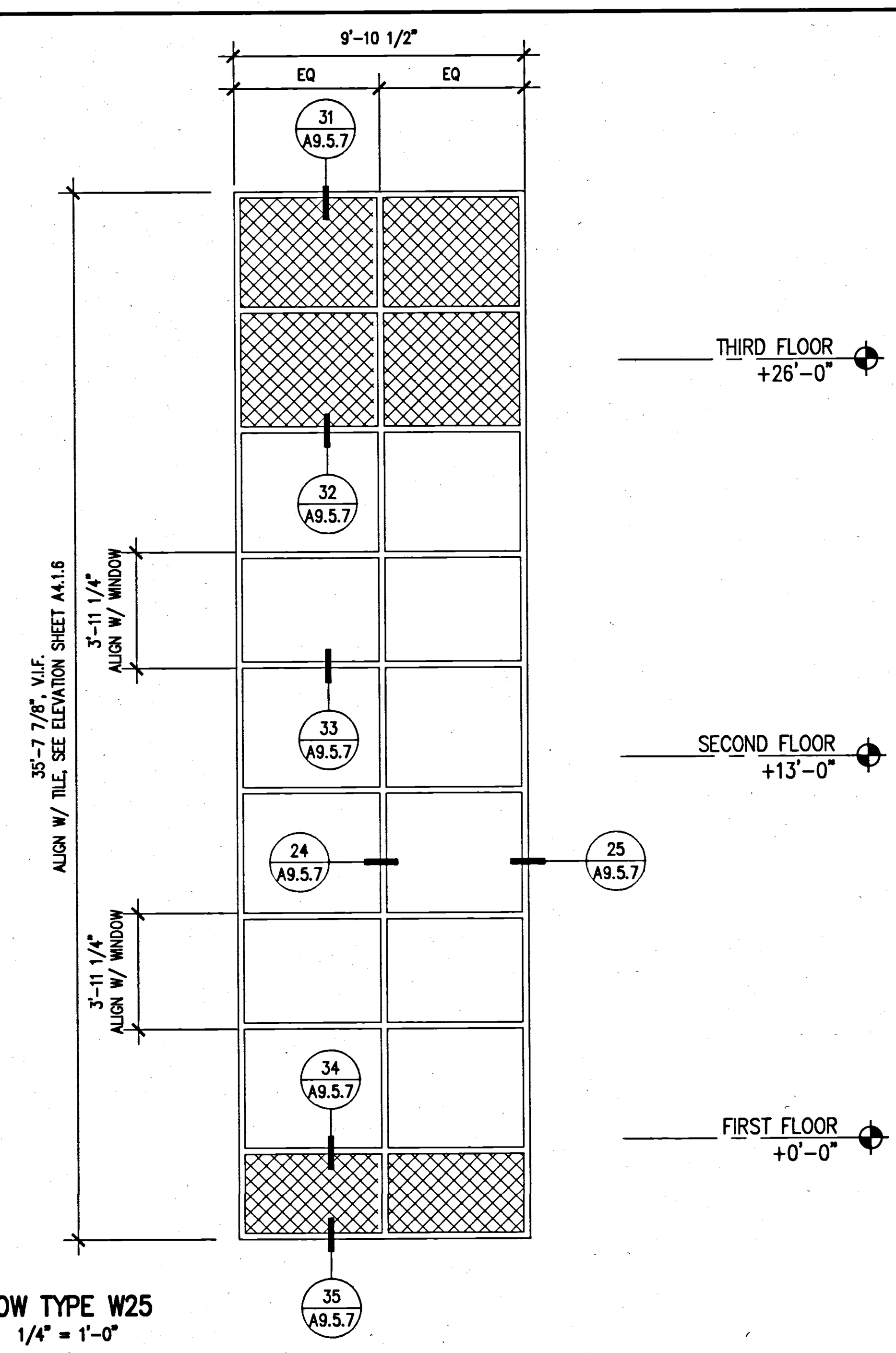
A9.5.2

Drawing Number

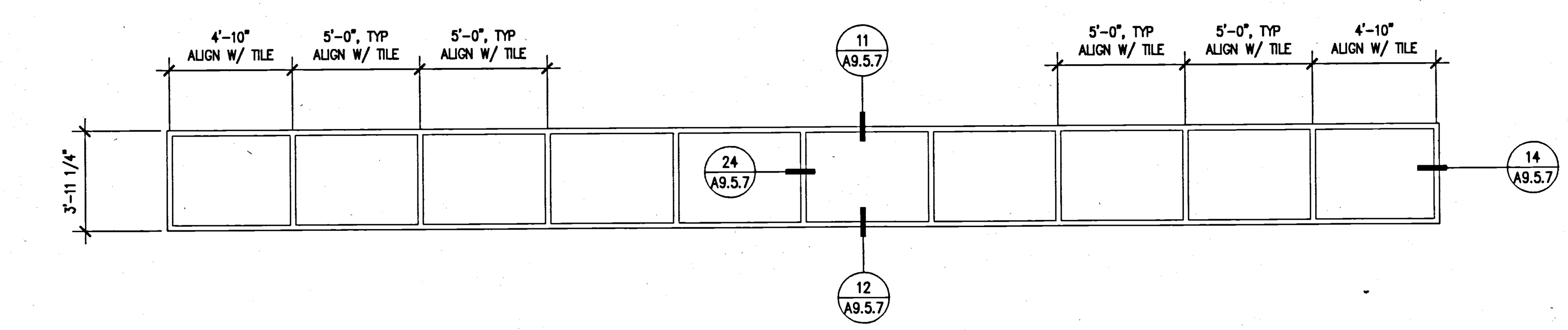
Plot Sheet Filename: I:\JOBS\3193000\SHT\A9502.dwg
XREF Filename(s): UCR_TBk WIN-NOTE uc-WIN01
Plot Setup Script: Plot View:
Plot Date: 03/11/02 17:23



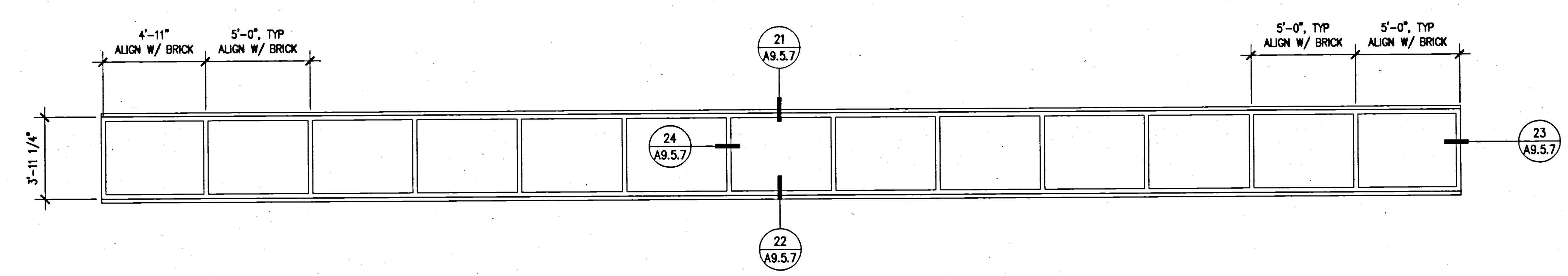
(37) WINDOW TYPE W21 & 22
SCALE: 1/4" = 1'-0"



(39) WINDOW TYPE W25
SCALE: 1/4" = 1'-0"



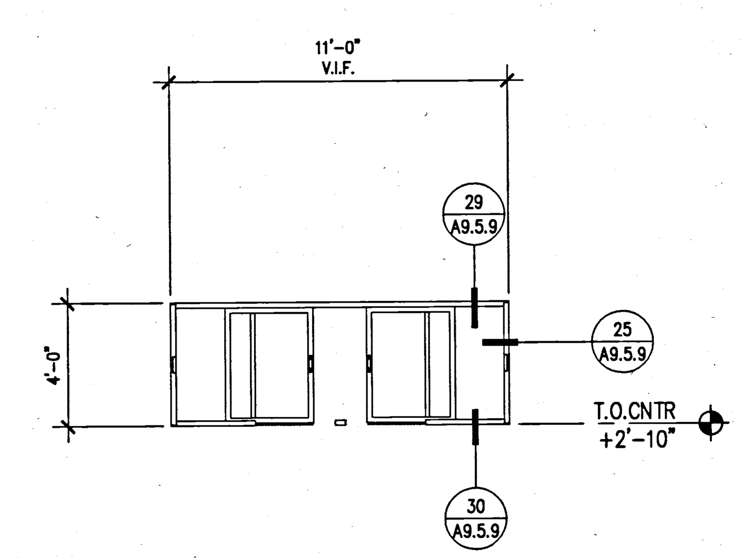
(28) WINDOW TYPE W23 & 24
SCALE: 1/4" = 1'-0"



(29) WINDOW TYPE W28
SCALE: 1/4" = 1'-0"

(40) NOT USED
SCALE: 1/4" = 1'-0"

(30) NOT USED
SCALE: 1/4" = 1'-0"



(15) WINDOW TYPE W30
SCALE: 1/4" = 1'-0"

KEY NOTES

LEGEND

08800A – VISION GLASS

08800A – GLASS W/ SHADOW BOX

T 08800B – TEMPERED GLASS

SHEET NOTES

1. INTERMEDIATE MULLIONS ARE DIMENSIONED TO CENTER LINE OF MULLION
2. DETAIL BUBBLE REFERENCE SHOW TYPICAL CONDITIONS

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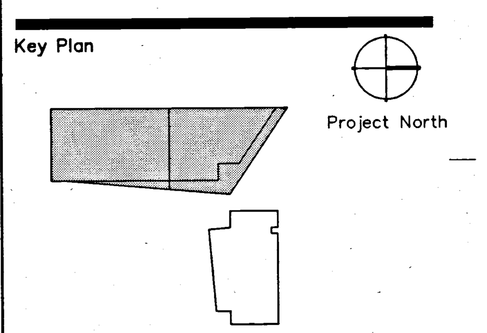
RECORD DRAWINGS

Key Plan



Drawing Title
WINDOW SCHEDULE
(SURGE)

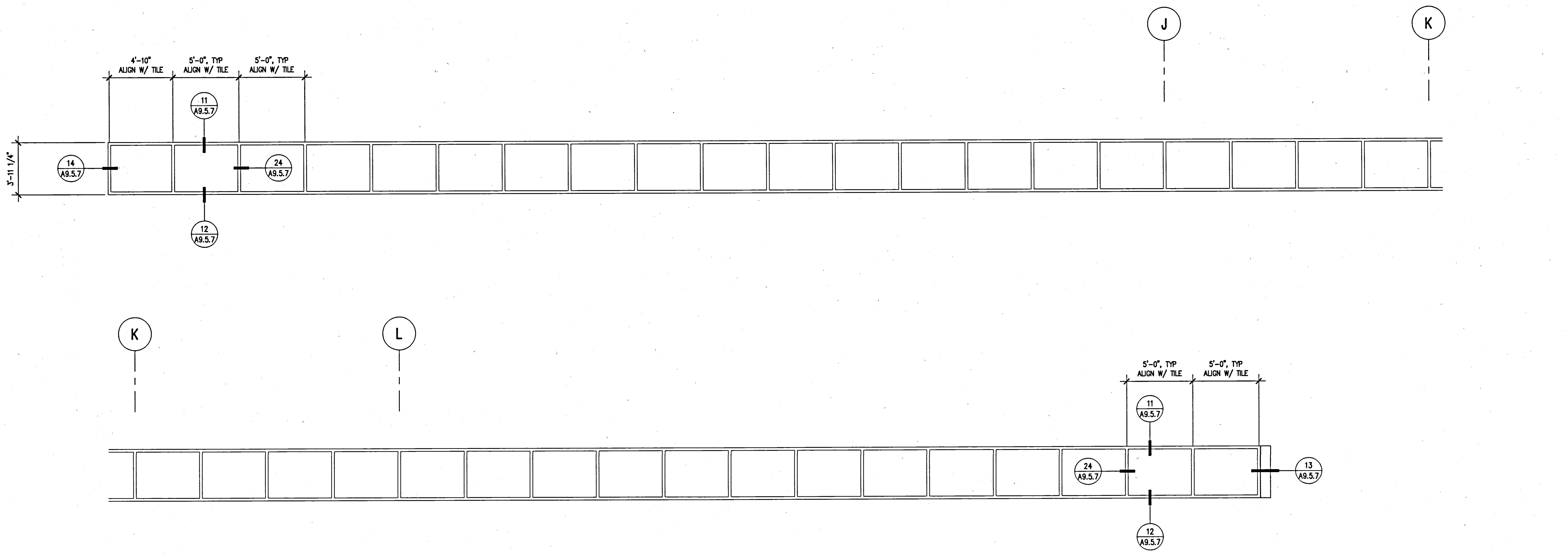
Scale
1/4" = 1'-0"

Project Number
3193000

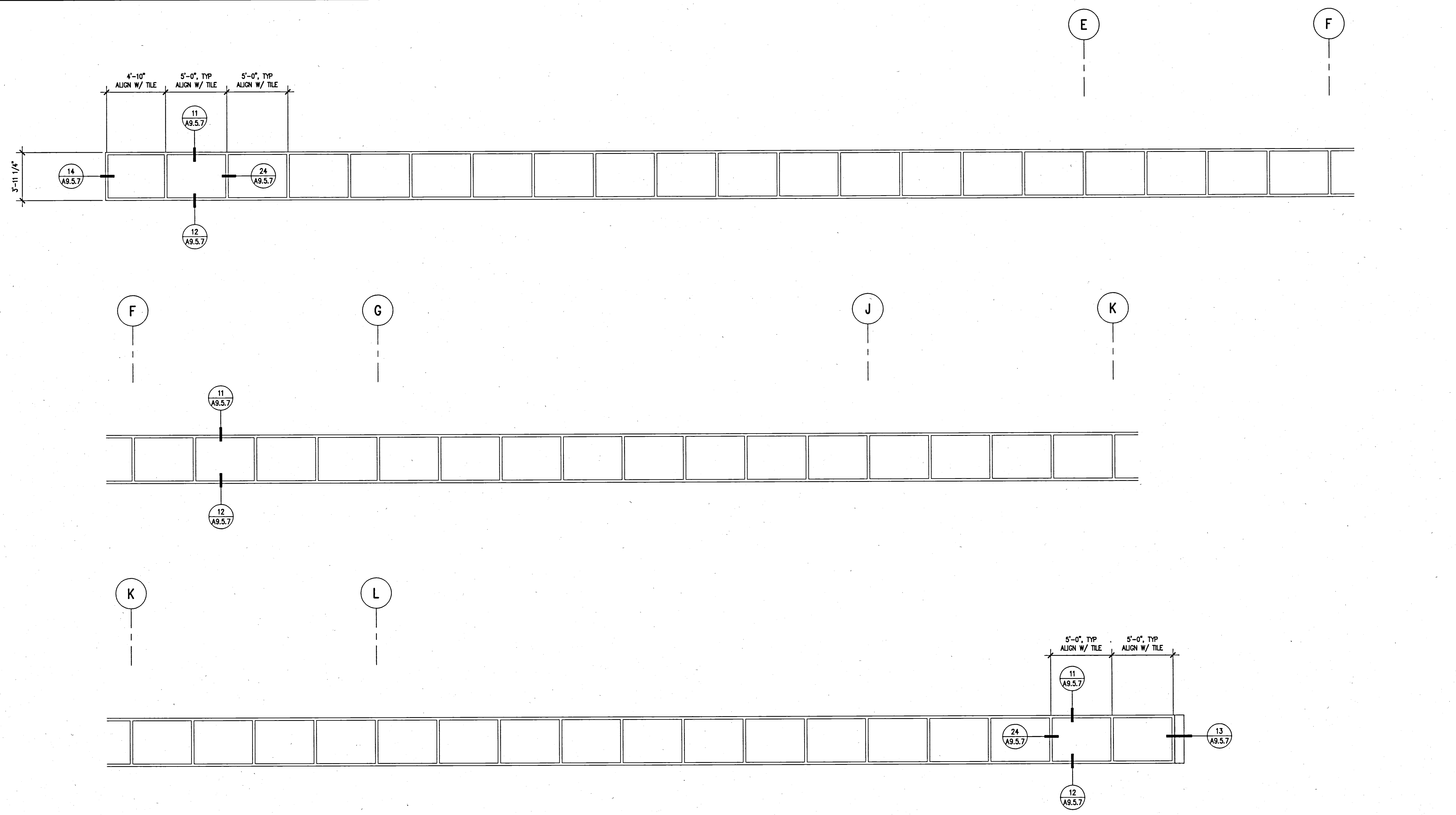
Baseline Date
06OCT00

Drawing Number
A9.5.3

Plot Sheet Filename: I:\JOBS\3193000\SHT\A9503.dwg
XREF Filename(s): UCR_tbk WIN-NOTE ucs-Win01
Plot Setup Script:
Plot Date: 03/11/02 17:24 Plot View:



37 **WINDOW TYPE W26**
SCALE: 1/4" = 1'-0"



40 **WINDOW TYPE W27**
SCALE: 1/4" = 1'-0"

XXXX

Plot Sheet Filename: I:\JOBS\3193000\SHT\A9504.dwg
XREF Filename(s): UCR_Tblk WIN-NOTE uc-Win01
Plot Setup Script:
Plot Date: 03/11/02 17:24 Plot View:

KEY NOTES

LEGEND

[blank rectangle]	08800A – VISION GLASS
[hatched rectangle]	08800A – GLASS W/ SHADOW BOX
T	08800B – TEMPERED GLASS

SHEET NOTES

1. INTERMEDIATE MULLIONS ARE DIMENSIONED TO CENTER LINE OF MULLION
2. DETAIL BUBBLE REFERENCE SHOW TYPICAL CONDITIONS

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Santa Monica, California 90404
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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

WINDOW SCHEDULE (SURGE)

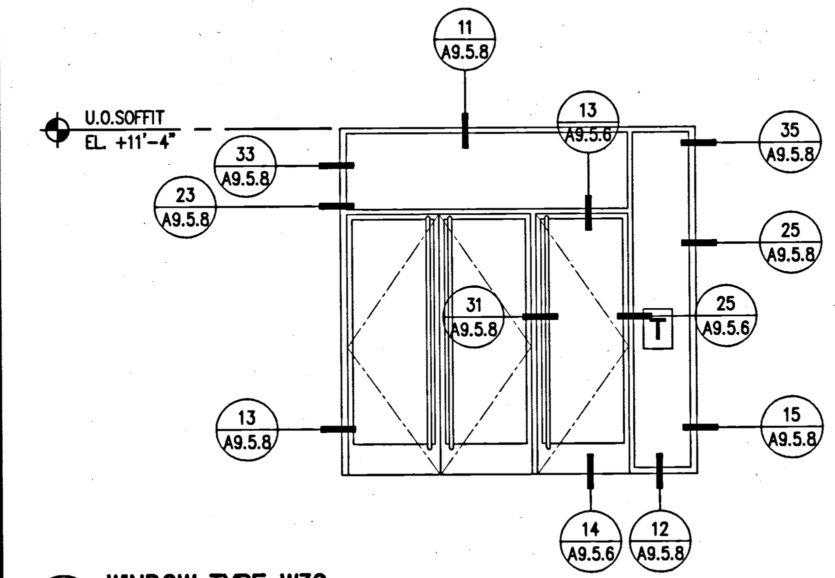
1/4" = 1'-0"
Scale

3193000
Project Number

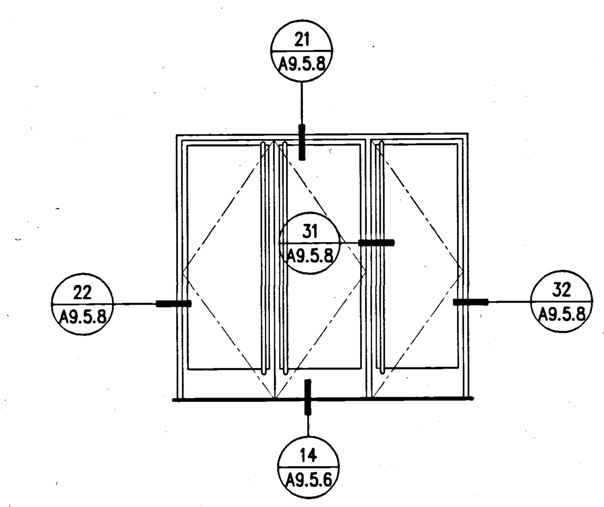
06OCT00
Baseline Date

A9.5.4
Drawing Number

KEY NOTES



(11) WINDOW TYPE W30
SCALE: 1/4" = 1'-0"



(12) STOREFRONT @ AUDITORIUM
SCALE: 1/4" = 1'-0"

(37) NOT USED
SCALE:

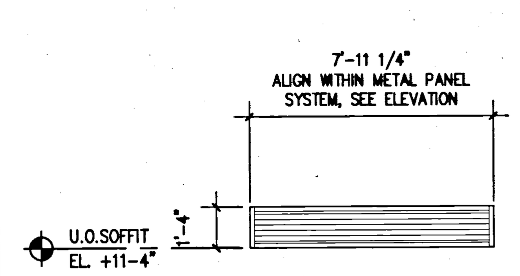
(32) NOT USED
SCALE:

(22) NOT USED
SCALE:

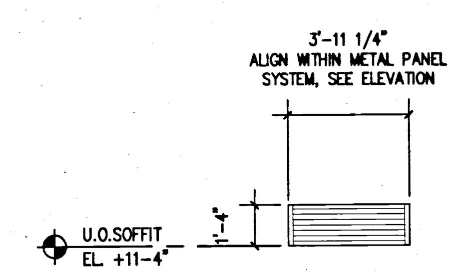
LEGEND

	08800A – VISION GLASS
	08800A – GLASS W/ SHADOW BOX
T	08800B – TEMPERED GLASS

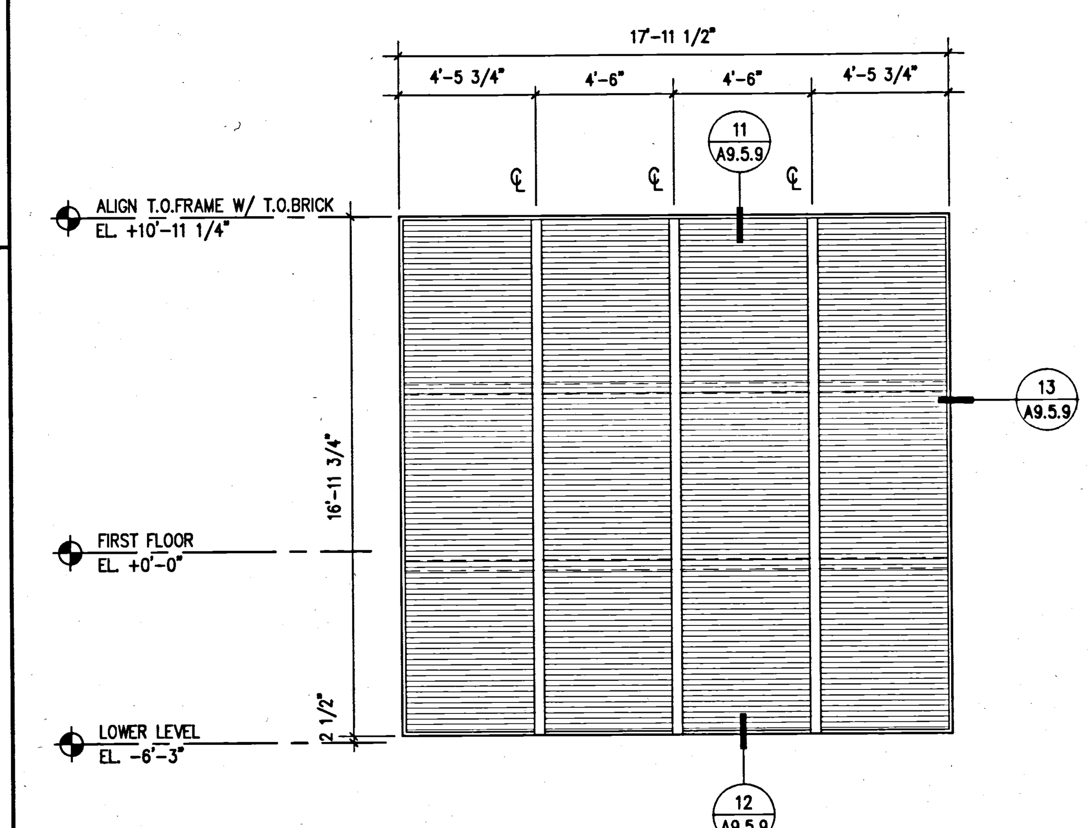
(23) NOT USED
SCALE:



(24) LOUVER TYPE 33
SCALE: 1/4" = 1'-0"



(19) LOUVER TYPE 32
SCALE: 1/4" = 1'-0"



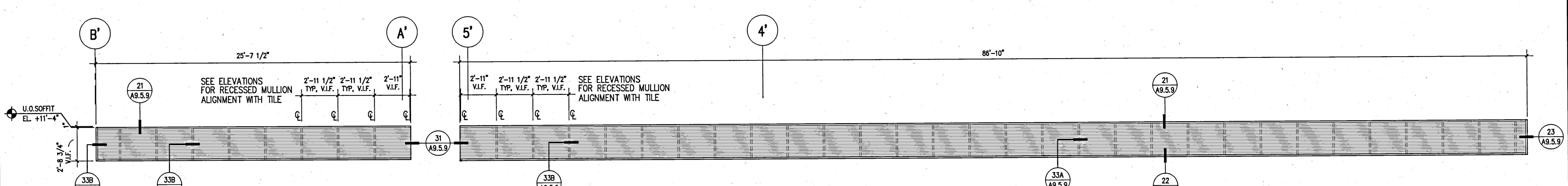
(14) LOUVER TYPE 34
SCALE: 1/4" = 1'-0"

(38) NOT USED
SCALE:

(34) NOT USED
SCALE:

SHEET NOTES

1. INTERMEDIATE MULLIONS ARE DIMENSIONED TO CENTER LINE OF MULLION
2. DETAIL BUBBLE REFERENCE SHOW TYPICAL CONDITIONS



(40) LOUVER TYPE W35
SCALE: 1/4" = 1'-0"

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XREF Filename(s): UCR_tblk WIN-NOTE uc-win31
Plot Setup Script: Plot View:
Plot Date: 03/11/02 17:24

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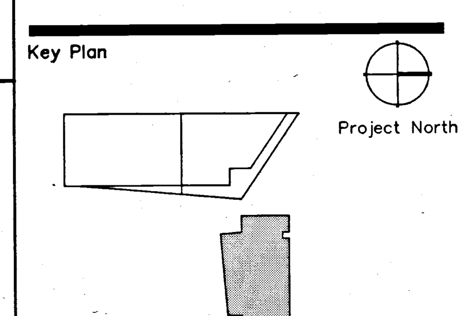
RECORD DRAWINGS

Key Plan



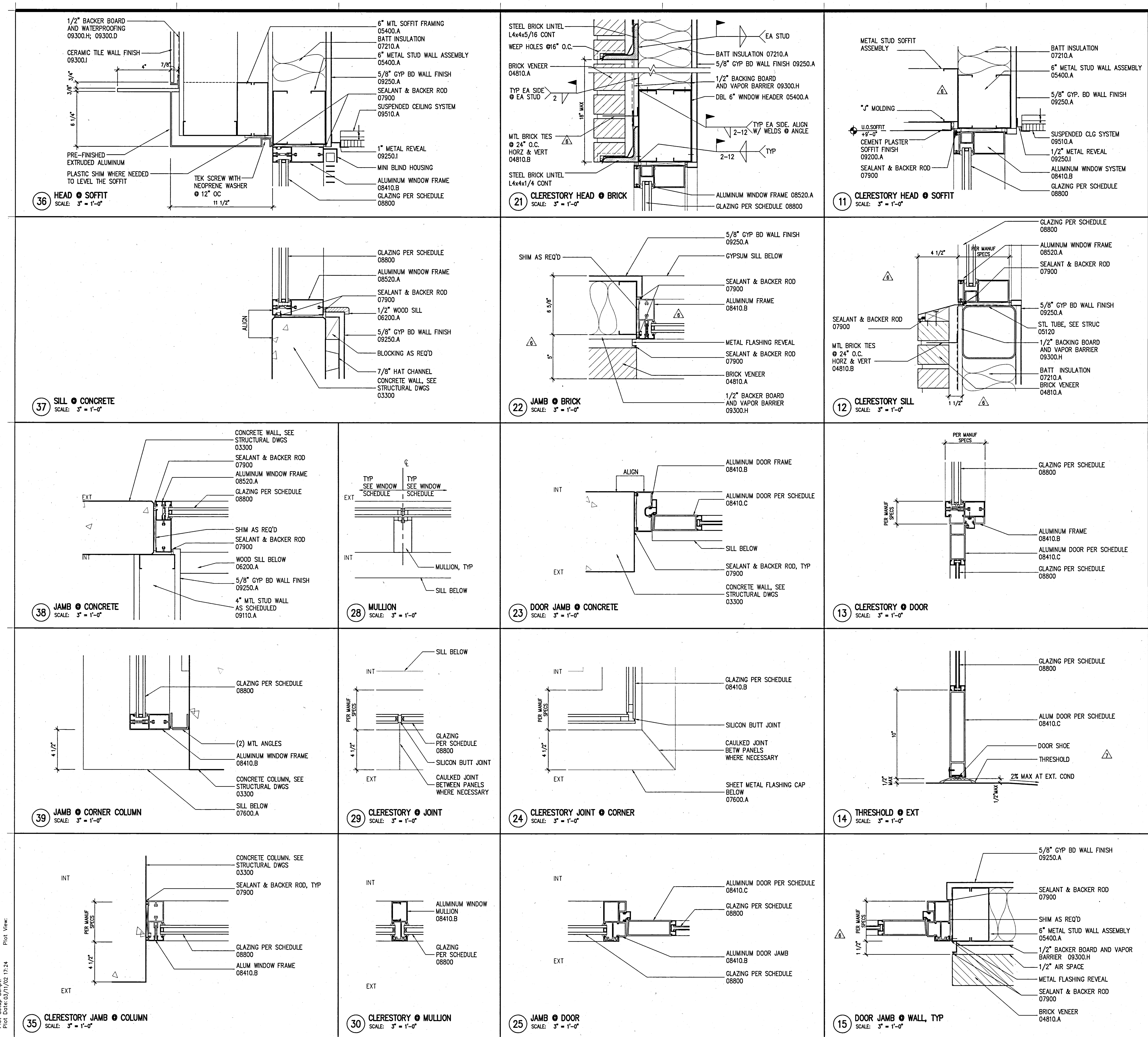
Drawing Title
WINDOW SCHEDULE
(AUDITORIUM)

1/4" = 1'-0"
Scale

3193000
Project Number

06OCT00
Baseline Date

A9.5.5
Drawing Number



KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

GENERAL NOTES

1. SEE STRUCTURAL DWGS. FOR TOP OF STEEL (TOS) ELEVATIONS.
2. TYPICAL CONDITIONS APPLY AT ALL DETAILS.
3. CALL-OUTS SHOWN ON ONE DETAIL SHALL APPLY TO ALL WHERE SAME CONDITIONS EXIST, U.O.N.
4. CASE WORK (N.I.C.). ALL BUILT IN CASE WORK PROVIDING WORK STATIONS ARE TO BE SUBMITTED TO DSA PRIOR TO FABRICATION. 5% MIN. TO BE PROVIDED SHALL BE ACCESSIBLE.
5. 5 % OF ALL FURNITURE PROVIDED SHALL BE ACCESSIBLE.
6. PROVIDE STAIR SIGNAGE AT BOTH SIDES OF DOORS 133A; 103A; 240A; 203A; 338A & 303A AS PER SEC. 1117B.5.2. THE INFORMATION SHALL BE PRESENTED USING RAISED ARABIC NUMERALS AND RAISED BRAILLE SYMBOLS. THE SIGN SHALL BE LOCATED 5 FT. A.F.F.. THE SIGN SHALL BE LOCATED IMMEDIATELY ADJACENT TO THE DOOR ON THE STRIKE SIDE. (SEC. 1133B.4.3.).
7. PROVIDE PORTABLE ASSISTIVE LISTENING DEVICES IN ALL CONFERENCE AND MEETING ROOMS WHERE REQUIRED – MINIMUM NUMBER SHALL BE EQUAL TO 4% OF SEATING BUT NOT LESS THAN 2

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

WINDOW DETAILS

SCALE AS SHOWN

Scale
3193000
Project Number
06OCT00
Baseline Date

A9.5.6

Drawing Number

Plot Sheet Filename: I:\JOBS\3193000\SHT\A9506.dwg
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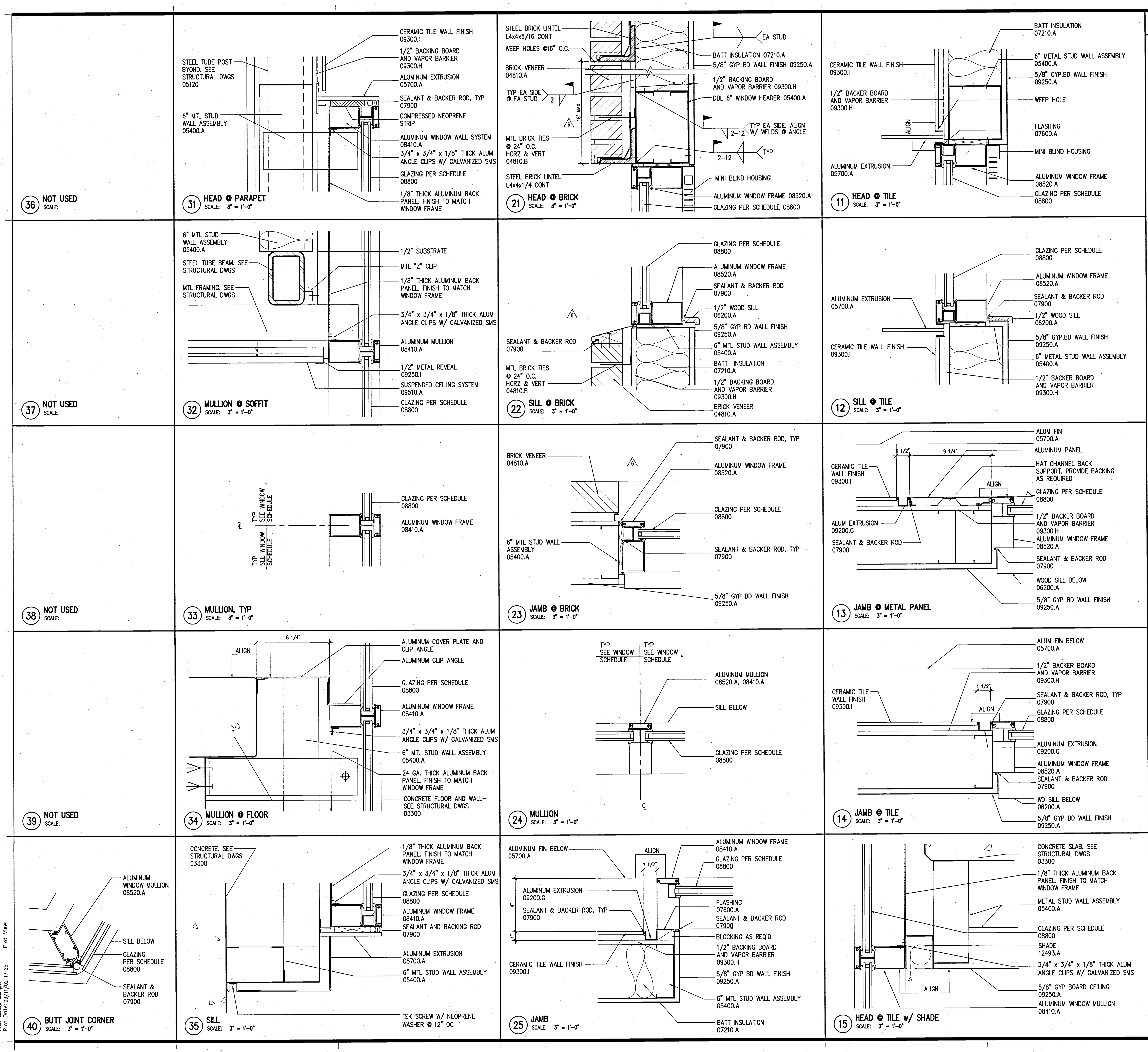
Plot Setup Script: Plot View:
Plot Date: 03/11/02 17:24



KEYED NOTES

03300 – CAST IN PLACE CONCRETE
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05120 – STRUCTURAL STEEL
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05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

GENERAL NOTES

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title
WINDOW DETAILS

SCALE AS SHOWN
Scale
3193000
Project Number
06OCT00
Baseline Date
A9.5.7
Drawing Number

Plot Sheet Filename: I:\JOBS\3193000\SHT\A9507.dwg
XREF Filename(s): UCR_Tbk uc-WinDtl keynotes
Plot Setup Script: Plot View:
Plot Date: 03/11/02 17:25

(36) NOT USED
SCALE:

(37) NOT USED
SCALE:

(38) NOT USED
SCALE:

(39) NOT USED
SCALE:

(40) NOT USED
SCALE:

Plot Sheet Filename: I:\JOBS\3193000\SHT\A9508.dwg
XREF Filename(s): UCR_Tblk uc-WinDtl keynotes
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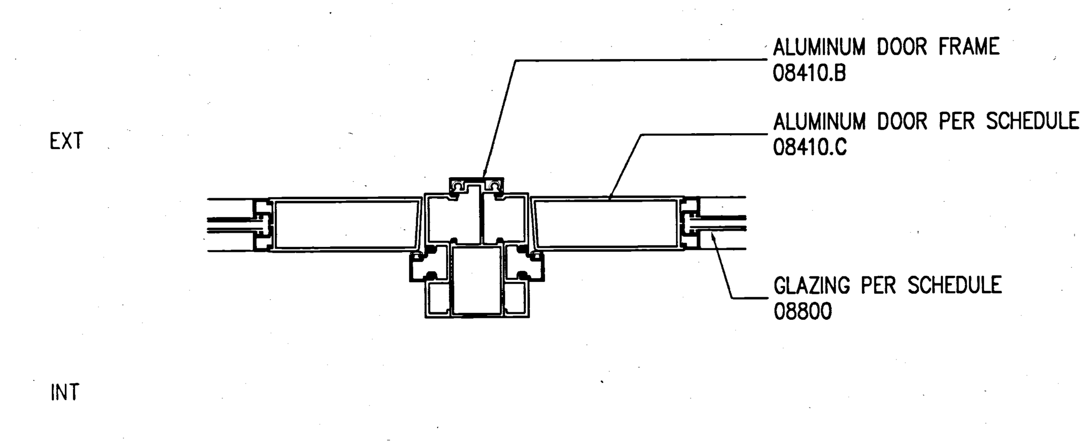

(31) DOOR JAMB @ DOOR
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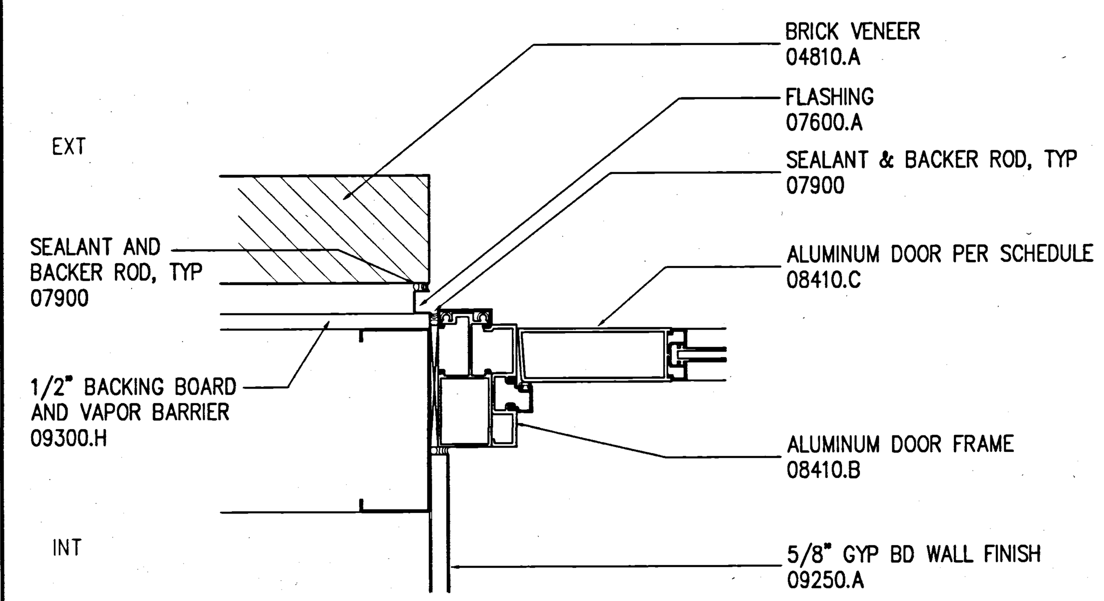

(32) DOOR JAMB @ BRICK
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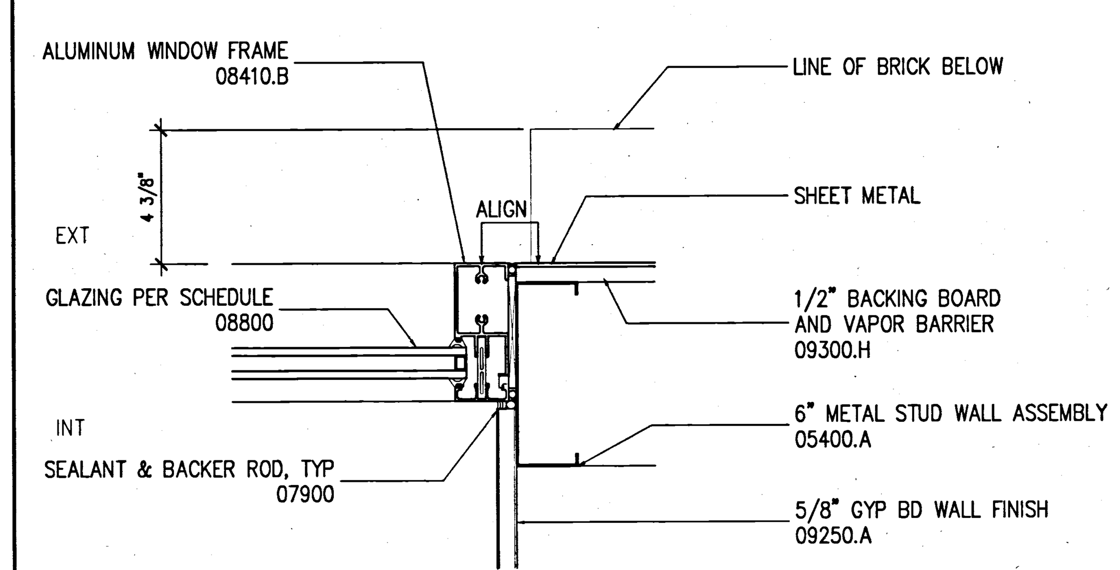

(33) JAMB @ METAL FLASHING
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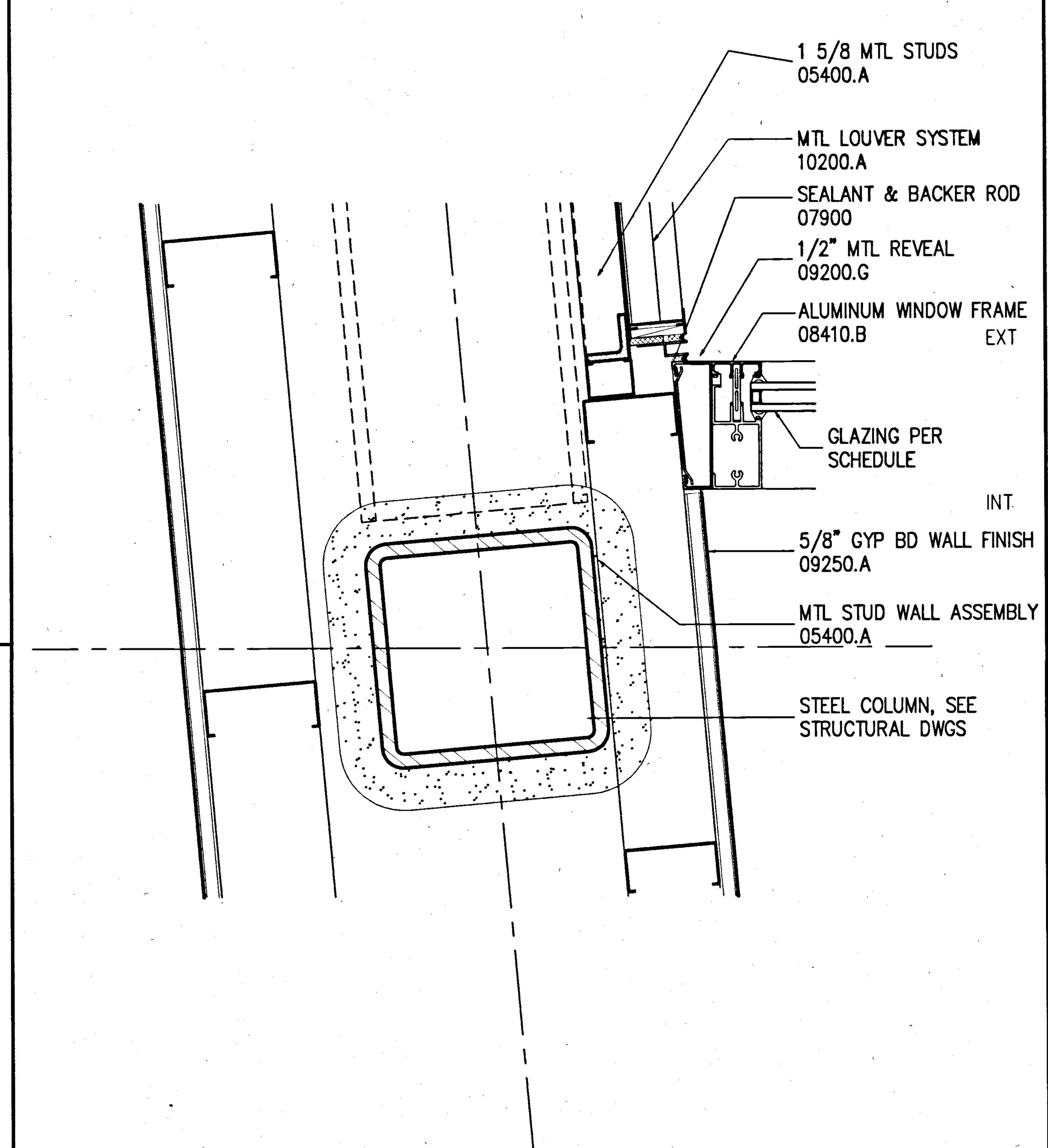

(35) JAMB @ LOUVER
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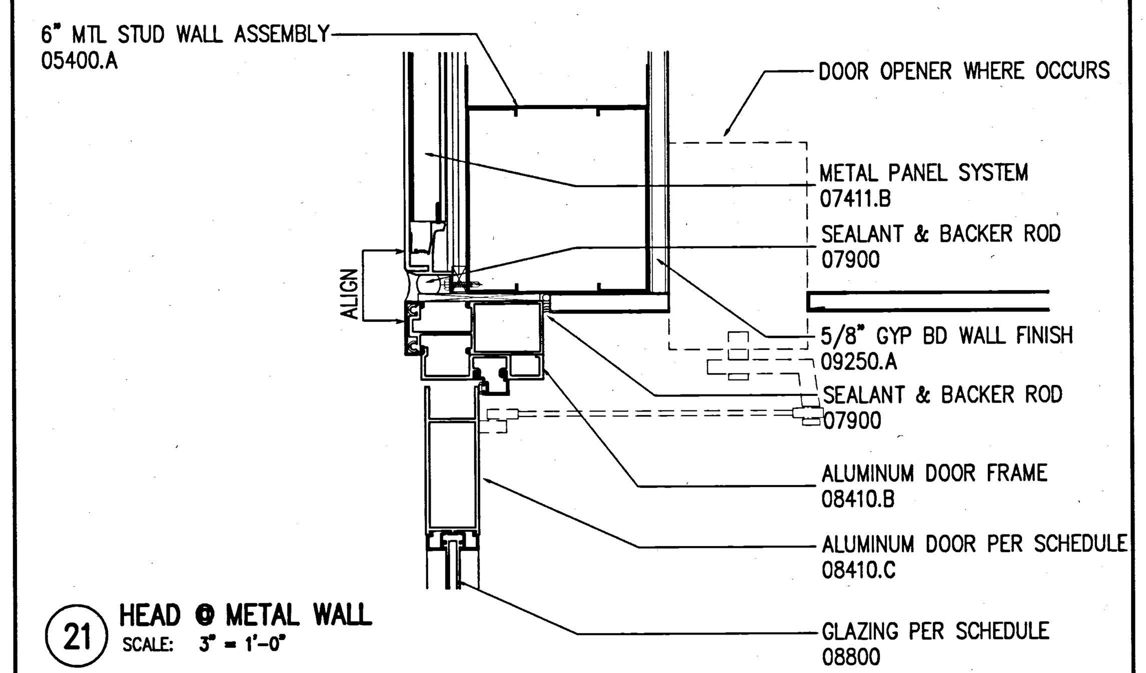

(21) HEAD @ METAL WALL
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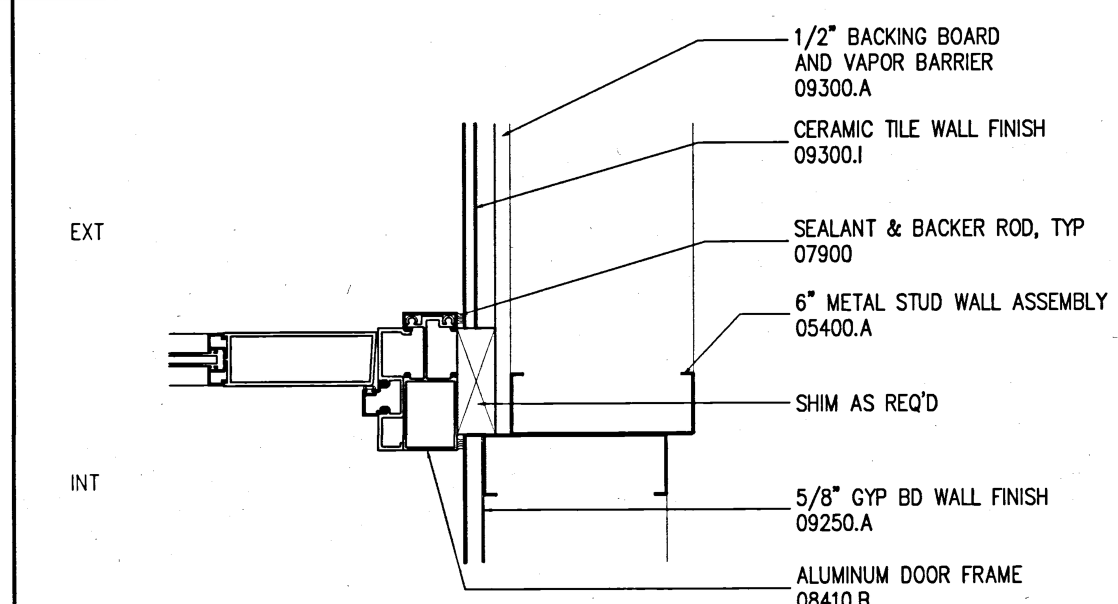

(22) DOOR JAMB @ TILE
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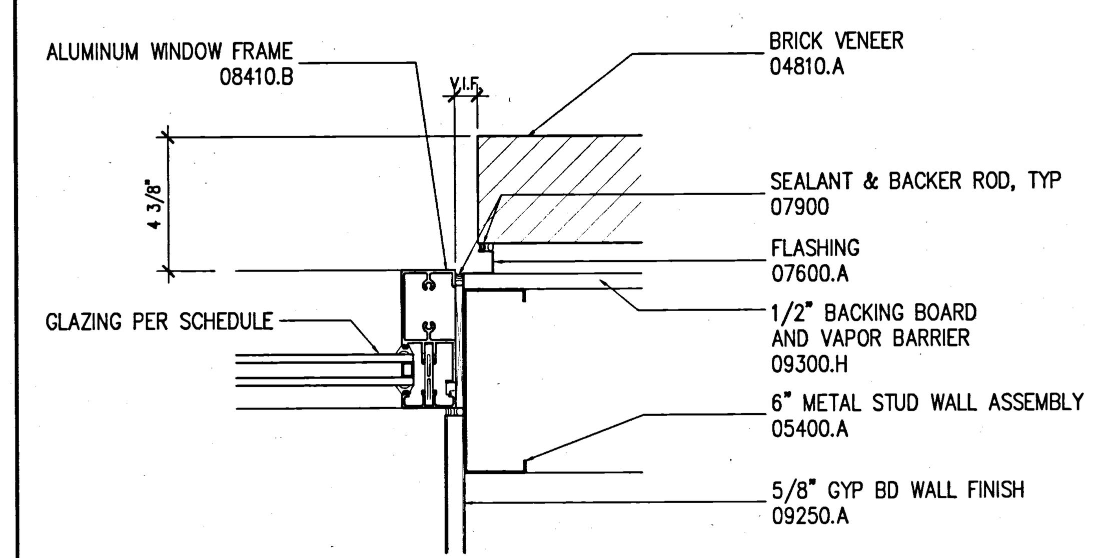

(23) JAMB @ BRICK
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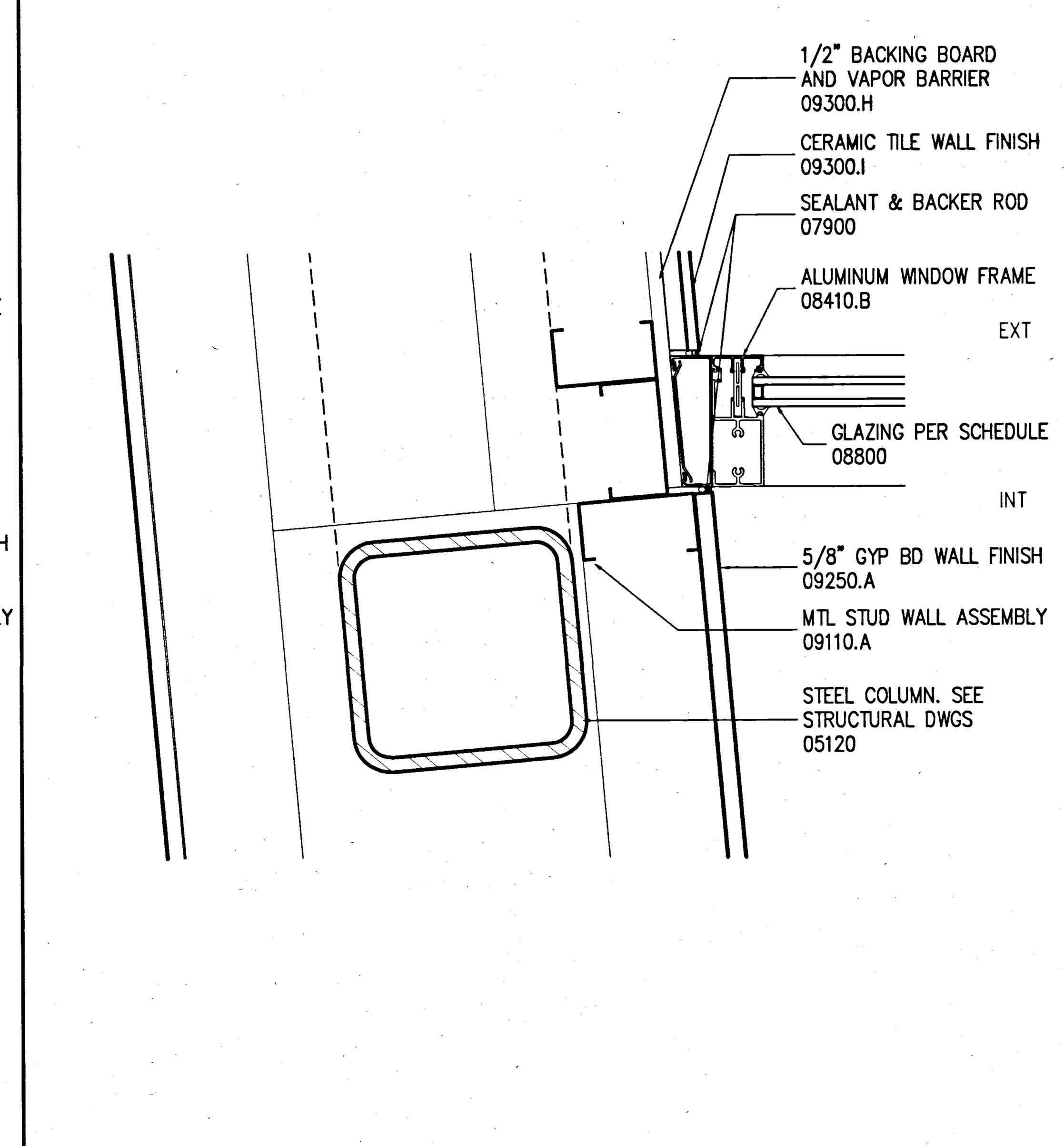

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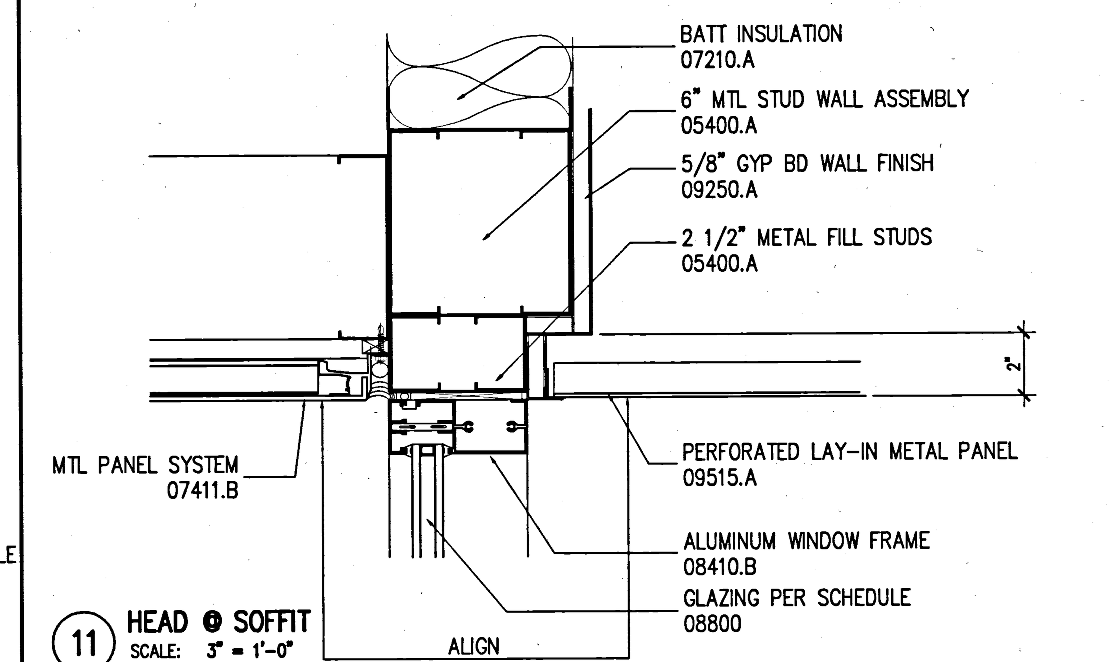

(11) HEAD @ SOFFIT
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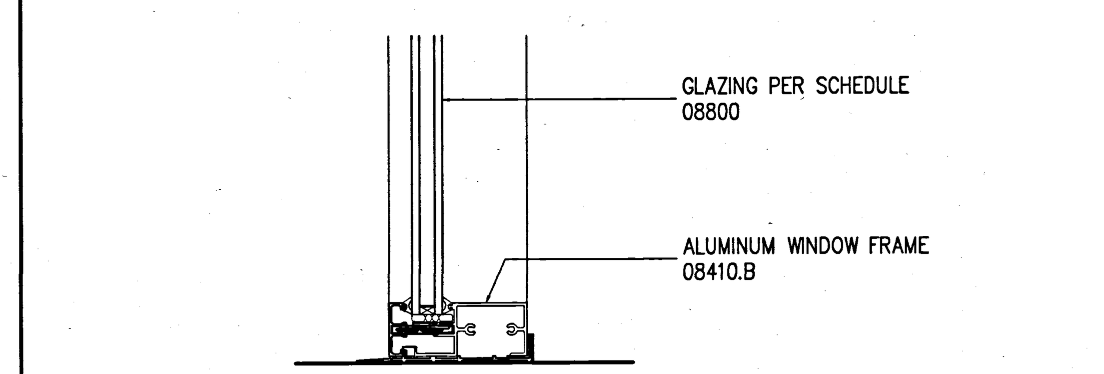

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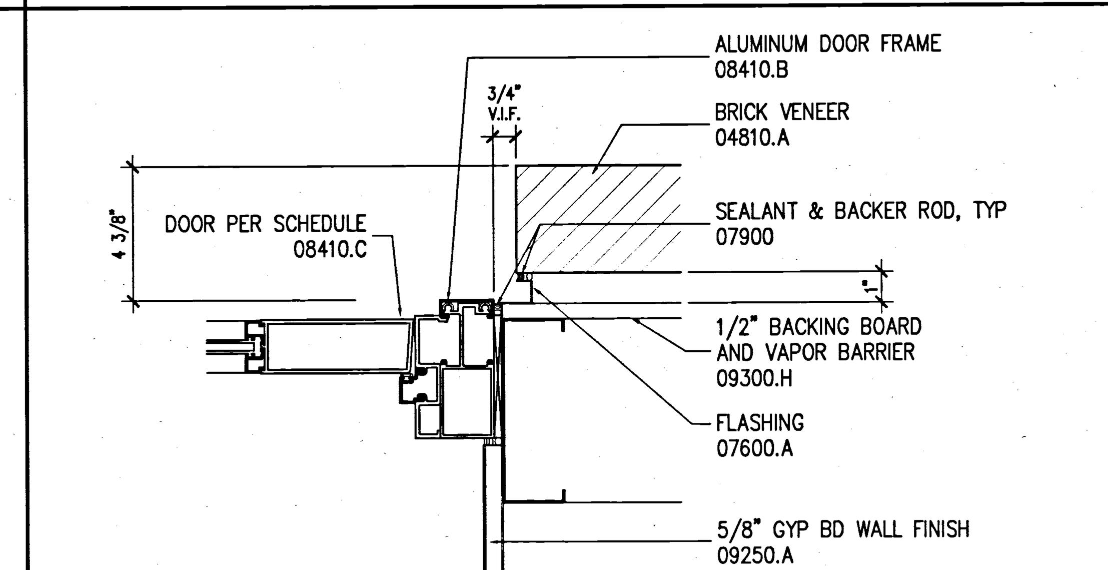

(13) DR JAMB @ BRICK
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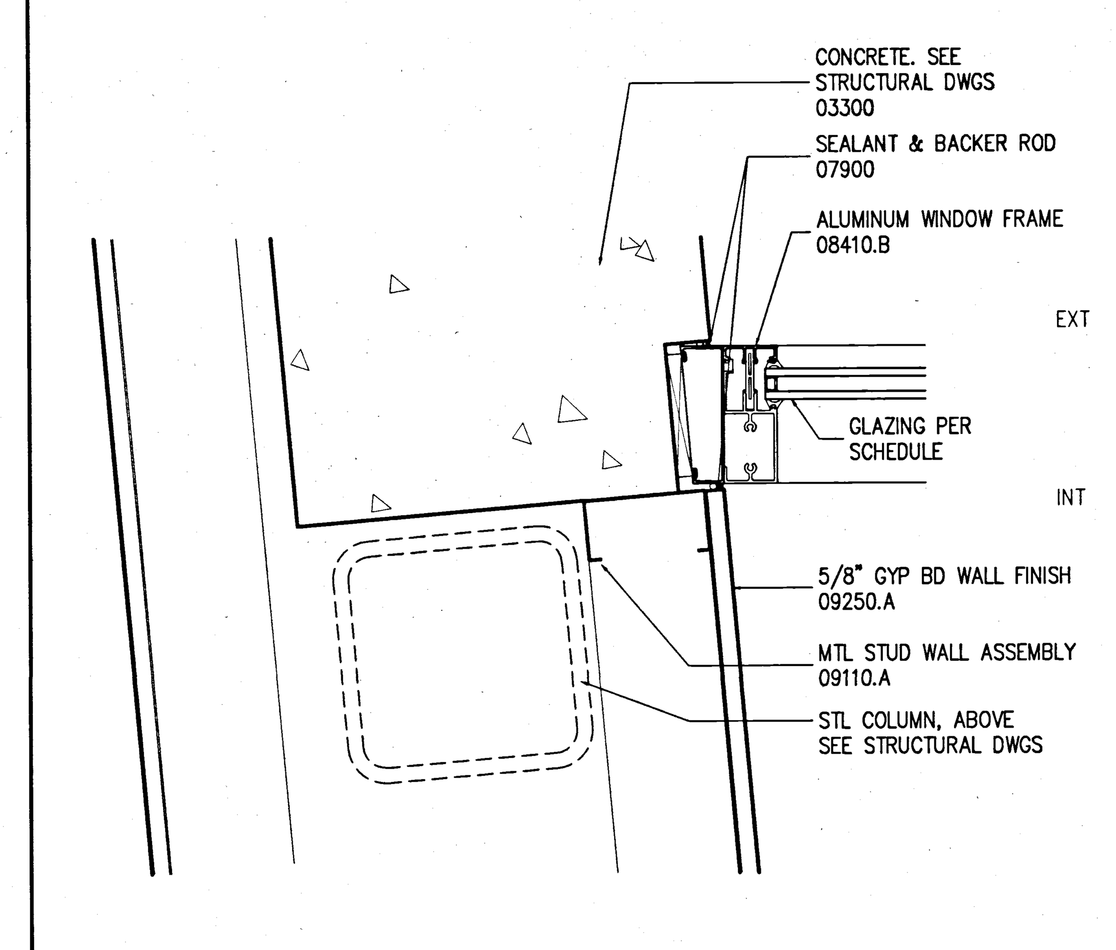

(15) JAMB @ CONCRETE
SCALE: 3" = 1'-0"

KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

GENERAL NOTES

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ALL BUILT IN CASE WORK PROVIDING WORK STATIONS ARE TO BE SUBMITTED TO DSA PRIOR TO FABRICATION. 5% MIN. TO BE PROVIDED SHALL BE ACCESSIBLE.
5. 5 % OF ALL FURNITURE PROVIDED SHALL BE ACCESSIBLE.
6. PROVIDE STAIR SIGNAGE AT BOTH SIDES OF DOORS 133A; 103A; 240A; 203A; 338A & 303A AS PER SEC. 1117B.5.2. THE INFORMATION SHALL BE PRESENTED USING RAISED ARABIC NUMERALS AND RAISED BRAILLE SYMBOLS. THE SIGN SHALL BE LOCATED 5 FT. A.F.F.. THE SIGN SHALL BE LOCATED INMEDIATELY ADJACENT TO THE DOOR ON THE STRIKE SIDE. (SEC. 1133B.4.3.).
7. PROVIDE PORTABLE ASSISTIVE LISTENING DEVICES IN ALL CONFERENCE AND MEETING ROOMS WHERE REQUIRED – MINIMUM NUMBER SHALL BE EQUAL TO 4% OF SEATING BUT NOT LESS THAN 2

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for	Rev	Date

Seals and Signatures

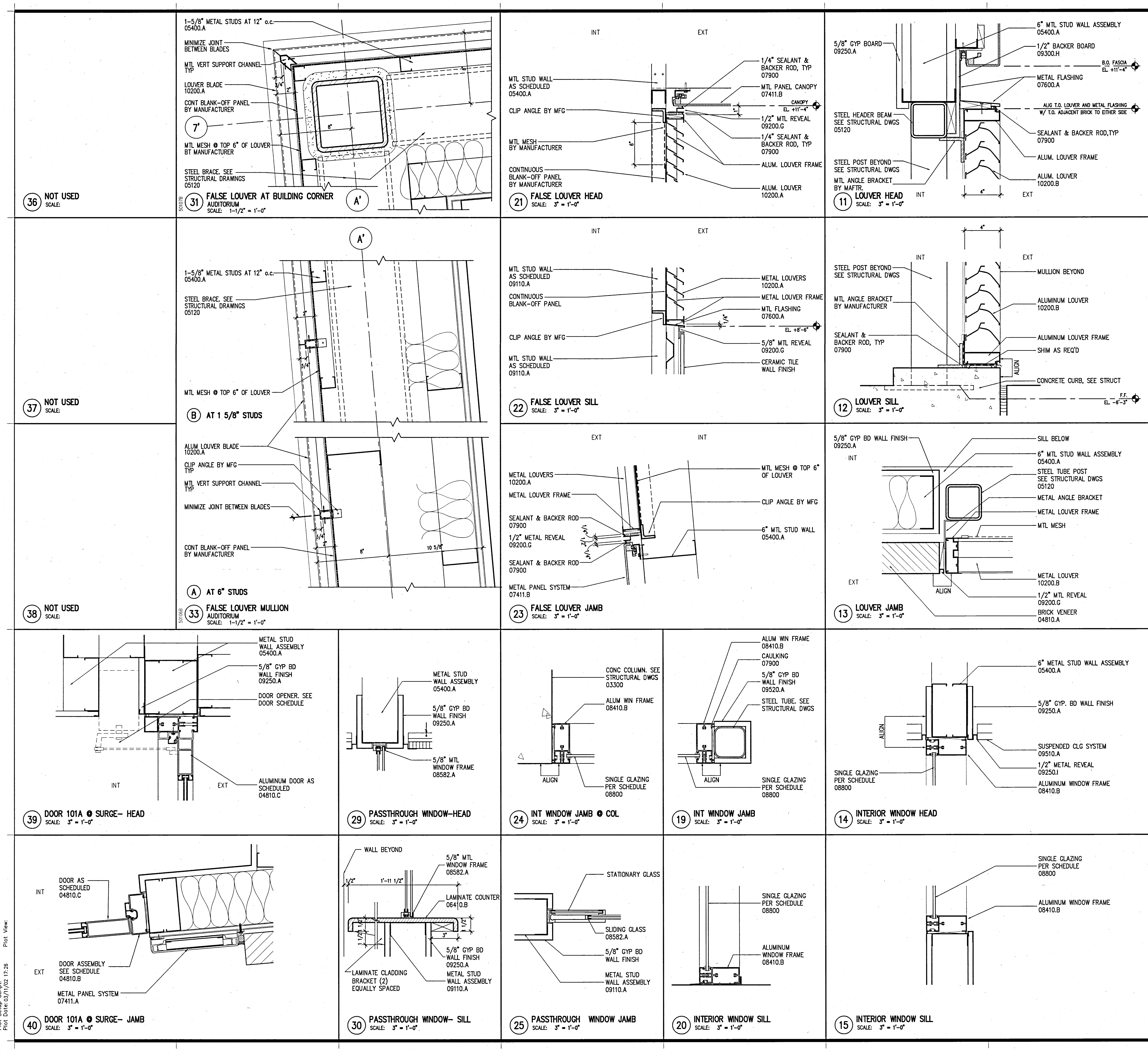
RECORD DRAWINGS

Key Plan

Project North

Drawing Title
WINDOW DETAILS

SCALE AS SHOWN
Scale
3193000
Project Number
060CT00
Baseline Date
A9.5.8
Drawing Number



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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title
WINDOW DETAILS

SCALE AS SHOWN

Scale
3193000

Project Number
06OCT00

Baseline Date

A9.5.9

Drawing Number

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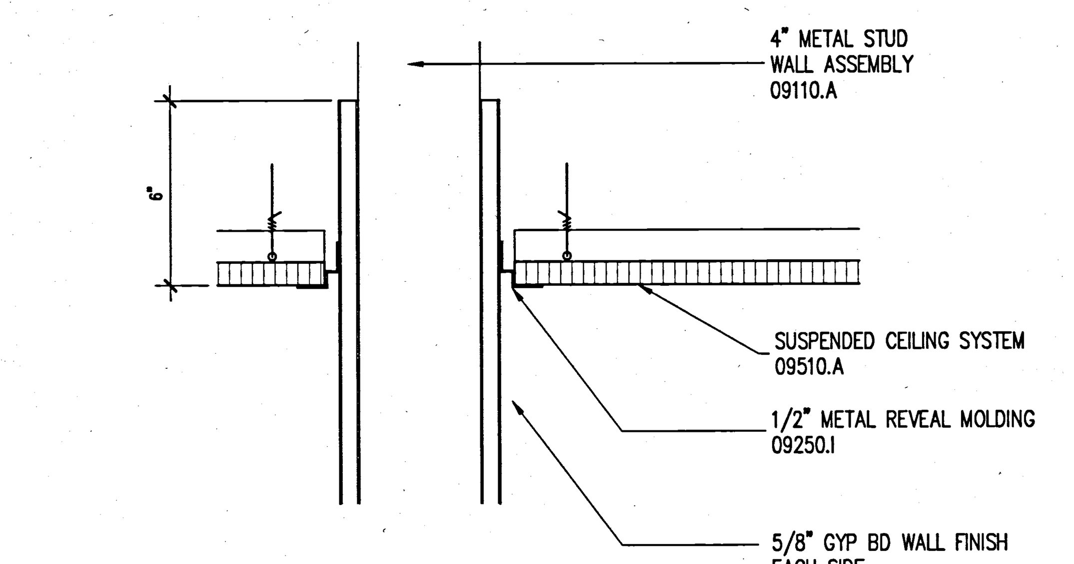

36 **TYP CEILING DTL @ INTERIOR WALL**
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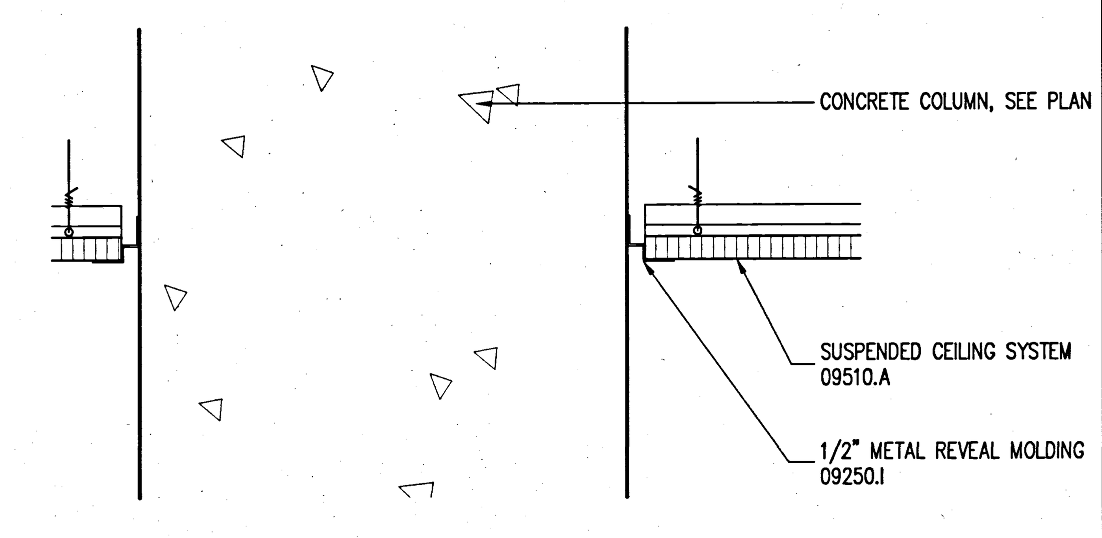

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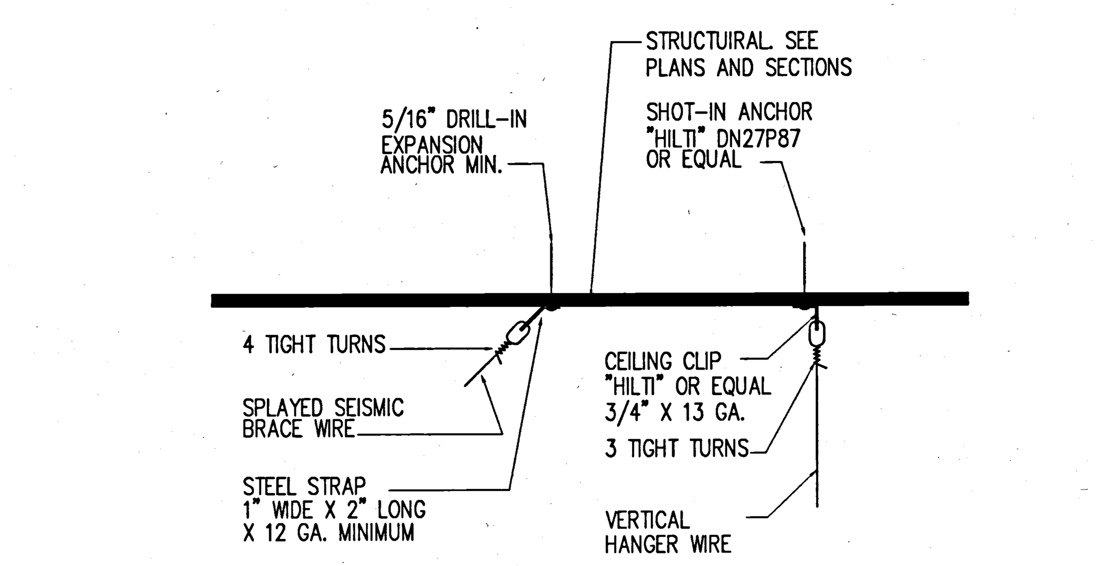

38 **HANGER WIRE CONNECTION**
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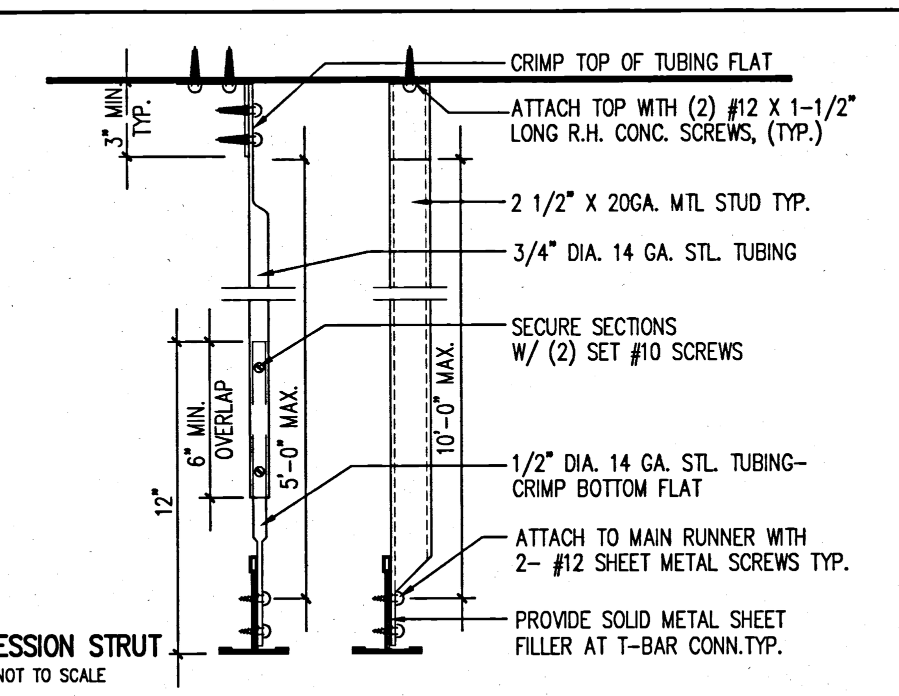

39 **COMPRESSION STRUT**
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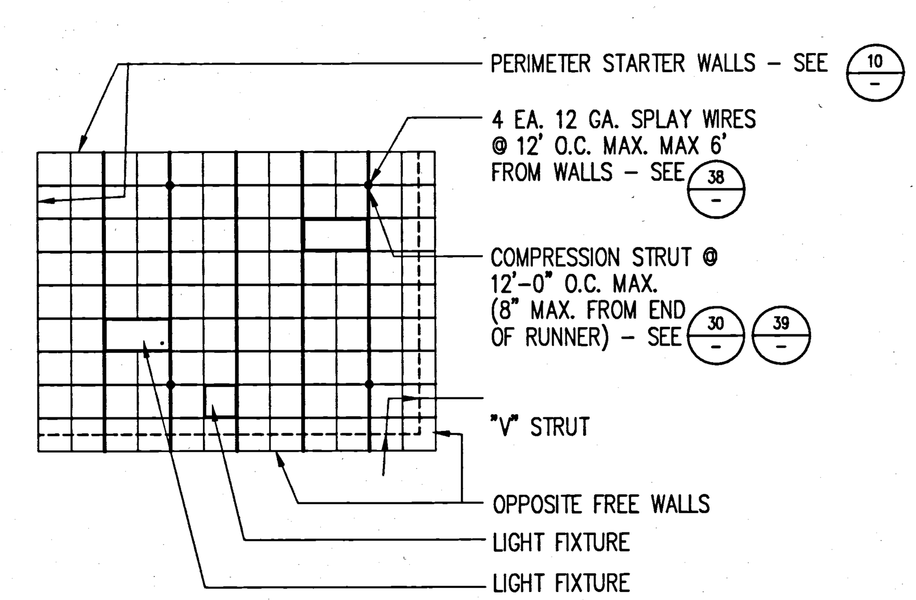

40 **RUNNER LAYOUT**
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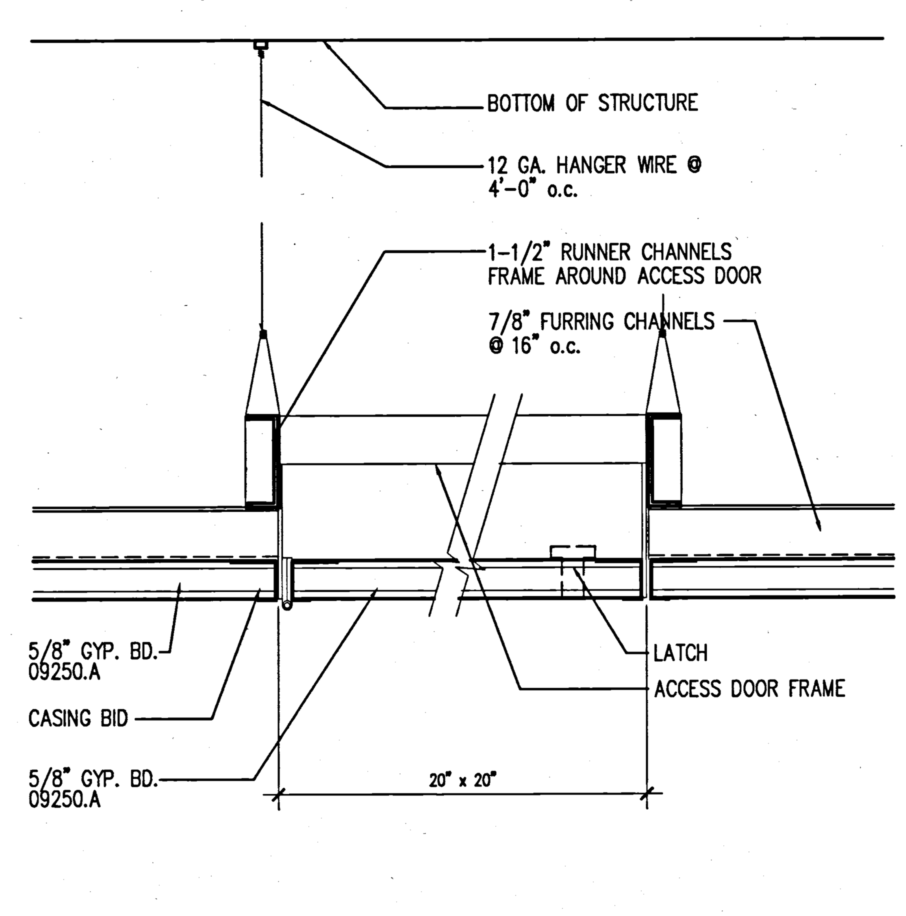

27 **ACCESS DOOR @ CEILING (NON-RATED)**
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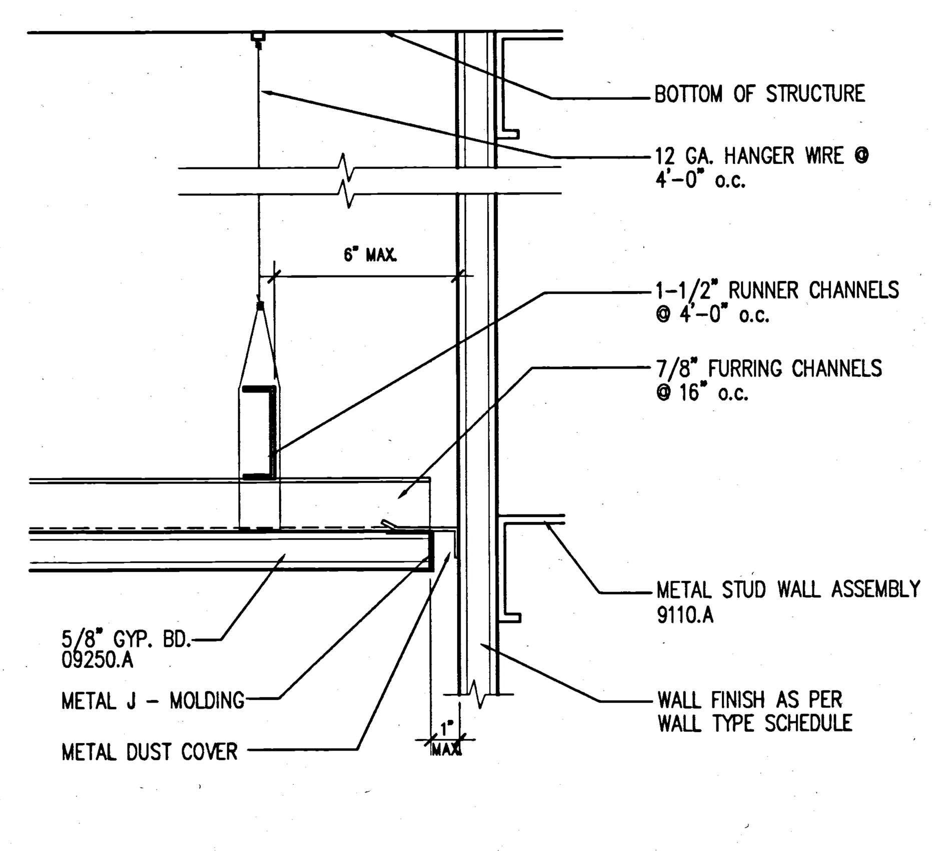


29 **GYP BD CEILING @ WALL**
SCALE: NOT TO SCALE

METAL SUSPENSION SYSTEMS FOR LAY IN PANEL CEILINGS

1. 12 GA. (MIN.) HANGER WIRES MAY BE USED FOR UP TO AND INCLUDING 4'-0" X 4'-0" GRID SPACING ALONG MAIN RUNNERS. SPLICES WILL NOT BE PERMITTED IN ANY HANGER WIRES UNLESS SPECIFICALLY APPROVED BY BUILDING DEPT.
2. PROVIDE 12 GA. HANGER WIRES AT THE ENDS OF ALL MAIN AND CROSS RUNNERS WITHIN 8" FROM THE SUPPORT OR WITHIN 1/4 OF THE LENGTH OF THE END TEE, WHICHEVER IS LEAST, FOR THE PERIMETER OF THE CEILING AREA.
3. PROVIDE TRAPEZE OR OTHER SUPPLEMENTARY SUPPORT MEMBERS AT OBSTRUCTIONS TO MAIN HANGER SPACING. PROVIDE ADDITIONAL HANGERS, STRUTS OR BRACES AS REQUIRED AT ALL CEILING BREAKS, SOFFITS, OR DISCONTINUOUS AREAS. HANGER WIRES THAT ARE MORE THAN 1 IN 6 OUT OF PLUMB ARE TO HAVE COUNTER-SLOPING WIRES.
4. CEILING GRID MEMBERS MAY BE ATTACHED TO NOT MORE THAN 2 ADJACENT WALLS. CEILING GRID MEMBERS SHOULD BE AT LEAST 1/2 INCH FREE OF OTHER WALLS. IF WALLS RUN DIAGONALLY TO CEILING GRID SYSTEM RUNNERS, ONE END OF MAIN AND CROSS RUNNER SHOULD BE FREE AND A MINIMUM OF 1/2 INCH CLEAR OF WALL.
5. AT THE PERIMETER OF THE CEILING AREA WHERE MAIN OR CROSS RUNNERS ARE NOT CONNECTED TO THE ADJACENT WALL, PROVIDE INTERCONNECTION BETWEEN RUNNERS AT THE FREE END TO PREVENT LATERAL SPREADING. A METAL STRUT OR A 16 GA. WIRE WITH A POSITIVE MECHANICAL CONNECTION TO THE RUNNER MAY BE USED. WHERE THE PERPENDICULAR DISTANCE FROM THE WALL TO THE FIRST PARALLEL RUNNER IS 12" OR LESS, THIS INTERLOCK IS NOT REQUIRED.
6. PROVIDE SETS OF FOUR 12 GA. SPLAYED BRACING WIRES ORIENTED 90° FROM EACH OTHER AT NOT MORE THAN 12'-0" X 12'-0" ON CENTER.

   PROVIDE BRACING WIRES AT LOCATIONS NOT MORE THAN 6'-0" FROM EACH PERIMETER WALL AND AT THE EDGE OF VERTICAL CEILING OFFSETS.

   THE SLOPE OF THESE WIRES SHOULD NOT EXCEED 45° FROM THE PLANE OF THE CEILING AND SHOULD BE TAUT WITHOUT CAUSING THE CEILING TO LIFT. SPLICES IN BRACING WIRES ARE NOT TO BE PERMITTED WITHOUT SPECIAL BUILDING DEPT. APPROVAL.
7. FASTEN HANGER WIRES WITH NOT LESS THAN 3 TIGHT TURNS. FASTEN BRACING WIRES WITH 4 TIGHT TURNS. MAKE ALL TIGHT TURNS WITHIN A DISTANCE OF 1-1/2". HANGER OR BRACING WIRE ANCHORS TO THE STRUCTURE SHOULD BE INSTALLED IN SUCH A MANNER THAT THE DIRECTION OF THE WIRE ALIGNS AS CLOSELY AS POSSIBLE WITH THE DIRECTION OF THE FORCES ACTING ON THE WIRE.

   NOTE: WIRE TURNS MADE BY MACHINE WHERE BOTH STRANDS HAVE BEEN DEFORMED OR BENT IN WRAPPING CAN WAIVE THE 1-1/2" REQUIREMENT, BUT THE NUMBER OF TURNS SHOULD BE MAINTAINED, AND BE AS TIGHT AS POSSIBLE.
8. SEPARATE ALL CEILING HANGING AND BRACING WIRES AT LEAST 6 INCHES FROM ALL UNBRACED DUCTS, PIPES, CONDUIT, ETC. IT IS ACCEPTABLE TO ATTACH LIGHTWEIGHT ITEMS, SUCH AS SINGLE ELECTRICAL CONDUIT NOT EXCEEDING 3/4" NOMINAL DIAMETER, TO HANGER WIRES USING CONNECTORS ACCEPTABLE TO BUILDING DEPT.

   HVAC DUCTWORK, ELECTRICAL DISTRIBUTION, TELEPHONE SERVICES, COMPUTER CABLE DISTRIBUTION, AND OTHER SERVICES NORMALLY FOUND IN A CEILING SPACE, SHALL BE INDEPENDENTLY SUPPORTED AND APPROPRIATELY BRACED TO ELIMINATE ANY LATERAL FORCE ON THE CEILING MEMBRANE OR BRACING ELEMENTS.
9. WHEN DRILL-IN CONCRETE ANCHORS OR SHOT-IN ANCHORS ARE USED IN REINFORCED CONCRETE FOR HANGER WIRES, 1 OUT OF 10 MUST BE FIELD TESTED FOR 200 POUNDS OF TENSION. WHEN DRILLED-IN CONCRETE ANCHORS ARE USED FOR BRACING WIRES, 1 OUT OF 2 MUST BE FIELD TESTED FOR 440 LBS. OF TENSION. SHOT IN ANCHORS IN CONCRETE ARE NOT PERMITTED FOR BRACING WIRES. IF ANY SHOT-IN OR DRILLED-IN ANCHOR FAILS, ALL ADJACENT ANCHORS MUST BE TESTED. DRILLED-IN OR SHOT-IN ANCHORS MUST BE TESTED. DRILLED-IN OR SHOT-IN ANCHORS REQUIRE SPECIAL OSA/SSS APPROVAL WHEN USED IN PRESTRESSED CONCRETE.
10. ATTACH ALL LIGHT FIXTURES TO THE CEILING GRID RUNNERS TO RESIST A HORIZONTAL FORCE EQUAL TO THE WEIGHT OF THE FIXTURES.

    ALL RECESSED LIGHTING FIXTURES HAVING A NOMINAL END DIMENSION OF 24" OR GREATER, SHALL BE POSITIVELY ATTACHED TO THE CEILING GRID RUNNER(S) AT THE END OF THE FIXTURE WITH TWO #8 SELF TAPPING TEK SCREWS, EACH SCREW SHALL BE LOCATED WITHIN 3" OF THE SIDE OF THE FIXTURE AND ATTACHED THROUGH THE BULB OF THE CEILING GRID RUNNER(S). LIGHT FIXTURES HAVING LESS THAN A NOMINAL 24" END DIMENSION SHALL BE ATTACHED WITH ONE #8 SELF TAPPING TEK SCREW AT THE CENTER OF EACH END OF THE FIXTURE, ATTACHED TO THE BULB OF THE CEILING GRID RUNNER(S). ALL ATTACHMENTS SHALL BE CAPABLE OF LATERALLY SUPPORTING THE WEIGHT OF THE FIXTURE. ALL FIXTURES REGARDLESS OF WEIGHT OR SIZE SHALL HAVE INTERLOCKING CEILING GRID RUNNER(S) ON ALL 4 SIDES OF THE FIXTURE.
11. CEILING-MOUNTED AIR TERMINALS OR SERVICES SHALL BE POSITIVELY ATTACHED TO THE CEILING SUSPENSION MAIN RUNNERS OR TO CROSS RUNNERS WITH THE SAME CARRYING CAPACITY AS THE MAIN RUNNER.

    AIR TERMINALS WITH A NOMINAL DIMENSION OF 24" OR LESS SHALL BE POSITIVELY ATTACHED TO THE CEILING GRID RUNNER(S) ON AT LEAST TWO OPPOSING SIDES WITH ONE #8 SELF TAPPING TEK SCREW ON EACH SIDE. EACH SCREW SHALL BE LOCATED IN THE CENTER OF THE AIR TERMINAL AND SHALL BE ATTACHED THROUGH THE BULB OF THE CEILING GIRD RUNNER(S). AIR TERMINALS IN EXCESS OF 24" IN LENGTH SHALL BE ATTACHED WITH TWO #8 SELF TAPPING TEK SCREWS ON EACH END OF DIFFUSER ATTACHED TO THE BULB OF THE CEILING GRID RUNNER(S). ALL ATTACHMENTS SHALL BE CAPABLE OF LATERALLY SUPPORTING THE WEIGHT OF THE AIR TERMINAL. ALL AIR TERMINALS REGARDLESS OF WEIGHT OR SIZE SHALL HAVE INTERLOCKING CEILING GRID RUNNER(S) ON ALL 4 SIDES OF THE AIR TERMINAL.
12. FLUSH OR RECESSED LIGHT FIXTURES AND AIR TERMINALS OR SERVICES WEIGHING LESS THAN 56 LBS. MAY BE SUPPORTED DIRECTLY ON THE RUNNERS OF A HEAVY DUTY GRID SYSTEM BUT, IN ADDITION, THEY MUST HAVE A MINIMUM OF TWO 12 GA. SLACK SAFETY WIRES ATTACHED TO THE FIXTURE AT DIAGONAL CORNERS AND ANCHORED TO THE STRUCTURE ABOVE. ALL 4'-0" X 4'-0" LIGHT FIXTURES MUST HAVE SLACK SAFETY WIRES AT EACH CORNER.
    ALL FLUSH OR RECESSED LIGHT FIXTURES AND AIR TERMINALS OR SERVICES WEIGHING 56 POUNDS OR MORE MUST BE INDEPENDENTLY SUPPORTED BY NOT LESS THAN 4 TAUT 12 GA. WIRES EACH ATTACHED TO THE FIXTURE AND TO THE STRUCTURE ABOVE REGARDLESS OF THE TYPE OF CEILING GRID SYSTEM USED.

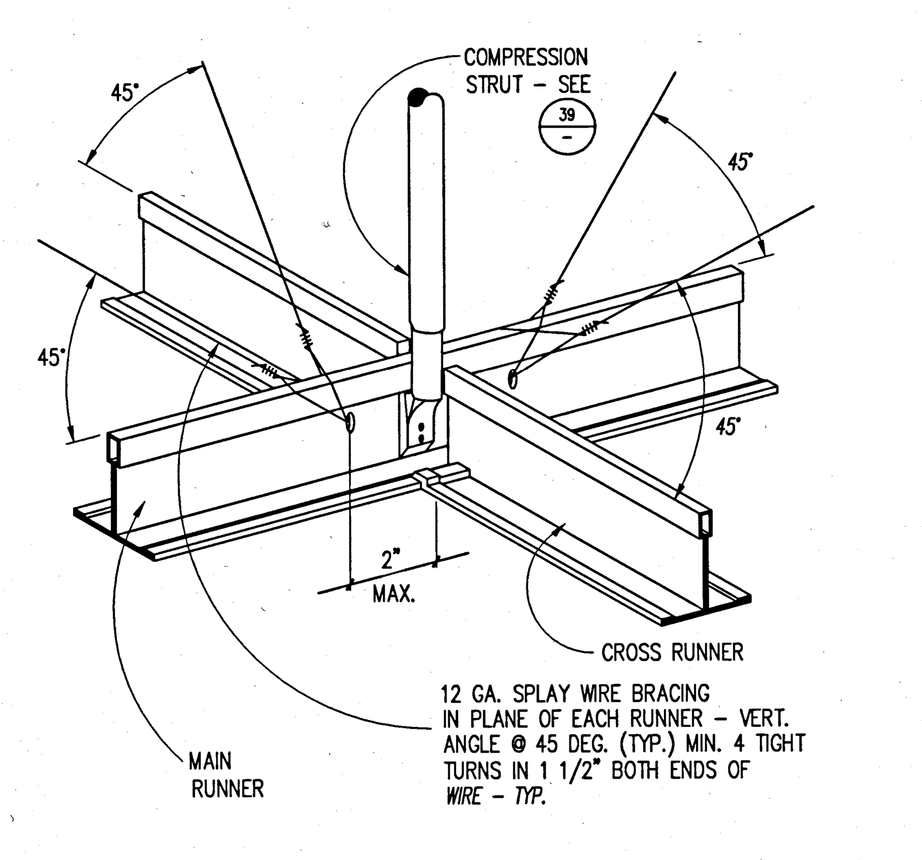
    THE 4 TAUT 12 GA. WIRES INCLUDING THEIR ATTACHMENT TO THE STRUCTURE ABOVE MUST BE CAPABLE OF SUPPORTING 4 TIMES THE WEIGHT OF THE UNIT.
13. ALL FIXTURES AND AIR TERMINALS OR SERVICES SUPPORTED ON INTERMEDIATE DUTY GRID SYSTEMS MUST BE INDEPENDENTLY SUPPORTED BY NOT LESS THAN 4 TAUT 12 GA. WIRES EACH ATTACHED TO THE FIXTURE OR TERMINAL AND TO THE STRUCTURE ABOVE.
14. SUPPORT SURFACE MOUNTED LIGHT FIXTURES BY AT LEAST TWO POSITIVE DEVICES WHICH SURROUND THE CEILING RUNNER AND WHICH ARE EACH SUPPORTED FROM THE STRUCTURE ABOVE BY A 12 GA. WIRE. SPRING CLIPS OR CLAMPS THAT CONNECT ONLY TO THE RUNNER ARE NOT ACCEPTABLE.

    PROVIDE ADDITIONAL SUPPORTS WHEN LIGHT FIXTURES ARE 8 FEET OR LONGER.
15. SUPPORT PENDANT MOUNTED LIGHT FIXTURES DIRECTLY FROM THE STRUCTURE ABOVE WITH HANGER WIRES OR CABLES PASSING THROUGH EACH PENDANT HANGER AND CAPABLE OF SUPPORTING 4 TIMES THE WEIGHT OF THE FIXTURE. SPECIAL DETAILS ARE NECESSARY FOR THIS CONDITION AT THE CEILING GRID.
16. CLASSIFICATION OF CEILING GRID IS HEAVY DUTY. COMPONENTS SHALL COMPLY WITH THE FOLLOWING SCHEDULE:

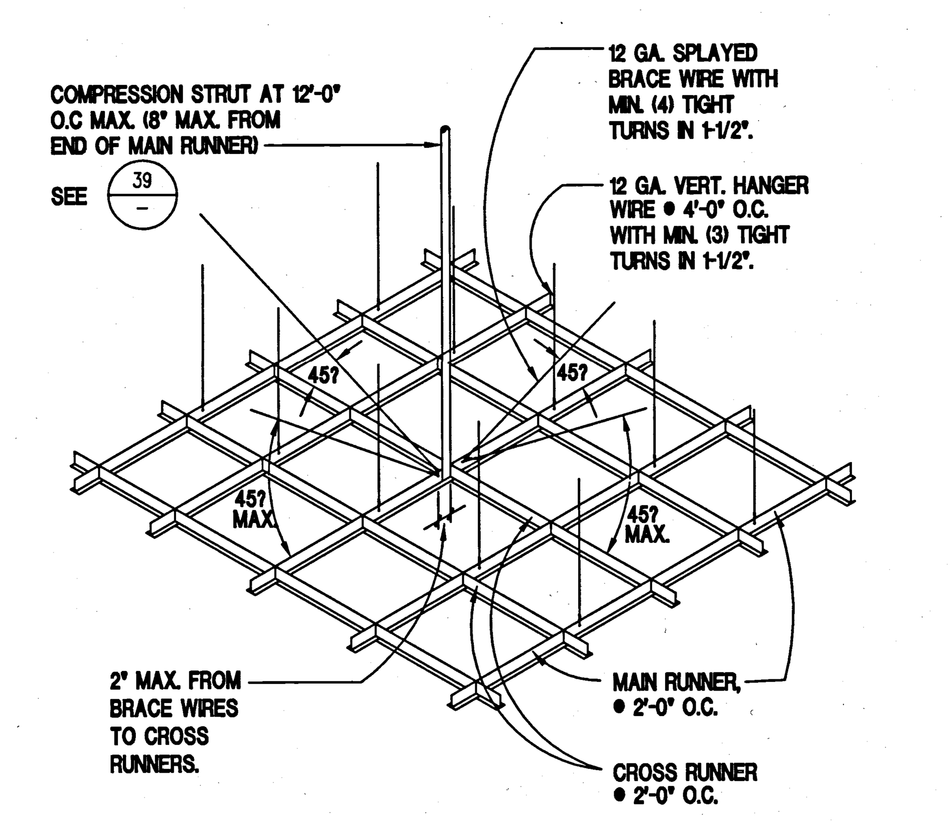
MANUFACTURER	MAIN RUNNER	CROSS RUNNER
CHICAGO METALLIC	1810	1804(2)
DONN CORPORATION	DX26	DX424(3)

    FOOTNOTES:
    (1) FOR 2 X 2 GRID USE 7324
    (2) FOR 2 X 2 GRID USE 1822
    (3) FOR 2 X 2 GRID USE DX216
17. ANCHORS FOR WALL ANGLES:
    A. AT WOOD STUD WALL: 4D COMMON NAIL @ 16" OC.
    B. AT METAL STUD WALL: 1-1/8" TYPE "S" BUGLE HEAD DRYWALL SCREW AT 16" OC.
    C. AT MASONRY WALL: 1/4" DIA. X 1-1/2" LONG TAPCON ANCHOR SCREW @ 16" OC. ICBO NO. 3370.
18. SUSPENDED CEILINGS SHALL COMPLY WITH UBC TABLES 25-A, 16-O AND 16-B.

19 **SUSPENDED CEILING NOTES**
SCALE: NOT TO SCALE



30 **SPLAY WIRE CONNECTION**
SCALE: NOT TO SCALE



20 **RUNNER LAYOUT**
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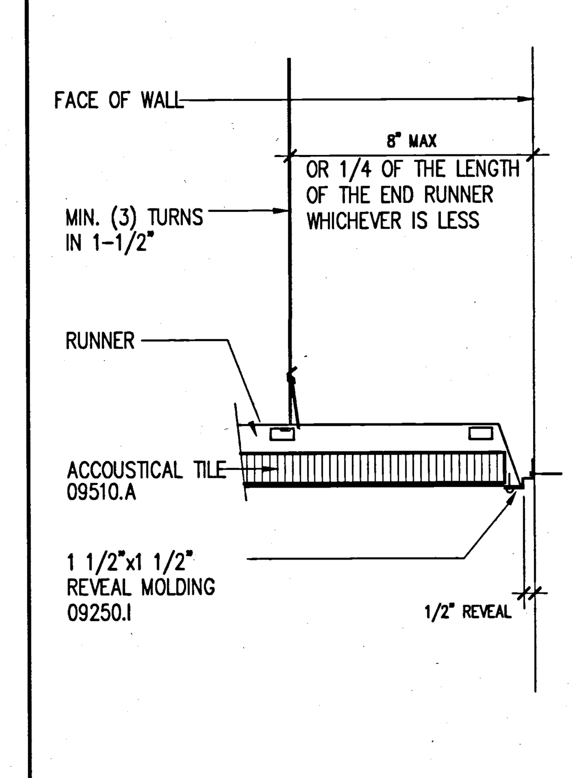

10 **CEILING AT PERIMETER**
SCALE: NOT TO SCALE

KEYED NOTES

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UCR PROJECT NO. 950424

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SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Drawing Title
CEILING DETAILS
(SURGE)

NOT TO SCALE
Scale
3193000
Project Number
060CT00
Baseline Date
A9.7.1
Drawing Number

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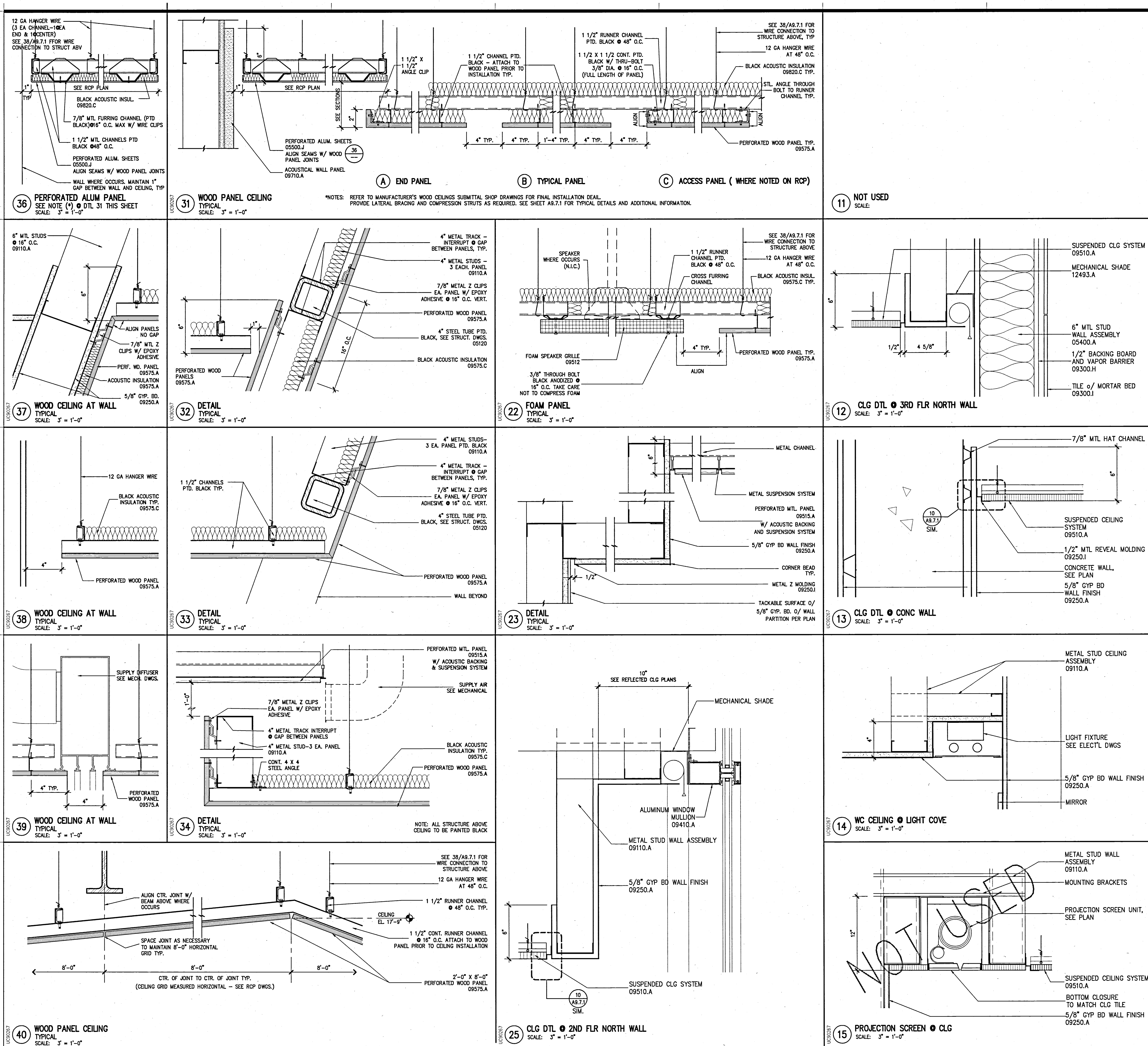

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07130.B – DRAINAGE BOARD
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08410.C – ALUMINUM DOOR
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09515.B – PERFORATED METAL PANEL
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09575.B – ACOUSTICAL BACKING
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RECORD DRAWINGS

Key Plan

Drawing Title

CEILING DETAILS

3" = 1'-0"

Scale

3193000

Project Number

06OCT00

Baseline Date

A9.7.2

Drawing Number

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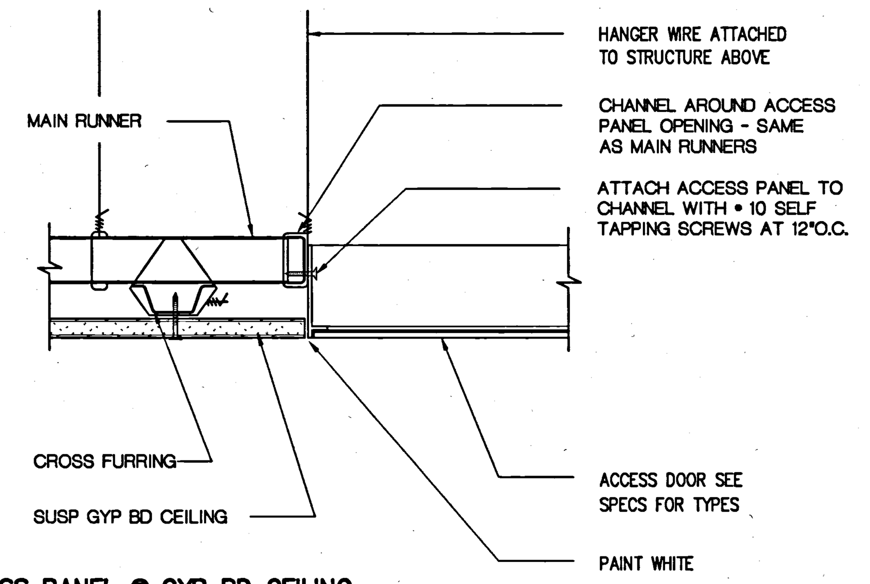
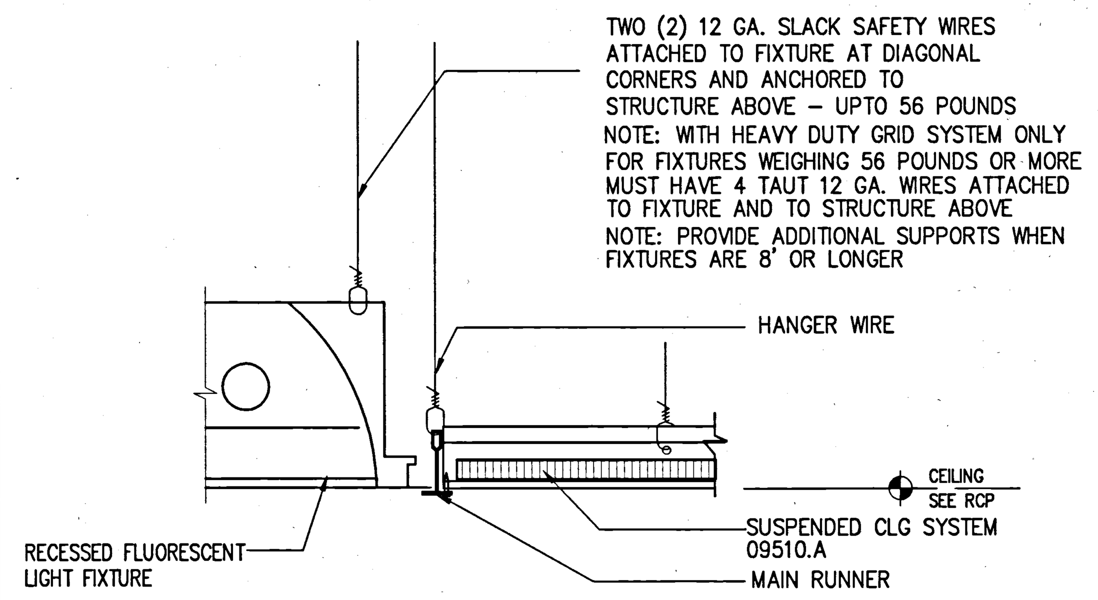


XXXX (31) ACCESS PANEL @ GYP BD CEILING
SCALE: 3" = 1'-0"

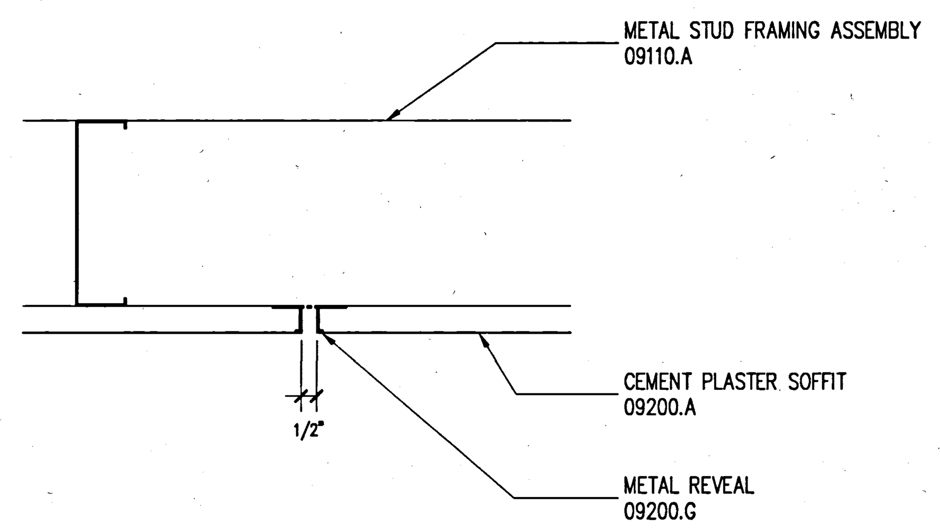
SEE 20/A9.8.3

XXXX (21) LIGHT COVE @ GYB BD CEILING
SCALE: 3" = 1'-0"

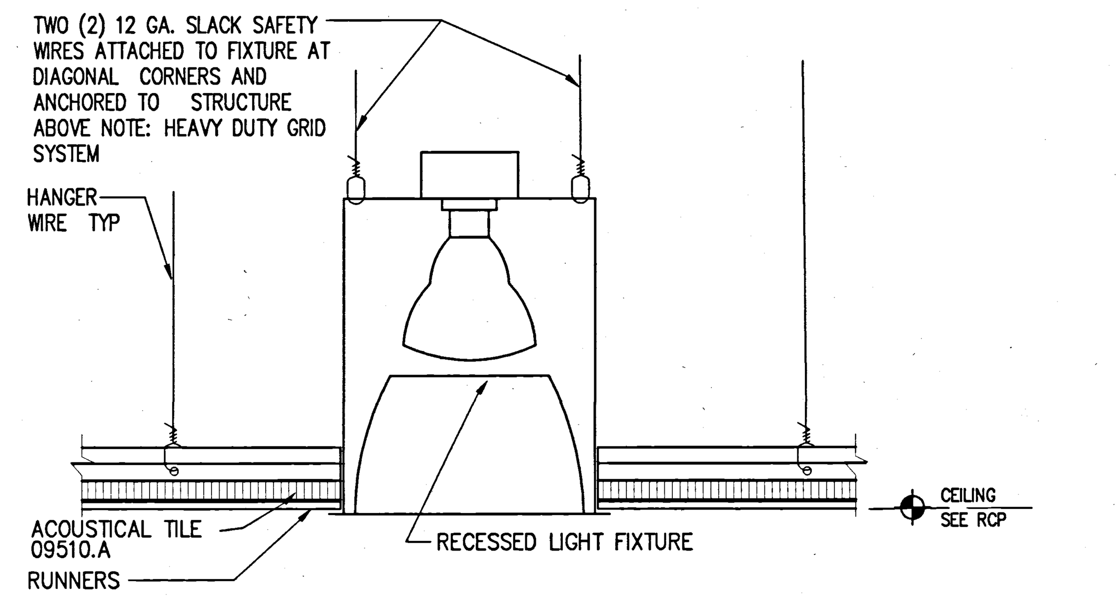


XXXX (11) FLUORESCENT LIGHT @ SUSPENDED CEILING TILE
SCALE: 3" = 1'-0"

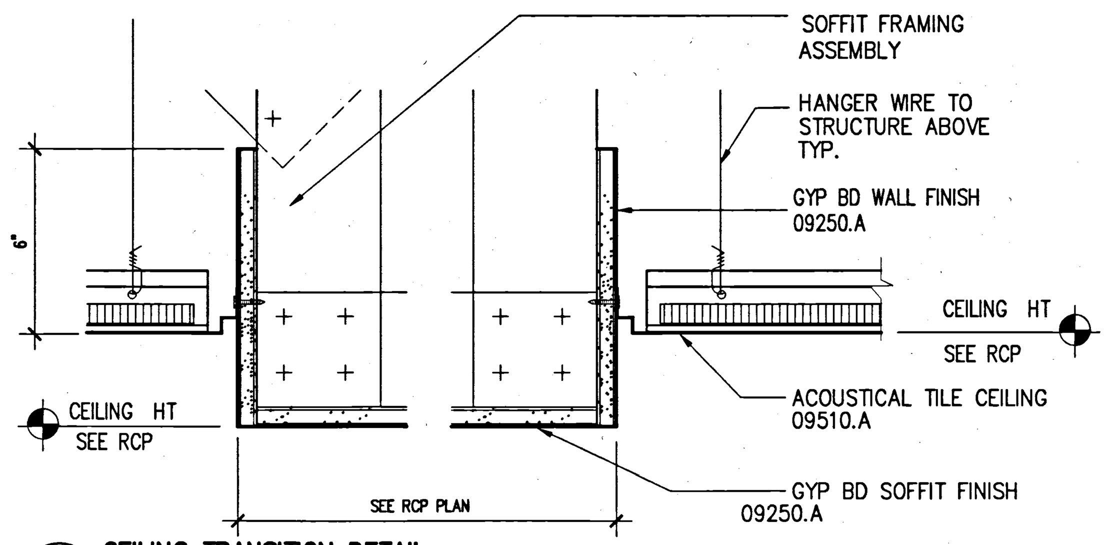
XXXX (37) NOT USED
SCALE: 3" = 1'-0"



XXXX (32) TYP REVEAL AT CEMENT PLASTER SOFFIT
SCALE: 3" = 1'-0"

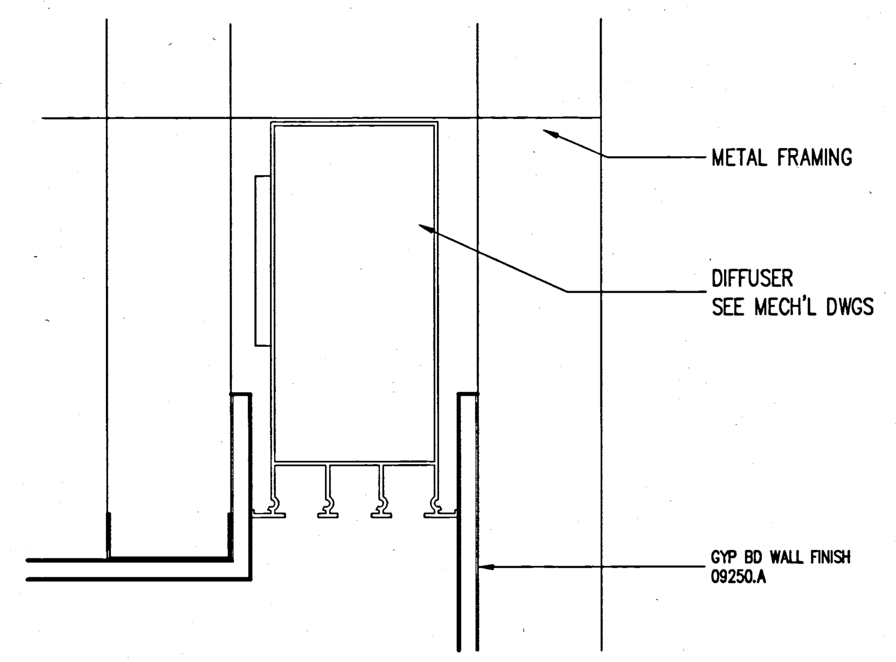


XXXX (12) RECESSED DOWNLIGHT @ SUSPENDED CEILING TILE
SCALE: 3" = 1'-0"

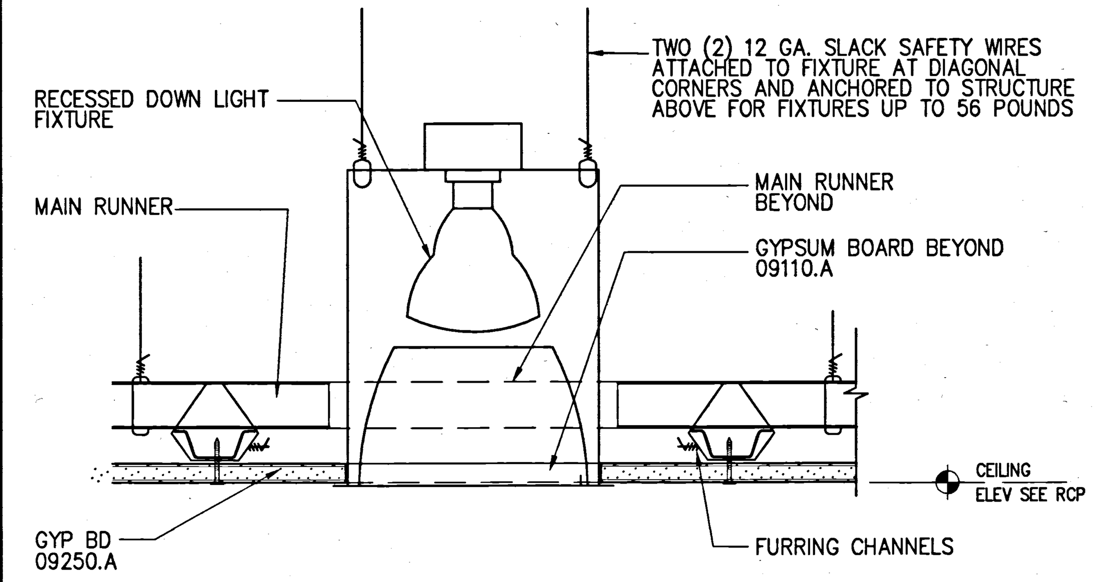


XXXX (38) NOT USED
SCALE: 3" = 1'-0"

XXXX (33) CEILING TRANSITION DETAIL
SCALE: 3" = 1'-0"



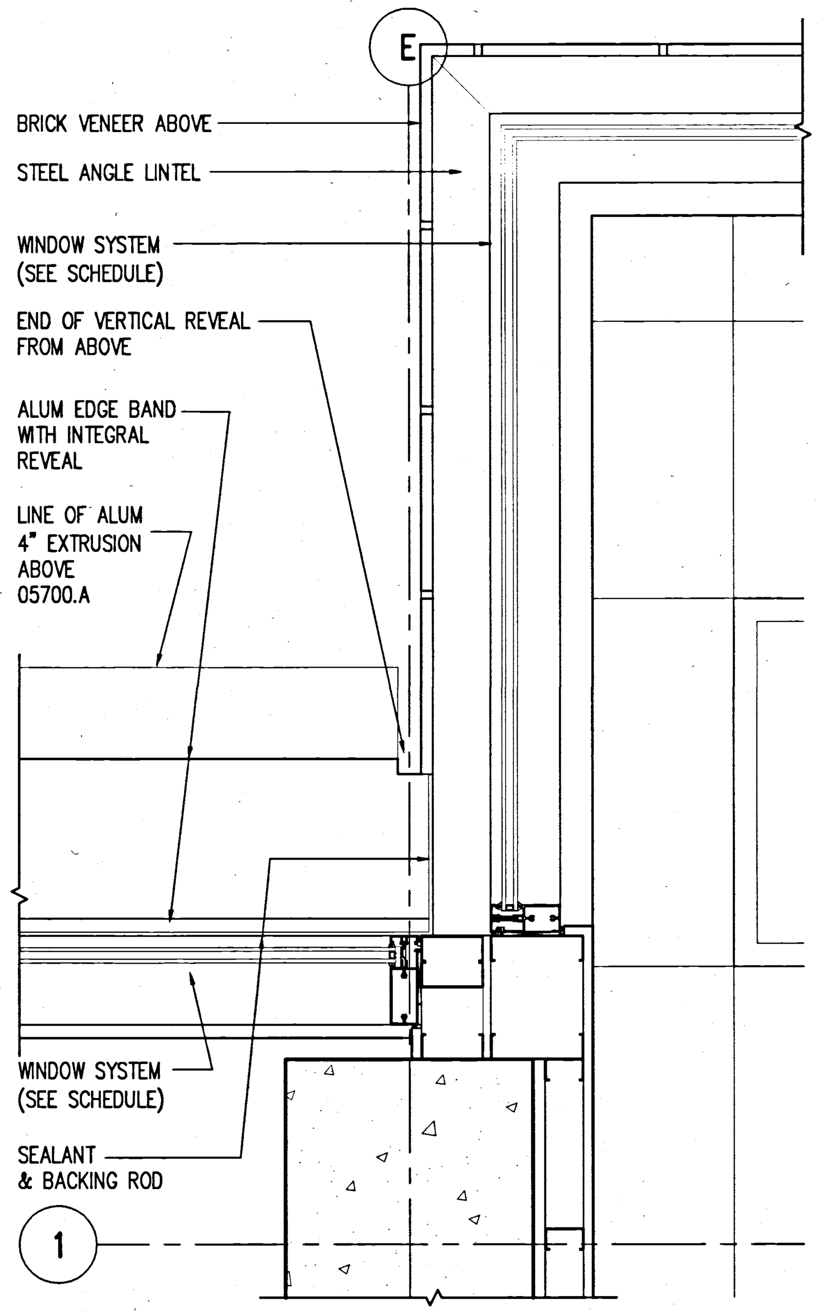
XXXX (23) GYP BD CEILING @ DIFFUSERS
SCALE: 3" = 1'-0"



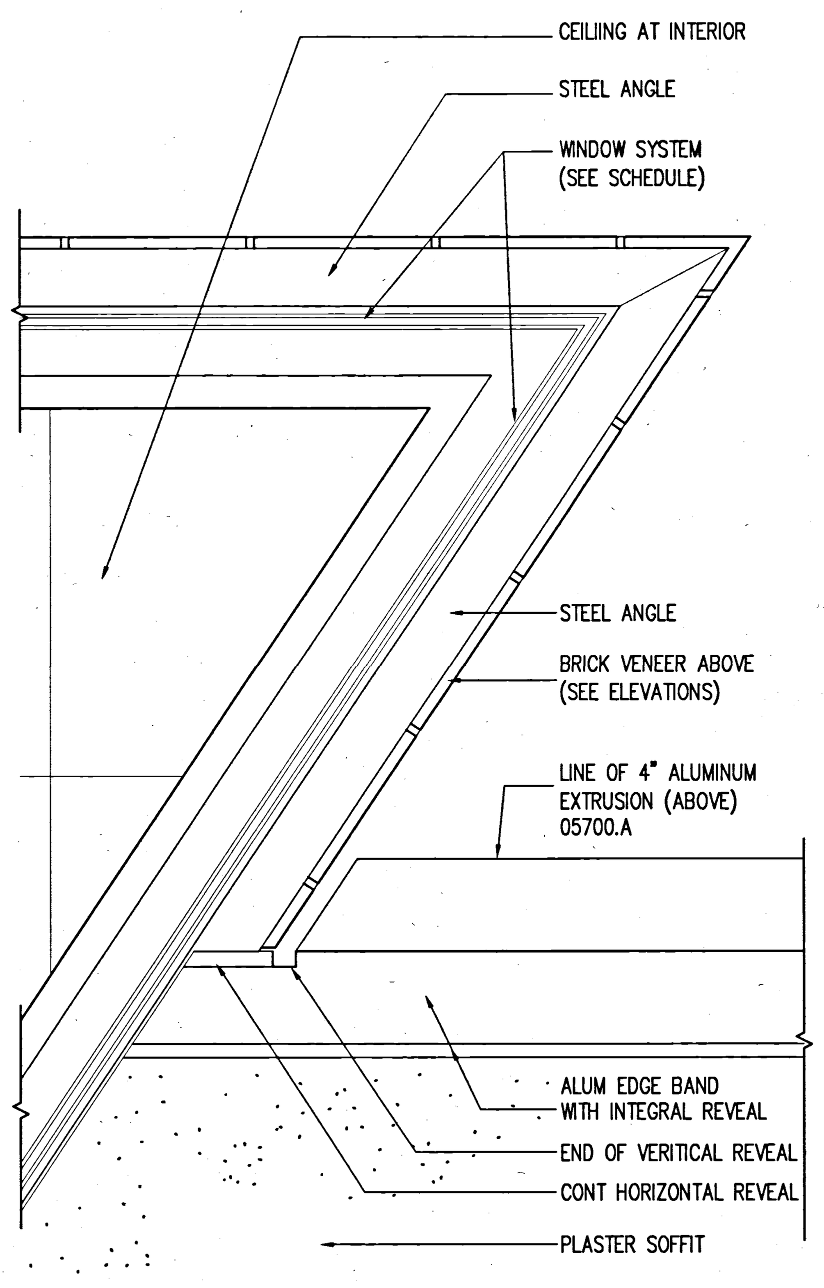
XXXX (13) RECESSED DOWNLIGHT @ GYP BD CEILING
SCALE: 3" = 1'-0"

XXXX (39) NOT USED
SCALE: 3" = 1'-0"

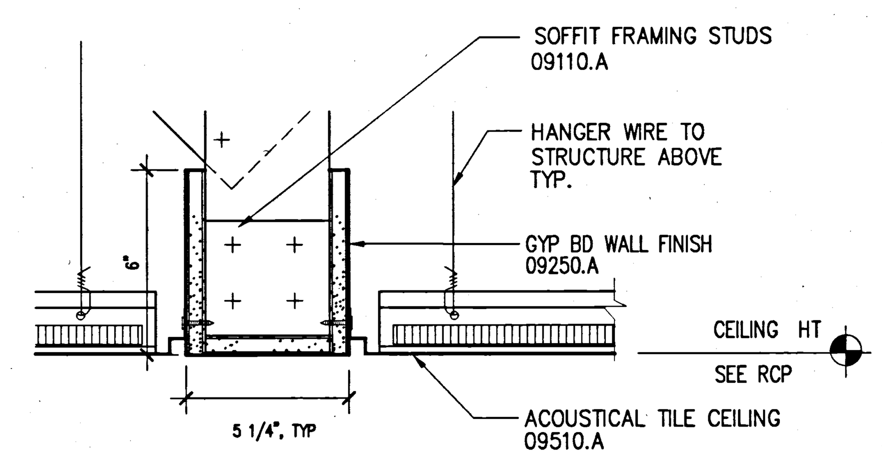
XXXX (34) NOT USED
SCALE: 3" = 1'-0"



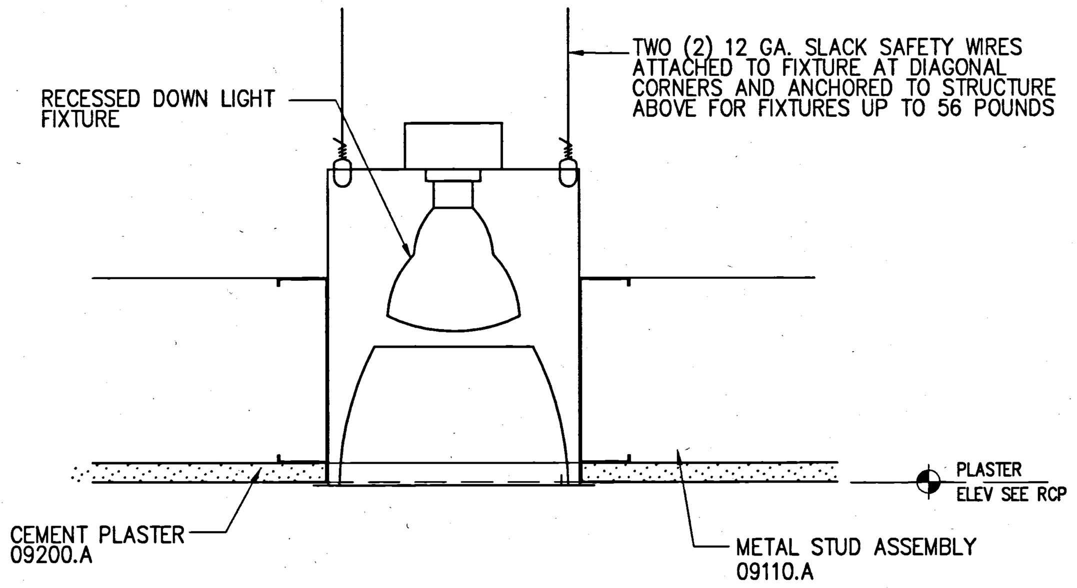
50173 (30) ENLARGED SOFFIT AT CORNER
SCALE: 1 1/2" = 1'-0"



50172 (25) ENLARGED SOFFIT AT CORNER
SCALE: 1 1/2" = 1'-0"



XXXX (14) GYP BD SOFFIT
SCALE: 3" = 1'-0"



XXXX (15) RECESSED DOWNLIGHT @ CEM PLAS SOFFIT
SCALE: 3" = 1'-0"

XXXX (40) NOT USED
SCALE: 3" = 1'-0"

XXXX (35) NOT USED
SCALE: 3" = 1'-0"

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Key Plan

Drawing Title
CEILING DETAILS

Scale
3" = 1'-0"

Project Number
3193000

Baseline Date
060CT00

Drawing Number
A9.7.3

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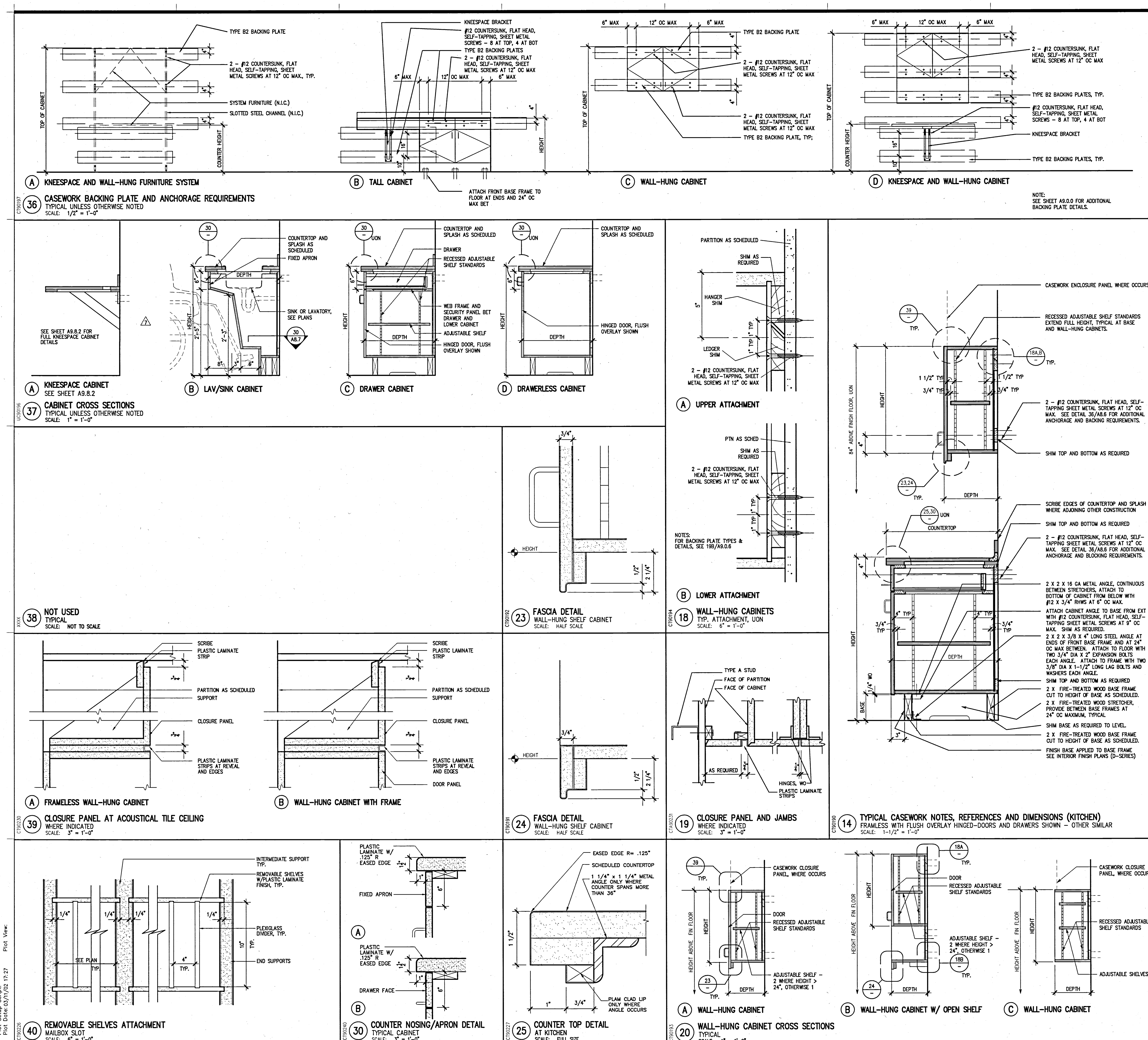

(A) KNEESPACE AND WALL-HUNG FURNITURE SYSTEM (B) TALL CABINET (C) WALL-HUNG CABINET (D) KNEESPACE AND WALL-HUNG CABINET

36 CASEWORK BACKING PLATE AND ANCHORAGE REQUIREMENTS
TYPICAL UNLESS OTHERWISE NOTED
SCALE: 1/2" = 1'-0"

NOTE:
SEE SHEET A9.0.0 FOR ADDITIONAL BACKING PLATE DETAILS.

(A) KNEESPACE CABINET SEE SHEET A9.8.2 (B) LAV/SINK CABINET (C) DRAWER CABINET (D) DRAWERLESS CABINET

37 CABINET CROSS SECTIONS
TYPICAL UNLESS OTHERWISE NOTED
SCALE: 1" = 1'-0"

38 NOT USED
TYPICAL
SCALE: NOT TO SCALE

23 FASCIA DETAIL
WALL-HUNG SHELF CABINET
SCALE: HALF SCALE

(A) UPPER ATTACHMENT (B) LOWER ATTACHMENT

NOTES:
FOR BACKING PLATE TYPES & DETAILS, SEE 19B/A9.0.6

18 WALL-HUNG CABINETS
TYP. ATTACHMENT, UON
SCALE: 6" = 1'-0"

14 TYPICAL CASEWORK NOTES, REFERENCES AND DIMENSIONS (KITCHEN)
FRAMELESS WITH FLUSH OVERLAY HINGED-DOORS AND DRAWERS SHOWN – OTHER SIMILAR
SCALE: 1-1/2" = 1'-0"

(A) FRAMELESS WALL-HUNG CABINET (B) WALL-HUNG CABINET WITH FRAME

39 CLOSURE PANEL AT ACOUSTICAL TILE CEILING
WHERE INDICATED
SCALE: 3" = 1'-0"

24 FASCIA DETAIL
WALL-HUNG SHELF CABINET
SCALE: HALF SCALE

19 CLOSURE PANEL AND JAMBS
WHERE INDICATED
SCALE: 3" = 1'-0"

40 REMOVABLE SHELVES ATTACHMENT
MAILBOX SLOT
SCALE: 6" = 1'-0"

30 COUNTER NOSING/APRON DETAIL
TYPICAL CABINET
SCALE: 3" = 1'-0"

25 COUNTER TOP DETAIL
AT KITCHEN
SCALE: FULL SIZE

(A) WALL-HUNG CABINET (B) WALL-HUNG CABINET W/ OPEN SHELF (C) WALL-HUNG CABINET

20 WALL-HUNG CABINET CROSS SECTIONS
TYPICAL
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SHEET NOTES

1. FOR INTERIOR FINISHES SEE FINISH SCHEDULE SHEETS A9.1.1– A9.1.3

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for	Rev	Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Drawing Title

CABINETRY DETAILS

Scale: AS NOTED
Project Number: 3193000
Baseline Date: 06OCT00
Drawing Number: A9.8.1

Plot Sheet Filename: I:\JOBS\3193000\SHT\A980I.dwg
XREF Filename(s): UC90190 UC90191 UC90192 UC90193 UC90194 UC90196 UC90226 UC90227 UC90230 UC90231 UC90197 UC90240 UCR_Tblk keynotes
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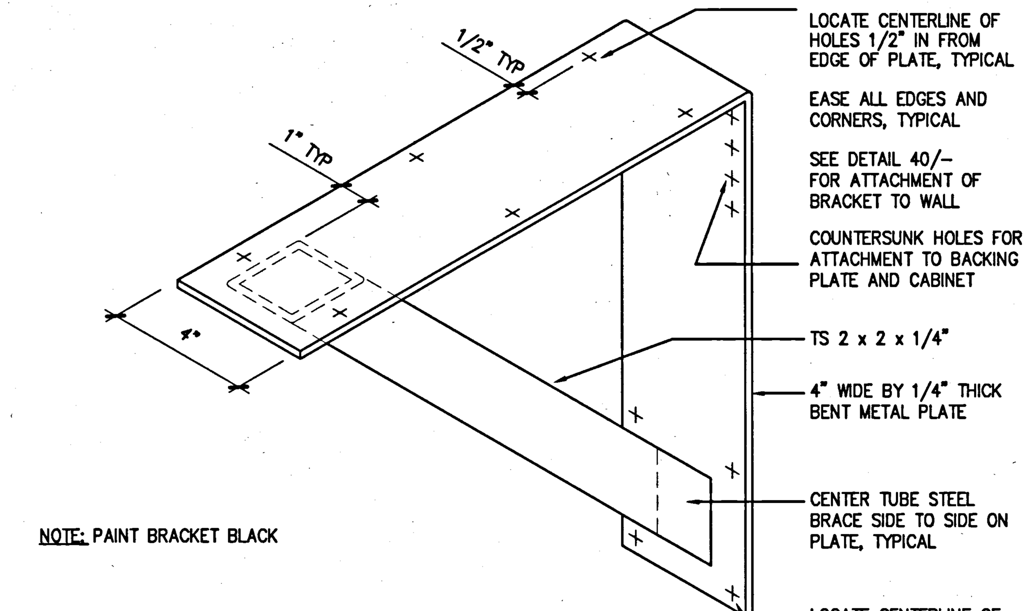
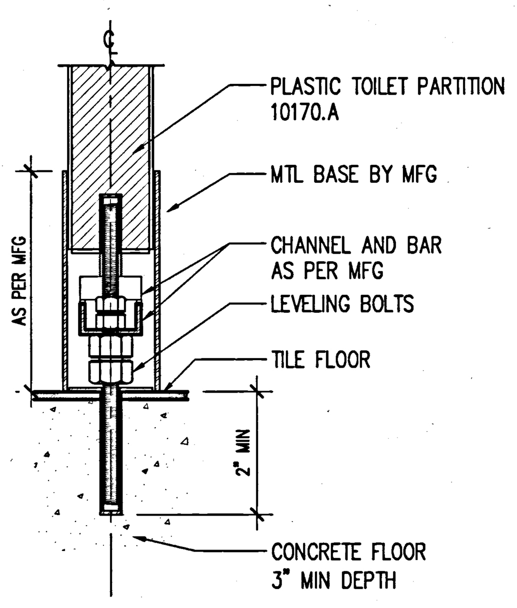


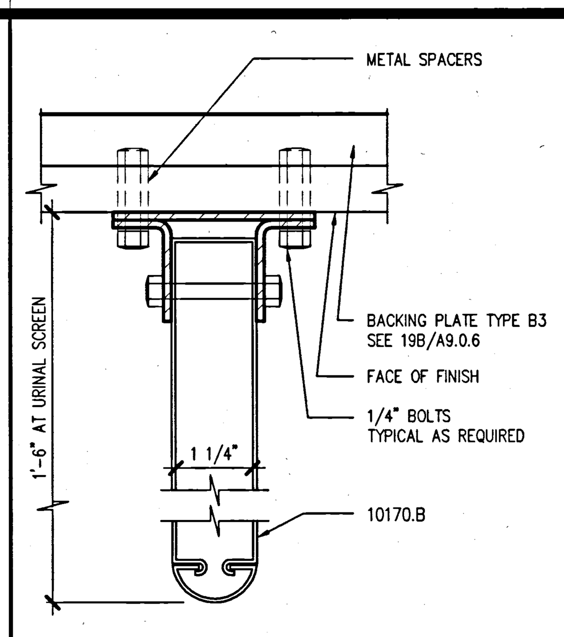
UC90185

36 KNEESPACE BRACKET – ISOMETRIC DIAGRAM
TYPICAL
SCALE: 3' = 1'-0"

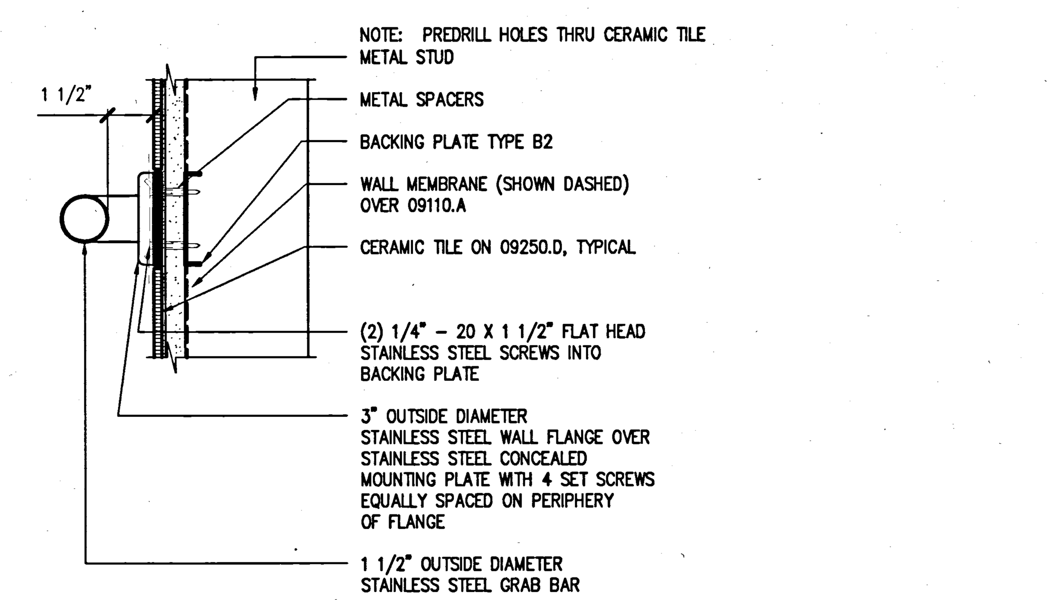


90266

26 STILE BASE
RESTROOMS
SCALE: HALF SIZE

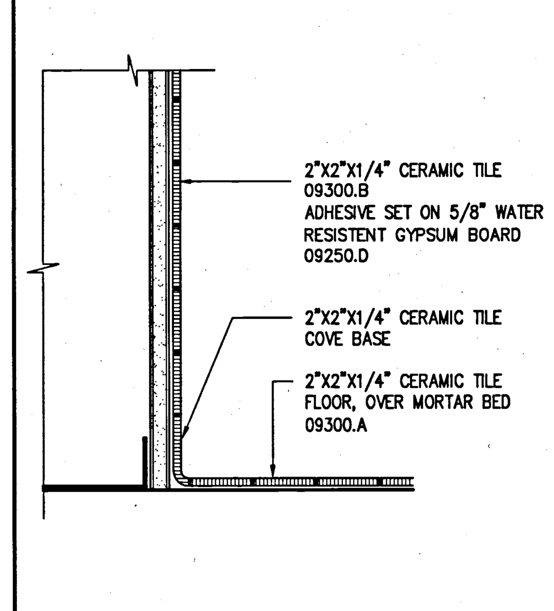


21 URINAL SCREEN (TOILET PARTITION SIM)
RESTROOMS
SCALE: HALF SIZE



90246

16 GRAB BAR DETAIL AT CERAMIC TILE
TYPICAL
SCALE: 3" = 1'-0"

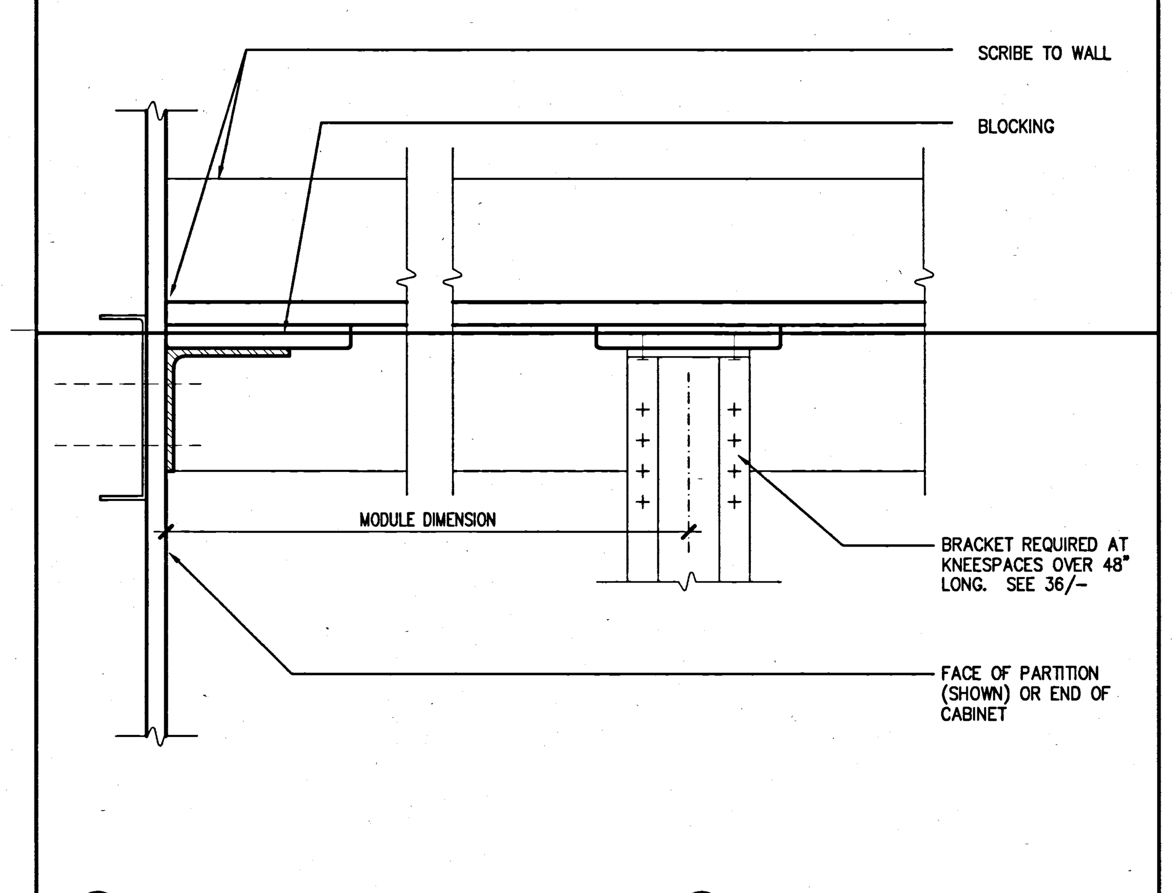


90234

6 CERAMIC TILE BASE DETAIL
RESTROOM
SCALE: 3" = 1'-0"

AT GYPSUM BOARD PARTITION (SHOWN): FASTEN TO TYPE B2 BACKING PLATE WITH WITH 8 – #8 SELF-TAPPING SHEET METAL SCREW. PROVIDE METAL SPACERS.

AT END OF CABINET, WO: FASTEN WITH 6 – 1/4" CARRIAGE BOLTS WITH WASHERS AND METAL SPACERS.

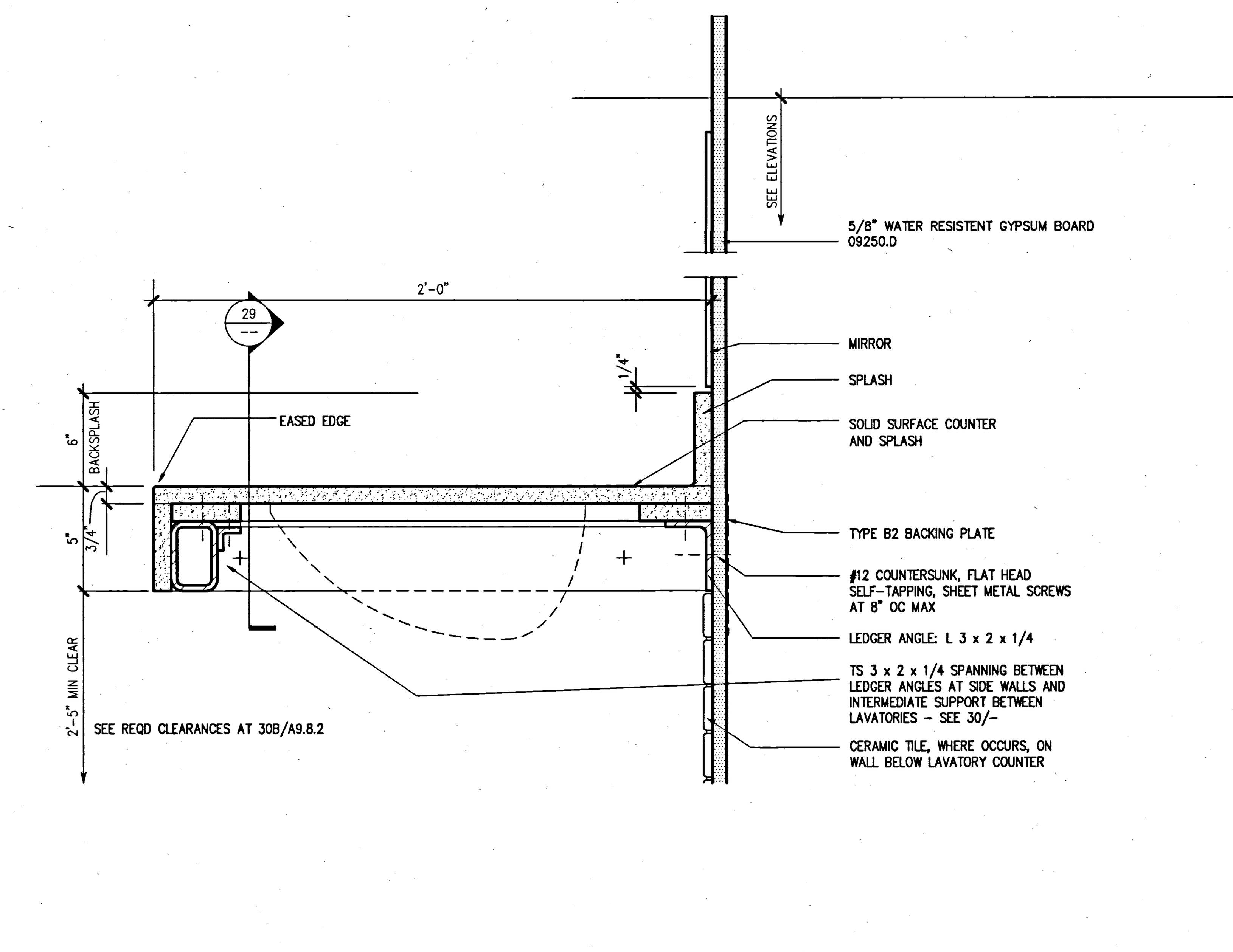


A AT PARTITION

B AT BRACKET

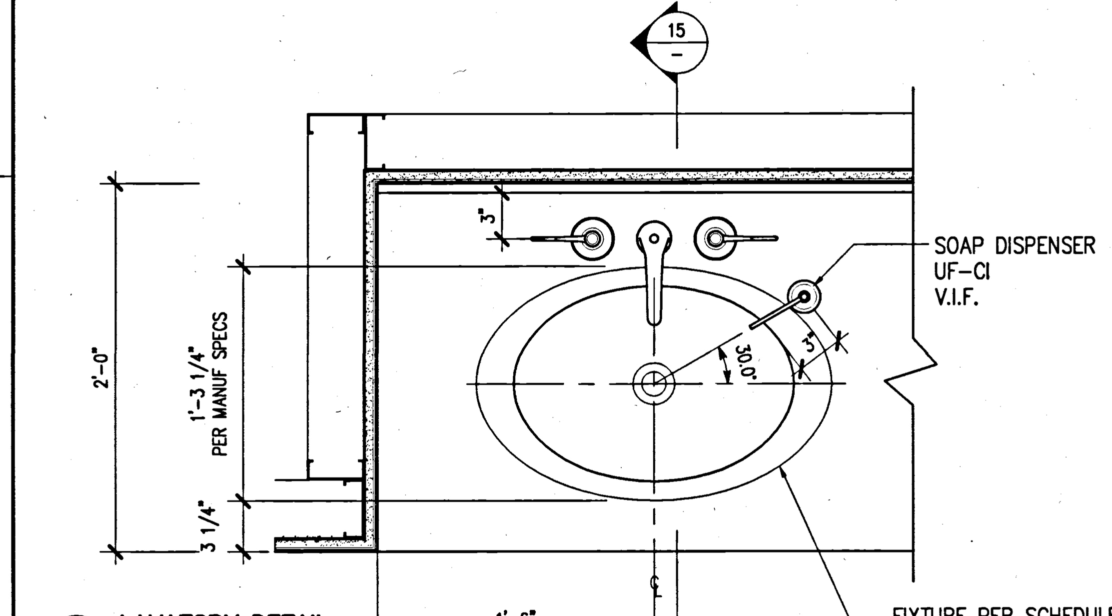
UC90186

38 KNEESPACE SECTION
TYPICAL
SCALE: 3' = 1'-0"



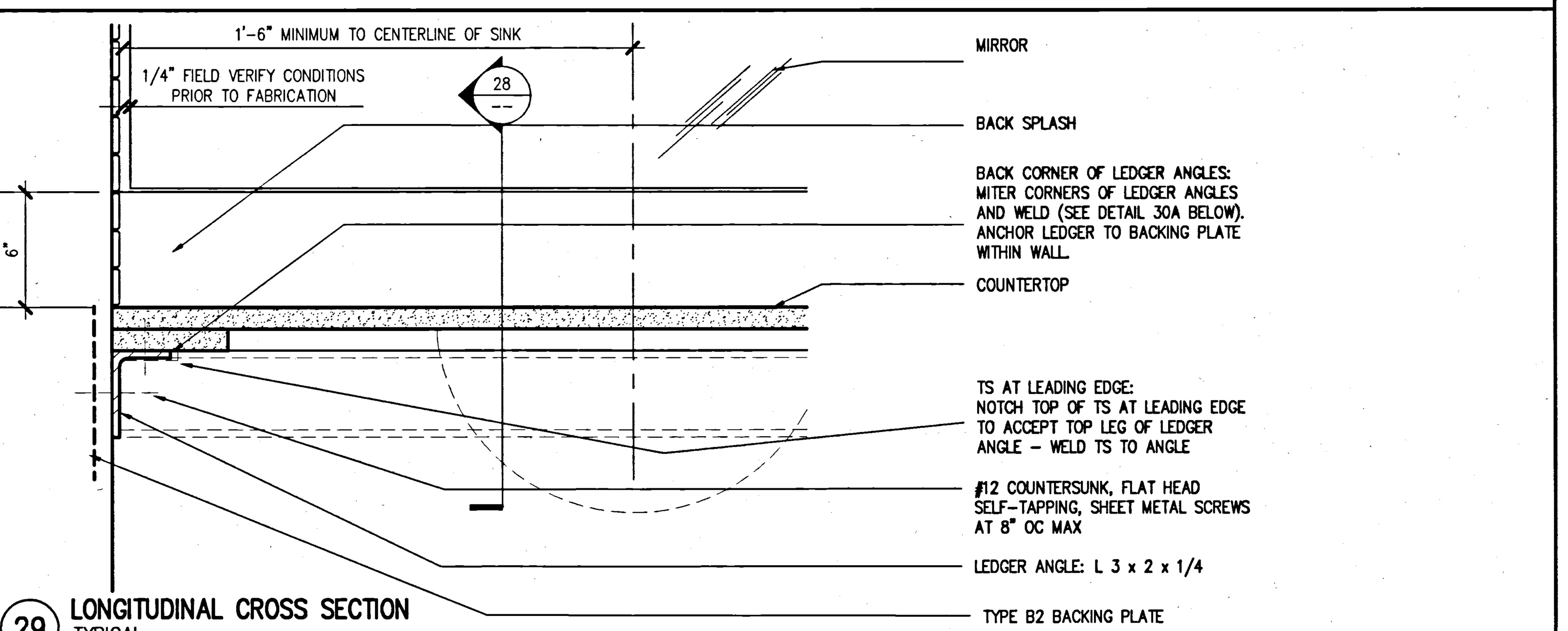
90237

28 TRANSVERSE CROSS SECTION
TYPICAL
SCALE: 3" = 1'-0"



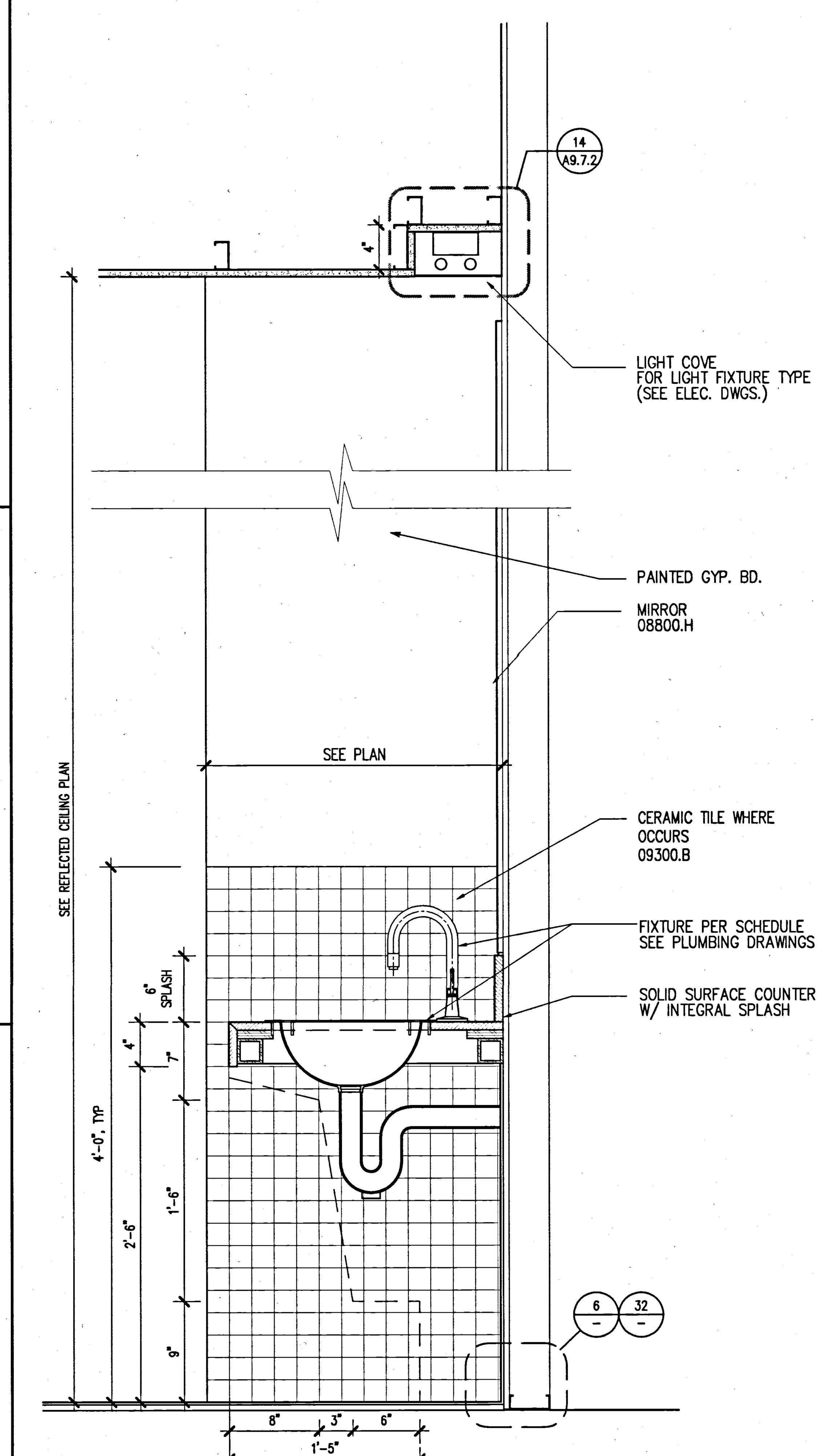
C90233

12 LAVATORY DETAIL
RESTROOMS
SCALE: 1 1/2" = 1'-0"



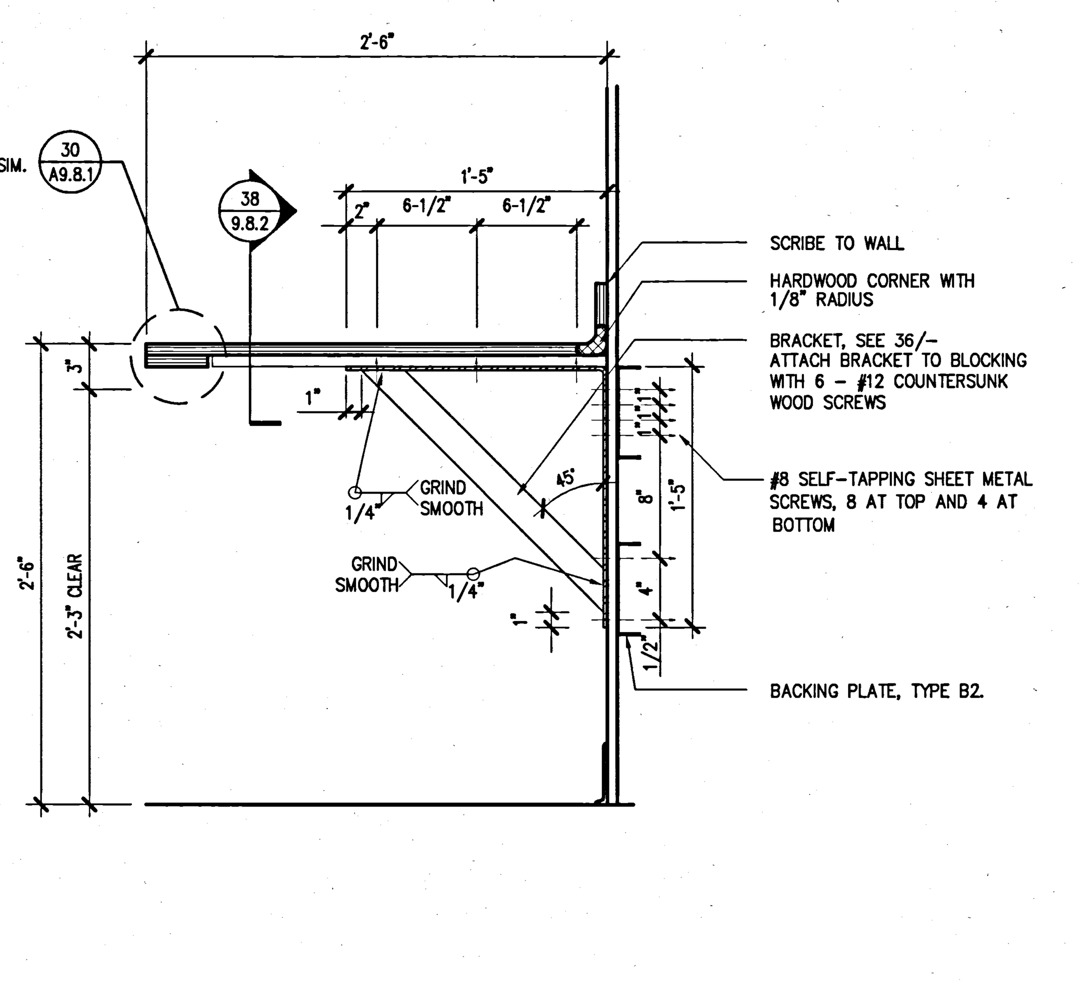
C90235

29 LONGITUDINAL CROSS SECTION
TYPICAL
SCALE: 3" = 1'-0"



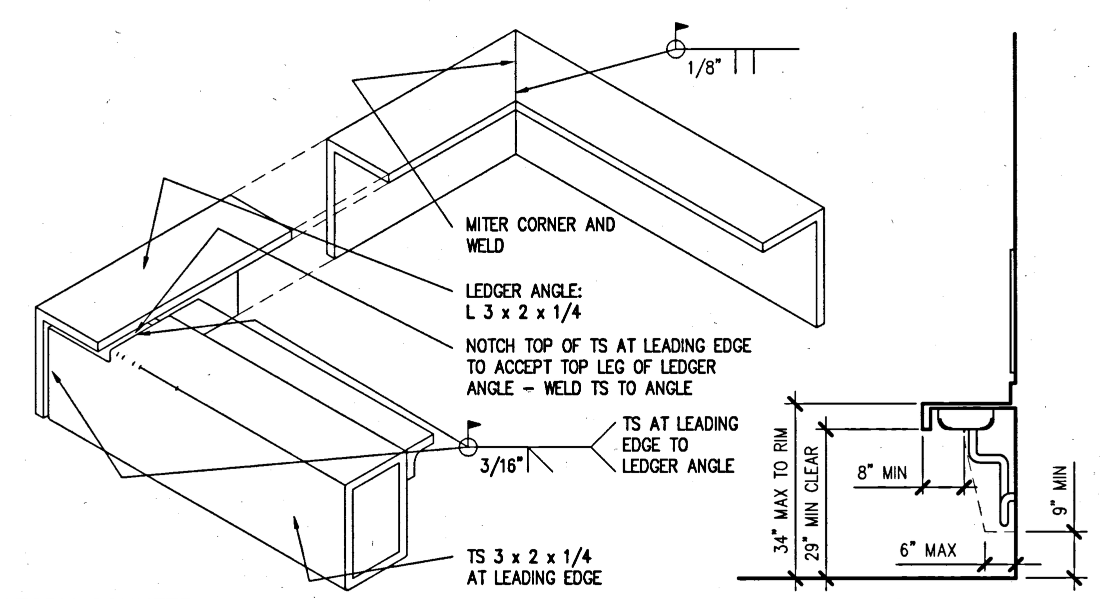
90232

15 ENLARGED DETAIL
RESTROOM
SCALE: 1 1/2" = 1'-0"



UC90184

40 CASEWORK DETAIL
TYPICAL
SCALE: 1 1/2" = 1'-0"



FAUCET CONTROLS AND OPERATING MECHANISMS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST

THE FORCE REQUIRED TO ACTIVATE FAUCET CONTROLS AND OPERATING MECHANISMS SHALL BE NO GREATER THAN 5 POUND-FEET

THERE SHALL BE NO SHARP EDGES OR ABRASIVE SURFACES EXPOSED BELOW COUNTER

INSULATE HOT WATER AND DRAIN PIPES EXPOSED BELOW COUNTER

ADDITIONAL, MORE RESTRICTIVE REQUIREMENTS MAY OCCUR ELSEWHERE – SEE PLUMBING DRAWINGS AND SPECIFICATIONS.

C90236

30 LAVATORY COUNTER
RESTROOM
SCALE: 3" = 1'-0"

A ISOMETRIC VIEW AT CORNERS OF STEEL FRAMING

B REQUIRED COUNTER CLEARANCES

KEYED NOTES

03300 – CAST IN PLACE CONCRETE
04810.A – BRICK VENEER
04810.B – BRICK VENEER ANCHORS
05120 – STRUCTURAL STEEL
05315 – METAL DECKING
05400 – STRUCTURAL STEEL STUD
05500.A – STEEL RAILINGS & HANDRAILS
05500.I – METAL MESH
05500.J – PERFORATED ALUMINUM SHEET
05510.A – METAL STAIR/HANDRAIL
05700.A – ALUMINUM EXTRUSION – 4" FIN
05700.B – ALUMINUM EXTRUSION – 1" FIN
06200.A – WOOD WINDOW SILL
07130.A – WATERPROOF MEMBRANE
07130.B – DRAINAGE BOARD
07135.A – AIR AND VAPOR BARRIER
07210.A – BATT INSULATION
07411.A – METAL PANEL SYSTEM (SILVER)
07411.B – METAL PANEL SYSTEM (GRAY)
07510.A – ROOFING SYSTEM
07510.C – WALKING PADS
07510.D – CANT STRIP & FLASHING SCREED
07600.A – SHEET METAL FLASHING
07600.D – METAL PARAPET CAP
07600.F – METAL DOWNSPOUT
07600.I – FLEXIBLE MEMBRANE
07600.J – SHEET METAL ROOFING
07600.K – RIGID INSULATION
07611.A – STANDING SEAM METAL ROOFING
07611.B – METAL FASCIA
07730.B – PENTHOUSE VENT
07811.A – FIREPROOFING
07840.E – FIRE STOPPING
07900 – SEALANT AND BACKER ROD
08310.A – ACCESS PANEL
08410.A – ALUMINUM WINDOW WALL SYSTEM
08410.B – ALUMINUM STOREFRONT
08410.C – ALUMINUM DOOR
08520.A – ALUMINUM WINDOW SYSTEM
08800 – GLAZING
09110.A – NON-BEARING METAL STUD
09110.B – METAL SHAFTWALL STUD
09120.B – SUSPENDED CEILING SYSTEM
09200.A – CEMENT PLASTER
09200.G – METAL REVEAL AT CEMENT PLASTER
09250.A – 5/8" GYP. BOARD
09250.C – 1" SHAFT LINER
09250.D – 5/8" WATER RESISTANT GYP BD
09250.I – METAL REVEAL AT GYP. BOARD
09250.J – GYPSUM SHEATHING
09300.B – GLAZED CERAMIC TILE
09300.D – WATERPROOF MEMBRANE
09300.H – 1/2" CEMENTITIOUS BACKER BOARD
09300.I – CERAMIC TILE WALL FINISH
09510.A – SUSPENDED CEILING SYSTEM
09515.A – PERFORATED METAL PANEL W/ SOUND ABSORPTION
09515.B – PERFORATED METAL PANEL
09575.A – PERFORATED WOOD PANEL
09575.B – ACOUSTICAL BACKING
09710.A – ACOUSTICAL PANEL
09775.A – METAL WALL PANEL
09820.A – ACOUSTICAL INSULATION – BATT
09820.C – ACOUSTICAL INSULATION – BLACK
10100.A – CHALK BOARD
10200.A – FALSE ALUMINUM LOUVER
10200.B – ALUMINUM LOUVER
14240.A – ELEVATOR

GENERAL NOTES

1. SEE STRUCTURAL DWGS. FOR TOP OF STEEL (TOS) ELEVATIONS.
2. TYPICAL CONDITIONS APPLY AT ALL DETAILS.
3. CALL-OUTS SHOWN ON ONE DETAIL SHALL APPLY TO ALL WHERE SAME CONDITIONS EXIST, U.O.N.
4. CASE WORK (N.I.C.).
ALL BUILT IN CASE WORK PROVIDING WORK STATIONS ARE TO BE SUBMITTED TO DSA PRIOR TO FABRICATION. 5% MIN. TO BE PROVIDED SHALL BE ACCESSIBLE.
5. 5 % OF ALL FURNITURE PROVIDED SHALL BE ACCESSIBLE.
6. PROVIDE STAIR SIGNAGE AT BOTH SIDES OF DOORS 133A; 103A; 240A; 203A; 338A & 303A AS PER SEC. 1117B.5.2. THE INFORMATION SHALL BE PRESENTED USING RAISED ARABIC NUMERALS AND RAISED BRAILLE SYMBOLS. THE SIGN SHALL BE LOCATED 5 FT. A.F.F.. THE SIGN SHALL BE LOCATED IMMEDIATELY ADJACENT TO THE DOOR ON THE STRIKE SIDE. (SEC. 1133B.4.3.).
7. PROVIDE PORTABLE ASSISTIVE LISTENING DEVICES IN ALL CONFERENCE AND MEETING ROOMS WHERE REQUIRED – MINIMUM NUMBER SHALL BE EQUAL TO 4% OF SEATING BUT NOT LESS THAN 2

SHEET NOTES

1. FOR INTERIOR FINISHES SEE FINISH SCHEDULE SHEETS A9.1.1– A9.1.3

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Issued for	Rev	Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Drawing Title

TOILET DETAILS

AS NOTED

Scale

3193000

Project Number

06OCT00

Baseline Date

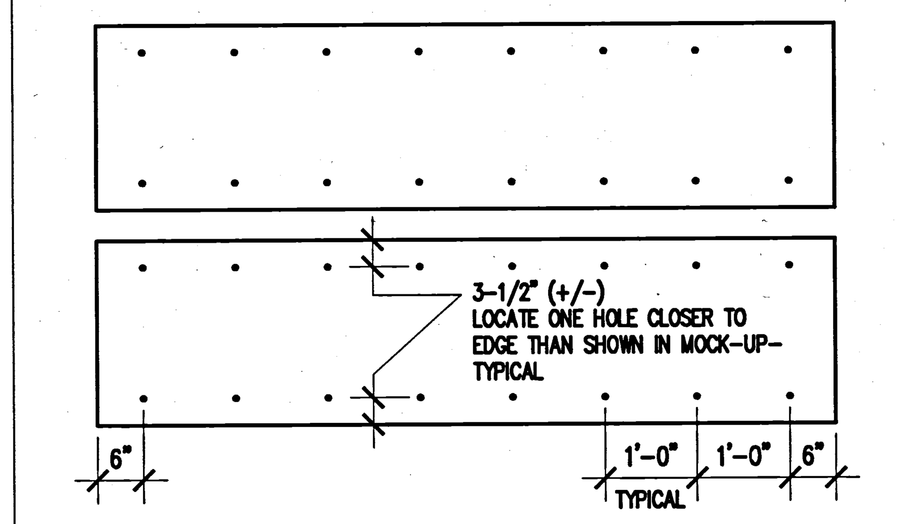
A9.8.2

Drawing Number

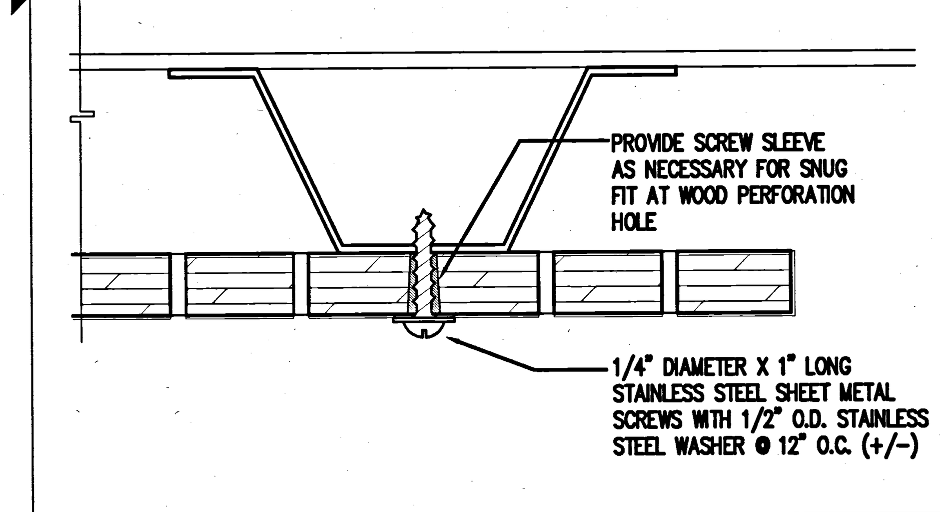
36 NOT USED
SCALE:

26 NOT USED
SCALE:

ISSUE: Submittal # 09575.006



16 TYPICAL CEILING PANEL CONNECTION AND SCREW SPACING
AT AUDITORIUM
SCALE:



SmithGroup Los Angeles, 1919 Santa Monica Boulevard, Santa Monica, California 90404, p (310) 586-5400, f (310) 586-1091	DESCRIPTION: CONNECTION AT WOOD CEILING PANEL AUDITORIUM	REV No.	JOB No. 31930.000
SCALE: N.T.S.	CLIENT: UC RIVERSIDE CAMPUS SURGE BUILDING	DATE: 07/26/01	SKETCH No. ASK-066

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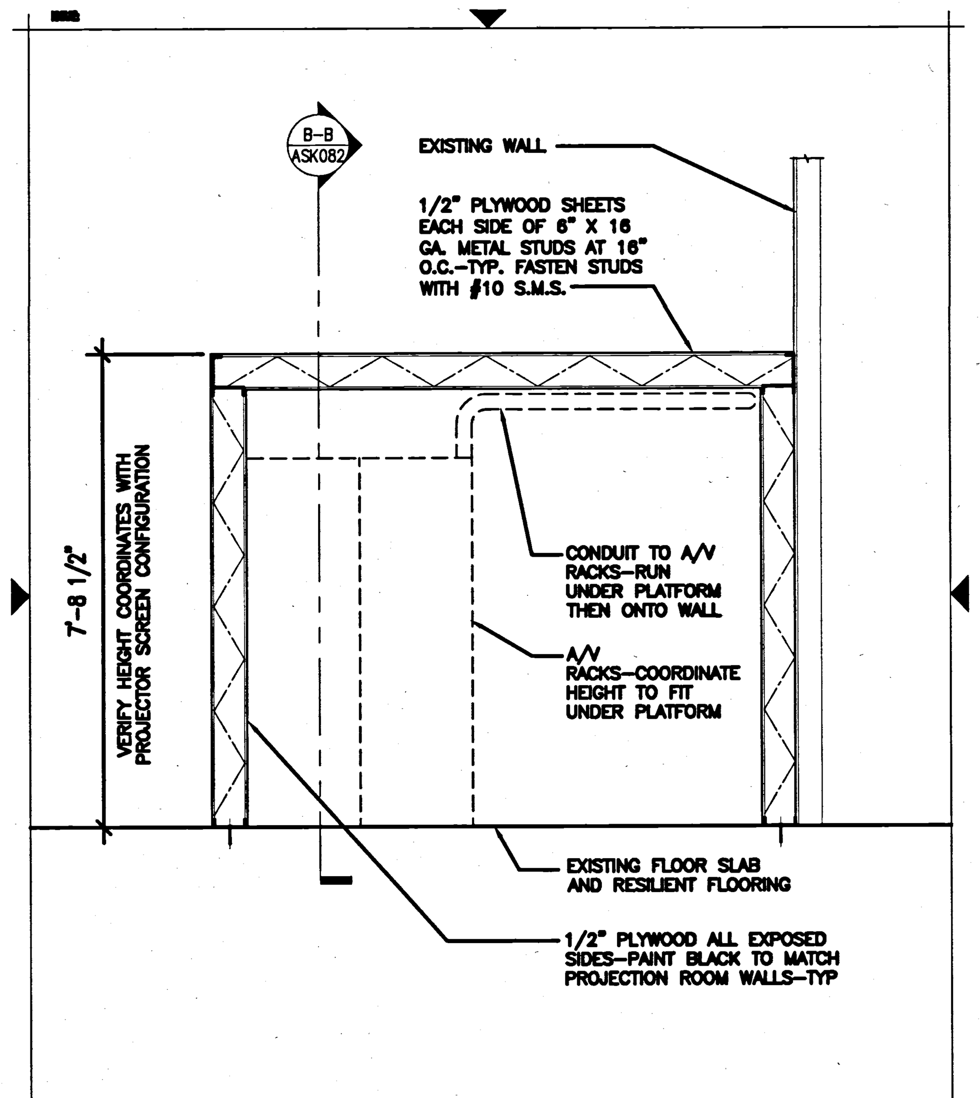

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38
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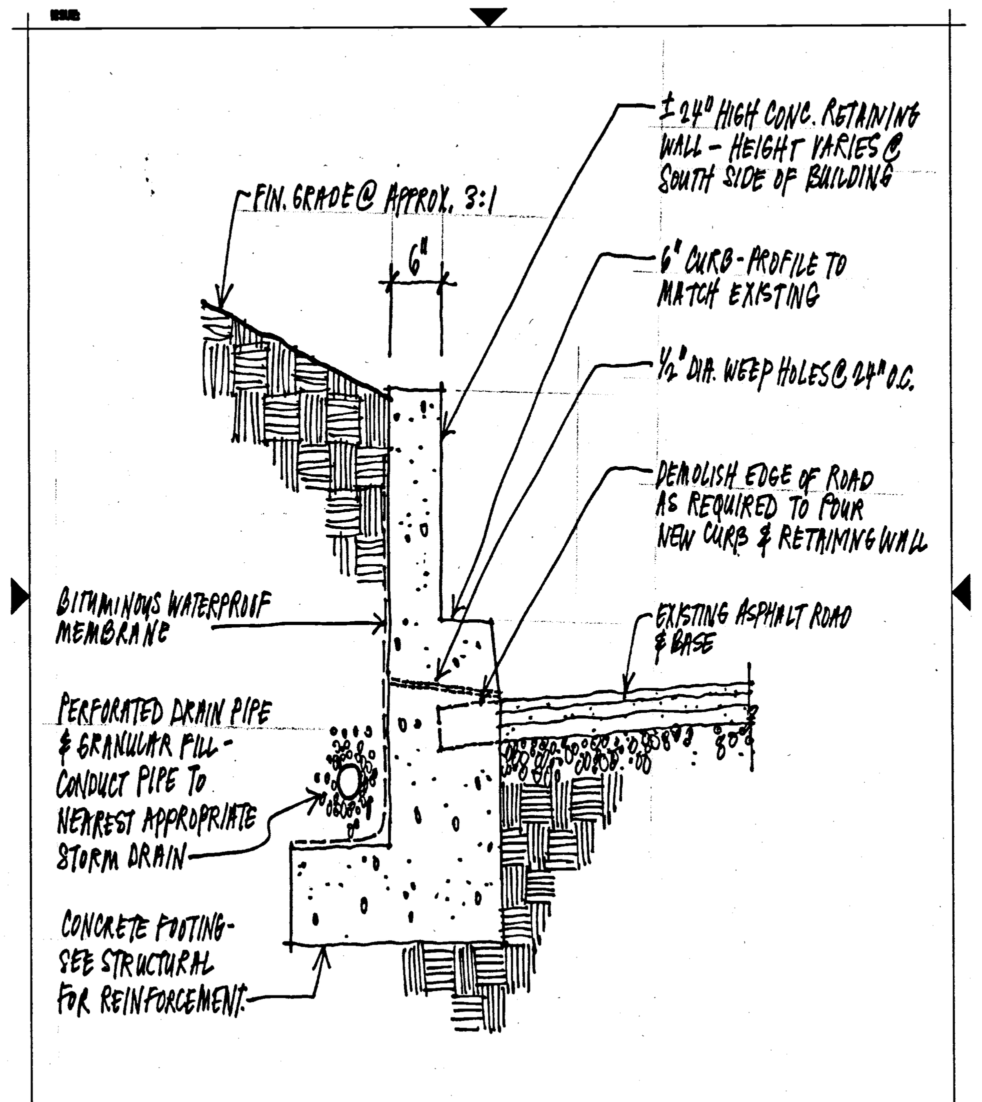
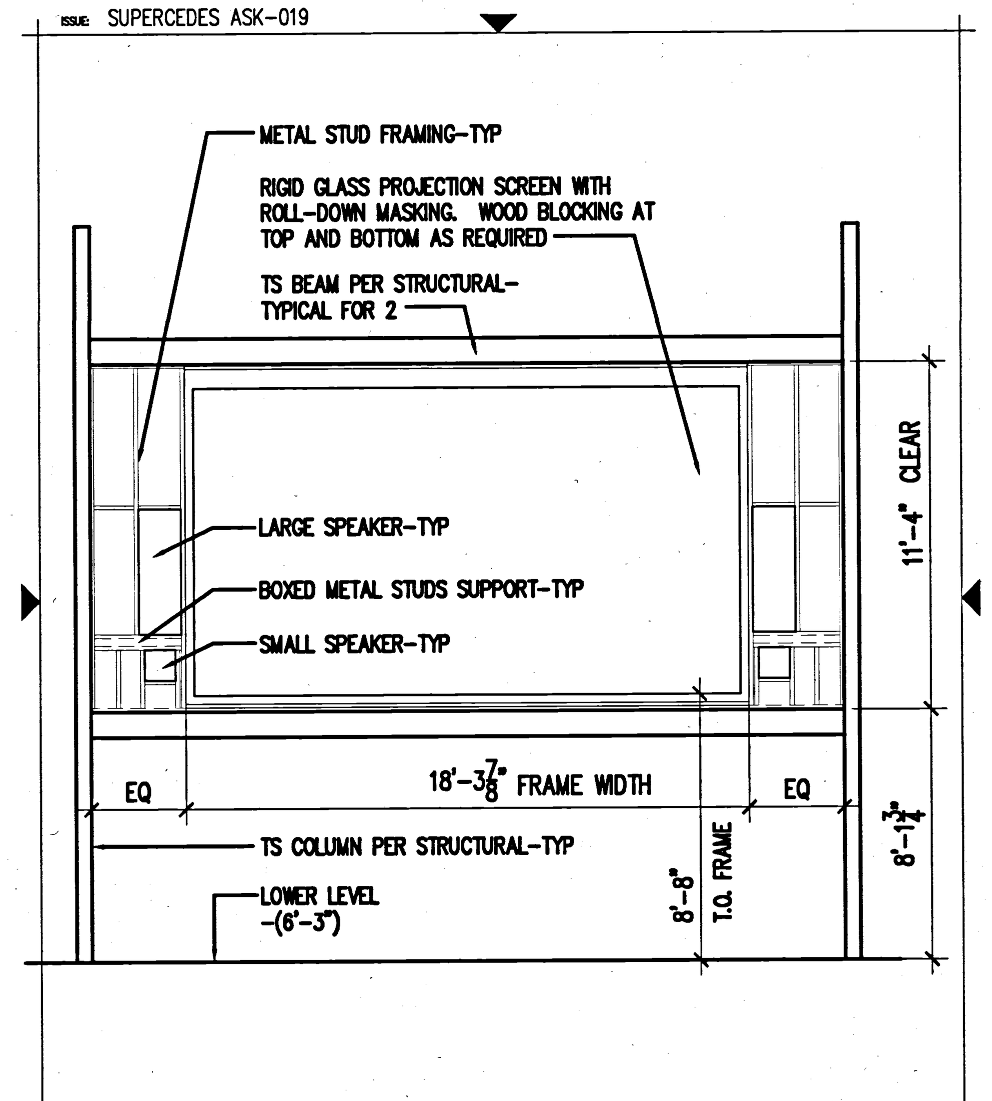


SmithGroup Los Angeles, 1919 Santa Monica Boulevard, Santa Monica, California 90404, p (310) 586-5400, f (310) 586-1091	DESCRIPTION: SECTION DETAIL AT CURB/RETAINING WALL	REV No.	JOB No. 31930.000
SCALE: NTS	CLIENT: UC RIVERSIDE CAMPUS SURGE PROJECT	DATE: 08/07/01	SKETCH No. ASK-073

28
SCALE:

ISSUE: SUPERCEDES ASK-019



SmithGroup Los Angeles, 1919 Santa Monica Boulevard, Santa Monica, California 90404, p (310) 586-5400, f (310) 586-1091	DESCRIPTION: FRAMING ELEVATION AT PROJECTION SCREEN WALL AUDITORIUM	REV No.	JOB No. 31930.000
SCALE: 1/4"=1'-0"	CLIENT: UC RIVERSIDE CAMPUS SURGE BUILDING	DATE: 06/06/01	SKETCH No. ASK-039

18
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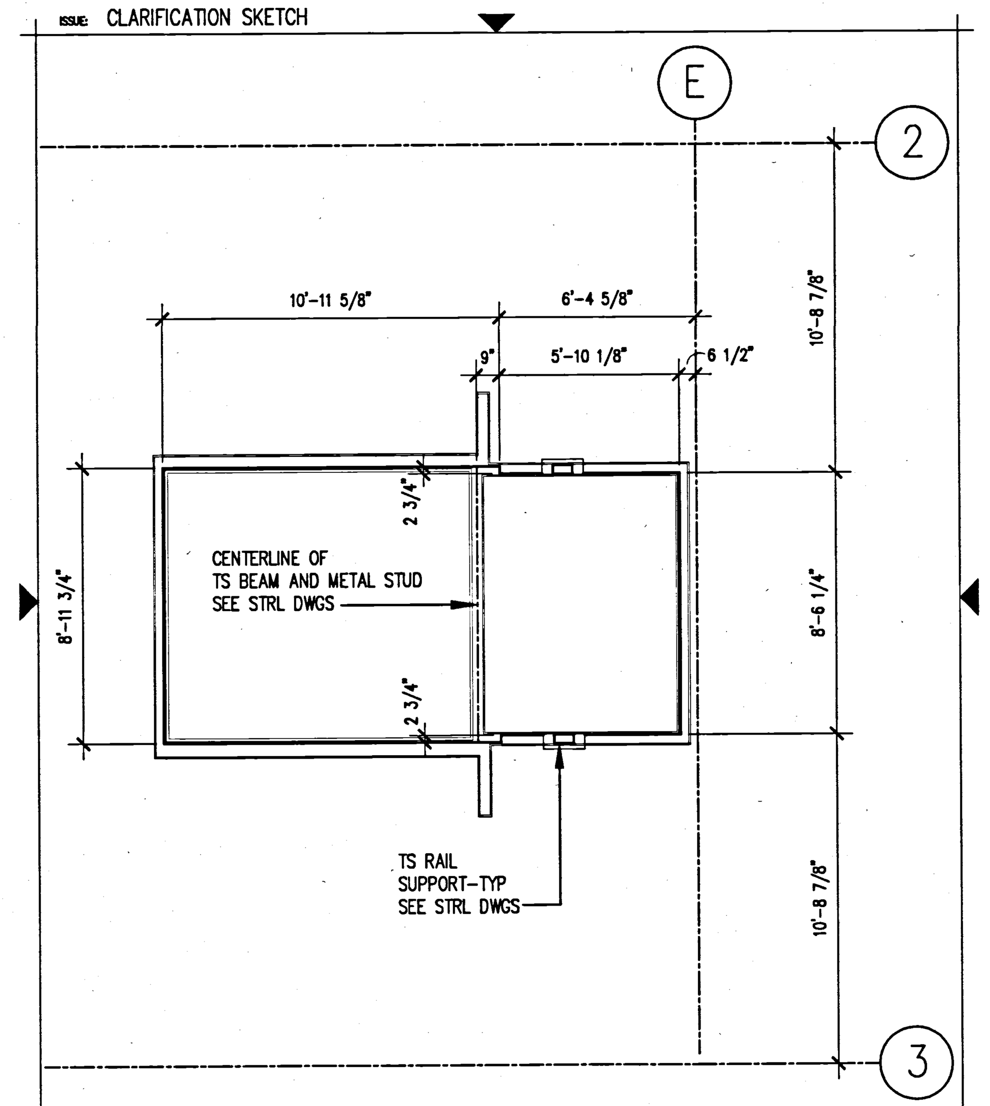
ISSUE: CLARIFICATION SKETCH



SmithGroup Los Angeles, 1919 Santa Monica Boulevard, Santa Monica, California 90404, p (310) 586-5400, f (310) 586-1091	DESCRIPTION: SLAB OPENING DIMENSIONS ELEV + MECH SHAFTS SECOND & THIRD FLOORS	REV No.	JOB No. 31930.00
SCALE: N.T.S.	CLIENT: UC RIVERSIDE CAMPUS SURGE BUILDING	DATE: 01/04/01	SKETCH No. ASK-003

8
SCALE:

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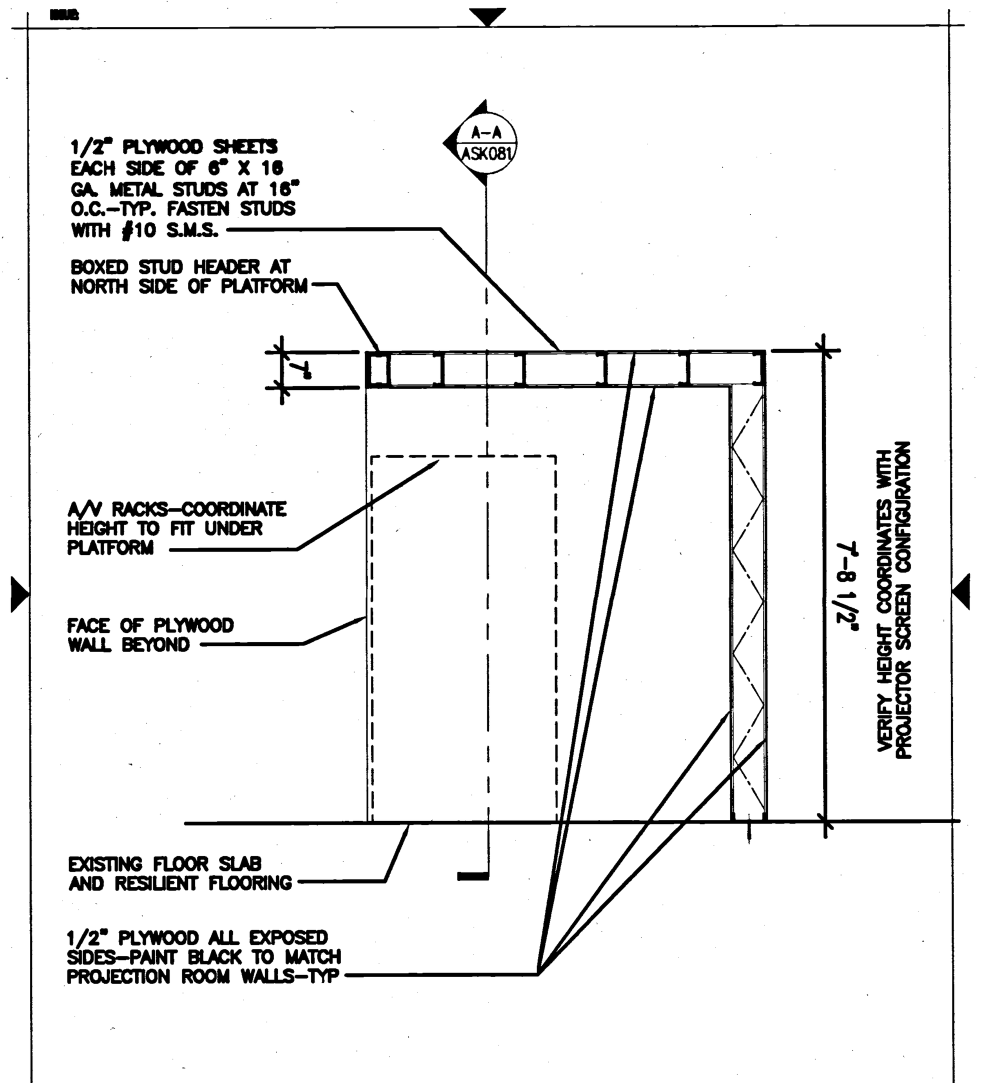
Seals and Signatures



SmithGroup Los Angeles, 1919 Santa Monica Boulevard, Santa Monica, California 90404, p (310) 586-5400, f (310) 586-1091	DESCRIPTION: PROJECTOR PLATFORM CROSS SECTION B-B	REV No.	JOB No. 31930.000
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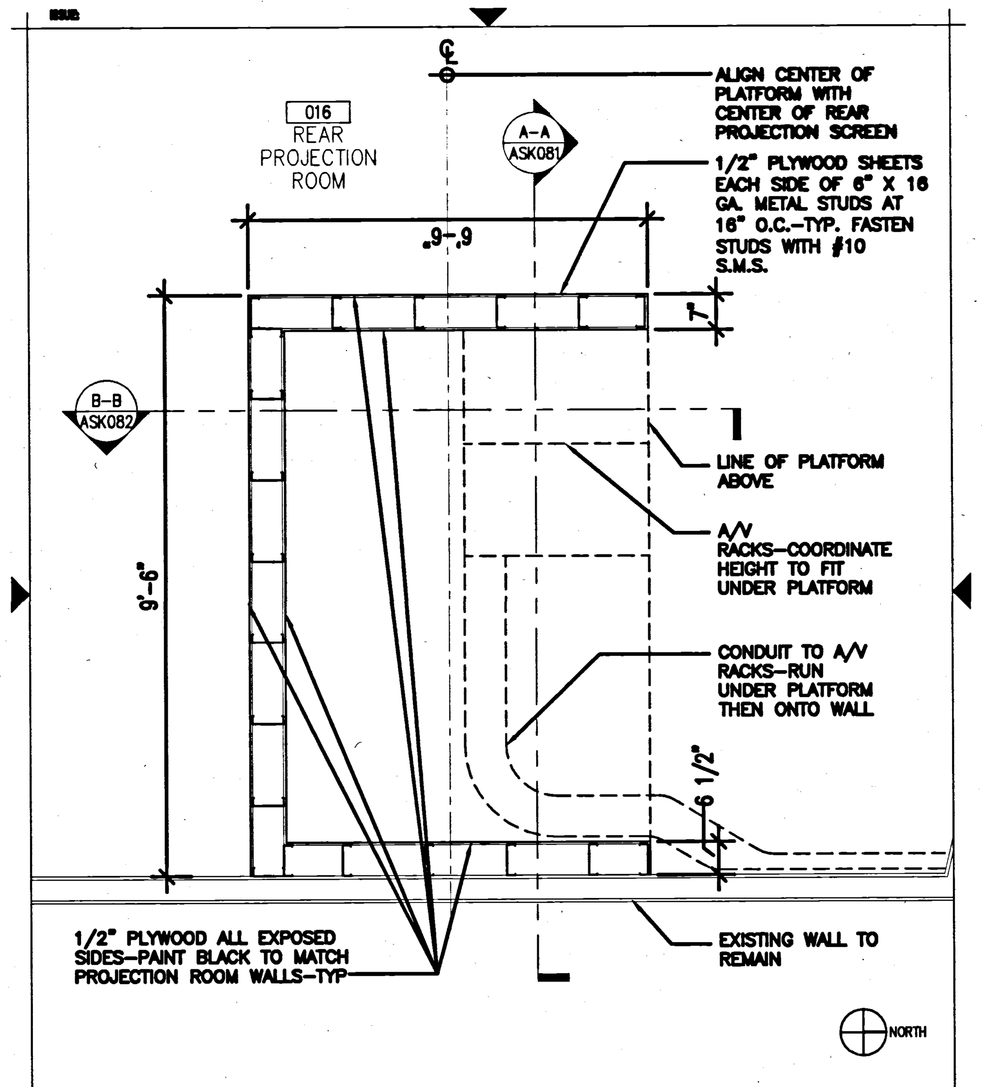

SmithGroup Los Angeles, 1919 Santa Monica Boulevard, Santa Monica, California 90404, p (310) 586-5400, f (310) 586-1091	DESCRIPTION: PROJECTOR PLATFORM PLAN SECTION	REV No.	JOB No. 31930.000
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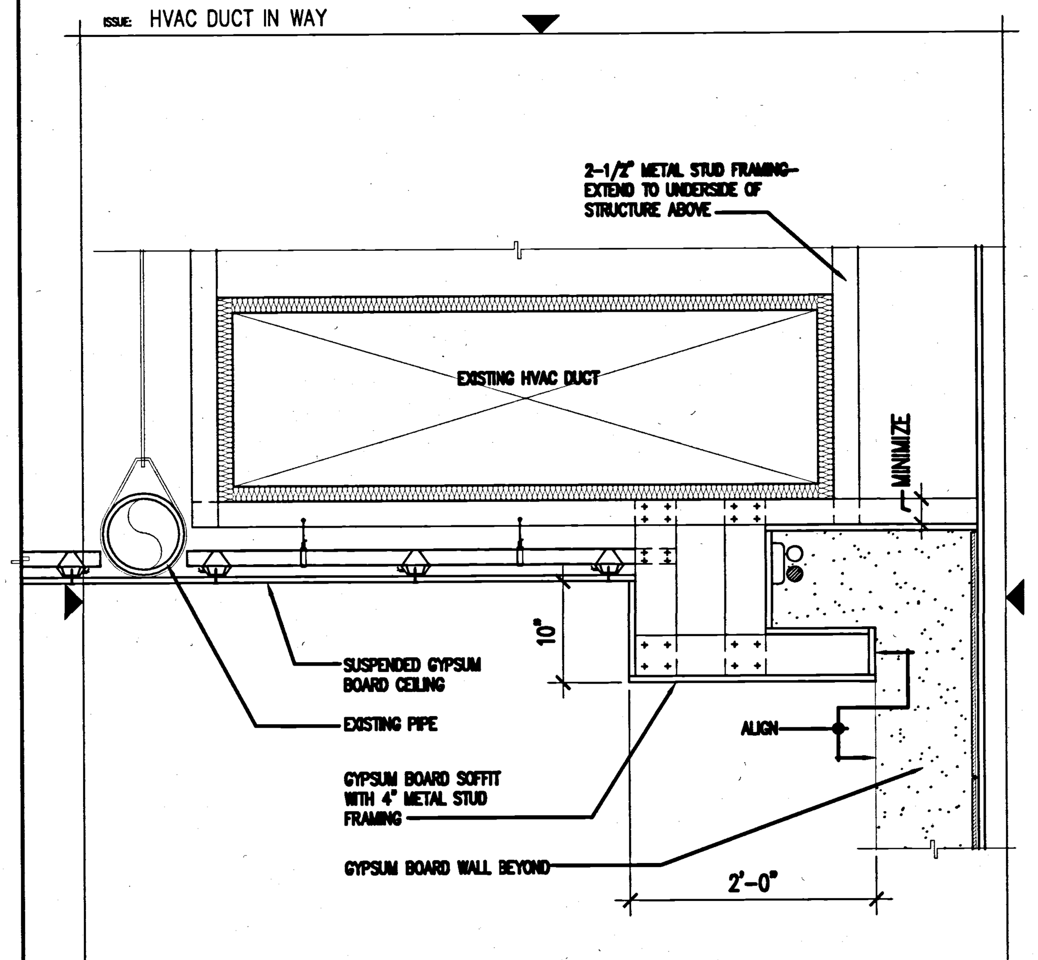
ISSUE: HVAC DUCT IN WAY

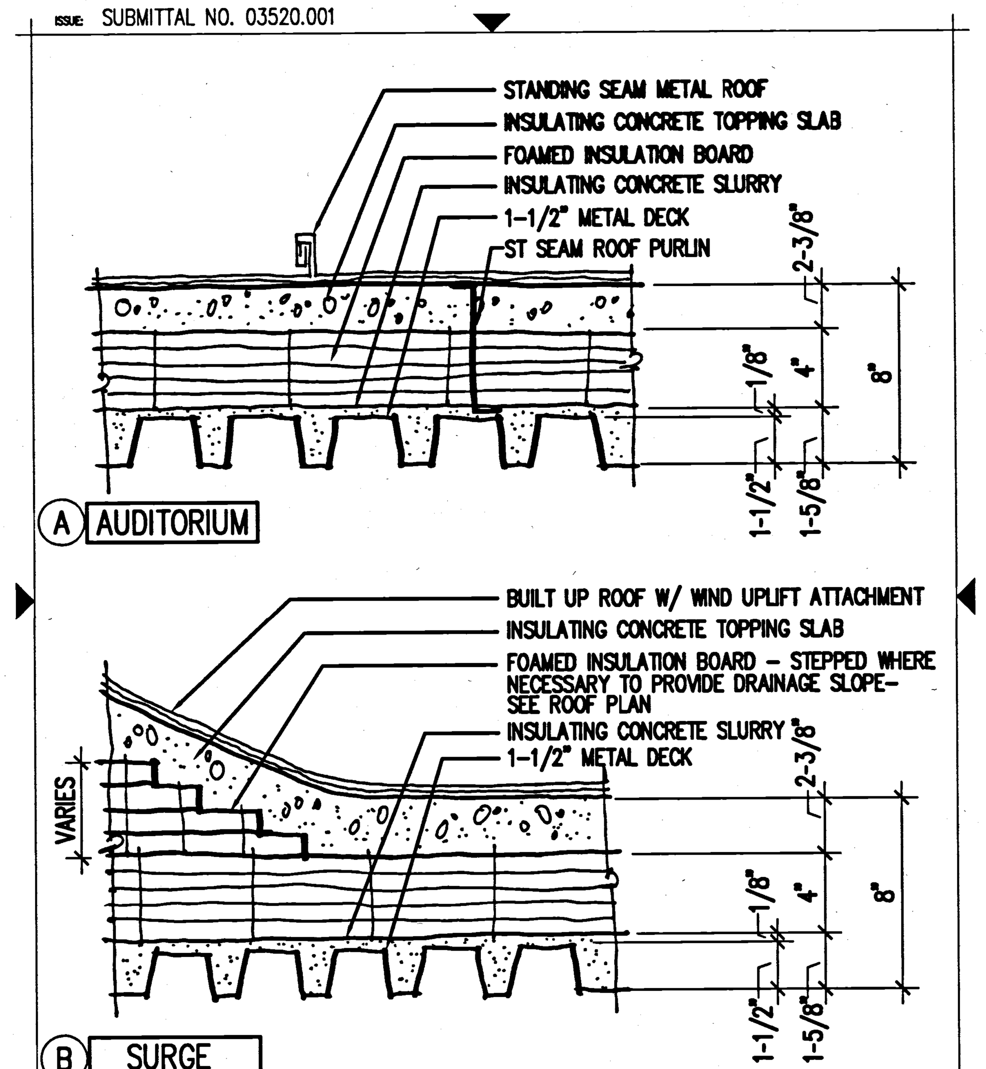


21 LIGHT COVE @ GYB BD CEILING
SCALE: 3" = 1'-0"

SmithGroup Los Angeles, 1919 Santa Monica Boulevard, Santa Monica, California 90404, p (310) 586-5400, f (310) 586-1091	DESCRIPTION: REVISED SOFFIT SURGE GROUND FLOOR LOBBY REFERENCE 21/A9.7.3	REV No.	JOB No. 31930.000
SCALE: NTS	CLIENT: UC RIVERSIDE CAMPUS SURGE BUILDING	DATE: 05/25/01	SKETCH No. ASK-041

20
SCALE:

ISSUE: SUBMITTAL NO. 03520.001

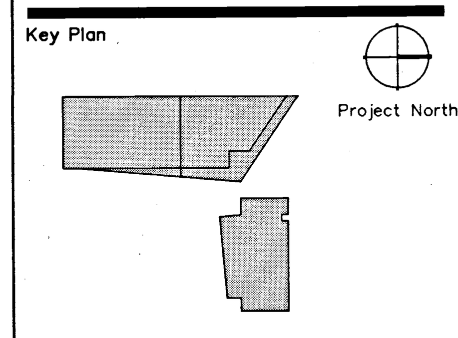


SmithGroup Los Angeles, 1919 Santa Monica Boulevard, Santa Monica, California 90404, p (310) 586-5400, f (310) 586-1091	DESCRIPTION: INSULATING CONCRETE SYSTEM AT SURGE BUILDING AND AUDITORIUM BASED ON U.L. DESIGN P921	REV No.	JOB No. 31930.00
SCALE: NTS	CLIENT: UC RIVERSIDE CAMPUS SURGE BUILDING	DATE: 04/04/01	SKETCH No. ASK-030

10
SCALE:

RECORD DRAWINGS

Key Plan



Drawing Title
MISCELLANEOUS DETAILS

SCALE AS SHOWN

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Baseline Date	
Drawing Number	A9.8.3

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Plot Setup Script:
Plot Date: 03/11/02 17:28
Plot View:

STRUCTURAL NOTES

EXPANSION TYPE CONCRETE WEDGE ANCHORS DESIGN AND TEST VALUES
HILTI KWIK BOLT-II CARBON STEEL (ICBO #4627)
4000 PSI STONE AGGREGATE CONCRETE

ANCHOR DIA (INCHES)	EMBEDMENT DEPTH (INCHES)	DESIGN VALUES (POUNDS)		TENSION TEST (POUNDS)
		SHEAR	TENSION	
1/4	1 1/8	400	180	360
	2		295	590
	3 3/4		315	625
3/8	1 5/8	1,025	365	710
	2 1/2	1,100	645	1,290
	3 1/4	1,100	675	1,350
1/2	2 1/4	1,840	680	1,365
	3 1/2		1,125	2,250
	6		1,190	2,375
5/8	2 3/4	2,875	1,000	2,000
	4	3,125	1,545	3,090
	7	3,125	1,750	3,500
3/4	3 1/4	3,875	1,250	2,500
	4 3/4	4,225	2,250	4,500
	8	4,225	2,750	5,500
1	4 1/2	7,625	2,190	4,375
	6	8,625	3,315	6,625
	9	8,625	4,065	8,125

THESE VALUES REFLECT 100% OF ICBO REPORT VALUES FOR SHEAR. THESE VALUES ASSUME NO SPECIAL INSPECTION AND REFLECT 100% OF ICBO REPORT VALUES FOR TENSION.

NOTES

1. ANCHOR DIAMETER REFERS TO THE THREAD SIZE OF THE WEDGE ANCHOR.
2. APPLY PROOF TEST LOADS TO WEDGE ANCHORS WITHOUT REMOVING THE NUT IF POSSIBLE. IF NOT, REMOVE NUT AND INSTALL A THREADED COUPLER TO THE SAME TIGHTNESS OF THE ORIGINAL NUT USING A TORQUE WRENCH AND APPLY LOAD.
3. REACTION LOADS FROM TEST FIXTURES MAY BE APPLIED CLOSE TO THE ANCHOR BEING TESTED, PROVIDED THE ANCHOR IS NOT RESTRAINED FROM WITHDRAWING BY THE FIXTURE(S).
4. TEST EQUIPMENT IS TO BE CALIBRATED BY AN APPROVED TESTING LABORATORY IN ACCORDANCE WITH STANDARD RECOGNIZED PROCEDURES.
5. THE FOLLOWING CRITERIA APPLY FOR THE ACCEPTANCE OF INSTALLED ANCHORS:
   HYDRAULIC RAM METHOD: THE ANCHOR SHOULD HAVE NO OBSERVABLE MOVEMENT AT THE APPLICABLE TEST LOAD. FOR WEDGE AND SLEEVE TYPE ANCHORS, A PRACTICAL WAY TO DETERMINE OBSERVABLE MOVEMENT IS THAT THE WASHER UNDER THE NUT BECOMES LOOSE.
6. TESTING SHOULD OCCUR 24 HOURS MINIMUM AFTER INSTALLATION OF THE SUBJECT ANCHORS.
7. WHEN INSTALLING DRILLED-IN ANCHORS AND/OR POWDER DRIVEN PINS IN EXISTING NON-PRESTRESSED REINFORCED CONCRETE, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE EXISTING REINFORCING BARS.
8. THE TABULATED VALUES ARE FOR ANCHORS INSTALLED A MINIMUM OF 12 ANCHOR DIAMETERS ON CENTER AND A MINIMUM EDGE DISTANCE OF 10 ANCHOR DIAMETERS.
9. THE TABULATED VALUES FOR LIGHT WEIGHT CONCRETE ARE FOR ANCHORS INSTALLED IN LIGHTWEIGHT EXPANDED SHALE AGGREGATE CONCRETE HAVING THE COMPRESSIVE STRENGTH AT THE TIME OF INSTALLATION. CONCRETE AGGREGATE MUST COMPLY WITH U.B.C. STANDARD NO. 19-3.

EXPANSION TYPE CONCRETE WEDGE ANCHOR DESIGN AND TEST VALUES
HILTI-KWIK BOLT-II CARBON STEEL (ICBO #4627)
3000 PSI LIGHT WEIGHT CONCRETE

ANCHOR DIA (INCHES)	EMBEDMENT DEPTH (INCHES)	DESIGN VALUES (POUNDS)		TENSION TEST (POUNDS)
		SHEAR	TENSION	
1/4	1 1/8	400	142	284
	2		187	376
3/8	1 5/8	755	250	500
	2 1/2	1,100	400	800
1/2	2 1/4	1,370	445	890
	3 1/2	1,840	650	1,300
5/8	2 3/4	2,480	670	1,340
	4	3,125	718	1,436
3/4	3 1/4	3,170	935	1,870
	4 3/4	4,135	1,363	2,726

THESE VALUES REFLECT 100% OF ICBO REPORT VALUES FOR SHEAR. THESE VALUES ASSUME NO SPECIAL INSPECTION AND REFLECT 100% OF ICBO REPORT VALUES FOR TENSION.

NOTES

1. ANCHOR DIAMETER REFERS TO THE THREAD SIZE OF THE WEDGE ANCHOR.
2. APPLY PROOF TEST LOADS TO WEDGE ANCHORS WITHOUT REMOVING THE NUT IF POSSIBLE. IF NOT, REMOVE NUT AND INSTALL A THREADED COUPLER TO THE SAME TIGHTNESS OF THE ORIGINAL NUT USING A TORQUE WRENCH AND APPLY LOAD.
3. REACTION LOADS FROM TEST FIXTURES MAY BE APPLIED CLOSE TO THE ANCHOR BEING TESTED, PROVIDED THE ANCHOR IS NOT RESTRAINED FROM WITHDRAWING BY THE FIXTURE(S).
4. TEST EQUIPMENT IS TO BE CALIBRATED BY AN APPROVED TESTING LABORATORY IN ACCORDANCE WITH STANDARD RECOGNIZED PROCEDURES.
5. THE FOLLOWING CRITERIA APPLY FOR THE ACCEPTANCE OF INSTALLED ANCHORS:
   HYDRAULIC RAM METHOD: THE ANCHOR SHOULD HAVE NO OBSERVABLE MOVEMENT AT THE APPLICABLE TEST LOAD. FOR WEDGE AND SLEEVE TYPE ANCHORS, A PRACTICAL WAY TO DETERMINE OBSERVABLE MOVEMENT IS THAT THE WASHER UNDER THE NUT BECOMES LOOSE.
6. TESTING SHOULD OCCUR 24 HOURS MINIMUM AFTER INSTALLATION OF THE SUBJECT ANCHORS.
7. WHEN INSTALLING DRILLED-IN ANCHORS AND/OR POWDER DRIVEN PINS IN EXISTING NON-PRESTRESSED REINFORCED CONCRETE, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE EXISTING REINFORCING BARS.
8. THE TABULATED VALUES ARE FOR ANCHORS INSTALLED A MINIMUM OF 12 ANCHOR DIAMETERS ON CENTER AND A MINIMUM EDGE DISTANCE OF 10 ANCHOR DIAMETERS.
9. THE TABULATED VALUES FOR LIGHT WEIGHT CONCRETE ARE FOR ANCHORS INSTALLED IN LIGHTWEIGHT EXPANDED SHALE AGGREGATE CONCRETE HAVING THE COMPRESSIVE STRENGTH AT THE TIME OF INSTALLATION. CONCRETE AGGREGATE MUST COMPLY WITH U.B.C. STANDARD NO. 19-3.

STEEL DECK

1. ROOF AND FLOOR DECKS SHALL BE AS NOTED ON THE DRAWINGS. PROPERTIES ARE AS FOLLOWS:

DECK SIZE AND GAUGE	I (in4)	+S (in3)	-S (in3)
1 1/2" X 20 GA DECK	0.216	0.235	0.248
1 1/2" X 18 GA DECK	0.302	0.322	0.335

2. DECK SHOP DRAWINGS SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION AND SHALL INDICATE STUD LAYOUT.
3. THE AMERICAN IRON AND STEEL INSTITUTE "SPECIFICATIONS FOR THE DESIGN OF LIGHT GAUGE STEEL STRUCTURAL MEMBERS" SHALL GOVERN THE DESIGN OF ALL DECK UNITS, STEEL DECK AND ALL OF ITS CLOSURES AND FLASHINGS SHALL CONFORM TO ASTM A653, GRADE B, FY 38,000 PSI MIN.
4. ACCEPTABLE STEEL DECK MANUFACTURERS ARE AS FOLLOWS:
   VERCO MANUFACTURING, INC. (ICBO #2078, LARR #23243)
   ASC PACIFIC (ICBO # 2757, LARR #23783, 23784 AND 23803)
5. UNITS SHALL BE CONTINUOUS OVER THREE OR MORE SPANS, EXCEPT WHERE THE FRAMING DOES NOT PERMIT. SHORING MAY BE REQUIRED AT NON-CONTINUOUS SPANS. DECK SHOP DRAWINGS SHALL INDICATE WHERE SHORING WILL BE REQUIRED. DECK SHALL BEAR 2" MINIMUM AT ALL SUPPORTS.
6. ALL WELDING OF STEEL DECK SHALL BE DONE BY CERTIFIED LIGHT GAGE WELDERS IN ACCORDANCE WITH AWS "SPECIFICATIONS FOR WELDING SHEET STEEL IN STRUCTURES", AWS D1.3-81.
7. UNITS SHALL BE FASTENED TO THE STEEL SUPPORTS AT THE END OF THE UNITS AND AT INTERMEDIATE SUPPORTS AND TO THE STEEL SUPPORTS AT THE SIDE BOUNDARIES BY 3/4" DIAMETER PUDDLE WELDS AT 1'-0" O.C. SHEAR STUDS WELDED THROUGH DECK MAY BE USED IN PLACE OF 3/4" DIAMETER PUDDLE WELDS.
8. PROVIDE FLASHING AND CLOSURE PLATES AT ENDS OF ALL UNITS, AROUND COLUMNS, AND AT ALL PERIMETER LOCATIONS REQUIRING CONCRETE.
9. ALL METAL DECK TO BE VENTED DECK.

METAL STUDS

1. ALL LIGHTGAGE METAL FRAMING SHALL BE AS NOTED BELOW:
   EXTERIOR STUDS: GALVANIZED
   INTERIOR STUDS: GALVANIZED
2. ALL LIGHTGAGE METAL FRAMING CONSTRUCTION SHALL BE IN ACCORDANCE WITH AISI "SPECIFICATIONS FOR DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS."
3. ALL LIGHTGAGE METAL FRAMING SHALL CONFORM WITH THE FOLLOWING:
   GALVANIZED STUDS: 12, 14 OR 16 GAUGE — ASTM A653, GRADE 50 (Fy = 50,000 psi)
   GALVANIZED STUDS: 18 OR 20 GAUGE — ASTM A653, GRADE 33 (Fy = 33,000 psi)
   GALVANIZED TRACK END CLOSURES, BRIDGING AND ACCESSORIES — ASTM A653, GRADE 33 (Fy = 33,000 psi)
4. DOUBLE VERTICAL STUDS SHALL BE STITCH WELDED TOGETHER ON BOTH FLANGES WITH 1/16" GROOVE WELDS X 1" LONG AT 12" ON CENTER.
5. TOP AND BOTTOM STUD TRACKS FOR INTERIOR PARTITIONS SHALL BE 16 GA MATERIAL WITH 1.25" FLANGES UNO.
6. TOP STUDS TRACKS FOR EXTERIOR WALLS SHALL BE 16 GA MATERIAL WITH 1.25" FLANGES: BOTTOM STUD TRACKS FOR EXTERIOR WALLS SHALL BE 16 GA MATERIAL WITH 1.25" FLANGES.
7. MINIMUM STUD PROPERTIES SHALL BE AS FOLLOWS:

	MAJOR AXIS S=......IN3	MAJOR AXIS I=......IN4	MAJOR AXIS A=......IN2	NET AREA A=......IN2
2-1/2" STUDS:				
2-1/2" X 20 GA (TYP)	0.151	0.191	0.189	0.132
2-1/2" X 18 GA	0.193	0.241	0.242	0.170
2-1/2" X 16 GA	0.235	0.296	0.301	0.219
2-1/2" X 20 GA TRACK	0.09	0.131		
2-1/2" X 18 GA TRACK	0.128	0.178		
2-1/2" X 16 GA TRACK	0.159	0.221		
3-5/8" STUDS:				
3-5/8" X 20 GA (TYP)	0.247	0.494	0.228	0.171
3-5/8" X 18 GA	0.317	0.574	0.293	0.223
3-5/8" X 16 GA	0.388	0.708	0.364	0.274
3-5/8" X 20 GA TRACK	0.156	0.32		
3-5/8" X 18 GA TRACK	0.218	0.432		
3-5/8" X 16 GA TRACK	0.273	0.538		
4" STUDS:				
4" X 20 GA (TYP)	0.282	0.572	0.241	0.184
4" X 18 GA	0.363	0.725	0.310	0.238
4" X 16 GA	0.444	0.895	0.386	0.296
4" X 20 GA TRACK	0.181	0.407		
4" X 18 GA TRACK	0.252	0.549		
4" X 16 GA TRACK	0.273	0.684		
6" STUDS:				
6" X 20 GA STUDS	0.504	1.513	0.311	0.253
6" X 18 GA STUDS	0.642	1.926	0.400	0.331
6" X 16 GA STUDS	0.789	2.385	0.499	0.409
6" X 16 DEEP LEG TRACKS	0.634	2.121		

THESE VALUES ARE TAKEN FROM THE MSMA CATALOG ICBO 4943. ALL PROPERTIES FOR STUDS REFLECT 1 1/4" FLANGE. ALL PROPERTIES FOR TRACKS REFLECT 1" FLANGE, AND ALL PROPERTIES FOR DEEP LEG TRACKS REFLECT 1 1/2" FLANGE.

8. ALL SHEET METAL SCREWS SHALL PROTRUDE 1/4" THROUGH METAL FRAMING.
9. ALL METAL STUDS SHALL HAVE STIFFENED FLANGES. SEE DRAWINGS FOR DETAILS ON CONNECTIONS, BRACING, BRIDGING, ETC.
10. TYPICAL INTERIOR PARTITIONS SHALL BE 4"-16 GA STUDS @ 16" O.C. U.N.O. ON THE DRAWINGS.

CONSTRUCTION JOINTS

1. ALL CONSTRUCTION JOINTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CODE SECTION 1906.4 AND THE TYPICAL CONSTRUCTION JOINT DETAILS SHOWN ON THE STRUCTURAL DRAWINGS.
2. ALL SURFACES OF CONSTRUCTION JOINTS SHALL BE CLEANED TO REMOVE DUST, CHIPS, OR OTHER FOREIGN MATTER PRIOR TO PLACING THE ADJACENT CONCRETE.
3. THE CONTRACTOR SHALL SUBMIT THE PROPOSED LOCATIONS OF CONSTRUCTION JOINTS TO THE ENGINEER FOR APPROVAL BY THE STRUCTURAL ENGINEER BEFORE STARTING CONSTRUCTION.

MASONRY

1. CONCRETE BLOCK SHALL BE HOLLOW LOAD-BEARING CONCRETE MASONRY UNITS CONFORMING TO ASTM C-90, GRADE N. MEDIUM WEIGHT UNITS. USE OPEN END UNITS FOR STACKED BOND PATTERN.
2. CEMENT SHALL BE AS SPECIFIED FOR CONCRETE.
3. REINFORCING BARS - SEE NOTES UNDER "REINFORCING STEEL" FOR REQUIREMENTS.
4. MORTAR SHALL BE TYPE S WITH PROPORTIONS OF 4 -1/2 PARTS SAND, 1/2 PART POWDERED LIME, 1 PART PORTLAND CEMENT AND SHALL COMPLY WITH UBC STD. 21-15. MORTAR SHALL HAVE A 28 DAY STRENGTH OF 1500 PSI MINIMUM. MORTAR COMPONENT TESTS ARE NOT REQUIRED.
5. GROUT SHALL CONSIST OF 3 PARTS SAND, 2 PARTS PEA GRAVEL, AND 1 PART PORTLAND CEMENT, AND SHALL COMPLY WITH UBC STD. 21-14. GROUT COMPONENT TESTS ARE NOT REQUIRED.
6. PROVIDE A MINIMUM OF 1/2" CLEAR BETWEEN MAIN REINFORCING AND MASONRY UNITS.
7. ALL CELLS SHALL BE GROUTED SOLID.
8. DESIGN f'm = 1500 PSI FOR CMU CONSTRUCTION, AS PER TABLE 21 D, OF THE CODE. PRISM TESTING SHALL BE PERFORMED AS PER THE REQUIREMENTS OF THE CODE, SECTION 2105.3.3.

REINFORCING STEEL (FOR CONCRETE AND MASONRY)

1. REINFORCING BARS SHALL CONFORM TO THE REQUIREMENTS OF CHAPTER 19 OF THE CODE, ASTM A615, GRADE 60 UNO. DEFORMATIONS SHALL BE IN ACCORDANCE WITH ASTM A-305.
2. BARS SHALL BE CLEAN OF RUST, GREASE, OR OTHER MATERIALS LIKELY TO IMPAIR BOND. ALL REINFORCING BAR BENDS SHALL BE MADE COLD.
3. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185. PROVIDE LAPS AS PER THE CODE SECTION 1912.19, 9" MINIMUM. WWF SHALL BE SUPPORTED ON APPROVED CHAIRS.
4. REINFORCING BAR SPLICES SHALL BE MADE AS INDICATED ON THE DRAWINGS. MINIMUM SPLICE LENGTH FOR REINFORCING STEEL BARS IN MASONRY SHALL BE 40 BAR DIAMETERS, 24" MINIMUM. MINIMUM SPLICE LENGTH FOR REINFORCING STEEL BARS IN CONCRETE SHALL BE AS PER THE CODE SECTION 1912. LAP ALL HORIZONTAL BARS AT CORNERS AND INTERSECTIONS. STAGGER ALL SPLICES UNLESS NOTED OTHERWISE ON PLANS.
5. ALL BARS SHALL BE MARKED SO THEIR IDENTIFICATION CAN BE MADE WHEN THE FINAL IN-PLACE INSPECTION IS MADE.
6. WHERE WELDING OF REINFORCING IS APPROVED BY THE STRUCTURAL ENGINEER, IT SHALL BE DONE BY AWS CERTIFIED WELDERS USING E90XX OR APPROVED ELECTRODES. WELDING PROCEDURES SHALL CONFORM TO THE REQUIREMENTS OF STRUCTURAL WELDING CODE- REINFORCING STEEL", AWS-D1.4, LATEST REVISION. REINFORCING BARS TO BE WELDED SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-706.
7. BARS IN SLABS SHALL BE SECURELY SUPPORTED ON WELL-CURED CONCRETE BLOCKS OR APPROVED METAL CHAIRS, PRIOR TO PLACING CONCRETE.
8. REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH THE "A.C.I. MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", LATEST EDITION.
9. COMPLETE AND DETAILED REINFORCING PLACEMENT DRAWINGS SHALL BE PREPARED AND SUBMITTED TO THE ARCHITECT FOR APPROVAL BY THE STRUCTURAL ENGINEER PRIOR TO FABRICATION IN ACCORDANCE WITH THE SPECIFICATIONS AND APPLICABLE CODES. THESE DRAWINGS SHALL BE AVAILABLE ON THE JOB SITE PRIOR TO PLACING OF CONCRETE.
10. MILL TEST REPORTS FOR GRADE 60 BARS SHALL BE SUBMITTED PRIOR TO PLACEMENT OF CONCRETE.
11. CONTINUOUS INSPECTION OF CONCRETE SHALL INCLUDE INSPECTION DURING INSTALLATION OF REINFORCING STEEL. INSPECTION SHALL BE SCHEDULED SO THAT PLACEMENT OF REINFORCING STEEL, CONDUIT, SLEEVES, AND EMBEDDED ITEMS MAY BE CORRECTED PRIOR TO PLACEMENT OF OVERLYING GRIDS OR REINFORCING STEEL.
12. ALL GRADE 60 REINFORCING STEEL SHALL BE CLEARLY MARKED TO DIFFERENTIATE THEM FROM GRADE 40 REINFORCING STEEL IF CONCURRENTLY ON SITE.
13. CONCRETE PROTECTION FOR REINFORCEMENT
   THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT:

	MINIMUM COVER, IN.
A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3
B. CONCRETE EXPOSED TO EARTH OR WEATHER:	
NO. 6 THROUGH NO. 18 BAR	2
NO 5 BAR, W31 OR D31 WIRE & SMALLER	1 1/2
C. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:	
SLABS, WALLS, JOISTS:	
NO. 14 AND NO. 18 BAR	1 1/2
NO. 11 BAR & SMALLER	3/4
BEAMS, COLUMNS:	
PRIMARY REINFORCEMENT TIES, STIRRUPS, SPIRALS	1 1/2
SHELLS, FOLDED PLATE MEMBERS:	
NO. 6 BAR AND LARGER	3/4
NO 5 BAR, W31 OR D31 WIRE & SMALLER	1/2

STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED BY AN APPROVED AND LICENSED FABRICATOR IN ACCORDANCE WITH THE AISC SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS (LATEST EDITION), AND WITH CHAPTER 22A OF THE CODE.
2. ALL STRUCTURAL STEEL SHALL CONFORM TO THE ASTM DESIGNATION AS INDICATED BELOW (UNO):

WF SHAPES, W14x22 & HEAVIER	A572 OR A992
ALL OTHER WF SHAPES, PLATES U.N.O., CONNECTION PLATES, AND MISC.	A-36
PIPE COLUMNS	A-53, GRADE B
TUBE SECTIONS	A-500, GRADE B
BOLTS	A-325
BOLTS IN CONCRETE/MASONRY	A-307
ANGLES, CHANNELS, WT SHAPES	A-36

3. THE STRUCTURAL STEEL FABRICATOR SHALL FURNISH SHOP DRAWINGS TO THE ARCHITECT OF ALL STEEL FOR ARCHITECTS AND STRUCTURAL ENGINEERS REVIEW AND APPROVAL BEFORE FABRICATION.
4. BOLT HOLES USED IN STEEL SHALL BE 1/16" LARGER IN DIAMETER THAN NOMINAL SIZE OF BOLT USED, EXCEPT AS NOTED.
5. ALL STRUCTURAL STEEL SURFACES THAT ARE ENCASED IN CONCRETE, OR MASONRY, SPRAY ON FIREPROOFING, OR ARE ENCASED BY BUILDING FINISH, SHALL BE LEFT UNPAINTED.
6. ALL WELDING IS TO BE DONE BY CERTIFIED WELDERS USING E70XX ELECTRODES (UNO). ALL WELDS SHALL BE IN CONFORMITY WITH THE PROJECT SPECIFICATIONS AND THE CODE FOR WELDING IN BUILDING CONSTRUCTION (AWS D1.1 LATEST REVISION) OF THE AMERICAN WELDING SOCIETY. SEE SPECIAL INSPECTIONS SECTION FOR WELDING INSPECTION REQUIREMENTS.
7. WELD LENGTHS CALLED FOR ON PLANS ARE THE NET EFFECTIVE LENGTH REQUIRED. WHERE FILLET WELD SYMBOL IS GIVEN WITHOUT INDICATION OF SIZE, USE MINIMUM SIZE WELDS AS SPECIFIED IN AISC MANUAL OF STEEL CONSTRUCTION 9TH EDITION, SECTION 1.17.2.
8. ALL EXPOSED STRUCTURAL STEEL AND MISCELLANEOUS METAL SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
9. THE USE OF E70-T4 WELDING WIRE IS NOT ALLOWED FOR ANY APPLICATION.
10. ALL WELD FILLER MATERIAL SHALL HAVE A MINIMUM CHARPY V-NOTCH (CVN) VALUE OF 20 FT-LBS AT A TEMPERATURE OF OF -20°F.
11. 100 PERCENT ULTRASONIC TESTING TESTING FOR ALL FULL JOINT PENETRATION GROOVE WELDS IS REQUIRED.

FOUNDATION

1. FOUNDATION DESIGN BASED ON SOILS REPORT BY CHJ INC. REPORT NO. 00186-3, DATED MARCH 24, 2000.
2. FOOTINGS ARE DESIGNED BASED ON THE FOLLOWING INFORMATION:

ALLOWABLE BEARING	=	2100 PSF
		- MAY BE INCREASED BY 400 PSF FOR ADDITIONAL FOOT OF WIDTH AND BY 900 PSF FOR EACH ADDITIONAL FOOT OF DEPTH
ALLOWABLE BEARING	=	3500 PSF MAXIMUM
		- MAY BE INCREASED BY 33% FOR WIND AND SEISMIC LOAD CASES.
EQUIVALENT FLUID PRESSURE:	=	58H PSF FOR RESTRAINED WALL
	=	35H PSF FOR UNRESTRAINED WALL
PASSIVE EARTH PRESSURE	=	400 PSF
COEFFICIENT OF FRICTION	=	0.4

   FOOTINGS SHALL BEAR ON FIRM NATURAL SOILS OR RECOMPACT 2 FEET BELOW THE BOTTOM OF FOOTING.
   MINIMUM DEPTH OF FOOTING INTO RECOMMENDED BEARING MATERIAL SHALL BE 1'-6".
   MINIMUM WIDTH OF FOOTING SHALL BE 1'-3".
   BASE FRICTION AND PASSIVE EARTH PRESSURE MAY BE COMBINED WITHOUT REDUCTION.

2A. PILE FOUNDATIONS ARE DESIGNED BASED ON THE FOLLOWING INFORMATION:

PILE	DOWNWARD CAPACITY (KIPS)	UPWARD CAPACITY (KIPS)	LATERAL CAPACITY (KIPS)
24"ø	150	80	20

   ALL DRILLED PILE EXCAVATION SHOULD BE INSPECTED BY THE SOILS ENGINEER AND THE REGISTERED DEPUTY INSPECTOR TO VERIFY THE DEPTH OF THE FILL AND THAT THE DESIRED PENETRATION INTO NATURAL SOILS IS ACHIEVED. PRECAUTIONS SHOULD BE TAKEN DURING THE INSTALLATION OF PILES TO MINIMIZE THE POSSIBILITY OF CAVING. CLOSELY SPACED PILES SHOULD BE DRILLED AND FILLED ALTERNATELY, ALLOWING THE CONCRETE TO SET AT LEAST EIGHT HOURS BEFORE DRILLING AN ADJACENT HOLE. PILE EXCAVATIONS SHOULD BE FILLED WITH CONCRETE AS SOON AFTER DRILLING AND INSPECTION AS POSSIBLE THE HOLES SHOULD NOT BE LEFT OPEN OVERNIGHT.

3. CONTRACTOR TO PROVIDE FOR DE-WATERING OF EXCAVATIONS FROM EITHER SURFACE WATER, GROUND WATER OR SEEPAGE, IF REQUIRED.
4. CONTRACTOR SHALL PROVIDE FOR DESIGN AND INSTALLATION OF ALL CRIBBING, SHEATHING AND SHORING REQUIRED AND SHALL BE SOLELY RESPONSIBLE FOR ALL EXCAVATION PROCEDURES INCLUDING LAGGING, SHORING AND PROTECTION OF ADJACENT PROPERTY, STRUCTURES, STREETS AND UTILITIES IN ACCORDANCE WITH ALL NATIONAL, STATE AND LOCAL SAFETY ORDINANCES.
5. EXCAVATION FOR FOOTINGS SHALL BE APPROVED BY THE INSPECTOR OR SOILS ENGINEER PRIOR TO PLACING THE CONCRETE AND REINFORCING. CONTRACTOR TO NOTIFY THE INSPECTOR WHEN INSPECTION OF EXCAVATION IS READY. INSPECTOR TO SUBMIT LETTER OF COMPLIANCE.
6. ALL EXCAVATIONS SHALL BE PROPERLY BACKFILLED. DO NOT PLACE BACKFILL BEHIND RETAINING WALLS BEFORE CONCRETE OR GROUT HAS ATTAINED FULL DESIGN STRENGTH. CONTRACTORS SHALL BRACE OR PROTECT ALL BUILDING AND PIT WALLS BELOW GRADE FROM LATERAL LOADS UNTIL ATTACHING FLOORS ARE COMPLETELY IN PLACE AND HAVE ATTAINED FULL STRENGTH. CONTRACTOR SHALL PROVIDE FOR DESIGN, PERMITS AND INSTALLATION OF SUCH BRACING.
7. FOUNDATIONS SHALL BE PLACED AND ESTIMATED ACCORDING TO DEPTHS SHOWN ON DRAWINGS. SHOULD SOIL ENCOUNTERED AT THESE DEPTHS NOT BE APPROVED BY THE INSPECTOR OR SOILS ENGINEER, FOUNDATION ELEVATIONS WILL BE ALTERED BY CHANGE ORDER.
8. FOOTING BACKFILL AND UTILITY TRENCH BACKFILL WITHIN BUILDING AREA SHALL BE MECHANICALLY COMPACTED IN LAYERS IN ACCORDANCE WITH THE SOILS REPORT AND APPROVED BY THE SOILS ENGINEER. FLOODING WILL NOT BE PERMITTED. ALL FILLS USED TO SUPPORT FOUNDATIONS SHALL BE INSPECTED BY THE SOILS ENGINEER PER CODE SECTION 3317, VOLUME I.
9. ALL ABANDONED FOOTINGS, UTILITIES, ETC. SHALL BE REMOVED UNLESS NOTED OTHERWISE. NEW FOOTINGS MUST EXTEND INTO UNDISTURBED SOILS.
10. SLABS ON GRADE SHALL BE SUPPORTED ON NATURAL GRADE OR COMPACTED FILL AS PER THE RECOMMENDATIONS OF THE SOILS REPORT.

CONCRETE

1. ALL CONCRETE CONSTRUCTION SHALL CONFORM WITH CHAPTER 19 OF THE CODE AND WITH THE PROVISIONS OF ACI 318, LATEST EDITION.
2. REINFORCED CONCRETE IS DESIGNED BY THE "ULTIMATE STRENGTH DESIGN METHOD".
3. CONCRETE MIXES SHALL BE DESIGNED BY THE APPROVED TESTING LABORATORY AND APPROVED BY THE STRUCTURAL ENGINEER. THE COMPRESSIVE STRENGTH OF THE CONCRETE SHALL BE PROPORTIONED BASED ON SECTION 1905 OF THE CODE.
4. SCHEDULE OF STRUCTURAL CONCRETE 28-DAY STRENGTH AND TYPES:

LOCATION IN STRUCTURE	STRENGTH (PSI)	DENSITY (PCF)	SLUMP (INS)
FOOTINGS AND GRADE BEAMS	4000	150	4
WALLS	4000	150	4
ELEVATED SLABS (U.N.O.)	4000	150	4
LIGHT WEIGHT CONCRETE FILL ON METAL DECK	3000	110	4
CONCRETE SLABS AND STAIRS ON GRADE CURBS, AND OTHER NON-STRUCTURAL CONCRETE.	3000	150	4
COLUMNS	4000	150	4
PILES	4000	150	5

5. PORTLAND CEMENT SHALL CONFORM TO ASTM C-150, TYPE II.
6. AGGREGATE FOR HARDROCK CONCRETE SHALL CONFORM TO ALL REQUIREMENTS AND TESTS OF ASTM C-33 AND PROJECT SPECIFICATIONS. EXCEPTIONS MAY BE USED ONLY WITH PERMISSION OF THE STRUCTURAL ENGINEER.
7. AGGREGATE FOR LIGHT WEIGHT (110PCF) CONCRETE SHALL BE EXPANDED SHALE CONFORMING TO ASTM A330 AND PROJECT SPECIFICATIONS. EXCEPTIONS MAY BE USED ONLY WITH PERMISSION OF THE STRUCTURAL ENGINEER.
8. CONCRETE MIXING OPERATION, ETC. SHALL CONFORM TO ASTM C-94.
9. PLACEMENT OF CONCRETE SHALL CONFORM TO CODE SECTION 1905B AND PROJECT SPECIFICATIONS. CLEAN AND ROUGHEN TO 1/4" AMPLITUDE ALL CONCRETE SURFACES AGAINST WHICH NEW CONCRETE IS TO BE PLACED.
10. ALL REINFORCING BARS, ANCHOR BOLTS AND OTHER CONCRETE INSERTS SHALL BE WELL SECURED IN POSITION PRIOR TO PLACING CONCRETE.
11. PROVIDE SLEEVES FOR PLUMBING AND ELECTRICAL OPENINGS IN CONCRETE BEFORE PLACING. DO NOT CUT ANY REINFORCING WHICH MAY CONFLICT. CORING IN CONCRETE IS NOT PERMITTED. NOTIFY THE STRUCTURAL ENGINEER IN ADVANCE OF CONDITIONS NOT SHOWN ON THE DRAWINGS. SEE THESE DRAWINGS FOR ADDITIONAL RESTRICTIONS ON THE PLACEMENT OF OPENINGS IN SLABS AND WALLS.
12. PIPES LARGER THAN 1-1/2" DIAMETER SHALL NOT BE EMBEDDED IN STRUCTURAL CONCRETE EXCEPT WHERE SPECIFICALLY APPROVED BY STRUCTURAL ENGINEER. PIPES SHALL NOT DISPLACE OR INTERRUPT REINFORCING BARS, SPACE EMBEDDED PIPES AND SLEEVES AT A MINIMUM OF 3 DIAMETERS.

GENERAL

1. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO STARTING CONSTRUCTION. THE ARCHITECT SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES.
2. ALL DRAWINGS ARE CONSIDERED TO BE A PART OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REVIEW AND COORDINATION OF ALL DRAWINGS AND SPECIFICATIONS PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES THAT OCCUR SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO START OF CONSTRUCTION SO THAT A CLARIFICATION CAN BE ISSUED. ANY WORK PERFORMED IN CONFLICT WITH THE CONTRACT DOCUMENTS OR ANY CODE REQUIREMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT THEIR OWN EXPENSE AND AT NO EXPENSE TO THE OWNER OR ARCHITECT.
3. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE GIVEN, CONSTRUCTION SHALL BE AS SHOWN FOR SIMILAR WORK.
4. ALL WORK SHALL CONFORM TO THE MINIMUM STANDARDS OF THE FOLLOWING CODES:
   1998 CALIFORNIA BUILDING CODE VOLUME 2, TITLE 24 PART 2, REFERRED TO HERE AS "THE CODE", AND ANY OTHER REGULATING AGENCIES WHICH HAVE AUTHORITY OVER ANY PORTION OF THE WORK, INCLUDING THE STATE OF CALIFORNIA DIVISION OF INDUSTRIAL SAFETY, AND THOSE CODES & STANDARDS LISTED IN THESE NOTES AND SPECIFICATIONS.
5. SEE ARCHITECTURAL DRAWINGS FOR THE FOLLOWING:
   SIZE AND LOCATION OF ALL DOOR AND WINDOW OPENINGS, EXCEPT AS NOTED.
   SIZE AND LOCATION OF ALL INTERIOR AND EXTERIOR NON-BEARING PARTITIONS.
   SIZE AND LOCATION OF ALL CONCRETE CURBS, EQUIPMENT PADS, PITS, FLOOR DRAINS, SLOPES, DEPRESSED AREAS, CHANGE IN LEVEL, CHAMFERS, GROOVES, INSERTS, ETC.
   SIZE AND LOCATION OF ALL FLOOR AND ROOF OPENINGS EXCEPT AS SHOWN.
   FLOOR AND ROOF FINISHES.
   DIMENSIONS NOT SHOWN ON STRUCTURAL DRAWINGS.
6. SEE MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR THE FOLLOWING:
   PIPE RUNS, SLEEVES, HANGERS, TRENCHES, WALL AND SLAB OPENINGS, ETC., EXCEPT AS SHOWN OR NOTED.
   ELECTRICAL CONDUIT RUNS, BOXES, OUTLETS IN WALLS AND SLABS.
   CONCRETE INSERTS FOR ELECTRICAL, MECHANICAL OR PLUMBING FIXTURES.
   SIZE AND LOCATION OF MACHINE OR EQUIPMENT BASES, ANCHOR BOLTS FOR MOTOR MOUNTS.
7. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR LOADS DUE TO CONSTRUCTION EQUIPMENT, ETC. OBSERVATION VISITS TO THE SITE BY THE STRUCTURAL ENGINEER SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS.
8. OPENINGS, POCKETS, ETC., LARGER THAN 6" SHALL NOT BE PLACED IN CONCRETE SLABS, DECKS, WALLS, UNLESS SPECIALLY DETAILED ON THE STRUCTURAL DRAWINGS. NOTIFY THE STRUCTURAL ENGINEER WHEN DRAWINGS BY OTHERS SHOW OPENINGS, POCKETS, ETC., LARGER THAN 6" NOT SHOWN ON THE STRUCTURAL DRAWINGS, BUT WHICH ARE LOCATED IN STRUCTURAL MEMBERS. FOR ANY FURTHER RESTRICTIONS ON OPENINGS IN STRUCTURAL ELEMENTS, SEE APPLICABLE SECTIONS BELOW.
9. PIPES LARGER THAN 1-1/2" DIAMETER SHALL NOT BE EMBEDDED IN STRUCTURAL CONCRETE EXCEPT WHERE SPECIFICALLY APPROVED. NO CONDUITS SHALL BE PLACED IN CONCRETE FILL OVER METAL DECKING.
10. ASTM SPECIFICATIONS ON THE DRAWINGS SHALL BE OF THE LATEST REVISION.
11. CONTRACTOR SHALL INVESTIGATE SITE DURING CLEARING AND EARTHWORK OPERATIONS FOR FILLED EXCAVATIONS OR BURIED STRUCTURES, SUCH AS CESSPOOLS, CISTERNS, FOUNDATIONS, ETC. IF ANY SUCH STRUCTURES ARE FOUND, STRUCTURAL ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
12. CONSTRUCTION MATERIAL SHALL BE SPREAD OUT IF PLACED ON FRAMED ROOF OR FLOOR. LOAD SHALL NOT EXCEED THE DESIGN LIVE LOAD PER SQUARE FOOT. PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE STRUCTURE HAS NOT ATTAINED DESIGN STRENGTH.
13. WIND ANALYSIS PER CHAPTER 16 DIVISION II OF THE CODE
   BASIC WIND SPEED 80 MPH (Q_s=16.4 PSF)
   EXPOSURE B
   SPECIAL OCCUPANCY STRUCTURES (I_w=1.0)
14. SEISMIC ANALYSIS PER CHAPTER 16 DIVISION III OF THE CODE, UTILIZING THE STATIC FORCE PROCEDURE
   Z = 0.4 ZONE 4
   I = 1.0 SPECIAL OCCUPANCY STRUCTURE
   R = 5.5 CONCRETE SHEAR WALLS BUILDING FRAME SYSTEM.

   SEISMIC SOURCE TYPE = A
   SOIL PROFILE = S_D
   $C_a = 0.44N_a$ $C_v = 0.64N_v$
   $N_a = 1.07$ $N_v = 1.32$

SPECIAL INSPECTIONS

THE FOLLOWING ELEMENTS OF CONSTRUCTION SHALL HAVE CONTINUOUS INSPECTION BY A BUILDING INSPECTOR APPROVED BY CITY OF LOS ANGELES.
1. CONCRETE.
2. BOLTS INSTALLED IN CONCRETE.
3. ALL STRUCTURAL WELDING, INCLUDING REINFORCING STEEL.
4. PLACING OF REINFORCING STEEL.
5. HIGH STRENGTH BOLTING.
6. STRUCTURAL MASONRY.
7. EXPANSION ANCHORS
8. ADHESIVE ANCHORS
9. INSTALLATION OF METAL DECKING AND HEADED STUD.
10. SEE GEOTECHNICAL REPORT FOR SPECIFIC INSPECTION REQUIREMENTS BY SOIL ENGINEER'S REPRESENTATIVE.

ALL SPECIAL INSPECTIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 1701 OF THE CODE AND ANY ADDITIONAL REQUIREMENTS STATED IN THESE DRAWINGS AND/OR THE PROJECT SPECIFICATIONS.

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CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for — Rev Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Drawing Title
GENERAL NOTES

Scale
Project Number 1001071
Baseline Date 6 OCT 00
Drawing Number S0.1

NOTES: JOB # 1001071 XREFS: 1071TB
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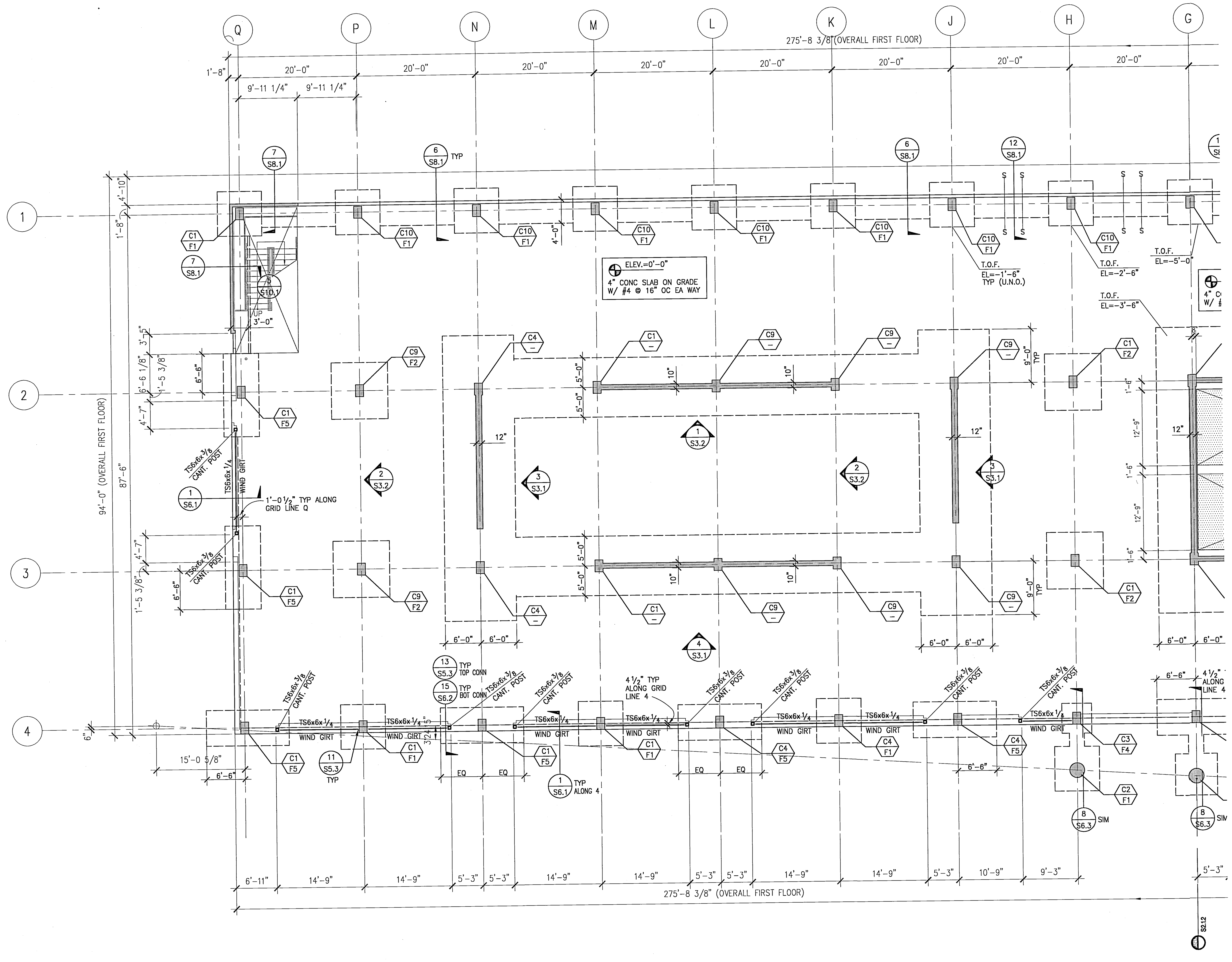
UPDATED BY: TONY TAM
PLOT SCALE: 1=1
PROG.MG.: R.H
DRAFTER: TONY TAM

NOTES (FOUNDATION):

1. SEE SHEET S0.1 FOR GENERAL NOTES.
2. T.O. FOOTING SHALL BE 1'-6" BELOW THE TOP OF CONCRETE SLAB ON GRADE ELEVATION U.N.O.
3. SEE SHEET S6.1 FOR TYPICAL FOUNDATION AND CONCRETE DETAILS.
4. C# / F# — INDICATES COLUMN DESIGNATION SEE COLUMN SCHEDULE ON SHEET 3/S4.1. INDICATES SPREAD FOOTING DESIGNATION SEE FOOTING SCHEDULE ON SHEET 12/S6.1.
5. X'-X" INDICATES TOP OF FOOTING ELEVATION WHERE A TYPICAL.
6. XXX'-X" INDICATES TOP OF STRUCTURAL CONCRETE SLAB ELEVATION.
7. INDICATES FLOOR ELEVATION CHANGE.
8. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN.
9. SEE M.E.P. DRAWINGS FOR LOCATION OF TRENCHES, FLOOR SINKS, AND UNDERGROUND UTILITIES.
10. S——S INDICATES STEPPED FOOTING PER DETAIL 6/S6.1.
11. PROVIDE CONTROL JOINTS IN SLAB ON GRADE PER DETAIL 4/S6.1.
12. SEE SHEET S10.1 FOR ENLARGED STAIR PLANS AND DETAILS.



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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL FIRST FLOOR PLAN FOUNDATION PLAN (SURGE BUILDING)

1/8" = 1'-0"

Scale

1001071

Project Number

6 OCT 00

Baseline Date

S2.1.1

Drawing Number

NOTES:
JOB # 1001071
XREFS: FNDNOTE, GRDIS, GRDIN, UCS-SFP1, 1071B

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06/21/00

NOTES (FOUNDATION):

1. SEE SHEET S0.1 FOR GENERAL NOTES.
2. T.O. FOOTING SHALL BE 1'-6" BELOW THE TOP OF CONCRETE SLAB ON GRADE ELEVATION U.N.O.
3. SEE SHEET S6.1 FOR TYPICAL FOUNDATION AND CONCRETE DETAILS.
4. C#/F# INDICATES COLUMN DESIGNATION SEE COLUMN SCHEDULE ON SHEET 3/S1.1. INDICATES SPREAD FOOTING DESIGNATION SEE FOOTING SCHEDULE ON SHEET 12/S6.1.
5. X'-X" INDICATES TOP OF FOOTING ELEVATION WHERE A TYPICAL.
6. XXX'-X" INDICATES TOP OF STRUCTURAL CONCRETE SLAB ELEVATION.
7. INDICATES FLOOR ELEVATION CHANGE.
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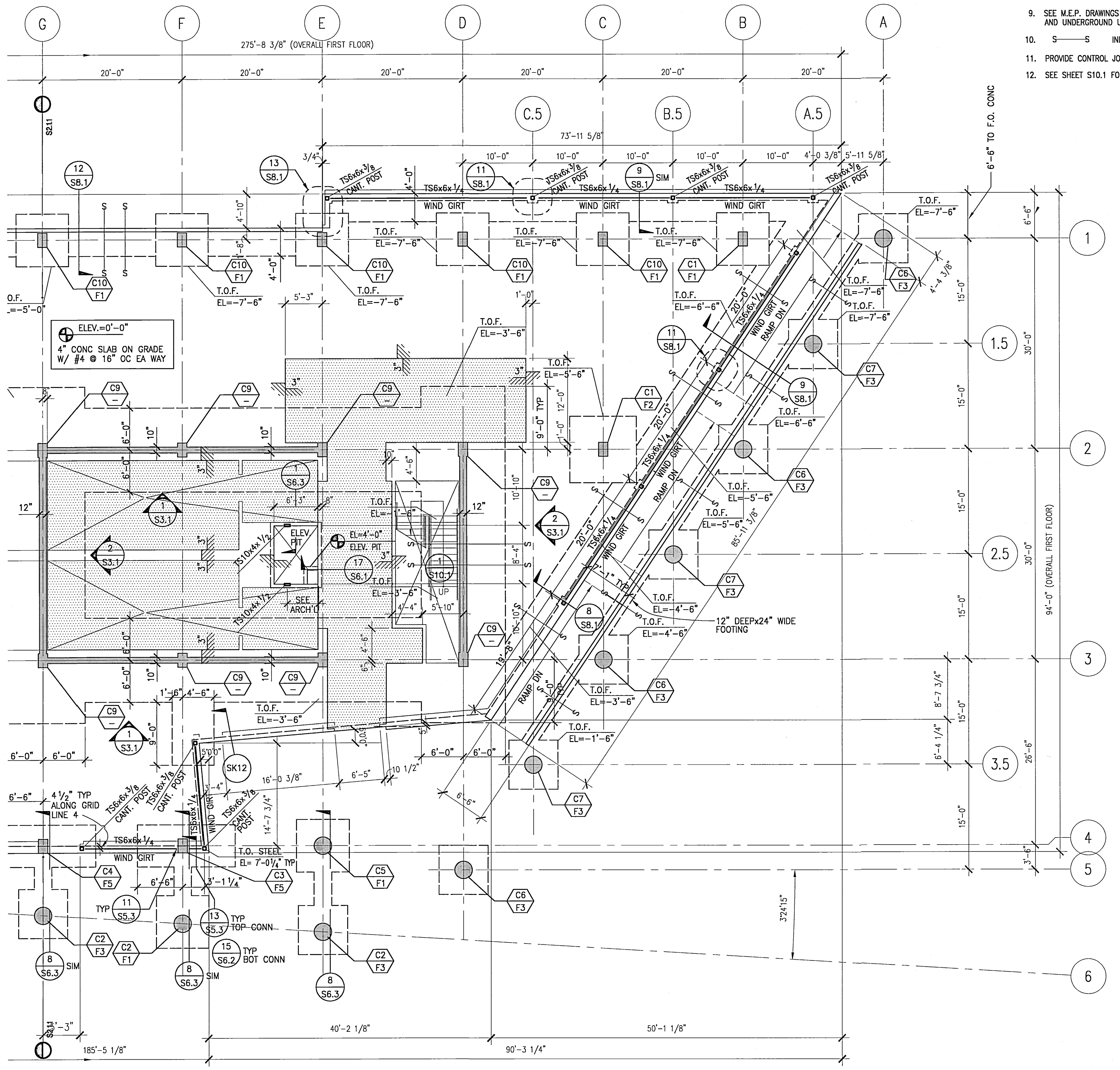
10. S——S INDICATES STEPPED FOOTING PER DETAIL 6/S6.1.
11. PROVIDE CONTROL JOINTS IN SLAB ON GRADE PER DETAIL 4/S6.1.
12. SEE SHEET S10.1 FOR ENLARGED STAIR PLANS AND DETAILS.



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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL FIRST FLOOR PLAN FOUNDATION PLAN (SURGE BUILDING)

Scale: 1/8" = 1'-0"

Project Number: 1001071

Baseline Date: 6 OCT 00

Drawing Number: S2.1.2

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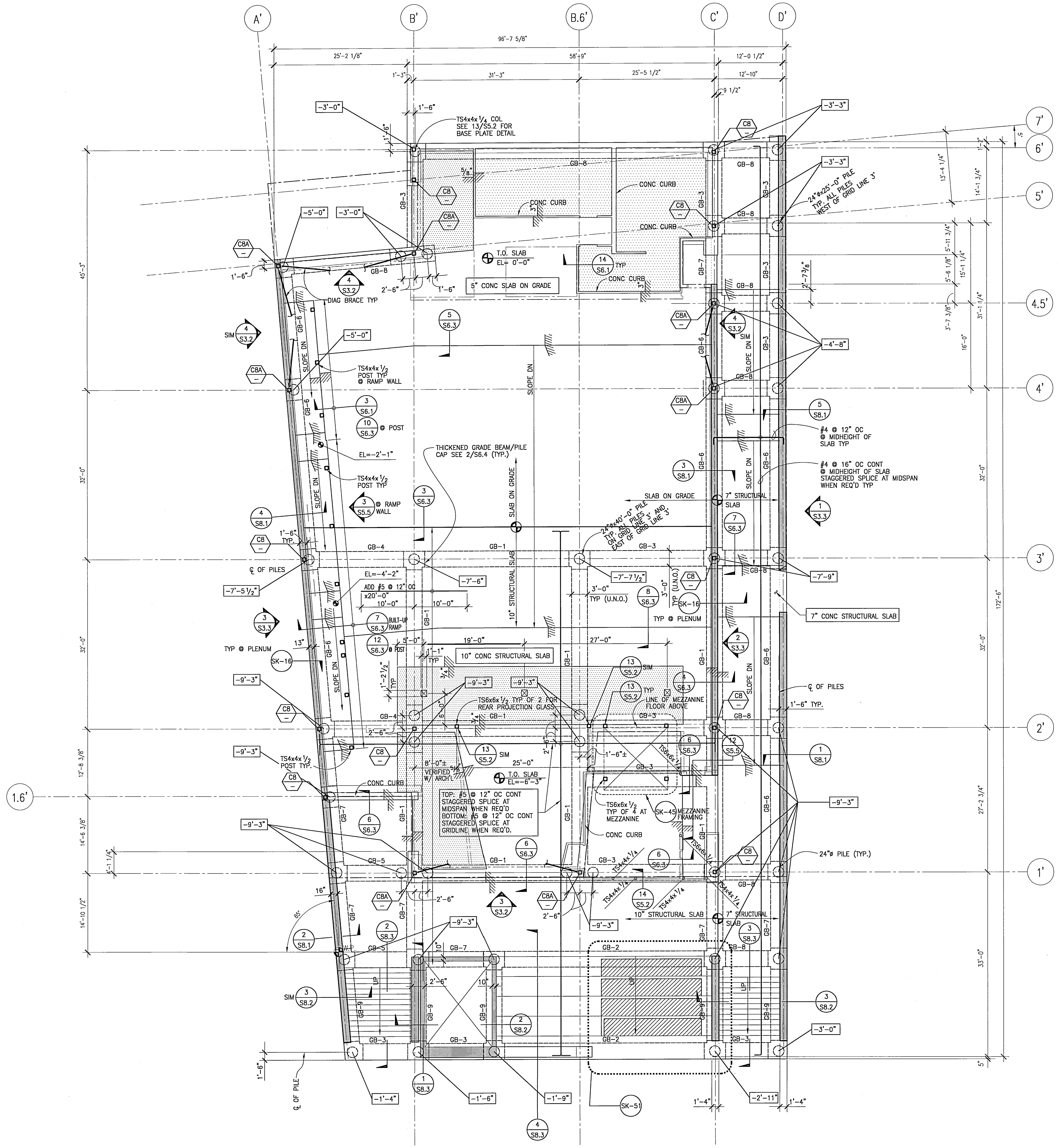
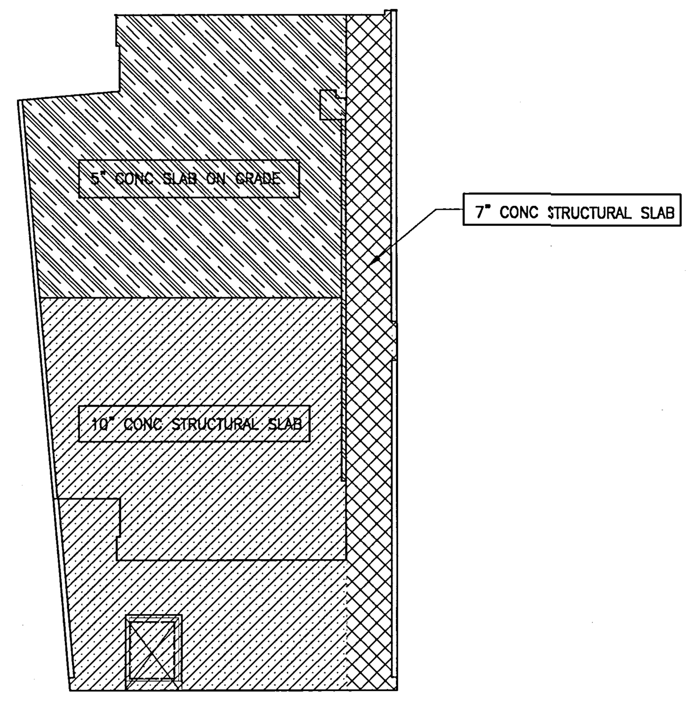
06/21/00





SLAB SYSTEM PLAN

1/32"=1'-0"

NOTES (FOUNDATION):

1. SEE SHEET S0.1 FOR GENERAL NOTES.
2. SEE SHEET S6.1 FOR TYPICAL FOUNDATION AND CONCRETE DETAILS.
3. C# INDICATES COLUMN DESIGNATION SEE COLUMN SCHEDULE ON SHEET 3/S4.1.
4. X'-X" INDICATES TOP OF FOOTING ELEVATION WHERE A TYPICAL.
5. XXX'-X" INDICATES TOP OF STRUCTURAL CONCRETE SLAB ELEVATION.
6. INDICATES FLOOR ELEVATION CHANGE.
7. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN.
8. SEE M.E.P. DRAWINGS FOR LOCATION OF TRENCHES, FLOOR SINKS, AND UNDERGROUND UTILITIES.
9. S——S INDICATES STEPPED FOOTING PER DETAIL 6/S6.1.
10. PROVIDE CONTROL JOINTS IN SLAB ON GRADE PER DETAIL 4/S6.1.
11. SEE S6.4 FOR PILE FOUNDATION DETAILS.
12. SEE 4/S6.4 FOR GRADE BEAM SCHEDULE.
13. SEE ARCHITECTURAL DRAWINGS FOR CONCRETE CURB INFORMATION.
14. SEE DETAIL 1/6.4 FOR PILE DETAIL.
15. INDICATES DEPRESSED AREA SEE 2/S6.1.
16. SEE 13/S5.2 FOR BASE PLATE DETAIL, U.N.O.
17. PLACE STRUCTURAL SLAB REINF. IN EAST TO WEST DIRECTION ON THE OUTER LAYER.
18. SEE CIVIL DRAWINGS FOR TOP OF SLAB ELEVATIONS OUTSIDE THE AUDITORIUM BUILDING.
19. -x'-x" INDICATES TOP OF PILE ELEVATION

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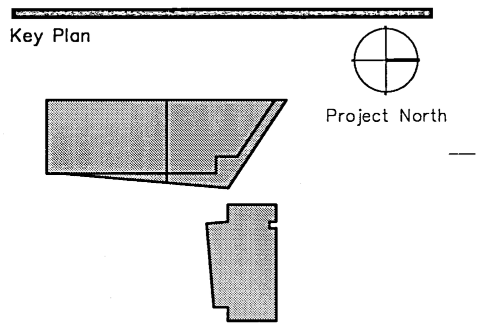

Drawing Title

AUDITORIUM FIRST FLOOR FRAMING/ FOUNDATION PLAN

Scale 1/8" = 1'-0"

Project Number 1001071

Baseline Date 6 OCT 00

Drawing Number **S.2.1.3**

NOTES:
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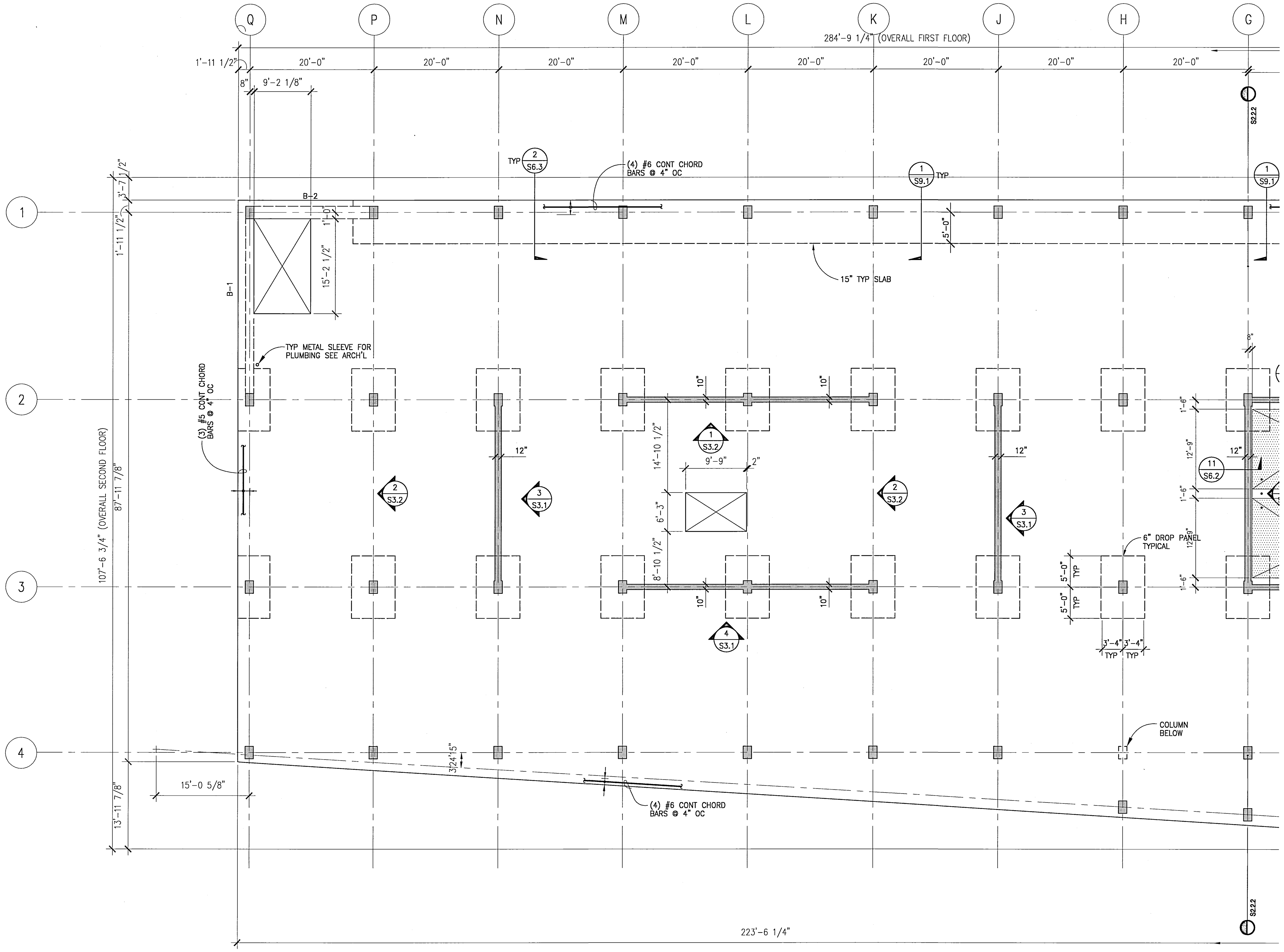
DRAFTER: TONY TAM



NOTES:

1. SEE SHEET S.0.1 FOR GENERAL NOTES.
2. T.O. FOOTING SHALL BE 1'–6" BELOW THE TOP OF CONCRETE ELEVATION U.N.O.
3. SEE SHEET S6.1 FOR TYPICAL CONCRETE DETAILS.
4. SEE SHEET 3/S4.1 FOR COLUMN SCHEDULE.
5. X'–X" INDICATES TOP OF FOOTING ELEVATION WHERE A TYPICAL.
7. XXX'–X" INDICATES TOP OF STRUCTURAL CONCRETE SLAB ELEVATION.
8. INDICATES FLOOR ELEVATION CHANGE.
9. SEE ARCHITECTURAL DRAWINGS FOR DINENSIONS NOT SHOWN.
10. SEE M.E.P. DRAWINGS FOR LOCATION OF TRENCHES, FLOOR SINKS, AND UNDERGROUND UTILITIES.
11. SEE 1/S6.2 FOR CONCRETE BEAM SCHEDULE.
12. FLOOR SLAB IS TYPICAL 9" THICK.
13. ALL ADDED BARS TO BE CENTERED AT SUPPORT (U.N.O.).
14. f'c=5000psi AT 3rd FLOOR SLAB CONCRETE.
15. CHORD REINFORCING SHALL BE PLACEC AT MID HEIGHT OF SLAB, TYPICAL.
16. SEE SPLICING SCHEDULE PER 15/S6.1 FOR SPLICE NOT SHOWN.
17. SEE SHEET S10.1 FOR ENLARGED STAIR PLANS AND DETAILS.
18. SEE SHEET 16/S6.1 FOR SLEEVE OPENING DETAIL ON CONCRETE FLOOR.

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SmithGroup

SmithGroup, Incorporated
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Fourth Floor
Santa Monica, California 90404
310.586.5400
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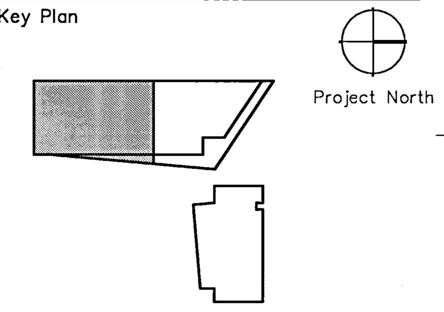
RECORD DRAWINGS

Key Plan



Drawing Title

PARTIAL SECOND FLOOR FRAMING PLAN OF SURGE BUILDING

1/8" = 1'-0"
Scale

1001071
Project Number

6 OCT 00
Baseline Date

S2.2.1
Drawing Number

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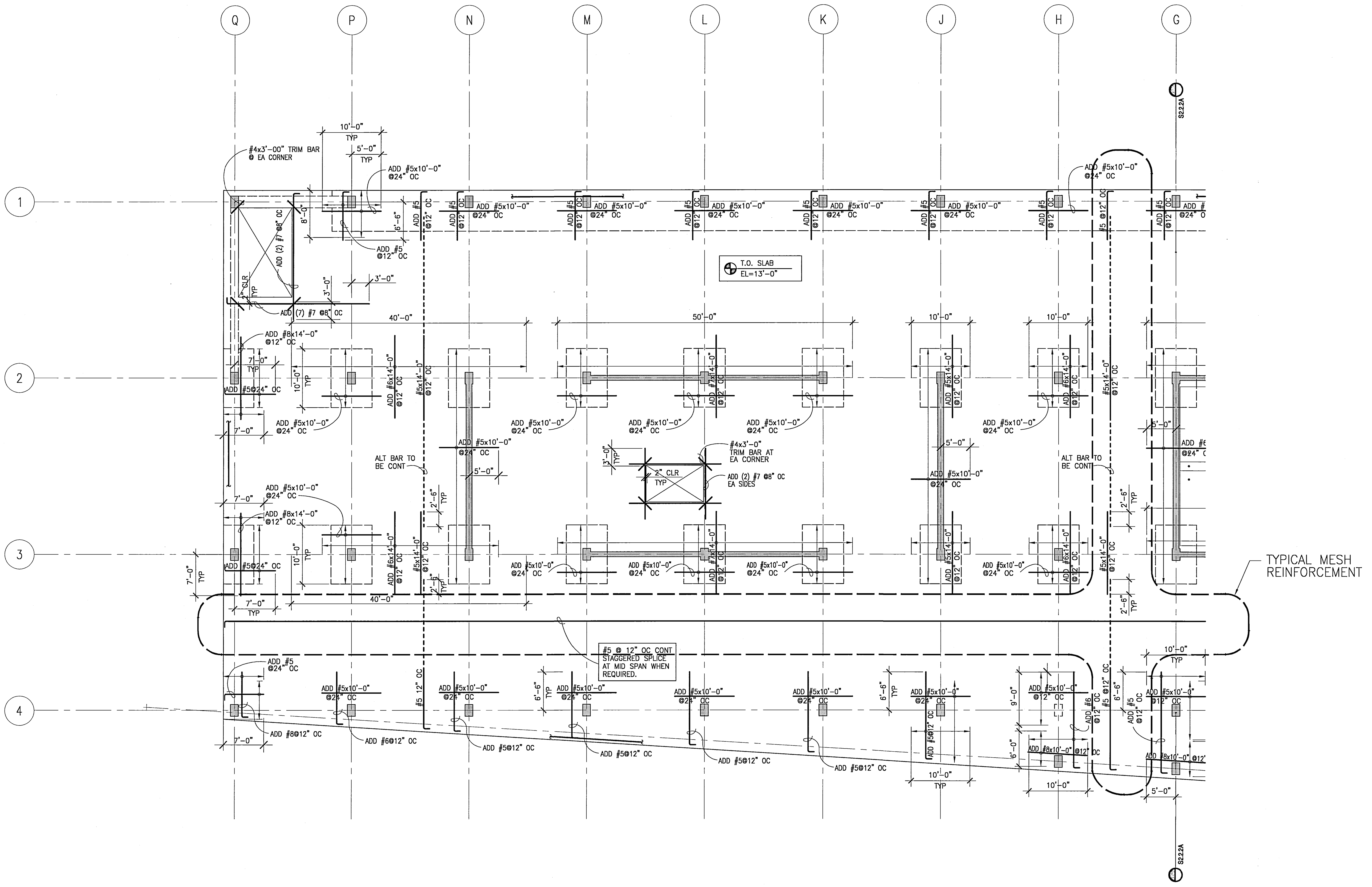

NOTES:

1. SEE SHEET S.0.1 FOR GENERAL NOTES.
2. T.O. FOOTING SHALL BE 1'-6" BELOW THE TOP OF CONCRETE ELEVATION U.N.O.
3. SEE SHEET S6.1 FOR TYPICAL CONCRETE DETAILS.
4. SEE SHEET 3/S4.1 FOR COLUMN SCHEDULE.
5. X'-X" INDICATES TOP OF FOOTING ELEVATION WHERE A TYPICAL.
7. XXX'-X" INDICATES TOP OF STRUCTURAL CONCRETE SLAB ELEVATION.
8. INDICATES FLOOR ELEVATION CHANGE.
9. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN.
10. SEE M.E.P. DRAWINGS FOR LOCATION OF TRENCHES, FLOOR SINKS, AND UNDERGROUND UTILITIES.
11. SEE 1/S6.2 FOR CONCRETE BEAM SCHEDULE.
12. FLOOR SLAB IS TYPICAL 9" THICK.
13. ALL ADDED BARS TO BE CENTERED AT SUPPORT (U.N.O.).
14. f'c=5000psi AT 3rd FLOOR SLAB CONCRETE.
15. CHORD REINFORCING SHALL BE PLACED AT MID HEIGHT OF SLAB, TYPICAL.
16. SEE SPLICING SCHEDULE PER 15/S6.1 FOR SPLICE NOT SHOWN.
17. SEE SHEET S10.1 FOR ENLARGED STAIR PLANS AND DETAILS.
18. SEE SHEET 16/S6.1 FOR SLEEVE OPENING DETAIL ON CONCRETE FLOOR.

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SmithGroup

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1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
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310.586.1091

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title
PARTIAL SECOND FLOOR FRAMING PLAN OF SURGE BUILDING (TOP REINFORCEMENT)

1/8" = 1'-0"

Scale
1001071

Project Number
6 OCT 00

Baseline Date

S2.2.1A

Drawing Number

NOTES:

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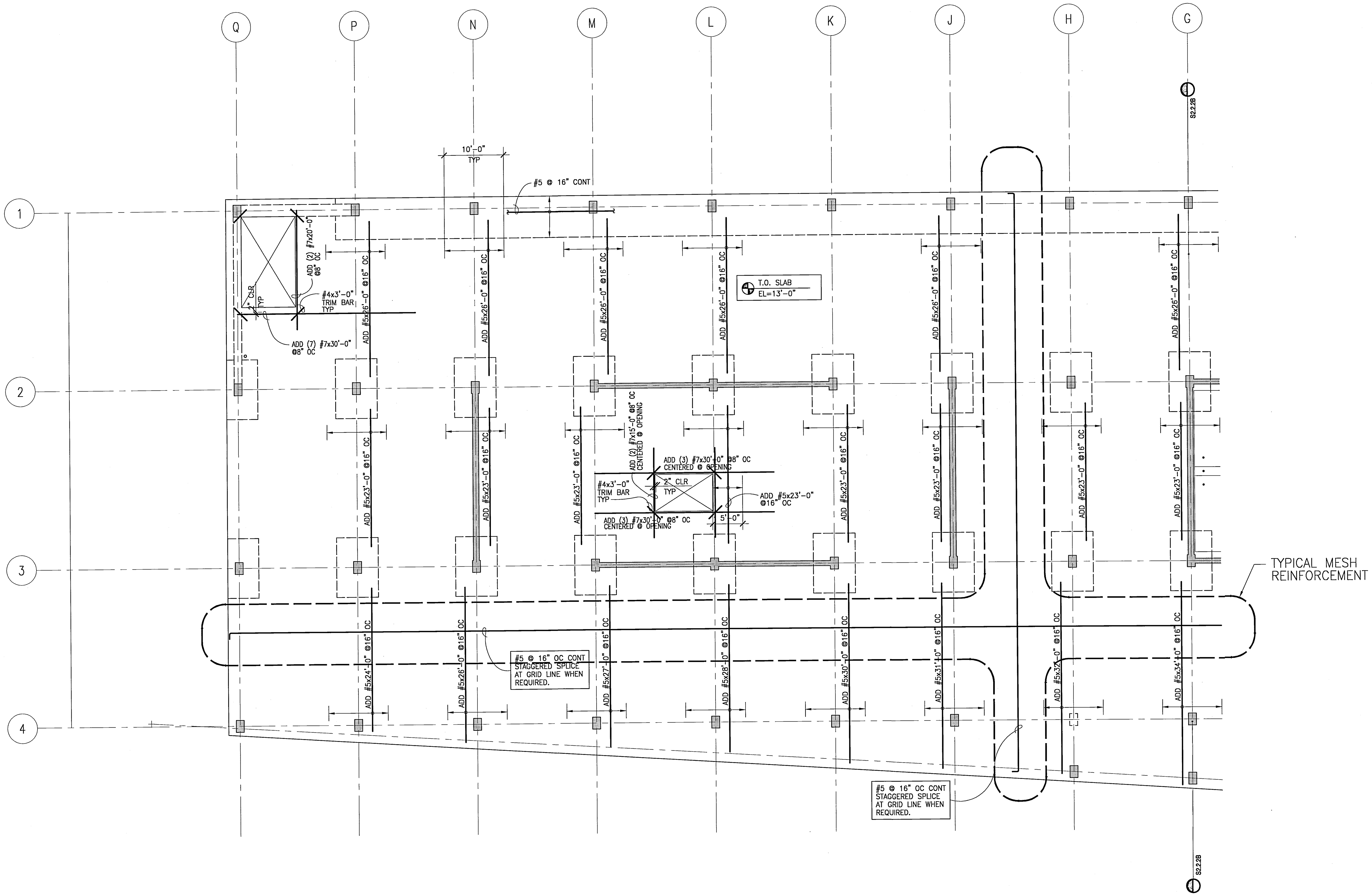

NOTES:

1. SEE SHEET S.0.1 FOR GENERAL NOTES.
2. T.O. FOOTING SHALL BE 1'–6" BELOW THE TOP OF CONCRETE ELEVATION U.N.O.
3. SEE SHEET S6.1 FOR TYPICAL CONCRETE DETAILS.
4. SEE SHEET 3/S4.1 FOR COLUMN SCHEDULE.
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8. INDICATES FLOOR ELEVATION CHANGE.
9. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN.
10. SEE M.E.P. DRAWINGS FOR LOCATION OF TRENCHES, FLOOR SINKS, AND UNDERGROUND UTILITIES.
11. SEE 1/S6.2 FOR CONCRETE BEAM SCHEDULE.
12. FLOOR SLAB IS TYPICAL 9" THICK.
13. ALL ADDED BARS TO BE CENTERED AT SUPPORT (U.N.O.).
14. f'c=5000psi AT 3rd FLOOR SLAB CONCRETE.
15. CHORD REINFORCING SHALL BE PLACED AT MID HEIGHT OF SLAB, TYPICAL.
16. SEE SPLICING SCHEDULE PER 15/S6.1 FOR SPLICE NOT SHOWN.
17. SEE SHEET S10.1 FOR ENLARGED STAIR PLANS AND DETAILS.
18. SEE SHEET 16/S6.1 FOR SLEEVE OPENING DETAIL ON CONCRETE FLOOR.

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title
PARTIAL SECOND FLOOR FRAMING PLAN OF SURGE BUILDING (BOTTOM REINFORCEMENT)
1/8" = 1'-0"

Scale
1001071

Project Number
6 OCT 00

Baseline Date
S2.2.1B

Drawing Number

NOTES:

1. SEE SHEET S.0.1 FOR GENERAL NOTES.
2. T.O. FOOTING SHALL BE 1'-6" BELOW THE TOP OF CONCRETE ELEVATION U.N.O.
3. SEE SHEET S6.1 FOR TYPICAL CONCRETE DETAILS.
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11. SEE 1/S6.2 FOR CONCRETE BEAM SCHEDULE.
12. FLOOR SLAB IS TYPICAL 9" THICK.
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15. CHORD REINFORCING SHALL BE PLACED AT MID HEIGHT OF SLAB, TYPICAL.
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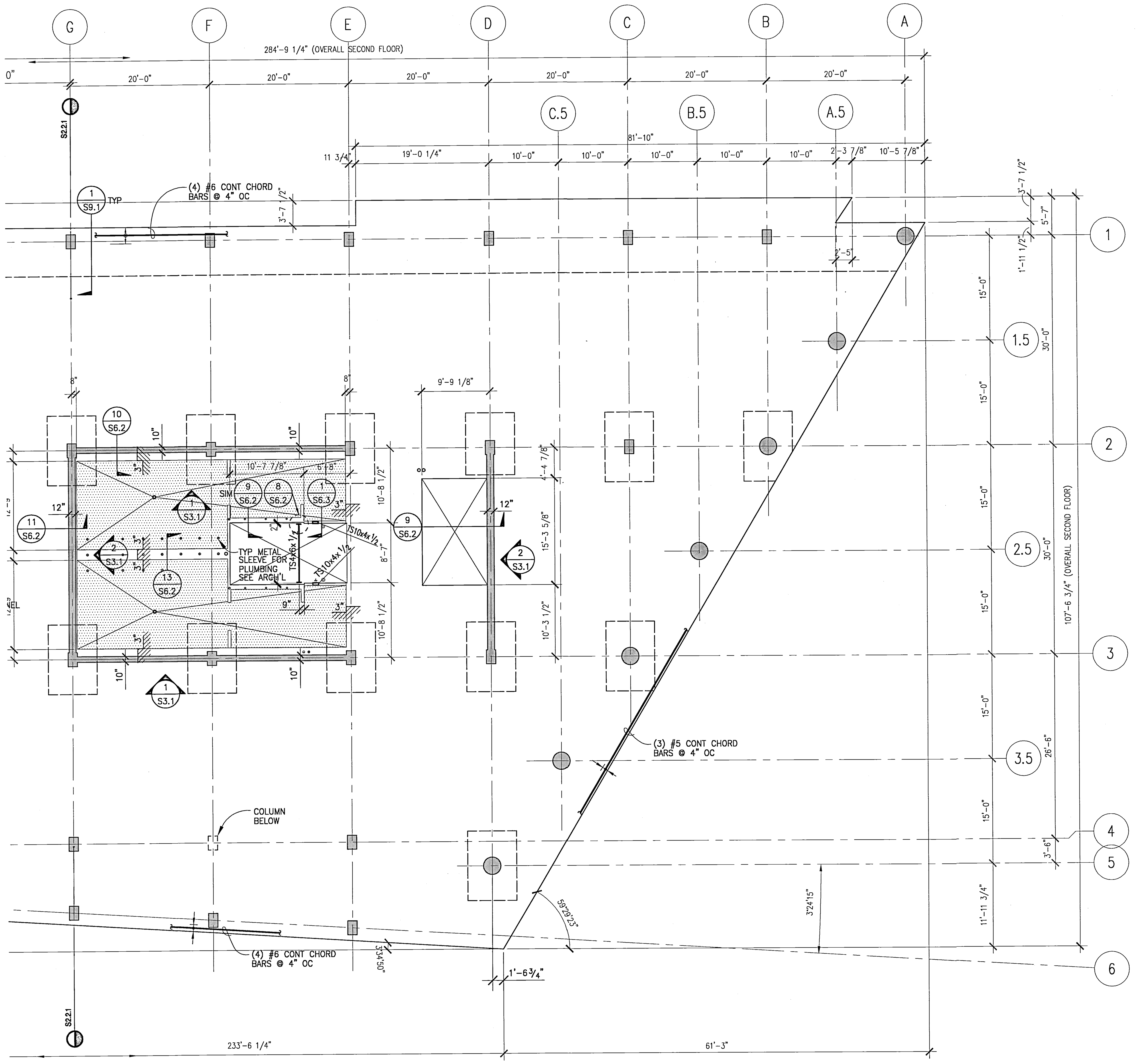
17. SEE SHEET S10.1 FOR ENLARGED STAR PLANS AND DETAILS.
18. SEE SHEET 16/S6.1 FOR SLEEVE OPENING DETAIL ON CONCRETE FLOOR.



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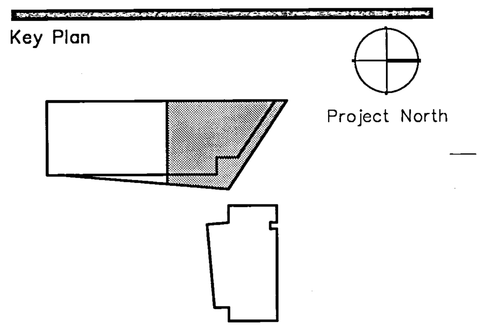
RECORD DRAWINGS

Key Plan



Drawing Title

PARTIAL SECOND FLOOR FRAMING PLAN OF (SURGE BUILDING)

1/8" = 1'-0"

Scale

1001071

Project Number

6 OCT 00

Baseline Date

S2.2.2

Drawing Number

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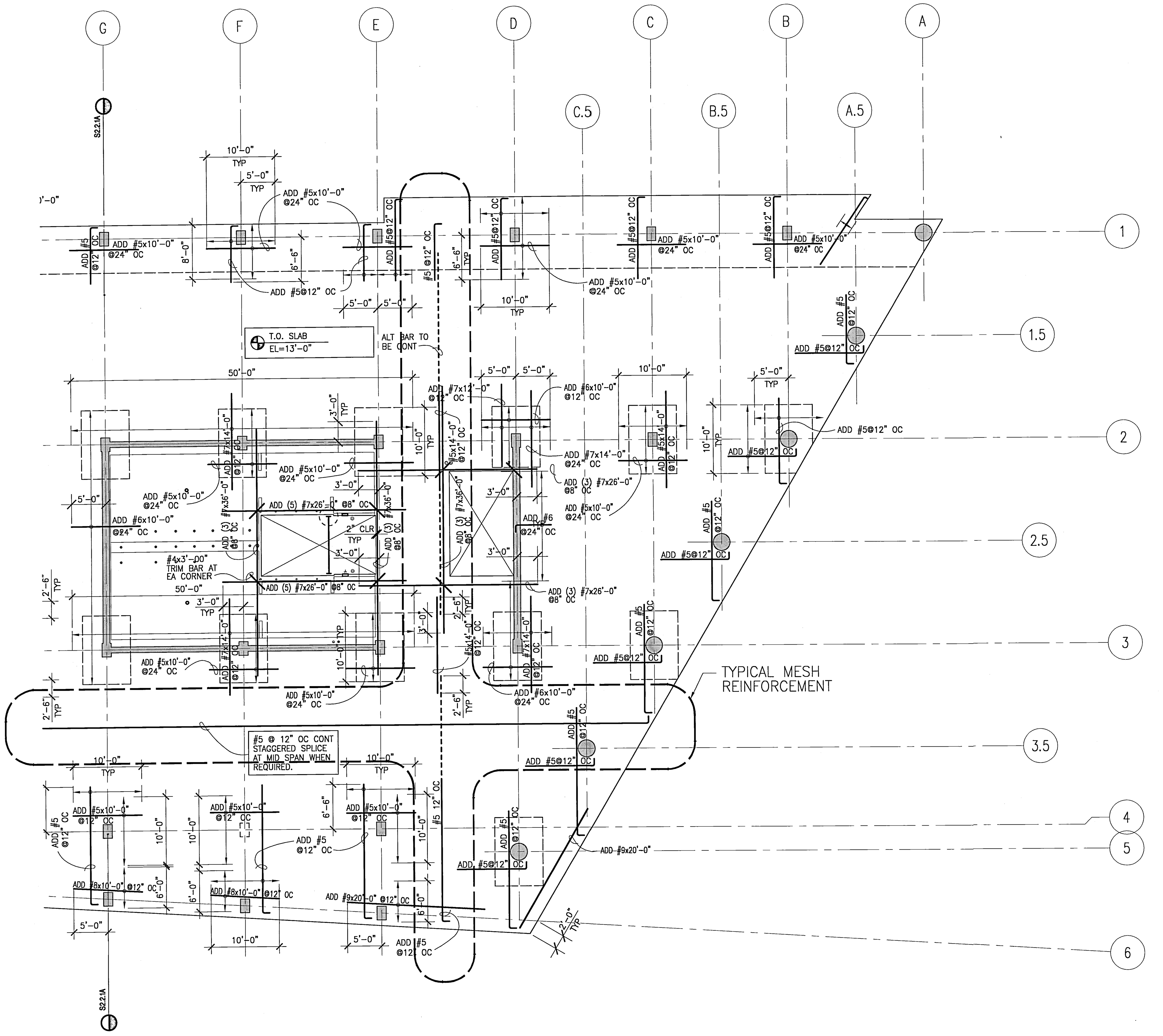
UPDATED BY: TONY TAM
PLOT SCALE: 1=1
PROG.MG.: R.H
DRAFTER: TONY TAM



NOTES:

1. SEE SHEET S.0.1 FOR GENERAL NOTES.
2. T.O. FOOTING SHALL BE 1'-6" BELOW THE TOP OF CONCRETE ELEVATION U.N.O.
3. SEE SHEET S6.1 FOR TYPICAL CONCRETE DETAILS.
4. SEE SHEET 3/S4.1 FOR COLUMN SCHEDULE.
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8. INDICATES FLOOR ELEVATION CHANGE.
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10. SEE M.E.P. DRAWINGS FOR LOCATION OF TRENCHES, FLOOR SINKS, AND UNDERGROUND UTILITIES.
11. SEE 1/S6.2 FOR CONCRETE BEAM SCHEDULE.
12. FLOOR SLAB IS TYPICAL 9" THICK.
13. ALL ADDED BARS TO BE CENTERED AT SUPPORT (U.N.O.).
14. f'c=5000psi AT 3rd FLOOR SLAB CONCRETE.
15. CHORD REINFORCING SHALL BE PLACED AT MID HEIGHT OF SLAB, TYPICAL.
16. SEE SPLICING SCHEDULE PER 15/S6.1 FOR SPLICE NOT SHOWN.
17. SEE SHEET S10.1 FOR ENLARGED STAIR PLANS AND DETAILS.
18. SEE SHEET 16/S6.1 FOR SLEEVE OPENING DETAIL ON CONCRETE FLOOR.

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SmithGroup

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL SECOND FLOOR FRAMING PLAN OF (SURGE BUILDING) (TOP REINFORCEMENT)

1/8" = 1'-0"

Scale

Project Number 1001071

Baseline Date 6 OCT 00

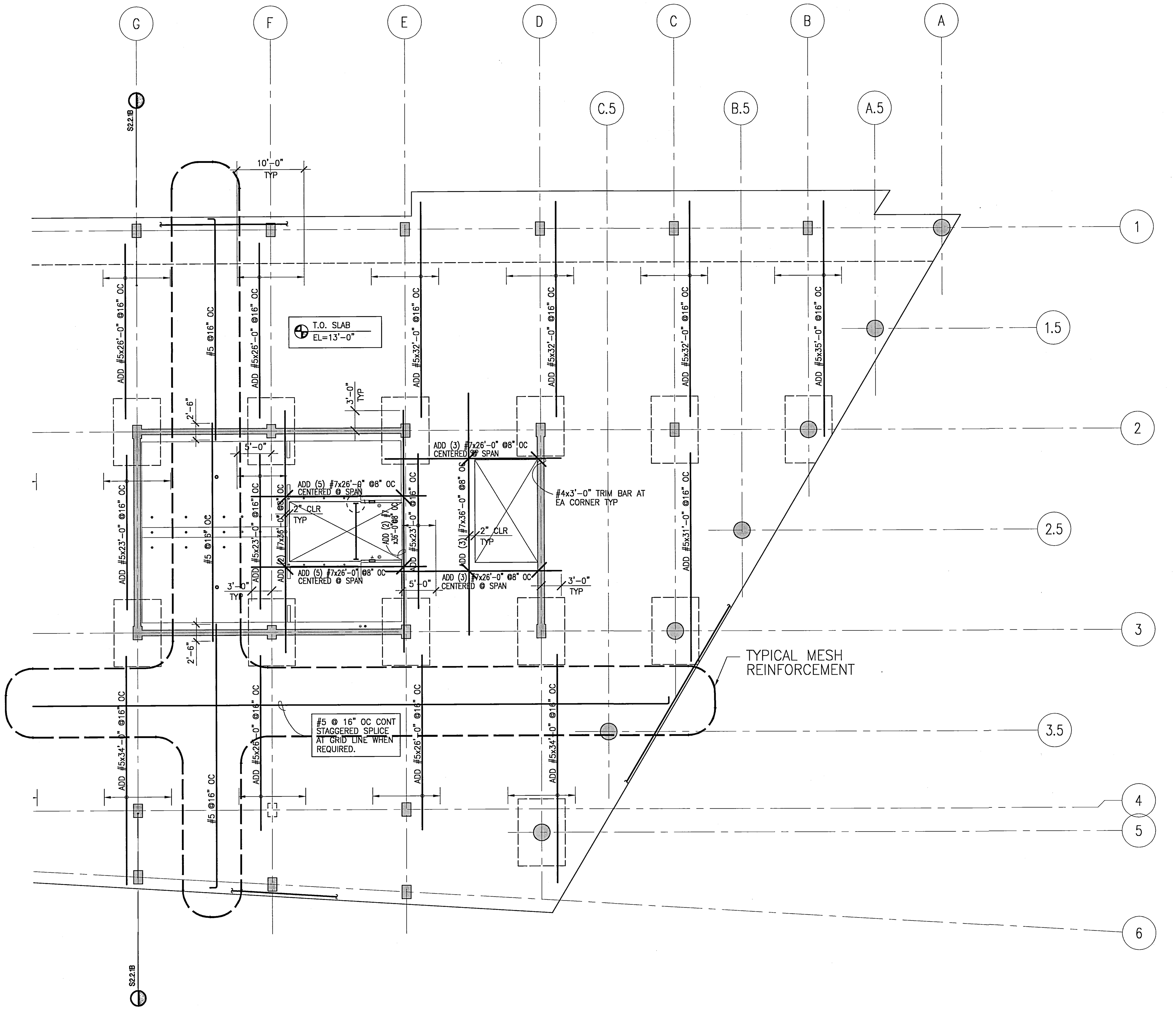
Drawing Number S2.2.2A

NOTES: | JOB # 1001071 | UCR SURGE | FILE PATH & NAME P:\2000\1001071-UCR\SDRAFT\S22-2A.DWG | PLOTTED DATE & TIME MAY. 04, 2000 4:19:38 PM | UPDATED BY TONY TAM | PLOT SCALE 1=1 | PROG.MG. R.H | DRAFTER TONY TAM

XREFS: 1071 1B

NOTES:

1. SEE SHEET S.0.1 FOR GENERAL NOTES.
2. T.O. FOOTING SHALL BE 1'-6" BELOW THE TOP OF CONCRETE ELEVATION U.N.O.
3. SEE SHEET S6.1 FOR TYPICAL CONCRETE DETAILS.
4. SEE SHEET 3/S4.1 FOR COLUMN SCHEDULE.
5. X'-X" INDICATES TOP OF FOOTING ELEVATION WHERE A TYPICAL.
7. XXX'-X" INDICATES TOP OF STRUCTURAL CONCRETE SLAB ELEVATION.
8. INDICATES FLOOR ELEVATION CHANGE.
9. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN.
10. SEE M.E.P. DRAWINGS FOR LOCATION OF TRENCHES, FLOOR SINKS, AND UNDERGROUND UTILITIES.
11. SEE 1/S6.2 FOR CONCRETE BEAM SCHEDULE.
12. FLOOR SLAB IS TYPICAL 9" THICK.
13. ALL ADDED BARS TO BE CENTERED AT SUPPORT (U.N.O.).
14. f'c=5000psi AT 3rd FLOOR SLAB CONCRETE.
15. CHORD REINFORCING SHALL BE PLACED AT MID HEIGHT OF SLAB, TYPICAL.
16. SEE SPLICING SCHEDULE PER 15/S6.1 FOR SPLICE NOT SHOWN.
17. SEE SHEET S10.1 FOR ENLARGED STAIR PLANS AND DETAILS.
18. SEE SHEET 16/S6.1 FOR SLEEVE OPENING DETAIL ON CONCRETE FLOOR.



UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for | Rev | Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL SECOND FLOOR FRAMING PLAN OF SURGE BUILDING (BOTTOM REINFORCEMENT)

1/8" = 1'-0"

Scale

1001071

Project Number

6 OCT 00

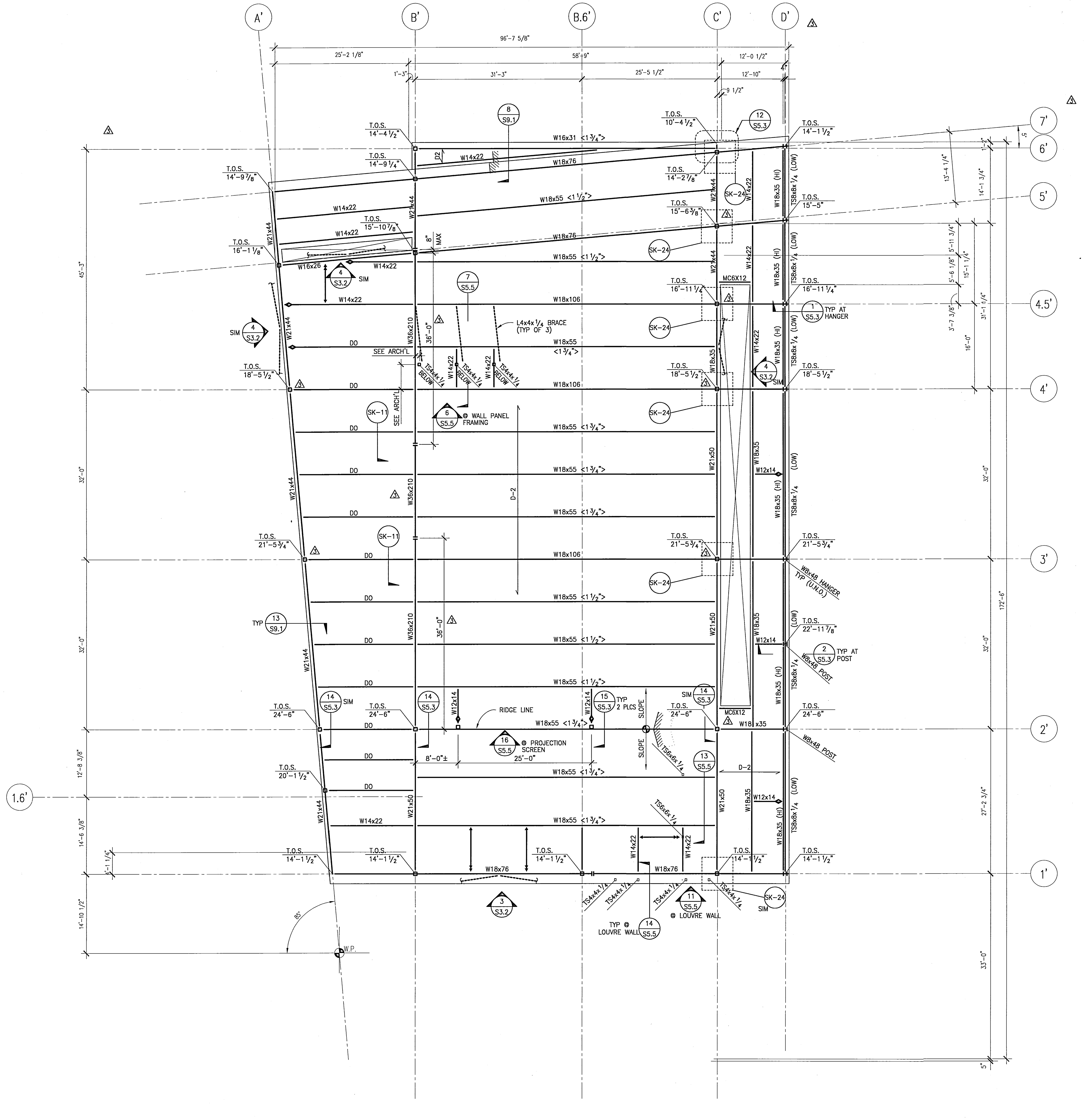
Baseline Date

S2.2.2B

Drawing Number

NOTES: | JOB # 1001071 | XREFS: 10711B
UCR SURGE
FILE PATH & NAME P:\2000\1001071-UCR\SDRAFT\S22-2B.DWG
PLOTTED DATE & TIME MAY. 04, 2000 4:19:38 PM
UPDATED BY TONY TAM
PLOT SCALE 1=1
PROG.MG. R.H
DRAFTER TONY TAM

06/21/00



NOTES:

1. SEE SHEET S.0.1 FOR GENERAL NOTES.
2. SEE SHEETS S.5.1 THRU S.52 FOR TYPICAL STEEL DETAILS.
3. SEE ARCHITECTURAL DRAWINGS FOR TOP OF STEEL AND TOP OF DECK ELEVATIONS.
4. INDICATES FLOOR ELEVATION CHANGE.
5. D1 INDICATES DECK TYPE. SEE DETAIL 3/S.5.2.
6. INDICATES SINGLE PLATE DRAG CONNECTION PER DETAIL.
7. ALL BEAMS SHALL BE EQUALLY SPACED BETWEEN COLUMNS UNLESS NOTED OTHERWISE.
8. INDICATES ANGLE BRACE PER DETAIL 7/S.52.
9. INDICATES FULL HIGHT STIFFENER SEE DETAILS 1/S5.1.
10. FOR BRACE FRAME ELEVATIONS REFER TO DETAIL.
11. INDICATES BRACED CONNECTION PER, 11/S5.4 @ TRELLS STRUCTURE
12. INDICATES BRACED FRAME BELOW FLOOR.
13. INDICATES BRACED FRAME ABOVE FLOOR ONLY.
14. (-X") INDICATES TOP OF STEEL BEAM BELOW THE REFERENCED T.O.STEEL ELEVATION
15. (A) INDICATES HIGH-STRENGH BOLTED CONNECTION PER "K".
16. <3/4> INDICATES BEAM CAMBER AT MIDSPAN.
17. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN.
18. SEE M.E.P. DRAWINGS FOR FLOOR PENETRATIONS NOT SHOWN.

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

ROOF FRAMING PLAN
AUDITORIUM

1/8" = 1'-0"

Scale

1001071

Project Number

6 OCT 00

Baseline Date

S.2.2.3

Drawing Number

NOTES:
JOB # 1001071
XREFS: RNOTE, UCA-GRID, UCA-SRO, 1071TB,
FILE PATH & NAME: P:\2000\1001071 UCR SURGE\SDRAFT\BULLETIN#1\S22-3.DWG
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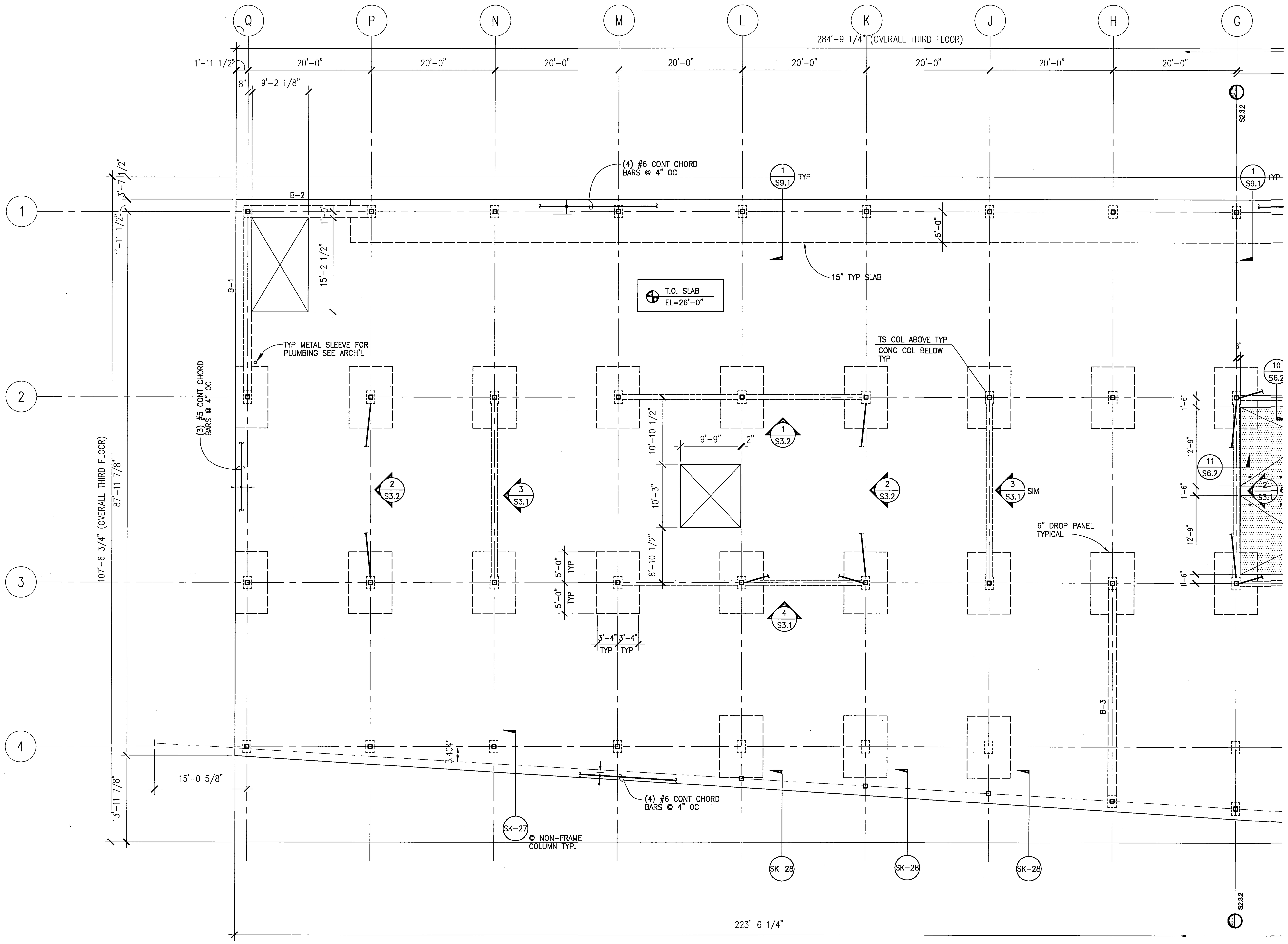
UPDATED BY: TONY TAM
PLOT SCALE: 1=1
PROJ.MG.: R.H
DRAFTER: TONY TAM



NOTES:

1. SEE SHEET S.0.1 FOR GENERAL NOTES.
2. T.O. FOOTING SHALL BE 1'-6" BELOW THE TOP OF CONCRETE ELEVATION U.N.O.
3. SEE SHEET S6.1 FOR TYPICAL CONCRETE DETAILS.
4. SEE SHEET 3/S4.1 FOR COLUMN SCHEDULE.
5. X'-X" INDICATES TOP OF FOOTING ELEVATION WHERE A TYPICAL.
7. XXX'-X" INDICATES TOP OF STRUCTURAL CONCRETE SLAB ELEVATION.
8. INDICATES FLOOR ELEVATION CHANGE.
9. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN.
10. SEE M.E.P. DRAWINGS FOR LOCATION OF TRENCHES, FLOOR SINKS, AND UNDERGROUND UTILITIES.
11. SEE 1/S6.2 FOR CONCRETE BEAM SCHEDULE.
12. FLOOR SLAB IS TYPICAL 9" THICK.
13. ALL ADDED BARS TO BE CENTERED AT SUPPORT (U.N.O.).
14. f'c=5000psi AT 3rd FLOOR SLAB CONCRETE.
15. CHORD REINFORCING SHALL BE PLACED AT MID HEIGHT OF SLAB, TYPICAL.
16. SEE SPLICING SCHEDULE PER 15/S6.1 FOR SPLICE NOT SHOWN.
17. SEE SHEET S10.1 FOR ENLARGED STAIR PLANS AND DETAILS.
18. SEE SHEET 16/S6.1 FOR SLEEVE OPENING DETAIL ON CONCRETE FLOOR.

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL THIRD FLOOR FRAMING PLAN (SURGE BUILDING)

1/8" = 1'-0"

Scale

1001071

Project Number

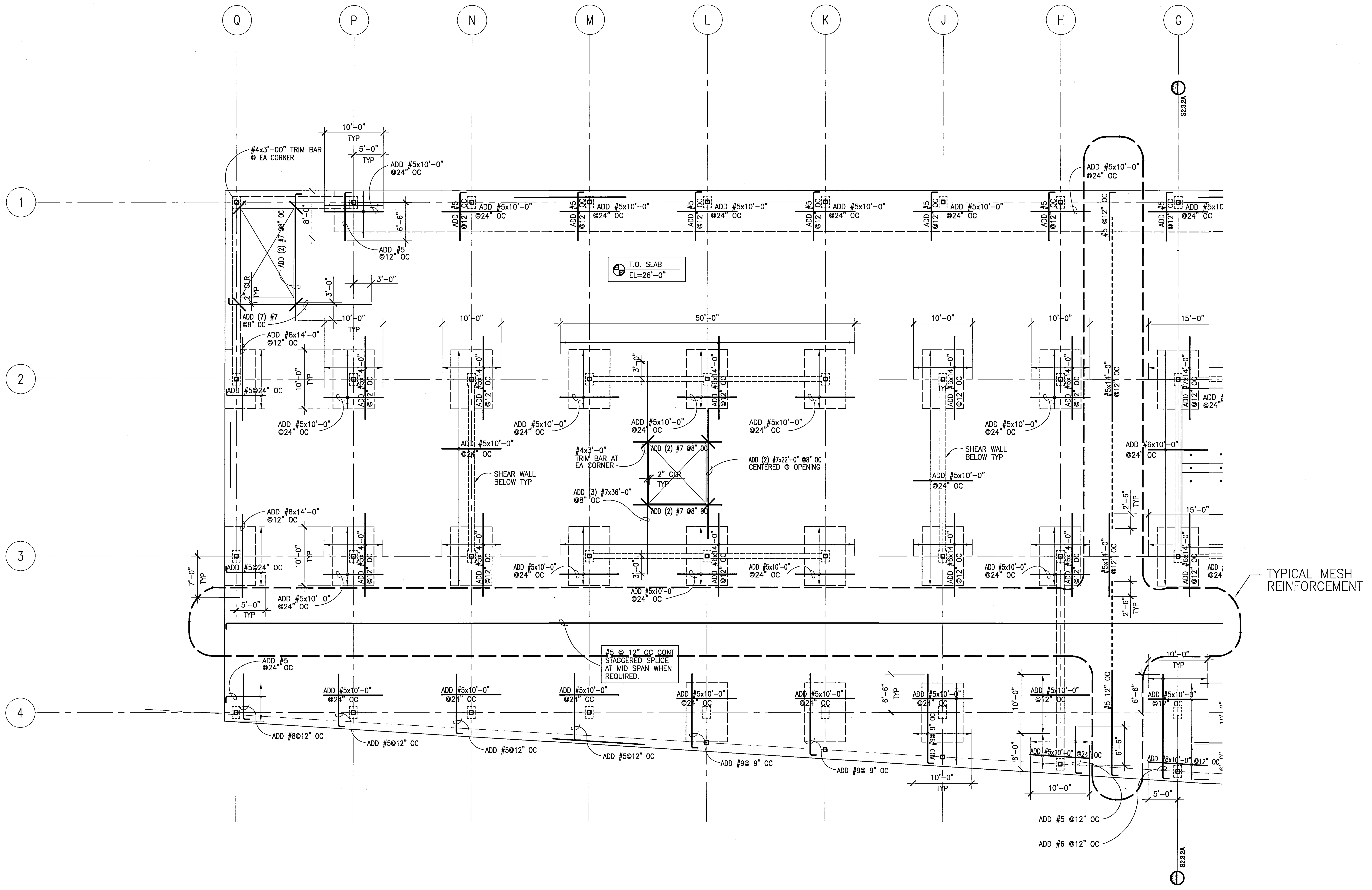
6 OCT 00

Baseline Date

S2.3.1

Drawing Number

NOTES:
JOB # 1001071
XREFS: 1071TB
UCR SURGE
FILE PATH & NAME P:\2000\1001071-UCR\SDRAFT\S32-1.DWG
PLOTTED DATE & TIME MAY. 04, 2000 4:19:38 PM
UPDATED BY TONY TAM
PLOT SCALE 1=1
PROJ.MG. R.H
DRAFTER TONY TAM



NOTES:

1. SEE SHEET S.0.1 FOR GENERAL NOTES.
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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL THIRD FLOOR FRAMING PLAN (SURGE BUILDING) (TOP REINFORCEMENT)

1/8" = 1'-0"

Scale

1001071

Project Number

6 OCT 00

Baseline Date

S2.3.1A

Drawing Number

NOTES: JOB # 1001071 XREFS: 10711B.

UCR SURGE

PLOTTED DATE & TIME: MAY. 04, 2000 4:19:38 PM

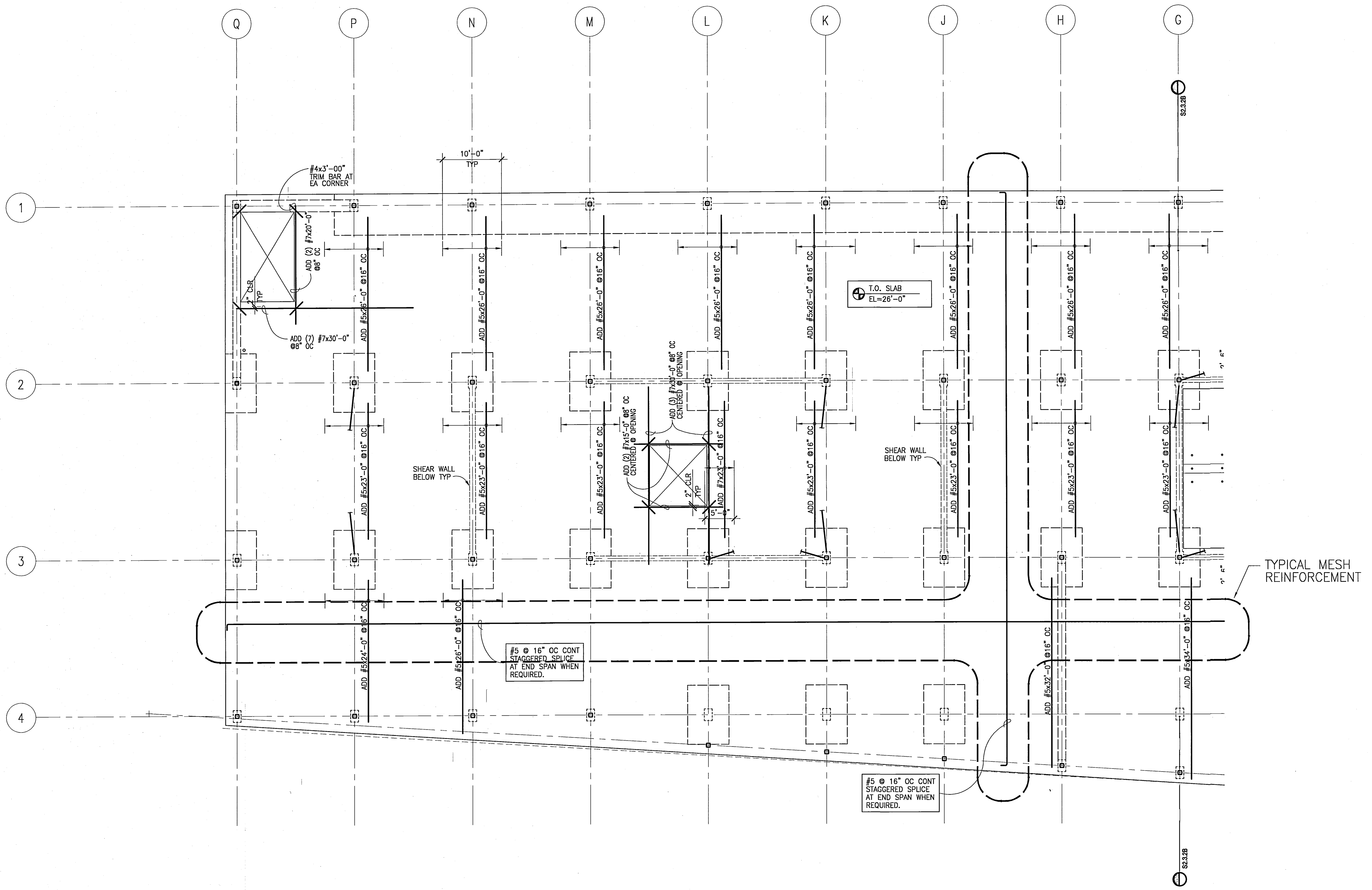
UPDATED BY: TONY TAM

PLOT SCALE: 1=1

PROJ.MG.: R.H

DRAFTER: TONY TAM

FILE PATH & NAME: P:\2000\1001071-UCR\SDRAFT\S32-1A.DWG



NOTES:

1. SEE SHEET S.0.1 FOR GENERAL NOTES.
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18. SEE SHEET 16/S6.1 FOR SLEEVE OPENING DETAIL ON CONCRETE FLOOR.

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310.586.1091

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title
PARTIAL THIRD FLOOR FRAMING PLAN OF SURGE BUILDING (BOTTOM REINFORCEMENT)
1/8" = 1'-0"

Scale

Project Number 1001071

Baseline Date 6 OCT 00

Drawing Number S2.3.1B

NOTES: | JOB # 1001071 | XREFS: 1071TB,
1071B PNOTE Ucs-sfp3 GRID3S GRID3N SFP3B | UCR SURGE
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PLOTTED DATE & TIME: MAY. 04, 2000 4:19:38 PM
UPDATED BY: TONY TAM
PLOT SCALE: 1=1
PROG.MG.: R.H
DRAFTER: TONY TAM

NOTES:

1. SEE SHEET S.0.1 FOR GENERAL NOTES.
2. T.O. FOOTING SHALL BE 1'-6" BELOW THE TOP OF CONCRETE ELEVATION U.N.O.
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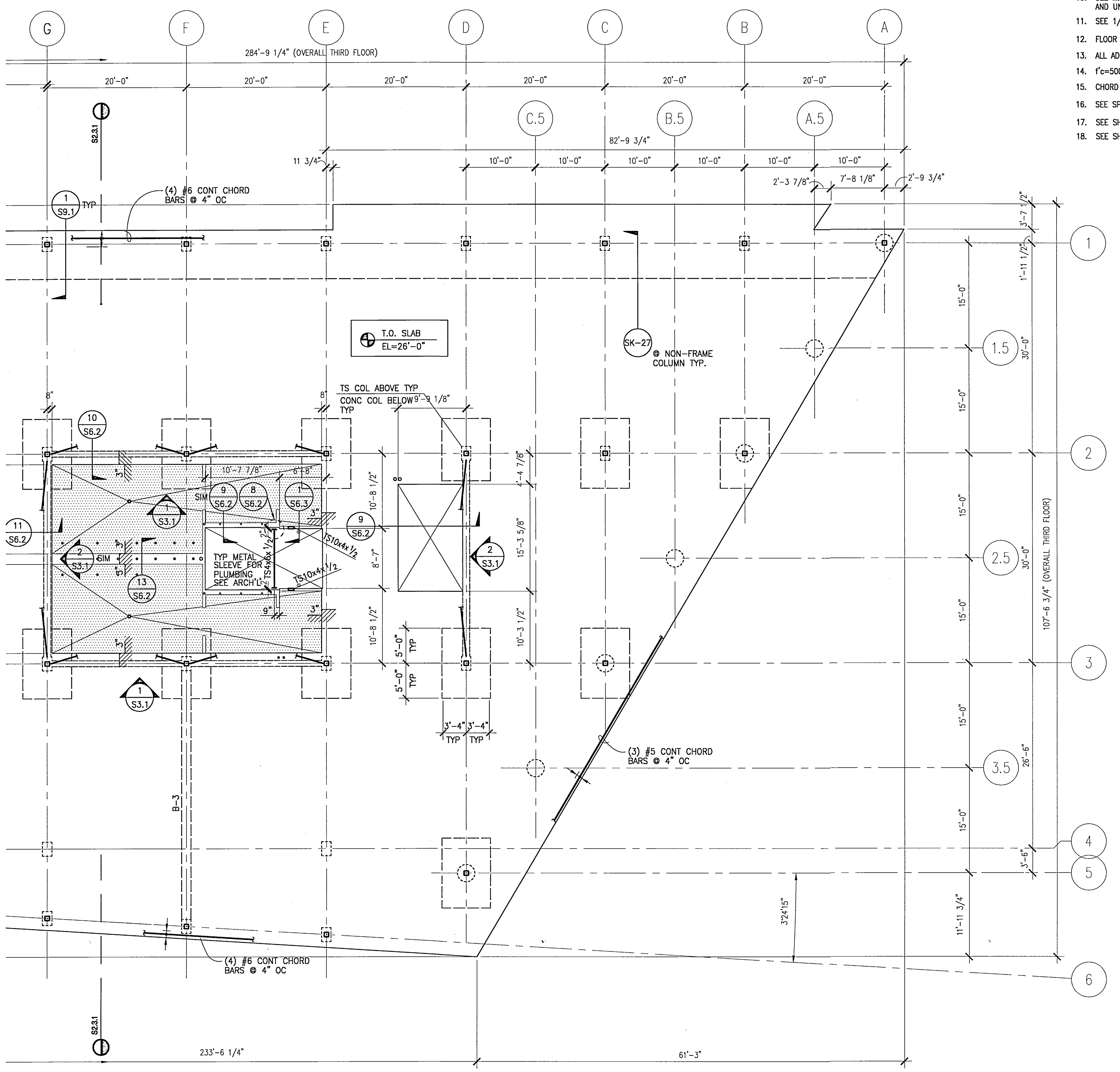
17. SEE SHEET S10.1 FOR ENLARGED STAIR PLANS AND DETAILS.
18. SEE SHEET 16/S6.1 FOR SLEEVE OPENING DETAIL ON CONCRETE FLOOR.



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UCR PROJECT NO. 950424

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Fourth Floor
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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL THIRD FLOOR PLAN OF SURGE BUILDING

1/8" = 1'-0"

Scale

1001071

Project Number

6 OCT 00

Baseline Date

S2.3.2

Drawing Number

NOTES:
JOB # 1001071
XREFS: 1071TB.
1071TB PHOTE UCR SURGE
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PLOTTED DATE & TIME: MAY. 04, 2000 4:19:38 PM
UPDATED BY: TONY TAM
PLOT SCALE: 1=1
PROG.MG.: R.H
DRAFTER: TONY TAM

NOTES:

1. SEE SHEET S.0.1 FOR GENERAL NOTES.
2. T.O. FOOTING SHALL BE 1'-6" BELOW THE TOP OF CONCRETE ELEVATION U.N.O.
3. SEE SHEET S6.1 FOR TYPICAL CONCRETE DETAILS.
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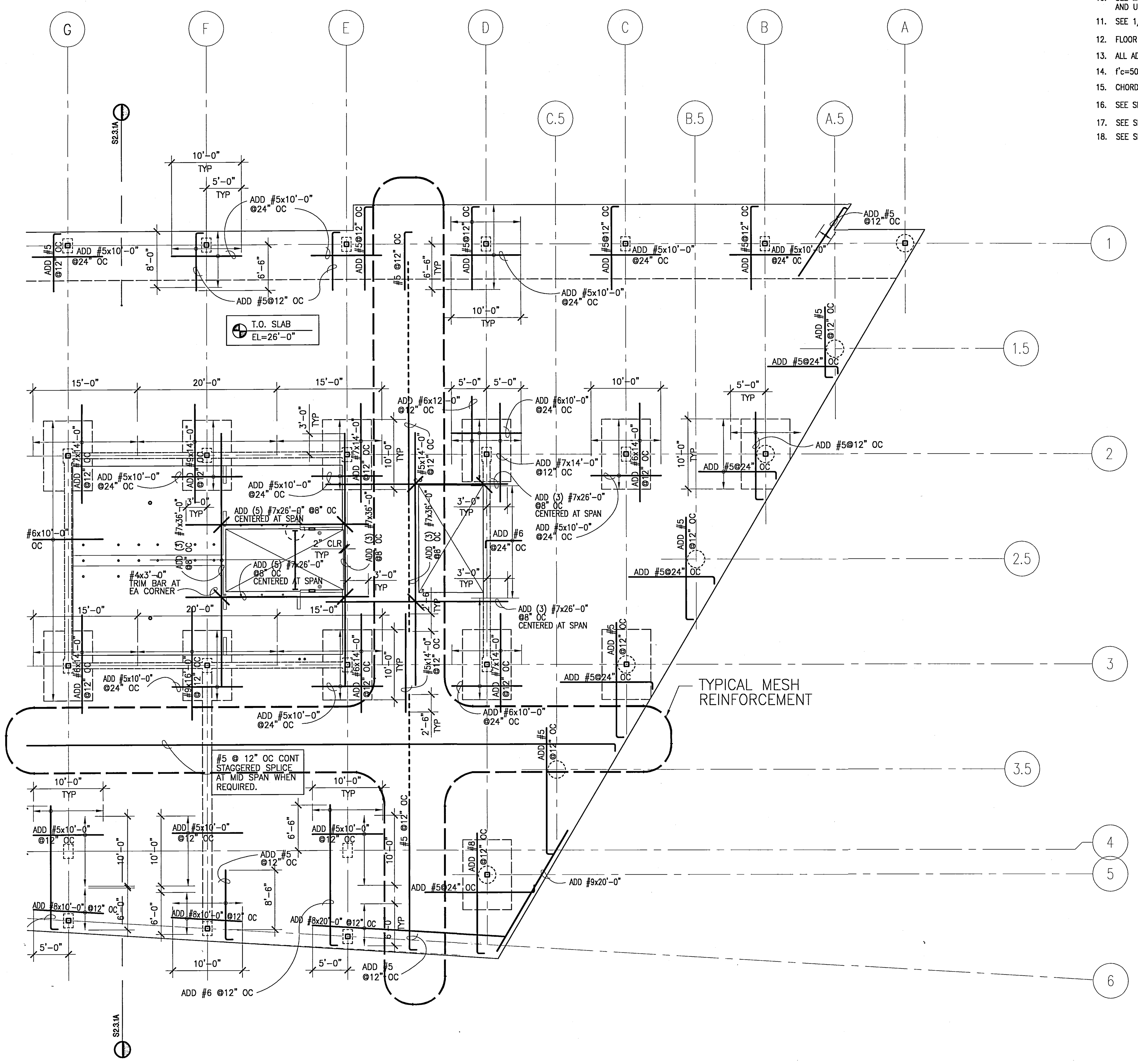

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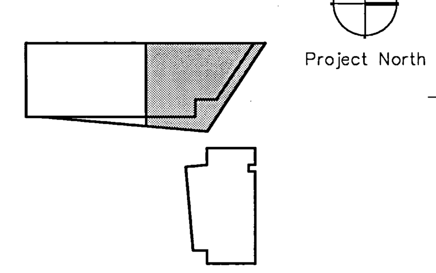
RECORD DRAWINGS

Key Plan



Drawing Title

PARTIAL THIRD FLOOR PLAN OF SURGE BUILDING (TOP REINFORCEMENT)

1/8" = 1'-0"

Scale

Project Number 1001071

Baseline Date 6 OCT 00

Drawing Number S2.3.2A

NOTES: | JOB # 1001071 | UCR SURGE | XREFS: 1071TB

FILE PATH & NAME: P:\2000\1001071-UCR\SDRAFT\S23-2A.DWG

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NOTES:
1. SEE SHEET S.0.1 FOR GENERAL NOTES.
2. T.O. FOOTING SHALL BE 1'-6" BELOW THE TOP OF CONCRETE ELEVATION U.N.O.
3. SEE SHEET S6.1 FOR TYPICAL CONCRETE DETAILS.
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5. X'-X" INDICATES TOP OF FOOTING ELEVATION WHERE A TYPICAL.
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8. INDICATES FLOOR ELEVATION CHANGE.
9. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN.
10. SEE M.E.P. DRAWINGS FOR LOCATION OF TRENCHES, FLOOR SINKS, AND UNDERGROUND UTILITIES.
11. SEE 1/S6.2 FOR CONCRETE BEAM SCHEDULE.
12. FLOOR SLAB IS TYPICAL 9" THICK.
13. ALL ADDED BARS TO BE CENTERED AT SUPPORT (U.N.O.).
14. f'c=5000psi AT 3rd FLOOR SLAB CONCRETE.
15. CHORD REINFORCING SHALL BE PLACED AT MID HEIGHT OF SLAB, TYPICAL.
16. SEE SPLICING SCHEDULE PER 15/S6.1 FOR SPLICE NOT SHOWN.
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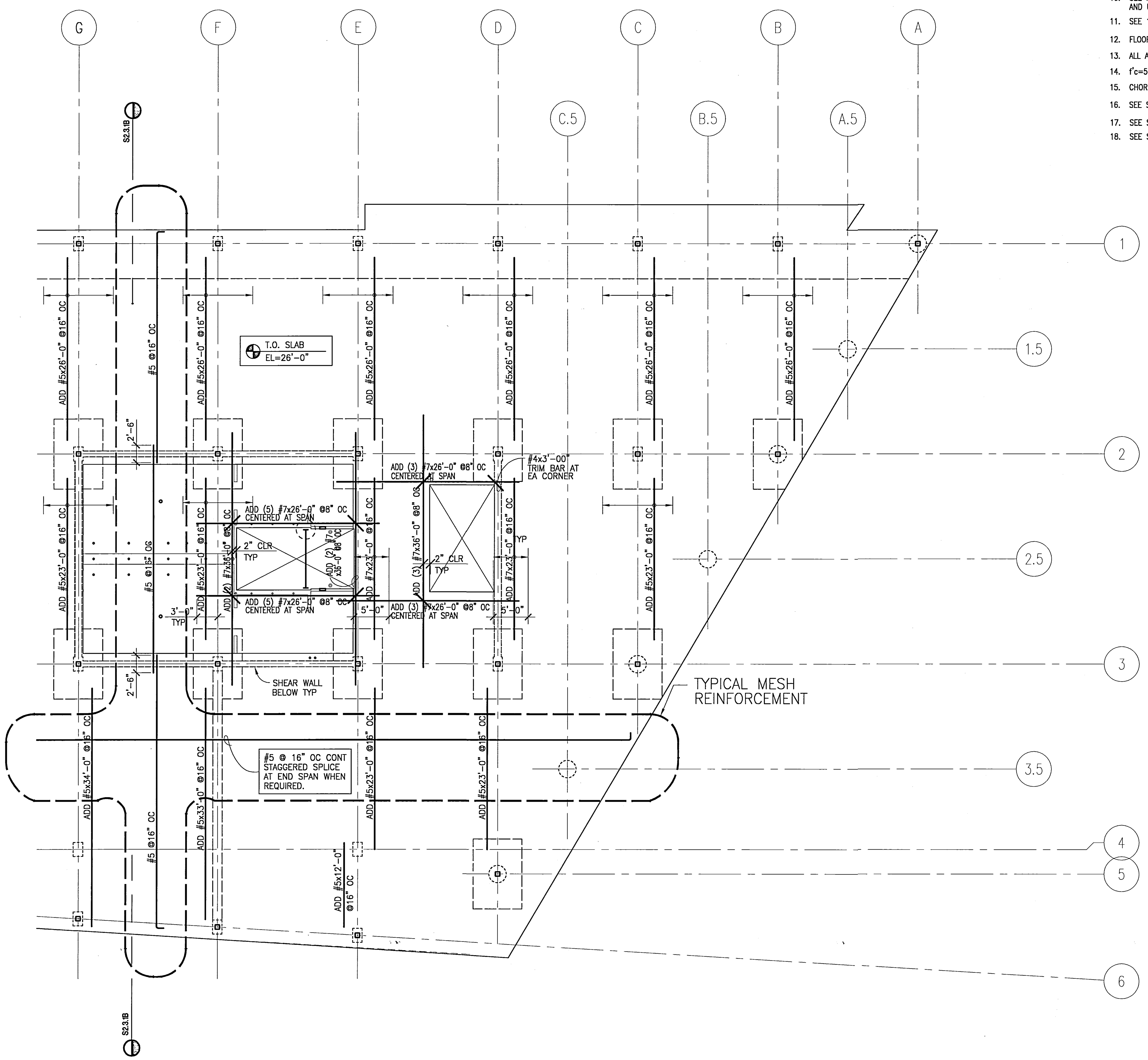
18. SEE SHEET 16/S6.1 FOR SLEEVE OPENING DETAIL ON CONCRETE FLOOR.



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CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL THIRD FLOOR PLAN OF SURGE BUILDING (BOTTOM REINFORCEMENT)

1/8" = 1'-0"

Scale

1001071

Project Number

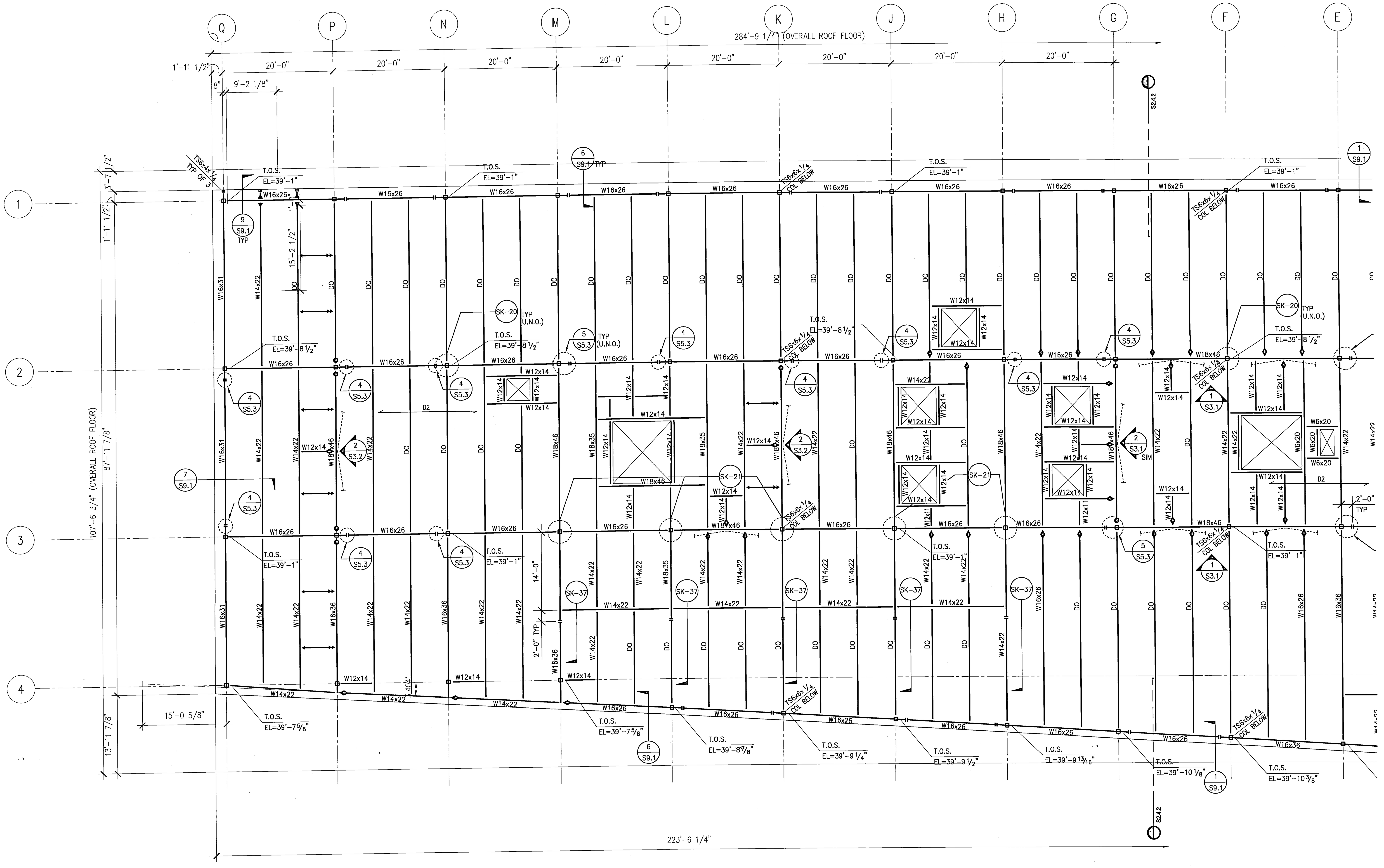
6 OCT 00

Baseline Date

S2.3.2B

Drawing Number

NOTES: JOB # 1001071 XREFS: 1071TB, 1071TB PNOTE Ucs-sfp3B Ucs-sfp3 GRID3N GRID3S SFP3B FILE PATH & NAME UCR SURGE P:\2000\1001071-UCR \SDRAFT\S23-2B.DWG PLOTTED DATE & TIME MAY. 04, 2000 4:19:38 PM UPDATED BY TONY TAM PLOT SCALE 1=1 PROG.MG. R.H DRAFTER TONY TAM



NOTES:

1. SEE SHEET S.0.1 FOR GENERAL NOTES.
2. SEE SHEETS S.5.1 THRU S.5.2 FOR TYPICAL STEEL DETAILS.
3. SEE ARCHITECTURAL DRAWINGS FOR TOP OF STEEL AND TOP OF DECK ELEVATIONS.
4. INDICATES FLOOR ELEVATION CHANGE.
5. D1 INDICATES DECK TYPE. SEE DETAIL 3/S.5.2.
6. INDICATES SINGLE PLATE DRAG CONNECTION PER DETAIL.
7. ALL BEAMS SHALL BE EQUALLY SPACED BETWEEN COLUMNS UNLESS NOTED OTHERWISE.
8. INDICATES ANGLE BRACE PER DETAIL 7/S.5.2.
9. INDICATES FULL HEIGHT STIFFENER SEE DETAILS 1/S5.1.
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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL ROOF FRAMING PLAN (SURGE BUILDING)

1/8" = 1'-0"

Scale

1001071

Project Number

6 OCT 00

Baseline Date

S2.4.1

Drawing Number

DRAFTER	PROG.MG.	PLOT SCALE	UPDATED BY	PLOTTED DATE & TIME	FILE PATH & NAME
TONY TAM	R.H	1=1	TONY TAM	MAY. 04, 2000 4:19:38 PM	P:\2000\1001071-UCR\SDRAFT\S24-1.DWG

10716 UCR SURGE

NOTES: JOB # 1001071 XREFS: 10716B

06/21/00

NOTES:

1. SEE SHEET S.0.1 FOR GENERAL NOTES.
2. SEE SHEETS S.5.1 THRU S.5.2 FOR TYPICAL STEEL DETAILS.
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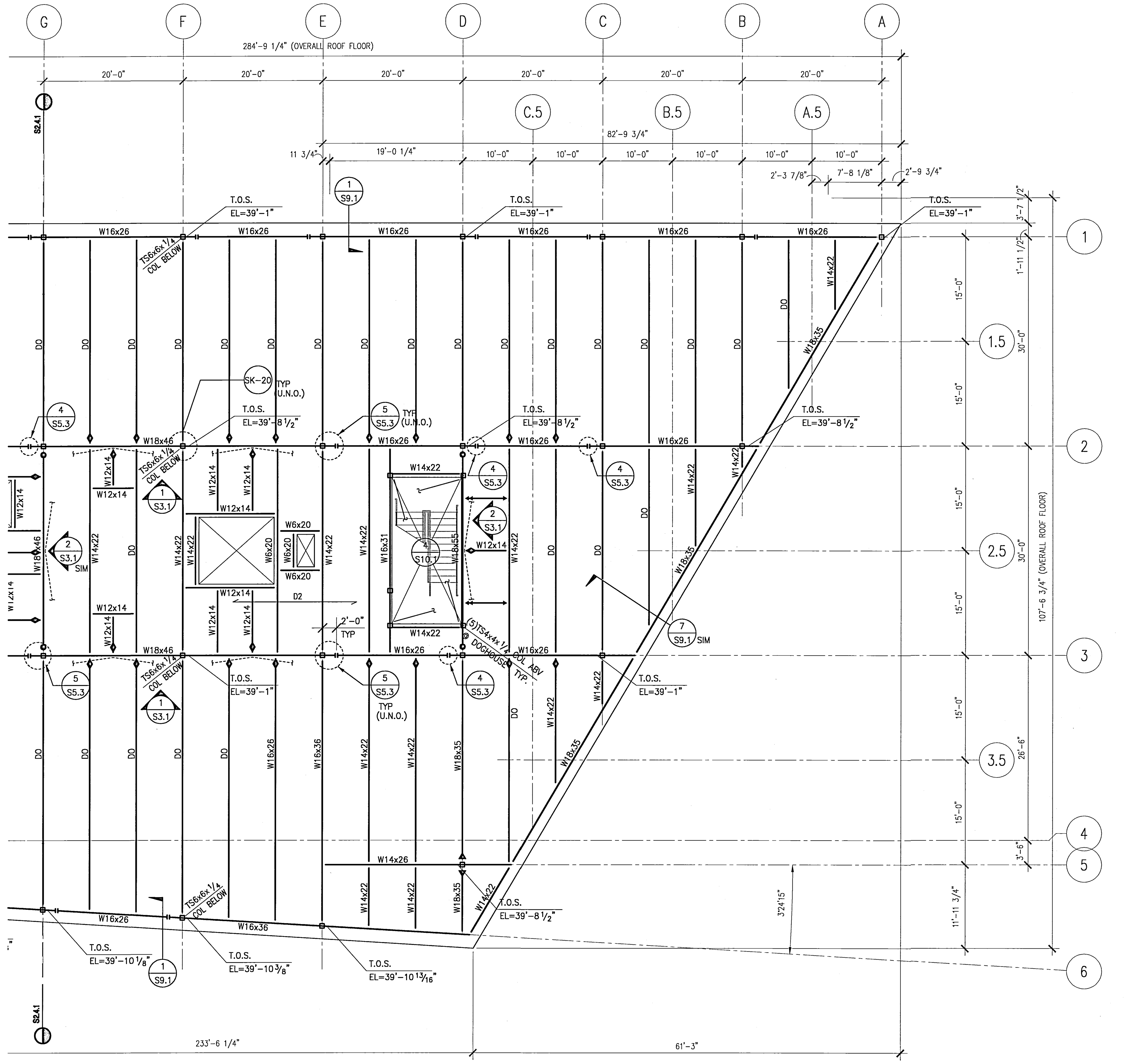
7. ALL BEAMS SHALL BE EQUALLY SPACED BETWEEN COLUMNS UNLESS NOTED OTHERWISE.
8. INDICATES ANGLE BRACE PER DETAIL 7/S.5.2.
9. INDICATES FULL HEIGHT STIFFENER SEE DETAILS 1/S5.1.
10. FOR BRACE FRAME ELEVATIONS REFER TO DETAIL.
11. INDICATES BRACED CONNECTION PER. 11/S5.4 @ TRELLIS STRUCTURE
12. INDICATES BRACED FRAME BELOW FLOOR.
13. INDICATES BRACED FRAME ABOVE FLOOR ONLY.
14. (-X") INDICATES TOP OF STEEL BEAM BELOW THE REFERENCED T.O.STEEL ELEVATION
15. (A) INDICATES HIGH-STRENGH BOLTED CONNECTION PER "K".
16. <3/4> INDICATES BEAM CAMBER AT MIDSPAN.
17. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN.
18. SEE M.E.P. DRAWINGS FOR FLOOR PENETRATIONS NOT SHOWN.



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Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Issued for | Rev Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL ROOF FRAMING PLAN (SURGE BUILDING)

1/8" = 1'-0"

Scale
1001071

Project Number
6 OCT 00

Baseline Date

S2.4.2

Drawing Number

NOTES: | JOB # 1001071 | 1071IB GRDRS GRDRN RNOTE | UCR SURGE | XREFS: GRDRS, GRDRN, RNOTE, UCS-SFPR, 1071TB.

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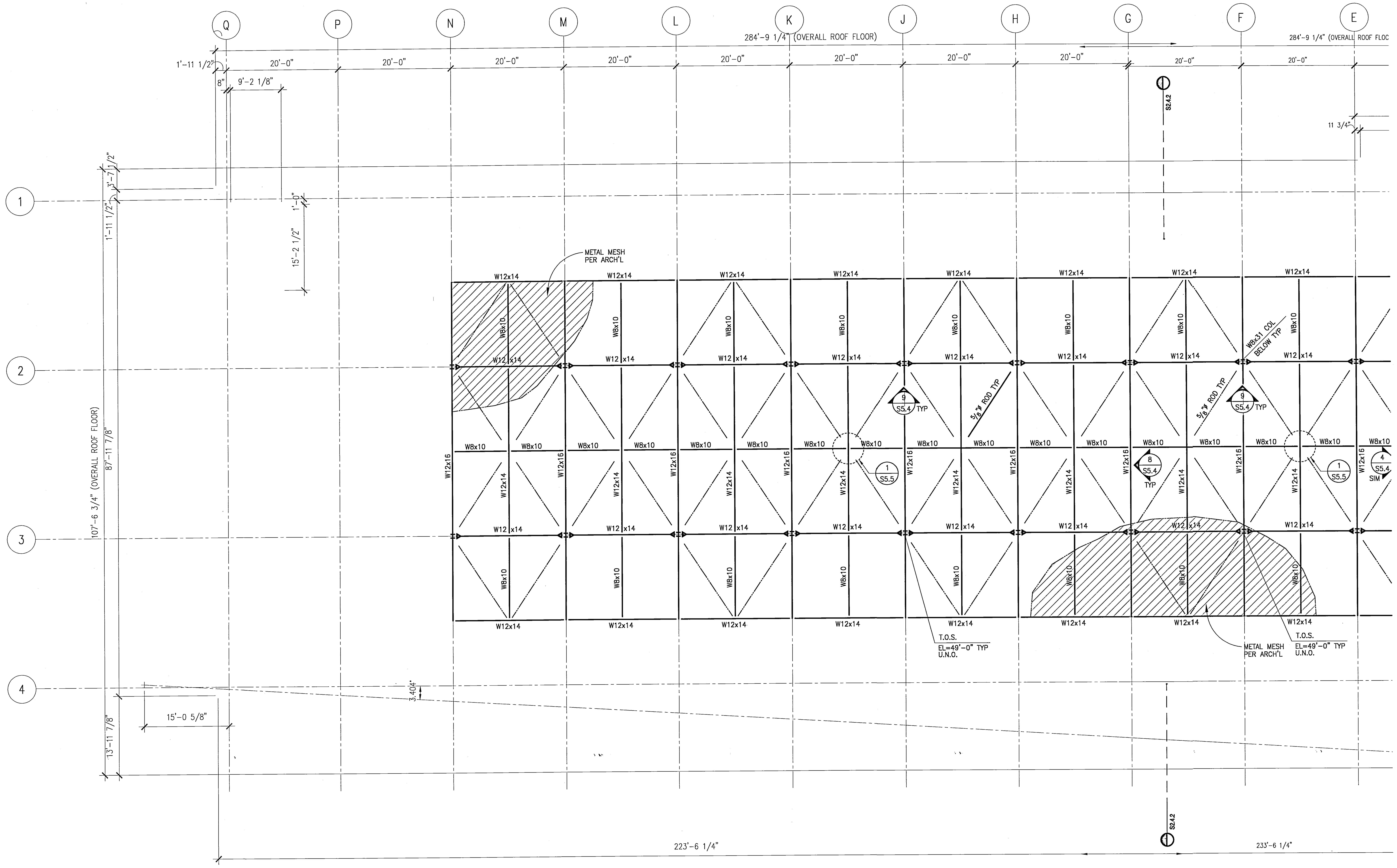
UPDATED BY: TONY TAM | PLOT SCALE: 1=1 | PROG.MG.: R.H | DRAFTER: TONY TAM



NOTES:

1. SEE SHEET S.0.1 FOR GENERAL NOTES.
2. SEE SHEETS S.5.1 THRU S.5.2 FOR TYPICAL STEEL DETAILS.
3. SEE ARCHITECTURAL DRAWINGS FOR TOP OF STEEL AND TOP OF DECK ELEVATIONS.
4. INDICATES FLOOR ELEVATION CHANGE.
5. D1 INDICATES DECK TYPE. SEE DETAIL 3/S.5.2.
6. INDICATES SINGLE PLATE DRAG CONNECTION PER DETAIL.
7. ALL BEAMS SHALL BE EQUALLY SPACED BETWEEN COLUMNS UNLESS NOTED OTHERWISE.
8. INDICATES ANGLE BRACE PER DETAIL 7/S.5.2.
9. INDICATES FULL HEIGHT STIFFENER SEE DETAILS 1/S5.1.
10. FOR BRACE FRAME ELEVATIONS REFER TO DETAIL.
11. INDICATES BRACED CONNECTION PER, 11/S5.4 @ TRELLIS STRUCTURE
12. INDICATES BRACED FRAME BELOW FLOOR.
13. INDICATES BRACED FRAME ABOVE FLOOR ONLY.
14. (-X") INDICATES TOP OF STEEL BEAM BELOW THE REFERENCED T.O.STEEL ELEVATION
15. (A) INDICATES HIGH-STRENGTH BOLTED CONNECTION PER "X".
16. <3/4> INDICATES BEAM CAMBER AT MIDSPAN.
17. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN.
18. SEE M.E.P. DRAWINGS FOR FLOOR PENETRATIONS NOT SHOWN.

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL TRELLIS FRAMING PLAN (SURGE BUILDING)

1/8" = 1'-0"

Scale

1001071

Project Number

6 OCT 00

Baseline Date

S2.5.1

Drawing Number

NOTES: | JOB # 1001071 | XREFS: 1071B, UCR-SPH

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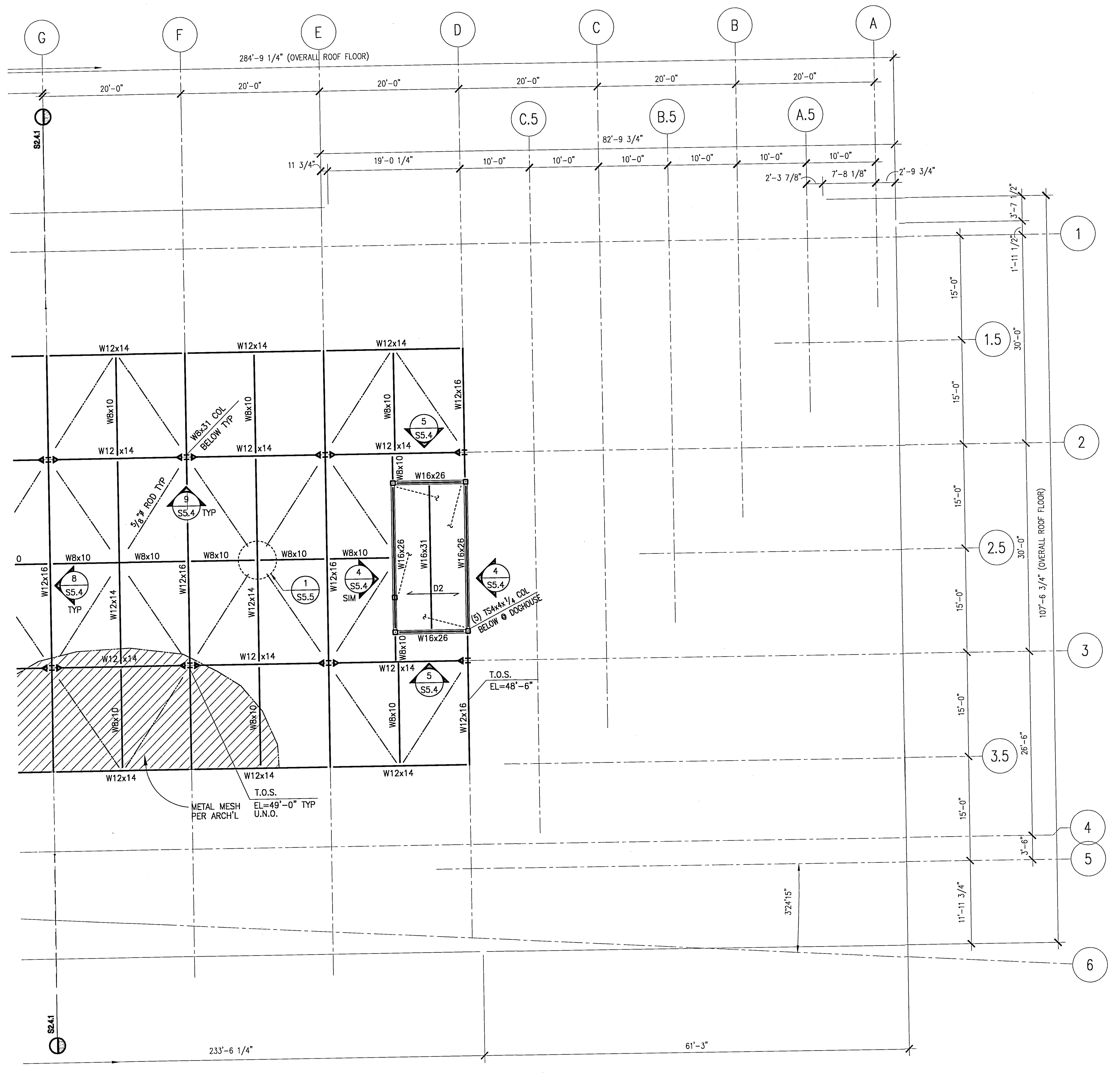
PLOTTED DATE & TIME: MAY. 04, 2000 4:19:38 PM

UPDATED BY: TONY TAM | PLOT SCALE: 1=1 | PROG.MG.: R.H | DRAFTER: TONY TAM

06/21/00

NOTES:

1. SEE SHEET S.0.1 FOR GENERAL NOTES.
2. SEE SHEETS S.5.1 THRU S.5.2 FOR TYPICAL STEEL DETAILS.
3. SEE ARCHITECTURAL DRAWINGS FOR TOP OF STEEL AND TOP OF DECK ELEVATIONS.
4. INDICATES FLOOR ELEVATION CHANGE.
5. D1 INDICATES DECK TYPE. SEE DETAIL 3/S.5.2.
6. INDICATES SINGLE PLATE DRAG CONNECTION PER DETAIL.
7. ALL BEAMS SHALL BE EQUALLY SPACED BETWEEN COLUMNS UNLESS NOTED OTHERWISE.
8. INDICATES ANGLE BRACE PER DETAIL 7/S.5.2.
9. INDICATES FULL HEIGHT STIFFENER SEE DETAILS 1/S5.1.
10. FOR BRACE FRAME ELEVATIONS REFER TO DETAIL.
11. INDICATES BRACED CONNECTION PER, 11/S5.4 @ TRELLIS STRUCTURE
12. INDICATES BRACED FRAME BELOW FLOOR.
13. INDICATES BRACED FRAME ABOVE FLOOR ONLY.
14. (-X") INDICATES TOP OF STEEL BEAM BELOW THE REFERENCED T.O.STEEL ELEVATION
15. A INDICATES HIGH-STRENGH BOLTED CONNECTION PER "K".
16. <3/4> INDICATES BEAM CAMBER AT MIDSPAN.
17. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN.
18. SEE M.E.P. DRAWINGS FOR FLOOR PENETRATIONS NOT SHOWN.



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XREFS: 1071TB, 1071tb RNOTE Ucs-SPH GridIn GridRS, UCR SURGE						

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

PARTIAL TRELLIS FRAMING PLAN (SURGE BUILDING)

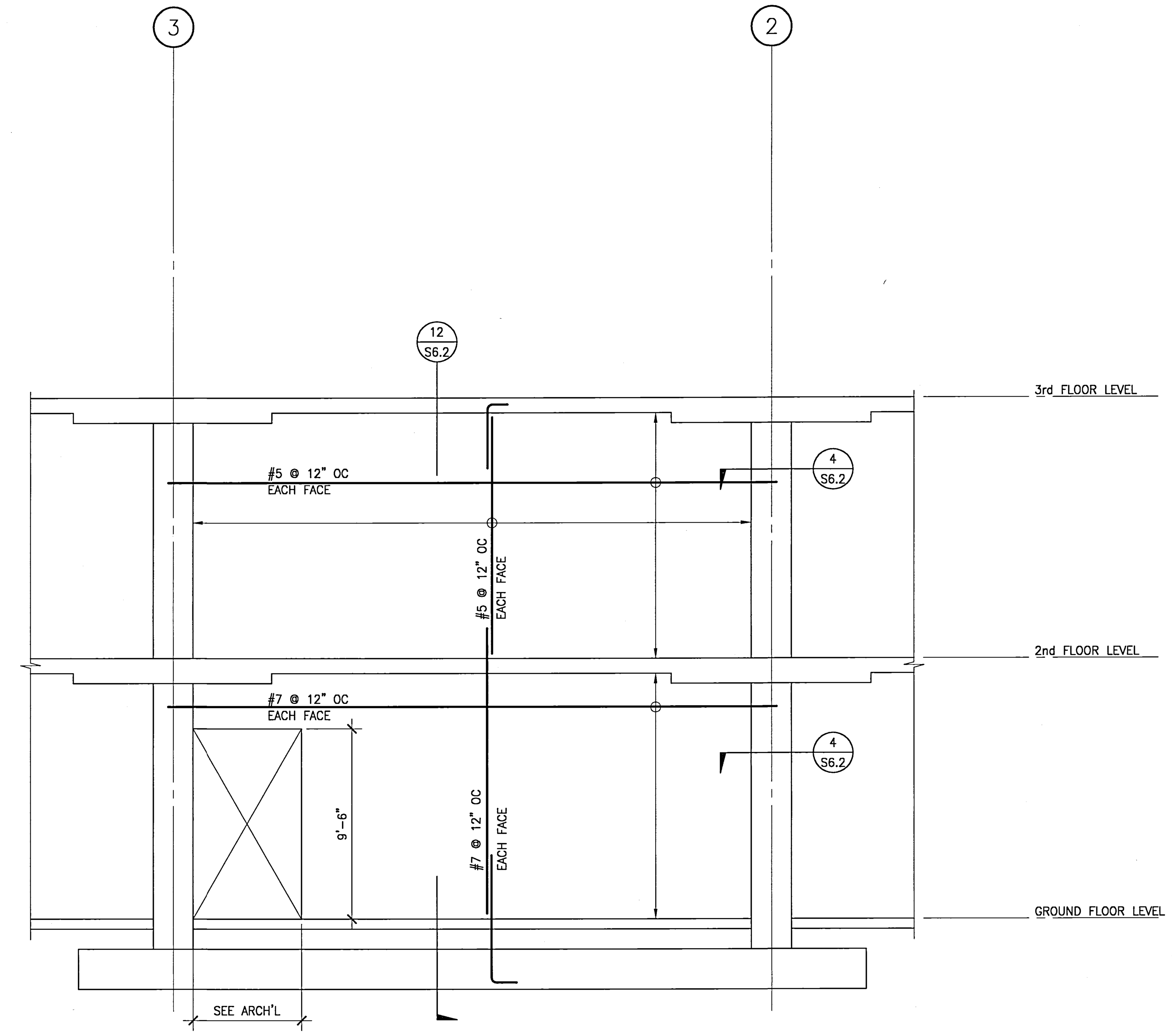
1/8" = 1'-0"

Scale

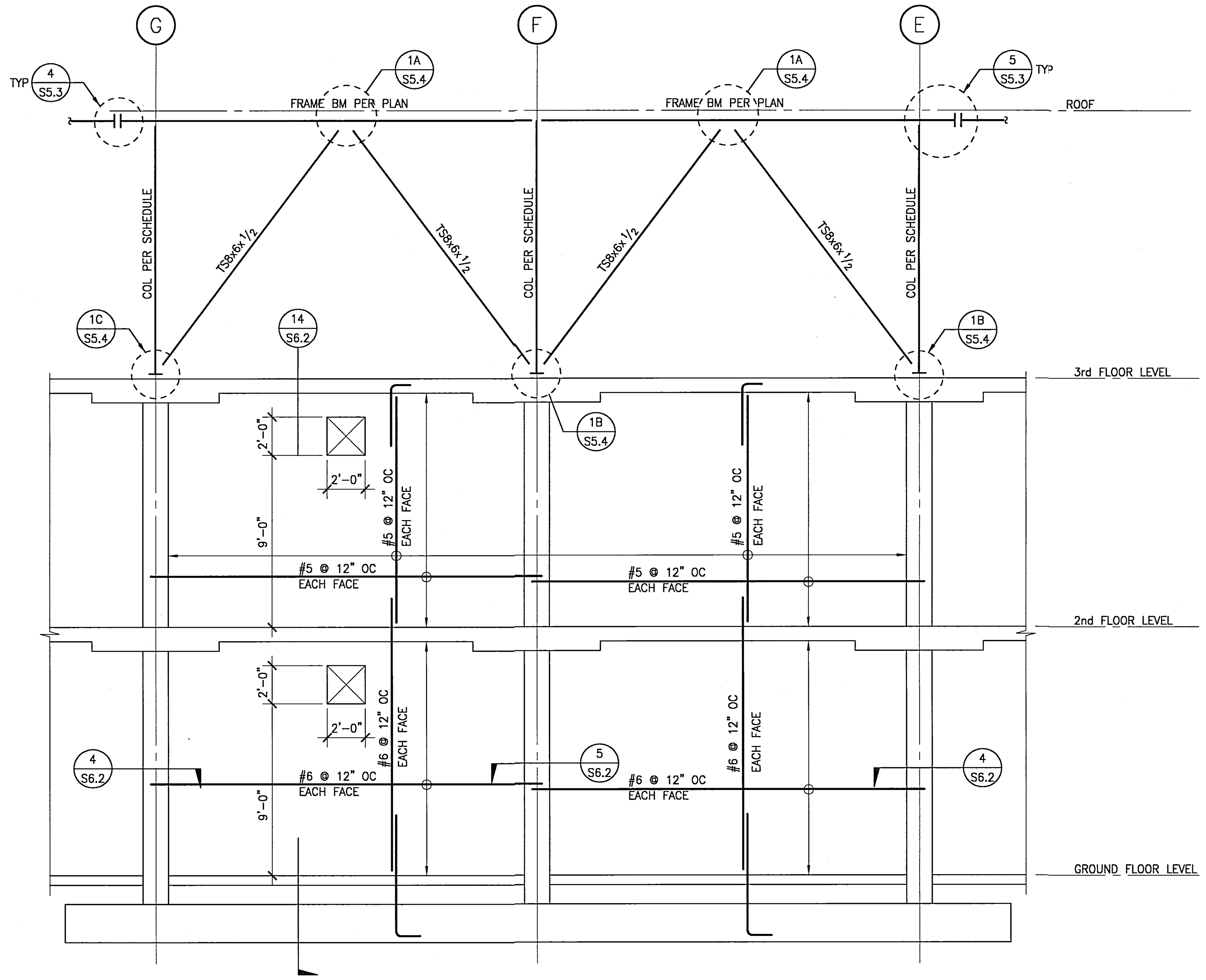
Project Number 1001071

Baseline Date 6 OCT 00

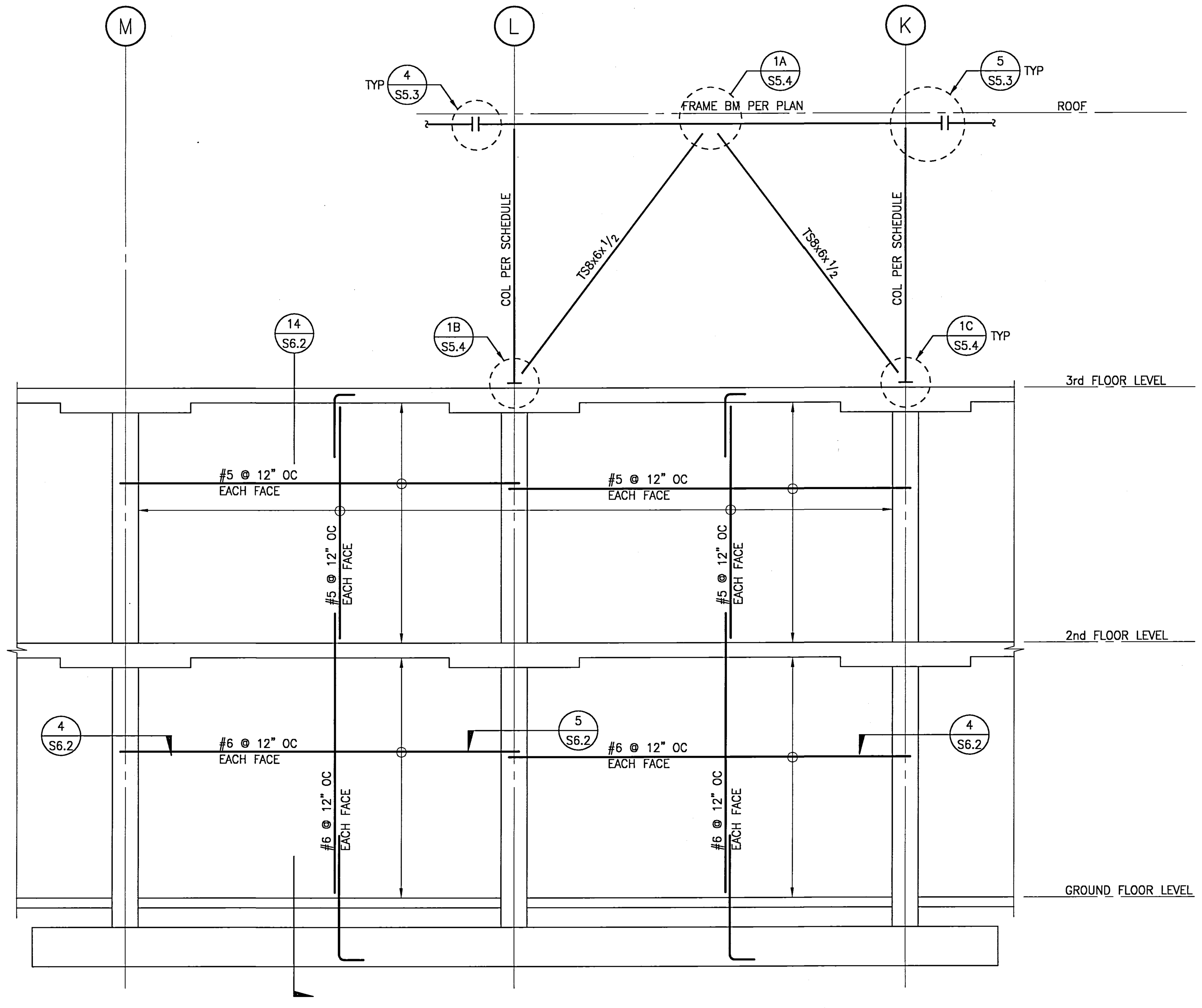
Drawing Number **S2.5.2**



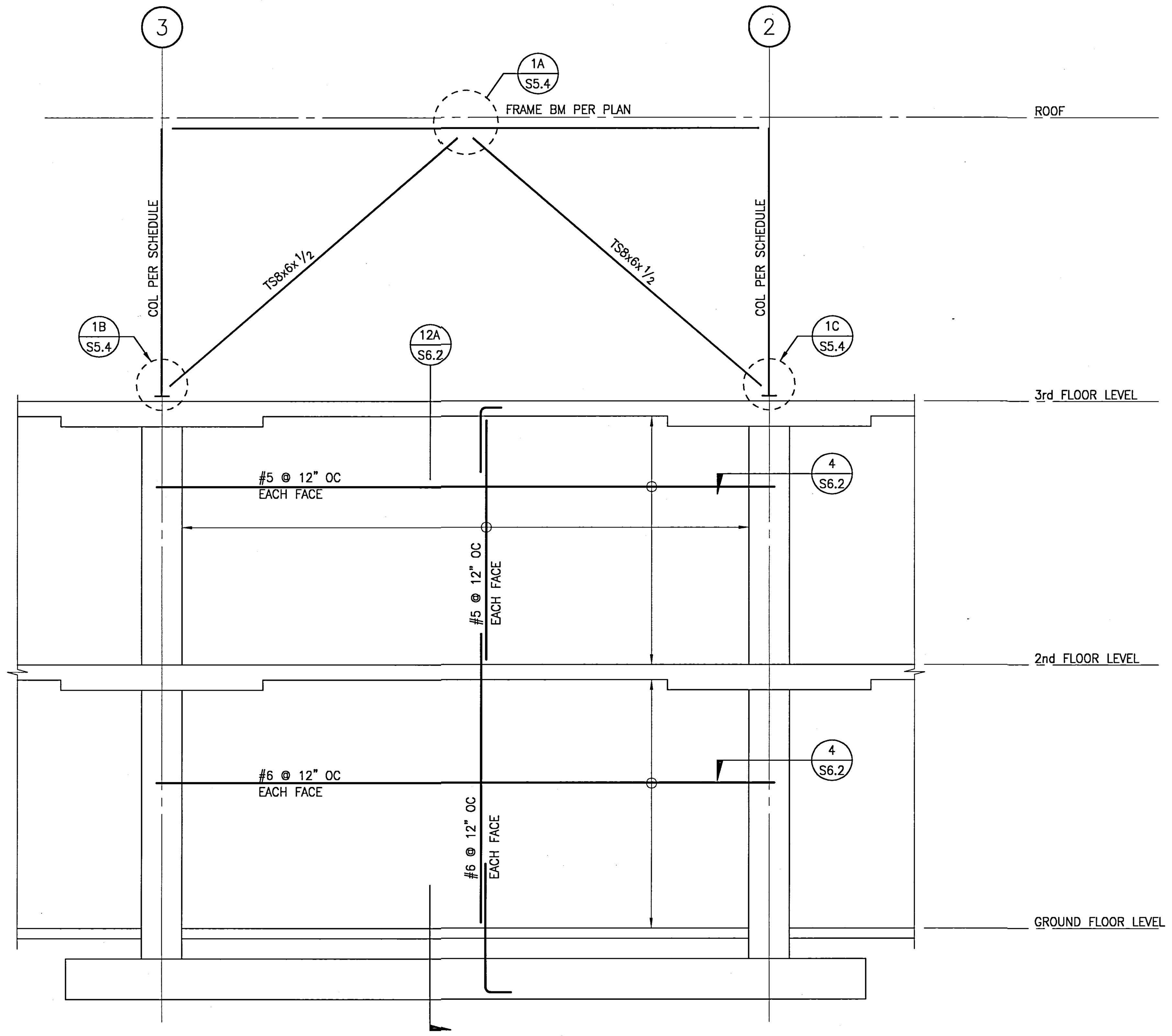
WALL ELEVATION AT GRID LINE N & J — 1/4"=1'-0" — 3



WALL ELEVATION AT GRID LINE 2 (GRID LINE 3 SIMILAR) — 1/4"=1'-0" — 1



WALL ELEVATION AT GRID LINE 3 — 1/4"=1'-0" — 4



WALL ELEVATION AT GRID LINE D (GRID LINE G SIMILAR) — 1/4"=1'-0" — 2

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

FRAME WALL ELEVATIONS
SURGE BUILDING

1/4" = 1'-0"

Scale
1001071
Project Number
6 OCT 00
Baseline Date
S3.1
Drawing Number

NOTES:
JOB # 1001071
XREFS: 1071TB
1071TB NAME: UCR SURGE
FILE PATH & NAME: P:\2000\1001071 UCR SURGE\SDRAFT\BULLETIN#1\S3-1.DWG
PLOTTED DATE & TIME: DEC. 06, 2000 11:57:48 AM
UPDATED BY: TONY TAM
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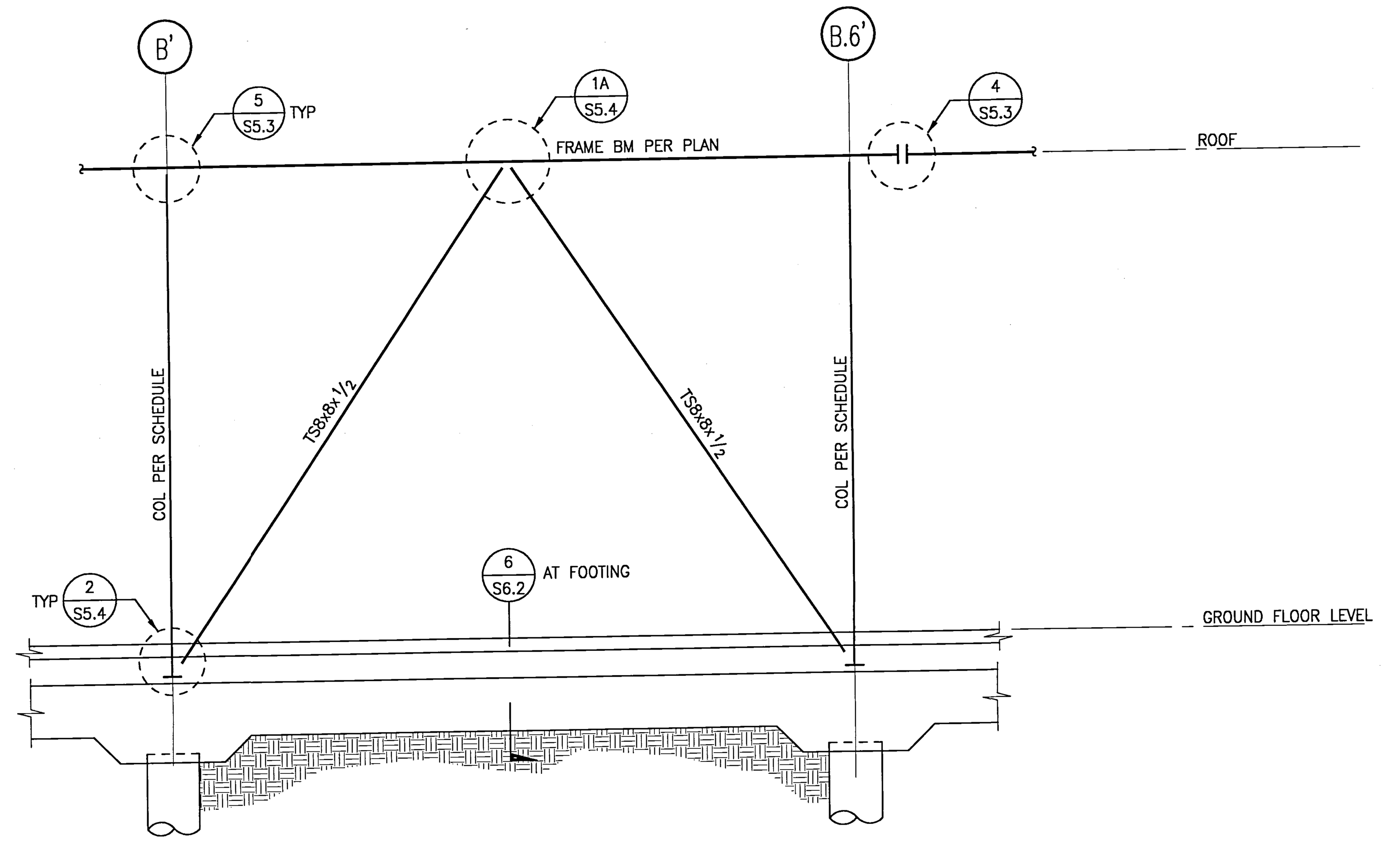
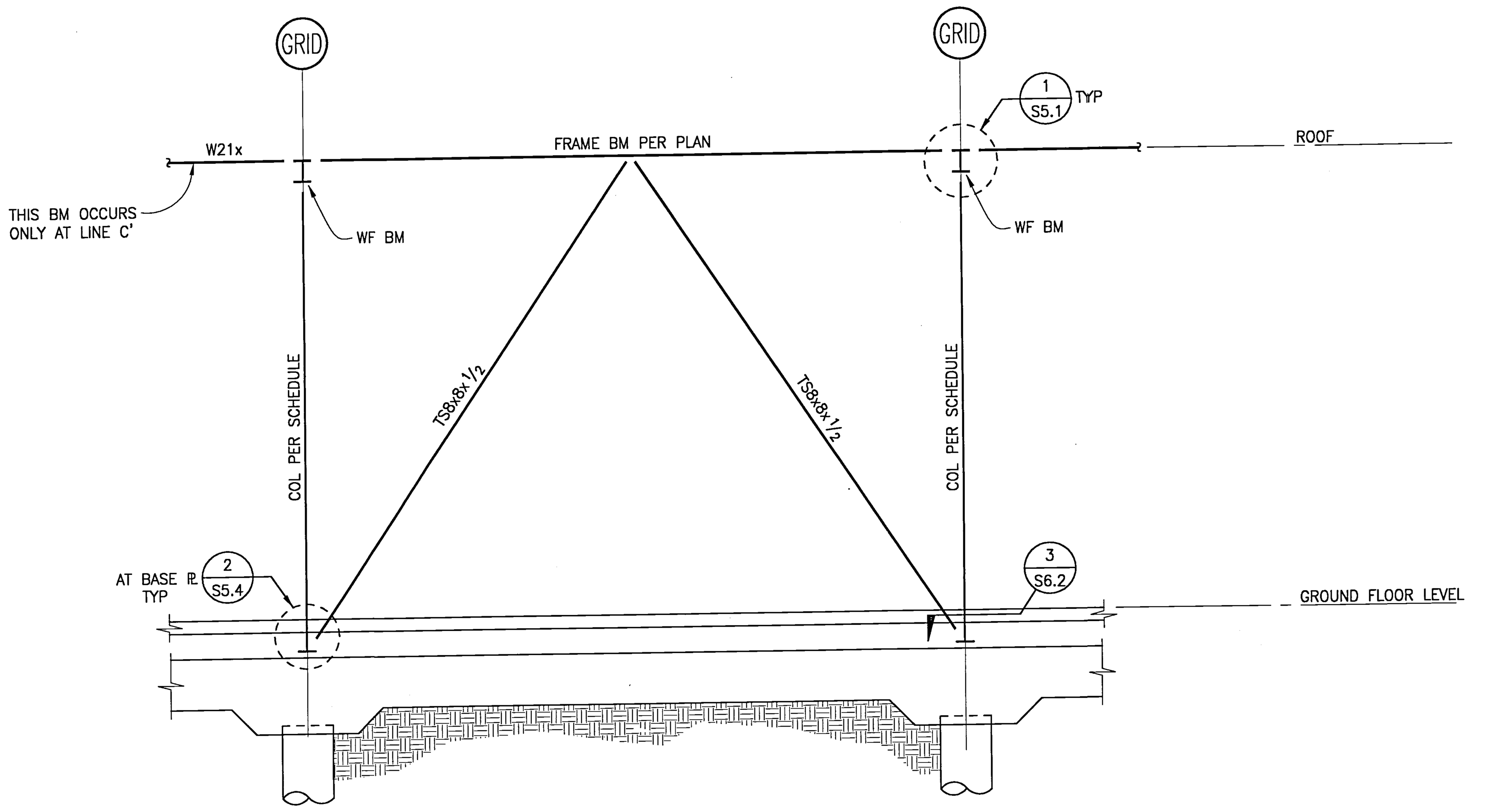
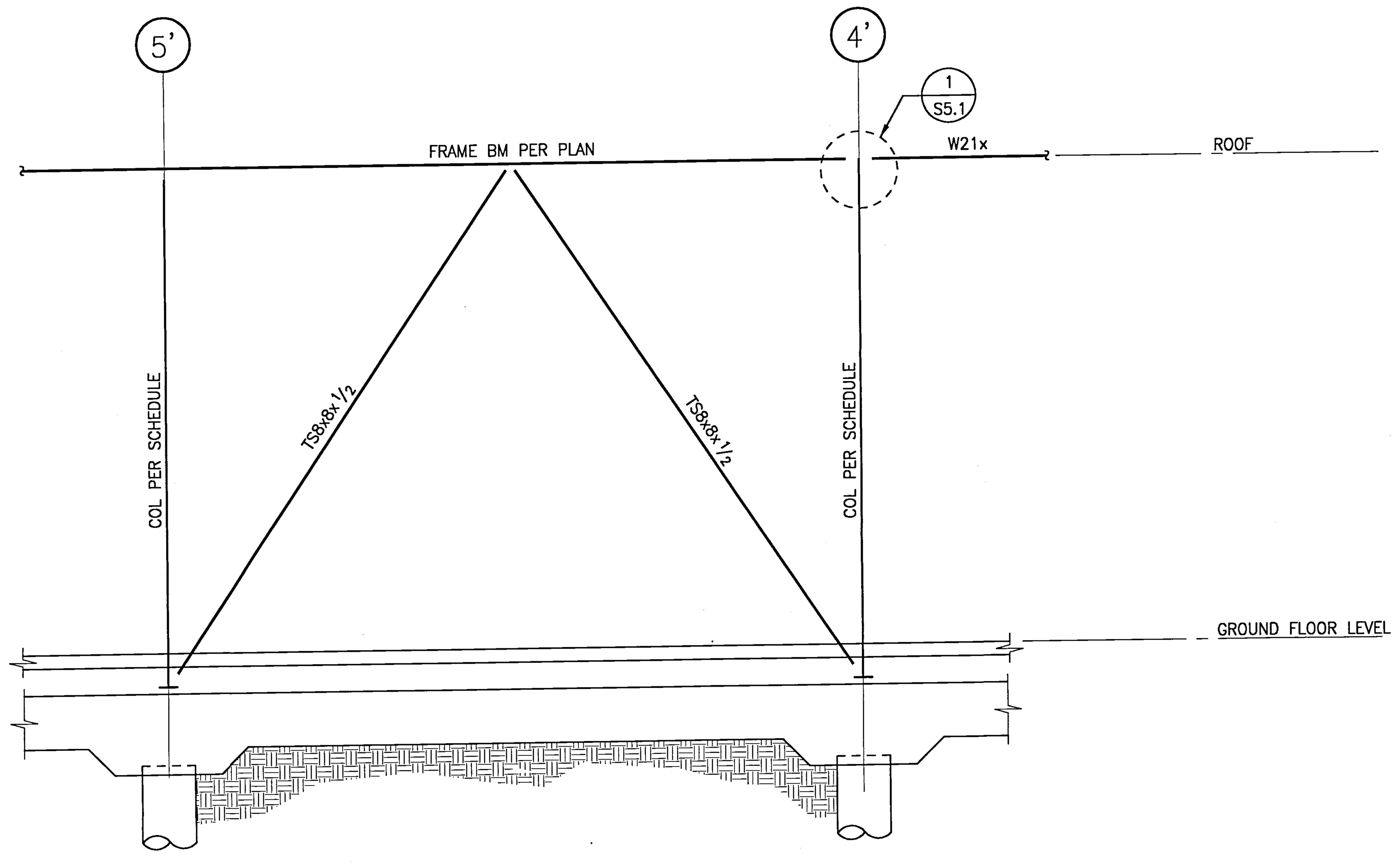
PROGMG.: R.H
DRAFTER: TONY TAM



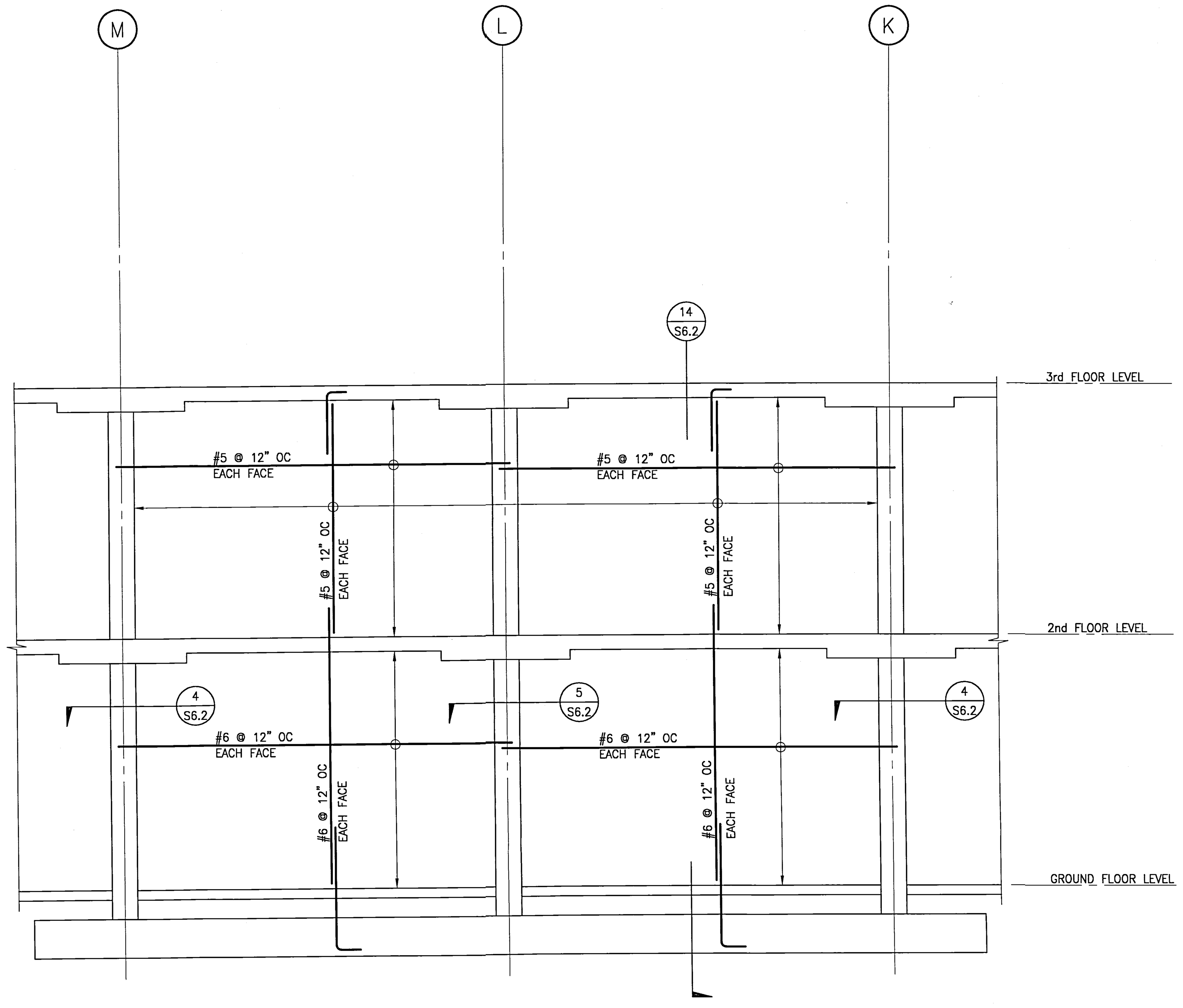
AUDITORIUM BRACED FRAME AT GRID LINE 1' — NTS 3



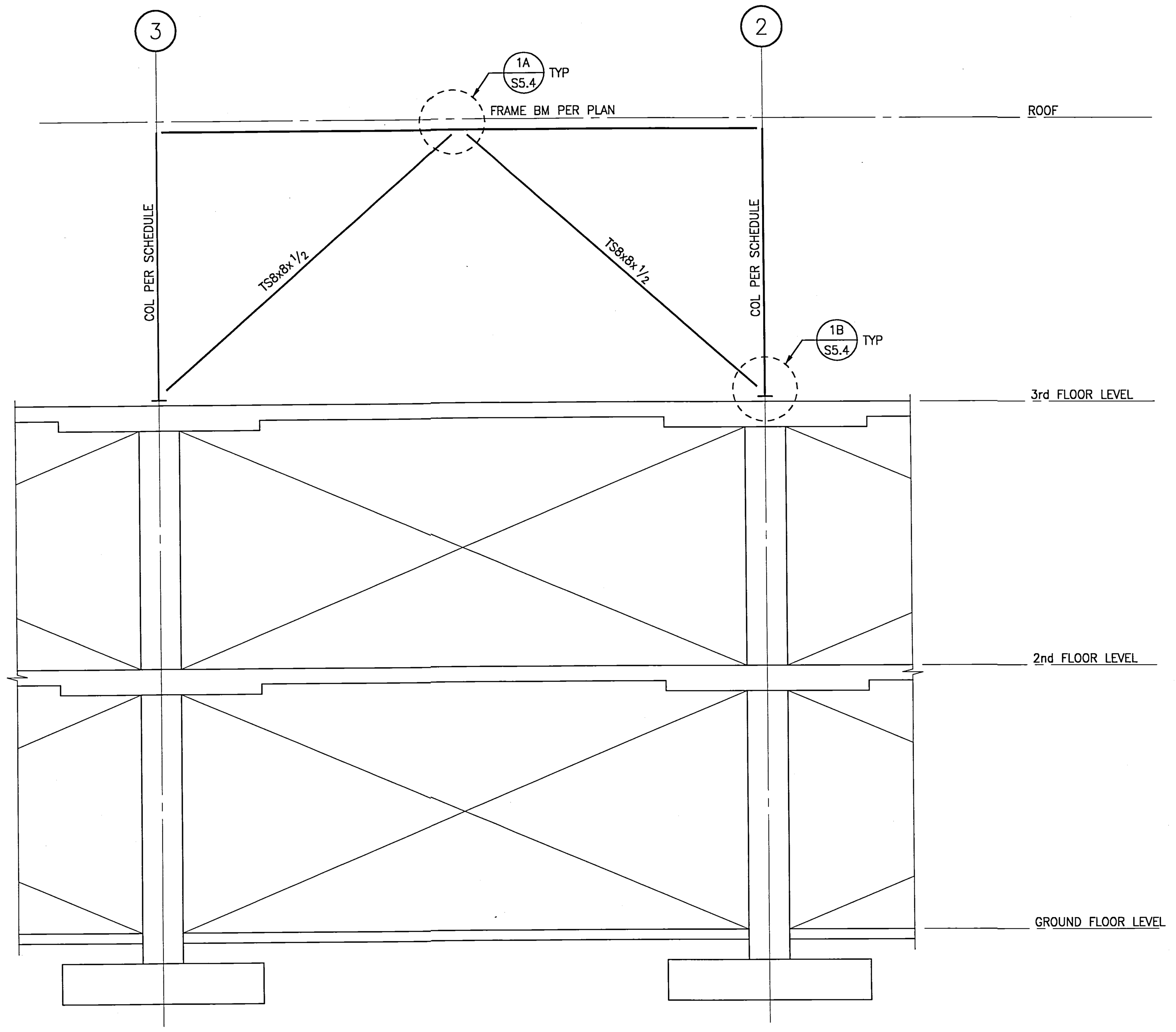
FRAME ELEVATION AT GRID LINE C' AND 5' — NTS 4



FRAME ELEVATION AT GRID LINE A' — NTS 5



WALL ELEVATION AT GRID LINE 2 — 1/4"=1'-0" 1



FRAME ELEVATION AT GRID LINE K & P — 1/4"=1'-0" 2

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RECORD DRAWINGS

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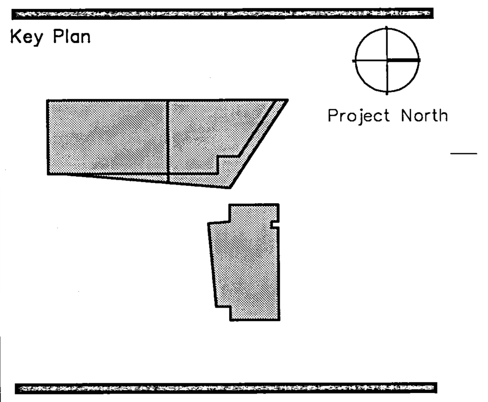

Drawing Title

FRAME WALL ELEVATIONS
SURGE BUILDING

1/4" = 1'-0"

Scale
1001071

Project Number
6 OCT 00

Baseline Date

S3.2

Drawing Number

NOTES:							
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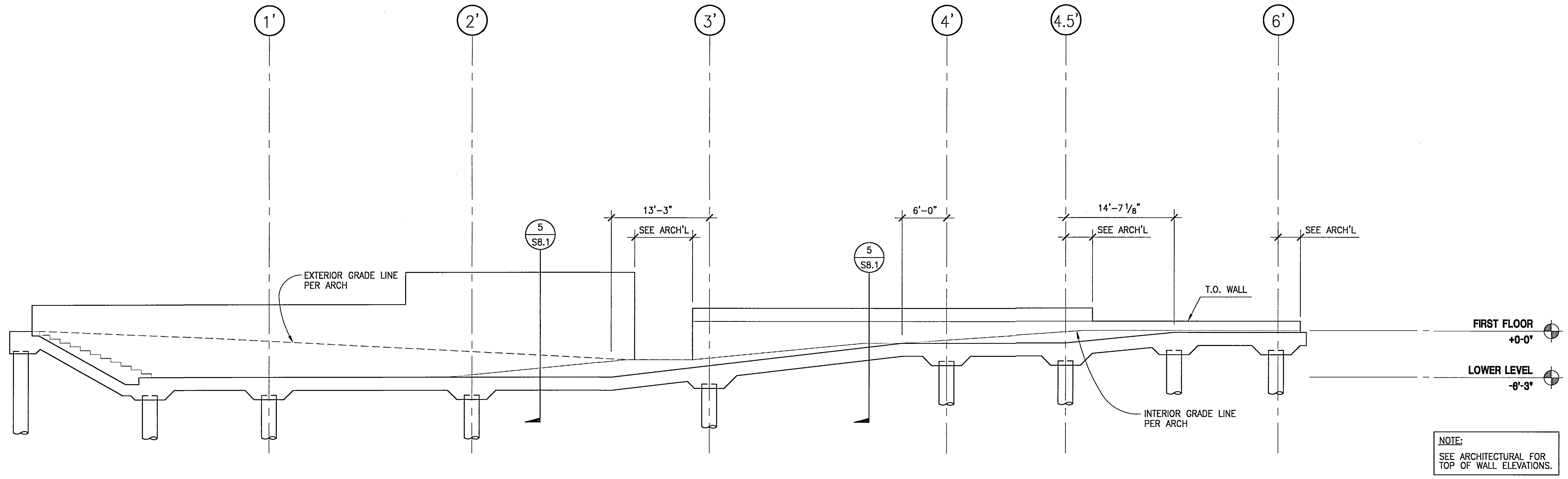
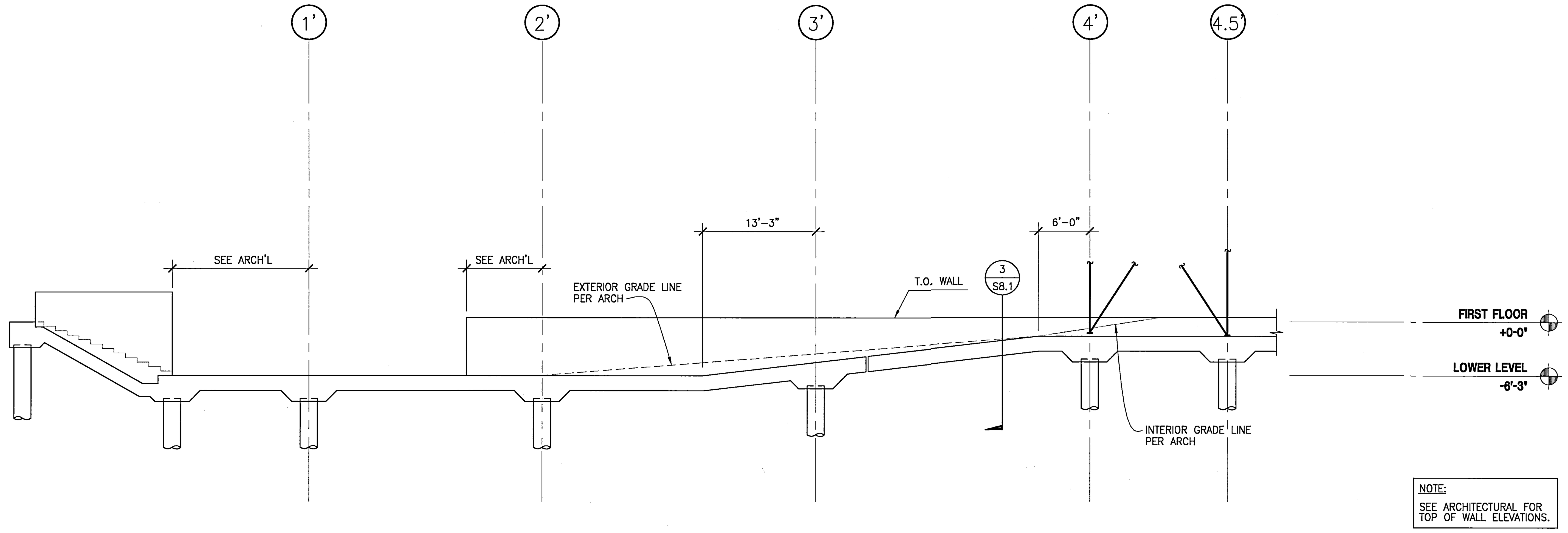
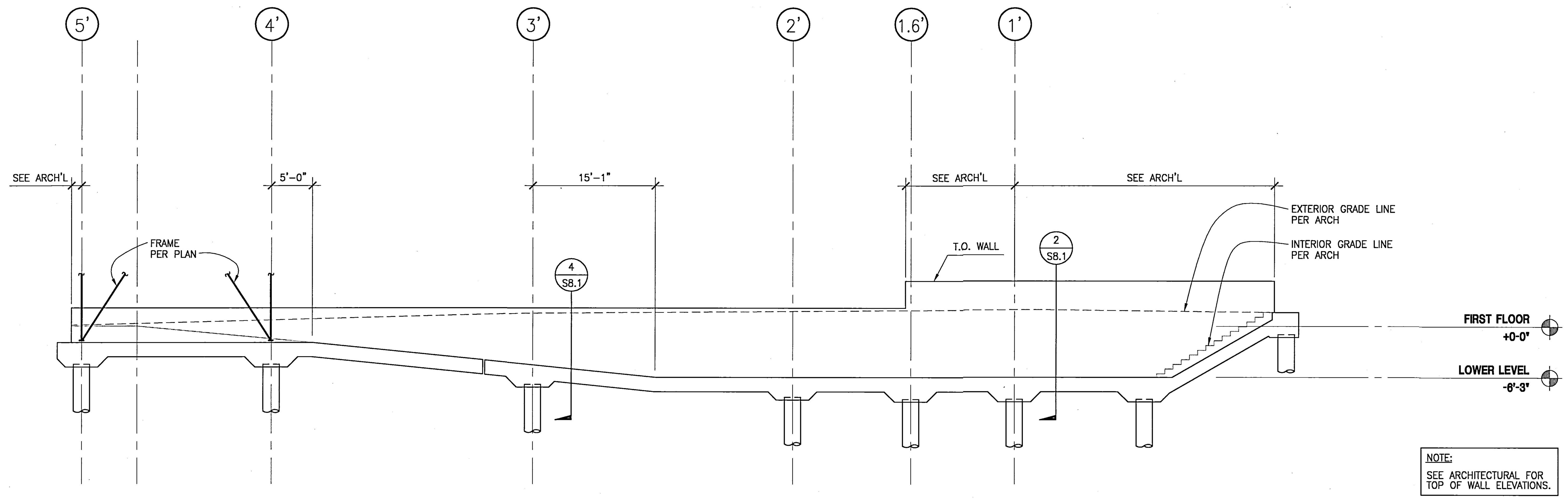


- | - | – | AUDITORIUM WALL ELEVATION ALONG GRID LINE D' | 1/8"=1'-0" | 1



- | - | – | AUDITORIUM WALL ELEVATION ALONG GRID LINE C' | 1/8"=1'-0" | 2



- | - | – | AUDITORIUM WALL ELEVATION ALONG GRID LINE A' | 1/8"=1'-0" | 3

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title
FRAME WALL ELEVATIONS

1/8" = 1'-0"
Scale

1001071
Project Number

6 OCT 00
Baseline Date

S3.3
Drawing Number

NOTES:	
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UPDATED BY	KR
PLOT SCALE	1=1
PROG.MG.	R.H
DRAFTER	TONY TAM
XREFS:	1071TB.

COLUMN SCHEDULE

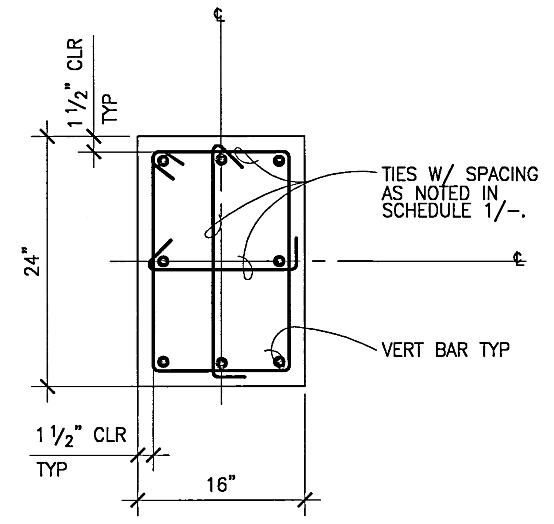
	C10				C9				C8, C8A				C7				DESIGNATION
	SIZE	VERTICAL REINF.	TIES	DETAIL	SIZE	VERTICAL REINF.	TIES	DETAIL	SIZE	VERTICAL REINF.	TIES	DETAIL	SIZE	VERTICAL REINF.	TIES	DETAIL	COLUMN MARK / FLOOR LEVEL
	TS6x6x1/4				TS6x6x1/4												THIRD FLOOR
	16"x24"	(8) #9	#4@4"	6/–	16"x24"	(8) #8	#4@4"	5/–					30"Ø	(9) #8	#4	4/–	SECOND FLOOR
	16"x24"	(8) #9	#4@4" 4'-0" TYP	6/–	16"x24"	(8) #8	#4@4" 4'-0" TYP	5/–	TS8x8x1/2				30"Ø	(9) #8	#4 4'-0" TYP	4/–	FIRST FLOOR
																	DOWELS TO FOUNDATION
				12/S5.2				1/S5.4				12/S5.2 @C8 1/S5.4 @C8A				–	BASE PLATE

	C6				C5				C4				DESIGNATION
	SIZE	VERTICAL REINF.	TIES	DETAIL	SIZE	VERTICAL REINF.	TIES	DETAIL	SIZE	VERTICAL REINF.	TIES	DETAIL	COLUMN MARK / FLOOR LEVEL
	TS6x6x1/4												THIRD FLOOR
	30"Ø	(9) #8	#4	4/–	16"x24"	(6) #8	#4	3/–	16"x24"	(6) #8	#4	3/–	SECOND FLOOR
	30"Ø	(9) #8	#4 4'-0" TYP	4/–	30"Ø	(9) #8	#4 4'-0" TYP	4/–	16"x24"	(6) #8	#4 4'-0" TYP	3/–	FIRST FLOOR
													DOWELS TO FOUNDATION
				12/S5.2				–				–	BASE PLATE

	C3				C2				C1				DESIGNATION
	SIZE	VERTICAL REINF.	TIES	DETAIL	SIZE	VERTICAL REINF.	TIES	DETAIL	SIZE	VERTICAL REINF.	TIES	DETAIL	COLUMN MARK / FLOOR LEVEL
					TS6x6x1/4				TS6x6x1/4				THIRD FLOOR
					16"x24"	(6) #8	#4	3/–	16"x24"	(6) #8	#4	3/–	SECOND FLOOR
	16"x24"	(6) #8	#4 4'-0" TYP	3/–	30"Ø	(9) #8	#4 4'-0" TYP	4/–	16"x24"	(6) #8	#4 4'-0" TYP	3/–	FIRST FLOOR
													DOWELS TO FOUNDATION
				–				12/S5.2				12/S5.2	BASE PLATE

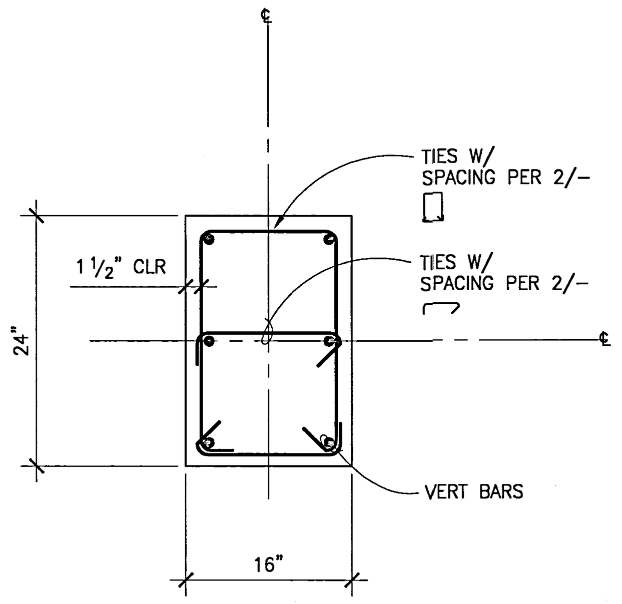
NOTE:
SEE 2/– FOR TIE SPACING, TYPICAL UNLESS NOTED OTHERWISE IN SCHEDULE ABOVE.

COLUMN SCHEDULE 1



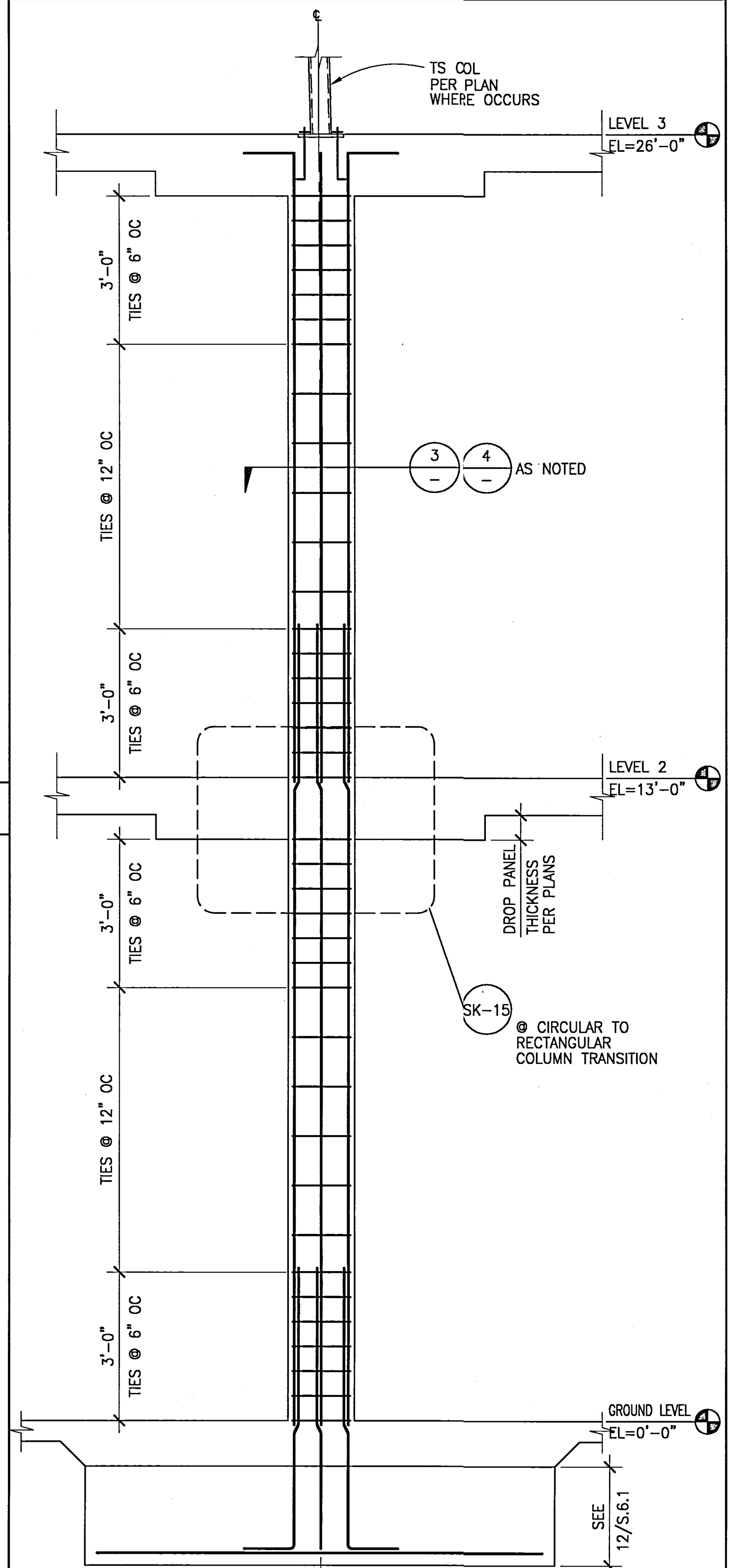
NOTE:
SEE 1/– FOR REINFORCEMENT SIZES.

CONCRETE COLUMN SECTION SUPPORTING BRACED FRAMES 1"=1'-0" 5



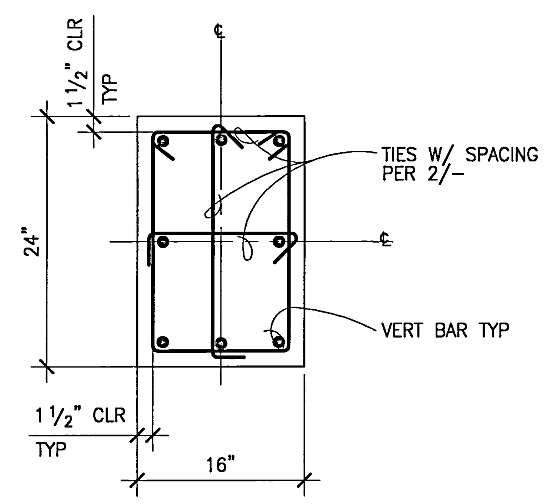
NOTE:
SEE 1/– FOR REINFORCEMENT SIZES.

TYPICAL CONCRETE COLUMN SECTION 1"=1'-0" 3



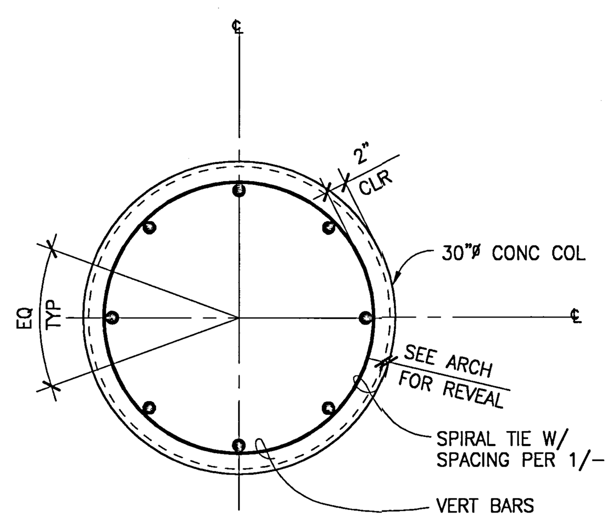
NOTE:
1. SEE 1/– FOR REINFORCEMENT SIZES.
2. TIE SPACING SHOWN SHALL BE USED TYPICALY UNLESS NOTED OTHERWISE IN SCHEDULE 1/–.

TYPICAL COLUMN ELEVATION 1/2"=1'-0" 2



NOTE:
SEE 1/– FOR REINFORCEMENT SIZES.

CONCRETE COLUMN SECTION 1"=1'-0" 6



NOTE:
SEE 1/– FOR REINFORCEMENT SIZES.

CONCRETE COLUMN SECTION 1"=1'-0" 4

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RECORD DRAWINGS

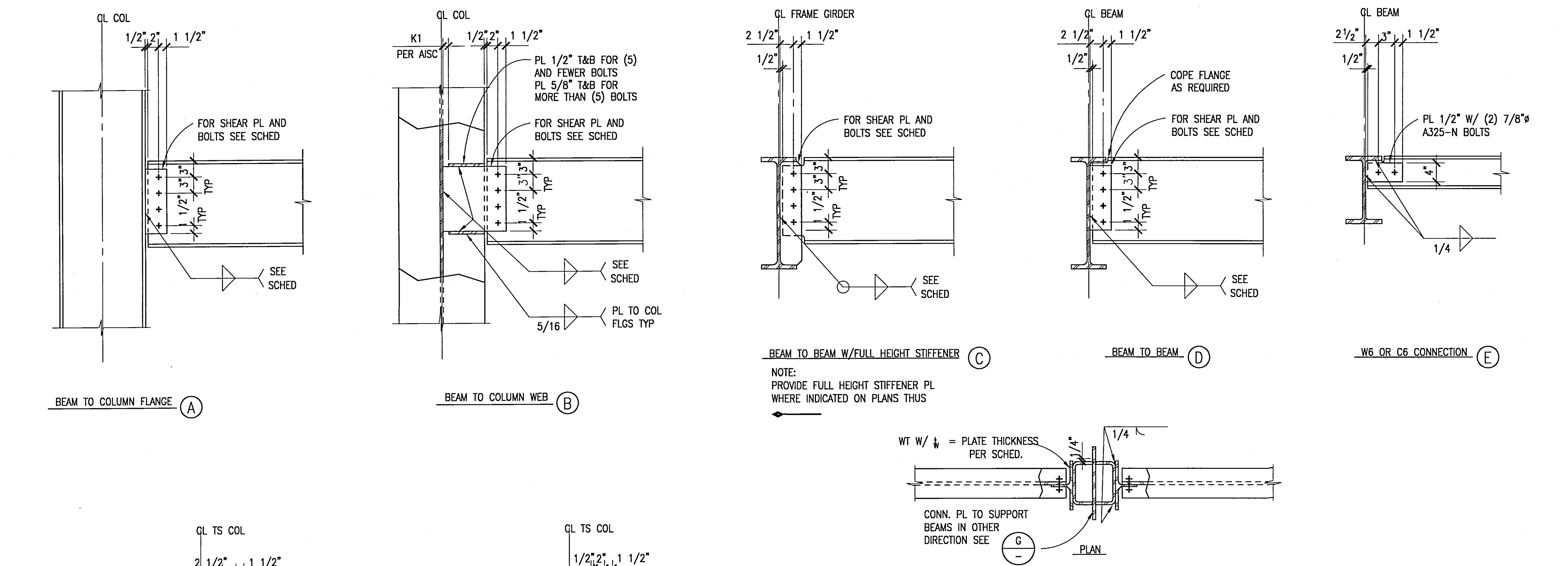
Key Plan

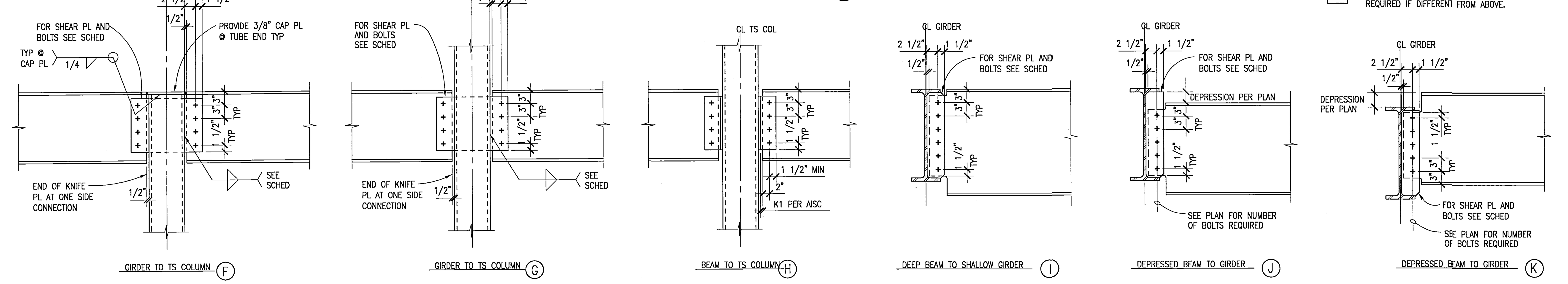
Project North

Drawing Title
COLUMN SCHEDULE AND DETAILS

AS SHOWN
Scale
1001071
Project Number
6 OCT 00
Baseline Date
S4.1
Drawing Number

NOTES: JOB # 1001071 | 1071B NAME UCR SURGE | FILE PATH & NAME P:\2000\1001071 UCR SURGE\SDRAFT\BULLETIN#1\S4-1.DWG | PLOTTED DATE & TIME DEC. 06, 2000 12:02:25 PM | UPDATED BY TONY TAM | PLOT SCALE 1=1 | PROG.MG. R.H | DRAFTER TONY TAM | XREFS: 1071TB





STANDARD BOLTED CONNECTION SCHEDULE				
BEAM SIZE	NO.& SIZE OF BOLTS REQUIRED	PLATE THICKNESS	WELD SIZE	CONN. CAPACITY (SINGLE SHEAR)
W8 C8	(2) 7/8"ø	1/4"	1/4"	11.1K
W10 C10	(2) 7/8"ø	1/4"	1/4"	11.1K
W12 C12	(3) 7/8"ø	1/4"	1/4"	22.1K
W14	(3) 7/8"ø	1/4"	1/4"	22.1K
W16	(4) 7/8"ø	5/16"	1/4"	35.4K
W18	(4) 7/8"ø	5/16"	1/4"	35.4K
W21	(5) 7/8"ø	5/16"	1/4"	49.1K
W24	(6) 7/8"ø	3/8"	5/16"	62.7K
W27	(7) 7/8"ø	3/8"	5/16"	76.4K
W30	(8) 7/8"ø*	7/16"	3/8"	83.9K
W33	(9) 7/8"ø*	7/16"	3/8"	91.2K
W36	(9) 7/8"ø*	7/16"	3/8"	91.2K

CONNECTION NOTES:

1. ALL BOLTS TO BE ASTM A325-N AND FULLY PRETENSIONED PER AISC STANDARDS EXCEPT AS DESCRIBED IN NOTE 2.
2. BOLTS IN BEAM TO BEAM CONNECTIONS SHALL BE TIGHTENED TO AISC "SNUG TIGHT" CONDITION UNLESS NOTED OTHERWISE IN DETAILS.
3. MOMENT CONNECTIONS USE A325-SC PER DETAIL 3/-.
4. CONNECTION PLATES TO HAVE AISC STANDARD ROUND HOLES UNLESS NOTED OTHERWISE.
5. ALL CONNECTION PLATE MATERIAL TO BE A36.
6. * INDICATES USE HORIZONTAL SHORT SLOTTED HOLES IN THE PLATE AT COLUMN CONNECTION ONLY.
7. X SHOWN ON PLANS INDCATES NUMBER OF BOLTS REQUIRED IF DIFFERENT FROM ABOVE.

- -

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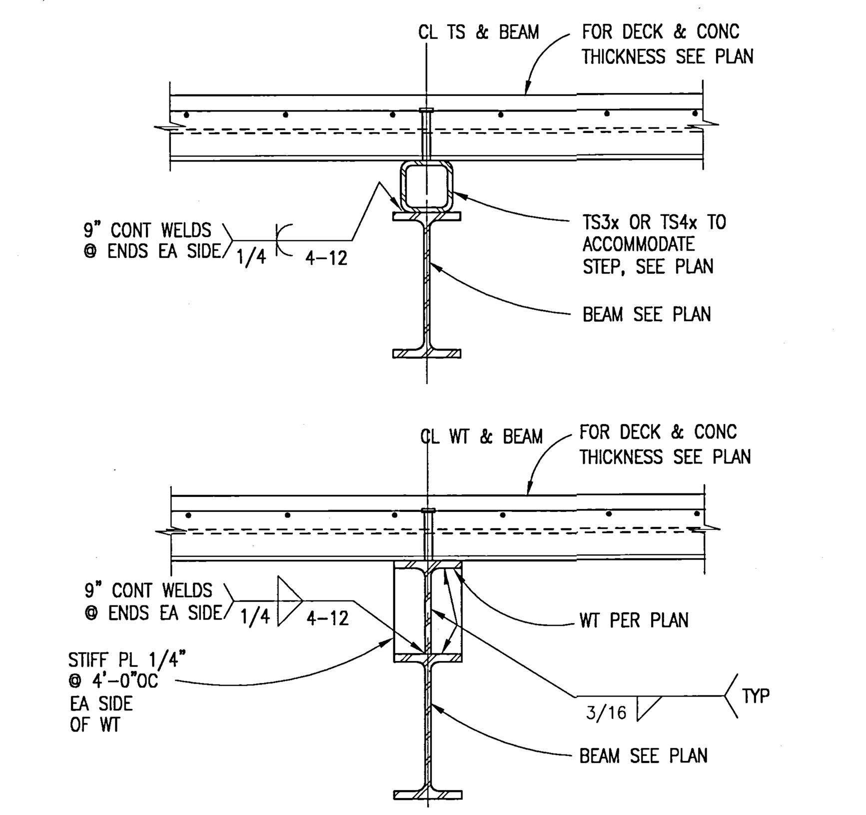
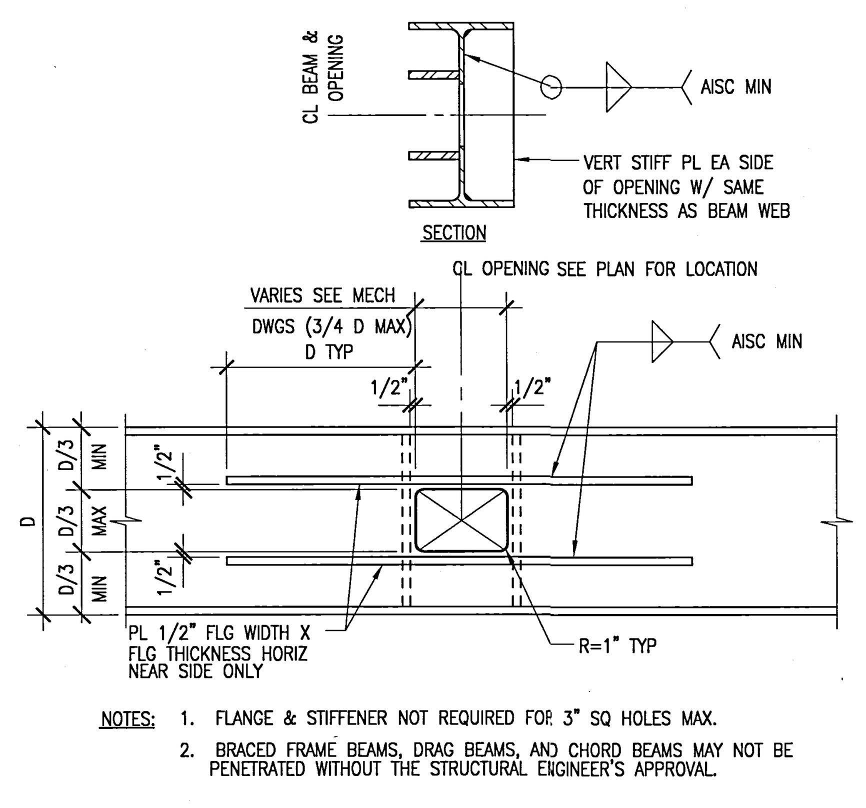
STANDARD BOLTED BEAM CONNECTION DETAILS 1"=1'-0" 1



LOWERED BEAM DETAIL W/ TUBE OR WT 1"=1'-0" 4



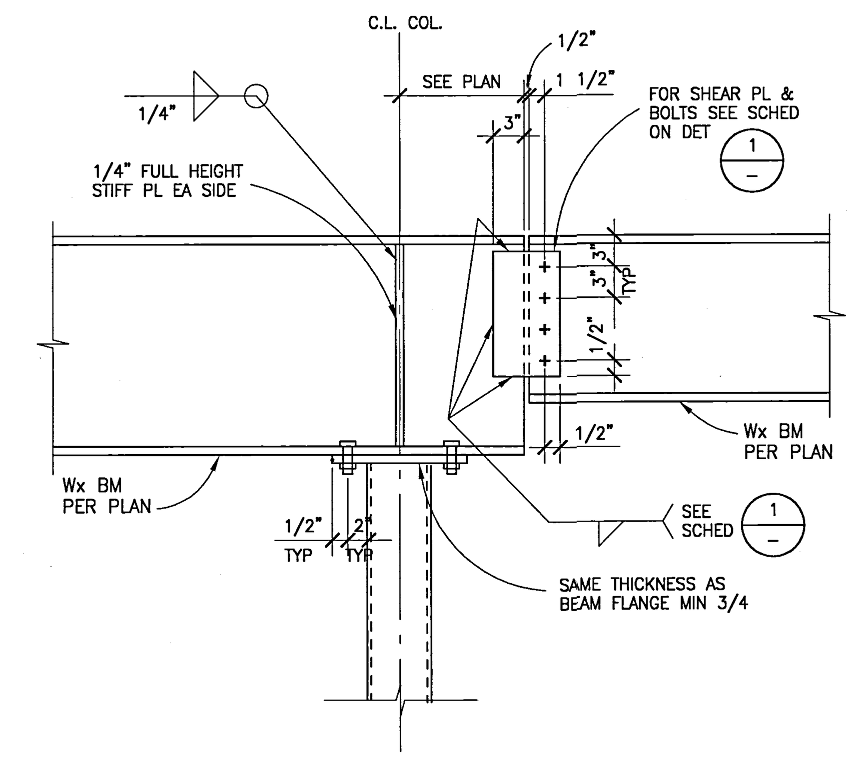
NOTES: 1. FLANGE & STIFFENER NOT REQUIRED FOR 3" SQ HOLES MAX.
2. BRACED FRAME BEAMS, DRAG BEAMS, AND CHORD BEAMS MAY NOT BE PENETRATED WITHOUT THE STRUCTURAL ENGINEER'S APPROVAL.

BEAM WEB OPENING DETAIL 1"=1'-0" 2

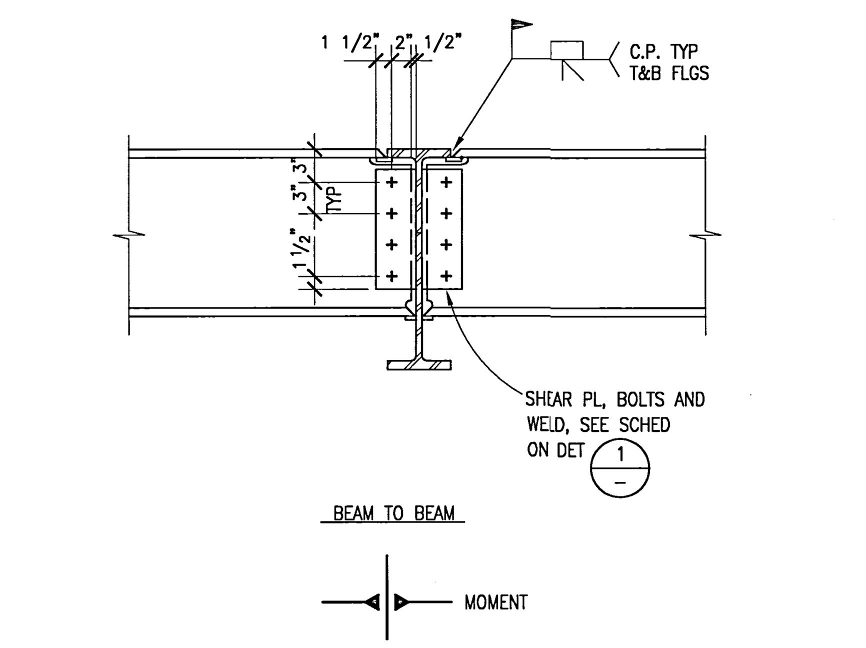
- -

- -

- -



BEAM SPLICE @ ROOF 1"=1'-0" 5



BM TO BM MOMENT CONN. 1"=1'-0" 3

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UCR PROJECT NO. 950424

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Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

TYPICAL STEEL DETAILS

AS SHOWN
Scale
1001071
Project Number
6 OCT 00
Baseline Date

S5.1
Drawing Number

NOTES:							
JOB #	1071B NAME	FILE PATH & NAME	PLOTTED DATE & TIME	UPDATED BY	PLOT SCALE	PROG.MG.	DRAFTER
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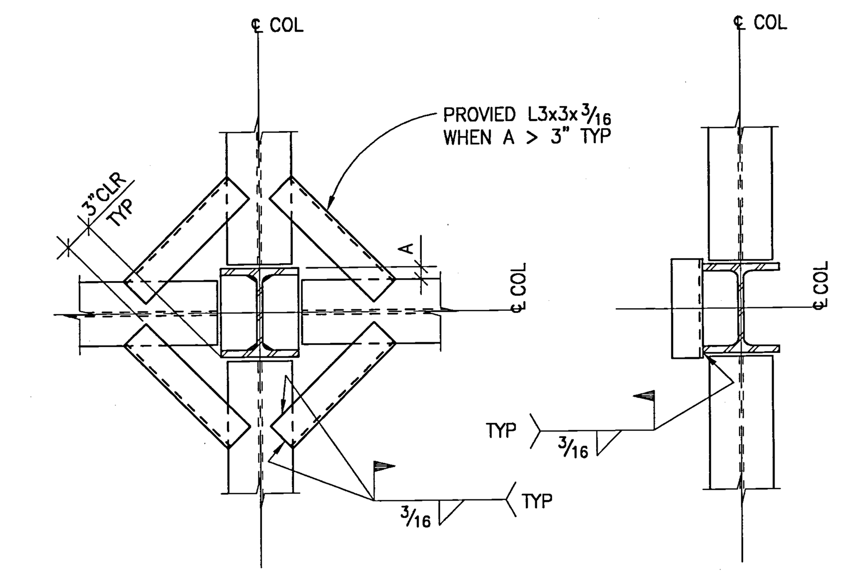
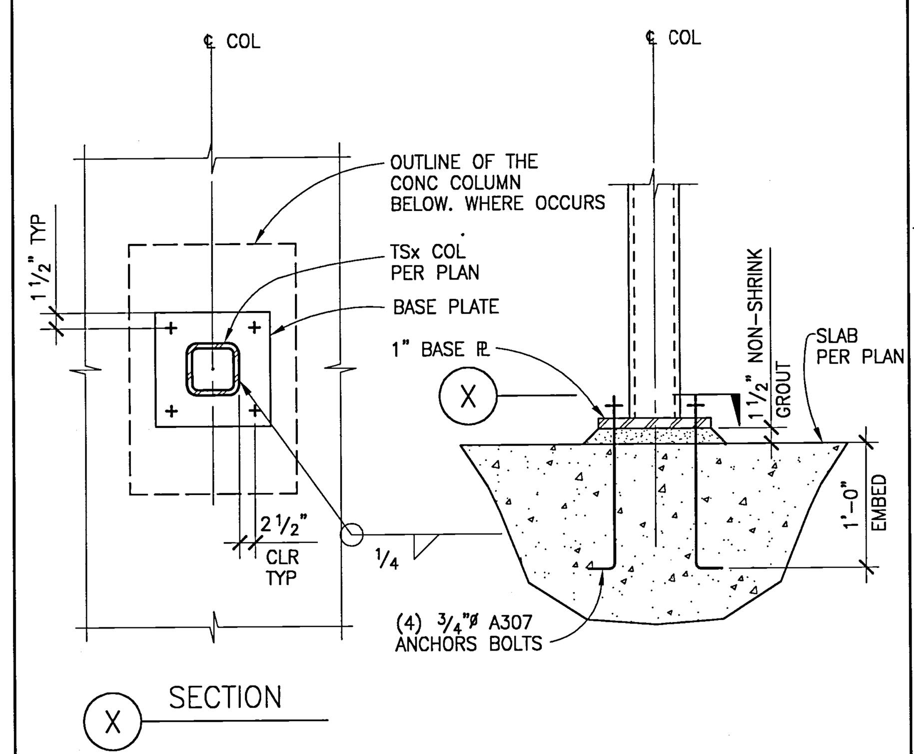
XREFS: 1071TB.							



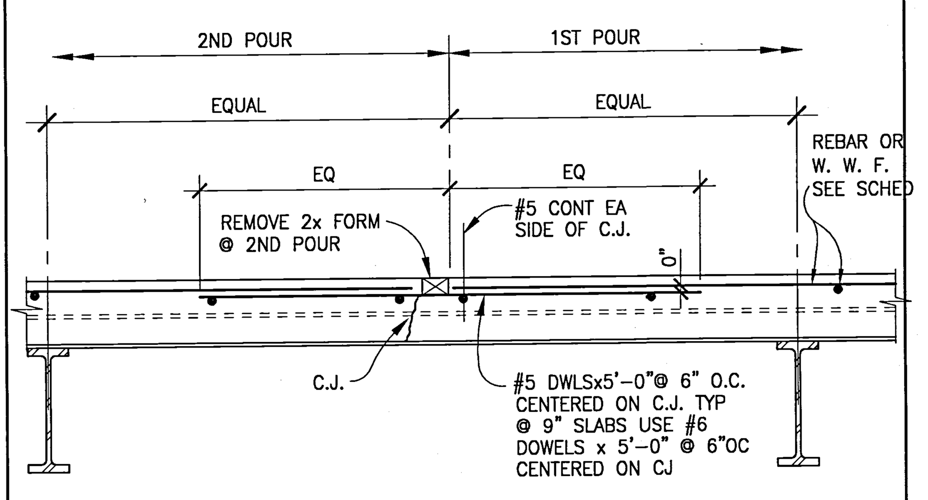
NOTE:
DECK SUPPLIER SHALL PROVIDE REQUIRED DECK SUPPORTS AND CLOSURES AROUND COLUMN.

METAL DECK SUPPORT AT COLUMN 1"=1'-0" 11

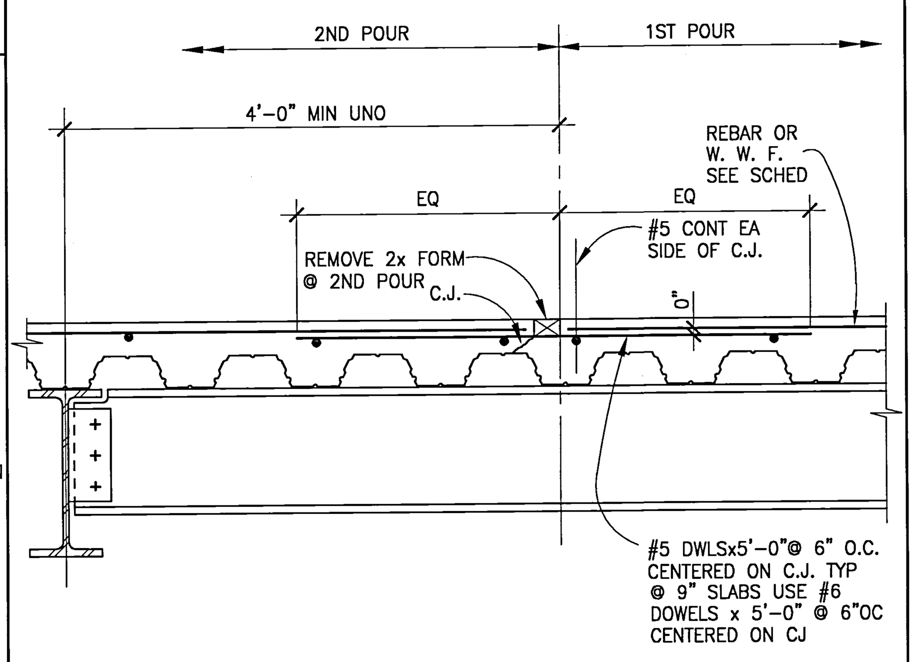


X SECTION

TYPICAL TS COL BOTTOM CONNECTION 1"=1'-0" 12

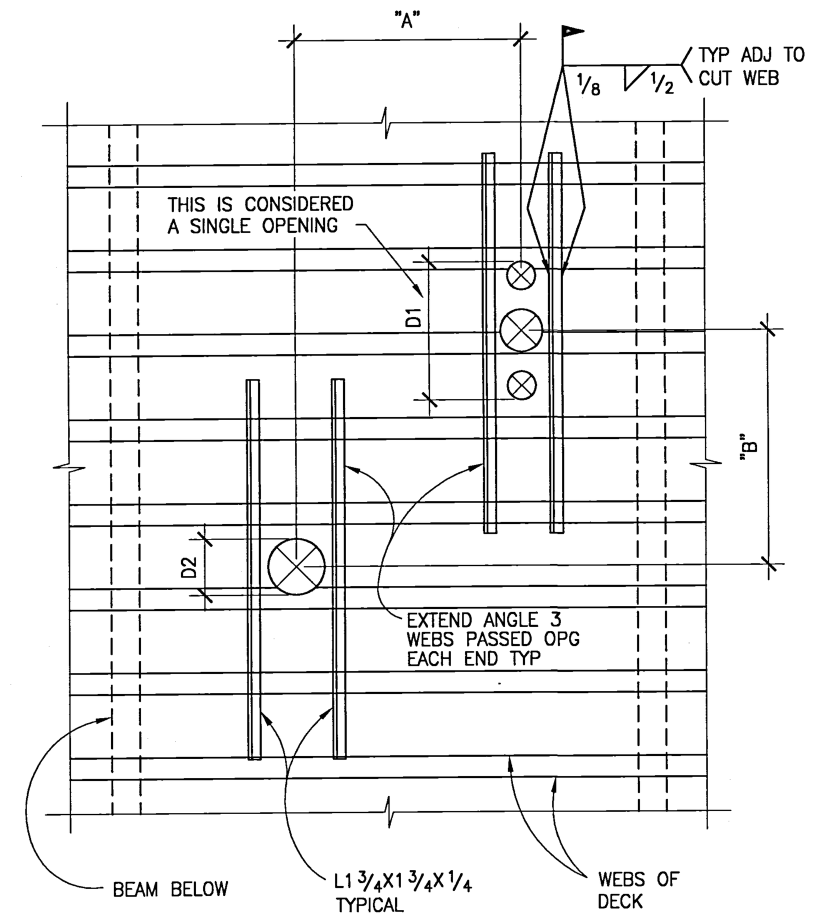


JOINT PERPENDICULAR TO DECK



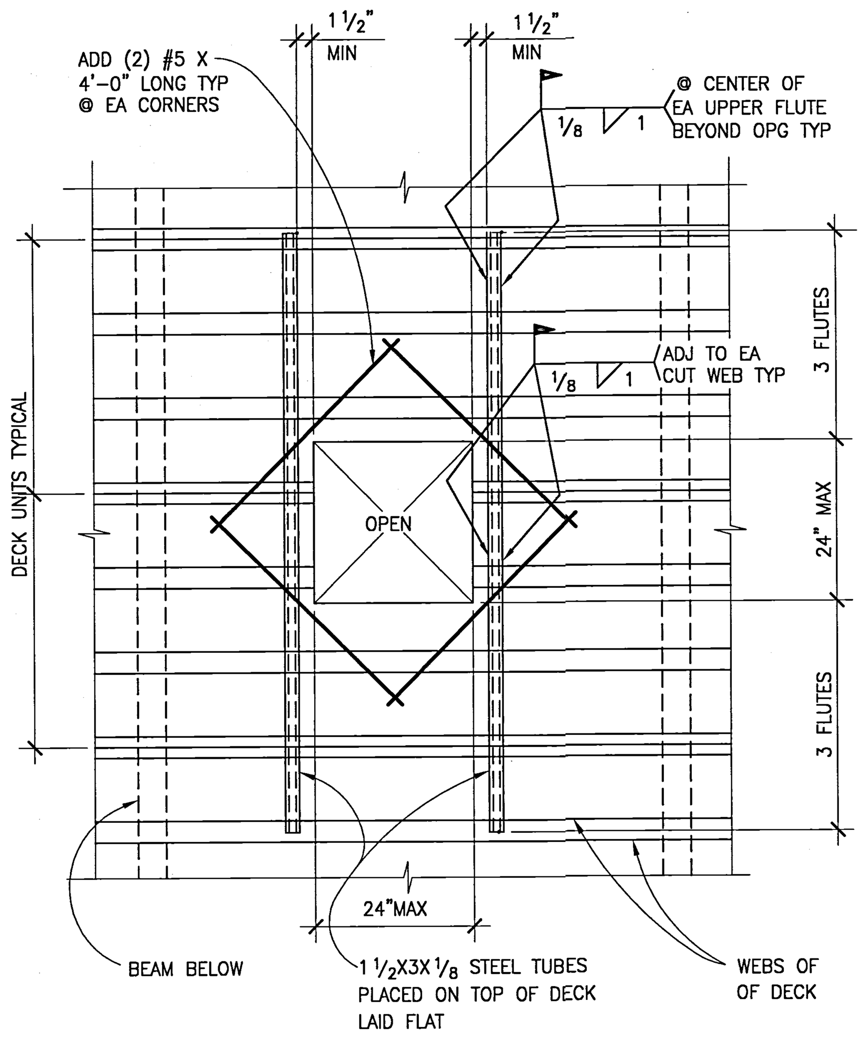
JOINT PARALLEL TO DECK

CONSTRUCTION JOINT FOR SLAB 1"=1'-0" 8



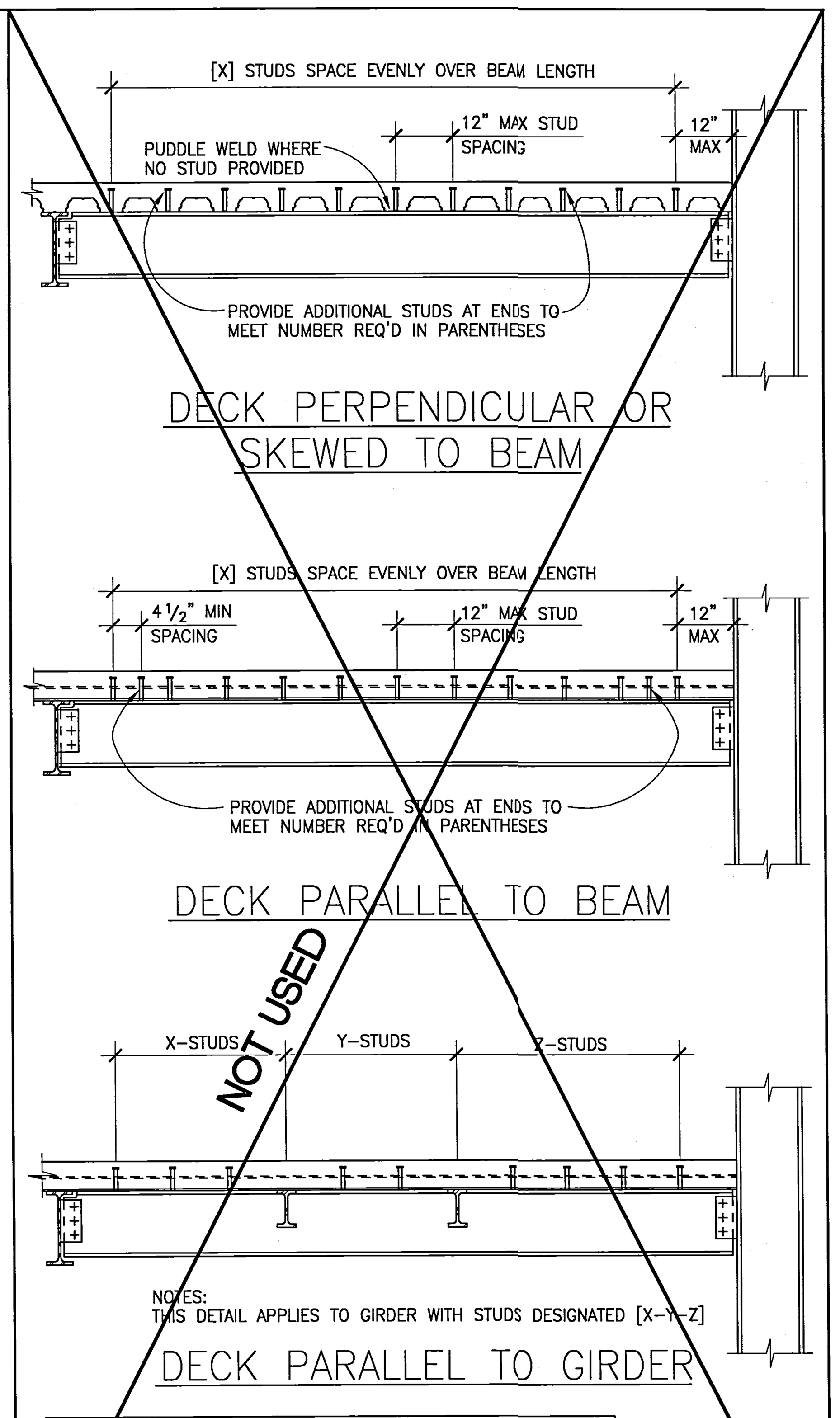
NOTES:
1. DO NOT CUT MORE THAN 2 ADJACENT WEBS.
2. HOLES LESS THAN 6" IN DIAMETER AND CUTTING NO MORE THAN 1 WEB NEED NO REINFORCING.
3. ANGLES SHALL BE PLACED ON TOP OF DECK.
4. IF DIMENSION "A" IS GREATER THAN 4D1, 4D2, OR 32" WHICHEVER IS LARGER, THEN THERE IS NO RESTRICTION ON DIMENSION "B".
5. IF DIMENSION "B" IS GREATER THAN 4D1, 4D2, OR 32" WHICHEVER IS LARGER, THEN THERE IS NO RESTRICTION ON DIMENSION "A".
6. IF DIMENSIONS "A" AND "B" ARE LESS THAN 4D1, 4D2, OR 32" WHICHEVER IS LARGER, THE OPENING GROUP WILL BE CONSIDERED AS A SINGLE HOLE, AND MUST BE REINFORCED AS REQUIRED FOR THE LARGER OPENING.
7. MAXIMUM DIMENSION FOR D2 IS 12".
8. ALL OPENINGS ADJACENT TO BRACED FRAME BEAMS, DRAG BEAMS, AND CHORD BEAMS CAN ONLY BE DONE WITH THE STRUCTURAL ENGINEER'S APPROVAL.

DECK SLEEVE DETAIL 1"=1'-0" 5



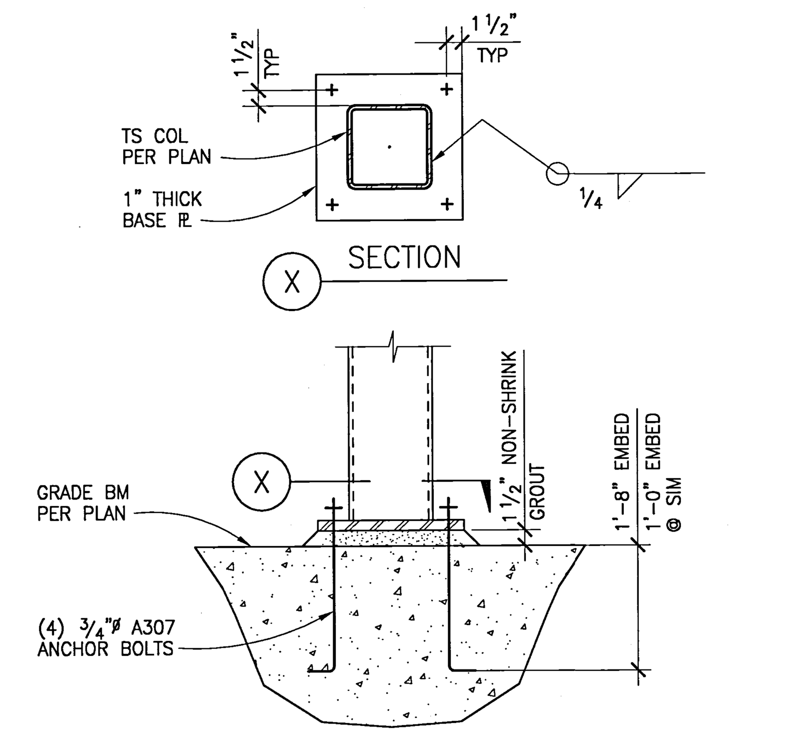
NOTE:
1. IF THE OPENING OR GROUP OF OPENING OCCURS IN ONE DECKING UNIT, THE OPENING OR OPENING GROUP MAY BE CUT PRIOR TO POURING OF CONCRETE.
2. IF, AS SHOWN IN THE DETAIL ABOVE, THE OPENING OR OPENING GROUP CUTS THROUGH TWO DECKING UNITS, THE DECKING SHALL NOT BE CUT UNTIL CONCRETE HAS BEEN PLACED AND CURED. AT THE TIME OF POURING, SUITABLE SLEEVES OR BULKHEADS SHALL BE PLACED AROUND THE OPENING.
3. ADD REBAR AT CORNERS OF OPENING.
4. WHEN THE MAXIMUM DIMENSION OF AN OPENING OR OPENING GROUP EXCEEDS 24", PLACE HEADER BEAM AROUND OPENING.
5. ALL OPENINGS ADJACENT TO BRACED FRAME BEAMS, DRAG BEAMS, AND CHORD BEAMS CAN ONLY BE DONE WITH THE STRUCTURAL ENGINEER'S APPROVAL.

DECK BLOCK OUT DETAIL 1"=1'-0" 4

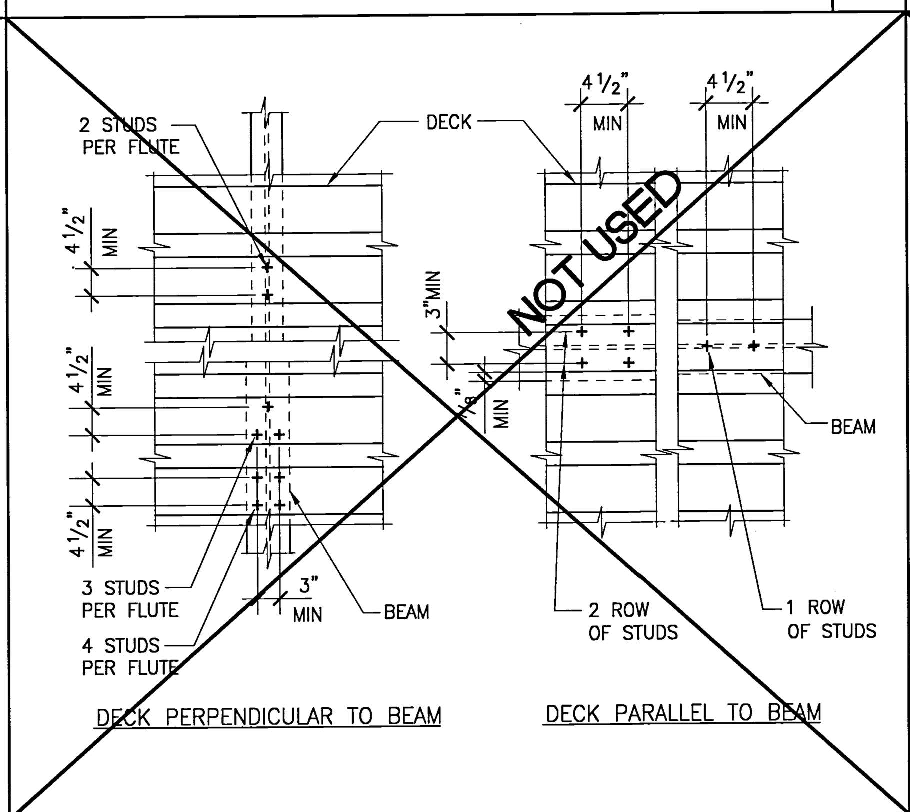


NOTES:
1. IF TWO STUDS ARE REQUIRED IN ONE FLUTE THE TRANSVERSE SPACING SHALL BE 3" MINIMUM
2. UNLESS NOTED [0] ALL BEAMS AND GIRDERS THAT SUPPORT STRUCTURAL CONCRETE HAVE 3/4"⌀x5" LONG HEADED SHEAR STUDS @ 12" OC (MAX)
3. STAGGER STUDS AS REQUIRED TO AVOID CONFLICT WITH GUSSET PLATES.

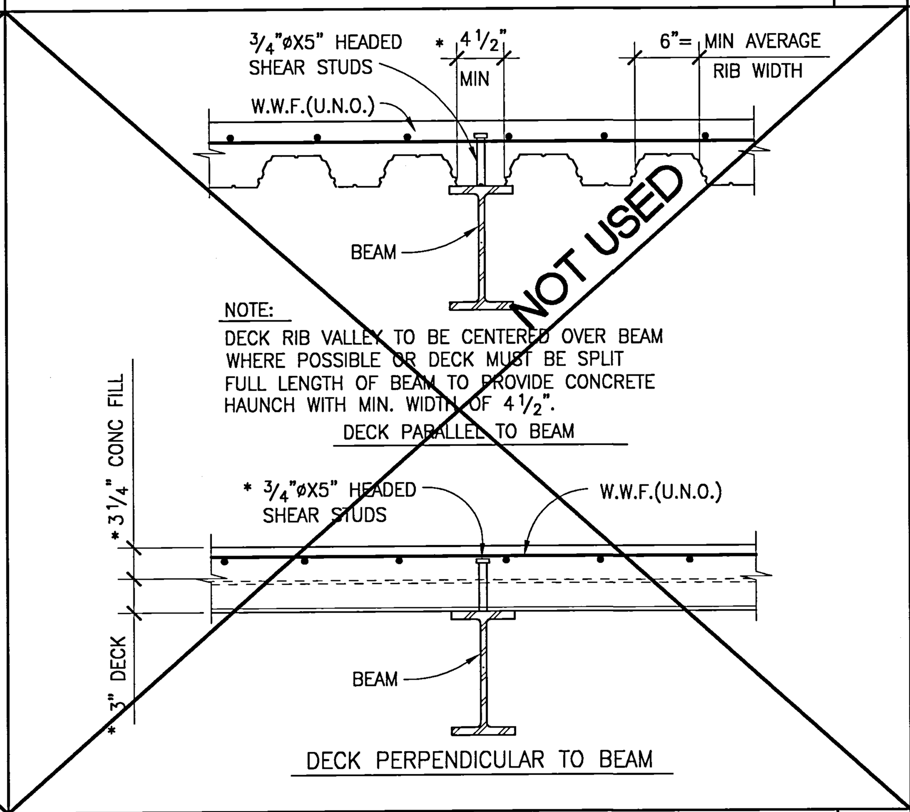
COMPOSITE BEAM STUD SPACING 1"=1'-0" 1



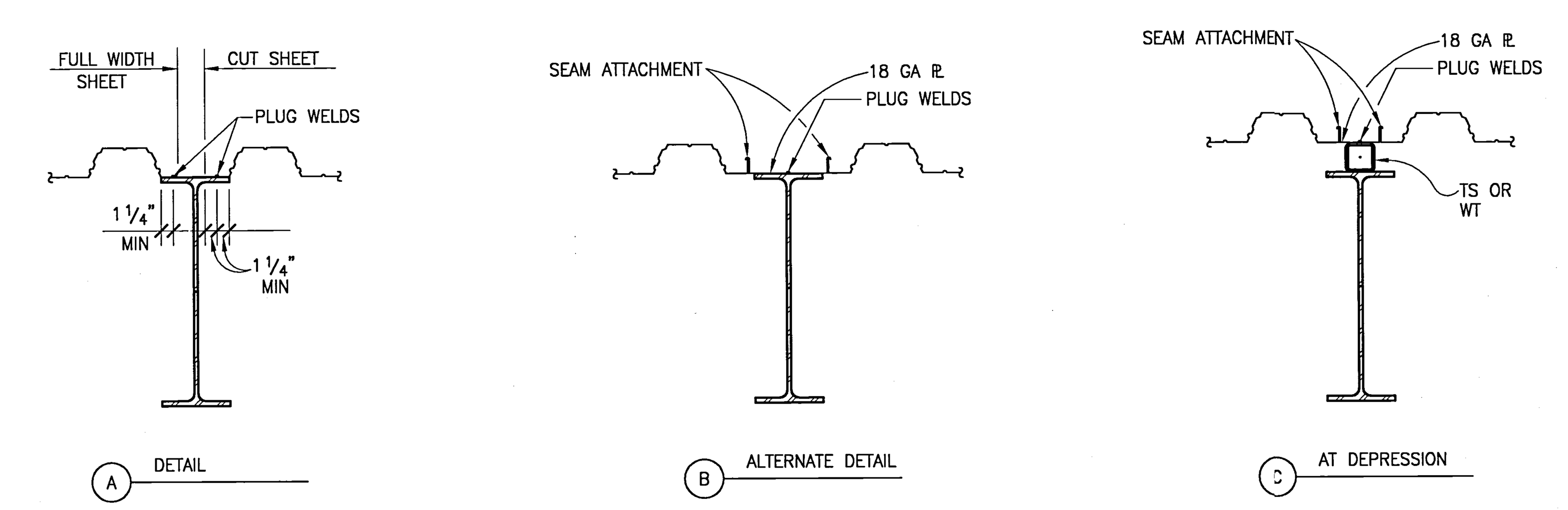
BASE PLATE DETAIL 1"=1'-0" 13



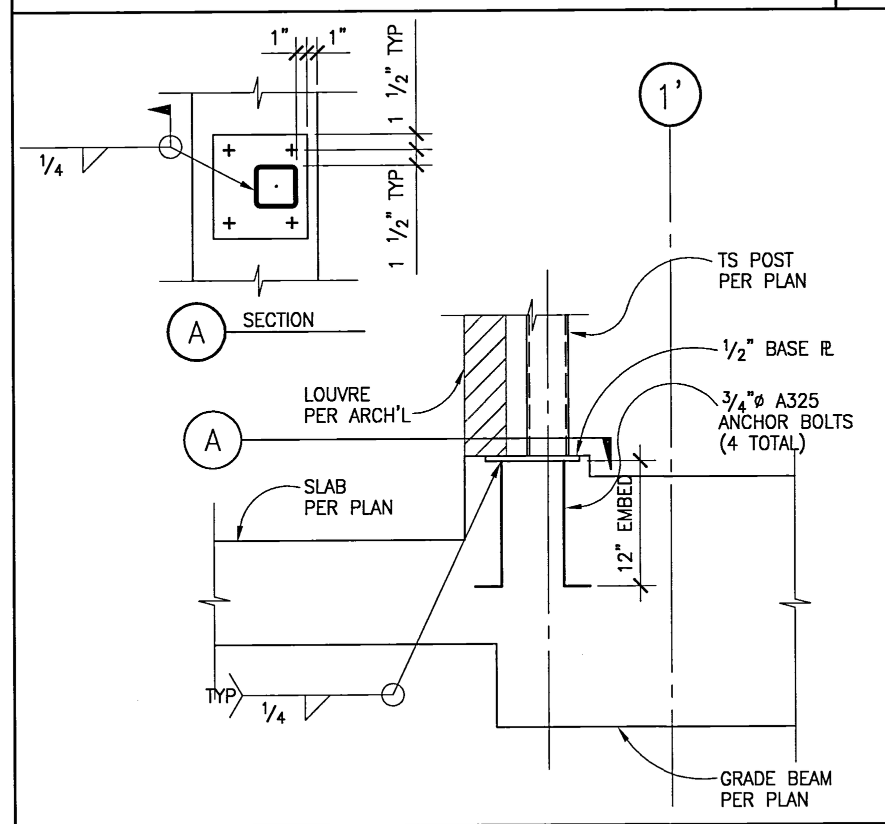
PLAN - STUD SPACING 1"=1'-0" 9



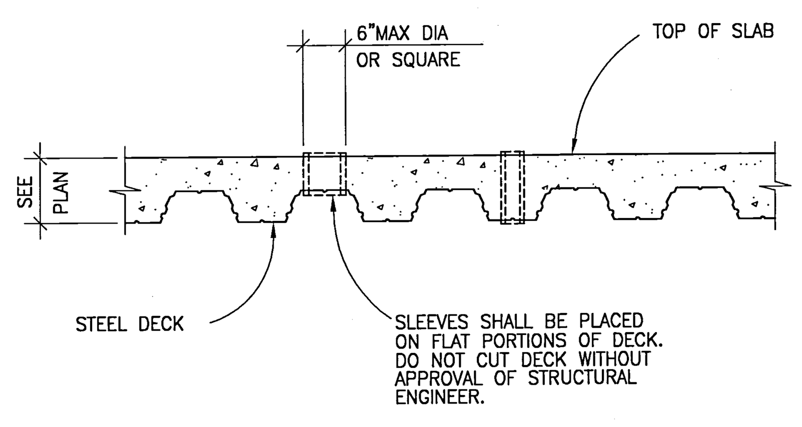
COMPOSITE BEAM TO COMPOSITE SLAB 1"=1'-0" 6



DECK DETAIL 1"=1'-0" 2

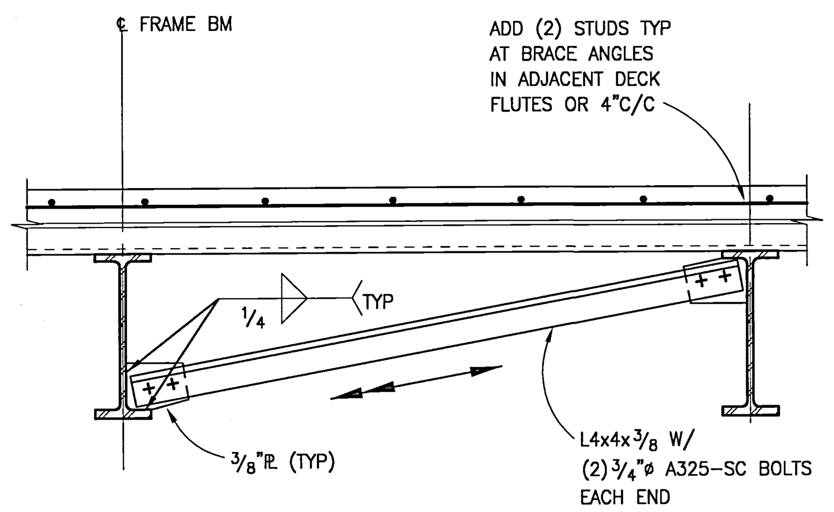


BASE ℞ CONN. @ LOUVRE WALL 1"=1'-0" 14



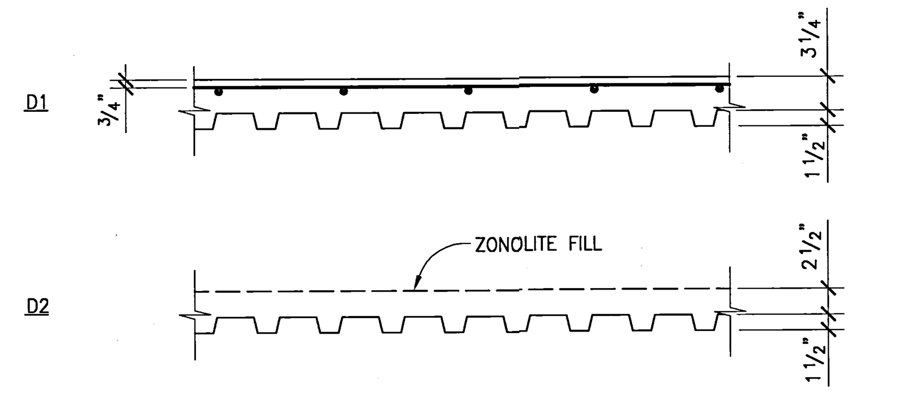
TYPICAL DECK SLEEVE 1"=1'-0" 10

NOT USED

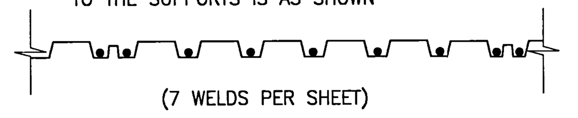


LATERAL BRACE DETAIL 1"=1'-0" 7

MARK	STEEL DECK TYPE.	GAGE	TOTAL THICKNESS (t)	CONC. TYPE	REINF.	STEEL DECK WELDING PATTERN				MAX. UNSHORED SPAN		
						END	INT.	SEAM	MARGINAL	SINGLE SPAN	DOUBLE SPAN	TRIPLE SPAN
D1	VERCO B FORMLOK	20	4 3/4"	f'c=3000 psi LT.WT.	#4@18"OC EA. WAY	3/4"⌀PUDDLE WELD@12"O.C	3/4"⌀PUDDLE WELD@12"O.C	SSW@12" OC	3/4"⌀PUDDLE WELD@12"O.C	6'-0"	7'-6"	8'-0"
D2	VERCO HSB-36	18	4"	–	–	3/4"⌀PUDDLE WELD@12"O.C	3/4"⌀PUDDLE WELD@12"O.C	SSW@12" OC	3/4"⌀PUDDLE WELD@12"O.C	–	–	–



NOTE:
1. SEE GENERAL NOTES FOR ADDITIONAL INFORMATION.
2. FOR ALL DECK TYPES THE WELD PATTERN TO THE SUPPORTS IS AS SHOWN



(7 WELDS PER SHEET)

3. ALL METAL DECK TO BE VENTED DECK.

STEEL DECK SCHEDULE 1"=1'-0" 3

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Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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ADDENDUM #2		23 OCT 00

Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

TYPICAL STEEL DETAILS

AS SHOWN
Scale

1001071
Project Number

6 OCT 00
Baseline Date

S5.2
Drawing Number

NOTES:	JOB # 1001071	XREFS: 1071B.
1071B NAME	UCR SURGE	
FILE PATH & NAME	P:\2000\1001071-UCR\SDRAFT\S5-2.DWG	
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UPDATED BY	TONY TAM	
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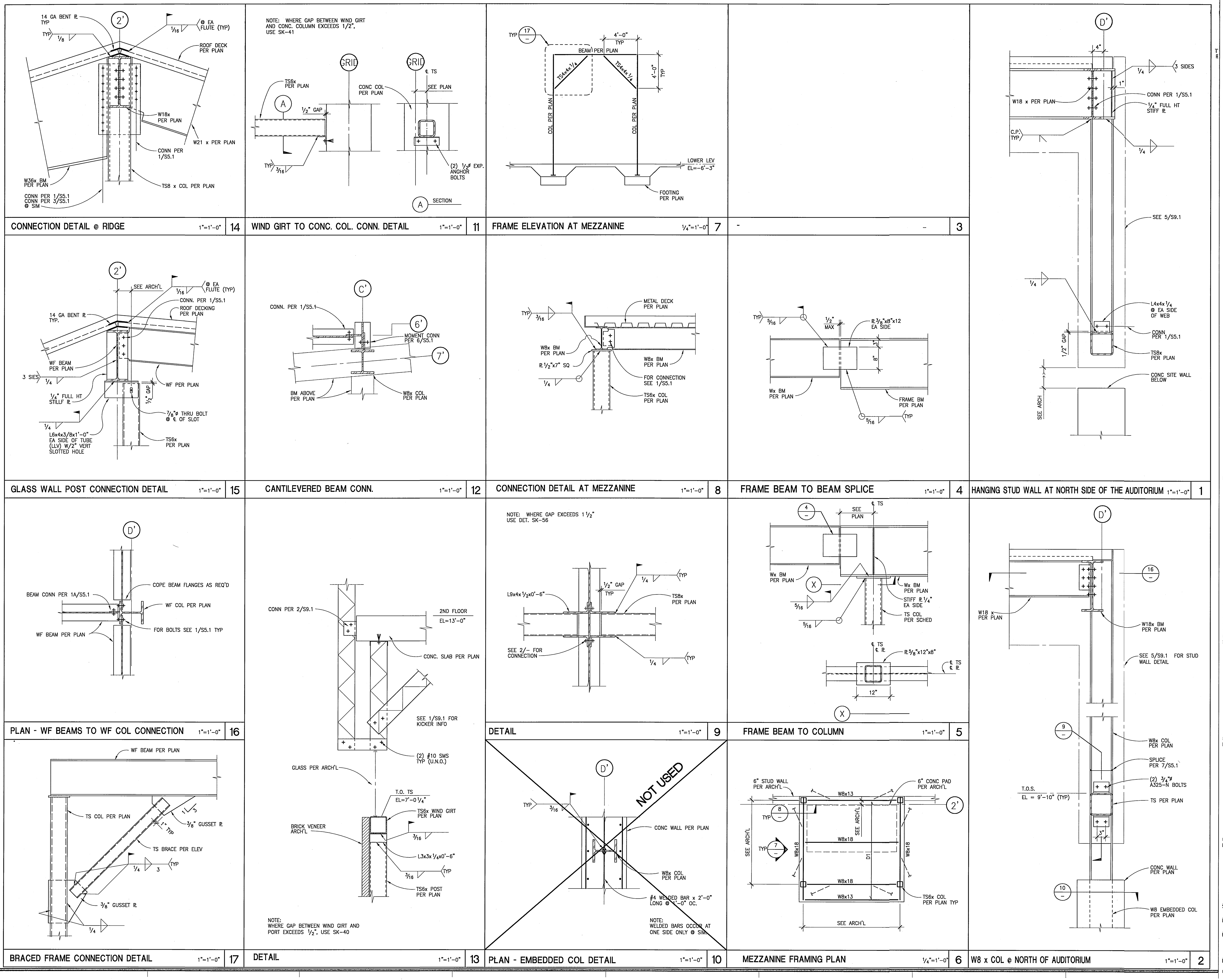
PROG.MG.	R.H	
DRAFTER	TONY TAM	



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900 University Avenue
Riverside, CA 92521

SmithGroup

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1919 Santa Monica Boulevard
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Project North

Drawing Title

STEEL DETAILS

AS SHOWN
Scale
1001071
Project Number
6 OCT 00
Baseline Date
S5.3
Drawing Number

NOTES:
JOB # 1001071
XREFS: 1071TB.
NAME UCR SURGE
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UPDATED BY TONY TAM
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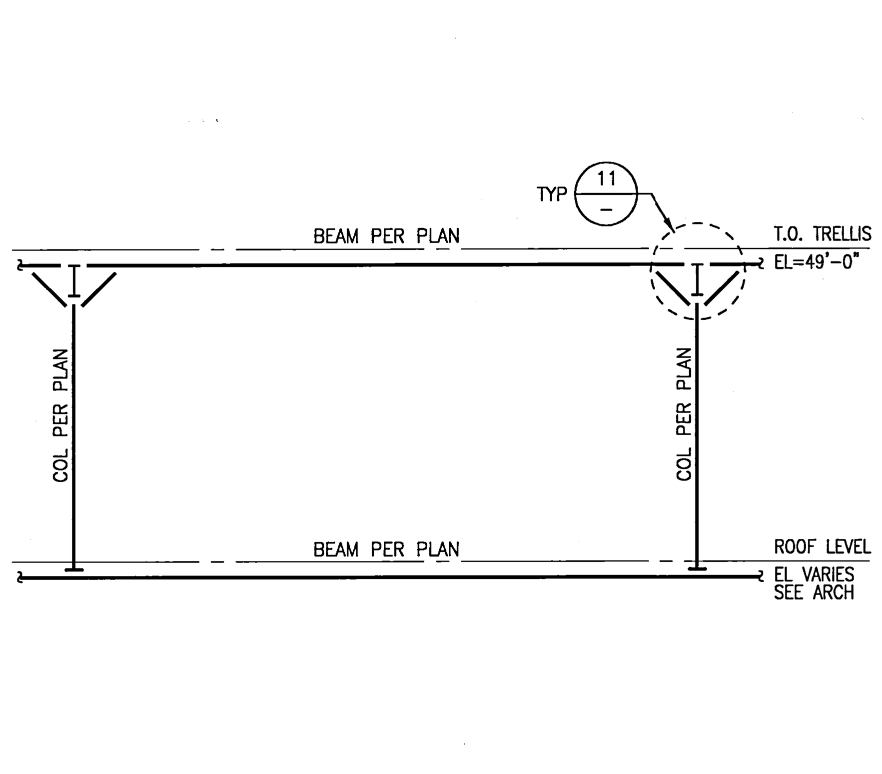
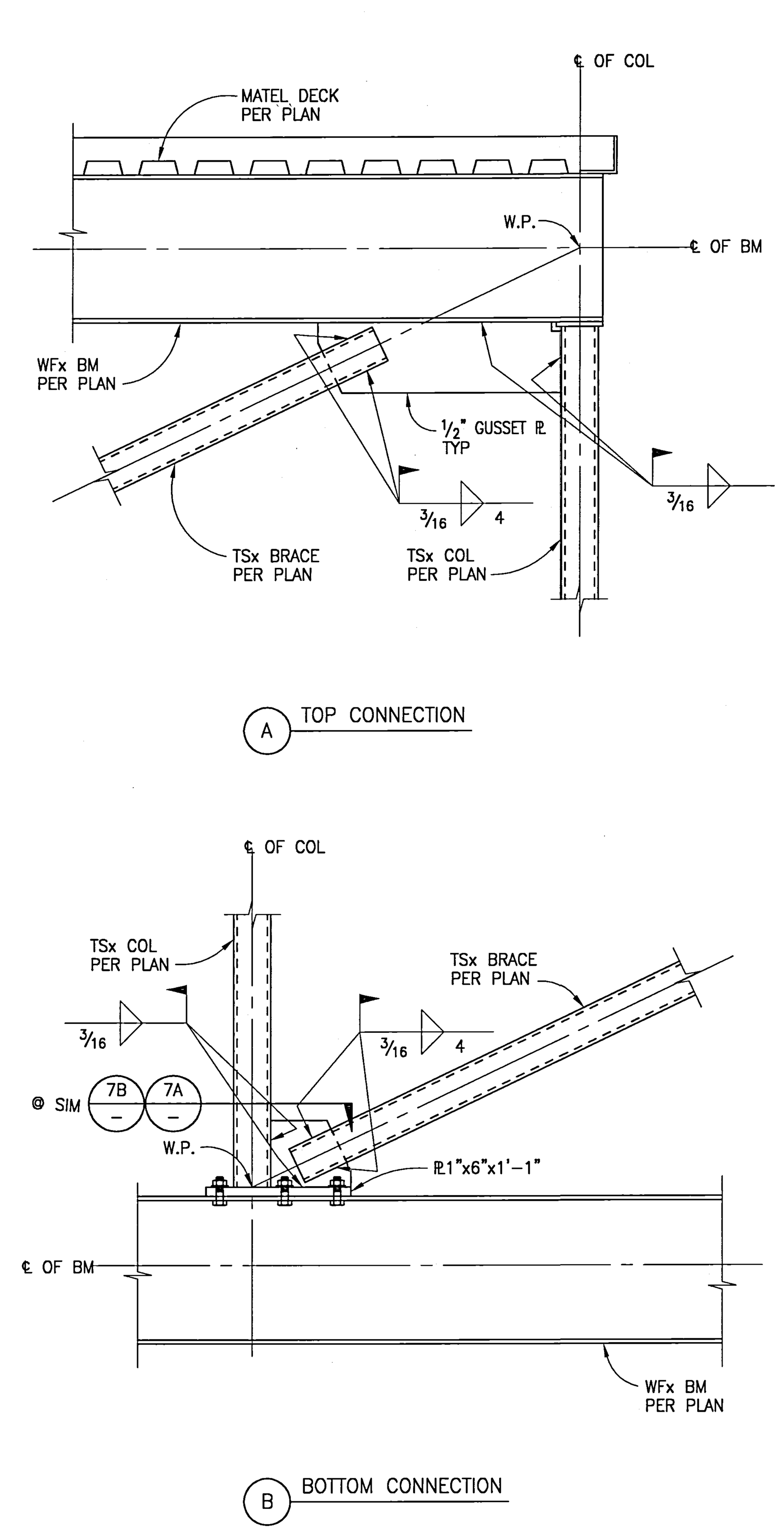
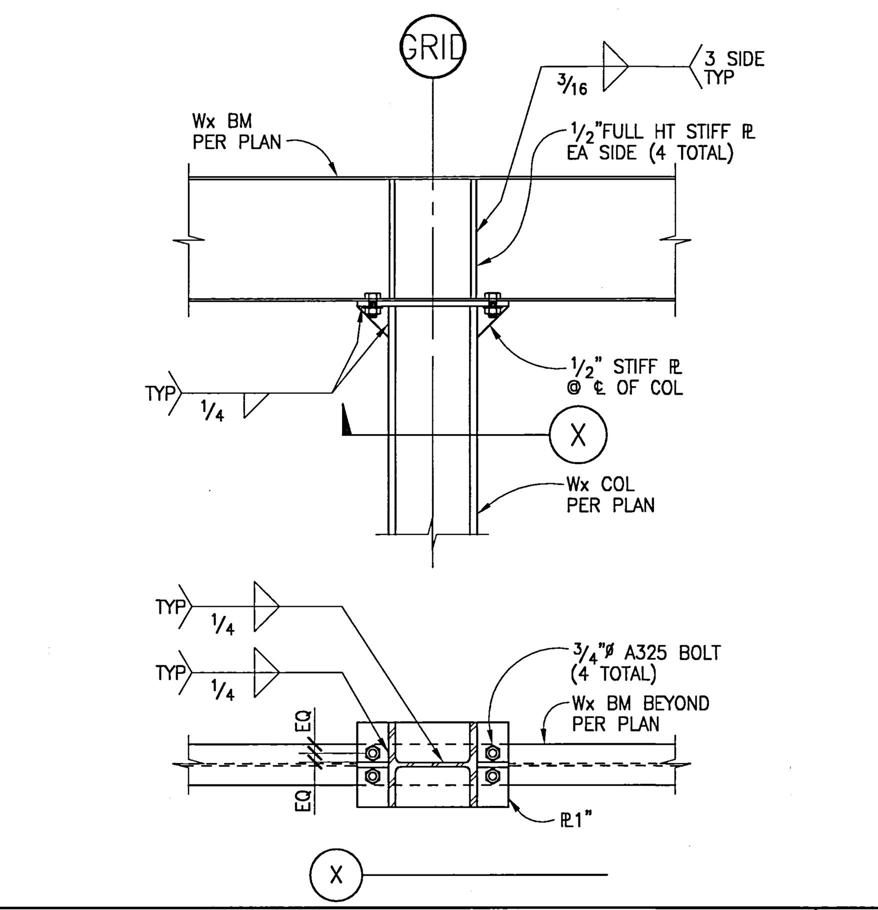
DRAFTER TONY TAM



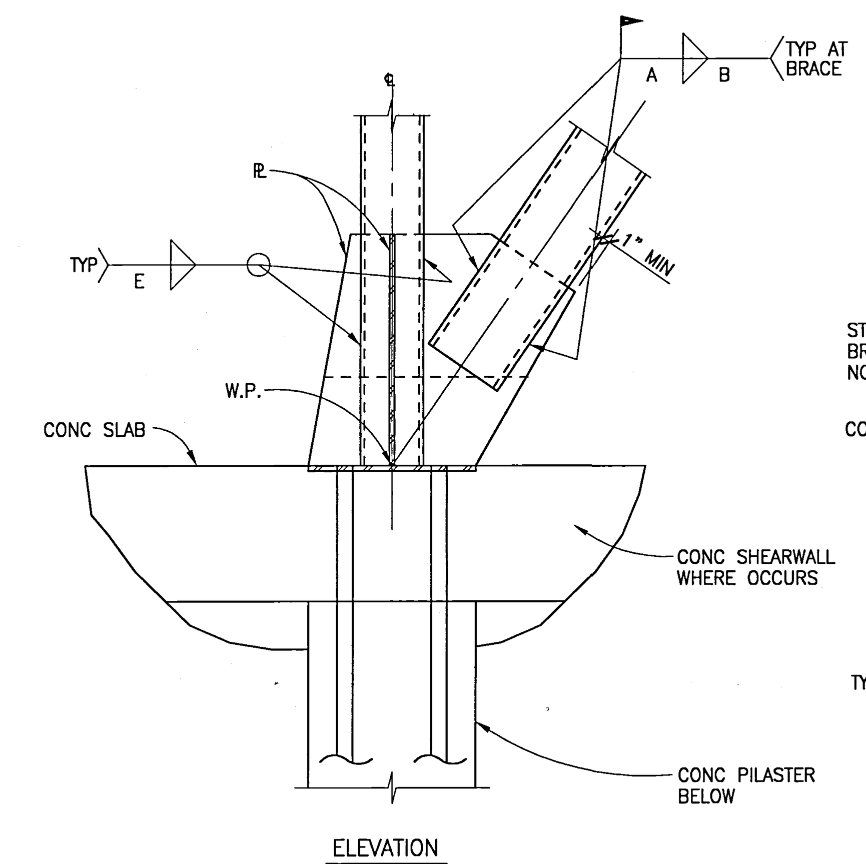
TRELLIS FRAME ELEVATION (N.S.) $1/4$"=1'-0" 9



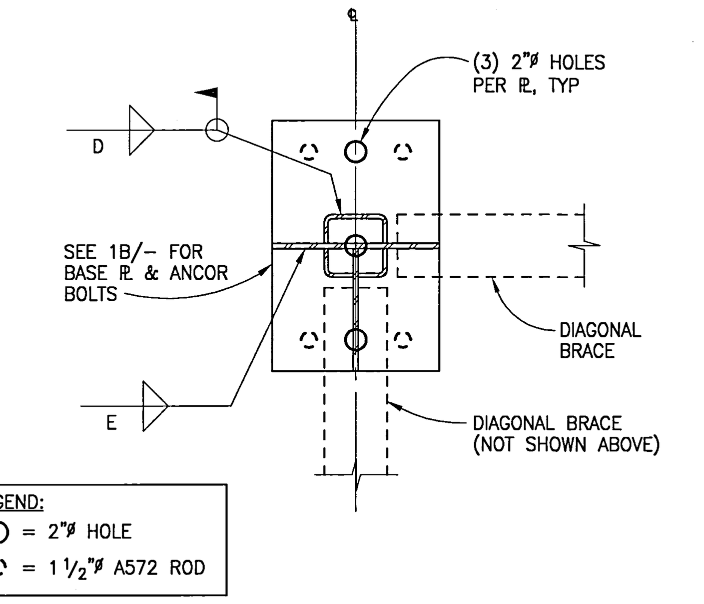
BRACE CONNECTION AT DOG HOUSE 1"=1'-0" 6



DETAIL 1"=1'-0" 10

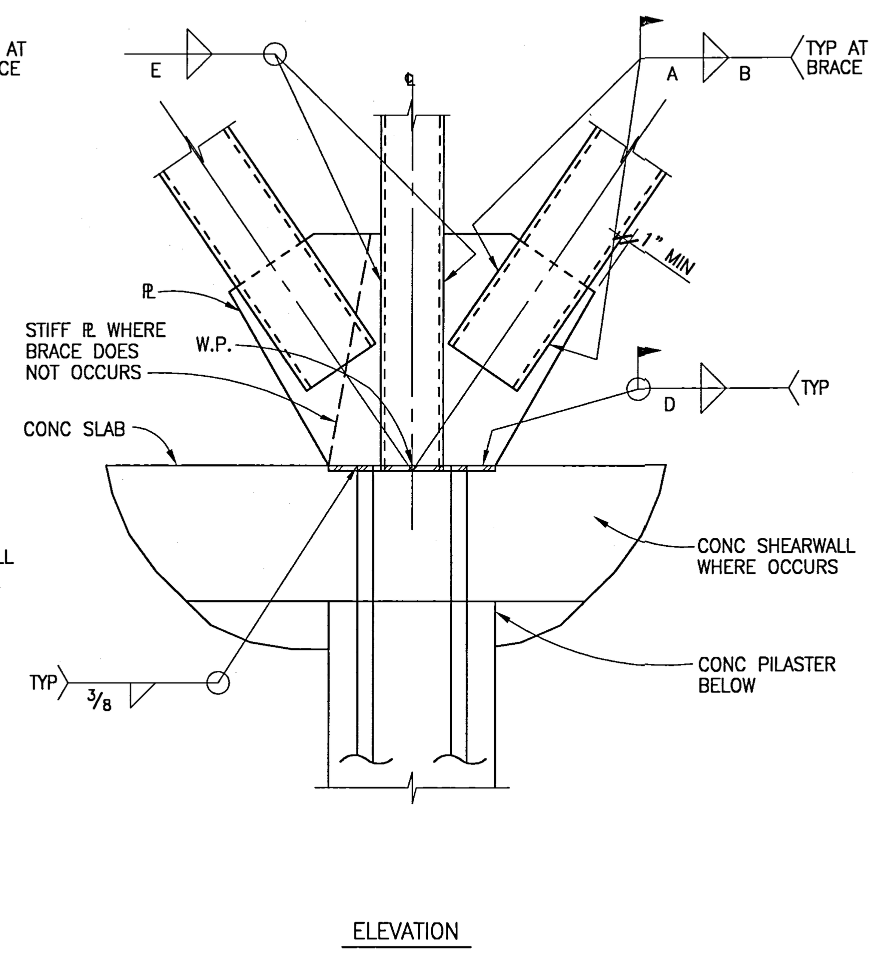


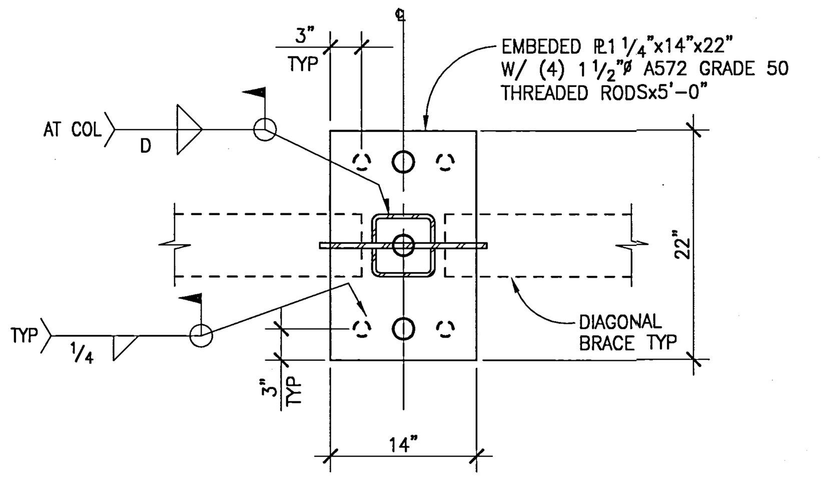
NOTES:
1. BRACE PERPENDIILULAR TO PLANE OF PAGE NOT SHOWN FOR CLARITY.
2. FOR BALANCE OF INFO SEE (A).



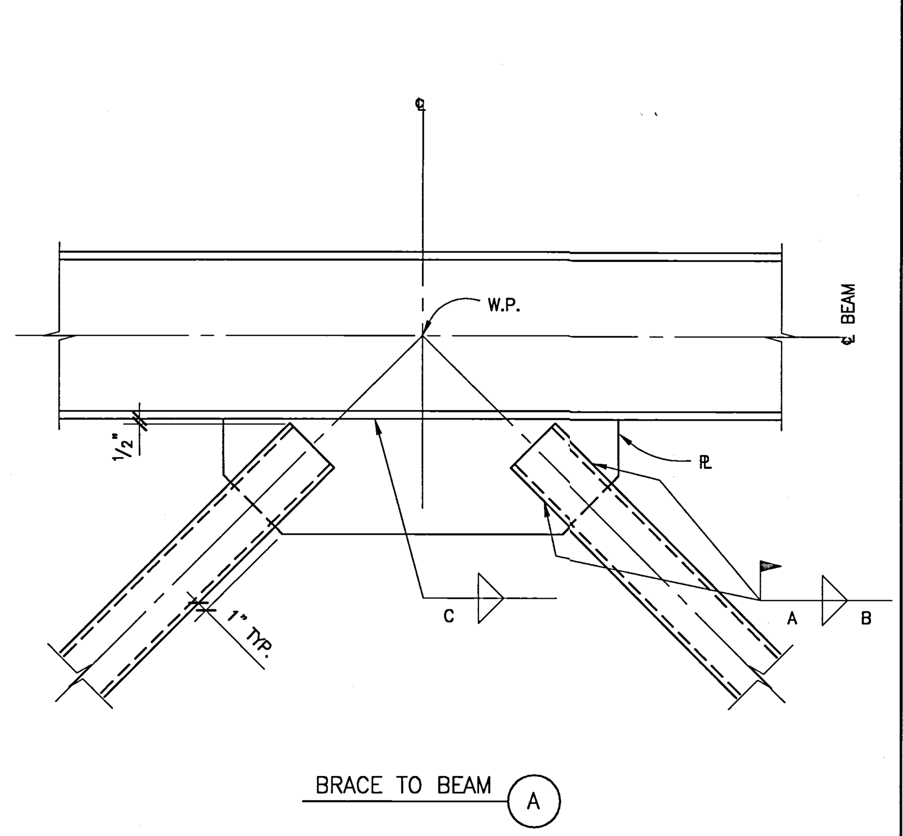
LEGEND:
○ = 2"⌀ HOLE
◌ = 1 1/2"⌀ A572 ROD

PLAN VIEW (C)





PLAN VIEW (B)

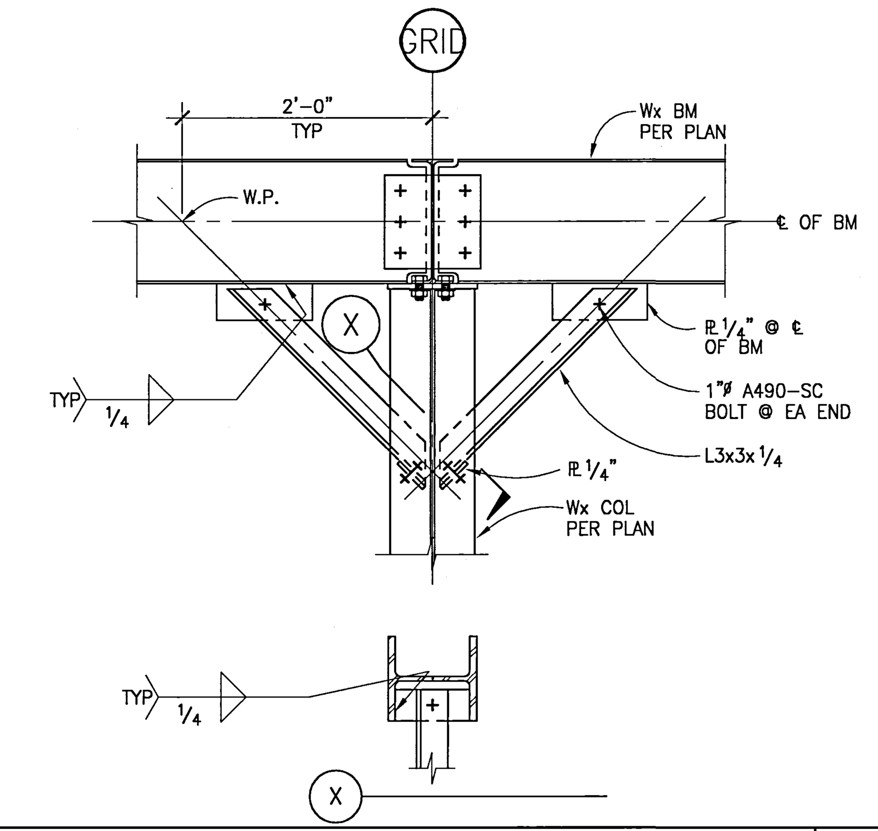


BRACE TO BEAM (A)

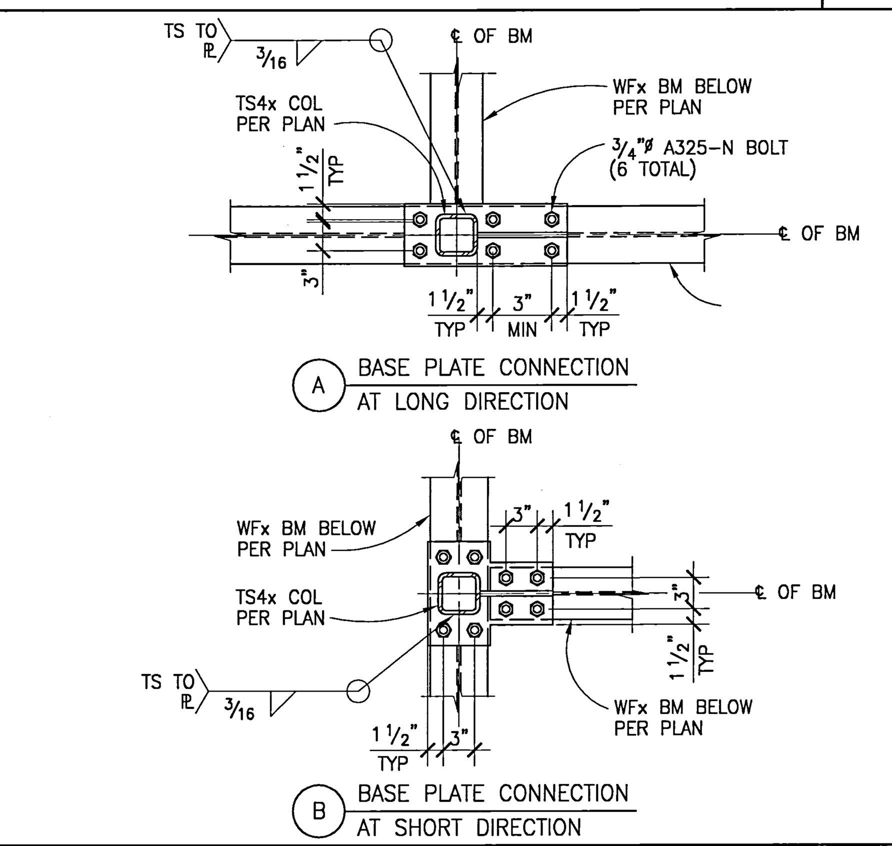
BRACED FRAME CONNECTION SCHEDULE							
BRACE SIZE	PLATE THICKNESS	WELD					REMARKS
		SIZE	LENGTH	SIZE	SIZE	SIZE	
		A	B	C	D	E	
TS8x6x $1/2$	$3/4$"	$5/16$"	12"	$5/16$"x24" E.S.	$5/16$"	$5/16$"	SURGE BUILDING
TS8x8x $1/2$	$5/8$"	$1/4$"	8"	$1/4$"x12" E.S.	$1/4$"	$1/4$"	AUDITORIUM BUILDING

NOTES:
1. SEE BRACED FRAME ELEVATIONS FOR MEMBER SIZES.
2. SEE SCHEDULE FOR WELD AND PLATE SIZES.

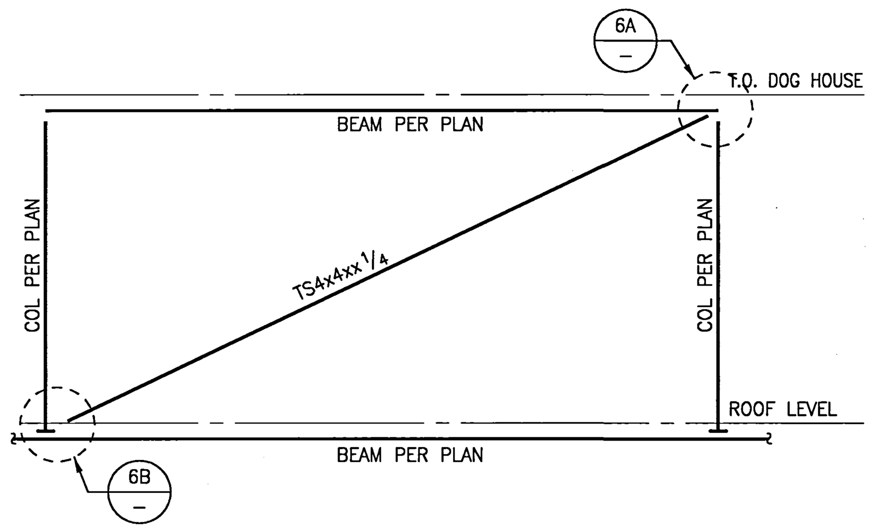
BRACED FRAME CONNECTION SCHEDULE & DETAILS 1"=1'-0" 1



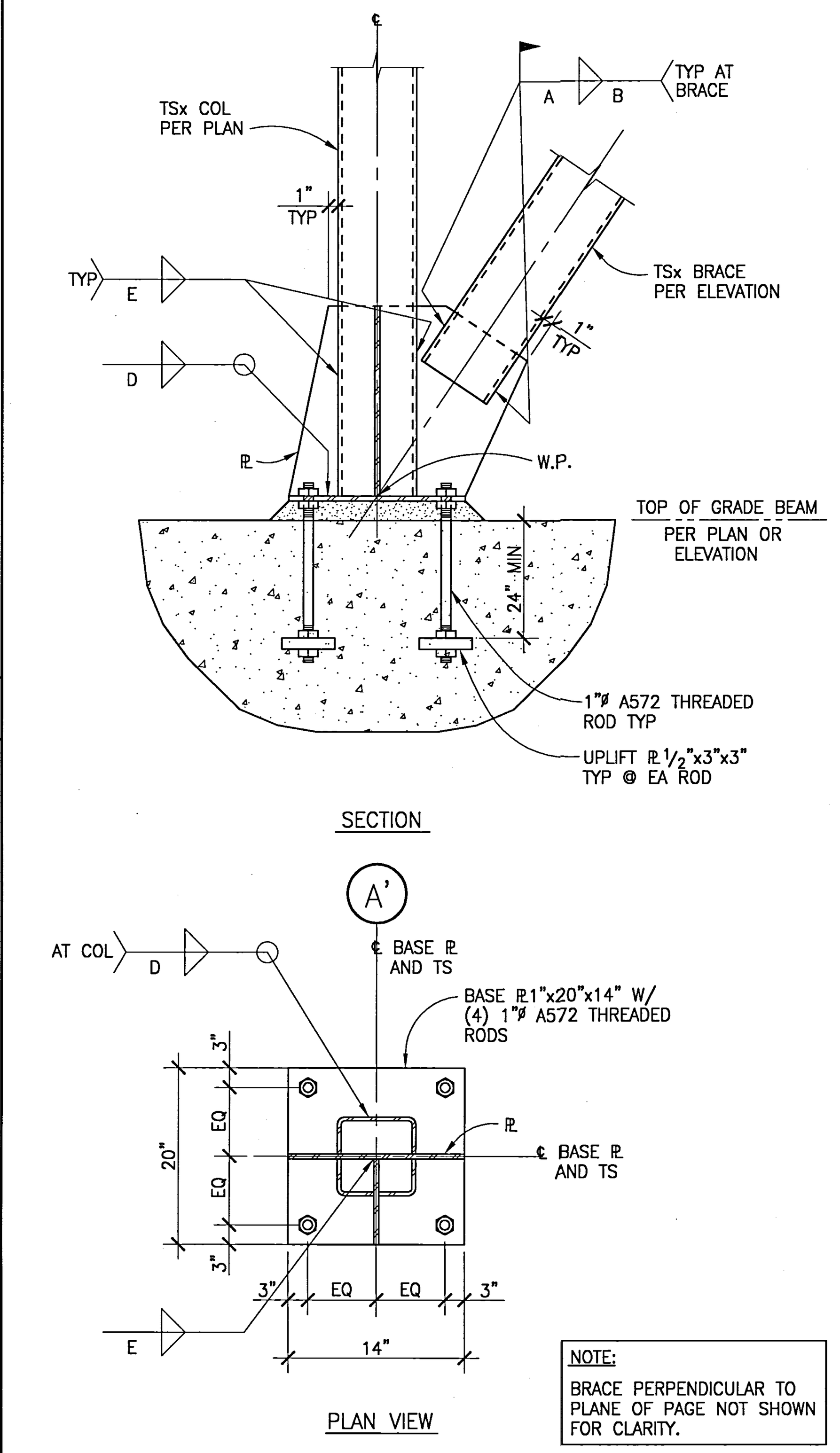
DETAIL 1"=1'-0" 11



DETAIL 1"=1'-0" 7

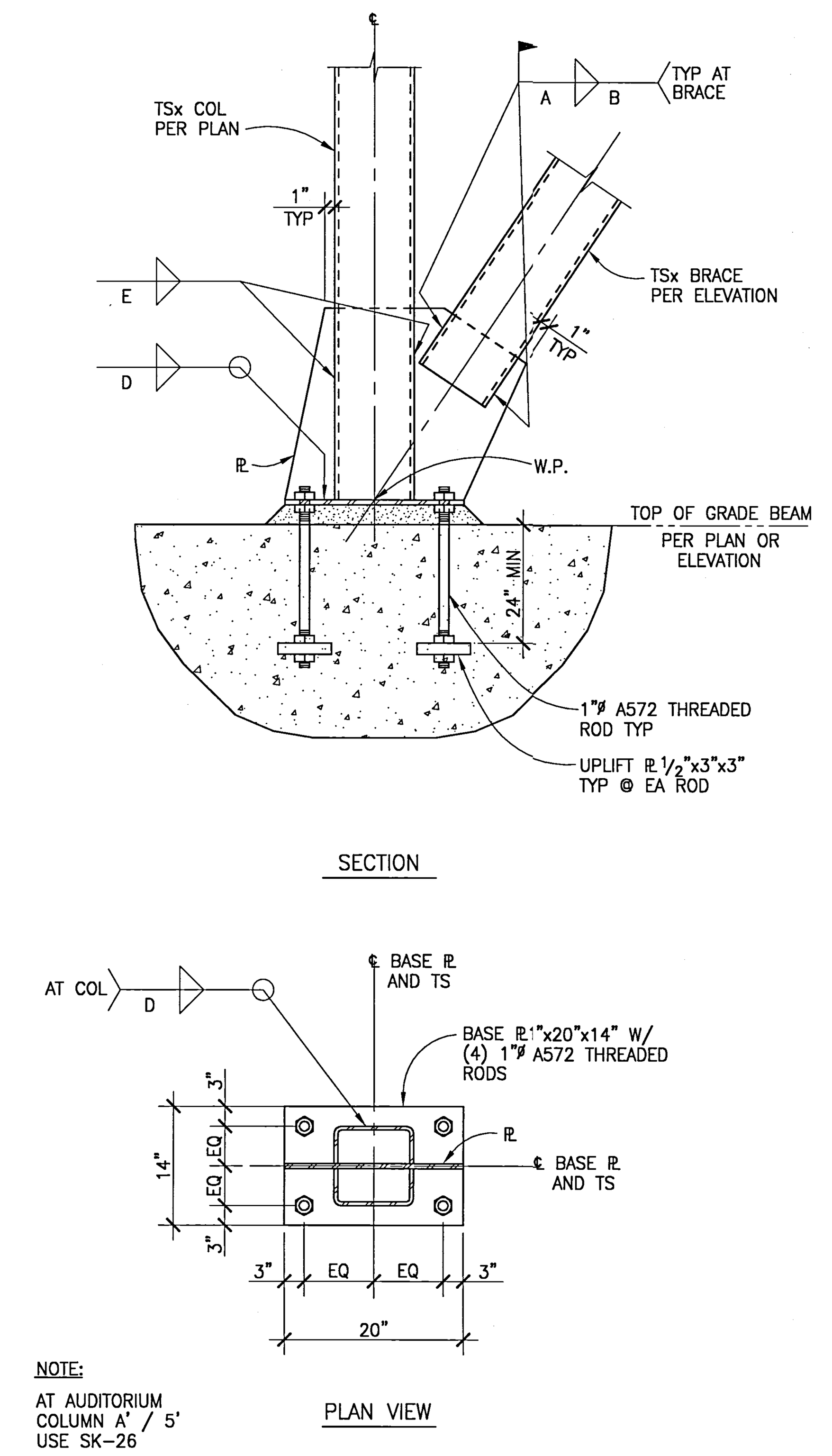


DOG HOUSE FRAME ELEVATION $1/4$"=1'-0" 4



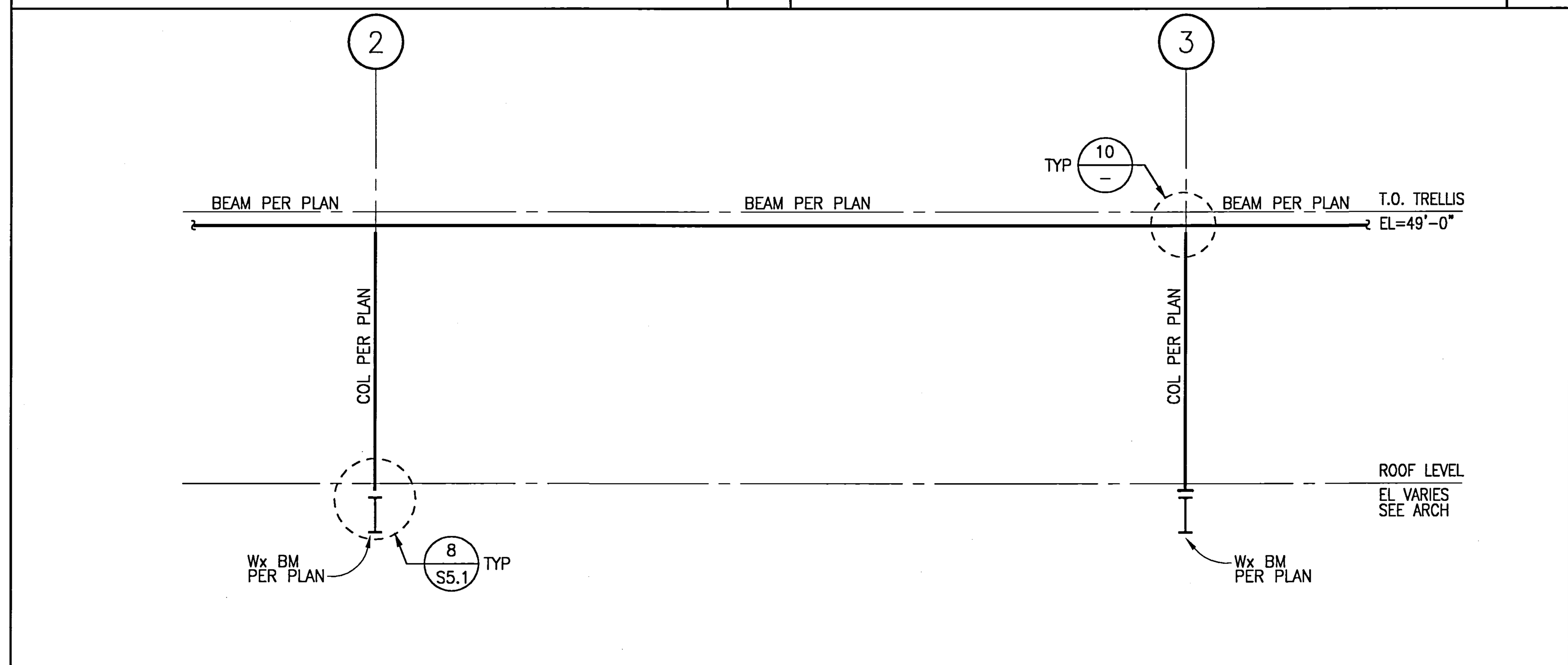
NOTE:
BRACE PERPENDICULAR TO PLANE OF PAGE NOT SHOWN FOR CLARITY.

DETAIL 1"=1'-0' 3

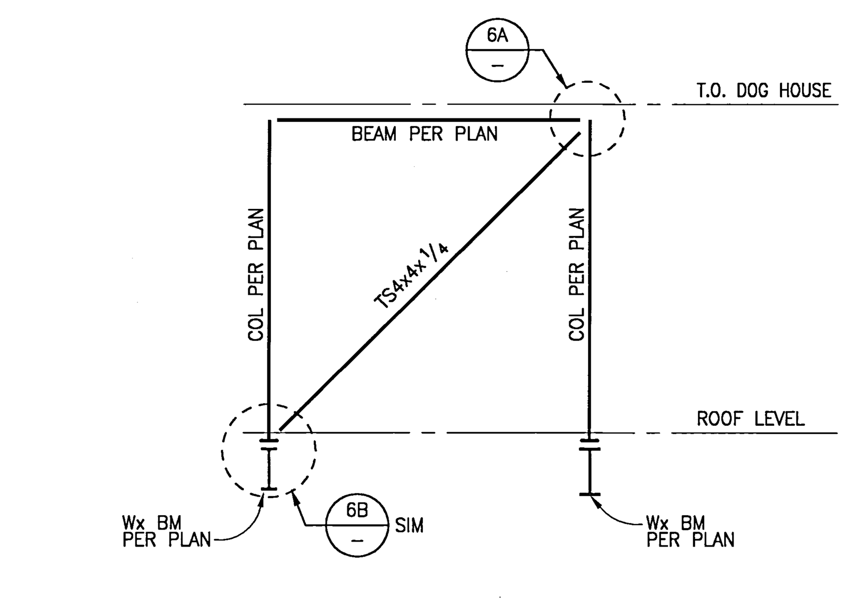


NOTE:
AT AUDITORIUM COLUMN A' / 5' USE SK-26

DETAIL 1"=1'-0' 2



TRELLIS FRAME ELEVATION (E.W.) $1/4$"=1'-0" 8



DOG HOUSE FRAME ELEVATION $1/4$"=1'-0" 5

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Santa Monica, California 90404
☎ 310.586.5400
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RECORD DRAWINGS

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Drawing Title

STEEL DETAILS

AS SHOWN

Scale 1001071

Project Number 6 OCT 00

Baseline Date

S5.4

Drawing Number

NOTES: | JOB # 1001071 | 1071B NAME UCR SURGE | FILE PATH & NAME P:\2000\1001071 UCR SURGE\SDRAFT\BULLETIN#1\S5-4.DWG | PLOTTED DATE & TIME DEC. 06, 2000 1:47:53 PM | UPDATED BY KR | PLOT SCALE 1=1 | PROG.MG. RH | DRAFTER TONY TAM
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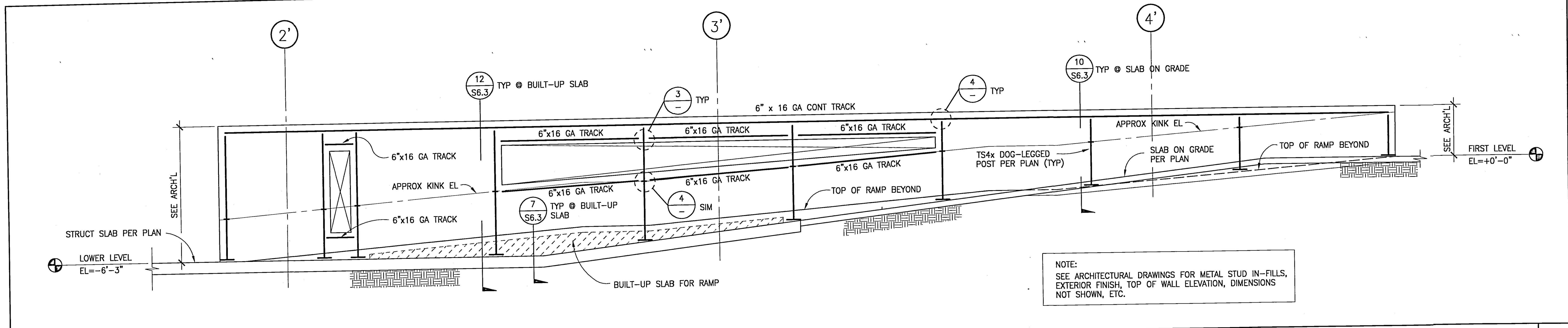
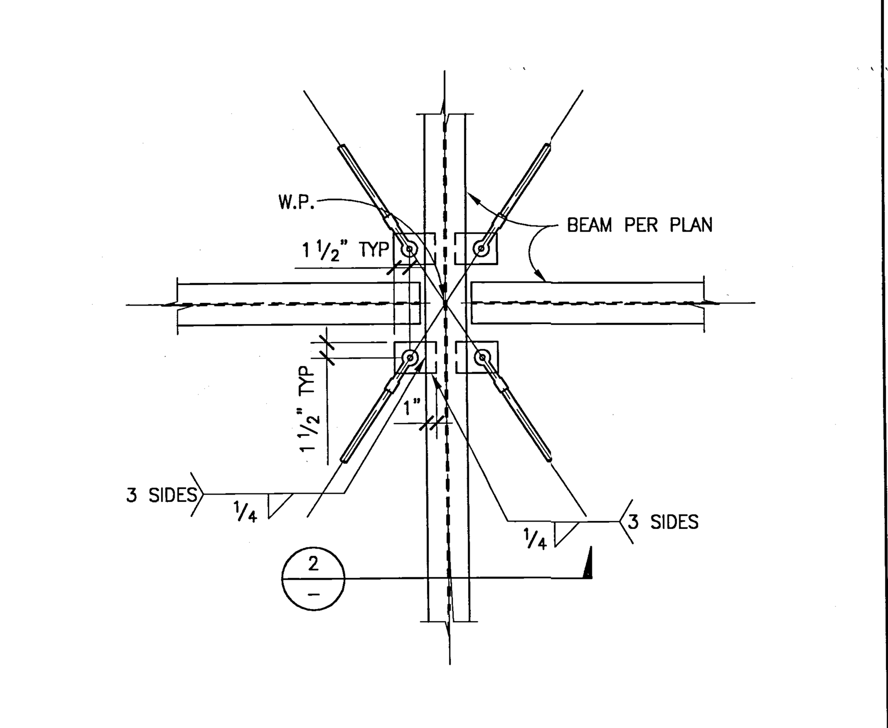
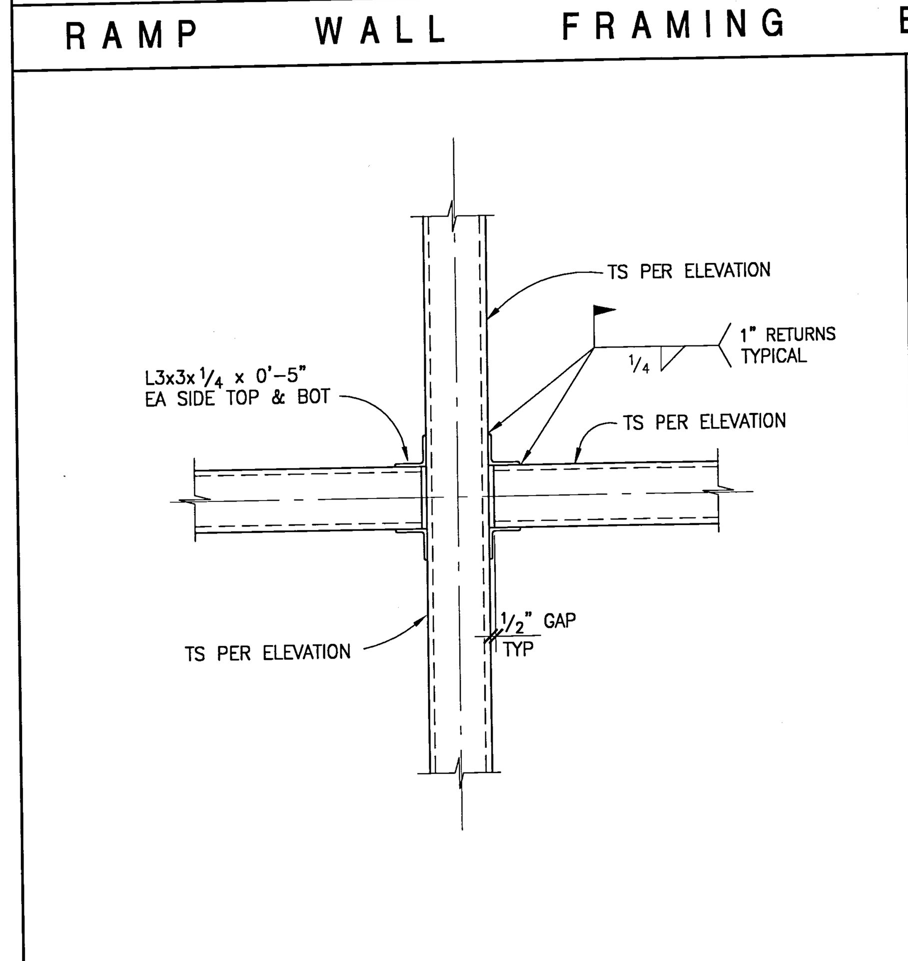


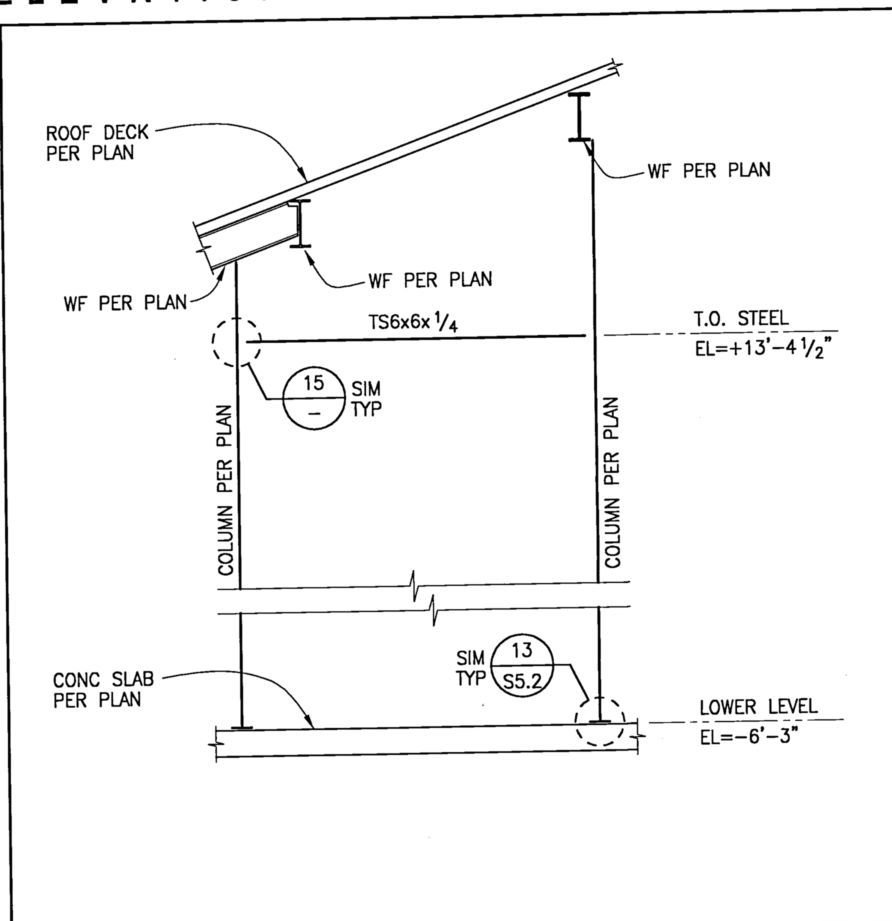
RAMP WALL FRAMING ELEVATION $\frac{1}{4}$"=1'-0" 5



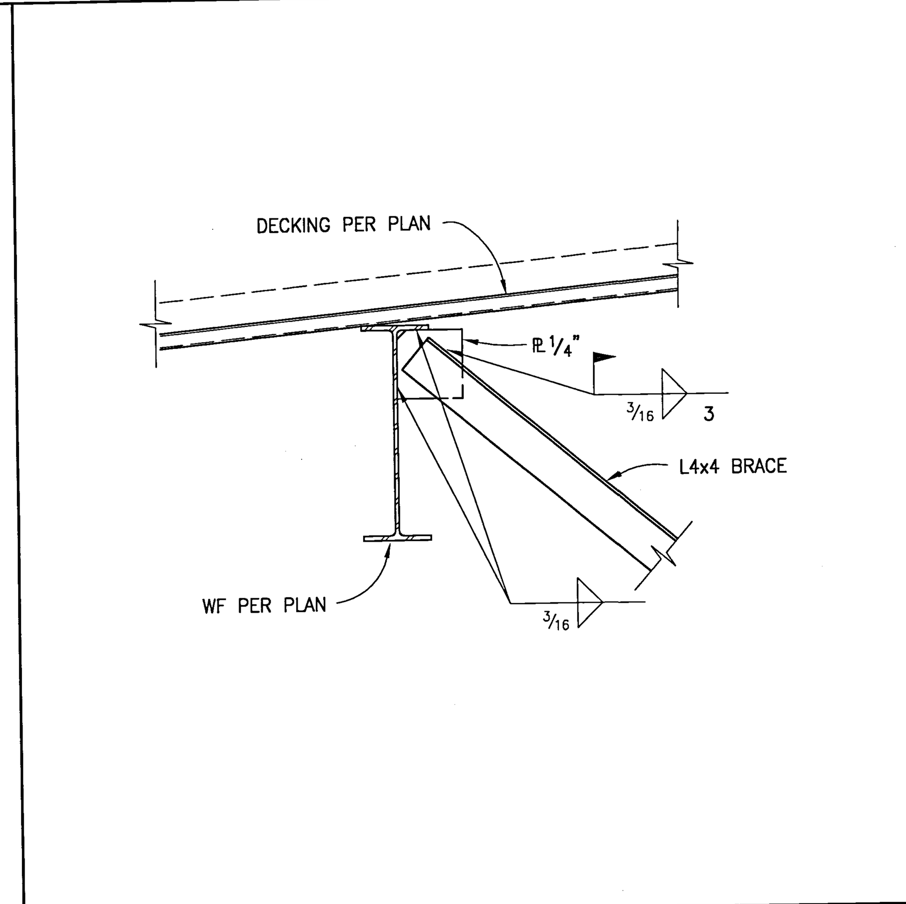
PLAN - ROD CONNECTION DETAIL 1"=1'-0" 1



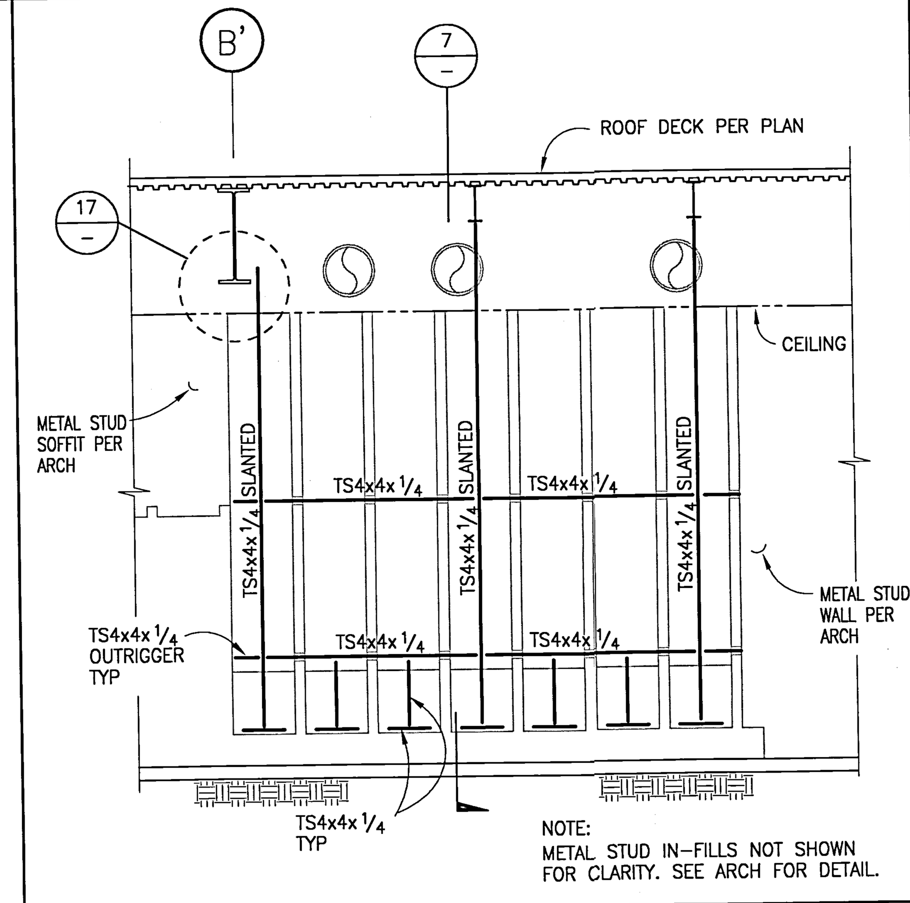
TS TO TS CONNECTION DETAIL 1"=1'-0" 15



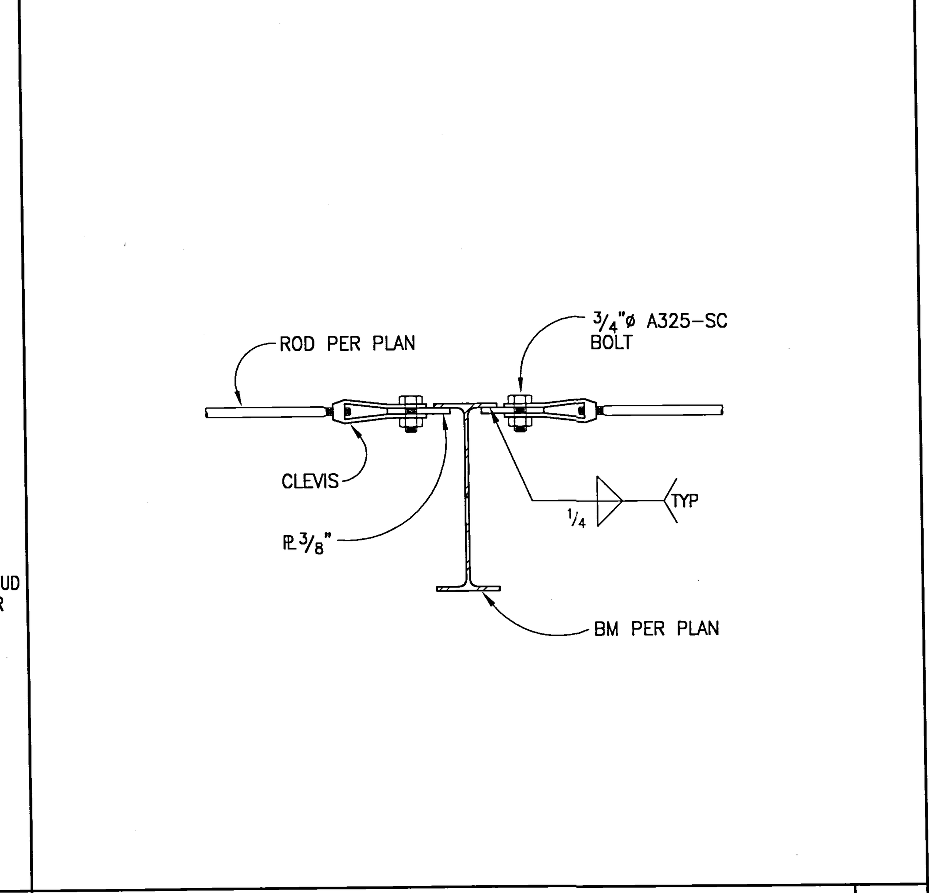
ROLL-UP DOOR FRAMING ELEVATION $\frac{1}{4}$"=1'-0" 12



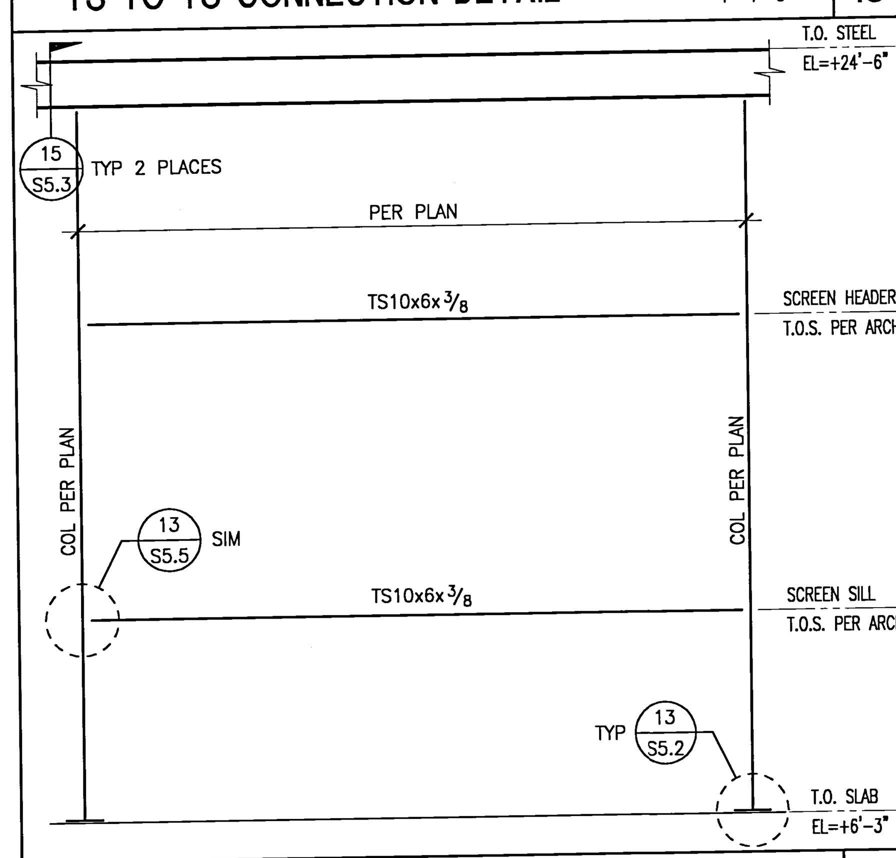
BRACE CONNECTION DETAIL 1"=1'-0" 9



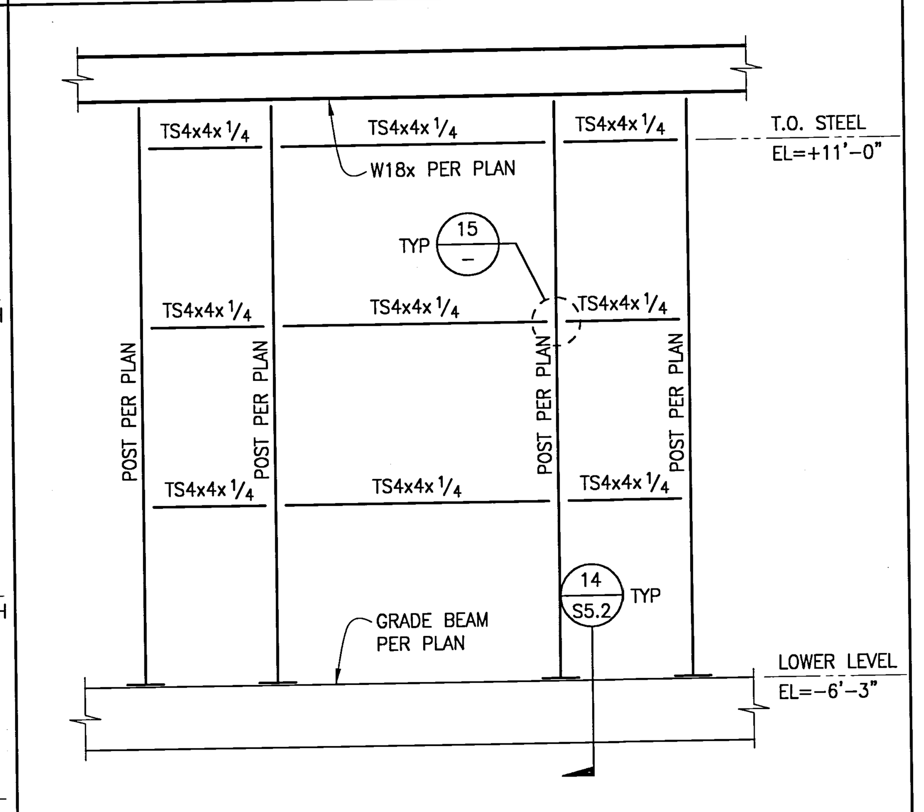
WALL PANEL FRAMING ELEVATION $\frac{1}{4}$"=1'-0" 6



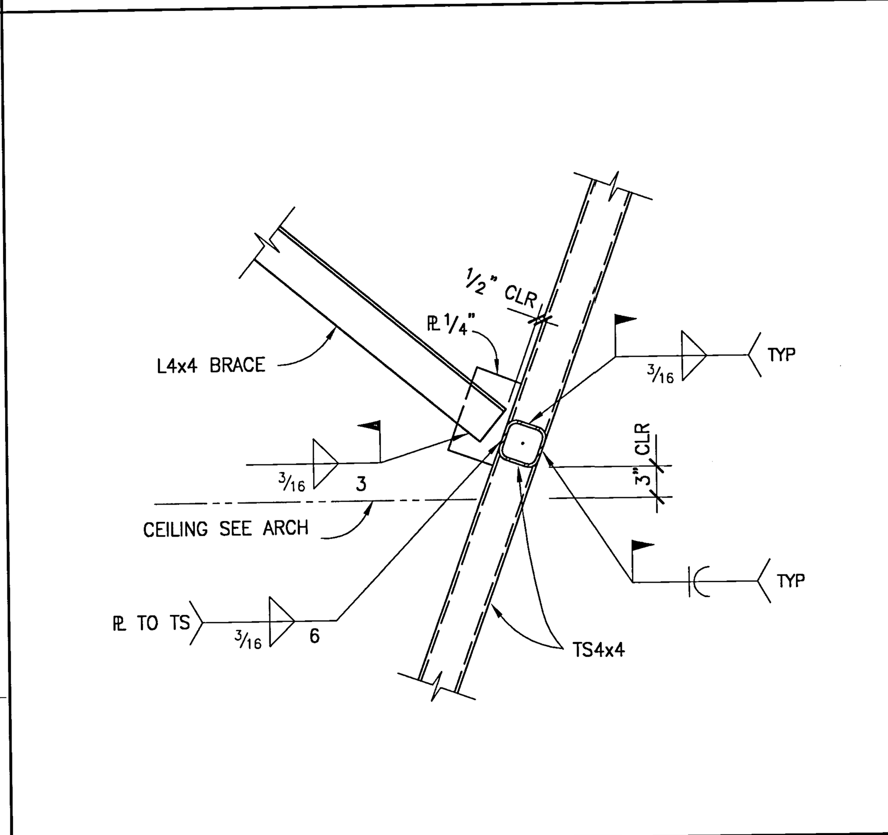
ROD CONNECTION DETAIL 1 1/2"=1'-0" 2



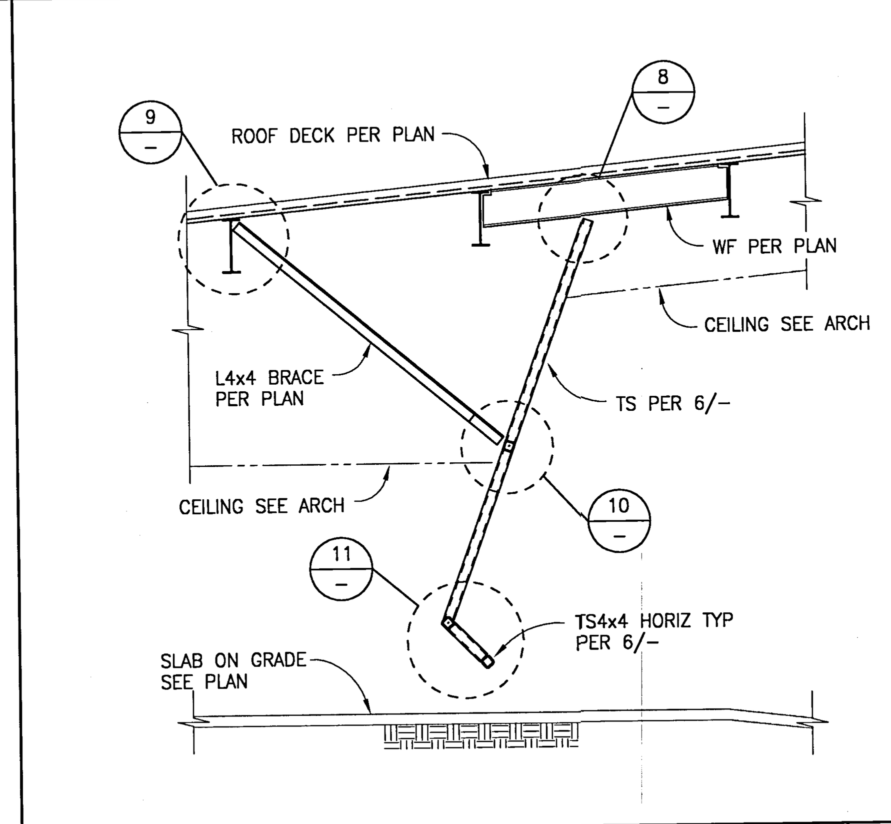
PROJECTION SCREEN FRAME ELEVATION N.T.S. 16



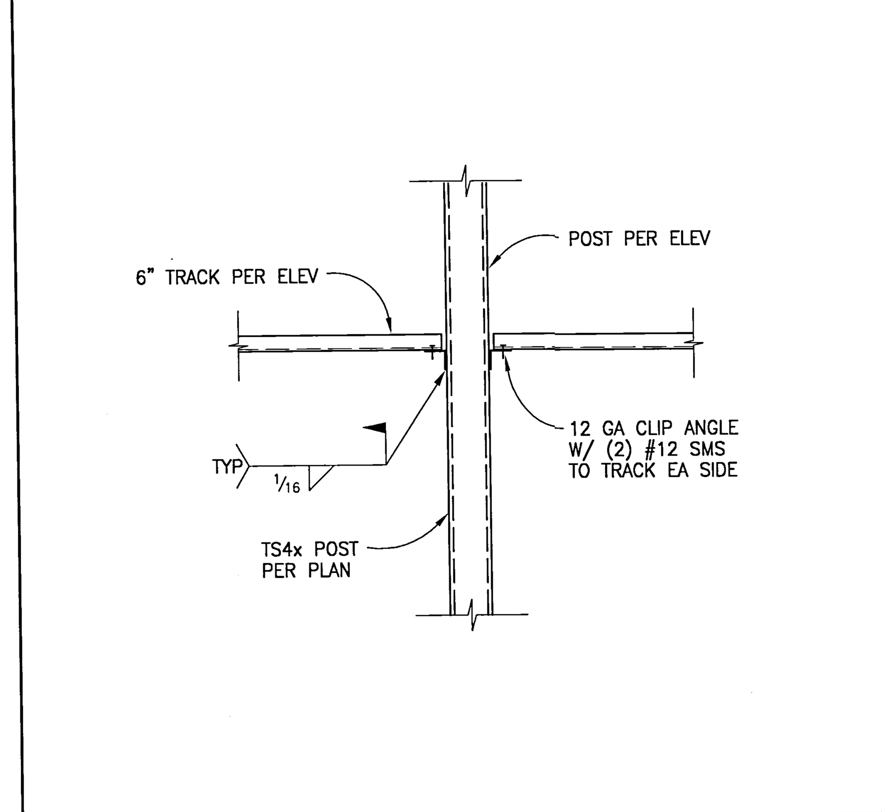
LOUVRE WALL FRAMING ELEVATION $\frac{1}{4}$"=1'-0" 13



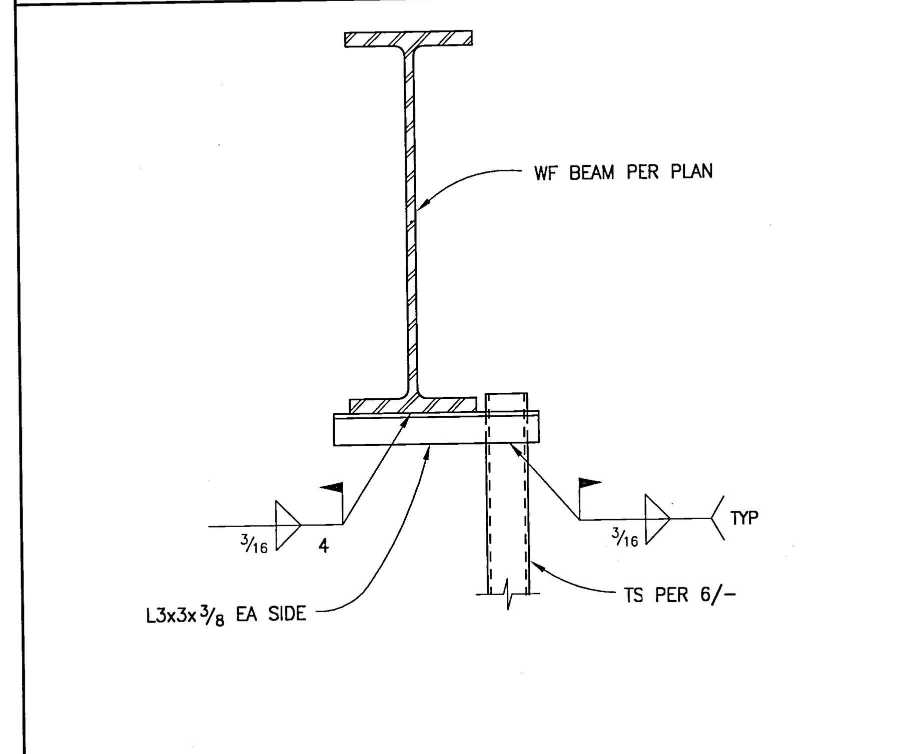
BRACE CONNECTION DETAIL 1"=1'-0" 10



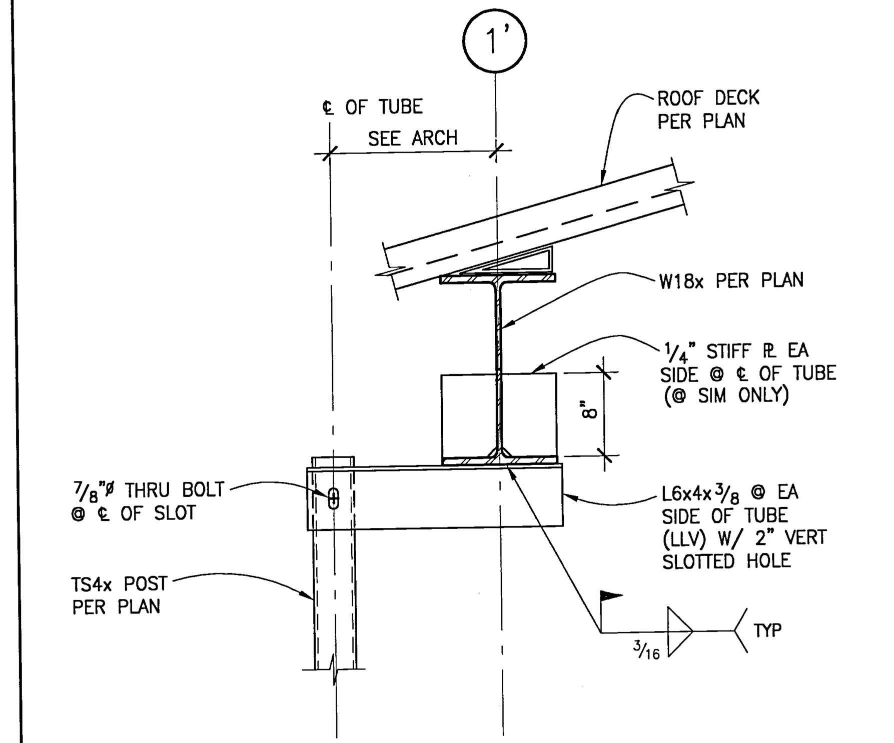
SECTION $\frac{1}{4}$"=1'-0" 7



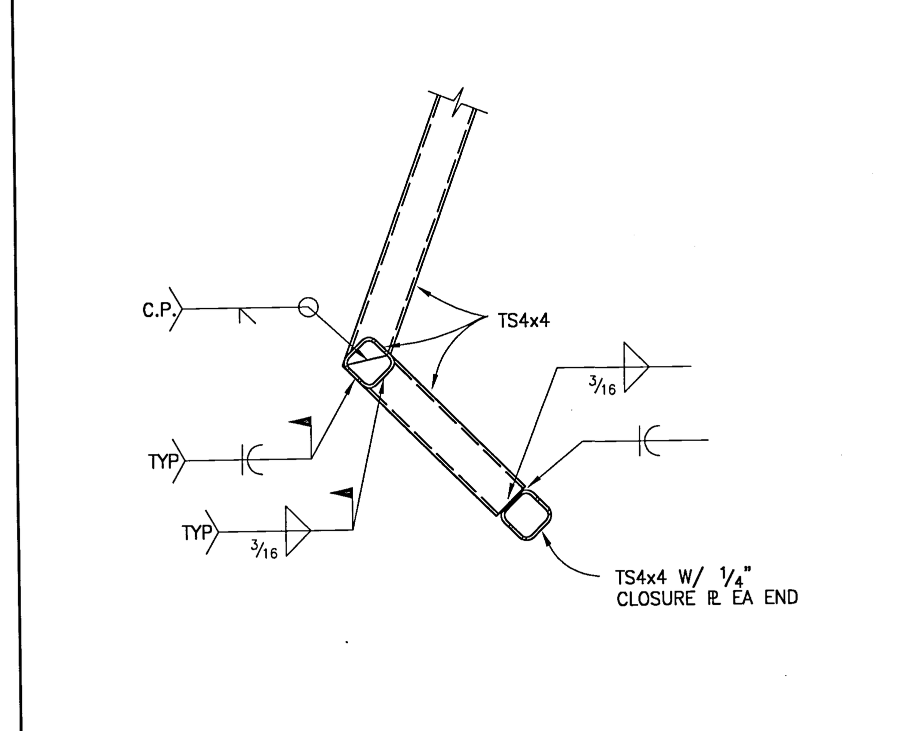
TRACK TO TS CONNECTION DETAIL 1"=1'-0" 3



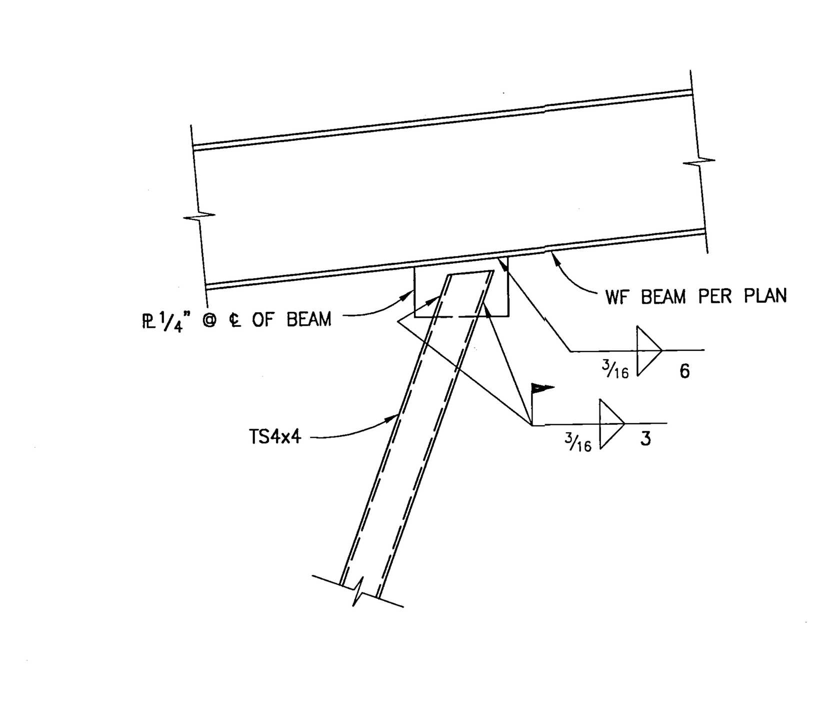
TS TO WF BEAM CONNECTION DETAIL 1"=1'-0" 17



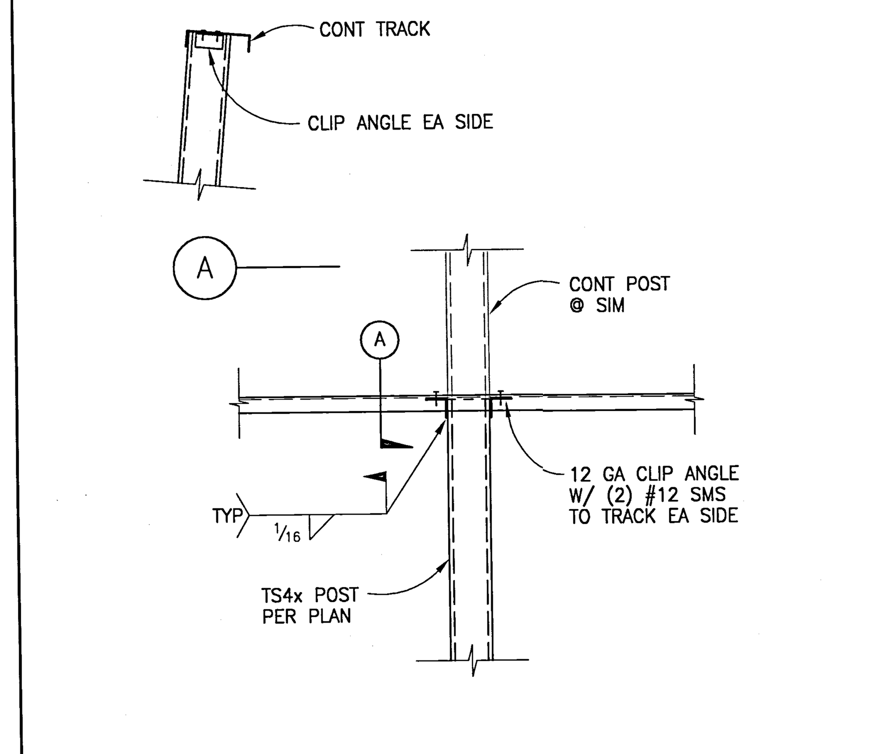
DETAIL 1"=1'-0" 14



TS TO TS CONNECTION DETAIL 1"=1'-0" 11



TS TO WF BEAM CONNECTION DETAIL 1"=1'-0" 8



TRACK TO TS CONNECTION DETAIL 1"=1'-0" 4

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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Seals and Signatures

RECORD DRAWINGS

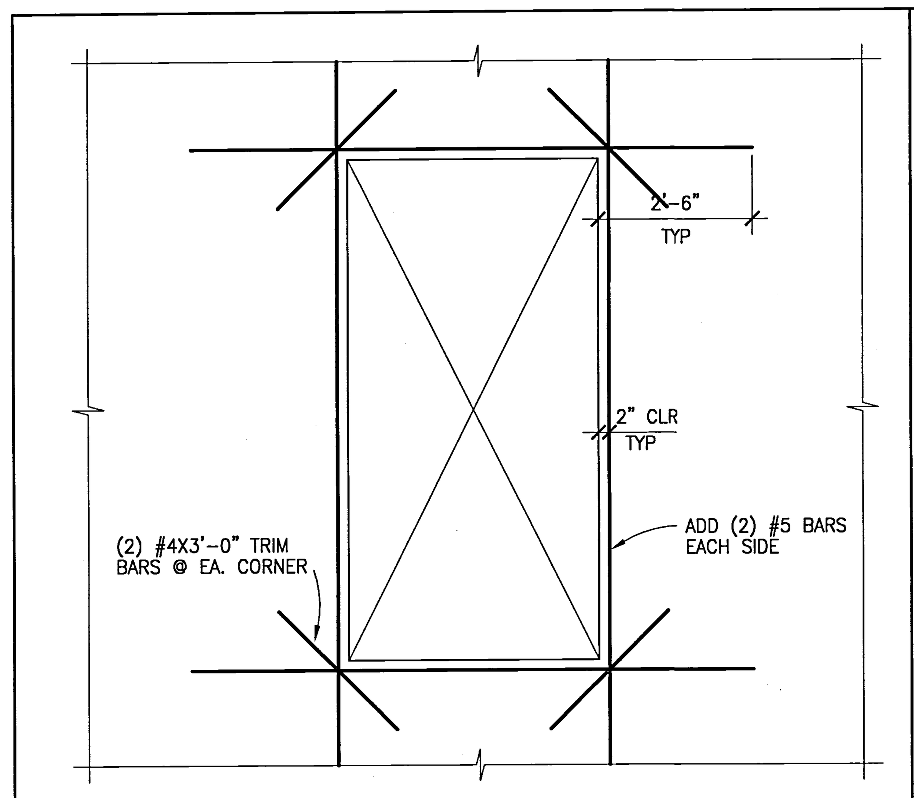
Key Plan
Project North

Drawing Title
STEEL DETAILS

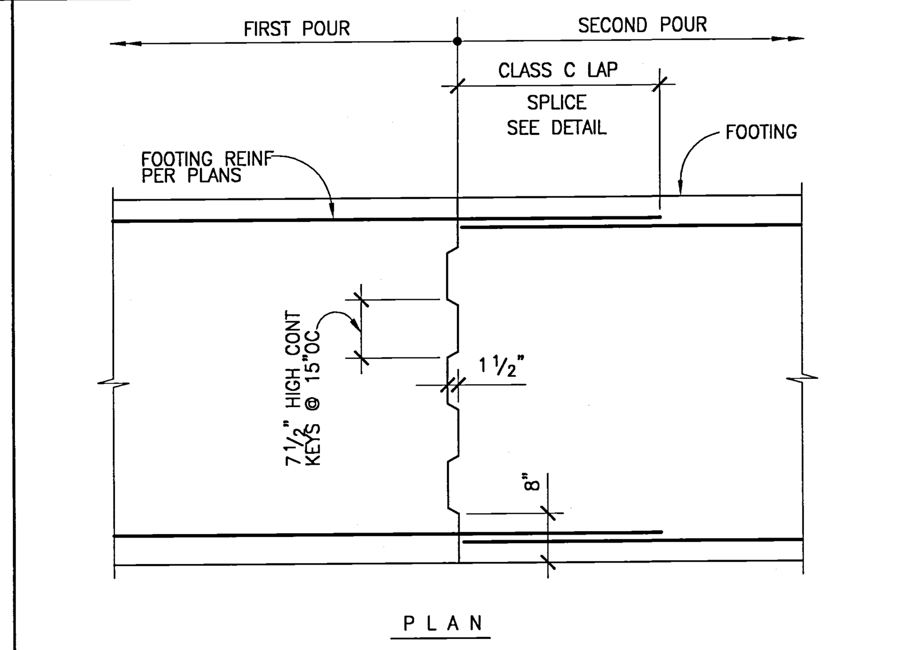
AS SHOWN
Scale
1001071
Project Number
6 OCT 00
Baseline Date
S5.5
Drawing Number

DRAFTER	PROG.MG.	PLOT SCALE	UPDATED BY	PLOTTED DATE & TIME	FILE PATH & NAME	10711B NAME
TONY TAM	R.H.	1=1	TONY TAM	SEP. 21, 2000 1:58:41 PM	P:\2000\1001071 UCR SURGE\SDRAFT\STEEL\S5-5.DWG	UCR SURGE

NOTES:
JOB #: 1001071
XREFS: 10711B

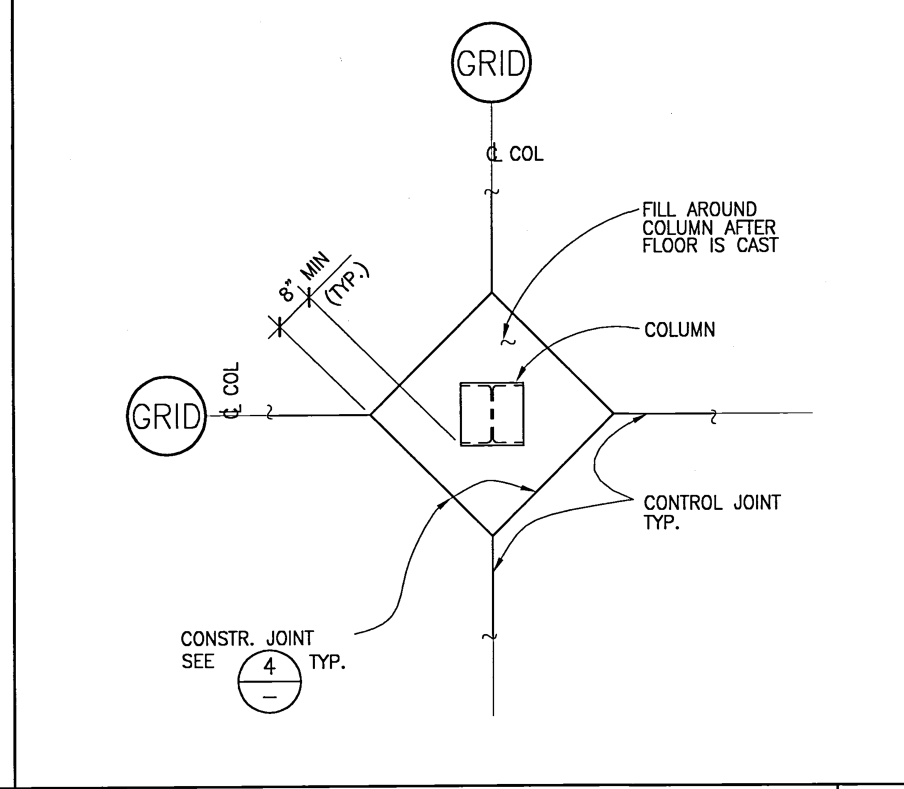


TYP. REINF. OF LARGE OPENING IN DECK SLAB ½"=1'-0" 16

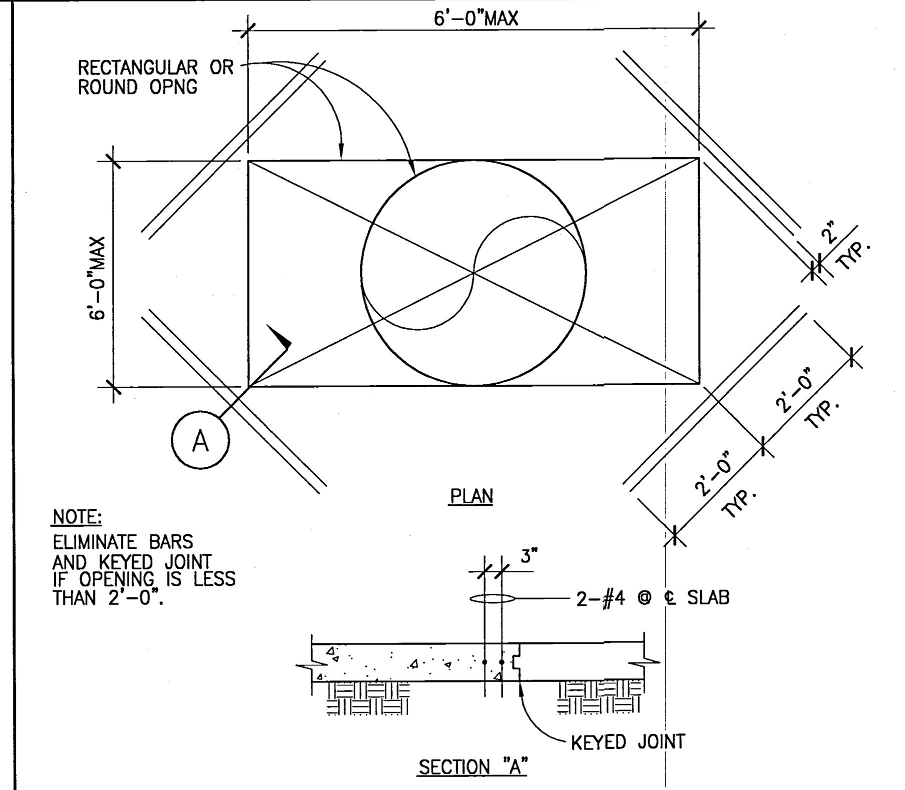


NOTE : WELDED SPLICES REQUIRED FOR #14 AND LARGER BARS. WHERE CONTINUOUS FOOTING IS UNDER A WALL, LOCATE CONSTRUCTION JOINT AT 1/4 OF THE CLEAR OPENING WIDTH ABOVE FROM FACE OF OPENING, OR IN MIDDLE 1/3 OF THE DISTANCE BETWEEN COLUMNS.

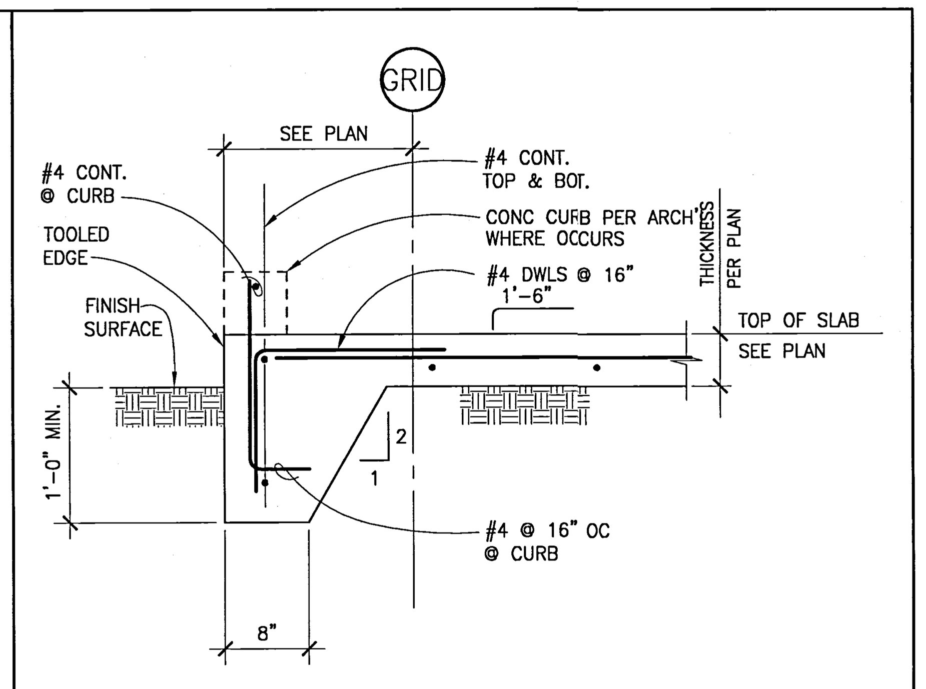
CONT. FOOTING CONSTRUCTION JOINT 1"=1'-0" 13



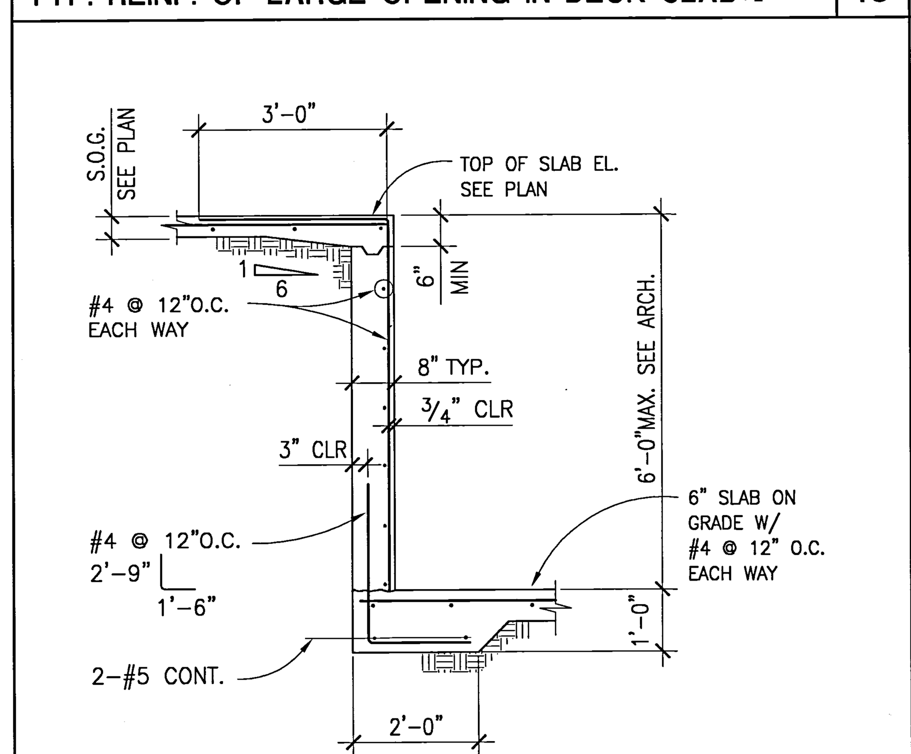
ISOLATION AT COLUMN AND S.O.G. 1"=1'-0" 9



OPENING IN SLAB ON GRADE 1"=1'-0" 5



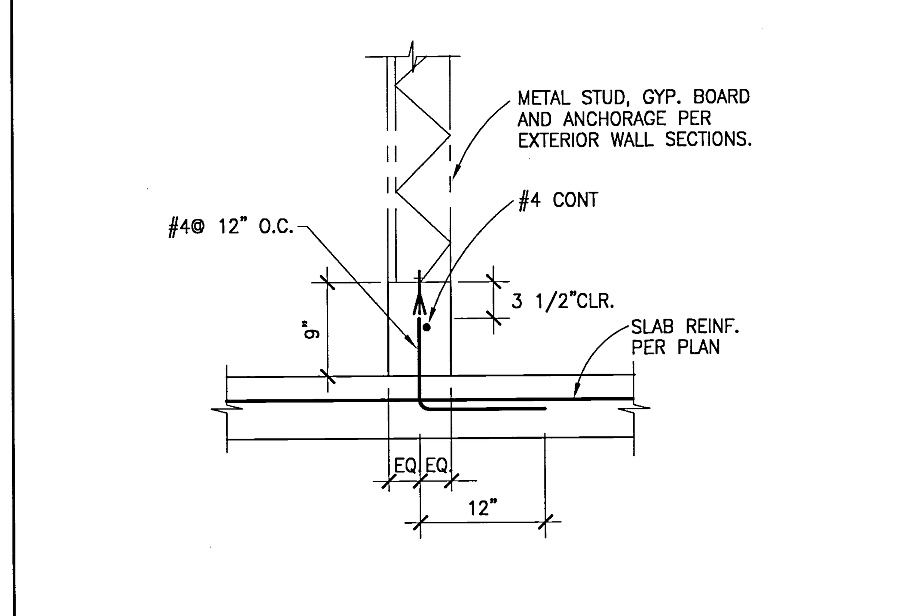
EDGE OF SLAB ON GRADE 1"=1'-0" 1



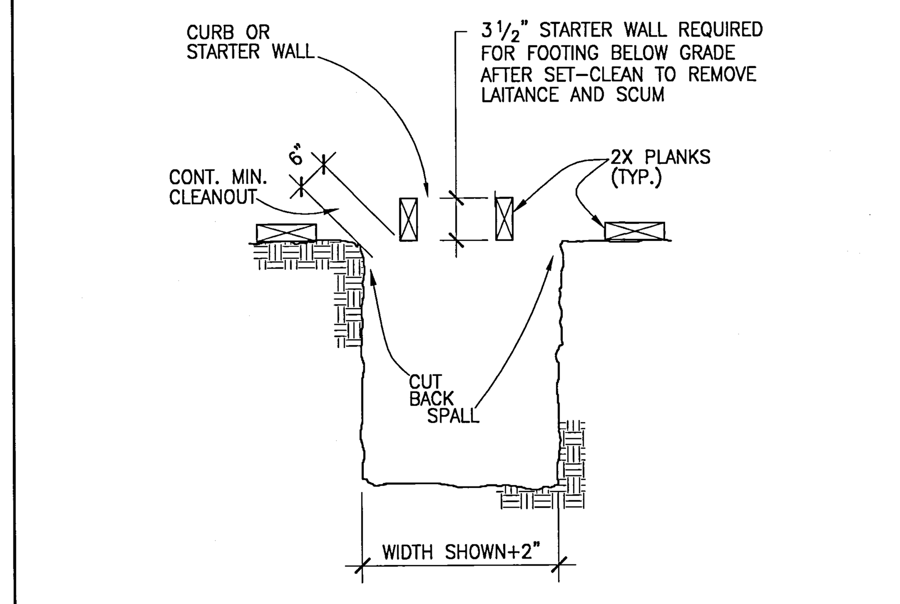
NOTE:

WALL IS TO REMAIN SHORED UNTIL (7) DAYS AFTER SLAB HAS BEEN PLACED.

ELEVATOR PIT DETAIL ½"=1'-0" 17



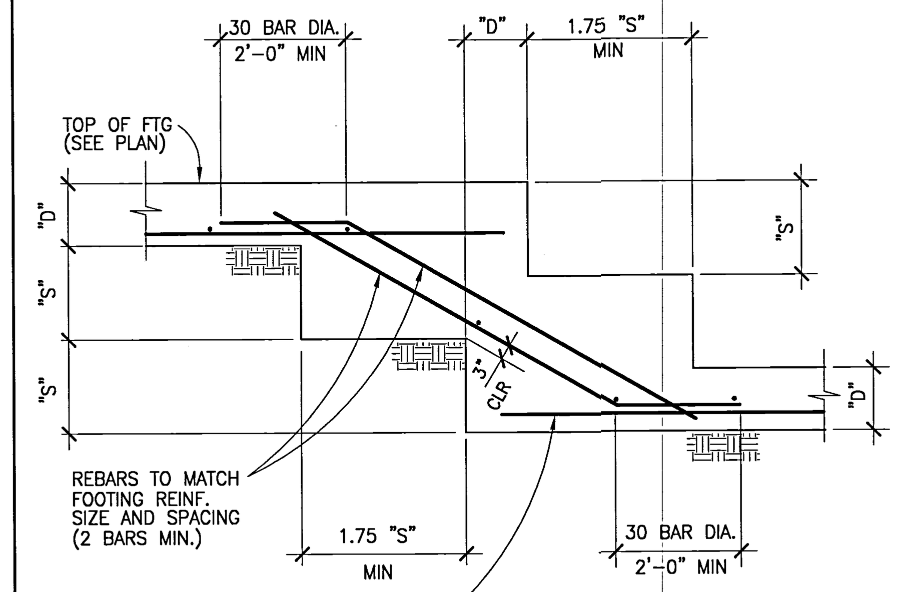
TYPICAL CONCRETE CURB DETAIL 1"=1'-0" 14



NOTE:

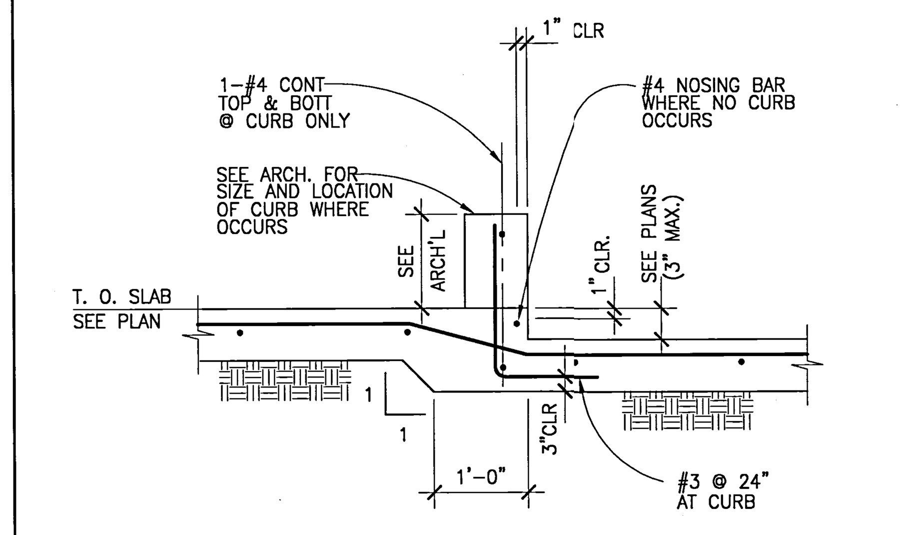
FORMWORK NOT PERMITTED BELOW GRADE (UNLESS SIDES OF FTG ARE FULLY FORMED). STAKES NOT PERMITTED IN FOOTING SECTION

MANDATORY MINIMUM FORMWORK 1"=1'-0" 10



NOTES:
1. "D"=DEPTH OF FOOTING
2. "S"=1'-6" MAX. U.N.O.

STEPPED FOOTING DETAIL 1"=1'-0" 6



DEPRESSION IN SLAB ON GRADE 1"=1'-0" 2

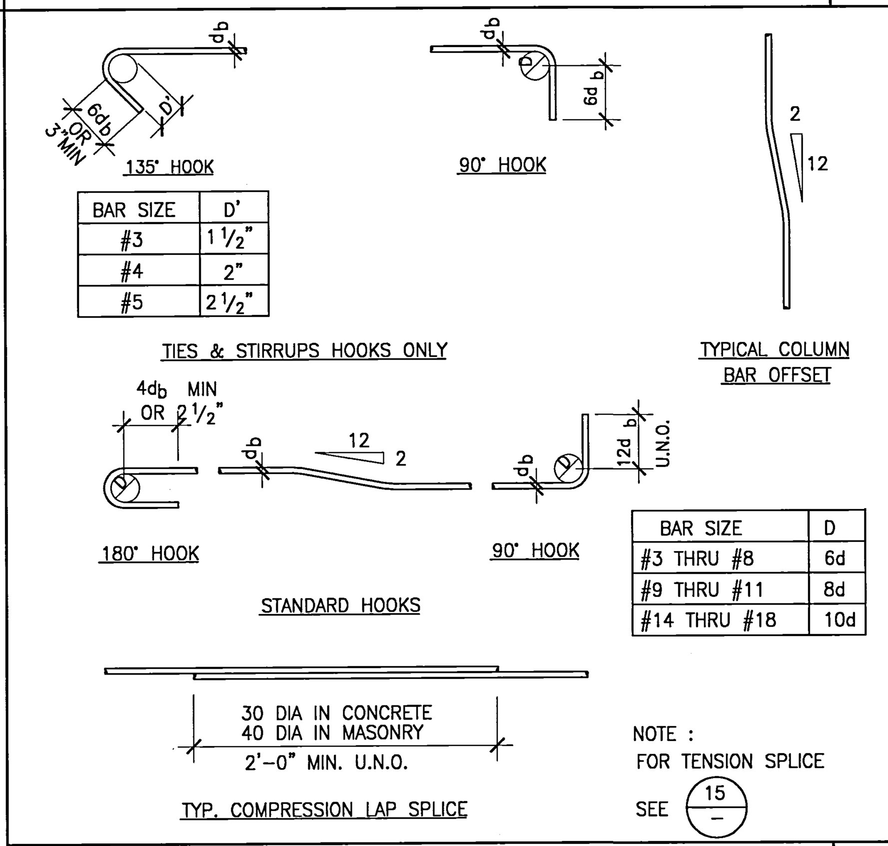
BAR DESCRIPTION AND LOCATION IN STRUCTURE	CONCRETE STRENGTH (PSI)	BAR SIZE	#11		#10		#9		#8		#7		#6		#5		#4	
		LAP CLASS	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
BEAMS, COLUMNS AND INNER LAYER OF WALLS OR SLABS WITH COVER > BAR DIAM. SPACING > 6XBAR DIAM.	3000	TOP	5'-11"	7'-9"	4'-10"	6'-4"	4'-0"	5'-3"	3'-7"	4'-8"	3'-2"	4'-1"	2'-8"	3'-6"	2'-3"	2'-11"	1'-10"	2'-4"
		BOTTOM	4'-7"	5'-11"	3'-9"	4'-10"	3'-1"	4'-0"	2'-9"	3'-7"	2'-5"	3'-2"	2'-1"	2'-8"	1'-9"	2'-3"	1'-5"	1'-10"
	4000	TOP	5'-2"	6'-8"	4'-2"	5'-5"	3'-6"	4'-7"	3'-1"	4'-0"	2'-9"	3'-6"	2'-4"	3'-0"	1'-11"	2'-6"	1'-7"	2'-0"
OR ANY BAR WITH COVER > 2XBAR DIAM. SPACING > 6XBAR DIAM.		BOTTOM	4'-0"	5'-2"	3'-3"	4'-2"	2'-8"	3'-6"	2'-5"	3'-1"	2'-1"	2'-9"	1'-10"	2'-4"	1'-6"	1'-11"	1'-3"	1'-7"
	5000	TOP	4'-7"	6'-0"	3'-9"	4'-11"	3'-2"	4'-1"	2'-9"	3'-7"	2'-5"	3'-2"	2'-1"	2'-9"	1'-9"	2'-3"	1'-5"	1'-10"
		BOTTOM	3'-7"	4'-7"	2'-11"	3'-9"	2'-5"	3'-2"	2'-2"	2'-9"	1'-11"	2'-5"	1'-7"	2'-1"	1'-4"	1'-9"	1'-1"	1'-5"
BEAMS, COLUMNS AND INNER LAYER OF WALLS OR SLABS WITH COVER > BAR DIAM. SPACING > 4XBAR DIAM.	3000	TOP	7'-5"	9'-8"	6'-1"	7'-10"	4'-9"	6'-2"	3'-9"	4'-11"	3'-2"	4'-1"	2'-8"	3'-6"	2'-3"	2'-11"	1'-10"	2'-4"
		BOTTOM	5'-9"	7'-5"	4'-8"	6'-1"	3'-8"	4'-9"	2'-11"	3'-9"	2'-5"	3'-2"	2'-1"	2'-8"	1'-9"	2'-3"	1'-5"	1'-10"
	4000	TOP	6'-5"	8'-4"	5'-3"	6'-10"	4'-2"	5'-4"	3'-3"	4'-3"	2'-9"	3'-6"	2'-4"	3'-0"	1'-11"	2'-6"	1'-7"	2'-0"
OR ANY BAR WITH COVER > 2XBAR DIAM. SPACING > 4XBAR DIAM.		BOTTOM	4'-11"	6'-5"	4'-0"	5'-3"	3'-2"	4'-2"	2'-6"	3'-3"	2'-1"	2'-9"	1'-10"	2'-4"	1'-6"	1'-11"	1'-3"	1'-7"
	5000	TOP	5'-9"	7'-6"	4'-8"	6'-1"	3'-8"	4'-10"	2'-11"	3'-10"	2'-5"	3'-2"	2'-1"	2'-9"	1'-9"	2'-3"	1'-5"	1'-10"
		BOTTOM	4'-5"	5'-9"	3'-7"	4'-8"	2'-10"	3'-8"	2'-3"	2'-11"	1'-11"	2'-5"	1'-7"	2'-1"	1'-4"	1'-9"	1'-1"	1'-5"
ANY BAR (EXCLUDING BEAMS, COLUMNS AND INNER LAYER OF WALLS OR SLABS) WITH	3000	TOP	8'-4"	10'-10"	6'-9"	8'-10"	5'-4"	6'-11"	4'-3"	5'-6"	3'-3"	4'-2"	2'-8"	3'-6"	2'-3"	2'-11"	1'-10"	2'-4"
		BOTTOM	6'-5"	8'-4"	5'-3"	6'-9"	4'-1"	5'-4"	3'-3"	4'-3"	2'-6"	3'-3"	2'-1"	2'-8"	1'-9"	2'-3"	1'-5"	1'-10"
	4000	TOP	7'-2"	9'-4"	5'-10"	7'-8"	4'-8"	6'-0"	3'-8"	4'-9"	2'-9"	3'-7"	2'-4"	3'-0"	1'-11"	2'-6"	1'-7"	2'-0"
COVER > BAR DIAM. SPACING > 6XBAR DIAM.		BOTTOM	5'-7"	7'-2"	4'-6"	5'-10"	3'-7"	4'-8"	2'-10"	3'-8"	2'-2"	2'-9"	1'-10"	2'-4"	1'-6"	1'-11"	1'-3"	1'-7"
	5000	TOP	6'-5"	8'-5"	5'-3"	6'-10"	4'-2"	5'-5"	3'-3"	4'-3"	2'-6"	3'-3"	2'-1"	2'-9"	1'-9"	2'-3"	1'-5"	1'-10"
		BOTTOM	5'-0"	6'-5"	4'-1"	5'-3"	3'-2"	4'-2"	2'-6"	3'-3"	1'-11"	2'-6"	1'-7"	2'-1"	1'-4"	1'-9"	1'-1"	1'-5"
ANY BAR WITH COVER > BAR DIAM. SPACING > 3XBAR DIAM.	3000	TOP	10'-5"	13'-6"	8'-6"	11'-0"	6'-8"	8'-8"	5'-3"	6'-10"	4'-0"	5'-3"	2'-11"	3'-10"	2'-3"	2'-11"	1'-10"	2'-4"
		BOTTOM	8'-0"	10'-5"	6'-6"	8'-6"	5'-2"	6'-8"	4'-1"	5'-3"	3'-1"	4'-0"	2'-3"	2'-11"	1'-9"	2'-3"	1'-5"	1'-10"
	4000	TOP	9'-0"	11'-8"	7'-4"	9'-6"	5'-9"	7'-6"	4'-7"	5'-11"	3'-6"	4'-6"	2'-7"	3'-4"	1'-11"	2'-6"	1'-7"	2'-0"
		BOTTOM	6'-11"	9'-0"	5'-8"	7'-4"	4'-5"	5'-9"	3'-6"	4'-7"	2'-8"	3'-6"	2'-0"	2'-7"	1'-6"	1'-11"	1'-3"	1'-7"
	5000	TOP	8'-1"	10'-6"	6'-7"	8'-6"	5'-2"	6'-9"	4'-1"	5'-4"	3'-1"	4'-0"	2'-3"	3'-0"	1'-9"	2'-3"	1'-5"	1'-10"
		BOTTOM	6'-2"	8'-1"	5'-1"	6'-7"	4'-0"	5'-2"	3'-2"	4'-1"	2'-5"	3'-1"	1'-9"	2'-3"	1'-4"	1'-9"	1'-1"	1'-5"

REINFORCING BAR TENSION SPLICE LENGTH (GRADE 60)

NOTES:

1. BAR SPLICES NOT COVERED BY THIS SCHEDULE ARE SPECIFICALLY DETAILED AND DIMENSIONED ON PLANS.
2. FOR TENSION DEVELOPMENT LENGTHS " Ld ", USE CLASS "A" SPLICE LENGTHS.
3. ALL SPLICES SHALL BE CLASS "B" UNLESS NOTED OTHERWISE ON PLANS.
4. TOP BARS ARE HORIZONTAL REINFORCEMENT WITH MORE THAN 12" OF CONCRETE CAST BELOW BAR.
5. BOTTOM BARS ARE VERTICAL REINFORCEMENT, AND HORIZONTAL REINFORCEMENT WITH LESS THAN 12" OF CONCRETE CAST BELOW BAR.
6. FOR LIGHTWEIGHT CONCRETE MULTIPLY THE SPLICES SHOWN BY 1.3
7. COVER DESIGNATES CLEAR CONCRETE COVER FROM SPLICED BAR TO FACE OF MEMBER. SPACING DESIGNATES CENTER - TO - CENTER SPACING OF SPLICED BARS.

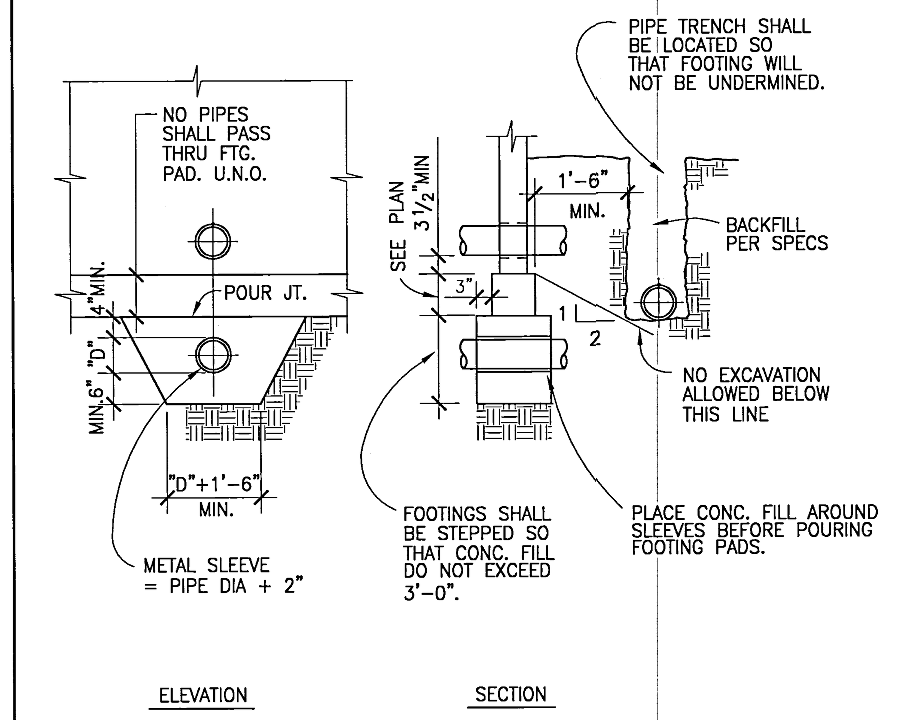
CONCRETE REINFORCING SPLICE SCHEDULE 1"=1'-0" 15



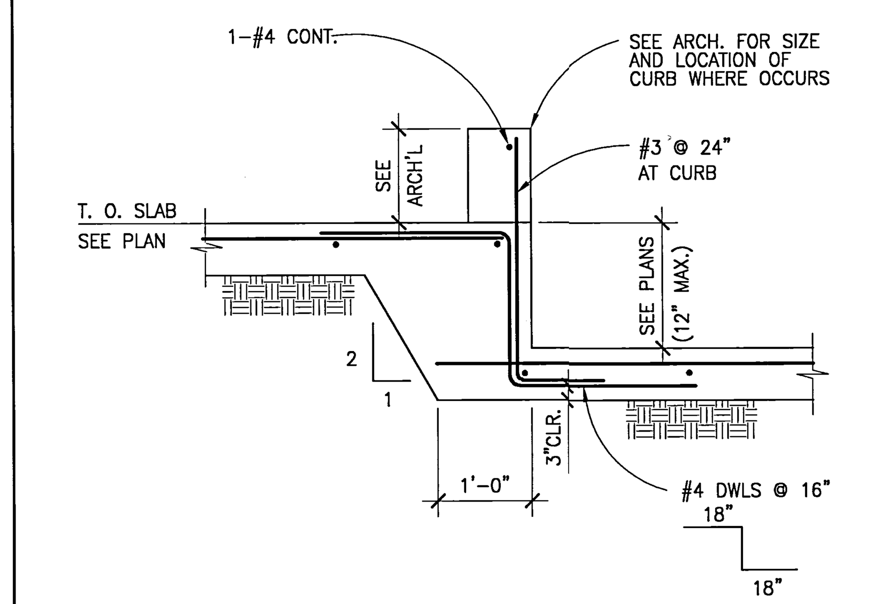
BAR SIZE	D'
#3	1½"
#4	2"
#5	2½"

BAR SIZE	D
#3 THRU #8	6d
#9 THRU #11	8d
#14 THRU #18	10d

REINFORCING BAR BENDING DETAIL 1"=1'-0" 11



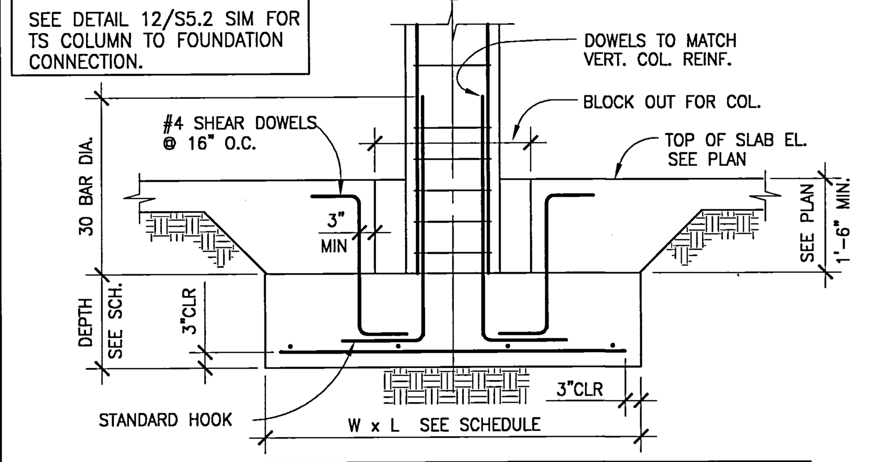
PIPE TRENCH/FOOTING DETAIL 1"=1'-0" 7



STEP IN SLAB ON GRADE 1"=1'-0" 3

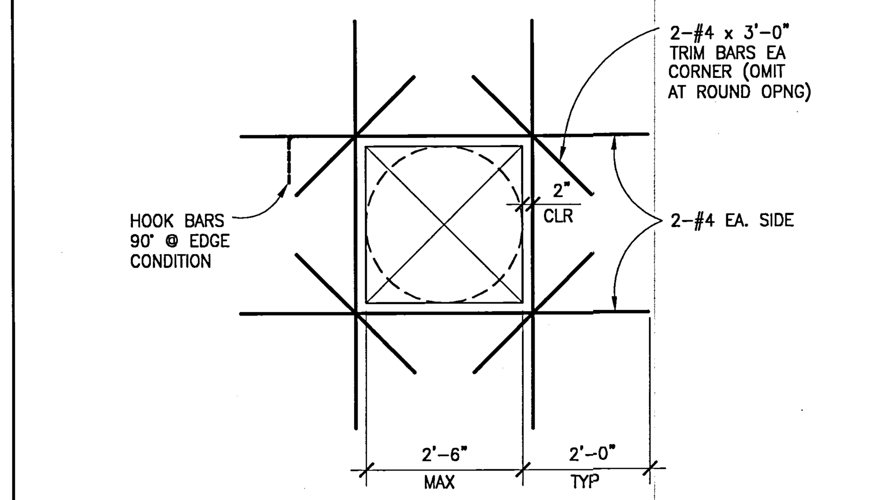
NOTE:

SEE DETAIL 12/S5.2 SIM FOR TS COLUMN TO FOUNDATION CONNECTION.



FOOTING SCHEDULE					
MARK	SIZE		REINFORCING		REMARKS
	DEPTH	W x L	SHORT BAR	LONG BAR	
F1	1'-6"	8'-0" SQ.	(7) #8	(7) #8	–
F2	1'-9"	10'-0" SQ.	(10) #8	(10) #8	–
F3	1'-6"	7'-0" SQ.	(6) #8	(6) #8	–
F4	1'-6"	5'-0" SQ.	(5) #7	(5) #7	–
F5	1'-6"	14'-0"x6'-0"	(11) #8 T&B	(6) #10 T&B	T&B REINFORCING
					–

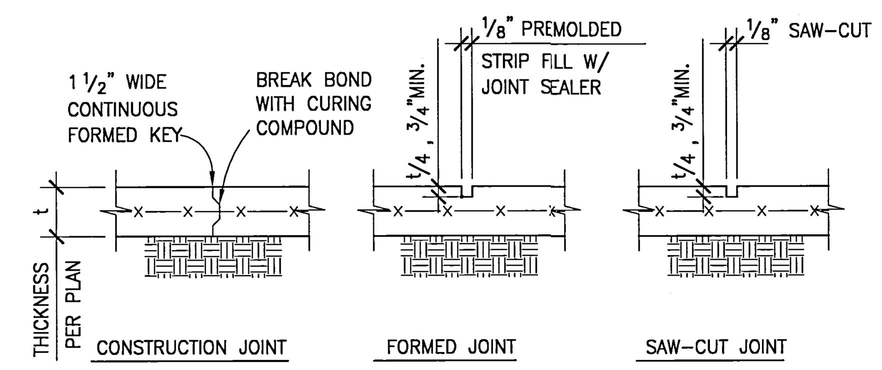
SPREAD FTG DET./SCHED. @ CONC. COL. ½"=1'-0" 12



NOTES:

1. SEE WALL ELEVATIONS OR PLANS FOR REINFORCEMENT AT LARGER OPENINGS.
2. CLUSTERS OF SMALL HOLES WHOSE OVERALL MEASUREMENT EXCEED 1'-0" SHOULD BE REINFORCED AS ONE OPENING.
3. NO OPENING IN SLAB TO BE LOCATED CLOSER THAN 2'-0" FROM COLUMN FACE UNLESS APPROVED BY THE STRUCTURAL ENGINEER.

CONCRETE WALL/SLAB OPENING DETAIL ½"=1'-0" 8



NOTES:
1. CONTROL JOINTS TO BE LOCATED AT COLUMN CENTER LINES AND AT 20'-0" O.C. MAX. AND EVERY 400 SQUARE FEET.
2. IF SAW-CUT CONTROL JOINT TO BE USED, SAW-CUT WITHIN 24 HOURS OF POUR.
3. CONSTRUCTION JOINT TO BE LOCATED AS PER NOTES #1 AND #2 UNLESS SPECIFICALLY INDICATED ON PLANS.

SLAB ON GRADE CONTROL JOINTS 1"=1'-0" 4

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
☎ 310.586.5400
℻ 310.586.1091

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Project North

Drawing Title

TYPICAL CONCRETE DETAILS

Scale: AS SHOWN

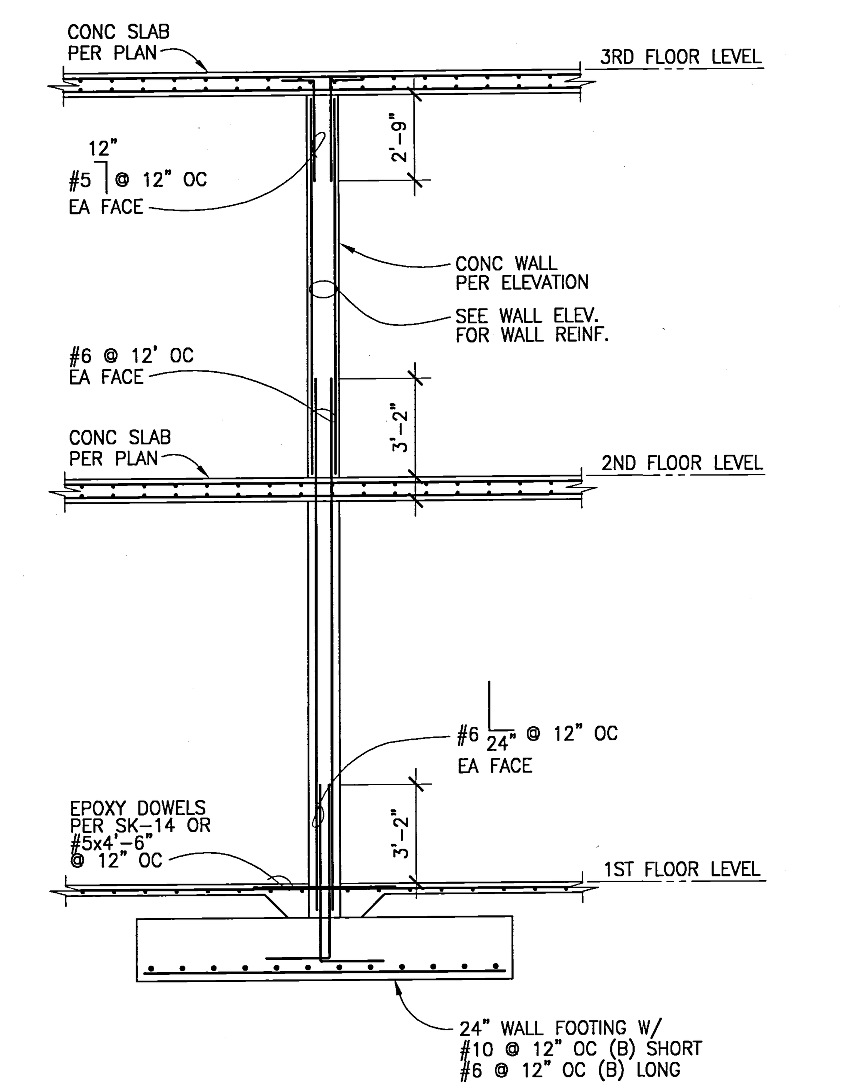
Project Number: 1001071

Baseline Date: 6 OCT 00

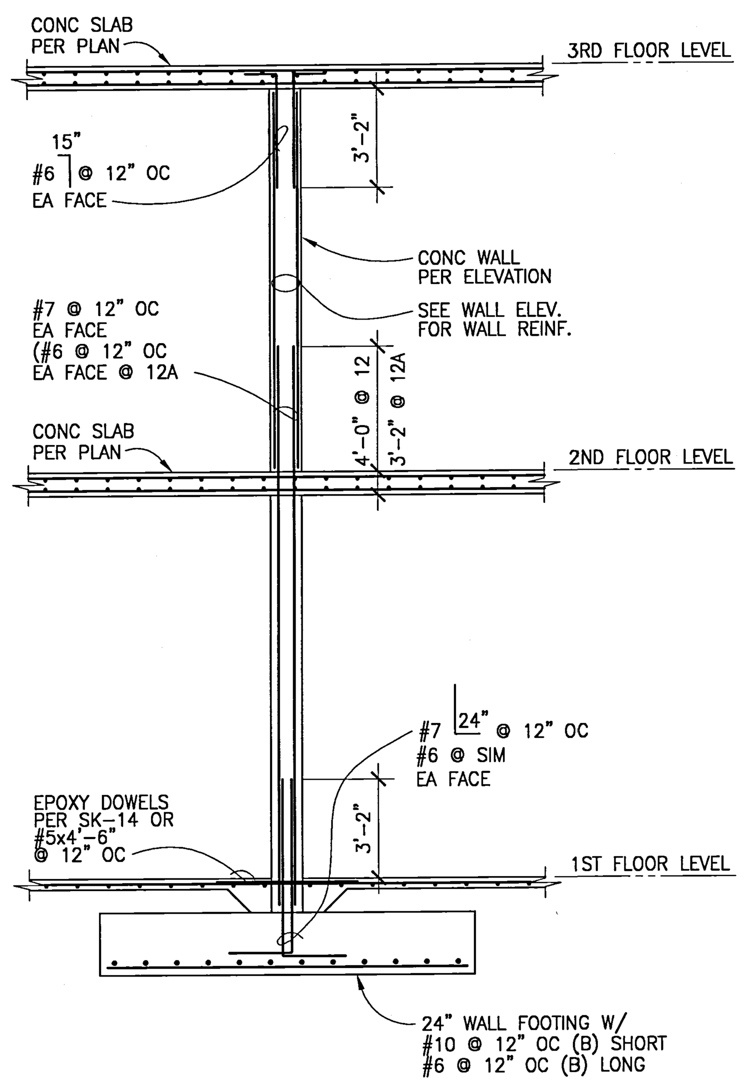
Drawing Number: S6.1

NOTES: | JOB #: 1001071 | 1071B NAME: UCR SURGE | FILE PATH & NAME: P:\2000\1001071-UCR\SDRAFT\S6-1.DWG | PLOTTED DATE & TIME: MAY. 04, 2000 4:19:38 PM | UPDATED BY: TONY TAM | PLOT SCALE: 1=1 | PROG.MG.: R.H | DRAFTER: TONY TAM

XREFS: 1071B_S4-1

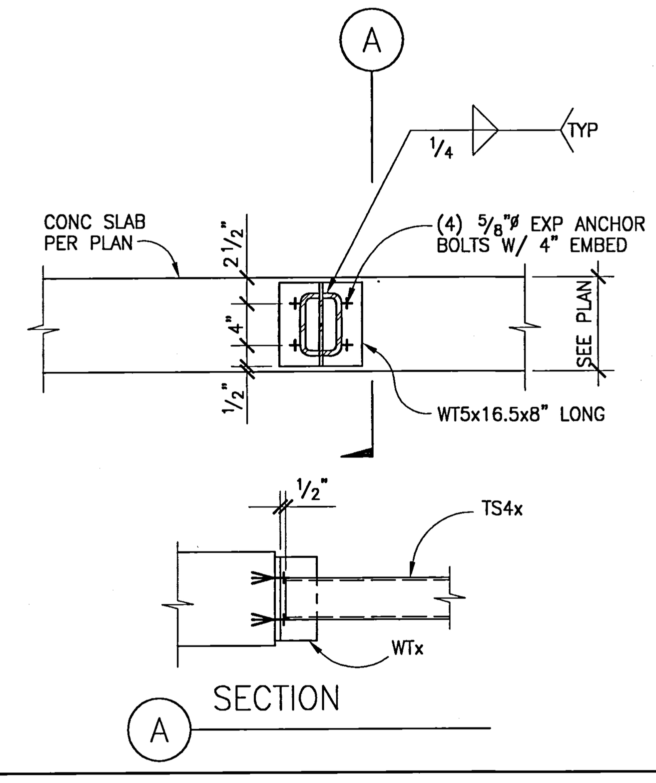


WALL SECTION AT GRID LINE 2 & 3 — $1/4"=1'-0"$ — 14



12A

WALL SECTION AT GRID LINE N & J (GRID LINE D & G AT 12A) $1/4"=1'-0"$ — 12



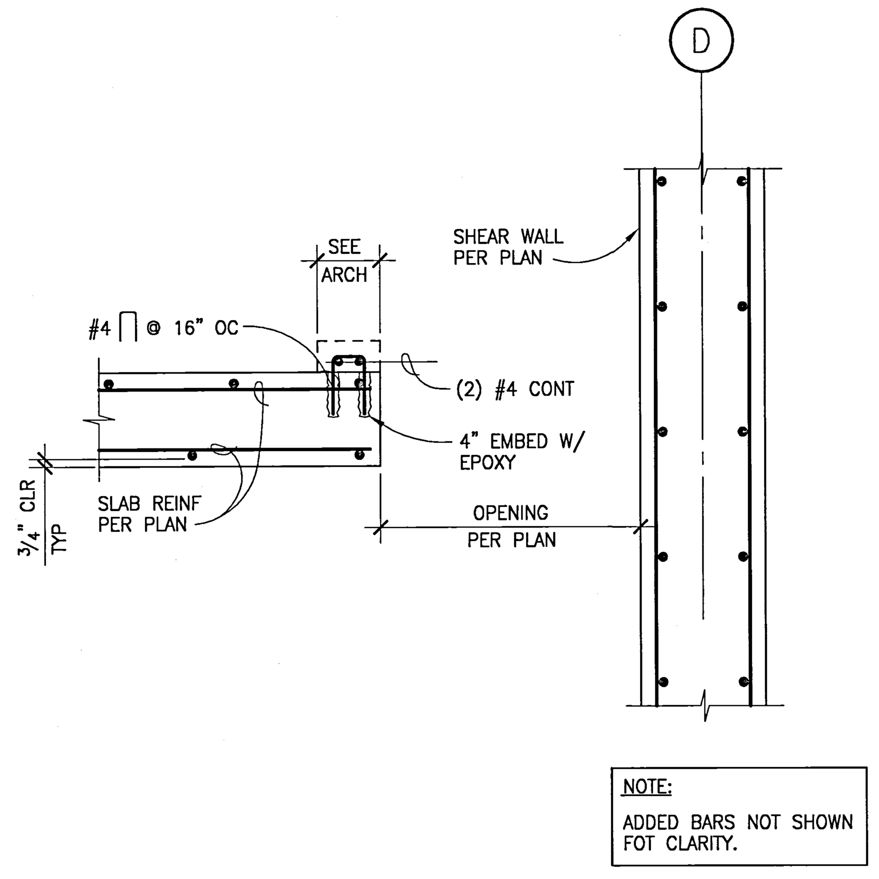
BEAM CONNECTION DETAIL AT SHAFT WALL — $1"=1'-0"$ — 8

CONCRETE BEAM AND GIRDER SCHEDULE

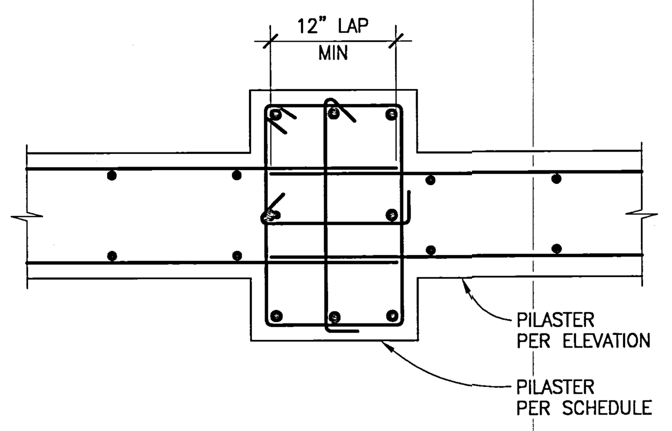
MARK	SIZE WIDTH	SIZE DEPTH	℄ SUPPORT		℄ SUPPORT	* STIRRUPS/ TIES	REMARKS
B-1	16"	24"	(3) #8	(2) #6, (2) #8	(3) #8	#4 @ 6" OC	
B-2	24"	24"	(2) #8	(2) #6, (3) #8	(2) #8	#4 @ 6" OC	
B-4	16"	40"	(2) #11	(2) #11, (3) #11	(3) #11	#4 @ 6" OC	

* USE STIRRUPS WHERE TIES ARE NOT SPECIFICALLY SPECIFIED

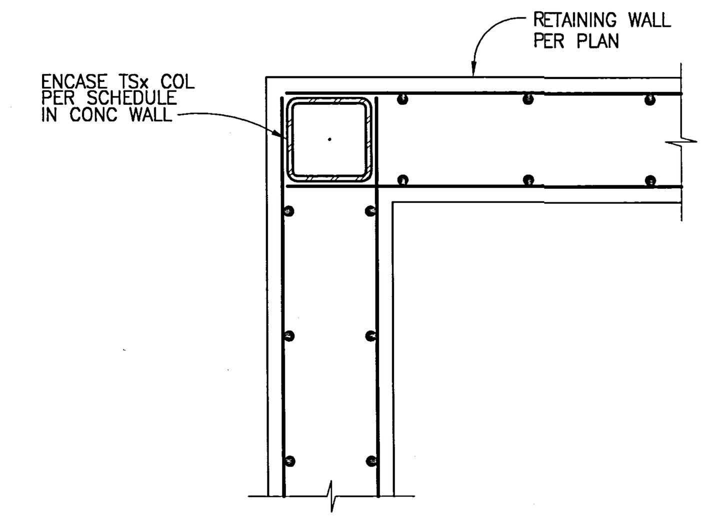
CONCRETE BEAM SCHEDULE — NONE — 1



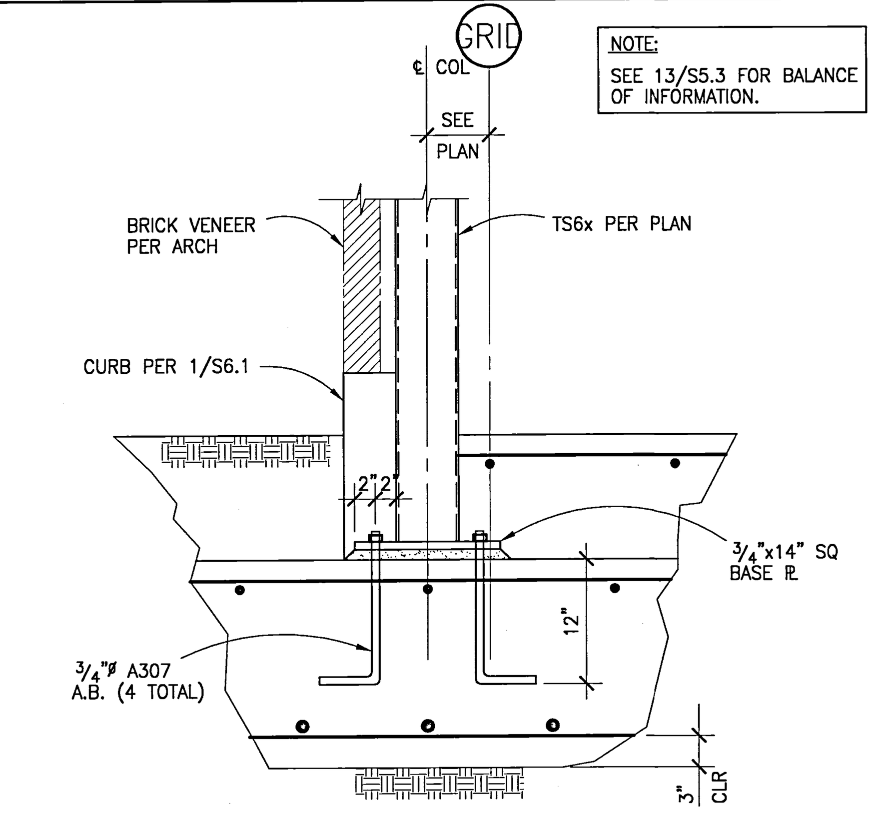
CONCETE CURB AT EDGE OF OPENING — $1"=1'-0"$ — 9



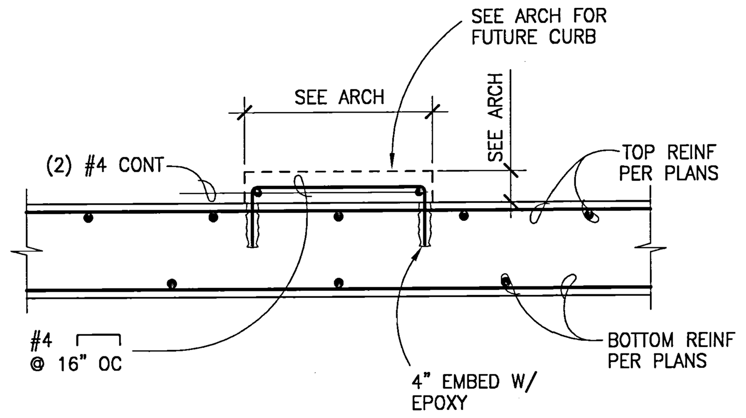
SHEARWALL BOTH SIDES OF PILASTER — $1"=1'-0"$ — 5



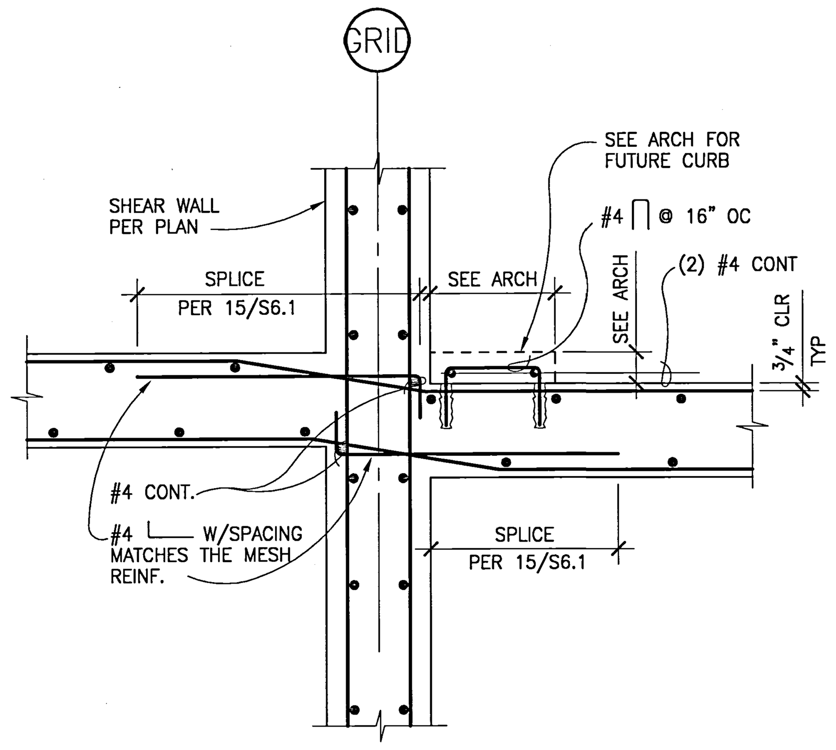
DETAIL AT CORNER TS COLUMN — $1"=1'-0"$ — 2



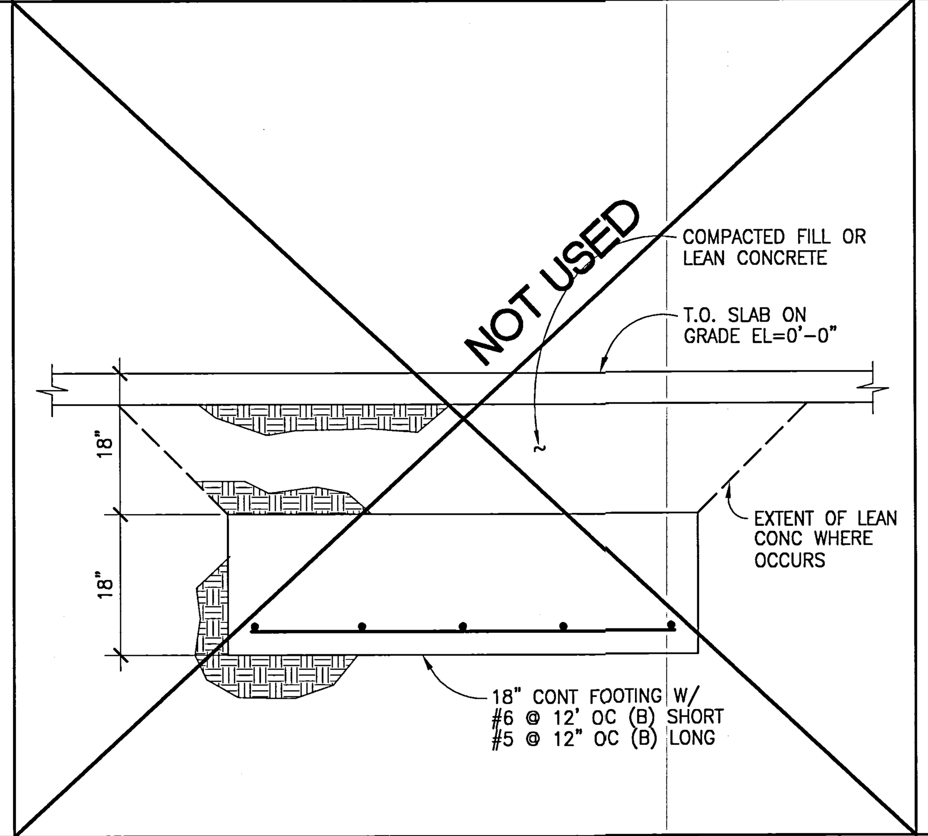
CANTILEVERED COLUMN FOUNDATION DETAIL — $1"=1'-0"$ — 15



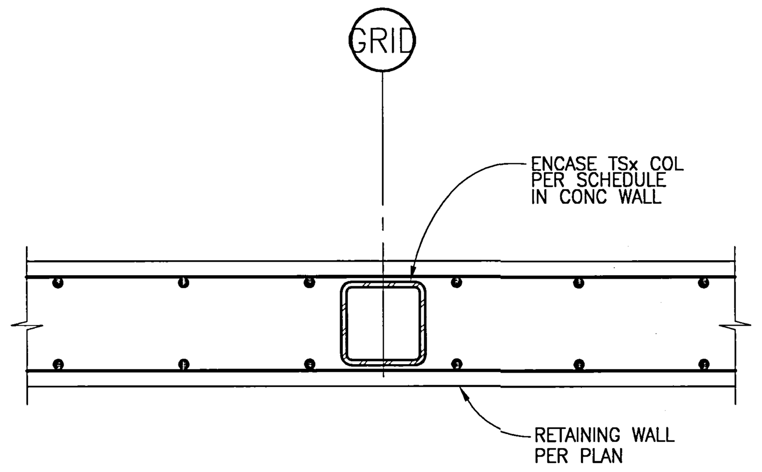
FLOOR CURB DETAIL — $1"=1'-0"$ — 13



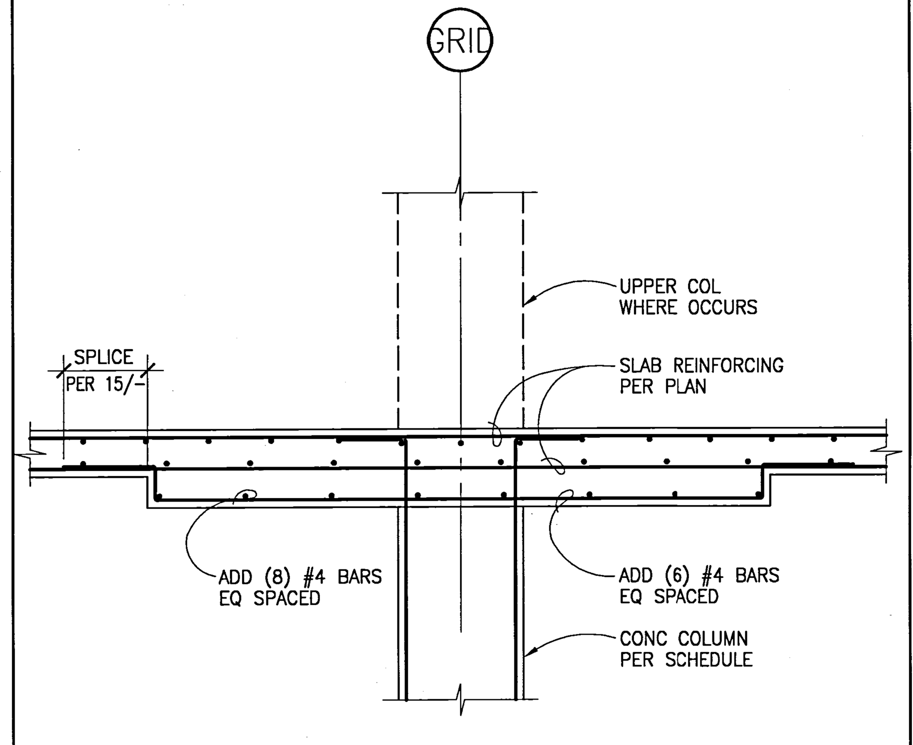
FLOOR DROP AT WALLS — $1"=1'-0"$ — 10



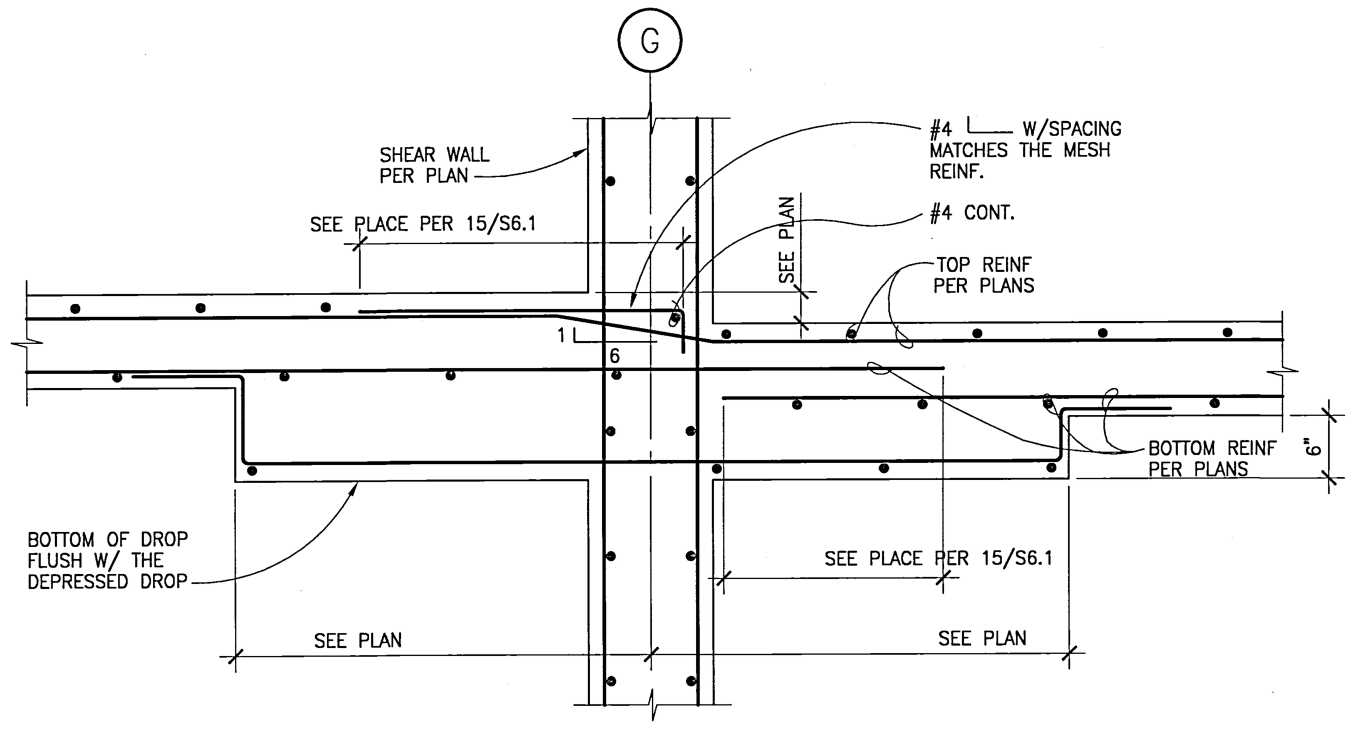
TYP AUDITORIUM FRAME FOOTING DETAIL — $3/4"=1'-0"$ — 6



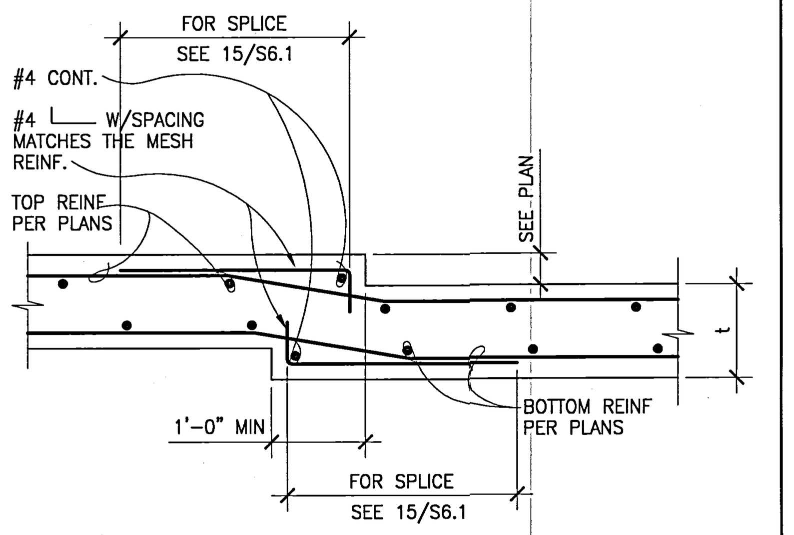
TYP DETAIL AT ENCASED TS COLUMN — $1"=1'-0"$ — 3



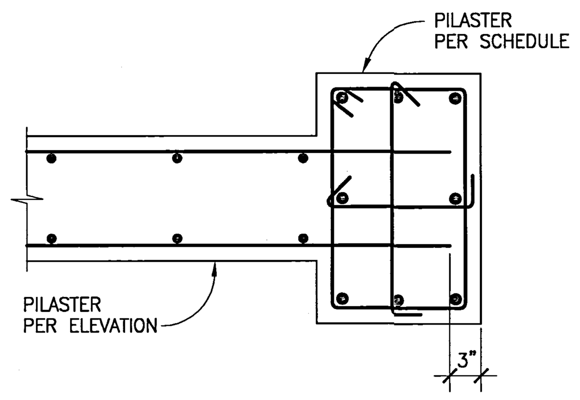
TYPICAL DROP PANEL DETAIL — $1/2"=1'-0"$ — 16



DROP PANEL AT SLAB DEPRESSION — $1"=1'-0"$ — 11



TYP DEPRESSION DETAIL — $1"=1'-0"$ — 7



SHEARWALL-PILASTER INTERFACE — $1"=1'-0"$ — 4

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NOTES: | JOB # 1001071 | 10711B NAME UCR SURGE | FILE PATH & NAME P:\2000\1001071-UCR\SDRAFT\S6-2.DWG | PLOTTED DATE & TIME MAY. 04, 2000 4:19:35 PM | UPDATED BY TONY TAM | PLOT SCALE 1=1 | PROG.MG. R.H | DRAFTER TONY TAM

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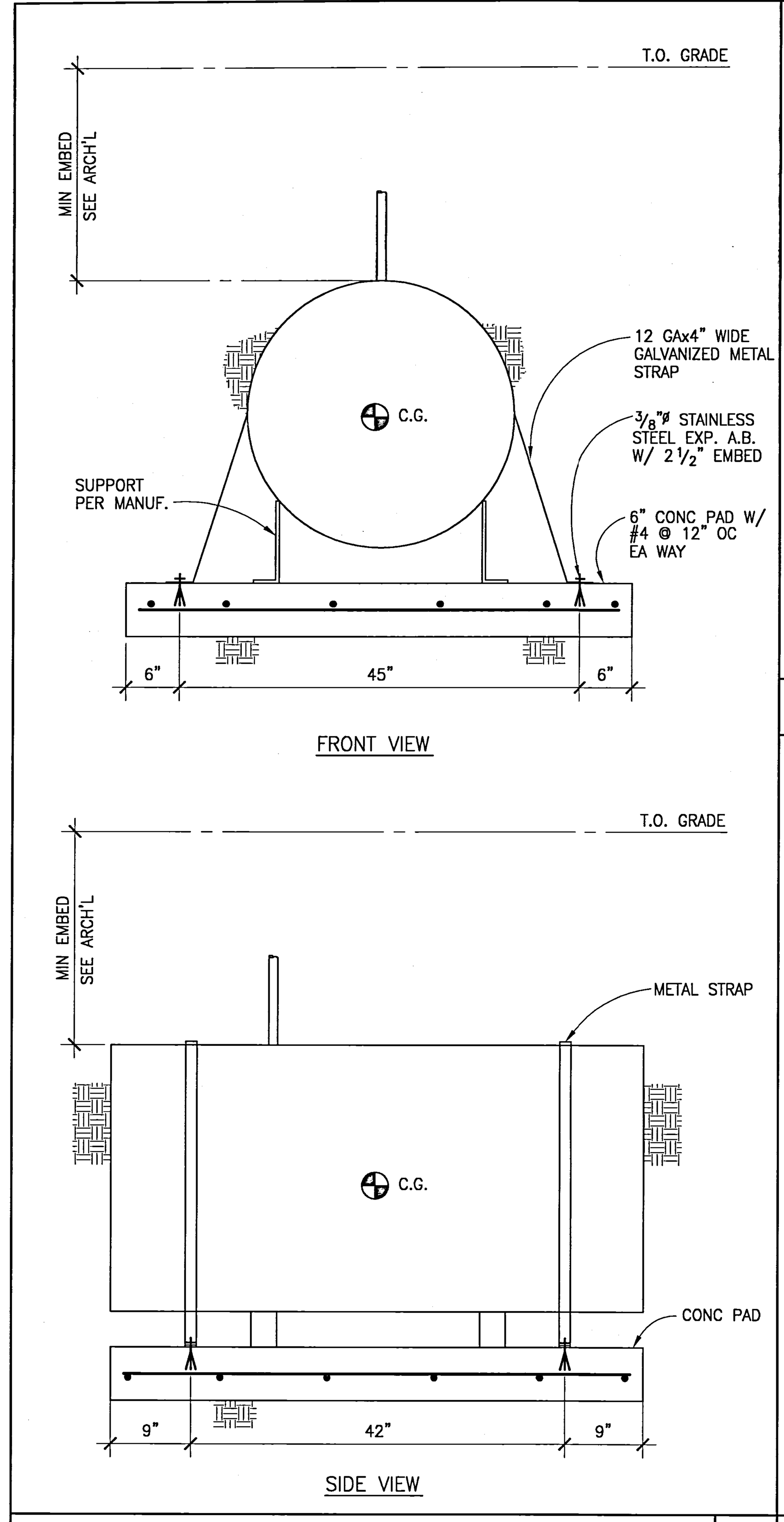
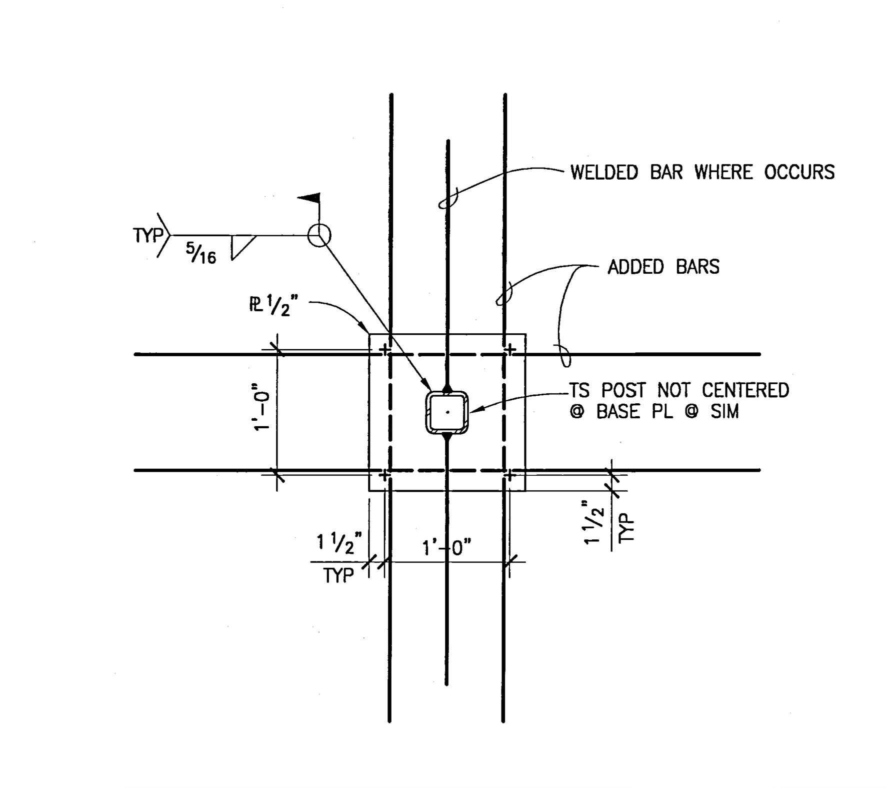
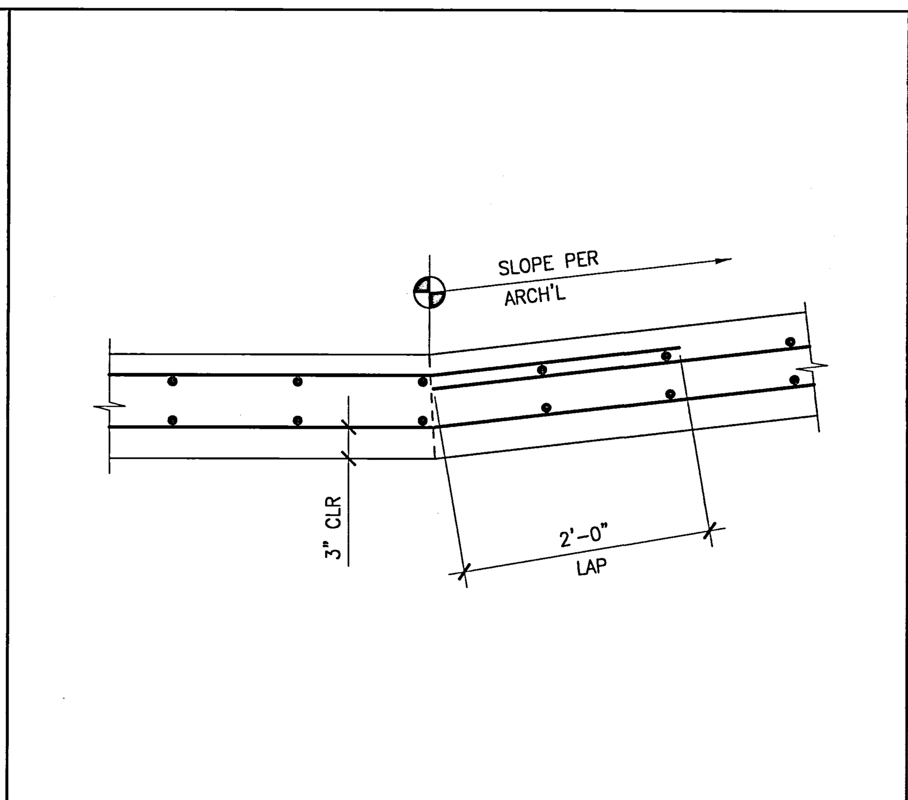


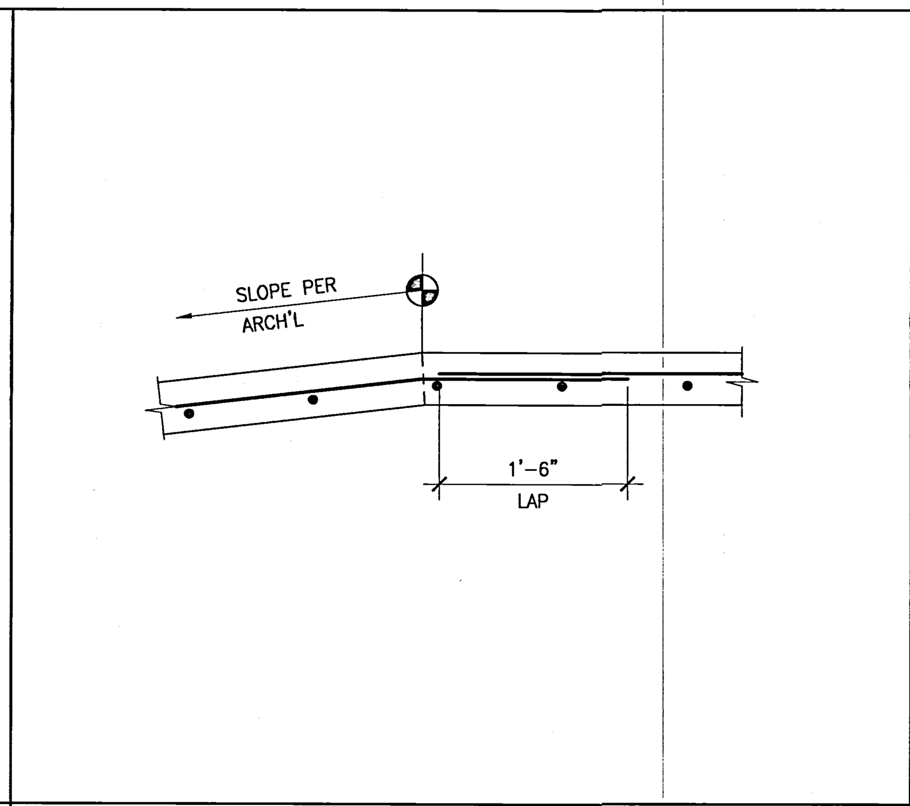
UNDERGROUND TANK 1"=1'-0" 13



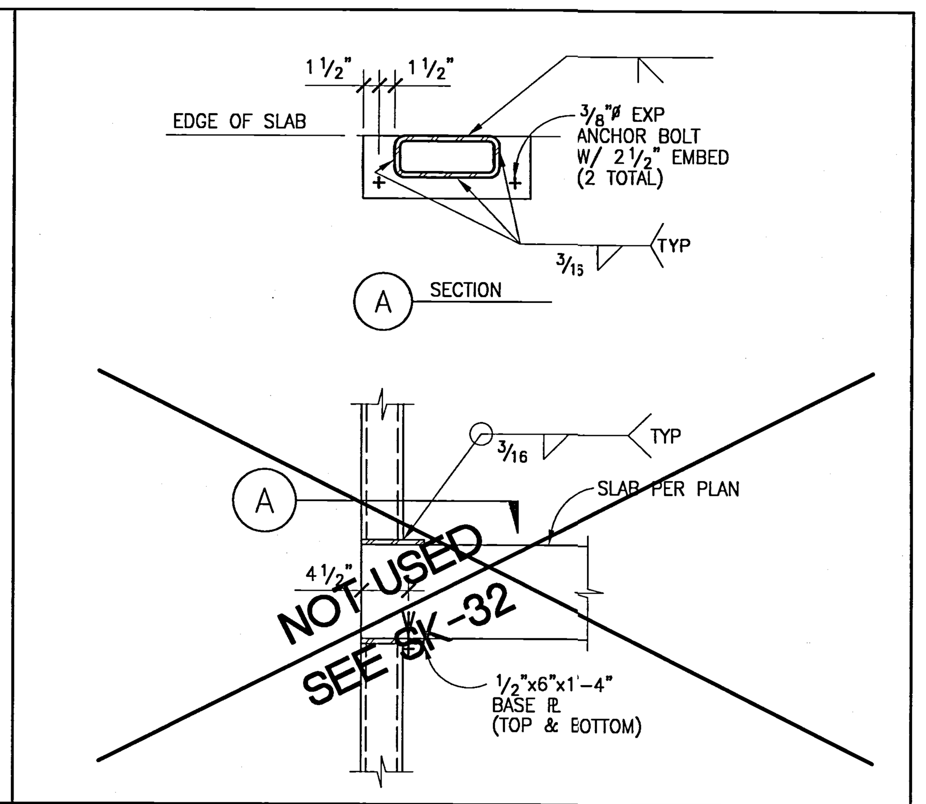
PLAN - BASE PLATE DETAIL 1"=1'-0" 11



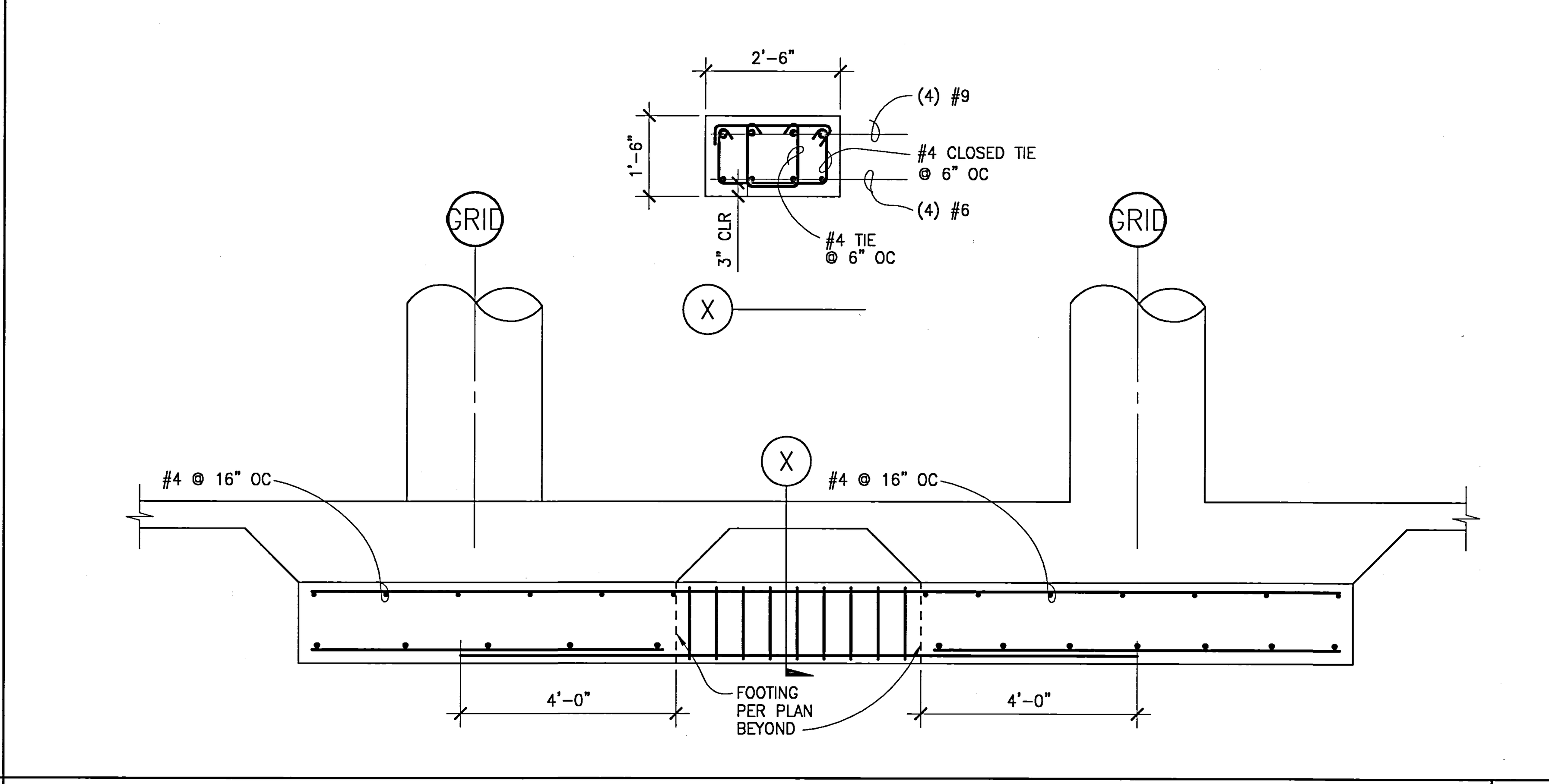
SLOPE CHANGE ON STRUCTURAL SLAB 1"=1'-0" 8



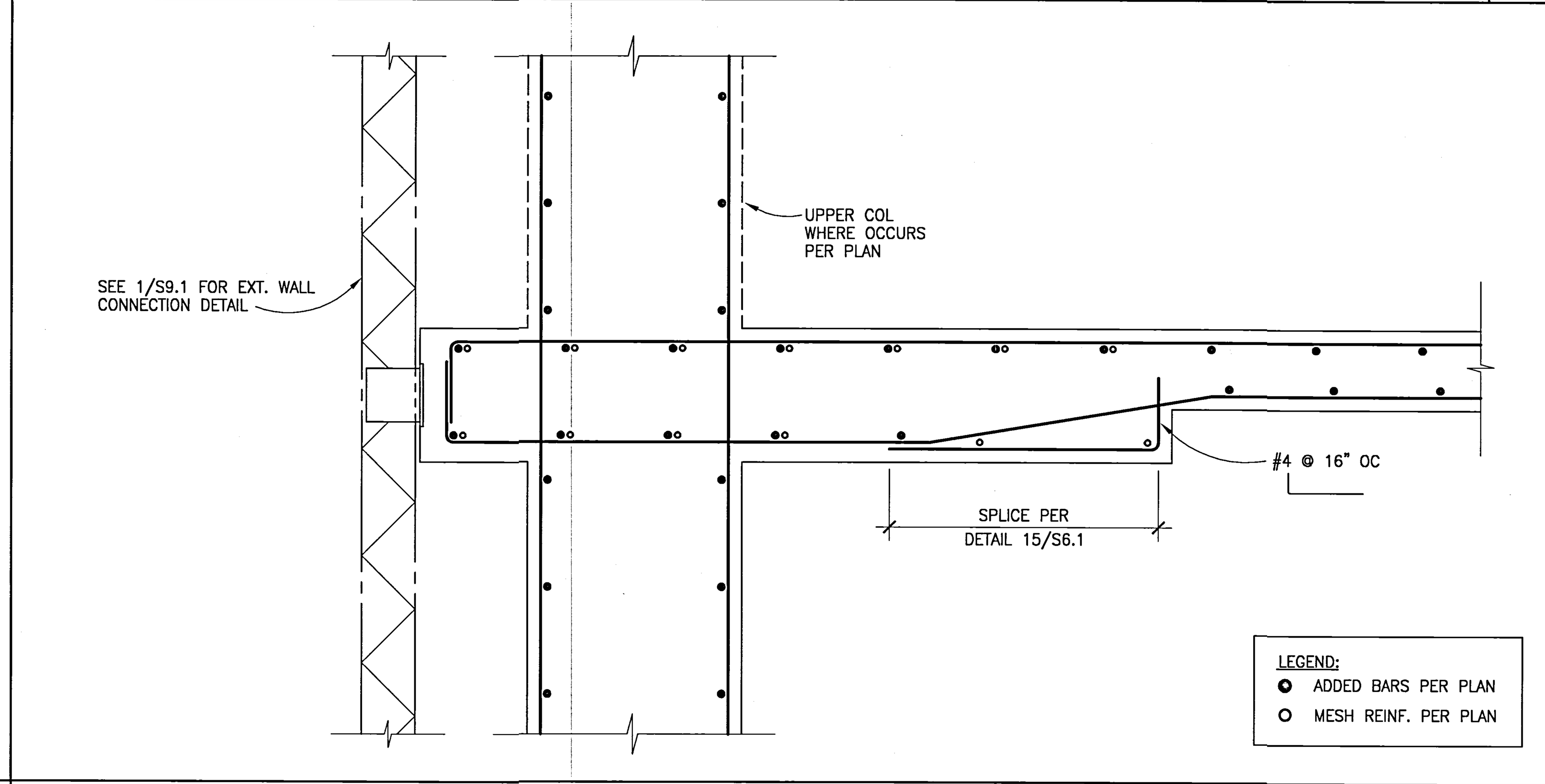
SLOPE CHANGE ON STRUCTURAL SLAB 1"=1'-0" 5



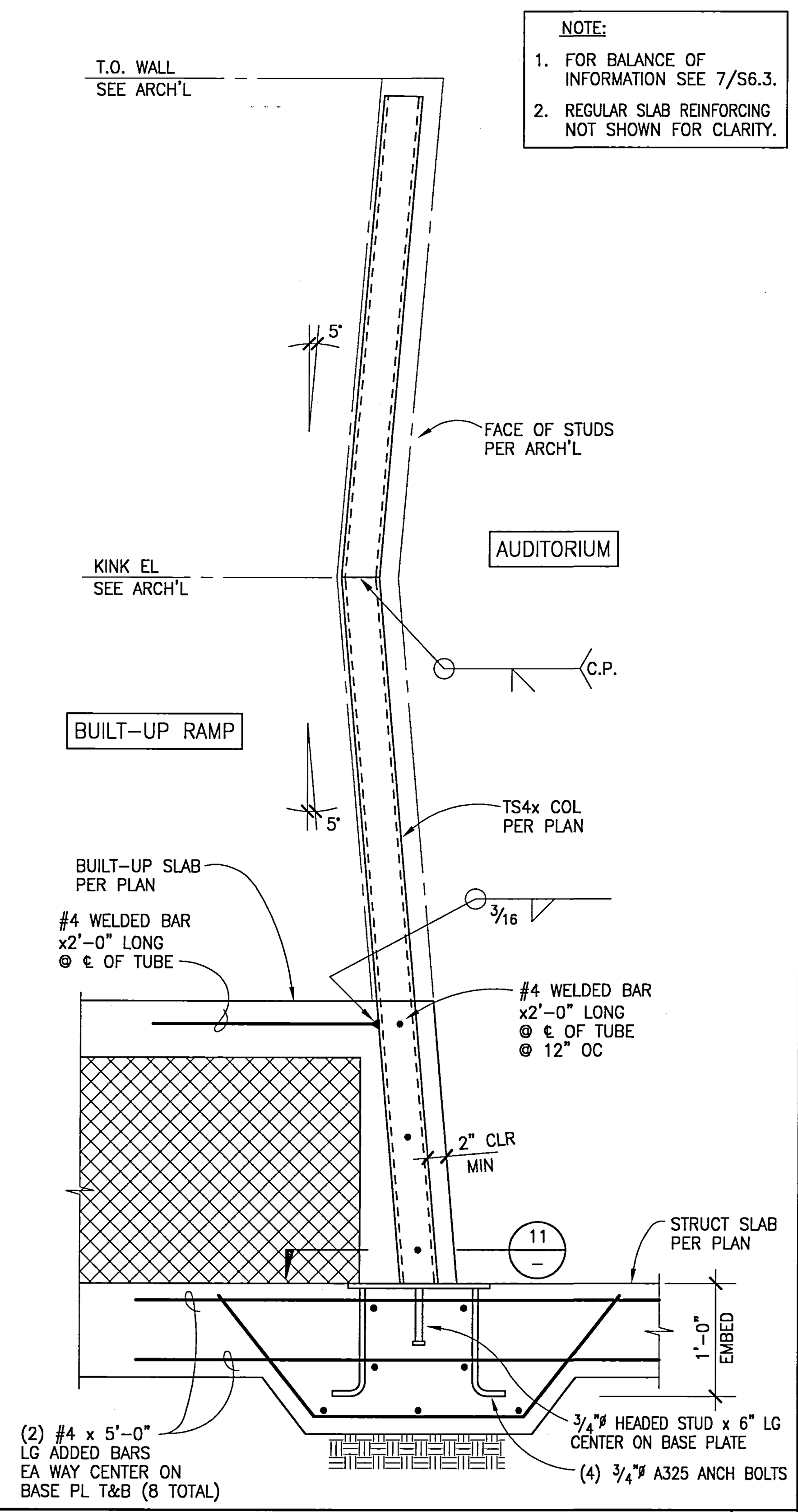
ELEVATOR GUIDE RAIL ANCHORAGE DETAIL 1"=1'-0" 1



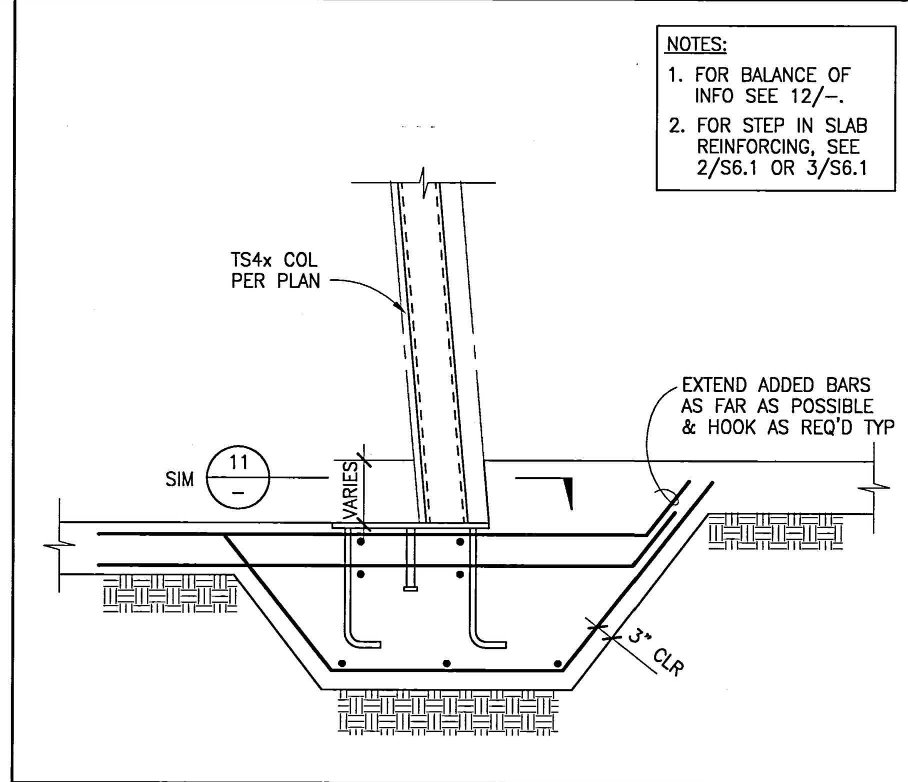
TIE BEAM DETAIL 1/2"=1'-0" 9



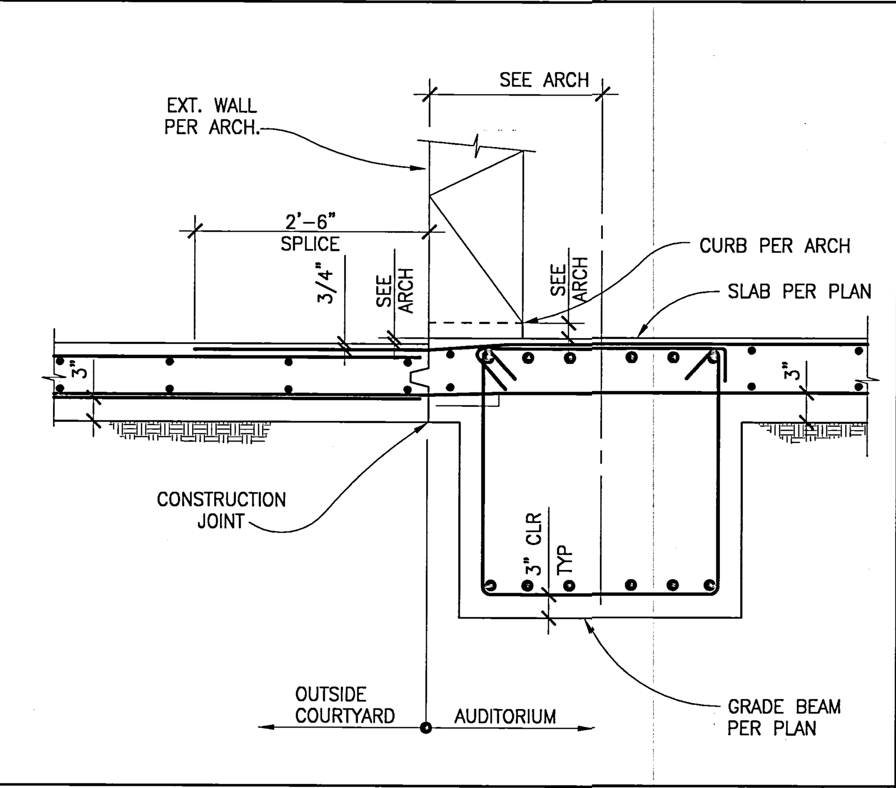
THICKENED SLAB SECTION ALONG GRIDLINE 1 1"=1'-0" 2



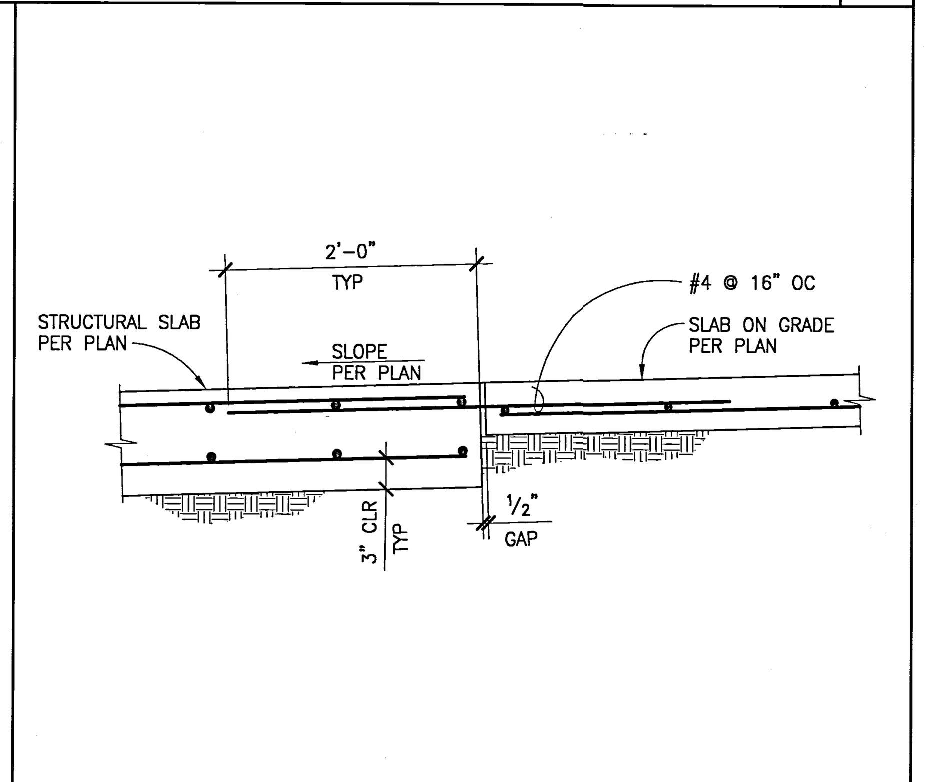
WALL DETAIL AT RAMP 1"=1'-0" 12



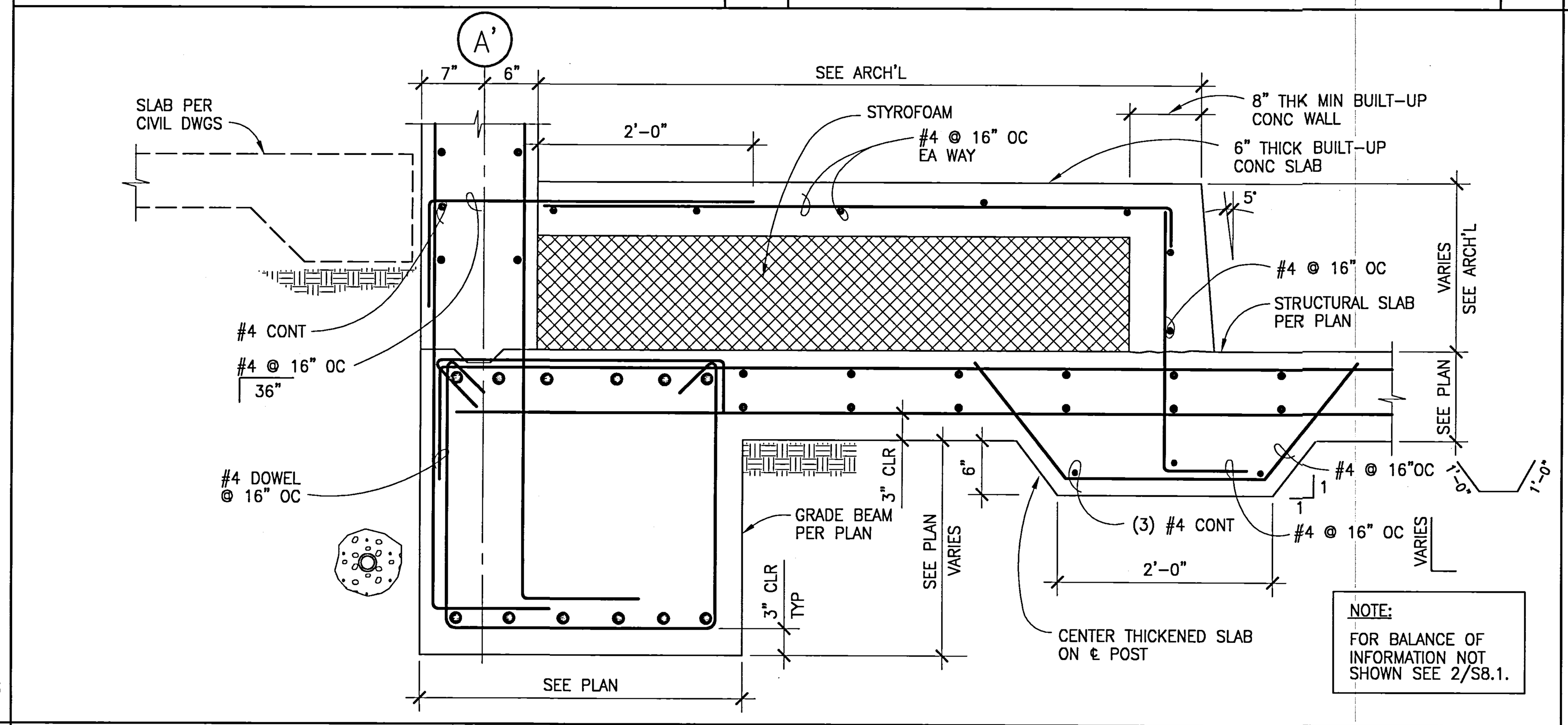
WALL DETAIL AT RAMP 1"=1'-0" 10



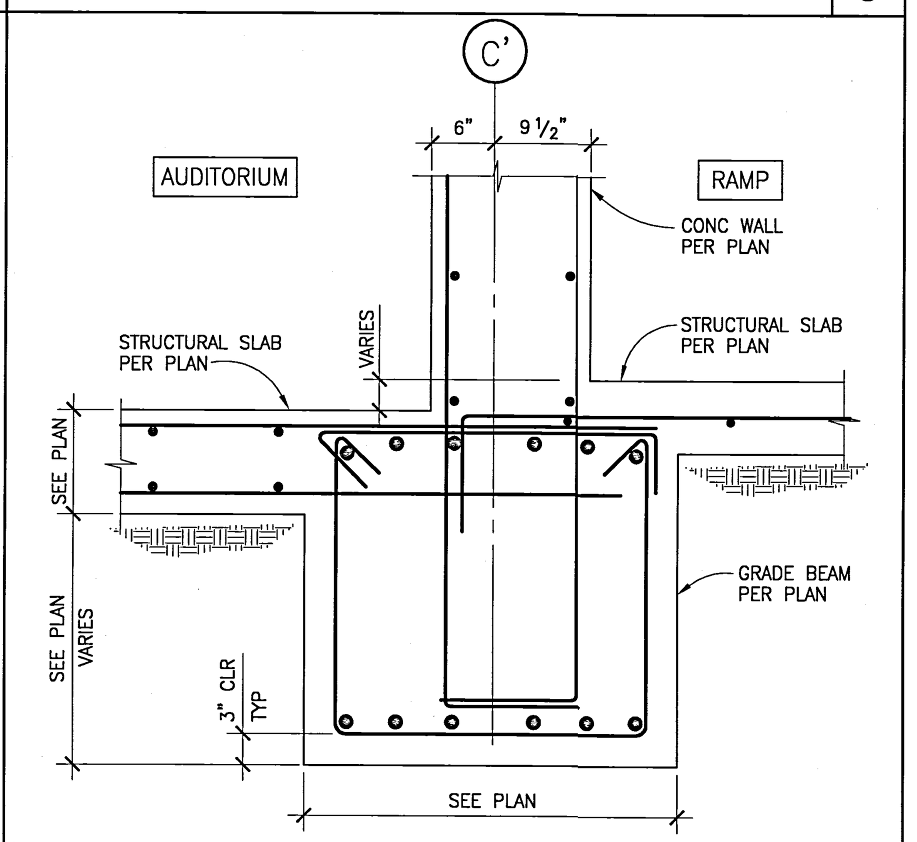
SLAB TRANSITION DETAIL 3/4"=1'-0" 6



SLAB JOINT DETAIL 1"=1'-0" 3



SECTION 1"=1'-0" 7



SECTION 1"=1'-0" 4

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NOTES:	JOB #	10716 NAME	FILE PATH & NAME	PLOTTED DATE & TIME	UPDATED BY	PLOT SCALE	PROG.MG.	DRAFTER
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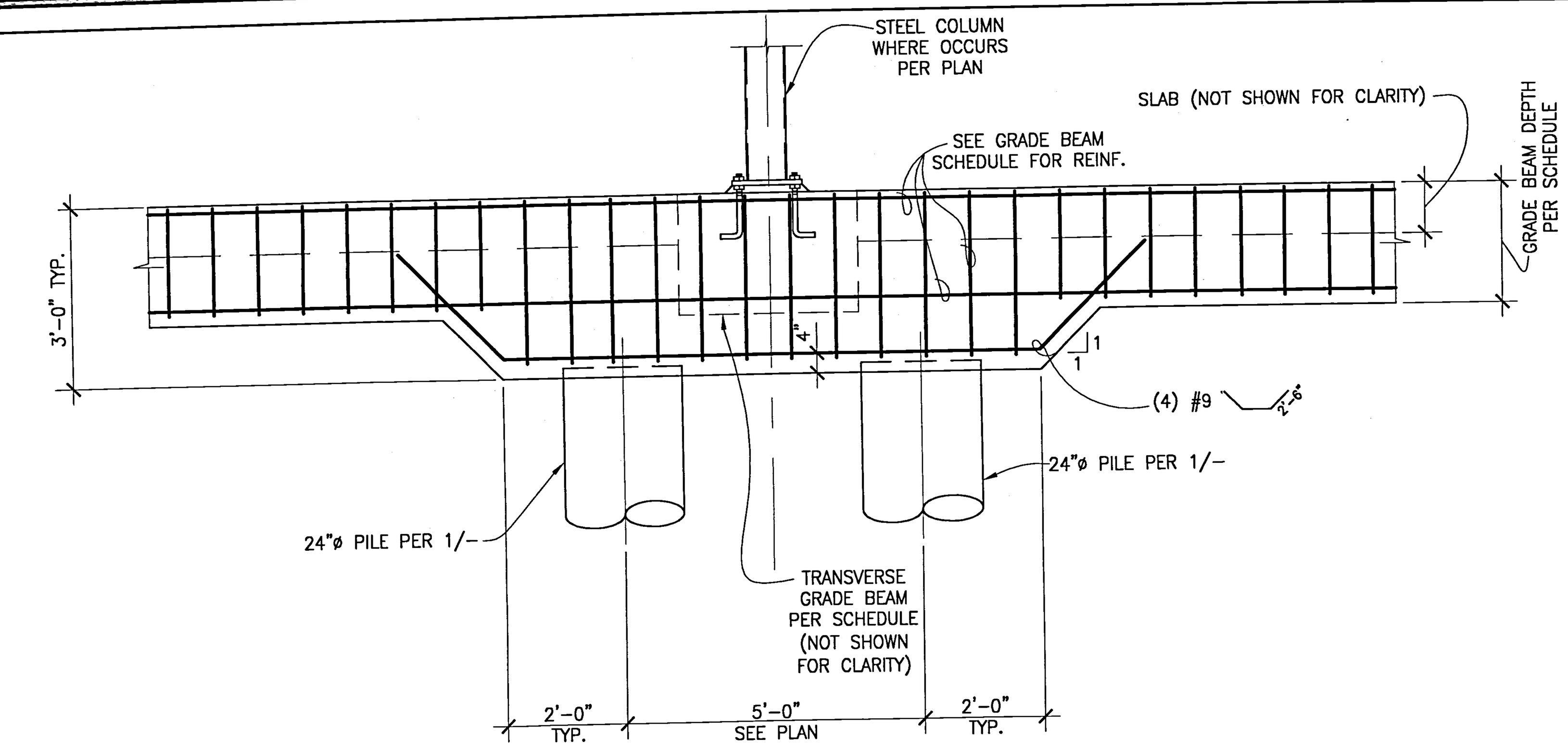
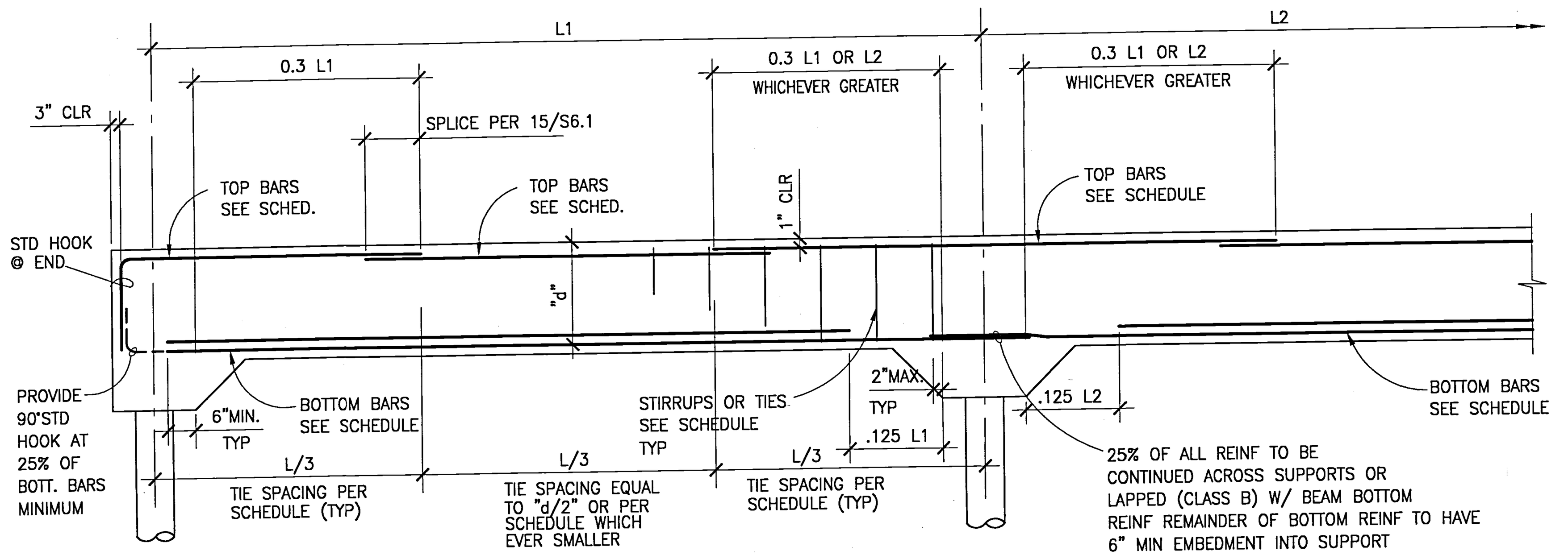


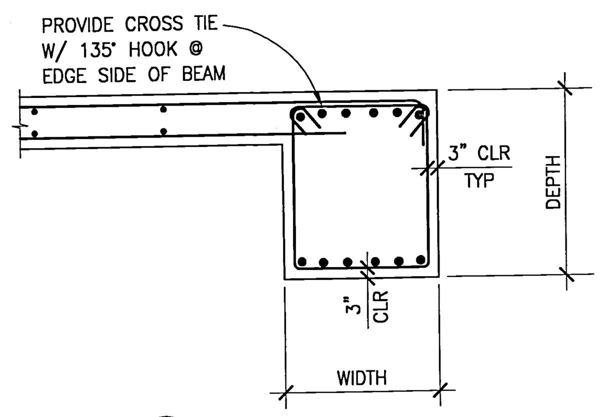
PILE CAP/GRADE BEAM DETAIL 1/2"=1'-0" 3C

GRADE BEAM SCHEDULE

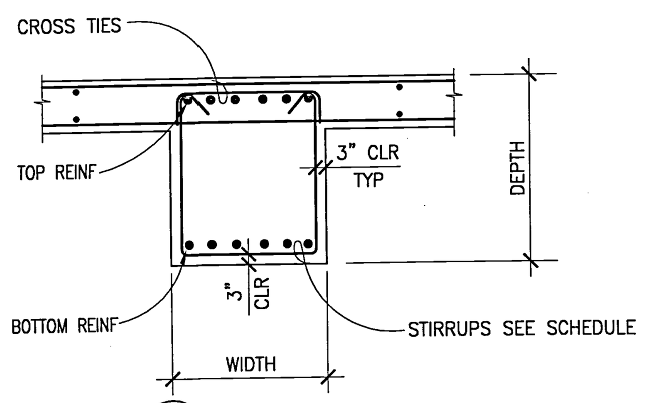
MARK	SIZE WIDTH	SIZE DEPTH	REINFORCEMENT (℄ SUPPORT – ℄ SUPPORT)	STIRRUPS/ TIES	REMARKS
GB-1	36"	24"	(6) #9; (2) #9; (6) #9; (6) #9	#4 @ 9" OC	B
GB-2	36"	24"	(6) #9; (2) #9; (6) #9; (6) #9	#4 @ 9" OC	A OR B
GB-3	36"	24"	SEE REINF. ON ADJACENT BEAM; (2) #9; (6) #9; (6) #9	#4 @ 9" OC	B
GB-4	36"	21"	SEE REINF. ON ADJACENT BEAM; (6) #7; (2) #7; (6) #7	#4 @ 9" OC	B
GB-5	36"	18"	SEE REINF. ON ADJACENT BEAM; (6) #6; (2) #6; (6) #6	#4 @ 9" OC	B
GB-6	36"	21"	(6) #7; (2) #7; (6) #7; (6) #7	#4 @ 9" OC	A
GB-7	36"	18"	SEE REINF. ON ADJACENT BEAM; (6) #6; (2) #6; (6) #6	#4 @ 9" OC	A OR B
GB-8	36"	18"	(6) #6; (2) #6; (6) #6; (6) #6	#4 @ 9" OC	A OR B
GB-9	36"	18"	SEE REINF. ON ADJACENT BEAM; (6) #6; (2) #6; (6) #6	#4 @ 9" OC	A OR B



CONCRETE BEAM AND GIRDER DETAIL

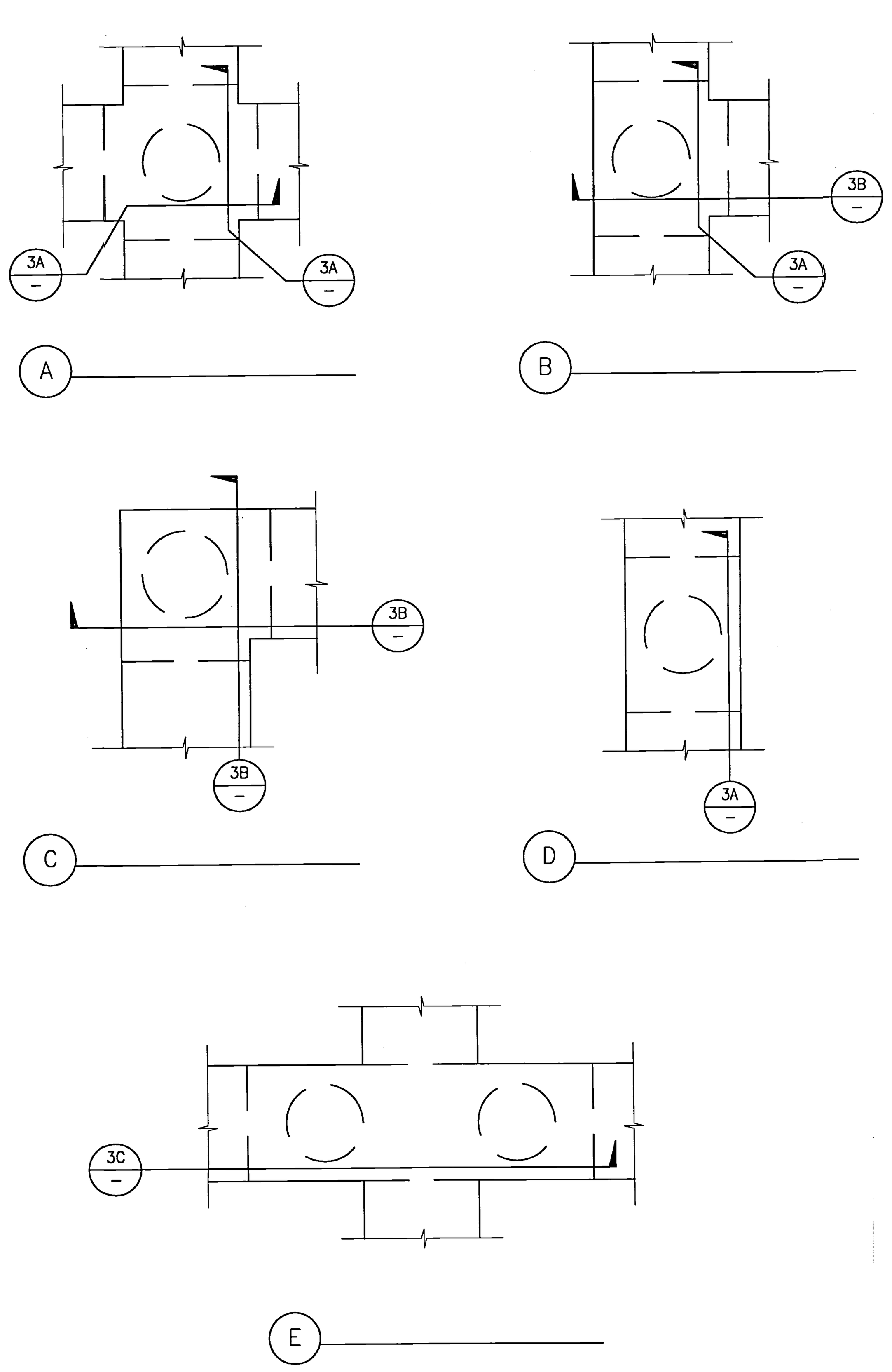


A SECTION @ EDGE BEAM
NTS



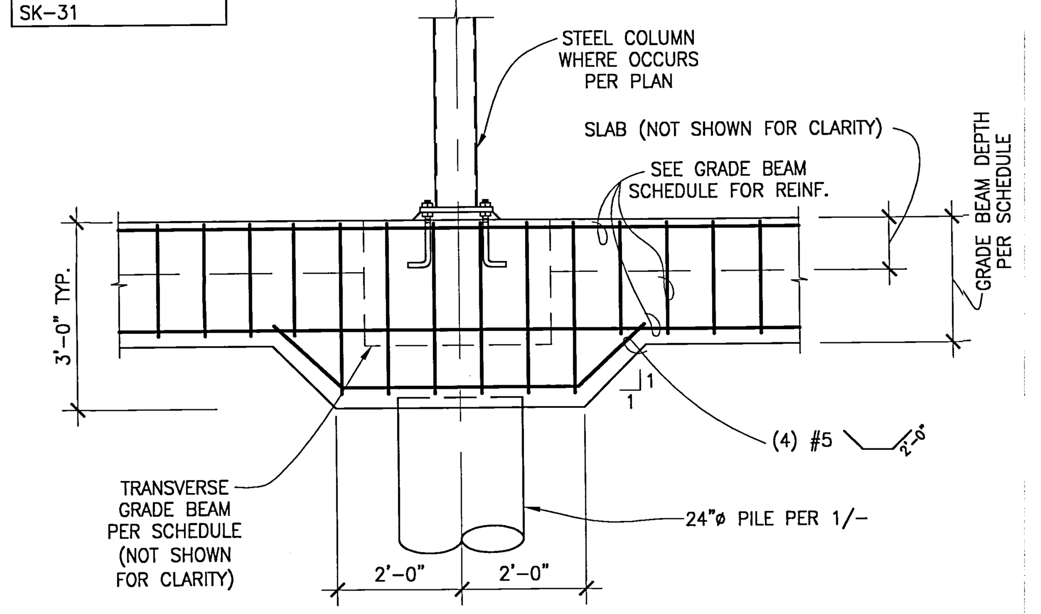
B SECTION @ MID-SPAN
NTS

NONE 4

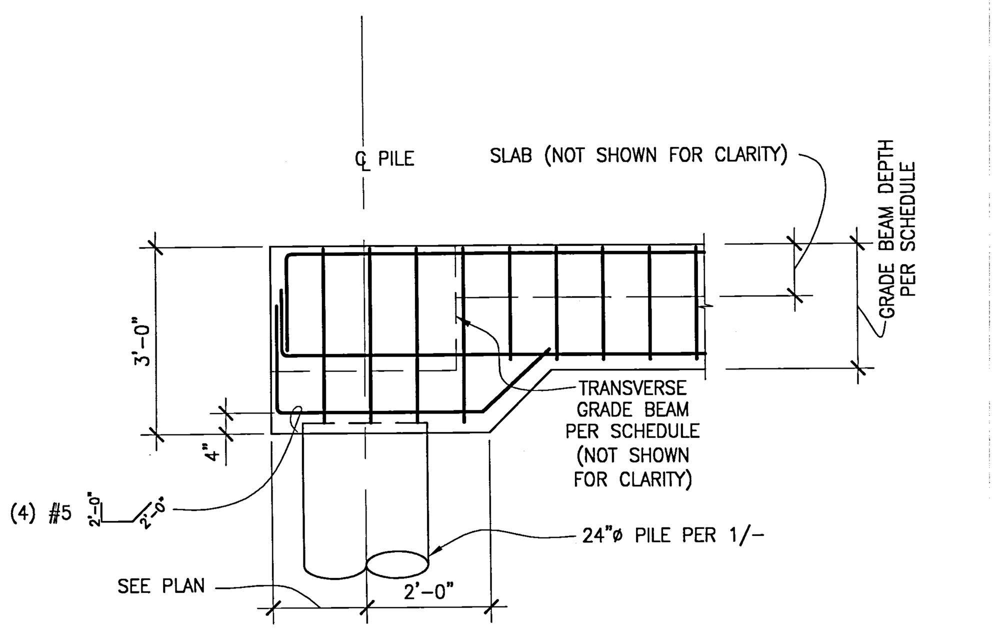


THICKENED GRADE BEAM (PILE CAP) PLAN VIEWS 3/8"=1'-0" 2

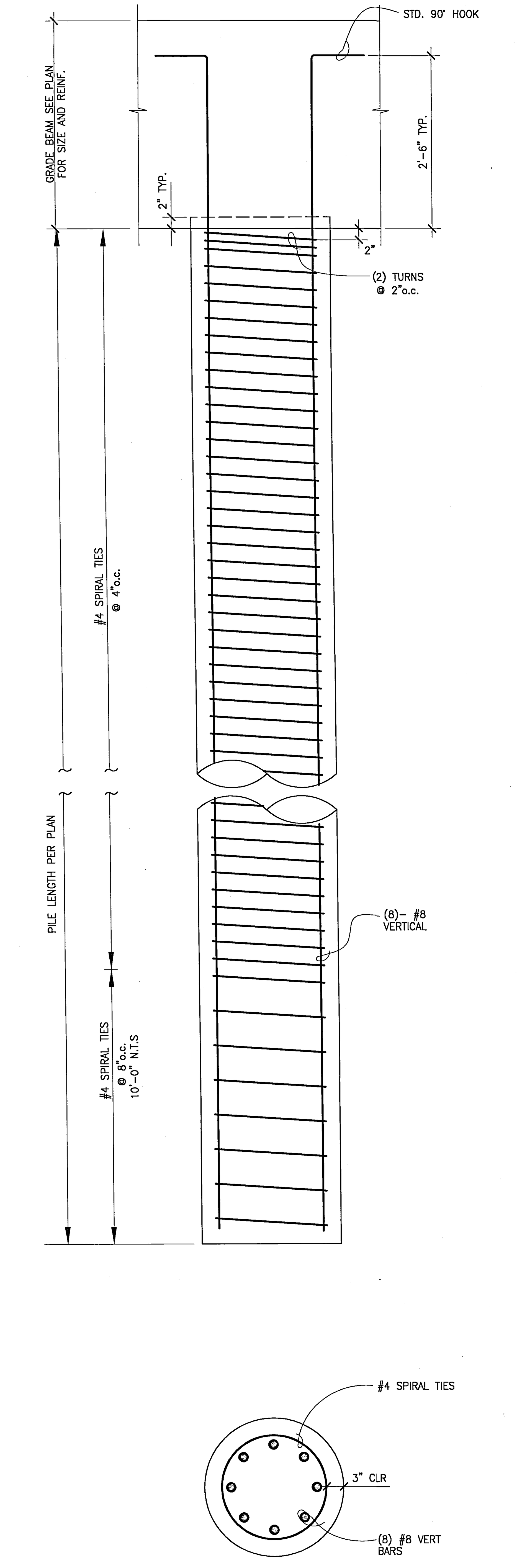
NOTE:
WHERE GRADE BEAM CHANGES DEPTH, USE SK-31



PILE CAP/GRADE BEAM DETAIL 1/2"=1'-0" 3A



PILE CAP/GRADE BEAM DETAIL 1/2"=1'-0" 3B



PILECAP DETAIL 1"=1'-0" 1

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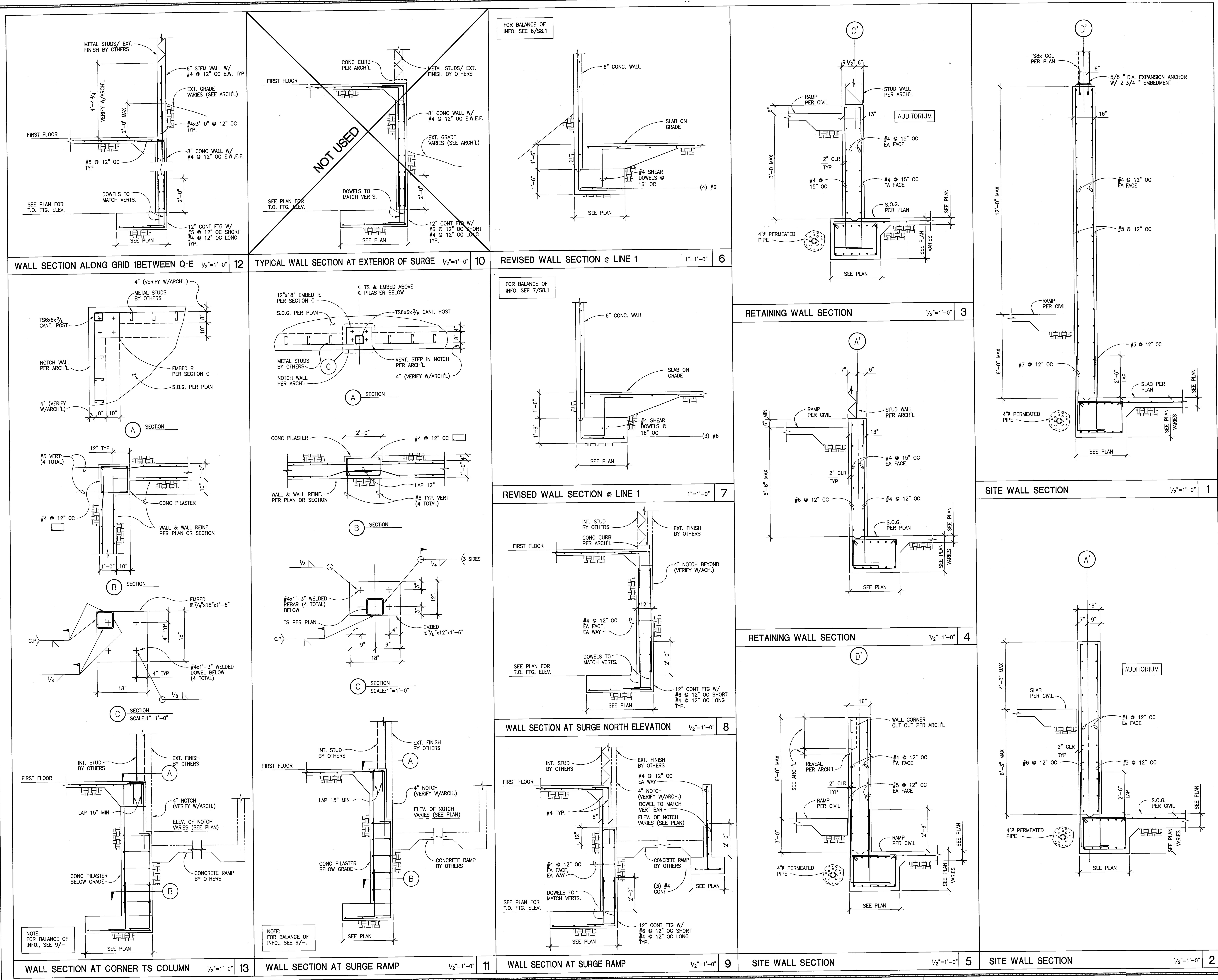

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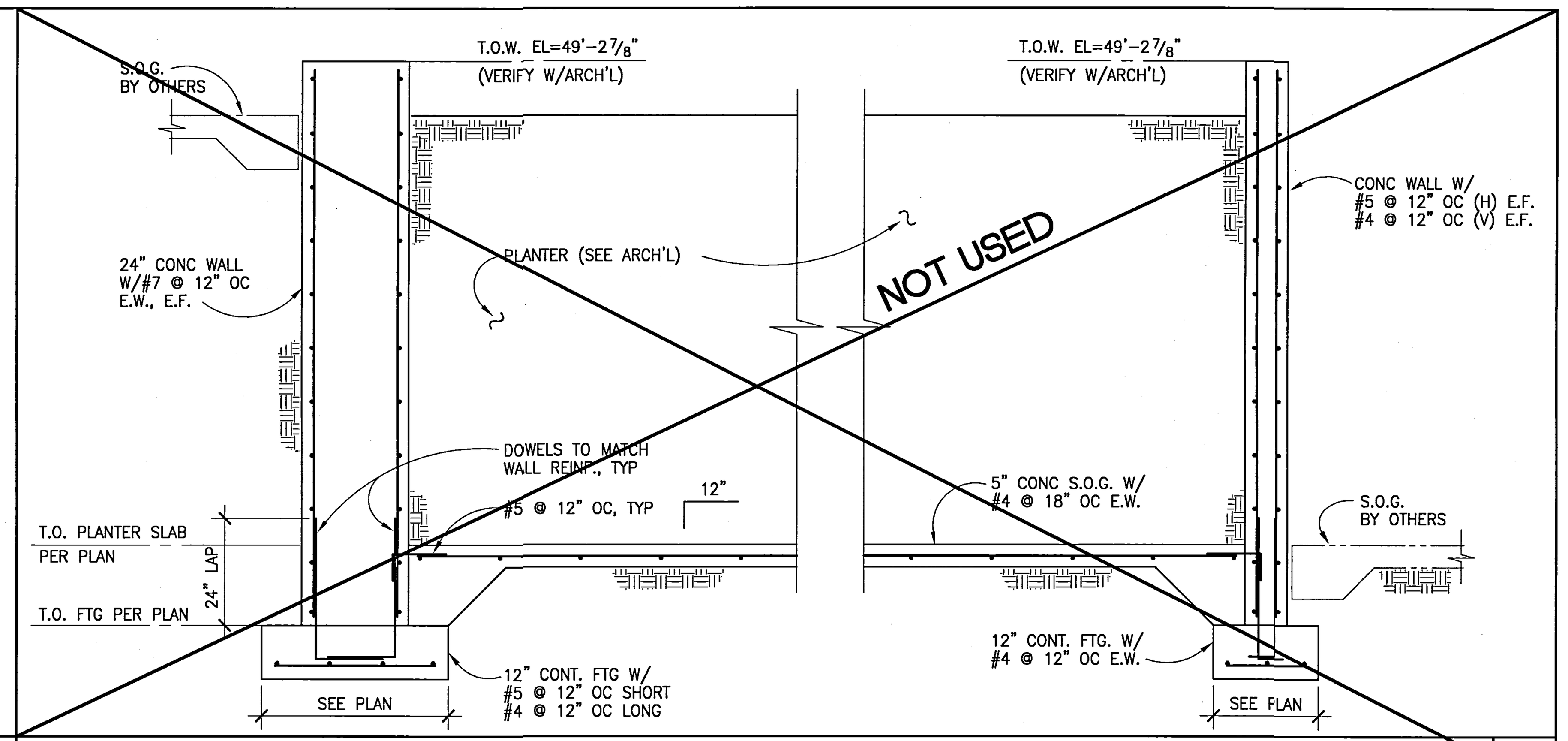
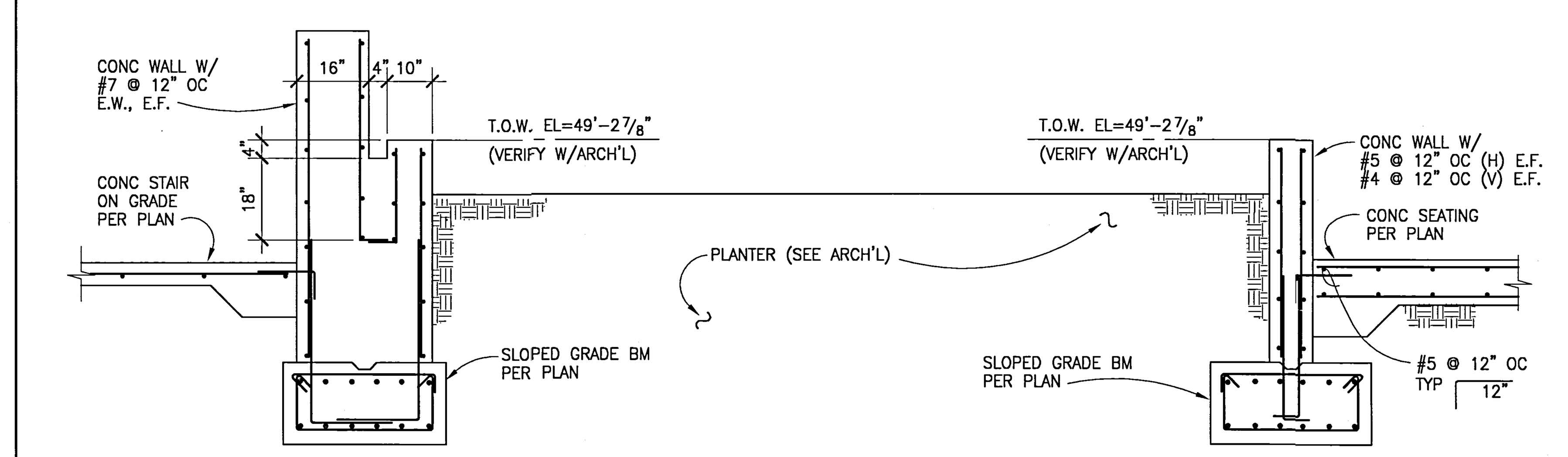


SECTION AT PLANTER ½"=1'-0" 1



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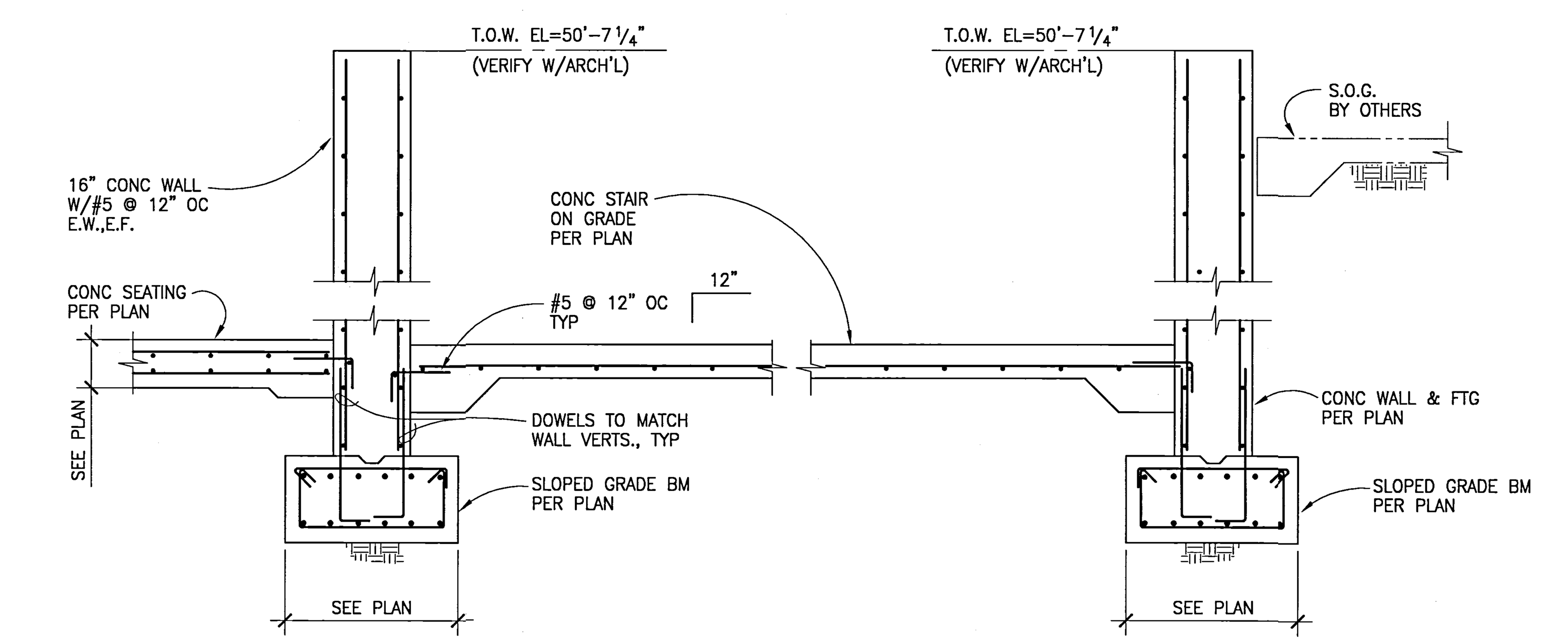

SECTION AT CONC STAIRS ½"=1'-0" 3

5

4

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NOTES:	JOB #	10711B NAME	FILE PATH & NAME	PLOTTED DATE & TIME	UPDATED BY	PLOT SCALE	PROG.MG.	DRAFTER
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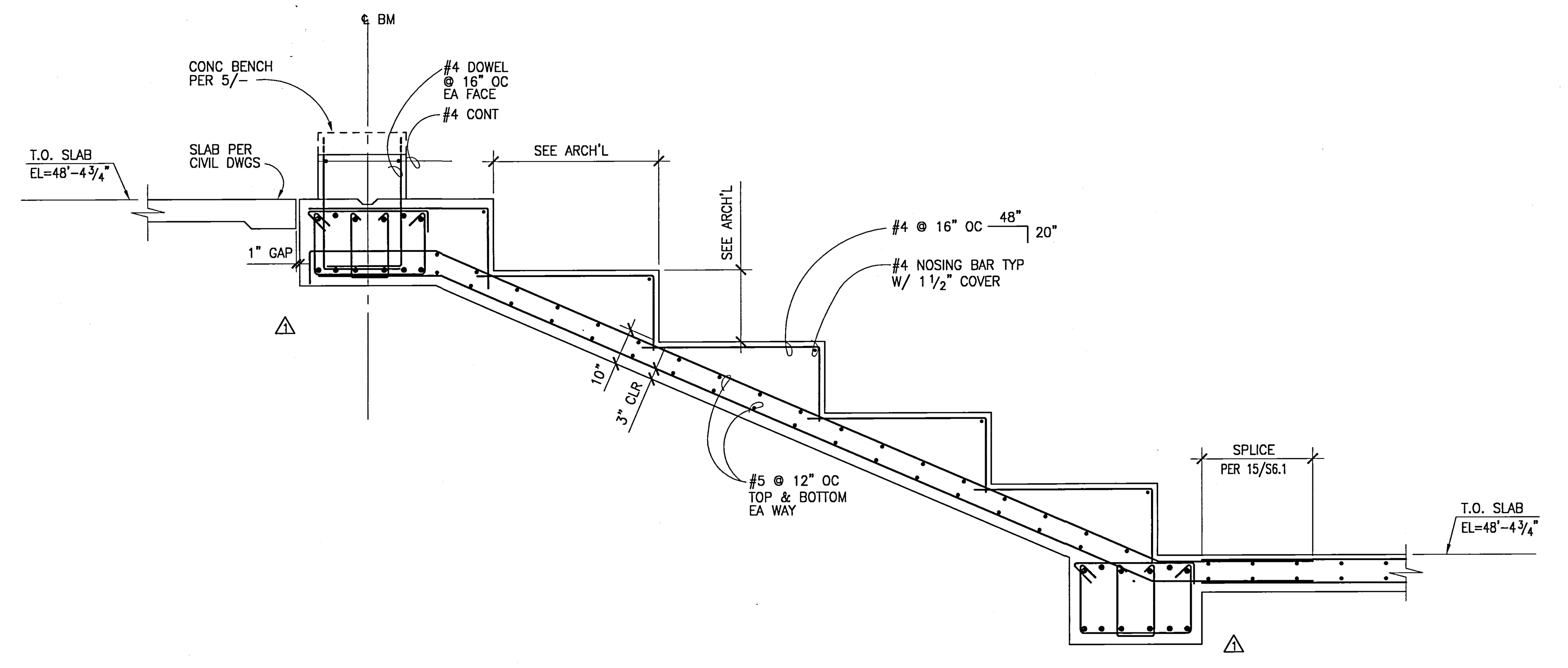
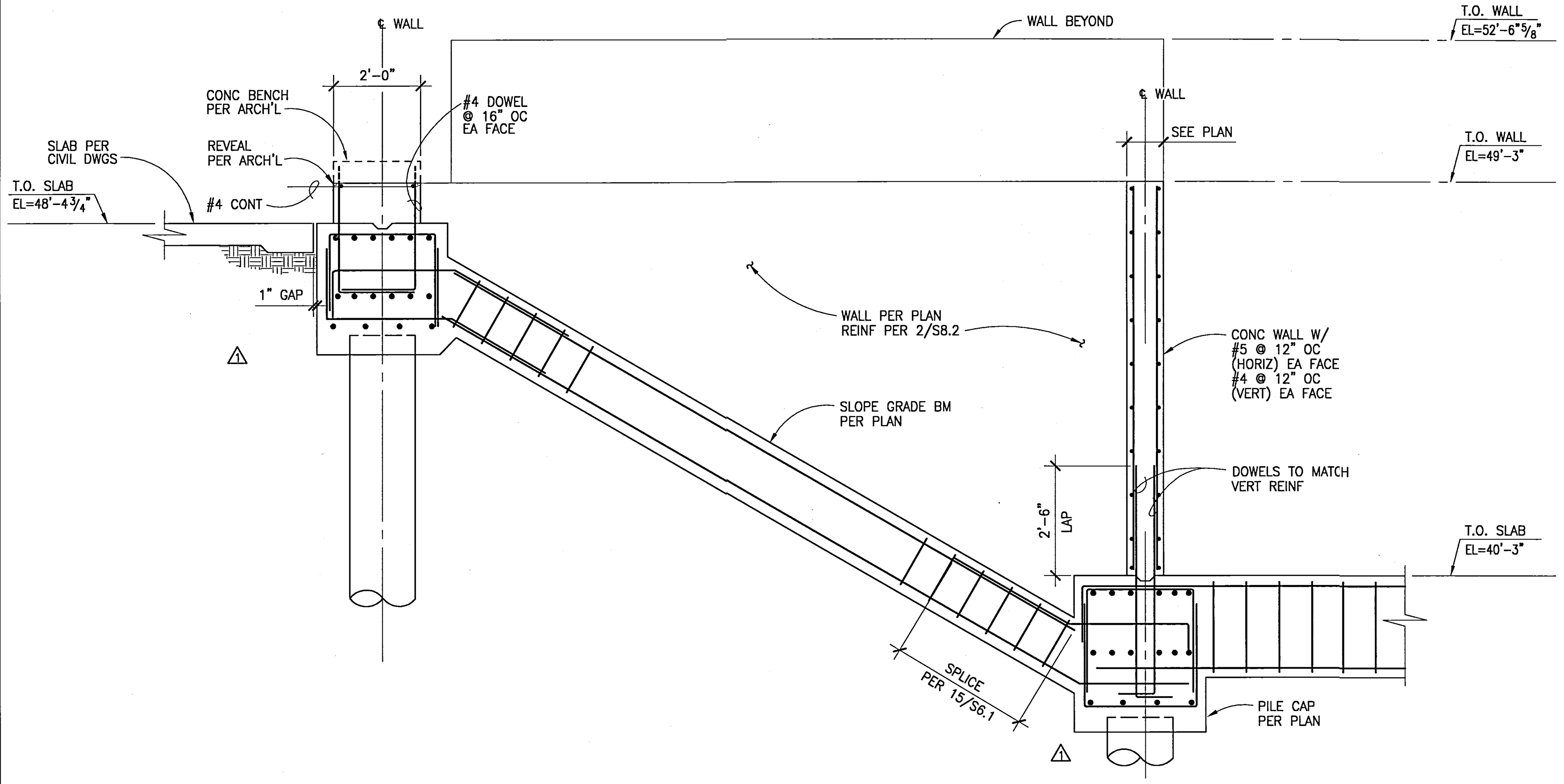


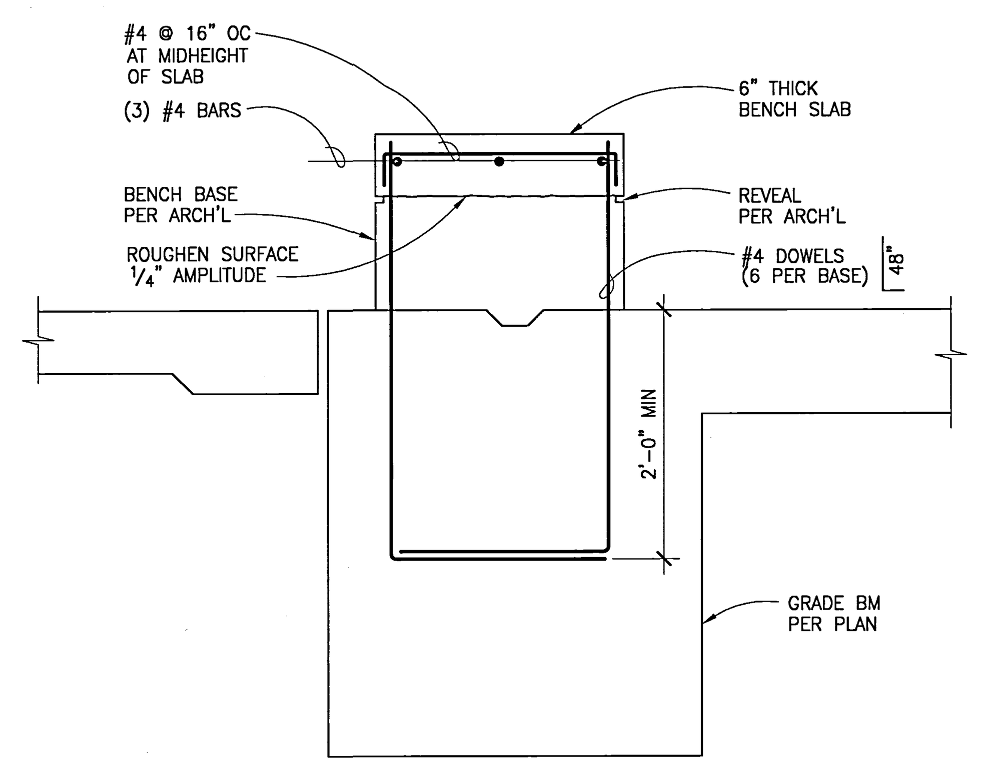
SECTION AT CONCRETE SEATING

1/2"=1'-0" 4



SECTION AT SLOPED GRADE BEAM

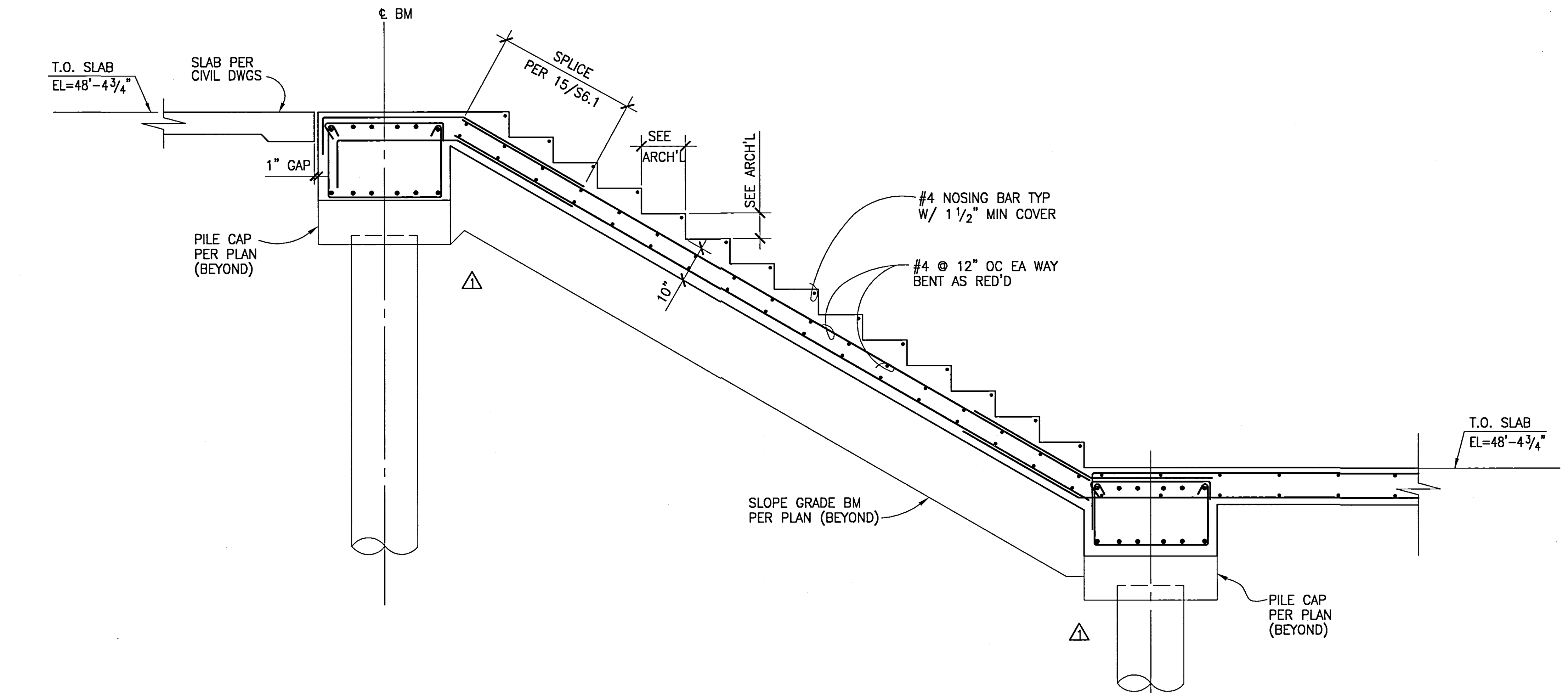
1/2"=1'-0" 1



NOTE:
SEE ARCH'L FOR FUTURE INFORMATION.

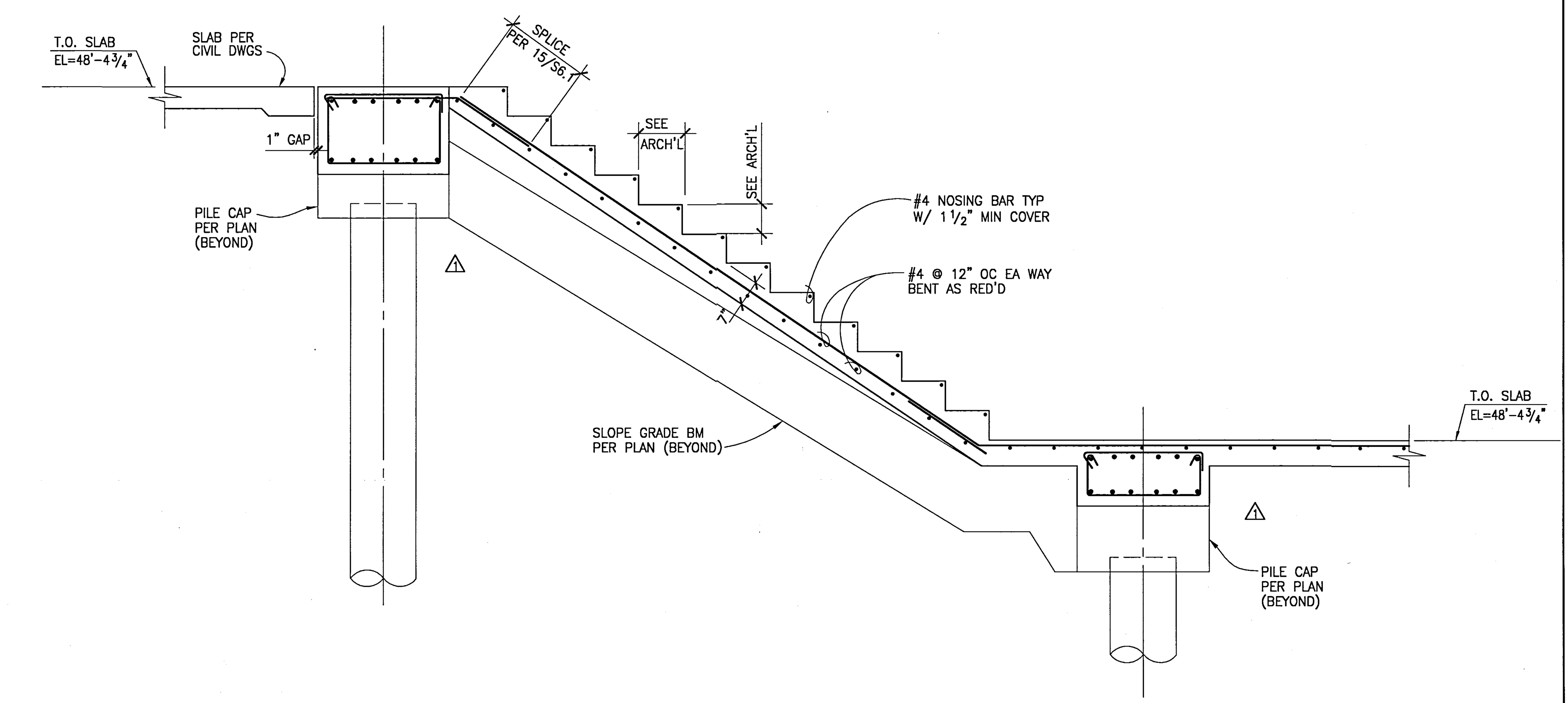
CONCRETE BENCH SECTION

1"=1'-0" 5



SECTION AT CONCRETE STAIR SPANNING FROM GRIDLINE A' TO B'

1/2"=1'-0" 2



SECTION AT CONCRETE STAIR SPANNING FROM GRIDLINE C' TO D'

1/2"=1'-0" 3

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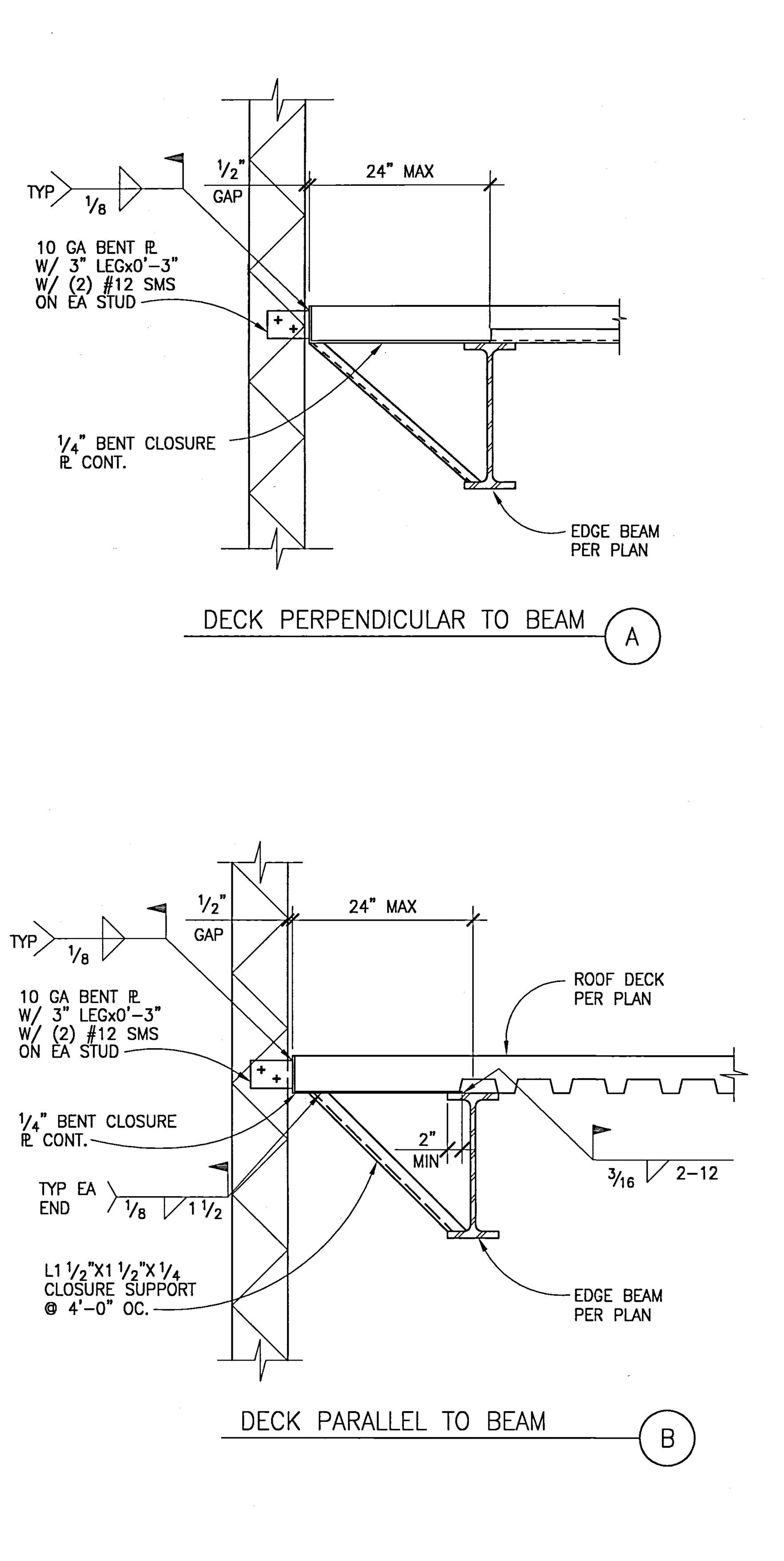
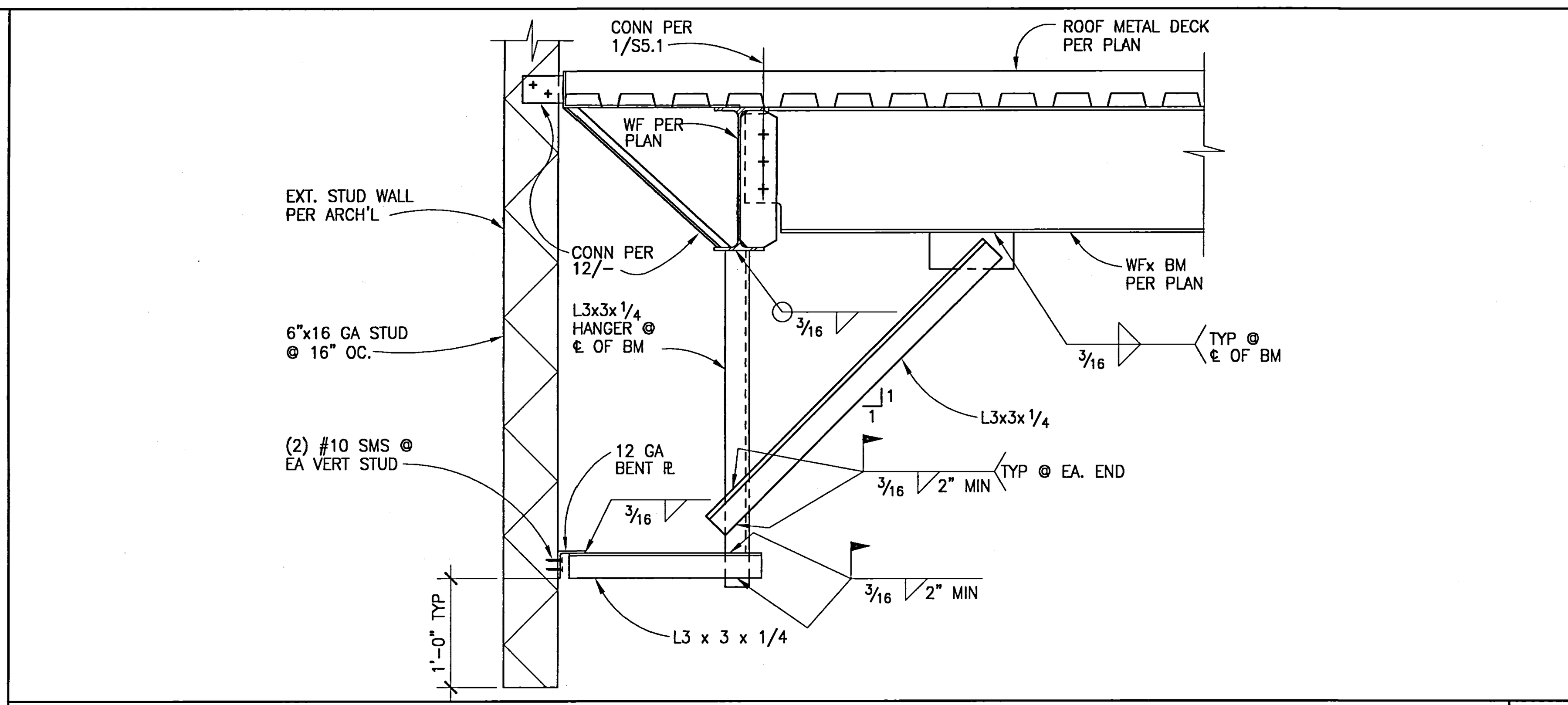
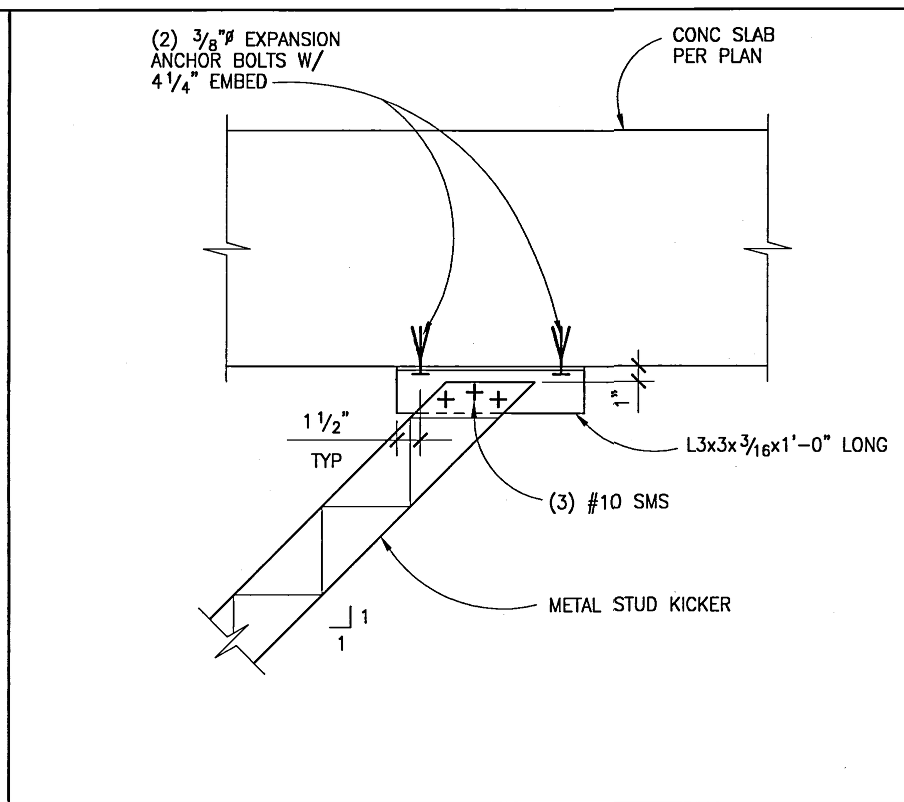


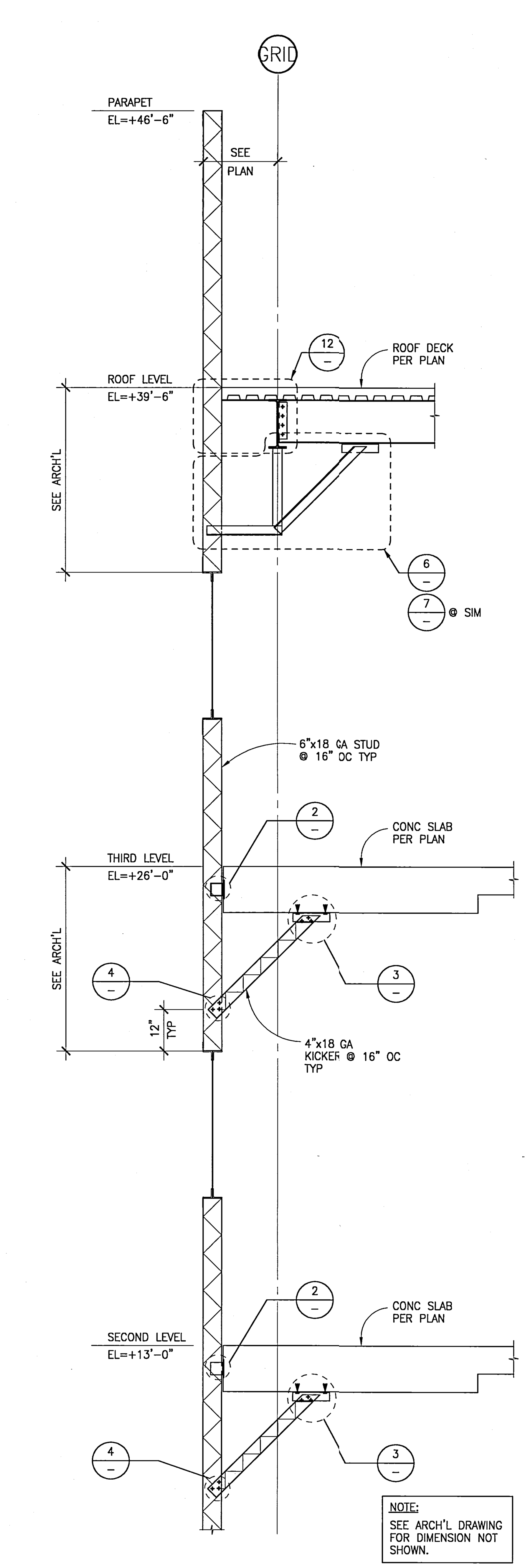
TYPICAL EDGE OF DECK SUPPORT @ EDGE OF BLDG 1"=1'-0" 12



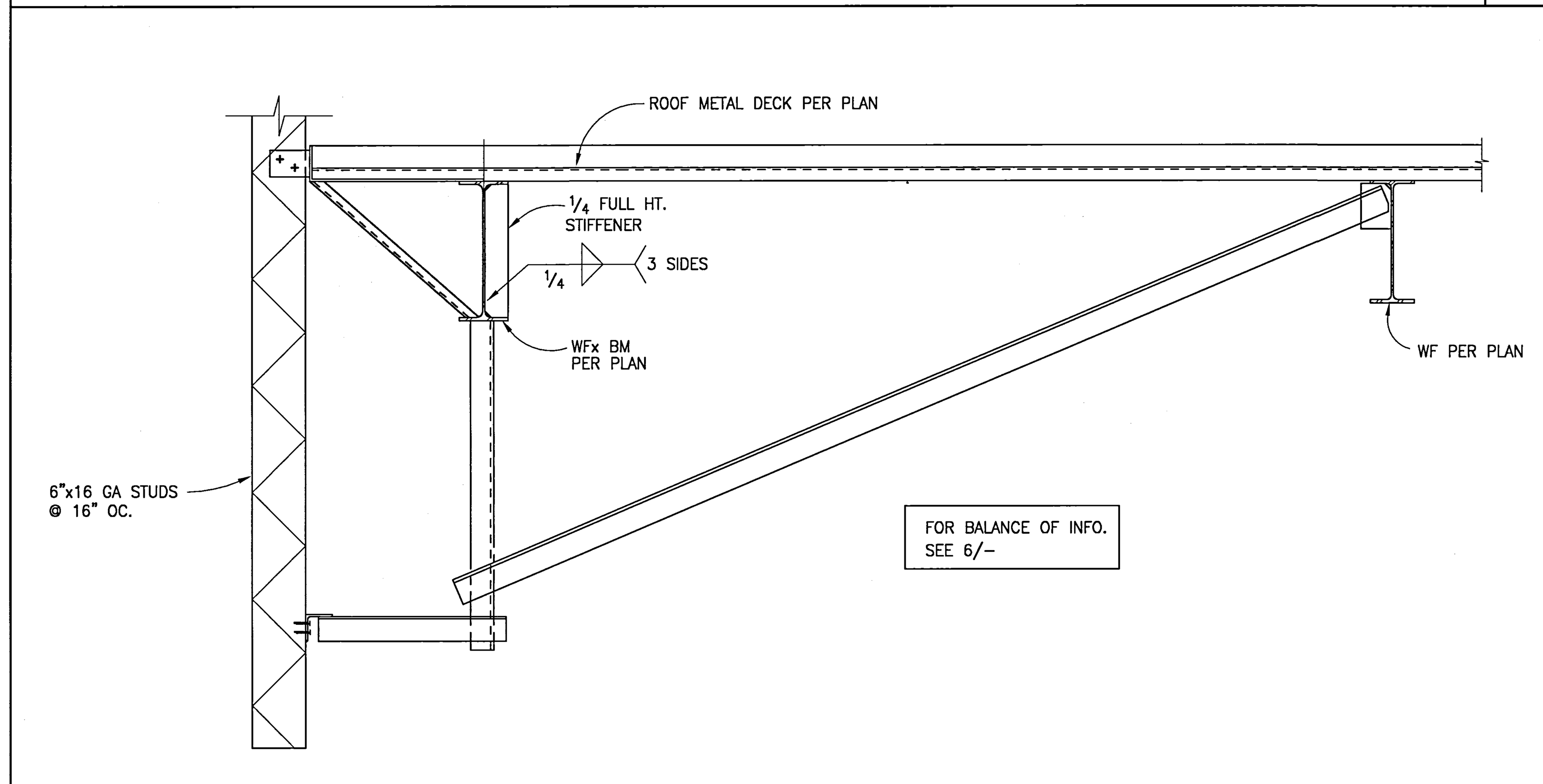
EXTERIOR WALL CONN. @ ROOF 1"=1'-0" 6



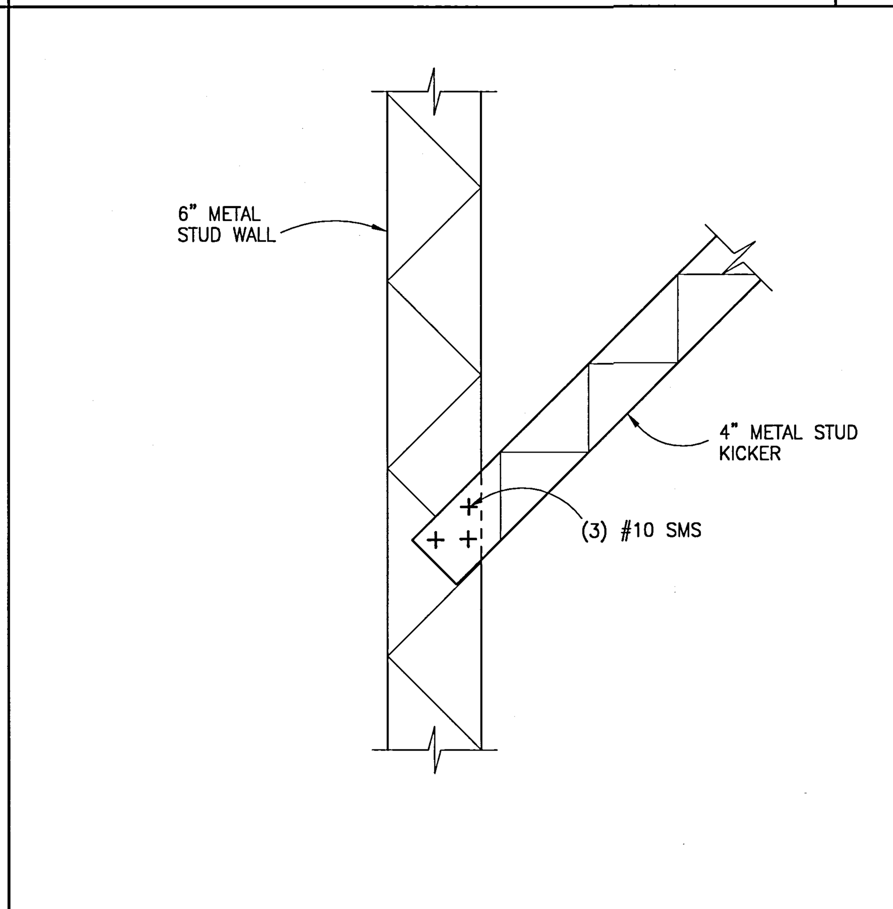
METAL STUD KICKER TO CONC. SLAB 1 1/2"=1'-0" 3



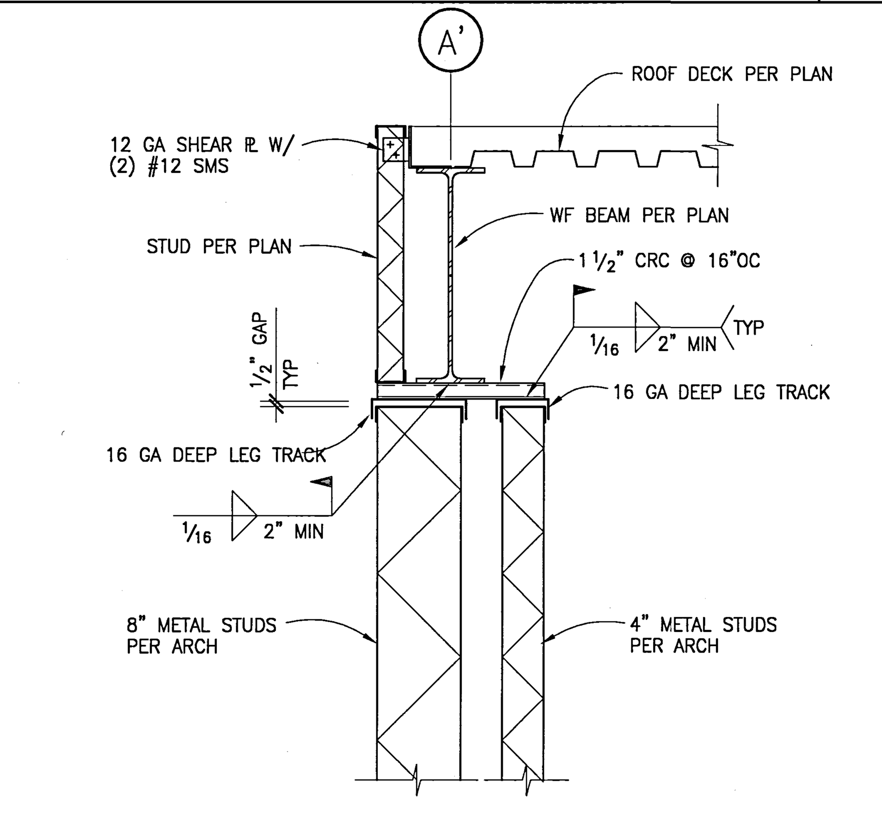
ELEVATION SECTION 1/2"=1'-0" 1



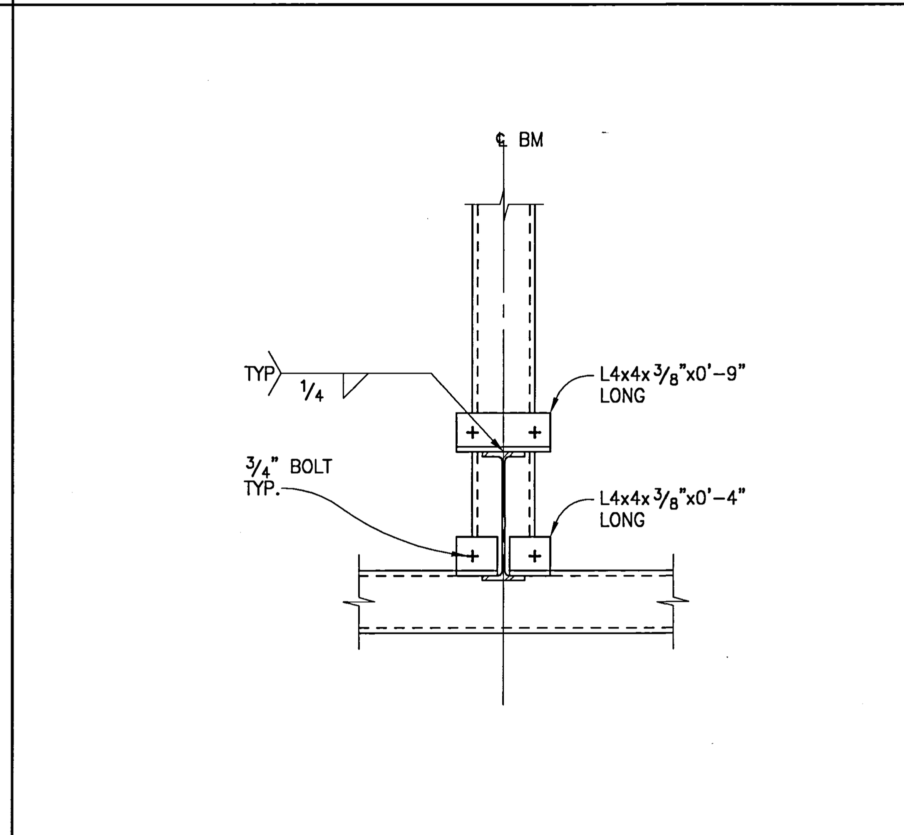
EXTERIOR WALL CONN. @ ROOF 1"=1'-0" 7



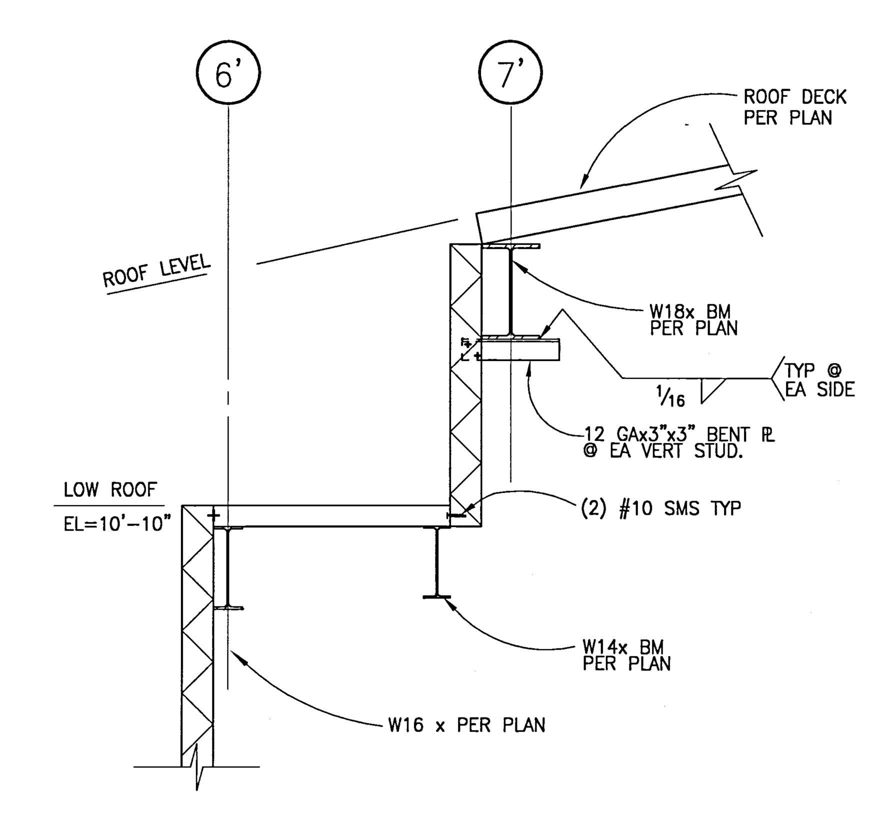
KICKER TO WALL STUD DETAIL 1 1/2"=1'-0" 4



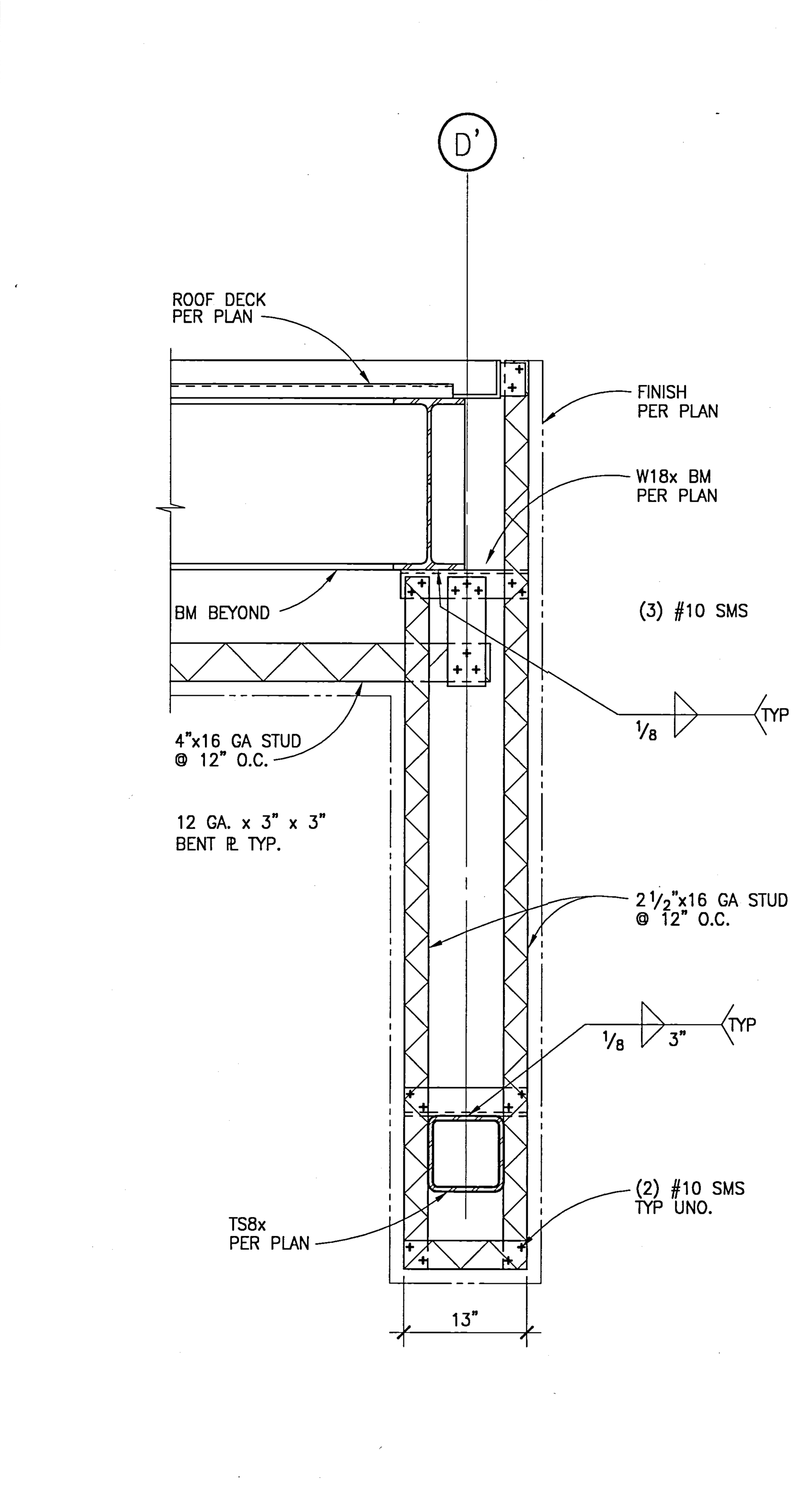
DETAIL 1"=1'-0" 13



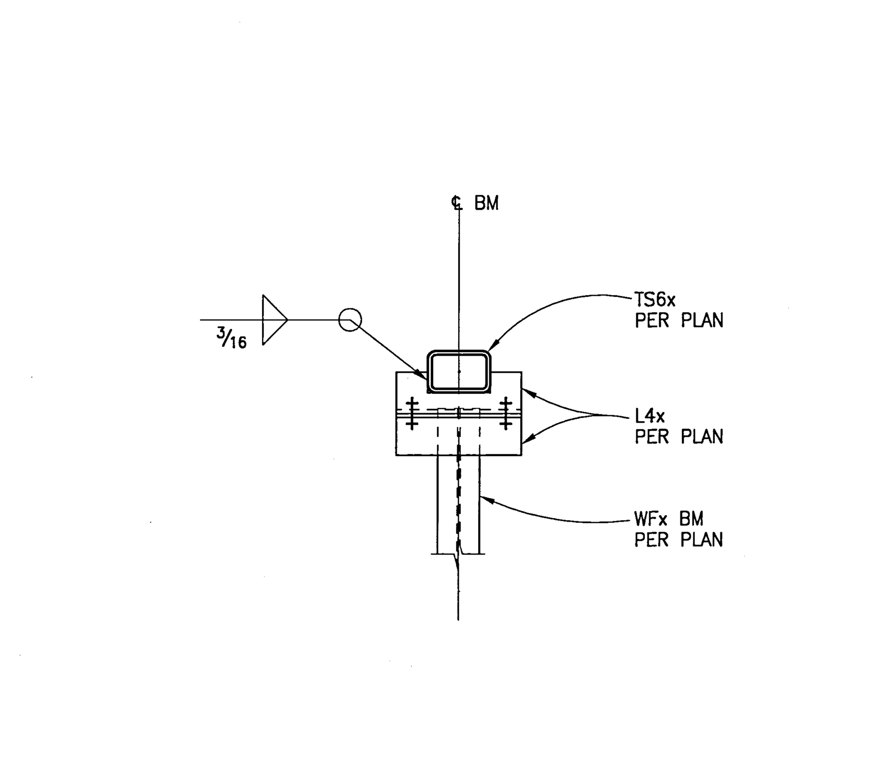
DETAIL 1"=1'-0" 10



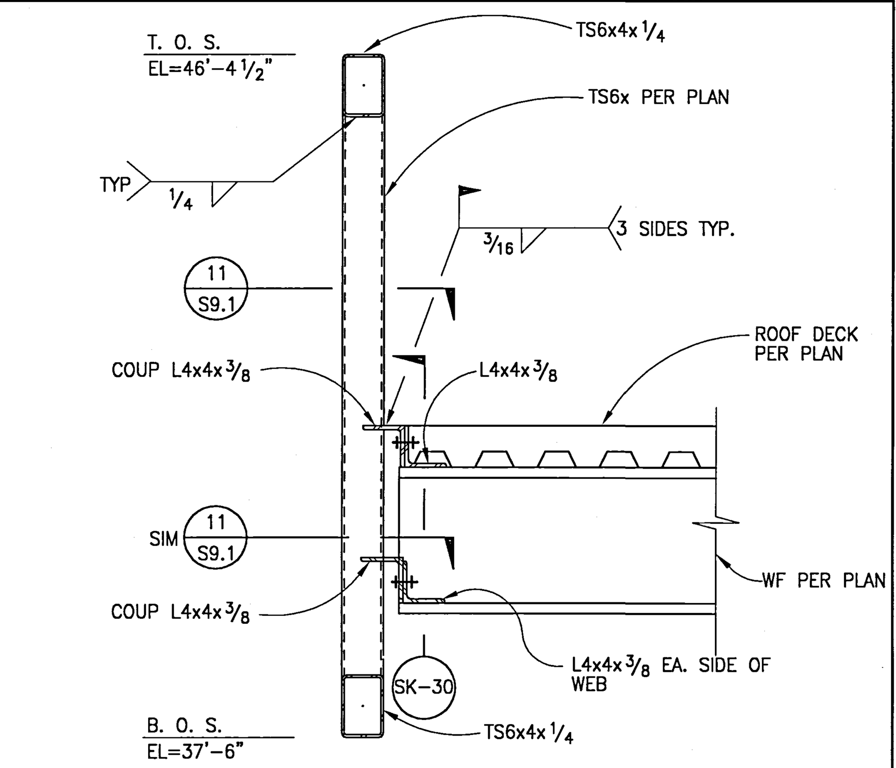
EXTERIOR WALL DETAIL 1/2"=1'-0" 8



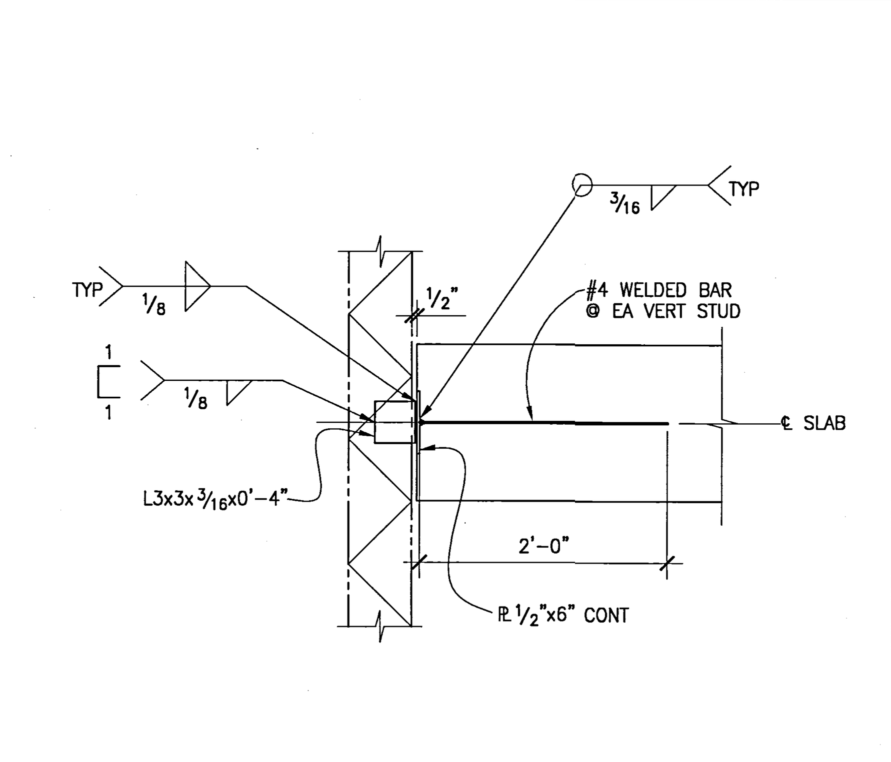
STUD WALL DETAIL @ OVERHANG 1"=1'-0" 5



DETAIL 1"=1'-0" 11



EXT. WALL SUPPORT @ STAIR WELL 1"=1'-0" 9



METAL STUD TO CONC. SLAB CONN. DETAIL 1"=1'-0" 2

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RECORD DRAWINGS

Key Plan

Project North

Drawing Title

EXTERIOR WALLS SECTIONS & SUPPORT DETAILS

AS SHOWN

Scale
1001071

Project Number
6 OCT 00

Baseline Date

S9.1

Drawing Number

NOTES:		
JOB #	10711B NAME	FILE PATH & NAME
1001071	UCR SURGE	P:\2000\1001071-UCR\SDRAFT\S9-1.DWG
XREFS: 10711B.		

PLOTTED DATE & TIME	UPDATED BY	PLOT SCALE	PROG.MG.	DRAFTER
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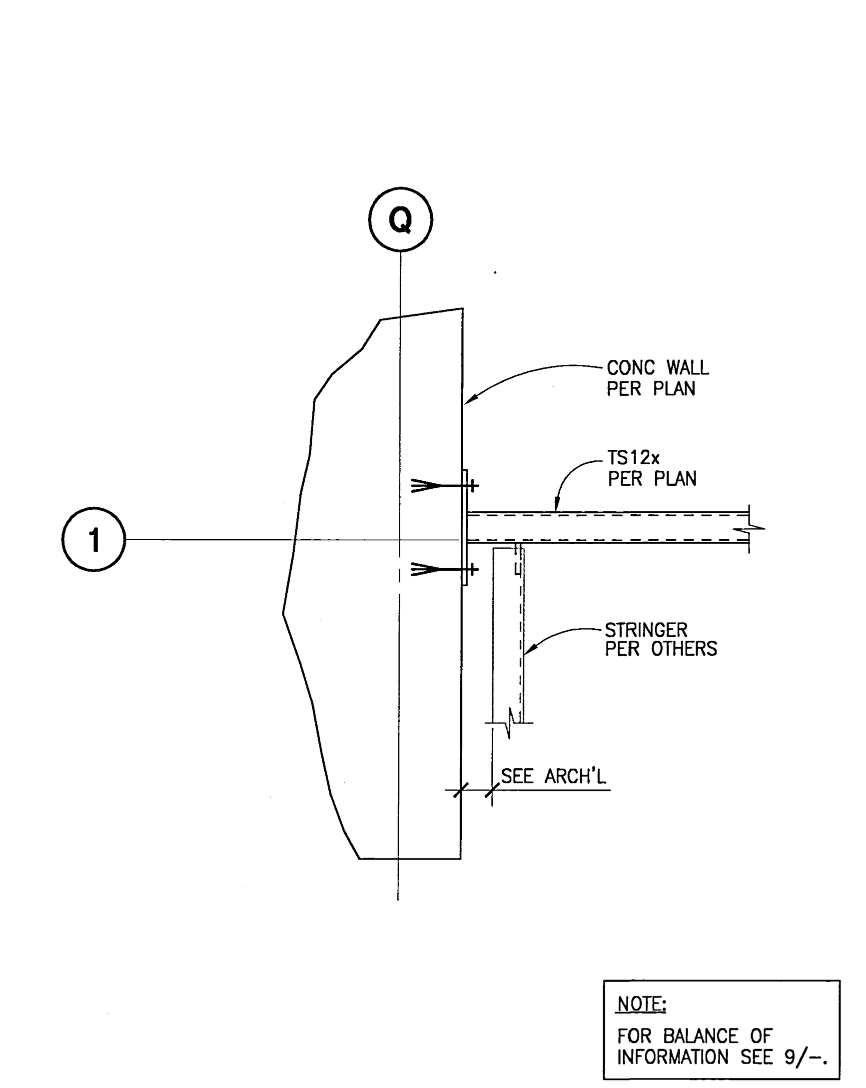
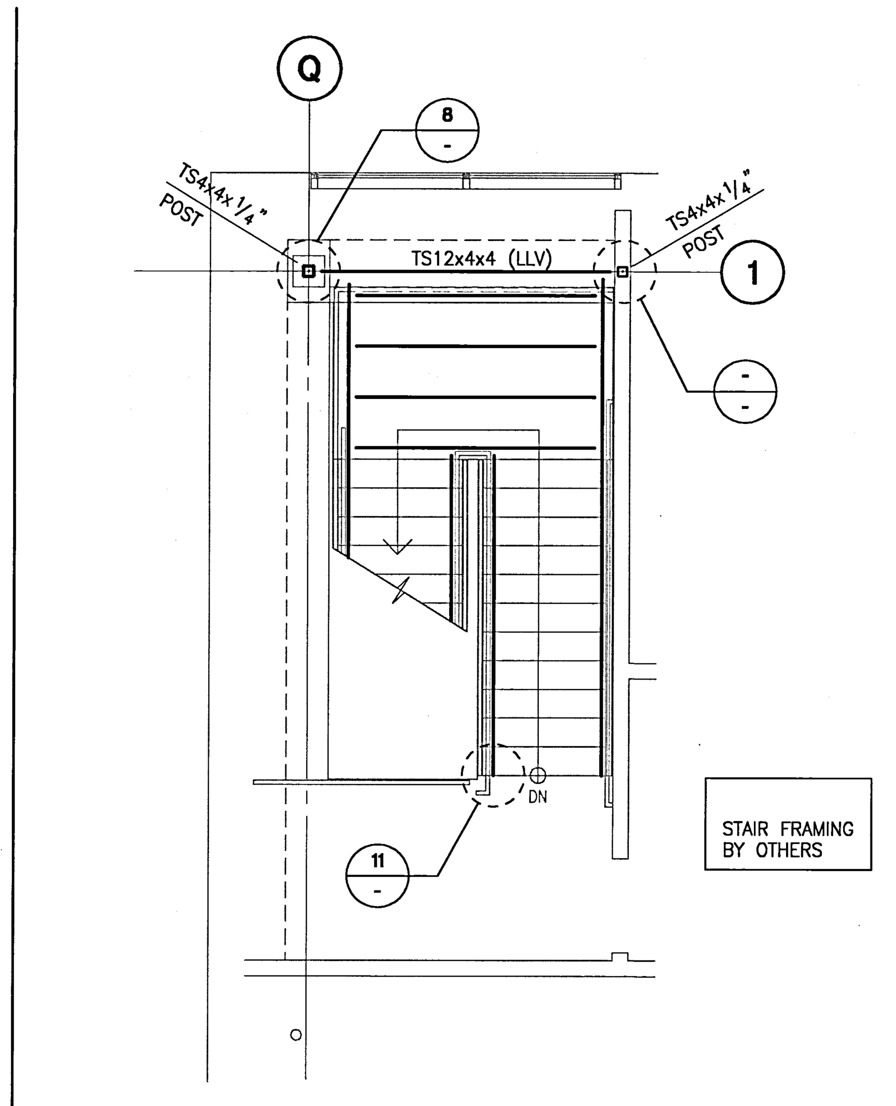
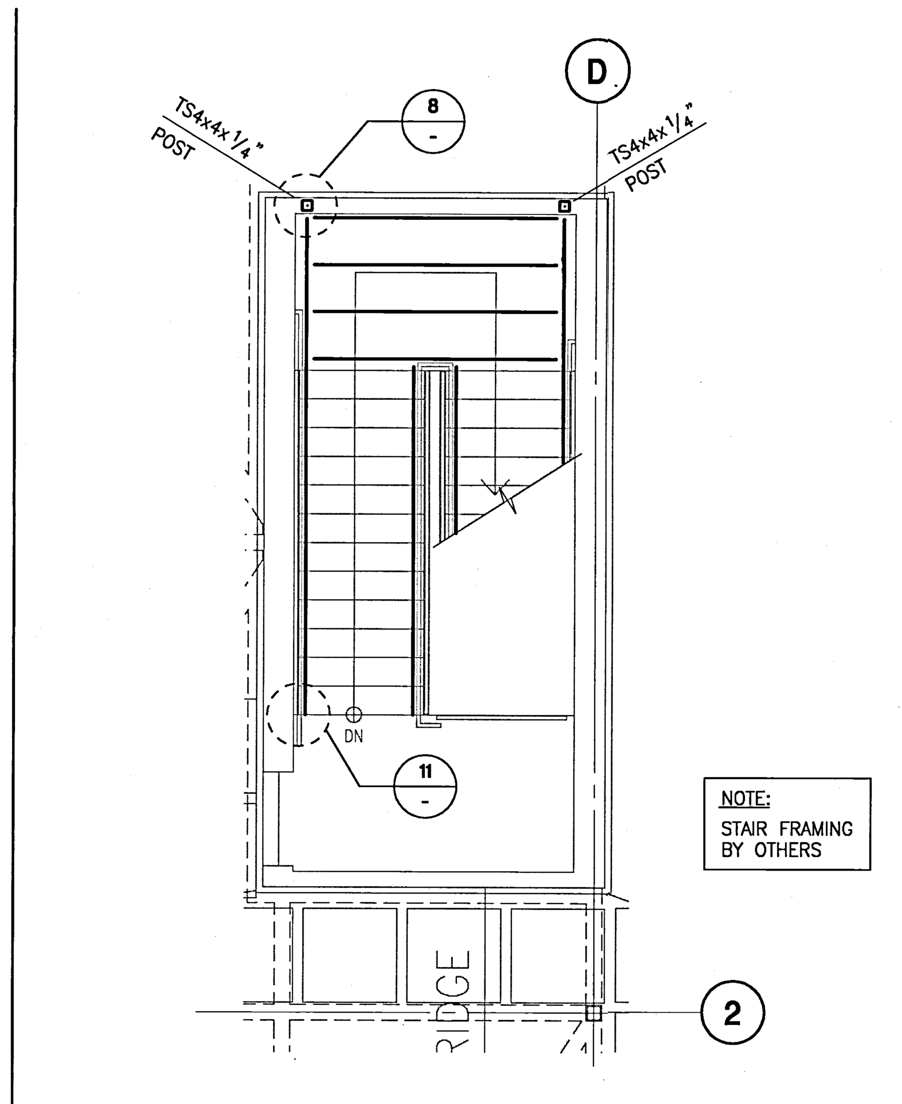


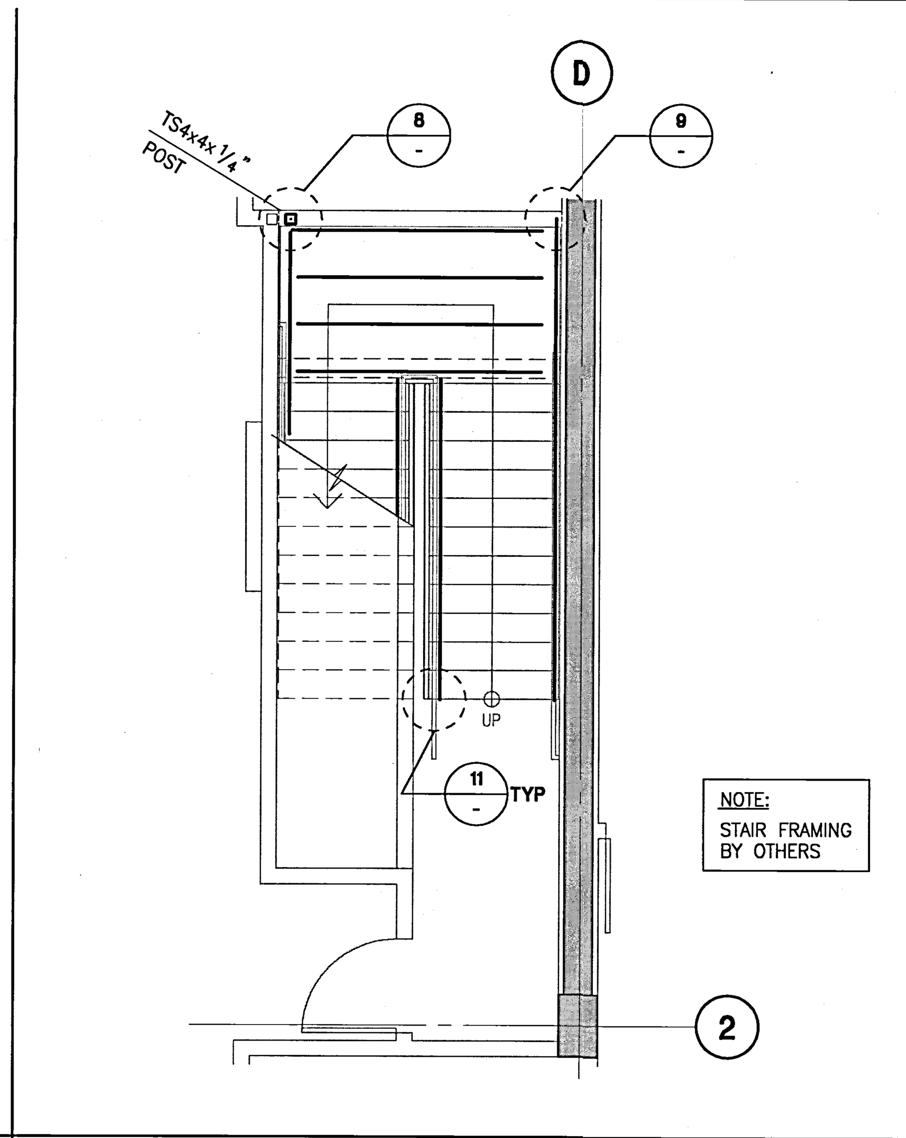
STRINGER TO CONC COLUMN CONNECTION DETAIL 1"=1'-0" | 10



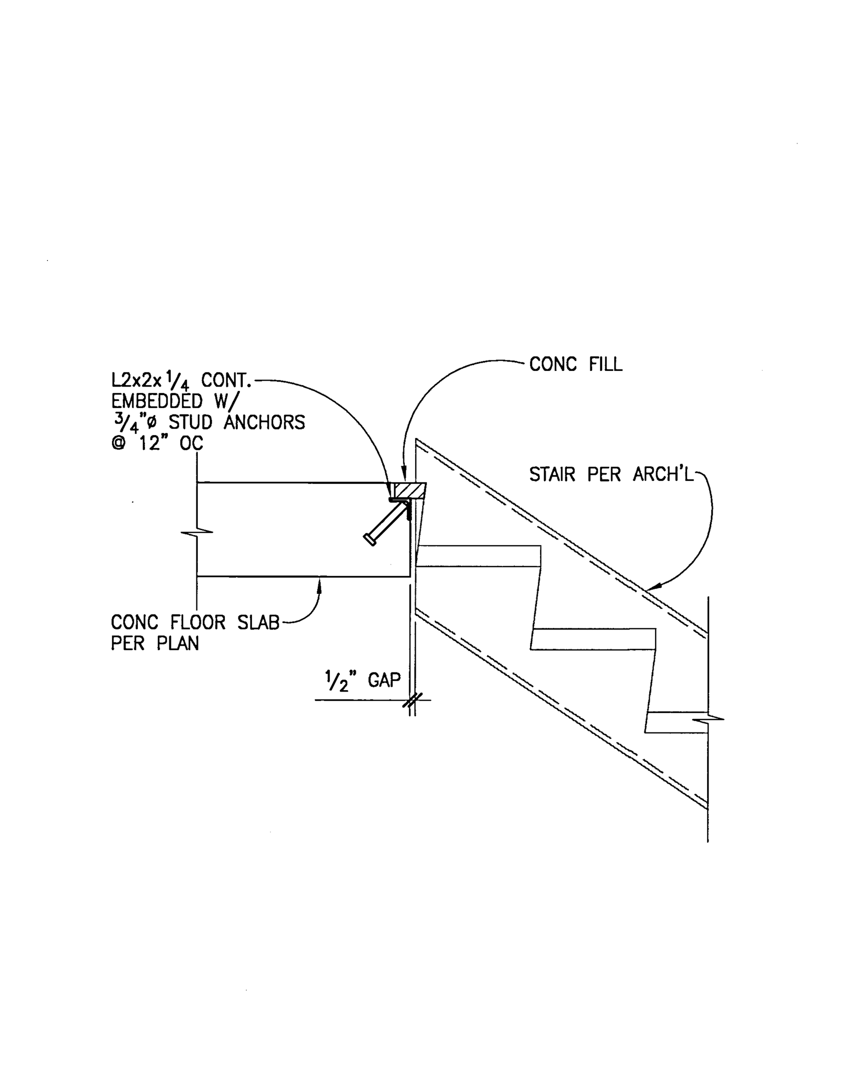
SRAIR #2 THIRD FLOOR 1/4"=1'-0" | 7



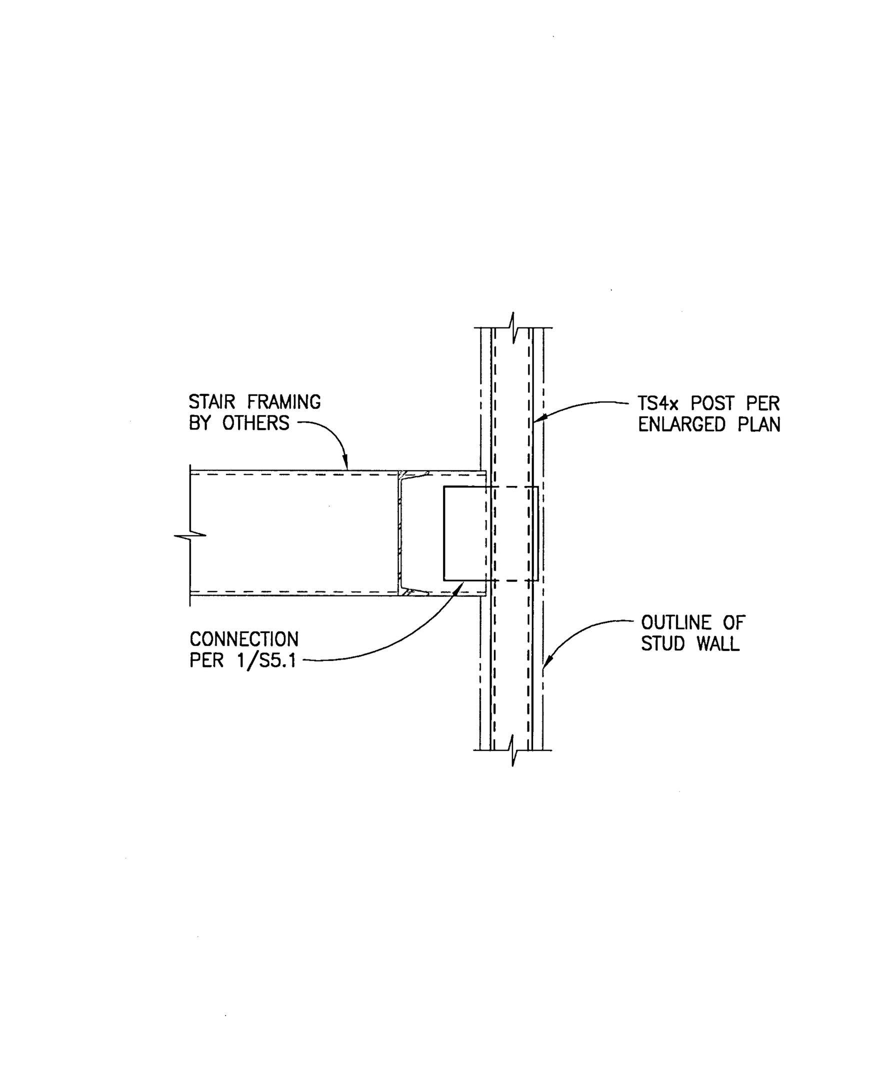
STAIR #1 ROOF LEVEL 1/4"=1'-0" | 4



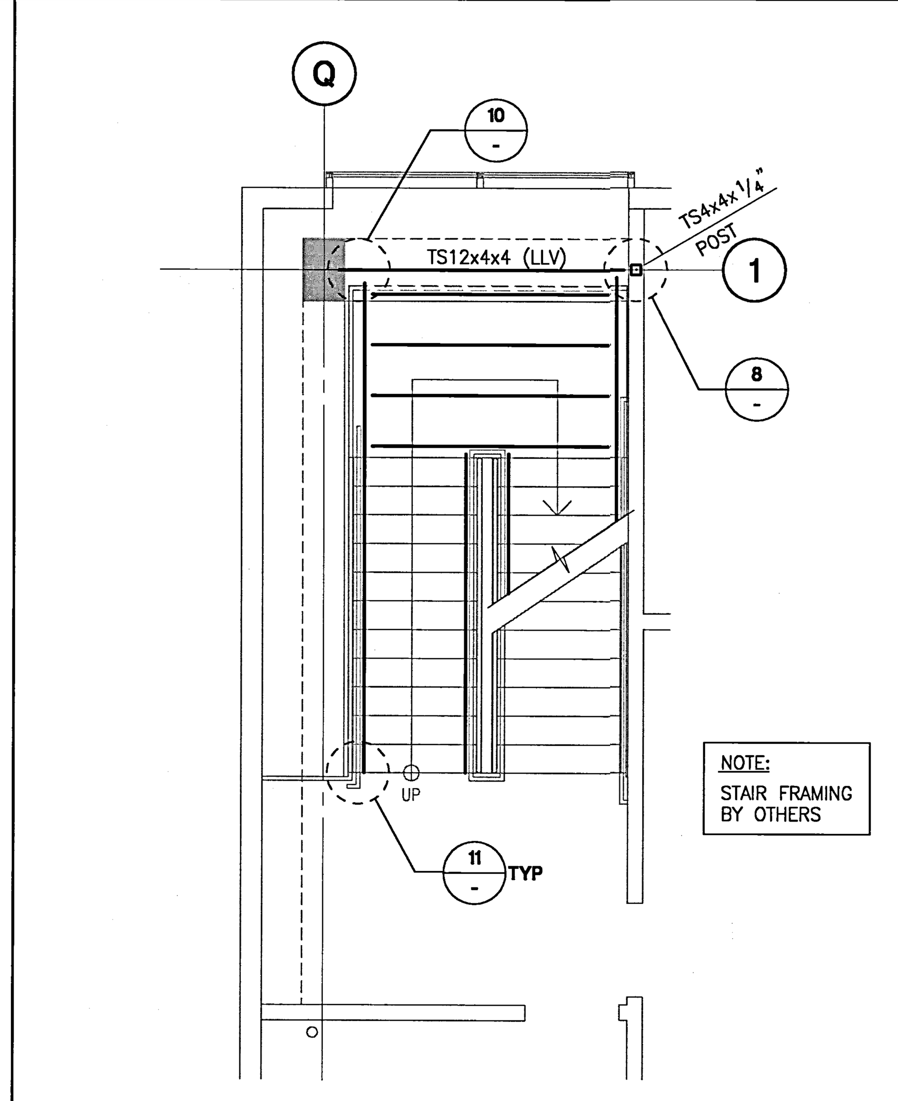
STAIR #1 FIRST FLOOR 1/4"=1'-0" | 1



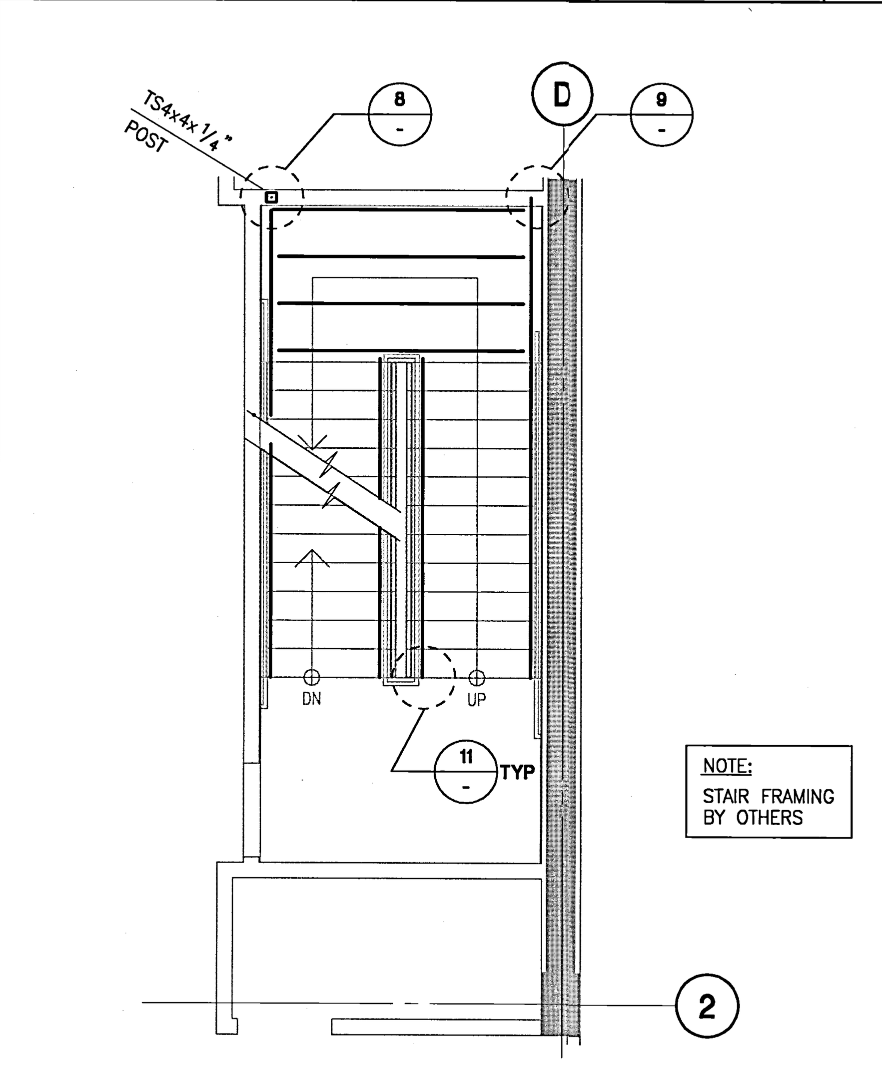
LANDING DETAIL 1"=1'-0" | 11



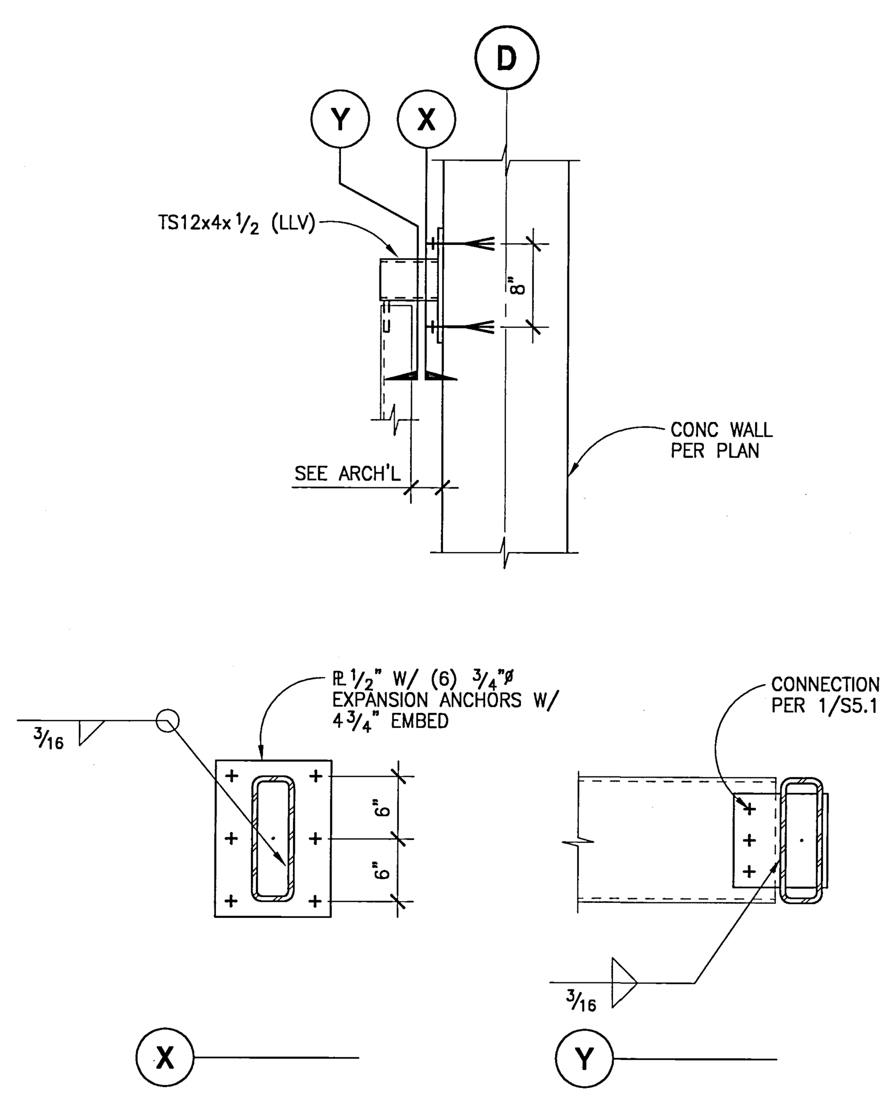
STRINGER TO POST CONNECTION DETAIL 1"=1'-0" | 8



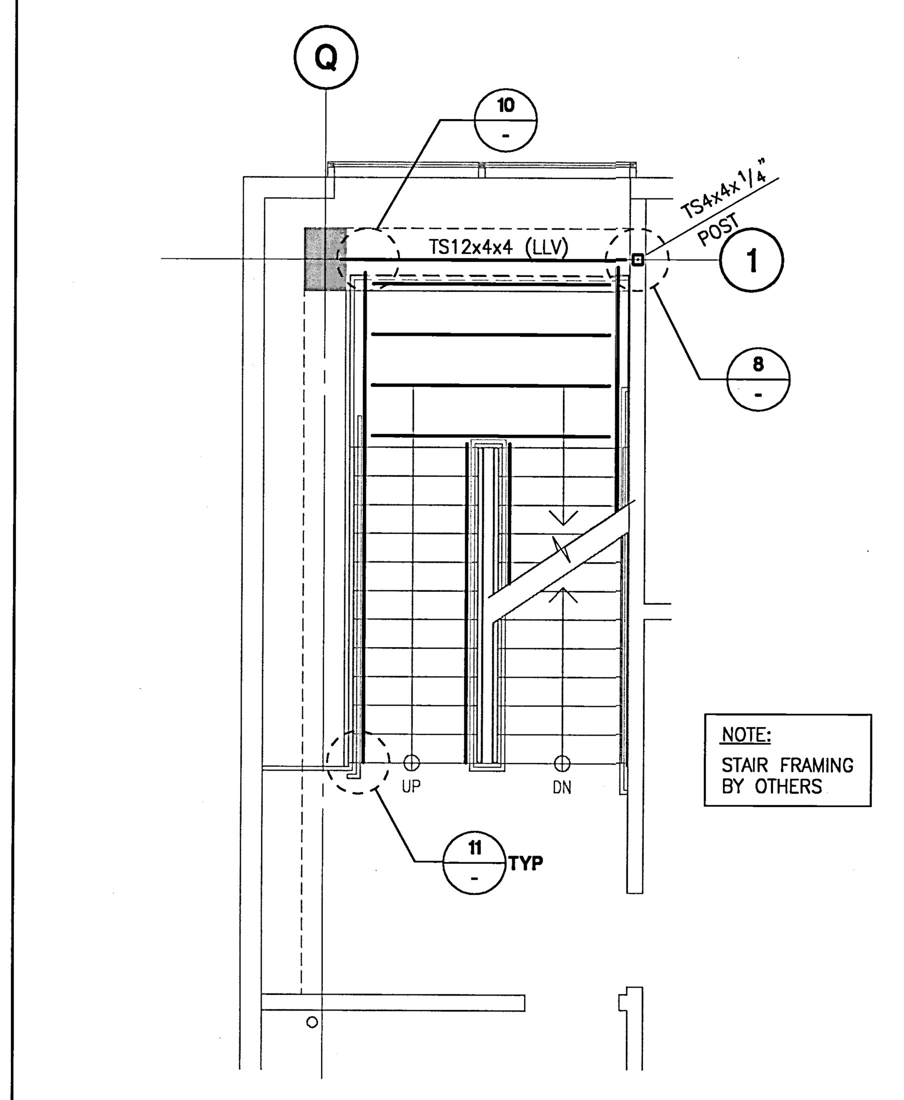
STAIR #2 FIRST FLOOR 1/4"=1'-0" | 5



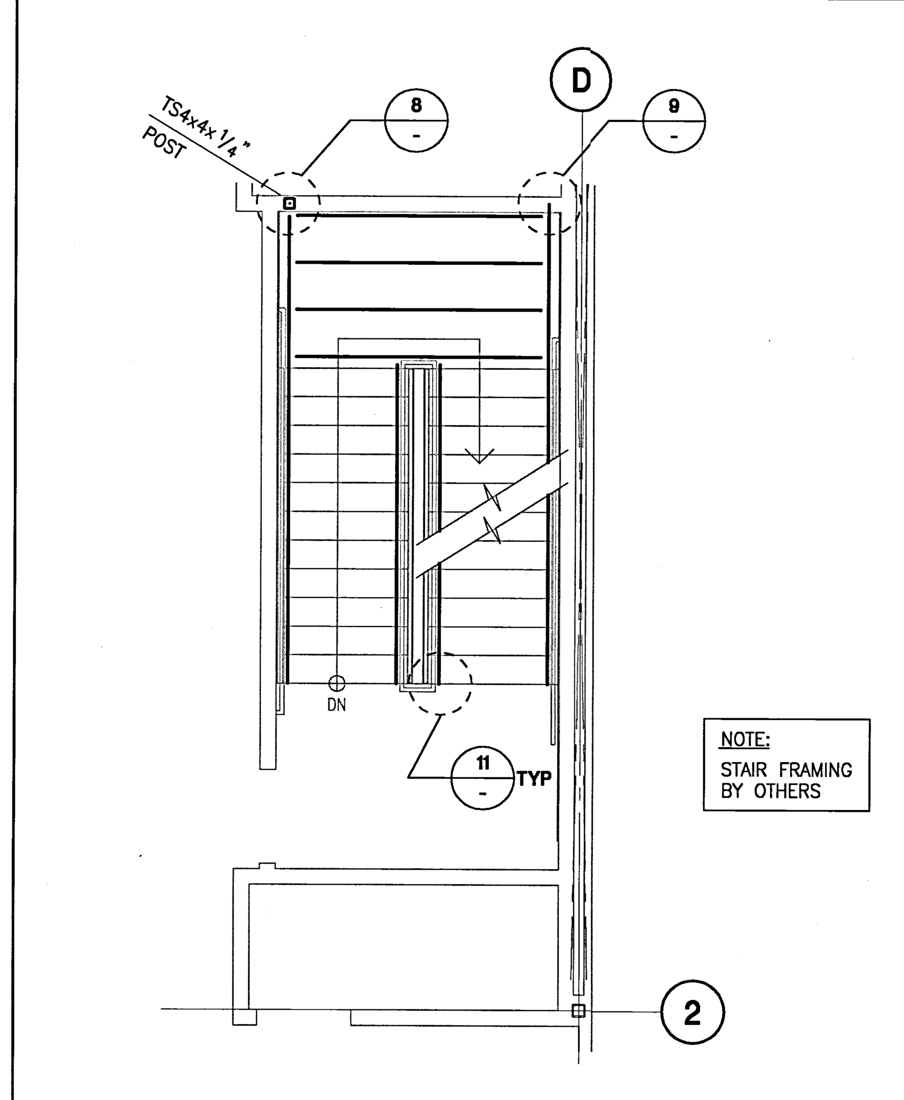
STAIR #1 SECOND FLOOR 1/4"=1'-0" | 2



STRINGER TO CONC WALL CONNECTION DETAIL 1"=1'-0" | 9



STAIR #2 SECOND FLOOR 1/4"=1'-0" | 6



STAIR #1 THIRD FLOOR 1/4"=1'-0" | 3

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RECORD DRAWINGS

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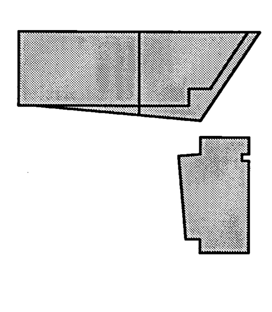


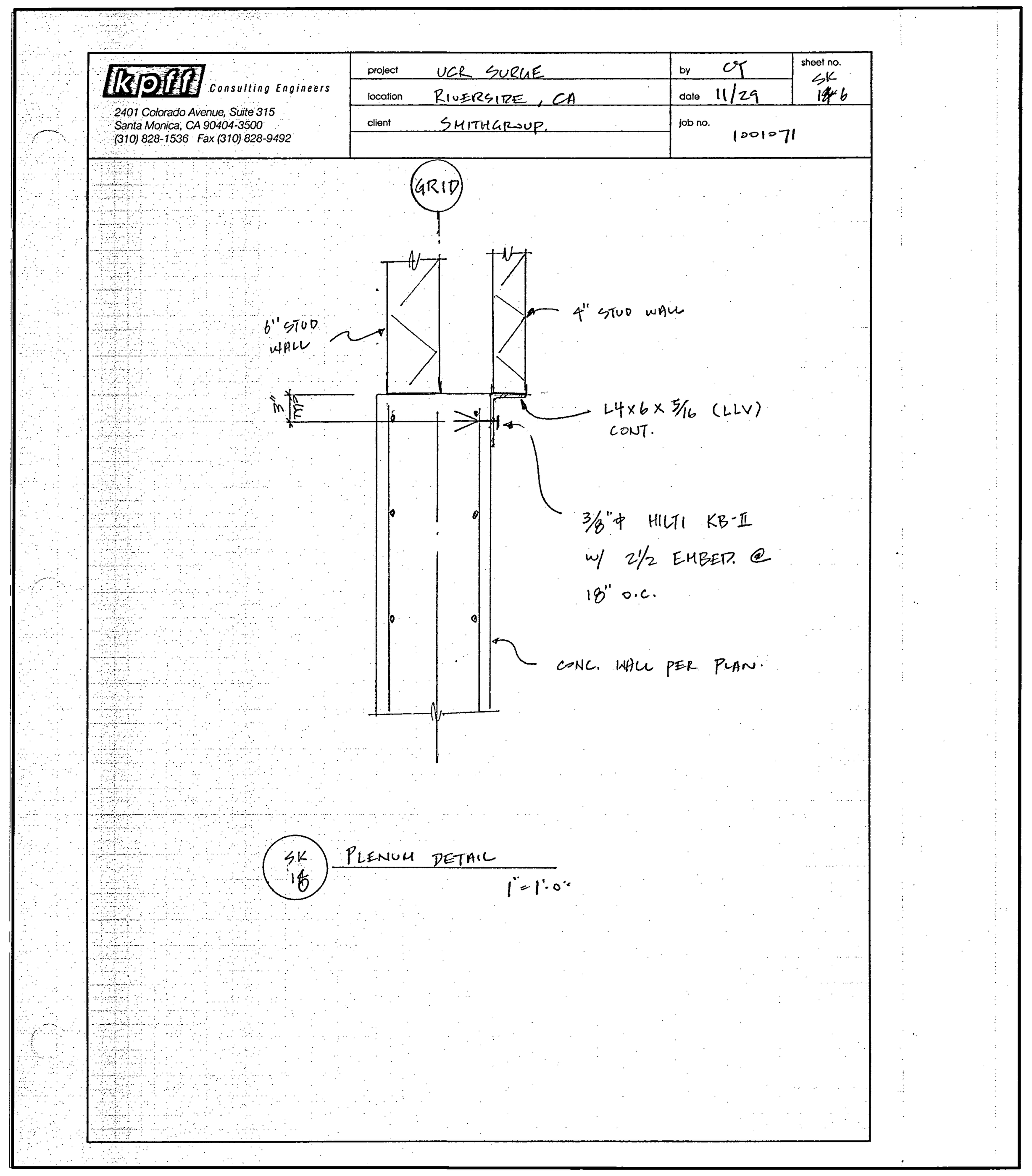
Drawing Title

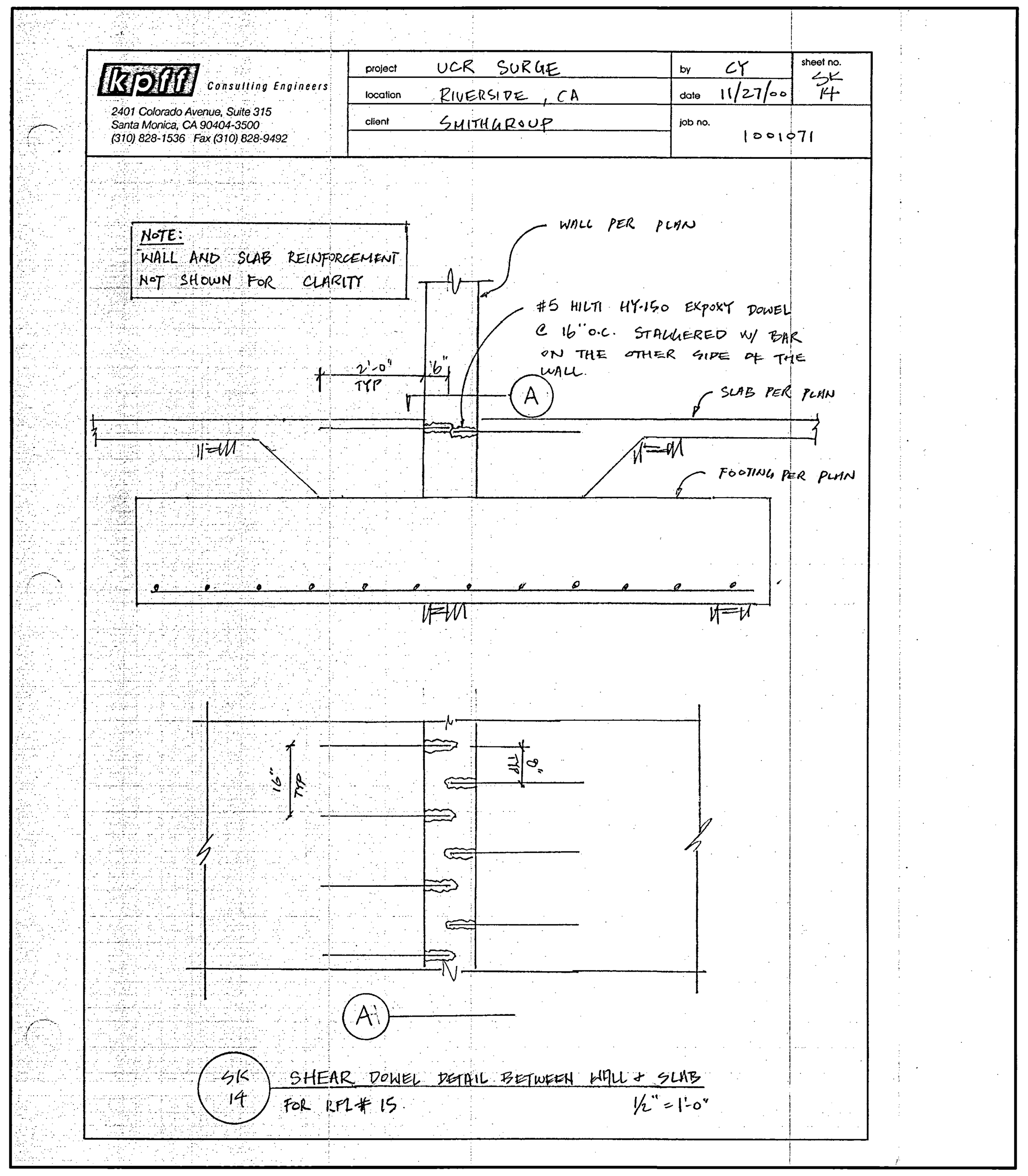
STAIR PLAN
AND DETAILS

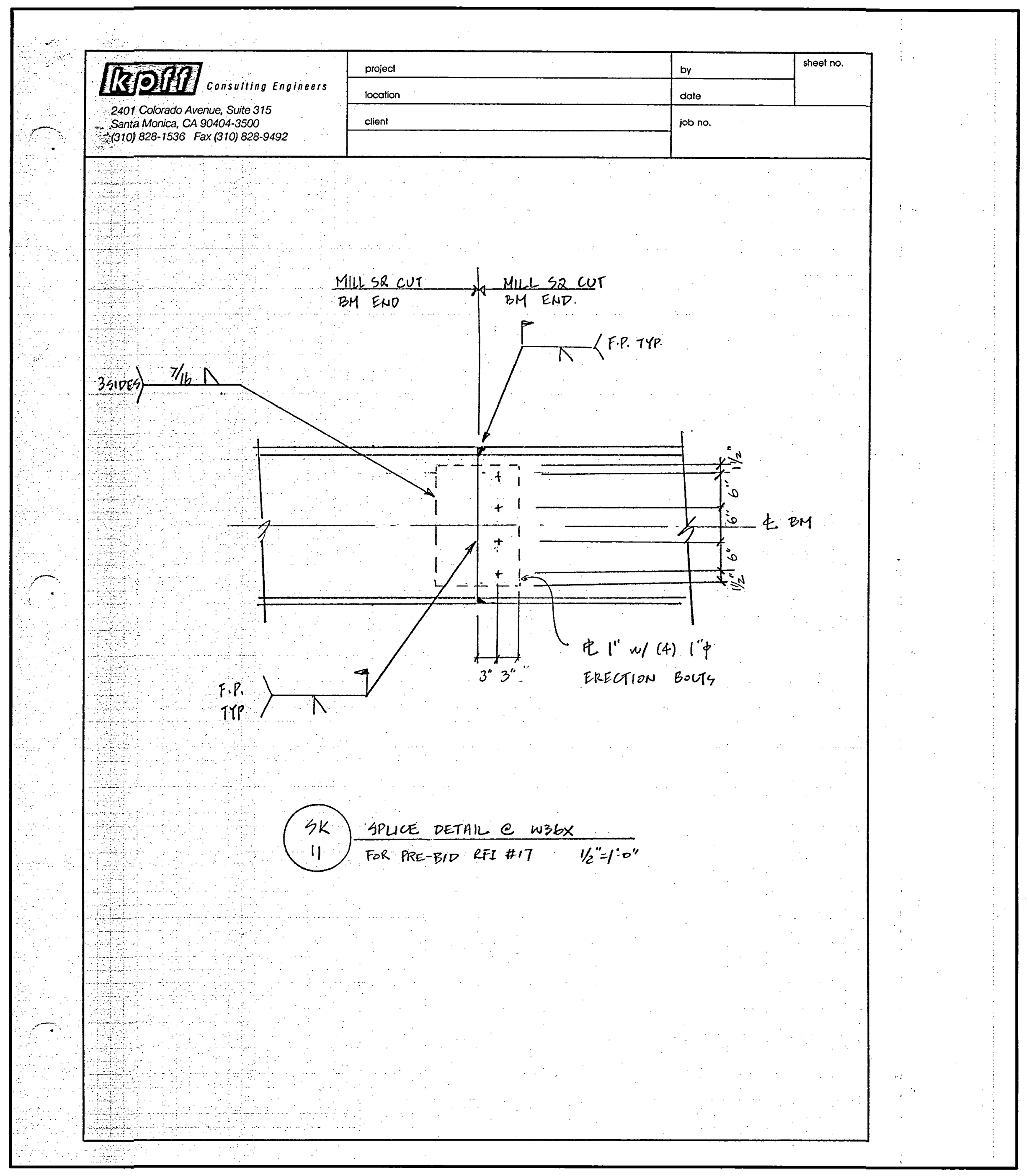
Scale
1001071
Project Number
6 OCT 00
Baseline Date

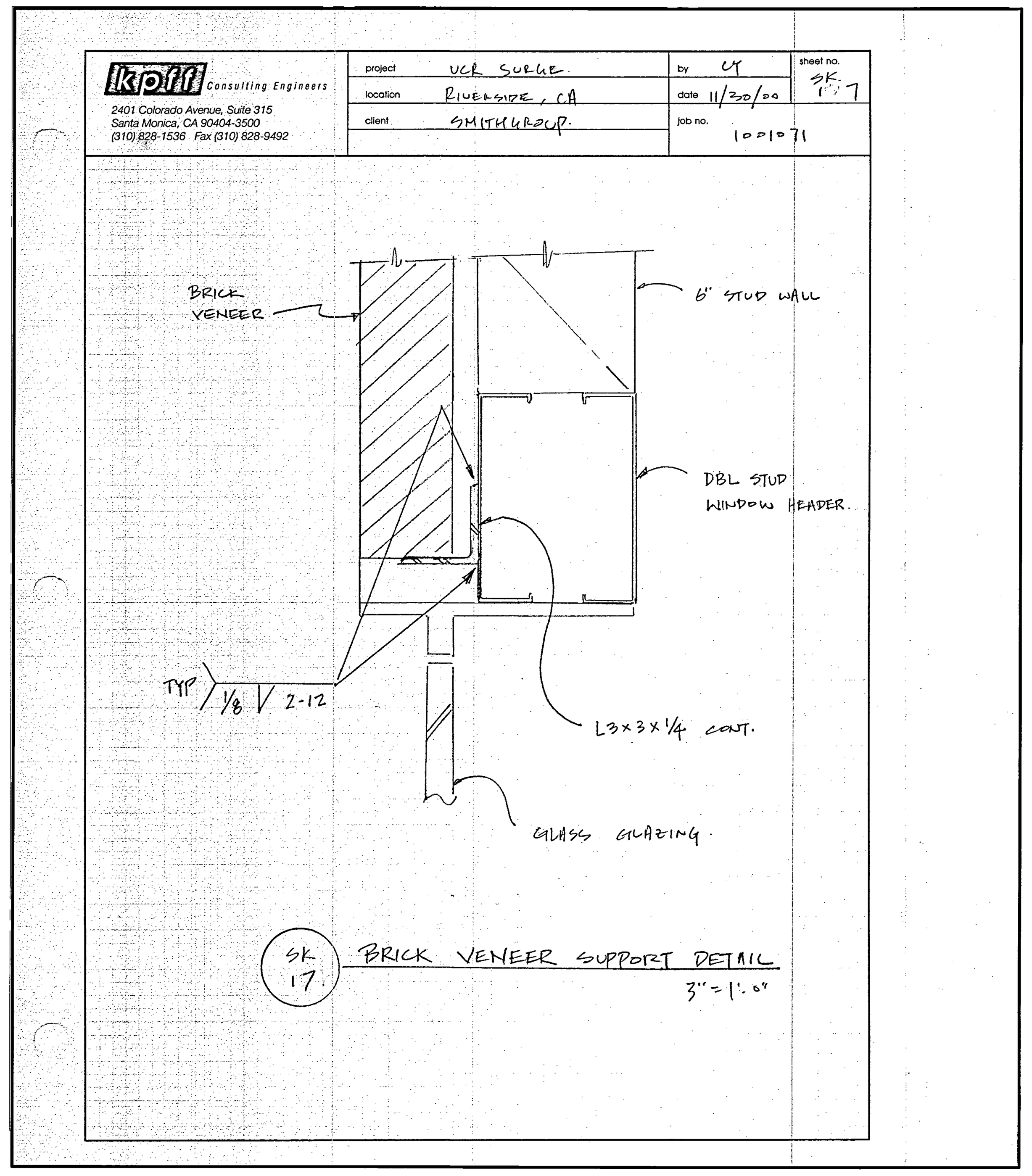
S10.1
Drawing Number

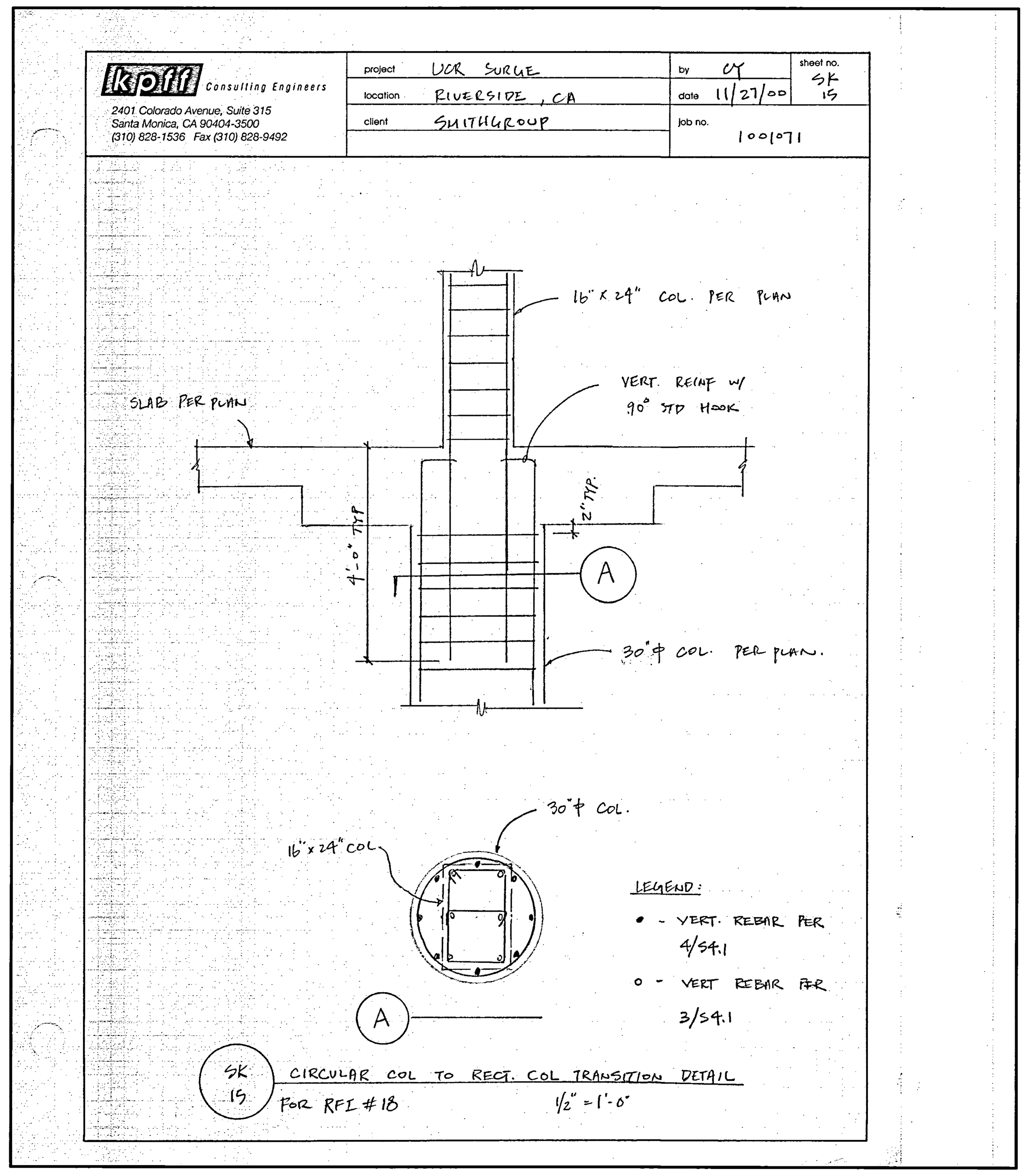
NOTES:
JOB # 1001071
JOB NAME UCR - CAMPUS SURGE BLDG
XREFS: NO XREFS ATTACHED
FILE PATH & NAME -
PLOTTED DATE & TIME -
UPDATED BY EVDH
PLOT SCALE 1=1
PROG.MG. CY
DRAFTER EVDH

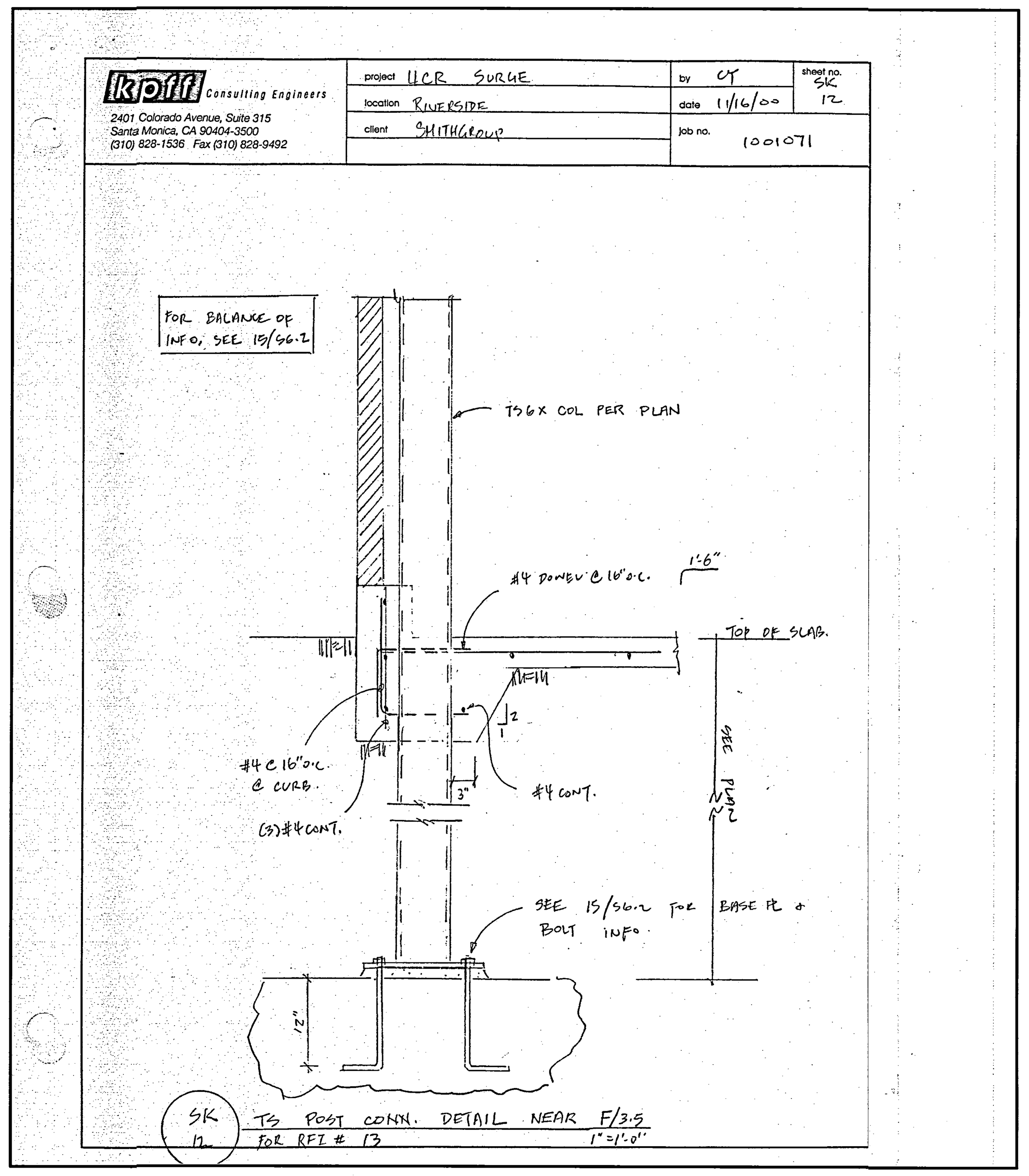












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RECORD DRAWINGS

Key Plan

Drawing Title

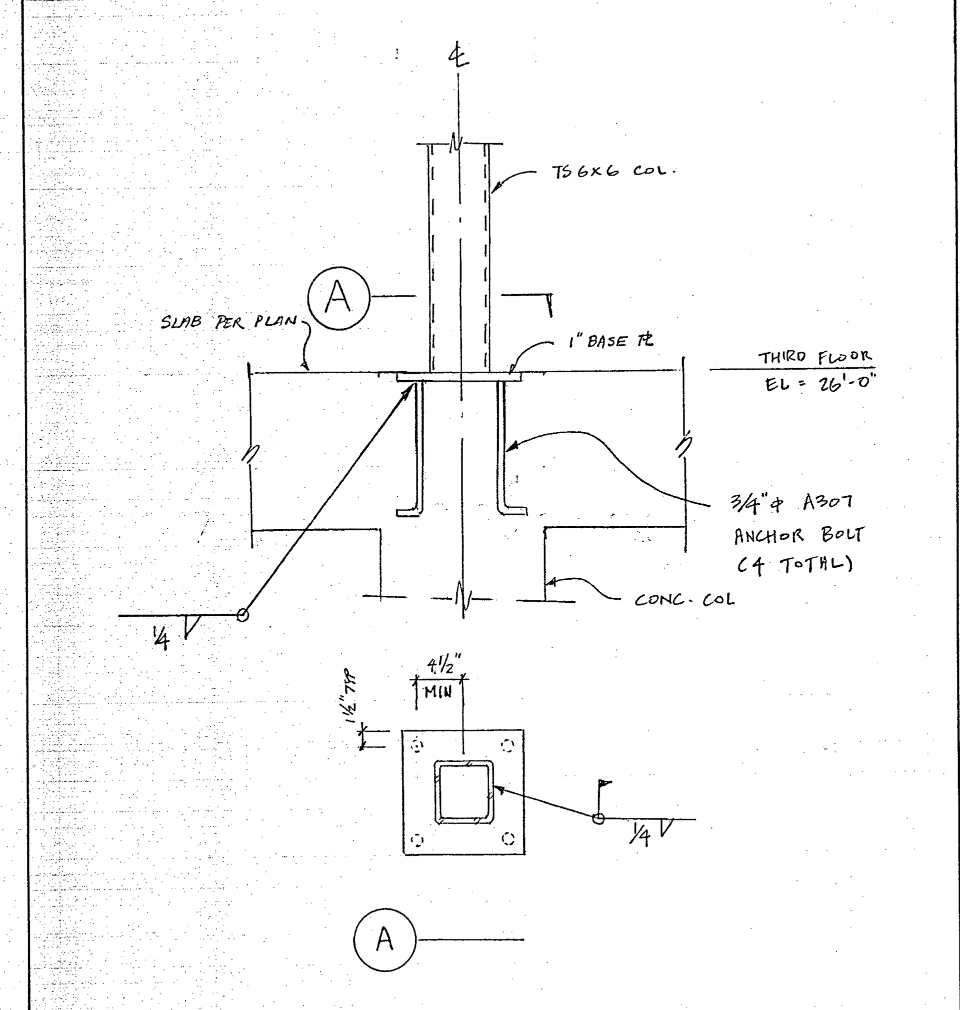
DETAILS

Scale
1001071
Project Number
6 OCT 00
Baseline Date
S11.1
Drawing Number

NOTES:
JOB NAME
1001071 UCR - CAMPUS SURGE BLDG
XREFS: NO XREFS ATTACHED
FILE PATH & NAME
PLOTTED DATE & TIME
UPDATED BY TT
PLOT SCALE 1=1
PROG.MG. CY
DRAFTER TT

kpff Consulting Engineers
2401 Colorado Avenue, Suite 315
Santa Monica, CA 90404-3500
(310) 828-1536 Fax (310) 828-9492

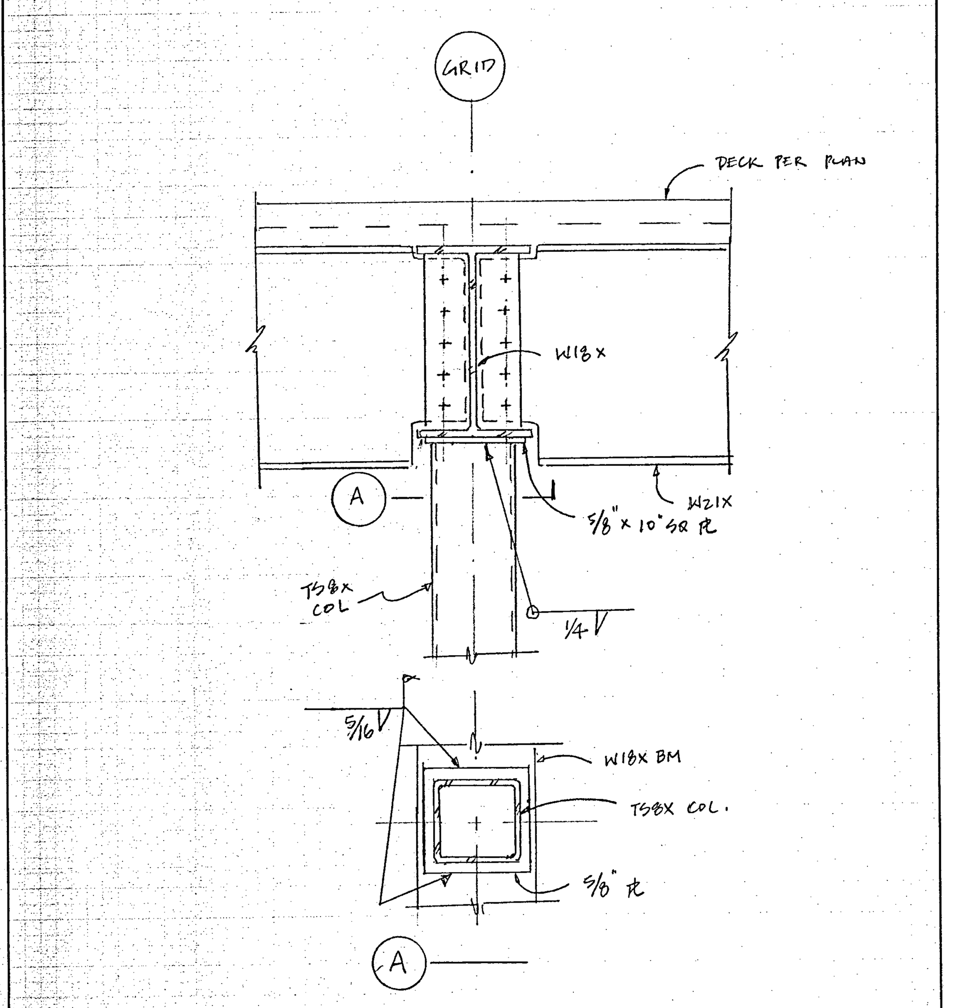
project UCR SURGE	by CY	sheet no. SK 27
location RIVERSIDE, CA	date 1/9/01	
client SMITHGROUP	job no. 1001071	



SK 27 BASE ℘ DETAIL FOR TYP. NON-FRAME COL. @ SURGE BUILDING
FOR SHOP DRG # 05120.002 1"=1'-0"

kpff Consulting Engineers
2401 Colorado Avenue, Suite 315
Santa Monica, CA 90404-3500
(310) 828-1536 Fax (310) 828-9492

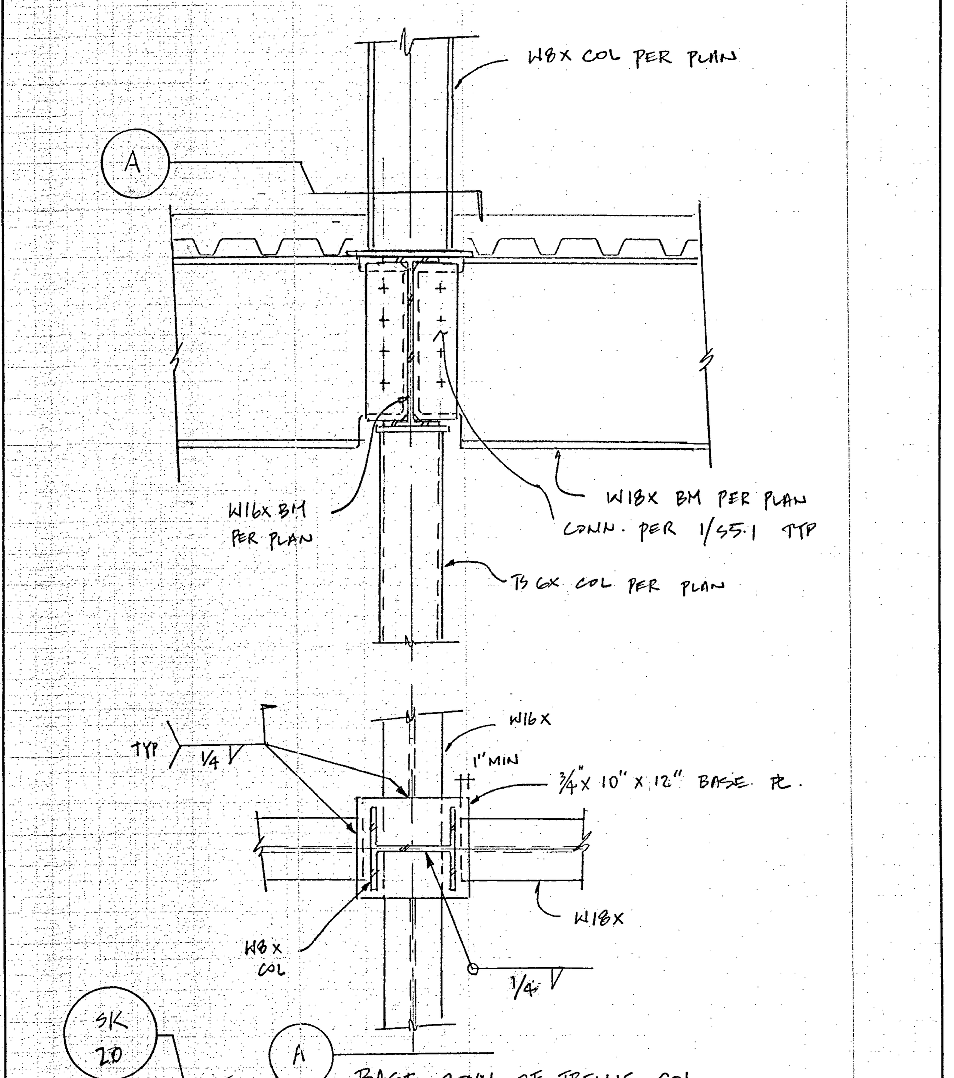
project UCR SURGE	by CY	sheet no. SK 24
location RIVERSIDE, CA	date 12/6/00	
client SMITHGROUP	job no. 1001071	



SK 24 COLUMN TO BM CONN DETAIL
FOR RFI # 33 1"=1'-0"

kpff Consulting Engineers
2401 Colorado Avenue, Suite 315
Santa Monica, CA 90404-3500
(310) 828-1536 Fax (310) 828-9492

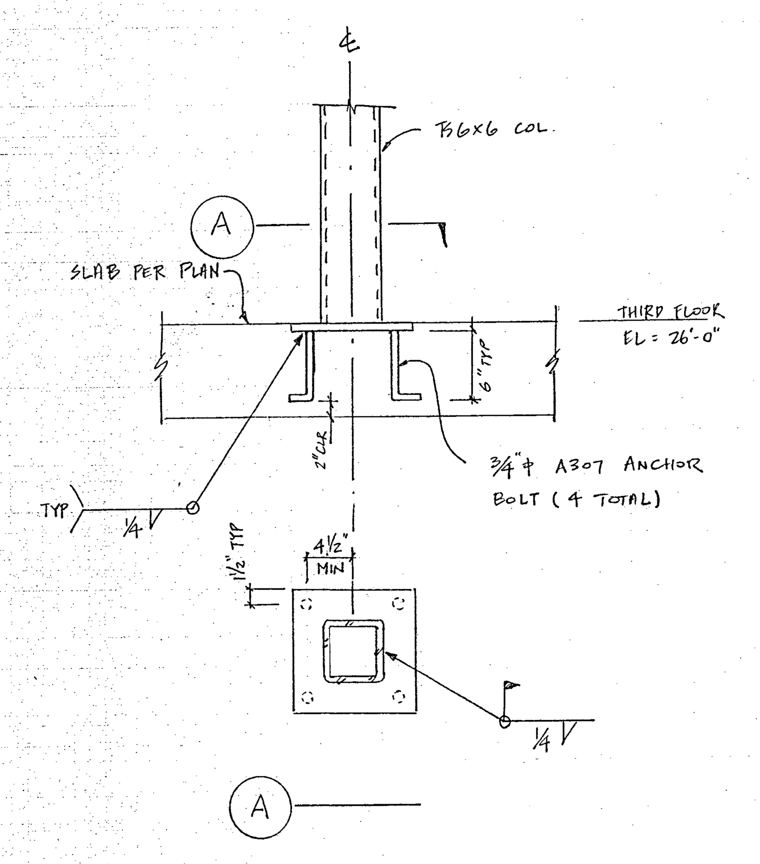
project UCR SURGE	by CY	sheet no. SK 20
location RIVERSIDE, CA	date 12/5/00	
client SMITHGROUP	job no. 1001071	



SK 20 A BASE CONN. OF TRELLIS COL
FOR RFI # 23 1"=1'-0"

kpff Consulting Engineers
2401 Colorado Avenue, Suite 315
Santa Monica, CA 90404-3500
(310) 828-1536 Fax (310) 828-9492

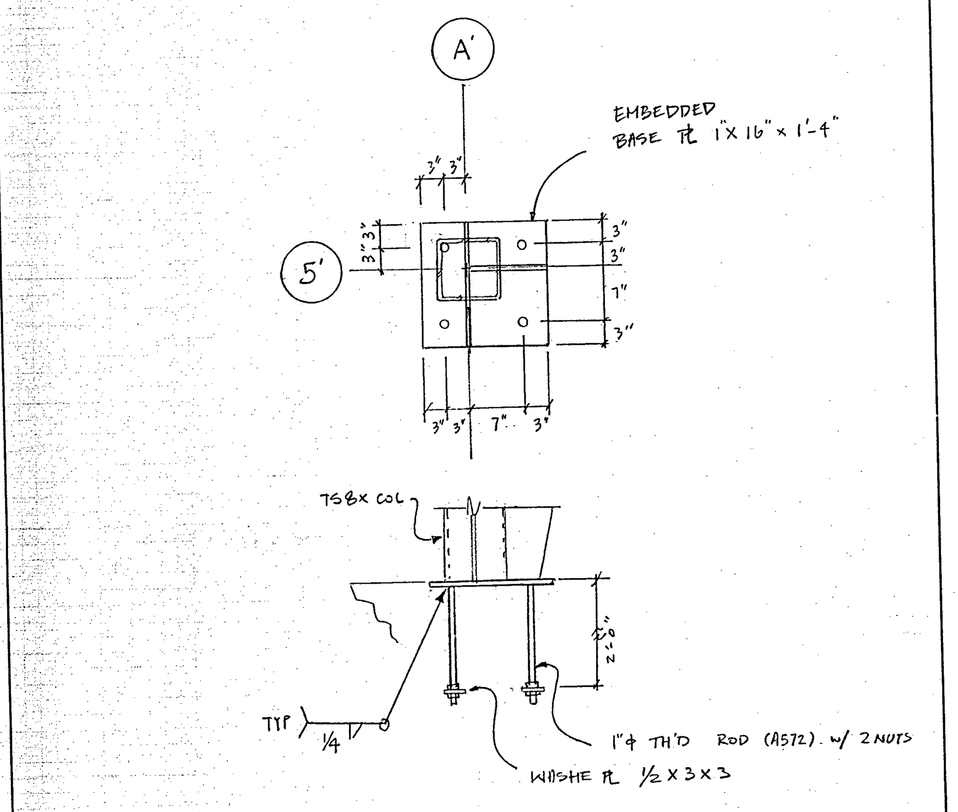
project UCR SURGE	by CY	sheet no. SK 28
location RIVERSIDE, CA	date 1/9/01	
client SMITHGROUP	job no. 1001071	



SK 28 BASE ℘ DETAIL @ J,K,L/6 AND M,N,P,Q/4
FOR SHOP DRWG # 05120.002 1"=1'-0"

kpff Consulting Engineers
2401 Colorado Avenue, Suite 315
Santa Monica, CA 90404-3500
(310) 828-1536 Fax (310) 828-9492

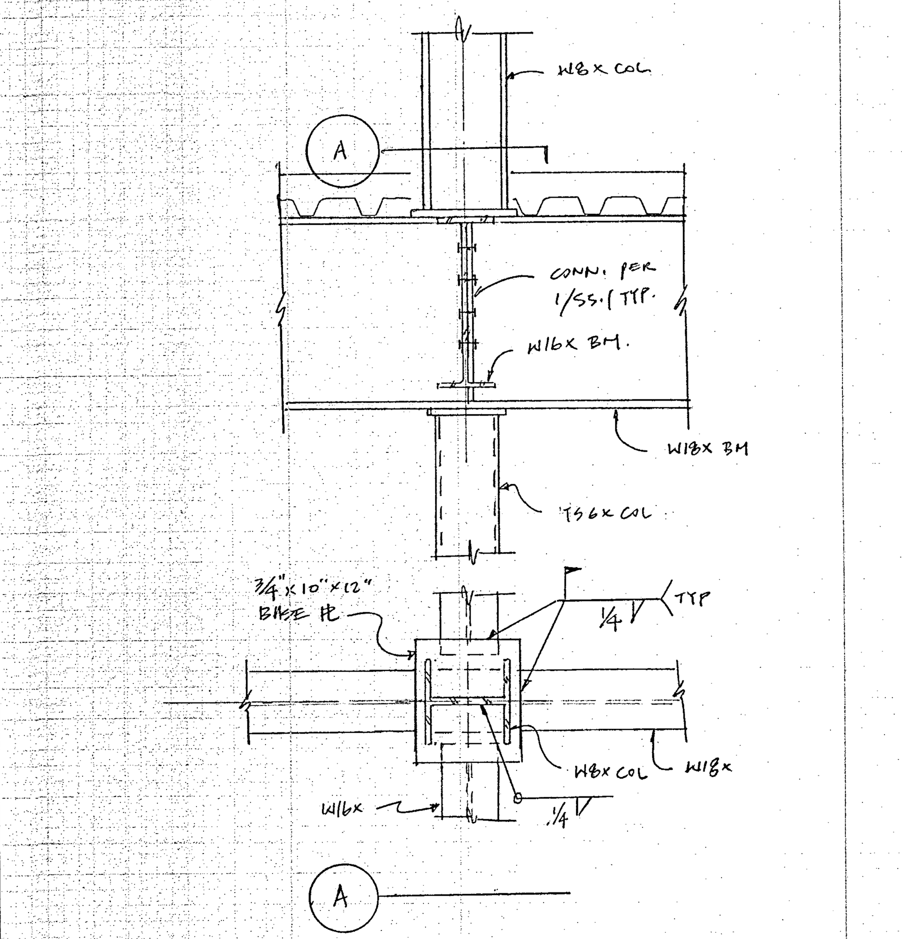
project UCR SURGE	by CY	sheet no. SK 26
location RIVERSIDE	date 1/5/01	
client SMITHGROUP	job no. 1001071	



SK 26 REVISED DETAIL OF A85-6
FOR SHOP # 05120.001 3/4"=1'-0"

kpff Consulting Engineers
2401 Colorado Avenue, Suite 315
Santa Monica, CA 90404-3500
(310) 828-1536 Fax (310) 828-9492

project UCR SURGE	by CY	sheet no. SK 21
location RIVERSIDE, CA	date 12/5/00	
client SMITHGROUP	job no. 1001071	



SK 21 BASE CONN. OF TRELLIS COL
FOR RFI # 23. 1"=1'-0"

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RECORD DRAWINGS

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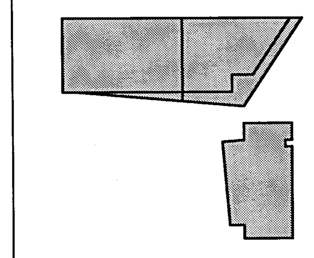


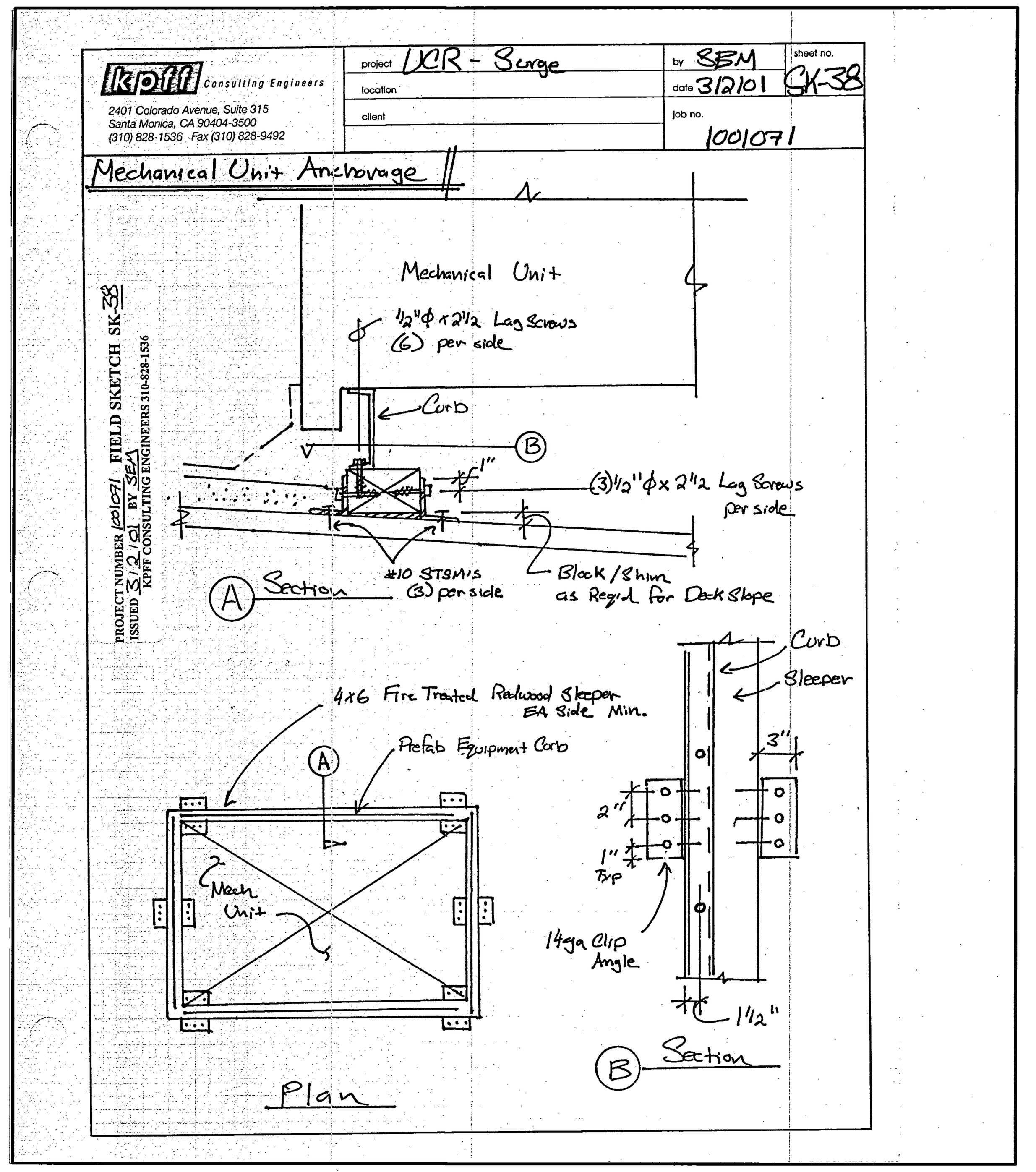
Drawing Title

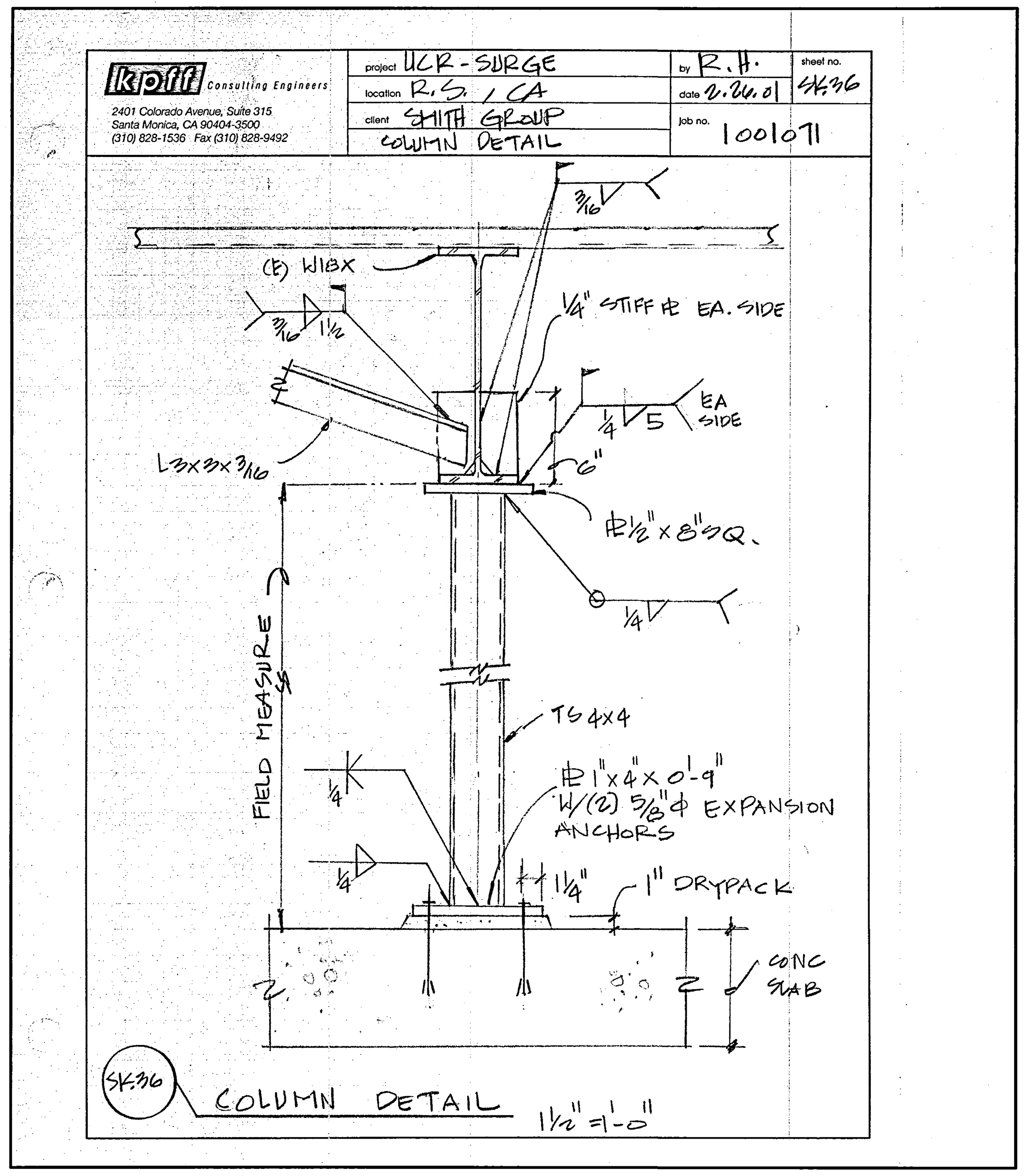
DETAILS

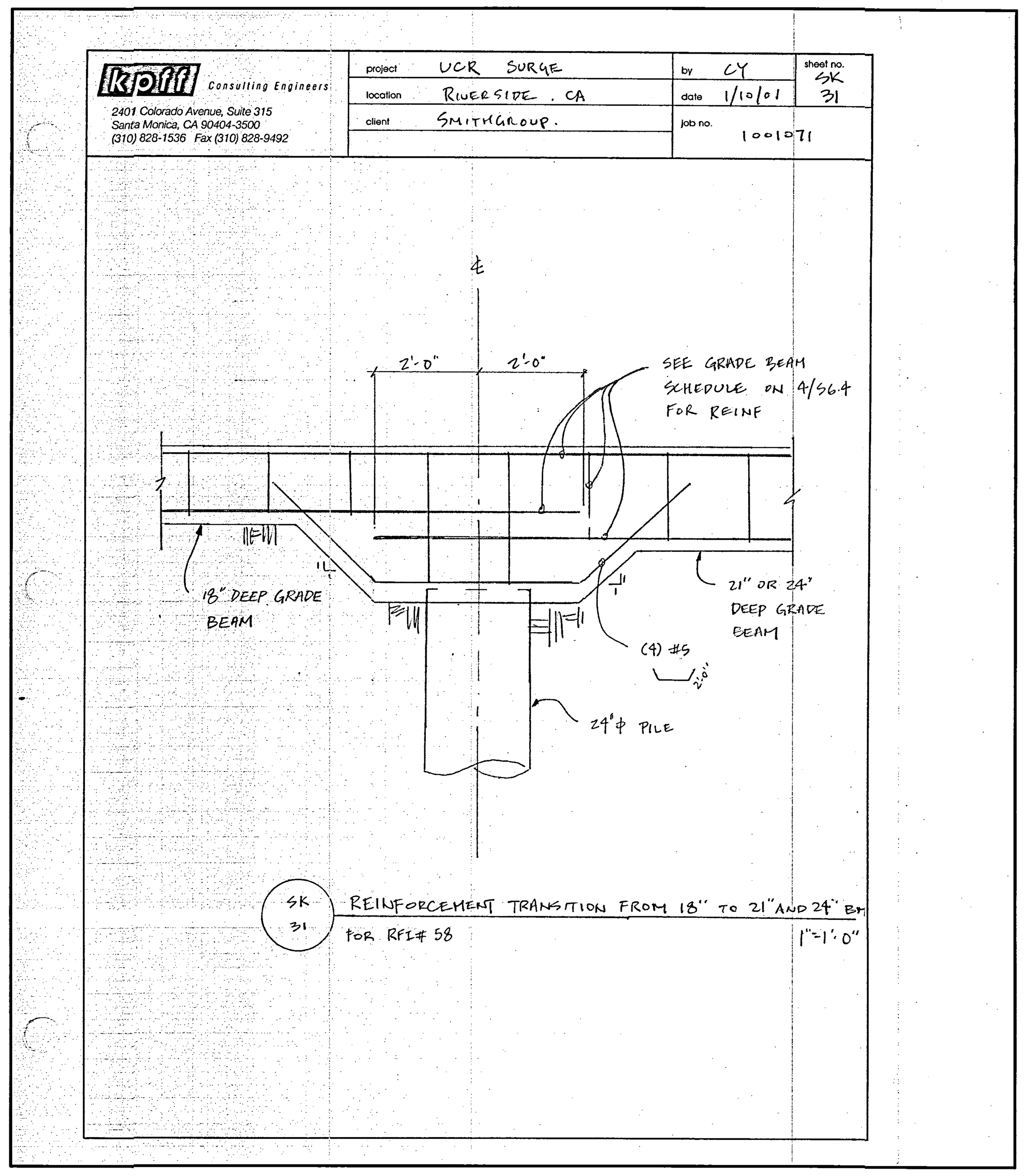
Scale
Project Number 1001071
6 OCT 00
Baseline Date

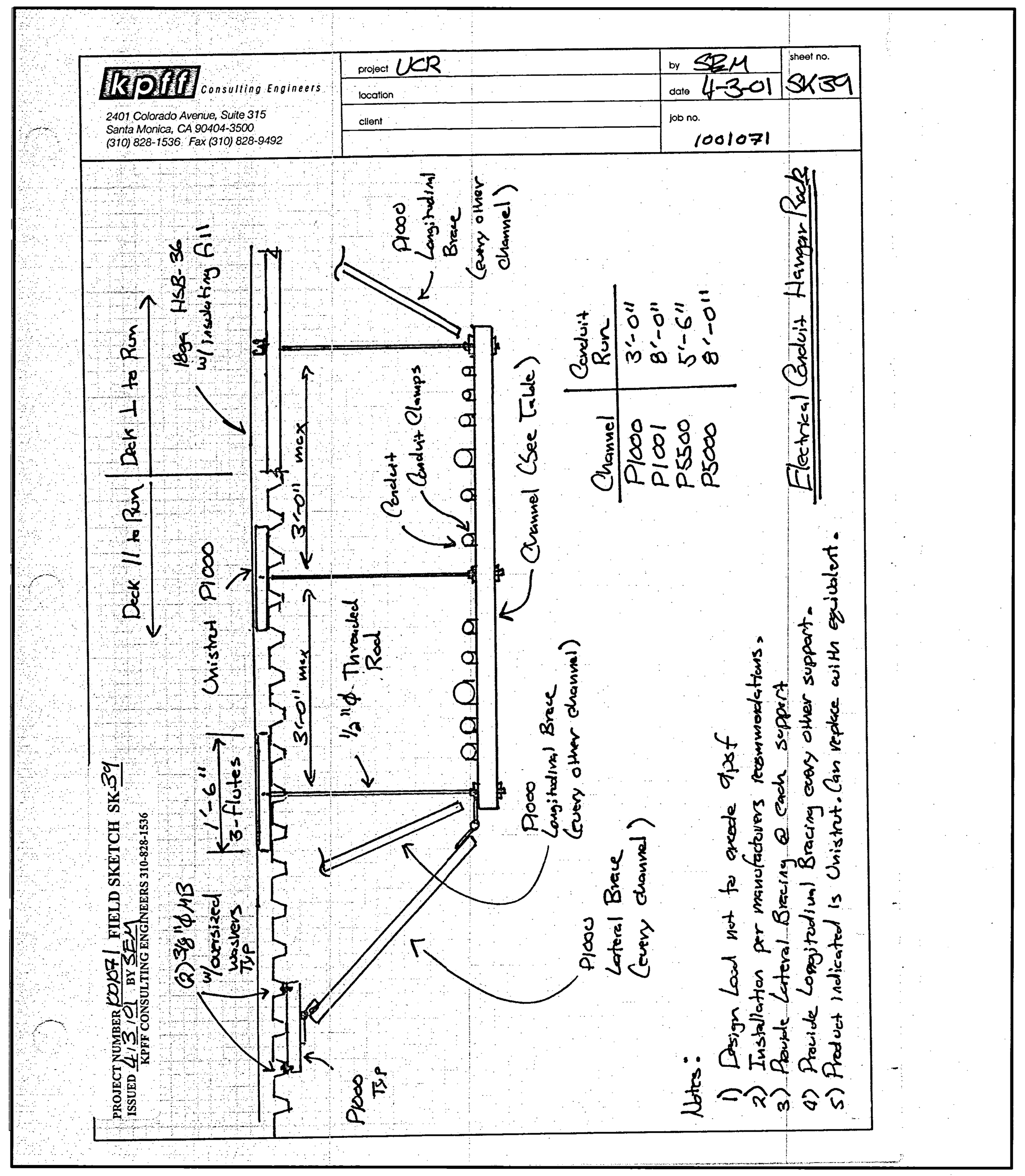
S11.2
Drawing Number

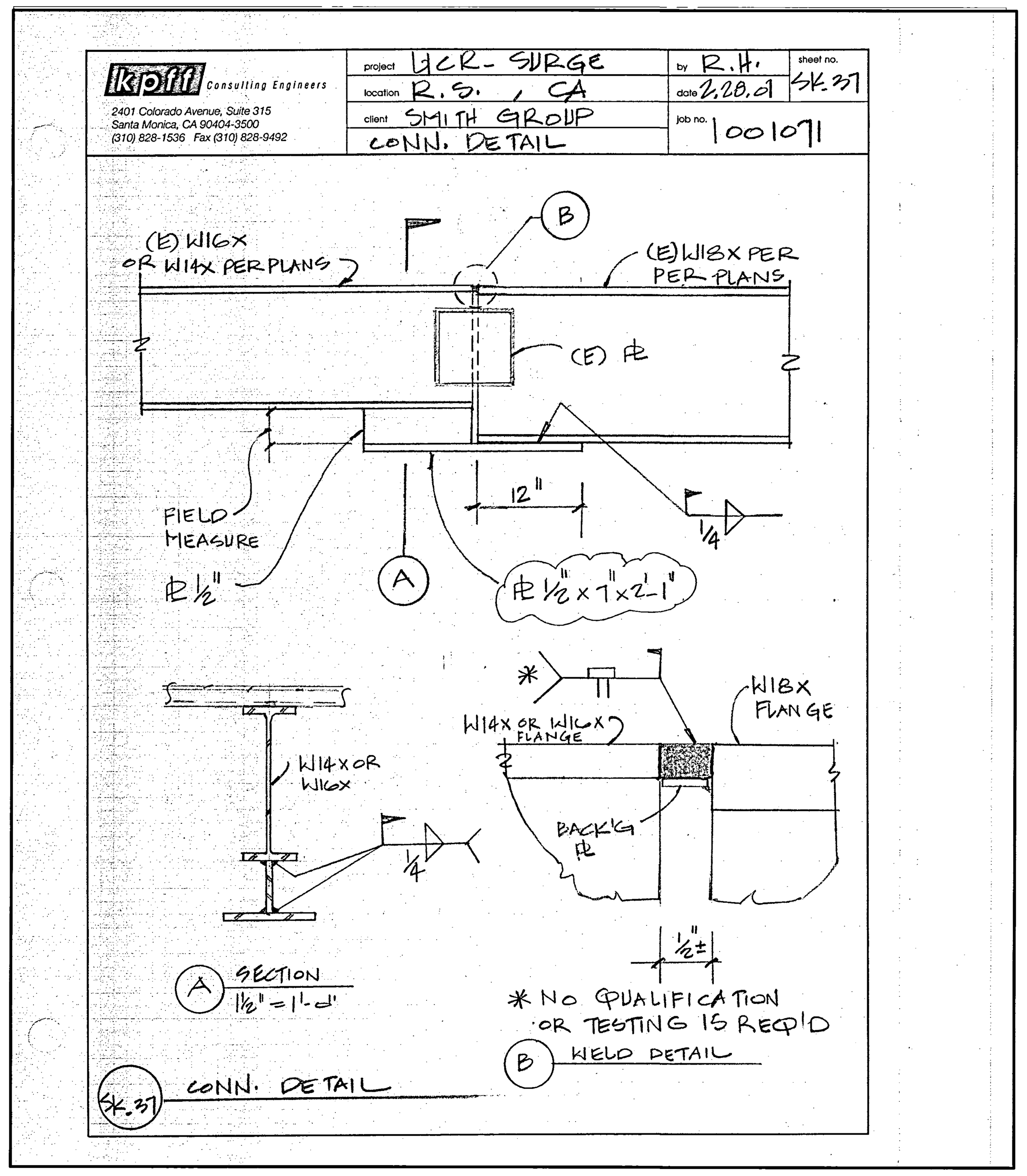
NOTES: | JOB # 1001071 | JOB NAME UCR - CAMPUS SURGE BLDG | FILE PATH & NAME | PLOTTED DATE & TIME | UPDATED BY TT | PLOT SCALE 1=1 | PROG.MG. CY | DRAFTER TT
XREFS: NO XREFS ATTACHED

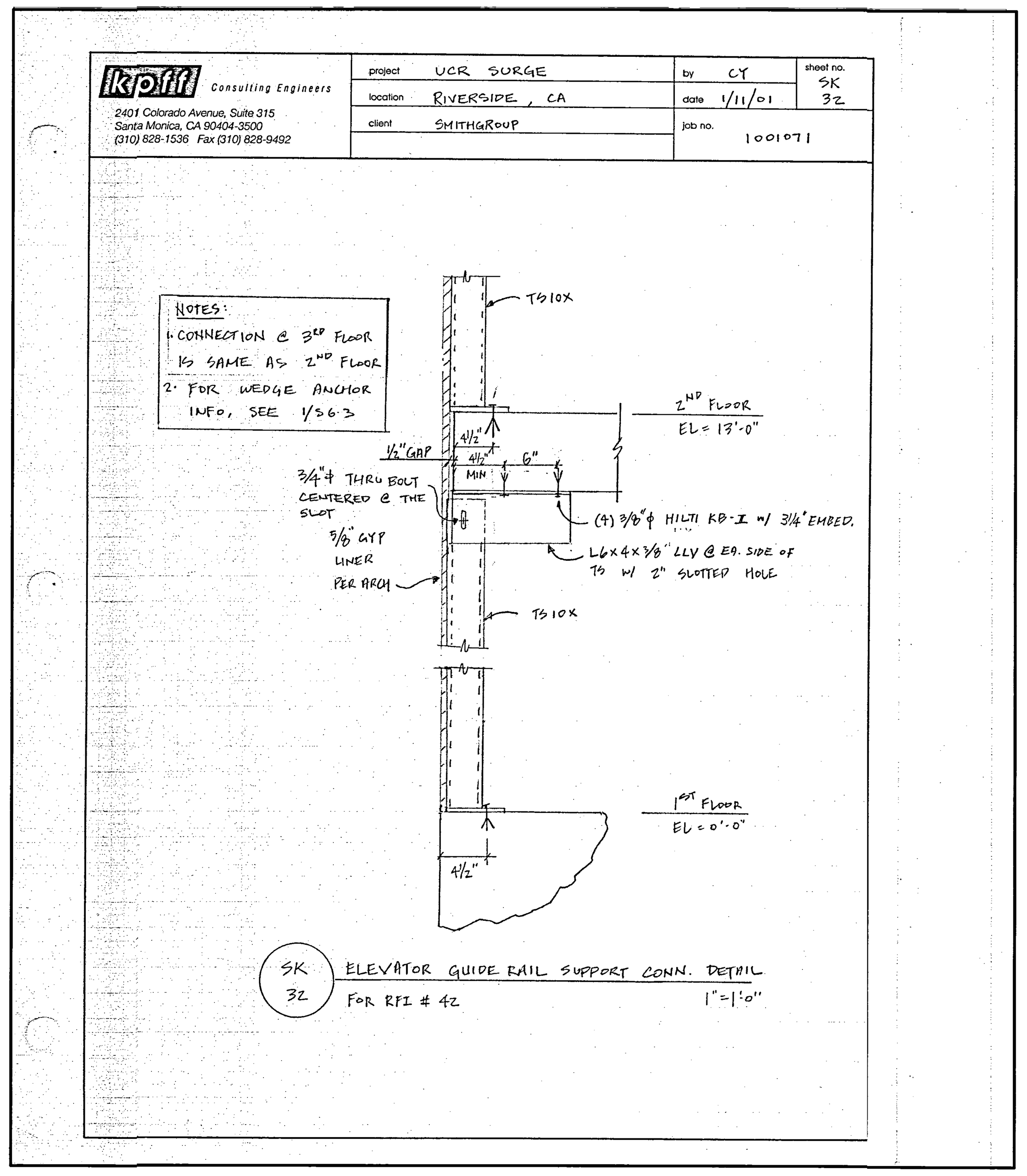












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RECORD DRAWINGS

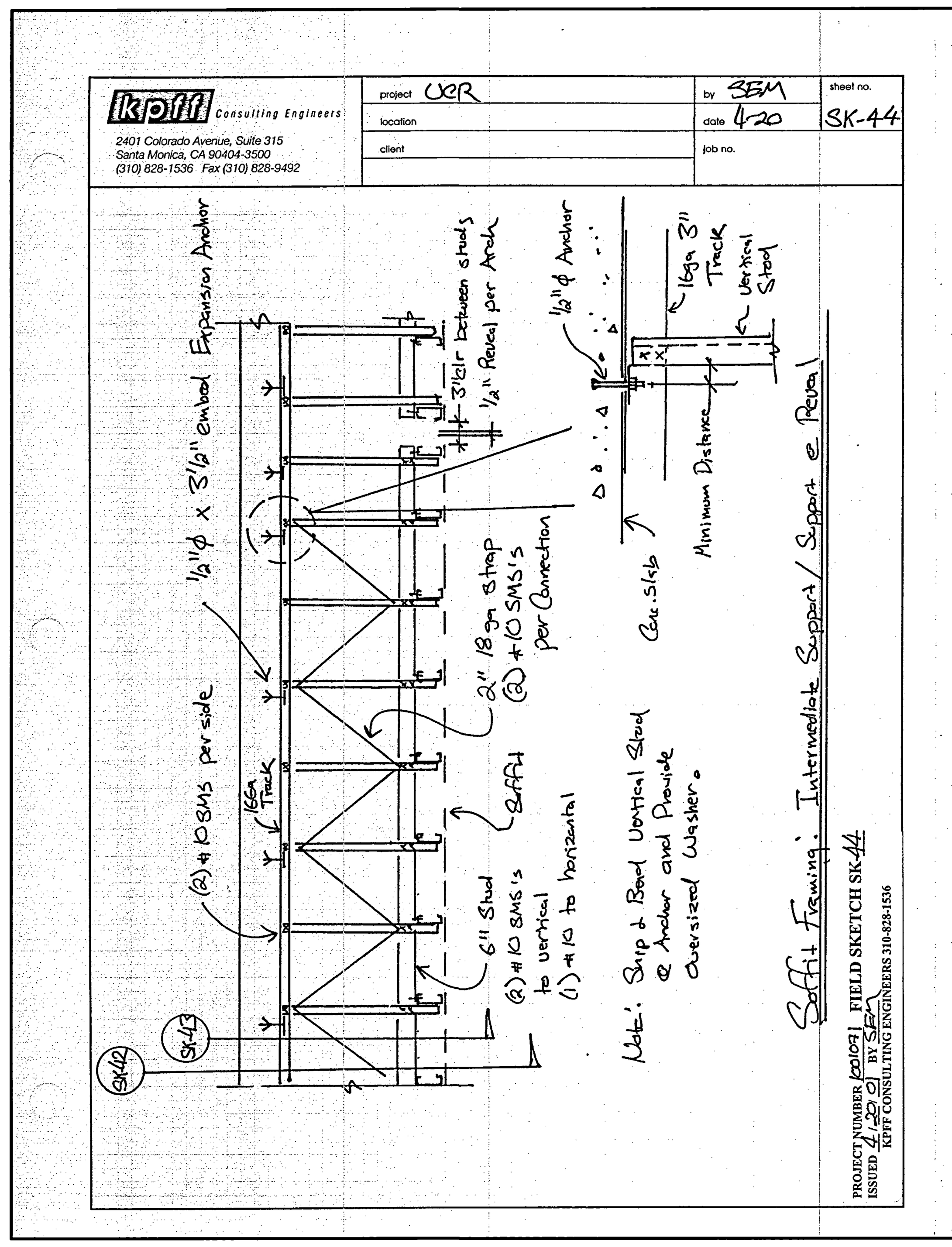
Key Plan

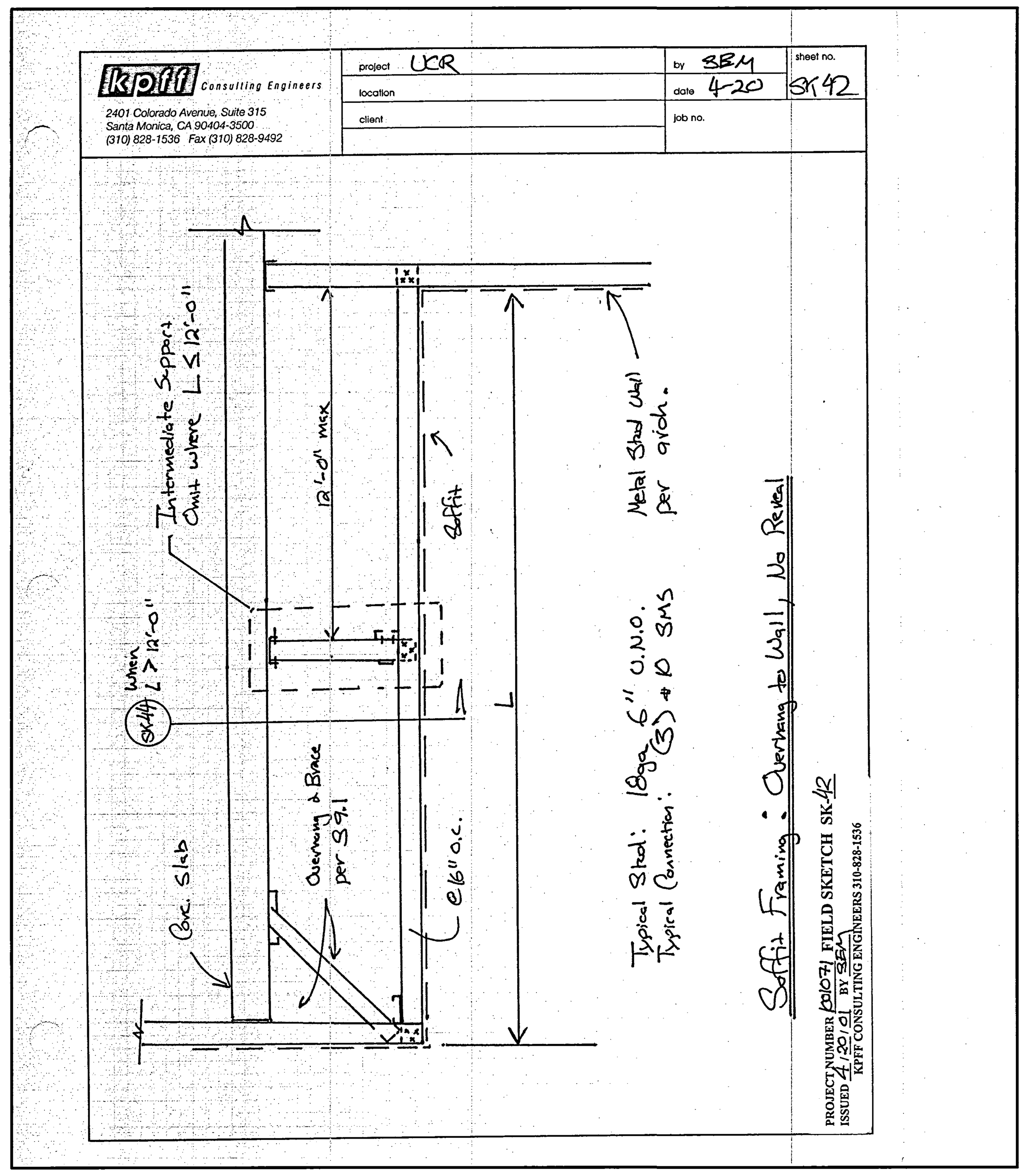
Drawing Title

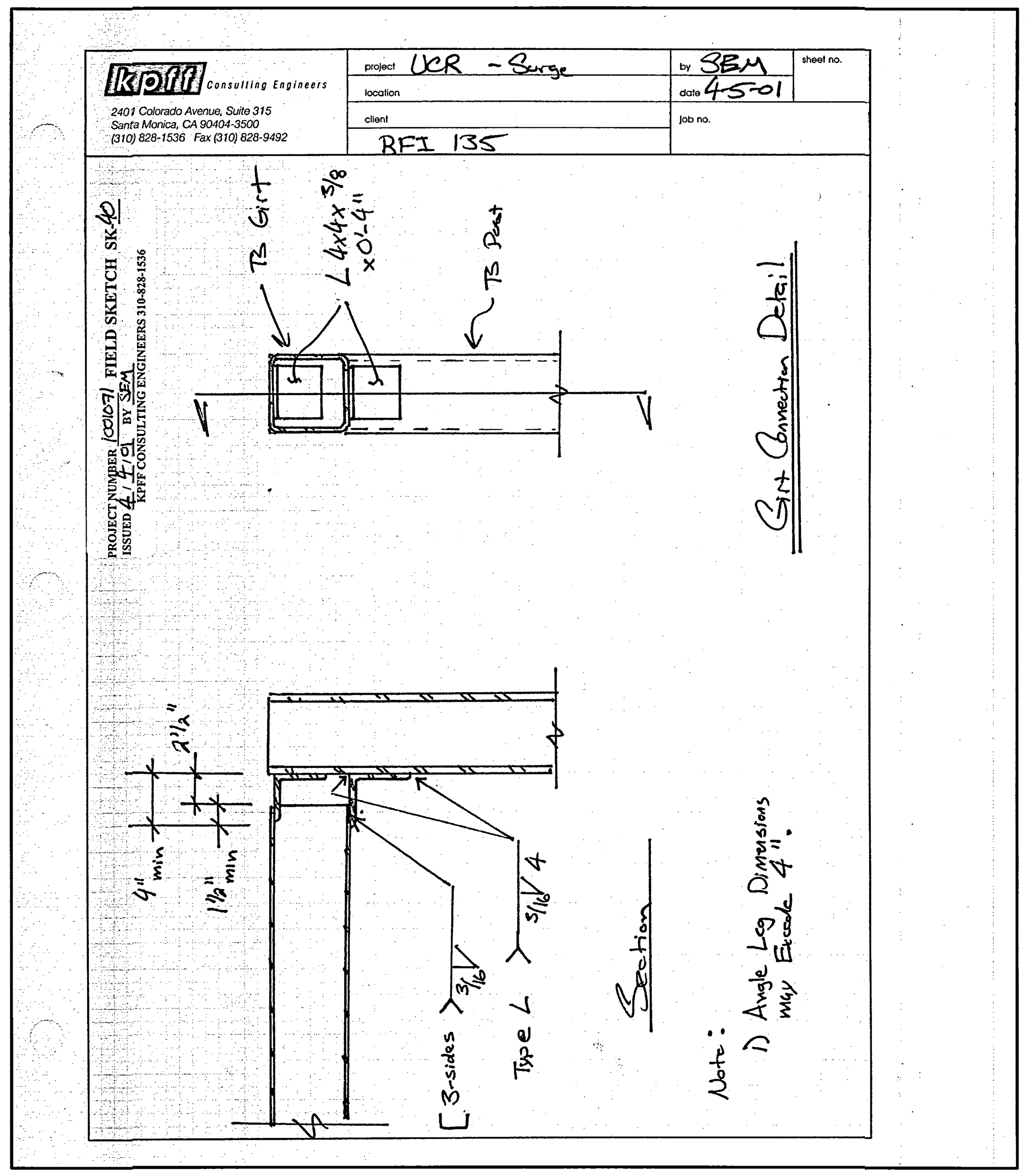
DETAILS

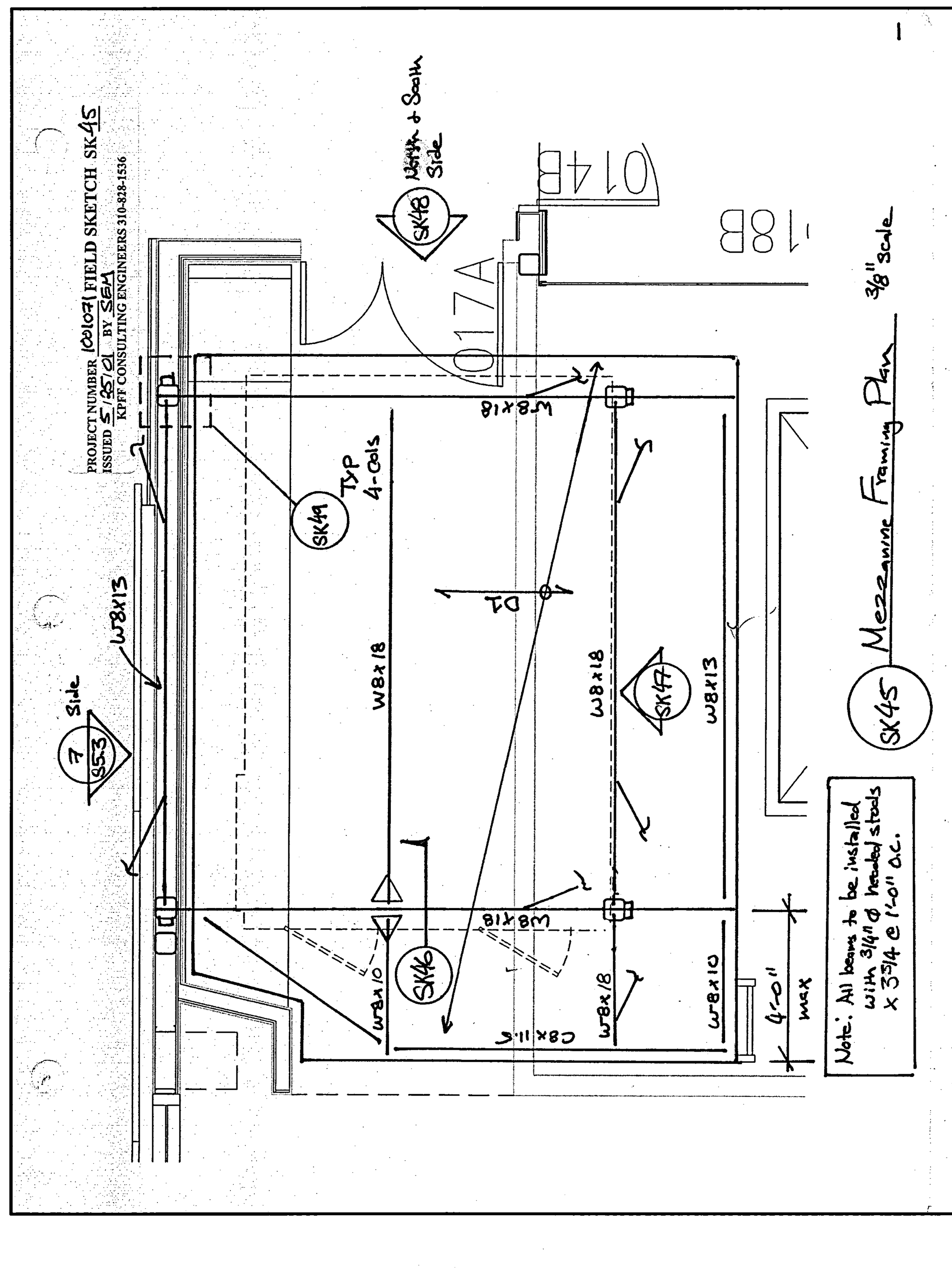
Scale
Project Number 1001071
Baseline Date 6 OCT 00
Drawing Number S11.3

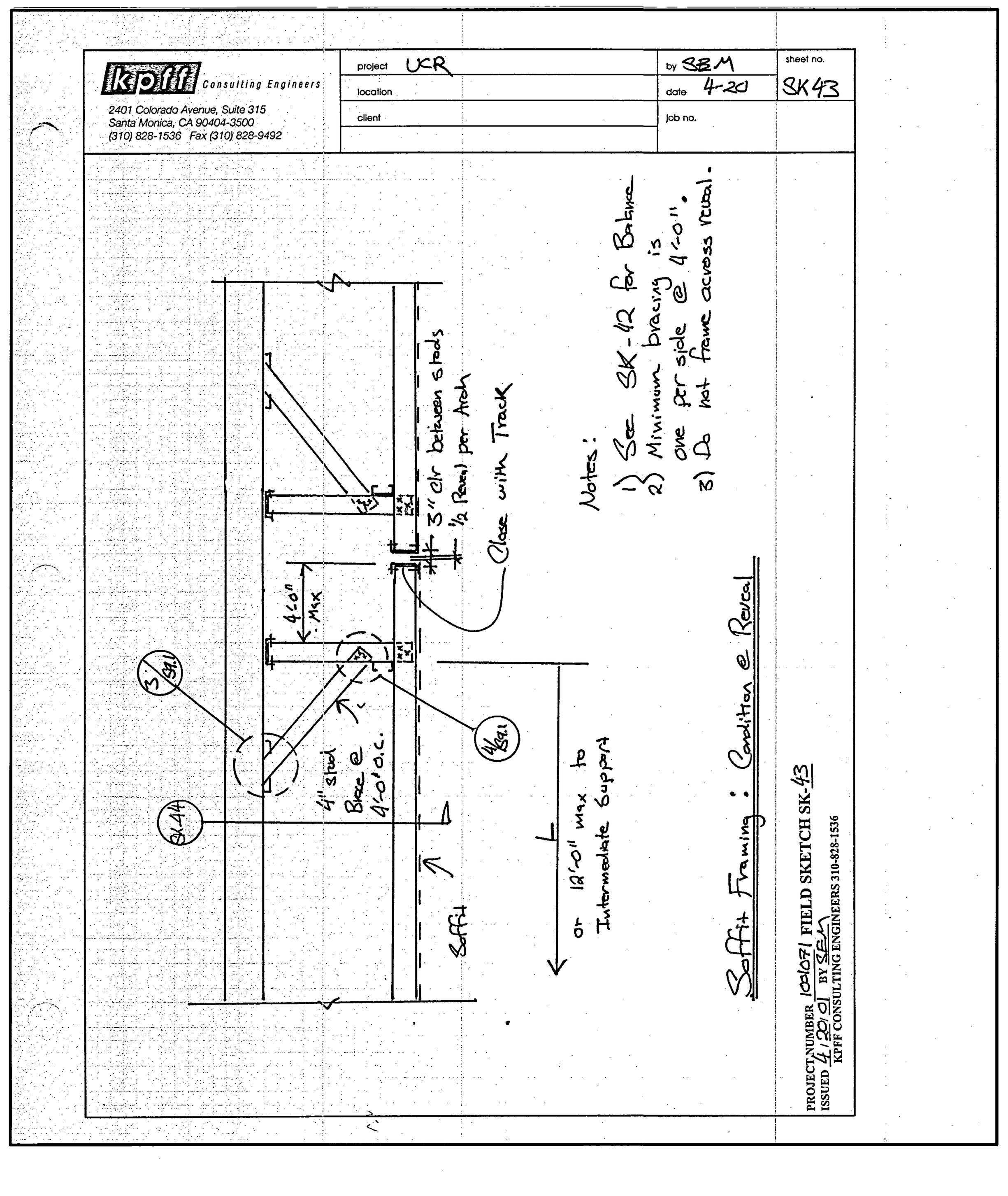
NOTES:
JOB # 1001071 — JOB NAME UCR - CAMPUS SURGE BLDG
XREFS: NO XREFS ATTACHED
FILE PATH & NAME -
PLOTTED DATE & TIME -
UPDATED BY TT
PLOT SCALE 1=1
PROG.MG. CY
DRAFTER TT

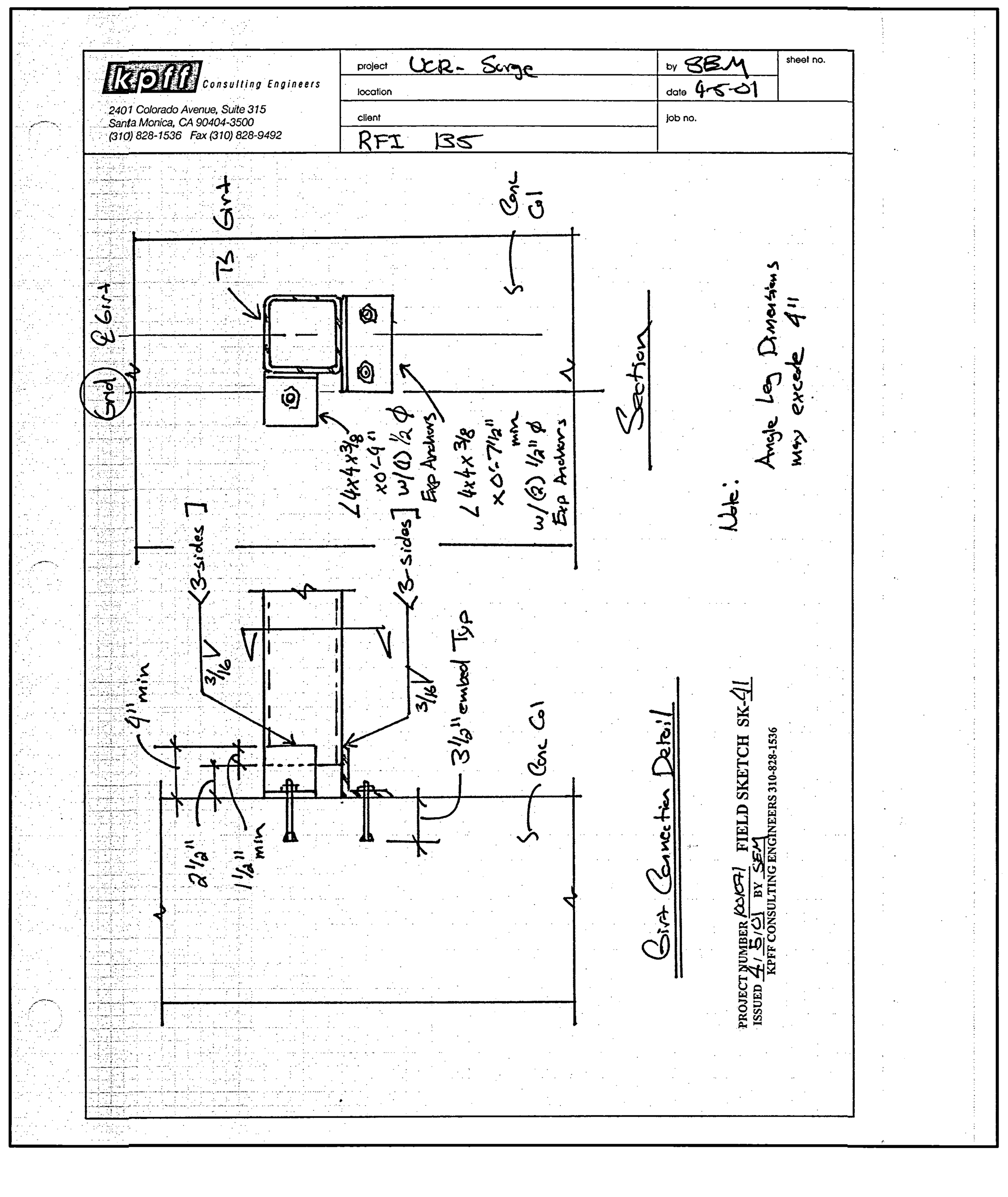












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RECORD DRAWINGS

Key Plan

Drawing Title

DETAILS

Scale
1001071
Project Number
6 OCT 00
Baseline Date

S11.4

Drawing Number

NOTES:	JOB #	FILE PATH & NAME	PLOTTED DATE & TIME	UPDATED BY	PLOT SCALE	PROJ.MG.	DRAFTER
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JOB NAME UCR - CAMPUS SURGE BLDG
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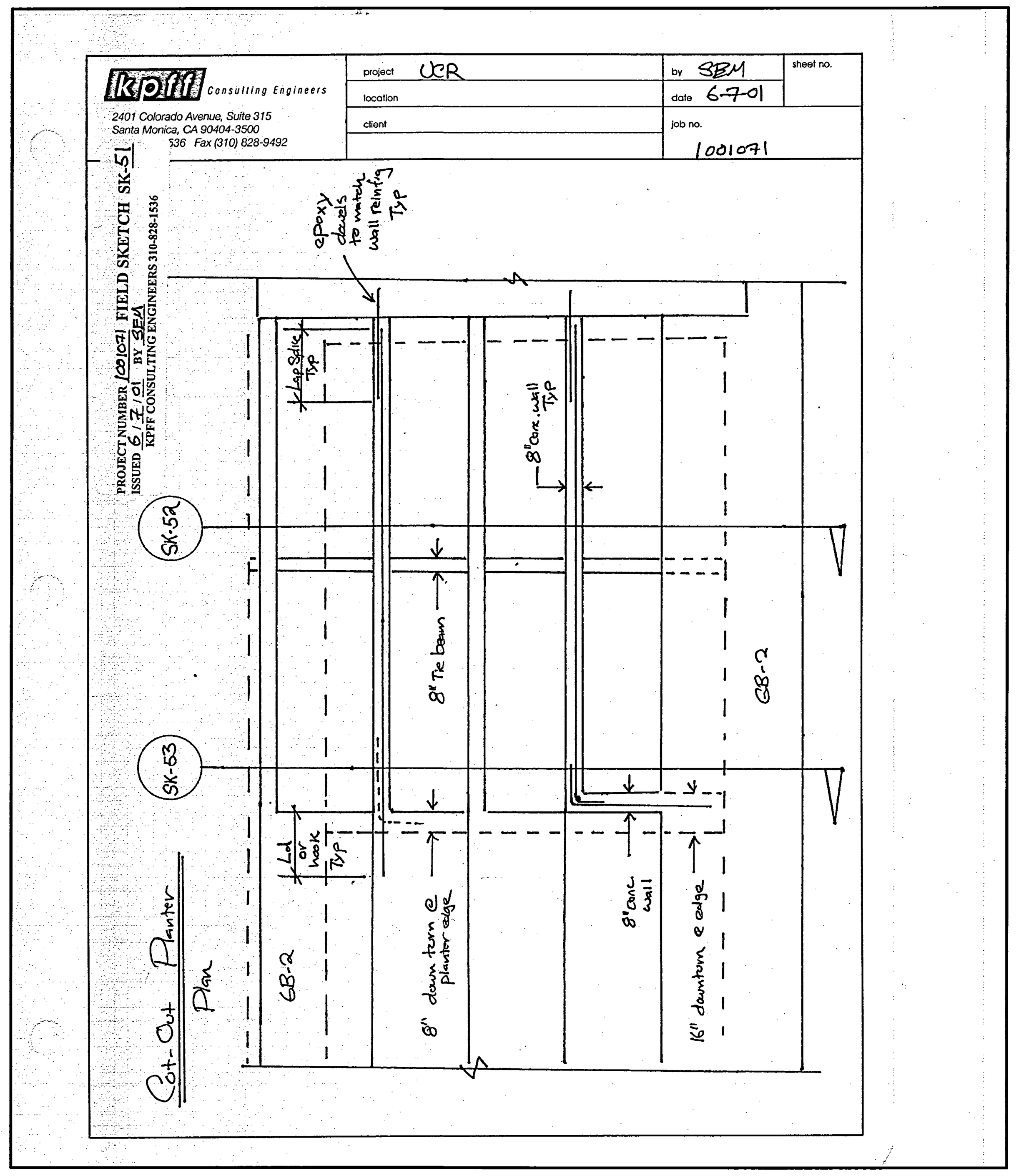

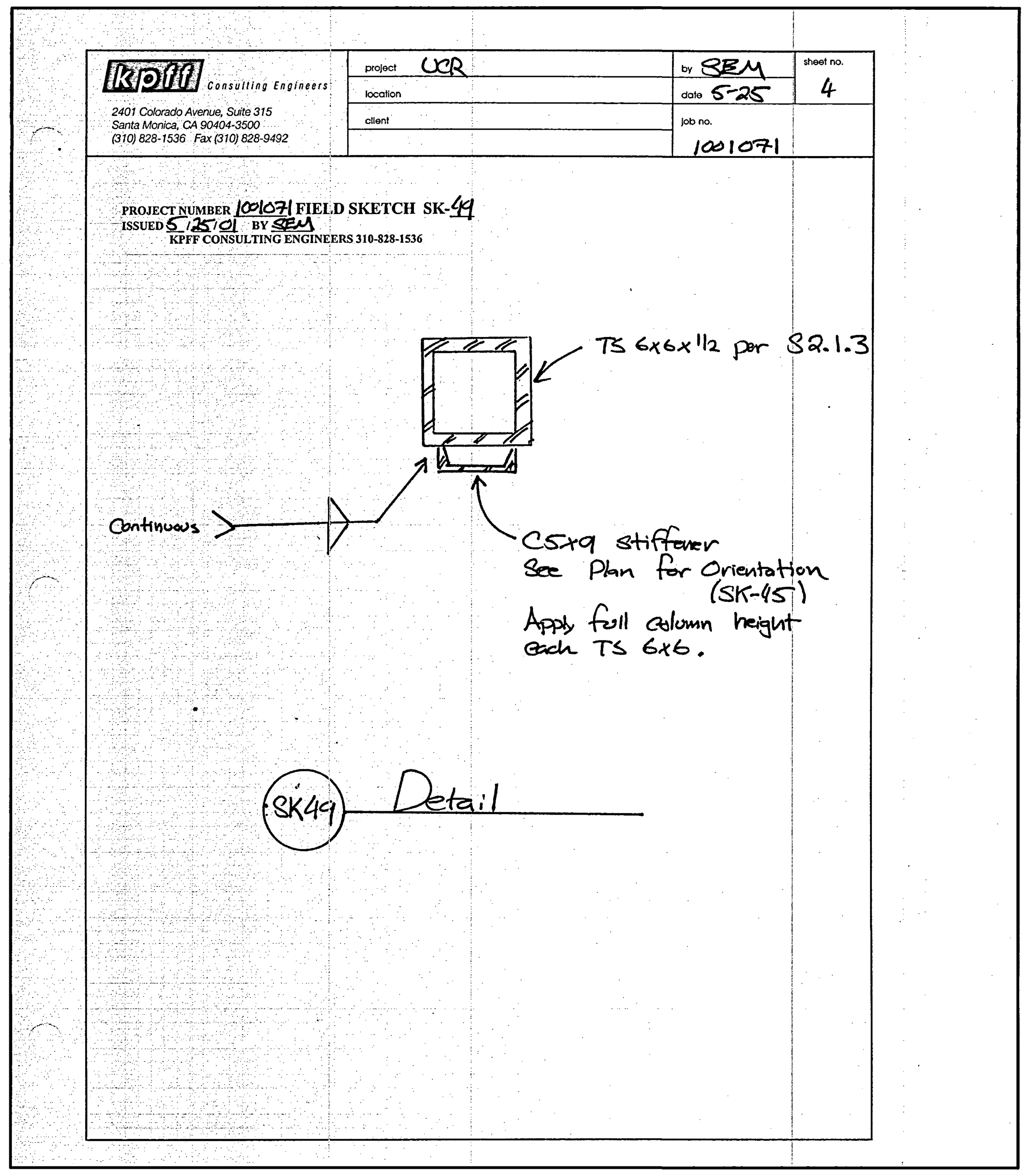

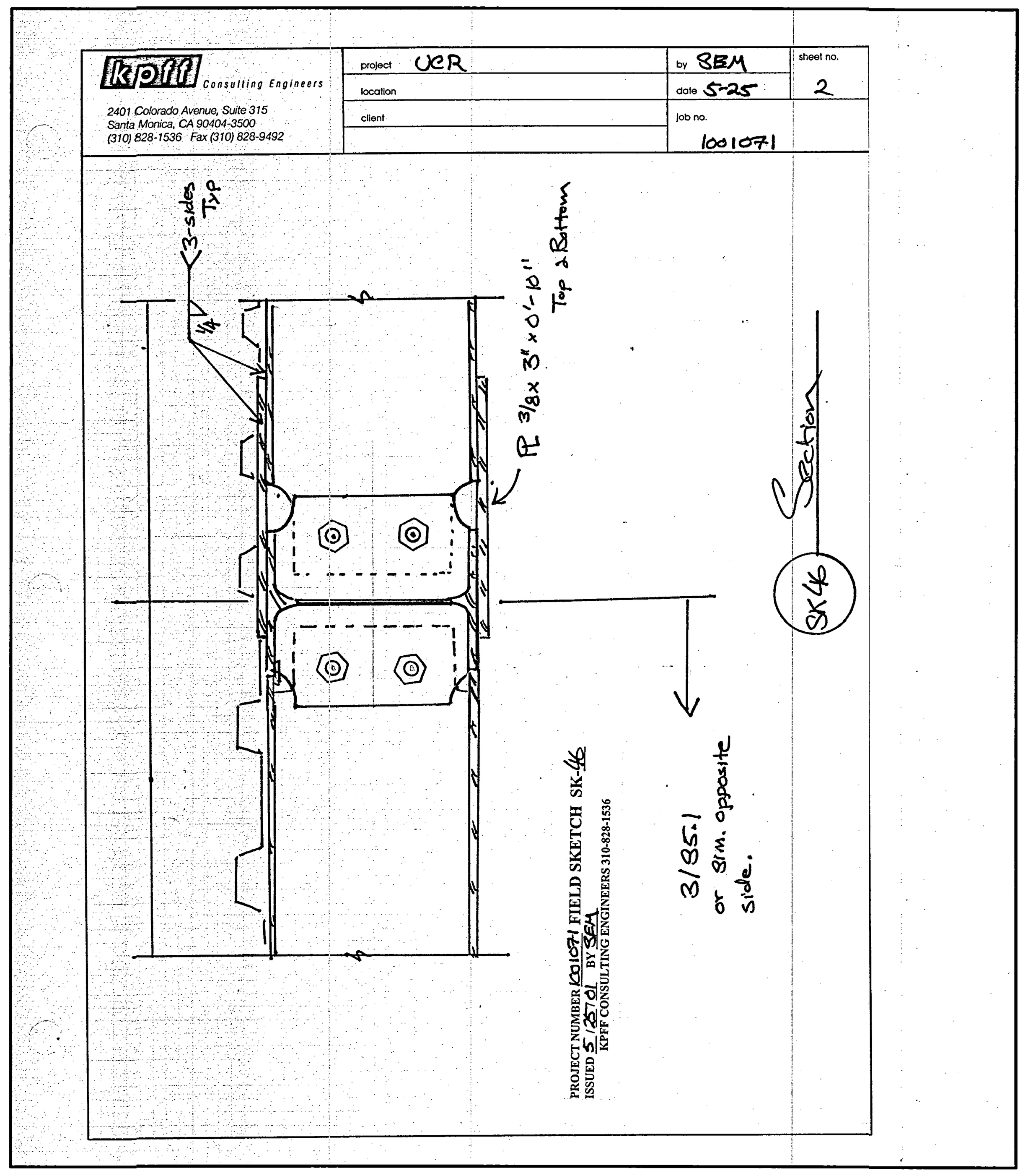

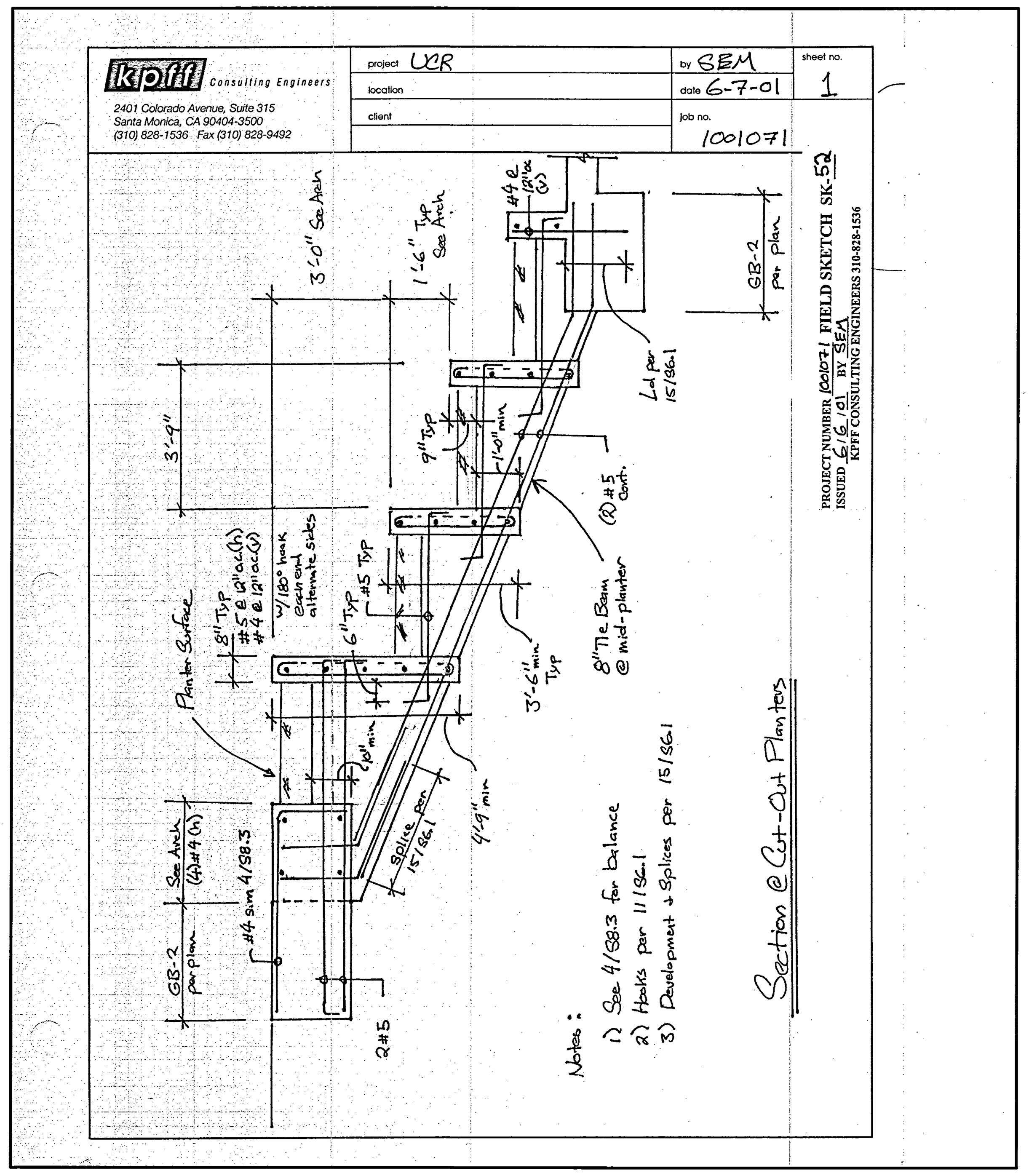

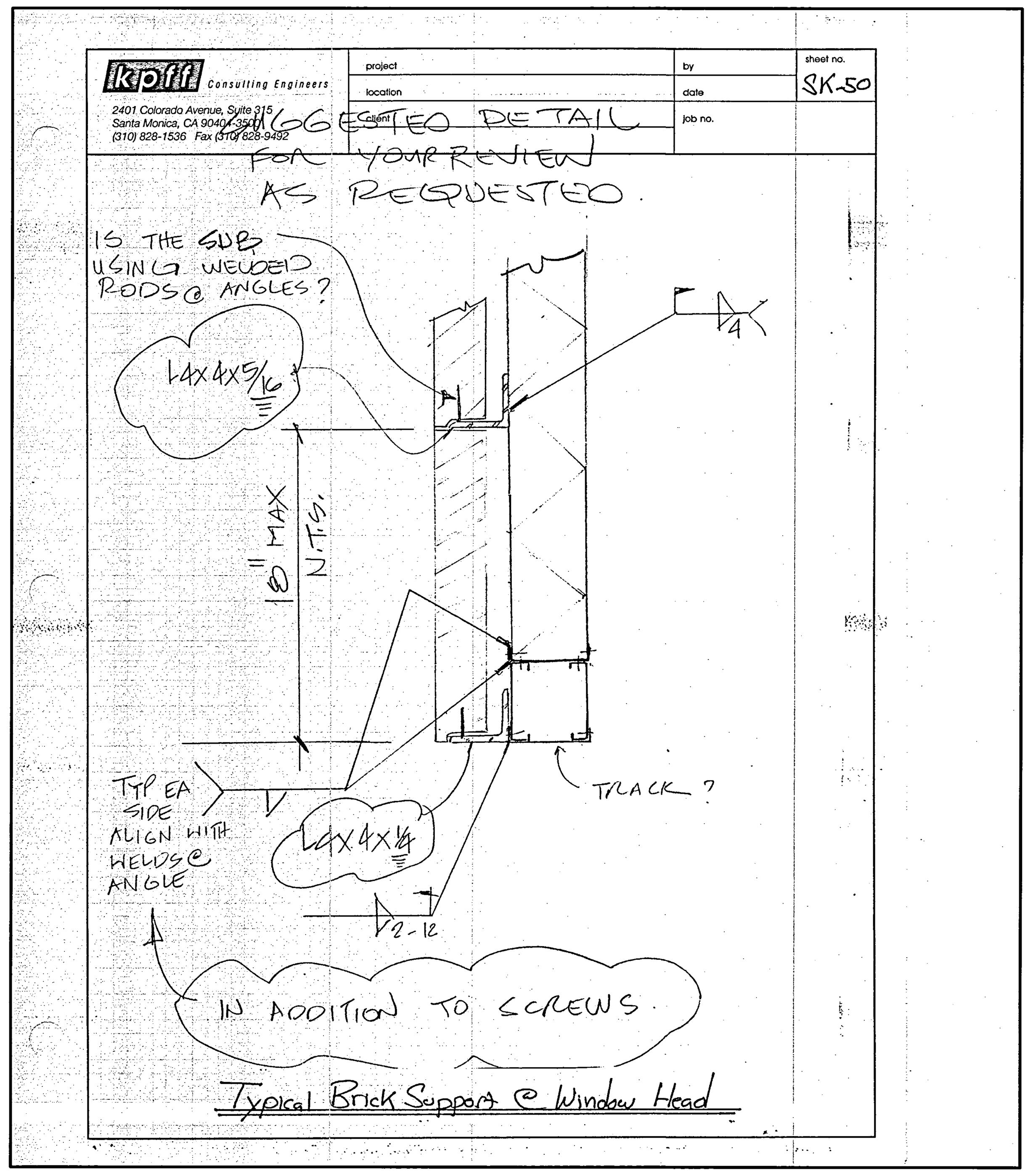

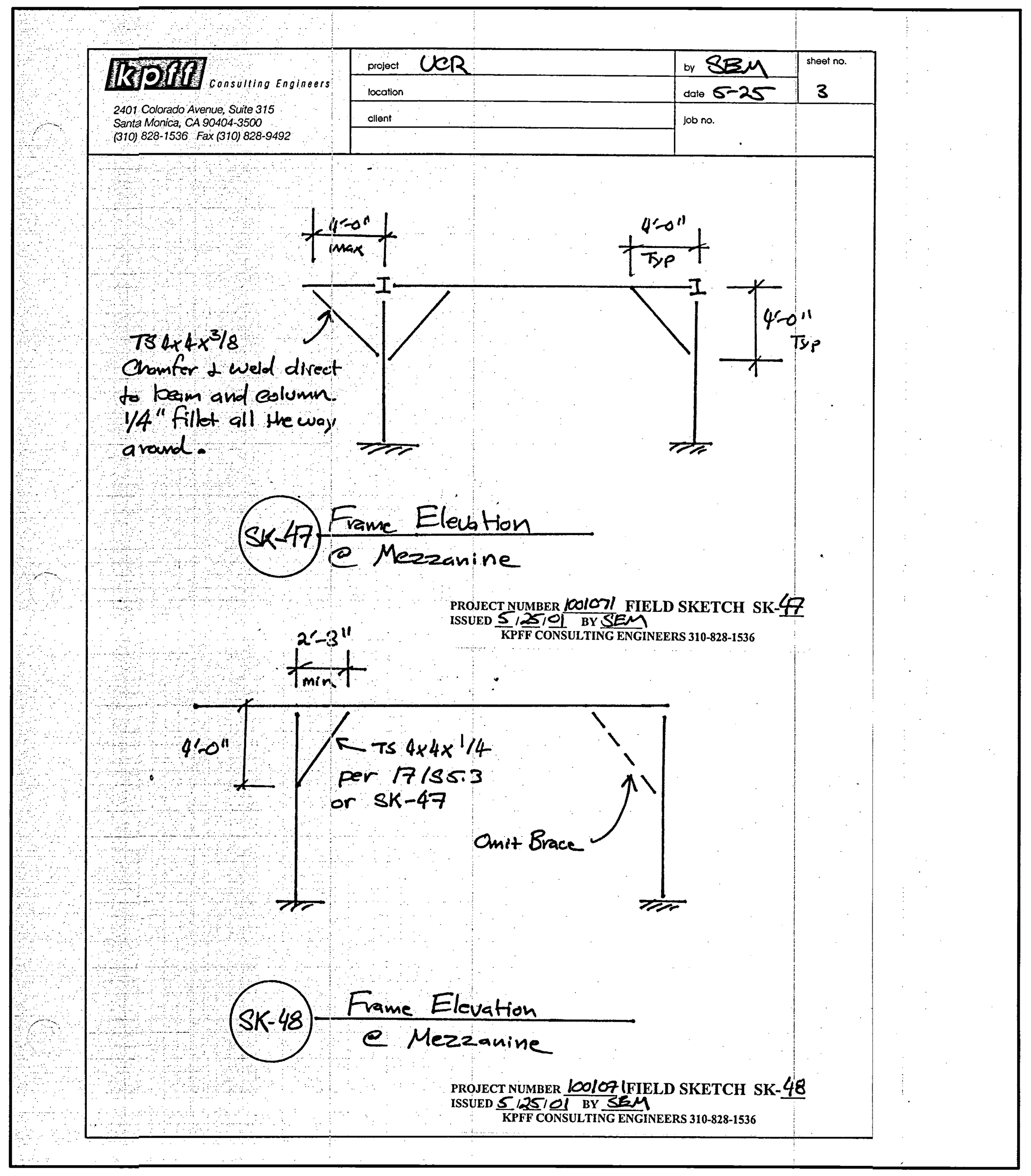

NOTES:	JOB #	JOB NAME	FILE PATH & NAME	PLOTTED DATE & TIME	UPDATED BY	PLOT SCALE	PROG.MG.	DRAFTER
	1001071	UCR - CAMPUS SURGE BLDG	-	-	TT	1=1	CY	TT

XREFS: NO XREFS ATTACHED

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RECORD DRAWINGS

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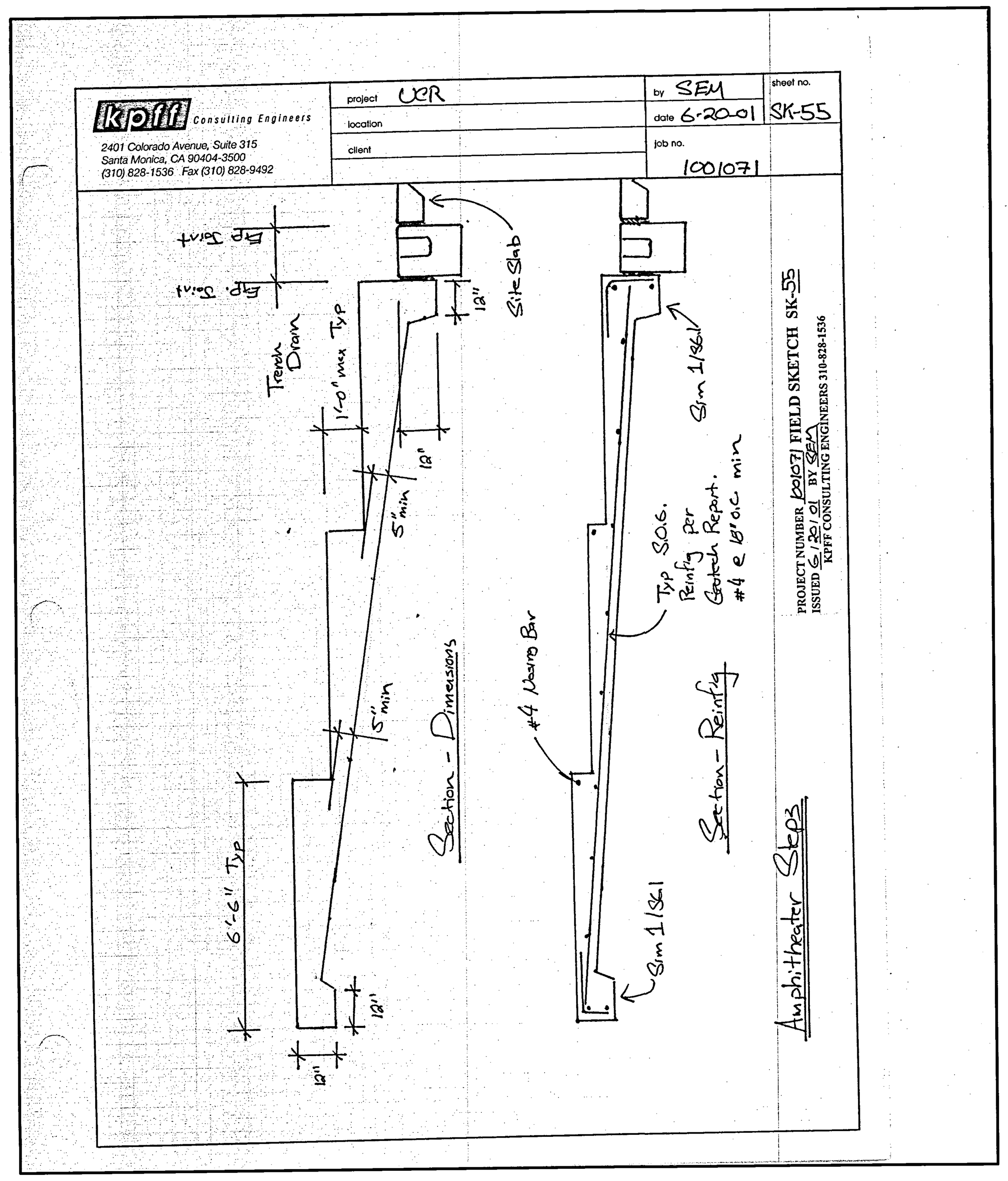
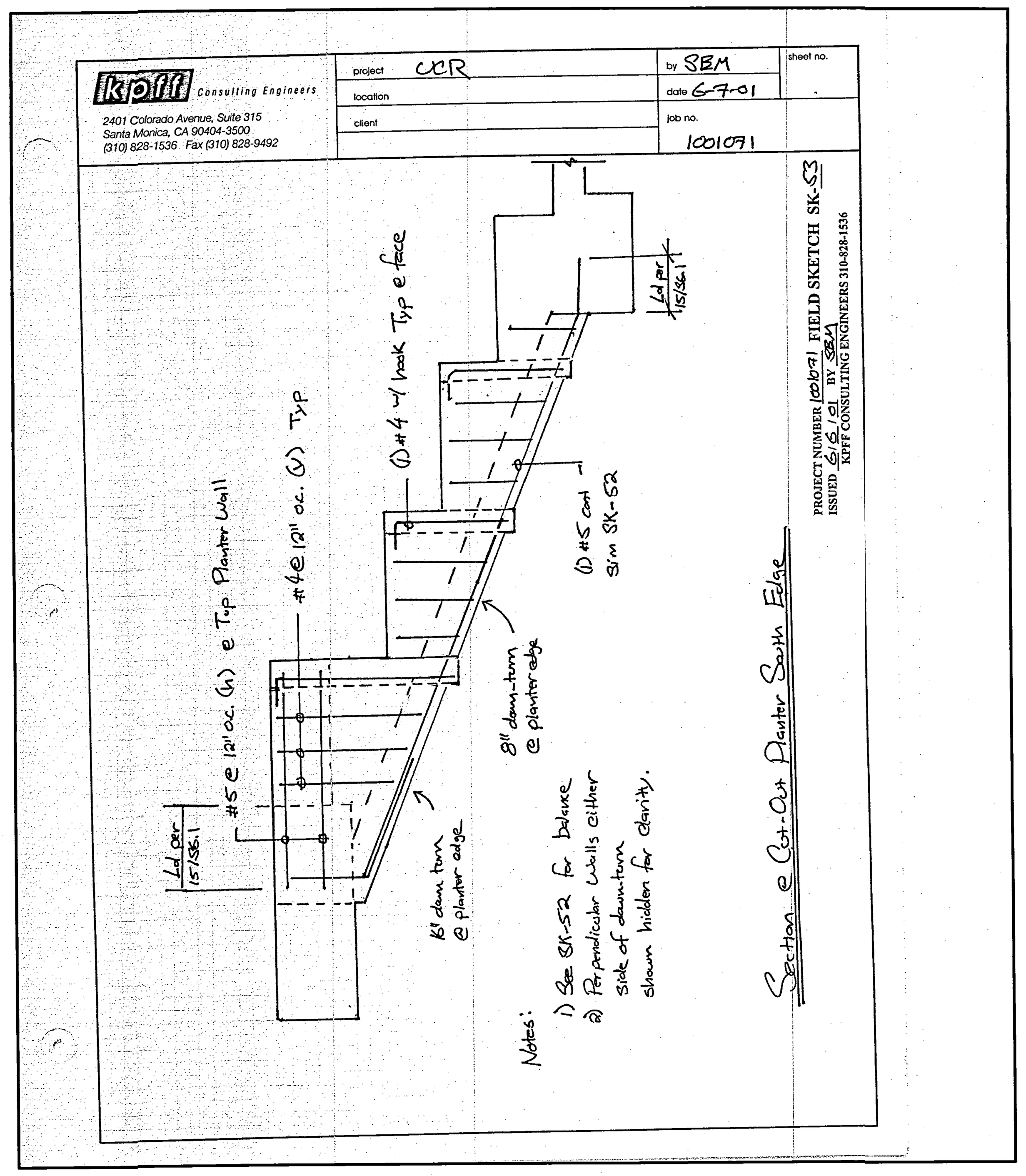
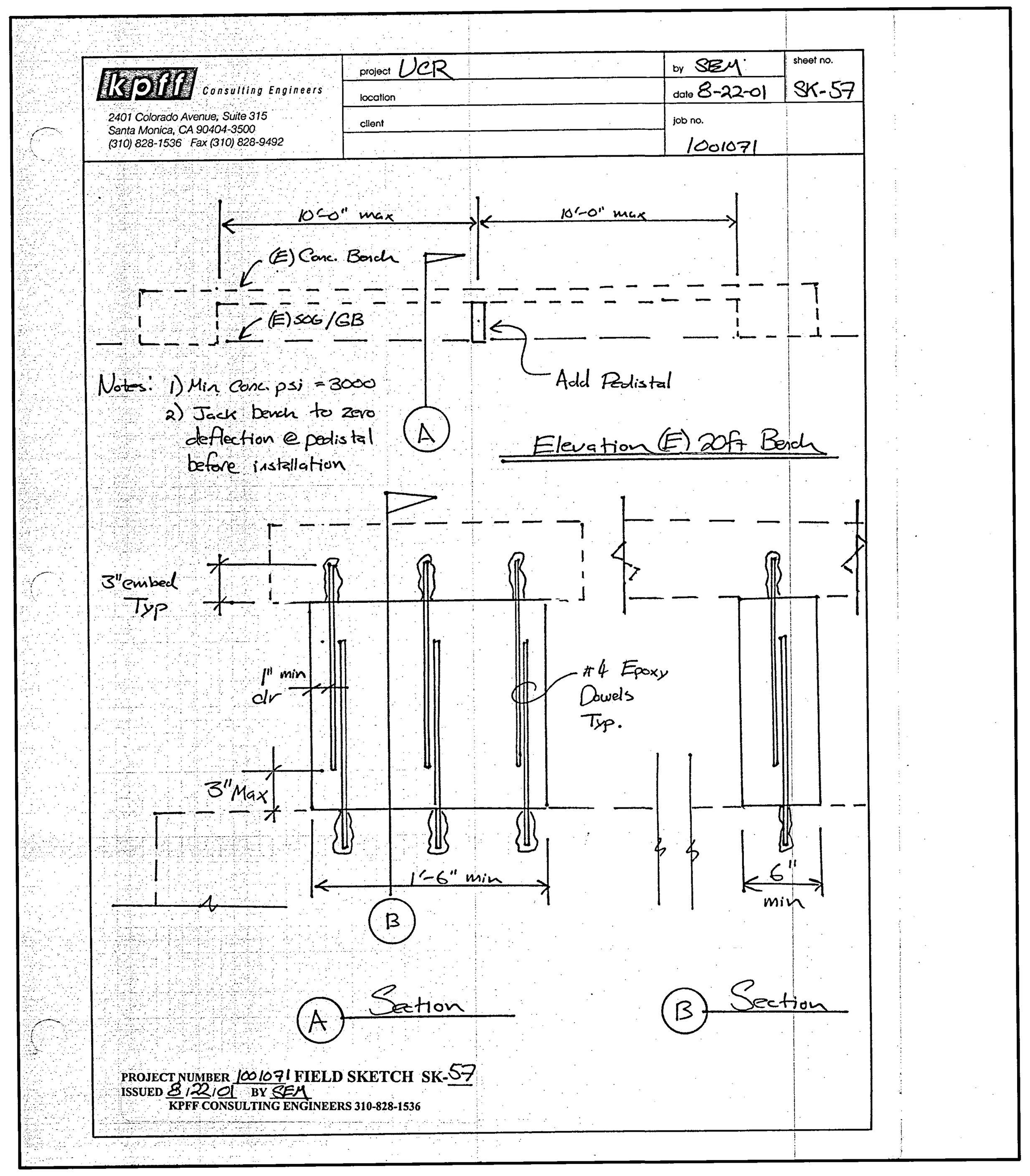
Project Number 1001071

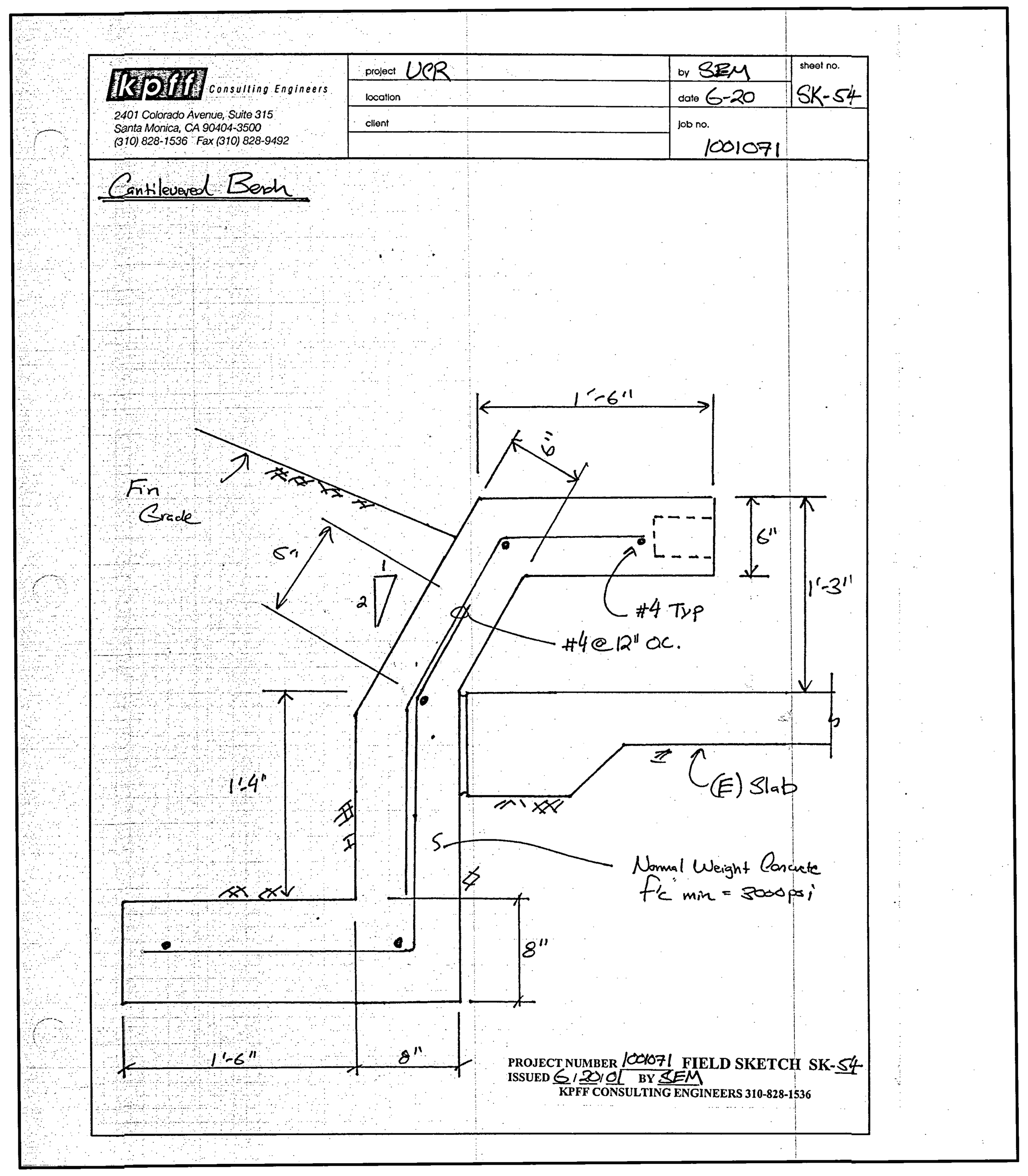
Baseline Date 6 OCT 00

Drawing Number S11.5









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CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

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Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Drawing Title

DETAILS

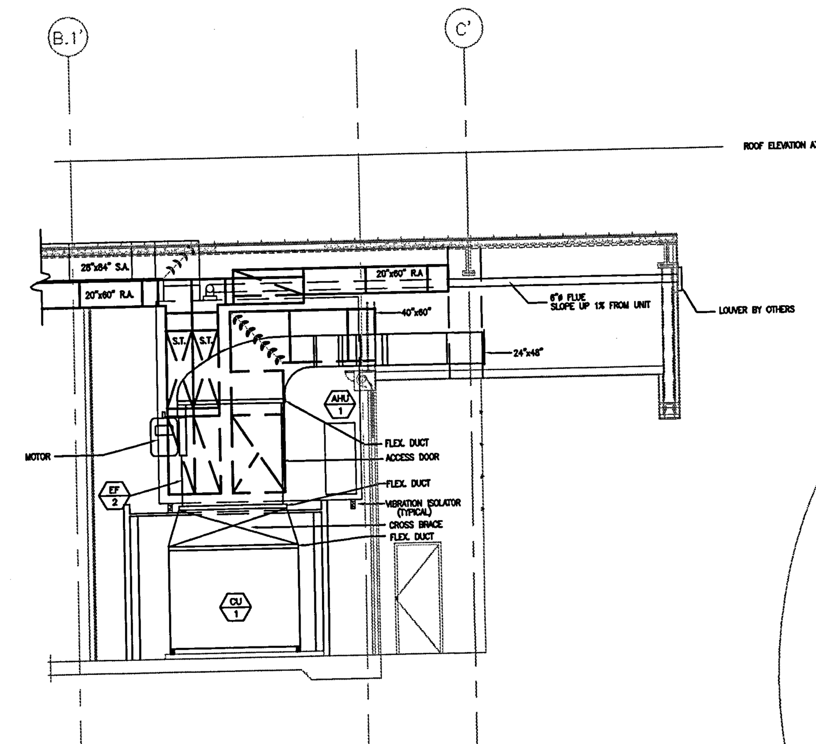
Scale

Project Number 1001071

Baseline Date 6 OCT 00

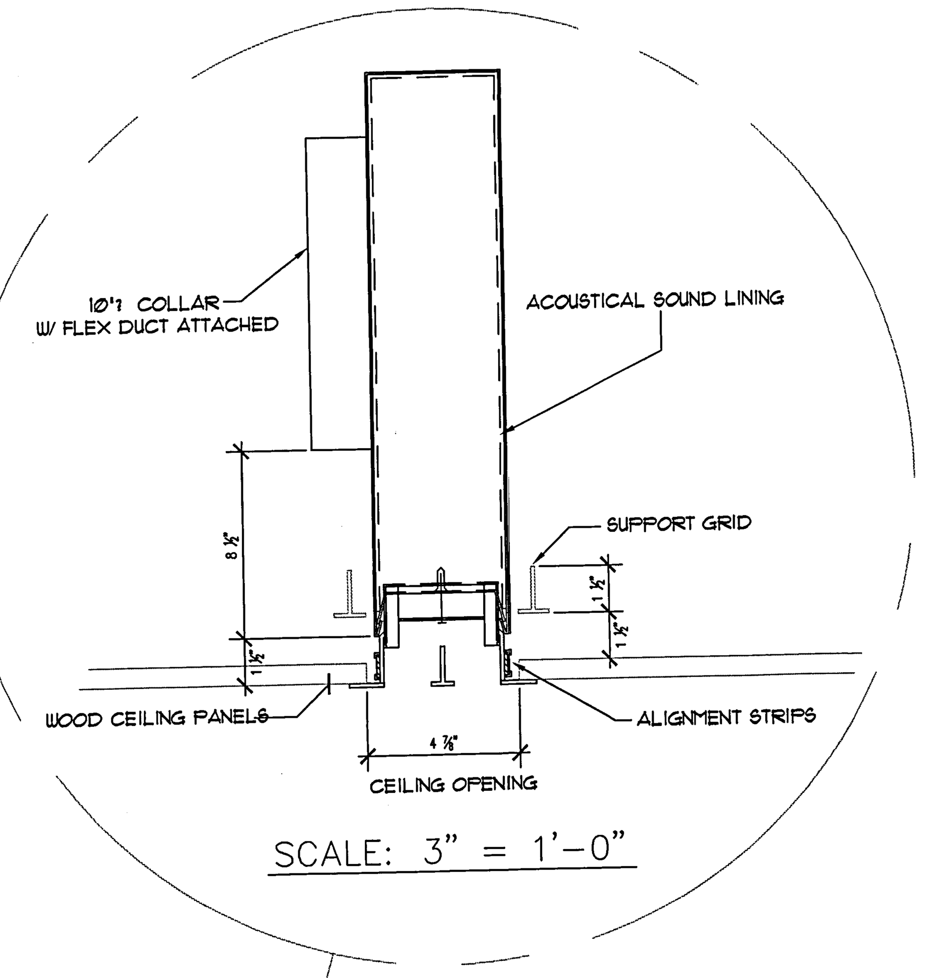
Drawing Number S11.6

NOTES:	JOB #	1001071	XREFS: NO XREFS ATTACHED
	1071tb	UCR - CAMPUS SURGE BLDG	
FILE PATH & NAME			
PLOTTED DATE & TIME			
UPDATED BY	TT		
PLOT SCALE	1=1		
PROG.MG.	CY		
DRAFTER	TT		

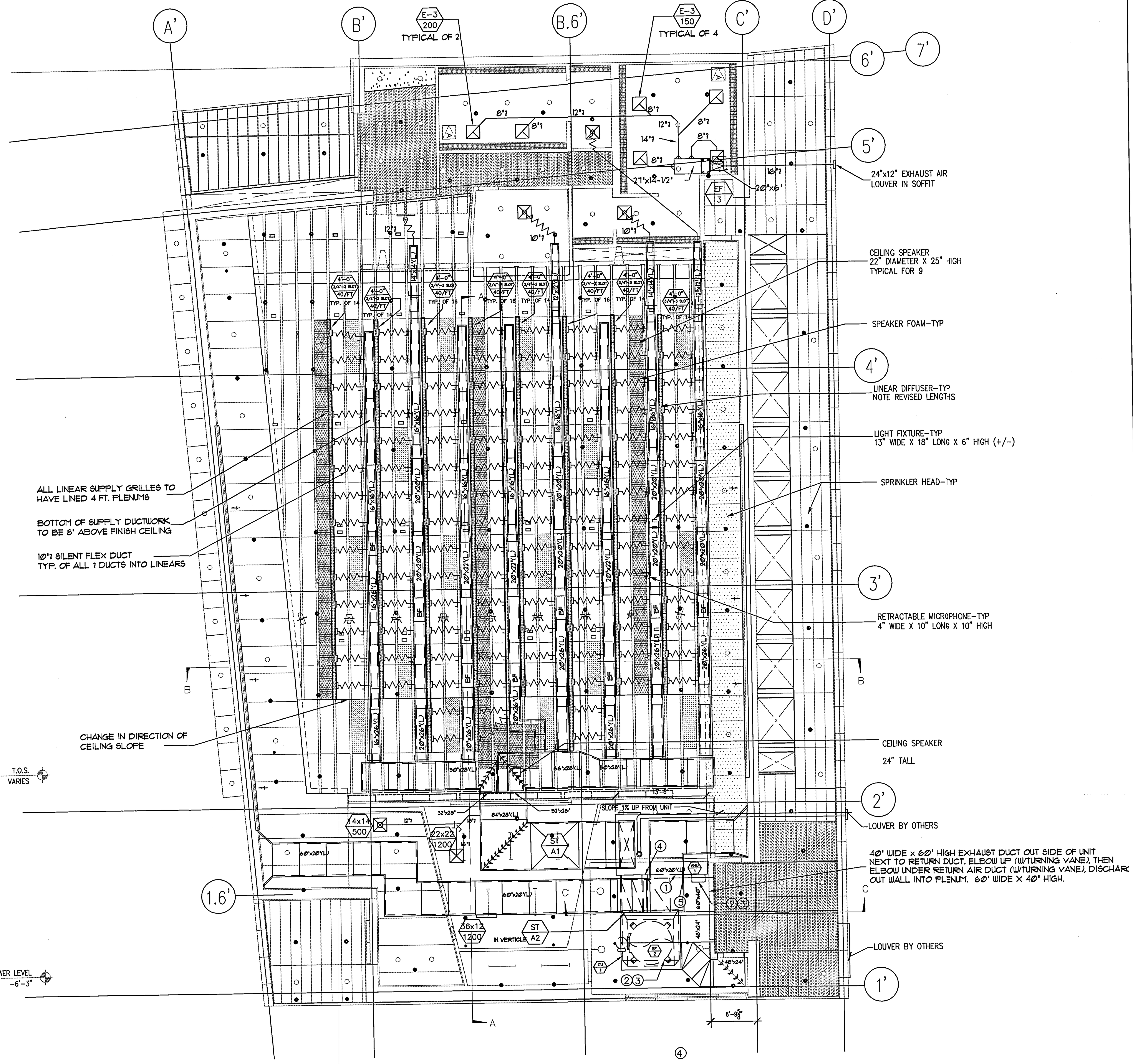


SECTION - CC

SCALE: 1/8" = 1'-0"



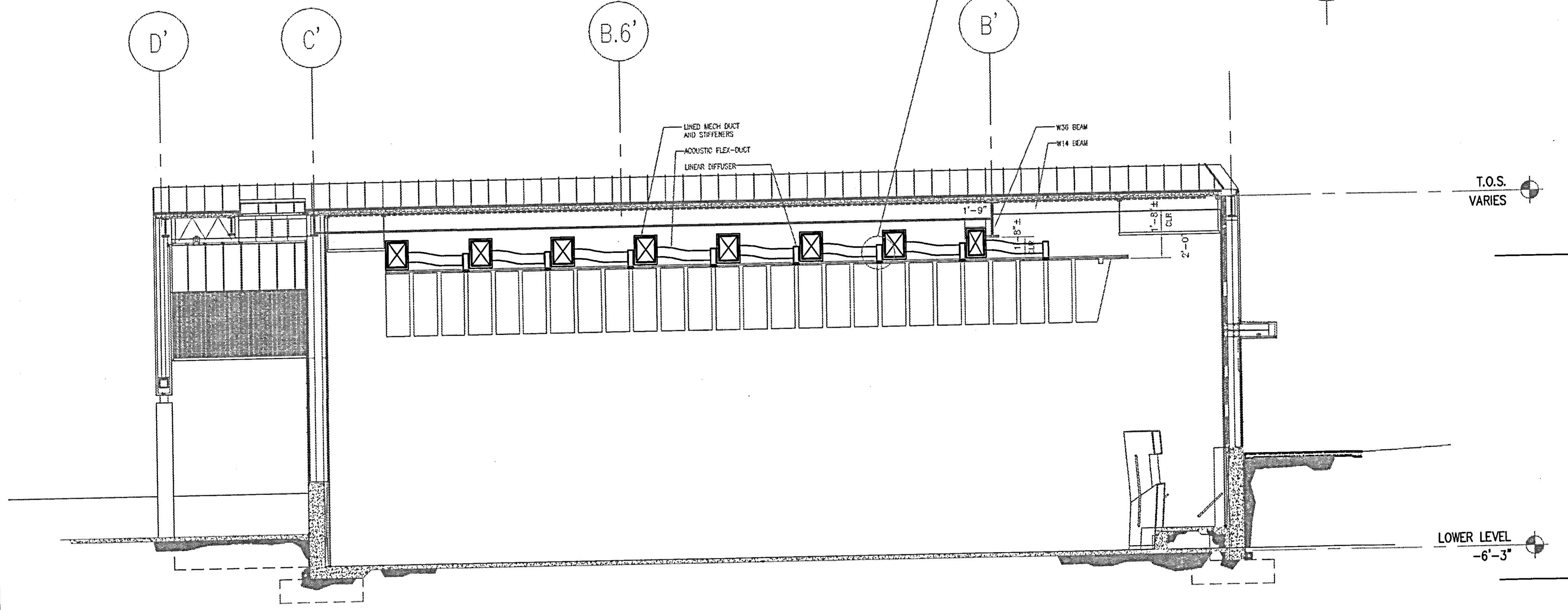
SCALE: 3" = 1'-0"



FIRST FLOOR PLAN

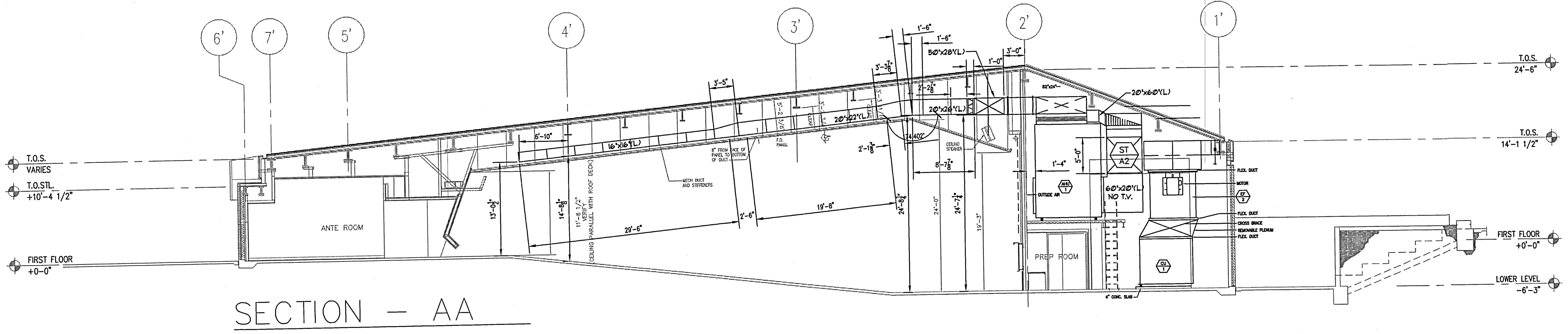
SCALE: 1/8" = 1'-0"

NORTH



SECTION - BB

SCALE: 1/8" = 1'-0"



SECTION - AA

SCALE: 1/8" = 1'-0"

NOTES:

1. FIRE AND/OR SMOKE DAMPER ASSEMBLIES, INCLUDING SLEEVES, AND INSTALLATION PROCEDURES SHALL BE APPROVED BY THE BUILDING INSPECTOR PRIOR TO INSTALLATION.
2. DUCT SIZES SHOWN ARE NET METAL SIZES. DUCTS SIZES SHOWN HAVE BEEN INCREASED FOR SOUND LINING WERE REQUIRED.
3. BOD = BOTTOM OF DUCT (ABOVE FINSH FLOOR). THIS DOES NOT ACCOUNT FOR DUCT FLANGE / INSULATION (ADDITIONAL 2").
4. B
5. D

CONNECTION NOTES:

1. CONDENSATE DRAIN CONNECTION
2. FIELD POWER CONNECTION
3. CONTROL POWER CONNECTION
4. GAS LINE ENTRY
5. REFRIGERATION LINES

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UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN

Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/860-4900

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RECORD DRAWINGS

Key Plan

Drawing Title

AUDITORIUM BLDG. FLOOR PLAN

1/8" = 1'-0"

Scale

Project Number 13OCT.,00

Baseline Date

M-1.

Drawing Number

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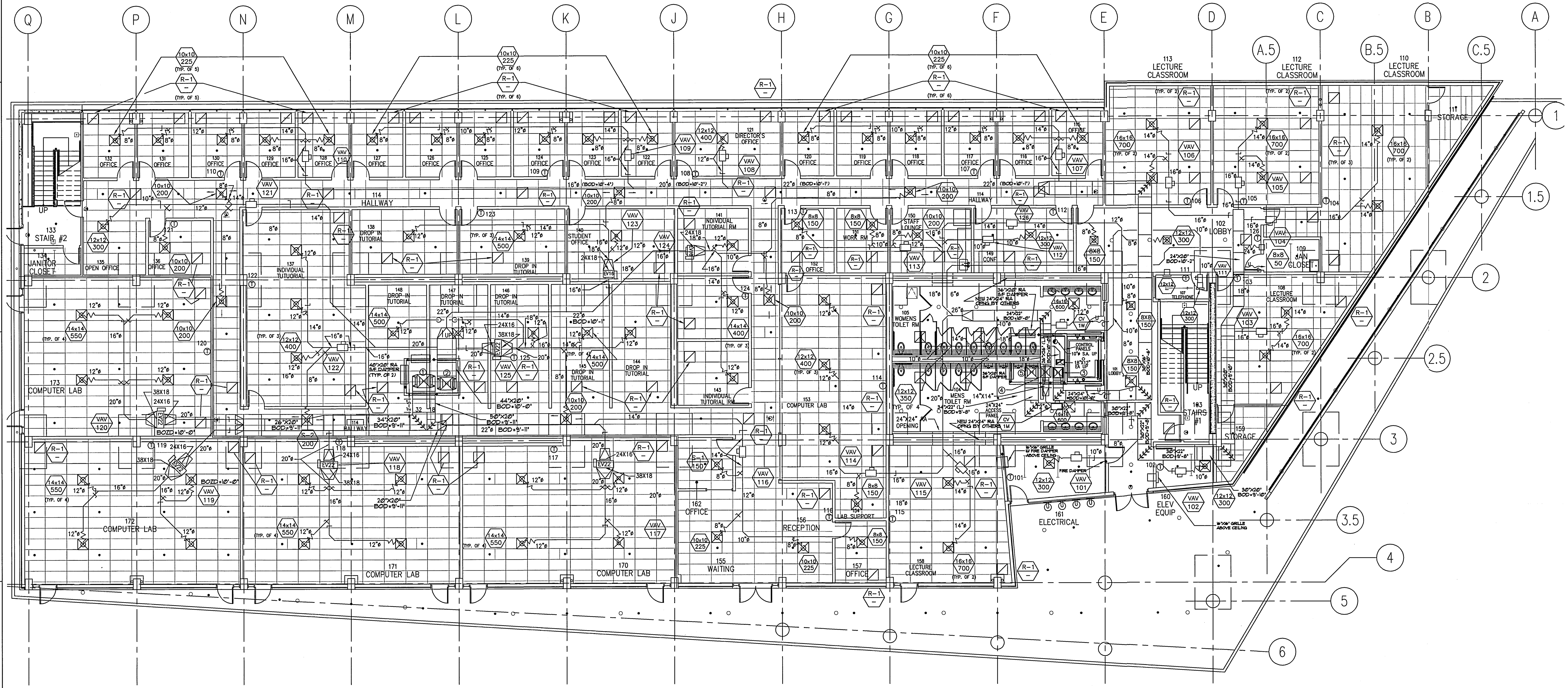

FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"

NORTH

NOTES:

1. FIRE AND/OR SMOKE DAMPER ASSEMBLIES, INCLUDING SLEEVES, AND INSTALLATION PROCEDURES SHALL BE APPROVED BY THE BUILDING INSPECTOR PRIOR TO INSTALLATION.
2. DUCT SIZES SHOWN ARE NET METAL SIZES. DUCTS SIZES SHOWN HAVE BEEN INCREASED FOR SOUND LINING WERE REQUIRED.
3. BOD = BOTTOM OF DUCT (ABOVE FINISH FLOOR). THIS DOES NOT ACCOUNT FOR DUCT FLANGE / INSULATION (ADDITIONAL 2").
4. BOZD = BOTTOM OF ZONE DAMPER (ABOVE FINISH FLOOR).
5. DUCTWORK RISERS (SHAFT DUCTWORK).
   1. 50"x20" (L) SA UP TO 32"x32" (L) UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-6
   2. 44"x20" (L) SA UP TO 30"x30" (L) UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-5
   3. 24"x24" (L) SA UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-15
   4. 26"x26" (L) SA UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-16
   5. 34"x22" (L) SA UP TO 28"x28" (L) UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-17

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SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN

Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/860-4900

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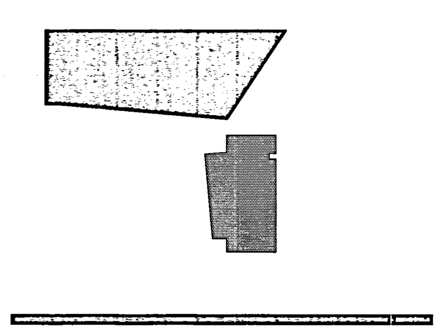
RECORD DRAWINGS

Key Plan



Drawing Title

SURGE BUILDING
FIRST FLOOR PLAN

1/8" = 1'-0"

Scale

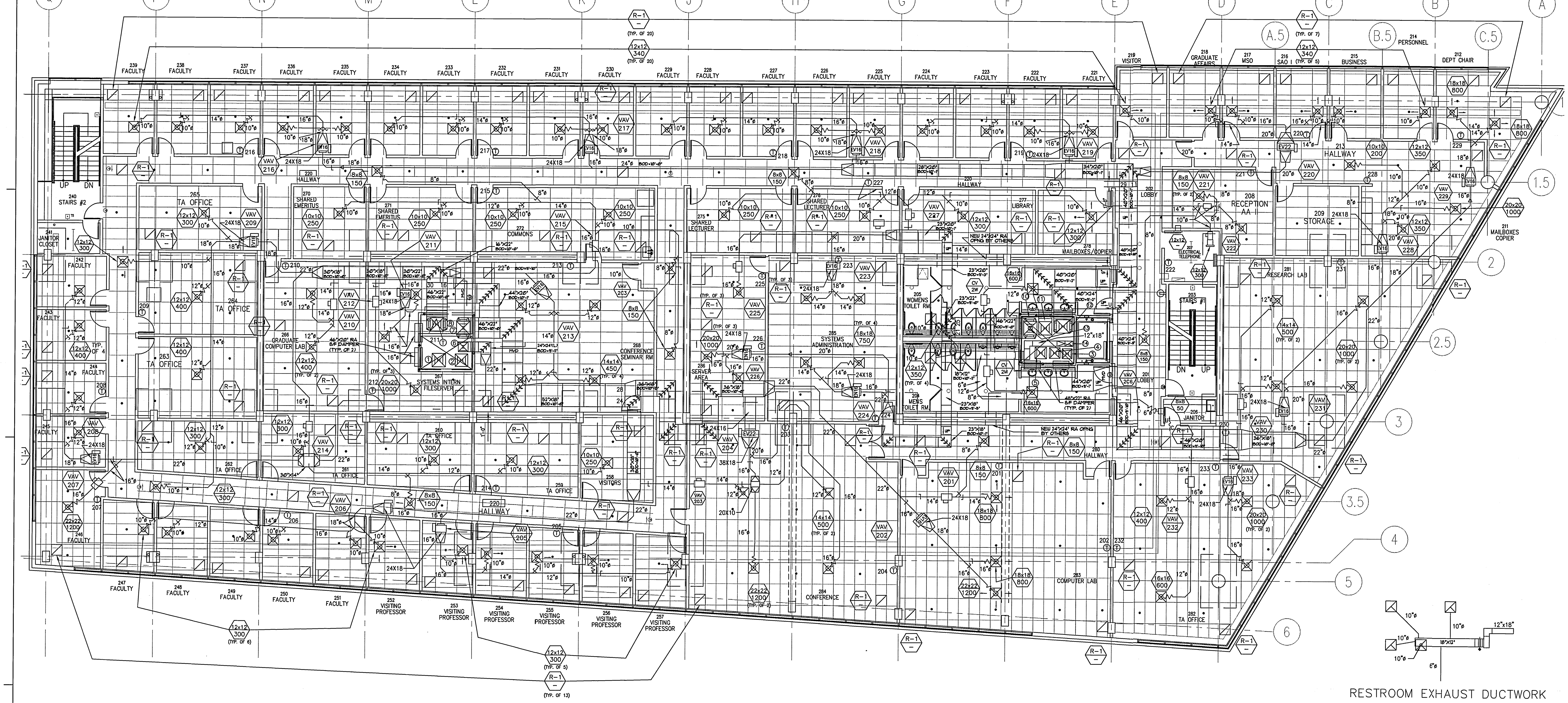
Project Number

13OCT.,00

Baseline Date

M-1.1

Drawing Number



RESTROOM EXHAUST DUCTWORK

SECOND FLOOR PLAN

SCALE: 1/8" = 1'-0"

NORTH

NOTES:

1. FIRE AND/OR SMOKE DAMPER ASSEMBLIES, INCLUDING SLEEVES, AND INSTALLATION PROCEDURES SHALL BE APPROVED BY THE BUILDING INSPECTOR PRIOR TO INSTALLATION.
2. DUCT SIZES SHOWN ARE NET METAL SIZES. DUCTS SIZES SHOWN HAVE BEEN INCREASED FOR SOUND LINING WERE REQUIRED.
3. BOD = BOTTOM OF DUCT (ABOVE FINISH FLOOR). THIS DOES NOT ACCOUNT FOR DUCT FLANGE / INSULATION (ADDITIONAL 2").
4. BOZD = BOTTOM OF ZONE DAMPER (ABOVE FINISH FLOOR).
4. DUCTWORK RISERS (SHAFT DUCTWORK).
   - ① 32"x32" (L) SA UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-6
   - ② 30"x30" (L) SA UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-5
   - ③ 24"x24" (L) SA UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-15
   - ④ 26"x26" (L) SA UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-16
   - ⑤ 28"x28" (L) SA UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-17
   - ⑥ 24"x24" (L) SA UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-4
   - ⑦ 46"x22" (L) SA UP TO 32"x32" (L) UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-2
   - ⑧ 46"x22" (L) SA UP TO 32"x32" (L) UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-3
   - ⑨ 44"x20" BYPASS MANUAL DAMPERTO REMAIN CLOSED, TO BE USED IN CASE OF EMERGENCY.
   - ⑩ 46"x22" (L) SA UP TO 32"x32" (L) UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-14
   - ⑪ 30"x30" (L) SA UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-12
   - ⑫ 40"x24" (L) SA UP TO 32"x32" (L) UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-13
   - ⑬ 10 " ? DOWN TO FIRST FLOOR ZODE DAMPER VAV 111 TELEPHONE ROOM
   - ⑭ 36"x 12" EXH. DUCT UP THRU FLOOR & 18"x12" EXH. DUCT DOWN TO FIRST FLOOR.

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UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN

Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/860-4900

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RECORD DRAWINGS

Key Plan

Drawing Title

SURGE BUILDING
SECOND FLOOR PLAN

1/8" = 1'-0"
Scale

Project Number
13OCT.,00
Baseline Date

M-2.0
Drawing Number

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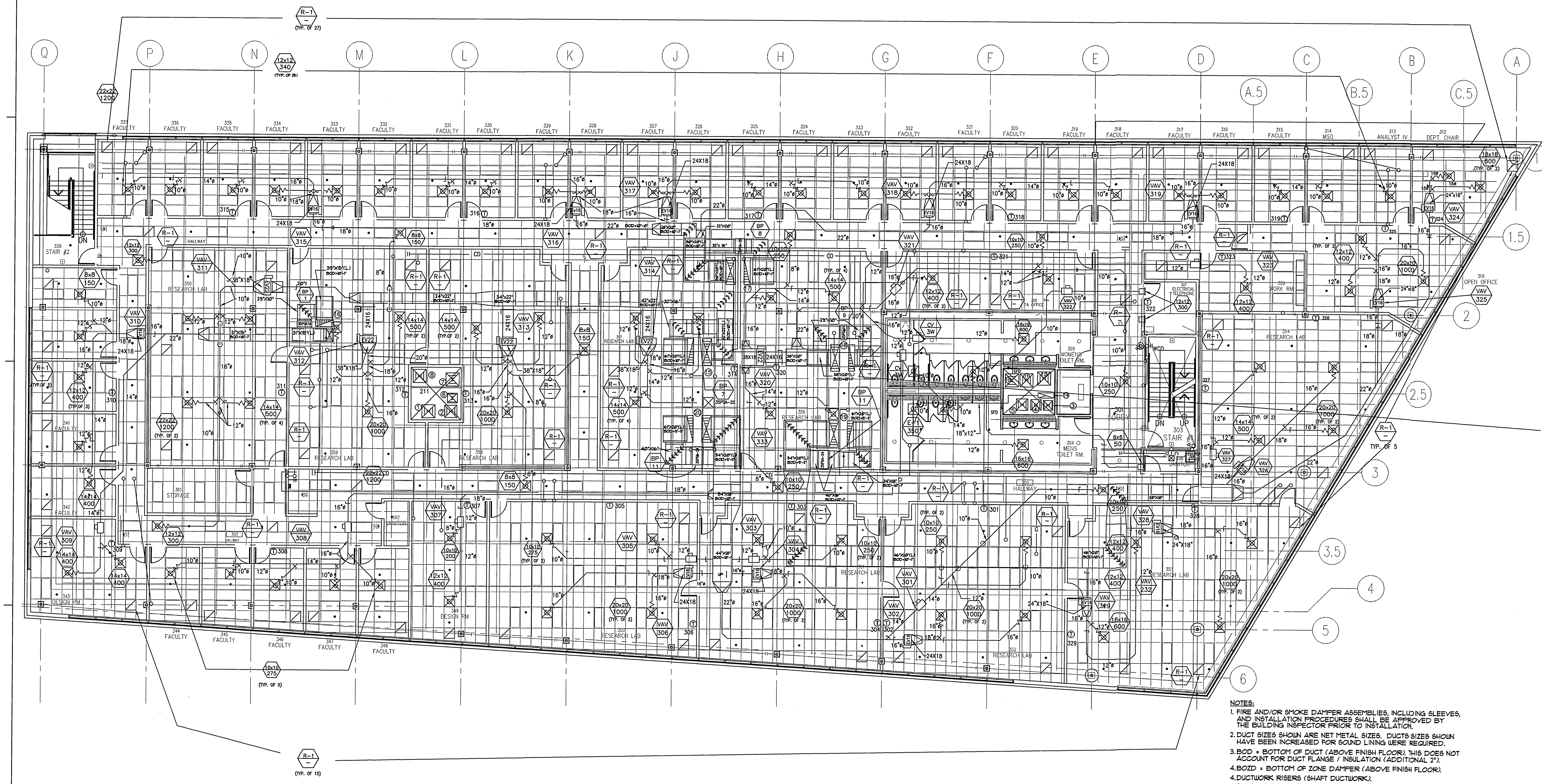

THIRD FLOOR PLAN

SCALE: 1/8" = 1'-0"

NORTH

NOTES:

1. FIRE AND/OR SMOKE DAMPER ASSEMBLIES, INCLUDING SLEEVES, AND INSTALLATION PROCEDURES SHALL BE APPROVED BY THE BUILDING INSPECTOR PRIOR TO INSTALLATION.
2. DUCT SIZES SHOWN ARE NET METAL SIZES. DUCTS SIZES SHOWN HAVE BEEN INCREASED FOR SOUND LINING WERE REQUIRED.
3. BOD = BOTTOM OF DUCT (ABOVE FINISH FLOOR). THIS DOES NOT ACCOUNT FOR DUCT FLANGE / INSULATION (ADDITIONAL 2").
4. BOZD = BOTTOM OF ZONE DAMPER (ABOVE FINISH FLOOR).
4. DUCTWORK RISERS (SHAFT DUCTWORK).
   - ① 32"x32" (L) SA UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-6
   - ② 30"x30" (L) SA UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-5
   - ③ 24"x24" (L) SA UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-15
   - ④ 26"x26" (L) SA UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-16
   - ⑤ 28"x28" (L) SA UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-17
   - ⑥ 24"x24" (L) SA UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-4
   - ⑦ 32"x32" (L) SA UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-2
   - ⑧ 32"x32" (L) SA UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-3
   - ⑩ 32"x32" (L) SA UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-14
   - ⑪ 30"x30" (L) SA UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-12
   - ⑫ 32"x32" (L) SA UP TO TRANSITION AT UNDERSIDE OF ROOF. RTU-13
   - ⑭ 42"x12" EXH. DUCT UP THRU ROOF & 36"x12" EXH. DUCT DN TO 2ND FLR.
   - ⑮ 21"x61" (L) SA DN THRU ROOF, TRANS. TO 42"x22" (L), THEN ELBOW 42"x22" (L). 14"x61" (L) RA DN THRU ROOF TO CHANGE ELBOW 20"x61" (L). RTU-7
   - ⑯ 30"x15" (L) SA & 15"x39" (L) RA PLENUMS DOWN THRU ROOF. RTU-1
   - ⑰ 21"x61" (L) SA DN THRU ROOF, TRANS. TO 40"x22" (L), THEN ELBOW 40"x22" (L). 14"x61" (L) RA DN THRU ROOF TO CHANGE ELBOW 20"x61" (L). RTU-20
   - ⑱ 21"x61" (L) SA DN THRU ROOF, TRANS. TO 38"x20" (L), THEN ELBOW 38"x20" (L). 14"x61"(L) RA DN THRU ROOF, TRANS TO 38"x20"(L),THEN ELBOW 38"x20"(L). RTU-9
   - ⑲ 21"x61" (L) SA DN THRU ROOF, TRANS. TO 54"x20" (L), THEN ELBOW 54"x20" (L). 14"x61" (L) RA DN THRU ROOF TO CHANGE ELBOW 20"x61" (L). RTU-11
   - ⑳ 21"x61" (L) SA DN THRU ROOF, TRANS. TO 54"x20" (L), THEN ELBOW 54"x20" (L). 14"x61" (L) RA DN THRU ROOF TO CHANGE ELBOW 20"x61" (L). RTU-20

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CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN

Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/860-4900

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Drawing Title

SURGE BUILDING
THIRD FLOOR PLAN

1/8" = 1'-0"

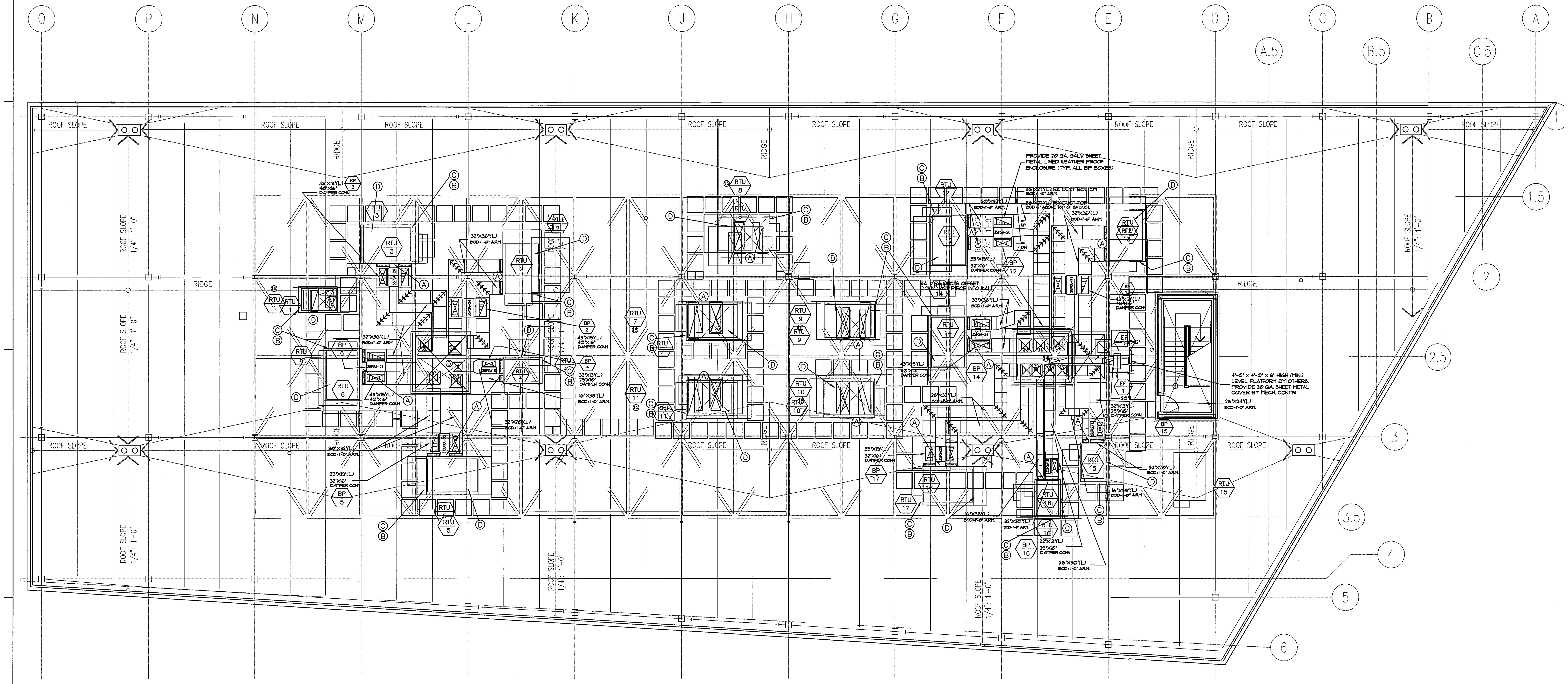
Scale

Project Number
13OCT.,00

Baseline Date

M-3.0

Drawing Number



ROOF PLAN

SCALE: 1/8" = 1'-0"

NORTH

HVAC UNIT UTILITY POINTS:

- Ⓐ CONDENSATE DRAIN CONNECTION
- Ⓑ LINE VOLTAGE CONNECTION
- Ⓒ LOW VOLTAGE CONNECTION
- Ⓓ GAS PIPING CONNECTION

NOTES:

1. DUCT SIZES SHOWN ARE NET METAL SIZES. DUCTS SIZES SHOWN HAVE BEEN INCREASED FOR SOUND LINING WERE REQUIRED.
2. ALL ROOFTOP DUCTWORK TO BE LINNED WITH 1 1/2" DUCT LINNER, ALL SHAFTS TO BE LINNED WITH 1" DUCT LINNER.
3. A.R.M. = ABOVE ROOF MINIMUM.
4. DUCTWORK RISERS (SHAFT DUCTWORK).
   - ① 32"x32" (L) SA DOWN IN SHAFT TO FIRST FLOOR. RTU-6
   - ② 30"x30" (L) SA DOWN IN SHAFT TO FIRST FLOOR. RTU-5
   - ③ 24"x24" (L) SA DOWN IN SHAFT TO FIRST FLOOR. RTU-15
   - ④ 26"x26" (L) SA DOWN IN SHAFT TO FIRST FLOOR. RTU-16
   - ⑤ 28"x28" (L) SA DOWN IN SHAFT TO FIRST FLOOR. RTU-17
   - ⑥ 24"x24" (L) SA DOWN IN SHAFT TO SECOND FLOOR. RTU-4
   - ⑦ 32"x32" (L) SA DOWN IN SHAFT TO SECOND FLOOR. RTU-2
   - ⑧ 32"x32" (L) SA DOWN IN SHAFT TO SECOND FLOOR. RTU-3
   - ⑩ 32"x32" (L) SA DOWN IN SHAFT TO SECOND FLOOR. RTU-14
   - ⑪ 36"x27"(L) SA ELBOW AT TOP OF SHAFT TRANSITION TO 30"x30" (L) DOWN IN SHAFT TO SECOND FLOOR. RTU-12
   - ⑫ 32"x32" (L) SA DOWN IN SHAFT TO SECOND FLOOR. RTU-13
   - ⑭ 42"x12" EXH. DUCT DN TO 3RD FLR, 36"x 12" EXH. DUCT DN TO 2ND FLOOR & 18"x12" EXH. DUCT DOWN TO FIRST FLOOR.
   - ⑮ 21"x61" (L) SA & 19"x73" (L) RA PLENUMS DOWN THRU ROOF. (TYPICAL OF RTU-7, 8, 9, 10 & 11)
   - ⑯ 30"x15" (L) SA & 14"x39" (L) RA PLENUMS DOWN THRU ROOF. (TYPICAL OF RTU-1)

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Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
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Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN

Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/860-4900

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RECORD DRAWINGS

Key Plan

Drawing Title

SURGE BUILDING
FOURTH FLOOR PLAN

1/8" = 1'-0"

Scale

Project Number 13OCT.,00

Baseline Date

M-4.0

Drawing Number

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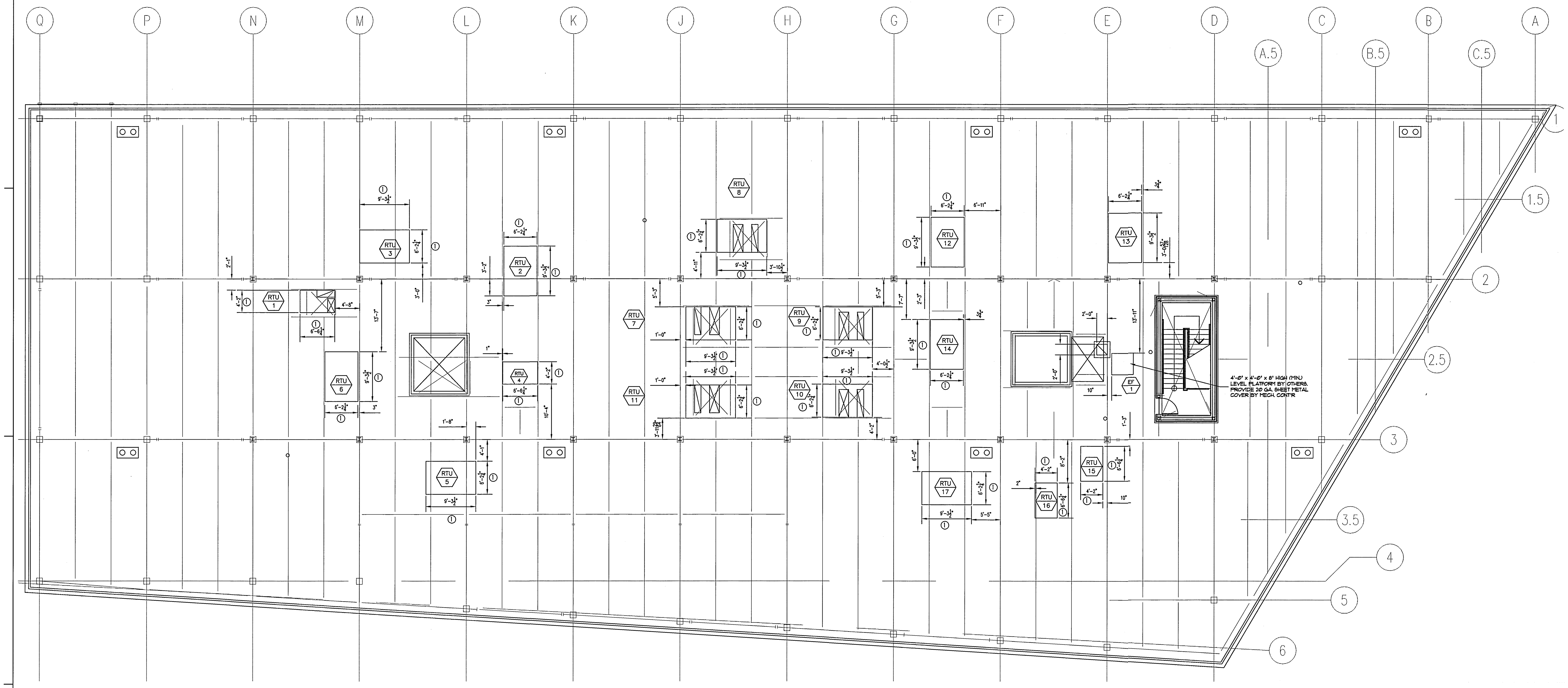

ROOF PLAN

SCALE: 1/8" = 1'-0"

NORTH

NOTES:

① ROOF CURB INSIDE DIMENSION (NET I.D.)

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Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN

Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/860-4900

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RECORD DRAWINGS

Key Plan

Drawing Title

ROOF PLAN
CURB LAYOUT

1/8" = 1'-0"

Scale

Project Number

13OCT.,00

Baseline Date

M-4.1

Drawing Number

PACKAGED ROOFTOP UNIT SCHEDULE

MARK	NOMINAL TONNAGE	SERVES	INDOOR FAN			MIN. OSA (CFM)	COOLING @ 80°F DB EAT/ 67°F WB EAT, 105°F OSA			HEATING			WEIGHT LBS.	POWER SUPPLY					DESIGN EQUIPMENT	NOTES
			CFM	ESP IN WG.	MTR. HP		TOTAL BTUH	SENSIBLE BTUH	SEER/EER	INPUT (BTUH)	OUTPUT (BTUH)	AFUE (%)		VOLT	PH	Hz	MCA	MOCP		
RTU 1	10.0	3 RD FLOOR	3350	1.5	3	650	117,290	81,960	11.0	180,000	147,600	82	1,600	460	3	60	26.5	35	CARRIER 48HJD012	1, 2, 3, 4, 5, 6, 7
RTU 2	25	2 ND FLOOR	9500	1.25	10	2300	300,800	229,200	10.4	250,000	205,000	82	3,013	460	3	60	63.0	80	CARRIER 48HGD028	2, 3, 4, 6, 7, 8
RTU 3	25	2 ND FLOOR	9750	1.23	10	2400	302,400	232,600	10.4	250,000	205,000	82	3,013	460	3	60	63.0	80	CARRIER 48HGD028	2, 3, 4, 6, 7, 8
RTU 4	10.0	2 ND FLOOR	3400	1.5	3	650	117,290	82,550	11.0	180,000	147,600	82	1,600	460	3	60	26.5	35	CARRIER 48HJD012	2, 3, 4, 6, 7, 8
RTU 5	20	1 ST FLOOR	8700	1.5	7.5	2000	252,500	205,000	11.0	250,000	205,000	82	2,817	460	3	60	49.0	50	CARRIER 48HGD024	2, 3, 4, 6, 7, 8
RTU 6	25	1 ST FLOOR	9550	1.25	10	2300	301,120	229,880	10.4	250,000	205,000	82	3,013	460	3	60	63.0	80	CARRIER 48HGD028	2, 3, 4, 6, 7, 8
RTU 7	20	3 RD FLOOR	8900	1.5	7.5	2100	253,500	200,800	11.0	250,000	205,000	82	2,817	460	3	60	49.0	50	CARRIER 48HGD024	1, 2, 3, 4, 5, 6, 7
RTU 8	20	3 RD FLOOR	8500	1.5	7.5	2100	253,500	200,080	11.0	250,000	205,000	82	2,817	460	3	60	49.0	50	CARRIER 48HGD024	1, 2, 3, 4, 5, 6, 7
RTU 9	15	3 RD FLOOR	5950	1.5	5	1000	189,530	143,330	11.5	250,000	205,000	82	2,741	460	3	60	37.0	40	CARRIER 48HGD016	1, 2, 3, 4, 5, 6, 7
RTU 10	25	3 RD FLOOR	9400	1.25	10	2300	300,160	227,840	10.4	250,000	205,000	82	3,013	460	3	60	63.0	80	CARRIER 48HGD028	1, 2, 3, 4, 5, 6, 7
RTU 11	25	3 RD FLOOR	9475	1.25	10	2300	300,640	228,860	10.4	250,000	205,000	82	3,013	460	3	60	63.0	80	CARRIER 48HGD028	1, 2, 3, 4, 5, 6, 7
RTU 12	20	2 ND FLOOR	8900	1.5	7.5	2100	253,500	200,080	11.0	250,000	205,000	82	2,817	460	3	60	49.0	50	CARRIER 48HGD024	2, 3, 4, 6, 7, 8
RTU 13	25	2 ND FLOOR	9500	1.25	10	2300	300,800	229,200	10.4	250,000	205,000	82	3,013	460	3	60	63.0	80	CARRIER 48HGD028	2, 3, 4, 6, 7, 8
RTU 14	25	2 ND FLOOR	9550	1.25	10	2300	301,120	229,880	10.4	250,000	205,000	82	3,013	460	3	60	63.0	80	CARRIER 48HGD028	2, 3, 4, 6, 7, 8
RTU 15	12.5	1 ST FLOOR	4225	1.5	5	800	138,880	102,570	9.6	224,000	183,700	82	1,700	460	3	60	29.1	30	CARRIER 48HJD014	2, 3, 4, 6, 7, 8
RTU 16	12.5	1 ST FLOOR	5500	1.5	5	1000	162,400	127,400	11.5	250,000	205,000	82	2,613	460	3	60	35.0	45	CARRIER 48HGD014	2, 3, 4, 6, 7, 8
RTU 17	15	1 ST FLOOR	6200	1.5	5	1100	190,800	146,400	11.5	250,000	205,000	82	2,741	460	3	60	37.0	40	CARRIER 48HGD016	2, 3, 4, 6, 7, 8

NOTES:
1. PROVIDE FACTORY ROOF ISOLATION CURB.
2. PROVIDE FACTORY 100% ECONOMIZER.
3. PROVIDE FACTORY DISCONNECT SWITCH AND CONTROL SYSTEM.
4. PACKAGED ROOFTOP UNIT SHALL BE INTERNALLY ISOLATED.
5. PROVIDE POWER EXHAUST.
6. PROVIDE OVERSIZE FAN MOTOR.
7. PROVIDE FACTORY SMOKE DETECTOR & DRY CONTACTS TO INTERLOCK W/ CONTROL FIRE ALARM PANEL.
8. PROVIDE FACTORY ROOF ISOLATION CURB.

AIR HANDLING UNIT SCHEDULE

SYMBOL	MANUF. MODEL NO.	COOLING CAPACITY		GAS HEAT BTUH		EFF. %	ENT. AIR °F		LEAV. AIR °F		ELECTRICAL					OUTSIDE AIR FLOW, CFM	RETURN AIR FLOW, CFM	FAN ESP IN W.C.	SUPPLY AIR FLOW, CFM	SUPPLY FAN HP	WEIGHT LBS.	REMARKS
		TOTAL MBH	SENSIBLE MBH	INLET	OUTLET		DB	WB	DB	WB	VOLT	ø	Hz	MOCP	MCA							
AHU 1	TO FOLLOW	764.4	549.6	600,000	486,000	81	80.0	67.0	55.0	54.5	460	3	60	–	–	9,000	21,380	3.5	22,180	–	–	1,2,3,4,5

NOTES:
1. PROVIDE MOTOR STARTER AND DISCONNECT SWITCH INTERLOCK W/ EF-2.
2. PROVIDE FACTORY VFD.
3. PROVIDE DUCT SMOKE DETECTOR IN MAIN SUPPLY AIR DUCT. WIRE AND CONNECT TO FAN MOTOR STARTERS SO THAT SUPPLY FAN SHUT DOWN UPON SMOKE DETECTION. ALSO CONNECT TO FIRE ALARM SYSTEM.
4. PROVIDE FACTORY VIBRATION ISOLATORS.
5. FAN SHALL BE INTERNALLY ISOLATED.

EXHAUST FAN SCHEDULE

MARK	LOCATION	SERVES	CFM	SP IN. WG.	DRIVE	HP	RPM	WEIGHT LBS.	POWER SUPPLY			DESIGN EQUIPMENT	NOTES
									VOLT	PH	Hz		
EF 1	ROOF SURGE BLDG.	REST ROOMS JAN. ROOMS	4350	1.5	BELT	3	1993	280	460	3	60	COOK 165 CPA	1, 2, 3, 4, 5, 6, 10
EF 2	MECH. ROOM AUDITORIUM	CU-I	35000	0.25	BELT	15	588	2280	460	3	60	COOK TCNH-B490	1, 3, 5, 7, 8, 9, 10
EF 3	CEILING AUDITORIUM	REST ROOMS	1000	0.5	DIRECT	1/2	1050	85	120	1	60	COOK GN-860	1, 3, 5, 6, 10

NOTE:
1. INTERLOCK W/ CONTROL PANEL.
2. PROVIDE DISCHARGE SHUTTER.
3. PROVIDE FLEX. DUCT CONNECTION.
4. BOTTOM HORIZONTAL DISCHARGE.
5. PROVIDE STARTER AND DISCONNECT SWITCH.
6. PROVIDE BACKDRAFT DAMPER.
7. PROVIDE MOTOR COVER.
8. PROVIDE ACCESS DOOR.
9. PROVIDE INLET/OUTLET FLANGES.
10. PROVIDE VIBRATION ISOLATORS.

CONDENSING UNIT SCHEDULE

SYMBOL	MANUF. MODEL NO.	ELECTRICAL					WT (LBS)	REMARKS
		VOLT	ø	Hz	MOCP	MCA		
CU 1	CARRIER 38AH064	460	3	60	150	113	3700	1,2,3

NOTES:
1. PROVIDE 4" THICK CONCRETE PAD.
2. PROVIDE FACTORY VIBRATION ISOLATORS.
3. PROVIDE DISCONNECT SWITCH.

DIFFUSER SCHEDULE

MARK	AIR FLOW CFM	MFR	MODEL	PANEL	NECK SIZE	REMARKS
S-1 –	150	ANEMOSTAT	RMN-FP	24"X24"	8"X8"	1, 2
S-2 –	200-275	ANEMOSTAT	RMN-FP	24"X24"	10"X10"	1, 2
S-3 –	300-400	ANEMOSTAT	RMN-FP	24"X24"	12"X12"	1, 2, 3
S-4 –	450-550	ANEMOSTAT	RMN-FP	24"X24"	14"X14"	1, 2, 3
S-5 –	600-700	ANEMOSTAT	RMN-FP	24"X24"	16"X16"	1, 2, 3
S-6 –	800	ANEMOSTAT	RMN-FP	24"X24"	18"X18"	1, 2
S-7 –	1000	ANEMOSTAT	RMN-FP	24"X24"	20"X20"	1, 2
S-8 –	1200	ANEMOSTAT	RMN-FP	24"X24"	22"X22"	1, 2
S-9 –	40 CFM/FT	ANEMOSTAT	LBD-FS-100	4 FT	–	1, 4
S-10 –	500	ANEMOSTAT	RMN-B	30"X6"	–	1, 2
E-1 –	350	ANEMOSTAT	GC-5	–	12"X12"	1, 2, 3
E-2 –	50	ANEMOSTAT	GC-5	–	6"X6"	1, 2
E-3 –	150-200	ANEMOSTAT	GC-5	–	8"X8"	1, 2, 3
R-1 –	150-1200	ANEMOSTAT	3PL-SERIES	24"X24"	22"X22"	1, 2
R-2 –	183 CFM/FT	ANEMOSTAT	TAL –	SEE M-7	–	6
R-3 –	1200	ANEMOSTAT	S2VO	36"X12"	–	1, 3

NOTE:
1. SELECT DIFFUSERS TO MATCH CEILING COLOR.
2. PROVIDE FACTORY DIFFUSER PLENUM.
3. DAMPER SHALL BE OPPOSED BLADE DAMPER IN HARD CEILING.
4. PROVIDE LINED PLENUM BOOT W/ PERFORMANCE BAFFLE.
5. PROVIDE ADJUSTABLE BLADE.
6. FINISH SHALL BE PER ARCH. DWGS.

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN
Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/860-4900

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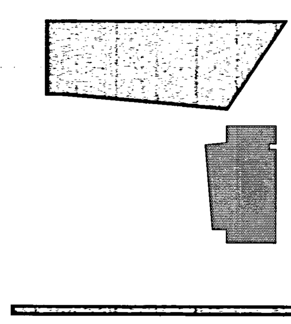
Seals and Signatures

RECORD DRAWINGS

Key Plan



Drawing Title

EQUIPMENT SCHEDULES

Scale

Project Number 13OCT.,00

Baseline Date

M-5.0

Drawing Number

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VARIABLE AIR VOLUME BOX SCHEDULE

ITEM NO.	MANUFACTURER MODEL NO.	INLET SIZE INCH. DIA.	RTU NO.	AIR VOLUME MAX. CFM	AIR VOLUME MIN. CFM	P.D. IN. WG. ΔPs	REMARKS
VAV 101	CARRIER 33CSDCDR-10	10	17	300	200	.1	
VAV 102	CARRIER 33CSDCDR-10	10	17	300	200	.1	
VAV 103	CARRIER 33CSDCDR-16	16	17	1400	800	.1	
VAV 104	CARRIER 33CSDCDR-16	16	17	1400	800	.1	
VAV 105	CARRIER 33CSDCDR-16	16	17	1400	800	.1	
VAV 106	CARRIER 33CSDCDR-16	16	17	1400	800	.1	
VAV 107	CARRIER 33CSDCDR-16	16	15	1350	700	.1	
VAV 108	CARRIER 33CSDCDR-12	12	15	400	200	.1	
VAV 109	CARRIER 33CSDCDR-16	16	15	1350	700	.1	
VAV 110	CARRIER 33CSDCDR-16	16	15	1125	600	.1	
VAV 111	CARRIER 33CSDCDR-10	10	14	300	200	.1	
VAV 112	CARRIER 33CSDCDR-10	10	16	300	200	.1	
VAV 113	CARRIER 33CSDCDR-12	12	16	500	300	.1	
VAV 114	CARRIER 33CSDCDR-16	16	16	1350	700	.1	
VAV 115	CARRIER 33CSDCDR-16	16	16	1400	800	.1	
VAV 116	CARRIER 33CSDCDR-14	14	6	750	400	.1	
VAV 117	CARRIER 35EV-22	24x16	6	2200	1200	.1	
VAV 118	CARRIER 35EV-22	24x16	6	2200	1200	.1	
VAV 119	CARRIER 35EV-22	24x16	6	2200	1200	.1	
VAV 120	CARRIER 35EV-22	24x16	6	2200	1200	.1	
VAV 121	CARRIER 33CSDCDR-14	14	5	900	450	.1	
VAV 122	CARRIER 33CSDCDR-16	16	5	1400	700	.1	
VAV 123	CARRIER 35EV-16	16	5	1700	850	.1	
VAV 124	CARRIER 35EV-16	16	5	1600	800	.1	
VAV 125	CARRIER 35EV-22	24x16	5	2500	1300	.1	
VAV 126	CARRIER 33CSDCDR-14	14	16	750	375	.1	
BP 5	CARRIER 35PSA-20-065HTA	32x16	5	6640	–	.1	BY PASS DAMPER FIRST FLOOR
BP 6	CARRIER 35PSA-24-100HTA	40x16	6	7640	–	.1	BY PASS DAMPER FIRST FLOOR
BP 15	CARRIER 35PSA-16-035HTA	29x10	15	3380	–	.1	BY PASS DAMPER FIRST FLOOR
BP 16	CARRIER 35PSA-16-035HTA	29x10	16	4400	–	.1	BY PASS DAMPER FIRST FLOOR
BP 17	CARRIER 35PSA-20-065HTA	32x16	17	4960	–	.1	BY PASS DAMPER FIRST FLOOR
CV 1W	CARRIER DAMPRND12INC	12	16	600	600	.1	CONSTANT VOLUME BOX WOMENS REST RM
CV 1M	CARRIER DAMPRND12INC	12	16	600	600	.1	CONSTANT VOLUME BOX MENS REST RM

VARIABLE AIR VOLUME BOX SCHEDULE

ITEM NO.	MANUFACTURER MODEL NO.	INLET SIZE INCH. DIA.	RTU NO.	AIR VOLUME MAX. CFM	AIR VOLUME MIN. CFM	P.D. IN. WG. ΔPs	REMARKS
VAV 201	CARRIER 33CSDCDR-14	14	2	950	475	.1	
VAV 202	CARRIER 35EV-16	16	2	2000	1000	.1	
VAV 203	CARRIER 33CSDCDR-14	14	2	1000	500	.1	
VAV 204	CARRIER 35EV-22	24x16	2	2400	1200	.1	
VAV 205	CARRIER 35EV-16	16	2	1500	800	.1	
VAV 206	CARRIER 35EV-16	16	2	1800	900	.1	
VAV 207	CARRIER 33CSDCDR-16	16	4	1200	700	.1	
VAV 208	CARRIER 35EV-16	16	4	1600	800	.1	
VAV 209	CARRIER 35EV-16	16	3	2000	1000	.1	
VAV 210	CARRIER 33CSDCDR-14	14	3	800	400	.1	
VAV 211	CARRIER 35EV-16	16	3	2000	1000	.1	
VAV 212	CARRIER 33CSDCDR-16	16	3	1000	500	.1	
VAV 213	CARRIER 35EV-16	16	3	1800	900	.1	
VAV 214	CARRIER 33CSDCDR-16	16	3	1300	650	.1	
VAV 215	CARRIER 33CSDCDR-16	16	3	1450	725	.1	
VAV 216	CARRIER 35EV-16	16	12	1700	800	.1	
VAV 217	CARRIER 35EV-16	16	12	1700	800	.1	
VAV 218	CARRIER 35EV-16	16	12	1700	800	.1	
VAV 219	CARRIER 35EV-16	16	12	1360	700	.1	
VAV 220	CARRIER 35EV-22	24x16	12	2040	1000	.1	
VAV 221	CARRIER 33CSDCDR-10	10	14	450	225	.1	
VAV 222	CARRIER 33CSDCDR-10	10	14	300	200	.1	
VAV 223	CARRIER 35EV-16	16	14	1600	800	.1	
VAV 224	CARRIER 35EV-16	16	14	1600	800	.1	
VAV 225	CARRIER 33CSDCDR-16	16	14	1000	500	.1	
VAV 226	CARRIER 35EV-16	16	14	2000	1000	.1	
VAV 227	CARRIER 33CSDCDR-16	16	14	1250	625	.1	
VAV 228	CARRIER 35EV-16	16	13	1900	1000	.1	
VAV 229	CARRIER 35EV-16	16	13	1600	800	.1	
VAV 230	CARRIER 33CSDCDR-16	16	13	1000	500	.1	
VAV 231	CARRIER 35EV-16	16	13	2000	1000	.1	
VAV 232	CARRIER 33CSDCDR-16	16	13	1000	500	.1	
VAV 233	CARRIER 35EV-16	16	13	2000	1000	.1	
BP 2	CARRIER 35PSA-24-100HTA	40x16	2	7600	–	.1	BY PASS DAMPER SECOND FLOOR
BP 3	CARRIER 35PSA-24-100HTA	40x16	3	7680	–	.1	BY PASS DAMPER SECOND FLOOR
BP 4	CARRIER 35PSA-16-035HTA	29x10	4	2720	–	.1	BY PASS DAMPER SECOND FLOOR
BP 12	CARRIER 35PSA-20-065HTA	32x16	12	6800	–	.1	BY PASS DAMPER SECOND FLOOR
BP 13	CARRIER 35PSA-24-100HTA	40x16	13	7600	–	.1	BY PASS DAMPER SECOND FLOOR
BP 14	CARRIER 35PSA-24-100HTA	40x16	14	7640	–	.1	BY PASS DAMPER SECOND FLOOR
CV 2W	CARRIER DAMPRND12INC	12	14	600	600	.1	CONSTANT VOLUME BOX WOMENS REST RM
CV 2M	CARRIER DAMPRND12INC	12	14	600	600	.1	CONSTANT VOLUME BOX MENS REST RM

VARIABLE AIR VOLUME BOX SCHEDULE

ITEM NO.	MANUFACTURER MODEL NO.	INLET SIZE INCH. DIA.	RTU NO.	AIR VOLUME MAX. CFM	AIR VOLUME MIN. CFM	P.D. IN. WG. ΔPs	REMARKS
VAV 301	CARRIER 33CSDCDR-14	14	11	750	375	.1	
VAV 302	CARRIER 35EV-16	16	11	2000	1000	.1	
VAV 303	CARRIER 33CSDCDR-12	12	11	500	300	.1	
VAV 304	CARRIER 35EV-16	16	11	2000	1000	.1	
VAV 305	CARRIER 33CSDCDR-12	12	11	500	300	.1	
VAV 306	CARRIER 35EV-16	16	11	2000	1000	.1	
VAV 307	CARRIER 33CSDCDR-12	12	11	600	300	.1	
VAV 308	CARRIER 33CSDCDR-16	16	11	1375	700	.1	
VAV 309	CARRIER 33CSDCDR-14	14	1	1000	500	.1	
VAV 310	CARRIER 35EV-16	16	1	1750	800	.1	
VAV 311	CARRIER 35EV-22	24x16	7	2600	1300	.1	
VAV 312	CARRIER 35EV-22	24x16	7	2150	1075	.1	
VAV 313	CARRIER 35EV-22	24x16	7	2300	1150	.1	
VAV 314	CARRIER 35EV-16	16	7	2000	1000	.1	
VAV 315	CARRIER 35EV-16	16	8	1700	800	.1	
VAV 316	CARRIER 35EV-16	16	8	1700	800	.1	
VAV 317	CARRIER 35EV-16	16	8	1700	800	.1	
VAV 318	CARRIER 35EV-16	16	8	1700	800	.1	
VAV 319	CARRIER 35EV-16	16	8	1700	800	.1	
VAV 320	CARRIER 35EV-22	24x16	9	2500	1250	.1	
VAV 321	CARRIER 33CSDCDR-14	14	9	1300	650	.1	
VAV 322	CARRIER 33CSDCDR-10	10	9	300	200	.1	
VAV 323	CARRIER 33CSDCDR-10	10	9	400	200	.1	
VAV 324	CARRIER 35EV-16	16	10	1600	800	.1	
VAV 325	CARRIER 35EV-16	16	10	1800	900	.1	
VAV 326	CARRIER 35EV-16	16	10	2000	1000	.1	
VAV 327	CARRIER 33CSDCDR-16	16	10	1000	500	.1	
VAV 328	CARRIER 35EV-16	16	10	2000	1000	.1	
VAV 329	CARRIER 33CSDCDR-16	16	10	1000	500	.1	
BP 7	CARRIER 35PSA-20-065HTA	32x16	7	6760	–	.1	BY PASS DAMPER THIRD FLOOR
BP 8	CARRIER 35PSA-20-065HTA	32x16	8	6800	–	.1	BY PASS DAMPER THIRD FLOOR
BP 9	CARRIER 35PSA-16-035HTA	29x10	9	4760	–	.1	BY PASS DAMPER THIRD FLOOR
BP 10	CARRIER 35PSA-24-100HTA	40x16	10	7520	–	.1	BY PASS DAMPER THIRD FLOOR
BP 11	CARRIER 35PSA-24-100HTA	40x16	11	7580	–	.1	BY PASS DAMPER THIRD FLOOR
BP 1	CARRIER 35PSA-16-035HTA	29x10	1	2680	–	.1	BY PASS DAMPER THIRD FLOOR
CV 3W	CARRIER DAMPRND12INC	12	9	600	600	.1	CONSTANT VOLUME BOX WOMENS REST RM
CV 3M	CARRIER DAMPRND12INC	12	9	600	600	.1	CONSTANT VOLUME BOX MENS REST RM

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN

Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/860-4900

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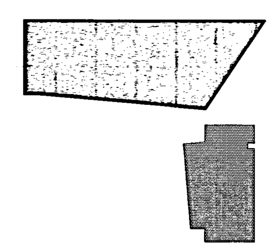
Seals and Signatures

RECORD DRAWINGS

Key Plan



Drawing Title

SURGE BUILDING
WT
DAMPER SCHEDULES

Scale

Project Number
13OCT.,00

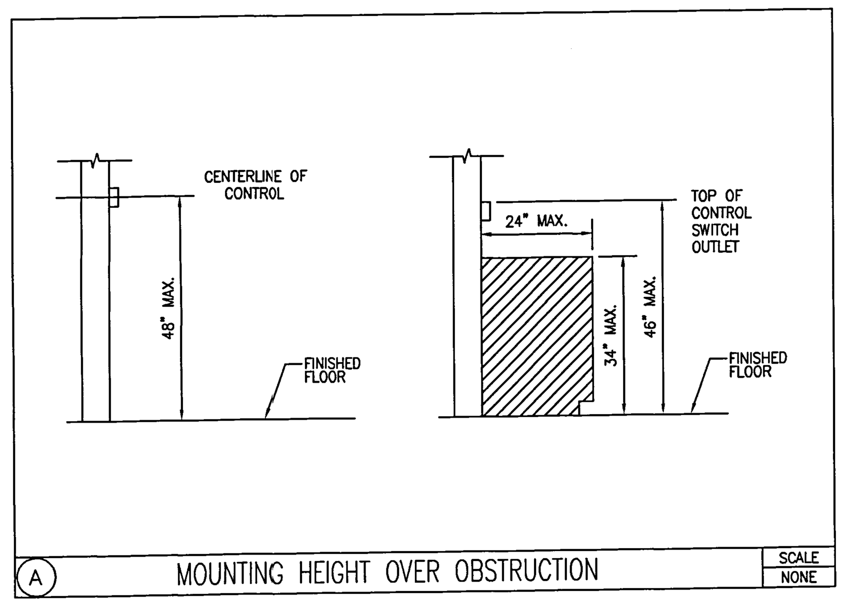
Baseline Date

M-5.2

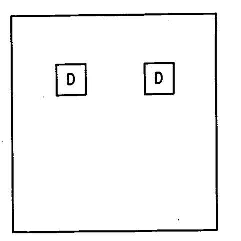
Drawing Number

GENERAL NOTES

1. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS AND INSPECTION REQUIRED BY LEGAL AUTHORITIES .
2. WORKS AND MATERIALS SHALL BE IN FULL COMPLIANCE WITH THE LATEST AND MOST STRINGENT APPLICABLE CODE OR REGULATION.
3. CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR ANY ADDITIONAL COSTS FOR MATERIAL OR LABOR TO COMPLY WITH THESE CODES OR REGULATIONS.
4. CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR THE CONDITION OF THE PREMISES ON WHICH THE WORK IS PERFORMED AND FOR THE SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE CONTRACT.
5. EQUIPMENT AND MATERIALS SHALL BE LISTED, LABELED AND INSTALLED PER RECOGNIZED ELECTRICAL TESTING LABORATORY.
6. WORK SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE BY OWNER.
7. DESIGN DRAWINGS ARE DIAGRAMMATIC ONLY AND SHALL BE FOLLOWED AS CLOSELY AS ACTUAL CONSTRUCTION CONDITIONS WILL PERMIT.
8. NOTHING ON THE DESIGN DRAWINGS SHALL BE DEEMED AS TO VIOLATE THE LATEST AND MOST STRINGENT APPLICABLE CODES OR REGULATIONS.
9. ANY ERROR, OMISSION OR DESIGN DISCREPANCY ON THE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE ELECTRICAL ENGINEER FOR CLARIFICATION OR CORRECTION BEFORE BID.
10. OPENINGS FOR ELECTRICAL PENETRATIONS THRU FIRE RESISTANCE RATED WALLS, PARTITIONS, FLOORS OR CEILINGS SHALL BE FIRE STOPPED USING APPROVED METHODS AS DETERMINED BY CODE OR REGULATION.
11. "PROVIDE" SHALL MEAN ITEMS TO BE FURNISHED, INSTALLED AND CONNECTED.
12. GROUNDING SHALL BE IN FULL COMPLIANCE WITH NATIONAL ELECTRICAL CODE. INCOMING SERVICE SHALL BE PER UTILITY GROUNDING COMPANY REQUIREMENTS & NEC-ART.#250, SECT. G&H.
13. UNDER GROUND CONDUITS SHALL BE SCHEDULE 40 PVC WITH SCHEDULE 80 PVC BENDS AND STEEL RISERS. ALL UNDER-GROUND PVC CONDUITS SHALL CONTAIN A GROUND CONDUCTOR, AND SHALL BE SIZED PER CODE REQUIREMENT.
14. PANELS SHALL BE PANELBOARD WITH BOLT-ON TYPE CIRCUIT BREAKERS, UNLESS NOTED AS LOAD CENTERS, WHICH ARE PLUG-IN TYPE BREAKERS.
15. FUSED DISCONNECTS SHALL BE FUSED PER NAMEPLATE UNLESS NOTED OTHERWISE.
16. "EQUIPMENT GROUNDING" (ALL NON-CURRENT CARRYING METAL PARTS OF EQUIPMENT ENCLOSURE AND RACEWAY SYSTEM) SHALL BE SOLIDLY INTERCONNECTED TO THE ELECTRICAL "SYSTEM GROUND" AS PROVIDED BY THE SERVICE ENTRANCE AND FOR EACH GROUNDED SEPARATELY DERIVED SYSTEM THAT IS INSTALLED. RESISTANCE TO GROUND NOT MORE THAN 25 OHMS.
17. CONDUCTORS SHALL BE COPPER TYPE THHN, THWN, 600V INSULATION UNLESS NOTED OTHERWISE.
18. WIRING DEVICES SHALL BE SPECIFICATION GRADE.
19. CONDUIT SHALL COMPLY WITH THE REQUIREMENTS OF UNDERWRITER'S LABORATORIES. CONDUIT SHALL BE RIGID GALVANIZED STEEL BELOW OR IN CONCRETE SLAB, OR IN WET LOCATION. CONDUIT SHALL BE SUPPORTED ACCORDING TO CODE. ALL EMPTY CONDUITS SHALL INCLUDE PULL WIRE.
20. FLEXIBLE CONDUIT SHALL BE USED FOR FINAL CONNECTION TO MOTORS AND OTHER VIBRATING EQUIPMENT. EXPANSION COUPLINGS SHALL BE USED AT BUILDING EXPANSION JOINTS.
21. NON METALLIC BUSHINGS OR INSULATED METALLIC BUSHINGS SHALL BE PROVIDED FOR ALL CONDUIT TERMINATIONS
22. CONTRACTOR SHALL COORDINATE AND VERIFY MECHANICAL EQUIPMENT CONTROL AND WIRING REQUIREMENTS WITH MECHNICAL CONTRACTOR BEFORE CONSTRUCTION.
23. NOT USED.
24. PROVIDE ILLUMINATED EXIT SIGNS AS REQUIRED WITH SELF CONTAINED EMERGENCY BATTERY PACK AS ACCEPTED BY FIRE MARSHAL.
25. NOT USED
26. IT IS THE INTENTION OF THE DESIGN DRAWINGS TO COVER ALL THINGS REQUIRED TO MAKE A COMPLETE AND OPERATIVE SYSTEM. CONTRACTOR SHALL FURNISH ALL LABOR MATERIALS, EQUIPMENT, OR MISCELLANEOUS SERVICE REQUIRED TO ACCOMPLISH THIS RESULT.
27. CONTRACTOR SHALL BID THE PROJECT AS INDICATED AND SPECIFIED ON THE DRAWINGS.
28. CONTRACTOR SHALL CONTACT SERVING UTILITY COMPANIES FOR APPROVED ENGINEERING DRAWINGS BEFORE CONSTRUCTION.
29. NOTES AND SCHEDULES LISTED ON DRAWINGS OF OTHER SECTIONS OF THIS PROJECT WITH REFERENCE TO ELECTRICAL CONTRACTOR OR ELECTRICIAN APPLY TO THIS SECTION OF CONTRACT.
30. ELECTRICAL WORK NOTED ON HVAC AND PLUMBING DRAWINGS TO BE DONE UNDER THIS SECTION.
31. SUBMIT 6 COPIES OF SHOP DRAWINGS FOR APPROVAL WITHIN 35 DAYS OF AWARD OF CONTRACT. CONTRACTOR SHALL VERIFY DIMENSIONS OF EQUIPMENT AND MAKE SURE THEY COMPLY WITH ALL APPLICABLE CODE REQUIREMENTS RELATING TO CLEAR WORKING SPACE AROUND EQUIPMENT PRICE TO SUBMITTING SHOP DRAWINGS.
32. SUBMIT 6 COPIES OF MATERIAL LIST FOR APPROVAL WITHIN 35 DAYS OF AWARD OF THE CONTRACT. THE RIGHT IS RESERVED TO SUBMITTAL OF ANY SAMPLES OF FURNISHED MATERIAL IF DEEMED NECESSARY BY THE OWNER.
33. SUBSTITUTION OF ANY MATERIAL OR EQUIPMENT SHALL BE APPROVED BY ARCHITECT BEFORE INSTALLATION.
34. BEFORE FINAL ACCEPTANCE OF WORK CONTRACTOR IS TO INSURE ALL EQUIPMENT, SYSTEMS ARE INSTALLED AND FUNCTIONING PROPERLY BY PERFORMING REQUIRED FIELD TESTS.
35. "OR EQUAL" MEANS EQUIVALENT OR SUPERIOR IN PERFORMANCE, MATERIALS, WORKMANSHIP AND APPEARANCE TO THE SPECIFIED EQUIPMENT.
36. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL TRANSFORMERS AND/OR BALLASTS REQUIRED TO OPERATE ALL LAMPS, INCLUDING REMOTE BALLASTS AND/OR TRANSFORMERS AND THE ENCLOSURES FOR SAME. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF COMPATIBILITY BETWEEN LAMPS, BALLAST AND/OR TRANSFORMERS AND OTHER CONTROL DEVICES SPECIFIED. NOTIFY ARCHITECT OF ANY INCOMPATABILITY PRIOR TO ORDERING EQUIPMENT.
37. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF ALL LIGHTING EQUIPMENT AND CONTROL DEVICES WITH CEILING AND WALL TYPES, PRIOR TO ORDERING LIGHTING EQUIPMENT.
38. NOT USED.
39. IN ADDITION TO ANY SUBMITTAL REQUIREMENTS, SHOP DRAWINGS AND PRODUCT DATA SUBMITTALS SHALL INCLUDE PHYSICAL DIMENSIONS, PHOTOMETRICS, SPECIFIC LAMP TYPE AND MOUNTING DETAILS.
40. COORDINATE EXACT LOCATIONS AND MOUNTING REQUIREMENTS OF ALL LIGHTING EQUIPMENT WITH ARCHITECT.
41. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN AND OTHER ARCHITECTURAL DRAWINGS AS REQUIRED FOR COORDINATION OF LIGHTING WITH MECHANICAL, STRUCTURAL, PLUMBING AND OTHER
42. DESIGN DETAILS SHOWN ON THE DRAWINGS ARE FOR INTENT ONLY AND ARE NOT FOR CONSTRUCTION UNLESS SPECIFICALLY NOTED "FOR CONSTRUCTION". REFER TO ARCHITECTURAL DETAILS FOR COORDINATION, CONSTRUCTION DETAILS, DIMENSIONS AND MOUNTING CONDITIONS.
43. FINAL AIMING OF ALL ADJUSTABLE LIGHTING EQUIPMENT SHALL BE DONE BY THE ELECTRICAL CONTRACTOR AS DIRECTED BY AND UNDER THE SUPERVISION OF THE LIGHTING CONSULTANT UNLESS NOTED TO THE CONTRARY.
44. PROVIDE LAMPS BY SYLVANIA, GENERAL ELECTRIC OR PHILIPS UNLESS SPECIFIED OR SHOWN OTHERWISE ON DRAWINGS.
45. FLUORESCENT LAMPS AND COMPACT FLUORESCENT LAMPS TO BE 3500°K COLOR, UNLESS NOTED OTHERWISE.
46. NOT USED
47. FLUORESCENT BALLASTS SHALL BE OF THE ELECTRONIC TYPE, WHERE THAT OPTION IS AVAILABLE OR THE "LOW ENERGY" TYPE (ADVANCE MARK III OR EQUAL). ALL COMPACT FLUORESCENT BALLAST SHALL BE HIGH POWER FACTOR, WHERE THAT OPTION IS AVAILABLE, UNLESS OTHERWISE NOTED.
48. COMPONENTS SHOWN ON THE SCHEMATIC AND CONNECTION DIAGRAMS, BUT NOT ON THE PLAN OR VICE VERSA, SHALL BE INCLUDED AS IF SHOWN ON BOTH.
49. EXACT LOCATION OF HVAC AND PLUMBING EQUIPMENT THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THE MECHANICAL DRAWINGS.
50. RACEWAYS RUNNING THROUGH BUILDING EXPANSION JOINTS SHALL BE EQUIPPED WITH EXPANSION FITTINGS.
51. ELECTRICAL CONTRACTOR SHALL COORDINATE ALL ELECTRICAL PANEL LOCATIONS WITH OTHER EQUIPMENT IN ORDER TO MAKE SURE THE PANELS ARE MOUNTED WITH ENOUGH CLEARANCE IN FRONT AND STAY CLEAR FROM ADJACENT EQUIPMENT BEFORE ROUGH-IN. NOTIFY ARCHITECT/ENGINEER OF ANY PROBLEM BEFORE INSTALLATION (N.E.C.110-16, 384-7 AND 384-8).
52. IT IS THE RESPOSIBILITY OF THE ELECTRICAL CONTRACTOR TO VERIFY THE TELEPHONE SERVICE ENTRANCE REQUIREMENTS WITH THE SERVING TELEPHONE UTILITY COMPANY AND THE TELEPHONE SYSTEM DISTRIBUTION REQUIREMENTS WITH THE TELEPHONE SYSTEM VENDOR.
53. PROVIDE 4'-0"x8'-0"x3/4" TELEPHONE TERMINAL BACKBOARD. COORDINATE REQUIREMENTS WITH TELEPHONE CO.
54. PROVIDE UNDERGROUND EMPTY DUCT FOR TELEPHONE CABLE. CHECK WITH TELEPHONE CO. FOR EXACT ROUTE, P.O.C. AND REQUIREMENTS.
55. OUTLETS SHALL COMPLY WITH ADA REQUIREMENT, MIN. 15" A.F.F UNLESS NOTED OTHERWISE.
56. SWITCHES SHALL BE MOUNTED AT ±36" – 48" A.F.F.
57. CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS IN THE FIELD BEFORE BID AND INFORM THE ENGINEER OF ANY DISCREPANCIES.

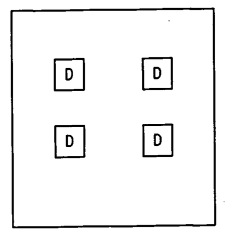


A MOUNTING HEIGHT OVER OBSTRUCTION — SCALE NONE



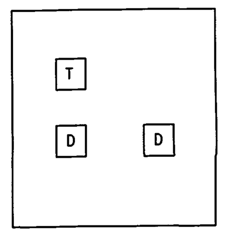
(2) DATA OUTLETS
(4) BLANK DATA OUTLETS

A/E-1 WALL PLATE DETAIL — SCALE: NONE



(4) DATA OUTLETS
(2) BLANK DATA OUTLETS

B/E-1 WALL PLATE DETAIL — SCALE: NONE



(2) DATA OUTLETS
(1) TELEPHONE OUTLET
(2) BLANK DATA OUTLETS
(1) BLANK TELEPHONE OUTLET

C/E-1 WALL PLATE DETAIL — SCALE: NONE

LIGHTING FIXTURE SCHEDULE

SYMBOL	FIXTURE TYPE	LAMPS NO.	LAMPS TYPE	BALLAST MANUFACTURER CAT. NO.	FIXTURE DESCRIPTION	MANUFACTURER CAT. NO.	FINISH	MOUNTING	REMARKS
	A / 87	3	F32T8 3600K 85CR 32W	ELECTRONIC MAGNETEK B332I277RH	2'x4' FLUORESCENT FIXTURE	LITHONIA 2SP 332 RN A12 277 GEB	WHITE	RECESS.	2 ELECTRONIC BALAST
	A1 / 57	2			SAME AS TYPE A/87 EXCEPT AS INDICATED.	LITHONIA 2SP 232 RN A12 277 GEB	WHITE	RECESS.	
	A2 / 57				SAME AS TYPE A1/87 EXCEPT WITH BUILT-IN EMERG. BATTERY PACK				
	A3 / 114	4	F32T8 3600K 85CR 32W	ELECTRONIC MAGNETEK B432I277RH	SAME AS TYPE A/87 EXCEPT AS INDICATED.	LITHONIA 2SP 432 RN A12 277 GEB	WHITE	RECESS.	2 ELECTRONIC BALAST
	A5 / 114				SAME AS TYPE A3/114 EXCEPT WITH BUILT-IN EMERG. BATTERY PACK				
	A4 / 114	4	F32T8 3600K 85CR 32W	ELECTRONIC MAGNETEK B432I277RH	2'x4' FLUORESCENT FIXTURE PARABOLIC TROFFERS	LITHONIA 2PM3N G B 432 18 LD 277 GEB	WHITE	RECESS.	2 ELECTRONIC BALAST
	A6 / 114				SAME AS TYPE A4/114 EXCEPT WITH BUILT-IN EMERG. BATTERY PACK				
	B / 30	1	F32T8 3500K 85CR 32W	ELECTRONIC MAGNETEK B132I277RH	9" x4' NARROW APPERTURE TROFFER FLUORESCENT FIXTURE.	LITHONIA 9NAT G 132 20 3 LD 277 GEB	WHITE	RECESS.	
	B1 / 31	1	F30T12 3500K 85CR 30W	ELECTRONIC MAGNETEK B132I277RH	9" x3' NARROW APPERTURE TROFFER FLUORESCENT FIXTURE.	LITHONIA 9NAT G 125 20 3 LD 277 GEB	WHITE	RECESS.	
	B2 / 18	1	F17T8 3500K 85CR 17W	ELECTRONIC MAGNETEK B132I277RH	9" x2' NARROW APPERTURE TROFFER FLUORESCENT FIXTURE.	LITHONIA 9NAT G 117 20 3 LD 277 GEB	WHITE	RECESS.	
	B3 / 30	1	F32T8 3500K 85CR 32W	ELECTRONIC MAGNETEK B132I277RH	4' STRIP FLUORESCENT FIXTURE	LITHONIA S 132 277 GEB	WHITE	SURFACE	
[1]	B4 / 30				SAME AS TYPE B3/30 EXCEPT WITH BUILT-IN EMERG. BATTERY PACK				
	C / 17	1	CFQ13W 13W	ELECTRONIC MAGNETEK CBC 113 277	6" DIA. FLUORESCENT DOWNLIGHT	LITHONIA LP6F 13DTT 277 GEB	WHITE	RECESS.	
[1]	C1 / 17				SAME AS TYPE C/17 EXCEPT WITH BUILT-IN EMERG. BATTERY PACK				
	C2 / 38	1	CFM32W 32W	ELECTRONIC MAGNETEK CBC 132 277	6" DIA. FLUORESCENT DOWNLIGHT	LP6F 32TRT 277 GEB	WHITE	RECESS.	
	C3 / 94	2	CFM42W 42W	ELECTRONIC MAGNETEK C142R277	RECTANGULAR PARABOLIC SPLAY TRIM COMPACT FLUORESCENT DOWNLIGHT	KURT VERSEN T4142	MATTE BLACK	RECESS.	
[1]	C4 / 94				SAME AS TYPE C3/94 EXCEPT WITH BUILT-IN EMERG. BATTERY PACK				
[1]	C5 / 38				SAME AS TYPE C2/38 EXCEPT WITH BUILT-IN EMERG. BATTERY PACK				
	D / 22	1	CFQ18W 18W	ELECTRONIC MAGNETEK CBC 118-277	4" DIA. DOWNLIGHT COMPACT FLUORESCENT FIXTURE	LITON LVH418E-277-LR994B	MATTE BLACK	RECESS	
	D1 / 22				SAME AS TYPE D/22 EXCEPT WITH WHITE BAFFLE & AS NOTED	LITON LVH418E-277-LR994W	WHITE		
[1]	D2 / 22				SAME AS TYPE D/22 EXCEPT WITH BUILT-IN EMERG. BATTERY PACK				
	E / –		LED IN RED	N.A	SELF- LUMINOUS EXIT SIGN.	LITHONIA CAT. NO. DW1R20IF	WHITE	CEILING	
	E1 / –				SAME AS TYPE E/– EXCEPT AS INDICATED			WALL	
	F / 28	1	F15T12 15W	HPF 277V	18" SIDE MOUNTED STRIP LIGHTS	LITHONIA SM 1 15 277 HPF ES	WHITE	WALL	
	G / 45	1	42WT4	ELECTRONIC 277V	COMPACT FLOURESCENT BOLLARD	AREA ARCH. LT. (ALL) SPB-42-CF-ANG GLA-MR2-COP			
	I / 38	1	CFM32W 32W	ELECTRONIC 277V	8" BOLLARD	LITHONIA KBC832TRT R5 LV 277			277V
	H / 50	1	MR16 50	N/A	HALOGEN FIXTURE UPLIGHT LAMP WITH INTEGRAL 277V-12V TRANSFORMER	LUMIERE 633-277			277V
	J / 50	1	MR16 50	N/A	HALOGEN FIXTURE UPLIGHT CONNECTED TO REMOTE TRANSFORMER 277-12V [2]	LUMIERE 253-FSI			12V
	K / 16	1	PLC13(T4) 13W	HPF 277V	COMPACT FLUORESCENT RECESSED STEPLIGHT	HADCO RSC2(A)K5F13E	BLACK	RECESS. WALL	
	L / 17	1	CFQ13W 13W	HPF 277	4" MINIATURE COMPACT FLUORESCENT DOWNLIGHT	LITON LH99P-LR99BB	BLACK	RECESS. CEILING	
	M / 47	1	CFM42W 42W	ELECTRONIC MAGNETEK C142R277	WALL MOUNTED LUMINAIRE COMPACT FLUORESCENT COMPLETE WITH EMERGENCY BATTERY PACK.	LITHONIA TWL 42TRT 277	–	WALL	
	N / 30	1	F32T8 3500K 85CRI 32W	ELECTRONIC MAGNETEK B132I277RH	SHALLOW SURFACE MOUNTED WALL WASH AND DOWN LIGHT FIXTURE	ELP 132T-SWW-SC MOD 7151	WHITE	SURFACE	
	O / 200		PAR 46 200W	N. A.	200 SERIES SPOT LIGHT COMPACT UNIT DESIGNED INCANDESCENT LIGHT	LSI 200 PAR46/3MFL	BLACK	SURFACE	
	P / 200				SAME AS TYPE O/200 EXCEPT WITH NARROW SPOT DISTRIBUTION.	LSI 200 PAR46/3NSP			
	Q / 16		13W PL	HPF 277V	RECESSED BENCH LIGHT.	BEGA 2286P	BLACK	RECESSED	277V
	R / 20		20W G4	N. A.	LV RECESSED STEP LIGHT CONNECTED TO REMOTE TRANSFORMER [2]	BEGA 2020LT	STAINLESS STEEL	RECESSED	12V
	T / 50		50W MR16	N. A.	HALOGEN FIXTURE UPLIGHT CONNECTED TO REMOTE TRANSFORMER 277-12V [2]	LUMIERE 253-FSI			12V

REFERENCE NOTE:

[1] EMERGENCY LIGHT FIXTURE ON DIMMER SYSTEM MUST HAVE TWO BALLASTS ONE FOR DIMMING AND ONE FOR EMERGENCY.

[2] REMOTE TRANSFORMER SHALL BE 277V-12V WITH PRIMARY AND SECONDARY PROTECTION IN HYDREL CBB FLUSH MOUNTED BOX - SEE SITE PLAN E-2.

ELECTRICAL SYMBOLS:

- WIRING/CONDUIT CONCEALED IN OR ABOVE CEILING OR IN ABOVE GROUND FLOOR SLAB
- WIRING/CONDUIT CONCEALED IN OR UNDER FLOOR
- WIRING/CONDUIT EXPOSED
- HOMERUN TO PANELBOARD CIRCUITS AS NOTED
- CONDUIT TURNED UP
- CONDUIT TURNED DOWN
- ---EX--- EXISTING CONDUIT
- ---ER--- EXISTING CONDUIT TO BE REMOVE.
- 2-#12, 1/2" CONDUIT UON.
- 3-#12, 1/2" CONDUIT UON.
- 4-#12, 1/2" CONDUIT UON.
- 5-#12, 1/2" CONDUIT UON.
- 6-#12, 3/4" CONDUIT UON.
- 7-#12, 3/4" CONDUIT UON.
- 8-#12, 3/4" CONDUIT UON.
- 9-#12, 1" CONDUIT UON.
- —FA— 1/2"C-FIRE ALARM SYSTEM CONDUIT

CEILING WALL FLOOR

- LIGHTING OUTLET WITH FIXTURE AS NOTED
- FLUORESCENT FIXTURE POCHED INDICATES EMERGENCY BATTERY PACK
- EXISTING FLUORESCENT FIXTURE TO REMAIN
- EXISTING FLUORESCENT FIXTURE "ER" DENOTES EXISTING TO BE REMOVE
- SINGLE LUMINAIRE AND POLE
- EXIT SIGIN WITH ARROW AS INDICATED
- DUPLEX RECEPTACLE, 120V, 15 AMP +15" UON
- TWO DUPLEX RECEPTACLE, 120V 15 AMP +15" UON
- DUPLEX RECEPTACLE, 15A-125V-2P, 3-WIRE GROUND FAULT CIRCUIT INTERRUPTER (GFCI)
- ISOLATED GROUND DUPLEX RECEPTACLE 208V, 20A, 2P,, 3- WIRE.
- P TELEPHONE OUTLET, 2-GANG BOX W/ 2-HOLE COVER & 3/4" CO TO ACCESSIBLE CEILING. +15" UON P-DENOTES PUBLIC PHONE
- DATA OUTLET, 6-GANG BOX WITH 6 HOLES COVER & CONDUIT TO ACCESSIBLE CEILING. +15" UON (A/E-1)
- DATA OUTLET, 6-GANG BOX WITH 6 HOLES COVER & CONDUIT TO ACCESSIBLE CEILING. +15" UON (B/E-1)
- DATA/VOICE OUTLET, 6-GANG BOX WITH 6 HOLES COVER & CONDUIT TO ACCESSIBLE CEILING. +15" UON (C/E-1)
- FIBER OPTIC DROP& CONDUIT TO ACCESSIBLE CEILING.
- JUNCTION BOX (J-BOX)
- OS CEILING MOUNTED OCCUPANCY SENSOR
- PP POWER PACK FOR OCCUPANCY SENSOR
- TELEVISION OUTLET, +15" UNO, 3/4"C.O. TO ACCESSIBLE CEILING SPACE & DUAL CABLE TV OUTLET. SEE SPECIFICATIONS FOR FURTHER INFORMATION OF RG5 CABLE.
- MICROPHONE JACK +15"A.F.F.
- P/A SPEAKER (BY OTHERS) +13'-0" A.F.F.
- FAAP FIRE ALARM ANNUNCIATOR PANEL
- FIRE ALARM MANUAL PULL STATION
- FIRE ALARM SMOKE DETECTOR
- FIRE ALARM HEAT DETECTOR
- FIRE ALARM HORN AND STROBE

- A/144 FIXTURE TYPE TOTAL NUMBER OF WATTS
- EF/1 MECHANICAL EQUIPMENT DESIGNATION EF-DENOTES EXHAUST FAN, 1-DENOTES EXHAUST FAN NUMBER 1
- A/E-2 DETAIL CALL-OUT DETAIL "A" DRAWN ON DWG. NO. "E-2"
- S TOGGLE SWITCH-EACH SUBSCRIPT (LIKE "a","b","c") INDICATES INDIVIDUAL SWITCH, +42" UNO
  2- 2 POLE P- PILOT LIGHT
  3- 3 WAY D- DIMMER
  4- 4 WAY MC- MOMENTARY CONTACT
  K- KEYED M- MOTOR RATED
- MOTOR OUTLET
- PANELBOARD
- TERMINAL CABINET
- MAIN DISTRIBUTION PANEL
- DISCONNECT SWITCH
- R RELAY
- FINAL CONNECTION BY CONTRACTOR
- T THERMOSTAT
- S ROOM SENSOR FOR HVAC. SEE MECHANICAL DRAWINGS
- 2 PLAN NOTE CALL OUT.
- 2 EQUIPMENT LIST CALL-OUT.
- LP-A PANEL CALLOUT, L-DENOTES 120/208V, H-DENOTES 277/480V, P-DENOTES PANEL, A-DENOTES PANEL "A".
- 12"W x 6" D, 6" RUNG SPACE SINGLE CENTER SPINE ALUMINUM CABLE TRAY SUSPENDED FROM STRUCTURE WITH THREADED ROD, COMPLETE WITH FITTINGS.
- 1 FEEDER DESIGNATION, I-INDICATES FEEDER NUMBER.

ABBREVIATIONS

A, AMP	AMPERE(S)
AF	AMP-FUSE
AFF	ABOVE FINISH FLOOR
AIC	AVAILABLE INTERRUPTING CAPACITY IN SYMMETRICAL AMPERES
AS	AMP-SWITCH
C.B.	CIRCUIT BREAKER
CIRC.	CIRCUIT
C.O.	CONDUIT ONLY
CONN.	CONNECTED
EM	EMERGENCY BATTERY PACK
(E)	INDICATES EXISTING TO REMAIN UON
F	FUSE
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
GND	GROUND
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
IG	ISOLATED GROUND
J	JUNCTION
KEC	KITCHEN EQUIPMENT CONTRACTOR
KVA	KILOVOLT-AMP
KW	KILOWATT
L.C.L.	LONG CONTINUOUS LOAD
L.O.	LUGS ONLY
LV	LOW VOLTAGE
N.I.C.	NOT IN CONTRACT
NL	NIGHT LIGHT
N.O.	NORMALLY OPEN
N.C.	NORMALLY CLOSE
N.T.S.	NOT TO SCALE
OFCI	OWNER-FURNISHED, CONTRACTOR INSTALLED
PC	PHOTOCELL CONTROL
PF	POWER FACTOR
P.O.C.	POINT OF CONNECTION
PROVIDE	FURNISH, INSTALL AND CONNECT
R	RELAY
RGS	RIGID GALVANIZED STEEL
UON	UNLESS OTHERWISE NOTED
V	VOLT(S)
VA	VOLT-AMP(S)
W	WATT(S)
WP	WEATHERPROOF
WT	WATER TIGHT

ELECTRICAL SHEET INDEX

SHEET NO.	SHEET TITLE
E-1	SYMBOLS, NOTES AND SCHEDULES
E-2	SITE PLAN
E-3	SINGLE LINE DIAGRAM AND FEEDER SCHEDULE
E-4	TITLE 24 CALCULATION
E-5	LIGHTING FIRST FLOOR PLAN
E-6	POWER FIRST FLOOR PLAN
E-7	SIGNAL FIRST FLOOR PLAN
E-8	LIGHTING AUDITORIUM FIRST FLOOR PLAN
E-9	POWER AUDITORIUM FIRST FLOOR PLAN
E-10	SIGNAL AUDITORIUM FIRST FLOOR PLAN
E-11	LIGHTING SECOND FLOOR PLAN
E-12	POWER SECOND FLOOR PLAN
E-13	SIGNAL SECOND FLOOR PLAN
E-14	LIGHTING THIRD FLOOR PLAN
E-15	POWER THIRD FLOOR PLAN
E-16	SIGNAL THIRD FLOOR PLAN
E-17	ROOF PLAN
E-18	PANEL SCHEDULES
E-19	PANEL SCHEDULES
E-20	PANEL SCHEDULES
E-21	PANEL SCHEDULES
E-22	DETAILS
E-23	DETAILS

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN
Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL. 949/860-4900

REGISTERED PROFESSIONAL ENGINEER — COBINGCO LAYANIS — No. 14492 — Exp. 6/30/02 — ELECTRICAL — STATE OF CALIFORNIA

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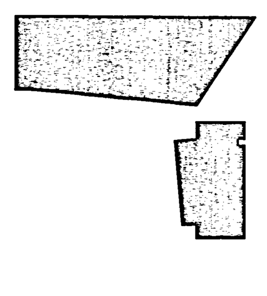
Seals and Signatures

RECORD DRAWINGS

Key Plan



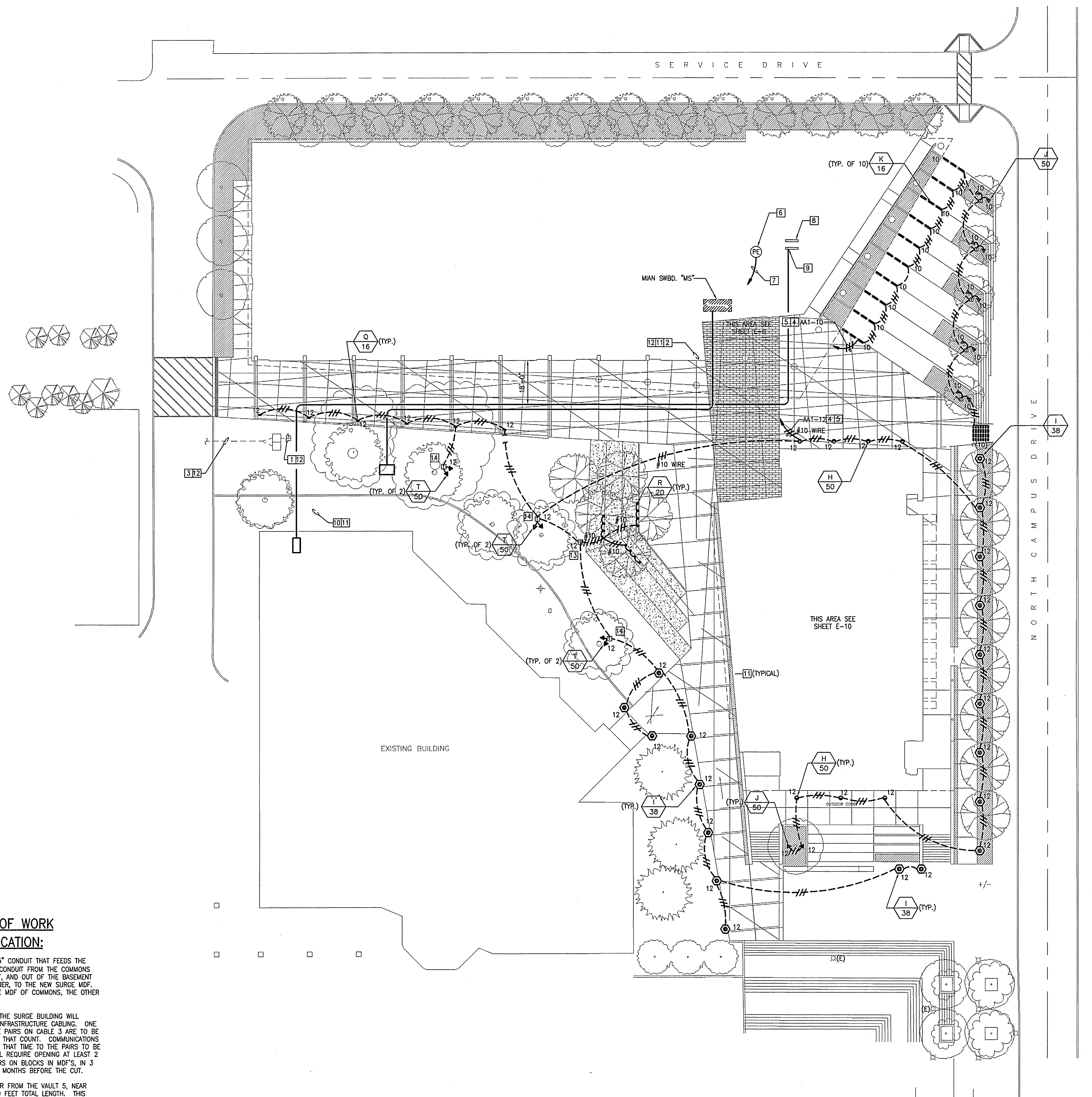
Drawing Title
SYMBOLS, NOTES AND SCHDULES

NONE
Scale

Project Number 13OCT.,00

Baseline Date

E-1
Drawing Number



ELECTRICAL SITE PLAN
SCALE: 1" = 20'
NORTH

REFERENCE NOTES:

1. (3) 4"C C.O. STUB-OUTS FOR POINT OF CONNECTION. COORDINATE WITH ARCHITECTS AND UNIVERSITY'S REPRESENTATIVE.
2. PROVIDE (3) 4"C, #4 600KCMIL & 1#1/0 GND., EACH ENCASED IN CONCRETE PER UCR'S REQUIREMENTS.
3. UNDERGROUND DUCTBANK, PULL BOX, AND STUB-OUTS SHOWN IN LIGHT LINE WEIGHT SHALL BE BY OTHERS. THS CONTRACTOR SHALL COORDINATE WITH UNIVERSITY'S UTILITY DRAWINGS.
4. PROVIDE 3/4" CONDUIT MINIMUM FOR ENTIRE UNDERGROUND RUNS.
5. THIS CIRCUIT VIA CONTROL RELAY SEE DETAILS A/E-22, B/E-22
6. PHOTOCELL MOUNT 24" ABOVE THE HIGHEST PART OF THE ROOF FACING NORTH DIRECTION.
7. 1/2"C – 4#12 DOWN TO PANEL A1 CIRCUIT #39 SEE DETAILS A/E-22, B/E-22
8. MAIN TELEPHONE BACKBOARD (MTB) SEE DWG. NO. E-7 FOR LOCATION.
9. COMPUTER DATA MAIN DISTRIBUTION FRAME (NDF) SEE DWG. NO. E-7 FOR LOCATION.
10. (2) 4"C SHALL BE TERMINATED AND CAPPED AT THE BASEMENT LEVEL OF EXISTING BOOKSTORE BUILDING AND AT THE MDF ROOM IN SURGE BUILDING.
11. ALL SHOWN IN BOLD SHALL BE BY THIS CONTRACTOR.
12. THIS CONTRACTOR SHALL PROVIDE UNSPLICED FEEDER CONDUCTORS AS STATED IN NOTE 2 FROM TRANSFORMER SECONDARY TO MAIN SWITCHBOARD "MS".
13. HYDREL CCB FLUSH MOUNTED BOX WITH 277Y–12V, 300 WATTS TRANSFORMER.
14. HYDREL CCB FLUSH MOUNTED BOX WITH 277Y–12V, 150 WATTS MIN. TRANSFORMER.

ADDITIONAL SCOPE OF WORK FOR TELECOMMUNICATION:

FROM THE COMMONS BASEMENT, USE THE EXISTING 5" CONDUIT THAT FEEDS THE BOOKSTORE, INSTALL A 300 PAIR CABLE IN THIS 5" CONDUIT FROM THE COMMONS BASEMENT MDF, THROUGH THE BOOKSTORE BASEMENT, AND OUT OF THE BASEMENT LEVEL OF THE BOOKSTORE, AT THE SOUTHWEST CORNER, TO THE NEW SURGE MDF. TERMINATE BOTH ENDS ON BLOCKS, ONE END IN THE MDF OF COMMONS, THE OTHER END IN THE SURGE MDF.

THIS 300 PAIR CABLE APPLICATION/INSTALLATION TO THE SURGE BUILDING WILL REQUIRE REORGANIZATION OF ASSIGNMENTS OF UCR INFRASTRUCTURE CABLING. ONE OF THE LOCATIONS TO SPLICE IS IN VAULT 5, WHERE PAIRS ON CABLE 3 ARE TO BE DIRECTED TO COMMONS BASEMENT MDF TO INCREASE THAT COUNT. COMMUNICATIONS SERVICES WILL DIRECT THE SPLICING CONTRACTOR AT THAT TIME TO THE PAIRS TO BE REASSIGNED. THIS REORGANIZATION OF CABLE 3 WILL REQUIRE OPENING AT LEAST 2 SPLICE CASES, REDIRECTING APPROXIMATELY 200 PAIRS ON BLOCKS IN MDF'S, IN 3 LOCATIONS. EXACT LOCATIONS TO BE DETERMINED 2 MONTHS BEFORE THE CUT.

INSTALL A 7-CELL TUBE CABLE FOR AIR BLOWN FIBER FROM THE VAULT 5, NEAR PIERCE HALL, WHICH IS AT TDU 6.3.1. APPROX. 1100 FEET TOTAL LENGTH. THIS GOES ALL OF THE WAY THROUGH COMMONS AND BOOKSTORE, THEN INTO THE SURGE BUILDING MDF. THIS PATH SHARES THE SAME 5" CONDUIT THAT IS FROM THE COMMONS MDF THROUGH THE BOOKSTORE AS MENTIONED ABOVE.

INSTALL 6-STRANDS OF MULTI-MODE AIR BLOWN FIBER FROM STAT. COMP. BUILDING. F.T.U.1.1.4, TO THE SURGE BUILDING, APPROX. 2500 FEET. THIS USES EXISTING TUBE CABLE AND THE NEW 7-CELL CABLE INSTALLATION MENTIONED ABOVE.

INSTALL 6 STRANDS OF SINGLE-MODE AIR BLOWN FIBER FROM SPROUL HALL, F.T.U.4.3.1, TO THE SURGE BUILDING, APPROX. 2300 FEET. THIS USES EXISTING TUBE CABLE AND THE NEW 7-CELL CABLE INSTALLATION MENTIONED ABOVE.

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN
Henrikson Owen & Associates
6 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/860-4900

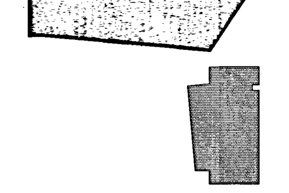
REGISTERED PROFESSIONAL ENGINEER
Exp. 6/30/02
No. 14492
ELECTRICAL
STATE OF CALIFORNIA

Issued for | Rev | Date

Seals and Signatures

RECORD DRAWINGS

Key Plan



Drawing Title
SITE PLAN

Scale: 1" = 20'

Project Number

Baseline Date: 13OCT.,00

Drawing Number: E-2

FEEDER SCHEDULE

FEEDER NO.	FEEDER FROM	FEEDER TO	APPROX. LENGTH IN FT.	SET QTY.	CONDUCTORS SIZE IN AWG	CONDUIT SIZE IN INCH	CONDUCTOR TYPE CU/AL	CONNECTED LOAD IN AMPERES	% VD	REMARKS
1					NOT USED					
2										
3										
4										
5	MS	T1	25	3	3#250 MCM+1#1/0 GND./C	3	CU	391	0.069	"T1" 500KVA
6		AA1	20	1	4#4/0+1#4 GND.	2 1/2	CU	38	0.013	
7		BB1	79	1	4#4/0+1#4 GND.	2 1/2	CU	41	0.055	
8		CC1	94	1	4#4/0+1#4 GND.	2 1/2	CU	35	0.054	
9		CC2	94	2	4#600MCM+1#2 GND./C	4	CU	698	0.255	
10		CC3	94	1	4#600MCM+1#2 GND.	4	CU	108	0.075	
11		DD1	240	1	4#600MCM+1#2 GND.	4	CU	272.4	0.128	
12	DD1	T2	20	1	3#1+1#6 GND.	1 1/2	CU	170	0.157	"T2" 75KVA
13	MS	ELEV	40	1	3#8+1#8 GND.	1	CU	32.6	0.193	25 HP
14	DS	B3	66	1	4#1/0+1#6 GND.	2	CU	129	0.372	
15		C4	120	1	4#1/0+1#6 GND.	2	CU	110.75	0.75	
16		A4	15	1	4#1/0+1#6 GND.	2	CU	6	0.00	
17		B4	66	1	4#1/0+1#6 GND.	2	CU	123	0.69	
18		C5	120		4#1/0+1#6 GND.	2	CU	37.36	0.38	
19	DS	A1	22	1	4#1+1#6 GND.	2	CU	86	0.198	
20		A2	19	1	4#1/0+1#6 GND.	2	CU	117	0.194	
21		A3	15	1	4#1/0+1#6 GND.	2	CU	118	0.117	
22		B1	56	1	4#1+1#6 GND.	2	CU	93	0.536	
23		B2	60	1	4#1/0+1#6 GND.	2	CU	103	0.558	
24		C1	112	1	4#1+1#6 GND.	2	CU	96	1.06	
25		C2	116	1	4#1/0+1#6 GND.	2	CU	112	0.973	
26		C3	120	1	4#1/0+1#6 GND.	2	CU	118	0.153	
27	T2	D1	20	1	4#4/0+1#4 GND.	2 1/2	CU	170	0.114	
28	D1	AV	15	1	4#2/0+1#6 GND.	2	CU	118	0.119	
29					NOT USED					
30										
–										

REFERENCE NOTES:

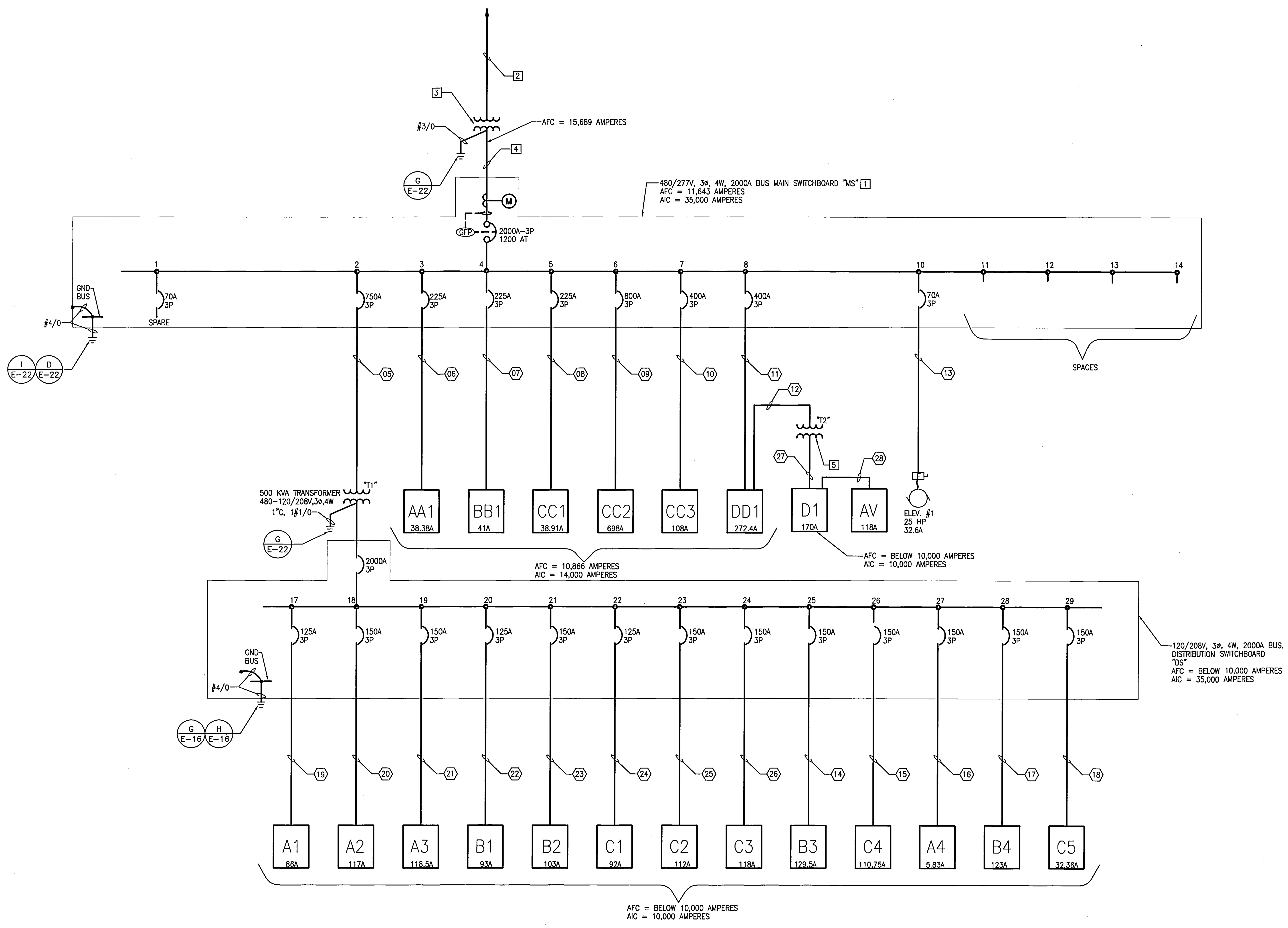
1. UTILITY TO FORWARD AVAILABLE FAULT CURRENT TO THE BUILDING DEPT.. AS REQUIRED BY CITY.
2. 12KV LINES BY OTHERS.
3. SERVICE TRANSFORMER 750KVA, 12KV–480/277V, 3ø, 4W %Z = 5.75% BY OTHERS.
4. (3) 4"C–4#600 KCMIL+1#1/0 GND. EACH SEE SITE PLAN FOR SCOPE OF WORK BY THIS CONTRACTOR AND LOCATION ON DWG. E-2.
5. DRY TYPE TRANSFORMER RATED 75KVA, 480V–208/120V, 3ø, 60Hz.

CONNECTED LOAD CALCULATIONS:

LIGHTING	= 85 KVA
RECEPTACLE	= 294 KVA
HVAC, & MISC.	= 850 KVA
TOTAL	= 1229.21 KVA 1479 A @ 480 V

DEMAND LOAD CALCULATIONS:

LIGHTING @ 100%	= 85 KVA
RECEPT. 1ST 10 KVA @ 100%	= 10 KVA
REMAINDER OVER 10 KVA @ 50%	= 142 KVA
HVAC & MISC. @ 100%	= 850 KVA
TOTAL	= 1087 KVA 1307.45 A @ 480 V



A
E–3

SINGLE LINE DIAGRAM

N.T.S.

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UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN
Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL. 949/860-4900

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RECORD DRAWINGS

Key Plan

Drawing Title

SINGLE LINE DIAGRAM AND FEEDER SCHEDULE

NONE

Scale

Project Number

13OCT.,00

Baseline Date

E–3

Drawing Number

CERTIFICATE OF COMPLIANCE

PART 1 OF 2 **LTG-1**

PROJECT NAME: University of California, Riverside, Surge Building		DATE: –
PROJECT ADDRESS: 900 University Avenue, Riverside, CA 92521		BUILDING PERMIT #
PRINCIPAL DESIGNER – LIGHTING: Henrikson Owen And Associates	TELEPHONE (949) 860-4900	
DOCUMENTATION AUTHOR: Regino C. Lavarias	TELEPHONE (949) 860-4900	CHECKED BY / DATE ENFORCEMENT AGENCY USE

GENERAL INFORMATION

DATE OF PLANS: –	BUILDING CONDITIONED FLOOR AREA 69,075 Sq. Ft.		CLIMATE ZONE 10	
BUILDING TYPE:	☒ NONRESIDENTIAL	☐ HIGH RISE RESIDENTIAL	☐ HOTEL/MOTEL GUEST ROOM	
PHASE OF CONSTRUCTION:	☒ NEW CONSTRUCTION	☐ ADDITION	☐ ALTERATION	
METHOD OF LIGHTING COMPLIANCE:	☐ COMPLETE BUILDING	☒ AREA CATEGORY	☐ TAILORED	☐ PERFORMANCE

STATEMENT OF COMPLIANCE

THIS CERTIFICATE OF COMPLIANCE LISTS THE BUILDING FEATURES AND PERFORMANCE SPECIFICATIONS NEEDED TO COMPLY WITH TITLE 24, PART 1,AND 6 OF THE CALIFORNIA CODE OF REGULATION. THIS CERTIFICATE APPLIES ONLY TO BUILDING ENVELOPE REQUIREMENTS.

THE DOCUMENTATION PREPARER HEREBY CERTIFIES THAT THE DOCUMENT IS ACCURATE AND COMPLETE

DOCUMENTATION AUTHOR	SIGNATURE	DATE
Regino C. Lavarias		–

THE PRINCIPAL ENVELOPE DESIGNER HEREBY CERTIFIES THAT THE PROPOSED BUILDING DESIGN REPRESENTED IN THIS SET OF CONSTRUCTION DOCUMENTS IS CONSISTENT WITH THE OTHER COMPLIANCE FORMS AND WORKSHEETS, WITH THE SPECIFICATIONS, AND WITH ANY OTHER CALCULATIONS SUBMITTED WITH THIS PERMIT APPLICATION. THE PROPOSED BUILDING HAS BEEN DESIGNED TO MEET THE LIGHTING REQUIREMENTS CONTAINED IN SECTIONS 110, 119, 130 THROUGH 132, AND 146 OR 149 OF TITLE 24, PART 6.

PLEASE CHECK ONE:

☒ I HEREBY AFFIRM THAT I AM ELIGIBLE UNDER THE PROVISIONS OF DIVISION 3 OF THE BUSINESS AND PROFESSIONAL CODE TO SIGN THIS DOCUMENT AS THE PERSON RESPONSIBLE FOR ITS PREPARATION; AND THAT I AM A CIVIL ENGINEER, ELECTRICAL ENGINEER OR ARCHITECT.

☐ I AFFIRM THAT I AM ELIGIBLE UNDER THE EXEMPTION TO DIVISION 3 OF THE BUSINESS AND PROFESSIONAL CODE BY SECTION 5537.2 OF THE BUSINESS AND PROFESSIONS CODE TO SIGN THIS DOCUMENT AS THE PERSON RESPONSIBLE FOR ITS PREPARATION; AND THAT I AM A LICENSED CONTRACTOR PREPARING DOCUMENT FOR WORK THAT I HAVE CONTRACTED TO PERFORM.

☐ I AFFIRM THAT I AM ELIGIBLE UNDER THE EXEMPTION TO DIVISION 3 OF THE BUSINESS AND PROFESSIONAL CODE BY BY SECTION ____ OF THE____________ CODE TO SIGN THIS DOCUMENT AS THE PERSON RESPONSIBLE FOR ITS PREPARATION; AND THE THE FOLLOWING REASON: ____________________

PRINCIPAL LIGHTING DESIGNER–NAME	SIGNATURE	DATE	LIC. #
Regino C. Lavarias		6/30/02	E14492

LIGHTING MANDATORY MEASURES

INDICATE LOCATION ON PLANS OF NOTE BLOCK FOR MANDATORY MEASURES

INSTRUCTION TO APPLICANT

FOR DETAILED INSTRUCTIONS OF THE USE OF THIS AND ALL ENERGY EFFICIENCY STANDARDS COMPLIANCE FORMS, PLEASE REFER TO THE NONRESIDENTIAL MANUAL PUBLISHED BY THE CALIFORNIA ENERGY COMMISION.
LTG-1: REQUIRED ON PLANS FOR ALL SUBMITTALS. PART 2 MAY BE INCORPORATED IN SCHEDULES ON PLANS.
LTG-2: REQUIRED FOR ALL SUBMITTALS.
LTG-3: OPTIONAL. USE ONLY IF LIGHTING CONTROL CREDITS ARE TAKEN.
LTG-4: OPTIONAL. USE ONLY IF TAILORED METHOD IS USED. PARTS 2 AND 3 USED ONLY IF APPLICABLE.

CERTIFICATE OF COMPLIANCE

PART 2 OF 2 **LTG-1**

PROJECT NAME: University of California, Riverside, Surge Building — DATE: –

INSTALLED LIGHTING SCHEDULE

CODE	LUMINAIRE DESCRIPTION	LAMPS: TYPE DESCRIPTION	LAMPS: NO. OF LAMPS	LAMPS: WATTS/LAMP	BALLASTS: TYPE DESCRIPTION	BALLASTS: #	BALLASTS: LUMINAIRE/LUMINAIRE #	BALLASTS: LUMINAIRE/LUMINAIRE WATTS	TOTAL WATTS
A	FLUORESCENT	F32T8	3	32	ELECTRONIC	2	–	–	–
A1	FLUORESCENT	F32T8	2	32	ELECTRONIC	1	–	–	–
A3	FLUORESCENT	F32T8	4	32	ELECTRONIC	2	–	–	–
A4	FLUORESCENT	F32T8	4	32	ELECTRONIC	2	–	–	–
B	FLUORESCENT	F32T8	1	32	ELECTRONIC	1	–	–	–
B1	FLUORESCENT	F30T12	1	30	ELECTRONIC	1	–	–	–
B2	FLUORESCENT	F17T8	1	17	ELECTRONIC	1	–	–	–
B3	FLUORESCENT	F32T8	1	32	ELECTRONIC	1	–	–	–
C	FLUORESCENT	CFQ13W	1	13	ELECTRONIC	1	–	–	–
C2	FLUORESCENT	CFM32W	1	32	ELECTRONIC	1	–	–	–
C3	FLUORESCENT	CFM42W	2	42	ELECTRONIC	1	–	–	–
F	FLUORESCENT	F15T12	1	15	ELEC. MAG	1	–	–	–

SUBTOTAL FROM THIS PAGE: –
BUILDING TOTAL: –
LESS CONTROL CREDIT WATTS (FROM LTG-3):
ADJUSTED ACTUAL WATTS: –

MANDATORY AUTOMATIC CONTROLS

CONTROL LOCATION (ROOM #)	CONTROL IDENTIFICATION	CONTROL TYPE (AUTO TIME SWITCH, EXTERIOR, ETC.)	SPACE CONTROLLED	NOTE TO FIELD

CONTROLS FOR CREDIT

CONTROL LOCATION (ROOM # OR DWG. #)	CONTROL IDENTIFICATION	CONTROL TYPE (AUTO TIME SWITCH, EXTERIOR, ETC.)	SPACE CONTROLLED: TYPE	SPACE CONTROLLED: # OF LUMIN	NOTE TO FIELD

NOTES TO FIELD – FOR BUILDING DEPARTMENT USE ONLY

LIGHTING MANDATORY MEASURES

☒ BUILDING LIGHTING SHUT OFF.
THE BUILDING LIGHTING SHUT OFF SYSTEM CONSISTS OF AN AUTOMATIC TIME SWITCH, WITH A ZONE ZONE FOR EACH FLOOR: OR — N.A.

THE BUILDING IS SEPARATELY METERED AND LESS THAN 5,000 SQUARE FEET: EXEMPT FROM THE SHUT-OFF REQUIREMENT. — E-5

☐ OVERRIDE FOR BUILDING SHUT-OFF.
THE AUTOMATIC BUILDING SHUT-OFF SYSTEM IS PROVIDED WITH A MANUAL, ACCESSIBLE OVERRIDE SWITCH IN THE SIGHT OF THE LIGHTS. THE AREA OF OVERRIDE IS NOT TO EXCEED 5,000 SF. — N.A.

☒ AUTOMATIC CONTROL DEVICES CERTIFIED.
ALL AUTOMATIC CONTROL DEVICES SPECIFIED ARE CERTIFIED, ALL ALTERNATE EQUIPMENT SHALL BE CERTIFIED AND INSTALLED AS DIRECTED BY THE MANUFACTURER. — E-5,E-8,E-11,E-14

☒ FLUORESCENT BALLAST AND LUMINARIES CERTIFIED.
ALL FLUORESCENT FIXTURES SPECIFIED FOR THE PROJECT ARE CERTIFIED AND LISTED IN THE DIRECTORY. ALL INSTALLED FIXTURES SHALL BE CERTIFIED. — E-5,E-8,E-11,E-14

☐ TANDEM WIRING FOR TWO-LAMP BALLAST'S.
ALL ONE AND THREE LAMP FLUORESCENT FIXTURES ARE TANDEM WIRED WITH TWO (2) LAMP BALLAST WHERE REQUIRED BY STANDARDS 132: OR — N.A.

ALL THREE LAMP FLUORESCENT FIXTURES ARE SPECIFIED WITH ELECTRONIC HIGH-FREQUENCY BALLAST'S AND ARE EXEMPT FROM TWO-LAMP TANDEM WIRING REQUIREMENTS. — N.A.

☒ INDIVIDUAL ROOM/AREA CONTROLS.
EACH ROOM AND AREA IN THIS BUILDING IS EQUIPPED WITH A SEPARATE SWITCH OR OCCUPANCY SENSOR DEVICE FOR EACH AREA WITH FLOOR-TO-CEILING WALLS. — E-5,E-8,E-11,E-14

☒ UNIFORM REDUCTION FOR INDIVIDUAL ROOMS.
ALL ROOMS AND AREAS GREATER THAN 100 SQUARE FEET AND MORE THAN 1.2 WATTS PER SQUARE FOOT OF LIGHTING LOAD SHALL BE CONTROLLED WITH BI-LEVEL SWITCHING FOR UNIFORM REDUCTION OF LIGHTING WITHIN THE ROOM. — E-5,E-8,E-11,E-14

☐ DAYLIT AREA CONTROL.
ALL ROOMS WITH WINDOWS AND SKYLIGHTS, THAT ARE GREATER THAN 250 SQUARE FEET, AND THAT ALLOW FOR THE EFFECTIVE USE OF DAYLIGHT IN THE AREA SHALL HAVE 50% OF THE LAMPS IN EACH DAYLIGHT AREA CONTROLLED BY A SEPARATE SWITCH: OR — N.A.

THE EFFECTIVE USE OF DAYLIGHT THROUGH CANNOT BE ACCOMPLISHED BECAUSE THE WINDOWS ARE CONTINUOUSLY SHADED BY A BUILDING ON THE ADJACENT LOT. DIAGRAM OF SHADING DURING DIFFERENT TIMES OF YEAR IS INCLUDED ON PLANS. — N.A.

☒ CONTROL OF EXTERIOR LIGHTS.
EXTERIOR MOUNTED FIXTURES AND SERVED FROM THE ELECTRICAL PANEL INSIDE THE BUILDING ARE CONTROLLED WITH A DIRECTIONAL PHOTO CELL CONTROL ON THE ROOF AND A CORRESPONDING RELAY IN THE ELECTRICAL PANEL. — E-5,E-8

LIGHTING COMPLIANCE SUMMARY

PART 1 OF 2 **LTG-2**

PROJECT NAME: University of California, Riverside, Surge Building — DATE: –

ACTUAL LIGHTING POWER

LUMINAIRE NAME	DESCRIPTION	NUMBER OF LUMINAIRES	WATTS PER LUMINAIRE (INCLUDING BALLAST)	CEC DEFAULT Y	CEC DEFAULT N	TOTAL WATTS
A	FLUORESCENT	434	87	☒	☐	37758
A1	FLUORESCENT	40	57	☒	☐	2280
A3	FLUORESCENT	149	114	☒	☐	16986
A4	FLUORESCENT	44	114	☒	☐	5016
B	FLUORESCENT	65	30	☒	☐	1950
B1	FLUORESCENT	4	31	☒	☐	124
B2	FLUORESCENT	12	18	☒	☐	216
B3	FLUORESCENT	17	30	☒	☐	510
C	FLUORESCENT	51	17	☒	☐	867

SUBTOTAL FROM THIS PAGE: 65707
PLUS SUBTOTAL FROM CONTINUATIONS PAGE: –
LESS CONTROL CREDIT WATTS (FROM LTG-3):
IF NOT USING THE CEC DEFAULT VALUE, PLEASE PROVIDE SUPPORTING DOCUMENTATION
ADJUSTED ACTUAL WATTS: 65707

COMPLETE BUILDING METHOD

COMPLETE BUILDING METHOD

BUILDING CATEGORY (FROM TABLE 2-53M)	WATTS PER SF	COMPLETE BLDG. AREA	ALLOWED WATTS
–			

AREA CATEGORY METHOD

BUILDING CATEGORY (FROM TABLE 2-53M)	WATTS PER SF	AREA (SF)	ALLOWED WATTS

SUBTOTALS — AREA — WATTS

TAILORED OR PERFORMANCE METHOD

TOTAL ALLOWED WATTS (FROM LTG-4 OR FROM COMPUTER RUN.): –

LIGHTING COMPLIANCE SUMMARY

PART 2 OF 2 **LTG-2**

PROJECT NAME: University of California, Riverside, Surge Building — DATE: –

ACTUAL LIGHTING POWER

LUMINAIRE NAME	DESCRIPTION	NUMBER OF LUMINAIRES	WATTS PER LUMINAIRE (INCLUDING BALLAST)	CEC DEFAULT Y	CEC DEFAULT N	TOTAL WATTS
C2	FLUORESCENT	48	35	☒	☐	1680
C3	FLUORESCENT	35	94	☒	☐	3290
F	FLUORESCENT	3	28	☒	☐	84
–	–	–	–	☐	☐	–

SUBTOTAL FROM THIS PAGE: 5054
PLUS SUBTOTAL FROM CONTINUATIONS PAGE: 65707
LESS CONTROL CREDIT WATTS (FROM LTG-3):
IF NOT USING THE CEC DEFAULT VALUE, PLEASE PROVIDE SUPPORTING DOCUMENTATION
ADJUSTED ACTUAL WATTS: 70761

COMPLETE BUILDING METHOD

COMPLETE BUILDING METHOD

BUILDING CATEGORY (FROM § 146(b) TABLE 1-M)	WATTS PER SF	COMPLETE BLDG. AREA	ALLOWED WATTS
–			

AREA CATEGORY METHOD

AREA CATEGORY (FROM § 146(b) TABLE 1-M)	WATTS PER SF	AREA (SF)	ALLOWED WATTS
AUDITORIUM	2	8465	16930
CLASSROOM, LECTURE	1.6	26361	42177
OFFICE	1.3	33701	43811
RECEPTION/WAITING	1.1	1341	1475
SUPPORT AREAS	0.6	8992	5395
ELECTRICAL & MECHANICAL ROOM	0.7	820	574
MAIN ENTRY LOBBY	1.5	789	1184
MOTION PICTURE	0.9	540	486
LIBRARY STACKS	1.5	600	900
TOTALS		81609 AREA	112932 WATTS

TAILORED OR PERFORMANCE METHOD

TOTAL ALLOWED WATTS (FROM LTG-4 OR FROM COMPUTER RUN.)

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UNIVERSITY OF CALIFORNIA RIVERSIDE

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900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN
Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/860-4900

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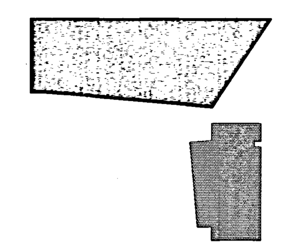
RECORD DRAWINGS

Key Plan



Drawing Title: TITLE-24

Scale: NONE

Project Number: 13OCT.,00

Baseline Date

Drawing Number: E-4

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UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
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5 GOODYEAR STREET
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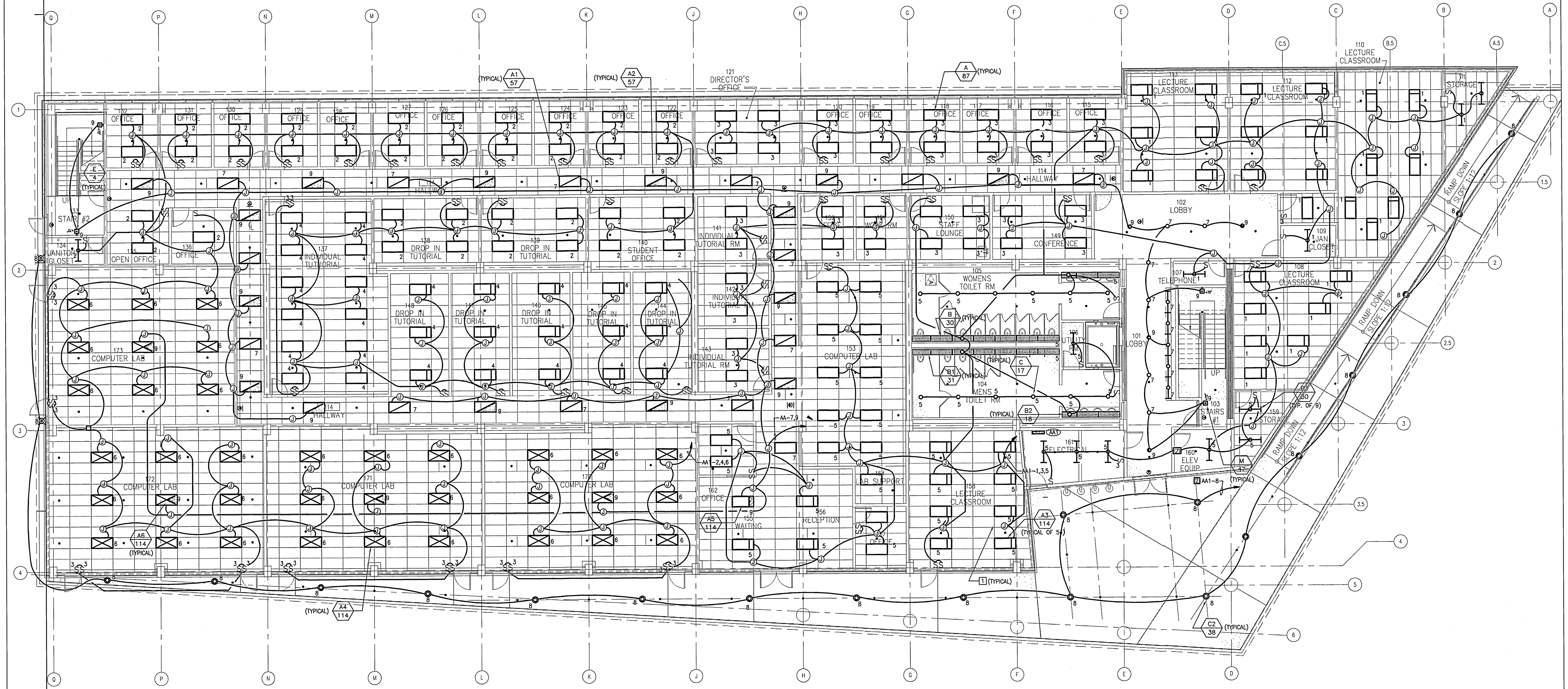

LIGHTING FIRST FLOOR PLAN
SCALE: 1/8"=1'-0"

NORTH

REFERENCE NOTES:

1. FLEXIBLE CONDUIT FROM JUNCTION BOX TO LIGHT FIXTURE SHALL NOT EXCEED 6'-0". PROVIDE JUNCTION BOX AS REQUIRED TO MEET THIS REQUIREMENT.
2. THIS CIRCUIT VIA CONTROL RELAY SEE A/E-22 B/E-22

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RECORD DRAWINGS

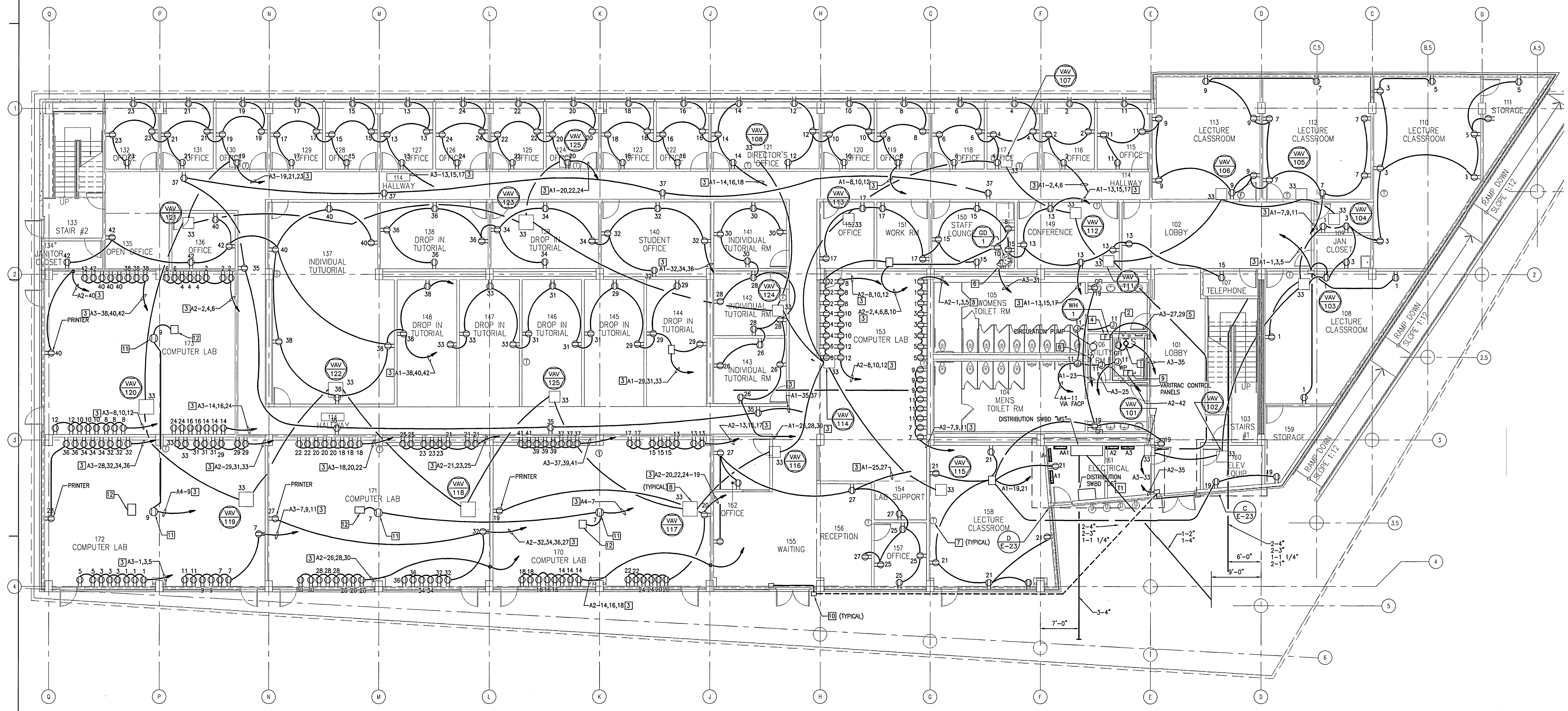
Key Plan

Drawing Title
LIGHTING FIRST FLOOR PLAN

1/8" = 1'-0"
Scale

Project Number
13OCT.,00
Baseline Date

E-5
Drawing Number



POWER FIRST FLOOR PLAN

SCALE: 1/8"=1'-0"

NORTH

REFERENCE NOTES:

1. INCANDESCENT LIGHT 70W, WITH WALL MOUNTED SOCKET. MOUNT SOCKET AND LIGHT SWITCH AT 12" BELOW 1ST FLOOR FINISHED.
2. MOUNT RECEPTACLE AT 12" BELOW 1ST FLOOR FINISHED.
3. PROVIDE GROUND WIRE FOR EVERY CIRCUIT SERVING COMPUTER.
4. NON-FUSED DISCONNECT SWITCH RATED 60A-2P, IN NEMA 1 ENCLOSURE.
5. 3/4"C-2#8+1#10 GND.
6. FRACTIONAL HORSEPOWER MANUAL STARTER, COMPLETE WITH THERMAL OVERLOAD RELAY, 2 POLE TOGGLE OPERATOR IN NEMA 1 ENCLOSURE.
7. PROVIDE 1/2" C.O. FROM THERMOSTAT TO VAV BEING SERVED. WIRED BY MECHANICAL.
8. PROVIDE 3/4" C.O. FORM VAV'S. TO VARITRAC CONTROL PANEL LOCATED IN UTILITY ROOM.
9. 30A-1P FUSIBLE WEATHER PROOF DISCONNECT FOR SUMP PUMP. SUMP PUMP AND CONTROLS PROVIDED BY OTHERS, VERIFY EXACT LOCATION.
10. PUSH BUTTON AUTOMATIC DOOR OPENER.
11. DUPLEX RECEPTACLE IN CEILING SPACE.
12. OUTLET BOX FOR COMBINATION FIRE/SMOKE DAMPER.
13. CARD READER POWER SUPPLY.

6

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900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 9040
310.586.540
310.586.10

HENRIKSON OWEN

Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/860-4900

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Seals and Signatures

RECORD DRAWINGS

Key Plan

Drawing Title

POWER FIRST FLOOR PLAN

1/8" = 1'-0"

Scale

Project Number 13OCT.,00

Baseline Date

E-6

Drawing Number

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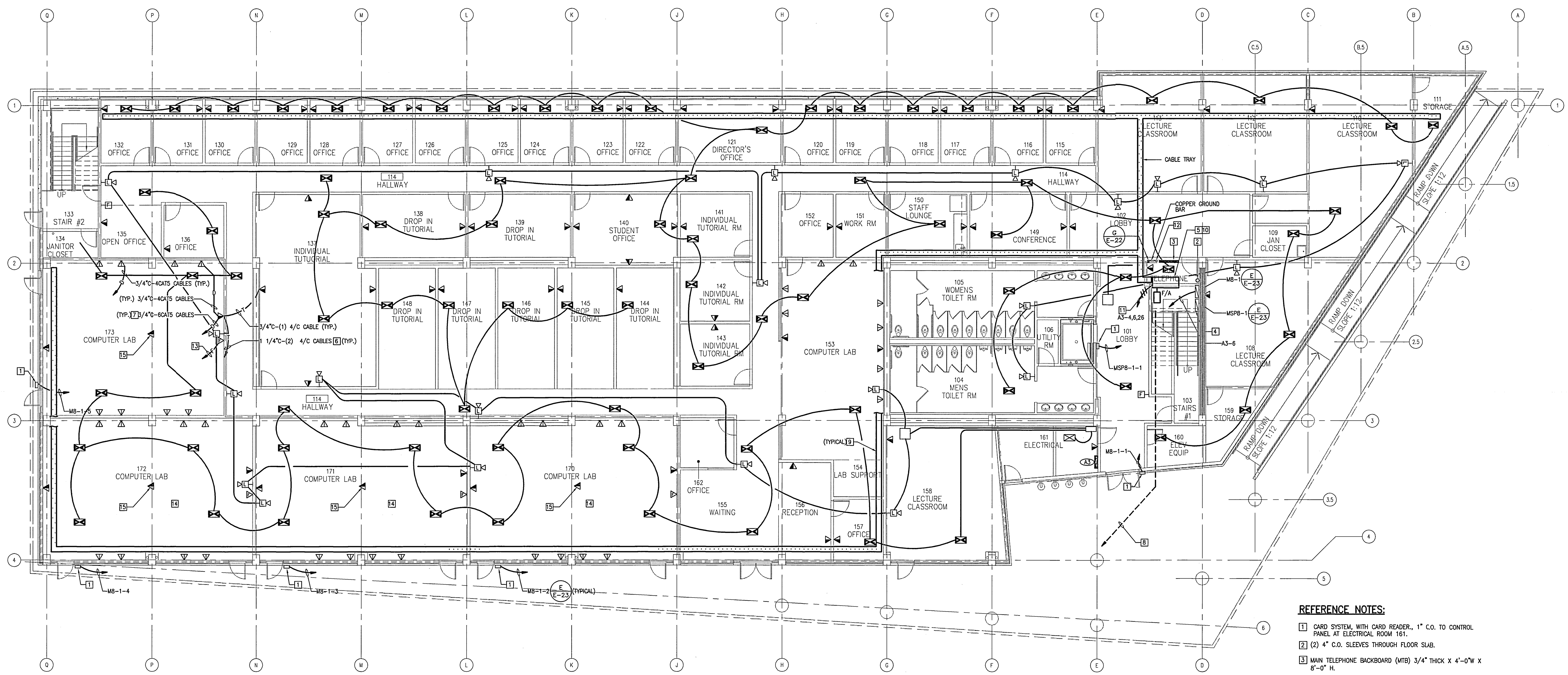

SIGNAL FIRST FLOOR PLAN

SCALE: 1/8"=1'-0"

NORTH

REFERENCE NOTES:

1. CARD SYSTEM, WITH CARD READER., 1" C.O. TO CONTROL PANEL AT ELECTRICAL ROOM 161.
2. (2) 4" C.O. SLEEVES THROUGH FLOOR SLAB.
3. MAIN TELEPHONE BACKBOARD (MTB) 3/4" THICK X 4'-0"W X 8'-0" H.
4. TELEPHONE ROOM EXTENSION UNDER STAIR LANDING VERIFY WITH ARCHITECTS.
5. COMPUTER DATA MAIN DISTRIBUTION FRAME (MDF).
6. HOME RUN TO CABLE TRAY FOR TELEPHONE ONLY. NO MORE THAN TWO TELEPHONE OUTLETS PER HOME RUN
7. HOME RUN TO CABLE TRAY FOR DATA ONLY. NO MORE THAN SIX OUTLETS PER HOME RUN FOR 3/4"C.
8. FIBER OPTIC CABLES IN CONDUIT (SIZE AS REQUIRED) TO EXISTING MDF LOCATED IN BASEMENT OF STUDENT COMMONS BUILDING FIELD VERIFY. SEE NOTE 10 ON DWG. E-2
9. ALUMINUM CABLE TRAY SIZE 12"WX3" LOAD DEPTH, 6" RUNG SPACING.
10. ALL DATA OUTLETS IN FIRST FLOOR SHALL BE WIRED DIRECTLY TO MDF VIA CABLE TRAY.
11. PROVIDE GROUND WIRE FOR EVERY CIRCUIT SERVING COMPUTER.
12. 3/4"C-1#4 BARE COPPER GROUND WIRE TO ROOF.
13. HOME RUN TO CABLE TRAY WITH 1"C-(1) FIBER OPTIC CABLE. FIBER OPTIC CABLE TO MDF IN TELEPHONE ROOM.
14. WIRING OF DATA & VOICE IN THIS ROOM SEE TYPICAL WIRING IN ROOM-173.
15. COMBINATION DATA/TELEPHONE OUTLET IN CEILING SPACE.

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5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/860-4900

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RECORD DRAWINGS

Key Plan

Drawing Title

SIGNAL FIRST FLOOR PLAN

1/8" = 1'-0"

Scale

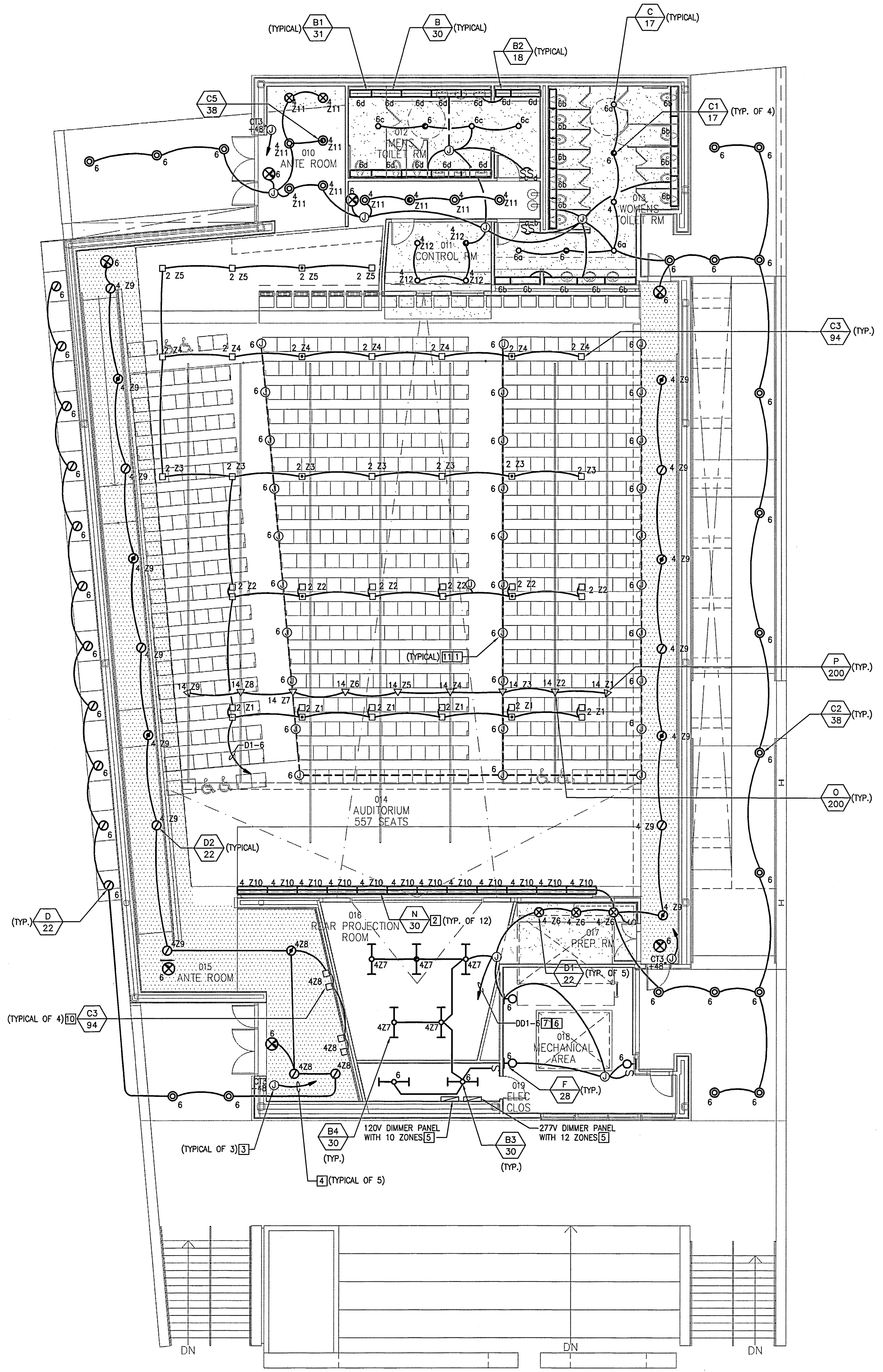
Project Number

13OCT.,00

Baseline Date

E-7

Drawing Number



LIGHTING AUDITORIUM FIRST FLOOR PLAN
SCALE: 1/8"=1'-0"

REFERENCE NOTES:

1. FLOOR MOUNTED JUNCTION BOX.
2. TYPE N/30 LIGHT FIXTURE SHALL BE MOUNTED ABOVE CHALKBOARD COORDINATE WITH AUDIO/VIDEO CONTRACTOR FOR EXACT LOCATION.
3. OUTLET BOX FOR 8-BUTTON CONTROL STATION BY AV CONTRACTOR.
4. 3/4" EMPTY CONDUIT WITH PULL WIRE TO AVD EQUIPMENT. SEE AV SETS OF DRAWING FOR EXACT LOCATION AND DETAILS.
5. SEE POWER PLAN ON DWG NO. E-9 FOR MORE INFORMATION.
6. FOR CIRCUIT #6 EXTERIOR LIGHTING ONLY SHALL BE VIA CONTROL RELAY. SEE A/E22 B/E22
7. FOR CIRCUIT #4 VIA 277V DIMMER PANEL ZONE Z6 THRU Z12.
8. VIA 120V DIMMER PANEL ZONE Z1 THRU Z9.
9. VIA 277V DIMMER PANEL ZONE Z1 THRU Z5.
10. FOR EXACT LOCATION OF LIGHT FIXTURE SEE ARCHITECTURAL DETAILS 38/A5.2.2 40/A8.4.3
11. FOR EXACT LOCATION OF JUNCTION BOX COORDINATE WITH SEATS MANUFACTURER.
12. ALL EMERGENCY LIGHTS ON DIMMER SYSTEM MUST HAVE TWO BALLASTS - ONE FOR DIMMING & ONE FOR EMERGENCY.

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CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN
Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/860-4900

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RECORD DRAWINGS

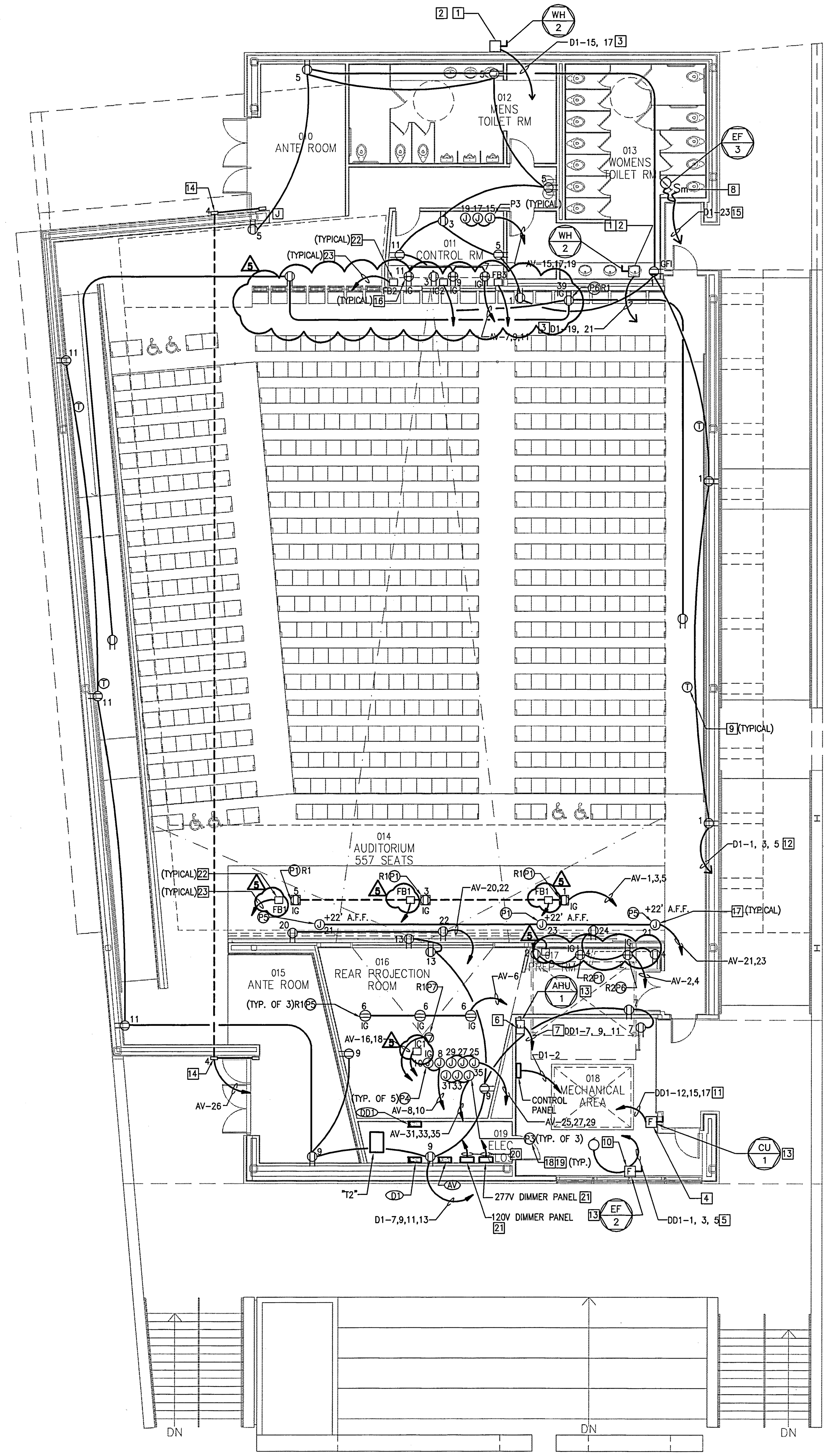
Key Plan

Drawing Title
LIGHTING AUDITORIUM FIRST FLOOR PLAN

1/8" = 1'-0"
Scale

Project Number 13OCT.,00
Baseline Date

E-8
Drawing Number



POWER AUDITORIUM FIRST FLOOR PLAN

SCALE: 1/8"=1'-0"

NORTH

REFERENCE NOTES:

1. FOR CLARITY THIS DISCONNECT SWITCH IS TO BE MOUNTED BELOW SINK NEXT TO WH-2.
2. NON-FUSED DISCONNECT SWITCH IS RATED 60A-2P IN NEMA I ENCLOSURE.
3. 3/4"C-2#8+1#10GND.
4. 200A-3P, 125A FUSED DISCONNECT SWITCH IN NEMA I ENCLOSURE.
5. 1'-1/2"C-3#1+1#6 GND.
6. 100A-3P 90A FUSED DISCONNECT SWITCH IN NEMA I ENCLOSURE.
7. 1"C-3#6+1#8 GND.
8. FRACTIONAL HORSEPOWER MANUAL STARTER, COMPLETE WITH THERMAL OVERLOAD RELAY, 2-POLE TOGGLE OPERATOR IN NEMA I ENCLOSURE.
9. PROVIDE 1/2"C.O. FROM THERMOSTAT TO VARITRAC CONTROL PANEL. WIRED BY MECHANICAL.
10. 60A-3P, 40A FUSED DISCONNECT SWITCH IN NEMA 1 ENCLOSURE.
11. 3/4"C-3#10+1#10 GND.
12. PROVIDE GROUND WIRE FOR EVERY CIRCUIT SERVING COMPUTER.
13. LOCATED ON PLATFORM ABOVE THIS FLOOR.
14. PUSH BUTTON AUTOMATIC DOOR OPENER.
15. VIA CONTROL PANEL LOCATED IN MECHANICAL AREA.
16. TWO ISOLATED GROUND DUPLEX RECEPTACLES FOR AV EQUIPMENT. SEE AUDIO VIDEO (AV) DRAWINGS DETAIL 2/AV401 C/AV401 FOR EXACT LOCATION.
17. HARD WIRED 120V, 20A, ISOLATED GROUND CIRCUIT.
18. THIS IS AV DESIGNATION CALL OUT. FOR DESCRIPTION OF THIS CALL OUT SEE DWG. NO. AV101, AV201 AND AV251.
19. ELECTRICAL CONTRACTOR SHALL PROVIDE RACEWAY SYSTEM NEEDED BY AV CONTRACTOR SUCH AS: CONDUITS, BACK BOXES AND CABLE TRAYS AS INDICATED IN THE AV DRAWINGS. ELECTRICAL CONTRACTOR SHALL INCLUDE IN HIS BID THE COST OF RACEWAY SYSTEM NEEDED BY AV CONTRACTOR WHICH ARE NOT SHOWN ON THE ELECTRICAL SET OF DRAWINGS BUT ARE INDICATED IN THE AV SET OF DRAWINGS.
20. 1" EMPTY CONDUIT WITH PULL WIRE TO AVD EQUIPMENT IN THE PROJECTION ROOM. SEE AV SETS OF DRAWING FOR EXACT LOCATION AND DETAILS.
21. DIMMER PANEL SHALL BE LUTRON GRAPHIC EYE DIMMING SYSTEM COMPOSED OF RS232 LUTRON MODULES QUANTITY AS REQUIRED. COORDINATE WITH AUDIO/VIDEO CONTRACTOR.
22. PROVIDE BOX AS REQUIRED PER BOX SCHEDULES SHOWN ON DWG # AV100 AND AS SPECIFIED ON DWG # AV101. FOR CONDUIT SIZE SEE DWG # AV251.
23. TO AVD SEE DWG # AV251.

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900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN

Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/860-4900

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RECORD DRAWINGS

Key Plan

Drawing Title

POWER AUDITORIUM FIRST FLOOR PLAN

1/8" = 1'-0"

Scale

Project Number 13OCT.,00

Baseline Date

E-9

Drawing Number

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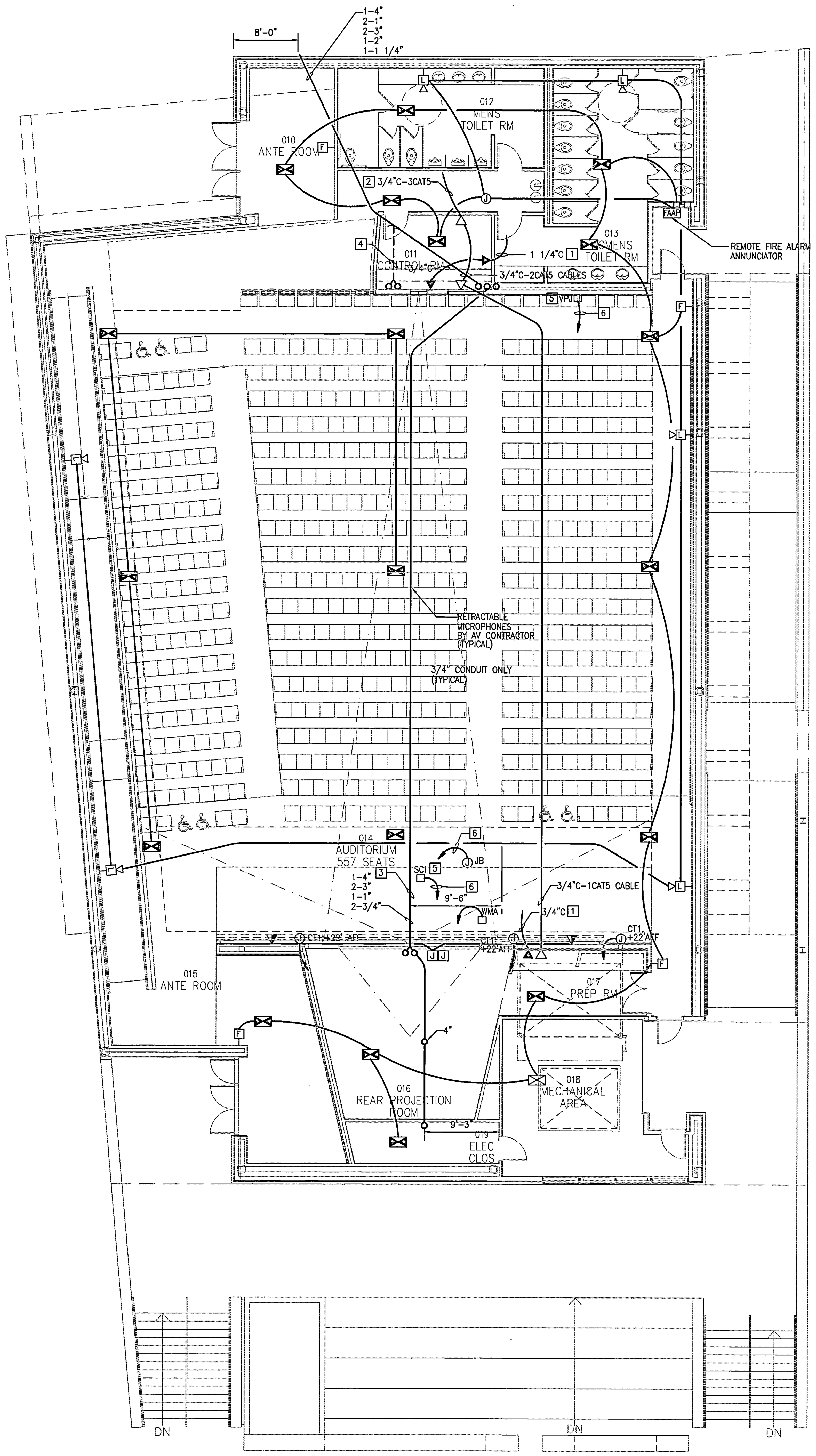

SIGNAL AUDITORIUM FIRST FLOOR PLAN

SCALE: 1/8"=1'-0"

NORTH

REFERENCE NOTES:

1. HOME RUN TO TELEPHONE BACKBOARD (TTB) LOCATED IN TELEPHONE ROOM SURGE BUILDING.
2. HOME RUN TO MDF LOCATED IN TELEPHONE ROOM SURGE BUILDING.
3. PROVIDE (2) 3"C.O. AND CAPPED AT BOTH ENDS.
4. PROVIDE (2) 3"C.O. TO MDF AT SURGE BUILDING AND CAPPED AT BOTH ENDS.
5. PROVIDE BOX AS REQUIRED PER BOX SCHEDULES SHOWN ON DWG # AV100 AND AS SPECIFIED ON DWG # AV101. FOR CONDUIT SIZE SEE DWG # AV251.
6. TO AVD SEE DWG # AV251.

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UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN

Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
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RECORD DRAWINGS

Key Plan

Drawing Title

SIGNAL AUDITORIUM FIRST FLOOR PLAN

1/8" = 1'-0"

Scale

Project Number

13OCT.,00

Baseline Date

E-10

Drawing Number

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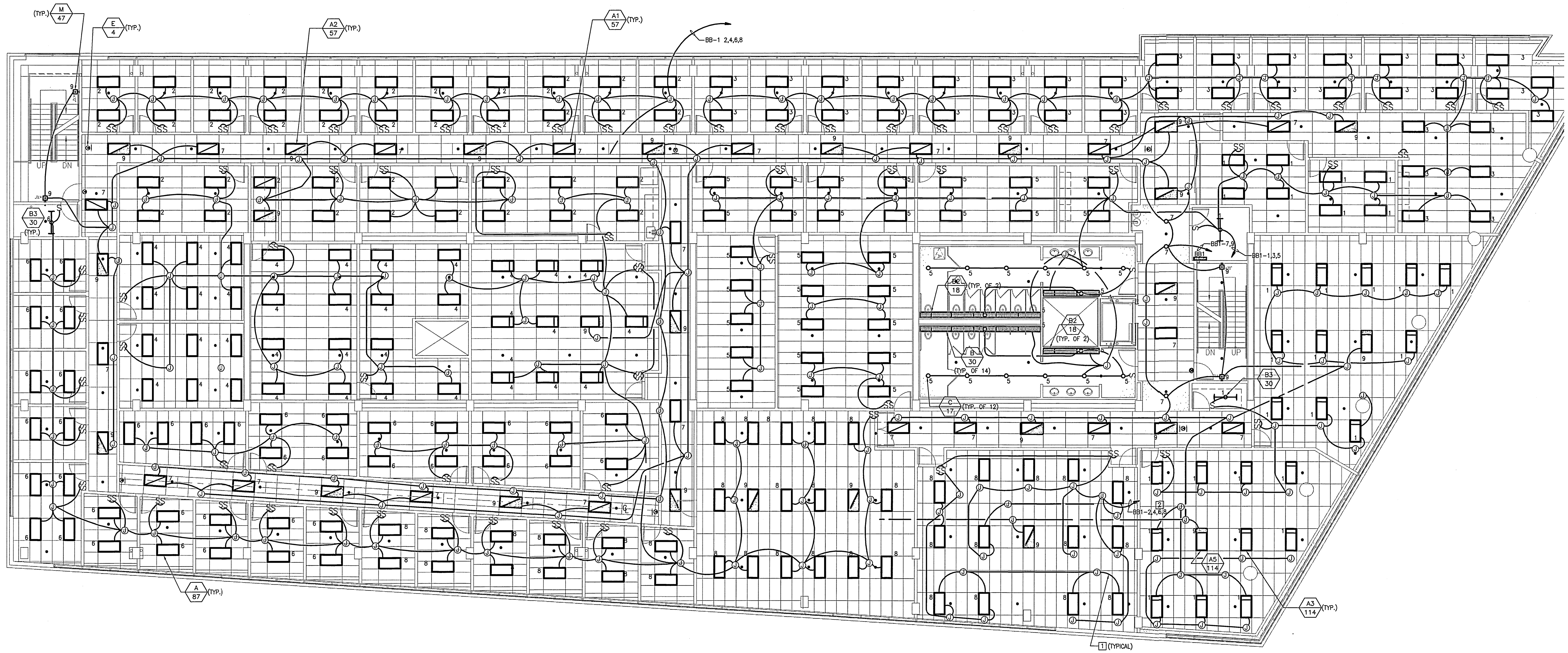

LIGHTING SECOND FLOOR PLAN

SCALE: 1/8"=1'-0"

NORTH

REFERENCE NOTES:

[1] FLEXIBLE CONDUIT FROM JUNCTION BOX TO LIGHT FIXTURE SHALL NOT EXCEED 6'-0". PROVIDE JUNCTION BOXES AS REQUIRED TO MEET THIS REQUIREMENT.

[2] FOR CIRCUIT #2,4 & 6 PROVIDE #10 CONDUCTORS AND SIZE CONDUIT AS REQUIRED.

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900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN

Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
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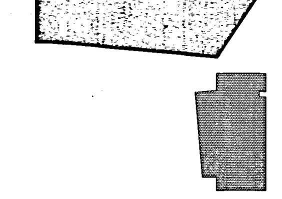
Key Plan



Drawing Title

LIGHTING SECOND FLOOR PLAN

1/8" = 1'-0"

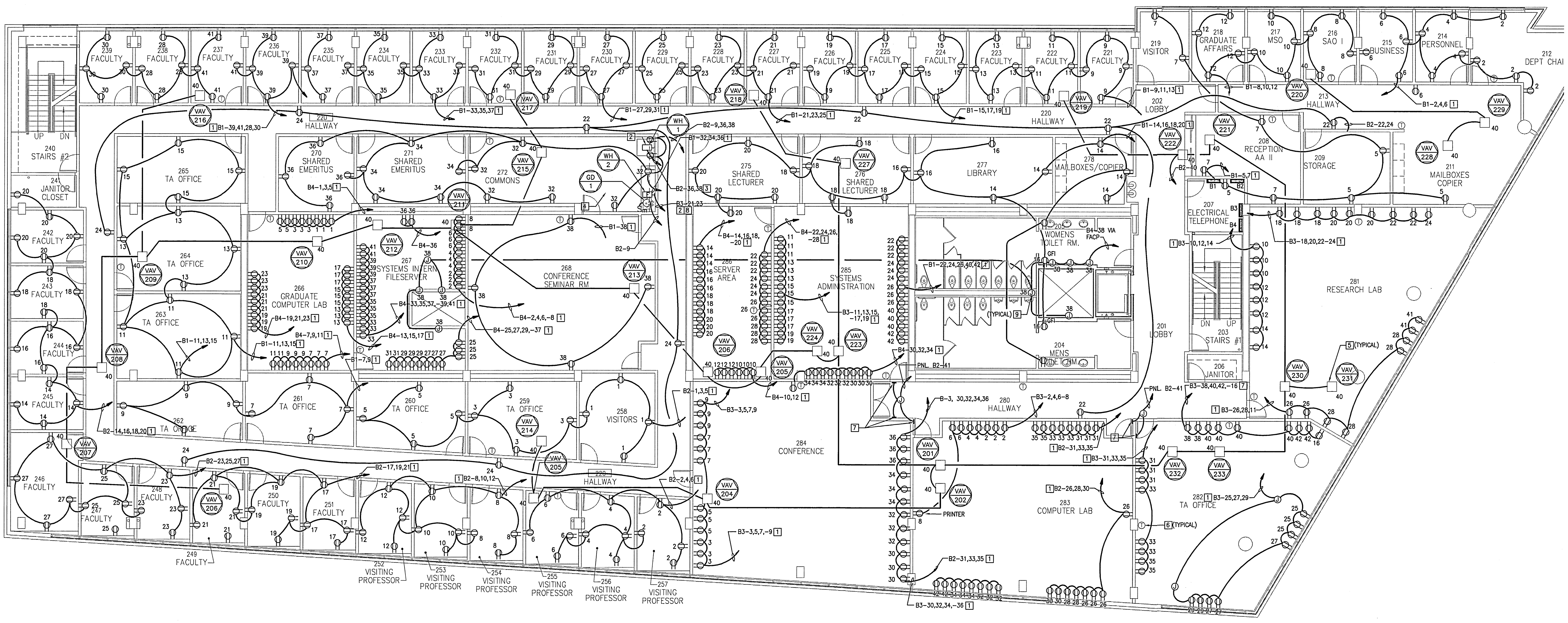
Scale

Project Number 13OCT.,00

Baseline Date

E-11

Drawing Number



POWER SECOND FLOOR PLAN

SCALE: 1/8"=1'-0"

NORTH

REFERENCE NOTES:

[1] PROVIDE GROUND WIRE FOR EVERY CIRCUIT SERVING COMPUTER.

[2] NON-FUSED DISCONNECT SWITCH IS RATED 60A-2P IN NEMA1 ENCLOSURE.

[3] 3/4"C-2#8+1#10 GND.

[4] FRACTIONAL HORSEPOWER MANUAL STARTER, COMPLETE WITH THERMAL OVERLOAD RELAY, 2-POLE TOGGLE OPERATOR IN NEMA I ENCLOSED.

[5] PROVIDE 3/4"C.O. FROM VAV'S TO VARITRAC CONTROL PANEL LOCATED IN UTILITY ROOM.

[6] PROVIDE 1/2"C.O. FROM THERMOSTAT TO VAV BEING SERVED. WIRED BY MECHANICAL.

[7] MAGNETIC DOOR HOLDER.

[8] FOR CLARITY THIS NON-FUSED DISCONNECT SWITCH SHALL BE MOUNTED BELOW SINK NEXT TO WH 2

[9] OUTLET BOX FOR COMBINATION FIRE/SMOKE DAMPER.

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UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN

Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/860-4900

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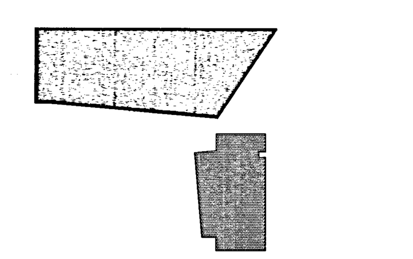


Drawing Title

POWER
SECOND FLOOR
PLAN

1/8" = 1'-0"

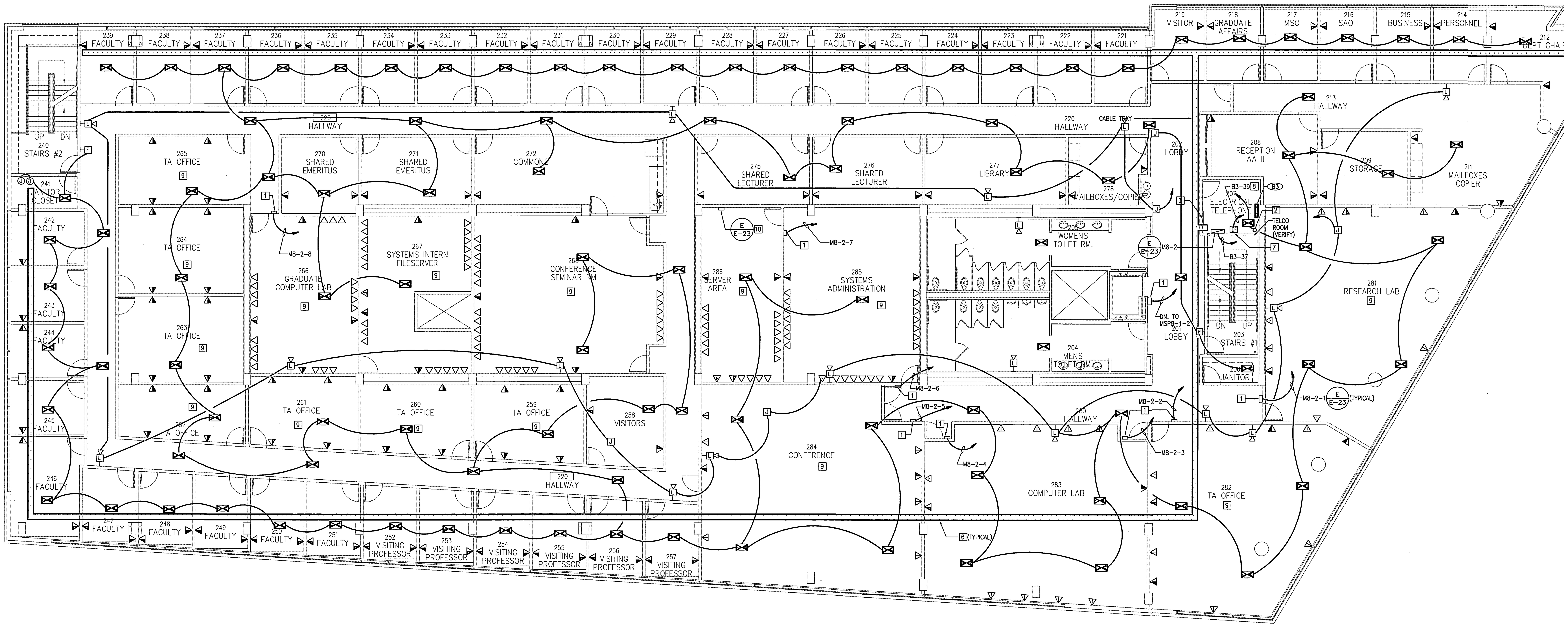
Scale

Project Number
13OCT.,00

Baseline Date

E-12

Drawing Number



SIGNAL SECOND FLOOR PLAN

SCALE: 1/8"=1'-0"

NORTH

REFERENCE NOTES

1. CARD SYSTEM, WITH CARD READER., 1"C.O. TO CONTROL PANEL AT ELECTRICAL ROOM 161.
2. (2) 4"C.O. SLEEVES THRU. SLAB TO 3 RD FLOOR (BOTH CORNER).
3. PROVIDE TELEPHONE BACKBOARD 3/4" THICK X 4'-0"W X 8'-0"H.
4. HOME RUN TO CABLE TRAY FOR TELEPHONE ONLY. NO MORE THAN TWO TELEPHONE OUTLETS PER HOMERUN.
5. HOME RUN TO CABLE FOR DATA ONLY. NO MORE THAN SIX OUTLETS PER HOME RUN FOR 3/4"C.
6. ALUMINUM CABLE TRAY SIZE 12"W X 3" DEPTH, 6" RUNG SPACING.
7. INTERMEDIATE DISTRIBUTION FRAME (IDF) ALL DATA OUTLET CABLE SHALL TERMINATE TO IDF. WIRING BETWEEN IDF AND MDF SHALL BE FIBER OPTIC CABLES.
8. PROVIDE GROUND WIRE FOR EVERY CIRCUIT SERVING COMPUTERS.
9. WIRING OF DATA & VOICE IN THIS ROOM SEE TYPICAL WIRINGS IN ROOM-173 ON DWG. E-7
10. HOST COMPUTER AND MONITOR FOR SECURITY SYSTEM.

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SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN

Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/860-4900

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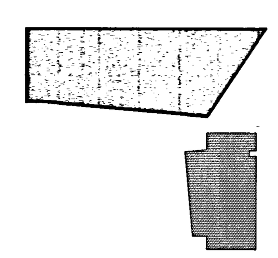


Drawing Title

SIGNAL
SECOND FLOOR
PLAN

1/8" = 1'-0"

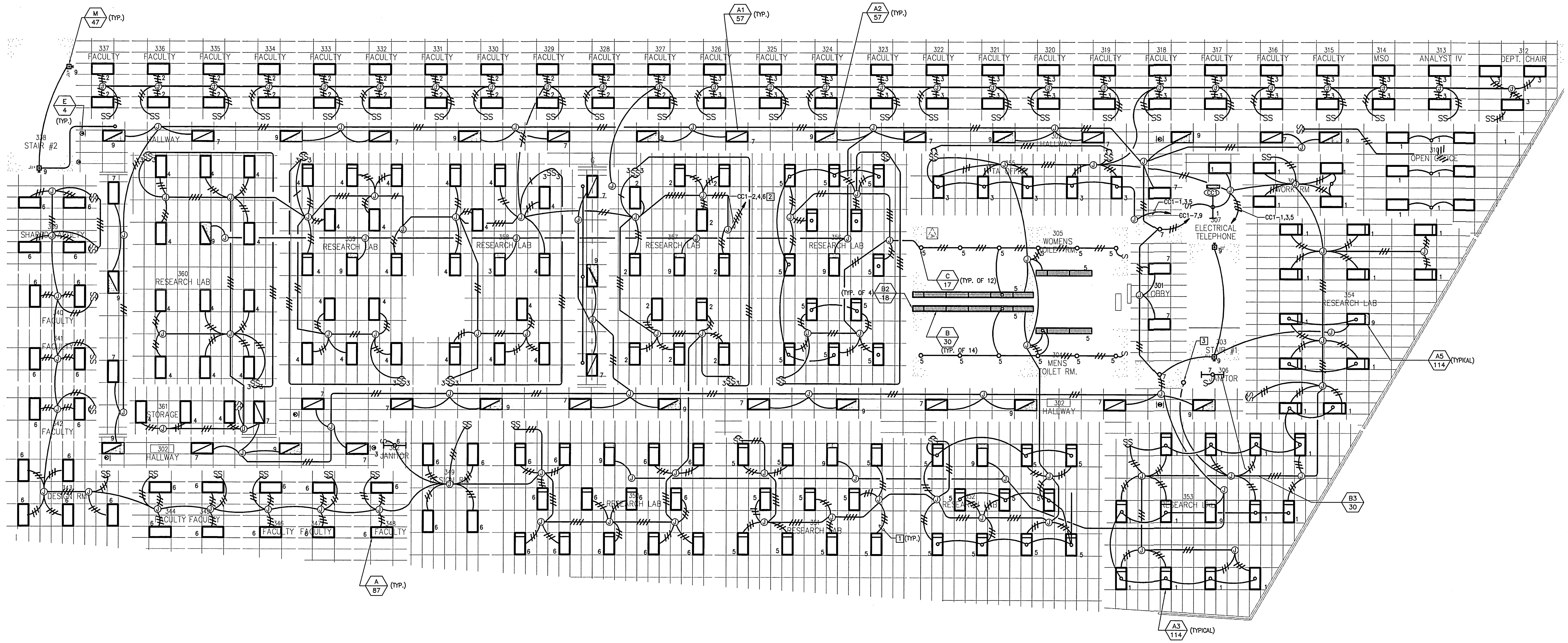
Scale

Project Number 13OCT.,00

Baseline Date

E-13

Drawing Number



LIGHTING THIRD FLOOR PLAN

SCALE: 1/8"=1'-0"

NORTH

REFERENCE NOTES:

1. FLEXIBLE CONDUIT FROM JUNCTION BOX TO LIGHT FIXTURE SHALL NOT EXCEED 6'-0". PROVIDE JUNCTION BOX AS REQUIRED TO MEET THIS REQUIREMENT.
2. FOR CIRCUIT #6 PROVIDE #10 CONDUCTORS AND SIZE CONDUIT AS REQUIRED.
3. UP TO LIGHT ON ROOF SEE DWG. NO. E-17.

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900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN

Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/580-4900

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LIGHTING THIRD FLOOR PLAN

1/8" = 1'-0"

Scale

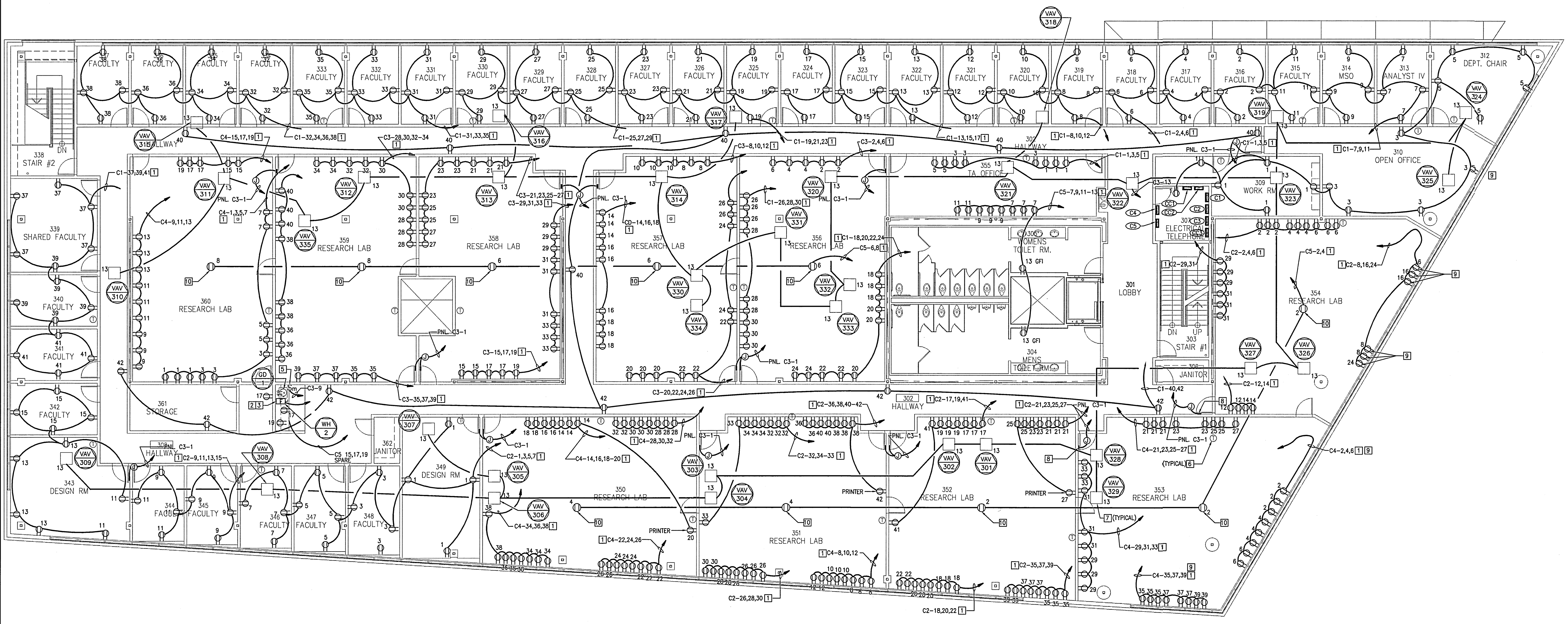
Project Number

13OCT.,00

Baseline Date

E-14

Drawing Number



POWER THIRD FLOOR PLAN

SCALE: 1/8"=1'-0"

NORTH

REFERENCE NOTES:

1. PROVIDE GROUND WIRE FOR EVERY CIRCUIT SERVING COMPUTER.
2. FOR CLARITY THIS NON-FUSED DISCONNECT SWITCH SHALL BE MOUNTED BELOW SINK NEXT TO WH 2
3. NON-FUSED DISCONNECT SWITCH IS RATED 60A-2P IN NEMA 1 ENCLOSURE.
4. 3/4"C-2#8+1#10 GND.
5. FRACTIONAL HORSEPOWER MANUAL STARTER, COMPLETE WITH THERMAL OVERLOAD RELAY, 2-POLE TOGGLE OPERATOR IN NEMA I ENCLOSED.
6. PROVIDE 1/2"C.O. FROM THERMOSTAT TO VAV BEING SERVED. WIRED BY MECHANICAL.
7. PROVIDE 3/4"C.O. FROM VAV'S TO VARITRAC CONTROL PANEL LOCATED IN THE FIRST FLOOR COORDINATE WITH MECHANICAL CONTRACTOR.
8. MAGNETIC DOOR HOLDER.
9. THESE RECEPTACLES ARE MOUNTED ON WIREMOLD MODEL AL3300. SEE ARCHITECTURAL DWGS. FOR DETAILS.
10. DUPLEX RECEPTACLE IN CEILING SPACE.

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900 University Avenue
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SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN

Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL- 949/860-4900

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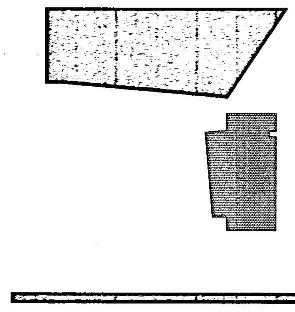
Key Plan



Drawing Title

POWER THIRD FLOOR PLAN

1/8" = 1'-0"

Scale

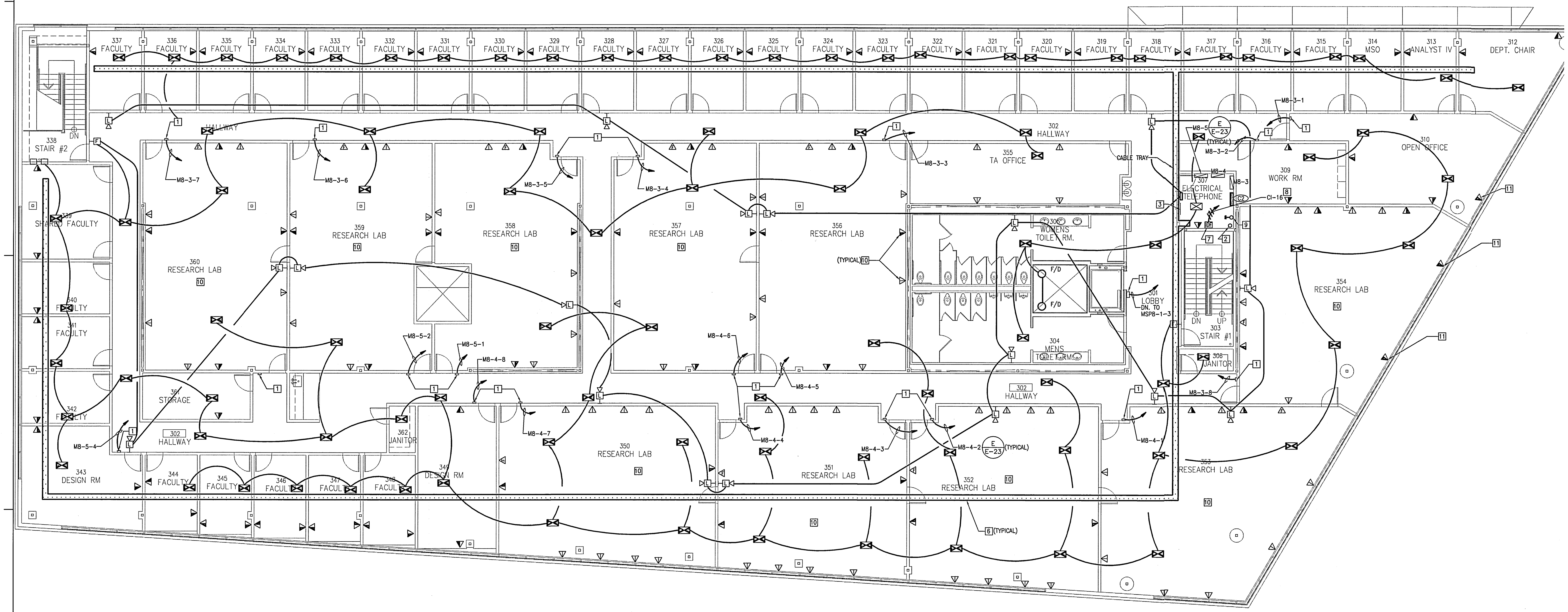
Project Number

13OCT.,00

Baseline Date

E-15

Drawing Number



SIGNAL THIRD FLOOR PLAN

SCALE: 1/8"=1'-0"

NORTH

REFERENCE NOTES

1. CARD SYSTEM, WITH CARD READER., 1"C.O. TO CONTROL PANEL AT ELECTRICAL ROOM 161.
2. (2) 4"C.O. SLEEVES THRU. SLAB TO 3 RD FLOOR (BOTH CORNER).
3. PROVIDE TELEPHONE BACKBOARD 3/4" THICK X 4'-0"W X 8'-0"H.
4. HOME RUN TO CABLE TRAY FOR TELEPHONE ONLY. NO MORE THAN TWO TELEPHONE OUTLETS PER HOMERUN.
5. HOME RUN TO CABLE TRAY FOR DATA ONLY. NO MORE THAN SIX OUTLETS PER HOME RUN FOR 3/4"C.
6. ALUMINUM CABLE TRAY SIZE 12"W X 3" LOAD DEPTH, 6" RUNG SPRING.
7. INTERMEDIATE DISTRIBUTION FRAME (IDF) ALL DATA OUTLET CABLE SHALL TERMINATE TO IDF. WIRING BETWEEN IDF AND MDF SHALL BE FIBER OPTIC CABLES.
8. PROVIDE GROUND WIRE FOR EVERY CIRCUIT SERVING COMPUTERS.
9. (2) 1 1/2"C.O. AND (1) 1"C.O. TO ROOF AND CAPPED AT BOTH ENDS.
10. WIRING OF DATA & VOICE IN THIS ROOM SEE TYPICAL WIRING IN ROOM 173 ON DWG. E-7.
11. COMBINATION DATA/TELEPHONE OUTLET MOUNTED ON WIREMOLD MODEL AL3300. SEE ARCHITECTURAL DWG. FOR DETAIL.

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900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN

Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
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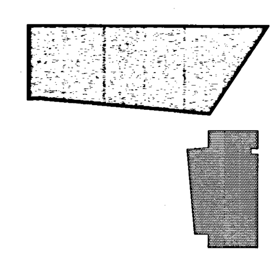

Drawing Title

SIGNAL THIRD FLOOR PLAN

1/8" = 1'-0"

Scale

Project Number

13OCT.,00

Baseline Date

E-16

Drawing Number

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SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
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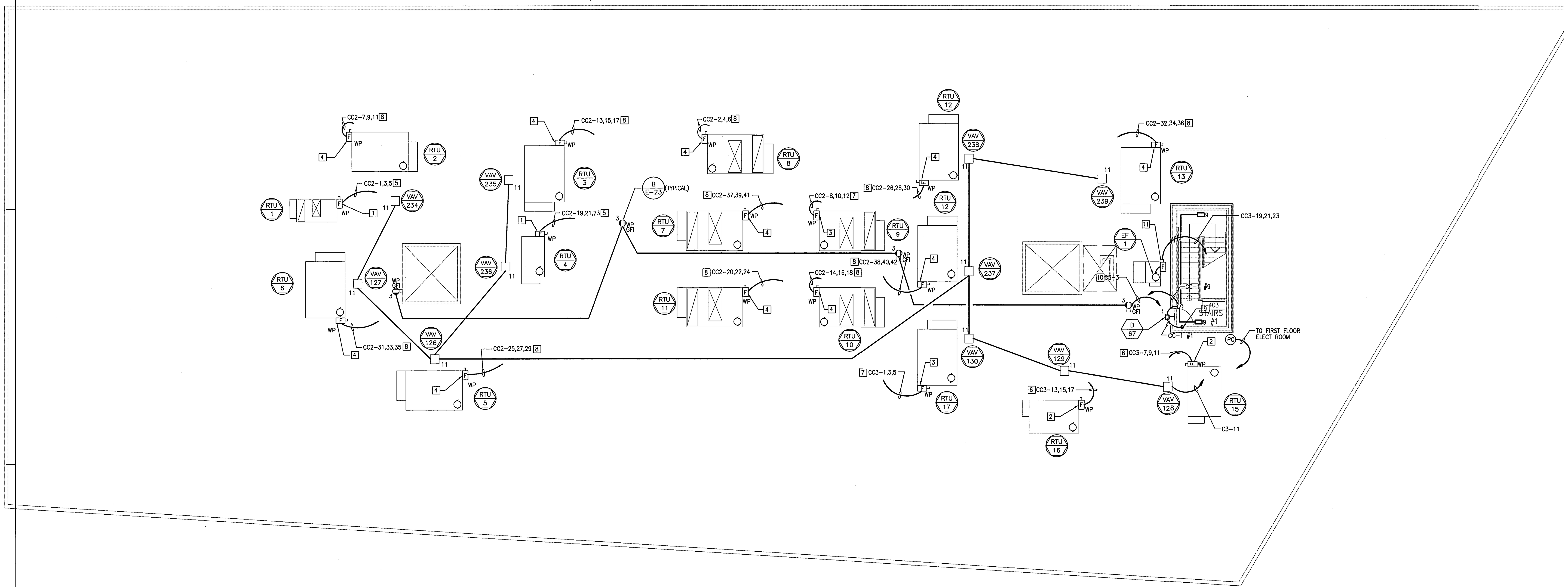

ROOF FLOOR PLAN
SCALE: 1/8"=1'-0"
NORTH

REFERENCE NOTES:

[1] 30A-3P, 30A FUSED DISCONNECT SWITCH IN NEMA 3R ENCLOSURE.

[2] 60A-3P, 40A FUSED DISSCONNECT SWITCH IN NEMA 3R ENCLOSURE.

[3] 60A-3P, 50A FUSED DISSCONNECT SWITCH IN NEMA 3R ENCLOSURE.

[4] 100A-3P, 70A FUSED DISSCONNECT SWITCH IN NEMA 3R ENCLOSURE.

[5] 3/4"C-3#10+1#10 GND.

[6] 3/4"C-3#8+1#10 GND.

[7] 1"C-3#6+1#10 GND.

[8] 1 1/4"C-3#4+1#8 GND.

[9] DOWN TO LIGHT ON 3RD FLOOR CIRCUIT CC1-1 SEE DWG. NO. E-14.

[10] PANEL "C2" & "C3" ARE LOCATED IN ELECTRICAL ROOM THIRD FLOOR.

[11] 30A-3P, 9A FUSED DISSCONNECT SWITCH IN NEMA 3R ENCLOSURE.

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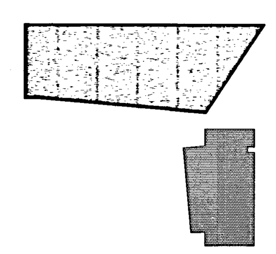
RECORD DRAWINGS

Key Plan



Drawing Title
ROOF PLAN

1/8" = 1'-0"
Scale

Project Number
13OCT.,00
Baseline Date

E-17
Drawing Number

PANEL AA1

277/480 VOLTS — 3 PH. — 4 WIRE

LOCATION 1ST FLOOR ELECTRICAL RM.#161 — 225 AMPS BUS — MLO MAIN — SURFACE MOUNTED

REMARKS	LOAD (WATTS) Aø	Bø	Cø	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	ALL BREAKERS 20 AMPERES EXCEPT AS NOTED	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) Aø	Bø	Cø	REMARKS
CLASSROOMS	3171			X			31	1		2	38			X	3249			OFFICES, TUTORIAL
OFFICE, TUTORIAL, COMPUTER		3045		X			35	3		4	27			X		2754		TUTORIALS
CALSSROOM, WAITING, TOILETS			3146	X			59	5		6	32			X			3648	COMPUTERS
CORRIDOR	1587			X			26	7		8	24			X	1086			EXTERIOR LTS.
CORRIDOR, STAIR, LOBBY		1784		X			27	9		10	49			X		2059		EXTERIOR LTS.
SPARE								11		12								EXTERIOR LTS.
								13		14								SPARE
								15		16								
								17		18								
								19		20								
								21		22								
								23		24								
SPACE								25		26								SPACE
								27		28								
								29		30								
								31		32								
								33		34								
								35		36								
								37		38								
								39		40								
								41		42								
	4758	4829	3146		12733	= LCL					LCL =	12797			4335	4813	3648	

TOTAL CONNECTED LOAD = 9093 W (øA) + 9642 W (øB) + 6794 W (øC) 25529 W

= 1 POLE
= 2 POLE
= 3 POLE

AIC = 14,000 AMPERES

TOTAL 25529 W
LCL X 25% = 6382 W
TOTAL = 31911 W
OR = 38.38 A

PANEL CC2

277/480 VOLTS — 3 PH. — 4 WIRE

LOCATION 3RD FLOOR ELECTRICAL RM.#307 — 800 AMPS BUS — MLO MAIN — SURFACE MOUNTED

REMARKS	LOAD (WATTS) Aø	Bø	Cø	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	ALL BREAKERS 20 AMPERES EXCEPT AS NOTED	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) Aø	Bø	Cø	REMARKS
RTU-1	7489				1			1	30 / 70	2			1		15722			RTU-8
		7489			–			3		4			–			15722		
			7489		–			5	70 / 50	6			–				15722	
RTU-2	14873				1			7		8			1		12270			RTU-9
		14873			–			9		10			–			12270		
			14873		–			11	70 / 70	12			–				12270	
RTU-3	14873				1			13		14			1		15722			RTU-10
		14873			–			15		16			–			15722		
			14873		–			17	30 / 70	18			–				15722	
RTU-4	6640				1			19		20			1		15722			RTU-11
		6640			–			21		22			–			15722		
			6640		–			23	70 / 70	24			–				15722	
RTU-5	14873				1			25		26			1		14873			RTU-13
		14873			–			27		28			–			14873		
			14873		–			29	70 / 70	30			–				14873	
RTU-6	14873				1			31		32			1		14873			RTU-14
		14873			–			33		34			–			14873		
			14873		–			35	70 / 70	36			–				14873	
RTU-7	15722				1			37		38			1		14873			RTU-12
		15722			–			39		40			–			14873		
			15722		–			41		42			–				14873	
	89343	89343	89343		–	= LCL					LCL =		–		104055	104055	104055	

TOTAL CONNECTED LOAD =193398 W (øA) +193398 W (øB) +193398 W (øC) 580194 W

= 1 POLE
= 2 POLE
= 3 POLE

AIC = 14,000 AMPERES

TOTAL W
LCL X 25% = W
TOTAL = 580194 W
OR = 697.86 A

PANEL BB1

277/480 VOLTS — 3 PH. — 4 WIRE

LOCATION 2ND FLOOR ELECTRICAL RM.#207 — 225 AMPS BUS — MLO MAIN — SURFACE MOUNTED

REMARKS	LOAD (WATTS) Aø	Bø	Cø	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	ALL BREAKERS 20 AMPERES EXCEPT AS NOTED	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) Aø	Bø	Cø	REMARKS
RESEARCH OFFICES	3207			X			31	1		2	40			X	3420			FACULTIES, OFFICES
FACULTIES		3306		X			38	3		4	39			X		3717		CONFERENCE, COMPUTER, OFFICES
LIBRARY, ADMINIST.,TOILET			3207	X			59	5		6	41			X			3510	FACUTIES, PROFESSORS, OFFICES
CORRIDOR	1539			X			27	7		8	40			X	3480			PROFESSORS,CONFERENCE,COMPUTER
CORRIDOR STAIR		1955		X			32	9		10								SPARE
SPARE								11		12								
								13		14								
								15		16								
								17		18								
								19		20								
								21		22								
								23		24								
SPACE								25		26								SPACE
								27		28								
								29		30								
								31		32								
								33		34								
								35		36								
								37		38								
								39		40								
								41		42								
	4746	5261	3207		13214	= LCL					LCL =	14127			6900	3717	3510	

TOTAL CONNECTED LOAD = 11646 W (øA) + 8978 W (øB) + 6717 W (øC) 27341 W

= 1 POLE
= 2 POLE
= 3 POLE

AIC = 14,000 AMPERES

TOTAL 27341 W
LCL X 25% = 6835 W
TOTAL = 34176 W
OR = 41.1 A

PANEL CC3

277/480 VOLTS — 3 PH. — 4 WIRE

LOCATION 3RD FLOOR ELECTRICAL RM.#307 — 400 AMPS BUS — MLO MAIN — SURFACE MOUNTED

REMARKS	LOAD (WATTS) Aø	Bø	Cø	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	ALL BREAKERS 20 AMPERES EXCEPT AS 50 NOTED	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) Aø	Bø	Cø	REMARKS
RTU-17	11420				1			1		2								SPARE
		11420			–			3		4								
			11420		–			5	40	6								
RTU-15	8233				1			7		8								
		8233			–			9		10								
			8233		–			11	40	12								
RTU-16	9030				1			13		14								
		9030			–			15		16								
			9030		–			17		18								
EF-1	1267				1			19		20								SPACE
		1267			–			21		22								
			1267		–			23		24								
SPARE								25		26								
								27		28								
								29		30								
SPACE								31		32								
								33		34								
								35		36								
								37		38								
								39		40								
								41		42								
	29950	29950	29950		–	= LCL					LCL =		–		–	–	–	

TOTAL CONNECTED LOAD = 29950 W (øA) +29950 W (øB) + 29950 W (øC) 89850 W

= 1 POLE
= 2 POLE
= 3 POLE

AIC = 14,000 AMPERES

TOTAL W
LCL X 25% = W
TOTAL = 89850 W
OR = 108 A

PANEL CC1

277/480 VOLTS — 3 PH. — 4 WIRE

LOCATION 3RD FLOOR ELECTRICAL RM.#307 — 225 AMPS BUS — MLO MAIN — SURFACE MOUNTED

REMARKS	LOAD (WATTS) Aø	Bø	Cø	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	ALL BREAKERS 20 AMPERES EXCEPT AS NOTED	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) Aø	Bø	Cø	REMARKS
RESEARCH OFFICES	3676			X			35	1		2	33			X	3168			FACULTIES
FACULTIES		3219		X			37	3		4	37			X		3786		RESEARCHS
RESEARCH, TOILET			4332	X			62	5		6	44			X			3890	FACUTIES, RESEARCH
CORRIDOR	1398			X			25	7		8								SPARE
CORRIDOR STAIRS		2411		X			34	9		10								
SPARE								11		12								
								13		14								
								15		16								
								17		18								
								19		20								
								21		22								
								23		24								
SPACE								25		26								SPACE
								27		28								
								29		30								
								31		32								
								33		34								
								35		36								
								37		38								
								39		40								
								41		42								
	5074	5630	4332		15036	= LCL					LCL =	10844			2826	3102	3435	

TOTAL CONNECTED LOAD = 8242 W (øA) + 9416 W (øB) + 8222 W (øC) 25880 W

= 1 POLE
= 2 POLE
= 3 POLE

AIC = 14,000 AMPERES

TOTAL 25880 W
LCL X 25% = 6470 W
TOTAL = 32350 W
OR = 38.91 A

PANEL DD1

277/480 VOLTS — 3 PH. — 4 WIRE

LOCATION AUDITORIUM — 400 AMPS BUS — 400 MAIN — SURFACE MOUNTED

REMARKS	LOAD (WATTS) Aø	Bø	Cø	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	ALL BREAKERS 20 AMPERES EXCEPT AS 25 NOTED	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) Aø	Bø	Cø	REMARKS
CU-1	32666				1			1		2	42			X	3948			AUDITORIUM LIGHTS
		32666			–			3		4	56			X		1764		
			32666		–			5	70	6	67			X			1873	
AHU-1	13800				1			7		8								SPARE
		13800			–			9		10								
			13800		–			11	45	12								
EF-2	5567				1			13		14								
		5567			–			15		16								
			5567		–			17	125	18								
75KVA TRANSFORMER(D1)	18618				1			19		20								
		22676			–			21		22								
			19918		–			23		24								
SPACE								25		26								SPACE
								27		28								
								29		30								
								31		32								
								33		34								
								35		36								
								37		38								
								39		40								
								41		42								
	70651	74709	71951			= LCL					LCL =	7585			3948	1764	1873	

TOTAL CONNECTED LOAD = 74599 W (øA) +76473 W (øB) + 73824 W (øC) 224896 W

= 1 POLE
= 2 POLE
= 3 POLE

AIC = 14,000 AMPERES

TOTAL 7585 W
LCL X 25% = 1896 W
TOTAL = 226,792 W
OR = 272.9 A

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN
Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/860-4900

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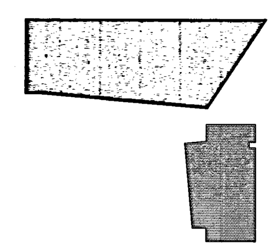
Seals and Signatures

RECORD DRAWINGS

Key Plan



Drawing Title
PANEL SCHEDULES

NONE
Scale

Project Number
13OCT.,00
Baseline Date

E-18
Drawing Number

PANEL D1

120/208 VOLTS | 3 PH. | 4 WIRE

LOCATION AUDITORIUM | 225 AMPS BUS | 225 MAIN | SURFACE MOUNTED

REMARKS	LOAD (WATTS) Aø	Bø	Cø	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	ALL BREAKERS 20 AMPERES EXCEPT AS NOTED	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) Aø	Bø	Cø	REMARKS
AUDITORIUM	900					5		1		2			1		300			VARITRAC CONTROL PANEL
COMPUTERS		800				2		3		4			2			100		SPARE
RM.-010,011,012			900			5		5	175	6			30	X			360	AUDITORIUM AISLE
1-COMPUTER, RM.-017,018	940					4		7		8					13400			SPARE
RM.-016		720				4		9		10						14900		
AUDITORIUM			540			3		11		12							14300	
RECPT. UPPER SCREEN								13	40	14	9			X	1800			120V DIMMER PANEL
(1) WH-2		3078			1			15		16								
			3078		–			17	40	18								
	3078				1			19		20								SPARE
		3078			–			21		22								LTG. CONTROL PANEL
(1) EF-1			1100		1			23		24								
								25		26								
								27		28								
								29		30								
								31		32								
								33		34								
								35		36								
								37		38								
								39		40								
								41		42								
	4918	7676	5618			= LCL					LCL =		2160		15500	15000	14660	

TOTAL CONNECTED LOAD = 20418 W (øA) +22676 W (øB) + 20278 W (øC) 63381 W

= 1 POLE

= 2 POLE

= 3 POLE

AIC = 10,000 AMPERES

* ON DIMMER SEE FLOOR PLAN E-8

TOTAL 2160 W
LCL X 25% = 540 W

TOTAL = 63921 W
OR = 177.4 A

PANEL AV

120/208 VOLTS | 3 PH. | 4 WIRE

LOCATION AUDITORIUM | 225 AMPS BUS | MLO MAIN | SURFACE MOUNTED

REMARKS	LOAD (WATTS) Aø	Bø	Cø	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	ALL BREAKERS 20 AMPERES EXCEPT AS NOTED	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) Aø	Bø	Cø	REMARKS
AV EQUIP. RM-014	1800					1		1		2		2			1800			AV EQUIP. RM-017
		1800				1		3		4		2				1800		
			1800			1		5		6		3					1200	AV EQUIP. RM-016
AV EQUIP. RM-011	1800					2		7		8			1		1800			
		1800				2		9		10			1			1800		
			1800			2		11		12		1					800	SPARE
SPARE								13		14		1			800			SPARE
AV EQUIP. RM-011		1800			1			15		16		1				1500		AV EQUIP. RM-016
			1800		1			17		18		–					1500	
	1800				1			19		20								FUTURE SMART BOARD
AV EQUIP. RM-014		800			2			21		22								SMART BOARD
			1800		1			23		24								FUTURE SMART BOARD
AV EQUIP. RM-016	1800				1			25		26								AUTOMATIC DOOR OPENER
		1800			1			27		28								
			1800		1			29		30								
	1800				1			31		32								
		1800			1			33		34								
			1800		1			35		36								
AV EQUIP. RM – 014	800							37		38								
		800						39		40								
								41		42								
	9800	10600	10800			= LCL					LCL =				4400	5100	3500	

TOTAL CONNECTED LOAD = 14200 W (øA) +15700 W (øB) + 14300 W (øC) 44200 W

= 1 POLE

= 2 POLE

= 3 POLE

AIC = 10,000 AMPERES

TOTAL – W
LCL X 25% = W

TOTAL = 44200 W
OR = 122.7 A

PANEL B4

120/208 VOLTS | 3 PH. | 4 WIRE

LOCATION RM-207 | 225 AMPS BUS | MLO MAIN | SURFACE MOUNTED

REMARKS	LOAD (WATTS) Aø	Bø	Cø	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	ALL BREAKERS 20 AMPERES EXCEPT AS NOTED	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) Aø	Bø	Cø	REMARKS
COMPUTER RM-266	1200					3		1		2		3			1200			FILESERVER RM-267
		1200				3		3		4		3				1200		
			800			2		5		6		3					1200	
	1200					3		7		8		2			1200			
		1200				3		9		10		3				1200		SERVER RM-286
			800			2		11		12		3					1200	
	1200					3		13	40	14		3			1200			
		1200				3		15		16		3				1200		
			800			3		17	40	18		3					1200	
	1200					3		19		20		3			1200			
		1200				3		21		22		3				1200		
			800			3		23		24		3					1200	
FILESERVER RM-267	1200					3		25		26		3			1200			
		1200				3		27		28		3				1200		
			1200			3		29		30		3					1200	ADMIN RM-285
	800					2		31		32		3			1200			
		1200				3		33		34		3				1200		
			1200			3		35		36		2					1200	FILESERVER RM-285
	1200					3		37		38			9		225			FIRE DAMPERS
		1200				3		39		40								F/A PWR
			800			2		41		42								SPARE
	8000	8400	7200			= LCL					LCL =				7425	7200	6800	

TOTAL CONNECTED LOAD = 15425 W (øA) +15600 W (øB) + 14400 W (øC) 45425 W

= 1 POLE

= 2 POLE

= 3 POLE

AIC = 10,000 AMPERES

TOTAL W
LCL X 25% = – W

TOTAL = 45425 W
OR = 126 A

PANEL A4

120/208 VOLTS | 3 PH. | 4 WIRE

LOCATION 1ST. FLR. ELECT. RM. | 225 AMPS BUS | MLO MAIN | SURFACE MOUNTED

REMARKS	LOAD (WATTS) Aø	Bø	Cø	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	ALL BREAKERS 20 AMPERES EXCEPT AS NOTED	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) Aø	Bø	Cø	REMARKS
AUTOMATIC DOOR OPENER	100				2			1		2								SPARE
CARD READER CONTROL PANEL		300			1			3		4								RM 153
TIMER AND DOOR OPENER			100		1			5		6								
COMPUTER RM. 170 & 171	800					2		7		8								
COMPUTER RM. 172 & 173		800				2		9		10								SPARE AT LOUNGE
COMB. FIRE/SMOKE DAMPER			200		8			11		12								GAR. DISP.
SPARE								13		14								LTG. CONTROL PNL.
								15		16								
								17		18								
								19		20								
								21		22								
								23		24								
F/A CONTROL PWR (DAMPERS)								25		26								
SPARE								27		28								
								29		30								
								31		32								
								33		34								
								35		36								
								37		38								
								39		40								
								41		42								
	900	1100	300			= LCL					LCL =		–		–	–	–	

TOTAL CONNECTED LOAD = 900 W (øA) + 1100 W (øB) + 300 W (øC) 2300 W

= 1 POLE

= 2 POLE

= 3 POLE

AIC = 10,000 AMPERES

TOTAL – W
LCL X 25% = – W

TOTAL = 2300 W
OR = 6.38 A

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CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
P 310.586.5400
F 310.586.1091

HENRIKSON OWEN

Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/860-4900

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RECORD DRAWINGS

Key Plan

Drawing Title

PANEL SCHEDULES

Scale NONE

Project Number

Baseline Date 13OCT.,00

Drawing Number E-19

PANEL A1

120/208 VOLTS | 3 PH. | 4 WIRE
LOCATION ELECTRICAL RM.#161 | 225 AMPS BUS | MLO MAIN | SURFACE MOUNTED

REMARKS	LOAD (WATTS) Aø	Bø	Cø	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	ALL BREAKERS 20 AMPERES EXCEPT AS NOTED	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) Aø	Bø	Cø	REMARKS
CLASSROOM	720					4		1		2		4			720			OFFICE
		900				5		3		4		4				720		
			720			4		5		6		4					720	
	1080					6		7		8		4			720			
		1080				6		9		10		4				720		
OFFICE			720			4		11		12		3					540	
CONFERENCE	900					5		13		14		3			540			
STAFF LOUNGE		900				5		15		16		4				720		
OFFICE WORK			720			4		17		18		4					720	
RESTROOM, ELEV. RM.	900					5		19		20		4			720			
CLASSROOM		1080				6		21		22		4				720		
CIRCULATE PUMP			667		1			23		24		4					720	
OFFICE	720					4		25		26		4			720			TUTORIAL
RECEPTION		720				4		27		28		4				720		
TUTORIAL			900			5		29		30		4					720	
	720					4		31		32		4			720			
OFFICE		720				4		33		34		4				720		
CORRIDOR			720			4		35		36		4					720	
CORRIDOR	720					4		37		38		5			900			
LIGHTING CONTROL		300			1			39		40		4				720		
								41		42		4					720	
	5760	5700	4447		= LCL						LCL =				5040	5040	4860	

TOTAL CONNECTED LOAD = 10800 W (ØA) +10740 W (ØB) + 9307 W (ØC) 30,847 W

= 1 POLE
= 2 POLE
= 3 POLE

AIC = 10,000 AMPERES

TOTAL W
LCL X 25% = W
TOTAL = 30,847 W
OR = 85.62 A

PANEL B1

120/208 VOLTS | 3 PH. | 4 WIRE
LOCATION 2ND FLR. ELECT. RM. 207 | 225 AMPS BUS | MLO MAIN | SURFACE MOUNTED

REMARKS	LOAD (WATTS) Aø	Bø	Cø	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	ALL BREAKERS 20 AMPERES EXCEPT AS NOTED	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) Aø	Bø	Cø	REMARKS
SPARE	–							1		2		4			720			DEPT. CHAIR
SPARE		1080				6		3		4		4				720		PERSONNEL
STORAGE			720			4		5		6		5					900	BUSINESS
RECEPTION	900					5		7		8		4			720			SAO
FACULTY		720				4		9		10		4				720		MSO
			720			4		11		12		4					720	GRADUATE AFFAIRS
	720					4		13		14		5			900			MAILBOX
		720				4		15		16		5				900		LIBRARY, TOILET
			720			4		17		18		5					900	LECTURER
	720					4		19		20		4			720			
		720				4		21		22		3				1200		SYSTEM ADMINISTRATION
			720			4		23		24		3					1200	
	720					4		25		26		3			1200			
		720				4		27		28		4				720		FACULTY
			720			4		29		30		4					720	FACULTY
	720					4		31		32		6			1080			COMMONS
		720				4		33		34		5				900		EMERITUS
			720			4		35		36		4					720	EMERITUS
	720					4		37		38		4			720			CONFERENCE
		720				4		39		40		3				1200		SYSTEM ADMINISTRATION
			720			4		41		42		2					800	
	4500	5400	5040		= LCL						LCL =				6060	6360	5960	

TOTAL CONNECTED LOAD = 10560 W (ØA) +11760 W (ØB) + 11000 W (ØC) 33320 W

= 1 POLE
= 2 POLE
= 3 POLE

AIC = 10,000 AMPERES

TOTAL W
LCL X 25% = W
TOTAL = 33320 W
OR = 92.5 A

PANEL A2

120/208 VOLTS | 3 PH. | 4 WIRE
LOCATION ELECTRICAL RM.#161 | 225 AMPS BUS | MLO MAIN | SURFACE MOUNTED

REMARKS	LOAD (WATTS) Aø	Bø	Cø	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	ALL BREAKERS 20 AMPERES EXCEPT AS NOTED	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) Aø	Bø	Cø	REMARKS
COMPUTER RM. 153	1200					3		1		2		3			1200			COMPUTER RM. 153
		1200				3		3		4		3				1200		
			1200			3		5		6		3					1200	
	1200					3		7		8		3			1200			
		1200				3		9		10		3				1200		
			1200			3		11		12		3					1200	
COMPUTER RM. 170	1200					3		13		14		3			1200			COMPUTER RM. 170
		1200				3		15		16		3				1200		
			800			2		17		18		2					800	
PRINTER RM. 170	900					1		19		20		3			1200			COMPUTER RM. 170
COMPUTER RM. 171		1200				3		21		22		2				800		
			1200			3		23		24		2					800	
	800					2		25		26		3			1200			COMPUTER RM. 171
PRINTER RM. 171		900				1		27		28		3				1200		
COMPUTER RM. 172			1200			3		29		30		2					800	
	1200					3		31		32		3			1200			COMPUTER RM. 171
		800				2		33		34		2				800		
AUTOMATIC DOOR OPENER			100		2			35		36		2					800	
ELEVATOR LIGHT	200			X	1			37		38			1	X	500			SECURITY CONTROL PANEL
HIGH WATER ALARM		500		X	1			39		40		1				900		PRINTER RM. 173
FIRE ALARM CONTROL PANEL			500	X	1			41		42			1				1100	DUPLEX SUMP PUMP
	6700	7000	6200	1200	= LCL						LCL =	500			7700	7300	6700	

TOTAL CONNECTED LOAD = 14400 W (ØA) +14300 W (ØB) + 12900 W (ØC) 41,600 W

= 1 POLE
= 2 POLE
= 3 POLE

AIC = 10,000 AMPERES

TOTAL 1,700 W
LCL X 25% = 425 W
TOTAL = 42,025 W
OR = 116.7 A

PANEL B2

120/208 VOLTS | 3 PH. | 4 WIRE
LOCATION 2ND FLR. ELECT. RM. 207 | 225 AMPS BUS | MLO MAIN | SURFACE MOUNTED

REMARKS	LOAD (WATTS) Aø	Bø	Cø	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	ALL BREAKERS 20 AMPERES EXCEPT AS NOTED	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) Aø	Bø	Cø	REMARKS
OFFICE	720					4		1		2		4			720			PROFESSOR
		720				4		3		4		4				720		
			720			4		5		6		4					720	
IDF	720					4		7		8		4			720			
GD-1		720				4		9		10		4				720		
OFFICE			720			4		11		12		4					720	
	720					4		13		14		4			720			FACULTY
		720				4		15		16		4				720		
FACULTY			720			4		17		18		4					720	
	720					4		19		20		5			900			
		720				4		21		22		5				900		CORRIDOR
			720			4		23		24		5					900	
	720					4		25		26		3			1200			COMPUTER RM. 283
		720				4		27		28		3				1200		
IDF			1100		1			29		30		2					800	
COMPUTER RM. 283	1200					3		31		32		3			1200			COMPUTER RM. 283
		1200				3		33		34		3				1200		
			800			2		35		36			1				3078	REFFER
OFFICE								37		38			–		3078			MICRO
OFFICE								39		40			31			620		VAV'S 2ND FLOOR
MAGNETIC DOOR HOLDER			250		5			41		42		2					800	COMPUTER RM. 283
	4800	4800	5030		= LCL						LCL =				8538	6080	7738	

TOTAL CONNECTED LOAD = 13338 W (ØA) +10880 W (ØB) + 12768 W (ØC) 36,986 W

= 1 POLE
= 2 POLE
= 3 POLE

AIC = 10,000 AMPERES

TOTAL W
LCL X 25% = W
TOTAL = 36,986 W
OR = 102.66 A

PANEL B3

120/208 VOLTS | 3 PH. | 4 WIRE
LOCATION 2ND FLR. ELECT. RM. 207 | 225 AMPS BUS | MLO MAIN | SURFACE MOUNTED

REMARKS	LOAD (WATTS) Aø	Bø	Cø	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	ALL BREAKERS 20 AMPERES EXCEPT AS NOTED	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) Aø	Bø	Cø	REMARKS
SPARE	300				1			1		2		3			1200			COMPUTER RM. 283
COMPUTER RM. 284		1200				3		3		4		2				800		
			1200			3		5		6		2					800	
	1200					3		7		8		1			900			PRINTER RM. 283
		1200				3		9		10		3				1200		COMPUTER RM. 281
SYSTEM ADMIN RM-285			1200			3		11		12		3					1200	
	1200					3		13		14		2			800			
		1200				3		15		16		1				900		PRINTER RM. 282
			1200			3		17		18		3					1200	COMPUTER RM. 281
	800					2		19	40	20		3			1200			
(1) WH-2		3078			1			21		22		2				800		
(1) WH-2			3078		–			23		24		1					900	PRINTER RM. 281
COMPUTER RM. 282	1200					3		25		26		3			1200			COMPUTER RM. 281
		1200				3		27		28		3				1200		
			800			2		29		30		3					1200	COMPUTER RM. 284
	1200					3		31		32		3			1200			
		1200				3		33		34		3				1200		
			800			2		35		36		3					1200	
SECURITY	300				1			37		38		3			1200			COMPUTER RM. 282
IDF								39		40		3				1200		
COMPUTER RM. 281			800			2		41		42		2					800	
	6200	9078	9078		= LCL						LCL =				7700	7300	7300	

TOTAL CONNECTED LOAD = 13900 W (ØA) +16378 W (ØB) + 16378 W (ØC) 46656 W

= 1 POLE
= 2 POLE
= 3 POLE

AIC = 10,000 AMPERES

TOTAL W
LCL X 25% = W
TOTAL = 46656 W
OR = 129.5 A

PANEL A3

120/208 VOLTS | 3 PH. | 4 WIRE
LOCATION ELECTRICAL RM.#161 | 225 AMPS BUS | MLO MAIN | SURFACE MOUNTED

REMARKS	LOAD (WATTS) Aø	Bø	Cø	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	ALL BREAKERS 20 AMPERES EXCEPT AS NOTED	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) Aø	Bø	Cø	REMARKS
COMPUTER LAB RM. 172	1200					3		1		2		3			1200			SPARE
		1200				3		3		4		3				1200		F/A NAC
			800			2		5		6		2					800	SEC. PANELS
	1200					3		7		8		3			1200			COMPUTER RM. 173
		800				2		9		10		3				1200		
			800			2		11		12		2					800	
OFFICE	720					4		13		14		3			1200			COMPUTER RM. 173
		720				4		15		16		2				800		
			720			4		17		18		3					1200	COMPUTER RM. 171
	720					4		19		20		3			1200			
		720				4		21		22		2				800		
OFFICE			720			4		23		24		2					800	COMPUTER RM. 173
VARITRAC CONTROL PANELS	500				1			25	40	26			1		800			MDF
WH-1		3006			1			27		28		1				900		PRINER RM. 172
WH-1			3006		–			29		30			1				300	SECURITY SYSTEM CONTROL PANEL
GD-1	1100				1			31		32		3			1200			COMPUTER RM. 172
VAV'S FIRST FLOOR		500			25			33		34		3				1200		
ELEVATOR PIT			250			1	1	35		36		2					800	
COMPUTER LAB RM. 170	1200					3		37		38		3			1200			COMPUTER RM. 173
		1200				3		39		40		3				1200		
			800			2		41		42		2					800	
	6640	8146	7096		= LCL						LCL =				8000	7300	5500	

TOTAL CONNECTED LOAD = 14640 W (ØA) +15446 W (ØB) + 12596 W (ØC) 42682 W

= 1 POLE
= 2 POLE
= 3 POLE

AIC = 10,000 AMPERES

TOTAL W
LCL X 25% = W
TOTAL = 42682 W
OR = 118.5 A

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UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

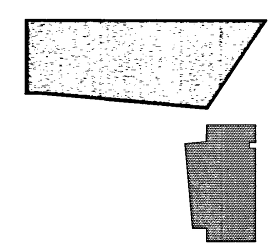
HENRIKSON OWEN
Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/580-4900

Issued for | Rev | Date

Seals and Signatures

RECORD DRAWINGS

Key Plan



Drawing Title
PANEL SCHEDULES

NONE
Scale

Project Number
13OCT.,00
Baseline Date

E-20
Drawing Number

PANEL C1 | 120/208 VOLTS | 3 PH. | 4 WIRE
LOCATION 3RD FLR. ELECT. RM. 307 | 225 AMPS BUS | MLO MAIN | SURFACE MOUNTED

REMARKS	LOAD (WATTS) AØ	BØ	CØ	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) AØ	BØ	CØ	REMARKS
WORK, ELEC.	1080					6		1	2		4			720			FACULTY
OFFICE		900				5		3	4		4				720		
DEPT. CHAIR			900			5		5	6		4					720	
ANALYST	720					4		7	8		4			720			
MSO		720				4		9	10		4				720		
FACULTY			720			4		11	12		4					720	
	720					4		13	14					–			SECURITY
		720				4		15	16						–		IDF
			720			4		17	18		3					1200	COMPUTER RM. 356
	720					4		19	20		3			1200			
		720				4		21	22		2				800		
			720			4		23	24		2					800	
	720					4		25	26		3			1200			
		720				4		27	28		3				1200		
			720			4		29	30		3					1200	
	720					4		31	32		4			720			FACULTY
		720				4		33	34		4				720		
			720			4		35	36		4					720	
	900					5		37	38		4			720			
		900				5		39	40		6				1080		CORRIDOR
			720			4		41	42		6					1080	
	5580	5400	5220			= LCL					LCL =			5280	5240	6440	

TOTAL CONNECTED LOAD = 10860 W (ØA) +10640 W (ØB) + 11660 W (ØC) 33160 W

= 1 POLE
= 2 POLE
= 3 POLE

AIC = – AMPERES

TOTAL W
LCL X 25% = W
TOTAL = 33160 W
OR = 92 A

PANEL C4 | 120/208 VOLTS | 3 PH. | 4 WIRE
LOCATION 3RD FLR. ELECT. RM. 307 | 225 AMPS BUS | MLO MAIN | SURFACE MOUNTED

REMARKS	LOAD (WATTS) AØ	BØ	CØ	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) AØ	BØ	CØ	REMARKS
COMPUTER RM. 360	1200					3		1	2		3			1200			COPMUTER RM. 353
		1200				3		3	4		3				1200		
			800			2		5	6		2					800	
	800					2		7	8		3			1200			COPMUTER RM. 351
		1200				3		9	10		3				1200		
			1200			3		11	12		2					800	
	1200					3		13	14		3			1200			COMPUTER RM. 350
		800				2		15	16		2				800		
			800			2		17	18		2					800	
PRINTER RM. 360	900					1		19	20		1			900			PRINTER RM. 350
COMPUTER RM. 353		1200				3		21	22		3				1200		COMPUTER RM. 350
			800			2		23	24		3					1200	
	800					2		25	26		2			800			
PRINTER RM. 353		900				1		27	28		3				1200		
COMPUTER RM. 353			1200			3		29	30		3					1200	
	1200					3		31	32		2			800			
		800				2		33	34		3				1200		
			1200			3		35	36		3					1200	
	1200					3		37	38		2			800			
		800				2		39	40								SPARE
SPARE								41	42								
	7300	6900	6000			= LCL					LCL =			6900	6800	6000	

TOTAL CONNECTED LOAD = 14200 W (ØA) +13700 W (ØB) + 12000 W (ØC) 39900 W

= 1 POLE
= 2 POLE
= 3 POLE

AIC = 10,000 AMPERES

TOTAL W
LCL X 25% = W
TOTAL = 39900 W
OR = 110.75 A

PANEL C2 | 120/208 VOLTS | 3 PH. | 4 WIRE
LOCATION 3RD FLR. ELECT. RM. 307 | 225 AMPS BUS | MLO MAIN | SURFACE MOUNTED

REMARKS	LOAD (WATTS) AØ	BØ	CØ	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) AØ	BØ	CØ	REMARKS
DESIGN ROOM	720					4		1	2		3			1200			COMPUTER RM. 354
FACULTY		720				4		3	4		3				1200		
			720			4		5	6		3					1200	
	720					4		7	8		2			800			COMPUTER RM. 354
		900				5		9	10			1			300		SPARE
			900			5		11	12		2					800	COMPUTER RM. 354
DESIGN ROOM	720					4		13	14		2			800			
FACULTY		720				4		15	16		3				1200		COMPUTER RM. 354
COMPUTER RM. 352			1200			3		17	18		3					1200	COMPUTER RM. 352
	1200					3		19	20		3			1200			
		1200				3		21	22		2				800		
			800			2		23	24		1					900	PRINTER RM. 354
	800					2		25	26		3			1200			COMPUTER RM. 351
PRINTER RM. 352		900				1		27	28		3				1200		
COMPUTER RM. 354			1200			3		29	30		2					800	
	1200					3		31	32		3			1200			
COMPUTER RM. 351		800				2		33	34		3				1200		
COMPUTER RM. 352			1200			3		35	36		2					800	COMPUTER RM. 351
	1200					3		37	38		3			1200			
		800				2		39	40		2				800		
COMPUTER RM. 352			800			2		41	42		1					900	PRINTER RM. 351
	6560	6140	6820			= LCL					LCL =			7600	6700	6600	

TOTAL CONNECTED LOAD = 14160 W (ØA) +12840 W (ØB) + 13420 W (ØC) 40420 W

= 1 POLE
= 2 POLE
= 3 POLE

AIC = 10,000 AMPERES

TOTAL W
LCL X 25% = W
TOTAL = 40420 W
OR = 112.2 A

PANEL C5 | 120/208 VOLTS | 3 PH. | 4 WIRE
LOCATION 3RD FLR. ELECT. RM. 307 | 225 AMPS BUS | MLO MAIN | SURFACE MOUNTED

REMARKS	LOAD (WATTS) AØ	BØ	CØ	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) AØ	BØ	CØ	REMARKS
COMPUTER RM. 355	1200					3		1	2		3			1200			RESEARCH LAB 354, 353, & 352
		1200				3		3	4		2				800		RESEARCH LAB 350 & 351
			800			2		5	6		3					1200	RESEARCH LAB 356, 357, & 358
	1200					3		7	8		2			800			RESEARCH LAB 359 & 360
		1200				3		9	10			1			300		SECURITY SYS. CONTROL PANEL
			800			2		11	12			1				300	
TOILET RM. 304, 305	360					2		13	14			1		300			
SPARE AT KIT								15	16								SPARE
KIT. RECEPTACLE								17	18								
REFFER RECEPT.								19	20								
SPARE								21	22								
								23	24								
								25	26								
								27	28								
								29	30								
								31	32								
								33	34								
								35	36								
								37	38								
								39	40								
								41	42								
	2760	2400	1600			= LCL					LCL =			2300	1100	1500	

TOTAL CONNECTED LOAD = 5060 W (ØA) + 3500 W (ØB) + 3100 W (ØC) 11660 W

= 1 POLE
= 2 POLE
= 3 POLE

AIC = 10,000 AMPERES

TOTAL W
LCL X 25% = W
TOTAL = 11660 W
OR = 32.36 A

PANEL C3 | 120/208 VOLTS | 3 PH. | 4 WIRE
LOCATION 3RD FLR. ELECT. RM. 307 | 225 AMPS BUS | MLO MAIN | SURFACE MOUNTED

REMARKS	LOAD (WATTS) AØ	BØ	CØ	LCL	OUTLETS OTHER	REC.	LTG.	CIR NO.	CIR NO.	OUTLETS LTG.	REC.	OTHER	LCL	LOAD (WATTS) AØ	BØ	CØ	REMARKS
MAGNETIC DOOR HOLDER	850				17			1	2		2			800			COMPUTER RM. 356
ROOF		720				4		3	4		2				800		
(1) WH-2			3078		1			5	6		1					900	PRINTER RM. 356
(1) WH-2	3078				–			7	8		2			800			COMPUTER RM. 357
(1) CD-1		1100			11			9	10		2				800		
VAV'S ROOF			220		34			11	12		1					900	PRINTER RM. 357
VAV'S 3RD FLR.	680							13	14		3			1200			COMPUTER RM. 357
COMPUTER RM. 358		800				2		15	16		3				1200		
			800			2		17	18		3					1200	
PRINTER RM. 358	900					1		19	20		3			1200			
COMPUTER RM. 358		1200				3		21	22		3				1200		
			1200			3		23	24		2					800	
	800					2		25	26		2			800			
		800				2		27	28		3				1200		COMPUTER RM. 359
			1200			3		29	30		3					1200	
	1200					3		31	32		2			800			
		1200				3		33	34		2				800		
COMPUTER RM. 359			800			2		35	36		3					1200	
	800					2		37	38		3			1200			
PRINTER RM. 359		900				1		39	40		3				1200		
SPARE								41	42								SPARE
	8308	6720	7298			= LCL					LCL =			6800	7200	6200	

ALL BREAKERS 20 AMPERES EXCEPT AS NOTED (40)

TOTAL CONNECTED LOAD = 15108 W (ØA) +13920 W (ØB) + 13498 W (ØC) 42526 W

= 1 POLE
= 2 POLE
= 3 POLE

AIC = 10,000 AMPERES

TOTAL W
LCL X 25% = W
TOTAL = 42526 W
OR = 118.0 A

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN
Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/860-4900

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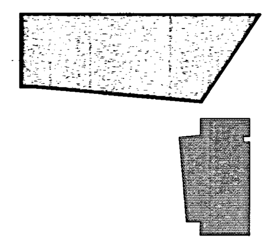
Seals and Signatures

RECORD DRAWING

Key Plan

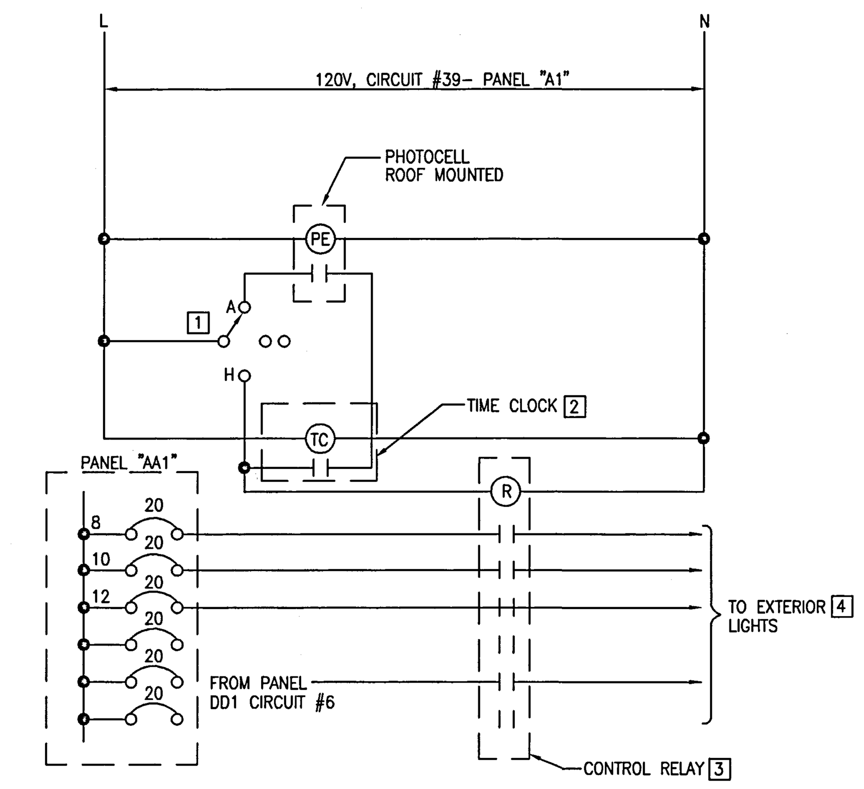


Drawing Title
PANEL SCHEDULES

NONE
Scale

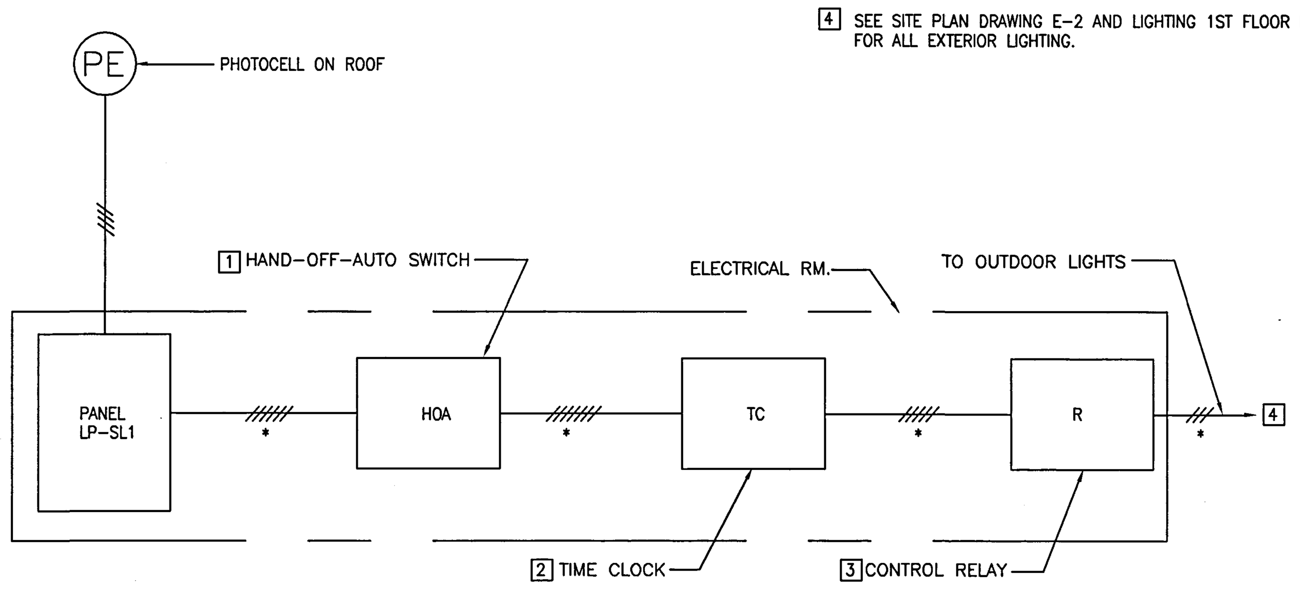
Project Number 13OCT.,00
Baseline Date

E-21
Drawing Number



EXTERIOR LIGHTING CONTROL SCHEMATIC (A / E-22)

SCALE: NONE



* INCLUDING GROUND WIRE

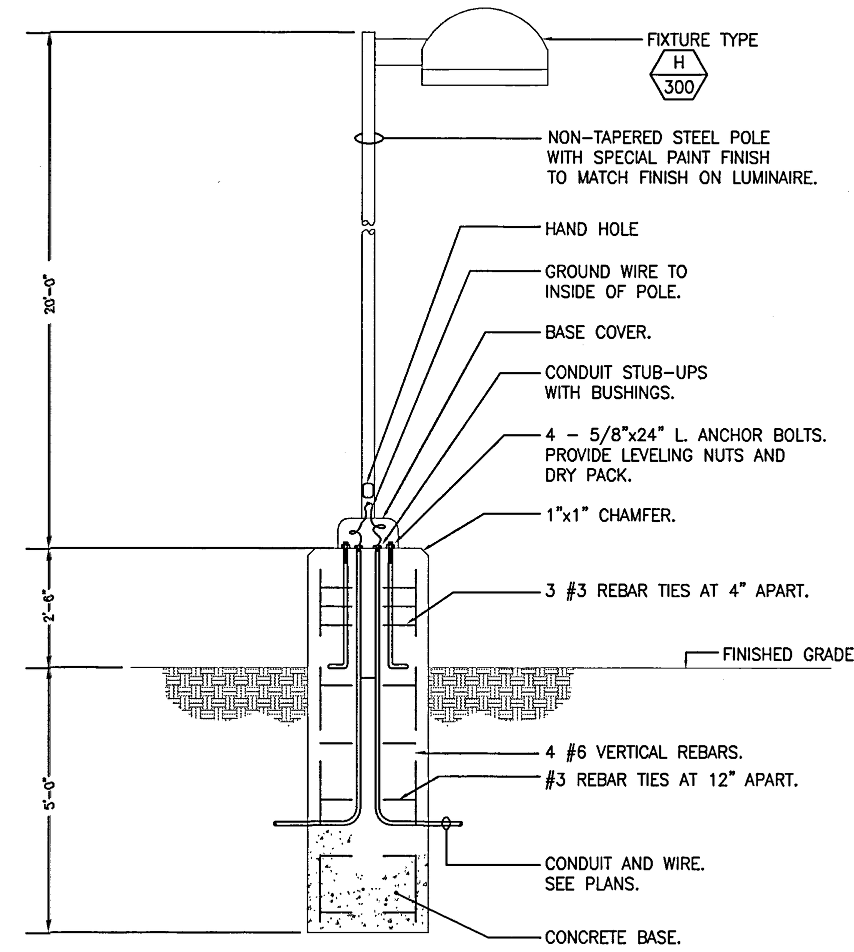
EXTERIOR LIGHTING CONTROL CONNECTION DIAGRAM (B / E-22)

* INCLUDING GROUND WIRE

SCALE: NONE

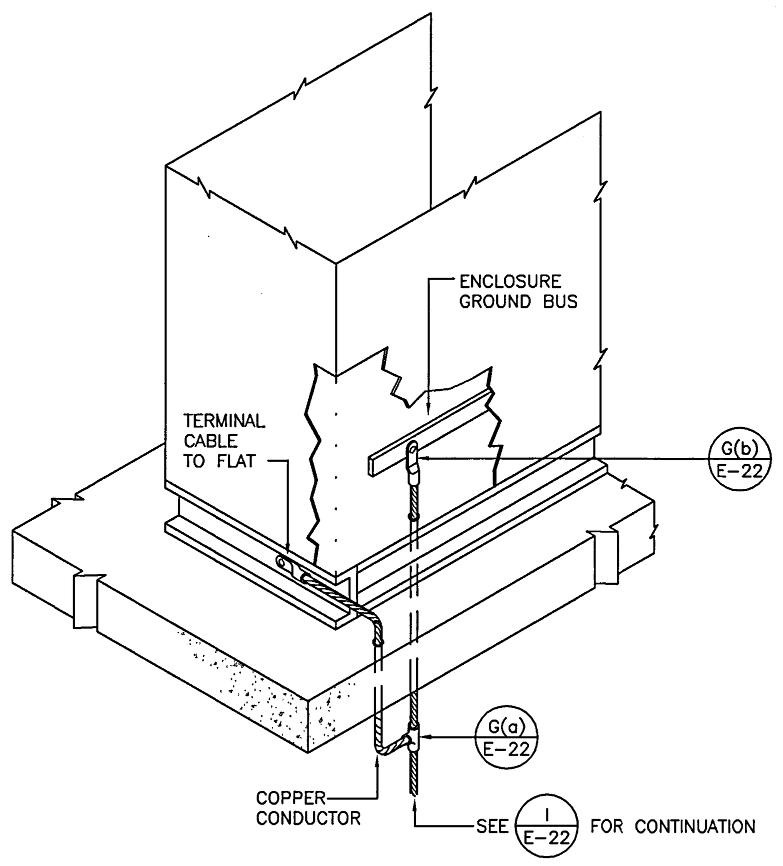
REFERENCE NOTES:

1. HAND-OFF-AUTO SWITCH IN NEMA 1 ENCLOSURE
2. TIME CLOCK SHALL BE 7-DAY GENERAL PURPOSE TIME CONTROL WITH 1SPST-N.O., ISPST-N.C. CONTACTS RATED AT 40 AMPERES PER POLE 277 VOLTS. 120 VOLTS COIL IN NEMA 1 METAL ENCLOSURE. PARAGON MODEL NO. P7005-00B.
3. CONTROL RELAY INDUSTRIAL TYPE, CLASS 8501, CONTACT RATED 600V, 10 AMPERS, 4-POLES NORMALLY OPEN CONTACTS, 120 VOLT COIL IN NEMA 1 ENCLOSURE. SQUARE D CAT. NUMBER 8501-X040-V02-Y414.
4. SEE SITE PLAN DRAWING E-2 AND LIGHTING 1ST FLOOR PLAN DRAWING E-5 FOR ALL EXTERIOR LIGHTING.



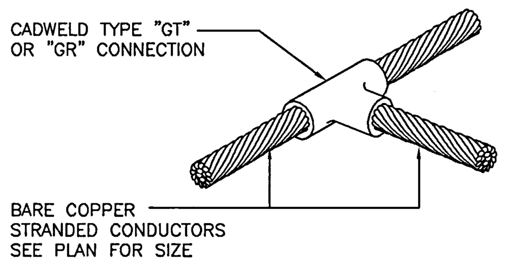
LIGHT POLE AND BASE DETAIL (C / E-22)

SCALE: NONE

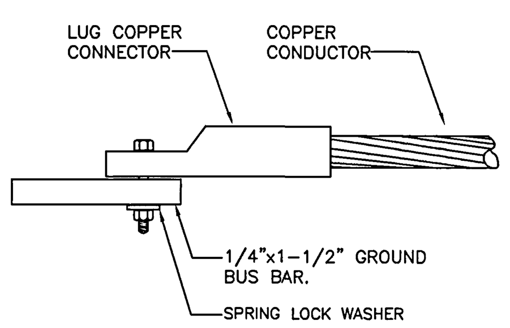


MAIN SWITCHBOARD GROUNDING (D / E-22)

SCALE: NONE



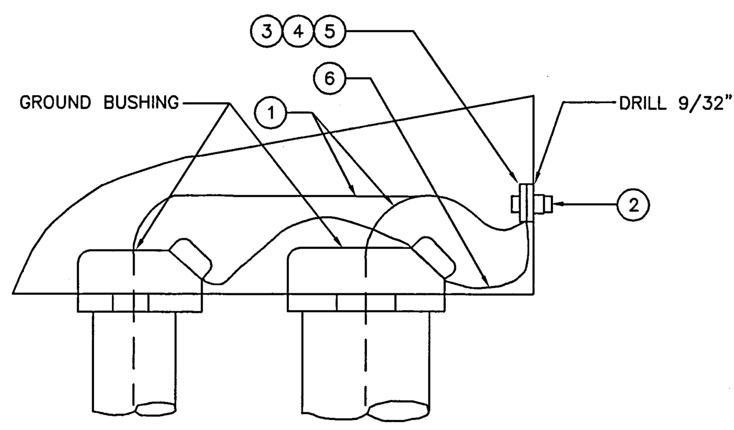
(a) THREE-WAY CABLE TO CABLE



(b) CABLE TO BUS BAR

GROUND CONDUCTORS CONNECTION (E / E-22)

SCALE: NONE

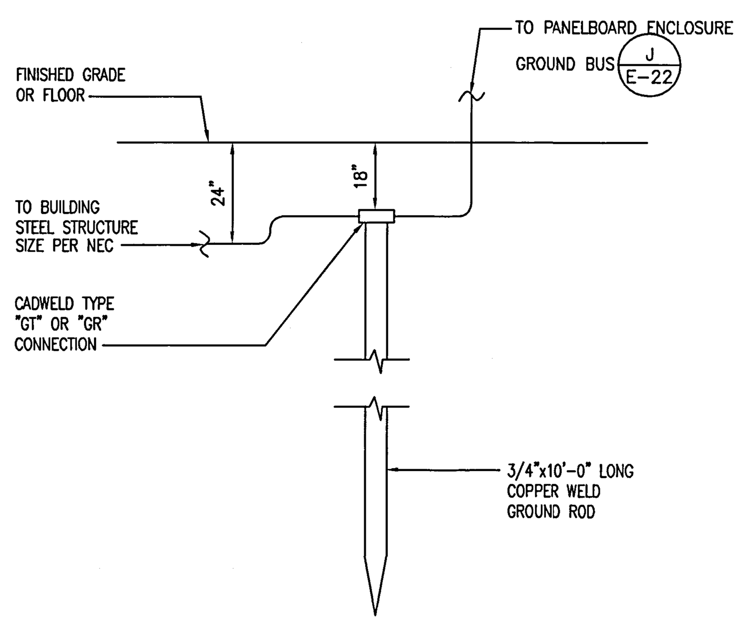


LIST OF MATERIAL				
ITEM NO.	MAIL CODE DESIGNATION		QTY	DESCRIPTION
	CODE	SIZE		
1		6	*	STRANDED COPPER WIRE
2		1	1	DURIUM BOLT 1/4-20NC2 X 1" LONG
3		1/4	1	DURIUM NUT 1/4-20NC2
4		1/4	1	DURIUM FLAT WASHER 1/4" BOLT
5		1/4	1	DURIUM LOCKWASHER SPRING 1/4" BOLT
6		8	1 FT.	WIRE SOFT DRAWN SOLID COPPER BARE 8 AWG.
NOTE: CATALOG NUMBERS AND VENDOR DESIGNATIONS NOT CODED ARE FOR REFERENCE ONLY. SUBSTITUTION OF ANY APPROVED EQUAL MAY BE MADE.				

* AS REQUIRED

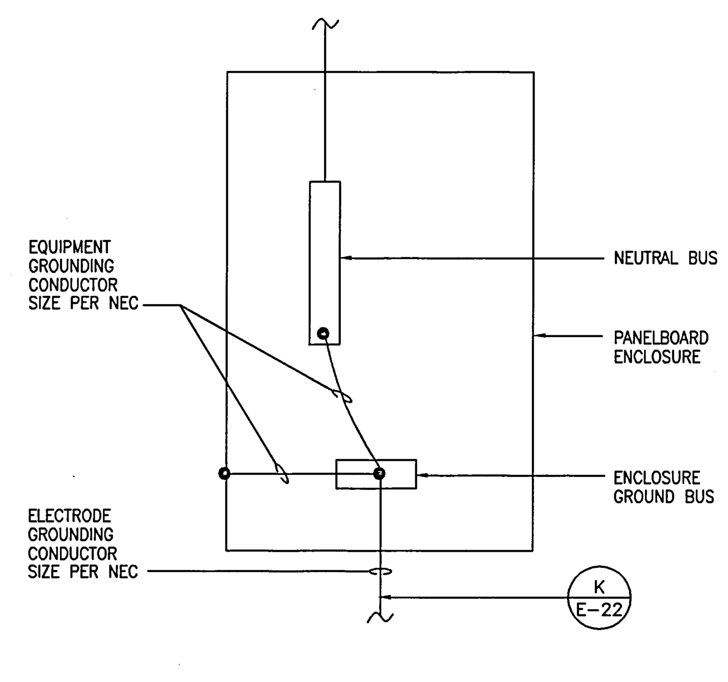
CABINET OR PULL BOX GROUNDING (F / E-22)

SCALE: NONE



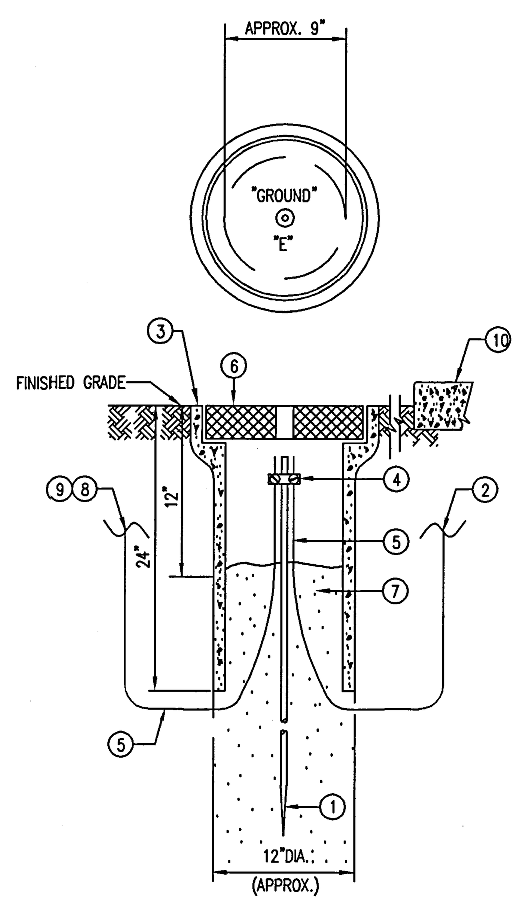
GROUNDING ELECTRODE DETAIL (G / E-22)

SCALE: NONE



PANELBOARD GROUNDING (H / E-22)

SCALE: NONE



SPECIAL NOTES:

1. 3/4" ϕ X 10'-0" COPPER CLAD DRIVEN GROUND ROD
2. SEE (D / E-22) FOR CONTINUATION (FOR GROUND WELL AT MAIN SWITCHBOARD LOCATION ONLY)
3. PRECAST GROUND ELECTRODE ENCLOSURE
4. GROUND CONNECTOR
5. #2/0(MIN.)BARE COPER GROUNDING CONDUCTOR
6. STEEL TRAFFIC TYPE COVER WITH HOOK HOLE AND ETCHED WORDS "GROUND"
7. SAND BACKFILL 1/2 CUBIC YARD MINIMUM
8. TO TRANSFORMER NEUTRAL (FOR GROUND WELL AT TRANSFOR LOCATION ONLY)
9. BOND TO MAIN WATER PIPE LINE (FOR GROUND WELL AT MAIN SWITCHBOARD LOCATION ONLY)
10. HOUSE KEEPING CONCRETE PAD

GROUND WELL (I / E-22)

SCALE: NONE

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
P310.586.5400
F310.586.1091

HENRIKSON OWEN

Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
TEL: 949/860-4900

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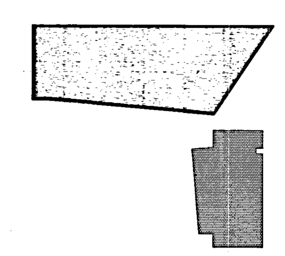
Seals and Signatures

RECORD DRAWINGS

Key Plan



Drawing Title

DETAILS

AS SHOWN

Scale

Project Number

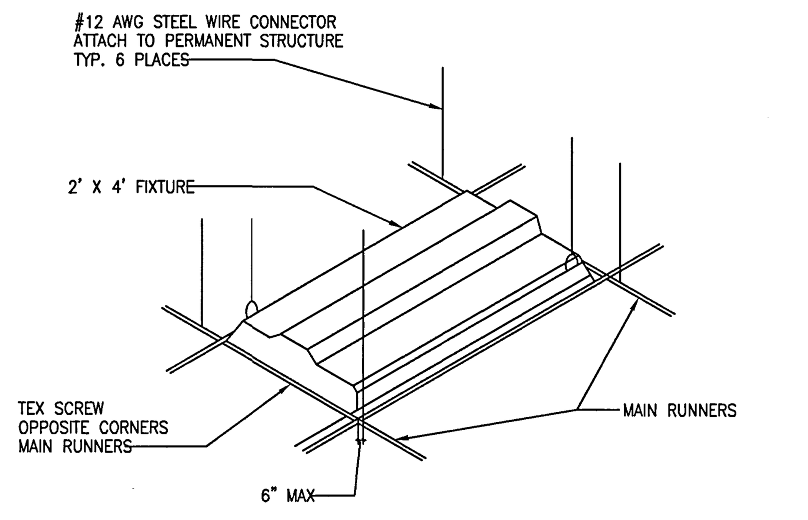
13OCT.,00

Baseline Date

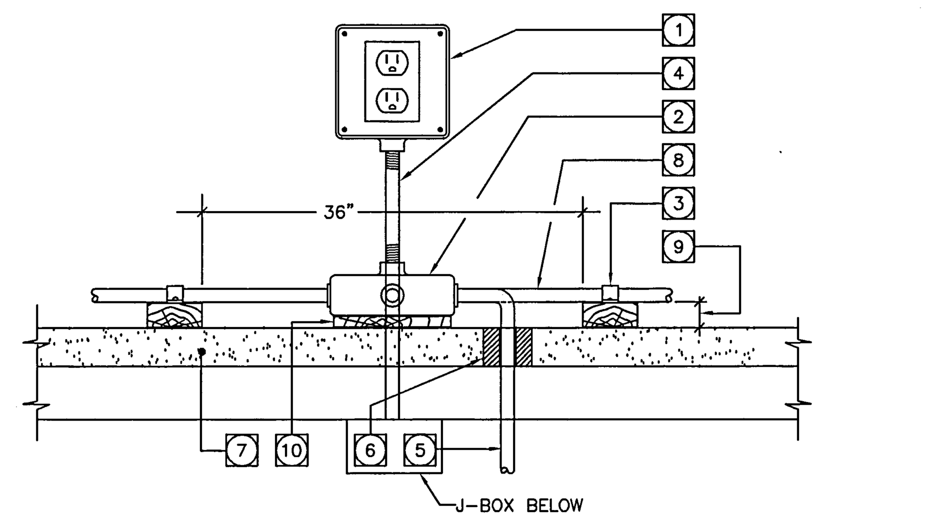
E-22

Drawing Number

M:\DRAWINGS\UC Riverside\Surge Building\As-Builts\ELECT\SURGE-E22.dwg, 3/7/2002 4:30:20 PM

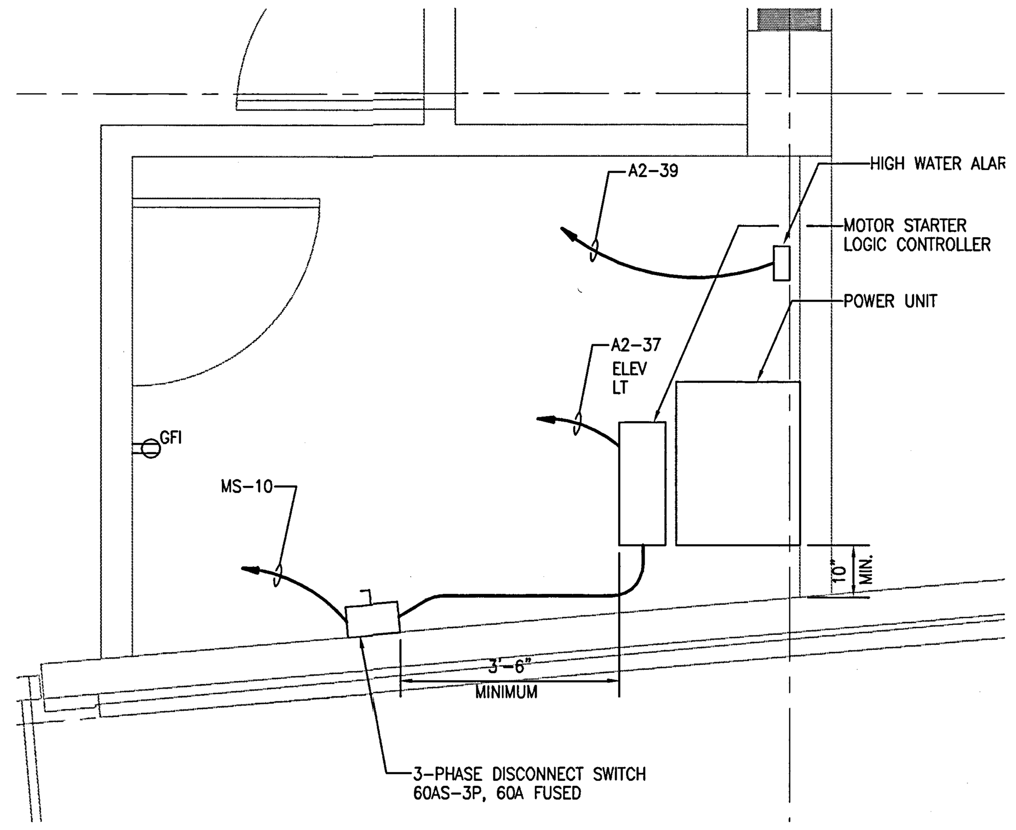


FIXTURE SUPPORT DETAIL (A / E-23)
SCALE: NONE

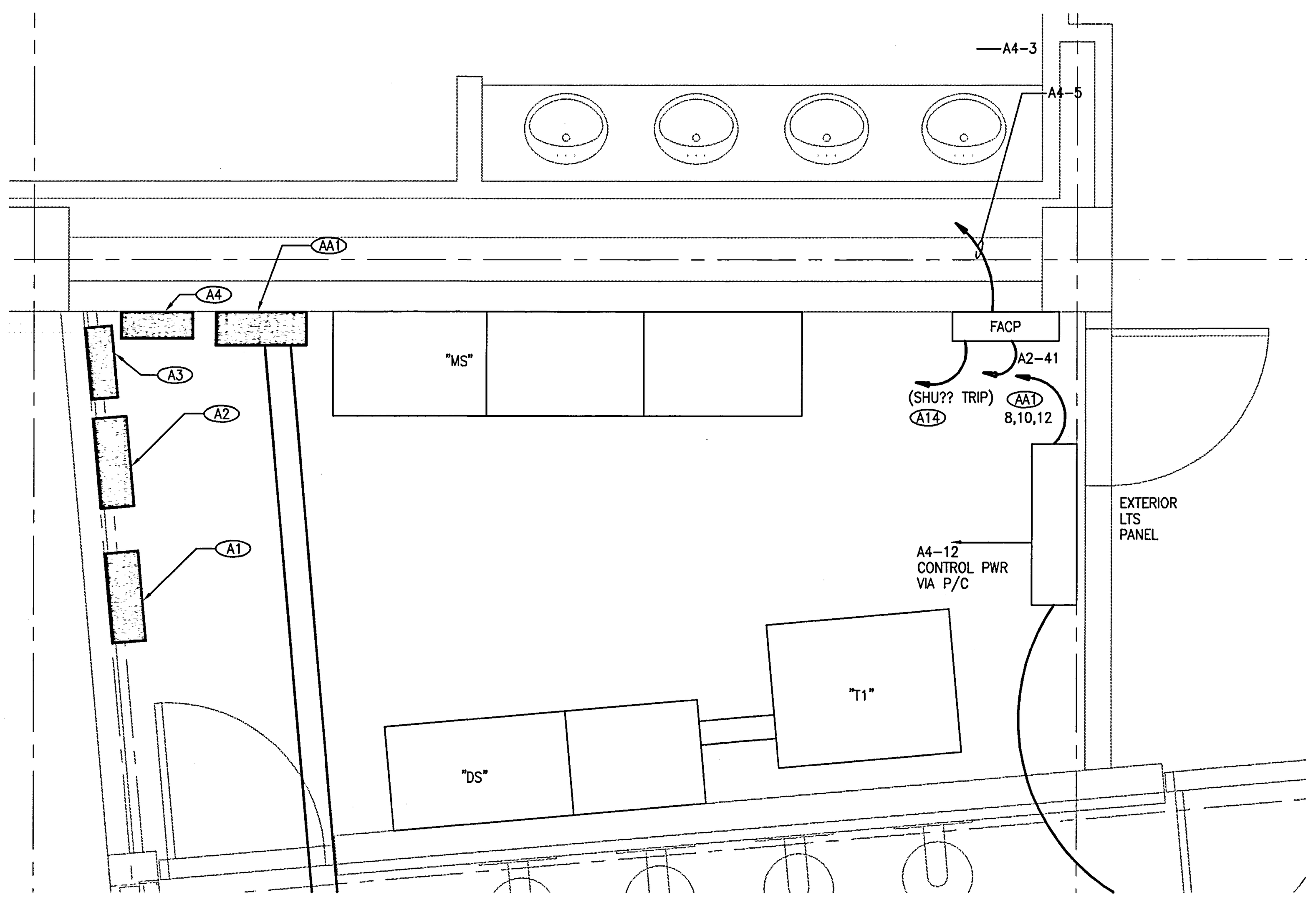


1. PROVIDE A 120V DUPLEX RECEPTACLE WITH GROUND FAULT INTERRUPTER. RECEPTACLE TO BE MOUNTED IN A CROUSE-HINDS "FS" SINGLE GANG BOX WITH SPRING DOOR COVER.
2. PROVIE A CROUSE-HINDS "GRFX" CAST STEEL BOX WITH "GRF" GASKETED COVER. DO NOT ANCHOR BOX TO EXISTING ROOF CONSTRUCTION.
3. PROVIDE 3" x 4" REDWOOD SADDLES (SLEEPERS) FOR CONDUIT CARRIERS. SPACE SADDLES 60" ON CENTER. USE GALVANIZED STRAPS TO RETAIN CONDUITS IN SADDLE (SINGLE CONDUITS IN EACH SLOT). DO NOT ANCHOR CONDUITS AND/OR ASSOCIATED MATERIALS ON EXISTING ROOF CONSTRUCTION.
4. CONDUIT PEDESTAL. 8" LONG 3/4" RIGID GALVANIZED CONDUIT NIPPLE.
5. HOMERUN CONDUIT.
6. SHEET METAL PITCH POCKET WITH WATERPROOFING COMPOUND FOR EACH CONDUIT PENETRATION THROUGH EXISTING ROOF.
7. BUILT-UP ROOFING CONSTRUCTION.
8. BRANCH CIRCUIT CONDUIT RUNNING ON ROOF. USE GALVANIZED RIGID STEEL OR IMC ONLY.
9. MAINTAIN A MINIMUM OF 3" CLEARANCE OFF ROOF.
10. REDWOOD BLOCK TO SUPPORT JUNCTION BOX. THICKNESS WILL VARY.

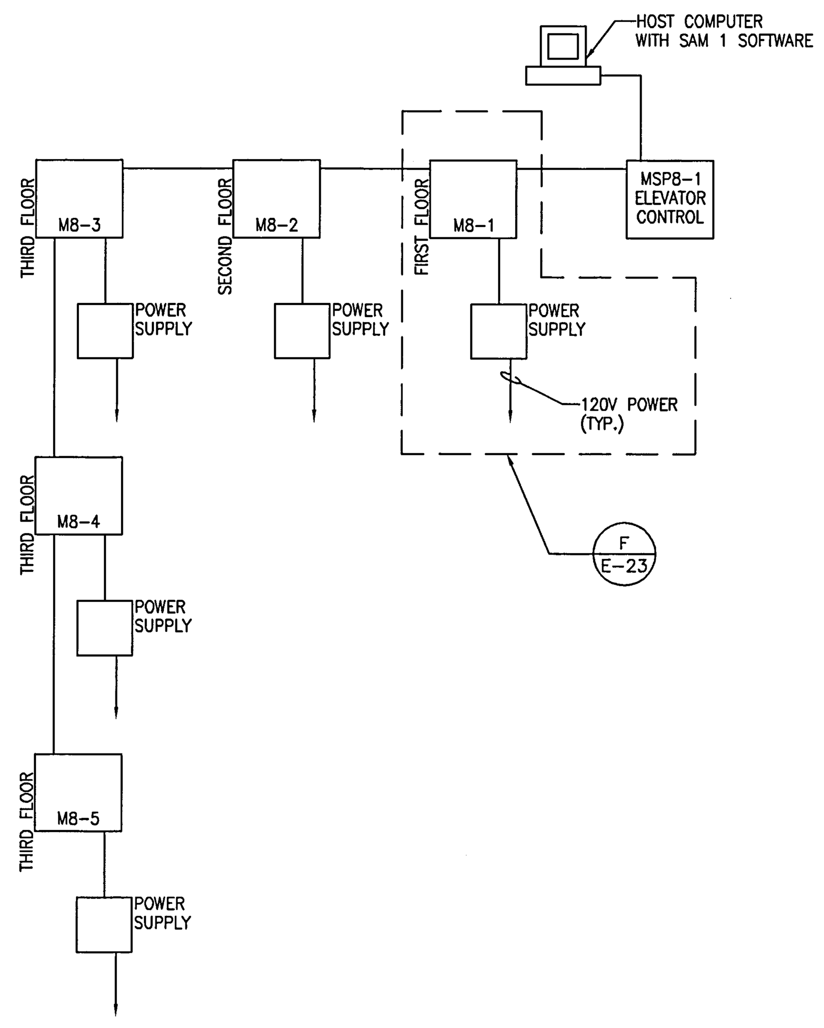
ROOF RECEPTACLE (B / E-23)
SCALE: NONE



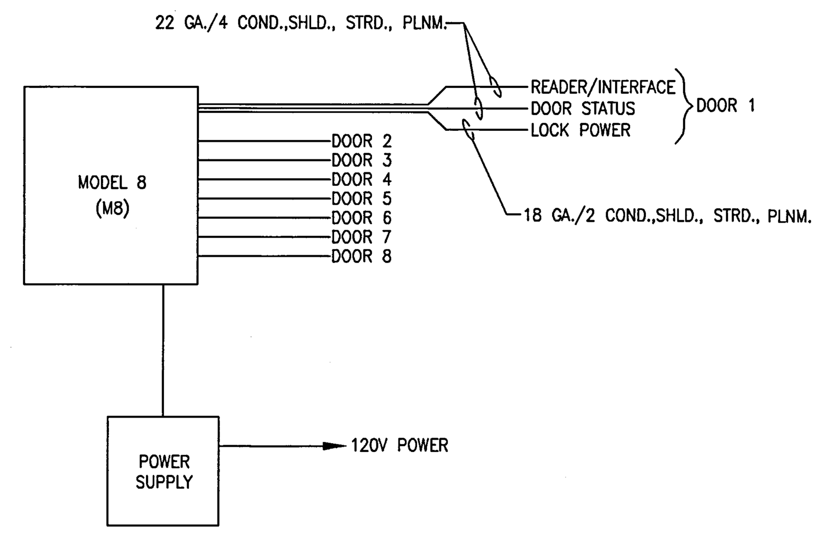
ENLARGED ELEVATOR MACHINE ROOM PLAN (C / E-23)
SCALE: 1/2" = 1'-0"



ENLARGED ELECTRICAL ROOM PLAN (D / E-23)
SCALE: 1/2" = 1'-0"



SECURITY SYSTEM CONNECTION DIAGRAM (E / E-23)
SCALE: NONE



TYPICAL DETAIL SECURITY SYSTEM (F / E-23)
SCALE: NONE

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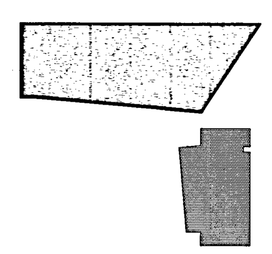

Drawing Title
DETAILS

Scale: AS SHOWN

Project Number

Baseline Date: 13OCT.,00

Drawing Number: E-23

PLUMBING GENERAL NOTES

1. THE PLUMBING SYSTEM DESIGN, INSTALLATION, AND MATERIALS SHALL CONFORM WITH THE 2000 UNIFORM PLUMBING CODE, ALL LOCAL CODES AND AUTHORITIES HAVING JURISDICTION.
2. SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION AND MOUNTING HEIGHTS OF ALL PLUMBING FIXTURES AND DRAINS.
3. COORDINATE ALL LOCATIONS, SIZES AND ELEVATIONS OF ALL SLEEVES THROUGH BEAMS, SLABS AND FOOTINGS WITH STRUCTURAL AND ARCHITECTURAL DRAWINGS.
4. ALL HORIZONTAL WASTE LINES SHALL BE RUN AT A MINIMUM SLOPE OF 1/4" PER FOOT UNLESS OTHERWISE NOTED ON PLAN.
5. ALL HORIZONTAL STORM DRAINS AND OVERFLOW DRAINS LINES SHALL BE RUN AT A MINIMUM SLOPE OF 1/4" PER FOOT UNLESS OTHERWISE NOTED ON PLAN.
6. COORDINATE AND VERIFY EXACT LOCATION, SIZE, POINTS OF CONNECTION AND INVERT ELEVATIONS OF UTILITY SERVICE PIPING BEFORE TRENCHING OR INSTALLATION.
7. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR WALL AND PARTITION CONSTRUCTION AND THICKNESS WHERE PLUMBING PIPING OR EQUIPMENT IS INDICATED.
8. THE LOCATION AND ELEVATION OF ALL PLUMBING PIPING SHALL BE VERIFIED AND COORDINATED BY THE GENERAL CONTRACTOR AND WITH ALL OTHER TRADES, STRUCTURAL CONDITIONS AND BUILDING CONSTRUCTION, PRIOR TO SUBMITTAL OF BID AND OF INSTALLATION.
9. ALL VALVES AND COCKS SHALL BE LOCATED TO BE READILY ACCESSIBLE. WHERE VALVES ARE INSTALLED WITHIN OR BEHIND WALLS, PARTITIONS OR CEILINGS, AN ACCESS PANEL SHALL BE INSTALLED.
10. ALL INDIRECT DRAIN LINES FROM EQUIPMENT SHALL BE A MINIMUM OF 6 INCHES OFF THE FLOOR AND 1/2 INCH AWAY FROM WALLS.
11. PLUMBING QUALITY AND WEIGHTS OF MATERIALS, ALTERNATE METHODS OF CONSTRUCTION SHALL CONFORM TO CHAPTER 2 OF THE 2000 UNIFORM PLUMBING CODE.
12. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS WITH UTILITY COMPANIES FOR SERVICE AND CONNECTION AND SHALL MAKE APPLICATIONS FOR SERVICE COUNTY TO PAY ALL FEES FOR PERMANENT UTILITY SERVICES.
13. ANY DEVIATIONS FROM THE DRAWINGS OR SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER PRIOR TO INSTALLATION.
14. THESE DRAWINGS DO NOT INCLUDE ALL NECESSARY SAFETY REQUIREMENTS. CONTRACTOR TO COMPLY TO SAFETY REQUIREMENTS SET FORTH BY THE LOCAL AUTHORITIES HAVING JURISDICTION
15. CONTRACTOR SHALL VISIT SITE PRIOR TO SUBMITTAL OF BID AND FAMILIARIZE HIMSELF WITH EXISTING CONDITIONS. SUBMITTAL OF BID WILL VERIFY THAT THE CONTRACTOR HAS VISITED THE SITE.
16. TEST SYSTEMS IN ACCORDANCE WITH REQUIREMENTS OF THE GOVERNING AUTHORITIES.
17. ALL CLEANOUTS SHALL BE INSTALLED WHERE READILY ACCESSIBLE AND LOCATED AS PER CODE REQUIREMENTS. THE CONTRACTOR SHALL COORDINATE ALL CLEANOUT LOCATIONS WITH EQUIPMENT, CABINETS, ETC. AND THE ARCHITECT PRIOR TO ANY INSTALLATION.
18. UNIONS SHALL BE PROVIDED AND INSTALLED AFTER EACH SCREW-TYPE VALVE AND PRIOR TO EQUIPMENT CONNECTIONS.
19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING AND REPAIRING ALL PAVED AREAS WHICH ARE EXCAVATED AND/OR DAMAGED BY HIS OPERATORS. IN ADDITION, THE CONTRACTOR SHALL RESTORE TO THEIR ORIGINAL CONDITION, ALL PLANTED AREAS DAMAGED BY HIS OPERATIONS.
20. ALL CUTTING OF EXISTING PAVING AND OR WALKS SHALL BE BY MACHINE SAW CUTTING. HOLES FOR PIPE IN CONCRETE WALLS OR FLOORS SHALL BE DONE BY USING CORE DRILLING EQUIPMENT.
21. CONTRACTOR SHALL ROUGH-IN WATER AND SEWER TO THE EXACT HEIGHTS AND SIZES REQUIRED FOR EACH PLUMBING FIXTURE.
22. NO PVC PLUMBING IS ALLOWED FOR WASTE DRAINS, AND VENTS. USE CAST IRON OR WROUGHT IRON PLUMBING AS SPECIFIED.
23. PROVIDE TEMPORARY PEDESTRIAN PROTECTION AS REQUIRED BY BUILDING CODE CHAPTER #33.

PLUMBING FIXTURE SCHEDULE

NO.	DESCRIPTION	W	V	DCW	DHW	REMARKS
WC-1	WATER CLOSET	4"	2"	1 1/4"	–	AMERICAN STANDARD NO.2234.015, "MADERA" ELONGATED VITREOUS CHINA FLOOR MOUNTED WATER CLOSET W/ OLSONITE SEAT NO. 95 OPEN FRONT LESS COVER . SLOAN ROYAL FLUSHOMETER NO. 111
WC-2	WATER CLOSET (DP)	4"	2"	1 1/4"	–	AMERICAN STANDARD NO. 3043.102 "MADERA" ELONGATED VITREOUS CHINA FLOOR MOUNTED WATER CLOSET W/ OLSONITE SEAT NO. 95 OPEN FRONT LESS COVER. SLOAN ROYAL FLUSHOMETER NO. 111.
UR-1	URINAL	2"	1 1/2"	1 1/4"	–	AMERICAN STANDARD NO. 6501.010 " WASH BROOK VITREOUS CHINA URINAL. COMPLETE W/ SLOAN ROYAL FLUSHOMETER NO. 186-1. AND STAINLESS STEEL STAINER NO. 047068-0070A.
UR-2	URINAL (DP)	2"	1 1/2"	1 1/4"	–	SAME AS UR-1 EXCEPT MOUNTED AT ACCESSIBLE HEIGHT.
L-1	LAVATORY	2"	1 1/2"	1/2"	1/2"	KOHLER NO. K-2601-S "RHYTHM" STAINLESS STEEL COUNTERTOP LAVATORY WITH STAINLESS STEEL FLEXIBLE WATER SUPPLY LINES AND FAUCET MODEL NO. K-13328-5-CP
L-2	LAVATORY (DP)	2"	1 1/2"	1/2"	1/2"	SAME AS L-1 EXCEPT MOUNTED AT ACCESSIBLE HEIGHT.
S-1 GD-1	SINK (KITCHEN) (DP)	2"	1 1/2"	3/4"	3/4"	JUST NO. SBW-1919-A-GR, 19X19X5 1/2" DEEP 1-COMPARTMENT SELF-RIMMING, STAINLESS STEEL, COMPLETE W/ JUST NO. J-902 FAUCET, CAST BRASS P-TRAP W/ ESCUTCHEON, CHROME PLATED RIGID SUPPLIES AND ANGLE STOPS, GE DISPOSER NO. GFC 300V, 1/2 HP, 120V, 60HZ, CONTROLLED BY A WALL MOUNTED SWITCH.
DF-1	DRINKING FOUNTAIN (DP)	2"	1 1/2"	3/4"	–	HAWS 1011, "HI-LO", BILEVEL, WALL MOUNTED, NON-ELECTRICAL DRINKING FOUNTAIN FOR REGULAR & ACCESSIBLE USE. 18 GAUGE, TYPE 304, NO. 4 SATIN FINISH, STAINLESS STEEL.
DF-2	DRINKING FOUNTAIN (DP)	2"	1 1/2"	3/4"	–	HAWS 1001, WALL MOUNTED, NON-ELECTRICAL DRINKING FOUNTAIN FOR ACCESSIBLE USE. 18 GAUGE, TYPE 304, NO. 4 SATIN FINISH, STAINLESS STEEL.
WHA-1	WATER HAMMER ARRESTOR	–	–	–	–	P.P.P. MODEL SC, COPPER BODY, SIZED AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
TP-1	TRAP PRIMER	–	–	1/2"	–	ZURN SANI-GUARD NO. Z1022 W/ J.R. SMITH COVER
HB-1	HOSE BIBB	–	–	3/4"	–	ZURN NO. 1335 W/ LOCKABLE COVER & VACUUM BREAKER
JS-1	JANITOR SINK	3"	2"	3/4"	3/4"	COMMERCIAL ENAMELING NO. 871, CAST IRON W/ CHICAGO FAUCET NO. 540-LD-897S-WXF, RIM GUARD NO. B-872 AND DRAIN NO. B71-3".
WH-1	WATER HEATER	–	–	1 1/4"	1 1/4"	AMERICAN LDCE32-30D, GLASS LINED, WATER HEATER, 30 GAL. STORAGE CAPACITY, 3/3 KW, 208 V, 1"ø, 28.9 A, 13.9 GPH REC. RATE AT 90° TEMP. RISE, SIMULTANEOUS OPERATION, APPROXIMATE OPERATING WEIGHT-400 LBS. HEATER SHALL BE UL & CEC DESIGN CERTIFIED.
WH-2	WATER HEATER	–	–	3/4"	3/4"	STIEBELELTRON NO. DHC8 INSTA-FLOW TANKLESS ELECTRIC WATER HEATER. 29°F TEMP. RISE AT 2.0 GPM FLOW RATE. 6200 WATTS AT 208 VOLTS AND 29.6 AMPS, 40 AMP CIRCUIT BREAKER.
P-1	PUMP	–	–	–	–	B & G IN LINE, MODEL 60-16, 12 GPM AT 39 FT. HEAD, 3/4 HP MOTOR, 110V, 1PH, ALL BRONZE CONSTRUCTION, PROVIDE TIME CLOCK AND AQUASTAT.
FD-1	FLOOR DRAIN	2"	1 1/2"	1/2"	–	J.R. SMITH MODEL NO. 2005 A WITH VANDAL RESISTANT SCREWS & TRAP PRIMER CONNECTION.
FS-1	FLOOR SINK	2"	1 1/2"	1/2"	–	J.R. SMITH MODEL 3140Y W/TRAP PRIMER CONNECTION
RD-1	ROOF DRAIN	SEE PLAN	–	–	–	J.R. SMITH NO. 1010-R-C, CAST IRON DRAIN, COMPLETE WITH CAST IRON FLASHING CLAMP, CAST IRON DOME STRAINER AND SUMP RECEIVER.
OFD-1	OVERFLOW ROOF DRAIN	SEE PLAN	–	–	–	J.R. SMITH NO. 1080-R-C, CAST IRON DRAIN, COMPLETE WITH CAST IRON FLASHING CLAMP, CAST IRON DOME STRAINER, SUMP RECEIVER AND 2" HIGH WATER DAM.
EQV-1	EARTH QUAKE GAS SHUT-OFF VALVE	–	–	–	–	PACIFIC SEISMIC PRODUCT "CALIFORNIA" NO. 314, IN CONCRETE YARD BOX
XT-1	EXPANSION TANK	–	–	–	1/2"	ZURN NO. WXTP-8

LEGEND

SYMBOL	ABBR.	DESCRIPTION
W	S OR W	SOIL OR WASTE ABOVE FLOOR OR GRADE
W	S OR W	SOIL OR WASTE BELOW FLOOR OR GRADE
SD	SD	STORM DRAIN ABOVE FLOOR OR GRADE
SD	SD	STORM DRAIN BELOW FLOOR OR GRADE
OFD	OFD	OVERFLOW DRAIN ABOVE FLOOR OR GRADE
OFD	OFD	OVERFLOW DRAIN BELOW FLOOR OR GRADE
V	V	SANITARY VENT
DCW	DCW	DOMESTIC COLD WATER
ICW	ICW	INDUSTRIAL COLD WATER
DHW	DHW	DOMESTIC HOT WATER
DHWR	DHWR	DOMESTIC HOT WATER RETURN
A	A	COMPRESSED AIR
F	F	FIRE MAIN
AS	AS	AUTOMATIC FIRE SPRINKLER
ASD	ASD	AUTOMATIC SPRINKLER DRAIN
D	D	INDIRECT DRAIN LINE
CD	CD	CONDENSATE DRAIN
G	G	FUEL GAS
TP	TP	TRAP PRIMER
		DIRECTION OF FLOW
	P.G.	PRESSURE GAUGE W/PETE COCK
	G.C.	GAS COCK
	P.R.V.	PRESSURE REDUCING VALVE
	SOV	SHUT-OFF VALVE
	FCO	FLOOR CLEANOUT
	WCO	WALL CLEANOUT
		DOWN
		RISE
		UNION
%		SLOPE IN DIRECTION OF FLOW
	W.H.A.	WATER HAMMER ARRESTOR

LEGEND (CONT.)

SYMBOL	ABBR.	DESCRIPTION
	P.O.C.	POINT OF CONNECTION
	RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
	ABV	ABOVE
	AFF	ABOVE FINISHED FLOOR
	AP	ACCESS PANEL
	BEH	BEHIND
	BEL	BELOW
	CFH	CUBIC FEET PER HOUR
	CLG	CEILING
	CONN	CONNECTION
	CONT	CONTINUATION
	COTG	CLEANOUT TO GRADE
	DP	DISABLED PERSON
	DTL	DETAIL
	EXIST	EXISTING
	FDC	FIRE DEPT. CONNECTION
	FFE	FINISHED FLOOR ELEVATION
	FLR	FLOOR
	FR	FROM
	GR	GRADE
	HC	HANDICAP
	HDR	HEADER
	IE	INVERT ELEVATION
	OS&Y	OUTSIDE SCREW & YOKE
	PIV	POST INDICATOR VALVE
	RD	ROOF DRAIN
	RI&C	ROUGH-IN AND CONNECT
	SOV/YB	SHUT-OFF VALVE IN YARD BOX
	TYP	TYPICAL
	VTR	VENT THROUGH ROOF
	W/	WITH

WATER CALCULATIONS

STREET PRESSURE: 75 PSI MIN./ 100 PSI MAX.
METER SIZE (EXISTING): 3" FOR 240 GPM FLOW
MATERIAL: COPPER
PRV SET @ 75 PSI
MAX. VEL. = 8 FPS

	COLD WATER
1. METER LOSS, PSI	–
2. STATIC LOSS, PSI (30'X0.43)	12.9
3. RESIDUAL PRESSURE REQUIRED, PSI	25
4. PRESSURE REGULATING STATION (NEW), PSI (3" BY CIVIL)	10
5. BACKFLOW PREVENTER	10
6. TOTAL LOSSES, PSI	57.9
7. WATER PRESSURE (MIN.), PSI	75
8. PRESSURE AVAILABLE FOR FRICTION, PSI	17.1
9. ACTUAL LENGTH OF SYSTEM, Ft.	200
10. DEVELOPED LENGTH 120% OF ITEM 9	240
11. AVERAGE PRESSURE DROP, PSI/100 Ft. $\frac{\text{ITEM 8}}{\text{ITEM 10}} \times 100$	7.1

PIPING MATERIALS

1. SOIL/WASTE AND VENT PIPING ABOVE AND BELOW GRADE:	CAST IRON PIPE
2. CONDENSATE DRAIN PIPING:	TYPE "L" COPPER PIPING, SEAMLESS, ASTM B88 HARD DRAWN TEMPER. SOLDER TYPE CONNECTIONS WITH THREADED OR FLANGED ADAPTERS FOR VALVES., WROUGHT COPPER OR BRONZE FITTINGS, ANSI B16.2
3. WATER PIPING ABOVE AND BELOW GROUND:	TYPE "L" COPPER PIPING, SEAMLESS, ASTM B88 HARD DRAWN TEMPER. SOLDER TYPE CONNECTIONS WITH THREADED OR FLANGED ADAPTERS FOR VALVES., WROUGHT COPPER OR BRONZE FITTINGS, ANSI B16.2
4. INSULATION OF DOMESTIC HOT WATER SUPPLY AND RETURN PIPING:	GLASS FIBER PIPE INSULATION WITH FACTORY APPLIED WHITE JACKET, J-M MICRO-LOK 750AP, 1 INCH THICK FOR PIPE SIZES 1 INCH AND BELOW, AND 1-1/2 INCHES THICK FOR PIPE SIZES 1-1/4 INCHES AND LARGER.
5. INSULATION OF CONDENSATE DRAIN PIPING.	FOAMED PLASTIC PIPE INSULATION, SELF-EXTINGUISHING TYPE, ASTM C534 TYPE 1 - TUBULAR, PIPE INSULATION SHALL BE ONE-PIECE PRE-FORMED, FLEXIBLE TUBING TYPE AND HAVE A MINIMUM K FACTOR OF 0.28 AT 75° F MEAN TEMPERATURE. PIPE INSULATION SHALL BE MANVILLE "RUBATEX" ARMSTRONG "ARMAFLEX" OR APPROVED EQUAL.

PIPE SIZE	SYSTEM		
	F.V. FU	F. TANK	GPM
1/2"	–	3	4
3/4"	–	9	9
1"	–	23	18
1 1/4"	11	49	36
1 1/2"	34	101	58
2"	216	351	110
2 1/2"	526	614	140
3"	726	918	288

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SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

HENRIKSON OWEN
Henrikson Owen & Associates
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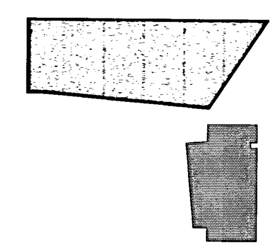
Key Plan



Drawing Title
PLUMBING SCHEDULES

Scale

Project Number 13OCT.,00

Baseline Date

P-1

Drawing Number

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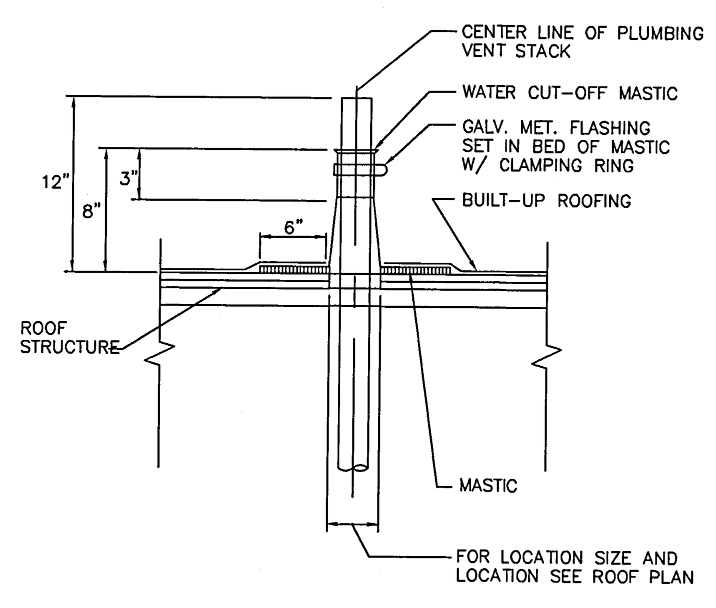
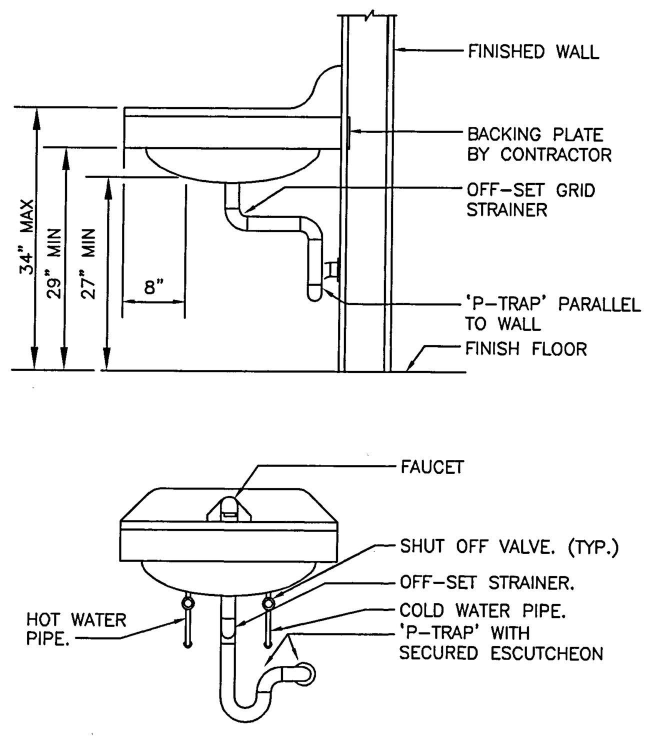


NOTE:
SEE ARCH. DWGS. FOR MORE INFORMATION.

A PLUMBING VENT THRU ROOF

NO SCALE

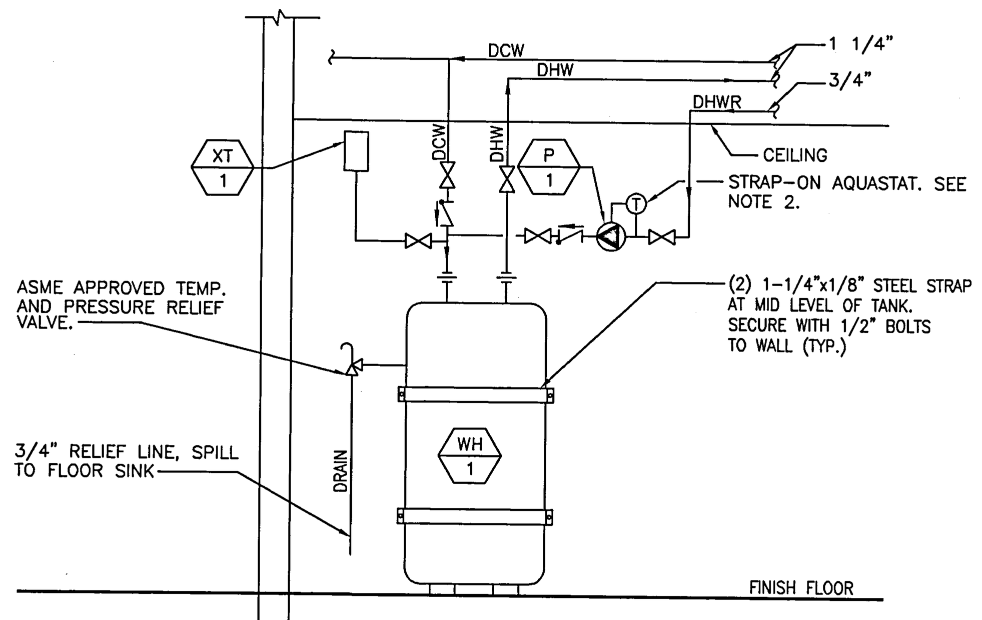


NOTES:

1. PROVIDE AND INSTALL HANDY-SHIELD P-TRAP (DRAIN) SAFETY COVER (PART #3012) AND WHEELCHAIR OFFSET TAILPIECE COVER (PART #3042) ON LAVATORY. COLOR SHALL BE IVORY.
2. PROVIDE AND INSTALL HANDY-SHIELD VALVE AND WATER SUPPLY SAFETY COVERS ON LAVATORY. IVORY COLOR. HANDY-SHIELD PART #3022.
3. PROVIDE FOR NO SHARP OR ABRASIVE EDGES OR SURFACES UNDER COUNTER.

B ADA LAVATORY COMPLIANCE

NO SCALE

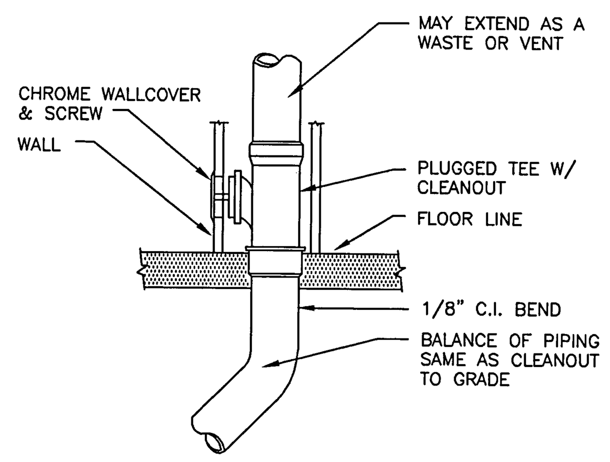


NOTES:

1. PROVIDE EARTHQUAKE STRAPPING AT UPPER AND LOWER 1/3 OF WATER HEATER.
2. PROVIDE INSTALL A STRAP-ON TYPE AQUASTAT. WIRE AQUASTAT TO DOMESTIC HOT WATER RECIRCULATION PUMP, P-1.

C HOT WATER HEATER DETAIL

NO SCALE



D WALL CLEANOUT DETAIL

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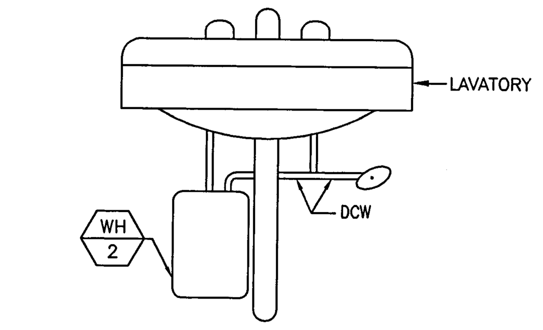
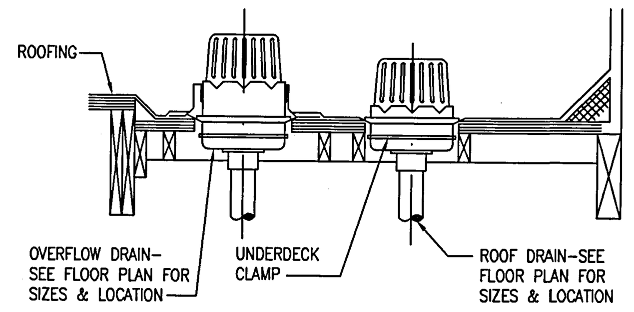


1. PROVIDE FOR NO SHARP OR ABRASIVE EDGES OR SURFACES UNDER COUNTER.

E INSTANT ELECTRIC WATER HEATER DETAIL

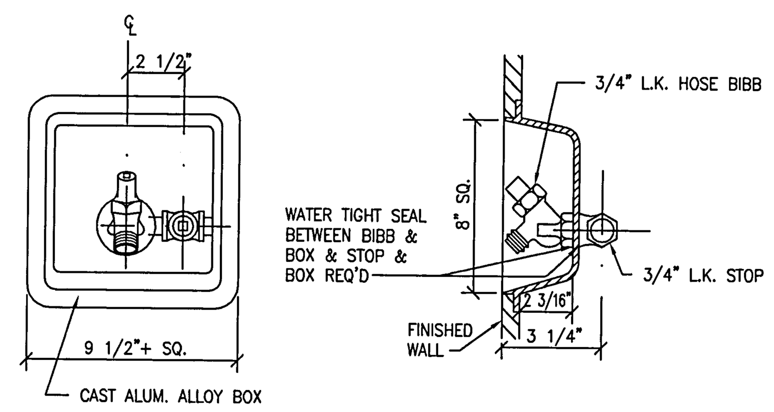
NO SCALE



NOTE:
SEE ARCH. DWGS. FOR MORE DETAILS.

F ROOF DRAIN & OVERFLOW DRAIN DETAIL

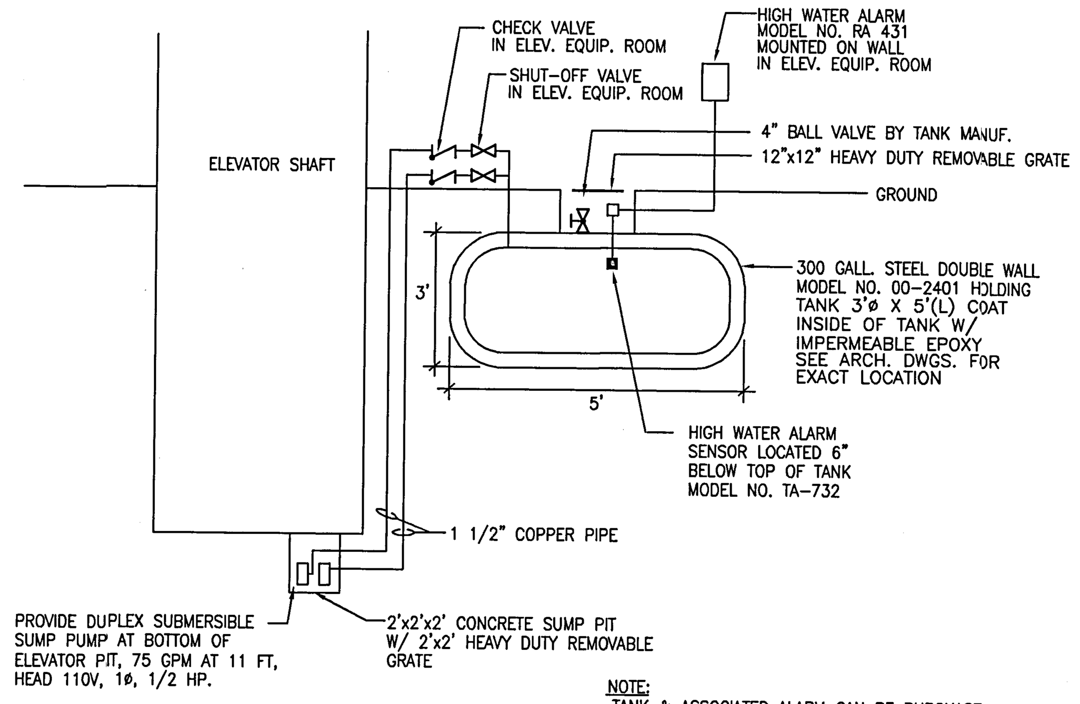
NO SCALE



NOTE: ALL DIM'S ARE APPROX.

G RECESSED HOSE BIBB ASSEMBLY DETAIL

NO SCALE



NOTE:
TANK & ASSOCIATED ALARM CAN BE PURCHASED FROM TANK DIRECT (301) 595-2000, JOEL NICCHITTA. SEE ARCH. DWGS. FOR DETAILS.

H ELEVATOR PIT DRAINAGE DETAIL

NO SCALE

M:\DRAWINGS\UC Riverside\Surge Building\As-Builts\PLUMB\SURGE-P2.dwg, 3/7/2002 5:11:20 PM

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1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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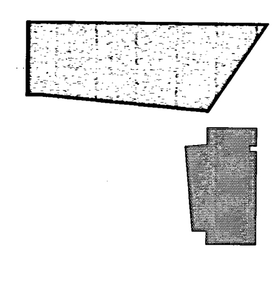


Drawing Title

PLUMBING DETAILS AND WATER CALCULATIONS

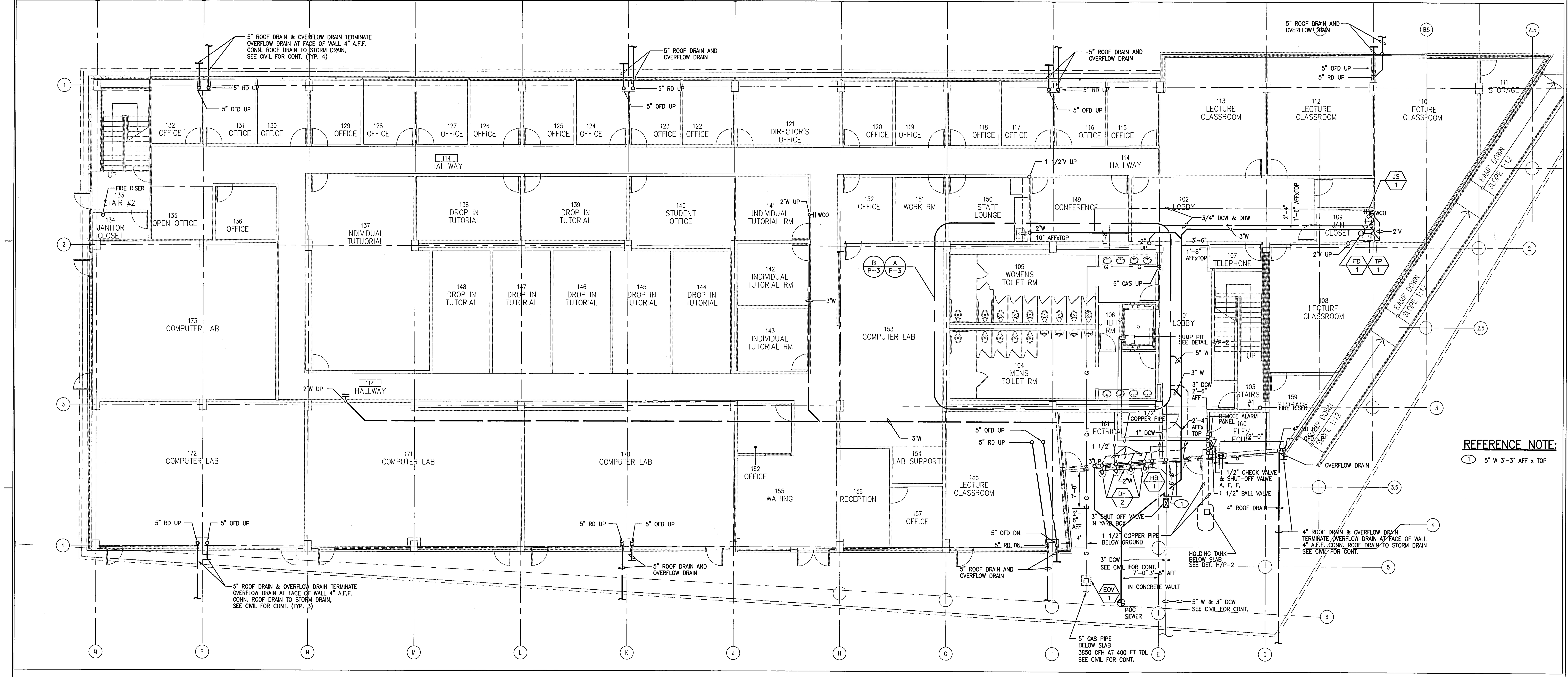
Scale

Project Number 13OCT.,00

Baseline Date

P-2

Drawing Number

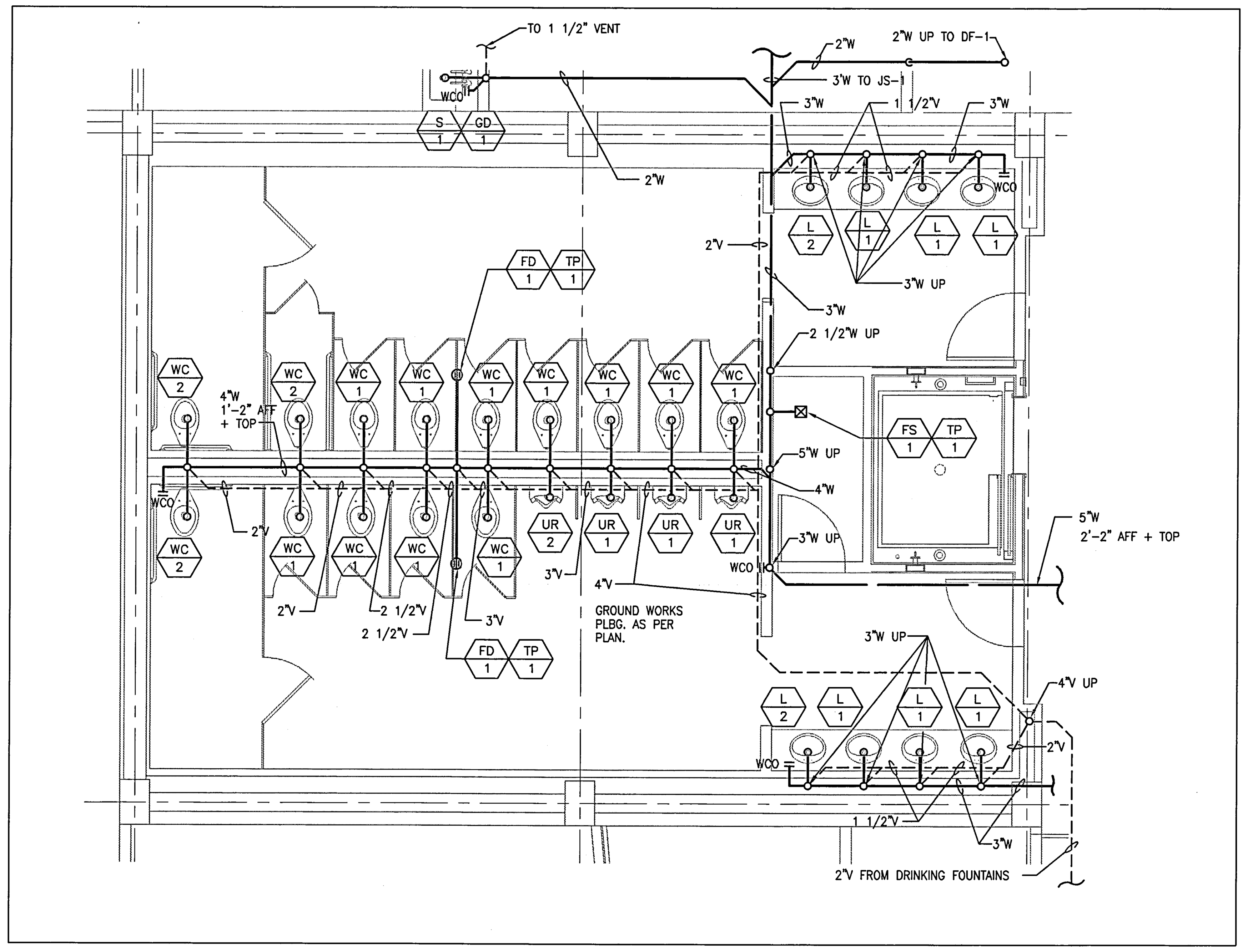


REFERENCE NOTE:

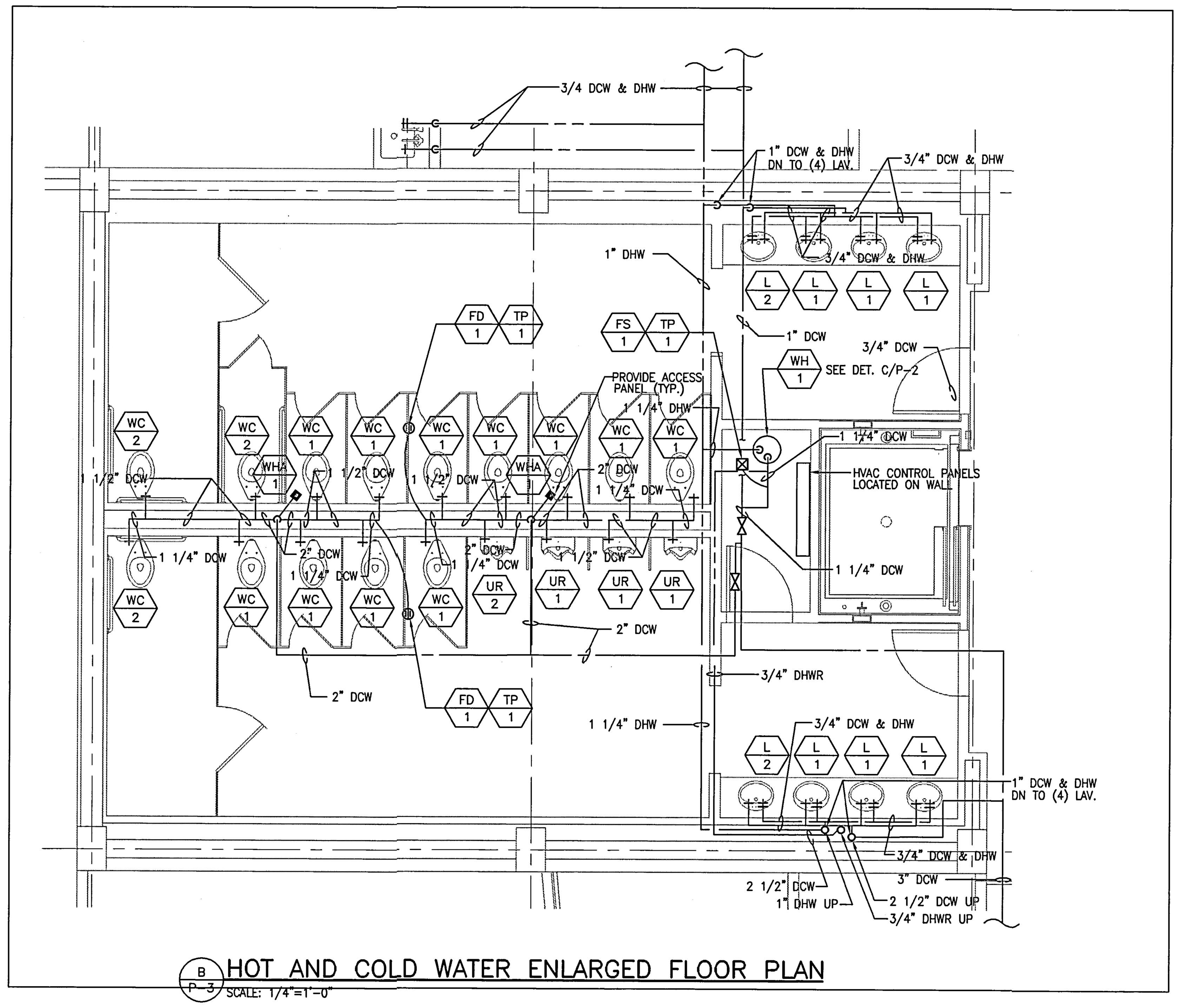
1 5" W 3'-3" AFF x TOP

PLUMBING FIRST FLOOR PLAN
SCALE: 1/8"=1'-0"

NORTH



A P-3 WASTE AND VENT ENLARGED FLOOR PLAN
SCALE: 1/4"=1'-0"



B P-3 HOT AND COLD WATER ENLARGED FLOOR PLAN
SCALE: 1/4"=1'-0"

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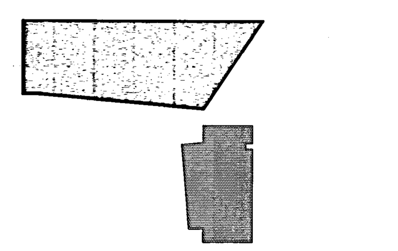


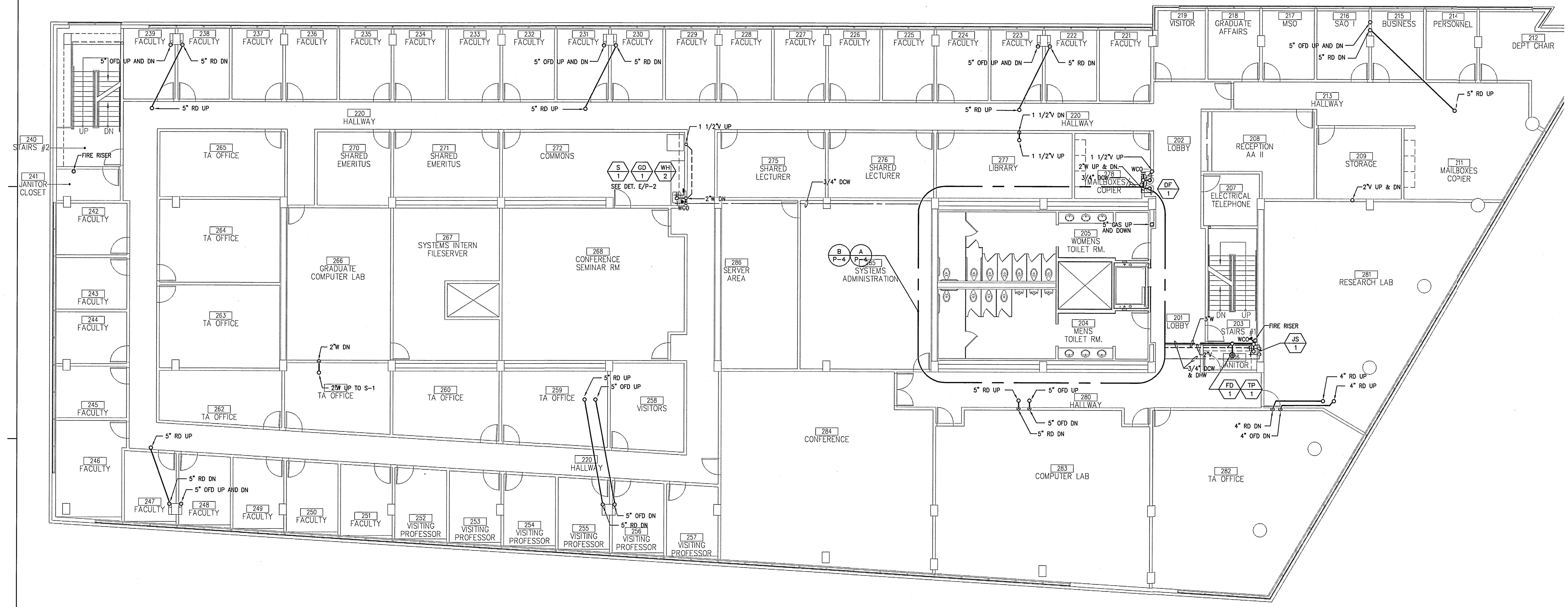
Drawing Title

PLUMBING
FIRST FLOOR
PLAN

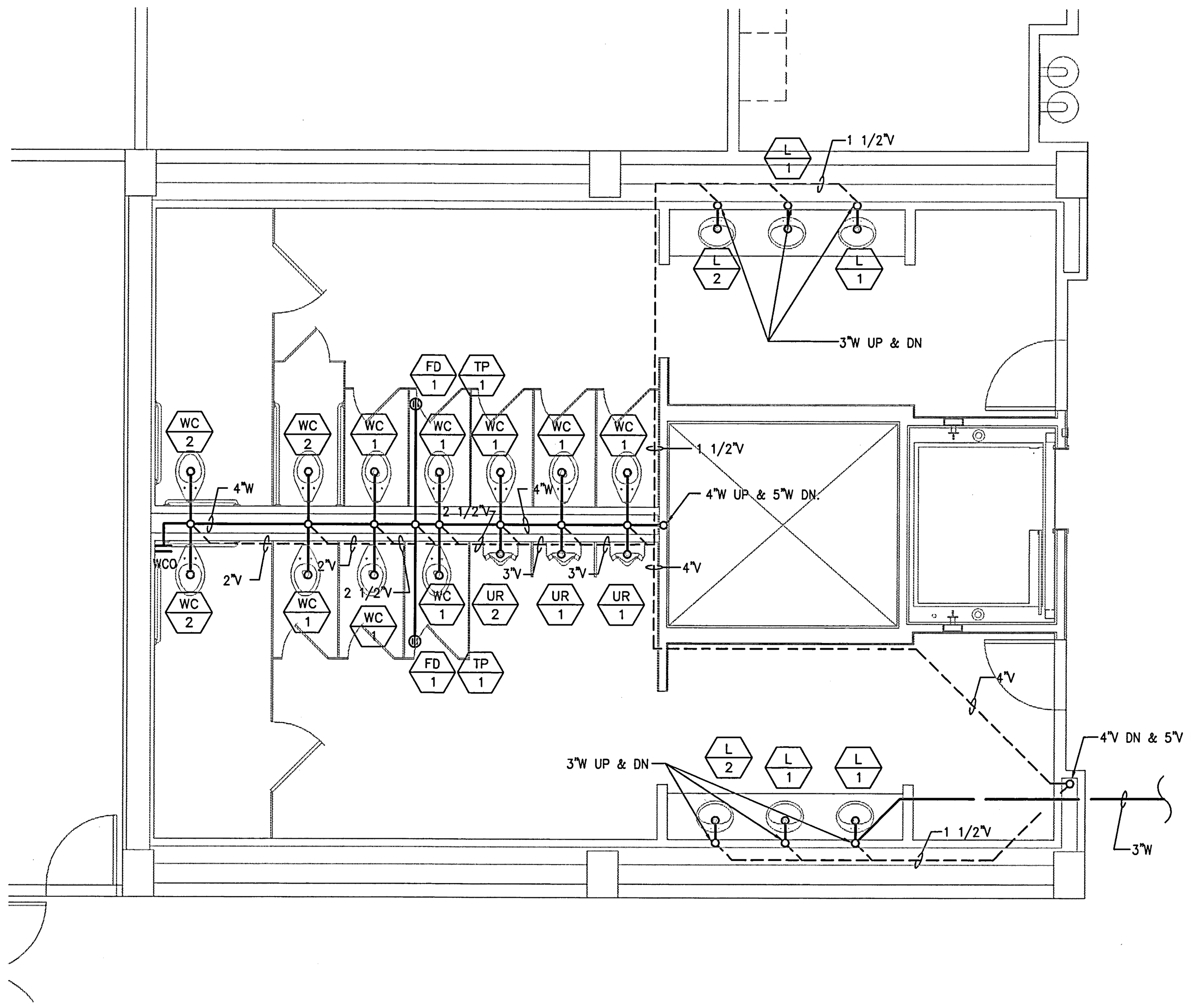
AS SHOWN
Scale

Project Number 13OCT.,00
Baseline Date

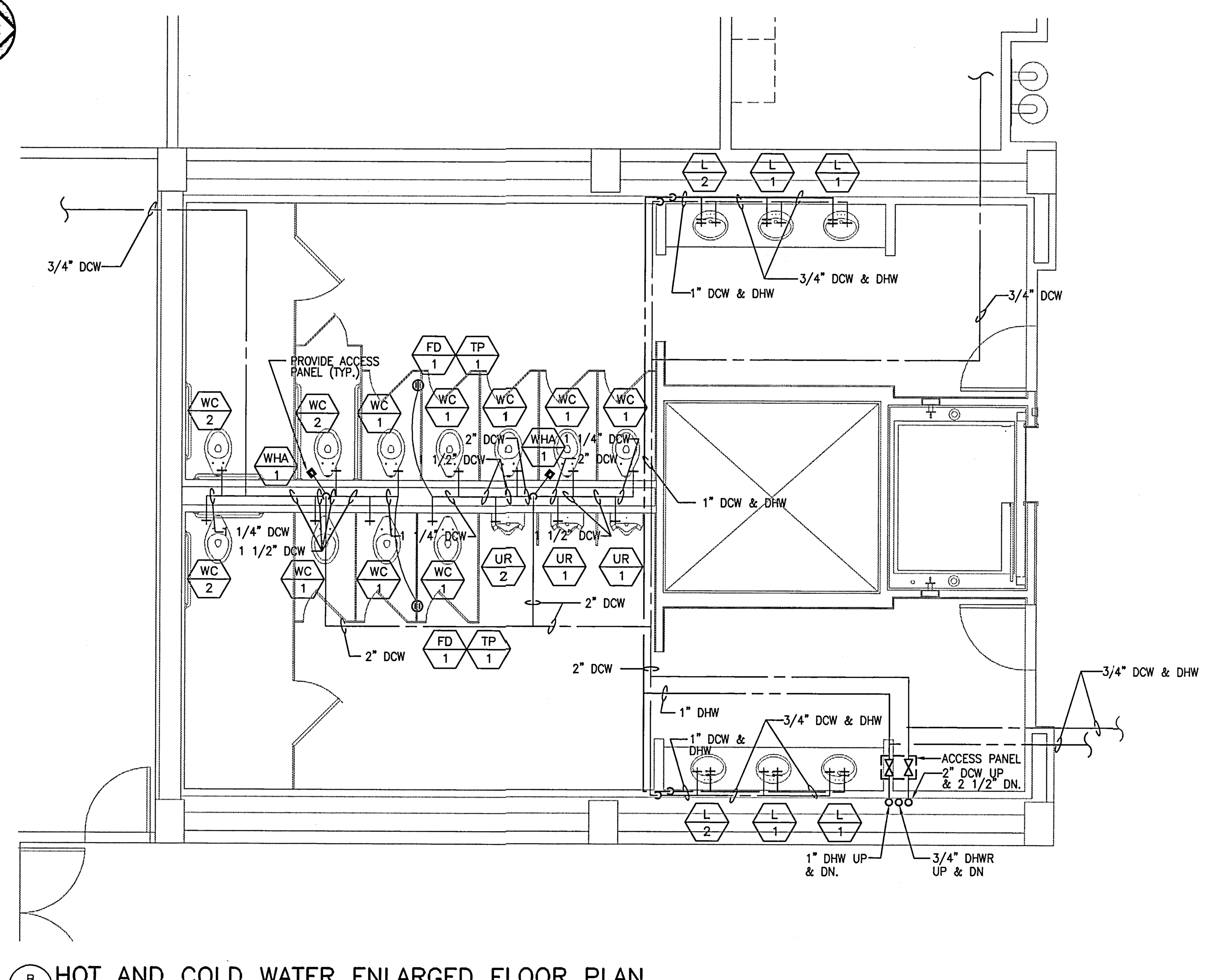
P-3
Drawing Number



PLUMBING SECOND FLOOR PLAN
SCALE: 1/8"=1'-0"



A/P-4 WASTE AND VENT ENLARGED FLOOR PLAN
SCALE: 1/4"=1'-0"



B/P-4 HOT AND COLD WATER ENLARGED FLOOR PLAN
SCALE: 1/4"=1'-0"

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1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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Henrikson Owen & Associates
6 GOODYEAR STREET
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RECORD DRAWINGS

Key Plan

Drawing Title
PLUMBING SECOND FLOOR PLAN

AS SHOWN
Scale

Project Number
13OCT.,00
Baseline Date

P-4
Drawing Number

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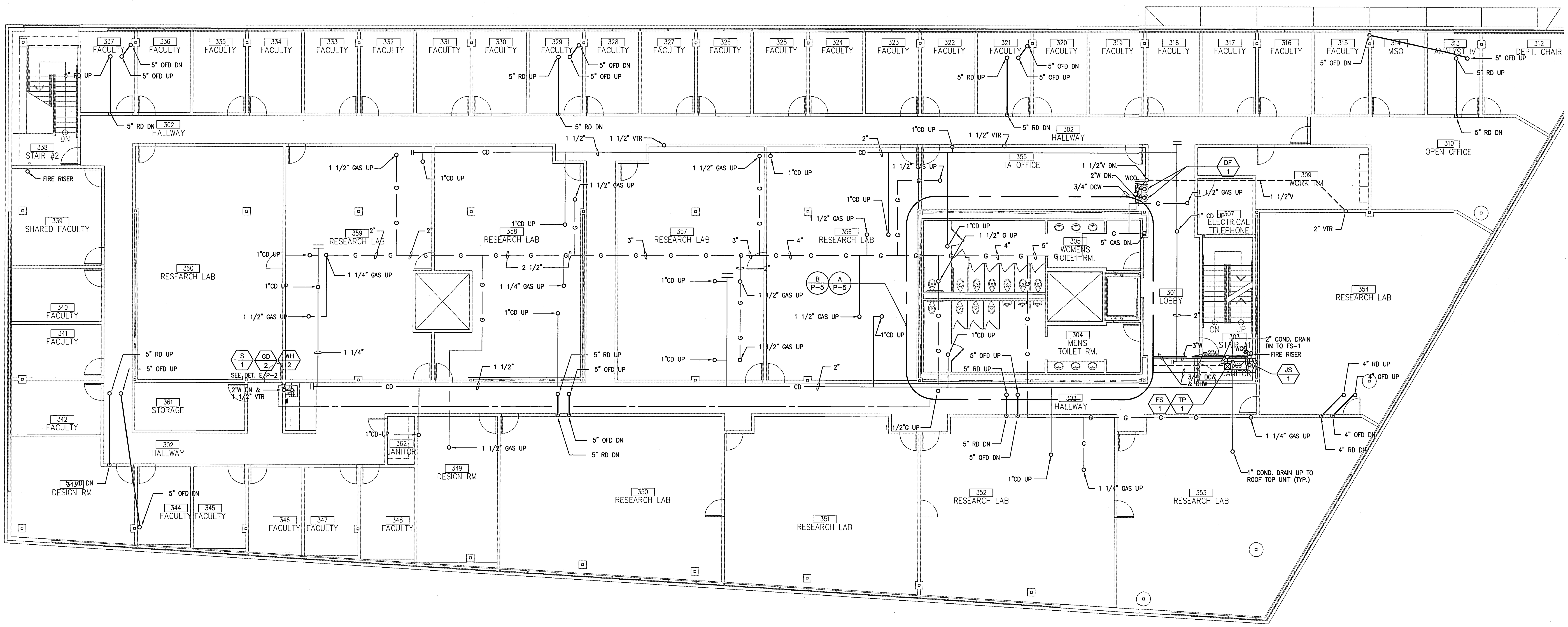
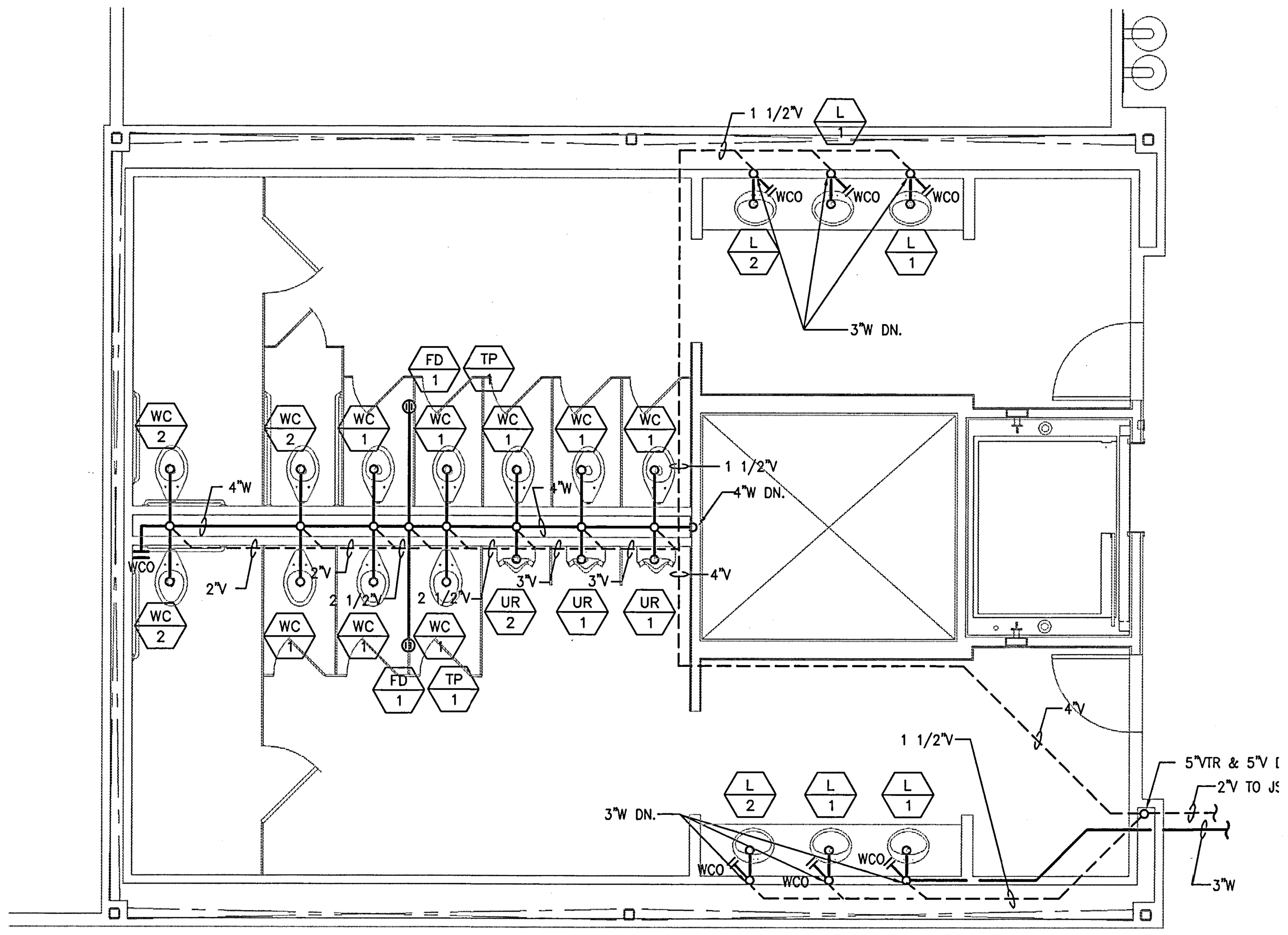
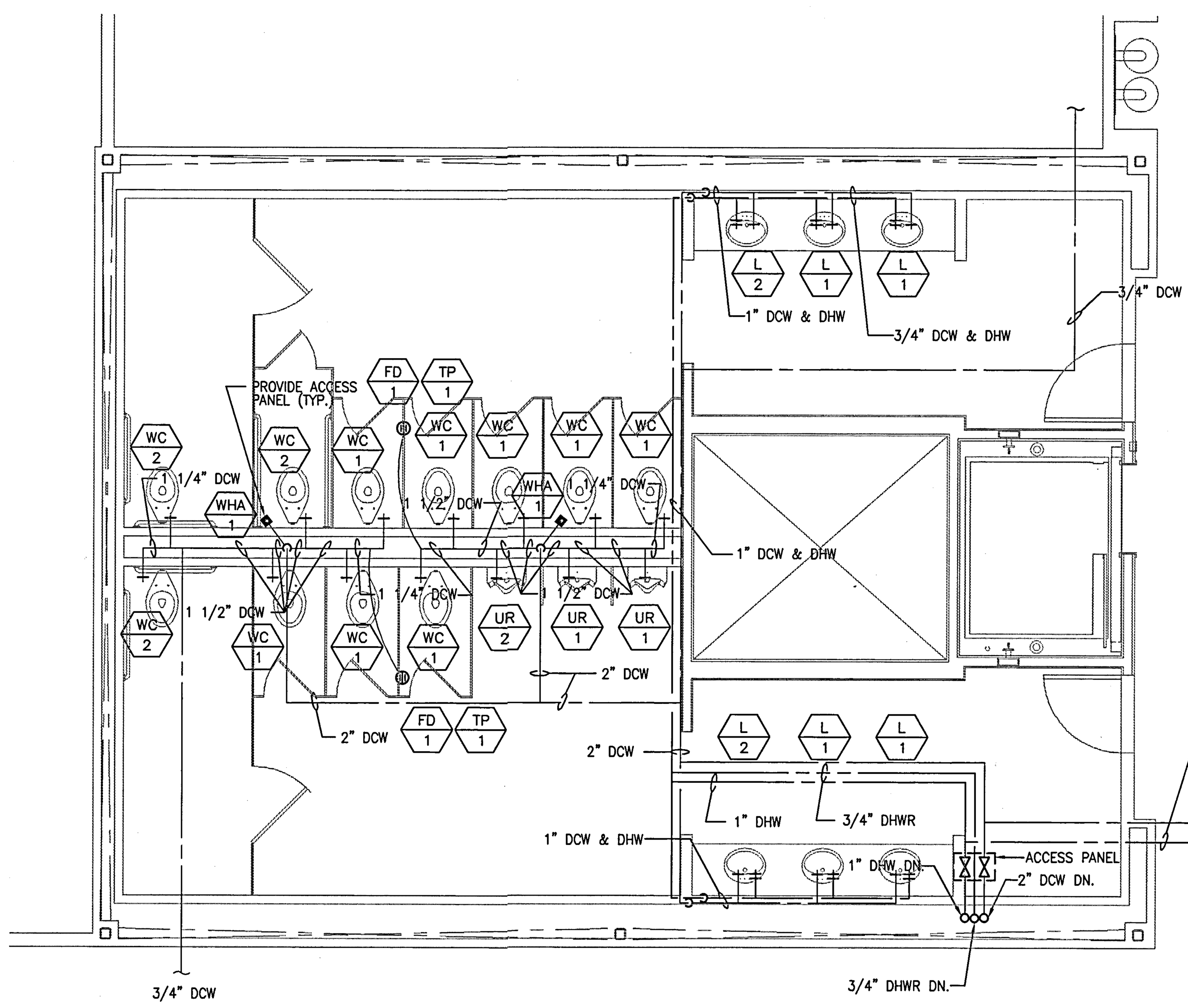


PLUMBING THIRD FLOOR PLAN
SCALE: 1/8"=1'-0"

NORTH



A P-5 WASTE AND VENT ENLARGED FLOOR PLAN
SCALE: 1/4"=1'-0"



B P-5 HOT AND COLD WATER ENLARGED FLOOR PLAN
SCALE: 1/4"=1'-0"

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1919 Santa Monica Boulevard
Fourth Floor
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310.586.5400
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Henrikson Owen & Associates
5 GOODYEAR STREET
IRVINE, CA 92618
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RECORD DRAWINGS

Key Plan

Drawing Title
PLUMBING
THIRD FLOOR
PLAN

AS SHOWN
Scale

Project Number
13OCT.,00
Baseline Date

P-5
Drawing Number

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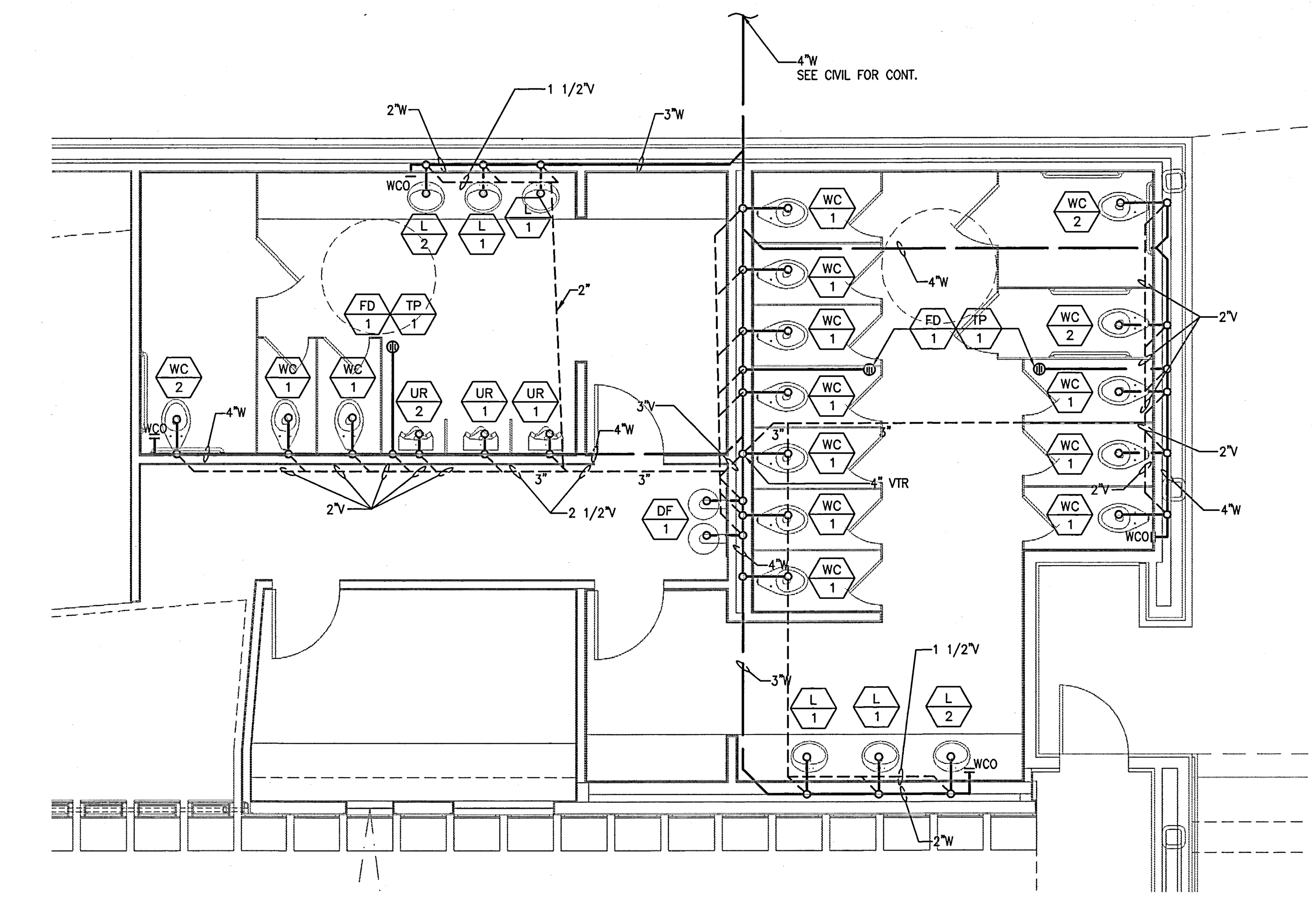
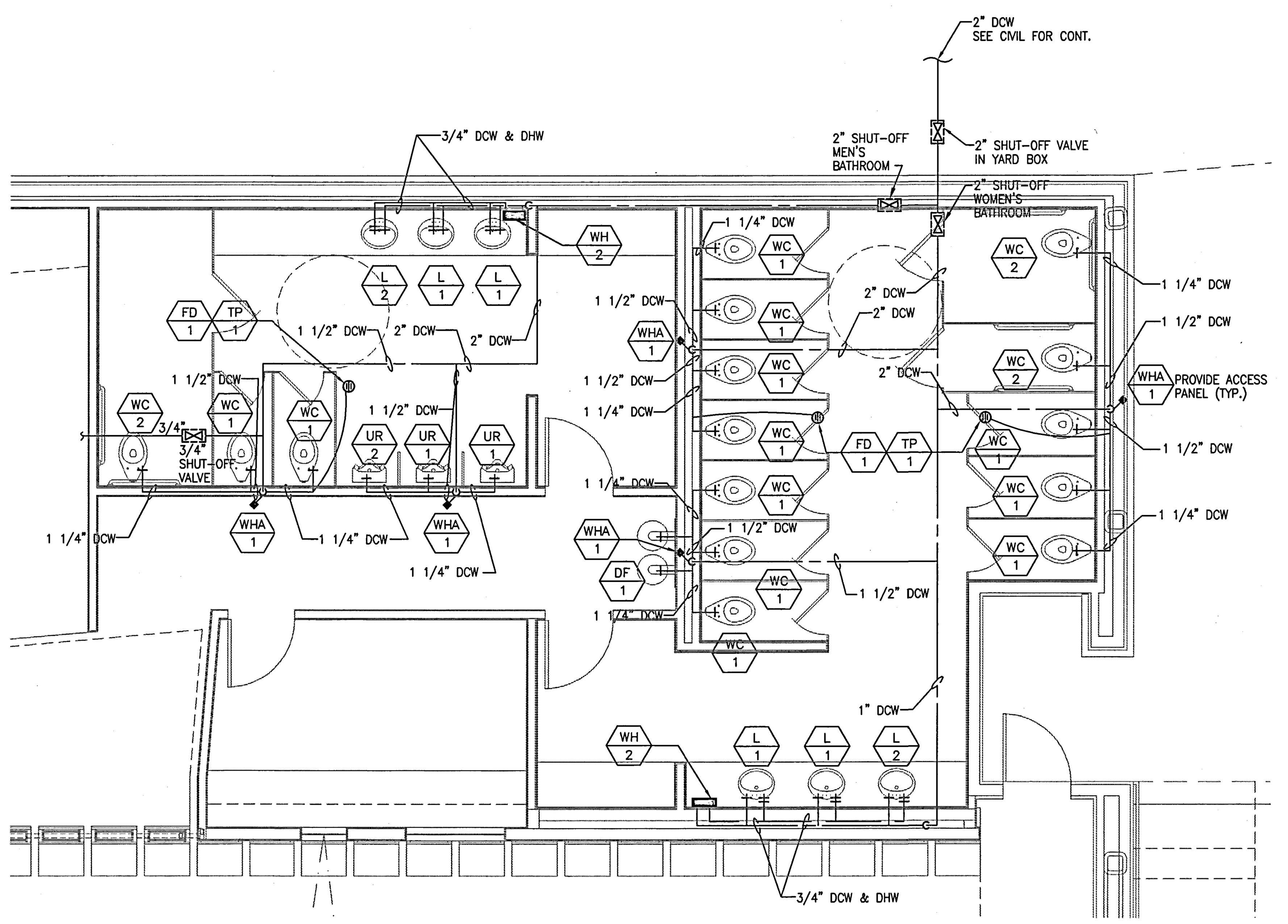
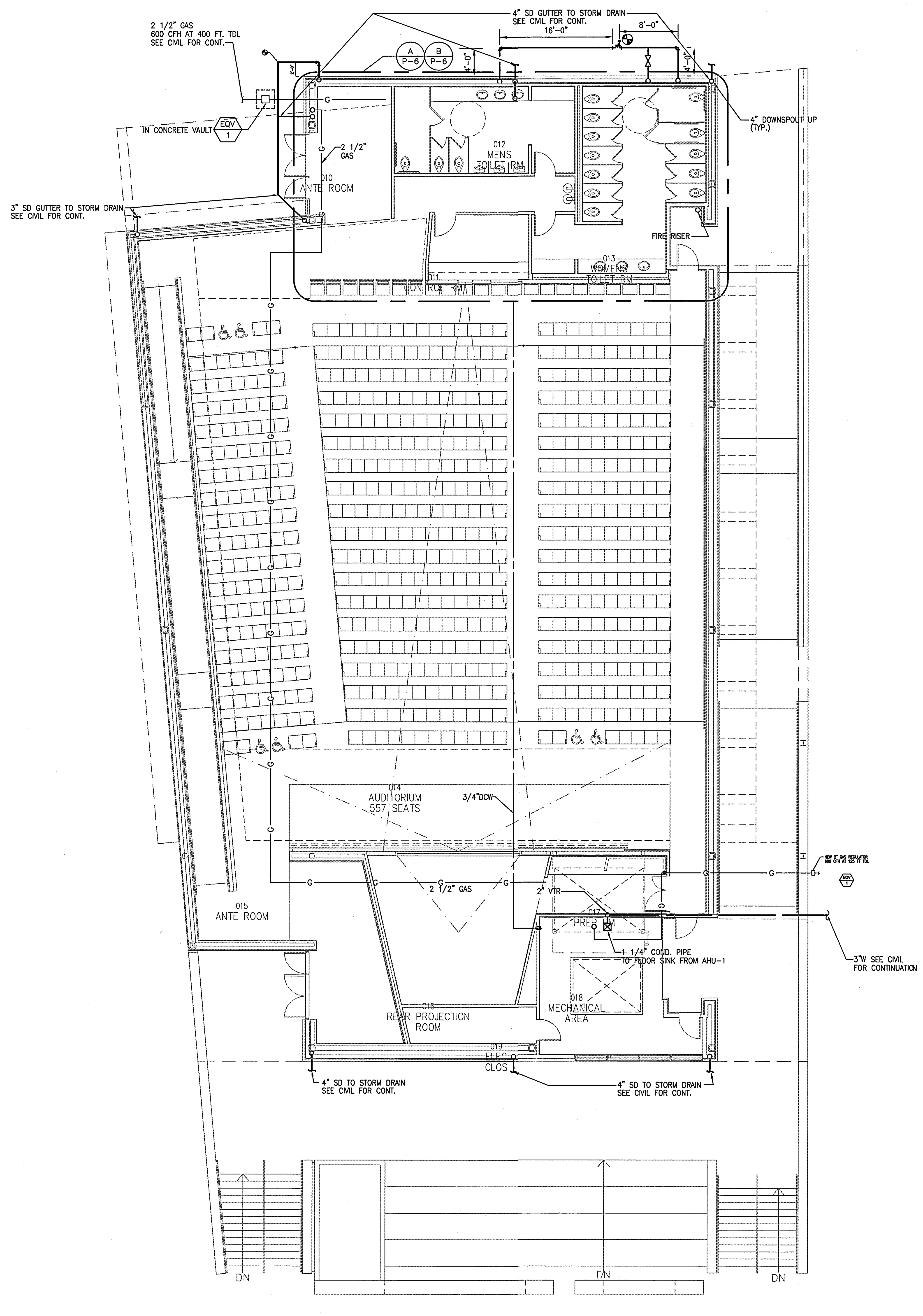


A WASTE AND VENT ENLARGED FLOOR PLAN
P-6 SCALE: 1/4"=1'-0"



B HOT AND COLD WATER FLOOR PLAN
P-6 SCALE: 1/4"=1'-0"



PLUMBING AUDITORIUM FLOOR PLAN
SCALE: 1/8"=1'-0"

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SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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Henrikson Owen & Associates
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PLUMBING
AUDITORIUM
FLOOR PLAN

AS SHOWN
Scale

Project Number
13OCT.,00
Baseline Date

P-6
Drawing Number

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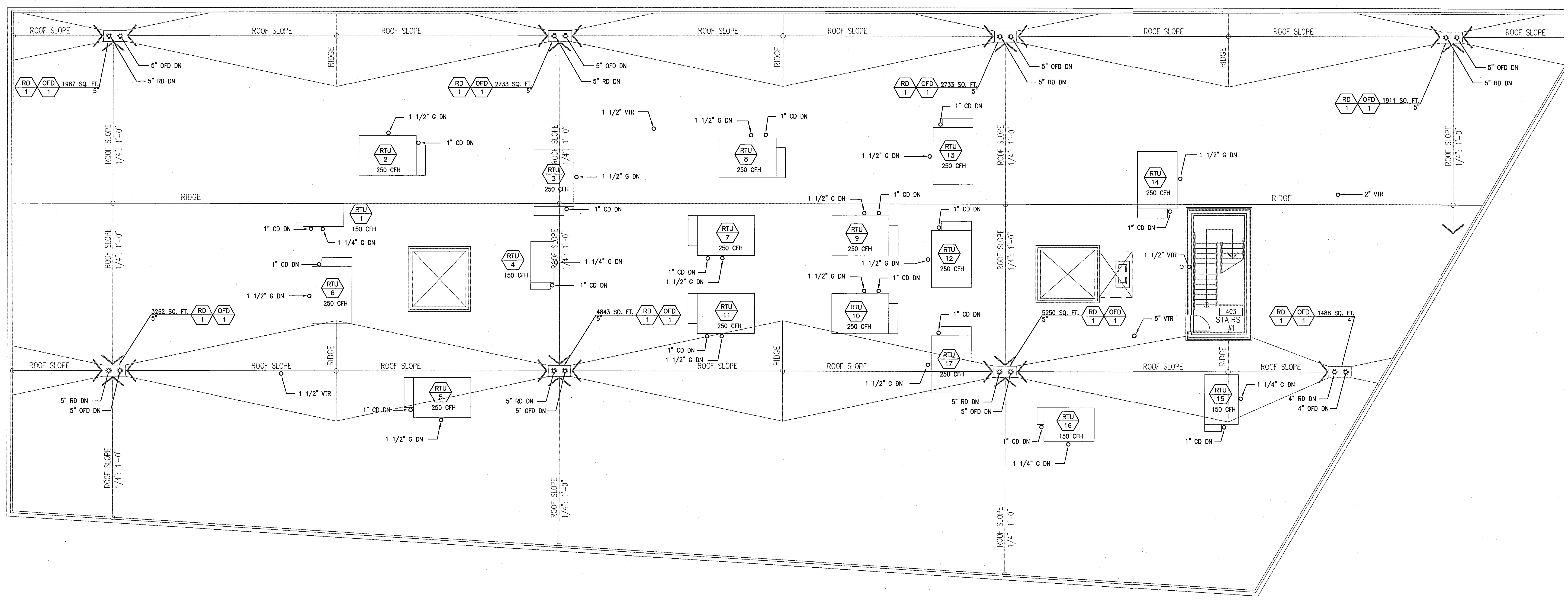

PLUMBING ROOF PLAN

SCALE: 1/8"=1'-0"

NORTH

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1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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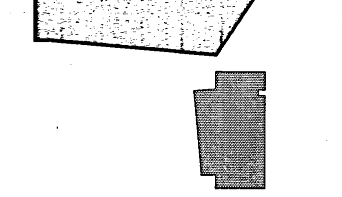


Drawing Title

ROOF PLAN

1/8" = 1'-0"

Scale

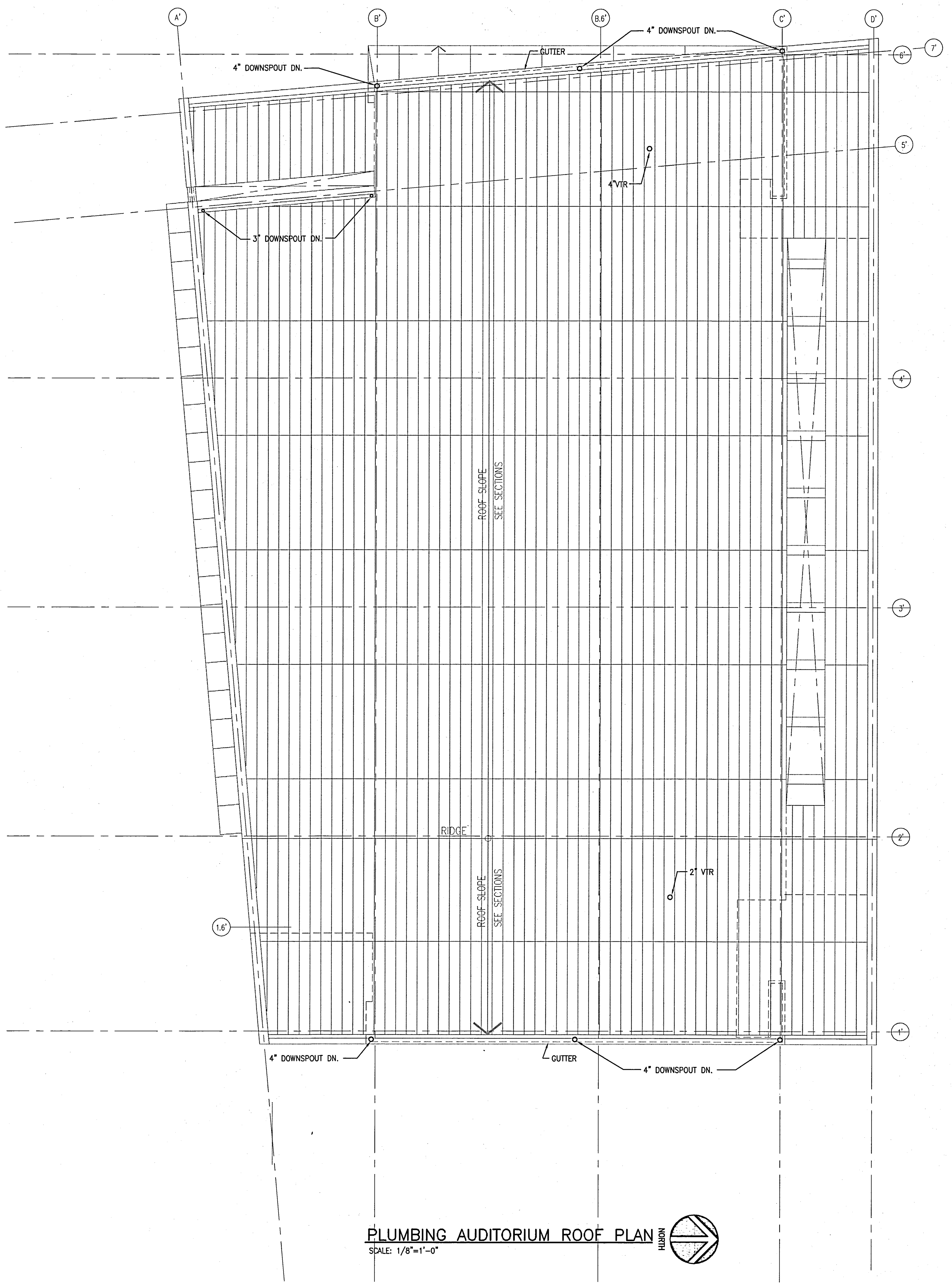
Project Number

13OCT.,00

Baseline Date

P-7

Drawing Number



PLUMBING AUDITORIUM ROOF PLAN
SCALE: 1/8"=1'-0"

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SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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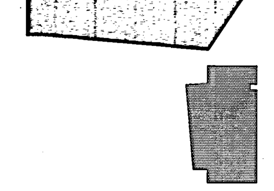
Key Plan



Drawing Title

PLUMBING
AUDITORIUM
ROOF PLAN

1/8" = 1'-0"

Scale

Project Number

13OCT.,00

Baseline Date

P-8

Drawing Number

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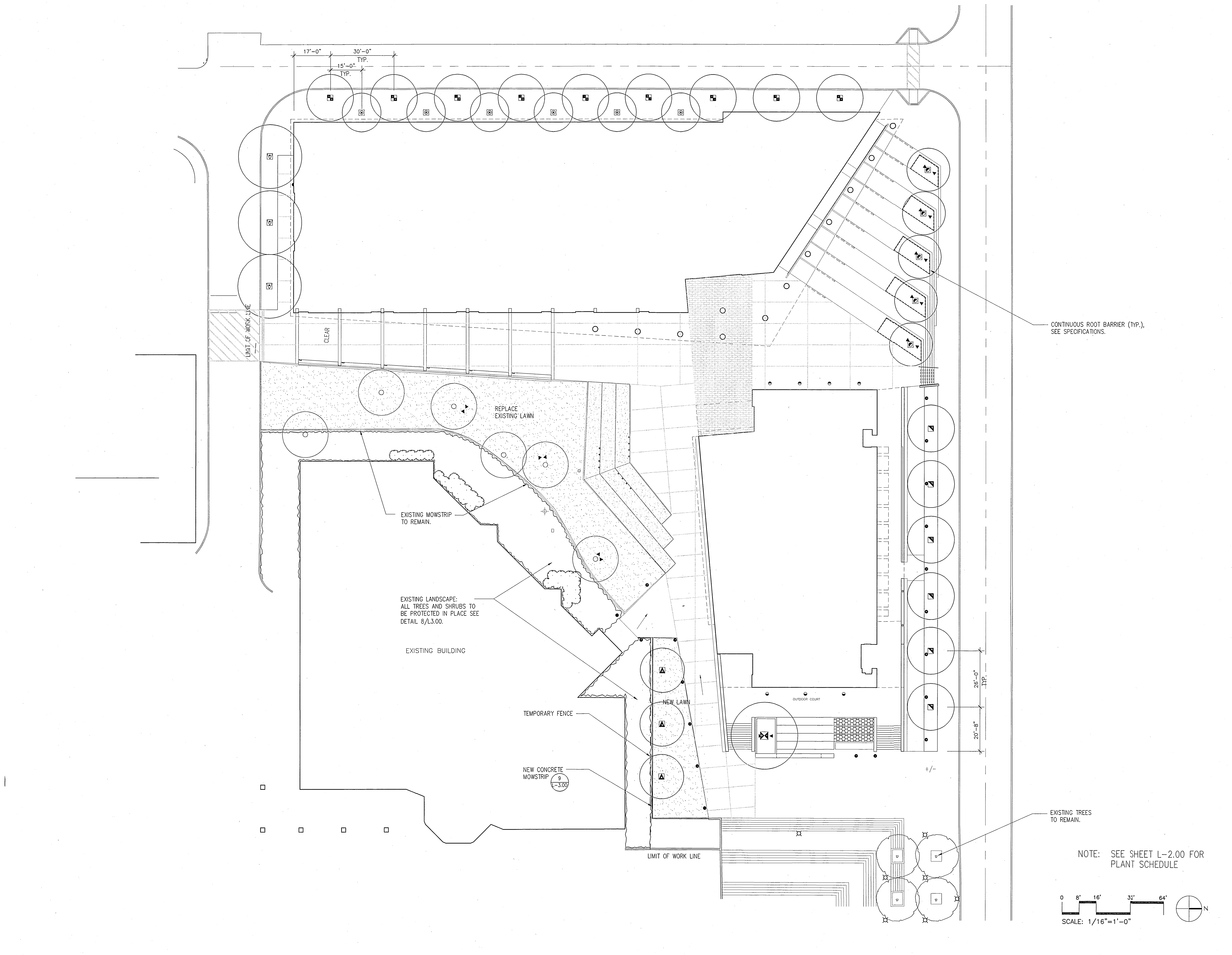

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XREF Filename(s):
Plot Setup Script:
Plot Date:
Plot View:

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SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Katherine Spitz Associates Inc.
LANDSCAPE ARCHITECTURE
Ph. 310 574 4460
Fax 310 574 4462
4212 1/2 Glencoe Avenue Marina Del Rey California 90292

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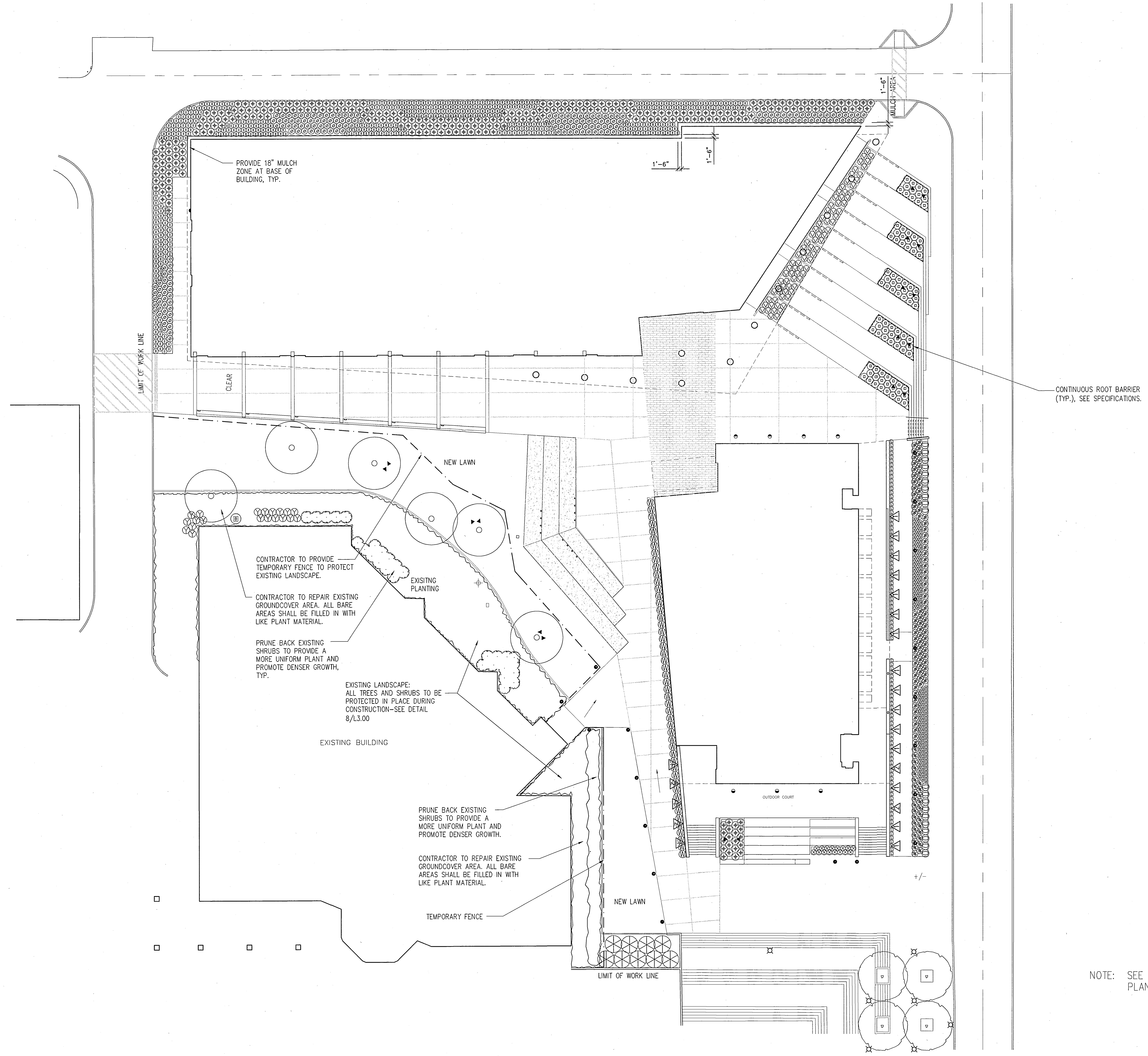
LICENSED LANDSCAPE ARCHITECT KATHERINE SPITZ No. 3946 STATE OF CALIFORNIA

RECORD DRAWINGS

Key Plan

Drawing Title
TREE AND GROUNDCOVER PLAN

1"=16'-0"
Scale
3193000
Project Number
08/14/00
Baseline Date
L-1.00
Drawing Number



NOTE: SEE SHEET L-2.00 FOR PLANT SCHEDULE

N

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SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

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Ph. 310 574 4460
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LICENSED LANDSCAPE ARCHITECT
KATHERINE SPITZ No. 3946
STATE OF CALIFORNIA

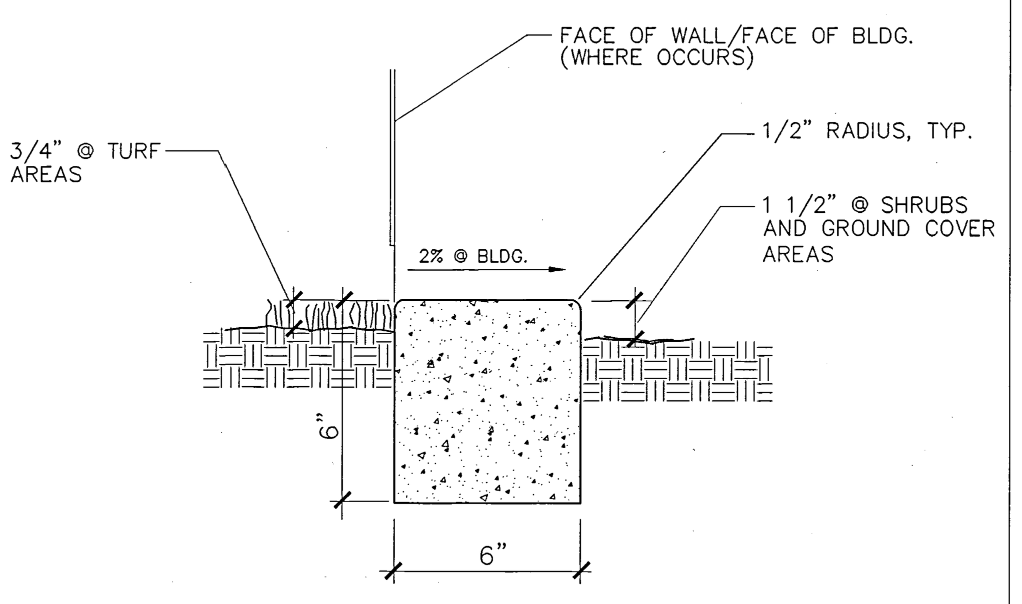
RECORD DRAWINGS

Key Plan

Drawing Title
SHRUB AND VINE PLAN

1"=16'-0"
Scale
3193000
Project Number
08/14/00
Baseline Date
L-1.01
Drawing Number

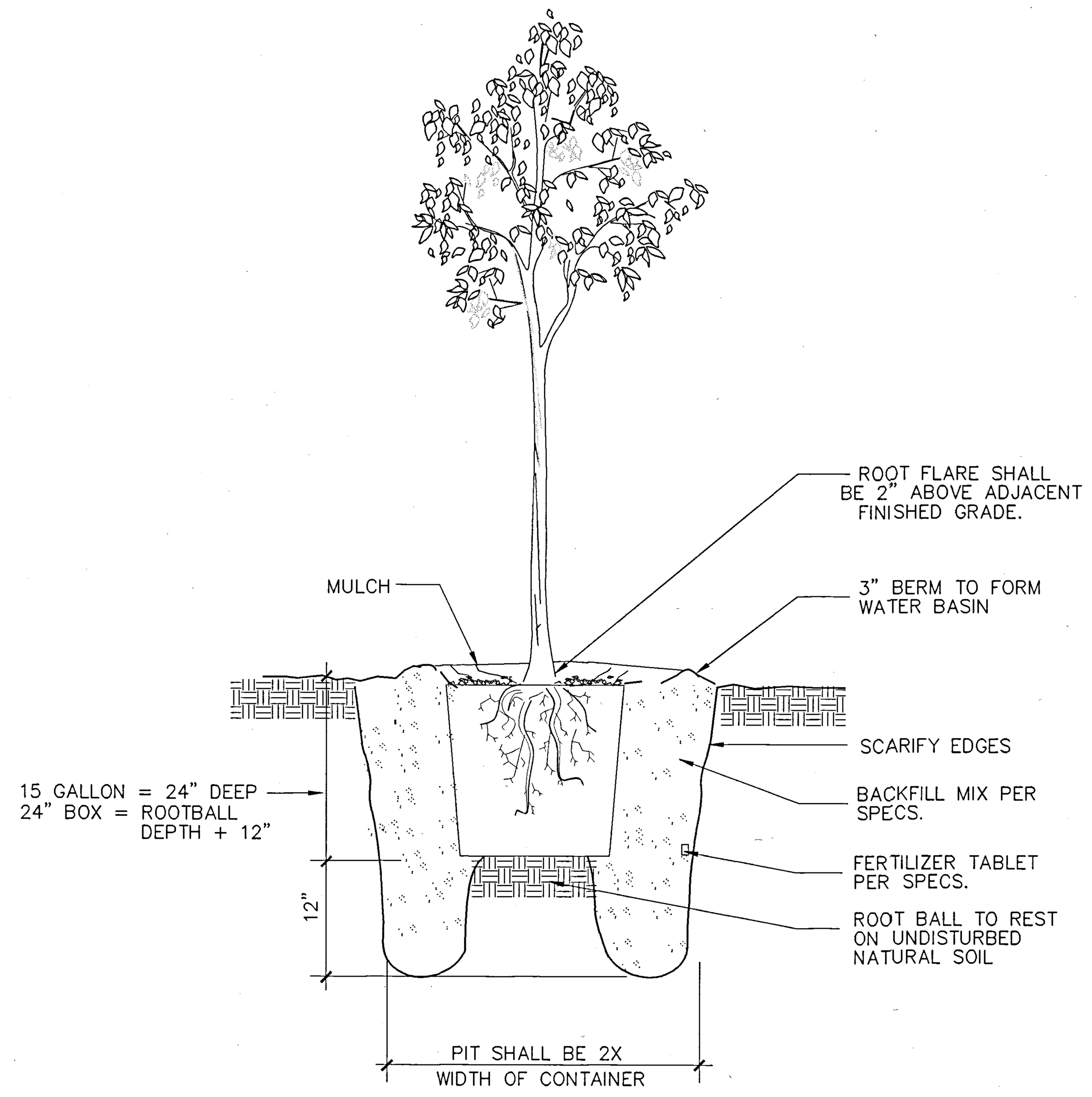
Plot Sheet Filename:
XREF Filename(s):
Plot Setup Script:
Plot Date:
Plot View:



NOTES:

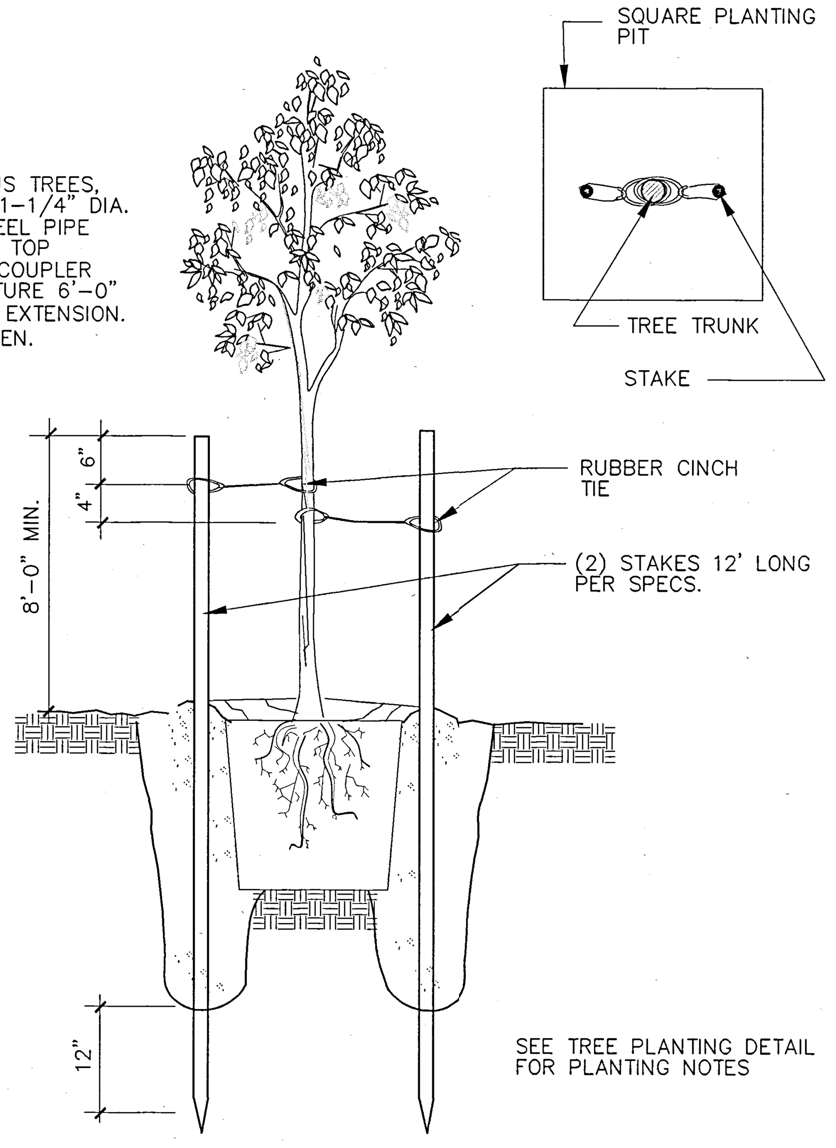
1. PROVIDE EXPANSION JOIINTS @ 20' O.C. AND @ EACH CHANGE IN DIRECTION.
2. STEEL TROWEL EXPOSED SURFACES OR MATCH ADJACENT CONCRETE FINISH.

9 CONCRETE MOWSTRIP
NTS



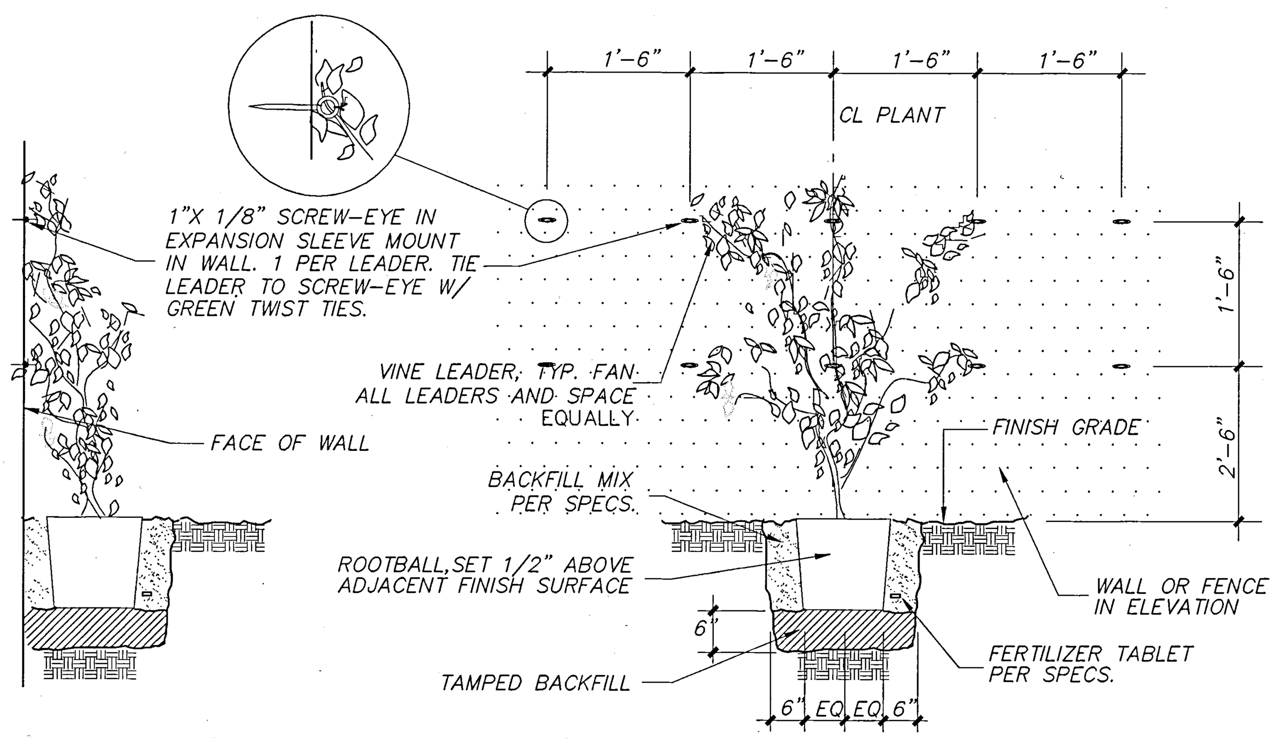
6 TREE PLANTING
NTS

NOTE:
FOR EUCALYPTUS TREES, STAKES TO BE 1-1/4" DIA. GALVANIZED STEEL PIPE WITH THREADED TOP AND STRAIGHT COUPLER TO RECEIVE FUTURE 6'-0" LG. STEEL PIPE EXTENSION. PAINT PIPE GREEN.

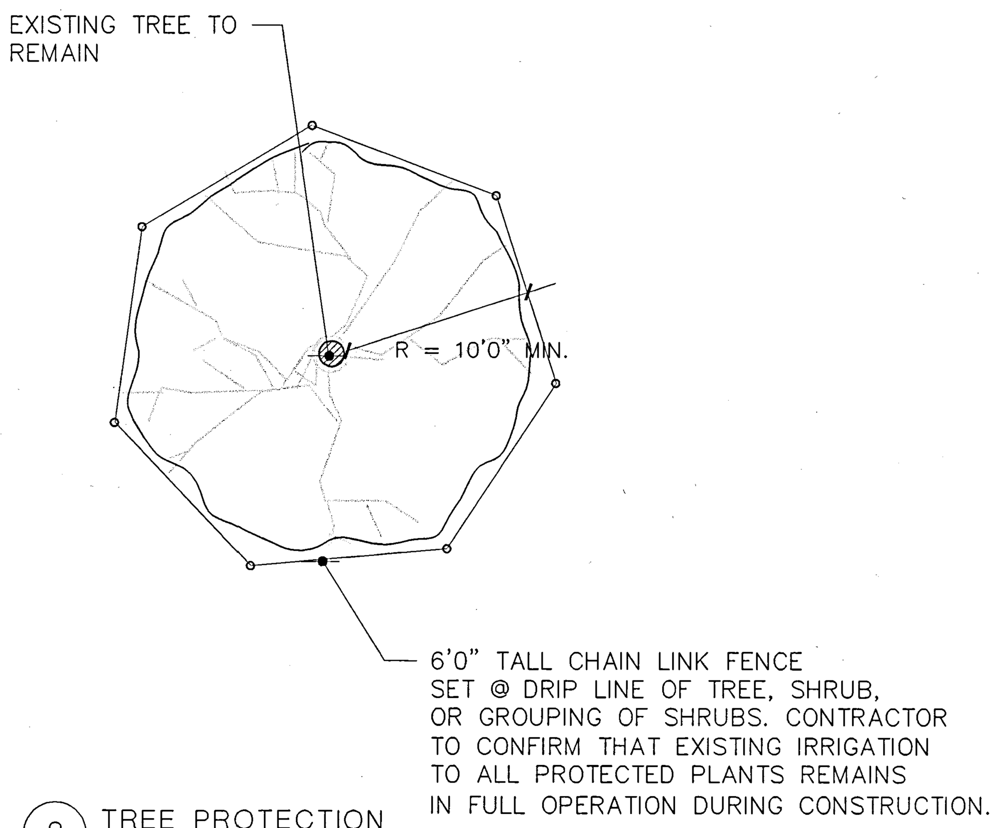


SEE TREE PLANTING DETAIL FOR PLANTING NOTES

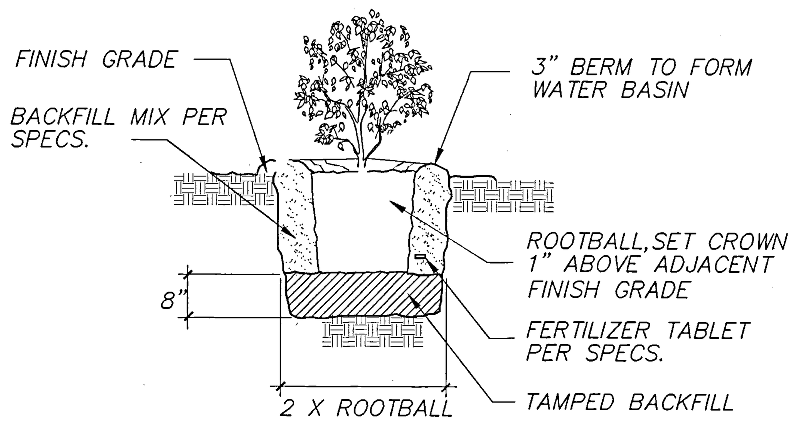
3 TREE STAKING
NTS



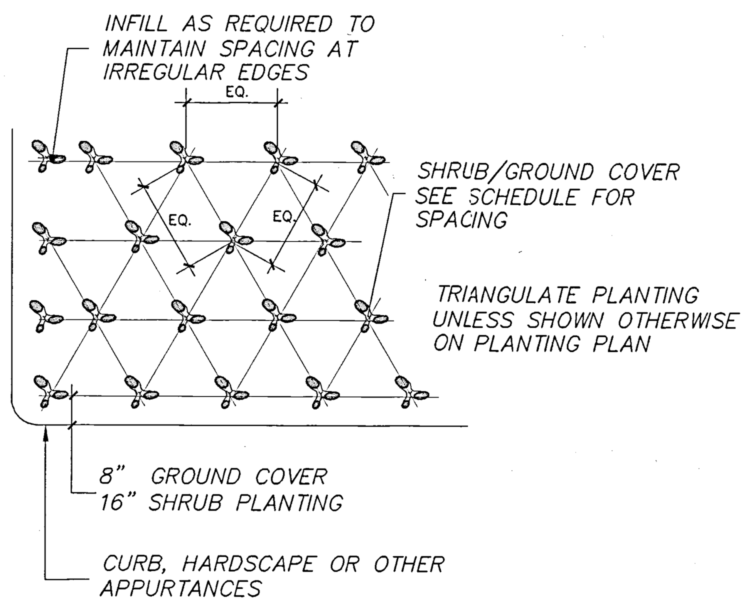
11 VINE PLANTING DETAIL
NTS



8 TREE PROTECTION
NTS

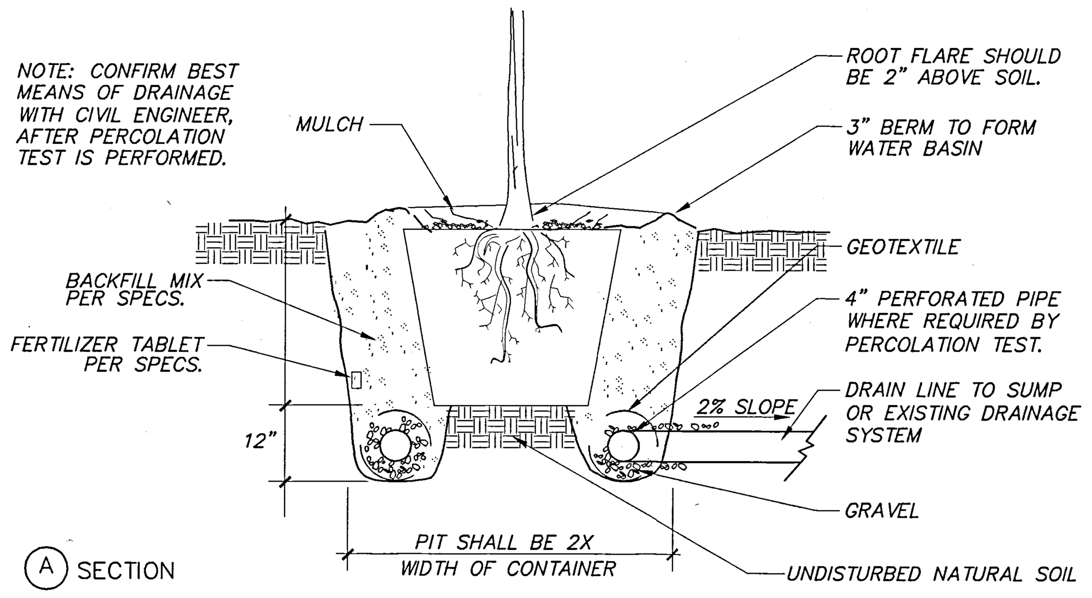


5 SHRUB PLANTING
NTS

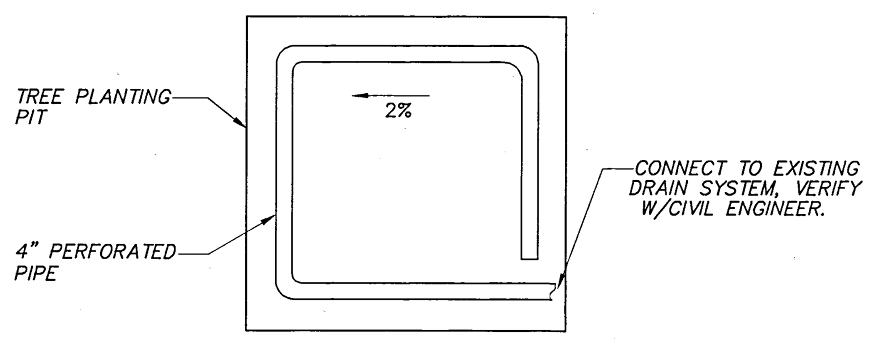


2 SHRUB AND GROUNDCOVER SPACING
NTS

NOTE: CONFIRM BEST MEANS OF DRAINAGE WITH CIVIL ENGINEER, AFTER PERCOLATION TEST IS PERFORMED.

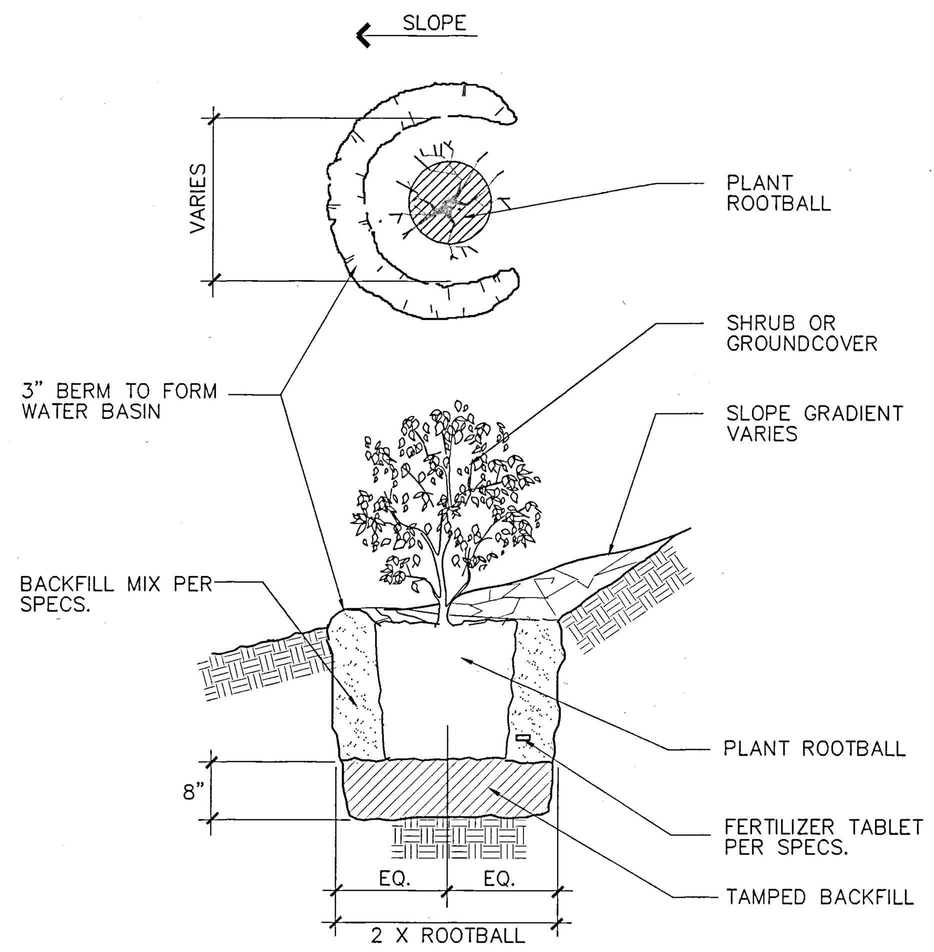


A SECTION

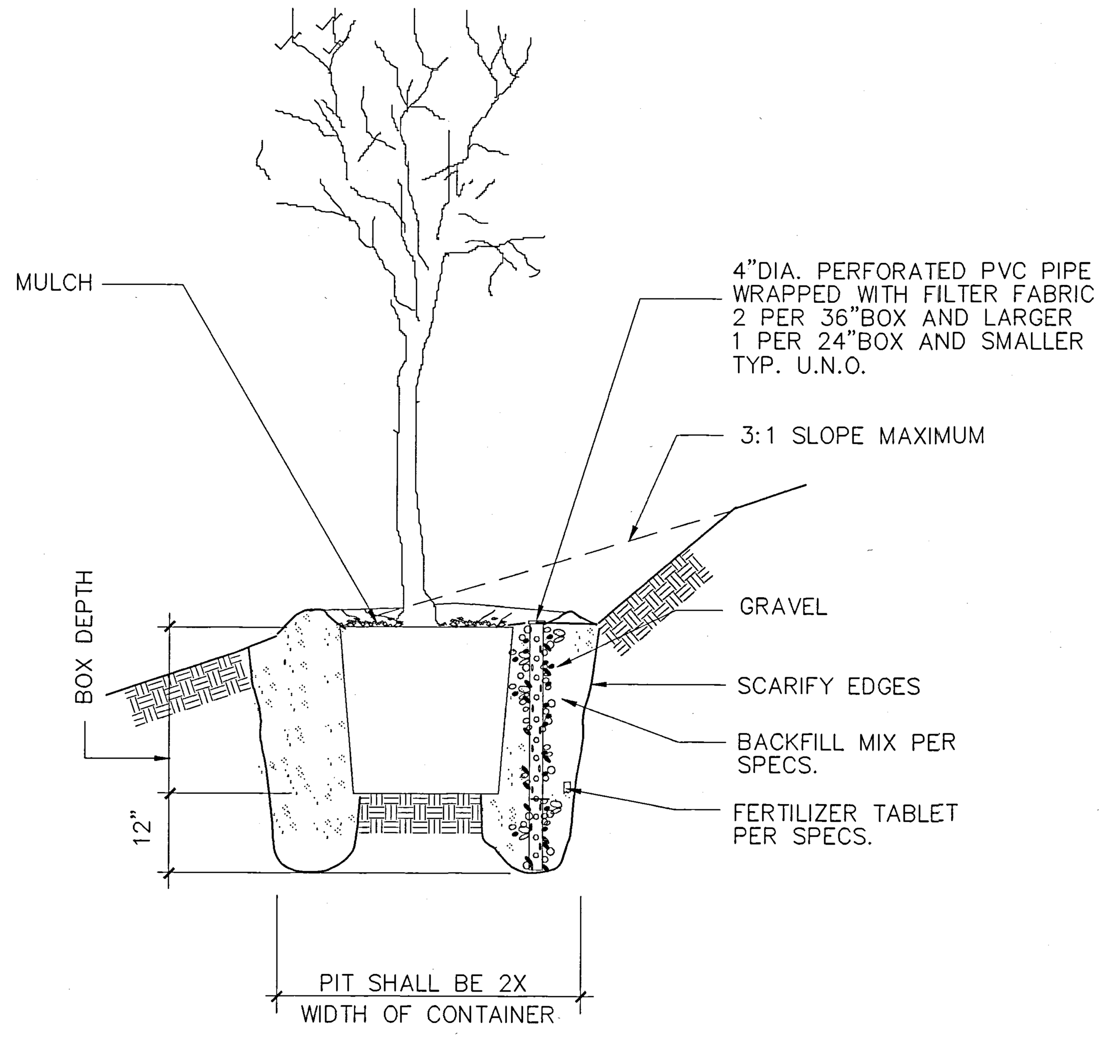


B PLAN

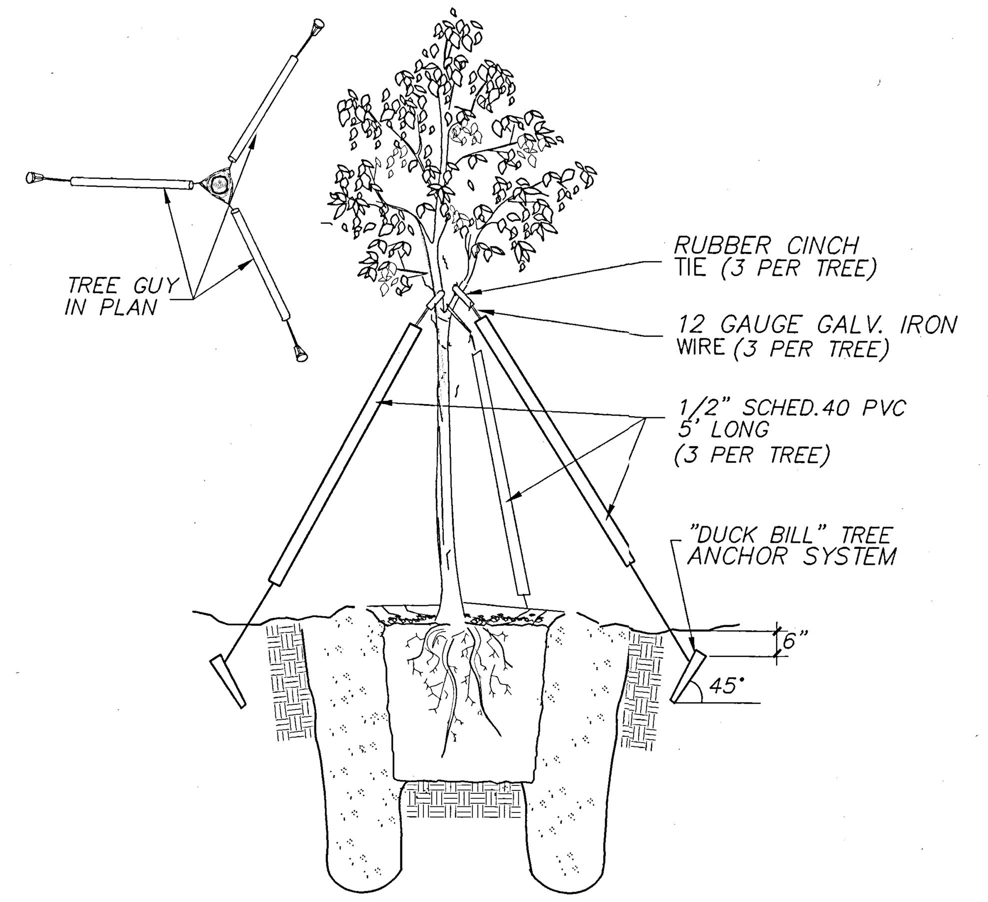
10 TREE DRAINAGE DETAIL
NTS



7 SHRUB PLANTING ON SLOPE
NTS



4 TREE PLANTING ON SLOPE
NTS



SEE TREE PLANTING DETAIL FOR PLANTING NOTES

1 TREE GUYING
NTS

Plot Sheet Filename:
XREF Filename(s):
Plot Setup Script:
Plot Date:
Plot View:

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Katherine Spitz Associates Inc.
LANDSCAPE ARCHITECTURE
Ph. 310 574 4460
Fax 310 574 4462
4212 1/2 Glencoe Avenue Marina Del Rey California 90292

Issued for | Rev Date

Seals and Signatures

LICENSED LANDSCAPE ARCHITECT KATHERINE SPITZ STATE OF CALIFORNIA

RECORD DRAWINGS

Key Plan

Drawing Title
PLANTING DETAILS

SCALE AS NOTED
Scale
3193000
Project Number
08/14/00
Baseline Date

L-3.00

GENERAL NOTES

NO TRENCHES OR EXCAVATIONS 5 FEET OR MORE IN DEPTH INTO WHICH A PERSON IS REQUIRED TO DESCEND ARE PERMITTED UNLESS THE NECESSARY PERMIT IS OBTAINED FROM THE STATE OF CALIFORNIA DIVISION OF INDUSTRIAL SAFETY PRIOR TO THE ISSUANCE OF A BUILDING OR GRADING PERMIT. CONFIRM WITH SOILS ENGINEER.

CONTRACTOR SHALL INSTALL ALL MATERIALS IN ACCORDANCE WITH LOCAL AND APPLICABLE CODES, ORDINANCES, MANUFACTURER'S SPECIFICATIONS, DETAILS, NOTES AND/OR SPECIFICATIONS.

CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND STAKING ALL SEWER, UTILITY AND WATER MAIN LINES PRIOR TO PLANTING. CONTRACTOR SHALL ASSUME SOLE RESPONSIBILITY FOR ANY COST INCURRED DUE TO DAMAGE AND REPLACEMENT OF SAID UTILITIES.

CONTRACTOR SHALL REVIEW EXISTING SITE CONDITIONS PRIOR TO BID SUBMITTAL AND COMMENCEMENT OF WORK. ANY DISCREPANCIES BETWEEN CONTRACT DOCUMENTS AND SITE CONDITIONS SHOULD BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE OWNER AND LANDSCAPE ARCHITECT. CONTRACTOR SHALL ASSUME ALL NECESSARY REVISIONS IF HE FAILS TO GIVE SUCH NOTICE.

SPOT ELEVATIONS AND GRADES SHOWN ON THE DRAWINGS ARE BASED ON SURVEY INFORMATION NOT CONDUCTED AS A PART OF THIS WORK AND ARE FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY EXISTING GRADES IN THE FIELD AND REPORT DISCREPANCIES TO THE LANDSCAPE ARCHITECT PRIOR TO ANY GRADING AND/OR CONSTRUCTION.

WRITTEN SPECIFICATIONS AND NOTES SUPERSEDE DRAWINGS. IF CONDITIONS IN THE FIELD ARE IN CONFLICT WITH THE DRAWINGS, NOTIFY LANDSCAPE ARCHITECT PRIOR TO PROCEEDING.

REFER TO WRITTEN DIMENSIONS FOR ALL DIMENSIONS, DO NOT SCALE DRAWINGS. NOTIFY LANDSCAPE ARCHITECT IF SITE CONDITIONS DO NOT MATCH DRAWINGS, OR IF ADDITIONAL DIMENSIONS ARE REQUIRED.

LARGER SCALE DRAWINGS TAKE PRECEDENCE OVER SMALLER SCALE DRAWINGS OR PLANS.

NO SUBSTITUTIONS TO ANY SPECIFIED ITEM ON THE DRAWINGS WILL BE MADE BY THE CONTRACTOR WITHOUT WRITTEN APPROVAL FROM THE OWNER OR LANDSCAPE ARCHITECT.

CONTRACTOR SHALL CONFIRM STATUS OF ALL EXISTING PLANT MATERIAL WITH LANDSCAPE UNIVERSITY'S REPRESENTATIVE PRIOR TO DEMOLITION. ALL DEMOLITION DEBRIS IS TO BE DISPOSED OF IN TIMELY MANNER TO LEGAL DUMPING FACILITY.

CONTRACTOR SHALL COORDINATE SECURE STORAGE AND STAGING FACILITIES WITH THE OWNER PRIOR TO DEMOLITION AND/OR CONSTRUCTION.

CONTRACTOR SHALL TAKE ALL APPROPRIATE ACTIONS TO ENSURE THE HEALTH, SAFETY, AND WELFARE OF THE PUBLIC AT ALL TIMES DURING THE CONSTRUCTION PROCESS.

CONTRACTOR SHALL PROVIDE AND BE RESPONSIBLE FOR PROTECTION OF ALL WORK PERFORMED UNTIL COMPLETION AND FINAL ACCEPTANCE BY THE OWNER. ALL WORK AND/OR MATERIALS WHICH ARE DETERMINED BY THE OWNER OR LANDSCAPE ARCHITECT TO BE DEFECTIVE OR DEFICIENT IN QUALITY OF WORKMANSHIP SHALL BE REMEDIED OR REMOVED AND REPLACED BY THE CONTRACTOR IN A TIMELY MANNER WITHOUT EXPENSE TO THE OWNER.

PLANTING NOTES:

CONTRACTOR SHALL INSTALL PLANT MATERIAL AND GROUND COVER MATERIAL IN ACCORDANCE WITH THESE DETAILS, DRAWINGS AND SPECIFICATIONS.

PLANT MATERIAL WHICH IN THE JUDGEMENT OF THE OWNER IS NOT HEALTHY AND VIGOROUS AT THE END OF THE GUARANTEE PERIOD WILL BE REPLACED.

QUALITY AND SIZE OF ALL PLANTS SHALL CONFORM TO THE CALIFORNIA STANDARD GRADING CODE OF NURSERY STOCK AND SHALL BE NUMBER ONE GRADE. THERE SHALL BE NO INSECTS, EGGS, OR LARVAE.

CONTRACTOR SHALL CONFIRM WITH GROWERS THAT PLANTS PURCHASED FOR THIS PROJECT ARE PROPERLY ACCLIMATIZED TO PROJECTS CONDITIONS AND SEASONS OF PLANTING.

CONTRACTOR SHALL STORE PLANT MATERIAL IN SHADE AND PROTECT FROM SUN. MAINTAIN PLANTS IN MOIST CONDITION PRIOR TO PLANTING.

A MINIMUM OF 3 SOILS TESTS SHALL BE MADE PRIOR TO ANY NEW LANDSCAPE PLANTING TO IDENTIFY SOIL CHARACTERISTICS AND RECOMMEND FERTILIZERS, AMENDMENTS AND INSTALLATION PROCEDURES. SOIL SAMPLES WILL BE SUBMITTED TO AN AUTHORIZED SOILS LABORATORY, WITH THE RESULTS GIVEN TO THE LANDSCAPE ARCHITECT FOR REVIEW.

CONTRACTOR SHALL PROVIDE PERCOLATION TESTS FOR TREE PITS SHOWN ON PLAN AND PROVIDE RESULTS TO LANDSCAPE ARCHITECT. TEST PITS SHOULD BE MINIMUM 2' LONG X 2' WIDE X 2' DEEP OR DEEPER. FILL EACH HOLE WITH WATER AND ALLOW TO DRAIN. REFILL HOLE AND MEASURE DROP IN LEVEL PER HOUR OVER A PERIOD OF 6 HOURS. RECORD MEASUREMENTS FOR EACH HOUR ALONG WITH SIZE OF TEST PITS. REPORT RESULTS TO LANDSCAPE ARCHITECT. IF SUCH TESTING REVEALS THAT NATURAL PERCOLATION OF WATER AT THESE SITES IS SUB-STANDARD PROVIDE DRAINAGE ACCORDING TO CONTRACT DOCUMENTS.

CONTRACTOR SHALL TAKE SUFFICIENT MEASURES TO KEEP LAWN AND AHRUB AREAS FROM DAMAGE BY PEDESTRIANS AND WORKMEN.

IRRIGATION NOTES

CONTRACTOR IS RESPONSIBLE FOR PROVIDING 100% IRRIGATION COVERAGE OF ALL PLANTING AREAS.

SLOPE AREAS HAVE BEEN ASSUMED. CONTRACTOR SHALL VERIFY ALL SLOPES IN FIELD AND PROVIDE LOW HEAD DRAINAGE PREVENTION WHERE REQUIRED.

WHERE NOT SPECIFIED IN CONTRACT DOCUMENTS, CONTRACTOR SHALL SUBMIT A LIST OF PREFERRED IRRIGATION MATERIALS TO THE UNIVERSITY PRIOR TO PURCHASE OR INSTALLATION. LIST MUST INCLUDE MASTER IRRIGATION CONTROLLER, REMOTE VALVES, IRRIGATION HEADS AND VALVE BOXES.

CONTRACTOR SHALL SUBMIT A WRITTEN WATERING SCHEDULE FOR EACH STATION TO THE LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO COMPLETION OF PROJECT.

FLUSH ALL LINES AND ADJUST ALL HEADS FOR MAXIMUM PERFORMANCE, ACCORDING TO DRAWINGS, AND TO PREVENT OVERSPRAY ONTO WALKS AND STREETS.

ALL VALVES SHALL BE LOCATED IN SHRUB PLANTING AREAS. VALVE BOXES SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO BUILDING WALLS AND PATHWAYS. VERIFY LOCATION OF ALL REMOTE VALVE BOXES WITH LANDSCAPE ARCHITECT BEFORE INSTALLATION.

IRRIGATION LINES INSTALLED IN PLANTERS LESS THAN 24" IN WIDTH SHALL BE RUN DOWN ONE SIDE OF THE PLANTER OR THE OTHER, NOT THE MIDDLE.

CONTRACTOR IS RESPONSIBLE FOR CONNECTION OF NEW SYSTEM TO EXISTING WATER SYSTEM AND UNINTERRUPTED IRRIGATION TO EXISTING PLANTING DURING CONSTRUCTION.

CONTRACTOR IS TO VERIFY AVAILABLE MAINLINE PRESSURE. IN THE EVENT THAT PRESSURE IS INADEQUATE, REPORT TO OWNER'S REPRESENTATIVE.

IF SPECIFIED VALVE SIZE IS UNAVAILABLE, PROVIDE NEXT LARGER AVAILABLE SIZE.

VALVE SUN AND SHADE AREAS SEPERATELY.

TREE AND GROUND COVER SCHEDULE

SYMBOL	QTY.	SIZE	BOTANICAL NAME	COMMON NAME	DETAIL	REMARKS
			EXISTING TREES		8/L-3.00	PROTECT IN PLACE SEE DETAIL #8, SHEET L-3.00
	6	24" BOX	PLATANUS ACERIFOLIA	LONDON PLANE TREE	3,4/L-3.00	MIN. HEIGHT 10-12'
	3	24" BOX	PINUS CANARIENSIS	CANARY ISLAND PINE	3,6/L-3.00	MIN. HEIGHT 8-10'
	6	24" BOX	RHUS LANCEA	AFRICAN SUMAC	3,4/L-3.00	STANDARD FORM, MIN. SIZE 9-11' x 3-4'
	9	24" BOX	EUCALYPTUS CITRIODORA	LEMON-SCENTED GUM	3,4/L-3.00	MIN. HEIGHT 10-12'
	3	24" BOX	ZELKOVA SERRATA	SAWLEAF ZELKOVA	1,10/L-3.00	STANDARD FORM, MIN HEIGHT 11-12'
	1	48" BOX	PLATANUS RACEMOSA	CALIFORNIA SYCAMORE	1,10/L-3.00	STANDARD FORM, MIN SIZE 18-20' x 8-10'
	5	48" BOX	GEIJERA PARVIFLORA	AUSTRALIAN WILLOW	1,10/L-3.00	STANDARD FORM

SHRUB AND VINE SCHEDULE

SYMBOL	QTY.	SIZE	BOTANICAL NAME	COMMON NAME	DETAIL	REMARKS
	153	1 G.C.	HEMEROCALLIS 'LAVENDER DEW'	DAYLILY	2,7/L3.00	
	436	1 G.C.	MYOPORUM PARVIFOLIUM		2,7/L3.00	
	83	1 G.C.	TRACHELOSPERMUM JASMINOIDES	STAR JASMINE	2,5/L3.00	
	89	1 G.C.	ROSMARINUS 'IRENE'	PROSTRATE ROSEMARY	2,5/L3.00	
	101	1 G.C.	LIRIOPE MUSCARI	BIG BLUE LILY TURF	2,5/L3.00	
	16	5 G.C.	PITTOSPORUM WHEELERS DWARF	DWARF TOBIRA	2,5/L3.00	
	270	5 G.C.	CEANOTHUS GRISEUS HORIZONTALIS 'YANKEE POINT'	WILD LILAC	2,5,7/L3.00	
	118	5 G.C.	DIETES 'LEMON DROPS'	FORTNIGHT LILY	2,7/L3.00	
	171	5 G.C.	PHORMIUM 'SEA JADE'	NEW ZEALAND FLAX	2,7/L3.00	
	50	5 G.C.	PHORMIUM COOKIANUM 'TRICOLOR'	NEW ZEALAND FLAX	2,5/L3.00	
	20	5 G.C.	PITTOSPORUM TOBIRA 'VARIEGATA'	VARIEGATED TOBIRA	2,5/L3.00	
	1	15 G.C.	BERBERIS THUNBERGII 'ATROPURPUREA'	JAPANESE BARBERRY	2,5/L3.00	
	9	15 G.C.	LEPTOSPERMUM SCOPARIUM 'RUBY GLOW'	NEW ZEALAND TEA TREE	2,7/L3.00	
	20	15 G.C.	RHAPHIOLEPIS INDICA 'CLARA'	INDIA HAWTHORN	2,7/L3.00	
		SOD	MARATHON II	DWARF FESCUE		
		FLATS	ZOYSIA TENUIFOLIA	KOREAN GRASS		
1	18	1 G.C.	PARTHENOCISSUS TRICUSPIDATA	BOSTON IVY	11/L3.00	8' O.C.
2	4	5 G.C.	MACFADYENA UNGUIS-CATI	CATS CLAW VINE	11/L3.00	8' O.C.

UCR

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SmithGroup

SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Katherine Spitz Associates Inc.
LANDSCAPE ARCHITECTURE

Ph. 310 574 4460
Fax 310 574 4462
4212 1/2 Glencoe Avenue Marina Del Rey California 90292

Issued for | Rev | Date

Seals and Signatures

RECORD DRAWINGS

Key Plan

Drawing Title

PLANT SCHEDULE AND NOTES

Scale

3193000

Project Number

08/14/00

Baseline Date

L-2.00

Drawing Number

Plot View:

Plot Sheet Filename:
XREF Filename(s):
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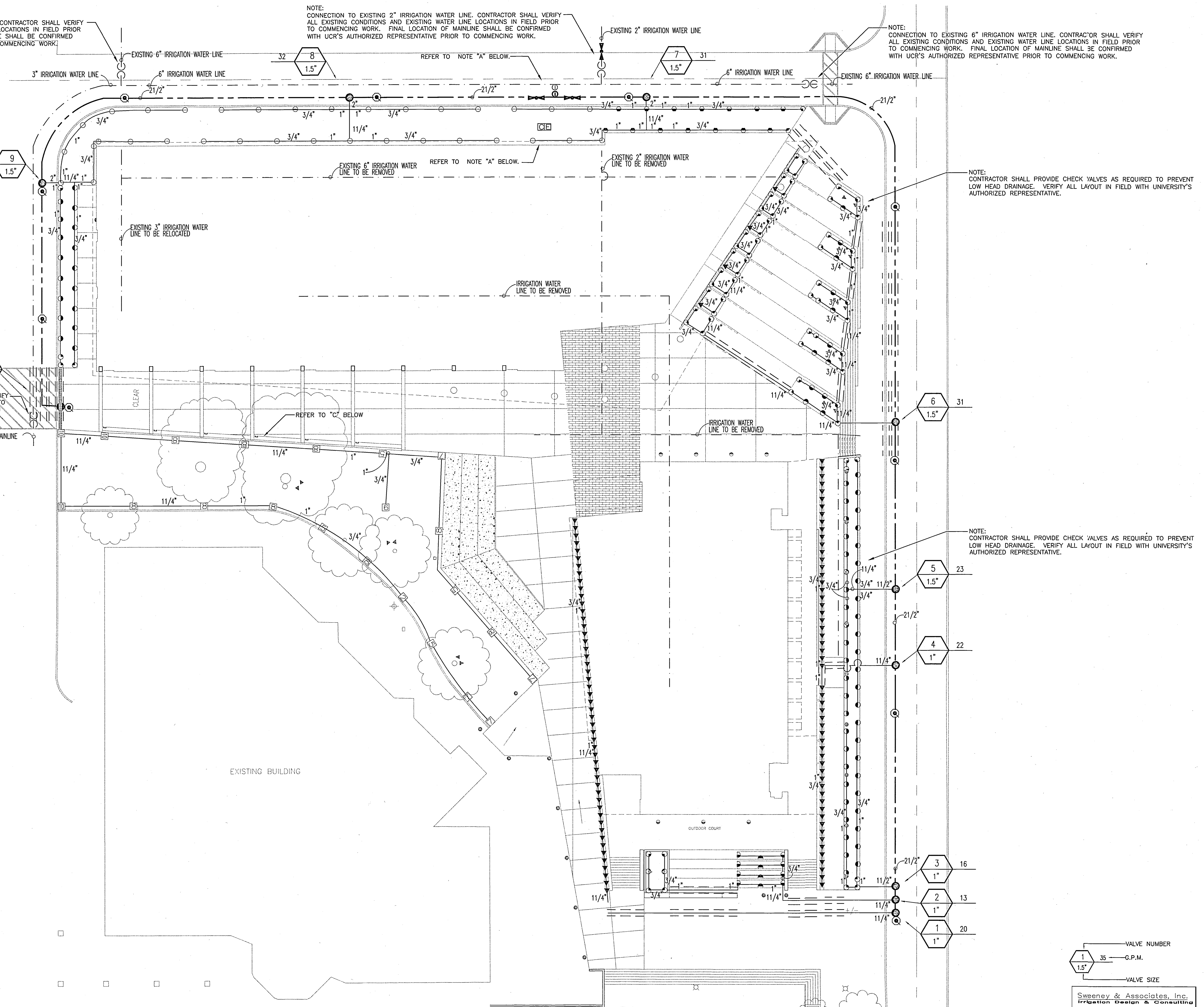

NOTE A:
CONTRACTOR SHALL CONNECT PROPOSED 21/2" IRRIGATION MAINLINE TO THE EXISTING 6" IRRIGATION SYSTEM WATER LINE. CONTRACTOR SHALL CONFIRM ACTUAL EXISTING IRRIGATION WATER LINE AND BACKFLOW LOCATION IN FIELD WITH AUTHORIZED REPRESENTATIVE PRIOR TO COMMENCING WORK. CONTRACTOR SHALL REFER TO AS-BUILTS PROVIDED BY UCR REPRESENTATIVES FOR EXISTING IRRIGATION SYSTEM LAYOUT. CONTRACTOR SHALL VERIFY ALL IRRIGATION CONNECTION AND DISCONNECTION POINTS IN FIELD WITH OWNER'S IN FIELD WITH OWNER'S AUTHORIZED REPRESENTATIVE PRIOR TO BIDDING AND PRIOR TO COMMENCING WORK.

CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING EXISTING BACKFLOW DEVICE AND TESTING FOR PROPER OPERATION. SHOULD BACKFLOW DEVICE BE INOPERABLE OR NOT IN PLACE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OR REPLACEMENT OF SAID BACKFLOW DEVICE. CONFIRM ANY DISCREPANCIES WITH OWNER'S AUTHORIZED REPRESENTATIVE PRIOR TO BIDDING WORK AND PRIOR TO COMMENCING WORK.

MINIMUM REQUIRED STATIC PRESSURE	60 PSI
DESIGN PRESSURE	54 PSI
MAXIMUM DEMAND	33 GPM

STATIC WATER PRESSURE WAS NOT AVAILABLE AT TIME OF SYSTEM DESIGN. SYSTEM WAS DESIGNED FOR A MINIMUM REQUIRED STATIC WATER PRESSURE OF 60 PSI. CONTRACTOR SHALL VERIFY EXISTING STATIC WATER PRESSURE PRIOR TO COMMENCING WORK. IF STATIC WATER PRESSURE IS LESS THAN THE 60 PSI MIN. REQUIRED PRESSURE THEN CONTRACTOR SHALL NOTIFY THE IRRIGATION CONSULTANT IMMEDIATELY FOR DIRECTION ON HOW TO PROCEED. A STATIC WATER PRESSURE LOWER THAN 60 PSI WILL REQUIRE THE ADDITION OF AN IRRIGATION BOOSTER PUMP, SAID BOOSTER PUMP SHALL BE AS SPECIFIED BY IRRIGATION CONSULTANT, AND SHALL BE ISSUED AS AN ADDENDUM TO THE ORIGINAL BID. FAILURE TO NOTIFY IRRIGATION COSULTANT SHALL PLACE ALL REQUIRED REPAIRS/EQUIPMENT AND OTHER RELATED COST AS THE FULL RESPONSIBILITY OF THE IRRIGATION CONTRACTOR.

NOTE B:
CONTROLLER SHALL BE SOLAR WIND 24 STATION CR/FST-B CONTROLLER WITH FIELD SWITCHING TERMINALS (MOD. # F0101-2124), CONTROLLER INSTALLED IN STAINLESS STEEL ENCLOSURES (SEE LEGEND FOR TYPE). CONTRACTOR SHALL ROUTE ONE #12 CONTROL WIRES FROM EACH CONTROLLER (1 NEW) TO THE EXISTING TELEPHONE VAULT AND CONNECT SAID WIRES TO THE EXISTING CENTRAL SYSTEM CONTROLL WIRES WITHIN VAULT (VERIFY ACTUAL VAULT LOCATION IN FIELD). CONTRACTOR SHALL PROVIDE FOR COMPLETE CONNECTION TO UCR CENTRAL CONTROL SYSTEM AS REQUIRED BY UCR REPRESENTATIVE. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND EXISTING EQUIPMENT LOCATIONS IN FIELD PRIOR TO COMMENCING WORK. FINAL LOCATION OF CONTROLLER AND ELECTRICAL POC SHALL BE CONFIRMED WITH OWNER'S AUTHORIZED REPRESENTATIVE PRIOR TO COMMENCING WORK.

TOTAL RUN TIME ALL VALVES IS 0.7 HOURS.

NOTE:
CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE ADJUSTMENT/MODIFICATION OF EXISTING IRRIGATION SYSTEM WITHIN THIS AND OTHER AREAS AFFECTED BY THE PROPOSED IMPROVEMENTS. ALL LAYOUT SHALL BE CONFIRMED WITH UCR'S AUTHORIZED REPRESENTATIVE PRIOR TO COMMENCING WORK. HEAD LAYOUT IN THIS AREA IS DIAGRAMMATIC AND SHALL BE ADJUSTED AS REQUIRED IN FIELD TO PROVIDE PROPER COVERAGE.

CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR/MODIFICATION OF ALL ADJACENT IRRIGATION SYSTEM EQUIPMENT THAT IS AFFECTED BY PROPOSED IRRIGATION IMPROVEMENTS. CONTRACTOR SHALL REPAIR SAID SYSTEMS TO A LIKE NEW MANNER, PROVIDING COMPLETE 100% HEAD TO HEAD COVERAGE IN ALL AREAS WITH SYSTEM LAYOUT AS APPROVED BY UCR'S AUTHORIZED REPRESENTATIVE. CONTRACTOR SHALL CONFIRM ALL AREAS REQUIRING MODIFICATION WITH OWNER'S AUTHORIZED REPRESENTATIVE PRIOR TO BIDDING WORK AND PRIOR TO COMMENCING WORK.

NOTE:
CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE REMOVAL AND DISPOSAL OF ALL EXISTING IRRIGATION EQUIPMENT AFFECTED BY THE PROPOSED IRRIGATION IMPROVEMENTS. CONTRACTOR SHALL VERIFY ALL EQUIPMENT TO BE REMOVED AND DISPOSED OF IN FIELD PRIOR TO BIDDING WORK AND PRIOR TO COMMENCING WORK.

NOTE:
MAINLINE SHOWN WITHIN PAVING FOR CLARITY ONLY, ACTUAL MAINLINE LOCATION TO BE A MINIMUM OF 18" OFF ADJACENT HARDSCAPE AND OTHER OBSTACLES TYP.

NOTE:
CONTRACTOR SHALL ADJUST ALL HEADS AS REQUIRED TO ACCOMMODATE ANY VERTICAL OBSTRUCTIONS THAT MAY OCCUR, INCLUDING BUT NOT LIMITED TO LIGHT POLES, FIRE HYDRANTS, ETC. VERIFY ALL HEAD LAYOUT WITH UCR'S AUTHORIZED REPRESENTATIVE PRIOR TO COMMENCING WORK.

Sweeney & Associates, Inc.
Irrigation Design & Consulting
38730 Sky Canyon Drive, Suite C
Murrieta, CA 92563
Ph. 909-461-6830 Fax. 909-461-6850
E-mail: lsweeney1@earthlink.net

SCALE: 1" = 16'-0"

Plot Sheet Filename:
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Ph. 310 574 4460
Fax 310 574 4462
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LICENSED LANDSCAPE ARCHITECT
KATHERINE SPITZ No. 3846
STATE OF CALIFORNIA

RECORD DRAWINGS

Key Plan

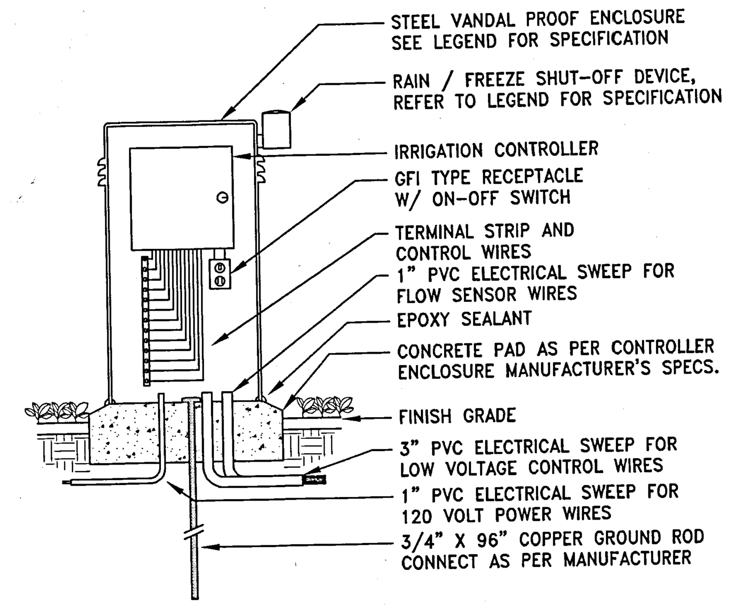
Drawing Title
IRRIGATION PLAN

1/16"=1'-0"
Scale

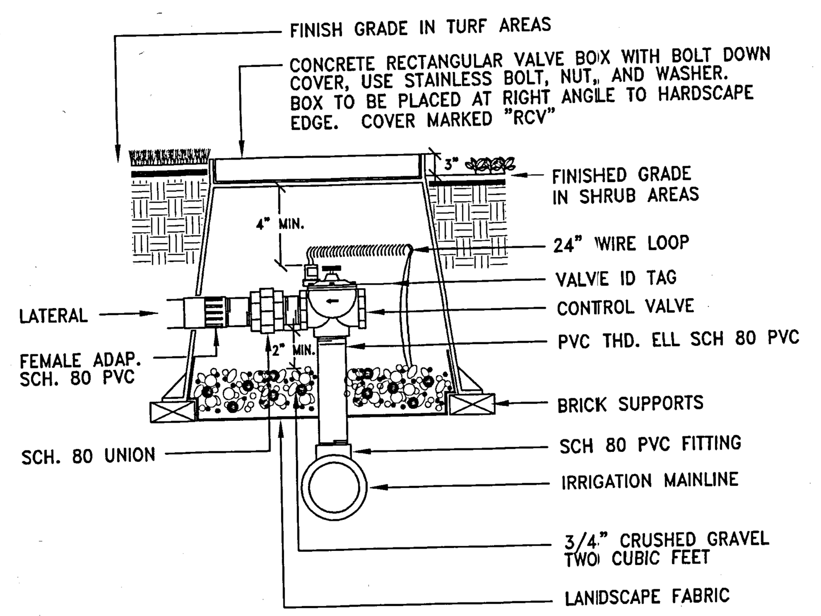
3191000
Project Number

05JULY00
Baseline Date

L-4.00
Drawing Number



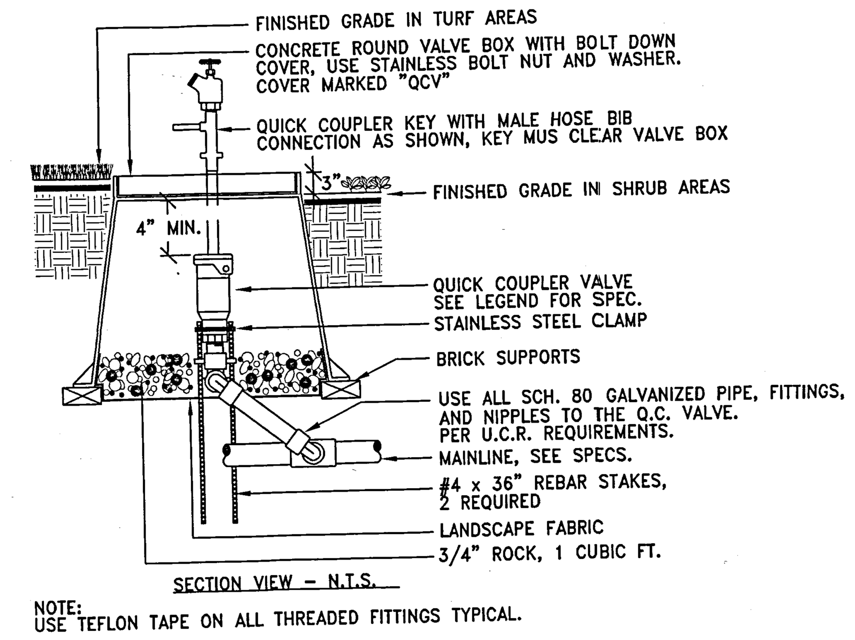
(E) CONTROLLER ASSEMBLY



SECTION VIEW – N.T.S.

NOTE:
USE SPEARS MANUFACTURING SCH. 80 STAINLESS STEEL REINFORCED TEES, 90 DEGREE ELLS AND FEMALE ADAPTERS FROM IRRIGATION MAINS TO ALL R.C. VALVES AND Q.C. VALVES. PER U.C.R. REQUIREMENT.

(D) REMOTE CONTROL VALVE

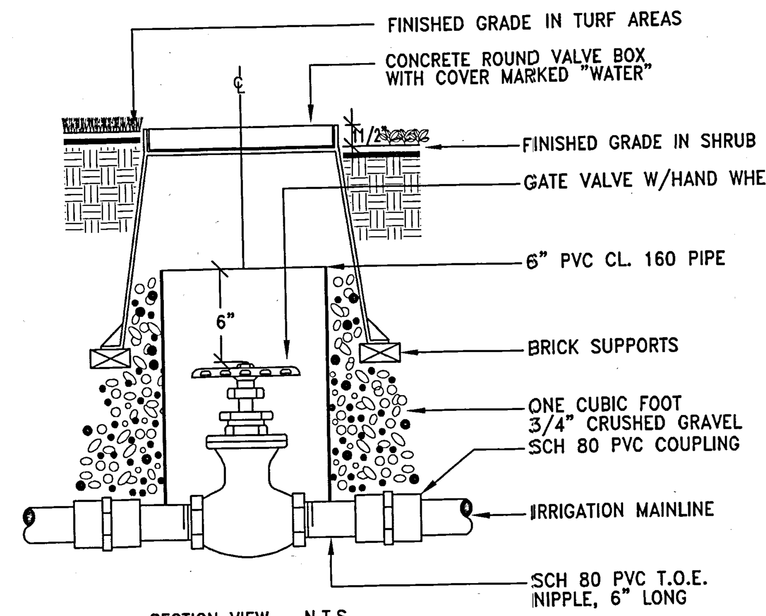


SECTION VIEW – N.T.S.

NOTE:
USE TEFLON TAPE ON ALL THREADED FITTINGS TYPICAL.

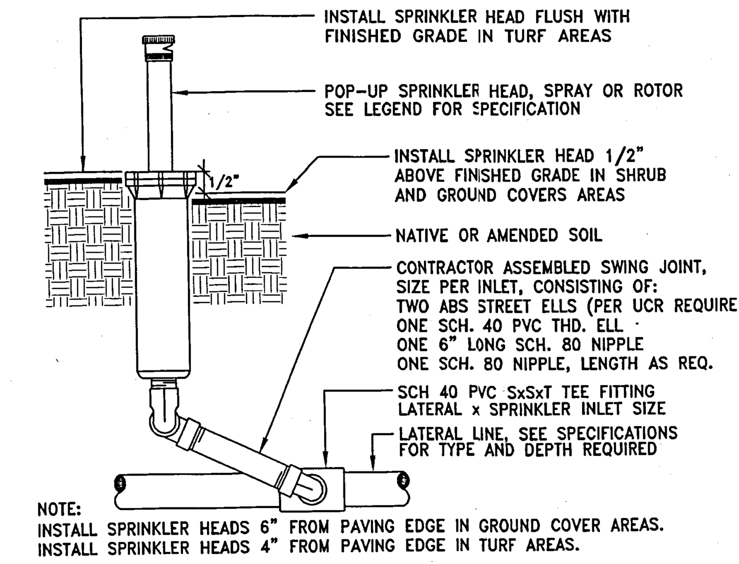
NOTE:
USE SPEARS MANUFACTURING SCH. 80 STAINLESS STEEL REINFORCED TEES, 90 DEGREE ELLS AND FEMALE ADAPTERS FROM IRRIGATION MAINS TO ALL R.C. VALVES AND Q.C. VALVES. PER U.C.R. REQUIREMENT.

(C) QUICK COUPLER



SECTION VIEW – N.T.S.

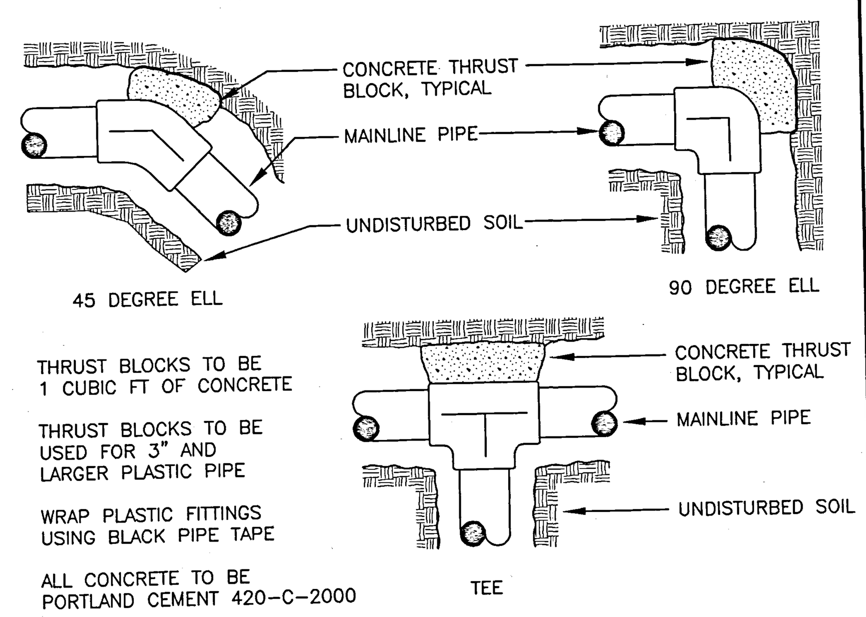
(B) GATE VALVE



NOTE:
INSTALL SPRINKLER HEADS 6" FROM PAVING EDGE IN GROUND COVER AREAS.
INSTALL SPRINKLER HEADS 4" FROM PAVING EDGE IN TURF AREAS.

INSTALL SPRINKLER HEADS PLUMB. ADJUST SPRAYS OR NOZZLE STREAM TO COVER LANDSCAPE AREA WITHOUT OVER SPRAY ONTO PAVING, FENCES, WALLS OR BUILDINGS.

(A) POP-UP SPRINKLER



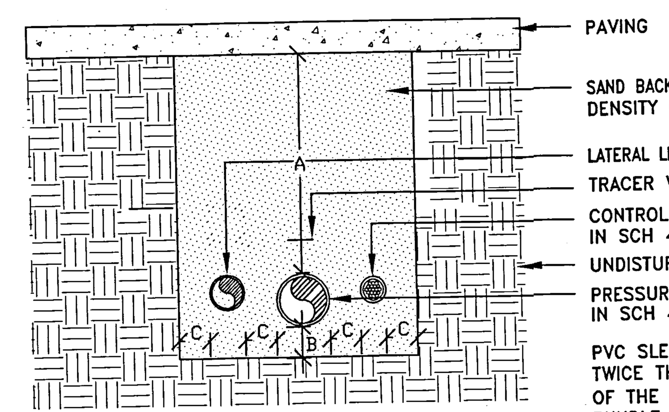
THRUST BLOCKS TO BE 1 CUBIC FT OF CONCRETE

THRUST BLOCKS TO BE USED FOR 3" AND LARGER PLASTIC PIPE

WRAP PLASTIC FITTINGS USING BLACK PIPE TAPE

ALL CONCRETE TO BE PORTLAND CEMENT 420-C-2000

(H) THRUST BLOCK



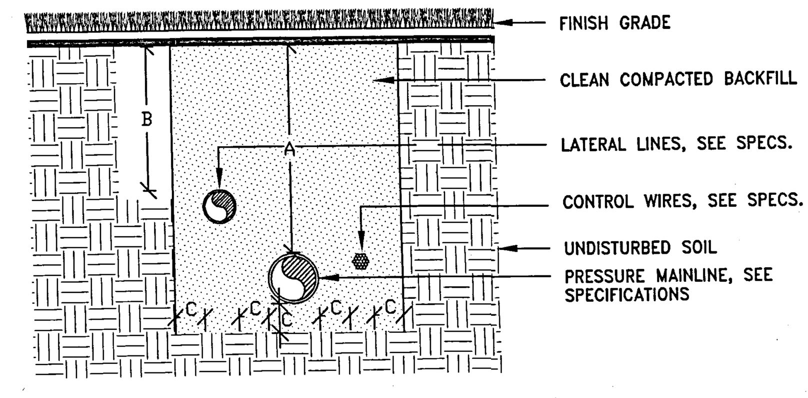
DIMENSION	A	B	C	
1/2" TO 3" IN SIZE	24"	2"	4"	

SECTION VIEW – N.T.S.

PVC SLEEVES TO BE TWICE THE DIAMETER OF THE PIPE OR WIRE BUNDLE CARRIED.

DETAIL ALSO FOR PIPE INSTALLED IN ROCK SOIL.

(G) SLEEVE INSTALLATION



DIMENSION	A	B	C
1/2" TO 2-1/2" IN SIZE	24"	12"	4"
3" TO 6" IN SIZE	24"		4"

SECTION VIEW – N.T.S.

(F) PIPE INSTALLATION

IRRIGATION MATERIAL LEGEND

SYMBOL Q T H F	MANUFACT.	MODEL NO. / DESCRIPTION	GPM	PSI	RADIUS	DETAIL
	TORO	570Z-12P-COM-5-Q/T/H-PC POP-UP SHRUB HEAD	.09, .12, .18	30	5 FT	A
	TORO	570Z-12P-COM-10-Q/T/H/5-PC POP-UP SHRUB HEAD	.33, .44, .66, 1.33	30	10 FT	A
	TORO	570Z-12P-COM-12-Q/T/H/F-PC POP-UP SHRUB HEAD	.48, .64, .96, 1.92	30	12 FT	A
	TORO	570Z-12P-COM-15-Q/T/H/F-PC POP-UP SHRUB HEAD	.75, 1.0, 1.5, 3.0	30	15 FT	A
	TORO	570Z-12P-COM-4-EST/SST-PC POP-UP SHRUB HEAD	.43, .86	30	4X15 FT 4X30 FT	A
1 2 3	HUNTER	PGM-06-A-V-.75/1.0/2.0 POP-UP TURF ROTOR HEAD	.75, 1.0, 2.0	40	20 FT	A
4 5 6	HUNTER	PGP-ADV/36V-01/04/06 POP-UP TURF ROTOR HEAD	.60, 1.4, 2.4	40	25 FT	A
7 8 9	HUNTER	PGP-ADV/36V-03/05/08 POP-UP TURF ROTOR HEAD	1.0, 1.8, 3.7	40	30 FT	A
10 11 12	HUNTER	PGP-ADV/36V-04/06/09 POP-UP TURF ROTOR HEAD	1.4, 2.4, 4.9	40	35 FT	A
13 14 15	HUNTER	PGP-ADV/36V-05/07/10 POP-UP TURF ROTOR HEAD	1.8, 3.0, 6.0	40	40 FT	A
	VALCON	5000 SERIES ANTI-DRAIN VALVES. USE ON ALL HEADS WITH LOW HEAD DRAINAGE, SIZE PER PIPE SIZE				N/A
	N/A	CONNECTIONS TO EXISTING IRRIGATION WATER LINES. VERIFY LOCATION AND SIZE IN FIELD WITH UNIVERSITIES REPRESENTATIVE PRIOR TO COMMENCING WORK				N/A
	NIBCO	T-113 GATE VALVE, LINE SIZE				B
	BUCKNER	14-LT 1" QUICK COUPLER VALVE				C
	GRISWOLD	2000E "EPOXY FUSED" REMOTE CONTROL VALVE, SIZE AS SHOWN				D
	SOLARWIND	CONTRACTOR SHALL PROVIDE ONE (1) SOLAR WIND 24 STATION CR/FST-B (MOD. # F0102-2124) CONTROLLER WITH FIELD SWITCHING TERMINALS INSTALLED WITHIN A STAINLESS STEEL ENCLOSURE (SEE BELOW FOR TYPE). PROVIDE MASTER VALVE ISOLATION RELAYS.				E
	N/A	120 VOLT ELECTRICAL POWER, PROVIDED BY ELECTRICIAN, VERIFY ACTUAL LOCATION IN FIELD				N/A
NO SYMBOL	LE MEUR	MODEL A STAINLESS STEEL CONTROLLER ENCLOSURE WITH ON-SITE POWER AND INTERIOR LIGHT OPTION 'A'.				E
	AS APPROVED	PVC PIPE 3/4" – 2" SCH. 40 AS LATERAL LINES 12" BELOW GRADE				F
	AS APPROVED	PVC PIPE 21/2" CL. 315 AS MAINLINES 18" BELOW GRADE				F,H
	AS APPROVED	PVC PIPE 3" – 6" CL. 315 AS MAINLINES 24" BELOW GRADE				F,H
	AS APPROVED	EXISTING IRRIGATION WATER LINES TO BE REMOVED				N/A
	AS APPROVED	PVC PIPE SCH. 40 AS SLEEVING, TWICE THE DIAMETER OF PIPE OR WIRE BUNDLE CARRIED PLACE BELOW ALL PAVING, HARDSCAPE, ETC., AND AS DIRECTED BY OWNER'S AUTHORIZED REPRESENTATIVE.				G
NO SYMBOL	AS APPROVED	IRRIGATION CONTROL WIRE #12UF AWG DIRECT BURIAL (U.L. APPROVED) PROVIDE A/B (BLACK-RED) SIGNAL WIRES TO BE CONNECTED TO UNIVERSITY SYSTEM				F,G
NO SYMBOL	3M	DBY WIRE CONNECTORS, OR APPROVED EQUAL, INSTALL PER MANUFACTURER'S RECOMMENDATIONS				N/A
NO SYMBOL	AS APPROVED	CONCRET VALVE BOXES, 10" ROUND AND RECTANGULAR AS NOTED ON DETAILS, BROOKS, CHRISTY OR APPROVED EQUAL				N/A
NO SYMBOL	AS APPROVED	TRACER WIRE, DETECTABLE UNDERGROUND UTILITY MARKING TAPE, CHRISTY TYPE III OR APPROVED EQUAL				N/A

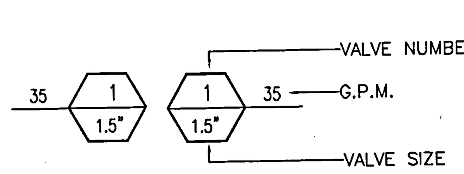
WATER PRESSURE CALCULATIONS

POC NUMBER	A	POC SIZE	2"
HYDRAULIC GRADE LINE	–	POC ELEVATION	–
ELEVATION DIFFERENCE	–	MINIMUM STATIC PRESSURE REQUIRED (PSI)	60
REMOTE CONTROL VALVE #	10	REMOTE CONTROL VALVE SIZE	11/2"
R.C.V. DEMAND (GPM)	33	TOTAL DEMAND (GPM)	28
R.C.V. ELEVATION	–	STATIC PRESSURE AT R.C.V.	54

SIZE	DESCRIPTION		PSI LOSS	
N/A	SERVICE LINE	1	0.0	PSI
N/A	WATER METER	3	0.0	PSI
N/A	BACKFLOW PREVENTER	4	12.0	PSI
21/2"	GATE/BALL VALVES	5	1.0	PSI
2"	MASTER CONTROL VALVE	6	2.5	PSI
21/2"	450 FEET OF MAINLINE: TYPE CL. 315	7	1.2	PSI
	FEET OF MAINLINE: TYPE CL. 315	8	0.0	PSI
11/2"	REMOTE CONTROL VALVE	9	2.5	PSI
10%	LATERAL LINE LOSS	10	3.0	PSI
10%	FITTING LOSS	11	2.2	PSI
0 FT	ELEVATION CHANGE (P.O.C. TO HIGHEST HEAD)	12	0.0	PSI
	TOTAL SYSTEM PRESSURE LOSS (SUM OF #1 THRU #12)	13	24.4	PSI
	PRESSURE REQUIRED AT HEAD	14	30.0	PSI
	TOTAL PRESSURE REQUIRED (SUM OF #13 AND # 14)	15	54.4	PSI
	MINIMUM STATIC WATER PRESSURE (FROM ABOVE)	16	60.0	PSI
	RESIDUAL PRESSURE (SUBTRACT # 15 FROM # 16)	17	5.6	PSI
	SET PRV OR MCV AT (# 15 PLUS 10 PSI)	18	0.0	PSI
	PRESSURE BOOST, IF REQUIRED (#15–#16 + 20 PSI)	19	–	PSI

IRRIGATION NOTES

1. ALL LOCAL MUNICIPAL AND STATE LAWS, RULES AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR.
2. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES, STRUCTURES AND SERVICES BEFORE COMMENCING WORK. THE LOCATIONS OF UTILITIES, STRUCTURES AND SERVICES SHOWN IN THESE PLANS ARE APPROXIMATE ONLY. ANY DISCREPANCIES BETWEEN THESE PLANS AND ACTUAL FIELD CONDITIONS SHALL BE REPORTED TO THE OWNER'S REPRESENTATIVE.
3. THE CONTRACTOR SHALL OBTAIN THE PERTINENT ENGINEERING OR ARCHITECTURAL PLANS BEFORE BEGINNING WORK.
4. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS REQUIRED TO PERFORM THE WORK INDICATED HEREIN BEFORE BEGINNING WORK.
5. THIS DESIGN IS DIAGRAMMATIC. ALL EQUIPMENT SHOWN IN PAVED AREAS IS FOR DESIGN CLARITY ONLY AND IS TO BE INSTALLED WITHIN PLANTING AREAS.
6. DO NOT WILLFULLY INSTALL ANY EQUIPMENT AS SHOWN ON THE PLANS WHEN IT IS OBVIOUS IN THE FIELD THAT UNKNOWN CONDITIONS EXIST THAT WERE NOT EVIDENT AT THE TIME THESE PLANS WERE PREPARED. ANY SUCH CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE PRIOR TO ANY WORK OR THE IRRIGATION CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR ANY FIELD CHANGES DEEMED NECESSARY BY THE OWNER.
7. INSTALL ALL EQUIPMENT AS SHOWN IN THE DETAILS AND SPECIFICATIONS. CONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH LOCAL CITY, COUNTY AND STATE REQUIREMENTS FOR BOTH EQUIPMENT AND INSTALLATION.
8. ACTUAL LOCATION FOR THE INSTALLATION OF THE BACKFLOW PREVENTER AND THE AUTOMATIC CONTROLLER IS TO BE DETERMINED IN THE FIELD BY THE OWNER'S AUTHORIZED REPRESENTATIVE.
9. CONTRACTOR IS TO PROVIDE AN ADDITIONAL PILOT WIRE TO THE END OF THE MAINLINE RUN IN TWO DIRECTIONS FROM THE CONTROLLER.
10. ALL PIPE UNDER PAVED AREAS TO BE INSTALLED IN A SCH. 40 SLEEVE TWICE THE DIAMETER OF THE PIPE CARRIED. ALL WIRE UNDER PAVED AREAS TO BE INSTALLED IN A SCH. 40 SLEEVE THE SIZE REQUIRED TO EASILY PULL WIRE THROUGH. ALL SLEEVES TO BE INSTALLED WITH A MINIMUM DEPTH AS SHOWN ON THE SLEEVING DETAILS. SLEEVES TO EXTEND AT LEAST 12" PAST THE EDGE OF THE PAVING.
11. ALL QUICK COUPLER VALVES TO BE INSTALLED IN SHRUB OR GROUND COVER AREAS WHERE POSSIBLE. ALL QUICK COUPLER VALVES TO BE INSTALLED AS SHOWN ON THE INSTALLATION DETAILS. INSTALL ALL QUICK COUPLER VALVES WITHIN 18" OF HARDSCAPE.
12. ALL HEADS ARE TO BE INSTALLED WITH THE NOZZLE, SCREEN AND ARCS SHOWN ON THE PLANS. ALL HEADS ARE TO BE ADJUSTED TO PREVENT OVERSPRAY ONTO BUILDINGS, WALLS, FENCES AND HARDSCAPE. THIS INCLUDES, BUT NOT LIMITED TO, ADJUSTMENT OF DIFFUSER PIN OR ADJUSTMENT SCREW, REPLACEMENT OF PRESSURE COMPENSATING SCREENS, REPLACEMENT OF NOZZLES WITH MORE APPROPRIATE RADIUS UNITS AND THE REPLACEMENT OF NOZZLES WITH ADJUSTABLE ARC UNITS.



Sweeney & Associates, Inc.
Irrigation Design & Consulting
39730 Sky Canyon Drive, Suite C
Murrieta, CA 92563
Ph. 909-461-6830 Fax. 909-461-6850
E-mail: lsweeney1@earthlink.net

UCR
UNIVERSITY OF CALIFORNIA RIVERSIDE

CAMPUS SURGE BUILDING
UCR PROJECT NO. 950424

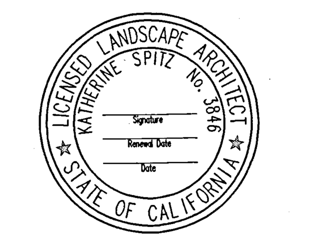
900 University Avenue
Riverside, CA 92521

SmithGroup
SmithGroup, Incorporated
1919 Santa Monica Boulevard
Fourth Floor
Santa Monica, California 90404
310.586.5400
310.586.1091

Katherine Spitz Associates Inc.
LANDSCAPE ARCHITECTURE
Ph. 310 574 4460
Fax 310 574 4462
4212 1/2 Glencoe Avenue Marina Del Rey California 90292

Issued for | Rev | Date

Seals and Signatures



RECORD DRAWINGS

Key Plan

Drawing Title

IRRIGATION DETAIL & LEGEND

NOT TO SCALE

Scale

3193000

Project Number

05JULY00

Baseline Date

L-4.01

Drawing Number

BID FORM

FOR: SKYE HALL HVAC REPLACEMENT
PROJECT NUMBER: 950583
CONTRACT NUMBER:950583-LF-2020-100
UNIVERSITY OF CALIFORNIA, RIVERSIDE
RIVERSIDE, CALIFORNIA

October 18, 2021

BID TO:

Planning, Design & Construction
UNIVERSITY OF CALIFORNIA, RIVERSIDE
1223 University Avenue, Suite 240
Riverside, CA 92521

(951) 827-2610

BID FROM: ______________________________
(Name of Bidder)

____
(Contact Name)

____
(Address)

____
(City, State, Zip Code)

______________________ ______________________
(Telephone Number) (Facsimile Number)

____
(E-mail)

____
(Date Bid Submitted)

Note: All portions of this Bid Form must be completed and the Bid Form must be signed before the Bid is submitted. Failure to do so will result in the Bid being rejected as non-responsive.

BIDDER'S NAME: ____

1. 0 BIDDER'S REPRESENTATIONS

Bidder, represents that a) Bidder and all Subcontractors, regardless of tier, has the appropriate current and active Contractor's licenses required by the State of California and the Bidding Documents; b) it has carefully read and examined the Bidding Documents for the proposed Work on this Project; c) it has examined the site of the proposed Work and all Information Available to Bidders; d) it has become familiar with all the conditions related to the proposed Work, including the availability of labor, materials, and equipment; e) Bidder and all Subcontractors, regardless of tier, are currently registered with the California Department of Industrial Relations pursuant to California Labor Code Section 1725.5 and 1771.1. Bidder hereby offers to furnish all labor, materials, equipment, tools, transportation, and services necessary to complete the proposed Work on this Project in accordance with the Contract Documents for the sums quoted. Bidder further agrees that it will not withdraw its Bid within **{60}** days after the Bid Deadline, and that, if it is selected as the apparent lowest responsive and responsible Bidder, that it will, within 10 days after receipt of notice of selection, sign and deliver to University the Agreement in triplicate and furnish to University all items required by the Bidding Documents. If awarded the Contract, Bidder agrees to complete the proposed Work within **105** days after the date of commencement specified in the Notice to Proceed.

2.0 ADDENDA

Bidder acknowledges that it is Bidder's responsibility to ascertain whether any Addenda have been issued and if so, to obtain copies of such Addenda from University's Facility at the appropriate address stated on Page 1 of this Bid Form. Bidder therefore agrees to be bound by all Addenda that have been issued for this Bid.

3.0 NOT USED

4.0 LUMP SUM BASE BID

$ [ ][ ] , [ ][ ][ ] , [ ][ ][ ] . [ ][ ]

(Place figures in appropriate boxes.)

5.0 SELECTION OF APPARENT LOW BIDDER

Refer to the Instructions to Bidders for selection of apparent low bidder.

6.0 UNIT PRICES - NOT USED

BIDDER'S NAME: ____

7.0 DAILY RATE OF COMPENSATION FOR COMPENSABLE DELAYS

Bidder shall determine and provide below the daily rate of compensation for any Compensable Delay caused by University at any time during the performance of the Work. A Facility may choose a minimum compensable delay in the best interests of the Project. If so, use the language in parentheticals { } and in grey highlight:

$ [ ][ ] , [ ][ ][ ] . [ ][ ] X 20 multiplier

(Place figures in appropriate boxes.)

Failure to fill in a dollar figure for the daily rate for Compensable Delay shall render the bid non-responsive. University will perform the extension of the daily rate times the multiplier.

The daily rate shown above will be the total amount of Contractor entitlement for each day of Compensable Delay caused by University at any time during the performance of the Work and shall constitute payment in full for all delay costs, direct or indirect (including, without limitation, compensation for all extended home office overhead and extended general conditions), of the Contractor and all subcontractors, suppliers, persons, and entities under or claiming through Contractor on the Project. The number of days of Compensable Delay shown as a "multiplier" above is not intended as an estimate of the number of days of Compensable Delay anticipated by the University. The University will pay the daily rate of compensation only for the actual number of days of Compensable Delay, as defined in the General Conditions; the actual number of days of Compensable Delay may be greater or lesser than the "multiplier" shown above.

8.0 ALTERNATES-NOT USED

BIDDER'S NAME: ______________________________

9.0 LIST OF SUBCONTRACTORS

Bidder will use Subcontractors for the Work:

☐ No ☐ Yes

If "yes", provide in the spaces below (a) the name, the location of the place of business, and the California contractor license number of each subcontractor who will perform work or labor or render service to the prime contractor in or about the construction of the work or improvement, or a subcontractor licensed by the state of California who, under subcontract to the prime contractor, specially fabricates and installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of 1 percent of the prime contractor's total bid, (b) the portion of the work which will be done by each subcontractor. The prime contractor shall list only one subcontractor for each such portion as is defined by the prime contractor in its bid.

	Subcontractor			
Portion of the Work Activity (e.g. electrical, mechanical, concrete)	Name of Business	Location of Business (City)	License No.	DIR Registration No.

(Note: Add additional pages if required.)

BIDDER'S NAME: ______________________________

10.0 NOT USED

11.0 BIDDER INFORMATION

TYPE OF ORGANIZATION

____
(Corporation, Partnership, Individual, Joint Venture, etc.)

IF A CORPORATION, THE CORPORATION IS ORGANIZED UNDER THE LAWS OF:

THE STATE OF ______________________ .
(State)

NAME OF PRESIDENT OF THE CORPORATION:

______________________________ .
(Insert Name)

NAME OF SECRETARY OF THE CORPORATION:

______________________________ .
(Insert Name)

IF A PARTNERSHIP, NAMES OF ALL GENERAL PARTNERS:

______________________________ .
(Insert Name(s))

CALIFORNIA CONTRACTORS LICENSE(S):

(Classification(s))	(License Number)	(Expiration Date)

(For Joint Venture, list Joint Venture's license and licenses for all Joint Venture partners.)

BIDDER'S NAME: ______________________________

12.0 REQUIRED COMPLETED ATTACHMENTS

The following documents are submitted with and made a condition of this Bid:

1. Bid Security in the form of ______________________________
(Bid Bond or Certified Check)

13.0 DECLARATION

I, ______________________________ , hereby declare that I am the
(Printed Name)

______________________ of ______________________________
(Title) (Name of Bidder)

submitting this Bid Form; that I am duly authorized to execute this Bid Form on behalf of Bidder; and that all information set forth in this Bid Form and all attachments hereto are, to the best of my knowledge, true, accurate, and complete as of its submission date.

I further declare that this bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

I declare, under penalty of perjury, that the foregoing is true and correct and that this Declaration was executed at:

______________________________ , in the State of ______________ ,
(Name of City if within a City, otherwise Name of County) (State)

on ______________ .
(Date)

____
(Signature)

BID BOND

KNOW ALL PERSONS BY THESE PRESENTS:

That we, ____,
as Principal, and ______________________________________, as Surety, are held and firmly bound unto THE REGENTS OF THE UNIVERSITY OF CALIFORNIA, hereinafter called THE REGENTS, in the sum of 10% of the Lump Sum Base Bid amount for payment of which in lawful money of the United States, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT, WHEREAS, Principal has submitted a Bid for the work described as follows:

Project Name: Skye Hall HVAC Replacement
Project Number: 950583, Contract Number: 950583-LF-2022-36
Location: 900 University Avenue, Riverside, CA. 92521

NOW, THEREFORE, if Principal shall not withdraw said Bid within the time period specified after the Bid Deadline, as defined in the Bidding Documents, or within **60** days after the Bid Deadline if no time period be specified, and, if selected as the apparent lowest responsible Bidder, Principal shall, within the time period specified in the Bidding Documents, do the following:

(1) Enter into a written agreement, in the prescribed form, in accordance with the Bid.
(2) File two bonds with THE REGENTS, one to guarantee faithful performance and the other to guarantee payment for labor and materials, as required by the Bidding Documents.
(3) Furnish certificates of insurance and all other items as required by the Bidding Documents.

In the event of the withdrawal of said Bid within the time period specified, or within **60** days if no time period be specified, or the disqualification of said Bid due to failure of Principal to enter into such agreement and furnish such bonds, certificates of insurance, and all other items as required by the Bidding Documents, if Principal shall pay to THE REGENTS an amount equal to the difference, not to exceed the amount hereof, between the amount specified in said Bid and such larger amount for which THE REGENTS procure the required work covered by said Bid, if the latter be in excess of the former, then this obligation shall be null and void, otherwise to remain in full force and effect.

In the event suit is brought upon this bond by THE REGENTS, Surety shall pay reasonable attorneys' fees and costs incurred by THE REGENTS in such suit.

IN WITNESS WHEREOF, we have hereunto set our hands this _____ day of _____________, 20___.

PRINCIPAL:	**SURETY:**
______________________ (Name of Company)	______________________ (Name of Company)
By: ______________________ (Signature)	By: ______________________ (Signature)
______________________ (Printed Name)	______________________ (Printed Name)
______________________ (Title)	______________________ (Title)
	Address for Notices:
	______________________ (Street Address)
	______________________ (City, State & Zip Code)

NOTE: Notary acknowledgement for Surety and Surety's Power of Attorney must be attached.

AGREEMENT

This AGREEMENT is made on_____, between THE REGENTS OF THE UNIVERSITY OF CALIFORNIA ("University"),

whose Facility is:	University of California, Riverside
whose address for notices is:	UCR Planning, Design & Construction UNIVERSITY OF CALIFORNIA, RIVERSIDE 1223 University Avenue, Suite 240 Riverside, CA 92521
and Contractor:	**Name**
whose address for notices is:	Street Address City, State & Zip
for the Project:	SKYE HALL HVAC REPLACMENT Project Number: 950583 University of California, Riverside County of Riverside Riverside, California 92521
University's Responsible Administrator:	Blythe R. Wilson, Architect Director of Project Management Planning, Design & Construction
University's Representative is:	Tameesha Hayes Project Manager Planning, Design & Construction
whose address for notices is:	UCR Planning, Design & Construction UNIVERSITY OF CALIFORNIA, RIVERSIDE 1223 University Avenue, Suite 240 Riverside, CA 92521
Contract Documents for the Work Prepared by:	Nick Ubrun Goss Engineering 255 E. Main Street, Suite 301 Corona, CA. 92879 Tel: 951-363-4797

University and Contractor hereby agree as follows:

ARTICLE 1 WORK

Contractor shall provide all work required by the Contract Documents (the "Work"). Contractor agrees to do additional Work arising from changes ordered by the University pursuant to Article 7 of the General Conditions. Contractor shall (1) pay all sales, consumer and other taxes and (2) obtain and pay for any governmental licenses and permits necessary for the work, other than building and utility permits.

ARTICLE 2 CONTRACT DOCUMENTS

"Contract Documents" means the Advertisement For Bids, Instructions To Bidders, Supplementary Instructions to Bidders, Bid Form, this Agreement, General Conditions, Supplementary Conditions, Exhibits, Specifications, List of Drawings, Drawings, Addenda, Notice to Proceed, Change Orders, Notice of Completion, and all other documents identified in this Agreement that together form the contract between University and Contractor for the Work (the "Contract"). The Contract constitutes the complete agreement between University and Contractor and supersedes any previous agreements or understandings.

ARTICLE 3 CONTRACT SUM

Subject to the provisions of the Contract Documents University shall pay to Contractor, for the performance of the Work, **$_____** , the "Contract Sum".

ARTICLE 4 CONTRACT TIME

Contractor shall commence the Work on the date specified in the Notice to Proceed and fully complete the work within **105 calendar** days, the "Contract Time".

By signing this agreement, Contractor represents to University that the Contract Time is reasonable for completion of the work and that Contractor will complete the Work within the Contract Time. Time limits stated in the Contract Documents are of the essence of the Contract.

ARTICLE 5 LIQUIDATED DAMAGES

If Contractor fails to complete the Work within the Contract Time, Contractor shall pay to University, as liquidated damages and not as a penalty, the sum of **$500.00** for each day after the expiration of the Contract Time that the Work remains incomplete. After Substantial Completion, the rate for liquidated damages shall be reduced to the sum of **$250.00** per day. University and Contractor agree that if the Work is not completed within the Contract Time, University's damages would be extremely difficult or impracticable to determine and that the aforesaid amounts are reasonable estimates of and reasonable sums for such damages. University may deduct any liquidated damages due from Contractor from any amounts otherwise due to Contractor under the Contract Documents. This provision shall not limit any right or remedy of University in the event of any other default of Contractor other than failing to complete the Work within the Contract Time.

ARTICLE 6 COMPENSABLE DELAY

If Contractor is entitled to an increase in the Contract Sum as a result of a Compensable Delay, determined pursuant to Articles 7 and 8 of the General Conditions, the Contract Sum will be increased by the sum of **$_____**per day for each day for which such compensation is payable.

ARTICLE 7 DUE AUTHORIZATION

The person or persons signing this Agreement on behalf of Contractor hereby represent and warrant to University that this Agreement is duly authorized, signed, and delivered by Contractor.

THIS AGREEMENT is entered into by University and Contractor as of the date set forth above.

CONTRACTOR:

____
(Name of Company)

a ______________________________
(Type of Organization)

By: ______________________________
(Signature)

____
(Print Name)

____
(Title)

California Contractor's License(s):

____
(Name of Licensee)

____
(Classification and License Number)

____
(Expiration Date)

____
(Employer Identification Number)

Recommended:
By University's Representative:

____
(Signature & Date)

Tameesha Hayes
Project Manager
Planning, Design & Construction
(Print Name & Title)

Funds Sufficient:
By Financial Administrative Officer:

____
(Signature & Date)

Susan McFadden
Senior Financial Analyst
Planning, Design & Construction
(Print Name & Title)

UNIVERSITY:
By The Regents of the University of California:

____
(Signature & Date)

Drew Hecht, Architect
Director of Project Management
Planning, Design & Construction
(Print Name & Title)

Account No.: __________ Activity Code: __________
Fund: __________ Function: __________
Cost Center: __________ Project Code: __________

Attach notary acknowledgement for all signatures of Contractor. If signed by other than the sole proprietor, a general partner, or corporate officer, attach original notarized Power of Attorney or Corporate Resolution.

GENERAL CONDITIONS – LONG FORM
TABLE OF CONTENTS

ARTICLE 1
GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1 APPLICABLE CODE REQUIREMENTS
The term "Applicable Code Requirements" means all laws, statutes, the most recent building codes, ordinances, rules, regulations, and lawful orders of all public authorities having jurisdiction over University, Contractor, any Subcontractor, the Project, the Project site, the Work, or the prosecution of the Work including without limitation the requirements set forth in Article 3.7.

1.1.2 APPLICATION FOR PAYMENT
The term “Application For Payment” means the submittal from Contractor wherein payment for certain portions of the completed Work is requested in accordance with Article 9.

1.1.3 BENEFICIAL OCCUPANCY
The term “Beneficial Occupancy” means the University's occupancy or use of any part of the Work in accordance with Article 9.

1.1.4 CERTIFICATE FOR PAYMENT
The term “Certificate For Payment” means the form signed by University's Representative attesting to the Contractor's right to receive payment for certain completed portions of the Work in accordance with Article 9.

1.1.5 CHANGE ORDER
See Article 7.2 of the General Conditions.

1.1.6 CLAIM
See Article 4.3 of the General Conditions.

1.1.7 COMPENSABLE DELAY
The term “Compensable Delay” means a delay that entitles the Contractor to an adjustment of the Contract Sum and an adjustment of the Contract Time pursuant to Articles 7 and 8 of the General Conditions.

1.1.8 CONTRACT
The term “Contract” shall have the meaning identified in Article 2 of the Agreement.

1.1.9 CONTRACT DOCUMENTS
The term “Contract Documents” means all documents listed in Article 2 of the Agreement, as modified by Change Order, including but not limited to the Drawings and Specifications.

1.1.10 CONTRACT MILESTONE
The term “Contract Milestone” means any requirement in the Contract Documents that reflects a planned point in time for the start or completion of a portion of the Work measured from i) the date of the Notice to Proceed or ii) the date of another Contract Milestone defined in the Contract Documents, as applicable.

1.1.11 CONTRACT SCHEDULE
The term “Contract Schedule” means the graphical representation of a practical plan, in accordance with the Specifications, to perform and complete the Work within the Contract Time in accordance with Article 3.

1.1.12 CONTRACT SUM
The term “Contract Sum” means the amount of compensation stated in the Agreement for the performance of the Work, as adjusted by Change Order.

1.1.13 CONTRACT TIME
The term “Contract Time” means the number of days set forth in the Agreement, as adjusted by Change Order, within which Contractor must achieve Final Completion.

1.1.14 CONTRACTOR
The term “Contractor” means the person or firm identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number.

1.1.15 CONTRACTOR FEE
See Article 7.3 of the General Conditions.

1.1.16 COST OF EXTRA WORK
See Article 7.3 of the General Conditions.

1.1.17 DAY
The term “day,” as used in the Contract Documents, shall mean calendar day, unless otherwise specifically provided.

1.1.18 DEFECTIVE WORK
The term “Defective Work” means work that is unsatisfactory, faulty, omitted, incomplete, deficient, or does not conform to the requirements of the Contract Documents, directives of University's Representative, or the requirements of any inspection, reference standard, test, or approval specified in the Contract Documents.

1.1.19 DRAWINGS
The term “Drawings” means the graphic and pictorial portions of the Contract Documents showing the design, location, and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams. The Drawings are listed in the List of Drawings.

1.1.20 EXCUSABLE DELAY
The term “Excusable Delay” means a delay that entitles the Contractor to an adjustment of the Contract Time but not an adjustment of the Contract Sum, pursuant to Articles 7 and 8 of the General Conditions.

1.1.21 EXTRA WORK
The term “Extra Work” means Work beyond or in addition to the Work required by the Contract Documents.

1.1.22 FIELD ORDER
See Article 7.2 of the General Conditions.

1.1.23 FINAL COMPLETION
The term “Final Completion” means the date at which the Work has been fully completed in accordance with the requirements of the Contract Documents pursuant to Article 9.8.1 of the General Conditions.

1.1.24 GUARANTEE TO REPAIR PERIOD
See Article 12.2 of the General Conditions.

1.1.25 HAZARDOUS MATERIAL
The term “Hazardous Material” means any substance or material identified as hazardous under any California or federal statute governing handling, disposal and/or cleanup of any such substance or material.

1.1.26 PROJECT
The term “Project” means the Work of the Contract and all other work, labor, equipment, and materials necessary to accomplish the Project . The Project may include construction by University or by Separate Contractors.

1.1.27 PROJECT SITE
The term “Project Site” or “Project site” or “Site” or “site” means lands and facilities upon which the Work pertaining to physical construction operations is performed, including such access and other lands and facilities designated in the Contract Documents for use by Contractor.

1.1.28 SEPARATE CONTRACTOR
The term “Separate Contractor” means a person or firm under separate contract with University performing other work related to the Project.

1.1.29 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES
See Article 3.12 of the General Conditions.

1.1.30 SPECIFICATIONS
The term “Specifications” means that portion of the Contract Documents consisting of the written requirements

for materials, equipment, construction systems, standards and workmanship for the Work, and performance of related services.

1.1.31 SUBCONTRACTOR
The term “Subcontractor” means a person or firm that has a contract with Contractor or with a Subcontractor to perform a portion of the Work. Unless otherwise specifically provided, the term Subcontractor includes Subcontractors of all tiers.

1.1.32 SUBSTANTIAL COMPLETION
See Article 9.7 of the General Conditions.

1.1.33 SUPERINTENDENT
The term “Superintendent” means the person designated by Contractor to represent Contractor at the Project site in accordance with Article 3.

1.1.34 TIER
The term “tier” means the contractual level of a Subcontractor or supplier with respect to Contractor. For example, a first-tier Subcontractor is under subcontract with Contractor, a second-tier Subcontractor is under subcontract with a first-tier Subcontractor, and so on.

1.1.35 UNEXCUSABLE DELAY
The term “Unexcusable Delay” means a delay that does not entitle the Contractor to an adjustment of the Contract Sum and does not entitle the Contractor to an adjustment of the Contract Time.

1.1.36 UNILATERAL CHANGE ORDER.
See Article 7.2 of the General Conditions.

1.1.37 UNIVERSITY
The term “University” means The Regents of the University of California.

1.1.38 UNIVERSITY’S BUILDING OFFICIAL
The term “University’s Building Official,” or “Certified Building Official,” means the individual the University has designated to act in the capacity as the “Building Official” as defined by the California Building Standards Code. The University’s Building Official will determine whether the Work complies with Applicable Code Requirements and will determine whether and when it is appropriate to issue a Certificate of Occupancy.

1.1.39 UNIVERSITY'S REPRESENTATIVE
The term “University's Representative” means the person identified as such in the Agreement.

1.1.40 UNIVERSITY’S RESPONSIBLE ADMINISTRATOR
The term “University’s Responsible Administrator“ means the person, or his or her authorized designee, who is authorized to execute the Agreement, Change Orders, Field Orders, and other applicable Contract Documents on behalf of the University.

1.1.41 WORK
The term “Work” means all construction, services and other requirements of the Contract Documents as modified by Change Order, whether completed or partially completed, and includes all labor, materials, equipment, tools, and services provided or to be provided by Contractor to fulfill Contractor's obligations. The Work may constitute the whole or a part of the Project.

1.2 OWNERSHIP AND USE OF CONTRACT DOCUMENTS

1.2.1 The Contract Documents and all copies thereof furnished to or provided by Contractor are the property of the University and are not to be used on other work.

1.3 INTERPRETATION

1.3.1 The Contract Documents are complementary and what is required by one shall be as binding as if required by all. In the case of conflict between terms of the Contract Documents, the following order of precedence shall apply:

.1 The Agreement,
.2 The Supplementary Conditions,
.3 The General Conditions,
.4 The Specifications,
.5 The Drawings.

1.3.2 With respect to the Drawings, figured dimensions shall control over scaled measurements and specific details shall control over typical or standard details.

1.3.3 With respect to the Contract Documents, Addenda shall govern over other portions of the Contract Documents to the extent specifically noted; subsequent Addenda shall govern over prior Addenda only to the extent specifically noted.

1.3.4 Organization of the Specifications into various subdivisions and the arrangement of the Drawings shall not control Contractor in dividing the Work among Subcontractors or in establishing the extent of work to be performed by any trade.

1.3.5 Unless otherwise stated in the Contract Documents, technical words and abbreviations contained in the Contract Documents are used in accordance with commonly understood construction industry meanings; and non-technical words and abbreviations are used in accordance with their commonly understood meanings.

1.3.6 The Contract Documents may omit modifying words such as "all" and "any," and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement. The use of the word "including," when following any general statement, shall not be construed to limit such statement to specific items or matters set forth immediately following such word or to similar items or matters, whether or not nonlimiting language (such as "without limitation," "but not limited to," or words of similar import) is used with reference thereto, but rather shall be deemed to refer to all other items or matters that could reasonably fall within the broadest possible scope of such general statement.

1.3.7 Whenever the context so requires, the use of the singular number shall be deemed to include the plural and vice versa. Each gender shall be deemed to include any other gender, and each shall include corporation, partnership, trust, or other legal entity whenever the context so requires. The captions and headings of the various subdivisions of the Contract Documents are intended only for reference and convenience and in no way define, limit, or prescribe the scope or intent of the Contract Documents or any subdivision thereof.

ARTICLE 2
UNIVERSITY

2.1 INFORMATION AND SERVICES PROVIDED BY UNIVERSITY

2.1.1 If required for performance of the Work, as determined by University's Representative, University will make available a survey describing known physical characteristics, boundaries, easements, and utility locations for the Project site.

2.1.2 University is not subject to any requirement to obtain or pay for local building permits, inspection fees, plan checking fees, or certain utility fees. Except as otherwise provided in the Contract Documents, University will obtain and pay for any utility permits, demolition permits, easements, and government approvals for the use or occupancy of permanent structures required in connection with the Work.

2.1.3 Contractor will be furnished, free of charge, such copies of the Contract Documents as University deems reasonably necessary for execution of the Work.

2.2 ACCESS TO PROJECT SITE

2.2.1 University will provide, no later than the date designated in the Contract Schedule accepted by University's Representative, access to the lands and facilities upon which the Work is to be performed, including such access and other lands and facilities designated in the Contract Documents for use by

Contractor.

2.3 UNIVERSITY'S RIGHT TO STOP THE WORK

2.3.1 If Contractor fails to correct Defective Work as required by Article 12.2 or fails to perform the Work in accordance with the Contract Documents, University or University's Representative may direct Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated by Contractor. Contractor shall not be entitled to any adjustment of Contract Time or Contract Sum as a result of any such order. University and University's Representative have no duty or responsibility to Contractor or any other party to exercise the right to stop the Work.

2.4 UNIVERSITY'S RIGHT TO CARRY OUT THE WORK

2.4.1 If Contractor fails to carry out the Work in accordance with the Contract Documents, fails to provide sufficient labor, materials, equipment, tools, and services to maintain the Contract Schedule, or otherwise fails to comply with any material term of the Contract Documents, and, after receipt of written notice from University, fails within 2 days, excluding Saturdays, Sundays and legal holidays, or within such additional time as the University may specify, to correct such failure, University may, without prejudice to other remedies University may have, correct such failure at Contractor's expense. In such case, University will be entitled to deduct from payments then or thereafter due Contractor the cost of correcting such failure, including without limitation compensation for the additional services and expenses of University's consultants made necessary thereby. If payments then or thereafter due Contractor are not sufficient to cover such amounts, Contractor shall pay the additional amount to University.

2.5 UNIVERSITY'S RIGHT TO REPLACE UNIVERSITY'S REPRESENTATIVE

2.5.1 University may at any time and from time to time, without prior notice to or approval of Contractor, replace University's Representative with a new University's Representative. Upon receipt of notice from University informing Contractor of such replacement and identifying the new University's representative, Contractor shall recognize such person or firm as University's Representative for all purposes under the Contract Documents.

ARTICLE 3
CONTRACTOR

3.1 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

3.1.1 Contractor and its Subcontractors shall review and compare each of the Contract Documents with the others and with information furnished or made available by University, and shall promptly report in writing to University's Representative any errors, inconsistencies, or omissions in the Contract Documents or inconsistencies with Applicable Code Requirements observed by Contractor or its Subcontractors.

3.1.2 Contractor and its Subcontractors shall take field measurements, verify field conditions, and carefully compare with the Contract Documents such field measurements, conditions, and other information known to Contractor before commencing the Work. Errors, inconsistencies, or omissions discovered at any time shall be promptly reported in writing to University's Representative.

3.1.3 If Contractor and its Subcontractors performs any construction activity involving an error, inconsistency, or omission referred to in Articles 3.1.1 and 3.1.2, without giving the notice required in those Articles and obtaining the written consent of University's Representative, Contractor shall be responsible for the resultant losses, including, without limitation, the costs of correcting Defective Work.

3.2 SUPERVISION AND CONSTRUCTION PROCEDURES

3.2.1 Contractor shall supervise, coordinate, and direct the Work using Contractor's best skill and attention. Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, procedures, and the coordination of all portions of the Work.

3.2.2 Contractor shall be responsible to University for acts and omissions of Contractor's agents, employees, and Subcontractors, and their respective agents and employees.

3.2.3 Contractor shall not be relieved of its obligation to perform the Work in accordance with the Contract Documents either by acts or omissions of University or University's Representative in the administration of the Contract, or by tests, inspections, or approvals required or performed by persons or firms other than Contractor.

3.2.4 Contractor shall be responsible for inspection of all portions of the Work, including those portions already performed under this Contract, to determine that such portions conform to the requirements of the Contract and are ready to receive subsequent Work.

3.2.5 Contractor shall at all times maintain good discipline and order among its employees and Subcontractors. Contractor shall provide competent, fully qualified personnel to perform the Work.

3.3 LABOR AND MATERIALS

3.3.1 Unless otherwise provided in the Contract, Contractor shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and Final Completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

3.4 CONTRACTOR'S WARRANTY

3.4.1 Contractor warrants to University that all materials and equipment used in or incorporated into the Work will be of good quality, new, and free of liens, claims, and security interests of third parties; that the Work will be of good quality and free from defects; and that the Work will conform with the requirements of the Contract. If required by University's Representative, Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

3.5 TAXES

3.5.1 Contractor shall pay all sales, consumer, use, and similar taxes for the Work or portions thereof provided by Contractor.

3.6 PERMITS, FEES, AND NOTICES

3.6.1 Except for the permits and approvals which are to be obtained by University or the requirements with respect to which University is not subject as provided in Article 2.1.2, Contractor shall secure and pay for all permits, approvals, government fees, licenses, and inspections necessary for the proper execution and performance of the Work. Contractor shall deliver to University all original licenses, permits, and approvals obtained by Contractor in connection with the Work prior to the final payment or upon termination of the Contract, whichever is earlier.

3.7 APPLICABLE CODE REQUIREMENTS

3.7.1 Contractor shall perform the Work in accordance with the following Applicable Code Requirements:

.1 All laws, statutes, the most recent building codes, ordinances, rules, regulations, and lawful orders of all public authorities having jurisdiction over University, Contractor, any Subcontractor, the Project, the Project site, the Work, or the prosecution of the Work.
.2 All requirements of any insurance company issuing insurance required hereunder.
.3 The Federal Occupational Safety and Health Act and all other Applicable Code Requirements relating to safety.
.4 Applicable titles in the State of California Code of Regulations.
.5 Applicable sections in the State of California Labor Code.
.6 All Applicable Code Requirements relating to nondiscrimination, payment of prevailing wages, payroll records, apprentices, and work day.

Without limiting the foregoing, Contractor shall comply with the provisions regarding nondiscrimination, payment of prevailing wages, payroll records, apprentices, and work day set forth in Article 14.

3.7.2 Contractor shall comply with and give notices required by all Applicable Code Requirements, including all environmental laws and all notice requirements under the State of California Safe Drinking Water and Enforcement Act of 1986 (State of California Health and Safety Code Section 25249.5 and applicable sections that follow). Contractor shall promptly notify University's Representative in writing if Contractor becomes aware during the performance of the Work that the Contract Documents are at variance with Applicable Code Requirements.

3.7.3 If Contractor performs Work which it knows or should know is contrary to Applicable Code Requirements, without prior notice to University and University's Representative, Contractor shall be responsible for such Work and any resulting damages including, without limitation, the costs of correcting Defective Work.

3.8 SUPERINTENDENT

3.8.1 Contractor shall employ a competent Superintendent satisfactory to University who shall be in attendance at the Project site at all times during the performance of the Work. Superintendent shall represent Contractor and communications given to and received from Superintendent shall be binding on Contractor.

3.8.2 Contractor shall provide the Key Personnel, in addition to the Superintendent, as named in the Key Personnel Exhibit to this Contract. Substitution or replacement of any named individual requires the written approval of the University’s Representative and approval will be at the sole discretion of University. Failure to maintain a Superintendent on the Project site at all times Work is in progress shall be considered a material breach of this Contract, entitling University to terminate the Contract or alternatively, issue a stop Work order until the Superintendent is on the Project site. If, by virtue of issuance of said stop Work order, Contractor fails to complete the Contract on time, Contractor will be assessed Liquidated Damages in accordance with the Agreement.

3.8.3 The Superintendent approved for the Project must be able to read, write and verbally communicate in English.

3.8.4 The Superintendent may not perform the Work of any trade, pick-up materials, or perform any Work not directly related to the supervision and coordination of the Work at the Project site when Work is in progress.

3.9 SCHEDULES REQUIRED OF CONTRACTOR

3.9.1 Contractor shall submit a Preliminary Contract Schedule to University's Representative in the form and within the time limit required by the Specifications. University's Representative will review the Preliminary Contract Schedule with Contractor within the time limit required by the Specifications, or, if no such time period is specified, within a reasonable period of time.

3.9.2 Contractor shall submit a Contract Schedule and updated Contract Schedules to University's Representative in the form and within the time limits required by the Specifications and acceptable to University's Representative. University's Representative will determine acceptability of the Contract Schedule and updated Contract Schedules within the time limits required by the Specifications, or if no such time period is specified, within a reasonable period of time. If University’s Representative deems the Contract Schedule or updated Contract Schedule unacceptable, it shall specify in writing to Contractor the basis for its objection.

3.9.3 The Preliminary Contract Schedule, the Contract Schedule, and updated Contract Schedules shall represent a practical plan to complete the Work within the Contract Time. Schedules showing the Work completed in less than the Contract Time may be acceptable if judged by University's Representative to be practical. Schedules showing the Work completed beyond the Contract Time may be submitted under the following circumstances:

.1 If accompanied by a Change Order Request seeking an adjustment of the Contract Time consistent the requirements of paragraph 8.4 for Adjustment of the Contract Time for Delay.; or

.2 If the Contract Time has passed, or if it is a practical impossibility to complete the Work within the Contract Time, then the updated Contract Schedule or fragnet schedule shall show completion at the earliest practical date.

University's Representative will timely review the updated Contract Schedule or Fragnet Schedule submitted by Contractor. If University's Representative determines that additional supporting data are necessary to fully evaluate the updated Contract Schedule or Fragnet Schedule, University's Representative will request such additional supporting data in writing. Such data shall be furnished no later than 10 days after the date of such request. University's Representative will render a decision promptly and in any case within 30 days after the later of the receipt of the updated Contract Schedule or Fragnet Schedule or the deadline for furnishing such additional supporting data. Failure of University's Representative to render a decision by the applicable deadline will be deemed a decision denying approval of the updated Contract Schedule or Fragnet Schedule.

Acceptance of any schedule showing completion beyond the Contract Time by University's Representative shall not change the Contract Time and is without prejudice to any right of the University. The Contract Time, not the Contract Schedule, shall control in the determination of liquidated damages payable by Contractor under Article 4 and Article 5 of the Agreement and in the determination of any delay under Article 8 of the General Conditions.

3.9.4 If a schedule showing the Work completed in less than the Contract Time is accepted, Contractor shall not be entitled to extensions of the Contract Time for Excusable Delays or Compensable Delays or to adjustments of the Contract Sum for Compensable Delays until such delays extend the Final Completion of the Work beyond the expiration of the Contract Time.

3.9.5 Contractor shall prepare and keep current to the reasonable satisfaction of University's Representative, a Submittal Schedule in the form contained in the Exhibits, for each submittal, as required by the Specifications, and that are coordinated with the other activities in the Contract Schedule.

3.9.6 The Preliminary Contract Schedule, Contract Schedule, and the Updated Contract Schedules shall meet the following requirements:

.1 Schedules must be suitable for monitoring progress of the Work.

.2 Schedules must provide necessary data about the timing for University decisions and University furnished items.

.3 Schedules must be in sufficient detail to demonstrate adequate planning for the Work.

.4 Schedules must represent a practical plan to perform and complete the Work within the Contract Time.

3.9.7 University's Representative's review of the form and general content of the Preliminary Contract Schedule, Contract Schedule, and Updated Contract Schedules is for the purpose of determining if the above-listed requirements have been satisfied.

3.9.8 Contractor shall plan, develop, supervise, control, and coordinate the performance of the Work so that its progress and the sequence and timing of Work will permit its completion within the Contract Time, any Contract milestones and any Contract phases.

3.9.9 In preparing the Preliminary Contract Schedule, the Contract Schedule, and updated Contract Schedules, Contractor shall obtain such information and data from Subcontractors as may be required to develop a reasonable and appropriate schedule for performance of the work and shall provide such information and data to the University’s Representative upon request. Contractor shall continuously obtain from Subcontractors information and data about the planning for and progress of the Work and the delivery of equipment, shall coordinate and integrate such information and data into updated Contract Schedules, as appropriate, and shall monitor the progress of the Work and the delivery of equipment.

3.9.10 Contractor shall act as the expeditor of potential and actual delays, interruptions, hindrances, or disruptions for its own forces and those forces of Subcontractors, regardless of tier.

3.9.11 Contractor shall cooperate with University's Representative in the development of the Contract Schedule and updated Contract Schedules. University's Representative's acceptance of or its review comments about any schedule or scheduling data shall not relieve Contractor from its sole responsibility to plan for, perform, and complete the Work within the Contract Time. Acceptance of or review comments about any schedule shall not transfer responsibility for any schedule to University's Representative or University nor imply their agreement with (1) any assumption upon which such schedule is based or (2) any matter underlying or contained in such schedule. Failure of University's Representative to discover errors or omissions in schedules that it has reviewed, or to inform Contractor that Contractor, Subcontractors, or others are behind schedule, or to direct or enforce procedures for complying with the Contract Schedule shall not relieve

Contractor from its sole responsibility to perform and complete the Work within the Contract Time and shall not be a cause for an adjustment of the Contract Time or the Contract Sum.

3.10 AS-BUILT DOCUMENTS

3.10.1 Contractor shall maintain one set of As-built drawings and specifications, which shall be kept up to date during the Work of the Contract. All changes which are incorporated into the Work which differ from the documents as drawn and written shall be noted on the As-built set. Notations shall reflect the actual materials, equipment and installation methods used for the Work and each revision shall be initialed and dated by Superintendent. Prior to filing of the Notice of Completion each drawing and the specification cover shall be signed by Contractor and dated attesting to the completeness of the information noted therein. As-built Documents shall be turned over to the University's Representative and shall become part of the Record Documents.

3.11 DOCUMENTS AND SAMPLES AT PROJECT SITE

3.11.1 Contractor shall maintain the following at the Project site:

.1 One as-built copy of the Contract Documents, in good order and marked to record current changes and selections made during construction.
.2 The current accepted Contract Schedule.
.3 Shop Drawings, Product Data, and Samples.
.4 All other required submittals.

These shall be available to University's Representative and shall be delivered to University's Representative for submittal to University upon the earlier of Final Completion or termination of the Contract.

3.12 SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND ENVIRONMENTAL PRODUCT DECLARATIONS

3.12.1 Definitions:

.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by Contractor or a Subcontractor to illustrate some portion of the Work.
.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by Contractor to illustrate or describe materials or equipment for some portion of the Work.
.3 Samples are physical examples which illustrate materials, equipment, or workmanship and establish standards by which the Work will be judged.
.4 Environmental Product Declarations are those documents and other submissions required to be furnished by Contractor or a Subcontractor pursuant to California Public Contract Code Section 3500 et seq., the Buy Clean California Act, as further described in Article 3.12.9 below.

3.12.2 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate, for those portions of the Work for which submittals are required, how Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents.

3.12.3 Contractor shall review, approve, and submit to University's Representative Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of University or of Separate Contractors. Submittals made by Contractor which are not required by the Contract Documents may be returned without action by University's Representative.

3.12.4 Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples, or similar submittals until the respective submittal has been reviewed by University's Representative and no exceptions have been taken by University's Representative. Such Work shall be in accordance with approved submittals and the Contract Documents.

3.12.5 By approving and submitting Shop Drawings, Product Data, Samples, and similar submittals, Contractor represents that it has determined or verified materials and field measurements and conditions related thereto, and that it has checked and coordinated the information contained within such submittals with the requirements of the Contract Documents and Shop Drawings for related Work.

3.12.6 If Contractor discovers any conflicts, omissions, or errors in Shop Drawings or other submittals, Contractor shall notify University's Representative and receive instruction before proceeding with the affected Work.

3.12.7 Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by University's Representative's review of Shop Drawings, Product Data, Samples, or similar submittals, unless Contractor has specifically informed University's Representative in writing of such deviation at the time of submittal and University's Representative has given written approval of the specific deviation. Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals by University's Representative's review, acceptance, comment, or approval thereof.

1.12.8 Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by University's Representative on previous submittals.

1.12.9 Environmental Product Declarations

3.12.9.1 Contractor shall comply with California Public Contract Code Section 3500 et seq., the Buy Clean California Act (“BCCA”).

3.12.9.2 The term “Eligible Materials”, as used herein, shall mean the same as defined by the BCCA, and shall include at a minimum the following materials:
(1) Carbon steel rebar.
(2) Flat glass.
(3) Mineral wool board insulation.
(4) Structural steel.

3.12.9.3 Compliance with the BCCA and this Article applies to all Eligible Materials for the Project.

3.12.9.4 Contractor shall submit to University a current facility-specific Environmental Product Declaration (“EPD”), Type III, as defined by the International Organization for Standardization (“ISO”) standard 14025, or similarly robust life cycle assessment methods that have uniform standards in data collection consistent with ISO standard 14025, industry acceptance, and integrity, for each Eligible Material proposed to be used on the Project.

3.12.9.5 Eligible Materials installed on the Project by Contractor must comply with any standards to the extent established in the BCCA or by University, whichever is more stringent. The facility-specific global warming potential for any Eligible Material must not exceed any existing maximum acceptable global warming potential for that material pursuant to the BCCA or by University, whichever is more stringent (“EM Standards”).

3.12.9.6 Contractor shall not install any Eligible Materials on the Project until Contractor submits a facility-specific EPD for that material which demonstrates that the material complies with any existing EM Standards and this Article. Contractor shall be responsible for any losses, expenses, penalties or damages of any type incurred or sustained by University, including any tear out and replacement of Defective Work, which are caused by Contractor’s failure to comply with the requirements of the BCCA or this Article.

3.13 USE OF SITE AND CLEAN UP

3.13.1 Contractor shall confine operations at the Project site to areas permitted by law, ordinances, permits, and the Contract Documents. Contractor shall not unreasonably encumber the Project site with materials or equipment.

3.13.2 Contractor shall, during performance of the Work, keep the Project site and surrounding area free from the accumulation of excess dirt, waste materials, and rubbish caused by Contractor. Contractor shall remove all excess dirt, waste material, and rubbish caused by the Contractor; tools; equipment; machinery; and surplus materials from the Project site and surrounding area at the completion of the Work.

3.13.3 Personnel of Contractor and Subcontractors shall not occupy, live upon, or otherwise make use of the Project site during any time that Work is not being performed at the Project site, except as otherwise provided in the Contract Documents.

3.14 CUTTING, FITTING, AND PATCHING

3.14.1 Contractor shall do all cutting, fitting, or patching of the Work required to make all parts of the Work come together properly and to allow the Work to receive or be received by work of Separate Contractors shown upon, or reasonably implied by, the Contract Documents.

3.14.2 Contractor shall not endanger the Work, the Project, or adjacent property by cutting, digging, or otherwise. Contractor shall not cut or alter the work of any Separate Contractor without the prior consent of University's Representative.

3.15 ACCESS TO WORK

3.15.1 University, University's Representative, their consultants, and other persons authorized by University will at all times have access to the Work wherever it is in preparation or progress. Contractor shall provide safe and proper facilities for such access and for inspection.

3.16 ROYALTIES AND PATENTS

3.16.1 Contractor shall pay all royalties and license fees required for the performance of the Work. Contractor shall defend suits or claims resulting from Contractor's or any Subcontractor's infringement of patent rights and shall Indemnify, defend and hold harmless University and University's Representative from losses on account thereof.

3.17 DIFFERING SITE CONDITIONS

3.17.1 If Contractor encounters any of the following conditions at the site, Contractor shall immediately notify the University's Representative in writing of the specific differing conditions before they are disturbed and before any affected Work is performed, and permit investigation of the conditions:

.1 Subsurface or latent physical conditions at the site (including Hazardous Materials) which differ materially from those indicated in this Contract, or if not indicated in this Contract, in the Information Available to Bidders; or

.2 Unknown physical conditions at the site, of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract.

3.17.2 Contractor shall be entitled to an adjustment to the Contract Sum and/or Contract Time as the result of extra costs and/or delays resulting from a materially differing site condition, if and only if Contractor fulfills the following conditions:

.1 Contractor fully complies with Article 3.17.1; and

.2 Contractor fully complies with Article 4 (including the timely filing of a Change Order Request and all other requirements for Change Orders Requests and Claims).

3.17.3 Adjustments to the Contract Sum and/or Contract Time shall be subject to the procedures and limitations set forth in Articles 7 and 8.

3.18 CONCEALED, UNFORESEEN, OR UNKNOWN CONDITIONS OR EVENTS

3.18.1 Except and only to the extent provided otherwise in Articles 3.17, 7 and 8 of the General Conditions, by signing the Agreement, Contractor agrees:

.1 To bear the risk of concealed, unforeseen or unknown conditions or events, if any, which may be encountered in performing the Contract; and
.2 That Contractor's bid for the Contract was made with full knowledge of this risk.

In agreeing to bear the risk of concealed, unforeseen or unknown conditions or events, Contractor understands that, except and only to the extent provided otherwise in Articles 3.17, 7 and 8, concealed, unforeseen or unknown conditions or events shall not excuse Contractor from its obligation to achieve Final Completion of the Work within the Contract Time, and shall not entitle the Contractor to an adjustment of the Contract Sum.

3.18.2 If Contractor encounters concealed, unforeseen or unknown conditions or events that may require a change to the design shown in the Contract Documents, Contractor shall immediately notify University's Representative in writing such that University's Representative can determine if a change to the design is required. Contractor shall be liable to University for any extra costs incurred as the result of Contractor's failure to immediately give such notice.

3.18.3 If, as the result of concealed, unforeseen or unknown conditions or events, the University issues a Change Order or Field Order that changes the design from the design depicted in the Contract Documents, Contractor shall be entitled, subject to compliance with all the provisions of the Contract, including those set forth in Articles 4, 7 and 8, to an adjustment of the Contract Sum and/or Contract Time, for the cost and delay resulting from implementing the changes to the design. Except as provided in this Article 3.18.3, or as may be expressly provided otherwise in the Contract, there shall be no adjustment of the Contract Sum and/or Contract Time as a result of concealed, unforeseen or unknown conditions or events. .

3.18.4 Contractor shall, as a condition precedent to any adjustment in Contract Sum or Contract Time under Article 3.18.3, fully comply with Article 4 (including the timely filing of a Change Order Request and all other requirements for Change Orders Requests and Claims).

3.19 HAZARDOUS MATERIALS

3.19.1 The University shall not be responsible for any Hazardous Material brought to the site by the Contractor.

3.19.2 If the Contractor: (i) introduces and/or discharges a Hazardous Material onto the site in a manner not specified by the Contract Documents; and/or (ii) disturbs a Hazardous Material identified in the Contract Documents, the Contractor shall hire a qualified remediation contractor at Contractor's sole cost to eliminate the condition as soon as possible. Under no circumstance shall the Contractor perform Work for which it is not qualified. University, in its sole discretion, may require the Contractor to retain at Contractor's cost an independent testing laboratory.

3.19.3 If the Contractor encounters a Hazardous Material which may cause foreseeable injury or damage, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such material or substance (except in an emergency situation); and (iii) notify University (and promptly thereafter confirm such notice in writing)

3.19.4 Subject to Contractor's compliance with Article 3.19.3, the University shall verify the presence or absence of the Hazardous Material reported by the Contractor, except as qualified under Section 3.19.1 and 3.19.3, and, in the event such material or substance is found to be present, verify that the levels of the hazardous material are below OSHA Permissible Exposure Levels and below levels which would classify the material as a state of California or federal hazardous waste. When the material falls below such levels, Work in the affected area shall resume upon direction by the University. The Contract Time and Sum shall be extended appropriately as provided in Articles 7 and 8.

3.19.5 The University shall indemnify and hold harmless the Contractor from and against claims, damages, losses and expenses, arising from a Hazardous Material on the Project site, if such Hazardous Material: (i) was not shown on the Contract Documents or Information Available to Bidders; (ii) was not brought to the site by Contractor; and (iii) exceeded OSHA Permissible Exposure Levels or levels which would classify the material as a state of California or federal hazardous waste. The indemnity obligation in this Article shall not apply to:

.1 Claims, damages, losses or expenses arising from the breach of contract, negligence or willful misconduct of Contractor, its suppliers, its Subcontractors of all tiers and/or any persons or entities working under Contractor; and

.2 Claims, damages, losses or expenses arising from a Hazardous Material subject to Article 3.19.2.

3.19.6 In addition to the requirements in Article 3.22, Contractor shall indemnify and hold harmless the University from and against claims, damages, losses and expenses, arising from a Hazardous Material on the Project site, if such Hazardous Material exceeded OSHA Permissible Exposure Levels or levels which would classify the material as a state of California or federal hazardous waste, and was either i) shown on the Contract Documents or Information Available to Bidders; or (ii) brought to the site by Contractor. Nothing in this paragraph shall obligate the Contractor to indemnify University in the event of the sole negligence of the University, its officers, agents, or employees.

3.20 INFORMATION AVAILABLE TO BIDDERS

3.20.1 Any information provided pursuant to INFORMATION AVAILABLE TO BIDDERS is subject to the following provisions:

.1 The information is made available for the convenience of Bidders and is not a part of the Contract.
.2 The Contractor may rely on written descriptions of physical conditions included in the information to the extent such reliance is reasonable.
.3 Other components of the information, including but not limited to recommendations, may not be relied upon by Contractor. University shall not be responsible for any interpretation of or conclusion drawn from the other components of the information by the Contractor.

3.21 LIABILITY FOR AND REPAIR OF DAMAGED WORK

3.21.1 Contractor shall be liable for any and all damages and losses to the Project (whether by fire, theft, vandalism, earthquake or otherwise) prior to University's acceptance of the Project as fully completed except that Contractor shall not be liable for damages and losses to the Project caused by earthquake in excess of magnitude 3.5 on the Richter Scale, tidal wave, or flood, provided that the damages or losses were not caused in whole or in part by the negligent acts or omissions of Contractor, its officers, agents or employees (including all Subcontractors and suppliers of all tiers). As used herein, "flood" shall have the same meaning as in the builder's risk property insurance.

3.21.2 Contractor shall promptly repair and replace any Work or materials damaged or destroyed for which the Contractor is liable under Article 3.21.1.

3.22 INDEMNIFICATION

3.22.1 Contractor shall indemnify, defend and hold harmless University, University's consultants, University's Representative, University's Representative's consultants, and their respective directors, officers, agents, and employees from and against losses (including without limitation the cost of repairing defective work and remedying the consequences of defective work) arising out of, resulting from, or relating to the following:

.1 The failure of Contractor to perform its obligations under the Contract.
.2 The inaccuracy of any representation or warranty by Contractor given in accordance with or contained in the Contract Documents.
.3 Any claim of damage or loss by any Subcontractor against University arising out of any alleged act or omission of Contractor or any other Subcontractor, or anyone directly or indirectly employed by Contractor or any Subcontractor.
.4 Any claim of damage or loss resulting from Hazardous Materials introduced, discharged, or disturbed by Contractor as required per Article 3.19.6.

3.22.2 The University shall not be liable or responsible for any accidents, loss, injury (including death) or damages happening or accruing during the term of the performance of the Work herein referred to or in connection therewith, to persons and/or property, and Contractor shall fully indemnify, defend and hold harmless University and protect University from and against the same as provided in paragraph 3.22.1 above.

In addition to the liability imposed by law upon the Contractor for damage or injury (including death) to persons or property by reason of the negligence of the Contractor, its officers, agents, employees or Subcontractors, which liability is not impaired or otherwise affected hereby, the Contractor shall defend, indemnify, hold harmless, release and forever discharge the University, its officers, employees, and agents from and against and waive any and all responsibility of same for every expense, liability, or payment by reason of any damage or injury (including death) to persons or property suffered or claimed to have been suffered through any negligent act, omission, or willful misconduct of the Contractor, its officers, agents, employees, or any of its Subcontractors, or anyone directly or indirectly employed by either of them or from the condition of the premises or any part of the premises while in control of the Contractor, its officers, agents, employees, or any of its Subcontractors or anyone directly or indirectly employed by either of them, arising out of the performance of the Work called for by this Contract. Contractor agrees that this indemnity and hold harmless shall apply even in the event of negligence of University, its officers, agents, or employees, regardless of whether such negligence is contributory to any claim, demand, loss, damage, injury, expense, and/or liability; but such indemnity and hold harmless shall not apply (i) in the event of the sole negligence of University, its officers, agents, or employees; or (ii) to the extent that the University shall indemnify and hold harmless the Contractor for Hazardous Materials pursuant to Article 3.19.5 .

3.22.3 In claims against any person or entity indemnified under this Article 3.22 that are made by an employee of Contractor or any Subcontractor, a person indirectly employed by Contractor or any Subcontractor, or anyone for whose acts Contractor or any Subcontractor may be liable, the indemnification obligation under this Article 3.22 shall not be limited by any limitation on amount or type of damages, compensation, or benefits payable by or for Contractor or any Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

3.22.4 The indemnification obligations under this Article 3.22 shall not be limited by any assertion or finding that the person or entity indemnified is liable by reason of a non-delegable duty.

3.22.5 Contractor shall indemnify University from and against Losses resulting from any claim of damage made by any Separate Contractor against University arising out of any alleged acts or omissions of Contractor, any Subcontractor, anyone directly or indirectly employed by either of them, or anyone for whose acts either of them may be liable.

3.22.6 Contractor shall indemnify Separate Contractors from and against Losses arising out of the negligent acts, omissions, or willful misconduct of Contractor, any Subcontractor, anyone directly or indirectly employed by either of them, or anyone for whose acts either of them may be liable.

ARTICLE 4
ADMINISTRATION OF THE CONTRACT

4.1 ADMINISTRATION OF THE CONTRACT BY UNIVERSITY'S REPRESENTATIVE

4.1.1 University's Representative will provide administration of the Contract as provided in the Contract Documents and will be the representative of University. University's Representative will have authority to act on behalf of University only to the extent provided in the Contract Documents.

4.1.2 University's Representative will have the right to visit the Project site at such intervals as deemed appropriate by the University's Representative. However, no actions taken during such Project site visit by University's Representative shall relieve Contractor of its obligations as described in the Contract Documents.

4.1.3 University's Representative will not have control over, will not be in charge of, and will not be responsible for construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work, since these are solely Contractor's responsibility.

4.1.4 Except as otherwise provided in the Contract Documents or when direct communications have been specifically authorized, University and Contractor shall communicate through University's Representative. Except when direct communication has been specifically authorized in writing by University Representative, communications by Contractor with University's consultants and University's Representative's consultants shall be through University's Representative. Communications by University and University's Representative with Subcontractors will be through Contractor. Communications by Contractor and Subcontractors with Separate Contractors shall be through University's Representative. Contractor shall not rely on oral or other non-written communications.

4.1.5 Based on University's Representative's Project site visits and evaluations of Contractor's Applications For Payment, University's Representative will recommend amounts, if any, due Contractor and will issue Certificates For Payment in such amounts.

4.1.6 University's Representative will have the authority to reject the Work, or any portion thereof, which does not conform to the Contract Documents. University's Representative will have the authority to stop the Work or any portion thereof. Whenever University's Representative considers it necessary or advisable for implementation of the intent of the Contract Documents, University's Representative will have the authority to require additional inspection or testing of the Work in accordance with the Contract Documents, whether or not such Work is fabricated, installed, or completed. However, no authority of University's Representative conferred by the Contract Documents nor any decision made in good faith either to exercise or not exercise such authority, will give rise to a duty or responsibility of University or University's Representative to Contractor, or any person or entity claiming under or through Contractor.

4.1.7 University's Representative will have the authority to conduct inspections as provided in the Contract Documents, to take Beneficial Occupancy and to determine the dates of Substantial Completion and Final Completion; will receive for review and approval any records, written warranties, and related documents required by the Contract Documents and assembled by Contractor; and will issue a final Certificate For Payment upon Contractor's compliance with the requirements of the Contract Documents.

4.1.8 University's Representative will be, in the first instance, the interpreter of the requirements of the Contract Documents and the judge of performance thereunder by Contractor. Should Contractor discover any conflicts, omissions, or errors in the Contract Documents; have any questions about the interpretation or clarification of the Contract Documents; question whether Work is within the scope of the Contract Documents; or question that Work required is not sufficiently detailed or explained, then, before proceeding with the Work affected, Contractor shall notify University's Representative in writing and request interpretation, clarification, or furnishing of additional detailed instructions. University's Representative's response to questions and requests for interpretations, clarifications, instructions, or decisions will be made with reasonable promptness. Should Contractor proceed with the Work affected before receipt of a response from University's Representative, any portion of the Work which is not done in accordance with University's Representative's interpretations, clarifications, instructions, or decisions shall be removed or replaced and Contractor shall be responsible for all resultant losses.

4.2 CONTRACTOR CHANGE ORDER REQUESTS

4.2.1 Contractor may request changes to the Contract Sum and/or Contract Time for Extra Work, materially differing site conditions, or Delays to Final Completion of the Work.

4.2.2 Conditions precedent to obtaining an adjustment of the Contract Sum and/or Contract Time , payment of money, or other relief with respect to the Contract Documents, for any other reason, are:

.1 Timely submission of a Change Order Request that meets the requirements of Articles 4.2.3.1 and 4.2.3.2; and

.2 If requested, timely submission of additional information requested by the University Representative pursuant to Article 4.2.3.3.

4.2.3 Change Order Request:

4.2.3.1 A Change Order Request will be deemed timely submitted if, and only if, it is submitted within 7 days of the date the Contractor discovers, or reasonably should discover the circumstances giving rise to the Change Order Request, unless additional time is allowed in writing by University's Representative for submission of the Change Order Request, provided that if :

.1 the Change Order Request includes compensation sought by a Subcontractor; AND
.2 the Contractor requests in writing to the University's Representative, within the 7-day time period, additional time to permit Contractor to conduct an appropriate review of the Subcontractor Change Order Request,

the time period for submission of the actual Change Order Request shall be extended by the number of days specified in writing by the University's Representative.

4.2.3.2 A Change Order Request must state that it is a Change Order Request, state and justify the reason for the request, and specify the amount of any requested adjustment of the Contract Sum, Contract Time, and/or other monetary relief. If the Contractor requests an adjustment to the Contract Sum or other monetary relief, the Contractor shall submit the following with the Change Order Request:

.1 a completed Cost Proposal in the form contained in the Exhibits meeting the requirements of Article 7; OR

.2 a partial Cost Proposal and a declaration of what required information is not then known to Contractor. If Contractor failed to submit a completed Cost Proposal with the Change Order Request, Contractor shall submit a completed Cost Proposal meeting the requirements of Article 7 within 7 days of the date the Contractor submitted the Change Order Request unless additional time is allowed by the University's Representative.

4.2.3.3 Upon request of University's Representative, Contractor shall submit such additional information as may be requested by University's Representative for the purpose of evaluating the Change Order Request. Such additional information may include:

.1 If Contractor seeks an adjustment of the Contract Sum or other monetary relief, actual cost records for any changed or extra costs (including without limitation, payroll records, material and rental invoices and the like), shall be submitted by the deadline established by the University's Representative, who may require such actual cost records to be submitted and reviewed, on a daily basis, by the University's Representative and/or representatives of the University's Representative.

.2 If Contractor seeks an adjustment of the Contract Time, written documentation demonstrating Contractor's entitlement to a time extension under Article 8.4, which shall be submitted within 15 days of the date requested. If requested, Contractor may submit a fragnet in support of its request for a time extension. The University may, but is not obligated to, grant a time extension on the basis of a fragnet alone which, by its nature, is not a complete schedule analysis. If deemed appropriate by University Representative, Contractor shall submit a more detailed schedule analysis in support of its request for a time extension.

.3 If Contractor seeks an adjustment of the Contract Sum or other monetary relief for delay, written documentation demonstrating Contractor's entitlement to such an adjustment under Article 7.3.9, which shall be submitted within 15 days of the date requested.

.4 Any other information requested by the University's Representative for the purpose of evaluating the Change Order Request, which shall be submitted by the deadline established by the University's Representative.

4.2.4 University's Representative will make a decision on a Change Order Request, within a reasonable time, after receipt of a Change Order Request. In the event the Change Order Request is submitted pursuant to Article 8.4.1, the University's Representative shall promptly review and accept or reject it within thirty (30) days. A final decision is any decision on a Change Order Request which states that it is final. If University's Representative issues a final decision denying a Change Order Request in whole or in part, Contractor may contest the decision by filing a timely Claim under the procedures specified in Article 4.4.

4.2.5 Contractor may file a written demand for a final decision by University's Representative on all or part of any Change Order Request as to which the University's Representative has not previously issued a final decision pursuant to Article 4.2.4; such written demand may not be made earlier than the 30th day after submission of the Change Order Request. Within 30 days of receipt of the demand, University's Representative will issue a final decision on the Change Order Request. The University's Representative's failure to issue a decision within the 30-day period shall be treated as the issuance, on the last day of the 30-day period, of a final decision to deny the Change Order Request in its entirety.

4.3 CLAIMS

4.3.1 The term “Claim” means a written demand or assertion by Contractor seeking an adjustment or interpretation of the terms of the Contract Documents, payment of money, extension of time, or other relief with respect to the Contract Documents, including a determination of disputes or matters in question between University and Contractor arising out of or related to the Contract Documents or the performance of the Work. However, the term "Claim" shall not include, and the Claims procedures provided under this Article 4, including but not limited to arbitration, shall not apply to the following:

.1 Claims respecting penalties for forfeitures prescribed by statute or regulation which a government agency is specifically authorized to administer, settle, or determine.
.2 Claims respecting personal injury, death, reimbursement, or other compensation arising out of or resulting from liability for personal injury or death.
.3 Claims by University, except as set forth in Articles 4.5, 4.6, and 4.7.
.4 Claims respecting stop payment notices.

4.3.2 A Claim arises upon the issuance of a written final decision denying in whole or in part Contractor's Change Order Request pursuant to Articles 4.2.4 and 4.2.5.

4.3.3 A Claim must include the following:

.1 A statement that it is a Claim and a request for a decision pursuant to Article 4.5.
.2 A detailed factual narrative of events fully describing the nature and circumstances giving rise to the Claim, including but not limited to, necessary dates, locations, and items of work affected.
.3 A certification, executed by Contractor, that the claim is filed in good faith. The certification must be made on the Claim Certification form, included in the Exhibits to the Contract. The language of the Claim Certification form may not be modified.
.4 A certification, executed by each Subcontractor claiming not less than 5% of the total monetary amount sought by the claim, that the subcontractor’s portion of the claim is filed in good faith. The certification must be made on the Claim Certification form, included in the Exhibits to the Contract. The language of the Claim Certification form may not be modified.
.5 A statement demonstrating that a Change Order Request was timely submitted as required by Article 4.2.3
.6 If a Cost Proposal or declaration was required by Article 4.2.3, a statement demonstrating that the Cost Proposal or the declaration was timely submitted as required by Article 4.2.3.
.7 A detailed justification for any remedy or relief sought by the Claim, including to the extent applicable, the following:

    .1 If the Claim involves Extra Work, a detailed cost breakdown of the amounts claimed, including the items specified in Article 7.3.2. An estimate of the costs must be provided even if the costs claimed have not been incurred when the Claim is submitted. To the extent costs have been incurred when the Claim is submitted, the Claim must include actual cost records (including without limitation, payroll records, material and rental invoices and the like) demonstrating that costs claimed have actually been incurred. To the extent costs have not yet been incurred at the time the Claim is submitted, actual cost records must be submitted on a current basis not less than once a month during any periods costs are incurred. A cost record will be considered current if submitted within 30 days of the date the cost reflected in the record is incurred. At the request of the University's Representative, claimed extra costs may be subject to further verification procedures (such as having an inspector verify the performance of alleged Extra Work on a daily basis). The cost breakdown must include an itemization of costs for i) labor including workers’ names, classifications, regular hours and overtime hours worked, dates worked, and other pertinent information; ii) materials stored or incorporated in the work including invoices, purchase orders, location of materials either stored or incorporated into the work, dates materials were transported to the project or incorporated into the work, and other pertinent information; and iii) itemization of machinery and equipment including make, model, hours of use, dates of use and equipment rental rates of any rented equipment.

.2 If the Claim involves an extension of the Contract Time, written documentation demonstrating the Contractor's entitlement to a time extension under Article 8.4, including the specific dates for which a time extension is sought and the specific reasons for entitlement of a time extension.

.3 If the Claim involves an adjustment of the Contract Sum for delay, written documentation demonstrating the Contractor's entitlement to such an adjustment under Article 7.3.9, including but not limited to, a detailed time impact analysis of the Contract Schedule. The Contract Schedule must demonstrate Contractor's entitlement to such an adjustment under Article 7.3.9.

4.4 ASSERTION OF CLAIMS

4.4.1 Claims by Contractor shall be first submitted to University's Representative for decision.

4.4.2 Notwithstanding the making of any Claim or the existence of any dispute regarding any Claim, unless otherwise directed by University's Representative, Contractor shall not cause any delay, cessation, or termination in or of Contractor's performance of the Work, but shall diligently proceed with performance of the Work in accordance with the Contract Documents.

4.4.3 Contractor shall submit a Claim in writing, together with all supporting data specified in Article4.3.3, to University's Representative as soon as possible but not later than 30 days after the date the Claim arises under Article 4.3.2, provided that after written notification to the University's Representative within such time period, the time period for submission of the Claim shall be extended by the number of days specified in writing by the University's Representative where the Claim includes compensation sought by a Subcontractor and the Contractor requests an extension of time to permit it to discharge its responsibilities to conduct an appropriate review of the Subcontractor claim.

4.4.4 Strict compliance with the requirements of Articles 4.2, 4.3 and 4.4 are conditions precedent to Contractor's right to an informal conference to meet and confer to resolve a Claim, mediate a Claim, or arbitrate or litigate a Claim. Contractor specifically agrees to assert no Claims via an informal conference, mediation, arbitration or litigation unless there has been strict compliance with Articles 4.2, 4.3, and 4.4. The failure of Contractor to strictly comply with the requirements of Articles 4.2, 4.3 and 4.4 constitutes a failure by Contractor to exhaust its administrative remedies with the University, thereby denying any court or arbitration panel of jurisdiction to adjudicate the Claim.

4.5 DECISION OF UNIVERSITY'S REPRESENTATIVE ON CLAIMS

4.5.1 University's Representative will timely review Claims submitted by Contractor. If University's Representative determines that additional supporting data are necessary to fully evaluate a Claim, University's Representative will request such additional supporting data in writing. Such data shall be furnished no later than 10 days after the date of such request. University's Representative will render a decision promptly and in any case within 30 days after the later of the receipt of the Claim or the deadline for furnishing such additional supporting data; provided that, if the amount of the Claim is in excess of $50,000, the aforesaid 30-day period shall be 45 days. Failure of University's Representative to render a decision by the applicable deadline will be deemed a decision denying the Claim on the date of the deadline, unless, upon receipt of a Claim, Contractor and University mutually agree to extend the time periods provided herein, or unless otherwise extended by law. The decision of University's Representative will be final and binding unless appealed in accordance with Articles 4.5.2, 4.6, and 4.7. The University's Representative's decision on a Claim or dispute will include a written statement both identifying all disputed and undisputed portions of the Claim and substantially including the following:

"This is a decision under Article 4.5 of the General Conditions of your contract. If you are dissatisfied with the decision, and if you complied with the procedural requirements for asserting claims specified in Article 4 of the General Conditions of your contract, you may have the right to demand in writing an informal conference to meet and confer for settlement of any remaining issues in dispute, following which, if still dissatisfied, you may demand in writing a further resolution via nonbinding mediation, after which you have the right to arbitrate or litigate this decision. If you fail to take appropriate action within 30 days of the date of this decision, the decision shall become final and binding and not subject to further appeal."

4.5.2 If either Contractor or University disputes University's Representative's decision on a Claim, then, within 30 days after the decision of University's Representative on the Claim, or, if no decision has been issued, within 30 days from the date of the applicable deadline in Article 4.5.1 for University Representative to render a decision, such party (the "Disputing Party") must provide written notice demanding an informal conference to meet and confer. University shall schedule the conference within 30 days upon receipt of the notice demanding an informal conference. The parties will attempt in good faith to resolve any controversy or Claim arising out of or relating to this Contract by negotiation at the conference.

4.6 MEDIATION

4.6.1 Within 10 business days following the informal conference to meet and confer stated in Article 4.5.2, if the Claim or any portion of the Claim remains in dispute, the University shall provide a written statement identifying the disputed and undisputed portions of the Claim. Within 30 days of receipt of the statement, if either Contractor or University disputes any portion of the Claim, then the Disputing Party must provide written notice to the non-disputing party demanding non-binding mediation. The Contractor and the University shall share the associated costs equally and shall mutually agree to a mediator within 10 business days. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the Claim, with each party bearing the fees and costs of its respective mediator. Mediation shall include, but not be limited to, neutral evaluation, a dispute review board, or other negotiation or evaluation through an independent third party or board. The Contractor and the University may mutually agree to waive any individual mediation in writing and proceed to arbitration or litigation pursuant to this Contract.

4.7 LITIGATION AND ARBITRATION

4.7.1 Either party may provide a written notice of its election to arbitrate or provide written notice of its election to litigate the Claim within 30 days after the mediation pursuant to Article 4.6.1, or, if the parties mutually agreed in writing to waive mediation, within 30 days after the agreement is signed by both parties.

4.7.2 If a notice of election to arbitrate or litigate is not given by either party within 30 days pursuant to Article 4.7.1, University's Representative's decision on the Claim will be final and binding and not subject to appeal or challenge.

4.7.3 If the Disputing Party gives timely notice of its election to arbitrate the University's Representative's decision on a Claim, Disputing Party shall have the right, within 120 days after a Notice of Completion, or a Notice of Cessation, as applicable, is filed for the Contract, to make a demand for arbitration in accordance with Article 4.7. Failure to perfect a Claim for which a timely election to arbitrate has been made by the timely filing of a demand for arbitration and timely payment of all applicable and required fees to the American Arbitration Association ("AAA") shall result in the University's Representative's decision on said Claim becoming final and binding and not subject to appeal or challenge. If the Disputing Party makes a timely demand for arbitration, and the amount of the Claim in question, when combined with all other Claims, if any, which are the subject of previously filed demands for arbitration that have not been resolved by settlement or arbitration award, is $100,000 or more, then the other party may elect to litigate all such Claims by filing a written notice with the "AAA" within 30 days after its receipt of notice from the AAA of the Disputing Party's demand for arbitration of the Claim that raises the total amount of Claims subject to arbitration to $100,000 or more. If the other party fails to give notice of its election to litigate within such 30-day period, it shall be deemed to have consented to arbitration and waived the right to litigate. If after commencement of arbitration the amount of unresolved Claims in arbitration are allowed to be increased to $100,000 or more, through an AAA-allowed amendment or otherwise, either party may elect to litigate within 30 days following the date that the electing party first receives written notification from the AAA that total Claims in arbitration equal or exceed $100,000. If neither party gives notice of its election to litigate within such 30-day period as applicable, then both parties shall be deemed to have consented to arbitration and waived the right to litigate.

4.7.4 A demand for arbitration pursuant to Article 4.7.3 shall include a copy of the Claim presented to University's Representative pursuant to Article 4.4, a copy of the decision of University's Representative pursuant to Article 4.5, if any, a copy of the University's written statement identifying the portion of the Claim that remained in dispute following the informal conference pursuant to Article 4.6.1, and a summary of the remaining portions of the Claim in dispute. The demand shall state the amount in controversy, if any, and state the remedy sought. The demand shall identify the University's Responsible Administrator as the representative of the responding party and the Office of the General Counsel as counsel for the responding party. The demand shall be filed with the AAA and shall not be deemed to have been made until all applicable fees have been paid to the AAA by the demanding party. Copies of the demand and attachments shall be sent to University's Responsible Administrator as the representative of the responding party and the University's Office of General Counsel as attorney for the responding party, at the addresses set forth in the Project Directory, at the time the demand for arbitration is initiated with the AAA.

4.7.5 Except as modified by this Article 4.7, arbitration shall be initiated and conducted in accordance with the Construction Industry Arbitration Rules of the AAA then in effect. The following additional modifications shall be made to the aforesaid AAA rules:

.1 Civil discovery shall be permitted for the production of documents and taking of depositions. Other discovery may be permitted at the discretion of the arbitrator. All disputes regarding discovery shall be decided by the arbitrator.

.2 University's Representative and/or University's consultants, shall if required by agreement with University, upon demand by University join in and be bound by the Arbitration. University's Representative and University's consultants will have the same rights in any arbitration proceeding as are afforded by the AAA rules to Contractor and University.

.3 Contractor's sureties shall be bound by any arbitration award and may join in any arbitration proceeding.

.4 Except as provided in Articles 4.7.5.2. and 4.7.5.3 above, no Subcontractor or other person shall have a right or obligation to join in or be a party to any arbitration proceeding provided for in this Article 4 either directly, by joinder, by consolidation or actions, by counterclaim or crossclaim, or otherwise without the express written consent of University, Contractor, and the joining party.

.5 If more than one demand for arbitration is made by a party with respect to Claims referred to University's Representative, all such Claims shall be consolidated into a single arbitration unless the parties otherwise agree in writing.

.6 If total Claims are less than $50,000, the AAA expedited procedures as modified by this Article 4 shall apply. If total Claims are between $50,000 and $100,000 they shall be heard by a single arbitrator who shall be an attorney. If total Claims are in excess of $100,000 and are submitted to arbitration, either by agreement or by failure to elect litigation the controversy shall be heard by a panel of three arbitrators, one of which shall be an attorney.

.7 No arbitrator shall be appointed and no discovery may be commenced prior to the date of Final Completion unless University and Contractor otherwise agree.

.8 The exclusive forum for determining arbitrability shall be the Superior Court of the State of California. The AAA shall not submit to any arbitrator any matter concerning the arbitrability of the dispute if the arbitrability is contested.

9 If the expedited procedures of the AAA are applicable, the AAA shall submit simultaneously to each party an identical list of 7 proposed arbitrators drawn from the National Panel of Commercial Arbitrators, and each party may strike 3 names from the list on a peremptory basis and return the list to the AAA within 10 days from the date of receipt.

.10 Except as provided herein, the arbitration shall be conducted and enforced under California law, including the California Arbitration Act (California Code of Civil Procedure section 1280 and following). The Federal Arbitration Act shall not apply to the arbitration.

4.7.6 Unless University and Contractor otherwise agree in writing, the arbitration decision shall be binding upon the parties, made under and in accordance with the laws of the State of California, supported by substantial evidence, and in writing. If the total of all Claims or cross Claims submitted to arbitration is in excess of $50,000, the award shall contain the basis for the decision, findings of fact, and conclusions of law. Any arbitration award shall be subject to confirmation, vacation, or correction under the procedures and on the grounds specified in the California Code of Civil Procedure including without limitation Section 1296. The expenses and fees of the arbitrators and the administrative fees of the AAA shall be divided among the parties equally. Each party shall pay its own counsel fees, witness fees, and other expenses incurred for its own benefit.

4.7.7 University may, but is not required, to assert as a counterclaim any matter arising out of the claims asserted by Contractor in the arbitration. University's failure to assert any such counterclaim in an arbitration shall be without prejudice to the University's right to assert the counterclaim in litigation or other proceeding.
4.7.8 Any litigation shall be filed in the Superior Court of the State of California for the County in which the contract was to be performed.

4.8 WAIVER

4.8.1 A waiver of or failure by University or University's Representative to enforce any requirement in this Article 4 in connection with any Claim shall not constitute a waiver of, and shall not preclude the University or University's Representative from enforcing such requirements in connection with any other Claims.

4.8.2 The Contractor agrees and understands that no oral approval, either express or implied, of any Claim shall be binding upon University unless and until such approval is ratified by execution of a written Change Order.

ARTICLE 5
SUBCONTRACTORS

5.1 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.1.1 Unless otherwise stated in the Contract Documents, Contractor shall submit in writing, prior to entering into subcontract agreements, the names and addresses of all Subcontractors proposed for the Work that were not previously listed in Contractor's Bid.

5.1.2 Any Subcontractor may be disqualified if University or University's Representative determines that such Subcontractor fails to meet the requirements of the Contract Documents or for any other reason.

5.1.3 In accordance with the Subletting and Subcontracting Fair Practices Act, nothing herein shall be deemed to entitle Contractor, without the approval of University, to substitute other subcontractors for those named in Contractor's List of Subcontractors and List of Changes in Subcontractors Due to Alternates contained in the completed Bid Form; and, except with such approval, no such substitution shall be made.

5.1.4 Except as hereinafter provided, any increase in the cost of the Work resulting from the replacement or substitution of a Subcontractor, as required by University or University's Representative pursuant to Article 5.1.1 shall be borne solely by Contractor and Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time on account of such replacement or substitution.

5.2 SUBCONTRACTUAL RELATIONS

5.2.1 Any part of the Work performed for Contractor by a first-tier Subcontractor shall be pursuant to a written subcontract. Each such subcontract shall require the Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to Contractor by the terms of the Contract Documents, to assume toward Contractor all the obligations and responsibilities which Contractor assumes towards University by the Contract Documents, and to perform such portion of the Work in accordance with the Contract Documents. Each such subcontract shall preserve and protect the rights of University under the Contract Documents, with respect to the Work to be performed by Subcontractor, so that subcontracting thereof will not prejudice such rights. Contractor shall cause each such subcontract to expressly include the following requirements:

.1 Subcontractor waives all rights that Subcontractor may have against University for damages caused by fire or other perils covered by builder's risk property insurance carried by Contractor or University, except for such rights Subcontractor may have to the proceeds of such insurance held by University under Article 11.

.2 University and entities and agencies designated by University will have access to and the right to audit and the right to copy at University's cost all of Subcontractor's books, records, contracts, correspondence, instructions, drawings, receipts, vouchers, purchase orders, and memoranda relating to the Work. Subcontractor shall preserve all such records and other items for a period of at least 3 years after Final Completion.

.3 Subcontractor recognizes the rights of University under Article 5.3, Contingent Assignment of Subcontracts, and agrees, upon notice from University that University has elected to accept said assignment and to retain Subcontractor pursuant to the terms of the subcontract, to complete the unperformed obligations under the subcontract and, if requested by University, to execute a written agreement confirming that Subcontractor is bound to University under the terms of the subcontract.

5.2.2 Upon the request of University, Contractor shall promptly furnish to University a true, complete, and executed copy of any subcontract.

5.2.3 Nothing contained in the Contract Documents shall create any contractual relationship between any Subcontractor and University, except when, and only to the extent that, University elects to accept the assignment of the subcontract with such Subcontractor pursuant to Article 5.3, Contingent Assignment of Subcontracts.

5.3 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

5.3.1 Contractor hereby assigns to University all its interest in first-tier subcontracts now or hereafter entered into by Contractor for performance of any part of the Work. The assignment will be effective upon acceptance by University in writing and only as to those subcontracts which University designates in writing. University may accept said assignment at any time during the course of the Work and prior to Final Completion in the event of a suspension or termination of Contractor's rights under the Contract Documents. Such assignment is part of the consideration to University for entering into the Contract with Contractor and may not be withdrawn prior to Final Completion.

ARTICLE 6
CONSTRUCTION BY UNIVERSITY OR BY SEPARATE CONTRACTORS

6.1 UNIVERSITY'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

6.1.1 University reserves the right to award separate contracts for, or to perform with its own forces, construction or operations related to the Work or other construction or operations at or affecting the Project site, including portions of the Work which have been deleted by Change Order. Contractor shall cooperate with University's forces and Separate Contractors.

6.1.2 University will provide coordination of the activities of University's forces and of each Separate Contractor with the Work of Contractor. Contractor shall participate with University and Separate Contractors in joint review of construction schedules and Project requirements when directed to do so. Contractor shall make necessary revisions to the Contract Schedule after such joint review.

6.2 MUTUAL RESPONSIBILITY

6.2.1 Contractor shall afford University and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities. Contractor shall connect, schedule, and coordinate its construction and operations with the construction and operations of University and Separate Contractors as required by the Contract Documents.

6.2.2 If a portion of the Work is dependent upon the proper execution or results of other construction or operations by University or Separate Contractors, Contractor shall inspect such other construction or operations before proceeding with that portion of the Work. Contractor shall promptly report to University's Representative apparent discrepancies or defects which render the other construction or operations unsuitable to receive the Work. Unless otherwise directed by University's Representative, Contractor shall not proceed with the portion of the Work affected until apparent discrepancies or defects have been corrected. Failure of Contractor to so report within a reasonable time after discovering such discrepancies or defects shall constitute an acknowledgment that the other construction or operations by University or Separate Contractors is suitable to receive the Work, except as to defects not then reasonably discoverable.

6.3 UNIVERSITY'S RIGHT TO CLEAN UP

6.3.1 If a dispute arises between Contractor and Separate Contractors as to the responsibility under their respective contracts for maintaining the Project site and surrounding areas free from waste materials and rubbish, University may clean up and allocate the cost between those firms it deems to be responsible.

ARTICLE 7
CHANGES IN THE WORK

7.1 CHANGES

7.1.1 University may, from time to time, order or authorize additions, deletions, and other changes in the Work by Change Order or Field Order without invalidating the Contract and without notice to sureties. Absence of such notice shall not relieve such sureties of any of their obligations to University.

7.1.2 Contractor may request a Change Order under the procedures specified in Article 4.2.

7.1.3 A Field Order may be issued by University, does not require the agreement of Contractor, and shall be valid with or without the signature of Contractor.

7.1.4 Contractor shall proceed promptly with any changes in the Work, unless otherwise provided in the relevant Change Order or Field Order.

7.2 DEFINITIONS

7.2.1 A Change Order is a Contract Document (as shown in the Exhibits) which has been signed by both University and Contractor, and states their agreement, as applicable, to the following:

.1 A change in the Work, if any.
.2 The amount of an adjustment of the Contract Sum, if any.
.3 The amount of an adjustment of the Contract Time, if any.
.4 A modification to any other Contract term or condition.

7.2.2 A Unilateral Change Order may be issued by University, without the Contractor' signature, where the University determines that a change in the Work requires an adjustment of the Contract Sum or Contract Time, even though no agreement has been reached between University and Contractor with regard to such change in the Work.

7.2.3 A Field Order (as shown in the Exhibits) is a Contract Document issued by the University that orders the Contractor to perform Work. A Field Order may, but need not, constitute a change in the Work and may, but need not, entitle Contractor to an adjustment of the Contract Sum or Contract Time.

7.3 CHANGE ORDER PROCEDURES

7.3.1 Contractor shall provide a Change Order Request and Cost Proposal pursuant to Article 4.2 and this Article 7.3 of the General Conditions. Adjustments of the Contract Sum resulting from Extra Work and Deductive Work shall be determined using one of the methods described in this Article 7.3. Adjustments of the Contract Time shall be subject to the provisions in Article 8. Contractor's obligation to provide Cost Proposals shall be subject to the following:

.1 The obligation of Contractor to provide Cost Proposals is not Extra Work, and shall not entitle the Contractor to an adjustment of the Contract Sum or Contract Time.
.2 The failure of Contractor to timely provide a Cost Proposal pursuant to Article 4.2 and this Article 7.3.1 is a material breach of the Contract. Contractor shall be responsible for any delay in implementing a change for which Contractor failed to timely provide a Cost Proposal consistent with the requirements of Article 4.2 and this Article 7.3.1.

7.3.2 The term "Cost of Extra Work" as used in this Article 7.3 shall mean actual costs incurred or to be incurred by Contractor and each Subcontractor regardless of tier involved, to the extent not otherwise disallowed under Article 7.3.3, and shall be limited to the following (to the extent the Contractor demonstrates that the costs are both reasonable and actually incurred, if such costs have been incurred):

.1 Straight-time wages or salaries for employees employed at the Project site, or at fabrication sites off the Project site, incurred as a result of the performance of the Extra Work.2 Fringe Benefits and Payroll Taxes for employees employed at the Project site, or at fabrication sites off the Project site, incurred as a result of the performance of the Extra Work.

.3 Overtime wages or salaries, specifically authorized in writing by University's Representative, for employees employed at the Project site, or at fabrication sites off the Project site, incurred as a result of the performance of the Extra Work.

.4 Fringe Benefits and Payroll Taxes for overtime Work specifically authorized in writing by University's Representative, for employees employed at the Project site, or at fabrication sites off the Project site, incurred as a result of the performance of the Extra Work.

.5 Costs of materials and consumable items which are furnished and incorporated into the Extra Work, as approved by University's Representative. Such costs shall be charged at the lowest price available to the Contractor but in no event shall such costs exceed competitive costs obtainable from other subcontractors, suppliers, manufacturers, and distributors in the area of the Project site. All discounts, rebates, and refunds and all returns from sale of surplus materials and consumable items shall accrue to University and Contractor shall make provisions so that they may be obtained.

.6 Sales taxes on the costs of materials and consumable items which are incorporated into and used in the performance of the Extra Work pursuant to Article 7.3.2.5 above.

.7 Rental charges for necessary machinery and equipment, whether owned or hired, as authorized in writing by University's Representative, exclusive of hand tools, used directly in the performance of the Extra Work. Such rental charges shall not exceed the current Equipment Rental Rates published by the California Department of Transportation for the area in which the work is performed. Such rental rates are found at http://www.dot.ca.gov/hq/construc/equipmnt.html . Contractor shall attach a copy of said schedule to the Cost Proposal. The charges for any machinery and equipment shall cease when the use thereof is no longer necessary for the Extra Work.

.8 Additional costs of royalties and permits due to the performance of the Extra Work.

.9 The cost for Insurance and Bonds shall not exceed 2% of items .1 through .8 above.

University and Contractor may agree upon rates to be charged for any of the items listed in this Article 7.3.2. Such agreed upon rates shall be subject to audit pursuant to Article 15.7. Contractor shall promptly refund to University any amounts (including associated mark-ups) in excess of the actual costs of such items.

7.3.3 Cost of Extra Work shall not include any of the following:

.1 Supervision
.2 Superintendent(s).
.3 Assistant Superintendent(s).
.4 Project Engineer(s).
.5 Project Manager(s).
.6 Scheduler(s).
.7 Estimator(s).
.8 Small tools (Replacement value does not exceed $300).
.9 Office expenses including staff, materials and supplies.
.10 On-site or off-site trailer and storage rental and expenses.
.11 Site fencing.
.12 Utilities including gas, electric, sewer, water, telephone, facsimile, copier equipment.

.13 Data processing personnel and equipment.
.14 Federal, state, or local business income and franchise taxes.
.15 Overhead and Profit.
.16 Costs and expenses of any kind or item not specifically and expressly included in Article 7.3.2.

7.3.4 The term “Contractor Fee” shall mean the full amount of compensation, both direct and indirect (including without limitation all overhead and profit), to be paid to Contractor for its own Work and the Work of all Subcontractors, for all costs and expenses not included in the Cost of Extra Work, whether or not such costs and expenses are specifically referred to in Article 7.3.3. The Contractor Fee shall not be compounded.

The Contractor Fee shall be computed as follows:

.1 Fifteen percent (15%) of the cost of that portion of the Extra Work to be performed by the prime contractor with its own forces.
.2 Fifteen percent (15%) of the cost of that portion of the Work to be performed by a Subcontractor with its own forces, plus 5% for the prime contractor. Total combined Contractor and Subcontractor fee shall not exceed 20%.
.3 Fifteen percent (15%) of the cost of that portion of the Work to be performed by a sub-subcontractor with its own forces, or any lower tier of Subcontractor, plus 5% for the Subcontractor, plus 5% for the prime contractor. Total combined Contractor, Subcontractor and all sub-subcontractor fee shall not exceed 25%.

7.3.5 Compensation for Extra Work shall be computed on the basis of one or more of the following:

.1 Where the Work involved is covered by Unit Prices contained in the Contract Documents, by application of the Unit Prices to the quantities of the items involved.
.2 Where Unit Prices are not applicable, a mutually agreed upon lump sum supported by a Cost Proposal pursuant to 7.3.1.
.3 Where Contractor and University cannot agree upon a lump sum, by Cost of Extra Work plus Contractor Fee applicable to such Extra Work.

7.3.6 As a condition to Contractor's right to an adjustment of the Contract Sum pursuant to Article 7.3.5.3, Contractor must keep daily detailed and accurate records itemizing each element of cost and shall provide substantiating records and documentation, including time cards and invoices. Such records and documentation shall be submitted to University's Representative on a daily basis.

7.3.7 For Work to be deleted by Change Order, the reduction of the Contract Sum shall be computed on the basis of one or more of the following:

.1 Unit Prices stated in the Contract Documents.
.2 Where Unit Prices are not applicable, a lump sum agreed upon by University and Contractor, based upon the actual costs which would have been incurred in performing the deleted portions of the Work as calculated in accordance with Articles 7.3.2 and 7.3.3, supported by a Cost Proposal pursuant to Article 7.3.1.

7.3.8 If any one Change involves both Extra Work and Deleted Work in the same portion of the Work, a Contractor fee will not be allowed if the deductive cost exceeds the additive cost. If the additive cost exceeds the deductive cost, a Contractor Fee will be allowed only on the difference between the two amounts.

7.3.9 The Contract Sum will be adjusted for a delay if, and only if, Contractor demonstrates that all of the following three conditions are met:

.1 <u>Condition Number One</u>: The delay results in an extension of the Contract Time pursuant to Article 8.4.1.

.2 <u>Condition Number Two</u>: The delay is caused solely by one or more of the following:

  .1 An error or omission in the Contract Documents; or
  .2 The University's decision to change the scope of the Work, where such decision is not the result of any default or

misconduct of the Contractor; or

.3 The University's decision to suspend the Work, where such decision is not the result of any default or misconduct of the Contractor; or

.4 The failure of the University (including the University acting through its consultants, Design Professionals, Separate Contractors or the University's Representative) to perform any Contract obligation where the failure to so perform is not the result of any default or misconduct of the Contractor.

.5 A materially differing site condition pursuant to Article 3.17.

.3 Condition Number Three: The delay is not concurrent with a delay caused by an event other than those listed in Article 7.3.9.2.

7.3.10 For each day of delay that meets all three conditions prescribed in Article 7.3.9 the Contract Sum will be adjusted by the daily rate included in the Agreement and specifically identified as the rate to be paid to Contractor for Compensable Delays. Pursuant to Article 9.7.4, said daily rate shall not apply to delays occurring after Substantial Completion.

7.3.11 Except as provided in Articles 7 and 8, Contractor shall have no claim for damage or compensation for any delay, interruption, hindrance, or disruption.

7.3.12 If for any reason one or more of the conditions prescribed in Article 7.3.9 is held legally unenforceable, the remaining conditions must be met as a condition to obtaining an adjustment of the Contract Time under Article 7.3.10.

7.4 FIELD ORDERS

7.4.1 Field Orders issued by the University Representative shall be subject to the following:

.1 A Field Order may state that it does or does not constitute a change in the Work.

.2 If the Field Order states that it does not constitute a change in the Work and the Contractor asserts that the Field Order constitutes a change in the Work, in order to obtain an adjustment of the Contract Sum or Contract Time for the Work encompassed by the Field Order, Contractor must follow all procedures set forth in Article 4, starting with the requirement of submitting a timely Change Order Request within 7 days of Contractor's receipt of the Field Order; failure to strictly follow those procedures is a bar to any Claim for an adjustment of the Contract Sum or Contract Time arising from performance of the Work described in the Field Order.

.3 If the Field Order states that it does constitute a change in the Work, the Work described in the Field Order shall be considered Extra Work and the Contractor shall be entitled to an adjustment of the Contract Sum and Contract Time, calculated under and subject to Contractor's compliance with the procedures for verifying and substantiating costs and delays in Articles 7 and 8.

.4 In addition, if the Field Order states that it does constitute a change in the Work, the Field Order may or may not contain University's estimate of adjustment of Contract Sum and/or Contract Time. If the Field Order contains an estimate of adjustment of Contract Sum or Contract Time, the Field Order is subject to the following:

.1 The Contractor shall not exceed the University's estimate of adjustment to Contract Sum or Contract Time without prior written notification to the University's Representative.

.2 If the Contractor asserts that the change in the Work encompassed by the Field Order may entitle Contractor to an adjustment of Contract Sum or Contract Time in excess of the University's estimate, in order not to be bound by University's estimate Contractor must follow all procedures set forth in Article 4, starting with the requirement of submitting a timely Change Order Request within 7 days of

Contractor's receipt of the Field Order; failure to strictly follow those procedures is a bar to any Claim for an adjustment of the Contract Sum or Contract Time, in excess of the University's estimate, arising from performance of the Work described in the Field Order.

7.4.2 Upon receipt of a Field Order, Contractor shall promptly proceed to perform the Work as ordered in the Field Order notwithstanding any disagreement by the Contractor concerning whether the Work is extra.

7.5 VARIATION IN QUANTITY OF UNIT PRICE WORK

7.5.1 University has the right to increase or decrease the quantity of any Unit price item for which an Estimated Quantity is stated in the Bid Form.

7.6 WAIVER

7.6.1 A waiver of or failure by University or University's Representative to enforce any requirement in this Article 7, including without limitation the requirements in Articles 7.3.6, 7.3.8, 7.3.9, 7.3.10, 7.3.11, or 7.3.12 in connection with any adjustment of the Contract Sum, will not constitute a waiver of, and will not preclude the University or University's Representative from enforcing, such requirements in connection with any other adjustments of the Contract Sum.

7.6.2 The Contractor agrees and understands that no oral approval, either express or implied, of any adjustment of the Contract Sum by University or its agents shall be binding upon University unless and until such approval is ratified by execution of a written Change Order.

ARTICLE 8
CONTRACT TIME

8.1 COMMENCEMENT OF THE WORK

8.1.1 The date of commencement of the Work shall be set forth in the Notice To Proceed. The date of commencement of the Work shall not be postponed by the failure of Contractor, Subcontractors, or of persons or firms for whom Contractor is responsible, to act.

8.2 PROGRESS AND COMPLETION

8.2.1 By signing the Agreement:

.1 Contractor represents to University that the Contract Time is reasonable for performing the Work and that Contractor is able to perform the Work within the Contract Time.

.2 Contractor agrees that University is purchasing the right to have the Contractor present on the Project site for the full duration of the Contract Time, even if Contractor could finish the Contract in less than the Contract Time.

8.2.2 Contractor shall not, except by agreement or instruction of University in writing, commence operations on the Project site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by Contractor. The dates of commencement and Final Completion of the Work shall not be changed by the effective date of such insurance.

8.2.3 Contractor shall proceed expeditiously with adequate forces and shall achieve full completion of the Work within the Contract Time. If University's Representative determines and notifies Contractor that Contractor's progress is such that Contractor will not achieve full completion of the Work within the Contract Time, Contractor shall immediately and at no additional cost to University, take all measures necessary, including working such overtime, additional shifts, Sundays, or holidays as may be required to ensure that the Work is fully completed within the Contract Time. Upon receipt of such notice from University's representative, Contractor shall immediately notify University's Representative of all measures to be taken to ensure full completion of the Work within the Contract Time. Contractor shall reimburse University for any extra costs or expenses (including the reasonable value of any services provided by University's employees) incurred by University as the result of such measures.

8.3 DELAY

8.3.1 Except and only to the extent provided otherwise in Articles 7 and 8, by signing the Agreement, Contractor agrees:

.1 to bear the risk of delays to the Work; and
.2 that Contractor's bid for the Contract was made with full knowledge of this risk.

In agreeing to bear the risk of delays to the Work, Contractor understands that, except and only to the extent provided otherwise in Articles 7 and 8, the occurrence of events that delay the Work shall not excuse Contractor from its obligation to achieve Final Completion of the Work within the Contract Time, and shall not entitle the Contractor to an adjustment of the Contract Sum.

8.4 ADJUSTMENT OF THE CONTRACT TIME FOR DELAY

8.4.1 Subject to Article 8.4.2, the Contract Time will be extended for each day of delay for which Contractor demonstrates that all of the following four conditions have been met; a time extension will not be granted for any day of delay for which Contractor fails to demonstrate compliance with the four conditions:

.1 Condition Number One: The delay is critical. A delay is critical if and only to the extent it delays a work activity that cannot be delayed without delaying Final Completion of the Work beyond the Contract Time. Under this Article 8.4.1.2, if the Contract Schedule shows Final Completion of the Work before expiration of the Contract Time, a delay is critical if and only to the extent the delay pushes Final Completion of the Work to a date that is beyond the Contract Time.

.2 Condition Number Two: Within 7 days of the date the Contractor discovers or reasonably should discover an act, error, omission or unforeseen condition or event causing the delay is likely to have an impact on the critical path of the Project, (even if the Contractor has not yet been delayed when the Contractor discovers or reasonably should discover the critical path impact of the act, error, omission or unforeseen condition giving rise to the delay) the Contractor submits both a timely and complete Change Order Request that meets the requirements of Article 4.2.

.3 Condition Number Three: The delay is not caused by:
- .1 A concealed, unforeseen or unknown condition or event except for a materially differing site condition pursuant to Article 3.17;or
- .2 The financial inability, misconduct or default of the Contractor, a Subcontractor or supplier; or
- .3 The unavailability of materials or parts.

.4 Condition Number Four: The delay is caused by:

- .1 Fire; or
- .2 Strikes, boycotts, or like obstructive actions by labor organizations; or
- .3 Acts of God (As used herein, “Acts of God” shall include only earthquakes in excess of a magnitude of 3.5 on the Richter Scale and tidal waves); or
- .4 A materially differing site condition pursuant to Article 3.17; or
- .5 An error or omission in the Contract; or
- .6 The University's decision to change the scope of the Work, where such decision is not the result of any default or misconduct of the Contractor; or
- .7 The University's decision to suspend the Work, where such decision is not the result of any default or misconduct of the Contractor; or
- .8 The failure of the University (including the University acting through its consultants, Design Professionals, Separate Contractors or the University's representative) to perform any

Contract obligation unless such failure is due to Contractor's default or misconduct.

.9 "Adverse weather," but only for such days of adverse weather, or on-site conditions caused by adverse weather, that are in excess of the number of days specified in the Supplementary Conditions. In order for a day to be considered a day of adverse weather for the purpose of determining whether Contractor is entitled to an adjustment in Contract Time, both of the following conditions must be met:

.1 the day must be a day in which, as a result of adverse weather, less than one half day of critical path work is performed by Contractor; and

.2 the day must be identified in the Contract Schedule as a scheduled work day.

8.4.2 If and only if a delay meets all four conditions prescribed in Article 8.4.1, then a time extension will be granted for each day that Final Completion of the Work is delayed beyond the Contract Time, subject to the following:

.1 When two or more delays (each of which meet all four conditions prescribed in Article 8.4.1) occur concurrently on the same day, and each such concurrent delay by itself without consideration of the other delays would be critical, then all such concurrent delays shall be considered critical. For the purpose of determining whether and to what extent the Contract Time should be adjusted pursuant to Article 8.4.2, such concurrent critical delays shall be treated as a single delay for each such day.

.2 Contractor shall be entitled to a time extension for a day of delay that meets all four requirements of Article 8.4.1 if the delay is concurrent with a delay that does not meet all four conditions of Article 8.4.1.

8.4.3 If for any reason one or more of the four conditions prescribed in Article 8.4.1 is held legally unenforceable, then all remaining conditions must be met as a condition to obtaining an extension of the Contract Time under Article 8.4.2.

8.5 COMPENSATION FOR DELAY

8.5.1 To the maximum extent allowed by law, any adjustment of the Contract Sum as the result of delays shall be limited to the amounts specified in Article 7. Such adjustment shall, to the maximum extent allowed by law, constitute payment in full for all delay related costs (including costs for disruption, interruption and hindrance, general conditions, on and off-site overhead and profit) of Contractor, its Suppliers and Subcontractors of all tiers and all persons and entities working under or claiming through Contractor in connection with the Project.

8.5.2 By signing the Agreement, the parties agree that the University is buying the right to do any or all of the following, which are reasonable and within the contemplation of the parties:

.1 To order changes in the Work, regardless of the extent and number of changes, including without limitation:

.1 Changes to correct errors or omissions, if any, in the Contract Documents.

.2 Changes resulting from the University's decision to change the scope of the Work subsequent to execution of the Contract.

.3 Changes due to unforeseen conditions.

.2 To suspend the Work or any part thereof.

.3 To delay the Work, including without limitation, delays resulting from the failure of the University or the University's Representative to timely perform any Contract obligation and delays for University's convenience.

8.6 WAIVER

8.6.1 A waiver of or failure by University or University's Representative to enforce any requirement in this Article 8, including without limitation the requirements in Article 8.4, in connection with any or all past delays shall not constitute a waiver of, and shall not preclude the University or University's Representative from enforcing, such requirements in connection with any present or future delays.

8.6.2 Contractor agrees and understands that no oral approval, either express or implied, of any time extension by University or its agents shall be binding upon University unless and until such approval is ratified by execution of a written Change Order.

ARTICLE 9
PAYMENTS AND COMPLETION

9.1 COST BREAKDOWN

9.1.1 Within 10 days after receipt of the Notice of Selection as the apparent lowest responsible Bidder, and with the Agreement, Contractor shall submit to University's Representative a Cost Breakdown of the Contract Sum in the form contained in the Exhibits. The Cost Breakdown shall itemize as separate line items the cost of each Work Activity and all associated costs, including but not limited to warranties, as-built documents, overhead expenses, and the total allowance for profit. Insurance and bonds shall each be listed as separate line items. The total of all line items shall equal the Contract Sum. The Cost Breakdown, when approved by the University's Representative, shall become the basis for determining the cost of Work performed for Contractor's Applications for Payment.

9.2 PROGRESS PAYMENT

9.2.1 University agrees to pay monthly to Contractor, subject to Article 9.4.3, an amount equal to 95% of the sum of the following:

.1 Cost of the Work in permanent place as of the date of the Contractor’s Application For Payment.
.2 Plus cost of materials not yet incorporated in the Work, subject to Article 9.3.5.
.3 Less amounts previously paid.

Under this Article 9.2.1, University may, but is not required, to pay Contractor more frequently than monthly.

9.2.2 After Substantial Completion and subject to Article 9.4.3, University will make any of the remaining progress payments in full.

9.3 APPLICATION FOR PAYMENT

9.3.1 On or before the 10th day of the month or such other date as is established by the Contract Documents, Contractor shall submit to University's Representative an itemized Application For Payment, for the cost of the Work in permanent place, as approved by University's Representative, which has been completed in accordance with the Contract Documents, less amounts previously paid.

The Application For Payment shall be prepared as follows:

.1 Use the form contained in the Exhibits.
.2 Itemize in accordance with the Cost Breakdown.
.3 Include such data substantiating Contractor's right to payment as University's Representative may reasonably require, such as invoices, certified payrolls, daily time and material records, and, if securities are deposited in lieu of retention pursuant to Article 9.5, a certification of the market value of all such securities as of a date not earlier than 5 days prior to the date of the Application For Payment.
.4 Itemize retention.

9.3.2 Applications For Payment shall not include requests for payment on account of (1) changes which have not been authorized by Change Orders or (2) amounts Contractor does not intend to pay a Subcontractor because of a dispute or other reason.

9.3.3 If required by University, an Application For Payment shall be accompanied by (1) a summary showing payments that will be made to Subcontractors covered by such application and conditional releases upon progress payment or final payment and (2) unconditional waivers and releases of claims and stop payment notices, in the form contained in the Exhibits, from each Subcontractor listed in the preceding Application For Payment covering sums disbursed pursuant to that preceding Application For Payment.

9.3.4 Contractor warrants that, upon submittal of an Application For Payment, all Work, for which Certificates For Payment have been previously issued and payment has been received from University, shall be free and clear of all claims, stop payment notices, security interests, and encumbrances in favor of Contractor, Subcontractors, or other persons or firms entitled to make claims by reason of having provided labor, materials, or equipment relating to the Work.

9.3.5 At the sole discretion of University, University's Representative may approve for inclusion in the Application For Payment the cost of materials not yet incorporated in the Work but already delivered and suitably stored either at the Project site or at some other appropriate location acceptable to University's Representative. In such case, Contractor shall furnish evidence satisfactory to University's Representative (1) of the cost of such materials and (2) that such materials are under the exclusive control of Contractor. Only materials to be incorporated in the Work will be considered for payment. Any payment shall not be construed as acceptance of such materials nor relieve Contractor from sole responsibility for the care and protection of such materials; nor relieve Contractor from risk of loss to such materials from any cause whatsoever; nor relieve Contractor from its obligation to complete the Work in accordance with the Contract; nor act as a waiver of the right of University to require fulfillment of all terms of the Contract. Nothing contained within this Article 9.3.5 shall be deemed to obligate University to agree to payment for any non-incorporated materials or any part thereof, payment being in the sole and absolute discretion of University.

9.4 CERTIFICATE FOR PAYMENT

9.4.1 If Contractor has submitted an Application For Payment in accordance with Article 9.3, University's Representative shall, not later than 5 working days after the date of receipt of the Application For Payment, issue to University, with a copy to Contractor, a Certificate For Payment for such amount as University's Representative determines to be properly due.

9.4.2 If any such Application For Payment is determined not to be in accordance with Article 9.3, University will inform Contractor as soon as practicable, but not later than 5 working days after receipt. Thereafter, Contractor shall have 3 days to revise and resubmit such Application For Payment; otherwise University's Representative may issue a Certificate For Payment in the amount that University's Representative determines to be properly due without regard to such Application For Payment.

9.4.3 Approval of all or any part of an Application For Payment may be withheld, a Certificate For Payment may be withheld, and all or part of a previous Certificate For Payment may be nullified and that amount withheld from a current Certificate For Payment on account of any of the following:

.1 Defective Work not remedied.
.2 Third-party claims against Contractor or University arising from the acts or omissions of Contractor or Subcontractors.
.3 Stop payment notices.
.4 Failure of Contractor to make timely payments due Subcontractors for material or labor.
.5 A reasonable doubt that the Work can be completed for the balance of the Contract Sum then unpaid.
.6 Damage to University or Separate Contractor for which Contractor is responsible.
.7 Reasonable evidence that the Work will not be completed within the Contract Time; and that the unpaid balance of the Contract Sum would not be adequate to cover University's damages for the anticipated delay.
.8 Failure of Contractor to maintain and update as-built documents.
.9 Failure of Contractor to submit schedules or their updates as required by the Contract Documents.
.10 Failure to provide conditional or unconditional releases from any Subcontractor or supplier, if such waiver(s) have been requested by University's Representative.

.11 Performance of Work by Contractor without properly processed Shop Drawings.
.12 Liquidated damages assessed in accordance with Article 5 of the Agreement.
.13 Failure to provide updated Reports of Subcontractor Information and Self-Certifications, as applicable.
.14 Failure to provide a Final Distribution of Contract Dollars with final Application for Payment.
.15 Any other failure of Contractor to perform its obligations under the Contract Documents.

9.4.4 Subject to the withholding provisions of Article 9.4.3, University will pay Contractor the amount set forth in the Certificate For Payment no later than 10 days after the issuance of the Certificate For Payment.

9.4.5 Neither University nor University's Representative will have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.

9.4.6 Neither a Certificate For Payment nor a progress payment made by University will constitute acceptance of Defective Work.

9.5 DEPOSIT OF SECURITIES IN LIEU OF RETENTION AND DEPOSIT OF RETENTION INTO ESCROW

9.5.1 At the request and expense of Contractor, a substitution of securities may be made for any monies retained by University under Article 9.2 to ensure performance under the Contract Documents. Securities equivalent in value to the retention amount required by the Contract Documents for each Certificate For Payment shall be deposited by Contractor with a state or federally chartered bank in the State of California (“Escrow Agent”), which shall hold such securities pursuant to the escrow agreement referred to in Article 9.5.3 until retention is due in accordance with Article 9.8. Securities shall be valued as often as conditions of the securities market warrant, but in no case less than once per month. Contractor shall deposit additional securities so that the current market value of the total of all deposited securities shall be at least equal to the total required amount of retention.

9.5.2 Alternatively to Article 9.5.1, and at the request and expense of Contractor, University will deposit retention directly with Escrow Agent. Contractor may direct the investment of such deposited retention into interest bearing accounts or securities, and such deposits or securities shall be held by Escrow Agent upon the same terms provided for securities deposited by Contractor. Contractor and its surety shall bear the risk of failure of the Escrow Agent selected.

9.5.3 A prerequisite to the substitution of securities in lieu of retention or the deposit of retention into escrow shall be the execution by Contractor, University, and Escrow Agent of an Escrow Agreement for Deposit of Securities in Lieu of Retention and Deposit of Retention in the form contained in the Exhibits. The Contractor shall submit the Selection of Retention Options and the Escrow Agreement for Deposit of Securities in Lieu of Retention and Deposit of Retention not later than the date when 50% of the Work has been completed. The terms of such escrow agreement are incorporated into the requirements of this Article 9.5.

9.6 BENEFICIAL OCCUPANCY

9.6.1 University reserves the right, at its option and convenience, to occupy or otherwise make use of any part of the Work at any time prior to Substantial Completion or Final Completion upon 10 days' notice to Contractor. Such occupancy or use is herein referred to as “Beneficial Occupancy.” Beneficial Occupancy shall be subject to the following conditions:

.1 University's Representative will make an inspection of the portion of the Project to be beneficially occupied and prepare a list of items to be completed or corrected prior to Final Completion. Prior to Beneficial Occupancy, University will issue a Certificate of Beneficial Occupancy on University's form.
.2 Beneficial Occupancy by University shall not be construed by Contractor as an acceptance by University of that portion of the Work which is to be occupied.
.3 Beneficial Occupancy by University shall not constitute a waiver of existing claims of University or Contractor against each other.

.4 Contractor shall provide, in the areas beneficially occupied and on a 24 hour and 7 day week basis as required, utility services, heating, and cooling for systems which are in operable condition at the time of Beneficial Occupancy. All responsibility for the operation and maintenance of equipment shall remain with Contractor while the equipment is so operated. Contractor shall submit to University an itemized list of each piece of equipment so operated with the date operation commences.

.5 The Guarantee to Repair Periods, as defined in Article 12.2, will commence upon the occupancy date stated in the Certificate of Beneficial Occupancy except that the Guarantee to Repair Periods for that part of equipment or systems that serve portions of the Work for which University has not taken Beneficial Occupancy or issued a Certificate of Substantial Completion shall not commence until the University has taken Beneficial Occupancy for that portion of the Work or has issued a Certificate of Substantial Completion with respect to the entire Project.

.6 University will pay all normal operating and maintenance costs resulting from its use of equipment in areas beneficially occupied.

.7 University will pay all utility costs which arise out of the Beneficial Occupancy.

.8 Contractor shall not be responsible for providing security in areas beneficially occupied.

.9 University will use its best efforts to prevent its Beneficial Occupancy from interfering with the conduct of Contractor's remaining Work.

.10 Contractor shall not be required to repair damage caused by University in its Beneficial Occupancy.

.11 Except as provided in this Article 9.6, there shall be no added cost to University due to Beneficial Occupancy.

.12 Contractor shall continue to maintain all insurance required by the Contract in full force and effect.

9.7 SUBSTANTIAL COMPLETION

9.7.1 “Substantial Completion” means the stage in the progress of the Work, as determined by University's Representative, when the Work is complete and in accordance with the Contract Documents except only for completion of minor items which do not impair University's ability to occupy and fully utilize the Work for its intended purpose and a Certificate of Occupancy has been issued by the University.

9.7.2 When Contractor gives notice to University's Representative that the Work is substantially complete, unless University's Representative determines that the Work is not sufficiently complete to warrant an inspection to determine Substantial Completion, University's Representative will inspect the Work. If the University’s Representative determines that the Work is not substantially completed the University’s Representative will prepare and give to Contractor a comprehensive list of items to be completed or corrected before establishing Substantial Completion. Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item on such list does not alter the responsibility of Contractor to complete all Work in accordance with the Contract Documents. Upon notification that the items on the list are completed or corrected, as applicable, the University's Representative will make an inspection to determine whether the Work is substantially complete. Costs for additional inspection by University's Representative shall be deducted from any monies due and payable to Contractor.

9.7.3 When University's Representative determines that the Work is substantially complete, University's Representative will arrange for inspection by University’s Building Official and other officials, as appropriate, for the purpose of issuing a Certificate of Occupancy. After a Certificate of Occupancy has been issued by the University, the University’s Representative will prepare a Certificate of Substantial Completion on University's form as contained in the Exhibits, which, when signed by University, shall establish the date of Substantial Completion and the responsibilities of University and Contractor for security, maintenance, utilities, insurance, and damage to the Work. The University’s Representative will prepare and furnish to the Contractor a comprehensive “punch list” of items to be completed or corrected prior to Final Completion.

9.7.4 Unless otherwise provided in the Certificate of Substantial Completion, the Guarantee To Repair Period for the Work covered by the Certificate of Substantial Completion, shall commence on the date of Substantial Completion of the Work except that Substantial Completion shall not commence the Guarantee to Repair Period for any equipment or systems that:

.1 Are not operational (equipment or systems shall not be considered operational if they cannot be used to provide the intended service; or

.2 Are not accepted by the University.

The Guarantee To Repair Period for equipment or systems which become operational and accepted subsequent to Substantial Completion will begin on the date of their written acceptance by University.

9.7.5 The daily rate included in the Agreement and specifically identified as the rate to be paid to Contractor for Compensable Delays shall not apply to any delays occurring after the Work is substantially completed.

9.8 **FINAL COMPLETION, FINAL PAYMENT, AND RELEASE OF RETENTION**

9.8.1 Upon receipt of notice from Contractor that the Work is ready for final inspection, University's Representative will make such inspection. Final Completion shall be when University's Representative determines that the Work is fully completed and in accordance with the Contract Documents, including without limitation, satisfaction of all "punch list" items, and determines that a Certificate of Occupancy has been issued by the University. University will file a Notice of Completion within 15 days after Final Completion. After receipt of the final Application For Payment, if University's Representative determines that Final Completion has occurred, University's Representative will issue the final Certificate For Payment.

9.8.2 Final payment and retention shall be released to Contractor, as set forth in Article 9.8.3, after:

.1 Contractor submits the final Application For Payment and all submittals required in accordance with Article 9.3;

.2 Contractor submits all guarantees and warranties procured by Contractor from Subcontractors, all operating manuals for equipment installed in the Project, as-built documents, and all other submittals required by the Contract Documents;

.3 Contractor submits the Final Distribution of Contract Dollars in the form contained in the Exhibits; and

.4 University's Representative issues the final Certificate For Payment.

At its sole discretion, after Final Completion, University may waive the requirement that Contractor submit a final Application For Payment before making final payment and/or release of retention to Contractor.

9.8.3 Final payment shall be paid not more than 10 days after University's Representative issues the final Certificate For Payment. Retention shall be released to Contractor 35 days after the filing of the Notice of Completion.

9.8.4 Acceptance of final payment by Contractor shall constitute a waiver of all claims, except claims for retention and claims previously made in writing and identified by Contractor as unsettled at the time of the final Application For Payment.

ARTICLE 10
PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 Contractor shall take adequate precautions for safety of and shall provide adequate protection to prevent damage, injury, or loss to the following:

.1 Employees involved in the Work and other persons who may be affected thereby.

.2 The Work in place and materials and equipment to be incorporated therein, whether in storage on or off the Project site, under care, custody, or control of Contractor or Subcontractors.

.3 Other property at the Project site and adjoining property.

10.2.2 Contractor shall erect and maintain, as required by existing conditions and performance of the Work, adequate safeguards for safety and protection, including providing adequate lighting and ventilation, posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent sites and utilities.

10.2.3 When use or storage of explosives, other hazardous materials, equipment, or unusual methods are necessary for execution of the Work, Contractor shall exercise the utmost care and carry on such activities only under the supervision of properly qualified personnel.

10.2.4 Contractor shall designate a responsible member of Contractor's organization at the Project site whose duty shall be the prevention of accidents. That person shall be the Superintendent, unless otherwise designated by Contractor in writing to University and University's Representative.

10.2.5 Contractor shall not load or permit any part of the Work or the Project site to be loaded so as to endanger the safety of persons or property.

10.3 EMERGENCIES

10.3.1 In an emergency affecting the safety of persons or property, Contractor shall act to prevent or minimize damage, injury, or loss. Contractor shall promptly notify University's Representative, which notice may be oral followed by written confirmation, of the occurrence of such an emergency and Contractor's action.

ARTICLE 11
INSURANCE AND BONDS

11.1 CONTRACTOR'S INSURANCE

11.1.1 Contractor shall, at its expense, purchase and maintain in full force and effect such insurance as will protect itself and University from claims, such as for bodily injury, wrongful death, and property damage, which may arise out of or result from the Work required by the Contract Documents, whether such Work is done by Contractor, by any Subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. The amounts of such insurance and any additional insurance requirements are specified in the Supplementary Conditions. See Article 3.21 regarding the scope and extent of Contractor's liability for and repair of damaged Work.

11.1.2 The following policies and coverages shall be furnished by Contractor:

.1 COMMERCIAL GENERAL LIABILITY INSURANCE subject to terms no less broad than the Insurance Services Office's (ISO) form CG 0001 (2004 or later edition), or a substitute form providing coverage at least as broad as the ISO form specified, covering all Work done by or on behalf of Contractor and providing insurance for bodily injury, wrongful death, personal injury, property damage, and contractual liability. There shall be no limitations or exclusions of coverage beyond those contained in the standard ISO form CG 0001 (2004 or later edition). Except with respect to bodily injury and property damage included within the products and completed operations hazards, the aggregate limit shall apply separately to Work required of Contractor by these Contract Documents. Contractor shall continue to maintain Products/Completed Operations liability insurance coverage for a minimum completed operations period of 10 year(s) or the applicable Statute of Repose as provided by the law of the jurisdiction where the project is located as shown in the policy(ies), whichever is less. All terms and conditions of such coverage shall be maintained during this completed operations period, including the required minimum coverage limits and the requirement to provide the University with coverage as an additional insured for completed operations as specified under this Article 11.1 and the Supplementary Conditions.

.2 BUSINESS AUTOMOBILE LIABILITY INSURANCE subject to terms no less broad than the Insurance Services Office's (ISO) form CA 0001 (1990 or later edition), or a substitute form providing coverage at least as broad as the ISO form specified, covering owned, hired, leased, and non-owned automobiles used by or on behalf of Insured, and providing liability insurance for bodily injury and property damage arising from the use or operation of such auto(s) with a minimum combined single limit of not less than $1,000,000 per accident. The minimum limits required may be satisfied by combination of primary and umbrella/excess policies. The Commercial Automobile Liability Insurance shall be provided by Contractor for all on site and off site Work.

.3 WORKERS' COMPENSATION AND EMPLOYER'S LIABILITY INSURANCE as required by Federal and State of California law. Contractor shall also require all of its Subcontractors to maintain this insurance coverage.

11.1.3 The coverages required under this Article 11 shall not in any way limit the liability of Contractor.

11.1.4 Contractor's Certificates of Insurance, executed by a duly authorized representative of each broker of record or each insurer as evidence of the insurance required by these Contract Documents and on the form contained in the Exhibits, shall be submitted by Contractor to University prior to the commencement of Work by the Contractor. The Certificates of Insurance shall provide for no cancellation or modification of coverage without prior written notice to University, in accordance with policy provisions.

11.1.5 In the event Contractor does not comply with these insurance requirements, University may, at its option, provide insurance coverage to protect University; and the cost of such insurance shall be paid by Contractor and may be deducted from the Contract Sum.

11.1.6 Contractor's insurance as required by Article 11.1.2, shall, by endorsement to the policies, include the following:

.1 The Regents of the University of California, The University of California, University, and each of their Representatives, consultants, officers, agents, employees, and each of their Representative's consultants, regardless of whether or not identified in the Contract Documents or to the Contractor in writing, will be included as additional insureds on the Contractor's General Liability insurance for and relating to the Work to be performed by the Contractor and Subcontractors. Additional Insured provision or endorsement shall be at least as broad as the CG 20 07 04 in combination with the CG 20 37 07 04 (or earlier versions of CG 20 10 and CG 20 37 or Form B - CG 20 10 11 85 by itself), as published by Insurance Services Offices (ISO) and shall be included with Certificates of Insurance. The additional insured requirement shall not apply to Worker's Compensation and Employer's Liability insurance.

Further, the amount of insurance available to the University shall be for the full amount of the loss up to the available policy limits and shall not be limited to any minimum requirements stated in the Contract Documents.

.2 University, University's consultants, University's Representative, and University's Representative's consultants will not by reason of their inclusion as insureds incur liability to the insurance carriers for payment of premiums for such insurance.

.3 Coverage provided is primary and is not in excess of or contributing with any insurance or self-insurance maintained by University, University's consultants, University's Representative, and University's Representative's consultants. This provision, however, shall only apply as per the stipulations of Article 11.1.6.1.

11.1.7 The form and substance of all insurance policies required to be obtained by Contractor shall be subject to approval by University. All policies required by Articles 11.1.2.1, 11.1.2.2, and 11.1.2.3 shall be issued by companies with ratings and financial classifications as specified in the Supplementary Conditions.

11.1.8 Contractor shall, by mutual agreement with University, furnish any additional insurance as may be required by University. Contractor shall provide Certificates of Insurance evidencing such additional insurance.

11.1.9 The Certificate of Insurance shall show (1) all companies affording coverage and (2) the name of the insured exactly in the manner as shown on the Bid Form. The name of the insured must be the name under which the entity is licensed by the Contractors State License Board.

11.1.10 If insurance company refuses to use the Certificate of Insurance form as contained in the Exhibits, it must provide a Certificate of Insurance evidencing compliance with this Article including those provisions noted under DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES section of the Certificate of Insurance Exhibit by including an endorsement to its Certificate of Insurance form covering those noted provisions exactly as they appear on the Certificate of Insurance Exhibit.

11.1.11 At the request of University, Contractor shall submit to University copies of the policies obtained by Contractor.

11.2 BUILDER'S RISK PROPERTY INSURANCE

11.2.1 If and only if the Contract Sum exceeds $300,000 at the time of award, University will provide its standard builder's risk property insurance, subject to the deductibles, terms and conditions, exclusions, and limitations as contained in the provisions of the policy. A copy of the University's standard builder's risk property insurance policy is available at the University's Facility office. In addition, a summary of the provisions of the policy is included as an Exhibit to the Contract. Contractor agrees that the University’s provision of its standard builder’s risk property insurance policy meets the University’s obligation to provide builder’s risk property insurance under the Contract and, in the event of a conflict between the provisions of the policy and any summary or description of the provisions contained herein or otherwise, the provisions of the policy shall control and shall be conclusively presumed to fulfill the University’s obligation to provide such insurance. The proceeds under such insurance policies taken out by University insuring the Work and materials will be payable to University and Contractor as their respective interests, from time to time, may appear. Contractor shall be responsible for the deductible amount in the event of a loss. In addition, nothing in this Article 11.2 shall be construed to relieve Contractor of full responsibility for loss of or damage to materials not incorporated in the Work, and for Contractor's tools and equipment used to perform the Work, whether on the Project site or elsewhere, or to relieve Contractor of its responsibilities referred to under this Article 11. Materials incorporated in the Work, as used in this Article 11.2, shall mean materials furnished while in transit to, stored at, or in permanent place at the Project site.

11.2.2 Insurance policies referred to under this Article 11.2 shall:

.1 Include a provision that the policies are primary and do not participate with nor are excess over any other valid collectible insurance carried by Contractor.

.2 Include a waiver of subrogation against Contractor, its Subcontractors, its agents, and employees.

11.2.3 Builder’s risk insurance coverage under this Article 11.2 will expire on the date of Final Completion recited in a Notice of Completion filed pursuant to Article 9.8.1. Should a Notice of Completion be filed more than 10 days after the date of Final Completion, the date of Final Completion recited in the Notice of Completion will govern.

11.3 PERFORMANCE BOND AND PAYMENT BOND

11.3.1 Contractor shall furnish bonds covering the faithful performance of the Contract (Performance Bond) and payment of obligations arising thereunder (Payment Bond) on the forms contained in Exhibits 3 and 2.

11.3.2 The Payment Bond and Performance Bond shall each be in the amount of the Contract Sum.

11.3.3 The Payment Bond and Performance Bond shall be in effect on the date the Contract is signed by University.

11.3.4 Contractor shall promptly furnish such additional security as may be required by University to protect its interests and those interests of persons or firms supplying labor or materials to the Work. Contractor shall furnish supplemental Payment and Performance Bonds each in the amount of the current Contract Sum at the request of the University.

11.3.5 Surety companies used by Contractor shall be, on the date the Contract is signed by University, an admitted surety insurer (as defined in the California Code of Civil Procedure Section 995.120).

11.3.6 The premiums for the Payment Bond and Performance Bond shall be paid by Contractor.

ARTICLE 12
UNCOVERING AND CORRECTION OF WORK

12.1 UNCOVERING OF WORK

12.1.1 If a portion of the Work is covered contrary to University's Representative's request or direction, or contrary to the requirements of the Contract Documents, it must, if required in writing by University's Representative, be uncovered for University's Representative's observation and be replaced at Contractor's expense without adjustment of the Contract Time or the Contract Sum.

12.1.2 If a portion of the Work has been covered, which is not required by the Contract Documents to be observed or inspected prior to its being covered and which University's Representative has not specifically requested to observe prior to its being covered, University's Representative may request to see such Work and it shall be uncovered and replaced by Contractor. If such Work is in accordance with the Contract Documents, the costs of uncovering and replacing the Work shall be added to the Contract Sum by Change Order; and if the uncovering and replacing of the Work extends the Contract Time, an appropriate adjustment of the Contract Time shall be made by Change Order. If such Work is not in accordance with the Contract Documents, Contractor shall pay such costs and shall not be entitled to an adjustment of the Contract Time or the Contract Sum.

12.2 CORRECTION OF DEFECTIVE WORK AND GUARANTEE TO REPAIR PERIOD

12.2.1 The term "Guarantee To Repair Period" means a period of 1 year, unless a longer period of time is specified, commencing as follows:

.1 For any Work not described as incomplete in the Certificate of Substantial Completion, on the date of Substantial Completion.
.2 For space beneficially occupied or for separate systems fully utilized prior to Substantial Completion pursuant to Article 9.6, from the first date of such Beneficial Occupancy or actual use, as established in a Certificate of Beneficial Occupancy.
.3 For all Work other than .1 or .2 above, from the date of Final Completion.

12.2.2 Contractor shall (1) correct Defective Work that becomes apparent during the progress of the Work or during the Guarantee To Repair Period and (2) replace, repair, or restore to University's satisfaction any other parts of the Work and any other real or personal property which is damaged or destroyed as a result of Defective Work or the correction of Defective Work. Contractor shall promptly commence such correction, replacement, repair, or restoration upon notice from University's Representative or University, but in no case later than 10 days after receipt of such notice; and Contractor shall diligently and continuously prosecute such correction to completion. Contractor shall bear all costs of such correction, replacement, repair, or restoration, and all losses resulting from such Defective Work, including additional testing, inspection, and compensation for University's Representative's services and expenses. Contractor shall perform corrective Work at such times that are acceptable to University and in such a manner as to avoid, to the extent practicable, disruption to University's activities.

12.2.3 If immediate correction of Defective Work is required for life safety or the protection of property and is performed by University or Separate Contractors, Contractor shall pay to University all reasonable costs of correcting such Defective Work. Contractor shall replace, repair, or restore to University's satisfaction any other parts of the Work and any other real or personal property which is damaged or destroyed as a result of such Defective Work or the correction of such Defective Work.

12.2.4 Contractor shall remove from the Project site portions of the Work and materials which are not in accordance with the Contract Documents and which are neither corrected by Contractor nor accepted by University.

12.2.5 If Contractor fails to commence correction of Defective Work within 10 days after notice from University or University's Representative or fails to diligently prosecute such correction to completion, University may correct the Defective Work in accordance with Article 2.4; and, in addition, University may remove the Defective Work and store salvageable materials and equipment at Contractor's expense.

12.2.6 If Contractor fails to pay the costs of such removal and storage as required by Articles 12.2.4 and 12.2.5 within 10 days after written demand, University may, without prejudice to other remedies, sell such materials at auction or at private sale, or otherwise dispose of such material. Contractor shall be entitled to the proceeds of such sale, if any, in excess of the costs and damages for which Contractor is liable to University, including compensation for University's Representative's services and expenses. If such proceeds of sale do not cover costs and damages for which Contractor is liable to University, the Contract Sum shall be reduced by such deficiency. If there are no remaining payments due Contractor or the remaining payments are insufficient to cover such deficiency, Contractor shall promptly pay the difference to University.

12.2.7 Contractor's obligations under this Article 12 are in addition to and not in limitation of its warranty under Article 3.4 or any other obligation of Contractor under the Contract Documents. Enforcement of Contractor's express warranties and guarantees to repair contained in the Contract Documents shall be in addition to and not in limitation of any other rights or remedies University may have under the Contract Documents or at law or in equity for Defective Work. Nothing contained in this Article 12 shall be construed to establish a period of limitation with respect to other obligations of Contractor under the Contract Documents. Establishment of the Guarantee To Repair Period relates only to the specific obligation of Contractor to correct the Work and in no way limits either Contractor's liability for Defective Work or the time within which proceedings may be commenced to enforce Contractor's obligations under the Contract Documents.

ARTICLE 13
TERMINATION OR SUSPENSION OF THE CONTRACT

13.1 TERMINATION BY CONTRACTOR

13.1.1 Subject to Article 13.1.2, Contractor shall have the right to terminate the Contract only upon the occurrence of one of the following:

.1 Provided that University has not commenced reasonable action to remove any order of a court within the 90 day period, the Work is stopped for 90 consecutive days, through no act or fault of Contractor, any Subcontractor, or any employee or agent of Contractor or any Subcontractor, due to an issuance of an order of a court or other public authority having jurisdiction or due to an act of government, such as a declaration of a national emergency making material unavailable.

.2 University fails to perform any material obligation under the Contract and fails to cure such default within 30 days, or University has not commenced to cure such default within 30 days where such cure will require a reasonable period beyond 30 days and diligently prosecutes the same to completion, after receipt of notice from Contractor stating the nature of such default(s).

.3 Repeated suspensions by University, other than such suspensions as are agreed to by Contractor under Article 13.3, which constitute in the aggregate more than 20% of the Contract Time.

13.1.2 Upon the occurrence of one of the events listed in Article 13.1.1, Contractor may, upon 10 days additional notice to University and University's Representative, and provided that the condition giving rise to Contractor's right to terminate is continuing, terminate the Contract.

13.1.3 Upon termination by Contractor, University will pay to Contractor the sum determined by Article 13.4.4. Such payment will be the sole and exclusive remedy to which Contractor is entitled in the event of termination of the Contract by Contractor pursuant to Article 13.1; and Contractor will be entitled to no other compensation or damages and expressly waives the same.

13.2 TERMINATION BY UNIVERSITY FOR CAUSE

13.2.1 University will have the right to terminate the Contract for cause at any time after the occurrence of any of the following events:

.1 Contractor becomes insolvent or files for relief under the bankruptcy laws of the United States.
.2 Contractor makes a general assignment for the benefit of its creditors or fails to pay its debts as the same become due.
.3 A receiver is appointed to take charge of Contractor's property.
.4 The commencement or completion of any Work activity on the critical path is more than 30 days behind the date set forth in the Contract Schedule for such Work activity, as a resultof an Unexcusable Delay. For a Contract with a Contract Time of less than 300 days, the 30-day period shall be reduced to the number of days commensurate with 10% of the Contract Time.
.5 Contractor abandons the Work.

13.2.2 Upon the occurrence of any of the following events, University will have the right to terminate the Contract for cause if Contractor fails to promptly commence to cure such default and diligently prosecute such cure within 5 days after notice from University, or within such longer period of time as is reasonably necessary to complete such cure:

.1 Contractor persistently or repeatedly refuses or fails to supply skilled supervisory personnel, an adequate number of properly skilled workers, proper materials, or necessary equipment to prosecute the Work in accordance with the Contract Documents.
.2 Contractor fails to make prompt payment of amounts properly due Subcontractors after receiving payment from University.
.3 Contractor disregards Applicable Code Requirements.
.4 Contractor persistently or materially fails to execute the Work in accordance with the Contract Documents.
.5 Contractor is in default of any other material obligation under the Contract Documents.
.6 Contractor persistently or materially fails to comply with applicable safety requirements.

13.2.3 Upon any of the occurrences referred to in Articles 13.2.1 and 13.2.2, University may, at its election and by notice to Contractor, terminate the Contract and take possession of the Project site and all materials, supplies, equipment, tools, and construction equipment and machinery thereon owned by Contractor; accept the assignment of any or all of the subcontracts; and then complete the Work by any method University may deem expedient. If requested by University, Contractor shall remove any part or all of Contractor's materials, supplies, equipment, tools, and construction equipment and machinery from the Project site within 7 days of such request; and if Contractor fails to do so, University may remove or store, and after 90 days sell, any of the same at Contractor's expense.

13.2.4 If the Contract is terminated by University as provided in this Article 13.2, Contractor shall not be entitled to receive any further payment until the expiration of 35 days after Final Completion and acceptance of all Work by University.

13.2.5 If the unpaid balance of the Contract Sum exceeds the cost of completing the Work, including all additional costs and expenses made necessary thereby, including costs for University staff time, plus all losses sustained, including any liquidated damages provided under the Contract Documents, such excess shall be paid to Contractor. If such costs, expenses, losses, and liquidated damages exceed the unpaid balance of the Contract Sum, Contractor shall pay such excess to University.

13.2.6 No termination or action taken by University after termination shall prejudice any other rights or remedies of University provided by law or by the Contract Documents upon such termination; and University may proceed against Contractor to recover all losses suffered by University.

13.3 SUSPENSION BY UNIVERSITY FOR CONVENIENCE

13.3.1 University may, at any time and from time to time, without cause, order Contractor, in writing, to suspend, delay, or interrupt the Work in whole or in part for such period of time, up to 90 days, as University may determine, with such period of suspension to be computed from the date of delivery of the written order. Such order shall be specifically identified as a “Suspension Order” under this Article 13.3. The Work may be stopped for such further period as the parties may agree. Upon receipt of a Suspension Order, Contractor shall, at University's expense, comply with its terms and take all reasonable steps to minimize costs allocable to the Work covered by the Suspension Order during the period of Work stoppage. Within 90 days after the issuance of the Suspension Order, or such extension to that period as is agreed upon by Contractor and University, University shall either cancel the Suspension Order or delete the Work covered by such Suspension Order by issuing a Change Order.

13.3.2 If a Suspension Order is canceled or expires, Contractor shall continue with the Work. A Change Order will be issued to cover any adjustments of the Contract Sum or the Contract Time necessarily caused by such suspension. Any Claim by Contractor for an adjustment of the Contract Sum or the Contract Time shall be made within 21 days after the end of the Work suspension. Contractor agrees that submission of its claim within said 21 days is an express condition precedent to its right to Arbitrate or Litigate such a claim.

13.3.3 The provisions of this Article 13.3 shall not apply if a Suspension Order is not issued by University. A Suspension Order shall not be required to stop the Work as permitted or required under any other provision of the Contract Documents.

13.4 TERMINATION BY UNIVERSITY FOR CONVENIENCE

13.4.1 University may, at its option, terminate this Contract, in whole or from time to time in part, at any time by giving notice to Contractor. Upon such termination, Contractor agrees to waive any claims for damages, including loss of anticipated profits, on account thereof; and, as the sole right and remedy of Contractor, University shall pay Contractor in accordance with Article 13.4.4.

13.4.2 Upon receipt of notice of termination under this Article 13.4, Contractor shall, unless the notice directs otherwise, do the following:

.1 Immediately discontinue the Work to the extent specified in the notice.
.2 Place no further orders or subcontracts for materials, equipment, services, or facilities, except as may be necessary for completion of such portion of the Work as is not discontinued.
.3 Promptly cancel, on the most favorable terms reasonably possible, all subcontracts to the extent they relate to the performance of the discontinued portion of the Work.
.4 Thereafter do only such Work as may be necessary to preserve and protect Work already in progress and to protect materials, plants, and equipment on the Project site or in transit thereto.

13.4.3 Upon such termination, the obligations of the Contract shall continue as to portions of the Work already performed and, subject to Contractor's obligations under Article 13.4.2, as to bona fide obligations assumed by Contractor prior to the date of termination.

13.4.4 Upon such termination, University shall pay to Contractor the sum of the following:

.1 The amount of the Contract Sum allocable to the portion of the Work properly performed by Contractor as of the date of termination, less sums previously paid to Contractor.
.2 Plus an amount equal to the lesser of $50,000 or 5% of the difference between the Contract Sum and the amount of the Contract Sum allocable to the portion of the Work properly performed by Contractor as of the date of termination.
.3 Plus previously unpaid costs of any items delivered to the Project site which were fabricated for subsequent incorporation in the Work.
.4 Plus any proven losses with respect to materials and equipment directly resulting from such termination.
.5 Plus reasonable demobilization costs.

.6 Plus reasonable costs of preparing a statement of the aforesaid costs, expenses, and losses in connection with such termination.

The above payment shall be the sole and exclusive remedy to which Contractor is entitled in the event of termination of the Contract by University pursuant to Article 13.4; and Contractor will be entitled to no other compensation or damages and expressly waives same.

ARTICLE 14
STATUTORY AND OTHER REQUIREMENTS

14.1 PATIENT HEALTH INFORMATION

Contractor acknowledges that its employees, agents, subcontractors, consultants and others acting on its behalf may come into contact with Patient Health Information ("PHI") while performing work at the Project Site. This contact is most likely rare and brief (e.g. walking through a clinic where patient files may be visible, overhearing conversations between physicians while working or touring a hospital, noticing a relative or acquaintance receiving treatment in a University facility, etc.). Contractor shall immediately notify University Representative of any such contact. Any and all forms of PHI should not be examined closer, copied, photographed, recorded in any manner, distributed or shared. Contractor will adopt procedures to ensure that its employees, agents and subcontractors refrain from such activity. If Contractor, its employees, agents or subcontractors do further examine, copy, photograph, record in any manner, distribute or share this information, Contractor will report such actions immediately to the University Representative. Contractor will immediately take all steps necessary to stop any such actions and will ensure that no further violations of this contractual responsibility will occur. Contractor will report to University Representative within five (5) days after Contractor gives University Representative notice of the event/action of the steps taken to prevent future occurrences.

14.2 NONDISCRIMINATION

14.2.1 For purposes of this Article 14.2, the term Subcontractor shall not include suppliers, manufacturers, or distributors.

14.2.2 Contractor shall comply and shall ensure that all Subcontractors comply with Section 12900 through 12996, of the State of California Government Code.

14.2.3 Contractor agrees as follows during the performance of the Work:

.1 Contractor shall provide equal treatment to, and shall not willfully discriminate against or allow harassment of any employee or applicant for employment on the basis of: race; color; religion; sex; age; ancestry; national origin; sexual orientation; physical or mental disability; veteran's status; medical condition (as defined in Section 12926 of the State of California Government Code and including cancer-related medical conditions and or genetic characteristics); genetic information (as defined in the Genetic Information Nondiscrimination Act of 2008 and including family medical history); marital status; gender identity, pregnancy, or citizenship (within the limits imposed by law or University's policy) or service in the uniformed services (as defined by the Uniformed Services Employment and Reemployment Rights Act of 1994). Contractor will also take affirmative action to ensure that any such employee or applicant for employment is not discriminated against on any of the bases identified above. Such equal treatment shall apply, but not be limited to the following: employment; upgrade; demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor also agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that qualified applicants will receive consideration for employment without regard to: race; color; religion; sex; age; ancestry; national origin; sexual orientation; physical or mental disability; veteran's status; medical condition (as defined in Section 12926 of the State of California Government Code and including cancer-related medical conditions and or genetic characteristics); genetic information (as defined in the Genetic Information Nondiscrimination Act of 2008 and including family medical history); marital status; gender identity, pregnancy, or citizenship (within the limits imposed by law or University's policy) or service in the uniformed services (as defined by the Uniformed Services Employment and Reemployment Rights Act of 1994). For purposes of this provision: (1) "Pregnancy" includes pregnancy, childbirth, and medical conditions related to pregnancy and childbirth; and (2) "Service in the uniformed services" includes membership, application for membership, performance of service, application for service, or obligation for service in the uniformed services.

.2 Contractor and all Subcontractors will permit access to their records of employment, employment advertisements, application forms, and other pertinent data and records by University or any appropriate agency of the State of California designated by University for the purposes of investigation to ascertain compliance with this Article 14.2. The outcome of the investigation may result in the following:

.1 A finding of willful violation of the provisions of this Contract or of the Fair Employment Practices Act may be regarded by University as (1) a basis for determining that Contractor is not a “responsible bidder” as to future contracts for which such Contractor may submit bids or (2) a basis for refusing to accept or consider the bids of Contractor for future contracts.

.2 University may deem a finding of willful violation of the Fair Employment Practices Act to have occurred upon receipt of written notice from the Fair Employment Practices Commission that it has (1) investigated and determined that Contractor has violated the Fair Employment Practices Act and (2) issued an order under the State of California Government Code Section 12970 or obtained an injunction under Government Code Section 12973.

.3 Upon receipt of such written notice from the Fair Employment Practices Commission, University may notify Contractor that, unless it demonstrates to the satisfaction of University within a stated period that the violation has been corrected, Contractor's bids on future projects will not be considered.

.4 Contractor agrees that, should University determine that Contractor has not complied with this Article 14.2, Contractor shall forfeit to University, as a penalty, for each day or portion thereof, for each person who was denied employment as a result of such non-compliance, the penalties provided in Article 14.3 for violation of prevailing wage rates. Such penalty amounts may be recovered from Contractor; and University may deduct any such penalty amounts from the Contract Sum.

.5 Nothing contained in this Article 14.2 shall be construed in any manner so as to prevent University from pursuing any other remedies that may be available at law.

.6 Contractor shall meet the following standards for compliance and provide University with satisfactory evidence of such compliance upon University's request, which shall be evaluated in each case by University:

.1 Contractor shall notify its Superintendent and other supervisory personnel of the nondiscrimination requirements of the Contract Documents and their responsibilities thereto.

.2 Contractor shall notify all sources of employee referrals (including unions, employment agencies, and the State of California Department of Employment) of the nondiscrimination requirements of the Contract Documents by sending to such sources and by posting the Notice of Equal Employment Opportunity (EEO).

.3 Contractor or its representative shall, through all unions with whom it may have agreements, develop agreements that (1) define responsibilities for nondiscrimination in hiring, referrals, upgrading, and training and (2) implement an affirmative nondiscrimination program, in terms of the unions' specific areas of skill and geography, such that qualified minority women, nonminority women, and minority men shall be available and given an equal opportunity for employment.

.4 Contractor shall notify University of opposition to the nondiscrimination requirements of the Contract Documents by individuals, firms, or organizations during the term of the Contract.

.7 Contractor shall include the provisions of the foregoing Articles 14.2.3.2.1 through 14.2.3.2.6 in all subcontracts with Subcontractors, so that such provisions will be binding upon each such Subcontractor.

14.3 PREVAILING WAGE RATES

14.3.1 For purposes of this Article 14.3, the term Subcontractor shall not include suppliers, manufacturers, or distributors.

14.3.2 Contractor shall comply and shall ensure that all Subcontractors comply with prevailing wage law pursuant to the State of California Labor Code, including but not limited to Section 1720 et seq. of the State of California Labor Code. Compliance with these sections is required by this Contract. The Work under this Contract is subject to compliance monitoring and enforcement by the State of California Department of Industrial Relations.

14.3.3 The State of California Department of Industrial Relations has ascertained the general prevailing per diem wage rates in the locality in which the Work is to be performed for each craft, classification, or type of worker required to perform the Work. A copy of the general prevailing per diem wage rates will be on file at University's principal facility office and will be made available to any interested party upon request. Contractor shall post a copy of the general prevailing per diem wage rates as well as job site notices as prescribed by regulation at the job site. By this reference, such schedule is made part of the Contract Documents. Contractor shall pay not less than the prevailing wage rates, as specified in the schedule and any amendments thereto, to all workers employed by Contractor in the execution of the Work. Contractor shall cause all subcontracts to include the provision that all Subcontractors shall pay not less than the prevailing rates to all workers employed by such Subcontractors in the execution of the Work. Contractor shall forfeit to University, as a penalty, not more than $200 for each calendar day or portion thereof for each worker that is paid less than the prevailing rates as determined by the Director of Industrial Relations for the work or craft in which the worker is employed for any portion of the Work done by Contractor or any Subcontractor. The amount of this penalty shall be determined pursuant to applicable law. Such forfeiture amounts may be deducted from the Contract Sum or sought directly from the surety under its Performance Bond if there are insufficient funds remaining in the Contract Sum. Contractor shall also pay to any worker who was paid less than the prevailing wage rate for the work or craft for which the worker was employed for any portion of the Work, for each day, or portion thereof, for which the worker was paid less than the specified prevailing per diem wage rate, an amount equal to the difference between the specified prevailing per diem wage rate and the amount which was paid to the worker. Review of any civil wage and penalty assessment shall be made pursuant to section 1742 of the California Labor Code.

14.4 PAYROLL RECORDS

14.4.1 For purposes of this Article 14.4, the term Subcontractor shall not include suppliers, manufacturers, or distributors.

14.4.2 Contractor and all Subcontractors shall keep an accurate payroll record, showing the name, address, social security number, job classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyworker, apprentice, worker, or other employee employed in connection with the Work. All payroll records shall be certified as being true and correct by Contractor or Subcontractors keeping such records; and the payroll records shall be available for inspection at all reasonable hours at the principal office of Contractor on the following basis:

.1 A certified copy of an employee's payroll record shall be made available for inspection or furnished to such employee or the employee's authorized representative on request.

.2 A certified copy of all payroll records shall be made available for inspection upon request to University, the State of California Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards of the State of California Division of Industrial Relations.

.3 A certified copy of all payroll records shall be made available upon request by the public for inspection or copies thereof made; provided, however, that the request by the public shall be made to either University, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement. The public shall not be given access to such records at the principal offices of Contractor or

Subcontractors. Any copy of the records made available for inspection as copies and furnished upon request to the public or any public agency by University shall be marked or obliterated in such a manner as to prevent disclosure of an individual's name, address, and social security number. The name and address of Contractor awarded the Contract or performing the Contract shall not be marked or obliterated.

14.4.3 Contractor shall file a certified copy of the payroll records with the entity that requested the records within 10 days after receipt of a written request. Contractor shall inform University of the location of such payroll records for the Project, including the street address, city, and county; and Contractor shall, within 5 working days, provide notice of change of location of such records. In the event of noncompliance with the requirements of this Article 14.4 or with the State of California Labor Code Section 1776, Contractor shall have 10 days in which to comply following receipt of notice specifying in what respects Contractor must comply. Should noncompliance still be evident after the 10 day period, Contractor shall forfeit to University, as a penalty, $100 for each day, or portion thereof, for each worker, until strict compliance is accomplished. Such forfeiture amounts may be deducted from the Contract Sum.

14.5 APPRENTICES

14.5.1 For purposes of this Article 14.5, the term Subcontractor shall not include suppliers, manufacturers, and distributors.

14.5.2 Only apprentices, as defined in the State of California Labor Code Section 3077, who are in training under apprenticeship standards and written apprentice agreements under Chapter 4, Division 3, of the State of California Labor Code, are eligible to be employed by Contractor and Subcontractors as apprentices. The employment and training of each apprentice shall be in accordance with the provisions of the apprenticeship standards and written apprentice agreements under which the apprentice is training and in accordance with prevailing wage law pursuant to the Labor Code, including but not limited to Section 1777.5. The Contractor bears responsibility for compliance with this section for all apprenticeable occupations.

14.5.3 Every apprentice shall be paid the standard wage to apprentices, under the regulations of the craft or trade at which the apprentice is employed, and shall be employed only at the Work in the craft or trade to which the apprentice is indentured.

14.5.4 When Contractor or Subcontractors employ workers in any apprenticeship craft or trade on the Work, Contractor or Subcontractors shall 1) send contract award information to the applicable joint apprenticeship committee that can supply apprentices to the site of the public work and 2) apply to the joint apprenticeship committee, which administers the apprenticeship standards of the craft or trade in the area of the Project site, for a certificate approving Contractor or Subcontractors under the apprenticeship standards for the employment and training of apprentices in the area of the Project site. The committee will issue a certificate fixing the number of apprentices or the ratio of apprentices to journeypersons who shall be employed in the craft or trade on the Work. The ratio will not exceed that stipulated in the apprenticeship standards under which the joint apprenticeship committee operates; but in no case shall the ratio be less than 1 hour of apprentice work for every 5 hours of journeyperson work, except as permitted by law. Contractor or Subcontractors shall, upon the issuance of the approval certificate in each such craft or trade, employ the number of apprentices or the ratio of apprentices to journeypersons fixed in the certificate issued by the joint apprenticeship committee or present an exemption certificate issued by the Division of Apprenticeship Standards.

14.5.5 “Apprenticeship craft or trade,” as used in this Article 14.5, shall mean a craft or trade determined as an apprenticeship occupation in accordance with rules and regulations prescribed by the Apprenticeship Council.

14.5.6 If Contractor or Subcontractors employ journeyworkers or apprentices in any apprenticeship craft or trade in the area of the Project site, and there exists a fund for assisting to allay the cost of the apprenticeship program in the trade or craft, to which fund or funds other contractors in the area of the Project site are contributing, Contractor and Subcontractors shall contribute to the fund or funds in each craft or trade in which they employ journeyworkers or apprentices on the Work in the same amount or upon the same basis and in the same manner done by the other contractors. Contractor may include the amount of such contributions in computing its bid for the Contract; but if Contractor fails to do so, it shall not be entitled to any additional compensation therefor from University.

14.5.7 In the event Contractor willfully fails to comply with this Article 14.5, it will be considered in violation of the requirements of the Contract.

14.5.8 Nothing contained herein shall be considered or interpreted as prohibiting or preventing the hiring by Contractor or Subcontractors of journeyworker trainees who may receive on-the-job training to enable them to achieve journeyworker status in any craft or trade under standards other than those set forth for apprentices.

14.6 WORK DAY

14.6.1 Contractor shall not permit any worker to labor more than 8 hours during any 1 day or more than 40 hours during any 1 calendar week, except as permitted by law and in such cases only upon such conditions as are provided by law. Contractor shall forfeit to University, as a penalty, $25 for each worker employed in the execution of this Contract by Contractor, or any Subcontractor, for each day during which such worker is required or permitted to work more than 8 hours in any 1 day and 40 hours in any 1 calendar week in violation of the terms of this Article 14.6 or in violation of the provisions of any law of the State of California. Such forfeiture amounts may be deducted from the Contract Sum. Contractor and each Subcontractor shall keep, or cause to be kept, an accurate record showing the actual hours worked each day and each calendar week by each worker employed on the Project, which record shall be kept open at all reasonable hours to the inspection of University, its officers and agents, and to the inspection of the appropriate enforcement agency of the State of California.

ARTICLE 15
MISCELLANEOUS PROVISIONS

15.1 GOVERNING LAW

15.1.1 The Contract shall be governed by the law of the State of California.

15.2 SUCCESSORS AND ASSIGNS

15.2.1 University and Contractor respectively bind themselves and their successors, permitted assigns, and legal representatives to the other party and to the successors, permitted assigns, and legal representatives of such other party in respect to covenants, agreements, and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract, in whole or in part, without prior written consent of the other party. Notwithstanding any such assignment, each of the original contracting parties shall remain legally responsible for all of its obligations under the Contract.

15.3 RIGHTS AND REMEDIES

15.3.1 All University's rights and remedies under the Contract Documents will be cumulative and in addition to and not in limitation of all other rights and remedies of University under the Contract Documents or otherwise available at law or in equity.

15.3.2 No action or failure to act by University or University's Representative will constitute a waiver of a right afforded them under the Contract, nor will such action or failure to act constitute approval of or acquiescence in a condition or breach thereunder, except as may be specifically agreed in writing. No waiver by University or University's Representative of any condition, breach or default will constitute a waiver of any other condition, breach or default; nor will any such waiver constitute a continuing waiver.

15.3.3 No provision contained in the Contract Documents shall create or give to third parties any claim or right of action against University, University's Representative, or Contractor.

15.4 SURVIVAL

15.4.1 The provisions of the Contract which by their nature survive termination of the Contract or Final Completion, including all warranties, indemnities, payment obligations, and University's right to audit Contractor's books and records, shall remain in full force and effect after Final Completion or any termination of the Contract.

15.5 COMPLETE AGREEMENT

15.5.1 The Contract Documents constitute the full and complete understanding of the parties and supersede any previous agreements or understandings, oral or written, with respect to the subject matter hereof. The Contract may be modified only by a written instrument signed by both parties or as provided in Article 7.

15.6 SEVERABILITY OF PROVISIONS

15.6.1 If any one or more of the provisions contained in the Contract Documents should be invalid, illegal, or unenforceable in any respect, the validity, legality, and enforceability of the remaining provisions contained herein shall not in any way be affected or impaired thereby.

15.7 UNIVERSITY'S RIGHT TO AUDIT

15.7.1 University and entities and agencies designated by University will have access to and the right to audit and the right to copy at University's cost all of Contractor's books, records, contracts, correspondence, instructions, drawings, receipts, vouchers, purchase orders, and memoranda relating to the Work. Contractor shall preserve all such records and other items during the performance of the Contract and for a period of at least 3 years after Final Completion.

15.8 METHODS OF DELIVERY FOR SPECIFIED DOCUMENTS

15.8.1 The following documents must be delivered in a manner specified in Article 15.8.2:

.1 Contractor Notices of election to litigate or arbitrate;
.2 Written demand for an informal conference to meet and confer pursuant to Article 4.5;
.3 University's written statement identifying remaining disputes following informal conference pursuant to Article 4.6;
.4 Written demand for non-binding mediation pursuant to Article 4.6;
.5 Contractor claims pursuant to Article 4.3;
.6 Contractor notices of conditions pursuant to Articles 3.17, 3.18, or 3.19;
.7 University's notices of Contractor's failure to perform and/or correct defective work pursuant to Articles 4.1.6, 12.2 and 13.2.3;
.8 University's notice to stop work pursuant to Article 2.3.1:
.9 Notices of termination or suspension pursuant to Article 13.

15.8.2 Delivery methods for documents specified in Article 15.8.1:

.1 By personal delivery.
.2 Sent by facsimile copy where receipt is confirmed.
.3 Sent by Express Mail, or another method of delivery providing for overnight delivery where receipt is confirmed.
.4 Sent by registered or certified mail, postage prepaid, return receipt requested.

15.8.3 The documents identified in Article 15.8.1 shall only be effective if delivered in the manner specified in Article 15.8.2. Subject to the forgoing, such documents shall be deemed given and received upon actual receipt in the case of all except registered or certified mail; and in the case of registered or certified mail, on the date shown on the return receipt or the date delivery during normal business hours was attempted. Delivery of the specified documents shall be made at the respective street addresses set forth in the Agreement. Such street addresses may be changed by notice given in accordance with this Article 15.8.

15.9 TIME OF THE ESSENCE

15.9.1 Time limits stated in the Contract Documents are of the essence of the Contract.

15.10 MUTUAL DUTY TO MITIGATE

15.10.1 University and Contractor shall use all reasonable and economically practicable efforts to mitigate delays and damages to the Project and to one another with respect to the Project, regardless of the cause of such delay or damage.

15.11 UC FAIR WAGE

Contractor shall pay all persons providing construction services and/or any labor on site, including any University location, no less than the UC Fair Wage (defined as $13 per hour as of 10/1/15, $14 per hour as of 10/1/16, and $15 per hour as of 10/1/17) and shall comply with all applicable federal, state and local working condition requirements.

SUPPLEMENTARY CONDITIONS

1. MODIFICATION OF GENERAL CONDITIONS, ARTICLE 11 – INSURANCE AND BONDS

Contractor shall furnish and maintain insurance in the amounts below.

The insurance required by 11.1.2.1 and 11.1.2.2 shall be (i) issued by companies with a Best rating of A- or better, and a financial classification of VIII or better (or an equivalent rating by Standard & Poor or Moody's) or (ii) guaranteed, under terms consented to by the University (such consent to not be unreasonably withheld), by companies with a Best rating of A- or better, and a financial classification of VIII or better (or an equivalent rating by Standard & Poor or Moody's). Such insurance shall be written for not less than the following:		Minimum Requirement
11.1.2.1	Commercial General Liability Insurance-Limits of Liability	
	Each Occurrence-Combined Single Limit for Bodily Injury and Property	$1,000,000.00
	Products-Completed Operations Aggregate	$1,000,000.00
	Personal and Advertising Injury	$1,000,000.00
	General Aggregate	$2,000,000.00
11.1.2.2	Business Automobile Liability Insurance-Limits of Liability Each Accident-Combined Single Limit for Bodily Injury and Property Damage	$1,000,000.00

Insurance required by Paragraph 11.1.2.3 shall be issued by companies (i) that have a Best rating of B+ or better, and a financial classification of VIII or better (or an equivalent rating by Standard & Poor or Moody's); or (ii) that are acceptable to the University. Such insurance shall be written for not less than the following:

11.1.2.3	WORKER'S COMPENSATION AND EMPLOYER'S LIABILITY –	Minimum Requirement
	Worker's Compensation:	(as required by Federal and State of California law)
	Employer's Liability:	
	Each Employee	$1,000,000
	Each Accident	$1,000,000
	Policy Limit	$1,000,000

2. MODIFICATION OF ARTICLE 8 – CONTRACT TIME

Rainy weather in excess of the following number of days will be granted a Contract Time extension pursuant to Article 8.4 of the General Conditions:

Total Number of days – 5 days

3. MODIFICATION OF GENERAL CONDITIONS ARTICLE 15 – MISCELLANEOUS PROVISIONS

This Agreement may be executed in two or more counterparts, each of which shall be deemed an original but all of which together shall constitute one and the same Agreement. The counterparts of this Agreement may be executed via a University approved digital signature process and shall have the same force and effect as the use of a manual signature. The University reserves the right to reject any digital signature that cannot be positively verified by the University system as an authentic digital signature.

EXHIBITS

TABLE OF CONTENTS

UC RIVERSIDE | Planning, Design & Construction

Project Name: SKYE HALL HVAC REPLACEMENT

Project Number: 950583

Contract Number: 950583-LF-2022-36

APPLICATION FOR PAYMENT

Application No. ______ Period From: ______________________ To: ________________

Application Date: ________________ Contract Date: ___________________

To **University**: THE REGENTS OF THE UNIVERSITY OF CALIFORNIA,
University of California, Riverside, and University's Representative

From Contractor: ____

Address: ____

____

CHANGE ORDER SUMMARY:			Additions	Deductions
Change Orders approved in previous months:		Total:		
Change Orders approved this month:				
Number:	Date Approved:			
		Total:	$-	$-

NET CHANGE BY CHANGE ORDERS: $-

Application is made for payment under the Contract as shown below and in Schedule 1 attached hereto:

1. ORIGINAL CONTRACT SUM		
2. NET CHANGE BY CHANGE ORDERS		$-
3. CONTRACT SUM TO DATE (Line 1 ± Line 2)		$-
4. TOTAL AMOUNT COMPLETED TO DATE (Column E on Schedule 1)		
5. RETENTION: ______ % of Completed Work (Column H on Schedule 1)*		
a. Current Value of Securities Deposited in Escrow		
b. Current Value of Retention Deposited in Escrow		
c. Retention Held by University		
Current Retention Value (a + b + c)	$-	
6. TOTAL EARNED LESS RETENTION (Line 4 less Line 5)		$-
7. TOTAL AMOUNT PREVIOUSLY PAID		
8. CURRENT PAYMENT DUE (Line 6 less Line 7)		$-
9. BALANCE TO FINISH, PLUS RETENTION (Line 3 less Line 6)		$-

*Pursuant to Article 9.2.2 of the General Conditions.

The undersigned Contractor hereby represents and warrants to University that all Work, for which Certificates For Payment have previously been issued and payment received from University, is free and clear of all claims, stop notices, security interests, and encumbrances in favor of Contractor, any Subcontractor, and any other persons or firms entitled to make claims by reason of having provided labor, materials, or equipment related to the Work.

The following Schedules are attached and incorporated herein, and made a part of this Application For Payment:

Schedule 1 Cost Breakdown Schedule
Schedule 2 Certification of Current Market Value of Securities in Escrow in Lieu of Retention
Schedule 3 List of Subcontractors
Schedule 4 Declaration of Releases of Claims

Contractor: ______________________________

By: ______________________________
(Signature & Date)

____
(Print Name & Title)

DECLARATION

I, ______________________________, hereby declare that I am the
(Print Name)

______________________________ of Contractor submitting this Application For
(Title)

Payment; that I am duly authorized to execute and deliver this Application For Payment on behalf of Contractor; and that all information set forth in this Application For Payment and all Schedules attached hereto are true, accurate, and complete as of its date.

I declare, under penalty of perjury, that the foregoing is true and correct and that this declaration was subscribed at ______________________________, ______________________________,
(City) (County)

State of ______________________________ on ____________________ .
(Date)

____
(Signature & Date)

____
(Print Name & Title)

UC RIVERSIDE | Planning, Design & Construction

CERTIFICATE OF LIABILITY INSURANCE

ACORD®

(for non-UCIP Construction Projects and Consultant/Design Contracts)

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:	
	PHONE (A/C, No, Ext):	FAX (A/C, No):
	E-MAIL ADDRESS:	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A :	
INSURED	INSURER B :	
	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
	GENERAL LIABILITY ☐ COMMERCIAL GENERAL LIABILITY ☐ ☐ CLAIMS-MADE ☐ OCCUR ☐ GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☐ PRO-JECT ☐ LOC						
	AUTOMOBILE LIABILITY ☐ ANY AUTO ☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS ☐ HIRED AUTOS ☐ NON-OWNED AUTOS						
	☐ **UMBRELLA LIAB** ☐ OCCUR ☐ **EXCESS LIAB** ☐ CLAIMS-MADE ☐ DED ☐ RETENTION $						
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? ☐ **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N/A					WC STATU-TORY LIMITS ☐ OTH-ER
	PROFESSIONAL LIABILITY ☐ OCCUR ☐ CLAIMS-MADE						

Special Provisions:

1. The Regents of the University of California, The University of California, University, and each of their Representatives, consultants, officers, agents, employees, and each of their Representative's consultants, are included as additional insureds on the general liability policy as required by contract and pursuant to additional insured endorsement CG2010 (11/85) or a combination of both CG 2010 (10/01 or 07/04) and CG 2037 (10/01 or 07/04) but only in connection with Skye hall HVAC Replacement, Project No. 950583, Contract No. 950583-LF-2022-36.
2. The General Liability coverage contains a Severability of Interest provision and shall be primary insurance as respects The Regents of the University of California, its officers, agents and employees. Any insurance or self-insurance maintained by The Regents of the University of California shall be excess of and non-contributory with this insurance.

CERTIFICATE HOLDER: The Regents of the University of California

Forward to: UCR CAPITAL PROGRAMS PLANNING, DESIGN & CONSTRUCTION, ATTN: CONTRACTS 1223 UNIVERSITY AVENUE, SUITE 240 RIVERSIDE, CA 92507	**SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.** *AUTHORIZED REPRESENTATIVE*

CERTIFICATE OF SUBSTANTIAL COMPLETION

Contractor: _____ Date of Issuance: _____

The Work has been reviewed and the date of Substantial Completion is hereby established as of the date of issuance above.

A Certificate of Occupancy has been issued by the University's Building Official **Name**, **Title** on **Date**.

A punch list of items to be completed or corrected is included herein. The failure to include any items on such list does not alter the responsibility of Contractor to complete all of the Work in accordance with the Contract Documents.

In accordance with the Contract Documents, Contractor is notified as follows:

1. Without limitation of Contractor's obligation to fully complete the Work within the Contract Time, Contractor shall complete or correct the Work on the list of items ("Punch List") attached hereto within days from the date of Substantial Completion.

2. University will be responsible for **INSERT "NONE" OR STATE ANY UNIVERSITY RESPONSIBILITIES AFTER SUBSTANTIAL COMPLETION: security, maintenance, utilities (e.g. water, sewer, electrical, gas, etc.)**

3. Contractor shall be responsible for all Contract requirements except items or responsibilities of University set forth in Paragraph 2 above.

4. List of items to be completed or corrected: **INSERT "NONE" or "SEE ATTACHMENT: LIST OF ITEMS TO BE COMPLETED OR CORRECTED."**

UNIVERSITY'S REPRESENTATIVE	**UNIVERSITY:** By: The Regents of the University of California University of California, Riverside
(Signature & Date)	(Signature & Date)
Tameesha Hayes Project Manager Planning, Design & Construction	Drew Hecht, Architect Director of Project Management Planning, Design & Construction
(Print Name & Title)	(Print Name & Title)

cc: Office of Risk Management

PUNCH LIST OF ITEMS TO BE COMPLETED OR CORRECTED

ATTACHMENT TO CERTIFICATE OF SUBSTANTIAL COMPLETION ISSUED

Contractor:

UC RIVERSIDE | Planning, Design & Construction

CHANGE ORDER REQUEST

Date: ______________________________ Change Order Request (COR) No. ________

Scope of Change:

Instructions:

1. Complete this form by providing (a) all information required above, (b) the amount and justification based upon the Contract Schedule for any proposed adjustment of Contract Time, (c) the proposed adjustment of Contract Sum, (d) the attached "Cost Proposal Summary," and (e) the attached form entitled, "Supporting Documentation for the Cost Proposal Summary."

2. Attach the form entitled "Supporting Documentation for the Cost Proposal Summary" for Contractor and each Subcontractor involved in the Extra Work. Each such form shall be completed and signed by Contractor or Subcontractor actually performing the Work Activity identified on the form. Attach supporting data to each such form to substantiate the individually listed costs. The costs provided on these forms shall be used to substantiate additional costs shown on the Cost Proposal Summary.

3. The Contractor Fee shall be computed on the Cost of Extra Work of Contractor and each Subcontractor involved in the Extra Work; and shall constitute full compensation for all costs and expenses related to the subject change and not listed in the "Supporting Documentation for the Cost Proposal Summary," including overhead and profit.

4. Refer to Article 7.3 of the General Conditions for the method of computing the Contractor Fee.

Adjustment of the Contract Time (Include justification based upon the Contract Schedule): ____________
Refer to Article 8 of the General Conditions. (Days)

Adjustment of the Contract Sum (Total from Line 18, Col. 4 of Cost Proposal Summary): $ ____________
Refer to Article 7 of the General Conditions.

Submitted: CONTRACTOR **Received: UNIVERSITY'S REPRESENTATIVE**

____
(Company Name)

______________________________ ______________________________
(Signature & Date) (Signature & Date)

Tameesha Hayes
Project Manager
Planning, Design & Construction

______________________________ ______________________________
(Print Name & Title) (Print Name & Title)

cc: Executive Director, Architects & Engineers, Capital Programs

COST PROPOSAL SUMMARY

Contractor: ______________________________ COR No. ________

		(1) **Contractor**	(2) **1st Tier Subs**	(3) **2nd & Lower Tier Subs**	(4) **Total**
ACTUAL COSTS	1. Straight Time Wages/Salaries-Labor				-
	2. Fringe Benefits and Payroll Taxes-Labor				-
	3. Overtime Wages/Salaries-Labor				-
	4. Fringe Benefits & Payroll Taxes-Overtime				-
	5. Materials & Cnsumable Items				-
	6. Sales Taxes (On Line 5)				-
	7. Rental Charges				-
	8. Royalties				-
	9. Permits				-
	10. Total Direct Expense (Sum of Lines 1-9)	**$-**	**$-**	**$-**	**$-**
	11. Insurance & Bonds (up to 2% of Line 10)	-	-	-	-
CONTRACTOR FEE	12. Sub-Sub (15% of Line 10, Col. 3)			-	-
	13. Subcontractor (5% of Line 10, Col. 3)		-		-
	14. Subcontractor (15% of Line 10, Col. 2)		-		-
	15. Contractor (5% of Line 10, Col. 2 & 3)	-			-
	16. Contractor (15% of Line 10, Col. 1)	-			-
	17. Contractor Fee (Sum of Lines 12-16)	$-	$-	$-	$-
TOTAL	18. Sum of Lines 10, 11, & 17	**$-**	**$-**	**$-**	**$-**

Actual Costs are taken from Line 12 of the attached forms entitled, "Supporting Documentation For the Cost Proposal Summary" for Contractor and each Subcontractor involved in the Extra Work.

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SUPPORTING DOCUMENTATION FOR THE COST PROPOSAL SUMMARY

Supporting Documentation From: ________________________________ COR No. ________
(Contractor/Subcontractor Name)

Work Activity: ____

COST ITEM	DESCRIPTION	COST[1]
ACTUAL COSTS	1. Straight Time Wages/Salaries-Labor	
	2. Fringe Benefits & Payroll Taxes-Labor: ___% of Line 1	
	3. Overtime Wages/Salaries-Labor (Attach University's Representative's written authorization.)	
	4. Fringe Benefits & Payroll Taxes-Overtime: ___% of Line 3	
	5. Materials & Consumable Items	
	6. Sales Taxes: ____% of Line 5	
	7. Rental Charges (Attach CalTrans' Schedule.)	
	8. Royalties	
	9. Permits	
	10. Total Direct Expense (Sum of Lines 1-9)	$-
	11. Insurance & Bonds ____% of Line 10 (up to 2% of Line 10)	-
TOTAL	12. Sum of Lines 10 & 11	$-

Prepared By:[2]

____
(Company Name)

____
(Signature & Date)

____
(Print Name & Title)

CONTRACTOR:[3]

____
(Company Name)

____
(Signature & Date)

____
(Print Name & Title)

Notes:

(1) This form shall be prepared and signed by Contractor or Subcontractor actually performing the Work Activity indicated above.
(2) If this form is signed by a Subcontractor, it shall be reviewed and signed by Contractor certifying the accuracy of the information.

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Project Name: Skye Hall HVAC Replacement
Project Number: 950583
Contract Number: 950583-LF-2022-36

CHANGE ORDER

Contract Date: ____________ Change Order No.: ____________
Date Issued: ____________

To Contractor: ____________
Attn: ____________
Address: ____________

DESCRIPTION OF CHANGE: (Reference attachments)

	Description	Contract Sum Adjustment	Contract Time Adjustment
1.			
2.			

☐ **Description of Change continued on Page 2. Subtotal from Page 2:** **$0.00** **0**

Adjustment of Contract Sum:		Adjustment of Contract Time:		
Original Contract Sum:		Original Contract Time:	0	(Days)
Prior Adjustments:		Prior Adjustments:	0	(Days)
Contract Sum before this Change:	**$-**	Contract Time before this Change:	**0**	(Days)
Adjustment for this Change:	**$-**	Adjustment for this Change:	**0**	(Days)
Revised Contract Sum:	**$-**	Revised Contract Time:	**0**	(Days)
		Start Date:		
		Original Final Completion Date:	##############	
		Revised Final Completion Date:	##############	

Contractor waives any claim for further adjustments of the Contract Sum and the Contract Time related to the above described change in the Work.

Accepted:
By: Contractor

(Signature & Date)

(Print Name & Title)

Recommended:
By: University's Representative

(Signature & Date)
Tameesha Hayes
Project Manager
Planning, Design & Construction
(Print Name & Title)

Funds Sufficient:
By: Financial Administrative Officer

(Signature & Date)
Susan McFadden
Senior Financial Analyst
Planning, Design & Construction
(Print Name & Title)

Approved:
University: The Regents of the University of California

(Signature & Date)
Drew Hecht, Architect
Director of Project Management
Planning, Design & Construction
(Print Name & Title)

Account No.: ____ Activity Code: ____
Fund: ____ Function: ____
Cost Center: ____ Project Code: ____

UC RIVERSIDE | Planning, Design & Construction

Project Name: Skye Hall HVAC Replacement
Project Number: 950583
Contract Number: 950583-LF-2022-36

CHANGE ORDER

Contract Date: ______________ Change Order No.: ______________

(Page 2)

DESCRIPTION OF CHANGE - CONTINUED

	Description	Contract Sum Adjustment	Contract Time Adjustment
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	Subtotals:	**$0.00**	**0**

CLAIM CERTIFICATION - GENERAL CONTRACTOR

Pursuant to Article 4.3.3 of the General Conditions, I certify as follows:

1. The Claim to which this certification is attached is made in good faith.

2. Amounts claimed for costs, expenses and damages incurred by Contractor are accurate and complete. Supporting data for amounts incurred by Contractor is accurate and complete. Any such supporting data, including any such new amounts, submitted after the execution of this certification, will be accurate and complete.

3. To the best of my knowledge and belief, amounts claimed, and supporting data submitted by Contractor on behalf of any and all subcontractors or suppliers, of all tiers, or any person or entity under Contractor, are accurate and complete. Contractor will not submit, after the date of execution of this certification, any such supporting data, including any such new amounts that, to the best of my knowledge and belief, is not accurate and complete.

4. The amount requested accurately reflects the adjustment of the Contract Sum for which the Contractor believes the University is liable.

5. Attached hereto is a certification that has been executed by each Subcontractor claiming not less than 5% of the total monetary amount sought by the claim to which this certification is attached.

6. I am duly authorized to certify the Claim on behalf of the Contractor.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration was executed at ______________________________ ,
(Name of City if within a City, otherwise, Name of County)

in the State of ______________________ , on ______________________ .
(Name of State) (Date)

____
(Name of Contractor)

By: ______________________________
(Signature)

____
(Print Name & Title)

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CLAIM CERTIFICATION - SUBCONTRACTOR

Pursuant to Article 4.3.3 of the General Conditions, I certify as follows:

1. The portion of the Claim made on behalf of the Subcontractor to which this certification is attached is made in good faith.

2. Amounts claimed for costs, expenses and damages incurred by the Subcontractor are accurate and complete. Supporting data for amounts incurred by the Subcontractor is accurate and complete. Any such supporting data, including any such new amounts, submitted to Contractor after the execution of this certification, will be accurate and complete.

3. To the best of my knowledge and belief, amounts claimed, and supporting data submitted to Contractor by the Subcontractor on behalf of any and all subcontractors or suppliers to Subcontractor, of all tiers, or any person or entity under Subcontractor, are accurate and complete. Subcontractor will not submit, after the date of execution of this certification, any such supporting data, including any such new amounts that, to the best of my knowledge and belief, is not accurate and complete.

4. The amount requested accurately reflects the amount for which the Subcontractor believes the University is liable to Contractor.

5. I am duly authorized to certify the Claim on behalf of the Subcontractor.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration was executed at ______________________________ ,
(Name of City if within a City, otherwise, Name of County)

in the State of ______________________ , on ______________________ .
(Name of State) (Date)

____
(Name of Subcontractor)

By: ______________________________
(Signature)

____
(Print Name & Title)

UC RIVERSIDE | Planning, Design & Construction

CONDITIONAL WAIVER AND RELEASE ON FINAL PAYMENT

NOTICE:
THIS DOCUMENT WAIVES THE CLAIMANT'S LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS EFFECTIVE ON RECEIPT OF PAYMENT. A PERSON SHOULD NOT RELY ON THIS DOCUMENT UNLESS SATISFIED THAT THE CLAIMANT HAS RECEIVED PAYMENT.

Identifying Information:

Name of Claimant: ______________________________

Name of Customer: ______________________________

Job Location: **Skye Hall HVAC Replacement, Project No. 950583**

University of California, Riverside, City of Riverside, County of Riverside

Owner: **The Regents of the University of California**

Conditional Waiver and Release:
This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. This document is effective only on the claimant's receipt of payment from the financial institution on which the following check is

Maker of Check: ______________________________

Amount of Check: $ ______________________________

Check Payable to: ______________________________

Exceptions:
This document does not affect any of the following: Disputed claims for extras in the amount of:

$ ______________________________ .

Signature:

Claimant's Signature & Date: ______________________________

Claimant's Name & Title: ______________________________

Prime Contractor's Application for Payment # ________

CONDITIONAL WAIVER AND RELEASE ON PROGRESS PAYMENT

NOTICE:
THIS DOCUMENT WAIVES THE CLAIMANT'S LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS EFFECTIVE ON RECEIPT OF PAYMENT. A PERSON SHOULD NOT RELY ON THIS DOCUMENT UNLESS SATISFIED THAT THE CLAIMANT HAS RECEIVED PAYMENT.

Identifying Information:

Name of Claimant: ______________________

Name of Customer: ______________________

Job Location: **Skye Hall HVAC Replacement, Project No. 950583**
University of California, Riverside, City of Riverside, County of Riverside

Owner: **The Regents of the University of California**

Through Date: ______________________

Conditional Waiver and Release:

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job through the Through Date of this document. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. This document is effective only on the claimant's receipt of payment from the financial institution on which the following check is drawn:

Maker of Check: ______________________

Amount of Check: $ ______________________

Check Payable to: ______________________

Exceptions:

This document does not affect any of the following:
(1) Retentions.
(2) Extras for which the claimant has not received payment.
(3) The following progress payments for which the claimant has previously given a conditional waiver and release but has not received payment:

Date(s) of Waiver and Release: ______________________

Amount(s) of Unpaid Progress Payment(s): $ ______________________

(4) Contract rights, including (A) a right based on rescission, abandonment, or breach of contract, and (B) the right to recover compensation for work not compensated by the payment.

Signature:

Claimant's Signature & Date: ______________________

Claimant's Name & Title: ______________________

Prime Contractor's Application for Payment # ________

RETURN THIS AGREEMENT SIGNED BY CONTRACTOR AND ESCROW AGENT TO:
UNIVERSITY OF CALIFORNIA, RIVERSIDE
Planning, Design & Construction
1223 University Ave, Suite 240
Riverside, CA 92521
USE THIS ADDRESS FOR ALL CORRESPONDENCE

Escrow Account No.: ____________________________

ESCROW AGREEMENT FOR DEPOSIT OF SECURITIES IN LIEU OF RETENTION AND DEPOSIT OF RETENTION

This Escrow Agreement is made as of ____________________ (Date), and entered into by and between THE REGENTS OF THE UNIVERSITY OF CALIFORNIA, hereinafter called "University," and

____,

whose address is ____,

hereinafter called "Contractor," and ____,

a state or federally chartered bank in the state of California, whose address is

____,

hereinafter called "Escrow Agent."

For consideration hereinafter set forth, University, Contractor, and Escrow Agent agree as follows:

(1) Contractor has the option to deposit securities with Escrow Agent as a substitute for retention required to be withheld by University pursuant to the Contract Documents, hereinafter referred to as "Contract," entered into between University and Contractor for the Project titled

Skye Hall HVAC Replacement,

Project Number **950583**, in the amount of $ ________________________________,

dated ______________________. Alternatively, on written request of Contractor, University shall deposit retention directly with Escrow Agent. Contractor and its surety shall be at risk for failure of the Escrow Agent selected. When Contractor deposits the securities as a substitute for retention, Escrow Agent shall notify University within 5 days after the deposit. At all times, Contractor shall have on deposit securities the market value of which is at least equal to the cash amount then required to be withheld as retention under the terms of the Contract. Securities shall be held in the name of The Regents of the University of California, Riverside; and Contractor shall be designated as the beneficial owner.

(2) Escrow Agent shall review the market value of securities deposited in escrow under this Escrow Agreement as often as conditions of the securities market warrant, but in no case less than once per month. Escrow Agent shall promptly notify University and Contractor of the market value of the deposited securities if such market value is less than the total amount of retention required to be withheld under the terms of the

Contract. Contractor shall promptly deposit additional securities so that the current market value of the total of all deposited securities shall be at least equal to the total required amount of retention. Escrow Agent shall, within 5 days after University's request, provide a statement to University of the current market value of all securities deposited under this Escrow Agreement as of a date not earlier than 5 days prior to such request. The provisions of this Paragraph 2 shall not apply to securities consisting of monetary deposits as allowed by Paragraph 7 held by a bank as Escrow Agent, provided the bank provides monthly statements reflecting the status of the monetary deposits held by the bank to University and Contractor.

(3) Contractor shall not use any or all of the securities deposited in lieu of retention under this Escrow Agreement for any other obligations, including deposits in lieu of retention for other contracts. Contractor represents, covenants and warrants that all deposited securities shall be lien free when tendered to the Escrow Agents and shall remain lien free during their retention by the Escrow Agent.

(4) University shall make progress payments to Contractor for those funds which otherwise would be withheld from progress payments pursuant to the Contract provision, provided that Escrow Agent holds securities in the form and amount specified herein.

(5) Prior to Contractor's submission of each Application For Payment, Escrow Agent shall issue a current statement of (a) the value of the securities currently being deposited in lieu of retention and (b) the current value of all securities being held in escrow pursuant to this Escrow Agreement. Such statement shall be no more than 5 days old at the time of submission, shall be notarized or have a guarantee of signature, and shall be submitted to Contractor with a copy to University under separate cover. Contractor shall attach such original statement to each Application For Payment. The provisions of this Paragraph 5 shall not apply to securities consisting of monetary deposits as allowed by Paragraph 7 held by a bank as Escrow Agent, provided the bank provides monthly statements reflecting the status of the monetary deposits held by the bank to University and Contractor.

(6) If, at the request of Contractor, University deposits retention directly with Escrow Agent, Escrow Agent shall hold such retention for the benefit of Contractor until such time as the escrow created under the Contract is terminated. All terms and conditions of this Escrow Agreement and the rights and responsibilities of the parties shall be equally applicable and binding when University deposits retention directly with Escrow Agent.

(7) University will allow Contractor to deposit the following securities in lieu of retention and direct the investment of the retention deposits into any of the following which at the time of payment are legal investments under the laws of the State of California:

a. Direct obligations of the United States of America (including obligations issued or held in book-entry form on the books of the Department of the Treasury of the United States of America or any Federal Reserve Bank), or obligations the timely payment of the principal of and interest on which are fully guaranteed by the United States of America, or tax-exempt obligations which are rated in the highest rating category of a nationally recognized bond rating agency.

b. Obligations, debentures, notes or other evidence of indebtedness issued or guaranteed by any of the following: Banks for Cooperatives, Federal Intermediate Credit Banks, Federal Home Loan Bank System, Export-Import Bank of the United States, Federal Financing Bank, Federal Land Banks, Federal Farm Credits, Government National Mortgage Association, Farmer's Home Administration, Federal Home Loan Mortgage Corporation, or Federal Housing Administration.

c. Bonds of the State of California or those for which the faith and credit of the State of California are pledged for the payment of principal and interest.

d. Interest-bearing bankers acceptances and demand or time deposits (including certificates of deposit) in banks, provided such deposits are either (1) secured at all times, in the manner and to the extent provided by law, by collateral security described in clauses a or b of this Paragraph 7 continuously having a market value at least equal to the amount so invested so long as such underlying obligations or securities are in the possession of the Securities Investors Protection Corporation, (2) in banks having a combined capital and surplus of at least One Hundred Million Dollars, or (3) fully insured by the Federal Deposit Insurance Corporation.

e. Taxable government money market portfolios restricted to obligations with maturities of one (1) year or less, issued or guaranteed as to payment of principal and interest by the full faith and credit of the United States of America.

f. Commercial paper rated in the highest rating category of a nationally recognized rating agency, and issued by corporations organized and operating within the United States of America and having total assets in excess of Five Hundred Million Dollars.

(8) Contractor shall be responsible for paying all fees, costs, and expenses incurred by Escrow Agent in administering the escrow account. These expenses and payment terms shall be determined by Contractor and Escrow Agent. All fees, costs, and expenses of this Escrow Agreement and any transactions carried out hereunder shall be billed by Escrow Agent to Contractor. In the event that any fees, costs, or expenses shall remain unpaid in excess of 30 days from the date due, Escrow Agent may withhold such unpaid amount from any income distributable to Contractor, but shall not withhold such unpaid amount from any income distributable to University.

(9) Interest earned on the securities or the money market accounts held in escrow and all interest earned on the interest shall be for the sole account of Contractor and shall be held in escrow. Interest may be withdrawn by Contractor from time to time, without notice to University, only to the extent that the total amount held in escrow meets or exceeds the required amount of retention.

(10) Except as provided in Paragraph 9, Contractor shall have the right to withdraw all or any part of the escrow account only by written notice to Escrow Agent accompanied by written authorization from University to Escrow Agent stating that University consents to the withdrawal of the amount sought to be withdrawn by Contractor. University shall not be obligated to consent to any withdrawal to the extent of stop notice claims which cannot be satisfied from other funds then due and payable to Contractor.

(11) University shall have the right to draw upon the securities, any interest earned on the securities, and any interest earned on the interest in the event of default by Contractor. Upon 7 days written notice to Escrow Agent from University, with a copy to Contractor, Escrow Agent shall immediately convert the securities, any interest earned on the securities, and all interest earned on the interest to cash and shall distribute the cash as instructed by University. Escrow Agent shall have no duty to determine whether a default has occurred and may rely solely upon the written notice of such default from University.

(12) Upon receipt of written notification from University certifying that final payment is due under the Contract, Escrow Agent shall release to Contractor the amount, if any, by which the value of all securities and interest on deposit less escrow fees and charges of the escrow account exceeds 125% of all stop notice claims on file. Escrow Agent shall pay the remaining amount to University or as directed by University. The escrow shall be closed immediately upon disbursement of all monies and securities on deposit and payment of fees and charges.

(13) Escrow Agent shall rely upon the written notifications from University and Contractor pursuant to this Escrow Agreement; and University and Contractor shall hold Escrow Agent harmless from Escrow Agent's release, conversion, and disbursement of the securities and interest as set forth herein.

(14) Escrow Agent shall have the right to terminate this Escrow Agreement upon 30 days notice to all parties hereunder. Upon receipt of such notice, University and Contractor shall appoint a successor Escrow Agent in writing and deliver written notice of such appointment to Escrow Agent. Thereupon, Escrow Agent shall deliver all assets in its custody to such successor Escrow Agent and all responsibility of Escrow Agent under this Escrow Agreement shall terminate; provided, however, if Contractor and University fail to appoint a successor Escrow Agent on or before the end of the 30 day notice period, then Escrow Agent is authorized and instructed to return all assets, documents, and other items in its custody to University and this Escrow Agreement shall be terminated without further instruction.

(15) The duties and responsibilities of Escrow Agent shall be limited to those expressly set forth in this Escrow Agreement; provided, however, that, with Escrow Agent's written consent, the duties and responsibilities in this Escrow Agreement may be amended at any time or times by an instrument in writing signed by all parties.

(16) Whenever Contractor tenders securities to be deposited in lieu of retention, an authorized representative of the Contractor shall declare under penalty of perjury that the securities are lien free and shall remain lien free during their retention by the Escrow Agent. The declaration shall be in the following form:

"The undersigned, on behalf of ______________________________ whose address is
(Name of Contractor)

____ ,
(Street Address, City, State & Zip Code)

represents, covenants and warrants that the securities tendered herewith are lien free and shall remain lien free during their retention by the Escrow Agent.

I, ______________________________________ , hereby declare that I am the
(Name)

__________________________ of ______________________________ ,
(Title) (Name of Contractor)

that I am duly authorized to make this representation, and that I declare under perjury under the laws of the State of California that the foregoing is true and correct."

______________________________ ____________________
(Signature) (Date)

(17) The names of the persons authorized to give written notice or to receive written notice on behalf of University and on behalf of Contractor in connection with this Escrow Agreement, and exemplars of their respective signatures, are as set forth below. Such names may be changed by written notice to the other parties.

On behalf of University:

1. ______________________________
(Signature)

Drew Hecht, Architect
Director of Project Management
Planning, Design & Construction
(Print Name & Title)

951.827.1485
(Telephone Number)

2. ______________________________
(Signature)

Bobbi McCracken
Associate Vice Chancellor and Controller
Business and Financial Services
(Print Name & Title)

951.827.3303
(Telephone Number)

On behalf of Contractor:

1. ______________________________
(Signature)

____
(Print Name & Title)

____
(Telephone Number)

2. ______________________________
(Signature)

____
(Print Name & Title)

____
(Telephone Number)

Contractor, Escrow Agent, and University hereby agree to the covenants contained herein.

IN WITNESS WHEREOF, Contractor, Escrow Agent, and University have executed this Escrow Agreement, the day and year first written above.

University:	**Contractor:**
By: ______________________ (Signature)	By: ______________________ (Signature)
Blythe R. Wilson, Architect Director of Project Management Planning, Design & Construction (Print Name & Title)	______________________ (Print Name & Title)
951.827.1485 (Telephone Number)	______________________ (Telephone Number)
By: ______________________ (Signature)	By: ______________________ (Signature)
Bobbi McCracken Associate Vice Chancellor and Controller Business and Financial Services (Print Name & Title)	______________________ (Print Name & Title)
951.827.3303 (Telephone Number)	______________________ (Telephone Number)

Escrow Agent:

By: ______________________
(Signature)

____
(Print Name & Title)

____
(Telephone Number)

FIELD ORDER

Contract Date: ______________________ Field Order No. _______

To Contractor: ____

Attn: ______________________________________
Address: ______________________________________
____

	Description of Work	Estimated Adjustment, Contract Sum	Estimated Adjustment, Contract Time
1.			
2.			
3.			

By University's Representative:

____
(Signature & Date)

Tameesha Hayes
Project Manager
Planning, Design & Construction
(Print Name & Title)

NOTE: If the work described above constitutes a change, this Field Order will be superseded by a Change Order that will include the scope of the change in the Work and any actual adjustments of the Contract Sum and the Contract Time.

cc: Director of Project Management, Planning, Design & Construction

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FINAL DISTRIBUTION OF CONTRACT DOLLARS

Completed By: ______________________ ______________________ ______________________ Date: ______________
(Signature) (Printed Name) (Title)

Provide the following information for each contracting party including the prime Contractor and each subcontractor/subconsultant regardless of tier.* Attach additional sheets if necessary.

Sheet No. ______ of ______

1	2	3	4	5	6					7a	7b	7c
Full Name of Business	Street Address City, State & Zip Code	Telephone # & Fax #	Contact Name	Type of Owner-ship	Business Categories (Check all that apply [X])					Portion of the Work	Amount $	Percent %
					SBE	DVBE	DBE	WBE	N/A			
Prime:												
Sub:												
Sub:												
Sub:												

	Column 5 – Type of	Column 6 – Business Categories	Subtotals	
Total Contract Amount: $ ______________	C = Corporation	SBE = Small Business Enterprise		
	JV = Joint Venture	DVBE = Disabled Veteran Business Enterprise		
	P = Partnership	DBE = Disadvantaged Business Enterprise		
	SP = Sole Proprietorship	WBE = Women-Owned Business Enterprise		
	O = Other	N/A = Not Applicable		

*Regardless of tier, a completed Self-Certification form must be submitted for the prime Contractor and each subcontractor/subconsultant shown on this Exhibit.

**If a prime Contractor, refer to the Report of Subcontractor Information for license and other information.

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FINAL INSPECTION ACCEPTANCE

Contract Date: ______________________ Final Inspection Date: ____________________

To Contractor: ____

Attn: ______________________________________

Address: ______________________________________

____

The above Project was inspected and accepted as of the above Final Inspection Date. No outstanding work remains to be performed. All required submittals have been received. All training has been performed pursuant to the Contract.

The following Change Orders for time and/or money ONLY remain unexecuted:

Upon receipt of this executed document for Final Inspection Acceptance, Contracts Administration will file a Notice of Completion with the county recorder's office. This action terminates the construction contract for this Project.

By: Inspector

____
(Signature & Date)
Name
Senior Construction Inspector
Planning, Design & Construction
(Print Name & Title)

By: Design Professional

____
(Signature & Date)

____
(Print Name & Title)

By: University's Representative

____
(Signature & Date)
Tameesha Hayes
Project Manager
Planning, Design & Construction
(Print Name & Title)

By: University's Responsible Administrator

____
(Signature & Date)
Drew Hecht, Architect
Director of Project Management
Planning, Design & Construction
(Print Name & Title)

Bond No. ____________

PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS:

THAT WHEREAS, The Regents of the University of California ("The Regents") has awarded to ______________________________ as Principal a contract dated the _______ day of _________________, 20 ______, (the "Contract") for the work described as follows:

Project Name: Skye hall HVAC Replacement
Project No. 950583, Contract No. 950583-LF-2022-36

AND WHEREAS, the Principal is required to furnish a bond in connection with the Contract, to secure the payment of claims of laborers, mechanics, material suppliers, and other persons as provided by law;

NOW, THEREFORE, we, the undersigned Principal and ______________________________ ______________________________ as Surety, are held and firmly bound unto The Regents in the sum of ______________________________ Dollars ($ _______________), for which payment well and truly to be made we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that if Principal, or its heirs, executors, administrators, successors, or assigns approved by The Regents, or its subcontractors shall fail to pay any of the persons named in State of California Civil Code Section 9100, or amounts due under the State of California Unemployment Insurance Code with respect to work or labor performed under the Contract, or for any amounts required to be deducted, withheld, and paid over to the State of California Employment Development Department from the wages of employees of Principal and subcontractors pursuant to Section 13020 of the State of California Unemployment Insurance Code with respect to such work and labor, that Surety will pay for the same in an amount not exceeding the sum specified in this bond, otherwise the above obligation shall become and be null and void.

This bond shall inure to the benefit of any of the persons named in State of California Civil Code Section 9100 as to give a right of action to such persons or their assigns in any suit brought upon this bond.

Surety, for value received, hereby expressly agrees that no extension of time, change, modification, alteration, or addition to the undertakings, covenants, terms, conditions, and agreements of the Contract, or to the work to be performed thereunder, shall in any way affect the obligation of this bond; and it does hereby waive notice of any such extension of time, change, modification, alteration, or addition to the undertakings, covenants, terms, conditions, and agreements of the Contract, or to the work to be performed thereunder.

Surety's obligations hereunder are independent of the obligations of any other surety for the payment of claims of laborers, mechanics, material suppliers, and other persons in connection with the Contract; and suit may be brought against Surety and such other sureties, jointly and severally, or against any one or more of them, or against less than all of them without impairing The Regents' rights against the other.

In the event suit is brought upon this bond, the parties not prevailing in such suit shall pay reasonable attorneys' fees and costs incurred by the prevailing parties in such suit.

Correspondence or claims relating to this bond shall be sent to Surety at the address set forth below.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _______ day of ____________________, 20 _____ .

PRINCIPAL:

____
(Name of Company)

By: ______________________________
(Signature)

____
(Print Name)

____
(Title)

SURETY:

____
(Name of Company)

By: ______________________________
(Signature)

____
(Print Name)

____
(Title)

Address for Notices:

____
(Street Address)

____
(City, State & Zip Code)

NOTE: Notary acknowledgement for Surety and Surety's Power of Attorney must be attached.

Bond No. ___________

PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS:

THAT WHEREAS, The Regents of the University of California ("The Regents") has awarded to ____ as Principal a contract dated the _______ day of _________________ , 20 _____ , (the "Contract"), which Contract is by this reference made a part hereof, for the work described as follows:

Project Name: Skye Hall HVAC Replacement
Project No. 950583, Contract No. 950583-LF-2020-100

AND WHEREAS, Principal is required to furnish a bond in connection with the Contract, guaranteeing the faithful performance thereof;

NOW, THEREFORE, we, the undersigned Principal and ________________________________ as Surety are held and firmly bound unto The Regents in the sum of ______________________________ ____ Dollars ($ ____________________), to be paid to The Regents or its successors and assigns; for which payment, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that if Principal, or its heirs, executors, administrators, successors, or assigns approved by The Regents, shall promptly and faithfully perform the covenants, conditions, and agreements of the Contract during the original term and any extensions thereof as may be granted by The Regents, with or without notice to Surety, and during the period of any guarantees or warranties required under the Contract, and shall also promptly and faithfully perform all the covenants, conditions, and agreements of any alteration of the Contract made as therein provided, notice of which alterations to Surety being hereby waived, on Principal's part to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify, defend, protect, and hold harmless The Regents as stipulated in the Contract, then this obligation shall become and be null and void; otherwise it shall be and remain in full force and effect.

No extension of time, change, alteration, modification, or addition to the Contract, or of the work required thereunder, shall release or exonerate Surety on this bond or in any way affect the obligation of this bond; and Surety does hereby waive notice of any such extension of time, change, alteration, modification, or addition.

Whenever Principal shall be and declared by The Regents to be in default under the Contract, Surety shall promptly remedy the default, or shall promptly:

1. Undertake through its agents or independent contractors, reasonably acceptable to The Regents, to complete the Contract in accordance with its terms and conditions and to pay and perform all obligations of Principal under the Contract, including without limitation, all obligations with respect to warranties, guarantees, and the payment of liquidated damages, or, at Surety's election, or, if required by The Regents,

2. Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and, upon determination by The Regents of the lowest responsible bidder, arrange for a contract between such bidder and The Regents and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract Sum, and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees, and the payment of liquidated damages; but, in any event, Surety's total obligations hereunder shall not exceed the amount set forth in the third paragraph hereof. The term "balance of the Contract Sum," as used in this paragraph, shall mean the total amount payable by The Regents to the Principal under the Contract and any amendments thereto, less the amount paid by The Regents to Principal.

Surety's obligations hereunder are independent of the obligations of any other surety for the performance of the Contract, and suit may be brought against Surety and such other sureties, jointly and severally, or against any one or more of them, or against less than all of them without impairing The Regents' rights against the others.

No right of action shall accrue on this bond to or for the use of any person or corporation other than The Regents or its successors or assigns.

Surety may join in any arbitration proceedings brought under the Contract and shall be bound by any arbitration award.

In the event suit is brought upon this bond by The Regents, Surety shall pay reasonable attorney's fees and costs incurred by The Regents in such suit.

Correspondence or claims relating to this bond shall be sent to Surety at the address set forth below.

IN WITNESS WHEREOF, we have hereunto set our hands this ______________ day of ______________________ , 20 _____ .

PRINCIPAL:

____
(Name of Company)

By: _______________________________
(Signature)

____
(Print Name)

____
(Title)

SURETY:

____
(Name of Company)

By: _______________________________
(Signature)

____
(Print Name)

____
(Title)

Address for Notices:

____
(Street Address)

____
(City, State & Zip Code)

NOTE: Notary acknowledgement for Surety and Surety's Power of Attorney must be attached.

UC RIVERSIDE | Planning, Design & Construction

REPORT OF SUBCONTRACTOR/SUBCONSULTANT INFORMATION

(NOTE: THIS EXHIBIT IS NOT TO BE SUBMITTED WITH BID)

Completed By: ______________________ (Signature) ______________________ (Print Name) ______________________ (Title) Date: ______________

Provide the following information for each contracting party including the prime Contractor and each subcontractor regardless of tier*. Sheet No. _____ of _____

Attach additional sheets if necessary.

1	2	3	4	5	6					7a	7b	8	
Full Name of Business	Street Address City, State & Zip Code	Telephone # & Fax #	Contact Name	Type of Owner-ship	Business Categories* (Check all that apply [X])					Portion of the Work	Amount $	License Information**	
					SBE	DVBE	DBE	WBE	N/A			License Classification	License #
Prime:													
Sub:													
Sub:													
Sub:													

Column 5 – Type of Ownership	Column 6 – Business Categories
C = Corporation	SBE = Small Business Enterprise
JV = Joint Venture	DVBE = Disabled Veteran Business Enterprise
P = Partnership	DBE = Disadvantaged Business Enterprise
SP = Sole Proprietorship	WBE = Women-Owned Business Enterprise
O = Other	N/A = Not Applicable

*Regardless of tier, a completed Self-Certification form must be submitted for the prime Contractor and each subcontractor shown on this Exhibit.
**List only those license classifications and numbers relevant to this Project.

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SELECTION OF RETENTION OPTIONS

I (we): ______________________________
(Contractor)

SELECT OPTION 1 ______________ Initial and date here for OPTION 1

University will withhold retention.

OR SELECT OPTION 2 ______________ Initial and date here for OPTION 2

herewith elect to substitute securities in the form of:

____
(Type of Security)

in lieu of retention being withheld by University for the above-referenced project.

OR SELECT OPTION 3 ______________ Initial and date here for OPTION 3

herewith elect to have retention on the above-referenced project paid directly into the Escrow Account.

____
(Type of Security to be Purchased)

An Escrow Account will be opened with: ______________________________
(Name of state or federally chartered bank in California)

whose address is: ______________________________
(Street)

____
(City, County)

____
(State, Zip Code)

On Behalf of Contractor*:	On Behalf of University: Acknowledged and Approved
By: ______________________ (Signature)	By: ______________________ (Signature)
______________________ (Print Name & Title)	Blythe R. Wilson, Architect Director of Project Management Planning, Design & Construction (Print Name & Title)

* Signature shall be by the authorized party who signs the Escrow Agreement for Deposit of Securities in Lieu of Retention and Deposit of Retention (“Escrow Agreement”).

Note: If a completed and signed Escrow Agreement is not submitted with this form, University will not allow deposit of securities in lieu of retention.

SELF-CERTIFICATION

For the Contractor and each subcontractor/subconsultant, the following must be completed.

Indicate all Business category(ies) that apply by initialing next to the applicable category(ies):

______ (Initial, if applicable) **Small Business Enterprise (SBE)** - an independently owned and operated concern certified, or certifiable, as small business by the Federal Small Business Administration (SBA). (Size standards by Standard Industrial Classification codes required by the Federal Acquisition Regulations, Section 19.102, may be found at http://www.sba.gov/content/table-small-business-size-standards.) The eligibility requirements for California contracting purposes is on the Department of General Services website at http://www.dgs.ca.gov/pd/Programs/OSDS/SBEligibilityBenefits.aspx. The University may rely on written representation by the vendors regarding their status.

______ (Initial, if applicable) **Disabled Veteran Business Enterprise (DVBE)** - a business that is at least 51% owned by one or more disabled veterans or, in the case of any publicly owned business, at least 51% of the stock of which is owned by such individuals and whose management and daily business operations are controlled by one or more of such individuals. A Disabled Veteran is a veteran of the military, naval, or air service of the United States with a service connected disability who is a resident of the State of California. To qualify as a veteran with a service connected disability, the person must be currently declared by the United States Veterans Administration to be 10% or more disabled as a result of service in the armed forces.

______ (Initial, if applicable) **Disadvantaged Business Enterprise (DBE)** - a business concern that is at least 51% owned by one or more socially and economically disadvantaged individuals or, in the case of any publicly owned business, at least 51% of the stock of which is owned by such individuals and whose management and daily business operations are controlled by one or more of such individuals. Socially disadvantaged individuals are those who have been subjected to racial or ethnic prejudice or cultural bias because of their identity as members of a group without regard to their individual qualities. Economically disadvantaged individuals are those socially disadvantaged individuals whose ability to compete in the free private enterprise system has been impaired due to diminished capital and credit opportunities as compared to others in the same business area who are not socially disadvantaged. Business owners who certify that they are members of named groups (Black Americans, Hispanic Americans, Native Americans, Asian-Pacific Americans, Asian-Indian Americans) are to be considered socially and economically disadvantaged.

______ (Initial, if applicable) **Women-Owned Business Enterprise (WBE**) - a business that is at least 51% owned by a woman or women who also control and operate it. “Control” in this context means exercising the power to make policy decisions. “Operate” in this context means being actively involved in the day-to-day management.

______ (Initial, if applicable) **None of the above categories apply.**

I hereby certify under penalty of perjury under the laws of the State of California that I have read this certification and know the contents thereof, and that the business category indicated above reflects the true and correct status of the business in accordance with Federal Small Business Administration criteria and Federal Acquisition Regulations, FAR 19 pertaining to small, disadvantaged, women-owned, and disabled veteran business enterprises. I understand that falsely certifying the status of this business, obstructing, impeding or otherwise inhibiting any University of California official who is attempting to verify the information on this form may result in suspension from participation in University of California business contracts for a period up to five (5) years and the imposition of any civil penalties allowed by law.

INFORMATION FURNISHED BY: ______________________________
(Print Name of Owner and/or Principal)

____
(Name of Business or Firm)

a ______________________________
(Insert type of business e.g. corporation, sole proprietorship, partnership, etc.)

By: ______________________________ ______________________________
(Print Name) (Title)

______________________________ ______________________________
(Signature) (Date)

PRIVACY NOTICE

The State of California Information Practices Act of 1977 (effective July 1, 1978) requires the University of California to provide the following information to individuals who are asked to supply personal information about themselves. Information furnished on the Self-Certification form may, in some cases, identify personal information of an individual.

- The University of California, Riverside, is requesting the information contained in this form and the accompanying Report of Subcontractor Information.
- The Small Business Outreach Program Manager at the University of California, Riverside, is responsible for maintaining the requested information. The contact information for the Small Business Outreach Program Manager may be found at: http://www.ucop.edu/procurement-services/_files/sbdmgr.xlsx.
- The maintenance of information is authorized in part by Public Contract Code section 10500.5.
- Furnishing the information requested on this form is mandatory. If SBE, DBE, WBE and/or DVBE status is applicable, furnishing such information is mandatory.
- Failure to provide the information may be a violation of bidding procedures and/or breach of the contract and the University may pursue any and all remedies permitted by the provisions of the Contract Documents.
- The information on this form is collected for monitoring and reporting purposes in accordance with state law and University policy.
- The individual may access information contained in this form and related forms by contacting the Small Business Outreach Program Manager(s).

SUBMITTAL SCHEDULE

Contract Date: ______________________

Subcontractor: ____

Specification Section: ____

Work Activity: ____

Event	Scheduled Completion Date	Actual Completion Date	Calendar Days Required to Complete
1. Received by Contractor and Time for Checking			
2. First Delivered to University's Representative and Time for Checking			
3. Return to Contractor			
4. Corrections Completed and Time for Corrections			
5. Next Delivered (1st Resubmission) to University's Representative and Time for Checking			
6. Return to Contractor			
7. Approval for Job Information			
8. Approval for Fabrication and Time for Fabrication			
9. Fabrication Completed			
10. Shipping Date and Time In Route			
11. Delivery to Job			

*Contractor must revise Submittal Schedule to reflect number of resubmissions.

SUBSTITUTION OF SUBCONTRACTOR - INDEMNITY AGREEMENT and CONSENT

WHEREAS, on **Date**, **The Regents of the University of California** (University) and
____ (Contractor)
(Full Company Name & Address of Prime Contractor)
entered into an Agreement (Contract Number **950583-LF-2022-36**) for the construction of **Skye Hall HVAC Replacement, Project No. 950583**, University of California, Riverside (Project); and

WHEREAS, Contractor's Bid, which was accepted by University for said Project, listed **Name of Listed Sub** as Subcontractor for the **work activity** work called for by the Bidding Documents and Contract Documents; and

WHEREAS, Contractor has represented and does hereby represent to University that **Name of Listed Sub** has **reasons for substitution**;

In consideration of the consent of University to the substitution of:
____ , for
*(Full Company Name & Address of **Substitute** Subcontractor)*
Name of Listed Sub , as
*(Full Company Name of **Listed** Subcontractor)*
Subcontractor to provide the **work activity** work called for in the Bidding Documents and Contract Documents for the Project, Contractor does hereby agree to indemnify the University and hold it harmless from any and all claims, expenses, losses or liabilities arising out of said substitution of subcontractor or said consent thereto, and to defend at Contractor's expense any and all claims, protests, suits, actions or other proceedings in connection therewith; provided, however, that the University shall be given prompt notice of all such proceedings and it shall be entitled, if it so desires, to participate in the response to or defense of any such proceedings. If any such proceedings causes or results in a delay in the completion of said Project, the loss to the University for such delay shall be deemed to be the amount determined by applying the liquidated damages provisions of said Agreement for the period of such delay.

IN WITNESS WHEREOF, this Indemnity Agreement has been executed on ____________________ ,
(Date)
at __________________________________ , California.
(Location: City & County)

CONTRACTOR:

By: ______________________________
(Signature)

____
(Typed or Printed Name & Title)

CONSENT TO SUBSTITUTION OF SUBCONTRACTOR

In consideration of the indemnification of University by Contractor, above, University agrees and does hereby consent to the substitution of:
____ , for
*(Full Company Name & Address of **Substitute** Subcontractor)*
Name of Listed Sub , as
*(Full Company Name of **Listed** Subcontractor)*
Subcontractor to provide the **work activity** work called for in the Bidding Documents and Contract Documents for the above named Project.

IN WITNESS WHEREOF, University and Contractor have executed this Consent to Substitution of Subcontractor as of the above date.

CONTRACTOR:

By: ______________________________
(Signature)

____
(Typed or Printed Name & Title)

UNIVERSITY:

By: ______________________________
(Signature)

____
(Typed or Printed Name & Title)

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
Master Builder's Risk Program
Coverage Summary

This document summarizes the Builder's Risk policy and is not intended to reflect all the terms, conditions, or exclusions of such policy as of the effective date of coverage. This document is not an insurance policy and does not amend, alter or extend the coverage afforded by the listed policy. The actual insurance policy defines all the terms, exclusions and conditions of coverage, and not this summary. Should any ambiguities or conflicts between the summary and policy exist, the policy terms and conditions will apply.

Some projects may be excluded and/or must be underwritten separately and may be subject to different rates, deductibles, and terms and conditions (see end of summary). ***Therefore, this document should be used as a guideline only.***

INSURANCE COMPANY: Liberty Mutual Fire Insurance Company

BEST'S RATING: A XV

NAMED INSURED: Regents of the University of California

INSURING GREEMENT

This Policy, subject to the Limit of Liability and the terms, conditions, and limitations contained herein or endorsed hereon, insures against all risks of direct physical loss or damage to Covered Property while at the construction site, stored off-site, or in the course of transit within this policy's territory and occurring during the period of insurance of this policy.

LIMITS OF LIABILITY

SCHEDULE OF LIMITS

This Company shall not be liable for more than the Limit of Liability, as stated in Confirmation of Coverage, in any one Occurrence for any one Insured Project, subject to the following limits and sublimits:

MASTER POLICY LIMITS, BY CONSTRUCTION CLASS

$150,000,000 per project, per occurrence; except,
$ 25,000,000 per project, Joisted Masonry construction
$ 10,000,000 per project, Wood Frame construction

NOTE: *The total estimated construction cost is estimated through project completion and reported on the original Builder's Risk Insurance Application. This Limit of Liability will correspond with the total estimated construction cost as shown on the original Builder's Risk Insurance Application. If the construction costs should increase, the Limit of Liability should be subsequently increased, once advance notice has been given to Willis Towers Watson by the University's representative.*

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
Master Builder's Risk Program
Coverage Summary

KEY SUBLIMITS (Per Occurrence unless otherwise stated):

1. $10,000,000 for **Wood Frame Construction**
2. $25,000,000 for **Joisted Masonry Construction**
3. $25,000,000 as respects **Demolition and Increased Cost of Construction**
4. $5,000,000 as respects **Expediting Expense, Contractor's Extra Expense**, General Conditions Expense / $500,000 Owner's Extra Expense / $100,000 Infrastructure Extra Expense
5. $10,000,000 as respects **Temporary Offsite Location** (per location)
6. $10,000,000 as respects **Transit** (Inland only)
7. $15,000,000 as respects **Debris Removal**
8. $1,000,000 as respects **Construction Documentation, Valuable Papers and Records**
9. $5,000,000 as respects **Design Professional Fees**
10. $1,000,000 as respects **Claims Preparation Expenses**
11. $1,000,000 as respects **Crane Re-Erection Expense**
12. $500,000 as respects **Scaffolding, Forms and Falsework Re-Erection Expense**
13. $500,000 as respects **Pollution Cleanup and Decontamination** (Per project aggregate)
14. $750,000 as respects **Fire Protection Equipment Refills**
15. $500,000 as respects **Governmental Authority Protection Services**
16. $500,000 as respects **Fungus, Wet Rot, Dry Rot or Bacteria**
17. $2,000,000 as respects **Preservation of Property Protection Expense** – 30 Days
18. $50,000 as respects **Reward Payment**
19. Included for 30 Days as respects **Hot Testing**
20. No sublimit as respects **Off Premises Service Interruption – Direct Damage**
21. No Sublimit as respects **Green/LEED Rating System**
22. No Sublimit for **Landscaping Materials**
23. No Sublimit as respects **Water Damage (Includes Frost, Freeze, Falling of Ice)**

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
Master Builder's Risk Program
Coverage Summary

TERMS AND CONDITIONS

NAMED INSURED

The Regents of the University of California and all affiliated and subsidiary companies, corporations, ventures, partnerships or other organizations, all owned, controlled or managed by the Named Insured and all as now exist or may hereafter be constituted or acquired.

ADDITIONAL INSUREDS

Except noted above, this Policy recognizes owners, contractors, subcontractors of any tier, architects, engineers, and any other individual or entity, all as required by contract documents or subcontract documents executed with respect to the insured project prior to the date of loss or damage to covered property as an Additional Insured, and then only as to their respective financial interest in the coverage property.

Notwithstanding the foregoing sentence, architects, engineers, manufacturers and suppliers shall only be Additional Insureds with respect to their activities at the insured project location.

ATTACHMENT/TERMINATION

Insurance hereunder applies to all projects specifically declared under the Master Policy in a Quarterly Report Endorsement, where the project is scheduled to begin during the term of the Master Policy. The Master Policy term commences on September 1, 2020 at 12:01AM and ends on September 1, 2023 at 12:01AM.

Coverage for each Insured Project declared under the Master Policy will go into effect and continue in full force and effect during the Coverage Period specified in the Confirmation of Coverage.

NOTIFICATION OF COVERAGE/TERMINATION: *The Confirmation of Coverage period will correspond with the earliest estimated Notice to Proceed date for any construction phase and estimated Notice of Final Completion date as indicated on the original Builder's Risk Insurance Application. If construction is not completed on time and coverage beyond the previously reported estimated Notice of Final Completion date is required, prior notification must be given to Willis Towers Watson by the University Representative in order to ensure that coverage remains in force for the project.*

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
Master Builder's Risk Program
Coverage Summary

DEDUCTIBLES

(Basis for determining deductible is the total project contract value for all construction phases, estimated through project completion.)

Deductible	All Other Perils	Water Damage
$10,000	• All ≤$1,000,000 projects • >$1,000,000 and ≤$25,000,000 Fire Resistive, Non-Combustible, Masonry Non- Combustible and Joisted Masonry projects • All Job Order Contracts (JOCs) • All Site Work Only (Outdoor Infrastructure / Utility / Hardscape / Landscape) projects	• All ≤$1,000,000 projects • All Job Order Contracts (JOCs) • All Site Work Only (Outdoor Infrastructure / Utility / Hardscape / Landscape) projects
$25,000	• All projects >$25,000,000	• >$1,000,000 and ≤$25,000,000 Fire Resistive, Non-Combustible, Masonry Non-Combustible and Joisted Masonry projects
$50,000	• Wood Frame projects >$1,000,000 and ≤$10,000,000	• All projects >$25,000,000 and ≤$50,000,000
$75,000		• All projects >$50,000,000 and ≤$150,000,000
$100,000		• Wood Frame projects >$1,000,000 and ≤$10,000,000

NOTE: *The contractor shall be responsible for the deductibles.*

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
Master Builder's Risk Program
Coverage Summary

KEY EXCLUSIONS

KEY PROPERTY NOT COVERED

Covered property does not include:

1. Land and land values and the value of cut, fill and backfill materials existing at the location of the insured project prior to project commencement. However, the following are covered to the extend identified in the contract documents and included in the Total Project Value:
- Fill and backfill materials purchased for use in the completion of the insured project; and
- Labor and material charges incurred to excavate land and to move, remove, place or otherwise handle cut, fill and backfill materials, whether such materials are insured or uninsured.

2. Any part of contractor's equipment including, tools, machinery, hoists, jacks, lifts, cranes or property of similar kind not intended to become a permanent part of the insured project;

3. Vehicles and equipment licensed for highway use, rolling stock, aircraft or watercraft;

4. Water, other than water that is contained within any enclosed tank, piping system, or any other processing equipment; standing timber including undisturbed natural wooded areas; growing crops; or animals;

5. Accounts, bills, currency, stamps, evidence of debts, checks, money, securities, precious metals, precious stones or other property of a similar nature;

6. Existing real property;

7. Property at a project site that stores, processes, handles or makes use of radioactive materials; however, this does not apply to project site making use of radioactive isotopes contained within equipment used for diagnostic or testing purposes;

8. Roadways, sidewalks or other paved or concrete surfaces at the project site that existed prior to the beginning of the Insured project;

9. Contraband or property in the course of illegal transportation or trade; or

10. Overhead transmission, distribution or communications lines, and their supporting structures, except to the extent identified in the contract documents and included in the total estimated construction cost.

KEY EXCLUDED CAUSES OF LOSS

1. This policy will not pay for loss or damage caused directly or indirectly by any of the following. Such loss or damage is excluded regardless of any other cause or event that contributes concurrently or in any sequence to the loss or damage, even if such other cause or event would otherwise be covered. These exclusions apply whether or not the loss event results in widespread damage or affects a substantial area:

a. Governmental Action

Seizure, confiscation, expropriation, nationalization or destruction of property by order of governmental authority.

This exclusion does not apply to seizure or destruction of property by order of governmental authority taken at the time of a fire to prevent its spread.

b. Nuclear Hazard

Nuclear reaction or radiation, or radioactive contamination, however caused, except as provided under Section E., Coverage Extensions, Radioactive Contamination. But if Nuclear reaction or radiation, or radioactive contamination results in fire, this policy will pay for the direct loss or damage caused by that fire.

c. Ordinance or Law

(1) The enforcement of or compliance with any ordinance or law:

(a) Regulating the construction, use or repair of any property; or

(b) Requiring the tearing down of any property, including the cost of removing its debris.

(2) This exclusion applies whether the loss or damage results from:

(a) An ordinance or law that is enforced even if the property has not been damage; or

(b) The increased costs incurred to comply with an ordinance or law in the course of construction, repair, renovation, remodeling or demolition of property, or removal of its debris, following a physical loss to that property.

This exclusion applies, except as provided under Section E., Coverage Extension, Ordinance or Law.

d. War and Military Action

War and military action, meaning:

(1) War, including undeclared or civil war;

(2) Warlike action by a military force, including action in hindering or defending against an actual or expected attack, by any government, sovereign, or other authority using military personnel or other agents; or

(3) Insurrection, rebellion, revolution, usurped power, or action taken by governmental authority by hindering or defending against any of these.

2. We will not pay for:

a. Consequential Loss

Loss, damage, cost or expense caused by, resulting from, or attributable to any of the following:

(1) Loss of market or loss of use;

(2) Liquidated damages, performances penalties or penalties for non-completion, except as provided under Section E., Coverage Extensions, Contract Penalties;

(3) Non-Compliance with contract conditions;

(4) Delay in completion of construction, except as provided under Time Element coverage, if endorsed to this Policy; or

(5) Re-Sequencing or inefficiencies of construction activities.

b. Cracking and Settling

Loss or damage caused by, resulting from or attributable to normal or expected subsidence, settling, cracking, expansion, contraction or shrinkage of walls, floors, ceilings, buildings, foundations, patios, walkways, driveways or pavements.

But if loss or damage caused by a covered cause of loss results, we will pay for the resulting loss or damage caused by that covered cause of loss.

c. Disappearance or Shortage

Missing property when the only proof of loss is unexplained or mysterious disappearance of covered property, or shortage of property discovered on taking inventory, or any other instance where there is no physical evidence to show what happened to the covered property. This exclusion does not apply to covered property in the custody of a carrier for hire.

d. Dishonest Acts

Loss or damage caused by or resulting from fraudulent, dishonest or criminal acts of any Insured or any of the Insured's partners, officers, directors, trustees, managers, employees (including leased or temporary employees) or others to whom the property is entrusted, except as provided under Section E., Coverage Extensions, Dishonest Acts.

This exclusion does not apply to:

(1) Acts of destruction committed by the Insured's employees (including leased or temporary employees); or

(2) Covered property in the custody of any carrier for hire or anyone claiming to be a carrier for hire at the time the property is entrusted to them.

This exclusion applies whether or not such persons are acting alone or in collusion with other persons, or whether such acts occur during the hours of employment.

e. Electronic Vandalism, Defects or Errors

Loss or damage to electronic hardware, software, programs or data caused by or resulting from:

(1) Computer virus;

(2) Willful or malicious electronic alteration, manipulation, tampering, or destruction by authorized or unauthorized users;

(3) Failure, malfunction, deficiency, deletion, errors, or omissions in:

(a) Programming;

(b) Instructions to a machine; or

(c) Installation or maintenance of electronic hardware; or

(4) Mysterious disappearance of code;

Except as provided by Section E. Coverage Extensions, Electronic Vandalism.

But if loss or damage caused by a specified cause of loss results, this policy will pay for the resulting loss or damage caused by that specified cause of loss.

f. Expected, Preventable or Accumulated Losses

Loss or damage caused by or resulting from wear and tear, deterioration, inherent vice, hidden or latent defect, corrosion, rust or dampness or dryness of the atmosphere.

But if loss or damage caused by a covered cause of loss results, this policy will pay for the resulting loss or damage caused by that covered cause of loss.

g. Faulty, Inadequate or Defective Workmanship or Design

Loss, damage, cost or expense caused by or resulting from faulty, inadequate or defective:

(1) Planning, zoning, development, surveying, siting;

(2) Design, specifications, workmanship, repair, construction, renovation, remodeling, grading or compaction;

(3) Materials used in repair, construction, renovation, remodeling, grading or compaction; or

(4) Maintenance;

Of part or all of any property on or off the project site described in the Declarations.

But if loss or damage caused by a covered cause of loss results, this policy will pay for the resulting loss or damage caused by that covered cause of loss. However, in no event this policy will pay for the covered property that was faulty or defective; the costs or expense to improve or redesign the original materials; supplies, designs, plans or specifications; or to improve workmanship.

The mere existence of any faulty, inadequate or defective conditions listed in paragraphs g. (1). Through g. (4)., above is not direct physical loss or damage.

h. Fines or Penalties

Fines or penalties imposed on the Insured at the order of any government agency, court or other authority.

i. Fungus, Wet Rot, Dry Rot or Bacteria

Loss or damage consisting of, directly or indirectly caused by, contributed to or aggravated by the presence, growth, proliferation, spread or any activity of fungus, wet rot, dry rot or bacteria, including any expense to remediate the presence or effects of any of the foregoing.

But if Fungus, wet or dry or bacteria result in a covered cause of loss, this policy will pay for the loss or damage caused by that covered cause of loss.

This exclusion does not apply:

(1) When fungus, wet or dry rot or bacteria result from fire or lightning; or

(2) To the extent that coverage is provided under Section E., Coverage Extensions, Fungus, Wet Rot, Dry Rot or Bacteria, with respect to loss or damage by a cause of loss other than fire or lightning.

j. **Pollutants**

Loss, damage, cost or expense caused by or resulting from the actual, alleged or threatened discharge, dispersal, seepage, migration, release, or escape of pollutants, unless the discharge, dispersal, seepage, migration, release, or escape is directly caused by a specified cause of loss.

But if the discharge, dispersal, seepage, migration, release, or escape of pollutants results in a specified cause of loss, this policy will pay for the loss or damage caused by that specified cause of loss.

This policy will also not pay for loss, damage, cost or expense arising out of any request, demand, order or statutory or regulatory requirement that requires any Insured or others to test for, monitor, cleanup, remove, contain, treat, detoxify, or neutralize, or in any way respond to, or assess the effects of pollutants.

k. Landscaping Materials

Insurance Company will not pay for direct physical loss or damage to landscaping materials caused by or resulting from:

a. Infestation, disease, freezing, drought, lack of moisture, hail or weight of ice or snow; or
b. Insects, vermin, rodents or animals.

l. Terrorism: Coverage has not been endorsed to this policy.

m. Damage to Existing Property: Coverage has not been endorsed to this policy.

n. Delay in Completion: Coverage has not been endorsed to this policy.

o. Earth Movement – Coverage has not been endorsed to this policy.

p. Flood – Coverage has not been endorsed to this policy.

SELECT EXTENSIONS OF COVERAGE

1. Expediting and Contractor's Extra Expense

a. In the event of direct physical loss or damage to covered property caused by or resulting from a covered cause of loss, this Company will pay for the reasonable and necessary:

(1) Expediting expenses, including:

(a) Wages for overtime, night work, and work on public holidays;

(b) Extra costs of express freight or other rapid means of transportation; and

(c) Extra costs of rental equipment;

Which are necessary to make temporary repairs or to expedite the permanent repair or replacement of the covered property sustaining such loss or damage;

(2) Owner's Extra Expense; and

(3) Contractor's extra expense and general conditions expense in excess of the total expense that would normally have been incurred during the period of time required to repair or replace covered property with reasonable speed and similar quality for the purpose of continuing the scheduled progress of undamaged work, and only to the extent such expenses are necessary to continue as nearly as practicable the normal operation of the work in progress.

2. Demolition and Increased Cost of Construction

a. In the event of direct physical loss or damage caused by a covered cause of loss to a building or structure that is covered property, the Company will pay for the:

(1) Cost to demolish and clear the project site of the undamaged portion of the constructed, erected or installed covered property as a consequence of a requirement to comply with an ordinance or law that required demolition of such undamaged property;

(2) Cost for recycling debris from the undamaged portion of the constructed, erected or installed covered property at a recycling facility, including the associated transportation costs, when those costs are incurred as a result of the demolition of the undamaged portion of the constructed, erected or installed covered property as a consequence of a requirement to comply with an ordinance or law that requires demolition of such undamaged property;

(3) Increase costs incurred by the Insured to repair, rebuild or replace the damaged and undamaged portions of that covered property for the same intended use as per the written contract in place at the time of direct physical loss or damage when the increased cost is a consequence of a requirement to comply with the minimum standards of an ordinance or law; and

(4) Loss to the undamaged portion of the constructed, erected or installed covered property as a consequence of a requirement to comply with an ordinance or law that requires demolition of undamaged parts of the same building.

Any income generated from debris recycling will reduce the Company loss payment.

b. We will not pay under this Ordinance or Law Coverage Extension for:

(1) Costs associated with the enforcement of any ordinance or law which required any Insured or others to test for, monitor, clean up, remove, contain, treat, detoxify, or neutralize, or in any way respond to, or assess the effects of, pollutants, fungus, wet rot, dry rot or bacteria;

(2) Enforcement of any ordinance or law which required the demolition, repair, replacement, reconstruction, remodeling, or remediation of property due to contamination by pollutants or due to the presence, growth, proliferation, spread or any activity of fungus, wet rot, dry rot or bacteria; or

(3) Costs to comply with any ordinance or law that was required to be complied with in the absence of the loss or damage.

3. Preservation of Property Protection Expense

a. If in the event of actual or imminent physical loss or damage to covered property caused by a covered cause of loss, this policy will pay for the reasonable and necessary expenses incurred by the Insured to protect the covered property by:

(1) Removing it from the project site or a temporary offsite location;

(2) Storing it away from the project site or a temporary offsite location for up to the number of days shown in the Builder's Risk Coverage Extensions Supplemental Declarations from the date it was first moved; and

(3) Returning it to the project site or temporary offsite location after the threat of actual or imminent loss or damage has passed.

b. This policy will reimburse the Insured for the reasonable and necessary expenses to protect covered property at the project site or temporary offsite location from actual or imminent physical loss or damage from fire, named storm or flood that has been forecast by the National Weather Service or the U.S. Army Corps of Engineers, but only if coverage is provided under this Policy for that cause of loss.

The Insured must keep a record of the expenses incurred.

No Deductible applies to this Coverage Extension.

4. Construction Documentation, Valuable Papers and Records

Subject to the stated sublimit, this Policy is extended to cover direct physical loss or damage to construction documentation, valuable papers, and records caused by a covered cause of loss.

This Company will value construction documentation, valuable papers, and records at the full cost necessary to research and reproduce the lost construction documentation, valuable papers, and records, plus the cost of the blank materials on which it resides. However, this company will only pay for costs of research and reproduction if the Insured reproduces the construction documentation, valuable papers, and records.

5. Crane Re-Erection Expense

If a tower or pole crane is lost or damaged by a covered cause of loss at the project site, this policy will pay the reasonable and necessary costs incurred by the Insured to re-erect a tower or pole crane necessary to complete the insured project. However, this policy will not cover any loss or damage to the tower or pole crane itself, unless such tower or pole crane is scheduled on a Contractor's Equipment Coverage endorsement, attached to this Policy.

6. Scaffolding, Forms or Falsework Re-Erection Expense

If scaffolding, forms or falsework covered under this policy is lost or damaged by a covered cause of loss at the project site, the Insurance Company will pay the reasonable and necessary costs incurred by the insured to re-erect scaffolding, forms or falsework necessary to complete the insured project.

7. Debris Removal

Subject to the Sublimit of Liability, in the event of direct physical loss or damage by a covered cause of loss occurs to covered property, this policy will pay:

a. The cost the Insured incurs to demolish, clear and remove debris of covered property, including such property while in transit or at a temporary offsite location; and

b. The reasonable and necessary expense incurred by the Insured for:

   (1) Recycling debris of covered property at a recycling facility, including the associated transportation costs; and

   (2) Removing debris of uncovered property from the project site.

The expenses will be paid only if reported to the Company in writing within three hundred sixty-five (365) days of the date of loss or damage.

Any income generated from debris recycling will reduce the Company loss payment

In no event will there be coverage under this Debris Removal Coverage Extension for any costs to:

(1) Extract pollutants from land, water or debris;

(2) Remove, restore, or replace polluted land or water; or

(3) Transport, store, decontaminate or recycle contaminated debris.

8. Design Professional Fees

Subject to the stated sublimit, this policy will reimburse the first Named Insured for reasonable and necessary expenses incurred for design professional services to repair, rebuild or replace the lost or damage covered property to the original design, if it has been damaged by a covered cause of loss.

9. Claims Preparation Expense

This Company will reimburse you for the reasonable and necessary claim preparation expenses you incur in preparing claim information, when it's required, for the purpose of determining the amount of loss or damage prior to finalizing a claim adjustment.

a. Claim preparation expense means the expenses incurred by the Insured for only the following:

   (1) The Insured's employees to produce or certify any particulars or details contained within the Insured's books or documents, or such other proofs, information or evidence required by us;

   (2) Taking inventory, conducting independent appraisals, or gathering and preparing other data to substantiate the amount of loss or damage; and

   (3) Services provided by accountants, auditors, contractors, architects and engineers or other professionals solely for the purpose of determining the amount of loss or damage.

b. Claim preparation expense does not mean the expenses incurred for:

   (1) Negotiating or presenting any claim that we have disputed or denied;

   (2) Attorneys, public adjusters, loss appraisers or loss consultants or their affiliates;

   (3) Examinations under oath, even if requested by this Company

   (4) Travel; or

   (5) Insurance brokers or insurance agents, or their affiliates, without our written consent prior to such expenses being incurred.

This Coverage extension does not apply until a claim for covered loss or damage to covered property has been submitted to and accepted by the Insurance Company. In the event that the amount of covered loss or damage does not exceed the applicable Deductible, no coverage will apply under this Coverage Extension.

10. Fungus, Wet Rot, Dry Rot or Bacteria

If fungus, wet rot, dry rot or bacteria is caused by or results from a covered cause of loss, other than fire or lightning, this Company will pay for:

a. Direct physical loss or damage to covered property at the project site or a temporary offsite location caused by or resulting from fungus, wet rot, dry rot or bacteria, including the cost of removal of the fungus, wet rot, dry rot or bacteria; and

b. The reasonable and necessary expenses to:

   (1) Test for, monitor or assess the existence, concentration or effects of fungus, wet rot, dry rot or bacteria;

   (2) Tear out and replace any part of covered property needed to gain access to the fungus, wet rot, dry rot or bacteria; and

   (3) Clean up, remove or remediate fungus, wet rot, dry rot or bacteria.

The coverage described in paragraphs 9.a and 9.b, of this Coverage Extension only applies if the Insured takes all reasonable steps to save and preserve property from further loss or damage at the time of, and after the discovery of the fungus, wet rot, dry rot or bacteria.

If there is covered loss or damage to covered property, not caused by fungus, wet rot, dry rot or bacteria loss payment will not be limited by the terms of this Coverage Extension, except to the extent that fungus, wet rot, dry rot or bacteria, causes an increase in the loss. Any such increase in the loss will be subject to the terms of this Coverage Extension. The most this Company will pay under this Coverage Extension is the Sub-Limit of Liability shown for Fungus, Wet Rot, Dry Rot or Bacteria. This is the most we will pay for the total of all loss or damage under this Coverage Extension, even if the fungus, wet rot, dry rot or bacteria continues to be present or active, or recurs, in a later Policy Term.

11. Governmental Authority Protection Service Charges

When the fire department, policy department or other governmental authority is called to save or protect covered property from a covered cause of loss at the project site or a temporary offsite location, this policy will pay the Insured's liability for service charges assessed that are:

A. Assumed by written contract or written agreement prior to loss or damage; or

B. Required by local ordinance, law or statue.

This policy will also pay for those costs incurred by the Insured's fire brigade to save or protect covered property from fire, but not including the costs to refill fire protective equipment.

The most this policy will pay for this Coverage Extension in any one occurrence, regardless of the number of responding departments or authorities or number of services performed, is the Sub-Limit of Liability shown for Government Authority Protection Service Charges.

No Deductible applies to this Coverage Extension.

12. Fire Protection Equipment Refills

Insurance Company will pay the reasonable and necessary costs the Insured incurs to refill fire protection equipment which has been discharged accidentally or in the course of saving or protecting covered property from a covered cause of loss.

13. Pollutant Clean-Up and Decontamination

a. This policy will pay the reasonable and necessary costs incurred by you to extract pollutants from land or water at the project site or a temporary offsite location if the discharge, dispersal, seepage, migration, release or escape of pollutants is directly caused by a covered cause of loss.

b. When required by ordinance, law or regulation in effect at the time of loss or damage, this policy will pay the reasonable and necessary costs incurred by you to extract pollutants from debris at the project site or a temporary offsite location if the discharge, dispersal, seepage, migration, release or escape of pollutants is directly caused by a covered cause of loss.

c. When paragraph a. above applies, this policy will also pay the Insured's reasonable and necessary costs incurred for:

(1) Restoring or replacing that contaminated land or water; and

(2) Testing performed in the course of extracting those pollutants from the land or water.

d. When paragraph b. above applies, this policy will also pay the Insured's reasonable and necessary costs incurred for transporting that contaminated debris to a temporary storage or decontamination facility.

These costs will be paid only if they are reported to the Insurance Company in writing within one hundred eighty (180) days of the date on which the covered cause of loss occurs.

This Coverage Extension does not apply to any other costs to test for, monitor or assess the existence, concentration or effects of pollutants.

14. Prevention of Access

<u>Civil Authority / Ingress or Egress</u>

The Insurance Company will pay for the reasonable and necessary contractor's extra expense, owner's extra expense and general conditions expense incurred by the insured, in excess of the total expense that would normally have been incurred during the same period of time had no loss or damage occurred, for the purpose of continuing the scheduled progress of undamaged work, but only to the extent such expenses are necessary to continue as nearly as practicable the normal operation of the work in progress.

Civil Authority

When an order of civil authority restricts or prohibits access to the project site in response to direct physical loss or damage caused by a covered cause of loss to property not insured under this policy and located within 2-miles of the project site. Coverage begins 72-hours after the time of direct physical loss or damaged caused by a covered cause of loss.

Ingress or Egress Coverage

When ingress or egress to the project site by suppliers, contractors, or employees is physically obstructed due to direct physical loss or damage caused by a covered cause of loss to property not insured under this policy and located within 2-miles of the project site. Coverage begins 72-hours after the time of direct physical loss or damaged caused by a covered cause of loss.

SELECTED GENERAL CONDITIONS

1. REQUIREMENTS IN CASE OF LOSS

In the event of loss or damage to Insured Property the Insured shall:

A. Notify the police if a law may have been broken

B. Give Insurance Company prompt notice of the loss or damage. Include a description of the property involved.

C. As soon as possible, give the Insurance Company a description of how, when and where the loss or damage occurred.

D. Take all reasonable steps to protect the Covered Property from further damage.

E. Not voluntarily make a payment, assume any obligation, or incur any expense without our consent.

F. Permit the Insurance Company to inspect the property.

G. Submit to examinations under oath about any matter relating to this insurance of the claim.

H. Send the Insurance Company a signed, sworn proof of loss containing the information they request to settle the claim, within 60-days after the Insurance Company's request.

I. Immediately send the Insurance Company copies of any demands, notices, summonses or legal papers received in connection with the claim or suit.

J. Cooperate with the Insurance Company in the investigation or settlement of the claim.

2. VALUATION

1. Except as provided in paragraphs 2., 3., and 4., below, the cost to repair, rebuild or replace covered property by the Insured as the time of direct physical loss or damage will be based on the following:

   A. Direct payroll cost for labor directly chargeable and related to the repair, rebuild or replacement of the damaged covered property;

   B. Contractors' profit, overhead charges and construction management fees as included in the original contract, or in any subsequent change order contract, as applicable;

   C. Expenses for the dismantling, transportation and reassembly of damaged covered property;

   D. General conditions expense; and

   E. Property under construction at the Insured's cost.

   For a green building, the valuation will include applicable green standards in force at the time of loss or damage in the cost to repair, rebuild or replace the lost or damaged green building. If applicable green standards, or equivalent standards, are not available, this policy will replace the lost or damaged green building with construction materials and equipment of like kind and quality.

2. Property under construction owned by others at the lesser of the following:

   a. The cost to repair, rebuild or replace property under construction at the time of direct physical loss or damage with materials of like kind and quality; or

   b. The amount the Insured is legally obligated to pay for direct physical loss or damage by reason of the Insured's assumption of liability for such loss or damage in written agreement executed prior to the loss or damage of that property.

3. Property under construction owned by the Insured that was refurbished, reconditioned or recertified, at the lesser of the cost to repair or replace the property under construction or the price which that property might be expected to realize if offered for sale in a fair market on the date of loss or damage.

4. Landscaping materials at the cost to repair or replace landscaping materials at the time of direct physical loss or damage with readily available commercial nursery stock.

5. Office contents, other than the contents of construction trailers, at a temporary offsite location, at the cost to repair or replace the covered property at the time of direct physical loss or damage with similar property intended to perform the same function. Office contents not replaced will be valued at actual cash value, at the time and place of loss or damage.

Insurance provided for office contents while at a temporary offsite location, is excess over any other valid and collectible insurance available to the owner of such property.

6. Property in transit at the invoice cost of the lost or damage covered property plus accrued shipping charges less shipper's liability, if any.

3. INCREASED HAZARD

If the circumstances in which this insurance was entered into are altered, or if the risk materially increases, the Insured shall give notice in writing to the Insurance Company within thirty (30) days of the Insured's knowledge of the same.

4. OTHER INSURANCE

1. This insurance is primary, except when paragraphs 2., 3., or 4, below apply.
2. This insurance is excess over any underlying insurance, including any insurance that you purchased for all or any part of a Deductible in this Policy. The existence of underlying insurance shall not prejudice the Insured's rights under this Policy. The Deductible and any amount paid under such underlying insurance will apply to the applicable Deductible under this policy.
3. To the extent others are responsible for loss of or damage to covered property while in transit under terms Free on Board, this insurance will be excess insurance and will not contribute with such other insurance.
4. If there is other insurance, whether purchased by the Insured or others, subject to the same plan, terms, conditions and provisions as the insurance provided under this Policy, the Company will pay their share of the covered loss or damage. The company share is the proportion that the applicable Limit of Liability or Sub-Limit of Liability under this Policy bears to the sum of all the Limits of Liability or Sub-Limits of Liability covering on the same basis.

Insured can purchase excess insurance commencing on or after the inception of this Policy that is specifically excess over the Limit of Liability or Sub-Limits of Liability under this policy without prejudice to this Policy. The existence of such insurance shall not reduce any liability under this policy.

5. PERMISSION TO OCCUPY IS GRANTED

SELECTED DEFINITIONS

The following terms have been defined in the policy – the policy definitions will be applied in the event of a loss.

1. FLOOD:

Flood means:

(1) Surface waters; rising waters; storm surge; wave wash; waves; tsunami; tide or tidal water; the release of water, the rising, overflowing or breaking of boundaries of natural or man-made bodies of water; or the spray therefrom; all whether drives by wind or not:

(2) Water or other material that backs up or overflows from any sewer, septic tank, sump or drain resulting *from any of the foregoing*; or

(3) Mudslide or mudflow caused by or resulting from surface water, runoff or accumulation of water on or under the ground;

Regardless of any other cause or event, whether natural or man-made, contributing concurrently or in any other sequence of loss.

Loss or damage from flood associated with a storm or weather disturbance whether or not identified by name by any meteorological authority is considered to be flood within the terms of this Policy. However, physical loss or damage, from fire, explosion, theft or sprinkler leakage caused by flood will not be considered to be loss by flood within the terms and conditions of this Policy.

2. POLLUTANTS:

Pollutants means any solid, liquid, gaseous or thermal irritant or contaminant, including but not limited to, lead, asbestos, PCB's, petroleum products, silica, smoke, vapor, soot, fumes, acids, alkalis, chemicals, and waste. Waste includes materials to be recycled, reconditioned or reclaimed.

3. EARTH MOVEMENT:

a. Earth movement means earthquake, landslide, subsidence or earth sinking (other than sinkhole collapse), rising or shifting of the earth, avalanche, whether natural or man-made, or volcanic eruption; regardless of any other cause or event contributing concurrently or in any other sequence of loss.

   However, physical loss or damage, , from fire, explosion, theft, sprinkler leakage, or flood caused by earth movement will not be considered to be loss by earth movement within the terms and conditions of this Policy.

4. OCCURRENCE:

Means all loss or damage attributable directly or indirectly to one (1) cause or series of similar causes. All such loss or damage will be added together and the total loss or damage will be treated as one (1) occurrence.

Unless otherwise amended by an endorsement attached to this Policy:

a. All loss or damage resulting from a continuous flood event, irrespective of the amount of time or area over which such loss or damage occurs, will be considered a single occurrence.

All loss or damage from earth movement or named storm within the time period specified in the Occurrence Time Specifications shown on the Declarations will be considered a single occurrence. The first Named Insured may elect the point in time when the time period specified in the Occurrence Time Specifications begins.

An occurrence that commences during the Policy term will not be limited by the expiration of this Policy.

5. WATER DAMAGE:

All water damage excluding flood, however caused, whether by natural event or manmade, including but not limited to interior water damage, damage due to water from pipe breakage or sprinkler leakage, damage from rainfall and/or resulting runoff; all whether wind driven or not.

6. TESTING:

COLD TESTING - means testing, exclusive of Hot Testing as defined in this Policy, including but not limited to electrical, mechanical, hydraulic, hydrostatic and pneumatic testing and includes the testing of systems and equipment that are intended to service a building, such as boilers, chillers, pumps and similar equipment.

HOT TESTING – means the testing of machinery or equipment that will be used in manufacturing, processing or power generation operations, when such machinery or equipment involves the use of feedstock, fuel, catalysts or similar materials, for the purpose of simulating load, operating or production conditions to train personnel or to verify the machinery or equipment functions according to the design specifications. Hot testing does not mean electrical, mechanical, hydraulic, hydrostatic or pneumatic testing, including the startup and testing of systems and equipment that are intended to service a building, including boilers, chillers, pumps, and similar equipment.

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
Master Builder's Risk Program
Coverage Summary

EXCLUDED PROJECT TYPES

Examples of projects that may require separate underwriting, including (but not limited to):

• Wood Frame construction where the values are estimated to exceed $10,000,000 by project completion date
• Joisted Masonry construction where values are estimated to exceed $25,000,000 by project completion date
• Any Fire Resistive; Non-Combustible; or Masonry Non-Combustible construction where the values are estimated to exceed $100,000,000 by project completion date
• Structural / Seismic Renovation construction where the values are estimated to exceed $50,000,000 by project completion date
• Power generation, Utility plants, Co-Generation facilities, Waste water and Waste treatment facilities, etc.
• Stadiums
• Bridges
• Cleanroom construction (both new and renovation) of any size
• Directional drilling
• Gas turbines
• Any project involving prototypical design or the use of unproven technology
• Any project with hot-testing where the values are estimated to exceed $100,000,000 by project completion date
• Projects with any other Construction Type, beyond Fire Resistive; Non-Combustible; Masonry Non-Combustible; Joisted Masonry; or Wood Frame, that are constructed of non-combustible materials or fire-resistive materials having a fire resistant rating of less than two hours

UC RIVERSIDE | Planning, Design & Construction

UNCONDITIONAL WAIVER AND RELEASE ON FINAL PAYMENT

NOTICE TO CLAIMANT:
THIS DOCUMENT WAIVES AND RELEASES LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST YOU IF YOU SIGN IT, EVEN IF YOU HAVE NOT BEEN PAID. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL WAIVER AND RELEASE FORM.

Identifying Information:

Name of Claimant: ______________________________

Name of Customer: ______________________________

Job Location: **Skye hall HVAC Replacement, Project No. 950583**
University of California, Riverside, City of Riverside, County of Riverside

Owner: **The Regents of the University of California**

Unconditional Waiver and Release:
This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for all labor and service provided, and equipment and material delivered, to the customer on this job. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. The claimant has been paid in full.

Exceptions:
This document does not affect the following: Disputed claims for extras in the amount of:
$ ______________________________ .

Signature:
Claimant's Signature & Date: ______________________________

Claimant's Name & Title: ______________________________

Prime Contractor's Application for Payment # ________

UC RIVERSIDE | Planning, Design & Construction

UNCONDITIONAL WAIVER AND RELEASE ON PROGRESS PAYMENT

NOTICE TO CLAIMANT:
UNCONDITIONAL WAIVER AND RELEASE ON PROGRESS PAYMENT NOTICE TO CLAIMANT: THIS DOCUMENT WAIVES AND RELEASES LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST YOU IF YOU SIGN IT, EVEN IF YOU HAVE NOT BEEN PAID. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL WAIVER AND RELEASE FORM.

Identifying Information:

Name of Claimant: ______________________

Name of Customer: ______________________

Job Location: **Skye Hall HVAC Replacement, Project No. 950583**
University of California, Riverside, City of Riverside, County of Riverside

Owner: **The Regents of the University of California**

Through Date: ______________________

Unconditional Waiver and Release:
This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job through the Through Date of this document. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. The claimant has received the following progress payment: $ ______________________

Exceptions:
This document does not affect any of the following:
(1) Retentions.
(2) Extras for which the claimant has not received payment.
(3) Contract rights, including (A) a right based on rescission, abandonment, or breach of contract, and (B) the right to recover compensation for work not compensated by the payment.

Signature:

Claimant's Signature & Date: ______________________

Claimant's Name & Title: ______________________

Prime Contractor's Application for Payment # ________

UC RIVERSIDE | Planning, Design & Construction

LIST OF DRAWINGS

SHEET NO.	TITLE	DATE
T0.1	TITLE SHEET, INDEX OF DRAWINGS, GENERAL NOTES, AND LOCATION MAP	02/25/2020
M0.1	SYMBOLS, DESIGNATIONS, AND ABBREVIATIONS	02/25/2020
M0.2	MECHANICAL EQUIPMENT SCHEDULES	02/25/2020
M1.1	1ST FLOOR DEMOLITION HVAC PLAN	02/25/2020
M1.2	2ND FLOOR DEMOLITION HVAC PLAN	02/25/2020
M1.3	3RD FLOOR DEMOLITION HVAC PLAN	02/25/2020
M1.4	ROOF LEVEL DEMOLITION HVAC PLAN	02/25/2020
M2.1	1ST FLOOR RECONSTRUCTION HVAC PLAN	02/25/2020
M2.2	2ND FLOOR RECONSTRUCTION HVAC PLAN	02/25/2020
M2.3	3RD FLOOR RECONSTRUCTION HVAC PLAN	02/25/2020
M2.4	ROOF LEVEL RECONSTRUCTION HVAC PLAN	02/25/2020
M3.1	1ST FLOOR ZONE PLAN	02/25/2020
M3.2	2ND FLOOR ZONE PLAN	02/25/2020
M3.3	3RD FLOOR ZONE PLAN	02/25/2020
M5.0	MECHANICAL DETAILS	02/25/2020
M5.1	MECHANICAL DETAILS	02/25/2020
M6.0	VAV BOX AND RTU CONTROL DIAGRAM	02/25/2020
M6.1	NETWORK ARCHITECTURE AND SEQUENCE OF OPERATION	02/25/2020
E0.1	ELECTRICAL SYMBOLS, LEGEND, AND GENERAL NOTES	02/25/2020
E1.0	FIRST FLOOR DEMOLITION POWER PLAN	02/25/2020
E1.1	SECOND FLOOR DEMOLITION POWER PLAN	02/25/2020
E1.2	ROOF DEMOLITION POWER PLAN	02/25/2020
E2.0	FIRST FLOOR RECONSTRUCTION POWER PLAN	02/25/2020
E2.1	SECOND FLOOR RECOSTRUCTION POWER PLAN	02/25/2020
E2.2	THIRD FLOOR RECONSTRUCTION POWER PLAN	02/25/2020
E2.3	ROOF RECONSTRUCTION POWER PLAN	02/25/2020
E3.0	ELECTRICAL SCHEDULES AND DETAILS	02/25/2020
S0.1	GENERAL NOTES	02/25/2020
S1.4	ROOF LEVEL DEMO HVAC PLAN	02/25/2020
S2.4	ROOF LEVEL RECONSTRUCTION PLAN	02/25/2020
S5.1	STRUCTRUAL DETAILS	02/25/2020

END OF LIST OF DRAWINGS

UNIVERSITY OF CALIFORNIA, RIVERSIDE
SKYE HALL
ROOFTOP REPLACEMENT
PROJECT NO. 950583
CAAN NO. P5380

UNIVERSITY OF CALIFORNIA
UC RIVERSIDE
CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

Architect's Data:

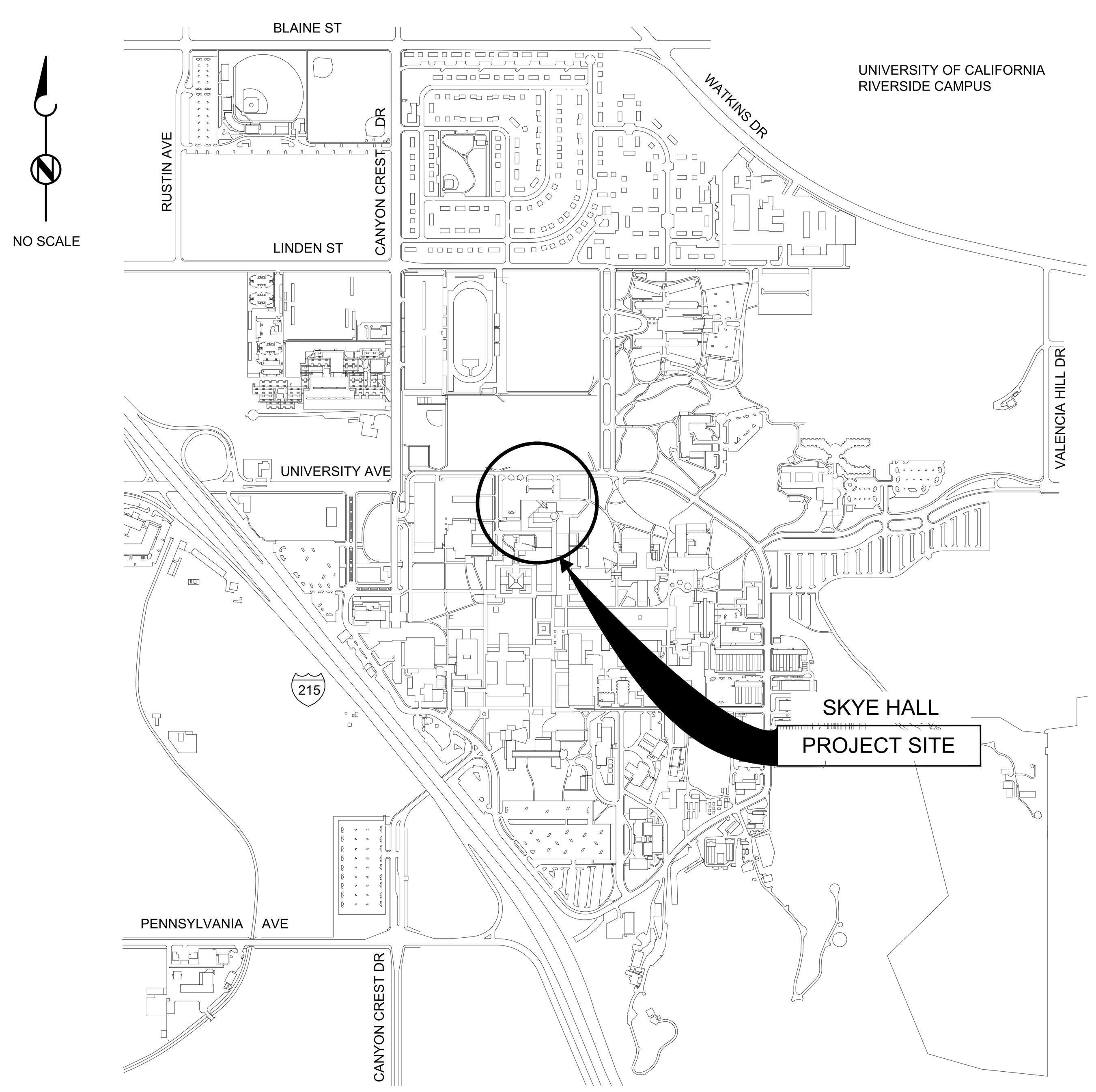
Architect's Stamp:

Consultant's Stamp:

REGISTERED PROFESSIONAL ENGINEER
N. DEAN UBRUN
No. M35378
Exp. 6-30-21
MECHANICAL
STATE OF CALIFORNIA

FILE NO.: 119-09-08

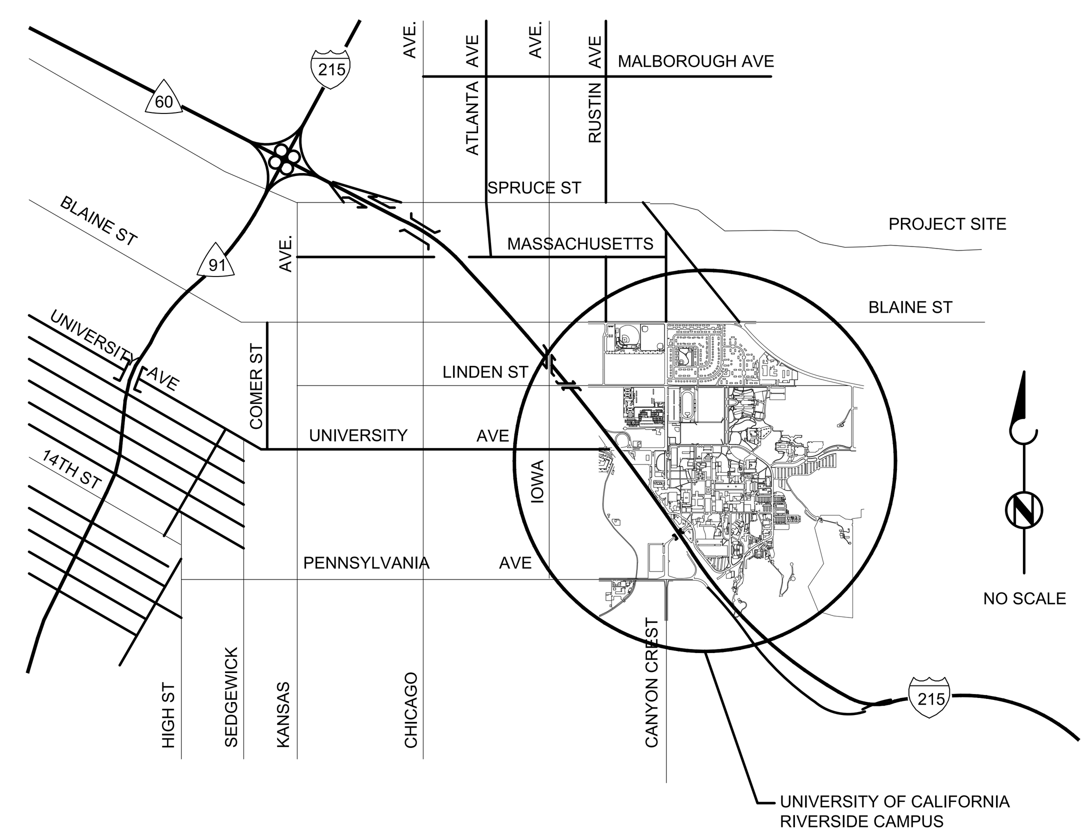
LOCATION MAP



PROJECT ADDRESS:

STUDENT RECREATION CENTER
900 UNIVERSITY AVENUE
RIVERSIDE, CA 92521

VICINITY MAP



GENERAL NOTES

1. IN BRIEF, THIS PROJECT INVOLVES THE REPLACEMENT OF SEVENTEEN (17) DX ROOF TOP UNITS (RTU) ON THE ROOF OF UCR'S SKYE HALL ALONG WITH ANY MODIFICATIONS AND REPAIRS TO THE EXISTING HVAC SYSTEM IN ORDER TO OPTIMIZE COOLING AND HEATING PERFORMANCE.
2. THE ARRANGEMENT OF THE SYSTEM SHOWN ON THESE DRAWINGS IS BASED UPON INFORMATION AVAILABLE TO THE ENGINEER AT THE TIME OF DESIGN. THE DRAWINGS ARE NOT INTENDED TO SHOW EXACT DIMENSIONS. THESE DRAWINGS ARE IN PART DIAGRAMMATIC, AND SOME FEATURES OF THE ILLUSTRATED EQUIPMENT INSTALLATION MAY REQUIRE REVISION TO MEET ACTUAL INSTALLATION REQUIREMENTS. STRUCTURAL SUPPORTS, CONNECTED PIPING, VALVES, CONDUIT AND WIRING SPECIFIED MAY HAVE TO BE ALTERED TO ACCOMMODATE THE EQUIPMENT PROVIDED. NO ADDITIONAL PAYMENT SHALL BE MADE FOR SUCH REVISIONS AND/OR ALTERATIONS.
3. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE CALIFORNIA ADMINISTRATIVE CODES, CALIFORNIA BUILDING STANDARD CODES, NFPA STANDARDS, LOCAL CODES, AND REQUIREMENTS SPECIFIED HEREIN.
4. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO BID IN ORDER TO THOROUGHLY FAMILIARIZE THEMSELVES WITH THE EXISTING FIELD CONDITIONS AND SCOPE OF WORK TO BE PERFORMED. THE CONTRACTOR SHALL ALSO VERIFY ALL DIMENSIONS OF THE EXISTING FACILITIES AND EQUIPMENT PERTINENT TO THE SCOPE OF WORK TO THIS PROJECT PRIOR TO BID.
5. THE CONTRACTOR SHALL PROVIDE AND BE RESPONSIBLE FOR PROTECTION AND REPAIR OF ADJACENT EXISTING SURFACES, DUCT, AREAS, PIPING, CONDUIT, AND EQUIPMENT WHICH MAY BE DAMAGED AS A RESULT OF DEMOLITION AND/OR NEW WORK. THE CONTRACTOR SHALL NOT DEMOLISH OR ALTER ANY WORK WHICH IS NOT A PART OF THIS CONTRACT WITHOUT WRITTEN PERMISSION FROM THE UNIVERSITY.
6. CONTRACTOR SHALL DESIGN AND PROVIDE PIPE SUPPORTS, SEISMIC SWAY BRACING AND RESTRAINT OF ALL NEW PIPING, CONDUIT, AND FLUE EXHAUST.
7. WHEN REQUIRED TO DEMOLISH EXISTING WALLS, CEILINGS, ETC. TO FACILITATE THE INSTALL OF THE NEW SYSTEM, THE CONTRACTOR SHALL PATCH, SEAL AND PAINT TO MATCH EXISTING CONDITIONS.

APPLICABLE CODES

2019 CALIFORNIA BUILDING CODE (CBC) PART 2, VOLUMES 1 AND 2, TITLE 24
[BASED ON 2015 INTERNATIONAL BUILDING CODE]

2019 CALIFORNIA ELECTRICAL CODE (CEC) PART 3, TITLE 24
[BASED ON 2014 NATIONAL ELECTRICAL CODE]

2019 CALIFORNIA MECHANICAL CODE (CMC) PART 4, TITLE 24
[BASED ON 2015 UNIFORM MECHANICAL CODE]

2019 CALIFORNIA PLUMBING CODE (CPC) PART 5, TITLE 24
[BASED ON 2015 UNIFORM PLUMBING CODE]

2019 CALIFORNIA FIRE CODE (CFC) PART 9, TITLE 24
[BASED ON 2015 INTERNATIONAL FIRE CODE]

2019 CALIFORNIA REFERENCED STANDARD CODE, PART 12, TITLE 24

TITLE 19, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS

REFER TO CBC CHAPTER 35 FOR ADDITIONAL STANDARDS NOT PROVIDED ON THIS LIST.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1146

PARTIAL LIST OF APPLICABLE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS

NFPA 13, 2019 EDITION - INSTALLATION OF SPRINKLER SYSTEMS (AS AMENDED BY CSFM)

NFPA 14, 2019 EDITION - INSTALLATION OF STANDPIPE AND HOSE SYSTEMS (AS AMENDED BY CSFM)

NFPA 17A, 2019 EDITION - WET CHEMICAL EXTINGUISHING SYSTEMS NFPA 24, 2016 EDITION - INSTALLATION OF PRIVATE FIRE SERVICE MAINS (AS AMENDED BY CSFM)

NFPA 25, (2019 CALIFORNIA EDITION, BASED ON NFPA 25, 2011 EDITION) - INSPECTION, TESTING & MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEMS

NFPA 72, 2019 EDITION - NATIONAL FIRE ALARM AND SIGNALING CODE (AS AMENDED BY CSFM)

FIRE SAFETY DURING CONSTRUCTION, ALTERATION, AND DEMOLITION

FIRE SAFETY DURING CONSTRUCTION, ALTERATION OR DEMOLITION OF A BUILDING SHALL BE IN THE ACCORDANCE WITH 2016 CFC CHAPTER 14.

FIRE-RESISTIVE ASSEMBLIES AND CONSTRUCTION SHALL BE MAINTAINED IN ACCORDANCE WITH CFC SECTION 141.2.

INDEX OF DRAWINGS

PROJECT TEAM

MECHANICAL CONSULTANT:

GOSS ENGINEERING, INC.
255 EAST RINCON STREET, SUITE 301
CORONA, CA 92879
PHONE: (951) 340-1977
CONTACT: NICK UBRUN, P.E.
EMAIL: NUBRUN@GOSS-ENG.COM

ELECTRICAL CONSULTANT:

GOSS ENGINEERING, INC.
255 EAST RINCON STREET, SUITE 301
CORONA, CA 92879
PHONE: (951) 340-1977
CONTACT: ED BURTCH, P.E.
EMAIL: EBURTCH@GOSS-ENG.COM

UNIVERSITY REPRESENTATIVE:

UC-RIVERSIDE, CAPITAL PROGRAMS, ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA 92507
PHONE: (951) 827-4706
CONTACT: SCOTT DONNELL, PROJECT MANAGER
EMAIL: SCOTT.DONNELL@UCR.EDU

STRUCTURAL CONSULTANT:

MIYAMOTO INTERNATIONAL
17300 RED HILL AVE., SUITE 250
IRVINE, CA 92614
PHONE: (949) 579-1170
CONTACT: JAMES CHEN
EMAIL: JCHEN@MIYAMOTOINTERNATIONAL.COM

BUILDING CODE ANALYSIS

OCCUPANCY TYPE: GROUP B
CONSTRUCTION TYPE: TYPE IIA
NUMBER OF STORIES: 3
ACTUAL BUILDING HEIGHT: 49 FT.
BUILDING AREA: 71,534 SQ. FT.
AREA OF PROJECT: 71,534 SQ. FT.
AREA INCREASE: NONE
HEIGHT INCREASE: NONE
FIRE ALARM: YES, AUTOMATIC
FIRE SPRINKLERS: YES, NFPA 13 WET
SMOKE CONTROL: NO
YEAR BUILDING WAS CONSTRUCTED: 2000

APPROVED
UC RIVERSIDE
Office of Planning, Design & Construction Signed CBO: Gilbert Cervantes
Building, Safety and Compliance Division
CAMPUS BUILDING PERMIT

OFFICE OF THE STATE FIRE MARSHAL
APPROVED FIRE AND PANIC ONLY
03/10/2020
Approval of this plan does not authorize or approve any omission or deviation from applicable regulations. Final approval is subject to field inspection. One set of approved plans shall be available on the project site at all times.
Reviewed by: Scott Jackson
Fire and Life Safety Division South

REVISIONS

REV #	DESCRIPTION	DATE
1	50% DESIGN	11/01/19
2	90% DESIGN	11/27/19
3	100% DESIGN	02/25/20

SKYE HALL HVAC
REPLACEMENT
CAAN NUMBER: P5380

Consultant's Data:

GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

UCR Project Manager: SCOTT DONNELL

Scale:	NONE	SD Approval:	N/A
Drawn By:	A. E. PEREZ	DD Approval:	NDU
Checked By:	N. D. UBRUN	CD Approval:	
Project No.:	950583	Construction Release:	
Bldg. Permit:	#B19-308		

Drawing Title: TITLE SHEET, INDEX OF DRAWINGS, GEN. NOTES AND LOCATION MAP

Sheet No. T0.1

Reviewed for Code Compliance
03/10/20

LEGEND

SYMBOL	DESCRIPTION
PIPING	
	PIPE ELBOW UP
	PIPE ELBOW DOWN
	PIPE TEE UP
	PIPE TEE DOWN
	PIPE RISE
	PIPE CAP
	FLOW DIRECTION
	PIPE BREAK
VALVES	
	ISOLATION VALVE (REFER TO SPECIFICATIONS)
	CHECK VALVE
	BALANCING VALVE
	FLOW LIMITING VALVE
	SAFETY RELIEF VALVE
	AUTOMATIC CONTROL VALVE, 2-WAY
	AUTOMATIC CONTROL VALVE, 3-WAY
PIPING SPECIALTIES	
	UNION
	FLANGE
	FLEX CONNECTOR
EJ	EXPANSION JOINT
	PIPE ANCHOR
	PIPE GUIDE
	TEST PORT
	THERMOMETER
	PRESSURE GAUGE
	SEISMIC JOINT
	Y-STRAINER
	FLOW SWITCH
	PRESSURE SWITCH
	MANUAL AIR VENT
	AUTOMATIC AIR VENT
T	THERMOSTAT
SD	DUCT SMOKE DETECTOR
TS	TEMPERATURE SENSOR
CO2	CARBON DIOXIDE SENSOR
	CONNECT
	DISCONNECT
PS	PRESSURE
H	HUMIDITY

LEGEND

SYMBOL	DESCRIPTION
	TRANSITION - RECTANGULAR TO ROUND
20x10	DUCT SIZE (CLEAR INSIDE DIMENSION)
	SOUNDLINED DUCTWORK
	RECTANGULAR DUCT UP
	RECTANGULAR DUCT DN
	ROUND OR OVAL DUCT UP
	ROUND OR OVAL DUCT DN
	FLEXIBLE CONNECTION
	DUCT RISE/DROP W/90° ELBOWS (RECTANGULAR DUCTS)
	DUCT RISE/DROP W/45° ELBOWS (RECTANGULAR DUCTS)
	DUCT RISE/DROP W/90° ELBOWS (ROUND AND/OR OVAL DUCTS)
	DUCT RISE/DROP W/45 ° ELBOWS (ROUND AND/OR OVAL DUCTS)
	SUPPLY AIR DUCT UP AND DOWN
	RETURN AIR DUCT UP AND DOWN
	EXHAUST AIR DUCT UP AND DOWN
	SUPPLY DUCT ROOF PENETRATION
	RETURN DUCT ROOF PENETRATION
	EXHAUST DUCT ROOF PENETRATION
	VOLUME DAMPER
	FIRE DAMPER
	COMBINATION FIRE/SMOKE
	DAMPER SMOKE DAMPER

LINE TYPES

- NEW DUCT OR PIPE
- NEW EQUIPMENT
- DUCT, PIPE OR EQUIPMENT (TO BE DEMOLISHED)
- EXISTING (SCREENED BACKGROUND)

ANNOTATION SYMBOLS

SHEET REFERENCE

SEE 1 / M0.1, TYP — DETAIL IDENTIFICATION; SHEET WHERE DETAIL IS DRAWN; OCCURRENCE

EQUIPMENT

HP / 1, TYP OF 2 — EQUIPMENT TYPE; OCCURRENCE; EQUIPMENT IDENTIFICATION

PIPE/DUCT SIZE

8" CHWS — SIZE; UTILITY TYPE

NEW AIR TERMINAL

S-1 / XXXX CFM / 1 — AIR TERMINAL TYPE; OCCURRENCE; AIRFLOW

EXISTING AIR TERMINAL TO BE REBALANCED

— / XXXX CFM / 1 — OCCURRENCE; AIRFLOW

MISCELLANEOUS

- 1 — RECONSTRUCTION KEY NOTE
- 1 — DEMOLITION KEY NOTE
- POINT OF CONNECTION
- POINT OF DISCONNECTION

REVISION

- REVISED AREA
- 1 — REVISION TAG

ABBREVIATIONS

A	AMPS
AAV	AUTOMATIC AIR VENT
ABV	ABOVE
AD	ACCESS DOOR
AFF	ABOVE FINISH FLOOR
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY
AHJ	AUTHORITY HAVING JURISDICTION
AMB	AMBIENT
APD	AIR PRESSURE DROP
ASHRAE INC.	AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR-CONDITIONING ENGINEERS,
ATM	ATMOSPHERE
BDD	BACK DRAFT DAMPER
BHP	BRAKE HORSE POWER
BEL	BELOW
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BTUH	BRITISH THERMAL UNIT PER HOUR
CA	COMPRESSED AIR
CD	CEILING DIFFUSER
CFG	CEILING FIRE DAMPER
CFM	CUBIC FEET PER MINUTE
CG	CEILING GRILLE
CHR	CHILLED WATER RETURN
CHS	CHILLED WATER SUPPLY
CO	CO SENSOR
CO2	CO2 SENSOR
COND	CONDENSER, CONDENSATE
CONT	CONTINUE, CONTROL
COP	COEFFICIENT OF PERFORMANCE
CR	CONDENSER WATER RETURN
CS	CONDENSER WATER SUPPLY
Cx	COMMISSIONING
DB	DRY BULB
dB	DECIBEL
DIA	DIAMETER
DN	DOWN
(E)	EXISTING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EG	EXHAUST GRILLE
ELEC	ELECTRICAL
EMS	ENERGY MANAGEMENT SYSTEM
EQUIV	EQUIVALENT
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EWT	ENTERING WATER TEMPERATURE
F	FAHRENHEIT
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
FLR	FLOOR
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FT	FOOT, FEET
FV	FACE VELOCITY
GA	GAUGE
GPM	GALLONS PER MINUTE
GRD	GRILLES, REGISTERS, & DIFFUSERS
H	HUMIDISTAT
HORIZ	HORIZONTAL
HP	HORSE POWER, HEAT PUMP
HTG	HEATING
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
HZ	HERTZ
IAQ	INDOOR AIR QUALITY
IN	INCHES
IN WC	INCHES WATER COLUMN
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LWT	LEAVING WATER TEMPERATURE
MAT	MIXED AIR TEMPERATURE
MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
MERV	MINIMUM EFFICIENCY REPORTING VALUE
MCA	MINIMUM CIRCUIT CAPACITY
MOCP	MAXIMUM OVER CURRENT PROTECTION
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NC	NOISE CRITERIA
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR
P	PUMP
PD	PRESSURE DROP
POC	POINT OF CONNECTION
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
RA	RETURN AIR, RELIEF AIR
RG	RETURN GRILLE
RLA	RATED LOAD AMPS
RPM	REVOLUTIONS PER MINUTE
RTU	ROOF TOP UNIT
S	SENSOR
SA	SUPPLY AIR
SAT	SUPPLY AIR TEMPERATURE
SMACNA	SHEET METAL AND AIR-CONDITIONING CONTRACTOR NATIONAL ASSOCIATION
TDH	TOTAL DYNAMIC HEAD
TEMP	TEMPERATURE
TG	TRANSFER GRILLE
TOD	TOP OF DUCT
TOP	TOP OF PIPE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
V	VOLT
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
W/	WITH
WB	WET BULB TEMPERATURE
WT	WEIGHT

APPLICABLE STANDARDS

2019 CALIFORNIA ELECTRICAL CODE (CEC: PART 3 , TITLE 24 , CCR)

2019 CALIFORNIA BUILDING CODE (CBC: PART 1 & PART 2 , TITLE 24 , CCR)

2019 CALIFORNIA MECHANICAL CODE (CMC: PART 4 , TITLE 24 , CCR)

2019 CALIFORNIA PLUMBING CODE (CPC: PART 5 , TITLE 24 , CCR)

2019 CALIFORNIA FIRE CODE (CFC: PART 9, TITLE 24, CCR)

2019 CALIFORNIA ENERGY CODE (CEC: PART 6, TITLE 24, CCR)

2019 CALIFORNIA GREEN BUILDING STANDARDS (PART 11, TITLE 24, CCR)

2019 TITLE 19 C.R.R PUBLIC SAFETY STATE FIRE MARSHAL REGULATIONS

THE PROJECT SHALL ALSO COMPLY WITH THE APPLICABLE CODES AND STANDARDS OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), AND FIRE MARSHALL GLOBAL REQUIREMENTS.

GENERAL NOTES

1. ALL DRAWINGS ARE CONSIDERED TO BE PART OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REVIEW AND COORDINATION OF ALL DRAWINGS PRIOR TO ANY CONSTRUCTION, INCLUDING STRUCTURAL, PLUMBING, AIR CONDITIONING AND ELECTRICAL. ANY DISCREPANCIES THAT OCCUR SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OR RECORD (EOR) PRIOR TO THE START OF CONSTRUCTION SO THAT A CLARIFICATION CAN BE ISSUED. ANY WORK PERFORMED IN CONFLICT WITH THE CONTRACT DOCUMENTS OR ANY CODE REQUIREMENT SHALL BE CORRECTED BY THE CONTRACTOR AT HIS OWN EXPENSE, AND AT NO EXPENSE TO THE OWNER.
2. ALL SYMBOLS AND ABBREVIATIONS USED ON THE DRAWINGS ARE CONSIDERED TO BE CONSTRUCTION STANDARDS. IF CLARIFICATION IS REQUIRED, THE CONTRACTOR SHALL NOTIFY EOR PRIOR TO PROCEEDING WITH THE WORK.
3. DO NOT SCALE DRAWINGS. ALL DIMENSIONS AND JOB SITE CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR AT THE JOB SITE PRIOR TO BID SUBMITTAL, START OF CONSTRUCTION AND/OR FABRICATION OF MATERIALS. IF DISCREPANCIES ARE ENCOUNTERED, THE EOR SHALL BE NOTIFIED FOR CLARIFICATION.
4. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, LABOR, EQUIPMENT, TRANSPORTATION AND SERVICES NECESSARY FOR COMPLETION OF THE WORK. ALL MATERIALS AND WORK SHALL COMPLY WITH APPLICABLE CODES AND GOVERNING REGULATION AND MEET THE APPROVAL OF THE CITY AND STATE FIRE MARSHALL.
5. CONTRACTOR SHALL PROVIDE AND BE RESPONSIBLE FOR PROTECTION AND REPAIR OF ADJACENT EXISTING SURFACES AND AREAS WHICH MAY BE DAMAGED AS A RESULT OF DEMOLITION AND/OR NEW WORK.
6. CONTRACTOR SHALL PROVIDE RECORD/AS BUILT DOCUMENTS TO CONSTRUCTION COORDINATOR OR ARCHITECT AT COMPLETION OF CONSTRUCTION.
7. ALL APPLIANCE AND PLUMBING VENTS AND THE DISCHARGE OUTLET OF EXHAUST FANS SHALL BE AT LEAST TEN (10) FEET IN A HORIZONTAL DIRECTION, OR THREE (3) FEET ABOVE THE OUTSIDE-AIR INTAKES FOR HVAC UNITS.
8. ALL HVAC SYSTEMS INCLUDING HYDRONIC SYSTEMS SHALL BE BALANCED IN ACCORDANCE WITH AN APPROVED METHOD PER CMC SECTION 317.1.
9. DURING CONSTRUCTION (AT TIME OF INSTALLATION AND WHILE BEING STORED ON SITE) AND UNTIL FINAL STARTUP OF HEATING AND COOLING EQUIPMENT, ENDS OF DUCT OPENINGS ARE TO BE SEALED, AND MECHANICAL EQUIPMENT IS TO BE COVERED PER CALGREEN SECTION 5.714.4.3.
10. ALL ADHESIVES, SEALANTS, CAULKS, PAINTS AND COATINGS, AEROSOL PAINTS AND COATINGS SHALL COMPLY WITH VOC LIMITS PER CALGREEN 5.714.4.4.1.
11. ALL MECHANICAL EQUIPMENT SHOULD BE TESTED AND LABELED BY AN APPROVED TESTING AGENCY. IF NOT, PROVIDE COMPLETE INFORMATION ON THE EQUIPMENT. TESTING BY AN APPROVED TESTING LABORATORY MAY BE REQUIRED BEFORE FINAL APPROVAL IS GRANTED.
12. ALL ROOFTOP EQUIPMENT SHALL BE SCREENED FROM PUBLIC VIEW.
13. INSTALL DIELECTRIC INSULATION WHERE COPPER PIPES CONNECT TO FERROUS PIPES, COMPONENTS AND EQUIPMENT.
14. SUPPORT THE INSTALLED PIPING PER CMC, SECTION 316.0 AND TABLE 316.2.
15. PROVIDE TYPE L DRAWN-TEMPER COPPER TUBING WITH SOLDERED JOINTS FOR CONDENSER WATER, NP2 2 AND SMALLER. PROVIDE SCHEDULE 40 STEEL PIPE WITH WELDED AND FLANGED JOINTS FOR NPS 2-1/2 AND LARGER.
16. INSULATION MATERIAL SHALL MEET THE CALIFORNIA QUALITY STANDARD PER SECTION 118 OF THE STATE ENERGY EFFICIENCY STANDARDS (E.E.S.). ALL INSULATION SHALL BE CERTIFIED BY THE MANUFACTURER AS COMPLIANT WITH CALIFORNIA QUALITY STANDARDS FOR INSULATING MATERIAL, TITLE 20, CHAPTER 4, ARTICLE 3.
17. THE CONTRACTOR SHALL PROVIDE TO THE BUILDING OWNER AT OCCUPANCY MAINTENANCE INFORMATION FOR ALL FEATURES, MATERIALS, AND MANUFACTURED DEVICES THAT REQUIRE ROUTINE MAINTENANCE FOR EFFICIENT OPERATION. REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY STATED AND INCORPORATED ON A READILY ACCESSIBLE LABEL. THE LABEL MAY BE LIMITED TO IDENTIFYING, BY TITLE AND/OR PUBLICATION NUMBER, THE OPERATION AND MAINTENANCE MANUAL FOR THE PARTICULAR MODEL AND TYPE OF FEATURE, MATERIAL, COMPONENT, OR MANUFACTURED DEVICE.
18. ALL SYSTEMS AND EQUIPMENT SHALL COMPLY WITH THE APPLICABLE MANUFACTURER PROVISIONS AND INSTALLATION PROVISIONS OF TITLE 24, PART 6, CHAPTER 2, SECTIONS 111 THROUGH 119.

UNIVERSITY OF CALIFORNIA
UC RIVERSIDE
CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA. 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

Architect's Data:

Architect's Stamp:

Consultant's Stamp:

REGISTERED PROFESSIONAL ENGINEER
NICHOLAS DEAN UBRUN
No. M35378
Exp. 6-30-21
MECHANICAL
STATE OF CALIFORNIA

FILE NO.: 119-09-08

APPROVED
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Office of Planning, Design & Construction Signed CBO: Gilbert Cervantes
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GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

UCR Project Manager: SCOTT DONNELL

Scale:	NONE	SD Approval:	N/A
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Checked By:	N. D. UBRUN	CD Approval:	
Project No.:	950583	Construction Release:	
Bldg. Permit:	#B19-308		

Drawing Title: SYMBOLS, DESIGNATIONS, AND ABBREVIATIONS

Sheet No. M0.1

RTU EQUIPMENT SCHEDULE

TAG	MANUFACTURER	MODEL	FLOOR SERVING	MIN OSA CFM	BLOWER PERFORMANCE CFM	BLOWER PERFORMANCE ESP (IN W.C.)	COOLING EER	COOLING CAPACITY (MBH) TOTAL	COOLING CAPACITY (MBH) SENSIBLE	SUPPLY AIR DB °F	SUPPLY AIR WB °F	OUTSIDE AIR DB °F	OUTSIDE AIR WB °F	MIXED AIR DB °F	MIXED AIR WB °F	HEATING EFF.	HEATING CAPACITY (MBH)	HEATING SUPPLY AIR DB °F	HEATING ENTERING AIR WB °F	ELECTRICAL V	MCA	PH	HZ	AIRFLOW DIRECTION	OPERATING WEIGHT (LBS)	NOTES
RTU-1	YORK	ZYG12D4C3AB1A111A2	3	650	3,350	2.0	11.5	120	82	55	55	106	71	80	67	80%	144	99.8	60	460	30.7	3	60	DOWNSHOT	1,680	1,3,4, 5,7,10
RTU-2	YORK	ZJ300N30R4C1ACD1A1	2	2300	9,500	2.5	10.6	282	211	55	55	106	71	80	67	80%	240	83.4	60	460	75.4	3	60	SIDESHOT	3,975	1,3,4, 5,7,8
RTU-3	YORK	ZJ300N30R4C1ACD1A1	2	2400	9,750	2.5	10.6	283	214	55	55	106	71	80	67	80%	240	82.8	60	460	75.4	3	60	SIDESHOT	3,975	1,3,4, 5,7,8
RTU-4	YORK	ZYG12D4C3AB1A111A2	2	650	3,350	2.0	11.5	118	82	55	55	106	71	80	67	80%	145	99.8	60	460	30.7	3	60	SIDESHOT	1,680	1,3,4, 5,7,10
RTU-5	YORK	ZT240N30R4C1ACD1A1	1	855	8,700	2.0	10.6	240	190	55	55	106	71	80	67	80%	240	85.5	60	460	67.0	3	60	SIDESHOT	4,045	1,2,3,4, 5,7,8
RTU-6	YORK	ZJ300N30R4C1ACD1A1	1	760	9,550	2.5	10.6	282	212	55	55	106	71	80	67	80%	240	83.3	60	460	75.4	3	60	SIDESHOT	3,975	1,2,3, 5,4,7,8
RTU-7	YORK	ZT240N30P4C1ACD1A1	3	2100	8,900	2.0	10.6	240	192	55	55	106	71	80	67	80%	240	85.0	60	460	67.0	3	60	DOWNSHOT	4,045	1,3,4, 5,7,8
RTU-8	YORK	ZT240N30R4C1ACD1A1	3	2100	8,500	2.0	10.6	240	187	55	55	106	71	80	67	80%	240	86.1	60	460	67.0	3	60	DOWNSHOT	4,045	1,3,4, 5,6,7,8
RTU-9	YORK	ZT180N30R4C1ACD1A1	3	1000	5,950	2.0	12	171	128	55	55	106	71	80	67	80%	240	97.3	60	460	44.7	3	60	DOWNSHOT	3,775	1,3,4, 5,6,7,9
RTU-10	YORK	ZJ300N30R4C1ACD1A1	3	2300	9,475	2.3	10.6	282	211	55	55	106	71	80	67	80%	240	83.5	60	460	75.4	3	60	DOWNSHOT	3,975	1,3,4, 5,7,8
RTU-11	YORK	ZJ300N30R4C1ACD1A1	3	2300	9,475	2.5	10.6	282	211	55	55	106	71	80	67	80%	240	83.5	60	460	75.4	3	60	DOWNSHOT	3,975	1,3,4, 5,7,8
RTU-12	YORK	ZT240N30R4C1ACD1A1	2	2100	8,900	2.0	10.6	240	192	55	55	106	71	80	67	80%	240	85.0	60	460	67.0	3	60	SIDESHOT	4,045	1,3,4, 5,6,7,8
RTU-13	YORK	ZJ300N30P4C1ACD1A1	2	2300	9,500	2.5	10.6	282	211	55	55	106	71	80	67	80%	240	83.4	60	460	75.4	3	60	SIDESHOT	3,975	1,3,4, 5,7,8
RTU-14	YORK	ZJ300N30R4C1ACD1A1	2	2300	9,550	2.5	10.6	282	212	55	55	106	71	80	67	80%	240	83.3	60	460	75.4	3	60	SIDESHOT	3,975	1,3,4, 5,7,8
RTU-15	YORK	ZJ150N18R4A1ACD1A1	1	800	4,225	2.0	12	151	104	55	55	106	71	80	67	80%	144	91.6	60	460	42.6	3	60	SIDESHOT	2,035	1,3,4,5, 5,7,11
RTU-16	YORK	ZJ150N18R4A1ACD1A1	1	620	5,500	2.0	12	163	125	55	55	106	71	80	67	80%	145	84.2	60	460	42.6	3	60	SIDESHOT	2,035	1,2,3,4, 5,6,7,10
RTU-17	YORK	ZT180N30R4C1ACD1A1	1	390	6,200	2.0	12	172	131	55	55	106	71	80	67	80%	240	95.8	60	460	44.7	3	60	SIDESHOT	3,775	1,2,3,4, 5,6,7,9

NOTES:

1	NATURAL GAS HEATING LOW-HEAT.
2	FURNISH WITH WITH DCV CONTROLS.
3	FURNISH WITH FACTORY FLUE DEFLECTOR.
4	FURNISH WITH VFD WITH INTELLESPEED CONTROLLER.
5	FURNISH WITH HIGH STATIC BELT DRIVE MOTOR.
6	FURNISH WITH HIGH SPEED DRIVE KIT.
7	PROVIDE VIBRATION ISOLATION ROOF CURB. ROOF CURB SHALL MEET SEISMIC REQUIREMENTS PER CBC.
8	FURNISH WITH PROVENT PECCSLM243046MS MODULATING COMBINATION ECONOMIZER/POWER EXHAUST.
9	FURNISH WITH PROVENT PECCSLM182146MS MODULATING COMBINATION ECONOMIZER/POWER EXHAUST.
10	FURNISH WITH PROVENT PEDCPRDLCDB46MS MODULATING COMBINATION ECONOMIZER/POWER EXHAUST.
11	FURNISH WITH PROVENT PEHCPRDLCDB46MS MODULATING COMBINATION ECONOMIZER/POWER EXHAUST.

BYPASS DAMPER EQUIPMENT SCHEDULE

TAG	MANUFACTURER	MODEL	LOCATION	SERVING FLOOR	SERVING UNIT	DIMENSIONS (IN) D	W	H	▲P (IN W.C.)	CFM	WEIGHT (LBS)	NOTES
BP-1	TAMCO	1000	3RD FLOOR PLENUM	3	RTU-1	7	29	10	0.07	3,350	33	1
BP-2	TAMCO	1000	ROOFTOP	2	RTU-2	7	40	16	0.09	9,500	48	1
BP-3	TAMCO	1000	ROOFTOP	2	RTU-3	7	40	16	0.10	9,750	48	1
BP-4	TAMCO	1000	ROOFTOP	2	RTU-4	7	29	10	0.07	3,350	33	1
BP-5	TAMCO	1000	ROOFTOP	1	RTU-5	7	32	16	0.10	8,700	41	1
BP-6	TAMCO	1000	ROOFTOP	1	RTU-6	7	40	16	0.09	9,550	48	1
BP-7	TAMCO	1000	3RD FLOOR PLENUM	3	RTU-7	7	32	16	0.10	8,900	41	1
BP-8	TAMCO	1000	3RD FLOOR PLENUM	3	RTU-8	7	32	16	0.09	8,500	41	1
BP-9	TAMCO	1000	3RD FLOOR PLENUM	3	RTU-9	7	29	16	0.10	5,950	33	1
BP-10	TAMCO	1000	3RD FLOOR PLENUM	3	RTU-10	7	40	16	0.09	9,475	48	1
BP-11	TAMCO	1000	3RD FLOOR PLENUM	3	RTU-11	7	40	16	0.09	9,475	48	1
BP-12	TAMCO	1000	ROOFTOP	2	RTU-12	7	32	16	0.10	8,900	41	1
BP-13	TAMCO	1000	ROOFTOP	2	RTU-13	7	40	16	0.09	9,500	48	1
BP-14	TAMCO	1000	ROOFTOP	2	RTU-14	7	40	16	0.09	9,550	48	1
BP-15	TAMCO	1000	ROOFTOP	1	RTU-15	7	29	10	0.12	4,225	33	1
BP-16	TAMCO	1000	ROOFTOP	1	RTU-16	7	29	14	0.10	5,500	33	1
BP-17	TAMCO	1000	ROOFTOP	1	RTU-17	7	32	16	0.05	6,200	41	1

NOTES:

1	PROVIDE WITH BELIMO TBF120 (OR APPROVED EQUAL) DAMPER ACTUATOR, 24VAC.

VAV TERMINAL SCHEDULE

TAG	MANUFACTURER	MODEL	AREA SERVED	DUCT DIAMETER INLET (IN)	MAX AIRFLOW (CFM)	MIN AIRFLOW (CFM)	NOTES
VAV-118	TITUS	DESV	RM. 118	10	1,050	210	1,2
VAV-123	TITUS	DESV	RM. 138, 139, & 140	12	1,700	340	1,2
VAV-205	TITUS	DESV	OFFICES 253, 254, 255, 256, & 257	12	1,500	300	1,2
VAV-212	TITUS	DESV	RM. 367	16	3,000	600	1,2
VAV-232	TITUS	DESV	TA OFFICE RM. 282	6	370	74	1,2
VAV-0321C	TITUS	DESV	RM. 0321C	12	1,500	300	1,2
VAV-0360	TITUS	DESV	RM. 0360	6	200	40	1,2
VAV-0366	TITUS	DESV	RM. 0366	6	200	40	1,2
VAV-3M	TITUS	DESV	3RD FLOOR MEN'S RESTROOM	8	600	--	1,2,3
VAV-3W	TITUS	DESV	3RD FLOOR WOMEN'S RESTROOM	8	600	--	1,2,3

NOTES:

1	CONTRACTOR SHALL ORDER TERMINAL UNIT WITH FACTORY MOUNTED 24v CONTROL BOX TRANSFORMER.
2	CONTRACTOR SHALL ORDER TERMINAL UNIT WITH FACTORY MOUNTED DISCONNECT SWITCH.
3	VAV BOX SHALL SUPPLY A CONSTANT VOLUME OF AIR.

AIR TERMINAL SCHEDULE

TAG	MANUFACTURER	MODEL	FACE SIZE	NECK SIZE	CFM	NOTES
S-1	PRICE	SPD	24" X 24"	6"Ø	0-175	
				8"Ø	176-279	
				10"Ø	280-409	
				12"Ø	410-549	
				14"Ø	550-694	
				15"Ø	695-736	
R-1	PRICE	PDDR	24" X 24"	22"X22"	0-2,000	

NOTES:

1	--

REPLACEMENT THERMOSTAT SCHEDULE

TAG	FLOOR	REQUIREMENTS TEMP	REQUIREMENTS CO2	ALC T-STAT MODEL NO.
101	1	•		ZS2-ALC
102	1	•		ZS2-ALC
103	1	•	•	ZS2-C-ALC
104	1	•	•	ZS2-C-ALC
105	1	•	•	ZS2-C-ALC
106	1	•	•	ZS2-C-ALC
107	1	•		ZS2-ALC
108	1	•		ZS2-ALC
109	1	•		ZS2-ALC
110	1	•		ZS2-ALC
111	1	•		ZS2-ALC
112	1	•	•	ZS2-C-ALC
113	1	•		ZS2-ALC
114	1	•	•	ZS2-C-ALC
115	1	•	•	ZS2-C-ALC
116	1	•	•	ZS2-C-ALC
117	1	•	•	ZS2-C-ALC
118	1	•	•	ZS2-C-ALC
119	1	•	•	ZS2-C-ALC
120	1	•	•	ZS2-C-ALC
121	1	•		ZS2-ALC
122	1	•	•	ZS2-C-ALC
123	1	•	•	ZS2-C-ALC
124	1	•	•	ZS2-C-ALC
125	1	•	•	ZS2-C-ALC
126	1	•	•	ZS2-C-ALC
201	2	•		ZS2-ALC
202	2	•		ZS2-ALC
203	2	•		ZS2-ALC
204	2	•		ZS2-ALC
205	2	•		ZS2-ALC
206	2	•		ZS2-ALC
207	2	•		ZS2-ALC
208	2	•		ZS2-ALC
209	2	•		ZS2-ALC
210	2	•		ZS2-ALC
211	2	•		ZS2-ALC
212	2	•		ZS2-ALC
213	2	•		ZS2-ALC
214	2	•		ZS2-ALC
215	2	•		ZS2-ALC
216	2	•		ZS2-ALC
217	2	•		ZS2-ALC
218	2	•		ZS2-ALC
219	2	•		ZS2-ALC
220	2	•		ZS2-ALC
221	2	•		ZS2-ALC
222	2	•		ZS2-ALC
223	2	•		ZS2-ALC
224	2	•		ZS2-ALC
225	2	•		ZS2-ALC
226	2	•		ZS2-ALC
227	2	•		ZS2-ALC
228	2	•		ZS2-ALC
229	2	•		ZS2-ALC
230	2	•		ZS2-ALC
231	2	•		ZS2-ALC
232	2	•		ZS2-ALC
233	2	•		ZS2-ALC
0301	3	•		ZS2-ALC
0302	3	•		ZS2-ALC
0303	3	•		ZS2-ALC
0304	3	•		ZS2-ALC
0305	3	•		ZS2-ALC
0306	3	•		ZS2-ALC
0307	3	•		ZS2-ALC
0308	3	•		ZS2-ALC
0309	3	•		ZS2-ALC
0310	3	•		ZS2-ALC
0311	3	•		ZS2-ALC
0312	3	•		ZS2-ALC
0313	3	•		ZS2-ALC
0314	3	•		ZS2-ALC
0315	3	•		ZS2-ALC
0316	3	•		ZS2-ALC
0317	3	•		ZS2-ALC
0318	3	•		ZS2-ALC
0319	3	•		ZS2-ALC
0320	3	•		ZS2-ALC
0321	3	•		ZS2-ALC
0322	3	•		ZS2-ALC
0323	3	•		ZS2-ALC
0324	3	•		ZS2-ALC
0325	3	•		ZS2-ALC
0326	3	•		ZS2-ALC
0327	3	•		ZS2-ALC
0328	3	•		ZS2-ALC
0329	3	•		ZS2-ALC
0321C	3	•		ZS2-ALC
0360	3	•		ZS2-ALC
0366	3	•		ZS2-ALC

NOTE:

PROVIDE INDICATED T-STAT OR APPROVED EQUAL

UNIVERSITY OF CALIFORNIA UCRIVERSIDE
CAPITAL PROGRAMS ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA. 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

Architect's Data:

Architect's Stamp:

Consultant's Stamp:

REGISTERED PROFESSIONAL ENGINEER
NICHOLAS DEAN UBRUN
No. M35378
Exp. 6-30-21
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SKYE HALL HVAC REPLACEMENT
CAAN NUMBER: P5380

Consultant's Data:

GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

UCR Project Manager: SCOTT DONNELL

Scale: NONE	SD Approval: N/A
Drawn By: A. E. PEREZ	DD Approval: NDU
Checked By: N. D. UBRUN	CD Approval:
Project No.: 950583	Construction Release:
Bldg. Permit: #B19-308	

Drawing Title: MECHANICAL EQUIPMENT SCHEDULES

Sheet No. M0.2

UC RIVERSIDE UNIVERSITY OF CALIFORNIA

CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

Architect's Data:

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REGISTERED PROFESSIONAL ENGINEER
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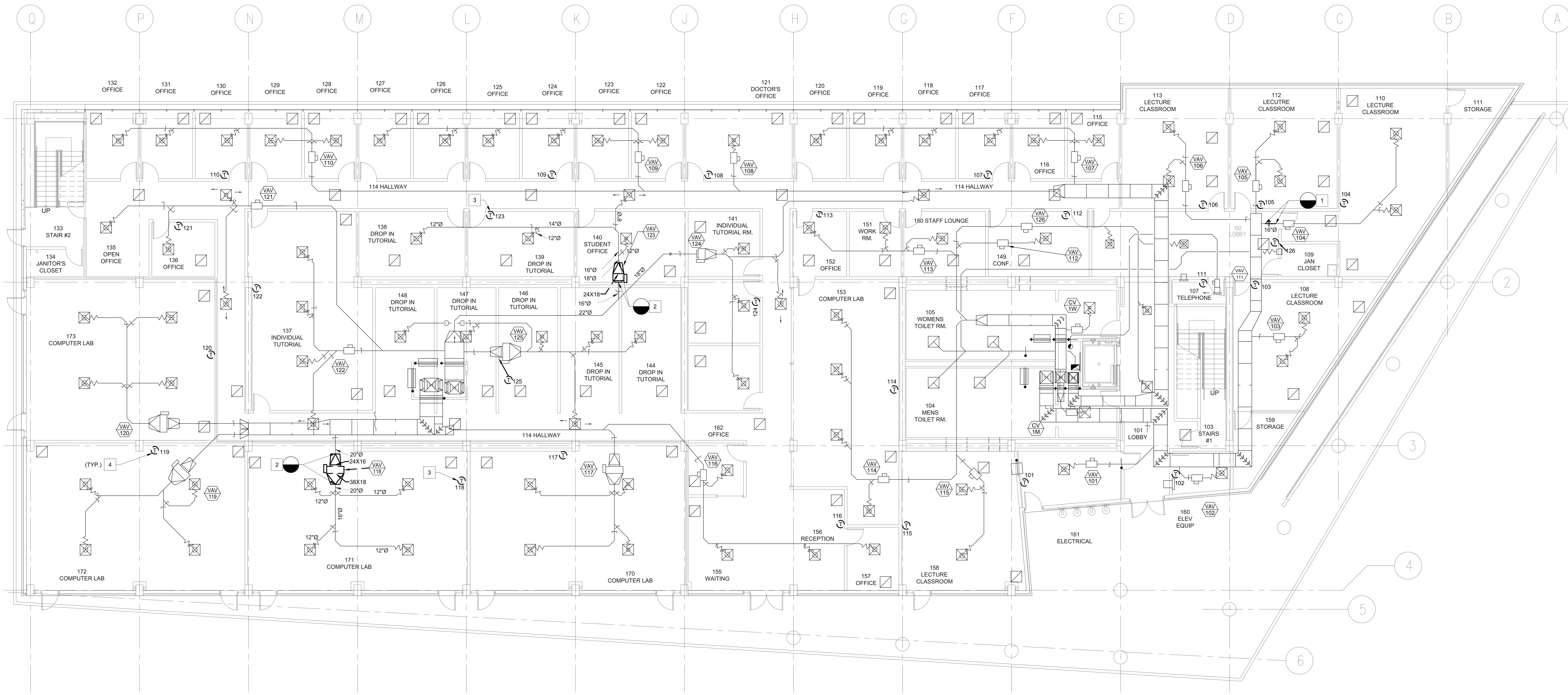

FIRST FLOOR DEMOLITION HVAC PLAN

0 4' 8' 16'

SCALE: 1/8" = 1'-0"

01

GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT SHOW ALL PIPES, DUCTS, FITTINGS, EQUIPMENT, AND OBSTACLES. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES BEFORE BEGINNING WORK. IF THERE ARE ANY DISCREPANCIES, THE CONTRACTOR SHALL NOTIFY THE UNIVERSITY'S REPRESENTATIVE.
2. CONTRACTOR SHALL COORDINATE ANY UTILITY SHUTDOWN AT LEAST THIRTY (30) DAYS IN ADVANCE WITH THE UNIVERSITY'S REPRESENTATIVE.
3. ALL VVT BOXES MARKED FOR DEMOLITION HAVE BEEN FIELD VERIFIED AS BEING DAMAGED OR UNABLE TO PROVIDE ADEQUATE CFM.
4. CONTRACTOR SHALL MEASURE THE CFM OF EACH SUPPLY DIFFUSER NOT MARKED FOR DEMOLITION AS A REFERENCE FOR RE-BALANCING DURING RECONSTRUCTION.
5. REMOVE T-BAR GRID AS NECESSARY TO FACILITATE DEMOLITION. SALVAGE CEILING TILES IF POSSIBLE.
6. CONTRACTOR SHALL REPLACE ANY DUCTWORK OR INSULATION DAMAGED DURING DEMOLITION AT NO ADDITIONAL CONST TO THE UNIVERSITY.
7. ALL REMAINING VVT BOXES NOT MARKED FOR DEMOLITION SHALL HAVE ITS ACTUATOR CONTROLLER AND T-STAT REMOVED TO FACILITATE REPLACEMENT DURING RECONSTRUCTION.

DEMOLITION SHEET NOTES:

1 DEMOLISH DAMPER AND ASSOCIATED DUCTING AS NEEDED TO FACILITATE RECONSTRUCTION. PROTECT REMAINING DUCTING IN PLACE.

2 DEMOLISH VAV BOX AND ASSOCIATED DUCTING AS NEEDED TO FACILITATE RECONSTRUCTION. PROTECT REMAINING DUCTING IN PLACE.

3 DEMOLISH THERMOSTAT, PATCH AND PAINT WALL TO MATCH EXISTING FINISH.

4 DEMOLISH THERMOSTAT AND ASSOCIATED VAV BOX ACTUATOR. PROTECT REMAINING VVT BOX IN PLACE.

APPROVED
UC RIVERSIDE
Office of Planning, Design & Construction Signed CBO: Gilbert Cervantes
Building, Safety and Compliance Division
CAMPUS BUILDING PERMIT

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Consultant's Data:

GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

UCR Project Manager: SCOTT DONNELL

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Drawn By:	A. E. PEREZ	DD Approval:	NDU
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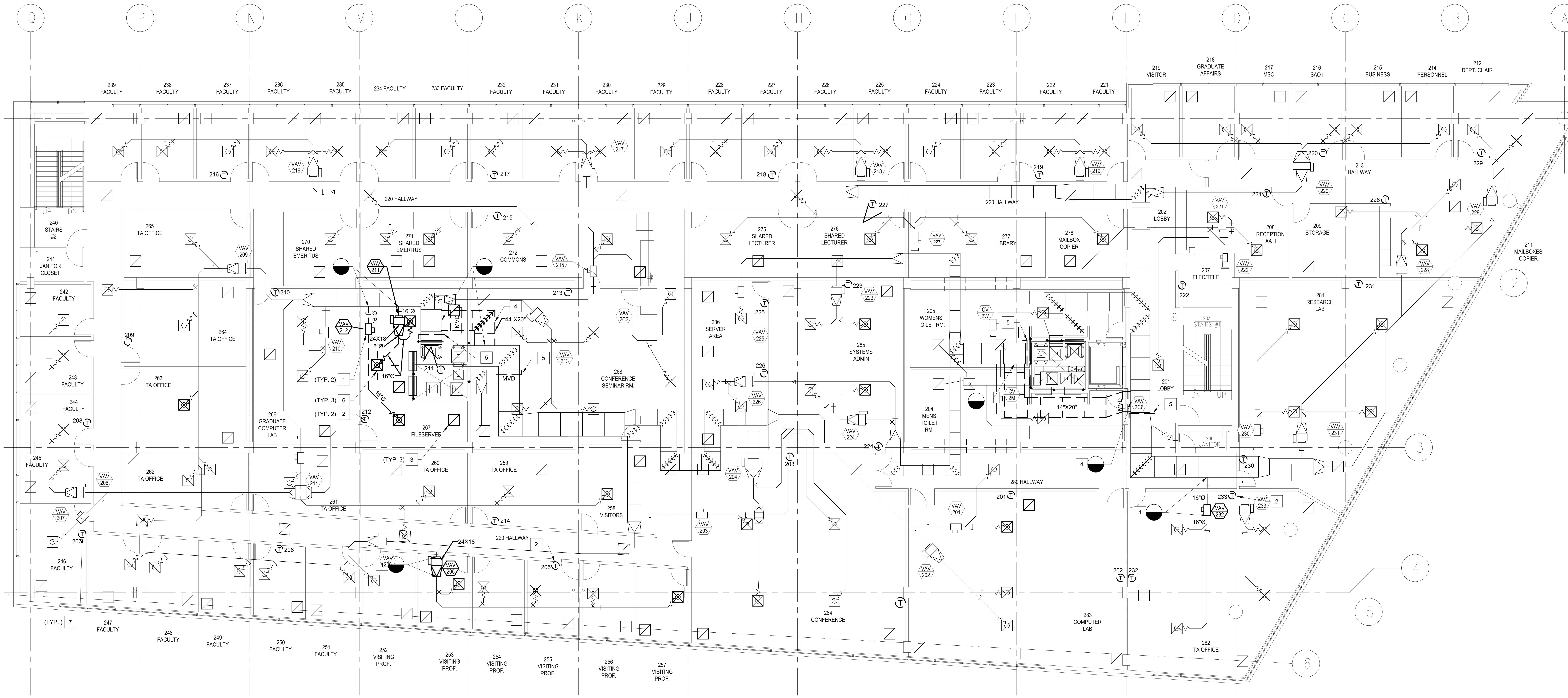
Drawing Title: 1ST FLOOR DEMOLITION HVAC PLAN

Sheet No. M1.1

Reviewed for Code Compliance
03/10/20

Building Permit B19-308



SECOND FLOOR DEMOLITION HVAC PLAN

SCALE: 1/8" = 1'-0" | 01

0 4' 8' 16'

GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT SHOW ALL PIPES, DUCTS, FITTINGS, EQUIPMENT, AND OBSTACLES. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES BEFORE BEGINNING WORK. IF THERE ARE ANY DISCREPANCIES, THE CONTRACTOR SHALL NOTIFY THE UNIVERSITY'S REPRESENTATIVE.
2. CONTRACTOR SHALL COORDINATE ANY UTILITY SHUTDOWN AT LEAST THIRTY (30) DAYS IN ADVANCE WITH THE UNIVERSITY'S REPRESENTATIVE.
3. ALL VAV BOXES MARKED FOR DEMOLITION HAVE BEEN FIELD VERIFIED AS BEING DAMAGED OR UNABLE TO PROVIDE ADEQUATE CFM.
4. CONTRACTOR SHALL MEASURE THE CFM OF EACH SUPPLY DIFFUSER NOT MARKED FOR DEMOLITION AS A REFERENCE FOR RE-BALANCING DURING RECONSTRUCTION.
5. REMOVE T-BAR GRID AS NECESSARY TO FACILITATE DEMOLITION. SALVAGE CEILING TILES IF POSSIBLE.
6. CONTRACTOR SHALL REPLACE ANY DUCTWORK OR INSULATION DAMAGED DURING DEMOLITION AT NO ADDITIONAL CONST TO THE UNIVERSITY.
7. ALL REMAINING VVT BOXES NOT MARKED FOR DEMOLITION SHALL HAVE ITS ACTUATOR CONTROLLER AND T-STAT REMOVED TO FACILITATE REPLACEMENT DURING RECONSTRUCTION.

DEMOLITION SHEET NOTES:

1 DEMOLISH VAV BOX AND ASSOCIATED DUCTING AS NEEDED TO FACILITATE RECONSTRUCTION. PROTECT REMAINING DUCTING IN PLACE.

2 DEMOLISH THERMOSTAT. PATCH AND PAINT WALL AS NEEDED TO MATCH EXISTING FINISH.

3 DEMOLISH RETURN GRILLE.

4 DEMOLISH SUPPLY DUCTWORK UP TO POINT OF DISCONNECT. PATCH AND CAP TO SEAL PERMANENTLY.

5 DEMOLISH MANUAL VOLUME DAMPER. CAP, RE-INSULATE, AND PATCH ASSOCIATED DUCT TO SEAL PERMANENTLY.

6 DEMOLISH SUPPLY DIFFUSER.

7 DEMOLISH THERMOSTAT AND ASSOCIATED VAV BOX ACTUATOR. PROTECT REMAINING VVT BOX IN PLACE.

UC RIVERSIDE UNIVERSITY OF CALIFORNIA

CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA. 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

Architect's Data:

Architect's Stamp:

Consultant's Stamp:

REGISTERED PROFESSIONAL ENGINEER No. M35378 Exp. 6-30-21 MECHANICAL STATE OF CALIFORNIA

FILE NO.: 119-09-08

APPROVED
UC RIVERSIDE
Office of Planning, Design & Construction Signed CBO: Gilbert Cervantes
Building, Safety and Compliance Division
CAMPUS BUILDING PERMIT

REVISIONS

REV #	DESCRIPTION	DATE
1	50% DESIGN	11/01/19
2	90% DESIGN	11/27/19
3	100% DESIGN	02/25/20

SKYE HALL HVAC
REPLACEMENT
CAAN NUMBER: P5380

Consultant's Data:

GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

UCR Project Manager: SCOTT DONNELL

Scale:	AS NOTED	SD Approval:	N/A
Drawn By:	A. E. PEREZ	DD Approval:	NDU
Checked By:	N. D. UBRUN	CD Approval:	
Project No.:	950583	Construction Release:	
Bldg. Permit:	#B19-308		

Drawing Title: 2ND FLOOR DEMOLITION HVAC PLAN

Sheet No. M1.2

Reviewed for Code Compliance 03/10/20

Building Permit B19-308

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CAPITAL PROGRAMS
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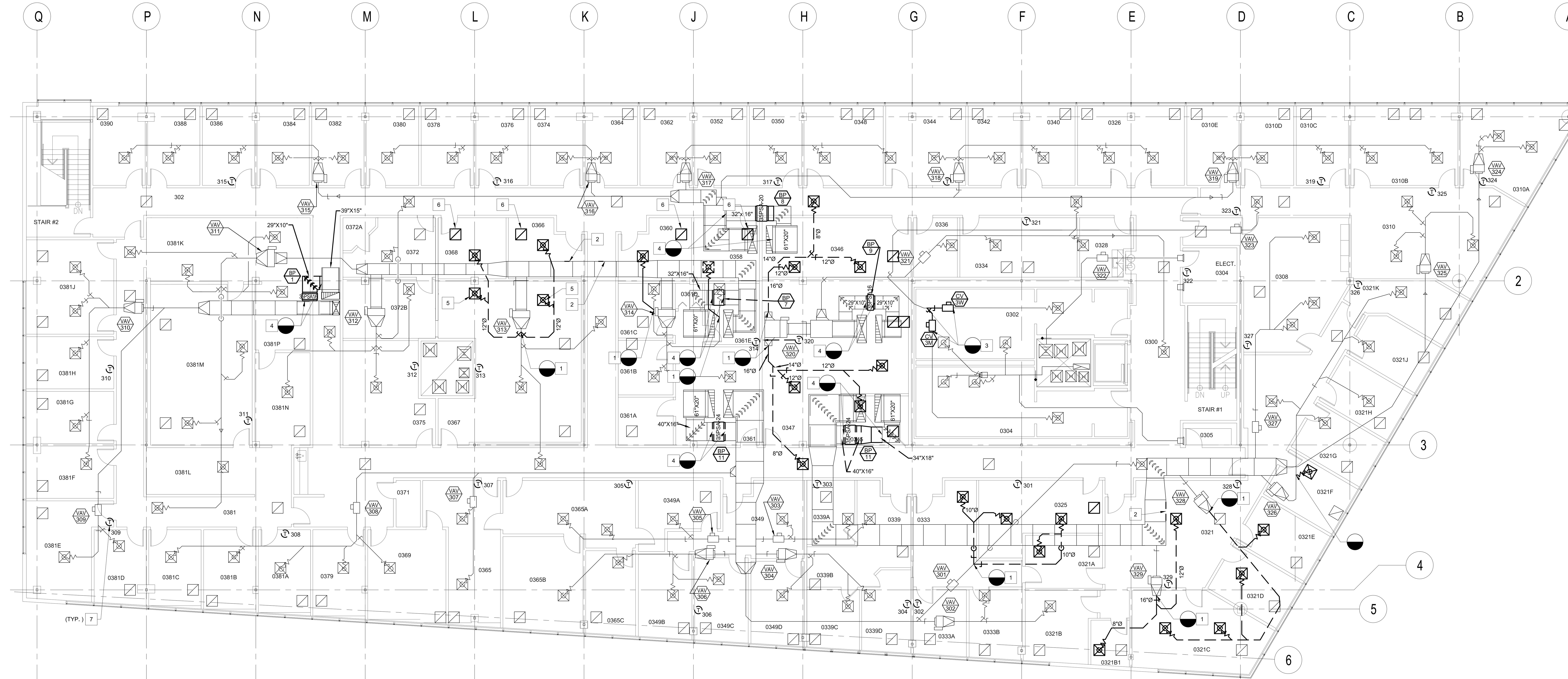

THIRD FLOOR DEMOLITION HVAC PLAN | SCALE: 1/8" = 1'-0" | 01

GENERAL NOTES:

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3. ALL VAV BOXES MARKED FOR DEMOLITION HAVE BEEN FIELD VERIFIED AS BEING DAMAGED OR UNABLE TO PROVIDE ADEQUATE CFM.
4. CONTRACTOR SHALL MEASURE THE CFM OF EACH SUPPLY DIFFUSER NOT MARKED FOR DEMOLITION AS A REFERENCE FOR RE-BALANCING DURING RECONSTRUCTION.
5. REMOVE T-BAR GRID AS NECESSARY TO FACILITATE DEMOLITION. SALVAGE CEILING TILES IF POSSIBLE.
6. CONTRACTOR SHALL REPLACE ANY DUCTWORK OR INSULATION DAMAGED DURING DEMOLITION AT NO ADDITIONAL CONST TO THE UNIVERSITY.
7. ALL REMAINING VVT BOXES NOT MARKED FOR DEMOLITION SHALL HAVE ITS ACTUATOR CONTROLLER AND T-STAT REMOVED TO FACILITATE REPLACEMENT DURING RECONSTRUCTION.

DEMOLITION SHEET NOTES:

1 DEMOLISH DUCTWORK UP TO POINT OF DISCONNECTION.
2 DEMOLISH PORTION OF DUCT AS NECESSARY TO FACILITATE RECONSTRUCTION.
3 DEMOLISH CONSTANT VOLUME BOX, GYP BOARD CEILING, AND ASSOCIATED DUCTWORK AS NEEDED TO FACILITATE RECONSTRUCTION. PROTECT REMAINING DUCTING IN PLACE.
4 DEMOLISH BYPASS DAMPER AND ASSOCIATED DUCTWORK UP TO POINT OF DISCONNECTION. PROTECT REMAINING DUCTWORK IN PLACE.
5 SALVAGE SUPPLY DIFFUSER.
6 DEMOLISH RETURN GRILLE.
7 DEMOLISH THERMOSTAT AND ASSOCIATED VAV BOX ACTUATOR. PROTECT REMAINING VVT BOX IN PLACE.

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SKYE HALL HVAC
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UCR Project Manager: SCOTT DONNELL

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Checked By: N. D. UBRUN	CD Approval:
Project No.: 950583	Construction Release:
Bldg. Permit: #B19-308	

Drawing Title: 3RD FLOOR DEMOLITION HVAC PLAN

Sheet No. M1.3

Reviewed for Code Compliance
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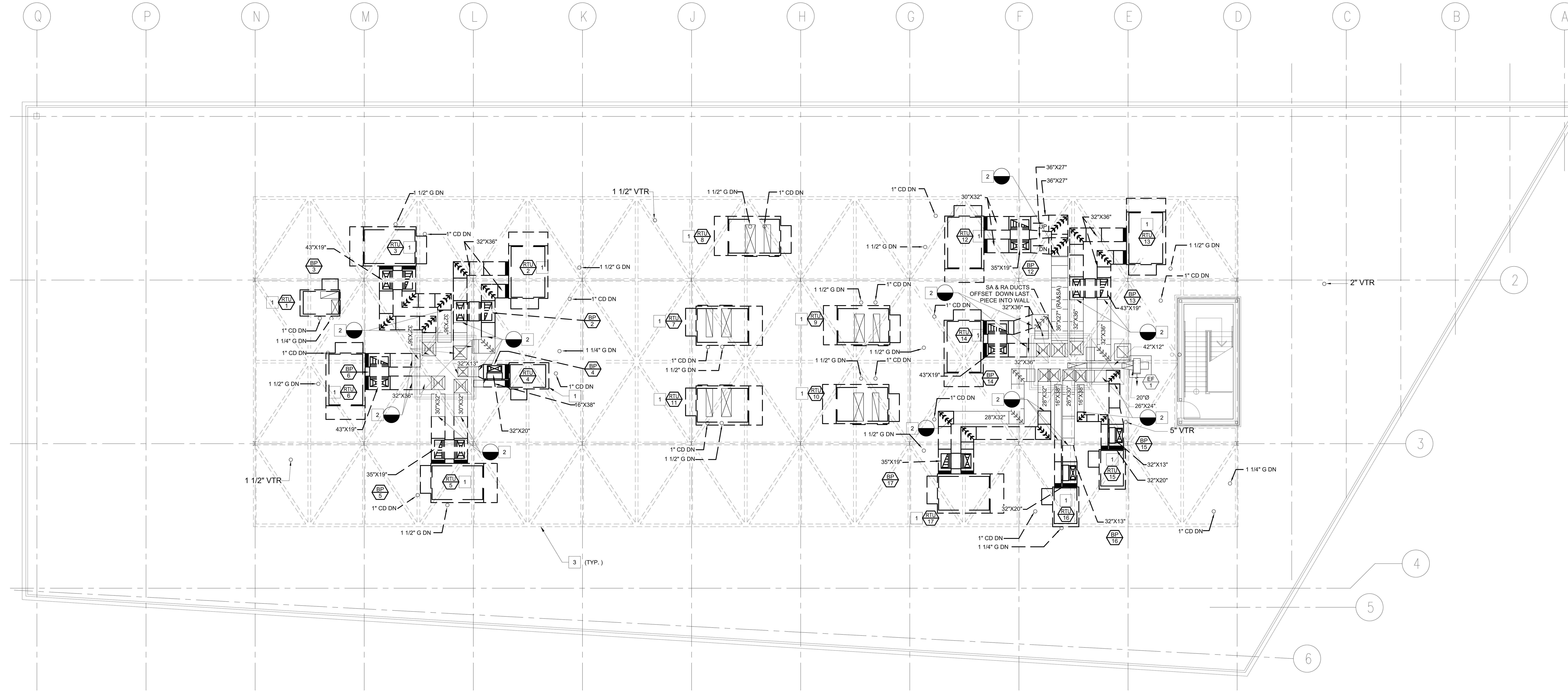

ROOF LEVEL DEMOLITION HVAC PLAN

SCALE: 1/8" = 1'-0" | 01

0 4' 8' 16'

GENERAL NOTES:

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2. CONTRACTOR SHALL PROVIDE ALL TRANSITION FITTINGS REQUIRED TO FACILITATE CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE ANY UTILITY SHUT DOWN AT LEAST THIRTY (30) DAYS IN ADVANCE WITH THE UNIVERSITY'S REPRESENTATIVE.

DEMOLITION SHEET NOTES:

1 DEMOLISH RTU, CONDENSATE/GAS PIPING, AND ASSOCIATED ROOF CURB.

2 DEMOLISH BYPASS DAMPER AND ASSOCIATED DUCTWORK UP TO THE POINT NECESSARY TO FACILITATE RECONSTRUCTION. PROTECT REMAINING DUCTWORK IN PLACE.

3 REMOVE PROTECTIVE SCREEN AS NECESSARY TO FACILITATE RECONSTRUCTION.

UNIVERSITY OF CALIFORNIA
UC RIVERSIDE
CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

Architect's Data:

Architect's Stamp: | Consultant's Stamp:

FILE NO.: 119-09-08

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REVISIONS

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SKYE HALL HVAC REPLACEMENT
CAAN NUMBER: P5380

Consultant's Data:
GE GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

UCR Project Manager: SCOTT DONNELL

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Checked By:	N. D. UBRUN	CD Approval:	
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Drawing Title: ROOF LEVEL DEMOLITION HVAC PLAN

Sheet No. M1.4

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UNIVERSITY OF CALIFORNIA
CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA 92521
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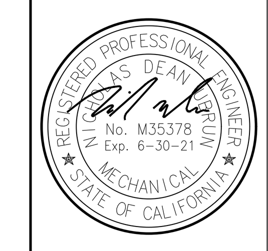

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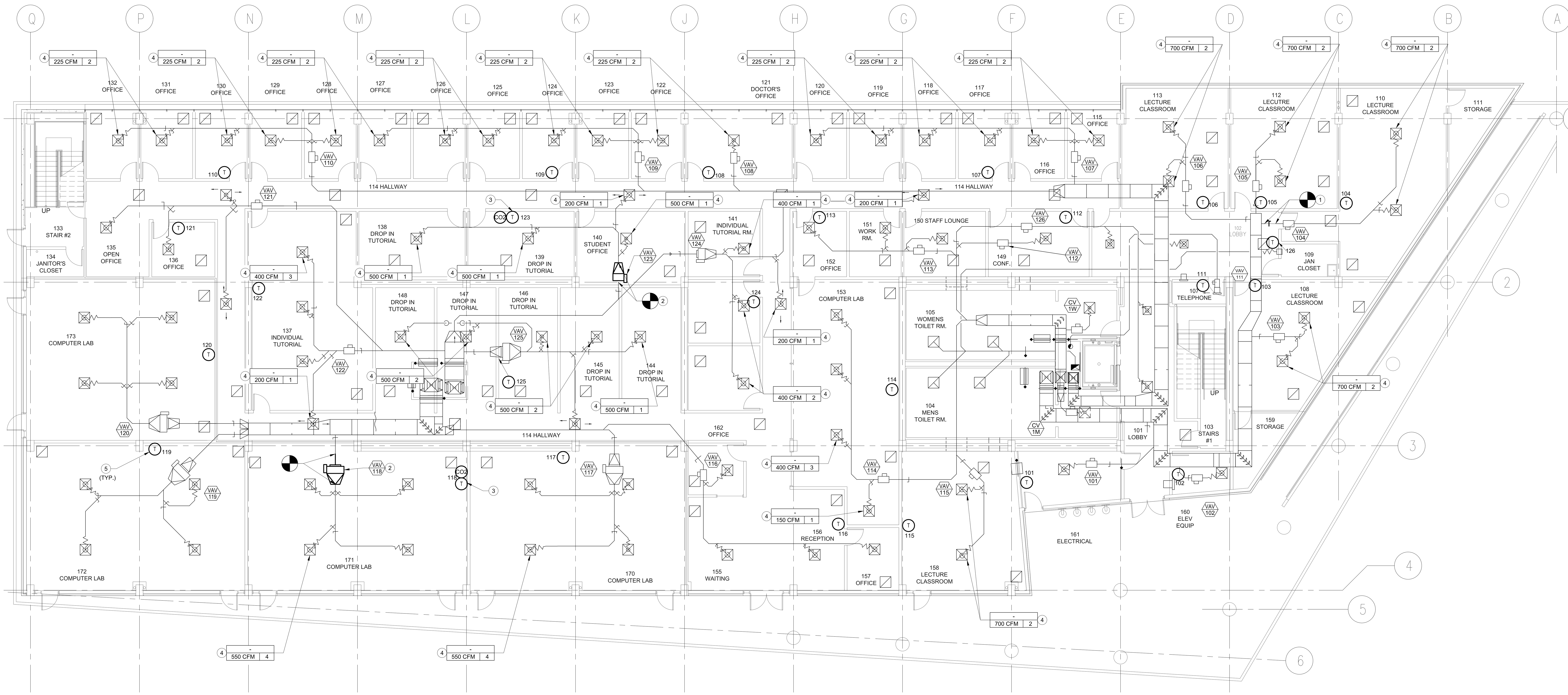

FIRST FLOOR RECONSTRUCTION HVAC PLAN

SCALE: 1/8" = 1'-0" | 01

0 4' 8' 16'

GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT SHOW ALL PIPES, DUCTS, FITTINGS, EQUIPMENT, AND OBSTACLES. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES BEFORE BEGINNING WORK. IF THERE ARE ANY DISCREPANCIES, THE CONTRACTOR SHALL NOTIFY THE UNIVERSITY'S REPRESENTATIVE.
2. CONTRACTOR SHALL PROVIDE ALL DUCTING NEEDED TO FACILITATE RECONSTRUCTION.
3. CONTRACTOR SHALL PROVIDE ALL TRANSITION FITTINGS NEEDED TO FACILITATE RECONSTRUCTION.
4. REFER TO DETAIL 01/M5.0 FOR GENERAL DUCTWORK INSTALLATION REQUIREMENTS.
5. REFER TO DETAIL 02/M5.0 FOR NEW AND SALVAGED SUPPLY DIFFUSER INSTALLATION REQUIREMENTS.
6. REFER TO DETAIL 03/M5.0 FOR TYPICAL DUCT HANGER INSTALLATION REQUIREMENTS.
7. REFER TO DETAIL 05/M5.1 FOR ALL FIRE RATED WALL PENETRATIONS.
8. CONTRACTOR SHALL CLEAN ALL DIFFUSERS AND GRILLES AFTER CONSTRUCTION IS COMPLETE.
9. CONTRACTOR SHALL VERIFY THE FLOW OF ALL DIFFUSERS NOT TOUCHED OR BALANCED DURING RECONSTRUCTION AND RE-BALANCE AS NEEDED TO MATCH THE CFM MEASURED DURING DEMOLITION.
10. CONTRACTOR SHALL ENSURE THAT EVERY MANUAL VOLUME DAMPER UPSTREAM OF A VAV BOX IS IN THE FULL OPEN POSITION BEFORE BEGINNING TESTING ADJUSTING AND BALANCING.
11. CONTRACTOR SHALL REINSTALL ANY PORTION OF T-GRID REMOVED DURING DEMOLITION, AND REPLACE ANY DAMAGED/MISCOLORED CEILING TILES.
12. CONTRACTOR SHALL PATCH AND PAINT ANY SECTION OF GYP BOARD CEILING REMOVED DURING DEMOLITION TO MATCH THE EXISTING FINISH.
13. INSTALL THERMOSTAT PER DETAIL 05/M5.0.

RECONSTRUCTION SHEET NOTES:

1 PROVIDE MANUAL VOLUME DAMPER.
2 PROVIDE VAV BOX PER DETAIL 04/M5.0
3 PROVIDE ALC ZS2_CS THERMOSTAT FOR NEW VAV BOX.
4 RE-BALANCE EXISTING SUPPLY DIFFUSERS TO THE CFM INDICATED.
5 PROVIDE ALC ZS2_CS THERMOSTAT AND ALC ZN341A ZONE CONTROLLER WITH BELIMO LMB24-3-T ACTUATOR (OR APPROVED EQUAL) FOR ALL SALVAGED VVT BOXES. SEE SHEET M0.2 FOR ADDITIONAL THERMOSTAT REQUIREMENTS.

REVISIONS

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1	50% DESIGN	11/01/19
2	90% DESIGN	11/27/19
3	100% DESIGN	02/25/20

SKYE HALL HVAC REPLACEMENT
CAAN NUMBER: P5380

Consultant's Data:
GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
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UCR Project Manager: SCOTT DONNELL

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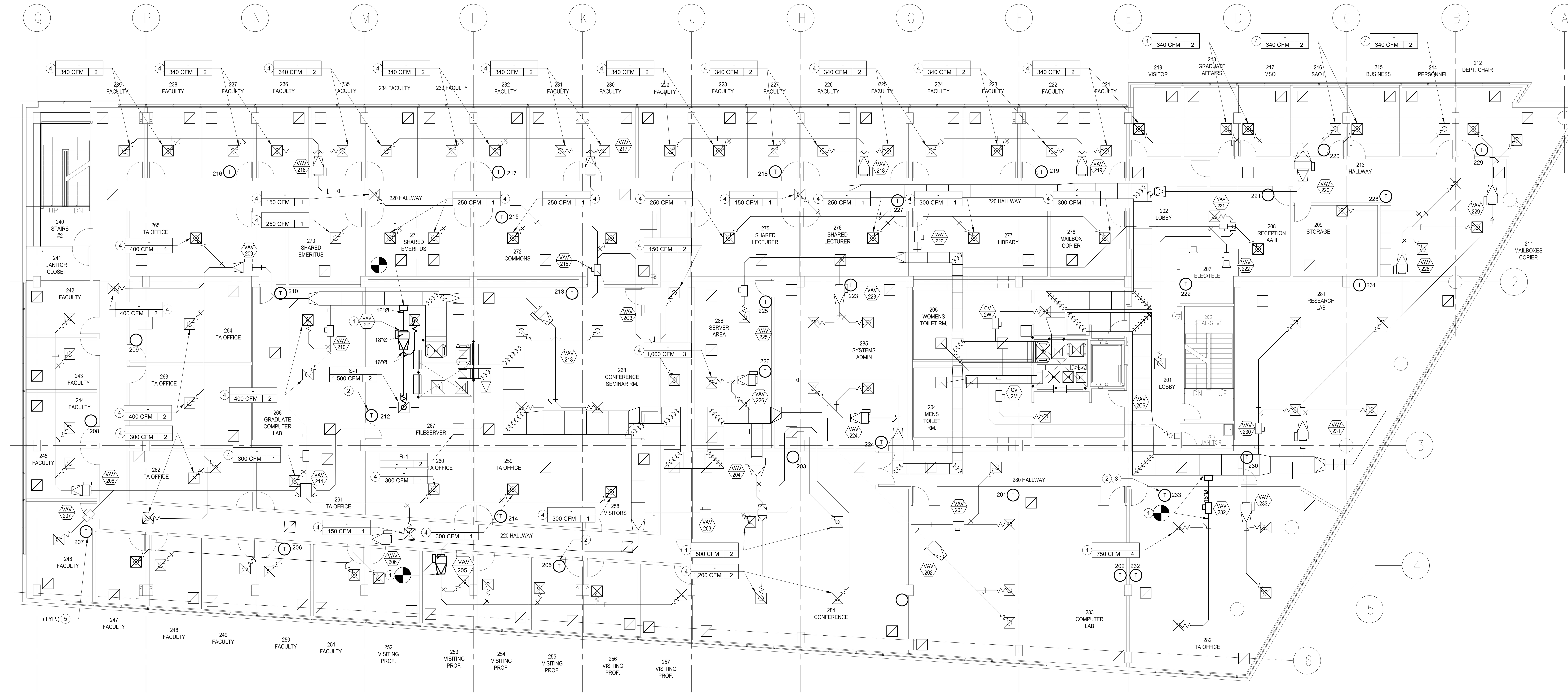
Checked By: N. D. UBRUN	CD Approval:
Project No.: 950583	Construction Release:
Bldg. Permit: #B19-308	

Drawing Title: 1ST FLOOR RECONSTRUCTION HVAC PLAN

Sheet No. M2.1

Building Permit B19-308



SECOND FLOOR RECONSTRUCTION HVAC PLAN — SCALE: 1/8" = 1'-0" — 01

GENERAL NOTES:

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2. CONTRACTOR SHALL PROVIDE ALL DUCTING NEEDED TO FACILITATE RECONSTRUCTION.
3. CONTRACTOR SHALL PROVIDE ALL TRANSITION FITTINGS NEEDED TO FACILITATE RECONSTRUCTION.
4. REFER TO DETAIL 01/M5.0 FOR GENERAL DUCTWORK INSTALLATION REQUIREMENTS.
5. REFER TO DETAIL 02/M5.0 FOR NEW AND SALVAGED SUPPLY DIFFUSER INSTALLATION REQUIREMENTS.
6. REFER TO DETAIL 03/M5.0 FOR TYPICAL DUCT HANGER INSTALLATION REQUIREMENTS.
7. REFER TO DETAIL 05/M5.1 FOR ALL FIRE RATED WALL PENETRATIONS.
8. CONTRACTOR SHALL CLEAN ALL DIFFUSERS AND GRILLES AFTER CONSTRUCTION IS COMPLETE.
9. CONTRACTOR SHALL VERIFY THE FLOW OF ALL DIFFUSERS NOT TOUCHED OR BALANCED DURING RECONSTRUCTION AND RE-BALANCE AS NEEDED TO MATCH THE CFM MEASURED DURING DEMOLITION.
10. CONTRACTOR SHALL ENSURE THAT EVERY MANUAL VOLUME DAMPER UPSTREAM OF A VAV BOX IS IN THE FULL OPEN POSITION BEFORE BEGINNING TESTING ADJUSTING AND BALANCING.
11. CONTRACTOR SHALL REINSTALL ANY PORTION OF T-GRID REMOVED DURING DEMOLITION, AND REPLACE ANY DAMAGED/MISCOLORED CEILING TILES.
12. CONTRACTOR SHALL PATCH AND PAINT ANY SECTION OF GYP BOARD CEILING REMOVED DURING DEMOLITION TO MATCH THE EXISTING FINISH.
13. INSTALL THERMOSTAT PER DETAIL 05/M5.0.

RECONSTRUCTION SHEET NOTES:

1. PROVIDE VAV BOX PER DETAIL 04/M5.0. RE-BALANCE SYSTEM TO THE EXISTING PEAK CFM VALUES SHOWN.
2. PROVIDE T-24 COMPLIANT DDC THERMOSTAT FOR NEW VAV BOX.
3. INTERLOCK BOTH VAV BOXES SERVING ROOM 282 WITH THE NEWLY INSTALLED DDC THERMOSTAT.
4. RE-BALANCE EXISTING SUPPLY DIFFUSERS TO THE CFM INDICATED.
5. PROVIDE ALC ZS2_CS THERMOSTAT AND ALC ZN341A ZONE CONTROLLER WITH BELIMO LMB24-3-T ACTUATOR (OR APPROVED EQUAL) FOR ALL SALVAGED VVT BOXES. SEE SHEET M0.2 FOR ADDITIONAL THERMOSTAT REQUIREMENTS.

UC RIVERSIDE — UNIVERSITY OF CALIFORNIA

CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

Architect's Data:

Architect's Stamp:

Consultant's Stamp:

REGISTERED PROFESSIONAL ENGINEER — No. M35378 — Exp. 6-30-21 — MECHANICAL — STATE OF CALIFORNIA

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SKYE HALL HVAC
REPLACEMENT
CAAN NUMBER: P5380

Consultant's Data:

GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

UCR Project Manager:
SCOTT DONNELL

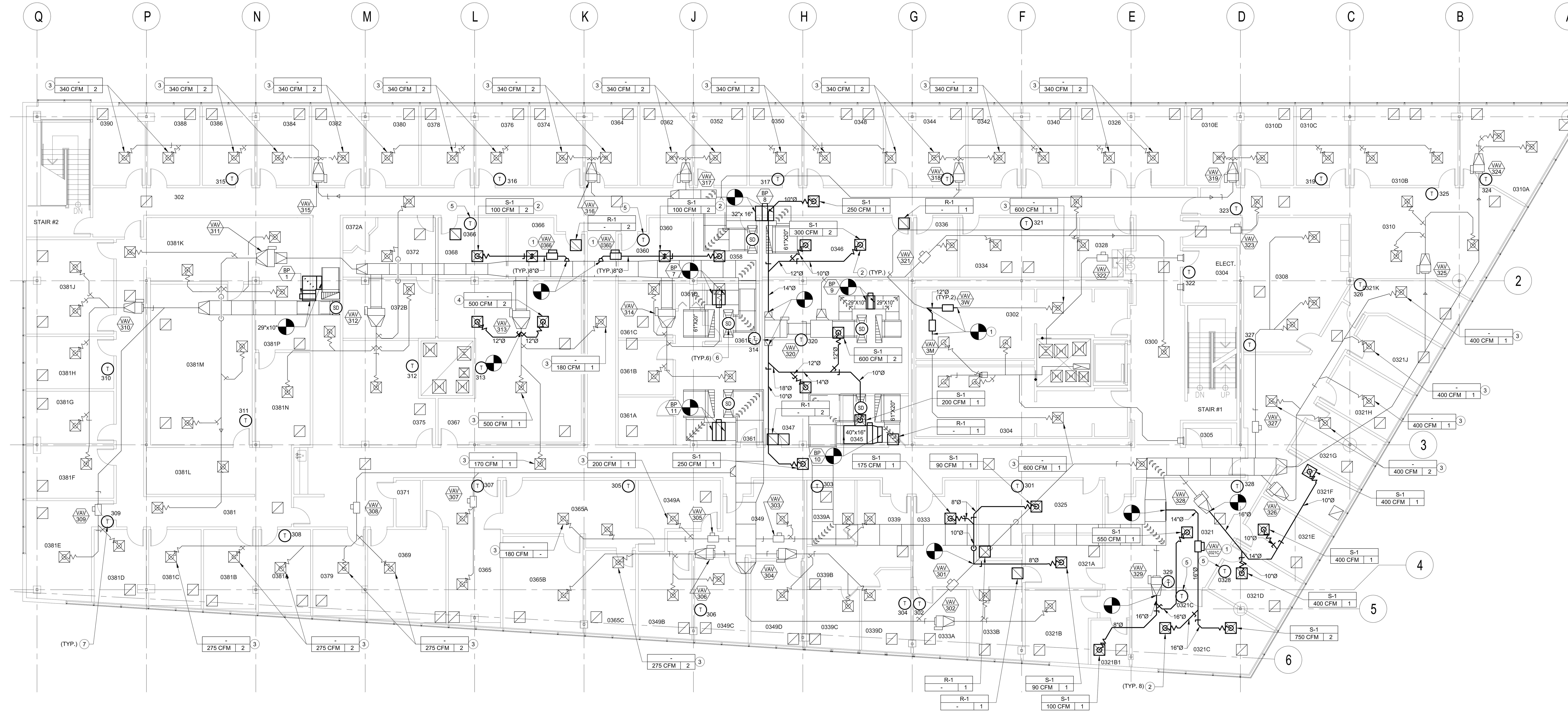
Scale:	AS NOTED	SD Approval:	N/A
Drawn By:	A. E. PEREZ	DD Approval:	NDU
Checked By:	N. D. UBRUN	CD Approval:	
Project No.:	950583	Construction Release:	
Bldg. Permit:	#B19-308		

Drawing Title:
2ND FLOOR RECONSTRUCTION HVAC PLAN

Sheet No.
M2.2

Reviewed for Code Compliance
03/10/20

Building Permit B19-308



THIRD FLOOR RECONSTRUCTION HVAC PLAN

SCALE: 1/8" = 1'-0" | 01

GENERAL NOTES:

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2. CONTRACTOR SHALL PROVIDE ALL DUCTING NEEDED TO FACILITATE RECONSTRUCTION.
3. CONTRACTOR SHALL PROVIDE ALL TRANSITION FITTINGS NEEDED TO FACILITATE RECONSTRUCTION.
4. REFER TO DETAIL 01/M5.0 FOR GENERAL DUCTWORK INSTALLATION REQUIREMENTS.
5. REFER TO DETAIL 02/M5.0 FOR NEW AND SALVAGED SUPPLY DIFFUSER INSTALLATION REQUIREMENTS.
6. REFER TO DETAIL 03/M5.0 FOR TYPICAL DUCT HANGER INSTALLATION REQUIREMENTS.
7. REFER TO DETAIL 05/M5.1 FOR ALL FIRE RATED WALL PENETRATIONS.
8. CONTRACTOR SHALL CLEAN ALL DIFFUSERS AND GRILLES AFTER CONSTRUCTION IS COMPLETE.
9. CONTRACTOR SHALL VERIFY THE FLOW OF ALL DIFFUSERS NOT TOUCHED OR BALANCED DURING RECONSTRUCTION AND RE-BALANCE AS NEEDED TO MATCH THE CFM MEASURED DURING DEMOLITION.
10. CONTRACTOR SHALL ENSURE THAT EVERY MANUAL VOLUME DAMPER UPSTREAM OF A VAV BOX IS IN THE FULL OPEN POSITION BEFORE BEGINNING TESTING ADJUSTING AND BALANCING.
11. CONTRACTOR SHALL REINSTALL ANY PORTION OF T-GRID REMOVED DURING DEMOLITION, AND REPLACE ANY DAMAGED/MISCOLORED CEILING TILES.
12. CONTRACTOR SHALL PATCH AND PAINT ANY SECTION OF GYP BOARD CEILING REMOVED DURING DEMOLITION TO MATCH THE EXISTING FINISH.
13. INSTALL THERMOSTAT PER DETAIL 05/M5.0.

RECONSTRUCTION SHEET NOTES:

1. PROVIDE VAV BOX PER DETAIL 04/M5.0.
2. PROVIDE SUPPLY DIFFUSER AND EXTEND DUCT WORK TO SERVE ASSOCIATED VAV BOX.
3. RE-BALANCE DIFFUSER TO THE AIRFLOW AS SHOWN.
4. REINSTALL SALVAGED SUPPLY DIFFUSER AND BALANCE TO THE AIRFLOW AS SHOWN.
5. PROVIDE T-24 COMPLIANT DDC THERMOSTAT FOR NEW VAV BOX.
6. SMOKE DUCT DETECTOR FURNISHED AND WIRED BY DIVISION 26. MECHANICAL CONTRACTOR SHALL INSTALL.
7. PROVIDE ALC ZS2_CS THERMOSTAT AND ALC ZN341A ZONE CONTROLLER WITH BELIMO LMB24-3-T ACTUATOR (OR APPROVED EQUAL) FOR ALL SALVAGED VVT BOXES. SEE SHEET M0.2 FOR ADDITIONAL THERMOSTAT REQUIREMENTS.

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Bldg. Permit:	#B19-308		

Drawing Title: 3RD FLOOR RECONSTRUCTION HVAC PLAN

Sheet No. M2.3

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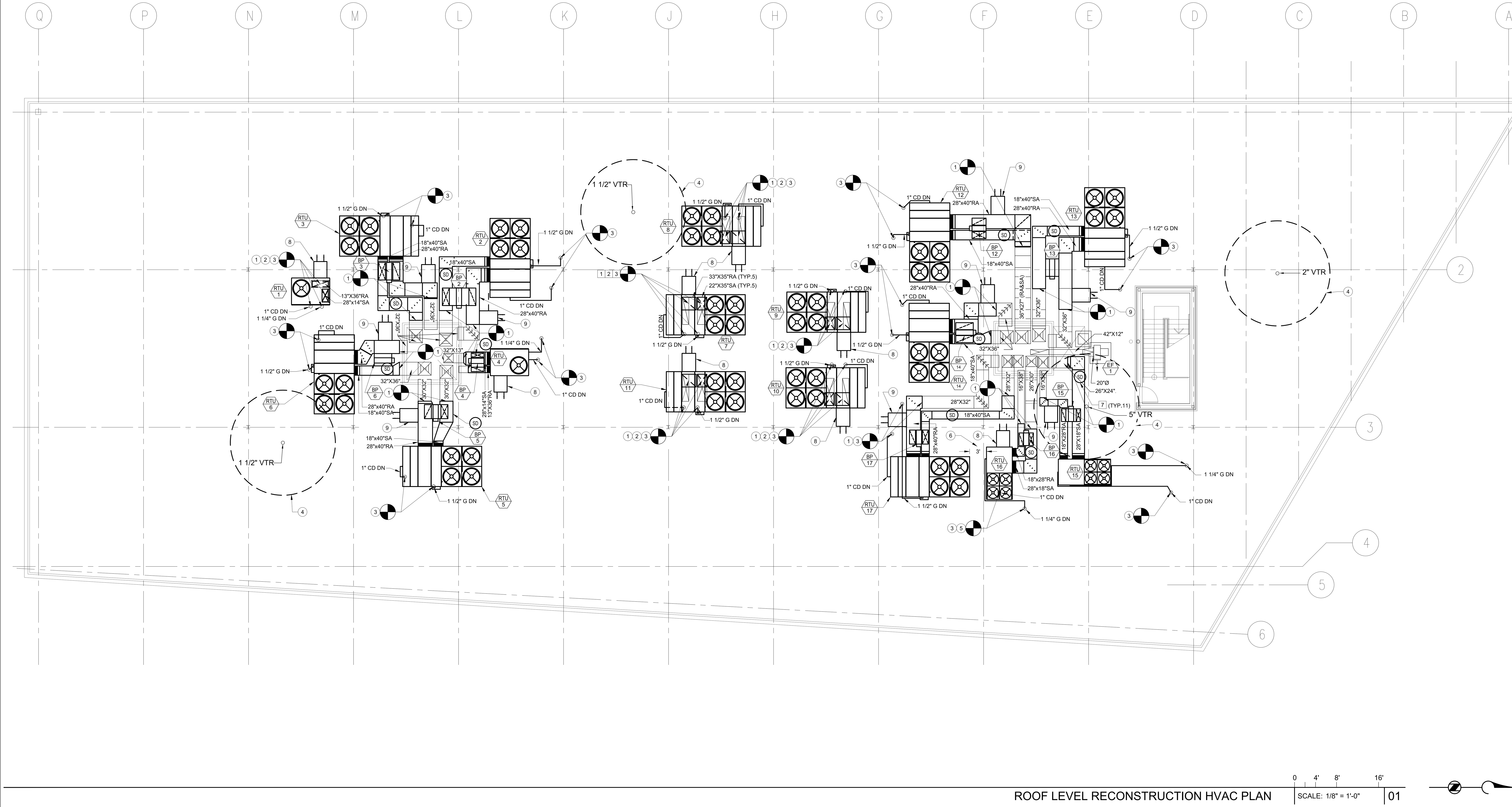

ROOF LEVEL RECONSTRUCTION HVAC PLAN — SCALE: 1/8" = 1'-0" — 01

GENERAL NOTES:

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2. CONTRACTOR SHALL PROVIDE ALL DUCTING NEEDED TO FACILITATE RECONSTRUCTION.
3. CONTRACTOR SHALL PROVIDE ALL TRANSITION FITTINGS NEEDED TO FACILITATE RECONSTRUCTION.
4. REFER TO DETAIL 02/M5.1 FOR CONDENSATE PIPE INSTALLATION REQUIREMENTS.
5. REINSTALL ROOF SCREEN ONCE RTU INSTALLATION IS COMPLETE.
7. REFER TO DETAIL 05/M5.1 FOR ALL FIRE RATED WALL PENETRATIONS.
8. REFER TO DETAIL 06/M5.1 FOR SIDE SHOT UNIT INSTALLATION REQUIREMENTS.
9. REFER TO STRUCTURAL PLANS FOR RTU MOUNTING REQUIREMENTS.

RECONSTRUCTION SHEET NOTES:

1 PROVIDE DUCTWORK AND EXTEND TO SERVE THE ASSOCIATED RTU. SUPPORT PER DETAIL 04/M5.1.
2 INSTALL DOWN-SHOT RTU PER DETAIL 01/M5.1
3 PROVIDE CONDENSATE AND NATURAL GAS PIPING FROM POINT OF CONNECTION UP TO RTU. SUPPORT PER DETAIL 03/M5.1
4 PROVIDE 10' OF CLEARANCE FROM ANY OUTSIDE AIR INTAKE PER CMC.
5 ROUTE CONDENSATE PIPE FROM THE RTU'S BOTTOM CONNECTION TO THE CONDENSATE DRAIN AS SHOWN.
6 ENSURE A MINIMUM 3' OF CLEARANCE IS MAINTAINED POST CONSTRUCTION BETWEEN RTU-16 AND RTU-17.
7 SMOKE DUCT DETECTOR FURNISHED AND WIRED BY DIVISION 26. MECHANICAL CONTRACTOR SHALL INSTALL.
8 PROVIDE UNIT MOUNTED COMBINATION ECONOMIZER / POWER EXHAUST. REFER TO SCHEDULE FOR MAKE AND MODEL.
9 PROVIDE DUCT MOUNTED COMBINATION ECONOMIZER / POWER EXHAUST. REFER TO SCHEDULE FOR MAKE AND MODEL.

UNIVERSITY OF CALIFORNIA UC RIVERSIDE
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1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

Architect's Data:

Architect's Stamp:

Consultant's Stamp:

FILE NO.: 119-09-08

REVISIONS

REV #	DESCRIPTION	DATE
1	50% DESIGN	11/01/19
2	90% DESIGN	11/27/19
3	100% DESIGN	02/25/20

SKYE HALL HVAC REPLACEMENT
CAAN NUMBER: P5380

Consultant's Data:
GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

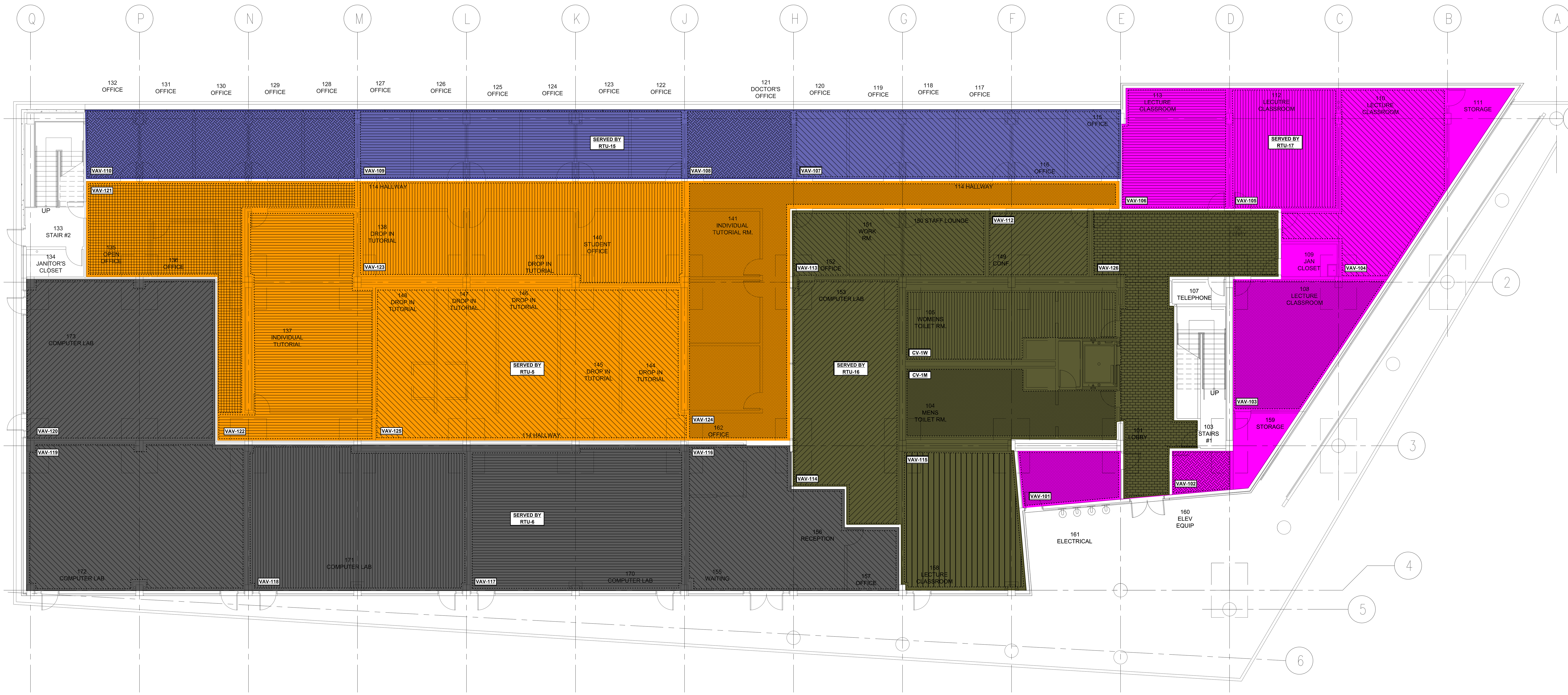
UCR Project Manager: SCOTT DONNELL

Scale:	AS NOTED	SD Approval:	N/A
Drawn By:	A. E. PEREZ	DD Approval:	NDU
Checked By:	N. D. UBRUN	CD Approval:	
Project No.:	950583	Construction Release:	
Bldg. Permit:	#B19-308		

Drawing Title: ROOF LEVEL RECONSTRUCTION HVAC PLAN

Sheet No. M2.4

Building Permit B19-308



FIRST FLOOR ZONE PLAN | SCALE: 1/8" = 1'-0" | 01

0 4' 8' 16'

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CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

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255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

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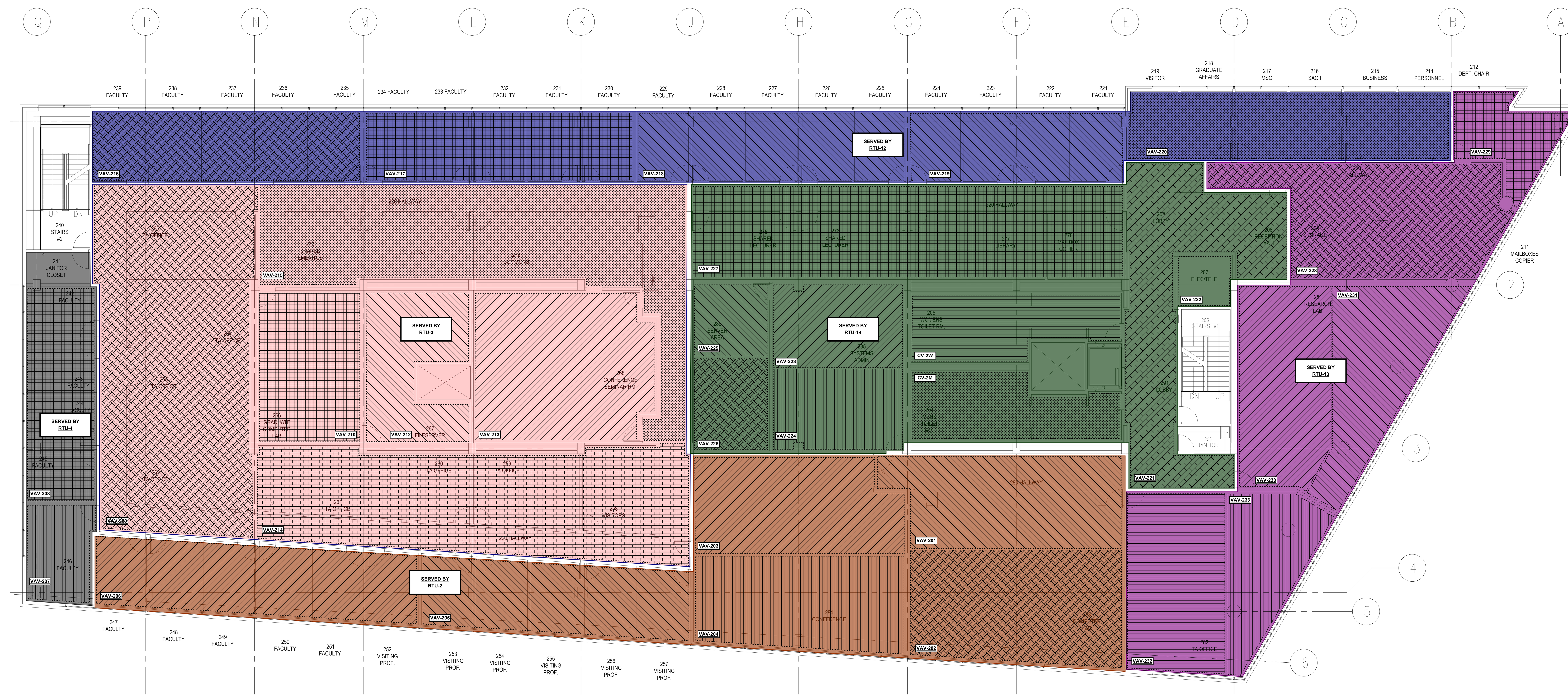
Bldg. Permit:	#B19-308		

Drawing Title: 1ST FLOOR ZONE PLAN

Sheet No. M3.1

Reviewed for Code Compliance
03/10/20



SECOND FLOOR ZONE PLAN | SCALE: 1/8" = 1'-0" | 01

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CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

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Consultant's Stamp:

FILE NO.: 119-09-08

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UC RIVERSIDE
Office of Planning, Design & Construction Signed CBO: Gilbert Cervantes
Building, Safety and Compliance Division
CAMPUS BUILDING PERMIT

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255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

UCR Project Manager: SCOTT DONNELL

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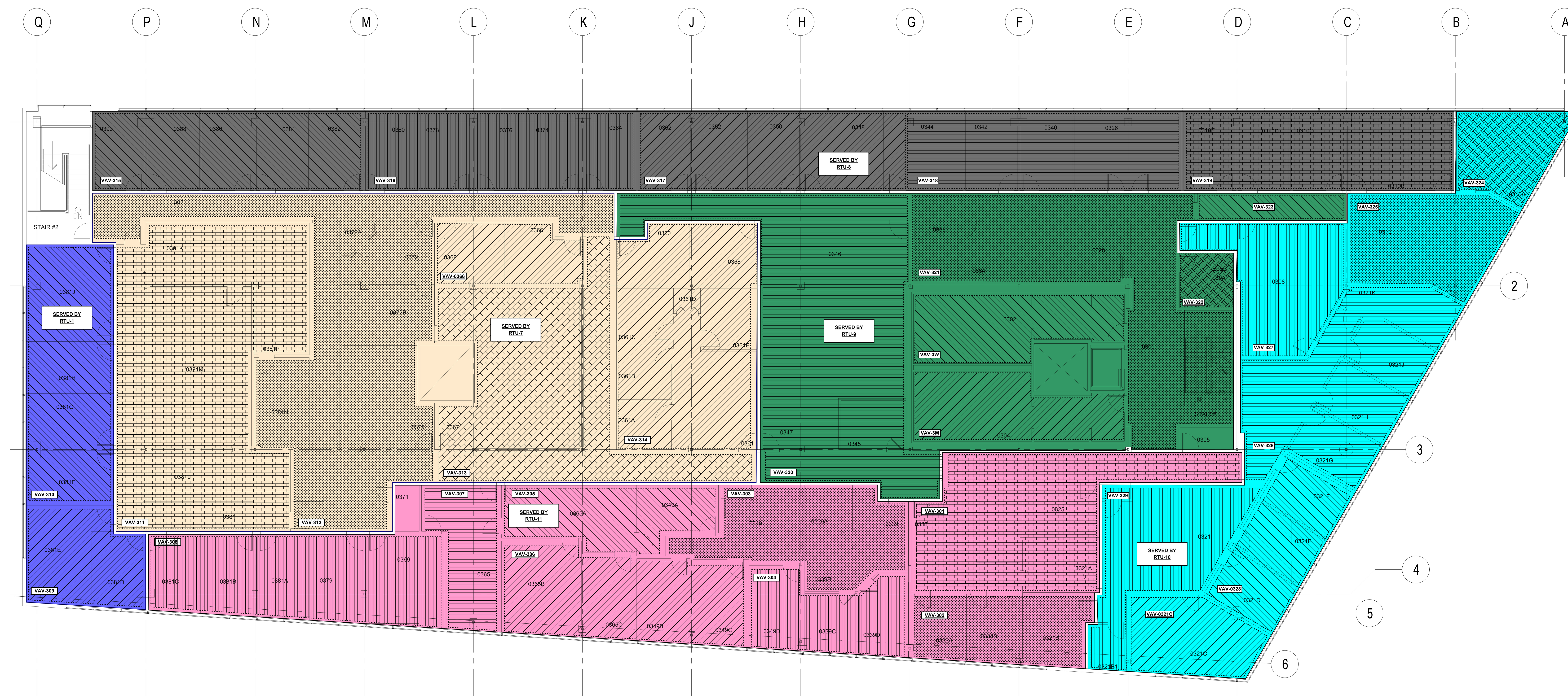
Drawn By: A. E. PEREZ	DD Approval: NDU
Checked By: N. D. UBRUN	CD Approval:
Project No.: 950583	Construction Release:
Bldg. Permit: #B19–308	

Drawing Title: 2ND FLOOR ZONE PLAN

Sheet No. M3.2

Reviewed for Code Compliance
03/10/20

Building Permit B19-308



THIRD FLOOR ZONE PLAN | SCALE: 1/8" = 1'-0" | 01

0 4' 8' 16'

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CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS

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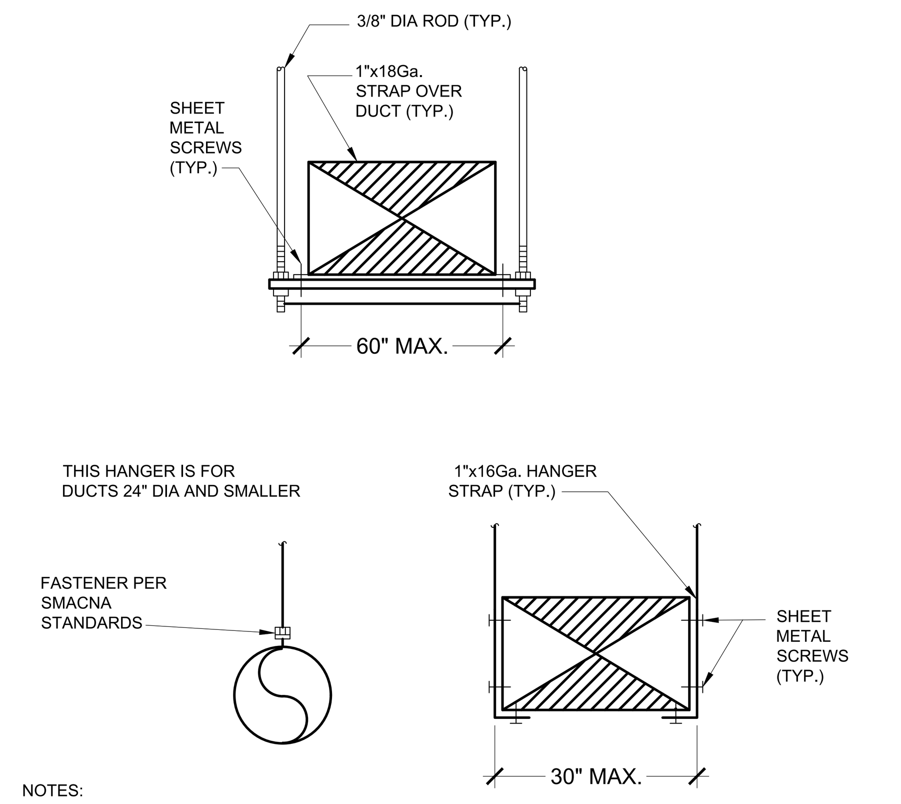
Drawing Title: 3RD FLOOR ZONE PLAN

Sheet No. M3.3

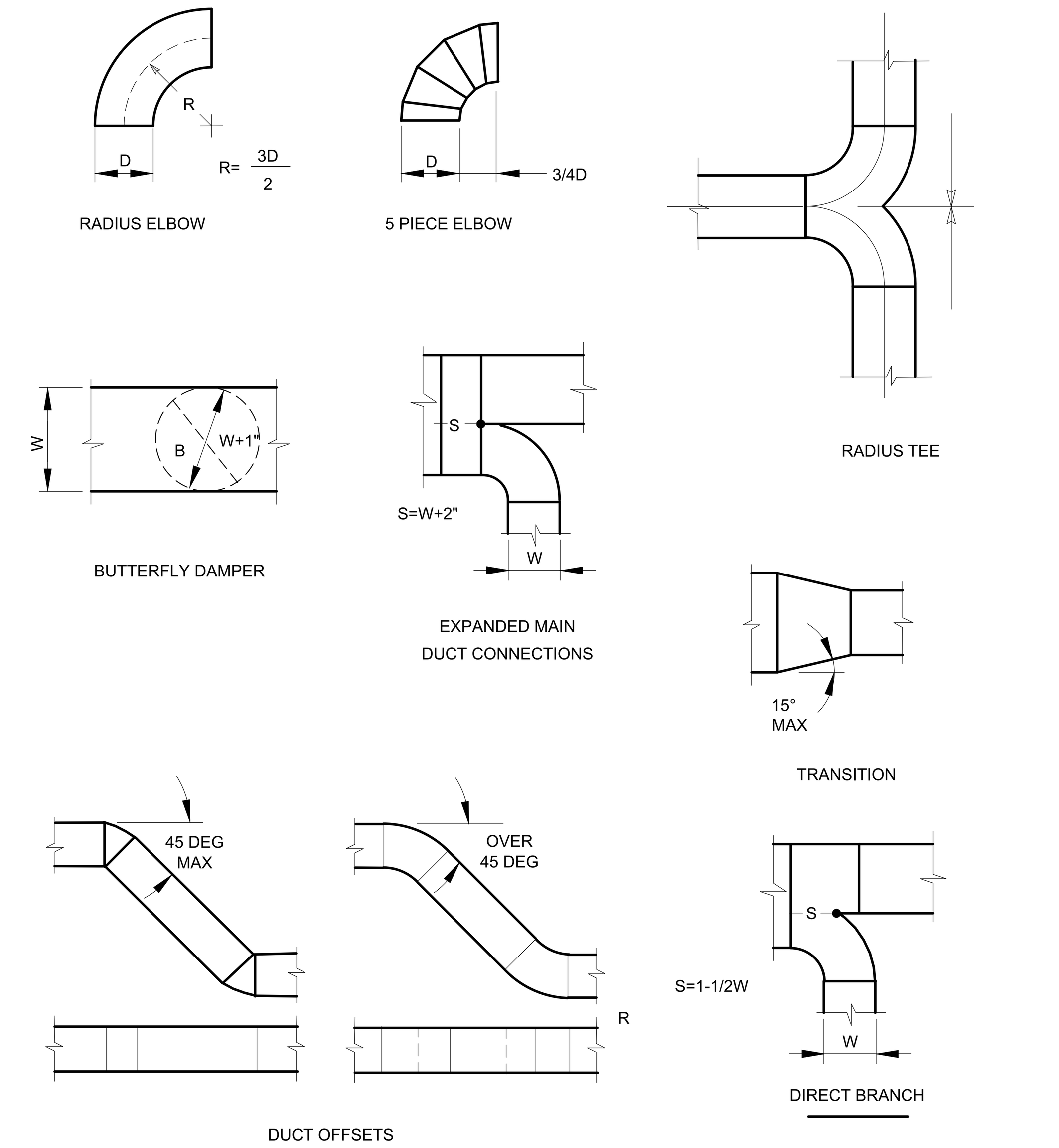
Reviewed for Code Compliance 03/10/20



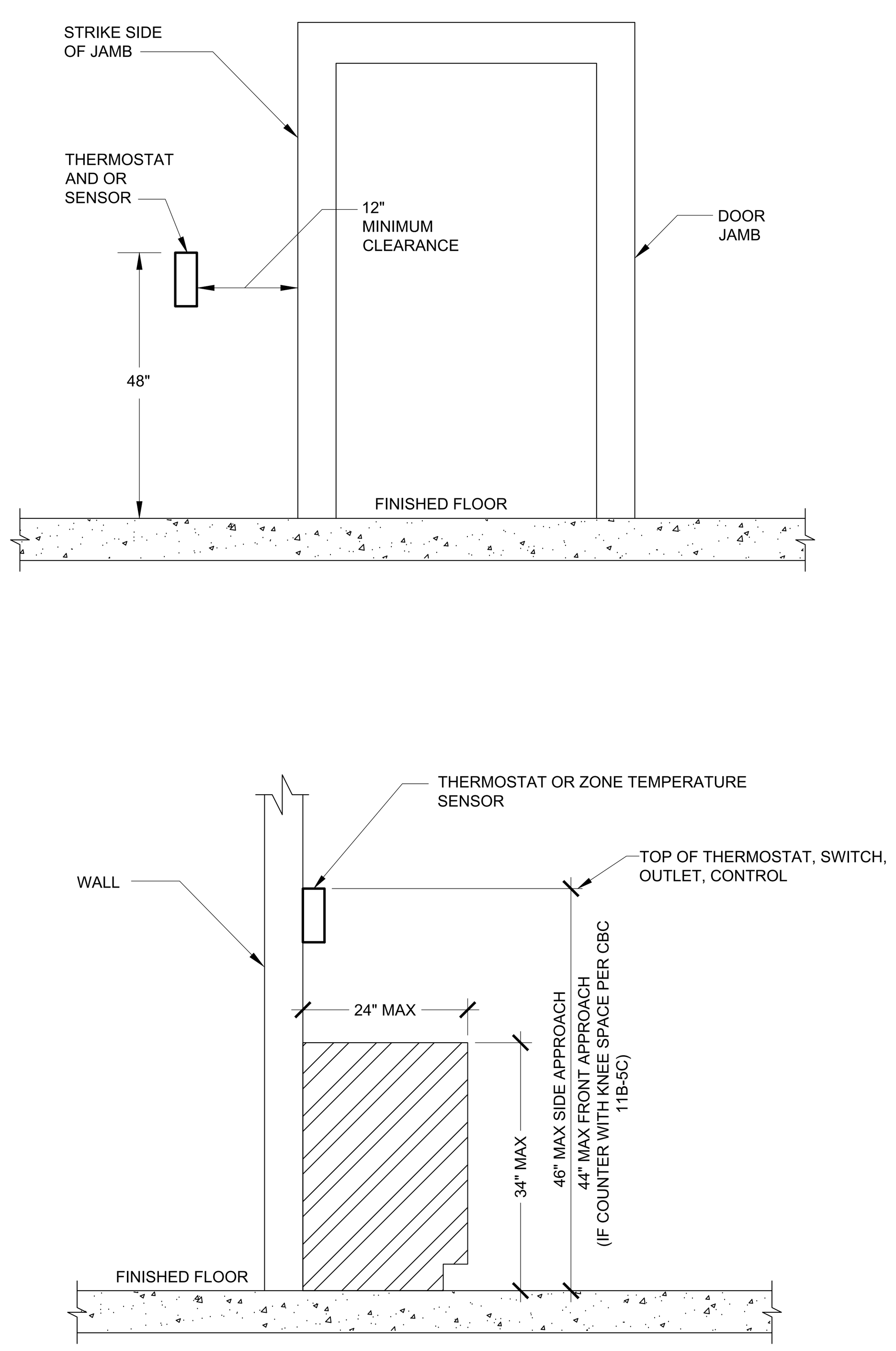
NOTES:

1. REFER TO SMACNA FOR HANGER SPACINGS.
2. PROVIDE SWAY AND SEISMIC BRACING PER SMACNA SEISMIC GUIDELINES.

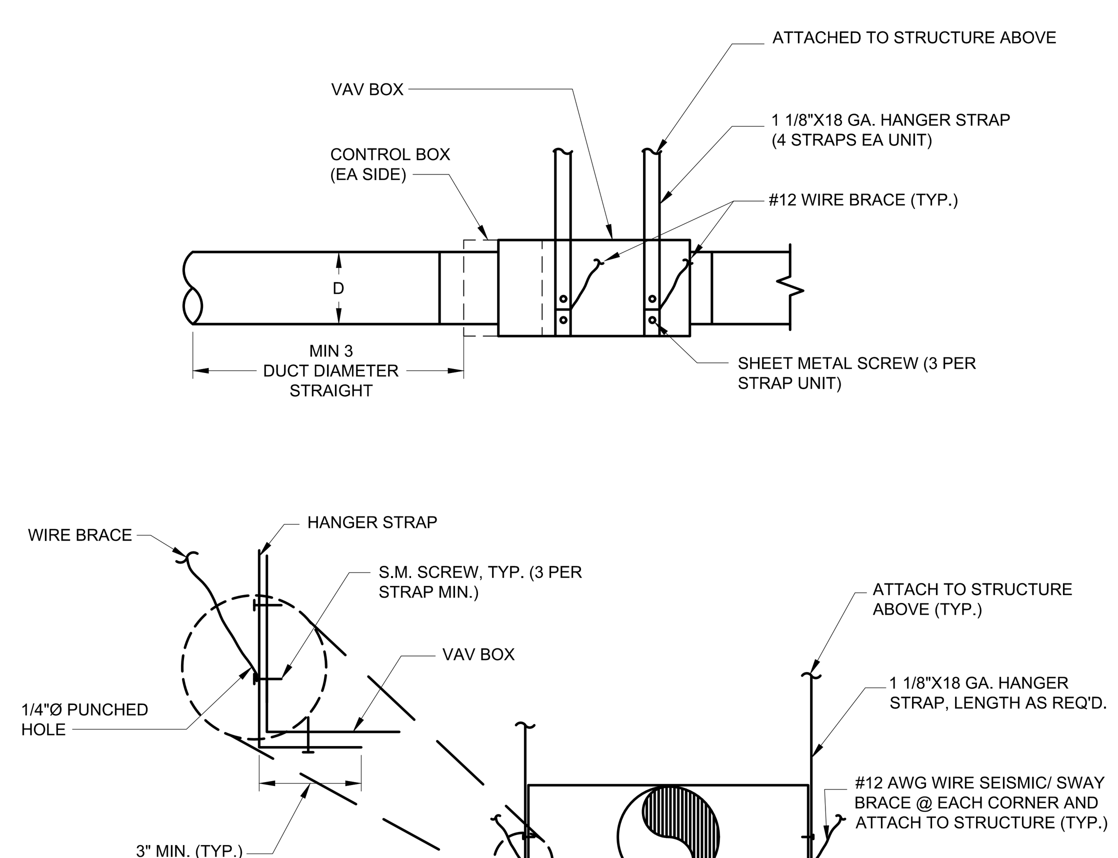
TYPICAL DUCT HANGER DETAIL | SCALE: NONE | 03



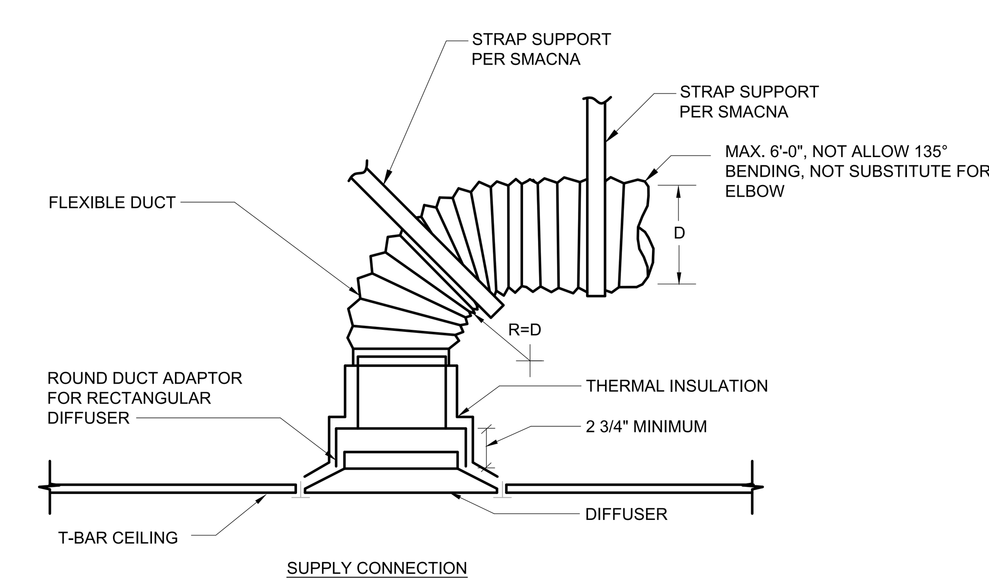
GENERAL DUCTWORK INSTALLATION REQ. | SCALE: NONE | 01



THERMOSTAT MOUNTING DETAIL | SCALE: NONE | 05



VAV BOX INSTALLATION DETAIL | SCALE: NONE | 04



NOTES:

1. PROVIDE SPLAY WIRE TO TIE OFF DIFFUSER TO STRUCTURE ABOVE.

SUPPLY DIFFUSER CONNECTION DETAIL | SCALE: NONE | 02

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ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

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No. M35378
Exp. 6-30-21
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FILE NO.: 119-09-08

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CAAN NUMBER: P5380

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255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

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Project No.:	950583	Construction Release:	
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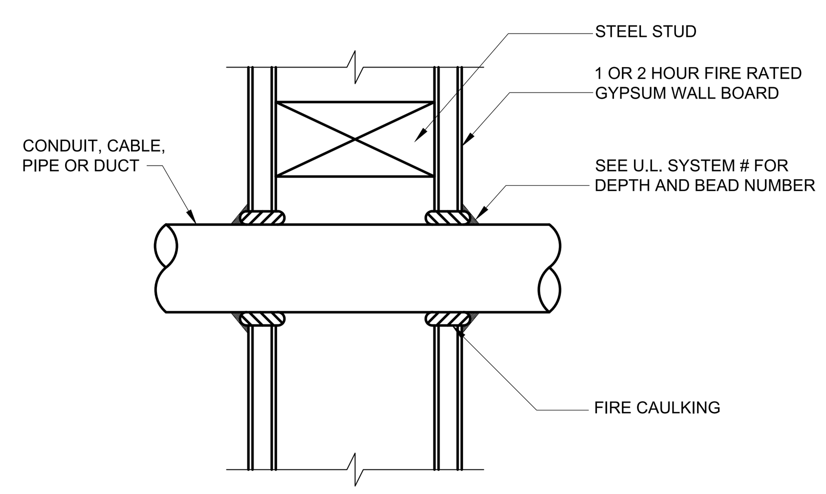
Drawing Title: MECHANICAL DETAILS

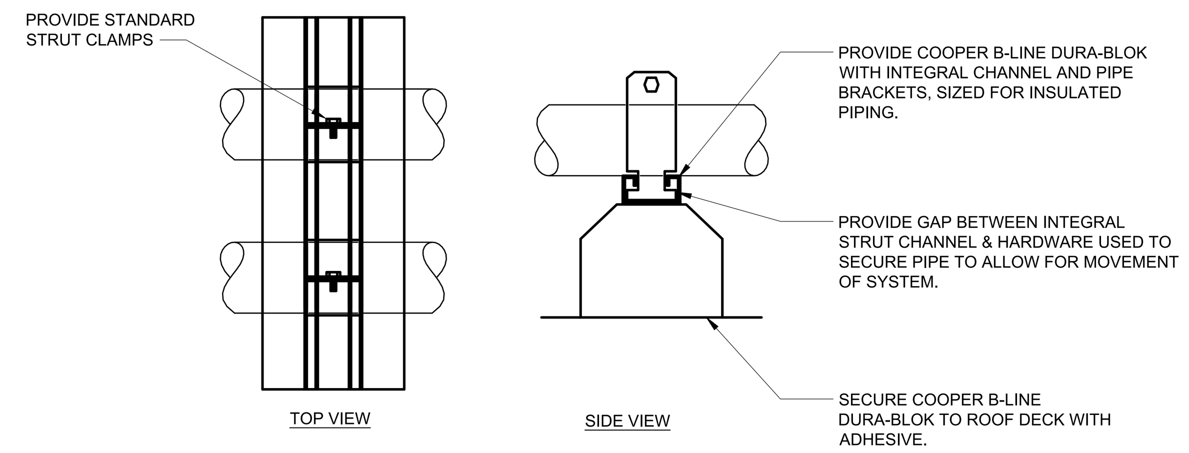
Sheet No. M5.0



NOTES:

1. DETAIL IS FOR REFERENCE ONLY. FOLLOW U.L. SYSTEM NUMBER FOR INSTALLATION INSTRUCTIONS.
2. SEE U.L. SYSTEM # FOR MAXIMUM ANNULAR SPACE.
3. INSTALL FIRE STOP ON BOTH SIDES OF THE WALL.
4. RECTANGULAR DUCT: INSTALLATION SHALL COMPLY WITH CURRENT U.L. SYSTEM NO. W-L-7008.
5. ROUND DUCT (16" DIA. MAX.): INSTALLATION SHALL COMPLY WITH CURRENT U.L. SYSTEM NO. W-L-7013.

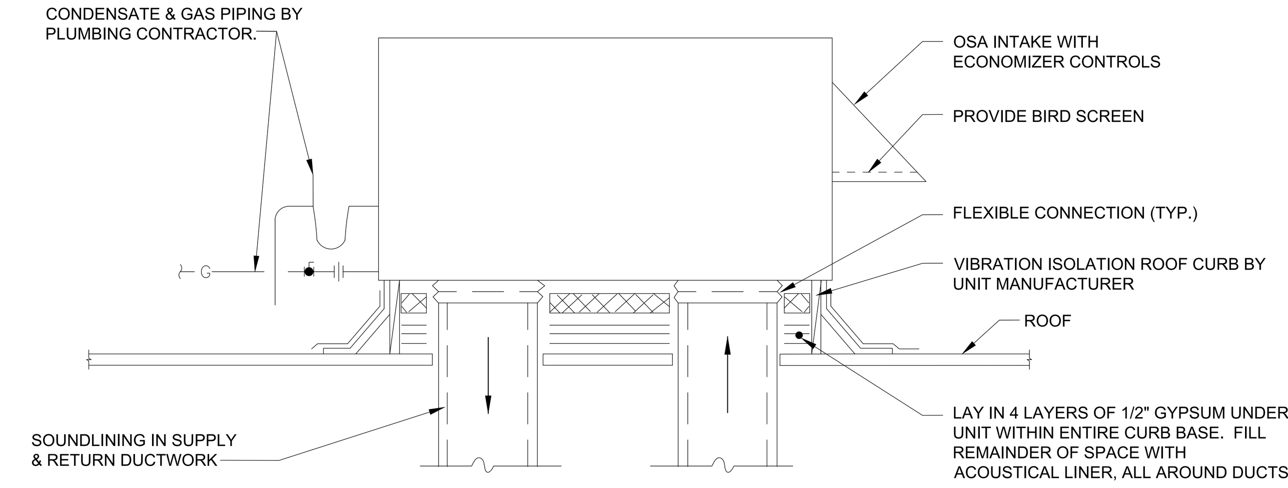
PENETRATION THROUGH FIRE RATED WALL | SCALE: NONE | 05



NOTE:

FOR SINGLE PIPE APPLICATIONS USING STEEL PIPE OR COPPER TUBING, PROVIDE A MAXIMUM OF 6'-0" BETWEEN SUPPORT BLOCKS. ADDITIONALLY, PROVIDE SUPPORT BLOCK WITHIN 2'-0" OF ANY CHANGE IN DIRECTION. REFER TO MANUFACTURER'S DATA FOR BLOCK SPACING OF MULTIPLE PIPES & PIPES OF DIFFERENT COMPOSITION THAN LISTED ABOVE.

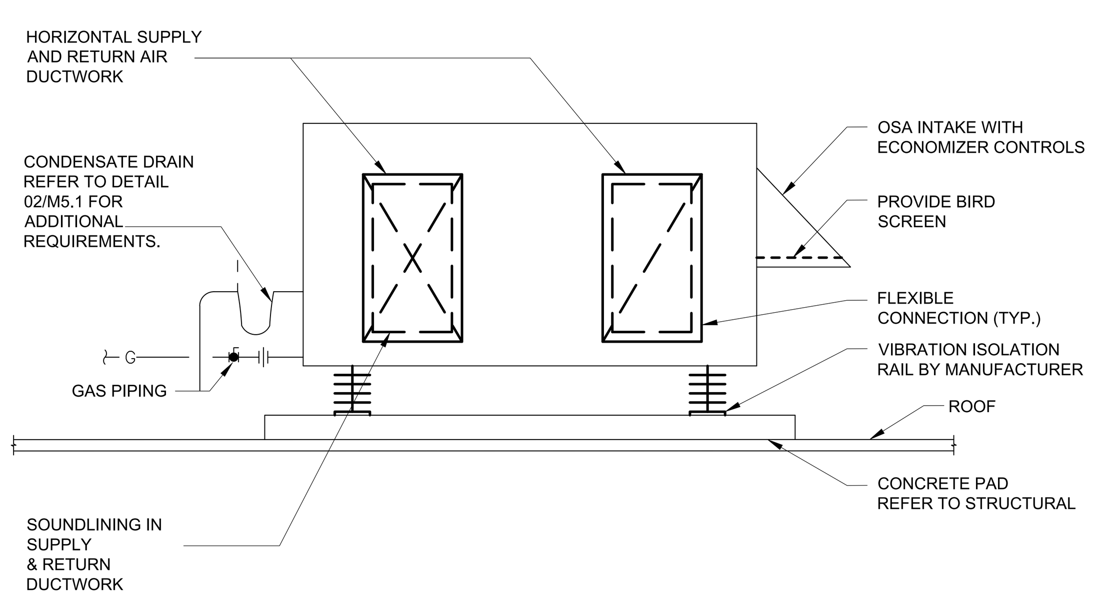
ROOF PIPE SUPPORT DETAIL | SCALE: NONE | 03



NOTES:

1. REFER TO DETAIL 02/M5.1 FOR CONDENSATE TRAP REQUIREMENTS.
2. REFER TO STRUCTURAL PLANS FOR ADDITIONAL INSTALLATION REQUIREMENTS.

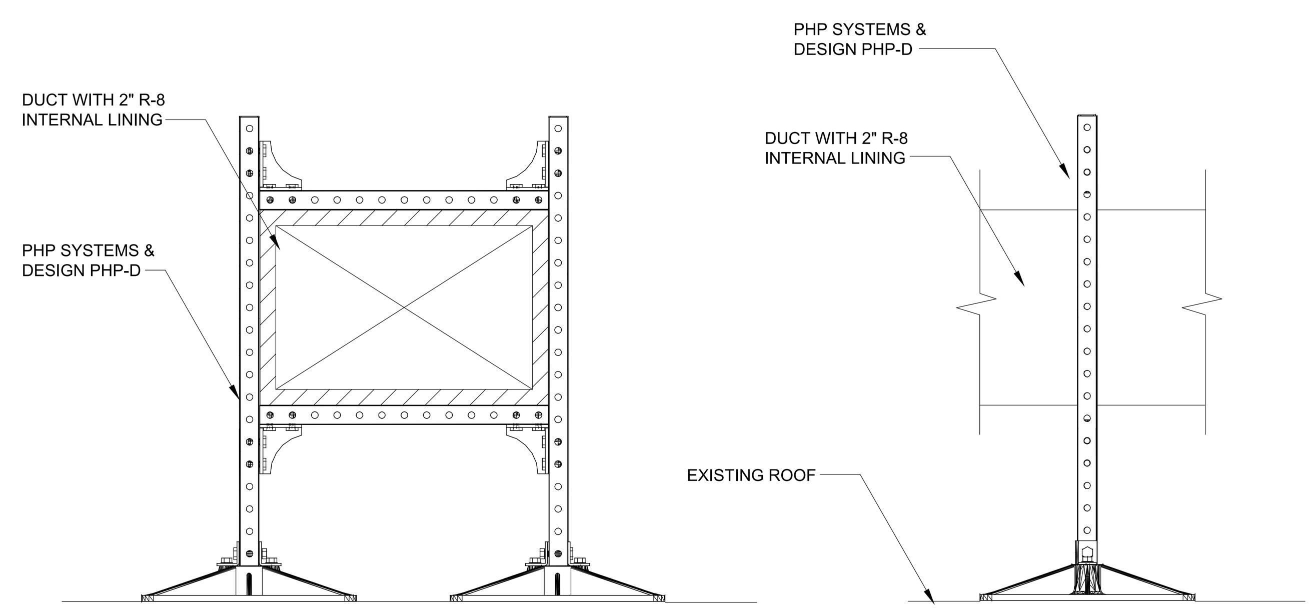
DOWNSHOT RTU INSTALLATION DETAIL | SCALE: NONE | 01



NOTES:

1. REFER TO DETAIL 02/M5.1 FOR CONDENSATE TRAP REQUIREMENTS.
2. REFER TO STRUCTURAL PLANS FOR ADDITIONAL INSTALLATION REQUIREMENTS.

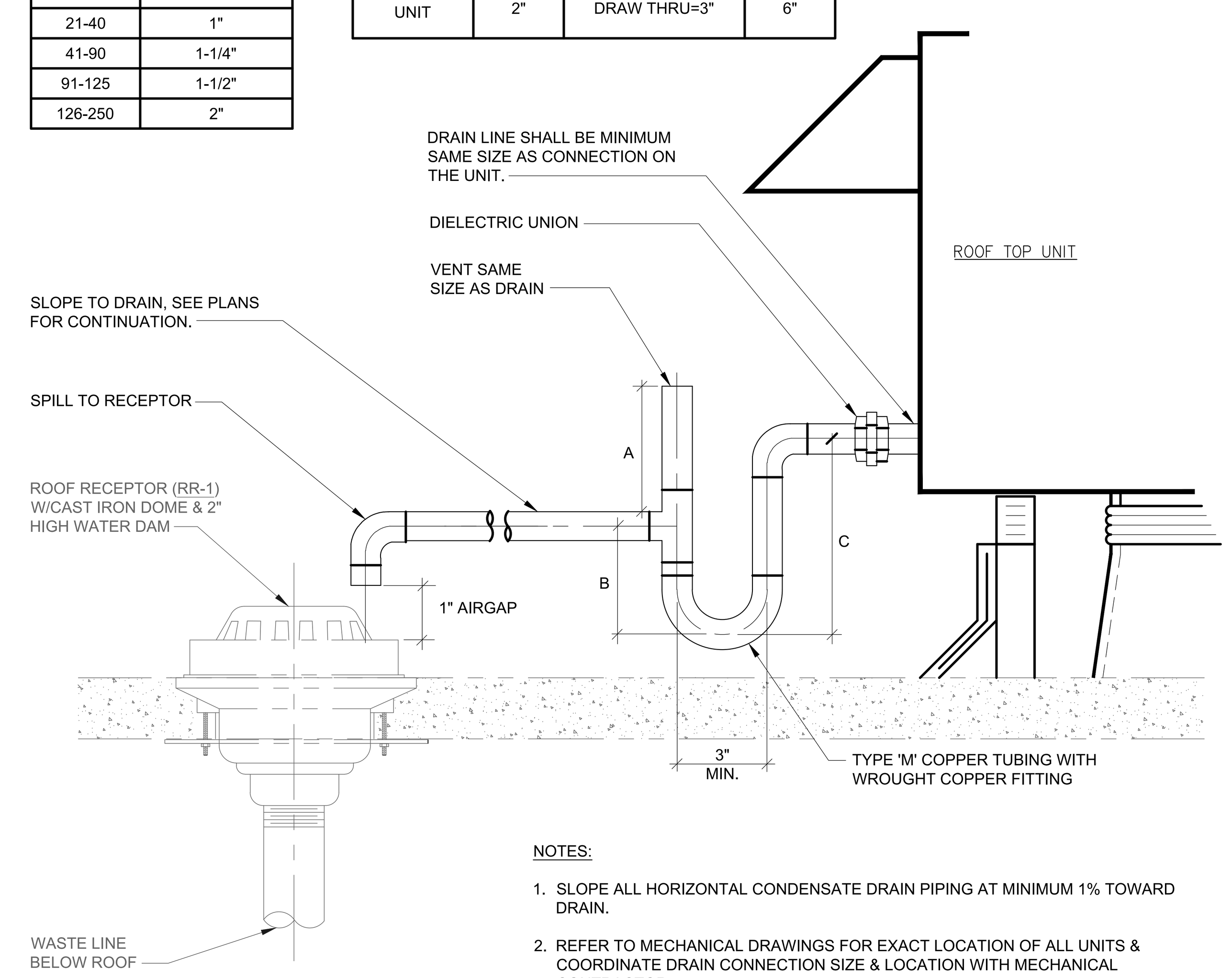
SIDESHOT RTU INSTALLATION DETAIL | SCALE: NONE | 06



ROOF DUCT SUPPORT DETAIL | SCALE: NONE | 04

TONS	DRAIN SIZE
0-20	3/4"
21-40	1"
41-90	1-1/4"
91-125	1-1/2"
126-250	2"

	A	B	C
ROOF TOP UNIT	2"	DRAW THRU=3"	6"



NOTES:

1. SLOPE ALL HORIZONTAL CONDENSATE DRAIN PIPING AT MINIMUM 1% TOWARD DRAIN.
2. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATION OF ALL UNITS & COORDINATE DRAIN CONNECTION SIZE & LOCATION WITH MECHANICAL CONTRACTOR.

RTU CONDENSATE TRAP DETAIL | SCALE: NONE | 02

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UC RIVERSIDE
CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

Architect's Data:

Architect's Stamp:

Consultant's Stamp:

REGISTERED PROFESSIONAL ENGINEER No. M35378 Exp. 6-30-21 MECHANICAL STATE OF CALIFORNIA

FILE NO.: 119-09-08

APPROVED UC RIVERSIDE

REVISIONS

REV #	DESCRIPTION	DATE
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SKYE HALL HVAC REPLACEMENT
CAAN NUMBER: P5380

Consultant's Data:
GE GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

UCR Project Manager: SCOTT DONNELL

Scale:	NONE	SD Approval:	N/A
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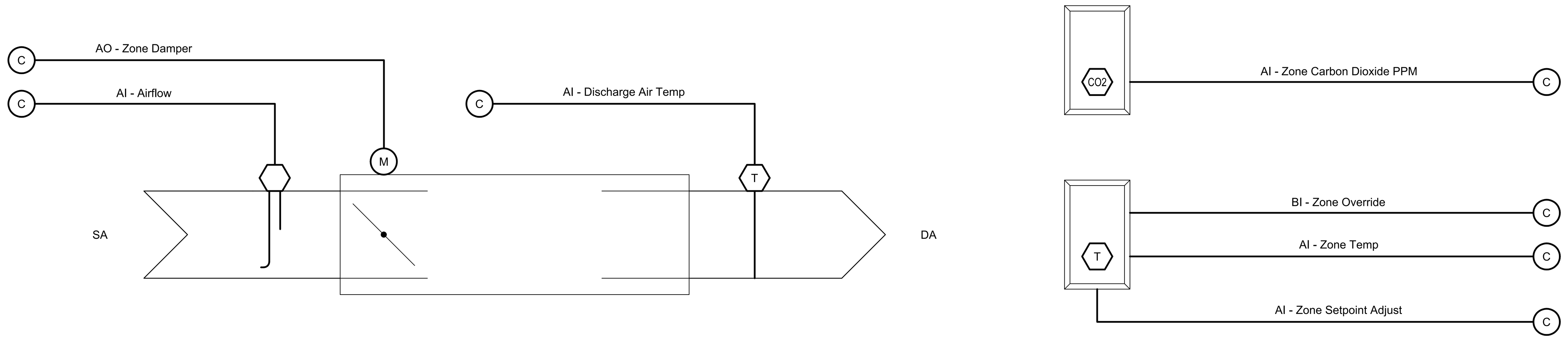
Checked By:	N. D. UBRUN	CD Approval:	
Project No.:	950583	Construction Release:	
Bldg. Permit:	B19-308		

Drawing Title: MECHANICAL DETAILS

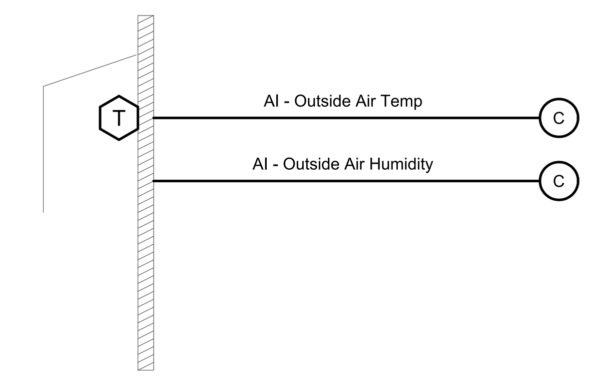
Sheet No. M5.1



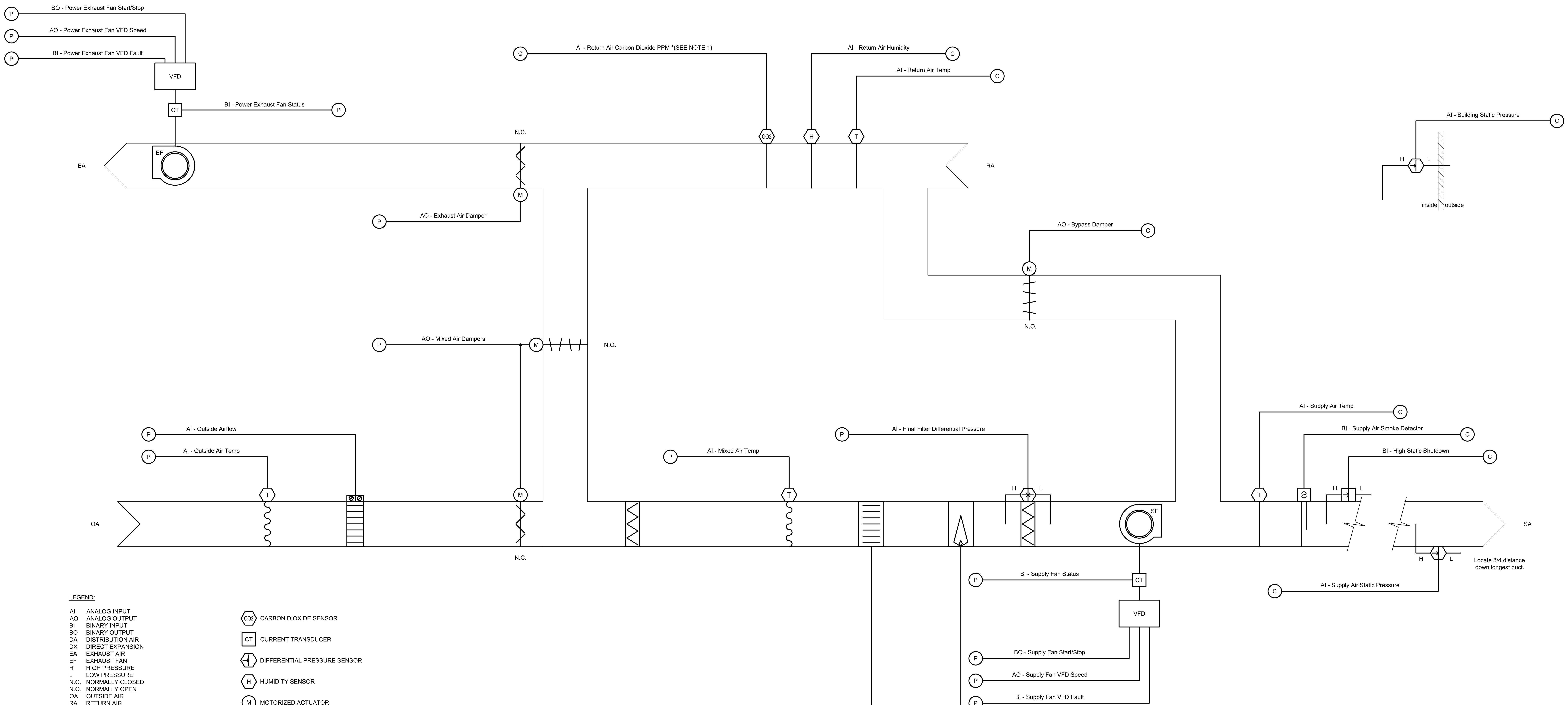
NOTES:

1. CONTROLS CONTRACTOR SHALL PROVIDE ALC ZN341A ZONE CONTROLLER WITH BELIMO LMB24-3-T ACTUATOR AND ALC ZS2_CS THERMOSTAT FOR EACH VAV BOX.
2. CONTROLS CONTRACTOR SHALL FIELD VERIFY EXISTING AIRFLOW SENSOR IS FUNCTION. IF IT IS NOT REPLACE WITH NEW.

VAV TERMINAL UNIT | SCALE: NONE | 02



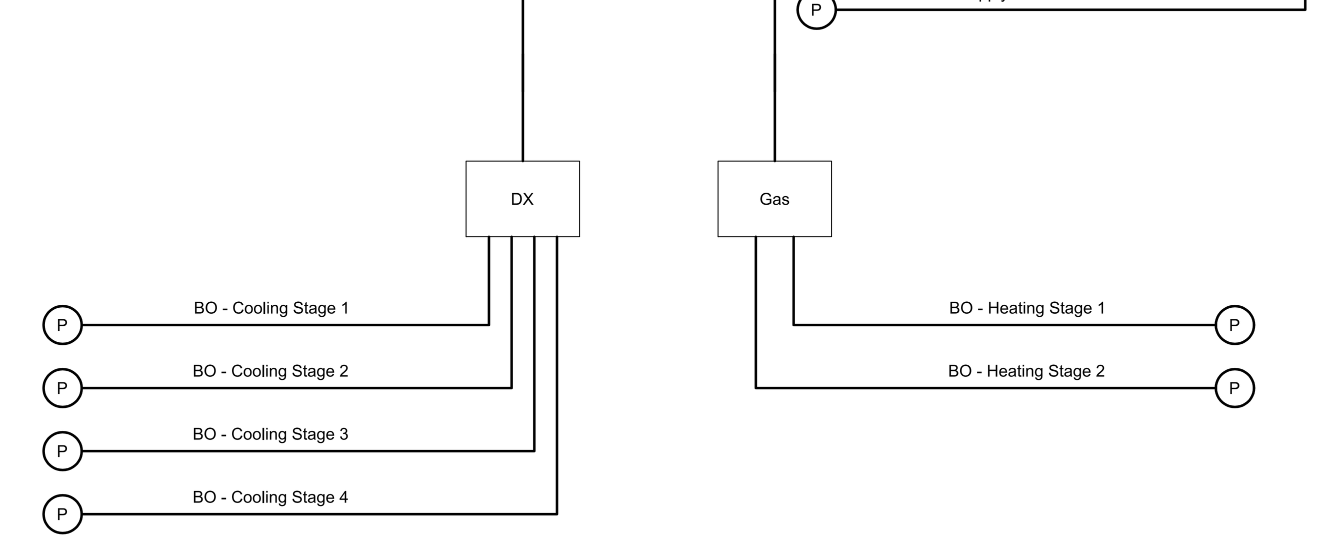
OUTSIDE AIR CONDITIONS TEMPERATURE AND HUMIDITY STATION | SCALE: NONE | 01



LEGEND:

AI ANALOG INPUT
AO ANALOG OUTPUT
BI BINARY INPUT
BO BINARY OUTPUT
DA DISTRIBUTION AIR
DX DIRECT EXPANSION
EA EXHAUST AIR
EF EXHAUST FAN
H HIGH PRESSURE
L LOW PRESSURE
N.C. NORMALLY CLOSED
N.O. NORMALLY OPEN
OA OUTSIDE AIR
RA RETURN AIR
SA SUPPLY AIR
SF SUPPLY FAN
VFD VARIABLE FREQUENCY DRIVE

CO2 CARBON DIOXIDE SENSOR
CT CURRENT TRANSDUCER
DIFFERENTIAL PRESSURE SENSOR
H HUMIDITY SENSOR
M MOTORIZED ACTUATOR
SMOKE DETECTOR
T TEMPERATURE SENSOR
C PROVIDED BY CONTROLS CONTRACTOR
P POINT PROVIDE WITH PACKAGED SET OF CONTROLS



NOTES:

1. CO2 SENSOR IS ONLY REQUIRED FOR UNITS EQUIPPED WITH DCV CONTROLS, SEE SHEET M0.2
2. REFER TO SPECS FOR SEQUENCE OF OPERATION.
3. DIAGRAM SHOWN IS TYPICAL FOR RTU (1-17).

RTU CONTROL DIAGRAM | SCALE: NONE | 01

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UC RIVERSIDE
CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS
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RIVERSIDE, CA. 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

Architect's Data:

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Building, Safety and Compliance Division
CAMPUS BUILDING PERMIT

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255 East Rincon St., Suite 301
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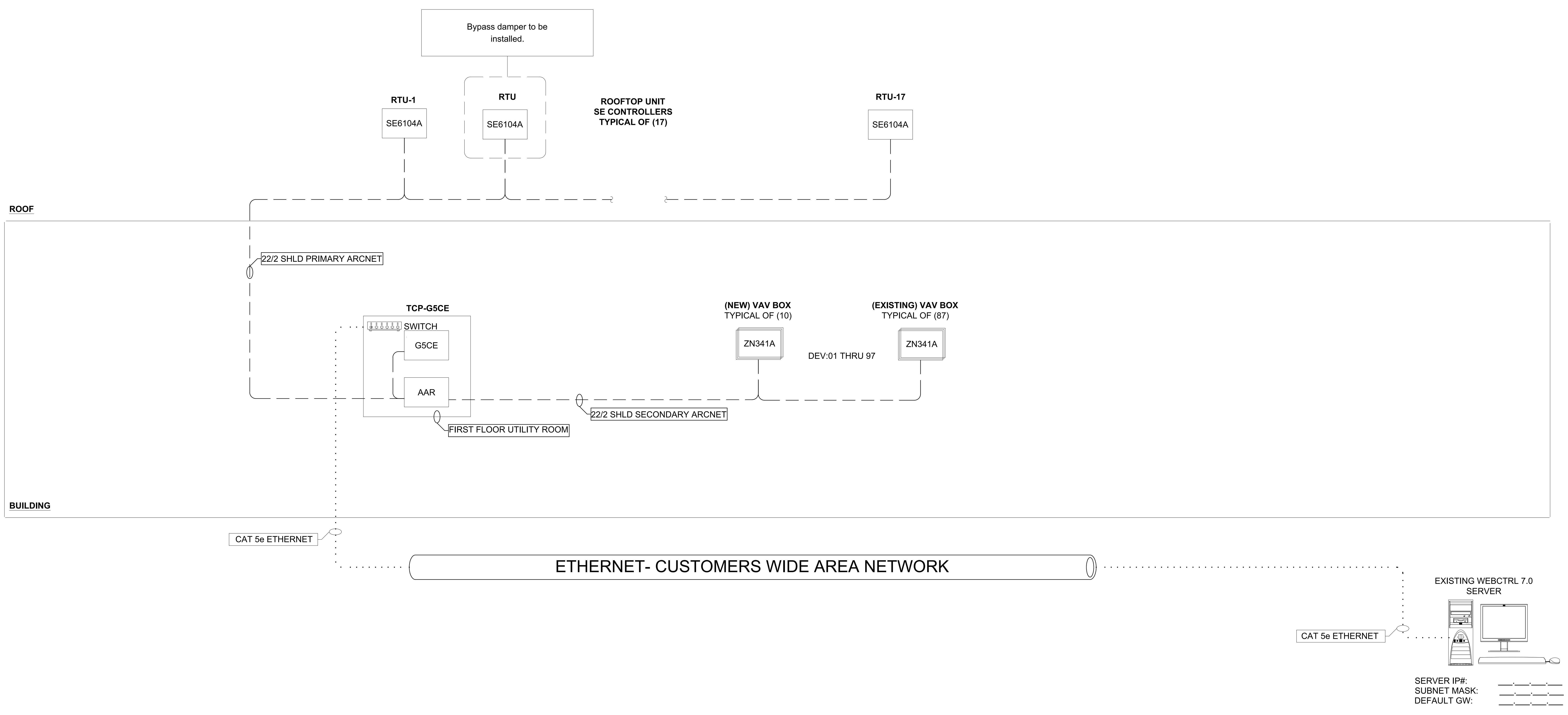
Checked By: N. D. UBRUN	CD Approval:
Project No.: 950583	Construction Release:
Bldg. Permit: #B19-308	

Drawing Title: VAV BOX AND RTU WIRING DIAGRAM

Sheet No. M6.0

ALC NETWORK ARCHITECTURE



Device Instance Addressing
24YYXX
YY = BACnet Network Number
XX = Module Device Address

120vac E = by Division 26 Electrical Contractor (formerly Div. 16)

Notes:
1. Insert BT485 terminator to the controllers at the beginning and end of the network segment. (Located near the the BACnet (Cmnet) connector). The BT485 has no polarity associated with it.
2. Each segment must be wired in a 'daisy chain' fashion. Branching requires the use of a REP485 or an ARCnet to ARCnet Router (AAR).
3. Network 'ends' must be terminated with TERM485 plugins or BT485 plugins (where applicable). When using TERM485 plugins each segment must have at least one (1) DIAG485 installed on the net to supply bias.
4. CAT5e Ethernet network runs should not exceed 100 meters or 328ft maximum length.
5. Reference page BAS 0.20 for cable schedule.
6. Place a REP485 after every 31 devices or after 2000 feet (whichever is reached first), and at each branch of a hybrid network. Each repeater begins a new network segment. You can wire a maximum of four REP485s in series. Power REP485 from next closest controller 24vac power source.

T = 120 ohm Resistor
BT = BT485 Device
P = PROT485 Device
R = REP485 Repeaters
D = DIAG485 Diagnostic Board

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Drawing Title: NETWORK ARCHITECTURE AND SEQUENCE OF OPERATION

Sheet No. M6.1

LEGEND AND SYMBOLS

- SWITCH
- FUSE
- FUSED DISCONNECT SWITCH
- 1 — COMBINATION MOTOR STARTER/DISCONNECT SWITCH (NUMBER INDICATES STARTER SIZE)
- DISCONNECT SWITCH (NON-FUSED)
- F — DISCONNECT SWITCH (FUSED) HORSE POWER RATED
- RECESSED PANELBOARD 120V/208V
- RECESSED PANELBOARD 277V/480V
- SURFACE MOUNTED PANELBOARD 120V/208V
- SURFACE MOUNTED PANELBOARD 277V/480V
- DISTRIBUTION BOARD
- GROUND CONNECTION
- MOTOR
- 3/4" CONDUIT WITH 2#12 PLUS 1#12 GND.
- 3/4" CONDUIT WITH 3#12 PLUS 1#12 GND.
- 3/4" CONDUIT WITH 4#12 PLUS 1#12 GND.
- DUPLEX RECEPTACLE +18" A.F.F. (UNLESS NOTED OTHERWISE)
- J — JUNCTION BOX WITH COVER (MINIMUM 4" SQUARE OR AS REQUIRED)
- RACEWAY TRANSITION BOX OR CONNECTION POINT
- $ — TOGGLE SWITCH FOR MECHANICAL UNIT

GENERAL NOTES

1. ELECTRICAL CONTRACTOR SHALL PERFORM ELECTRICAL INSTALLATION WORK IN CONFORMANCE WITH THE 2016 EDITION OF THE CALIFORNIA ELECTRICAL CODE (CEC) AND ALL OTHER APPLICABLE CODES, ORDINANCES, REGULATIONS AND PROJECT STANDARDS.
2. CONDUIT ROUTING AND OUTLET LOCATION AS SHOWN ON THE ELECTRICAL POWER PLAN ARE DIAGRAMMATIC IN NATURE. VERIFY FEASIBILITY OF THE INSTALLATION BEFORE COMMENCING THE JOB. ANY OBSERVATIONS TO THE EXECUTION OF THE WORK SHALL BE BROUGHT TO THE ATTENTION OF THE UNIVERSITY'S REPRESENTATIVE IMMEDIATELY.
3. PER SPECIFICATION SECTION "CONDUCTORS AND CABLES"
   a. CONDUCTOR MATERIAL APPLICATIONS:
      a.1 FEEDERS: COPPER, STRANDED FOR NO. 14 AWG AND LARGER
      a.2 BRANCH CIRCUITS: COPPER, STRANDED FOR NO. 14 AWG AND LARGER
   b. CONDUCTOR INSULATION AND MULTI-CONDUCTOR CABLE APPLICATIONS AND WIRING METHODS:
      b.1 BRANCH CIRCUITS CONCEALED IN CEILINGS, WALLS AND PARTITIONS: TYPE THHN-2-THWN-2, SINGLE CONDUCTORS IN RACEWAYS.
      b.2 BRANCH CIRCUITS CONCEALED IN CONCRETE, BELOW SLABS-ON-GRADE, AND UNDERGROUND: TYPE THHN-2-THWN-2, SINGLE CONDUCTORS IN RACEWAYS.
4. MAINTAIN PROPER WORKING SPACE PER CALIFORNIA ELECTRICAL CODE (CEC), PARAGRAPH 110-26.
5. PROVIDE NECESSARY HARDWARE AND SUPPORTS AS REQUIRED FOR ELECTRICAL CONDUIT/WIRE NOT SCHEDULED FOR DEMOLITION PER CALIFORNIA ELECTRICAL CODE (CEC), PARAGRAPH 110-12.
6. THE SEISMIC BRACING AND ANCHORAGE OF ELECTRICAL CONDUITS, BUS DUCT, WIREWAY, AND CABLE TRAY SHALL BE IN ACCORDANCE WITH THE CALIFORNIA BUILDING CODE, CHAPTER 16 AND "GUIDELINE FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PLUMBING PIPING SYSTEMS", PUBLISHED BY SMACNA AND PPIC, OR THE SUPERSTRUT-SEISMIC RESTRAINT SYSTEM, OR THE KIN-LINE SEISMIC RESTRAINT SYSTEM.
7. CONNECTIONS TO VIBRATING EQUIPMENT AND SEISMIC SEPARATIONS:
   - LIQUID-TIGHT FLEXIBLE STEEL CONDUIT IN DRY INTERIOR LOCATIONS.
   - LIQUID-TIGHT FLEXIBLE STEEL CONDUIT IN AREAS EXPOSED TO WEATHER, DAMP LOCATIONS, CONNECTIONS TO TRANSFORMER ENCLOSURES, AND FINAL CONNECTIONS TO MOTORS.

   PROVIDE A SEPARATE INSULATED EQUIPMENT GROUNDING CONDUCTOR IN FLEXIBLE CONDUIT RUNS. MAXIMUM LENGTH SHALL BE SIX FEET UNLESS OTHERWISE NOTED.
8. ROUTE EXPOSED CONDUIT PARALLEL AND PERPENDICULAR TO WALLS AND ADJACENT PIPING. ARRANGE CONDUIT TO MAINTAIN HEADROOM AND TO PRESENT A NEAT APPEARANCE.
9. WHENEVER A DISCREPANCY IN QUANTITY OR SIZE OF CONDUIT, WIRE, EQUIPMENT DEVICES, CIRCUIT BREAKERS, GROUND FAULT PROTECTION SYSTEMS, ETC. (ALL MATERIALS), ARISES ON THE DRAWINGS OR SPECIFICATIONS, PROVIDE AND INSTALL ALL MATERIAL AND SERVICES REQUIRED BY THE STRICTEST CONDITIONS NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS TO ENSURE COMPLETE AND OPERABLE SYSTEMS.

CIRCUITS AND RACEWAYS

(solid line)	RACEWAY OR WIRING SYSTEM ABOVE FLOOR LEVEL, CONCEALED IN WALL OR ABOVE CEILING UON
(dashed line)	RACEWAY OR WIRING SYSTEM IN OR UNDER FLOOR OR CONCEALED IN OR BEHIND STRUCTURE OR EQUIPMENT
(line with cap)	CONDUIT STUB ENDING WITH CAP
J JB2700A	JUNCTION BOX. OPTIONAL IDENTIFIER.
PB PB1035	PULL BOX. OPTIONAL IDENTIFIER.
TB TB1035	TERMINAL BOX. OPTIONAL IDENTIFIER.
1"C 3#10 AWG +1#10 AWG GRD.	RACEWAY SIZE WITH CONDUCTOR CONTENTS AND SIZES
0 0	DENOTES CONNECTION TO EQUIPMENT

ABBREVIATIONS

A	AMPERE
AC	ALTERNATING CURRENT
AF	AMPERE FRAME
AS	AMPERE SWITCH
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CAPACITY
ANN	ANNUNCIATOR
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
BLDG	BUILDING
C	CONDUIT
CB	CIRCUIT BREAKER
CATV	CABLE TELEVISION
CEC	CALIFORNIA ELECTRICAL CODE
CKT	CIRCUIT
CLG	CEILING
CO	CONDUIT ONLY
COMM	COMMUNICATIONS
COMP	COMPUTER
DISC	DISCONNECT
DIST	DISTRIBUTION
DL	DOUBLE LUG
DP	DISTRIBUTION PANEL
DWG	DRAWING
E	EXISTING TO REMAIN
EG	EQUIPMENT GROUND
ELEC	ELECTRICAL
EMH	ELECTRICAL MAN HOLE
EMT	ELECTRICAL METALLIC TUBING
EPO	EMERGENCY POWER OFF
EQUIP	EQUIPMENT
F	FUSE, FUSED
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FLA	FULL LOAD AMPERES
GRD	GROUND
GALV	GALVANIZE, GALVANIZED
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
HPF	HEAT PUMP HIGH POWER FACTOR
HPS	HIGH PRESSURE SODIUM
JB	JUNCTION BOX
KA	THOUSAND AMPERES
KCMIL	THOUSAND CIRCULAR MILS
KVA	KILOVOLT-AMPERE
KW	KILOWATT
LTG	LIGHTING
LO/TO	LOCK OUT/ TAG OUT
MC	METAL CLAD CABLE
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCM	THOUSAND CIRCULAR MILS
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MH	METAL HALIDE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTR	MOTOR
MTS	MANUAL TRANSFER SWITCH
NEC	NATIONAL ELECTRIC CODE
NF	NON-FUSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
P	POLE, POLES
PF	POWER FACTOR
PNL	PANEL
PRI	PRIMARY
PVC	POLYVINYL CHLORIDE CONDUIT
PWR	POWER
PH	PHASE
R	REMOVE
RR	REMOVE AND RELOCATE
RL	RELOCATED
RECEPT	RECEPTACLE
RGS	RIGID GALVANIZED STEEL CONDUIT
RM/S	ROOM/S
SEC	SECONDARY
SPKR	SPEAKER
SUSP	SUSPEND, SUSPENDED
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TBB	TELECOMMUNICATIONS BACKBOARD
TMH	TELECOMMUNICATIONS MAN HOLE
TYP.	TYPICAL
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
UON	UNLESS OTHERWISE NOTED
V	VOLT, VOLTS
VA	VOLT-AMPERES
VAV	VARIABLE AIR VOLUME
WT	WATERTIGHT
W	WATT OR WIRE
WP	WEATHER PROOF
X'FMR	TRANSFORMER
Y	WYE CONNECTION

APPLICABLE CODES

2016 CALIFORNIA BUILDING CODE (CBC), PART 2, VOLUMES 1 AND 2, TITLE 24

2016 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24

2016 CALIFORNIA ENERGY CODE, PART 6, TITLE 24

2016 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24

2016 CALIFORNIA REFERENCED STANDARDS, PART 12, TITLE 24

TITLE 19, PUBLIC SAFETY STATE FIRE MARSHAL REGULATIONS.

PARTIAL LIST OF APPLICABLE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS:

NFPA 72, 2016 NATIONAL FIRE ALARM AND SIGNALING CODE (CALIFORNIA AMENDED BY CSFM)

UNIVERSITY OF CALIFORNIA
UCRIVERSIDE
CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA. 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

Architect's Data:

Architect's Stamp:

Consultant's Stamp:

PROFESSIONAL ENGINEER
No. E17083
ELECTRICAL
STATE OF CALIFORNIA

FILE NO.: 119-09-08

APPROVED

REVISIONS

REV #	DESCRIPTION	DATE
1	50% DESIGN	11/01/19
2	90% DESIGN	11/27/19
3	100% DESIGN	02/25/20

SKYE HALL HVAC
REPLACEMENT
CAAN NUMBER: P5380

Consultant's Data:
GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

UCR Project Manager: SCOTT DONNELL

Scale:	NONE	SD Approval:	N/A
Drawn By:	N. OROPEZA	DD Approval:	EDB
Checked By:	E. BURTCH	CD Approval:	
Project No.:	_	Construction Release:	
DSA No.:			

Drawing Title: ELECTRICAL SYMBOLS, LEGEND, AND GENERAL NOTES

Sheet No. E0.1

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03/10/20

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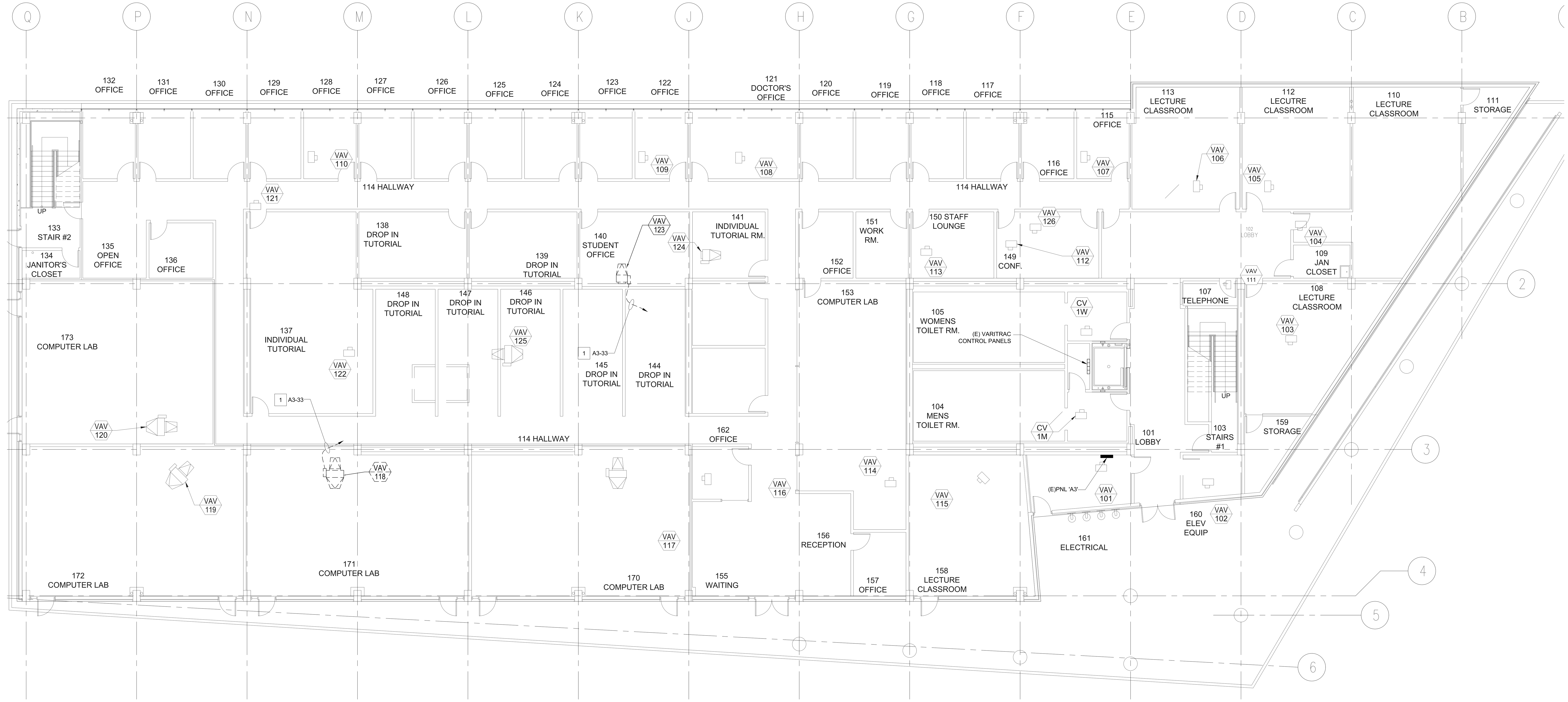

LEGEND:

- — — DEMOLISH/REMOVE
- ——— EXISTING

0 4' 8' 16'

FIRST FLOOR DEMOLITION POWER PLAN | SCALE: 1/8" = 1'-0" | 01

GENERAL NOTES:

1. ELECTRICAL ENGINEERING FOR THIS PROJECT IS BASED ON EXISTING DRAWINGS, DATED 3-7-2002 AND A FIELD VISIT OF THE ELECTRICAL SYSTEM. IN CASE OF ANY DISCREPANCIES WITH EXISTING FIELD CONDITIONS, ELECTRICAL CONTRACTOR SHALL VERIFY THE EXACT DIFFERENCES AND NOTIFY THE UNIVERSITY'S REPRESENTATIVE FOR POSSIBLE REVISION TO THESE DOCUMENTS.
2. ENSURE THAT THE CONTRACTOR COORDINATES ALL ELECTRICAL WORK REGARDING LO/TO WITH THE UNIVERSITY'S REPRESENTATIVE PRIOR TO ANY EXHAUST FAN TO BE DISCONNECTED.
3. PROPERLY REMOVE AND DISPOSE OF ALL MATERIALS IN A PROPER AND COMPLIANT METHOD WITH ALL PERTINENT REGULATORY AGENCIES AND THEIR REQUIREMENTS.

DEMOLITION SHEET NOTES:

1. DISCONNECT AND REMOVE EXISTING POWER AND/OR CONTROL CONNECTIONS OF EXISTING VAV. ALL ASSOCIATED CONDUITS SHALL BE DEMOLISHED BACK TO NEAREST J-BOX AT CEILING SPACE. MAINTAIN CIRCUIT CONTINUITY OF EQUIPMENT/DEVICES TO REMAIN. REUSE EXISTING CIRCUIT AS SHOWN IN RECONSTRUCTION DRAWINGS.

UCRIVERSIDE UNIVERSITY OF CALIFORNIA

CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

Architect's Data:

Architect's Stamp:

Consultant's Stamp:

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Consultant's Data:

GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

UCR Project Manager: SCOTT DONNELL

Scale:	AS NOTED	SD Approval:	N/A
Drawn By:	N. OROPEZA	DD Approval:	EDB
Checked By:	E. BURTCH	CD Approval:	
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DSA No.:			

Drawing Title: FIRST FLOOR DEMOLITION POWER PLAN

Sheet No. E1.0

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UC RIVERSIDE
UNIVERSITY OF CALIFORNIA
CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

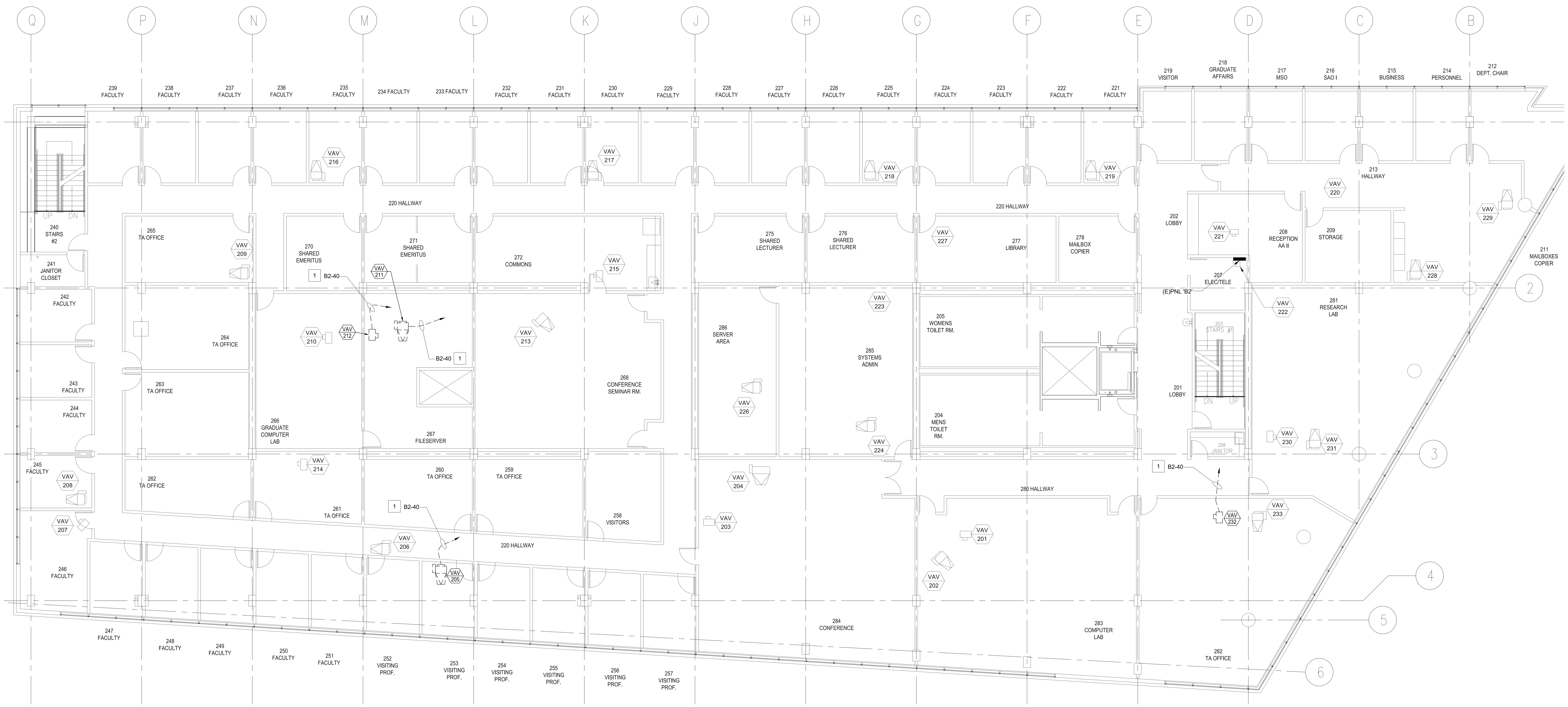
Architect's Data:

Architect's Stamp:

Consultant's Stamp:

PROFESSIONAL ENGINEER No. E17083 ELECTRICAL STATE OF CALIFORNIA

FILE NO.: 119-09-08



LEGEND:

— — — DEMOLISH/REMOVE

———— EXISTING

0 4' 8' 16'

SECOND FLOOR DEMOLITION POWER PLAN | SCALE: 1/8" = 1'-0" | 01

GENERAL NOTES:

1. ELECTRICAL ENGINEERING FOR THIS PROJECT IS BASED ON EXISTING DRAWINGS, DATED 3-7-2002 AND A FIELD VISIT OF THE ELECTRICAL SYSTEM. IN CASE OF ANY DISCREPANCIES WITH EXISTING FIELD CONDITIONS, ELECTRICAL CONTRACTOR SHALL VERIFY THE EXACT DIFFERENCES AND NOTIFY THE UNIVERSITY'S REPRESENTATIVE FOR POSSIBLE REVISION TO THESE DOCUMENTS.

2. ENSURE THAT THE CONTRACTOR COORDINATES ALL ELECTRICAL WORK REGARDING LO/TO WITH THE UNIVERSITY'S REPRESENTATIVE PRIOR TO ANY EXHAUST FAN TO BE DISCONNECTED.

3. PROPERLY REMOVE AND DISPOSE OF ALL MATERIALS IN A PROPER AND COMPLIANT METHOD WITH ALL PERTINENT REGULATORY AGENCIES AND THEIR REQUIREMENTS.

DEMOLITION SHEET NOTES:

1 DISCONNECT AND REMOVE EXISTING POWER AND/OR CONTROL CONNECTIONS OF EXISTING VAV. ALL ASSOCIATED CONDUITS SHALL BE DEMOLISHED BACK TO NEAREST J-BOX AT CEILING SPACE. MAINTAIN CIRCUIT CONTINUITY OF EQUIPMENT/DEVICES TO REMAIN. REUSE EXISTING CIRCUIT AS SHOWN IN RECONSTRUCTION DRAWINGS.

REVISIONS

REV #	DESCRIPTION	DATE
1	50% DESIGN	11/01/19
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3	100% DESIGN	02/25/20

SKYE HALL HVAC REPLACEMENT
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Consultant's Data:

GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

UCR Project Manager: SCOTT DONNELL

Scale: AS NOTED	SD Approval: N/A
Drawn By: N. OROPEZA	DD Approval: EDB
Checked By: E. BURTCH	CD Approval:
Project No.:	Construction Release:
DSA No.:	

Drawing Title: SECOND FLOOR DEMOLITION POWER PLAN

Sheet No. E1.1

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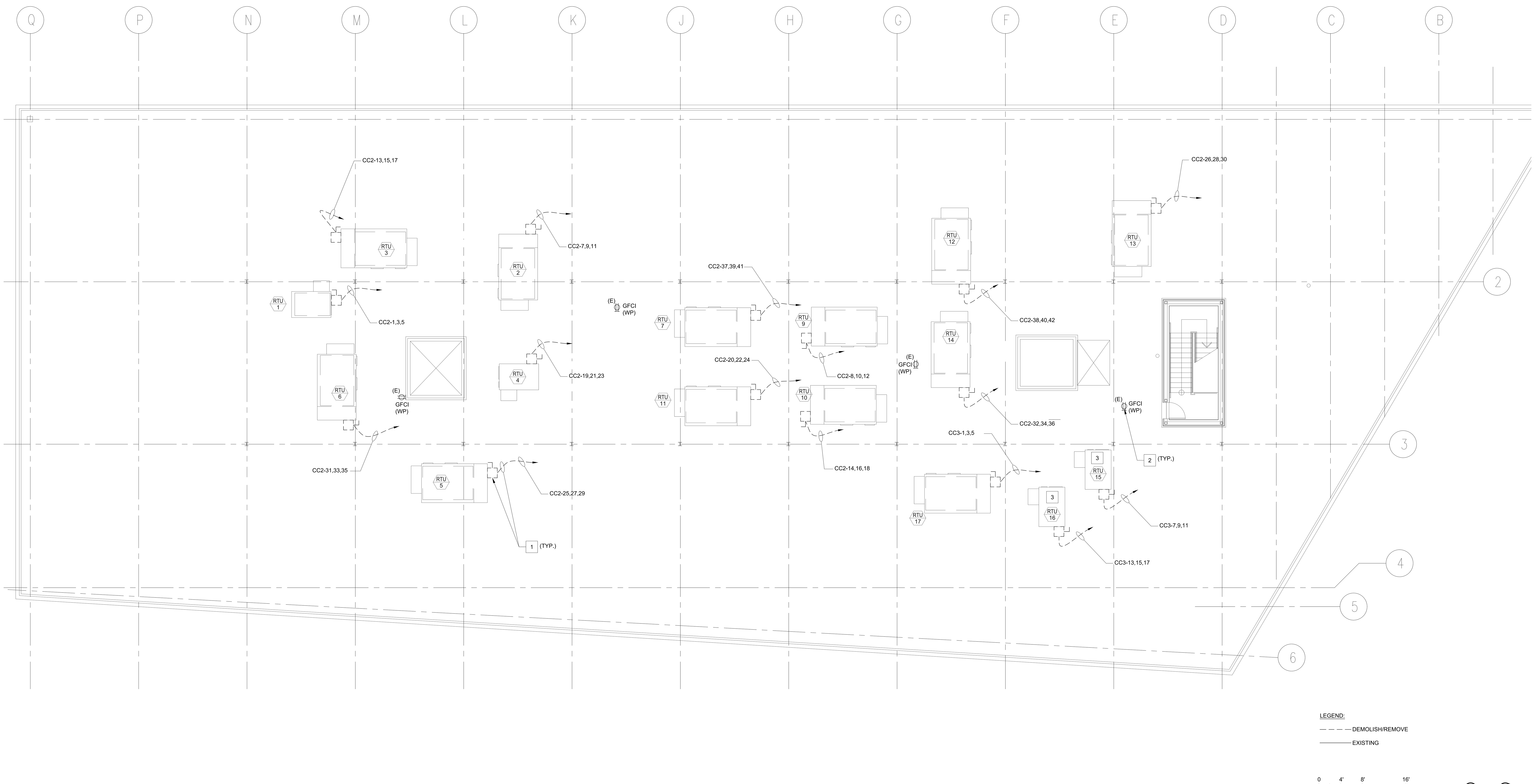

ROOF DEMOLITION POWER PLAN | SCALE: 1/8" = 1'-0" | 01

GENERAL NOTES:

1. ELECTRICAL ENGINEERING FOR THIS PROJECT IS BASED ON EXISTING DRAWINGS, DATED 3-7-2002 AND A FIELD VISIT OF THE ELECTRICAL SYSTEM. IN CASE OF ANY DISCREPANCIES WITH EXISTING FIELD CONDITIONS, ELECTRICAL CONTRACTOR SHALL VERIFY THE EXACT DIFFERENCES AND NOTIFY THE UNIVERSITY'S REPRESENTATIVE FOR POSSIBLE REVISION TO THESE DOCUMENTS.
2. ENSURE THAT THE CONTRACTOR COORDINATES ALL ELECTRICAL WORK REGARDING LO/TO WITH THE UNIVERSITY'S REPRESENTATIVE PRIOR TO ANY EXHAUST FAN TO BE DISCONNECTED.
3. PROPERLY REMOVE AND DISPOSE OF ALL MATERIALS IN A PROPER AND COMPLIANT METHOD WITH ALL PERTINENT REGULATORY AGENCIES AND THEIR REQUIREMENTS.

DEMOLITION SHEET NOTES:

1 DISCONNECT AND REMOVE ALL EXISTING ASSOCIATED POWER AND/OR CONTROL CONNECTIONS FROM EXISTING MECHANICAL EQUIPMENTS BACK TO ROOF STUB-UPS. EXISTING CIRCUITS INCLUDING ALL CONDUITS AND WIRING BELOW ROOF SHALL BE REUSED AND BE PROTECTED IN-PLACE. MAINTAIN CIRCUIT CONTINUITY OF EQUIPMENTS TO REMAIN. COORDINATE ALL DEMOLITION WORKS WITH MECHANICAL DRAWINGS.

2 EXISTING ROOF TOP RECEPTACLE (WP) GFCI TYPE TO BE PROTECTED IN-PLACE.

3 DISCONNECT AND REMOVE ALL EXISTING ASSOCIATED POWER AND/OR CONTROL CONNECTIONS FROM EXISTING MECHANICAL EQUIPMENTS BACK TO SOURCE. COORDINATE ALL DEMOLITION WORKS WITH MECHANICAL DRAWINGS. SEE SHEET E1.0 FOR PANEL LOCATION.

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CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA. 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

Architect's Data:

Architect's Stamp:

Consultant's Stamp:

Ed Burtch — PROFESSIONAL ENGINEER — No. E17083 — ELECTRICAL — STATE OF CALIFORNIA

FILE NO.: 119-09-08

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Office of Planning, Design & Construction Signed CBO: Gilbert Cervantes
Building, Safety and Compliance Division
CAMPUS BUILDING PERMIT

REVISIONS

REV #	DESCRIPTION	DATE
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3	100% DESIGN	02/25/20

SKYE HALL HVAC
REPLACEMENT
CAAN NUMBER: P5380

Consultant's Data:

GE GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

UCR Project Manager: SCOTT DONNELL

Scale: AS NOTED	SD Approval: N/A
Drawn By: N. OROPEZA	DD Approval: EDB
Checked By: E. BURTCH	CD Approval:
Project No.: _	Construction Release:
DSA No.:	

Drawing Title: ROOF DEMOLITION POWER PLAN

Sheet No. E1.2

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CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

Architect's Data:

Architect's Stamp:

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FILE NO.: 119-09-08

FIRST FLOOR RECONSTRUCTION POWER PLAN | SCALE: 1/8" = 1'-0" | 01

GENERAL NOTES:

1. THE EXISTING BUILDING INCLUDING PORTIONS OF THE RECONSTRUCTION AREA SHALL REMAIN IN SERVICE DURING THE CONSTRUCTION PHASE OF THIS PROJECT. ANY MODIFICATIONS TO THE EXISTING ELECTRICAL SYSTEMS THAT MAY REQUIRE THE TEMPORARY INTERRUPTION OF EXISTING SERVICES SHALL BE COORDINATED AND PRE-SCHEDULED WITH THE UNIVERSITY'S REPRESENTATIVE PRIOR TO STARTING ANY WORK.

RECONSTRUCTION SHEET NOTES:

1. PROVIDE NEW POWER CONNECTION/S AND LOCAL REMOTE DISCONNECT SWITCH FOR MECHANICAL UNIT/S. EXTEND CONDUIT AND WIRING TO NEW SWITCH AS REQUIRED. REUSE EXISTING CIRCUIT.
2. APPROXIMATE LOCATION OF EXISTING J-BOX, CIRCUIT AS SHOWN. EXTEND CONDUIT AND WIRE AS SHOWN. FIELD VERIFY EXACT LOCATIONS.
3. PROVIDE 120V CONNECTION TO NEW MECHANICAL CONTROL PANEL. CIRCUIT AS SHOWN. COORDINATE ALL EFFORTS WITH MECHANICAL DRAWINGS. VERIFY AVAILABILITY OF CIRCUITS.

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UC RIVERSIDE
Office of Planning, Design & Construction Signed CBO: Gilbert Cervantes
Building, Safety and Compliance Division
CAMPUS BUILDING PERMIT

REVISIONS

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GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
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www.gossengineering.com

UCR Project Manager: SCOTT DONNELL

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Project No.: _	Construction Release:
DSA No.:	

Drawing Title: FIRST FLOOR RECONSTRUCTION POWER PLAN

Sheet No. E2.0

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CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

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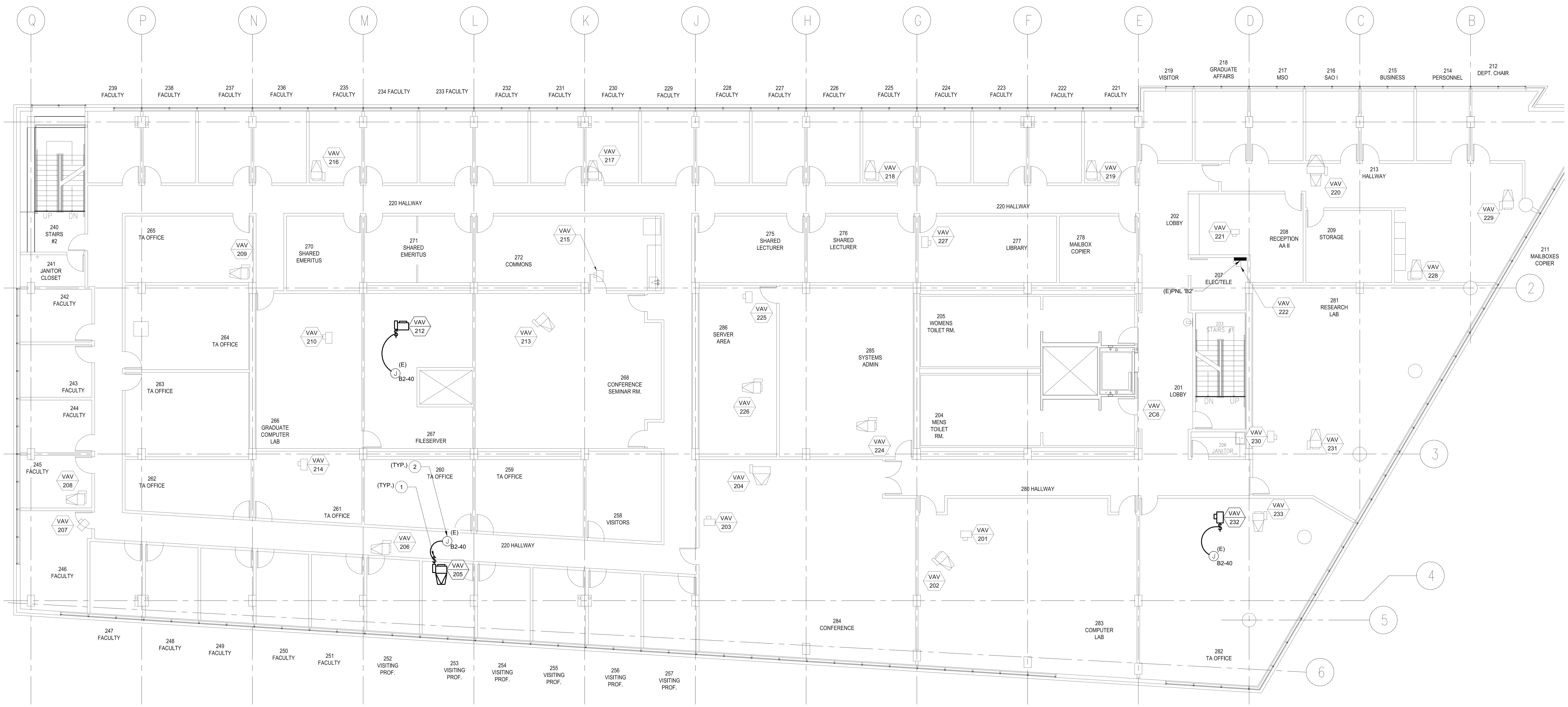

LEGEND:
NEW
EXISTING

0 4' 8' 16'

SECOND FLOOR RECONSTRUCTION POWER PLAN | SCALE: 1/8" = 1'-0" | 01

GENERAL NOTES:

1. THE EXISTING BUILDING INCLUDING PORTIONS OF THE RECONSTRUCTION AREA SHALL REMAIN IN SERVICE DURING THE CONSTRUCTION PHASE OF THIS PROJECT. ANY MODIFICATIONS TO THE EXISTING ELECTRICAL SYSTEMS THAT MAY REQUIRE THE TEMPORARY INTERRUPTION OF EXISTING SERVICES SHALL BE COORDINATED AND PRE-SCHEDULED WITH THE UNIVERSITY'S REPRESENTATIVE PRIOR TO STARTING ANY WORK.

RECONSTRUCTION SHEET NOTES:

1. PROVIDE NEW POWER CONNECTION/S AND LOCAL REMOTE DISCONNECT SWITCH FOR MECHANICAL UNIT/S. EXTEND CONDUIT AND WIRING TO NEW SWITCH AS REQUIRED. REUSE EXISTING CIRCUIT.

2. APPROXIMATE LOCATION OF EXISTING J-BOX. CIRCUIT AS SHOWN. EXTEND CONDUIT AND WIRE AS SHOWN. FIELD VERIFY EXACT LOCATIONS.

REVISIONS

REV #	DESCRIPTION	DATE
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SKYE HALL HVAC REPLACEMENT
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Consultant's Data:
GE GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

UCR Project Manager: SCOTT DONNELL

Scale: AS NOTED	SD Approval: N/A
Drawn By: N. OROPEZA	DD Approval: EDB
Checked By: E. BURTCH	CD Approval:
Project No.:	Construction Release:
DSA No.:	

Drawing Title: SECOND FLOOR RECONSTRUCTION POWER PLAN

Sheet No. E2.1

Building Permit B19-308

THIRD FLOOR RECONSTRUCTION POWER PLAN SCALE: 1/8" = 1'-0" 01

GENERAL NOTES:

1. THE EXISTING BUILDING INCLUDING PORTIONS OF THE RECONSTRUCTION AREA SHALL REMAIN IN SERVICE DURING THE CONSTRUCTION PHASE OF THIS PROJECT. ANY MODIFICATIONS TO THE EXISTING ELECTRICAL SYSTEMS THAT MAY REQUIRE THE TEMPORARY INTERRUPTION OF EXISTING SERVICES SHALL BE COORDINATED AND PRE-SCHEDULED WITH THE UNIVERSITY'S REPRESENTATIVE PRIOR TO STARTING ANY WORK.

2. DOWN TIME OF EXISTING FIRE ALARM SYSTEM SHALL BE SCHEDULED AND COORDINATED IN ADVANCE WITH THE UNIVERSITY'S REPRESENTATIVE AND THE CAMPUS FIRE MARSHAL.

RECONSTRUCTION SHEET NOTES:

1 PROVIDE NEW POWER CONNECTION/S AND LOCAL REMOTE DISCONNECT SWITCH FOR MECHANICAL UNIT/S. EXTEND CONDUIT AND WIRING TO NEW SWITCH AS REQUIRED. REUSE EXISTING CIRCUIT.

2 APPROXIMATE LOCATION OF EXISTING J-BOX, CIRCUIT AS SHOWN. EXTEND CONDUIT AND WIRE AS SHOWN. FIELD VERIFY EXACT LOCATIONS.

3 DUCT SMOKE DETECTOR INSTALLED BY THE DIVISION 23. FURNISHED AND WIRED BY DIVISION 26. ENSURE THE DETECTOR SHALL BE 100% COMPATIBLE WITH THE EXISTING FIRE ALARM SYSTEM. PROVIDE ALL NECESSARY CONDUITS AND WIRING TO CONNECT TO EXISTING FIRE ALARM SYSTEM. RE-PROGRAM INTO EXISTING FACP AS NEEDED. ALL FIRE ALARM WORKS SHALL BE REQUIRED TO BE REVIEWED AND APPROVED BY THE CAMPUS FIRE MARSHAL. COORDINATE ALL EFFORTS WITH MECHANICAL DRAWINGS.

UNIVERSITY OF CALIFORNIA
UC RIVERSIDE
CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA. 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

Architect's Data:

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REVISIONS

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GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

UCR Project Manager: SCOTT DONNELL

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Checked By: E. BURTCH	CD Approval:
Project No.: _	Construction Release:
DSA No.:	

Drawing Title: THIRD FLOOR RECONSTRUCTION POWER PLAN

Sheet No. E2.2

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CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

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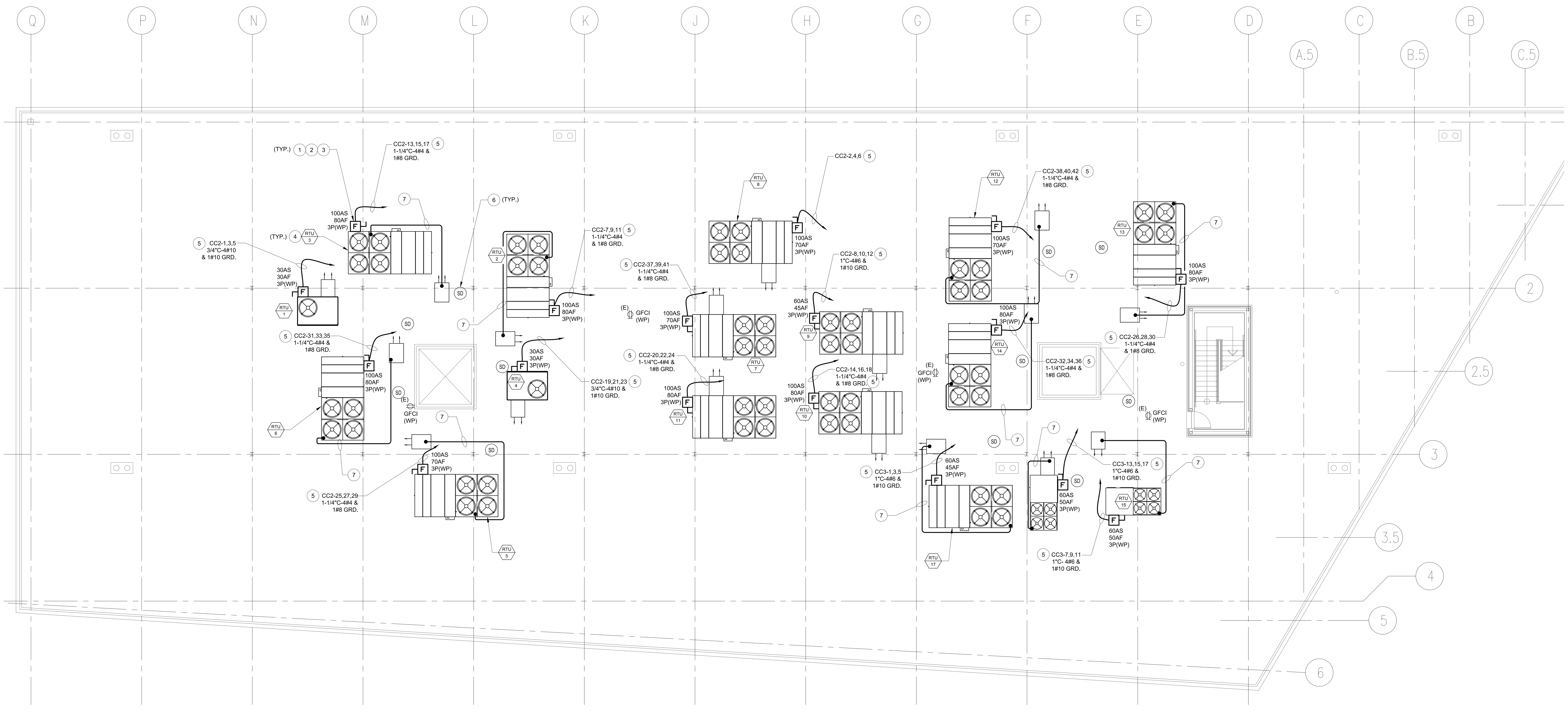


LEGEND:

NEW

EXISTING

ROOF RECONSTRUCTION POWER PLAN | SCALE: 1/8" = 1'-0" | 01

GENERAL NOTES:

1. THE EXISTING BUILDING INCLUDING PORTIONS OF THE RECONSTRUCTION AREA SHALL REMAIN IN SERVICE DURING THE CONSTRUCTION PHASE OF THIS PROJECT. ANY MODIFICATIONS TO THE EXISTING ELECTRICAL SYSTEMS THAT MAY REQUIRE THE TEMPORARY INTERRUPTION OF EXISTING SERVICES SHALL BE COORDINATED AND PRE-SCHEDULED WITH THE UNIVERSITY'S REPRESENTATIVE PRIOR TO STARTING ANY WORK.

2. DOWN TIME OF EXISTING FIRE ALARM SYSTEM SHALL BE SCHEDULED AND COORDINATED IN ADVANCE WITH THE UNIVERSITY'S REPRESENTATIVE AND THE CAMPUS FIRE MARSHAL.

RECONSTRUCTION SHEET NOTES:

1 ALL ELECTRICAL EQUIPMENT/DEVICES ON THE ROOF SHALL BE WEATHER PROOF, NEMA-3R AND +18" ABOVE FINISHED ROOF LEVEL.

2 PROVIDE LOCAL REMOTE DISCONNECT SWITCH FOR MECHANICAL UNIT/S. EXTEND CONDUIT AND WIRING FROM ROOF STUB-UP TO NEW SWITCH AS REQUIRED. REUSE EXISTING CIRCUIT. SEE DETAIL 01 SHEET E3.0. ALL FUSES TO BE "TIME-DELAY" REJECTION TYPE. EQUIPMENT NAMEPLATE FUSE RATING SHALL SUPERSEDE DESIGN VALUE.

3 MECHANICAL UNIT DISCONNECT SWITCHES TO BE MARKED/LABELED AS REQUIRED.

4 REFER TO ALL MECHANICAL DRAWINGS FOR EXACT LOCATIONS AND CHARACTERISTICS OF ALL EQUIPMENT LISTED IN THE MECHANICAL SCHEDULE. ANY MODIFICATIONS AND/OR ADDITIONAL WORK NECESSARY SHALL BE INCLUDED IN THE BASE BID.

5 REUSE ALL EXISTING ROOF PENETRATIONS AS POSSIBLE. ALL ELECTRICAL SEPERATE/ADDITIONAL ROOF PENETRATIONS SHALL BE FLASHED. SEE DETAIL 01, SHEET E3.0 FOR ADDITIONAL INFORMATION.

6 DUCT SMOKE DETECTOR LOCATED IN THE SUPPLY DUCT ON ROOF. DUCT SMOKE DETECTOR INSTALLED BY THE DIVISION 23. FURNISHED AND WIRED BY DIVISION 26. ENSURE THE DETECTOR SHALL BE 100% COMPATIBLE WITH THE EXISTING FIRE ALARM SYSTEM. PROVIDE ALL NECESSARY CONDUITS AND WIRING TO CONNECT TO EXISTING FIRE ALARM SYSTEM. RE-PROGRAM INTO EXISTING FACP AS NEEDED. ALL FIRE ALARM WORKS SHALL BE REQUIRED TO BE REVIEWED AND APPROVED BY THE CAMPUS FIRE MARSHAL. COORDINATE ALL EFFORTS WITH MECHANICAL DRAWINGS.

7 PROVIDE (1) 3/4"C-3#12 & 1#12 GRD. FOR POWER EXHAUST. COORDINATE ALL EFFORTS WITH MECHANICAL DRAWINGS.

REVISIONS

REV #	DESCRIPTION	DATE
1	50% DESIGN	11/01/19
2	90% DESIGN	11/27/19
3	100% DESIGN	02/25/20

SKYE HALL HVAC REPLACEMENT
CAAN NUMBER: P5380

Consultant's Data:
GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

UCR Project Manager: SCOTT DONNELL

Scale:	AS NOTED	SD Approval:	N/A
Drawn By:	N. OROPEZA	DD Approval:	NDU
Checked By:	E. BURTCH	CD Approval:	
Project No.:	_	Construction Release:	
DSA No.:			

Drawing Title: ROOF RECONSTRUCTION POWER PLAN

Sheet No. E2.3

PANEL: A3 (EXISTING)

LOCATION : 1ST FLR. ELECTRICAL RM. 161 — VOLTAGE/PHASE : 208Y/120V, 3Ø, 4W — FED FROM : MAIN SWITCHBOARD
MOUNTING : SURFACE — BUS AMPS : 225A — RATING : 10,000A
NEMA : 1 — MAIN BREAKER : M.L.O

LOADS	SEE NOTE	*	OUTLETS LTG	OUTLETS REC	OUTLETS MISC	VOLT-AMPS A	VOLT-AMPS B	VOLT-AMPS C	CKT	BKR/ POLE	ABC	BKR/ POLE	CKT	VOLT-AMPS A	VOLT-AMPS B	VOLT-AMPS C	OUTLETS LTG	OUTLETS REC	OUTLETS MISC	*	SEE NOTE	LOADS
COMP. LAB RM. 172						1,200			1	20/1	*–	20/1	2	500							1	MECH. CTRL. PNL
COMP. LAB RM. 172							1,200		3	20/1	–*–	20/1	4		1,200							F/A NAC
COMP. LAB RM. 172								800	5	20/1	–*	20/1	6			800						SEC. PANELS
COMP. LAB RM. 172						1,200			7	20/1	*–	20/1	8	1,200								COMP. ROOM 173
COMP. LAB RM. 172							800		9	20/1	–*–	20/1	10		1,200							COMP. ROOM 173
COMP. LAB RM. 172								800	11	20/1	–*	20/1	12			800						COMP. ROOM 173
OFFICE REC.						720			13	20/1	*–	20/1	14	1,200								COMP. ROOM 173
OFFICE REC.							720		15	20/1	–*–	20/1	16		800							COMP. ROOM 173
OFFICE REC.								720	17	20/1	–*	20/1	18			1,200						COMP. ROOM 171
OFFICE REC.						720			19	20/1	*–	20/1	20	1,200								COMP. ROOM 171
OFFICE REC.							720		21	20/1	–*–	20/1	22		800							COMP. ROOM 171
OFFICE REC.								720	23	20/1	–*	20/1	24			800						COMP. ROOM 173
VARITRAC CTRL. PANEL						500			25	20/1	*–	20/1	26	800								MDF
WH-1							3,000		27	20/1	–*–	20/1	28		900							PRINTER RM. 172
WH-1								3,000	29	20/1	–*	20/1	30			300						SEC. SYS. CTRL. PANEL
GD-1						1,100			31	20/1	*–	20/1	32	1,200								COMP. ROOM. 172
VAV'S 1ST FLOOR	1						800		33	20/1	–*–	20/1	34		1,200							COMP. ROOM. 172
ELEVATOR PIT								250	35	20/1	–*	20/2	36			800						COMP. ROOM. 172
COMP. LAB RM. 170						1,200			37	20/1	*–		38	1,200								COMP. ROOM. 173
COMP. LAB RM. 170							1,200		39	20/1	–*–	20/1	40		1,200							COMP. ROOM. 173
COMP. LAB RM. 170								800	41	20/1	–*	20/1	42			800						COMP. ROOM. 173

TOTAL ØA = 13,940 VOLT-AMPS — 116 AMPS
TOTAL ØB = 15,740 VOLT-AMPS — 131 AMPS
TOTAL ØC = 12,590 VOLT-AMPS — 105 AMPS
LCL = 0 VOLT-AMPS

TOTAL PANEL = 42,270 VA @ 208V, 3Ø = 117 AMPS

NOTES:
1. LOAD UPDATED

PANEL: CC2 (EXISTING)

LOCATION : 3RD FLOOR ELECTRICAL RM. 307 — VOLTAGE/PHASE : 480Y/277V, 3Ø, 4W — FED FROM : MAIN SWITCHBOARD 'MS'
MOUNTING : SURFACE — BUS AMPS : 800A — RATING : 14,000A
NEMA : 1 — MAIN BREAKER : M.L.O.

LOADS	SEE NOTE	*	OUTLETS LTG	OUTLETS REC	OUTLETS MISC	VOLT-AMPS A	VOLT-AMPS B	VOLT-AMPS C	CKT	BKR/ POLE	ABC	BKR/ POLE	CKT	VOLT-AMPS A	VOLT-AMPS B	VOLT-AMPS C	OUTLETS LTG	OUTLETS REC	OUTLETS MISC	*	SEE NOTE	LOADS
						6,030			1		*–		2	13,300								
RTU-1	1						6,030		3	30/3	–*–	70/3	4		13,300						1	RTU-8
								6,030	5		–*		6			13,300						
						15,160			7		*–		8	8,355								
RTU-2	1,2						15,160		9	80/3	–*–	50/3	10		8,355						1	RTU-9
								15,160	11		–*		12			8,355						
						15,160			13		*–		14	15,160								
RTU-3	1,2						15,160		15	80/3	–*–	80/3	16		15,160						1,2	RTU-10
								15,160	17		–*		18			15,160						
						6,030			19		*–		20	15,160								
RTU-4	1						6,030		21	30/3	–*–	80/3	22		15,160						1,2	RTU-11
								6,030	23		–*		24			15,160						
						13,300			25		*–		26	15,160								
RTU-5	1						13,300		27	70/3	–*–	80/3	28		15,160						1,2	RTU-13
								13,300	29		–*		30			15,160						
						15,160			31		*–		32	15,160								
RTU-6	1,2						15,160		33	80/3	–*–	80/3	34		15,160						1,2	RTU-14
								15,160	35		–*		36			15,160						
						13,300			37		*–		38	13,300								
RTU-7	1						13,300		39	70/3	–*–	70/3	40		13,300						1	RTU-12
								13,300	41		–*		42			13,300						

TOTAL ØA = 179,735 VOLT-AMPS — 649 AMPS
TOTAL ØB = 179,735 VOLT-AMPS — 649 AMPS
TOTAL ØC = 179,735 VOLT-AMPS — 649 AMPS
LCL = 0 VOLT-AMPS

TOTAL PANEL = 539,205 VA @ 480V, 3Ø = 649 AMPS

NOTES:
1. LOAD UPDATED
2. PROVIDE NEW BREAKER TO MATCH EXISTING TYPE AND AIC RATING.

PANEL: B2 (EXISTING)

LOCATION : 2ND FLR. ELECTRICAL RM. 207 — VOLTAGE/PHASE : 208Y/120V, 3Ø, 4W — FED FROM : MAIN SWITCHBOARD
MOUNTING : SURFACE — BUS AMPS : 225A — RATING : 10,000A
NEMA : 1 — MAIN BREAKER : M.L.O

LOADS	SEE NOTE	*	OUTLETS LTG	OUTLETS REC	OUTLETS MISC	VOLT-AMPS A	VOLT-AMPS B	VOLT-AMPS C	CKT	BKR/ POLE	ABC	BKR/ POLE	CKT	VOLT-AMPS A	VOLT-AMPS B	VOLT-AMPS C	OUTLETS LTG	OUTLETS REC	OUTLETS MISC	*	SEE NOTE	LOADS
OFFICE						720			1	20/1	*–	20/1	2	720								PROFESSOR
OFFICE							720		3	20/1	–*–	20/1	4		720							PROFESSOR
OFFICE								720	5	20/1	–*	20/1	6			720						PROFESSOR
IDF						720			7	20/1	*–	20/1	8	720								PROFESSOR
GD-1							720		9	20/1	–*–	20/1	10		720							PROFESSOR
OFFICE								720	11	20/1	–*	20/1	12			720						PROFESSOR
OFFICE						720			13	20/1	*–	20/1	14	720								FACULTY
OFFICE							720		15	20/1	–*–	20/1	16		720							FACULTY
FACULTY								720	17	20/1	–*	20/1	18			720						FACULTY
FACULTY						720			19	20/1	*–	20/1	20	900								FACULTY
FACULTY							720		21	20/1	–*–	20/1	22		900							CORRIDOR
FACULTY								720	23	20/1	–*	20/1	24			900						CORRIDOR
FACULTY						720			25	20/1	*–	20/1	26	1,200								COMPUTER RM. 283
FACULTY							720		27	20/1	–*–	20/1	28		1,200							COMPUTER RM. 283
IDF								1,100	29	20/1	–*	20/1	30			1,200						COMPUTER RM. 283
COMPUTER RM 283						1,200			31	20/1	*–	20/1	32	1,200								COMPUTER RM. 283
COMPUTER RM 284							1,200		33	20/1	–*–	20/1	34		1,200							COMPUTER RM. 283
COMPUTER RM 285								800	35	20/1	–*	20/2	36			3,078						REFRIG./MICROWAVE
OFFICE						720			37	20/1	*–		38	3,078								
OFFICE							720		39	20/1	–*–	20/1	40		800						1	VAV'S 2ND FLOOR
MAGNETIC DOOR HOLDER								250	41	20/1	–*	20/1	42			800						COMPUTER RM. 283

TOTAL ØA = 14,058 VOLT-AMPS — 117 AMPS
TOTAL ØB = 11,780 VOLT-AMPS — 98 AMPS
TOTAL ØC = 13,168 VOLT-AMPS — 110 AMPS
LCL = 0 VOLT-AMPS

TOTAL PANEL = 39,006 VA @ 208V, 3Ø = 108 AMPS

NOTES:
1. LOAD UPDATED

PANEL: CC3 (EXISTING)

LOCATION : 3RD FLOOR ELECTRICAL RM. 307 — VOLTAGE/PHASE : 480Y/277V, 3Ø, 4W — FED FROM : MAIN SWITCHBOARD 'MS'
MOUNTING : SURFACE — BUS AMPS : 400A — RATING : 14,000A
NEMA : 1 — MAIN BREAKER : M.L.O.

LOADS	SEE NOTE	*	OUTLETS LTG	OUTLETS REC	OUTLETS MISC	VOLT-AMPS A	VOLT-AMPS B	VOLT-AMPS C	CKT	BKR/ POLE	ABC	BKR/ POLE	CKT	VOLT-AMPS A	VOLT-AMPS B	VOLT-AMPS C	OUTLETS LTG	OUTLETS REC	OUTLETS MISC	*	SEE NOTE	LOADS
						8,355			1		*–	20/1	2									SPARE
RTU-17	1						8,355		3	50/3	–*–	20/1	4									SPARE
								8,355	5		–*	20/1	6									SPARE
						8,665			7		*–	20/1	8									SPARE
RTU-15	1,2						8,665		9	50/3	–*–	20/1	10									SPARE
								8,665	11		–*	20/1	12									SPARE
						8,665			13		*–	20/1	14									SPARE
RTU-16	1,2						8,665		15	50/3	–*–	20/1	16									SPARE
								8,665	17		–*	20/1	18									SPARE
						1,267			19		*–	–	20									SPACE
EF-1							1,267		21	20/3	–*–	–	22									SPACE
								1,267	23		–*	–	24									SPACE
SPARE									25	20/1	*–	–	26									SPACE
SPARE									27	20/1	–*–	–	28									SPACE
SPARE									29	20/1	–*	–	30									SPACE
SPACE									31	–	*–	–	32									SPACE
SPACE									33	–	–*–	–	34									SPACE
SPACE									35	–	–*	–	36									SPACE
SPACE									37	–	*–	–	38									SPACE
SPACE									39	–	–*–	–	40									SPACE
SPACE									41	–	–*	–	42									SPACE

TOTAL ØA = 26,952 VOLT-AMPS — 97 AMPS
TOTAL ØB = 26,952 VOLT-AMPS — 97 AMPS
TOTAL ØC = 26,952 VOLT-AMPS — 97 AMPS
LCL = 0 VOLT-AMPS

TOTAL PANEL = 80,856 VA @ 480V, 3Ø = 97 AMPS

NOTES:
1. LOAD UPDATED
2. PROVIDE NEW BREAKER TO MATCH EXISTING TYPE AND AIC RATING.

PANEL: C3 (EXISTING)

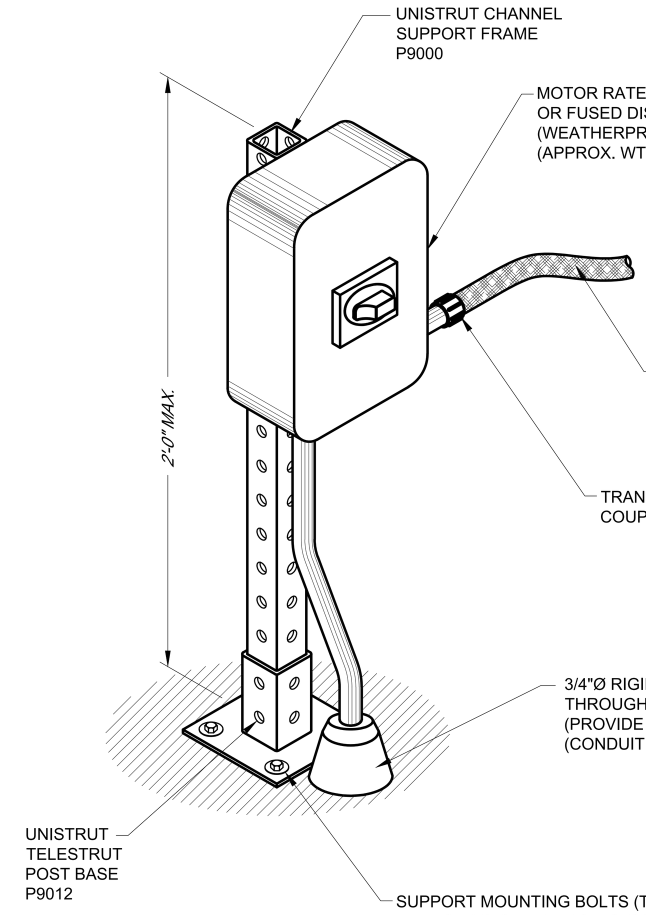
LOCATION : 3RD FLR. ELECTRICAL RM. 307 — VOLTAGE/PHASE : 208Y/120V, 3Ø, 4W — FED FROM : MAIN SWITCHBOARD
MOUNTING : SURFACE — BUS AMPS : 225A — RATING : 10,000A
NEMA : 1 — MAIN BREAKER : M.L.O

LOADS	SEE NOTE	*	OUTLETS LTG	OUTLETS REC	OUTLETS MISC	VOLT-AMPS A	VOLT-AMPS B	VOLT-AMPS C	CKT	BKR/ POLE	ABC	BKR/ POLE	CKT	VOLT-AMPS A	VOLT-AMPS B	VOLT-AMPS C	OUTLETS LTG	OUTLETS REC	OUTLETS MISC	*	SEE NOTE	LOADS
MAGNETIC DOOR HOLDER						850			1	20/1	*–	20/1	2	800								COMPUTER RM. 356
ROOF							720		3	20/1	–*–	20/1	4		800							COMPUTER RM. 356
(1) WH-2								3,078	5	40/2	–*	20/1	6			900						PRINTER RM. 356
						3,078			7		*–	20/1	8	800								COMPUTER RM. 357
(1) CD-1							1,100		9	20/1	–*–	20/1	10		800							COMPUTER RM. 357
VAV'S ROOF								220	11	20/1	–*	20/1	12			900						PRINTER RM. 357
VAV'S 3RD FLR.	1					1,000			13	20/1	*–	20/1	14	1,200								COMPUTER RM. 357
COMPUTER RM. 358							800		15	20/1	–*–	20/1	16		1,200							COMPUTER RM. 357
COMPUTER RM. 358								800	17	20/1	–*	20/1	18			1,200						COMPUTER RM. 357
PRINTER RM. 358						900			19	20/1	*–	20/1	20	1,200								COMPUTER RM. 357
COMPUTER RM. 358							1,200		21	20/1	–*–	20/1	22		1,200							COMPUTER RM. 357
COMPUTER RM. 358								1,200	23	20/1	–*	20/1	24			800						COMPUTER RM. 357
COMPUTER RM. 358						800			25	20/1	*–	20/1	26	800								COMPUTER RM. 357
COMPUTER RM. 358							800		27	20/1	–*–	20/1	28		1,200							COMPUTER RM. 359
COMPUTER RM. 358								1,200	29	20/1	–*	20/1	30			1,200						COMPUTER RM. 359
COMPUTER RM. 358						1,200			31	20/1	*–	20/1	32	800								COMPUTER RM. 359
COMPUTER RM. 358							1,200		33	20/1	–*–	20/1	34		800							COMPUTER RM. 359
COMPUTER RM. 359								800	35	20/1	–*	20/2	36			1,200						COMPUTER RM. 359
COMPUTER RM. 359						800			37	20/1	*–		38	1,200								COMPUTER RM. 359
COMPUTER RM. 359							900		39	20/1	–*–	20/1	40		1,200							COMPUTER RM. 359
SPARE									41	20/1	–*	20/1	42									SPARE

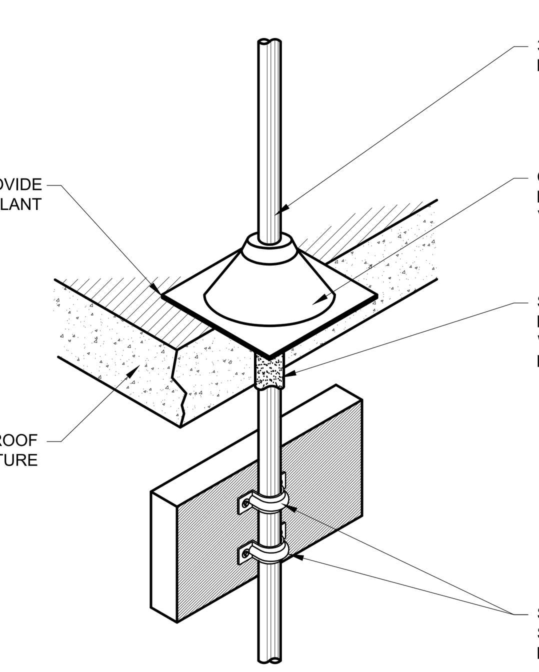
TOTAL ØA = 15,428 VOLT-AMPS — 129 AMPS
TOTAL ØB = 13,920 VOLT-AMPS — 116 AMPS
TOTAL ØC = 13,498 VOLT-AMPS — 112 AMPS
LCL = 0 VOLT-AMPS

TOTAL PANEL = 42,846 VA @ 208V, 3Ø = 119 AMPS

NOTES:
1. LOAD UPDATED



ROOF MOTOR RATED/DISCONNECT SWITCH MOUNTING DETAIL — SCALE: NONE — 02



ROOF CONDUIT FLASHING DETAIL — SCALE: NONE — 01

UNIVERSITY OF CALIFORNIA
UC RIVERSIDE
CAPITAL PROGRAMS ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA. 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

Architect's Data:

Architect's Stamp:

Consultant's Stamp: PROFESSIONAL ENGINEER — No. E17083 — ELECTRICAL — STATE OF CALIFORNIA

FILE NO.: 119-09-08

APPROVED

REV #	DESCRIPTION	DATE
1	50% DESIGN	11/01/19
2	90% DESIGN	11/27/19
3	100% DESIGN	02/25/20

REVISIONS

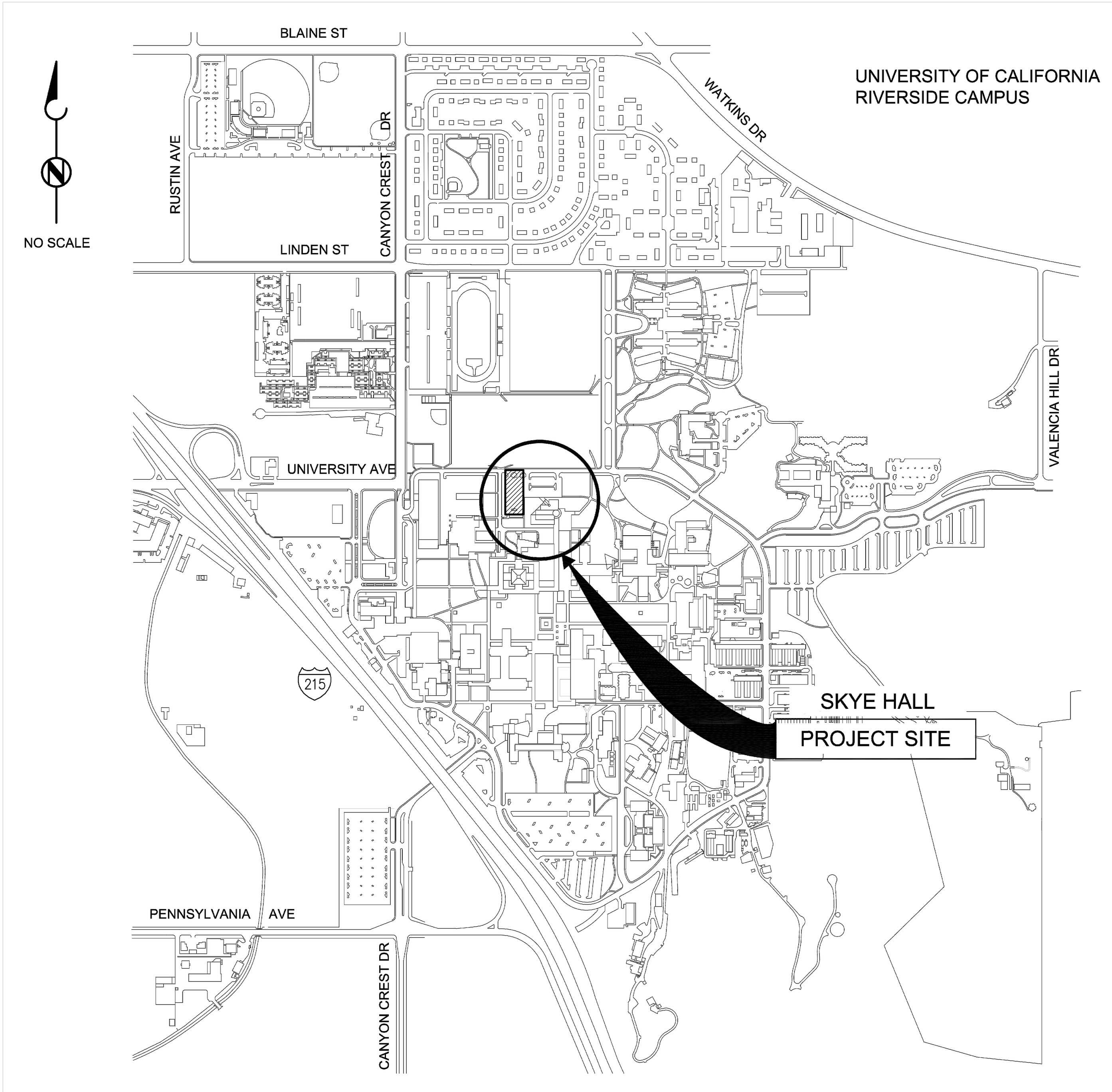
SKYE HALL HVAC REPLACEMENT
CAAN NUMBER: P5380

Consultant's Data:
GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

UCR Project Manager: SCOTT DONNELL

Scale: NONE	SD Approval: N/A
Drawn By: N. OROPEZA	DD Approval: EDB
Checked By: E. BURTCH	CD Approval:
Project No.:	Construction Release:
DSA No.:	

Drawing Title: ELECTRICAL SCHEDULES AND DETAILS
Sheet No. E3.0



STATEMENT OF SPECIAL INSPECTIONS

1. THE OWNER SHALL EMPLOY ONE OR MORE SPECIAL INSPECTORS TO PROVIDE INSPECTIONS DURING CONSTRUCTION. THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.
2. SPECIAL INSPECTIONS ARE NOT REQUIRED WHERE THE WORK IS DONE ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION. APPROVED FABRICATORS MUST SUBMIT A CERTIFICATE OF COMPLIANCE FOR OFFSITE FABRICATIONS SUCH AS STRUCTURAL STEEL, PRECAST CONCRETE, GLUED LAMINATED TIMBER, ETC.
3. ALL INSPECTIONS SHALL BE PERFORMED BY INDEPENDENT SPECIAL INSPECTORS. JOB SITE VISITS BY THE STRUCTURAL ENGINEER OR BUILDING OFFICIAL DO NOT CONSTITUTE AND ARE NOT A SUBSTITUTE FOR INSPECTIONS BY A SPECIAL INSPECTOR.
4. ALL INSPECTION REPORTS SHALL BE SUBMITTED TO THE BUILDING OFFICIAL AND EOR. THE FINAL REPORTS BY THE SPECIAL INSPECTOR(S) MUST CERTIFY THAT THE ENTIRE STRUCTURAL SYSTEM COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS.
5. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT THESE INSPECTIONS ARE PERFORMED.
6. WORK REQUIRING SPECIAL INSPECTION SHALL BE INSPECTED BY THE SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK IS PERFORMED AND AT THE COMPLETION OF WORK. CONTINUOUS INSPECTION CONSISTS OF FULL-TIME INSPECTION; PERIODIC INSPECTION CONSISTS OF PART-TIME OR INTERMITTENT INSPECTION.
7. THE FOLLOWING SPECIAL INSPECTIONS ARE IN ADDITION TO INSPECTIONS BY THE BUILDING OFFICIAL. THIS LIST IS NOT INTENDED TO BE ALL INCLUSIVE.

STRUCTURAL CONCRETE
PERIODIC: INSPECTION OF REINFORCING STEEL AND PLACEMENT

CONT: INSPECT BOLTS TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT OF CONCRETE

PERIODIC: VERIFY USE OF REQUIRED DESIGN MIX

CONT: SAMPLING FRESH CONCRETE & PERFORMING SLUMP AND AIR CONTENT TESTS & DETERMINING THE TEMPERATURE OF FRESH CONCRETE AT THE TIME OF MAKING SPECIMENS FOR STRENGTH TESTS

CONT: INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES

PERIODIC: INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUE

PERIODIC: VERIFICATION OF IN-SITU CONCRETE STRENGTH, PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS

PERIODIC: INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED

PERIODIC: POST-INSTALLED AND ADHESIVE ANCHORS

STRUCTURAL STEEL
PERIODIC: STRUCTURAL STEEL IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS

PERIODIC: STRUCTURAL STEEL MANUFACTURER'S CERTIFIED MILL TEST REPORTS REQUIRED

WELDING
CONT: COMPLETE AND PARTIAL PENETRATION GROOVE WELDS

CONT: FILLET WELDS > 5/16" AND MULTIPASS FILLET WELDS

PERIODIC: FILLET WELDS < 5/16"

PERIODIC: WELD FILLER MATERIAL IDENTIFICATION MARKINGS TO CONFORM TO AWS STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS, MANUFACTURER'S CERTIFICATION OF COMPLIANCE REQUIRED

PERIODIC: VERIFICATION OF WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A706

PERIODIC: ALL OTHER REINFORCEMENT WELDS, UNO

NON-STRUCTURAL COMPONENTS
PERIODIC: ANCHORAGE OF ELECTRICAL EQUIPMENT.

STRUCTURAL STEEL

051200-0000 (04/21/17)

1. DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE SPECIFICATIONS AND STANDARD OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), AS CONTAINED IN THE LATEST EDITION OF "AISC MANUAL OF STEEL CONSTRUCTION".
2. ALL STRUCTURAL STEEL SHALL BE ERECTED PLUMB AND TRUE TO LINE. TEMPORARY BRACING SHALL BE INSTALLED AND SHALL BE LEFT IN PLACE UNTIL OTHER MEANS IS PROVIDED TO ADEQUATELY BRACE THE STRUCTURE.
3. PROVIDE THE FOLLOWING MATERIALS FOR STRUCTURAL STEEL UNO:

SHAPE	MATERIAL/GRADE
WIDE FLANGE SECTIONS & TEES	ASTM A992
PLATES, ANGLES, CHANNELS	ASTM A36
SQUARE OR RECTANGULAR HOLLOW STRUCTURAL SECTIONS (HSS)	ASTM A500, GRADE C (F_y=50 KSI) OR ASTM A1085
ROUND HOLLOW STRUCTURAL SECTIONS (HSS)	ASTM A500, GRADE C (F_y=46 KSI) OR ASTM A1085
PIPES	ASTM A53 TYPE E OR S, GRADE B, (F_y=35 KSI)
MACHINE BOLTS (MB)	ASTM A307
HIGH STRENGTH BOLTS (HSB)	ASTM A325 TYPE N
WELDED HEADED STUDS	ASTM A108
THREADED RODS FOR ANCHOR BOLTS	ASTM F1554, GRADE 55
HIGH STRENGTH PLATE	ASTM A572 GRADE 50

a. EXCEPT AS OTHERWISE NOTED, ALL BOLTS SHALL BE HIGH STRENGTH BOLTS.
b. WHERE WELDING TO GRADE 55 THREADED ANCHOR RODS IS REQUIRED, USE ASTM F1554 GRADE 55 WITH SUPPLEMENT S1.

4. ALL CONNECTIONS NOT SHOWN SHALL CONFORM TO THE "AISC MANUAL OF STEEL CONSTRUCTION" AND SHALL BE SUBMITTED ON SHOP DRAWINGS FOR REVIEW BY EOR PRIOR TO FABRICATION.
5. ALL WELDED HEADED STUDS, THREADED STUDS, AND DEFORMED BARS SHALL BE NELSON, OR EQUIVALENT, AND WELDED (IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS BY CERTIFIED WELDERS) SO AS TO FULLY DEVELOP THE TENSILE CAPACITY OF THE CONNECTOR.
6. BOLTS WITH UPSET THREADS ARE NOT ALLOWED. USE THE APPROPRIATE NUT AND WASHER TYPE FOR THE SPECIFIED BOLT.
7. ALL STEEL FABRICATION SHALL BE PERFORMED BY A LICENSED FABRICATOR.
8. ALL STRUCTURAL STEEL AND MISCELLANEOUS STEEL PERMANENTLY EXPOSED TO THE ELEMENTS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION UNLESS A WEATHER PROOF COATING IS SPECIFIED BY THE ARCHITECT, UNO. STAINLESS AND WEATHERING STEELS, WHERE SPECIFIED, ARE EXEMPT FROM THIS REQUIREMENT. GALVANIZED SURFACES SHALL BE PROTECTED DURING CONSTRUCTION AND SHALL BE REPAIRED AS NECESSARY. ALL ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS) SHALL COMPLY WITH AISC CODE OF STANDARD PRACTICE, SECTION 10.
9. WHERE STEEL IS EMBEDDED IN CONCRETE OR MASONRY, PROVIDE HOLES AS REQUIRED FOR PASSAGE OF CONTINUOUS REINFORCING BARS WHERE INDICATED ON DRAWINGS.
10. DO NOT CUT HOLES IN STRUCTURAL STEEL WITHOUT APPROVAL OF THE SEOR.
11. PLACE NON-SHRINK OR DRYPACK GROUT UNDER ALL BASE PLATES AND ALLOW TO CURE BEFORE APPLYING LOADS.
12. ALL WORK SHALL BE IN CONFORMANCE WITH ANY AND ALL TESTING, INSPECTION, QUALIFICATION, AND QUALITY ASSURANCE PROVISIONS AS REQUIRED BY THE BUILDING CODE AND ANY APPLICABLE STANDARDS. THESE STANDARDS INCLUDE, BUT ARE NOT LIMITED TO THE LATEST VERSION OF THE FOLLOWING: AISC 360 "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS"; AISC 341 "SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS"; AWS D1.1 "STRUCTURAL WELDING CODE - STEEL"; AWS D1.8 "STRUCTURAL WELDING CODE - SEISMIC SUPPLEMENT"; AND RCSC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS". CONFORMANCE TO SUPPLEMENTS TO THESE STANDARDS, IF PUBLISHED ON OR BEFORE THE DATE OF PERMIT ISSUANCE, IS ALSO REQUIRED. ALTHOUGH THESE CONTRACT DOCUMENTS INCLUDE GENERAL REFERENCES TO CODES AND STANDARDS, AND REFERENCES TO OR INCLUSIONS OF SPECIFIED PROVISIONS, OMISSIONS OF ANY APPLICABLE CODE, STANDARD, OR PROVISION DOES NOT RELIEVE THE GENERAL CONTRACTOR FROM COMPLIANCE TO THE APPLICABLE REQUIREMENTS. COORDINATION OF QUALITY CONTROL AND QUALITY ASSURANCE IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

WELDING

051200-0000 (04/21/17)

1. WELDING PROCEDURES, ELECTRODES AND WELDER QUALIFICATIONS SHALL CONFORM TO THE "CODE FOR WELDING IN BUILDING CONSTRUCTION", AMERICAN WELDING SOCIETY (AWS), D1.1 AND THE AISC "SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
2. ALL WELDERS SHALL HAVE EVIDENCE OF PASSING THE AWS STANDARD QUALIFICATION TESTS, AND SHALL BE CERTIFIED FOR THE WORK THEY ARE PERFORMING.
3. PROJECT WELDING SHALL BE PERFORMED ONLY IN ACCORDANCE WITH WELDING PROCEDURE SPECIFICATIONS (WPS) SUBMITTED BY THE CONTRACTOR AND REVIEWED BY THE EOR AND PROJECT WELDING INSPECTOR. THE WPS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE APPLICABLE AWS.
4. WELDING OF STRUCTURAL STEEL SHALL BE PERFORMED PER AWS D1.1 USING E70XX ELECTRODES UNLESS OTHERWISE NOTED.
5. ALL FULL PENETRATION WELDS SHALL BE ULTRA-SONIC TESTED PER AWS D1.1 AND D1.8 REQUIREMENTS AS APPLICABLE.
6. ALL GROOVE OR BUTT WELDS SHALL BE COMPLETE PENETRATION WELDS, UNO. ALL EXPOSED BUTT WELDS SHALL BE GROUND SMOOTH.
7. ALL EXPOSED WELDS ON ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS) SHALL COMPLY WITH AISC CODE OF STANDARD PRACTICE, SECTION 10.
8. FIELD WELDS HAVE BEEN INDICATED WHERE THEY ARE EXPECTED TO OCCUR. THE CONTRACTOR SHALL DETERMINE THE ACTUAL FIELD WELDING NECESSARY TO COMPLETE THE PROJECT AND INCLUDE ALL ASSOCIATED COSTS WITHIN THE BASE BID.

STRUCTURAL CONCRETE

033100-0000 (04/18/18)

1. CONCRETE SHALL BE MIXED, PLACED AND CURED IN ACCORDANCE WITH ACI 318 AND ACI 301 LATEST EDITION, AND PROJECT SPECIFICATIONS.
2. CONCRETE SHALL NOT BE DROPPED THROUGH REINFORCING STEEL (AS IN WALLS) SO AS TO CAUSE SEGREGATION OF AGGREGATES. IN SUCH CASES, HOPPERS AND VERTICAL CHUTES OR TRUNKS SHALL BE USED. CHUTES OR TRUNKS SHALL BE OF VARIABLE LENGTHS SO THAT FREE UNCONFINED FALL OF CONCRETE SHALL NOT EXCEED SIX FEET. A SUFFICIENT NUMBER OF CHUTES OR TRUNKS SHALL BE USED TO ENSURE THE CONCRETE IS KEPT LEVEL AT ALL TIMES.
3. STRUCTURAL CONCRETE SHALL MEET THE FOLLOWING DESIGN CRITERIA:

LOCATION	MIN 28-DAY COMP STRENGTH	CONC TYPE	MAX AGGREGATE SIZE	MAX W/C RATIO
CONC PADS	3000 PSI	LWC	1"	0.50

a. WHEN THE USE OF PLASTICIZER (ASTM C1017, TYPE I OR II) OR WATER REDUCER (ASTM C494, TYPE F OR G) IS USED, MAXIMUM SLUMP SHALL BE 4" PRIOR TO ADMIXTURE AND 8" INCLUDING ADMIXTURE AT THE POINT OF DELIVERY. IN THE ABSENCE OF PLASTICIZER AND WATER REDUCER, SLUMP AT THE POINT OF DELIVERY SHALL NOT EXCEED 4".
b. W/C RATIO INDICATES WATER TO CEMENTITIOUS MATERIALS RATIO.
c. FOR INTERIOR SLABS ON GRADE AND ALL OTHER SLABS RECEIVING ADHERED FLOORING FINISHES (I.E., GLUED, ETC.), THE MAXIMUM W/C RATIO SHALL NOT EXCEED 0.46. CURING COMPOUNDS USED ON CONCRETE THAT IS TO RECEIVE FINISHES SHALL BE COMPATIBLE WITH TILE AND ADHESIVES OR GROUTS IN ACCORDANCE WITH MANUFACTURER'S DATA AND BE APPROVED BEFORE USE.
d. SLABS ON GRADE, TOPPING SLABS, AND ELEVATED CONCRETE FLOORS SHALL HAVE A MAXIMUM SHRINKAGE RATE OF 0.04% AT 28 DAYS PER ASTM C 157 (CURING TEST SPECIMENS TO BE CONSISTENT WITH FIELD CONDITIONS), OR USING EMBEDDED VIBRATING WIRE STRAIN GAUGES. RESULTS OF TESTING SHALL BE SUBMITTED TO ENGINEER.
e. SEE ACI 318 FOR ADDITIONAL REQUIREMENTS REGARDING MAXIMUM AGGREGATE SIZE.
f. AGGREGATE GRADATION OF 3/8" MAXIMUM (PEA GRAVEL) SHALL NOT BE USED WHERE FINISHED CONCRETE SURFACE IS EXPOSED TO VIEW.

5. CONCRETE MIX DESIGN AND TESTING SHALL MEET THE REQUIREMENTS OF THE BUILDING CODE, AND SPECIFICATIONS. ALL CONCRETE MIXES SHALL BE DESIGNED PER ACI 318 SECTION 5.2 BY A RECOGNIZED TESTING LAB STAMPED AND SIGNED BY A LICENSED CALIFORNIA CIVIL ENGINEER AND SUBMITTED TO THE EOR FOR REVIEW PRIOR TO CONCRETE PLACEMENT. STRUCTURAL CONCRETE MIXES SHALL CONSIST OF 5 SACK MINIMUM UNO.
6. AGGREGATES IN NORMAL WEIGHT CONCRETE SHALL CONFORM TO ASTM C-33 (HARDROCK). AGGREGATES IN LIGHT WEIGHT CONCRETE SHALL CONFORM TO ASTM C-330.
7. COMPRESSIVE STRENGTH TEST REPORTS SHALL BE SUBMITTED TO THE BUILDING DEPARTMENT AND THE EOR.
8. PORTLAND CEMENT SHALL BE TYPE II AND SHALL CONFORM TO ASTM C150, LOW ALKALI. MILL TESTS WITH CERTIFICATES OF COMPLIANCE SHALL BE SUBMITTED.
9. FLY ASH OR OTHER POZZOLANS CONFORMING TO ASTM C618 CLASS F MAY BE USED AS A PARTIAL SUBSTITUTION FOR PORTLAND CEMENT UP TO A MAXIMUM OF 25% TOTAL CEMENTITIOUS MATERIALS BY WEIGHT IF THE MIX DESIGN IS PROPORTIONED BY FIELD EXPERIENCE OR TRIAL MIXTURES.
10. CONCRETE MIXING OPERATIONS, ETC. SHALL CONFORM TO ASTM C94.
11. LEAN CONCRETE, WHERE SPECIFICALLY INDICATED, SHALL CONTAIN 2 SACKS OF CEMENT PER CUBIC YARD OF CONCRETE.
12. DRYPACK OR NONSHRINK GROUT SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 5000 PSI, AND CONSIST OF MASTERFLOW 713, EUCON NS GROUT, SIKA GROUT 212, OR APPROVED EQUAL. FOR THICK GROUT LAYERS FOLLOW MANUFACTURER'S GUIDELINES TO ATTAIN THE REQUIRED STRENGTH, WHICH MAY INCLUDE THE ADDITION OF PEA GRAVEL. FOR BASE PLATES LARGER THAN 6 SQUARE FEET, USE HI-FLOW GROUT OR MASTERFLOW 928.
13. DO NOT USE ANY CONCRETE OR GROUT CONTAINING CHLORIDES. WATER USED IN MIX SHALL BE CLEAN AND POTABLE.
14. PRIOR TO ERECTING ANY ELEMENTS THAT LOAD THE FOUNDATION, CONCRETE MUST REACH AN UNCONFINED COMPRESSION STRENGTH OF 2000 PSI MINIMUM AS DETERMINED BY TESTING OR PREVIOUSLY DOCUMENTED DATA FOR THE MIX DESIGN USED UNDER SIMILAR CONDITIONS, AND MUST BE ALLOWED TO CURE FOR A MINIMUM OF 3 DAYS.
15. MAINTAIN CONCRETE ABOVE 50 DEGREES FAHRENHEIT AND IN A MOIST CONDITION FOR A MINIMUM OF 7 DAYS AFTER PLACEMENT UNLESS OTHERWISE ACCEPTED BY EOR.
16. EXPOSED CORNERS OF SLABS, BEAMS, WALLS, COLUMNS, ETC. SHALL BE FORMED WITH 3/4" CHAMFER OR 1/2" RADIUS TOOLED EDGE, UNO.

REINFORCING STEEL

032000-0000 (04/21/17)

1. REINFORCING GRADES FOR CONCRETE OR MASONRY:
   A. ALL BARS EXCEPT THOSE TO BE WELDED............ ASTM A615, GRADE 60
   B. TIES AND STIRRUPS .... ASTM A615, GRADE 60
   C. WELDED WIRE FABRIC .... ASTM A1064
   D. ALL BARS TO BE WELDED .... ASTM A706, GRADE 60

   NOTE: ALL BARS SHALL BE DEFORMED.

2. MAINTAIN MINIMUM CONCRETE COVER FROM FACE OF CONCRETE TO EDGE OF ALL REINFORCEMENT AS FOLLOWS (UNO):

CONDITION	COVER
CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3"
FORMED AND EXPOSED TO EARTH OR WEATHER	
- #6 BARS AND LARGER	2"
- #5 BARS AND SMALLER	1 1/2"
UNEXPOSED RAISED SLABS AND WALL FACES (#11 BARS AND SMALLER)	3/4"
UNEXPOSED COLUMNS AND BEAMS	1 1/2"
STRUCTURAL SLABS ON GRADE	
- FROM BOTTOM OF SLAB	2"
- FROM TOP OF SLAB	1 1/2"
OTHER CONCRETE NOT EXPOSED TO WEATHER OR EARTH FOR #11 BARS AND SMALLER	3/4"

PROVIDE THE LARGEST COVER REQUIRED FOR ALL APPLICABLE CONDITIONS. WHERE #3 STIRRUPS OR TIES ARE USED, ENSURE THAT THE COVER FOR LONGITUDINAL BARS IS ADEQUATE.

3. REINFORCEMENT SHALL BE PLACED IN ACCORDANCE WITH THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI) "MANUAL OF STANDARD PRACTICE". EACH REINFORCING BAR SHALL BE WIRED TO A CROSS BAR AT A MAXIMUM SPACING OF 24"OC. PROVIDE ALL ACCESSORIES NECESSARY TO SUPPORT REINFORCING IN POSITIONS SHOWN ON THE PLANS. DO NOT USE WOOD OR BRICK TO SUPPORT REINFORCING.
4. SPLICES IN CONTINUOUS REINFORCEMENT AS USED IN WALLS, WALL FOOTINGS, ETC., SHALL HAVE A CLASS "B" LAP (1'-6" MIN) AND THE SPLICES IN ADJACENT BARS SHALL BE NOT LESS THAN 5'-0" APART. VERTICAL WALL BARS SHALL BE SPLICED AT OR NEAR FLOOR LINES. BARS MAY BE WIRED TOGETHER AT SPLICES OR LAPS EXCEPT FOR TOP REINFORCING OF BEAMS AND SLABS OR WHERE SPECIFICALLY DETAILED TO BE SEPARATED. WELDED WIRE FABRIC SHALL BE LAPPED 12" MINIMUM.
5. ALL DOWELS, ANCHOR BOLTS AND OTHER HARDWARE TO BE SET IN CONCRETE SHALL BE TIED IN PLACE PRIOR TO PLACEMENT OF CONCRETE. NO WET SETTING, STABBING, RODDING OR OTHER MOVEMENT OF EMBEDDED ITEMS SHALL BE PERFORMED DURING PLACEMENT OF CONCRETE.
6. BEND REINFORCING BARS COLD.
7. STEEL SHALL BE KEPT CLEAN AND FREE OF RUST.
8. DOWELS BETWEEN FOOTING AND WALLS OR COLUMNS SHALL BE THE SAME GRADE, SIZE AND SPACING AS THE MAIN REINFORCING UNO.
9. ALL BARS SHALL BE MARKED SO THEIR IDENTIFICATION CAN BE MADE WHEN THE FINAL IN PLACE INSPECTION IS MADE.
10. CHAIRS OR SPACERS FOR REINFORCING SHALL BE PLASTIC WHEN RESTING ON EXPOSED SURFACES.
11. WHERE LONGITUDINAL REINFORCING BARS ARE PLACED IN 2 OR MORE LAYERS, BARS IN THE UPPER LAYERS SHALL BE PLACED DIRECTLY ABOVE BARS IN THE BOTTOM LAYER.
12. ALL BENDS WITHIN STIRRUPS, HOOPS, AND CROSS-TIES SHALL ENGAGE A LONGITUDINAL BAR. PROVIDE #4 SPACER BAR WHERE A LONGITUDINAL BAR IS NOT SPECIFICALLY DETAILED.
13. WELDING OF REINFORCING BARS SHALL BE PERFORMED PER AMERICAN WELDING SOCIETY (AWS) D1.4 USING E90XX ELECTRODES FOR A615 REINFORCING AND E80XX ELECTRODES FOR A706 REINFORCING.

GENERAL

010000-0000 (03/12/18)

1. REFER TO THE TYPICAL DETAIL SHEETS FOR TYPICAL DETAILS OF CONSTRUCTION. TYPICAL DETAILS APPLY TO ALL CONSTRUCTION UNLESS SPECIFICALLY NOTED OR SHOWN OTHERWISE. WHERE CONDITIONS REQUIRE MODIFICATIONS OF A TYPICAL DETAIL, THE CONTRACTOR SHALL SUBMIT MODIFIED DETAIL FOR APPROVAL BY THE ENGINEER OF RECORD PRIOR TO FABRICATION AND INSTALLATION. DETAILS OF CONSTRUCTION NOT SHOWN SHALL BE OF SAME NATURE AS THOSE SHOWN FOR SIMILAR CONSTRUCTION.
2. WHERE INFORMATION IS CONFLICTING, SPECIFIC DETAILS SHALL GOVERN OVER TYPICAL DETAILS WHICH SHALL GOVERN OVER THESE NOTES.
3. ALL DIMENSIONS ON STRUCTURAL DRAWINGS SHALL BE CHECKED AGAINST MECHANICAL DRAWING DIMENSIONS. DO NOT SCALE DRAWINGS. IF DIMENSIONS ARE OMITTED OR NOT CLEAR, CONTACT THE ARCHITECT (ARCH) OR ENGINEER OF RECORD (EOR). ALL DIMENSIONS RELATED TO EXISTING CONDITIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR. DIMENSIONS ARE TO THE FACE OF STUDS, AND TO CENTERLINE OF COLUMNS UNO.
4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IMMEDIATELY NOTIFY THE EOR OF ANY CONFLICTS BETWEEN THE STRUCTURAL DRAWINGS AND OTHER DRAWINGS; OR EXISTING CONDITIONS NOT SHOWN OR DIFFERENT FROM THOSE SHOWN ON DRAWINGS PRIOR TO COMMENCEMENT OF WORK. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE SCOPE THAT IS IN CONFLICT UNTIL THE CONFLICT IS RESOLVED WITH THE AFFECTED PARTIES.
5. THE STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. UNLESS OTHERWISE SHOWN THEY DO NOT INDICATE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE CONSTRUCTION AND ALL ADJACENT PROPERTIES DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE BUT ARE NOT LIMITED TO BRACING, SHORING OF LOADS DUE TO CONSTRUCTION EQUIPMENT, ETC. OBSERVATION VISITS TO THE SITE BY THE ARCHITECT OR EOR SHALL NOT INCLUDE OBSERVATION OF THE ABOVE ITEMS.
6. SUBSTITUTION REQUESTS FOR MATERIALS SPECIFIED ON THE STRUCTURAL DRAWINGS MAY BE CONSIDERED WITH MATERIALS HAVING EQUIVALENT OR GREATER CAPACITY AND PERFORMANCE. CURRENT EVALUATION REPORTS AND PRODUCT INFORMATION SHALL BE PROVIDED TO THE STRUCTURAL ENGINEER DEMONSTRATING THE REQUIRED CAPACITY AND PERFORMANCE OF THE MATERIAL TO BE SUBSTITUTED. WRITTEN APPROVAL FROM THE EOR SHALL BE OBTAINED PRIOR TO THE SUBSTITUTION OF ANY MATERIAL SPECIFIED ON THE STRUCTURAL DOCUMENTS.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH THE PERTINENT SECTIONS OF THE "CONSTRUCTION SAFETY ORDERS" ISSUED BY THE STATE OF CALIFORNIA, LATEST EDITION, AND ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT. THE ARCHITECT, EOR, AND THE OWNER DO NOT ACCEPT ANY RESPONSIBILITY FOR THE CONTRACTOR'S FAILURE TO COMPLY WITH THESE REQUIREMENTS.
8. ALL WORK IS NEW (N) UNLESS INDICATED AS EXISTING (E).
9. CONSTRUCTION MATERIALS SHALL BE DISTRIBUTED WHEN PLACED ON THE STRUCTURE SUCH THAT LOADS DO NOT EXCEED DESIGN LIVE LOADS OR RESULT IN AN UNBALANCED CONDITION.
10. REFER TO THE PROJECT SPECIFICATIONS FOR SHOP DRAWING REQUIREMENTS AND SUBMITTALS. SHOP DRAWINGS SHALL BE SUBMITTED TO THE EOR (ALLOW FOR A REVIEW DURATION OF 10 BUSINESS DAYS), AND SHALL CONSIST OF EITHER ELECTRONIC FILES OR ONE SET FOR OUR RECORDS AND ONE REPRODUCIBLE SET. REVIEW OF SHOP DRAWINGS AND SUBMITTALS BY THE EOR IS FOR GENERAL COMPLIANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR WILL REMAIN RESPONSIBLE FOR ALL ERRORS OF DETAILING, FABRICATION, AND FOR CORRECT FITTING OF ALL STRUCTURAL MEMBERS, INCLUDING COORDINATION WITH OTHER TRADES. SHOP DRAWINGS AND SUBMITTALS DO NOT CONSTITUTE CHANGE ORDERS. ANY PROPOSED CHANGES TO THE STRUCTURAL DOCUMENTS MUST BE SUBMITTED IN WRITING AS A REQUEST FOR SUBSTITUTION TO THE ARCHITECT AND EOR FOR APPROVAL. SEE "STRUCTURAL SUBMITTALS" FOR MORE INFORMATION.
11. CORE DRILLS REQUIRED SHALL NOT CUT ANY REINFORCING. THE CONTRACTOR IS TO COORDINATE WORK OF ALL TRADES TO ENSURE COMPLIANCE. ALL CORE DRILLS ARE TO BE PRESENTED TO THE INSPECTOR OF RECORD (IOR) FOR VERIFICATION. THE IOR IS TO DOCUMENT CORES EXAMINED INDICATING AN ABSENCE OF REINFORCING.
12. STRUCTURAL JOINT DIMENSIONS SHOWN ON PLANS (EXPANSION, SEISMIC, SEPARATION, ETC) (WHERE OCCURS) INDICATE THE MINIMUM CLEAR DISTANCE REQUIRED. SEE PLANS, DETAILS, AND ARCHITECTURAL DRAWINGS FOR ADDITIONAL REQUIREMENTS.

STRUCTURAL DESIGN CRITERIA

010000-0001 (03/02/17)

1. CODES:
   ALL NEW WORK SHALL BE IN CONFORMANCE WITH THE CALIFORNIA BUILDING CODE (CBC) 2016 EDITION (TITLE 24, PART 2), INCLUDING ALL AMENDMENTS. ALL STANDARDS USED SHALL BE THE LATEST VERSION APPROVED BY THE CODE ENFORCEMENT AGENCY ON THE DATE OF THE PERMIT ISSUANCE UNLESS SPECIFICALLY NOTED OTHERWISE.
2. WIND DESIGN INFORMATION:
   RISK CATEGORY II EXPOSURE C
   BASIC WIND SPEED (3 SEC GUST), V_{ult} = 110 MPH
3. SEISMIC DESIGN INFORMATION:
   I_e = 1.0 RISK CATEGORY II DESIGN CAT. D SITE CLASS D
   S_S = 1.500 S_1 = 0.626 S_{DS} = 1.000 S_{D1} = 0.626

EXISTING CONDITIONS

020000-0000 (05/31/17)

1. SEE "AS BUILT" DRAWINGS FOR EXISTING BUILDING ITEMS NOT SHOWN OR NOTED.
2. FIELD VERIFY ALL CONDITIONS & DIMENSIONS PRIOR TO SHOP DRAWING PRODUCTION AND FABRICATION OF STRUCTURAL ELEMENTS.
3. WHERE ALL OTHER EXISTING CONDITIONS VARY SIGNIFICANTLY FROM THOSE SHOWN ON THESE DRAWINGS, THE STRUCTURAL ENGINEER SHALL BE NOTIFIED PRIOR TO CONTINUED CONSTRUCTION RELATED TO SUBJECT CONDITIONS.
4. SHORE ALL EXISTING CONSTRUCTION AS REQUIRED, INCLUDING WHERE WELDING TO EXISTING STEEL FRAMING. SHORING DESIGN BY OTHERS.
5. ALL EXISTING CONCRETE SURFACES TO BE IN CONTACT WITH NEW CONCRETE SHALL BE CLEANED AND ROUGHENED TO 1/4" MINIMUM AMPLITUDE. USE ICC APPROVED BONDING AGENT ON EXISTING CONCRETE PRIOR TO PLACING NEW CONCRETE.
6. VERIFY LOCATION OF EXISTING REBAR BEFORE FABRICATION USING NON-DESTRUCTIVE TESTING. EXISTING REINFORCING SHALL BE AVOIDED WHERE DRILLING FOR POST-INSTALLED ANCHORS OR CONCRETE DOWELS.
7. THE GENERAL CONTRACTOR SHALL COORDINATE THE WEIGHT AND SPECIFIC LOCATION OF ALL MECHANICAL EQUIPMENT WITH THE STRUCTURAL FRAMING. IF THE EQUIPMENT DEVIATES IN WEIGHT OR LOCATION FROM THOSE INDICATED IN THE DRAWINGS, THE STRUCTURAL ENGINEER'S APPROVAL MUST BE OBTAINED PRIOR TO INSTALLATION OF THE UNITS.
8. ALL EXISTING WOOD FRAMING MEMBERS SUPPORTING NEW MECHANICAL UNITS SHALL BE INSPECTED FOR DAMAGE AND DETERIORATION PRIOR TO INSTALLATION OF THE UNITS. NOTIFY THE STRUCTURAL ENGINEER IF DAMAGE OR DETERIORATION IS DISCOVERED.

POST-INSTALLED ANCHORS

UNLESS OTHERWISE NOTED ON THE DRAWINGS, THE FOLLOWING APPLIES TO ALL POST-INSTALLED ANCHORAGE INTO HARDENED CONCRETE OR MASONRY WHICH INCLUDES TYPES SUCH AS EXPANSION, WEDGE, SLEEVE, ADHESIVE/EPOXY, SHOT-PIN, SCREW AND UNDERCUT.

1. INSTALL PER THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII) EXCEPT AS OTHERWISE STATED IN THE SPECIFIED PRODUCT REPORTS. USE INSTALLATION PROCEDURES FOR CRACKED CONCRETE CONDITIONS. DO NOT USE CORE DRILL BITS FOR ANCHOR HOLES WITHOUT PRIOR EOR APPROVAL. COPIES OF INSTALLATION INSTRUCTIONS SHALL BE MAINTAINED ON SITE.
2. CLEAN OUT ANCHOR HOLES AND SET ANCHORS PER THE PRODUCT'S ICC REPORT FOR THE APPROPRIATE CONDITIONS. INSTALL UNDER SUPERVISION OF THE SPECIAL INSPECTOR WHERE REQUIRED.
3. PROVIDE GALVANIZED CARBON STEEL ANCHORS AT DRY INTERIOR LOCATIONS AND STAINLESS STEEL TYPE 304 OR 316 AT EXTERIOR / DAMP INTERIOR LOCATIONS, REINFORCEMENT BARS TO RECEIVE CONCRETE COVER MAY BE UNCOATED. ANCHORS SHALL BE CLEAN AND FREE OF DEBONDING SUBSTANCES.
4. EMBEDMENT REFERS TO THE FINAL INSTALLED EFFECTIVE DEPTH "Hef" AS DEFINED IN THE PRODUCT REPORT, REQUIRED ANCHOR HOLE DEPTH FOR INSTALLATION MAY BE DEEPER.
5. MAINTAIN A MINIMUM OF 2 INCHES FROM EXISTING REINFORCEMENT, CONDUIT, POST-TENSIONING (WHERE OCCURS), ETC. PRIOR TO DRILLING, CORING OR SHOOTING PINS INTO EXISTING CONCRETE OR MASONRY. USE NON DESTRUCTIVE TESTING TO LOCATE SUCH ITEMS, FOR INSTALLATION DEEPER THAN 3 INCHES USE GROUND PENETRATING RADAR OR X-RAY METHODS.
6. WHEN THE FULL ANCHOR EMBEDMENT DEPTH, SPACING OR EDGE DISTANCE CANNOT BE OBTAINED, NOTIFY THE EOR AND IOR.
7. FILL ABANDONED HOLES WITH EPOXY AND PATCH SPALLS USING NON-SHRINK GROUT AND REPAIR FINISHES AS REQUIRED. CLEAR DISTANCE BETWEEN NEW HOLES AND ABANDONED HOLES SHALL BE 2" OR TWO ANCHOR DIAMETERS, WHICHEVER IS GREATER, UNLESS OTHERWISE SPECIFIED BY EOR. ANCHORS PENETRATING THROUGH WATERPROOFING OR VAPOR MEMBRANES SHALL BE SEALED OR FLASHED.
8. INSTALL IN DRY CONCRETE OR MASONRY HAVING A MINIMUM AGE OF 21 DAYS.
9. ADHESIVE/EPOXY ANCHORS ON THIS PROJECT ARE NOT DESIGNED TO SUPPORT OR INTENDED TO RESIST SUSTAINED TENSION LOADS UNLESS NOTED OTHERWISE.

ABBREVIATIONS

010000-0002-ALT1 (04/30/18)

AB	ANCHOR BOLT	CONN	CONNECTION	EXP	EXPANSION	HT	HEIGHT	OC	ON CENTER	SIM	SIMILAR
ABV	ABOVE	CONT	CONTINUOUS	EXT	EXTERIOR	ID	INSIDE DIAMETER	OD	OUTSIDE DIAMETER	SMS	SHEET METAL SCREW
ADDL	ADDITIONAL	CP	COMPLETE PENETRATION	FIN	FINISH	I.F.	INSIDE FACE	O.F.	OUTSIDE FACE	SN	SILL NAIL
ADJ	ADJACENT	CSK	COUNTERSINK	FLG	FLANGE	IN	INCH	OH	OPPOSITE HAND	SOG	SLAB ON GRADE
AFF	ABOVE FINISH FLOOR	CTR(D)	CENTER(ED)	FLR	FLOOR	INT	INTERIOR	OPNG	OPENING	SQ	SQUARE
ALT	ALTERNATE	D_B	BAR OR BOLT DIAMETER	FN	FIELD NAILING	IOR	INSPECTOR OF RECORD	PDF	POWDER/POWER DRIVEN FASTENER	SS	STAINLESS STEEL
ARCH	ARCHITECT(URAL)	DBL	DOUBLE	FND	FOUNDATION	JST	JOIST	PJ	PANEL JOINT	STD	STANDARD
BLDG	BUILDING	DEMO	DEMOLITION	F.O.	FACE OF	JT	JOINT	PJP	PARTIAL JOINT PENETRATION	STGRD	STAGGERED
BLK	BLOCK	DET	DETAIL	FS	FAR SIDE OR FIELD SCREW	KLF	KIPS PER LINEAR FOOT	PL	PLATE	STIFF	STIFFENER
BLKG	BLOCKING	DIA	DIAMETER	FRMG	FRAMING	KSF	KIPS PER SQUARE FOOT	PLC(S)	PLACE(S)	STL	STEEL
BLW	BELOW	DIAG	DIAGONAL	FRP	FIBER REINFORCED POLYMER	KSI	KIPS PER SQUARE INCH	PLF	POUNDS PER LINEAR FOOT	STRUCT	STRUCTURAL
BM	BEAM	DIM	DIMENSION	FT	FOOT OR FEET	L	ANGLE	PLYWD	PLYWOOD	T&B	TOP & BOTTOM
BN	BOUNDARY NAILING	DIR	DIRECTION	FTG	FOOTING	LFRS	LATERAL FORCE RESISTING	PREFAB	PREFABRICATED	THK	THICK
B.O.	BOTTOM OF	DO	DITTO	G	GIRDER		SYSTEM	PSF	POUNDS PER SQUARE FOOT	THRD	THREADED
BOTT	BOTTOM	DWG	DRAWING	GA	GAGE	LLH	LONG LEG HORIZONTAL	PSI	POUNDS PER SQUARE INCH	T.O.	TOP OF
BRB	BUCKLING-RESTRAINED BRACE	(E)	EXISTING	GALV	GALVANIZED	LLV	LONG LEG VERTICAL	PT	PRESSURE TREATED OR	TRANS	TRANSVERSE
BRG	BEARING	EA	EACH	GB	GRADE BEAM	LONG	LONGITUDINAL		POST TENSION	TYP	TYPICAL
BS	BOTH SIDES	EF	EACH FACE	GC	GENERAL CONTRACTOR	LP	LOW POINT	QTY	QUANTITY	UNO	UNLESS NOTED OTHERWISE
BTWN	BETWEEN	EJ	EXPANSION JOINT	GLB	GLUED-LAMINATED BEAM	LWC	LIGHT WEIGHT CONCRETE	RAD, R	RADIUS	VERT	VERTICAL
C	CAMBER	EMBED	EMBEDMENT	HAB	HEADED ANCHOR BOLT	MAX	MAXIMUM	REF	REFERENCE	VIF	VERIFY IN FIELD
CIP	CAST IN PLACE	ELEC	ELECTRICAL	HD	HOLDOWN	MB	MACHINE BOLT	REINF	REINFORCING	W/	WITH
CJ	CONTROL/CONSTRUCTION JOINT	ELEV	ELEVATION OR ELEVATOR	HDR	HEADER	MECH	MECHANICAL	REQD	REQUIRED	W/O	WITHOUT
CJP	COMPLETE JOINT PENETRATION	EN	EDGE NAILING	HGR	HANGER	MFR	MANUFACTURER	(S)	"SIMPSON" STRONG TIE CO. OR "USP"	WF, W	WIDE FLANGE
CL	CENTERLINE	E.O.	EDGE OF	HK	HOOK	MIN	MINIMUM		W/ EQUIVALENT ICC VALUES	WLD	WELDED
CLG	CEILING	EOR	ENGINEER OF RECORD	HORIZ	HORIZONTAL	MTL	METAL	SB	SILL BOLT	WO	WHERE OCCURS
CLR	CLEAR	EQ	EQUAL	HP	HIGH POINT	(N)	NEW	SC	SAW CUT OR SLIP CRITICAL	WP	WORK POINT
CMU	CONCRETE MASONRY UNIT	EQUIP	EQUIPMENT	HS	HIGH STRENGTH	NS	NEAR SIDE OR NON-SHRINK	SCHED	SCHEDULE	WT	WEIGHT
COL	COLUMN	ES	EACH SIDE OR EDGE SCREW	HSB	HIGH STRENGTH BOLT	NTS	NOT TO SCALE	SEOR	STRUCTURAL ENGINEER OF RECORD	WWF	WELDED WIRE FABRIC
CONC	CONCRETE	EW	EACH WAY	HSS	HOLLOW STRUCTURAL STEEL	NWC	NORMAL WEIGHT CONCRETE	SHTG	SHEATHING		

UNIVERSITY OF CALIFORNIA
UC RIVERSIDE
CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS
1223 UNIVERSITY AVENUE, SUITE 240
RIVERSIDE, CA. 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

Engineer's Data:
miyamoto.
17300 Red Hill Ave., Suite 250
Irvine, CA 92614
T: (949) 579-1170
miyamotointernational.com
MI1904175.00

Architect's Stamp:

Consultant's Stamp:

REGISTERED PROFESSIONAL ENGINEER
JEFFREY ALAN CROSIER
S 5525
Exp. 03/31/21
STRUCTURAL
STATE OF CALIFORNIA

SKYE HALL ROOFTOP
HVAC REPLACEMENT
UNIVERSITY OF CALIFORNIA, RIVERSIDE
PROJECT No: 950583

APPROVED
UC RIVERSIDE
CAMPUS BUILDING PERMIT

REVISIONS

REV #	DESCRIPTION	DATE
1	50% DESIGN	11/01/19
2	90% DESIGN	12/11/19
3	100% DESIGN	02/25/20

SKYE HALL HVAC
REPLACEMENT
CAAN NUMBER: P5380

Consultant's Data:
GOSS ENGINEERING
255 East Rincon St., Suite 301
Corona, CA 92879
P 951.340.1977 | F 951.340.1090
www.gossengineering.com

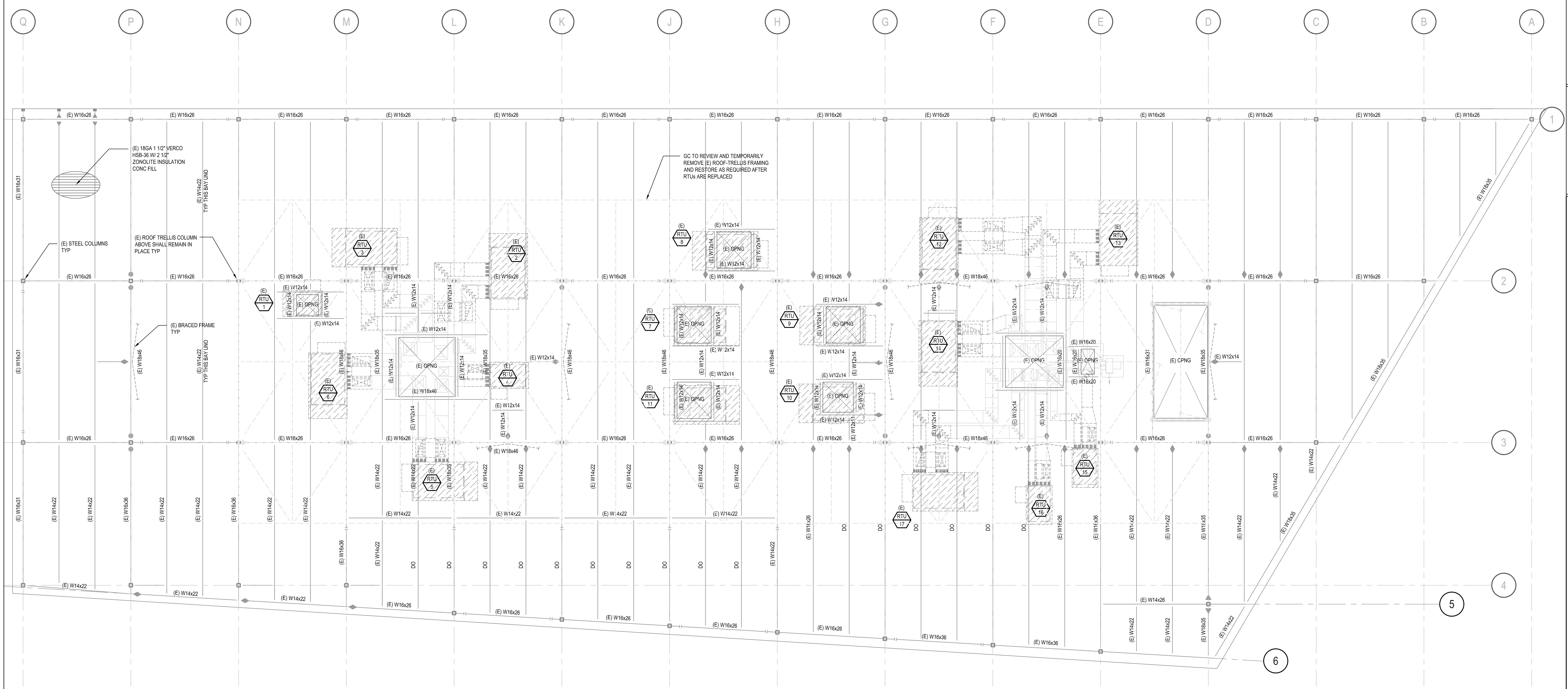
UCR Project Manager:

Scale:	NONE	SD Approval:	N/A
Drawn By:	RR	DD Approval:	NDU
Checked By:	JJC	CD Approval:	
Project No.:	950583	Construction Release:	
Bldg. Permit:	#B19-308		

Drawing Title: GENERAL NOTES

Sheet No. S0.1

Building Permit B19-308



(E) ROOF LEVEL DEMO HVAC PLAN

1/8" = 1'-0"

north

UC RIVERSIDE
UNIVERSITY OF CALIFORNIA

CAPITAL PROGRAMS
ARCHITECTS & ENGINEERS

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RIVERSIDE, CA. 92521
TEL:(951) 827-1273 FAX:(951) 827-3890

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Drawn By:	RR	DD Approval:	NDU
Checked By:	JJC	CD Approval:	
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Bldg. Permit:	#B19-308		

Drawing Title:
ROOF LEVEL DEMO HVAC PLAN

Sheet No.
S1.4

Reviewed for Code Compliance
03/10/20

TAG	WEIGHT (LBS)		ANCHORAGE TYPE SEE SHEET S5.1
	EXISTING	NEW	
RTU-1	1,600	1,680	A
RTU-2	3,013	3,975	B
RTU-3	3,013	3,975	B
RTU-4	1,600	1,680	A
RTU-5	2,817	4,045	B
RTU-6	3,013	3,975	B
RTU-7	2,817	4,045	B
RTU-8	2,817	4,045	B
RTU-9	2,741	3,775	B
RTU-10	3,015	3,975	B
RTU-11	3,015	3,975	B
RTU-12	2,817	4,045	B
RTU-13	3,015	3,975	B
RTU-14	3,013	3,975	B
RTU-15	1,700	2,035	C
RTU-16	2,615	2,035	C
RTU-17	2,741	3,775	B

(E) ROOF LEVEL RECONSTRUCTION HVAC PLAN

NOTE: (E) ROOF TRELLIS NOT SHOWN FOR CLARITY

1/8" = 1'-0" north

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UNIVERSITY OF CALIFORNIA, RIVERSIDE
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P 951.340.1977 | F 951.340.1090
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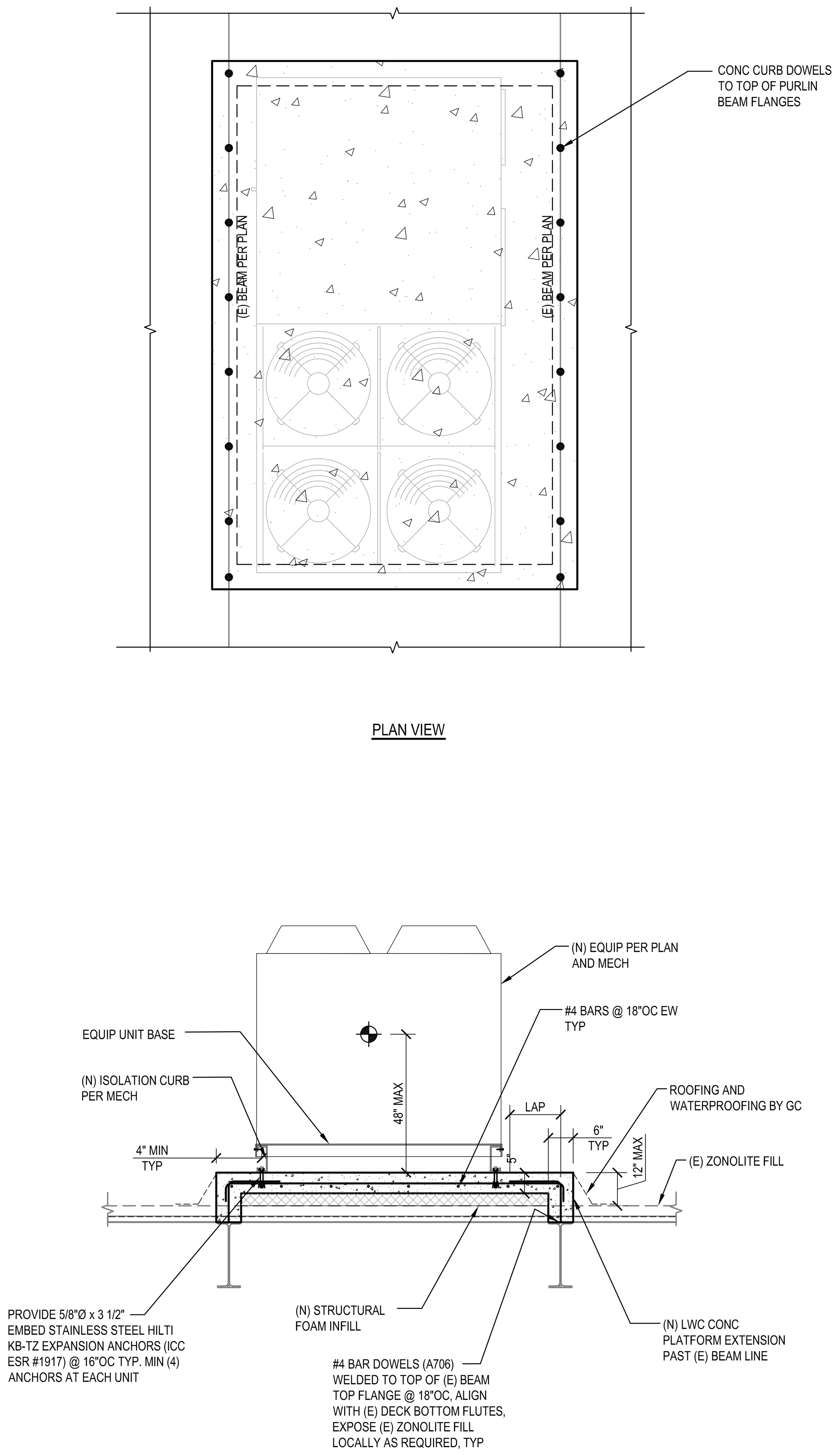
Scale:	NONE	SD Approval:	N/A
Drawn By:	RR	DD Approval:	NDU
Checked By:	JJC	CD Approval:	
Project No.:	950583	Construction Release:	
Bldg. Permit:	#B19-308		

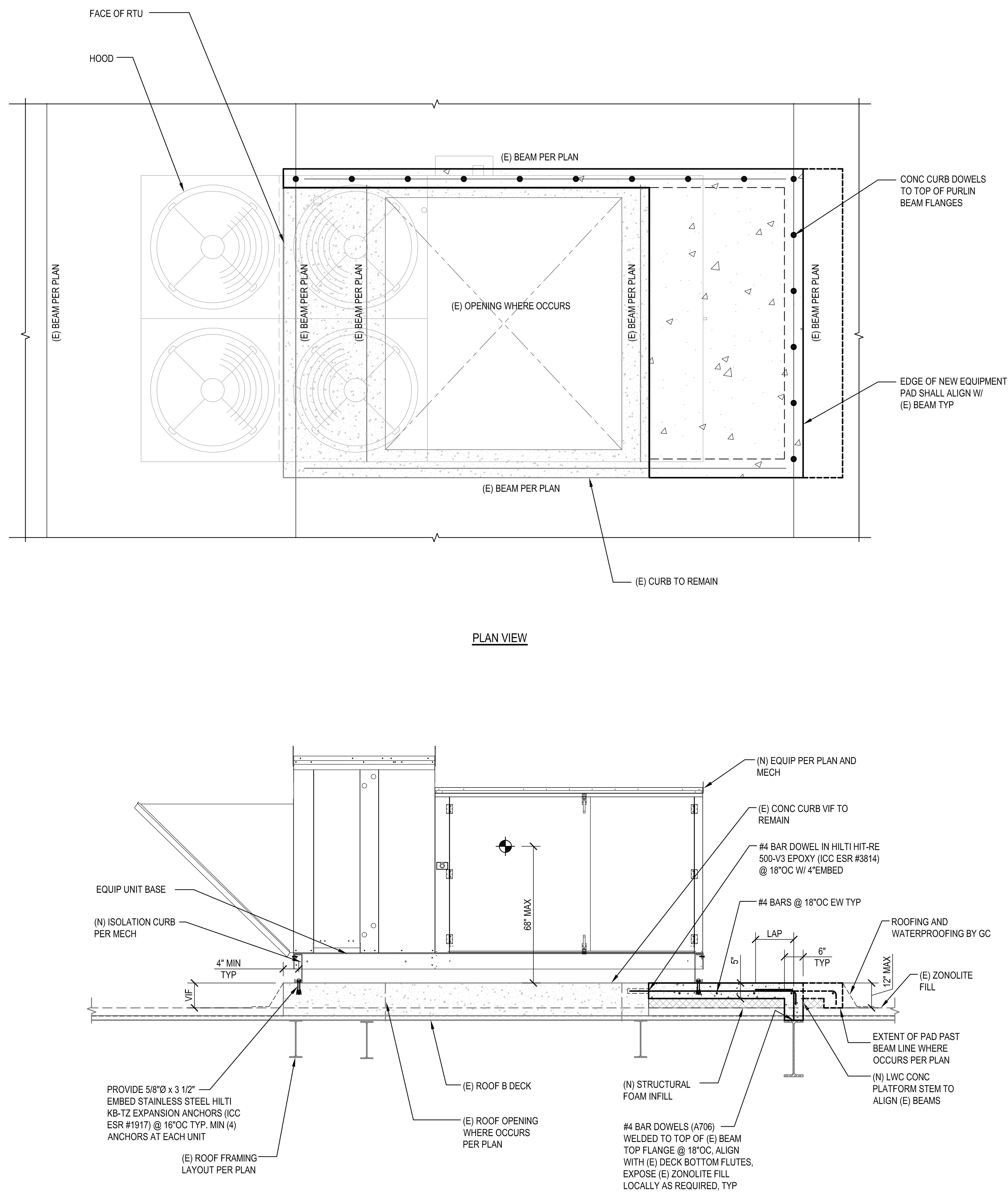
Drawing Title:
ROOF LEVEL RECONSTRUCTION HVAC PLAN

Sheet No.
S2.4



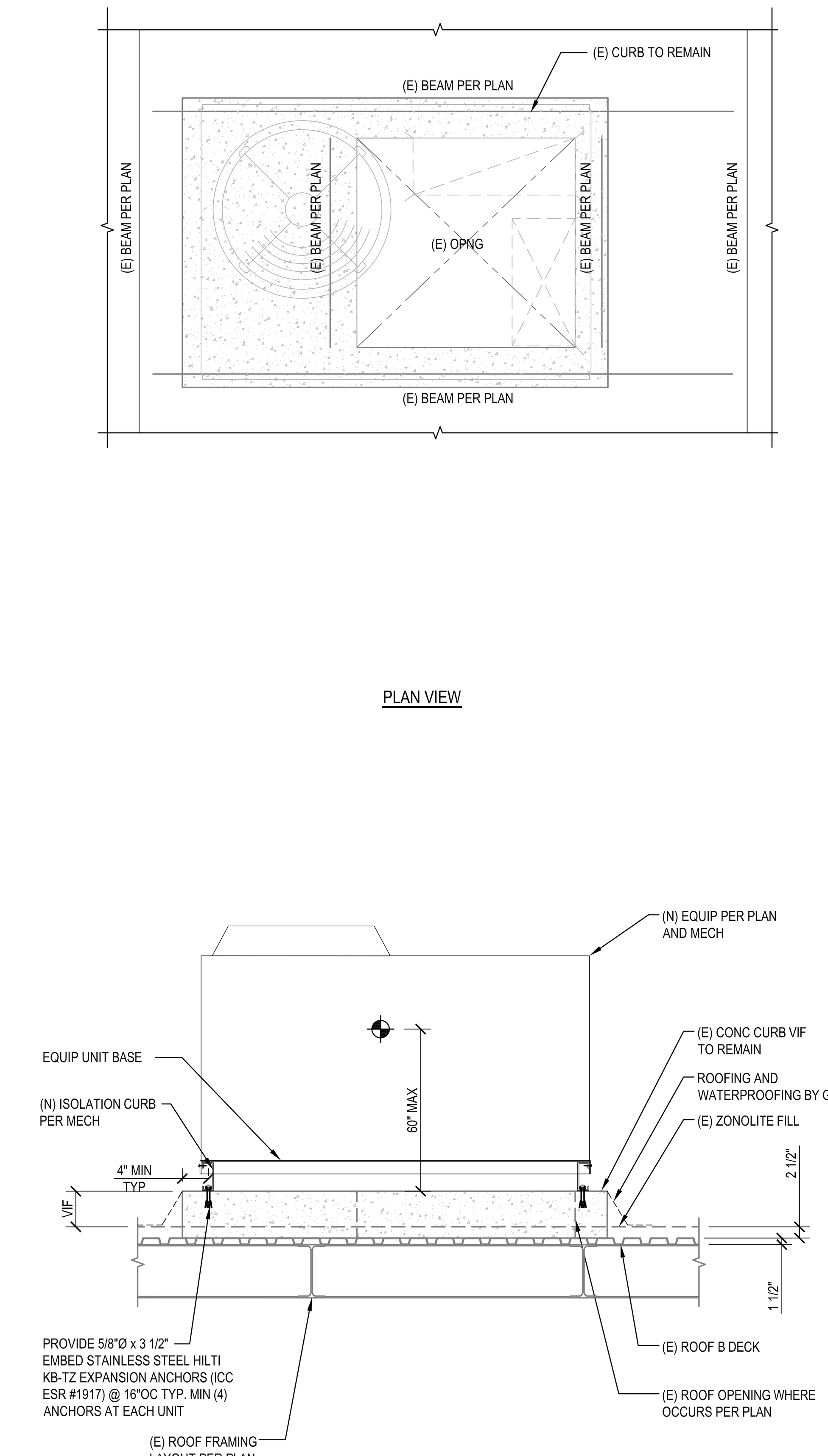
C TYPE-C RTU ANCHORAGE ON NEW PLATFORM

NTS



B TYPE-B RTU ANCHORAGE ON EXTENDED PLATFORM

NTS



A TYPE-A RTU ANCHORAGE ON (E) ROOF PLATFORM

NTS

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Checked By:	JJC	CD Approval:	
Project No.:	950583	Construction Release:	
Bldg. Permit:	#B19-308		

Drawing Title: STRUCTURAL DETAILS

Sheet No. S5.1

Reviewed for Code Compliance 03/10/20

SPECIFICATIONS

TABLE OF CONTENTS

Division 01 – General Requirements

SECTION 01 1100
SUMMARY OF WORK

PART 1 – GENERAL

1.1. SUMMARY

A. Section includes:

1. Work Covered by Contract Documents
2. Work Sequence
3. Work by University
4. University Furnished Products

B. In case any Sections contain conflicting requirements, refer to General Conditions, Paragraph 4.1.8.

1.2. WORK COVERED BY CONTRACT DOCUMENTS

A. The University of California, Riverside (UCR) intends to procure the services of a General Contractor (Contractor) to construct the replacement of seventeen (17) existing roof-mounted RTUs, replacement of ten (10) existing 10 VVT boxes with replacement of actuators on eighty-seven (87) existing VVT boxes, upgrade of existing controls to ALC [Automated Logic Controls] standard, new thermostats throughout the building.

B. The Contract Time to complete the Work of this Contract is specified in the Supplemental Instructions to Bidders.

C. Project Location: Skye Hall - University of California, Riverside.

1.3. WORK SEQUENCE

A. The work shall be sequenced to occur on successive weekends, or as may be determined by the University's Representative based upon the prevailing conditions at the time of mobilization.

1.4. WORK BY UNIVERSITY

A. The University shall manage the HVAC systems in-hand, and or as needed

1.5. UNIVERSITY FURNISHED PRODUCTS

A. None

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 1400
WORK RESTRICTIONS

PART 1 – GENERAL

1.1. SUMMARY

A. Section includes:

1. Access to Site
2. Coordination with Occupants
3. Use of Site
4. Scheduling of Work and Work Hours
5. Neighbor Complaint Hotline
6. Site Decorum

1.2. ACCESS TO SITE

A. Special Requirements

1. Existing Site Conditions and Restrictions:
   a. Maintain access and code required exiting to and from surrounding buildings during construction.
2. Contractor shall be responsible for safely securing the work areas, with at a minimum, trench plates, fencing, signage, safety lighting, traffic and pedestrian coordinators.
3. Trench plates shall be provided and safely secured at all roadway, parking lots, and walkways.
4. Trenches shall be protected from vehicles by utilizing trench plates, and from pedestrians by utilizing fully installed galvanized fencing. Excavations and holes shall be protected by utilizing fully installed galvanized fencing, safety lighting, and other methods to safely secure the site. Establishment of the work area in any space requiring the University's vacating shall not commence before notification to University's Representative. Refer to Section 01 1400 - CONTRACTOR'S USE OF THE PROJECT SITE, Notifications.
5. Individual work areas shall not be established until Contractor has labor, materials and equipment ready to commence and complete the Work in that area.
6. Work shall not commence in any area until barriers and other protections are in place.

B. Use of Public Thoroughfares and University Roads

1. Contractor shall make its own investigation of the condition of available public thoroughfares and University roads, and of the clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress at the Project site.

2. Where materials are transported in the prosecution of the Work, do not load vehicles beyond the capacity recommended by manufacturer of the vehicles or prescribed by any applicable state or local law or regulation.

3. Use only established roads on the campus; provided, however, that such temporary haul roads as may be required in the work shall be constructed and maintained by Contractor, subject to the approval of University's Representative. Refer to Section 01 3540 Environmental Mitigation for description of the approved haul route to and from the campus.

4. Provide protection against damage whenever it is necessary to cross existing sidewalks, curbs, and gutters in entering upon the University roads and public thoroughfares. Repair and make good immediately at the expense of Contractor all damages thereto, including damage to existing utilities and paving, arising from the operations under the Contract.

5. Truck staging is not allowed on campus or on any residential street surrounding the campus.

C. See also Section 01 5500, Vehicular Access and Parking.

1.3. COORDINATION WITH OCCUPANTS

A. The University reserves the right to occupy and to place and install equipment in completed areas of the Work prior to Notice of Completion, provided such occupancy does not interfere with completion of the Work and subject to the General Conditions. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. Partial occupancy of the Work may occur upon University's approval, in which case the University's Representative will prepare a Certificate of Beneficial Occupancy for each specific portion of the Work to be occupied prior to Final Completion of the entire Work.
2. Refer to Article 9.6 of the General Conditions.

1.4. USE OF SITE

A. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the Work is indicated.

1. Driveways and Entrances: Keep driveways and entrances serving adjacent buildings clear and available to the University, and its employees, students, faculty, visitors, and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for use of these areas.
2. Contractor's use of the Project site for the work, staging, deliveries, and storage is restricted to the project limits on the Drawings, or as directed by the University's Representative.
3. All material for construction operations shall be brought in and the work conducted so as to avoid any interference with existing University facilities or their normal operations.
4. Noise from job equipment shall be kept to a minimum by use of adequate mufflers and other appropriate means.
5. Delivery of Materials: Arrange for delivery of materials and equipment to minimize length of on-site storage prior to installation. Delivery route shall be from South Campus Circle Drive to Big Springs Road to the project site, or as designated by the University's Representative.
6. The Contractor shall take appropriate steps throughout the term of the project to prevent airborne dust due to work under this contract. Water shall be applied wherever practical to settle and hold dust to a minimum, particularly during excavation and moving of materials. No chemical palliatives shall be used.

1.5. SCHEDULING OF WORK AND WORK HOURS

A. Work outside of regular work hours, ***7:00 a.m. to 3:30 p.m.,*** "overtime", required to accomplish work of this contract, such as utility shutdowns, shall be included in the contract sum.

B. Overtime work requests must be submitted to the University's Representative three working days before the work is to commence.

1. Acceptable overtime hours are no earlier than 7:00 a.m. and no later than 7:00 p.m., Monday through Friday; and from 8:00 a.m. to 5:00 p.m. on Saturday. Work will not be allowed on Sunday and Holidays.
2. Work at other times may be permitted if it takes place within the enclosed building and the University's Representative determines that it is unlikely to affect University personnel, students, operations and the surrounding neighborhood.
3. Additional overtime operating hours may be approved at the University's Representative sole discretion and only without change to the contract sum.
4. Contractor shall pay all the inspectors (in-house inspectors and University's testing laboratory inspectors) and University's Representative's costs if the overtime request is approved by University's Representative.

1.6. NEIGHBOR COMPLAINT HOTLINE

A. Contractor to provide a phone number monitored 24 hours a day for the public to use to lodge complaints about construction activities that may harm or degrade their quality of life. Refer to Section 01 5000 “Construction Controls and Temporary Facilities” for more detailed specifications.

B. Neighbor Complaint Hotline Phone Number: Contractor shall provide signage described elsewhere in this section with the telephone number for the off-campus neighbors to use to notify the contractor and University about construction related issues affecting their persons and properties such as, but not limited to excessive noise, dust and construction vehicle traffic along Valencia Hill Drive which is not allowed under any circumstances.

1. The contractor shall contact a security service which shall provide an answering service for any calls, 24 hours a day and relay the call to a list of designated construction personnel on site for response. The contactor can contact Knight Security at (760) 745-3604 which provided service for the Phase 1 portion of the project for terms and conditions but is not obligated to use this firm and can choose to any service of a similar type.

1.7. SITE DECORUM

A. Contractor shall control the conduct of its employees (including subcontractor's employees) so as to prevent unwanted interaction initiated by Contractor's employees with University of California Riverside (UCR) students, UCR staff, UCR Faculty or other individuals (except those associated with the Project), adjacent to the Project site. Without limitation, unwanted interaction by Contractor employees would include whistling at or initiating conversations with passersby. In the event that any Contractor employee initiates such unwanted interaction, or utilized profanity, Contractor shall, either upon request of University's Representative or on its own initiative, replace said employee with another of equivalent technical skill, at no additional cost to the University. No radios, other than two-way communication type, will be allowed on the Project site. No smoking is allowed in any University Building.

B. Contractor shall control the conduct of its employees (including subcontractor's employees) to prevent unwanted interaction initiated by Contractor's employees with UCR students, staff, Faculty or other individuals, adjacent to the Project site. Unwanted interaction by Contractor employees includes whistling at, or initiating conversations with, passersby. If any contractor employee initiates such unwanted interaction, or utilizes profanity, Contractor shall, upon request of University's Representative or on its own initiative, replace said employee with another of equivalent technical skill, at no additional cost to University. No radios, other than two-way communication type, will be allowed on the Project site. No smoking is allowed in any existing University Building or University Building under Construction.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

MATERIAL/PRODUCT SUBSTITUTION REQUEST FORM

Date: ______________________________ Material/Product Substitution Request No. __________

TO: University's Representative **FROM:** ____________________

A. We hereby submit for your consideration the following product instead of the specified item:

1. Section: __________________________ Sub-Article: __________________________________
2. Specified Item: ____
3. Proposed Substitution: (Mfg., Type, Model, etc. Attach a separate sheet if necessary.)

B. Complete all of the following:

1. Does this Substitution offer The Regents a cost credit (including costs for changes by other trades)? ☐ Yes ☐ No
   If "Yes," state how much and attach an itemized breakdown of all costs: $ ___________________
2. Does this Substitution offer earlier delivery or less construction time? ☐ Yes ☐ No
   If "Yes," state the effect on the Contract Time: (Attach a separate sheet if necessary.)
3. Does this substitution affect any dimensions, layout, or details of other trades as shown on the drawings? ☐ Yes ☐ No
   If "Yes," explain in the space below: (Attach a separate sheet if necessary.)
4. Describe the specific differences between this Substitution and the specified item in the space below: (Attach a separate sheet if necessary.)

C. Attach the following items as applicable: (Check if attached.)

1. Manufacturer's technical data. ☐
2. Laboratory test or performance results. ☐
3. Drawings and wiring diagrams of the proposed product. ☐
4. Drawings and description of changes required by other trades. ☐
5. Samples. ☐
6. Manufacturer's guarantee and maintenance instructions. ☐
7. Documentation of code compliance for all specific uses. ☐

D. The undersigned agrees to pay for all additional review, design, testing, changes in the contract documents, and construction as a result of the acceptance of this substitution, at no cost to The Regents.

E. Submitted by Contractor: ____
(Signed)

____
(Printed Name & Title)

UNIVERSITY'S REPRESENTATIVE'S USE ONLY:

☐Accepted ☐Revise and Resubmit ☐Rejected ☐See attachment dated ______________

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SECTION 01 2500
PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 – GENERAL

1.1. SUMMARY

A. This Section includes:

1. General Provisions
2. Special Requirements for Other Than First-Named Product, Material or Equipment
3. Special Requirements for Substitutions
4. Material/Product Substitution Request Form

1.2. GENERAL PROVISIONS

A. This subsection includes the general provisions regarding specification of products, material and equipment by brand or trade name.

B. Products, material or equipment specified by both brand or trade name and model number are approved for use, provided that Contractor complies with all Contract requirements. Specification of a product, material or equipment by brand or trade name and model number is not a representation or warranty that the product, material or equipment can be used without modification, to meet the requirements of the plans and specifications; Contractor shall, at its sole cost, modify such products, material, or equipment so that they comply with all requirements of the plans and specifications.

C. The **first-named** product, material or equipment specified by brand or trade name and model number is the **basis for the Project design** and the use of any item other than the first-named one may require modifications of that design. If Contractor uses any product, material or equipment other than the first-named one, Contractor shall, at its sole cost:

1. Make all revisions and modifications to the design and construction of the Work necessitated by the use of the product, material or equipment.
2. Be responsible for all costs of any changes resulting from the use of the product, material or equipment including without limitation, costs or changes which affect other parts of the Work, the work of Separate Contractors, or any other property or operations of the University.

D. When a product, material or equipment specified by brand or trade name is followed by the words “**or equal**,” a **substitution** may be permitted if the substitution is equal to or superior to the first-named product, material or equipment in quality, utility and appearance and if the substitution complies with all other requirements of the plans and specifications.

E. A product, material or equipment specified by brand or trade name followed by the words “**or equal, no known equal**,” signifies that University does not have sufficient knowledge to specify a product, material or equipment, other than the one specified by brand or trade name, that is suitable for use on the Project. The use of the words "no known equal" is not intended to discourage substitution requests in accordance with the requirements specified herein.

F. When catalog numbers and specific brands or trade names not followed by the designation "or equal" are used in conjunction with a product, material or equipment required by the specifications, **substitutions will NOT be allowed** and the named product, material or equipment must be used.

G. Specification of a product, material or equipment by brand or trade name and model number is not a representation or warranty that the product, material or equipment is available; Contractor should confirm, prior to submitting its Bid, the availability of any product, material or equipment specified by brand or trade name and model number.

1.3. SPECIAL REQUIREMENTS FOR OTHER THAN FIRST-NAMED PRODUCT, MATERIAL OR EQUIPMENT

A. This subsection includes special requirements for named products, material and equipment, other than the first-named product, material or equipment, specified by both brand or trade name and model number.

B. In addition to complying with all other submittal requirements of the Contract, **submit within 70 days after the date of commencement specified in the Notice to Proceed**, for review and approval by the University's Representative, Contractor prepared specifications and drawings, including design and engineering calculations, prepared by an appropriate licensed professional, depicting all revisions and modifications to the design and construction of the Work necessitated by the use of the product, material or equipment**.** **If no revisions or modifications are necessary, submit within 70 days after the date of commencement specified in the Notice to Proceed**, a written representation that no revisions or modifications to the design or construction of the Work are necessitated by the use of the product, material or equipment. Contractor shall utilize the first-named product, material or equipment if Contractor fails to make the appropriate required submittal pursuant to this paragraph within the 70-day period.

C. A product, material or equipment, other than the first-named product, material or equipment, specified by both brand or trade name and model number may be used if no revisions or modifications to the design or construction of the Work are necessitated by the use of the product, material or equipment. If such revisions or modifications are necessary, the product, material or equipment may be used only if the revisions or modifications are approved in writing by the University's Representative. Contractor has the burden of demonstrating, through the procedures specified herein, that any such revisions or modifications will not be detrimental to the quality, utility or appearance of the Project or any portion of the Project. The University's Representative may refuse to approve any such proposed revisions or modifications where, in the reasonable opinion of the University's Representative, Contractor has failed to demonstrate, through the procedures specified herein, that the revisions or modifications are not detrimental to the quality, utility or appearance of the Project or any portion of the Project.

1.4. SPECIAL REQUIREMENTS FOR SUBSTITUTIONS

A. In addition to complying with all other submittal requirements of the Contract, submit written data demonstrating that the proposed substitution is equal to or superior to the first-named product, material or equipment in quality, utility, appearance, environmental performance criteria, and otherwise complies with all requirements of the plans and specifications, including:

1. Complete technical data including drawings, performance specifications, samples, and test reports of the article proposed for substitution.
2. Statement by Contractor that the proposed substitution is in full compliance with the requirements of the Contract Documents and Applicable Code Requirements.
3. List of Subcontractors, if any, that may be affected by the substitution.
4. Contractor prepared specifications and drawings, including design and engineering calculations, prepared by an appropriately licensed professional, depicting all revisions and modifications to the design and construction of the Work necessitated by the use of the substitution. If no revisions or modifications are necessary, submit a written representation that no revisions or modifications to the design or construction of the Work are necessitated by the use of the product, material or equipment.

B. Requests for substitutions will only be considered if Contractor completes and submits Material/Product Substitution Request Form and the above supporting data.

C. At the request of and within the timeframes specified by the University's Representative:

1. Submit samples as deemed necessary by the University's Representative to evaluate the proposed substitution.
2. Submit proposed substitution to tests deemed necessary by the University's Representative to evaluate the proposed substitution. Such tests shall be made by an independent Testing Laboratory and at the sole expense of Contractor, after review and approval of the test procedures by University's Representative. If re-testing is deemed necessary by the University's Representative to evaluate the proposed substitution, such re-testing shall be made by an independent Testing Laboratory at the sole expense of the Contractor.
3. Provide any additional information deemed necessary by the University's Representative to evaluate the proposed substitution.

D. If University's Representative, in reviewing a proposed substitution, requires revisions or corrections to be made to previously accepted shop drawings and supplemental supporting data to be resubmitted, Contractor shall do so within the time period specified by the University's Representative. A proposed substitution may be rejected if Contractor fails to submit such revisions, corrections, or supplemental supporting data within the specified time period.

E. Except for products, material or equipment designated in the Bidding Documents for evaluation of substitutions prior to award, **requests for substitution, including the data required by Paragraph 1.4.A., must be submitted to the University's Representative not later than 35 days after the date of commencement specified in the Notice to Proceed**. No requests for substitutions of products, material or equipment subject to the 35-day deadline shall be considered unless the request and supporting data is submitted on or before the deadline, except those deemed, in University's Representative's sole opinion, to be necessary because (i) previously specified or approved manufactured products, material or equipment are no longer manufactured, (ii) of University initiated change orders, or (iii) it is in the best interest of University to accept such substitution.

F. If a product, material or equipment is designated in the Bidding Documents for evaluation of substitutions prior to award, then a request for substitution of the product, material or equipment, including the data required by Paragraph 1.4.A., must be submitted by the deadline specified in the Bidding Documents. Because of time constraints, only one submittal will be allowed for each such substitution request. Requests for substitutions of products, material or equipment designated for evaluation prior to award may not be made after the deadline specified in the Bidding Documents, and such requests be shall not be considered unless the request and supporting data is submitted on or before the deadline specified in the Bidding Documents. Notwithstanding the forgoing, the University may consider, after award of the Contract, requests for substitution of a product, material or equipment designated for evaluation prior to award where, in University's Representative's sole opinion, a substitution is necessary because (i) previously specified or approved manufactured products, material or equipment are no longer manufactured, (ii) of University initiated change orders, or (iii) it is in the best interest of University to accept such substitution.

G. In reviewing the supporting data submitted for substitutions, University's Representative will use, for purposes of comparison, all the characteristics of the specified material or equipment as they appear in the manufacturer's published data even though all the characteristics may not have been particularly mentioned in the Specifications. If more than 2 submissions of supporting data are required, the cost of reviewing the additional supporting data shall be at Contractor's expense.

H. Contractor has the burden of demonstrating, through the procedures specified herein, that its proposed substitution is equal to or superior to the first-named product, material or equipment in quality, utility and appearance and complies with all other requirements of the plans and specifications. If revisions or modifications to the design or construction of the work are necessitated by the use of the substitution, Contractor also has the burden of demonstrating, through the procedures specified herein, that the use of the substitution will not be detrimental to the quality, utility or appearance of the Project or any portion of the Project.

I. The University's Representative may refuse to approve any requested substitution where, in the reasonable opinion of the University's Representative, Contractor has failed to demonstrate, through the procedures specified herein, that the proposed substitution is equal to, or superior to, the first-named product, material or equipment, in quality, utility and appearance and that the proposed substitution complies with all other requirements of the plans and specifications.

J. University's Representative may reject any substitution not proposed in the manner and within the time limits prescribed herein.

K. Substitutions are not allowed unless approved in writing by the University's Representative. Any such approval shall not relieve Contractor from the requirements of the Contract Documents.

L. The 35-day and 70-day submittal periods do not excuse Contractor from completing the Work within the Contract Time or excuse Contractor from paying liquidated damages if Final Completion is delayed.

M. If revisions or modifications to the design or construction of the Work are necessitated by the use of a substitution, the substitution may be used only if the revisions and modifications are approved in writing by the University's Representative. The University's Representative may refuse to approve any such proposed revisions or modifications where, in the reasonable opinion of the University's Representative, Contractor has failed to demonstrate, through the procedures specified herein, that the revisions or modifications are not detrimental to the quality, utility and appearance of the Project or any portion of the Project.

N. If a substitution request is finally rejected by the University's Representative, Contractor shall furnish and install:

1. The first-named product, material or equipment; or
2. A product, material, or equipment, other than the first-named product, material or equipment, specified by both brand or trade name and model number, provided Contractor complies with the submittal requirements (including deadlines) of this specification section 01 2500.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

(MATERIAL/PRODUCT SUBSTITUTION REQUEST FORM ON FOLLOWING PAGE)

SECTION 01 2613
REQUESTS FOR INFORMATION & INSTRUCTIONS (RFI) PROCEDURES

PART 1 – GENERAL

1.1. SUMMARY

A. This Section contains the procedures to be followed by Contractor upon discovery of any apparent conflicts, omissions, or errors in the Contract Documents or upon having any question concerning interpretation.

1.2. PROCEDURES

A. Notification by Contractor:

1. Submit all requests for clarification or additional information in writing to Design Professional and University's Representative concurrently using the **Request for Information (RFI) form attached to this Section**.

   a. All RFI's, and any attachments thereto, must be submitted in PDF format with Optical Character Recognition (OCR) Text.

   b. For any RFI for which Contractor has indicated a Cost Impact or Work/Time Impact, Contractor must also send a copy of the RFI to University's Responsible Administrator at Richard.Racicot@ucr.edu.

2. Limit each RFI to one subject and number RFI's sequentially. For each resubmission, follow the RFI number with suffix "R" sequentially numbered as necessary. For example, the first RFI would be "1." The second RFI would be "2." The first resubmittal of RFI "2" would be "2R1."

3. Submit a RFI if one of the following conditions occurs:

   a. Contractor discovers an unforeseen condition or circumstance that is not described in the Contract Documents.

   b. Contractor discovers an apparent conflict or discrepancy between portions of the Contract Documents that appears to be inconsistent or is not reasonably inferred from the intent of the Contract Documents.

   c. Contractor discovers what appears to be an omission from the Contract Documents that cannot be reasonably inferred from the intent of the Contract Documents.

4. Contractor shall not submit a RFI:

   a. As a request for substitution.

   b. As a submittal.

   c. Under the pretense of a Contract Documents discrepancy or omission without thorough review of the Contract Documents.

   d. In a manner that suggests that specific portions of the Contract Documents are assumed to be excluded or by taking an isolated portion of the Contract Documents in part rather than whole.

e. In an untimely manner without proper coordination and scheduling of Work of related trades.

f. As a request for approval of Contractor's means and methods.

5. If Contractor submits a RFI contrary to 1.2. A.4. above, Contractor shall pay the cost of any review, which cost shall be deducted from the Contract Sum.

6. Contractor shall submit a RFI immediately upon discovery. Contractor shall submit RFI's within a reasonable time frame so as not to delay the Contract Schedule while allowing the full response time described below.

B. Response Time:

1. Design Professional shall send its RFI response to University's Representative within a reasonable time so that University's Representative can send a final RFI response to Contractor within the time frames in 1.2. B.2. below.

2. University's Representative, or his/her designee, whose decision will be final and conclusive, shall resolve such questions and issue instructions or issue approval of instructions or information from Design Professional, to Contractor within a reasonable time frame. In most cases, RFI's will receive a response within **7 days for architectural issues and within 14 days for issues that require review and response from Design Professional's consultants.** In some cases, the response time may be lengthened for complex issues or shortened for emergencies as approved by University's Representative in writing. If in the opinion of University's Representative more than **14 days** is required to prepare a response to a RFI, Contractor will be notified in writing.

3. Should Contractor proceed with the Work affected before receipt of a response from University's Representative within the response time described above, any portion of the Work which is not done in accordance with University's Representative's interpretations, clarifications, instructions, or decisions is subject to removal or replacement and Contractor shall be responsible for all resultant losses.

4. Failure to Agree: In the event of failure to agree as to the scope of the Contract requirements, Contractor shall follow procedures set forth in Article 4 of the General Conditions.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

REQUEST FOR INFORMATION

DATE: mm/dd/yy ________ **RFI #:** ____________

TO: | **FROM:**

Cc:

Subject/Title:

☐Architectural ☐ Civil ☐ Mechanical ☐ Electrical ☐ Plumbing ☐ Structural
☐Fire Protection ☐ Landscape ☐ Other: ______

Reason(s) for RFI:
☐ Clarification/Interpretation ☐ Conflict in CD's
☐ Coordination Issue ☐ Information Not Shown on CD's
☐ Cost Impact: ______ ☐ Safety
☐ Work/Time Impact: ______

Issue/Question:
(Reference Attachments)

Specification #: ____________ Paragraph #: _________ Sheet #: ________ Detail #: ________
Other Reference: ______________________________ Schedule Activity: ______________

Proposed Solution:
(Reference Attachments)

Signed by Contractor: ________________________ **Response Required by Date:** mm/dd/yy

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RESPONSE TO CONTRACTOR:

From Design Professional:
(Reference Attachments)

Date Received RFI: mm/dd/yy **Response Date:** mm/dd/yy **Signed:** ______________

From University's Rep.:
(Reference Attachments)

Date Received RFI: mm/dd/yy **Response Date:** mm/dd/yy **Signed:** ______________

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SECTION 01 3113
COORDINATION

PART 1 – GENERAL

1.1. SUMMARY

A. This Section includes administrative and supervisory requirements necessary for coordinating construction operations including, but not necessarily limited to, the following:

1. Administrative Requirements
2. Facilities Services Coordination and Service Continuity

1.2. ADMINISTRATIVE REQUIREMENTS

A. Coordinate construction operations including, but not limited to, the following:

1. Coordinate the Work and do not delegate responsibility for coordination to any Subcontractor.
2. Anticipate the interrelationship of all Subcontractors and their relationship with the Work.
3. Resolve differences or disputes between Subcontractors and their relationship with the Work.
4. Coordinate the Work of Subcontractors so that portions of the Work are performed in a manner that minimizes interference with the progress of the Work.
5. Do not obstruct spaces and installations that are required to be clear by Applicable Code Requirements.
6. Do not cover any piping, wiring, ducts, or other installations until they have been inspected and approved and required certificates of inspection issued.
7. Remove and replace all Work, which does not comply with the Contract Documents. Repair or replace any other Work or property damaged by these operations with no adjustment of Contract Sum.

B. Coordinate construction operations included in various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections that depend on each other for proper installation, connection, and operation. Coordinate all portions of the Work requiring careful coordination in order to fit in space available. Before commencing such portions of the Work, prepare supplementary Drawings for review by University's Representative and Design Professional. Non-conformance of this task will result in the delay of applications for payment and the contractor responsibility for any remedial works requested by University Representative.

1. Schedule construction operations in the sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.
3. Make provisions to accommodate items scheduled for later installation, including, but not limited to, coordination of furnishing and placing embedded items, sleeves, and block-outs with formwork and reinforcing steel for cast-in-place concrete.
4. Resolve conflicts and coordinate access to, and utilization of, spaces available for construction activities on the site and within structures, and delivery, storage, and installation of materials and equipment.
5. Implement a quality assurance program designed to ensure completion of the Work in accordance with requirements of the Contract Documents.

C. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.

1. Prepare similar memoranda for the University and separate contractors where coordination of their work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of schedules.
2. Installation and removal of temporary facilities.
3. Delivery and processing of submittals.
4. Progress meetings.
5. Project closeout activities.
6. Obtaining required permits and approvals from authorities having jurisdiction.
7. Utility company approvals and installations.

E. Conservation: Coordinate construction operations to assure that operations are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated in, the Work.

F. Clean and protect construction in progress and adjoining materials in place, during handling and installation. Apply protective covering where required to assure protection from damage or deterioration at Substantial Completion.

G. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to assure operability without damaging effects.

1.3. FACILITIES SERVICES COORDINATION AND SERVICE CONTINUITY

A. Maintain continuous services to all existing facilities during the period of construction except for the following conditions:

1. Perform Work that involves "shut-down" of existing facilities at such times as will cause the least inconvenience to the University activities, performing at night, on Saturdays, Sundays, holidays and at the discretion of University's Representative. Furnish University's Representative written notice of exact date and time of "shut-down" at least **thirty (30) working days** in advance, unless a longer period is specified or shown on the Drawings. On jobs with short performance time, Contractor shall verify with University's Representative the number of days required in advance for shut-down.

2. The University's preference would be for the contractor to try to coordinate the high voltage utility shut down simultaneously with the Student Recreation Center's shut down to avoid unnecessary inconvenience to the campus. However this preference is not a mandatory requirement if it doesn't fit in with the contractor's schedule.

3. The Contractor's bid shall include the cost of overtime necessary for the Work. No extra payment will be allowed for overtime to meet this requirement or the Contract Schedule.

B. Service Continuity:

1. Within the areas of the Work, investigate and uncover all drainage lines, sewers, electrical ducts, and other piping in use or forming continuations or utility systems required for other buildings or improvements upon the campus, and maintain such services in operation during performance of the Work of the Contract.

C. Notify University's Representative at least 30 days in advance of all utility shutdowns including date, time and expected duration.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 3119
PROJECT MEETINGS

PART 1 – GENERAL

1.1. SUMMARY

A. This Section includes administrative and procedural requirements for the following project meetings:

1. reconstruction Meeting
2. Pre-Installation Meetings
3. Progress Meetings
4. Billing Meetings
5. 11-Month Warranty Meeting

1.2. PRECONSTRUCTION MEETING

A. The University's Representative will schedule a preconstruction conference before starting construction, at a time convenient to the University and the University's Representative, but no later than 10 days after execution of the Agreement. The conference will be held at the Project Site or another convenient location. The meeting will review responsibilities and personnel assignments.

1. Distribute written notice of agenda, meeting time, and location a minimum of five calendar days in advance.

B. Attendees: The University's Representative and authorized representatives of the Architect, and its consultants; the Contractor and its superintendent; major subcontractors; manufacturers; suppliers; Contractor's designated safety manager; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: Items of significance that could affect progress, including the following:

1. Tentative construction schedule.
2. Critical work sequencing.
3. Designation of responsible personnel.
4. Procedures for processing field decisions and Change Orders.
5. Procedures for processing Applications for Payment.
6. Distribution of Contract Documents.
7. Submittal of Shop Drawings, Product Data, and Samples.
8. Preparation of record documents.
9. Use of the premises.
10. Parking availability.
11. Office, work, and storage areas.
12. Equipment deliveries and priorities.
13. Safety procedures, including emergency notification procedures.
14. First Aid.
15. Security.
16. Housekeeping.
17. Working hours.
18. Sustainability requirements, including Contractor staffing.

1.3. PRE-INSTALLATION MEETINGS

A. The Contractor shall conduct a pre-installation conference at the Project Site before each construction activity that requires coordination with other construction, and as required by other sections of the specifications.

1. The Contractor shall distribute written notice of agenda, meeting time, and location a minimum of five calendar days in advance.

B. Attendees: The Installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise the University's Representative of scheduled meeting dates.

1. Review the progress of other construction activities and preparations for the particular activity under consideration at each pre-installation conference, including requirements for the following:

a. Contract Documents
b. Options
c. Related Change Orders
d. Purchases
e. Deliveries
f. Shop Drawings, Product Data, and quality-control samples
g. Possible conflicts
h. Compatibility problems
i. Time schedules
j. Weather limitations.
k. Manufacturer's recommendations
l. Warranty requirements
m. Compatibility of materials
n. Acceptability of substrates
o. Temporary facilities
p. Space and access limitations
q. Governing regulations
r. Safety
s. Inspecting and testing requirements
t. Required performance results
u. Recording requirements
v. Protection.

2. Record significant discussions and agreements and disagreements of each conference, and the approved schedule. Promptly distribute the record of the meeting to everyone concerned, including the University and the University's Representative.

3. Do not proceed with the installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the conference at the earliest feasible date.

1.4. PROGRESS MEETINGS

A. The Contractor shall conduct progress meetings at the Project Site at regular intervals. Notify the University's Representative and the Design Professional of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request. Document meetings with meeting minutes to be distributed to the University's Representative, the Design Professional and all other attendees.

B. Attendees: In addition to representatives of the University and the Architect, each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the status of the Project.

1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to insure that current and subsequent activities will be completed within the Contract Time.

2. Review the present and future needs of each entity present, including the following:

a. Interface requirements
b. Time
c. Sequences
d. Status of submittals
e. Status of RFI's
f. Deliveries
g. Off-site fabrication problems
h. Access
i. Site utilization
j. Temporary facilities and services
k. Hours of work
l. Contractor's Safety Program (including any special hazards and risks)
m. Housekeeping
n. Quality and work standards
o. Contractor's two week "look ahead" schedule and issues
p. Change Orders
q. Documentation of information for payment requests
r. Sustainability review, including tracking and status.

D. Schedule Updating: Revise the Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

1.5. BILLING MEETINGS

A. Attend a meeting monthly 5 days prior to submittal of the Application for Payment, at a location acceptable to University's Representative.

B. Attendees:

1. University's Representative.
2. Design Professional and Consultants, as appropriate.
3. Contractor's Project Manager.
4. Superintendent.
5. Others as directed by University's Representative.

C. Agenda:

1. Determination of current schedule progress.
2. Review of work completed based on the cost loaded schedule to be billed in the Application for Payment.

D. Schedule Updating: Revise the Contract Schedule prior to the meeting based on information determined at prior progress meetings. Review schedule revisions and prepare a final revised schedule for submission 10 days prior to the application for payment.

1.6. 11-MONTH WARRANTY MEETING

A. Attend a meeting eleven months following the date of Notice of Completion.

B. Attendees:

1. University's Representative
2. Design Professional and Consultants, as appropriate
3. Contractor's Project Manager
4. Subcontractors, as appropriate
5. Others as directed by Responsible Administrator.

C. Agenda: Review of guarantees, bonds, service and maintenance contracts for materials and equipment.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 3200
DOCUMENT CONTROL

PART 1 – GENERAL

1.1. SUMMARY

A. This Section includes the requirements for Contractor provided electronic document control system(s):

1. General Requirements
2. Submittals
3. Software
4. System Maintenance

1.2. GENERAL REQUIREMENTS

A. Contractor shall provide a web accessible system for electronic document control designed for use during pre-construction and construction to manage documents including RFIs and submittals.

B. Contractor shall provide an electronic document control system(s) that is accessible via a web browser (including IE version 7.7) from any geographical location.

C. Contractor shall provide access to University's Representative, University's Inspector of Record, Design Professional, and at least 7 other individuals identified by University's Representative.

D. The electronic document control system must use the University numbering system specified in the applicable Specification Section.

E. Hours of Operation: The electronic document control system shall be available 24 hours a day, 7 days a week except for short periods of planned system maintenance.

1.3. SUBMITTALS

A. Contractor shall submit a narrative description and outline of the proposed electronic document control system for review and approval by University's Representative.

B. Contractor shall submit an example of the electronic log for both RFIs and Submittals for review and approval by University's Representative.

C. Contractor shall establish a commercially available web based RFI and submittal processing system capable of posting RFI's and submittals with the following capabilities:

1. Password secured access with varying levels of "write" or action capability, with multiple user defined stamps for action taken.
2. Accessible from any computer with Internet access, whether in the office or the field.
3. Notification of submittal status based on user profile.
4. Automatic Transmittal generation when submittal is released.
5. Extensive and user friendly mark-up tools and capability.
6. Ability to hide mark-up comments based on user profile.
7. Status of submittal and responsible party.
8. Download in PDF format based on user profile.
9. Tracking of resubmittal process, including University designated numbering system.

PART 2 – PRODUCTS

2.1. SOFTWARE

A. Primavera, Prolog or equal is acceptable as the electronic document control system used for RFIs and submittals.

2.2. SYSTEM MAINTENANCE

A. University shall be notified at least 48 hours in advance of planned system maintenance of the electronic document control system(s). Planned system maintenance should be scheduled not to interfere with construction activities whenever possible. The system uptime shall be at least 95% based on a rolling monthly average.

B. Contractor is responsible for installation, maintenance, and backup activities of the electronic document control system(s).

PART 3 – EXECUTION (Not Applicable)

1.1. UPDATES

A. Every two (2) weeks, Contractor shall export or otherwise generate electronic logs of all RFIs and submittals that can be imported into the University's enterprise system. The format of the electronic logs shall be a spreadsheet in MS-Excel format of all the structured data from each RFI or submittals. The exported or otherwise generated log for RFIs shall be separate from the log for submittals. Samples shall be included in the log of submittals.

B. Contractor shall also allow, at any time, the University's Representative or designee, to download electronic copies of such RFI and submittal documents in a format that is searchable such as printed PDFs. Scanned PDFs are not acceptable except in the case of drawings.

C. At least 7 days before the date scheduled for Final Inspection, Contractor shall provide University's Representative a complete electronic copy of all electronic files from the electronic document control system for the project.

1. The electronic files shall be executable on CD or DVD.

2. Each disc shall be fully labeled with the project name, contract number, date, and the sequence number of the disc in the set. Files may be submitted compressed, but the decompression utility used (executable preferred) should be fully described with directions included on the transmittal as well as in digital form.

END OF SECTION

SECTION 01 3216
SCHEDULES

PART 1 – GENERAL

1.1. SUMMARY

A. This Section includes administrative and procedural requirements for the Critical Path Method (CPM) of scheduling and reporting progress of the Work:

1. Preliminary Contract Schedule
2. Contract Schedule
3. Summary Schedule
4. Narrative Report
5. Variance Report
6. Cash Flow Curve
7. Manpower Curve
8. Look-Ahead Schedule
9. Final As-Built Schedule
10. Responsibility for Completion
11. Adjustment of Time for Completion

B. Refer to the Agreement, General Conditions, and Notice to Proceed for definitions and specific dates of Contract Time.

1. Contractor shall develop a network plan and schedule for the Project demonstrating complete fulfillment of all contract requirements, shall keep the network plans up-to-date and in accordance with the requirements of this Section and shall utilize the CPM in planning, coordination, performing and reporting the Work under this Contract, including all activities of subcontractors, equipment vendors, and suppliers and in assisting University's Representative in monitoring the progress of the Work.

2. The Precedence Diagramming Method (PDM) shall be utilized in preparing the CPM Schedule network diagrams utilizing Primavera Scheduling Software (P6 or the latest version for Windows, MS Project (latest version for Windows), or equal which is 100% importable into Primavera.

3. Contractor shall use Primavera Scheduling Software as a computerized critical path scheduling system for producing computer generated reports with the following minimum information:

a. Activity identification code keyed to summary and Contract Schedule activities.
b. Activity description.
c. Status date and remaining duration.
d. Activity percentage complete.
e. Activity duration.
f. Early start/finish and late start/finish.
g. Total float.
h. Free float.
i. The predecessor and successor activities for each individual activity.
j. A comparison between the current updated Contract Schedule and the Baseline Schedule.
k. Designation of the planned work day/work week for each activity.
l. A critical item list of activities with ten (10) working days or less total float.
m. Scheduled and actual manpower loading for each activity.
n. Scheduled and actual progress payment for each activity.

C. Definitions:

1. Critical Path activities are defined as Work activities that, if delayed or extended, will cause a critical delay as defined in Article 8 of the General Conditions. All other Work activities are defined as non-critical Work activities and are considered to have float.

2. Float is defined as the time that a non-critical Work activity can be delayed or extended without causing a critical delay as defined in Article 8 of the General Conditions. Neither Contractor nor University shall have an exclusive right to the use of float. Float is a shared resource available to Contractor and University.

   a. Float for any Work Activity shall be calculated as the difference in days between the Latest Finish and its Earliest Finish. Any such calculated float that results in a negative number is considered Negative Float.

D. Submittals:

1. Preliminary Contract Schedule
2. Contract Schedule
3. Summary Schedule
4. Narrative Report
5. Variance Report
6. Cash Flow Curve
7. Manpower Curve
8. Look-Ahead Schedule
9. Final As-Built Schedule

1.2. PRELIMINARY CONTRACT SCHEDULE

A. Submittal

1. Submit the Preliminary Contract Schedule to University's Representative within the time specified in the Instructions to Bidders and Supplementary Instructions to Bidders.

2. Submit to University’s Representative **1 hardcopy**, **1 electronic copy** in PDF, and **1 electronic copy** in the computerized critical path scheduling system software per 1.1.A.2. above approved by University’s Representative.

3. Use the form of a bar chart, GANT chart, or other system approved by University’s Representative showing the Work from the construction start date through the final completion date, with the work activities involved and other information relative to the progress of the Work, in a continuous flow from left to right.

4. Show sufficient detail to demonstrate adequate planning for the Work and to show a practical plan to complete the Work within the Contract Time, and suitable for monitoring progress of the Work.

B. Approval

1. Within **5 days** after receipt of the Contract Schedule, University's Representative will notify Contractor of its acceptance or return with comments for resubmittal.

C. Activities and Milestones

1. Identify all Work activities which constitute the Critical Path.

2. Include submittals and lead times.

3. Identify the milestone for completion of the Project. At a minimum, identify the following milestones:

   Commencement Date
   Substantial Completion
   Final Completion

4. Identify all holidays and non-working days. Contractor shall perform no work that requires the University's observation or inspection on the following University holidays and campus closure days:

   a. Regular University Holidays and Campus Closure Days:

      New Year's Day
      Martin Luther King, Jr. Day (3rd Monday in January)
      Presidents' Day (3rd Monday in February)
      Cesar Chavez Day (Last Friday in March)
      Memorial Day (Last Monday in May)
      Independence Day (July 4)
      Labor Day (1st Monday in September)
      Veterans' Day (November 11)
      Thanksgiving Day (4th Thursday in November)
      Friday following Thanksgiving Day
      Christmas Eve
      Christmas Day
      Campus Closure: business days between Christmas Day and New Year's Eve
      New Year's Eve

      Exception: A University Holiday that falls on a Saturday is observed on the preceding Friday, and a University Holiday that falls on a Sunday is observed on the following Monday, unless an alternate day to observe the University Holiday is designated by the University.

   b. Other Campus Closure Days: None

1.3. CONTRACT SCHEDULE

A. Submittal

1. Submit the Contract Schedule, or updated Contract Schedule as applicable, within **<u>7</u> days** prior to submitting an Application For Payment.

   a. The initial Contract Schedule submitted to and approved by University's Representative shall be known as the Baseline Schedule, and shall be used by Contractor to execute the Work of the Contract, including planning, organizing and directing the Work, and reporting its progress until subsequently updated.

   b. In no event shall Contractor submit an updated Contract Schedule less than monthly.

   c. If the commencement or completion of any Work activity on the critical path is more than 30 days behind the date set forth in the Contract Schedule for such Work activity, at University's Representative's sole discretion, University's Representative may require Contractor to submit an updated Contract Schedule at a more frequent interval without additional cost to the University.

      If the Contract Time is less than 300 days, and if the commencement or completion of any Work activity on the critical path is more than 10% of the Contract Time behind the date set forth in the Contract Schedule for such Work activity, at University's

Representative's sole discretion, University's Representative may require Contractor to submit an updated Contract Schedule at a more frequent interval without additional cost to the University.

2. Submit to University's Representative **1 hardcopy**, **1 electronic copy** in PDF, and **1 electronic copy** in the computerized critical path scheduling system software per 1.1.A.2. above approved by University's Representative.

3. Submit the Contract Schedule or updated Contract Schedule in the same form as required in 1.2.A. above.

4. The presentation of each Work activity on the Contract Schedule or updated Contract Schedule shall include a brief description of the Work activity, the duration of the Work activity in days, and a responsibility code identifying the organization or trades performing the Work activity.

5. The Contract Schedule or updated Contract Schedule shall be a computerized, detailed, task level CPM diagram in PDM format. A clear delineation of construction activities shall be shown. This schedule shall be manpower and cost loaded and not extending beyond the Contract Time.

6. The work activities comprising the Contract Schedule shall be of sufficient detail to ensure adequate planning and execution of the Work to provide an appropriate basis for monitoring and evaluating the progress of the Work. A work activity is defined as an activity which requires time and resource (manpower, equipment, and/or material) to complete in a continuous operation. No activity shall be less than 1 day, no more than 14 days duration for any onsite operation.

7. Failure by Contractor to include any element of the Work required for the performance of this Contract and completion of the Project shall not excuse Contractor from completing all work required within the Contract Time, regardless of University's Representative's acceptance of the Contract Schedule or any updated Contract Schedule.

8. No more than 30% of the total number or activities shown shall be critical or near critical. Near critical is defined as float less than 10 days.

9. These schedules shall indicate the sequence and interdependency of work activities and shall be coordinated with all submittal, review and approval requirements.

10. Each approved Change Order and Field Order shall be listed and plotted as a separate and independent activity. Schedule components shall be organized into logical groupings by location, responsibility, Specification Section, etc.

B. Approval

1. Within **5 days** after receipt of the Contract Schedule or updated Contract Schedule, University's Representative will notify Contractor of its acceptance or return with comments for resubmittal.

   a. Contractor shall participate in a review of the proposed Contract Schedule or updated Contract Schedule by University's Representative when requested.

   b. Contractor shall resubmit any revisions within **3 days**.

2. The accepted Contract Schedule or updated Contract Schedule shall be the Contract Schedule of record for the period it is current and shall be the basis for payment during that period. Contractor shall perform the Work in accordance with the Contract Schedule or updated Contract Schedule as accepted.

3. No Application For Payment will be processed nor shall any progress payment become due for work performed until the Contract Schedule or updated Contract Schedule is accepted by University's Representative. University's Representative's acceptance of the Contract Schedule or updated Contract Schedule is a condition precedent to University making any progress payment for work performed.

4. Updating

    a. Contractor shall meet with University's Representative at least **once per month**, or as directed by University's Representative, to review the latest approved Contract Schedule for actual progress made to date, activities started and completed to date, and the percentage of work completed to date on each activity started but not completed, and to incorporate in the Contract Schedule all changes in the progress, sequences, and scope of Work activities.

        (1) The updated Contract Schedule shall accurately represent the as-built condition of all completed and in-progress Work activities as of the date of the updated Contract Schedule.

        (2) The updated Contract Schedule shall incorporate all changes mutually agreed upon by Contractor and University during preceding periodic reviews and all changes resulting from Change Orders and Field Orders.

        (3) Contractor shall document the effect on the updated Contract Schedule whenever float has been used.

C. Activities and Milestones

1. Identify all Work activities which constitute the critical path.

2. Identify all Work activities in correct sequence for the completion of the Work. Work activities shall include the following:

    a. Major Contractor-furnished equipment, materials, and building elements, and scheduled activities requiring submittals or University's prior approval.

    b. Show dates for the submission, review, and approval of each submittal. Dates shall be shown for the procurement, fabrication, delivery, and installation of major equipment, materials, and building elements, and for scheduled activities designated by University.

    c. System test dates.

    d. Scheduled overtime Work if required by Contract Documents.

    e. Dates of Contractor requests for designated working spaces, storage areas, access, and other facilities to be provided by University.

    f. Dates of Contractor requests for approvals and decisions from University on designated items.

    g. Dates of Contractor requests for University-furnished equipment.

    h. Dates of Contractor requests for University-furnished utilities.

    i. Connection and relocation of existing utilities.

    j. Connecting to or penetrating existing structures.

k. Inspections and testing.

l. Commissioning Sequence and activities for all building systems.

3. Include the milestones per 1.2.C.

4. Include all holidays and non-working days per 1.2.C.

1.4. SUMMARY SCHEDULE

A. All activities in the Contract Schedule shall be grouped to enable "rollup" of the activities in the form of a Summary Schedule which shall be submitted along with the updated Contract Schedule within **7 days** prior to submitting Contractor's next Application For Payment. A clear delineation of construction activities shall be shown on the summary schedule. The summary schedule shall be manpower and cost loaded.

B. Review and approval by University's Representative of the Summary Schedule is a condition precedent to University making any progress payments for work performed.

1.5. NARRATIVE REPORT

A. With each updated Contract Schedule, Contractor shall provide an accompanying Narrative Report within **7 days** prior to submitting its next Application For Payment.

B. The Narrative Report shall describe the progress achieved over the past period since the prior update, the progress anticipated during the upcoming period, critical activities, delays encountered during the prior period, delays anticipated during the upcoming period, and an audit of the Contract Time. The narrative shall also discuss the status of major project milestones. The audit shall show current days allowed by Contract, days used through the end of the period, days remaining, percent of time used to date, and percent complete as measured by a cost loaded schedule, and days ahead of or behind schedule. In the event that the Contractor was delayed by any occurrence during the prior period, the narrative report shall include a listing of all delays that affected the critical path and shall clearly explain the impact the claimed delay(s) had on the critical path and shall include an accounting of days lost or gained.

C. In the event the monthly update shows the Contractor to be behind schedule (negative float), the narrative shall include a description of actions needed to bring the project back on schedule.

D. Review and approval by University's Representative of the Narrative Report is a condition precedent to University making any progress payments for work performed.

1.6. VARIANCE REPORT

A. A variance report shall be submitted along with the updated Contract Schedule within **7 days** prior to submitting Contractor's next Application For Payment.

B. The variance report shall compare the approved Baseline Schedule and the latest updated Contract Schedule. The report shall include a description of all activities completed during the preceding period (last approved updated Contract Schedule), a description of progress made and planned for activities listed as started but not completed on the updated Contract Schedule, and shall report noncritical activities which have been delayed 10 or more days and critical (8 days or less total float) activities that have incurred any delay. The format of this report shall include:

1. Activity code and description.
2. Baseline scheduled early start/finish dates.
3. Current anticipated early start/finish dates.
4. Days remaining to complete the activity.

5. Percentage complete of the activity.
6. Total float of the activity.

C. Review and approval by University's Representative of the Variance Report is a condition precedent to University making any progress payments for work performed.

1.7. CASH FLOW CURVE

A. Contractor shall submit its Cash Flow Curve of expected progress payments over the time of the Project along with its Contract Schedule within **7 days** prior to submitting its first Application For Payment. The curve shall be plotted against the Contract Schedule using the Cost Breakdown approved by University's Representative.

B. Contractor shall furnish costs for each Work activity that cumulatively equal the total Contract Sum. Mobilization costs may be shown separately; however, other costs, such as profit and bonds, shall be pro-rated throughout all activities.

C. Contractor shall update the Cash Flow Curve with actuals from the approved progress payments and forecasted progress payments and submit it to University's Representative along with Contractor's updated Contract Schedule per 1.3. The total of approved progress payments and forecasted progress payments shall equal the Contract Sum plus approved Change Orders. The updated curve shall be plotted against the Baseline Schedule and updated Contract Schedule.

D. Review and approval by University's Representative of the Cash Flow Curve is a condition precedent to University making any progress payments for work performed.

1.8. MANPOWER CURVE

A. Contractor shall submit a Manpower Curve of the labor requirements per calendar week over the time of the Project along with its Contract Schedule within **7 days** prior to submitting its first Application For Payment. The curve shall be plotted against the Baseline Schedule. The curve shall show the number of persons in each craft for each week.

B. Contractor shall update the Manpower Curve with actual labor employed and forecasted labor requirements necessary to complete the Project within the Contract Time, and shall submit it to University's Representative along with Contractor's updated Contract Schedule per 1.3. The updated curve shall be plotted against the Baseline Schedule and updated Contract Schedule.

C. Review and approval by University's Representative of the Manpower Curve is a condition precedent to University making any progress payments for work performed.

1.9. LOOK-AHEAD SCHEDULE

A. The Look-Ahead Schedule is a schedule derived from the Contract Schedule or updated Contract Schedule that indicates in detail all activities scheduled for work for the next 2 weeks and all activities scheduled to occur during the next 4 weeks.

B. Submit in 11" x 17" Gantt chart format. Provide as many copies as requested by University's Representative.

C. The Look-Ahead Schedule shall be generated from the then current Preliminary Contract Schedule, Contract Schedule, or updated Contract Schedule.

1.10. FINAL AS-BUILT SCHEDULE

A. A combined 2-week Look-Ahead Schedule with a 2-week As-Built Schedule for previous two weeks shall be submitted by Contractor for review and approval as often as requested by the University's Representative, at no additional cost.

B. As a condition precedent to final acceptance of the Project, Contractor shall submit a final As-Built Schedule and all final reports which accurately reflect the manner in which the Project was constructed and includes actual start and completion dates for all work activities on the last updated Contract Schedule.

C. As a condition precedent to the release of retention, the last update of the Contract Schedule submitted shall be identified by the Contractor as the “As Built Schedule”. The As-Built Schedule shall be submitted when all activities are 100 percent complete. The As-Built Schedule shall reflect the exact manner in which the Project was actually constructed (including start and completion dates, activities, sequences, and logic) and shall include a statement signed by the Contractor that the As Built Schedule accurately reflects the actual sequence and timing of the construction of the Project.

1.11. RESPONSIBILITY FOR COMPLETION

A. Delays of any non-critical Work activity shall not be the basis for an extension of Contract Time until the delays consume the float associated with that non-critical Work activity and cause the Work activity to become critical.

B. Contractor shall not sequester float through strategies including extending activity duration estimates to consume available float, using preferential logic, using extensive or insufficient crew/resource loading, use of float suppression techniques, special lead/lag logic restraints or imposed dates. Use of float time disclosed or implied by the use of alternate float suppression techniques shall be shared for the benefit of both the University and contractor.

C. It is acknowledged that University generated time savings (critical path submittal reviews returned in less time than allowed by the Contract Documents, approval of substitution requests which result in a savings of time for contractor) create shared float. Accordingly, University caused delays may be offset by University generated time savings.

D. Contractor agrees that whenever it becomes apparent from the current updated Contract Schedule that the Contract completion date will not be met, it will take some or all of the following actions, with prior approval of University’s Representative, at no additional cost.

1. Increase construction manpower in such quantities and crafts as will eliminate, in the judgment of University’s Representative, any delay.

2. Increase the number of working hours per shift, shifts per working day, working days per week, or the amount of construction equipment, or any combination of the foregoing, sufficiently to eliminate, in the judgment of University’s Representative, any delay. This paragraph shall not be construed to permit Contractor to violate the work hour restrictions specified in the Contract Documents.

3. Reschedule activities to achieve maximum practical concurrent completion activities within the requirements of the specifications.

1.12. ADJUSTMENT OF TIME FOR COMPLETION

A. Contractor shall submit a detailed time impact analysis of the Contract Schedule to support an adjustment of the Contract Time for delay under Article 8 of the General Conditions or an adjustment of the Contract Sum for delay under Article 7 of the General Conditions.

B. Each time impact analysis shall provide information justifying the request and stating the extent of the adjustment requested for each specific change or alleged delay. Each time impact analysis shall be in form and content acceptable to University’s Representative, and shall include, but not be limited to the following:

1. A fragmentary CPM type network (Fragnet) illustrating how Contractor proposes to incorporate the change or alleged delay into the current updated Contract Schedule.

2. Identification of activities in the current updated Contract Schedule which are proposed to be amended due to the change or alleged delay, together with engineering estimates and other appropriate data justifying the proposal.

C. The time impact analysis shall be determined on the basis of the date when the change was issued, or the date when the alleged delay began. The status of completion of the Work and time impact analysis shall include event time computations for all affected activities.

D. Contractor shall provide time impact analysis at no additional cost to demonstrate the time impact upon the Contract Time.

E. If University's Representative finds, after review of the time impact analysis, that Contractor is entitled to any extension of time, the Contract Time will be adjusted per the General Conditions, and Contractor shall revise the updated Contract Schedule accordingly.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 3280
ELECTRONIC DATA TRANSFER

PART 1 – GENERAL

1.1. SUMMARY

A. Section includes Terms and Conditions for the transfer of Electronic Data to Contractor for use in preparation of Submittals, Record Documents, coordination drawings, and related documents to be produced by Contractor and submitted to University:

1. **CONTRACTOR'S ACCEPTANCE OF ELECTRONIC DATA IN ANY FORM SHALL CONSTITUTE ACCEPTANCE OF THE TERMS AND CONDITIONS OF THIS SECTION, INCLUDING PAYMENT OF INDICATED FEES.**

B. The University and the Contractor acknowledge that established administrative procedures for management of construction Projects anticipate paper documentation and methods for the exchange of such documents. To the extent the administrative and procedural requirements of the Contract Documents are predicated on established practices the University and the Contractor agree to accept reasonable modifications to certain procedural requirements to facilitate electronic exchange of information and the use of digital media.

C. Submittals: Only a material original stamped and signed by the University's Representative shall be acceptable as an official record of the processed submittal. When directed, quantities of document submittals specified in the Contract Documents may be adjusted as permitted to facilitate utilization of electronic transfer of information.

1.2. TERMS AND CONDITIONS

A. In consideration of Contractor's request to the University to deliver certain Electronic Data for use on the Project, Contractor agrees to the following:

1. Electronic Data includes but is not limited to, computer-aided design (CAD) files including native file formats (DWG) and drawing exchange formats (DXF), and files produced by word processing, spread sheet, scheduling, data base and other software programs. The Electronic Data may be provided in an original format produced by Design Professional or other University consultant, or an alternate, "translated" format as requested by other parties to this Agreement.

2. The means by which the Electronic Data is transferred may include but are not limited to, electronic mail, File Transfer Protocol (FTP) sites, project websites, and disk copies transmitted between the parties to this Agreement. Contractor acknowledges that Electronic Data transferred in any manner or translated from the system and format used by Design Professional or other University consultant, to an alternate system or format is subject to errors that may affect the accuracy and reliability of the data and that the data may be altered, whether inadvertently or otherwise. Accordingly, the University and Design Professional make no warranty, express or implied, as to the accuracy of the information transferred. The Electronic Data are not the Bidding Documents and differences may exist between these electronic files and corresponding hard-copy Bidding Documents. University reserves the right to retain hard copy originals in addition to electronic copies of the Electronic Data transferred, which originals shall be referred to and shall govern.

3. As consideration to University for the transfer of the Electronic Data, Contractor agrees that the University, University's Design Professional, and University's agents and consultants shall not be liable for and hereby waives all claims and agrees to indemnify and hold University harmless from all liabilities, losses, damages or expenses (including attorneys' fees) arising out of, or connected with: (1) the transfer of Electronic

Data by any means; (2) the use, modification or misuse by parties other than University and Design Professional of the Electronic Data; (3) the limited life expectancy and decline of accuracy or readability of the Electronic Data due to storage; (4) any use of the Electronic Data by any third parties receiving the data from other parties to this Agreement; or (5) the incompatibility of software or hardware used by University and Design Professional and the other parties participating in the Work.

4. The Electronic Data provided under the terms of this Agreement are the proprietary information of University. All Electronic Data shall be treated as confidential and shall not be disclosed to or shared with others without express, written consent from the University's.

5. The University shall issue the most current information available, but does not undertake the responsibility for providing updated information as the Project proceeds. Contractor may make a specific written request for such updated information as Contractor deems necessary, which University will then provide subject to the Terms and Conditions hereof.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 3300
SUBMITTALS

PART 1 – GENERAL

1.1. SUMMARY

A. Section includes:

1. Certificates
2. Shop Drawings, Product Data, and Samples
3. LEED Documentation
4. Refrigerant Management Documentation
5. Contractor Certification Form
6. Subcontractor Certification Form
7. Submittal Schedule

B. Definitions:

1. Mockups are full-size assemblies for review of construction, coordination, testing, or operation, appearance, and finish by which the Work will be judged; they are not Samples.

2. The terms “Shop Drawings” and Product Data” are defined in Article 3.12 of the General Conditions.

3. As used herein, the term “manufactured” applies to standard units usually mass-produced. The term “fabricated” means items specifically assembled or made out of selected materials to meet individual design requirements. Shop drawings shall establish the actual detail of all manufactured or fabricated items, indicate proper relation to adjoining Work, and amplify design details of mechanical and electrical equipment in proper relation to physical spaces in the structure.

4. The terms "Shop Drawings" and "Product Data" are defined in Article 3.12 of the General Conditions.

C. Manufacturer’s Instructions: Where it is required in the specifications that materials, products, processes, equipment or the like to be installed or applied in accordance with manufacturer's instructions, directions or specification, or words to this effect, it shall be construed to mean that said application or installation shall be in strict accordance with printed instructions furnished by the manufacturer of the material concerned for use under conditions similar to those at the job site. Three (3) copies of such instructions shall be furnished to the University's Representative and his/her approval thereof obtained before work is begun.

D. The University's Representative or its Design Professional reserves the right to review and request the removal or redesign of manufacturers' trade marks and names on items of materials and equipment which will be exposed to view in the completed Work. Such removal or redesign shall be at no increase in Contract Sum.

E. Materials and equipment, for which Underwriters' Laboratories, Inc. standards have been established and their label service is available, shall bear the appropriate UL label.

1.2. CERTIFICATES

A. Certifications of Review and Coordination: Within 10 days of Notice to Proceed, submit completed Contractor Certification of Review and Coordination and all Subcontractor Certifications of Review and Coordination.

B. Certifications of Review and Coordination: As required by the General Conditions, perform a thorough review of the Contract Documents prior to commencing the Work. If there are no exceptions, write 'NO EXCEPTIONS" in the space provided.

1. Complete a copy of the Contractor Certification of Review and Coordination Form following this Section.
2. Require all subcontractors to perform a thorough review of the Contract Documents and complete a copy of the Subcontractor Certification of Review and Coordination Form following this Section.
3. Review all completed Forms and resolve conflicting comments, if any, among the various parties so as to present a clear, concise view of items noted.
4. Submitting the required certifications does not relieve the Contractor from responsibility to continue to immediately report new discrepancies, errors, omissions, conflicts, code violations, and improper use of materials discovered in the Contract Documents during the course of construction.
5. Applications for Payment will not be processed by the University's Representative until all certificates have been received.

1.3. SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

A. Shop drawings, product data, and samples, other than in connection with proposed substitutions, shall be submitted to University's Representative only when specifically required; and University's Representative will not review any other such submittals. Product data and samples for proposed substitutions shall be submitted to University's Representative in accordance with Section 01 2500. Contractor shall be responsible for obtaining such copies of shop drawings, product data, and samples as it may require for its own use. Submittals Not Required: No shop drawings of supplemental data are required unless specifically requested by the University or specified herein. No shop drawings shall be submitted unless specifically requested.

1. Submittal Schedule:

   a. Refer to Specific Specification Sections for the list of submittals required under each section and indicate the required submittals on the attached Submittal Schedule for review by University's Design Professional. A schedule of submission of shop drawings, product data, and samples by Contractor ("Submittal Schedule"), and their processing and return by the University's Design Professional shall be agreed upon by both parties in order that the items covered by these submittals will be available when needed by the construction process and so that each party can plan its workload in an orderly manner. Submit Submittal Schedule no later than 30 days after Award of Contract.
   b. Contractor shall prepare the Submittal Schedule in the form as attached or similar form acceptable to the University's Representative, and coordinate it with the Contract Schedule. No submittals will be processed before the Submittal Schedule has been submitted to and accepted by University's Representative, except in such cases where the processing of submittals is required to maintain job progress before the acceptance of the Submittal Schedule.
   c. In preparing the Submittal Schedule, Contractor must first determine from the Contract Schedule the date a particular item is needed for the Work. Working backwards, Contractor will establish the number of days required for fabrication, shipment, placement, and similar activities to determine the date required for the first submittal.

d. Allow 14-28 day duration for the University's Design Professional's initial review of submittals depending on the submittal/shop drawing and specification section. Allow 7 days for Design Professional to re-review revised or unapproved submittal/shop drawings.
e. Contractor to indicate whether the submittal is a "Full" or "Partial" submittal on the schedule and on the submittal.

2. Material List: Provide complete material list of products proposed for use. Submit Material Safety Data Sheets (MSDS) for Owner's use. Neither the University Representative nor its Design Professional will review MSDS.

3. Contractor's Review:

a. Contractor Review: The shop drawings and supplemental data, when called for, shall be submitted as the instruments of the Contractor, even though they may have been prepared by a subcontractor, supplier, dealer, manufacturer, or by any other person, firm or organization. Prior to submission, the Contractor shall undertake his/her own review and stamp with his/her acceptance those shop drawings and supplemental data he/she is requested to submit to the University's Architect/Design Professional for his/her review. By accepting and submitting shop drawings and supplemental data, the Contractor represents that the Contractor has determined and verified all field measurements, the physical construction, the quality of materials, the applicability of catalog numbers, and similar data, or will do so, and that the Contractor has checked and coordinated each shop drawing with the requirements of the work and of the Contract Documents. Conflicts with other trades shall be resolved by the Contractor in the shop drawings, if possible, but in any event prior to the actual construction. Drawings submitted in response to a request of the University's Architect shall show rearrangements, if any, made necessary by the use of materials or equipment other than those specified. Review, mark-up as appropriate, and stamp show drawings, product data, and samples prior to submission. Submittals shall clearly show that they have been reviewed and approved by Contractor for conformance with the requirements of the Contract Documents and for coordination with other Sections.
b. Submittals not stamped and signed by Contractor will be returned without review.
c. Determine and verify:
(1) Field measurements.
(2) Field construction criteria.
(3) Catalog numbers and similar data.
(4) Conformance with Contract Documents.
d. Coordinate each submittal with requirements of the Work and of the Contract Documents.
e. Notify University's Representative and it's Design Professional in writing, at time of submission, of any changes in the submittals from requirements of the Contract Documents. Contractor is responsible to correct the deficiencies from the requirements of the contract documents when any changes are not made in writing to the University Representative or its Design Professional at the time of submission. The approval of submittals will be deemed null and void.
f. Begin no fabrication or Work which requires submittals until the return of the University's Design Professional's final reviewed submittals.

4. Coordination Drawings: Prepare coordination drawings where careful coordination is needed for installation of products and materials fabricated by separate entities as specified in Section 01 3300. Prepare coordination drawings where limited space availability necessitates maximum utilization of space for efficient installation of different components.

    a. Show the relationship of components shown on separate Shop Drawings.
    b. Indicate required installation sequences.
    c. Comply with requirements contained in this Section.

5. BIM Procedures:

    a. Contractor shall establish procedures for coordinating work using BIM methods and protocols.

    b. Format and Development: Prepare coordination drawings according to the following requirements:

        (1) Prepare BIM files for the project based on original hard copy documents as received from the University.
        (2) Prepare all files using BIM software program, version, and operating system as approved by University.
        (3) Prepare BIM Execution Plan establishing BIM protocols for project, including standards, responsibilities of Contractor and sub-contractors, schedules, clash detection, and quality control.
        (4) Designate a specific staff person as Contractor's BIM Coordinator.
        (5) Submit or post coordination drawing files using format same as file preparation format or Portable Data File (PDF) format.

    c. Clash Detection:

        (1) Using BIM procedures perform clash detection as part of preparation of coordination drawings.
        (2) Include clash detection protocol in the BIM execution plan.
        (3) BIM Coordinator will review and assemble the various design and trade models, create clash reports and conduct coordination meetings with University's Representative as defined by the BIM execution plan.
        (4) Run Parameters: Clash detection, at minimum, shall be set to report any hard clashes within a 1 /4 inch tolerance. Clearance tolerances shall be used to account for additional material applied to modeled elements, such as fire proofing or required clearances.
        (5) At a minimum, review Clash Detection documents on a weekly basis. Identify conflicts requiring document modifications and review with University's Representative.
        (6) Update model elements based on field verification of dimensions and orientation.

    d. Following resolution of conflicts and clash detection, prepare coordination drawings for review as follows:

        (1) Comply with shop drawing requirements for sheet size and submittal methods specified in Section 01 3300 "Submittals".
        (2) Refer to Specifications in Divisions 2-33 technical specification sections for specific Coordination Drawing requirements.
        (3) Provide composite coordination drawings for equipment and system installations in mechanical and electrical rooms and spaces where two or more entities will provide the work.
        (4) Provide composite coordination drawings showing planned locations of core cuts, sleeves, and other penetrations intended for placement in

concrete decks, slabs, and structural components. Indicate intended use such as openings for conduit, piping, ducts, and utility services.

(5) Provide composite coordination drawings showing planned locations of fire and sound rated wall penetrations, including dampers. Indicate intended use such as openings for conduit, piping, ducts, and utility services.

(6) Prepare above-ceiling coordination drawings showing all above-ceiling work including structural members and required clearances and dimensions.

e. At the end of the project as part of the close out submittals the Contractor shall provide an “as-built” BIM model to be given to the University in addition to the hard copy as built drawings.

6. Submission Requirements:

a. Make submittals promptly in accordance with the Specifications and in such sequence as to cause no delay in the Work.

(1) Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

(a) Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.

(b) Coordinate transmittal of different types of submittals for related elements of the work so processing will not be delayed by the need to review submittals concurrently for coordination.

(c) The University's Representative reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

(2) Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.

(a) Allow sufficient time from receipt by University's Representative, for initial review and comment. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The University's Representative will promptly advise the Contractor when a submittal being processing must be delayed for coordination.

(b) If an intermediate submittal is necessary, process the same as the initial submittal.

(c) Allow additional time for reprocessing each submittal.

(d) No extension of Contract Time will be authorized because of failure to transmit submittals to the University's Representative sufficiently in advance of the Work to permit processing.

b. Number of Submittals Required: Refer to Specification Section 01 3500 “Document Control” for distribution of Shop Drawings and Product Data submittals. After each submittal has been reviewed by the Design Professional and returned to the Contractor. The Contractor shall make (two) 2 hard copies of all approved submittals and shall submit the hard copies to the University’s Representative for project record filing.

(1) Samples: Contractor to submit a minimum of (five) 5 physical samples each of products and or samples for Design Professional’s review and approval. After review and approval one sample will be retained by the architect, two (2) for

the contractor and its subcontractor and two (2) for the University's Representative.

(2) Shop drawings and supplemental data, where called for, shall be prepared and submitted as per General Conditions. Final corrected copies of schedules and shop drawings or supplemental data to University's Design Professional for review shall be such as to provide one (1) for University's Architect's files, two (2) for the University and two (2) to the Contractor's job files and for distribution by the Contractor to subcontractors or vendors. Exceptions shall be as noted in Specifications sections.

c. Submittals shall contain:

(1) Identification data number assigned by the Contractor, consisting of the specification section number followed with the number 001 and continuing in sequence.

(a) Resubmittals: Add a letter to the previous identification, for instance 01 3400/005/R1 would be a first resubmittal.

(b) Use a separate number for each product, assembly, or system. Similar or related items may be grouped only if compatible with review process as approved.

(2) Date of submission and dates of any previous submissions.
(3) Project name and number, and contract identification.
(4) Names of Contractor, Subcontractor, Supplier and Manufacturer.
(5) Identification of item, with Specification Section number and article/paragraph references.
(6) Field dimensions, clearly identified as such.
(7) Relation to adjacent or critical features of the Work or materials.
(8) Reference standards, such as ASTM or Federal Specification numbers.
(9) Identification of changes from requirements of the Contract Documents.
(10) Identification of revisions on resubmittals.
(11) An 8-inch x 3 inch blank space for review stamps, as necessary.
(12) Contractor's stamp, initialed or signed, certifying to the review of the submittal; verification of materials and field measurements and conditions; and compliance of the information within the submittal with requirements of the Work and of the Contract Documents.

d. Interpretation of Terms:

(1) "As directed", "as required", "as permitted", "acceptable", "satisfactory", means by or to the University's Architect. The term "equal" means "equal in the opinion of the University's Architect after submittal data is reviewed". The term "favorable review" means that the submittals for material list, shop drawings, material substitutions, schedules, etc., will be reviewed by the University's Architect and copies returned to the Contractor marked as "Review Completed", "No Exceptions Taken" or "Make Corrections Noted" in which case no further submittals are needed.

(2) Submittals returned marked "Resubmit", "Amend and Resubmit" or "Rejected - Resubmit" shall be corrected to comply with project requirements and shall be resubmitted for review

7. Resubmission Requirements:

a. Shop Drawings and Product Data:

(1) Revise shop drawings or product data, and resubmit as specified for the initial submittal, only if required by University's Design Professional.
(2) Identify any changes which have been made other than those requested.

(3) Note any departures from the Contract Documents or changes in previously reviewed submittals which were not commented upon by University's Design Professional.

b. Samples: Submit new samples as required for initial submittal.

c. University's Design Professional's Review: The University's Design Professional will review shop drawings and supplemental data submitted by the Contractor only for general design conformance with the concept of the Project and compliance with the information given in the Contract Documents. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of Contractor as required by the Contract Documents.

8. Distribution:

a. Reproduce and distribute copies of Submittals including Shop Drawings and Product Data, which carry the University's Design Professional's review stamp, to the following locations:
(3) Contractor's Project site file.
(4) Record documents file maintained by Contractor.
(5) Separate Contractors.
(6) Subcontractors.
(7) Supplier or manufacturer.
(8) Other involved parties as directed by University's Representative.

9. Design Professional's or Design Professional's designee's or University Representative's Review will be under the following conditions.

a. Review of submittals is only for general conformance with the design concept of the Project and general compliance with the information given in the Contract Documents. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instruction for installation for performance or equipment or systems, all of which remain the responsibility of contractor as required by the Contract Documents.

b. The review does not affect the Contractor's responsibility to perform all Contract requirements with no change in Contract Sum or Contract Time. Any actions shown are subject to the requirements of the Drawings, Specifications and other Contract Documents. The Contractor is responsible to confirm and correlate dimensions at the site, for information that pertains to the fabrication processes, for the means, methods, techniques, procedures, sequences and quantities necessary to complete the Contract and for coordination of the work of all trades and satisfactory performance of his work. The review is undertaken solely to satisfy Consultant's obligations, if any to the University and shall not give rise to any claim by the Contractor or other parties against the University's Representative, his/her Consultants or University.

B. Shop Drawings

1. Present information required on shop drawings in a clear and thorough manner. Identify details by reference to drawings and detail, schedule, or room numbers shown and specified.

2. Shop drawings shall be original drawings by the Contractor. Direct reproductions of the Contract Drawings will not be acceptable as shop drawings.

3. Shop Drawings Delineation: The Shop Drawings shall be drawn to scale and shall be completely dimensioned, giving the plan together with such sections as are necessary to clearly show construction detail.

4. Responsibility: These Shop Drawings and all supporting data, catalogs, etc., shall be prepared by the Contractor or his/her suppliers, but shall be submitted as the instruments of the Contractor. Therefore, the Contractor shall review and approve the drawings of his/her suppliers as well as his/her own drawings before submitting them to the University's Representative. In particular, the Contractor shall ascertain that the drawings meet all requirements of the Drawings and Specifications and also conform to the structural and space conditions. Each Shop Drawing submitted for review shall bear a stamp certifying that it has been reviewed and approved by the Contractor in accordance with the Contract Documents. If such Shop Drawings show variations from Contract Documents, whether because of standard shop practice or other reasons, the Contractor shall make special mention thereof in his/her letter of transmittal. The Contractor shall be fully responsible for observing the need for and making any changes in the arrangement of piping, connections, wiring, manner of installation, etc., which may be required by the equipment he/she proposes to supply both as pertains to his/her own work and any work affected under other parts, heading or divisions of Drawings and Specifications.

5. Identification: Shop Drawings shall be entitled with the name of the project on each sheet and shall otherwise be identified by listing the particular division, section, article or reference of the work pertaining. Submit different items on separate sheets. All submittals shall be numbered sequentially.

6. Manner: Furnish for University's Design Professional's approval separate sheets of submittal of each specialty item in the following manner:

   a. Catalog cuts shall be photocopied or reproduced in some other acceptable manner and submitted on one (1) side only of an 8-1/2" x 11" sheet, noting only the items in question, together with the descriptive (specification) data complete. Once the Design Professional has reviewed the submittal provide two (2) hard copies of each approved, stamped shop drawing and other supporting data to the on-site University's Representative.
   b. Each sheet shall be identified with the division, section, article or reference in the Contract Documents which covers the item submitted for approval.
   c. Each sheet shall be identified with the project name, the University's Representative and the project's Design Professional.
   d. Each sheet shall bear the Contractor's stamp and signature of approval.

7. All shop drawings shall be drawn accurately suitable for duplicate copying by black line, blue line printing processes or photocopy.

8. Supplemental Data: Supplemental data shall include information as noted in the specification paragraphs requiring them, or as requested by the University.

9. Review Required: Shop drawings, if requested, must be submitted to and favorably reviewed by the University's Architect/Design Professional before being used by the Contractor on the job.

C. Product Data

1. Clearly mark each copy to identify pertinent Products or models.

2. Show performance data consisting of capabilities, rpm, kw pressure drops, design and operating pressures, temperatures, performance curves, noise level curves, power characteristics and consumption; conforming as closely as possible to the test methods referenced in the plan and specifications.

3. Show dimensions, weights and clearances required.

4. Show wiring or piping diagrams and controls.

5. Modify the standard schematic drawings and other diagrams to delete information, which is not applicable to the Work.

6. Supplement standard information to provide information specifically applicable to the Work.

D. Samples

1. Office samples shall be of sufficient size and quality to clearly illustrate the following:
   a. Functional characteristics of the products, with integrally related parts and attachment devices.
   b. Full ranges of color, texture, and pattern.
   c. Provide a minimum of5 samples plus any additional number for Contractor needs.
2. Samples herein referred to shall include all materials, equipment, surface textures, colors, fabrics, etc., as required by Drawings and Specifications or as requested by the University's Design Representative. They shall be submitted as required by the Specifications or requested by the University's Representative or its Design Professional.
3. Submittal: Samples, properly identified and described, shall be submitted as noted herein, or as may be required by the University's Representative. They shall be submitted and resubmitted until approved. No approval of a sample shall be taken in itself to change or modify any contract requirement. Finishes, materials, or workmanship in the completed building shall match the approved samples.
4. Manner: Contractor shall forward all samples under cover letter in five (5) copies, including a complete listing of such samples designated for use on the project, with complete identification on each sample by project name, ultimate destination of material, manufacturer, brand, lot, style, model, etc., Contract Document reference as well as the names of the Contractor, Supplier, Project, Design Professional and University's Representative. All submittals shall be numbered sequentially.
5. Return: Samples of value will be returned to the Contractor for use in the project after review, analysis, comparison and/or testing as may be required by the University's Architect.
6. Test Sample: Test samples, as the University's Representative designates, will be selected from the materials or equipment delivered by the Contractor for use in the work. If any test sample fails to meet the specification requirements, all previous approvals will be withdrawn and such materials or equipment which fail the testing shall be subject to removal and replacement by the Contractor with materials or equipment meeting the specification requirements.

E. Mockups

1. Provide mock-ups as described in Specification Section 01 4339 and on the following drawings:
2. Material List: Provide complete material list of products proposed for use. Submit Material Safety Data Sheets (MSDS) for Owner's use. Neither the University Representative nor its Design Professional will review MSDS.
3. Contractor's Review: Review, mark-up as appropriate, and stamp show drawings, product data, and samples prior to submission. Submittals shall clearly show that they have been reviewed and approved by Contractor for conformance with the requirements of the Contract Documents and for coordination with other Sections.

1.4. LEED DOCUMENTATION

A. Sustainable Design and LEED submittals are in addition to other submittals. If submittal item is identical to that submitted to comply with other requirements, submit duplicate electronic copies as a separate submittal to verify compliance. Any discrepancies shall be referred to the Universities Representative for clarification.

B. LEED documentation submittals shall be prepared and submitted using the LEED-Online credit website.

C. Refer to Section 01 8113 “Sustainability Design Requirements” item 1.5 Submittals; for the complete listing of all LEED documentation and submittals required for the project.

1.5. REFRIGERANT MANAGEMENT DOCUMENTATION

A. UCR has instituted a requirement to comply with end-of-year refrigerant inventory for reporting to UCOP and with the South Coast Air Quality Management District’s policies to account for the use of refrigerant gas delivery, recovery and charging installed with new HVAC and any other equipment using gas refrigerant on UCR projects.

B. To provide accurate accounting for the reporting of the refrigerant charge in a mechanical system and/or equipment, the actual quantity must be known in order to document gas lost from leaks etc. when repairs are done.

C. HVAC and other equipment utilizing gas refrigerant that are delivered to the site intact with the factory charge quantity listed on the nameplate or in literature submitted for the design professional’s review, can sometimes be charged in the field according to various indications. Therefore the contractor who delivers and installs any system and/or equipment which uses refrigerant shall provide startup reports that list the exact quantity of gas charged into each system and submit these reports to the University’s Representative who will provide to UCR EH&S.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

CONTRACTOR CERTIFICATION

COMPLETE THIS CERTIFICATE, INCLUDING SIGNATURE BY PERSON DIRECTLY RESPONSIBLE FOR WORK ON THIS PROJECT. REVIEW EACH SUBCONTRACTOR CERTIFICATION FOR COMPLETENESS AND COORDINATION WITH COMMENTS MADE ON THIS CERTIFICATE AND OTHER SUBCONTRACTOR CERTIFICATES. SUBMIT THIS CERTIFICATE AND ALL SUBCONTRACTOR CERTIFICATES TO THE UNVERSITY'S REPRESENTATIVE WITHIN 10 DAYS OF RECEIVING NOTICE TO PROCEED.

1. As required by the General Conditions of the Contract for Construction, the undersigned certifies that a thorough review has been made of all of the Contract Documents, including, but not limited to the Agreement, General and Supplementary conditions, Drawings, specifications, and Addenda (if any) for the Work. The undersigned also acknowledges each subcontractor has been required to perform a similar thorough review and that Contractor and subcontractors have related and coordinated requirements of individual units of Work to requirements for the entire Work.

2. The undersigned acknowledges his/her obligation to identify below discrepancies, errors, omissions, conflicts, code violations, and improper use of materials discovered in the Contract Documents. Except as noted below and on subcontractor certificates, the undersigned certifies, to the best of his/her knowledge, information, and belief that the Work can be completed in a workmanlike manner without extensive modifications or additional expense.

EXCEPTIONS:____

NAME, ADDRESS, TELEPHONE OF
CONTRACTOR:____

AUTHORIZED
SIGNATURE:_________________________________ DATE:______________________

NAME (PRINTED CLEARLY OR TYPED):____

TITLE:____

END OF CONTRACTOR CERTIFICATION

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UC RIVERSIDE | Planning, Design & Construction

SUBMITTAL SCHEDULE									
Section	Shop Dwgs	Prod. Data/List	Samples Mock-ups	Extend. Guarantee	Op/Maint. Manuals	Tests	Extra Mat'l	Certs.	Other
01 1100									
01 1400									
01 2300									
01 2500									
01 2613									
01 3100									
01 3119									
01 3200									
01 3300									
01 3520									
01 3540									
01 4100									
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01 4300									
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01 4500									
01 4520									
01 5000									
01 5739									
01 6000									
01 7123									
01 7329									
01 7419									
01 7423									
01 7700									
01 7836									
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01 8113									
01 9113									
02 4000									
03 3000									
03 3600									
03 3816									
03 4816									
03 4819									
03 4830									
03 4900									
03 5415									

SUBMITTAL SCHEDULE									
Section	Shop Dwgs	Prod. Data/List	Samples Mock-ups	Extend. Guarantee	Op/Maint. Manuals	Tests	Extra Mat'l	Certs.	Other
03 5600									
04 2113									
04 2200									
05 1200									
05 1213									
05 3100									
05 4000									
05 5000									
05 5010									
05 5100									
05 5813									
05 7000									
06 1643									
06 2013									
06 4023									
06 4100									
06 6420									
07 1416									
07 1716									
07 1900									
07 2114									
07 2129									
07 2616									
07 2620									
07 4646									
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07 8720									
07 9200									
07 9513									
08 1113									
08 1216									
08 1316									

SUBMITTAL SCHEDULE									
Section	Shop Dwgs	Prod. Data/List	Samples Mock-ups	Extend. Guarantee	Op/Maint. Manuals	Tests	Extra Mat'l	Certs.	Other
08 1400									
08 3100									
08 3213									
08 3323									
08 3816									
08 4213									
08 4313									
08 4330									
08 4413									
08 4500									
08 5113									
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08 8000									
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09 2116									
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09 2400									
09 2900									
09 3000									
09 5113									
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09 8200									
09 9000									
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10 2213									
10 2226									
10 2813									
10 4400									
10 5113									
10 5500									
10 7113									
10 8214									

SUBMITTAL SCHEDULE									
Section	Shop Dwgs	Prod. Data/List	Samples Mock-ups	Extend. Guarantee	Op/Maint. Manuals	Tests	Extra Mat'l	Certs.	Other
11 1200									
11 1300									
11 1630									
11 3100									
11 4000									
11 5200									
11 8226									
12 2116									
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12 3623									
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13 1107									
13 1108									
14 2100									
14 2400									
14 9182									
20 0548									
21 0517									
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22 0719									
22 0800									
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22 1119									
22 1123									
22 1316									
22 1319									
22 1323									

SUBMITTAL SCHEDULE									
Section	Shop Dwgs	Prod. Data/List	Samples Mock-ups	Extend. Guarantee	Op/Maint. Manuals	Tests	Extra Mat'l	Certs.	Other
22 1413									
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22 3400									
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22 4000									
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23 0713									
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23 0800									
23 0900									
23 0993									
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23 3723									
23 4100									
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23 5216									
23 6500									
23 8119									
23 8126									

SUBMITTAL SCHEDULE									
Section	Shop Dwgs	Prod. Data/List	Samples Mock-ups	Extend. Guarantee	Op/Maint. Manuals	Tests	Extra Mat'l	Certs.	Other
23 8127									
23 8128									
23 8146									
26 0501									
26 0519									
26 0524									
26 0526									
26 0529									
26 0533									
26 0543									
26 0553									
26 0570									
26 0573									
26 0800									
26 1219									
26 2213									
26 2413									
26 2416									
26 2716									
26 2726									
26 2811									
26 2816									
26 3100									
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26 5610									
27 0000									
28 3100									
31 1000									
31 2000									
31 2333									
32 0513									
32 1100									
32 1216									
32 1300									
32 1316									
32 1413									
32 1723									

SUBMITTAL SCHEDULE									
Section	Shop Dwgs	Prod. Data/List	Samples Mock-ups	Extend. Guarantee	Op/Maint. Manuals	Tests	Extra Mat'l	Certs.	Other
32 3210									
32 3236									
32 3400									
32 8200									
32 9000									
32 9010									
32 9020									
32 9030									
32 9040									
33 1100									
33 3100									
33 4000									

NOTE: Should a discrepancy arise between this schedule's requirements and individual requirements, the most stringent requirement shall prevail.

END OF SECTION

SUBCONTRACTOR CERTIFICATION

COMPLETE THIS CERTIFICATE, INCLUDING SIGNATURE BY PERSON DIRECTLY RESPONSIBLE FOR WORK ON THIS PROJECT, AND SUBMIT TO THE GENERAL CONTRACTOR WITHIN 5 DAYS OF RECEIVING NOTICE TO PROCEED FROM GENERAL CONTRACTOR.

1. As required by the General Conditions of the Contract FOR construction, the undersigned certifies that a thorough review has been made of all of the Contract Documents, including, but not limited to the Agreement, General and Supplementary Conditions, Drawings, Specifications, and Addenda (if any) for the Work. The undersigned also certifies that Contractor and subcontractor have related and coordinated requirements for the entire Work.

2. The undersigned acknowledges his/her obligation to identify below discrepancies, errors, omissions, conflicts, code violations, and improper use of materials discovered in the Contract Documents. Except as noted below, the undersigned certifies, to the best of his/her knowledge, information, and belief that no such discrepancies, errors, omissions, conflicts, code violations, or improper use of materials occur in the Contract Documents.

3. Except as noted below, the undersigned has no objection to, or reservation about, the materials to be furnished or the conditions under which they will be installed, and is satisfied that contractual responsibilities for units of Work for which undersigned is responsible can be completed in a workmanlike manner without extensive modifications or additional expense.

EXCEPTIONS:____
____
____

UNITS OF WORK FOR WHICH UNDERSIGNED IS RESPONSIBLE:
____
____

NAME, ADDRESS, TELEPHONE OF
SUBCONTRACTOR:____
____
____
____

AUTHORIZED
SIGNATURE: ____DATE______________________

NAME (PRINTED CLEARLY OR TYPED) ____

TITLE: ____

END OF SUBCONTRACTOR CERTIFICATION

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Standard Specification

SECTION 01 33 29.08 BUY CLEAN CALIFORNIA REPORTING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Section includes general requirements and procedures for compliance with Buy Clean California Act per California Public Contract Code, Sections 3500-3505.

B. Contractor is requested to submit current facility-specific environmental product declaration for each eligible material proposed to be used on the Project.

1.2 DEFINITIONS

A. Environmental Product Declaration (EPD): Type III environmental impact label, as defined by the International Organization for Standardization (ISO) standard 14025, or similarly robust life cycle assessment methods that have uniform standards in data collection consistent with ISO standard 14025, industry acceptance, and integrity.

B. Eligible Materials: Any of the following:

1. Carbon steel rebar.
2. Flat glass.
3. Mineral wool board insulation.
4. Structural steel.

1.3 SUBMITTALS

A. General: Buy Clean California submittals are requested to be submitted along with other required submittal items for eligible materials as described in the Specifications.

B. Facility-specific Environmental Product Declaration: For each eligible material proposed to be used on the Project.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 33 29.08

SECTION 01 3543
ENVIRONMENTAL PROCEDURES

PART 1 – GENERAL

1.1. SUMMARY

A. This Section includes:

1. Hazardous Materials Procedures
2. Toxic Materials Procedures
3. University of California – Approved TSDFs (Attached to end of Section.)

B. Submittals:

1. Submit Material Safety Data Sheets (MSDS) for all materials, whether existing or incorporated into the work, which are identified as potentially hazardous but not required to be abated.

1.2. HAZARDOUS MATERIALS PROCEDURES

A. Except as otherwise specified, in the event Contractor encounters on the Project site material reasonably believed to be asbestos, polychlorinated biphenyl (PCB), or other hazardous materials which have not been rendered harmless, Contractor shall immediately stop Work in the area affected and report the condition to University and University's Representative in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of University and Contractor if in fact the material is asbestos, PCB, or other hazardous materials and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos, PCB, or other hazardous materials, or when such materials have been rendered harmless.

B. If material has been encountered on site and the Contractor has reported the condition to the University's Representative, then the University Representative shall contact UCR Environmental Health and Safety office (EH&S) as well as a hazardous material consultant chosen from the "EH&S Approved Hazardous Materials Consultant List" to conduct an on-site assessment of the material and if it is found to be hazardous then the chosen consultant shall prepare a plan to remove it off site and dispose of it at a University of California approved Treatment, Storage, and Disposal Facility (TSDF). See the list of University of California – Approved TSDFs attached to the end of this Section.

1.3. TOXIC MATERIALS PROCEDURES

A. Not Used

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

University of California - Approved TSDFs

This document is a list of permitted treatment, storage, and disposal facilities (TSDFs) that have been deemed acceptable for use in managing hazardous waste generated by the University of California (UC) or at UC facilities. Neither UC nor any of its employees makes any warranty, express or implied, as to the merchantability or fitness for a particular purpose of the goods or services provided by the TSDFs listed above. Except as stated above, reference to the TSDFs in this document does not necessarily constitute or imply its endorsement or recommendation by UC and UC expresses no opinion as to any TSDF that does not appear in this document. This document shall not be used for advertising or product endorsement purposes or for any other use not expressly authorized in writing by UC.

TSDF name	Street	City	State	Zip phone	EPA ID
Altamont Landfill	10840 Altamont Pass Road	Livermore	CA	94550 (925) 455-7306	CAD981382732
AERC INC (MTI)	30677 Huntwood Avenue	Hayward	CA	94544 (510) 429-1129	CAD982411993
Azusa Land Reclamation Co.	1201 W. Gladstone	Azusa	CA	91702 (626) 334-0719	CAD009007626
Bethlehem Apparatus	890 Front Street	Hellertown	PA	18055 (610) 838-7034	PAD002390961
Chemical Waste Management (CWM) - Kettleman Hills	35251 Old Skyline Road	Kettleman	CA	93239 (559) 386-9711	CAT000646117
Chemical Waste Management (CWM) - TWI	7 Mobile Drive	Sauget	IL	62201 (618)271-2804	ILD098642424
Chem-Nuclear Systems, Inc (Barnwell)	140 Stoneridge Drive	Columbia	SC	29210 (803) 758-1826	SCD048372429
Clean Harbors (Aragonite), LOC Inc.	P.O. Box 22890	Aragonite	UT	84122 (801) 323-8100	UTD981552177
Clean Harbors (Chicago)	11800 S. Stony Island Ave.	Chicago	IL	60617 (800)678-4844	ILD000608471
Clean Harbors (Deer park), Inc	2027 Battleground Road	Deer Park	TX	77536 (713) 930-2300	TXD055141378
Clean Harbors (Kimball, Incinerator Facility)	2247 S. Highway 71	Kimball	NE	69145 (308)235-4012	NED981723513
Clean Harbors (Lokern)	2500 West Lokern Rd.	Buttonwillow	CA	93206 (805) 762-6200	CAD980675276
Clean Harbors (Los Angeles), Inc.	5756 Alba Street	Los Angeles	CA	90058 (213) 585-5063	CAD050806850
Clean Harbors (Phoenix)	1340 West Lincoln Street	Phoenix	AZ	85007 (602)258-6155	AZD049318009
Clean Harbors (Sacramento)	6000 - 88th Street	Sacramento	CA	95828 (916) 386-4999	CAD000084517
Clean Harbors (San Jose)	1040 Commercial St. Suite 109	San Jose	CA	95112 (408) 453-6046	CAD059494310
Clean Harbors (Spring Grove Resources Recovery)	4829 Spring Grove Ave.	Cincinnati	OH	45232 (513)681-5738	OHD000816629
Crosby & Overton, Inc.	1630 W 17th Street	Long Beach	CA	98013 (562) 432-5445	CAD028409019
DeMenno/Kerdoon	22000 N. Alameda Street	Compton	CA	90222 (310)537-7100	CAT080013352
Diversified Scientific Services (DSSI)	P.O. Box 863	Kinston	TN	37831 (615) 376-0084	TND982109142
Duratek	1560 Bear Creek Road	Oak Ridge	TN	37831 (423) 481-0222	TND982157570
ENSCO	309 American Circle	El Dorado	AR	71730 (870) 862-0272	ARD069748192
ENSCO West	1737 East Denni Street	Wilmington	CA	90744 (310) 835-9997	CAD044429835
Envirocare of Utah, Inc	US I-80, Exit 49	Clive	UT	84029 (801) 532-1330	UTD982598898
Environmental Management & Controls (EMC)	3106 South Faith Home Road	Turlock	CA	95380 (209)-667-1102	Radioactive Material License # 3546-50
Envirosafe	hwy 78 Missile Base Road	Grand View	ID	82624 (208)834-2275	IDD073114654
Heritage Environmental Services, Inc	7901 West Morris Street	Indianapolis	IN	46231 (317) 243-0811	IND093219012
Heritage Environmental Services, LLC	5122 East Story Road	Coolidge	AZ	85228 (520)723-4167	AZD081705402
Heritage Landfill	4370 W.CR 1275N	Roachdale	IN	46172 (317)243-0811	IND980503890
Kinsbursky Brothers Incorporated	1314 Lemon Street	Anaheim	CA	92801 (714)738-8516	CAD088504881
Mercury Waste Solutions, Inc.	21211 Durand Avenue	Union Grove	WI	53182 414-878-2599	WIR 000 000 356
Merry X-Ray	131 South Maple #1	S. San Fran	CA	94080 (650)6742-6630	CAL000512065
ONYX (formerly AETS)	1125 Hensley Street	Richmond	CA	94801 (510) 233-8001	CAT080014079
Onyx (formerly CWM OSCO)	1704 W. First Street	Azusa	CA	91702 (626) 815-2215	CAD008302903
Onyx (Superior Special Services, Inc.)	5736 West Jefferson	Phoenix	AZ	85043 (602) 233-2955	AZD983473539
Perma-Fix (Quadrex)	1940 NW 67th Street	Gainesville	FL	32653 (405) 468-2000	FLD980711071
Philip Environmental (Burlington)	20245 - 77th Avenue, south	Kent	WA	98032 (206) 872-8030	WAD991281767
Philip Environmental (Georgetown)	734 Lucile Street	Seattle	WA	98108 (206) 762-3362	WAD000812909
Philip Environmental (Rho-Chem)	425 Isis Avenue	Inglewood	CA	90301 (213) 776-6233	CAD008364432
Photo Waste Recycling Co., Inc.	2980 Kerner Boulevard	San Rafael	CA	94901 (415)459-8807	CAD981429673
Photo Waste Recycling Co., Inc.	12898 Bradley Avenue, Suite B	Sylmar	CA	91342 (818)362-0668	CAD000121946
Ramos Environmental Services Inc.	1515 South River Road	W. Sacramento	CA	95691 (916)-371-5747	CAD044003556
Romic Environmental Technologies Corp	2081 Bay Road	East Palo Alto	CA	94303 (650)-324-1638	CAD009452657
Romic Environmental Technologies Corp (Southwest)	6760 West Allison Road	Chandler	AZ	85226 (602) 796-1040	AZD009015389
Ross Environmental Services	36790 Giles Road	Grafton	OH	44044 (440) 748-5800	OHD 048415665
Stericycle, Inc. (Formerly BFI)	4135 West Swift Avenue	Fresno	CA	93722 (559)275-0991	None
Stericycle, Inc. (Formerly BFI)	90 North 1100 West	North Salt Lake	UT	84054 (801) 295-1555	UTD988078150
Systech Environmental Corp.	South Cement Road	Fedonia	KS	66736 (316) 378-4451	KSD980633259
SET Environmental INC. (Treatment One)	5743 Chestwood	Houston	TX	77087 (713)645-8710	TXD055735388
U.S. Filter Recovery Services (Norris Environmental)	5375 South Boyle Ave.	Los Angeles	CA	90058 (213) 277-1500	CAD097030993
Von Roll America (WTI)	1250 Saint George Street	East Liverpool	OH	43920 (800) 403-4888	OHD980613541
Waste Control Speciaists (WCS)	1710 West Broadway	Andrews	TX	79714 (713) 944-5900	TXD988088464

Pacific Resource Recovery Services		Big Bear	CA		CAD008252405

Yellow Highlight indicates TSDF pending approval.

SECTION 01 3546
INDOOR AIR QUALITY (IAQ) PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. This Section includes, without limitation, the following:

1. IAQ Submittals
2. Quality Assurance
3. IAQ Management During Construction
4. Sequence of Finish Installation

B. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Indoor Air Quality Procedures include:

1. IAQ Management Plan During Construction:
   a. Prepare plan to comply with the requirements for LEED EQ 3.1 as specified in Section 01 8113, “Sustainable Design Requirements” and in this Section.
   b. Procedures to prevent indoor air quality problems resulting from the construction/renovation process in order to help sustain the comfort and well-being of construction workers and building occupants.

2. Sequence of Finish Installation: Scheduling/sequencing requirements and procedures necessary to optimize Indoor Air Quality (IAQ) levels for the completed Project.

B. Related Work Specified in Other Sections:

1. Section 01 8113, "Sustainable Design Requirements (for LEED Certification)" for additional requirements.
2. Section 01 5000, "Construction Facilities and Temporary Controls" for environmental-protection measures during construction and location of waste containers at Project site.
3. Section 01 7419, "Construction Waste Management" for handling requirements of construction waste.
4. Application Sections for indoor air sampling prior to occupancy. (Sections to be identified)

1.3 IAQ SUBMITTALS

A. IAQ Construction Management Plan. Submit 5 copies of plan within 30 days of date established for commencement of the Work.

1. Include a schedule of all IAQ-related construction activities in the IAQ Construction Management Plan submittal.
2. Update plan as required during the construction process to reflect Project conditions.

B. Meeting Minutes: Submit minutes from Contractor meetings related to the execution and verification of the IAQ Construction Management Plan.

C. Project Photographs: Submit to document IAQ measures implemented.

D. Product Data: Submit cut sheets of filtration media proposed for use.

E. LEED Submittal: LEED letter template for Credit EQ 3.1, signed by Contractor, with copy of plan and a statement that requirements for the credit have been met.

1.4 QUALITY ASSURANCE

A. Comply with the requirements of LEED Credit EQ 3.1, “Construction IAQ Management Plan During Construction.”

B. Contractor’s Plan shall meet or exceed the recommended design approaches of SMACNA’s “IAQ Guidelines for Occupied Buildings Under Construction,” (1995 Edition, Chapter 3).

C. IAQ Management Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1. Review methods and procedures related to IAQ management during construction.
2. Review IAQ management requirements for each trade.

PART 2 - PRODUCTS

PART 3 - EXECUTION

3.1 IAQ MANAGEMENT DURING CONSTRUCTION

A. General: Contractor’s IAQ Construction Management Plan shall include procedures to prevent indoor air quality problems resulting from the construction/renovation process in order to help sustain the comfort and well-being of construction workers and building occupants.

1. Prepare and submit an Indoor Air Quality (IAQ) Management Plan to comply with the requirements for LEED EQ 3.1, as specified in Section 01 81 13, “Sustainable Design Requirements” and in this Section.
2. Contractor’s detailed plan shall be based on the particular characteristics of the Project, and include the items listed in this Section as a minimum.
3. The IAQ Management Plan shall highlight the five requirements of the Sheet Metal and Air Conditioning National Design/Builders Association (SMACNA), “IAQ Guidelines for Occupied Buildings Under Construction,” 1995, Chapter 3 and shall embody the principles and practices set forth hereinafter.
4. Subcontractors and their employees shall be provided instruction and training in the IAQ Management Plan.

B. Plan Implementation:

1. Implement waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
2. Comply with Section 01 5000 for operation, termination, and removal requirements.

C. Monitoring of IAQ Plan:

1. Hold weekly Contractor Site Co-ordination Meetings with the superintendents of all trade contractors. Review the appropriate components of the IAQ Construction Management Plan as a regular action topic at these meetings, and update the Plan as required. Document the implementation of the Plan in the meeting minutes. As a recording format, use SMACNA IAQ Guidelines Appendix C (Planning Checklist) and Appendix D (Inspection Checklist) as a guide.
2. Take a specific series of record photographs at the appropriate stages to document adherence with the IAQ requirements. Submit at least 18 photographs (six photos taken on three different occasions during construction) along with identification of the SMACNA approach featured by each photo, in order to show consistent adherence to the LEED Credit requirements.

D. HVAC Protection:

1. Store HVAC equipment in a clean, dry location. Until HVAC equipment (ducting, registers, air handler VAV boxes components, fans, and motors) has been installed, it shall be kept covered and secured with plastic film or in a location where it will not be exposed to moisture, dust, or other contaminants.
2. Seal off all louvers and air intake/discharge points to prevent construction dust and debris from entering.
3. Seal off all ductwork openings and air outlets with plastic sheeting to protect the duct system from dust and debris. Do not re-open until the end of activities that produce dust or pollution, such as drywall sanding, concrete cutting, masonry work, wood sawing, and so forth.
4. Seal all HVAC inlets and outlets. Use of the HVAC system shall be avoided during construction until drywall construction is complete. Temporary ventilation may be installed to remove contaminants. All air inlets and outlets shall be sealed securely with tape during construction. These include, but not limited to, outside air inlets, grilles, diffusers, supply ducts, return ducts, ceiling plenums, VAV (variable-air volume) plenum intakes, exhaust ducts, and window ventilator or air conditioning units. Openings shall be sealed with plastic film and tape that can be removed cleanly.
5. Seal HVAC components during installation. For ducting runs that require several days to install, sections shall be sealed off as they are completed. Seals shall be removed prior to continuing the ducting run. Other components of the HVAC system shall be subjected to the same requirements to protect them from contamination.
6. Use temporary filtration media. If the HVAC system is to be used while construction work is being done, temporary filtration media shall be installed on all intakes. Such filtration media shall have a minimum filtration efficiency (Minimum Efficiency Reporting Value-MERV per ASHRAE 52.2) of 8 or higher. For air intakes into parts of a building that are very sensitive to dust contamination, such as computer rooms, filtration media with a MERV rating of 13 or higher is required. New filtration with a MERV rating of 13 or higher shall be installed after construction.
7. If, for some unforeseen reason, there should arise a circumstance wherein the return air system is required to be used during the construction phase, install temporary MERV 8 filters or higher (as determined by ASHRAE Standard 52.2-1999) at each return air opening and provide frequent inspection and maintenance. If inspections by University Representatives reveal that the ductwork has become contaminated due to inadequate protection, the ductwork shall be cleaned professionally prior to the first phase of occupancy, using procedures established in ACR 2005 published by the National Air Duct Cleaners Association.
8. Under no circumstances shall air be returned from a construction area and then re-circulated through the permanent supply ductwork, unless and until the level of construction in the relevant area involves final finishes and trim and the construction has reached a point of complete building dry-in with no sanding and is free from dust, debris, and contaminants.
9. Do not use fan rooms to store construction or waste materials, and keep them clean and neat.

10. Inspect filters regularly. When the HVAC system is being used during construction and temporary filters are installed, filters shall be inspected weekly and replaced as needed.
11. Avoid contaminated air entry into enclosed parts of the building. When outdoor construction activities generate dust, combustion emissions, or other contaminants, operable windows and outside air supplies to enclosed portions of the building shall be closed.

E. Source Control:

1. Limit construction traffic and motor idling in the vicinity of air intake louvers when the HVAC systems are activated. Restrict motor vehicles to the loading dock area, well-removed from air intakes, preventing emissions from being drawn into the building.
2. Use electric or natural gas alternatives for gasoline and diesel equipment where possible and practical.
3. Cycle equipment off when not being used or needed.
4. Avoid the use of materials and products with high VOC and/or particulate levels. Use products and installation methods with low VOCs such as paints, sealers, sealants, filler materials, insulation, adhesives, caulking and cleaners. Comply with the requirements in other specification sections.
5. Keep containers of wet products closed as much as possible. Cover and seal waste materials which can release odor or dust.
6. Protect all materials, especially absorbent materials such as insulated ductwork, against moisture during delivery to and storage at the job site. Store materials inside the structure in a dry and clean environment pending installation. Building materials shall be kept dry to avoid the introduction of moisture into the building interior.
7. Avoid the use of moisture-damaged materials. Any porous materials that have been wetted shall be dried thoroughly before installation. Any porous materials that have been damaged, remained wet longer than 48 hours, or show signs of visible mold shall be discarded.
8. Ensure that the construction process will not result in moisture intrusion. In the event of rain or groundwater gaining entry to the building interior during construction, notify the University.
9. Avoid tracking pollutants into work areas.
   a. Once the framing and mechanical system installation starts, access to the building interior shall be controlled to minimize the tracking in of contaminants.
   b. Material deliveries and construction waste removal shall be routed via the most direct route to the building exterior of the building rather than through the space.
   c. Provide rough track-off grates or matting at the entryway to remove moisture and contaminants from workers shoes.
   d. Prevent the ingress of rodents and pests.
   e. Use procedures to ensure that there is no smoking inside the building.

F. Pathway Interruption:

1. Use dust curtains or temporary enclosures to prevent dust from migrating to other areas when applicable. During construction, isolate areas of work to prevent contamination of clean or occupied areas.
2. Keep pollutant sources as far away as possible from ductwork and areas occupied by workers when feasible.
3. Isolate work areas and/or create pressure differentials to prevent the migration of contaminants.
4. Use portable fan systems to exhaust contaminated air directly to the outside of the building, and discharge the air in a means to prevent it from re-entering.

G. Housekeeping:

1. Minimize accumulation of dust and other contaminants. Construction practices shall be used that minimize the production of dust and other contaminants from construction activities. Use integral dust-collection systems on drywall sanders, cut-off saws, and

routers. Confine dust-generation activities to areas where clean-up can be carried out easily and contaminants will not be tracked to other areas.

2. Suppress Dirt. Wetting agents or sweeping compounds shall be used to deep dust from becoming airborne.
3. Clean up dust. Wet clothes, damp mops, wet scrubbers, and vacuum cleaners with high-efficiency particulate (HEPA) filters shall be used to clean up dust generated by construction activities.
   a. Cleaning frequency shall be increased when dust accumulation is noted.
   b. Institute cleaning activities of building areas on a daily basis, and of HVAC equipment as required.

4. Keep all coils, air filters, dampers, fans, and ductwork clean during installation, and clean them as required prior to performing the testing, adjusting and balancing of the systems.
5. Clean up spills. All spills and excess applications of solvent-containing products should be cleaned up using approved methods as soon as practicable. Water spills shall be mopped up promptly.
6. Keep work area dry. Avoid accumulations of water inside the building, and promptly remove any that may occur.
   a. Especially protect porous materials such as insulation and ceiling tiles from exposure to moisture.
   b. The entire area shall be kept as dry as practicable by promptly repairing any leaks that allow rainwater entry and mopping up any water accumulation.
   c. Use dehumidification if necessary for prompt drying of wetted spaces. Unvented combustion (e.g., propane of diesel “salamander” space heaters) shall not be used.

7. Seal containers containing volatile liquids. Containers of fuel, paints, finishes, and solvents shall be kept tightly sealed and preferably stored outside of the building when not in use.

H. Scheduling:

1. Comply with the scheduling requirements of Article, "Sequence of Finish Installation" of this Section.
   a. Schedule the installation of porous materials only after closing in building.
   b. Porous materials, such as insulation, fireproofing, and drywall shall not be installed in a building open to the weather.
   c. To avoid potential contamination of porous or absorbent materials such as ceiling tiles, install furnishings after interior finishes (drywall, paint, and floor finishing) have cured.

2. Phased Completion: Implement IAQ control measures in each tenant area until construction in that area is complete. Do not allow contaminants from an area under construction to enter the HVAC ductwork systems or to migrate to completed areas.
3. Filters:
   a. Install new MERV 13 filters at the central fan system, immediately prior to the first phase of building occupancy.
   b. Install new MERV 13 filters at fan systems serving limited areas immediately prior to occupancy for each respective area.

I. Ventilation:

1. Provide adequate ventilation during curing period. To aid in curing of interior finishes and other products used during construction and to remove pollutants after drywall installation is complete, provide adequate ventilation with 100% outside air, and proper filtration. In humid periods or when very high-moisture materials are present, supplementary dehumidification may be required during this curing period.

2. Flush-Out: Comply with the requirements of LEED credit EA 3.2.

3.2 SEQUENCE OF FINISH INSTALLATION

A. Sequence of Finish Installation: Project schedule shall address construction scheduling/sequencing requirements and procedures necessary to optimize Indoor Air Quality (IAQ) levels for the completed Project.

1. Scheduling: Contractor’s Project Schedule for finish applications should allow for:
   a. Dissipation of high emissions from finishes that off-gas perceptible quantities of deleterious material during curing.
   b. Separation of off-gassing effects from the installation of adsorptive materials that would act as a "sink" for storage and subsequent release of these unwanted substances into building spaces and mechanical systems after project occupancy.

2. When Contractor’s “Project Schedule” requires less than optimal sequencing of finish installation, related to IAQ, provide supplemental filtered “fresh air” ventilation of work areas during construction and restrict / control the use of permanent building mechanical systems prior to Owner acceptance of building to prevent contamination of systems by construction wastes and other deleterious substances.

B. Finish Types:

1. Type 1 Finishes: Materials and finishes which have a potential for short-term levels of off-gassing from chemicals inherent in their manufacturing process, or which are applied in a form requiring vehicles or carriers for spreading which release a high level of particulate matter in the process of installation and/or curing. Type 1 Finishes include, but are not limited to the following:
   a. Composite wood products, specifically including particleboard from which millwork, wood paneling, doors or furniture may be fabricated.
   b. Adhesives, sealants, and glazing compounds, specifically those with petrochemical vehicles or carriers.
   c. Wood preservatives, finishes, and paint.
   d. Control and/or expansion joint fillers.
   e. All hard finishes requiring adhesive installation.
   f. Gypsum board and associated finish processes.
   g. Sealants and associated filler materials.

2. Type 2 Finishes: "Fuzzy" materials and finishes which are woven, fibrous, or porous in nature and tend to adsorb chemicals off-gassed by Type 1 finishes or may be adversely affected by particulates. These materials become "sinks" for deleterious substances which may be released much later, or collectors of contaminants that may promote subsequent bacterial growth. Type 2 Finishes include, but are not limited to the following:
   a. Carpet and padding.
   b. Fabric wallcovering.
   c. Insulation exposed to the airstream.
   d. Acoustic ceiling materials.
   e. Fabric covered acoustic wall panels.
   f. Upholstered furnishings.

3. Materials that can be categorized as both Type 1 and Type 2 materials shall be considered to be Type 1 materials.

C. Optimal Order of Installation: Apply all Type 1 interior finishes throughout the entire controlled air zone of each enclosed building or building segment and allow such finishes to completely cure according to intervals and times stated in respective finish manufacturer's printed instructions before commencing installation of any Type 2 materials in the same area.

1. Do not store any Type 2 materials in areas where installation or curing of Type 1 materials is in progress.

D. Materials Test Data - Required For Substitutions Only:

1. All manufacturers/producers of materials listed below that are proposed for substitution on this Project are required to provide test data for their materials which show permanent, in-place Indoor Air Quality performance in accordance with requirements of this Specification.
2. Material Safety Data Sheets: Review all MSDS's of materials to be submitted for testing as well as MSDS's for other products where specifically requested in this Project Manual and identify those classified as "Prohibited Materials".
3. Prohibited Materials:
    a. Any building materials or products that emit pollutants included on the International Agency for Research on Cancer (IARC) "List of Chemical Carcinogens", the "Carcinogen List" of the National Toxicology Program, and the "Reproductive Toxin List" of the "Catalog of Teratogenic Agents" must have approval in writing from the Owner's Representative before that building material or product may be used on this Project.
    b. Carcinogens: Use of materials emitting carcinogens will not be permitted unless a suitable substitute is not available. Do not proceed with procurement of any carcinogen emitting product or material without prior review and written approval of the University's Representative.

END OF SECTION

SECTION 01 4100
REGULATORY REQUIREMENTS

PART 1 – GENERAL

1.1. SUMMARY

A. Section includes:

1. Applicable Codes, Regulations, and Authorities
2. Regulatory Notifications
3. Permit Requirements, Notifications, and Certificates
4. Fees

B. References in the Specifications to "code" or to "building code," not otherwise identified, shall mean the foregoing specified codes, together with the additions, changes, amendments, and interpretations adopted by the enforcing agency and in effect on the date of these Contract Documents. Nothing on the Drawings or in the Specifications shall be interpreted as requiring or permitting work that is contrary to these rules, regulations, and codes.

C. Where other regulatory requirements are referenced in these Specifications, the affected work shall meet or exceed the applicable requirements of such references.

D. Nothing stated in this Section of the Specifications or other Sections of the Specifications, the other Contract Documents or shown on the Drawings shall be construed as allowing Work that is not in strict compliance with all applicable Federal, State, regional, and local statutes, laws, regulations, rules, ordinances, codes and standards.

E. Regulatory requirements referred to shall have full force and effect as though printed in these Specifications.

F. Discrepancies between these codes/rules/etc. and the Contract Documents shall be brought to the attention of the University's Representative for resolution. Unless otherwise directed by the University's Representative, if a conflict exists between referenced regulatory requirements and the Contract Documents, comply with the one establishing the more stringent requirements.

1.2. APPLICABLE CODES, REGULATIONS, AND AUTHORITIES

A. All applicable federal, state, and local laws and the rules and regulations of governing utility districts and the various other authorities having jurisdiction over the construction and completion of the Project, including the latest rules and regulations of the state fire marshal, OSHA, and the California Labor Code, shall apply to the Contract throughout, and they shall be deemed to be included in the Contract the same as though printed in these Specifications.

B. Codes and regulations that apply to this Project include, but are not limited to, the following including additions, changes, and interpretations adopted by the enforcing agency in effect as of the date of these Contract Documents.

1. California Code of Regulations (CCR):

a. Title 8, Industrial Relations
b. Title 17, Public Health
c. Title 19, Public Safety
d. Title 20, Public Utilities and Energy
e. Title 21, Public Works

f. Title 22, Environmental Health
g. Title 24: Building Standards Code
(1) Part 2, California Building Code
(2) Part 3, California Electric Code
(3) Part 4, California Mechanical Code
(4) Part 5, California Plumbing Code
(5) Part 6, California Energy Code
(6) Part 7, California Elevator Safety Construction Code
(7) Part 9, California Fire Code
(8) Part 11, California Green Building Standards Code
(9) Part 12, California State Reference Standards

2. In addition to the above, work shall comply with the following:

a. California Environmental Quality Act (CEQA).
b. California Health and Safety Code.
c. California Occupational Safety and Health Act Standards (Cal-OSHA).
d. California Department of Transportation (Caltrans): Standard Specifications, latest edition.
e. National Fire Protection Association (NFPA): Standards 13, 24, 72, and 80.
f. Americans with Disabilities Act - Title II (ADA).
g. Federal Occupational Safety and Health Act (OSHA).
h. Federal Environmental Protection Agency – Clean Air Act.
i. Storm Water Pollution Prevention Act.

3. All work shall meet or exceed code and regulatory requirements.

C. Copies of Regulations: Obtain copies of the following regulations and retain at the Project site to be available for reference by parties who have a reasonable need:

1. California Code of Regulations, Title 8, 9 and 19
2 California Code of Regulations, Title 24, including:
a. Part 1, California Administrative Code
b. Part 2, California Building Code, Volumes 1 and 2
c. Part 3, California Electrical Code
d. Part 4, California Mechanical Code
e. Part 5, California Plumbing Code
f. Part 6, California Energy Code
g. Part 7, California Elevator Safety Construction Code
h. Part 9, California Fire Code
i. Part 11, California Green Building Standards Code
i. Part 12, California Referenced Building Standards Code
2. California Health and Safety Code regulations as referenced in the specifications.
1. CAL/OSHA Construction Safety Orders.
2. City of Riverside "Department of Public Works Standards and Specifications.
3. ~~National Electrical Code.~~ Covered by Part 3
4. National Fire Protection Association standards as referenced within the specifications
5. State of California, Department of Transportation, Division of Highways, "Materials Specifications." [should keep this in]
6. State of California, Department of Transportation, Division of Highways, "Standard Specifications." [should keep this in]
7. ~~State of California, Office of State Fire Marshal~~ Covered by Title 19 and Part 9
8. California Industrial Accident Commission, Safety Bulletins .
~~9. Uniform Building Code~~
~~10. Uniform Mechanical Code~~
~~11. Uniform Plumbing Code~~
12. Standard Specifications for Public Works, (Greenbook), with local agency amendments.

D. 2010 ADA Accessibility Standards for Accessible Design

1.3. REGULATORY NOTIFICATIONS

A. Submit all required notifications to Federal, State of California, State in which disposal facility is located if not in California, regional, and local agencies with regulatory responsibilities associated with the Work activities that are included in the Contract. All notifications shall be served in writing, in the form required by the agency requiring notification, and in a timely manner so as not to negatively impact the Project schedule. Serve notifications at least 10 business days in advance (or earlier if required by agency) of activity requiring notice. The Contractor shall serve all required notifications in writing to all governmental and quasi-government agencies having notification requirements pertaining to any portion of the Work included in the Project.

B. Contractor shall file a Notice of Intent for coverage under State General Construction Activity Storm water Permit National Pollutant Discharge Eliminate System (NPDES). Contractor shall comply with applicable permit requirements including the project Storm Water Pollution Prevention Plan.

1.4. PERMIT REQUIREMENTS, NOTIFICATIONS, AND CERTIFICATES

A. Permits, Licenses, and Certificates: For the University’s records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgment, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

B. Underground Service Alert (USA) Notifications: Prior to commencing clearing, excavation and trenching, coordinate with Underground Service Alert of Southern California for field verification and marking of utilities within the limits of Project site. Contractor shall be responsible for outlining limits of excavation with white chalk paint prior to coordination with USA. Coordination shall require 2 business days advance notification prior to start of excavation work. Provide USA notification permit number to the University's Representative prior to starting site Work.

C. In no event, shall the Contractor install materials that contain asbestos, PCB, lead or other known hazardous materials unless prior approval is obtained from the University.

D. Regulated Carcinogens by Title 8 California Code of Regulations (CCR), Subchapter 7, Group 16 (Control of Hazardous Substances), Article 110 (Regulated Carcinogens).

1. Products containing chemicals regulated as carcinogens by the State of California are not allowed for use on University projects.

2. Case-by-case exceptions may be considered for products containing the following Cal/OSHA recognized carcinogens:

Methylene Chloride, 5202
Cadmium, 1532, 5207
Inorganic Arsenic, 5214
Formaldehyde, 5217
Benzene, 5218

3. Case-by-case exceptions may only be made when suitable alternative products are not available. Such exceptions are subject to written approval by the University's Representative.

4. Exceptions require that the Contractor shall have an established carcinogen program as required by Cal/OSHA (§5203. Carcinogen Report of Use Requirements) and shall submit to University's Representative, a copy of the Cal/OSHA Confirmation of Report for Cal/OSHA carcinogens.

5. When exceptions are granted, the Contractor is responsible for providing to the University's Representative a copy of the semi-annual Confirmation of Report received from Cal/OSHA or, in lieu of that, a copy of the Contractor's semi-annual report as submitted to Cal/OSHA at periods not to exceed 6 months, or at project closeout, whichever occurs first.

E. Fire Department and Additional Notifications, Manifests, and Requirements: As required by University and coordinated by Contractor with the University’s Representative.

1.5. FEES

A. None

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 4200
REFERENCES

PART 1 – GENERAL

1.1. SUMMARY

A. Section includes:

1. Specification Format and Content Explanation
2. Definitions
3. Reference Standards
4. Abbreviations and Acronyms

1.2. SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. Specification Format: These Specifications are organized into Divisions and Sections based on the 49-division format and CSI/CSC's "Master Format" numbering system.

B. Specification Content: These Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words shall be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.

   a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon is used within a sentence or phrase.

1.3. DEFINITIONS

A. "Indicated": The term "indicated refers to graphic representations, notes, or schedules on the Drawings; or to other paragraphs or schedules in the Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," "detailed" and "specified" are used to help the user locate the reference. Location is not limited.

B. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the University's Representative or University, requested by the University's Representative or University, and similar phrases.

C. "Approved": The term "approved," when used in conjunction with the University Representative's action on the Contractor's submittals, applications, and requests, is limited to the University Representative's duties and responsibilities as stated in the Conditions of the Contract.

D. "Regulations," "building code," "code": The terms "regulations," "building code", and "code" include laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

E. “Furnish”: The term “furnish” means to supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

F. “Install”: The term “install” describes operations at the Project site including the actual unloading, temporary storage, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing protecting, cleaning, and similar operations.

G. “Provide”: The term “provide” means to furnish and install, complete in place, operating, tested, approved, and ready for the intended use.

H. “Installer”: An installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.

1. Unless specified otherwise in other Sections, the term “experienced,” when used with the term “installer,” means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.
2. Trades: Using a term such as “carpentry” does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as “carpenter.” It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

I. “Project site” is the space available to the Contractor for performing construction activities, either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.

J. “Testing Agencies”: A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

K. “Similar”: The term “similar” means in the general sense and not necessarily identical.

L. See also the Instructions to Bidders and General Conditions.

1.4. REFERENCE STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

1. Requirements for packaging, packing, marking, and preparation for shipment or delivery included in referenced federal specifications are not mandatory for products provided for this Work.

B. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents except where a specific publication date or issue is included with the reference in other Sections of these Specifications.

1. When a named or proposed product complies with a referenced standard of different publication date or issue than required by these Specifications, submit the product as a substitute under provisions of Division 1 Section “Substitutes.” Provide a detailed written summary of changes in product or workmanship quality and performance as a

result of the product complying with a different version of a standard from the version referenced.

C. Conflicting Requirements: Where compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different but apparently equal to the University's Representative for a decision before proceeding.

1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicate numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to the University's Representative for a decision before proceeding.
2. Where a product is specified by both brand name and reference to 1 or more standards, provide that product only if it actually complies with the required standards. Listing of a product by brand or trade name in these Specifications is not a warranty that the product complies with the standards which may also be listed. If a named product does not comply with 1 or more of the required standards and no alternative product is listed which does comply, submit a substitute product under provisions of Division 1 Section "Substitutes" which complies with the required standards.

D. Copies of Standards: Each entity engaged in construction on the Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source and make them available on request.

1.5. ABBREVIATIONS AND ACRONYMS

A. Trade Abbreviations and Association Names: Trade association names and titles of general standards are frequently abbreviated. The following abbreviations and acronyms, as referenced in the Contract Documents, mean the associated names. Names and addresses are subject to change and are believed, but not assured, to be accurate and up-to-date as the date of the Contract Documents.

B. Federal Government Agencies: Names and titles of Federal Government standards- or specification-producing agencies are often abbreviated. The following abbreviations and acronyms referenced in the Contract Documents indicate names of standards-or specification-producing agencies of the Federal Government. Names and addresses are subject to change and are believed, but are not assured, to be accurate and up-to-date as of the date of the Contract Documents.

C. The following are commonly used abbreviations which may appear in the Project Manual. Refer to Construction Specifications Institute Document TD-2-4 "Abbreviations" for explanation of other abbreviations.

C	degree Centigrade
Co.	Company
Corp.	Corporation
F	degree Fahrenheit
ft.	foot (feet)
ga.	gage or gauge
gal.	gallon(s)

in.	inch(es)
Inc.	Incorporated
HVAC	Heating, Ventilating and Air Conditioning
lb(s).	pound(s)
o.c.	on center
psi	pounds per square inch
psf	pounds per square foot
sq.	square
yd.	yard(s)

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 4300
INSPECTION OF WORK

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes, without limitation, the following:

1. Access to the Work
2. Testing and Approval
3. University's Inspectors
4. Inspection Requests
5. Inspection Request Form
6. Nonconforming Work Notice

B. The University will provide a Project Inspector or Inspector of Record (IOR) for this project. Contractor shall not cover any work requiring inspection until the IOR has inspected and approved the subject work. For uncovering of work, refer to General Conditions, Article 12.

1.2 ACCESS TO THE WORK

A In addition to the requirements of the General Conditions, University, University's Representative and their representatives shall at all times have access to the Work wherever it is in preparation or progress and Contractor shall provide safe and proper facilities for such access and for inspection. The inspection and written acceptance of material and workmanship, unless otherwise stated in these Specifications, shall be final except as provided in Article 12.2 of the General Conditions.

1.3 TESTING AND APPROVAL

A. In addition to the requirements of the General Conditions, if any law, ordinance or public authority or the Specifications or University's Representative's instructions require any work to be specially tested or approved (including use of ionizing radiation for radiography), Contractor shall give University's Representative timely notice of its readiness for inspection, and if the inspection is by another authority, other than University's Representative, of the date fixed for such inspection.

B. Re-examination of questioned work may be ordered by University's Representative.

1.4 UNIVERSITY'S INSPECTORS

A. The IOR shall report to University's Representative. The IOR shall observe construction in progress and shall have the following responsibilities and limitations on authority.

1. Act under the direction of University's Representative.

2. Observe installation and work in progress as a basis for determining conformance of the work, materials and equipment with the Contract Documents. IOR will report any discrepancies observed to University's Representative and Contractor. Only University's Representative has the final authority to make approvals or rejections.

3. Only University's Representative shall interpret the requirements of the Contract Documents. If any item is ambiguous, University's Representative shall make a written interpretation. If Contractor requests changes or modifications to the Contract Documents, University's Representative shall make a written determination on the requested changes or modifications.

4. Prepare and submit an inspection report to University's Representative for each inspection performed.

5. Review application for payments.

6. Assist University's Representative in reviewing the test and inspection results of testing laboratories.

7. The IOR is not authorized to permit deviations from the requirements of the Contract Documents unless such deviation has been approved by University's Representative in writing.

8. The IOR shall not supervise, coordinate, or direct the Work. The IOR has no responsibility or control over Contractor's construction means, methods, techniques, sequences, procedures, or coordination of any portions of the Work, or over any safety programs in connection with the Project.

B. The failure of University, University's Representative and its representatives and consultants, or University's IOR to observe or inspect the Work, or to detect deficiencies in the Work, or to inform Contractor of any deficiencies which may be discovered, shall not relieve Contractor, its subcontractors regardless of tier, or suppliers from their responsibility for construction means, methods, techniques, sequences and procedures, construction safety, nor from their responsibilities to carry out the work in accordance with the Contract Documents and to detect and correct defective work as defined in the General Conditions.

1.5 INSPECTION REQUESTS

A. Contractor shall request inspection of completed portions of the Work through University's Representative. Contractor shall submit a request for inspection using University's Inspection Request Form attached to the end of this Section.

1. Contractor shall submit an Inspection Request **at least 3 working days prior** to the time the work will be ready for inspection.

2. For work to be inspected by a third party testing laboratory, whether Contractor's or University's, Contractor shall submit an Inspection Request **at least 3 working days prior** to the time the work will be ready for inspection.

3. For work not in conformance with the Contract Documents, the IOR shall submit to the Contractor a Nonconforming Work Notice.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

2.1 Refer to the Inspection Request Form attached at the end of this Section.

2.2 Refer to the Nonconforming Work Notice form attached at the end of this Section.

END OF SECTION

INSPECTION REQUEST

INSPECTION REQUEST INSTRUCTIONS USING CFORMS

1. *Log into http://ucr.cforms.net
2. Complete Automated Inspection Request Form
3. Select your Permit # from the drop down menu and request the inspection you are in need of
4. An e-mail will be sent to the IOR for that project, advising them that you are requesting inspection
5. Once that inspection is conducted, the IOR will input the disposition into CForms (approved, disapproved, corrections, etc.) and may add photos, documents, etc.
6. Results of the inspection is known immediately by those assigned to the project via email. Inspectors can also upload photos and other documents and attach them to the inspection file in CForms
7. Completed "As-Built" plans of project shall be provided to Inspector of Record (IOR) prior to final inspection signature
8. Once the work is completed, request a final inspection and a final inspection will be conducted. If approved, the permit will be signed as approved and complete.

*Access to CForms must be granted by Inspection Group prior to accessing CForms.

NONCONFORMING WORK NOTICE
NUMBER: ____________
DATE: _______________

TO: **FROM:**

SPEC. SEC. REF.:____________ PARA:____________ DWG REF:___________ DETAIL:____________

DESCRIPTION OF DEFECTIVE CONDITION (IOR):____

____

____

____

____

REPORTED BY (IOR): ____

CORRECTIVE ACTION SHOULD BE TAKEN AS SOON AS POSSIBLE AND COORDINATED WITH THE INSPECTOR OF RECORD (IOR). IF FURTHER INFORMATION IS NEEDED, ADVISE THE UNIVERSITY'S REPRESENTATIVE IMMEDIATELY.

DESCRIPTION OF CORRECTIVE ACTION TAKEN (CONTRACTOR): ___________________________

____

____

____

____

____

ACCEPTED BY (CONTRACTOR):__________________________**DATE:**_________________________

UCR USE ONLY

ACCEPTANCE OF CORRECTED DEFECTIVE CONDITION (IOR): ____________________________

____

____

____

ACCEPTED BY (IOR):____ **DATE:**__________________

COPIES: ☐ UNIVERSITY ☐ CONSULTANT ☐ CONTRACTOR

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SECTION 01 4500
QUALITY CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for quality-control services, without limitation, the following:

1. Contractor’s Responsibilities
2. Tests and Inspections
3. Test Reports
4. Geotechnical Engineer and Other Inspection and Testing
5. Repair and Protection

B. Quality-control services include inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and by governing authorities. They do not include contract enforcement activities performed by University's Representative.

C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.

D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.

1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified inspections, tests, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with Contract Document requirements.
3. Requirements for Contractor to provide quality-control services, required by University's Representative, are not limited by provisions of this Section.

E. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section "Cutting and Patching" specifies requirements for repair and restoration of construction disturbed by inspection and testing activities.

1.2 DEFINITIONS

A. The term "University's Testing Laboratory" means a testing laboratory retained and paid for by the University for the purpose of performing the testing services required by the Contract Documents except where specifically noted to be done by contractor, reviewing material and product reports, and performing other services as determined by University's Representative.

B. The term "Contractor's Testing Laboratory" means a testing laboratory retained and paid for by Contractor to perform the testing services which are required by the Contract Documents to be performed by Contractor. Contractor's Testing Laboratory shall be an organization other than University's Testing Laboratory and shall be acceptable to University's Representative. It may be a commercial testing organization or the testing laboratory of a trade association. Contractor's Testing Laboratory shall have performed testing of the type specified for at least five (5) years and shall maintain a separate General and Professional Liability Insurance, (Errors and Omissions,) in amount not less than one million dollars ($1,000,000) each.

C. Tests, inspections, and acceptances of portions of the Work required by the Contract Documents or by Applicable Code Requirements shall be made at the appropriate times. Contractor shall give University's Representative timely notice of when and where tests and inspections are to be made and/or required regardless whose Testing Laboratory will perform the tests and inspections.

D. If such procedures for testing, inspection, or acceptance reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, Contractor shall bear all costs made necessary by such failure including those of repeated procedures and compensation for University's Representative's services and expenses.

E. If University's Representative is to observe tests, inspections, or make acceptances required by the Contract Documents, University's Representative will do so promptly upon 3 days advance written notice and, where practicable, at the normal place of testing.

F. Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

1.3 CONTRACTOR'S RESPONSIBILITIES

A. Secure and deliver to Contractor’s Testing Laboratory adequate quantities of representative samples of materials proposed for use as specified.

B. Submit to University's Testing Laboratory the preliminary design mixes proposed to be used for concrete and other materials which require review by University's Testing Laboratory.

C. Submit copies of product test reports as specified.

D. Furnish incidental labor and facilities, as required:

1. To provide University's Testing Laboratory access to the Work to be tested.
2. To obtain and handle samples at the Project site or at the source of the product to be tested.
3. To facilitate inspections and tests.
4. For storage and curing of test samples.

E. Provide written notice to University's Representative sufficiently in advance (a minimum of 3 days) of operations to allow for University's Testing Laboratory assignment of personnel and scheduling of tests.

F. When tests or inspections are not performed after such notice, Contractor shall reimburse University for University's Testing Laboratory personnel and travel expenses incurred.

1.4 TESTS AND INSPECTIONS

A. Certain portions of the Work will be tested, inspected, or both, at various stages. Nothing in any prior acceptance or satisfactory test result shall govern, if at any subsequent time the Work, or portion thereof, is found not to conform to the requirements of the Contract Documents.

B. If initial tests or inspections made by University's Testing Laboratory’s Geotechnical Engineer reveal that any portion of the Work does not comply with Contract Documents, or if University's Representative determines that any portion of the Work requires additional testing or inspection, additional tests and inspections shall be made as directed.

C. If such additional tests or inspections establish that such portion of the Work fails to comply with the Contract Documents, all costs of such additional tests and inspections, and all other costs resulting from such failure, including compensation for University's Representative and University Representative's Consultants shall be deducted from the Contract Sum.

D. Fixtures, equipment, materials, and other items removed, demolished, abandoned, or capped and left in place, shall be tested to verify that there is no damage caused after the items have been covered by construction.

1.5 TEST REPORTS

A. University's Testing Laboratory and Contractor's Testing Laboratory shall submit five (5) copies of all reports to University's Representative, indicating observations and results of tests and indicating compliance or non-compliance with the Contract Documents.

1.6 GEOTECHNICAL ENGINEER AND OTHER INSPECTION AND TESTING

A. The University shall retain and pay the expenses of a Geotechnical Engineer and materials testing, inspection and observation services consultant (“TIO Consultant”) to perform inspection, testing, and observation functions specified by the University. Geotechnical Engineer and such other TIO Consultant shall communicate only with University and University's Representative. University's Representative shall then give notice to Contractor, with a copy to the University, of any action required of Contractor.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes. Comply with Contract Document requirements for Division 1 Section "Cutting and Patching."

B. Protect construction exposed by or for quality-control service activities, and protect repaired construction.

C. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

END OF SECTION

SECTION 01 4516
CONTRACTOR'S QUALITY CONTROL PROGRAM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. This Section includes, without limitation, the following:

1. Quality Control Program
2. Submittals
3. Qualifications of Quality Control Manager
4. Reporting Procedures
5. Implementation

B. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section describes the requirements for implementation of a Quality Control Program by the Contractor to assure performance of the Work in conformance with the provisions of the Contract Documents.

B. Related Work Specified Elsewhere:

1. Testing and Inspection Services of Quality Control are specified in Section 01 4500, "Quality Control."

1.3 QUALITY CONTROL PROGRAM

A. The Contractor shall prepare and submit within thirty (30) days after the issuance of Notice to Proceed, the Quality Control Program (QCP) they intend to implement for the Work for approval by the University. This Program shall be tailored to the specific requirements of the Work and shall become an active part of the construction procedures. The Quality Control Program shall include the procedures, instructions, reports and forms to be used throughout the performance of the Work. The University reserves the right to review and reject all or part of the Quality Control Program as proposed by the Contractor. The Contractor shall revise and resubmit as appropriate until satisfactory to the University. The basic objectives of the Quality Control Program are as follows:

1. To ensure that all Work adheres strictly to all provisions of the Contract Documents and governing agencies.
2. To produce good quality workmanship.
3. To prevent deficiencies through pre-construction quality control coordination.
4. To detect and correct deficiencies in a timely manner.
5. To provide an auditable record of all tests, inspections, procedures, non-compliance and corrections, and any other pertinent data as required by the University.

B. The Contractor shall notify the University in writing of any proposed change to their Quality Control system and changes shall not be permitted if they would, in the opinion of the University, result in nonconformance with the Contract requirements.

C. The Contractor may select either an outside "agency" or in-house personnel to administer the program. In either case, the Quality Control staff on-site shall be responsible only for Quality Control and the Quality Control Manager shall report directly to the Contractor's highest ranking

Corporate Officer involved in the Work. Quality Control staff members shall interface with the University, its Inspectors and Consultants, as required and appropriate.

1.4 SUBMITTALS

A. The Quality Control Program submittal shall include, as a minimum, the following:

1. The Quality Control organization chart, beginning with the Quality Control Manager, shall include Quality Control personnel as may be necessary to accomplish complete and adequate inspection of the Work.
2. Names and qualifications of personnel and firms selected to implement the Quality Control Program on-site and off-site.
3. Authority and responsibility of the Quality Control Staff.
4. Methods of Quality Control inspection including subcontractor's work and describing name of qualified testing laboratory to be used, if applicable.
5. Documents to be used to record inspections and tests, including those specified in the Contract.
6. Formats for documentation and reports.
7. Model agenda for Quality Control Meetings
8. A letter signed by the Responsible Managing Officer of the Contractor's firm outlining the authority of the Quality Control Manager to include, among other things, the authority as described herein. Clerical personnel sufficient to accomplish timely submittal of Quality Control Reports and other required documentation shall be provided.

1.5 QUALIFICATION OF QUALITY CONTROL MANAGER

A. The minimum qualifications required of the Quality Control Manager are as follows:

1. Has recent construction experience in projects of similar size and nature.
2. Has ten (10) years' experience performing construction-related work on Type I or II buildings.
3. Has seven (7) years' experience performing Quality Control services on Type I or II multi story projects. At least 3 years must be on projects in California.

OR

4. Has recent construction experience in projects of similar size and nature.
5. Possess current certification issued by State of California OSHPD Class A level or DSA Class 1 level.
6. Has seven (7) years' experience performing Quality Control work or inspection services on multi story Type I or II projects. At least 3 years must be on projects in California.

OR

7. Possess an undergraduate degree in architecture, civil engineering or construction management.
8. Has five years (5) performing Quality Control services or inspection experience on Type I or II multi story buildings. At least 3 years must be on projects in California.
9. Possess at least four special inspector current certifications issued by ICC.

B. Responsibilities and Duties of the Quality Control Staff:

1. The Quality Control Manager shall have the authority to stop work, reject work, order work removed, initiate remedial work, propose solutions, and reject material not in compliance with the Contract Documents.
2. Responsibilities of the Quality Control Manager shall include, but are not limited to the following:
   a. Present on-site during all working hours and assigned "full time" to this Project. Contractor shall designate alternate individual(s) to assume responsibilities in the temporary absence of the Quality Control Manager or when overtime work is being performed.
   b. Have complete familiarity with the Drawings and Specifications.

c. Establish and implement Quality Control Programs for the Contractor and with the various Subcontractors and monitor their conformance.
d. Present samples, mock-ups and test panels to be used as standards of quality for review by the University and their Consultants.
e. Inspect existing conditions prior to the start of new work segments.
f. Perform in-progress and follow-up inspections on each work segment to ensure compliance with the Contract Documents. Accompany the University and their Consultants on such inspections.
g. Coordinate required tests, inspections, and demonstrations with the University's IOR inspectors, consultants and any other authority having jurisdiction.
h. Inspect all materials and equipment arriving at the job site to ensure conformance to the provisions of the Contract Documents. Prepare and submit to the University written reports as required by the Contract Documents.
i. Identify, report and reject defective Work or Work not in conformance with the Contract Documents. Monitor the repair or reconstruction of rejected Work.
j. Develop checklists to be used for the inspection of each Division of the Work.
k. Retain specialists or outside firms for inspection of Work in areas where additional technical knowledge is required (mechanical, electrical, electronics, controls, communications, security, welding, structural, security hardware, etc.).
l. Schedule additional site visits where appropriate.
m. Verify and report that all materials and equipment manufactured off-site are in conformance with the Contract Documents.
n. Prior to the start of each Division, Section and/or major item of Work required by the Contract Documents, conduct a preconstruction Quality Control meeting with responsible field and office representative and the University and their Consultants. Provide the University and their Consultants minutes of these meetings within forty-eight (48) hours.
o. Work closely with the University to ensure optimum Quality Control. Attend Project meetings as required by the University.

1.6 REPORTING PROCEDURES

A. As a minimum, develop forms, logs and reporting procedures consisting of the following:

1. A Quality Control meeting shall be held at least monthly between the University, Consultants and the Quality Control Manager during which only Quality related topics will be reviewed.
2. A monthly written report published at month end providing an overview of Quality Control activities, problems found and/or solved, status of remedial work, status of mock-ups, anticipated problems and planned activities for the coming month, etc.
3. Deficiency reports: Plan of action by the Contractor for correcting any known contract deficiencies including delay in scheduled progress.
4. Weekly reports (including reports from Contractor and Subcontractors) to the University describing:
   a. Equipment and material received.
   b. Tests and inspections performed with submittal information.
   c. Deficiencies noted and/or corrected.
   d. Quality Control concerns and problems.
   e. Record keeping (as required).

1.7 IMPLEMENTATION

A. The Contractor's Quality Control program shall be adequate to cover all operations, including both on-site and off-site and will be keyed to the proposed sequence of work and shall include as a minimum at least three (3) phases of inspection for all definable items or segments of work, as follows:

1. Preparatory inspection shall be performed prior to beginning any work on any definable segment of the Work and shall include a review of Contract requirements; verification that

all materials and/or equipment have been tested, submitted, and accepted; verification that provisions have been made to provide required control testing; examination of the work area to ascertain that all preliminary work has been completed; and a physical examination of materials and equipment to assure that they conform to accepted shop drawings or submittal data and that all material and/or equipment are available. As a part of this preparatory work, Contractor's Quality Control organization will review and verify that all documents, including but not limited to; shop drawings, submittal data, method of Quality Control, product data sheets, test reports, affidavits, certification and manufacturer's instructions have been submitted and accepted by the University as required herein. Each submittal to the University shall bear the date and the signature of the Contractor's Quality Control Manager indicating that he has reviewed the submittal and certified it to be in compliance with Drawings and Specifications or showing the required changes.

2. Initial Inspection: To be performed as soon as a representative segment of the particular item of work has been accomplished and to include examination of the quality or workmanship and a review of control testing for compliance with Contract requirements, exclusion of defective or damaged materials, omissions, and dimensional requirements.
3. Follow-up Inspection: To be performed daily or as frequently as necessary to ensure continuing compliance with Contract requirements, including control testing, until completion.
4. The Contractor shall maintain daily current records with information as described above, in an appropriate format of all inspections and tests that the required inspection or tests have been performed. These records must cover both conforming and defective items and must include a statement that all supplies and materials, incorporated in the Work, are in full compliance with the terms of the Contract. Two legible copies must be furnished to the University. The report will cover all work performed or completed subsequent to the previous report.

END OF SECTION

SECTION 01 5100
TEMPORARY UTILITIES

PART 1 – GENERAL

1.1. SUMMARY

A. Section includes:

1. Installation
2. Temporary Electricity
3. Temporary Water
4. Temporary Lighting
5. Temporary Heating, Cooling, and Ventilating
6. Temporary Telecommunications

1.2. INSTALLATION

A. Use qualified personnel for installation of temporary utilities. Locate utilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify utilities as required.

B. Provide each utility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until utilities are no longer needed or are replaced by authorized use of completed permanent facilities.

C. Utility Service Connection: Engage the appropriate local utility company to install temporary service or connect to existing service. Where company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with company recommendations.

1. Arrange with company and existing users for a time when service can be interrupted, if necessary, to make connections for temporary services.
2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
3. Obtain easements to bring temporary utilities to the site where the University's easements cannot be used for that purpose.
4. Use Charges: Cost or use charges for temporary facilities are not chargeable to the University or University's Representative. Neither the University nor University's Representative will accept cost or use charges as a basis of claims for Change Orders.

D. Submittals:

1. Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.
2. Implementation and Termination Schedule: Within 15 days of the date established for commencement of the Work, submit a schedule indicating implementation and termination of each temporary utility. Temporary Utilities: Prepare a schedule indicating dates for taking over the responsibility of the existing temporary utilities that the University already has in place from the first phase and termination of each temporary utility. At the earliest feasible time, when acceptable to the University, change over from use of temporary service to use of permanent service.

E. Quality Assurance:

1. Comply with industry standards and applicable laws and regulations of the University including, but not limited to, the following:

    a. Potentially hazardous materials.
    b. Health and safety regulations.
    c. Utility company regulations.
    d. Police, fire department, and rescue squad rules.
    e. Environmental protection regulations.

2. Standards: Comply with NFPA 241 “Standard for Safeguarding Construction, Alterations, and Demolition Operations,” ANSI A10 Series standards for “Safety Requirements for Construction and Demolition,” and NECA Electrical Design Library “Temporary Electrical Facilities.”

    a. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 “National Electric Code.”

3. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

4. Construction Facilities and general construction activities shall comply with the energy use guidelines in Title 24 of the California Administrative Code.

1.3. TEMPORARY ELECTRICITY

A. Temporary Electric Power Service: Electric power will be furnished by the University at cost of $0.087/KWH. Provide weatherproof, grounded electric power service and distributions system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnects, automatic ground-fault interrupters, and main distribution switch gear.

1. Contractor Responsibilities:
    a. The University is providing temporary power equipment for the Contractor’s use at the management trailer compound. The equipment includes; power skid, meter, quad-plex wire, panel board and Nema enclosure. Install project site electric power service with a meter at the point of connection designated by the University’s Representative. Refer to the diagram for locating temporary power connections at the end of this section.
    b. Maintain connections and extensions in a safe manner and utilize so as to not constitute a hazard to persons or property.
    c. Connections and extensions will be subject to OSHA regulatory requirements. Immediately remove or remedy connections and extensions that represent safety hazards or cause undue interruption of University's normal operations.

1.4. TEMPORARY WATER

A. Water Service: Water for use in construction, testing, and irrigation will be furnished by the University at a cost of $1.12/CCF (748 gallons).

1. Contractor Responsibilities:
    a. Provide meter and all connections and extensions required.
    b. Maintain connections and extensions in a safe manner and utilize so as to not constitute a hazard to persons or property.
    c. Connections and extensions will be subject to approval of the University. Immediately remove or remedy connections and extensions that represent

safety hazards or cause undue interruption of University's normal operations.

1.5. TEMPORARY LIGHTING

A. Temporary Lighting: Provide temporary lighting with local switching as required to supplement existing lighting.

B. Temporary Exterior Lighting: Install exterior yard and sign lights so signs are visible when Work is being performed.

1.6. TEMPORARY HEATING, COOLING, AND VENTILATING

A. Temporary Heat: Provide temporary heat required by construction activities. Select safe equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce the ambient condition required and minimize consumption of energy.

B. Maintain temperature at less than 60 degrees F (16 degrees C) in permanently enclosed portions of the building and areas where finished Work has been installed.

C. Heating Facilities: Except where the University's Representative authorizes use of the permanent system, provide vented, self-contained, LP-gas or fuel-oil heaters with individual space thermostatic control. Use of gasoline-burning space heaters, open flame, or salamander heating units is prohibited.

1.7. TEMPORARY TELECOMMUNICATIONS

A. Temporary Telephones and Data Services: Not required

1. Provide Communications Work Order(s) (e.g. voice add and/or data add) for service through UCR Computing & Communications (UCR C&C), Communications Services, contact Sheri Morgan at (951) 827-3979. Contractor is responsible for providing Network Electronics, Telephone Sets and all installation and monthly recurring service charges.

2. Install separate telephone lines (phone numbers) for each temporary trailer/office and first aid station. At each telephone, post a list of important telephone numbers.

3. Provide telephone lines and telephone sets for the following:

   a. Contractor's field trailer/office: Direct-line telephones (telephone lines and telephone sets) as required.
   b. University's Representative's field trailer/office: Three (3) Direct-line digital telephones and three (3) telephone sets.

4. Provide data connections for the following:

   a. Contractor's field trailer/office: as required. NOTE: A signed and approved Memo of Understanding (MOU) between Contractor(s) and UCR C&C will be required for all data services that are to be provided to Contractor(s).
   b. University's Representative's field trailer/office: Provide four (4) data connections.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 5400
CONSTRUCTION AIDS

PART 1 – GENERAL

1.1. SUMMARY

A. This Section Includes:

1. Temporary Cranes

1.2. TEMPORARY ELEVATORS – Not Used

1.3. TEMPORARY LIFTS AND HOISTS – Not Used

A. Provide facilities for hoisting materials and employees. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

1.4. TEMPORARY CRANES

A. Provide Lift and Rigging Plans for UCR Authority Having Jurisdiction [AHJ] review and approval.

1.5. TEMPORARY SWING STAGING – Not used

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 5500
VEHICULAR ACCESS AND PARKING

PART 1 – GENERAL

1.1. SUMMARY

A. Section includes:

1. Temporary Access Roads
2. Haul Routes
3. Temporary Parking Areas
4. Temporary Roads
5. Traffic Control
6. Staging Areas

B. Submittals:

1. Submittals shall be submitted in accordance with Section 01 3300, "Submittals."
   a. Submit Traffic Control Plan for Project Construction prior to the start of construction activities for approval by University's Representative.
   b. Submit Pedestrian Access Plan for Project Construction prior to the start of construction activities for approval by University's Representative.

1.2. TEMPORARY ACCESS ROADS

A. N/A

1.3. HAUL ROUTES

A. To be discussed with the University's Representative prior to mobilization. The University's Representative shall coordinate with Campus entities and shall provide guidance and coordination.

1.4. TEMPORARY PARKING AREAS

A. Parking: Limited parking for workers employed on the Work may be provided on the Project Site to the extent that space for that purpose is available without interference with activities of University or activities related to performance of the Work. Refer to Section 01 3540 "Environmental Mitigation".

1. All vehicles are required to display a parking permit while parked on campus. Transportation and Parking Services will sell parking permits to contractors, their employees and sub-contractors in parking lots where spaces are currently available for purchase. 2014-15 monthly permit rates are $40/Gold, $47/Blue and $64/Red. All rates are subject to change. Monthly permits are available at the Parking Service Building located at 683 Linden Street. Daily permits can be purchased in the Parking Service Building, at information kiosks at campus entrances, and in posted visitor parking lots. Parking permits are lot specific. All vehicles entering the campus are required to adhere to the University's parking policies and the California Vehicle Code. .
2. Contractor may use available space within its Project Site fence limits for parking without a permit.
3. Provide 3 parking spaces within Contractor's Project Site fence limits for University's Representative and its Consultants use.

1.5. TEMPORARY ROADS

A. N/A

1.6. TRAFFIC CONTROL

A. Prior to the start of construction activities, determine the routing of construction vehicles and the measures necessary to control traffic during construction. Provide measures including, but not limited to, the following:

1. Contractor is responsible for controlling construction traffic on and adjacent to the site, including public right-of-ways. Comply with requirements of authorities having jurisdiction for traffic controls in public right-of-ways.
   a. Provide necessary measures including, but not limited to, flag personnel, barricades, sufficient lights, reflectors, warning signals, warning signs indicating closures, directional, and detour instructions.
2. Route construction equipment, trucks, and similar vehicles through the campus to Big Springs Road and existing public streets to and from the site as approved by the University's Representative and as specified in Section 01 3540 Environmental Mitigation.
3. Schedule deliveries to minimize disruption of University traffic and duration of on-site storage.

B. Traffic Control Plan for Project Construction.

1. Contractor and all subcontractors shall ensure that the construction site and access road speed limits are established and enforced during the Contract Time until Substantial Completion. Post and enforce traffic speed limits of 15 miles per hour or less on all unpaved roads.

2. Contractor and all subcontractors shall comply with the Traffic Control Plan for project construction prepared by Contractor and approved by University's Representative prior to the commencement of construction activities.

3. To the extent reasonable, Contractor and all subcontractors shall maintain at least one unobstructed lane in both directions on campus roadways. At any time only a single lane is available, Contractor and all subcontractors shall provide a temporary traffic signal, signal carriers (i.e., flag persons), or other appropriate traffic controls, as approved by University's Representative, to allow travel in both directions. If construction activities require the complete closure of a roadway segment, contractor and all subcontractors shall provide appropriate signage indicating alternative routes as approved by University's Representative.

4. To maintain adequate access for emergency vehicles when construction activities would result in roadway closures, Contractor shall give 14-days notice to the University's Representative, so that the University's Representative can consult with the UCPD, EH&S, and Riverside Fire Dept. as appropriate to disclose closures and identify alternative travel routes.

5. The hauling and disposal of any excess clean soil excavated from or already stockpiled on the site will be the responsibility of the contractor to transport and stockpile it at the UCR Ag Ops area located near Lot 13 as directed by the University Representative. Refer to Section 31 2000 Earth Moving for additional information regarding the collection and disposal of unsatisfactory material and debris.

6. All construction traffic will access the Project Site from the west and through the campus. Construction traffic will avoid using Valencia Hill Drive, Watkins Drive and Big Springs Road. There are two existing, posted construction traffic warning signs at the corner of Watkins Drive and Valencia Hill Drive which shall remain in place and maintained by the Contractor for the duration of the Project and will be the Contractor's responsibility to remove and dispose of the signs at the completion of the Work.

C. Pedestrian Access Plan for Project Construction.

1. Contractor and all subcontractors shall comply with the Pedestrian Access Plan for project construction prepared by the Contractor and approved by University's Representative, prior to the commencement of construction activities.

1.7. STAGING AREAS

A. Temporary staging shall be subject to change due to existing conditions at the time of mobilization. It is intended that certain aspects of the Contractors work shall require Lift-staging, and that certain aspects of day-to-day access shall also require staging. The University shall provide for Lift-staging and for the day-to-day drop-off of materials and equipment, Privately Owned Vehicles and the required permitting, if such vehicles are parked on University Property, shall be the responsibility of the Contractor or vehicle owner, and may be at some distance from the jobsite.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 5600
TEMPORARY BARRIERS AND ENCLOSURES

PART 1 – GENERAL

1.1. SUMMARY

A. This Section includes:

1. General Cleaning and Protection
2. Temporary Fire Protection
3. Temporary Barricades, Warning Signs, Signals and Lights
4. Temporary Fencing
5. Temporary Protective Walkways

1.2. GENERAL CLEANING AND PROTECTION

A. Clean and protect construction in progress and adjoining materials in place, during handling and installation. Apply protective covering where required to assure protection from damage or deterioration at Substantial Completion.

B. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to assure operability without damaging effects.

C. Limiting Exposures: Supervise construction operations to assure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:

1. Excessive static or dynamic loading.
2. Excessive internal or external pressures.
3. Excessively high or low temperatures.
4. Thermal shock.
5. Excessively high or low humidity.
6. Air contamination or pollution.
7. Water or ice.
8. Solvents.
9. Chemicals.
10. Light.
11. Radiation.
12. Puncture.
13. Abrasion.
14. Heavy traffic.
15. Soiling, staining, and corrosion.
16. Bacteria.
17. Rodent and insect infestation.
18. Combustion.
19. Electrical current.
20. High-speed operation.
21. Improper lubrication.
22. Unusual wear or other misuse.
23. Contact between incompatible materials.
24. Destructive testing.
25. Misalignment.

26. Excessive weathering.
27. Unprotected storage.
28. Improper shipping or handling.
29. Theft.
30. Vandalism.

1.3. TEMPORARY FIRE PROTECTION

A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer, as requested by the University's Representative.

B. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers,"NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," and requirements of the University.

1. Locate fire extinguishers where convenient and effective for their intended purpose.
2. Store combustible materials in containers in fire-safe locations.
3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for fighting fires. Prohibit smoking in all buildings and anywhere on site.
4. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

1.4. TEMPORARY BARRICADES, WARNING SIGNS, SIGNALS AND LIGHTS

A. Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.
1. Enclose excavations and openings with proper barricades.
2. Clearly identify hazards on and adjacent to the Project site. Maintain clearly visible and, if applicable, audible identification on a continuous 24-hour-per-day basis.
3. Illuminate barricades, warning signs, obstructions, and other hazards at night. Provide adequate light for clear visibility from sunset to sunrise.
4. Where appropriate, provide audible warning signals.

1.5. TEMPORARY FENCING

A. Control of pedestrian and vehicular traffic through and adjacent to areas of exterior work that may require temporary fencing, is the Contractor’s responsibility. The installation of such temporary controls shall be submitted in advance to the University authorities of installation, and shall be maintained by the Contractor at all times.

1.6. TEMPORARY PROTECTIVE WALKWAYS

N/A

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 5700
TEMPORARY CONTROLS

PART 1 – GENERAL

1.1. SUMMARY

A. This Section Includes:

1. Control of Construction Water
2. Dust Control, Air Pollution, and Odor Control
3. Noise Control
4. Temporary Erosion and Sediment Control (SWPPP)
5. Temporary Environmental Controls
6. Temporary Pest Control
7. Biological Resources
8. Cultural Resources
9. Aesthetics
10. Air Quality

1.2. CONTROL OF CONSTRUCTION WATER

A. Provide impermeable floor coverings and suitable dams to prevent damage by water used for the Work. Immediately clean up and remove all surplus water and water spilled in non-working areas. Do not allow water to overflow gutters, flood streets or parking lots.

1.3. DUST CONTROL, AIR POLLUTION, AND ODOR CONTROL

A. The Contractor shall employ measures to prevent the creation of dust, air pollution and odors.

1. Unpaved areas where vehicles are operated shall be periodically wetted down or given an equivalent form of treatment as defined in South Coast Air Quality Management District (SCAQMD) Rule 403 to eliminate dust formation.

2. All volatile liquids including fuels or solvents shall be stored in closed containers.

3. No open burning of debris, lumber or other scrap will be permitted.

4. Equipment shall be maintained in a manner to reduce gaseous emission.

5. Low sulfur fuel shall be used for construction equipment.

6. Stockpiles of excavated materials shall be covered with material approved by University's Representative.

7. Contractor shall provide street sweeping whenever silt from construction site is carried over to adjacent streets.

B. Provide measures, including regular watering, necessary to minimize air-borne dust.

1. Exposed surfaces should be watered twice daily.
2. Stockpiles of excavated materials should be covered.
3. A berm shall be erected on the downslope of the project site to prevent silt-laden water from running off site.
4. Trucks carrying excavated materials from the site shall be covered and shall have their tires and undercarriages washed prior to exiting the site as required to remove material that may fall or blow off later.
5. Paving of exposed dirt surfaces should be done as quickly as is reasonably possible.

6. Streets affected by fugitive dust shall be swept regularly.
7. The Contractor shall assign a person to be responsible for monitoring dust levels, reviewing conditions with the University's Representative, and suggesting appropriate additional control measures when required.
8. Uncovered soil shall be bound by grass or similar ground cover as soon as is reasonably possible.
9. Excavation should not be conducted when surface winds exceed 11 miles per hour.
10. Unnecessary idling of construction vehicles and equipment shall be avoided.

C. All contractors, and overseen by the General Contractor, shall implement dust control measures consistent with South Coast Air management District (SCAQMD) Rule 403 – Fugitive Dust during the construction phases on the project development.

1. Apply water and/or non-toxic chemical soil stabilizers according to manufacturer's specifications to all inactive construction areas (previously graded areas that have been inactive for 10 or more days).

2. Replace ground cover in disturbed areas as quickly as possible.

3. Enclose, cover, water twice daily, or apply approved chemical soil binders to exposed piles with 5 percent or greater silt content.

4. Water active grading sites at least twice daily.

5. Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed over 25 mile per hour over a 30-minute period.

6. All trucks hauling dirt, sand, soil, or other loose material are to be covered or should maintain at least two feet of freeboard (i.e., minimum vertical distance between top of the load and top of the trailer) in accordance with section23114 of the California Vehicle Code.

7. Sweep streets at the end of the day if visible soil material is carried over to adjacent roads.

8. Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving project site for each trip.

9. Apply water three times daily of chemical soil stabilizers according to manufacturer's specifications to all unpaved parking or staging areas or unpaved road surfaces.

1.4. NOISE CONTROL

A. Noise control shall be maintained by the contractor in all areas of construction, guarding against any undue noise, which may impair proper use of existing facilities. Contractor shall use noise suppressed equipment available and control noise on equipment to the maximum extent possible.

B. The following noise control procedures shall be employed:

1. Noise control shall be maintained by the contractor in all areas of construction, guarding against any undue noise, which may impair proper use of existing facilities. Contractor shall use noise suppressed equipment available and control noise on equipment to the maximum extent possible.

2. Equipment: Jack hammers shall be equipped with exhaust mufflers and steel muffling sleeves. All diesel equipment shall have exhaust muffled. Air compressors shall be of a quiet type such as a "whisperized" compressor.

3. Operations: Machines shall not be left idling. Electric power shall be used in lieu of internal combustion engine power wherever possible. Equipment shall be maintained to reduce noise from vibration, faulty mufflers, or other sources.

4. Scheduling: Noisy operations shall be scheduled so as to minimize the disturbance and duration to adjacent neighborhoods and nearby student Housing complexes.

6. Use of High Vibration Construction Equipment near Lothian Residence Hall

   a. All contractors, and overseen by the General Contractor, shall schedule construction activity entailing use of high-vibration generating equipment within 75 feet of Residence Halls during periods when students are not in residence, to the extent feasible.

   Prohibit Noise-producing Signals: All contractors, and overseen by the General Contractor, shall prohibit the use of noise-producing signals, including horns, whistles, alarms, and bells, except for safety purposes only. Public address or music systems will also be prohibited.

1.5. TEMPORARY EROSION AND SEDIMENT CONTROL

A. Exposed earth surfaces shall be watered to minimize dust generation as necessary according to weather conditions.

B. During winter construction, an erosion and sediment-transport control plan incorporating standard erosion control practices shall be implemented prior to the first day of earth moving activities.

   1. Erosion control shall include retaining sediments within project site by the use of catch basins; using interceptor ditches and benches to prevent gullying of slopes; and preparing and implementing erosion control plans.

C. Storm Water Pollution Prevention Plan (SWPPP):

   1. This project has an active SWPPP permit and the university has retained a SWPPP management consultant for this project. The contractor shall take over the contract of the SWPPP consultant for the SWPPP management of the project for the duration of the schedule until substantial completion. Contact David Beckwith, President, David Beckwith & Associates at (714) 349-7007. The details of the SWPPP for Glen Mor 2 and its implementation can be viewed online at the California State Water Resources Board's SMARTS website (type "University of California, Riverside").

   2. Refer to Section 01 2100 Allowances for the description of the SWPPP allowance.

   3. For additional information see Section 31 1000 "Site Clearing".

   4. Protection Against Inclement Weather: Brace, secure, and cover all parts of the Work to prevent damage by inclement weather. Refer to Section 3.9 Storm Water Control for SWPPP information.

   5. Protect the Work from damage due to nuisance water such as rainwater, surface runoff, and irrigation water. Comply with requirements of the University's Representative regarding routing and disposal of nuisance water.

D. Storm Water Control

   1. This project already has an open SWPPP permit on file. Refer to Section 01 1400 "Contractor's Use of the Project Site" for more detailed SWPPP information.

a. Provide engineering, drawings, etc., to meet the requirements.

2. Erect berm and other appropriate measures to prevent water from running off site and staging area.

3. Erect berm and other appropriate measures to prevent water from entering the site and staging area.

4. Temporary Storm Water Pollution Control: Provide earthen embankments and similar barriers in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of storm water from heavy rains.

1.6. TEMPORARY ENVIRONMENTAL CONTROLS

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid use of tools and equipment that produce levels of harmful noise. Restrict use of noise-making tools and equipment to hours that will minimize complaints from persons or firms near the site.

B. See also Section 01 3543, Environmental Procedures.

1.7. TEMPORARY PEST CONTROL

A. N/A

1.8. BIOLOGICAL RESOURCES

A. Pre-Construction Surveys for Burrowing Owls will be conducted (by University representatives) **not more than 30 days prior to ground disturbance and/or construction related activities.** No ground disturbance and/or construction related activities shall begin until survey complete and any avoidance measures identified and implemented.

B. Pre-Construction Nesting Bird Surveys will be conducted (by University representatives) **within a maximum of 7 days prior to initiation of ground disturbance activities** when vegetation removal will occur between February 15 and September 15. No ground disturbance activities shall occur until survey complete and any avoidance measures identified and implemented.

1. Prior to initiation of ground disturbance activities, disturbance limits adjacent to or within the Arroyo shall be clearly staked by University representatives, including disturbance limits associated with Arroyo improvements. Access to the Arroyo shall be limited to existing roads and shall be fenced to ensure unnecessary encroachment to the Arroyo does not occur.

C. Minimize Temporary Impacts

1. Biological Resources to be avoided during construction, include identified California Dept. of Fish and Game (CDFG) jurisdictional streambeds and riparian habitats, and shall be avoided if practicable. No impacts on the Arroyo shall occur outside of staked disturbance limits.

2. At a minimum, the following areas shall be avoided:

a. Riparian vegetation adjacent to the path/culvert removal.

b. Riparian vegetation located at the northwest side of the south abutment temporary work area for Bridge 2.

c. CDFG jurisdictional streambed located on the south side of the bank re-contouring area.

d. The mature cottonwood tree near the Valencia Hill culvert extension work limit.

(1) The following measures will be implemented to minimize disturbance to the cottonwood tree at the Valencia Hill culvert work area:

(2) Establishment and demarcation of a tree protection zone. This should be accomplished under the guidance of an International Society of Arboriculture (ISA) certified arborist and employ a protective barrier consisting of 3-foot- high orange construction fencing. The preferred protection zone shall encompass a buffer of 5 feet beyond the drip line, or 15 feet from trunks, whichever is greater. Where the proposed improvements extend into the preferred protection zone, placement of the protective barrier shall minimize encroachment into the preferred protection zone to the maximum extent practical.

(3) Pruning of tree roots, limbs and canopy prior to start of construction, under the guidance of an ISA certified arborist and in accordance with ISA pruning standards (for instance, cuts made clean and to the bark collar of the closest joint on the branch). Pruning should occur during the dormant period (approximately November to March).

(4) Construction of the Valencia Hill culvert extension shall be monitored by an ISA certified arborist. The arborist may require implementation of best management practices to minimize disturbance within the work limits, including but not limited to padding of vehicles, minimizing soil removal or addition, and use of protective matting.

(5) Upon completion of construction, the tree shall be evaluated by an ISA certified arborist. Evaluations shall occur quarterly for one full year to monitor for signs of failure (including canopy dieback, reduced size or number of leaves, premature fall color). If in the opinion of the arborist, the tree is not showing signs of failure, it shall be determined that the avoidance measures have been successful and no further action shall be required.

(6) If post-construction monitoring indicates the tree has failed, the measures provided for below shall be implemented to replace the lost functions and values:

(7) In the event the mature cottonwood tree at the Valencia Hill culvert extension is determined to have failed the re-vegetation plan shall include the following measures to replace the lost functions and values:

(8) Replacement planting of three coast live oaks on the upper bank within the removed canopy area. Replacement trees shall be at least 6 inch caliper and 10 feet in height.

(9) Replacement planting of Fremont's cottonwood (15 gallon minimum) along the stream channel within the area immediately downstream of the extended culvert. The total number of replacement trees (live oak and cottonwood) shall provide a minimum 1:1 replacement ratio based on the 85-inch diameter at breast

height (DBH) measurement of the existing cottonwood tree. It is expected compliance with this measure would require planting of approximately 25 to 30 cottonwood trees.

e. To reduce disturbance of Natural and Naturalistic Open Space areas:

(1) Unnecessary driving in sensitive or otherwise undisturbed areas shall be avoided. New roads or construction access roads would not be created where adequate access already exists.

(2) Removal of native shrub or brush shall be avoided, except where necessary.

(3) Drainages shall be avoided, except where required for construction. Limit activity to crossing drainages rather than using the lengths of drainage courses for access.

(4) Excess fill or construction waste shall not be dumped in washes.

(5) Vehicles or other equipment shall not be parked in washes or other drainages.

(6) Overwatering shall be avoided in washes and other drainages.

(7) Wildlife including species such as fox, coyote, snakes, etc. shall not be harassed. Harassment includes shooting, throwing rocks, etc.

D. Worker Education Program

1. All contractors, and overseen by the General Contractor, shall participate in a worker education program for all construction personnel prior to personnel initiating ground disturbance activities, which will include a discussion of the importance of the Arroyo and areas within the Arroyo to be avoided (including parking and staging of equipment), a discussion of native wildlife with the potential to occur, and education on not harassing native wildlife.

E. Biological Monitoring During Construction

1. All contractors, and overseen by the General Contractor, shall cooperate with and follow required direction from the qualified biologist who shall monitor the project for compliance with best management practices.

F. Exotic species

1. Any exotic species removed shall be properly handled to prevent sprouting or re-growth. Construction equipment shall be cleaned of mud or other debris that may contain invasive plants and/or seeds and inspected to reduce the potential of spreading noxious weeds before mobilizing to the work of construction. Cleaning of any equipment shall occur at least 300 feet from the Arroyo area and before leaving the work area during the course of construction.

1.9. CULTURAL RESOURCES

A. Protection and Recovery of Buried Artifacts

1. If an archaeological resource is discovered during construction, all soil-disturbing work within 100 feet of the find shall cease and the University Representative shall be notified and shall contact a qualified archaeologist within 24 hours of discovery to inspect the site. If a resource within the project area of potential effect is determined to qualify as a unique archaeological resource (as defined by CEQA), the University shall devote adequate time

and funding to salvage the material. Any archaeologically important artifacts recovered during monitoring shall be cleaned, catalogued, and analyzed, with the results presented in a report of finding that meets professional standards.

2. In the event of the discovery of a burial, human bone, or suspected human bone, all excavation or grading in the vicinity of the find shall halt immediately and the area of the find shall be protected and the University immediately shall notify the Riverside County Coroner of the find and comply with the provisions of P.R.C. Section 5097 with respect to Native American involvement, burial treatment, and re-burial, if necessary.

1.10. AESTHETICS

A. Strict adherence to the approved Detailed Planting Plans to Maintain Existing View Corridors.

1.11. AIR QUALITY

A. All construction vehicles and equipment containing an internal combustion engine and operating on the project site shall meet EPA-certified Tier 2 emission standards or higher. Contractor shall maintain on-going verification records of equipment certification as new equipment is delivered to the site for University Representatives to review for compliance.

B. Low NOx diesel fuel and construction equipment shall be used to the extent that is readily available at the time of construction. Contractor shall maintain on-going, updated records for University Representatives to review for compliance.

C. The following Air Quality reduction procedures shall be implemented throughout the construction process:

a. Compliance with all SCAQMD rules and regulations.

b. Maintenance programs to assure vehicles remain in good operating condition.

c. Avoid unnecessary idling of construction vehicles and equipment.

d. Use of alternative fuel vehicles.

e. Provision of electrical power to site to eliminate the need for on-site generators.

D. All off-road equipment operating on project site, as well as on-road heavy-duty vehicles (including hauling and material delivery trucks) traveling to and from the project site will be fitted with an oxides catalyst. Contractor shall maintain on-going verification records of equipment certification as equipment is delivered to the site for University Representatives to review for compliance.

E. Limited on-campus parking outside the project site boundaries will be made available for construction workers. The University will provide contractors' workers with limited, free, on-campus parking in a designated portion of Lot 13 across Big Springs Rd from the project site.

1. Confine parking to the construction site or specifically designated areas of Lot 13. Vehicles parked elsewhere are subject to Campus parking fees or fines. Campus parking permits are available through Parking Services of **$56.00** per month (check with Parking Services for daily and weekly rates) per vehicle. Rate is subject to change.

2. Contractor may use available space within its Project fence limits for parking without a permit.

3. Provide 3 parking spaces within the staging area for University's Representative and its Consultants use.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 5800
TEMPORARY SIGNAGE

PART 1 – GENERAL

1.1. SUMMARY

A. This Section includes:

1. Temporary Project Signage.
2. Temporary Interior Signage.

1.2. TEMPORARY PROJECT SIGNAGE

A. Project Identification: Two (2) 8’ x 4’ post mounted temporary project identification signs are already in place at two locations on the site. The Contractor shall make minor text revisions of the name of the UCR Vice Chancellor, the project’s construction firm and the time of occupancy. Verify the actual copy with University Representative.

B. Contractor shall make minor changes to the required text on the (2) Project identification signs. The text shall match the existing (black times Roman) font and dimensions on the sign. All Stars Signs of Escondido is a pre-approved supplier to UC Riverside project signs although any vendor can be used. Contractor to change the name of the Vice Chancellor, change the name of the project construction firm and change the time of occupancy. Verify the actual copy with University Representative.

C. Provide signs for traffic direction and warnings such as "Construction Project" and "Keep Out" to facilitate control of personnel and vehicles. Use only the minimum number necessary, to 2' x 4' maximum size.

D. After text changes have been made, reinstall signs securely on existing wood posts. Maintain in good condition throughout the construction period and remove upon completion, including concrete footings, if any.

E. Contractor shall submit all name and title changes on the existing signs to University's Representative for approval prior to installation. Contractor shall review completed project sign with University Representative, prior to installation.

1.3. TEMPORARY INTERIOR SIGNAGE

A. When and if there are construction activities within the shell of the building, and as and when such activities may affect ingress and/or egress, or normal business operations, the Contractor shall provide cautionary and directional signage to aid the public, and to maintain public safety.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 6000
PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.1. SUMMARY

A. This Section includes administrative and procedural requirements governing the Contractor's selection of products for use in the Project:

1. Quality Assurance
2. Product Delivery, Storage, and Handling
3. Product Selection
4. Product Installation

B. Definitions: The Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.

1. “Products” are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

a. "Named Products" are items identified by the manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature that is current as of the date of the Contract Documents.
b. "Foreign Products," as distinguished from "domestic products," are items substantially manufactured (50 percent or more of value) outside the United States and its possessions. Products produced or supplied by entities substantially owned (more than 50 percent) by persons who are not citizens of, nor living within, the United States and its possessions are also considered to be foreign products.

2. “Materials” are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

3. “Equipment” is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

1.2. QUALITY ASSURANCE

A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.

B. Compatibility of Options: When the Contractor is given the option of selecting between 2 or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

1. Each prime contractor is responsible for providing products and construction methods that are compatible with products and construction methods of other prime or separate contractors.

2. If a dispute arises between prime contractors over concurrently selectable, but incompatible products, the University's Representative will determine which products shall be retained and which are incompatible and must be replaced.

C. Foreign Product Limitations: Except under one or more of the following conditions, provide domestic products, not foreign products, for inclusion in the Work:

1. No available domestic product complies with the Contract Documents.

2. Domestic products that comply with the Contract Documents are available only at prices or terms substantially higher than foreign products that comply with the Contract Documents.

D. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products that will be exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.

2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

a. Name of product and manufacturer.
b. Model and serial number.
c. Capacity.
d. Speed.
e. Ratings.

3. UL Label: Provide products bearing appropriate UL label as indicated.

1.3. PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Refer to Section 01 5200, Paragraph 1.5.

PART 2 – PRODUCTS

2.1. PRODUCT SELECTION

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation, except where salvaged materials are indicated.

1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.

2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

B. Product Selection Procedures: The Contract Documents and governing regulations govern product selection. Procedures governing product selection include the following:

1. Nonproprietary Specifications: When Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract

Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.

2. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with an imposed code, standard, or regulation, select a product that complies with the standards, codes, or regulations specified.

3. Visual Matching: Where Specifications require matching an established Sample, the University Representative's decision will be final on whether a proposed product matches satisfactorily.

    a. Where no product available within the specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category.

4. Visual Selection: Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The University's Representative will select the color, pattern, and texture from the product line selected.

PART 3 – EXECUTION

3.1 PRODUCT INSTALLATION

A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.

    1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION

SECTION 01 7100
EXAMINATION AND PREPARATION

PART 1 – GENERAL

1.1. SUMMARY

A. This Section includes:

1. Mobilization
2. Acceptance of Conditions
3. Construction Layout
4. Construction Surveying
5. Protection of Adjacent Construction
6. Non-Destructive Concrete Examination

1.2. MOBILIZATION

A. Mobilization shall be identified on the project schedule and shall be accompanied will all necessary Campus notifications and approvals in-place. Various day-to-day activities shall be notified to the Campus and any building occupants in advance of mobilization.

1.3. ACCEPTANCE OF CONDITIONS

1. Prior to commencing the Work, the Contractor and University's Representative shall tour together the Project site (and areas immediately surrounding the site) to examine and record damage to existing buildings and improvements constructed under a prior contract. As such the Contractor accepts the work constructed on site “as–is” and must finish what is installed into a complete and functional system.

2. This record shall serve as a basis for determination of subsequent damage due to Contractor's operations and shall be signed by all parties making the tour. Any cracks, sags, or damage to the adjacent buildings, improvements and landscaping elements not noted in the original survey, but subsequently discovered, shall be reported to University's Representative within 15 days from Notice to Proceed.

3. The Contractor shall prepare a report of the survey, including:

   a. DVD recording of existing conditions.
   b. 8" x 10" glossy photographs of significant features requested by University's Representative.
   c. Key plan with references to video/photographs

4. The Contractor and University Representative shall periodically monitor conditions of existing buildings and installations for signs of movement, settlement, or other damage related to construction.

5. Contractor is solely responsible for repairing damage to existing construction and finishes and for replacing damaged components, which cannot be repaired.

6. Contractor is solely responsible for maintaining and watering existing landscaping within the Project site and for replacing landscaping elements, which are damaged or destroyed during the course of the Work.

1.4. CONSTRUCTION LAYOUT

1.5. CONSTRUCTION SURVEYING

1.6. PROTECTION OF ADJACENT CONSTRUCTION

1.7. NON-DESTRUCTIVE CONCRETE EXAMINATION

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 7123
FIELD ENGINEERING

PART 1 – GENERAL

1.1. SUMMARY

A. This Section specifies administrative and procedural requirements for field-engineering services including, but not limited to, the following:

1. Surveys, Lines, and Levels Examination.
2. Surveys, Lines, and Levels Performance.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION

3.1 EXAMINATION

A. Identification: The University's Design Professional or its designee will identify existing control points including horizontal and vertical control points.

B. Verify layout information shown on the Drawings, in relation to the property survey and existing benchmarks, before proceeding to lay out the Work. Locate and protect existing benchmarks and control points. Preserve permanent reference points during construction.

1. Do not change or relocate benchmarks or control points without prior written approval. Promptly report lost and destroyed reference points or requirements to relocate reference points because of necessary changes in grades or locations.

2. Promptly replace lost or destroyed Project control points. Base replacements on the original survey control points.

C. Establish and maintain a minimum of 2 permanent benchmarks on the site, referenced to data established by survey control points.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

D. Existing Utilities and Equipment: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning site work Contractor shall employ and pay for underground utilities service company to investigate and verify the existence and location of all underground utilities and other construction.

1. Prior to construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping.

2. The Drawings show, if applicable, existing above and below grade structures, drainage lines, storm drains, sewers, water, gas, electrical, hot water and other utilities, which are known to the University.

3. Existing installations shall be kept in service where possible and damage to them shall be repaired with no adjustment of Contract Sum.

4. If any other structures or utilities are encountered, request University's Representative to provide direction on how to proceed with the Work.

5. If any structure or utility is damaged, take appropriate action to ensure the safety of persons and property. Repair damage and restore utility to service at no cost to the University.

6. Obtain University Representative approval at least 30 days prior to any service shutdown or cutover. All utility shut downs shall be kept to a minimum. Contractor shall coordinate for all shut downs to occur during weekend hours without change to the contract sum. Identify date, time and expected duration (no more than 8 hours duration) of all utility shutdowns. There will be no shut downs for sewer services, must do bypass.

3.2 PERFORMANCE

A. Work from lines and levels established by the property survey. Establish benchmarks and markers to set lines and levels at each story of construction and elsewhere as needed to locate each element of the Project. Calculate and measure required dimensions within indicated or recognized tolerances. Do not scale Drawings to determine dimensions.

1. Advise entities engaged in construction activities of marked lines and levels provided for their use.

2. As construction proceeds, check every major element for line, level, plumb, movement, settlement, or other damage.

B. Site Improvements: Locate and lay out site improvements, including pavements, stakes for grading, fill and topsoil placement, utility slopes, and invert elevations.

C. Existing Utilities: Furnish information necessary to adjust, move, or relocate existing structures, utility poles, lines, services, or other appurtenances located in or affected by construction. Coordinate with, and obtain required approvals from University's Representative.

END OF SECTION

SECTION 01 7329
CUTTING AND PATCHING

PART 1 – GENERAL

1.1. SUMMARY

A. This Section includes general administrative and procedural requirements for cutting and patching, including without limitation, the following:

1. Submittals
2. Quality Assurance
3. Warranty
4. Materials
5. Inspection
6. Preparation
7. Performance
8. Cleaning

B. Requirements of this Section apply to mechanical and electrical installations. Refer to Specification Divisions 20-28 for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

C. Refer to other applicable Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

D. Cutting and Patching, in addition to requirements of the General Conditions, includes removing, altering, and repairing portions of the Work as required to accomplish the following:

1. Make several parts fit properly.
2. Uncover work to provide for installation of ill-timed work.
3. Remove and replace defective work.
4. Remove samples of installed work as specified or requested by the University's Representative for testing.
5. Install new construction penetrations of or connections to existing construction.

1.2. SUBMITTALS

A. Cutting and Patching Proposal: Submit written notice to the University's Representative requesting permission to proceed with cutting which could affect structural safety of the project 10 days in advance of starting cutting. Request approval to proceed. Include the following information, as applicable, in the proposal:

1. Describe the extent of cutting and patching required. Show how it will be performed and indicate why it cannot be avoided.
2. Describe anticipated results in terms of changes to existing construction. Include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
3. List products to be used and firms or entities that will perform Work.
4. Indicate dates when cutting and patching will be performed.
5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out-of-service. All utility shut downs shall be kept to a minimum. Contractor shall coordinate for all shut downs to occur during weekend hours without change to the contract sum. Identify date, time and expected duration (no more than 8 hours duration) of all utility shutdowns. There will be no shut downs for sewer services, must do bypass.

6. Approval by the University's Representative to proceed with cutting and patching does not waive the University's Representative right to later require complete removal and replacement of unsatisfactory work.

B. Changed Conditions Notice: Submit written recommendations to the University's Representative should conditions of work or schedule indicate change of materials or methods, including the following:

1. Conditions indicating change.
2. Recommendations for alternative materials and methods.
3. Information required for substitution.

1.3. QUALITY ASSURANCE

A. Requirements for Structural Work:

1. Obtain approval of the cutting and patching proposal before cutting and patching structural elements including, but not limited to, the following:

a. Foundation construction.
b. Structural concrete.
c. Miscellaneous structural metals.
d. Piping and equipment.

B. Operational Limitations: Do not cut and patch operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safety.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems

a. Primary operational systems and equipment.
b. Fire protection systems.
c. Communication systems.
d. Electrical wiring systems.
e. Security systems

C. Visual Requirements: Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace construction cut and patch in a visually unsatisfactory manner.

1.4. WARRANTY

A. Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void any warranties required or existing.

PART 2 – PRODUCTS

2.1. MATERIALS

A. Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible if identical materials are unavailable or cannot be used. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 – EXECUTION

3.1 INSPECTION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting. If unsafe or unsatisfactory conditions are encountered, take corrective action and notify University's Representative before proceeding.

1. Before proceeding, meet at the Project Site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
2. Provide drawings and calculations signed by a licensed California Structural Engineer for shoring, bracing and support to maintain structural integrity.
3. Protect other portions of the Project.
4. Protect Project from the element.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of work to be cut.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Avoid cutting existing pipe, conduit, or ductwork serving the building but scheduled to be removed or relocated until provisions have been made to bypass them.

3.3 PERFORMANCE

A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.

B. Cutting: Cut existing construction using methods least likely to damage elements retained or adjoining construction. Where possible, review proposed procedures with the original Installer; comply with the original Installer's recommendations.

1. In general, where cutting, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
3. Cut through concrete and masonry using a cutting machine, such as a Carborundum saw or a diamond-core drill.
4. Comply with requirements applicable Division 2 Sections where cutting and patching requires excavating and backfilling.
5. Where services are required to be removed, relocated, or abandoned, by-pass utility services, such as pipe or conduit, before cutting. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
3. Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.4 CLEANING

A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

END OF SECTION

SECTION 01 7400
CLEANING AND WASTE MANAGEMENT

PART 1 – GENERAL

1.1. SUMMARY

A. This Section includes:

1. Progress Cleaning and Site Maintenance
2. Construction Waste Management and Disposal
3. Final Cleaning
4. Contractor C&D Waste Monitoring Form and Green Waste Monitoring Form, copies of which are attached at the end of this Section.

B. Cleaning Agents: Use cleaning materials and agents recommended by the manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

C. Environmental Requirements: Conduct cleaning and waste-disposal operations in compliance with local laws and ordinances. Comply fully with federal and local environmental and antipollution regulations.

1. Do not dispose of volatile wastes, such as mineral spirits, oil, or paint thinner, in streams, storm or sanitary drains.
2. Burning or burying of debris, rubbish, or other waste material on the premises is not permitted.
3. Comply with requirements of Southern California Air Quality Management District in effect at the time of construction.
4. Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from the site and dispose of lawfully.

D. Submittal: Prior to requesting inspection for Substantial Completion and Final Completion, submit written certification to the University's Representative that final cleaning has been performed in accordance with the Contract Documents.

1.2. PROGRESS CLEANING AND SITE MAINTENANCE

A. Collection and Disposal of Waste: Contractor shall furnish all labor, equipment, containers, transportation, materials, supplies and related expenses to provide the University with comprehensive waste collection and waste recycling services for the Project. Contractor shall collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 degrees F (27 degrees C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly.

1. Do not burn waste materials. Do not bury debris or excess materials on the University's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems or streams. Remove waste materials from the site and dispose of lawfully.

2. Where extra materials of value remain after completion of associated Work, they become the University's property. Dispose of these materials as directed by the University's Representative.

3. Provide on-site containers for collection of waste materials, debris, and rubbish, and empty at least weekly. Maintain containers in such condition so as to ensure they are clean and sanitary, to prevent odor and insect infestation, and ensure no unsightly presentation. Perform maintenance on the containers as required to ensure proper function for the intended purpose.

4. Handle waste materials in a controlled manner. Do not drop or throw materials from heights.

5. Remove combustible debris from the building daily and store in covered, non-combustible containers located not less than 40 feet from any building.

B. Cleaning During Construction Period: Comply with regulations of the University and safety standards for cleaning.

1. Schedule cleaning operations so that dust and other contaminants resulting from cleaning operations will not settle on wet paint, or other coatings or finishes during their cure period.

2. Comply with manufacturer's instructions for cleaning the surfaces and parts of finishes and equipment. Use only those cleaning materials and procedures recommended by the manufacturer of the item to be cleaned.

3. Provide cleaning during construction as necessary to ensure operations can proceed on schedule and that finish materials can be installed properly and viewed for determination of aesthetic characteristics.

1.3. CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

A. The University has established that this Project shall generate the least amount of waste possible and that processes that ensure the generation of as little waste as possible shall be employed to enable the University to meet a minimum 95% percent diversion of construction and demolition (C&D) waste (including green waste) from the landfill.

B. Contractor shall be responsible for monitoring and maintaining a written log using the C&D Waste Monitoring Form and Green Waste Monitoring Form, copies of which are attached at the end of this Section, to report when actual container deliveries and waste pickups occur, the types of C&D waste material included, weight of each type (in Tons) diverted or landfilled and total percentage of waste diverted from landfill, and any other data required to be reported on the respective forms. Contractor shall submit completed forms with the required data to University's Representative, or designee, **with each Application for Payment**. Such written information shall be used as backup to support payment of Contractor's scheduled value for Division 1, General Requirements.

C. C&D waste is a combination of concrete, lumber, plaster, cardboard, glass, various metals, paper, PVC, ABS, HDPE, PP, PDPE, PET, white foam, paint buckets, carpet, green waste, and dirt.

1. C&D waste accepted for recycling:

a. Card Board.
b. Mixed metals.
c. PVC Pipe.
d. ABS Pipe.
e. H.D.P.E. Pipe.
f. Carpet.
g. Carpet Pad.
h. Mixed Plastics.
i. Glass.

j. Bottles & Cans – CRV.
k. H.D.P.E Plastics.
l. H.D.P.E Pipe.
m. Foam – White.
n. Paper – Mixed.
o. Plastic Buckets – Paint (empty) & Landscapers.
p. Drywall.
q. Wood.
r. Particle Board.
s. Green Waste:
(1) Green Waste refers to waste resulting from removal of vegetation; it is a combination of brush, branches, leaves, flowers, shrubs and small trees and other items listed on the Green Waste Monitoring Form.
(2) Green Waste accepted for recycling and/or compost:
(a) Grass Clippings.
(b) Trees – Tree trunks shall be cut into 4' and 10" pieces.
(c) Branches – Branches shall be cut into 4' and 10" pieces.
(d) Tree Trimmings – All other material other than trunks, branches, and leaves.
(e) Wood.
(f) Mulch.
(g) Brush.
(h) Leaves.
(i) Flowers.
(j) Shrubs.
(k) Palm Fronds.
t. Inert Material – Soil, Asphalt, Brick, Concrete

1.4. FINAL CLEANING

A. This Section includes the administrative and procedural requirements for final cleaning at Substantial Completion and Final Inspection.

B. Provide final-cleaning operations when indicated. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of Work to the condition expected from a commercial cleaning and maintenance program. Comply with manufacturer's instructions.

C. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for the entire Project or a portion of the Project.

1. Clean the Project Site, yard and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and foreign substances.

2. Sweep paved areas broom clean. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

3. Remove petrochemical spills, stains, and other foreign deposits.

4. Remove tools, construction equipment, machinery, and surplus material from the site.

5. Remove snow and ice, if any, to provide safe access to the building.

6. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural

weathering of exterior surfaces. Restore reflective surfaces to their original condition.

7. Remove debris and surface dust from limited access spaces, including trenches, equipment vaults, manholes and similar spaces.

8. Broom clean concrete floors in unoccupied spaces.

9. Remove labels that are not permanent labels.

10. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

    a. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

11. Wipe surfaces of electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

12. Remove grease, dust, dirt, stains, and other marks from surfaces exposed-to-view.

13. Leave the Project clean.

D. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid the Project of rodents, insects, and other pests. Comply with regulations of local authorities.

E. Removal of Protection: Remove temporary protection and facilities installed during construction to protect previously completed installations during the remainder of the construction period.

F. Where extra materials of value remain after completion of associated Work, they become the University's property. Dispose of these materials as directed by the University's Representative at no additional cost to the University.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

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Contractor Green Waste Monitoring Form

Project Name & No.:

Contractor:

Prepared by:

Date/Time of Pick up	Size of Bin	R/L[1]	Bin Makeup: Recycled or Landfill Materials (Provide quantity of each in Tons.)										
			Grass Clippings	Small Tree	Tree Trunks	Branches	Tree Trimmings	Wood	Mulch	Brush	Leaves	Flowers	Shrubs	Palm Fronds
Column Totals:													
Total Green Waste to Landfill:													
% of Green Waste Recycled:													

[1] Indicate whether R=Recycled or L=Landfill.

Contractor C&D Waste Monitoring Form

Project Name & No.:

Contractor:

Prepared by:

Date/Time of Pick up	Size of Bin	R/L[1]	Bin Makeup: Recycled or Landfill Materials (Provide quantity of each in Tons.)											
			Concrete	Metals	Wood	Glass	Clay/Brick	Paper	Gypsum	Paint	Insulation	Green Waste[2]	Dirt[2]	Other
		Column Totals:												
		Total C&D Waste to Landfill:												
		% of C&D Waste Recycled:												

[1] Indicate whether R=Recycled or L=Landfill.
[2] For waste diversion numbers, Green Waste and dirt are not included. Complete Green Waste Monitoring Form.

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SECTION 01 7700
CONTRACT CLOSEOUT

PART 1 – GENERAL

1.1. SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout including, but not limited to, the following:

1. Substantial Completion
2. Final Inspection Acceptance
3. Closeout Procedures
4. Instruction and Evaluation of University's Personnel
5. Training Tools and Materials
6. Qualifications of Instructors
7. Operation and Maintenance Manuals and Instructions
8. Spare Parts and Extra Stock Materials
9. Warranties

B. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions 2 through 33.

1.2. SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.

1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete.
   a. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
   b. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
2. Advise the University of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance and service agreements, final certifications, and similar documents.
4. Obtain and submit releases enabling the University unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Submit record drawings, operation and maintenance manuals, final project photographs, damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra stock, and similar items.
7. Make final changeover of permanent locks and transmit keys and key schedule to the University. Advise the University's personnel of changeover in security provisions.
8. Complete startup testing of systems and instruction of the University's operation and maintenance personnel. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.
9. Complete final cleanup requirements, including touchup painting.
10. Touch up and otherwise repair and restore marred, exposed finishes.
11. Adjust and balance all systems and adjust all valves.
12. Check fluid and gas carrying pipe systems, roofs, flashings, gutters, and downspouts for leaks. Repair or replace as necessary.

13. Lubricate all moving parts of machinery and equipment as recommended by the manufacturers of the machinery and equipment.
14. Submit certification required in Section 01 7400 for "Final Cleaning."

B. Inspection Procedures: On receipt of a request for inspection, the University's Representative will either proceed with inspection or advise the Contractor of incomplete or incorrect work. The University's Representative will prepare the Punchlist following inspection or advise the Contractor of what must be completed or corrected before the certificate will be issued.

1. The University's Representative will repeat inspection when requested and assured that the Work is substantially complete.
2. Results of the completed inspection will form the basis of requirements for final acceptance.
3. Allow 3 weeks for the University's Representative to prepare the list of items to be corrected.

1.3. FINAL INSPECTION ACCEPTANCE

A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.
2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
3. Submit a certified copy of the University Representative's final inspection list of items to be completed or corrected, endorsed and dated by the University's Representative. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the University's Representative.
4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion or when the University took possession of and assumed responsibility for corresponding elements of the Work.
5. Submit consent of surety to final payment.
6. Submit a final liquidated damages settlement statement.
7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
8. Completed Punchlist.

B. Reinspection Procedure: The University's Representative will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the University's Representative.

1. Upon completion of reinspection, the University's Representative will prepare a certificate of final acceptance. If the Work is incomplete, the University's Representative will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
2. If necessary, reinspection will be repeated and related costs of University's Representative and University Representative's Consultants will be deducted from final retention payment.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION

3.1 CLOSEOUT PROCEDURES

A. Operation and Maintenance Instructions: Arrange for each Installer of equipment that requires regular maintenance to meet with the University's personnel to provide instruction in proper operation and maintenance. Provide instruction by manufacturer's representatives if installers are not experienced in operation and maintenance procedures. Include a detailed review of the following items:

1. Operation and Maintenance manuals.
2. As-Built documents.
3. Spare parts and materials.
4. Tools.
5. Lubricants.
6. Fuels.
7. Identification systems.
8. Control sequences.
9. Hazards.
10. Cleaning.
11. Warranties and bonds.
12. Maintenance agreements and similar continuing commitments.

B. As part of instruction for operating equipment, demonstrate the following procedures:

1. Startup.
2. Shutdown.
3. Emergency operations.
4. Noise and vibration adjustments.
5. Safety procedures.
6. Economy and efficiency adjustments.
7. Effective energy utilization.

3.2 INSTRUCTION AND EVALUATION OF UNIVERSITY’S PERSONNEL

A. Perform hands-on demonstrations and instruction for University’s designated personnel in the operation, adjustment and maintenance of products, equipment, and systems, as required and at agreed upon times.

B. Instruction Before Final Inspection: Before Final Inspection, and after work under this contract is completed, tested and prior to acceptance by the University; and not less than five (5) days after submittal of the Operation and Maintenance Data, operate all the systems for a period of three (3) 8-hour periods during which time a qualified factory trained representative familiar with the items installed shall instruct and supervise the University’s Personnel in the operation and maintenance of the equipment and systems. This instruction period is in addition and subsequent to any period of operation, testing and adjustment called for elsewhere in these specifications.

C. Instruction by Manufacturer’s Representatives: Any instructions from manufacturer's representatives required under other sections of this specification shall be conducted during this period. This instruction period shall be conducted after completion of all piping and equipment labeling required by the Contract.

D. Time of Instructions: Make all arrangements and notices for operation and instruction periods though the University’s Representative.

E. Seasonal Operation: For equipment requiring seasonal operation, perform demonstrations and instructions for each required season and at agreed upon times.

F. Evaluation: During and after demonstrations and instructions for University’s designated personnel, evaluate their ability to perform the necessary maintenance and operation functions required to properly operate and maintain each piece of equipment. Make sure that at the end of the training session, the University's designated personnel are reasonably proficient in the operations and maintenance of products, systems, and equipment.

3.3 TRAINING TOOLS AND MATERIALS

A. Use operation and maintenance manuals as basis for instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance. For all systems requiring operation and maintenance training from factory representative, written authorization from the University is required. All systems of more than one manufacturer, a factory representative from each will be required.

B. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.

3.4 QUALIFICATIONS OF INSTRUCTORS

A. Instructions for the University's Personnel. For instruction of the University's operating and maintenance personnel, use experienced instructors thoroughly trained and experienced in the operation and maintenance of the building equipment or system involved.

3.5 OPERATION AND MAINTENANCE MANUALS AND INSTRUCTIONS

A. Assemble and furnish a minimum of 3 complete sets (unless otherwise indicated in a specific section) of all mechanical and electrical systems data, except that noted to be mounted in frames, in three-ring loose-leaf binders, complete with index, with indexed dividers permanently attached and exterior labels on cover and back of binders.

B. Data Required:

1. Manufacturers' Manuals: Provide complete installation, operation, maintenance, and service manuals and printed instructions and parts lists for all materials and equipment, where such printed matter is regularly available from the manufacturer. This includes but is not limited to such service manuals as may be sold by the manufacturer covering the operation and maintenance of items, and complete replacement parts lists sufficiently detailed for parts replacement ordering to manufacturer. Bound publications need not be assembled in binders.
2. Equipment Nameplate Data: A typewritten list of all mechanical and electrical equipment showing all equipment nameplate data exactly. Identify equipment by means of names, symbols, and numbers used in the Contract Documents.
3. System Operating Instructions: Typewritten instructions covering operation of the entire system as installed (not duplicating manufacturers' instructions for operating individual components). Include schematic flow and control diagrams as appropriate and show, locate, or list system valves, control-elements, and equipment components using identification symbols and numbers. List rooms, area of equipment served, and show proper settings for valves, controls, and switches.
4. System Maintenance Instructions: Typewritten instructions covering routine maintenance of systems. List each item of equipment requiring inspection, lubrication, or service and briefly describe such maintenance, including types of lubricants and frequency of service. It is not intended that these instructions duplicate manufacturers' detailed instructions. Give name, address, and phone number of nearest firm authorized or qualified to service equipment or provide parts.
5. Warranty, Bonds, and Service Contracts: Provide a copy of each warranty, bond, and service contract issued. These should be accompanied by a sheet which outlines procedures to take in the event of failure and the circumstances which might affect the validity of warranties or bonds.
6. Wall Mounted Data: Frame one set of typewritten system instructions and diagrams as required under Paragraphs 3. and 4. above, covered with plexiglass and mount in locations as directed by the University's Representative.

3.6 SPARE PARTS AND EXTRA STOCK MATERIALS

A. Contractor shall in advance of delivering any such materials notify the University's Representative for approval to receive

3.7 WARRANTIES

A. General Provisions:

1. This subsection includes administrative and procedural requirements for warranties required by the Contract Documents, including manufacturers' standard warranties on products and special warranties.

   a. Refer to the General Conditions for terms of the Contractor's period for correction of the Work.

   b. Refer to Divisions 2 through 33 for specific requirements for warranties on products and installations specified to be warranted.

   c. Certifications and other commitments and agreements for continuing services to University are specified elsewhere in the Contract Documents.

2. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

3. Effective Date: Warranties shall begin on the date of Final Acceptance unless specifically designated differently or a different date is mutually agreed upon in writing by the parties involved.

4. General Conditions require all items to be under warranty for a period of one (1) year from date of final completion (Notice of Completion) unless otherwise indicated. Warranties for more than one year required by individual Sections require a written warranty by Contractor and Subcontractor. Refer to individual Section of the Specifications to verify if longer warranties are required.

B. Definitions:

1. Standard product warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the University.

2. Special warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the University.

C. Warranty Requirements

1. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.

2. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement.

The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

3. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Regents have benefited from use of the Work through a portion of its anticipated useful service life.

4. Regents' Recourse: Expressed warranties made to the Regents are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Regents can enforce such other duties, obligations, rights, or remedies.

   a. Rejection of Warranties: The Regents reserve the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

   b. The Regents reserve the right to reuse to accept Work for the Project where a special guarantee, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented so that entities required to countersign such commitments are willing to do so.

5. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, the University reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.

6. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on standard product warranties shall not relieve the Contractor of the Contractor's warranty on the Work that incorporates the products, and shall also not relieve suppliers, manufacturers, and subcontractors required to counter-sign special warranties with the Contractor.

D. Warranty Submittals

1. Submit written warranties to the University's Representative prior to the date certified for Substantial Completion. If the University Representative's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion, or a designated portion of the Work, submit written warranties upon request of the University's Representative.

   a. When a designated portion of the Work is completed and occupied or used by the University, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the University's Representative within 10 days of completion of that designated portion of the Work.

2. Forms for special warranties are included at the end of this Section. Prepare a written document utilizing the appropriate form, ready for execution by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Submit a draft to the University, through the University's Representative, for approval prior to final execution.

   a. Refer to Divisions 2 through 33 for specific content requirements and particular requirements for submitting special warranties.

3. Form of Submittal: At Final Completion compile 3 copies of each required warranty, in the form included at the end of this Section, properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.

4. Assemble required guarantees, bonds, and service and maintenance contracts.

5. Number of original signed copies required: Three (3) sets, each on 8-1/2 inch x 11 inch sheets, 3-hole punched in 3-ring binders. Fold larger sheets to fit into binders. Submit in commercial quality, 3-ring binders, with durable, cleanable plastic covers. Each set of binders shall include:

   a. Cover: Identify each binder on the cover with typed or printed title, "WARRANTIES", University's Project Name and Number, Name of General Contractor, and binder number, such as "Set 1, Volume 1 of 2", etc.

   b. Table of Contents: in a spreadsheet/table format, neatly typed and in orderly sequence by CSI number, based on Specifications Table of Contents in the Bidding-Contract Documents, with the following information:
      (1) CSI Number.
      (2) Name of Product or Work item.
      (3) Brief Scope Description.
      (4) Firm name, address, telephone number, and name of principal with email address.
      (5) Date of beginning of guarantee, bond, or service and maintenance contract.
      (6) Duration and expiration date of warranty or service and maintenance contract.
   c. When warranted, construction requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.
   d. Except when a special warranty is required by the provisions of a specific Section of these Specifications, or a standard warranty is not offered as a matter of record by the manufacturer of a specified product, submit the manufacturer's standard warranty for each product incorporated in the Work.
   e. When a manufacturer does not offer a standard warranty, provide a written form listing the product and indicating "Standard Product Warranty Not Available."

6. Special Warranty Forms: Attached at the end of this Section.

END OF SECTION

GUARANTEE

Project Name: ______________________________ Date:__________

Project Location: ____________________

Project Number: ____________________

GUARANTEE FOR _____________________________________ (the "Contract"), between
The (Specification SECTION and Contract No.)

The Regents of the University of California ("University") and

____
("Contractor")

____
(Name of Contractor or Subcontractor)

hereby guarantees to University that the portion of the Work described as follows:

____
____
____
____,

which it has provided for the above referenced Project, is of good quality; free from defects; free from any liens, claims, and security interests; and has been completed in accordance with Specification SECTION and the other requirements of the Contract.

The undersigned further agrees that, if at any time within _____ months after the date of the guarantee the undersigned receives notice from University that the aforesaid portion of the Work is unsatisfactory, faulty, deficient, incomplete, or not in conformance with the requirements of the Contract, the undersigned will, within 10 days after receipt of such notice, correct, repair, or replace such portion of the Work, together with any other parts of the Work and any other property which is damaged or destroyed as a result of such defective portion of the Work or the correction, repair, or replacement thereof; and that it shall diligently and continuously prosecute such correction, repair, or replacement to completion.

In the event the undersigned fails to commence such correction, repair, or replacement within 10 days after such notice, or to diligently and continuously prosecute the same to completion, the undersigned, collectively and separately, do hereby authorize University to undertake such correction, repair, or replacement at the expense of the undersigned; and Contractor will pay to University promptly upon demand all costs and expenses incurred by University in connection therewith.

SUBCONTRACTOR

Signed: ___________________________________ Title:________________________________
Typed Name: ____
Name of Firm: ____
Contractor License Classification and Number: ____
Address: ____
Telephone Number: ____

CONTRACTOR

Signed: ___________________________________ Title:________________________________
Typed Name: ____
Name of Firm: ____

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SPECIAL WARRANTY FORM

When required in Sections of the Specifications, Special Warranties shall be in the following form and written on Contractor's own letterhead:

"Warrant ____

(portion of work warranted)

Project:____

Address:____

Date: ______________________________

We, the undersigned hereby warrant to the Regents of the University of California ("Regents") that the portion of the work identified, which we have installed in the above-named Project has been performed in accordance with the Contract Documents and that the work, as installed, will fulfill the requirements of the warranty included in this Specification. We agree to repair or replace any or all of our work, together with any other work which may be damaged or displaced by so doing, that may prove to be defective in its workmanship, materials, operation, or failure to conform to Contract provisions and requirements within a period of year(s) from date of Substantial Completion of the stipulated below for the above-named Project, without any expense whatever to the said Regents, ordinary wear and tear and unusual abuse or neglect excepted. In the event of our failure to comply with the above-mentioned conditions within ten (10) calendar days after being notified in writing by the Regents, we collectively or separately do hereby authorize the Regents to proceed to have said defects repaired and made good at our expense, including all collection cost and reasonable attorney fees, and we will honor and pay the costs and charges therefore upon demand."

WARRANTY PERIOD: ______________ STARTING: ___________ TERMINATING _________

Name of General Contractor	Name of Subcontractor
______________________________	______________________________
Signature of General Contractor	Signature of Subcontractor
Address	Address
Phone Number	Phone Number
State License Number	State License Number
Name of Manufacturer	Manufacturer Phone Number
Signature of Manufacturer	

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SECTION 01 7839
AS-BUILT DOCUMENTS

PART 1 – GENERAL

1.1. SUMMARY

A. This Section includes administrative and procedural requirements for As-Built Documents, including without limitation, the following:

1. As-Built Drawings
2. As-Built Specifications
3. As-Built Product Data
4. As-Built Sample Submittal
5. Miscellaneous As-Built Submittals
6. Recording

B. As-Built Documents required include the following:

1. Marked-up copies of Drawings.
2. Marked-up copies of Shop Drawings.
3. Newly prepared drawings.
4. Marked-up copies of Specifications, Addenda, and Change Orders.
5. Marked-up Product Data submittals.
6. Samples.
7. Field records for variable and concealed conditions.
8. Record information on Work that is recorded only schematically.
9. Operation and Maintenance Data submittals.
10. Miscellaneous submittals.

C. Maintenance of Documents and Samples: Store As-Built Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use As-Built Documents for construction purposes. Maintain As-Built Documents in good order, legible condition, and in a clean, dry, secure, fire-safe location. Make As-Built Documents and Samples available at all times for the University's Representative's inspections.

1. Maintain 1 set of all As-Built Documents at the Project site for the entire duration of construction.
2. Clearly label each document or item "AS-BUILT DRAWING," "AS-BUILT SAMPLE," "AS-BUILT SPECIFICATION," or similarly as appropriate and applicable.

D. Do not conceal Work requiring verification for As-Built Documents until such information has been verified and recorded.

1.2. AS-BUILT DRAWINGS

A. Markup Procedure: During construction, maintain a clean, undamaged set of blue- or black-line white prints of Contract Drawings and Shop Drawings for As-Built Document purposes.

1. Mark these Drawings to show the actual installation where the installation varies from the installation shown originally. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later. Items required to be marked include, but are not limited to, the following:

   a. Dimensional changes to the Drawings.
   b. Revisions to details shown on the Drawings.
   c. Depths of foundations below the first floor. Indicate foundation elevations relative to first floor elevation.
   d. Horizontal locations and vertical depths of underground utilities and appurtenances, including both site utilities and those under buildings and structures, referenced to permanent surface improvements.
   e. Revisions to routing of piping and conduits.
   f. Revisions to electrical circuitry.
   g. Changes made by change order or field order.
   h. Changes made following the University Representative's written orders and pertinent graphic and written responses to RFI’s.
   i. Details not on original Contract Drawings.

2. Mark As-Built prints of Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. Where Shop Drawings are marked, show cross-reference on Contract Drawings location.

3. Mark As-Built sets with red erasable colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.

4. Mark important additional information that was either shown schematically or omitted from original Drawings. Mark new information that is important to the University but was not shown on Contract Drawings or Shop Drawings.

5. Note field order numbers, alternate numbers, change order numbers, RFI numbers, ASI numbers, and similar identification.

6. Identify and date each drawing; include the printed designation "AS-BUILT DRAWING" in a prominent location on each drawing

B. Responsibility for Markup: The individual or entity who obtained As-Built data, whether the individual or entity is the installer, subcontractor, or similar entity, shall prepare the markup on As-Built drawings.

1. Accurately information in an understandable drawing technique.

2. Record data as soon as possible after obtaining it, but within 24 hours maximum. Record and check the markup prior to enclosing concealed installations.

3. At time of Substantial Completion, submit As-Built drawings to the University's Representative for the University's records. Organize into sets and bind and label sets for the University's continued use. Bind each set with durable-paper cover sheets. Include appropriate identification, including titles, dates, and other information on the cover sheets.

C. Newly Prepared As-Built Drawings: Prepare new drawings instead of following procedures specified for preparing As-Built drawings where new drawings are required, and the University's

Representative determines that neither original Contract Drawings nor Shop Drawings are suitable to show the actual installation.

D. Consult with the University's Representative for the proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. When completed and accepted, integrate newly prepared Drawings with procedures specified for organizing, copying, binding and submittal of As-Built drawings.

1.3. AS-BUILT SPECIFICATIONS

A. During the construction period, maintain 3 copies of the Specifications, including addenda and modifications issued, for As-Built Document purposes.

1. Mark the Specifications to indicate the actual installation where the installation varies from that indicated in Specifications and modifications issued. Note related project record drawing information, where applicable. Give particular attention to substitutions, selection of product options, and information on concealed installations that would be difficult to identify or measure and record later.

a. In each Specification Section where products, materials, or units of equipment are specified or scheduled, mark the copy with the proprietary name and model number of the product furnished.

b. Record the name of the manufacturer, supplier, installer, and other information necessary to provide a record of selections made and to document coordination with As-Built Product Data submittals and maintenance manuals.

c. Note related As-Built Product Data, where applicable. For each principal product specified, indicate whether As-Built Product Data has been submitted in maintenance manual instead of submitted as As-Built Product Data.

d. Use pen and black ink so marks will reproduce clearly.

2. Upon completion of markup, submit As-Built Specifications to the University's Representative for the University's records.

1.4. AS-BUILT PRODUCT DATA

A. During the construction period, maintain one copy of each Product Data submittal for As-Built Document purposes.

1. Mark Product Data to indicate the actual product installation where the installation varies substantially from that indicated in Product Data submitted. Include significant changes in the product delivered to the site and changes in manufacturer's instructions and recommendations for installation.

2. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

3. Note related change orders and markup of As-Built Drawings, where applicable.

4. Upon completion of markup, submit a complete set of As-Built Product Data to the University's Representative for the University's records.

5. Where As-Built Product Data is required as part of maintenance manuals, submit marked-up Product Data as an insert in the manual instead of submittal as As-Built Product Data.

1.5. AS-BUILT SAMPLE SUBMITTAL

A. Immediately prior to date of Substantial Completion meet with the University's Representative and the University's personnel at the site to determine which of the Samples maintained during the construction period shall be transmitted to the University for record purposes. Comply with the University Representative's instructions for packaging, identification marking, and delivery to the University's Sample storage space. Dispose of other Samples in a manner specified for disposing surplus and waste materials.

1.6. MISCELLANEOUS AS-BUILT SUBMITTALS

A. Refer to other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Immediately prior to Substantial Completion, complete miscellaneous As-Built records and place in good order, properly identified and bound or filed, ready for use and reference. Submit to the University's Representative for the University's records.

1. Categories of requirements resulting in miscellaneous As-Built Documents include, but are not limited to, the following:

a. Field records on excavations and foundations.
b. Field records on underground construction and similar work.
c. Survey showing locations and elevations of underground lines.
d. Invert elevations of drainage piping.
e. Surveys establishing building lines and levels.
f. Authorized measurements utilizing unit prices or allowances.
g. Records of plant treatment.
h. Ambient and substrate condition tests.
i. Certifications received in lieu of labels on bulk products.
j. Batch mixing and bulk delivery records.
k. Testing and qualification of tradesmen.
l. Documented qualification of installation firms.
m. Load and performance testing.
n. Inspections and certifications by governing authorities.
o. Leakage and water-penetration tests.
p. Final inspection and correction procedures.
q. Field test reports.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

3.1 RECORDING

A. Post changes and modifications to the As-Built Documents as they occur. Do not wait until the end of the Project. The University's Representative and IOR will periodically review As-Built Documents to determine compliance with this requirement.

B. Current updated As-Built Documents shall be made available to the University's Representative and IOR for review at the time of submitting applications for payment.

C. Per the General Conditions, the University has the right to withhold payment until As-Built Documents are completed and current to date as of the latest application for payment

END OF SECTION

UC RIVERSIDE | Planning, Design & Construction

SECTION 01 8113
SUSTAINABLE DESIGN REQUIREMENTS

PART 1 – GENERAL

1.1. SUMMARY

A. This Section includes: Requirements and procedures for compliance with certain U.S. Green Building Council's (USGBC) LEED (Leadership in Energy and Environment Design) New Construction (NC) Version 3 (v3) prerequisites and credits needed for the Project to obtain at minimum LEED Silver certification with the goal being LEED Gold including:

1. Prerequisites and credits which the Owner intends to achieve.

2. Requirements for LEED documentation and submittals.

3. A copy of the LEED Project Checklist, attached at the end of this Section for information only.

B. Definitions:

1. Agrifiber Product: Products consisting of fibrous material derived from the agricultural industry and typically characterized by rapidly renewable characteristics. Such products may consist of wheat straw, sugar cane, and other agricultural crops.

2. Chain-of-Custody Certificates: Certificates signed by manufacturers certifying that wood used to make products was obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2, "Principles and Criteria for Forest Stewardship." Certificates shall include evidence that manufacturer is certified for chain of custody by an FSC-accredited certification body.

3. Chain of Custody: A tracking procedure to document the status of a product from the point of harvest, extraction, or recovery to the point of ultimate end use.

4. Chemical Waste: Includes paints, adhesives, sealants, coatings, petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, organic chemicals, and inorganic wastes.

5. Chlorofluorocarbons (CFCs): Any of various halocarbon compounds consisting of carbon, hydrogen, chlorine, and fluorine, once used widely as aerosol propellants and refrigerants. Chlorofluorocarbons have been identified to cause depletion of the atmospheric ozone layer.

6. Construction and Demolition Waste: Includes solid wastes, such as building materials, packaging, rubbish, debris, and rubble resulting from construction, remodeling, repair and demolition operations.

7. Construction IAQ Management Plan: A document that outlines measures to minimize contamination in a building during construction and to flush the building of contaminants prior to occupancy.

8. Cost Basis: A basis of calculation wherein the input values are in terms of monetary cost (US Dollar).

9. Hazardous Materials: Includes pesticides, biocides, carcinogens, and "wet products" as listed by recognized authorities, such as the Environmental Protection Agency (EPA), International Agency for Research on Cancer (IARC), the State of California, and any special local requirements.

10. Heat Island Effect: A condition wherein elevated temperatures are experiences in urban landscapes as a result of solar energy retention within constructed bodies. Principal bodies that contribute to the heat island effect include streets, sidewalks, parking lots, and buildings.

11. Interior Final Finishes: Materials and products that will be exposed at interior occupied spaces, including flooring, wall covering finish carpentry, and ceilings.

12. LEED v3 NC: Leadership in Energy & Environmental Design, version 3 for New Construction. The LEED Green Building Rating System represents the US Green Building Council's effort to provide a national standard for what constitutes a green building.

13. Point of Extraction, Harvest, or Recovery: The geographic location where the material was extracted, harvested, or recovered.

14. Point of Final Assembly: The geographic location where individual components are assembled into the product that is furnished and installed by the tradesmen.

15. Post-Consumer Material: Recycled material from consumer waste.

16. Post-Consumer Recycled Content: The percentage of material in a product (by weight) that was consumer waste. The recycled material was generated by household, commercial, industrial, or institutional end-users and can no longer be used for its intended purpose. It includes returns of materials collected though recycling programs, discarded products (e.g., furniture, cabinetry, decking), and landscaping waste (e.g., leaves, grass clippings, tree trimmings). (ISO 14021)

17. Pre-Consumer (Post-Industrial) Material: Material diverted from the waste stream during the manufacturing process (can also be considered post-industrial). Excluded is reutilization of materials such as rework, re-grind or scrape generated in a process and capable of being reclaimed within the same process that generated it.

18. Rapidly Renewable Materials: Materials made from plants that are typically harvested within a 10-year or shorter cycle. Rapidly renewable materials include products made from bamboo, cotton, flax, jute, straw, sunflower seed hulls, vegetable oils or wool.

19. Recycled Content: The percentage by weight of constituents that have been recovered or otherwise diverted from the solid waste stream, either during the manufacturing process (pre- consumer), or after consumer use (post-consumer).

    a. Spills and scraps from the original manufacturing process that are combined with other constituents after a minimal amount of reprocessing for use in further production of the same product are not recycled materials.

    b. Discarded materials from one manufacturing process that are used as constituents in another manufacturing process are pre-consumer recycled materials.

20. Regionally Extracted, Harvested, or Recovered Materials: Materials that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site. Manufacturing refers to the final assembly of components into the building product that is installed at the Project site.

21. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

22. Volatile Organic Compounds (VOCs): Carbon compounds emitted by materials that participate in atmospheric photochemical reactions. VOC's are common in building products and are emitted over time through outgassing. Sources of VOC's may include solvents in paints and other coatings; wood preservatives; strippers and household cleaners; adhesives in particleboard, fiberboard, and some plywoods; and foam insulation. When released, VOC scan contribute to the formation of smog and can cause respiratory tract problems, headaches, eye irritations, nausea, and damage to the liver, kidneys, and central nervous system, and possibly cancer.

23. Waste Management Plan: A Project-related plan for the collection, transportation, and disposal of the waste generated at the construction site. The purpose of the plan is to ultimately reduce the amount of material being landfilled.

24. Weight Basis: A basis of calculation wherein the input values are in terms of weight (US Pound).

1.2. GENERAL REQUIREMENTS

A. Work must be completed in accordance with the requirements of the U.S. Green Building Council's LEED Rating System for achieving the credits shown in the attached Checklist. Changes to the LEED Checklist shall be approved by the LEED Project Administrator.

B. LEED credits needed to obtain LEED Gold certification are dependent on material selections and may not be specifically identified as LEED requirements. Compliance with requirements needed to obtain LEED prerequisites and credits will be used as one criterion to evaluate substitution requests.

C. Additional LEED prerequisites and credits needed to obtain the specified LEED certification are dependent on the design and other aspects of the Project that are not part of the Work under this Contract.

D. LEED rating system applicable to the work shall be USGBC's LEED Rating System for New Construction and Major Renovations (LEED-NC), Version 3.

E. LEED Registration: The LEED Project Administrator has registered the Project with the internet based LEED Tracking System "LEED-Online".

F. The General Contractor shall provide a LEED Representative to provide and coordinate Contractor related services for LEED. The General Contractor's LEED Representative shall be a LEED Accredited Professional.

G. Contractor's LEED® Representative shall be an individual responsible for implementation, coordination, and documentation of LEED® Credit Requirements specified herein. General Contractor's LEED® Representative shall attend LEED® Certification meetings and put together a LEED Action Plan critical showing how LEED prerequisites and credits requirements will be met. General Contractor's LEED® Representative shall be present on site at all times necessary when work is in progress to insure that the LEED Action Plan is being met.

H. Other Sections in Divisions 02 through 33: Specific information related to sustainable design and in reference to LEED credits.

1.3. REFERENCE STANDARDS

A. American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. (ASHRAE).

B. Carpet and Rug Institute (CRI): Indoor Air Quality Green Label Plus Testing Program.

C. CARB - California Air Resources Board Suggested Control Measures for Architectural Coatings

D. Environmental Protection Agency (EPA): Energy Star - Program Requirements for Roof Products

E. Energy Policy Act (EPACT) of 2005.

F. Forest Stewardship Council (FSC) "Principles and Criteria." G. Green Seal (GS) Environmental Standards.

G. LEED Reference Guide for New Construction and Major Renovations, Version 3 (LEED-Cv3).

H. South Coast Air Quality Management District (SCAQMD).

I. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA).

1.4. LEED PROJECT GOALS

A. This project shall incorporate campus-wide credits that were to be approved by the USGBC in March of 2012. The General Contractor shall be required to provide full credit documentation and back-up for each Credit, as required, as part of their Construction Submittal. The Contractor shall refer to the Project Checklist for LEED credits having bearing on the Contractor's scope of work. Any credit documentation required from a listed subcontractor who is unable to provide the required documentation shall then become the General Contractor's responsibility as part of their Construction Submittal.

B. Contractor shall appoint a LEED Representative to be present on-site to coordinate and insure LEED project goals/credits are achieved. The Contractor's LEED Representative will coordinate with the University's LEED Representative.

1. The University's Representative will designate trades where the Contractor shall designate a LEED® Representative. Contractor's LEED® Representative shall be responsible for implementation, coordination, and documentation of relevant LEED® Credit Requirements specified herein. Contractor's LEED® Representative shall provide the General Contractor with all necessary documentation to insure LEED® prerequisites and credits requirements are met.

2. General Contractor's LEED® Representative shall coordinate of all Contractors and shall insure Contractors not designated by the University to have a LEED® Representative, meet LEED® prerequisites and credits requirements, and provide sufficient documentation for LEED® compliance.

C. Contractor shall refer to the LEED-NC v3 "Reference Guide" for more detailed information and exact language of the requirements and the exact nature of the submittals, referred to as "credit templates and supporting documentation." The University's LEED Representative shall provide further details as needed.

D. Contractor shall maintain a copy of the LEED-NC v3 "Reference Guide" on site. Additional information on LEED® and how to purchase copies of the LEED®-NC v3.0 reference guide and how to use LEED®-Letter Templates can be found at www.usgbcv.org and https://leedonline.usgbc.org.

E. The following table summarizes the credits that need full documentation from the Contractor as noted in this LEED specification.

LEED® **Certification**	
LEED® **Reference**	**Point Description**
SSp1: PTC	Construction Activity Pollution Prevention
MR 4.1 – 4.2: PTC	Recycled Content Material
MR 5.1 – 5.2: PTC	Local/Regional Materials
MR 6.0: PTC	Rapidly Renewable Materials
MR 7.0: PTC	Certified Wood
EQ 3.1 – 3.2: PTC	Construction IAQ Management Plan
EQ 4.1 – 4.4: PTC	Low-Emitting Materials

1.5. SUBMITTALS

A. Sustainable Design and LEED submittals are in addition to other submittals. If submittal item is identical to that submitted to comply with other requirements, submit duplicate electronic copies as a separate submittal to verify compliance. Any discrepancies shall be referred to the Universities Representative for clarification.

B. LEED Documentation Submittals shall be prepared and submitted using the LEED-Online credit website.

1. The Contractor is responsible to obtain project access to LEED-Online and join the project using the project's 15 digit project access code.

a. Contractor shall assign one representative to coordinate the LEED-Online PDF credit templates and submittal documents assigned to the Contractor.

b. Access to the credit templates requires installation of the current version of Adobe software as required by LEED-Online.

c. Additional instructions on how to access the project can be provided by the LEED Project LEED Administrator.

2. Once the Contractor has joined the project through LEED-Online, the LEED Project Administrator will assign the LEED credits that the Contractor is responsible for completing.

a. Each credit template is an editable Adobe PDF document.

b. Each credit template may be completed or updated at any time prior to the LEED Construction Submittal.

c. After completion of documentation for each credit, use the "Save Template to LEED- Online" button at the lower right hand corner of the last page of the template to save the data.

d. Additional submittal documentation and back-up requirements should be uploaded to the LEED-Online website following the instructions for each credit.

3. LEED-Online submittals require calculations for items such as recycled content materials to be inserted into an online form called a template. Costs and materials need to be broken down and the calculations carried out on the templates.

4. The Contractor is responsible for providing the information, downloading and completing the templates and uploading them on the LEED-Online website. Certain types of backup information such as the material safety data sheets (MSDS) for low-emitting materials, need to be submitted by the Contractor. The LEED-NC v3 “Reference Guide” provides detailed documentation requirements.

    a. All Sub-Contractors shall provide the Contractor with the necessary cutsheets and MSDS data sheets for the materials used on site.

5. The Contractor is responsible for providing resubmission of any requested information or documentation on the LEED-Online website in response to USGBC review comments to LEED credits previously submitted.

C. LEED Materials Cost Analysis Sheet: Provide updates and maintain materials’ cost data for recycled content, regional content and certified wood excluding mechanical, electrical, and plumbing components, and specialty items such as elevators and equipment, concurrent with each Application for Payment. The Project Administrator shall provide a template for use by the Contractor.

1. Provide actual material costs which can include shipping costs. Material costs should account for all taxes and transportation costs incurred by the contractor but, exclude labor and equipment costs once the material has been delivered to the site. For each material supplied for Divisions 3-11specific material cost data for individual components and materials (not including labor) will be required to be provided as part of some LEED® pre-requisite and credit requirements submittals.

2. For assemblies formulated from multiple materials (e.g., a composite wood panel) or a product made up of subcomponents (e.g., a window system), determine the percentage of applicable material content (percentage of weight for recycled content and for FSC wood as a percentage of total weight, volume or cost).

3. Consistent numbers must be applied to various LEED® credits submittals requiring similar material cost data.

D. LEED Data Sheet: Submit LEED Data Sheets with each submittal and with each change order. Sample form is attached at the end of this Section.

E. LEED Action Plans: Provide the following plans within 14 days of date established in the Notice to Proceed:

1. Credit SS Prerequisite 1: Erosion and sedimentation control plan. See Sections 01 1400, 01 3540, and 31 1000 for requirements.

2. Prerequisite EA 1.0: Plan for fundamental commissioning complying with the requirements in Section 01 9113.

3. Credit MR 2.1 and 2.2: Construction and Demolition Debris Recycling (Waste Management) Plan in order to meet 95% construction waste diversion. See Section 01 7419 Construction Waste Management for requirements.

4. Credit MR 4.1: List of proposed materials with recycled content.

    a. Indicate cost, post-consumer recycled content, and pre-consumer recycled content for each product having recycled content. Use materials with recycled content such that the sum of postconsumer recycled content plus ½ of the preconsumer content constitutes at least 10% based on cost of the total value of the materials in the project.

b. Indicate cost of all products and materials used regardless of recycled content for the purpose of comparison so as to ultimately derive a cost-based percentage of recycled content.

5. Credit MR 5.1: List of proposed regional materials.

a. Identify each regionally extracted, processed, and manufactured material, its source, and cost.

6. Credit MR 7.0: List of proposed certified wood products.

a. Include statement indicating costs for each product containing certified wood. In the case of manufactured products containing non-wood materials, only the new wood portion can contribute to this credit.

b. Include statement indicating total cost for wood-based materials used for Project, including non-rented temporary construction.

7. Credit IEQ 3.1: Provide an Indoor Air Quality Plan for activities during construction following the SMACNA 2007 guidelines.

8. Credit IEQ 3.2: Create a plan and schedule for building flush-outs to be performed in accordance with credit requirements after all finishes have been installed and the building has been completely cleaned before occupancy.

9. Credit EQ 4.1, 4.2, 4.3 & 4.4: Low Emitting Materials

F. LEED Progress Reports: Concurrent with each Application for Payment, submit reports comparing actual construction and purchasing activities with LEED action plans for the following:

1. Prerequisite SSp1 Construction Activity Pollution Prevention.

2. Credit MR 2.1 and 2.2: Waste reduction progress reports.

3. Credit MR 4.1 and 4.2: Recycled content.

4. Credit MR 5.1 and 5.2: Regional material.

5. Credit MR 7.0: Certified wood.

6. Credit IEQ 3.1 and 3.2: Construction IAQ Management Plan: During Construction and Before Occupancy

G. Within 21 calendar days of Project Substantial Completion, General Contractor shall provide to University's Representative an electronic copy of all LEED required documentation demonstrating compliance with LEED Certification requirements, including but not limited to, documentation provided during the submittal process. This shall be submitted through the Universities LEED Management Software.

1.6. SUBSTITUTIONS

A. Requests for substitutions shall comply with the provisions of Section 01 2500 Product Options and Substitutions and the following additional requirements specified in this Article for LEED certification related materials and requirements and environmental products and procedures identified in this Section. Submit a description of the differences of the proposed substitution from specified product related to LEED requirements. Include description of environmental advantages of proposed substitution over specified product.

1. No substitutions shall be submitted without the full projected LEED® impact documented.

2. Where LEED® material emission limits are specified, the University shall reject proposed substitutions where:

    a. Data for VOC's is not provided.

    b. Emissions of VOC's exceed the material's specified VOC limit.

    c. There is negative impact on overall system efficiency.

    d. The total number of LEED® credits will be compromised.

    e. The intent of the LEED® credits are compromised.

B. The Contractor is responsible for re-submittal of calculations and documentation of products or material substitutions that affect LEED prerequisites and credits referenced in this Section, and which apply to any credits previously submitted as part of the LEED Design Application Submittal, and credits included in the LEED Construction Submittal Products that do not meet these requirements shall not be submitted for substitution.

1.7. CREDIT REQUIREMENTS

A. The following is a list of Credit Requirements for which the General Contractor shall contribute LEED® certification documentation demonstrating compliance with the corresponding LEED® Credit Requirements. The LEED BD&C v2009 Reference Guide shall be used along with following requirements.

B. All Contractors shall provide the General Contractor with their trade's relevant documentation contributing to LEED® certification.

C. The following Credit Requirements for LEED® compliance are in addition to those requirements specified elsewhere in the Specifications.

D. Construction Activity Pollution Prevention (SSp1):

1. Contractor shall comply with the Universities Erosion Control Plan.

2. Keep an inspection report or photos to demonstrate compliance.

E. Building Systems Commissioning: Contractor shall comply with the following requirements of LEED® Energy and Atmosphere Prerequisite 1 – Fundamental Building Systems Commissioning.

1. Refer to Section 01 9113 General Commissioning Requirements.

F. Construction Waste Management (MRc2): Contractor shall divert at minimum 95% of construction waste from the landfill by weight.

G. Recycled Content (MRc4): Contractor shall use materials with recycled-content so that the sum of post-consumer recycled content plus one-half of the post-industrial content constitutes at least 10 percent of the total value of the materials in the project. (Mechanical and electrical components shall not be included in this calculation). Documentation includes:

1. Cost of each material or product, excluding cost of labor and equipment for installation.

2. Manufacturer's product data, product literature, or a letter from the manufacturer verifying the percentage of post-consumer and pre-consumer recycled content (by weight) of each material or product.

3. An electronic spreadsheet that tabulates the Project's total materials cost and combined recycled content value (defined as the sum of the post-consumer recycled content value plus one-half of the pre-consumer recycled content value) expressed as a percentage of total materials cost.

H. Local Regional Material (MRc5): Contractor shall provide a minimum of 10 percent (cost basis) of project materials that are extracted, processed, and manufactured within a radius of 500 miles of the project. Documentation Includes:

1. Cost of each material or product, excluding cost of labor and equipment for installation.

2. Location of product manufacture and distance from point of manufacture to the Project Site.

3. Location of point of extraction, harvest, or recovery for each raw material in each product and distance from the point of extraction, harvest, or recovery to the Project Site.

4. Manufacturer's product data, product literature, or a letter from the manufacturer verifying the location and distance from the Project Site to the point of manufacture for each regional material.

5. Manufacturer's product data, product literature, or a letter from the manufacturer verifying the location and distance from the Project Site to the point of extraction, harvest, or recovery for each regional material or product.

6. An electronic spreadsheet that tabulates the Project's total materials cost and regional materials value, expressed as a percentage of total materials cost.

I. Certified Wood (MRc6): Contractor shall provide a minimum of 50% (cost basis) of all new non-salvaged wood-based materials that are certified in accordance with the Forest Stewardship Council (FSC) guidelines for wood building components.

1. Track certified wood purchases and retain associated COC (Chain of Custody) documentation. Collect copies of vendor invoices for each certified wood product. Maintain a list that identifies the percentage of certified wood in each purchase. In the case of manufactured products that combine wood and non-wood materials, only the new wood portion can be applied toward the credit.

2. You will need a letter, cut sheet, or statement from the vendor indicating the type of FSC certification.

   a. FSC Pure: valued at 100% of product cost.

   b. FSC Mixed Credit: valued at 100% of product cost.

   c. FSC Mixed (XX)%: A percentage of FSC content is indicated, and you can claim that percentage of the product's cost.

d. FSC Recycled and FSC Recycled Credit: do not count toward this credit at all and can be left out of the baseline wood budget. FSC Recycled can count towards MRc4 Recycled Content.

3. If FSC wood is part of an assembly, **Request that manufacturers provide assembly informatio**n broken down by weight, volume, or cost.

a. If in an assembly, only the portion or FSC certified wood can count towards this credit.

J. Construction Indoor Air Quality Management Plan During Construction (IEQc3.1): Contractor shall develop and implement an Indoor Air Quality (IAQ) Management Plan for the construction and preoccupancy phases of Project buildings.

1. General Contractor shall submit to University's Representative an electric copy of a Construction IAQ Management Plan within 14 calendar days of Notice to Proceed. Plan shall include, but not be limited to, the following:

a. Provision to meet the five requirements of SMACNA IAQ Guideline for Occupied Buildings Under Construction, 2nd Edition 2007, ANSI/SMACNA 008-2008.

b. Provision to protect stored on-site or installed absorptive materials from moisture damage. This shall include a description of:

(1) Storage of materials on elevated platforms, under cover, and in a dry location.
(2) Secure coverage of the tops and sides of material with waterproof sheeting if materials are not stored in an enclosed location.

c. Provision to protect HVAC equipment during construction. This shall include a description and commitment to:

(1) Shut down the return side of the HVAC system during heavy construction or demolition and cover return air openings air tight to prevent introduction of contaminants.
(2) Provide temporary filters that shall be replaced with new media prior to occupancy if the HVAC system is operated during heavy construction.

d. Provision to take Construction Photographs demonstrating conformance with the approved Construction Indoor Air Quality Management Plan measures to insure protection of materials and air-handling equipment from moisture while stored on site.

(1) A minimum of 6 Construction Photographs shall be taken on three different occasions during Construction for a total minimum of 18. Construction photographs shall be time stamped and shall be taken during those periods' absorptive materials and HVAC equipment is stored on site. Construction Photographs shall include identification of the SMACNA approach featured by each photograph.
(2) Contractor shall submit Construction Photographs to the University's Representative for approval.
(3) If permanently installed air handlers are used during construction, filtration media with a minimum efficiency reporting value (MERV) of 8 must be used at each return air grille, as determined by ASHRAE Standard 52.2-1999 (with errata but without addenda). Replace all filtration media immediately prior to occupancy.

Project teams wishing to use ASHRAE approved addenda for the purposes of this credit may do so at their discretion. Addenda must be applied consistently across all LEED credits.

K. Construction Indoor Air Quality Management Plan Before Occupancy (IEQc3.2): After construction ends, prior to occupancy and with all interior finishes installed, install new filtration media and perform a building flush-out by supplying a total air volume of 14,000 cubic feet of outdoor air per square foot of floor area while maintaining an internal temperature of at least 60 degrees F and a relative humidity no higher than 60%.

L. If occupancy is desired prior to completion of the flush-out, the space may be occupied following delivery of a minimum of 3,5000 cubic feet of outdoor air per square foot of floor area. Once the space is occupied, it must be ventilated at a rate of 0.30 cubic feet per minute (cfm) per square foot of outside air or the design minimum outside air rate determined in IEQ Prerequisite 1: Minimum Indoor Air Quality Performance, whichever is greater. During each day of the flush-out period, ventilation must begin a minimum of 3 hours prior to occupancy and continue during occupancy. These conditions must be maintained until a total of 14,000 cubic feet per square foot of outside air has been delivered to the space. Provide a written narrative describing the building flush out procedures implemented. Provide Flush0out Start Date and End Date for each building.

OR

Conduct baseline IAQ testing after construction ends and prior to occupancy using testing protocols consistent with the EPA Compendium of Methods for Determination of Air Pollutants in Indoor Air "or the ISO method listed in the table below. Testing must be done in accordance with one standard; project teams may not mix requirements from the EPA Compendium of Methods with ISO.

M. Low-Emitting Materials:

1. Credit EQc4.1: Adhesives, Sealants and Sealant Primers must comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168. Volatile organic compound (VOC) limits listed in the table below correspond to an effective date of July 1, 2005 and rule amendment date of January 7, 2005.

a. Wood Glues: 30 g/L.
b. Metal to Metal Adhesives: 30 g/L.
c. Adhesives for Porous Materials (Except Wood): 50 g/L.
d. Subfloor Adhesives: 50 g/L.
e. Plastic Foam Adhesives: 50 g/L.
f. Carpet Adhesives: 50 g/L.
g. Carpet Pad Adhesives: 50 g/L.
h. VCT and Asphalt Tile Adhesives: 50 g/L.
i. Cove Base Adhesives: 50 g/L.
j. Gypsum Board and Panel Adhesives: 50 g/L.
k. Rubber Floor Adhesives: 60 g/L.
l. Ceramic Tile Adhesives: 65 g/L.
m. Multipurpose Construction Adhesives: 70 g/L.
n. Fiberglass Adhesives: 80 g/L.
o. Structural Glazing Adhesives: 100 g/L.
p. Wood Flooring Adhesive: 100 g/L.

q. Contact Adhesive: 80 g/L.
r. Special Purpose Contact Adhesive: 250 g/L.
s. Structural Wood Member Adhesive: 140 g/L.
t. Sheet Applied Rubber Lining Operations: 850g/L.
u. Plastic Cement Welding Compounds: 50 g/L.
v. ABS Welding Compounds: 4325 g/L.

w. CPVC Welding Compounds: 490 g/L.
x. PVC Welding Compounds: 510 g/L.
y. Adhesive Primer for Plastic: 550 g/L.
z. Architectural Sealants: 250 g/L.
aa. Non-membrane Roof Sealants: 300 g/L.
bb. Roadway Sealants: 250 g/L.
cc. Single-ply Roof Membrane Sealants: 450 g/L.
dd. Other Sealants: 420 g/L.
ee. Sealant Primers for Nonporous Substrates: 250 g/L.
ff. Sealant Primers for Porous Substrates: 775 g/L.
gg. Other Sealants Primers: 750 g/L.

2. Credit EQ 4.2: Paints and coatings used on the interior of the building (i.e., inside of the weatherproofing system and applied on-site) must comply with the following criteria as applicable to the project scope.

a. Architectural paints and coatings applied to interior walls and ceilings must not exceed the volatile organic compound (VOC) content limits established in Green Seal Standard GS-11, Paints, 1st Edition, May 20, 1993.

b. Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates must not exceed the VOC content limit of 250 g/L established in Green Seal Standard GC-03, Anti- Corrosive Paints, 2nd Edition, January 7, 1997.

c. Clear wood finishes, floor coatings, stains, primers, sealers and shellacs applied to interior elements must not exceed the VOC content limits established in South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004.

d. Flat Paints and Coatings: VOC not more than 250 g/L.

e. Non-Flat Paints and Coatings: VOC not more than 250 g/L.

f. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).

g. Restricted Components: Paints and coatings shall not contain any of the following:

(1) Acrolein.
(2) Acrylonitrile.
(3) Antimony.
(4) Benzene.
(5) Butyl benzyl phthalate.
(6) Cadmium.
(7) Di (2-ethylhexyl) phthalate.
(8) Di-n-butyl phthalate.
(9) Di-n-octyl phthalate.
(10) 1,2-dichlorobenzene.
(11) Diethyl phthalate.
(12) Dimethyl phthalate.
(13) Ethylbenzene.
(14) Formaldehyde.
(15) Hexavalent chromium.
(16) Isophorone.

(17) Lead.
(18) Mercury.
(19) Methyl ethyl ketone.
(20) Methyl isobutyl ketone.
(21) Methylene chloride.
(22) Naphthalene.
(23) Toluene (methylbenzene).
(24) 1,1,1-trichloroethane.
(25) Vinyl chloride.

Product Type	Referenced Standard	VOC Limit (g/Lminus water)
Interior Flat Coating or Primer	Green Seal GS-11, 1993	50
Interior Non-Flat Coating or Primer	Green Seal GS-11, 1993	150
Anti-Corrosive/ Anti-Rust Paint	Green Seal GC-03, 2nd Edition, 1997	250
Clear Wood Finish: Lacquer	SCAQMD Rule 1113, 2004	550
Clear Wood Finish: Sanding Sealer	SCAQMD Rule 1113, 2004	350
Clear Wood Finish: Varnish	SCAQMD Rule 1113, 2004	350
Clear Brushing Lacquer	SCAQMD Rule 1113, 2004	680
Floor Coatings	SCAQMD Rule 1113, 2004	100
Sealers and Under coaters	SCAQMD Rule 1113, 2004	200
Shellac: Clear	SCAQMD Rule 1113, 2004	730
Shellac: Pigmented	SCAQMD Rule 1113, 2004	550
Stain	SCAQMD Rule 1113, 2004	250
Concrete Curing Compounds	SCAQMD Rule 1113, 2004	350
Japans/ Faux Finishing Coatings	SCAQMD Rule 1113, 2004	350
Magnesite Cement Coatings	SCAQMD Rule 1113, 2004	450
Pigmented Lacquer	SCAQMD Rule 1113, 2004	550
Waterproofing Sealers	SCAQMD Rule 1113, 2004	250
Waterproofing Concrete/ Masonry Sealers	SCAQMD Rule 1113, 2004	400
Wood Preservatives	SCAQMD Rule 1113, 2004	350
Low-Solids Coatings	SCAQMD Rule 1113, 2004	120*
*Note: VOC levels for Low-Solids Coatings are measured in grams of VOC per liter of material.		

3. Credit EQ 4.3: All carpet installed in the building interior must meet the testing and product requirements of the Carpet and Rug Institute Green Label Plus program. All carpet cushion installed in the building interior must meet the requirements of the Carpet and Rug Institute Green Label1 program. All hard surface flooring must be certified as compliant with the FloorScore 2 standard (current as of the date of this rating system, or more stringent version) by an independent third-party. Flooring products covered by FloorScore include vinyl, linoleum, laminate flooring, wood flooring, ceramic flooring, rubber flooring and wall base.

IEQc4.3: LOW-EMITTING MATERIALS—FLOORING SYSTEMS REQUIREMENTS	
Option 1	
Carpet	Meet testing and product requirements of the Carpet and Rug Institute's Green Label Plus program.
Carpet cushion	Meet requirements of the Carpet and Rug Institute Green Label program.
Carpet adhesives	Meet VOC limit of 50 g/L (Same as for EQc4.1).
Hard surface flooring (see exceptions below)	Meet the testing and product requirements of FloorScore certification.
Floor finishes	Meet the requirements of South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004 (Same as for IEQc4.2).
Tile setting adhesives and grout	Meet the South Coast Air Quality Management District (SCAQMD) Rule 1168. VOC limits correspond to an effective date of July 1, 2005 and rule amendment date of January 7, 2005. (Same as for IEQc4.1).
Tile, masonry, terrazzo, cut stone, and solid-wood flooring without coatings or sealants	Qualifies for credit without testing.
Option 2	
All flooring elements installed in the building interior	Meet the testing and product requirements of the California Department of Health Services Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.
Tile, masonry, terrazzo, cut stone, and solid-wood flooring without coatings or sealants	Qualifies for credit without testing.

4. Credit EQ 4.4: Composite wood and agrifiber products used on the interior of the building (i.e., inside the weatherproofing system) must contain no added urea-formaldehyde resins. Laminating adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies must not contain added urea-formaldehyde resins.

IEQc4.4: LOW-EMITTING MATERIALS—COMPOSITE WOOD AND AGRIFIBER PRODUCTS REQUIREMENTS	
Composite wood and agrifiber products: • Particleboard • Medium density fiberboard (MDF) • Plywood • Wheatboard • Strawboard • Panel substrates • Door cores • Plywood sections of I-beams	No added urea-formaldehyde resins
Laminating adhesives used for assemblies	No added urea-formaldehyde resins

PART 2 – PRODUCTS

2.1. LEED ACTION PLANS

A. See list of required plans.

2.2. LEED PROGRESS REPORTS

A. See list of required progress reports.

2.3. LEED CREDIT DOCUMENTATION

A. See LEED Data Sheet.

PART 3 – EXECUTION

3.1 CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT

A. Product Data:

1. MERV ratings for all air filter media used should be provided in compliance with the requirements for Credit IEQ Pr1, Credits IEQ 3.1-3.2, and Credit IEQ 5.

2. Product emissions data and material safety data sheets (MSDS) showing compliance with the requirements for the following materials and credits:

a. Adhesives and sealants used on the interior of the building (Credit IEQ 4.1).

(1) Interior adhesives and sealants shall comply with the VOC limits of SCAQMD Rule #1168.

(2) Aerosol Adhesives must comply with Green Seal Standard for Commercial Adhesives GS-36 requirements in effect on October 19, 2000.

b. Paints and coatings used on the interior of the building. Indicate VOC content in grams per liter (g/l) calculated according to 40 CFR 59, Subpart D (EPA method 24) and chemical components (Credit IEQ 4.2).

(1) Architectural paints and coatings applied to interior walls and ceilings must not exceed the volatile organic compound (VOC) content limits established in Green Seal Standard GS-11, Paints, 1st Edition, May 20, 1993.
(2) Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates must not exceed the VOC content limit of 250 g/L established in Green Seal Standard GC-03, Anti-Corrosive Paints, 2nd Edition, January 7, 1997.
(3) Clear wood finishes, floor coatings, stains, primers, sealers, and shellacs applied to interior elements must not exceed the VOC content limits established for those coating types in South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004.

c. Flooring products and materials (Credit IEQ 4.3).

(1) All Carpet and carpet cushion installed in the building must meet the testing and product requirements of the Carpet and Rug Institute Green Label Plus program.
(2) All hard surface flooring must meet the requirements of the FloorScore standards as shown with testing by an independent third-party.
(3) All flooring adhesives and finishes meeting IEQc4.1 and 4.2 requirements.

d. Composite wood materials (Credit IEQ 4.4).

(1) Composite wood and agrifiber products including laminating adhesives used on the interior of the building (i.e., inside the weatherproofing system) must contain no added urea-formaldehyde resins.

B. Construction Indoor Air Quality Management Plan. During construction Contractor shall meet or exceed the minimum requirements of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 2nd Edition 2007, ANSI/ SMACNA 008-2008 (Chapter 3). Submit a plan that addresses how SMACNA Guidelines will be met in each of the following five areas:

1. Material and equipment protection.

2. Source control and materials emissions.

3. Pathway interruption.

4. Housekeeping.

5. Material scheduling.

C. Temporary Construction Ventilation-HVAC use and protection during construction: If used during construction, HVAC systems will either run 100 percent outside air or have MERV 8 air filters in place during construction. After construction MERV 13 filters shall be put in place. Contractor shall maintain sufficient temporary ventilation of areas where materials are being used that emit VOC's, and maintain ventilation continuously during installation, and until emissions dissipate after installation. If continuous ventilation is not possible via the building's HVAC system(s) then ventilation shall be supplied via open windows and temporary fans, sufficient to provide no less than three air changes per hour. Contractor shall submit a Pre-Occupancy Indoor Air Quality Management Plan that addresses the following:

1. The period after installation shall be sufficient to dissipate odors and elevated concentrations of VOCs. Where no specific period is stated in these Specifications, a time period of 72 hours shall be used.

2. All areas shall be vented directly to outside. Areas shall not be vented to other enclosed areas.

3. Estimated start and end dates of a building flush-out supplying a total air volume of 14,000 cubic feet of outdoor air per square foot of floor area.

4. Use of MERV 13 filters prior to and after the building flush-out.

5. Use of 100% outside air for the duration of the flush-out period.

D. During dust producing activities (e.g. drywall installation and finishing) ventilation system shall be off, and openings in supply and return HVAC system shall be protected from dust infiltration. Provide temporary ventilation as required.

E. Preconditioning: Prior to installation, Contractor shall allow products which have odors and VOC emissions to off-gas in dry, well-ventilated space outside of building for 14 calendar days, in order to allow for reasonable dissipation of odors and emissions.

F. Signed LEED letters indicating proper completion of work for IEQ 3.1 and 3.2 Construction IAQ Management Plan, during construction and pre-occupancy.

G. Photographs: Document the implementation of the SMACNA Guidelines during construction with six photographs at three different occasions (total of 18 photographs). Include a brief description of the measures in each photograph, location in the building, and the date the photograph was taken.

3.2 SEQUENCING

A. Environmental Issues: Contractor shall complete all interior finish material installation no less than 14 days prior to Substantial Completion to allow for building flush out. Submit notification to General Contractor's LEED Representative when all interior finish material installation is complete, highlighting the date of completion.

3.3 FIELD QUALITY CONTROL

A. Building Flush Out: Prior to Substantial Completion, Contractor shall flush out building continuously (i.e. 24 hours per day, 7 days per week) using 100 percent outside air at standard operational set-point temperatures for at least 14 calendar days. Conduct flush-out with new MERV 13 filtration media, and after flush-out, replace with new MERV 13 filtration media, except the filters solely processing outside air. For air handlers, filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 must be used at each return air grill, as determined by ASHRAE 52.2-1999. If interruptions of more than 4 hours are required for testing and balancing purposes, extend flush out period by a minimum of 1 day.

1. When touch-up work is performed, Contractor shall provide temporary construction ventilation during installation and extend building flush out by a minimum of 4 days after touch-up installation is complete.

2. Return ventilation system to normal operation following flush-out period to minimize energy consumption.

3. Replace all outside air filtration media prior to occupancy. Filtration media shall have a MERV of 13 as determined by ASHRAE 52.2-1999.

B. IAQ Testing: If Building Flush Out is not undertaken, Contractor shall conduct a baseline indoor air quality testing procedure consistent with current EPA protocol for Environmental Requirements, Baseline IAQ and Materials.

3.4 PROTECTION

A. Protect stored on-site and installed absorptive materials from moisture damage. Where absorptive materials not intended for wet applications are exposed to moisture, immediately remove from site and dispose of properly.

B. Protect installed materials using methods that do not support growth of molds and mildews.

1. Immediately remove from site and properly dispose of materials showing signs of mold and signs of mildew, including materials with moisture stains.

2. Replace materials showing signs of mold and mildew with new, undamaged materials.

3. Ducts: Seal ducts during transportation, delivery, and construction to prevent accumulation of construction dust and construction debris inside ducts.

C. Ducts: Seal ducts during transportation, delivery, and construction to prevent accumulation of construction dust and construction debris inside ducts.

END OF SECTION

LEED CONCRETE TRACKING FORM

PROJECT NAME: ___________________________________

CONTRACTOR: ___________________________________

SPEC SECTION: ___________________________________

CONTACT NAME: ___________________________________ Tel. no: ______________ SUBMITTAL NO: ___________

A. Mix Number	B. Supplier	C. Total Materials Cost of Concrete ($)	D. Mass of recycled SCMs (lbs.)	E. Mass of total cementitious materials only (lbs.)[1]	F. SCMs as a percentage of total cementitious materials only (%) [D/E]	G. Dollar value of all cementitious materials only ($) [from concrete supplier]	H. Recycled content value per yard ($) [(F/2) x G]	I. Distances from both harvesting AND manufacturing point to project site (miles)[2]
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								

[1] This column includes Portland cement, recycled SCM's and any other cementitious ingredients that are not recycled (not total lbs. of concrete).
[2] Materials can travel more than 500 miles, provided materials always remain within 500 mile radius of project site.

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LEED CREDIT CHECKLIST

Contractor Certification:

I, ____, a duly authorized representative of ____ (Contractor), hereby certify that the material information contained herein is an accurate representation of the material qualifications to be provided by Contractor, as components of the final building construction. Furthermore, I understand that any change in such qualifications during the purchasing period will require prior written approval from the University's Representative.

SIGNATURE OF CONTRACTOR'S AUTHORIZED REPRESENTATIVE: ____ Date: ___________

P. ____ OF ____

Example:

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LEED DATA SHEET

Shall be submitted with each submittal along with cut sheets supporting the data below:

ENVIRONMENTAL MATERIALS REPORTING FORM (provide cut sheets for the data below)

LEEDuser

PROJECT NAME: ______________________ CONTRACTOR: ______________________

SPEC SECTION: ______________________

CONTACT NAME: TEL. NO: SUBMITTAL NO:

Product Name	Vendor or Manufacturer	REQUIRED for ALL products identified in Specs CSI 2004 Divisions 3–10, 31.60 Foundations, 32.10 Paving, 32.30 Site Improvements, and 32.90 Planting. *MEP excluded.*	Percentage of the product salvaged, refurbished or reused[1]	Recycled Content[2] (for concrete, use separate form)		Location and distances from manufacturing point to project site AND raw material harvesting point to project site (miles)[3]	Percentage of product that is rapidly renew-able[4]	For all wood-based products[5]			
		Total Material Cost (excl. labor & equipment)		% post-consumer	% pre-consumer			% New wood	% Certified Wood	FSC Tracking: COC #	Urea formaldehyde in composites (Y/N)
1.						Harvest: Manufacture:					
2.						Harvest: Manufacture:					
3.						Harvest: Manufacture:					
4.						Harvest: Manufacture:					

CONTRACTOR CERTIFICATION:

I, ______________________ a duly authorized representative of ______________________ hereby certify that the material information contained herein is an accurate representation of the material qualifications to be provided by us, as components of the final building construction. Furthermore, I understand that any change in such qualifications during the purchasing period will require prior written approval from the Construction Manager and Owner.

SIGNATURE OF AUTHORIZED REPRESENTATIVE: ______________________ DATE: ____________ **p. ____ of ____**

[1] ***Salvaged:*** Material or product which has been recovered from existing buildings or construction sites and reused in other buildings (e.g., structural beams, doors, brick).

[2] ***Post-Consumer Recycled Content:*** Portion of material or product which derives from discarded consumer waste that has been recovered for use as a raw material (e.g., plastic bottles, newspaper).
Pre-Consumer Recycled Content: Portion of material or product which derives from recovered industrial and mfg. materials that are diverted from municipal solid waste for use in a *different* mfg. process, prior to use by a consumer (e.g., fly-ash in concrete or synthetic gypsum board, both of which are by-products of coal-burning power plants). Note that spills and scraps from the original mfg. process that are combined with other constituents after a minimal amount of reprocessing for use in further production of the same product do not qualify.

[3] ***Regional Materials:*** Materials are considered regional if harvested AND manufactured within 500 miles of the project site. Materials can travel more than 500 miles, provided materials always remain within a 500 mile radius of project site. For salvaged/recycled materials such as steel, you do not need to provide the original harvesting location, but rather the location the steel was sourced from. Distances are as the crow flies, not actual miles traveled via surface transport.

[4] ***Rapidly Renewable:*** Materials and products made from raw materials that are harvested within a 10-year cycle (e.g., bamboo, cork, linoleum, fast-growing poplar, wheatboard, wool carpet)

[5] ***FSC Certified:*** Wood-based products which are certified by the Forest Stewardship Council and carry a Chain-of-Custody certificate number from the vendor or manufacturing.
Composite Wood & Agrifiber Products: Any wood based products must not contain added urea-formaldehyde.

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VOC REPORTING FORM

PROJECT NAME:

CONTRACTOR: ____

SPEC

SECTION:______________________________________

CONTACT NAME:____ TEL. NO:________________________________

SUBMITTAL NO:

Product type or application	Product name	Vendor or Manufacturer	Greenguard or SCS Certified (Y/N) (provide certificate): Systems Furniture and Seating Only	**REQUIRED for ALL field-applied adhesives, sealants, paints & coatings identified in Specs (including those related to MEP work)**		
				VOC content [1] (grams per liter)	Corresponding LEED VOC limit	Backup documen-tation [2]
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						

1. *VOC:* Volatile organic compound which vaporizes into a gas at normal room temperatures and is emitted during the use, application, curing, or drying of an adhesive, sealant, paint, or coating product (excludes methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and other exempt compounds).
2. Submit backup documentation from manufacturer indicating VOC content of the product, defined in either grams per liter, or lbs. per gallon (e.g., MSDS sheet, Product Data Sheet)
3. Refer to the Sustainable Design Requirements Spec. for applicable VOC limits and chemical component limitations for adhesives, sealants, paints and architectural coatings.

CONTRACTOR CERTIFICATION:

I, ____ a duly authorized representative of____ hereby certify that the material information contained herein is an accurate representation of the material qualifications to be provided by us, as components of the final building construction. Furthermore, I understand that any change in such qualifications during the purchasing period will require prior written approval from the Construction Manager and Owner.

SIGNATURE OF AUTHORIZED REPRESENTATIVE: ____ DATE: ____________ **p. ____ of ____**

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SECTION 01 9113
GENERAL COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes general requirements that apply to implementation of commissioning without regard to systems, subsystems, and equipment being commissioned:

1. Commissioning Team
2. University's Responsibilities
3. Contractor's Responsibilities
4. CxA's Responsibilities
5. Commissioning Documentation
6. Submittals
7. Quality Assurance
8. Title 24 Acceptance Testing
9. Start-up, Pre-Functional Checklists and Initial Checkout
10. Functional Performance Testing
11. Operation and Maintenance Training Requirements
12. Costs of Commissioning Work
13. Equipment and System Schedule

B. Related Sections:

a. Division 1 Section "Sustainable Design Requirements" for LEED Documentation related to commissioning.
b. Audio visual equipment
c. Fire suppression systems
d. Plumbing systems
e. HVAC systems, including Controls or Integrated Automation.
f. Lighting and other electrical systems.
g. Communications and Data systems.
h. Safety and security systems.

C. Basis of Design (BOD) and Owner's Project Requirements (OPR) documentation prepared by University contains requirements that apply to this Section. This information is available to Bidders upon request.

D. Comply with the Acceptance Testing requirements of Title 24 Energy Code and ACM (Alternative Calculation Method) Approval Manual. Additional requirements are given in Part 3 of this Section.

1.2 DEFINITIONS

A. Commissioning Process: The basic purpose of building commissioning is to provide documented confirmation that building systems function in compliance with criteria set forth in the Project Documents to satisfy the owner's operational needs.

B. Basis of Design (BOD) document: A document that records concepts, calculations, decisions, product selections used to meet the OPR and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that support the design process.

C. CxA: Commissioning Authority.

D. University Project Requirements (OPR): A written document, prepared by the University, that details the functional requirements of Project and expectations of how it will be used and operated. This document includes Project and design goals, measurable performance criteria, budgets, schedules, success criteria, and supporting information.

E. Systems, Subsystems, and Equipment: Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, and equipment.

F. TAB: Testing, Adjusting, and Balancing.

G. Title 24: California Code of Regulations, Title 24, Part 1 - Building Energy Efficiency Standards (latest edition).

1.3 COMMISSIONING TEAM

A. Members Appointed by Contractor: Individuals, each having authority to act on behalf of the entity he or she represents, explicitly organized to implement the commissioning process through coordinated actions. The commissioning team shall consist of, but not be limited to, representatives of Contractor, including Project superintendent and subcontractors, installers, suppliers, and specialists deemed appropriate by the CxA.

B. Members Appointed by University:

1. CxA: The designated person, company, or entity that plans, schedules, and coordinates the commissioning team to implement the commissioning process. Owner may engage the independent CxA under a separate contract.
2. Representatives of the facility user and operation and maintenance personnel.
3. Architect and engineering design professionals.

1.4 UNIVERSITY'S RESPONSIBILITIES

A. Provide the OPR documentation to the CxA and Contractor for use in developing the commissioning plan; systems manual; operation and maintenance training plan; and testing plans and checklists.

B. Assign operation and maintenance personnel and schedule them to participate in commissioning team activities including, but not limited to the following:

1. Coordination meetings.
2. Training in operation and maintenance of systems, subsystems, and equipment.
3. Testing meetings.
   14. Demonstration of operation of systems, subsystems, and equipment.

B. Provide the BOD documents, prepared by University or its consultants, to the CxA and Contractor for use in developing the commissioning plan, systems manual, and operation and maintenance training plan.

1.5 CONTRACTOR'S RESPONSIBILITIES

A. Provide utility services required for the commissioning process.

B. Contractor is responsible for construction means, methods, job safety, and/or management function related to commissioning on the job site.

C. Contractor shall assign representatives with expertise and authority to act on behalf of the Contractor and schedule them to participate in and perform commissioning team activities including, but not limited to, the following:

1. Participate in construction-phase coordination meetings.

2. Participate in maintenance orientation and inspection.
3. Participate in operation and maintenance training sessions.
4. Participate in final review at acceptance meeting.
5. Certify that Work is complete and systems are operational according to the Contract Documents, including calibration of instrumentation and controls.
6. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
7. Review and comment on final commissioning documentation.

D. Contractor shall integrate all commissioning activities into Contractor's master construction schedule.

E. Subcontractors shall assign representatives with expertise and authority to act on behalf of subcontractors and schedule them to participate in and perform commissioning team activities including, but not limited to, the following:

1. Participate in construction-phase coordination meetings.
2. Participate in maintenance orientation and inspection.
3. Participate in procedures meeting for testing.
4. Participate in final review at acceptance meeting.
5. Provide schedule for operation and maintenance data submittals, equipment startup, and testing to CxA for incorporation into the commissioning plan. Update schedule on a weekly basis throughout the construction period.
6. Provide information to the CxA for developing construction-phase commissioning plan.
7. Participate in training sessions for University's operation and maintenance personnel.
8. Provide updated Project Record Documents to the CxA on a daily basis.
9. Gather and submit operation and maintenance data for systems, subsystems, and equipment to the CxA, as specified in Division 01 Section "Operation and Maintenance Data."
10. Provide technicians who are familiar with the construction and operation of installed systems, who shall execute the test procedures developed by the CxA, and who shall participate in testing of installed systems, subsystems, and equipment.

1.6 CxA'S RESPONSIBILITIES

A. Organize and lead the commissioning team.

B. Conduct a commissioning design review of the OPR, BOD, and design documents prior to mid-construction documents phase and back-check the review comments in the subsequent design submissions, in accordance with LEED credit EA3 "Enhanced Commissioning".

C. Prepare a construction-phase commissioning plan. Collaborate with design team, University, Contractor and with subcontractors to develop test and inspection procedures. Include design changes and scheduled commissioning activities coordinated with overall Project schedule. Identify commissioning team member responsibilities, by name, firm, and trade specialty, for performance of each commissioning task.

D. Work with the University to schedule commissioning activities. All parties will address scheduling issues in a timely manner in order to expedite the commissioning process.

E. Review and comment on submittals from Contractor for compliance with the OPR, BOD, Contract Documents, and construction-phase commissioning plan. Review and comment on performance expectations of systems and equipment and interfaces between systems relating to the OPR and BOD.

F. Convene commissioning team meetings on a monthly basis for the purpose of coordination, communication, and conflict resolution; discuss progress of the commissioning processes. Responsibilities include arranging for facilities, preparing agenda and attendance lists, and notifying participants. The CxA shall prepare and distribute minutes to commissioning team members and attendees within five (5) workdays of the commissioning meeting.

G. At the beginning of the construction phase, conduct an initial construction-phase coordination meeting for the purpose of reviewing the commissioning activities and establishing tentative schedules for operation and maintenance submittals; operation and maintenance training sessions; TAB Work; and Project completion.

F. Observe and inspect construction and report progress and deficiencies. In addition to compliance with the OPR, BOD, and Contract Documents, inspect systems and equipment installation for adequate accessibility for maintenance and component replacement or repair.

G. Prepare Project-specific test and inspection procedures and checklists.

H. Schedule, direct, witness, and document tests, inspections, and systems startup.

I. Compile test data, inspection reports, and certificates and include them in the systems manual and commissioning report.

J. Certify date of acceptance and startup for each item of equipment for start of warranty periods.

K. Review Project Record Documents for accuracy. Request revisions from Contractor to achieve accuracy. Project Record Documents requirements are specified in Division 01 Section "Project Record Documents."

L. Review and comment on operation and maintenance documentation and systems manual outline for compliance with the OPR, BoD, and Contract Documents. Operation and maintenance documentation requirements are specified in Division 01 Section "Operation and Maintenance Data."

M. Review Contractor's operation and maintenance training program. Operation and maintenance training is specified in Division 01 Section "Demonstration and Training."

N. Obtain the services of a professional agency to video the training sessions where required by individual Specification Sections.

O. Video construction progress including hidden shafts.

P. Prepare commissioning reports.

Q. Assemble the final commissioning documentation, including the commissioning report and Project Record Documents.

1.7 COMMISSIONING DOCUMENTATION

A. Index of Commissioning Documents: CxA shall prepare an index to include storage location of each document.

B. Commissioning Plan: A document, prepared by CxA, that outlines the schedule, allocation of resources, documentation requirements of the commissioning process, and shall include, but is not limited to the following:

1. Plan for delivery and review of submittals, systems manuals, and other documents and reports. Identification of the relationship of these documents to other functions and a detailed description of submittals that are required to support the commissioning processes. Submittal dates shall include the latest date approved submittals must be received without adversely affecting commissioning plan.
2. Description of the organization, layout, and content of commissioning documentation (including systems manual) and a detailed description of documents to be provided along with identification of responsible parties.
3. Identification of systems and equipment to be commissioned.
4. Description of schedules for testing procedures along with identification of parties involved in performing and verifying tests.
5. Identification of items that must be completed before the next operation can proceed.
6. Description of responsibilities of commissioning team members.
7. Description of observations to be made.
8. Description of requirements for operation and maintenance training, including required training materials.
9. Description of expected performance for systems, subsystems, equipment, and controls.
10. Schedule for commissioning activities with specific dates coordinated with overall construction schedule.
11. Identification of installed systems, subsystems, and equipment, including design changes that occurred during the construction phase.
12. Process and schedule for documenting changes on a continuous basis to appear in Project Record Documents.
13. Process and schedule for completing prestart and startup checklists for systems, subsystems, and equipment to be verified and tested.
14. Step-by-step procedures for testing systems, subsystems, and equipment with descriptions for methods of verifying relevant data, recording the results obtained, and listing parties involved in performing and verifying tests.

C. Pre-Functional Checklists: CxA shall develop pre-functional checklists for all equipment to be commissioned. Further requirements are specified in Part 3 of this Section.

D. Functional Performance Testing: CxA shall develop functional performance test procedures for all equipment and systems to be commissioned. Further requirements are specified in Part 3 of this Section.

E. Certificate of Readiness: Certificate of Readiness shall be signed by Contractor, Subcontractor(s), and installer(s) certifying that systems, subsystems, equipment, and associated controls are ready for testing. Completed test checklists signed by the responsible parties shall accompany this certificate.

F. Test and Inspection Reports: CxA shall record test data, observations, and measurements on test checklists. Photographs, forms, and other means appropriate for the application shall be included with data. CxA shall compile test and inspection reports and test and inspection certificates and include them in systems manual and commissioning report.

G. Corrective Action Documents: CxA shall document corrective action taken for systems and equipment that fail tests. Include required modifications to systems and equipment and revisions to test procedures, if any. Retest systems and equipment requiring corrective action and document retest results.

H. Issues Log: CxA shall prepare and maintain an issues log that describes design, installation, and performance issues that are at variance with the OPR, BoD, and Contract Documents. Identify and track issues as they are encountered, documenting the status of unresolved and resolved issues.

1. Creating an Issues Log Entry:

    a. Identify the issue with unique numeric or alphanumeric identifier by which the issue may be tracked.
    b. Assign a descriptive title of the issue.
    c. Identify date and time of the issue.
    d. Identify test number of test being performed at the time of the observation, if applicable, for cross-reference.
    e. Identify system, subsystem, and equipment to which the issue applies.
    f. Identify location of system, subsystem, and equipment.
    g. Include information that may be helpful in diagnosing or evaluating the issue.
    h. Note recommended corrective action.
    i. Identify commissioning team member responsible for corrective action.
    j. Identify expected date of correction.
    k. Identify person documenting the issue.

2. Documenting Issue Resolution:

    a. Log date correction is completed or the issue is resolved.
    b. Describe corrective action or resolution taken. Include description of diagnostic steps taken to determine root cause of the issue, if any.
    c. Identify changes to the OPR, BOD, or Contract Documents that may require action.
    d. State that correction was completed and system, subsystem, and equipment is ready for retest, if applicable.
    e. Identify person(s) who corrected or resolved the issue.
    f. Identify person(s) documenting the issue resolution.

I. Commissioning Report: CxA shall document results of the commissioning process including unresolved issues and performance of systems, subsystems, and equipment. The commissioning report shall indicate whether systems, subsystems, and equipment have been completed and are performing according to the OPR, BOD, and Contract Documents. The commissioning report shall include, but is not limited to, the following:

1. Lists and explanations of substitutions; compromises; variances in the OPR, BOD, and Contract Documents; record of conditions; and, if appropriate, recommendations for resolution. This report shall be used to evaluate systems, subsystems, and equipment and shall serve as a future reference document during University occupancy and operation. It shall describe components and performance that exceed requirements of the OPR, BOD, and Contract Documents and those that do not meet requirements of the OPR, BOD, and Contract Documents. It may also include a recommendation for accepting or rejecting systems, subsystems, and equipment.
2. OPR and BOD documentation.
3. Commissioning plan.
4. Testing plans and reports.
5. Corrective modification documentation.
6. Issues log.
7. Completed test checklists.
8. Listing of off-season test(s) not performed and a schedule for their completion.

J. Systems Manual: CxA shall gather required information and compile systems manual. Systems manual shall include, but is not limited to, the following:

1. OPR and BOD, including system narratives, schematics, and changes made throughout the Project.
2. Project Record Documents as specified in Division 01 Section "Project Record Documents."

3. Final commissioning plan.
4. Commissioning report.
5 Operation and maintenance data as specified in Division 01 Section "Operation and Maintenance Data."

1.8 SUBMITTALS

The CxA shall submit the following:

A. Commissioning Plan Prefinal Submittal: Submit three (3) hard copies of pre-final commissioning plan. Deliver one copy to Contractor, one to Owner, and one to University Consultant. Present submittal in sufficient detail to evaluate data collection and arrangement process. One copy, with review comments, will be returned to the CxA for preparation of the final construction-phase commissioning plan.

B. Commissioning Plan Final Submittal: Submit three (3) hard copies and two sets of electronically formatted information of final commissioning plan. Deliver one hard copy and one set of discs to University, and one copy to University Consultant. The final submittal must address previous review comments. The final submittal shall include a copy of the pre-final submittal review comments along with a response to each item.

C. Test Checklists and Report Forms: Submit sample checklists and forms to Contractor quality-control manager and subcontractors for review and comment. Submit three (3) copies of each checklist and report form.

D. Certificates of Readiness.

E. Test and Inspection Reports.

F. Corrective Action Documents.

G. Pre-final Commissioning Report Submittal: Submit three (3) hard copies of the pre-final commissioning report. Include a copy of the preliminary submittal review comments along with CxA's response to each item. CxA shall deliver one copy to University and one copy to University Consultant. One copy, with review comments, will be returned to the CxA for preparation of final submittal.

H. Final Commissioning Report Submittal and LEED™ Documentation: Submit three (3) hard copies and three (3) sets of electronically formatted information of the final commissioning report. The final submittal must address previous review comments and shall include a copy of the pre-final submittal review comments along with a response to each item.

I. Recommissioning Management Manual: Develop an indexed Recommissioning Management Manual to be delivered to the Owner with the final commissioning report. Include all components listed in the LEED Reference Guide.

J. LEED™ Documentation. Compile LEED™ Documentation. Format as required by USGBC for submittal under LEED™ rating system.

1.9 QUALITY ASSURANCE

A. Training Instructor Qualifications: Contractor shall provide factory-authorized service representatives, experienced in training, operation, and maintenance procedures for installed systems, subsystems, and equipment.

B. Test Equipment Calibration: Comply with test equipment manufacturer's calibration procedures and intervals. Recalibrate test instruments (per NIST requirements if applicable) immediately whenever instruments have been repaired following damage or dropping. Affix calibration tags to test instruments. Instruments shall have been calibrated within six months prior to use.

CxA shall coordinate the following:

A. Coordinating Meetings: Conduct regular coordination meetings of the commissioning team at least monthly to review progress on the commissioning plan, to discuss scheduling conflicts, and to discuss upcoming commissioning process activities.

B. Pretesting Meetings: Conduct pretest meetings of the commissioning team to review startup reports, pretest inspection results, testing procedures, testing personnel and instrumentation requirements, and manufacturers' authorized service representative services for each system, subsystem, equipment, and component to be tested.

C. Testing Coordination: Coordinate sequence of testing activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

1.2 TITLE 24 ACCEPTANCE TESTING

A. Comply with the requirements of Title 24, and Appendix NJ of the Nonresidential Alternative Calculation Method (ACM) Approval Manual.

1. The installing Contractor shall be responsible for reviewing the plans and specifications to assure they conform to the Acceptance Requirements. This is typically done prior to signing a Certificate of Compliance.

2. The installing Contractor shall be responsible for providing all necessary instrumentation, measurement and monitoring, and undertaking all required acceptance requirement procedures. They shall be responsible for correcting all performance deficiencies and again implementing the acceptance requirement procedures until all specified systems and equipment are performing in accordance with the Standards.

3. The installing Contractor shall be responsible for documenting the results of the acceptance requirement procedures including paper and electronic copies of all measurement and monitoring results. They shall be responsible for performing data analysis, calculation of performance indices and crosschecking results with the requirements of the Standard. They shall be responsible for issuing a Certificate of Acceptance. The University shall not release a final Certificate of Occupancy until a Certificate of Acceptance is submitted that demonstrates that the specified systems and equipment have been shown to be performing in accordance with the Standards.

4. The installing Contractor upon completion of undertaking all required acceptance requirement procedures shall record their State of California Contractor’s License number or their State of California Professional Registration License Number on each Certificate of Acceptance that they issue.

1.3 START-UP, PRE-FUNCTIONAL CHECKLISTS AND INITIAL CHECKOUT

A. The following procedures apply to all equipment to be commissioned.

B. General. Pre-functional Checklists are developed and completed for all major equipment and systems being commissioned. The checklist captures equipment nameplate and characteristics data, confirming the as-built status of the equipment or system. These checklists also ensure that the systems are complete and operational, so that the functional performance testing can be scheduled. The checklists are created by the CxA and completed (filled out) by the installing Contractor.

C. Start-up and Initial Checkout Plan. The CxA shall assist the commissioning team members responsible for startup of any equipment in developing detailed start-up plans for all equipment. The primary role of the CxA in this process is to ensure that there is written documentation that each of the manufacturer-recommended procedures have been completed.

D. Pre-functional Checklists. The CxA shall create pre-functional checklists, based primarily on the manufacturer’s startup and initial checkout procedures are created. Each checkout item shall have a place to document that proper installation has occurred. Once the pre-functional checklist is completed by the installing Contractor, this signifies that the equipment is properly installed per manufacturer’s procedures, and the controls and TAB are complete and the equipment is ready for final functional performance testing. The Contractor determines which Sub-contractor is responsible for executing and documenting each of the line item tasks.

E. Sensor Calibration. Calibration of all sensors shall be included as part of the pre-functional checklists performed by the Contractors.

F. Execution of Pre-functional Checklists and Startup.

1. Sub-contractors and vendors schedule startup and checkout with the University, Contractor, and CxA.
2. The CxA shall observe, at minimum, the procedures for each piece of primary equipment, unless there are repetitive multiple units, (in which case a sampling strategy may be used as approved by the University).
3. For lower-level components of equipment in non-sensitive areas of the Project, (e.g., VAV boxes, reheat coils), the CxA shall observe a sampling of the pre-functional and start-up procedures.
4. The Contractor and vendors shall execute startup and provide the CxA with a signed and dated copy of the completed start-up and pre-functional checklists.
5. Only individuals that have direct knowledge and witnessed that a line item task on the pre-functional checklist was actually performed shall initial or check that item off.

G. Deficiencies, Non-Conformance and Approval in Checklists and Startup.

1. The Contractor shall clearly list any outstanding items of the initial start-up and pre-functional procedures that were not completed successfully, at the bottom of the procedures form or on an attached sheet. The procedures form and any outstanding deficiencies are provided to the CxA within two days of test completion.
2. The CxA reviews the report and recommends approval to the University. The CxA shall work with the Contractor and vendors to correct and retest deficiencies or uncompleted items. The CxA will involve the University and others as necessary.

1.4 FUNCTIONAL PERFORMANCE TESTING

A. Objectives and Scope. The objective of functional performance testing is to demonstrate that each system is operating according to the documented design intent and Contract Documents. In general, each system should be operated through all modes of operation (seasonal, occupied, unoccupied, warm-up, cool-down, part- and full-load) where there is a specified system response. Verifying each sequence in the sequences of operation is required. Proper responses to such modes and conditions as power failure, freeze condition, low oil pressure, no flow, equipment failure, etc. shall also be tested.

B. Development of Test Procedures. Before test procedures are written, the CxA shall obtain all requested documentation and a current list of change orders affecting equipment or systems, including an updated points list, program code, control sequences and parameters. The CxA shall develop specific test procedures and forms to verify and document proper operation of each piece of equipment and system. Prior to execution, the CxA shall provide a copy of the test procedures to the Contractor who shall review the tests for feasibility, safety, equipment and warranty protection. The CxA shall review University-contracted or factory testing which the CxA is not responsible to oversee and shall determine what further testing may be required to comply with the Contract Documents. Redundancy of testing shall be minimized.

The test procedure forms developed by the CxA shall include the following information:

1. System and equipment or component name(s).
2. Equipment location and ID number.
3. Date.
4. Project name and University Project Number.
5. Participating parties.
6. Reference to the specification section describing the test requirements.
7. A copy of the specific sequence of operations.
8. Instructions for setting up the test.
9. Special cautions, alarm limits, etc.
10. Specific step-by-step procedures to execute the test.
11. Acceptance criteria of proper performance with a Yes / No check box.
12. A section for comments.
13. Signatures and date block for the CxA.

C. Test Methods.

1. Functional performance testing and verification may be achieved by manual testing (persons manipulate the equipment and observe performance) or by monitoring the performance and analyzing the results using the control system's trend log capabilities or by stand-alone data loggers. The CxA will determine which method is most appropriate.
2. Setup. Each function and test shall be performed under conditions that simulate actual conditions as close as is practically possible. The Contractor executing the test shall provide all necessary materials, system modifications, etc. to produce the necessary flows, pressures, temperatures, etc. necessary to execute the test according to the specified conditions. At completion of the test, the Contractor shall return all affected building equipment and systems, due to these temporary modifications, to their pre-test condition.
3. Sampling. Multiple identical pieces of non-life-safety or non-critical equipment may be functionally tested using a sampling strategy. The sampling strategy will be developed by the CxA and approved by the University. If, after three attempts at testing the specified sample percentage, failures are still present, then all remaining units are tested at the Contractor's expense.

D. Coordination and Scheduling. The Contractor shall provide sufficient notice to the CxA regarding their completion schedule for the pre-functional checklists and startup of all equipment and systems. The CxA will schedule functional tests through the University Representative and Contractor. The CxA shall direct, witness and document the functional testing of all equipment and systems. The Contractor shall execute the tests.

E. Problem Solving. The CxA will recommend solutions to problems found; however the burden of responsibility to solve, correct and retest problems is with the Contractor and University consultants.

1.5 OPERATION AND MAINTENANCE TRAINING REQUIREMENTS

A. Training Preparation Conference: Before operation and maintenance training, CxA shall convene a training preparation conference to include Owner's operation and maintenance personnel, Contractor, and subcontractors. In addition to requirements specified in Division 01 Section "Demonstration and Training," perform the following:

1. Review the OPR and BoD.
2. Review installed systems, subsystems, and equipment.
3. Review instructor qualifications.
4. Review instructional methods and procedures.
5. Review training module outlines and contents.
6. Review course materials (including operation and maintenance manuals).
7. Inspect and discuss locations and other facilities required for instruction.
8. Review and finalize training schedule and verify availability of educational materials, instructors, audiovisual equipment, and facilities needed to avoid delays.
9. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

B. Training Modules: Develop an instruction program that includes individual training modules for each system, subsystem, and equipment as specified in Division 01 Section "Demonstration and Training."

1.6 COSTS OF COMMISSIONING WORK

A. The cost of the CxA shall be borne by the University.

B. The cost to the Contractor and Subcontractors to comply with the specified requirements and to support the work of the CxA shall be included in the Contractor's and Subcontractor's bid price.

C. If a device, piece of equipment, sequence, or system fails a test, corrections shall be made and a second test shall be performed. If the second test is not successful, then the CxA's cost for a third test or subsequent tests shall be reimbursed to the CxA by the Contractor.

1.7 EQUIPMENT & SYSTEM SCHEDULE

A. The following equipment shall be commissioned in this Project.

System	Equipment	Note	Req'd by LEED
HVAC System	Chillers		X
	Boilers		X
	Pumps		X
	Cooling towers		X
	Variable frequency drives		X
	Air handlers		X
	Packaged AC units		X
	Terminal units for Court Rooms and other high occupancy rooms		X
	Terminal units for Office areas	2	X
System	**Equipment**	**Note**	**Req'd by LEED**
HVAC System	Unit heaters		X
	Heat exchangers		X
	Exhaust fans		X
	Supply fans		X
	Return fans		X
	Chilled beams		X

Building Energy Management System (EMS)	Sequences of Operation, Monitored Points, Control Points, and Alarms		X
	Metering/Monitoring Devices and Equipment		X
	Software Commissioning, GUI presentation commissioning, system access performance criteria, software tools/source code commissioning, instrument data sheets, middleware commissioning, Internet Protocol commissioning		
Lighting and Shade Control System	Sequences of Operation, Monitored points, control points, user controls		X
Electrical System	Sweep or scheduled lighting controls	2	X
	Daylight dimming controls		X
	Lighting occupancy sensors		X
	Electrical grounding		
Plumbing System	Domestic water heaters		X
Security Alarm Systems	Security cameras and monitoring system personal duress alarm system; Intercom system; Paging System.		
Security Electronics	Security plumbing fixture water management system.		
Seminar/ Conference Rooms	Door Controls.		
	Fire alarm system.		
	Distributed radio antenna system.		
	Access control system.		
	Room acoustics.		
Fire/Life Safety Systems	Sound masking system.		
	Assisted listening.		
	Video projection.		
	Audio system.		
	Lighting and lighting controls.		X
	All devices		
Communication System	Alarm drivers		
	HVAC/Fire System Integration		
	Event Notifying and Reporting Systems		

Notes:

1. Centralized equipment should be fully commissioned.

PART 2 - Items which represent multiple, identical repetitive equipment may be tested on a "sampling" or "spot-check" basis, 20% of total.

END OF SECTION

Division	Section Title	Pages

SPECIFICATIONS TABLE OF CONTENTS

DIVISION 28 – FIRE ALARM

END OF TABLE OF CONTENTS

SECTION 22 0500

COMMON WORK RESULTS FOR PLUMBING

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes the following:

1. Piping materials and installation instructions common to most piping systems.
2. Transition fittings.
3. Plumbing demolition.
4. Supports and anchorages.

1.02 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe chases, unheated spaces immediately below roof, space above ceilings, unexcavated spaces, crawlspaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in chases.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

1.03 SUBMITTALS

A. Product Data: For the following:

1. Transition fittings.

B. Welding certificates: Certificates shall be applicable for materials to be joined at the job-site.

1.04 QUALITY ASSURANCE

A. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel."

B. Steel Pipe Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."

1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."

2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.

B. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

1.06 COORDINATION

A. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction, to allow for plumbing installations.

B. Coordinate with other sections of the specifications for the applicability of materials specified in this section. Not every product or material listed may be used.

C. Coordinate requirements of this section with actual work to be performed. This section is general in scope for basic materials and methods, some of which may not actually apply to this project.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.02 PIPE, TUBE, AND FITTINGS

A. Refer to individual Division 22 piping Sections for pipe, tube, and fitting materials and joining methods.

B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

2.03 JOINING MATERIALS

A. Refer to individual Division 22 piping Sections for special joining materials not listed below.

B. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

C. Brazing Filler Metals: AWS A5.8, BCuP Series, BCup3 or BCUp4, copper-phosphorus alloys for general-duty brazing, unless otherwise indicated; and AWS A5.8, BAg1, silver alloy for refrigerant piping, unless otherwise indicated.

D. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

2.04 TRANSITION FITTINGS

A. AWWA Transition Couplings: Same size as, and with pressure rating at least equal to and with ends compatible with, piping to be joined.

1. Manufacturers:

   a. Cascade Waterworks Mfg. Co.
   b. Dresser Industries, Inc.; DMD Div.
   c. Ford Meter Box Company, Incorporated (The); Pipe Products Div.
   d. JCM Industries.
   e. Smith-Blair, Inc.
   f. Viking Johnson.
   g. Or equal.

2. Aboveground Pressure Piping: Pipe fitting.

PART 3 - EXECUTION

3.01 PIPING SYSTEMS - COMMON REQUIREMENTS

A. Install piping according to the following requirements and Division 22 Sections specifying piping systems.

B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.

D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

E. Install piping to permit valve servicing.

F. Install piping at indicated slopes.

G. Install piping free of sags and bends.

H. Install fittings for changes in direction and branch connections.

I. Install piping to allow application of insulation where specified.

J. Select system components with pressure rating equal to or greater than system operating pressure.

K. Mounting hardware, including nuts, bolts and washers for outdoor applications and below grade applications must be of stainless steel materials.

L. Verify final equipment locations for roughing-in.

M. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

3.02 PIPING JOINT CONSTRUCTION

A. Join pipe and fittings according to the following requirements and Division 22 Sections specifying piping systems.

B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.

E. Oxyacetylene torch welding and cutting of structural steel or bolt holes is prohibited.

F. Install main and branch piping using specified fittings.

G. “T-drill”, “welded nozzles”, or “Side-Tap” or similar fitting substitution style connections are prohibited.

H. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.

I. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
2. Damaged Threads: Pipe or pipe fittings with threads that are corroded or damaged are prohibited for use. Pipe sections that have cracked or open welds are prohibited for use.

J. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.

3.03 PIPING CONNECTIONS

A. Make connections according to the following, unless otherwise indicated:

1. Install shut-off valves at final connection to each piece of equipment.
2. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
3. Dry Piping Systems: Install dielectric couplings or nipples and flanges to connect piping materials of dissimilar metals.

3.04 ERECTION OF METAL SUPPORTS AND ANCHORAGES

A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor plumbing materials and equipment.

B. Field Welding: Comply with AWS D1.1.

C. Outdoor Applications: Outdoor support assemblies and accessories shall be of “stainless steel material”, or “hot-dip galvanized carbon steel with high-performance coatings”, as noted below:

1. Stainless steel: Mounting hardware such as bolts, nuts, washers, straps, brackets, fastening hardware etc., shall be stainless steel.
2. Coated galvanized steel: Carbon steel support assemblies, including metal fabrications for use outdoors shall comply with each paragraph listed below:

    a. Assemblies must be shop-fabricated and pre-assembled for one-piece hot-dip galvanized coating process
    b. Touch-up and repair per manufacturer’s recommendations after field installation.

D. Rooftop Applications: Rooftop support assemblies and accessories shall be fabricated for outdoor applications as noted above, and shall be designed per SMACNA design requirements.

1. SMACNA Clearances: Pipes, pipe racks, and equipment shall be installed high enough above roofing surfaces to allow roofing access for maintenance and repair. Install piping and equipment at a minimum height as shown in Table 4-1 of SMACNA Architectural Sheet Metal Manual – 5th Edition.
2. SMACNA Support Systems: Piping systems and equipment supports, unless otherwise shown, use round column supports to tie-in to structure with lead jacks for built-up roofs, and single-ply preformed jacks for single-ply roofs, lead flashing, and lead umbrellas with stainless steel draw band per Figure 4-16A, or Figure 4-16B, of SMACNA Architectural Sheet Metal Manual – 5th Edition.

3.05 SHEET METAL

A. Exposed edges shall be completely deburred and smooth or folded over (hemmed)

B. Eliminate sharp corners through rounding, folding over, trimming, or other acceptable means.

C. Sheet metal ducting shall not “oil can” or visibly deflect in service. Add additional reinforcement(s) as needed to eliminate these issues if observed.

END OF SECTION

SECTION 22 0529

HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes the following hangers and supports for plumbing system piping and equipment:

1. Fastener systems.
2. Pipe stands.

1.02 DEFINITIONS

A. MSS: Manufacturers Standardization Society for the Valve and Fittings Industry Inc.

B. Terminology: As defined in MSS SP-90, "Guidelines on Terminology for Pipe Hangers and Supports."

1.03 PERFORMANCE REQUIREMENTS

A. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.

B. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

C. Design seismic-restraint hangers and supports shop drawing for piping and equipment in accordance with CBC.

1.04 SUBMITTALS

A. Product Data: For the following:

1. Steel pipe hangers and supports.

B. Shop Drawings: Signed and sealed by a qualified professional engineer. Show fabrication and installation details and include calculations for the following:

1. Pipe stands. Include Product Data for components.

C. Welding certificates.

1.05 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to the following:

1. AWS D1.1, "Structural Welding Code--Steel."
2. AWS D1.4, "Structural Welding Code--Reinforcing Steel."
3. ASME Boiler and Pressure Vessel Code: Section IX.

B. Seismic Engineering: Seismic bracing and support design, mounting hardware and equipment, support systems, restraint systems, anchorage systems, and installation shall conform to the CBC requirements. Submit calculations, plans, and documents stamped by a qualified California registered engineer.

C. Structural Review: Seismic engineering submittal documents, seismic loads, anchorage and support loads, and vertical loads applied to building structures and structural components shall be reviewed, analyzed, and approved by the project structural engineer of record.

D. Wind-Restraint Loading:

1. Basic Wind Speed: minimum 110 mph.
2. Building Classification Category: II.
3. Minimum 10 lb per sq. ft. multiplied by maximum area of HVAC component projected on vertical plane normal to wind direction, and 45 degrees either side of normal.

E. Seismic-Restraint Loading: (to be confirmed for each building)

1. Site Class as Defined in the CBC: D.

2. Assigned Seismic Use Group or Building Category as Defined in the CBC: II.

   a. Component Importance Factor: 1.0.
   b. Component Response Modification Factor: 2.5.
   c. Component Amplification Factor: 2.5.

3. Design Spectral Response Acceleration at Short Periods (0.2 Second): 1.057 g.
4. Design Spectral Response Acceleration at 1.0-Second Period: 0.579 g.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
2. Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01. Specific procedures must be followed before use of an unnamed product or manufacturer.

2.02 STEEL PIPE HANGERS AND SUPPORTS

A. Description: MSS SP-58, Types 1 through 58, factory-fabricated components. Refer to Part 3 "Hanger and Support Applications" Article for where to use specific hanger and support types.

B. Manufacturers:

1. B-Line Systems, Inc.; a division of Cooper Industries.

2. Grinnell Corp.
3. ERICO/Michigan Hanger Co.
4. Globe Pipe Hanger Products, Inc.
5. Grinnell Corp.
6. Tolco Inc.
7. Superstrut
8. Or equal.

C. Galvanized, Metallic Coatings: Pregalvanized or hot dip.galvanized

D. ambient air temperature.

2.03 FASTENER SYSTEMS

A. Powder-Actuated Fasteners are prohibited

B. Mechanical-Expansion Anchors: Insert-wedge-type zinc-coated, except exterior or corrosive environments shall be stainless steel, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

1. Manufacturers:

   a. B-Line Systems, Inc.; a division of Cooper Industries.
   b. Hilti, Inc.
   c. ITW Ramset/Red Head.
   d. Powers Fasteners.
   e. Or equal.

C. Concrete Inserts: Carbon steel, hot-dip galvanized, except exterior or corrosive environments shall be stainless steel, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used. UL listed for use in metal deck formed concrete and formed slabs for pre-positioning and attaching hanger rods in poured concrete decks. Suitable for seismic loads and brace attachments.

1. Manufacturers:

   a. B-Line Systems, Inc.; a division of Cooper Industries.
   b. ISAT (Blue Banger Hanger).
   c. Simpson Strong-Tie Company (Blue Banger Hanger).
   d. NIBCO Inc.; Tolco.
   e. Or equal.

2.04 PIPE STAND FABRICATION

A. Pipe Stands, General: Shop or field-fabricated assemblies made of manufactured corrosion-resistant components to support roof-mounted piping.

B. Compact Pipe Stand: One-piece plastic unit with integral-rod-roller, pipe clamps, or V-shaped cradle to support pipe, for roof installation without membrane penetration.

1. Manufacturers:

    a. ERICO/Michigan Hanger Co.
    b. MIRO Industries.
    c. Or equal.

C. Low-Type, Single-Pipe Stand: One-piece stainless-steel base unit with plastic roller, for roof installation without membrane penetration.

1. Manufacturers:

    a. MIRO Industries.
    b. Or equal.

D. High-Type, Single-Pipe Stand: Assembly of base, vertical and horizontal members, and pipe support, for roof installation without membrane penetration.

1. Manufacturers:

    a. ERICO/Michigan Hanger Co.
    b. MIRO Industries.
    c. Portable Pipe Hangers.
    d. Or equal.

2. Base: Stainless steel.
3. Vertical Members: Two or more cadmium-plated-steel or stainless-steel, continuous-thread rods.
4. Horizontal Member: Cadmium-plated-steel or stainless-steel rod with plastic or stainless-steel, roller-type pipe support.

E. High-Type, Multiple-Pipe Stand: Assembly of bases, vertical and horizontal members, and pipe supports, for roof installation without membrane penetration.

1. Manufacturers:

    a. Portable Pipe Hangers.
    b. Or equal.

2. Bases: One or more plastic.
3. Vertical Members: Two or more protective-coated-steel channels.
4. Horizontal Member: Protective-coated-steel channel.
5. Pipe Supports: Galvanized-steel, clevis-type pipe hangers.

F. Curb-Mounting-Type Pipe Stands: Shop- or field-fabricated pipe support made from structural-steel shape, continuous-thread rods, and rollers for mounting on permanent stationary roof curb.

2.05 MISCELLANEOUS MATERIALS

A. Structural Steel: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.

1. Properties: Nonstaining, noncorrosive, and nongaseous.
2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.01 HANGER AND SUPPORT APPLICATIONS

A. Specific hanger and support requirements are specified in Sections specifying piping systems and equipment.

B. Comply with MSS SP-69 for pipe hanger selections and applications if not specified in piping system Sections.

C. Use hangers and supports with galvanized, metallic coatings for piping and equipment that will not have field-applied finish.

D. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Welded-Steel Brackets: For support of pipes from below, or for suspending from above by using clip and rod. Use one of the following for indicated loads:

    a. Light (MSS Type 31): 750 lb.
    b. Medium (MSS Type 32): 1500 lb.
    c. Heavy (MSS Type 33): 3000 lb.

2. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
3. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.
4. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.

3.02 HANGER AND SUPPORT INSTALLATION

A. Steel Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.

B. Flexible connection located in horizontal piping shall be supported within 2 feet of each connector.

C. Metal Framing System Installation: Arrange for grouping of parallel runs of piping and support together on field-assembled metal framing systems.

D. Fastener System Installation:

1. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

E. Pipe Stand Installation:

1. Pipe Stand Types except Curb-Mounting Type: Assemble components and mount on smooth roof surface. Penetration of roof membrane is prohibited.
2. Curb-Mounting-Type Pipe Stands: Assemble components or fabricate pipe stand and mount on permanent, stationary roof curb.

F. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.

G. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

H. Install lateral bracing with pipe hangers and supports to prevent swaying.

I. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

J. Load Distribution: Install hangers and supports to prohibit piping live and dead loads, and stresses from movement being transmitted to connected equipment.

K. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes.

L. Exceeding maximum pipe deflections allowed by ASME B31.9 for building services piping are prohibited.

3.03 METAL FABRICATIONS

A. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

B. Field Welding: Comply with AWS D1.1 procedures for shielded metal arc welding, appearance and quality of welds, and methods used in correcting welding work, and with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Finish welds at exposed connections so no roughness shows after finishing and contours of welded surfaces match adjacent contours.

3.04 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

3.05 PAINTING

A. Touch Up: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.

B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

3.06 ROOFTOP AND OUTDOOR APPLICATIONS

A. Outdoor assemblies shall be fully weather-proof design and installation. Mounting hardware such as bolts, nuts, washers, anchors straps, brackets, fastening hardware etc., shall be stainless steel.

END OF SECTION

SECTION 22 0553

IDENTIFICATION FOR PLUMBING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes the following mechanical identification materials and their installation:

1. Pipe markers
2. Valve tags
3. Valve schedules/chart
4. Danger and Warning signs

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples, when requested: For color, letter style, and graphic representation required for each identification material and device.

C. Valve Numbering Scheme. Provide hard-copy and electronic spreadsheet of valve schedule covering valve tags. Coordinate numbering scheme prior to submittal.

D. Valve Plans and Schedules: For each piping system. Furnish extra copies (in addition to mounted copies) in maintenance manuals.

E. System Drawings: For each piping system for each air system (exhaust included). Furnish system one-line plan drawings indicating valves, dampers, instruments, control devices, smoke detectors, and equipment addressed in this section. Furnish electronic spread sheets for each system. Coordinate numbering scheme prior to submittal.

1.3 QUALITY ASSURANCE

A. ASME Compliance: Comply with ASME A13.1, "Scheme for the Identification of Piping Systems," for letter size, length of color field, colors, and viewing angles of identification devices for piping.

B. NFPA Compliance: Comply with requirements of NFPA-99 for piping and equipment labeling and identification.

1.4 COORDINATION

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

B. Coordinate installation of identifying devices with location of access panels and doors.

C. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. For fixture descriptions in other Part 2 articles where the subparagraph titles "Products," and "Manufacturers" introduce a list of manufacturers and their products or manufacturers only, the following requirements apply for product selection:

1. Products: Subject to compliance with requirements, provide one of the products specified in other Part 2 articles.
2. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified in other Part 2 articles.
3. Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01. Specific procedures must be followed before use of an unnamed product or manufacturer.

2.2 PIPING IDENTIFICATION DEVICES

A. Manufactured Pipe Markers, General: Preprinted, color-coded, with lettering indicating service, and showing direction of flow.

1. Colors: Comply with ASME A13.1, unless otherwise approved.
2. Lettering: Use piping system terms and abbreviations as approved by the University’s Representative.
3. Pipes with OD, Including Insulation, Less Than 6 Inches: Full-band pipe markers extending 360 degrees around pipe at each location.
4. Pipes with OD, Including Insulation, 6 Inches and Larger: Either full-band or strip-type pipe markers at least three times letter height and of length required for label.
5. Arrows: Integral with piping system service lettering to accommodate both directions; or as separate unit on each pipe marker to indicate direction of flow.

B. Pretensioned Pipe Markers: Precoiled semirigid plastic formed to cover full circumference of pipe and to attach to pipe without adhesive.

C. Shaped Pipe Markers: Preformed semirigid plastic formed to partially cover circumference of pipe and to attach to pipe with mechanical fasteners that do not penetrate insulation vapor barrier.

D. Self-Adhesive Pipe Markers: Plastic with pressure-sensitive, permanent-type, self-adhesive back.

E. Plastic Tape: Continuously printed, vinyl tape at least 3 mils thick with pressure-sensitive, permanent-type, self-adhesive back.

1. Width for Markers on Pipes with OD, Including Insulation, Less Than 6 Inches: 3/4 inch minimum.
2. Width for Markers on Pipes with OD, Including Insulation, 6 Inches or Larger: 1-1/2 inches minimum.

2.3 VALVE TAGS

A. Valve Tags: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch numbers, with numbering scheme approved by the University. Provide 5/32-inch hole for fastener.

1. Material: 0.040-inch- thick brass minimum 2" in diameter.
2. Valve-Tag Fasteners: Stainless steel chain, or S-hook.

2.4 VALVE PLANS

A. Valve Plans: For each piping system, on standard-size or 11"x17" bond paper. Provide a plan per floor showing the location, valve number, control device number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.

1. Valve-Plan and Schedule Frames: Glazed display frame for removable mounting on masonry walls for each page of valve plan and schedule. Include mounting screws.
2. Frame: Extruded aluminum.
3. Glazing: ASTM C 1036, Type I, Class 1, Glazing Quality B, 2.5-mm, single-thickness glass.

2.5 DANGER AND WARNING SIGNS

A. Danger and Warning signs: Preprinted or partially preprinted, accident-prevention tags; of plasticized card stock with matte finish suitable for writing.

1. Size: 4 by 5-1/4 inches minimum.
2. Fasteners: Brass grommet and wire.
3. Nomenclature: Large-size primary caption such as DANGER, CAUTION, WARNING, SAFETY FIRST or NOTICE.

2.6 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Brady Corporation.
2. Seton Identification Products.
3. R&R Identification Co.
4. Or equal.

PART 3 - EXECUTION

3.1 APPLICATIONS, GENERAL

A. Products specified are for applications referenced in other Division 22 Sections. If more than single-type material, device, or label is specified for listed applications, selection is Installer's option.

3.2 PIPING IDENTIFICATION

A. Install manufactured pipe markers indicating service on each piping system. Install with flow indication arrows showing direction of flow.

1. Pipes with OD, Including Insulation, Less Than 6 Inches: Self-adhesive pipe markers. Use color-coded, self-adhesive plastic tape, 1-1/2 inches wide, lapped at least 1-1/2 inches at both ends of pipe marker, and covering full circumference of pipe.
2. Pipes with OD, Including Insulation, 6 Inches and Larger: Self-adhesive pipe markers. Use color-coded, self-adhesive plastic tape, at least 1-1/2 inches wide, lapped at least 3 inches at both ends of pipe marker, and covering full circumference of pipe.

B. Locate pipe markers and color bands where piping is exposed in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior nonconcealed locations as follows:

1. Near each valve and control device.
2. At each branch of a tee.
3. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
4. Near penetrations through walls, floors, ceilings, and nonaccessible enclosures.
5. At access doors, manholes, and similar access points that permit view of concealed piping.
6. Near major equipment items and other points of origination and termination.
7. Spaced at maximum intervals of 25 feet along each run. Located on each side of wall penetrations.

3.3 VALVE-TAG INSTALLATION

A. Install tags on any valve type and control devices in piping systems, except check valves; valves within factory-fabricated equipment units; plumbing fixture supply stops; shutoff valves; faucets; convenience and lawn-watering hose connections; and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule. Install tags on valves such that they will not interfere with the valve operation and maintenance. Installation on hand wheel or lever is prohibited

B. Valve-Tag Application Schedule:

1. Information:

   a. Service.
   b. Floor.
   c. Valve number.
   d. Area served.
   e. Normal position.
   f. Duty.
   g. Type (if not obvious).

2. Valve-Tag Size and Shape:

   a. 2 inches, round.

3.4 VALVE-PLAN INSTALLATION

A. Mount valve plan on wall in accessible location in each major equipment room.

3.5 WARNING-TAG INSTALLATION

A. Write required message on, and attach warning tags to, equipment and other items where required.

3.6 ADJUSTING

A. Relocate plumbing identification materials and devices that have become visually blocked by other work.

3.7 CLEANING

A. Clean faces of plumbing identification devices and glass frames of valve schedules.

END OF SECTION

SECTION 22 1616
NATURAL GAS PIPING

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes fuel gas piping outside above ground to connection at Gas company meter or University's gas recharge meter and within the building. Products include the following:

B. Adjust list below to suit Project.

1. Pipe, tube, fittings, and joining materials.
2. Protective pipe and fitting coating.
3. Piping specialties.
4. Specialty valves.
5. Service and Recharge meters.
6. Pressure regulators.
7. Earthquake valves.

1.02 DEFINITIONS

A. CPC: California Plumbing Code.

1.03 PROJECT CONDITIONS

A. Design values of fuel gas supplied for these systems are as follows:

1. Nominal Heating Value: 1000 Btu/cu. ft.
2. Nominal Specific Gravity: 0.6.

1.04 SUBMITTALS

A. Product Data: For the following:

1. Specialty valves. Include pressure rating, capacity, settings, and electrical connection data of selected models.
2. Recharge-meter bars. Include Recharge-meter size of selected models.
3. Recharge meters. Include pressure rating and capacity of selected models.
4. Recharge-meter bypass fittings.
5. Pressure regulators. Include pressure rating, capacity, and settings of selected models.
6. Earthquake valves.

B. Shop Drawings: For fuel gas piping. Include plans and attachments to other work. Show different pressure zones and indicate pressure for each zone.

1. Wiring Diagrams: Power, signal, and control wiring.

C. Welding certificates.

D. Field quality-control test reports.

E. Operation and Maintenance Data: For natural gas specialties and accessories to include in emergency, operation, and maintenance manuals.

F. Structural Seismic Performance: Refer to Division 22 Section “Vibration and Seismic Controls for Plumbing.”

1.05 QUALITY ASSURANCE

A. Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX.

B. Electrical Components and Devices: Listed and labeled as defined in CEC, Article 100, by a testing agency acceptable to University’s Representative, and marked for intended use.

C. Code: Comply with CPC.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Handling Flammable Liquids: For modification of existing systems, remove and legally dispose of liquids from drips in existing gas piping. Handle cautiously to avoid spillage and ignition. Notify fuel gas supplier. Handle flammable liquids used by Installer with proper precautions and do not leave on premises from end of one day to beginning of next day.

1.07 COORDINATION

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by the University or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

B. Notify University’s Representative not less than two weeks in advance of proposed utility interruptions.

1. Do not proceed with utility interruptions without University’s Representative written permission.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified, or equal.
2. Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01. Specific procedures must be followed before use of an unnamed product or manufacturer.

2.02 PIPING MATERIALS

A. Refer to Part 3 "Piping Applications" Article for applications of pipe, tube, fitting, and joining materials.

2.03 PIPES, TUBES, FITTINGS, AND JOINING MATERIALS

A. Steel Pipe: ASTM A 53/A 53M; Type E or S; Grade B; Schedule 40 black. Wall thickness of wrought-steel pipe shall comply with ASME B36.10M.

1. Malleable-Iron Threaded Fittings: ASME B16.3, Class 150, standard pattern, with threaded ends according to ASME B1.20.1.
2. Steel Threaded Fittings: ASME B16.11, forged steel with threaded ends according to ASME B1.20.1.
3. Steel Welding Fittings: ASME B16.9, wrought steel or ASME B16.11, forged steel.
4. Unions: ASME B16.39, Class 150, malleable iron with brass-to-iron seat, ground joint, and threaded ends according to ASME B1.20.1.
5. Joint Compound and Tape: Suitable for natural gas.
6. Steel Flanges and Flanged Fittings: ASME B16.5.
7. Gasket Material: Thickness, material, and type suitable for natural gas.

2.04 PIPING SPECIALTIES

A. Flexible Connectors: ANSI Z21.24, stainless steel metal connectors for gas appliances.

2.05 SPECIALTY VALVES

A. Valves, NPS 2 and Smaller: Threaded ends according to ASME B1.20.1 for pipe threads.

B. Valves in category below are limited to 0.5 psig, are used for shutoff service to appliances, and are NPS 3/4 and smaller.

C. Appliance Connector Valves: ANSI Z21.15 and CSA International listed.

1. Manufacturers:
    a. American Valve Inc. B&K Industries, Inc.
    b. Conbraco Industries, Inc.; Apollo Div.
    c. JMF Company
    d. Fisher Controls International, Inc.
    e. Jomar International Ltd.
    f. Key Gas Components, Inc.
    g. Legend Valve and Fitting, Inc.
    h. McDonald, A. Y. Mfg. Co.
    i. Mueller Co.; Mueller Gas Products Div.
    j. Robert Manufacturing Co.
    k. State Metals, Inc.
    l. Watts Industries, Inc.; Water Products Div.
    m. Or equal.

D. Gas Stops: Size, 2" and below, bronze body with AGA stamp, plug type with bronze plug and flat or square head, ball type with chrome-plated brass ball and lever handle; 2-psig minimum pressure rating.

1. Gas shut off valves, NPS 2 and Smaller: ASME B16.33 and CSA International-listed bronze body and 125-psig pressure rating. Tamperproof Feature: Include design for locking.
    a. Manufacturers:
        1) Conbraco Industries, Inc., Apollo Div.
        2) Crane Valves.
        3) Honeywell International Inc.
        4) Milwaukee Valve Company.
        5) Mueller Co.; Mueller Gas Products Div.
        6) NIBCO INC.
        7) Watts Industries, Inc.; Water Products Div.
        8) Or equal.

2. For 2-inch and larger: Prohibited (provide gate valves instead)

E. Earthquake Valves: Listed in CSA International's "Certified Product Listing Directory: Components for Gas and Electrical Equipment" as complying with ASCE 25 and UL listed. The valves shall be certified by California Division of the State Architect.

1. Earthquake-Valve: Cast-aluminum body with stainless-steel internal parts. Buna-N, reset-stem, O-ring seal. Threaded end connections.

2. Manufacturers:

a. Safe T Quake Corp.
b. Koso the California valve
c. Or equal.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine roughing-in for fuel oil piping system to verify actual locations of piping connections before equipment installation.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Close equipment shutoff valves before turning off fuel gas to premises or section of piping. Perform leakage test as specified in "Field Quality Control" Article to determine that equipment is turned off in affected piping section.

3.03 SERVICE ENTRANCE PIPING

A. Extend fuel gas piping and connect to Campus or the Gas Company fuel gas distribution for service entrance to building.

B. Provide exterior fuel gas distribution system piping, earthquake valve, pressure regulator, and meter.

C. Install dielectric fitting downstream from and adjacent to each meter unless meter is supported from meter bar with integral dielectric fitting. Install shutoff valve downstream from and adjacent to dielectric fitting. Dielectric fittings are specified in Division 22 Section "Common Work Results for Plumbing." Dielectric union are prohibited.

D. Install strainer upstream from each earthquake valve. Strainers are specified in Division 22 Section "Domestic Water Piping Specialties."

3.04 PIPING APPLICATIONS

A. Flanges, unions, transition, and special fittings with pressure ratings same as or higher than system pressure rating may be used in applications below, unless otherwise indicated.

B. Fuel Gas Piping, 5 psig or Less:

1. NPS 1/2 to NPS 2: Steel pipe, malleable-iron threaded fittings, and threaded joints.
2. NPS 2-1/2 and Larger: Steel pipe, steel welding fittings, and welded joints.

C. Gas Piping above ground at Meters and Regulators, More Than 5 psig: Steel pipe, steel welding fittings, and welded joints.

D. PE-to-Steel Piping Connections: Transition fitting.

3.05 VALVE APPLICATIONS

A. Appliance Shutoff Valves for Pressure 0.5 psig or Less: Appliance connector valve or gas stop.

B. Appliance Shutoff Valves for Pressure 0.5 to 5 psig.

C. Piping Line Valves, NPS 2 and Smaller.

D. Piping Line Valves, NPS 2-1/2 and Larger: Plug valve.

E. Valves at Meter, NPS 2 and Smaller.

F. Valves at Meter, NPS 2-1/2 and Larger: Plug valve.

G. Connections to Existing Gas Piping: Use valve and fitting assemblies made for tapping gas mains.

3.06 PIPING INSTALLATION

A. Basic piping installation requirements are specified in Division 22 Section "Common Work Results for Plumbing."

B. Drips and Sediment Traps: Install drips at points where condensate may collect. Include outlets of meters. Locate where readily accessible for cleaning and emptying.

1. Construct drips and sediment traps using tee fitting with bottom outlet and stop valve. Use minimum-length nipple of 3 pipe diameters, but not less than 3 inches long, and same size as connected pipe. Install with space between bottom of drip and floor for removal of plug or cap and opening of the valve.

C. Install fuel gas piping at uniform grade of 0.1 percent slope upward toward risers.

D. Install pressure test ports, upstream and downstream of gas meter.

E. Use eccentric reducer fittings to make reductions in pipe sizes on horizontal runs. Install fittings with level side down.

F. Connect branch piping from top or side of horizontal piping.

G. Install unions in pipes NPS 2 and smaller, adjacent to each valve, at final connection to each piece of equipment, and elsewhere as indicated. Unions are not required on flanged devices.

H. Install pipe bollards or other suitable barriers in front of outside gas meter assemblies for protection.

I. Install strainer on inlet of each line pressure regulator and automatic and electrically operated valve.

3.07 JOINT CONSTRUCTION

A. Basic piping joint construction is specified in Division 22 Section "Common Work Results for Plumbing"."

B. Use materials suitable for fuel gas.

C. Prohibited fittings include: bushings, reducing couplings, street tees, and street elbows,

D. Preferred fittings for pipe size change is reducing nipple (swaged nipple).

E. Patch factory-applied protective coating as recommended by manufacturer at field welds and where damage to coating occurs during construction.

3.08 HANGER AND SUPPORT INSTALLATION

A. Pipe hanger and support and equipment support materials and installation requirements are specified in Division 22 Section "Hangers and Supports for Plumbing."

B. Install hangers for horizontal steel piping with the following maximum spacing and minimum rod sizes:

1. NPS 1 and Smaller: Maximum span, 96 inches; minimum rod size, 3/8 inch.
2. NPS 1-1/4: Maximum span, 108 inches; minimum rod size, 3/8 inch.
3. NPS 1-1/2 and NPS 2: Maximum span, 108 inches; minimum rod size, 3/8 inch.
4. NPS 2-1/2 to NPS 3-1/2: Maximum span, 10 feet; minimum rod size, 1/2 inch.
5. NPS 4 and Larger: Maximum span, 10 feet; minimum rod size, 5/8 inch.

3.09 CONNECTIONS

A. Drawings indicate general arrangement of fuel gas piping, fittings, and specialties.

B. Install piping adjacent to appliances to allow service and maintenance.

C. Connect piping to appliances using gas with shutoff valves and unions. Install valve upstream from and within 72 inches of each appliance. Install union downstream from valve.

D. Sediment Traps: Install tee fitting with capped nipple in bottom to form drip, as close as practical to inlet of each appliance using gas.

E. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

F. Gas pipe as grounding electrode is prohibited.

G. Connect wiring according to Division 26 Section "Low Voltage Electrical Power Conductors and Cables."

3.10 LABELING AND IDENTIFYING

A. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplate or sign on or near each meter, pressure regulator, and specialty valve.

1. Text: In addition to name of identified unit, distinguish between multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.
2. Nameplates, pipe identification, and signs are specified in Division 22 Section "Identification for Plumbing."

3.11 PAINTING

A. Paint exterior meters, pressure regulators, exterior metal piping, and specialty valves.

1. Color: Gray or as directed by University's Representative.

3.12 FIELD QUALITY CONTROL

A. Test, inspect, and purge piping according to CPC and requirements of University's Representative.

B. Repair leaks and defects with new materials and retest system until satisfactory results are obtained.

C. Verify that specified piping tests are complete.

END OF SECTION

SECTION 23 0500

COMMON WORK RESULTS FOR HVAC

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes the following:

1. Grout.
2. Mechanical demolition.
3. Equipment installation requirements common to equipment sections.
4. Painting and finishing.
5. Supports and anchorages.

1.02 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within concrete pipe trench and unheated shelters.

F. The following are industry abbreviations for plastic materials:

1. ABS: Acrylonitrile-butadiene-styrene plastic.
2. CPVC: Chlorinated polyvinyl chloride plastic.
3. PE: Polyethylene plastic.
4. PVC: Polyvinyl chloride plastic.

G. The following are industry abbreviations for rubber materials:

1. EPDM: Ethylene-propylene-diene terpolymer rubber.

2. NBR: Acrylonitrile-butadiene rubber.

1.03 SUBMITTALS

A. Product Data: For the following if proposed to be used on this project:

1. Escutcheons.

B. Welding certificates: Certificates shall be applicable for materials to be joined at the job-site.

1.04 QUALITY ASSURANCE

A. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel" and ASME Section VIII.

B. Electrical Characteristics for Mechanical Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

C. Structural Seismic Performance: Refer to Division 23 Section “Vibration and Seismic Controls for HVAC.”

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

1. Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01. Specific procedures must be followed before use of an unnamed product or manufacturer.

2.02 JOINING MATERIALS

A. Refer to individual Division 23 piping Sections for special joining materials not listed below.

B. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

2.03 GROUT

A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.

1. Characteristics: Post-hardening, volume-adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.

2. Design Mix: 5000-psi, 28-day compressive strength.
3. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.01 MECHANICAL DEMOLITION

A. Disconnect, demolish, and remove mechanical systems, equipment, and components indicated to be removed.

1. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
2. Ducts to Be Abandoned in Place: Prohibited. Remove completely.
3. Equipment to Be Removed: Disconnect and cap services and remove equipment.
4. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
5. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to University's Representative.

B. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

3.02 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

A. Install equipment to allow maximum possible headroom.

B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.

C. Install mechanical equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Grease fittings shall be installed in accessible locations. Extended lube lines are prohibited.

D. Install equipment to allow right of way for piping installed at required slope.

3.03 PAINTING

A. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

3.04 ERECTION OF METAL SUPPORTS AND ANCHORAGES

A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor mechanical materials and equipment.

B. Field Welding: Comply with AWS D1.1.

C. Outdoor Applications: Outdoor support assemblies and accessories shall be of "stainless steel material", or "hot-dip galvanized carbon steel ", as noted below:

1. Stainless steel: Mounting hardware such as bolts, nuts, washers, straps, brackets, fastening hardware etc., shall be stainless steel.

2. Hot-dip galvanized steel: Carbon steel support assemblies, including metal fabrications for use outdoors shall comply with each paragraph listed below:

   a. Assemblies must be shop-fabricated and pre-assembled for one-piece hot-dip galvanized coating process
   b. Touch-up and repair per ASTM A780 “The Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.”

D. Rooftop Applications: Rooftop support assemblies and accessories shall be fabricated for outdoor applications as noted above, and shall be designed per SMACNA design requirements.

1. SMACNA Clearances: Pipes, pipe racks, and equipment shall be installed high enough above roofing surfaces to allow roofing access for maintenance and repair. Install piping and equipment at a minimum height as shown in Table 4-1 of SMACNA Architectural Sheet Metal Manual – 5th Edition.

2. SMACNA Support Systems: Piping systems and equipment supports, unless otherwise shown, use round column supports to tie-in to structure with lead jacks for built-up roofs, and single-ply preformed jacks for single-ply roofs, lead flashing, and lead umbrellas with stainless steel draw band per Figure 4-16A, or Figure 4-16B, of SMACNA Architectural Sheet Metal Manual – 5th Edition.

3.05 GROUTING

A. Mix and install grout for mechanical equipment base bearing surfaces, pump and other equipment base plates, and anchors.

B. Clean surfaces that will come into contact with grout.

C. Provide forms as required for placement of grout.

D. Avoid air entrapment during placement of grout.

E. Place grout, completely filling equipment bases.

F. Place grout on concrete bases and provide smooth bearing surface for equipment.

G. Place grout around anchors.

H. Cure placed grout.

3.06 SHEET METAL

A. Exposed edges shall be completely deburred and smooth or folded over (hemmed)

B. Eliminate sharp corners through rounding, folding over, trimming, or other acceptable means.

C. Sheet metal ducting shall not “oil can” or visibly deflect in service. Add additional reinforcement(s) as needed to eliminate these issues if observed.

END OF SECTION

SECTION 23 0529

HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes the following hangers and supports for mechanical system piping and equipment:

1. Metal framing systems.
2. Fastener systems.
3. Pipe stands.
4. Equipment supports.

1.02 DEFINITIONS

A. MSS: Manufacturers Standardization Society for The Valve and Fittings Industry Inc.

1.03 PERFORMANCE REQUIREMENTS

A. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

B. Design seismic-restraint hangers and supports shop drawing for piping and equipment in accordance with CBC.

C. Wind-Restraint Loading:

1. Basic Wind Speed: minimum 110 mph.
2. Building Classification Category: II.
3. Minimum 10 lb per sq. ft. multiplied by maximum area of HVAC component projected on vertical plane normal to wind direction, and 45 degrees either side of normal.

D. Seismic-Restraint Loading: (to be confirmed for each building)

1. Site Class as Defined in the CBC: D.
2. Assigned Seismic Use Group or Building Category as Defined in the CBC: II.
   a. Component Importance Factor: 1.0.
   b. Component Response Modification Factor: 2.5.
   c. Component Amplification Factor: 2.5.
3. Design Spectral Response Acceleration at Short Periods (0.2 Second): 1.057 g.
4. Design Spectral Response Acceleration at 1.0-Second Period: 0.579 g.

1.04 SUBMITTALS

A. Product Data: For the following:

1. Steel pipe hangers and supports.
2. Thermal-hanger shield inserts.
3. Pipe positioning systems.

B. Shop Drawings: Signed and sealed by a qualified California registered professional engineer. Show fabrication and installation details and include calculations for the following:

1. Trapeze pipe hangers. Include Product Data for components.
2. Metal framing systems. Include Product Data for components.
3. Pipe stands. Include Product Data for components.
4. Equipment supports.

C. Welding certificates.

1.05 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to the following:

1. AWS D1.1, "Structural Welding Code--Steel."
2. AWS D1.2, "Structural Welding Code--Aluminum."
3. AWS D1.3, "Structural Welding Code--Sheet Steel."
4. AWS D1.4, "Structural Welding Code--Reinforcing Steel."
5. ASME Boiler and Pressure Vessel Code: Section IX.

B. Seismic Engineering: Seismic bracing and support design, mounting hardware and equipment, support systems, restraint systems, anchorage systems, and installation shall conform to the CBC. Submit calculations, plans, and documents stamped by a qualified California registered engineer.

C. Structural Review: Seismic engineering submittal documents, seismic loads, anchorage and support loads, and vertical loads applied to building structures and structural components shall be reviewed, analyzed, and approved by the project structural engineer of record.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
2. Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01. Specific procedures must be followed before use of an unnamed product or manufacturer.

2.02 STEEL PIPE HANGERS AND SUPPORTS

A. Description: MSS SP-58, Types 1 through 58, factory-fabricated components. Refer to Part 3 "Hanger and Support Applications" Article for where to use specific hanger and support types.

B. Manufacturers:

1. B-Line Systems, Inc.; a division of Cooper Industries.
2. ERICO/Michigan Hanger Co.
3. Grinnell Corp.
4. Tolco Inc.
5. Superstrut.
6. Or equal.

C. Galvanized, Metallic Coatings: Pregalvanized or hot dip galvanized.

D. Nonmetallic Coatings: Plastic coating, jacket, or liner.

2.03 METAL FRAMING SYSTEMS

A. Description: MFMA-4, shop- or field-fabricated pipe-support assembly made of steel channels and other components.

B. Manufacturers:

1. Allied Tube & Conduit.
2. Cooper B-Line, Inc.
3. Flex-Strut Inc.
4. GS Metals Corp.
5. Thomas & Betts Corporation.
6. Unistrut Corporation; Atkore International, Ltd.
7. Wesanco, Inc.
8. Or equal.

C. Coatings: Manufacturer's standard finish, unless bare metal surfaces are indicated.

D. Nonmetallic Coatings: Plastic coating, jacket, or liner.

2.04 FASTENER SYSTEMS

A. Powder-Actuated Fasteners are prohibited .

B. Mechanical-Expansion Anchors: Insert-wedge-type zinc-coated, except exterior or corrosive environments shall be stainless steel, for use in hardened Portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

1. Manufacturers:

a. B-Line Systems, Inc.; a division of Cooper Industries.
b. Hilti, Inc.
c. ITW Ramset/Red Head.
d. Simpson Strong-Tie Company.
e. Or equal.

2.05 PIPE STAND FABRICATION

A. Pipe Stands, General: Shop or field-fabricated assemblies made of manufactured corrosion-resistant components to support roof-mounted piping.

B. Compact Pipe Stand: One-piece plastic unit with integral-rod-roller, pipe clamps, or V-shaped cradle to support pipe, for roof installation without membrane penetration.

1. Manufacturers:

   a. ERICO/Michigan Hanger Co.
   b. MIRO Industries.
   c. Or equal.

C. Low-Type, Single-Pipe Stand: One-piece stainless-steel base unit with plastic roller, for roof installation without membrane penetration.

1. Manufacturers:

   a. MIRO Industries.
   b. Or equal.

D. High-Type, Single-Pipe Stand: Assembly of base, vertical and horizontal members, and pipe support, for roof installation without membrane penetration.

1. Manufacturers:

   a. ERICO/Michigan Hanger Co.
   b. MIRO Industries.
   c. Portable Pipe Hangers.
   d. Or equal.

2. Base: Stainless steel.
3. Vertical Members: Two or more cadmium-plated-steel or stainless-steel, continuous-thread rods.
4. Horizontal Member: Cadmium-plated-steel or stainless-steel rod with plastic or stainless-steel, roller-type pipe support.

E. High-Type, Multiple-Pipe Stand: Assembly of bases, vertical and horizontal members, and pipe supports, for roof installation without membrane penetration.

1. Manufacturers:

   a. Portable Pipe Hangers.
   b. Or equal.

2. Bases: One or more plastic.
3. Vertical Members: Two or more protective-coated-steel channels.
4. Horizontal Member: Protective-coated-steel channel.
5. Pipe Supports: Galvanized-steel, clevis-type pipe hangers.

F. Curb-Mounting-Type Pipe Stands: Shop- or field-fabricated pipe support made from structural-steel shape, continuous-thread rods, and rollers for mounting on permanent stationary roof curb.

2.06 EQUIPMENT SUPPORTS

A. Description: Welded, shop- or field-fabricated equipment support made from structural-steel shapes.

2.07 ROOFTOP AND OUTDOOR APPLICATIONS

A. Outdoor assemblies shall be fully weather-proof design and installation. Mounting hardware such as bolts, nuts, washers, anchors straps, brackets, fastening hardware etc., shall be stainless steel.

2.08 MISCELLANEOUS MATERIALS

A. Structural Steel: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.

1. Properties: Nonstaining, noncorrosive, and nongaseous.
2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.01 HANGER AND SUPPORT INSTALLATION

A. Flexible connection located in horizontal piping shall be supported within 2 feet of each connector.

B. Pipe Stand Installation:

1. Pipe Stand Types except Curb-Mounting Type: Assemble components and mount on smooth roof surface. Penetration of roof membrane is prohibited.
2. Curb-Mounting-Type Pipe Stands: Assemble components or fabricate pipe stand and mount on permanent, stationary roof curb.

C. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.

D. Equipment Support Installation: Fabricate from welded-structural-steel shapes.

E. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so maximum pipe deflections allowed by ASME B31.1 (for power piping) and ASME B31.9 (for building services piping) are not exceeded.

F. Hangers shall not be in direct contact with the pipe.

3.02 EQUIPMENT SUPPORTS

A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.

B. Grouting: Place grout under supports for equipment and make smooth bearing surface.

C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.03 METAL FABRICATIONS

A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.

B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

C. Field Welding: Comply with AWS D1.1 procedures for shielded metal arc welding, appearance and quality of welds, and methods used in correcting welding work, and with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Finish welds at exposed connections so no roughness shows after finishing and contours of welded surfaces match adjacent contours.

3.04 PAINTING

A. Touch Up: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.

B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION

SECTION 23 0548

VIBRATION AND SEISMIC CONTROLS FOR HVAC

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes the following:

1. Steel and inertia, vibration isolation equipment bases.

1.02 PERFORMANCE REQUIREMENTS

A. Wind-Restraint Loading:

1. Basic Wind Speed: minimum 110 mph.
2. Building Classification Category: II.
3. Minimum 10 lb per sq. ft. multiplied by maximum area of HVAC component projected on vertical plane normal to wind direction, and 45 degrees either side of normal.

B. Seismic-Restraint Loading: (to be confirmed for each building)

1. Site Class as Defined in the CBC: D.

2. Assigned Seismic Use Group or Building Category as Defined in the CBC: II.

   a. Component Importance Factor: 1.0.
   b. Component Response Modification Factor: 2.5.
   c. Component Amplification Factor: 2.5.

3. Design Spectral Response Acceleration at Short Periods (0.2 Second): 1.057 g.
4. Design Spectral Response Acceleration at 1.0-Second Period: 0.579 g.

C. Sound and Vibration Performance: The Design-Build Team shall retain a licensed professional acoustical engineer for acoustic and vibration analysis and design. Systems shall be reviewed by the acoustical engineer for compliance with acoustics and vibration control contract document requirements. Provide acoustic and vibration design solutions, including system modifications, equipment modifications, additional sound treatment devices, materials and devices, and labor per the acoustical engineer’s design solution reports, and recommendations.

D. Rotating and reciprocating equipment shall be statically and dynamically balanced to meet the following vibration limits under design operating conditions and under specified vibration isolation:

Equipment Type	Vibration Limit (inches/sec, RMS)
Direct Drive Fans	0.05
Belt-Driven Fans	0.1

Equipment Type	Vibration Limit (inches/sec, RMS)
Other Equipment	0.1

1. These vibration limits apply either on the bearings or the equipment support structure, whichever applicable.
2. The vibration limits shall include the effects of inertia mass or inertia bases, where applicable.
3. Equipment with variable frequency drives shall meet these limits throughout the entire frequency range that the equipment will operate.

E. Vibration Isolated Equipment with Variable Frequency Drives (VFD) shall not be operated below the following rotational speeds:

Specified Isolation Minimum Static Deflection	Minimum Allowed Equipment Rotational Speed (rpm)
Less than 1 inch	600
1 inch	500
2 inches	400
3 inches	350
4 inches	300
5 or more inches	250

1.03 SUBMITTALS

A. Product Data: Include load deflection curves for each vibration isolation device.

1. Manufacturer's model number for each vibration isolator, the equipment or ductwork or pipeline to which it is to be attached, and the number of isolators to be furnished for each installed system.
2. An itemized list of isolated equipment with detailed schedules showing isolators proposed for each piece of equipment, referencing materials and drawings.

B. Shop Drawings: Signed and sealed by a qualified California registered professional engineer. Include the following:

1. Design Calculations: Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
2. Vibration Isolation Base Details: Detail fabrication, including anchorages and attachments to structure and to supported equipment. Include auxiliary motor slides and rails, base weights, equipment static loads, power transmission, component misalignment, and cantilever loads.

   a. Show base construction for equipment; include dimensions, structural member sizes and support point locations.
   b. Dimensional and weight data for concrete inertia bases, steel and rail bases, and details of isolator attachment.

3. Seismic-Restraint Details: Detail fabrication and attachment of seismic restraints. Show anchorage details and indicate quantity, diameter, and depth of penetration of anchors.
4. Submittals for Interlocking Snubbers: Include load deflection curves up to 1/2-inch deflection in x, y, and z planes.
5. Layout Drawings showing locations and sizes of braces for suspended piping and ductwork.

C. Manufacturer's Certification: Upon completion of installation, submit written certification from equipment manufacturer that vibration isolation and seismic control devices are installed correctly and properly adjusted.

1.04 QUALITY ASSURANCE

A. Seismic-restraint devices shall have horizontal and vertical load testing and analysis performed according to CBC or shall bear anchorage preapproval "OPA" number, from OSHPD or another agency acceptable to University's Representative, showing maximum seismic-restraint ratings. Ratings based on independent testing are preferred to ratings based on calculations. If preapproved ratings are not available, submittals based on independent testing are preferred. Calculations (including combining shear and tensile loads) to support seismic-restraint designs must be signed and sealed by a qualified California registered professional engineer. Testing and calculations must include both shear and tensile loads and 1 test or analysis at 45 degrees to the weakest mode.

B. Seismic Engineering: Seismic bracing and support design, mounting hardware and equipment, support systems, restraint systems, anchorage systems, and installation shall conform to the CBC requirements. Submit calculations, plans, and documents stamped by a qualified California registered engineer.

C. Structural Review: Seismic engineering submittal documents, seismic loads, anchorage and support loads, and vertical loads applied to building structures and structural components shall be reviewed, analyzed, and approved by the project structural engineer of record.

1.05 COORDINATION

A. Coordinate installation of roof curbs, equipment supports, and roof penetrations.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Crystal Distribution Inc.
2. California Dynamics Corp.
3. Kinetics Noise Control, Inc.
4. Vibrex
5. Or equal.

2.02 RESTRAINED VIBRATION ISOLATION ROOF-CURB RAILS

A. Roof-Curb Rails: Shall only be used with prior approval of University.

B. Description: Factory-assembled, fully enclosed, insulated, air- and watertight curb rail designed to resiliently support equipment and to withstand 125-mph wind impinging laterally against side of equipment.

C. Lower Support Assembly: Sheet-metal "Z" section containing adjustable and removable steel springs that support upper floating frame. Upper frame shall provide continuous support for equipment and shall be captive to resiliently resist wind and seismic forces. Lower support assembly shall have a means for attaching to building structure and a wood nailer for attaching roof materials, and shall be insulated with a minimum of 2 inches of rigid, glass-fiber insulation on inside of assembly.

D. Spring Isolators: Adjustable, restrained spring isolators shall have access ports, for level adjustment, with removable waterproof covers at isolator locations. Isolators shall be located so they are accessible for adjustment at any time during the life of the installation without interfering with the integrity of the roof. Isolator adjustment mechanism shall be a rigid lift platform to minimize side sway.

1. Restrained Spring Isolators: Freestanding, steel, open-spring isolators with seismic restraint.

   a. Housing: Steel with resilient vertical-limit stops and adjustable equipment mounting and leveling bolt.
   b. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
   c. Minimum Additional Travel: 50 percent of the required deflection at rated load.
   d. Lateral Stiffness: More than 80 percent of the rated vertical stiffness.
   e. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.

E. Water Seal: Galvanized sheet metal with EPDM seals at corners, attached to upper support frame, extending down past wood nailer of lower support assembly, and counter-flashed over roof materials.

F. Based on Mason RSC.

2.03 SEISMIC-RESTRAINT DEVICES

A. Anchor Bolts: Seismic-rated, drill-in, and stud-wedge or female-wedge type. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488/E 488M.

2.04 FACTORY FINISHES

A. Manufacturer's standard galvanized steel coating.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and equipment to receive vibration isolation and seismic-control devices for compliance with requirements, installation tolerances, and other conditions affecting performance.

B. Examine roughing-in of reinforcement and cast-in-place anchors to verify actual locations before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Installation of vibration isolators must not cause any change of position of equipment, piping, or ductwork resulting in stresses or misalignment.

B. Install steel angles or channel, sized to prevent buckling, clamped with ductile-iron clamps to hanger rods for trapeze and individual pipe hangers. At trapeze anchor locations, shackle piping to trapeze. Requirements apply equally to hanging equipment. Do not weld angles to rods.

C. Install resilient bolt isolation washers on equipment anchor bolts.

D. Seismic restraint systems shall be installed in strict accordance with the manufacturer's seismic restraint guidelines manual and certified submittal data.

E. Branch lines may not be used to restrain main lines.

F. Piping crossing building seismic or expansion joints, passing from building to building, or supported from different portions of the building shall be installed to allow differential support displacements without damaging the pipe, equipment connections, or support connections. Pipe offsets, loops, anchors, and guides shall be installed as required to provide specified motion capability and limit motion of adjacent piping.

G. Do not brace a system to two independent structures such as ceiling and wall.

H. Provide appropriately sized openings in walls, floors, and ceilings for anticipated seismic movement. Provide fire seal systems in fire-rated walls.

I. Installation of seismic restraints shall not cause any change in position of equipment or piping, resulting in stresses or misalignment.

J. No rigid connections between equipment and the building structure shall be made that degrade the noise and vibration-isolation system specified.

K. Additional Seismic devices, mounts, and equipment bases shall be installed, type of device shall be selected by licensed structural engineer, or licensed acoustical engineer as required to meet project requirements.

L. Ductwork shall be installed with vibration isolation devices required to meet sound criteria.

M. Provide seismic joints in piping and ductwork crossing building seismic joints.

3.03 EQUIPMENT ISOLATION

A. Install duct, piping and electrical flexible connections to externally vibration-isolated equipment.

B. Flexible duct connections shall result in a loose and resilient connection and maintain a minimum clearance of 4” between the two sides that they connect.

C. Flexible connectors shall be used to connect piping to isolated equipment, except equipment for which flexible connectors are not permitted by code.

D. Flexible pipe equipment connectors for externally isolated equipment shall be as follows:

1. Spherical rubber expansion joints.
2. Flexible hose joints.
3. Locate isolation device downstream of shut-off valves.

E. Equipment Isolators: For equipment larger than 0.5 horsepower, use spring isolation device.

3.04 FIELD QUALITY CONTROL

A. Testing: Perform the following field quality-control testing:

1. Isolator seismic-restraint clearance.
2. Isolator deflection.
3. Snubber minimum clearances.

3.05 ADJUSTING

A. Adjust limit stops on restrained spring isolators to mount equipment at normal operating height. After equipment installation is complete, adjust limit stops so they are out of contact during normal operation.

B. Attach thrust limits at centerline of thrust and adjust to a maximum of 1/4-inch movement during start and stop.

C. Adjust active height of spring isolators.

D. Adjust seismic restraints to permit free movement of equipment within normal mode of operation.

E. Torque anchor bolts according to equipment manufacturer's written recommendations to resist seismic forces.

3.06 CLEANING

A. After completing equipment installation, inspect vibration isolation and seismic-control devices. Remove paint splatters and other spots, dirt, and debris.

END OF SECTION

SECTION 23 0553

IDENTIFICATION FOR HVAC

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes the following mechanical identification materials and their installation:

1. Equipment nameplates.
2. Equipment markers.
3. Equipment signs.
4. Duct markers.
5. Damper tags.
6. Stencils.
7. Warning tags.
8. Thermostats referencing terminal boxes.
9. Control devices and instruments

1.02 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For color, letter style, and graphic representation required for each identification material and device.

C. Air-Side Equipment Schedule: Provide hard copy and electronic spreadsheet of air-side equipment schedule covering damper, terminal boxes, instrumentation, etc. Coordinate numbering scheme prior to submittal.

D. System Drawings: For each piping system for each air system (exhaust included). Furnish system one-line plan drawings indicating valves, dampers, instruments, control devices, smoke detectors, and equipment addressed in this section. Furnish electronic spread sheet for each system. Coordinate numbering scheme prior to submittal.

E. Equipment Location Plans: For each system. Furnish plans showing equipment, equipment identification numbers/tags, and description.

1.03 QUALITY ASSURANCE

A. ASME Compliance: Comply with ASME A13.1, "Scheme for the Identification of Piping Systems," for letter size, length of color field, colors, and viewing angles of identification devices for piping.

B. NFPA Compliance: Comply with requirements of NFPA-99 for piping and equipment labeling and identification.

1.04 COORDINATION

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

B. Coordinate installation of identifying devices with location of access panels and doors.

C. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.01 MATERIALS

A. For fixture descriptions in other Part 2 articles where the subparagraph titles "Products," and "Manufacturers" introduce a list of manufacturers and their products or manufacturers only, the following requirements apply for product selection:

1. Products: Subject to compliance with requirements, provide one of the products specified in other Part 2 articles.
2. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified in other Part 2 articles.
3. Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01. Specific procedures must be followed before use of an unnamed product or manufacturer.

2.02 EQUIPMENT IDENTIFICATION DEVICES

A. Equipment Nameplates: Metal, with data engraved or stamped, for permanent attachment on equipment.

1. Data:

   a. Manufacturer, product name, model number, and serial number.
   b. Capacity, operating and power characteristics, and essential data.
   c. Labels of tested compliances.

2. Location: Accessible and visible.
3. Fasteners: As required to mount on equipment.

B. Equipment Markers: Engraved, color-coded laminated plastic. Include contact-type, permanent epoxy adhesive or rivets.

1. Terminology: Match schedules as closely as possible.
2. Data:

   a. Name and plan number.
   b. Equipment service.
   c. Design capacity.
   d. Other design parameters such as pressure drop, entering and leaving conditions, and speed.

3. Size: 2-1/2 by 4 inches for control devices, dampers, and valves; 4-1/2 by 6 inches for equipment.

C. Equipment Signs: ASTM D 709, Type I, cellulose, paper-base, phenolic-resin-laminate engraving stock; Grade ES-2, white surface, black phenolic core, with black melamine subcore. Fabricate in sizes required for message. Provide holes for mechanical fastening.

1. Data: Instructions for operation of equipment and for safety procedures.
2. Engraving: Manufacturer's standard letter style, of sizes and with terms to match equipment identification.
3. Thickness: 1/8 inch.
4. Provide signs on equipment that is automatically started to comply with CAL-OSHA requirements.
5. Fasteners: Self-tapping, stainless-steel screws or contact-type, permanent adhesive.

D. Access Panel and Door Markers: 1/16-inch- thick, engraved laminated plastic, with abbreviated terms and numbers corresponding to identification. Provide 1/8-inch center hole for attachment.

1. Fasteners: Self-tapping, stainless-steel screws or contact-type, permanent adhesive.

2.03 DUCT IDENTIFICATION DEVICES

A. Duct Markers: Engraved, color-coded laminated plastic. Include direction and quantity of airflow and duct service (such as supply, return, and exhaust). Include contact-type, permanent epoxy adhesive. As an option, stencil may be used.

B. Automatic or Motorized Control Damper Tags: Same as valve tags.

2.04 STENCILS

A. Stencils: Prepared with letter sizes according to ASME A13.1 for piping; minimum letter height of 1-1/4 inches for ducts; and minimum letter height of 3/4 inch for access panel and door markers, equipment markers, equipment signs, and similar operational instructions.

1. Stencil Material: Aluminum.
2. Stencil Paint: Use for pipe marking, exterior, gloss, acrylic enamel black. Paint may be in pressurized spray-can form.
3. Identification Paint: Use for contrasting background, exterior, acrylic enamel in colors according to ASME A13.1.

2.05 WARNING TAGS

A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags; of plasticized card stock with matte finish suitable for writing.

1. Size: 3 by 5-1/4 inches minimum.
2. Fasteners: Brass grommet and wire.
3. Nomenclature: Large-size primary caption such as DANGER, CAUTION, or DO NOT OPERATE.
4. Color: Yellow background with black lettering.

2.06 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Brady Corporation.
2. Seton Identification Products.
3. R&R Identification Co.
4. Or equal.

PART 3 - EXECUTION

3.01 APPLICATIONS, GENERAL

A. Products specified are for applications referenced in other Division 23 Sections. If more than single-type material, device, or label is specified for listed applications, selection is Installer's option.

3.02 EQUIPMENT IDENTIFICATION

A. Install and permanently fasten equipment nameplates on each major item of mechanical equipment that does not have nameplate or has nameplate that is damaged or located where not easily visible. Locate nameplates where accessible and visible.

B. Install equipment markers with permanent adhesive on or near each major item of mechanical equipment. Data required for markers may be included on signs, and markers may be omitted if both are indicated.

1. Letter Size: Minimum 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
2. Data: Distinguish among multiple units, indicate operational requirements, indicate safety and emergency precautions, warn of hazards and improper operations, and identify units.
3. Locate markers where accessible and visible. Include markers for the following general categories of equipment:

    a. Main control and operating valves, including safety devices and hazardous units such as gas outlets.
    b. Fans, blowers, primary balancing dampers, and mixing boxes.
    c. HVAC custom, central-station and zone-type air handling units.

C. Install equipment signs with screws or permanent adhesive on or near each major item of mechanical equipment. Locate signs where accessible and visible.

1. Letter Size: Minimum 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.

2. Data: Distinguish among multiple units, indicate operational requirements, indicate safety and emergency precautions, warn of hazards and improper operations, and identify units.
3. Include signs for the following general categories of equipment:

   a. Main control and operating valves, including safety devices and hazardous units such as gas outlets.
   b. Fans, blowers, primary balancing dampers, and mixing boxes.
   c. Packaged HVAC central-station and zone-type units.

D. Install access panel markers with screws on equipment access panels.

3.03 DUCT IDENTIFICATION

A. Install duct markers with permanent adhesive or stencil on air ducts in the following color codes:

1. Green: For cold-air supply ducts.
2. Yellow: For hot-air supply ducts.
3. Blue: For exhaust-, outside-, relief-, return-, and mixed-air ducts.
4. ASME A13.1 Colors and Designs: For hazardous material exhaust.
5. Letter Size: Minimum 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.

B. Stenciled Duct Label Option: Stenciled labels, showing service and flow direction, may be provided instead of plastic-laminated duct labels, at Installer's option, if lettering larger than 1 inch high is needed for proper identification because of distance from normal location of required identification.

C. Locate markers near points where ducts enter into concealed spaces and at maximum intervals of 50 feet (maximum intervals of 25 feet for exhaust ductwork) in each space where ducts are exposed or concealed by removable ceiling system.

D. Duct markers shall include air system type, and air system number.

3.04 WARNING-TAG INSTALLATION

A. Write required message on, and attach warning tags to, equipment and other items where required.

3.05 ADJUSTING

A. Relocate mechanical identification materials and devices that have become visually blocked by other work.

3.06 CLEANING

A. Clean faces of mechanical identification devices and glass frames of valve schedules.

END OF SECTION

SECTION 23 0593

TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes TAB to produce design objectives for the following new and existing systems affected by the Work of this project:

1. Balancing Air systems
2. Testing, Adjusting and Balancing HVAC equipment quantitative-performance settings
3. Vibration tests
4. Sound tests
5. Verifying that automatic control devices are functioning properly.
6. Reporting results of activities and procedures specified in this Section

1.02 DEFINITIONS

A. Adjust: To regulate fluid flow rate and air patterns at the terminal equipment, such as to reduce fan speed or adjust a damper.

B. Balance: To proportion flows within the distribution system, including submains, branches, and terminals, according to indicated quantities.

C. Barrier or Boundary: Construction, either vertical or horizontal, such as walls, floors, and ceilings that are designed and constructed to restrict the movement of airflow, smoke, odors, and other pollutants.

D. Draft: A current of air, when referring to localized effect caused by one or more factors of high air velocity, low ambient temperature, or direction of airflow, whereby more heat is withdrawn from a person's skin than is normally dissipated.

E. NC: Noise criteria

F. Procedure: An approach to and execution of a sequence of work operations to yield repeatable results.

G. RC: Room criteria

H. Report Forms: Test data sheets for recording test data in logical order

I. Static Head: The pressure due to the weight of the fluid above the point of measurement. In a closed system, static head is equal on both sides of the pump.

J. Suction Head: The height of fluid surface above the centerline of the pump on the suction side.

K. System Effect: A phenomenon that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.

L. System Effect Factors: Allowances used to calculate a reduction of the performance ratings of a fan when installed under conditions different from those presented when the fan was performance tested.

M. TAB: Testing, adjusting, and balancing.

N. Terminal: A point where the controlled medium, such as fluid or energy, enters or leaves the distribution system.

O. Test: A procedure to determine quantitative performance of systems or equipment

P. Testing, Adjusting, and Balancing (TAB) Firm: The entity responsible for performing and reporting TAB procedures

1.03 SUBMITTALS

A. Qualification Data: Within 20 days of Contractor's Notice to Proceed, submit documentation that the TAB specialist and this Project's TAB team members meet the qualifications specified in "Quality Assurance" Article.

B. Contract Documents Examination Report: Within 30 days of Contractor's Notice to Proceed or as directed by University's Representative, submit the Contract Documents review report as specified in Part 3.

C. Strategies and Procedures Plan: Within 30 days of Contractor's Notice to Proceed, submit TAB strategies and step-by-step procedures as specified in "Preparation" Article.

D. System Readiness Checklists: Within 30 days of Contractor's Notice to Proceed, submit system readiness checklists as specified in "Preparation" Article.

E. Examination Report: Submit a summary report of the examination review required in "Examination" Article.

F. Certified TAB reports

G. Within 30 days of Contractor's Notice to Proceed, submit instrument calibration reports for instruments proposed to be used which shall include the following:

1. Instrument type and make
2. Serial number
3. Application
4. Dates of calibration

1.04 QUALITY ASSURANCE

A. TAB Firm Qualifications: Engage a TAB firm certified by either AABC or NEBB. Submit proof of a minimum of five years of experience in work similar to that required by the Project.

B. TAB Conference: Meet with University's Representative on approval of TAB strategies and procedures plan to develop a mutual understanding of the details. Ensure the participation of TAB team members, equipment manufacturers' authorized service representatives, HVAC controls installers, and other support personnel. Provide seven days' advance notice of scheduled meeting time and location.

1. Agenda Items: Include at least the following:
    a. Submittal distribution requirements
    b. The Construction Documents examination report.
    c. TAB plan
    d. Work schedule and Project-site access requirements
    e. Coordination and cooperation of trades and subcontractors
    f. Coordination of documentation and communication flow

C. Certification of TAB Reports: Certify TAB field data reports. This certification includes the following:

1. Review field data reports to validate accuracy of data and to prepare certified TAB reports.
2. Certify that TAB team complied with approved TAB plan and the procedures specified and referenced in this Specification.

D. TAB Report Forms: Use standard forms from AABC's "National Standards for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems." or NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems." If data required by the specification is not on standard forms, modify those forms or use a non-standard form or provide supplement form to provide the specified items.

E. Instrumentation Type, Quantity, and Accuracy: As described in AABC's "National Standards for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems and NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems," Section II, "Required Instrumentation for NEBB Certification."

F. Instrumentation Calibration: Calibrate instruments at least every six months or more frequently if required by instrument manufacturer. Keep an updated record of instrument calibration that indicates date of calibration and the name of party performing instrument calibration.

1.05 PROJECT CONDITIONS

A. Full University Occupancy: University will occupy the site and existing building during entire TAB period. Cooperate with University during TAB operations to minimize conflicts with University's operations.

1.06 COORDINATION

A. Coordinate the efforts of factory-authorized service representatives for systems and equipment, HVAC controls installers, and other mechanics to operate HVAC systems and equipment to support and assist TAB activities.

B. Notice: Provide seven days' advance notice for each test. Include scheduled test dates and times.

C. Perform TAB after leakage and pressure tests on air and water distribution systems have been satisfactorily completed.

1.07 WARRANTY

A. National Project Performance Guarantee: Provide a guarantee on AABC's "National Standards for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems" forms stating that AABC will assist in completing requirements of the Contract Documents if TAB firm fails to comply with the Contract Documents. Guarantee includes the following provisions:

1. The certified TAB firm has tested and balanced systems according to the Contract Documents.
2. Systems are balanced to optimum performance capabilities within design and installation limits.

B. Special Guarantee: Provide a guarantee on NEBB forms stating that NEBB will assist in completing requirements of the Contract Documents if TAB firm fails to comply with the Contract Documents. Guarantee shall include the following provisions:

1. The certified TAB firm has tested and balanced systems according to the Contract Documents.
2. Systems are balanced to optimum performance capabilities within design and installation limits.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine the Construction Documents to become familiar with Project requirements and to discover conditions in systems' designs that may preclude proper TAB of systems and equipment.

1. Construction Documents are defined in the General and Supplementary Conditions of Contract.
2. Verify provision of balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that quantities and locations of these balancing devices are accessible and appropriate for effective balancing and for efficient system and equipment operation.

B. Examine approved submittal data of HVAC systems and equipment.

C. Examine design data, including HVAC system descriptions, statements of design assumptions for environmental conditions and systems' output, and statements of philosophies and assumptions about HVAC system and equipment controls.

D. Examine equipment performance data including fan and pump curves.

1. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
2. Calculate system effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from those presented when the equipment was performance tested at the factory. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems--Duct Design." Compare results with the design data and installed conditions.

E. Examine system and equipment installations verifying they are complete and that testing, cleaning, adjusting, and commissioning specified in individual Sections have been performed.

F. Examine system and equipment test reports.

G. Examine HVAC system and equipment installations to verify that indicated balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers, are properly installed, and that their locations are accessible and appropriate for effective balancing and for efficient system and equipment operation.

H. Examine systems for functional deficiencies that cannot be corrected by adjusting and balancing.

I. Examine HVAC equipment to ensure that clean filters have been installed, bearings are greased, belts are aligned and tight, and equipment with functioning controls is ready for operation.

J. Examine terminal units, such as variable-air-volume boxes, to verify that they are accessible and their controls are connected and functioning.

K. Examine equipment for installation and for properly operating safety interlocks and controls.

L. Examine automatic temperature system components to verify the following:

1. Dampers, valves, and other controlled devices are operated by the intended controller.
2. Dampers and valves are in the position indicated by the controller.
3. Integrity of valves and dampers for free and full operation and for tightness of fully closed and fully open positions. This includes dampers in mixing boxes, and variable-air-volume terminals.
4. Automatic modulating and shutoff valves, including two-way valves and three-way mixing and diverting valves, are properly connected.
5. Thermostats and humidistats are located to avoid adverse effects of sunlight, drafts, heat sources, and cold walls.
6. Sensors are located to sense only the intended conditions.
7. Sequence of operation for control modes.
8. Controller set points are set at indicated values.

9. Interlocked systems are operating.
10. Changeover from heating to cooling mode occurs according to indicated values.

M. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

3.02 PREPARATION

A. Prepare a TAB plan that includes strategies and step-by-step procedures.

B. Ensure that gauges and test equipment are recently calibrated. Use pressure gauges accurate to ±0.1% of full scale. Where measuring differential pressures, a direct-reading differential gauge may be used.

C. Complete system readiness checks and prepare system readiness reports. Verify the following:

1. Permanent electrical power wiring is complete
2. Hydronic systems are filled, clean, and free of air
3. Automatic temperature-control systems are operational
4. Equipment and duct access doors are securely closed
5. Balance, smoke, and fire dampers are open
6. Fan isolation and control dampers are in correct position for the controls sequence and operate correctly and closed completely when commanded to close
7. Isolating and balancing valves are open and control valves are operational
8. Ceilings are installed in critical areas where air-pattern adjustments are required and access to balancing devices is provided
9. Windows and doors can be closed so indicated conditions for system operations can be met

3.03 PROCEDURES FOR TESTING, ADJUSTING, AND BALANCING EXISTING SYSTEMS

A. Perform a preconstruction inspection of existing equipment that is to remain and be reused.

1. Measure and record the operating speed, airflow, and static pressure of each fan.
2. Measure motor voltage and amperage. Compare the values to motor nameplate information.
3. Check the refrigerant charge.
4. Check the condition of filters.
5. Check the condition of coils.
6. Check the operation of the drain pan and condensate-drain trap.
7. Check bearings and other lubricated parts for proper lubrication.
8. Report on the operating condition of the equipment and the results of the measurements taken. Report deficiencies.

B. Before performing testing and balancing of existing systems, inspect existing equipment that is to remain and be reused to verify that existing equipment has been cleaned and refurbished. Verify the following:

1. New filters are installed.
2. Coils are clean and fins combed.
3. Drain pans are clean.
4. Fans are clean.
5. Bearings and other parts are properly lubricated.
6. Deficiencies noted in the preconstruction report are corrected.

C. Perform testing and balancing of existing systems to the extent that existing systems are affected by the renovation work.

1. Compare the indicated airflow of the renovated work to the measured fan airflows, and determine the new fan speed and the face velocity of filters and coils.
2. Verify that the indicated airflows of the renovated work result in filter and coil face velocities and fan speeds that are within the acceptable limits defined by equipment manufacturer.
3. If calculations increase or decrease the airflow rates and water flow rates by more than 5 percent, make equipment adjustments to achieve the calculated rates. If increase or decrease is 5 percent or less, equipment adjustments are not required.
4. Balance each air outlet.

3.04 GENERAL PROCEDURES FOR TESTING AND BALANCING

A. Perform testing and balancing procedures on each system according to the procedures contained in AABC's "National Standards for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems" or NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems" and this Section.

B. Use factory provided or field installed test ports. Cutting, drilling or otherwise penetrating of equipment with previously installed test ports is prohibited and if test port are not used may require complete new air handling unit doors or ductwork to be installed as directed by University's Representative. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary to allow adequate performance of procedures. After testing and balancing, close probe holes and patch insulation with new materials identical to those removed. Restore vapor barrier and finish according to insulation Specifications for this Project. Provide stainless steel test ports for stainless steel ductwork and plenums. Install test ports that comply with requirements in Section 23 3300 "Air Duct Accessories."

C. Mark equipment and balancing device settings with paint or other suitable, permanent identification material, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, to show final settings.

D. Take and report testing and balancing measurements in inch-pound (IP) units.

3.05 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Crosscheck the summation of required outlet volumes with required fan volumes.

B. Prepare schematic diagrams of systems' "as-built" duct layouts.

C. For variable-air-volume systems, develop a plan to simulate diversity.

D. Determine the best locations in main and branch ducts for accurate duct airflow measurements.

E. Check airflow patterns from the outside-air louvers and dampers and the return- and exhaust-air dampers, through the supply-fan discharge and mixing dampers.

F. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.

G. Verify that motor starters are equipped with properly sized thermal protection.

H. Check dampers for proper position to achieve desired airflow path.

I. Check for airflow blockages.

J. Check condensate drains for proper connections and function.

K. Check for proper sealing of air-handling unit components.

L. Check for proper sealing of air duct system.

3.06 PROCEDURES FOR VARIABLE-AIR-VOLUME SYSTEMS

A. Pressure-Independent, Variable-Air-Volume Systems: After the fan systems have been adjusted, adjust the variable-air-volume systems as follows:

1. Set outside-air dampers at minimum, and return- and exhaust-air dampers at a position that simulates full-cooling load.
2. Select the terminal unit that is most critical to the supply-fan airflow and static pressure. Measure static pressure. Adjust system static pressure so the entering static pressure for the critical terminal unit is not less than the sum of terminal-unit manufacturer's recommended minimum inlet static pressure plus the static pressure needed to overcome terminal-unit discharge system losses.
3. Measure total system airflow. Adjust to within indicated airflow.
4. Set terminal units at maximum airflow and adjust controller or regulator to deliver the designed maximum airflow. Use terminal-unit manufacturer's written instructions to make this adjustment. When total airflow is correct, balance the air outlets downstream from terminal units as described for constant-volume air systems.
5. Set terminal units at minimum airflow and adjust controller or regulator to deliver the designed minimum airflow. Check air outlets for a proportional reduction in airflow as described for constant-volume air systems.

    a. If air outlets are out of balance at minimum airflow, report the condition but leave outlets balanced for maximum airflow.

6. Remeasure the return airflow to the fan while operating at maximum return airflow and minimum outside airflow. Adjust the fan and balance the return-air ducts and inlets as described for constant-volume air systems.

7. Measure static pressure at the most critical terminal unit and adjust the static-pressure controller at the main supply-air sensing station to ensure that adequate static pressure is maintained at the most critical unit.
8. Record the final fan performance data.

3.07 PROCEDURES FOR TEMPERATURE MEASUREMENTS

A. During TAB, report the need for adjustment in temperature regulation within the automatic temperature-control system.

B. Measure indoor wet- and dry-bulb temperatures every other hour for a period of two successive eight-hour days, in each separately controlled zone, to prove correctness of final temperature settings. Measure when the building or zone is occupied.

C. Measure outside-air, wet- and dry-bulb temperatures.

3.08 PROCEDURES FOR VIBRATION MEASUREMENTS

A. Use a vibration meter meeting the following criteria:

1. Solid-state circuitry with a piezoelectric accelerometer
2. Velocity range of 0.1 to 10 inches per second
3. Displacement range of 1 to 100 mils
4. Frequency range of at least 0 to 1000 Hz
5. Capable of filtering unwanted frequencies

B. Calibrate the vibration meter before each day of testing.

1. Use a calibrator provided with the vibration meter.
2. Follow vibration meter and calibrator manufacturer's calibration procedures.

C. Perform vibration measurements when other building and outdoor vibration sources are at a minimum level and will not influence measurements of equipment being tested.

1. Turn off equipment in the building that might interfere with testing.
2. Clear the space of people.

D. Perform vibration measurements after air and water balancing and equipment testing is complete.

E. Clean equipment surfaces in contact with the vibration transducer.

F. Position the vibration transducer according to manufacturer's written instructions and to avoid interference with the operation of the equipment being tested.

G. Measure and record vibration on rotating equipment over 1 hp.

H. Measure and record equipment vibration, bearing vibration, equipment base vibration, and building structure vibration. Record velocity and displacement readings in the horizontal, vertical, and axial planes.

1. Pumps:

a. Pump Bearing: Drive end and opposite end
b. Motor Bearing: Drive end and opposite end
c. Pump Base: Top and side
d. Building: Floor
e. Piping: To and from the pump after flexible connections

2. Fans and HVAC Equipment with Fans:

a. Fan Bearing: Drive end and opposite end.
b. Motor Bearing: Drive end and opposite end.
c. Equipment Casing: Top and side
d. Equipment Base: Top and side
e. Building: Floor
f. Ductwork: To and from equipment after flexible connections
g. Piping: To and from equipment after flexible connections

3. HVAC Equipment with Compressors:

a. Compressor Bearing: Drive end and opposite end
b. Motor Bearing: Drive end and opposite end
c. Equipment Casing: Top and side
d. Equipment Base: Top and side
e. Building: Floor
f. Piping: To and from equipment after flexible connections

I. For equipment with vibration isolation, take floor measurements with the vibration isolation blocked solid to the floor and with the vibration isolation floating. Calculate and report the differences.

J. Inspect, measure, and record vibration isolation.

1. Verify that vibration isolation is installed in the required locations.
2. Verify that installation is level and plumb.
3. Verify that isolators are properly anchored.
4. For spring isolators, measure the compressed spring height, the spring OD, and the travel-to-solid distance.
5. Measure the operating clearance between each inertia base and the floor or concrete base below. Verify that there is unobstructed clearance between the bottom of the inertia base and the floor.

3.09 PROCEDURES FOR SOUND-LEVEL MEASUREMENTS

A. Perform sound-pressure-level measurements with an octave-band analyzer complying with ANSI S1.4 for Type 1 sound-level meters and ANSI S1.11 for octave-band filters. Comply with requirements in ANSI S1.13, unless otherwise indicated.

B. Calibrate sound meters before each day of testing. Use a calibrator provided with the sound meter complying with ANSI S1.40 and that has NIST certification.

C. Use a microphone that is suitable for the type of sound levels measured. For areas where air velocities exceed 100 fpm, use a windscreen on the microphone.

D. Perform sound-level testing after air and water balancing and equipment testing are complete.

E. Close windows and doors to the space.

F. Perform measurements when the space is not occupied and when the occupant noise level from other spaces in the building and outside are at a minimum.

G. Clear the space of temporary sound sources so unrelated disturbances will not be measured. Position testing personnel during measurements to achieve a direct line-of-sight between the sound source and the sound-level meter.

H. Take sound measurements at a height approximately 48 inches above the floor and at least 36 inches from a wall, column, and other large surface capable of altering the measurements.

I. Take sound measurements using the dB(A) filter and in each of the 8 unweighted octave bands in the frequency range of 63 to 8000 Hz.

J. Take sound measurements with the HVAC systems off to establish the background sound levels and take sound measurements with the HVAC systems operating. Calculate the difference between measurements. Apply a correction factor depending on the difference and adjust measurements.

K. Perform sound testing at two locations on Project for each of the following space types. For each space type tested, select a measurement location that has the greatest sound level. If testing multiple locations for each space type, select at least one location that is near and at least one location that is remote from the predominant sound source.

1. Private office
2. Open office area
3. Conference room
4. Auditorium/large meeting room/lecture hall
5. Classroom/training room
6. Patient room/exam room
7. Sound or vibration sensitive laboratory
8. Each space with a noise criterion of RC or NC 25 or lower
9. Each space with an indicated noise criterion of RC or NC 35 and lower that is adjacent to a mechanical equipment room or roof mounted equipment
10. Inside each mechanical equipment room
11. Two additional areas as designated by the University

3.10 TEMPERATURE-CONTROL VERIFICATION

A. Verify that controllers are calibrated and commissioned.

B. Check transmitter and controller locations and note conditions that would adversely affect control functions.

C. Record controller settings and note variances between set points and actual measurements.

D. Check the operation of limiting controllers (i.e., high- and low-temperature controllers).

E. Check free travel and proper operation of control devices such as damper and valve operators.

F. Check the sequence of operation of control devices. Note air pressures and device positions and correlate with airflow and water flow measurements. Note the speed of response to input changes.

G. Check the interaction of electrically operated switch transducers.

H. Check the interaction of interlock and lockout systems.

I. Check main control supply-air pressure and observe compressor and dryer operations.

J. Record voltages of power supply and controller output. Determine whether the system operates on a grounded or non-grounded power supply.

K. Note operation of electric actuators using spring return for proper fail-safe operations.

3.11 TOLERANCES

A. Set HVAC system airflow and water flow rates within the following design rate tolerances:

1. Supply, Return, and Exhaust Fans and Equipment with Fans: 0 to plus 10 percent
2. Individual room air outlets and inlets, and air flow rates: minus 5 percent to plus 10 percent. Total room shall be ±5 percent
3. Minimum Outside Air: 0 to plus 10 percent
4. Air Terminal Units (Max): Minus 5 percent to plus 5 percent
5. Air Terminal Units (Min): 0 to plus 10 percent

B. Maintaining pressure relationships and coil capacities as designed shall have priority over the tolerances specified above.

3.12 REPORTING

A. Initial Construction-Phase Report: Based on examination of the Contract Documents as specified in "Examination" Article, prepare a report on the adequacy of design for systems' balancing devices. Recommend changes and additions to systems' balancing devices to facilitate proper performance measuring and balancing. Recommend changes and additions to HVAC systems and general construction to allow access for performance measuring and balancing devices.

B. Status Reports: As Work progresses, prepare reports to describe completed procedures, procedures in progress, and scheduled procedures. Include a list of deficiencies and problems found in systems being tested and balanced. Prepare a separate report for each system and each building floor for systems serving multiple floors.

3.13 FINAL REPORT

A. General: Typewritten, or computer printout in letter-quality font, on standard bond paper, in three-ring binder, tabulated and divided into sections by tested and balanced systems.

1. Include a certification sheet in front of binder signed and sealed by the certified testing and balancing engineer.
2. Include a list of instruments used for procedures, along with proof of calibration.
3. Certify validity and accuracy of field data.

B. Final Report Contents: In addition to certified field report data, include the following:

1. Pump curves
2. Fan curves
3. Manufacturers' test data
4. Field test reports prepared by system and equipment installers
5. Simplified system diagrams
6. Other information relative to equipment performance, but do not include Shop Drawings and Product Data

C. General Report Data: In addition to form titles and entries, include the following data in the final report, as applicable:

1. Title page
2. Name and address of TAB firm
3. Project name
4. Project location
5. Architect's name and address
6. Engineer's name and address
7. Contractor's name and address
8. Report date
9. Signature of TAB firm who certifies the report
10. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report
11. Summary of contents including the following:

    a. Indicated versus final performance
    b. Notable characteristics of systems
    c. Description of system operation sequence if it varies from the Contract Documents

12. Nomenclature sheets for each item of equipment.
13. Data for terminal units, including manufacturer, type size, and fittings.
14. Notes to explain why certain final data in the body of reports varies from indicated values.
15. Test conditions for fans and pump performance forms including the following:

    a. Settings for outside-, return-, and exhaust-air dampers
    b. Conditions of filters

c. Cooling coil, wet- and dry-bulb conditions
d. Face and bypass damper settings at coils
e. Fan drive settings including settings and percentage of maximum pitch diameter
f. Inlet vane settings for variable-air-volume systems
g. Settings for supply-air, static-pressure controller
h. Other system operating conditions that affect performance

D. System Diagrams: Include schematic layouts of air and hydronic distribution systems. Present each system with single-line diagram and include the following:

1. Quantities of outside, supply, return, and exhaust airflows
2. Water and steam flow rates
3. Duct, outlet, and inlet sizes
4. Pipe and valve sizes and locations
5. Terminal units
6. Balancing stations
7. Position of balancing devices

E. Round, Flat-Oval, and Rectangular Duct Traverse Reports: Include a diagram with a grid representing the duct cross-section and record the following:

1. Report Data:

a. System and air-handling unit or exhaust fan number
b. Location and zone
c. Traverse air temperature in °F
d. Duct static pressure in inches water gauge
e. Duct size in inches
f. Duct area in square feet
g. Length of straight duct before traverse in feet and inches.
h. Indicated airflow rate in cfm
i. Indicated velocity in fpm
j. Actual airflow rate in cfm
k. Actual average velocity in fpm
l. Barometric pressure in inches of mercury
m. Duct mounted sound attenuator static-pressure differential in inches water gauge and velocity in fpm

F. Air-Terminal-Device Reports:

1. Unit Data:

a. System and air-handling unit identification
b. Location and zone
c. Test apparatus used
d. Area served
e. Air-terminal-device make
f. Air-terminal-device number from system diagram

g. Air-terminal-device type and model number
h. Air-terminal-device size
i. Air-terminal-device effective area in square feet

2. Test Data (Indicated and Actual Values):

a. Airflow rate in cfm
b. Air velocity in fpm
c. Preliminary airflow rate as needed in cfm
d. Preliminary velocity as needed in fpm
e. Final airflow rate in cfm
f. Final velocity in fpm
g. Space temperature in °F

G. Compressor and Condenser Reports: For refrigerant side of unitary systems, stand-alone refrigerant compressors, air-cooled condensing units, or water-cooled condensing units, include the following:

1. Unit Data:

a. Unit identification
b. Location
c. Unit make and model number
d. Compressor make
e. Compressor model and serial numbers
f. Refrigerant weight in pounds
g. Low ambient temperature cutoff in °F

2. Test Data (Indicated and Actual Values):

a. Inlet-duct static pressure in inches water gauge
b. Outlet-duct static pressure in inches water gauge
c. Entering-air, dry-bulb temperature in °F
d. Leaving-air, dry-bulb temperature in °F
e. Condenser entering-water temperature in °F
f. Condenser leaving-water temperature in °F
g. Condenser-water temperature differential in °F
h. Condenser entering-water pressure psig
i. Condenser leaving-water pressure psig
j. Condenser-water pressure differential psi
k. Control settings
l. Unloader set points
m. Low-pressure-cutout set point in psig
n. High-pressure-cutout set point in psig
o. Suction pressure in psig
p. Suction temperature in °F
q. Condenser refrigerant pressure in psig
r. Condenser refrigerant temperature in °F
s. Oil pressure in psig

t. Oil temperature in °F
u. Voltage at each connection
v. Amperage for each phase
w. Kilowatt input
x. Crankcase heater kilowatt
y. Number of fans
z. Condenser fan rpm
aa. Condenser fan airflow rate in cfm
bb. Condenser fan motor make, frame size, rpm, and horsepower
cc. Condenser fan motor voltage at each connection
dd. Condenser fan motor amperage for each phase.

H. Vibration Measurement Reports:

1. Date and time of test
2. Vibration meter manufacturer, model number, and serial number
3. Equipment designation, location, equipment, speed, motor speed, and motor horsepower
4. Diagram of equipment showing the vibration measurement locations
5. Measurement readings for each measurement location
6. Calculate isolator efficiency using measurements taken
7. Description of predominant vibration source

I. Sound Measurement Reports: Record sound measurements on octave band and dB(A) test forms and on an NC or RC chart indicating the decibel level measured in each frequency band for both "background" and "HVAC system operating" readings. Record each tested location on a separate NC or RC chart. Record the following on the forms:

1. Date and time of test
2. Sound meter manufacturer, model number, and serial number
3. Space location within the building including floor level and room number
4. Diagram or color photograph of the space showing the measurement location
5. Time weighting of measurements, either fast or slow
6. Description of the measured sound: steady, transient, or tonal
7. Description of predominant sound source

J. Instrument Calibration Reports:

1. Report Data:

a. Instrument type and make
b. Serial number
c. Application
d. Dates of use
e. Dates of calibration

3.14 INSPECTIONS

A. Initial Inspection:

1. After testing and balancing are complete, operate each system and randomly check measurements to verify that the system is operating according to the final test and balance readings documented in the Final Report.
2. Randomly check the following for each system:

    a. Measure airflow of at least 10 percent of air outlets.
    b. Measure sound levels at two locations.
    c. Verify that balancing devices are marked with final balance position.
    d. Note deviations to the Contract Documents in the Final Report.

B. Final Inspection:

1. After initial inspection is complete and evidence by random checks verifies that testing and balancing are complete and accurately documented in the final report, request that a final inspection be made by University's Representative.
2. TAB firm test and balance engineer shall conduct the inspection in the presence of University's Representative.
3. University Representative shall randomly select measurements documented in the final report to be rechecked. The rechecking shall be limited to either 10 percent of the total measurements recorded, or the extent of measurements that can be accomplished in a normal 8-hour business day.
4. If the rechecks yield measurements that differ from the measurements documented in the final report by more than the tolerances allowed, the measurements shall be noted as "FAILED."
5. If the number of "FAILED" measurements is greater than 10 percent of the total measurements checked during the final inspection, the testing and balancing shall be considered incomplete and shall be rejected.
6. TAB firm shall recheck measurements and make adjustments. Revise the final report and balancing device settings to include changes and resubmit the final report.
7. Request a second final inspection. If the second final inspection also fails, University shall contract the services of another TAB firm to complete the testing and balancing in accordance with the Contract Documents and deduct the cost of the services from the final payment.

END OF SECTION

SECTION 23 0700

HVAC INSULATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes new piping and ductwork and equipment insulation that is not factory insulated and repair of existing insulation damaged by the Work of this contract:

1. Insulation Materials:

    a. Mineral fiber.

2. Thermal Blankets
3. Adhesives.
4. Mastics.
5. Securements.
6. Corner angles.

1.02 SUBMITTALS

A. Product Data: For each type of product indicated. Include thermal conductivity, thickness, and jackets (both factory and field applied, if any). Clearly mark the materials being provided and its intended use of each product or the submittal will be rejected.

B. Submittal:

1. Product Data: For adhesives and sealants, including printed statement of VOC content.

C. Shop Drawings:

1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
2. Detail insulation application at pipe expansion joints for each type of insulation.
3. Detail insulation application at elbows, fittings, flanges, valves, and specialties for each type of insulation.
4. Detail removable insulation at piping specialties, equipment connections, nameplates, service plugs, HTW pipe anchors, guides, expansion joints, and HTW supports, and access panels.
5. Detail application of field-applied jackets.
6. Detail application at linkages of control devices.
7. Detail field application for each equipment type.

D. Qualification Data: For qualified Installer.

E. Material Test Reports: From a qualified testing agency acceptable to Campus Fire Marshal indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.

F. Field quality-control reports if requested by the University's Representative.

1.03 QUALITY ASSURANCE

A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

B. Surface Burning Characteristics: For insulation and related materials, as determined by testing identical products per ASTM E 84, by a testing and inspecting agency acceptable to Campus Fire Marshal. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing and inspecting agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

C. Mockups shall be Type 1: An in-place review of items, materials and systems prior to execution, with approval by University's Representative. It is not the intent to modify materials or installation but to verify quality control expectations of the Contractor. The mockups shall include materials, finishes, and construction details to complete the finished appearance. The exact location shall be verified with the Contractor's sequencing and the University's Representative.

1. Ductwork Mockups:

   a. None unless installing special or alternate insulation, build in place mockups for each type of insulation and finish to demonstrate quality of insulation application and finishes. Build mockups using same materials as for the completed Work.

2. For each mockup, fabricate cutaway sections or shop drawing to allow observation of application details for insulation materials, adhesives, mastics, attachments, and jackets.
3. Notify University's Representative seven days in advance of dates and times when mockups will be constructed.
4. Obtain University's Representative's approval of mockups before starting insulation application.
5. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless University's Representative specifically approves such deviations in writing.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

B. Insulation shall be delivered to the job site in original, unopened manufacturer’s containers.

C. Insulation shall be stored in a dry location and kept dry throughout construction.

1.05 COORDINATION

A. Coordinate size and location of supports, hangers, and insulation shields specified in Division 23 Section "Hangers and Supports for HVAC."

B. Coordinate clearance requirements with piping Installer for piping insulation application, duct Installer for duct insulation application, and equipment Installer for equipment insulation application. Before preparing piping and ductwork Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

1.06 SCHEDULING

A. Schedule insulation application after pressure testing systems. Insulation application may begin on segments that have satisfactory test results.

PART 2 - PRODUCTS

2.01 INSULATION MATERIALS

A. Comply with requirements in Part 3 schedule articles for where insulating materials shall be applied.

B. Prohibited: Products containing asbestos, lead, mercury, or mercury compounds.

C. Prohibited insulation materials: Calcium silicate, phenolic, or polyisocyanurate insulation.

D. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

E. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

F. Definition of “Or Equal”: Where products are specified by manufacturers’ name and accompanied by the term “or equal”, comply with provisions in Division 01. Specific procedures must be followed before use of an unnamed product or manufacturer.

G. Mineral Wool: Inorganic mineral fiber made from Basalt, or high-recycled content mineral fiber insulation. Comply with ASTM C547 with or without factory applied FSK jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article

1. Products: Subject to compliance with requirements, provide one of the following:

   a. Industrial Insulation Group, LLC

b. Roxul
c. Thermafiber
d. Or Equal

H. Mineral-Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II and ASTM C 1290, Type III with factory-applied

I. Mineral-Fiber Board Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 612, Type IA or Type IB. For duct and plenum applications, provide insulation with factory-applied FSK jacket. For equipment applications, provide insulation without factory-applied jacket if needed for building up thicknesses of insulation otherwise provide with factory-applied ASJ or with factory-applied FSK jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Products: Subject to compliance with requirements, provide one of the following:

a. CertainTeed Corp.; Commercial Board.
b. Fibrex Insulations Inc.; FBX.
c. Industrial Insulation Group, LLC
d. Johns Manville; 800 Series Spin-Glas.
e. Knauf Insulation; Insulation Board.
f. Manson Insulation Inc.; AK Board.
g. Owens Corning; Fiberglas 700 Series.
h. Roxul
i. Thermafiber
j. Or equal.

2.02 THERMAL BLANKETS:

A. Thermal blankets: custom fit pre-engineered insulation system, flexible and removable after installation to allow reinstallation and access to hard to insulate items.

1. Insulation Material: ASTM C 1086, encapsulated 11 lb/cu. ft. fiberglass needled mat, Type E fiber
2. Inner and Outer Jacket: Minimum 16.5 oz./sq. yd. PTFE Teflon impregnated fiberglass.
3. Blanket Construction: Double sewn lock stitch with a minimum of 7 stitches per inch. Raw jacket edges shall have a PTFE Teflon fiberglass cloth binding with Teflon coated fiberglass thread stitching.
4. Quilting: Stainless steel tufts or pins placed at random locations no greater than 16” inches apart, with stainless steel speed washers for securing the insulation in place.
5. Fasteners: 12 or 14 gauge Type 304 Stainless Steel lacing pins shall be provided. The lacing pins will be held in place with 1-inch diameter, 14 gauge, type 304 stainless steel speed washers.
6. I.D. Tags: Stainless steel with embossed lettering.
7. Insulation thickness: to comply with insulation schedule in Part 3.
8. Thermal blankets installed outdoors shall be installed in a manner that rain and dew will not collect on blankets or seep inside of blanket. Provide removable aluminum jackets water shields or rain guards if necessary.

9. Custom Manufacturers:

   a. Orange County Thermal Industries, Inc.
   b. Sound Waves Insulations, Inc., Santa Ana
   c. Thermal Energy Products, Inc.
   d. Or equal.

2.03 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated. Adhesives shall contain no flammable solvents if that option is available.

B. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. Design Polymerics DP 2590-CA
   b. ITW TACC, Division of Illinois Tool Works; SP80, T1080
   c. Marathon Industries, Inc.
   d. Or equal.

2. For indoor applications use adhesive that has a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.04 MASTICS

A. Materials shall water based and be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.

1. For indoor applications, use mastics that have a VOC content of 40 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Vapor-Barrier Mastic: Water based; suitable for indoor and outdoor use on below ambient services.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. Childers Products, Division of ITW; CP-35.
   b. Design Polymerics 3040 with zero VOC’s.
   c. Foster Products Corporation, H. B. Fuller Company; 30-90.
   d. ITW TACC, Division of Illinois Tool Works; CB-50.
   e. Marathon Industries, Inc.; 590.
   f. Mon-Eco Industries, Inc.; 55-40.
   g. Vimasco Corporation; 749.
   h. Or equal.

2. Water-Vapor Permeance: ASTM E 96, Procedure B, 0.013 perm at 43-mil dry film thickness.
3. Service Temperature Range: Minus 20 to plus 180 deg F.

4. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
5. Color: White.

C. Breather Mastic: Water based; suitable for indoor and outdoor use on above ambient services.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Childers Products, Division of ITW; CP-10.
b. Foster Products Corporation, H. B. Fuller Company; 35-00.
c. ITW TACC, Division of Illinois Tool Works; CB-05/15.
d. Marathon Industries, Inc.; 550.
e. Mon-Eco Industries, Inc.; 55-50.
f. Vimasco Corporation; WC-1/WC-5.
g. Or equal.

2. Water-Vapor Permeance: ASTM F 1249, 1.8 perms at 0.0625-inch dry film thickness.
3. Service Temperature Range: Minus 20 to plus 180 deg F.
4. Solids Content: 60 percent by volume and 66 percent by weight.
5. Color: White.

D. High Temperature Water Mastic: asphalt cutback

1. Products:

a. Pittsburgh Corning Corp.: Pittcote 300.
b. Or equal.

2.05 SECUREMENTS

A. Bands:

1. Products: Subject to compliance with requirements, provide one of the following:

a. Childers Products; Bands.
b. PABCO Metals Corporation; Bands.
c. RPR Products, Inc.; Bands.
d. Or equal.

2. Stainless Steel: ASTM A167 or ASTM A240/A 240M, Type 304 or Type 316; 0.015 inch thick, ¾ inch wide with wing seal.
3. Aluminum: ASTM B209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, ¾ inch wide with wing seal.
4. Springs: For larger than 84-inch diameter tank applications. Twin spring set constructed of stainless steel with ends flat and slotted to accept metal bands. Spring size determined by manufacturer for application.

B. Insulation Pins and Hangers:

1. Cupped-Head, Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.135-inch- diameter shank, length to suit depth of insulation indicated with integral 1½-inch galvanized carbon-steel washer.

    a. Products: Subject to compliance with requirements, provide one of the following:

        1) AGM Industries, Inc.; CWP-1.
        2) GEMCO; Cupped Head Weld Pin.
        3) Midwest Fasteners, Inc.; Cupped Head.
        4) Nelson Stud Welding; CHP.
        5) Or equal.

2. Self-Sticking-Base Insulation Hangers for Equipment: Baseplate welded to projecting spindle that is capable of holding insulation, of thickness indicated, and securely in position indicated when self-locking washer is in place. Self-sticking-base is prohibited for use with ductwork insulation. Comply with the following requirements:

    a. Products: Subject to compliance with requirements, provide one of the following:

        1) AGM Industries, Inc.; Tactoo Insul-Hangers, Series TSA.
        2) GEMCO; Press and Peel.
        3) Midwest Fasteners, Inc.; Self Stick.
        4) Or equal.

    b. Baseplate: Galvanized carbon-steel sheet, 0.015 inch thick by 2 inches square.
    c. Spindle: Low carbon steel, fully annealed, 0.105-inch-diameter (12 gage) shank, length to suit depth of insulation indicated.
    d. Adhesive-backed base with a peel-off protective cover.

3. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch- thick, galvanized-steel sheet, with beveled edge sized as required to hold insulation securely in place but not less than 1-½ inches in diameter.

    a. Products: Subject to compliance with requirements, provide one of the following:

        1) AGM Industries, Inc.; RC-150.
        2) GEMCO; R-150.
        3) Midwest Fasteners, Inc.; WA-150.
        4) Nelson Stud Welding; Speed Clips.
        5) Or equal.

    b. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in exposed locations.

C. Staples: Outward-clinching insulation staples, nominal ¾-inch- wide, stainless steel or Monel.

D. Wire: 0.062-inch soft-annealed, stainless steel or 0.062-inch soft-annealed Monel®.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. C & F Wire.
   b. Childers Products.
   c. PABCO Metals Corporation.
   d. RPR Products, Inc.
   e. Or equal.

2.06 CORNER ANGLES

A. Aluminum Corner Angles: 0.040 inch thick, minimum 1 by 1 inch, aluminum according to ASTM B209, Alloy 3003, 3005, 3105 or 5005; Temper H-14.

B. Stainless-Steel Corner Angles: 0.024 inch thick, minimum 1 by 1 inch, stainless steel according to ASTM A167 or ASTM A240/A240M, Type 304 or Type 316.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation and other conditions affecting performance of insulation application.

1. Verify that systems and equipment to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

1. Stainless Steel: Coat 300 series stainless steel with epoxy primer 5 mils thick and an epoxy finish 5 mils thick if operating in a temperature range between 140 and 300 deg F. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.
2. Carbon Steel: Coat carbon steel operating at a service temperature between 32 and 300 deg F with an epoxy coating. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.

B. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water.

3.03 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation in accordance with the manufacturer's installation instructions. Any conflicts or differences shall be brought to the attention of the University's Representative for review and approval before any work proceeds.

B. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of equipment, ducts and fittings, and piping including fittings, valves, and specialties.

C. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of equipment, duct system, and pipe system as specified in insulation system schedules.

D. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

E. Install insulation with longitudinal seams at top and bottom of horizontal runs.

F. Install multiple layers of insulation with longitudinal and end seams staggered.

G. Welding brackets, clips, or other attachment devices to piping, fittings, and specialties is prohibited.

H. Keep insulation materials dry during application and finishing.

I. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

J. Install insulation with least number of joints practical. Do not use two or more scrap pieces where a full-length section will fit.

K. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.

1. Install insulation continuously through hangers and around anchor attachments.
2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.

L. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses. Their function is not to mask poor-fitting insulation.

M. Install insulation with factory-applied jackets as follows:

1. Draw jacket tight and smooth.
2. Cover circumferential joints with 3-inch-wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches on center.
3. Overlap jacket longitudinal seams at least 1-½ inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 4 inches on center.

    a. For below ambient services, apply vapor-barrier mastic over staples.

4. Cover joints and seams with tape as recommended by insulation material manufacturer to maintain vapor seal.
5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to duct and pipe flanges and fittings.

N. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

O. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

P. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

Q. Existing pipe insulation damaged or affected by the work of this contract shall be repaired to comply with these specifications except that materials and thicknesses may match existing unless otherwise directed by the University's Representative.

3.04 FINISHES

A. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.

3.05 FIELD QUALITY CONTROL

A. Perform tests and inspections when requested and in the presence of University's Representative. The University will test and inspect if there is a concern with the installer's workmanship.

B. Tests and Inspections:

1. Inspect ductwork, randomly selected by University's Representative, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to one location for each 5,000 cfm duct system.
2. Inspect field-insulated equipment, randomly selected by University's Representative, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to one location for each type of equipment defined in the "Equipment Insulation Schedule" Article. For large equipment, remove only a portion adequate to determine compliance.

3. Inspect pipe, fittings, strainers, and valves, randomly selected by University's Representative, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe, three locations of threaded fittings, three locations of welded fittings, for each pipe service defined in the "Piping Insulation Schedule, General" Article.

C. Insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.06 DUCT INSULATION SCHEDULE, GENERAL

A. Ducts with duct liner within the duct shall still require exterior duct insulation.

B. Sound attenuators or duct silencers if installed in an insulated duct system shall also require exterior duct insulation.

C. Install duct insulation with a vapor barrier.

D. Provide professional appearance in exposed locations for blanket and board insulation. Board shall continue to suitable point to change to blanket insulation, e.g. elbow, tee, etc. Secure blanket insulation in exposed locations shall using tape. Exposed wire is prohibited.

E. Items Not Insulated:

1. Factory-insulated flexible ducts.
2. Factory-insulated plenums and casings.
3. Flexible connectors.
4. Vibration-control devices.
5. Factory-insulated access panels and doors.

3.07 DUCT AND PLENUM INSULATION SCHEDULE

DUCT OR PLENUM LOCATION	TYPE	NOMINAL THICKNESS/ MINIMUM R-VALUE (HR-FT^2-°F/BTU) @ 75°F			DENSITY (LBS/ FT^3)
		SUPPLY	RETURN	OUTSIDE AIR	
Outdoors	Board	2" / 8	2" / 8	None	3

3.08 EQUIPMENT INSULATION SCHEDULE, GENERAL

A. Insulation materials and thicknesses are identified in following Article based on the equipment temperature service. If more than one material is listed for a type of equipment, selection from materials listed is Contractor's option.

B. Insulate indoor and outdoor equipment in paragraphs below that are not factory insulated or if the factory installed insulation that does not meet or exceed the specified thermal requirements.

END OF SECTION

SECTION 23 0800

COMMISSIONING OF HVAC

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes commissioning process requirements for the following HVAC&R systems, assemblies, and equipment:

1. Energy supply systems, including [**gas supply**] [**central-plant chilled water supply**] [**central-plant high temperature-water supply**] <**Insert supply sources**>.
2. Heat generation systems, including [**steam boilers**] [**hot-water boilers**] [**furnaces**] [**fuel-fired unit heaters**] [**auxiliary equipment**] <**Insert equipment**>.
3. Cooling generation systems, including [**chilled-water systems**] [**direct-expansion systems**] <**Insert systems**>.
4. Distribution systems, including [**air distribution (heating and cooling) systems**] [**high temperature-water distribution systems**] **[heating water distribution systems**] [**chilled-water distribution systems**] [**exhaust systems**] [**air-handling units**] <**Insert systems**>.
5. Terminal and packaged units, including [**unit ventilators**] [**unit heaters**] [**fan-coil units**] [**finned-tube radiation**] [**electric heating**] [**packaged units**] <**Insert units**>.
6. Vibration and sound systems, including [**sound attenuation**] [**vibration isolation devices**] [**seismic restraints**].
7. Controls and instrumentation, including [**BAS**] [**energy monitoring and control system**] <**Insert systems**>.
8. Systems testing and balancing verification, including [**heating-water piping systems**] [**chilled-water piping systems**] [**domestic hot-water circulating systems**] [**supply-air systems**] [**return-air systems**] [**exhaust-air systems**] <**Insert systems**>.
9. <**Insert HVAC systems**>.

1.02 DEFINITIONS

A. BAS: Building automation system.

B. DDC: Direct digital controls.

C. HVAC&R: Heating, Ventilating, Air Conditioning, and Refrigeration.

D. "Systems," "Subsystems," "Equipment," and "Components": Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, equipment, and components.

E. TAB: Testing, adjusting, and balancing.

1.03 INFORMATIONAL SUBMITTALS

A. Qualification Data: For [**BAS**] [**and**] [**HVAC&R**] Testing Technician.

B. Construction Checklists: See related Sections for technical requirements for the following construction checklists:

1. Vibration and seismic controls for HVAC&R piping and equipment.
2. Instrumentation and control for HVAC&R.
3. Heating-water piping and accessories.
4. Cooling-water piping and accessories.
5. Steam and condensate piping and accessories.
6. Refrigerant piping.
7. Metal ducts and accessories.
8. Fans.
9. Particulate air filtration.
10. Air-handling units.
11. Computer-room air conditioners.
12. Boilers.
13. Chillers.
14. Pumps.
15. Cooling towers.

1.04 QUALITY ASSURANCE

A. BAS Testing Technician Qualifications: Technicians to perform BAS construction checklist verification tests, construction checklist verification test demonstrations, commissioning tests, and commissioning test demonstrations shall have the following minimum qualifications:

1. Journey-level or equivalent skill level with knowledge of BAS, HVAC&R, electrical concepts, and building operations.
2. Minimum [**three years'**] <**Insert time**> experience installing, servicing, and operating systems manufactured by approved manufacturer.
3. International Society of Automation (ISA) Certified Control Systems Technician (CCST) Level I.

B. HVAC&R Testing Technician Qualifications: Technicians to perform HVAC&R construction checklist verification tests, construction checklist verification test demonstrations, commissioning tests, and commissioning test demonstrations shall have the following minimum qualifications:

1. Journey-level or equivalent skill level. Vocational School four-year program graduate or an Associate's degree in mechanical systems, air conditioning, or similar field. Degree may be offset by three years' experience in servicing mechanical systems in the HVAC industry. Generally, required knowledge includes HVAC&R systems, electrical concepts, building operations, and application and use of tools and

instrumentation to measure performance of HVAC&R equipment, assemblies, and systems.

2. Minimum [**three years'**] <**Insert time**> experience installing, servicing, and operating systems manufactured by approved manufacturer.
3. One of the following:

    a. National Environmental Balancing Bureau (NEBB) Certified Testing, Adjusting, and Balancing Technician.
    b. Associated Air Balance Council (AABC) Certified Test and Balance Technician.
    c. Owner retains the right to waive NEBB or AABC Certification.

C. Testing Equipment and Instrumentation Quality and Calibration: For test equipment and instrumentation required to perform HVAC&R commissioning work, perform the following:

1. Submit test equipment and instrumentation list. For each equipment or instrument, identify the following:

    a. Equipment/instrument identification number.
    b. Planned commissioning application or use.
    c. Manufacturer, make, model, and serial number.
    d. Calibration history, including certificates from agencies that calibrate the equipment and instrumentation.

2. Test equipment and instrumentation shall meet the following criteria:

    a. Capable of testing and measuring performance within the specified acceptance criteria.
    b. Be calibrated at the manufacturer's recommended intervals with current calibration tags permanently affixed to the instrument being used.
    c. Be maintained in good repair and operating condition throughout the duration of use on this Project.
    d. Be recalibrated/repaired if dropped or damaged in any way since last calibrated.

D. Proprietary Test Instrumentation and Tools:

1. Equipment Manufacturer's Proprietary Instrumentation and Tools: For installed equipment included in the commissioning process, test instrumentation and tools manufactured or prescribed by equipment manufacturer to service, calibrate, adjust, repair, or otherwise work on its equipment or required as a condition of equipment warranty, perform the following:

    a. Submit proprietary instrumentation and tools list. For each instrument or tool, identify the following:

        1) Instrument or tool identification number.
        2) Equipment schedule designation of equipment for which the instrument or tool is required.
        3) Manufacturer, make, model, and serial number.

4) Calibration history, including certificates from agencies that calibrate the instrument or tool, where appropriate.

b. Include a separate list of proprietary test instrumentation and tools in the operation and maintenance manuals.

c. HVAC&R proprietary test instrumentation and tools become the property of Owner at the time of Substantial Completion.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 GENERAL TESTING REQUIREMENTS

A. Certify that HVAC&R systems, subsystems, and equipment have been installed, calibrated, and started and are operating according to the Contract Documents and approved Shop Drawings and submittals.

B. Certify that HVAC&R instrumentation and control systems have been completed and calibrated, that they are operating according to the Contract Documents and approved Shop Drawings and submittals, and that pretest set points have been recorded.

C. Certify that TAB procedures have been completed and that TAB reports have been submitted, discrepancies corrected, and corrective work approved.

D. Set systems, subsystems, and equipment into operating mode to be tested according to approved test procedures (e.g., normal shutdown, normal auto position, normal manual position, unoccupied cycle, emergency power, and alarm conditions).

E. Measure capacities and effectiveness of systems, assemblies, subsystems, equipment, and components, including operational and control functions to verify compliance with acceptance criteria.

F. Test systems, assemblies, subsystems, equipment, and components operating modes, interlocks, control responses, and responses to abnormal or emergency conditions, and response according to acceptance criteria.

G. Construction Checklists: Prepare and submit detailed construction checklists for HVAC&R systems, subsystems, equipment, and components.

1. Contributors to the development of construction checklists shall include, but are not limited to, the following:

a. HVAC&R systems and equipment installers.
b. TAB technicians.
c. HVAC&R instrumentation and controls installers.

H. Perform tests using design conditions, whenever possible.

1. Simulated conditions may, with approval of Architect, be imposed using an artificial load when it is impractical to test under design conditions. Before simulating conditions, calibrate testing instruments. Provide equipment to simulate loads. Set simulated conditions as directed by Commissioning Coordinator and document simulated conditions and methods of simulation. After tests, return configurations and settings to normal operating conditions.
2. Commissioning test procedures may direct that set points be altered when simulating conditions is impractical.
3. Commissioning test procedures may direct that sensor values be altered with a signal generator when design or simulating conditions and altering set points are impractical.

I. If tests cannot be completed because of a deficiency outside the scope of the HVAC&R system, document the deficiency and report it to Owner. After deficiencies are resolved, reschedule tests.

J. If seasonal testing is specified, complete appropriate initial performance tests and documentation and schedule seasonal tests.

K. Coordinate schedule with, and perform the following activities at the direction of, Commissioning Coordinator.

L. Comply with construction checklist requirements, including material verification, installation checks, start-up, and performance tests requirements specified in Sections specifying HVAC systems and equipment.

M. Provide technicians, instrumentation, tools, and equipment to complete and document the following:

1. Performance tests.
2. Demonstration of a sample of performance tests.
3. Commissioning tests.
4. Commissioning test demonstrations.

3.02 TAB COMMISSIONING TESTS

A. TAB Verification:

1. Prerequisites: Completion of "Examination" Article requirements and correction of deficiencies, as specified in Section 23 0593 "Testing, Adjusting, and Balancing for HVAC."
2. Completion of "Preparation" Article requirements for preparation of a TAB plan that includes strategies and step-by-step procedures, and system-readiness checks and reports, as specified in Section 23 0593 "Testing, Adjusting, and Balancing for HVAC."
3. Scope: HVAC&R air systems and hydronic piping systems.
4. Purpose: Differential flow relationships intended to maintain air pressurization differentials between the various areas of Project.
5. Conditions of the Test:

a. Commissioning Test Demonstration Sampling Rate: As specified in "Inspections" Article in Section 23 0593 "Testing, Adjusting, and Balancing for HVAC."
b. Systems operating in full heating mode[**with minimum outside-air volume**].
c. Systems operating in full cooling mode[**with minimum outside-air volume**].
d. For measurements at air-handling units with economizer controls; systems operating in economizer mode with 100 percent outside air.

6. Acceptance Criteria:

a. Under all conditions, rechecked measurements comply with "Inspections" Article in Section 23 0593 "Testing, Adjusting, and Balancing for HVAC."
b. Additionally, no rechecked measurement shall differ from measurements documented in the final report by more than two times the tolerances allowed.
c. Under all conditions, where the Contract Documents indicate a differential in airflow between supply and exhaust and/or return in a space, the differential relationship shall be maintained.

3.03 HEATING CONTROL SYSTEM COMMISSIONING TESTS

A. Heating-Water Supply Temperature Control:

1. Prerequisites: Installation verification of the following:

a. Startup of [**boiler**] <**Insert boiler designations**> [**steam to hot-water converter**] <**Insert converter designations**> <**Insert prime heating-water equipment**>.
b. Startup of heating-water pump(s) <**Insert pump designations**>.
c. TAB of heating-water flow and pressure.
d. Input Device: Heating-water supply temperature; [**thermostat**] [**thermistor temperature sensor**] [**resistance temperature sensor**] <**Insert device designations**>.
e. Output Device: Control valve <**Insert device designation**>.
f. Display the following at the operator's workstation:

1) Heating-water supply temperature.
2) Heating-water supply temperature set point.
3) Control-valve position.

2. Scope: Heating-water system.
3. Purpose: Control of heating-water supply temperature at input device <**Insert device designation**>.
4. Conditions of the Test:

a. Minimum heating-water flow.
b. Midrange Heating-Water Flow: [**50 to 60**] <**Insert number(s)**> percent of maximum.
c. Maximum heating-water flow.

5. Acceptance Criteria: Under all conditions, heating-water supply temperature is within plus or minus [**2.0 deg F**] <**Insert temperature**> of set point.

B. Heating-Water Supply Temperature Reset:

1. Prerequisites: Installation verification of the following:

    a. Startup of [**boiler**] <**Insert boiler designations**> [**steam to hot-water converter**] <**Insert converter designations**> <**Insert prime heating-water equipment**>.
    b. Startup of heating-water pump(s) <**Insert pump designations**>.
    c. TAB of heating-water flow and pressure.
    d. Input Device: Heating-water supply temperature; [**thermostat**] [**thermistor temperature sensor**] [**resistance temperature sensor**] <**Insert device designations**>.
    e. Input Device: Outdoor-air temperature; [**electric, outdoor-air-reset controller**] [**outdoor-air sensor**].
    f. Output Device: Control valve <**Insert device designations**>.
    g. Display the following at the operator's workstation:

        1) Outdoor-air temperature.
        2) Heating-water supply temperature.
        3) Heating-water supply temperature set point.
        4) Control-valve position.

2. Scope: Heating-water system.
3. Purpose: Control of heating-water supply temperature at heating-water supply temperature input device <**Insert device designation**> in response to variable outdoor-air temperature input; [**electric, outdoor-air-reset controller**] [**outdoor-air sensor**].
4. Conditions of the Test: Outdoor-air temperature input value may be overridden for this test.

    a. Low Temperature: Outdoor-air temperature between [**minus 30 and 0 deg F**] <**Insert temperature range**>.
    b. Midrange Temperature: Outdoor-air temperature between [**30 and 45 deg F**] <**Insert temperature range**>.
    c. High Temperature: Outdoor-air temperature above [**65 deg F**] <**Insert temperature**>.

5. Acceptance Criteria: Heating-water supply temperature resets in straight-line relationship with outdoor-air temperature for the following reset schedule. Under all conditions, heating-water supply temperature is within [**2.0 deg F**] <**Insert temperature**> of set point.

    a. [**195 deg F**] <**Insert temperature**> heating water when outdoor-air temperature is [**minus 30 deg F**] <**Insert temperature**>.

b. [**130 deg F**] <**Insert temperature**> heating water when outdoor-air temperature is [**65 deg F**] <**Insert temperature**>.
c. Under all conditions, heating-water supply temperature is within plus or minus [**2.0 deg F**] <**Insert temperature**> of set point.

C. Control Primary Circulating Pump(s):

1. Prerequisites: Installation verification of the following:

a. Startup of heating-water pump(s) <**Insert pump designations**>.
b. Input Device: Outdoor-air temperature; [**electric, outdoor-air-reset controller**] [**outdoor-air sensor**].
c. Output Device: Heating-water pump; [**starter**] [**DDC system command to starter**] relay.
d. Display the following at the operator's workstation:

1) Outdoor-air temperature.
2) Operating status of primary circulating pump(s).

2. Scope: Heating-water pump(s) <**Insert pump designations**> and associated controls.
3. Purpose: On-off control of heating-water pump(s) in response to variable outdoor-air temperature input; [**electric, outdoor-air-reset controller**] [**outdoor-air sensor**].
4. Conditions of the Test:

a. High Temperature: Outdoor-air temperature above [**65 deg F**] <**Insert temperature**>.
b. Low Temperature: Outdoor-air temperature below [**65 deg F**] <**Insert temperature**>.

5. Acceptance Criteria:

a. High Temperature: Pump(s) are off when outside-air temperature is above [**65 deg F**] <**Insert temperature**>.
b. Low Temperature: Pump(s) are on when outside-air temperature is below [**65 deg F**] <**Insert temperature**>.

3.04 CENTRAL REFRIGERATION SYSTEM COMMISSIONING TESTS

A. Start and Stop Condenser-Water Pump(s):

1. Prerequisites: Installation verification of the following:

a. Startup of condenser-water pump(s) <**Insert pump designations**>.
b. Startup of cooling tower <**Insert cooling tower designations**>.
c. Input Device: Water pressure transducer <**Insert device designation**>.
d. Input Device: [**Space thermostat**] [**DDC system outdoor-air temperature**] <**Insert device designation**>.

e. Input Device: [**Time clock**] [**DDC system time schedule**] <**Insert device designation**>.
f. Output Device: Hard wired through motor starter; [**DDC system binary output**] <**Insert device designation**>.
g. Output Device: [**Time clock**] [**Binary output**] <**Insert device designation**>.
h. Display the following at the operator's workstation:

1) Low-level cooling-tower sump alarm.
2) Outdoor-air temperature.
3) Cooling (software) demand indication.
4) Time and time schedule.
5) Condenser-water pump(s) on-off status.
6) Condenser-water pump(s) on-off indication.
7) Condenser-water flow indication.

2. Scope:

a. Condenser-water system, including condenser-water pump(s), cooling towers, and associated controls.

3. Purpose:

a. Condenser-water pump(s) lockout.
b. Condenser-water pump(s) start.
c. Condenser-water pump(s) shutdown.
d. Low-level cooling-tower sump alarm.
e. Condenser-water pump(s) time-of-day schedule.

4. Conditions of the Test:

a. Verify Lockout: Start with condenser-water pump enable-input devices in the "disable" state to prevent pump start. One-by-one, place the enable-input devices in the "enable" state, and then return each to the "disable" state before placing the next enable-input device to the "enable" state.
b. Verify Start: Start with condenser-water pump enable-input devices in the "disable" state to prevent pump start. One-by-one, place the enable-input devices in the "enable" state.
c. Verify Shutdown: Place all enable-input devices in the "enable" state to allow the pump(s) to start. One-by-one, place the enable-input devices to their "disable" state, and then return each to the "enable" state before placing the next enable-input device to the "disable" state.
d. Verify Schedule: Compare condenser-water pump start and stop schedule times with Owner-approved time-of-day schedule.

5. Acceptance Criteria:

a. Lockout: No single enable-input device starts the pump(s) when released to the enable state.

b. Start: Condenser-water pump(s) start when and only when all enable-input devices are in the "enable" state.
c. Shutdown: Each enable-input device stops the condenser-water pump(s) when placed in the "disable" state, regardless of the state of other enable-input devices.
d. Schedule: Condenser-water pump start and stop schedule times agree with Owner-approved time-of-day schedule.

B. Start and Stop Chilled-Water Pump(s):

1. Prerequisites: Installation verification of the following:

a. Startup of chilled-water pump(s) <**Insert pump designations**>.
b. Startup of condenser-water pump(s) <**Insert pump designations**>.
c. Startup of cooling tower <**Insert cooling tower designations**>.
d. Input Device: Flow switch in condenser-water circuit<**Insert device designation**>.
e. Output Device: [**Starter**] [**DDC system command to starter**] relay.
f. Display of the following at the operator's workstation:

1) Chilled-water flow indication.
2) Condenser-water flow indication.
3) Chilled-water pump(s) on-off status.
4) Chilled-water pump(s) on-off indication.

2. Scope: Chilled-water system, including chilled-water pump(s), associated controls, and condenser-water system controls.
3. Purpose:

a. Chilled-water pump(s) start.
b. Chilled-water pump(s) shutdown.

4. Conditions of the Test:

a. Verify Start: Start with chilled-water pump enable-input device in the "disable" state to prevent pump start. Place the enable-input device in the "enable" state.
b. Verify Shutdown: Start with the enable-input device in the "enable" state to allow the pump(s) to run. Then place the enable-input device to the "disable" state.

5. Acceptance Criteria:

a. Start: Chilled-water pump(s) start when and only when the enable-input device is in the "enable" state.
b. Shutdown: The enable-input device stops the chilled-water pump(s) when placed in the "disable" state.

C. Start and Stop Cooling-Tower Fans(s):

1. Prerequisites: Installation verification of the following:

   a. Input Device: Flow switch in condenser-water circuit <**Insert device designation**>.
   b. Output Device: [**Starter**] [**DDC system command to starter**] relay.
   c. Display:

      1) Condenser-water flow indication.
      2) Cooling-tower fan(s) on-off indication.

2. Scope: Condenser-water system, including cooling tower, condenser-water pump(s), and associated controls.
3. Purpose:

   a. Cooling-tower fan(s) start.
   b. Cooling-tower fan(s) shutdown.

4. Conditions of the Test:

   a. Verify Start: Start with cooling-tower fan enable-input device in the "disable" state to prevent fan(s) start. Place the enable-input device in the "enable" state.
   b. Verify Shutdown: Start with the enable-input device in the "enable" state to allow the fan(s) to run. Then place the enable-input device to the "disable" state.

5. Acceptance Criteria:

   a. Start: Chilled-water pump(s) start when and only when the enable-input device is in the "enable" state.
   b. Shutdown: The enable-input device stops the chilled-water pump(s) when placed in the "disable" state.

D. Alternative Chiller(s):

1. Prerequisites: Installation verification of the following:

   a. Input Device: [**Electric alternator**] [**DDC system software**] <**Insert device designation**>.
   b. Output Device: [**Chiller**] [**DDC system command to chiller**] <**Insert device designation**> terminal strip.
   c. Display:

      1) Chiller(s) on-off indication.
      2) Chiller failure alarm.

2. Scope:

   a. Chilled-water system and associated controls.
   b. Condenser-water system and associated controls.

3. Purpose:

   a. Lead-lag rotation of chillers.
   b. Replacement of failed chiller in rotation.
   c. Adding and dropping chillers as follows: <**Insert sequence and parameters**>.
   d. Replacement of failed chiller in add/drop sequence.
   e. Chiller failure alarm initiation.

4. Conditions of the Test:

   a. Lead-Lag Rotation - Chiller Start: Create a number of chilled-water system start-stop cycles equal to the number of chillers plus one.
   b. Lead-Lag Rotation - Lead Chiller Fail: Disable the lead chiller while it is running.
   c. Lead-Lag Rotation - Lag Chiller Fail: Disable a lag chiller while it is running.
   d. Lead-Lag Rotation - Chiller Start Fail: Disable a chiller while it is in standby mode. Initiate a lead-lag rotation call for the disabled chiller to start.
   e. Add/Drop Sequence - Increasing Demand: Increase chilled-water demand incrementally to observe the corresponding addition of chillers. Increase demand gradually as the load approached the set point for adding the next chiller to permit observation of the actual load at the time the next chiller is enabled.
   f. Add/Drop Sequence - Decreasing Demand: Decrease chilled-water demand incrementally to observe the corresponding dropping of chillers. Decrease demand gradually as the load approached the set point for dropping the next chiller to permit observation of the actual load at the time the next chiller is disabled.
   g. Add/Drop Sequence - Operating Chiller Fail:
   h. Add/Drop Sequence - Chiller Start Fail:

5. Acceptance Criteria:

   a. Lead-Lag Rotation - Chiller Start: On each chilled-water system start event, the [**other**] [**next**] chiller in rotation starts as the lead chiller, and the previous lead chiller is designated as the [**last**]lag chiller.
   b. Lead-Lag Rotation - Lead Chiller Fail: When the lead chiller fails, the [**other**] [**next**] chiller in rotation starts as the lead chiller, and a chiller failure alarm is initiated for the failed chiller.
   c. Lead-Lag Rotation - Lag Chiller Fail: When the lag chiller fails, [**the next chiller in rotation starts as the lead chiller, and**]a chiller failure alarm is initiated for the failed chiller.
   d. Lead-Lag Rotation - Chiller Start Fail: When a chiller fails to start, [**the next chiller in rotation starts in its place, and**]a chiller failure alarm is initiated for the failed chiller.
   e. Add/Drop Sequence - Increasing Demand: Chillers are added at the specified load set point, plus or minus [**5**] <**Insert number**> percent. Chilled-water supply temperature remains stable within plus or minus [**2.0 deg F**] <**Insert temperature**> of set point.

f. Add/Drop Sequence - Decreasing Demand: Chillers are dropped at the specified load set point, plus or minus [**5**] <**Insert number**> percent. Chilled-water supply temperature remains stable within plus or minus [**2.0 deg F**] <**Insert temperature**> of set point.
g. Add/Drop Sequence - Operating Chiller Fail: When an operating chiller fails, the next chiller in sequence starts and a chiller failure alarm is initiated for the failed chiller.
h. Add/Drop Sequence - Chiller Start Fail: When a chiller fails to start, the next chiller in sequence starts in its place, and a chiller failure alarm is initiated for the failed chiller.

3.05 TERMINAL UNIT EQUIPMENT COMMISSIONING TESTS

A. Variable-Air-Volume Terminal Air Units with Coils:

1. Prerequisites: Installation verification of the following:

a. Occupancy Input Device: Occupancy sensor.
b. Occupancy Output Device: DDC system binary output.
c. Room Temperature Input Device: [**Room thermostat**] [**Electronic temperature sensor**].
d. Room Temperature Output Device: [**Pneumatic**] [**Electronic**] damper actuators and control-valve operators.
e. Display the following at the operator's workstation:

1) Room/area served.
2) Room occupied/unoccupied.
3) Room temperature indication.
4) Room temperature set point.
5) Room temperature set point, occupied.
6) Room temperature set point, unoccupied.
7) Air-damper position as percentage open.
8) Control-valve position as percentage open.

2. Scope: Variable-air-volume terminal air units with [**hydronic**] [**steam**] coils in supply-air systems, and associated controls.
3. Purpose:

a. Occupancy-dependent room temperature set-point reset.
b. Room temperature control.

4. Conditions of the Test:

a. Commissioning Test Demonstration Sampling Rate: [**10**] <**Insert number**> percent of each model/size unit.
b. Temperature Control - Occupied: Start with the room unoccupied. Occupy the room and observe the change to occupied status. Observe temperature control until room temperature is stable at occupied set point plus or minus [**1.0 deg F**] <**Insert temperature**>.

c. Temperature Control - Unoccupied: Start with the room occupied. Vacate the room and observe the change to unoccupied status. Observe temperature control until room temperature is stable at unoccupied set point plus or minus [**1.0 deg F**] <**Insert temperature**>.

5. Acceptance Criteria:

a. Temperature Control - Occupied:

1) Control system status changes from "occupied" to "unoccupied" after the specified time.
2) Room temperature is stable at occupied set point plus or minus [**1.0 deg F**] <**Insert temperature**> within [**10**] <**Insert number**> minutes of occupancy. Room temperature does not overshoot or undershoot set point by more than [**2.0 deg F**] <**Insert temperature**> during transition.

b. Temperature Control - Unoccupied:

1) Control system status changes from "unoccupied" to "occupied" [**immediately**] [**after five minutes of continuous occupancy**].
2) Room temperature is stable at unoccupied set point plus or minus [**1.0 deg F**] <**Insert temperature**> within [**30**] <**Insert number**> minutes of occupancy.

3.06 AIR-HANDLING SYSTEM COMMISSIONING TESTS

A. Supply Fan(s) Variable-Volume Control:

1. Prerequisites: Installation verification of the following:

a. Volume Control Input Device: [**Static-pressure transmitter**] [**Differential-pressure switch**] sensing supply-duct static pressure referenced to conditioned-space static pressure.
b. Volume Control Output Device: [**Receiver controller**] [**DDC system analog output**] [**DDC system analog output to digital-to-pneumatic transducer**] to modulating damper actuator. Set inlet guide vanes to [**minimum**] [**closed**] position when fan is stopped.
c. Volume Control Input Device: [**Static-pressure transmitter**] [**Differential-pressure switch**] sensing supply-duct static pressure referenced to conditioned-space static pressure.
d. Volume Control Output Device: [**Receiver controller**] [**DDC system analog output**] to motor speed controller. Set variable-speed drive to minimum speed when fan is stopped.
e. High-Pressure Input Device: Static-pressure transmitter sensing supply-duct static pressure referenced to static pressure outside the duct.
f. High-Pressure Output Device: [**Receiver controller**] [**DDC system binary output**] to [**alarm panel**] [**motor starter**].
g. Display the following at the operator's workstation:

1) Supply-fan-discharge static-pressure indication.
2) Supply-fan-discharge static-pressure set point.
3) Supply-fan airflow rate.
4) Supply-fan [**inlet vane position**] [**speed**].

2. Scope: Variable-air-volume supply fan units and associated controls.
3. Purpose:

a. Supply-air discharge static pressure control.
b. Response to excess supply-air discharge static pressure condition.

4. Conditions of the Test:

a. Minimum supply-air flow.
b. Midrange Supply-Air Flow: [**50 to 60**] <**Insert number(s)**> percent of maximum.
c. Maximum supply-air flow.
d. Excess supply-air discharge static pressure.

5. Acceptance Criteria:

a. At all supply-air flow rates, and during changes in supply-air flow, discharge air static pressure is at set point plus or minus [**2**] <**Insert number**> percent.
b. Fan stops and an alarm is initiated at the operator's workstation when supply-air discharge static pressure is at the excess static pressure plus or minus [**2**] <**Insert number**> percent.

B. Air-Handler Mixed-Air Control:

1. Prerequisites: Installation verification of the following:

a. Minimum Position Input Device: [**Time clock**] [**DDC system time schedule**].
b. Output Device: [**Receiver controller**] [**DDC system analog output**] [**DDC system analog output to digital-to-pneumatic transducer**] to modulating damper actuator(s).
c. Heating Reset Input Device: [**Room thermostat**] [**DDC system software**].
d. [**Supply**] [**Mixed**]-Air Temperature Input Device: [**Duct-mounted thermostat**] [**Electronic temperature sensor**].
e. Cooling Reset Input Device: Outdoor- and return-air, duct-mounted [**thermostats**] [**electronic temperature sensors**].
f. Display the following at the operator's workstation:

1) Mixed-air-temperature indication.
2) Mixed-air-temperature set point.
3) Mixed-air damper position.

2. Scope: Air handler with mixed-air control and associated controls.
3. Purpose:

a. Occupied time control.
b. Minimum damper position control.
c. Heating reset control.
d. [**Supply**] [**Mixed**]-air temperature control.
e. Cooling reset control.
f. Unoccupied time control.

4. Conditions of the Test:

a. Occupied Time Control: Start in unoccupied schedule. Advance to occupied schedule time.
b. Minimum Damper Position Control: Command system to mode in which minimum damper position is required.
c. Heating Reset Control: Create a call for heating.
d. [**Supply**] [**Mixed**]-Air Temperature Control: Override [**supply**] [**mixed**]-air temperature set point to a value [**2.0 deg F**] <**Insert temperature**> above current [**supply**] [**mixed**]-air temperature.
e. Cooling Reset Control: Override outdoor-air [**temperature to a value that exceeds return-air temperature**] [**enthalpy to a value that exceeds return-air enthalpy**].
f. Unoccupied Time Control: Advance to unoccupied schedule time.
g. Control Data Trend Log: Set up a data trend log of the following input device values and output device commands. Record data at [**hourly**] <**Insert alternative recording frequency**> intervals. Submit trend data for [**24-hour**] <**Insert time**> periods in which natural conditions require heating reset control, [**supply**] [**mixed**]-air temperature control, and cooling reset control.

1) Minimum position input device.
2) Heating reset input device.
3) [**Supply**] [**Mixed**]-air temperature input device.
4) Cooling reset input device.

5. Acceptance Criteria:

a. Occupied Time Control: Mixed-air control is active in occupied mode.
b. Minimum Damper Position Control: Controller [**opens minimum outdoor-air dampers**] [**positions outdoor-air dampers to minimum position**].
c. Heating Reset Control: Controller [**closes minimum outdoor-air dampers**] [**sets outdoor-air dampers to minimum position**].
d. [**Supply**] [**Mixed**]-Air Temperature Control: Controller modulates outdoor-, return-, and relief-air dampers to maintain temporary [**supply**] [**mixed**]-air temperature set point plus or minus [**1.0 deg F**] <**Insert temperature**>.
e. Cooling Reset Control: Controller sets outdoor-air dampers to minimum position when outdoor-air [**temperature exceeds return-air temperature**] [**enthalpy exceeds return-air enthalpy**].
f. Unoccupied Time Control: Controller positions outdoor- and relief-air dampers closed and return-air dampers open.
g. Control Data Trend Log: Data verifies control according to sequence of control.

END OF SECTION

SECTION 23 0900

INSTRUMENTATION AND CONTROLS

Contents

23 09 23 Direct-Digital Control System for HVAC
PART 1: GENERAL

1.1 Products Furnished but Not Installed under This Section

A. Section 23 09 13.33 - Control Valves
   1. Control valves

1.2 Products Installed but Not Furnished under This Section

A. Section 23 09 13.23 - Sensors and Transmitters
   1. Duct static pressure sensors

1.3 Products Not Furnished or Installed under but Integrated with the Work of This Section

A. Section - General
   1. Coordination Meeting: The Installer furnishing the DDC network shall meet with the Installer(s) furnishing each of the following products to coordinate details of the interface between these products and the DDC network. The Owner or his designated representative shall be present at this meeting. Each Installer shall provide the Owner and all other Installers with details of the proposed interface including PICS for BACnet equipment, hardware and software identifiers for the interface points, network identifiers, wiring requirements, communication speeds, and required network accessories. The purpose of this meeting shall be to insure there are no unresolved issues regarding the integration of these products into the DDC network. Submittals for these products shall not be approved prior to the completion of this meeting.

B. Section 26 29 00 - Low-Voltage Controllers
   1. Variable frequency drives: The variable frequency drive (VFD) vendor shall furnish VFDs with an interface to the control and monitoring points specified in Section 23 09 93. These specified points shall be the minimum acceptable interface to the VFD. The connection to these points shall be by one of the following methods: (a) Hardwired connection such as relay, 0-10VDC, or 4-20mA. (b) BACnet/IP network connection. (c) BACnet over ARCNET network connection. (d) BACnet MS/TP network connection.

1.4 Related Sections

A. The General Conditions of the Contract, Supplementary Conditions, and General Requirements are part of this specification and shall be used in conjunction with this section as part of the contract documents.

B. The following sections constitute related work:
   1. Section 23 05 00 - Common Work Results for HVAC
   2. Section 26 05 00 - Common Work Results for Electrical
   3. Section 26 09 00 - Instrumentation and Control for Electrical Systems
   4. Section 26 20 00 - Low Voltage Electrical Transmission
   5. Section 26 29 00 - Low-Voltage Controllers
   6. Section 28 00 00 - Electronic Safety and Security

1.5 Description

A. General: The control system shall consist of a high-speed, peer-to-peer network of DDC controllers, a control system server, and a web-based operator interface.

B. System software shall be based on a server/thin client architecture, designed around the open standards of web technology. The control system server shall be accessed using a Web browser over the control system network, the owner's local area network, and (at the owner's discretion) over the Internet.
The intent of the thin-client architecture is to provide operators complete access to the control system via a Web browser. No special software other than a web browser shall be required to access graphics, point displays, and trends, configure trends, configure points and controllers, or to download programming into the controllers.

C. System shall use the BACnet protocol for communication to the operator workstation or web server and for communication between control modules. I/O points, schedules, setpoints, trends and alarms specified in 23 09 93 – “Sequence of Operations for HVAC Controls” shall be BACnet objects.

1.6 Approved Control system Manufacturers

A. The following are approved control system suppliers, manufacturers, and product lines:
1. Automated Logic Controls
2. Siemens Building Technologies
3. Johnson Controls, Inc.

The above list does not indicate order of preference. Inclusion on this list does not guarantee acceptance of products or installation. Control systems shall comply with the terms of this specification.

4. The Contractor shall use only operator workstation software, controller software, custom application programming language, and controllers from the corresponding manufacturer and product line unless Owner approves use of multiple manufacturers.
5. Other products specified herein (such as sensors, valves, dampers, and actuators) need not be manufactured by the above manufacturers.

1.7 Quality Assurance

A. Installer and Manufacturer Qualifications
1. Installer shall have an established working relationship with Control System Manufacturer.
2. Installer shall have successfully completed Control System Manufacturer’s control system training. Upon request, Installer shall present record of completed training including course outlines.

1.8 Codes and Standards

A. Work, materials, and equipment shall comply with the most restrictive of local, state, and federal authorities' codes and ordinances or these plans and specifications. As a minimum, the installation shall comply with the current editions in effect 30 days prior to the receipt of bids of the following codes:
   1. National Electric Code (NEC)
   2. International Building Code (IBC)
      a. Section 719 Ducts and Air Transfer Openings
      b. Section 907 Fire Alarm and Detection Systems
      c. Section 909 Smoke Control Systems
      d. Chapter 28 Mechanical
   3. International Mechanical Code (CMC)
   4. ANSI/ASHRAE Standard 135, BACnet - A Data Communication Protocol for Building Automation and Control Systems

1.9 System Performance

A. Performance Standards. System shall conform to the following minimum standards over network connections. Systems shall be tested using manufacturer's recommended hardware and software for operator workstation (server and browser for web-based systems).
   1. Graphic Display.A graphic with 20 dynamic points shall display with current data within 10 sec.
   2. Graphic Refresh.A graphic with 20 dynamic points shall update with current data within 8 sec. and shall automatically refresh every 15 sec.
   3. Configuration and Tuning Screens. Screens used for configuring, calibrating, or tuning points, PID loops, and similar control logic shall automatically refresh within 6 sec.
   4. Object Command. Devices shall react to command of a binary object within 2 sec. Devices shall begin reacting to command of an analog object within 2 sec.
   5. Alarm Response Time. An object that goes into alarm shall be annunciated at the workstation within 45 sec.
   6. Program Execution Frequency. Custom and standard applications shall be capable of running as often as once every 5 sec. Select execution times consistent with the mechanical process under control.
   7. Performance. Programmable controllers shall be able to completely execute DDC PID control loops at a frequency adjustable down to once per sec. Select execution times consistent with the mechanical process under control.
   8. Multiple Alarm Annunciation. Each workstation on the network shall receive alarms within 5 sec of other workstations.

9. Reporting Accuracy. System shall report values with minimum end-to-end accuracy listed in Table 1.
10. Control Stability and Accuracy. Control loops shall maintain measured variable at setpoint within tolerances listed in Table 2.

Table-1
Reporting Accuracy

Measured Variable	Reported Accuracy
Space Temperature	±0.5ºC (±1ºF)
Ducted Air	±0.5ºC (±1ºF)
Outside Air	±1.0ºC (±2ºF)
Dew Point	±1.5ºC (±3ºF)
Relative Humidity	±5% RH
Airflow (terminal)	±10% of full scale (see Note 1)
Airflow (measuring stations)	±5% of full scale
Airflow (pressurized spaces)	±3% of full scale
Air Pressure (ducts)	±25 Pa (±0.1 in. w.g.)
Air Pressure (space)	±3 Pa (±0.01 in. w.g.)
Electrical	±1% of reading (see Note 3)
Carbon Monoxide (CO)	±5% of reading
Carbon Dioxide (CO2)	±50 ppm

Note 1: Accuracy applies to 10%–100% of scale
Note 2: For both absolute and differential pressure
Note 3: Not including utility-supplied meters

Table 2
Control Stability and Accuracy

Controlled Variable	Control Accuracy	Range of Medium
Air Pressure	±50 Pa (±0.2 in. w.g.) ±3 Pa (±0.01 in. w.g.)	0–1.5 kPa (0–6 in. w.g.) -25 to 25 Pa (-0.1 to 0.1 in. w.g.)
Airflow	±10% of full scale	
Space Temperature	±1.0ºC (±2.0ºF)	
Duct Temperature	±1.5ºC (±3ºF)	
Humidity	±5% RH	

1.10 Submittals

A. Product Data and Shop Drawings: Meet requirements of Section 01 30 00 on Shop Drawings, Product Data, and Samples. In addition, the contractor shall provide shop drawings or other submittals on hardware, software, and equipment to be installed or provided. No work may begin on any segment of this project until submittals have been approved for conformity with design intent. Provide drawings as AutoCAD compatible files on magnetic or optical disk (file format: .DWG, .DXF, .VSD, or comparable) and three 11" x 17" prints of each drawing. When manufacturer's cutsheets apply to a product series rather than a specific product, the data specifically applicable to the project shall be highlighted or clearly indicated by other means. Each submitted piece of literature and drawing shall clearly reference the specification and/or drawing that the submittal is to cover. General catalogs shall not be accepted as cutsheets to fulfill submittal requirements. Select and show submittal quantities appropriate to scope of work. Submittal approval does not relieve Contractor of responsibility to supply sufficient quantities to complete work. Submittals shall be provided within 12 weeks of contract award. Submittals shall include:

1. DDC System Hardware
   a. A complete bill of materials to be used indicating quantity, manufacturer, model number, and relevant technical data of equipment to be used.
   b. Manufacturer's description and technical data such as performance curves, product specifications, and installation and maintenance instructions for items listed below and for relevant items not listed below:
      i. Direct digital controllers (controller panels)
      ii. Transducers and transmitters
      iii. Sensors (including accuracy data)
      iv. Actuators
      v. Valves
      vi. Relays and switches
      vii. Control panels
      viii. Power supplies
      ix. Batteries
      x. Operator interface equipment
      xi. Wiring
   c. Wiring diagrams and layouts for each control panel. Show termination numbers.
   d. Schematic diagrams for all field sensors and controllers. Provide floor plans of all sensor locations and control hardware. Riser diagrams showing control network layout, communication protocol, and wire types.
2. Central System Hardware and Software
   a. A complete bill of material of equipment used indicating quantity, manufacturer, model number, and relevant technical.

b. Manufacturer's description and technical data such as product specifications and installation and maintenance instructions for items listed below and for relevant items furnished under this contract not listed below:
   i. Central Processing Unit (CPU) or web server
   ii. Monitors
   iii. Keyboards
   iv. Power supplies
   v. Battery backups
   vi. Interface equipment between CPU or server and control panels
   vii. Operating System software
   viii. Operator interface software
   ix. Color graphic software
   x. Third-party software
c. Schematic diagrams for all control, communication, and power wiring. Provide a schematic drawing of the central system installation. Label all cables and ports with computer manufacturers' model numbers and functions. Show interface wiring to control system.
d. Network riser diagrams of wiring between central control unit and control panels.

3. Controlled Systems
   a. Riser diagrams showing control network layout, communication protocol, and wire types.
   b. A schematic diagram of each controlled system. The schematics shall have all control points labeled with point names shown or listed. The schematics shall graphically show the location of all control elements in the system.
   c. A schematic wiring diagram of each controlled system. Label control elements and terminals. Where a control element is also shown on control system schematic, use the same name.
   d. An instrumentation list (Bill of Materials) for each controlled system. List each control system element in a table. Show element name, type of device, manufacturer, model number, and product data sheet number.
   e. A mounting, wiring, and routing plan-view drawing. The design shall take into account HVAC, electrical, and other systems' design and elevation requirements. The drawing shall show the specific location of all concrete pads and bases and any special wall bracing for panels to accommodate this work.
   f. A complete description of the operation of the control system, including sequences of operation. The description shall include and reference a schematic diagram of the controlled system.
   g. A point list for each control system. List I/O points and software points specified in Section 23 09 93. Indicate alarmed and trended points.
4. Quantities of items submitted shall be reviewed but are the responsibility of the Contractor.

5. A description of the proposed process along with all report formats and checklists to be used in Section 23 09 23 Article3.17(Control System Demonstration and Acceptance).
6. BACnet Protocol Implementation Conformance Statement (PICS) for each submitted type of controller and operator interface.

B. Schedules
   1. Within one month of contract award, provide a schedule of the work indicating the following:
      a. Intended sequence of work items
      b. Start date of each work item
      c. Duration of each work item
      d. Planned delivery dates for ordered material and equipment and expected lead times
      e. Milestones indicating possible restraints on work by other trades or situations
   2. Monthly written status reports indicating work completed and revisions to expected delivery dates. Include updated schedule of work.

C. Project Record Documents. Upon completion of installation, submit three copies of record (as-built) documents. The documents shall be submitted for approval prior to final completion and shall include:
   1. Project Record Drawings. As-built versions of submittal shop drawings provided as AutoCAD compatible files on magnetic or optical media (file format: .DWG, .DXF, .VSD, or comparable) and as 11" x 17" prints.
   2. Testing and Commissioning Reports and Checklists. Completed versions of reports, checklists, and trend logs used to meet requirements of Section 23 09 23 Article3.17(Control System Demonstration and Acceptance).
   3. Operation and Maintenance (O&M) Manual.
   4. As-built versions of submittal product data.
   5. Names, addresses, and telephone numbers of installing contractors and service representatives for equipment and control systems.
   6. Operator's manual with procedures for operating control systems: logging on and off, handling alarms, producing point reports, trending data, overriding computer control, and changing setpoints and variables.
   7. Programming manual or set of manuals with description of programming language and syntax, of statements for algorithms and calculations used, of point database creation and modification, of program creation and modification, and of editor use.
   8. Engineering, installation, and maintenance manual or set of manuals that explains how to design and install new points, panels, and other hardware; how to perform preventive maintenance and calibration; how to debug hardware problems; and how to repair or replace hardware.
   9. Documentation of programs created using custom programming language including setpoints, tuning parameters, and object database. Electronic copies of programs shall meet this requirement if control logic, setpoints, tuning parameters, and objects can be viewed using furnished programming tools.

10. Graphic files, programs, and database on magnetic or optical media.
11. List of recommended spare parts with part numbers and suppliers.
12. Complete original-issue documentation, installation, and maintenance information for furnished third-party hardware including computer equipment and sensors.
13. Complete original-issue copies of furnished software, including operating systems, custom programming language, operator workstation or web server software, and graphics software.
14. Licenses, guarantees, and warranty documents for equipment and systems.
15. Recommended preventive maintenance procedures for system components, including schedule of tasks such as inspection, cleaning, and calibration; time between tasks; and task descriptions.

D. Training Materials: Provide course outline and materials for each class at least six weeks before first class. Training shall be furnished via instructor-led sessions, computer-based training, or web-based training. Engineer will modify course outlines and materials if necessary to meet Owner's needs. Engineer will review and approve course outlines and materials at least three weeks before first class.

1.11 Warranty

A. Warrant work as follows:
1. Warrant labor and materials for specified control system free from defects for a period of 12 months after final acceptance. Control system failures during warranty period shall be adjusted, repaired, or replaced at no additional cost or reduction in service to Owner. Respond during normal business hours within 24 hours of Owner's warranty service request.
2. Work shall have a single warranty date, even if Owner receives beneficial use due to early system start-up. If specified work is split into multiple contracts or a multi-phase contract, each contract or phase shall have a separate warranty start date and period.
3. If the engineer determines that equipment and systems operate satisfactorily at the end of final start-up, testing, and commissioning phase, the engineer will certify in writing that control system operation has been tested and accepted in accordance with the terms of this specification. Date of acceptance shall begin warranty period.
4. Provide updates to operator workstation or web server software, project-specific software, graphic software, database software, and firmware that resolve the contractor-identified software deficiencies at no charge during warranty period. If available, Owner can purchase in-warranty service agreement to receive upgrades for functional enhancements associated with above-mentioned items. Do not install updates or upgrades without Owner's written authorization.
5. Exception: Contractor shall not be required to warrant reused devices except those that have been rebuilt or repaired. Installation labor and

materials shall be warranted. Demonstrate operable condition of reused devices at time of Engineer's acceptance.

1.12 Ownership of Proprietary Material

A. Project-specific software and documentation shall become Owner's property. This includes, but is not limited to:
1. Graphics
2. Record drawings
3. Database
4. Application programming code
5. Documentation

1.13 Definitions

Term	Definition
BACnet Interoperability Building Blocks (BIBB)	A BIBB defines a small portion of BACnet functionality that is needed to perform a particular task. BIBBS are combined to build the BACnet functional requirements for a device in a specification.
BACnet/BACnet Standard	BACnet communication requirements as defined by the latest version of ASHRAE/ANSI 135 and approved addenda.
Control Systems Server	A computer(s) that maintain(s) the systems configuration and programming database.
Controller	Intelligent stand-alone control device. Controller is a generic reference to building controllers, custom application controllers, and application specific controllers.
Direct Digital Control	Microprocessor-based control including Analog/Digital conversion and program logic.
Gateway	Bi-directional protocol translator connecting control systems that use different communication protocols.
Local Area Network	Computer or control system communications network limited to local building or campus.
Master-Slave/Token Passing	Data link protocol as defined by the BACnet standard.
Point-to-Point	Serial communication as defined in the BACnet standard.
Primary Controlling LAN	High speed, peer-to-peer controller LAN connecting BCs and optionally AACs and ASCs. Refer to System Architecture below.
Protocol Implementation Conformance Statement	A written document that identifies the particular options specified by BACnet that are implemented in a device.
Router	A device that connects two or more networks at the network layer.
Wiring	Raceway, fittings, wire, boxes and related items.

PART 2: PRODUCTS

2.1 Materials

A. Use new products the manufacturer is currently manufacturing and selling for use in new installations. Do not use this installation as a product test site unless explicitly approved in writing by Owner. Spare parts shall be available for at least five years after completion of this contract.

2.2 Communication

A. Control products, communication media, connectors, repeaters, hubs, and routers shall comprise a BACnet internetwork. Controller and operator interface communication shall conform to ANSI/ASHRAE Standard 135, BACnet.
B. Install new wiring and network devices as required to provide a complete and workable control network.
C. Use existing Ethernet backbone for network segments marked "existing" on project drawings.
D. Each controller shall have a communication port for temporary connection to a laptop computer or other operator interface. Connection shall support memory downloads and other commissioning and troubleshooting operations.
E. Internetwork operator interface and value passing shall be transparent to internetwork architecture.
   1. An operator interface connected to a controller shall allow the operator to interface with each internetwork controller as if directly connected. Controller information such as data, status, and control algorithms shall be viewable and editable from each internetwork controller.
   2. Inputs, outputs, and control variables used to integrate control strategies across multiple controllers shall be readable by each controller on the internetwork. Program and test all cross-controller links required to execute control strategies specified in Section 23 09 93. An authorized operator shall be able to edit cross-controller links by typing a standard object address or by using a point-and-click interface.
F. Workstations, Building Control Panels, and Controllers with real-time clocks shall use the BACnet Time Synchronization service. System shall automatically synchronize system clocks daily from an operator-designated device via the internetwork. The system shall automatically adjust for daylight saving and standard time as applicable.
G. System shall be expandable to at least twice the required input and output objects with additional controllers, associated devices, and wiring.

2.3 Operator Interface

A. Operator Interface. Web server shall reside on high-speed network with building controllers. Each standard browser connected to server shall be able to access all system information. The Operator Workstation or server shall conform to the BACnet Operator Workstation (B-OWS) or BACnet Advanced Workstation (B-AWS) device profile as specified in ASHRAE/ANSI 135 BACnet Annex L.

B. Communication. Web server or workstation and controllers shall communicate using BACnet protocol. Web server or workstation and control network backbone shall communicate using ISO 8802-3 (Ethernet) Data Link/Physical layer protocol and BACnet/IP addressing as specified in ANSI/ASHRAE 135, BACnet Annex J.

C. Hardware.
   1. Workstation or web server. Industry-standard hardware shall meet or exceed DDC system manufacturer's recommended specifications and shall meet response times specified elsewhere in this document. The following hardware requirements also apply:
      a. The hard disk shall have sufficient memory to store:
         i. All required operator workstation software.
         ii. A DDC database at least twice the size of the delivered system database.
         iii. One year of trend data based on the points specified to be trended at their specified trend intervals.
      b. Provide additional hardware (communication ports, video drivers, network interface cards, cabling, etc.) to facilitate all control functions and software requirements specified for the DDC system.
      c. Minimum hardware configuration shall include the following:
         i. Quad Core Processor
         ii. 8 GB RAM
         iii. 1 TB hard disk providing data at 3.0 Gb/sec
         iv. 16x DVD+/-RW drive
         v. Serial, parallel, and network communication ports and cables as required for proper DDC system operation

D. System Software.
   1. Operating System. Web server or workstation shall have an industry-standard professional-grade operating system. Operating system shall meet or exceed the DDC System manufacturers minimum requirements for their software. Acceptable systems include Microsoft Windows 7 or 8, Microsoft Vista, Windows Server 2008 or 2012, Red Hat Enterprise Linux, or Ubuntu Desktop 12.04.
   2. System Graphics. The operator interface software shall be graphically based and shall include at least one graphic per piece of equipment or occupied zone, graphics for each chilled water and hot water system, and graphics that summarize conditions on each floor of each building

included in this contract. Indicate thermal comfort on floor plan summary graphics using dynamic colors to represent zone temperature relative to zone setpoint.

a. Functionality. Graphics shall allow operator to monitor system status, to view a summary of the most important data for each controlled zone or piece of equipment, to use point-and-click navigation between zones or equipment, and to edit setpoints and other specified parameters.
b. Animation. Graphics shall be able to animate by displaying different image files for changed object status.
c. Alarm Indication. Indicate areas or equipment in an alarm condition using color or other visual indicator.
d. Format. Graphics shall be saved in an industry-standard format such as BMP, JPEG, PNG, or GIF. Web-based system graphics shall be viewable on browsers compatible with World Wide Web Consortium browser standards. Web graphic format shall require no plug-in or shall only require widely available no-cost plug-ins (such as Adobe Flash).

3. Custom Graphics. Custom graphic files shall be created with the use of a graphics generation package furnished with the system. The graphics generation package shall be a graphically based system that uses the mouse to create and modify graphics that are saved in the same formats as are used for system graphics.
4. Graphics Library. Furnish a complete library of standard HVAC equipment graphics such as chillers, boilers, air handlers, terminals, fan coils, and unit ventilators. This library also shall include standard symbols for other equipment including fans, pumps, coils, valves, piping, dampers, and ductwork. The library shall be furnished in a file format compatible with the graphics generation package program.

E. System Applications. System shall provide the following functionality to authorized operators as an integral part of the operator interface or as stand-alone software programs. If furnished as part of the interface, the tool shall be available from each workstation or web browser interface. If furnished as a stand-alone program, software shall be installable on standard IBM-compatible PCs with no limit on the number of copies that can be installed under the system license.

1. Automatic System Database Configuration. Each workstation or web server shall store on its hard disk a copy of the current system database, including controller firmware and software. Stored database shall be automatically updated with each system configuration or controller firmware or software change.

2. Manual Controller Memory Download. Operators shall be able to download memory from the system database to each controller.
3. System Configuration. The workstation software shall provide a method of configuring the system. This shall allow for future system changes or additions by users under proper password protection. Operators shall be able to configure the system.
4. On-Line Help. Provide a context-sensitive, on-line help system to assist the operator in operating and editing the system. On-line help shall be available for all applications and shall provide the relevant data for that particular screen. Additional help information shall be available through the use of hypertext.
5. Security. Each operator shall be required to log on to the system with user name and password in order to view, edit, add, or delete data.
    a. Operator Access. The user name and password combination shall define accessible viewing, editing, adding, and deleting privileges for that operator. Users with system administrator rights shall be able to create new users and edit the privileges of all existing users. System Administrators shall also be able to vary and deny each operator's privileges based on the geographic location of the equipment, such as the ability to edit operating parameters in Building A, to view but not edit parameters in Building B, and to not even see equipment in Building C.
    b. Automatic Log Out. Automatically log out each operator if no keyboard or mouse activity is detected. This auto logoff time shall be user adjustable.
    c. Encrypted Security Data. Store system security data including operator passwords in an encrypted format. System shall not display operator passwords.
6. System Diagnostics. The system shall automatically monitor the operation of all building management panels and controllers. The failure of any device shall be annunciated to the operator.
7. Alarm Processing. System input and status objects shall be configurable to alarm on departing from and on returning to normal state. Operator shall be able to enable or disable each alarm and to configure alarm limits, alarm limit differentials, alarm states, and alarm reactions for each system object. Configure and enable alarm points as specified in Section 23 09 93 (Sequences of Operation). Alarms shall be BACnet alarm objects and shall use BACnet alarm services.
8. Alarm Messages. Alarm messages shall use the English language descriptor for the object in alarm in such a way that the operator will be

able to recognize the source, location, and nature of the alarm without relying on acronyms or mnemonics.

9. Alarm Reactions. Operator shall be able to configure (by object) what, if any actions are to be taken during an alarm. As a minimum, the workstation or web server shall be able to log, print, start programs, display messages, send e-mail, send page, and audibly annunciate.
10. Alarm and Event log. Operators shall be able to view all system alarms and changes of state from any location in the system. Events shall be listed chronologically. An operator with the proper security level may acknowledge and delete alarms, and archive closed alarms to the workstation or web server hard disk.
11. Trend Logs. The operator shall be able to configure trend sample or change of value (COV) interval, start time, and stop time for each system data object and shall be able to retrieve data for use in spreadsheets and standard database programs. Controller shall sample and store trend data and shall be able to archive data to the hard disk. Configure trends as specified in Section 23 09 93 (Sequences of Operation). Trends shall be BACnet trend objects.
12. Object and Property Status and Control. Provide a method for the operator to view, and edit if applicable, the status of any object or property in the system. The status shall be available by menu, on graphics, or through custom programs.
13. Reports and Logs. Operator shall be able to select, to modify, to create, and to print reports and logs. Operator shall be able to store report data in a format accessible by standard spreadsheet and word processing programs.
14. Standard Reports. Furnish the following standard system reports:
    a. Objects. System objects and current values filtered by object type, by status (in alarm, locked, normal), by equipment, by geographic location, or by combination of filter criteria.
    b. Alarm Summary. Current alarms and closed alarms. System shall retain closed alarms for an adjustable period.
    c. Logs. System shall log the following to a database or text file and shall retain data for an adjustable period:
        i. Alarm History.
        ii. Trend Data. Operator shall be able to select trends to be logged.
        iii. Operator Activity. At a minimum, system shall log operator log in and log out, control parameter changes, schedule changes, and alarm acknowledgment and deletion. System shall date and time stamp logged activity.

15. Environmental Index. System shall monitor all occupied zones and compile an index that provides a numerical indication of the environmental comfort within the zone. As a minimum, this indication shall be based upon the deviation of the zone temperature from the heating or cooling setpoint. If humidity is being measured within the zone then the environmental index shall be adjusted to reflect a lower comfort level for high or low humidity levels. Similarly, if carbon dioxide levels are being measured as an indication of ventilation effectiveness then the environmental index shall be adjusted to indicate degraded comfort at high carbon dioxide levels. Other adjustments may be made to the environmental index based upon additional measurements. The system shall maintain a trend of the environmental index for each zone in the trend log. The system shall also compute an average comfort index for every building included in this contract and maintain trendlogs of these building environmental indices. Similarly, the system shall compute the percentage of occupied time that comfortable conditions were maintained within the zones. Through the UI the user shall be able to add a weighting factor to adjust the contribution of each zone to the average index based upon the floor area of the zone, importance of the zone, or other static criteria.
16. Time Span Graphic Replay. Operator shall be able to "replay" any graphic in the system to see how key values changed over an operator-selected period of time. Operator shall be able to select the starting date/time for this display and the end date/time or the display period. On completion of the project specified herein, the BAS contractor shall demonstrate that up to 24 hours of data within the last 30 days of operation cab be instantly replayed. System shall then display the graphic as it would have looked at the beginning of that period, displaying key data, dynamic colors, etc. based upon values recorded at the start time. When the operator starts the replay the graphics and key values shall dynamically change to produce the effect of "fast forwarding" through the designated period of time. Once the system has been operational for at least 30 days, the contractor shall demonstrate that up to 24 hours of data from within the last 30 days can be replayed on any graphic page. Owner's representative shall choose the graphic pages for this demonstration at the time of the demonstration.

F. Workstation Application Editors. Each PC or browser workstation shall support editing of all system applications. The applications shall be downloaded and executed at one or more of the controller panels.

1. Controller. Provide a full-screen editor for each type of application that shall allow the operator to view and change the configuration, name, control parameters, and set points for all controllers.
2. Scheduling. An editor for the scheduling application shall be provided at each workstation. Provide a method of selecting the desired schedule and schedule type. Exception schedules and holidays shall be shown clearly on the calendar. The start and stop times for each object shall be adjustable from this interface.
3. Custom Application Programming. Provide the tools to create, edit, debug, and download custom programs. System shall be fully operable while custom programs are edited, compiled, and downloaded. Programming language shall have the following features:
    a. Language. Language shall be graphically based and shall use function blocks arranged in a logic diagram that clearly shows control logic flow. Function blocks shall directly provide functions listed below, and operators shall be able to create custom or compound function blocks.
    b. Programming Environment. Tool shall provide a full-screen, cursor-and-mouse-driven programming environment that incorporates word processing features such as cut and paste. Operators shall be able to insert, add, modify, and delete custom programming code, and to copy blocks of code to a file library for reuse in other control programs.
    c. Independent Program Modules. Operator shall be able to develop independently executing program modules that can disable, enable and exchange data with other program modules.
    d. Debugging and Simulation. Operator shall be able to step through the program observing intermediate values and results. Operator shall be able to adjust input variables to simulate actual operating conditions. Operator shall be able to adjust each step's time increment to observe operation of delays, integrators, and other time-sensitive control logic. Debugger shall provide error messages for syntax and for execution errors.
    e. Conditional Statements. Operator shall be able to program conditional logic using compound Boolean (AND, OR, and NOT) and relational (EQUAL, LESS THAN, GREATER THAN, NOT EQUAL) comparisons.
    f. Mathematical Functions. Language shall support floating-point addition, subtraction, multiplication, division, and square root operations, as well as absolute value calculation and programmatic selection of minimum and maximum values from a list of values.

g. Variables. Operator shall be able to use variable values in program conditional statements and mathematical functions.
    i. Time Variables. Operator shall be able to use predefined variables to represent time of day, day of the week, month of the year, and date. Other predefined variables or simple control logic shall provide elapsed time in seconds, minutes, hours, and days. Operator shall be able to start, stop, and reset elapsed time variables using the program language.
    ii. System Variables. Operator shall be able to use predefined variables to represent status and results of Controller Software and shall be able to enable, disable, and change setpoints of Controller Software as described in Controller Software section.

G. Portable Operator's Terminal. Provide all necessary software to configure an IBM-compatible laptop computer for use as a Portable Operator’s Terminal. Operator shall be able to connect configured Terminal to the system network or directly to each controller for programming, setting up, and troubleshooting.

2.4 Controller Software

A. Furnish the following applications for building and energy management. All software application shall reside and operate in the system controllers. Applications shall be editable through operator workstation, web browser interface, or engineering workstation.

B. System Security. See Paragraph 2.3.E.5 (Security) and Paragraph 2.3.E.14.c.iii (Operator Activity).

C. Scheduling. Provide the capability to execute control functions according to a user created or edited schedule. Each schedule shall provide the following schedule options as a minimum:
    1. Weekly Schedule. Provide separate schedules for each day of the week. Each schedule shall be able to include up to 5 occupied periods (5 start-stop pairs or 10 events).
    2. Exception Schedules. Provide the ability for the operator to designate any day of the year as an exception schedule. Exception schedules may be defined up to a year in advance. Once an exception schedule has executed, the system shall discard and replace the exception schedule with the standard schedule for that day of the week.
    3. Holiday Schedules. Provide the capability for the operator to define up to 24 special or holiday schedules. These schedules will be repeated each year. The operator shall be able to define the length of each holiday period.

D. System Coordination. Operator shall be able to group related equipment based on function and location and to use these groups for scheduling and other applications.
E. Binary Alarms. Each binary object shall have the capability to be configured to alarm based on the operator-specified state. Provide the capability to automatically and manually disable alarming.
F. Analog Alarms. Each analog object shall have both high and low alarm limits. The operator shall be able to enable or disable these alarms.
G. Alarm Reporting. The operator shall be able to determine the action to be taken in the event of an alarm. An alarm shall be able to start programs, print, be logged in the event log, generate custom messages, and display on graphics.
H. Remote Communication. System shall automatically contact operator workstation or server on receipt of critical alarms. If no network connection is available, system shall use a modem connection.
I. Demand Limiting.
    1. The demand-limiting program shall monitor building power consumption from a building power meter (provided by others) which generates pulse signals or a BACnet communications interface. An acceptable alternative is for the system to monitor a watt transducer or current transformer attached to the building feeder lines.
    2. When power consumption exceeds adjustable levels, system shall automatically adjust setpoints, de-energize low-priority equipment, and take other programmatic actions to reduce demand as specified in Section 23 09 93 (Sequences of Operation). When demand drops below adjustable levels, system shall restore loads as specified.
J. Maintenance Management. The system shall be capable of generating maintenance alarms when equipment exceeds adjustable runtime, equipment starts, or performance limits. Configure and enable maintenance alarms as specified in 23 09 93 (Sequences of Operation).
K. PID Control. System shall provide direct- and reverse-acting PID (proportional-integral-derivative) algorithms. Each algorithm shall have anti-windup and selectable controlled variable, setpoint, and PID gains. Each algorithm shall calculate a time-varying analog value that can be used to position an output or tostage a series of outputs. The calculation interval, PID gains, and other tuning parameters shall be adjustable by a user with the correct security level.
L. Staggered Start. System shall stagger controlled equipment restart after power outage. Operator shall be able to adjust equipment restart order and time delay between equipment restarts.
M. Anti-Short Cycling. All binary output objects shall be protected from short cycling by means of adjustable minimum on-time and off-time settings.

N. On and Off Control with Differential. Provide an algorithm that allows a binary output to be cycled based on a controlled variable and a setpoint. The algorithm shall be direct-acting or reverse-acting.
O. Runtime Totalization. Provide software to totalize runtime for each binary input and output. Operator shall be able to enable runtime alarm based on exceeded adjustable runtime limit. Configure and enable runtime totalization and alarms as specified in Section 23 09 93 (Sequence of Operations).

2.5 Controllers

A. General. Provide an adequate number of Building Controllers (BC), Advanced Application Controllers (AAC), Application Specific Controllers (ASC), Smart Actuators (SA), and Smart Sensors (SS) as required to achieve performance specified in Section 23 09 23 Article 1.9 (System Performance). Every device in the system which executes control logic and directly controls HVAC equipment must conform to a standard BACnet Device profile as specified in ANSI/ASHRAE 135, BACnet Annex L. Unless otherwise specified, hardwired actuators and sensors may be used in lieu of BACnet Smart Actuators and Smart Sensors.
B. BACnet.
    1. Building Controllers (BCs). Each BC shall conform to BACnet Building Controller (B-BC) device profile as specified in ANSI/ASHRAE 135, BACnet Annex L, and shall be listed as a certified B-BC in the BACnet Testing Laboratories (BTL) Product Listing.
    2. Advanced Application Controllers (AACs). Each AAC shall conform to BACnet Advanced Application Controller (B-AAC) device profile as specified in ANSI/ASHRAE 135, BACnet Annex L and shall be listed as a certified B-AAC in the BACnet Testing Laboratories (BTL) Product Listing.
    3. Application Specific Controllers (ASCs). Each ASC shall conform to BACnet Application Specific Controller (B-ASC) device profile as specified in ANSI/ASHRAE 135, BACnet Annex L and shall be listed as a certified B-ASC in the BACnet Testing Laboratories (BTL) Product Listing.
    4. Smart Sensors (SSs). Each SS shall conform to BACnet Smart Sensor (B-SS) device profile as specified in ANSI/ASHRAE 135, BACnet Annex L and shall be listed as a certified B-SS in the BACnet Testing Laboratories (BTL) Product Listing.
    5. BACnet Communication.
        a. Each BC shall reside on or be connected to a BACnet network using ISO 8802-3 (Ethernet) Data Link/Physical layer protocol and BACnet/IP addressing.
        b. BACnet routing shall be performed by BCs or other BACnet device routers as necessary to connect BCs to networks of AACs and ASCs.

c. Each AAC shall reside on a BACnet network using ISO 8802-3 (Ethernet) Data Link/Physical layer protocol with BACnet/IP addressing, or it shall reside on a BACnet network using the ARCNET or MS/TP Data Link/Physical layer protocol.
d. Each ASC shall reside on a BACnet network using the ARCNET or MS/TP Data Link/Physical layer protocol.
e. Each SA shall reside on a BACnet network using the ARCNET or MS/TP Data Link/Physical layer protocol.
f. Each SS shall reside on a BACnet network using ISO 8802-3 (Ethernet) Data Link/Physical layer protocol with BACnet/IP addressing, or it shall reside on a BACnet network using ARCNET or MS/TP Data Link/Physical layer protocol.

C. Communication
1. Service Port. Each controller shall provide a service communication port for connection to a Portable Operator's Terminal. Connection shall be extended to space temperature sensor ports where shown on drawings.
2. Signal Management. BC and ASC operating systems shall manage input and output communication signals to allow distributed controllers to share real and virtual object information and to allow for central monitoring and alarms.
3. Data Sharing. Each BC and AAC shall share data as required with each networked BC and AAC.
4. Stand-Alone Operation. Each piece of equipment specified in Section 23 09 93 shall be controlled by a single controller to provide stand-alone control in the event of communication failure. All I/O points specified for a piece of equipment shall be integral to its controller. Provide stable and reliable stand-alone control using default values or other method for values normally read over the network such as outdoor air conditions, supply air or water temperature coming from source equipment, etc.

D. Environment. Controller hardware shall be suitable for anticipated ambient conditions.
1. Controllers used outdoors or in wet ambient conditions shall be mounted in waterproof enclosures and shall be rated for operation at -29°C to 60°C (-20°F to 140°F).
2. Controllers used in conditioned space shall be mounted in dust-protective enclosures and shall be rated for operation at 0°C to 50°C (32°F to 120°F).

E. Keypad. Provide a local keypad and display for each BC and AAC. Operator shall be able to use keypad to view and edit data. Keypad and display shall require password to prevent unauthorized use. If the manufacturer does not normally provide a keypad and display for each BC and AAC, provide the software and any interface cabling needed to use a laptop computer as a Portable Operator's Terminal for the system.

F. Real-Time Clock. Controllers that perform scheduling shall have a real-time clock.

G. Serviceability. Provide diagnostic LEDs for power, communication, and processor. All wiring connections shall be made to a field-removable modular terminal strip or to a termination card connected by a ribbon cable. Each BC and AAC shall continually check its processor and memory circuit status and shall generate an alarm on abnormal operation. System shall continuously check controller network and generate alarm for each controller that fails to respond.

H. Memory.
  1. Controller memory shall support operating system, database, and programming requirements.
  2. Each BC and AAC shall retain BIOS and application programming for at least 72 hours in the event of power loss.
  3. Each ASC and SA shall use nonvolatile memory and shall retain BIOS and application programming in the event of power loss. System shall automatically download dynamic control parameters following power loss.

I. Immunity to Power and Noise. Controllers shall be able to operate at 90% to 110% of nominal voltage rating and shall perform an orderly shutdown below 80% nominal voltage. Operation shall be protected against electrical noise of 5 to 120 Hz and from keyed radios up to 5 W at 1 m (3 ft).

J. Transformer. ASC power supply shall be fused or current limiting and shall be rated at a minimum of 125% of ASC power consumption.

2.6 Input and Output Interface

A. General. Hard-wire input and output points to BCs, AACs, ASCs, or SAs.

B. Protection. All input points and output points shall be protected such that shorting of the point to itself, to another point, or to ground shall cause no damage to the controller. All input and output points shall be protected from voltage up to 24 V of any duration, such that contact with this voltage will cause no controller damage.

C. Binary Inputs. Binary inputs shall allow the monitoring of ON/OFF signals from remote devices. The binary inputs shall provide a wetting current of at least 12 mA to be compatible with commonly available control devices and shall be protected against contact bounce and noise. Binary inputs shall sense dry contact closure without application of power external to the controller.

D. Pulse Accumulation Inputs. Pulse accumulation inputs shall conform to binary input requirements and shall also accumulate up to 10 pulses per second.

E. Analog Inputs. Analog inputs shall allow the monitoring of low-voltage (0–10 Vdc), current (4–20 mA), or resistance (thermistor or RTD) signals. Analog inputs shall be compatible with and field configurable to commonly available sensing devices.

F. Binary Outputs. Binary outputs shall provide for ON/OFF operation or a pulsed low-voltage signal for pulse width modulation control. Binary outputs on Building Controllers shall have three-position (on-off-auto) override switches and status lights. Outputs shall be selectable for normally open or normally closed operation.
G. Analog Outputs. Analog outputs shall provide a modulating signal for the control of end devices. Outputs shall provide either a 0–10 Vdc or a 4–20 mA signal as required to properly control output devices. Each Building Controller analog output shall have a two-position (auto-manual) switch, a manually adjustable potentiometer, and status lights. Analog outputs shall not drift more than 0.4% of range annually.
H. Tri-State Outputs. Control three-point floating electronic actuators without feedback with tri-state outputs (two coordinated binary outputs). Tri-State outputs may be used to provide analog output control in zone control and terminal unit control applications such as VAV terminal units, duct-mounted heating coils, and zone dampers.
I. Universal Inputs and Outputs. Inputs and outputs that can be designated as either binary or analog in software shall conform to the provisions of this section that are appropriate for their designated use.
J. System Object Capacity. The system size shall be expandable to at least twice the number of input/ output objects required for this project. Additional controllers (along with associated devices and wiring) shall be all that is necessary to achieve this capacity requirement. The operator interfaces installed for this project shall not require any hardware additions or software revisions in order to expand the system

2.7 Power Supplies and Line Filtering

A. Power Supplies. Control transformers shall be UL listed. Furnish Class 2 current-limiting type or furnish over-current protection in primary and secondary circuits for Class 2 service in accordance with NEC requirements. Limit connected loads to 80% of rated capacity.
   1. DC power supply output shall match output current and voltage requirements. Unit shall be full-wave rectifier type with output ripple of 5.0 mV maximum peak-to-peak. Regulation shall be 1.0% line and load combined, with 100-microsecond response time for 50% load changes. Unit shall have built-in over-voltage and over-current protection and shall be able to withstand 150% current overload for at least three seconds without trip-out or failure.
      a. Unit shall operate between 0°C and 50°C (32°F and 120°F). EM/RF shall meet FCC Class B and VDE 0871 for Class B and MILSTD 810C for shock and vibration.
      b. Line voltage units shall be UL recognized and CSA listed.
B. Power Line Filtering.
   1. Provide internal or external transient voltage and surge suppression for workstations and controllers. Surge protection shall have:
      a. Dielectric strength of 1000 V minimum
      b. Response time of 10 nanoseconds or less
      c. Transverse mode noise attenuation of 65 dB or greater
      d. Common mode noise attenuation of 150 dB or greater at 40–100 Hz

2.8 Auxiliary Control Devices

A. Motorized Control Dampers, unless otherwise specified elsewhere, shall be as follow.
   1. Type. Control dampers shall be the parallel or opposed-blade type as specified below or as scheduled on drawings.
      a. Outdoor and return air mixing dampers and face-and-bypass dampers shall be parallel-blade and shall direct airstreams toward each other.
      b. Other modulating dampers shall be opposed-blade.
      c. Two-position shutoff dampers shall be parallel- or opposed-blade with blade and side seals.
   2. Frame. Damper frames shall be 2.38 mm (13 gauge) galvanized steel channel or 3.175 mm (⅛ in.) extruded aluminum with reinforced corner bracing.
   3. Blades. Damper blades shall not exceed 20 cm (8 in.) in width or 125 cm (48 in.) in length. Blades shall be suitable for medium velocity (10 m/s [2000 fpm]) performance. Blades shall be not less than 1.5875 mm (16 gauge).
   4. Shaft Bearings. Damper shaft bearings shall be as recommended by manufacturer for application, oil impregnated sintered bronze, or better.
   5. Seals. Blade edges and frame top and bottom shall have replaceable seals of butyl rubber or neoprene. Side seals shall be spring-loaded stainless steel. Blade seals shall leak no more than 50 L/s·m^2 (10 cfm per ft^2) at 1000 Pa (4 in. w.g.) differential pressure. Blades shall be airfoil type suitable for wide-open face velocity of 7.5 m/s (1500 fpm).
   6. Sections. Individual damper sections shall not exceed 125 cm × 150 cm (48 in. × 60 in.). Each section shall have at least one damper actuator.
   7. Modulating dampers shall provide a linear flow characteristic where possible.
   8. Linkages. Dampers shall have exposed linkages.

B. Electric Damper and Valve Actuators.
   1. Stall Protection. Mechanical or electronic stall protection shall prevent actuator damage throughout the actuator's rotation.
   2. Spring-return Mechanism. Actuators used for power-failure and safety applications shall have an internal mechanical spring-return mechanism or an uninterruptible power supply (UPS).
   3. Signal and Range. Proportional actuators shall accept a 0–10 Vdc or a 0–20 mA control signal and shall have a 2–10 Vdc or 4–20 mA operating range. (Floating motor actuators may be substituted for proportional actuators in terminal unit applications as described in paragraph 2.6H.)
   4. Wiring. 24 Vac and 24 Vdc actuators shall operate on Class 2 wiring.
   5. Manual Positioning. Operators shall be able to manually position each actuator when the actuator is not powered. Non-spring-return actuators shall have an external manual gear release. Spring-return actuators with more than 7 N·m (60 in.-lb) torque capacity shall have a manual crank.

C. Binary Temperature Devices.
   1. Low-Voltage Space Thermostats. Low-voltage space thermostats shall be 24 V, bimetal-operated, mercury-switch type, with adjustable or fixed anticipation

heater, concealed setpoint adjustment, 13°C–30°C (55°F–85°F) setpoint range, 1°C (2°F) maximum differential, and vented ABS plastic cover.

2. Line-Voltage Space Thermostats. Line-voltage space thermostats shall be bimetal-actuated, open-contact type or bellows-actuated, enclosed, snap-switch type or equivalent solid-state type, with heat anticipator, UL listing for electrical rating, concealed setpoint adjustment, 13°C–30°C (55°F–85°F) setpoint range, 1°C (2°F) maximum differential, and vented ABS plastic cover.
3. Low-Limit Thermostats. Low-limit airstream thermostats shall be UL listed, vapor pressure type. Element shall be at least 6 m (20 ft) long. Element shall sense temperature in each 30 cm (1 ft) section and shall respond to lowest sensed temperature. Low-limit thermostat shall be manual reset only.

D. Temperature Sensors.
1. Type. Temperature sensors shall be Resistance Temperature Device (RTD) or thermistor.
2. Duct Sensors. Duct sensors shall be single point or averaging as shown. Averaging sensors shall be a minimum of 1.5 m (5 ft) in length per 1 m^2(10 ft^2) of duct cross-section.
3. Immersion Sensors. Provide immersion sensors with a separable stainless steel well. Well pressure rating shall be consistent with system pressure it will be immersed in. Well shall withstand pipe design flow velocities.
4. Space Sensors. Space sensors shall have setpoint adjustment, override switch, display, and communication port as shown.
5. Differential Sensors. Provide matched sensors for differential temperature measurement.

E. Humidity Sensors.
1. Duct and room sensors shall have a sensing range of 20%–80%.
2. Duct sensors shall have a sampling chamber.
3. Outdoor air humidity sensors shall have a sensing range of 20%–95% RH and shall be suitable for ambient conditions of -40°C–75°C (-40°F–170°F).
4. Humidity sensors shall not drift more than 1% of full scale annually.

F. Flow Switches. Flow-proving switches shall be paddle (water service only) or differential pressure type (air or water service) as shown. Switches shall be UL listed, SPDT snap-acting, and pilot duty rated (125 VA minimum).
1. Paddle switches shall have adjustable sensitivity and NEMA 1 enclosure unless otherwise specified.
2. Differential pressure switches shall have scale range and differential suitable for intended application and NEMA 1 enclosure unless otherwise specified.

G. Relays.
1. Control Relays. Control relays shall be plug-in type, UL listed, and shall have dust cover and LED “energized” indicator. Contact rating, configuration, and coil voltage shall be suitable for application.
2. Time Delay Relays. Time delay relays shall be solid-state plug-in type, UL listed, and shall have adjustable time delay. Delay shall be adjustable ±100% from setpoint shown. Contact rating, configuration, and coil voltage shall be suitable

for application. Provide NEMA 1 enclosure for relays not installed in local control panel.

H. Override Timers.
   1. Unless implemented in control software, override timers shall be spring-wound line voltage, UL Listed, with contact rating and configuration required by application. Provide 0–6 hour calibrated dial unless otherwise specified. Flush mount timer on local control panel face or where shown.

I. Current Transmitters.
   1. AC current transmitters shall be self-powered, combination split-core current transformer type with built-in rectifier and high-gain servo amplifier with 4–20 mA two-wire output. Full-scale unit ranges shall be 10 A, 20 A, 50 A, 100 A, 150 A, and 200 A, with internal zero and span adjustment. Unit accuracy shall be ±1% full-scale at 500 ohm maximum burden.
   2. Transmitter shall meet or exceed ANSI/ISA S50.1 requirements and shall be UL/CSA recognized.
   3. Unit shall be split-core type for clamp-on installation on existing wiring.

J. Current Transformers.
   1. AC current transformers shall be UL/CSA recognized and shall be completely encased (except for terminals) in approved plastic material.
   2. Transformers shall be available in various current ratios and shall be selected for ±1% accuracy at 5 A full-scale output.
   3. Use fixed-core transformers for new wiring installation and split-core transformers for existing wiring installation.

K. Voltage Transmitters.
   1. AC voltage transmitters shall be self-powered single-loop (two-wire) type, 4–20 mA output with zero and span adjustment.
   2. Adjustable full-scale unit ranges shall be 100–130 Vac, 200–250 Vac, 250–330 Vac, and 400–600 Vac. Unit accuracy shall be ±1% full-scale at 500 ohm maximum burden.
   3. Transmitters shall meet or exceed ANSI/ISA S50.1 requirements and shall be UL/CSA recognized at 600 Vac rating.

L. Voltage Transformers.
   1. AC voltage transformers shall be UL/CSA recognized, 600 Vac rated, and shall have built-in fuse protection.
   2. Transformers shall be suitable for ambient temperatures of 4°C–55°C (40°F–130°F) and shall provide ±0.5% accuracy at 24 Vac and 5 VA load.
   3. Windings (except for terminals) shall be completely enclosed with metal or plastic.

M. Power Monitors.
   1. Selectable rate pulse output for kWh reading, 4–20 mA output for kW reading, N.O. alarm contact, and ability to operate with 5.0 amp current inputs or 0–0.33 volt inputs.
   2. 1.0% full-scale true RMS power accuracy, +0.5 Hz, voltage input range 120–600 V, and auto range select.

3. Under voltage/phase monitor circuitry.
4. NEMA 1 enclosure.
5. Current transformers having a 0.5% FS accuracy, 600 VAC isolation voltage with 0–0.33 V output. If 0–5 A current transformers are provided, a three-phase disconnect/shorting switch assembly is required.

N. Thermal Energy Meters
   1. Matched RTD, solid state, or thermistor temperature sensors with a differential temperature accuracy of ±0.15°F.
   2. Flow meter : See "Hydronic Flowmeters" section.
   3. Unit accuracy of ±1% factory calibrated, traceable to NIST with certification.
   4. NEMA 1 enclosure.
   5. Panel mounted display.
   6. UL listed.
   7. Isolated 4–20 ma signals for energy rate and supply and return temperatures and flow.

O. Current Switches.
   1. Current-operated switches shall be self-powered, solid-state with adjustable trip current. Select switches to match application current and DDC system output requirements.

P. Pressure Transducers.
   1. Transducers shall have linear output signal and field-adjustable zero and span.
   2. Transducer sensing elements shall withstand continuous operating conditions of positive or negative pressure 50% greater than calibrated span without damage.
   3. Water pressure transducer diaphragm shall be stainless steel with minimum proof pressure of 1000 kPa (150 psi). Transducer shall have 4–20 mA output, suitable mounting provisions, and block and bleed valves.
   4. Water differential pressure transducer diaphragm shall be stainless steel with minimum proof pressure of 1000 kPa (150 psi). Over-range limit (differential pressure) and maximum static pressure shall be 2000 kPa (300psi.)Transducer shall have 4–20 mA output, suitable mounting provisions, and 5-valve manifold.

Q. Differential Pressure Switches. Differential pressure switches (air or water service) shall be UL listed, SPDT snap-acting, pilot duty rated (125 VA minimum) and shall have scale range and differential suitable for intended application and NEMA 1 enclosure unless otherwise specified.

R. Pressure-Electric (PE) Switches.
   1. Shall be metal or neoprene diaphragm actuated, operating pressure rated for 0–175 kPa (0–25 psig), with calibrated scale minimum setpoint range of 14–125 kPa (2–18 psig) minimum, UL listed.
   2. Provide one- or two-stage switch action (SPDT, DPST, or DPDT) as required by application. Electrically rated for pilot duty service (125 VA minimum) and/or for motor control.
   3. Switches shall be open type (panel-mounted) or enclosed type for remote installation. Enclosed type shall be NEMA 1 unless otherwise specified.

4. Each pneumatic signal line to PE switches shall have permanent indicating gauge.

S. Occupancy Sensors. Occupancy sensors shall utilize Passive Infrared (PIR) and/or Microphonic Passive technology to detect the presence of people within a room. Sensors shall be mounted as indicated on the approved drawings. The sensor output shall be accessible by any lighting and/or HVAC controller in the system. Occupancy sensors shall be capable of being powered from the lighting or HVAC control panel, as shown on the drawings. Occupancy sensor delay shall be software adjustable through the user interface and shall not require manual adjustment at the sensor.

T. Local Control Panels.
1. All indoor control cabinets shall be fully enclosed NEMA 1 construction with (hinged door) key-lock latch and removable subpanels. A single key shall be common to all field panels and subpanels.
2. Interconnections between internal and face-mounted devices shall be prewired with color-coded stranded conductors neatly installed in plastic troughs and/or tie-wrapped. Terminals for field connections shall be UL listed for 600 volt service, individually identified per control/ interlock drawings, with adequate clearance for field wiring. Control terminations for field connection shall be individually identified per control drawings.
3. Provide ON/OFF power switch with overcurrent protection for control power sources to each local panel.

2.9 Wiring and Raceways

A. General. Provide copper wiring, plenum cable, and raceways as specified in applicable sections of Division 26.

B. Insulated wire shall use copper conductors and shall be UL listed for 90°C (200°F) minimum service.

PART 3: EXECUTION

3.1 Examination

A. The contractor shall inspect the site to verify that equipment may be installed as shown. Any discrepancies, conflicts, or omissions shall be reported to the engineer for resolution before rough-in work is started.

B. The contractor shall examine the drawings and specifications for other parts of the work. If head room or space conditions appear inadequate—or if any discrepancies occur between the plans and the contractor's work and the plans and the work of others—the contractor shall report these discrepancies to the engineer and shall obtain written instructions for any changes necessary to accommodate the contractor's work with the work of others. Any changes in the work covered by this specification made necessary by the failure or neglect of the contractor to report such discrepancies shall be made by—and at the expense of—this contractor.

3.2 Protection

A. The contractor shall protect all work and material from damage by his/her work or employees and shall be liable for all damage thus caused.

B. The contractor shall be responsible for his/her work and equipment until finally inspected, tested, and accepted. The contractor shall protect any material that is not immediately installed. The contractor shall close all open ends of work with temporary covers or plugs during storage and construction to prevent entry of foreign objects.

3.3 Coordination

A. Site
   1. Where the mechanical work will be installed in close proximity to, or will interfere with, work of other trades, the contractor shall assist in working out space conditions to make a satisfactory adjustment. If the contractor installs his/her work before coordinating with other trades, so as to cause any interference with work of other trades, the contractor shall make the necessary changes in his/her work to correct the condition without extra charge.
   2. Coordinate and schedule work with other work in the same area and with work dependent upon other work to facilitate mutual progress.

B. Submittals. See Section 23 09 23 Article 1.10 (Submittals).

C. Test and Balance.
   1. The contractor shall furnish a single set of all tools necessary to interface to the control system for test and balance purposes.
   2. The contractor shall provide training in the use of these tools. This training will be planned for a minimum of 4 hours.
   3. In addition, the contractor shall provide a qualified technician to assist in the test and balance process, until the first 20 terminal units are balanced.
   4. The tools used during the test and balance process will be returned at the completion of the testing and balancing.

D. Life Safety.

1. Duct smoke detectors required for air handler shutdown are provided under Division 28. Interlock smoke detectors to air handlers for shutdown as specified in Section 23 09 93 (Sequences of Operation).
2. Smoke dampers and actuators required for duct smoke isolation are provided under Division 23. Interlock smoke dampers to air handlers as specified in Section 23 09 93 (Sequences of Operation).
3. Fire and smoke dampers and actuators required for fire-rated walls are provided under Division 23. Fire and smoke damper control is provided under Division 28.

E. Coordination with controls specified in other sections or divisions. Other sections and/or divisions of this specification include controls and control devices that are to be part of or interfaced to the control system specified in this section. These controls shall be integrated into the system and coordinated by the contractor as follows:
1. All communication media and equipment shall be provided as specified in Section 23 09 23 Article 2.2 (Communication).
2. Each supplier of a controls product is responsible for the configuration, programming, start up, and testing of that product to meet the sequences of operation described in Section 23 09 93.
3. The contractor shall coordinate and resolve any incompatibility issues that arise between control products provided under this section and those provided under other sections or divisions of this specification.
4. The contractor is responsible for providing all controls described in the contract documents regardless of where within the contract documents these controls are described.
5. The contractor is responsible for the interface of control products provided by multiple suppliers regardless of where this interface is described within the contract documents.

3.4 General Workmanship

A. Install equipment, piping, and wiring/raceway parallel to building lines (i.e. horizontal, vertical, and parallel to walls) wherever possible.
B. Provide sufficient slack and flexible connections to allow for vibration of piping and equipment.
C. Install equipment in readily accessible locations as defined by Chapter 1 Article 100 Part A of the National Electrical Code (NEC).
D. Verify integrity of all wiring to ensure continuity and freedom from shorts and grounds.
E. All equipment, installation, and wiring shall comply with industry specifications and standards for performance, reliability, and compatibility and be executed in strict adherence to local codes and standard practices.

3.5 Field Quality Control

A. All work, materials, and equipment shall comply with rules and regulations of applicable local, state, and federal codes and ordinances as identified in Section 23 09 23 Article 1.8 (Codes and Standards).
B. Contractor shall continually monitor the field installation for code compliance and quality of workmanship.
C. Contractor shall have work inspection by local and/or state authorities having jurisdiction over the work.

3.6 Existing Equipment

A. Wiring. The contractor may reuse any abandoned wires. The integrity of the wire and its proper application to the installation are the responsibility of the contractor. The wire shall be properly identified and tested in accordance with this specification. Unused or redundant wiring must be properly identified as such.
B. Local Control Panels. The contractor may reuse any existing local control panel to locate new equipment. All redundant equipment within these panels must be removed. Panel face cover must be patched to fill all holes caused by removal of unused equipment or replaced with new.
C. Repair. Unless otherwise directed, the contractor is not responsible for repair or replacement of existing energy equipment and systems, valves, dampers, or actuators. Should the contractor find existing equipment that requires maintenance, the engineer is to be notified immediately.
D. Temperature Sensor Wells. The contractor may reuse any existing wells in piping for temperature sensors. These wells shall be modified as required for proper fit of new sensors.
E. Indicator Gauges. Where these devices remain and are not removed, they must be made operational and recalibrated to ensure reasonable accuracy.
F. Room Thermostats. Room thermostats may be reused. Remove and deliver unnecessary thermostats to Owner unless otherwise noted. Patch and finish holes and marks left by removal to match existing walls.
G. Electronic Sensors and Transmitters. Unless specifically noted otherwise, existing sensors and transmitters may be reused. Remove and deliver unnecessary sensors and transmitters to Owner.
H. Controllers and Auxiliary Electronic Devices. Existing controllers and auxiliary electronic devices may be reused unless specifically noted otherwise. Recondition as necessary. Remove unnecessary sensors and transmitters.
I. Damper Actuators, Linkages, and Appurtenances. Existing damper actuators, linkages, and appurtenances may be reused unless specifically noted otherwise. Recondition as necessary. Remove and deliver unnecessary equipment to Owner.
J. Existing System Operating Schedule. Existing mechanical system may be disabled during this work.
K. The scheduling of fans through existing or temporary time clocks or control system shall be maintained throughout the DDC system installation
L. Install control panels where shown.

M. Modify existing starter control circuits, if necessary, to provide hand-off-auto control of each controlled starter. If new starters or starter control packages are required, these shall be included as part of this contract.
N. Patch holes and finish to match existing walls.

3.7 Wiring

A. All control and interlock wiring shall comply with national and local electrical codes, and Division 26 of this specification, Where the requirements of this section differ from Division 26, the requirements of this section shall take precedence.
B. All NEC Class 1 (line voltage) wiring shall be UL listed in approved raceway according to NEC and Division 26 requirements.
C. All low-voltage wiring shall meet NEC Class 2 requirements. Low-voltage power circuits shall be subfused when required to meet Class 2 current limit.
D. Where NEC Class 2 (current-limited) wires are in concealed and accessible locations, including ceiling return air plenums, approved cables not in raceway may be used provided that cables are UL listed for the intended application.
E. All wiring in mechanical, electrical, or service rooms – or where subject to mechanical damage – shall be installed in raceway at levels below 3 m (10ft).
F. Do not install Class 2 wiring in raceways containing Class 1 wiring. Boxes and panels containing high-voltage wiring and equipment may not be used for low-voltage wiring except for the purpose of interfacing the two (e.g. relays and transformers).
G. Do not install wiring in raceway containing tubing.
H. Where Class 2 wiring is run exposed, wiring is to be run parallel along a surface or perpendicular to it and neatly tied at 3 m (10 ft) intervals.
I. Where plenum cables are used without raceway, they shall be supported from or anchored to structural members. Cables shall not be supported by or anchored to ductwork, electrical raceways, piping, or ceiling suspension systems.
J. All wire-to-device connections shall be made at a terminal block or terminal strip. All wire-to-wire connections shall be at a terminal block.
K. All wiring within enclosures shall be neatly bundled and anchored to permit access and prevent restriction to devices and terminals.
L. Maximum allowable voltage for control wiring shall be 120 V. If only higher voltages are available, the contractor shall provide step-down transformers.
M. All wiring shall be installed as continuous lengths, with no splices permitted between termination points.
N. Install plenum wiring in sleeves where it passes through walls and floors. Maintain fire rating at all penetrations.
O. Size of raceway and size and type of wire type shall be the responsibility of the contractor in keeping with the manufacturer's recommendations and NEC requirements, except as noted elsewhere.
P. Include one pull string in each raceway 2.5 cm (1 in.) or larger.
Q. Use color-coded conductors throughout with conductors of different colors.

R. Control and status relays are to be located in designated enclosures only. These enclosures include packaged equipment control panel enclosures unless they also contain Class 1 starters.
S. Conceal all raceways except within mechanical, electrical, or service rooms. Install raceway to maintain a minimum clearance of 15 cm (6 in.) from high-temperature equipment (e.g. steam pipes or flues).
T. Secure raceways with raceway clamps fastened to the structure and spaced according to code requirements. Raceways and pull boxes may not be hung on flexible duct strap or tie rods. Raceways may not be run on or attached to ductwork.
U. Adhere to this specification's Division 26 requirements where raceway crosses building expansion joints.
V. Install insulated bushings on all raceway ends and openings to enclosures. Seal top end of vertical raceways.
W. The contractor shall terminate all control and/or interlock wiring and shall maintain updated (as-built) wiring diagrams with terminations identified at the job site.
X. Flexible metal raceways and liquid-tight flexible metal raceways shall not exceed 1 m (3 ft) in length and shall be supported at each end. Flexible metal raceway less than ½ in. electrical trade size shall not be used. In areas exposed to moisture, including chiller and boiler rooms, liquid-tight, flexible metal raceways shall be used.
Y. Raceway must be rigidly installed, adequately supported, properly reamed at both ends, and left clean and free of obstructions. Raceway sections shall be joined with couplings (according to code). Terminations must be made with fittings at boxes, and ends not terminating in boxes shall have bushings installed.

3.8 Communication Wiring

A. The contractor shall adhere to the items listed in the "Wiring" article in Part 3 of the specification.
B. All cabling shall be installed in a neat and workmanlike manner. Follow manufacturer's installation recommendations for all communication cabling
C. Do not install communication wiring in raceways and enclosures containing Class 1 or other Class 2 wiring.
D. Maximum pulling, tension, and bend radius for the cable installation, as specified by the cable manufacturer, shall not be exceeded during installation.
E. Contractor shall verify the integrity of the entire network following cable installation. Use appropriate test measures for each particular cable.
F. When a cable enters or exits a building, a lightning arrestor must be installed between the lines and ground. The lighting arrestor shall be installed according to manufacturer's instructions.
G. All runs of communication wiring shall be unspliced length when that length is commercially available.
H. All communication wiring shall be labeled to indicate origination and destination data.
I. Grounding of coaxial cable shall be in accordance with NEC regulations article on "Communications Circuits, Cable, and Protector Grounding."

J. BACnet MS/TP communications wiring shall be installed in accordance with ASHRAE/ANSI Standard 135. This includes but is not limited to:
   1. The network shall use shielded, twisted-pair cable with characteristic impedance between 100 and 120 ohms. Distributed capacitance between conductors shall be less than 100 pF per meter (30 pF per foot.)
   2. The maximum length of an MS/TP segment is 1200 meters (4000 ft) with AWG 18 cable. The use of greater distances and/or different wire gauges shall comply with the electrical specifications of EIA-485.
   3. The maximum number of nodes per segment shall be 32, as specified in the EIA 485 standard. Additional nodes may be accommodated by the use of repeaters.
   4. An MS/TP EIA-485 network shall have no T connections.

3.9 Installation of Sensors

A. Install sensors in accordance with the manufacturer's recommendations.
B. Mount sensors rigidly and adequately for environment within which the sensor operates.
C. Room temperature sensors shall be installed on concealed junction boxes properly supported by wall framing.
D. All wires attached to sensors shall be sealed in their raceways or in the wall to stop air transmitted from other areas from affecting sensor readings.
E. Sensors used in mixing plenums and hot and cold decks shall be of the averaging type. Averaging sensors shall be installed in a serpentine manner vertically across the duct. Each bend shall be supported with a capillary clip.
F. Low-limit sensors used in mixing plenums shall be installed in a serpentine manner horizontally across duct. Each bend shall be supported with a capillary clip. Provide 3 m (1 ft) of sensing element for each 1 m^2(1 ft^2) of coil area.
G. Do not install temperature sensors within the vapor plume of a humidifier. If installing a sensor downstream of a humidifier, install it at least 3 m (10 ft) downstream.
H. All pipe-mounted temperature sensors shall be installed in wells. Install liquid temperature sensors with heat-conducting fluid in thermal wells.
I. Install outdoor air temperature sensors on north wall, complete with sun shield at designated location.
J. Differential Air Static Pressure.
   1. Supply Duct Static Pressure. Pipe the high-pressure tap to the duct using a pitot tube. Pipe the low-pressure port to a tee in the high-pressure tap tubing of the corresponding building static pressure sensor (if applicable) or to the location of the duct high-pressure tap and leave open to the plenum.
   2. Return Duct Static Pressure. Pipe high-pressure tap to duct using a pitot tube. Pipe the low-pressure port to a tee in the low-pressure tap tubing of the corresponding building static pressure sensor.
   3. Building Static Pressure. Pipe the low-pressure port of the pressure sensor to the static pressure port located on the outside of the building through a high-volume accumulator. Pipe the high-pressure port to a location behind a thermostat cover.

4. The piping to the pressure ports on all pressure transducers shall contain a capped test port located adjacent to the transducer.
5. All pressure transducers, other than those controlling VAV boxes, shall be located in field device panels, not on the equipment monitored or on ductwork. Mount transducers in a location accessible for service without use of ladders or special equipment.
6. All air and water differential pressure sensors shall have gauge tees mounted adjacent to the taps. Water gauges shall also have shut-off valves installed before the tee.

K. Smoke detectors, freezestats, high-pressure cut-offs, and other safety switches shall be hard-wired to de-energize equipment as described in the sequence of operation. Switches shall require manual reset. Provide contacts that allow DDC software to monitor safety switch status.

L. Install humidity sensors for duct mounted humidifiers at least 3 m (10 ft) downstream of the humidifier. Do not install filters between the humidifier and the sensor.

3.10 Actuators

A. General. Mount and link control damper actuators according to manufacturer's instructions.
1. To compress seals when spring-return actuators are used on normally closed dampers, power actuator to approximately 5° open position, manually close the damper, and then tighten the linkage.
2. Check operation of damper/actuator combination to confirm that actuator modulates damper smoothly throughout stroke to both open and closed positions.
3. Provide all mounting hardware and linkages for actuator installation.

B. Electric/Electronic
1. Dampers: Actuators shall be direct mounted on damper shaft or jackshaft unless shown as a linkage installation. For low-leakage dampers with seals, the actuator shall be mounted with a minimum 5° travel available for tightening the damper seal. Actuators shall be mounted following manufacturer’s recommendations.
2. Valves: Actuators shall be connected to valves with adapters approved by the actuator manufacturer. Actuators and adapters shall be mounted following the actuator manufacturer's recommendations.

C. Pneumatic Actuators.
1. Size pneumatic damper actuator to operate the related control damper(s) with sufficient reserve power to provide smooth modulating action or two-position action. Actuator also shall be sized for proper speed of response at the velocity and pressure conditions to which the control damper is subject.
2. Pneumatic damper actuators shall produce sufficient torque to close off against the maximum system pressures encountered. Size the pneumatic damper actuator to close off against the fan shutoff pressure, as a minimum.

3. Where two or more pneumatic damper actuators are installed for interrelated operation in unison, such as dampers used for mixing, provide the dampers with a positive pilot positioner. The positive pilot positioner shall be directly mounted to the pneumatic damper actuator and have pressure gauges for supply input and output pressures.
4. The total damper area operated by an actuator shall not exceed 80% of the manufacturer's maximum area rating. Provide at least one actuator for each damper section. Each damper actuator shall not power more than 2 m^2(20 ft^2) of damper.
5. Use line shafting or shaft couplings (jackshafting) in lieu of blade-to-blade linkages or shaft coupling when driving axially aligned damper sections.

3.11 Warning Labels

A. Permanent warning labels shall be affixed to all equipment that can be automatically started by the control system.
   1. Labels shall use white lettering (12-point type or larger) on a red background.
   2. Warning labels shall read as follows.

C A U T I O N
This equipment is operating under automatic control and may start or stop at any time without warning. Switch disconnect to"Off"position before servicing.

B. Permanent warning labels shall be affixed to all motor starters and control panels that are connected to multiple power sources utilizing separate disconnects.
   1. Labels shall use white lettering (12-point type or larger) on a red background.
   2. Warning labels shall read as follows.

C A U T I O N
This equipment is fed from more than one power source with separate disconnects. Disconnect all power sources before servicing.

3.12 Identification of Hardware and Wiring

A. All wiring and cabling, including that within factory-fabricated panels shall be labeled at each end within 5 cm (2 in.) of termination with control system address or termination number.
B. All pneumatic tubing shall be labeled at each end within 5 cm (2 in.) of termination with a descriptive identifier.
C. Permanently label or code each point of field terminal strips to show the instrument or item served.
D. Identify control panels with minimum 1 cm (½ in.) letters on laminated plastic nameplates.
E. Identify all other control components with permanent labels. All plug-in components shall be labeled such that label removal of the component does not remove the label.

F. Identify room sensors related to terminal boxes or valves with nameplates.
G. Manufacturers' nameplates and UL or CSA labels shall be visible and legible after equipment is installed.
H. Identifiers shall match record documents.

3.13 Controllers

A. Provide a separate controller for each AHU or other HVAC system. A DDC controller may control more than one system provided that all points associated with the system are assigned to the same DDC controller. Points used for control loop reset, such as outside air or space temperature, are exempt from this requirement.
B. Building Controllers and Custom Application Controllers shall be selected to provide the required I/O point capacity required to monitor all of the hardware points listed in Section 23 09 93 (Sequences of Operation).

3.14 Programming

A. Provide sufficient internal memory for the specified sequences of operation and trend logging.
B. Point Naming. Name points as shown on the equipment points list provided with each sequence of operation. See Section 23 09 93 (Sequences of Operation). If character limitations or space restrictions make it advisable to shorten the name, the abbreviations given in Appendix B to Section 23 09 93 may be used. Where multiple points with the same name reside in the same controller, each point name may be customized with its associated Program Object number. For example, "Zone Temp 1" for Zone 1, "Zone Temp 2" for Zone 2.
C. Software Programming.
    1. Provide programming for the system and adhere to the sequences of operation provided. All other system programming necessary for the operation of the system, but not specified in this document, also shall be provided by the contractor. Embed into the control program sufficient comment statements to clearly describe each section of the program. The comment statements shall reflect the language used in the sequences of operation. Use the appropriate technique based on the following programming types:
        a. Text-based:
            i. Must provide actions for all possible situations
            ii. Must be modular and structured
            iii. Must be commented
        b. Graphic-based:
            i. Must provide actions for all possible situations
            ii. Must be documented
        c. Parameter-based:
            i. Must provide actions for all possible situations
            ii. Must be documented.
D. Operator Interface.

1. Standard Graphics. Provide graphics for all mechanical systems and floor plans of the building. This includes each chilled water system, hot water system, chiller, boiler, air handler, and all terminal equipment. Point information on the graphic displays shall dynamically update. Show on each graphic all relevant input and output points for that equipment. Also show relevant calculated points such as setpoints. As a minimum, show on each equipment graphic the input and output points and relevant calculated points as indicated on the applicable Points List in Section 23 09 93.
2. The contractor shall provide all the labor necessary to install, initialize, start up, and troubleshoot all operator interface software and its functions as described in this section. This includes any operating system software, the operator interface database, and any third-party software installation and integration required for successful operation of the operator interface.

3.15 Control System Checkout and Testing

A. Startup Testing. All testing listed in this article shall be performed by the contractor and shall make up part of the necessary verification of an operating control system. This testing shall be completed before the owner's representative is notified of the system demonstration.

1. The contractor shall furnish all labor and test apparatus required to calibrate and prepare for service of all instruments, controls, and accessory equipment furnished under this specification.
2. Verify that all control wiring is properly connected and free of all shorts and ground faults. Verify that terminations are tight.
3. Enable the control systems and verify calibration of all input devices individually. Perform calibration procedures according to manufacturers' recommendations.
4. Verify that all binary output devices (relays, solenoid valves, two-position actuators and control valves, magnetic starters, etc.) operate properly and that the normal positions are correct.
5. Verify that all analog output devices (I/Ps, actuators, etc.) are functional, that start and span are correct, and that direction and normal positions are correct. The contractor shall check all control valves and automatic dampers to ensure proper action and closure. The contractor shall make any necessary adjustments to valve stem and damper blade travel.
6. Verify that the system operation adheres to the sequences of operation. Simulate and observe all modes of operation by overriding and varying inputs and schedules. Tune all DDC loops.
7. Alarms and Interlocks:
   a. Check each alarm separately by including an appropriate signal at a value that will trip the alarm.
   b. Interlocks shall be tripped using field contacts to check the logic, as well as to ensure that the fail-safe condition for all actuators is in the proper direction.

c. Interlock actions shall be tested by simulating alarm conditions to check the initiating value of the variable and interlock action

3.16 Control System Demonstration and Acceptance

A. Demonstration.

1. Prior to acceptance, the control system shall undergo a series of performance tests to verify operation and compliance with this specification. These tests shall occur after the Contractor has completed the installation, started up the system, and performed his/her own tests.
2. The tests described in this section are to be performed in addition to the tests that the contractor performs as a necessary part of the installation, start-up, and debugging process and as specified in the "Control System Checkout and Testing" article in Part 3 of this specification. The engineer will be present to observe and review these tests. The engineer shall be notified at least 10 days in advance of the start of the testing procedures.
3. The demonstration process shall follow that approved in Part 1, "Submittals." The approved checklists and forms shall be completed for all systems as part of the demonstration.
4. The contractor shall provide at least two persons equipped with two-way communication and shall demonstrate actual field operation of each control and sensing point for all modes of operation including day, night, occupied, unoccupied, fire/smoke alarm, seasonal changeover, and power failure modes. The purpose is to demonstrate the calibration, response, and action of every point and system. Any test equipment required to prove the proper operation shall be provided by and operated by the contractor.
5. As each control input and output is checked, a log shall be completed showing the date, technician's initials, and any corrective action taken or needed.
6. Demonstrate compliance with Part 1, "System Performance."
7. Demonstrate compliance with sequences of operation through all modes of operation.
8. Demonstrate complete operation of operator interface.
9. Additionally, the following items shall be demonstrated:
   a. DDC loop response. The contractor shall supply trend data output in a graphical form showing the step response of each DDC loop. The test shall show the loop's response to a change in set point, which represents a change of actuator position of at least 25% of its full range. The sampling rate of the trend shall be from 10 seconds to 3 minutes, depending on the speed of the loop. The trend data shall show for each sample the set point, actuator position, and controlled variable values. Any loop that yields unreasonably under-damped or over-damped control shall require further tuning by the Contractor.
   b. Demand limiting. The contractor shall supply a trend data output showing the action of the demand limiting algorithm. The data shall document the action on a minute-by-minute basis over at least a 30-

minute period. Included in the trend shall be building kW, demand limiting set point, and the status of sheddable equipment outputs.

c. Optimum start/stop. The contractor shall supply a trend data output showing the capability of the algorithm. The change-of-value or change-of-state trends shall include the output status of all optimally started and stopped equipment, as well as temperature sensor inputs of affected areas.
d. Interface to the building fire alarm system.
e. Operational logs for each system that indicate all set points, operating points, valve positions, mode, and equipment status shall be submitted to the architect/engineer. These logs shall cover three 48-hour periods and have a sample frequency of not more than 10 minutes. The logs shall be provided in both printed and disk formats.

10. Any tests that fail to demonstrate the operation of the system shall be repeated at a later date. The contractor shall be responsible for any necessary repairs or revisions to the hardware or software to successfully complete all tests.

B. Acceptance.

1. All tests described in this specification shall have been performed to the satisfaction of both the engineer and owner prior to the acceptance of the control system as meeting the requirements of completion. Any tests that cannot be performed due to circumstances beyond the control of the contractor may be exempt from the completion requirements if stated as such in writing by the engineer. Such tests shall then be performed as part of the warranty.
2. The system shall not be accepted until all forms and checklists completed as part of the demonstration are submitted and approved as required in Part 1, "Submittals."

3.17 Cleaning

A. The contractor shall clean up all debris resulting from his/her activities daily. The contractor shall remove all cartons, containers, crates, etc., under his/her control as soon as their contents have been removed. Waste shall be collected and placed in a designated location.

B. At the completion of work in any area, the contractor shall clean all work, equipment, etc., keeping it free from dust, dirt, and debris, etc.

C. At the completion of work, all equipment furnished under this section shall be checked for paint damage, and any factory-finished paint that has been damaged shall be repaired to match the adjacent areas. Any cabinet or enclosure that has been deformed shall be replaced with new material and repainted to match the adjacent areas.

3.18 Training

A. Provide training for a designated staff of Owner's representatives. Training shall be provided via self-paced training, web-based or computer-based training, classroom training, or a combination of training methods.

B. Training shall enable students to accomplish the following objectives.

1. Day-to-day Operators:
    a. Proficiently operate the system
    b. Understand control system architecture and configuration
    c. Understand DDC system components
    d. Understand system operation, including DDC system control and optimizing routines (algorithms)
    e. Operate the workstation and peripherals
    f. Log on and off the system
    g. Access graphics, point reports, and logs
    h. Adjust and change system set points, time schedules, and holiday schedules
    i. Recognize malfunctions of the system by observation of the printed copy and graphical visual signals
    j. Understand system drawings and Operation and Maintenance manual
    k. Understand the job layout and location of control components
    l. Access data from DDC controllers and ASCs
    m. Operate portable operator's terminals
2. Advanced Operators:
    a. Make and change graphics on the workstation
    b. Create, delete, and modify alarms, including annunciation and routing of these
    c. Create, delete, and modify point trend logs and graph or print these both on an ad-hoc basis and at user-definable time intervals
    d. Create, delete, and modify reports
    e. Add, remove, and modify system's physical points
    f. Create, modify, and delete programming
    g. Add panels when required
    h. Add operator interface stations
    i. Create, delete, and modify system displays, both graphical and others
    j. Perform DDC system field checkout procedures
    k. Perform DDC controller unit operation and maintenance procedures
    l. Perform workstation and peripheral operation and maintenance procedures
    m. Perform DDC system diagnostic procedures
    n. Configure hardware including PC boards, switches, communication, and I/O points
    o. Maintain, calibrate, troubleshoot, diagnose, and repair hardware
    p. Adjust, calibrate, and replace system components
3. System Managers/Administrators:
    a. Maintain software and prepare backups
    b. Interface with job-specific, third-party operator software
    c. Add new users and understand password security procedures

C. Organize the training into sessions or modules for the three levels of operators listed above. (Day-to-Day Operators, Advanced Operators, System Managers and

Administrators). Students will receive one or more of the training packages, depending on knowledge level required.

D. Provide course outline and materials according to the "Submittals" article in Part 1 of this specification. Provide one copy of training material per student.
E. The instructor(s) shall be factory-trained and experienced in presenting this material.
F. Classroom training shall be done using a network of working controllers representative of installed hardware.

3.19 Sequences of Operation

See Section 23, Appendix A (Sequences of Operation, With Points Lists).

3.20 Control Damper Installation

A. Damper submittals shall be coordinated for type, quantity, and size to ensure compatibility with sheet metal design.
B. Duct openings shall be free of any obstruction or irregularities that might interfere with blade or linkage rotation or actuator mounting. Duct openings shall measure ¼ in. larger than damper dimensions and shall be square, straight, and level.
C. Individual damper sections, as well as entire multiple section assemblies, must be completely square and free from racking, twisting, or bending. Measure diagonally from upper corners to opposite lower corners of each damper section. Both dimensions must be within 0.3 cm (1/8 in.) of each other.
D. Follow the manufacturer's instructions for field installation of control dampers. Unless specifically designed for vertical blade application, dampers must be mounted with blade axis horizontal.
E. Install extended shaft or jackshaft according to manufacturer's instructions. (Typically, a sticker on the damper face shows recommended extended shaft location. Attach shaft on labeled side of damper to that blade.)
F. Damper blades, axles, and linkage must operate without binding. Before system operation, cycle damper after installation to ensure proper operation. On multiple section assemblies, all sections must open and close simultaneously.
G. Provide a visible and accessible indication of damper position on the drive shaft end.
H. Support ductwork in area of damper when required to prevent sagging due to damper weight.
I. After installation of low-leakage dampers with seals, caulk between frame and duct or opening to prevent leakage around perimeter of damper.

3.21 Duct Smoke Detection

A. Submit data for coordination of duct smoke detector interface to HVAC systems as required in Part 1, "Submittals."
B. This Contractor shall provide a dry-contact alarm output in the same room as the HVAC equipment to be controlled.

3.22 Packaged Equipment Controls

A. General. The electronic controls packaged with any equipment furnished under this contract shall communicate with the building direct digital control (DDC) system. The DDC system shall communicate with these controls to read the information and change the control setpoints as shown in the points list, sequences of operation, and control schematics. The information to be communicated between the DDC system and these controls shall be in the standard object format as defined in ANSI/ASHRAE Standard 135 (BACnet). Controllers shall communicate with other BACnet objects on the internetwork using the Read (Execute) Property service as defined in Clause 15.5 of Standard 135.

B. Distributed Processing. The controller shall be capable of stand-alone operation and shall continue to provide control functions if the network connection is lost.

C. I/O Capacity. The controller shall contain sufficient I/ O capacity to control the target system.

D. The Controller shall have a physical connection for a laptop computer or a portable operator’s tool.

E. Environment. The hardware shall be suitable for the anticipated ambient conditions.
   1. Controllers used outdoors and/or in wet ambient conditions shall be mounted within waterproof enclosures and shall be rated for operation at 40°C to 60°C (40°F to 140°F).
   2. Controllers used in conditioned space shall be mounted in dust-proof enclosures and shall be rated for operation at 0°C to 50°C (32°F to 120°F).

F. Serviceability. Provide diagnostic LEDs for power, communication, and processor. All wiring connections shall be made to field removable, modular terminal strips or to a termination card connected by a ribbon cable.

G. Memory. The Controller shall maintain all BIOS and programming information in the event of a power loss for at least 30 days.

H. Power. Controller shall be able to operate at 90% to 110% of nominal voltage rating.

I. Transformer. Power supply for the Controller must be rated at minimum of 125% of ASC power consumption and shall be fused or current limiting type.

3.23 Start-Up and Checkout Procedures

A. Start up, check out, and test all hardware and software and verify communication between all components.
   1. Verify that all control wiring is properly connected and free of all shorts and ground faults. Verify that terminations are tight.
   2. Verify that all analog and binary input/output points read properly.
   3. Verify alarms and interlocks.
   4. Verify operation of the integrated system.

23 09 93 Sequence of Operations for HVAC Controls

PART 1: GENERAL

1.0 Section Includes
1.1 Variable Air Volume - AHU
1.2 Outside Air Conditions - Temperature and Humidity Station
1.3 VAV - Terminal Unit
1.4 Point Summary

1.1 Variable Air Volume - RTU (typical of 17)

Run Conditions - Requested:
The unit shall run whenever:

- Any zone is occupied.
- OR a definable number of unoccupied zones need heating or cooling.

Emergency Shutdown:
The unit shall shut down and generate an alarm upon receiving an emergency shutdown signal.

High Static Shutdown:
The unit shall shut down and generate an alarm upon receiving an high static shutdown signal.

Supply Air Smoke Detection:
The unit shall shut down and generate an alarm upon receiving a supply air smoke detector status.

RTU Optimal Start:
The unit shall start prior to scheduled occupancy based on the time necessary for the zones to reach their occupied setpoints. The start time shall automatically adjust based on changes in outside air temperature and zone temperatures.

Demand Limiting - Setpoint Adjust:
To lower power consumption, the supply air temperature setpoint shall automatically relax (raised for cooling; lowered for heating) when the facility power consumption exceeds definable thresholds. The amount of relaxation shall be accomplished by one of the following methods:

- The supply air temperature setpoint shall relax by 2°F (adj.) for each demand threshold exceeded.
- The setpoints in the zones supplied by this unit shall be relaxed as specified in the Sequence of Operations for the zones. This shall in turn relax the unit's supply air temperature setpoint by a user definable amount.

All setpoints shall automatically return to their previous settings when the facility power consumption drops below the thresholds.

Supply Fan:
The supply fan shall run anytime the unit is commanded to run, unless shutdown on safeties. To prevent short cycling, the supply fan shall have a user definable (adj.) minimum runtime.

Alarms shall be provided as follows:

- Supply Fan Failure: Commanded on, but the status is off.
- Supply Fan in Hand: Commanded off, but the status is on.
- Supply Fan Runtime Exceeded: Status runtime exceeds a user definable limit (adj.).

Supply Air Duct Static Pressure Control:
The controller shall measure duct static pressure and modulate the supply fan VFD speed to maintain a duct static pressure setpoint. The speed shall not drop below 30% (adj.). The static pressure setpoint shall be reset based upon the position of the zone dampers, with a goal of reducing the static pressure until at least one zone damper is nearly wide open.

- The initial duct static pressure setpoint shall be 1.5in H2O (adj.).
- If no zone damper is nearly wide open, the setpoint shall incrementally reset down to a minimum of 1.0in H2O (adj.) .
- As one or more dampers nears the wide open position, the setpoint shall incrementally reset up to a maximum of 1.8in H2O (adj.).

Alarms shall be provided as follows:

- High Supply Air Static Pressure: If the supply air static pressure is 25% (adj.) greater than setpoint.
- Low Supply Air Static Pressure: If the supply air static pressure is 25% (adj.) less than setpoint.
- Supply Fan VFD Fault.

Supply Air Temperature Setpoint - Optimized:
The controller shall monitor the supply air temperature and shall maintain a supply air temperature setpoint reset based on zone cooling and heating requirements

The supply air temperature setpoint shall be reset for cooling based on zone cooling requirements as follows:

- The initial supply air temperature setpoint shall be 55°F (adj.).
- As cooling demand increases, the setpoint shall incrementally reset down to a minimum of 53°F (adj.).
- As cooling demand decreases, the setpoint shall incrementally reset up to a maximum of 72°F (adj.) .

If more zones need heating than cooling, then the supply air temperature setpoint shall be reset for heating as follows:

- The initial supply air temperature setpoint shall be 82°F (adj.).
- As heating demand increases, the setpoint shall incrementally reset up to a maximum of 85°F (adj.).
- As heating demand decreases, the setpoint shall incrementally reset down to a minimum of 72°F (adj.).

Cooling Stages:
The controller shall measure the supply air temperature and stage the cooling to maintain its cooling setpoint. To prevent short cycling, there shall be a user definable (adj.) delay between stages, and each stage shall have a user definable (adj.) minimum runtime.

The cooling shall be enabled whenever:

- Outside air temperature is greater than 60°F (adj.).
- AND the economizer (if present) is disabled or fully open.
- AND the supply fan status is on.

- AND the heating (if present) is not active.

Alarms shall be provided as follows:

- High Supply Air Temp: If the supply air temperature is 5°F (adj.) greater than setpoint.

Gas Heating Stages:
The controller shall measure the supply air temperature and stage the heating to maintain its heating setpoint. To prevent short cycling, there shall be a user definable (adj.) delay between stages, and each stage shall have a user definable (adj.) minimum runtime.

The heating shall be enabled whenever:

- Outside air temperature is less than 65°F (adj.).
- AND the supply fan status is on.
- AND the cooling (if present) is not active.

The heating stages shall run for freeze protection whenever:

- Supply air temperature drops from 40°F to 35°F (adj.).
- AND the supply fan status is on.

Alarms shall be provided as follows:

- Low Supply Air Temp: If the supply air temperature is 5°F (adj.) less than setpoint.

Building Static Pressure Control:
The controller shall measure the building static pressure and modulate the exhaust air damper to maintain building static pressure setpoint of 0.05in H2O (adj.).

exhaust air damper shall be enabled when the supply fan status is proven and close when the unit is off.

Alarms shall be provided as follows:

- High Building Static Pressure: If the building static pressure is 25% (adj.) greater than setpoint.
- Low Building Static Pressure: If the building static pressore is 25% (adj.) less than setpoint.

Economizer:
The controller shall measure the mixed air temperature and modulate the economizer dampers in sequence to maintain a setpoint 2°F (adj.) less than the supply air temperature setpoint. The outside air dampers shall maintain a minimum adjustable position of 20% (adj.) open whenever occupied.

The economizer shall be enabled whenever:

- Outside air temperature is less than 65°F (adj.).
- AND the outside air enthalpy is less than 22Btu/lb (adj.)
- AND the outside air temperature is less than the return air temperature.
- AND the outside air enthalpy is less than the return air enthalpy.
- AND the supply fan status is on.

The economizer shall close whenever:

- Mixed air temperature drops from 40°F to 35°F (adj.)
- OR the freezestat (if present) is on.
- OR on loss of supply fan status.

The outside and exhaust air dampers shall close and the return air damper shall open when the unit is off. If Optimal Start Up is available the mixed air damper shall operate as described in the occupied mode except that the outside air damper shall modulate to fully closed.

Minimum Outside Air Ventilation - Fixed Percentage:
The outside air dampers shall maintain a minimum adjustable position during building occupied hours and be closed during unoccupied hours.

Final Filter Differential Pressure Monitor:
The controller shall monitor the differential pressure across the final filter.

Alarms shall be provided as follows:

- Final Filter Change Required: Final filter differential pressure exceeds a user definable limit (adj.).

Mixed Air Temperature:
The controller shall monitor the mixed air temperature and use as required for economizer control (if present) or preheating control (if present).

Alarms shall be provided as follows:

- High Mixed Air Temp: If the mixed air temperature is greater than 90°F (adj.).
- Low Mixed Air Temp: If the mixed air temperature is less than 45°F (adj.).

Return Air Carbon Dioxide (CO_2) Concentration Monitoring:
The controller shall measure the return air CO_2 concentration.

Alarms shall be provided as follows:

- High Return Air Carbon Dioxide Concentration: If the return air CO_2 concentration is greater than 1000ppm (adj.) when in the unit is running.

Return Air Humidity:
The controller shall monitor the return air humidity and use as required for economizer control (if present) or humidity control (if present).

Alarms shall be provided as follows:

- High Return Air Humidity: If the return air humidity is greater than 70% (adj.).
- Low Return Air Humidity: If the return air humidity is less than 35% (adj.).

Return Air Temperature:
The controller shall monitor the return air temperature and use as required for setpoint control or economizer control (if present).

Alarms shall be provided as follows:

- High Return Air Temp: If the return air temperature is greater than 90°F (adj.).
- Low Return Air Temp: If the return air temperature is less than 45°F (adj.).

Supply Air Temperature:
The controller shall monitor the supply air temperature.

Alarms shall be provided as follows:

- High Supply Air Temp: If the supply air temperature is greater than 120°F (adj.).
- Low Supply Air Temp: If the supply air temperature is less than 45°F (adj.).

	Hardware Points				Software Points						
Point Name	**AI**	**AO**	**BI**	**BO**	**AV**	**BV**	**Loop**	**Sched**	**Trend**	**Alarm**	**Show On Graphic**
Building Static Pressure	x								x		x
Final Filter Differential Pressure	x								x		
Mixed Air Temp	x								x		x
Return Air Carbon Dioxide PPM	x								x		x
Return Air Humidity	x								x		x
Return Air Temp	x								x		x
Supply Air Static Pressure	x								x	x	x
Supply Air Temp	x								x		x
Exhaust Air Damper		x									x
Mixed Air Dampers		x							x		x

	Hardware Points				Software Points						
Point Name	**AI**	**AO**	**BI**	**BO**	**AV**	**BV**	**Loop**	**Sched**	**Trend**	**Alarm**	**Show On Graphic**
Supply Fan VFD Speed		x							x		x
Exhaust Air Damper Status			x						x		x
High Static Shutdown			x						x	x	x
Supply Air Smoke Detector			x						x	x	x
Supply Fan Status			x						x		x
Supply Fan VFD Fault			x							x	x
Cooling Stage 1				x					x		x
Cooling Stage 2				x					x		x
Cooling Stage 3				x					x		x
Cooling Stage 4				x					x		x
Heating Stage 1				x					x		x
Heating Stage 2				x					x		x
Supply Fan Start/Stop				x					x		x
Building Static Pressure Setpoint					x						x
Demand Limit Level					x						x
Economizer Mixed Air Temp Setpoint					x				x		x
Supply Air Static Pressure Setpoint					x				x		x
Supply Air Temp Setpoint					x				x		x
Emergency Shutdown						x			x	x	x
Compressor Runtime Exceeded										x	
Exhaust Air Damper Failure										x	
Exhaust Air Damper in Hand										x	
Final Filter Change Required										x	x
High Mixed Air Temp										x	
High Return Air Carbon Dioxide Concentration										x	
High Return Air Humidity										x	
High Return Air Temp										x	
High Supply Air Static Pressure										x	
High Supply Air Temp										x	
High Supply Air Temp										x	
Low Mixed Air Temp										x	
Low Return Air Humidity										x	
Low Return Air Temp										x	
Low Supply Air Static Pressure										x	

	Hardware Points				Software Points						
Point Name	**AI**	**AO**	**BI**	**BO**	**AV**	**BV**	**Loop**	**Sched**	**Trend**	**Alarm**	**Show On Graphic**
Low Supply Air Temp										x	
Low Supply Air Temp										x	
Supply Fan Failure										x	
Supply Fan in Hand										x	
Supply Fan Runtime Exceeded										x	
Totals	**8**	**3**	**5**	**7**	**5**	**1**	**0**	**0**	**25**	**25**	**29**

Total Hardware (23) **Total Software (56)**

Outside Air Conditions - Temperature and Humidity Station (typical of 1)

Outside Air Conditions:
The controller shall monitor the outside air temperature and humidity and calculate the outside air enthalpy on a continual basis. These values shall be made available to the system at all times.

Alarm shall be generated as follows:

- Sensor Failure: Sensor reading indicates shorted or disconnected sensor. In the event of a sensor failure, an alternate outside air conditions sensor shall be made available to the system without interruption in sensor readings.

If an OA Temp Sensor cannot be read, a default value of 65°F will be used.

If an OA Humidity Sensor cannot be read, a default value of 50 % will be used.

Outside Air Temperature History:
The controller shall monitor and record the high and low temperature readings for the outside air. These readings shall be recorded on a daily, month-to-date, and year-to-date basis.

	Hardware Points				Software Points						
Point Name	**AI**	**AO**	**BI**	**BO**	**AV**	**BV**	**Loop**	**Sched**	**Trend**	**Alarm**	**Show On Graphic**
Outside Air Humidity	x								x		x
Outside Air Temp	x								x		x
Outside Air Enthalpy					x				x		x
High Temp Month-to-Date									x		x
High Temp Today									x		x
High Temp Year-to-Date									x		x
Low Temp Month-to-Date									x		x
Low Temp Today									x		x
Low Temp Year-to-Date									x		x
Sensor Failure										x	
Totals	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**9**	**1**	**9**

Total Hardware (2) **Total Software (11)**

VAV - Terminal Unit (typical of 5)

Run Conditions - Scheduled:
The unit shall run according to a user definable time schedule in the following modes:

- Occupied Mode: The unit shall maintain
  - A 75°F (adj.) cooling setpoint
  - A 70°F (adj.) heating setpoint.

- Unoccupied Mode (night setback): The unit shall maintain
  - A 85°F (adj.) cooling setpoint.
  - A 55°F (adj.) heating setpoint.

Alarms shall be provided as follows:

- High Zone Temp: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.).
- Low Zone Temp: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).

Minimum Ventilation on Carbon Dioxide (CO_2) Concentration:
When in the occupied mode, the controller shall measure the zone CO_2 concentration and modulate the zone damper open on rising CO_2 concentrations, overriding normal damper operation to maintain a CO_2 setpoint of not more than 750 ppm (adj.).

Alarms shall be provided as follows:

- High Zone Carbon Dioxide Concentration: If the zone CO_2 concentration is greater than 1000 ppm (adj.).

Demand Limiting - Zone Setpoint Optimization:
To lower power consumption, the zone setpoints shall automatically relax when the facility power consumption exceeds definable thresholds. The amount of relaxation shall be individually

configurable for each zone. The zone setpoints shall automatically return to their previous settings when the facility power consumption drops below the thresholds.

Zone Setpoint Adjust:
The occupant shall be able to adjust the zone temperature heating and cooling setpoints at the zone sensor.

Zone Optimal Start:
The unit shall use an optimal start algorithm for morning start-up. This algorithm shall minimize the unoccupied warm-up or cool-down period while still achieving comfort conditions by the start of scheduled occupied period.

Zone Unoccupied Override:
A timed local override control shall allow an occupant to override the schedule and place the unit into an occupied mode for an adjustable period of time. At the expiration of this time, control of the unit shall automatically return to the schedule.

Reversing Variable Volume Terminal Unit - Flow Control:
The unit shall maintain zone setpoints by controlling the airflow through one of the following:

Occupied:

- When zone temperature is greater than its cooling setpoint, the zone damper shall modulate between the minimum occupied airflow (adj.) and the maximum cooling airflow (adj.) until the zone is satisfied.
- When the zone temperature is between the cooling setpoint and the heating setpoint, the zone damper shall maintain the minimum required zone ventilation (adj.).
- When zone temperature is less than its heating setpoint, the controller shall enable heating to maintain the zone temperature at its heating setpoint. Additionally, if warm air is available from the AHU, the zone damper shall modulate between the minimum occupied airflow (adj.) and the maximum heating airflow (adj.) until the zone is satisfied.

Unoccupied:

- When the zone is unoccupied the zone damper shall control to its minimum unoccupied airflow (adj.).
- When the zone temperature is greater than its cooling setpoint, the zone damper shall modulate between the minimum unoccupied airflow (adj.) and the maximum cooling airflow (adj.) until the zone is satisfied.
- When zone temperature is less than its unoccupied heating setpoint, the controller shall enable heating to maintain the zone temperature at the setpoint. Additionally, if warm air is available from the AHU, the zone damper shall modulate between the minimum unoccupied airflow (adj.) and the auxiliary heating airflow (adj.) until the zone is satisfied.

Discharge Air Temperature:
The controller shall monitor the discharge air temperature.

Alarms shall be provided as follows:

- High Discharge Air Temp: If the discharge air temperature is greater than 120°F (adj.).
- Low Discharge Air Temp: If the discharge air temperature is less than 40°F (adj.).

Environmental Index:
When the zone is occupied, the controller will monitor the deviation of the zone temperature from the heating or cooling setpoint and calculate a 0 - 100% Environmental Index which gives an indication of how well the zone is maintaining comfort. The controller will also calculate the percentage of time since occupancy began that the Environmental Index is 70% or higher. Optionally, a weighting factor can be configured to adjust the contribution of the zone to the rollup average index based upon the floor area of the zone, importance of the zone, or other static criteria.

	Hardware Points				**Software Points**						
Point Name	**AI**	**AO**	**BI**	**BO**	**AV**	**BV**	**Loop**	**Sched**	**Trend**	**Alarm**	**Show On Graphic**
Airflow	x								x		x
Discharge Air Temp	x								x		x
Zone Carbon Dioxide PPM	x								x		x
Zone Setpoint Adjust	x										x
Zone Temp	x								x		x

	Hardware Points				Software Points						
Point Name	**AI**	**AO**	**BI**	**BO**	**AV**	**BV**	**Loop**	**Sched**	**Trend**	**Alarm**	**Show On Graphic**
Zone Damper		x							x		x
Zone Override			x						x		x
Airflow Setpoint					x				x		x
Cooling Setpoint					x				x		x
Environmental Index					x				x		
Heating Setpoint					x				x		x
Percent of Time Satisfied					x				x		
Zone Carbon Dioxide PPM Setpoint					x				x		x
Heating Mode						x			x		
Schedule								x			
High Discharge Air Temp										x	
High Zone Carbon Dioxide Concentration										x	
High Zone Temp										x	
Low Discharge Air Temp										x	
Low Zone Temp										x	
Totals	**5**	**1**	**1**	**0**	**6**	**1**	**0**	**1**	**13**	**5**	**11**

Total Hardware (7) **Total Software (26)**

Point Summary

		Hardware Points				Software Points						
Point Name	**Qty**	**AI**	**AO**	**BI**	**BO**	**AV**	**BV**	**Loop**	**Sched**	**Trend**	**Alarm**	**Show On Graphic**
Variable Air Volume - AHU (Typical of 17)	Each	8	3	5	7	5	1	0	0	25	25	29
	Total (x17)	**136**	**51**	**85**	**119**	**85**	**17**	**0**	**0**	**425**	**425**	**493**
Outside Air Conditions - Temperature and Humidity Station (Typical of 1)	Each	2	0	0	0	1	0	0	0	9	1	9
	Total (x1)	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**9**	**1**	**9**
VAV - Terminal Unit (Typical of 5)	Each	5	1	1	0	6	1	0	1	13	5	11
	Total (x5)	**25**	**5**	**5**	**0**	**30**	**5**	**0**	**5**	**65**	**25**	**55**
Project Totals		**163**	**56**	**90**	**119**	**116**	**22**	**0**	**5**	**499**	**451**	**557**

Total Hardware (428) **Total Software (1093)**

APPENDIX A: Glossary of Terms

Terms used within the Specification Text:

- **Advanced Application Controller (AAC):**

A fully programmable control module. This control module may be capable of some of the advanced features found in Building Controllers (storing trends, initiating read and write requests, etc.) but it does not serve as a master controller. Advanced Application Controllers may reside on either the Ethernet/IP backbone or on a subnet.

- **Application Specific Controller (ASC):**

A pre-programmed control module which is intended for use in a specific application. ASCs may be configurable, in that the user can choose between various pre-programmed options, but it does not support full custom programming. ASCs are often used on terminal equipment such as VAV boxes or fan coil units. In many vendors' architectures ASCs do not store trends or schedules but instead rely upon a Building Controller to provide those functions.

- **BACnet/IP:**

An approved BACnet network type which uses an Ethernet carrier and IP addressing.

- **BACnet MS/TP:**

  An approved BACnet network type which uses a Master-Slave Token Passing configuration. MS/TP networks are unique to BACnet and utilize EIA485 twisted pair topology running at 9600 to 76,800 bps.

- **BACnet over ARCNET:**

  An approved BACnet network type which uses an ARCNET (attached resource computer network) carrier. ARCNET is an industry standard that can utilize several speeds and wiring standards. The most common configuration used by BACnet controllers is an EIA485 twisted pair topology running at 156,000 bps.

- **Building Controller (BC):**

  A fully programmable control module which is capable of storing trends and schedules, serving as a router to devices on a subnet, and initiating read and write requests to other controllers. Typically this controller is located on the Ethernet/IP backbone of the BAS. In many vendors' architectures a Building Controller will serve as a master controller, storing schedules and trends for controllers on a subnet underneath the Building Controller.

- **Direct Digital Control (DDC):**

  A control system in which a digital computer or microprocessor is directly connected to the valves, dampers, and other actuators which control the system, as opposed to indirectly controlling a system by resetting setpoints on an analog pneumatic or electronic controller.

- **PICS - Protocol Implementation Conformance Statement:**

  A written document, created by the manufacturer of a device, which identifies the particular options specified by BACnet that are implemented in the device.

- **Smart Actuator (SA):**

  An actuator which is controlled by a network connection rather than a binary or analog signal. (0-10v, 4-20mA, relay, etc.)

- **Smart Sensor (SS):**

  A sensor which provides information to the BAS via network connection rather than a binary or analog signal. (0-10000 ohm, 4-20mA, dry contact, etc.)

- **Web services:**

  Web services are a standard method of exchanging data between computer systems using the XML (extensible markup language) and SOAP (simple object access protocol) standards. Web services can be used at any level within a Building Automation System (BAS), but most commonly they are used to transfer data between BAS using different protocols or between a BAS and a non-BAS system such as a tenant billing system or a utility management system.

Terms used within the Sequences of Operation:

- **adj.**
  Adjustable by the end user, through the supplied user interface.

- **AI, AO, etc. (Column Headings on Points List)**

  AI = Analog Input. A physical input to the control module.
  AO = Analog Output. A physical output from the control module.
  AV = Analog Value. An intermediate (software) point that may be editable or read-only. Editable AVs are typically used to allow the user to set a fixed control parameter, such as a setpoint. Read Only AVs are typically used to display the status of a control operation.

BI = Binary Input. A physical input to the control module.
BO = Binary Output. A physical output from the control module.
BV = Binary Value. An intermediate (software) point that may be editable or read-only. Editable BVs are typically used to allow the user to set a fixed control parameter, such as a setpoint. Read Only BVs are typically used to display the status of a control operation.
Loop = A control loop. Most commonly a PID control loop. Typically a control loop will include a setpoint, an input which is compared to the setpoint, and an output which controls some action based upon the difference between the input and the setpoint. A PID control loop will also include gains for the proportional, integral, and derivative response as well as an interval which controls how frequently the control loop updates its output. These gains may be adjustable by the end user for control loop "tuning," but in self-tuning control loops or loops which have been optimized for a specific application the gains may not be adjustable.
Sched = Schedule. The control algorithm for this equipment shall include a user editable schedule.
Trend. The control system shall be configured to collect and display a trend log of this object. The trending interval shall be no less than one sample every 5 minutes. (Change of Value trending, where a sample is taken every time the value changes by more than a user-defined minimum, is an acceptable alternative.)
Alarm. The control system shall be configured to generate an alarm when this object exceeds user definable limits, as described in the Sequence of Controls.

Note: If the specifications require use of the BACnet protocol, all of the above shall be provided as BACnet objects.

- **KW Demand Limiting: ***

  An energy management strategy that reduces energy consumption when a system's electric power meter exceeds an operator-defined threshold.

  When power consumption exceeds defined levels, the system automatically adjust setpoints, de-energizes low priority equipment, and takes other pre-programmed actions to avoid peak demand charges. As the demand drops, the system restores loads in a predetermined manner.

- **Occupant Override Switch, or Timed Local Override:**

  A control option that allows building occupants to override the programmed HVAC schedule for a limited period of time.

  When the override time expires, the zone returns to its unoccupied state.

- **Occupant Setpoint Adjustment:**

A control option that allows building occupants to adjust - within limits set by the HVAC control system - the heating and cooling setpoints of selected zones. Typically the user interface for this function is built into the zone sensor.

- **Optimal Start-Up: ***

  A control strategy that automatically starts an HVAC system at the latest possible time yet ensures comfort conditions by the time the building becomes occupied.

  In a typical implementation, a controller measures the temperature of the zone and the outside air. Then, using design heating or cooling capacity at the design outside air temperature, the system computes how long a unit must run at maximum capacity to bring the zone temperature to its occupied setpoint.

  The optimal start algorithm often includes a self-learning feature to adjust for variations from design capacity.

  A distributed system must use Run on Request with Optimal Start. (See below.)

- **Requested, or Run on Request: ***

  A control strategy that optimizes the runtime of a source piece of equipment that supplies one or more receiving units - such as an air handler unit supplying zone terminal units with heating, cooling, ventilation, or similar service. Source equipment runs only when needed, not on a fixed schedule.

  The source equipment runs when one or more receiving units request its services. An operator determines how many requests are required to start the source equipment.

  For example, if all the zones in a building are unoccupied and the zone terminal units do not need heating or cooling, the AHU will shut down. However, if a zone becomes occupied or needs cooling, the terminal unit will send a run request to the AHU to initiate the start-up sequence. If this AHU depends on a central chiller, it can send a run request to the chiller.

  The run on request algorithm also allows an operator to schedule occupancy for individual zones based on the needs of the occupants without having to adjust the schedules of related AHUs and chillers.

- **Trim and Respond, or Setpoint Optimization: ***

  A control strategy that optimizes the setpoint of a source piece of equipment that supplies one or more receiving units - such as an air handler unit supplying zone terminal units with heating, cooling, ventilation, or similar service.

The source unit communicates with receiving units to determine heating, cooling, and other requirements, and then adjusts its setpoint.

For example, if all zones are comfortable and do not request cooling, the AHU will gradually increase (trim) its supply air setpoint. When a zone requests cooling, the AHU responds by dropping its setpoint. The more zones that request cooling, the more it drops the setpoint. The AHU repeats this process throughout the day to keep zones cool, but with a supply air setpoint that is no cooler than necessary.

Contracting Terms:

- **Furnished or Provided:**

  The act of supplying a device or piece of equipment as required meeting the scope of work specified and making that device or equipment operational. All costs required to furnish the specified device or equipment and make it operational are borne by the division specified to be responsible for providing the device or equipment.

- **Install or Installed:**

  The physical act of mounting, piping or wiring a device or piece of equipment in accordance with the manufacturer's instructions and the scope of work as specified. All costs required to complete the installation are borne by the division specified to include labor and any ancillary materials.

- **Interface:**

  The physical device required to provide integration capabilities from an equipment vendor's product to the control system. The equipment vendor most normally furnishes the interface device. An example of an interface is the chilled water temperature reset interface card provided by the chiller manufacturer in order to allow the control system to integrate the chilled water temperature reset function into the control system.

- **Integrate:**

  The physical connections from a control system to all specified equipment through an interface as required to allow the specified control and monitoring functions of the equipment to be performed via the control system.

SECTION 23 0910

FACILITY MONITORING SYSTEM

PART 1 - GENERAL

1.01 SUMMARY

A. This document contains the specification and input/output summaries for a Facility Monitoring System (FMS). The system architecture shall use local space pickup devices and duct probes networked to an Air Sampling Network and Multi-Sensor Monitor(s). The Air Sampling Network shall consist of Air Sampling Controllers and an air packet transportation network that shall transport air samples from environment being monitored to Multi-Sensor Monitor(s) located throughout the facility. The FMS shall provide continuous air sampling of environmental conditions as prescribed in the Multi-Sensor Monitor section, report on those conditions via a web based user interface, and interface with other microprocessor based building subsystems as shown on the drawings and as specified.

1.02 DEFINITIONS

A. BAS refers to the Building Automation System. (Similar terms are: EMS, Energy Management System; BMS, Building Management System; or ATC, Automatic Temperature Control.)

B. LCS – refers to the Laboratory Control system

C. FMC refers to the Facility Monitoring System Contractor. The FMC is the Contractor responsible for the implementation of this specification section.

D. FMS refers to the hardware, software and other components comprising the Facility Monitoring System as herein described.

1.03 ACCEPTABLE FACILITY MONITORING SYSTEM CONTRACTOR (FMC)

A. The FMC shall have support services within a 50 mile radius of Project Site and comply with the service requirements of a 48 hour response time. Support services is defined as having complete parts inventory, having required test and diagnostic equipment, and have trained technicians on the systems specified herein.

1.04 CONTRACTOR RESPONSIBILITIES:

A. The FMC shall furnish necessary hardware, software, and computing equipment required for a complete and functional system meeting the design intent and as defined in this specification.

B. Installation of FMS components; and electrical work required as an integral part of this section as noted in Part 3 Execution including but not limited to Multi-Sensor Monitors, Air Sampling Controllers, Air Sampling Network, Space pickup devices, Duct Probes, Transformers, Vacuum Pumps, Network Servers, Air Sampling Tubing, etc.

C. The FMC shall coordinate with the Electrical Contractor to provide a dedicated power source for the FMS. Provide an emergency power source for buildings with an emergency generator.

1.05 SYSTEM REQUIREMENTS

A. Material and equipment used shall be standard components, regularly manufactured and available by the manufacturer and not custom designed especially for this project. Systems and components, except site specific software, shall have previously been thoroughly tested and proven in actual use prior to installation on this project.

B. The system architecture shall be fully modular permitting expansion of application software, system peripherals, and field hardware.

C. The system, upon completion of the installation and prior to acceptance of the project, shall perform operating functions as detailed in this specification.

1.06 EQUIPMENT

A. System Hardware

1. The FMC shall provide the following: Air Sampling Controllers, Multi-Sensor Monitors, Space pickup devices, Duct Probes, Network Servers, Vacuum Pumps, Air Sampling Tubing, Air Sampling Network, transformers, solenoids, relays, switches, sensing devices, indicating devices, uninterrupted power source (UPS) and transducers required to perform the functions listed.

B. System Software

1. The FMC shall provide software identified in this specification. The database required for implementation of these specifications shall be provided by the FMC, including point descriptor, alarm limits, calibration variables, reports and point summaries. The FMC shall provide and create the system database using the latest software release, at the time of Shop Drawing approval.
2. The FMC shall provide a BACnet compatible integration server and software to interface with the facility's BAS as required.

C. Building Ethernet Connection Cabling:

1. The University shall provide CAT-5e or CAT-6 cabling and installation between the Network Server and the University's Building Ethernet Connection. Final Building Ethernet Connection shall be coordinated with the University's IT Group.

D. Air Sampling Controllers and Multi-Sensor Monitors supplied shall be listed per Underwriters Laboratories UL916 - Energy Management Equipment.

E. The FMC shall have quality control procedures for design and manufacture of facility monitoring systems for precision monitoring, indoor air quality, energy savings and preventative maintenance.

F. The FMC shall provide test area attribute data and programming and shall coordinate object naming conventions and network map requirements with the University's internal BAS department.

1.07 SUBMITTALS

A. As soon as Submittals are prepared, an electronic version shall be provided. This version shall be transmitted in electronic format, via e-mail, to expedite the review process.

B. Shop Drawings shall include:

1. Index: The first sheet of the Shop Drawings shall be an Index of sheets in the set.

2. Legend: A description of symbols and acronyms used shall be provided at the beginning of the set of Shop Drawings.

3. Communications Riser: A single-page diagram depicting the system architecture complete with a communications riser. Riser shall include space pickup devices and duct probe location locations and addressing for each Air Sampling Controller and Multi-Sensor Monitor. Include a Bill of Material for equipment in this diagram but not included with the unique controlled systems.

4. Device Addressing Scheme: Install equipment implementing an addressing scheme consistent with a reference-document. The addressing scheme shall be submitted, reviewed and approved by the University prior to implementation

5. Point-to-point Wiring Details: Drawings shall include point-to-point wiring details and must show field devices, Air Sampling Controllers, Multi-Sensor Monitors, panel devices, wiring terminal numbers and any special information (i.e. shielding requirements) for properly monitoring areas and controlling equipment.

6. As-Built Drawings shall conform to requirements in Division 01.

C. Operating and Maintenance Manuals

1. Operating and Maintenance (O&M) manuals for the system shall include project specific, detailed information describing the specific installation. Manual shall contain as a minimum:

a. System overview
b. Networking architecture
c. Established test sequences and schedules
d. Hardware cut-sheets and product descriptions
e. Wiring diagrams for controllers and field hardware
f. Installation, mounting and connection details for field hardware and accessories

1.08 CONTRACTOR (FMC) EXPERIENCE AND PERFORMANCE

A. The FMC shall have a local office or representative, staffed with factory trained engineers, fully capable of providing instruction, routine maintenance, and emergency maintenance service on system components. The FMC shall be responsible for replacement of products supplied for a period of not less than 5 years following project substantial completion.

1.09 COORDINATION

A. Coordinate layout and installation of wall and ceiling-mounted devices with existing wall and ceiling construction and other ceiling supported equipment, including light fixtures, HVAC equipment, fire-suppression system, and fire-rated partition or ceiling assemblies.

1.10 WARRANTY

A. Repair or replace any defective product and correct any defect in material or workmanship for a period of five years following the date of substantial completion of the system.

PART 2 - PRODUCTS

2.01 AIR SAMPLING NETWORK

A. The Air Sampling Network of the FMS shall consist of networked based distributed Air Sampling Controllers for routing of discreet air and data packets from the designated test areas/locations back to the Multi-Sensor Monitor; or individual home runs of Air Sampling Tubing from the designated test areas/locations back to the Multi-Sensor Monitor.

B. Air Sampling Network shall include electronics, air solenoid valves, sampling manifolds, firmware, and software as furnished as an integral assembly within the Air Sampling Controller or the Multi-Sensor Monitor. Air Sampling Network shall utilize an internal, factory pre-assembled air sampling manifold to interface to the on-board solenoid valves, and push to connect speed fittings for ease of interface to the Air Sampling Tubing. Romex connectors and knockouts shall be factory furnished and installed on the Air Sampling Controller and Multi-Sensor Monitor.

C. Air Sampling Network shall receive commands from the Multi-Sensor Monitor to open the solenoid valve of each test area to be monitored while simultaneously closing other solenoid valves in the system. A direct path between the test area and the sensors located with the Multi-Sensor Monitor shall be established to draw a continuous vacuum of air through the Air Sampling Tubing. A continuous duty vacuum pump shall be provided for each Multi-Sensor Monitor.

D. Air Sampling Controller or Multi-Sensor Monitor shall be capable of sampling multiple test areas. Air Sampling Controller or Multi-Sensor Monitor shall be sized and configured with the appropriate number of air sampling solenoid valves including hardware and software to accommodate the number of test areas noted on the plans and/or specifications; and the required sampling rate as noted in the Multi-Sensor Monitor section.

E. Temperature Sensing – Additional Inputs/Outputs:

1. Air Sampling Controller or Multi-Sensor Monitor shall be capable of sensing per test area/sampling point the temperature at the space or duct via a local room temperature sensor or duct probe. Local temperature readings shall be in addition to the sampled air data gathered through the Air Sampling Network. Temperature reading(s) shall be capable of being shared with and interfaced to the BAS through

local hardwired analog outputs as noted below.

2. Air Sampling Controller or Multi-Sensor Monitor shall be capable of accepting universal 0-10 v and 4-20 mA inputs, in addition to temperature sensors as noted above, and generating 0-10 v and 4-20 mA outputs through expansion boards for interfacing to the facility's BAS and other third party devices and controllers.

F. Air Sampling Controllers shall operate on 24 vac power fed from a common 120/24 vac transformer provided by the FMC connected to the Multi-Sensor Monitor that serves the Air Sampling Controller. Low voltage power shall be distributed to the Air Sampling Controller through the associated Air Sampling Tubing.

2.02 SENSOR SUITE

A. The Sensor Suite shall be a distributed, network based, multipoint sensing device. The Sensor Suite shall be furnished as a complete, self contained unit housing electronics, sensing card cage, sampling manifolds, flow regulators, pressure regulators, firmware, and software.

B. The Sensor Suite shall provide communications between the Air Data Router sub network and the Information Management Server over an isolated RS-485 network. The Sensor Suite shall support communications with a sub network of 30 Air Data Routers; 30 other Sensor Suites, and an Information Management Server.

C. The Sensor Suite base unit shall consist of an enclosure; hinged door with keyed lock; terminations area for both field wiring and Structured Cable connections; a communications/processor board; electronic flow measurement and controller assembly; and sensor bay.

D. The Sensor Suite shall utilize a card cage to allow for the ease of selection and installation of a diverse array of environmental and specialty sensors. At a minimum, the Sensor Suite shall incorporate the sensors to meet the required applications as shown on Attachment 2.02.D at the end of this specification section.

E. The Sensor Suite shall be modular in nature, and allow for the addition and removal of the sensors for application specific sensing requirements, and ease of calibration and service. Additional, modular sensor bay expansion capabilities shall be provided for additional sensors.

F. The Sensor Suite shall house an on-board flow regulator, orifice plate, and differential pressure sensor to maintain a continuous, regulated flow rate through the Structured Cable.

G. On-board diagnostics shall continuously perform system checks.

H. Each Sensor Suite shall contain a serial port for the interface with a portable computer. Sensor Suite and network interrogation shall be possible through this port.

I. Sensor Suites shall be capable of proper operation in an ambient temperature environment of 40 degrees F to 120 degrees F, 0 – 90% RH.

J. Sensor Suites shall have LED indication for visual status of communication and power.

K. Sensor Suites shall operate on 24Vac power fed from a common 120/24Vac transformer connected to the Sensor Suite provided by the FMC. Transformer shall also distribute low voltage power to the Air Date Routers connected to the Sensor Suite through the associated structured cable.

2.03 AIR DATA ROUTERS

A. The Air Data Router shall be furnished as a complete, self contained, unit housing electronics, air solenoid valves, sampling manifolds, firmware, and software. Unit shall be furnished with internal devices and wiring assembled and tested at the factory.

B. Air Data Routers shall receive commands from the Sensor Suite to open the solenoid valve of each test area to be monitored while simultaneously closing the other solenoid valves in the system. A direct path between the test area and the virtual sensors located with the Sensor Suite shall be established to draw a continuous stream of air through the Structured Cable.

C. Air Data Routers shall consist of an enclosure; terminations areas for both field wiring and Structured Cable connections; a communications/processor board; high capacity solenoid valves; and sampling manifold.

D. Air Data Router shall have provisions to interface to the FMS Structured Cable. Air Data Router shall utilize an internal, factory pre-assembled air sampling manifold to interface to the on-board solenoid valves, and push to connect speed fittings for ease of interface to the Structured Cable. Romex connectors and knockouts shall be factory furnished and installed on the Router.

E. Air Data Routers shall be capable of sampling of up to four test areas. Air Data Routers shall be sized and configured with the appropriate number of air sampling solenoid valves including hardware and software to accommodate the number of test areas noted on the plans and/or specifications.

F. Air Data Router shall have the capacity to sense per test area the temperature at the room, duct or outside air via a room temperature sensor, duct probe, or outside air probe. A total of four sensor inputs shall be provided that corresponds to the air sampling of the respective four test areas.

G. Air Data router shall be capable of accepting universal 0-10Vdc and 4-20mA inputs and outputs through expansion boards for interfacing to other third party devices and controllers.

H. Up to 30 Air Data Routers shall communicate on an isolated RS-485 network with the Sensor Suite.

I. Point data, algorithms and application software within the Air Data Routers shall be programmable from the Information Management Server. Each Air Data Router shall contain both software and firmware to receive and perform full test sequencing schemes downloaded from the Server.

J. Each Air Data Router shall contain a serial port for the interface with a portable computer. Air Data Router and network interrogation shall be possible through this port.

K. Air Data Routers shall be capable of proper operation in an ambient temperature environment of 40 degrees F to 120 degrees F, 0 – 90% RH.

L. Air Data Routers shall have LED indication for visual status of communication and power.

M. Air Data Routers shall operate on 24Vac power fed from a common 120/24Vac transformer connected to the Sensor Suite that serves the Air Data Router. Low voltage power shall be distributed to the Air Date Routers through the associated structured cable.

2.04 INFORMATION MANAGEMENT SERVER

A. The Information Management Server (Server) shall provide network management of Sensor Suites, integration to the BAS, and interface to the web based Aircuity Knowledge Center for viewing and outputting graphs, charts and data derived from the Facility Monitoring System.

B. The hardware platform for the Server shall, at a minimum, consist of:

1. PC processor with minimum 64-bit word structure.
2. Minimum 1 GHz processor speed.
3. Minimum 256MB on board RAM
4. Hard drive or equal high-speed data storage, minimum 20 gigabytes.
5. Network Interface Card: (10/100)
6. RS-232 Serial Port
7. Operating System shall be Windows XP.

C. The University shall provide CAT-5e or CAT-6 cabling and installation between the Information Management Server's Network Interface Card and the University's Building Ethernet Connection. Final Building Ethernet Connection shall be coordinated with the University's IT Group.

D. The Server shall be located within 25 feet of the nearest Sensor Suite and be connected to the Server through the RS-232 serial port.

E. The Server shall be mounted within a ventilated and lockable wall mounted enclosure

2.05 STRUCTURED CABLE

A. The FMS shall utilize a pre-engineered system of Structured Cable to facilitate network wide communications; distribution of low voltage power to Air Data Routers and Sensor Suites; and provide a sampling conduit for air samples within a single cable.

B. The cable shall consist of a plurality of wires to distribute communications, data and low voltage power throughout the FMS. As a minimum, Structured cable shall consist of:

1. Communications – 22 AWG twisted shield pair with drain wire
2. Low Voltage Power – 18 AWG, 3 wire

C. An inner pathway, MicroDuct, shall be furnished as an integral part of the Structured Cable to facilitate collection of test area air samples. MicroDuct shall be lined with a smooth, electrically conductive, chemically inert surface to insure air samples remain pure and uncorrupted and do not adhere to the wall lining during transport. Aircuity OSC or stainless steel tubing only. No exceptions. Polyethylene tubing, copper tubing, galvanized pipe are prohibited. See below for stainless steel specifications.

D. Structured cable shall not require any specialized tools for installation. Installation of the cable shall follow traditional local area network practices.

E. Structured cable shall be suitable for riser and plenum applications, be Underwriter's Laboratories Listed to UL CMP and C-UL CMP standards, and carry the appropriate markings throughout the cable length.

F. Alternate provision for furnishing Air Sampling Tubing shall be to furnish:

1. A dedicated air sampling network interconnecting the Air Sampling Controllers, Multi-Sensor Monitors, and room/duct sensors consisting of Type 304 Stainless Steel Welded Tubing 5/16" OD, .273" ID, .020" Wall, McMaster-Carr part number 8989K92. Compression fittings and couplings shall be used and be a minimum of Type 304, or 316L Stainless Steel, McMaster-Carr part number 50715K262. Traditional copper, plastic tubing, or variants thereof used in pneumatic controls or other processes shall not be acceptable.

2. Dedicated wiring specifically used for the FMS consisting of a minimum of:

   a. Communications – 22 AWG twisted shield pair with drain wire

   b. Low Voltage Power – 18 AWG, 3 wire

2.06 ROOM SENSORS/DUCT PROBES

A. Room Sensors:

1. A semi-flush mounted, room temperature sensor with an integral air sampling port are to be housed within one enclosure; the port within the enclosure will accept the MicroDuct from the Structured Cable.

2. Temperature Sensing Element:

   a. Platinum RTD: range -30 – 130°F
   b. Accuracy: + .30 °F

3. Internal coarse filter to screen out large particulate matter from entering the MicroDuct.

4. Terminations:

   a. Sensor – one wire
   b. Power – three wire
   c. MicroDuct – integral hose clamp

B. Duct Probe – Duct and Outdoor Air Mount

1. A duct temperature sensor and air sample probe is to be mounted within one enclosure. Duct sample probe to accept integral MicroDuct from Structured Cable.

2. Temperature Sensing Element:

   a. Platinum RTD: range -30 – 130°F
   b. Accuracy: + .30 °F

3. Internal coarse filter to screen out large particulate matter from entering the MicroDuct.
4. Terminations:
    a. Sensor – one wire
    b. Power – three wire
    c. MicroDuct – speed fitting
5. Outdoor Air Locations – A NEMA 4X weatherproof enclosure shall be provided.

2.07 HIGH FLOW VACUUM PUMP

A. Each Sensor Suite will be equipped with a High Flow Vacuum Pump (HFP) that will draw samples from the sampling ports in the system, through the Sensor Suite, and then discharge them. Samples will be discharged into the nearest exhaust duct so the samples are safely discharged from the building.

B. The HFP will meet the following specifications:
1. Maximum Vacuum pressure: 24 inches Hg
2. Minimum Flow Rate: 1.2 SCFM

C. Pump mounting: Pumps shall be mounted securely to prevent it from moving due to vibration, and in a location where the sound of the pump will not be heard outside the immediate area. The pumps shall be mounted wall mounted on a bracket in a location that has adequate ventilation for cooling the pump.

D. Standby pump with automatic switchover: Provides a second pump, identical to the first, with automatic switchover controller that will automatically take over should the on-line pump stop for any reason other than a complete failure of local AC power. When the primary pumps stops for any reason, or there is some other condition resulting in a loss of vacuum at the SST, the standby pump will be placed in operation and a notification will be sent to the Aircuity remote data center, notifying customer support that the backup pump is in operation, prompting a field visit. At any point, if there is a sustained loss of vacuum at the SST, a notification will be sent to the Aircuity remote data center, and BACnet points whose integrity is affected by the loss of vacuum condition will be marked as “unreliable”, which can be observed by the BMS, so that they can respond accordingly. The notification will be reset once the loss of vacuum condition is remedied.

E. Vacuum pump shall be oil-less type operation with permanently lubricated bearings, long-life diaphragm and balanced for smooth, low vibration operation.

F. Provide pump with factory set pressure relief valve, muffler and mounting feet with rubber isolators.

G. Pump shall be hardwired for a permanent installation.

2.08 OCCUPANCY SENSORS

A. Manufacturers:
1. Watt Stopper (The).
2. Or equal.

B. General Description: Ceiling or wall-mounted, solid-state units, used only for HVAC.

1. Operation: Switch HVAC airflow to occupied mode when covered area is occupied and to unoccupied mode when unoccupied; with a time delay for switching to unoccupied mode, adjustable over a minimum range of 1 to 30 minutes.

2. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A. Power supply to sensor shall be 24-V dc, 150-mA, Class 2 power source as defined by CEC.

3. Mounting:

   a. Sensor: Suitable for mounting in any position on a standard outlet box.
   b. Time-Delay and Sensitivity Adjustments: Recessed and concealed behind hinged door.

4. Indicator: LED, to show when motion is being detected during testing and normal operation of the sensor.

5. Bypass Switch: Override the on function in case of sensor failure.

C. Dual-Technology Type: Ceiling or wall-mounting; detect occupancy by using a combination of PIR and ultrasonic detection methods in area of coverage. Particular technology or combination of technologies that controls on and off functions shall be selectable in the field by operating controls on unit. Sensor shall be capable of corner mounting to a wall or ceiling to eliminate detection through open doorways and outside of control area. Both technologies must be complete and overlapping throughout the controlled area to provide immediate activation upon entry.

1. Sensitivity Adjustment: Separate for each sensing technology.

2. Detector Sensitivity: Detect occurrences of 6-inch minimum movement of any portion of a human body that presents a target of at least 36 sq. in., and detect a person of average size and weight moving at least 12 inches in either a horizontal or a vertical manner at an approximate speed of 12 inches/s.

3. Detection Coverage (Standard Room): Detect occupancy anywhere within a circular area of 1000 sq. ft. when mounted on a 96-inch-high ceiling.

2.09 TRANSFORMER

A. Provide transformers to provide low voltage power to the Sensor Suite and Air Data Router.

B. Provide one transformer for the Sensor Suite and a separate transformer for the Air Data Routers.

C. Transformer specifications: 120 Vac primary, 24 Vac secondary, 96 Volt-amp rating, UL listed Class 2.

D. Provide with manual reset, 4 amp trip circuit breaker and dual junction boxes.

2.10 SYSTEM SOFTWARE OVERVIEW

A. The FMC shall provide software required for operation of the FMS system specified herein. Functionality described herein shall be regarded as a minimum. The FMC shall provide the following as a minimum:

1. Completed database.
2. Configuration of Air Data Router, Sensor Suite, Server and user interface application programs.
3. Configuration Tools, and software licenses, required to configure and operate products installed on this project.

2.11 SYSTEM CONFIGURATION

A. Database Creation and Modification. Changes shall be done utilizing standard procedures. The system shall allow changes to be made at the local site through the Information Management Server.

B. The system shall permit the operator to perform, as a minimum, the following:

1. Add and delete points/objects
2. Modify point parameters
3. Create and modify control sequences and programs
4. Reconfigure application programs

2.12 WEB BASED USER INTERFACE AND DATA MANAGEMENT SYSTEM

A. Included with the system shall be a fully integrated web based user interface and data management system. The data management system shall be password protected and shall be able to store sampled data from test areas for online viewing and reporting.

B. Unlimited data access, viewing, report generation and remote data storage shall be provided with the FMS for the duration of the project commissioning and for the entire warranty period.

2.13 TEST SEQUENCING

A. The system shall allow the operator to designate any test area to be scheduled with an operator command through the Information Management Server.

B. The operator shall be able to make schedule additions, modifications and deletions to the test schedules. The operator shall have the capability to edit schedules and then download schedule changes to the FMS.

PART 3 - EXECUTION

3.01 GENERAL

A. Verify that systems are complete and ensure that the systems are capable of being started and operated in a safe and normal condition before attempting to operate the FMS.

B. Install software in Air Sampling Controllers, Multi-Sensor Monitors and Network Server. Implement features of programs to specified requirements and as appropriate for sequence of operation.

C. Connect and configure equipment and software to achieve sequence of operation specified.

3.02 WIRING AND AIR SAMPLING TUBING INSTALLATION

A. FMC contractor shall install systems and materials in accordance with manufacturer's instructions, rough-in drawings and equipment details. Install electrical components Air Sampling Tubing and use electrical products complying with requirements of applicable sections of these specifications.

B. FMC contractor shall install wiring and Air Sampling Tubing neatly and professionally, in accordance with requirements of applicable installation section and California Electric Code.

C. FMC contractor shall provide wiring and Air Sampling Tubing as required by the functions specified.

D. FMC contractor shall install wiring, cables and Air Sampling Tubing according to the electrical installation section and as follows:

1. Bundle and harness multi-conductor cable in place of single cables where several cables follow a common path.
2. Fasten flexible conductors, bridging cabinets and doors, along hinge side; protect against abrasion. Tie and support conductors.
3. Exposed control wiring and Air Sampling Tubing in the mechanical, electrical, telephone, and similar rooms shall be installed in raceways.
4. Control wiring and Air Sampling Tubing shall be installed in a neat and workmanlike manner parallel to building lines with adequate support. Both conduit and plenum wiring and Air Sampling Tubing shall be supported from or anchored to structural members. Conduit, plenum wiring or Air Sampling Tubing supported from or anchored to piping, duct supports, the ceiling suspension system, is prohibited. Wiring and Air Sampling Tubing buried in slab-on-grade concrete or explosion-proof areas shall be in rigid metal conduit. Provide adequate strain relief for field terminations.

3.03 CONTROL DEVICE INSTALLATION

A. Room sensors and emergency pushbuttons shall be mounted in accordance with ADA Guidelines, unless otherwise noted on the drawings.

B. Duct probes shall be installed per SMACNA guidelines and/or manufacturer’s installation instructions. Existing duct insulation damaged during the installation of the probe shall be repaired to match existing conditions. Provide duct sealant around penetrations of existing ductwork.

C. Freestanding enclosures and panels, server, pump and transformers shall be supported on steel Unistrut frames and shelving, or equal, and be securely anchored to the wall or floor and be well braced.

D. Enclosures and panels mounted directly to the wall shall be provided with a minimum airspace of one-inch between the enclosure and the wall.

E. A minimum of three foot working clearance shall be provided in front of enclosures and panels; clearance shall be ensured to permit the enclosure door to open at least 90° from its closed position.

F. A field-installed, 14-gage galvanized steel drip shield shall be provided where enclosures and panels may be subjected to dripping water.

G. Install emergency pushbuttons/horns at exits of every laboratory.

H. Install Occupancy Sensors or use existing to integrate with the FMS to achieve greater energy savings.

3.04 SENSOR INSTALLATION

A. Manufacturer's recommendations shall be followed for proper placement and adjustment of sensors.

B. Install and aim sensors in locations to achieve 100 percent coverage of each lab space. Do not exceed coverage limits specified in manufacturer's written instructions.

3.05 IDENTIFICATION

A. The FMC shall label each system device with a point address or other clearly identifiable notation inside the device cover - labels shall be permanent and use a laser printer. FMS equipment shall be clearly identified as noted on the approved submittals.

3.06 ACCEPTANCE OF COMPLETED FMS INSTALLATION

A. Upon completion of the installation, the FMC shall start up the system and perform necessary calibration, testing, and debugging operations. An acceptance test shall be performed by the FMC in the presence of the University's Representative. Acceptance test shall be scheduled with at least 10 working days advance notice.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including piping and electrical connections. Report results in writing.

C. After electrical circuitry has been energized, start units to confirm proper unit operation. Remove malfunctioning units, replace with new units, and retest.

D. Demonstrate compliance with specifications, including calibration and testing, and air sampling test sequences. Adjust, calibrate, and fine tune circuits and equipment to achieve sequence of operation specified.

E. The acceptance test shall include, but not be limited to:

1. The FMC shall verify the proper operation of input and outputs.

2. The FMC shall verify inputs meet or exceed manufacturer's stated tolerances for accuracy. The FMC shall verify that on-line graphical displays of air sampling test data accurately represent the real time state of the field conditions.

3. The FMC shall verify the reliability of communications of Air Sampling Controllers and Multi-Sensor Monitors. The test shall include functional verification of interfaces and system integration required to meet the scope of this project.

4. Acceptance: When the field test procedures have been successfully demonstrated to the University's Representative and the system performance is deemed satisfactory, the system parts will be accepted for beneficial use and placed under warranty. At this time, a "notice of completion" shall be issued by the University's Representative and the warranty period shall start.

3.07 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections:

1. After installing sensors, and after electrical circuitry has been energized, adjust and test for compliance with requirements.

2. Operational Test: Verify actuation of each sensor and adjust time delays.

3. After installing wiring devices and after electrical circuitry has been energized, test for proper polarity, ground continuity, and compliance with requirements.

B. Remove malfunctioning units, replace with new units, and retest as specified above.

C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.08 DEMONSTRATION

A. Engage a factory-authorized service representative to train University's maintenance personnel to adjust, operate, and maintain control systems and components.

B. Train University's maintenance personnel on procedures and schedules for starting and stopping, troubleshooting, servicing, and maintaining equipment and schedules.

C. Provide operator training on data display, alarm and status descriptors, requesting data, executing commands, calibrating and adjusting devices, resetting default values, and requesting logs. Include a minimum of 8 hours' dedicated instructor time on-site.

D. Review data in maintenance manuals. Refer to Division 01.

E. Schedule training with University, through University's Representative. Refer to Division 01.

3.09 ON-SITE ASSISTANCE

A. Occupancy Adjustments: Within one year of date of Substantial Completion, provide up to three Project site visits, when requested by University's Representative, to adjust and calibrate components and to assist University's personnel in making program changes and in adjusting sensors and controls to suit actual conditions.

ATTACHMENT 2.02.D - SENSOR SPECIFICATIONS:

Model Number	**SEN-CO2-2A**	**SEN-DPT-2**	**SEN-PAR-1**	**SEN-COM-1**	**SEN-TVC-1&2**	
	CO2 Based Demand Controlled Ventilation (DCV) or Monitoring	**Dewpoint Temp, Relative Humidity*, Enthalpy*, Monitoring or Control**	**Particulate Monitoring or Control**	**Carbon Monoxide Monitoring or Control**	**Combines the MOS sensor (SEN-TVC-1) and the PID sensor (SEN-TVC-2) into one assembly, while supporting the individual sensing capabilities of each. This configuration is recommended for Research Lab or Vivarium applications.**	
Typical Application	**Sensor: Carbon Dioxide (CO2)**	**Sensor: Dewpoint Temp (DPT)**	**Sensor: Airborne Particulates - Small Particles PM2.5**	**Sensor: TVOCs**	**Sensor:: TVOCs (SEN-TVC-1)**	**Sensor: TVOCs (SEN-TVC-2)**
Element	Dual Wavelength, Non-Dispersive Infrared Sensor	Capacitive Polymer Sensor	Optical Particle Counter	Electrochemical Sensor	Metal Oxide Semiconductor (MOS)	Photoionization Detector (PID)- VOCs & other gases with ionization potentials <10.6eV
Range	0-3000 ppm	0 to ambient DPT Deg F or 70 Deg F, whichever is less	PM2.5 - 0.3 - 2.5µm	0-150 ppm	**Calibrated Range**: 0-50 ppm (as Isobutylene) **Maximum Range:** 0-100 ppm (as Isobutylene)	**Calibrated Range:** 0-5 ppm (as Isobutylene) **Maximum Range:** 0-20 ppm (as Isobutylene)
Accuracy	± 60 ppm	Dewpoint: ± 2 Deg F RH: @ 65°F and ± 0.5°F ± 6% RH @10-60%RH ±	± 25% of reading	± 3 ppm or 5% of reading, whichever is greater	± 2 ppm (as Isobutylene) or 25% of reading (whichever is greater)	± 0.2 ppm (as Isobutylene) or 2.5% of reading (whichever is greater)

		8% RH @ 61-90%RH				
Resolution	3 ppm	0.25 Deg F DPT	± 10% of reading	1 ppm	1 ppm	0.01 ppm
Response	25 seconds	30 seconds	30 seconds	60 seconds	30 seconds	30 seconds
Repeatability	± 5 ppm					

END OF SECTION

SECTION 23 3113

METAL DUCTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes metal ducts for supply, return, outside, and exhaust air-distribution systems in pressure classes from minus 2- to plus 10 inches w.g. Metal ducts include the following:

1. Rectangular ducts and fittings.
2. Single-wall, round, and flat-oval spiral-seam ducts and formed fittings.
3. Duct liner. Exposed fibrous glass duct liners are prohibited.

1.02 PERFORMANCE REQUIREMENTS

A. Delegated Duct Design: Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, hangers and supports, shall comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and performance requirements and design criteria indicated in "Duct Schedule" Article.

1. Duct system design shall be used to select size and type of air-moving and distribution equipment and other air system components. Design of the layout and configuration of duct system shall be approved in writing by the University's Representative.

B. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

C. Structural Seismic Performance: Refer to Division 23 Section "Vibration and Seismic Controls for HVAC."

1.03 SUBMITTALS

A. Shop Drawings: CAD-generated. Show fabrication and installation details for metal ducts.

1. Fabrication, assembly, and installation, including plans, elevations, sections, components, and attachments to other work.
2. Equipment service clearance and access panels and door swings.
3. Duct layout indicating sizes and pressure classes.
4. Elevations of top and bottom of ducts.
5. Dimensions of main duct runs from building grid lines.
6. Fittings.
7. Reinforcement and spacing.
8. Seam and joint construction.
9. Penetrations through fire-rated and other partitions.
10. Equipment installation based on equipment being used on Project.
11. Duct accessories, including access doors and panels.

12. Hangers and supports, including methods for duct and building attachment, vibration isolation, and seismic restraints.
13. Fabrication details and materials may be a separate submittal from ductwork shop drawings.
14. Seismic bracing calculations, details, products, and plans.

B. Welding certificates.

C. Field quality-control test reports.

D. Submittals:

1. Product Data: Documentation indicating that duct systems comply with ASHRAE 62.1, Section 5 - "Systems and Equipment."
2. Product Data: Documentation indicating that duct systems comply with ASHRAE/IESNA 90.1, Section 6.4.4 - "HVAC System Construction and Insulation."
3. Leakage Test Report: Documentation of work performed for compliance with ASHRAE/IESNA 90.1, Section 6.4.4.2.2 - "Duct Leakage Tests."
4. Duct-Cleaning Test Report: Documentation of work performed for compliance with ASHRAE 62.1, Section 7.2.4 - "Ventilation System Start-Up."
5. Product Data: For adhesives and sealants, including printed statement of VOC content.

E. Product Data: For each type of the following products:

1. Liners and adhesives.
2. Sealants and gaskets.
3. Seismic-restraint devices.
4. Ducts, fittings, hangers, dampers, supports, fasteners and any other sheet metal products used.

1.04 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel," for hangers and supports AWS D1.2, "Sheet Metal Welding Code," for duct joint and seam welding.

B. Seismic Engineering: Seismic bracing and support design, product installation, equipment, and systems shall conform to the CBC. Submit calculations, plans, and documents stamped by a qualified California registered engineer.

C. Structural Review: Seismic engineering submittal documents, seismic loads, anchorage loads, and vertical loads applied to the building structure shall be approved by the project structural engineer of record.

D. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1-2004, Section 5 - "Systems and Equipment" and Section 7 - "Construction and System Start-Up."

E. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2004, Section 6.4.4 - "HVAC System Construction and Insulation."

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
2. Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01. Specific procedures must be followed before use of an unnamed product or manufacturer.

2.02 SHEET METAL MATERIALS

A. Comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods, unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

B. Galvanized Sheet Steel: Lock-forming quality; complying with ASTM A 653/A 653M and having G90 coating designation. Ducts shall have mill-phosphatized finish for surfaces exposed to public view and that are specified to be painted.

C. Stainless Steel: ASTM A 480/A 480M, Type 316L unless otherwise indicated, and having a No. 2D finish for concealed ducts and No. 4 finish for ducts exposed to public view. Minimum 18 gage. Provide welded construction.

D. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts.

E. Tie Rods: Tie rods inside ductwork are prohibited.

2.03 DUCT LINER

A. Fibrous-Glass Liner: Shall not be used without University's Representatives written approval. When approved liner shall comply with the following:

1. Manufacturers:

   a. Certain Teed Corp.; Insulation Group.
   b. Johns Manville International, Inc.
   c. Knauf Fiber Glass GmbH.
   d. Owens Corning.
   e. Or equal.

2. Materials: ASTM C 1071; surfaces exposed to airstream shall be coated to prevent erosion of glass fibers.

   a. Thickness: 1 inch.
   b. Thermal Conductivity (k-Value): 0.26 at 75 deg F mean temperature.

c. Fire-Hazard Classification: Maximum flame-spread index of 25 and smoke-developed index of 50 when tested according to ASTM E 84.
d. Liner Adhesive: Comply with ASTM C 916.
e. Interior surface shall be perforated galvanized sheets.
f. Mechanical Fasteners: Galvanized steel suitable for adhesive attachment, mechanical attachment, or welding attachment to duct without damaging liner when applied as recommended by manufacturer and without causing leakage in duct.

1) Tensile Strength: Indefinitely sustain a 50-lb tensile, dead-load test perpendicular to duct wall.
2) Fastener Pin Length: As required for thickness of insulation and without projecting more than 1/8 inch into airstream.
3) Adhesive for Attaching Mechanical Fasteners: Comply with fire-hazard classification of duct liner system.

g. For indoor applications use adhesive that has a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

3. Antimicrobial Erosion-Resistant Coating: Apply to the surface of the liner that will form the interior surface of the duct to act as a moisture repellent and erosion-resistant coating. Antimicrobial compound shall be tested for efficacy by an NRTL and registered by the EPA for use in HVAC systems.

B. Flexible Elastomeric Duct Liner: Comply with NFPA 90A. Shall not be used without University's Representatives written approval.

1. Manufacturers:

a. Armacell
b. Aeroflex USA
c. K-flex USA
d. Or equal.

2. Materials: Flexible Polymeric Foam Sheet Insulation complying with ASTM C 1534, Type I,

a. Thickness: 1 inch.
b. Thermal Conductivity (k-Value): less than 0.25 at 75 deg F mean temperature.
c. Fire-Hazard Classification: Maximum flame-spread index of 25 and smoke-developed index of 50 when tested according to ASTM C 411.
d. UL 181 for mold growth/humidity, air erosion and passes ASTM G 21 Fungal Resistance.
e. Liner Adhesive: As recommended by insulation manufacturer and complying with NFPA 90A.
f. For indoor applications use adhesive that has a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.04 SEALANT AND GASKETS

A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.

B. Two-Part Tape Sealing System:

1. Tape: Woven cotton fiber impregnated with mineral gypsum and modified acrylic/silicone activator to react exothermically with tape to form hard, durable, airtight seal.
2. Tape Width: 4 inches.
3. Sealant: Modified styrene acrylic.
4. Water resistant.
5. Mold and mildew resistant.
6. Maximum Static-Pressure Class: 10 inches w.g., positive and negative.
7. Service: Indoor and outdoor.
8. Service Temperature: Minus 40 to plus 200 deg F.
9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel.
10. For indoor applications use sealant that has a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

C. Water-Based Joint and Seam Sealant:

1. Application Method: Brush on.
2. Solids Content: Minimum 65 percent.
3. Shore A Hardness: Minimum 20.
4. Water resistant.
5. Mold and mildew resistant.
6. VOC: Maximum 75 g/L (less water).
7. Maximum Static-Pressure Class: 10 inches wg, positive and negative.
8. Service: Indoor or outdoor.
9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel.

D. Flanged Joint Sealant: Comply with ASTM C 920.

1. General: Single-component, acid-curing, silicone, elastomeric.
2. Type: S.
3. Grade: NS.
4. Class: 25.
5. Use: O.
6. For indoor applications use sealant that has a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

E. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

F. Round Duct Joint O-Ring Seals:

1. Seal shall provide maximum leakage class of 3 cfm/100 sq. ft. at 1 inch w.g. and shall be rated for 10 inches w.g. static-pressure class, positive or negative.
2. EPDM O-ring to seal in concave bead in coupling or fitting spigot.
3. Double-lipped, EPDM O-ring seal, mechanically fastened to factory-fabricated couplings and fitting spigots.

2.05 HANGERS AND SUPPORTS

A. Building Attachments: Drilled in fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.

   1. Use drilled in concrete fasteners for standard-weight aggregate concretes or for slabs more than 5 inches thick.

B. Powder-Actuated Fasteners are prohibited.

C. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.

D. Trapeze and Riser Supports: Steel shapes complying with ASTM A 36/A 36M.

   1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.
   2. Supports for Stainless-Steel Ducts: Galvanized-steel or stainless steel shapes and plates.

2.06 RECTANGULAR DUCT FABRICATION

A. Fabricate ducts, elbows, transitions, offsets, branch connections, and other construction according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" third edition and complying with requirements for metal thickness, reinforcing types and intervals, and joint types and intervals except as modified by this specification.

   1. Lengths: Fabricate rectangular ducts in lengths appropriate to reinforcement and rigidity class required for pressure class.
   2. Deflection: Duct systems shall not exceed deflection limits according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible."

B. Elbows shall be short radius with splitter or guide vanes are the standard method to be used on campus or if space permits, long radius elbows may be used, figure 4-2, type RE 1 and RE 3 in the SMACNA manual. Use short radius elbows with 1, 2, or 3 splitter or guide vanes. Construct splitter or guide vanes per SMACNA HVAC Systems Duct Design Manual.

   1. Mitered elbows with or without turning vanes and other elbow types are prohibited.

C. Divided flow branches shall be per SMACNA manual figure 4-5, type 1 or type 4A or 4B only.

D. Branch connections per SMACNA manual figure 4-6; 45-degree entry shall only be used where airflow in branch is less than 25% of total airflow in main duct.

E. Offsets shall be SMACNA manual figure 4-7, type 3 only.

F. Provide bellmouth transitions for connections to air handling units and plenums.

G. Transverse Joints: Prefabricated slide-on joints and components constructed using manufacturer's guidelines for material thickness, reinforcement size and spacing, and joint reinforcement.

1. Manufacturers:

    a. Ductmate Industries, Inc.
    b. Nexus Inc.
    c. Ward Industries, Inc.
    d. Or equal.

H. Longitudinal Seams: Pittsburgh lock sealed with noncuring polymer sealant.

1. Button punch snap lock seams are prohibited.

I. Provide drive slip or equivalent flat seams for ducts exposed in the conditioned space or where necessary due to space limitations.

J. Cross Breaking or Cross Beading: Cross break or cross bead duct sides 19 inches and larger and 20 gauge (0.0359 inch thick) or less, with more than 10 sq. ft. of nonbraced panel area.

2.07 APPLICATION OF LINER IN RECTANGULAR DUCTS

A. Adhere a single layer of indicated thickness of duct liner with at least 100 percent adhesive coverage at liner contact surface area. Attaining indicated thickness with multiple layers of duct liner is prohibited.

B. Apply adhesive to transverse edges of liner facing upstream that do not receive metal nosing.

C. Butt transverse joints without gaps and coat joint with adhesive.

D. Fold and compress liner in corners of rectangular ducts or cut and fit to ensure butted-edge overlapping.

E. Do not apply liner in rectangular ducts with longitudinal joints, except at corners of ducts, unless duct size and standard liner product dimensions make longitudinal joints necessary.

F. Apply adhesive coating on longitudinal seams.

G. Secure liner with mechanical fasteners 4 inches from corners and at intervals not exceeding 12 inches transversely; at 3 inches from transverse joints and at intervals not exceeding 18 inches longitudinally.

H. Secure transversely oriented liner edges facing the airstream with metal nosings that have either channel or "Z" profiles or are integrally formed from duct wall. Fabricate edge facings at the following locations:

1. Fan discharges.
2. Intervals of lined duct preceding unlined duct.

3. Upstream edges of transverse joints in ducts where air velocities are greater than 2500 fpm or where indicated.

I. Sheet Metal Inner Duct Perforations: 3/32-inch diameter, with an overall open area of 23 percent. Use solid metal (nonperforated) inner ducts for material handling exhaust systems.

J. Terminate inner ducts with build outs attached to fire-damper sleeves, dampers, splitter vane assemblies, or other devices. Fabricated build outs (metal hat sections) or other build out means are optional; when used, secure build outs to duct walls with bolts, screws, rivets, or welds.

2.08 ROUND AND FLAT-OVAL DUCT AND FITTING FABRICATION

A. Diameter as applied to flat-oval ducts in this Article is the diameter of a round duct with a circumference equal to the perimeter of a given size of flat-oval duct.

B. Round, Spiral Lock-Seam Ducts: Fabricate supply ducts of galvanized steel according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible."

C. Flat-Oval, Spiral Lock-Seam Ducts: Fabricate supply ducts according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible." Fabricate ducts larger than 72 inches in diameter with butt-welded longitudinal seams.

1. Manufacturers:

a. McGill AirFlow Corporation.
b. SEMCO Incorporated.
c. Or equal.

D. Duct Joints:

1. Ducts up to 20 inches in Diameter: Interior, center-beaded slip coupling per SMACNA figure 3-1, RT-1, sealed before and after fastening, attached with sheet metal screws.
2. Three-piece, gasketed flanged joint consisting of two external flanges with sealant, SMACNA manual figure 3-1, RT-2 and 2A.
3. Round Ducts: Prefabricated connection system consisting of neoprene gasket dual flanges. Manufacture ducts according to connection system manufacturer's tolerances.

a. Manufacturers:

1) Ductmate Industries, model Spiralmate
2) Or equal.

4. Flat-Oval Ducts: Prefabricated connection system consisting of two flanges and one synthetic rubber gasket.

a. Manufacturers:

1) Ductmate Industries, Inc.
2) McGill AirFlow Corporation.
3) SEMCO Incorporated.
4) Or equal.

E. 90-Degree Tees and Laterals and Conical Tees: Fabricate to comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible," with metal thicknesses specified for longitudinal-seam straight ducts.

F. Diverging-Flow Fittings: Fabricate with reduced entrance to branch taps and with no excess material projecting from fitting into branch tap entrance.

G. Fabricate elbows using die-formed, gored, segmented, or mitered construction. Ratio of centerline radius to duct diameter of elbows shall be 1½. Unless elbow construction type is indicated, fabricate elbows as follows:

1. Mitered-Elbow Number of Pieces: Welded construction complying with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible," comply with table 3-1.
2. Round Mitered Elbows: Welded construction with the following metal thickness for pressure classes from minus 2 to plus 2 inches w.g.:

   a. Ducts 3 to 36 Inches in Diameter: 0.034 inch.
   b. Ducts 37 to 50 Inches in Diameter: 0.040 inch.
   c. Ducts 52 to 60 Inches in Diameter: 0.052 inch.
   d. Ducts 62 to 84 Inches in Diameter: 0.064 inch.

3. Round Mitered Elbows: Welded construction with the following metal thickness for pressure classes from 2- to 10 inches w.g.:

   a. Ducts 3 to 26 Inches in Diameter: 0.034 inch.
   b. Ducts 27 to 50 Inches in Diameter: 0.040 inch.
   c. Ducts 52 to 60 Inches in Diameter: 0.052 inch.
   d. Ducts 62 to 84 Inches in Diameter: 0.064 inch.

4. Flat-Oval Mitered Elbows: Welded construction with same metal thickness as longitudinal-seam flat-oval duct.
5. Round Elbows 8 inches and less in Diameter: Fabricate die-formed elbows for 45- and 90-degree elbows. Fabricate nonstandard bend-angle configurations or nonstandard diameter elbows with gored construction.
6. Round Elbows 9 through 14 inches in Diameter: Fabricate gored elbows for 30, 45, 60, and 90 degrees. Fabricate nonstandard bend-angle configurations or nonstandard diameter elbows with gored construction. Fabricate 90 degrees elbows with minimum of 5 pieces.
7. Round Elbows Larger than 14 inches in Diameter and Flat-Oval Elbows: Fabricate gored elbows.
8. Die-Formed Elbows for Sizes through 8 inches in Diameter and Pressures 0.040 inch thick with 2-piece welded construction.
9. Round Gored-Elbow Metal Thickness: Same as non-elbow fittings specified above.

10. Flat-Oval Elbow Metal Thickness: Same as longitudinal-seam flat-oval duct specified above.

PART 3 - EXECUTION

3.01 DUCT APPLICATIONS

A. Static-Pressure Classes: Unless approved by the University's Representative, construct ducts according to the following:

1. Supply Ducts (exterior installation): plus 6 inches water gauge (w.g.).
2. Supply Ducts before (upstream) Air Terminal Units (VAV boxes or air valves): plus 4 inches w.g.
3. Supply Ducts after (downstream) Air Terminal Units (VAV boxes or air valves): plus 2 inches w.g.
4. Supply Ducts (in Mechanical Equipment Rooms): plus 6 inches w.g.
5. Return ducts (negative pressure) after (downstream) Air Terminal Units (VAV boxes, air valves, or filters): minus 4 inches w.g.
6. Return Ducts (negative pressure) before (upstream) Air Terminal Units (VAV boxes, air valves, or filters): minus 2 inches w.g.
7. Vertical risers shall be constructed to a minimum of plus or minus 4 inches w.g., regardless of service.

B. Ducts shall be galvanized steel except as follows:
1. Ductwork exposed on roof and not furnished with insulation and metal jacket: Type 316L stainless steel.
2. Outside Air / Air Make-up Ducts: Type 316L stainless steel.

C. Use round ducts to the maximum extent possible. As duct size increases, flat oval shall be considered. Rectangular ducts shall be limited to areas of space restriction with a maximum aspect ratio of 3:1. If due to a structural clearance constraint, duct aspect ratio can be increased and/or duct cross section reduced if upstream transition has included angles of 60 degrees or less and downstream transition has included angles of 30 degrees or less.

D. Ducts exposed outside to elements shall be of round construction to shed rainwater. If conditions do not allow round ducts, slope the flat top of ductwork so rainwater will not stand on top of duct. Ensure that rectangular or square exhaust ducting is stiff enough that it will not pull inward on the top and create ponding areas for water under maximum design conditions of pressure and air flow.

E. Except for connection of terminal discharge duct to air outlets, 90 degree taps shall not be used. Takeoff feeding terminals shall be conical branch; 45 wye conical branch; low loss tee; bell mouth, or branch with a loss coefficient equivalent to that for the conical branch. The slopes of transitions shall be approximately one to five, and no abrupt changes or offsets of any kind in the duct system shall be permitted.

3.02 DUCT INSTALLATION

A. Construct and install ducts according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible," unless otherwise indicated.

B. Install round and flat-oval ducts in lengths not less than 12 feet unless interrupted by fittings.

C. Install ducts with fewest possible joints.

D. Install fabricated fittings for changes in directions, size, and shape and for connections.

E. Install couplings tight to duct wall surface with a minimum of projections into duct. Secure couplings with sheet metal screws. Install screws at intervals of 12 inches, with a minimum of 3 screws in each coupling.

F. Install ducts vertically and horizontally and parallel and perpendicular to building lines; avoid diagonal runs in ducts that would be over 12 feet in length.

G. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.

H. Install ducts with a clearance of 2 inch on each side, plus allowance for insulation thickness.

I. Conceal ducts from view in finished spaces. Do not encase horizontal runs in solid partitions unless specifically indicated.

J. Coordinate layout with suspended ceiling, fire- and smoke-control dampers, lighting layouts, and similar finished work.

K. Seal joints and seams. Apply sealant to male end connectors before insertion, and afterward to cover entire joint and sheet metal screws.

L. Stainless steel ducts shall be welded joints and fittings except for connections to air valves and fume hoods, which shall be flanged or draw-band connections.

M. Protect duct interiors from the elements and foreign materials until building is enclosed. Follow SMACNA's "Duct Cleanliness for New Construction."

N. Prohibited: Painting interiors of metal ducts.

O. Protect duct openings from damage and prevent entrance of foreign materials.

P. Sealants shall not take the place of welding of metal ducts, where required.

3.03 SEAM AND JOINT SEALING

A. Seal duct seams and transverse and longitudinal joints regardless of pressure classification.

B. Seal ducts before external insulation is applied.

C. Provide airtight seal on seams around fan and coil housings with clear caulking compound.

D. Do not use permanent sealants on duct mounted equipment. Sealant at equipment, or other in-duct maintenance component, shall be sealed with a code approved sealant that may be easily removed and replaced upon repair and replacement of the device connected to the ductwork.

3.04 HANGING AND SUPPORTING

A. Attachment method, hanger device selection, loads, and spacing shall be coordinated and approved with the structural engineer.

B. Support horizontal ducts within 24 inches of each elbow and within 48 inches of each branch intersection.

C. Support vertical ducts at maximum intervals of 16 feet and at each floor.

D. Install upper attachments to structures with an allowable load not exceeding one-fourth of failure (proof-test) load. Wire and friction clamps are prohibited.

E. Install concrete inserts before placing concrete.

F. Install drilled in concrete anchors after concrete is placed and completely cured.

G. Powder-Actuated Fasteners: are prohibited except when executed in accordance with Division 01.

H. Wet, or High Moisture Areas: Provide stainless steel supports, brackets, and mounting hardware for spaces that have wet process, wash-down, or high humidity.

I. Outdoor Applications: Support assemblies shall be of stainless steel material, or hot-dip galvanized carbon steel":

1. Fasteners: Mounting hardware such as bolts, nuts, washers, straps, brackets, fastening hardware etc., shall be stainless steel.
2. Supports: Carbon steel support assemblies, including metal fabrications for use outdoors shall comply with each paragraph listed below:

    a. Assemblies must be shop-fabricated and pre-assembled for one-piece hot-dip galvanized coating process.
    b. Touch-up and repair per manufacturer's recommendations after field installation.

J. Ducts and equipment shall be supported high enough above roofing surfaces to allow roofing access for maintenance and repair. Install ducts and equipment at a minimum height as shown in Table 4-1 of SMACNA Architectural Sheet Metal Manual – 5th Edition.

K. Roof-mounted duct and equipment supports: Unless otherwise shown, use round column supports to tie-in to structure with lead jacks, lead flashing, and lead umbrellas with stainless steel draw band per Figure 4-17A, or Figure 4-17B, of SMACNA architectural Sheet Metal Manual – 6th Edition. Coordinate flashing, waterproofing, and structural connection methods with other disciplines.

3.05 CONNECTIONS

A. Make connections to equipment with flexible connectors according to Division 23 Section "Air Duct Accessories" unless equipment is internally isolated.

B. Comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

C. Make connections to grilles, registers or diffusers the same size as the flange outer perimeter or neck size of the grille, register, or diffuser.

3.06 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections according to SMACNA's "HVAC Air Duct Leakage Test Manual" and prepare test reports:

1. Disassemble, reassemble, and seal segments of systems to accommodate leakage testing and for compliance with test requirements.
2. Conduct tests at static pressures equal to maximum design pressure of system or section being tested. If pressure classes are not indicated, test entire system at maximum system design pressure. Do not pressurize systems above maximum design operating pressure. Give seven days' advance notice for testing.
3. Maximum Allowable Leakage: Comply with requirements for Leakage Class 3 for round and flat-oval ducts, Leakage Class 12 for rectangular ducts in pressure classes lower than and equal to 2 inches w.g. (both positive and negative pressures), and Leakage Class 6 for pressure classes from 2- to 10 inches w.g.
4. Remake leaking joints and retest until leakage is equal to or less than maximum allowable.

B. Supply, return and exhaust ducts shall be sealed to minimize leakage. Ducts in concealed spaces such as chases or shafts and above wallboard ceilings shall be pressure-tested prior to concealment. Seams and joints of ducts shall be sealed with mastic or mastic plus tape or gasketing as appropriate to limit the air leakage.

C. Laboratory and kitchen grease exhaust shall not have any leakage for welded segments. Pressure test at 95% of duct pressure rating, checking every joint by spraying soap test to verify seal.

D. Materials such as duct, stiffeners, gaskets, bolting, etc., intended as part of the final installation, which are damaged during testing shall be replaced.

E. Ductwork may be tested in sections. The section of the ductwork to be tested shall be prepared by blanking off duct outlets, etc.

F. Dampers in the tested ductwork shall be left in the open position. Testing shall be satisfactorily completed before insulation or enclosure of the ductwork and before terminal units are installed.

G. Ductwork downstream of terminal units and air valves need not be leak tested.

3.07 CLEANING NEW SYSTEMS

A. If the ductwork system is maintained in a clean state during the installation the following is not required. If in the opinion of the University's Representative the ductwork system becomes dirty during installation the following shall be complied with:

B. Mark position of dampers and air-directional mechanical devices before cleaning, and perform cleaning before air balancing.

C. Use service openings, as required, for physical and mechanical entry and for inspection.

1. Create other openings to comply with duct standards.
2. Disconnect flexible ducts as needed for cleaning and inspection.
3. Remove and reinstall ceiling sections to gain access during the cleaning process.

D. Vent vacuuming system to the outside. Include filtration to contain debris removed from HVAC systems, and locate exhaust down wind and away from air intakes and other points of entry into building.

E. Clean the following metal duct systems by removing surface contaminants and deposits:

1. Air outlets and inlets (registers, grilles, and diffusers).
2. Supply, return, and exhaust fans including fan housings, plenums (except ceiling supply and return plenums), scrolls, blades or vanes, shafts, baffles, dampers, and drive assemblies.
3. Air-handling unit internal surfaces and components including mixing box, coil section, air wash systems, spray eliminators, condensate drain pans, humidifiers and dehumidifiers, filters and filter sections, and condensate collectors and drains.
4. Coils and related components.
5. Return-air ducts, dampers, and actuators except in ceiling plenums and mechanical equipment rooms.
6. Supply-air ducts, dampers, actuators, and turning vanes.

F. Mechanical Cleaning Methodology:

1. Clean metal duct systems using mechanical cleaning methods that extract contaminants from within duct systems and remove contaminants from building.
2. Use vacuum-collection devices that are operated continuously during cleaning. Connect vacuum device to downstream end of duct sections so areas being cleaned are under negative pressure.
3. Use mechanical agitation to dislodge debris adhered to interior duct surfaces without damaging integrity of metal ducts, duct liner, or duct accessories.
4. Clean fibrous-glass duct liner with HEPA vacuuming equipment; do not permit duct liner to get wet.
5. Clean coils and coil drain pans according to NADCA 1992. Keep drain pan operational. Rinse coils with clean water to remove latent residues and cleaning materials; comb and straighten fins.

G. Cleanliness Verification:

1. Visually inspect metal ducts for contaminants.
2. Where contaminants are discovered, re-clean and reinspect ducts.

3.08 CLEANING EXISTING SYSTEMS

A. Use service openings, as required, for physical and mechanical entry and for inspection.

1. Use existing service openings where possible.
2. Create new openings and install access panels appropriate for duct static-pressure class if required for cleaning access. Provide insulated panels for insulated or lined duct. Patch insulation and liner as recommended by duct liner manufacturer. Comply with Division 23 Section "Air Duct Accessories" for access panels and doors.
3. Disconnect flexible ducts as needed for cleaning and inspection.
4. Remove and reinstall ceiling sections to gain access during the cleaning process.

B. Mark position of dampers and air-directional mechanical devices before cleaning, and restore to their marked position on completion.

C. Particulate Collection and Odor Control

1. When venting vacuuming system inside the building, use HEPA filtration with 99.97 percent collection efficiency for 0.3-micron size (or larger) particles.
2. When venting vacuuming system to the outside, use filtration to contain debris removed from HVAC system, and locate exhaust downwind away from air intakes and other points of entry into building.

D. Clean the following components by removing surface contaminants and deposits:

1. Air outlets and inlets (registers, grilles, and diffusers).
2. Supply, return, and exhaust fans including fan housings, plenums (except ceiling supply and return plenums), scrolls, blades or vanes, shafts, baffles, dampers, and drive assemblies.
3. Air-handling unit internal surfaces and components including mixing box, coil section, air wash systems, spray eliminators, condensate drain pans, humidifiers and dehumidifiers, filters and filter sections, and condensate collectors and drains.
4. Coils and related components.
5. Return-air ducts, dampers, actuators, and turning vanes except in ceiling plenums and mechanical equipment rooms.
6. Supply-air ducts, dampers, actuators, and turning vanes.
7. Dedicated exhaust and ventilation components and makeup air systems.

E. Mechanical Cleaning Methodology

1. Clean metal duct systems using mechanical cleaning methods that extract contaminants from within duct systems and remove contaminants from building.
2. Use vacuum collection devices that are operated continuously during cleaning. Connect vacuum device to downstream end of duct sections so areas being cleaned are under negative pressure.
3. Use mechanical agitation to dislodge debris adhered to interior duct surfaces without damaging integrity of metal ducts, duct liner, or duct accessories.

4. Clean fibrous-glass duct liner with HEPA vacuuming equipment; do not permit duct liner to get wet. Replace fibrous-glass duct liner that is damaged, deteriorated, or delaminated or that has friable material, mold or fungus growth.
5. Clean coils and coil drain pans according to NADCA 1992. Keep drain pan operational. Rinse coils with clean water to remove latent residues and cleaning materials; comb and straighten fins.
6. Provide operative drainage system for wash-down procedures.
7. Antimicrobial Agents and Coatings: Apply EPA-registered antimicrobial agents if fungus is present. Apply antimicrobial agents according to manufacturer's written instructions after removal of surface deposits and debris.

F. Duct System Cleanliness Tests:

1. Verify cleanliness after mechanical cleaning and before application of treatment, including biocidal agents and protective coatings.
2. Visually inspect duct system to ensure that no visible contaminants are present.
3. Where contaminants are discovered, re-clean and reinspect ducts.
4. Test sections of metal duct system, chosen randomly by University's Representative, for cleanliness according to "Vacuum Test" in NADCA ACR, "Assessment, Cleaning and Restoration of HVAC Systems." Comply with ASHRAE 62.1-2004, in which Section 7.2.4 - "Ventilation System Start-Up" requires that distribution systems be clean of dirt and debris.

    a. Acceptable Cleanliness Level: Net weight of debris collected on the filter media shall not exceed 0.75 mg/100 sq. cm.

5. Duct system will be considered defective if it does not pass tests and inspections.
6. Prepare test and inspection reports.

G. Gravimetric Analysis: At discretion and expense of the University, sections of metal duct system, chosen randomly by the University, may be tested for cleanliness according to NADCA vacuum test gravimetric analysis.

1. If analysis determines that levels of debris are equal to or lower than suitable levels, system shall have passed cleanliness verification.
2. If analysis determines that levels of debris exceed suitable levels, system cleanliness verification will have failed and metal duct system shall be re-cleaned and re-verified.

END OF SECTION

SECTION 23 3300

AIR DUCT ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes the following:

1. Manual volume dampers.
2. Automatic balancing damper
3. Backdraft dampers
4. Motorized control dampers.
5. Fan isolation and bypass dampers
6. Bubble tight dampers.
7. Fire dampers.
8. Smoke or combination fire and smoke dampers.
9. Duct silencers.
10. Turning vanes (prohibited)
11. Duct-mounting access doors.
12. Flexible connectors.
13. Drawband connectors.
14. Flexible ducts.
15. Duct accessory hardware.

1.02 SUBMITTALS

A. Product Data: For the duct accessories to be used on this project.

B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

1. Manual-volume damper installations.
2. Motorized-control damper installations.
3. Fire-damper, smoke-damper, and combination fire and smoke-damper installations, including sleeves and duct-mounting access doors.
4. Wiring Diagrams: Power, signal, and control wiring.

C. Submittal shall include published leakage, pressure drop and maximum pressure data for a full range of damper sizes based on AMCA Standard 500 testing. Data from one size sample test is prohibited.

D. Submittal:

1. Product data: Documentation indicating that units comply with ASHRAE 62.1.

1.03 QUALITY ASSURANCE

A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and with NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."

B. Comply with AMCA 500-D testing for damper rating.

C. Flexible ducts shall be listed by Underwriters Laboratories, Inc., complying with UL 181.

D. Fire, Smoke, and Combination Fire-Smoke dampers shall conform to the California State Fire Marshall Listing for Fire Damper and Smoke Damper.

E. Fire dampers shall be listed by Underwriters Laboratories, Inc., complying with UL 555, Smoke, and Combination Fire-Smoke dampers shall be listed by Underwriters Laboratories, Inc., complying with UL 555S.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
2. Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01. Specific procedures must be followed before use of an unnamed product or manufacturer.

2.02 SHEET METAL MATERIALS

A. Comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods, unless otherwise indicated.

B. Galvanized Sheet Steel: Lock-forming quality; complying with ASTM A 653/A 653M and having G90 coating designation; exposed ducts shall have mill-phosphatized finish for paint adhesion.

C. Stainless Steel: ASTM A480/A480M, type 304, and having a No. 2 finish for concealed ducts and exposed ducts.

D. Extruded Aluminum: ASTM B221, alloy 6063, temper T5.

E. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts; compatible materials for stainless steel ducts.

F. Tie Rods are prohibited.

2.03 MANUAL VOLUME DAMPERS

A. Standard, Steel, Rectangular Manual Volume Balancing Dampers:

1. Manufacturers:

    a. Air Balance Inc.
    b. American Warming and Ventilating
    c. McGill AirFlow LLC.
    d. Nailor Industries Inc.
    e. Pottorff
    f. Ruskin Company.
    g. Or equal.

2. Standard leakage rating.
3. Suitable for horizontal or vertical applications.
4. Frames:

    a. Frame: Hat-shaped, 0.094 inch thick, galvanized sheet steel or 0.05 inch thick stainless steel.
    b. Welded corners
    c. Flanges for attaching to walls, flangeless frame for installing inside ducts, and flanged frames for installing in ducts

5. Blades:

    a. Multiple or single blade.
    b. Parallel- or opposed-blade design.
    c. Stiffen damper blades for stability.
    d. Galvanized or Stainless-steel, 0.064 inch thick.
    e. Blade Axles: Galvanized steel or Stainless steel.

6. Bearings:

    a. Oil-impregnated bronze, oil-impregnated stainless-steel sleeve, or ball bearing as specified for the project conditions
    b. Dampers in ducts with pressure classes of 3 inches water gauge or greater shall have full-length axles. That is, the damper shafts shall be solid and pass completely through from one side to the other without any form of coupling. Both ends shall be supported by bearings.
    c. Tie Bars and Brackets: Galvanized steel.

7. Jackshaft (jackshafts are rarely used on manual volume dampers consult with University's Representative):

    a. Size: 1 inch diameter or larger
    b. Material: Galvanized-steel pipe rotating within pipe-bearing assembly mounted on supports at each mullion and at each end of multiple-damper assemblies.

c. Length and Number of Mountings: As required to connect linkage of each damper in multiple-damper assembly.

8. Damper Hardware:

a. Include center hole to suit damper operating-rod size.
b. Include elevated platform for insulated duct mounting.

B. Standard, Steel, Round Manual Volume Balancing Dampers

1. Manufacturers

a. Air Balance Inc.
b. American Warming and Ventilating
c. McGill AirFlow LLC.
d. Nailor Industries Inc.
e. Pottorff
f. Ruskin Company.
g. Or equal.

2. Standard leakage rating.
3. Suitable for installation at any angle
4. Blades

a. Single blade or multi-blade
b. Stiffen damper blades for stability.
c. Galvanized or Stainless-steel, 0.064 inch thick.
d. Blade Axles: Galvanized steel or Stainless steel.

5. Bearings:

a. Oil-impregnated bronze, oil-impregnated stainless-steel sleeve, or ball bearing as specified for the project conditions
b. Dampers in ducts with pressure classes of 3 inches water gauge or greater shall have full-length axles. That is, the damper shafts shall be solid and pass completely through from one side to the other without any form of coupling. Both ends shall be supported by bearings.
c. Tie Bars and Brackets: Galvanized steel.

6. Damper Hardware:

a. Include center hole to suit damper operating-rod size.
b. Include elevated platform for insulated duct mounting.
c. Provide locking quadrant or remote actuator by Young Regulator

C. Motorized Control Dampers may be used as manual volume dampers where the dual application is suitable.

2.04 AUTOMATIC BALANCING DAMPERS

A. Manufacturers:

1. Ruskin Model ABD
2. Or equal

B. Pressure independent, 4, 5 and 6 inch round, automatically balance airflow to set point ±10% at 0.5 inch water gauge differential across the damper.

C. Shall comply with UL2043.

D. Warranty: 5 years, minimum.

2.05 BACKDRAFT DAMPERS (PROHIBITED UNLESS SPECIFICALLY DIRECTED)

A. Manufacturers:

1. TAMCO Series 7000 CW
2. Or equal

B. Description: Multiple-blade, parallel action, weighted gravity balanced, factory fabricated with silicon-sealed blades and edges with adjustment device to permit setting for varying differential static pressure. The damper shall be limited to 4 inches static pressure and 2500 fpm velocity unless otherwise certified and warranted by manufacturer.

C. Frame: 0.06 inch thick extruded aluminum, 2.5 inches deep.

D. Blades: 0.06 inch thick, extruded aluminum.

E. Blade Axles: Aluminum

F. Mounting style shall be either rear flange, front flange, or in duct.

G. Linkage system shall consist of aluminum crank arms fastened to aluminum pivot rods. Aluminum alloy linkage rod shall connect crank arms by means of trunnion.

H. Provide access door for maintenance of adjustment device when access is not readily available.

2.06 ACTUATED CONTROL DAMPERS

A. Low-Leakage Outside Air, Return and Exhaust or Relief Dampers:

1. Manufacturers:

    a. TAMCO Series 1000 SW Air-Foil Control Damper with Salt Water Resistance Option
    b. Or equal.

2. Dampers shall be manufactured of aluminum or stainless steel. Carbon steel components are prohibited in the damper construction.
3. If damper is to be aluminum, aluminum parts shall be clear anodized to a minimum thickness of 0.7 mil.
4. There shall be two mechanically-fastened damper blade seals at each blade sealing point to assure maintenance of long-term leakage resistance. Blade seals shall be of extruded silicone.
5. Frame seals shall be of extruded silicone and factory tested to over 500,000 cycles to ensure durability.
6. Bearings shall be maintenance free. Metal-to-metal contact is prohibited.
7. Damper drive rod shall be mechanically maintained in drive blade, and shall incorporate hex flats to prevent slippage.
8. Leakage shall not exceed 3 cfm/ft^2 against 1" water gauge differential static pressure (AMCA Class 1A).
9. Dampers shall be made to size required without blanking off free area.
10. Dampers shall have opposed blade action or parallel blade action, depending on application.
11. Dampers shall be available in three mounting types: "Installed in Duct", "Extended Rear Flange", or "Flanged to Duct" as required for installation.
12. Intermediate or tubular steel structural support shall be provided by installer to resist applied pressure loads for dampers that consist of two or more sections in height or width.
13. Air handling units with 100% outside air intended for continuous operation do not require outside air dampers. Systems with standby units require fan isolation control dampers at the discharge sides of the units.

2.07 FAN ISOLATION AND BYPASS CONTROL DAMPERS

A. AMCA rated, parallel blade for open and closed design and opposed blade for modulation control design, airfoil shape, for fan isolation under dynamic conditions. Dampers shall be low leakage industrial grade control dampers that meet the following minimum construction standards. Carbon steel components are prohibited.

1. Manufacturers:

    a. Tamco model 8800 with Salt Water Resistance Option (Basis of Design)
    b. Ruskin model CD80AF3
    c. Greenheck model HCD-230
    d. Or equal.

2. Frame shall be 8 inches deep by 2 inch flanged anodized 6063-T5 aluminum channel, or 316 stainless steel channel. Blades shall be double skin airfoil, maximum 8 inches wide and minimum 0.08" aluminum, or 14-gage stainless steel. Axles shall be minimum 3/4" diameter anodized aluminum or stainless steel rod. Provide dampers with low-leakage blade and jamb seals.
3. Except for Basis of Design, provide external ball bearings mounted outboard external of frame. Bearings shall have provisions for lubrication (Zurk fitting).

4. Linkage shall be located out of air stream. Standard construction shall include crank lever for motor operation. Linkage in air stream is prohibited. Each damper panel shall have separate drive actuator.
5. Submittal data must include published leakage, pressure drop, and maximum pressure data for full range of damper sizes based on AMCA standard 500 testing. Performance data for 48" x 48" damper at 1 inch water gauge shall be less than 4.0 cfm per square foot.
6. Bolts, nuts, screws, linkage components, and appurtenances shall be anodized aluminum or stainless steel.
7. Damper shall be rated for minimum of 15 inches water gauge pressure.

2.08 BUBBLE TIGHT DAMPERS

A. Bubble tight dampers shall be Flanders model PB-2000-1099 or equal.

1. Tested for 10,000 open/close cycles.
2. Damper leakage to max 60 inches water gauge after cycle testing.
3. Round type.

B. The standard construction for model number shall be as follows. Flanges shall be minimum 1½ inches wide by 0.1875 inch thick. Factory drilled holes (7/16" diameter) shall be 4" or less apart as recommended in ERDA 76-21, "Nuclear Air Cleaning Handbook". The frame material shall be minimum 11-gage unpainted Type 304 stainless steel. Shafts shall be minimum ¾" diameter stainless steel rod with shaft seals.

C. The dampers shall be positive seal, isolation type that shall be bubble-tight at the minimum differential pressure of 10 inches water gage. The blade shall consist of two (2) 0.1875 inch thick type 304 stainless steel plates with a replaceable solid silicone gasket between them. Blade seal shall occur when the gasket seats against the inside of the 11 gage housing wall. The damper shall be of welded construction. Pressure-retaining welded joints and seams shall be continuously welded, pores are prohibited. As a minimum, weld joints and seams shall be wire brushed or buffed to remove heat discoloration, burrs and sharp edges.

D. The dampers shall be manufactured under a quality assurance program that meets the requirements of ASME NQA-1, "Quality Assurance Program Requirements for Nuclear Facilities". Welding procedures, welders and welder operators shall be qualified in accordance with ASME Boiler and Pressure Vessel Code, Section IX. Production welds shall be visually inspected per the Flanders/CSC standard procedure number P-122, "Visual Inspection of Welds," which incorporates the workmanship acceptance criteria described in Sections 5 and 6 of ANSI/AWS D9.1-1990, "Specifications for Welding Sheet Metal".

E. The damper blade shall be tested in the closed position at 10 inches water gage and shall be bubble-tight when tested in accordance with ASME N509-1996 "Reaffirmed" paragraph 5.9.7.3. The complete pressure boundary (damper housing) shall be leak tested by the "Pressure Decay Method" in accordance with ASME N510-1995 "Reaffirmed", "Testing of Nuclear Air Treatment Systems", Paragraphs 6 and 7. Pressure readings are recorded once a minute until pressure decays to 75% of the test pressure or for 5 minutes. There shall be a maximum leak rate of 0.0005 CFM per cubic foot of housing volume at 10 inches water gage.

F. Actuators

1. Manual actuators shall be quarter-turn, worm-gear or scotch yoke actuators with hand wheels. Rated output torque shall be 2,000 inch-pounds up to 22 inch diameter size dampers with a gear ratio of 30:1 and 7,000 inch pounds on dampers 24” to 36” diameter size, with a gear ratio of 40:1. Actuator shall be fully lubricated and self-locking to hold in any position.
2. Pneumatic actuator shall be rotary type with flow control valves.

2.09 FIRE DAMPERS

A. Manufacturers:

1. Air Balance Inc.
2. Cesco Products
3. Greenheck Fan Corporation.
4. Nailor Industries Inc.
5. Pottorff
6. Prefco; Perfect Air Control, Inc.
7. Ruskin Company.
8. Vent Products Company, Inc.
9. Or equal.

B. Fire dampers shall be static type labeled according to UL 555 by an NRTL and CSFM listed.

C. Fire Rating: 1½ hours.

D. Frame: Curtain type with blades outside airstream or Multiple-blade type with mitered and interlocking corners.

E. Mounting Sleeve: Factory- or field-installed, galvanized sheet steel.

1. Minimum Thickness: 0.05 or 0.138 inch thick as indicated and of length to suit application.
2. Exceptions: Omit sleeve where damper frame width permits direct attachment of perimeter mounting angles on each side of wall or floor, and thickness of damper frame complies with sleeve requirements.

F. Mounting Orientation: Vertical or horizontal as required.

G. Blades: Roll-formed, interlocking, 0.034 inch thick, galvanized sheet steel, or stainless steel. In place of interlocking blades, use full-length, 0.034 inch-thick, galvanized-steel blade connectors.

H. Provide access doors for the dampers. Doors shall be sufficiently large for the application. That is, if a human must climb inside to work, they shall be not less than 28 inches x 28 inches. Scale openings to the necessary work of inspection, service, and repair. Openings smaller than 6 inches by 4 inches are prohibited. Provide multiple openings, as necessary to ensure full and complete access without removing dampers from the ductwork.

I. Horizontal Dampers: Include blade lock and stainless-steel closing spring.

J. Fusible Links: Replaceable, 165°F or 212°F rated as applicable.

K. Size dampers to limit pressure loss to 0.05 inch water gauge or less at the maximum designed air flow for the particular duct.

1. Dampers less than duct size are prohibited.
2. Dampers located in small ducts may need to be increased in size to minimize pressure loss.
3. Account for effects of upstream and downstream transition fittings in pressure loss calculations.
4. Construct transitions in accordance with SMACNA and ASHRAE standards.
5. The total pressure loss through the assembly including any transitions shall not exceed 0.05 inches water gauge.

L. Multi-leaf fire dampers shall have airfoil blades. Damper design shall have a maximum pressure drop 0.05 inch water gauge at the designed system airflow or 2,000 feet per minute whichever is greater.

1. Dampers less than duct size are prohibited.
2. Dampers located in small ducts may need to be increased in size to minimize pressure loss.
3. Account for effects of upstream and downstream transition fittings in pressure loss calculations.
4. Construct transitions in accordance with SMACNA and ASHRAE standards.
5. The total pressure loss through the assembly including any transitions shall not exceed 0.05 inch water gauge.

2.10 SMOKE, OR COMBINATION FIRE AND SMOKE DAMPERS

A. Manufacturers:

1. Air Balance, Inc.
2. CESCO Products.
3. Greenheck.
4. Nailor Industries Inc.
5. Pottorff.
6. Prefco Products Co.
7. Ruskin Company.
8. Tamco (smoke dampers only)
9. Vent Products Company, Inc.
10. Or equal.

B. General Description: Labeled according to UL 555S by an NRTL. Combination fire and smoke dampers shall be labeled according to UL 555 for 1½-hour rating. Leakage: Class I.

C. Fusible Links: Replaceable, 165 °F or, and 212 °F rated as applicable.

D. Frame and Blades: 0.094 inch-thick, galvanized sheet steel, or stainless steel for stainless steel duct installation.

E. Mounting Sleeve: Factory-installed, galvanized sheet steel; length to suit wall or floor application.

F. Damper Motors: Provide for modulating or two-position action.

1. Permanent-Split-Capacitor or Shaded-Pole Motors: With oil-immersed and sealed gear trains.
2. Spring-Return Motors: Equip with an integral spiral-spring mechanism where indicated. Enclose entire spring mechanism in a removable housing designed for service or adjustments. Size for running torque rating of 150 inch-pounds and breakaway torque rating of 150 inch-pounds.
3. Outdoor Motors and Motors in Outside-Air Intakes: Equip with O-ring gaskets designed to make motors weatherproof NEMA 3R.
4. Non-spring-Return Motors: For dampers larger than 25 sq. ft., size motor for running torque rating of 150 inch-pounds and breakaway torque rating of 300 inch-pounds.
5. Electrical Connection: 115 V, single phase, 60 Hz.
6. Locate motors outside of airstream.

G. Provide access doors for the dampers. Doors shall be sufficiently large for the application. That is, if a human must climb inside to work, they shall be not less than 28 inches x 28 inches. Scale openings to the necessary work of inspection, service, and repair. Openings smaller than 6 inches by 4 inches are prohibited. Provide multiple openings, if necessary.

H. Size dampers to limit pressure loss to 0.05 inch water gauge or less at the maximum designed air flow for the particular duct.

1. Dampers less than duct size are prohibited.
2. Dampers located in small ducts may need to be increased in size to minimize pressure loss.
3. Account for effects of upstream and downstream transition fittings in pressure loss calculations.
4. Construct transitions in accordance with SMACNA and ASHRAE standards.
5. The total pressure loss through the assembly including any transitions shall not exceed 0.05 inches water gauge.

I. Multi-leaf fire dampers shall have airfoil blades. Damper design shall have a maximum pressure drop 0.05 inch water gauge at the designed system airflow or 2000 feet per minute whichever is greater.

1. Dampers less than duct size are prohibited.

2. Dampers located in small ducts may need to be increased in size to minimize pressure loss.
3. Account for effects of upstream and downstream transition fittings in pressure loss calculations.
4. Construct transitions in accordance with SMACNA and ASHRAE standards.
5. The total pressure loss through the assembly including any transitions shall not exceed 0.05 inch water gauge.

J. Dampers shall bear the UL and CSFM listed labels.

2.11 DUCT SILENCERS (NORMALLY PROHIBITED)

A. Manufacturers:

1. Metal Form Manufacturing Inc.; Commercial Acoustics.
2. Industrial Noise Control, Inc.
3. McGill AirFlow LLC.
4. Ruskin Company.
5. Vibro-Acoustics.
6. Industrial Acoustics Company (IAC).
7. Or equal

B. General Description: Factory-fabricated and -tested, round or rectangular silencers with performance characteristics and physical requirements as indicated.

C. Fire Performance: Adhesives, sealants, packing materials, and accessory materials shall have fire ratings not exceeding 25 for flame-spread index and 50 for smoke-developed index when tested according to ASTM E 84.

D. Rectangular Units: Fabricate casings with a minimum of 0.034 inch thick, solid galvanized sheet metal for outer casing and 0.022 inch thick, ASTM A653/A653M, G90, perforated galvanized sheet metal for inner casing. Attenuators in 100% outside air or fume hood exhaust system shall have a solid stainless steel internal lining.

E. Round Units:

1. Outer Casings:

   a. ASTM A 653/A 653M, G90, galvanized sheet steel.

2. Interior Casing, Partitions, and Baffles:

   a. ASTM A 653/A 653M, G90, galvanized sheet steel.
   b. At least 0.034 inch thick and designed for minimum aerodynamic losses.
   c. Attenuators in 100% outside air or fume exhaust system shall have a solid stainless steel internal lining.

F. Sheet Metal Perforations: Not more than one eighth (⅛) inch diameter for inner casing and baffle sheet metal.

G. Fill Material: Inert and vermin-proof fibrous material, packed under not less than 5 percent compression.

1. Erosion Barrier: Polymer bag enclosing fill and heat-sealed before assembly.

H. Fabricate silencers to form rigid units that will not pulsate, vibrate, rattle, or otherwise react to system pressure variations.

1. Do not use nuts, bolts, or sheet metal screws for unit assemblies.
2. Lock form and seal or continuously weld joints.
3. Suspended Units: Factory-installed suspension hooks or lugs attached to frame in quantities and spaced to prevent deflection or distortion.
4. Reinforcement: Cross or trapeze angles for rigid suspension.

I. Source Quality Control:

1. Acoustic Performance: Test according to ASTM E 477.
2. Record acoustic ratings, including dynamic insertion loss and self-noise power levels with an airflow of at least 2000 fpm face velocity.
3. Leak Test: Test units for air tightness at 200 percent of associated fan static pressure or 6 inches water gauge static pressure, whichever is greater.

J. Size attenuators to limit pressure loss to the specified value on the equipment schedule or less at the maximum designed air flow for the particular duct.

1. Attenuators less than duct size are prohibited.
2. Attenuators located in small ducts may need to be increased in size to minimize pressure loss.
3. Account for effects of upstream and downstream transition fittings in pressure loss calculations.
4. Construct transitions in accordance with SMACNA and ASHRAE standards.
5. The total pressure loss through the assembly including any transitions shall not exceed the value on the equipment schedule.
6. If there is not a silencer specified on the equipment schedule, consult with the University’s representative before proceeding.
7. Do not install silencers unless specifically directed.

2.12 TURNING VANES

A. Turning vanes are prohibited. Provide short radius elbows with splitter vanes per SMACNA or long radius elbows.

2.13 DUCT-MOUNTING ACCESS DOORS

A. General Description: Fabricate doors airtight and suitable for duct pressure class. Include vision panel where indicated.

B. Access Door: Double wall, duct mounting, for round or rectangular ducts; fabricated of galvanized sheet metal, or stainless steel, closed cell neoprene gasket, closure knobs with zinc plated springs and bolts. Provide accessory safety chain.

1. Manufacturers:

   a. Ductmate Industries, Inc.
   b. Greenheck Fan Corporation.
   c. Pottorff; a division of PCI Industries, Inc.
   d. Ruskin Company.
   e. Or equal.

2. Frame: None. Sandwich type configuration with outer door galvanized sheet steel, notched frame
3. Hinge: None
4. Gasket location: shall be interchangeable for positive and negative pressure applications, in accordance with manufacturer's guidelines.
5. Pressure Rating: Ultra low leakage for positive or negative 8 inches water gauge

C. Pressure Relief Access Door: Double wall and duct mounting; fabricated of galvanized sheet metal, or stainless steel, with insulation fill and thickness as indicated for duct pressure class. Include vision panel where indicated, latches, and retaining chain.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. American Warming and Ventilating
   b. Ductmate Industries, Inc.
   c. Greenheck Fan Corporation.
   d. McGill AirFlow LLC.
   e. Ruskin Company.
   f. Or equal.

2. Frame: Galvanized sheet steel, with bend-over tabs and neoprene gaskets.
3. Provide negative pressure and positive pressure relief doors design to open automatically to prevent exploding or imploding ductwork in the event dampers close or some other event may occur while the fan is still operating. The door shall automatically close and reset when the pressure is equalized or the system shuts down. Ruskin models PRD18, NRD18 or ADHP-3. Provide insulated doors in supply air systems, stainless steel construction for hazardous air exhaust systems and construction shall be appropriate for the pressure class.
4. Seal around frame attachment to duct and door to frame with neoprene rubber.
5. Insulation: 1 inch thick, fibrous-glass or polystyrene-foam board.

2.14 FLEXIBLE CONNECTORS

A. Manufacturers:

1. Duro Dyne Inc.

2. Ventfabrics, Inc.
3. Ward Industries, Inc.
4. Or equal.

B. General Description: Flame-retardant or noncombustible fabrics, coatings, and adhesives complying with UL 181, Class 1.

C. Metal-Edged Connectors: Factory fabricated with a fabric strip 5¾ inches wide attached to two strips of 2¾ inches wide, 0.028 inch thick, galvanized sheet steel.

D. Indoor System, Flexible Connector Fabric: Glass fabric double coated with neoprene.

1. Minimum Weight: 22 ounces per square yard.
2. Tensile Strength: 475 lbf/inch in the warp and 360 lbf/inch in the filling.
3. Service Temperature: Zero to plus 200 °F

E. Outdoor System, Flexible Connector Fabric: Glass fabric insulated double coated with weatherproof, Hypalon synthetic rubber resistant to UV rays and ozone.

1. Minimum Weight: 23 ounces per square yard
2. Insulation: Fiberglass.
3. Tensile Strength: 250 lbf/inch in the warp and 275 lbf/inch in the filling.
4. Service Temperature: Zero to plus 240 °F

F. High-Temperature System, Flexible Connectors: Glass fabric coated with silicone rubber.

1. Minimum Weight: 16 ounces per square yard.
2. Tensile Strength: 200 lbf/inch in the warp and 185 lbf/inch in the filling.
3. Service Temperature: Zero to plus 500 °F

G. High-Corrosive-Environment System, Flexible Connectors: Glass fabric with Teflon chemical-resistant coating including gasoline grease and acetone, UL 214 listed.

1. Minimum Weight: 14 ounces per square yard.
2. Pressure Rating: 8 inch water gauge positive and 5 inches water gauge negative.
3. Tensile Strength: 300 lbf/inch in the warp and 275 lbf/inch in the filling.
4. Service Temperature: Zero to plus 500 °F

2.15 DRAWBAND CONNECTORS

A. Manufacturers:

1. Ductmate
2. Phoenix Controls Corp.
3. Or equal.

B. General Description: Formed galvanized steel cylindrical sleeve with internal gasket and external drawband bolts. Flame-retardant or noncombustible gaskets and adhesives complying with UL 181, Class 1.

1. Pressure Rating: 10 inches water gauge positive and 5 inches water gauge negative.
2. Maximum Air Velocity: 4000 fpm.
3. Temperature Range: Minus 20 to plus 200 °F
4. Fume Hood or Corrosive Application: Chemically resistant gasket material. Galvanized metal shall not contact airstream.

2.16 FLEXIBLE DUCTS

A. Manufacturers:

1. ANCO Products, Inc.
2. ATCO Rubber Products, Inc.
3. Buckley Associates, Inc.
4. CASCO; Cal-Flex
5. Flexmaster U.S.A., Inc.
6. Quietflex Manufacturing Co.
7. Or equal.

B. Noninsulated, Non-Metallic Flexible Duct: UL 181, Class 1, black polymer reinforced sheeting or coated fiberglass cloth fabric supported by helically wound, spring-steel wire.

1. Pressure Rating: 4 inches water gauge positive and 0.5 inch water gauge negative.
2. Maximum Air Velocity: 4000 fpm.
3. Temperature Range: Minus 20 to plus 175 °F

C. Noninsulated, Non-Metallic Flexible Duct: UL 181, Class 0, interlocking spiral of aluminum foil, or coated heavy fiberglass cloth fabric.

1. Pressure Rating: 8 inches water gauge positive and 5 inches water gauge negative.
2. Maximum Air Velocity: 5000 fpm.
3. Temperature Range: Minus 100 to plus 435 °F

D. Insulated, Non-Metallic Flexible Duct: UL 181, Class 1, black polymer film or coated fiberglass cloth fabric supported by helically wound, spring-steel wire; fibrous-glass insulation; polyethylene fire retardant vapor-barrier film.

1. Pressure Rating: 4 inches water gauge positive and 0.5 inch water gauge negative.
2. Maximum Air Velocity: 4000 fpm.
3. Minimum Installed R-Value: R4.2
4. Temperature Range: Minus 20 to plus 175 °F

E. Insulated, Non-Metallic Flexible Duct: UL 181, Class 0, interlocking spiral of aluminum foil or coated fiberglass cloth fabric; fibrous-glass insulation; polyethylene fire retardant vapor-barrier film.

1. Pressure Rating: 8 inches water gauge positive and 5 inches water gauge negative.
2. Maximum Air Velocity: 5000 fpm.
3. Minimum Installed R-Value: R4.2
4. Temperature Range: Minus 20 to plus 250 °F

F. Flexible Duct Connectors:

1. Clamps: Stainless-steel band clamps with stainless hex screw to tighten band with a worm-gear action in sizes 3 through 18 inches, to suit duct size.
2. Sheet Metal Screws: For flexible duct connectors with metal collars, use minimum three sheet metal screws and duct sealer.

2.17 DUCT ACCESSORY HARDWARE

A. Instrument Test Ports or Holes: Cast aluminum, cast zinc, or zinc-plated cast iron to suit duct material, including screw cap and rubber gasket. Size to allow insertion of Pitot tube and other testing instruments and of length to suit duct insulation thickness. Basis of design is VentLok 699, or VentLok 699-2 (where there is 2 inches of external insulation), or equal.

B. Adhesives: High strength, quick setting, waterproof, antimicrobial agent, and resistant to gasoline and grease, complying with UL 181 and approved for use inside of ducts.

C. Remote Damper Actuators: Manually operated Bowden Cable Design Model 270 series by Young Regulator or equal.

PART 3 - EXECUTION

3.01 APPLICATION AND INSTALLATION

A. Install duct accessories according to applicable details in SMACNA's "HVAC Duct Construction Standards-- Metal and Flexible" for metal ducts.

B. Provide duct accessories and components of materials suited to duct materials; use galvanized-steel accessories in galvanized-steel ducts, and stainless-steel accessories in stainless-steel ducts.

C. Where permitted, install weighted backdraft dampers only on general low volume (less than 2,500 cfm) exhaust fans or exhaust ducts nearest to outside discharge.

D. Where dampers are installed in ducts having duct liner, install dampers with hat channels of same depth as liner, and terminate liner with nosing at hat channel.

E. Provide manual volume dampers at points on supply, return, and exhaust systems where branches lead from larger ducts as required for air balancing. Provide balancing volume dampers at duct takeoff serving ceiling diffusers and registers. Install at a minimum of two duct widths from branch takeoff. Provide 12" long neon color flags hanging from damper handle for locating dampers. Flags shall remain after balancing unless ductwork is exposed.

F. Provide instrument test holes in ductwork at fan inlets and outlets and elsewhere as required by Testing, Adjusting and Balancing contractor for testing and balancing purposes. Factory install instrument test holes for air handling units.

G. Install fire and smoke dampers, with fusible links, according to manufacturer's UL-approved written instructions.

H. When approved by the University's representative in writing, install duct silencers rigidly to ducts and provide supports.

I. Install duct access doors to allow for inspecting, adjusting, and maintaining accessories and terminal units as follows:

1. Upstream side of duct coils.
2. Downstream from volume dampers, and equipment.
3. Adjacent to fire or smoke dampers, providing access to reset or reinstall fusible links.
4. To interior of ducts for cleaning; at base of risers or bottom of multi-story drops.
5. On sides of ducts where adequate clearance is available.
6. For access to backdraft dampers adjustable device and to visual see position of dampers.
7. Control devices requiring inspection.
8. Elsewhere as indicated.

J. Install access doors to maintain seal when under duct static pressure.

K. Install the following sizes for rectangular duct-mounting, rectangular access doors:

1. 8 by 5 inches for 6-inch duct size and smaller.
2. 12 by 6 inches for 8-inch to 10-inch duct sizes.
3. 12 by 8 inches for 11 to 13-inch duct sizes.
4. 12 by 12 inches for 14-inch to 24-inch duct sizes by maximum of 18 inches wide.
5. 20 by 12 inches for 14-inch to 24-inch duct sizes by 19 inches and wider.
6. 24 by 24 inches for larger duct sizes than listed above.

L. Install the following sizes for round duct-mounting, round access doors:

1. 8 inches in diameter for up to 12-inch diameter duct size.
2. 12 inches in diameter for 13-inch to 19 inch duct sizes.
3. 18 inches in diameter for 20-inch to 25 inch duct sizes.
4. 24 inches in diameter for larger duct sizes than listed above.

M. Label access doors according to Division 23 Section "Identification for HVAC."

N. Install flexible connectors immediately adjacent to equipment in ducts associated with fans and motorized equipment supported by vibration isolators. Units with internal fan isolation are prohibited to have a flexible connector.

O. For fans developing static pressures of 5 inches water gauge and higher, cover flexible connectors with loaded vinyl sheet held in place with metal straps.

P. For air systems with fire or smoke dampers in the mains provide pressure relief dampers when fan static exceeds pressure class of ductwork.

Q. Connect terminal units to hard metal supply ducts directly.

R. Connect diffusers, registers and grilles with lengths of flexible duct clamped or strapped in place without kinks and not exceeding an angular layout sum of 135 degrees. Do not use flexible ductwork above hard lid gypsum or similar inaccessible ceilings. Do not use flexible ducts to change directions more than 45 degrees, and with 90 degrees or less turn down from horizontal duct to diffuser, register or grille in ceiling.

S. Connect flexible ducts to metal ducts with adhesive and band clamps. Flexible ducts with galvanized sheet metal collars shall be connected with duct sealant and sheet metal screws.

T. Provide bubble tight dampers for BSL-3 isolation dampers. Provide pneumatic actuators except at HEPA filters provide manual wheel handle actuators.

3.02 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Operate dampers to verify full range of movement.
2. Inspect locations of access doors and verify that purpose of access door can be performed.
3. Operate fire, smoke, and combination fire and smoke dampers to verify full range of movement and verify that proper heat-response device is installed.
4. Operate remote damper operators to verify full range of movement of operator and damper.

B. Adjusting:

1. Adjust duct accessories for proper settings.
2. Adjust fire and smoke dampers for proper action.
3. Final positioning of manual-volume dampers is specified in Division 23 Section "Testing, Adjusting, and Balancing for HVAC."

END OF SECTION

SECTION 23 3600

AIR TERMINAL UNITS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes the following:

1. Single-duct air terminal units.
2. Fan powered air terminal units.

1.02 SUBMITTALS

A. Product Data: For each type of product indicated, include rated capacities, pressure loss, furnished specialties, liner/insulation, sound-power ratings, and accessories.

B. Submittal:

1. Product Data: Documentation indicating that units comply with ASHRAE 62.1-2004, Section 5 - "Systems and Equipment."

C. Shop Drawings: Detail equipment assemblies and indicate dimensions, required clearances, method of field assembly, components, and location and size of each field connection.

1. Include a schedule showing unique model designation, room location, model number, size, and accessories furnished.

2. Wiring Diagrams: Power, signal, and control wiring.

D. Operation and Maintenance Data: For air terminal units to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01, include the following:

1. Instructions for resetting minimum and maximum air volumes.
2. Instructions for adjusting software set points.

1.03 QUALITY ASSURANCE

A. Product Options: Drawings indicate size, profiles, and dimensional requirements of air terminal units and are based on the specific system indicated. Refer to Division 01.

B. Sound Performance: Air Terminal Unit sizing and selection shall include sound performance characteristics. Terminal selection shall be limited to a maximum of 80% of nominal air flow range.

C. UL Listing: Meeting UL 181 requirements flame spread, smoke developed, and erosion.

D. NFPA Compliance: NFPA 90A, "Installation of Air Conditioning and Ventilating Systems."

E. Performance: Rate air terminal unit performance characteristic data according to ARI 880.

1.04 COORDINATION

A. Coordinate layout and installation of air terminal units and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

B. Coordinate control wiring, transformer requirements, electrical wiring and electrical disconnect installation.

C. Coordinate DDC controller, automatic temperature controls and instrumentation installation.

D. Coordinate CBC equipment anchorage and seismic bracing requirements.

E. Structural Seismic Performance: Refer to Division 23 Section “Vibration and Seismic Controls for HVAC.”

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

1. Manufacturers:

   a. Anemostat
   b. Krueger.
   c. Nailor Industries
   d. Price Industries
   e. Titus.
   f. Or equal.

B. Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01. Specific procedures must be followed before use of an unnamed product or manufacturer.

2.02 SINGLE-DUCT AIR TERMINAL UNITS

A. Configuration: Volume-damper assembly inside unit casing with control components located inside a protective metal shroud.

B. Casing: Minimum 22-gauge galvanized steel, 304 stainless steel, or 0.04-inch thick aluminum.

1. Casing Lining: 1-inch- thick, coated, fibrous-glass duct liner complying with ASTM C 1071; secured with adhesive. Cover liner with nonporous foil and perforated metal.

2. Casing Lining: Adhesive attached, 3/4-inch- thick, polyurethane foam insulation complying with UL 181 erosion requirements, and having a maximum flame-spread

index of 25 and a maximum smoke-developed index of 50, for both insulation and adhesive, when tested according to ASTM E 84.
3. Air Inlet: Round stub connection or S-slip and drive connections for duct attachment.
4. Air Outlet: S-slip and drive connections.

C. Volume Damper: Galvanized steel with peripheral gasket and self-lubricating bearings.

1. Maximum Damper Leakage: ARI 880 rated, 2 percent of nominal airflow at 6 inches w.g. inlet static pressure.
2. Damper Position: Normally closed. Spring return not required.

2.03 FAN-POWERED AIR TERMINAL UNITS

A. Not for new installations on campus, replacements only with permission from University.

B. Configuration: Volume-damper assembly and fan in series or in parallel arrangement inside unit casing with control components inside a protective metal shroud.

C. Casing: Minimum 22-gage galvanized steel or minimum 0.04-inch thick aluminum.

1. Casing Lining: 1-inch- thick, coated, fibrous-glass duct liner complying with ASTM C 1071; secured with adhesive. Cover liner with nonporous foil and perforated metal.

2. Casing Lining: Adhesive attached, 3/4-inch thick, polyurethane foam insulation complying with UL 181 erosion requirements, and having a maximum flame-spread index of 25 and a maximum smoke-developed index of 50, for both insulation and adhesive, when tested according to ASTM E 84.
3. Air Inlets: Round stub connections or S-slip and drive connections for duct attachment.
4. Air Outlet: S-slip and drive connections.
5. Access: Removable panels for access to dampers and other parts requiring service, adjustment, or maintenance; with airtight gasket and quarter-turn latches.

D. Volume Damper: Galvanized steel with peripheral gasket and self-lubricating bearings.

1. Maximum Damper Leakage: ARI 880 rated, 2 percent of nominal airflow at 6 inches w.g. inlet static pressure.
2. Damper Position: Normally closed.

E. Fan Section: Galvanized-steel plenum, with direct-drive fan with air filter and backdraft damper.

1. Lining: 1-inch- thick, coated, fibrous-glass duct liner complying with ASTM C 1071; secured with adhesive. Cover liner with nonporous foil and perforated metal.
2. Casing Lining: Adhesive attached, 3/4-inch- thick, polyurethane foam insulation complying with UL 181 erosion requirements, and having a maximum flame-spread index of 25 and a maximum smoke-developed index of 50, for both insulation and adhesive, when tested according to ASTM E 84.

3. Fan motor assembly shall be centrifugal fan with a direct drive motor. Motors shall be ECM, variable-speed, DC, brushless motors specifically designed for use with single phase,120 or 277 volt, 60 hertz electrical input.

   a. Motor shall be complete with and operated by a single-phase integrated controller/inverter that operates the wound stator and senses rotor position to electronically commutate the stator. Motors shall be designed for synchronous rotation.
   b. Motor rotor shall be permanent magnet type with near zero rotor losses.
   c. Motor shall have built-in soft start and soft speed change ramps.
   d. Motor shall be able to be mounted with shaft in horizontal or vertical orientation.
   e. Motor shall be permanently lubricated with ball bearings.
   f. Motor shall be direct coupled to the blower. Motor shall maintain a minimum of 70% efficiency over its entire operating range.
   g. Provide remote fan speed output control for field adjustment of the fan airflow setpoint.

4. Air Filter: 2-inch-thick, fiberglass throwaway.

F. Factory-Mounted and -Wired Controls: Electrical components shall be mounted in control box with removable cover. Incorporate single-point electrical connection to power source.

1. Control Transformer: Factory mounted for control voltage on electric and electronic control units with terminal strip in control box for field wiring of thermostat and power source.
2. Wiring Terminations: Fan and controls to terminal strip, and terminal lugs shall match quantities, sizes, and materials of branch-circuit conductors. Enclose terminal lugs in terminal box that is sized according to CEC.
3. Disconnect Switch: Factory-mounted, fused type.

G. Control Panel Enclosure: NEMA 250, Type 1, with access panel sealed from airflow and mounted on side of unit.

H. Control Sequence:

1. With central system fan operating in occupied mode, sequence the controls as follows:

   a. When primary duct is pressurized, modulate volume damper to maintain room temperature.
   b. On reduced-cooling demand, close volume damper. At a field-adjustable point, air terminal fan is energized.
   c. As cooling demand increases, increase air terminal fan speed.
   d. If central duct system pressure varies, modulate volume damper to maintain constant primary airflow.
   e. If no cooling or heating demand, control enters field-adjustable, no-load band.
   f. On heating demand, actuate heating coil control valve.

2. With central system fan operating in unoccupied mode, sequence the controls as follows:

   a. On heating demand, energize air terminal unit fan and operate reheat coil control valve.
   b. Maintain field-adjustable setback temperature.
   c. Close volume damper.

2.04 REQUIRED ACCESSORIES

A. DDC Controls: Single terminal unit controller and actuator specified in Division 23 Section "Instrumentation and Controls"**.**

B. Control Transformer: For control voltage on electronic control units.

C. Hot-Water Heating Coil:

1. Fins in systems with no return air (100% outside air): 0.008" thick copper fins with stainless steel casing.
2. Fins with recirculated air systems: 0.010" thick phenolic coated aluminum fins, or 0.010" aluminum fins, with galvanized casing.
3. Tubes: 0.035" thick copper ½"or 5/8" diameter tube, mechanically expanded into plate fins; and factory installed casings.
4. Factory test coils at 350 psi.

D. Attenuator Section: Similar to terminal casing, as specified above. For multi-outlet attenuator section: provide collars; each with locking butterfly balancing damper.

E. Access: Removable panels for access to dampers, and other parts requiring service, adjustment, or maintenance; with airtight gasket.

F. Identification: Label each air terminal unit with plan number, nominal airflow, maximum and minimum factory-set airflows, coil type, and ARI certification seal.

2.05 SOURCE QUALITY CONTROL

A. Identification: Label each air terminal unit with plan number, nominal airflow, maximum and minimum factory-set airflows, coil type, and ARI certification seal.

B. Verification of Performance: Rate air terminal units according to ARI 880.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install air terminal unit's level and plumb. Maintain sufficient clearance for normal service and maintenance.

B. Install air terminal units with seismic bracing where required by code.

3.02 CONNECTIONS

A. Piping installation requirements are specified in other Division 23 Sections. Drawings indicate general arrangement of piping, fittings, and specialties. Shop drawings shall show specific installation locations.

B. Install piping adjacent to air terminal units to allow service and maintenance.

C. Hot-Water Piping: In addition to requirements in Division 23 Section "Hydronic Piping and Valves," connect heating coils to supply with shutoff valve, strainer, and union or flange; and to return with control valve, automatic flow limiting valve, shutoff valve and union or flange, in accordance with UCR Campus Standard details.

D. Connect ducts to air terminal units according to Division 23 Section "Metal Ducts."

E. Connect DDC control wiring and control devices according to Division 23 "Instrumentation and Controls."

F. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

G. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.

3.03 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:

1. After installing air terminal units and after electrical circuitry has been energized, test for compliance with requirements.
2. Leak Test: After installation, fill water coils and test for leaks. Repair leaks and retest until no leaks exist.
3. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

B. Remove and replace malfunctioning units and retest as specified above.

END OF SECTION

SECTION 23 3713

DIFFUSERS, REGISTERS, AND GRILLES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes ceiling- and wall-mounted diffusers, registers, and grilles some of which may not be applicable to this project.

1.02 SUBMITTALS

A. Product Data: For each product indicated, include the following:

1. Data Sheet: Indicate materials of construction, finish, and mounting details; and performance data including throw and drop, static-pressure drop, and noise ratings.
2. Diffuser, Register, and Grille Schedule: Indicate Drawing designation, room location, quantity, model number, size, and accessories furnished.

B. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:

1. Ceiling suspension assembly members.
2. Method of attaching hangers to building structure.
3. Size and location of initial access modules for acoustical tile.
4. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
5. Duct access panels.

C. Samples for Verification: For diffusers, registers, and grilles to be provided in other than baked white enamel the University's Representative may request a sample in the manufacturer's standard sizes to select and verify alternate color.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following.

   a. Anemostat; a Mestek Company.
   b. Krueger.
   c. Nailor Industries of Texas Inc.
   d. Price Industries.
   e. Titus

f. Trox
g. Or equal.

2. Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01. Specific procedures must be followed before use of an unnamed product or manufacturer.

2.02 SUPPLY AIR OUTLETS

A. Louver Face Diffuser - CD:

1. Titus model MCD.
2. Material: Steel.
3. Finish: Baked enamel, white.
4. Panel Size: 24” x 24”.
5. Mounting: Lay-in T-bar.
6. Pattern: modular core, field adjustable.
7. Dampers: None.
8. Accessories: Square to round neck adaptor, if needed.
9. Adjust modules in field to provide air pattern required.
10. For hard ceilings, provide surface mount beveled drop face border type 6. Panel size not required.

B. Ceiling Diffuser – optional type to CD specified above:

1. Titus model OMNI.
2. Material: Steel.
3. Finish: Baked enamel, white.
4. Panel Size: 24” x 24”.
5. Mounting: Lay-in T-bar.
6. Pattern: horizontal air with directional blow clip.
7. Dampers: None.
8. Accessories: Direction blow clips..
9. Provide blow clips in field to provide air pattern required.
10. For hard ceilings, provide surface mount full face border type 1. Panel size not required.

C. Sidewall Supply Register – SWR (if needed on project):

1. Titus model 300RL.
2. Material: Steel.
3. Finish: Baked enamel, white.
4. Face Blade Arrangement: Adjustable horizontal or vertical to suit installation and air flow with blades spaced at 3/4 inch apart unless otherwise required.
5. Rear Blade Arrangement: alternate of face blade with same blade spacing. .
6. Frame: 1-1/4 inches wide.
7. Mounting: Wall with concealed screws.
8. Damper Type: None.
9. Accessories: Front-blade gang operator.

D. Round Ceiling Diffuser :

1. Material: Steel or Aluminum.
2. Finish: Baked enamel, white or Anodized aluminum to match existing
3. Dampers: none.

2.03 RETURN, TRANSFER AND EXHAUST AIR INLETS

A. Perforated Face Ceiling Grille - CR:

1. Titus model PAR.
2. Material: Steel.
3. Finish: Baked enamel, white.
4. Face Arrangement: Perforated core.
5. Panel Size: 24" x 24".
6. Mounting: Lay-in T-bar.
7. Damper: None.
8. Accessories: Square to round neck adaptor, if needed.
9. For hard ceilings, provide surface mounting face border type 1. Panel size not required.

B. Fixed Face Wall Grille or Register – TG & SWE (if needed on project):

1. Titus model 350RL.
2. Material: Steel, or Stainless steel.
3. Finish: Baked enamel, white. Or Stainless steel, mill.
4. Face Blade Arrangement: Fixed horizontal or vertical to suit installation at 3/4 inch apart at 35° angle.
5. Rear Blade Arrangement: alternate of face blade with same blade spacing. .
6. Frame: 1-1/4 inches wide.
7. Mounting: Wall with concealed screws.
8. Damper Type: none.

C. Eggcrate Ceiling Grille - TG & EG (if needed on project):

1. Titus model 50F.
2. Material: Aluminum.
3. Finish: Natural anodized.
4. Face: ½" x ½" x ½" grid.
5. Panel Size: 24" x 24".
6. Mounting: Lay-in T-bar.
7. Damper: none. .
8. Accessories: Square to round neck adaptor, if needed.
9. For hard ceilings, provide plaster frame with concealed screws. Panel size not required.

D. Adjustable Bar Grille or Register:

1. Material: Steel, Aluminum, Stainless steel.

2. Mounting Frame: Filter.
3. Mounting: Concealed.
4. Damper Type: only for registers, opposed blade.

2.04 THERMALLY POWERED VAV DIFFUSERS

A. Manufacturers:

1. Acutherm Therma-Fuser model TF-HC
2. Or equal.

B. Thermally powered heating and cooling VAV diffusers shall be a complete VAV terminal and thermostat self-contained in a nominal 2’ X 2’ diffuser. They shall be thermally powered with one room thermostat/actuator and one changeover thermostat/actuator. Provide with white baked enamel finish.

2.05 LINEAR SLOT OUTLETS

A. Linear Bar Grille or Diffuser (Replacement Only match existing specifications, no new Linear slot outlets unless approved by University) :

B. Linear Slot Diffuser (Replacement Only match existing specifications, no new Linear slot outlets unless approved by University)

2.06 SOURCE QUALITY CONTROL

A. Verification of Performance: Rate diffusers, registers, and grilles according to ASHRAE 70, "Method of Testing for Rating the Performance of Air Outlets and Inlets."

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas where diffusers, registers, and grilles are to be installed for compliance with requirements for installation tolerances and other conditions affecting performance of equipment.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install diffusers, registers, and grilles level and plumb.

B. Ceiling-Mounted Outlets and Inlets: Drawings indicate general arrangement of ducts, fittings, and accessories. Air outlet and inlet locations have been indicated to achieve design requirements for air volume, noise criteria, airflow pattern, throw, and pressure drop. Make final locations where indicated, as much as practicable. For units installed in lay-in ceiling panels, units shall be furnished with metal panel. Where architectural features or other items conflict with installation, notify the University’s Representative for a determination of final location.

C. Install diffusers, registers, and grilles with airtight connections to ducts and to allow service and maintenance of dampers, air extractors, and fire dampers.

D. Provide stainless steel exhaust grilles in showers, dark rooms, sterilizer area, glass wash areas, and other moisture areas.

E. Provide outlets with gaskets and install so that there will be no streaking of the walls or ceilings due to leakage.

F. Furnish diffusers, registers, and grilles with an electrostatically applied finish including heads of screw or concealed screws.

G. Grilles and diffusers shall match qualities, including appearance, throw, noise level, adjustability, etc.

H. Locations of diffusers, registers and grilles shall be coordinated as not to interfere with light fixtures and sprinkler heads and also be located in accordance with the following:

1. Supply and return grilles shall create efficient cross ventilation in the room.
2. Exhaust grilles in restrooms shall be located near water closets.
3. Transfer air inlets in restrooms shall be located as farthest from exhaust grille.
4. Airflow within the room shall minimize the effects of door operation.
5. Return grilles shall be located near windows to offset heat gain/loss.

I. Air Distribution within the laboratories is critical. Supply diffusers shall be positioned such that air discharge does not affect the operation of the fume hoods. The terminal velocity shall not exceed 50 fpm at 2 feet from the face of any fume hood and 50 fpm at 6 feet above the floor. Provide a laminar flow ceiling panel if these requirements can be meet with design layout.

J. Dampers in ceiling diffusers are a source of noise and shall not be provided. Provide volume damper upstream to balance airflow. Provide remote damper actuators where diffusers are installed in hard-lids or other areas where accessing damper may be difficult.

K. Air throw from supply air diffusers shall not be directed towards the face of laboratory hoods. Re-orient the throw on existing diffusers where necessary for remodeling projects.

L. Grilles, registers and diffusers shall be selected to perform without distracting noise. Throw, drop, and NC values shall be analyzed during design layout.

M. Painting inside of ducts behind grilles is prohibited to avoid any IAQ issues.

3.03 ADJUSTING

A. After installation, adjust diffusers, registers, and grilles to air patterns indicated, or as directed, before starting air balancing.

END OF SECTION

SECTION 23 7413

ROOFTOP AIR CONDITIONERS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes the following rooftop air conditioners:

1. Cooling and heating units larger than 20 tons.

B. Related Sections include the following:
1. Division 23 Section “Instrumentation and Controls.
2. Division 23 Section “Vibration and Seismic Controls for HVAC”, for fan systems, and roof curb system.

1.02 SUBMITTALS

A. Product Data: Include manufacturer's technical data for each model indicated, including rated capacities, dimensions, required clearances, characteristics, furnished specialties, and accessories.

1. Product data: shall indicate dimensions, weights, capacities, ratings, fan performance, motor electrical characteristics and efficiency, gages and finishes of materials.
2. Shop drawings shall include assembly, unit dimensions, weight loading, required clearances, construction details, field connection details, and electrical characteristics and connection requirements, location of access doors, size of access doors, service light locations, arrangement of unit sections, duct size and connection location.
3. Provide manufacturer’s typical performance rating table or chart for each fan.
4. Provide fan curves clearly plotted and operating point showing cubic feet per minute, static pressure, efficiency, and horsepower for both present and future design points of operation and at maximum of present and future design cfm and 110% of design static pressure.
5. Submit sound power levels in each octave band for fan and at entrance and discharge of AHU at both present and future scheduled conditions. Include sound attenuator capacities if internal to unit and itemized internal component attenuation.
6. Submit itemized list of specified and unspecified internal AHU pressure losses at present and future conditions. Determine total fan static pressure, including external static pressure, AHU including total, inlet discharge pressures losses and dirty filters.
7. Submit certification that each coil meets or exceeds the design capacities.

B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection. Prepare the following by or under the supervision of a qualified professional engineer:

1. Design Calculations: Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
2. Detail mounting, securing, and flashing of roof curb to roof structure. Indicate coordinating requirements with roof membrane system.
3. Wiring Diagrams: Power, signal, and control wiring.

C. Manufacturer Seismic Qualification Certification: Submit certification that rooftop air conditioners, accessories, and components will withstand seismic forces defined in Division 23 Section "Mechanical Vibration and Seismic Controls for HVAC." Include the following:

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.

   a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."

2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

D. Field quality-control test reports.

E. Operation and Maintenance Data: For rooftop air conditioners to include in emergency, operation, and maintenance manuals.

F. Warranties: Special warranties specified in this Section.

1.03 QUALITY ASSURANCE

A. Fabricate and label refrigeration system to comply with ASHRAE 15, "Safety Code for Mechanical Refrigeration."

B. Energy-Efficiency Ratio and Coefficient of Performance: Equal to or greater than prescribed by ASHRAE 90.1, "Energy Efficient Design of New Buildings except Low-Rise Residential Buildings."

C. Comply with NFPA 54 for gas-fired furnace section.

D. Exterior Finish: Exterior finish shall withstand salt spray testing as prescribed in ASTM B117 Operating Salt Spray (Fog) Apparatus.

1.04 COORDINATION

A. Coordinate size, location, and installation of rooftop air-conditioner manufacturer's roof curbs and equipment supports with roof installer, and structural steel contractor.

1.05 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to replace components of rooftop air conditioners that fails in materials or workmanship within specified warranty period.

1. Warranty Period for Compressors: Manufacturer's standard, but not less than four years from date of Substantial Completion.

1.06 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Bearings: One set of supply fan bearings.
2. Bearings: One set of return fan bearings.

PART 2 - PRODUCTS

2.01 ROOFTOP AIR CONDITIONERS

A. Manufacturers:
1. York
2. Carrier
3. Trane
4. Or equal.

B. Description: Factory assembled and tested; designed for exterior installation; consisting of compressor, indoor and outside refrigerant coils, blow or draw-through supply fan, return fan, condenser fans, roof-curb, VFD’s, refrigeration and temperature controls, filters, and dampers.

C. Base: Corrosion resistant structural steel base, with two coats of rust inhibiting primer and two coats of epoxy paint or galvanized steel construction.

D. Casing: Manufacturer's standard 2” thick insulated double-wall G-90 galvanized sheet metal construction with non-chalking powdered paint finish, 2-inch thick insulated hinged access doors. Casing requirements:
1. Roof: the roof shall be sloped away from the access doors, and shall have raised seams to avoid low points.
2. Insulation: 1-1/2-pound per cubic foot density fiberglass insulation, conforming to NFPA 90A flame spread and smoke generation.
3. Finish: Dry Powder – baked polyester coated for a minimum of 750 hours salt spray resistance test.
4. Accessories: Unit shall have knockouts for electrical and piping connections, exterior condensate drain connection, and lifting lugs.

E. Supply Fan, and Return Fan: Airfoil, centrifugal plug fan, belt driven.:

1. Wheel: Fan wheel shall be double inlet type with forward curve blades, dynamically balanced to operate smoothly throughout the entire range of operation. Airflow design shall be constant volume. Bearings shall be sealed and permanently lubricated.

F. Condenser Fan: Propeller type, directly driven by permanently lubricated motor and aluminum fan blades.

G. Evaporator and Condenser Refrigerant Coils: Aluminum fin and seamless copper tube in stainless steel casing with equalizing-type vertical distributor and thermal expansion valve; pressure tested to 450 psig and leak tested to 150 psig with air under water. Insulate coil section. Provide stainless-steel drain pan under indoor coil.

H. Refrigeration System:

1. Outside coil and fan.
2. Indoor coil and fan.
3. Expansion valves with replaceable thermostatic elements.
4. Refrigerant dryers.
5. High-pressure switches.
6. Low-pressure switches.
7. Thermostats for coil freeze-up protection during low-ambient temperature operation or loss of air.
8. Independent refrigerant circuits.
9. Service gauges for both suction and discharge lines.
10. Full charge of "CFC-free" environmentally friendly refrigerant.
11. Timed Off Control: Automatic-reset control shuts compressor off after five minutes.
12. Refrigerant Circuits: Interlaced refrigerant-coil circuiting with circuit for each compressor.
13. Capacity Control: Multiple compressors, and modulating scroll compressors.
14. Compressor Motor Overload Protection: Manual reset.
15. Adjustable, Low-Ambient, and Head-Pressure Control: Designed to operate at temperatures as low as 0 deg F by cycling outside coil fans and controlling speed of last fan of each circuit.

I. Heat Exchanger: Stainless-steel or Aluminized Steel construction for natural-gas-fired burners with the following controls:

1. Redundant dual gas valve with manual shutoff.
2. Staged gas valves.

J. Outside-Air Damper: Linked damper blades, for 0 to 25 percent outside air, with fully modulating, spring-return damper motor and hood.

K. Economizer: Return, relief, and outside-air dampers with neoprene seals.

1. Damper Motor: Fully modulating spring return with adjustable minimum position.

2. Control: Electronic-control system uses outside-air enthalpy to adjust mixing dampers.

L. Power Connection: Provide for single connection of power to unit with externally mounted disconnect switch accessible from outside unit and control-circuit transformer with built-in circuit breaker.

M. Unit Controls: Solid-state control board and components contain at least the following features:
1. Unit shall be complete with self-contained low-voltage control circuit protected by a resettable circuit breaker on the 24-volt transformer side Default control to ensure proper operation after power interruption.
2. Unit shall incorporate a lockout circuit which provides reset capability at the space thermostat or base unit, should any of the following standard safety devices trip and shut off compressor Unit diagnostics and diagnostic code storage.
3. Loss-of-charge/Low-pressure switch. (1) High-pressure switch, (2) Freeze-protection thermostat, evaporator coil. If any of the above safety devices trip, a LED (light-emitting diode) indicator shall flash a diagnostic code that indicates which safety switch has tripped.
4. Unit shall incorporate "AUTO RESET" compressor over temperature, over current protection.
5. Unit shall operate with conventional thermostat designs and have a low voltage terminal strip for easy hook-up .
6. Unit control board shall have on-board diagnostics and fault code display .
7. Standard controls shall include anti-short cycle and low voltage protection, and permit cooling operation down to 0 °F .
8. Control board shall monitor each refrigerant safety switch independently .
9. Control board shall retain last 5 fault codes in non volatile memory, which will not be lost in the event of a power loss .

N. DDC Temperature Control: Install stand-alone control module providing link between unit controls and DDC temperature-control system. Control module shall be compatible with temperature-control system specified in Division 23 Section "Instrumentation and Controls."

O. Roof Curb: Steel with corrosion-protection coating, gasketing, insulation, and factory-installed wood nailer; complying with NRCA standards; minimum height of 14 inches, meeting seismic requirements.

P. Isolation Curb: Rigid upper and lower steel structure with vibration isolation springs having 2-inch static deflection and vertical and horizontal restraints.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install units level and plumb, maintaining manufacturer's recommended clearances Install according to ARI Guideline B.

B. Curb Support: Install roof curb on roof structure, level and secure, according to ARI Guideline B. Install and secure rooftop air conditioners on curbs and coordinate roof penetrations and flashing with roof construction. Secure units to curb support**,** per the recommendations of the rooftop unit manufacturer, complying with the seismic requirements of CBC.

C. Isolation Curb Support: Install units on isolation curbs according to NRCA's "Low-Slope Membrane Roofing Construction Details Manual," Illustration "Raised Curb Detail for Rooftop Air Handling Units and Ducts."

D. Install restrained vibration isolation roof-curb rails on roof structure according to NRCA's "Low-Slope Membrane Roofing Construction Details Manual," Illustration "Raised Curb Detail for Rooftop Air Handling Units and Ducts." Install and secure rooftop air conditioners on rails and coordinate roof penetrations and flashing with roof construction. Restrained isolation roof-curb rails are specified in Division 23 Section "Mechanical Vibration and Seismic Controls for HVAC."

3.02 CONNECTIONS

A. Piping installation requirements are specified in other Division 23 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to machine to allow service and maintenance.

1. Gas Piping: Comply with applicable requirements in Division 22 Section "Fuel Gas Piping." Connect gas piping to burner, full size of gas train inlet, and connect with union and shutoff valve with sufficient clearance for burner removal and service.

C. Duct installation requirements are specified in other Division 23 Sections. Drawings indicate the general arrangement of ducts. The following are specific connection requirements:

1. Install ducts to termination in roof curb.
2. Remove roof decking only as required for passage of ducts. Do not cut out decking under entire roof curb.
3. Connect supply ducts to rooftop unit with flexible duct connectors specified in Division 23 Section "Air Duct Accessories."
4. Terminate return-air duct through roof structure and insulate space between roof and bottom of unit with 2-inch- thick, acoustic duct liner.

D. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.

3.03 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections and to assist in field testing. Report results in writing.

B. Perform the following field quality-control tests and inspections and prepare test reports:

1. After installing rooftop air conditioners and after electrical circuitry has been energized, test units for compliance with requirements.
2. Inspect for and remove shipping bolts, blocks, and tie-down straps.
3. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

C. Remove malfunctioning units, replace with new units, and retest as specified above.

3.04 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

B. Complete installation and startup checks according to manufacturer's written instructions and do the following:

1. Inspect for visible damage to unit casing.
2. Inspect for visible damage to furnace combustion chamber.
3. Inspect for visible damage to compressor, air-cooled outside coil, and fans.
4. Inspect internal insulation.
5. Verify that labels are clearly visible.
6. Verify that clearances have been provided for servicing.
7. Verify that controls are connected and operable.
8. Verify that filters are installed.
9. Clean outside coil and inspect for construction debris.
10. Clean furnace flue and inspect for construction debris.
11. Connect and purge gas line.
12. Adjust vibration isolators.
13. Inspect operation of barometric dampers.
14. Lubricate bearings on fan.
15. Inspect fan-wheel rotation for movement in correct direction without vibration and binding.
16. Perform final field balance of fan wheels.
17. Start unit according to manufacturer's written instructions.

    a. Start refrigeration system.
    b. Complete startup sheets and attach copy with Contractor's startup report.

18. Inspect and record performance of interlocks and protective devices; verify sequences.
19. Operate unit for an initial period as recommended or required by manufacturer.
20. Perform the following operations for both minimum and maximum firing and adjust burner for peak efficiency. Adjust pilot to stable flame.

    a. Measure gas pressure on manifold.
    b. Measure combustion-air temperature at inlet to combustion chamber.

c. Measure flue-gas temperature at furnace discharge.
d. Perform flue-gas analysis. Measure and record flue-gas carbon dioxide and oxygen concentration.
e. Measure supply-air temperature and volume when burner is at maximum firing rate and when burner is off. Calculate useful heat to supply air.

21. Calibrate instrumentation devices.
22. Adjust and inspect high-pressure limits of fans.
23. Inspect outside-air dampers for proper stroke and interlock with return-air and relief dampers.
24. Start refrigeration system and measure and record the following:

    a. Coil leaving-air, dry- and wet-bulb temperatures.
    b. Coil entering-air, dry- and wet-bulb temperatures.
    c. Outside-air, dry-bulb temperature.
    d. Outside-air-coil, discharge-air, dry-bulb temperature.

25. Inspect controls for correct sequencing of cooling, mixing dampers, refrigeration, and normal and emergency shutdown.
26. Measure and record the following minimum and maximum airflows. Plot fan volumes on fan curve.

    a. Supply-air volume.
    b. Return-air volume.
    c. Relief-air volume.
    d. Outside-air intake volume.

27. Simulate maximum cooling demand and inspect the following:

    a. Compressor refrigerant suction and hot-gas pressures.
    b. Short circuiting of air through outside coil or from outside coil to outside-air intake.

28. Verify operation of remote panel, including pilot-light operation and failure modes. Inspect the following:

    a. High-limit heat exchanger.
    b. Warm-up for morning cycle.
    c. Freezestat operation.
    d. Economizer to limited outside-air changeover.
    e. Alarms.

29. After startup and performance testing, change filters, vacuum heat exchanger and cooling and outside coils, lubricate bearings, adjust belt tension, and inspect operation of power vents.

3.05 ADJUSTING

A. Adjust initial temperature and humidity set points.

B. Set field-adjustable switches and circuit-breaker trip ranges as indicated.

C. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to site outside normal occupancy hours for this purpose, without additional cost.

3.06 DEMONSTRATION

A. Engage a factory-authorized service representative to train University's maintenance personnel to adjust, operate, and maintain rooftop air conditioners.

***** END OF SECTION *****

SECTION 26 0500

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes the following:

1. Supporting devices for electrical components.
2. Electrical demolition.
3. Cutting and patching for electrical construction.

B. Related sections include the following:

1. Division 07 Section “Penetration Firestopping” for firestopping materials and requirements for penetrations through fire and smoke barriers.

1.02 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC (NFPA 70), Article 100, by a testing agency acceptable to the University, and marked for intended use.

B. Comply with CEC (NFPA 70).

1.03 COORDINATION

A. Coordinate chases, slots, inserts, sleeves, and openings with general construction work and arrange in building structure during progress of construction to facilitate the electrical installations that follow.

B. Sequence, coordinate, and integrate installing electrical materials and equipment for efficient flow of the Work. Coordinate installing large equipment requiring positioning before closing in the building.

C. Coordinate location of access panels and doors for electrical items that are concealed by finished surfaces. Access doors and panels are specified in Division 08 Section "Access Doors and Frames."

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
2. Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01 Section “Product Options and Substitutions”. Specific procedures must be followed before use of an unnamed product or manufacturer.

2.02 SUPPORTING DEVICES

A. Material: Cold-formed steel, with corrosion-resistant coating acceptable to the University.

B. Metal Items for Use Outdoors or in Damp Locations: Hot-dip galvanized steel.

C. Slotted-Steel Channel Supports: Flange edges turned toward web, and 9/16-inch- diameter slotted holes at a maximum of 2 inches O.C., in webs.

1. Channel Thickness: Selected to suit structural loading.
2. Fittings and Accessories: Products of the same manufacturer as channel supports.

D. Raceway and Cable Supports: Manufactured clevis hangers, riser clamps, straps, threaded C-clamps with retainers, ceiling trapeze hangers, wall brackets, and spring-steel clamps or click-type hangers.

E. Pipe Sleeves: ASTM A 53, Type E, Grade A, Schedule 40, galvanized steel, plain ends.

F. Cable Supports for Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug for non-armored electrical cables in riser conduits. Plugs have number and size of conductor gripping holes as required to suit individual risers. Body constructed of malleable-iron casting with hot-dip galvanized finish.

G. Expansion Anchors: Carbon-steel wedge or sleeve type.

H. Toggle Bolts: All-steel springhead type.

I. Powder-Driven Threaded Studs: Heat-treated steel. Not allowed within building with occupants except by prior approval, before installation, with the University‘s Representative.

2.03 TOUCHUP PAINT

A. For Equipment: Equipment manufacturer's paint selected to match installed equipment finish.

B. Galvanized Surfaces: Zinc-rich paint recommended by item manufacturer.

PART 3 - EXECUTION

3.01 ELECTRICAL EQUIPMENT INSTALLATION

A. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide the maximum possible headroom.

B. Materials and Components: Install level, plumb, and parallel and perpendicular to other building systems and components, unless otherwise indicated.

C. Equipment: Install to facilitate service, maintenance, and repair or replacement of components. Connect for ease of disconnecting, with minimum interference with other installations.

D. Right of Way: Give to raceways and piping systems installed at a required slope.

3.02 WIRING INSTALLATION

A. Install splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

B. Install wiring at outlets with at least 12 inches of slack conductor at each outlet.

C. Connect outlet and component connections to wiring systems and to ground. Tighten electrical connectors and terminals, according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.

3.03 ELECTRICAL SUPPORTING DEVICE APPLICATION

A. Damp Locations and Outdoors: Hot-dip galvanized materials, U-channel system components.

B. Dry Locations: Steel materials.

C. Support Clamps for PVC Raceways: Click-type clamp system.

D. Selection of Supports: Comply with manufacturer's written instructions.

E. Strength of Supports: Adequate to carry present and future loads, times a safety factor of at least four; minimum of 200-lb design load.

3.04 SUPPORT INSTALLATION

A. Install support devices to securely and permanently fasten and support electrical components.

B. Install individual and multiple raceway hangers and riser clamps to support raceways. Provide U-bolts, clamps, attachments, and other hardware necessary for hanger assemblies and for securing hanger rods and conduits.

C. Support parallel runs of horizontal raceways together on trapeze- or bracket-type hangers.

D. Size supports for multiple raceway installations so capacity can be increased by a 25 percent minimum in the future.

E. Support individual horizontal raceways with separate, malleable-iron pipe hangers or clamps.

F. Install 1/4-inch diameter or larger threaded steel hanger rods.

G. Arrange supports in vertical runs so the weight of raceways and enclosed conductors is carried entirely by raceway supports, with no weight load on raceway terminals.

H. Simultaneously install vertical conductor supports with conductors.

I. Separately support cast boxes that are threaded to raceways and used for fixture support. Support sheet-metal boxes directly from the building structure or by bar hangers. If bar hangers are used, attach bar to raceways on opposite sides of the box and support the raceway with an approved fastener not more than 24 inches from the box.

J. Install metal channel racks for mounting cabinets, panel boards; disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices unless components are mounted directly to structural elements of adequate strength.

K. Install sleeves for cable and raceway penetrations of concrete slabs and walls unless core-drilled holes are used. Install sleeves for cable and raceway penetrations of masonry and fire-rated gypsum walls and of all other fire-rated floor and wall assemblies. Install sleeves during erection of concrete and masonry walls.

L. Securely fasten electrical items and their supports to the building structure, unless otherwise indicated. Perform fastening according to the following unless other fastening methods are indicated:

1. Wood: Fasten with wood screws or screw-type nails.
2. Masonry: Toggle bolts on hollow masonry units and expansion bolts on solid masonry units.
3. New Concrete: Concrete inserts with machine screws and bolts.
4. Existing Concrete: Expansion bolts.
5. Instead of expansion bolts, threaded studs driven by a powder charge and provided with lock washers may be used in existing concrete when prior approval is received from the University's Representative.
6. Steel: Welded threaded studs or spring-tension clamps on steel.

    a. Field Welding: Comply with AWS D1.1.

7. Welding to steel structure may be used only for threaded studs, not for conduits, pipe straps, or other items.
8. Light Steel: Sheet-metal screws.
9. Fasteners: Select so the load applied to each fastener does not exceed 25 percent of its proof-test load.

3.05 FIRESTOPPING

A. Apply firestopping to cable and raceway penetrations of fire-rated floor and wall assemblies to achieve fire-resistance rating of the assembly. Firestopping materials and installation requirements are specified in Division 07 Section “Penetration Firestopping”.

3.06 DEMOLITION

A. Protect existing electrical equipment and installations indicated to remain. If damaged or disturbed in the course of the Work, remove damaged portions and install new products of equal capacity, quality, and functionality.

B. Accessible Work: Remove exposed electrical equipment and installations, indicated to be demolished, in their entirety.

C. Abandoned Work: Cut and remove buried raceway and wiring. When approval by the University’s Representative raceway can be abandoned in place a minimum of 4 inches below the surface of adjacent construction. Cap raceways and patch surface to match existing finish.

D. Remove demolished material from Project site.

E. Remove, store, clean, reinstall, reconnect, and make operational components indicated for relocation.

3.07 CUTTING AND PATCHING

A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces required to permit electrical installations. Perform cutting by skilled mechanics of trades involved.

B. Repair and refinish disturbed finish materials and other surfaces to match adjacent undisturbed surfaces. Install new fireproofing where existing fire stopping has been disturbed. Repair and refinish materials and other surfaces by skilled mechanics of trades involved.

3.08 FIELD QUALITY CONTROL

A. Inspect installed components for damage and faulty work, including the following:

1. Supporting devices for electrical components.
2. Concrete bases.
3. Electrical demolition.
4. Cutting and patching for electrical construction.

5. Touchup painting.

3.09 REFINISHING AND TOUCHUP PAINTING

A. Refinish and touch up paint. Paint materials and application requirements are specified in Division 09 Section "Interior Painting."

1. Clean damaged and disturbed areas and apply primer, intermediate, and finish coats to suit the degree of damage at each location.
2. Follow paint manufacturer's written instructions for surface preparation and for timing and application of successive coats.
3. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
4. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

3.10 CLEANING AND PROTECTION

A. On completion of installation, including outlets, fittings, and devices, inspect exposed finish. Remove burrs, dirt, paint spots, and construction debris.

B. Protect equipment and installations and maintain conditions to ensure that coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

***** END OF SECTION *****

SECTION 26 0501

MINOR ELECTRICAL DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes the following:

1. Electrical demolition.

B. Related sections include the following:

1. Section 26 0553 - Identification for Electrical Systems.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify field measurements and circuiting arrangements are as shown on Drawings.

B. Verify that abandoned wiring and equipment serve only abandoned facilities.

C. Demolition drawings are based on casual field observation and existing record documents.

D. Report discrepancies to Owner before disturbing existing installation.

E. Beginning of demolition means installer accepts existing conditions.

3.02 PREPARATION

A. Disconnect electrical systems in walls, floors, and ceilings to be removed.

B. Coordinate utility service outages with Owner.

C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use qualified personnel in such operations.

1. Obtain permission from Owner at least 72 hours before partially or completely disabling system.

3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

A. Remove, relocate, and extend existing installations to accommodate new construction.

B. Remove abandoned wiring to source of supply. Install pull rope and cap conduit ends.

C. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.

D. Remove abandoned wiring from underground conduits and install pull rope and conduit caps. Label abandoned conduits with "from and to" identifiers.

E. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.

F. Repair adjacent construction and finishes damaged during demolition and extension work. Repair of themed finishes shall match existing finish.

G. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.

H. Protect adjacent equipment during demolition.

I. Maintain existing emergency circuits and equipment to maintain power continuity.

3.04 CLEANING AND REPAIR

1. On completion of installation, including outlets, fittings, and devices, inspect exposed finish. Remove burrs, dirt, paint spots, and construction debris.

2. Protect equipment and installations and maintain conditions to ensure that coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

*****END OF SECTION*****

SECTION 26 0519

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes building wires and cables and associated connectors, splices, and terminations for wiring systems rated 600 V and less.

1.02 SUBMITTALS

A. Product Data: For each type of product indicated.

1.03 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC (NFPA 70), Article 100, by a testing agency acceptable to the University, and marked for intended use.

B. Comply with CEC (NFPA 70).

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.
2. Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01 Section “Product Options and Substitutions”. Specific procedures must be followed before use of an unnamed product or manufacturer.

2.02 CONDUCTORS AND CABLES

A. Manufacturers (Building Wire and Cable):

1. American Insulated Wire Corp.; a Leviton Company.
2. General Cable Corporation.
3. Southwire Company.
4. Or equal

B. Manufacturers (Control Cable):

1. Alpha.
2. Belden.
3. Or equal.

C. Manufacturers (MC cable):

1. AFC Cable Systems.
2. Southwire Company.
3. Or equal.

D. Refer to Part 3 "Conductor and Insulation Applications" Article for insulation type, cable construction, and ratings.

E. Conductor Material: Copper complying with ICEA S-95-658 / NEMA WC 70 Non-Shielded 0-2 kV Cables.

F. Conductor Insulation Types: Type THW, THHN-THWN, XHHW, UF, USE, and SO complying with NEMA WC 70.

G. Multi-Conductor Cable: Not allowed.

2.03 CONNECTORS AND SPLICES

A. Manufacturers:

1. AFC Cable Systems, Inc.
2. AMP Incorporated/Tyco International.
3. Hubbell/Anderson.
4. O-Z/Gedney; EGS Electrical Group LLC.
5. 3M Company; Electrical Products Division.
6. Or equal.

B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

PART 3 - EXECUTION

3.01 CONDUCTOR AND INSULATION APPLICATIONS

A. Feeders Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.

B. Exposed Branch Circuits, including in Crawlspaces: Type THHN-THWN, single conductors in raceway.

C. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.

D. Lighting Circuits Concealed in Ceiling, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.

E. Outdoors and below grade: Compression types with heat shrink style watertight splice covers. Raychem CTE series, T&B "Shrink-Kon" series or equal. Cables with multiple conductors shall include a waterproof housing with a non-hardening encapsulating material.

F. Fire Alarm Circuits: Type THHN-THWN, in raceway, Power-limited, fire-protective, signaling circuit cable.

G. Class 1 Control Circuits: Type THHN-THWN, in raceway.

H. Class 2 Control Circuits: Type THHN-THWN, in raceway.

3.02 INSTALLATION

A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.

B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not use oil, grease, graphite or similar substances. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

C. Use pulling means; including fish tape, cable, rope, and basket-weave wire/cable grips that will not damage cables or raceway. Pulling of large conductors in raceways shall be done with an approved cable pulling machine. Other methods such as block and tackle to install conductors are not acceptable.

D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.

E. Support cables according to Division 26 Section "Common Work Results for Electrical."

F. Seal around cables penetrating fire-rated elements according to Division 07 Section "Penetration Firestopping". Provide separate sleeves and/or fire barriers for cable fire wall penetration, unless cable is UL listed for the application.

G. Identify and color-code conductors and cables according to Division 26 Section "Common Work Results for Electrical". Identification for Electrical System. Color-coded conductor sleeves are not permitted."

H. Metal Clad (MC) Cable Installation Requirements:
   1. Not allowed.

3.03 CONNECTIONS

A. Provide steel with insulated throat cable connectors, OZ/Gedney AMC series or equivalent. Die cast or pressure cast fittings are not permitted.

B. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.

C. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

D. Wiring at Outlets: Install conductor at each outlet, with at least 12 inches of slack.

3.04 FIELD QUALITY CONTROL

A. Testing: Perform the following field quality-control testing:

1. After installing conductors and cables and before electrical circuitry has been energized, test for compliance with requirements.
2. Perform each electrical test and visual and mechanical inspection stated in NETA ATS, Section 7.3.1. Certify compliance with test parameters.

***** END OF SECTION *****

SECTION 26 0526

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes grounding of electrical systems and equipment. Grounding requirements specified in this Section may be supplemented by special requirements of systems described in other Sections.

1.02 SUBMITTALS

A. Product Data: None.

1.03 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC (NFPA 70), Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1. Comply with UL 467.

B. Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Grounding Conductors, Cables, Connectors, and Rods:

   a. Boggs, Inc.
   b. Chance/Hubbell.
   c. Copperweld Corp.
   d. Dossert Corp.
   e. Erico Inc.; Electrical Products Group.
   f. Framatome Connectors/Burndy Electrical.
   g. Hastings Fiber Glass Products, Inc.
   h. Heary Brothers Lightning Protection Co.
   i. Ideal Industries, Inc.
   j. ILSCO.
   k. Or equal.

B. Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01 Section "Product Options and Substitutions". Specific procedures must be followed before use of an unnamed product or manufacturer.

2.02 GROUNDING CONDUCTORS

A. For insulated conductors, comply with Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

B. Material: Copper.

C. Equipment Grounding Conductors: Insulated with green-colored insulation.

D. Grounding Electrode Conductors: Stranded cable.

E. Bare Copper Conductors: Comply with the following:

1. Solid Conductors: ASTM B 3.
2. Assembly of Stranded Conductors: ASTM B 8.
3. Tinned Conductors: ASTM B 33.

F. Copper Bonding Conductors: As follows:

1. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG copper conductor, 1/4 inch in diameter.
2. Bonding Conductor: No. 4 or No. 6 AWG, stranded copper conductor.
3. Bonding Jumper: Bare copper tape, braided bare copper conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
4. Tinned Bonding Jumper: Tinned-copper tape, braided copper conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.

2.03 CONNECTOR PRODUCTS

A. Comply with IEEE 837 and UL 467; listed for use for specific types, sizes, and combinations of conductors and connected items.

B. Bolted Connectors: Bolted-pressure-type connectors, or compression type.

C. Welded Connectors: Exothermic-welded type, in kit form, and selected per manufacturer's written instructions.

PART 3 - EXECUTION

3.01 APPLICATION

A. Use only copper conductors for both insulated and bare grounding conductors in direct contact with earth, concrete, masonry, crushed stone, and similar materials.

B. In raceways, use insulated equipment grounding conductors.

C. Exothermic-Welded Connections: Use for connections to structural steel and for underground connections, except those at test wells.

D. Equipment Grounding Conductor Terminations: Use bolted pressure clamps.

3.02 EQUIPMENT GROUNDING CONDUCTORS

A. Comply with CEC (NFPA 70), Article 250, for types, sizes, and quantities of equipment grounding conductors, unless specific types, larger sizes, or more conductors than required by CEC (NFPA 70) are indicated.

B. Install equipment grounding conductors in all feeders and circuits.

C. Install insulated equipment grounding conductor with circuit conductors for the following items, in addition to those required by NEC:

1. Feeders and branch circuits.
2. Receptacle circuits.
3. Single-phase motor and appliance branch circuits.
4. Three-phase motor and appliance branch circuits.
5. Flexible raceway runs.
6. Armored and metal-clad cable runs.

D. Air-Duct Equipment Circuits: Install an equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners and heaters. Bond conductor to each unit and to air duct.

E. Signal and Communication Systems: For telephone, alarm, voice and data, and other communication systems, provide No. 2 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.

1. Service and Central Equipment Locations and Wiring Closets: Terminate grounding conductor on a 1/4-by-2-by-12-inch grounding bus.
2. Terminal Cabinets: Terminate grounding conductor on cabinet grounding terminal.

F. Common Ground Bonding with Lightning Protection System: Bond electrical power system ground directly to lightning protection system grounding conductor at closest point to electrical service grounding electrode. Use bonding conductor sized same as system grounding electrode conductor, and install in conduit.

3.03 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Bonding Straps and Jumpers: Install so vibration by equipment mounted on vibration isolation hangers and supports is not transmitted to rigidly mounted equipment. Use exothermic-welded connectors for outdoor locations, unless a disconnect-type connection is required; then, use a bolted clamp. Bond straps directly to the basic structure taking care not to penetrate any adjacent parts. Install straps only in locations accessible for maintenance.

C. Metal Water Service Pipe: Provide insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes by grounding clamp connectors. Where a dielectric main water fitting is installed, connect grounding conductor to street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.

D. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with grounding clamp connectors.

E. Bond interior metal piping systems and metal air ducts to equipment grounding conductors of associated pumps, fans, blowers, electric heaters, and air cleaners. Use braided-type bonding straps.

3.04 CONNECTIONS

A. General: Make connections so galvanic action or electrolysis possibility is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.

1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer to order of galvanic series.
2. Make connections with clean, bare metal at points of contact.
3. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

B. Exothermic-Welded Connections: Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.

C. Equipment Grounding Conductor Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.

D. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.

E. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by connector manufacturer. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.

***** END OF SECTION *****

SECTION 26 0529

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes the following:

1. Hangers and supports for electrical equipment and systems.
2. Seismic restraints for electrical equipment and systems.

1.02 DEFINITIONS

A. CBC: California Building Code

B. EMT: Electrical metallic tubing.

C. IMC: Intermediate metal conduit.

D. RMC: Rigid metal conduit.

E. Seismic Restraint: A structural support element such as a metal framing member, a cable, an anchor bolt or stud, a fastening device, or an assembly of these items used to transmit seismic forces from an item of equipment or system to building structure and to limit movement of item during a seismic event.

1.03 SUBMITTALS

A. Product Data: Illustrate and indicate style, material, strength, fastening provision, and finish for each type and size of electrical support and seismic-restraint component used.

1.04 QUALITY ASSURANCE

A. Comply with seismic-restraint requirements in the California Building Code

B. Testing of Seismic Anchorage Devices: Comply with testing requirements in Part 3 and in Division 26 Section "Common Work Results for Electrical."

C. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.05 PROJECT CONDITIONS

A. Project Seismic Zone as Defined in the CBC: Zone 4.

B. Project Seismic Zone Factor as Defined in the CBC: Zone Factor 0.40.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
2. Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01 Section “Product Options and Substitutions”. Specific procedures must be followed before use of an unnamed product or manufacturer.

2.02 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed under this Project, with a minimum structural safety factor of five times the applied force.

B. Steel Slotted Support Systems: Comply with MFMA-3, factory-fabricated components for field assembly.

1. Manufacturers:

   a. Cooper B-Line; a division of Cooper Industries.
   b. ERICO International Corporation.
   c. Allied Support Systems; Power-Strut Unit.
   d. GS Metals Corp.
   e. Michigan Hanger Co., Inc.; O-Strut Div.
   f. National Pipe Hanger Corp.
   g. Thomas & Betts Corporation.
   h. Unistrut; Tyco International, Ltd.
   i. Wesanco, Inc.
   j. Or equal.

2. Finishes:

   a. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-3.
   b. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-3.
   c. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-3.

3. Channel Dimensions: Selected for structural loading and applicable seismic forces.

C. Raceway and Cable Supports: As described in NECA 1.

D. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

E. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.

F. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

G. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Powder-Actuated Fasteners: Shall not be used in University occupied areas and then only for non-seismic restraints.
2. Threaded-steel stud, for use in hardened Portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

   a. Manufacturers:

      1) Hilti, Inc.
      2) ITW Construction Products.
      3) MKT Fastening, LLC.
      4) Simpson Strong-Tie Co. Inc.
      5) Or equal.

3. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened Portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.

   a. Manufacturers:

      1) Cooper B-Line; a division of Cooper Industries.
      2) Empire Tool and Manufacturing Co., Inc.
      3) Hilti, Inc.
      4) ITW Construction Products.
      5) MKT Fastening, LLC.
      6) Powers Fasteners.
      7) Or equal.

4. Concrete Inserts: Steel or malleable-iron slotted-support-system units similar to MSS Type 18; complying with MFMA-3 or MSS SP-58.
5. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
6. Through Bolts: Structural type, hex head, high strength. Comply with ASTM A 325.
7. Toggle Bolts: All-steel springhead type.

8. Hanger Rods: Threaded steel.

2.03 SEISMIC-RESTRAINT COMPONENTS

A. Rated Strength, Features, and Application Requirements for Restraint Components: As defined in reports by an agency acceptable to the University.

1. Structural Safety Factor: Strength in tension, shear, and pullout force of components used shall be at least five times the maximum seismic forces to which they will be subjected.

B. Angle and Channel-Type Brace Assemblies: Steel angles or steel slotted-support-system components; with accessories for attachment to braced component at one end and to building structure at the other end.

C. Cable Restraints: ASTM A 603, zinc-coated, steel wire rope attached to steel or stainless-steel thimbles, brackets, swivels, and bolts designed for restraining cable service.

1. Manufacturers:

a. Amber/Booth Company, Inc.
b. Loos & Co., Inc.
c. Mason Industries, Inc.
d. Or equal.

2. Seismic Mountings, Anchors, and Attachments: Devices as specified in Part 2 "Support, Anchorage, and Attachment Components" Article, selected to resist seismic forces.
3. Hanger Rod Stiffener: Reinforcing steel angle clamped to hanger rod, of design recognized by an agency acceptable to the University**.** Retain both subparagraphs below for projects subject to seismic design requirements; delete if bushing requirements are included in details or charts on Drawings.
4. Bushings for Floor-Mounted Equipment Anchors: Neoprene units designed for seismically rated rigid equipment mountings, and matched to type and size of anchor bolts and studs used.
5. Bushing Assemblies for Wall-Mounted Equipment Anchorage: Assemblies of neoprene elements and steel sleeves designed for seismically rated rigid equipment mountings, and matched to type and size of attachment devices used.

PART 3 - EXECUTION

3.01 APPLICATION

A. Comply with NECA 1 for application of hangers and supports for electrical equipment and systems, except if requirements in this Section are stricter.

B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, and RMC as scheduled in NECA 1, where Table 1 lists maximum spacing less than stated in. Minimum rod size shall be 1/4 inch in diameter.

C. For individual conduit runs not directly fastened to the structure, use rod hangers.

D. Arrange conduit supports to prevent distortion of alignment by wire pulling operations. Fasten conduit using galvanized straps, lay-in adjustable hangers, clevis hangers, or bolted split galvanized hangers.

E. Do not fasten conduit with wire or perforated pipe straps. Remove wire used for temporary conduit support during construction before conductors are pulled. Do not use ceiling wire to support conduit.

F. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits. Supports should be spaced for maximum deflection of conduit not greater than 1/8".

1. Secure raceways and cables to trapeze member with clamps approved for application by an agency acceptable to the University.

3.02 SUPPORT AND SEISMIC-RESTRAINT INSTALLATION

A. Comply with NECA 1 for installation requirements, except as specified in this Article.

B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, RMC may be supported by openings through structure members, as permitted in CEC (NFPA 70).

C. Install seismic-restraint components using methods approved by the evaluation service providing required submittals for component.

D. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.03 INSTALLATION OF SEISMIC-RESTRAINT COMPONENTS

A. Install bushing assemblies for anchor bolts for floor-mounted equipment, arranged to provide resilient media between anchor bolts and mounting hole in concrete base.

B. Install bushing assemblies for mounting bolts for wall-mounted equipment, arranged to provide resilient media where equipment or equipment-mounting channels are attached to wall.

C. Restraint Cables: Provide slack within maximums recommended by manufacturer.

D. Attachment to Structure: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, upper truss chords of bar joists, or at concrete members.

E. Provide raceway fixtures and equipment systems with appropriate longitudinal and cross bracing to satisfy Seismic Zone 4 requirements.

***** END OF SECTION *****

SECTION 26 0533

RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

B. Related Sections include the following:
1. Division 07 Section “Penetration Firestopping” for firestopping materials and installation at penetrations through walls, ceilings, and other fire rated elements.
2. Division 26 Section "Hangers and Supports for Electrical Systems" for seismic restraints and bracing of raceways, boxes, enclosures, and cabinets.
3. Division 26 Section "Wiring Devices" for devices installed in boxes and for floor-box service fittings.

1.02 DEFINITIONS

A. EMT: Electrical Metallic Tubing.

B. ENT: Electrical Non-metallic Tubing.

C. FMC: Flexible Metal Conduit.

D. IMC: Intermediate Metal Conduit.

E. LFMC: Liquid-Tight Flexible Metal Conduit.

F. LFNC: Liquid-Tight Flexible Non-metallic Conduit.

G. RGS: Rigid Galvanized Steel Conduit.

H. RNC: Rigid Nonmetallic Conduit

1.03 SUBMITTALS

A. Product Data: For surface raceways, wireways and fittings.

1.04 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

1.05 COORDINATION

A. Coordinate layout and installation of raceways, boxes, enclosures, cabinets, and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.
2. Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01 Section “Product Options and Substitutions”. Specific procedures must be followed before use of an unnamed product or manufacturer.

2.02 METAL CONDUIT AND TUBING

A. Manufacturer**s**:

1. AFC Cable Systems, Inc.
2. Alflex Inc.
3. Anamet Electrical, Inc.; Anaconda Metal Hose.
4. Electri-Flex Co.
5. Grinnell Co./Tyco International; Allied Tube and Conduit Div.
6. LTV Steel Tubular Products Company.
7. Manhattan/CDT/Cole-Flex.
8. O-Z Gedney; Unit of General Signal.
9. Wheatland Tube Co.
10. Or equal.

B. Rigid Galvanized Steel Conduit (RGS): ANSI C80.1.

C. Plastic-Coated Steel Conduit and Fittings: NEMA RN 1.

D. EMT and Fittings: ANSI C80.3.

1. Fittings: Compression type, Set Screw not allowed.

E. FMC: Zinc-coated steel.

F. LFMC: Flexible steel conduit with PVC jacket.

G. Fittings: NEMA FB 1; compatible with conduit and tubing materials.

2.03 METAL WIREWAYS

A. Manufacturer**s**:

1. Hoffman.
2. Square D.
3. Or equal.

B. Material and Construction: Sheet metal sized and shaped as indicated, NEMA 1 and 3R.

C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

D. Select features, unless otherwise indicated, as required to complete wiring system and to comply with NFPA 70.

E. Wireway Covers: Screw-cover type.

F. Finish: Manufacturer's standard enamel finish.

2.04 BOXES, ENCLOSURES, AND CABINETS

A. Manufacturer**s**:

1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
2. Emerson/General Signal; Appleton Electric Company.
3. Erickson Electrical Equipment Co.
4. Hoffman.
5. Hubbell, Inc.; Killark Electric Manufacturing Co.
6. O-Z/Gedney; Unit of General Signal.
7. RACO; Division of Hubbell, Inc.
8. Robroy Industries, Inc.; Enclosure Division.
9. Scott Fetzer Co.; Adalet-PLM Division.
10. Spring City Electrical Manufacturing Co.
11. Thomas & Betts Corporation.
12. Walker Systems, Inc.; Wiremold Company (The).
13. Woodhead, Daniel Company; Woodhead Industries, Inc. Subsidiary.
14. Or equal

B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.

C. Cast-Metal Outlet and Device Boxes: NEMA FB 1, Type FD, with gasketed cover.

D. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

E. Cast-Metal Pull and Junction Boxes: NEMA FB 1, cast aluminum with gasketed cover.

F. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous hinge cover and flush latch.

1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.

G. Cabinets: NEMA 250, Type 1, galvanized steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel. Hinged door in front cover with flush latch and concealed hinge. Key latch to match panelboards. Include metal barriers to separate wiring of different systems and voltage and include accessory feet where required for freestanding equipment.

2.05 FACTORY FINISHES

A. Finish: For raceway, enclosures, or cabinet components, provide manufacturer's standard prime-coat finish ready for field painting.

B. Finish: For raceway, enclosures, or cabinet components, provide manufacturer's standard paint applied to factory-assembled surface raceways, enclosures, and cabinets before shipping.

PART 3 - EXECUTION

3.01 RACEWAY APPLICATION

A. Outdoors: Apply Raceways products as specified below, unless otherwise indicated:

1. Exposed: RGS or IMC is acceptable for 600V or Below.
2. Concealed, Above ground: EMT, RGS or IMC.
3. Underground, Single Run: RNC.
4. Underground, Grouped: RNC.
5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
6. Boxes and Enclosures: NEMA 250, Type 3R.

B. Indoors: Comply with the following applications, unless otherwise indicated:

1. Exposed, Not Subject to Physical Damage: EMT
2. Exposed, Not Subject to Severe Physical Damage: EMT
3. Exposed, Subject to Severe Physical Damage: RGS
4. Exposed, Include Raceways in the following Locations: RGS
   a. Loading Docks.
   b. Corridors used for traffic or mechanized carts, forklifts, and pallet handling Units.

c. Mechanical Rooms.
d. Hazardous/Corrosive Locations.

5. Concealed in Ceilings and Interior Walls and Partitions: EMT
6. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC; except use LFMC in damp or wet locations.
7. Damp or Wet Locations: RGS
8. Raceways for Signal System or Communications Cable in spaces for Environmental Air: Plenum-Type, Signal System/Communications Cable Raceways and/or EMT
9. Raceways for Signal System or Communications Cable Risers in Vertical Shafts: Riser-Type, Signal System/Communications Cable Raceways and/or EMT
10. Raceways for concealed general purpose distribution for Signal System or Communications Cable: General-Use, Signal System /Communications Cable raceway [Riser-Type, Signal System/Communications Cable raceways; Plenum-Type, Signal System/Communications Cable raceways], and/or EMT
11. Boxes and Enclosures: NEMA 250, Type 1, except in damp or wet locations, use NEMA 250, Type 4, Stainless Steel.

C. Minimum Raceway Size Indoors: 3/4-inch trade size.

D. Minimum Raceway Size Underground: 1-inch trade size.

E. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.
2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings approved for use with that material. Patch all nicks and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer.

F. Install nonferrous conduit or tubing for circuits operating above 60 Hz. Where aluminum raceways are installed for such circuits and pass through concrete, install in nonmetallic sleeve.

3.02 INSTALLATION

A. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

B. Complete raceway installation before starting conductor installation.

C. Support raceways as specified in Division 26 Section "Hangers and Supports for Electrical Systems."

D. Install temporary closures to prevent foreign matter from entering raceways.

E. Protect stub-ups from damage where conduits rise through floor slabs. Arrange so curved portions of bends are not visible above the finished slab.

F. Make bends and offsets so ID is not reduced. Keep legs of bends in the same plane and keep straight legs of offsets parallel, unless otherwise indicated.

G. Install NO more than the equivalent of (3) three 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed.

H. Concealed Raceways:

1. Conceal conduits and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
2. Install concealed raceways with a minimum of bends in the shortest practical distance, considering type of building construction and obstructions, unless otherwise indicated.

I. Raceways Embedded in Slabs:

1. Install in middle 1/3 of slab thickness where practical and leave at least 2 inches of concrete cover.
2. Secure raceways to reinforcing rods to prevent sagging or shifting during concrete placement.
3. Space raceways laterally to prevent voids in concrete.
4. Run conduit larger than 1-inch trade size parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
5. Change from nonmetallic tubing to Schedule 80 nonmetallic conduit, RGS, or IMC before rising above the floor.

J. Install exposed raceways parallel or at right angles to nearby surfaces or structural members and follow surface contours as much as possible.

1. Run parallel or banked raceways together on common supports.
2. Make parallel bends in parallel or banked runs. Use factory elbows only where elbows can be installed parallel; otherwise, provide field bends for parallel raceways.

K. Join raceways with fittings designed and approved for that purpose and make joints tight.

1. Use insulating bushings to protect conductors.

L. Tighten set screws of thread less fittings with suitable tools.

M. Threaded Conduit Joints, exposed to wet, damp, corrosive, or outdoor conditions: Apply compound to threads of raceways and fittings before making up joints. Follow compound's manufacturers written instructions.

N. Terminations:

1. Where raceways are terminated with locknuts and bushings, align raceways to enter squarely and install locknuts with dished part against box. Use two locknuts, one inside and one outside box.
2. Where raceways are terminated with threaded hubs, screw raceways or fittings tightly into hub so end bears against wire protection shoulder. Where chase nipples are used, align raceways so coupling is square to box; tighten chase nipple so no threads are exposed.
3. Where raceway terminations are subjected to moisture or vibration: use insulating bushing to protect conductors, including conductors smaller than No. 4 AWG.

O. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire.

P. Signal System or Communications Cable: Install Raceways, metallic and nonmetallic, rigid and flexible, as follows:

1. 2-Inch Trade Size and Smaller: Install raceways in maximum lengths of 150 feet.
2. 1-Inch Trade Size and Smaller: Install raceways in maximum lengths of 75 feet.
3. 3/4-Inch Trade Size and Smaller: Install raceways in maximum lengths of 50 feet.
4. Install with a maximum of two 90-degree bends or equivalent for each length of raceway unless drawing show stricter requirements. Separate lengths with pull or junction boxes or terminations at distribution frames or cabinets where necessary to comply with these requirements.

Q. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2. Where otherwise required by NFPA 70.

R. Stub-up Connections: Extend conduits through concrete floor for connection to freestanding equipment. Install with an adjustable top or coupling threaded inside for plugs set flush with finished floor. Extend conductors to equipment with rigid steel conduit; FMC may be used 6 inches above the floor. Install screwdriver-operated, threaded plugs flush with floor for future equipment connections.

S. Expansion-Joint Fittings for RNC: Install in each run of aboveground conduit that is located where temperature change may exceed 30 degrees F, and that has a straight-run length that exceeds 25 feet.

1. Install expansion-joint fittings for each of the following locations, and provide type and quantity of fittings that accommodate temperature change listed for location:
    a. Outdoor Locations Not Exposed to Direct Sunlight: 125 degrees F temperature change.

b. Outdoor Locations Exposed to Direct Sunlight: 155 degrees F temperature change.
c. Indoor Spaces: Connected with the outdoors without physical separation, 125 degrees F temperature change.
d. Attics: 135 degrees F temperature change.

2. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per degree F of temperature change.
3. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer’s written instructions for conditions at specific location at the time of installation.

T. Flexible Connections: Use maximum of 72 inches of flexible conduit for recessed and semi recessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement; and for all motors. Install separate ground conductor across flexible connections.
1. Use LFMC in damp or wet locations subject to severe physical damage.
2. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.

U. Surface Raceways: Install a separate, green, ground conductor in raceways from junction box supplying raceways to receptacle or fixture ground terminals.

V. Install hinged-cover enclosures and cabinets plumb. Support at each corner.

3.03 PROTECTION

A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

3.04 CLEANING

A. After completing installation of exposed, factory-finished raceways and boxes, inspect exposed finishes and repair damaged finishes.

***** END OF SECTION *****

SECTION 26 0548

VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes seismic restraints and other earthquake-damage-reduction measures for electrical components. It complements optional seismic construction requirements in the various electrical component Sections.

1.02 DEFINITIONS

A. CBC: California Building Code.

B. Seismic Restraint: A fixed device used to prevent vertical or horizontal movement, or both vertical and horizontal movement, of an electrical system component during an earthquake.

C. Mobile Structural Element: A part of the building structure such as a slab, floor structure, roof structure, or wall that may move independent of other mobile structural elements during an earthquake.

1.03 SUBMITTALS

A. Product Data: Illustrate and indicate types, styles, materials, strength, fastening provisions, and finish for each type and size of seismic restraint component used.

1.04 QUALITY ASSURANCE

A. Comply with seismic restraint requirements in California Building Code/Code of Regulations, unless requirements in this Section are more stringent.

1.05 PROJECT CONDITIONS

A. Project Seismic Zone and Zone Factor as Defined in CBC: Zone 4, Zone Factor 0.40.

B. Occupancy Category as Defined in CBC: I=1.0 standard occupancy.

C. Acceleration Factor: 8 Km from seismic source B.

D. Soil profile Type SC.

E. For additional criteria, see Structural Drawings.

1.06 COORDINATION

A. Coordinate layout and installation of seismic bracing with building structural system and architectural features, and with mechanical, fire-protection, electrical, and other building features in the vicinity.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. B-Line Systems, Inc.
2. Erico, Inc.
3. Powerstrut.
4. Thomas & Betts Corp.
5. Unistrut Corporation.
6. Or equal.

B. Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01 Section “Product Options and Substitutions”. Specific procedures must be followed before use of an unnamed product or manufacturer.

2.02 MATERIALS

A. Use the following materials for restraints:

1. Indoor Dry Locations: Steel, zinc plated.
2. Outdoors and Damp Locations: Galvanized steel.
3. Corrosive Locations: Stainless steel.

2.03 ANCHORAGE AND STRUCTURAL ATTACHMENT COMPONENTS

A. Strength: Defined in reports by ICBO Evaluation Service or another agency acceptable to University’s Representative.

1. Structural Safety Factor: Strength in tension and shear of components used shall be at least two times the maximum seismic forces to which they will be subjected.

B. Concrete and Masonry Anchor Bolts and Studs: Steel-expansion wedge type.

C. Concrete Inserts: Steel-channel type.

D. Through Bolts: Structural type, hex head, high strength. Comply with ASTM A 325.

E. Welding Lugs: Comply with MSS SP-69, Type 57.

F. Beam Clamps for Steel Beams and Joists: Double sided. Single-sided type is not acceptable.

G. Bushings for Floor-Mounted Equipment Anchors: Neoprene units designed for seismically rated rigid equipment mountings, and matched to the type and size of anchor bolts and studs used.

H. Bushing Assemblies for Wall-Mounted Equipment Anchorage: Assemblies of neoprene elements and steel sleeves designed for seismically rated rigid equipment mountings, and matched to the type and size of attachment devices used.

2.04 SEISMIC BRACING COMPONENTS

A. Slotted Steel Channel: 1-5/8-by-1-5/8-inch cross section, formed from 0.1046-inch- thick steel, with 9/16-by-7/8-inch slots at a maximum of 2-inches O.C. in webs, and flange edges turned toward web.

1. Materials for Channel: ASTM A 570, GR 33.
2. Materials for Fittings and Accessories: ASTM A 575, ASTM A 576, or ASTM A 36.
3. Fittings and Accessories: Products of the same manufacturer as channels and designed for use with that product.
4. Finish: Baked, rust-inhibiting, acrylic-enamel paint applied after cleaning and phosphate treatment, unless otherwise indicated.

B. Channel-Type Bracing Assemblies: Slotted steel channel, with adjustable hinged steel brackets and bolts.

C. Cable-Type Bracing Assemblies: Zinc-coated, high-strength steel wire rope cable attached to steel thimbles, brackets, and bolts designed for cable service.

1. Arrange units for attachment to the braced component at one end and to the structure at the other end.
2. Wire Rope Cable: Comply with ASTM 603. Use 49 or 133-strand cable with a minimum strength of 2 times the calculated maximum seismic force to be resisted.

D. Hanger Rod Stiffeners: Slotted steel channels with internally bolted connections to hanger rod.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install seismic restraints according to applicable codes and regulations and as approved by the University’s Representative, unless more stringent requirements are indicated.

3.02 STRUCTURAL ATTACHMENTS

A. Use bolted connections with steel brackets, slotted channel, and slotted-channel fittings to spread structural loads and reduce stresses in accordance with the structural engineer of record approval.

B. Attachments to New Concrete: Bolt to channel-type concrete inserts or use expansion anchors.

C. Attachments to Existing Concrete: Use expansion anchors.

D. Holes for Expansion Anchors in Concrete: Drill at locations and to depths that avoid reinforcing bars.

E. Attachments to Solid Concrete Masonry Unit Walls: Use expansion anchors.

F. Attachments to Hollow Walls: Bolt to slotted steel channels fastened to wall with expansion anchors.

G. Attachments to Wood Structural Members: Install bolts through members.

H. Attachments to Steel: Bolt to clamps on flanges of beams or on upper truss chords of bar joists.

3.03 ELECTRICAL EQUIPMENT ANCHORAGE

A. Anchor rigidly to a single mobile structural element or to a concrete base that is structurally tied to a single mobile structural element.

B. Anchor panel boards, motor-control centers, motor controls, switchboards, switchgear, transformers, unit substations, fused power-circuit devices, transfer switches, busways, battery racks, static uninterruptible power units, power conditioners, capacitor units, communication system components, and electronic signal processing, control, and distribution units as follows:

1. Size concrete bases so expansion anchors will be a minimum of 10 bolt diameters from the edge of the concrete base.
2. Concrete Bases for Floor-Mounted Equipment: Use female expansion anchors and install studs and nuts after equipment is positioned.
3. Bushings for Floor-Mounted Equipment Anchors: Install to allow for resilient media between anchor bolt or stud and mounting hole in concrete.
4. Anchor Bolt Bushing Assemblies for Wall-Mounted Equipment: Install to allow for resilient media where equipment or equipment-mounting channels are attached to wall.
5. Torque bolts and nuts on studs to values recommended by equipment manufacturer.

3.04 SEISMIC BRACING INSTALLATION

A. Install bracing according to spacing and strengths indicated by approved analysis.

B. Expansion and Contraction: Install to allow for thermal movement of braced components.

C. Cable Braces: Install with maximum cable slack recommended by manufacturer.

D. Attachment to Structure: If specific attachment is not indicated, anchor bracing to the structure at flanges of beams, upper truss chords of bar joists, or at concrete members.

***** END OF SECTION *****

SECTION 26 0553

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Identification for raceways.
2. Identification of power and control cables.
3. Identification for conductors.
4. Equipment identification labels.

1.02 SUBMITTALS

A. Product Data: For each electrical identification product indicated.

1.03 QUALITY ASSURANCE

A. Comply with ANSI A13.1 and IEEE C2.

B. Comply with NFPA 70.

C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.

1.04 COORDINATION

A. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.

B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

C. Coordinate installation of identifying devices with location of access panels and doors.

D. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.01 MATERIALS

A. For fixture descriptions in other Part 2 articles where the subparagraph titles "Products," and "Manufacturers" introduce a list of manufacturers and their products or manufacturers only, the following requirements apply for product selection:

1. Products: Subject to compliance with requirements, provide one of the products specified in other Part 2 articles.
2. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified in other Part 2 articles.
3. Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01 Section “Product Options and Substitutions”. Specific procedures must be followed before use of an unnamed product or manufacturer.

2.02 POWER RACEWAY IDENTIFICATION MATERIALS

A. Colors for Raceways Carrying Circuits at 600 V or Less:

1. Black letters on an orange field
2. Legend: Indicate voltage and system or service type.

B. Colors for Raceways Carrying Circuits at More Than 600 V:

1. Black letters on an orange field.
2. Legend: "DANGER CONCEALED HIGH VOLTAGE WIRING" with 3-inch high letters on 20-inch centers.

C. Write-On Tags: Polyester tag, 0.015-inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.

1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.

2.03 ARMORED AND METAL-CLAD CABLE IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.

B. Colors for Raceways Carrying Circuits at 600 V and Less:

1. Black letters on an orange field
2. Legend: Indicate voltage and system or service type.

C. Colors for Raceways Carrying Circuits at More Than 600 V:

1. Black letters on an orange field.

2. Legend: "DANGER CONCEALED HIGH VOLTAGE WIRING" with 3-inch high letters on 20-inch centers.

D. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; 2-inches wide; compounded for outdoor use.

2.04 POWER AND CONTROL CABLE IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.

B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

C. Write-On Tags: Polyester tag, 0.015-inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.

1. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

D. Snap-Around, Color-Coding Bands: Slit, pre-tensioned, flexible, solid-colored acrylic sleeve, 2-inches long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

2.05 CONDUCTOR IDENTIFICATION MATERIALS

A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.

B. Snap-Around Labels: Slit, pre-tensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

C. Write-On Tags: Polyester tag, 0.015-inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.

1. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

2.06 EQUIPMENT IDENTIFICATION LABELS

A. Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting. White letters on a dark-gray background. Minimum letter height shall be 3/8 inch.

B. Stenciled Legend: In nonfading, waterproof, black ink or paint. Minimum letter height shall be 1 inch.

2.07 CABLE TIES

A. Plenum-Rated Cable Ties: Self-extinguishing, UV stabilized, one piece, self-locking.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 deg F According to ASTM D 638: 7000 psi.
3. UL 94 Flame Rating: 94V-0.
4. Temperature Range: Minus 50 to plus 284 deg F.
5. Color: Black.

2.08 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Paint: Comply with requirements in Division 09 painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location

B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Verify identity of each item before installing identification products.

B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

C. Apply identification devices to surfaces that require finish after completing finish work.

D. Secure nameplates to equipment fronts using screws, rivets or adhesive. Secure nameplate to inside face of recessed panel board doors in finished locations. Use weatherproof adhesive for outdoor installation. Do not use tape for nameplates or legend plates.

E. Lettering, Colors, and Graphics: Coordinate names, abbreviations, colors, and other designations with corresponding designations. Use consistent designations throughout project.

1. Based on the University's Electrical Equipment Numbering and Identification Scheme included in this section.

F. Self-Adhesive Identification Products: Clean surfaces before applying.

G. Install nameplates and labels parallel to equipment lines.

H. Color Coded Raceways: Junction Boxes for Fire Alarm System shall be red.

I. Caution Labels for Indoor Boxes and Enclosures for Power and Lighting: Install labels identifying system voltage with black letters on orange background. Install on exterior of door or cover.

J. Circuit Identification Labels on Receptacles:

1. Public View Areas (lobbies, atrium, etc.): Stencil circuit information on back of plate.
2. All Other Areas: Engraved or permanently stencil circuit information on front of plate.

K. Conduit installed below grade shall have underground hazard tape (non-adhesive) installed a minimum of 12 inches above the conduit or top layer of conduits in a duct bank. The tape shall be 6-inches wide and 4-millimeters thick yellow polyethylene for low voltage conduits and red for medium voltage conduits. The tape shall be marked "Caution Buried Electric Line" for low voltage and "Danger High Voltage Line" for medium voltage. Tracer wire shall be used for PVD conduits and non-metallic tape for metallic conduits. The tape shall be installed the entire length of conduit below grade.

L. Color-Coding of Secondary Phase Conductors: Use the following colors for service feeder and branch-circuit phase conductors. Wiring shall be color coded, see Division 26 "Low Voltage Electrical Power Conductors and Cables". Low voltage wire markers shall be adhering, preprinted, self-laminating vinyl wrap-around strips. Wire shall be marked with opposite end termination and shall include panel source and circuit numbers. Phasing shall be indicated by colored wire or tape. For other system voltages consult the University:

1. 208/120-V Conductors:

   a. Phase A: Black.
   b. Phase B: Red.
   c. Phase C: Blue.
   d. Switch Leg: Pink.
   e. Switch Traveler: Same as Hot Leg.

2. 480/277-V Conductors:

   a. Phase A: Brown.
   b. Phase B: Orange.
   c. Phase C: Yellow.
   d. Switch Leg: Purple
   e. Switch Traveler: Same as Hot Leg.

3. Neutral and Ground Conductors:

   a. Neutral: White.
   b. Ground: Green.

4. Factory apply color the entire length of conductors, except the following field-applied, color-coding methods may be used instead of factory-coded wire for sizes larger than No. 10 AWG:

   a. Colored, pressure-sensitive plastic tape in half-lapped turns for a distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Use 1-

inch- wide tape in colors specified. Adjust tape bands to avoid obscuring cable identification markings.

b. Colored cable ties applied in groups of three ties of specified color to each wire at each terminal or splice point starting 3 inches from the terminal and spaced 3 inches apart. Apply with a special tool or pliers, tighten to a snug fit, and cut off excess length.

M. Power-Circuit Identification: Brass tags wraparound marker bands for cables, feeders, and power circuits in vaults, pull and junction boxes, manholes, and switchboard rooms.

1. Legend: 1/4-inch steel letter and number stamping or embossing with legend corresponding to indicated circuit designations.
2. Tag Fasteners: Nylon cable ties.
3. Band Fasteners: Integral ears.

N. Apply identification to conductors as follows:

1. Multiple Power or Lighting Circuits in the Same Enclosure: Identify each conductor with source, voltage, circuit number, and phase. Use color-coding to identify circuits' voltage and phase.
2. Multiple Control and Communication Circuits in the Same Enclosure: Identify each conductor by its system and circuit designation. Use a consistent system of tags, color-coding, or cable marking tape.

O. Apply warning, caution, and instruction signs as follows:

1. Warnings, Cautions, and Instructions: Install to ensure safe operation and maintenance of electrical systems and of items to which they connect. Install engraved plastic-laminated instruction signs with approved legend where instructions are needed for system or equipment operation. Install metal-backed butyrate signs for outdoor items.
2. Emergency Operation: Install engraved laminated signs with white legend on red background with minimum 3/8-inch- high lettering for emergency instructions on power transfer, load shedding, and other emergency operations.

P. Equipment Identification Labels: Engraved plastic laminate. Install on each unit of equipment, including central or master unit of each system. This includes power, lighting, communication, signal, and alarm systems, unless units are specified with their own self-explanatory identification. Unless otherwise indicated, provide a single line of text with 1/2-inch- high lettering on 2” high label. Use black lettering on white field. Use white lettering on red field for emergency circuited equipment. Apply labels for each unit of the following categories of equipment using mechanical fasteners:

1. Panel boards, electrical cabinets, and enclosures.
2. Disconnect switches.
3. Enclosed circuit breakers.
4. Motor starters.
5. Control devices.

Q. Low Voltage Identification

1. Equipment nameplates shall be engraved three-layer laminated plastic with white background and black letters. Letters shall be 1/4" minimum size. Identifications shall match plan designations and based upon the University's Numbering Scheme.
2. Legend plates for control panels and indicators shall be provided on disconnect and safety switches and indicating lights. The plates shall be die-stamped metal with mounting hole and positioning key.
3. For panel board directories provide the following:

   a. Provide typewritten directories arranged in numerical order showing number of room in which each device is located.
   b. Verify room numbers to be used with the University's Representative prior to typing, since room numbers will most likely not be those shown on the drawings.
   c. Mount directories under a clear plastic cover inside each panelboard door.

4. The following low voltage equipment numbering scheme shall be followed:

TYPE	DESCRIPTION
DP	208/120V Distribution Panelboard
LP	208/120V Panelboard – Receptacles & Lighting
HDP	480/277V Distribution Panelboard
HLP	480/277 V Panelboard – Lighting
ATS	Automatic Transfer Switch
CB	Circuit Breaker
DS	Disconnect Switch
EDP	Emergency 208/120V Distribution Panelboard
ELP	Emergency 208/120V Panelboard
EHDP	Emergency 480/277V Distribution Panelboard
EMCC	Emergency Motor Control Center
MSB	Main Switchboard
MCC	Motor Control Center
T	Transformer
US	Unit Substation

5. Utilize numbering convention as follows:

   a. First letter or number = floor designation; B = basement, 1, 2, 3, etc. (B).
   b. Subsequent lower case letter = panel number on each floor; a, b, c, etc. (Ba).

1) Example: Emergency 277/480V Distribution panelboard installed in basement is “EHDP-B”.

***** END OF SECTION *****

SECTION 26 2726

WIRING DEVICES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes the following:

1. Duplex receptacles, ground-fault circuit interrupter receptacles.
2. Single- and double-pole snap switches.
3. Device wall plates.
4. Control and signal transformers.

1.02 DEFINITIONS

A. EMI: Electromagnetic interference.

B. GFCI: Ground-fault circuit interrupter.

C. UTP: Unshielded twisted pair.

1.03 SUBMITTALS

A. Product Data: For each type of product indicated.

1.04 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Occupancy sensors shall be manufactured by an ISO 9002 certified manufacturing facility and shall have a defect rate of less than 1/3 of 1 percent.

C. Source Limitations: Obtain each type of wiring device through one source from a single manufacturer.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC (NFPA 70), Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

E. Comply with CEC (NFPA 70).

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers:

Toggle switches and receptacles shall be of the same manufacturer. Only one manufacturer shall be used in a building. Subject to compliance with requirements, provide products by one of the following:

1. Wiring Devices:

   a. Bryant Electric, Inc./Hubbell Subsidiary.
   b. Hubbell Incorporated; Wiring Device-Kellems.
   c. Leviton Mfg. Company Inc.
   d. Pass & Seymour/Legrand; Wiring Devices Div.
   e. Acuity Controls - nLight
   f. Or equal.

Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01 Section “Product Options and Substitutions”. Specific procedures must be followed before use of an unnamed product or manufacturer.

2.02 RECEPTACLES

A. Straight-Blade-Type Receptacles: Comply with NEMA WD 1, NEMA WD 6, DSCC W-C-596G, and UL 498, “Decora or style line” type in white color.

B. Straight-Blade Receptacles: Specification grade/Institutional grade.

C. GFCI Receptacles: Straight blade, feed-through type, specification grade, with integral NEMA WD 6, Configuration 5-20R duplex receptacle; complying with UL 498 and UL 943. Design units for installation in a 2-3/4-inch- deep outlet box without an adapter.

2.03 SWITCHES

Minimum rating for all electrical contacts shall be 10 amps @ 125 volts AC. The switch used shall be a UL/CSA approved type, supplied with color coded spade leads. The switch assembly shall be modular, allowing for up to six district functions upon activation of the push button. The mounting shall employ a bayonet assembly, so that no set screws are required to secure the free spinning button.

A. Single- and Double-Pole Switches: Comply with DSCC W-C-896F and UL 20. “Decora or style line” type in white color.

B. Snap Switches: Heavy -Duty grade, quiet type.

2.04 WALL PLATES

Single and combination types to match corresponding wiring devices.

A. Plate-Securing Screws: Metal with head color to match plate finish. Minimum of two screws per outlet box gang section.

B. Material for Finished Spaces: Smooth, high-impact thermoplastic 0.035-inch-thick, satin-finished stainless steel. When approved by the University cover plates may be non-metallic, shatter resistant nylon in lieu of stainless steel.

C. Material for Unfinished Spaces: Smooth, high-impact thermoplastic.

D. Material for Wet Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in "wet locations."

2.05 CONTROL AND SIGNAL TRANSFORMERS

A. Description: 120/24V. Self-cooled, two-winding dry type, rated for continuous duty, complying with NEMA ST 1, and listed and labeled as complying with UL 506.

B. Ratings: Continuous duty. If rating is not indicated, provide at least 50 percent spare capacity above connected peak load.

C. See mechanical Equipment Schedule for exact equipment/device required voltage.

D. Provide (1) low voltage control transformer for each mechanical device/equipment or provide a larger low voltage control transformer for several devices and provide low voltage control wiring to mechanical devices.

2.06 FINISHES

A. Color:

1. Wiring Devices Connected to Normal Power System: White or as selected by the University's Representative, unless otherwise indicated or required by CEC (NFPA 70).
2. Coordinate final cover plate style and color with the University's Representative. The following is a general guide:

    1. White or almond in office areas
    2. Stainless steel in laboratories, vivariums, and other high use areas.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install devices and assemblies level, plumb, and square with building lines.

B. Install wall dimmers to achieve indicated rating after derating for ganging according to manufacturer's written instructions.

C. Install unshared neutral conductors on line and load side of dimmers according to manufacturers' written instructions.

D. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical, and with grounding terminal of receptacles on top. Group adjacent switches under single, multi-gang wall plates.

E. Remove wall plates and protect devices and assemblies during painting.

F. Coordinate locations of floor service outlets and service poles to suit arrangement of partitions and furnishings.

G. Switches shall be installed in a minimum 4-inch by 4-inch outlet boxes.

3.02 IDENTIFICATION

A. Comply with Division 26 Section “Identification for Electrical Systems”.

1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with black filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.
2. Cover plates for receptacles shall be engraved or permanent stenciled on the front side with the device circuit number and panelboard source name. Use of an engraving on the front of the device plate is not required for housing projects.
3. Cover plates for receptacles in locations of public view such as lobbies and atriums shall have the circuit numbers and source feed point stenciled on the back of the plate.

3.03 CONNECTIONS

A. Ground equipment according to Division 26 Section "Grounding and Bonding for electrical systems."

B. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

C. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.

3.04 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:

1. After installing wiring devices and after electrical circuitry has been energized, test for proper polarity, ground continuity, and compliance with requirements.
2. Test GFCI operation with both local and remote fault simulations according to manufacturer's written instructions.

B. Remove malfunctioning units, replace with new units, and retest as specified above.

***** END OF SECTION *****

SECTION 26 2813

FUSES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes the following:

1. Cartridge fuses rated 600 V and less for use in switches and controllers.

1.02 SUBMITTALS

A. Product Data: Include the following for each fuse type indicated:

1.03 QUALITY ASSURANCE

A. Source Limitations: Obtain fuses from a single manufacturer.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC (NFPA 70), Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with NEMA FU 1.

D. Comply with CEC (NFPA 70).

1.04 PROJECT CONDITIONS

A. Where ambient temperature to which fuses are directly exposed is less than 40 degrees F or more than 100 degrees F, apply manufacturer's ambient temperature adjustment factors to fuse ratings.

1.05 COORDINATION

A. Coordinate fuse ratings with utilization equipment nameplate limitations of maximum fuse size.

1.06 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fuses: Quantity equal to 5 percent of each fuse type and size, but no fewer than 3 of each type and size.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cooper Bussman, Inc.
2. Eagle Electric Mfg. Co., Inc.; Cooper Industries, Inc.
3. Ferraz Shawmut, Inc.
4. Tracor, Inc.; Littelfuse, Inc. Subsidiary.
5. Or equal.

B. Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01 Section “Product Options and Substitutions”. Specific procedures must be followed before use of an unnamed product or manufacturer.

2.02 CARTRIDGE FUSES

A. Characteristics: NEMA FU 1, nonrenewable cartridge fuse; class and current rating indicated; voltage rating consistent with circuit voltage.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine utilization equipment nameplates and installation instructions. Install fuses of sizes and with characteristics appropriate for each piece of equipment.

B. Evaluate ambient temperatures to determine if fuse rating adjustment factors must be applied to fuse ratings.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 FUSE APPLICATIONS

A. Motor Branch Circuits: Class RK1, time delay.

B. Other Branch Circuits: Class RK1, time delay.

3.03 INSTALLATION

A. Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.

B. Install spare-fuse cabinet(s).

3.04 IDENTIFICATION

A. Install labels indicating fuse replacement information on inside door of each fused switch.

***** END OF SECTION *****

SECTION 26 2816

ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes the following individually mounted, enclosed switches and circuit breakers:

1. Fusible switches.
2. Non-Fusible Switches.
3. Molded-Case Circuit Breakers (MCCBs).
4. Molded-Case Switches.
5. Enclosures.

B. Related Sections:

1. Refer to Section 26 2413 for Circuit Breaker requirements.

1.02 DEFINITIONS

A. HD: Heavy Duty.

B. NC: Normally closed.

C. NO: Normally open.

D. SPDT: Single pole, double throw.

1.03 SUBMITTALS

A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

1.04 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC (NFPA 70), Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with CEC (NFPA 70).

C. Product Selection for Restricted Space: Drawings indicate maximum dimensions for enclosed switches and circuit breakers, including clearances between enclosures, and adjacent surfaces and other items. Comply with indicated maximum dimensions.

1.05 PROJECT CONDITIONS

A. Environmental Limitations: Rate equipment for continuous operation under the following conditions, unless otherwise indicated:

1. Ambient Temperature: Not less than minus 22 degrees F and not exceeding 104 degrees F.
2. Altitude: Not exceeding 6600 feet.

B. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:

1. Notify University's Representative no fewer than 10 days in advance of proposed interruption of electric service.
2. Indicate method of providing temporary electric service.
3. Do not proceed with interruption of electric service without University's Representative's written permission.
4. Comply with NFPA 70E.

1.06 COORDINATION

A. Coordinate layout and installation of switches, circuit breakers, and components with other construction, including conduit, piping, equipment, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

1.07 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Spares: For the following:

   a. Control-Power Fuses: 4.
   b. Fuses for Fusible Switches: 3.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
2. Or Equal: Where products are specified by manufacturers name and accompanied by the term "or equal", comply with provisions in Division 01 Section “Product Options and Substitutions”. Specific procedures must be followed before use of an unnamed product or manufacturer.

2.02 FUSIBLE AND NONFUSIBLE SWITCHES

A. Manufacturers:

1. Eaton Corporation; Cutler-Hammer Products.
2. General Electric Co.; Electrical Distribution & Control Division.
3. Siemens Energy & Automation, Inc.
4. Square D/Group Schneider.
5. Or equal.

B. Fusible Switch, 600 A and Smaller: NEMA KS 1, Type HD, with clips or bolt pads to accommodate specified fuses, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.

C. Non-Fusible Switch, 600 A and Smaller: NEMA KS 1, Type HD, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.

D. Type GD, General Duty, Single Throw, 240-Vac, 800 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with fuse interiors to accommodate fuses, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.

E. Type HD, Heavy Duty, Single Throw, 240-600Vac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

F. Type HD, Heavy Duty, Six Pole, Single Throw, 240-600Vac, 200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

G. Type HD, Heavy Duty, Double Throw, 240-600Vac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

H. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded, and bonded; and labeled for copper neutral conductors.

3. Auxiliary Contact Kit: Auxiliary set of contacts arranged to open before switch blades If more than one type or rating of receptacle-switch combination is required, consider showing location of each on Drawings and deleting subparagraph below; otherwise, insert required information.

2.03 ENCLOSURES

A. Enclosed Switches and Circuit Breakers: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.

1. Indoor, Dry and Clean Locations: NEMA 250, Type 1.
2. Outdoor Locations: NEMA 250, Type 3R.
3. Kitchen/Wash-Down Areas: NEMA 250, Type 4X, Stainless Steel.
4. Other Wet or Damp, Indoor Locations: NEMA 250, Type 4.
5. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: NEMA 250, Type 12.
6. Hazardous Areas Indicated on Drawings: NEMA 250, Type 7C.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 CONCRETE BASES

A. Coordinate size and location of concrete bases. Verify structural requirements with structural engineer.

B. Concrete base is specified in Division 26 Section "Common Work Results for Electrical", and concrete materials and installation requirements are specified in Division 03.

3.03 INSTALLATION

A. Comply with applicable portions of NECA 1, NEMA PB 1.1, and NEMA PB 2.1 for installation of enclosed switches and circuit breakers.

B. Mount individual wall-mounting switches and circuit breakers with tops at uniform height, unless otherwise indicated. Anchor floor-mounting switches to concrete base.

C. Comply with mounting and anchoring requirements specified in Division 26 Section "Vibration and Seismic Controls for Electrical Work".

D. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

3.04 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Division 26 Section "Common Work Results for Electrical" and Identification for Electrical Systems".

B. Enclosure Nameplates: Label each enclosure with engraved metal or laminated-plastic nameplate as specified in Division 26 Section "Common Work Results for Electrical" and "Identification for Electrical Systems".

3.05 CLEANING

A. On completion of installation, vacuum dirt and debris from interiors; do not use compressed air to assist in cleaning.

B. Inspect exposed surfaces and repair damaged finishes.

***** END OF SECTION *****

SECTION 28 3112

ZONED (DC LOOP) FIRE-ALARM SYSTEM

PART 1 - GENERAL

1.01 SECTION REQUIREMENTS

A. Submittals: Product Data and system operating description.

B. Submittals to Authorities Having Jurisdiction: In addition to distribution requirements for submittals, make an identical submittal to authorities having jurisdiction. To facilitate review, include copies of annotated Contract Drawings as needed to depict component locations.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Comply with NFPA 72.

B. UL listed and labeled.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.02 SYSTEM DESCRIPTION

A. Non-coded, conventional, hardwired, zoned, 24-V dc loop system.

2.03 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements and approval of the University's Representative, provide products compatible with the existing Campus GCC and Network:

1. FACP Equipment and enclosures:

   a. SimplexGrinnell.
   b. WSA.
   c. Hoffman (weatherproof applications only).

2. Wire and Cable:

   a. Comtran Corporation.
   b. Helix/HiTemp Cables, Inc.; a Draka USA Company.
   c. Rockbestos-Suprenant Cable Corporation; a Marmon Group Company.
   d. West Penn Wire/CDT; a division of Cable Design Technologies.

3. Audible and Visual Signals:

a. SimplexGrinnell.
b. Wheelock (weatherproof applications only).

2.04 FIRE-ALARM CONTROL UNIT

A. General Requirements for Fire-Alarm Control Unit: Modular, power-limited design with electronic modules, UL 864 listed.

B. Alphanumeric Display and System Controls: Display alarm, supervisory, and component status messages and the programming and control menu.

C. Circuits:

1. No Fewer Than [**Five**] <**Insert number**> Initiating Device Circuits:

a. [**Four**] <**Insert number**> circuits, NFPA 72, Class B.
b. [**One**] <**Insert number**> circuit(s), NFPA 72, Class A, Style 6.

2. No Fewer Than [**Two**] <**Insert number**> Notification Appliance Circuits: NFPA 72, Class B, Style Y.

D. Door Controls: Door hold-open devices that are controlled by smoke detectors at doors in smoke barrier walls shall [**be**] [**not be**] connected to fire-alarm system.

E. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, supervisory, and trouble signals to a remote alarm station.

F. Primary Power: 24-V dc obtained from 120-V ac service and a power-supply module. Initiating devices, notification appliances, signaling lines, and trouble signals, shall be powered by the 24-V dc source.

1. Alarm current draw of the entire fire-alarm system shall not exceed 80 percent of the power-supply module rating.

G. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch.

1. Batteries: Sealed lead calcium.

H. Instructions: Computer printout or typewritten instruction card mounted behind a plastic or glass cover in a stainless-steel or aluminum frame. Include interpretation and describe appropriate response for displays and signals. Briefly describe the functional operation of the system under normal, alarm, and trouble conditions.

2.05 MANUAL FIRE-ALARM BOXES

A. General Requirements for Manual Fire-Alarm Boxes: Comply with UL 38.

1. Single-action mechanism, breaking-glass or plastic-rod type.
2. Double-action mechanism requiring two actions to initiate an alarm, breaking-glass or plastic-rod type.
3. Station Reset: Key- or wrench-operated switch.

2.06 SYSTEM SMOKE DETECTORS

A. Photoelectric Smoke Detectors: Comply with UL 268.

B. Duct Smoke Detectors: Photoelectric type, complying with UL 268A.

2.07 HEAT DETECTORS

A. General Requirements for Heat Detectors: Comply with UL 521.

B. Heat Detector, Combination Type: Actuated by either a fixed temperature or a rate of rise that exceeds 15 degrees F per minute unless otherwise indicated.

2.08 NOTIFICATION APPLIANCES

A. General Requirements for Notification Appliances: Connected to notification appliance signal circuits, zoned as indicated, equipped for mounting as indicated and with screw terminals for system connections.

B. Horns: Comply with UL 464. Horns shall produce a sound-pressure level of 90 dBA, measured 10 feet from the horn, using the coded signal prescribed in UL 464 test protocol.

C. Visible Notification Appliances: Xenon strobe lights comply with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1-inch- high letters on the lens.

1. Rated Light Output:

    a. Indicated on Drawings.
    b. [**15**] [**30**] [**75**] [**110**] [**177**] <**Insert value**> cd.
    c. 15/30/75/110 cd, selectable in the field.

2.09 MAGNETIC DOOR HOLDERS

A. Description: Equipped for wall or floor mounting, complete with matching doorplate.

B. Material and Finish: Match door hardware.

2.10 REMOTE ANNUNCIATOR

A. Description: Annunciator functions shall match those of fire-alarm control unit for alarm, supervisory, and trouble indications. Manual switching functions shall match those of fire-alarm control unit, including acknowledging, silencing, resetting, and testing.

2.11 DIGITAL ALARM COMMUNICATOR TRANSMITTER

A. Digital alarm communicator transmitter shall be acceptable to the remote central station and shall comply with UL 632 and be listed and labeled by an NRTL.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Comply with NFPA 72 for installation of fire-alarm equipment.

B. Connecting to Existing Equipment: Verify that existing fire-alarm system is operational before making changes or connections.

1. Connect new equipment to the existing control panel in the existing part of the building.
2. Connect new equipment to the existing monitoring equipment at the supervising station.
3. Expand, modify, and supplement the existing [**control**] [**monitoring**] equipment as necessary to extend the existing [**control**] [**monitoring**] functions to the new points. New components shall be capable of merging with the existing configuration without degrading the performance of either system.

3.02 FIELD QUALITY CONTROL

A. Field tests shall be witnessed by [**University's Representative**] [**authorities having jurisdiction**] <**Insert names or titles of witnesses**>.

B. Perform tests and inspections.

C. Tests and Inspections:

1. Visual Inspection: Conduct the visual inspection prior to testing.

    a. Inspection shall be based on completed record Drawings and system documentation that is required by NFPA 72 in its "Completion Documents, Preparation" Table in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter.
    b. Comply with "Visual Inspection Frequencies" Table in the "Inspection" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.

2. System Testing: Comply with "Test Methods" Table in the "Testing" Section of the "Inspection, Testing, and Maintenance" Chapter in NFPA 72.

D. Prepare test and inspection reports.

E. Maintenance Test and Inspection: Perform tests and inspections listed for weekly, monthly, quarterly, and semiannual periods. Use forms developed for initial tests and inspections.

F. Annual Test and Inspection: One year after date of Substantial Completion, test fire-alarm system complying with the visual and testing inspection requirements in NFPA 72. Use forms developed for initial tests and inspections.

***** END OF SECTION *****