

ADDENDUM NO. 2

October 29, 2021

BIDDING AND CONTRACT DOCUMENTS

FOR

**BATCHELOR HALL BUILDING SYSTEMS RENEWAL
PROJECT NO. 950464
CONTRACT NO. 950464-LF-2022-21**



The following changes, additions, or deletions shall be made to the following documents as indicated for this Project; and all other terms and conditions shall remain the same. Each bidder is responsible for transmitting this information to all affected subcontractors and suppliers before the Bid Deadline.

1. INFORMATION AVAILABLE TO BIDDERS

- A. **Delete** the Information Available to Bidders and **replace** with the one issued in this Addendum.
- B. **Add** elevator photos, 10/21/2021, issued in this Addendum.
- C. **Add** Fire Flow Test, dated 11-18-2019, issued in this Addendum.
- D. **Add** HDR's Addendum Narrative, 3 pages, issued in this Addendum.

2. AGREEMENT

- A. **Delete** Agreement and **replace** with the one issued in this Addendum

3. SPECIFICATIONS

- A. **Delete** Specification Table of Contents, and **replace** with the one issued in this Addendum.
- B. **Delete** Specification 01 2100 Allowance, and **replace** with the one issued in this Addendum.
- C. **Delete** Specification 01 2500, Product Options and Substitutions.
- D. **Delete** Specification 01 5100 Temporary Utilities, and **replace** with the one issued in this Addendum.
- E. **Add** Specification 01630, Product Options and Substitutions, issued in this Addendum.
- F. **Delete** Specification 01 9113 General Commissioning Requirements, and **replace** with the one issued in this addendum.
- G. **Delete** Specification 20 0505 Mechanical Renovation, and **replace** with the one issued in this addendum.
- H. **Delete** Specification 23 8239 Hydronic Heating Terminal Units, and **replace** with the one issued in this addendum.

4. DRAWINGS

- A. **Delete** sheet G-201 and **replace** with the one issued in this Addendum. Updated phasing notes.
- B. **Delete** sheet G-202 and **replace** with the one issued in this Addendum. Updated phasing notes.
- C. **Delete** sheet C-100 and **replace** with the one issued in this Addendum. Handrail added to site stair.
- D. **Delete** sheet S-302 and **replace** with the one issued in this Addendum. Updated detail reference.
- E. **Delete** sheet AS-102A and **replace** with the one issued in this Addendum. Updated staging area limit.

- F. **Delete** sheet AD-104B and **replace** with the one issued in this Addendum. Updated notes at roof Demo.
- G. **Delete** sheet A-101A and **replace** with the one issued in this Addendum. Updated scope at bike rack and area way entrance and patching at interior walls.
- H. **Delete** sheet A-102A and **replace** with the one issued in this Addendum. Update patching at interior walls.
- I. **Delete** sheet A-103A and **replace** with the one issued in this Addendum. Update pathing at interior walls.
- J. **Delete** sheet A-104A and **replace** with the one issued in this Addendum. Update patching at interior walls.
- K. **Delete** sheet I-600 and **replace** with the one issued in this Addendum. Updated schedule.
- L. **Delete** sheet P-101-B and **replace** with the one issued in this Addendum. Aligned keynotes/annotations.
- M. **Delete** sheet P-104-B and **replace** with the one issued in this Addendum. Hosebib locations identified.
- N. **Delete** sheet P-105-A1 and **replace** with the one issued in this Addendum. Hosebib location identified.
- O. **Delete** sheet P-105-A2 and **replace** with the one issued in this Addendum. Hosebib location identified.
- P. **Delete** sheet MS-101 and **replace** with the one issued in this Addendum. Temporary staging area updated and aligned keynotes/annotations.
- Q. **Delete** sheet M-100-A2 and **replace** with the one issued in this Addendum. Keynote added.
- R. **Delete** sheet M-101-A1 and **replace** with the one issued in this Addendum. Keynote added.
- S. **Delete** sheet M-101-B and **replace** with the one issued in this Addendum. Fan coil unit (FCU-5) removed.
- T. **Delete** sheet M-102-A2 and **replace** with the one issued in this Addendum. Keynote added.
- U. **Delete** sheet M-102-B and **replace** with the one issued in this Addendum. Aligned keynotes/annotation.
- V. **Delete** sheet M-103-A2 and **replace** with the one issued in this Addendum. Ductwork sizes added.
- W. **Delete** sheet M-103-B and **replace** with the one issued in this Addendum. Ductwork sizes added, fan coil unit (FCU-7) location identified and Keynote added.
- X. **Delete** sheet M-104-A1 and **replace** with the one issued in this Addendum. Ductwork sizes added.
- Y. **Delete** sheet M-105-A2 and **replace** with the one issued in this Addendum. Keynote added.
- Z. **Delete** sheet M-305 and **replace** with the one issued in this Addendum. Ductwork sized added.

- AA. **Delete** sheet M-306 and **replace** with the one issued in this Addendum. Ductwork sizes added.
- BB. **Delete** sheet M-702 and **replace** with the one issued in this Addendum. Fan coil unit (FCU-7) updated and piping connection sizes indicated.
- CC. **Delete** sheet M-705 and **replace** with the one issued in this Addendum. Exhaust ductwork runout sizes updated.
- DD. **Delete** sheet ES-101 and **replace** with the one issued in this Addendum. Removed alternate-A feeder from V-10 and removed keyed note #14.
- EE. **Delete** sheet EP-501 and **replace** with the one issued in this Addendum. Added key note #1.
- FF. **Delete** sheet ED-601 and **replace** with the one issued in this Addendum. Modified note on existing feeder.
- GG. **Delete** sheet ED-602 and **replace** with the one issued in this Addendum. Modified note on existing feeder.
- HH. **Delete** sheet E-601 and **replace** with the one issued in this Addendum. Removed Alternate-A feeder from V-10 and removed all keyed notes associated with Alternate-A.

5. REQUEST FOR INFORMATION

RFI NO.	QUESTIONS & ANSWERS
1-2	<p>Question: Has the Owner’s CxA developed the required plan for commissioning of temporary and new systems as identified in Section 01 91 13? Will any off-season testing be required as implied by 1.7.1.8 of the Specification Section?</p> <p>Answer: See revised Specification Section 01 9113, General Commissioning Requirements, issued in this Addendum.</p>
1-14	<p>Question: General Note B on Mechanical Demolition drawings states: “The Mechanical Contractor shall investigate and perform necessary modifications to existing equipment to assure that the systems will perform the same before and after Demolition scope has been executed. How do we quantify these modifications prior to performing TAB survey/pre-reads mentioned in the same General Note? Please advise.</p> <p>Answer: See Allowance Specification 01 2100 revised in this Addendum.</p>
1-18	<p>Question: During the job walk we noticed multiple raceway types (GRC, EMT, etc.) installed exposed in the basement, mechanical rooms and Building Support areas. Will EMT be acceptable raceway exposed in the basement, mechanical rooms and Building Support areas below 9’ A.F.F.?</p> <p>Answer: No, Use Rigid conduit in Basement, Mechanical Rooms and Building Support Areas Below 10’ AFF per spec 26-05-33- 3.1 (wet location) in these areas.</p>
1-19	<p>Question: We are bidding this project for [REDACTED] and one of the concerns that we have is that in the past we had a few similar jobs and in the corridors all EMP(electrical, mechanical, plumbing) for the building takes over the whole space up above the ceilings and it is very difficult to work without having any room to shoot wires and add posts for when it comes time for our guys to install a t-bar ceiling and comply with code/inspection.</p>

	<p>We want to know if there will be room to build a metal structure below the EMP with studs and track bracing from wall to wall so that the acoustical ceiling can be hung off of the metal studs and track and not off of the deck because again it is impossible to comply with IOR and have the wires not touch any EMP and to also comply with codework for our seismic post.</p> <p>Answer: Spec Section 09 51 00 para 3.3.6.c.2 requires "Provide supplementary rough suspension system where necessary to support ceilings beneath pipes, ducts, equipment, cable trays." Paragraph 3.3.6.a and 3.3.6.b requires contractor to provide hangers and inserts necessary to support ceiling suspension system and to coordinate location and alignment with work of other trades.</p> <p>Where required, supplementary support system below MEP is allowable, and shall be designed and engineered by the contractor. Ceiling heights noted on drawings shall be maintained.</p>
1-20	<p>Question: Specification 23 31 13-3.7 states to clean work installed under this section. Duct cleaning new ductwork is not recommended because cutting in access doors required for duct cleaning is a potential source of leakage. New work is also to be sealed and protected as it is shipped and installed. Confirm if duct cleaning of new work is required.</p> <p>Answer: Ductwork shall be cleaned immediately prior to installation as noted in 23 31 13-3.2.</p>
1-21	<p>Question: Per M-103-A1 (typical), Lab exhaust ductwork is missing sizes and details (see attached markups). Provide duct sizing and material clarification.</p> <p>Answer: Refer to runout sizes as noted on the schedules. The materials are identified in the sheet Legend and specifications. Please see revised drawings.</p>
1-22	<p>Question: Specification 23 31 13-2.4-4.a states to provide the fume hood exhaust in 316 stainless steel. On the plan document sheet M-103-A1 (typical), is the grey shaded ductwork to be 316 stainless steel and the non shaded mains to be galvanized?</p> <p>Answer: Yes. Materials are listed on plan Legend and in specifications.</p>
1-23	<p>Question: Drawing MS-101 shows space for temporary HVAC systems on site. Is this scope defined within documents for pricing?</p> <p>Answer: Scope of work zones indicated on the drawings for each phase as noted, will be vacant with no active research or utilities required while that phase is under construction, other than room 2163 and Metabolomics as shown on the drawings. If the contractor determines by means and methods that other areas will be required to be taken out of service, temporary HVAC and utilities are required to provide a functional system, as determined and sized by the Contractors, per 01 51 00.</p>
1-24	<p>Question: Drawing M-103-A1 (typical) Piping is not shown to the terminal units (see attached markups). Please confirm no piping is required.</p> <p>Answer: Mechanical run-out piping shall be provided as required to supply terminal unit heating, as/where applicable for the new installation. Run out piping sizes as indicated on schedules.</p>
1-25	<p>Question: At the Pre-Bid Meeting and presentation provided it was discussed that the Phase 0 work was to be performed from 12/11/21 to 1/2/22. The scope of the Phase 0 work shown on sheet G-201 does not align with work shown on slide 11 of</p>

	<p>the Pre-Bid presentation. Please confirm intended scope of work during this time period.</p> <p>Answer: Heavy demo will occur during the December dates stated, however, Phase 0 will extend beyond that.</p>
1-26	<p>Question: Phase 0 work shown on sheet G-201 does not appear practical during the December 2021 timeframe based on shutdown approval, material lead time and submittal approval requirements. Please confirm scope of work to be performed during Phase 0</p> <p>Answer: See answer in RFI 1-25.</p>
1-27	<p>Question: Sheet G-102, The section identified as “Conceptual Phasing Diagram Notes” indicates that temporary utilities are to be provided for durations which are deemed to be unacceptable to the University (paragraph 2). Please define acceptable outage durations for systems as basis for proposal and pricing.</p> <p>Answer: Acceptable duration for outages is 4 – 8 hours per outage.</p>
1-28	<p>Question: Fire sprinkler drawings indicate a new system is to be installed within the entirety of the existing building. This work does not align with the scope of ceiling replacement shown on the AC series of drawings. Is any removal of acoustic material required in areas to receive new sprinkler system or other adjustment to finishes required that is not indicated?</p> <p>Answer: Confirmed, fire sprinklers to be provided for the entirety of the existing building. Ceilings are to be provided as new where main lines are provided within the corridors. The majority of labs and offices do not have ceilings, however there are rooms which will require limited removal of ACT in order to install new branch lines/heads within those spaces.</p>
1-29	<p>Question: Drawings SD-106-A, indicate requirements for temporary shoring of existing catwalk systems from Levels 2 – 4. Please provide structural load criteria and restrictions of loading for Level 1 or lower that may restrict or impact shoring system loads to floors below.</p> <p>Answer: Contractor to determine preferred method of shoring and submit shoring concept for approval. See B1/SD-106-A for approximate gravity loads per hanger rod. Upon approval of shoring method, submit calculations for SEOR approval per project specifications.</p>
1-31	<p>Question: Will there be warranty maintenance or just warranty on parts?</p> <p>Answer: Warranty maintenance will apply if specified for a specific system/application.</p>
1-32	<p>Question: Are there constraints with regard to how long the elevator modernization may take and which phases shall the work occur?</p> <p>Answer: Yes. Contractor to work with University to schedule work to minimize impact on operation of the building.</p>
1-33	<p>Question: Please confirm that the contractor doesn’t need to provide a temporary lift for the University’s use while the elevator modernization occurs.</p> <p>Answer: A temporary elevator is not required during the scheduled outage for elevator upgrade.</p>

1-40	<p>Question: Spec section 051210 Structural Steel paragraph 1.2C & D Fabricator/Erector Qualifications indicates AISC certification for Structural Steel fabricators and erectors. Please advise if LA City certification is also acceptable.</p> <p>Answer: AISC Certification is required for Structural steel fabricators and erectors. Substitution may be requested if and only if the it can be demonstrated that the LA City Certification meets and or exceeds the AISC Certification requirements and then is approved by the University. Do not assume this will be automatically approved; this must be presented to the University and approval received.</p>
1-41	<p>Question: Please advise if grass seed or sod is required when restoring the laydown area at the completion of the project.</p> <p>Answer: Hydroseeding is fine, as long as the area is fully prepared. The area needs to be treated as a new lawn space would. Weed removal, soil amendments & rototilling, rock removal, irrigation repairs and fine grading before hydroseeding is allowed. The key to the turf's success is the preparations.</p>
1-43	<p>Question: Are there any requirements with regard to tree protection for the trees in the staging area? How close may we get to the dripline / canopy? Will the University trim the trees before we utilize the area?</p> <p>Answer: See specification 01 5639 Tree plant Protection issued in Addendum No. 1.</p>
1-44	<p>Question: Due to the nature of the work, its likely some overtime will be required and as a result we respectfully request an allowance be added for costs pertaining to article 1.5C-2 of section 01 1400.</p> <p>Answer: An Allowance for overtime will not be added; please stagger shifts to provide adequate coverage according to the respective shifts. If new work arises that is not part of this scope, overtime may be negotiated and approved per the Project Managers discretion.</p>
1-45	<p>Question: With regard to BIM procedures in article 1.3A-5 in section 01 3300 is there a LOD the University mandates? Will as-builts be required to be provided in BIM?</p> <p>Answer: Level 350. Follow as listed in Specification Section 01 3300, 1.3A-5. As-builts are to be provided in AutoCad and PDF.</p>
1-46	<p>Question: The FAQ pages on the DGS.CA.Gov website regarding Buy Clean California states that that public works contracts awarded to a bidder on or after 7.1.22 will have to comply to the BCCA if any of the eligible materials are used. With specification section 01 33 29.08, is UCR asking the bidder to ensure compliance for this project now?</p> <p>Answer: Yes as stated for those specific materials. Provide BCCA for this project as applicable.</p>
1-47	<p>Question: Has the phasing plan taken into consideration the requirement for the completion of the design assist elements specified in article 1.1B 1 and B2 on page 1 of section 01 35 20 and deferred approvals listed on drawing G-101? Our concern is based on the phasing plan we are expected to hit the ground running on day one of this project. We want to confirm that the phasing plan has taken into consideration the amount of time required to complete the design assist work as well as the deferred approvals and subsequently the time required to get approval for all of these items from the AHJ.</p>

	Answer: Yes.
1-48	<p>Question: Article 01 35 20 doesn't specify any AHJ approval requirements or timeline for same. Article 1.3F of section 21 10 00 specifies all the AHJs for the Fire Protection Systems and article 3.1C states work cannot begin until Agency approvals have been submitted to Architect and General Note C on drawing F-001 states similar. Please clarify how the Owner anticipates the phasing schedule to accommodate these requirements.</p> <p>Answer: Contractor to provide preliminary submittal (plans, specifications, and product cut sheets) for the full building fire protection system as soon after award as possible. University and Contractor will work with AHJ to facilitate review and comments from AHJ to expedite final approvals to align with the individual phases.</p>
1-49	<p>Question: Reference to article 3 of section 02 41 00, are there items to be salvaged on behalf of the Owner?</p> <p>Answer: Generator on Roof.</p>
1-50	<p>Question: Please expand on the Owner's occupancy regulations as specified in article 3.8C on page 8 of section 20 05 00. Please identify which "certain portions of work is required to be performed after regular working hours."</p> <p>Answer: To be determined by contractor, following allowable work schedule noted in Specification Section 01 1400, Work Restrictions; work during December 11, 2021 through January 2, 2022 can occur outside of the noted schedule with notification and coordination with the Project Manager. The University is expecting work during the December 2021 period to occur after hours.</p>
1-51	<p>Question: What is the University's direction with regard to elevator use and building corridors as referenced in article 3.8B on page 8 of section 20 05 00?</p> <p>Answer: Elevator is not to be used. Use exterior stairs and scaffolding for access. Building stairs and corridors can be used to access the immediate work area.</p>
1-52	<p>Question: Please identify the specific testing requirements to satisfy article 3.1C on page 2 of section 20 05 05 as it pertains to mold.</p> <p>Answer: Clause to be re-written as "Inspect, determine, and remediate for mold in accordance with ANSI/IICRC S520."</p>
1-54	<p>Question: Please confirm all products in the technical specifications comply with general notes 9-13 on drawing G-101.</p> <p>Answer: Confirmed.</p>
1-55	<p>Question: Drawing G-201 doesn't provide requirements pertaining to keeping the existing fire protection system (standpipe, hose cabinets, etc) operational or providing a temporary one. Since the building type is classified as a Type-II non-sprinklered, does that mean service doesn't need to be maintained during construction? Please advise.</p> <p>Answer: Per Fire Department Notes 5.D the existing fire protection system shall remain operational throughout construction. If the entire system must be shut down a fire watch shall be maintained on site until the system is returned to service.</p>
1-56	<p>Question: Please confirm that the Allowance No. 1 includes any required demolition and structural support for the mechanical screening.</p>

	<p>Answer: The allowance should include structural support for the mechanical screening. The allowance will be exercised prior to the new roof being installed therefore no demolition is anticipated, as the roof and concrete infill will already be demolished as part of the base scope of work.</p>
1-57	<p>Question: Please provide a specification section for the louvers e.g. A4/A-500.</p> <p>Answer: Per A3/A-500 louvers to be 7" CS Specialties storm louver or equal.</p>
1-58	<p>Question: The new acoustical ceiling is installed in areas with existing walls. Please confirm that the connections of the new ledger /trim angle to be "attached to structure" per details D1, D4 on A-553, etc. shall be attached to existing structure since the walls are existing. If any new backing is required to be added to the existing walls, please provide a unit price or allowance for bid leveling purposes.</p> <p>Answer: Confirmed, new ledger/trim angles shall be attached to existing structure.</p>
1-59	<p>Question: Has the new flow test report required to be provided to the engineer no more than 3 months prior to working plan submittal per note B on drawing F-001 been provided?</p> <p>Answer: Previous flow test is being provided to bidders for information in this Addendum. New test to be conducted by the University as required per specification section 21 10 00.</p>
1-60	<p>Question: Please identify in the addenda the work anticipated by the University to occur during the winter holiday break.</p> <p>Answer: Schedule to be validated by awarded contractor. It is expected that the heavy demolition - Phase 1 mechanical penthouse and roof topping slab removal and temporary MEP - portion of work is to be completed during December 11, 2021-January 2, 2022. The expectation is for the contractor to take advantage of the time allotted here as this will be the winter break.</p>
1-61	<p>Question: Are the areas designated for temporary HVAC equipment on drawing MS-101 still available for use by the Contractor?</p> <p>Answer: This area is not available.</p>
1-62	<p>Question: Is there existing electrical service available from the University to provide power to the temporary HVAC equipment locations on drawing MS-101?</p> <p>Answer: The Existing 208V Electrical Distribution System and the New 480V Electrical Distribution System can be utilized for temporary power requirements.</p>
1-63	<p>Question: May the conduit needing to be installed for the new battery pack fixtures in rooms with no other work be exposed? If not, please update the architectural plans to reflect the cutting and patching required for this work.</p> <p>Answer: Exposed conduit is acceptable.</p>
1-64	<p>Question: For bid leveling purposes, what distance should be assumed with regard to the switch location in the tunnel per keynote 3 on ED-601, keynote 6 on ED-602, etc.?</p> <p>Answer: Feeder runs from MH 18 into basement approximately 300' to first switch then 80' to the second switch.</p>

1-65	<p>Question: The anticipated scope of work stated in Phase 0 includes the installation of a new transformer (keynote 4A on E-601). The anticipated completion date of Phase 0 is March '22. Has the University verified that is enough time to obtain submittal approval and procurement of the transformer?</p> <p>Answer: It is expected that all parts shall be ordered upon Notice to Proceed during Phase 0.</p>
1-66	<p>Question: Was there a plan developed with regard to the temporary process piping systems required to feed Keen Hall that can be shared? There is a tremendous amount of work to be performed in the basement level pertaining to these systems.</p> <p>Answer: No plan has been developed as this is means and methods by the contractor.</p>
1-67	<p>Question: Please confirm that any requirement specified in the technical specifications with regard to submitting information at the time of bid may be submitted after Award or as otherwise requested by the University sometime after bid. This gets back to article 5.3.1 of the Instructions to Bidders which states the Bid Form, Bid Security and “all other documents required to be submitted with the Bid.”</p> <p>Answer: Required documents must be turned in with the Bid on or before the bid deadline.</p>
1-68	<p>Question: Article 5.3.1 of the Instructions to Bidders states that the Bid Form, Bid Security and all other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. Please clarify if there are any other documents required to be submitted for this particular bid in addition to the Bid Form and Bid Security and if so what they are specifically.</p> <p>Answer: Please refer to Article 5 in Instructions to Bidders for items due with bid.</p>
1-69	<p>Question: Specification 23 31 13-3.7 states to clean work installed under this section. Duct cleaning new ductwork is not recommended because cutting in access doors required for duct cleaning is a potential source of leakage. Also the ductwork is protected as it is shipped and installed. Please confirm duct cleaning is not required.</p> <p>Answer: Ductwork shall be cleaned immediately prior to installation as noted in 23 31 13-3.2.</p>
1-70	<p>Question: Lab exhaust ductwork is missing sizes and details (see attached markups).</p> <p>Answer: Refer to runout sizes as noted on the schedules. The materials are identified in the sheet Legend and specifications. See Delta A drawings.</p>
1-71	<p>Question: Specification 23 31 13-2.4-4.a states to provide the fume hood exhaust in 316 stainless steel. Is the grey shaded ductwork to be 316 stainless steel and the non shaded mains to be galvanized? (see attached markups).</p> <p>Answer: Yes. Materials are listed on plan Legend and in specifications.</p>

1-72	<p>Question: Piping is not shown to the terminal units (see attached markups).</p> <p>Answer: Mechanical run-out piping shall be provided as required to supply terminal unit heating, as/where applicable for the new installation. Run out piping sizes as indicated on schedules.</p>
1-73	<p>Question: Provide more details for fume connection to the new ductwork (see attached markups).</p> <p>Answer: Please see fume hood connection details B1/M-503.</p>
1-74	<p>Question: Provide finish information for the lab sink/lab countersurface/lab casework shown on A4/A-401.</p> <p>Answer: Please see spec section 11 5343 for lab sinks and 12 3553 for lab countertop and casework.</p>
1-75	<p>Question: Confirm that hazardous abatement referenced in the Omega Environmental report dated October 31, 2019 is only required as necessary to complete the work required here-in.</p> <p>Answer: For bidding purposes use the information provided there.</p>
1-76	<p>Question: Provide a specification for hazardous abatement.</p> <p>Answer: Abatement to be carried out by properly licensed subcontractor in coordination with UCR Environmental Health & Safety Department. Refer to SECTION 01 35 43, ENVIRONMENTAL PROCEDURES.</p>
1-78	<p>Question: Drawing M-102-B, Missing Sheet Keynotes. Please provide.</p> <p>Answer: Miscellaneous Keynote callouts to be removed. Sheet to be reissued.</p>
1-79	<p>Question: Drawings MD-101, 102,103,104 & 105, General Notes, C.</p> <p>“...The mechanical contractor must perform a complete air system evaluation to determine additional locations not currently identified on the documents. But that also require remediation”</p> <ul style="list-style-type: none"> • Please explain: A complete air system evaluation? • Do you have some kind of breakdown for this evaluation and what is UCR looking for? • Who would be responsible for the cost associated with the findings after the evaluation? <p>Answer: Complete air system evaluation shall inspect for duct liner. Refer to requirements in 20 05 05 – Mechanical Renovation</p>

1-80	<p>Question: Specification 23 31 13-3.7 states to clean work installed under this section. Duct cleaning new ductwork is not recommended because cutting in access doors required for duct cleaning is a potential source of leakage. Also, the ductwork is protected as it is shipped and installed. Please confirm duct cleaning is not required.</p> <p>Answer: Ductwork shall be cleaned immediately prior to installation as noted in 23 31 13-3.2.</p>
1-81	<p>Question: Sheet M103-A1, Lab exhaust ductwork is missing sizes and details (see attached markups).</p> <p>Answer: Refer to runout sizes as noted on the schedules. The materials are identified in the sheet Legend and specifications. Please see revised drawings.</p>
1-82 & 1-83	Inadvertently skipped numbering.
1-84	<p>Question: Sheet M-103-A1, Specification 23 31 13-2.4-4.a states to provide the fume hood exhaust in 316 stainless steel. Is the grey shaded ductwork to be 316 stainless steel and the non-shaded mains to be galvanized?</p> <p>Answer: Yes. Materials are listed on plan Legend and in specifications.</p>
1-85	<p>Question: Piping is not shown to the terminal units (see attached markups)</p> <p>Answer: Mechanical run-out piping shall be provided as required to supply terminal unit heating, as/where applicable for the new installation. Run out piping sizes as indicated on schedules.</p>
1-86	<p>Question: There is a note 7 called out on sheet P-101-B, but there is not #7 Sheet Keynote. Please clarify.</p> <p>Answer: See reissued P-1010B, issued in Addendum 2.</p>
1-88	<p>Question: What is the path of travel for materials and workers on each floor?</p> <p>Answer: See answer in RFI 1-51.</p>
1-89	<p>Question: Please confirm use of AWS certified welders and 10 years of erection experience satisfies the requirements of section 05 12 10 1.2D.</p> <p>Answer: AISC Certification is required for Structural steel fabricators and erectors. Substitution may be requested if and only if the it can be demonstrated that the AWS Certification meets and or exceeds the AISC Certification requirements and then is approved by the University. Do not assume this will be automatically approved; this must be presented to the University and approval received.</p>
1-90	<p>Question: There is acid waste lines shown on M-104-B. However all the other acid waste lines are shown on the plumbing plans. Is there a reason why this particular lines only appear on the mechanical plans?</p> <p>Answer: These are drains off of the lab exhaust fans that capture acid waste.</p>

1-91	<p>Question: Just looking for clarification on if the elevator needed the cab to be modernized as well?</p> <p>Answer: Provide new car enclosure per 14 22 10, 2.1.28. Car enclosure is to be understood as to include Cab interiors.</p>
1-92	<p>Question: For bid leveling purposes, what distance should be assumed with regard to the switch location in the tunnel per keynote 3 on ED-601, keynote 6 on ED-602, etc.? Further, drawing E-601 includes an "Alternate A" that provides additional scope options. There is no Alternate "A" on the bid form. Please clarify.</p> <p>Answer: Reference to Alternate A is no longer applicable. See revised drawing ED-601 issued in this Addendum.</p>
1-93	<p>Question: During our mandatory GC Job Walk. It was suggested that a (4-Story) Stair Tower be provided on the Westside of the building and provides access to the roof. Please confirm if a Stair Tower should be included in the proposers General Conditions?</p> <p>Answer: See SECTION 01 53 00, TEMPORARY CONSTRUCTION, reissued in Addendum 1.</p>
1-94	<p>Question: There is new electrical gear that gets installed in the basement, which will need to enter the basement through one of the existing air ways. Can the electrical engineer confirm that the size of the new gear will fit dimensional through the existing air way openings?</p> <p>Answer: Yes, an additional Larger Air way will be available in SW corner of basement and along with the Air ways on the East side will be adequate for electrical equipment move in.</p>
1-95	<p>Question: During our mandatory GC Job Walk. It was mentioned that the proposers would not be able to utilize the existing Loading Lock during construction. Please confirm.</p> <p>Answer: The loading dock will be available for use by contractors on a very limited pre-scheduled basis that will be coordinated with other on-going scheduled deliveries for the building, through the Project Manager. The majority of the building will continue to be occupied during construction, and as such, building deliveries will take precedence.</p>
1-96	<p>Question: Can the laser scan of the basement and / or other floors of the building be provided to all proposers?</p> <p>Answer: See RFI 1-87.</p>
1-97	<p>Question: Can Revit files of the Bid Docs be provided to all proposers for all disciplines that may have designed in REVIT?</p> <p>Answer: No, all we have is what was issued in Addendum 1.</p>
1-98	<p>Question: Please confirm that the University will pay for all water and electrical usage for the project and the proposers are to exclude all temporary utility costs from their General Conditions.</p> <p>Answer: See revised Specification SECTION 01 51 00, TEMPORARY UTILITIES, issued in this Addendum.</p>

1-99	<p>Question: In an effort to keep the labs, classrooms and administrative spaces free from construction dust. Can the University require that all proposers furnish and install filters or filter media on all existing supply and return registers during the course of construction to eliminate dust inside the building during construction. These filters or filter media should be changed every 2-weeks during the course of construction. Please confirm that this will be a requirement by the proposers and their HVAC subcontractors.</p> <p>Answer: General Contractor is responsible for controlling migration of dust. Installation of filters or filter media and the regular replacement or maintenance of them is to be determined by the General Contractor as the University does not want to direct, limit or restrict General Contractors' means and methods.</p>
1-101	<p>Question: The plumbing diagrams drawings P-801 thru P-806 have more piping runs and connections, which are not shown on pipe layout drawings. Which drawings are correct to use? We are going to follow the piping diagram drawings for a complete take-off.</p> <p>Answer: The design team is unable to find the suggested discrepancy. Plumbing plan drawings, P-10X series provide the intended extent of new piping required for fully functional systems.</p>
1-102	<p>Question: Drawing P-101-A2 at column's F and 7 shows what appears to be a single process pipe but teeing off in 2 directions. Flow diagrams P-801 thru P-805 indicate multiple systems that tee off and either cap or run to a POC at each level. Please advise whether the "process pipe" (Note 8 P-101-A2) is indicative of all these systems or only some and what the size and materials are for this/these process pipes?</p> <p>Answer: All systems to be teed and capped for future connections. Refer to all systems diagrams for sizes.</p>
1-103	<p>Question: Drawings show piping running along the core (HHWS/R, CHWS/R and ECWS/R) but does not branch out or serve any equipment. Please clarify if we have to provide branch piping outside. If we provide branch piping, please provide which equipment do we pipe it to.</p> <p>Answer: Mechanical run-out piping shall be provided as required to supply terminal unit heating, chilled water for fan coils, etc as/where applicable for the new installation. Run out piping sizes as indicated on schedules.</p>
1-104	<p>Question: Contract notes that Builder's Risk policy is available for review at UCR offices. Please confirm available times and days for review of policy.</p> <p>Answer: Insurance Company has not responded to our request for the policy, please refer to the Builders Risk Summary issued in Addendum 1.</p>
1-105	<p>Question: Provide temporary allowable live loads at rooftop and floors that may impose restrictions on demolition work and equipment selection to be used for demolition.</p> <p>Answer: 20 PSF allowed at the roof and 50 PSF allowed at typical floors. Contractor to take measures to distribute loads to satisfy these limitations.</p>

1-106	<p>Question: Architectural wall drawings do not reflect scope required as shown on HVAC and mechanical drawings. Specifically, the new penetrations for ductwork, FSD's and wall rating requirements are not identified. Please provide coordinated architectural layout showing required scope of work.</p> <p>Answer: Wall ratings are both shown on Life Safety drawings G-110 to G-114 (see legend for wall rating designations), Architectural floor plans and backgrounds of Mech drawings M-100 series which indicate required FSD's as ducts penetrate the core. Contractor to coordinate work between trades as required.</p>
1-107	<p>Question: Interior wall infill work required by demolition and abandonment of existing mechanical is not reflected architecturally. Please provide coordinated architectural layout showing required scope of work and replacement wall ratings.</p> <p>Answer: Wall ratings are both shown on Life Safety drawings G-110 to G-114 (see legend for wall rating designations), Architectural floor plans and backgrounds of Mech and Plumbing drawings. Contractor to coordinate work between trades as required and infill and patch walls as required to re-establish required wall ratings and provide continuity of non-rated walls as required where piping, ductwork and equipment is removed.</p>
1-108	<p>Question: Design indicates new wet fire protection system throughout entire building. When working within the Phase area will there be any restrictions on access to lab and office spaces to allow performance of the work? Where acoustic insulation has been applied to existing structure are there abatement, patching and repair requirements? Is there any requirement for partial acceptance of new system or can it be commissioned at completion of project?</p> <p>Answer: There will be no restrictions to rooms that are located in the area of the active Phase. Where acoustic insulation is encountered refer to hazardous materials report for potential ACM and if asbestos containing, abate in accordance with federal, state and local codes. Patch and repair of damaged areas is required. Testing and acceptance of the fully installed fire suppression system at the completion of the project is the University's expectation.</p>
1-109	<p>Question: Installation of the new 15 kV feed and system modifications will require whole building shutdown for completion of the work (shown as Phase 5). Identify allowable shutdown duration for this work and any calendar restrictions that may be imposed by academic calendar.</p> <p>Answer: Refer to Specification SECTION 01 31 13, COORDINATION. Shutdowns will not be allowed during Finals Week or when on-going research cannot be interrupted. Coordinate with Project Manager.</p>
1-110	<p>Question: Elevations for new ductwork shown on M 103-A1 are not provided. Based on photo documentation provided of the shaft / service spaces it appears there may be conflicts with existing electrical or other services mounted on walls near catwalks that are not identified for relocation. Please provide updated drawings to reflect coordination with existing systems or identify how these conflicting services are to be relocated or re-routed.</p> <p>Answer: Drawings provide overall design concept. New ductwork to replace existing ductwork in the same general location. The final details and coordination with existing systems shall be shown on the shop drawings provided by the contractor.</p>
1-111	<p>Question: Mechanical drawings show mechanical wall penetrations in areas that are obstructed by pipe and catwalk structure, leaving limited space and access to work. To what extent will demolition take place in these areas?</p>

	<p>Answer: The extent of demolition is area specific and shall be coordinated to facilitate the install.</p>
1-112	<p>Question: Demolition drawings call for removal of spray-on acoustical ceiling treatment to be removed. Please confirm that spray treatment is to be removed from existing open structure ceilings only and provide photos/supplemental information for these conditions.</p> <p>Answer: Confirmed, spray treatment is only to be removed where no new ceilings are being provided on AC series drawings. Per keynote D25 as indicated on levels 1 and 2. Photos are available as part of the bid package.</p>
1-113	<p>Question: Sheet AC-101-A and AC-102-A show new ACT at corridor locations where there is open structure. A4/A553 does not appear to be the correct detail for termination of ceiling system at these locations. Please provide detail.</p> <p>Answer: The configuration of the ACT ceiling and transition to open to structure ceiling area is existing. Bulkheads are existing to remain, no new detail is required.</p>
1-114	<p>Question: Where finish schedule call for contractor to “match existing”, please provide information as to what finishes are existing at these locations.</p> <p>Answer: 3201 is concrete, existing conditions may be viewed via Multi-vista to confirm extent of existing finishes. Where floors are shown as existing on the schedule, existing is to remain.</p>
1-115	<p>Question: Has engineer evaluated alternate support structure approach for the catwalk in lieu of shoring and re-supporting from tension rod? Has a horizontal framing support system been evaluated for work shown on B1/SD-106?</p> <p>Answer: The intent is to maintain the existing hanger support concept. Introducing new horizontal framing across the mechanical core could introduce conflicts with the new and existing MEP utilities.</p>
1-116	<p>Question: Sheet G-101 notes that pipe supports are a deferred approval item for project. Rooftop duct supports are shown on S-501 and have been approved by DSA as part of the design package. Confirm these support systems will not require deferred approval from DSA.</p> <p>Answer: Pipe supports are a deferred approval item, however the scope of work of this project is not under DSA jurisdiction as it is an MEP infrastructure project only. DSA deferred approval is not required.</p>
1-117	<p>Question: Please confirm we are responsible for pathways only for telephone and data systems.</p> <p>Answer: Pathways only.</p>
1-118	<p>Question: Please provide grading plan C-101 as it is as referenced in detail A5/S-302, note 1.</p> <p>Answer: Reference should be revised to be C-100.</p>
1-119	<p>Question: Provide details on Roof Walk Pads as seen on Sheet A-104B</p> <p style="padding-left: 40px;">a. Provide specs as well</p> <p>Answer: Provide walkway protection per 07 54 19, 2.3H.</p>

1-120	<p>Question: Verify callout 14 on sheet ES-101 is part of scope. Sheet E-601 has it listed under “Sheet Keynotes (Alternate A)”</p> <p>Answer: Alternate A has been eliminated from the design. See revised drawings.</p>
1-121	<p>Question: Sheet ES-101, verify location of existing Vault ‘10’.</p> <p>Answer: With the Alternate being eliminated from the design there will no work in V-10. The location is shown on sheet ES-101 SE of new transformer for reference.</p>
1-122	<p>Question: Most of drawings do not show exact duct or pipe sizes, will you be issuing plans to reflect sizes on ductwork and piping on the floor plans?</p> <p>Answer: Mechanical run-out piping shall be provided as required to supply terminal unit heating, as/where applicable for the new installation. Run out piping sizes as indicated on schedules.</p>
1-123	<p>Question: Do you have any duct cleaning requirement for any of the existing ductwork?</p> <p>Answer: Ducts shall be cleaned per 20 05 05, 3.6. Where duct liner exists and cannot be physically removed it shall be encapsulated per 20 05 05, 3.3.</p>
1-124	<p>Question: Do you have any requirement for duct leakage testing?</p> <ol style="list-style-type: none"> 1. If yes for the duct leakage testing, will that be required on the existing ductwork too? 2. If duct leakage testing is required for the existing ductwork, then insulation must be removed, and new insulation will be required. <p>Answer: Yes, duct air leakage testing is per 23 31 13-3.6 pertaining to high pressure duct work only (new or existing).</p>
1-125	<p>Question: If we are required to install any Temporary cooling, would you give us an estimate of the size or sizes maybe required for temporary cooling?</p> <p>Answer: Scope of work zones indicated on the drawings for each phase as noted, will be vacant with no active research or utilities required while that phase is under construction, other than room 2163 and Metabolomics as shown on the drawings. If the contractor determines by means and methods that other areas will be required to be taken out of service, temporary HVAC and utilities are required to provide a functional system, as determined and sized by the Contractors, per 01 51 00.</p>
1-126	<p>Question: Large amount of ductwork will be welded stainless-steel 316, but the specs did not list the type of finish for this stainless-steel welded ductwork. Will finish “2B” can be sufficient for this project?</p> <p>Answer: There is no requirement for any specific exterior or interior finish on the stainless-steel ducting.</p>
1-127	<p>Question: Plumbing Scope: Does the plumbing scope of work must be under the prequalified mechanical contractor? Or it can be separate bid direct to the prequalified GC?</p> <p>Answer: See RFI 1-77.</p>

1-128	<p>Question: Drawing M-102-B: Missing Sheet Keynotes.</p> <p>Answer: Miscellaneous Keynote callouts to be removed. Sheet to be reissued.</p>
1-129	<p>Question: Sheets MD-101, 102,103,104 & 105, General Note C states "...The mechanical contractor must perform a complete air system evaluation to determine additional locations not currently identified on the documents. But that also require remediation".</p> <ol style="list-style-type: none"> 1. Please explain: A complete air system evaluation? 2. Do you have A breakdown for this evaluation and what is UCR looking for? 3. Who would be responsible for the cost associated with the findings after the evaluation? <p>Answer: Complete air system evaluation shall inspect for duct liner. Refer to requirements in 20 05 05 – Mechanical Renovation.</p>
1-130	<p>Question: What low voltage systems (communications/fire alarm/security) is the contractor expected to include in their proposal?</p> <p>Answer: Fire alarm and Security system shall be included in the proposal. Communications pathways as indicated on plans will also be included in proposal. (Telecom devices and cables will be provided by UCR in future.)</p>
1-131	<p>Question: Sheet C-100, are railings required at the stairs?</p> <p>Answer: Confirmed, compliant handrail is required. Revised drawing provided in Addendum 2.</p>
1-132	<p>Question: One of our manufactures is asking to see if their product would be considered as an approved equal. In our Bid Documents it states "Other manufactures desiring approval, comply with Section 01630." This Specification is not included in the bid package.</p> <p>Answer: Please find attached section 01630 for your use. Section was previously included as Section 01 2500. Bid per current plans and specifications.</p>
1-133	<p>Question: Please confirm if SIEMENS will be considered as an approved equal for the DDC scope.</p> <p>Answer: Substitution procedures to be followed per 01630. Bid per current plans and specifications.</p>
1-134	<p>Question: Please confirm the shop drawings and submittal duration for this project.</p> <p>Answer: Refer to SECTION 01 33 00 Submittal.</p>
1-135	<p>Question: Please confirm the approved laydown area and crane staging location for this project.</p> <p>Answer: Refer to AS-102.</p>

1-137	<p>Question: General note B on sheet MD-100 states that the mechanical contractor shall investigate and perform necessary modifications to the existing equipment. Please advise if this cost shall be provided as an alternative cost and not included in the base bid.</p> <p>Answer: Cost to be provide in base bid.</p>
1-138	<p>Duplicate entry (1-137)</p>
1-139	<p>Question: Please clarify the requirements for temporary HVAC. Will there be a dedicated area near the building for temporary equipment?</p> <p>Answer: See response to 1-7, space is available within contractor staging area.</p>
1-140	<p>Question: Keynote #6 on sheet M-104-B states to route 2" AW down to nearest floor sink or open sight drain. Please confirm if this work will be done by the plumbing contractor.</p> <p>Answer: The assignment of scope related to individual trades is the responsibility of the general contractor as a part of means and methods.</p>
1-141	<p>Question: Please confirm if all condensate drains for mechanical equipment will be by the plumbing contractor.</p> <p>Answer: The assignment of scope related to individual trades is the responsibility of the general contractor as a part of means and methods.</p>
1-142	<p>Question: On sheet M-101-B, FCU-5 is shown, but no reference to this fan coil unit is made on the mechanical schedule shown on sheet M-702. Please advise.</p> <p>Answer: FCU-5 is not required. Drawing(s) depicting this FCU-5 are to be revised/reissued.</p>
1-143	<p>Question: The mechanical schedule on sheet M-702 calls out for FCU-7. FCU-7 tag cannot be identified on plans. Please advise.</p> <p>Answer: FCU-7 is required and shall be added to the drawing (South Wing). FCU-7 schedule edited for more appropriate unit type. Drawings to be re-issued.</p>

1-145	<p>Question: Detail A5 on sheet S-501 calls out for rooftop duct support. Please confirm if rooftop duct supports shall be by the structural contractor.</p> <p>Answer: the assignment of scope related to individual trades is the responsibility of the general contractor as a part of means and methods.</p>
1-146	<p>Question: Please confirm the warranty duration for equipment and labor.</p> <p>Answer: 12 months from Substantial Completion unless otherwise specified in the pertaining specification section. Patent/Latent warranties as applicable.</p>
1-147	<p>Question: Please confirm if the laboratory exhaust ductwork (LE) has to be the same material as the fume hood exhaust (FHE). Specifications call out butt-welded 316 stainless steel for both systems.</p> <p>Answer: Refer to question 1-22.</p>
1-148	<p>Question: Please confirm the requirements for the temporary plumbing systems.</p> <p>Answer: Refer to question 1-7.</p>
1-149	<p>Question: Sheet P-803 states that the DI mixer Bed filter will be furnished by the owner. Please confirm if the RODI water system will be owner furnished.</p> <p>Answer: RODI system is CFCI, as shown on P-803 and described within spec section 22 67 21.</p>
1-150	<p>Question: Please confirm if UCR has a preferred water treatment supplier/contractor for domestic water testing and sterilization.</p> <p>Answer: No preferred vendor.</p>
1-151	<p>Question: What is the expectation for the alternate (ALC) manufacturer with regard to integration to the JCI Metasys front end (graphics, programming), or a separate front end.</p> <p>Answer: Performance expectations per Specification 25 5000.</p>
1-152	<p>Question: Can you provide the schedule slide from the prebid meeting?</p> <p>Answer: Please see slide provided in this Addendum. Remember that it is up to the contractor to validate the estimated timelines shown in the slide. Also see RFI 1-60.</p>

END OF ADDENDUM

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: <https://www.ucop.edu/procurement-services/for-suppliers/construction-supplier-resources.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:
 - A. Limited Asbestos Report, OMEGA Environmental, October 31, 2019, 153 pages.
 - B. Structural Calculations Backcheck, HDR, October 16, 2020, 311 pages
 - C. Preliminary Project Schedule, PCL Construction, November 13, 2019, 7 pages.
 - D. Phasing Plan-Under Construction, PCL, 7 pages.
 - E. Laydown Area
 - F. Multi-Vista Building Photos:
 1. Level 1 Photos, dated 08/15/2019
 2. Level 1 Photos, dated 08/16/2019
 3. Level 1 Photos, dated 09/04/2019
 4. Level 1 Photos, dated 09/16/2019
 5. Level 2 Photos, dated 08/15/2019
 6. Level 2 Photos, dated 08/16/2019
 7. Level 2 Photos, dated 08/19/2019
 8. Level 2 Photos, dated 08/28/2019
 9. Level 2 Photos, dated 09/16/2019
 10. Level 3 Photos, dated 08/15/2019

11. Level 3 Photos, dated 08/16/2019
12. Level 3 Photos, dated 08/19/2019
13. Level 3 Photos, dated 08/22/2019
14. Level 3 Photos, dated 08/28/2019
15. Level 3 Photos, dated 09/05/2019
16. Level 3 Photos, dated 09/10/2019
17. Level 3 Photos, dated 09/16/2019
18. Level 4 Photos, dated 08/19/2019
19. Level 4 Photos, dated 08/28/2019
20. Level 4 Photos, dated 08/29/2019
21. Level 4 Photos, dated 09/16/2019 (*folder 1*)
22. Level 4 Photos, dated 09/16/2019 (*folder 2*)

For access to Multi-Vista photos, please click on the One Drive link below:


https://o365ucr-my.sharepoint.com/:f/g/personal/ibetho_ucr_edu/EhOPBP3ibRjFIDQ1me9PRvMbsITFa6AFIF0bROIoKhaeMg?e=0oNeFv

G. As-Built Drawings:  [905066 As Builts 04-21-67](#)

H. Basement 3D Scan, dated 06/24/2021:  [08-Basement 3D Scan](#)

- a) To access Navisworks (NWD) file, please download Navisworks Freedom viewer (free) at:

[Navisworks 3D Viewer Free Download | Navisworks Freedom \(autodesk.com\)](#)

I. **Elevator Photos, dated 10/21/2021:**  [09-Elevator Photos](#)

J. **Fire Flow Test, dated 11/19/2018, Daart Engineering Services, Inc.**

K. **Addendum Narrative, HDR, 3 pages**

END OF INFORMATION AVAILABLE TO BIDDERS



Daart Engineering Co., Inc.
Water System Fire Flow Calculation Work Sheet

LOCATION: **UCR 950531 Batchelor Renewal -Fire Flow Test**

DATE: **Nov. 15/2019**

6:00am

Conducted by Byron Pettibone/Chris Spurbeck

Fill in the required info in the blue blocks

Read Baseline Pressures at Hydrant # :

Static pressure: 110 Residual pressure: 96 Psi Drop: 14 Total Flow: 1430

Percent Drop: 27%

City Hydrant Number	Pitot	Opening	Coefficient	Flow	
Example: C427	30	2.5	1	1021	
1	1	72.5	2.5	0.9	1429
 	2	 	 	 	
 	3	 	 	0	
 	4	 	 	0	
 	5	 	 	0	

Desired Residual: 20 Flow at Desired 20psi residual: 3906

Flow at Desired 10psi residual: 4135

10 psi	1430	100	12.02264	4135
		14	4.158236	
20 psi	1430	90	11.35771	3906
		14	4.158236	
Hazen - Williams Computations				

X FLOW

UCR BATCHELOR HALL BID ADDENDUM 2 NARRATIVE: 10/29/2021

SPECIFICATIONS

20 05 05

- UPDATED 3.1.C

23 82 39

- UPDATED 2.2.A.2

GENERAL

G-201

- UPDATED PHASING NOTES

G-202

- UPDATED PHASING NOTES

CIVIL

C-100

- HANDRAIL ADDED TO SITE STAIR

STRUCTURAL

S-302

- UPDATED DETAIL REFERENCE

ARCHITECTURAL

AS-102A

- UPDATED STAGING AREA LIMIT

AD-104B

- UPDATED NOTES AT ROOF DEMO

A-101A

- UPDATED SCOPE AT BIKE RACK AND AREA WAY ENTRANCE
- UPDATED PATCHING AT INTERIOR WALLS

A-102A

- UPDATED PATCHING AT INTERIOR WALLS

A-103A

- UPDATED PATCHING AT INTERIOR WALLS

A-104A

- UPDATED PATCHING AT INTERIOR WALLS

I-600

- UPDATED SCHEDULE

PLUMBING

P-101-B

- ALIGNED KEYNOTES/ANNOTATION.

P-104-B

- HOSEBIB LOCATIONS IDENTIFIED.

P-105-A1

- HOSEBIB LOCATIONS IDENTIFIED.

P-105-A2

- HOSEBIB LOCATIONS IDENTIFIED.

MECHANICAL

MS-101

- TEMPORARY STAGING AREA UPDATED.
- ALIGNED KEYNOTES/ANNOTATION.

M-100-A2

- KEYNOTE ADDED.

M-101-A1

- KEYNOTE ADDED.

M-101-B

- FAN COIL UNIT (FCU-5) REMOVED.

M-102-A2

- KEYNOTE ADDED.

M-102-B

- ALIGNED KEYNOTES/ANNOTATION.

M-103-A2

- DUCTWORK SIZES ADDED.

M-103-B

- DUCTWORK SIZES ADDED.
- FAN COIL UNIT (FCU-7) LOCATION IDENTIFIED.
- KEYNOTE ADDED.

M-104-A1

- DUCTWORK SIZES ADDED.

M-105-A2

- KEYNOTE ADDED.

M-305

- DUCTWORK SIZES ADDED.

M-306

- DUCTWORK SIZES ADDED.

M-702

- FAN COIL UNIT (FCU-7) UPDATED.
- PIPING CONNECTION SIZES INDICATED.

M-705

- EXHAUST DUCTWORK RUNOUT SIZES UPDATED.

ELECTRICAL

ES-101 – ELECTRICAL SITE PLAN

- REMOVED ALTERNATE-A FEEDER FROM V-10
- REMOVED KEYED NOTE #14

E-601 – ELECTRICAL ONE LINE DIAGRAM PARTIAL SITE 12kV DISTRIBUTION

- REMOVED ALTERNATE-A FEEDER FROM V-10.
- REMOVED ALL KEYED NOTES ASSOCIATED WITH ALTERNATE-A

ED-601 – ELECTRICAL ONE LINE DIAGRAM DEMOLITION EAST/WEST WING

- MODIFIED NOTE ON EXISTING FEEDER

ED-602 – ELECTRICAL ONE LINE DIAGRAM DEMOLITION SOUTH WING

- MODIFIED NOTE ON EXISTING FEEDER

EP-501 – ELECTRICAL DETAILS

- ADDED KEYED NOTE #1

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
900 University Avenue
Riverside, CA 92521

and Contractor: **Name**

whose address for notices is: **Street Address**
City, State & Zip

for the Project: BATCHELOR HALL BUILDING SYSTEMS
RENEWAL
Project Number: 950464
University of California, Riverside
County of Riverside
Riverside, California 92521

University's Responsible Administrator: Drew Hecht
Director of Project Management
Planning, Design & Construction

University's Representative is: John Franklin
Senior Project Manager
Planning, Design & Construction

whose address for notices is: UCR Planning, Design & Construction
UNIVERSITY OF CALIFORNIA, RIVERSIDE
900 University Avenue
Riverside, CA 92521

Contract Documents for the Work Prepared by: Diane Hamlin
AIA, LEED AP BD+C, DBIA
HDR, Inc.
350 South Grand Avenue
Los Angeles, CA 90071-3406

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 Contractor Prequalification and 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, \$ [REDACTED], the "Contract Sum".

The Contract Sum includes the following Allowances:

Allowance No. 1: Mechanical Screening \$300,000.00

Allowance No. 2: HVAC Modifications \$200,000.00

The Contract Sum includes the following Alternates accepted by University:

List Alternates Accepted by University at Time of Award

University reserves the right to accept the following Alternates within **10** days after the date of this Agreement:

List Alternates Not Accepted by University at Time of Award

The Contract Sum will be increased by an amount equal to the Unit Price multiplied by the actual number of units of each Unit Price item incorporated in the Work.

ARTICLE 4 CONTRACT TIME

Contractor shall commence the Work on the date specified in the Notice to Proceed and fully complete the work within **931** 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 **\$2,500.00** 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 **\$1,500.00** 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 \$ [REDACTED] 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)	California Contractor's License(s):
a _____ (Type of Organization)	_____ (Name of Licensee)
By: _____ (Signature)	_____ (Classification and License Number)
_____ (Print Name)	_____ (Expiration Date)
_____ (Title)	_____ (Employer Identification Number)

Recommended:

By University's Representative:

 (Signature & Date)
 John Franklin
 Senior 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
 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.

SPECIFICATIONS

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		01 2300	Alternates
		<u>01 2500</u>	<u>Product Options, Requirements & Substitution Procedures</u>
		01 2613	Requests for Information & Instructions (RFI) Procedures
		01 3113	Coordination
		01 3119	Project Meetings
		01 3200	Document Control
		01 3216	Schedules
		01 3280	Electronic Data Transfer
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		01 3329.08	Buy Clean California Reporting
		01 3520	Design Assist Procedures
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		01 4520	Concrete Moisture Testing
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		01 5200	Construction Facilities

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		01 5400	Construction Aids
		01 5500	Vehicular Access and Parking
		01 5600	Temporary Barriers and Enclosures
October 21, 2021	Addendum 1	01 5639	Tree and Plant Protection
		01 5700	Temporary Controls
		01 6000	Product Requirements
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		01 7121	Specialty Engineering Requirements
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		01 7329	Cutting and Patching
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SECTION 01 2100 ALLOWANCES

PART 1 – GENERAL

1.1. SUMMARY

- A. This Section includes:
 - 1. Allowance Requirements
 - 2. Allowance Descriptions

1.2. ALLOWANCE REQUIREMENTS

- A. Included in the Contract Sum are all Allowances stated in the Contract Documents. Items covered by Allowances shall be provided for such amounts and by such persons or firms as University's Representative may direct.
- B. The following shall apply, unless otherwise provided in the Contract Documents:
 - 1. Allowances shall cover the actual costs incurred by Contractor and each Subcontractor regardless of tier involved, to the extent not otherwise disallowed under Paragraph 1.2. B.4. of this Section, and shall be limited to the following:
 - a. 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 Allowance work.
 - b. 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 Allowance work.
 - c. 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 Allowance work.
 - d. 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 Allowance work.
 - e. Costs of materials and consumable items which are furnished and incorporated into the Allowance 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.
 - f. Sales taxes on the costs of materials and consumable items which are incorporated into and used in the performance of the Allowance work pursuant to Paragraph 1.2. B.1.e. above.

- g. 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 Allowance 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 Allowance work.
 - h. Additional costs of royalties and permits due to the performance of the Allowance work.
 - i. The cost for Insurance and Bonds shall not exceed 2% (for non-UCIP projects) and shall not exceed 0.75% (for UCIP projects) of the items Paragraphs 1.2. B.1.a-h. above.
- 2. Contractor must demonstrate that the costs in Paragraph 1.2. B.1. above are both reasonable and actually incurred.
 - 3. University and Contractor may agree upon rates to be charged for any of the items listed in Paragraph 1.2. B.1. above. Such agreed upon rates shall be subject to audit pursuant to the General Conditions, Article 15.7. Contractor shall promptly refund to University any amounts (including associated mark-ups) in excess of the actual costs of such items.
 - 4. The cost of Allowance work shall not include any of the following:
 - a. Superintendent(s).
 - b. Assistant Superintendent(s).
 - c. Project Engineer(s).
 - d. Project Manager(s).
 - e. Scheduler(s).
 - f. Estimator(s).
 - g. Small tools (Replacement value does not exceed \$300).
 - h. Office expenses including staff, materials and supplies.
 - i. On-site or off-site trailer and storage rental and expenses.
 - j. Site fencing.
 - k. Utilities including gas, electric, sewer, water, telephone, facsimile, copier equipment.
 - l. Data processing personnel and equipment.
 - m. Federal, state, or local business income and franchise taxes.
 - n. Overhead and Profit.
 - o. Costs and expenses of any kind or item not specifically and expressly included in Paragraph 1.2. B.1. above.
 - 5. The full amount of Contractor's 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 Allowance work, whether or not such costs and expenses are specifically referenced in Paragraph 1.2. B.1 above, shall be included in the Contract Sum and not in the Allowances.
 - 6. 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. Unless otherwise provided herein, whenever costs are more than or less than Allowances, the Contract Sum shall be adjusted by Change Order based on (1) the difference between actual costs and the Allowances and (2) changes in Contractor's costs.

C. Allowances shall be completed within the Contract Time specified in the Agreement. Adjustments of the Contract Time shall be subject to the provisions of the General Conditions, Article 8.

1.3. ALLOWANCE DESCRIPTIONS

A. Allowance No. 1: Mechanical Screening. Include an Allowance of **\$300,000.00** for Mechanical Screening.

B. **Allowance No. 2: HVAC Modifications to Existing Equipment. Include an allowance of \$200,000.00. The Mechanical Contractor shall investigate and perform necessary modifications to existing equipment to assure that the systems will perform the same before and after Demolition scope has been executed.**

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 51 00 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
 - 7. Temporary Hot Water
 - 8. Temporary Plumbing

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. Obtain approval from the University for proposed locations of temporary equipment and utilities prior to any work. Coordinate the size and weights of temporary equipment with supplier in order to appropriately prepare for a level adequately supported surface.
- C. Provide each utility ready for use when needed to avoid delay. Maintain and modify as required.
- D. Coordinate the changeover between temporary utilities and permanent equipment with the University. Do not remove until utilities are no longer needed or are replaced by authorized use of completed permanent facilities.
- E. Stage introduction of equipment quantity and duration to incur the least amount of cost to the University. Consult with the Construction Manager and the University in regard to temporary equipment quantities with respect to managing building loads.
- F. Provide manufacturers clearances around and between temporary equipment when locating.
- G. At the conclusion of temporary utilities, make repairs to any site and building areas that may have been damaged during the construction activities.
- H. 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.

- I. 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.
 3. 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.
 4. Temporary HVAC Plan: Submit coordination drawing and narrative that indicates the HVAC-control measures proposed for use, existing systems connections, proposed locations, and proposed time frame for their operation.
 5. Temporary Plumbing Plan: Submit coordination drawing and narrative that indicates the Plumbing-control measures proposed for use, existing systems connections, proposed locations, and proposed time frame for their operation.
- J. 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 **a \$450.00 flat rate payable to the University on a monthly basis through the end of project construction** ~~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 **\$250.00 flat rate payable to the University on a monthly basis through the end of project construction** 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. Required HVAC:
 1. During construction the contractor shall at all times maintain operational occupied temperature control, pressure control, and HVAC utilities (air handling supply/return air, fan exhaust air, chilled water, heating water, steam, etc.) without interruption, within critical portions of the building and those areas not actively being constructed based upon the phased construction plan. Critical building areas include:
 - a. Keen Hall.
 2. Should it be necessary to interrupt any HVAC service or utility, the contractor shall secure permission in writing from the University for such interruption at least seven days in advance.
 3. Any interruption shall be made with minimum amount of inconvenience to the University and any shut-down time shall have to be on a premium time basis and such time to be included in the contractor's bid.
 4. Contractor to arrange to provide and pay for temporary HVAC if required by project conditions. Coordinate with the University in regard to temporary HVAC equipment delivery and placement.
- B. Temporary Construction Heat:
 1. 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.
 2. Maintain temperature at no less than 60 DEGF (16 DEGC) in permanently enclosed portions of the building and areas where finished Work has been installed.
 3. 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. Contractors and the University's Representative field trailer/office construction trailers are optional. However, if used, temporary telephones and Data Services: Provide temporary telephone and data service at the existing Construction Trailer site throughout the construction period for all personnel engaged in construction activities as described below.
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).

1.8 TEMPORARY HOT WATER

- A. During construction the contractor shall at all times maintain Hot Water (domestic and industrial) utility without interruption, within critical portions of the building and those areas not actively being constructed based upon the phased construction plan. Critical building areas include:
1. Keen Hall.
- B. Should it be necessary to interrupt any Hot Water service or utility, the contractor shall secure permission in writing from the University for such interruption at least seven days in advance.
- C. Any interruption shall be made with minimum amount of inconvenience to the University and any shut-down time shall have to be on a premium time basis and such time to be included in the contractor's bid.
- D. Contractor to arrange to provide and pay for temporary Hot Water if required by project conditions. Coordinate with the University in regard to temporary Hot Water equipment delivery and placement.

1.9 TEMPORARY PLUMBING

- A. During construction the contractor shall at all times maintain Plumbing utilities (domestic and industrial cold water, acid waste/sanitary sewer, natural gas, compressed air, vacuum, etc.) without interruption, within critical portions of the building and those areas not actively being constructed based upon the phased construction plan. Critical building areas include:
1. Keen Hall.
- B. Should it be necessary to interrupt any Plumbing service or utility, the contractor shall secure permission in writing from the University for such interruption at least seven days in advance.

- C. Any interruption shall be made with minimum amount of inconvenience to the University and any shut-down time shall have to be on a premium time basis and such time to be included in the contractor's bid.
- D. Contractor to arrange to provide and pay for temporary Plumbing if required by project conditions. Coordinate with the University in regard to temporary Plumbing equipment delivery and placement.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

SECTION ~~01-2500~~ 01 630
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 ~~04-2500~~ **01 630**.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

(MATERIAL/PRODUCT SUBSTITUTION REQUEST FORM ON FOLLOWING PAGE)

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 91 13

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:
 - 1. Fire suppression systems
 - 2. Plumbing systems
 - 3. HVAC systems, including Controls or Integrated Automation.
 - 4. Lighting and other electrical systems.
 - 5. Communications and Data systems.
 - 6. 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.
 - 4. Demonstration of operation of systems, subsystems, and equipment.
- C. 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" (Section 01 77 00).
 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.
- H. 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.
- I. Prepare Project-specific test and inspection procedures and checklists.
- J. Schedule, direct, witness, and document tests, inspections, and systems startup.
- K. Compile test data, inspection reports, and certificates and include them in the systems manual and commissioning report.
- L. Certify date of acceptance and startup for each item of equipment for start of warranty periods.
- M. 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" (Section 01 78 39).
- N. 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" (Section 01 77 00)
- O. Review Contractor's operation and maintenance training program. Operation and maintenance training is specified in Division 01 Section "Demonstration and Training" (Section 01 77 00)
- P. Obtain the services of a professional agency to video the training sessions where required by individual Specification Sections.
- Q. Video construction progress including hidden shafts.
- R. Prepare commissioning reports.
- S. 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" (Section 01 78 39).
 3. Final commissioning plan.
 4. Commissioning report.
 5. Operation and maintenance data as specified in Division 01 Section "Operation and Maintenance Data" (Section 01 77 00).

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.
- C. CxA shall coordinate the following:
 - 1. 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.
 - 2. 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.

3. Testing Coordination: Coordinate sequence of testing activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
 - a. Schedule times for tests, inspections, obtaining samples, and similar activities.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 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.

3.2 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.

3.3 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.

3.4 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" (Section 01 77 00) 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" (Section 01 77 00)

3.5 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.

3.6 EQUIPMENT & SYSTEM SCHEDULE

A. The following equipment shall be commissioned in this Project.

System	Equipment	Note
HVAC System	Pumps	
	Variable frequency drives	
	Air handlers	
	Packaged AC units	
	Air terminal units for High Occupancy rooms	
	Air terminal units for Office and Laboratory areas	2
	Air terminal valves for Laboratory areas	
	Heat exchangers	
	Condensate return units	
	Exhaust fans	
	Supply fans	
Return fans		
Building Energy Management System (EMS)	Sequences of Operation, Monitored Points, Control Points, and Alarms	
	Metering/Monitoring Devices and Equipment	
Lighting and Shade Control System	Software Commissioning, GUI presentation commissioning, system access performance criteria, software tools/source code commissioning, instrument data sheets, middleware commissioning, Internet Protocol commissioning	
	Sequences of Operation, Monitored points, control points, user controls	
Electrical System	Sweep or scheduled lighting controls	2
	Daylight dimming controls	
	Lighting occupancy sensors	
	Electrical grounding	
Plumbing System	Domestic water heaters	
	Pumps	
	Air compressors	
	Compressed air dryers	
	Vacuum pumps	

System	Equipment	Note
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	
Fire/Life Safety Systems	Room acoustics.	
	Sound masking system.	
	Assisted listening.	
	Video projection.	
	Audio system.	
Communication System	Lighting and lighting controls.	
	All devices	
	Alarm drivers	
	HVAC/Fire System Integration	
	Event Notifying and Reporting Systems	

Notes:

1. Centralized equipment should be fully commissioned.
2. Items which represent multiple, identical repetitive equipment may be tested on a "sampling" or "spot-check" basis, 20% of total.

END OF SECTION

SECTION 20 05 05

MECHANICAL RENOVATION

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Scope of Work:

1. Provide all labor and furnish all equipment necessary for the demolition of all Fire Protection, Plumbing, Mechanical Piping, Heating, Ventilating and Air Conditioning, and Controls for the work as specified and as indicated within the Contract Documents.
2. The Contractor for each trade shall coordinate all work with other trades and the General Contractor prior to commencing their work. No addition cost to the Owner shall be permitted for failing to fully coordinate at the start and over the entire project duration.

1.2 RELATED DOCUMENTS

- A. Work under this Section is subject to the requirements of the Contract Documents, including the Drawings, General and Supplementary Conditions, and the Specifications.**
1. Division 1: General Requirements.
 2. Work by Owner: Asbestos Abatement or Abatement of other hazardous materials.

1.3 QUALITY ASSURANCE

A. Qualifications:

1. The Contractor and their Subcontractors shall only employ workmen who are skilled in their respective trades.

1.4 SUBMITTALS

A. Contract Initiation Information:

1. Drainage piping video inspection report(s).
2. Test, adjust and balance report(s).
3. Air distribution duct cleaning qualifications and procedure(s).

1.5 PROJECT CONDITIONS

- A. Existing conditions and demolition information shown on the drawings is based on a cursory field observation and any available record documents. Limited existing record documents may be available for contractor use and the accuracy of the record documents is unknown.**
- B. Contractor shall field verify all existing services sizes and routing, providing necessary re-routing and fittings to accommodate existing and new field conditions.**
- C. Perform all renovation work that may be required or necessary for a full and complete execution of the work, whether or not shown or specified. The exact extent of demolition and connection scope may not be as fully indicated by the drawings. The Contractor shall determine the exact nature and extent of the scope that will be necessary, by comparing the contract documents with existing field conditions, and coordinate all new-to-existing utility connections with actual field conditions.**
- D. The beginning of demolition work means Contractor acknowledgement of the existing conditions.**

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Exercise care in transporting and handling removed materials to avoid damage to existing construction, fixtures and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Provide materials and equipment for patching, capping and sealing ductwork and piping as required and as indicated within the contract documents.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. The Contractor shall visit and inspect the existing building and shall thoroughly familiarize themselves with the actual job conditions prior to submitting a proposal. Failure to do so shall not relieve the Contractor from performing the work required under this contract. The submission of the Contractors proposal is construed as evidence of performing a site inspection, and includes all the materials, means and methods required for all work in the contract.
- B. The Contractor shall inspect the work site with the University Environmental Health & Safety Officer(s) to review/discuss all known and potential health and safety hazards prior to submitting a proposal.
- C. The Contractor shall investigate for, and the condition of, existing duct liner within all existing to remain ducting systems. **Inspect, determine, and remediate for mold in accordance with ANSI/IICRC S520. ~~Test for mold.~~**
- D. The Contractor shall investigate each space through which equipment must be moved to determine any special considerations due to building layout, site access, etc.
- E. Notify the Architect/Engineer in writing, prior or with the proposal, of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until the unsatisfactory conditions have been corrected or properly addressed.
- F. Prior to the removal of existing walls, verify the existing conditions, check to make sure that no existing piping, ductwork, conduit, etc., which the Architect/Engineer is unaware of, will be damaged. Rerouting of existing live services will be subject to the approval of the Architect/Engineer. Make arrangements with the Building Owner for the outages required of any services.
- G. Verify that piping, ductwork and equipment being abandoned serves only the abandoned facilities area.
- H. Prior to disconnection and removal of plumbing drainage piping, video inspect all existing drain lines that are intended to remain in service to ensure they are free of debris and in condition for reuse. Submit report to Architect/Engineer in written, accurate detail.

3.2 PREPARATION

- A. At the beginning of construction, the Contractor shall seal airtight the existing ductwork serving the areas of new work to reduce dust contamination to the building's system.
- B. The Contractor shall be responsible to maintain the existing building operation in surrounding areas, at all times during the entire demolition period. If it is absolutely necessary to shut down part of or an entire system at any time, this Contractor shall consult with the General Contractor

and Building Owner to make arrangements to do so at the Building Owner's convenience. The Contractor shall give a minimum of 10 workday notice before shutting down the system and obtaining Building Owner's written authorization. Minimize outage duration during shutdown.

- C. Care shall be exercised to minimize any inconvenience or disturbance to other areas of the building which are to remain in operation. The Contractor shall physically isolate work areas by means of temporary partitions to keep dust and dirt within the construction area.
- D. The Contractor shall examine materials, equipment, and conditions under which the work is to be performed. Correct unsafe and unsatisfactory conditions prior to proceeding with the work, and stop work when conditions/materials may jeopardize the safety of workers or occupants of the building and contact the University.
- E. The Contractor shall maintain temporary ventilation for all areas of work in accordance with OSHA and local codes.

3.3 DEMOLITION WORK

- A. Demolition work required in the building shall be performed in a manner and time acceptable to the Owner.
- B. Demolish and remove existing-to-remove equipment, piping, wiring, enclosures, controllers, etc. to the extent required for the new construction. Should the demolition occur within occupied spaces, the demolition shall be coordinated to limit disturbance of the occupied areas to the maximum extent possible.
- C. Disconnect and remove piping, ductwork, fixtures, trim, equipment, brackets, hangers, devices, and other accessories which are rendered obsolete or abandoned by this or previous alterations.
- D. All piping of ductwork to be removed shall be removed back to the active source or valve and capped leaving no dead-end runs.
- E. Perform cutting and patching required for the demolition work.
- F. Materials and equipment to be salvaged or reused is identified on the Drawings. Salvaged items are the property of the Owner and shall be returned to the Building Owner's designated storage area. Care shall be taken during the handling of these items.
- G. Demolished materials and equipment not being salvaged or reused shall become the property of the Contractor and removed from the site and legally disposed of.
- H. Remove all of the existing fiberglass duct liner and clean the existing sheet metal duct with disinfectant agents. Ductwork shall be sealed airtight and reinsulated with exterior duct wrap insulation.
 - 1. If removal of existing fiberglass duct liner is not practical, the Contractor has the option of cleaning all the duct liner and then fully encapsulate the existing liner, with Fosters 40/20 or equal.

3.4 RENOVATION WORK

- A. If unanticipated mechanical (i.e., fire protection), electrical (i.e., conduit, cable tray) or structural elements intended to remain for reuse and which conflict with the systems involved in this work are encountered, investigate and measure both nature and extent of the conflict. Submit report to Architect/Engineer in written, accurate detail.

3.5 TESTING, ADJUSTING, AND BALANCING

- A. Before demolition, and after all openings in piping and ductwork have been capped (temporarily or permanently) as indicated on the drawings, the Contractor shall employ the services of an independent "Testing, Adjusting and Balancing" professional to provide pre-read survey test, adjust and balance of all the existing-to-remain hydronic and air systems that are intended to be altered

because of the demolition. These survey values shall be used to rebalance all the areas served by the systems involved in this work to the original set points.

- B. It is the responsibility of this Contractor to make sure that all areas, served by the systems involved in this work, remain 100% operational and provided with the same comfort conditions as before.
- C. Contractor shall submit the pre-read test, adjust and balance report(s) to the Architect/Engineer for approval.

3.6 CLEANING AND REPAIR

- A. Maintain the spaces surrounding the area of work clean and clear of all demolition debris throughout the entire project duration. Clean the job site daily and remove all dirt and debris caused by selective demolition and installation. Do not allow accumulation of debris.
- B. After demolition, clean and repair the existing materials and equipment remaining in places that are to be reused.
- C. Air Distribution Duct Cleaning:
 - 1. Clean all the existing supply air, return air, and exhaust air duct systems, including all air outlets and inlets (diffusers, registers, and grilles), that are to be reused.
 - 2. The Duct Cleaning Contractor shall be a certified member of the National Air Duct Cleaners Association (NADCA) and shall also be a certified Air System Cleaning Specialist (ASCS).
 - 3. The identified duct systems shall be cleaned in strict accordance with NADCA General Specification for the Cleaning & Restoration of Commercial HVAC Systems, Part 1 and Part 2.

END OF SECTION

SECTION 23 82 39

HYDRONIC HEATING TERMINAL UNITS

PART 1 - GENERAL

1.1 SUMMARY

- A. Furnish labor, materials, tools, equipment, and services for Hydronic Heating Terminal Units, as indicated, in accordance with provisions of Contract Documents.
- B. Description of system:
 - 1. Fan coil units.
- C. Work installed but not furnished:
 - 1. Control valves: Furnished under Section 25 50 00.
- D. Completely coordinate with work of other trades.

1.2 QUALITY ASSURANCE

- A. Standards:
 - 1. Methods of Testing for Rating Fan-Coil Air Conditioners: ASHRAE-79.
 - 2. Room Fan-Coil Air Conditioners: AHRI-440.
 - 3. Safety Standards for Fan Coil Units and Room Fan Heater Units: ANSI/UL-883.
 - 4. Advanced Installation Guide for Hydronic Heating Systems: IBR-250, 2nd Edition.
 - 5. American Society of Testing and Materials (ASTM):
 - a. E 136 Test Method for Behavior of Materials in a Vertical Tube Furnace at 1382 °F.
 - b. C 553 Standard Specification for Mineral Fiber Blanket and Felt Insulations.
 - c. C665 Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

1.3 SUBMITTALS

- A. Product Data:
 - 1. Fan coil units.
- B. Contract Closeout Information:
 - 1. Operation and Maintenance Data.
 - 2. Owner instruction report.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Fan coil units:
 - 1. Base - Horizontal:
 - a. Trane
 - 2. **Base - Wall:**
 - a. **Multiagua**
 - 3. Optional:
 - a. Energy Labs
 - b. Carrier
 - c. Daikin
 - d. Dunham-Bush
 - e. International Environmental
- B. Other manufacturers desiring approval comply with Section 01630.

2.2 MATERIALS

A. Fan Coil Units:

1. Fan coil units, horizontal: Draw thru type with heating and cooling coils, centrifugal direct-driven fan, filters and drain pan.
 - a. Capacity: As scheduled.
 - b. Casing: 16 GA galvanized steel with side access panels for maintenance and service.
 - c. Coils: Copper tube, aluminum plate fins.
 - 1) Leak tested at 300 PSIG minimum air pressure.
 - 2) Automatic air vent.
 - d. Fan: DWDI forward curved, centrifugal type.
 - 1) Permanently lubricated, long life bearings.
 - 2) Dynamically balanced.
 - e. Drain pans: Integrally attached to coil casing.
 - 1) Drain pipe connection.
 - 2) Stainless steel with molded polystyrene foam insulating liner.
 - f. Filters: 2 IN MERV flat pleated 8 type.
 - g. Motors: Electronically Commutated Motors (ECM), see Section 20 05 00.
 - 1) Provide with built-in thermal overload protection.
 - h. Provide discharge duct collar integral with casing.
2. **Fan coil units, wall mount:**
 - a. **General:**
 - 1) **Factory fabricated fan coil units of the size, type configuration and capacity as scheduled on the drawings.**
 - 2) **Units include coil casing, coil assembly drain pan, air filter, fan, motor, motor drive, motor switch, and cabinet enclosure.**
 - 3) **Unit shall be a factory assembled and tested chilled or heating water fan coil. Contained within the unit shall be all factory wiring, piping, associated controls and special accessories required prior to start up.**
 - 4) **Provide wall fan-coil units that are certified as complying with AHRI 440, and meet the requirements of UL 1995.**
 - b. **Unit cabinet shall be composed of high impact polymers, and shall be internally insulated to ensure quiet operation.**
 - c. **Fan wheels shall be dynamically balanced. Fan motors shall be three speed, direct drive, PSC type, and totally enclosed with internal overload protection.**
 - d. **Water coils shall be manufactured with 3/8 inch copper tubing mechanically bonded to aluminum fins. Coils shall be factory tested to 300 PSIG, with a maximum inlet water temperature 160 DEG F.**
 - e. **Drain pans shall be molded with high impact polymers. The exterior of all drain pans shall be insulated with closed cell insulation to prevent condensation. Pans shall contain flexible drain tubing that is accessible from the rear of the unit.**
 - f. **A condensate drain pan secondary float switch shall be provided to permit field wiring to the unit control to disable the cooling coil control valve upon a high water level condition.**
 - g. **Unit shall contain washable filters. Filters shall be minimum MERV-8 efficiency or as shown on the drawings. Filters in each unit shall be removable without the use of tools.**
 - h. **Controls shall include a circuit board, room sensor, indoor coil thermistor, and transformer. Furnish hard-wired room sensor shipped loose for installation and wiring under Section 23 50 00.**
3. Piping package:
 - a. Provide piping package complete with 4-stop valves, automatic air vent for each coil and electric 2-way valve for each coil.
 - b. Electric modulating 2-way valve: Furnished under Section 25 50 00.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install as indicated and in accordance with manufacturer's recommendations and instructions.

END OF SECTION

LIST OF DRAWINGS

SHEET NO.	TITLE	DATE
GENERAL		
G-100	COVER SHEET	9/10/2021
G-101	ABBREVIATIONS, SYMBOLS, & GENERAL NOTES	9/10/2021
G-102	TYPICAL MOUNTING HEIGHTS & ELEVATOR SIGNAGE - CBC 2016	9/10/2021
G-104	ACCESSIBILITY DIAGRAMS - CBC 2016	9/10/2021
G-110	LEVEL 0 BASEMENT LIFE SAFETY	9/10/2021
G-111	LEVEL 1 LIFE SAFETY	9/10/2021
G-112	LEVEL 2 LIFE SAFETY	9/10/2021
G-113	LEVEL 3 LIFE SAFETY	9/10/2021
G-114	LEVEL 4 LIFE SAFETY	9/10/2021
<u>G-201</u>	<u>CONCEPTUAL PHASING AXON DIAGRAMS & NARRATIVE</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
<u>G-202</u>	<u>PHASING PLAN - LEVEL B, 1, 2</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
G-203	PHASING PLAN - LEVEL 3, 4	9/10/2021
G-204	PHASING PLAN ROOF LEVEL	9/10/2021
G-301	CAMPUS PLAN	9/10/2021
CIVIL		
<u>C-100</u>	<u>TRANSFORMER PAD GRADING</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
STRUCTURAL		
S-001	GENERAL NOTES	9/10/2021
S-002	GENERAL NOTES	9/10/2021
SD-104B	DEMOLITION PLAN FOURTH LEVEL AREA B	9/10/2021
SD-105A	DEMOLITION PLAN ROOF LEVEL AREA A	9/10/2021
SD-106A	DEMOLITION SECTIONS	9/10/2021
S-104B	FLOOR PLAN FOURTH LEVEL AREA B	9/10/2021
S-105A	FLOOR PLAN ROOF LEVEL AREA A	9/10/2021
S-201	PENTHOUSE ELEVATIONS	9/10/2021
S-301	CONCRETE SECTIONS AND DETAILS	9/10/2021
<u>S-302</u>	<u>CONCRETE SECTIONS AND DETAILS</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
S-501	STEEL SECTIONS AND DETAILS	9/10/2021
S-502	STEEL SECTIONS AND DETAILS	9/10/2021
S-503	STEEL SECTIONS AND DETAILS	9/10/2021
ARCHITECTURE		
AS-102	SITE WORK	9/10/2021
<u>AS-102A</u>	<u>SITE WORK</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
AD-100A	DEMOLITION PLAN BASEMENT LEVEL AREA A	9/10/2021
AD-101A	DEMOLITION PLAN FIRST LEVEL AREA A	9/10/2021
AD-102A	DEMOLITION PLAN SECOND LEVEL AREA A	9/10/2021

AD-102B	DEMOLITION PLAN SECOND LEVEL AREA B	9/10/2021
AD-103A	DEMOLITION PLAN THIRD LEVEL AREA A	9/10/2021
AD-103B	DEMOLITION PLAN THIRD LEVEL AREA B	9/10/2021
<u>AD-104B</u>	<u>DEMOLITION PLAN ROOF LEVEL AREA B</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
AD-105A	DEMOLITION PLAN ROOF LEVEL AREA A	9/10/2021
AD-111A	DEMOLITION RCP - FIRST LEVEL AREA A	9/10/2021
AD-112A	DEMOLITION RCP - SECOND LEVEL AREA A	9/10/2021
AD-112B	DEMOLITION RCP - SECOND LEVEL AREA B	9/10/2021
AD-113A	DEMOLITION RCP - THIRD LEVEL AREA A	9/10/2021
AD-113B	DEMOLITION PLAN THIRD LEVEL AREA B	9/10/2021
AD-114A	DEMOLITION RCP - FOURTH LEVEL AREA A	9/10/2021
A-100A	FLOOR PLAN BASEMENT LEVEL AREA A	9/10/2021
<u>A-101A</u>	<u>FLOOR PLAN FIRST LEVEL AREA A</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
<u>A-102A</u>	<u>FLOOR PLAN SECOND LEVEL AREA A</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
A-102B	FLOOR PLAN SECOND LEVEL AREA B	9/10/2021
<u>A-103A</u>	<u>FLOOR PLAN THIRD LEVEL AREA A</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
A-103B	FLOOR PLAN THIRD LEVEL AREA B	9/10/2021
<u>A-104A</u>	<u>FLOOR PLAN FOURTH LEVEL AREA A</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
A-104B	FLOOR PLAN FOURTH LEVEL AREA B	9/10/2021
A-105A	FLOOR PLAN ROOF LEVEL AREA A	9/10/2021
AC-101A	RCP - FIRST LEVEL AREA A	9/10/2021
AC-102A	RCP - SECOND LEVEL AREA A	9/10/2021
AC-102B	RCP - SECOND LEVEL AREA B	9/10/2021
AC-103A	RCP - THIRD LEVEL AREA A	9/10/2021
AC-103B	RCP - THIRD LEVEL AREA B	9/10/2021
AC-104A	RCP - FOURTH LEVEL AREA A	9/10/2021
A-201	EXTERIOR ELEVATIONS	9/10/2021
A-202	EXTERIOR ELEVATIONS	9/10/2021
A-301	BUILDING SECTIONS AREA A	9/10/2021
A-302	BUILDING SECTIONS AREA B	9/10/2021
A-401	ENLARGED LABORATORY CASEWORK	9/10/2021
A-404	ENLARGED PLANS	9/10/2021
A-405	PENTHOUSE PLANS AND ELEVATIONS	9/10/2021
A-500	DETAILS - EXTERIOR	9/10/2021
A-501	DETAILS - EXTERIOR	9/10/2021
A-502	DETAILS - STAIRS & GUARDRAIL	9/10/2021
A-504	DETAILS -ROOF	9/10/2021
A-505	DETAILS -ROOF	9/10/2021
A-552	DETAILS - INTERIOR	9/10/2021
A-553	DETAILS - INTERIOR	9/10/2021
A-601	DOOR SCHEDULE AND DETAILS	9/10/2021

A-720	STANDARD PARTITION TYPES	9/10/2021
A-721	PARTITION FRAMING DETAILS	9/10/2021
INTERIOR		
I-102A	INTERIOR FINISH PLAN SECOND LEVEL AREA A	9/10/2021
<u>I-600</u>	<u>INTERIOR FINISH LIST & ROOM FINISH SCHEDULE</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> <u>9/10/2021</u>
FIRE PROTECTION		
F-001	FIRE PROTECTION SYMBOLS, ABBREVIATIONS AND DETAILS	9/10/2021
FD-100	FIRE PROTECTION DEMOLITION PLAN BASEMENT LEVEL	9/10/2021
FD-101	FIRE PROTECTION DEMOLITION PLAN FIRST LEVEL	9/10/2021
FD-102	FIRE PROTECTION DEMOLITION PLAN SECOND LEVEL	9/10/2021
FD-103	FIRE PROTECTION DEMOLITION PLAN THIRD LEVEL	9/10/2021
FD-104	FIRE PROTECTION DEMOLITION PLAN FOURTH LEVEL	9/10/2021
F-100	FIRE PROTECTION PLAN BASEMENT LEVEL	9/10/2021
F-101	FIRE PROTECTION PLAN FIRST LEVEL	9/10/2021
F-102	FIRE PROTECTION PLAN SECOND LEVEL	9/10/2021
F-103	E PROTECTION PLAN THIRD LEVEL	9/10/2021
F-104	FIRE PROTECTION PLAN FOURTH LEVEL	9/10/2021
F-105	FIRE PROTECTION PLAN ROOF LEVEL	9/10/2021
PLUMBING		
P-001	PLUMBING SYMBOLS AND ABBREVIATIONS	9/10/2021
PD-10U-A1	PLUMBING DEMOLITION PLAN UNDERGROUND LEVEL AREA A1	9/10/2021
PD-10U-A2	PLUMBING DEMOLITION PLAN BASEMENT UNDGND AREA A2	9/10/2021
PD-100-A2	PLUMBING DEMOLITION PLAN BASEMENT LEVEL AREA A2	9/10/2021
PD-101-A1	PLUMBING DEMOLITION PLAN FIRST LEVEL AREA A1	9/10/2021
PD-101-A2	PLUMBING DEMOLITION PLAN FIRST LEVEL AREA A2	9/10/2021
PD-101-B	PLUMBING DEMOLITION PLAN FIRST LEVEL AREA B	9/10/2021
PD-102-A1	PLUMBING DEMOLITION PLAN SECOND LEVEL AREA A1	9/10/2021
PD-102-A2	PLUMBING DEMOLITION PLAN SECOND LEVEL AREA A2	9/10/2021
PD-102-B	PLUMBING DEMOLITION PLAN SECOND LEVEL AREA B	9/10/2021
PD-103-A1	PLUMBING DEMOLITION PLAN THIRD LEVEL AREA A1	9/10/2021
PD-103-A2	PLUMBING DEMOLITION PLAN THIRD LEVEL AREA A2	9/10/2021
PD-103-B	PLUMBING DEMOLITION PLAN THIRD LEVEL AREA B	9/10/2021
PD-104-A1	PLUMBING DEMOLITION PLAN FOURTH LEVEL AREA A1	9/10/2021
PD-104-A2	PLUMBING DEMOLITION PLAN FOURTH LEVEL AREA A2	9/10/2021
PD-104-B	PLUMBING DEMOLITION PLAN FOURTH LEVEL AREA B	9/10/2021
PD-105-A1	PLUMBING DEMOLITION PLAN ROOF LEVEL AREA A1	9/10/2021
PD-105-A2	PLUMBING DEMOLITION PLAN ROOF LEVEL AREA A2	9/10/2021
P-10U-A1	PLUMBING PLAN BASEMENT UNDGND AREA A1	9/10/2021
P-10U-A2	PLUMBING PLAN BASEMENT UNDERGROUND LEVEL AREA A2	9/10/2021
P-100-A2	PLUMBING PLAN BASEMENT LEVEL AREA A2	9/10/2021
P-101-A1	PLUMBING PLAN FIRST LEVEL AREA A1	9/10/2021
P-101-A2	PLUMBING PLAN BASEMENT LEVEL AREA A2	9/10/2021
<u>P-101-B</u>	<u>PLUMBING PLAN FIRST LEVEL AREA B</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> <u>9/10/2021</u>
P-102-A1	PLUMBING PLAN SECOND LEVEL AREA A1	9/10/2021
P-102-A2	PLUMBING PLAN SECOND LEVEL AREA A2	9/10/2021
P-102-B	PLUMBING PLAN SECOND LEVEL AREA B	9/10/2021
P-103-A1	PLUMBING PLAN THIRD LEVEL AREA A1	9/10/2021
P-103-A2	PLUMBING PLAN THIRD LEVEL AREA A2	9/10/2021
P-103-B	PLUMBING PLAN THIRD LEVEL AREA B	9/10/2021

P-104-A1	PLUMBING PLAN FOURTH LEVEL AREA A1	9/10/2021
P-104-A2	PLUMBING PLAN FOURTH LEVEL AREA A2	9/10/2021
<u>P-104-B</u>	<u>PLUMBING PLAN FOURTH LEVEL AREA B</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
<u>P-105-A1</u>	<u>PLUMBING PLAN ROOF LEVEL AREA A1</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
<u>P-105-A2</u>	<u>PLUMBING PLAN ROOF LEVEL AREA A2</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
P-501	PLUMBING DETAILS	9/10/2021
P-701	PLUMBING SCHEDULES	9/10/2021
P-702	PLUMBING SCHEDULES	9/10/2021
P-801	PLUMBING DOMESTIC SUPPLY AND DISTRIBUTION FLOW DIAGRAM	9/10/2021
P-802	PLUMBING INDUSTRIAL WATER SYSTEM FLOW DIAGRAM	9/10/2021
P-803	PLUMBING REVERSE OSMOSIS DEIONIZED WATER SYSTEM FLOW DIAGRAM	9/10/2021
P-804	PLUMBING LABORATORY COMPRESSED AIR SYSTEM FLOW DIAGRAM	9/10/2021
P-805	PLUMBING PROCESS VACUUM SYSTEM FLOW DIAGRAM	9/10/2021
P-806	PLUMBING NATURAL GAS SYSTEM FLOW DIAGRAM	9/10/2021
MECHANICAL		
M-001	MECHANICAL SYMBOLS AND ABBREVIATIONS	9/10/2021
M-002	MECHANICAL SYMBOLS AND ABBREVIATIONS INSTRUMENTATION	9/10/2021
M-003	MECHANICAL TITLE 24 COMPLIANCE FORMS	9/10/2021
M-004	MECHANICAL TITLE 24 COMPLIANCE FORMS	9/10/2021
M-005	MECHANICAL TITLE 24 COMPLIANCE FORMS	9/10/2021
M-006	MECHANICAL TITLE 24 COMPLIANCE FORMS	9/10/2021
M-007	MECHANICAL TITLE 24 COMPLIANCE FORMS	9/10/2021
M-008	MECHANICAL TITLE 24 COMPLIANCE FORMS	9/10/2021
M-009	MECHANICAL TITLE 24 COMPLIANCE FORMS	9/10/2021
<u>MS-101</u>	<u>MECHANICAL SITE PLAN</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
MD-100	MECHANICAL DEMOLITION PLAN BASEMENT LEVEL	9/10/2021
MD-101	MECHANICAL DEMOLITION PLAN FIRST LEVEL	9/10/2021
MD-102	MECHANICAL DEMOLITION PLAN SECOND LEVEL	9/10/2021
MD-103	MECHANICAL DEMOLITION PLAN THIRD LEVEL	9/10/2021
MD-104	MECHANICAL DEMOLITION PLAN FOURTH LEVEL	9/10/2021
MD-105	MECHANICAL DEMOLITION PLAN PENTHOUSE LEVEL	9/10/2021
M-100	MECHANICAL PLAN BASEMENT LEVEL	9/10/2021
M-101	MECHANICAL PLAN FIRST LEVEL	9/10/2021
M-102	MECHANICAL PLAN SECOND LEVEL	9/10/2021
M-103	MECHANICAL PLAN THIRD LEVEL	9/10/2021
M-104	MECHANICAL PLAN FOURTH LEVEL	9/10/2021
M-105	MECHANICAL PLAN ROOF LEVEL	9/10/2021
<u>M-100-A2</u>	<u>MECHANICAL PLAN BASEMENT LEVEL AREA A2</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
<u>M-101-A1</u>	<u>MECHANICAL PLAN FIRST LEVEL AREA A1</u>	<u>10/25/2021</u>

		<u>BID ADDENDUM 2</u> 9/10/2021
M-101-A2	MECHANICAL PLAN FIRST LEVEL AREA A2	9/10/2021
<u>M-101-B</u>	<u>MECHANICAL PLAN FIRST LEVEL AREA B</u>	<u>10/25/2021</u> <u>BID ADDENDUM 2</u> 9/10/2021
M-102-A1	MECHANICAL PLAN SECOND LEVEL AREA A1	9/10/2021
<u>M-102-A2</u>	<u>MECHANICAL PLAN SECOND LEVEL AREA A2</u>	<u>9/10/2021</u> <u>BID ADDENDUM 2</u> 9/10/2021
<u>M-102-B</u>	<u>MECHANICAL PLAN SECOND LEVEL AREA B</u>	<u>9/10/2021</u> <u>BID ADDENDUM 2</u> 9/10/2021
M-103-A1	MECHANICAL PLAN THIRD LEVEL AREA A1	9/10/2021
<u>M-103-A2</u>	<u>MECHANICAL PLAN THIRD LEVEL AREA A2</u>	<u>10/25/2021</u> <u>BID ADDENDUM 2</u> 9/10/2021
<u>M-103-B</u>	<u>MECHANICAL PLAN THIRD LEVEL AREA B</u>	<u>10/25/2021</u> <u>BID ADDENDUM 2</u> 9/10/2021
<u>M-104-A1</u>	<u>MECHANICAL PLAN FOURTH LEVEL AREA A1</u>	<u>10/25/2021</u> <u>BID ADDENDUM 2</u> 9/10/2021
M-104-A2	MECHANICAL PLAN FOURTH LEVEL AREA A2	9/10/2021
M-104-B	MECHANICAL PLAN FOURTH LEVEL AREA B	9/10/2021
M-105-A1	MECHANICAL PLAN ROOF LEVEL AREA A1	9/10/2021
<u>M-105-A2</u>	<u>MECHANICAL PLAN ROOF LEVEL AREA A2</u>	<u>10/25/2021</u> <u>BID ADDENDUM 2</u> 9/10/2021
M-301	MECHANICAL SECTION WEST WING LOOKING NORTH	9/10/2021
M-302	MECHANICAL SECTION WEST WING LOOKING NORTH	9/10/2021
M-303	MECHANICAL SECTION WEST WING LOOKING SOUTH	9/10/2021
M-304	MECHANICAL SECTION WEST WING LOOKING SOUTH	9/10/2021
<u>M-305</u>	<u>MECHANICAL SECTION SOUTH WING LOOKING EAST</u>	<u>10/25/2021</u> <u>BID ADDENDUM 2</u> 9/10/2021
<u>M-306</u>	<u>MECHANICAL SECTION SOUTH WING LOOKING WEST</u>	<u>10/25/2021</u> <u>BID ADDENDUM 2</u> 9/10/2021
M-501	MECHANICAL DETAILS	9/10/2021
M-502	MECHANICAL DETAILS	9/10/2021
M-503	MECHANICAL DETAILS	9/10/2021
M-504	MECHANICAL DETAILS	9/10/2021
M-505	MECHANICAL DETAILS	9/10/2021
M-601	MECHANICAL DIAGRAM LABORATORY AIRFLOW	9/10/2021
M-602	MECHANICAL DIAGRAM LABORATORY AIRFLOW FIRST LEVEL	9/10/2021
M-603	MECHANICAL DIAGRAM LABORATORY AIRFLOW SECOND LEVEL	9/10/2021

M-605	MECHANICAL DIAGRAM LABORATORY AIRFLOW THIRD LEVEL	9/10/2021
M-607	MECHANICAL DIAGRAM LABORATORY AIRFLOW FOURTH LEVEL	9/10/2021
M-610	MECHANICAL DIAGRAM HYDRONICS SYSTEMS	9/10/2021
M-611	MECHANICAL DIAGRAM HYDRONICS DISTRIBUTION	9/10/2021
M-612	MECHANICAL DIAGRAM HYDRONICS DISTRIBUTION	9/10/2021
M-701	MECHANICAL SCHEDULES	9/10/2021
<u>M-702</u>	<u>MECHANICAL SCHEDULES</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
M-703	MECHANICAL SCHEDULES	9/10/2021
M-704	MECHANICAL SCHEDULES	9/10/2021
<u>M-705</u>	<u>MECHANICAL SCHEDULES</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
M-801	MECHANICAL CONTROL DIAGRAM	9/10/2021
M-802	MECHANICAL CONTROL DIAGRAM	9/10/2021
M-804	MECHANICAL CONTROL DIAGRAM	9/10/2021
M-805	MECHANICAL CONTROL DIAGRAM	9/10/2021
ELECTRICAL		
E-001	ELECTRICAL SYMBOLS AND ABBREVIATIONS	9/10/2021
E-002	ELECTRICAL SYMBOLS AND ABBREVIATIONS	9/10/2021
E-003	ELECTRICAL - TITLE 24	9/10/2021
E-004	ELECTRICAL - TITLE 24	9/10/2021
<u>ES-101</u>	<u>ELECTRICAL SITE PLAN</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
ED-100	ELECTRICAL DEMOLITION PLAN BASEMENT LEVEL	9/10/2021
ED-101	ELECTRICAL DEMOLITION PLAN FIRST LEVEL	9/10/2021
ED-102	ELECTRICAL DEMOLITION PLAN SECOND LEVEL	9/10/2021
ED-103	ELECTRICAL DEMOLITION PLAN THIRD LEVEL	9/10/2021
ED-104	ELECTRICAL DEMOLITION PLAN FOURTH LEVEL	9/10/2021
ED-105	ELECTRICAL DEMOLITION PLAN PENTHOUSE LEVEL	9/10/2021
EL-100	ELECTRICAL LIGHTING PLAN BASEMENT LEVEL	9/10/2021
EL-101	ELECTRICAL LIGHTING PLAN FIRST LEVEL	9/10/2021
EL-102	ELECTRICAL LIGHTING PLAN SECOND LEVEL	9/10/2021
EL-103	ELECTRICAL LIGHTING PLAN THIRD LEVEL	9/10/2021
EL-104	ELECTRICAL LIGHTING PLAN FOURTH LEVEL	9/10/2021
EL-105	ELECTRICAL LIGHTING PLAN ROOF LEVEL	9/10/2021
EL-200	ELECTRICAL LIGHTING PLAN BASEMENT LEVEL – PHOTOMETRIC	9/10/2021
EL-201	ELECTRICAL LIGHTING PLAN FIRST LEVEL – PHOTOMETRIC	9/10/2021
EL-202a	ELECTRICAL LIGHTING PLAN SECOND LEVEL - PHOTOMETRIC	9/10/2021
EL-202b	ELECTRICAL LIGHTING PLAN SECOND LEVEL - PHOTOMETRIC EM	9/10/2021
EL-203a	ELECTRICAL LIGHTING PLAN THIRD LEVEL - PHOTOMETRIC	9/10/2021
EL-203b	ELECTRICAL LIGHTING PLAN THIRD LEVEL - PHOTOMETRIC EM	9/10/2021
EL-204	ELECTRICAL LIGHTING PLAN FOURTH LEVEL - PHOTOMETRIC	9/10/2021
EL-205	ELECTRICAL LIGHTING PLAN ROOF LEVEL – PHOTOMETRIC	9/10/2021
EP-100	ELECTRICAL PLAN BASEMENT LEVEL	9/10/2021
EP-101	ELECTRICAL PLAN FIRST LEVEL	9/10/2021
EP-102	ELECTRICAL PLAN SECOND LEVEL	9/10/2021
EP-103	ELECTRICAL PLAN THIRD LEVEL	9/10/2021
EP-104	ELECTRICAL PLAN FOURTH LEVEL	9/10/2021

EP-105	ELECTRICAL PLAN ROOF LEVEL	9/10/2021
EP-401	ELECTRICAL ENLARGED PLANS	9/10/2021
<u>EP-501</u>	<u>ELECTRICAL DETAILS</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
ET-100	ELECTRICAL SECURITY PLAN BASEMENT LEVEL	9/10/2021
ET-101	ELECTRICAL SECURITY PLAN FIRST LEVEL	9/10/2021
ET-102	ELECTRICAL TELECOM/SECURITY PLAN SECOND LEVEL	9/10/2021
ET-103	ELECTRICAL TELECOM/SECURITY PLAN THIRD LEVEL	9/10/2021
ET-104	ELECTRICAL TELECOM/SECURITY PLAN FOURTH LEVEL	9/10/2021
ET-501	ELECTRICAL TELECOM/SECURITY DETAILS	9/10/2021
EY-100	ELECTRICAL FIRE ALARM PLAN BASEMENT LEVEL	9/10/2021
EY-101	ELECTRICAL FIRE ALARM PLAN FIRST LEVEL	9/10/2021
EY-102	ELECTRICAL FIRE ALARM PLAN SECOND LEVEL	9/10/2021
EY-103	ELECTRICAL FIRE ALARM PLAN THIRD LEVEL	9/10/2021
EY-104	ELECTRICAL FIRE ALARM PLAN FOURTH LEVEL	9/10/2021
EY-105	ELECTRICAL FIRE ALARM PLAN ROOF LEVEL	9/10/2021
EY-601	ELECTRICAL FIRE ALARM RISER-DETAILS	9/10/2021
<u>ED-601</u>	<u>ELECTRICAL ONE-LINE DIAGRAM DEMOLITION EAST/WEST WING</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
<u>ED-602</u>	<u>ELECTRICAL ONE-LINE DIAGRAM DEMOLITION SOUTH WING</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
<u>E-601</u>	<u>ELECTRICAL ONE-LINE PARTIAL SITE 12KV DISTRIBUTION</u>	<u>10/25/2021</u> <u>BID</u> <u>ADDENDUM 2</u> 9/10/2021
E-602	ELECTRICAL ONE-LINE DIAGRAM 480/277V EAST/WEST WING	9/10/2021
E-603	ELECTRICAL ONE-LINE DIAGRAM 480/277V SOUTH WING	9/10/2021
E-604	ELECTRICAL ONE-LINE DIAGRAM 208/120V EAST/WEST WING	9/10/2021
E-605	ELECTRICAL ONE-LINE DIAGRAM 208/120V SOUTH WING	9/10/2021
E-701	ELECTRICAL SCHEDULES	9/10/2021
E-702	ELECTRICAL SCHEDULES	9/10/2021
E-703	ELECTRICAL SCHEDULES	9/10/2021
E-704	ELECTRICAL SCHEDULES	9/10/2021
E-705	ELECTRICAL SCHEDULES	9/10/2021
E-706	ELECTRICAL SCHEDULES	9/10/2021
TOTAL	257 SHEETS	

END OF LIST OF DRAWINGS