

# UNIVERSITY OF CALIFORNIA, RIVERSIDE

## LOTHIAN RESIDENCE HALL

### AHU REPLACEMENTS

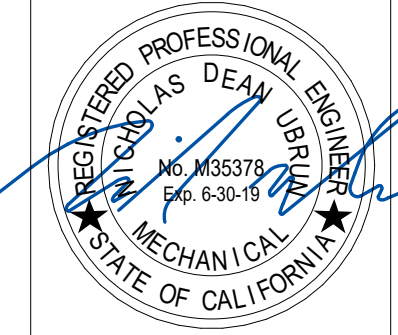
### PROJECT NO. 956394



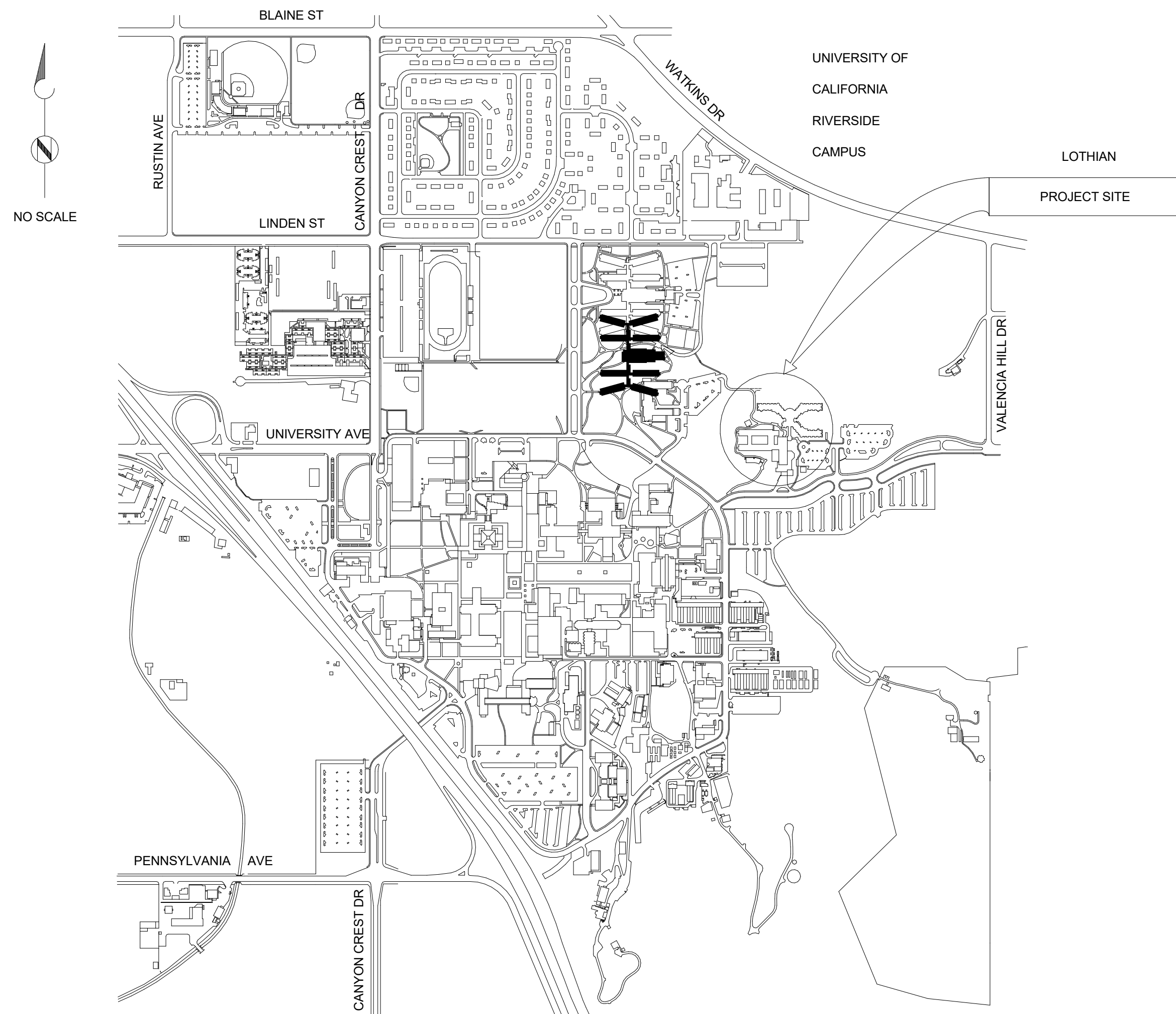
CAPITAL PROGRAMS  
ARCHITECTS & ENGINEERS  
1223 UNIVERSITY AVENUE, SUITE 240  
RIVERSIDE, CA. 92521  
TEL: (951) 827-1273 FAX: (951) 827-3890

Architect's Data:

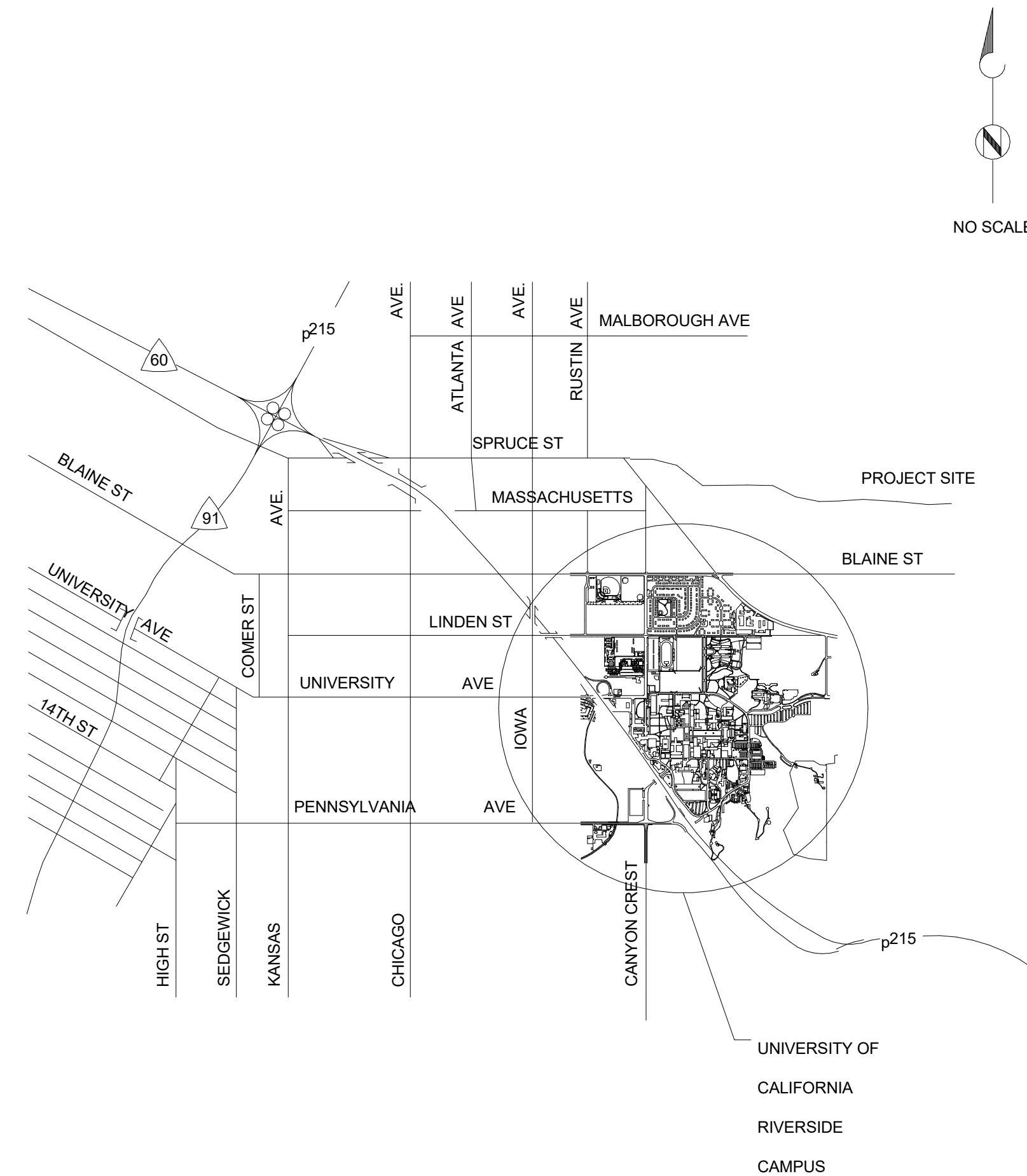
Architect's Stamp: Consultant's Stamp:



LOCATION MAP



VICINITY MAP



JOB DESCRIPTION

IN BRIEF, THIS PROJECT INVOLVES THE LIKE KIND REPLACEMENT OF TWO EXISTING AIR HANDLING UNITS LOCATED IN THE WEST LOTHIAN MECHANICAL ROOM. THE EXISTING HHW PUMPS WILL ALSO BE REMOVED AND NEW DDC CONTROLS WILL BE PROVIDED FOR THE NEW AIR HANDLING UNITS.

GENERAL NOTES

- THE ARRANGEMENT OF THE SYSTEM SHOWN ON THESE DRAWINGS IS BASED UPON INFORMATION AVAILABLE TO THE ENGINEER AT THE TIME OF DESIGN. THE DRAWINGS ARE NOT INTENDED TO SHOW EXACT DIMENSIONS. THESE DRAWINGS ARE IN PART DIAGRAMMATIC, AND SOME FEATURES OF THE ILLUSTRATED EQUIPMENT INSTALLATION MAY REQUIRE REVISION TO MEET ACTUAL INSTALLATION REQUIREMENTS. STRUCTURAL SUPPORTS, CONNECTED PIPING, VALVES, CONDUIT AND WIRING SPECIFIED MAY HAVE TO BE ALTERED TO ACCOMMODATE THE EQUIPMENT PROVIDED. NO ADDITIONAL PAYMENT SHALL BE MADE FOR SUCH REVISIONS AND/OR ALTERATIONS.
- ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE CALIFORNIA ADMINISTRATIVE CODES, CALIFORNIA BUILDING STANDARD CODES, NFPA STANDARDS, LOCAL CODES, AND REQUIREMENTS SPECIFIED HEREIN.
- THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO BID IN ORDER TO THOROUGHLY FAMILIARIZE THEMSELVES WITH THE EXISTING FIELD CONDITIONS AND SCOPE OF WORK TO BE PERFORMED. THE CONTRACTOR SHALL ALSO VERIFY ALL DIMENSIONS OF THE EXISTING FACILITIES AND EQUIPMENT PERTINENT TO THE SCOPE OF WORK TO THIS PROJECT PRIOR TO BID.
- THE CONTRACTOR SHALL PROVIDE AND BE RESPONSIBLE FOR PROTECTION AND REPAIR OF ADJACENT EXISTING SURFACES, DUCT, AREAS, PIPING, CONDUIT, AND EQUIPMENT WHICH MAY BE DAMAGED AS A RESULT OF DEMOLITION AND/OR NEW WORK. THE CONTRACTOR SHALL NOT DEMOLISH OR ALTER ANY WORK WHICH IS NOT A PART OF THIS CONTRACT WITHOUT WRITTEN PERMISSION FROM THE UNIVERSITY.
- CONTRACTOR SHALL DESIGN AND PROVIDE PIPE SUPPORTS, SEISMIC SWAY BRACING AND RESTRAINT OF ALL NEW PIPING, CONDUIT, AND FLUE EXHAUST.
- CONTRACTOR SHALL PATCH, SEAL AND PAINT TO MATCH EXISTING ANY DEMOLITION TO EXISTING WALLS, FLOORS, AND CEILINGS REQUIRED TO FACILITATE CONSTRUCTION.
- REFER TO DETAIL 1M3.0 FOR GENERAL DUCT INSTALLATION REQUIREMENTS.
- REFER TO DETAILS 2M3.0 AND 3M3.0 FOR CHW AND HHW PIPE INSTALLATION.
- REFER TO DETAIL 4M3.0 FOR DUCT SUPPORT INSTALLATION.

INDEX OF DRAWINGS

MECHANICAL	
M0.1	MECHANICAL NOTES, ABBREVIATIONS, AND SYMBOLS
M0.2	EQUIPMENT SCHEDULES
M1.0	MECHANICAL DEMOLITION
M2.0	MECHANICAL RECONSTRUCTION
M3.0	MECHANICAL DETAILS
M3.1	AHU DETAILS
M4.0	P&ID
M5.0	CONTROL DIAGRAM / SEQUENCE OF OPERATION
M5.1	COMMUNICATION RISER DIAGRAM
ELECTRICAL	
E0.1	ELECTRICAL SYMBOLS, LEGEND, AND GENERAL NOTES
E1.0	ELECTRICAL DEMOLITION & RECONSTRUCTION PLANS
E3.1	SINGLE LINE DIAGRAM AND SCHEDULES
STRUCTURAL	
S1.0	GENERAL NOTES
S2.0	BASEMENT FLOOR PLAN
S3.0	STRUCTURAL DETAILS

APPLICABLE CODES

- 2016 CALIFORNIA BUILDING CODE (CBC) PART 2, VOLUMES 1 AND 2, TITLE 24 [BASED ON 2015 INTERNATIONAL BUILDING CODE]
- 2016 CALIFORNIA ELECTRICAL CODE (CEC) PART 3, TITLE 24 [BASED ON 2014 NATIONAL ELECTRICAL CODE]
- 2016 CALIFORNIA MECHANICAL CODE (CMC) PART 4, TITLE 24 [BASED ON 2015 UNIFORM MECHANICAL CODE]
- 2016 CALIFORNIA PLUMBING CODE (CPC) PART 5, TITLE 24 [BASED ON 2015 UNIFORM PLUMBING CODE]
- 2016 CALIFORNIA FIRE CODE (CFC) PART 9, TITLE 24 [BASED ON 2015 INTERNATIONAL FIRE CODE]
- 2016 CALIFORNIA REFERENCED STANDARD CODE, PART 12, TITLE 24
- TITLE 19, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS

PARTIAL LIST OF APPLICABLE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS

- NFPA 13, 2016 EDITION - INSTALLATION OF SPRINKLER SYSTEMS (AS AMENDED BY CSFM)
- NFPA 14, 2013 EDITION - INSTALLATION OF STANDPIPE AND HOSE SYSTEMS (AS AMENDED BY CSFM)
- NFPA 17A, 2013 EDITION - WET CHEMICAL EXTINGUISHING SYSTEMS
- NFPA 24, 2016 EDITION - INSTALLATION OF PRIVATE FIRE SERVICE MAINS (AS AMENDED BY CSFM)
- NFPA 25, (2013 CALIFORNIA EDITION, BASED ON NFPA 25, 2011 EDITION) - INSPECTION, TESTING & MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEMS
- NFPA 72, 2016 EDITION - NATIONAL FIRE ALARM AND SIGNALING CODE (AS AMENDED BY CSFM)
- NFPA 80, 2016 EDITION - FIRE DOORS AND OTHER OPENING PROTECTIVES

REFER TO CBC CHAPTER 35 FOR ADDITIONAL STANDARDS NOT PROVIDED ON THIS LIST.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1146

FIRE SAFETY DURING CONSTRUCTION, ALTERATION, AND DEMOLITION

- FIRE SAFETY DURING CONSTRUCTION, ALTERATION OR DEMOLITION OF A BUILDING SHALL BE IN THE ACCORDANCE WITH 2016 CFC CHAPTER 14.
- FIRE-RESISTIVE ASSEMBLIES AND CONSTRUCTION SHALL BE MAINTAINED IN ACCORDANCE WITH CFC SECTION 141.2.

PROJECT TEAM

**PRIME / MECHANICAL CONSULTANT:**

GOSS ENGINEERING, INC.  
255 EAST RINCON STREET, SUITE 301  
CORONA, CA 92879  
PHONE: (951) 340-1977  
CONTACT: NICK UBRUN, P.E.  
EMAIL: NUBRUN@GOSS-ENG.COM

**ELECTRICAL CONSULTANT:**

GOSS ENGINEERING, INC.  
255 EAST RINCON STREET, SUITE 301  
CORONA, CA 92879  
PHONE: (951) 340-1977  
CONTACT: ED BURTON, P.E.  
EMAIL: EBURTON@GOSS-ENG.COM

**STRUCTURAL CONSULTANT:**

MIYAMOTO INTERNATIONAL, INC.  
1901 EAST ALTON AVENUE, SUITE 160  
SANTA ANA, CA 92705  
PHONE: (949) 579-1170  
CONTACT: JEFFERY CROSIER, P.E.  
EMAIL: JCROSIER@MIYAMOTOINTERNATIONAL.COM

**UNIVERSITY REPRESENTATIVE:**

UC-RIVERSIDE, CAPITAL PROGRAMS, ARCHITECTS & ENGINEERS  
1223 UNIVERSITY AVENUE, SUITE 240  
RIVERSIDE, CA 92521  
PHONE: (951) 827-1397  
CONTACT: JOHN FRANKLIN, PROJECT MANAGER  
EMAIL: JOHN.FRANKLIN@UCR.EDU

**PROJECT ADDRESS:**  
LOTHIAN RESIDENCE HALL  
3595 CANYON CREST DRIVE  
RIVERSIDE, CA 92507

04/19/19



REVISIONS

REV #	DESCRIPTION	DATE
1	50% CONSTRUCTION DOCUMENT	02/15/19
2	90% CONSTRUCTION DOCUMENT	03/20/19
3	100% CONSTRUCTION DOCUMENT	04/17/19

LOTHIAN RESIDENCE HALL  
AHU REPLACEMENTS  
PROJECT# 956394  
CAAN# P5502

Consultant's Data:



UCR Project Manager:

John Franklyn

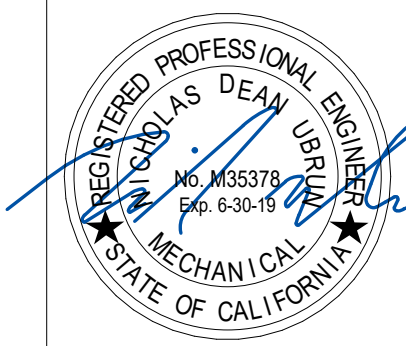
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Checked By:	WG / NU	CD Approval:	
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DSA No.:			

Drawing Title: Sheet No.

TITLE SHEET T0.1

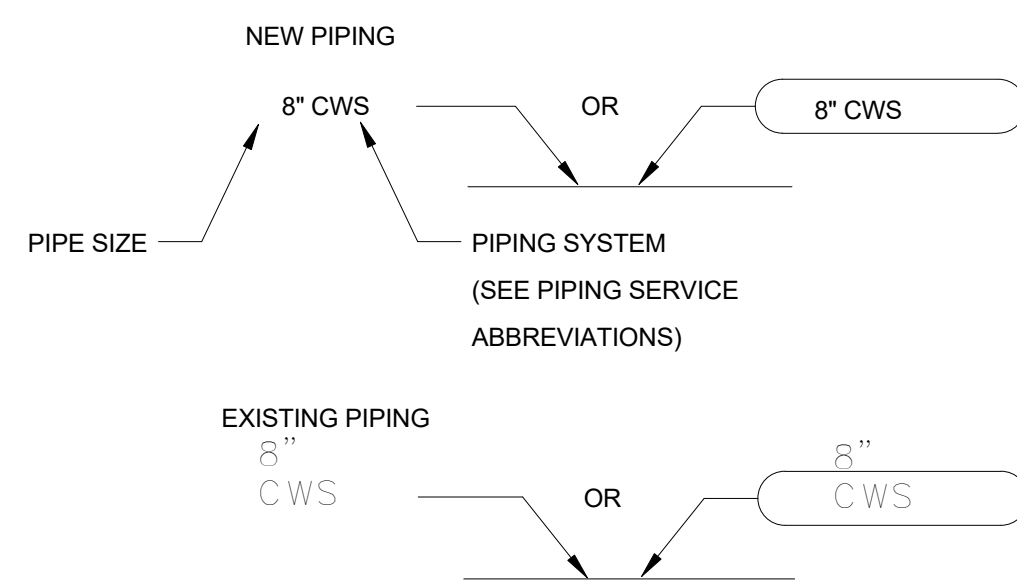
Architect's Data:

Architect's Stamp: Consultant's Stamp:

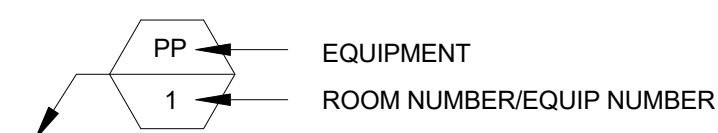


**PIPING DESIGNATIONS**

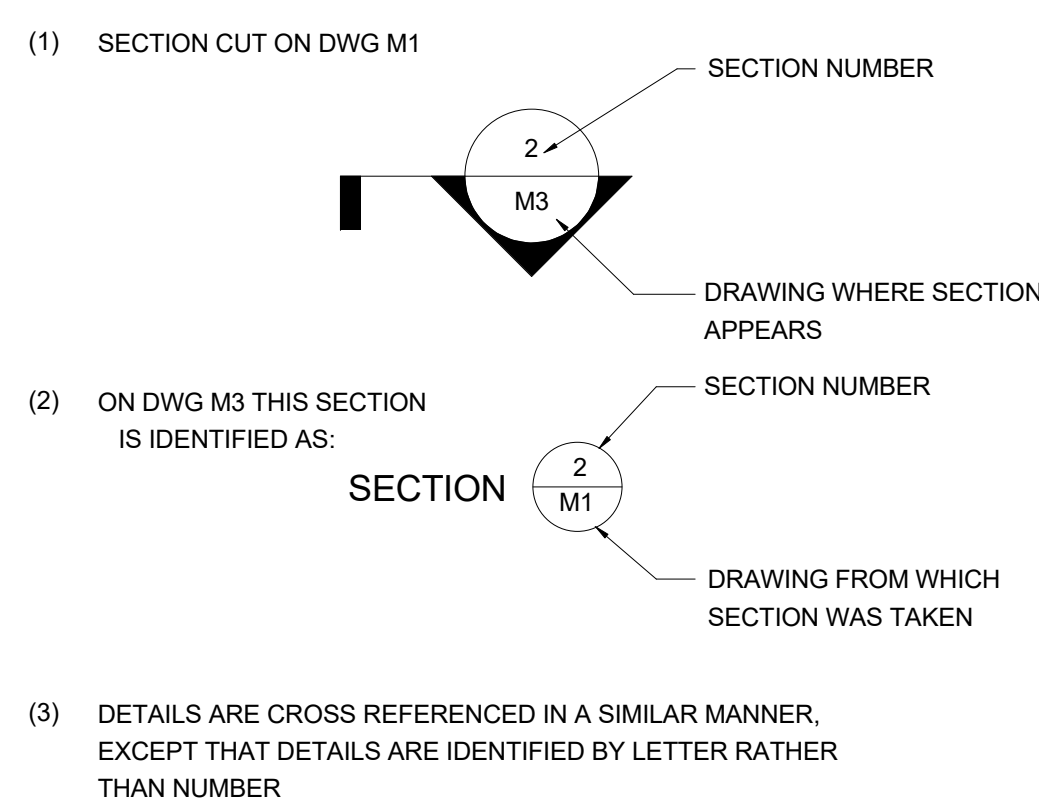
PIPING IS CALLED OUT BY ITS SIZE FOLLOWED BY ITS PIPING SERVICES ABBREVIATION ENCLOSED AS SHOWN:



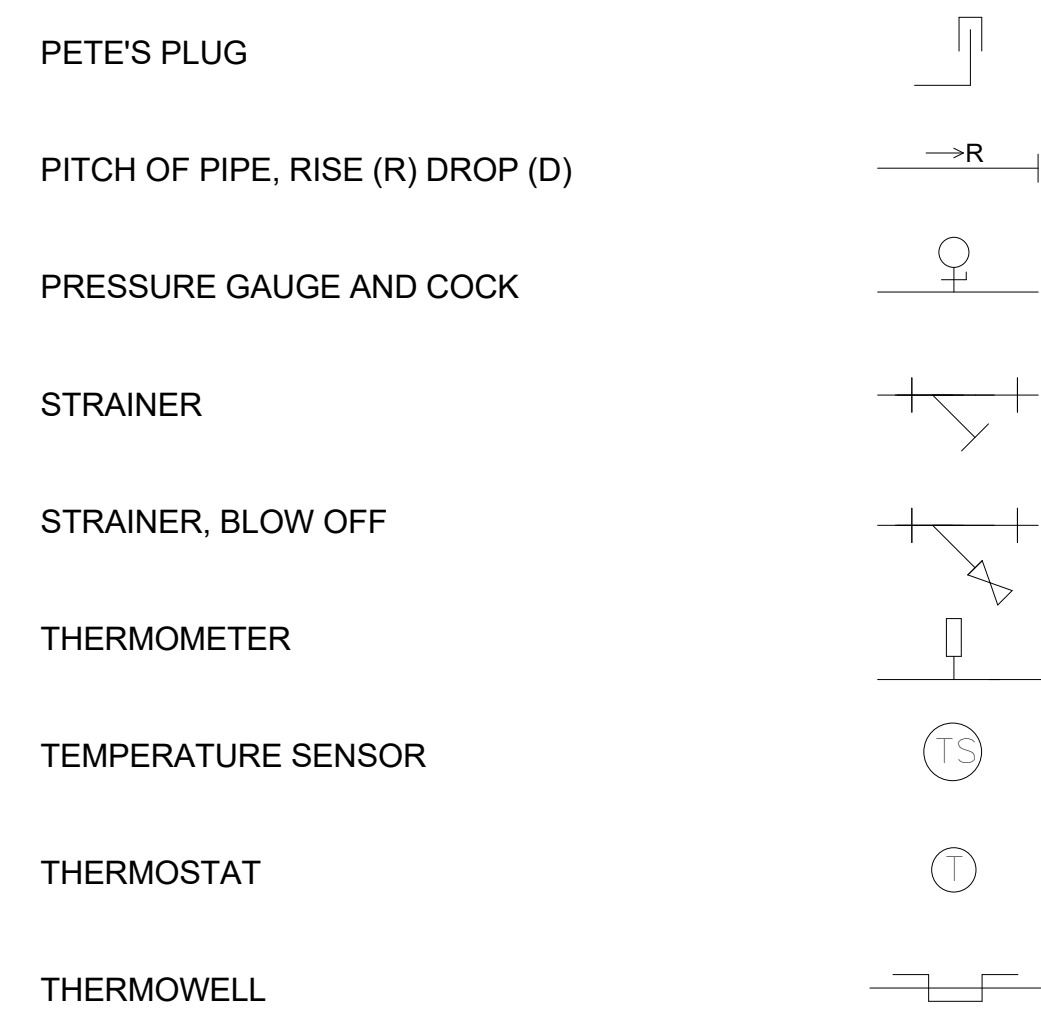
**EQUIPMENT DESIGNATIONS**



**SECTION AND DETAIL DESIGNATIONS**



**STANDARD PIPING SPECIALTY SYMBOLS**



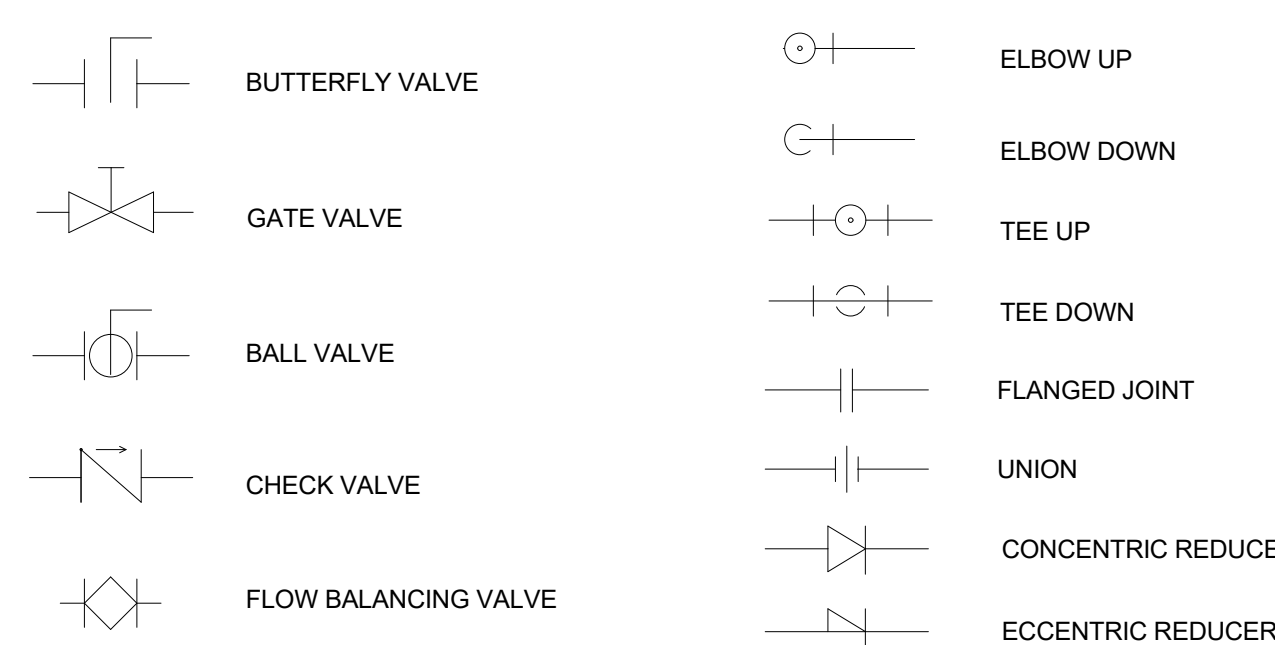
**STANDARD CONTROL ABBREVIATIONS**

AI	ANALOG - INPUT	HS	HUMIDITY SENSOR
AO	ANALOG - OUTPUT	M	DAMPER ACTUATOR
CS	CURRENT SENSOR	MS	MOTOR STARTER
DI	DIGITAL INPUT	TS	TEMPERATURE SENSOR
DO	DIGITAL OUTPUT	VA	VALVE ACTUATOR
PSW	PRESSURE SWITCH		

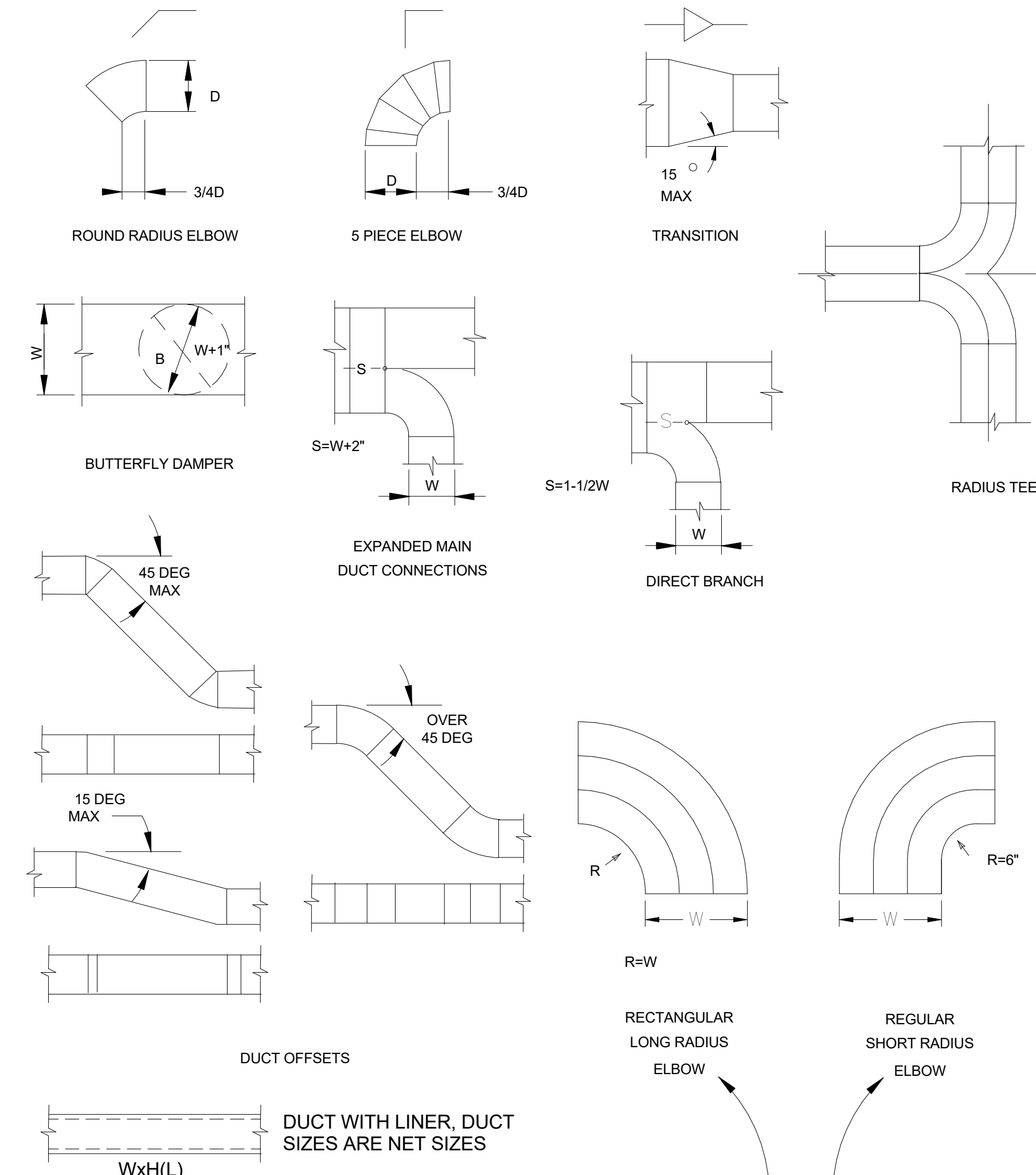
**STANDARD MECHANICAL ABBREVIATIONS**

ABBREV	ABBREVIATION	LWB	LEAVING WET BULB
ACFM	ACTUAL CUBIC FEET PER MINUTE	LWT	LEAVING WATER TEMPERATURE
AFM	AIRFLOW METER	M	MOTOR
AHU	AIR HANDLING UNIT	MAX	MAXIMUM
AS	AIR SEPARATOR	MBH/ MBTUH	THOUSAND BTU PER HOUR
AW	ACID WASTE	MECH	MECHANICAL
AWV	ACID WASTE VENT	MFG	MANUFACTURER
BLDG	BUILDING	MIN	MINIMUM
BMS	BUILDING ENERGY MANAGEMENT SYSTEM	N	NORTH
BTU	BRITISH THERMAL UNIT	NC	NORMALLY CLOSED
BTUH	BRITISH THERMAL UNITS PER HOUR	NG	NATURAL GAS
CC	COOLING COIL	No	NUMBER
CD	CEILING DIFFUSER	NO	NORMALLY OPEN
CFM	CUBIC FEET PER MINUTE	OSA	OUTSIDE AIR
CHWR	CHILLED WATER RETURN	PD	PRESSURE DROP
CHWS	CHILLED WATER SUPPLY	PH	PHASE
CNDS	CONDENSATE	POC	POINT OF CONNECTION
CSFM	CALIFORNIA STATE FIRE MARSHAL	POD	POINT OF DISCONNECTION
Cv	VALVE FLOW COEFFICIENT	PSI	POUNDS PER SQUARE INCH
CV	CONTROL VALVE	QTY	QUANTITY
DB	DRY BULB	R	RADIUS
DDC	DIRECT DIGITAL CONTROL	RA	RETURN AIR
DEG	DEGREE	REQ'D	REQUIRED
DIA	DIAMETER	REV	REVISIONS
DN	DOWN	RF	RETURN FAN
DWG	DRAWING	RM	ROOM
EA	EACH/EXHAUST AIR	RPM	REVOLUTIONS PER MINUTE
EAT	ENTERING AIR TEMPERATURE	RR	RETURN REGISTER
EDB	ENTERING DRY BULB	SA	SUPPLY AIR
EF	EXHAUST FAN	SF	SUPPLY FAN
EG	EXHAUST GRILLE	SD	SMOKE DETECTOR
EQUIP	EQUIPMENT	SG	SUPPLY GRILLE
ESP	EXTERNAL STATIC PRESSURE/ SAMPLE PORT	SQFT	SQUARE FEET
ET	EXPANSION TANK	SR	SUPPLY REGISTER
EWB	ENTERING WET BULB	TA	TRANSFER AIR
EWT	ENTERING WATER TEMPERATURE	TAH	TEMPORARY AIR HANDLER
FPI	FINS PER INCH	TCV	TEMPERATURE CONTROL VALVE
FPM	FEET PER MINUTE	TCP	TEMPERATURE CONTROL PANEL
FSD	COMBINATION SMOKE FIRE DAMPER	TD	TO DRAIN
*F	DEGREES FAHRENHEIT	TEMP	TEMPERATURE
GA	GALVANIZED	TG	TRANSFER GRILLE
GAL	GALLONS	TSF	TEMPORARY SUPPLY FAN
GPM	GALLONS PER MINUTE	TSP	TOTAL STATIC PRESSURE
HC	HEATING COIL	TYP	TYPICAL
HP	HORSEPOWER	VAV	VARIABLE AIR VOLUME
HR	HOUR	VFD	VARIABLE FREQUENCY DRIVE
HW	HOT WATER	VTR	VENT THRU ROOF
HHWR	HEATING HOT WATER RETURN	WB	WET BULB
HHWS	HEATING HOT WATER SUPPLY	WFM	WATERFLOW METER
Hz	HERTZ	WG	WATER GAGE
ICW	INDUSTRIAL COLD WATER	WPD	WATER PRESSURE DROP
IN	INCHES	WT	WEIGHT
KW	KILOWATT	W/	WITH
KWH	KILOWATT HOUR	&	AND
L	LONG/LINER	ø	PHASE/DIAMETER
LAT	LEAVING AIR TEMPERATURE	'	FOOT
LBS	POUNDS	"	INCH
LD	LOW VELOCITY DIFFUSER		
LDB	LEAVING DRY BULB		

**STANDARD MECHANICAL VALVE AND FITTING SYMBOLS**



**GENERAL DUCTWORK INSTALLATION REQUIREMENTS**



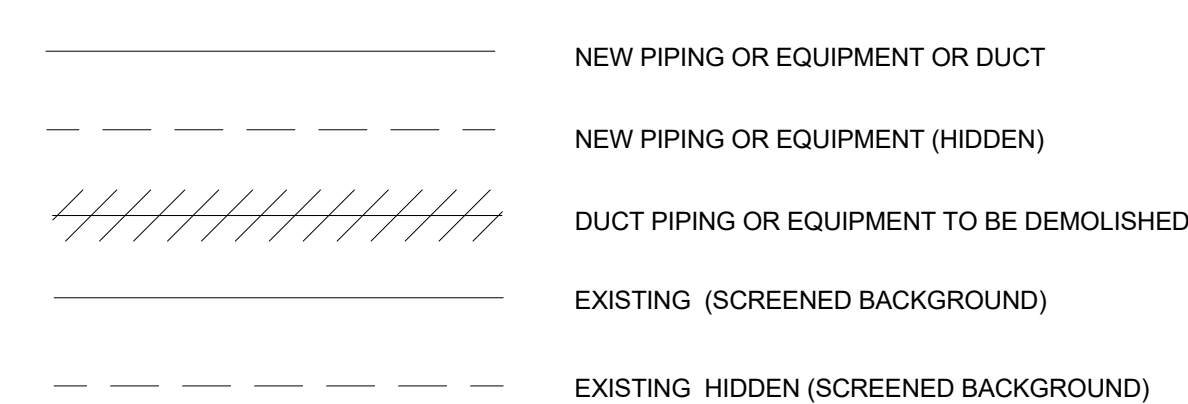
ALL DUCTWORK CONSTRUCTION SHALL COMPLY WITH CMC AND SMACNA STANDARDS

**HVAC LEGEND**

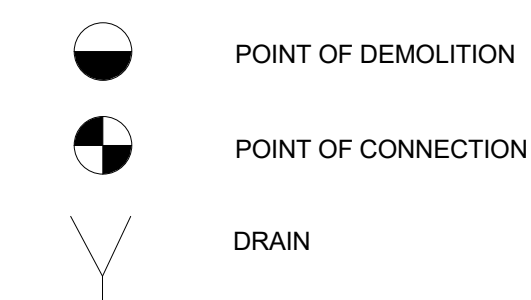
SYMBOL	DESCRIPTION
	4-WAY CEILING DIFFUSER
	3-WAY CEILING DIFFUSER
	2-WAY CEILING DIFFUSER
	RETURN/TRANSFER GRILLE
	EXHAUST GRILLE
	DUCT CARRYING RETURN AIR
	DUCT CARRYING SUPPLY AIR
	DUCT CARRYING EXHAUST AIR
	FLEXIBLE CONNECTION
	MANUAL VOLUME DAMPER

NOTE:  
THIS IS A GENERAL LEGEND SHEET. SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE USED ON THIS SPECIFIC PROJECT

**LINE TYPES**



**GENERAL SYMBOLS**



04/19/19  
**APPROVED**  
**UC RIVERSIDE**  
Office of Planning, Design & Construction Signed (CBO) *Robert Comanzo*  
Building, Safety and Compliance Division  
CAMPUS BUILDING PERMIT

OFFICE OF THE STATE FIRE MARSHAL  
APPROVED FIRE AND PANIC ONLY  
04/19/2019  
Approval of this plan does not authorize or approve any construction or deviation from applicable regulations. Final approval is subject to field inspection. One set of approved plans shall be available on the project site at all times.  
Reviewed by: *Scott Johnson*  
Fire and Life Safety Division/SLM

**REVISIONS**

REV #	DESCRIPTION	DATE
1	50% CONSTRUCTION DOCUMENT	02/15/19
2	90% CONSTRUCTION DOCUMENT	03/20/19
3	100% CONSTRUCTION DOCUMENT	04/17/19

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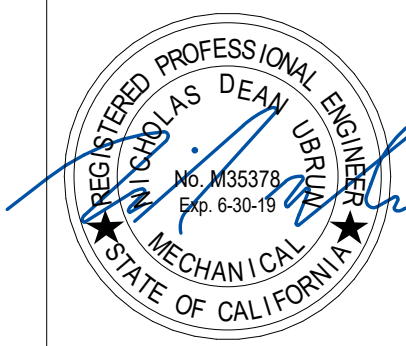
Consultant's Data:  
**GOSS ENGINEERING**  
255 East Rincon St., Suite 301  
Corona, CA 92879  
P 951.340.1977 | F 951.340.1090  
www.gossengineering.com

UCR Project Manager:  
John Franklin  
Scale: As Indicated SD Approval:  
Drawn By: AB DD Approval:  
Checked By: WG / NJ CD Approval:  
Project No.: 119-01-07 Construction Release:  
DSA No.:

Drawing Title: MECHANICAL NOTES, ABBREVIATIONS, AND SYMBOLS Sheet No. MO.1

Architect's Data:

Architect's Stamp: Consultant's Stamp:



AIR HANDLER UNIT SCHEDULE																																					
EQUIPMENT TAG	LOCATION	AREA SERVED	MANUFACTURER	BLOWER DATA				COOLING COIL PERFORMANCE DATA												HEATING COIL PERFORMANCE DATA								ELECTRICAL REQUIREMENTS			OPERATING WEIGHT (LBS)	NOTES					
				CFM	ESP (W.C.)	HP/ MOTOR	# OF MOTORS	TOTAL (MBH)	SENSIBLE (MBH)	AIRSIDE DATA				WATERSIDE DATA				SENSIBLE (MBH)	AIRSIDE DATA				WATERSIDE DATA				VOLTS	PHASE	HZ								
										OSA DB (°F)	OSA WB (°F)	SA DB (°F)	SA WB (°F)	ROWS	FPI	PD (W.C.)	FT/MIN		GPM	EWT (°F)	LWT (°F)	PD (FT)	OSA DB (°F)	OSA WB (°F)	SA DB (°F)	SA WB (°F)				ROWS			FPI	PD (W.C.)	FT/MIN	GPM	EWT (°F)
AHU-3	MECHANICAL ROOM A-005	WEST LOTHIAN	SCOTT SPRINGFIELD	12,340	4.5	7.5	3	732	631	102	72	55	55	5	12	0.52	485	95	42	57	15.84	809	34	95	3	12	0.34	485	54	140	100	7.66	208	3	60	4,100	1,2,3
AHU-4	MECHANICAL ROOM A-005	WEST LOTHIAN	SCOTT SPRINGFIELD	9,400	1.0	3	3	552	478	102	72	55	55	5	12	0.64	501	73	42	57	15.07	622	34	95	4	8	0.33	501	42	140	100	9.22	208	3	60	3,700	1,2,3

- NOTES:  
 1. PROVIDE FACTORY MOUNTED VFD WITH INTEGRAL LOCKABLE DISCONNECT TO SERVE EACH AHU. VFD LOCATIONS ARE INDICATED ON THE FLOOR PLANS AS VFD-3 AND VFD-4 SERVING AHU-3 AND AHU-4 RESPECTIVELY.  
 2. PROVIDE 4" RIGID MERV 13 FILTERS TO SERVE THE AHU AIR INTAKE.  
 3. FANS SHALL BE INTERNALLY ISOLATED.

PIPE SCHEDULE				
SERVICE	MATERIAL	FITTINGS	JOINTS	INSULATION
HYDRONIC HOT WATER, SUPPLY & RETURN PIPING	ASTM A53, GRADE A OR B SEAMLESS OR ELECTRIC RESISTANCE WELDED, SCHEDULE 40 BLACK	ASME B16.3 MALLEABLE IRON, ASTM A234/A234M FORGED STEEL WELDING TYPE	WELDED ANSI 150 LB. FLANGED, 150 LB. RATED	PREFORMED MINERAL FIBER
CHILLED WATER, SUPPLY AND RETURN PIPING	ASTM A53, GRADE A OR B SEAMLESS OR ELECTRIC RESISTANCE WELDED, SCHEDULE 40 BLACK	ASME B16.3 MALLEABLE IRON, ASTM A234/A234M FORGED STEEL WELDING TYPE	WELDED ANSI 150 LB. FLANGED, 150 LB. RATED	CELLULAR GLASS OR FLEXIBLE ELASTOMERIC

PRESSURE INDEPENDENT CONTROL VALVE SCHEDULE									
EQUIPMENT TAG	SERVES	MANUFACTURER	VALVE TYPE	MODEL NUMBERS		GPM	SIZE (IN)	SUPPLY VOLTAGE (AC)	NOTES
				VALVE	ACTUATOR				
CWCV-3	AHU-3	BELIMO	ePIV/EV	P6250S-100	ARX24-PI	95.3	2.5	24	1,2,3,4,5
CWCV-4	AHU-4	BELIMO	ePIV/EV	P2200S-761	ARX24-EP	72.6	2.0	24	1,2,3,4,5
HWCV-3	AHU-3	BELIMO	ePIV/EV	P2200S-563	ARX24-EP	54.3	2.0	24	1,2,3,4,5
HWCV-4	AHU-4	BELIMO	ePIV/EV	P2200S-441	ARX24-EP	42.1	2.0	24	1,2,3,4,5

- NOTES:  
 1. CONTROL VALVE IS TO BE MOUNTED WITHIN THE COIL RETURN PIPE.  
 2. PROVIDE A STRAIGHT PIPE LENGTH FIVE (5) TIMES THE PIPE DIAMETER BEFORE THE CONTROL VALVE INLET PER MANUFACTURER RECOMMENDATION.  
 3. CONTRACTOR IS TO PROVIDE ALL PIPE AND TRANSITION FITTINGS REQUIRED TO FACILITATE INSTALLATION.  
 4. INSTALL ACCORDING TO MANUFACTURERS INSTRUCTIONS.

GENERAL VALVE SCHEDULE			
SERVICE	TYPE	MANUFACTURER/MODEL	NOTES
MANUAL SHUTOFF FOR SMALLER THAN 3"	BALL	NIBCO FIGURE T-585-70-66	1
MANUAL SHUT OFF, 3" AND LARGER.	BUTTERFLY	NIBCO MODEL LD 2000 OR APPROVED EQUAL	1
CHECK VALVES FOR PUMP SERVICE- ALL SIZES	NON SLAM SPRING LOADED CHECK	NIBCO MODEL F-910 OR APCO GLOBE TYPE NON-SLAM SILENT CHECK VALVE OR APPROVED EQUAL	1

- NOTES:  
 1. BODY: ANSI CLASS 150 CAST OF DUCTILE IRON WITH REPLACEABLE EPDM SEATS, LUG ENDS, EXTENDED NECK FOR INSULATED PIPE, & STAINLESS STEEL SHAFTS. PROVIDE GEAR OPERATOR WHEEL HANDLE (TYP).

04/19/19



REVISIONS

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Consultant's Data:



UCR Project Manager:  
John Franklin

Scale:	As Indicated	SD Approval:
Drawn By:	AB	DD Approval:
Checked By:	WG / NU	CD Approval:
Project No.:	119-01-07	Construction Release:
DSA No.:		

Drawing Title: EQUIPMENT SCHEDULES  
 Sheet No: M0.2

**GENERAL NOTES**

- 1 THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT SHOW ALL PIPES, DUCTS, FITTINGS, EQUIPMENT AND OBSTACLES. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES BEFORE BEGINNING WORK.
- 2 TO MINIMIZE DOWNTIME, THE CONTRACTOR SHALL COORDINATE SHUTDOWN OF EXISTING EQUIPMENT SERVED BY HOT WATER SYSTEM WITH THE UNIVERSITY REPRESENTATIVE AT LEAST ONE WEEK IN ADVANCE.
- 3 PROTECT ALL PIPES, FITTINGS, AND EQUIPMENT NOT MARKED FOR DEMOLITION IN PLACE FOR FUTURE RECONSTRUCTION.

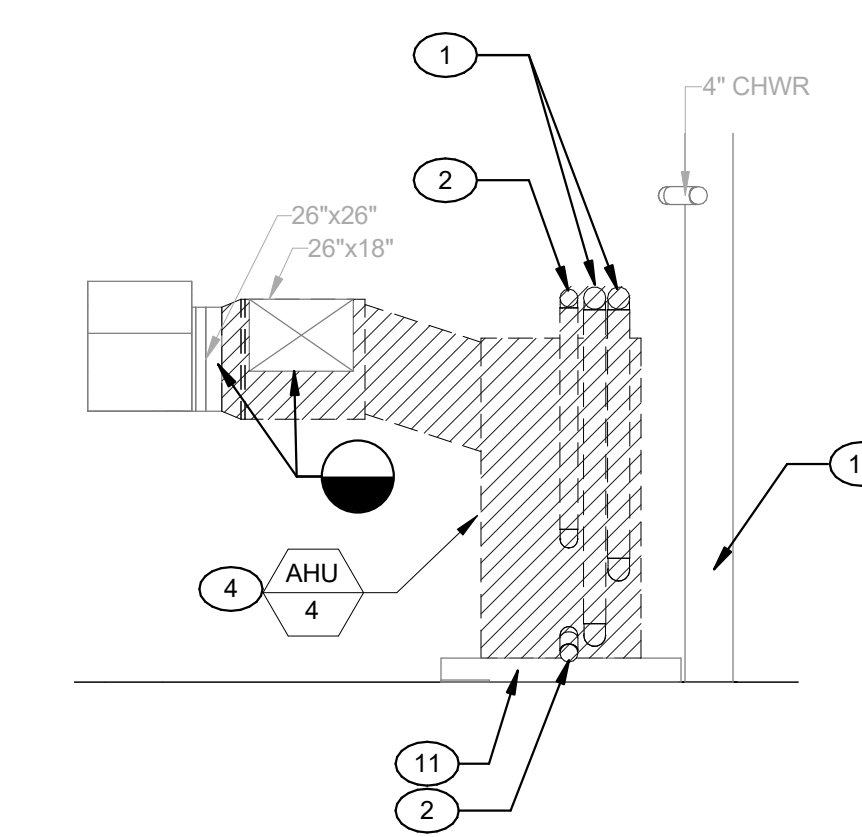
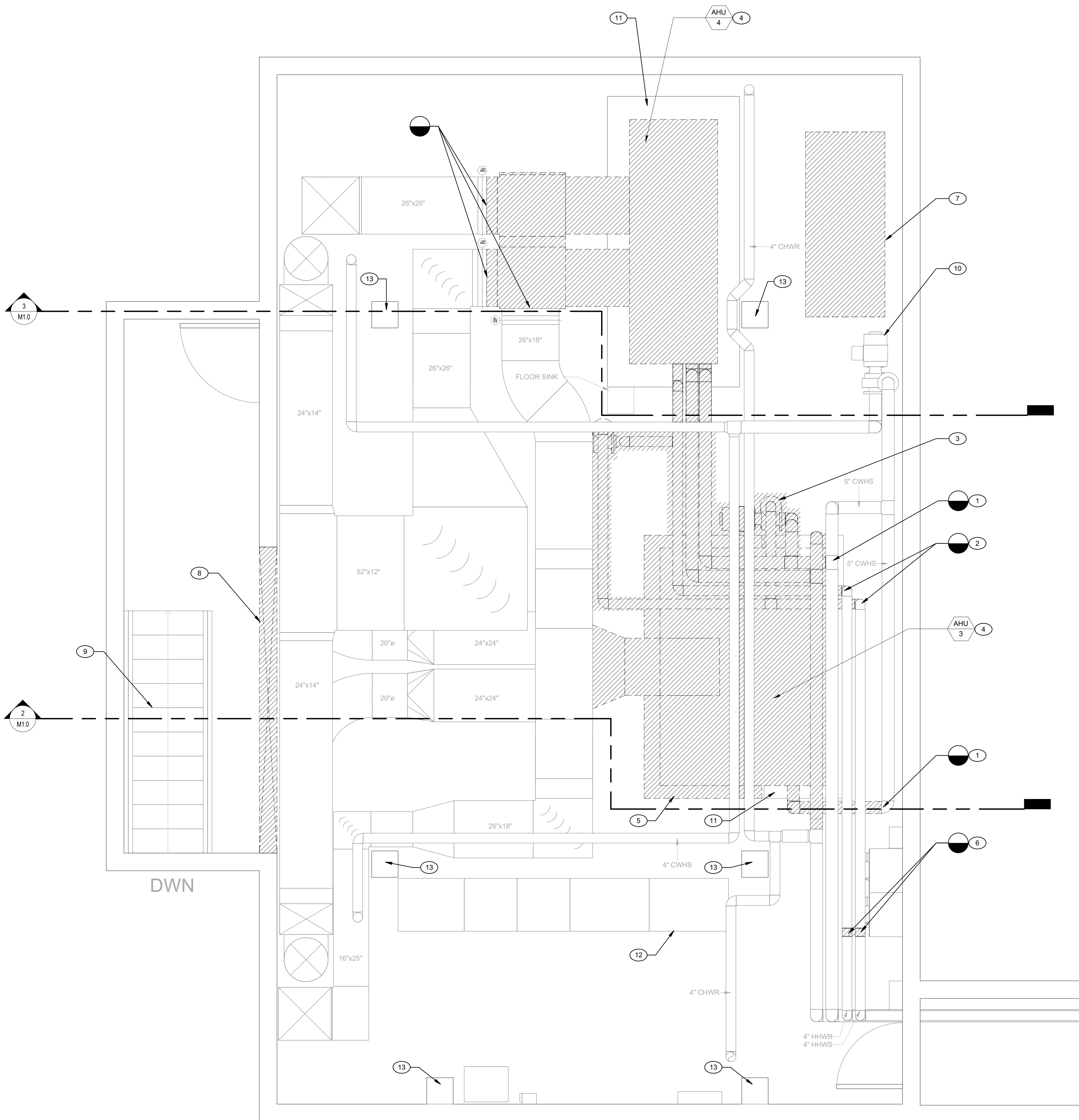
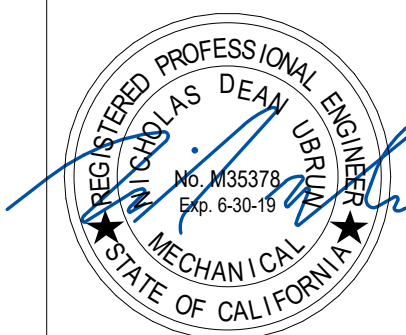
Architect's Data:

**DEMOLITION NOTES**

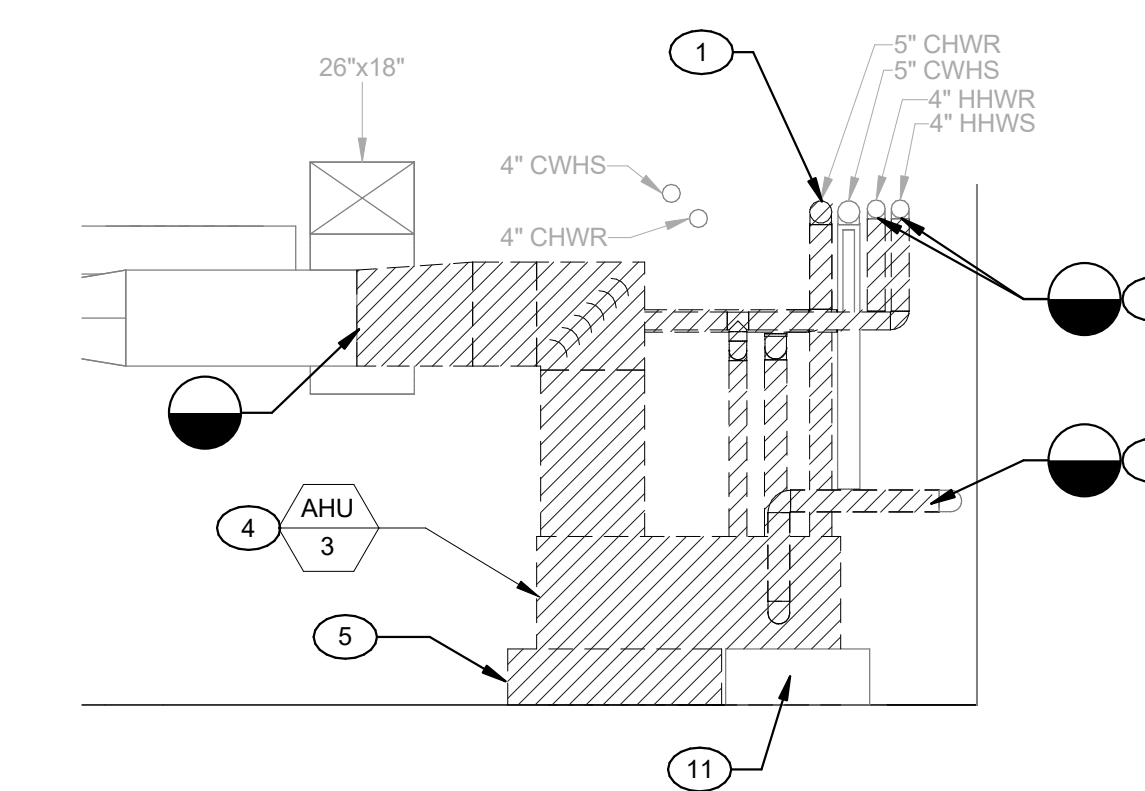
- 1 DEMOLISH CHW/R PIPE FROM P.O.D. AND TO THE EXTENT NECESSARY TO FACILITATE RECONSTRUCTION.
- 2 DEMOLISH HHW/S/R PIPE FROM P.O.D. AND TO THE EXTENT NECESSARY TO FACILITATE RECONSTRUCTION.
- 3 DEMOLISH HHW PUMP AND ASSOCIATED EQUIPMENT PAD.
- 4 DEMOLISH AHU AND ASSOCIATED SUPPLY DUCTING UP TO P.O.D.
- 5 DEMOLISH VIBRATION ISOLATION PAD, AND PROTECT REMAINING CONCRETE PAD IN PLACE FOR RECONSTRUCTION.
- 6 DEMOLISH PORTION OF HHW/S/R PIPING TO THE EXTENT NECESSARY TO FACILITATE RE-INSTALLATION.
- 7 DEMOLISH EXPANSION TANK AND ALL ASSOCIATED APPARATUS.
- 8 REMOVE OUTSIDE AIR LOUVER TO FACILITATE AHU INSTALLATION AND PROTECT FOR FUTURE RE-INSTALLATION.
- 9 IF NECESSARY, REMOVE STAIRS TO FACILITATE AHU INSTALLATION AND PROTECT FOR FUTURE RECONSTRUCTION.
- 10 PROTECT CHW PUMP IN PLACE.
- 11 PROTECT REMAINING CONCRETE EQUIPMENT PAD IN PLACE.
- 12 EXISTING ELECTRICAL SWITCHGEAR TO BE PROTECTED IN PLACE.
- 13 EXISTING CONCRETE COLLUM.

Architect's Stamp:

Consultant's Stamp:



**3 AHU-4 DEMOLITION**  
1/4" = 1'-0"



**2 AHU-3 DEMOLITION**  
1/4" = 1'-0"

**1 MECHANICAL ROOM DEMOLITION**  
1/2" = 1'-0"

04/19/19  
**APPROVED**  
UC RIVERSIDE  
Office of Planning, Design & Construction Signed CBO, Gilbert Cervantes  
Building, Safety and Compliance Division  
CAMPUS BUILDING PERMIT

OFFICE OF THE STATE FIRE MARSHAL  
APPROVED FIRE AND PANIC ONLY  
04/19/2019  
Approval of this plan does not authorize or approve any condition or deviation from applicable regulations. Final approval is subject to field inspection. One set of approved plans shall be available on the project site at all times.  
Reviewed by: *Scott Johnson*  
Fire and Life Safety Division

**REVISIONS**

REV #	DESCRIPTION	DATE
1	50% CONSTRUCTION DOCUMENT	02/15/19
2	90% CONSTRUCTION DOCUMENT	03/20/19
3	100% CONSTRUCTION DOCUMENT	04/17/19

**LOTHIAN RESIDENCE HALL  
AHU REPLACEMENTS**  
PROJECT# 956394  
CAAN# P5502

Consultant's Data:

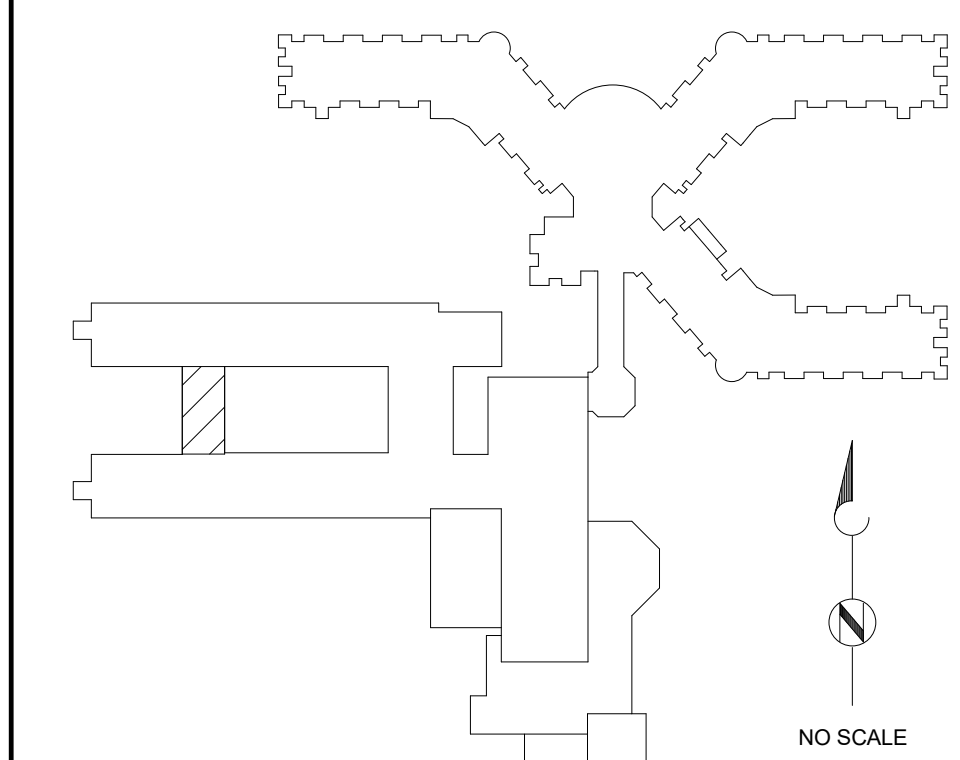
**GOSS ENGINEERING**  
255 East Rincon St., Suite 301  
Corona, CA 92879  
P 951.340.1977 | F 951.340.1090  
www.gossengineering.com

UCR Project Manager:

John Franklin

Scale: As Indicated	SD Approval:
Drawn By: AB	DD Approval:
Checked By: WG / NU	CD Approval:
Project No.: 119-01-07	Construction Release:
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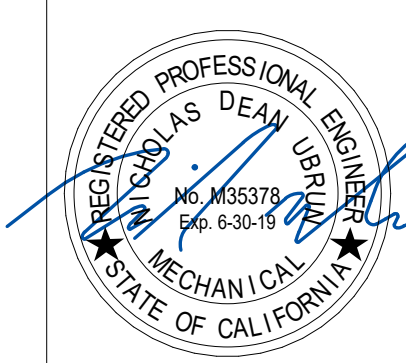
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Architect's Data:

Architect's Stamp:

Consultant's Stamp:

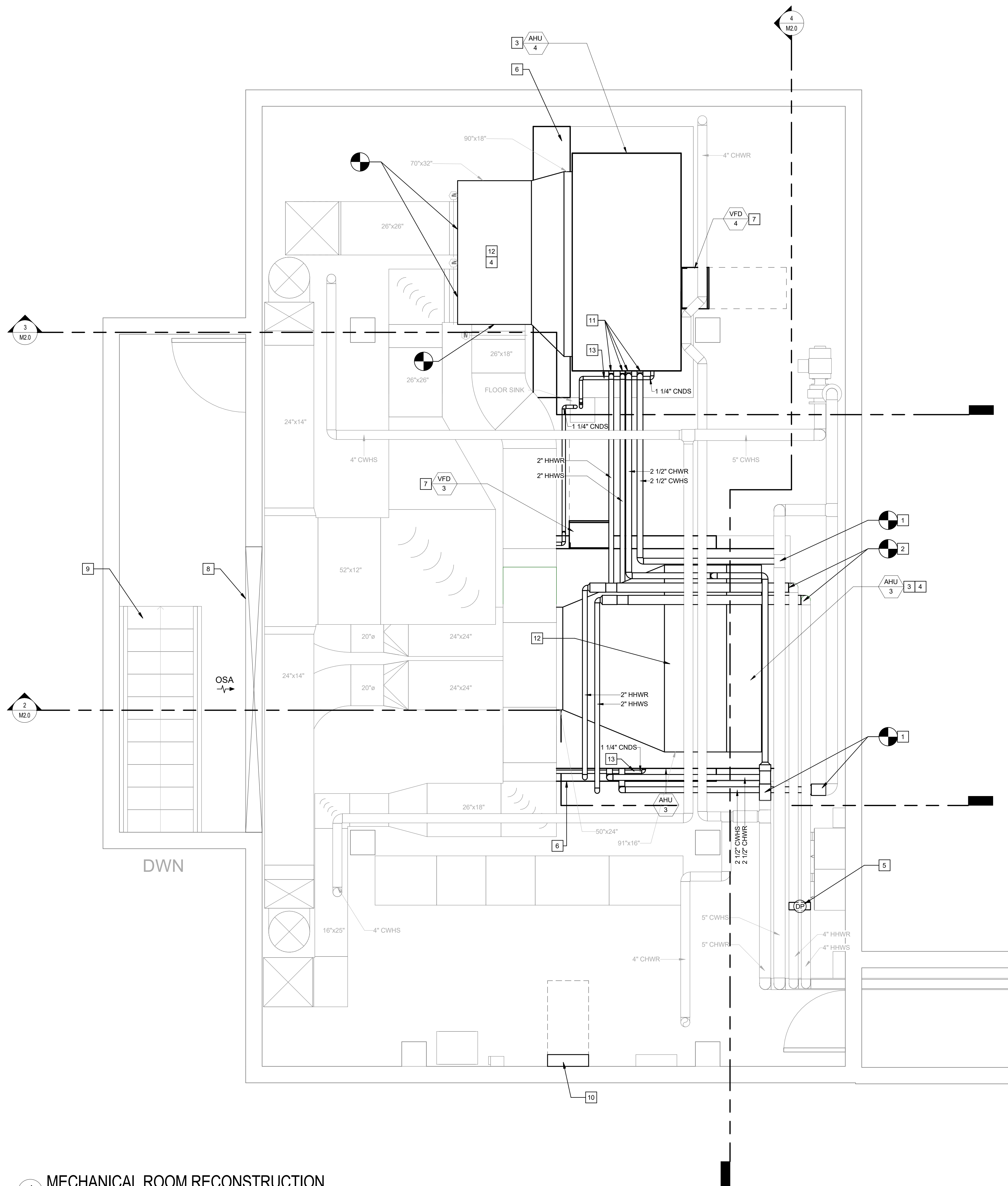


**GENERAL NOTES**

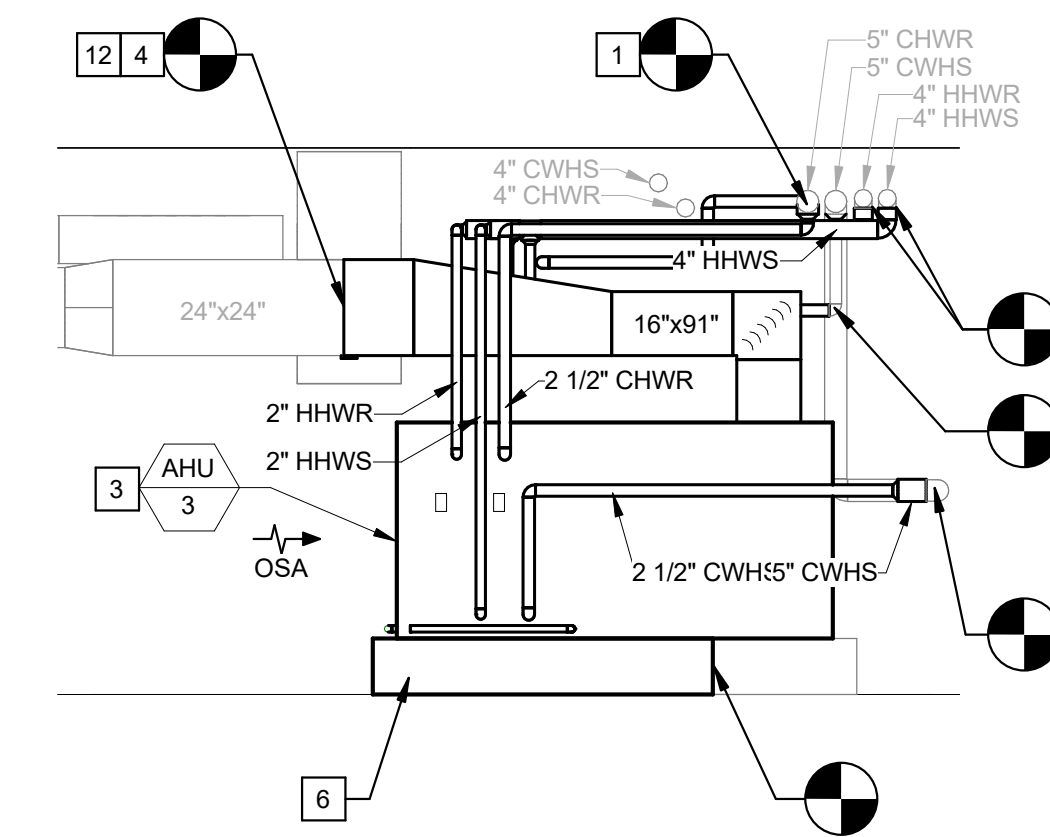
- 1 THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT SHOW ALL PIPES, DUCTS, FITTINGS, EQUIPMENT AND OBSTACLES. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES BEFORE BEGINNING WORK.
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- 3 CONTRACTOR SHALL PROVIDE ALL TRANSITION FITTINGS REQUIRED TO FACILITATE RECONSTRUCTION.

**RECONSTRUCTION NOTES**

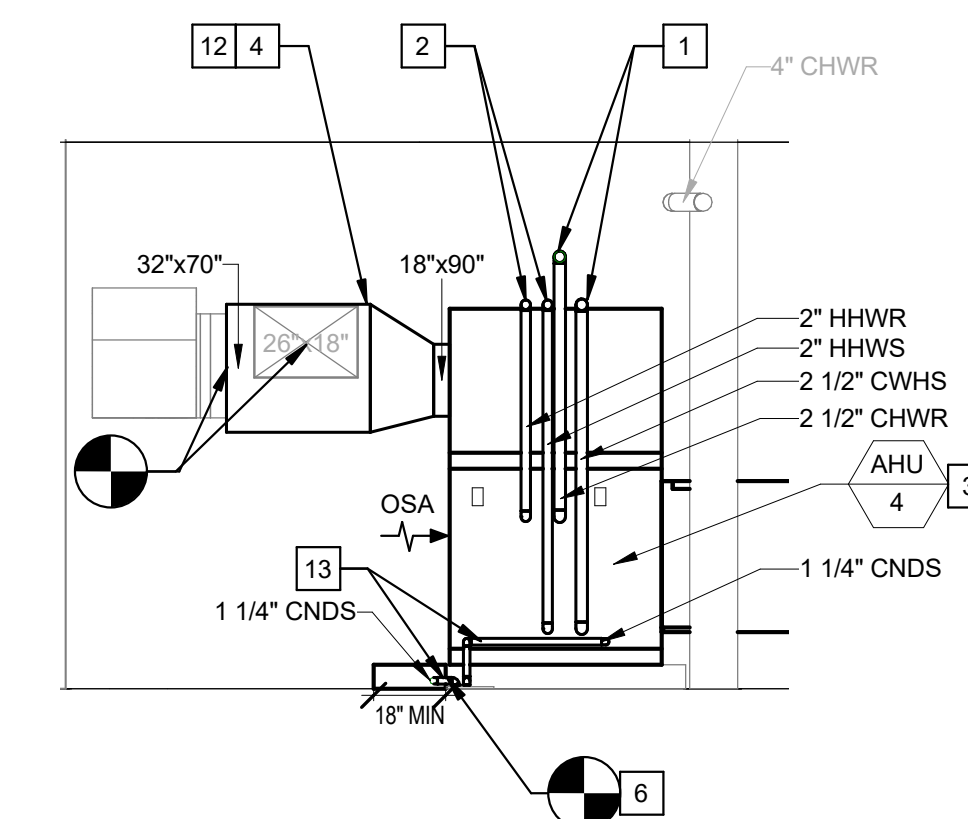
- 1 PROVIDE CHWS/R PIPE AND EXTEND TO SERVE AHU. REFER TO DRAWINGS FOR REQUIRED PIPE DIAMETER.
- 2 PROVIDE HHWR/R PIPE AND EXTEND TO SERVE AHU. REFER TO DRAWINGS FOR REQUIRED PIPE DIAMETER.
- 3 PROVIDE AHU.
- 4 PROVIDE FIELD FABRICATED PLENUM AND ALL OTHER ADDITIONAL DUCTING REQUIRED FOR CONNECTION TO EXISTING SUPPLY DUCTWORK.
- 5 PROVIDE DIFFERENTIAL PRESSURE SENSOR TO SERVE THE HHWS/R LOOP.
- 6 EXTEND CONCRETE PAD TO SERVE NEW AHU. REFER TO DETAIL 1/M3.0 FOR INSTALLATION.
- 7 PROVIDE FACTORY MOUNTED VFD AND ENSURE THAT REQUIRED SERVICE CLEARANCES ARE PROVIDED.
- 8 REINSTALL SALVAGED LOUVER AND PROVIDE NEW MERV 8 FILTERS.
- 9 IF REMOVAL OF STAIRCASE WAS NECESSARY TO FACILITATE INSTALLATION, REINSTALL TO SERVE MECHANICAL ROOM.
- 10 CONTROLS CONTRACTOR PROVIDED BMS CONTROLLER. MOUNT PER MANUFACTURERS INSTRUCTIONS.
- 11 CHW AND HHW PIPING DOWN TO UNIT COOLING AND HEATING COILS. INSTALL PIPING AND ASSOCIATED CONTROL VALVES PER DETAIL 1/M3.0.
- 12 PROVIDE DUCT MOUNTED SMOKE DETECTOR PER CMC 608.1.
- 13 PROVIDE SOLDERED TYPE L COPPER CONDENSATE PIPING.



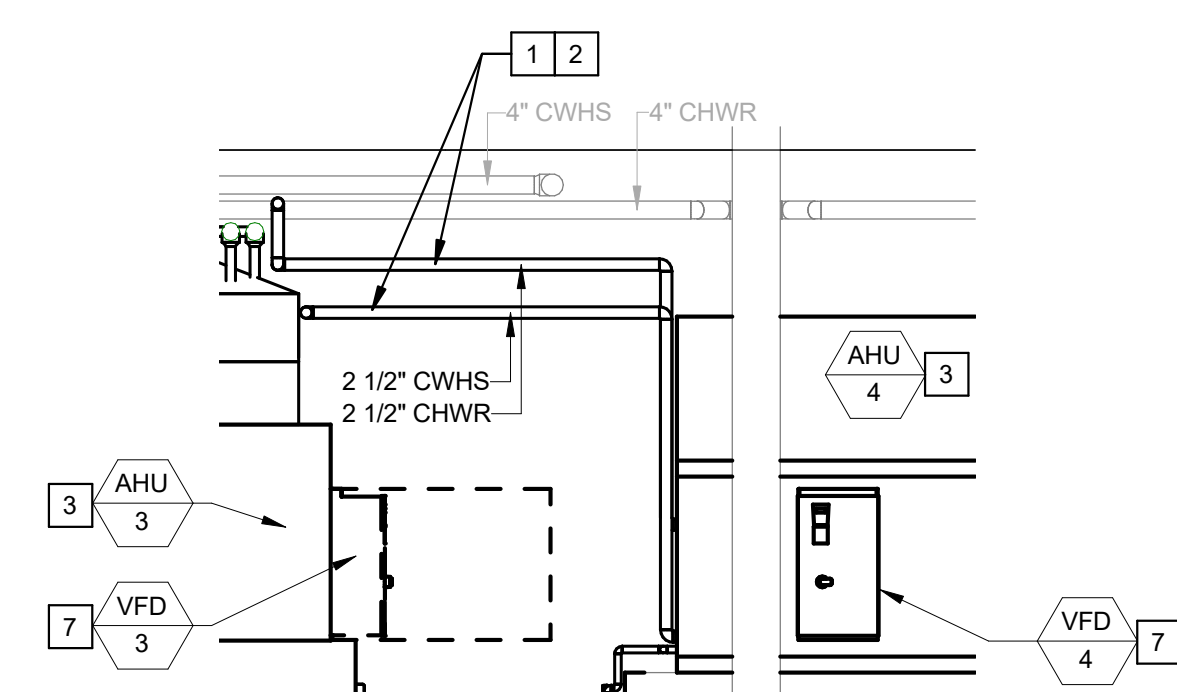
**1 MECHANICAL ROOM RECONSTRUCTION**  
1/2" = 1'-0"



**2 AHU-3 RECONSTRUCTION**  
1/4" = 1'-0"



**3 AHU-4 RECONSTRUCTION**  
1/4" = 1'-0"



**4 VFD INSTALLATION**  
1/4" = 1'-0"

04/19/19  
**APPROVED**  
UCRIVERSIDE  
Office of Planning, Design & Construction Signed CBO: *Silvestre Coronado*  
Building, Safety and Compliance Division  
CAMPUS BUILDING PERMIT

OFFICE OF THE STATE FIRE MARSHAL  
APPROVED FIRE AND PANIC ONLY  
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Reviewed by: *Scott Johnson*  
Fire and Life Safety Division

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LOTHIAN RESIDENCE HALL  
AHU REPLACEMENTS  
PROJECT# 956394  
CAAN# P5502

Consultant's Data:

**GOSS ENGINEERING**  
255 East Rincon St., Suite 301  
Corona, CA 92879  
P 951.340.1977 | F 951.340.1090  
www.gossengineering.com

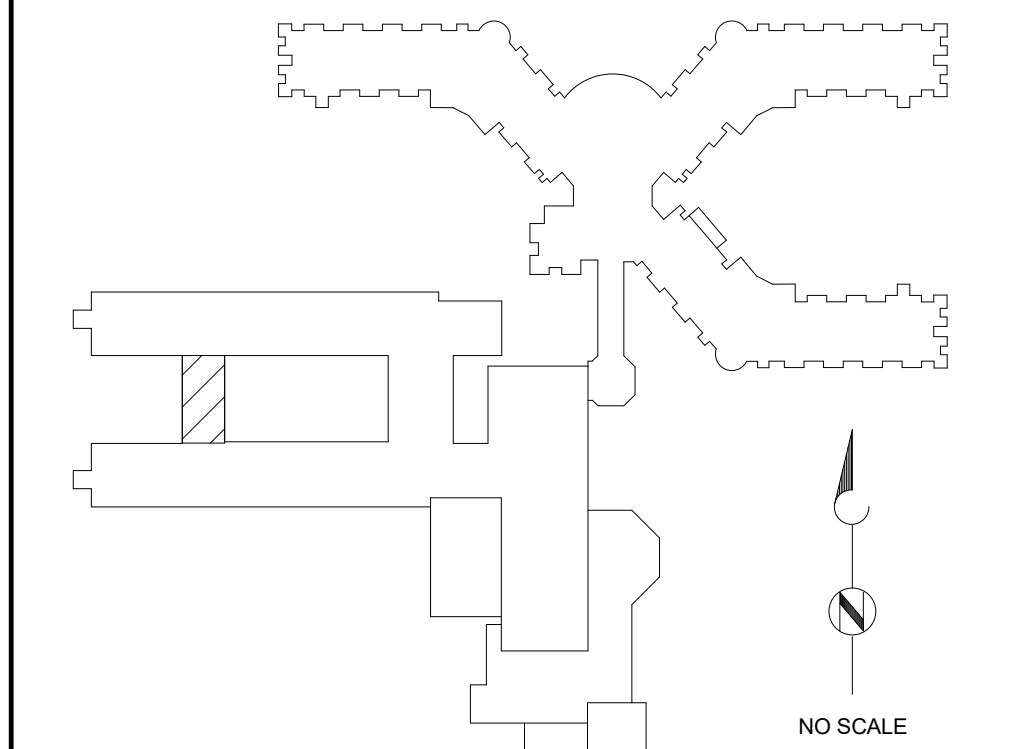
UCR Project Manager:

John Franklin

Scale: As Indicated SD Approval:  
Drawn By: AB DD Approval:  
Checked By: WG / NU CD Approval:  
Project No.: 119-01-07 Construction Release:  
DSA No.:

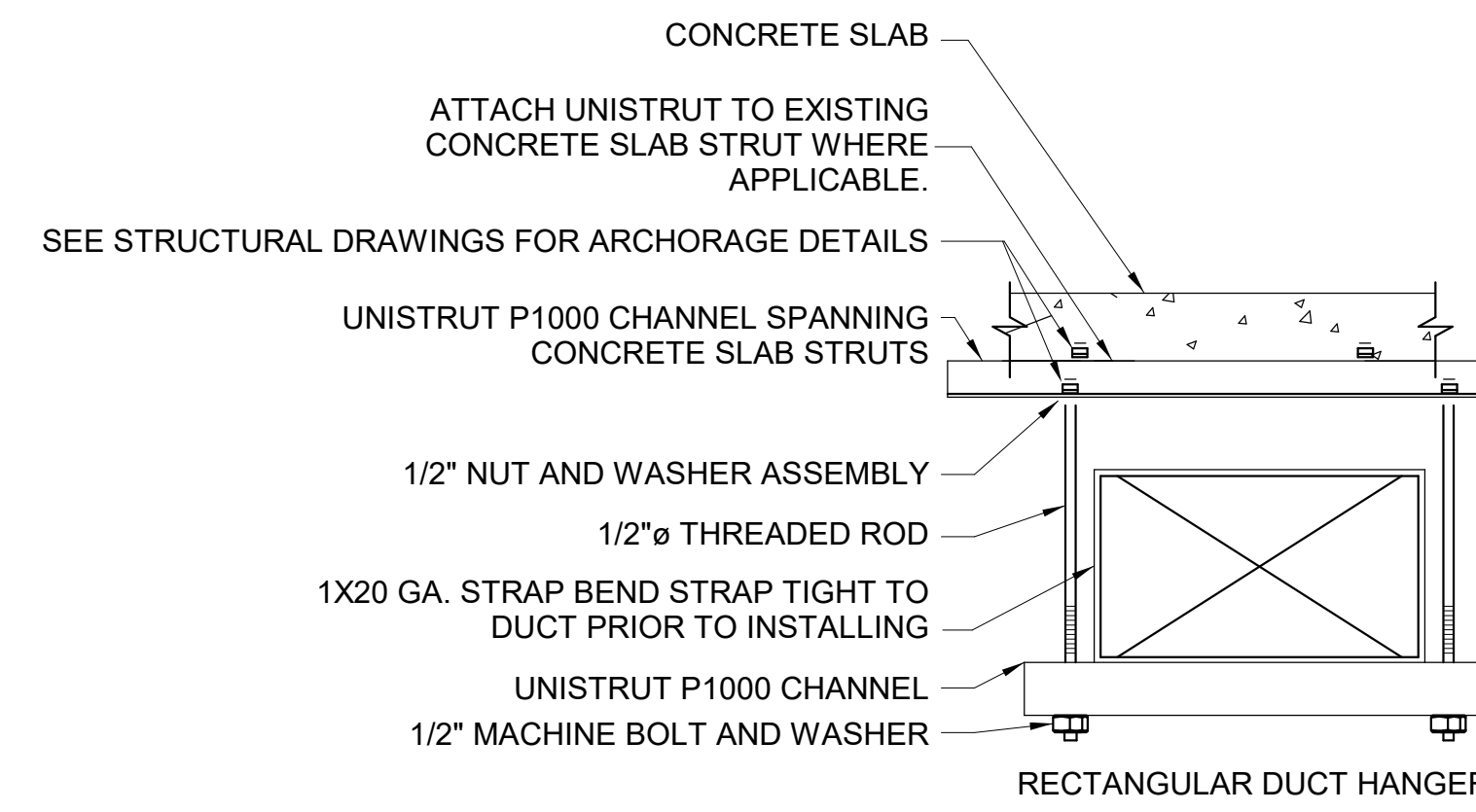
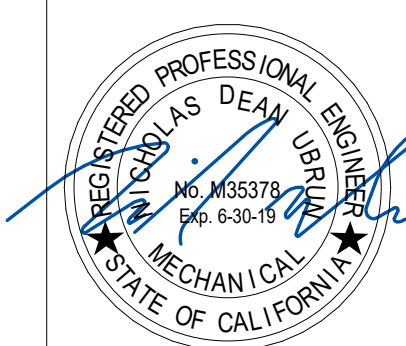
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MECHANICAL RECONSTRUCTION M2.0



Architect's Data:

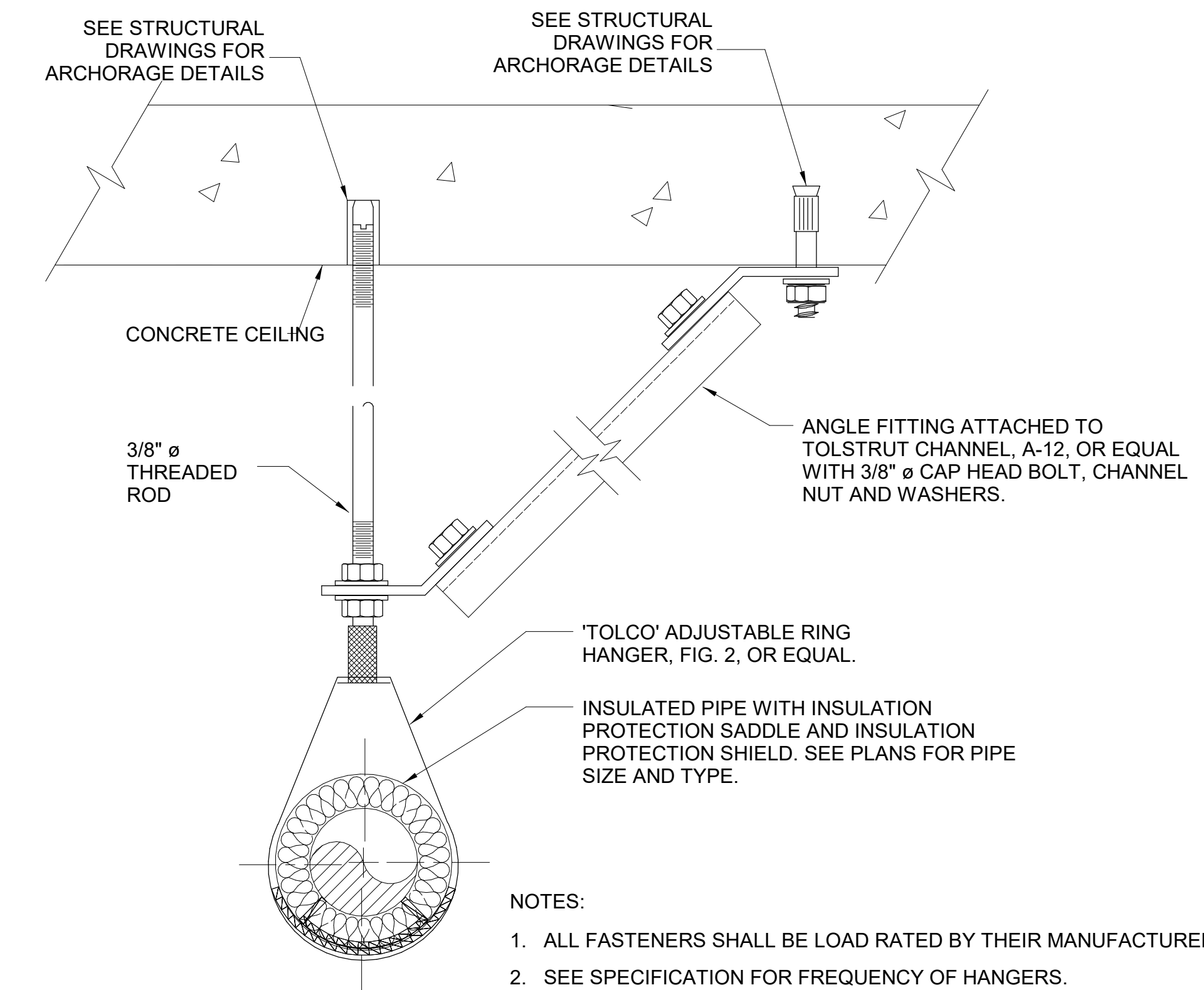
Architect's Stamp: Consultant's Stamp:



NOTES:

1. MAX DUCT SUPPORT SPACING SHALL BE 10'. PROVIDE DUCT SUPPORT WITHIN 1' OF ALL FITTINGS.
2. PROVIDE SWAY AND SEISMIC BRACING PER SMACNA SEISMIC GUIDELINES.
3. HANGER MATERIAL SUPPORTING FLEXIBLE SHALL IN NO CASE BE LESS THAN 1-1/2" WIDE. FLEXIBLE DUCT SHALL BE SUPPORTED PER MANUFACTURER'S RECOMMENDED MATERIALS. BUT AT NO GREATER DISTANCE THAN 4 FEET MAX. PERMISSIBLE SAG IS MAX. 1/2" PER FOOT OF SPACING BETWEEN SUPPORTS.
4. PROVIDE DUCT SUPPORT ON EACH SIDE OF PROPOSED COOLING COIL.

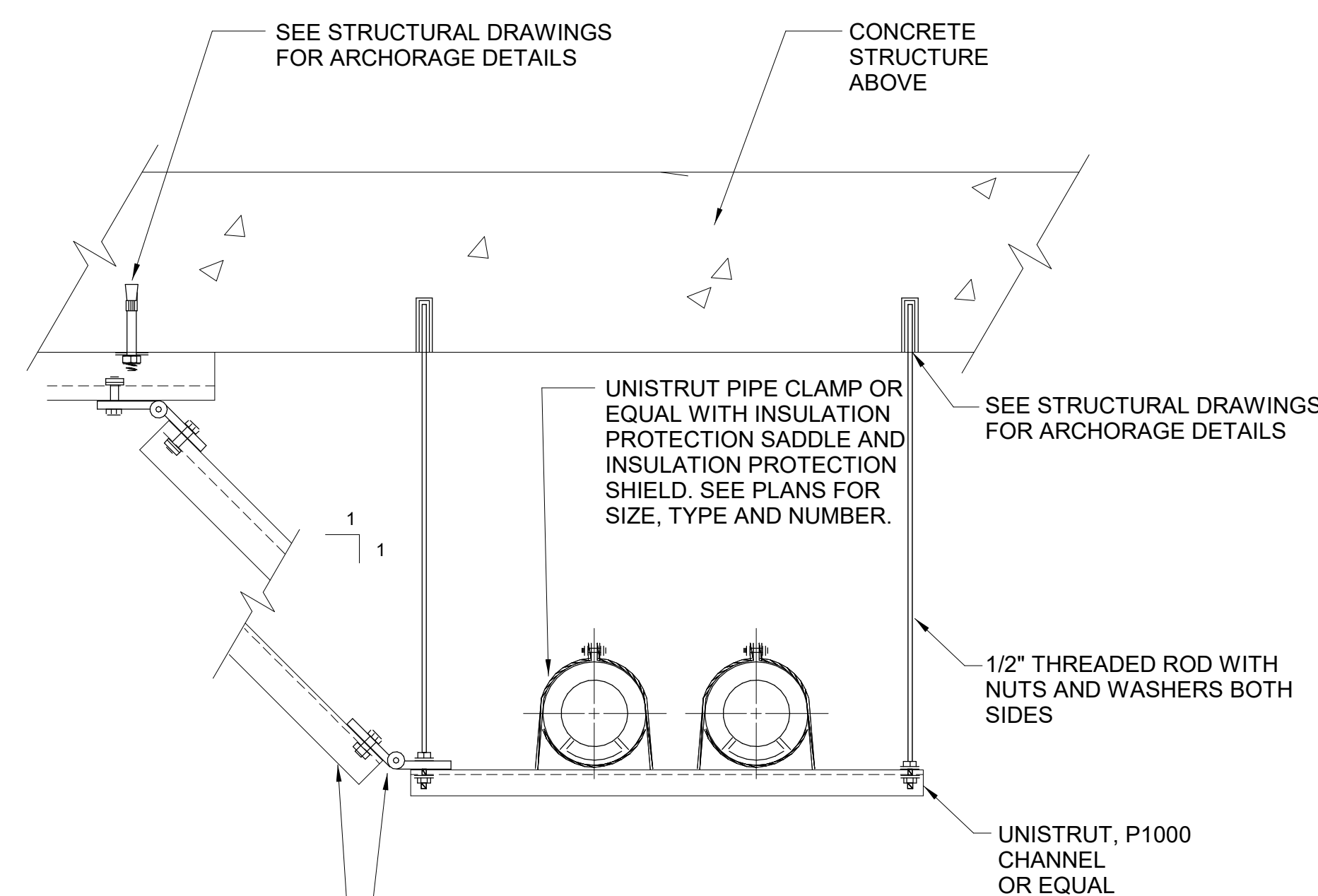
**4 DUCT MOUNTING**  
N.T.S.



NOTES:

1. ALL FASTENERS SHALL BE LOAD RATED BY THEIR MANUFACTURER.
2. SEE SPECIFICATION FOR FREQUENCY OF HANGERS.

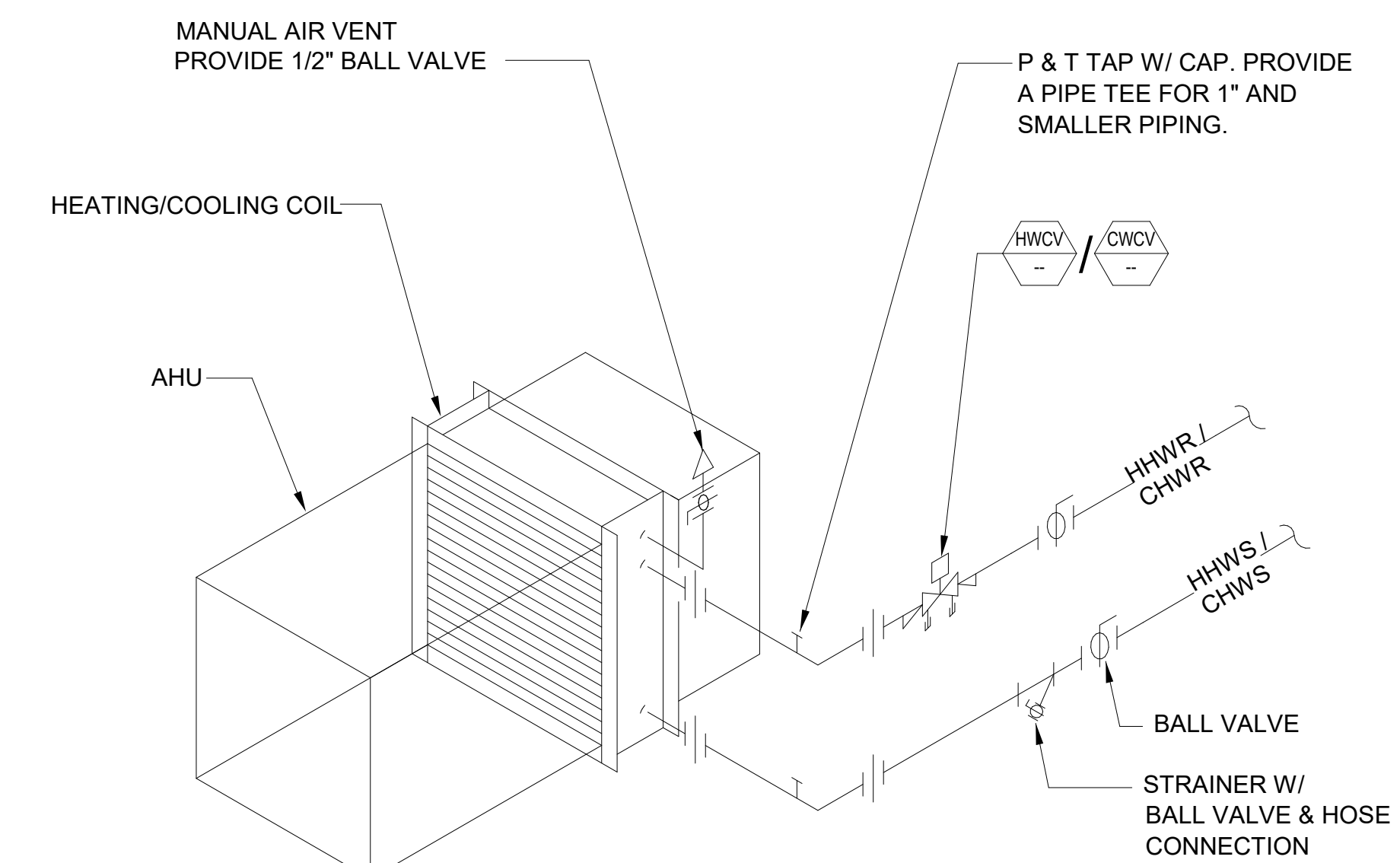
**2 PIPE SUPPORT DETAIL**  
N.T.S.



NOTES:

1. ALL FASTENERS SHALL BE LOAD RATED BY THEIR MANUFACTURER.
2. SEE SPECIFICATION FOR FREQUENCY OF HANGERS.

**3 TRAPEZE PIPE SUPPORT**  
N.T.S.



NOTES:

1. UNLESS INDICATED OTHERWISE, ALL RHC CONNECTION HWS/R PIPE SIZES SHALL BE 3/4" MINIMUM. RHC WITH SCHEDULED HW FLOW RATES GREATER THAN 3 GPM SHALL USE 1-INCH DIAMETER PIPING MINIMUM. PROVIDE PIPE REDUCERS TO CONNECT TO EXISTING LARGER SIZE PIPES.
2. PROVIDE SOLDER (SWEAT) TO MPT FITTING AT POC FOR CONNECTION TO FPT AT BALL VALVES.

**1 HEATING AND COOLING COIL PIPING DETAIL**  
N.T.S.

04/19/19  
**APPROVED**  
UC RIVERSIDE  
Office of Planning, Design & Construction Signed CSO: *Gilbert Hernandez*  
Building, Safety and Compliance Division  
CAMPUS BUILDING PERMIT

OFFICE OF THE STATE FIRE MARSHAL  
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Reviewed by: *Scott Johnson*  
Fire and Life Safety Division/CSM

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LOTHIAN RESIDENCE HALL  
AHU REPLACEMENTS  
PROJECT# 956394  
CAAN# P5502

Consultant's Data:

**GOSS ENGINEERING**  
255 East Rincon St., Suite 301  
Corona, CA 92879  
P 951.340.1977 | F 951.340.1090  
www.gossengineering.com

UCR Project Manager:

John Franklin

Scale: As Indicated	SD Approval:
Drawn By: AB	DD Approval:
Checked By: WG / NU	CD Approval:
Project No.: 119-01-07	Construction Release:
DSA No.:	

Drawing Title: MECHANICAL DETAILS  
Sheet No: M3.0

GENERAL NOTES

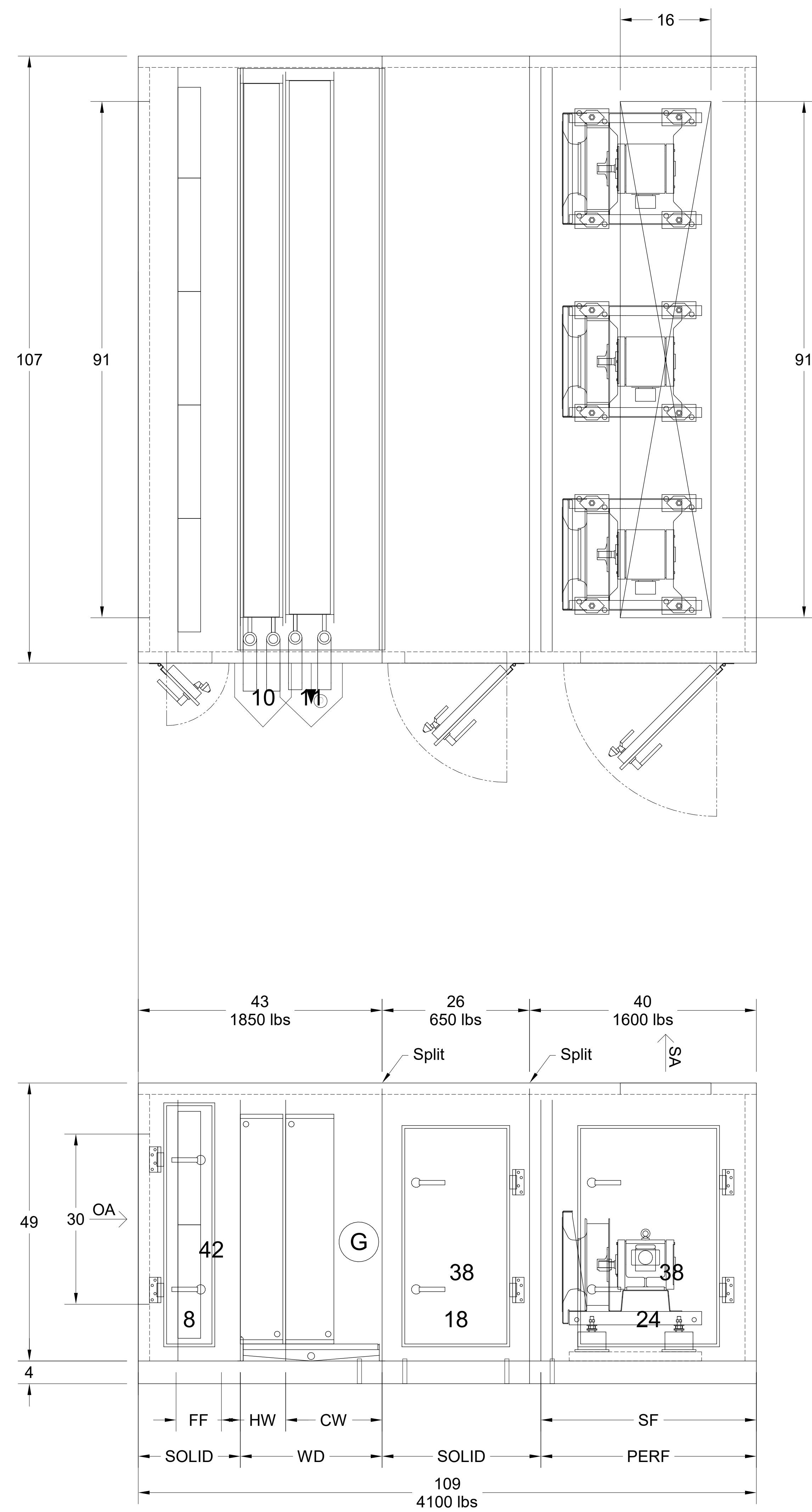
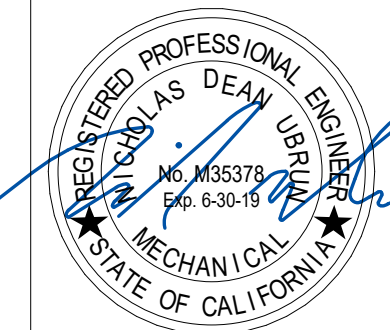
1 MEASUREMENT UNITS ARE INCHES.

CAPITAL PROGRAMS  
ARCHITECTS & ENGINEERS

1223 UNIVERSITY AVENUE, SUITE 240  
RIVERSIDE, CA. 92521  
TEL: (951) 827-1273 FAX: (951) 827-3890

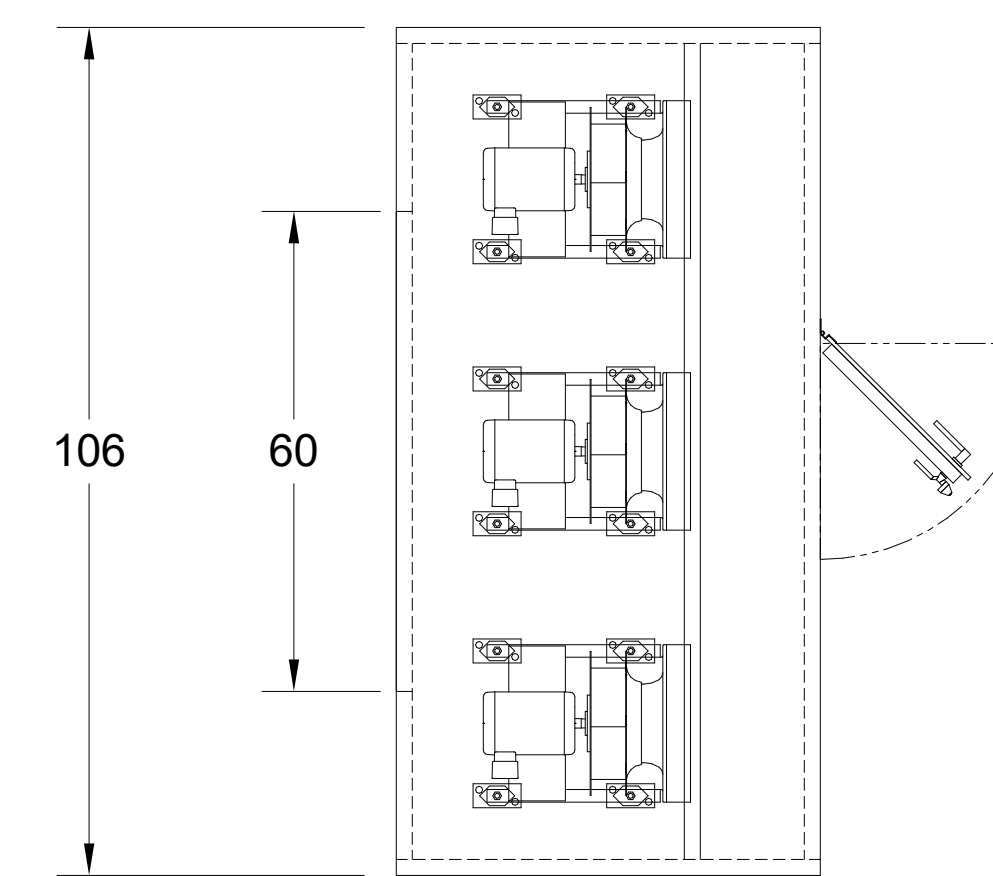
Architect's Data:

Architect's Stamp: Consultant's Stamp:

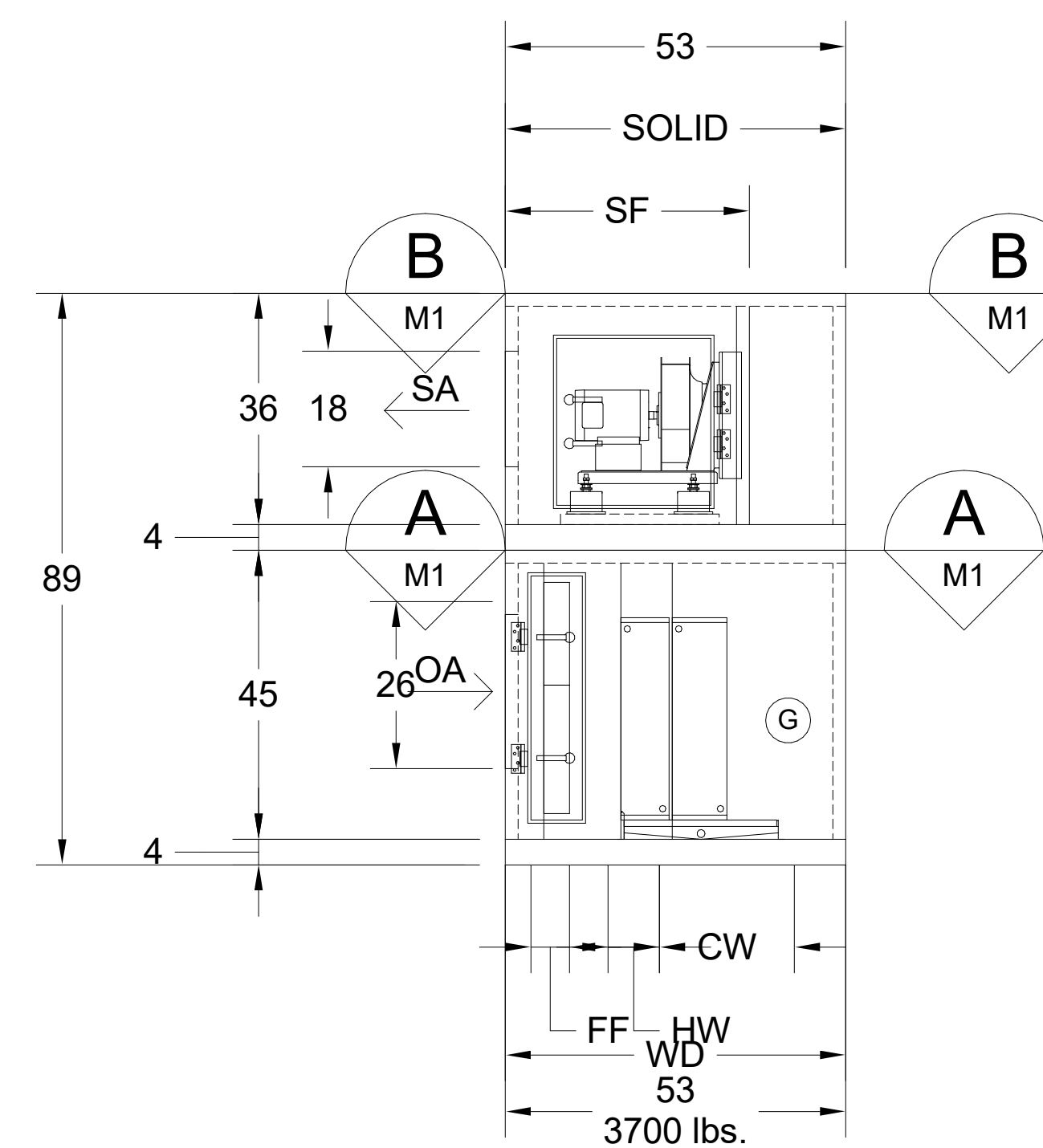
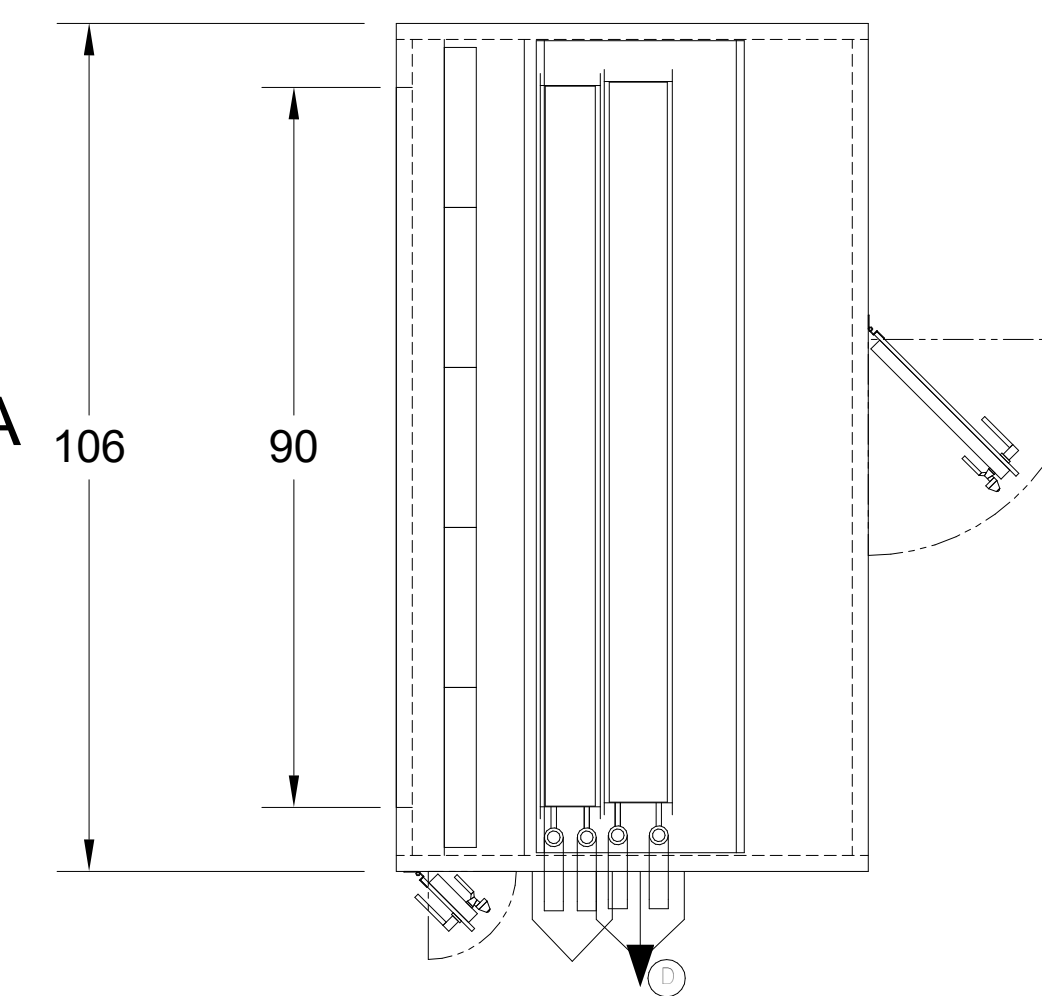


1 AHU-3 DETAIL  
1" = 1'-0"

SECTION B-B



SECTION A-A



2 AHU-4 DETAIL  
1/2" = 1'-0"



REVISIONS		
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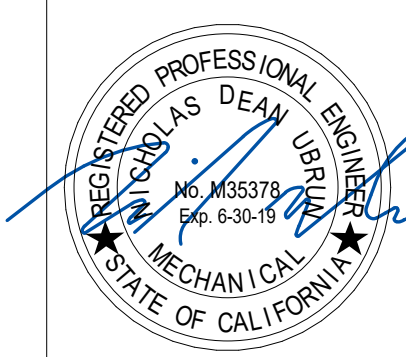
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Drawn By:	AB	DD Approval:
Checked By:	WG / NU	CD Approval:
Project No.:	119-01-07	Construction Release:
DSA No.:		

Drawing Title: AHU DETAILS  
Sheet No: M3.1

Architect's Data:

Architect's Stamp:

Consultant's Stamp:



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- 2 TO MINIMIZE DOWNTIME, THE CONTRACTOR SHALL COORDINATE SHUTDOWN OF EXISTING EQUIPMENT SERVED BY HOT WATER SYSTEM WITH THE UNIVERSITY REPRESENTATIVE AT LEAST ONE WEEK IN ADVANCE.
- 3 PROTECT ALL PIPES, FITTINGS, AND EQUIPMENT NOT MARKED FOR DEMOLITION IN PLACE FOR FUTURE RECONSTRUCTION.

**DEMOLITION NOTES**

- ① DEMOLISH CHWS/R PIPE TO THE POINT NECESSARY TO FACILITATE RECONSTRUCTION.
- ② DEMOLISH HHWS/R PIPE TO THE POINT NECESSARY TO FACILITATE RECONSTRUCTION.
- ③ DEMOLISH THREE WAY VALVE AND ALL ASSOCIATED APPARATUS.
- ④ DEMOLISH HHWS/R PIPE TO FACILITATE INSTALLATION OF A DIFFERENTIAL PRESSURE SENSOR.
- ⑤ PROTECT CHW PUMP IN PLACE.

**RECONSTRUCTION NOTES**

- ① PROVIDE NEW HHWS/R PIPE AND EXTEND TO SERVE AHU.
- ② PROVIDE NEW CHWS/R PIPE AND EXTEND TO SERVE AHU.
- ③ PROVIDE NEW 2-WAY PRESSURE INDEPENDENT CONTROL VALVE TO SERVE THE HEATING COIL. REFER TO DETAIL 5M3.0 FOR INSTALLATION.
- ④ PROVIDE NEW 2-WAY PRESSURE INDEPENDENT CONTROL VALVE TO SERVE THE COOLING COIL. REFER TO DETAIL 5M3.0 FOR INSTALLATION.
- ⑤ PROVIDE DIFFERENTIAL PRESSURE SENSOR TO SERVE HHW LOOP.

04/19/19



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PROJECT# 956394  
CAAN# P5502

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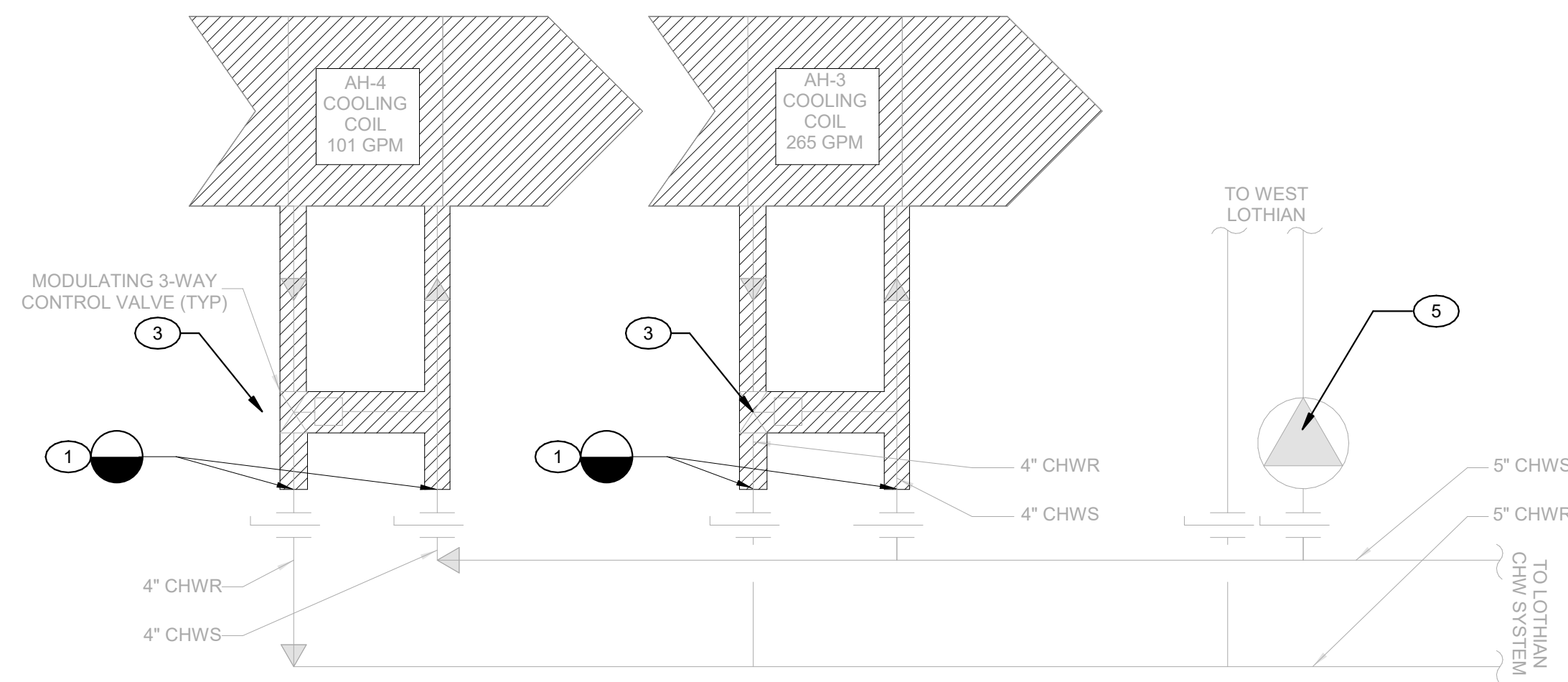


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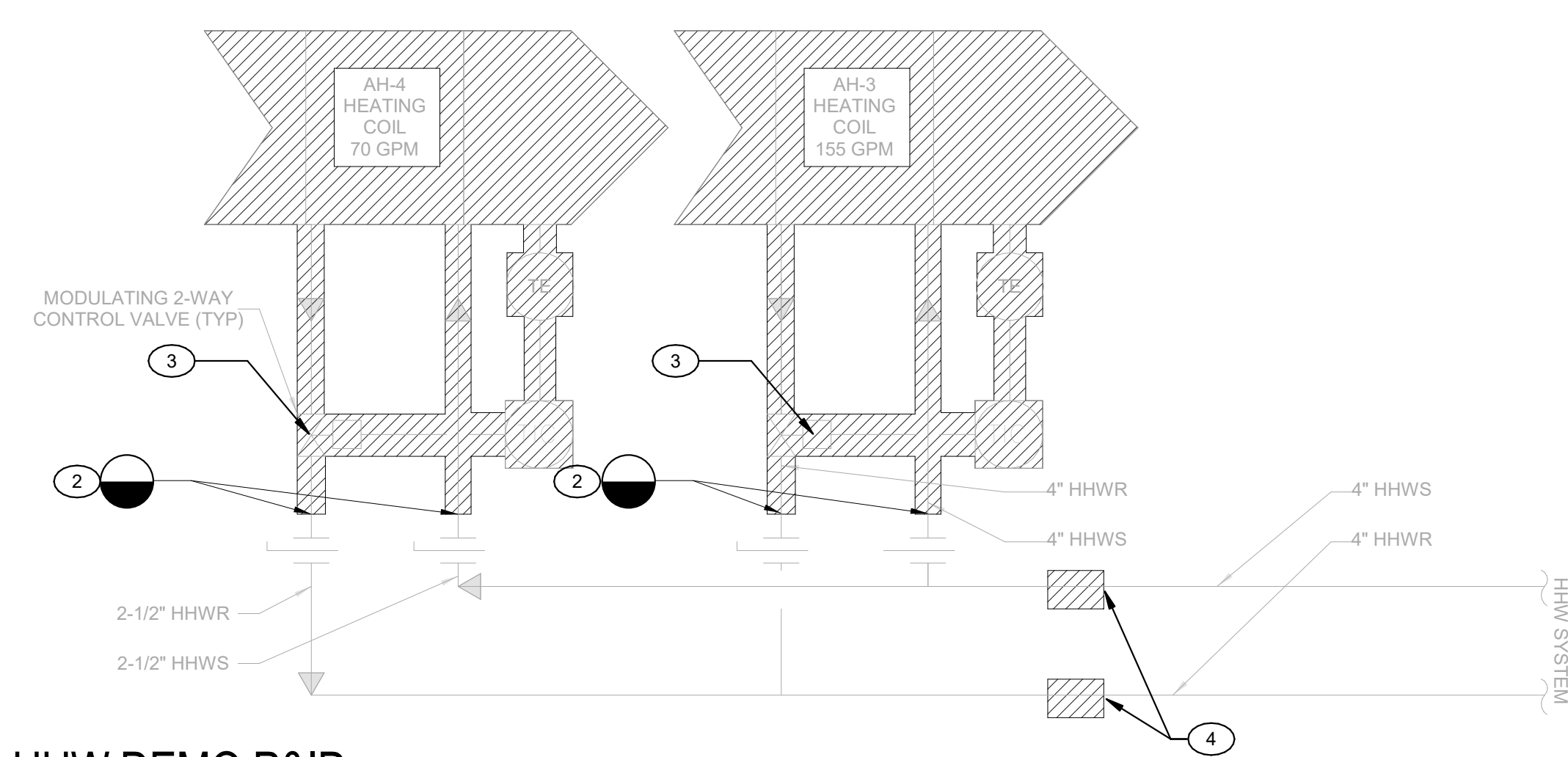
John Franklin

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Checked By:	WG / NU	CD Approval:	
Project No.:	119-01-07	Construction Release:	
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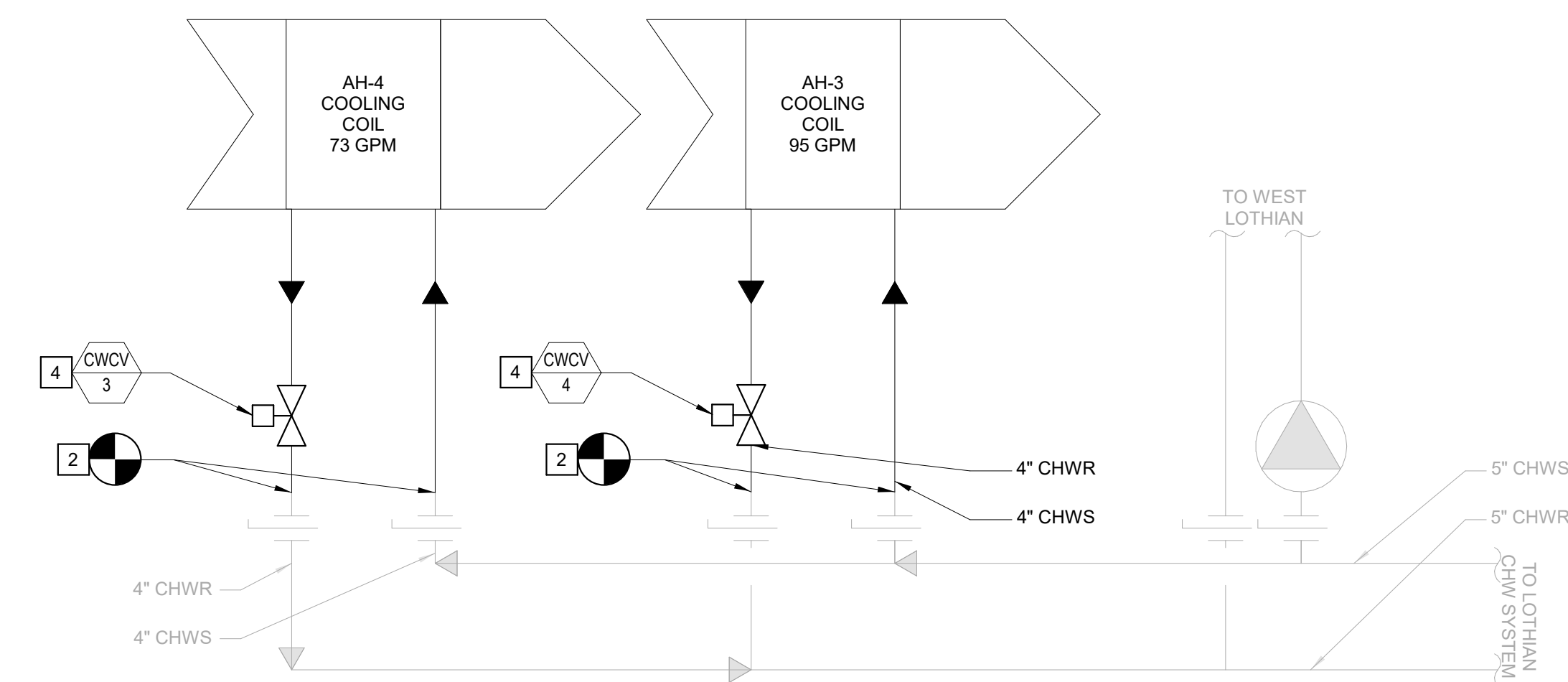
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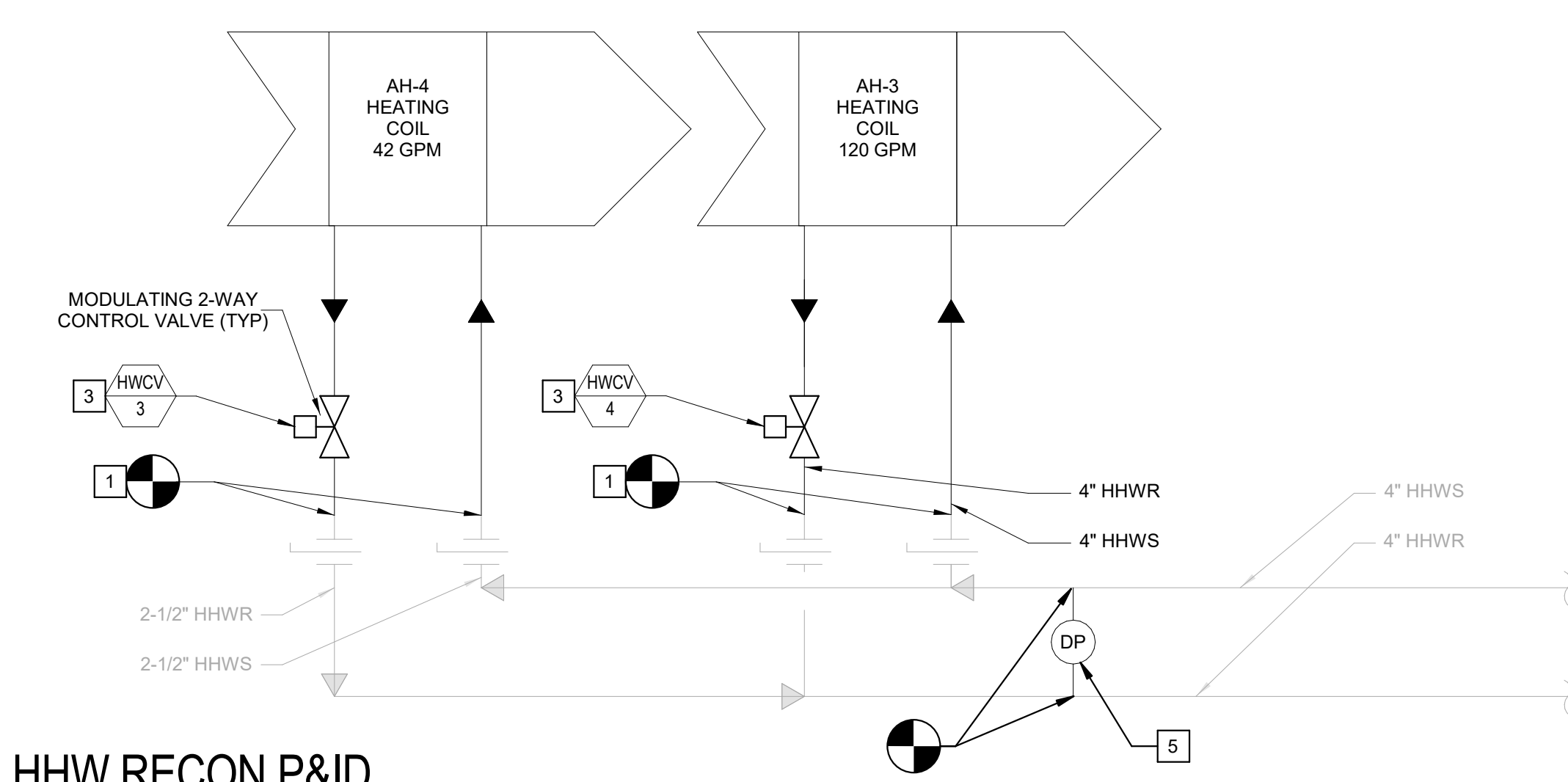
① CHW DEMO P&ID  
N.T.S.



③ HHW DEMO P&ID  
N.T.S.



② CHW RECON P&ID  
N.T.S.

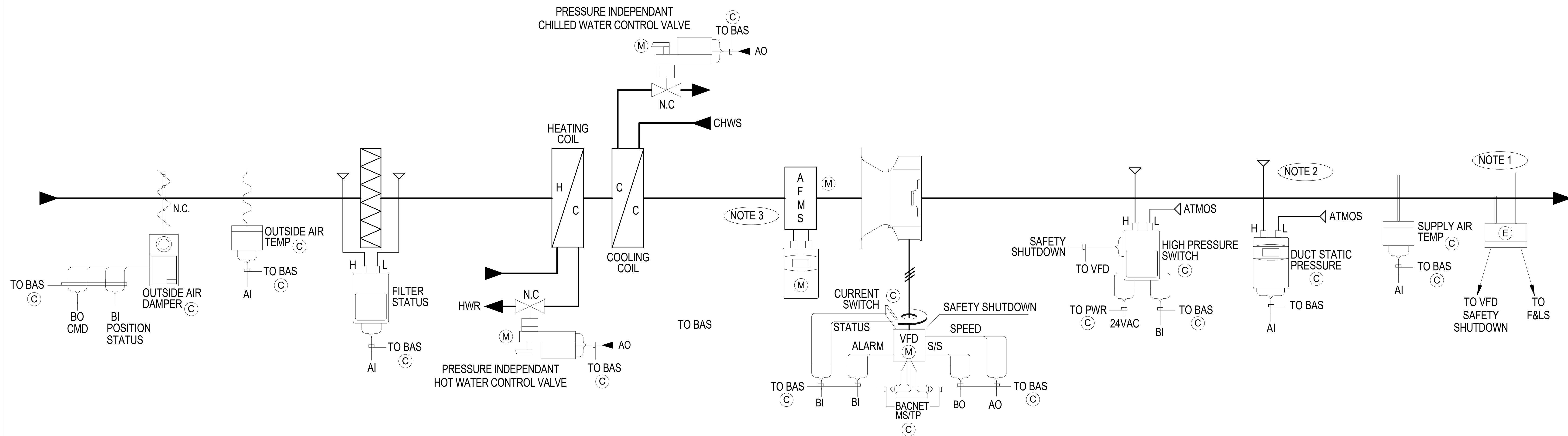
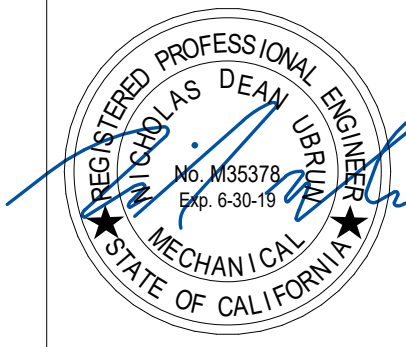


④ HHW RECON P&ID  
N.T.S.



Architect's Data:

Architect's Stamp: Consultant's Stamp:



**NOTES:**

1. SMOKE DETECTOR(S) PROVIDED BY OTHERS AND SHUTDOWN WIRED BY FLS.
2. LOCATE DUCT STATIC PRESSURE SENSOR 2/3 DOWN DUCT.
3. SUPPLY FAN AIRFLOW SENSOR PROVIDED BY UNIT MFR. CONFIRM WIRING REQUIRED WITH FLOW TRANSMITTER PROVIDED.

**AHU-3 CONTROL DIAGRAM (TYP AHU-4)**

**LEGEND:**

- (E) = PROVIDED BY ELECTRICAL CONTRACTOR
- (M) = PROVIDED BY MECHANICAL CONTRACTOR
- (C) = PROVIDED BY CONTROLS CONTRACTOR

- LOW VOLTAGE DC WIRING
- - - - - LINE VOLTAGE AC WIRING

**SEQUENCE OF OPERATION:**

**AHU FAN SPEED**

AHU-3 and AHU-4 shall modulate VFD controlled fan speed to maintain system pressure. Once set point pressure is met, VFD shall maintain fan speed until measured system pressure deviates from set point pressure.

Upon receiving a disable command, the AHU shall be commanded off and both the CHW and HHW control valves shall close.

**HEATING AND COOLING MODE**

During heating mode, the CHW control valve shall close while the HHW control valve shall modulate to maintain the setpoint supply heating air temperature of 90 °F (adjustable). Once setpoint temperature is met, valve shall maintain valve position until the measured supply air temperature deviates from the set point temperature.

During cooling mode, the HHW control valve shall close while the CHW control valve shall modulate to maintain the setpoint supply cooling air temperature of 55 °F (adjustable). Once setpoint temperature is met, valve shall maintain valve position until the measured supply air temperature deviates from the set point temperature.

**SMOKE DETECTOR**

If smoke is detected within the supply ductwork, the AHU shall be commanded off and both the CHW and HHw control valves shall close.

04/19/19  
**APPROVED**  
UC RIVERSIDE  
Office of Planning, Design & Construction Signed CDD: *Glenn Goodwin*  
Building, Safety and Compliance Division  
CAMPUS BUILDING PERMIT

OFFICE OF THE STATE FIRE MARSHAL  
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Reviewed by: *Scott Johnson*  
Fire and Life Safety Division

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LOTHIAN RESIDENCE HALL  
AHU REPLACEMENTS  
PROJECT# 956394  
CAAN# P5502

Consultant's Data:  
**GOSS ENGINEERING**  
255 East Rincon St., Suite 301  
Corona, CA 92789  
P 951.340.1977 | F 951.340.1090  
www.gossengineering.com

UCR Project Manager:  
John Franklin

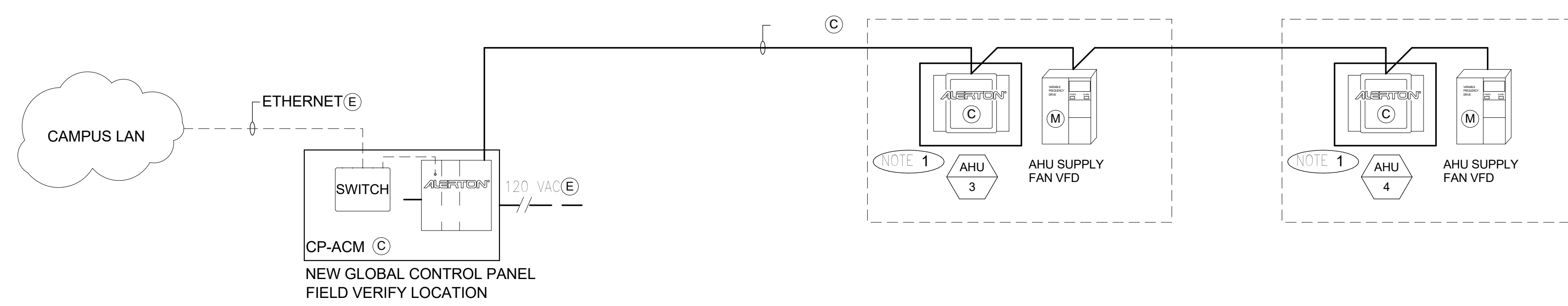
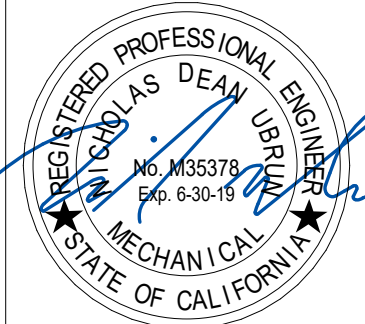
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Drawn By:	AB	DD Approval:	
Checked By:	WG / NUJ	CD Approval:	
Project No.:	119-01-07	Construction Release:	
DSA No.:			

Drawing Title: CONTROL DIAGRAM / SEQUENCE OF OPERATION  
Sheet No: M5.0

Architect's Data:

Architect's Stamp:

Consultant's Stamp:



**GENERAL NOTES:**

- COMM. RISER FOR GENERAL INTENT ONLY- CONTRACTOR TO VERIFY ACTUAL INSTALLATION REQUIREMENTS.

**DRAWING CONTROL NOTES:**

1. CONTROL POWER FROM AHU POWER - PROVIDE MULTI-TAP TRANSFORMER.

**LEGEND:**

- (C) = PROVIDED BY CONTROLS CONTRACTOR
- (E) = PROVIDED BY ELECTRICAL CONTRACTOR
- (M) = PROVIDED BY MECHANICAL CONTRACTOR

- MSTP COMMUNICATION WIRING
- - - - - CAT-5 ETHERNET CABLING
- . - . - . LINE VOLTAGE AC WIRING

## WEST LOTHIAN HALL - BAS NETWORK COMMUNICATION RISER DIAGRAM

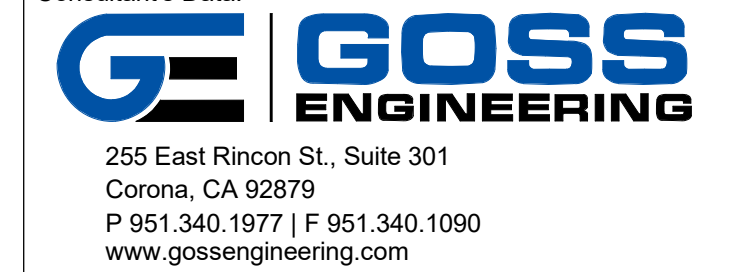


**REVISIONS**

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AHU REPLACEMENTS  
PROJECT# 956394  
CAAN# P5502

Consultant's Data:



UCR Project Manager:

John Franklin

Scale: As Indicated SD Approval:

Drawn By: Author DD Approval:

Checked By: Checker CD Approval:

Project No.: 119-01-07 Construction Release:

DSA No.:

Drawing Title: Sheet No.

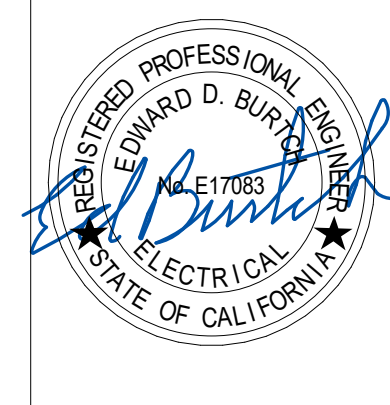
COMMUNICATION RISER DIAGRAM

M5.1

	LEGEND AND SYMBOLS	CIRCUITS AND RACEWAYS	GENERAL NOTES
	<p>TRANSFORMER</p> <p>SWITCH</p> <p>FUSE</p> <p>LOW VOLTAGE C/B</p> <p>LOW VOLTAGE DRAWOUT TYPE C/B</p> <p>LOW VOLTAGE NETWORK PROTECTOR GROUND FAULT DETECTOR TYPE CB</p> <p>SURFACE MOUNTED PANEL</p> <p>GROUND BAR 3/4-INCH DIA. 10 FOOT LONG</p> <p>MOTOR HP RATED</p> <p>COMBINATION MOTOR STATER, HORSE POWER RATED</p> <p>SAFETY DISCONNECT SWITCH, HORSE POWER RATED</p> <p>SOLID STATE STARTER</p> <p>FUSE DISCONNECT SWITCH</p> <p>POWER METER</p> <p>VARIABLE REQUENCY DRIVE WITH LOCKABLE DISCONNECT</p> <p>C/B</p> <p>MOTOR CIRCUIT PROTECTOR</p> <p>MCP</p> <p>MOTOR CONTROL CENTER</p> <p>FLEXIBLE CONNECTION TO EQUIPMENT</p> <p>2-POLE TOGGLE SWITCH FOR MECHANICAL UNIT</p> <p>120V, 20A, CONV. OUTLET</p> <p>QUAD BOX OUTLET</p> <p>DUCT MOUNTED SMOKE DETECTOR</p>	<p>RACEWAY OR WIRING SYSTEM ABOVE FLOOR LEVEL, CONCEALED IN WALL OR ABOVE CEILING LION.</p> <p>RACEWAY OR WIRING SYSTEM IN OR UNDER FLOOR, OR CONCEALED IN OR BEHIND STRUCTURE OR EQUIPMENT.</p> <p>CONDUIT STUB UP ENDING WITH CAP.</p> <p>JB2700A JUNCTION BOX. OPTIONAL IDENTIFIER.</p> <p>TB1035 TERMINAL BOX. OPTIONAL IDENTIFIER.</p> <p>1" C 3#10 AWG+1#10G RACEWAY SIZE WITH CONDUCTOR CONTENTS AND SIZES</p> <p>3/4" CONDUIT WITH 2#12 &amp; 1#12 GND U.N.O</p>	<ol style="list-style-type: none"> <li>ELECTRICAL CONTRACTOR SHALL PERFORM ELECTRICAL INSTALLATION WORK IN CONFORMANCE WITH 2016 CALIFORNIA ELECTRICAL CODE (CEC) EDITION ELECTRICAL INSTALLATION REQUIREMENTS.</li> <li>CONDUIT ROUTING AND OUTLET LOCATION AS SHOWN ON THE ELECTRICAL POWER PLAN ARE DIAGRAMMATIC IN NATURE. CONTRACTOR SHALL VERIFY FEASIBILITY OF THE INSTALLATION BEFORE COMMENCING THE JOB. ANY CONFLICT OF THE WORK SHALL BE BROUGHT TO THE ATTENTION OF THE UNIVERSITY REPRESENTATIVE IMMEDIATELY.</li> <li>CONTRACTOR SHALL COORDINATE ALL HIS WORK WITH OTHER CONSTRUCTION TRADES. CONTRACTOR SHALL NOTIFY THE UNIVERSITY REPRESENTATIVE OF ANY UNRESOLVED ISSUES THAT MAY DELAY INSTALLATION OF HIS WORK.</li> <li>PROVIDE GROUND WIRE IN ALL CONDUITS.</li> </ol>
		<p><b>GROUNDING</b></p> <p>GROUND ROD</p> <p>GROUND CONNECTION, BOLTED TYPE</p> <p>GROUND CONNECTION, EXOTHERMIC TYPE</p> <p>GROUNDING ELECTRODE CONDUCTOR</p>	<p><b>APPLICABLE CODES</b></p> <p>2016 CALIFORNIA BUILDING CODE (CBC), PART 2, VOLUMES 1 AND 2, TITLE 24</p> <p>2016 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24</p> <p>2016 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24</p> <p>2016 CALIFORNIA REFERENCED STANDARDS, PART 12, TITLE 24</p> <p>TITLE 19, PUBLIC SAFETY STATE FIRE MARSHAL REGULATIONS.</p> <p><b>PARTIAL LIST OF APPLICABLE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS:</b></p> <p>NFPA 72, 2016 NATIONAL FIRE CODE (CALIFORNIA AMMENDED BY CSFM)</p>

Architect's Data:

Architect's Stamp:      Consultant's Stamp:



REVISIONS		
REV #	DESCRIPTION	DATE
1	50% CONSTRUCTION DOCUMENT	02/15/19
2	90% CONSTRUCTION DOCUMENT	03/20/19
3	100% CONSTRUCTION DOCUMENT	04/17/19

LOTHIAN RESIDENCE HALL  
AHU REPLACEMENTS  
PROJECT# 956394  
CAAN# P5502

Consultant's Data:  
**GOSS ENGINEERING**  
255 East Rincon St., Suite 301  
Corona, CA 92879  
P 951.340.1977 | F 951.340.1090  
www.gossengineering.com

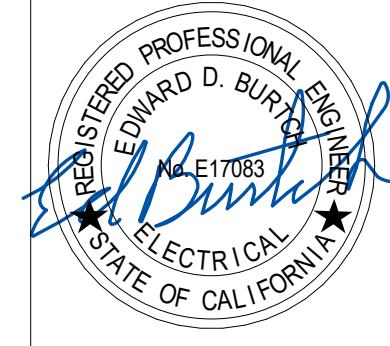
UCR Project Manager:  
John Franklin

Scale:	As Indicated	SD Approval:
Drawn By:	T.R.	DD Approval:
Checked By:	E.B.	CD Approval:
Project No.:	119-01-07	Construction Release:
DSA No.:		

Drawing Title: ELECTRICAL SYMBOLS, LEGEND, AND GENERAL NOTES      Sheet No. E0.1

Architect's Data:

Architect's Stamp: Consultant's Stamp:



**GENERAL NOTES**

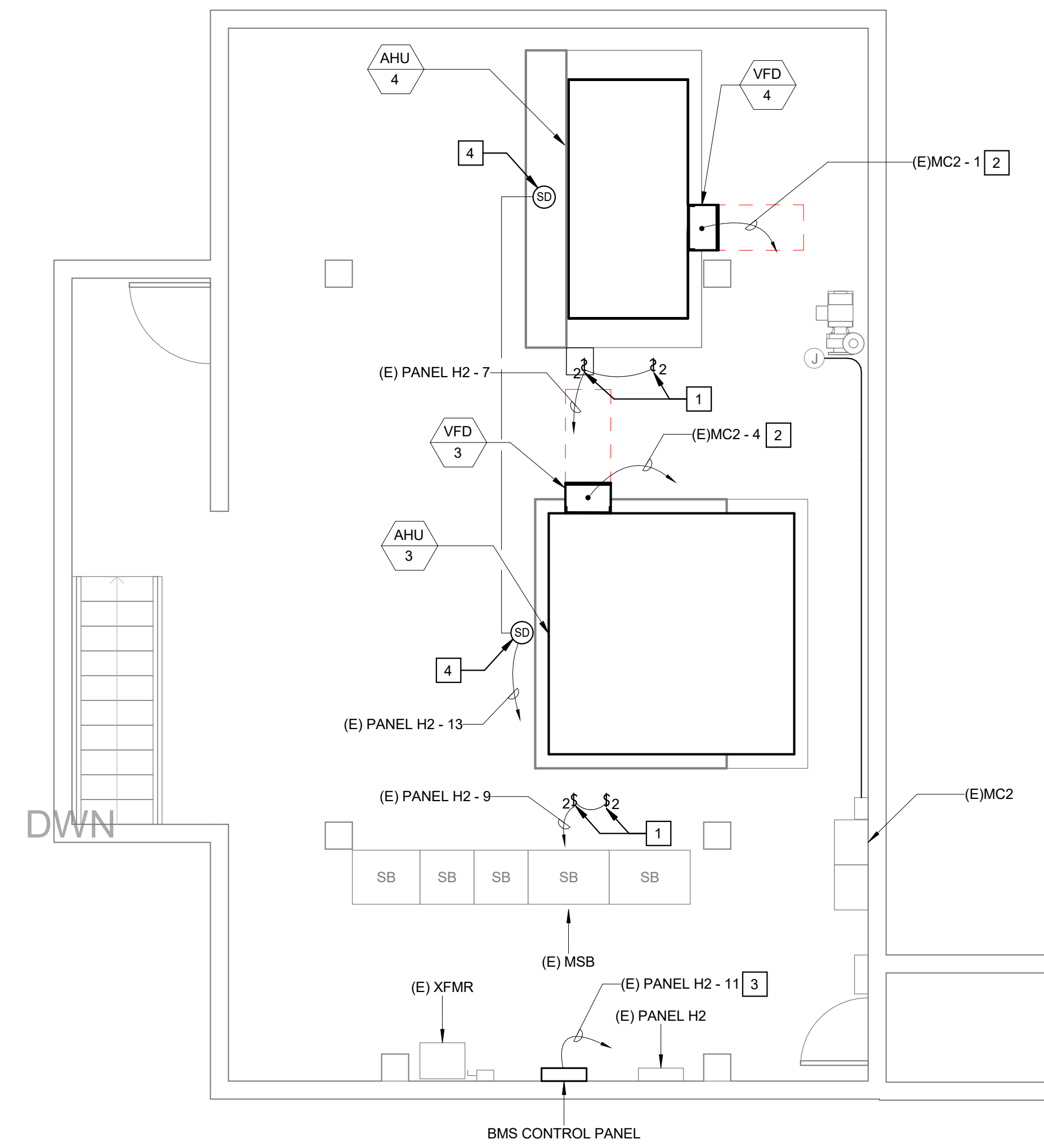
- ELECTRICAL ENGINEERING FOR THIS PROJECT IS BASED ON EXISTING DRAWINGS, AND A FIELD SURVEY OF THE ELECTRICAL PANELS/DEVICES. IN FIELD CONDITIONS, CONTRACTOR SHALL VERIFY THE EXACT DIFFERENCES AND NOTIFY THE ELECTRICAL ENGINEER FOR POSSIBLE REVISIONS TO THIS DOCUMENT.

**DEMOLITION NOTES**

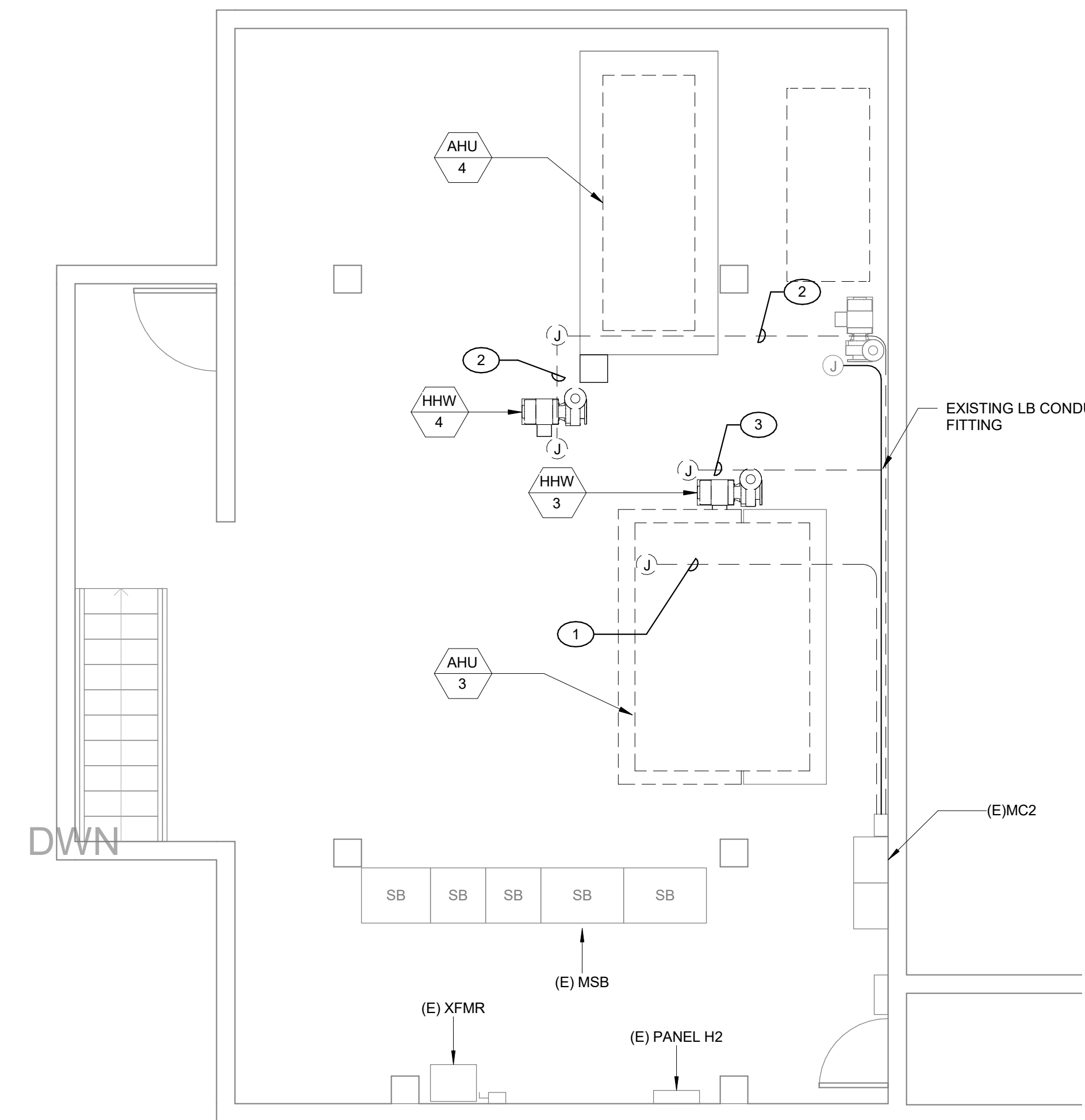
- DISCONNECT AND REMOVE ALL ASSOCIATED POWER AND CONTROL CONDUITS AND WIRING CONNECTIONS FROM AHU-3 BACK TO EXISTING MC2 PANEL.
- DISCONNECT AND REMOVE ALL ASSOCIATED POWER AND CONTROL CONDUITS AND WIRING CONNECTIONS FROM AHU-4 AND HHW-4 BACK TO EXISTING MC2 PANEL.
- DISCONNECT AND REMOVE ALL ASSOCIATED POWER AND CONDUIT FROM HHW-3 TO EXISTING LB CONDUIT FITTING. ABBANDON WIRING IN EXISTING CONDUIT TO REMAIN.

**RECONSTRUCTION NOTES**

- PROVIDE 120V CONNECTION TO NEW CONTROL VALVES. COORDINATE EXACT LOCATION WITH DIV. 23.
- PROVIDE ELECTRICAL CONNECTION TO NEW AHU BUILT IN VFD. SEE SINGLE LINE DIAGRAM 02 ON SHEET E3.1 FOR CONDUIT AND FEEDER INFORMATION.
- PROVIDE 120V CONNECTION TO NEW BMS CONTROL PANEL.
- UNIVERSITY APPROVED DUCT SMOKE DETECTOR TO BE FURNISHED BY DIV. 26 AND INSTALLED BY DIV. 26. PROVIDE 120V CONNECTION TO DUCT SMOKE DETECTOR. COORDINATE EXACT LOCATION WITH DIV. 23. ALL CONTROLS WIRING AND CONDUIT TO BE FURNISHED AND INSTALLED BY CONTROLS CONTRACTOR.



2 MECHANICAL RM. ELECTRICAL RECONSTRUCTION PLAN  
1/4" = 1'-0"



1 MECHANICAL RM. ELECTRICAL DEMOLITION PLAN  
1/4" = 1'-0"

04/19/19



OFFICE OF THE STATE FIRE MARSHAL  
APPROVED FIRE AND PANIC ONLY  
04/19/2019  
Approval of this plan does not authorize or approve any condition or deviation from applicable regulations. Final approval is subject to field inspection. One set of approved plans shall be available on the project site at all times.  
Reviewed by: [Signature]  
Fire and Life Safety Division

**REVISIONS**

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3	100% CONSTRUCTION DOCUMENT	04/17/19

LOTHIAN RESIDENCE HALL  
AHU REPLACEMENTS  
PROJECT# 956394  
CAAN# P5502

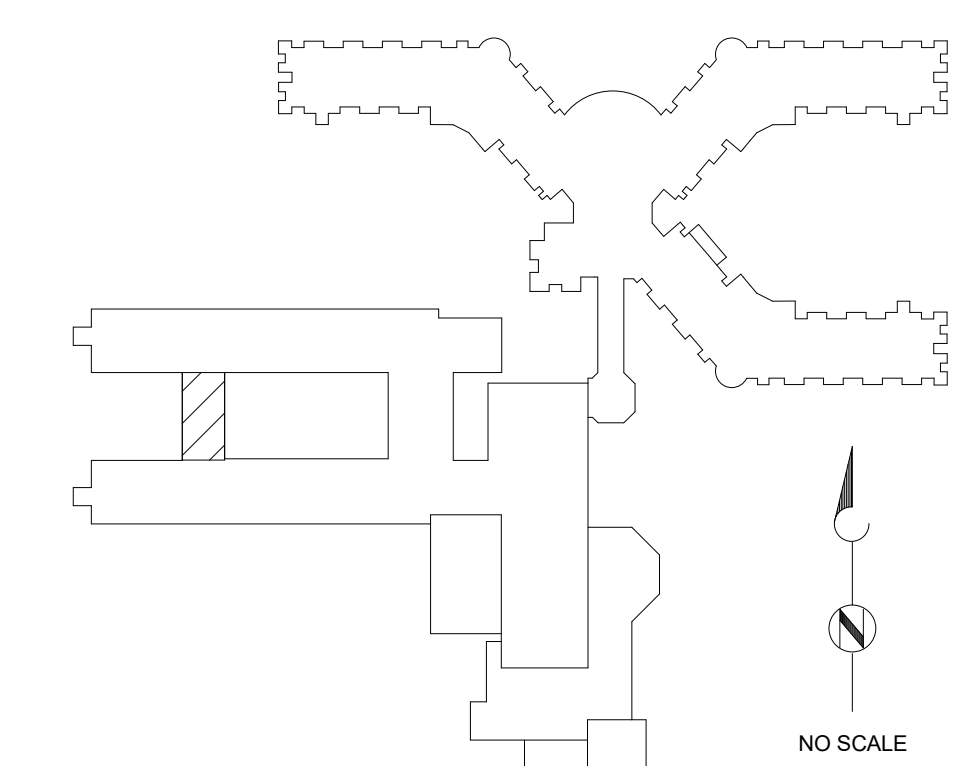
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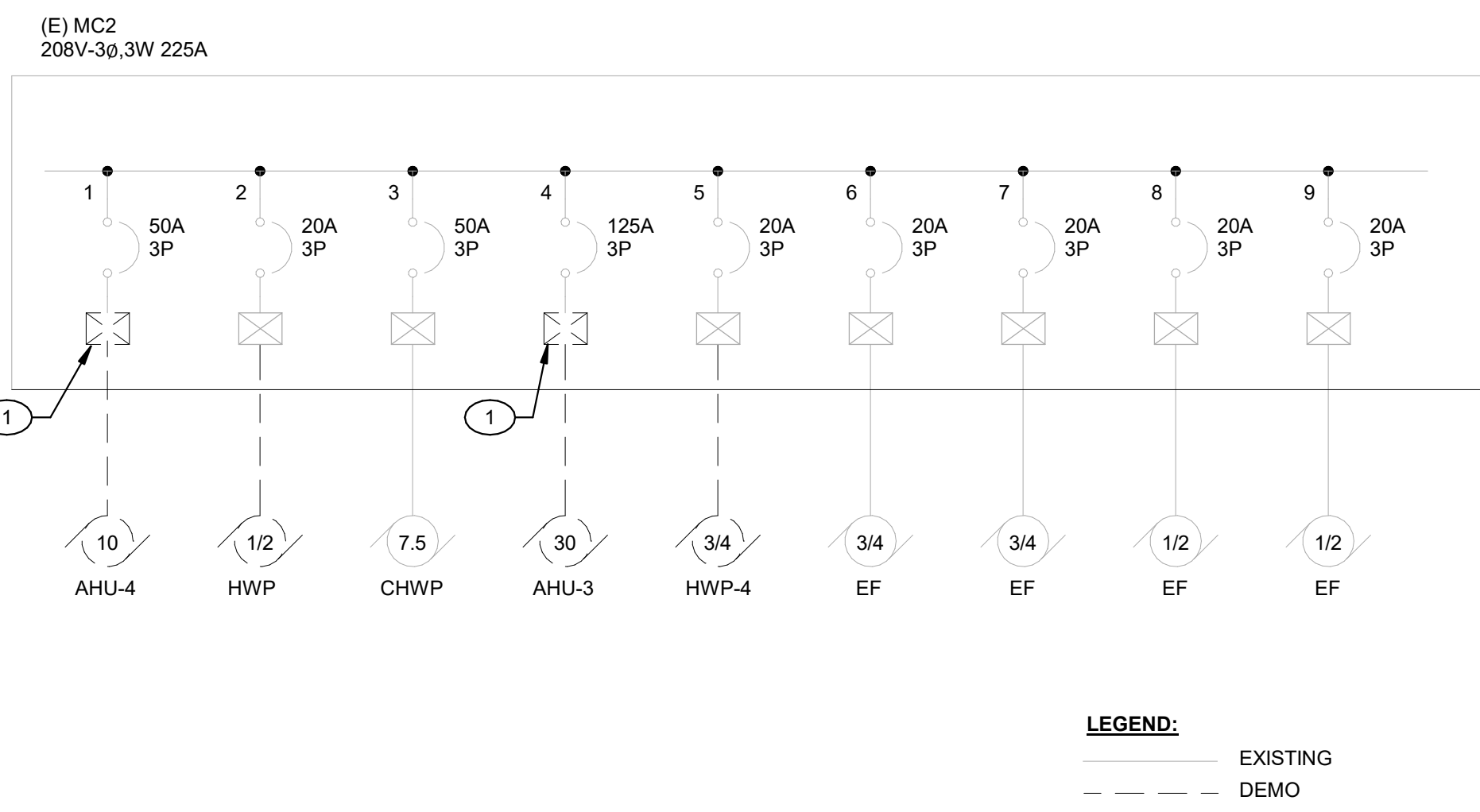


UCR Project Manager:  
John Franklin

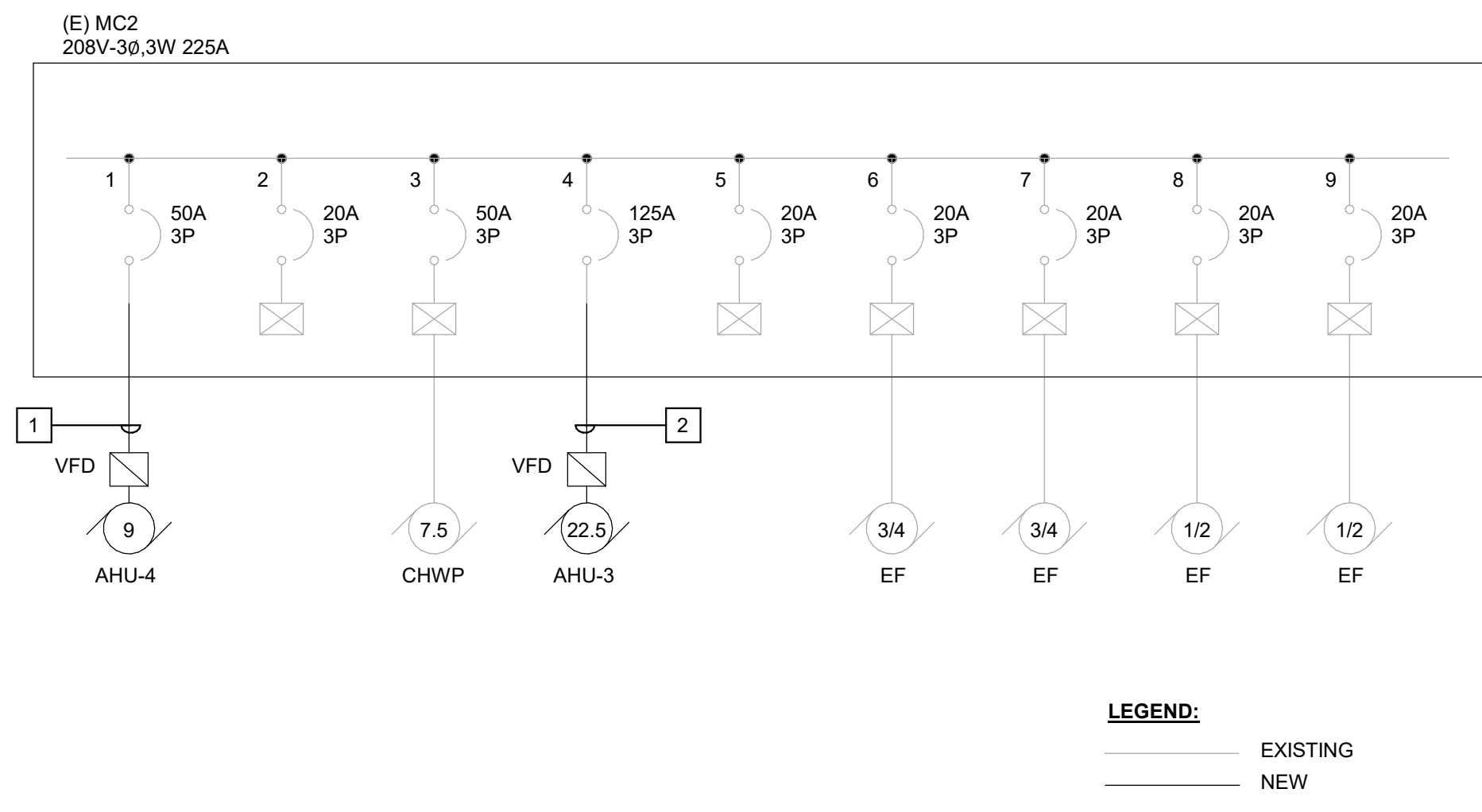
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Drawn By: T.R.	DD Approval:
Checked By: E.B.	CD Approval:
Project No.: 119-01-07	Construction Release:
DSA No.:	

Drawing Title: ELECTRICAL DEMOLITION & RECONSTRUCTION PLANS  
Sheet No: E1.0





1 'MC2' SINGLE LINE DIAGRAM DEMOLITION



2 'MC2' SINGLE LINE DIAGRAM RECONSTRUCTION

**Branch Panel: (E) PANEL H2**

Location: Volts: 208Y/120V A.I.C. Rating: 10kAIC  
 Supply From: Phases: 3 Bus Amps: 225A  
 Mounting: Surface Wires: 4 Main Breaker: MLO  
 Enclosure: Type 1

CKT	Circuit Description	SEE NOT E	Trip	Poles	A	B	C	Poles	Trip	SEE NOT E	Circuit Description	CKT
1	WALK LIGHTING		30 A	1	1800 VA	1200 VA		1	20 A		EXISTING LOAD	2
3	TIMECLOCK		20 A	1		100 VA	1500 VA	1	30 A		WALK LIGHTING	4
5	RECEPTACLE FOR PUMP		30 A	1			1500 VA	1800 VA	1	30 A	WALK LIGHTING	6
7	Control Valves		1 20 A	1	20 VA	0 VA					Space	8
9	Control Valves		1 20 A	1		20 VA	1872 VA		2 30 A		SOLAR HOT WATER SYSTEM	10
11	BMS CONTROL PANEL		1 20 A	1			500 VA	1872 VA	--	--	--	12
13	DUCT SMOKE DETECTORS		1 20 A	1	10 VA	0 VA			--	--	Space	14
15	Space		--	--		0 VA	0 VA		--	--	Space	16
17	Space		--	--			0 VA	0 VA	--	--	Space	18
19	Space		--	--		0 VA	0 VA		--	--	Space	20
<b>Total Load:</b>					3030 VA	3492 VA	5672 VA					
<b>Total Amps:</b>					25 A	30 A	48 A					

Notes:  
1. PROVIDE NEW CIRCUIT BREAKER TO MATCH EXISTING TYPE AND AIC RATING.

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Power	550 VA	100.00%	550 VA	
				<b>Total Conn. Load:</b> 12194 VA
				<b>Total Est. Demand:</b> 12194 VA
				<b>Total Conn. Current:</b> 34 A
				<b>Total Est. Demand Current:</b> 34 A

**MCC: (E)MC2**

Location: Volts: 208Y/120V A.I.C. Rating: 25,000AIC  
 Supply From: Phases: 3 Mains Type:  
 Mounting: FLOOR Wires: 4 Mains Rating: 225 A  
 Enclosure: Type 12 MCB Rating:

Notes:

CKT	Circuit Description	# of Poles	Trip Rating	Load	Remarks
1	AHU-4	3	50 A	10795 VA	
2	Spare	3	20 A	0 VA	
3	CHWP	3	50 A	8708 VA	
4	AHU-3	3	125 A	26000 VA	
5	Spare	3	20 A	0 VA	
6	EF	3	20 A	1259 VA	
7	EF	3	20 A	1259 VA	
8	EF	3	20 A	863 VA	
9	EF	3	20 A	836 VA	
10				49720 VA	
				138 A	

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Power	36795 VA	100.00%	36795 VA	
				<b>Total Conn. Load:</b> 49720 VA
				<b>Total Est. Demand:</b> 49720 VA
				<b>Total Conn. Current:</b> 138 A
				<b>Total Est. Demand Current:</b> 138 A

Notes:

GENERAL NOTES

- ELECTRICAL ENGINEERING FOR THIS PROJECT IS BASED ON EXISTING DRAWINGS, AND A FIELD SURVEY OF THE ELECTRICAL PANELS/DEVICES. IN FIELD CONDITIONS, CONTRACTOR SHALL VERIFY THE EXACT DIFFERENCES AND NOTIFY THE ELECTRICAL ENGINEER FOR POSSIBLE REVISIONS TO THIS DOCUMENT.

DEMOLITION NOTES

- DEMOLISH EXISTING MOTOR STARTER, EXISTING CIRCUIT BREAKER TO REMAIN.

RECONSTRUCTION NOTES

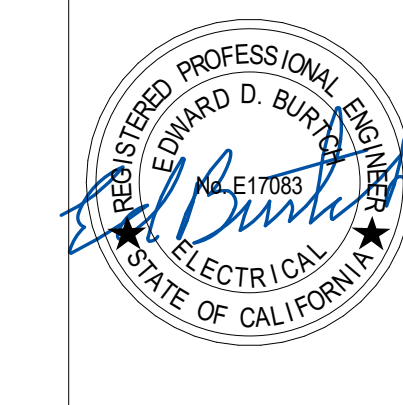
- 1" - 3#6 & 1#10 GRD
- 1-1/2" 3#1 & 1#6 GRD



**CAPITAL PROGRAMS ARCHITECTS & ENGINEERS**  
 1223 UNIVERSITY AVENUE, SUITE 240  
 RIVERSIDE, CA. 92521  
 TEL: (951) 827-1273 FAX: (951) 827-3890

Architect's Data:

Architect's Stamp: Consultant's Stamp:



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LOTHIAN RESIDENCE HALL  
 AHU REPLACEMENTS  
 PROJECT# 956394  
 CAAN# P5502

Consultant's Data:  
**GOSS ENGINEERING**  
 255 East Rincon St., Suite 301  
 Corona, CA 92879  
 P 951 340, 1977 | F 951 340, 1090  
 www.gossengineering.com

UCR Project Manager:  
John Franklin

Scale: As Indicated SD Approval:  
 Drawn By: T.R. DD Approval:  
 Checked By: E.B. CD Approval:  
 Project No.: 119-01-07 Construction Release:  
 DSA No.:

Drawing Title: SINGLE LINE DIAGRAM AND SCHEDULES Sheet No. E3.1



Engineer's Data:

**miyamoto.**

1901 East Alton Avenue, Suite 100 T: (949) 579-1170  
Santa Ana, CA 92705 miyamotointernational.com  
MI1904030.00

Architect's Stamp:

Consultant's Stamp:



04/19/19  
**APPROVED**  
UC RIVERSIDE  
Office of Planning, Design &  
Construction Signed (CBO): *Gilbert Gonzalez*  
Building, Safety and Compliance Division  
CAMPUS BUILDING PERMIT

**LOTHIAN RESIDENCE HALL  
AHU REPLACEMENT**  
UC RIVERSIDE  
RIVERSIDE, CA 92507  
UCR PROJECT No: 956396

OFFICE OF THE STATE FIRE MARSHAL  
APPROVED FIRE AND PANIC ONLY  
04/19/2019  
Approval of this plan does not authorize or  
approve any condition or deviation from applicable  
regulations. Final approval is subject to field  
inspection. One set of approved plans shall be  
available on the project site at all times.  
Reviewed by: *Scott Johnson*  
Fire and Life Safety Division

REVISIONS		
REV #	DESCRIPTION	DATE
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2	100% CONSTRUCTION DOCUMENTS	04/17/19

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AHU REPLACEMENTS  
PROJECT# 956394  
CAAN# P5502

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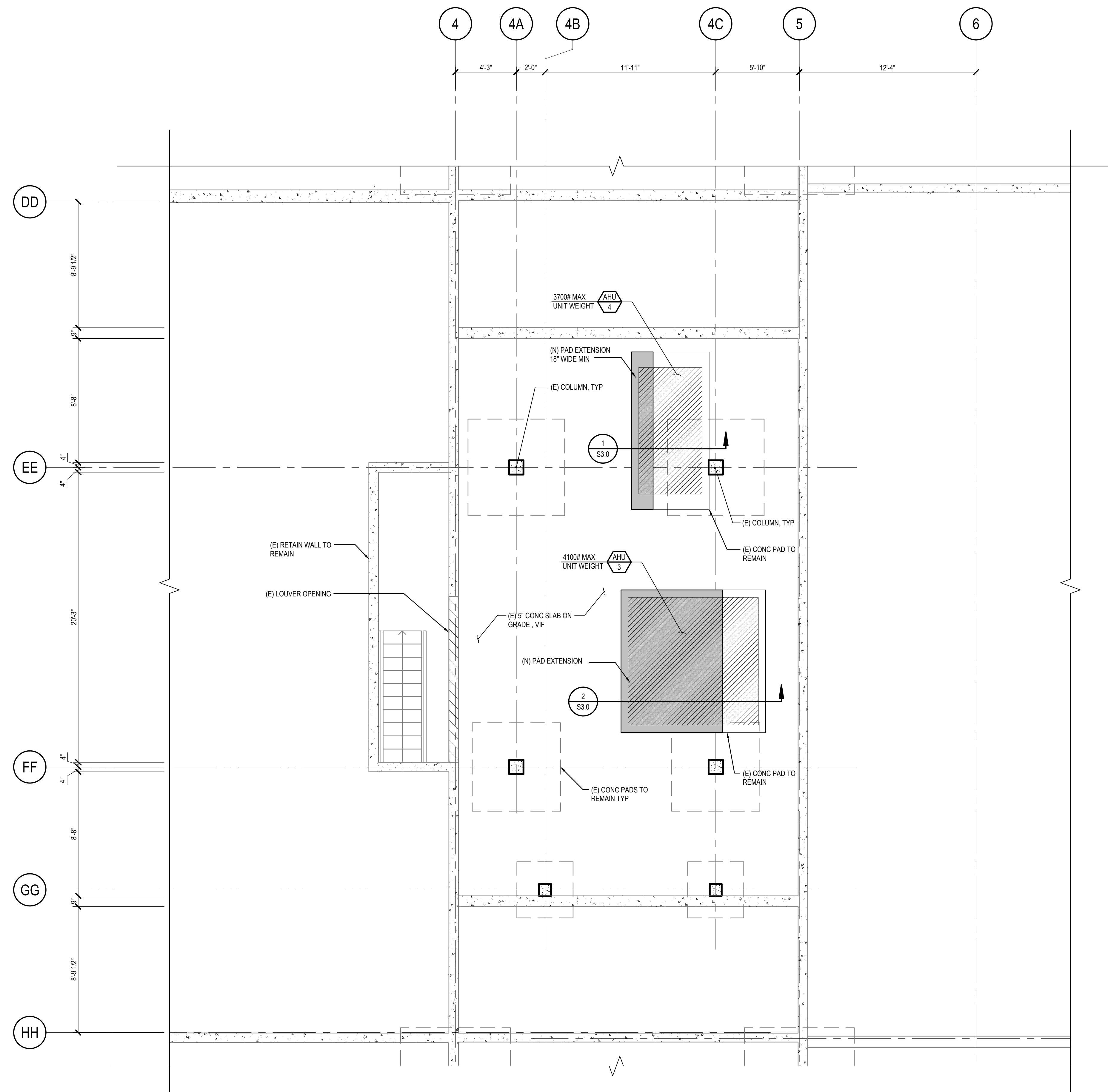
**G GOSS ENGINEERING**  
255 East Rincon St., Suite 301  
Corona, CA 92879  
P 951.340.1977 | F 951.340.1090  
www.gossenengineering.com

UCR Project Manager: JOHN FRANKLIN

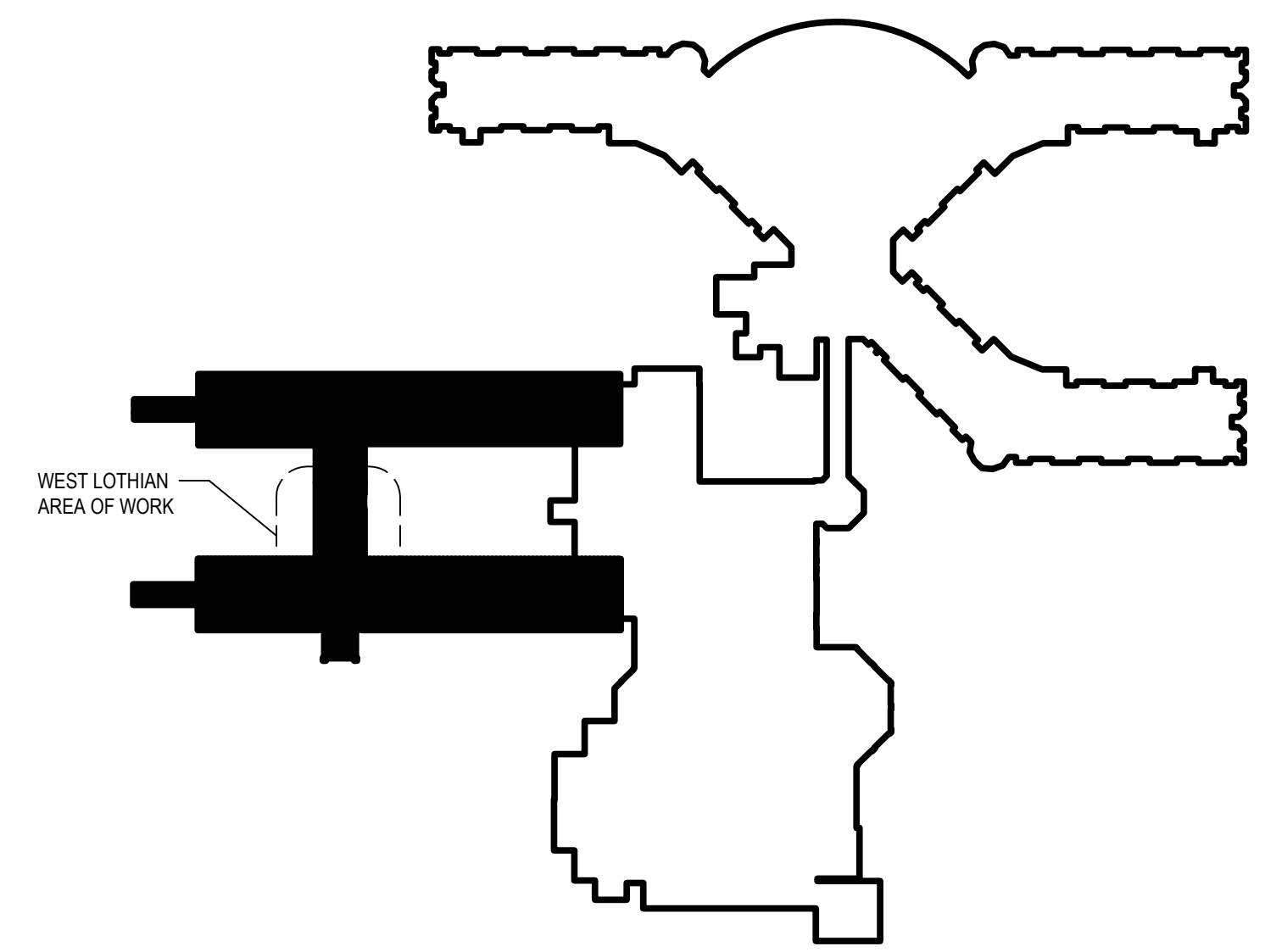
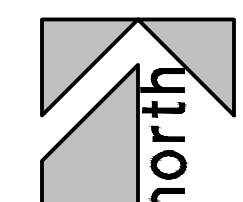
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Drawn By:	D.M.	DD Approval:
Checked By:	J.C.	CD Approval:
Project No.:	MI1904030.00	Construction Release:
DSA No.:		

Drawing Title: BASEMENT FLOOR PLAN

Sheet No: S2.0



**A PARTIAL EXISTING BASEMENT PLAN** 1/4" = 1'-0"



**KEY PLAN**  
NTS

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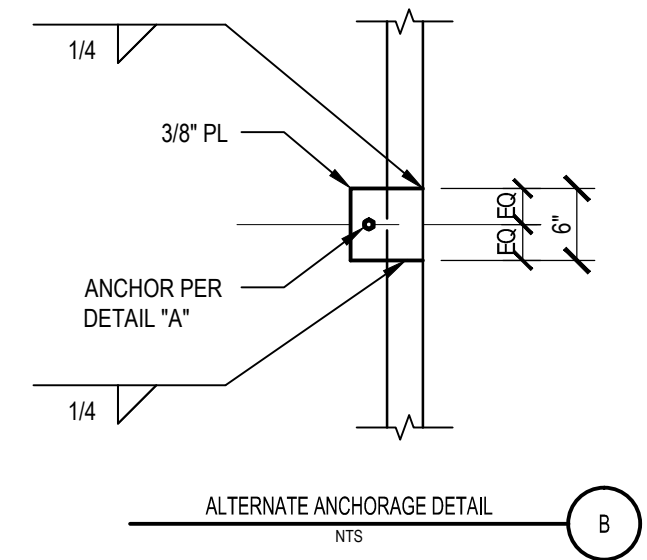
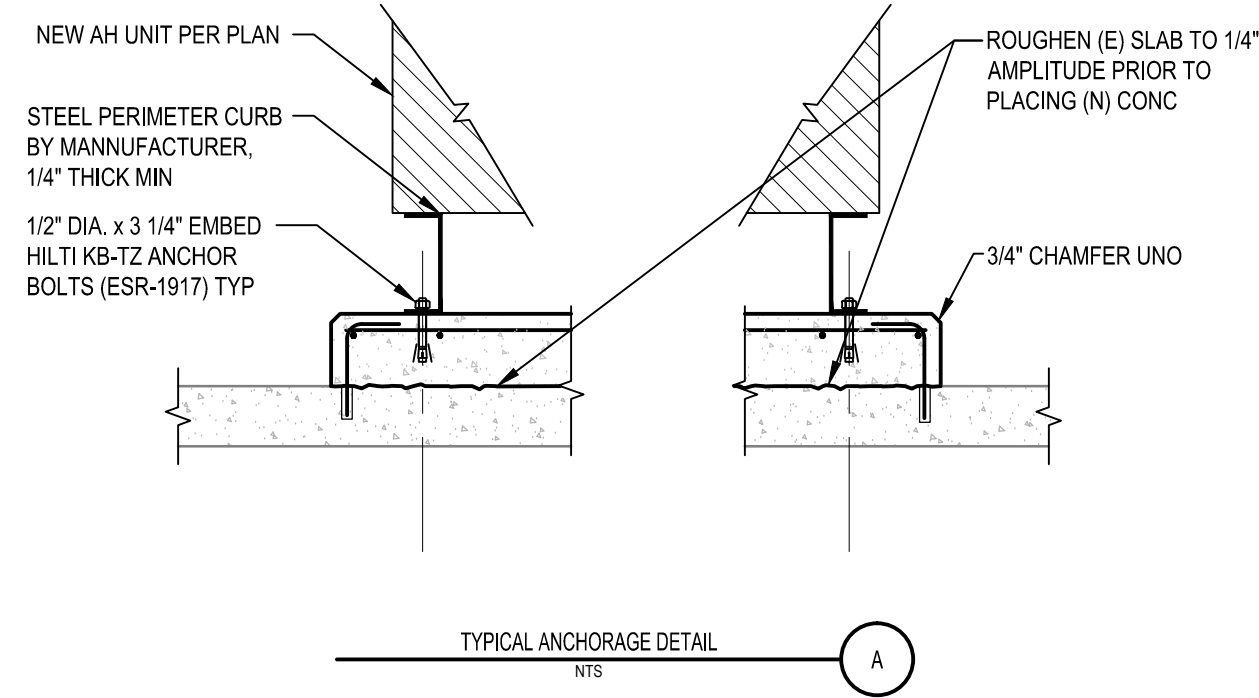
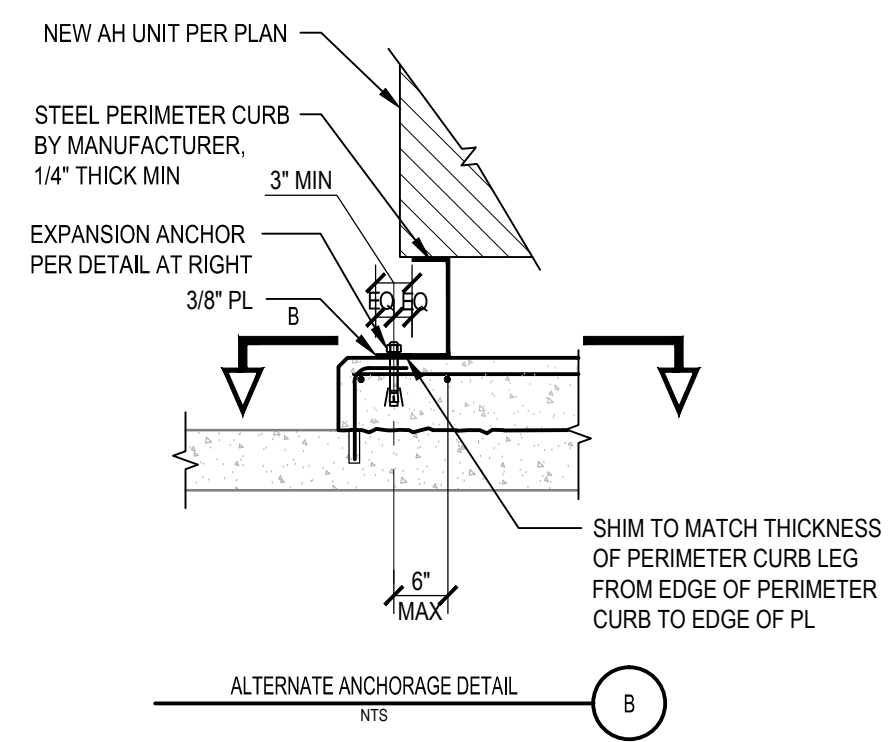
Engineer's Data:

**miyamoto.**

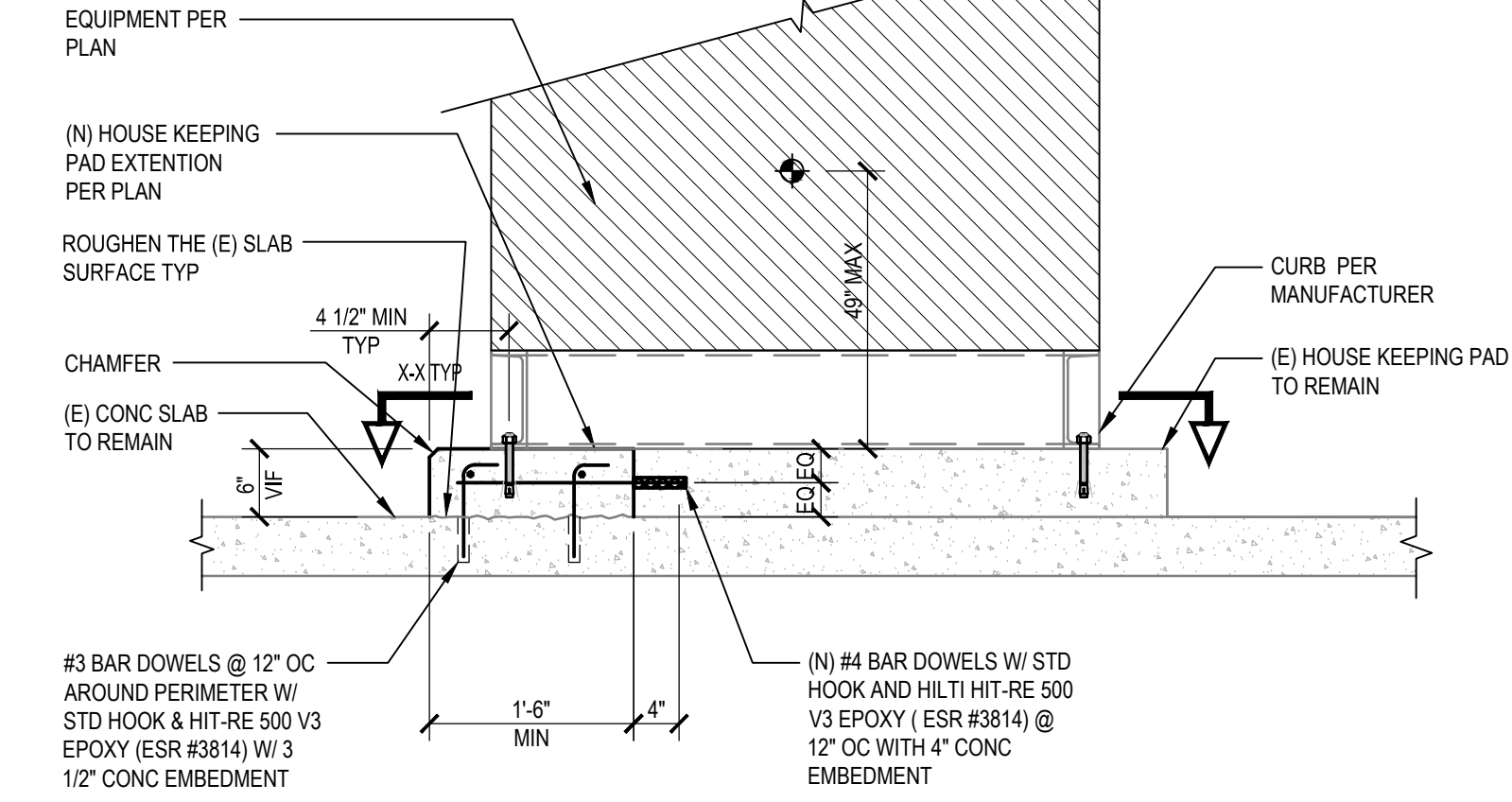
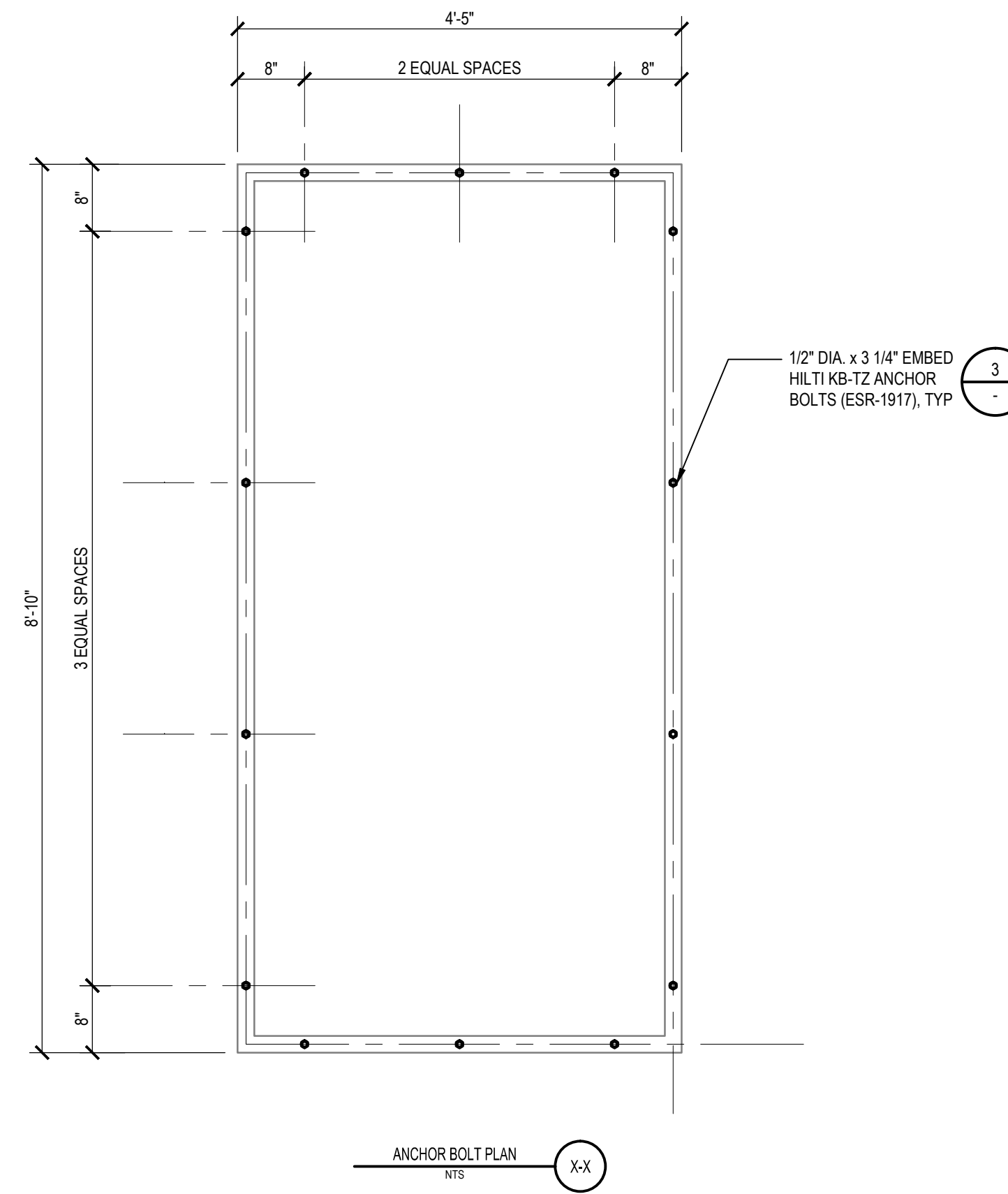
1901 East Alton Avenue, Suite 100 T: (949) 579-1170  
San Jose, CA 92070 miyamotointernational.com  
M11904030.00

Architect's Stamp:

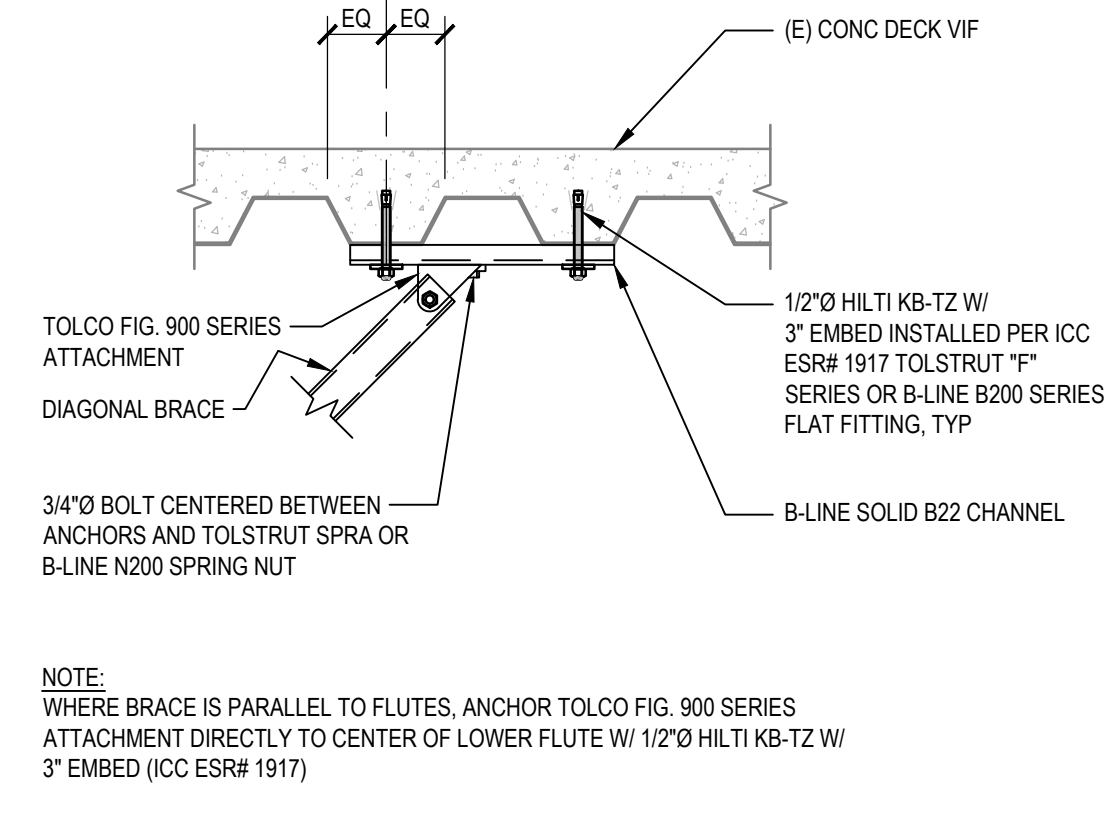
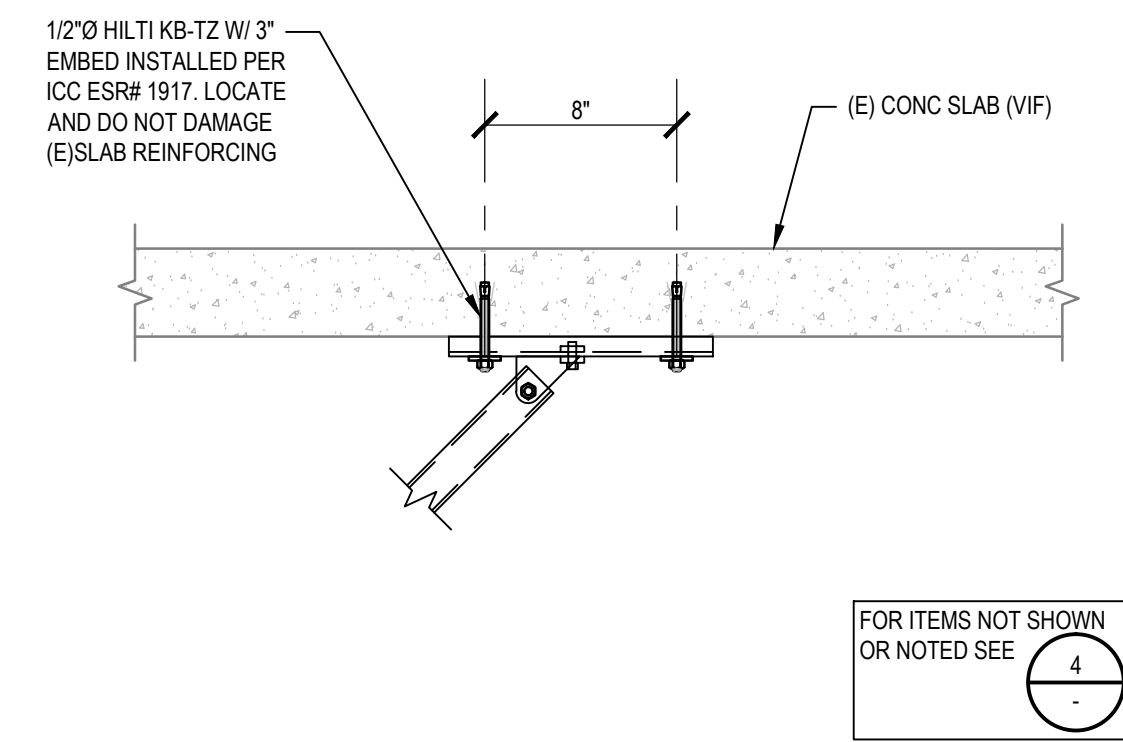
Consultant's Stamp:



**3** EQUIPMENT CURB TO CONC PAD ANCHORAGE DETAIL N.T.S.

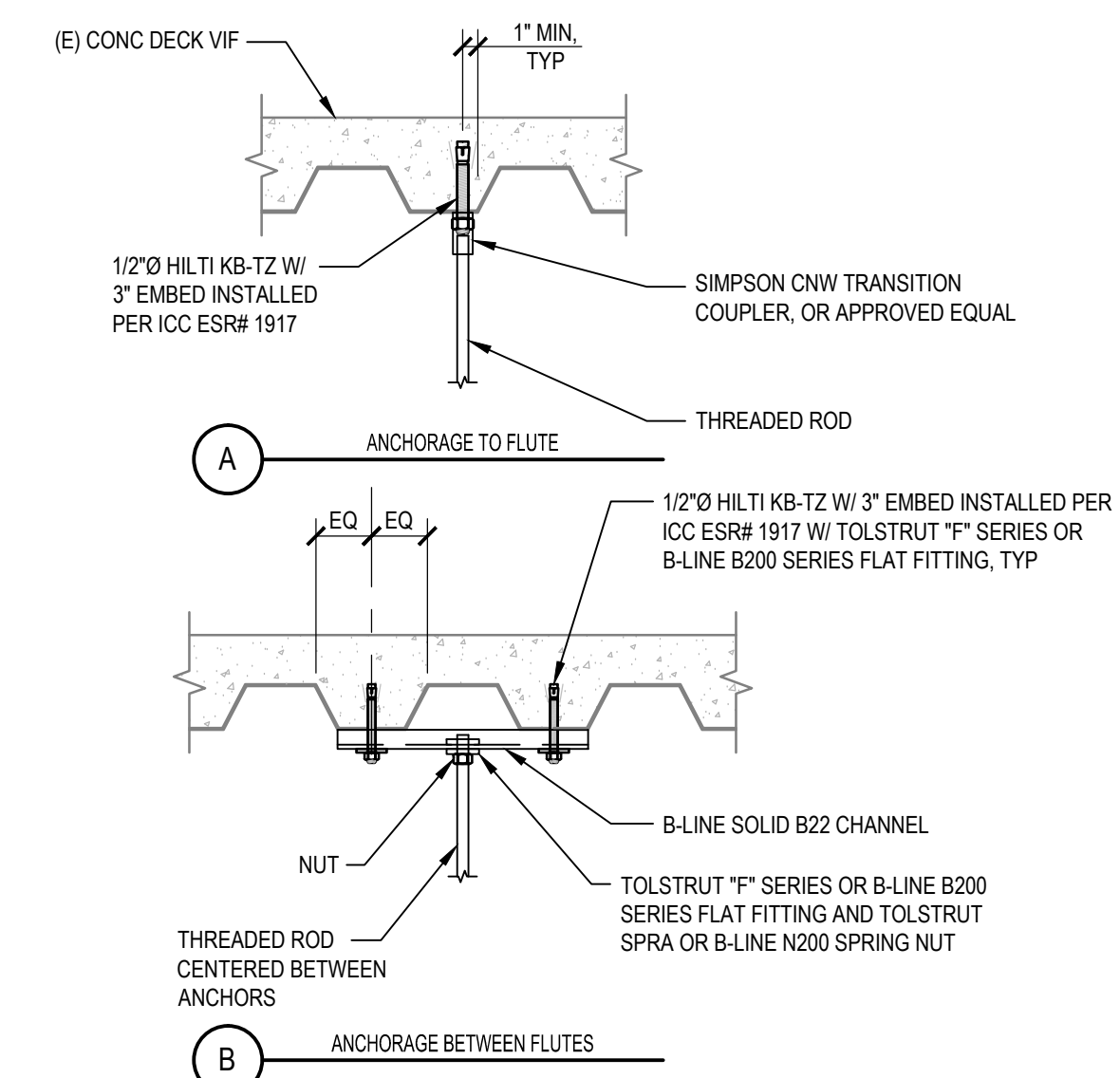
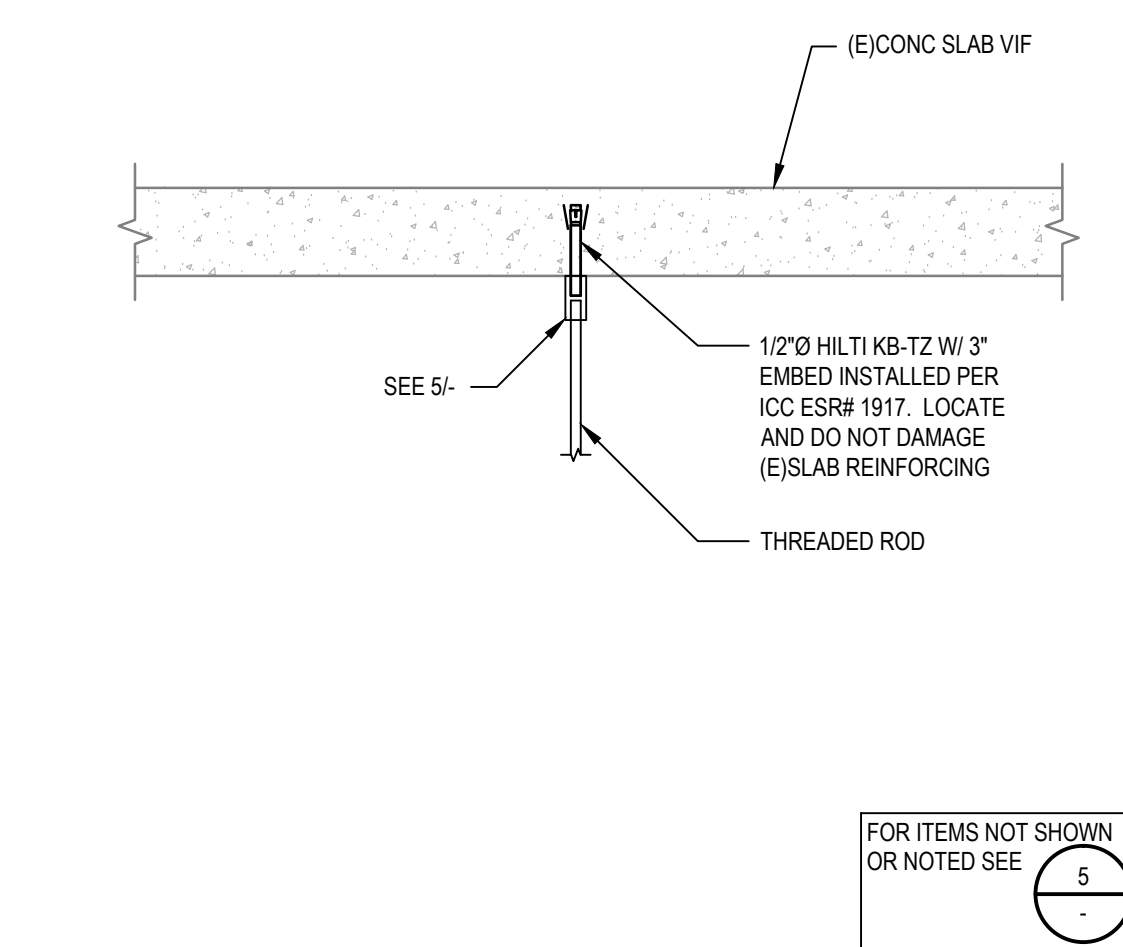


**1** AHU-4 EQUIPMENT PAD N.T.S.



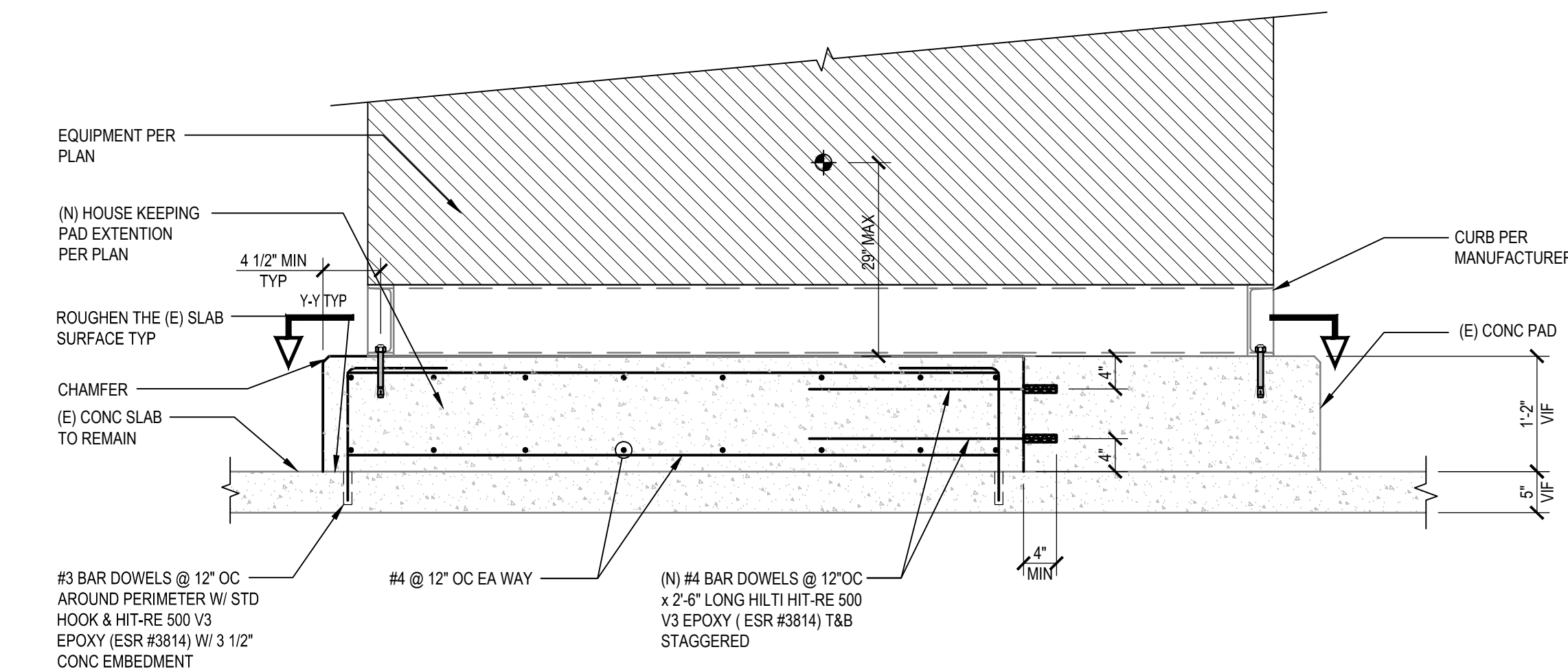
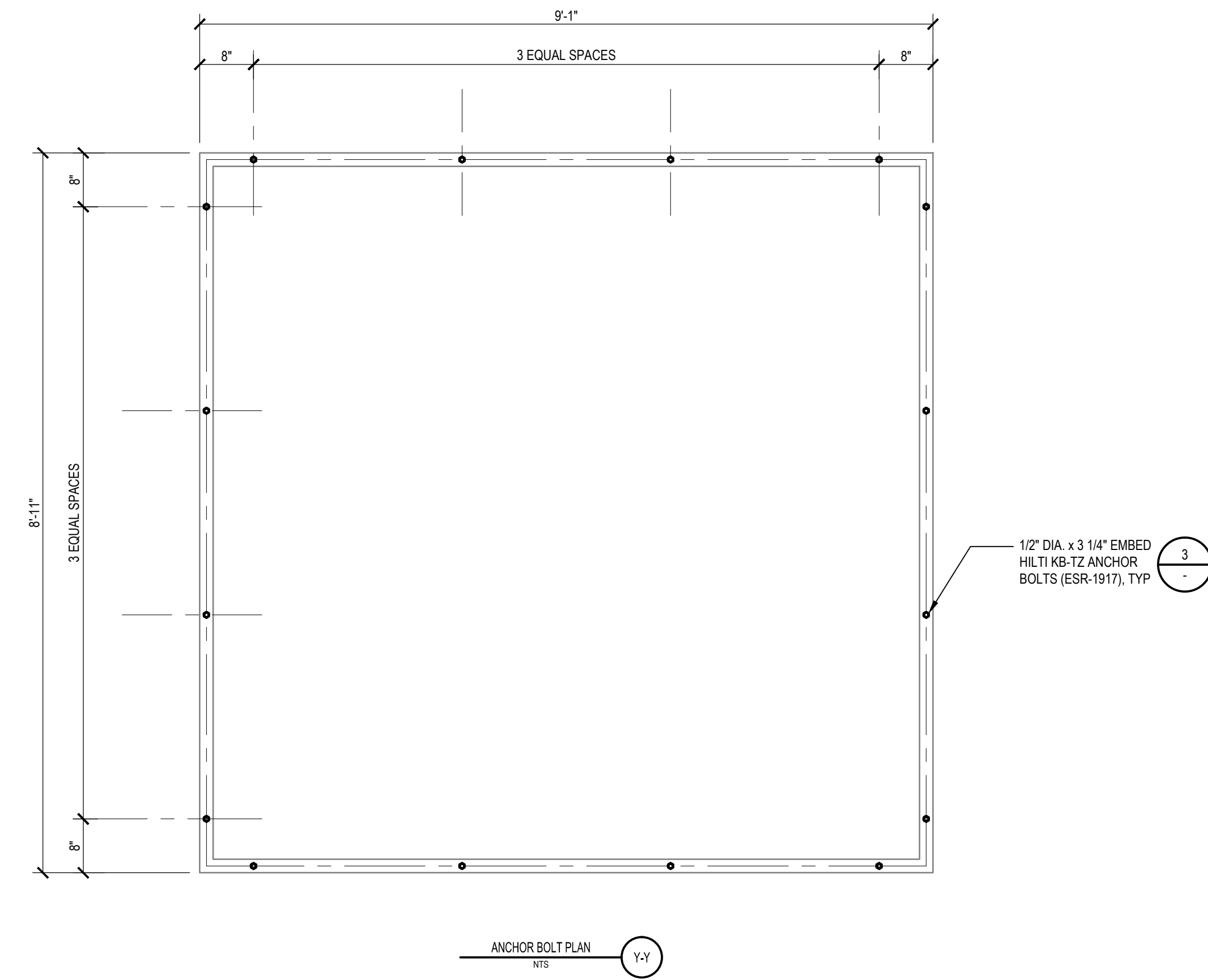
**6** TYPICAL DIAGONAL ANCHORAGE TO CONCRETE SLAB N.T.S.

**4** TYPICAL DIAGONAL ANCHORAGE TO CONCRETE OVER METAL DECK N.T.S.



**7** TYPICAL VERTICAL ANCHORAGE TO CONCRETE SLAB N.T.S.

**5** TYPICAL VERTICAL ANCHORAGE TO CONCRETE OVER METAL DECK N.T.S.



**2** AHU-3 EQUIPMENT PAD N.T.S.

LOTHIAN RESIDENCE HALL  
AHU REPLACEMENT  
UC RIVERSIDE  
RIVERSIDE, CA 92507  
UCR PROJECT No: 956396

04/19/19

**APPROVED**  
UC RIVERSIDE  
Office of Planning, Design & Construction Signed CDO: *Jane Egan*  
Building, Safety and Compliance Division  
CAMPUS BUILDING PERMIT

REVISIONS		
REV #	DESCRIPTION	DATE
1	90% CONSTRUCTION DOCUMENTS	03/20/19
2	100% CONSTRUCTION DOCUMENTS	04/17/19

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www.gossenengineering.com

UCR Project Manager: JOHN FRANKLIN

Scale: AS NOTED	SD Approval:
Drawn By: D.M.	DD Approval:
Checked By: J.C.	CD Approval:
Project No.: M11904030.00	Construction Release:
DSA No.:	

Drawing Title: **STRUCTURAL DETAILS** Sheet No. **S3.0**

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