

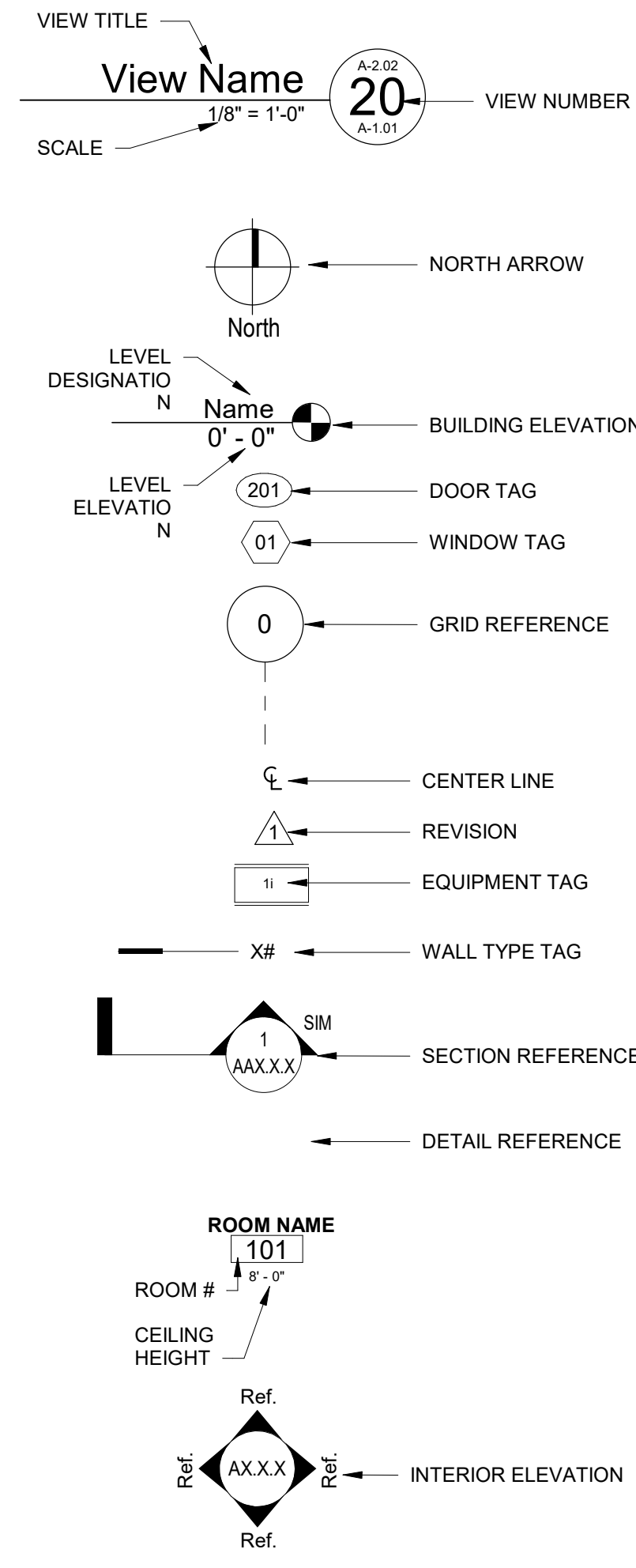
ALUM ROCK UNION SCHOOL DISTRICT
HVAC AND ROOFING UPGRADES



ABBREVIATIONS

ABV	ABOVE	JT	JOINT
ACOUS	ACOUSTICAL	LAM	LAMINATE
ACT	ACOUSTICAL CEILING TILE	LAV	LAVATORY
AD	AREA DRAIN	LB(S)	POUNDS
ADJ	ADJUSTABLE	LDG	LANDING
AFF	ABOVE FINISH FLOOR	LT	LIGHT
ALT	ALTERNATE	MAX	MAXIMUM
ALUM	ALUMINUM	MECH	MECHANICAL
APPROX	APPROXIMATE	MEMB	MEMBRANE
ARCH	ARCHITECT	MFR	MANUFACTURER
B.O.	BOTTOM OF	MIN	MINIMUM
BALC	BALCONY	MISC	MISCELLANEOUS
BD	BOARD	MO	MASONRY OPENING
BET	BETWEEN	MTD	MOUNTED
BLDG	BUILDING	MTL	METAL
BLKG	BLOCKING	N	NORTH
BLW	BELOW	NIC	NOT IN CONTRACT
BM	BEAM	NO	NUMBER
BOT	BOTTOM	NOM	NOMINAL
BRKT	BRACKET	NTS	NOT TO SCALE
BULKHD	BULKHEAD	O.P.	OVERFLOW PIPE
BUR	BUILT UP ROOF	OA	OVERALL
C.G.	CORNER GUARD	OC	ON CENTER
CAB	CABINET	OD	OUTSIDE DIAMETER
CALK	CAULKING	OFF	OFFICE
CEM	CEMENT	OH	OPPOSITE HAND
CER	CERAMIC	OPG	OPENING
CLJ	CONTROL JOINT	OPP	OPPOSITE
CLG	CEILING	PART	PARTITION
CLOS	CLOSET	PERM	PERIMETER
CLR	CLEAR	PG	PAINT GRADE
CO	CASED OPENING	PLAM	PLASTIC LAMINATE
COL	COLUMN	PLAS	PLASTER
CONC	CONCRETE	PLYWD	PLYWOOD
CONT	CONTINUOUS	PR	PAIR
CPT	CARPET	PT	PAINT
CT	CERAMIC TILE	PTD	PAINTED
CTR	CENTER	R	RISER
DBL	DOUBLE	RAD	RADIUS
DET	DETAIL	RCP	REFLECTED CEILING PLAN
DIA	DIAMETER	RD	ROOF DRAIN
DIM	DIMENSION	RE	REFER
DN	DOWN	REF	REFRIGERATOR
DR	DOOR	REINF	REINFORCED
DS	DOWN SPOUT	REOD	REQUIRED
DW	DISHWASHER	RESIL	RESILIENT
DWG	DRAWING	RF DK	ROOF DECK
E	EAST	RM	ROOM
EA	EACH	RO	ROUGH OPENING
EFIS	EXTERIOR INSULATION & FINISH SYSTEM	RTU	ROOF TOP UNIT (MECH)
ELEC	ELECTRIC	S	SOUTH
ELEV	ELEVATION	S.S.D.	SEE STRUCTURAL DRAWINGS
EMER	EMERGENCY	S.T.S.	SELF TAPPING SCREW
ENCL	ENCLOSURE	SABF	SOUND ATTENUATION FIBER BATT
EOS	EDGE OF SLAB	SC	SCUPPER
EQ	EQUAL	SCHED	SCHEDULE
EQUIP	EQUIPMENT	SEAL	SEALANT
ETR	EXISTING TO REMAIN	SECT	SECTION
EW	EACH WAY	SF	SQUARE FOOT
EXP. JT.	EXPANSION JOINT	SHT	SHEET
EXST	EXISTING	SM	SIMILAR
F.F.	FINISHED FACE	SPEC	SPECIFICATION
F.O.	FACE OF	SQ	SQUARE
FA	FIRE ALARM	SS	STAINLESS STEEL
FAP	FIRE ANNUNCIATOR PANEL	STD	STANDARD
FD	FLOOR DRAIN	STL	STEEL
FE	FIRE EXTINGUISHER	STOR	STORAGE
FEC	FIRE EXTINGUISHER PANEL	STRUCT	STRUCTURAL
FG	FINISH GROUP	SUSP	SUSPENDED
FH	FIRE HYDRANT	SYM	SYMMETRICAL
FHC	FIRE HOSE CABINET	T	TREAD
FIN	FINISH	T&G	TONGUE & GROOVE
FLR	FLOOR	TEL	TELEPHONE
FLUOR	FLOURESCENT	TER	TERRAZZO
FMF	FLEXIBLE MEMBRANE FLASHING	THK	THICK
FT	FOOT OR FEET	THR	THRESHOLD
FUR	FURRING	TO	TOP OF
GAL	GALLON	TYP	TYPICAL
GALV	GALVANIZED	UC	UNDERCUT
GB	GRAB BAR	UNFIN	UNFINISHED
GC	GENERAL CONTRACTOR	UNO	UNLESS NOTED OTHERWISE
GL	GLASS	UON	UNLESS OTHERWISE NOTED
GND	GROUND	UTIL	UTILITY
GWB	GYPNUM BOARD	VCT	VINYL COMPOSITION TILE
GYP	GYPNUM	VERT	VERTICAL
H.W.H.	HOT WATER HEATER	VIF	VERIFY IN FIELD
HWID	HARDWOOD	VTR	VENT TERMINATION PIPE
HWIR	HARDWARE	VWC	VINYL WALL COVERING
HM	HOLLOW METAL	W	WEST
HORIZ	HORIZONTAL	W/	WITH
HR	HOUR	W/O	WITHOUT
HT	HEIGHT	WC	WATERCLOSET
ID	INNER DIAMETER	WIN	WINDOW
INCAN	INCANDESCENT	WP	WATERPROOF
INSUL	INSULATION	WS	WETSTACK
INT	INTERIOR	WSCT	WAINSCOT
JAN	JANITOR	WT	WEIGHT
JST	JOIST		

STRUCTURAL NOTES



MATERIALS

	STEEL
	GYPNUM BD.
	RIGID INSULATION
	MINERAL WOOL
	PLYWOOD
	EARTH
	PLASTER
	CONCRETE
	STONE / CMU
	WOOD
	BATT INSULATION

PARTIAL LIST OF APPLICABLE STANDARDS

NFPA 13	INSTALLATION OF SPRINKLER SYSTEMS	2022 EDITION
NFPA 14	INSTALLATION OF STANDPIPE AND HOSE SYSTEMS	2019 EDITION
NFPA 17	DRY CHEMICAL EXTINGUISHING SYSTEMS	2021 EDITION
NFPA 18	WET CHEMICAL EXTINGUISHING SYSTEMS	2021 EDITION
NFPA 20	INSTL. OF STATIONARY PUMPS FOR FIRE PROTECT.	2019 EDITION
NFPA 72	NATIONAL FIRE ALARM CODE (CA AMENDED)	
NFPA 80	UL STD 1071 FOR VISUAL DEVICES	2022 EDITION
NFPA 82	FIRE DOOR AND OTHER OPENING PROTECTIVES	2019 EDITION
NFPA 92	STANDARD FOR SMOKE CONTROL SYSTEM	2018 EDITION
UL 464	AUDIBLE SIGNAL APPLIANCES	2003 EDITION
UL 521	HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS	1999 EDITION
	ADA STANDARDS FOR ACCESSIBLE DESIGN	2010

REFERENCE CODE SECTION FOR NFPA STANDARDS - 2022 CBC (SFM) CHAPTER 35
SEE CHAPTER 35 FOR STATE OF CALIFORNIA AMENDMENTS TO NFPA STANDARDS

INDEX - SHEET LIST		
SHEET NUMBER	SHEET NAME	100% CD

01 - General		
G0.0	COVER SHEET	•

30 - Demolition		
D2	OVERALL DEMOLITION ROOF PLAN	•

31 - Architectural		
A2	OVERALL ROOF PLAN	•
A5.1	ROOF DETAILS CUSTOM	•
A5.2	ROOF DETAILS TYPICAL	•
A7.1	ENLARGED REFLECTED CEILING PLAN	•

40 - Structural		
S0.0.1	GENERAL NOTES	•
S0.0.2	STRUCTURAL SPECIAL INSPECTION AND TESTING	•
S1.0.1	FOUNDATION PLAN	•
S2.0.1	ROOF FRAMING PLAN	•
S3.0.1	SECTIONS	•
S5.0.1	DETAILS	•

50 - Mechancial		
M0.0.1	MECHANICAL NOTES, LEGEND, AND SCHEDULES	•
M0.0.2	MECHANICAL DETAILS	•
M2.0.1	MECHANICAL ROOF PLAN	•
M2.0.1D	MECHANICAL DEMO OVERALL ROOF PLAN	•
M6.4.1	MECHANICAL ENLARGED FLOOR PLAN	•
M6.4.1D	MECHANICAL DEMO ENLARGED FLOOR PLAN	•
M7.0.1	MECHANICAL CONTROLS	•
M7.0.2	MECHANICAL CONTROLS	•
M7.0.3	MECHANICAL CONTROLS	•

60 - Plumbing		
P0.0.1	PLUMBING SCHEDULES, LEGEND & NOTES	•
P0.0.2	PLUMBING DETAILS	•
P2.0.1	PLUMBING ROOF PLAN	•
P2.0.1D	PLUMBING DEMO OVERALL ROOF PLAN	•
P6.4.1	PLUMBING ENLARGED FLOOR PLAN	•
P6.4.1.D	PLUMBING DEMO ENLARGED FLOOR PLAN	•

70 - Electrical		
E0.0.1	ELECTRICAL SYMBOL LEGEND, NOTES & ABBREVIATIONS	•
E0.0.2	ELECTRICAL SYMBOL LEGEND	•
E0.0.3	ELECTRICAL DETAILS	•
E0.0.4	ELECTRICAL SPECIFICATIONS	•
E0.0.5	ELECTRICAL SPECIFICATIONS	•
E2.0.1	ELECTRICAL OVERALL ROOF PLAN	•
E2.0.1D	ELECTRICAL DEMO OVERALL ROOF PLAN	•
E6.4.1	ELECTRICAL ENLARGED FLOOR PLAN	•
E6.4.1D	ELECTRICAL DEMO ENLARGED FLOOR PLAN	•
E6.4.2	ELECTRICAL PARTIAL ONE LINE DIAGRAM & PANEL SCHEDULES	•

80 - Fire Alarm		
FA0.0.1	FIRE ALARM SYMBOL LEGEND, NOTES & ABBREVIATIONS	•
FA0.0.2	FIRE ALARM DETAILS	•
FA1.0.0	FIRE ALARM SITE PLAN	•
FA1.0.1	FIRE ALARM FLOOR PLANS	•
FA6.4.2	FIRE ALARM RISER DIAGRAM, CALCULATIONS, AND SEQUENCE OF OPERATIONS	•
FA9.0.1	FIRE ALARM SPECIFICATIONS	•

PARTIAL LIST OF APPLICABLE CODES

CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH:

- 2022 CALIFORNIA ADMINISTRATIVE CODE, C.C.R., TITLE 24, PART 1.
- 2022 CALIFORNIA BUILDING CODE (CBC), - C.C.R., TITLE 24, PART 2. (2021 INTERNATIONAL BUILDING CODE, VOLUMES 1-2, & 2022 CALIFORNIA AMENDMENTS)
- 2022 CALIFORNIA ELECTRICAL CODE (CEC), - C.C.R., TITLE 24, PART 3. (2017 NFPA 70, NATIONAL ELECTRICAL CODE, WITH CALIFORNIA AMENDMENTS)
- 2022 CALIFORNIA MECHANICAL CODE (CMC), - C.C.R., TITLE 24, PART 4. (2021 MECHANICAL CODE, WITH CALIFORNIA AMENDMENTS)
- 2022 CALIFORNIA PLUMBING CODE (CPC), - C.C.R., TITLE 24, PART 5. (2021 INTERNATIONAL PLUMBING CODE, WITH CALIFORNIA AMENDMENTS)
- 2022 CALIFORNIA ENERGY CODE (CEC), - C.C.R., TITLE 24, PART 6.
- 2022 CALIFORNIA FIRE CODE, C.C.R., TITLE 24, PART 9. (2021 INTERNATIONAL FIRE CODE, WITH CALIFORNIA AMENDMENTS)
- 2022 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN), C.C.R., TITLE 24, PART 11.
- 2022 CALIFORNIA REFERENCED STANDARDS, C.C.R., TITLE 24, PART 12.
- C.C.R., PUBLIC SAFETY CODE, TITLE 19, DIVISION 1, STATE FIRE MARSHAL REGULATIONS

NOTES:
1. WORK AND MATERIALS SHALL BE IN FULL ACCORDANCE WITH THE REQUIREMENTS OF THESE CODES, INCLUDING REFERENCED STANDARDS WITHIN, AND APPLICABLE LOCAL ORDINANCES. WHERE CONTRACT DOCUMENTS EXCEED SUCH REQUIREMENTS, WITHOUT VIOLATING SUCH CODES, REGULATIONS AND ORDINANCES, CONTRACT DOCUMENTS TAKE PRECEDENCE. WHERE CODES CONFLICT, THE MORE STRINGENT REQUIREMENTS SHALL APPLY.

PROJECT SCOPE

DESCRIPTION OF OVERALL SCOPE OF WORK

THIS PROJECT IS LOCATED AT THE ALUM ROCK UNION SCHOOL DISTRICT OFFICE IN SAN JOSE, CA. THE SCOPE INCLUDES THE FOLLOWING:

- A. A COMPLETE REROOF OF THE EXISTING ROOF.
- B. UPGRADES TO THE HEATING AND COOLING SYSTEM IN THE SUPERINTENDENTS OFFICE AND THE ENTRY LOBBY.

STATEMENT OF GENERAL CONFORMANCE

THE DRAWINGS AND/OR SPECIFICATIONS AND/OR CALCULATIONS FOR THE ITEMS LISTED IN THE SHEET INDEX HAVE BEEN PREPARED BY OTHER DESIGN PROFESSIONALS OR CONSULTANTS WHO ARE LICENSED AND/OR AUTHORIZED TO PREPARE SUCH DRAWINGS IN THIS STATE. IT HAS BEEN EXAMINED BY ME FOR:

- 1) DESIGN INTENT AND APPEARS TO MEET THE APPROPRIATE REQUIREMENTS OF TITLE 24, CALIFORNIA CODE OF REGULATIONS AND THE PROJECT SPECIFICATIONS, AND
- 2) COORDINATION WITH MY PLANS AND SPECIFICATIONS AND IS ACCEPTABLE FOR INCORPORATION INTO THE CONSTRUCTION OF THIS PROJECT.

THE STATEMENT OF GENERAL CONFORMANCE "SHALL NOT BE CONSTRUED AS RELIEVING ME OF MY RIGHTS, DUTIES AND RESPONSIBILITIES UNDER SECTIONS 17302 AND 81138 OF THE EDUCATION CODE AND SECTIONS 4-336, 4-341 AND 4-344 OF TITLE 24, PART 1 (TITLE 24, PART 1, SECTION 4-317(B))

SIGNATURE OF THE ARCHITECT
CHRIS VICENCIO, PARTNER, JK ARCHITECTURE
C26985
LICENSE NUMBER
03/11/2024
DATE
6/30/25
EXPIRATION

PROJECT INFORMATION

PROJECT NAME:	ALUM ROCK USD HVAC & ROOFING UPGRADES
PROJECT ADDRESS:	2930 GAY AVE SAN JOSE, CA, 95127
AREA	
ROOF AREA	22,559 SF
BUILDING AREA	19,521SF
BUILDING USE	OFFICE
CONSTRUCTION TYPE	V-B
NUMBER OF STORIES	1
BLDG HEIGHT	11' - 11"

PROJECT TEAM

CLIENT:	ALUM ROCK UNION ELEMENTARY SCHOOL DISTRICT
CONTACT	MARC FREITAS
TITLE	BONDS DIRECTOR
ADDRESS	2930 GAY AVE, SAN JOSE, CA 95127
EMAIL	Marc.freitas@ansd.org
ARCHITECT:	JK ARCHITECTURE ENGINEERING
CONTACT	CHRIS VICENCIO
TITLE	PARTNER, ARCHITECT OF RECORD
ADDRESS	300 ORCHARD CITY DRIVE, SUITE 140 CAMPBELL, CA, 95008
PHONE	(930) 888-0298
EMAIL	chris@jkaedesign.com
CONTACT	MANUEL ORDONEZ
TITLE	PROJECT ARCHITECT
ADDRESS	300 ORCHARD CITY DRIVE, SUITE 140 CAMPBELL, CA, 95008
PHONE	(408) 708-9111
EMAIL	manuel@jkaedesign.com
CONTACT	HOLMAN VILCHEZ
ADDRESS	PROJECT LEADER 300 ORCHARD CITY DRIVE, SUITE 140 CAMPBELL, CA, 95008
PHONE	(408) 502-2347
EMAIL	hvilchez@jkaedesign.com

STRUCTURAL ENGINEER:

BUEHLER ENGINEERING INC.
CONTACT
TITLE
ADDRESS
PHONE
EMAIL

MECH/PLUMB ENGINEER:

LP CONSULTING ENGINEERS
CONTACT
TITLE
ADDRESS
PHONE
EMAIL

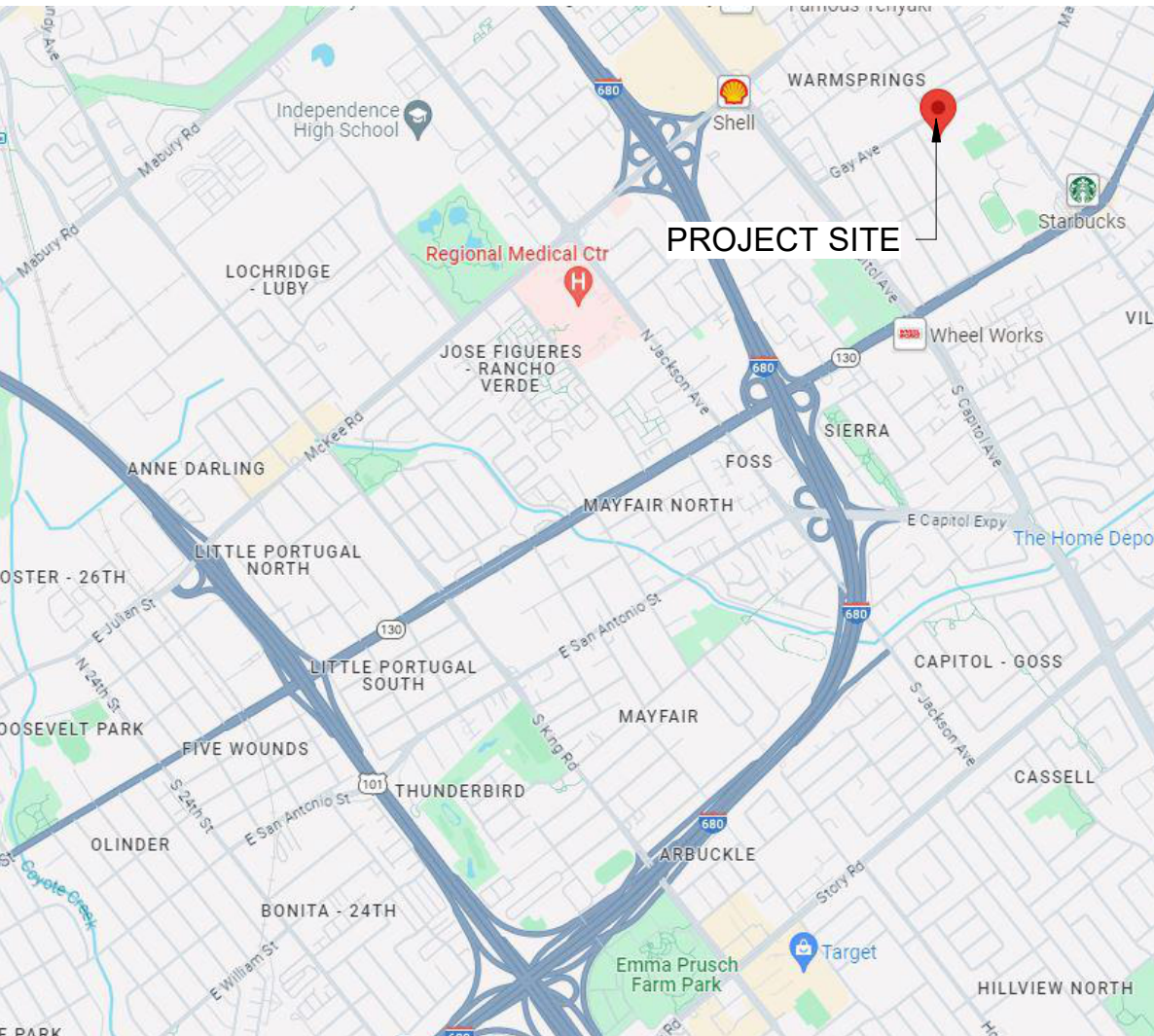
ELECTRICAL ENGINEER:

LP CONSULTING ENGINEERS
CONTACT
TITLE
ADDRESS
PHONE
EMAIL

FIRE ALARM ENGINEER:

LP CONSULTING ENGINEERS
CONTACT
TITLE
ADDRESS
PHONE
EMAIL

VICINITY MAP



SEAL



2930 GAY AVE
SAN JOSE, CA 95127

Drawing Title
COVER SHEET

NO.	DATE	ISSUE

Project
ALUM ROCK UNION SCHOOL DISTRICT
HVAC AND ROOFING UPGRADES

Drawn By
VJ

Checked By
HV/MO

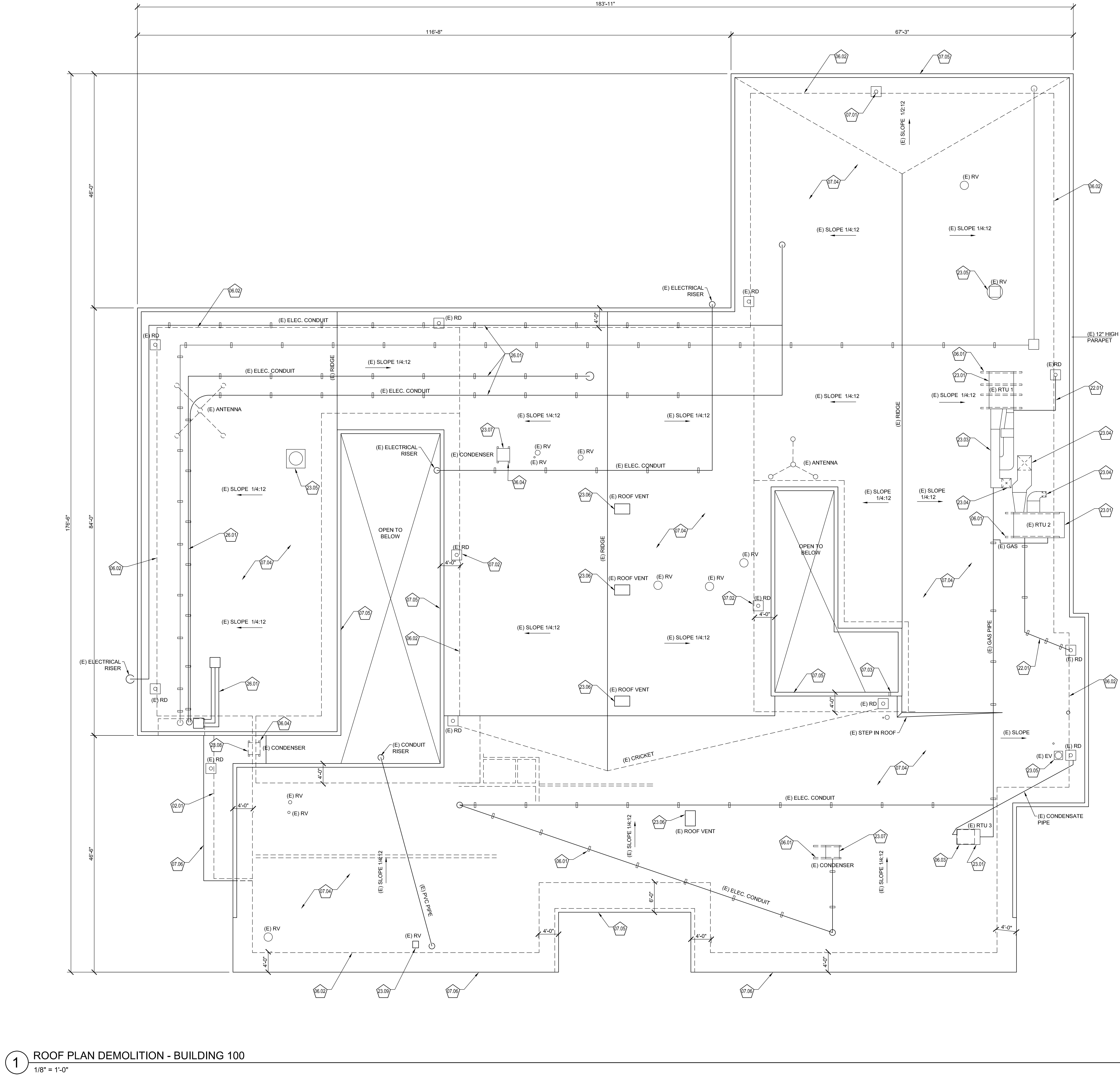
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23-525

Date
03/11/24

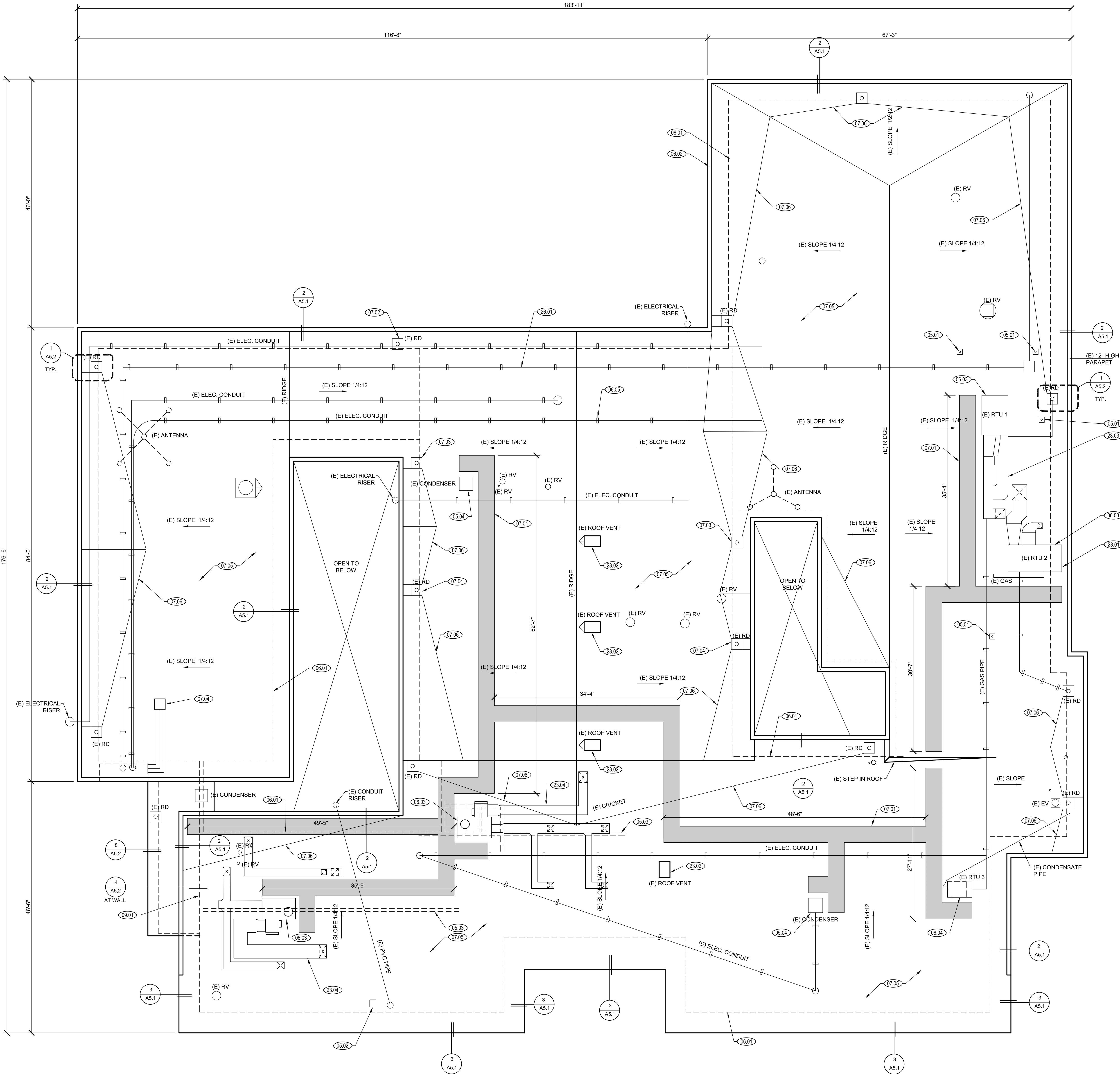
DRAWING NO.

G0.0

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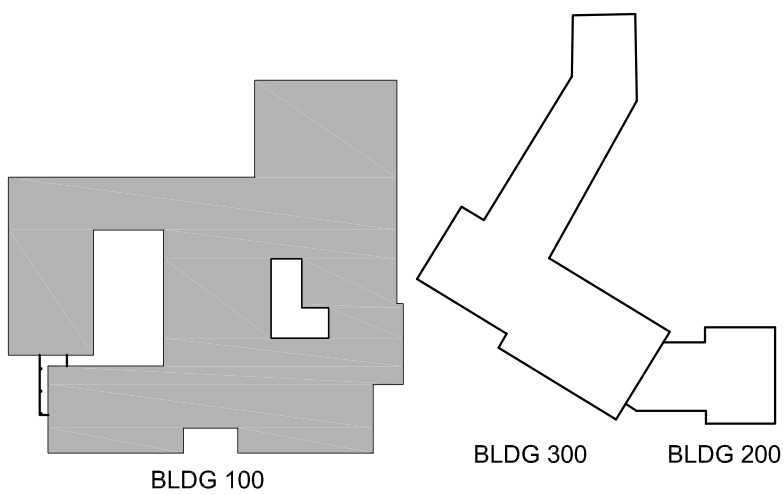
GENERAL NOTES

1. NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES IN THE DRAWINGS, AND OF ANY DAMAGED OR SUSPECT MATERIALS THAT HAVE NOT BEEN IDENTIFIED AS REQUIRING REPLACEMENT OR CORRECTIVE ACTION, PRIOR TO PROCEEDING WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR EXTENDING / MODIFYING ALL UTILITIES AS REQUIRED TO RECONNECT EQUIPMENT, FIXTURES AND DEVICES FOR A COMPLETE INSTALLATION, IN COMPLIANCE WITH ALL APPLICABLE CODES.
2. THE CONTRACTOR SHALL MAINTAIN THE BUILDING IN A WEATHER TIGHT CONDITION AGAINST INCLEMENT WEATHER AT ALL TIMES. USE THE APPROPRIATE INDUSTRY METHOD TO COVER AND PROTECT THE ROOF IN THE CASE OF RAIN OR INCLEMENT WEATHER.
3. PATCH AND REPAIR ALL DAMAGED / AFFECTED FINISHES TO MATCH EXISTING, INCLUDING BUT NOT LIMITED TO: PAINT, CEMENT PLASTER, AND WOOD SIDING/TRIM.
4. INSTALL NEW ROOF SLEEPERS FOR THE UTILITY PIPES/ CONDUITS OVER THE AREA OF ROOF TO BE REPLACED. USE 2X PRESSURE TREATED WOOD BLOCKS.
5. UPON REMOVAL OF THE EXISTING ROOFING CONTRACTOR SHALL VERIFY THAT THE EXISTING ROOF HAS A POSITIVE SLOPE. NOTIFY THE OWNER OF ANY NON-COMFORMANCE TO INSTALLATION OF NEW ROOFING SYSTEM.
6. AT COMPLETION OF PROJECT, DRAINS SHALL BE WATER TESTED AGAIN BY CONTRACTOR. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL BLOCKAGES OR PLUMBING LEAKS NOT REPORTED AT START OF PROJECT.
7. THE CONSTRUCTION DOCUMENTS ADDRESS KNOWN CONDITIONS, BUT IT IS ANTICIPATED THAT HIDDEN CONDITIONS WILL BE ENCOUNTERED DURING CONSTRUCTION.
8. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR DETAILS, MECHANICAL AND ELECTRICAL INFORMATION AND REQUIREMENTS.
9. REFER TO STRUCTURAL DRAWINGS FOR DETAILED STRUCTURAL INFORMATION AND REQUIREMENTS.
10. PROVIDE CRICKETS AT HIGH SIDE OF ALL ROOF MOUNTED EQUIPMENT TO INSURE POSITIVE DRAINAGE.
11. DO NOT CUT OR ALTER EXISTING ROOF RAFTERS. INSTALL NEW DUCT PENETRATIONS BETWEEN EXISTING ROOF RAFTERS WITH THE APPROPRIATE WOOD BLOCKING AS SHOWN ON THE STRUCTURAL DRAWINGS.
12. ALL CURBS MUST PROVIDE MIN. 8" FLASHING HEIGHT FROM ROOF SURFACE.
13. MECHANICAL DUCTWORK DROPPING DOWN THROUGH ROOF SHALL FALL BETWEEN ROOF JOISTS. DO NOT CUT EXISTING ROOF JOISTS.

JKAE
architecture + interiors + engineering

ROOF PLAN KEYNOTES

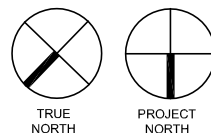
- 05.01 FALL ARREST POST, GUARDIAN CB-12. SEE DETAIL 7/55.0.1 ON THE STRUCTURAL DRAWINGS. REPLACE THE WALL GYPSUM BOARD AND RUBBER WALL BASE FINISHES IN KIND WHERE THE EXISTING FINISHES ARE MODIFIED PER DETAIL 9/55.0.1 AND 8/55.0.1, PAINT TO MATCH EXISTING WALL.
- 05.02 (E) SHEET METAL HOOD, SEE DETAIL 3/A5.2.
- 05.03 LINE OF STEEL BEAM BELOW.
- 05.04 INSTALL METAL CURB AT CONDENSER UNIT, SEE 4/M0.0.2.
- 06.01 (E) WALL BELOW.
- 06.02 (E) ROOF PARAPET, HEIGHT VARIES UP TO 12 INCHES HIGH.
- 06.03 INSTALL METAL CURB, SEE 4/M0.0.2.
- 06.04 (E) WOOD HVAC CURB TO REMAIN, SEE DETAIL 5/A5.1.
- 06.05 4X P.T. WOOD SLEEPERS AT 10'-0" ON CENTER, TYPICAL. SEE DETAIL 2/A5.2.
- 07.01 ROOF WALKPAD.
- 07.02 (E) ROOF DRAIN, TYPICAL. REMOVE AND REPLACE TO ACCOMMODATE THE NEW WORK. SEE DETAIL 1/A5.2.
- 07.03 PROVIDE NEW ROOF DRAIN AND DOWNSPOUT. SEE DETAILS 6/A5.1 AND 1/A5.1.
- 07.04 INSTALL NEW ROOF DRAIN BOWL ASSEMBLY.
- 07.05 SINGLE-PLY KEE MEMBRANE SYSTEM, TYPICAL. SEE DETAIL 1/A5.1 AND 9/A5.1.
- 07.06 TAPERED RIGID INSULATION CRICKET.
- 9.01 MODIFY CEMENT PLASTER SYSTEM ON WALL AS REQUIRED TO INSTALL WALL FLASHING. SEE DETAIL 4/A5.2.
- 23.01 (E) MECHANICAL PACKAGED ROOF TOP UNIT. RAISE UNIT AS REQUIRED FOR THE INSTALLATION OF NEW ROOFING MATERIAL.
- 23.02 (E) STATIC ROOF VENT.
- 23.03 (E) EXPOSED DUCT THROUGH ROOF. RAISE DUCTS AND MODIFY ATTACHMENT AS REQUIRED FOR INSTALLATION OF NEW ROOF. ADD ROOF CURB AS SHOWN ON DETAIL 5/A5.2. RESEAL JOINTS AND PAINT TO MATCH KM 4990-1 FLAT.
- 23.04 EXPOSED DUCTWORK, SEE MECHANICAL DRAWINGS. PAINT EXPOSED DUCTS TO MATCH KM 4990-1 FLAT.
- 23.05 STATIC ROOF VENT.
- 26.01 (E) CONDUITS TO REMAIN, TYPICAL. SEE DETAIL 7/A5.1 AND 8/A5.1 FOR PIPE FLASHING AT ROOF PENETRATIONS.



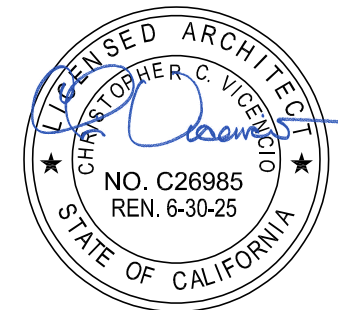
KEY PLAN

PAINT COLORS:
DOWNSPOUTS: WIND WEAVER (KM4990-1 FLAT)
GSM ROOF FLASHING AND COPING: TETON BLUE (KELLY-MOORE #203 SEMI GLOSS)
NOTE: SELECTED COLORS ARE TO MATCH THE EXISTING KELLY-MOORE COLORS.

1 ROOF PLAN - BUILDING 100
1/8" = 1'-0"



SEAL



2830 GAY AVE.
SAN JOSE, CA 95127

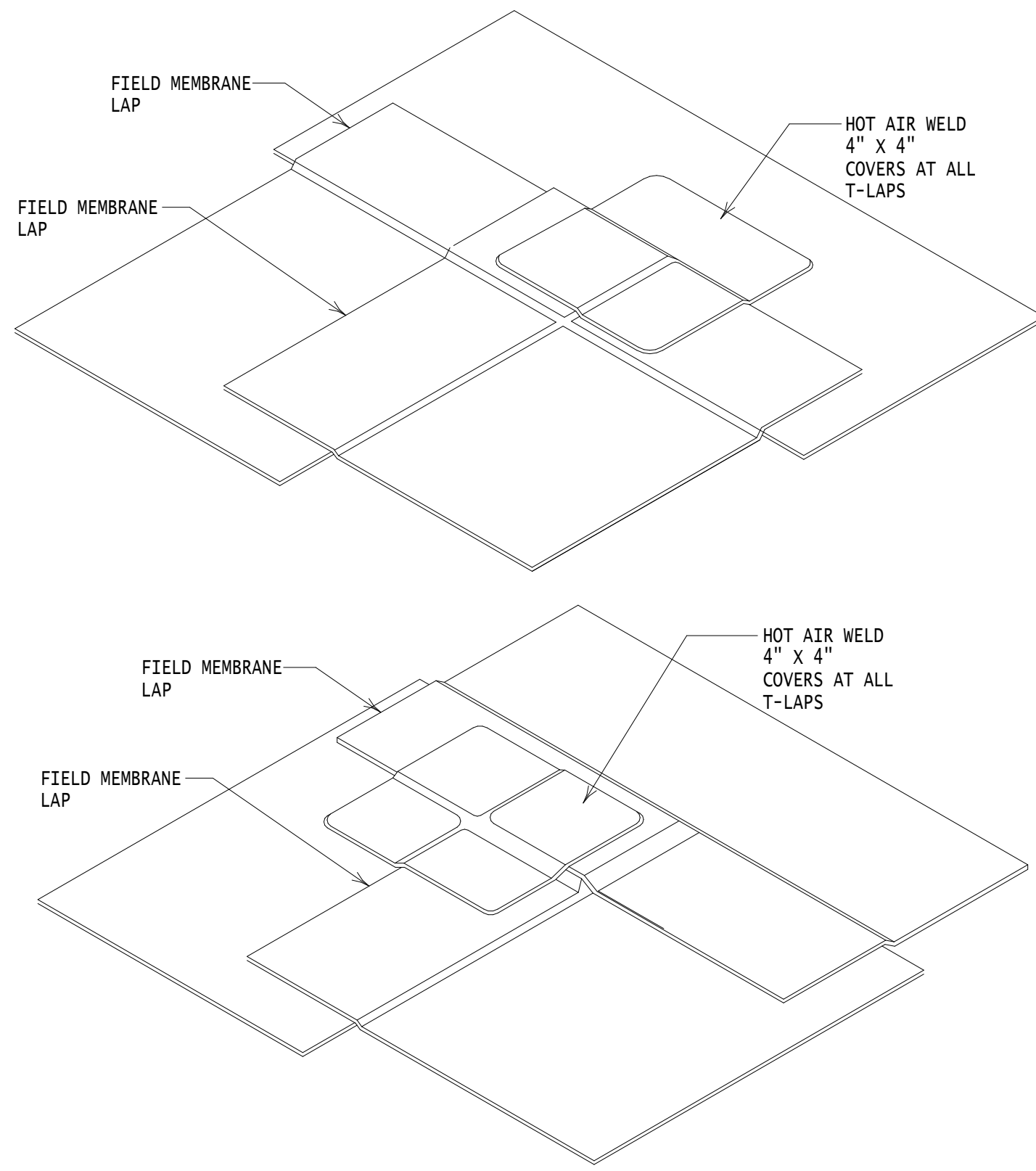
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**ROOF PLAN
BUILDING 100**

NO.	DATE	ISSUE

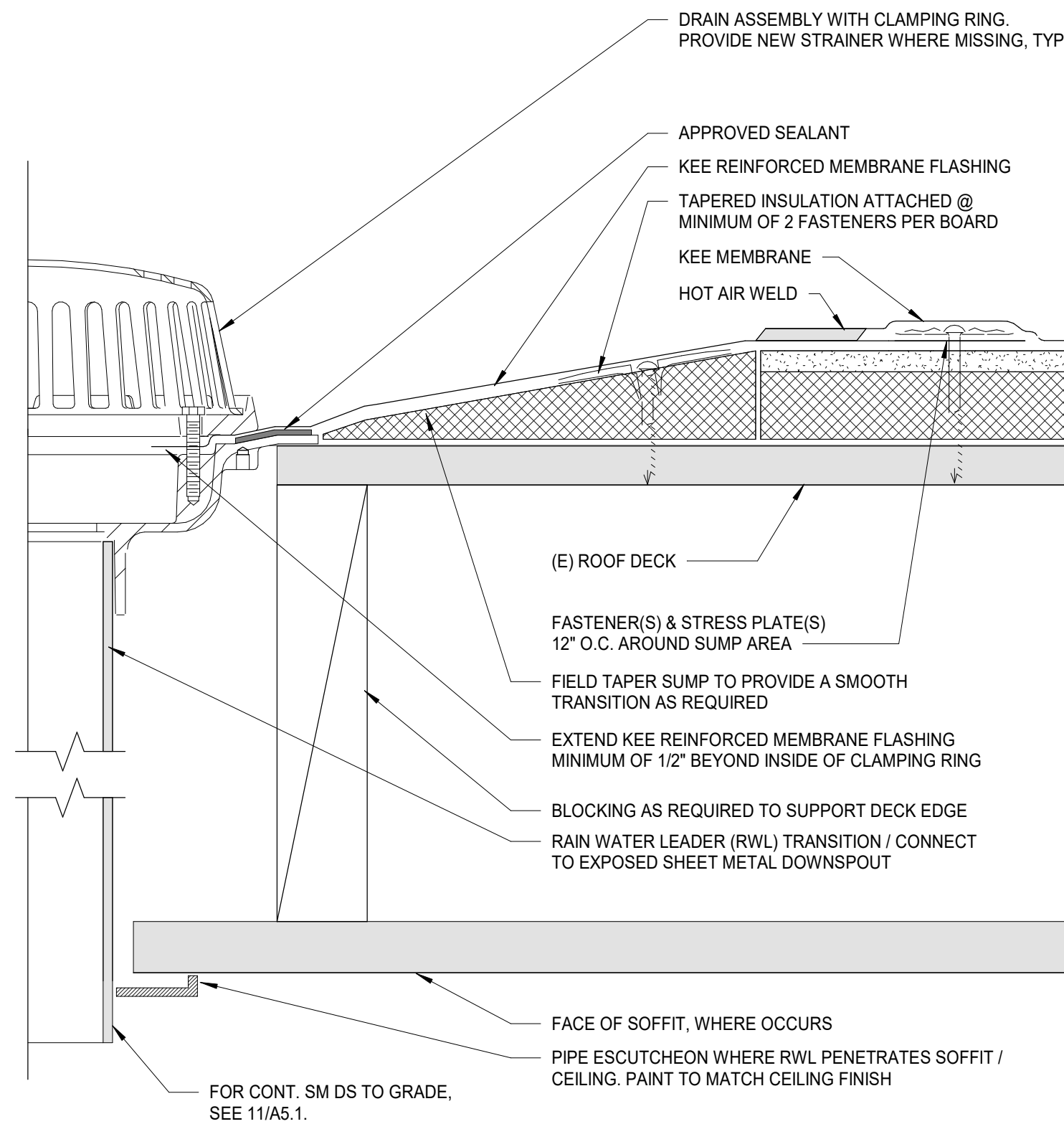
Project
**ALUM ROCK UNION SCHOOL DISTRICT
HVAC & ROOFING UPGRADES**

Drawn By
VJ
Checked By
HV, MO
Project No.
23-525
©Date
03/11/2024
Drawing No.

A2

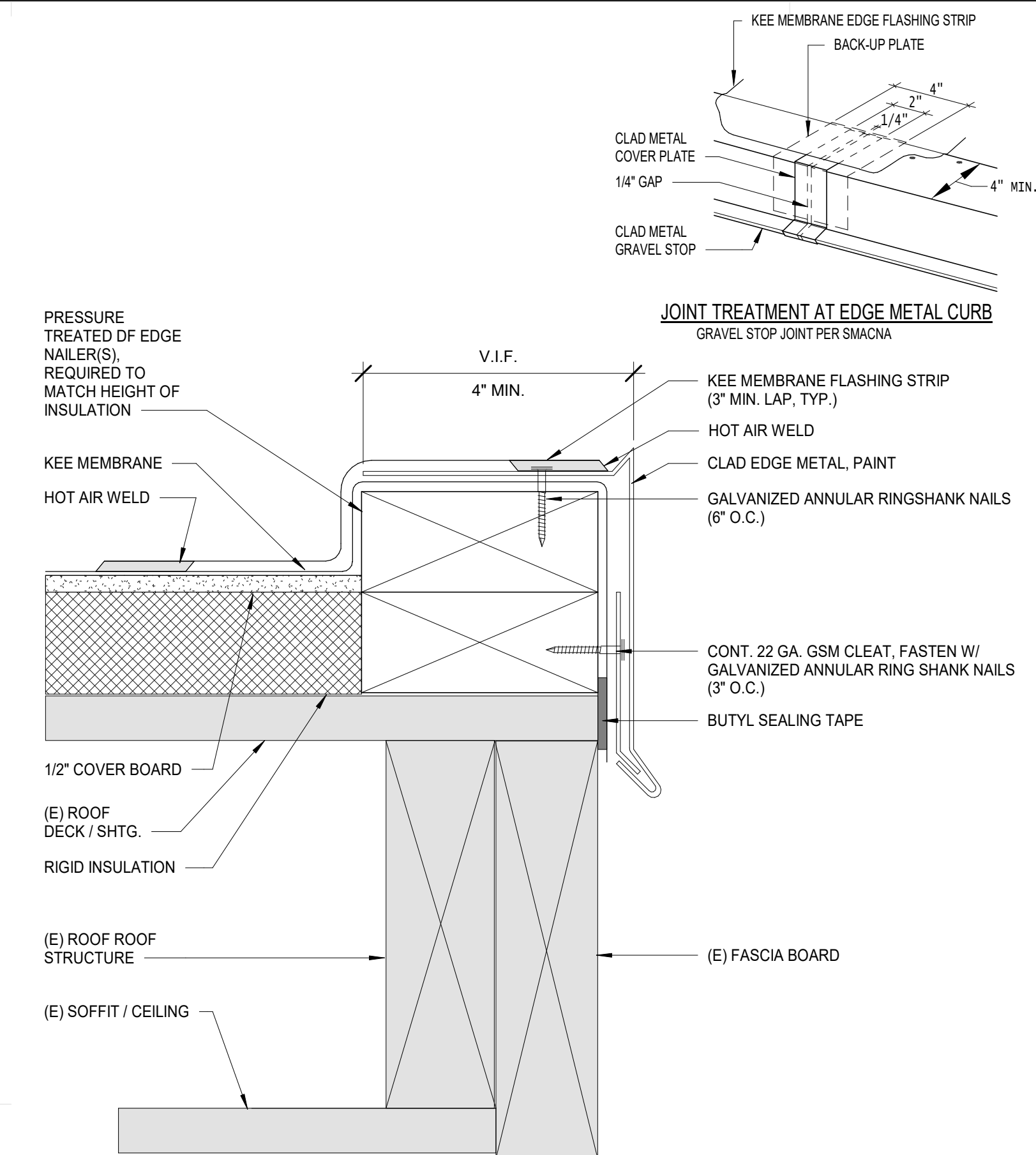


9 KEE TYPICAL COVERS AT MEMBRANCE T-LAPS
NTS

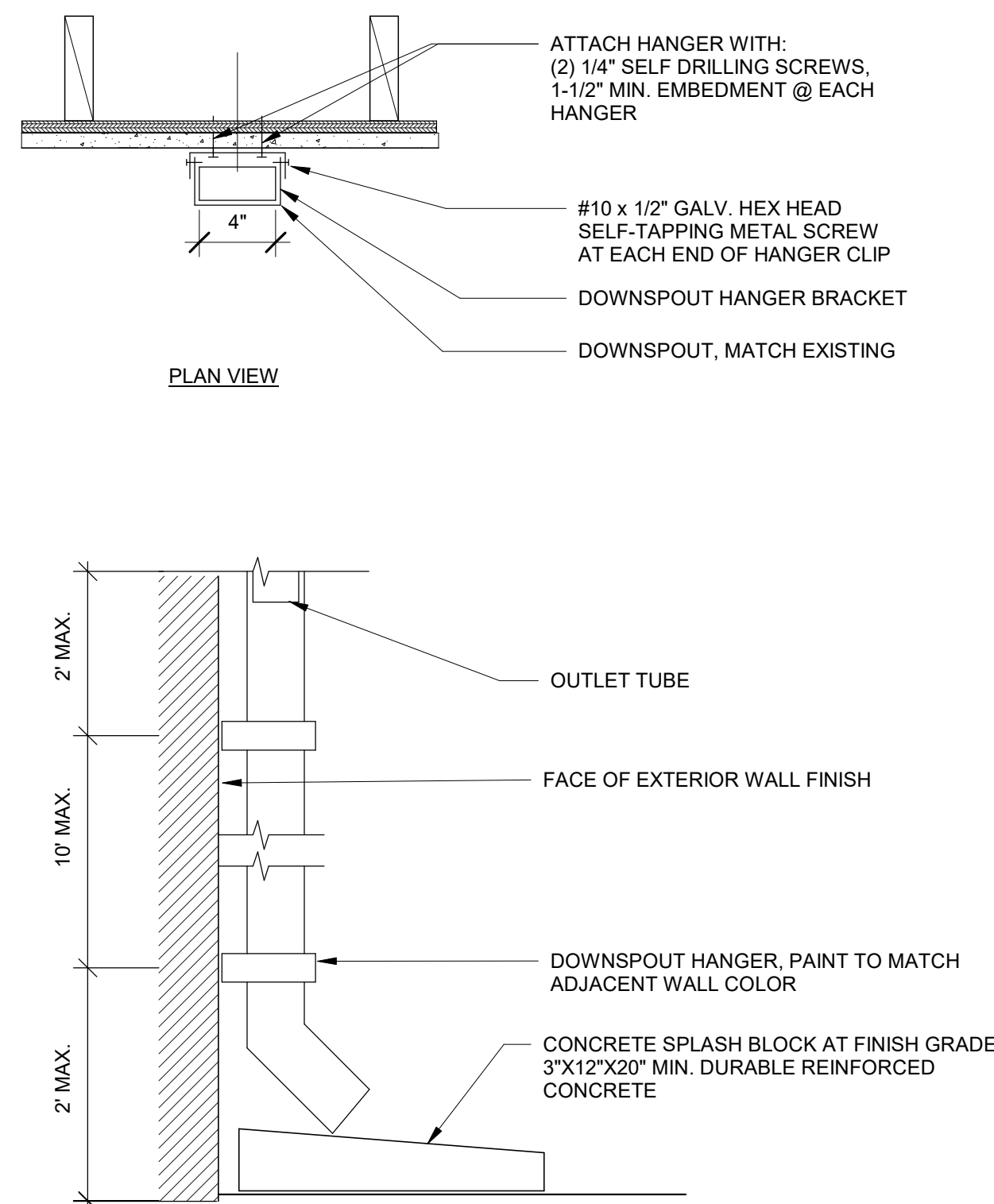


- NOTES
1. USE TAPERED ROOF INSULATION (EDGE STRIPS) TO CREATE DRAIN SUMP, IF TOTAL INSULATION THICKNESS IS LESS THAN OR EQUAL TO 1 1/2 IN., TAPER 12 IN. FROM THE DRAIN CENTER. IF TOTAL INSULATION THICKNESS IS GREATER THAN 1 1/2 IN., TAPER 18 IN. FROM DRAIN CENTER.

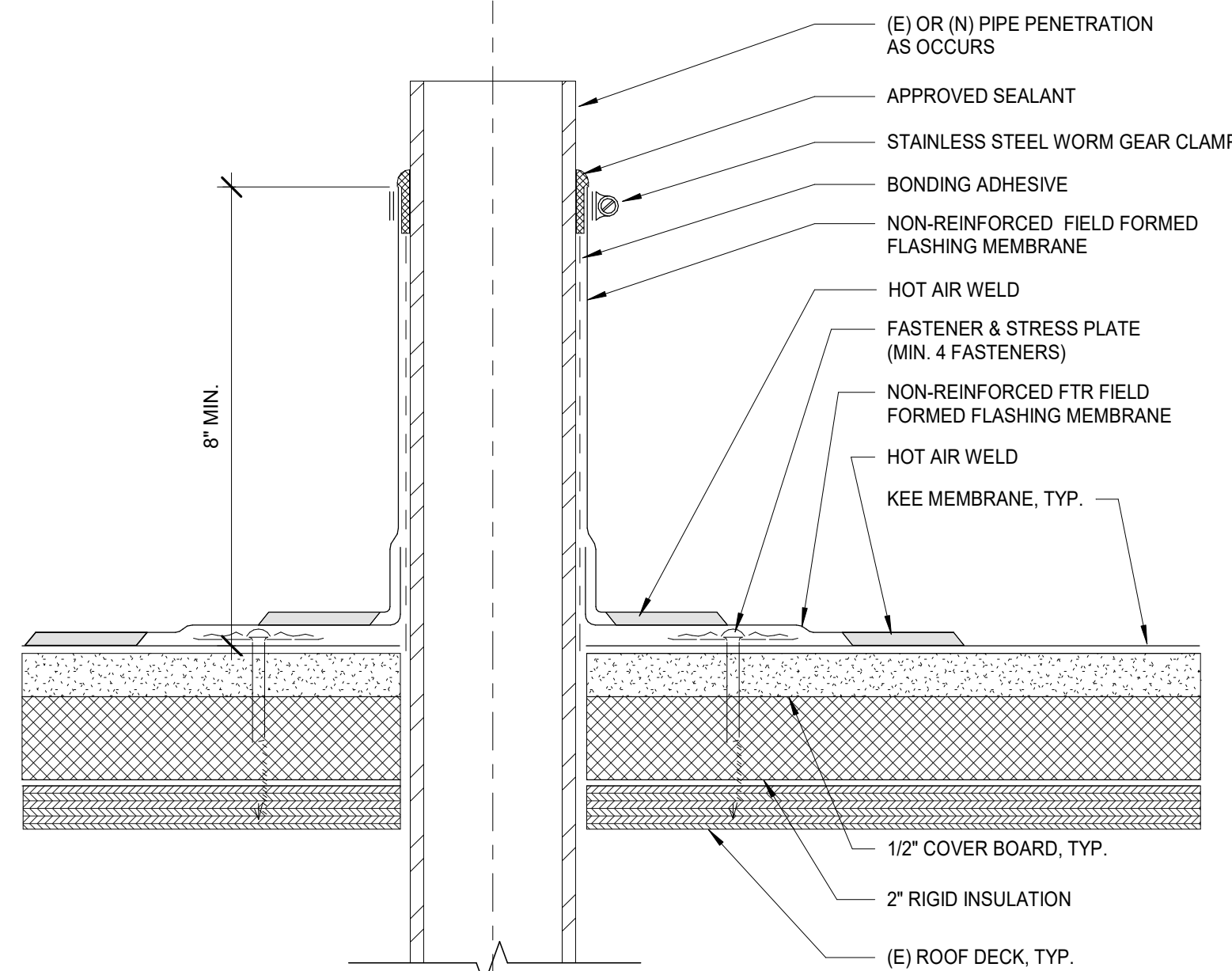
6 TYPICAL REINFORCED DRAIN FLASHING AT NEW ROOF DRAINS
NTS



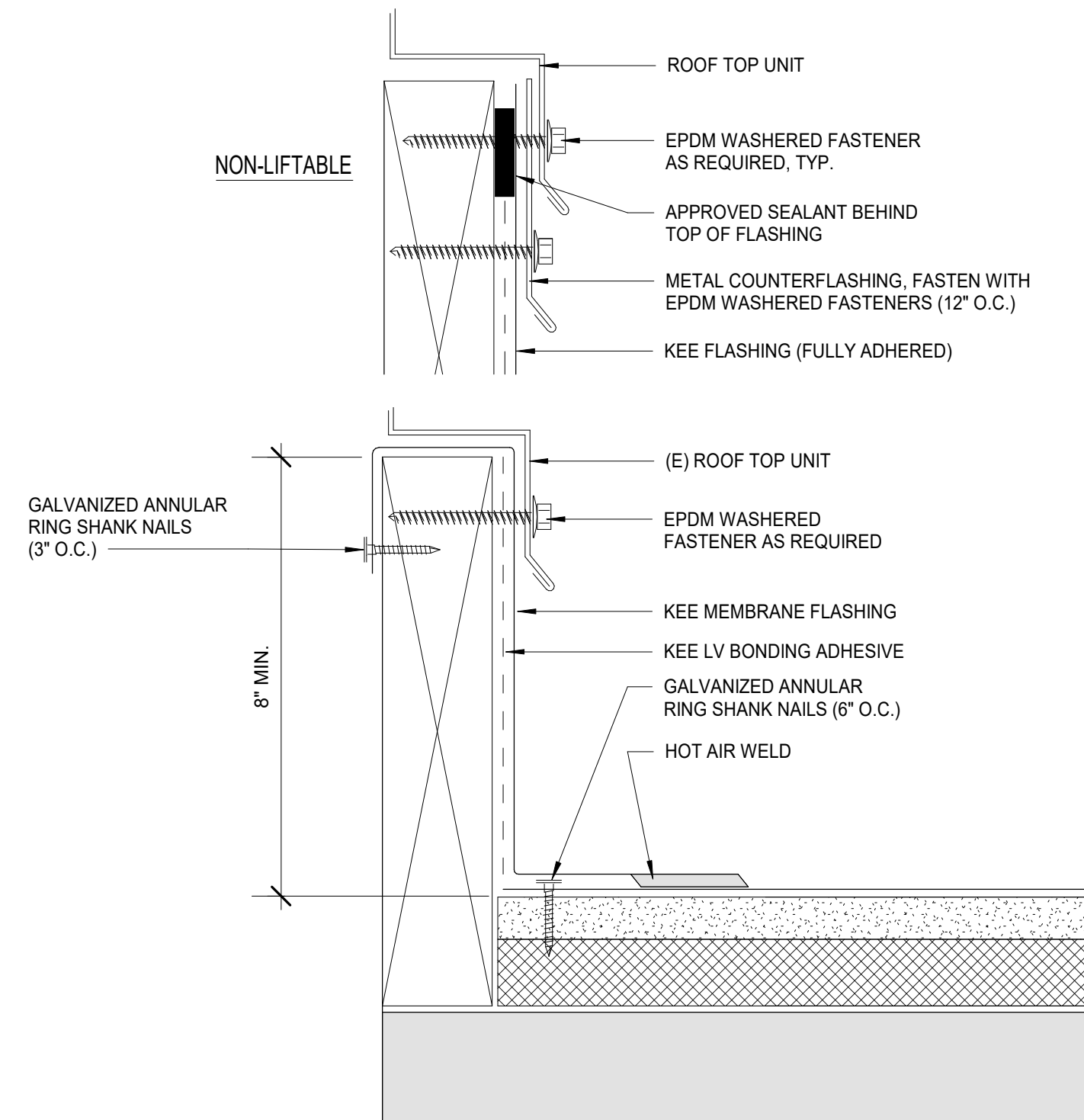
3 KEE TERMINATION AT EDGE CURB
NTS



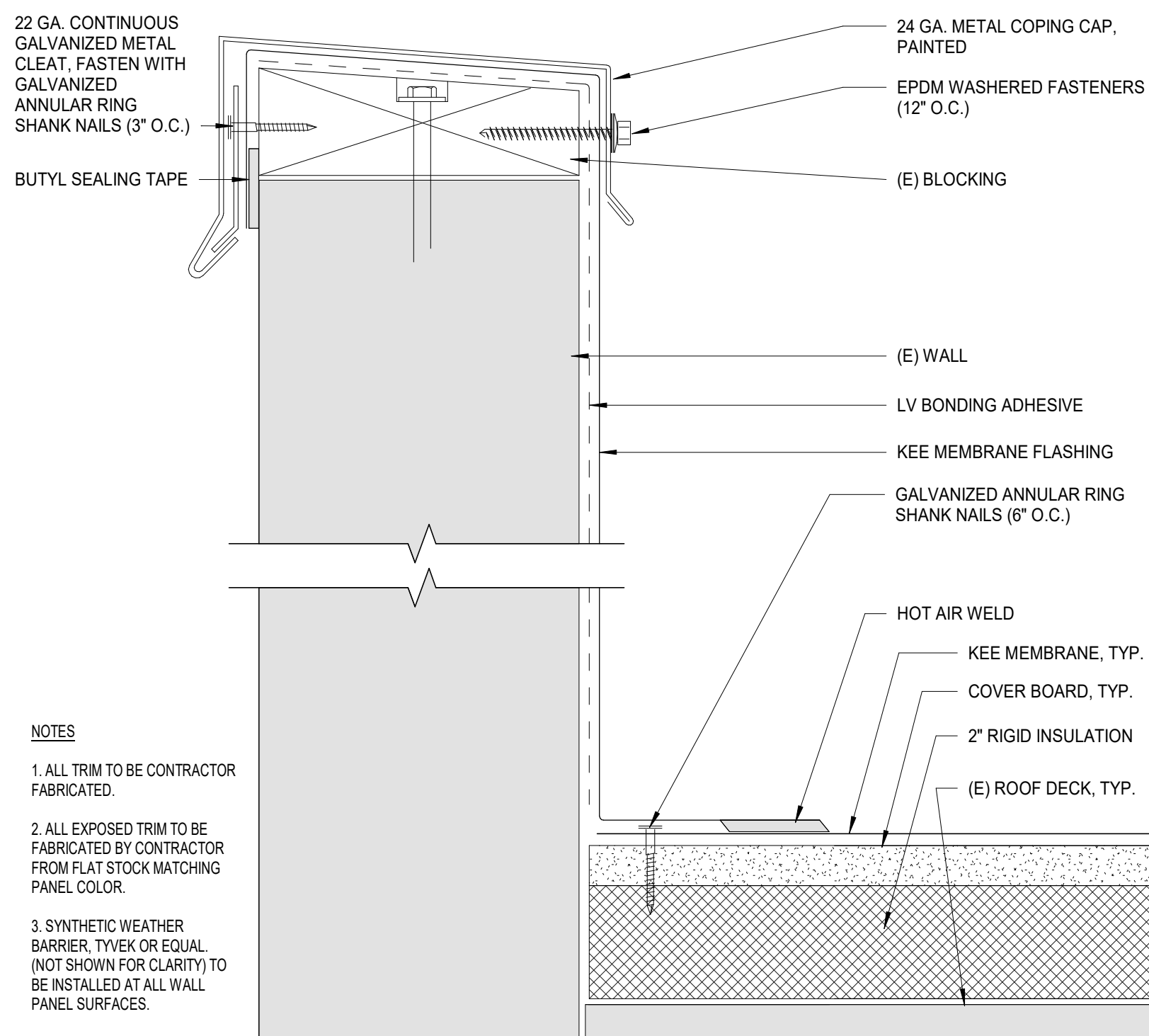
11 DOWNSPOUT ATTACHMENT
NTS



8 KEE FIELD FABRICATED PIPE FLASHING
N.T.S.

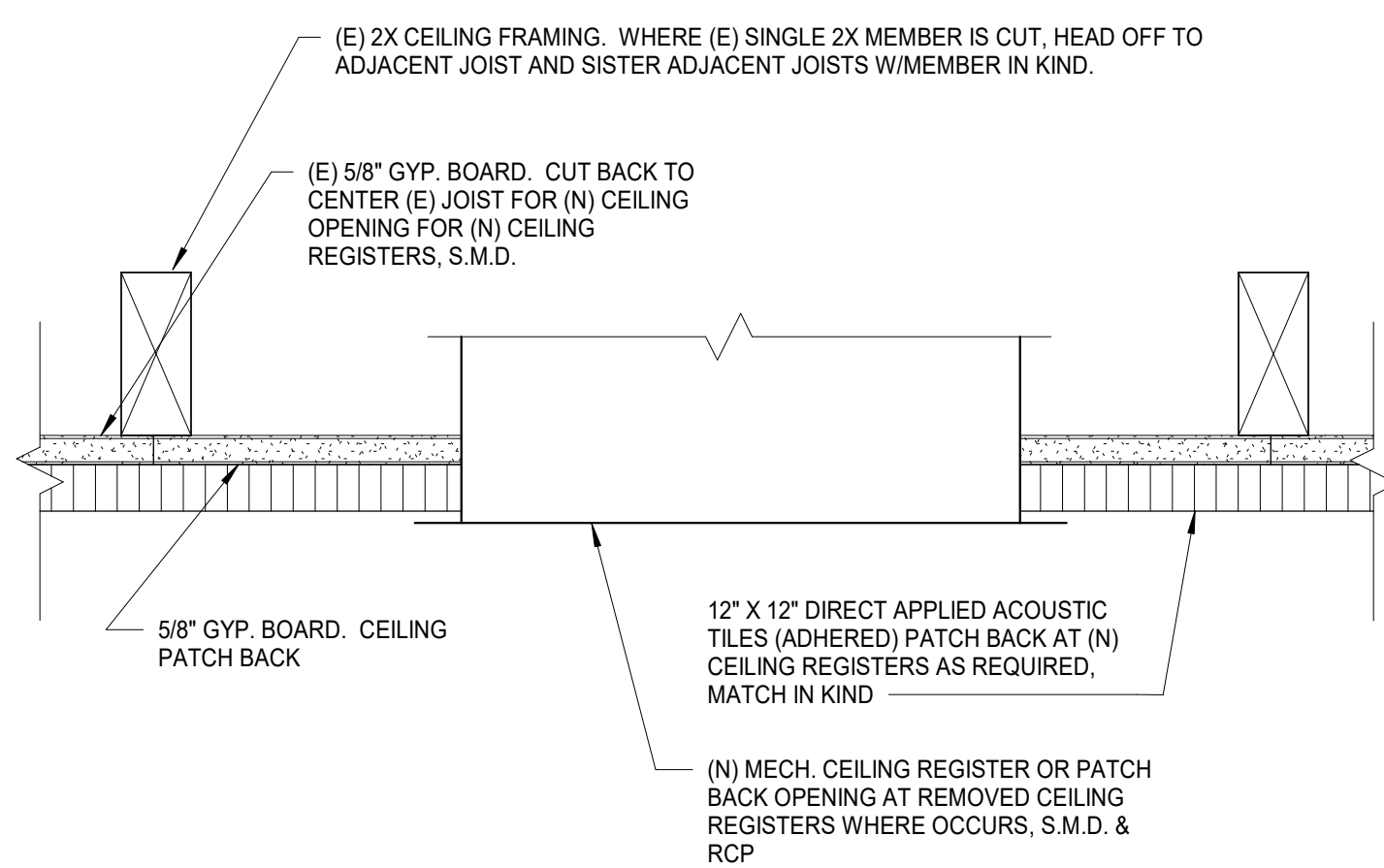


5 ROOF FINISH AT EXISTING WOOD CURB
NTS

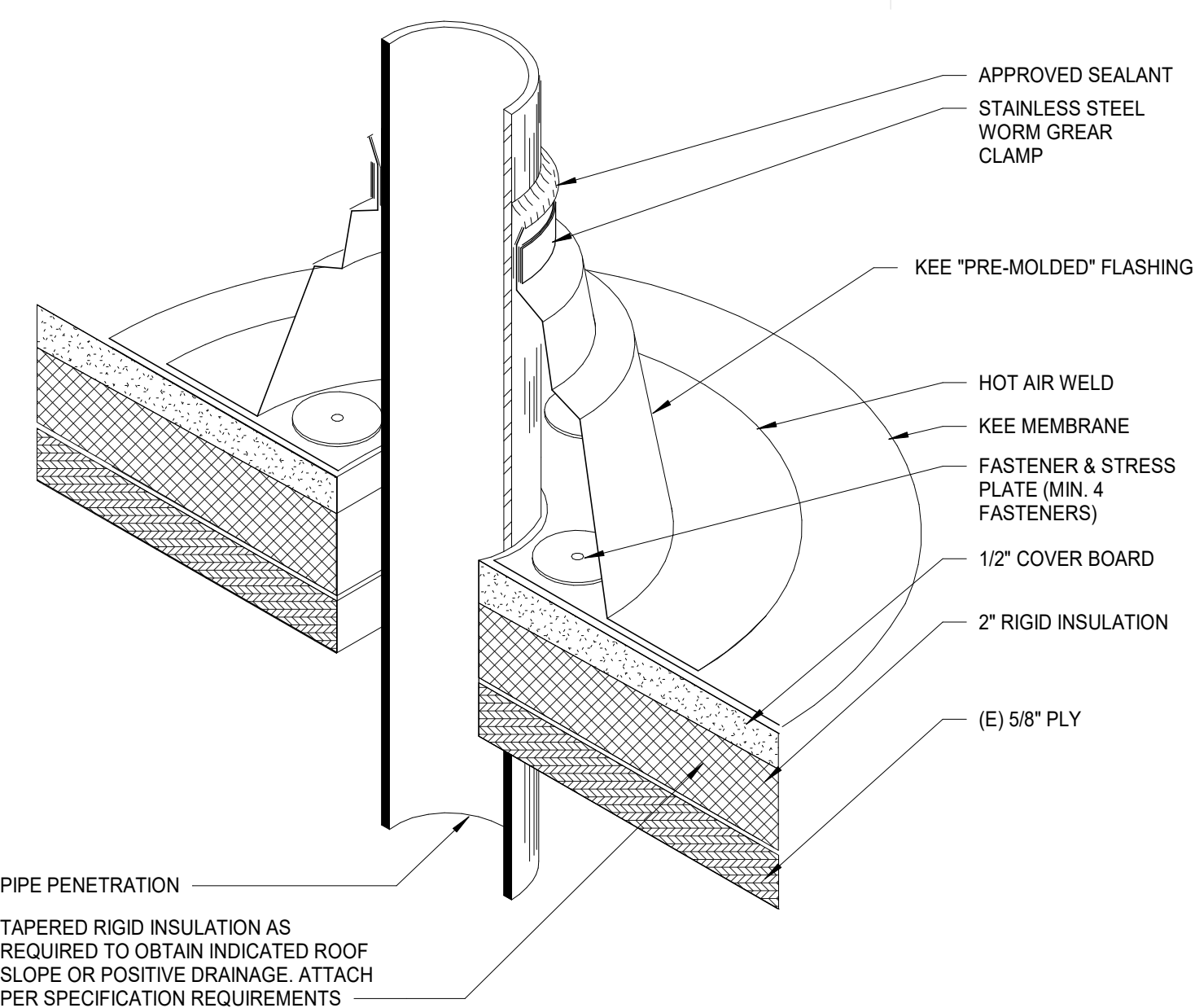


- NOTES
1. ALL TRIM TO BE CONTRACTOR FABRICATED.
 2. ALL EXPOSED TRIM TO BE FABRICATED BY CONTRACTOR FROM FLAT STOCK MATCHING PANEL COLOR.
 3. SYNTHETIC WEATHER BARRIER, THICK OR EQUAL (NOT SHOWN FOR CLARITY) TO BE INSTALLED AT ALL WALL PANEL SURFACES.

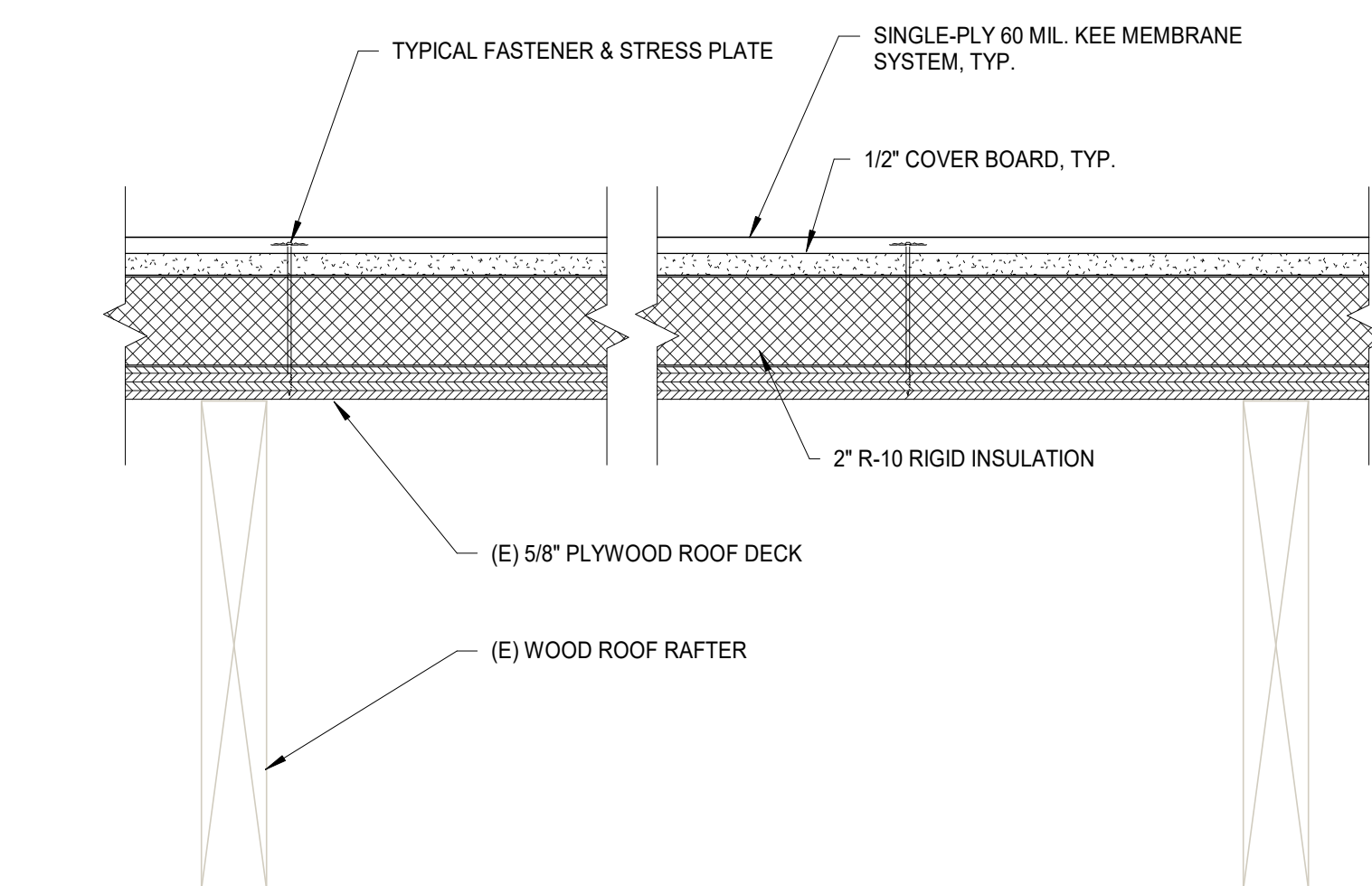
2 KEE WALL FLASHING WITH METAL CAP FLASHING
NTS



10 GLUE-UP CEILING TILE PATCH BACK
3\"/>



7 PRE-MOLDED PIPE FLASHING
NTS



1 TYPICAL ROOF ASSEMBLY
3\"/>

SEAL



2930 GAY AVE
SAN JOSE, CA 95127

Drawing Title
ROOF DETAILS

NO.	DATE	ISSUE

Project
**ALUM ROCK UNION SCHOOL DISTRICT
HVAC AND ROOFING UPGRADES**

Drawn By
VJ

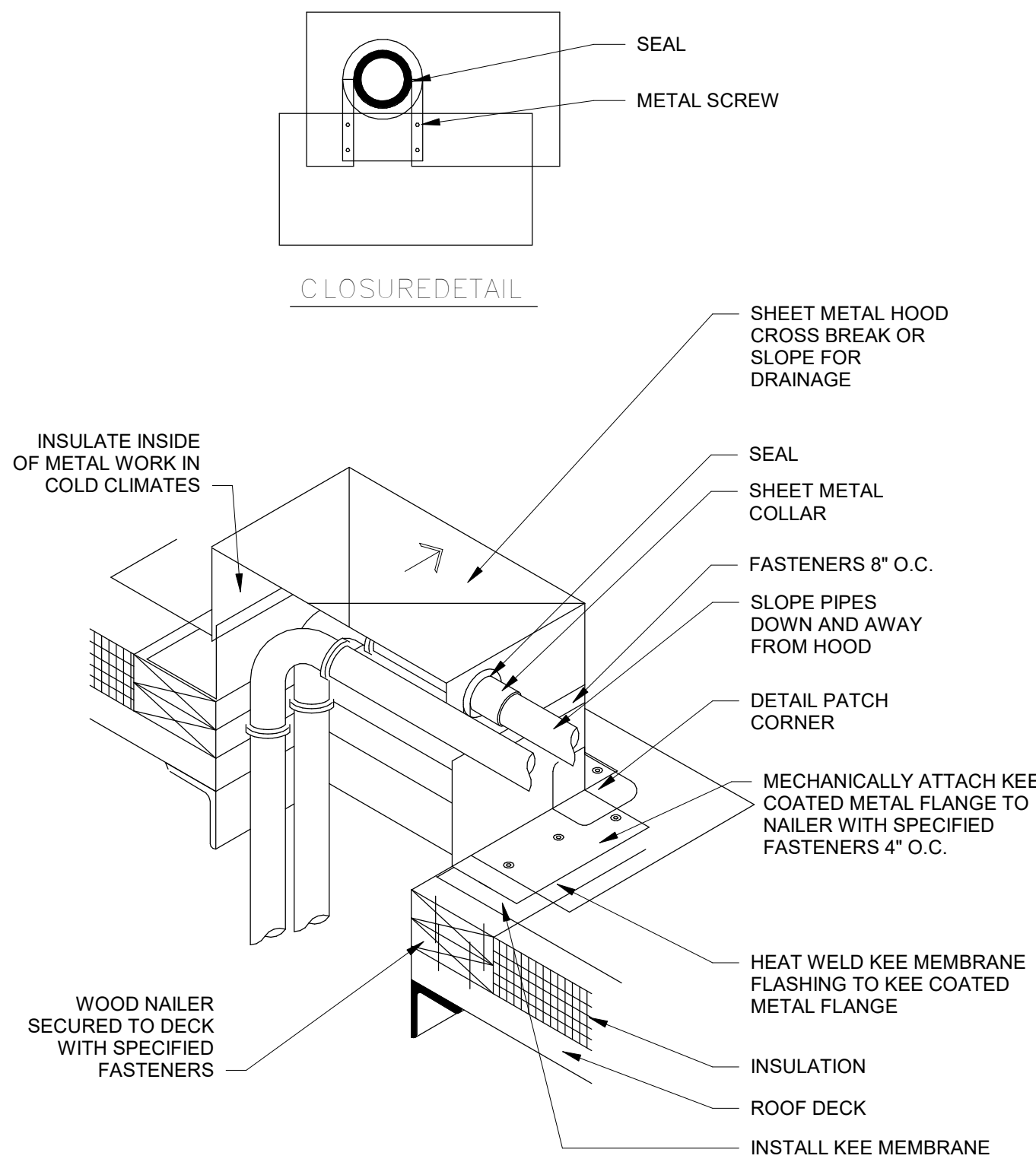
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HV/MO

Project No.
23-525
@Date
03/11/24

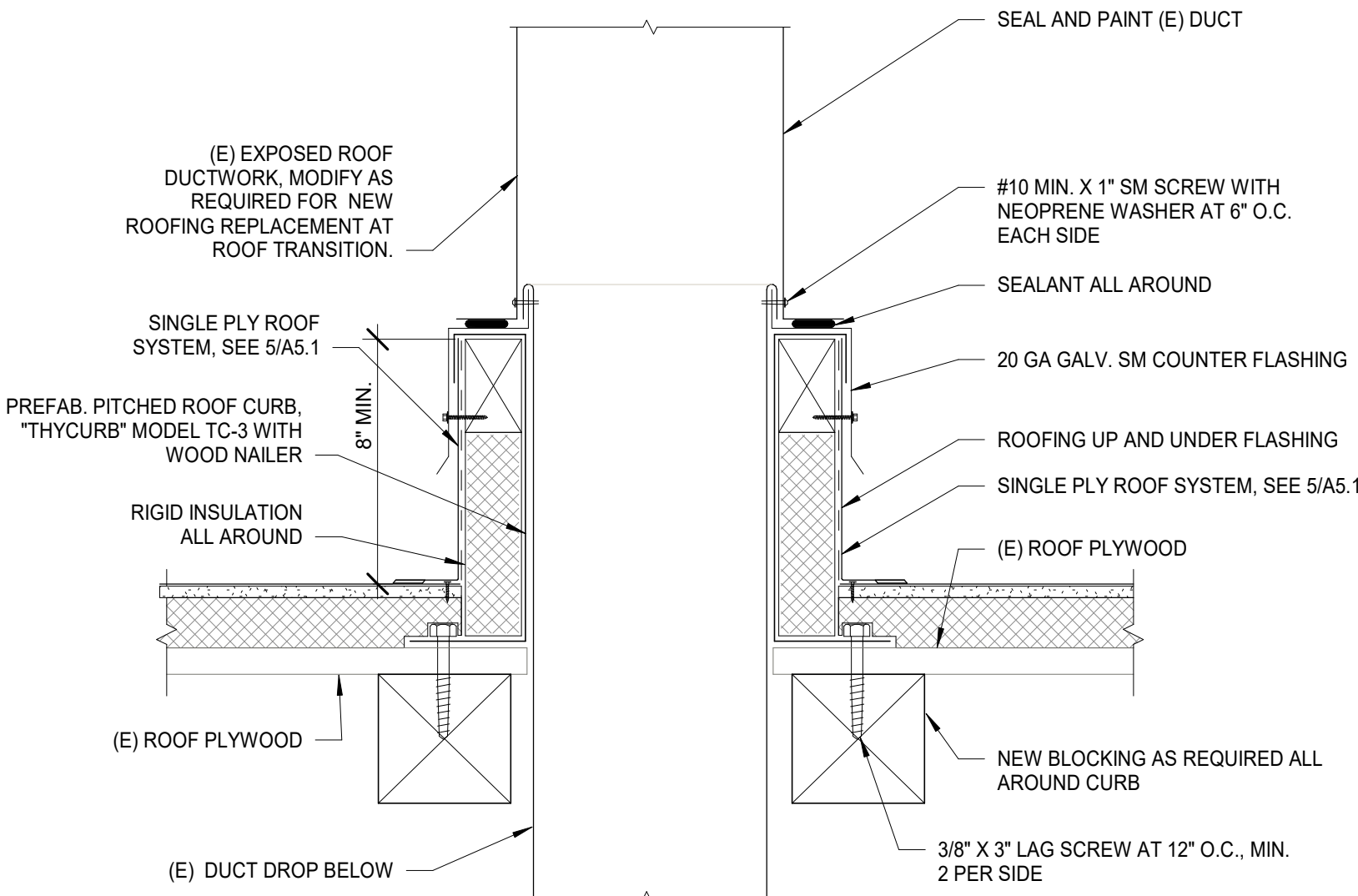
DRAWING NO.

A5.1

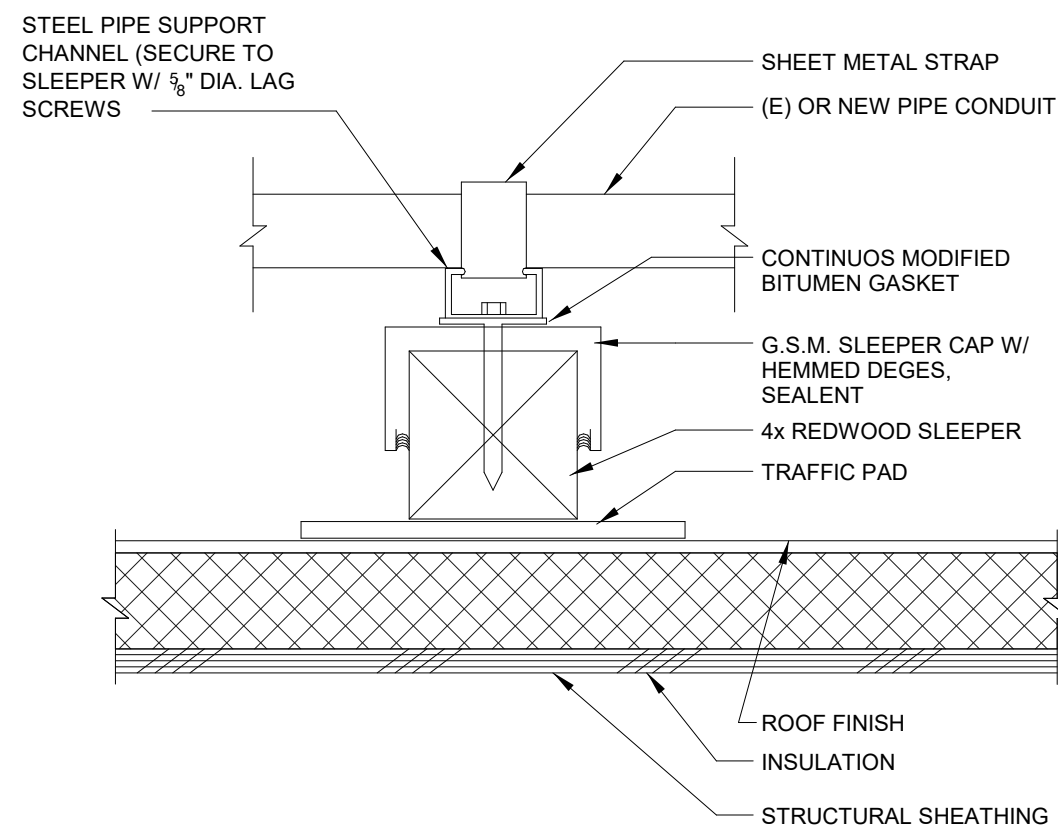
3 MULTIPLE PIPE PENETRATION
N.T.S.



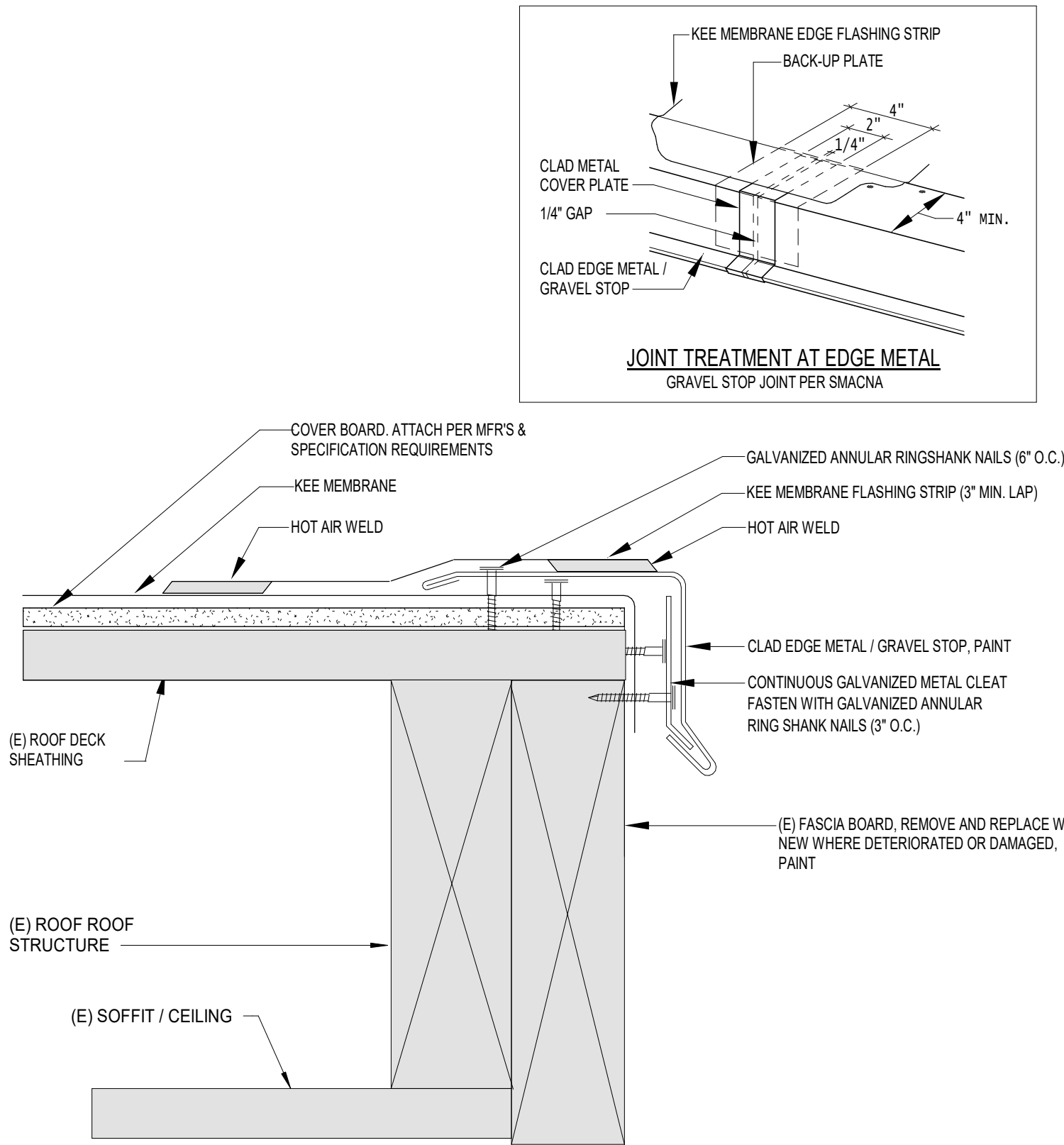
5 (E) DUCT MODIFICATION AT ROOF
3" = 1'-0"



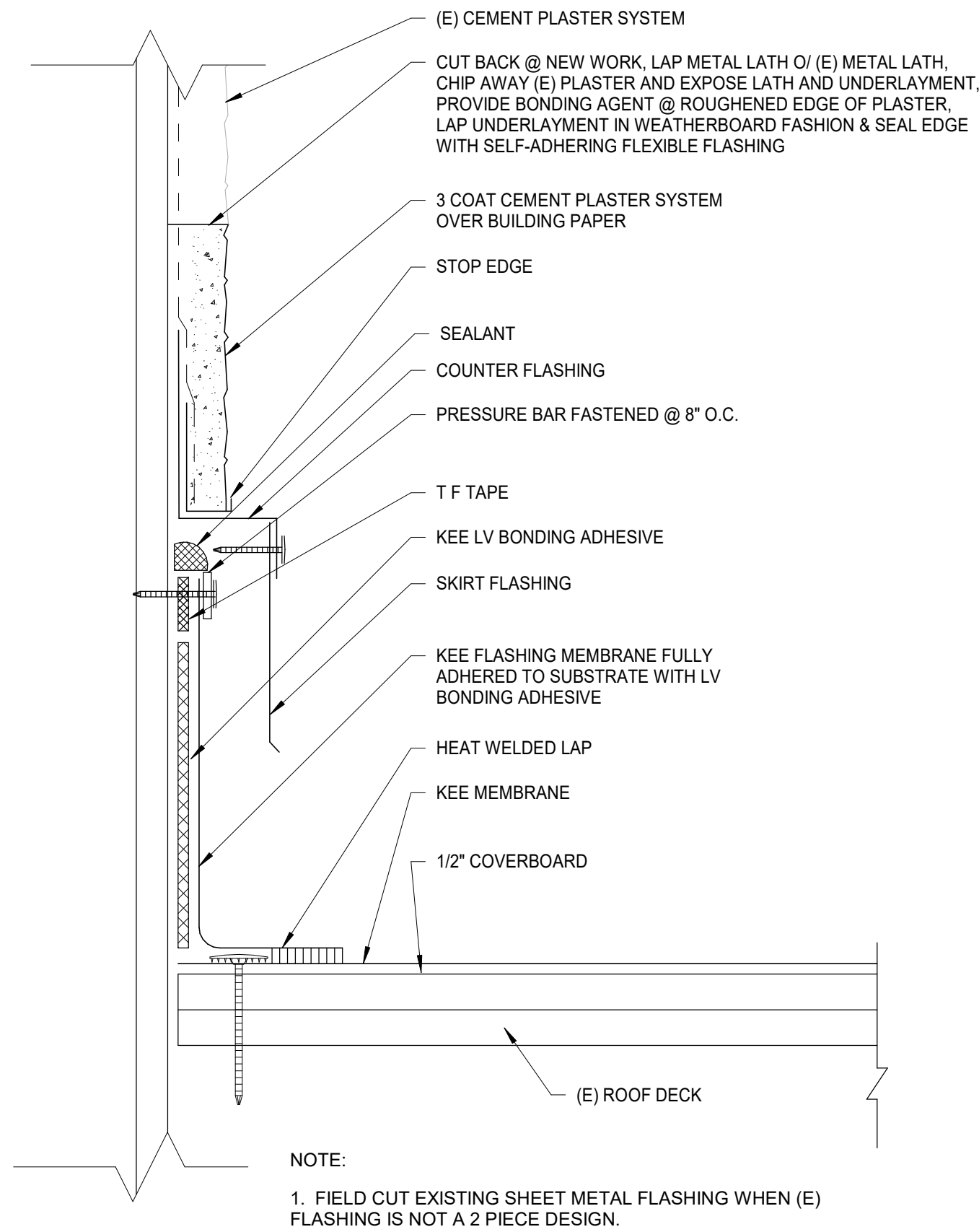
2 WOOD SLEEPER AT (E) CONDUIT
3" = 1'-0"



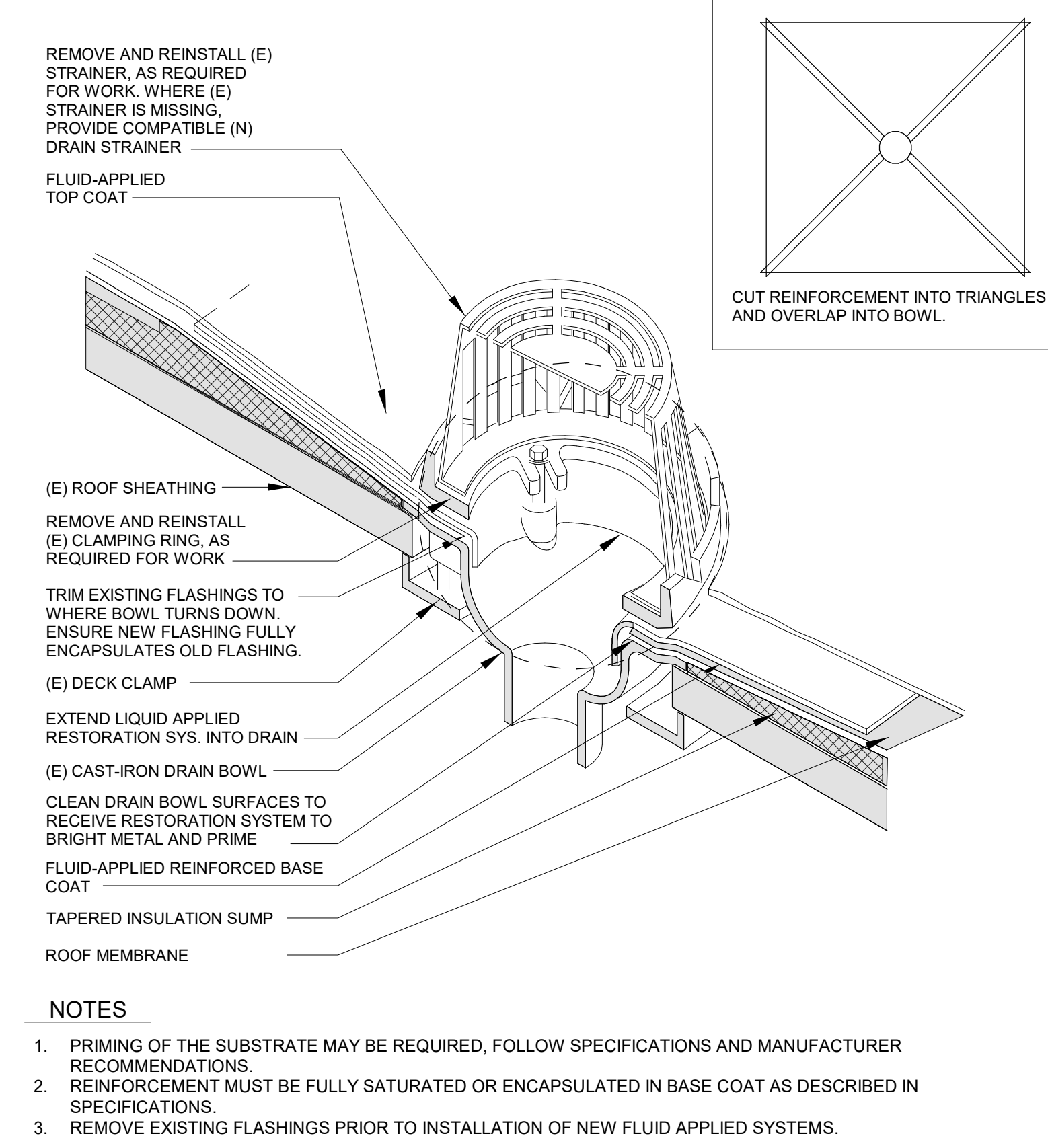
8 KEE TERMINATION AT EDGE METAL / GRAVEL STOP
N.T.S.



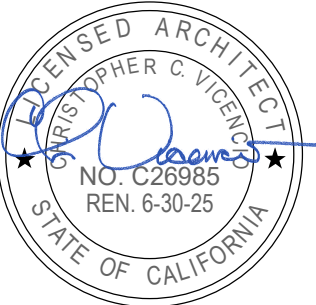
4 SKIRT FLASHING AT WALL AT COVERED WALKWAY CANOPY
N.T.S.



1 ROOF DRAIN - RESTORATION AT (E) ROOF DRAIN ASSEMBLIES
N.T.S.



SEAL



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SAN JOSE, CA 95127

Drawing Title
ROOF DETAILS

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Project
**ALUM ROCK UNION SCHOOL DISTRICT
HVAC AND ROOFING UPGRADES**

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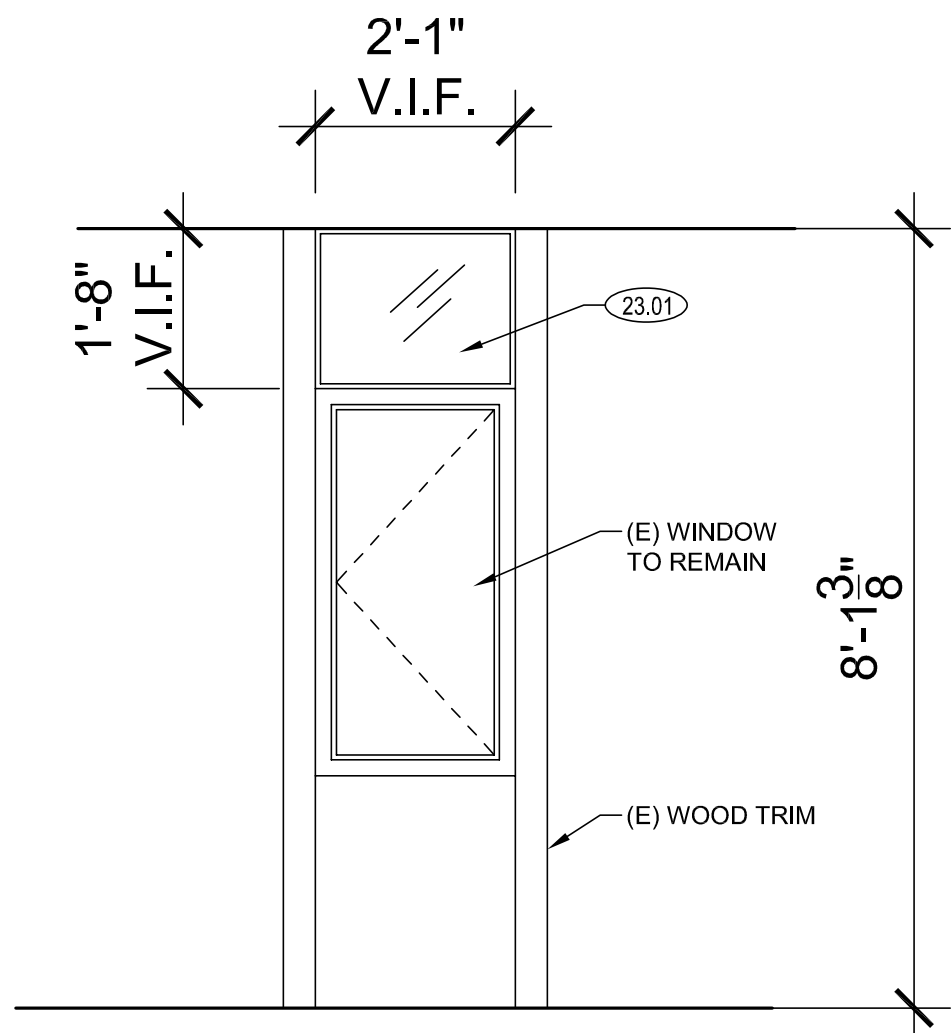
Project No.
23-525

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A5.2

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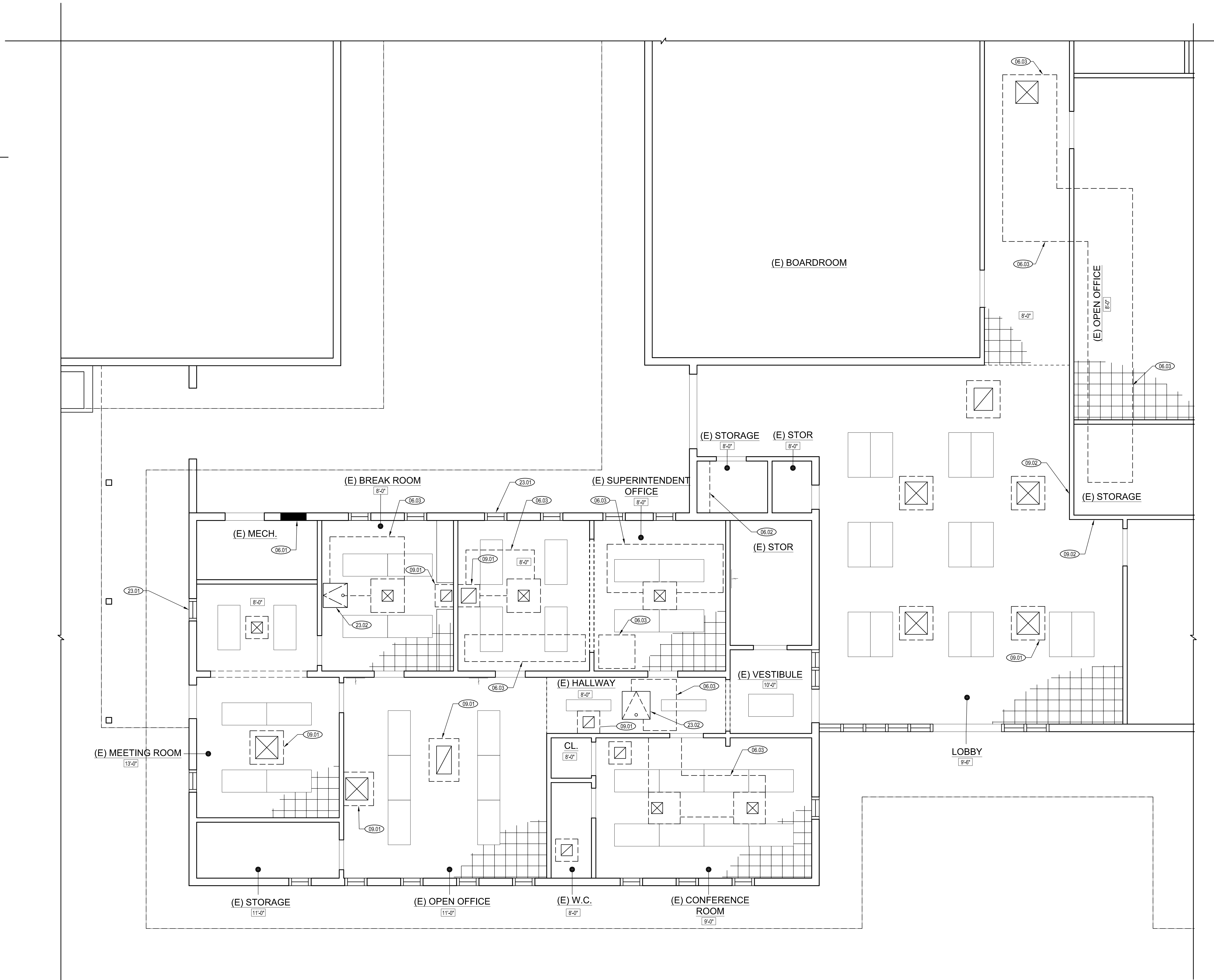


2 WINDOW ELEVATION
1/2" = 1'-0"

LEGEND

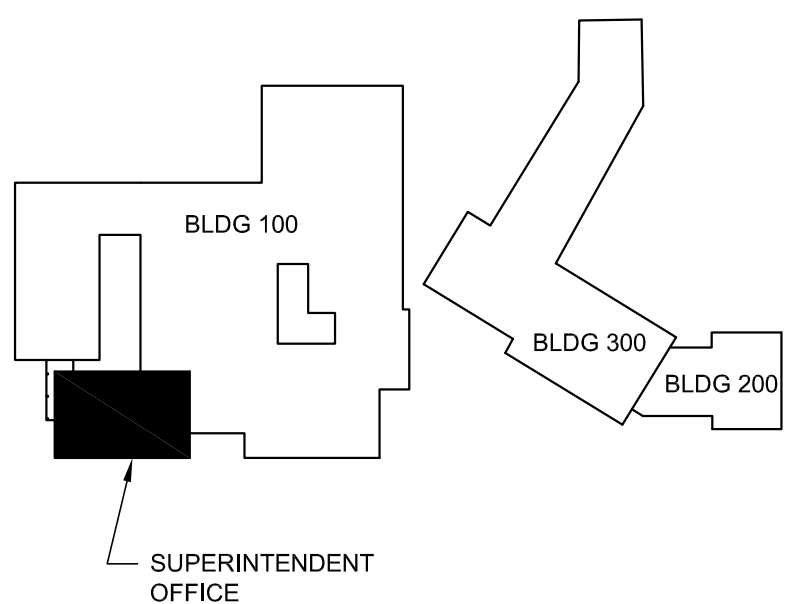
- (E) CEILING ACCESS PANEL
- (E) 12X12 ACOUSTIC TILE
- (E) SURFACE MOUNTED LIGHT FIXTURES
- (E) MECH CEILING SUPPLY AND RETURN GRILLES
- (E) WALL MECH REGISTER GRILLE

1 PARTIAL REFLECTED CEILING PLAN
1/4" = 1'-0"



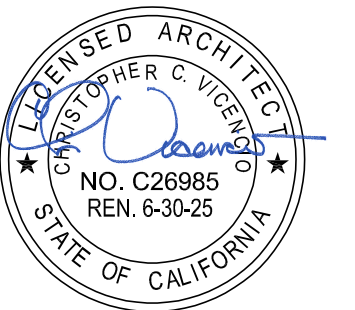
RCP KEYNOTES

- 06.01 INFILL PANEL ABOVE LOUVER BELOW WITH 1" PLYWOOD.
- 06.02 REMOVE SHELVING IN THIS ROOM AS REQUIRED TO INSTALL NEW ELECTRICAL PANEL.
- 06.03 MODIFY (E) DROPPED CEILING 2X JOIST FRAMING AS NEEDED TO INSTALL NEW DUCTWORK, TYPICAL. SEE DETAIL 10A5.1. REMOVE AND REINSTALL LIGHT FIXTURES AS REQUIRED. VERIFY THE LOCATION OF LIGHT FIXTURES BEFORE BEGINNING THE WORK.
- 09.01 REMOVE (E) ACOUSTICAL TILES O/GYP BD AS NEEDED FOR REPLACEMENT OF MECHANICAL CEILING REGISTERS, S.M.D. FOR ADDITIONAL INFORMATION, MODIFY (E) DROPPED CEILING 2X JOIST FRAMING AS NEEDED TO ACCOMMODATE NEW WORK. SEE DETAIL 10A5.1.
- 09.02 PATCH (E) GYP. BOARD AT WALL LOUVER OPENING TO BE REMOVED. PAINT TO MATCH EXISTING.
- 23.01 NEW 1/2" TEMPERED GLASS SET IN THE EXISTING WINDOW FRAME. SEE ELEVATION ON 2/47.1.
- 23.02 (E) CEILING ACCESS PANEL. FOR NEW CEILING ACCESS PANELS, SEE FIRE ALARM DRAWINGS.



KEY PLAN

SEAL



2830 GAY AVE.
SAN JOSE, CA 95127

Drawing Title
**ENLARGED REFLECTED
CEILING PLAN**

NO.	DATE	ISSUE

Project
**ALUM ROCK UNION SCHOOL DISTRICT
HVAC & ROOFING UPGRADES**

Drawn By
VJ
Checked By
HV, MO
Project No.
23-525
©Date
03/11/2024
Drawing No.

A7.1

GENERAL NOTES

- [illegible]

- | | |
|--|--|
| 1. CODES AND STANDARDS
2022 CALIFORNIA BUILDING CODE (CBC)
ASCE 7-16
ACI 318-19
ASCE 360-16, 3416, 358-16
AISI S100-16 w/ S2-20, S240-20, S400-20
2018 NDS, 2021 SDPWS | 3. LATERAL LOADS
SEISMIC:
SITE CLASS <u>D (assumed)</u>
$S_{D1} = 1.04$; $S_{D2} = 1.50$
$S_{D3} = 0.743$; $S_{D1} = \text{N/A}$
$I_e = 1.0$
$R = 1.0$ TYPICAL
RISK CATEGORY: <u>II</u>
SEISMIC DESIGN CATEGORY: <u>D</u>
WIND:
$V = 92$ MPH |
|--|--|

- FABRICATION, ERECTION AND MATERIALS SHALL CONFORM WITH THE AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS. THE AISC SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS SHALL BE USED IN ALL CASES UNLESS OTHERWISE PROVIDED BY THE BUILDING CODE SPECIFIED IN THE DESIGN CRITERIA NOTES. UNO.
2. ALL ROLLED STEEL SHAPES, PLATES AND BARS SHALL BE NEW STEEL CONFORMING TO ASTM A992 OR ASTM A572 GRADE 50. STRUCTURAL STEEL SHALL BE AS FOLLOWS:
- a. WIDE FLANGE AND WT SHAPES: ASTM A992
 - b. M- AND S-SHAPES: ASTM A36
 - c. MC- AND SHAPES: ASTM A992
 - d. L-SHAPES: ASTM A572 GRADE 50
 - e. SQUARE AND RECTANGULAR TUBES: ASTM A500 GRADE C (F = 48 KSI)
 - f. RECTANGULAR HSS: ASTM A500 GRADE C (F = 50 KSI)
 - g. PIPE: ASTM A53, GRADE B (F = 35 KSI)
 - h. BASE PLATE UP TO 4" THICK: ASTM A572 GRADE 50
 - i. ALL OTHER PLATE MATERIAL: ASTM A572 GRADE 50
 - j. BUILT UP COLUMNS: ASTM A572 GRADE 50
 - k. MEMBERS: ASTM A572 GRADE 50
 - l. CONNECTION MATERIAL:
 - a. COLUMN CONTINUITY PLATES AND DOUBLER PLATES: ASTM A572 GRADE 50
 - b. BRACED FRAME GUSSET PLATES: ASTM A572 GRADE 50
3. ALL STRUCTURAL STEEL SHALL RECEIVE A MINIMUM OF ONE SHOP COAT OF RED PRIMER PAINT. DO NOT POINT AREAS TO BE FIELD WELDED, FIREPROOFED, GALVANIZED, TO RECEIVE SLIP-RESISTANT SURFACE FINISHES, OR TO BE IMBEDDED IN CONCRETE. PROVIDE ADDITIONAL PAINTING AS NOTED IN THE SPECIFICATIONS.
4. ALL STRUCTURAL STEEL SHALL BE ERECTED PLUMB AND TRUE TO LINE. TEMPORARY BRACING AND SHORING SHALL BE INSTALLED AND MAINTAINED THROUGHOUT THE ERECTION PROCESS TO ADEQUATELY BRACE THE STRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING ALL BASE PLATE AND SUPPORT CONDITIONS DURING ERECTION AND BRACING AS REQUIRED. SEE SECTION 05100 FOR REQUIREMENTS.
5. GROUT BELOW BASE PLATES SHALL BE NON-METALLIC, NON-SHRINK GROUT WITH A MINIMUM COMPRESSIVE STRENGTH OF 8,000 PSI UNO. COLUMN BASE PLATES SHALL BE PROMPTLY GRouted AFTER SHIELD FRAME HAS BEEN PLUMBED AND PRIOR TO INSTALLATION OF METAL DECKING.
6. STRUCTURAL STEEL BELOW GRADE SHALL HAVE A THREE INCHES MINIMUM OF CONCRETE COVER. UNO.
- a. BOLTED CONNECTIONS SHALL CONSIST OF UNFINISHED BOLTS CONFORMING TO ASTM F3125 GRADE A325 UNO.
- b. HIGH-STRENGTH BOLT HEADS ARE SPECIFIED; BOLTS CONFORMING TO ASTM F3125 GRADES A325 OR GRADE A490 SHALL BE PROVIDED AS INDICATED. HIGH STRENGTH BOLTS IN SLIP-CRITICAL AND PRETENSION JOINTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F1882.
- c. TURN OFF TOP OF NUTS TO PROVIDE FULL CONTACT BETWEEN WASHERS AND PLATES. PROVIDE DIRECT TENSION INDICATOR WASHERS CONFORMING TO THE REQUIREMENTS OF ASTM F1969.
- d. ANCHOR RODS CAN BE CONCRETE OR MASONRY SHALL BE HEADED BOLT WITH CUT THREAD. USE ANCHOR BODY OR ANCHOR RODS SHALL BE 1/2" DIA. UNLESS OTHERWISE SPECIFIED. PROVIDE SUPPLEMENTARY REINFORCEMENTS, OR GRADE 10S AS INDICATED ON DRAWINGS. IN LIEU OF ANCHOR RODS, ANCHORS MAY BE USED WHERE APPROPRIATE. ANCHORS SHALL BE WELDED TO THE ROOF OR DOUBLE NUTS TIGHTENED TO PREVENT ROTATION. ANCHOR ROD PROJECTION ABOVE TOP OF FOUNDATION SHALL BE AS NOTED ON THE DRAWINGS.
7. BOLTED CONNECTIONS SHALL HAVE WASHERS CONFORMING TO ASTM A36 UNO. WASHERS MAY BE OMITTED AT SNUG-TIGHTENED AND SLIP-CRITICAL CONNECTIONS, EXCEPT WHERE INDICATED BY THE DESIGN SPECIFICATIONS.
8. BASE PLATES SHALL HAVE NUTS AND WASHERS AT TOP AND BOTTOM OF PLATE. WASHERS FOR BASE PLATES SHALL BE A36 SQUARE OR CIRCULAR PLATE UNLESS ASTM F844 WASHERS ARE SPECIFIED. SEE BASE PLATE DETAILS FOR PLATE WASHER SIZE AND PERMISSIBLE WASHER TYPE.
9. THREADED RODS SHALL CONFORM TO ASTM A36 UNLESS NOTED OTHERWISE ON THE DRAWINGS.
10. PINS: ALL PINS IN PIN CONNECTED MEMBERS SHALL CONFORM TO ASTM A36 OR ASTM A108 AS INDICATED ON THE DRAWINGS.
11. ADJUNCT REQUIREMENTS FOR "SLIP-CRITICAL" BOLTED CONNECTIONS:
- a. "SLIP-CRITICAL" CONNECTIONS (A325-C SIGN DESIGN VALUES WITH SPECIAL INSPECTION) ARE REQUIRED AT ALL MOMENT FRAME CONNECTIONS, BRACED FRAME CONNECTIONS, AT ALL MOMENT RESISTING ALGEBRAIC JOINTS AND BRAG LINES (AS NOTED ON PLANS), AND UNO, AT ALL BOLTS IN OVERSIZED OR SLOTTED HOLES.
 - b. THE SPECIAL INSPECTOR MUST BE PRESENT DURING THE INSTALLATION AND TIGHTENING OF ALL MOMENT RESISTING ALGEBRAIC JOINTS.
12. PROVIDE 3/4" DIAMETER STITCH BOLTS AND RING FILLS, SPACED AT NOT MORE THAN 2'-0" ON CENTER FOR ALL DOUBLE ANGLE MEMBERS UNO.
13. PROVIDE 1/2" DIA. STITCH BOLTS WITH 1/2" DIA. DIAMETER BOLTS AT MAXIMUM 24" OC UNLESS NOTED OTHERWISE IN THE DRAWINGS.
14. BOLT HOLES SHALL BE AISC STANDARD HOLES UNLESS OTHERWISE SPECIFIED USING STANDARD HOLES AND MATCH FOR BOLT. UNO.
15. WELDING SHALL BE DONE BY THE ELECTRIC ARC CERTIFIED IN ACCORDANCE WITH AMERICAN WELDING SOCIETY STANDARDS, USING QUALIFIED WELDERS. ALL GROOVE WELDS SHALL HAVE BACK GROUND BEHIND THE JOINTS. PROVIDE 1/2" DIA. STITCH BOLTS FOR WELDING SHALL COMPLY WITH AWS D1.1 AND D1.8 AS APPLICABLE. 670 SERIES MINIMUM.
16. WELDING SHALL BE DONE ON PLANS AND THE NET EFFECTIVE LENGTHS REQUIRED.
17. MINIMUM FIELD WELD: 1/4" PART OF 1/2"
- 3/16" @ 1'-4"
 - 1/2" @ 1'-2"
18. WELDING PROCEDURE SPECIFICATIONS (WPS) FOR SHOP AND FIELD PREQUALIFIED WELD JOINTS AND WELDMENTS SHALL BE SUBMITTED FOR REVIEW BY THE STRUCTURAL ENGINEER AND THE OWNER'S TESTING LABORATORY PRIOR TO FABRICATION. ALL WELDING PROCEDURE ITEMS SUCH AS BASE METALS, WELDING PROCEDURES, FILLER METALS AND JOINT TYPES SHALL MEET THE REQUIREMENTS OF THE TESTING LABORATORY. IF ANY ALTERATIONS OR PREQUALIFIED, ANY CHANGE OR SUBSTITUTION THAT IS BEYOND THE RANGE OR TOLERANCE OR REQUIREMENTS FOR PREQUALIFICATION SHALL BE QUALIFIED BY TEST PER AWS D1.1 SECTION 4. ALL WELDMENTS SHALL BE TESTED TO VERIFY THE PASSAGE OF QUALIFICATION TESTS FOR ALL NON-PREQUALIFIED WELDING PROCEDURE SPECIFICATIONS.

- ALL STRUCTURAL WOOD SHALL CONFORM WITH THE FOLLOWING SPECIFICATIONS:
- SPECIES COMBINATION SHALL BE DOUGL FIR - LARCH PER WCLB GRADING RULES #17 OR WYPA
- STAIN GRADING: ALL GRADING SHALL BE PER WCLB GRADING RULES #17 OR WYPA AND DOUGLAS FIR (SOUTH) ARE NOT PERMITTED WITHOUT APPROVAL FROM THE STRUCTURAL ENGINEER.
2. 3X AND 4X AND 4X MEMBERS - #2 UNO
3X AND LARGER MEMBERS - #1 UNO
2X DECKING - SELECT DEX
MEMBERS 3X AND LARGER SHALL BE FREE OF HEART CENTER
REDWOOD - CALIFORNIA REDWOOD, RIS
SHEATHING - US PRODUCT STANDARD PS 1-99 AND PS-2 UNO, APA RATED
SHEATHING W/ EXTERIOR GRADE FINISH. WALL PLATES AND ROOFING UNO
PRESSURE TREATED DOUGL FIR - TYPE S AS APPROPRIATE FOR EXTERIOR ABOVE GROUND
USE AS SPECIFIED, BY AWPA.
2. ALL EXPOSED DIRECT CONTACT WITH CONCRETE SHALL BE PRESSURE TREATED, EXCEPT
LEDGERS, WHICH DO NOT NEED TO BE PRESSURE TREATED.
FIELD CUTS AND BOLT HOLES IN PRESSURE TREATED WOOD SHALL BE PROTECTED IN
ACCORDANCE WITH AWPA STANDARD.
BEARING AND SHEAR WALLS SHALL HAVE DOUBLE TOP PLATES, LAPPED AT WALL AND
PARTITION INTERSECTION WITH (3) 16d NAILS. SPLICE UPON AND LOWER PLATES AS IN
TYPE UNO. ALL SPINNING SHALL BE PRESSURE TREATED.
PROVIDE SOLID BLOCKING BETWEEN JOISTS AND RAFTERS AT ALL SUPPORTS.
PROVIDE BLOCKING AS REQUIRED AT CEILINGS, WALL FINISHES, FIRE BLOCKING, BACKING ETC.
IN TYPE UNO AND W/ CEMENT PANELS SHALL BE DOUBLED AND NAILED TOGETHER.
THE MOISTURE CONTENT OF 2X MATERIAL AT TIME OF INITIAL USE SHALL BE LESS THAN 19%
THE MOISTURE CONTENT OF LUMBER 3X AND LARGER AT TIME OF INITIAL USE SHALL BE LESS
THAN 19%
2. HOLES FOR BOLTS IN WOOD SHALL BE BORED WITH A BIT OF THE SAME NOMINAL DIAMETER AS
THE BOLT PLUS 1/16"
2. UNWEATHERED SHANKS SHALL BE FIRST BORED TO THE SAME DIAMETER AND DEPTH AS THE
UNWEATHERED SHANK. THE THEADED PORTION SHALL BE DRILLED TO 50% OF THE SHANK
DIAMETER. SHANKS NOTED OTHERWISE IN THE SPECIFICATION SHALL BE DOUBLED AND NAILED TOGETHER.
SOAP MAY BE USED TO LUBRICATE SCREWS.
2. ALL SCREWS AND NUTS SHALL BE GALVANNEAL COATED SHALL BE PROVIDED WITH METAL
WASHERS UNDER HEADS AND NUTS WHICH BEAR ON WOOD. STEEL WASHERS SHALL BE
SIMPSON BP OR BPS TYPE (3" SQ MIN W/ STD CUT W/ASHERS THERE REQ BY CODE), MALLEABLE
IRON WASHERS SHALL BE TYPE UNO. GALVANNEAL COATED SHALL BE PROVIDED WITH METAL
WASHERS 1/8" X 1 1/2" X 1/4" WIDE PLATE. FOR WASHERS AT SIL ANCHORS, SEE SCHEDULE

SILL ANCHOR BOLT WASHER SCHEDULE				
WALL TYPE	2x4	2x6	2x8 & LARGER 1 SIDE SHTG	2x8 & LARGER 2 SIDES SHTG
WASHER DESIGNATION	BPS 5/8-3	BPS 5/8-6	BPS 5/8-6	3GA 3" x STUD WIDTH - 1/2" w/ 11/16"Ø @ CL

3. ALL BOLTS AND LAG SCREWS SHALL BE TIGHTENED ON INSTALLATION AND RETIGHTENED BEFORE CLOSING IN OR AT COMPLETION OF JOB.
4. ALL BOLTS SHALL BE FULL NOMINAL DIMENSION AT UNTHREADED PORTION. NO UPSET
5. TREADED BOLT SHALL FOLLOW:
6. ALL FASTENERS, INCLUDING NUTS AND WASHERS, IN CONTACT W/ PRESERVATIVE-TREATED OR FIRE-RETARDANT MATERIAL, SHALL BE HOT-DIPPED GALVANIZED STEEL OR ZINC BORATE STEEL OR HOT DIPPED OR COATED STEEL. GALVANIZED STEEL SHALL BE TYPE 55. PLAIN CARBON STEEL FASTENERS ARE PERMITTED IN CONTACT W/ SBXDOT OR STAINLESS BORATE PRESERVATIVE-TREATED WOOD IN AN INTERIOR, DRY ENVIRONMENT.
7. ALL FRAMING AND SHEATHING SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY EACH PROJECT AND SUBJECT TO APPROVAL BY THE GOVERNING AGENCY. THE APPROVAL IS SUBJECT TO CONTINUED SATISFACTORY PERFORMANCE. MACHINE NAILING WILL NOT BE APPROVED IN 5/8" SHEATHING IF NAIL HEADS PENETRATE THE OUTER PLY BY MORE THAN WOULD BE NOTICED OR IF A HARD OR SOFT SPOT IS DETECTED. MINIMUM DISTANCES ARE NOT MAINTAINED, THE PERFORMANCE WILL BE DEEMED UNSATISFACTORY.
8. BLOCK SHGT JOINTS WITH 2x4 FLAT BLOCKING WHERE NOTED ON ROOF OR FLOOR FRAMING. PLATE WITH 2x4 FLAT BLOCKING AT STUDS AT WALLS. USE PLYCLIPS AT MIDSPAN OF UNSUPPORTED ROOF SHEATHING EDGES.
9. FRAMING HARDWARE SHOWN ON THE PLANS IS SIMPSON STRONG-TIE. USE FRAMING HARDWARE AS MANUFACTURED BY SIMPSON COMPANY OR EQUIVALENT. PRIOR TO INSTALLATION OF ANY NON-SIMPSON HARDWARE, THE CONTRACTOR SHALL SUBMIT A LIST OF ALL DETAIL REFERENCES WHERE A HARDWARE SUBSTITUTION IS PROPOSED. THE DESIGNATION FOR THE SIMPSON ITEM AND NON-SIMPSON PROPOSED EQUIVALENT AND AN ICC E-REPORT FOR EACH SUBSTITUTION SHALL BE SUBMITTED.
10. LAY ALL STRUCTURAL SHEATHING ON ROOF AND FLOORS WITH LONG DIMENSION PERPENDICULAR TO SUPPORTS UNLESS NOTED OTHERWISE.
11. ALL STRUCTURAL MEMBERS SHALL BE SIGNED AND DATED BY THE ROOF SHOT NAILER HAS BEEN COMPLETED AND A MINIMUM OF 48 HOURS PRIOR TO CONCEALING NAILING.

1. UNLESS SPECIFICALLY NOTED OTHERWISE, HARDWARE SPECIFIED ON THE DRAWINGS SHALL BE SIMPSON HARDWARE.
2. SIMPSON HARDWARE FOR THIS PROJECT HAS BEEN SPECIFIED BASED ON THE ALLOWABLE LOAD AND PRODUCT INFORMATION GIVEN IN THE SIMPSON CATALOG FOR THE YEAR THAT THESE DRAWINGS ARE DATED.
3. PLANS, SECTIONS AND DETAILS INDICATE GENERAL PRODUCT TYPE AND ANY REQUIRED MODIFICATIONS (I.E. SLOPES AND SKEWS). SPECIFIC CATALOG CALL OUTS ARE DETERMINED BY INDIVIDUAL MEMBER SIZES.
- EXAMPLES:
- PLAN-SECTIONS INDICATE 2x10 MEMBERS SUPPORTED BY SIMPSON 'U' HANGERS.
SIMPSON CALL-OUT: U210.
PLAN-SECTIONS INDICATE 5/8"x18" GLB SUPPORTED BY 4X6 POST AND SIMPSON ECCP CIP-SIMPSON CALL-OUT: ECCS144-18" OR OPTION WITH STRAPS ROTATED 90° ECCS144-18" 90°
WHERE THE SIMPSON CALL-OUT INDICATES TWO SIZES MAY BE USED FOR THE SAME SIZE MEMBER, USE THE LARGER SIZE.
- EXAMPLE:
- PLAN-SECTIONS INDICATE 4X8 MEMBER SUPPORTED BY SIMPSON LUS HANGERS.
SIMPSON CATALOG INDICATES LUS46 OR LUS48 MAY BE USED. THE LUS48 SHALL BE USED UNLESS SPECIFIED OTHERWISE.
4. USE SIMPSON MAX NAILING CONFIGURATION (FILL ALL HOLES WITH NAILS), TYPICAL UNO.
5. WHEN MULTIPLE NAIL SIZES ARE INDICATED IN SIMPSON CATALOG, USE LARGEST NAIL SIZE LISTED, TYPICAL UNO.
- HARDWARE SUPPLIER OTHER THAN SIMPSON SHALL SUBMIT A COMPARATIVE MATERIAL LIST, INCLUDING PRODUCT DESIGNATION, LOAD RATING, AND SUPPORTED MEMBER SIZE FOR REVIEW BY THE ENFORCEMENT AGENCY AND THE STRUCTURAL ENGINEER.

ALL NAILS FOR STRUCTURAL WORK SHALL BE COMMON WIRE NAILS UNO, CONFORMING TO THE FOLLOWING MINIMUM SIZES:

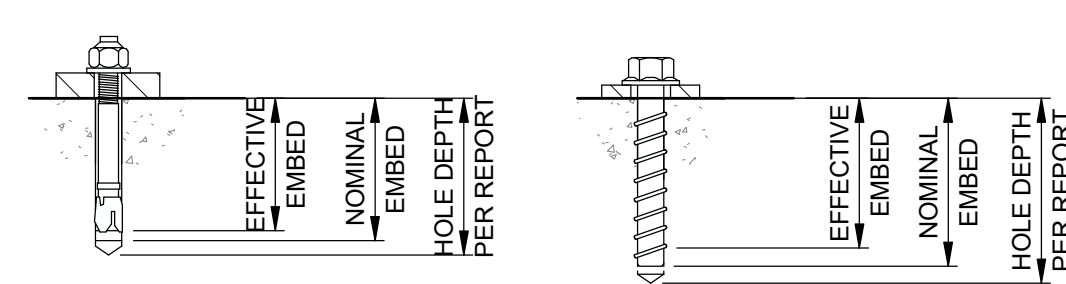
- | | |
|-----------|--|
| 8d | -0.131" SHANK DIA (0.281" HEAD DIA) x 2 1/2" |
| 10d | -0.148" SHANK DIA (0.312" HEAD DIA) x 3" |
| 10d SHORT | -0.148" SHANK DIA (0.312" HEAD DIA) x 1 1/2" |
| 16d | -0.162" SHANK DIA (0.344" HEAD DIA) x 3 1/2" |
| 20d | -0.192" SHANK DIA (0.406" HEAD DIA) x 4" |
| 20d BOX | -0.148" SHANK DIA (0.375" HEAD DIA) x 4" |
| 40d BOX | -0.162" SHANK DIA (0.406" HEAD DIA) x 5" |
| RSR-03 | -0.131" SHANK DIA (0.281" HEAD DIA) x 2 1/2" (ROOF SHITG RING SHANK) |

HOLES SHALL BE PRE-DRILLED WHERE NECESSARY TO PREVENT SPLITTING. NAILING NOT NOTED BELOW OR ON PLANS SHALL BE A MINIMUM OF TWO NAILS AT EACH CONTACT. 8d FOR 1x MATERIAL AND 16d FOR 2x MATERIAL.

- | | | | | |
|-----|---|--|---------------------------------------|-----------------|
| 1. | JOISTS OR RAFTERS | SAWN LUMBER BRG ON PLATES
I-JOISTS BRG ON PLATES
LAPPED TO SIDES OF STUDS | TN EACH SIDE | (2)10s |
| | | | EACH SIDE OF WEB | (2)10s |
| | | | 2x4 | 2x4 |
| | | | 2x8 | 416s |
| | | | 2x8 | 2x12 |
| 2. | STUDS TO BEARINGS | 2x4 STUDS | TN EACH SIDE | (2)10s |
| | (3x, 4x 3M) | 2x6 AND 2x8 STUDS | EN IN LIEU OF TN | (3)16s |
| | | | TN EACH SIDE | (3)10s |
| | | | EN IN LIEU OF TN | (3)16s |
| | | | TN EACH SIDE | (3)10s |
| | | | EN IN LIEU OF TN | (4)16s |
| 3. | BLOCKING | BETWEEN JOISTS, RAFTERS
OR STUDS
BETWEEN JOIST OR
RAFTER BEARINGS (PLATES) | TN EACH SIDE EACH END | (2)10s |
| | | | EN IN PL OF EACH END OF TN | (2)16s |
| | | | TN EA SIDE | (2)10s |
| 4. | CONTINUOUS RM | TO DEL TOP PLATES | TN EA SIDE | 16d @ 16"OC |
| 5. | LEDGERS | TO STUDS | 1x LEDGER | 2x8d |
| | | | 2x LEDGER | 316d |
| 6. | DOUBLE TOP PLATES | LOWER PLATE TO 2x4 STUD
LOWER PLATE TO 2x6 OR 2x8 STUD | 2x LEDGER | 316d |
| | | | 2x LEDGER | 316d |
| 7. | SILL PLATES | TO PARALLEL FRAMING
TO PERPENDICULAR FRAMING | EACH CONTACT | 16d @ 12"OC |
| 8. | MULTIPLE STUDS | STAGGER FOR WIDTHS MORE THAN 4" | 16d @ 12"OC | 16d @ 12"OC |
| 9. | BUILT UP BEAMS | (2)x MEMBERS, TOP AND BOTTOM
(3 OR MORE 2x MEMBERS | 16d @ 12"OC CLINCHED
12" DIA BOLTS | 12"OC STAGGERED |
| 10. | CEILING STRIPPING | HOLES SHALL BE PRE-DRILLED FOR
NAILS AT ENDS OF STRIPPING BOARDS.
WHERE CEILING IS PLASTER OR 5/8"
GYPSUM USE ANNUULAR RING NAILS
(NO SLANT) | 1x | (2)8d (1-SLANT) |
| 11. | FLOOR OR ROOF RAILING | SEE PLAN NOTES AND 1055.01 | | |
| 12. | NON-STRUCTURAL | AT EDGES AND INTERIOR | HGD CASTER NAILS | 6d @ 6"OC |
| 13. | NON-STRUCTURAL | AT EDGES | NAILS TO MATCH SHEAR WALLS @ 6"OC | |
| 13. | SHORTHITCH | AT FIELDS | NAILS TO MATCH SHEAR WALLS @ 12"OC | |
| 14. | USE DEFORMED SHANK NAIL ALL FLOOR SHEATHING | | | |
| 15. | ALL EXPOSED FASTENERS SHALL HAVE A ZINC-COATED CORROSION RESISTIVE SURFACE. | | | |
| 16. | NAILS USED INTO PRESSURE TREATED OR FIRE RETARDANT MATERIAL SHALL BE HOT-DIPPED | | | |

1. TYPICAL GLUED LAMINATED BEAMS SHALL BE MANUFACTURED FROM VISUALLY GRADED WESTERN SPECIES AND SHALL CONFORM TO THE FOLLOWING COMBINATIONS:
- 20F CANTILEVER AND CONTINUOUS MEMBERS: 24F-4V
EXTERIOR MEMBERS NOT PROTECTED FROM WEATHER SHALL BE ALASKAN YELLOW CEDAR, 20F OR AS INDICATED ABOVE WITH AN APPROVED PRESERVATIVE TREATMENT, WHERE ANY MEMBERS OCCURS, THEY SHALL CONFORM TO THE FOLLOWING COMBINATIONS:
 - SIMPLE SPAN MEMBERS: 20F-V12
CANTILEVER AND CONTINUOUS MEMBERS: 20F-V13
 - 24F CANTILEVER AND CONTINUOUS MEMBERS AS INDICATED ON PUTH AN WHERE CANTILEVER MEMBERS ARE CAMBERED, THE MEMBER SHALL ONLY BE CAMBERED AT THE INTERIOR SPAN, NO CAMBER AT CANTILEVERS, TYPICAL UNLESS NOTED OTHERWISE.
 - 24F CANTILEVER AND CONTINUOUS MEMBERS SHALL BE INSPECTED BY A QUALIFIED INSPECTOR AND STAMPED WITH A QUALITY CONTROL MARK SIGNIFYING IT WAS MANUFACTURED ACCORDING TO ANSI/AISC A190.1.
 - 24F CANTILEVER AND CONTINUOUS MEMBERS SHALL BE FABRICATED USING WET-USE ADHESIVES COMPLYING WITH ANSI/AISC A190.1.

- FOR CONCRETE CONSTRUCTION, POST-INSTALLED ANCHORS SHALL BE ONE OF THE FOLLOWING:
- A. ADHESIVE ANCHORS FOR THIRD ROD & REBAR:
- a. HILTI HIT-HY 200/3 PER ESR-4868
 - b. HILTI HIT-HY250 V3 PER ESR-3814
 - c. SIMPSON SET-XP PER ESR-2508
 - d. SIMPSON SET-3G PER ESR-4057
 - e. DEWALT PURE 110+ ESR-3288
- B. EXPANSION ANCHORS:
- a. HILTI KB-T2Z PER ESR-4266
 - b. SIMPSON STRONG-BOLT 2 PER ESR-3037
 - c. DEWALT POWER-STD+ SD2, SD4 OR SD6 AS NOTED PER ESR-2502
- C. SCREW ANCHORS:
- a. HILTI KWIK HUS-EZ (KH-EZ) PER ESR-3027
 - b. SIMPSON TITEN HD PER ESR-2713
 - c. DEWALT SCREW-BOLT+ PER ESR-3889
2. FOR GROUT-FILLED MASONRY CONSTRUCTION, POST-INSTALLED ANCHORS SHALL BE ONE OF THE FOLLOWING:
- A. ADHESIVE ANCHORS FOR THIRD ROD & REBAR:
- a. HILTI HIT-HY 270 PER ESR-4143
 - b. SIMPSON SET-XP PER IAPMO UES-260
 - c. DEWALT AC100+ GOLD PER ESR-3225
- B. EXPANSION ANCHORS:
- a. HILTI KB-T2Z PER ESR-4561
 - b. SIMPSON STRONG-BOLT 2 PER IAPMO ESR-240
 - c. DEWALT POWER-STD+ SD1 PER ESR-2966
- C. SCREW ANCHORS:
- a. HILTI KWIK HUS-EZ (KH-EZ) PER ESR-3056
 - b. SIMPSON TITEN HD PER ESR-1056
 - c. DEWALT SCREW-BOLT+ PER ESR-4042
3. FOR GROUT-FILLED MASONRY CONSTRUCTION, ADHESIVE ANCHORS SHALL BE ONE OF THE FOLLOWING:
- a. HILTI HY-270 PER ESR-4144
 - b. SIMPSON ET-HD PER ESR-3630
 - c. DEWALT AC100+ GOLD PER ESR-4105
4. PLASTIC MESH SCREEN TUBES SHALL BE PROVIDED AND EXISTING WALL THICKNESS AND MORTAR SHEAR STRENGTH SHALL MEET THE REQUIREMENTS OF THE EVALUATION REPORT. IF THE EXISTING SIZE OF THE TUBES SHALL BE AS INDICATED IN DRAWINGS, POST-INSTALLED ANCHORS FOR REPAIR SHALL BE EVALUATED ON A CASE BY CASE BASIS. NOTIFY STRUCTURAL ENGINEER FOR REPAIRS.
5. EMBEDMENT REPORT SHALL BE CALLED OUT IN DRAWINGS REPORT FOR EFFECTIVE EMBEDMENT UNLESS OTHERWISE NOTED. SEE DIAGRAM BELOW AND ICC REPORTS.
7. ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS GIVEN IN THE EMBEDMENT REPORT. PROVIDE MINIMUM EMBEDMENT PROVIDED IN ICC ESR REPORT UNLESS NOTED OTHERWISE.
8. PROVIDE SPECIAL INSPECTION AS INDICATED IN THE STATEMENT OF SPECIAL INSPECTION. PROVIDE SPECIAL INSPECTION FOR THE TEXT AND THE EMBEDMENT REPORT.
9. WHEN INSTALLING POST-INSTALLED ANCHORS IN EXISTING CONCRETE OR MASONRY, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING EXISTING REINFORCING BARS. DO NOT CUT OR REMOVE EXISTING REINFORCING BARS. HEAD JOINTS DO NOT INSTALL ANCHORS IN PRESTRESSED CONCRETE ELEMENTS.
10. ANCHORS INSTALLED FROM THE BOTTOM INTO MORTAL DECK WITH CONCRETE SHALL BE INSTALLED IN THE CONCRETE ABOVE THE FLUTE OF THE DECKING UNLESS NOTED OTHERWISE IN EVALUATION REPORT. THE DECKING SHALL HAVE A MINIMUM THICKNESS OF 20 GAUGE. THE MINIMUM THICKNESS OF THE CONCRETE ABOVE THE HIGH FLUTE OF THE MORTAL DECK SHALL BE AS INDICATED IN THE EVALUATION REPORT. SEE EVALUATION REPORT FOR ANCHOR REQUIREMENTS. THE MINIMUM DESIGN STRENGTH PRIOR TO FLUTE WIDTH AND DEPTH, THE CONCRETE SHALL HAVE ATTAINED ITS MINIMUM DESIGN STRENGTH PRIOR TO INSTALLATION OF THE ANCHORS.
11. ADHESIVE ANCHORS SHALL BE INSTALLED IN CONCRETE HAVING A MINIMUM AGE OF 21 DAYS AT THE TIME OF ANCHOR INSTALLATION PER ACI 318, CHAPTER 17.
12. INSTALLER CERTIFICATION AND INSPECTION IS REQUIRED FOR HORIZONTAL AND UPWARDLY INSTALLED ANCHORS SUBJECT TO SUSTAINED TENSION LOADING IN ACCORDANCE WITH ACI 318, CHAPTER 17.
13. IF TEMPERATURE OF BASE MATERIAL AT TIME OF ADHESIVE ANCHOR INSTALLATION IS 45 DEGREES OR LOWER, THE CONTRACTOR SHALL USE AN ACRYLIC/CL OR COLD WEATHER ADHESIVE. USE DEWALT AC208+, SIMPSON AT-XP, OR HILTI HIT-HY2000 WHEN THIS OCCURS.
15. THE INSPECTION OF THE ANCHORS SHALL BE DONE BY A QUALIFIED INSPECTION AGENCY AND NOT BY THE CONTRACTOR. THE INSPECTION REPORT SHALL BE SUBMITTED TO THE GOVERNING AGENCY AND ARCHITECT/STRUCTURAL ENGINEER.

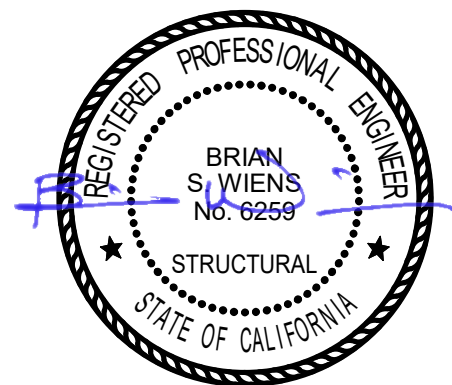


EXPANSION ANCHOR

SCREW ANCHOR

- | | |
|------------------------------------|--|
| (A) - OCCURS ABOVE | JH - JOIST HANGER |
| AB - ANCHOR BOLT | LL - LIVE LOAD |
| ABV - ABOVE | LLH - LONG LEG HORIZONTAL |
| ADDL - ADDITIONAL | LLV - LONG LEG VERTICAL |
| AHU - AIR HANDLING UNIT | LONGST - LONGITUDINAL |
| ALT - ALTERNATE | LS - LAG SCREW |
| APPROX - APPROXIMATE | LW - LIGHTWEIGHT |
| ARCH - ARCHITECTURAL | MECH - MECHANICAL |
| (B) - OCCURS BELOW | MFR - MANUFACTURER |
| BLDG - BUILDING | MI - MALLEABLE IRON |
| BLKG - BLOCKING | * - MARK |
| BLW - BELOW | MTL - METAL |
| BM - BEAM | (N) - NEW |
| B.O. - BOTTOM OF | NIC - NOT IN CONTRACT |
| BOF - BOTTOM OF FOOTING | NS - NEAR SIDE |
| BOTT - BOTTOM | NTS - NOT TO SCALE |
| BRCC - BRACINGS | NW - NORMAL WEIGHT |
| BRG - BEARING | O - OVER |
| BTWN - BETWEEN | OH - OPPOSITE HAND |
| BVND - BEYOND | OPNG - OPENING |
| CC - CENTER OF GRAVITY | OSB - ORIENTED STRAND BOARD |
| CG - CENTER OF GRAVITY | PC - PIECE |
| CH - CONSTRUCTION JOINT | PERP - PERPENDICULAR |
| CJP - COMPLETE JOINT PENETRATION | PJP - PARTIAL JOINT PENETRATION |
| CL - CENTERLINE | PL - PLATE |
| CLS - CEILING | PT - PRESSURE TREATED |
| CLR - CLEAR | PW - PUDDLE WELD |
| CMU - CONCRETE MASONRY UNIT | REINF - REINFORCING OR REINFORCEMENT |
| CMU - CONCRETE MASONRY UNIT | REQD - REQUIRED |
| CONC - CONCRETE | RWD - REDWOOD |
| CONN - CONNECTION | SC - SLIP CRITICAL |
| CONT - CONTINUOUS | SCH - SCHEDULE |
| CONTR - CONTRACTOR | SEOR - STRUCTURAL ENGINEER OF RECORD |
| COORD - COORDINATE | SHGT - SHEATHING |
| CSK - COUNTERSINK | SM - SIMILAR |
| CSL - COLUMN | SL - SLAB CONTROL JOINT |
| DF - DOUGLAS FIR | SMS - SHEET METAL SCREW |
| DIAG - DIAGONAL | SG - SLAB-ON-GRADE |
| DL - DEAD LOAD | SP - STRUCTURAL PANEL |
| DWG - DRAWING | SPCG - SPACING |
| (E) - EXISTING | SO - SQUARE |
| EA - EACH | STD - STANDARD |
| EAF - EACH FACE OR EDGE FASTENER | STFNR - STIFFENER |
| EJ - EXPANSION JOINT | STGRD - STAGGERED |
| ELEV - ELEVATION | STL - STEEL |
| EN - EDGE NAILING | STRUCT - STRUCTURAL |
| EOS - EDGE OF SLAB | SW - SHEAR WALL |
| EQ - EQUAL | T&B - TOP & BOTTOM |
| EW - EACH WAY | T&G - TONGUE & GROOVE |
| FB - FACE OF BLOCK/BOR OR FLAT BAR | THRD - THREADED |
| FC - FACE OF CONCRETE | TN - TIE NAIL |
| FDN - FOUNDATION | T.O. - TOP OF |
| FF - FINISH FLOOR | TOC - TOP OF CONCRETE (SLAB UNO) |
| FRG - FRAMING | TOF - TOP OF FOOTING OR TOP OF FRAMING |
| FRT - FIRE RETARDANT TREATED | TOS - TOP OF STEEL |
| FS - FACE OF STUD OR FAR SIDE | TOW - TOP OF WALL |
| FTG - FOOTING | TRANS - TRANSVERSE |
| GA - GAUGE OR GAGE | UN - UNUSUAL |
| GALV - GALVANIZED | UNO - UNLESS NOTED OTHERWISE |
| GLB - GLUED LAMINATED BEAM | VERT - VERTICAL |
| GR - GRADE | VF - VERIFY IN FIELD |
| GYP - GYPSUM | WF - WIDE FLANGE |
| HD - HOLD DOWN | WHS - WELDED HEADED STUD |
| HDR - HANGER | WP - WORK POINT |
| HGR - HANGER | WS - WELD SCREW |
| HK - HOOK | WWF - WELDED WIRE FABRIC |
| HORIZ - HORIZONTAL | XS - EXTRA STRONG |
| HSB - HIGH STRENGTH BOLT | XXS - DOUBLE EXTRA STRONG |
| HSS - HOLLOW STRUCTURAL SECTION | Ø - ROUND OR DIAMETER |

SEAL



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SAN JOSE, CA 95127

GENERAL NOTES

[illegible]Project
ALUM ROCK UNION SCHOOL DISTRICT

HVAC & ROOFING UPGRADES

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STRUCTURAL SPECIAL INSPECTIONS AND TESTING

APPLICABLE TO ALL DRAWINGS UNLESS NOTED OR SHOWN OTHERWISE

STATEMENT OF STRUCTURAL SPECIAL INSPECTIONS AND TESTING

1. SPECIAL INSPECTIONS AND TESTING SHALL BE PROVIDED BY A TESTING AND INSPECTION AGENCY EMPLOYED BY THE OWNER (OR OWNERS AUTHORIZED AGENT), AND APPROVED BY THE BUILDING OFFICIAL TO PROVIDE SPECIAL INSPECTIONS AND TESTING FOR THE PARTICULAR TYPE OF CONSTRUCTION.
2. TABLES OF SPECIAL INSPECTIONS AND TESTING ARE DERIVED FROM THE STRUCTURAL PROVISIONS OF THE CBC AND REFERENCED STANDARDS AND ARE FOR REFERENCE ONLY. THE INCLUDED TABLES ARE PROVIDED FOR THE CONVENIENCE OF THE OWNER, TESTING AGENCY AND CONTRACTOR IN DEVELOPING THE SCOPE OF WORK FOR REQUIRED TESTING AND INSPECTION OF STRUCTURAL MATERIALS AND COMPONENTS. FINAL DEFINITION OF THIS SCOPE OF WORK IS TO BE DETERMINED BY THE TESTING AGENCY AND THE OWNER (OR OWNERS AUTHORIZED AGENT).
3. FREQUENCY OF SPECIAL INSPECTIONS AND TESTING SHALL BE, AT A MINIMUM, AS NOTED FOR THE INDIVIDUAL ELEMENTS WITHIN THE TABLES BELOW. THE CONTRACTOR SHALL COORDINATE TIMING OF SPECIAL INSPECTIONS AND TESTING WITH THE SPECIAL INSPECTION AND TESTING AGENCY.
4. PRIOR TO THE START OF CONSTRUCTION, THE TESTING AND INSPECTION AGENCY SHALL PROVIDE DOCUMENTATION TO THE BUILDING OFFICIAL DEMONSTRATING COMPETENCE AND RELEVANT EXPERIENCE OR TRAINING OF THE SPECIAL INSPECTORS WHO WILL PERFORM THE SPECIAL INSPECTIONS AND TESTS DURING CONSTRUCTION, IN ACCORDANCE WITH CBC SECTION 1704.2.1.
5. THE TESTING AND INSPECTION AGENCY SHALL SUBMIT REPORTS OF SPECIAL INSPECTIONS AND TESTS TO THE BUILDING OFFICIAL, STRUCTURAL ENGINEER OF RECORD AND THE CONTRACTOR. PER CBC SECTION 1704.2.4, THE REPORTS SHALL INDICATE WHETHER WORK INSPECTED OR TESTED CONFORMED TO THE APPROVED CONSTRUCTION DOCUMENTS. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF DISCREPANCIES ARE NOT CORRECTED, THEY SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND THE STRUCTURAL ENGINEER OF RECORD.
6. SPECIAL INSPECTION AND TESTING RECORDS SHALL BE RETAINED BY THE CONTRACTOR ON SITE UNTIL COMPLETION OF CONSTRUCTION.
7. THE CONTRACTOR SHALL SUBMIT A WRITTEN STATEMENT TO THE BUILDING OFFICIAL ACKNOWLEDGING RESPONSIBILITY FOR CONSTRUCTION OF THE MAIN LATERAL-FORCE RESISTING SYSTEM PRIOR TO COMMENCEMENT OF THAT WORK AS REQUIRED BY CBC SECTION 1704.4.
8. THE OWNER OR THE OWNER'S AUTHORIZED AGENT SHALL SUBMIT TO THE BUILDING OFFICIAL, A FINAL REPORT DOCUMENTING SPECIAL INSPECTIONS AND TESTS PER CBC SECTION 1704.2.4, AND REPORTS AND CERTIFICATES PER CBC SECTION 1704.5.
9. ALL SOILS AND FOUNDATION EXCAVATION INSPECTIONS SHALL BE BY THE GEOTECHNICAL ENGINEER OF RECORD, OR A GEOTECHNICAL FIRM HIRED BY THE OWNER PER CBC SECTION 1705.6.
10. SPECIAL INSPECTION IS REQUIRED FOR ALL SHOP FABRICATED MEMBERS OR ASSEMBLIES UNLESS WAIVED PER THE EXCEPTIONS IN CBC SECTION 1704.2.5.
11. DEFINITIONS:
- a. CONTINUOUS - SPECIAL INSPECTION BY THE SPECIAL INSPECTOR WHO IS CONTINUOUSLY PRESENT WHEN AND WHERE THE WORK TO BE INSPECTED IS BEING PERFORMED.
 - b. PERIODIC - SPECIAL INSPECTION BY THE SPECIAL INSPECTOR WHO IS INTERMITTENTLY PRESENT WHERE THE WORK TO BE INSPECTED HAS BEEN OR IS BEING PERFORMED.
 - c. QUALITY ASSURANCE (QA) - MONITORING AND INSPECTION TASKS PERFORMED BY AN AGENCY OR FIRM OTHER THAN THE FABRICATOR OR ERECTOR TO ENSURE THAT THE MATERIAL PROVIDED AND WORK PERFORMED BY THE FABRICATOR AND ERECTOR MEET THE REQUIREMENTS OF THE APPROVED CONSTRUCTION DOCUMENTS AND REFERENCED STANDARDS. QUALITY ASSURANCE INCLUDES THOSE TASKS DESIGNATED 'SPECIAL INSPECTION' BY THE APPLICABLE CODE.
 - d. QUALITY CONTROL (QC) - CONTROLS AND INSPECTIONS IMPLEMENTED BY THE FABRICATOR OR ERECTOR, AS APPLICABLE, TO ENSURE THAT THE MATERIAL PROVIDED AND WORK PERFORMED MEET THE REQUIREMENTS OF THE APPROVED CONSTRUCTION DOCUMENTS AND REFERENCED STANDARDS.
 - e. OBSERVE (O) - OBSERVE THESE ITEMS ON A RANDOM BASIS (DAILY FOR LFRS). OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS.
 - f. PERFORM (P) - PERFORM THOSE TASKS PRIOR TO FINAL ACCEPTANCE FOR EACH ITEM OR ELEMENT.
 - g. DOCUMENT (D) - THE INSPECTOR SHALL PREPARE REPORTS INDICATING THAT THE WORK HAS BEEN PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE REPORT NEED NOT PROVIDE DETAILED MEASUREMENTS FOR JOINT FIT-UP, WPS SETTINGS, COMPLETED WELDS, OR OTHER INDIVIDUAL ITEMS LISTED IN THE TABLES. FOR SHOP FABRICATION, THE REPORT SHALL INDICATE THE PIECE MARK OF THE PIECE INSPECTED. FOR FIELD WORK, THE REPORT SHALL INDICATE THE REFERENCE GRID LINES AND FLOOR OR ELEVATION INSPECTED. WORK NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS AND WHETHER THE NONCOMPLIANCE HAS BEEN SATISFACTORILY REPAIRED SHALL BE NOTED IN THE INSPECTION REPORT.
12. SPECIAL INSPECTIONS AND TESTING SHALL BE PERFORMED DURING CONSTRUCTION ON THE WORK SHOWN IN THE CONSTRUCTION DOCUMENTS AS REQUIRED BY CBC CHAPTER 17. THE TABLES LISTED BELOW, AND THE JURISDICTION'S SPECIAL INSPECTION AND TESTING FORM, IF DISCREPANCIES ARE NOTED, CONTACT THE SEOR. ALL EXCEPTIONS INCLUDED IN CBC CHAPTER 17 ARE PERMITTED TO BE USED.
- CONCRETE CONSTRUCTION (POST-INSTALLED ANCHORS)

CONCRETE CONSTRUCTION - POST-INSTALLED ANCHORS REQUIRED SPECIAL INSPECTIONS AND TESTS CBC TABLE 1705.3			
TYPE	CONTINUOUS	PERIODIC	REFERENCED STANDARD
1. INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS. ^{a,b}			ACI 318: 17.8.2.4, 17.8.2
A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS.	X	-	
B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 1.A.	-	X	

- A. SPECIFIC REQUIREMENTS FOR SPECIAL INSPECTION SHALL BE INCLUDED IN THE RESEARCH REPORT FOR THE ANCHOR ISSUED BY AN APPROVED SOURCE IN ACCORDANCE WITH 17.8.2 IN ACI 318, OR OTHER QUALIFICATION PROCEDURES. WHERE SPECIFIC REQUIREMENTS ARE NOT PROVIDED, SPECIAL INSPECTION REQUIREMENTS SHALL BE SPECIFIED BY THE REGISTERED DESIGN PROFESSIONAL AND SHALL BE APPROVED BY THE BUILDING OFFICIAL PRIOR TO COMMENCEMENT OF THE WORK.
- B. SEE THE POST-INSTALLED ANCHOR NOTES FOR ADDITIONAL INFO.

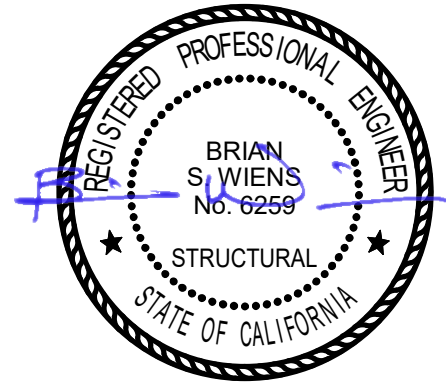


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Drawing Title
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INSPECTIONS AND
TESTING

NO.	DATE	ISSUE

Project
ALUM ROCK UNION SCHOOL DISTRICT
HVAC & ROOFING UPGRADES

Drawn By

Checked By

Project No.

23-525

@Date

03/11/24

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EQUIPMENT SCHEDULE				
ID	DESCRIPTION	MAX OPERATING WT (LBS)	ANCHORAGE DETAIL	COMMENTS
HP-1	HEAT PUMP UNIT	1030#	6/SS.0.1	EXTERIOR, ROOF MOUNTED
HP-2	HEAT PUMP UNIT	900#	6/SS.0.1	EXTERIOR, ROOF MOUNTED
CU-1	CONDENSING UNIT	150#	4/MO.0.2	EXTERIOR, ROOF MOUNTED
CC-1	COOLING COIL UNIT	75#	7/MO.0.2	INTERIOR, FLOOR MOUNTED
F-1	FURNACE UNIT	150#	7/MO.0.2	INTERIOR, FLOOR MOUNTED
EP-1	ELECTRICAL PANEL	250#	5/EO.0.3	INTERIOR, WALL MOUNTED
(E) RTU-1	EXISTING ROOF TOP UNIT¹	1700#	6/SS.0.1	EXTERIOR, ROOF MOUNTED
(E) RTU-2	EXISTING ROOF TOP UNIT¹	1800#	6/SS.0.1	EXTERIOR, ROOF MOUNTED
(E) RTU-4	EXISTING ROOF TOP UNIT¹	300#	6/SS.0.1	EXTERIOR, ROOF MOUNTED
(E) CU-1	EXISTING CONDENSING UNIT¹	200#	4/MO.0.2	EXTERIOR, ROOF MOUNTED

NOTE:
1. CONTRACTOR TO VERIFY UNIT WEIGHT IS NOT GREATER THAN MAXIMUM OPERATING WEIGHT LISTED IN SCHEDULE. IF WEIGHT EXCEEDS MAXIMUM LISTED, INFORM SEOR PRIOR TO REINSTALLATION.



FOUNDATION PLAN NOTES

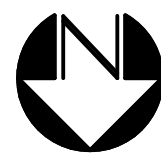
- NOTES AND DETAILS ON SHEETS LABELED AS "GENERAL" OR "TYPICAL" ARE APPLICABLE TO ALL DRAWINGS. UNO.
- CONTRACTOR TO NOTIFY ARCHITECT IF EXISTING DAMAGE OR DETERIORATION OF EXISTING STRUCTURE IS ENCOUNTERED.
- ALL ITEMS ARE EXISTING UNLESS SHOWN OTHERWISE AS NEW.
- EXISTING STRUCTURE NOT SHOWN OUTSIDE AREAS OF WORK.

FOUNDATION LEGEND

MECHANICAL UNIT. SEE MECHANICAL UNIT SCHEDULE A/S1.0.1 FOR WEIGHTS AND ATTACHMENT OF UNIT TO STRUCTURE.

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FOUNDATION PLAN

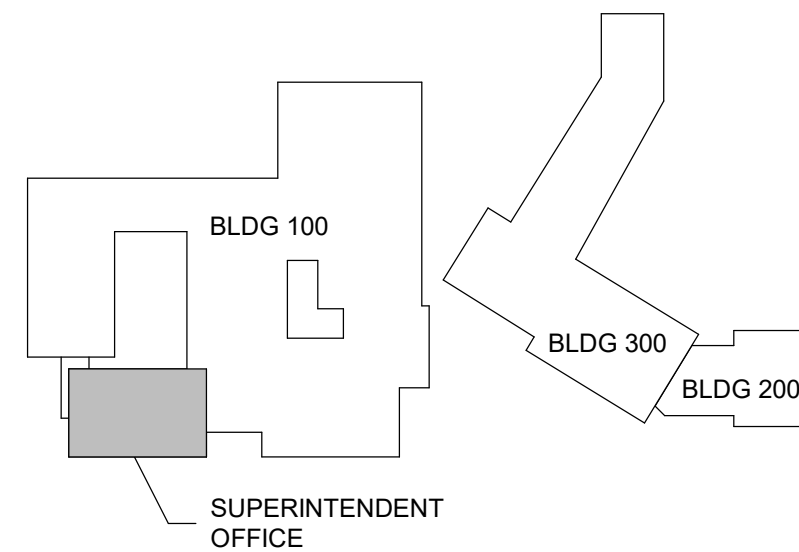


1/8" = 1'-0"



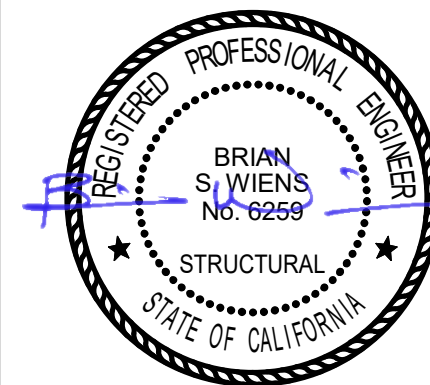
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KEY PLAN

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FOUNDATION PLAN

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Project
ALUM ROCK UNION SCHOOL DISTRICT
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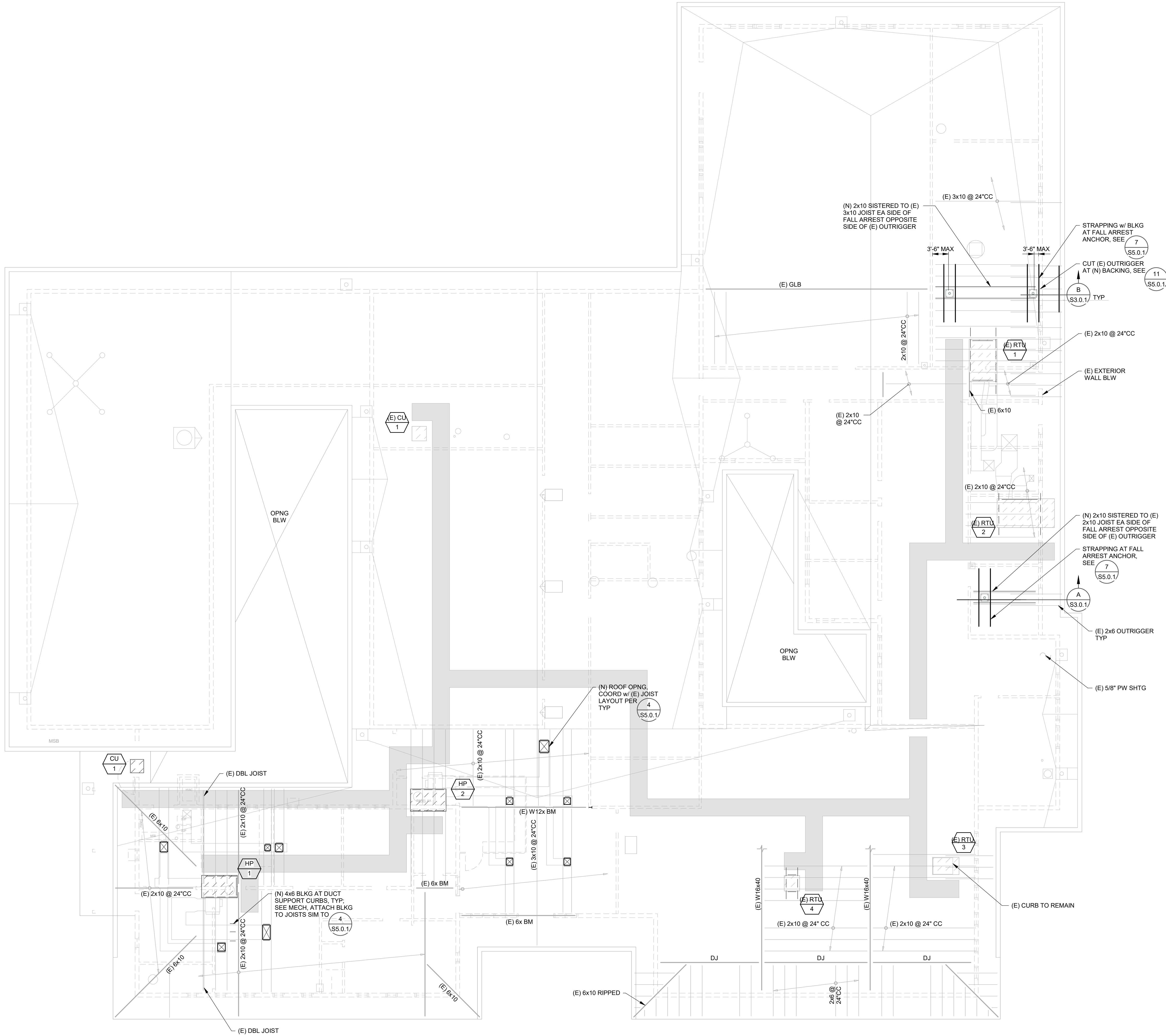
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FRAMING PLAN NOTES

- NOTES AND DETAILS ON SHEETS LABELED AS "GENERAL" OR "TYPICAL" ARE APPLICABLE TO ALL DRAWINGS. UNO.
- CONTRACTOR TO NOTIFY ARCHITECT OF DAMAGE OR DETERIORATION OF EXISTING STRUCTURE ENCOUNTERED.
- ALL ITEMS ARE EXISTING UNLESS SHOWN OTHERWISE AS NEW.
- FOR EQUIPMENT SCHEDULE, SEE **A/S1.0.1**.
- EXISTING STRUCTURE NOT SHOWN OUTSIDE AREAS OF WORK.
- AT EXISTING ROOF OPENINGS TO BE INFILLED, SEE **1/S5.0.1**.
- EXISTING ROOFING TO BE REMOVED AND REPLACED, SEE ARCHITECTURAL DRAWINGS. DAMAGE AND/OR DETERIORATION OBSERVED SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND SEOR PRIOR TO INSTALLATION OF NEW ROOFING. REPLACE DAMAGED MEMBERS AND/OR SHEATING IN KIND UNO.

FRAMING LEGEND

- (N) MECHANICAL UNIT. THE CONTRACTOR SHALL COORDINATE ALL MECHANICAL EQUIPMENT FOR SIZE & LOCATION WITH OTHER TRADES & THE STRUCTURAL DRAWINGS. UNIT SIZES & LOCATIONS SHOWN ARE APPROXIMATE. SEE SCHEDULE **A/S1.0.1**.
- XX X
- INDICATES NEW FALL ARREST ANCHOR RATED FOR 5,000# (ULTIMATE) HORIZONTALLY, SEE **7/S5.0.1**.
- INDICATES NEW OPENING THRU (E) ROOF, SEE **4/S5.0.1**.
- INDICATES (E) STRUCTURAL WALL BELOW.



ROOF FRAMING PLAN

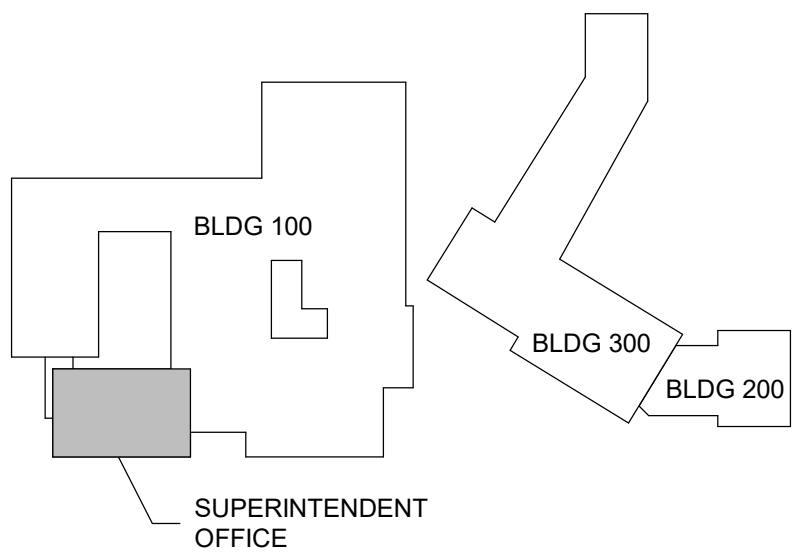


1/8" = 1'-0"



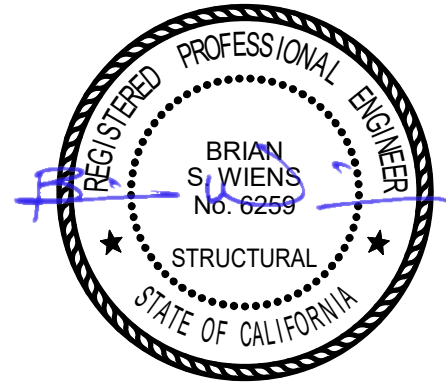
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KEY PLAN

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ROOF FRAMING PLAN

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HVAC & ROOFING UPGRADES**

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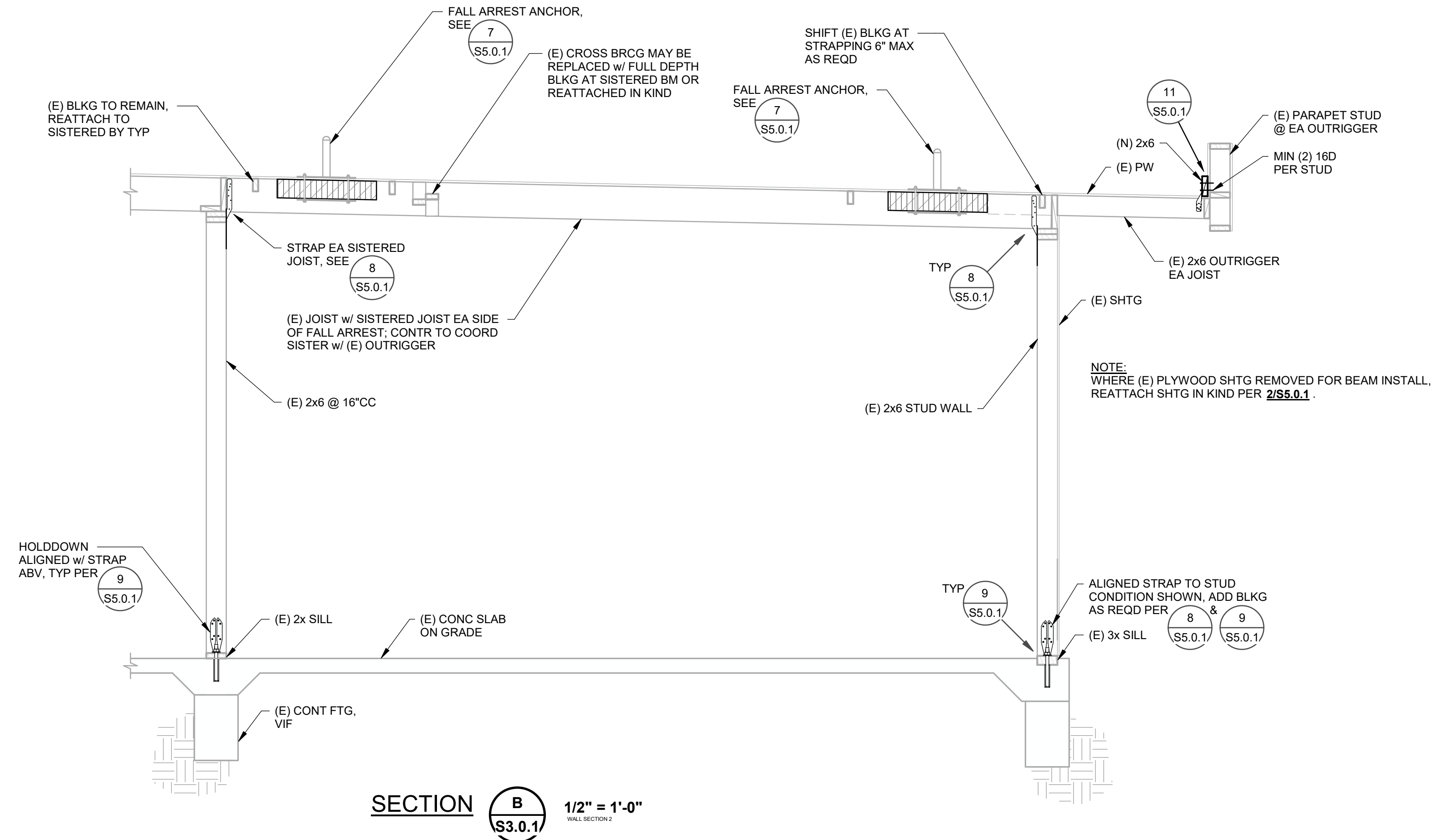
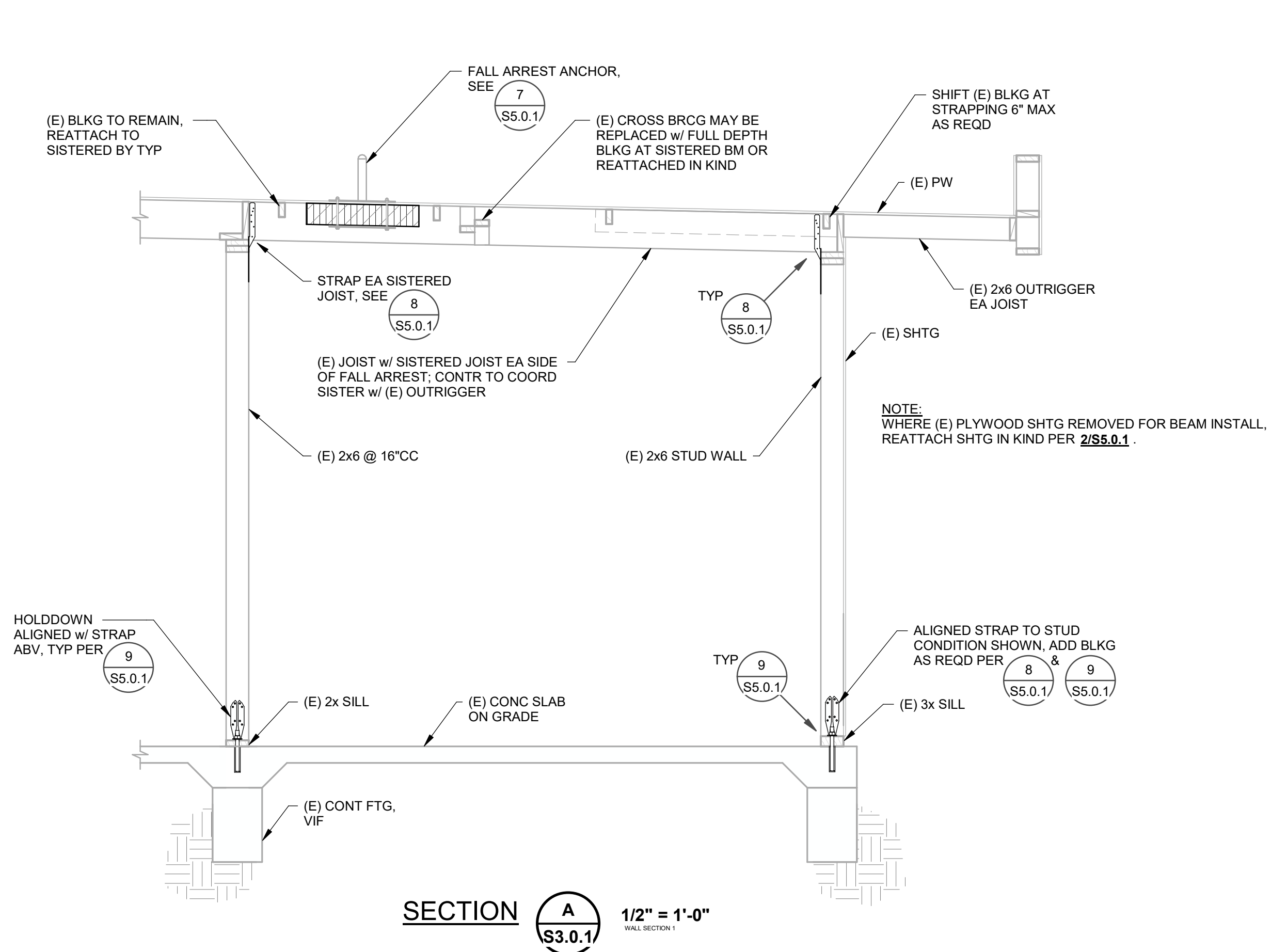
Project No.
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@Date
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Drawing No.

S2.0.1

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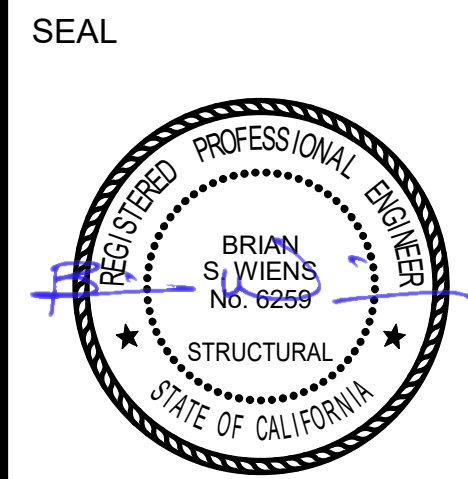
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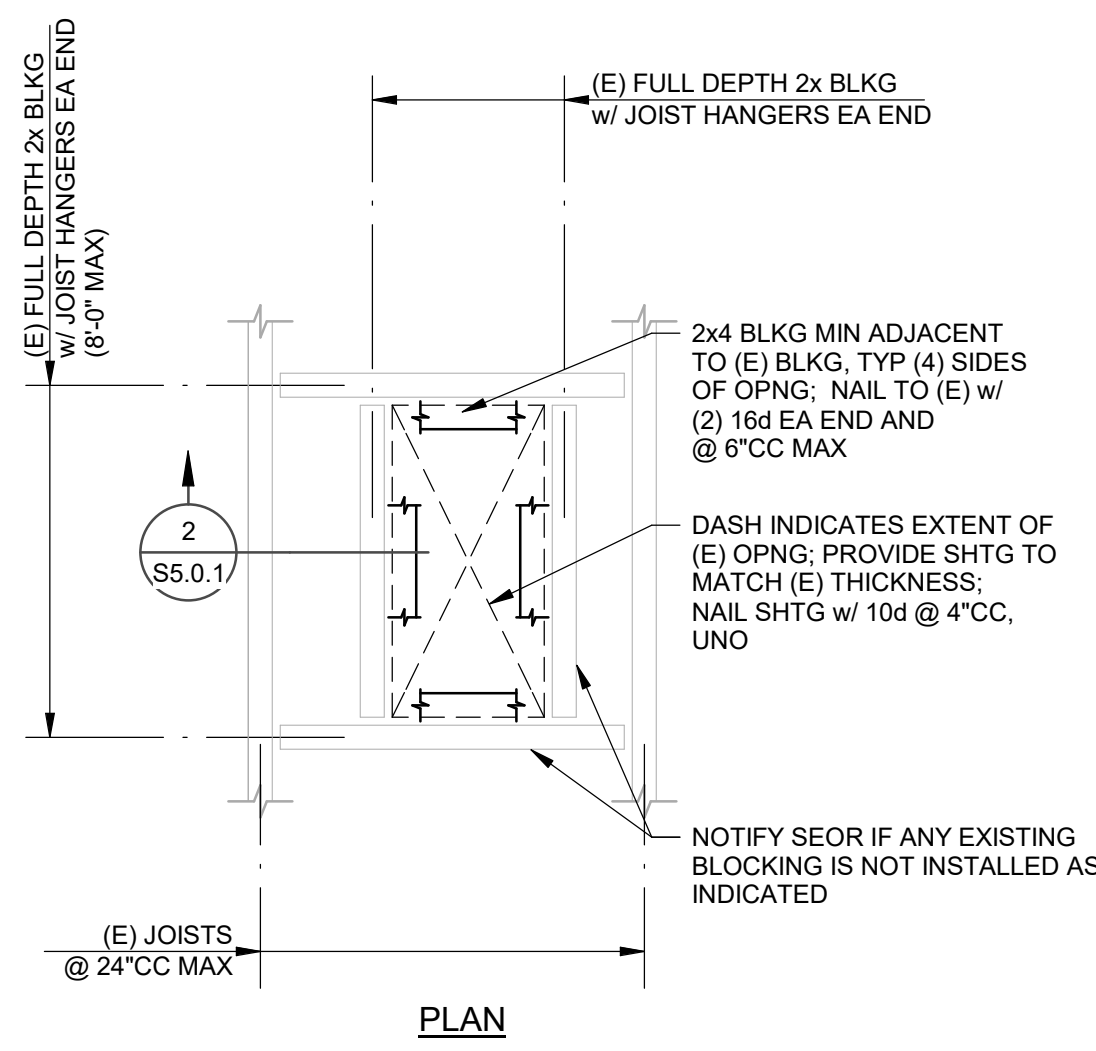
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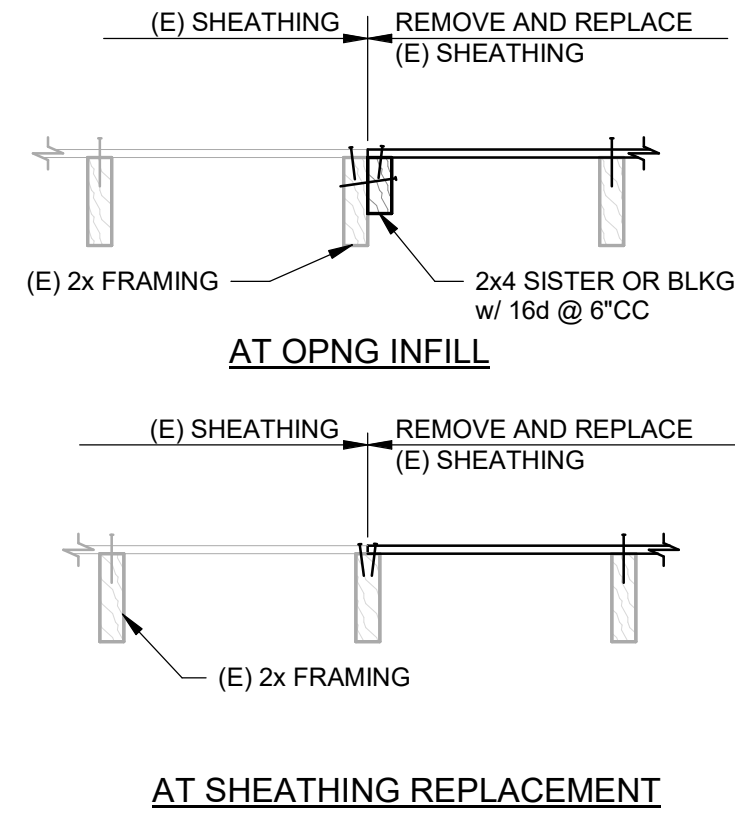
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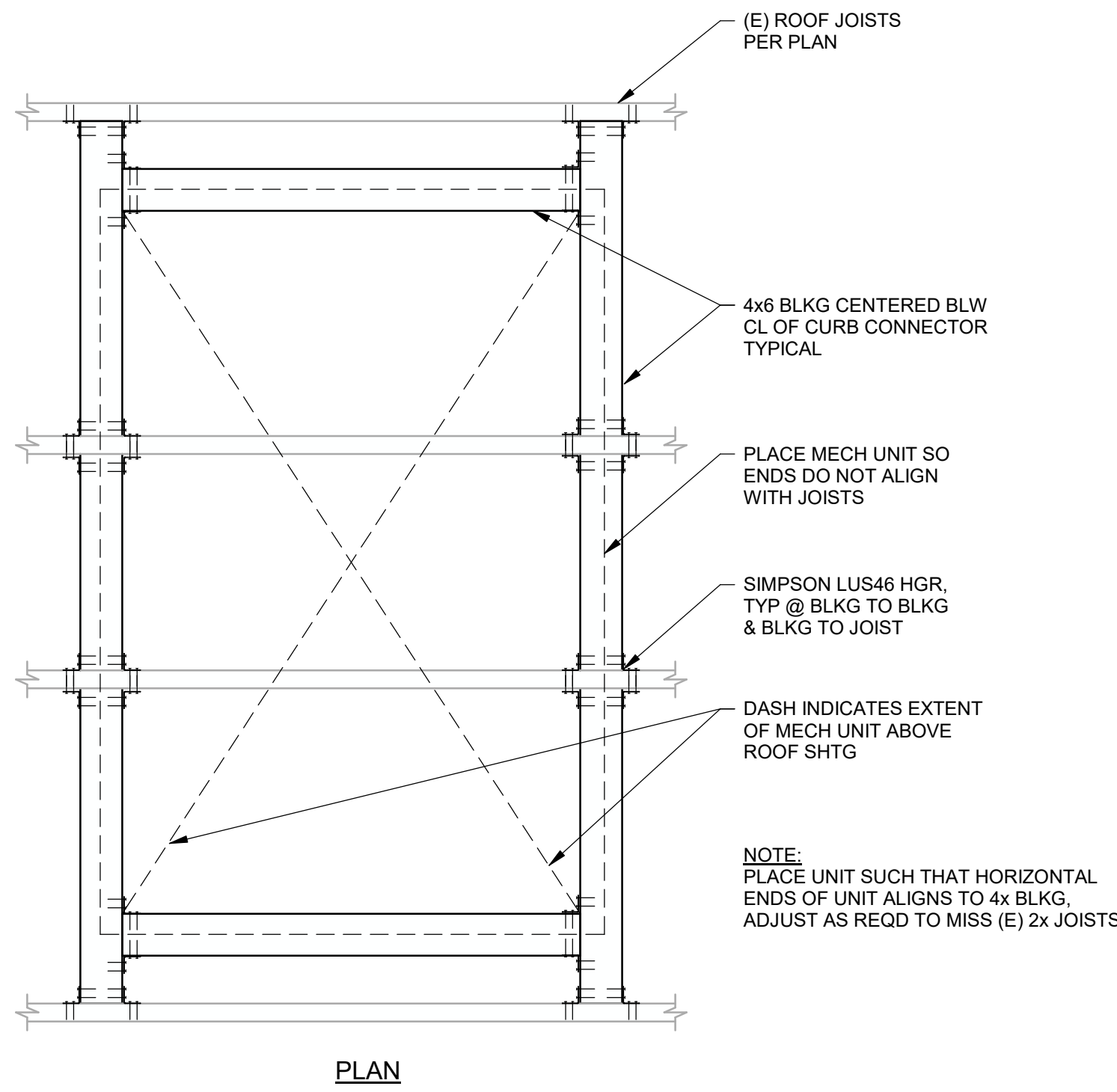
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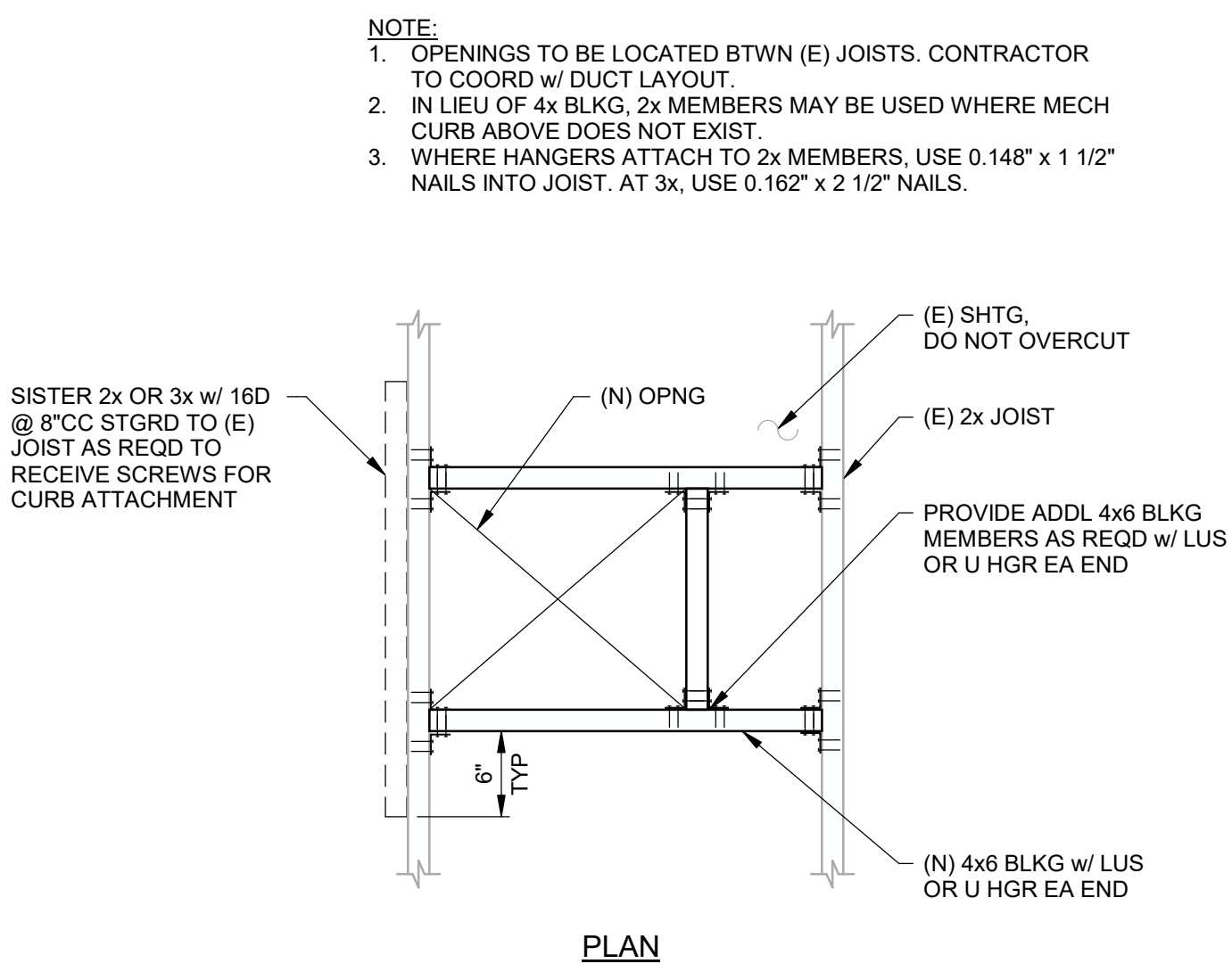
DETAIL 1
OPENING INFILL
NO SCALE
S5.0.1



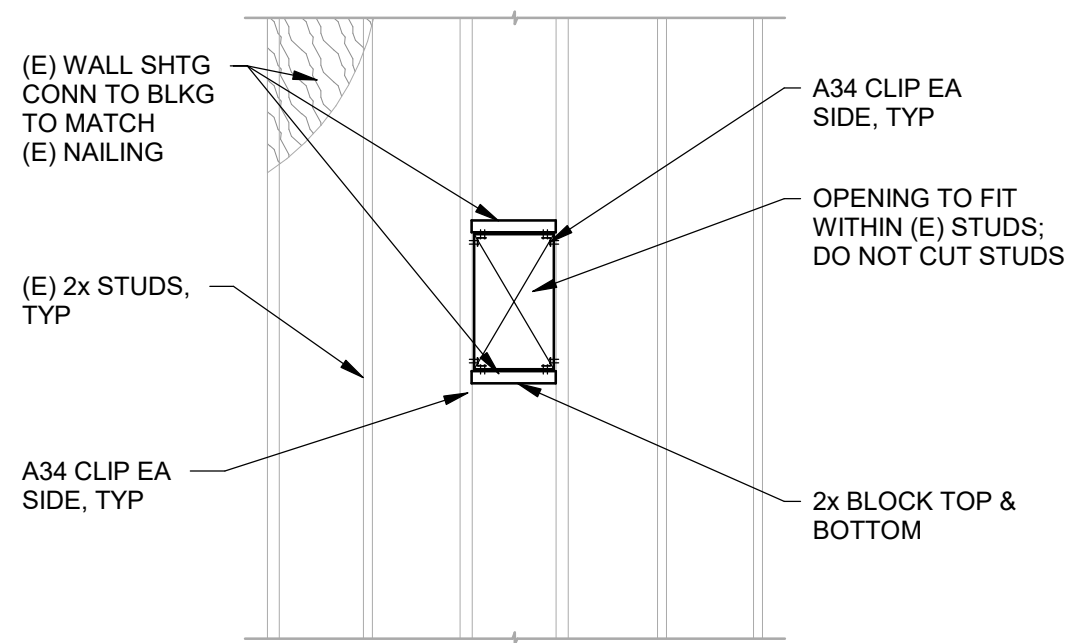
DETAIL 2
SHEATHING
REPLACEMENT & INFILL
NO SCALE
S5.0.1



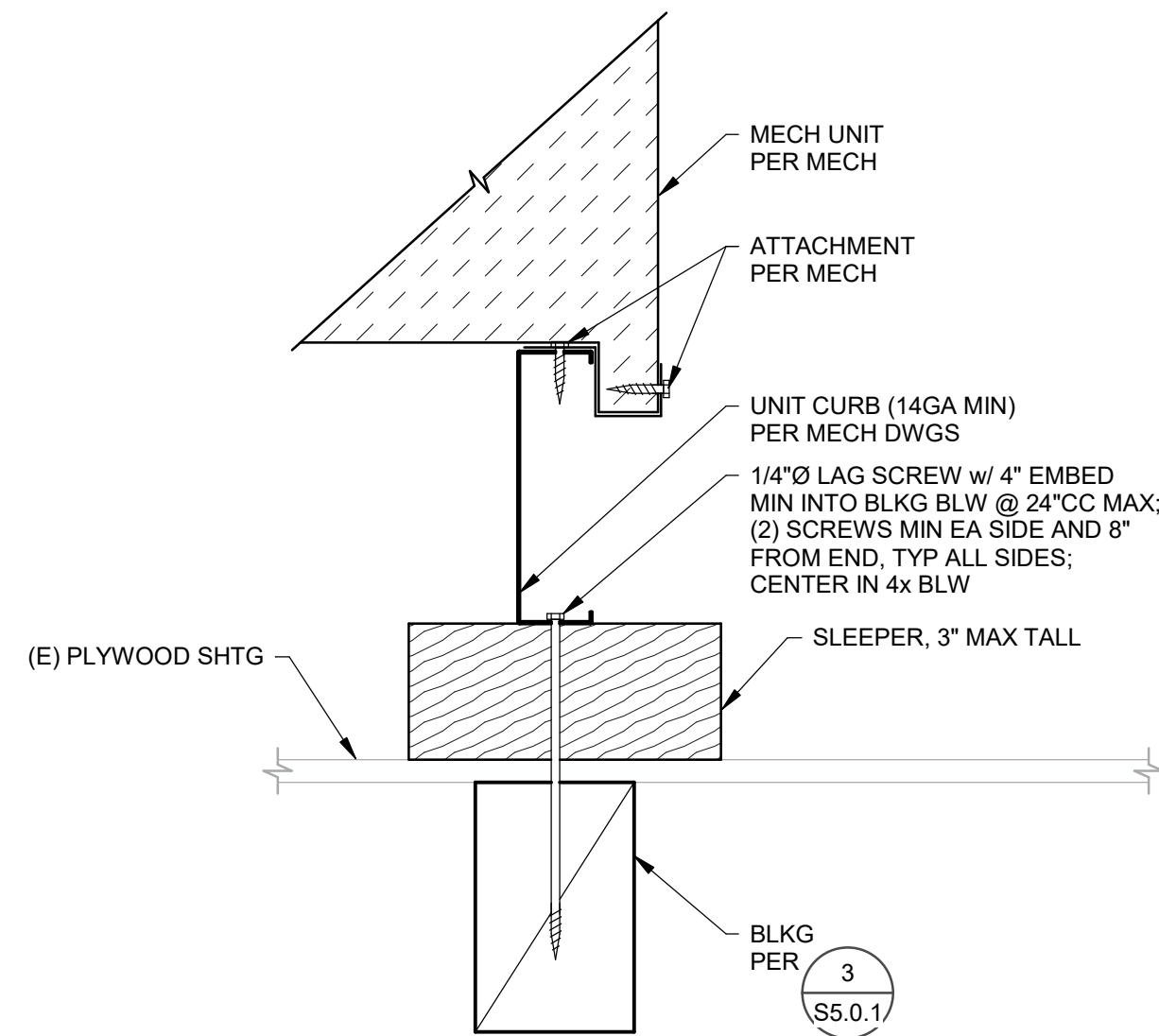
DETAIL 3
BLOCKING UNDER
MECHANICAL CURB
NO SCALE
S5.0.1



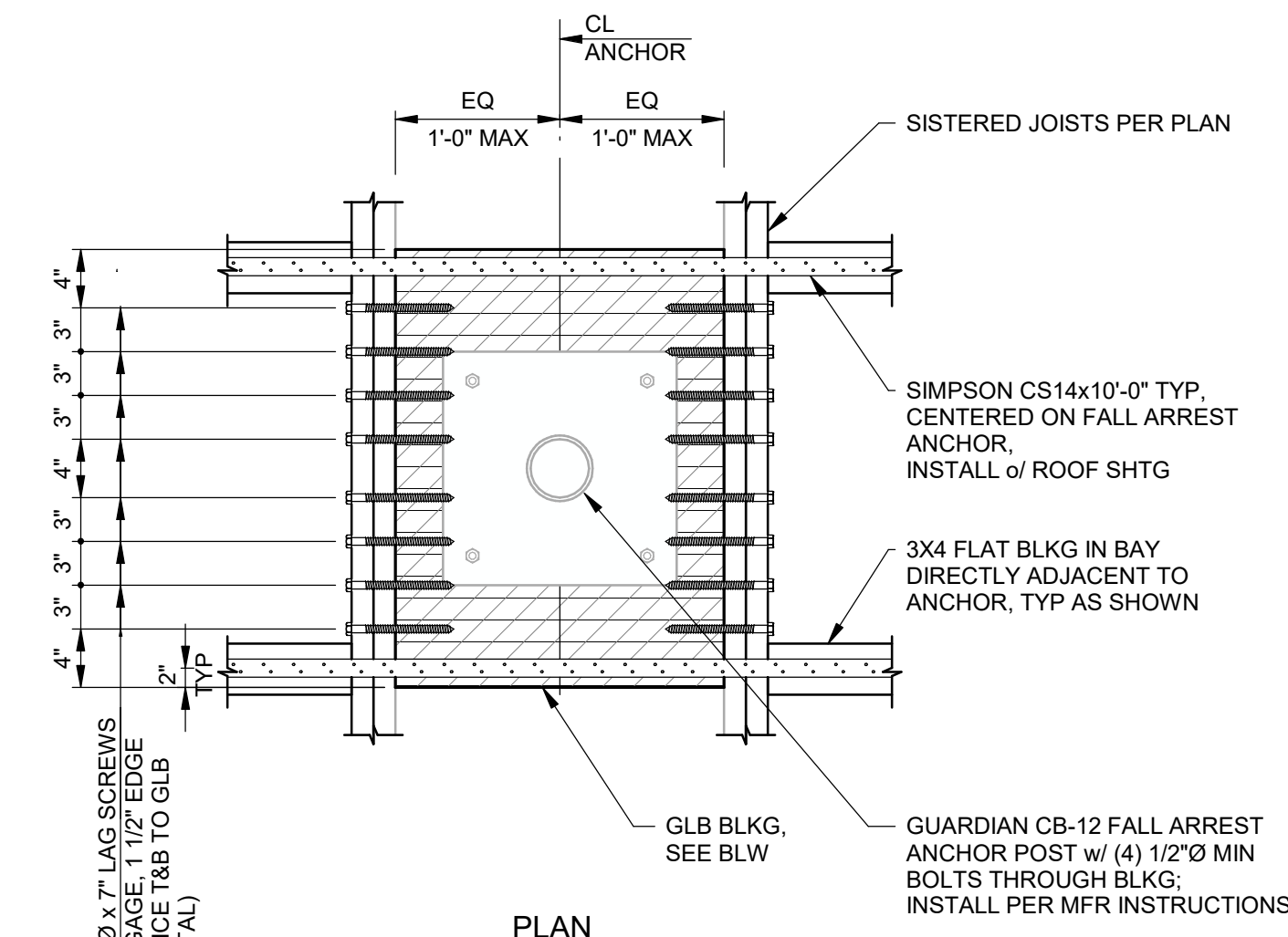
DETAIL 4
OPENING IN FLOOR OR
ROOF
NO SCALE
S5.0.1



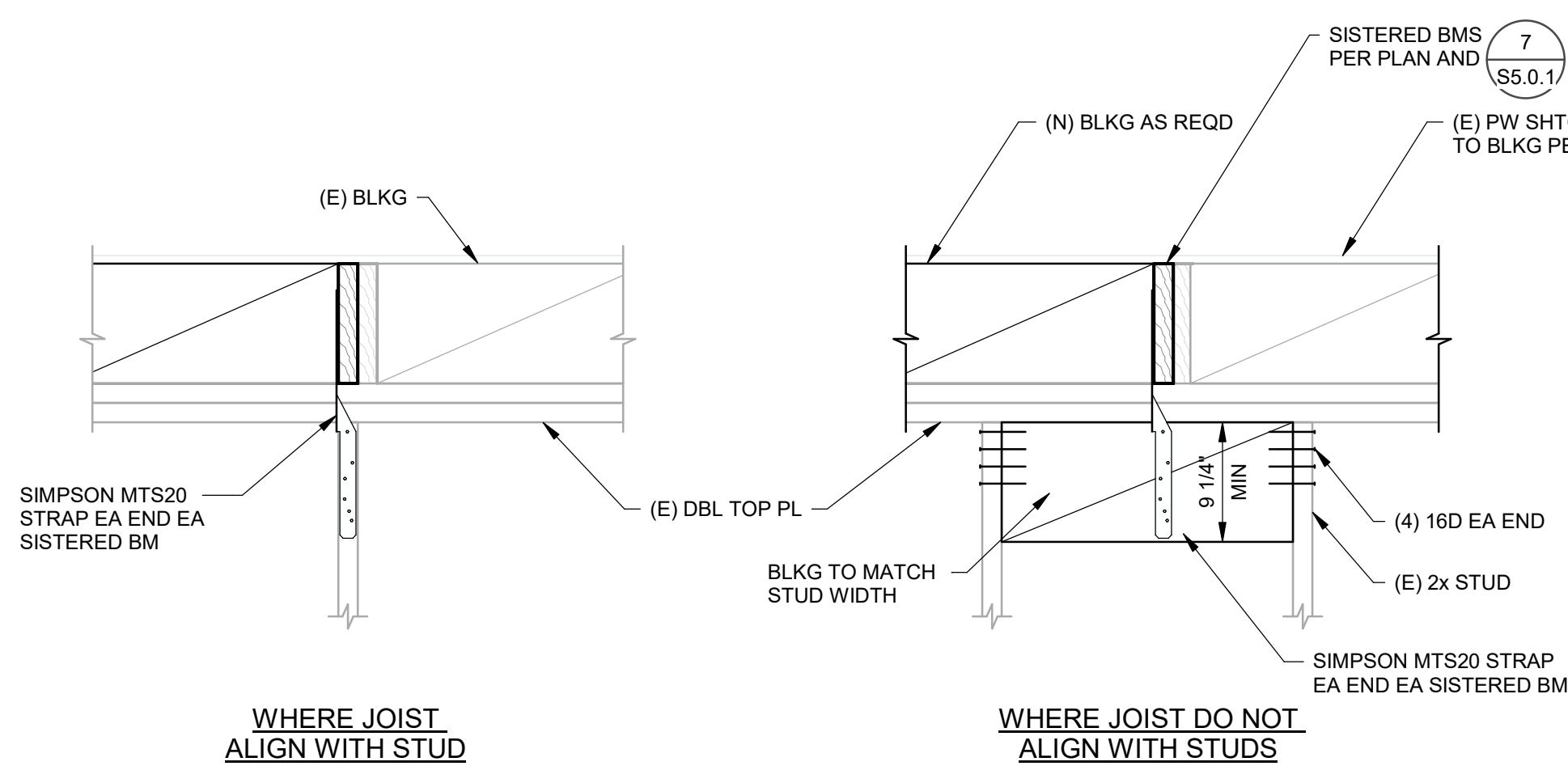
DETAIL 5
OPENING BETWEEN
(E) STUDS
NO SCALE
S5.0.1



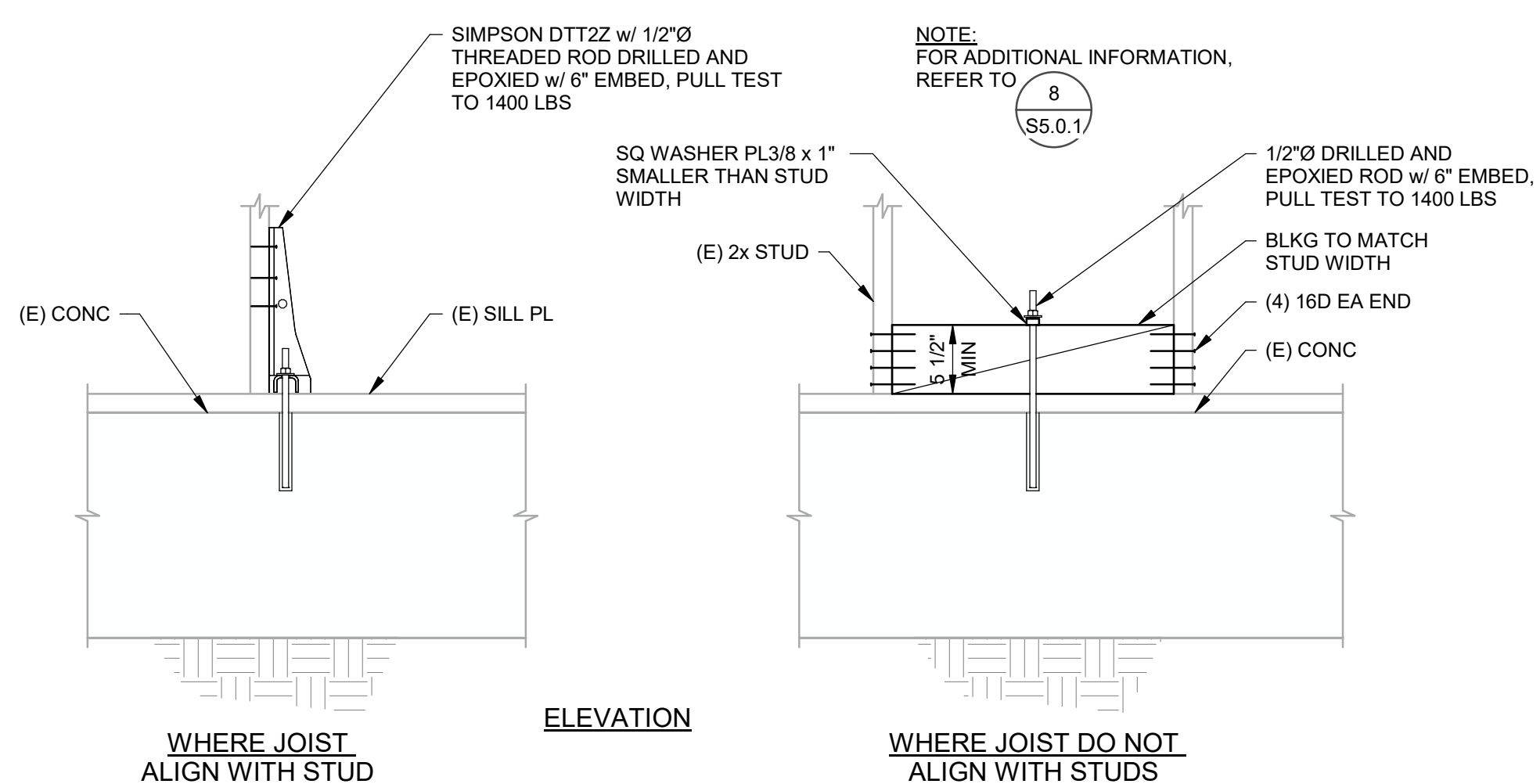
DETAIL 6
(N) CURB
3" = 1'-0"
S5.0.1



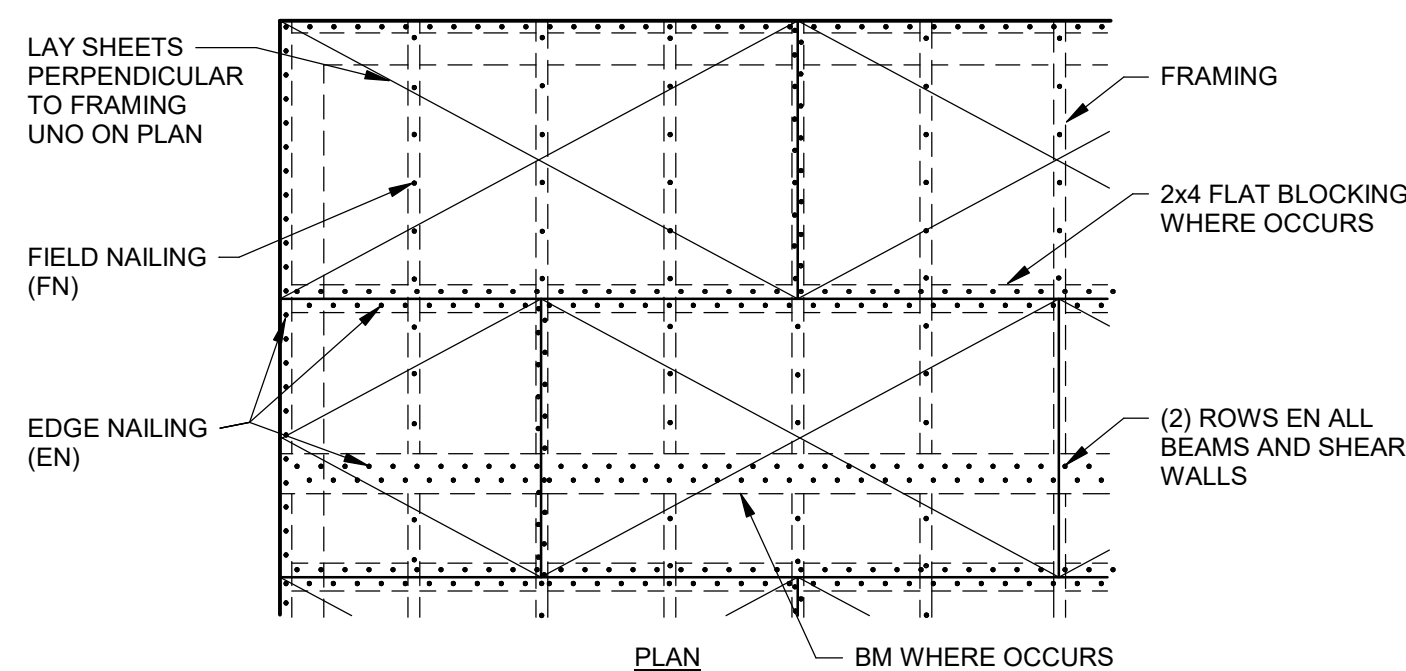
DETAIL 7
FALL ARREST ANCHOR
1" = 1'-0"
S5.0.1



DETAIL 8
SISTERED JOIST
TIE TO (E) STUD
1" = 1'-0"
S5.0.1

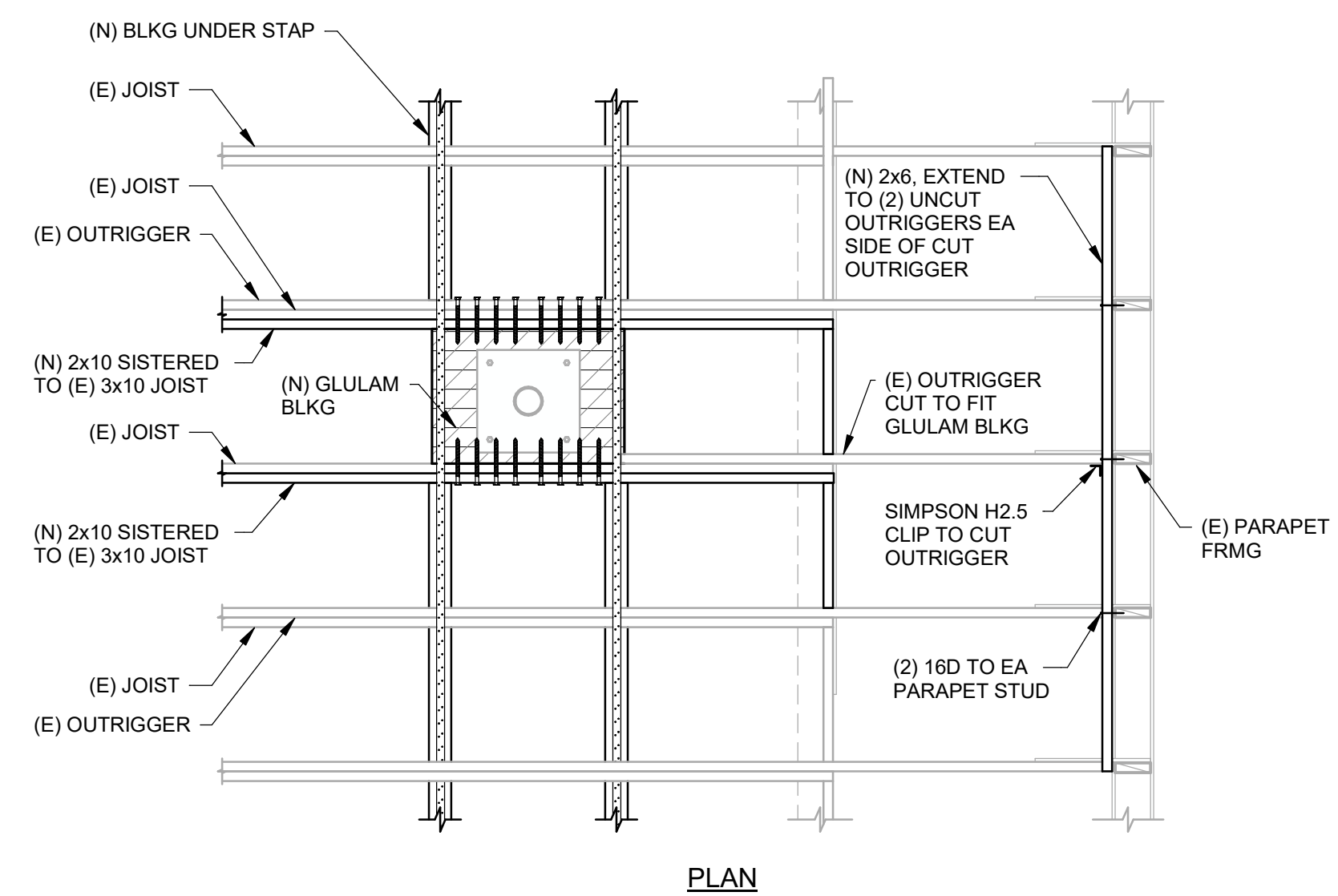


DETAIL 9
HOLDDOWN TO (E) SLAB
1" = 1'-0"
S5.0.1



- NOTES:
- SEE PLAN FOR SHEATHING TYPE AND NAIL SIZE AND SPACING.
 - PROVIDE EN AT ALL SHEET EDGES, BEAMS, SHEAR WALLS, BLOCKING, AND MECHANICAL UNITS.
 - EN SHALL BE 6"CC UNO.
 - FN SHALL BE @ 12"CC. NAIL SIZE TO MATCH EN.
 - PROVIDE FLAT BLOCKING AND EN AT ALL UNSUPPORTED EDGES WHERE BLOCKING AND NAILING ARE INDICATED ON PLAN.
 - STAGGER SP JOINTS AS SHOWN. MINIMUM PANEL DIMENSION IN EITHER DIRECTION IS 24".
 - EN SHALL BE 10d NAILS, UNO.
 - FRAMING AT PANEL EDGES, SHALL BE 3x WHERE NAILS ARE SPACED < 3"CC.

DETAIL 10
FLOOR & ROOF NAILING
AT NEW SHEATHING
NO SCALE
S5.0.1



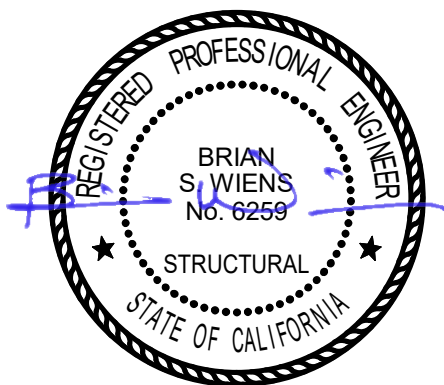
DETAIL 11
OUTRIGGER SUPPORT AT
(N) FALL ARREST
1/2" = 1'-0"
S5.0.1



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FURNACE UNIT (GAS) SCHEDULE																					
TYPE	MARK	NOM. TONS	UNIT ORIENT-ATION	ELECTRICAL					SUPPLY FAN			OSA		HEATING (NATURAL GAS)				FILTER TYPE	OPER. WEIGHT (LBS.)	MANUFACTURER	MODEL NUMBER
				VOLTS	PHASE	FLA	MCA	MOCp	MOTOR BHP	DRIVE	CFM	E.S.P. (IN WC)	MIN CFM	AFUE (%)	INPUT (MBH)	OUTPUT (MBH)	AMBIENT DB (°F)				
F	1	2	VERTICAL	115	1	8.8	14.2	15	3/4	BELT	872	0.8	SEE SCHED.	80	60	48	30	MERV-13	150	CARRIER	58SU0B060M17-16
NOTES: 1. SEE ELECTRICAL DRAWINGS FOR UNIT DISCONNECT SWITCH. 2. SEE ELECTRICAL DRAWINGS FOR CONVENIENCE OUTLET. 3. PROVIDE FACTORY CONCENTRIC VENT KIT AND CONDENSATE NEUTRALIZER. 4. SEE CONTROL DRAWINGS FOR ADDITIONAL REQUIREMENTS.																					

CONDENSING UNIT (SPLIT DX) SCHEDULE														
TYPE	MARK	NOM. TONS	ELECTRICAL					COOLING (DX)			OPER. WEIGHT (LBS.)	MANUFACTURER	MODEL NUMBER	
			VOLTS	PHASE	RLA	MCA	MOCp	SEER / EER	TOTAL CAP. (MBH)	SENS. CAP. (MBH)				AMBIENT DB (°F)
CU	1	2	208	1	10.9	14.2	20	15.2 / 12.5	22.3	17.85	105	150	CARRIER	24SCA524W003
NOTES: 1. COORDINATE PLUMBING CONNECTIONS WITH PLUMBING CONTRACTOR.														

COOLING COIL (SPLIT DX) SCHEDULE										
TYPE	MARK	NOM. TONS	COIL ORIENTATION	SUPPLY AIR CFM	COOLING (DX)			OPER. WEIGHT (LBS.)	MANUFACTURER	MODEL NUMBER
					TOTAL CAP. (MBH)	SENS. CAP. (MBH)	E.A. DB/WB (°F)			
CC	1	2	VERTICAL	800	22.3	17.85	80/67	125	CARRIER	CAPMP2417ALA

NOTES:
1. SEE ELECTRICAL DRAWINGS FOR UNIT DISCONNECT SWITCH.
2. SEE ELECTRICAL DRAWINGS FOR CONVENIENCE OUTLET.

AIR DISTRIBUTION SCHEDULE		
SYMBOL	TYPE	DESCRIPTION
	SURFACE CEILING SUPPLY	STEEL MODULAR CORE SQUARE CEILING DIFFUSER WITH ADJUSTABLE DISCHARGE PATTERN. FINISH: COLOR BY ARCHITECT. FRAME: FLAT SURFACE. TITUS MCO.
	SURFACE CEILING RETURN/TRANSFER	STEEL LOUVERED RETURN GRILLE WITH HORIZONTAL BLADES AT 3/4" SPACING AND 35' DEFLECTION. FINISH: COLOR BY ARCHITECT. FRAME: FLAT SURFACE. TITUS 350RL.
	SURFACE CEILING EXHAUST	ALUMINUM EGGRATE RETURN GRILLE WITH 1/2"x1/2"x1/2" GRID. FINISH: COLOR BY ARCHITECT. FRAME: FLAT SURFACE. TITUS 50F.
	SIDEWALL SUPPLY	STEEL LOUVERED SUPPLY GRILLE WITH DOUBLE DEFLECTION AND INDIVIDUALLY ADJUSTABLE BLADES AT 3/4" SPACING. FINISH: COLOR BY ARCHITECT. FRAME: FLAT SURFACE. TITUS 350RL.
	SIDEWALL RETURN/TRANSFER	STEEL LOUVERED RETURN GRILLE WITH HORIZONTAL BLADES AT 3/4" SPACING AND 35' DEFLECTION. FINISH: COLOR BY ARCHITECT. FRAME: FLAT SURFACE. TITUS 350RL.
	EXTERIOR WALL LOUVER	4" DEEP ALUMINUM DRAINABLE BLADE STATIONARY WALL LOUVER. 50% FREE AREA. PROVIDE WALL FLANGE, MOUNTING ANGLES AND INSECT SCREEN. (MIN. 12"x12", MAX. 120"x120") FINISH: COLOR BY ARCHITECT. FRAME: WALL MOUNTING. GREENHECK ESD-403.

NOTES:
1. REFER TO MECHANICAL PLANS FOR NECK SIZE, CFM, AIR DIFFUSION PATTERN, AND FIRE DAMPER WHERE APPLICABLE.

EQUIPMENT ANCHORAGE NOTES									
ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC SECTIONS 1617A.1.17 THROUGH 1617A.1.20 & 1617A.1.23 AND ASCE 7-16 CHAPTERS 13, 26 AND 30.									
1. ALL PERMANENT EQUIPMENT AND COMPONENTS. 2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER, "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE. 3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.									
THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLY WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS: A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT. B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.									
THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL. RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.									

PIPING AND DUCTWORK DISTRIBUTION SYSTEM BRACING NOTES									
PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2022 CBC, SECTIONS 1617A.1.24 THROUGH 1617A.1.26.									
THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE-APPROVED INSTALLATION GUIDE (E.G., HCAI OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.									
MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E): MP MD PP E OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT [X] [] [] SPECIFIC NOTES AND DETAILS. MP MD PP E OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL [] [] [] (OPM#) #0043-13.									

OUTSIDE AIR SCHEDULE				
SYSTEM NAME	MIN. OSA CFM	MAX. OSA CFM	DEMAND CONTROL VENT. (Y/N)	
F-1	150	—	N	
HP-1	160	340	Y	
HP-2	315	—	N	

* OSA TO BE PER TITLE 24, 2019 BUILDING ENERGY EFFICIENCY STANDARDS, SECTION 120.1, REQUIREMENTS.

* DEMAND VENTILATION CONTROLS SHALL MAINTAIN CO2 CONCENTRATIONS LESS THAN OR EQUAL TO 600 PPM PLUS THE OUTDOOR AIR CO2 CONCENTRATIONS IN ALL ROOMS WITH CO2 SENSORS.

MECHANICAL LEGEND		
SYMBOL	ITEM	ABBR.
	SUPPLY AIR	SA
	RETURN AIR	RA
	EXHAUST AIR	EA
	OUTSIDE AIR	OSA
	TRANSFER AIR	TA
	DETAIL DESIGNATION DETAIL NUMBER SHEET NO. WHERE SHOWN	
	EQUIPMENT DESIGNATION UNIT ABBREVIATION NUMBER	
	GRILLE DESIGNATION NECK SIZE & BLOW (4 UOM) FIRE DAMPER WHERE REQ'D CFM	
	ACOUSTIC LINED DUCT	L
	TURNING VANES	TV
	DUCT FLEXIBLE CONNECTION	
	DUCT RISER	
	DUCT DROP	
	RECTANGULAR TO ROUND FITTING	
	VOLUME CONTROL DAMPER	VD
	FIRE DAMPER W/ ACCESS	FD
	FIRE SMOKE DAMPER W/ ACCESS	FSD
	OPPOSED BLADE DAMPER	OB
	BACKDRAFT DAMPER	BDD
	MOTORIZED DAMPER	
	THERMOSTAT @ +48" AFF	T-STAT
	SENSOR @ +48" AFF	
	TIMELOCK @ +48" AFF	
	TEMPERATURE CONTROL PANEL	TCP
	DUCT SMOKE DETECTOR	SD
	PIPE RISER/DROP	(R)/D
	ABOVE FINISHED FLOOR	AFF
	UNLESS OTHERWISE NOTED	UON
	TYPICAL	(TYP)
	BOTTOM OF DUCT	BOD
	BOTTOM OF PIPE	BOP
	AUTOMATIC AIR VENT	AAV
	MANUAL AIR VENT	MAV
	TEMP. CONTROL CONTRACTOR	TCC
	TEMPERATURE CONTROL VALVE	TCV
	COMBUSTION AIR	CA
	NEW	(N)
	EXISTING	(E)
	POINT OF DIS/CONNECTION	POD/POC
	HEATING HOT WATER SUPPLY	HHWS
	HEATING HOT WATER RETURN	HHWR
	2-WAY CONTROL VALVE	
	BACKFLOW PREVENTER	BFP
	BALL VALVE	
	BUTTERFLY VALVE	
	CAP	
	CHIEF VALVE	
	AUTOMATIC BALANCE VALVE (B&G ULTRA SET)	ABV
	AUTOMATIC BALANCE VALVE (B&G CIRCUIT SETTER)	CBV
	CONTROL VALVE (2-WAY)	
	FLEX CONNECTOR	FC
	FLOW ARROW	
	GATE VALVE	
	PRESSURE GAUGE	
	PLUG VALVE	
	REDUCER	
	STRAINER	
	TEMPERATURE SENSOR	TS
	TEST PORT (PETE'S PLUG)	PP
	THERMOMETER	
	TRIPLE DUTY VALVE	

MECHANICAL SPECIFICATIONS									
A. THIS CONTRACTOR SHALL COMPLY WITH ALL CODES AND REGULATIONS IN EFFECT AT THE JOB SITE, INCLUDING, BUT NOT LIMITED TO: A.1. 2022 CALIFORNIA BUILDING CODE A.2. 2022 CALIFORNIA MECHANICAL CODE A.3. 2022 CALIFORNIA PLUMBING CODE A.4. 2022 CALIFORNIA ELECTRICAL CODE A.5. 2022 CALIFORNIA GREEN BUILDING STANDARDS A.6. 2022 CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS - TITLE 24 A.7. NATIONAL FIRE PROTECTION ASSOCIATION A.8. CALIFORNIA STATE FIRE MARSHAL B. ALL MATERIALS AND EQUIPMENT INSTALLED UNDER THIS CONTRACT SHALL BE GUARANTEED FREE FROM ALL MECHANICAL, ELECTRICAL AND WORKMANSHIP DEFECTS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING ALL DAMAGED ITEMS INSTALLED UNDER THIS CONTRACT WITHOUT ADDITIONAL COST TO OWNER. C. THE MECHANICAL CONTRACTOR SHALL PROVIDE THE OWNER COPIES OF OPERATION, MAINTENANCE AND PREVENTATIVE MAINTENANCE MANUALS FOR EACH MODEL AND TYPE OF MECHANICAL EQUIPMENT. D. CHECK AND VERIFY EXISTING CONDITIONS AT THE JOB SITE BEFORE BEGINNING WORK. ADJUST THE LOCATION AND CONFIGURATION OF THE WORK NECESSARY TO SUIT ACTUAL CONDITIONS AND OTHER TRADES. ANY CHANGES REQUIRED MUST FIRST BE APPROVED BY THE ARCHITECT OR ENGINEER. E. THE LOCATIONS OF EQUIPMENT, PIPING, DUCTWORK AND SYSTEMS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC AND SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE. CHANGES REQUIRED TO SUIT EXISTING CONDITIONS AND DUE TO COORDINATION WITH OTHER TRADES SHALL BE MADE AT NO EXTRA COST TO THE OWNER. F. SUBMIT MANUFACTURER'S PRODUCT DATA INCLUDING NAME OF MANUFACTURER, TRADE NAME, MODEL, CAPACITY, OPTIONS, DIMENSIONS, WEIGHTS, INSTALLATION AND STARTUP DATA. EQUIPMENT PERFORMANCES SCHEDULED ARE MINIMUM CAPACITY, AIR FLOW, EFFICIENCY, ETC. REQUIRED. WEIGHTS AND ELECTRICAL DATA SCHEDULED IS MAXIMUM AVAILABLE OR ALLOWABLE. G. ALL EQUIPMENT IS TO BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER, USING ALL ACCESSORY EQUIPMENT AVAILABLE FROM THE MANUFACTURER FOR SUPPORTS, CONTROLS, ETC., TO MAKE A COMPLETE SYSTEM. ALL EQUIPMENT OR ACCESSORIES NEEDED AND NOT SHOWN OR SPECIFIED SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR. ADJUST THE EQUIPMENT FOR PROPER OPERATION. CHECK ALL CONTROLS AND VERIFY THAT ALL SAFETY DEVICES ARE FUNCTIONING PROPERLY. H. PROVIDE ACCESS DOORS WHERE ACCESS THROUGH FLOORS, WALLS OR CEILINGS IS REQUIRED TO ACCESS MECHANICAL CONTROL SYSTEM COMPONENTS, FIRE/SMOKE DAMPERS, SMOKE DETECTORS, ETC., OR OTHER SYSTEMS REQUIRING ACCESS FOR MAINTENANCE, TESTING OR OBSERVATION. COORDINATE THE EXACT TYPE AND LOCATION OF ACCESS DOORS TO PROVIDE PROPER ACCESS TO THE ITEM CONCEALED. I. CHECK ALL PIPE AND DUCTWORK FOR LEAKS AND EXCESSIVE AIR LOSS AND NOISE. CORRECT ANY DEFICIENCIES AS SOON AS DISCOVERED. OPERATE THE SYSTEMS AS A TEST AND DEMONSTRATE TO THE OWNER AND ARCHITECT OR ENGINEER THAT THE SYSTEM IS FUNCTIONING PROPERLY. J. GALVANIZED STEEL DUCTS SHALL BE ASTM A 653/A 653M GALVANIZED STEEL SHEET, FORMING STEEL (F5) DESIGNATION, WITH G90/Z275 ZINC COATING. K. FABRICATE, SUPPORT AND SEAL DUCTWORK IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE, AND AS INDICATED. PROVIDE DUCT MATERIAL, GAGES, REINFORCING, AND SEALING FOR 4' STATIC PRESSURE, UPSTREAM OF TERMINAL UNITS (VAV, CAV BOXES) AND 2' STATIC PRESSURE, DOWNSTREAM OF TERMINAL UNITS (VAV, CAV BOXES). L. CONSTRUCT DUCTWORK T'S, BENDS, AND ELBOWS WITH RADIUS OF NOT LESS THAN 1-1/2 TIMES WIDTH OF DUCT ON CENTERLINE. WHERE NOT POSSIBLE RECTANGULAR ELBOWS MUST BE USED, PROVIDE AIR FOIL TURNING VANES. WHERE ACOUSTICAL LINING IS INDICATED, PROVIDE TURNING VANES OF PERFORATED METAL WITH GLASS FIBER INSULATION. M. COMBINATION FIRE AND SMOKE DAMPERS SHALL MEET THE REQUIREMENTS OF NFPA 90A, UL 555, UL 555S, AND AS INDICATED. PROVIDE FACTORY SLEEVE AND COLLAR FOR EACH DAMPER. N. ALL INSULATION AND LINER PRODUCTS SURFACE BURNING CHARACTERISTICS: FLAME SPREAD/SMOKE DEVELOPED INDEX OF 25/50, MAXIMUM, WHEN TESTED IN ACCORDANCE WITH ASTM E 84, NFPA 255, OR UL 723. O. DUCT INSULATION BLANKET (INTERIOR APPLICATIONS): O.1. INSULATION: ASTM C553; FLEXIBLE, NONCOMBUSTIBLE BLANKET. "K" ("KSF") VALUE: 0.31 AT 75 DEGREES F (0.045 AT 24 DEGREES C), WHEN TESTED IN ACCORDANCE WITH ASTM C 518. MAXIMUM SERVICE TEMPERATURE: 250 DEGREES F (121 DEGREES C). MAXIMUM MOISTURE ABSORPTION: 0.20 PERCENT BY VOLUME. DUCT APPLICATION: 2" THICK, 3/4 LB. DENSITY. O.2. VAPOR BARRIER JACKET: KRAFT PAPER WITH GLASS FIBER YARN AND BONDED TO ALUMINIZED FILM. MOISTURE VAPOR TRANSMISSION: ASTM E 96, 0.02 PERM. SECURE WITH PRESSURE SENSITIVE TAPE. P. DUCT INSULATION BOARD (EXTERIOR APPLICATIONS): P.1. INSULATION: ASTM C 612, RIGID, NONCOMBUSTIBLE BLANKET. "K" ("KSF") VALUE: 0.24 AT 75 DEGREES F (0.036 AT 24 DEGREES C), WHEN TESTED IN ACCORDANCE WITH ASTM C 518. MAXIMUM SERVICE TEMPERATURE: 250 DEGREES F (121 DEGREES C). MAXIMUM MOISTURE ABSORPTION: 0.20 PERCENT BY VOLUME. DENSITY: 3.0 LB/CU FT (48 KG/CU M). P.2. VAPOR BARRIER JACKET: KRAFT PAPER WITH GLASS FIBER YARN AND BONDED TO ALUMINIZED FILM. MOISTURE VAPOR TRANSMISSION: ASTM E 96, 0.04 PERM. SECURE WITH PRESSURE SENSITIVE TAPE. P.3. ALUMINUM JACKET: ASTM B 209 (ASTM B 209M), THICKNESS: 0.016 INCH (0.40 MM) SHEET. FINISH: SMOOTH. JOINING: LONGITUDINAL SLIP JOINTS AND 2 INCH (50 MM) LAPS. FITTINGS: 0.016 INCH (0.4 MM) THICK DIE SHAPED FITTING COVERS WITH FACTORY ATTACHED PROTECTIVE LINER. METAL JACKET BANDS: 3/8 INCH (10 MM) WIDE, 0.015 INCH (0.38 MM) THICK ALUMINUM. Q. DUCT LINER: Q.1. INSULATION: INCOMBUSTIBLE GLASS FIBER COMPLYING WITH ASTM C 1071; FLEXIBLE BLANKET; WITH ACRYLIC POLYMER SHOWN TO BE FUNGUS AND BACTERIA RESISTANT BY TESTING TO ASTM G 21 IMPREGNATED SURFACE AND EDGE COAT. APPARENT THERMAL CONDUCTIVITY: MAXIMUM OF 0.31 AT 75 DEGREES F (0.045 AT 24 DEGREES C). DUCT APPLICATION: 1-1/2" THICK, 1-1/2" POUND DENSITY. SERVICE TEMPERATURE: UP TO 250 DEGREES F (121 DEGREES C). RATED VELOCITY ON COATED AIR SIDE FOR AIR EROSION: 5,000 FPM (25.4 M/S), MINIMUM. Q.2. LINER FASTENERS: GALVANIZED STEEL, SHEET METAL WELD PINS OR CLINCH PINS AND WASHERS. R. INSULATED FLEXIBLE DUCT: R.1. FLEXIBLE DUCTS SHALL BE U.L. LISTED AND SHALL COMPLY WITH UMC STANDARD 6-1. R.2. THE MAXIMUM LENGTH OF FLEXIBLE DUCTWORK SHALL BE 5 FEET PER CMC SECTION 603.4.1 DUCTWORK SHALL BE EXTENDED TO FULL LENGTH WHENEVER POSSIBLE WITHOUT SEVERE BENDS OR KINKS. BENDS SHALL BE MADE TO MAINTAIN R/W EQUAL TO 1.5. R.3. BLACK POLYMER FILM SUPPORTED BY HELICALLY WOUND SPRING STEEL WIRE; FIBERGLASS INSULATION; POLYETHYLENE VAPOR BARRIER FILM. R.3.1. PRESSURE RATING: 4 INCHES WG POSITIVE PRESSURE AND 1 INCH NEGATIVE PRESSURE. R.3.2. INSULATION SHALL BE 1-1/2 INCH THICK FIBERGLASS. R.3.3. MAXIMUM VELOCITY: 4000 FPM (20.3 M/SEC). R.3.4. TEMPERATURE RANGE: -20 DEGREES F TO 175 DEGREES F (-28 DEGREES C TO 79 DEGREES C). S. SEAL ALL STANDING SEAMS AND TRANSVERSE JOINTS IN ALL SHEETMETAL DUCTWORK WITH HARDCAST IRON GRIP PREMIUM FLEXIBLE WATER BASED DUCT SEALANT. T. DURING CONSTRUCTION PROVIDE TEMPORARY CLOSURES OF METAL OR TAPED POLYETHYLENE ON OPEN DUCTWORK TO PREVENT CONSTRUCTION DUST FROM ENTERING DUCTWORK SYSTEM. U. ALL BRANCH DUCTS SHALL HAVE BALANCING DAMPERS WITH ACCESSIBLE LOCKING TYPE QUADRANT. WHERE DAMPER IS INACCESSIBLE, PROVIDE YOUNG REGULATOR MODEL 270-301 CABLE KIT WITH EITHER 830A-CC (RECTANGULAR) OR 5020-CC (ROUND) DAMPER. V. PERFORM TOTAL SYSTEMS BALANCE IN ACCORDANCE WITH ASHRAE STD 111, OR NEBB PROCEDURAL STANDARDS FOR TESTING, BALANCING AND ADJUSTING OF ENVIRONMENTAL SYSTEMS. W. THE INSTALLATION OF DUCT SMOKE DETECTORS FOR AUTOMATIC SHUTDOWN OF AIR MOVING SYSTEMS AS REQUIRED BY CMC SECTION 609 OR AS REQUIRED FOR THE OPERATION OF FIRE SMOKE DAMPERS SHALL COMPLY WITH THE REQUIREMENTS OF THE LOCAL FIRE DEPARTMENT'S STANDARD "FIRE PROTECTION DESIGN GUIDELINES FOR SMOKE CONTROL WITHIN BUILDINGS". WHERE AIR DUCT SMOKE DETECTORS SERVING AIR-MOVING SYSTEMS ARE INSTALLED WITHIN CONCEALED SPACES, AND/OR DROP CEILING AREAS, THE DETECTOR SHALL BE PROVIDED WITH THE UNIT SERVED. SAID REMOTE ALARM LED DEVICE SHALL BE LABELED TO CLEARLY IDENTIFY THE UNIT SERVED (AC-1, ETC.). WHERE AIR DUCT SMOKE DETECTORS SERVING AIR-MOVING SYSTEMS ARE INSTALLED IN CONCEALED SPACES, AND/OR DROP CEILING AREAS MORE THAN 10 FEET ABOVE THE FINISHED FLOOR, THE DETECTOR SHALL BE PROVIDED WITH A REMOTE TEST AND RESET SWITCH. SAID REMOTE TEST AND RESET SWITCH SHALL BE ATTACHED TO AN ADJACENT WALL OR STRUCTURAL COLUMN AT A MAXIMUM HEIGHT OF 6 FEET ABOVE FINISHED FLOOR. PRIOR TO MECHANICAL PERMIT FINAL, A SMOKE DETECTOR SHUT-OFF TEST WILL BE REQUIRED.									

MECHANICAL SHEET INDEX	
SHEET NO.	SHEET TITLE
M0.0.1	MECHANICAL NOTES, LEGEND AND SCHEDULES
M0.0.2	MECHANICAL DETAILS
M2.0.1D	MECHANICAL DEMO ROOF PLAN
M2.0.1	MECHANICAL ROOF PLAN
M6.4.1D	MECHANICAL DEMO ENLARGED FLOOR PLAN
M6.4.1	MECHANICAL ENLARGED FLOOR PLAN
M7.0.1	MECHANICAL CONTROLS
M7.0.2	MECHANICAL CONTROLS
M7.0.3	MECHANICAL CONTROLS

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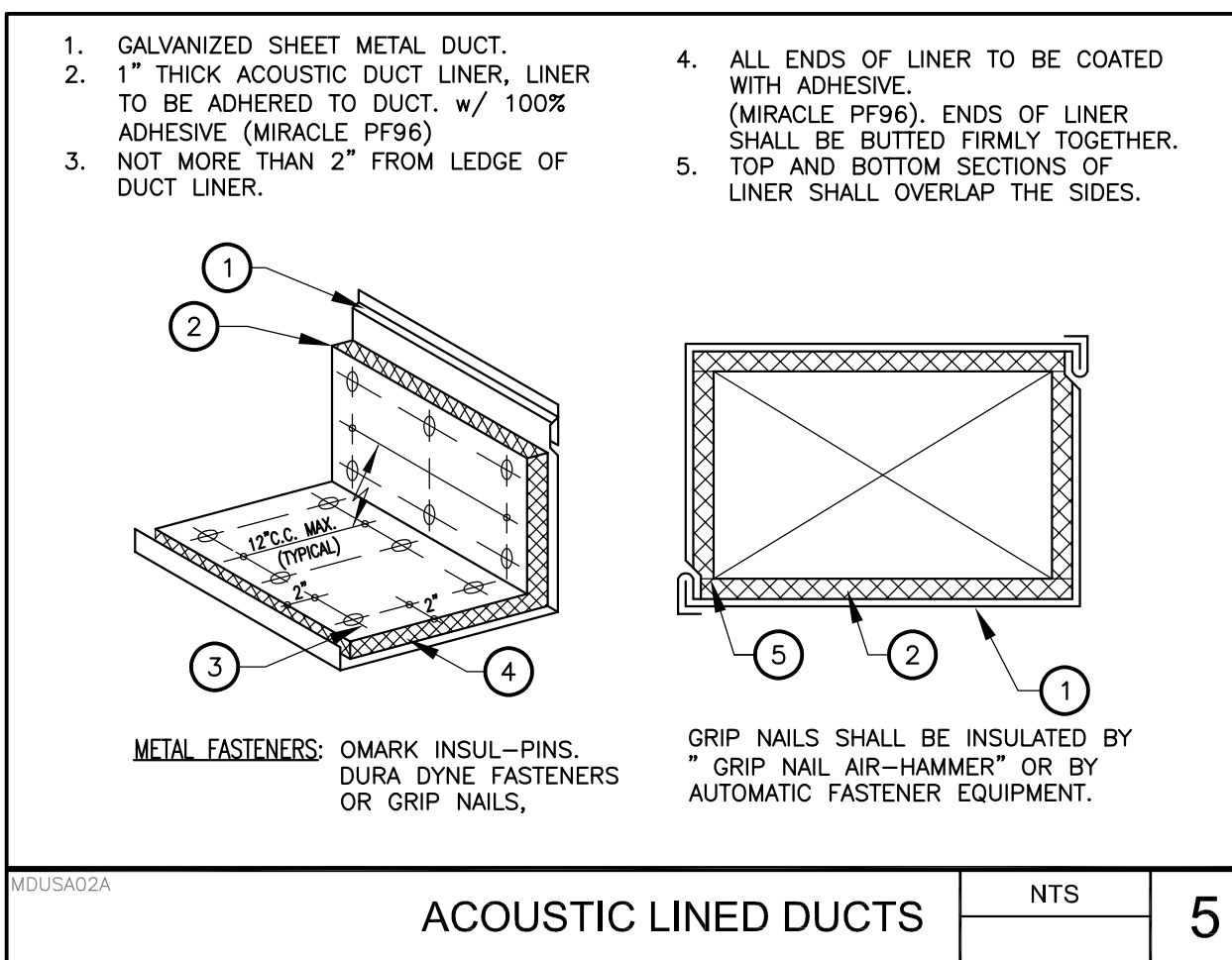
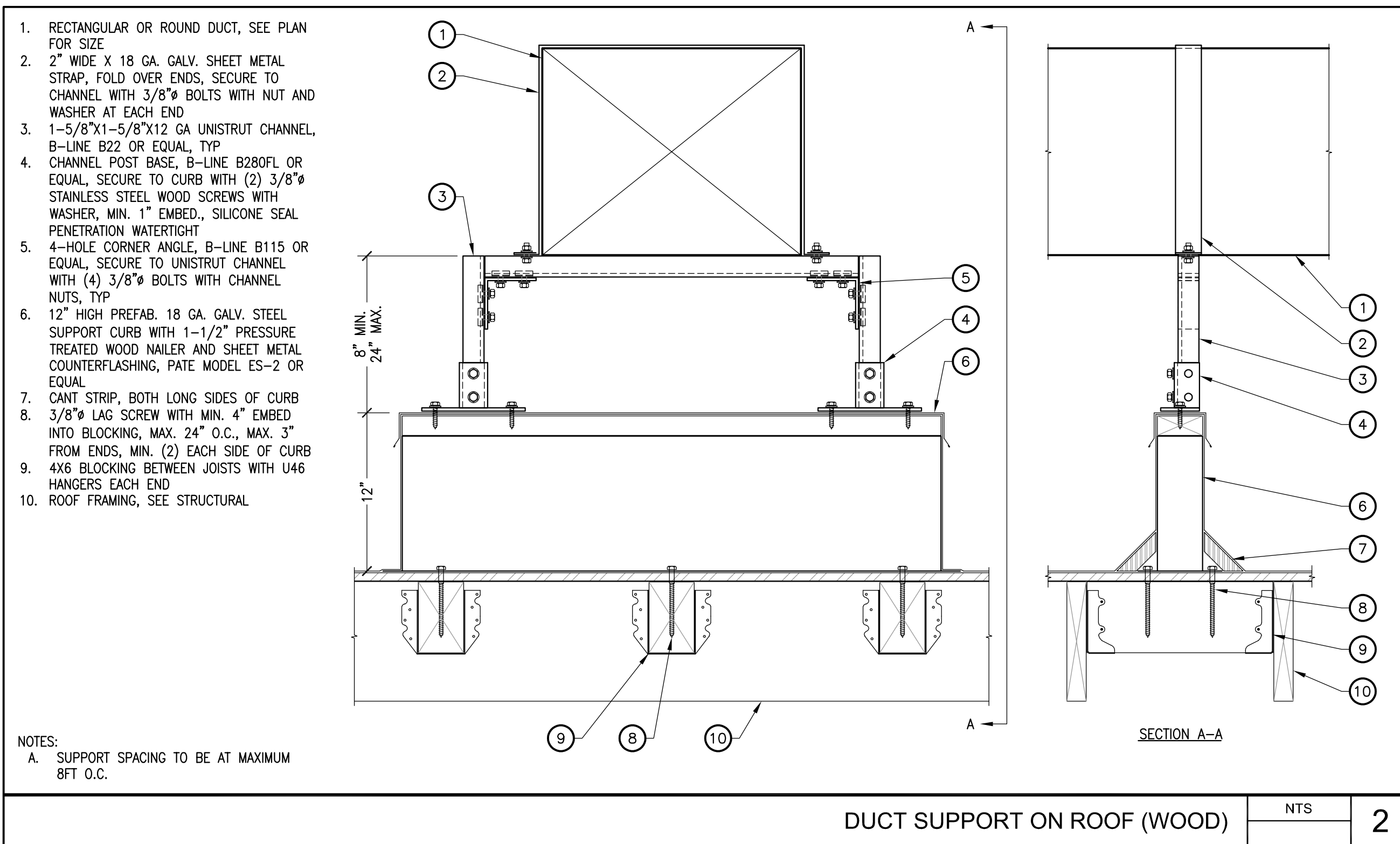
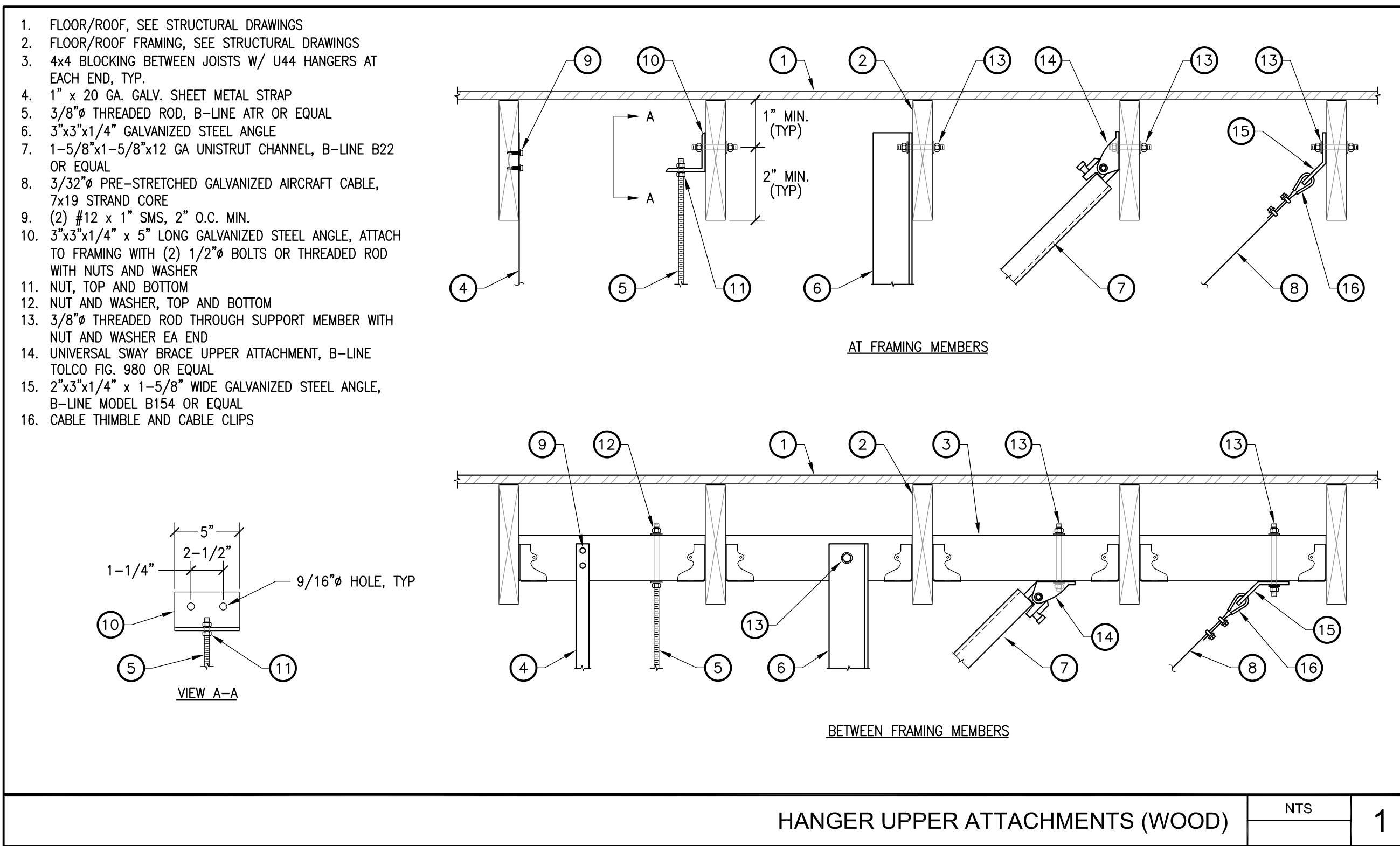
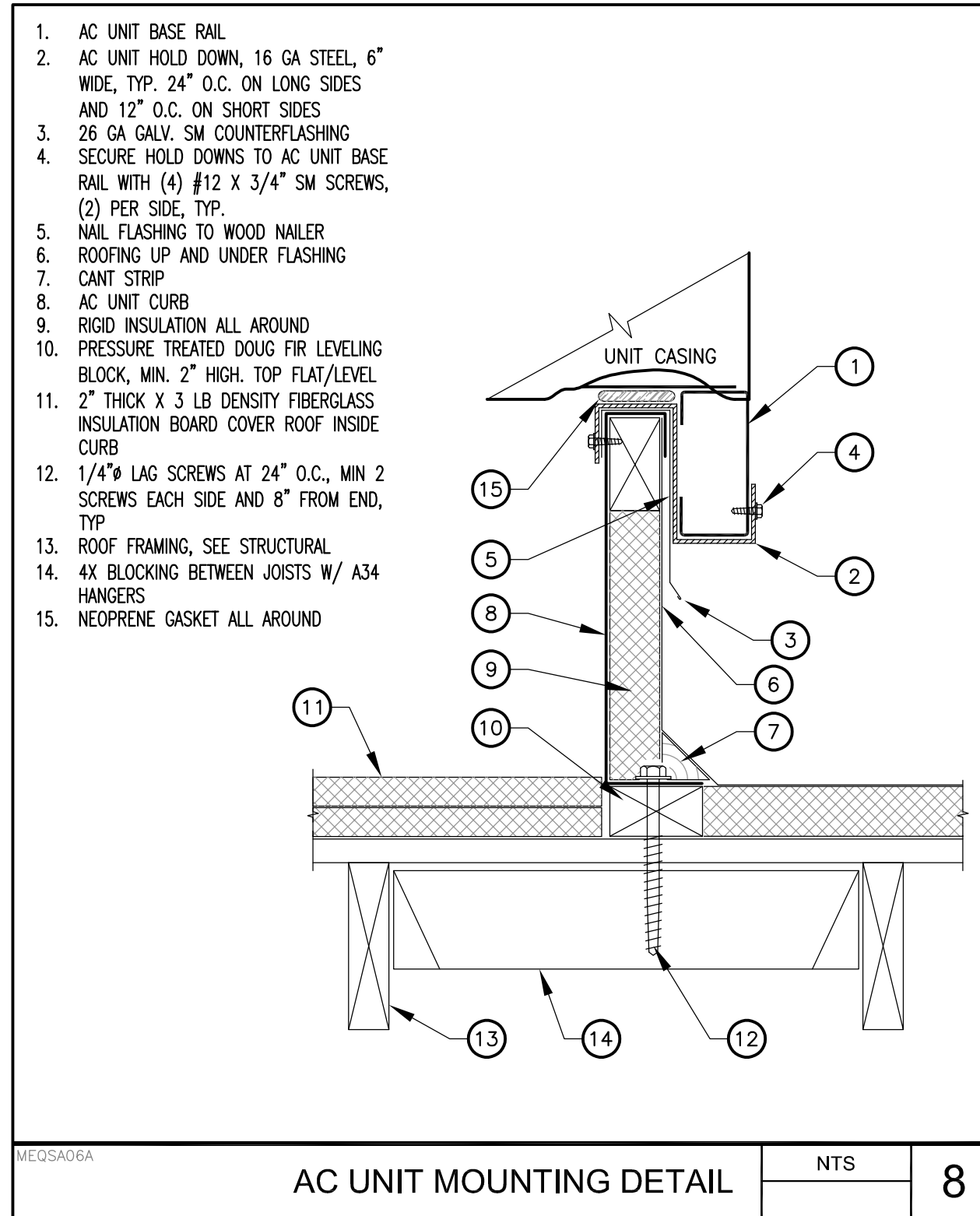
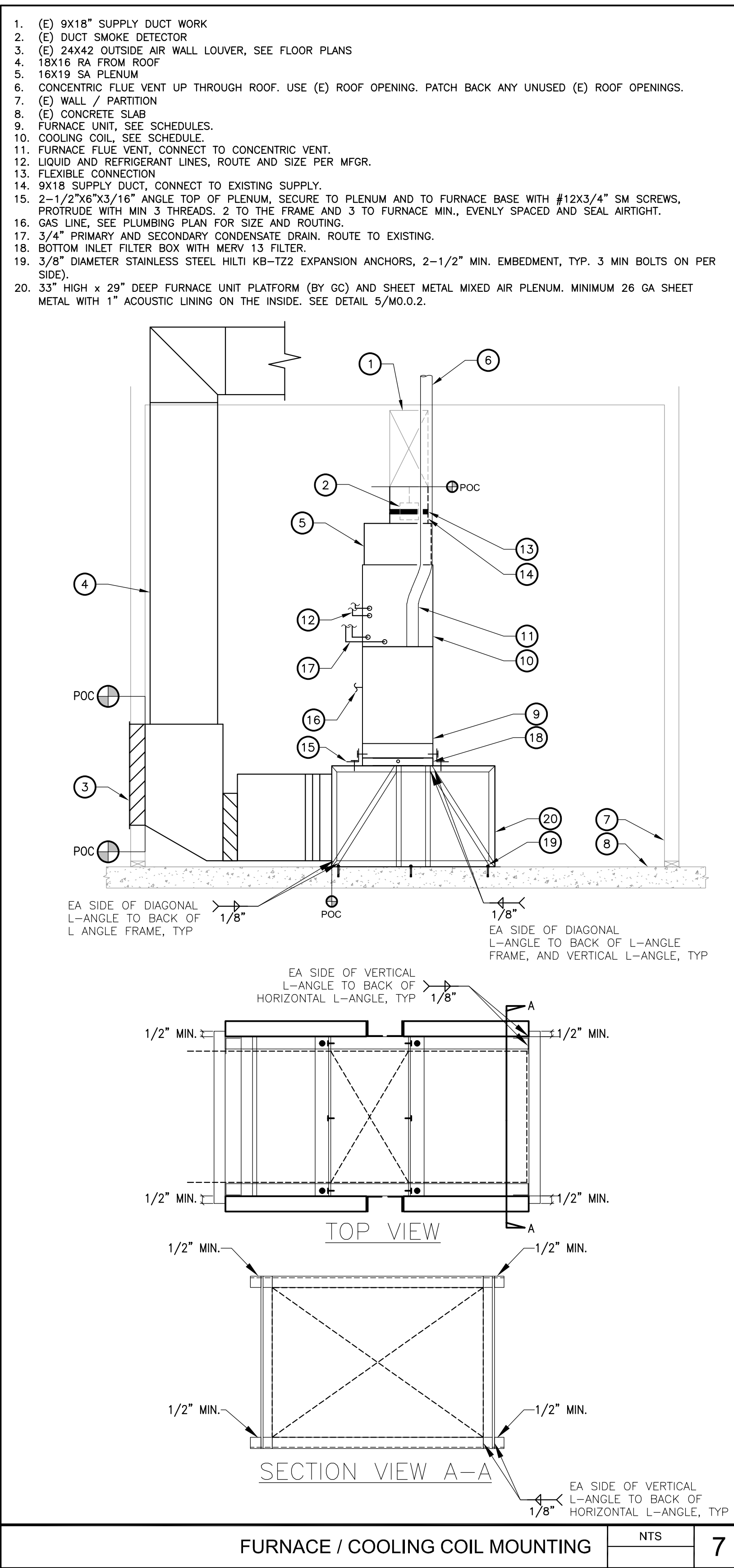
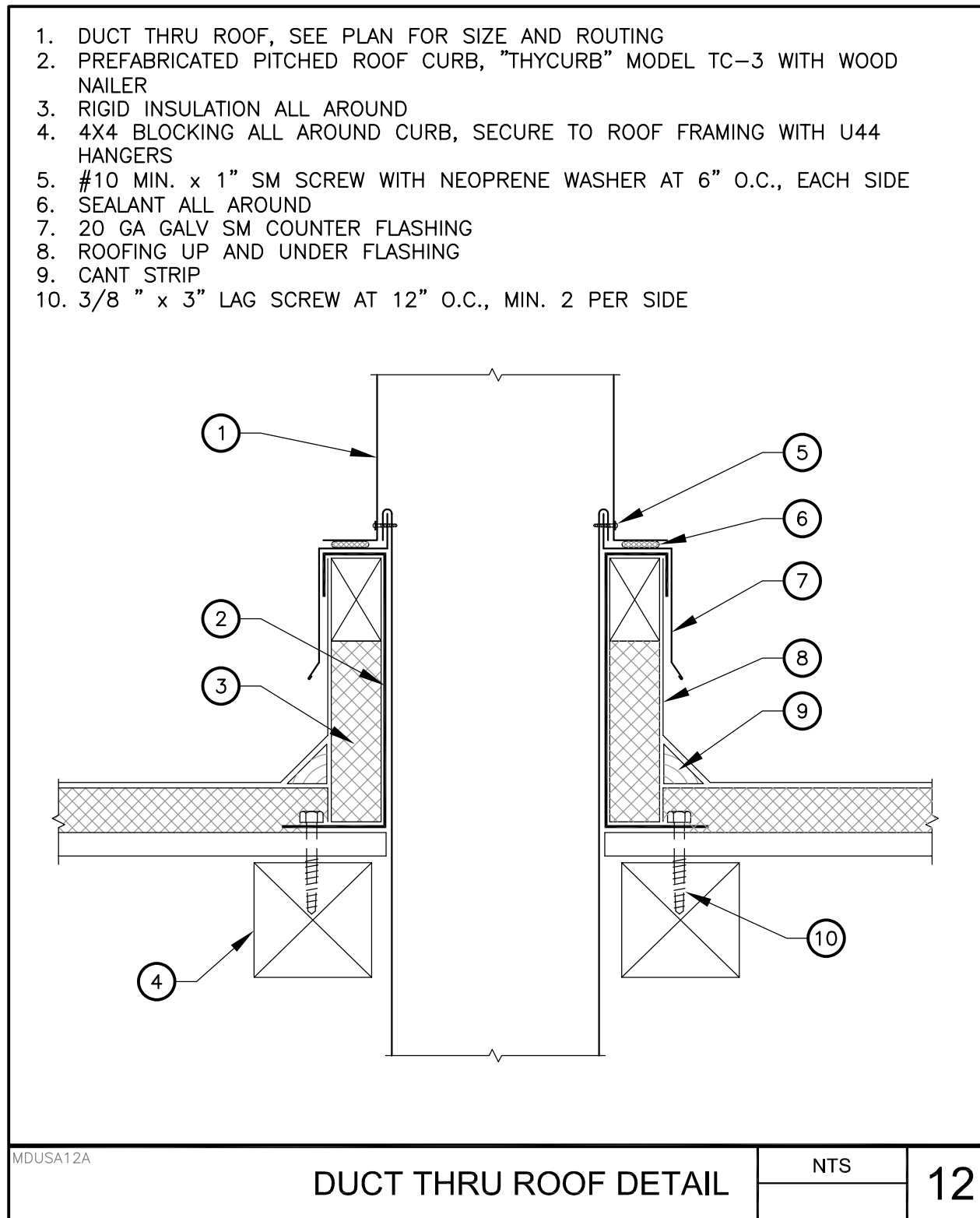
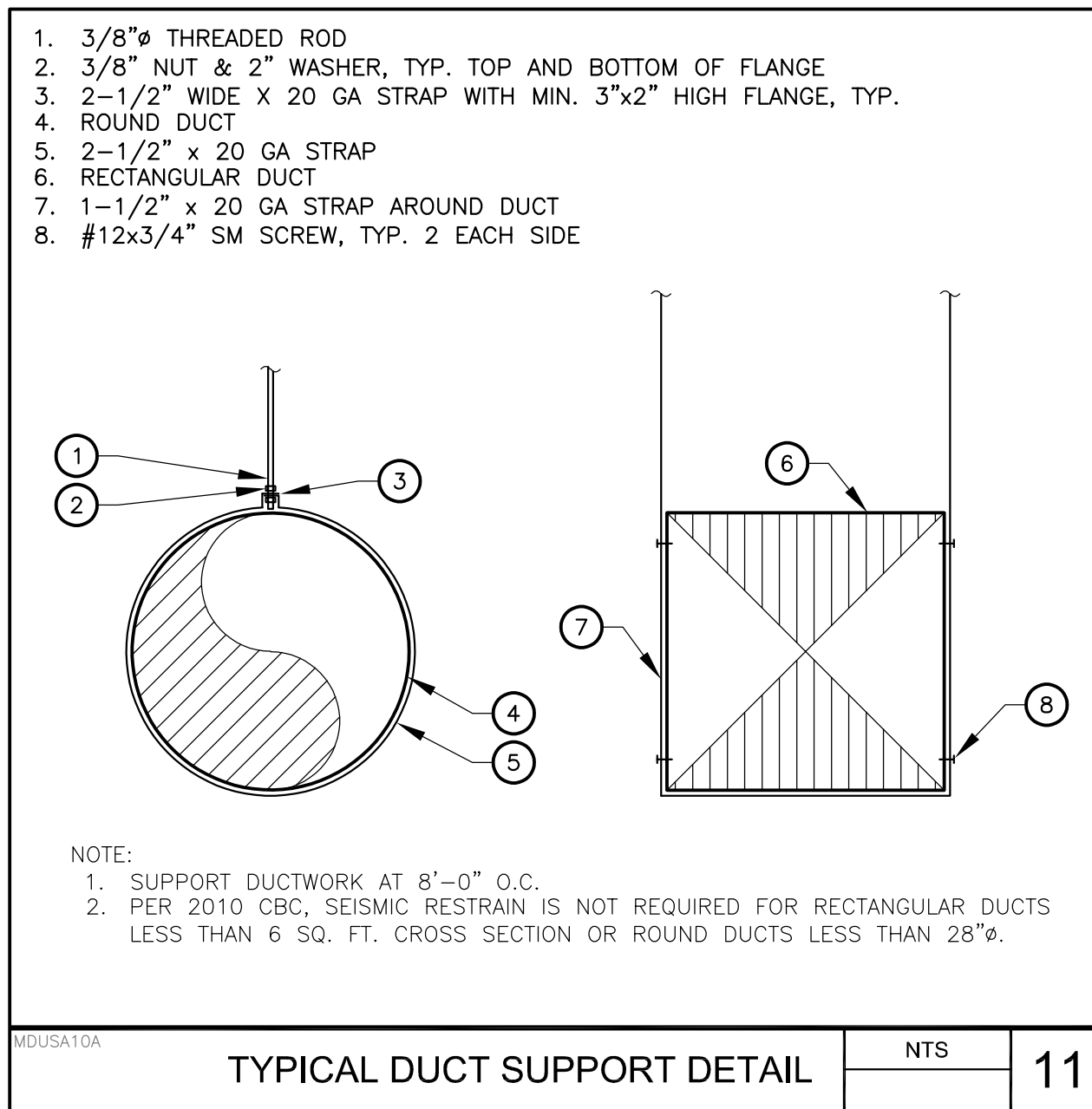
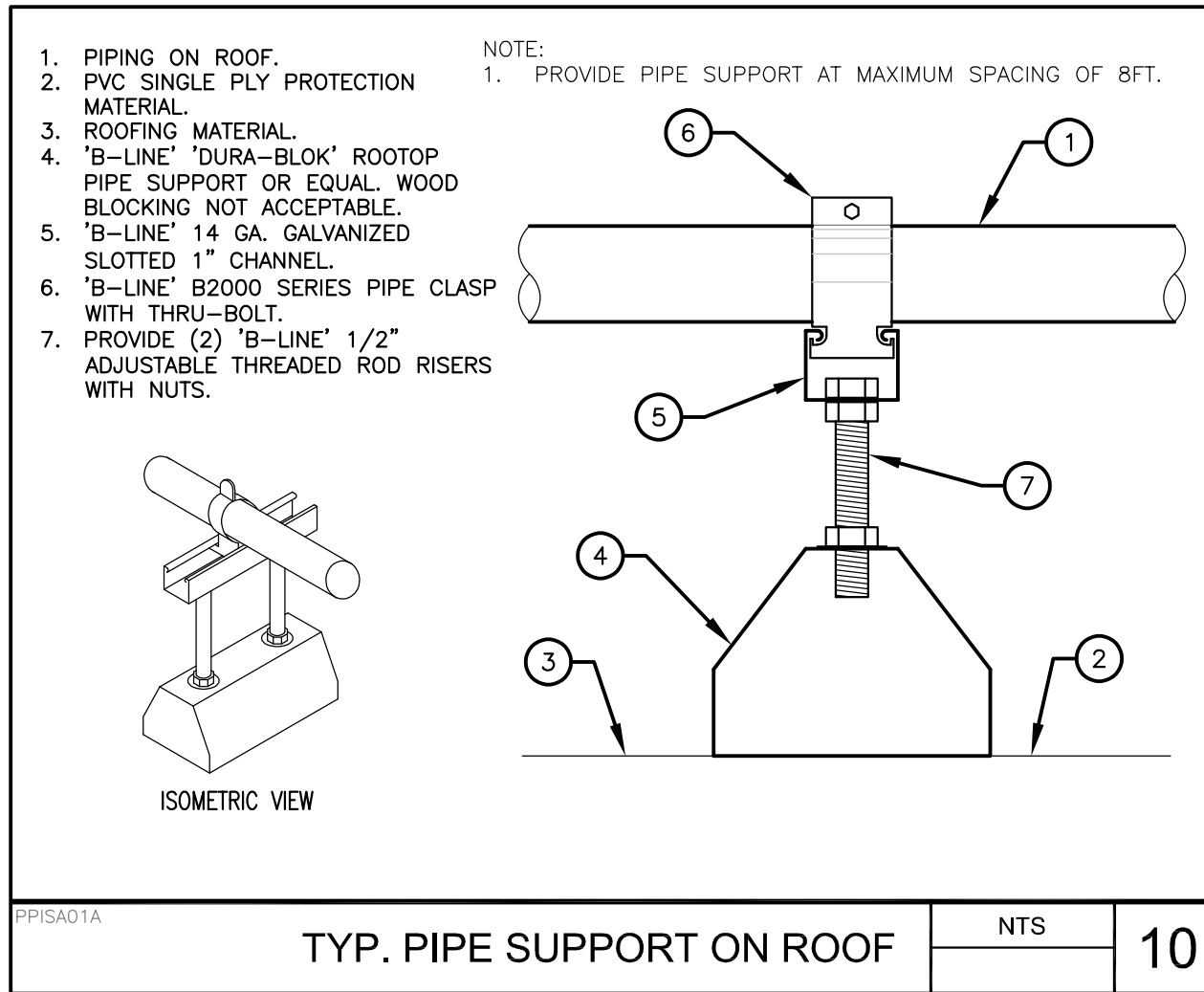
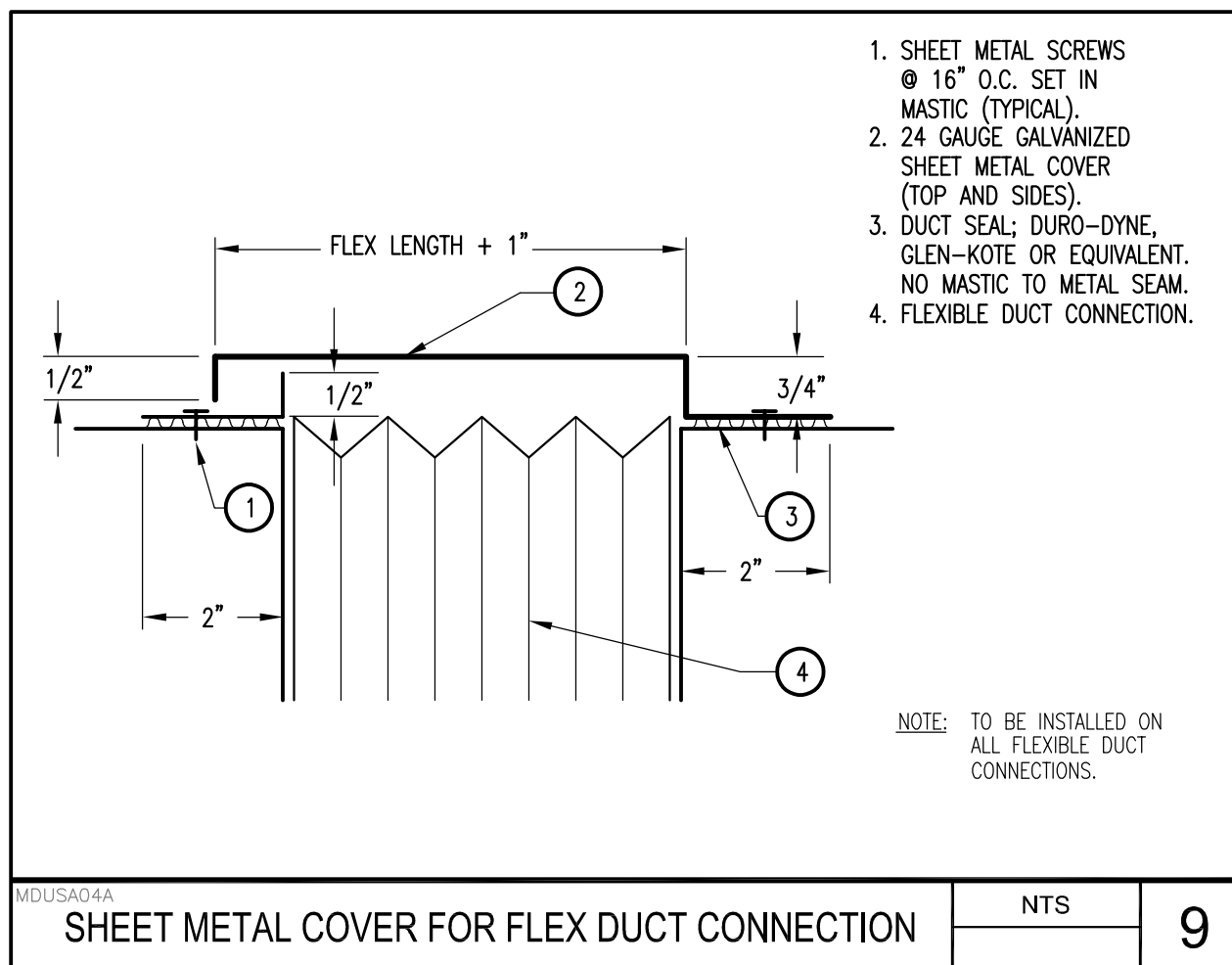
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Project: **ALUM ROCK UNION SCHOOL DISTRICT**
HVAC & ROOFING UPGRADES

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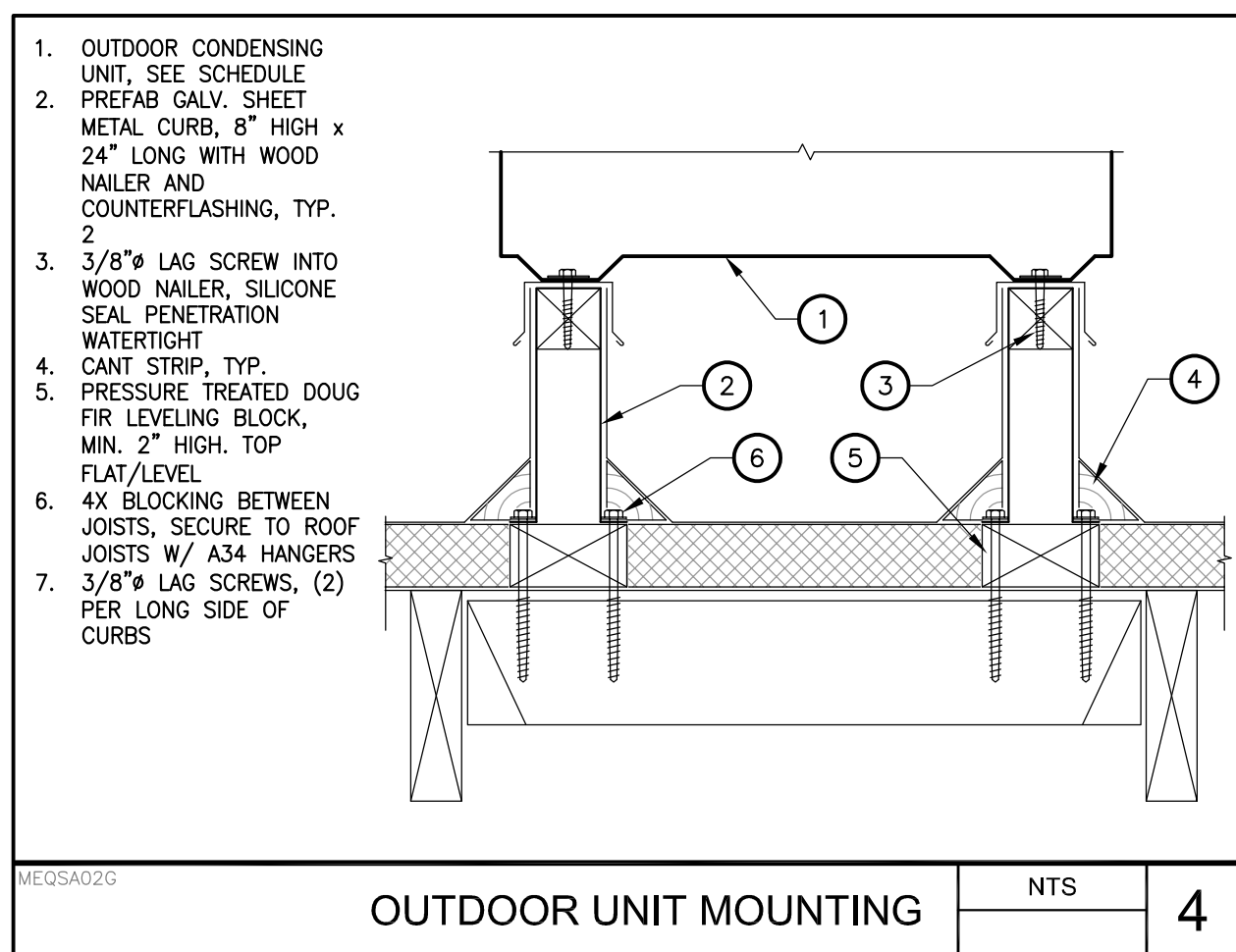
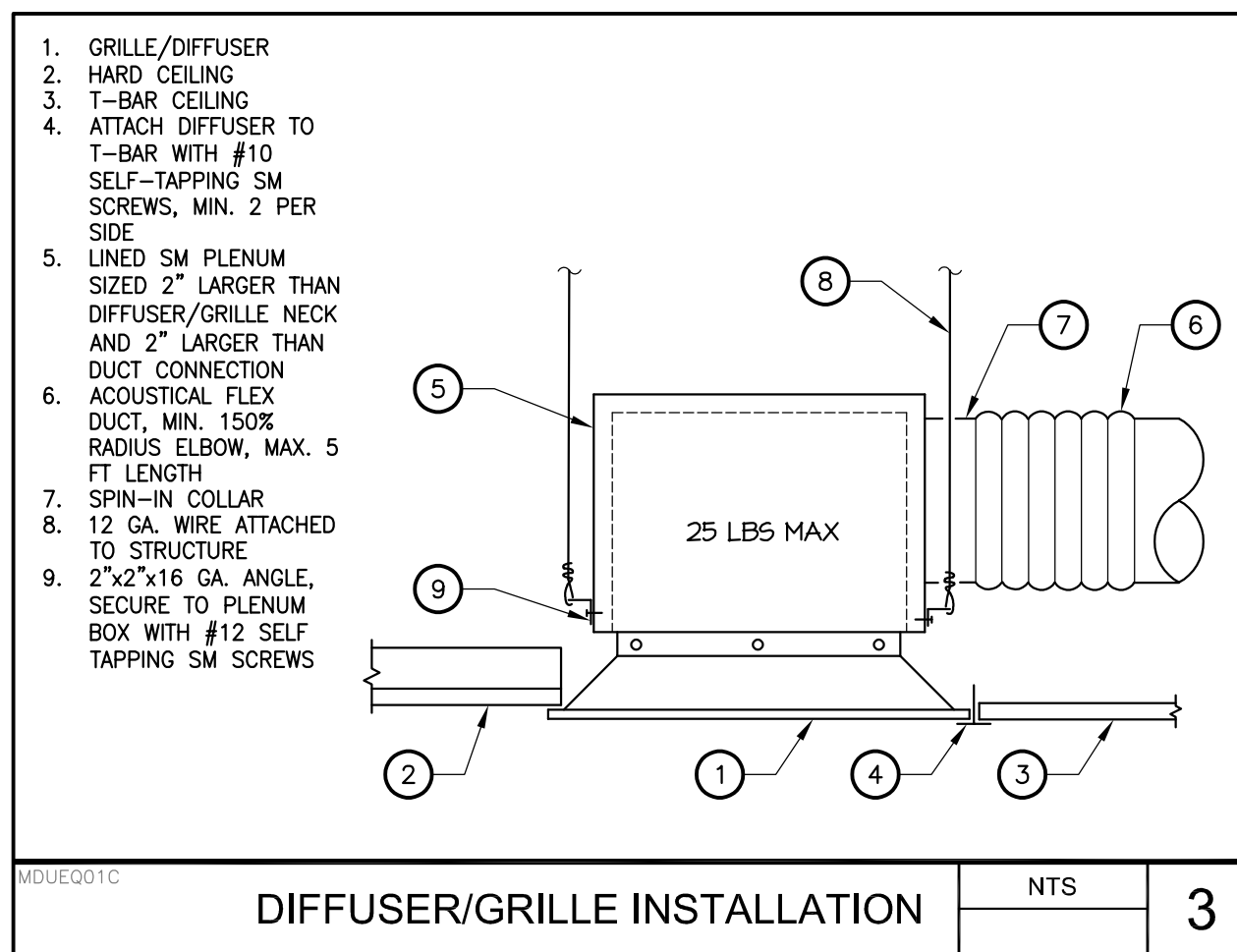


DIMENSION LONGEST INCHES	SHEET METAL GAGE SIZE (FOUR SIDES)	MINIMUM REINFORCING ANGLE SIZE AND MAXIMUM LONGITUDINAL SPACING BETWEEN TRANSVERSE JOINTS &/OR INTERMEDIATE REINFORCING	TRANSVERSE REINFORCING (1)				
			AT JOINTS				
			DRIVE SLIP	HEMMED SLIP	ALTERNATE BAR SLIP	REINFORCED BAR SLIP	
UP THRU 12	26	NONE REQUIRED	1	26	26	24	24
13 - 18	24	NONE REQUIRED	1	24	24	24	24
19 - 30	24	1" x 1" x 1/8" Ø 60 IN.	1		24	24	24
31 - 42	22	1" x 1" x 1/8" Ø 60 IN.	1		22	22	22

(1) TRANSVERSE REINFORCING SIZE IS DETERMINED BY DIMENSION OF SIDE TO WHICH ANGLE IS APPLIED.

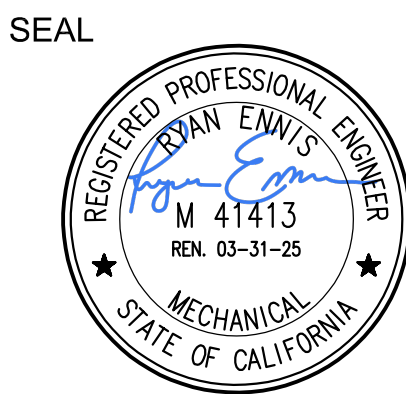
DUCT CONSTRUCTION STANDARDS

NTS	6
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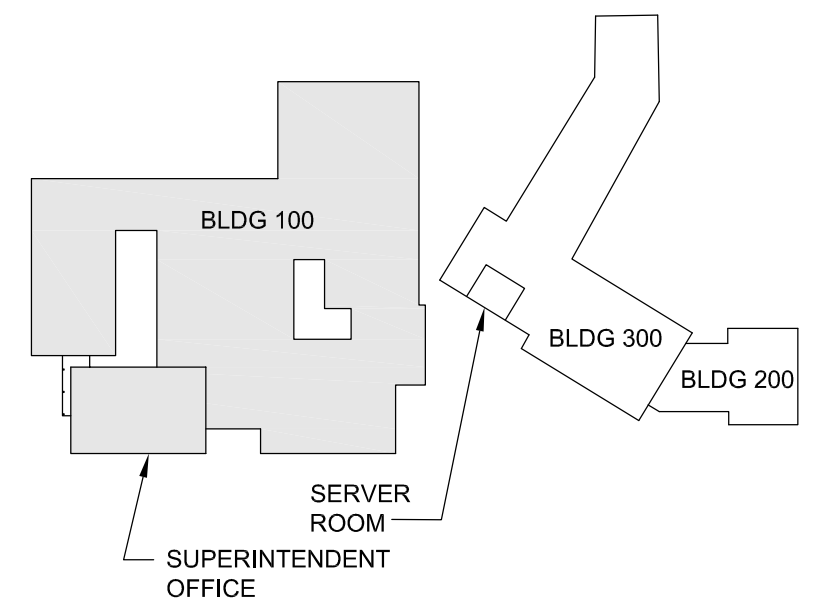
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MECHANICAL DETAILS

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① REMOVE EXISTING CONDENSING UNIT AND REFRIGERANT PIPING SERVING FURNACES.

1. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK AND NOTIFY ARCHITECT/ENGINEER OF ANY CONFLICTS OR DISCREPANCIES.



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**MECHANICAL DEMO
OVERALL ROOF PLAN**

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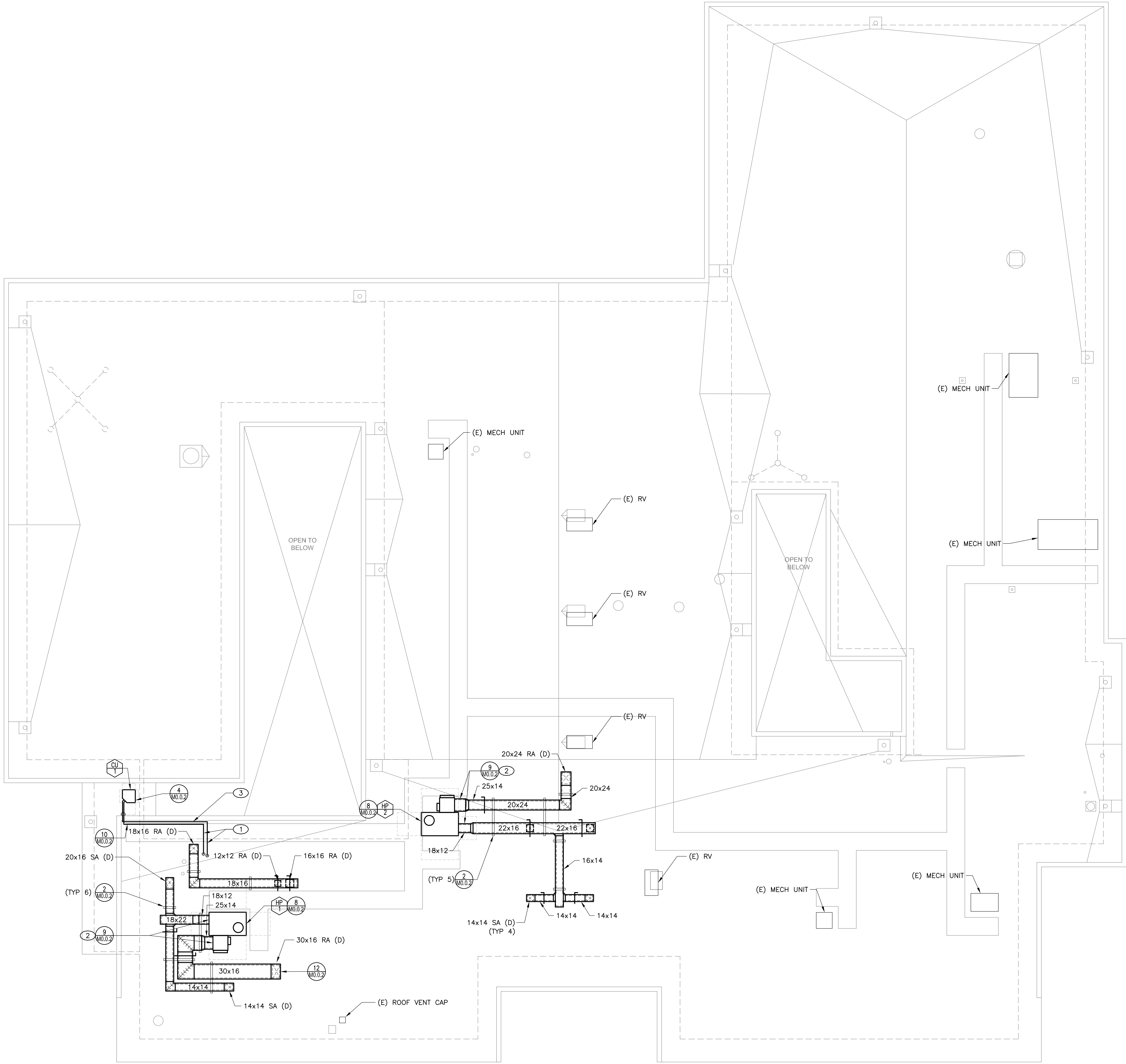
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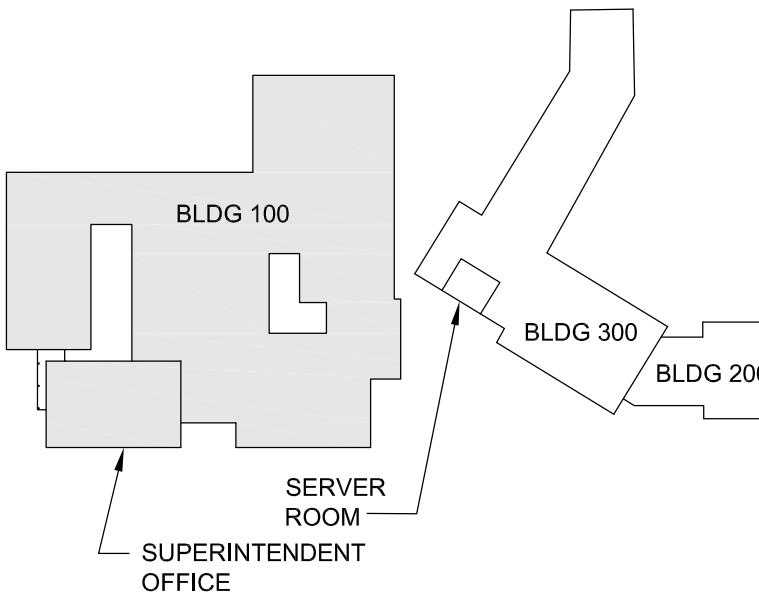
KEY NOTES

- ① REFRIGERANT LINES, SEE MANUFACTURER'S MANUAL FOR SIZES.
- ② PROVIDE SHEET METAL COVER OVER FLEXIBLE DUCT CONNECTION.
- ③ PROVIDE FLEXIBLE ELASTOMERIC INSULATION FOR REFRIGERANT PIPING PER TITLE 24 REQUIREMENTS WITH ALUMINUM JACKETING.

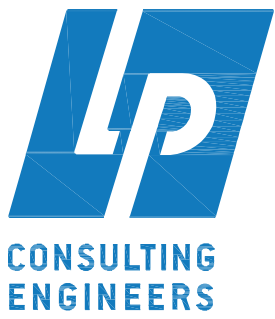
GENERAL NOTES

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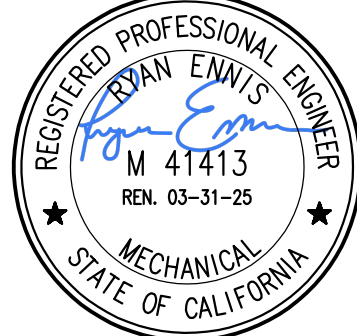


KEY PLAN



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Drawing Title
**MECHANICAL
ROOF PLAN**

NO.	DATE	ISSUE

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**ALUM ROCK UNION SCHOOL DISTRICT
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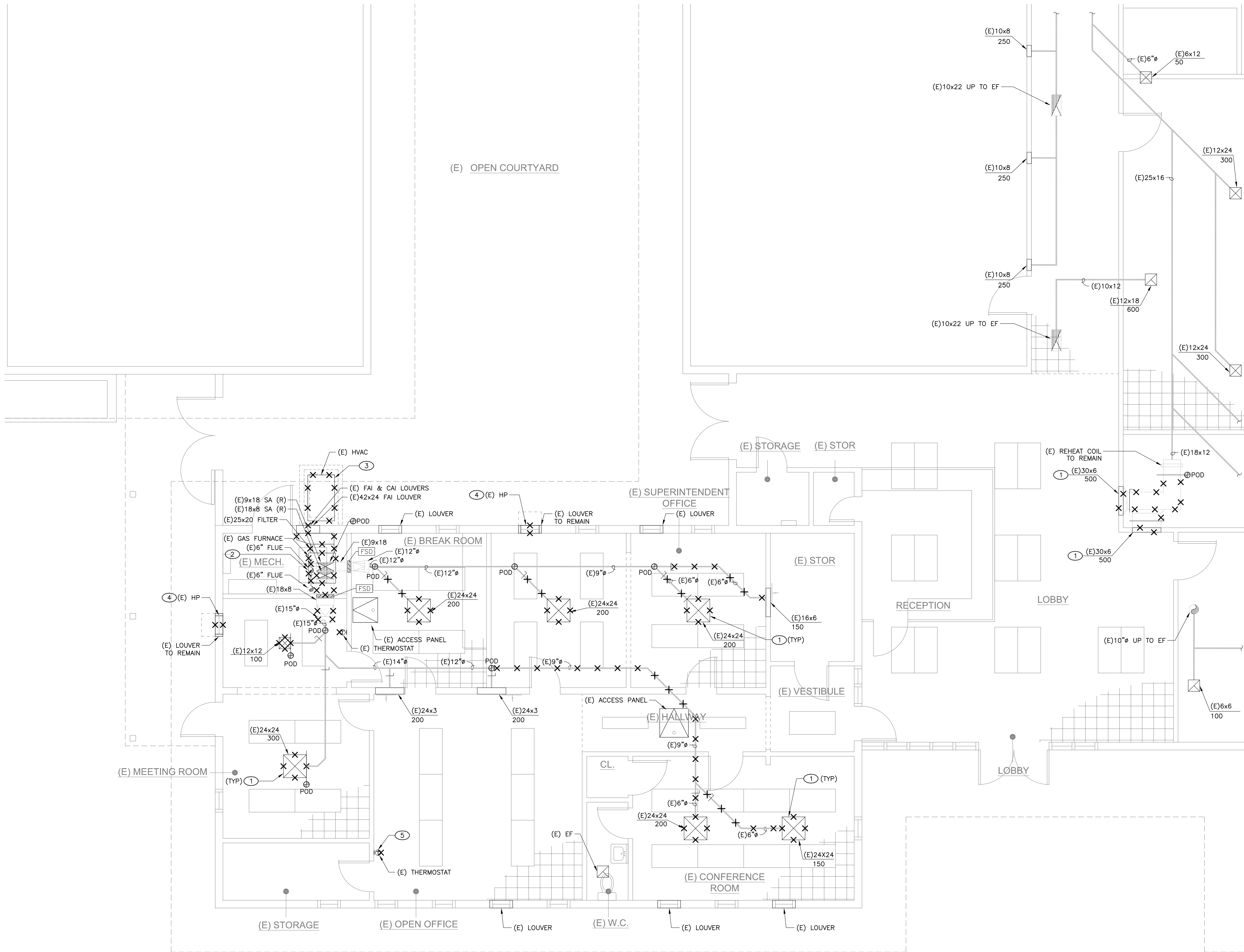
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1 MECHANICAL OVERALL ROOF PLAN
1/8" = 1'-0"

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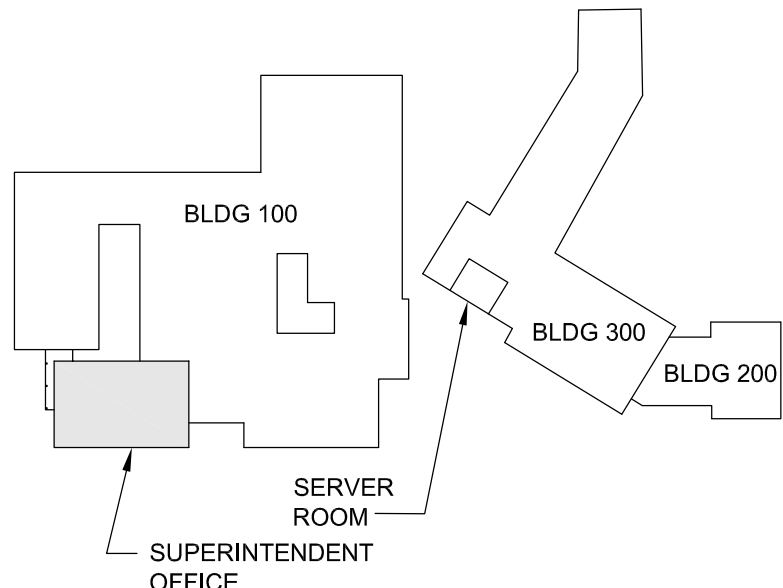
KEY NOTES

- ① REMOVE (E) DIFFUSER/GRILLE AND ASSOCIATED DUCTWORK SHOWN HATCHED BACK TO POD.
- ② REMOVE (E) FURNACES, DUCTWORK, OUTSIDE AIR FLOVER, CONTROLS & RELATED APPURTENANCES AS SHOWN. (E) FLUE OPENING IN ROOF TO BE REUSED FOR (N) FLUE PIPING. (E) EXTERIOR WALL OPENING TO REMAIN FOR (N) OUTSIDE AIR LOUVER.
- ③ REMOVE (E) DEDICATED OUTSIDE AIR UNIT AND ASSOCIATED DUCTWORK SHOWN HATCHED.
- ④ REMOVE (E) WINDOW MOUNTED PTAC UNIT AND ASSOCIATED CONTROLS.
- ⑤ REMOVE (E) T-STAT AND RELATED WIRING.

GENERAL NOTES

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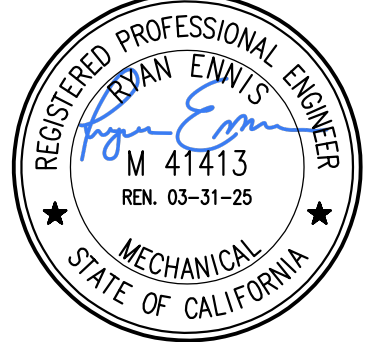


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Drawing Title
**MECHANICAL DEMO
ENLARGED FLOOR
PLAN**

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Project
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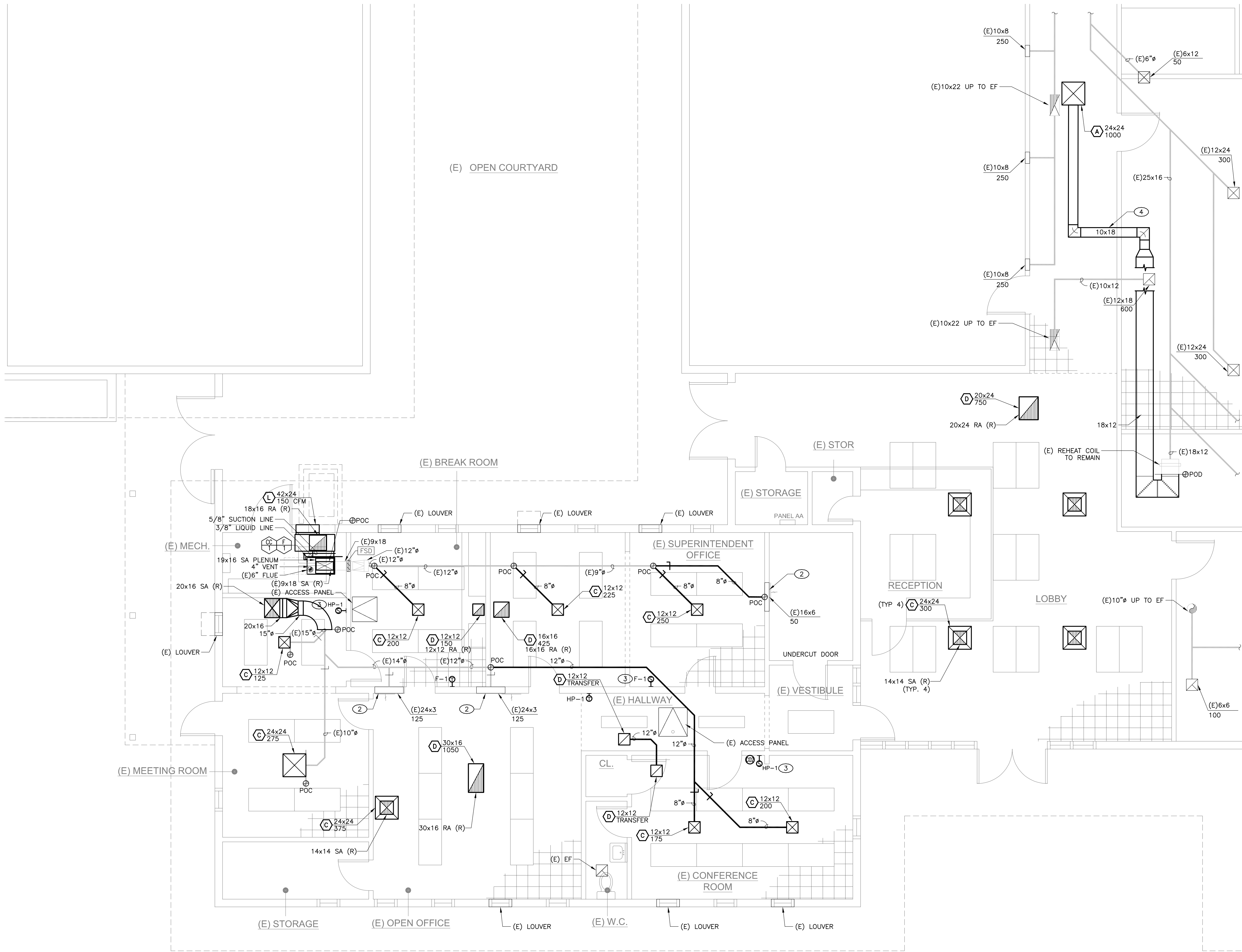
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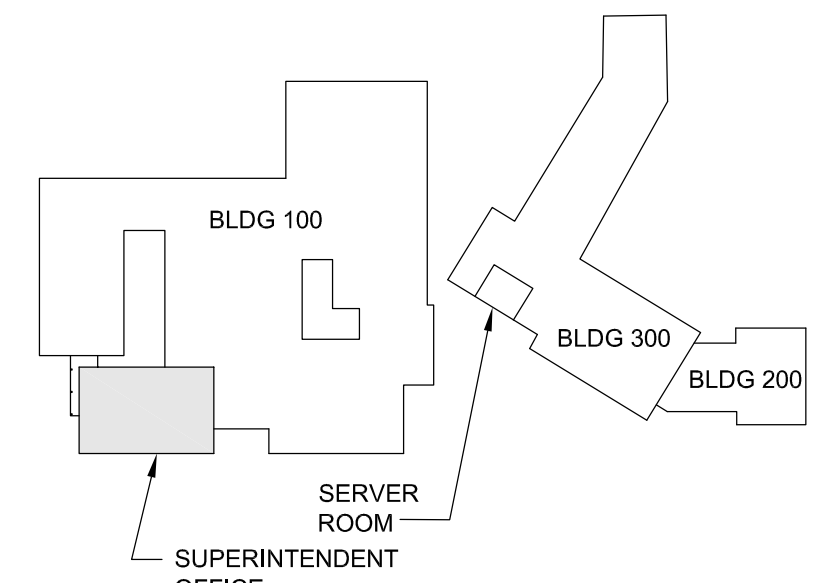
KEY NOTES

- ROUTE (N) CONCENTRIC VENT FROM FURNACE UNIT THROUGH (E) FLUE PENETRATION THROUGH ROOF.
- REBALANCE (E) AIR INLET/OUTLET TO AIR QUANTITY SHOWN.
- PROVIDE REMOTE AVERAGING SENSOR CONNECTED TO ASSOCIATED MECHANICAL UNIT THERMOSTAT SHOWN. SEE CONTROL DRAWINGS.
- RUN DUCT IN JOIST SPACE ABOVE CEILING.

GENERAL NOTES

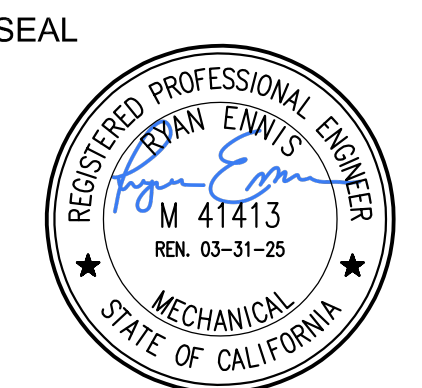
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Drawing Title
**MECHANICAL
ENLARGED FLOOR
PLAN**

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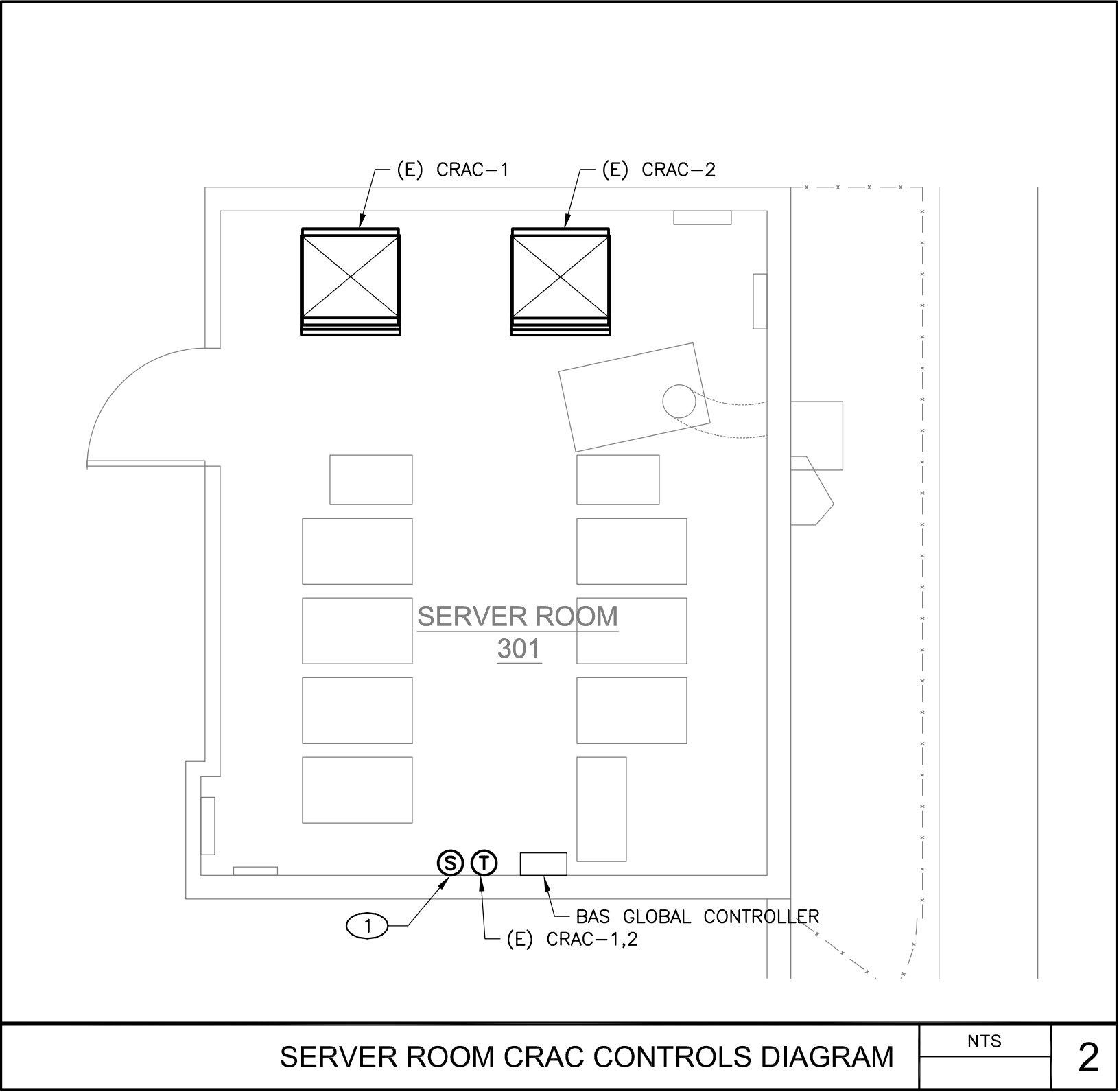
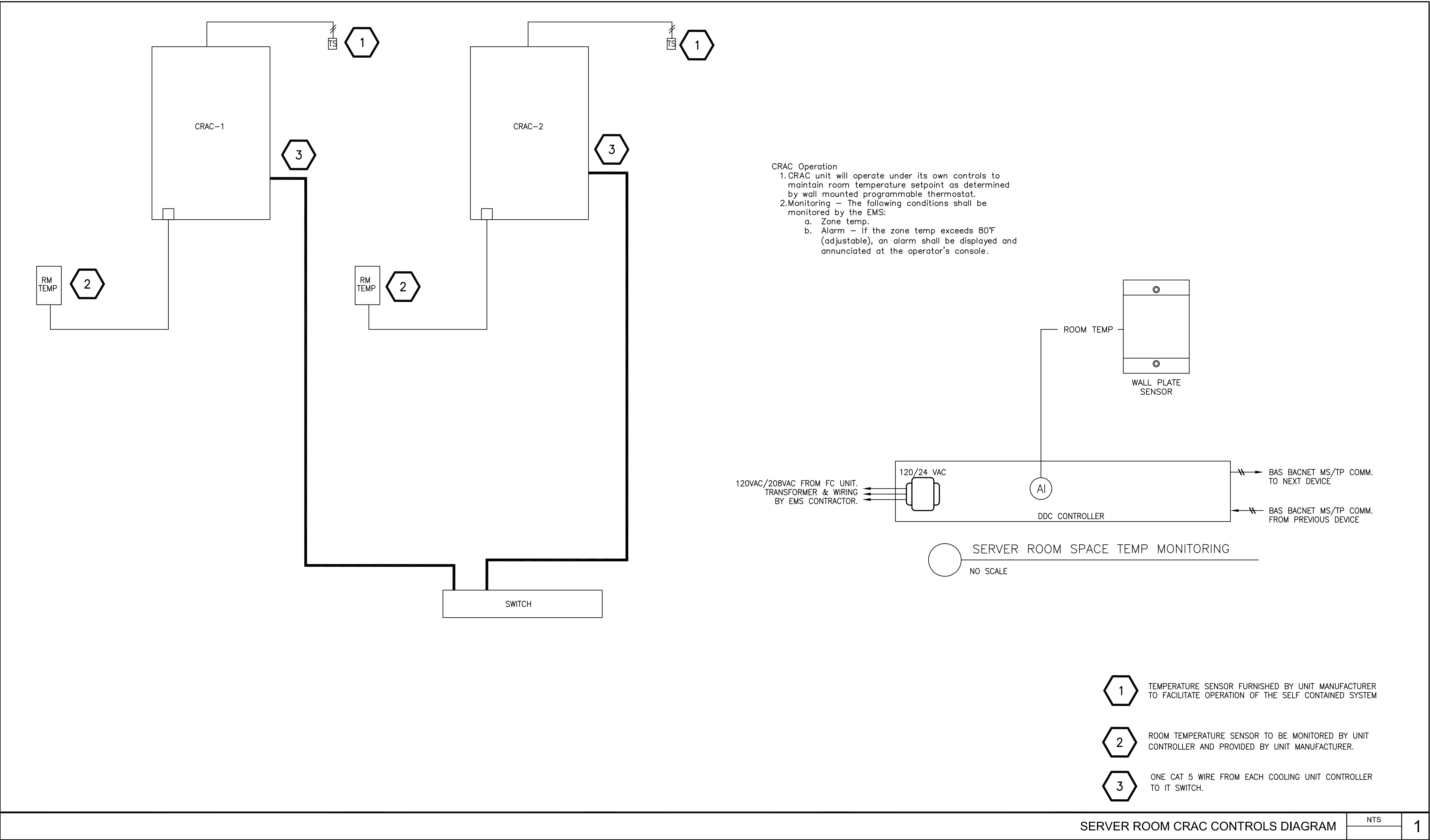
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1 MECHANICAL ENLARGED FLOOR PLAN
1/4" = 1'-0"

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KEY NOTES

- 1 TEMPERATURE SENSOR-ONLY FOR ALARM CONNECTED TO EMS SYSTEM. SEE MECHANICAL CONTROL DRAWINGS.

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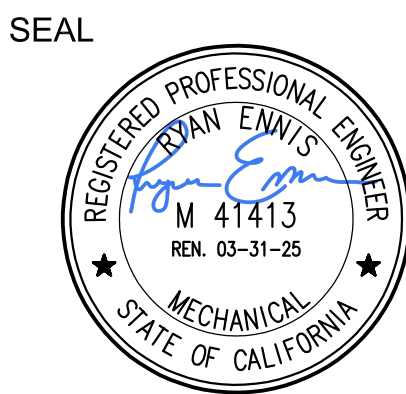
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**MECHANICAL
CONTROLS**

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The diagram illustrates the internal components and wiring of a VAV terminal unit. Key components include:

- RAI**: Return Air Inlet
- EA**: Economizer Air Inlet
- OAI**: Outside Air Inlet
- SAI**: Supply Air Inlet
- POWER EXHAUST VFD**: Variable Frequency Drive
- POWER EXHAUST DPT**: Differential Pressure Transducer
- SPEED S/S**: Speed Setpoint Switch
- END SWITCH 24VAC**: End Switch
- COMP**: Compressor
- REV VALVE**: Reversing Valve
- AUX. HTG.**: Auxiliary Heating
- FAN**: Fan
- C/S**: Control Switch
- T**: Temperature sensor

Wiring and Connections:

- 120/24 VAC**: Power supply for the unit.
- AI, AO, AI**: Analog Input/Output terminals for the DDC controller.
- BI, BO, BO, BO, BO, BO**: Digital Input/Output terminals for the DDC controller.
- BI, AO, AI, AI, AI, AI, BO, BO, BO, BO**: Digital Input/Output terminals for the BAS BACNET.
- WALL MOUNTED ZONE SENSOR W/LCD DISPLAY & INDICATOR LIGHTS**: Sensors for temperature, humidity, and pressure.

Legend:

- BI**: BAS BACNET MS/TP COMM. TO NEXT DEVICE
- BO**: BAS BACNET MS/TP COMM. FROM PREVIOUS DEVICE

Notes:

- ECONOMIZER/POWER EXHAUST SYSTEM PROVIDED AND WIRED BY AC UNIT MFR INCLUDING ECONOMIZER DAMPER ACTUATOR W/END SWITCH, 0-10VDC SIGNAL RANGE & POSITION FEEDBACK FOR INTERFACE W/EMS POWER EXHAUST VFD & DPT PROVIDED AND WIRED BY HP UNIT MFR. EMS CONTRACTOR TO INSTALL DPT TUBING.

NTS	1
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ECONOMIZER/POWER EXHAUST SYSTEM
 PROVIDED AND WIRED BY AC UNIT MFR
 INCLUDING ECONOMIZER DAMPER ACTUATOR
 W/END SWITCH, 0-10VDC SIGNAL RANGE &
 POSITION FEEDBACK FOR INTERFACE W/EMS.
 POWER EXHAUST VFD & DPT PROVIDED AND
 WIRED BY AC UNIT MFR, EMS CONTRACTOR TO
 INSTALL DPT TUBING.

POWER EXHAUST VFD
 SPEED S/S

POWER EXHAUST DPT
 OUT LOW HIGH

TO
 + ATMOSPHERE

TO ROOM SPACE

END SWITCH
 24VAC

OAT

EA

SA

c/s

COOL1
 COOL2
 HEAT1
 HEAT2
 FAN

UNIT FAN STATUS
 MECH CLG STG 1
 MECH CLG STG 2
 MECH HTG STG 1
 MECH HTG STG 2
 UNIT FAN

SUPPLY AIR TEMP

AFTER HOUR TIMER
 ROOM SET POINT
 ROOM TEMP
 ROOM HUMIDITY

UNOCCUPIED STATUS
 HEATING STATUS
 COOLING STATUS
 ECON STATUS

SCHEDULE
 # °F/°C
 # °F/°C
 # %RH

WALL
 MOUNTED
 ZONE SENSOR
 W/LCD
 DISPLAY &
 INDICATOR
 LIGHTS

120/24 VAC

AI
 AO
 AI

BI
 BO
 BO
 BO
 BO
 BO

AI

BI
 AO
 AI
 AI

BO
 BO
 BO
 BO

BAS BACNET MS/TP COMM.
 TO NEXT DEVICE

BAS BACNET MS/TP COMM.
 FROM PREVIOUS DEVICE

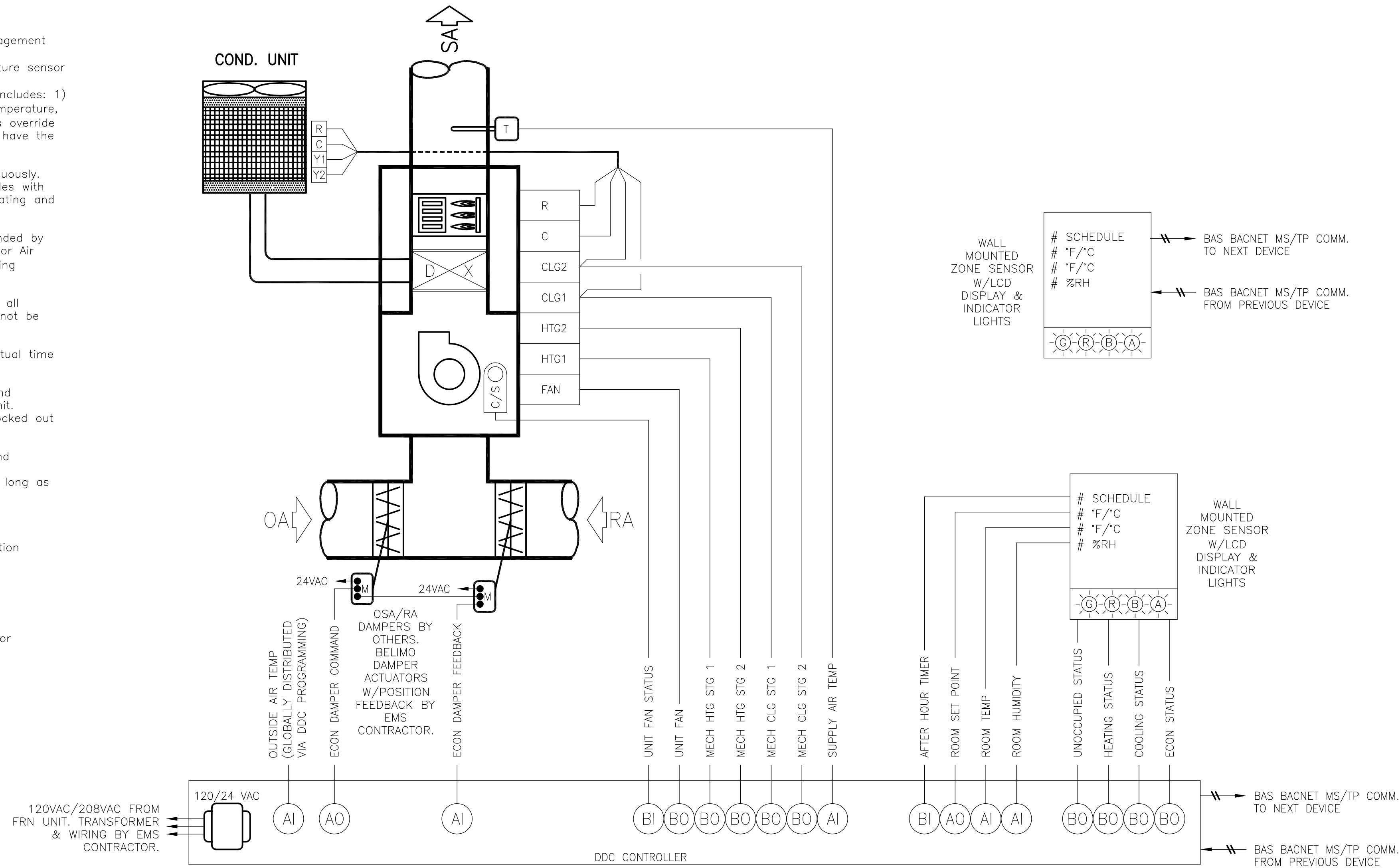
DDC CONTROLLER

NTS	2

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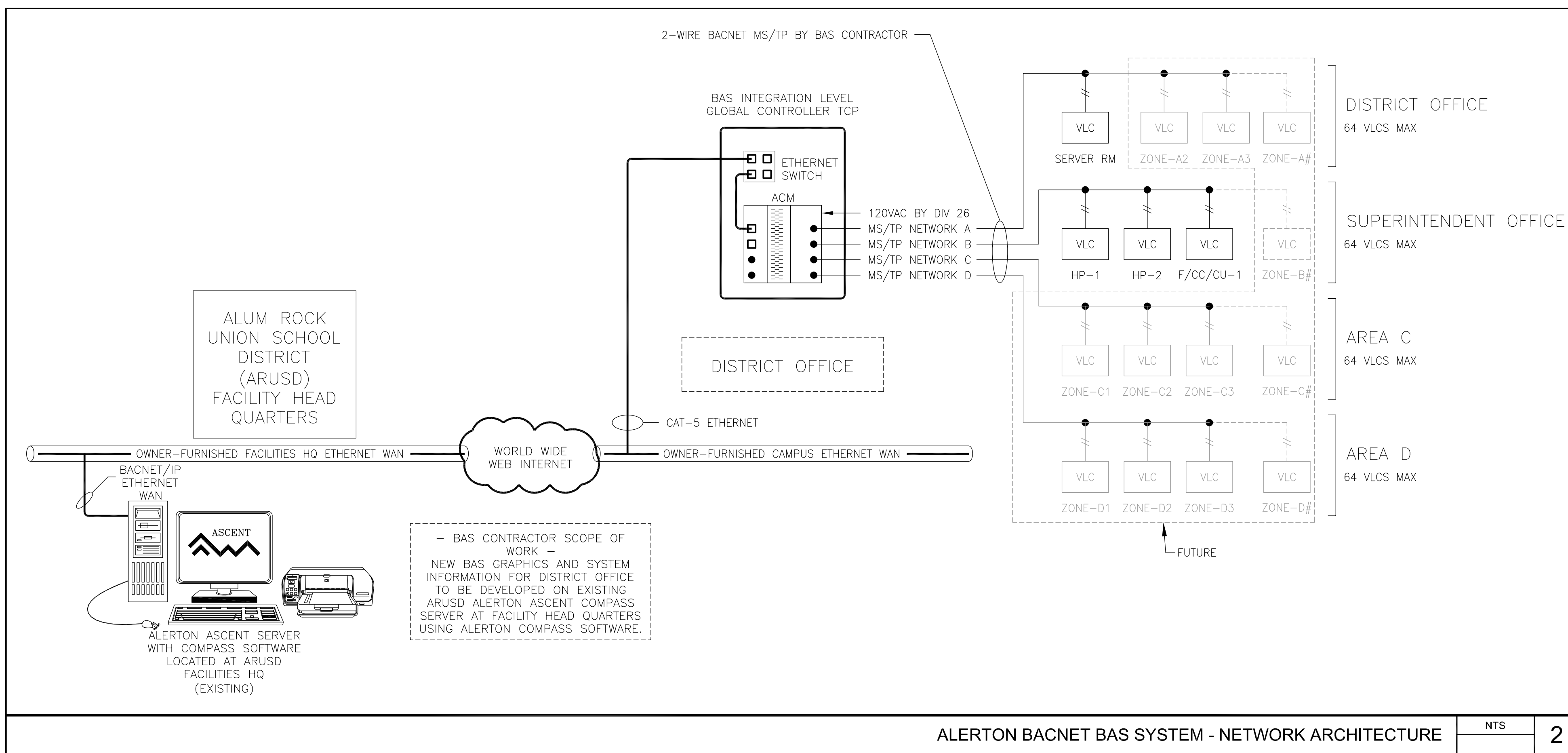
Surveillance/Condensing Unit Split System with Economizer

1. System Overview
 - a. Each FRN/Unit will be directly controlled by its own dedicated EMS (Energy Management System) unitary controller.
 - b. EMS unitary controller will be connected to a wall mounted electronic zone temperature sensor with integral relative humidity sensor.
 - c. Electronic zone temperature sensor shall have a touch screen LCD interface which includes: 1) digital pushbuttons for warmer/cooler setpoint control, 2) visual display of room temperature, room humidity, and zone CO2 temperature; and 3) digital pushbutton after-hours override timer control, with user adjustable duration. The after-hours override duration shall have the ability to be limited from the front-end.
2. Unit Fan Operation
 - a. When the zone is in Occupied Mode or in Afterhours Mode, the fan shall run continuously.
 - b. During the Unoccupied Mode as determined by EMS time schedule, the unit fan cycles with demand and the temperature is controlled by the unoccupied space temperature heating and cooling setpoints.
3. Minimum Outdoor Air Ventilation
 - a. During Occupied Mode or Afterhours Mode, the economizer damper shall be commanded by the EMS unitary controller to maintain a position which satisfies the Minimum Outdoor Air Ventilation requirements for the zone. Damper position(s) determined by Air Balancing Contractor.
4. Automatic Demand Reduction Controls
 - a. EMS shall be programmed with capability to implement centralized demand shed for all non-critical zones upon call for Automatic Demand Reduction. Critical zones shall not be impacted by demand shed conservation measures.
5. Zone Pre-Occupancy Purge
 - f. The EMS shall schedule the zone to be in Occupied Mode one hour prior to the actual time of anticipated occupancy.
6. Heating operation
 - a. The controller compares the heating setpoint with the average space temperature and determines a need-heating control signal to stage a gas regulating valve on the unit.
 - b. Economizer to be commanded to Min CFM setpoint and mechanical cooling to be locked out during heating mode.
7. Cooling operation
 - a. The controller compares the cooling setpoint with the average space temperature and determines a need-cooling signal.
 - b. The first stage of cooling will enable the economizer to provide free cooling for as long as possible.
 - c. The second stage will enable the compressor(s) to maintain the room set point.
 - d. Mechanical heating to be locked out during cooling mode.
8. Fault Detection Diagnostics
 - a. The EMS BDC Controller shall monitor the following economizer actuator Fault Detection Diagnostics conditions and broadcast results via EMS network:
 - Temperature Sensor Failure/Fault
 - Economizer not economizing when enabled
 - Economizer economizing when disabled
 - Economizer damper modulation failure
 - Excess outdoor air
9. Monitoring – The following conditions shall be monitored and displayed at EMS Operator Workstation/Graphical User Interface:
 - a. Supply air temperature.
 - b. Room temperature Qty of 2.
 - c. Room humidity Qty of 2.
 - d. Current mode (heating/cooling/fan).
 - e. Supply air temperature attained last time unit was in heating.
 - f. Supply air temperature attained last time unit was in cooling.
 - g. Current command status of fan, economizer, compressor and gas valve.
 - h. Run time meters on fan, compressor, and heat.
 - i. Fan Status thru Current Switch.
 - j. Economizer actuator feedback status.



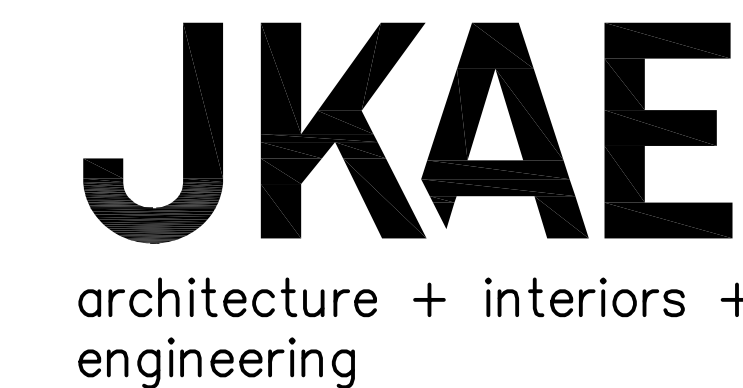
GAS FURNACE AND CONDENSING UNIT CONTROLS DIAGRAM (F-1)

NTS	1
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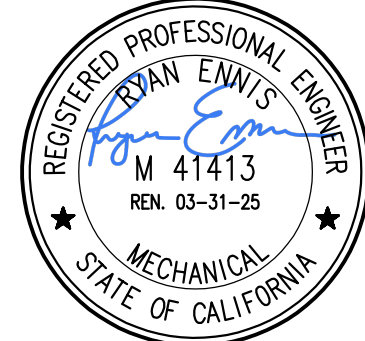


ALERTON BACNET BAS SYSTEM - NETWORK ARCHITECTURE

NTS	2
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SEAL



2930 GAY AVE
SAN JOSE, CA 95127

Drawing Title

**MECHANICAL
CONTROLS**

[illegible]

Project
ALUM ROCK UNION SCHOOL DISTRICT
HVAC & ROOFING UPGRADES

M7.0.3

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PLUMBING MATERIAL SCHEDULE					
SYSTEM	LOCATION	MATERIAL		JOINING METHOD	
		MATERIAL	TEST METHOD	MATERIAL	TEST METHOD
CONDENSATE DRAIN	INDOORS (ACIDIC)	PVC-DWV PIPE, SCHEDULE 40 THICKNESS	ASTM D2665	SOLVENT WELD	ASTM D2665
NATURAL GAS	ABOVE SLAB	SCHEDULE 40 BLACK STEEL PIPE	ASTM A53	150 PSI BLACK MALLEABLE IRON SCREWED FITTINGS	ANSI B16.3, ANSI B16.8
CONDENSATE DRAIN	OUTDOORS (NON-ACIDIC)	SCHEDULE 40 HOT DIPPED GALVANIZED STEEL PIPE	ASTM A53	150 PSI HOT DIPPED GALVANIZED MALLEABLE IRON SCREWED FITTINGS	ANSI B16.3, ANSI B16.8
NOTES:					
1. PRIME AND PAINT ALL GAS PIPING.					

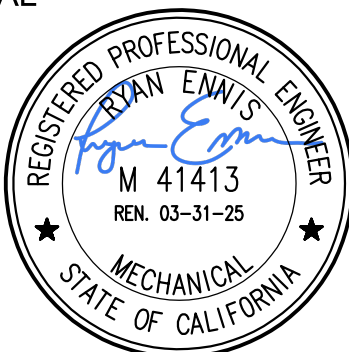
EQUIPMENT ANCHORAGE NOTES	
ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC SECTIONS 1617A.1.17 THROUGH 1617A.1.20 & 1617A.1.23 AND ASCE 7-16 CHAPTERS 13, 26 AND 30.	
1. ALL PERMANENT EQUIPMENT AND COMPONENTS. 2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER, "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE. 3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.	
THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:	
A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT. B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.	
THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.	

PIPING AND DUCTWORK DISTRIBUTION SYSTEM BRACING NOTES	
PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8, AND 2022 CBC, SECTIONS 1617A.1.24 THROUGH 1617A.1.26.	
THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE-APPROVED INSTALLATION GUIDE (E.G., HCAI OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.	
MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):	
MP MD PP E	OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT
☒ ☒ ☐	SPECIFIC NOTES AND DETAILS.
MP MD PP E	OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL
☐ ☐ ☐	(OPM#) #0043-13.

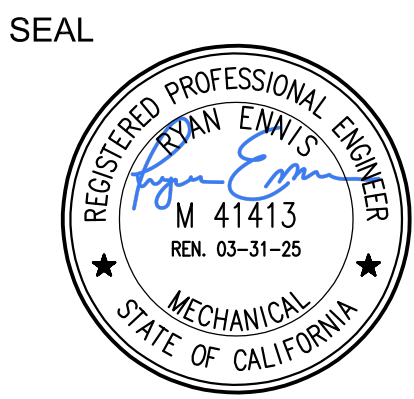
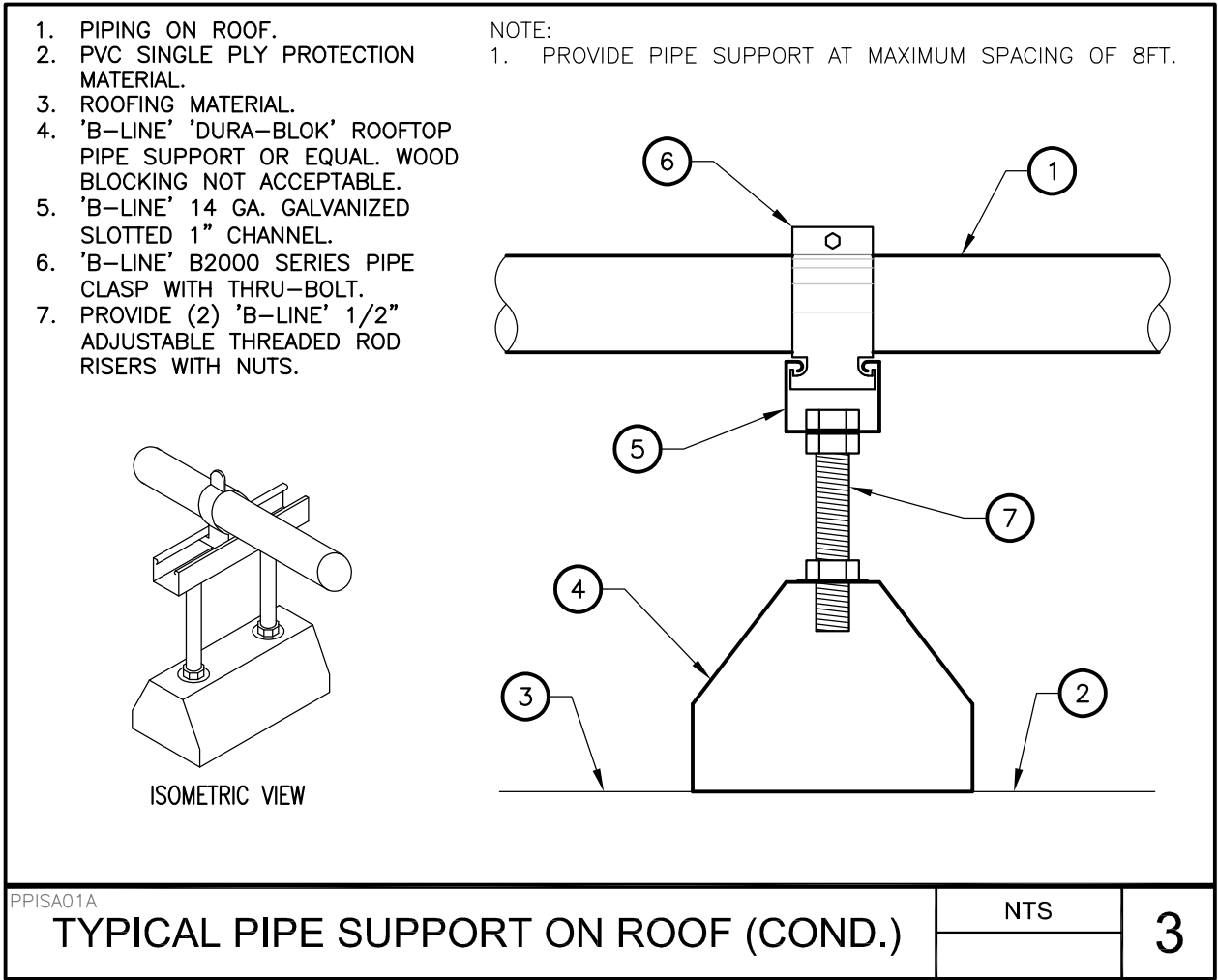
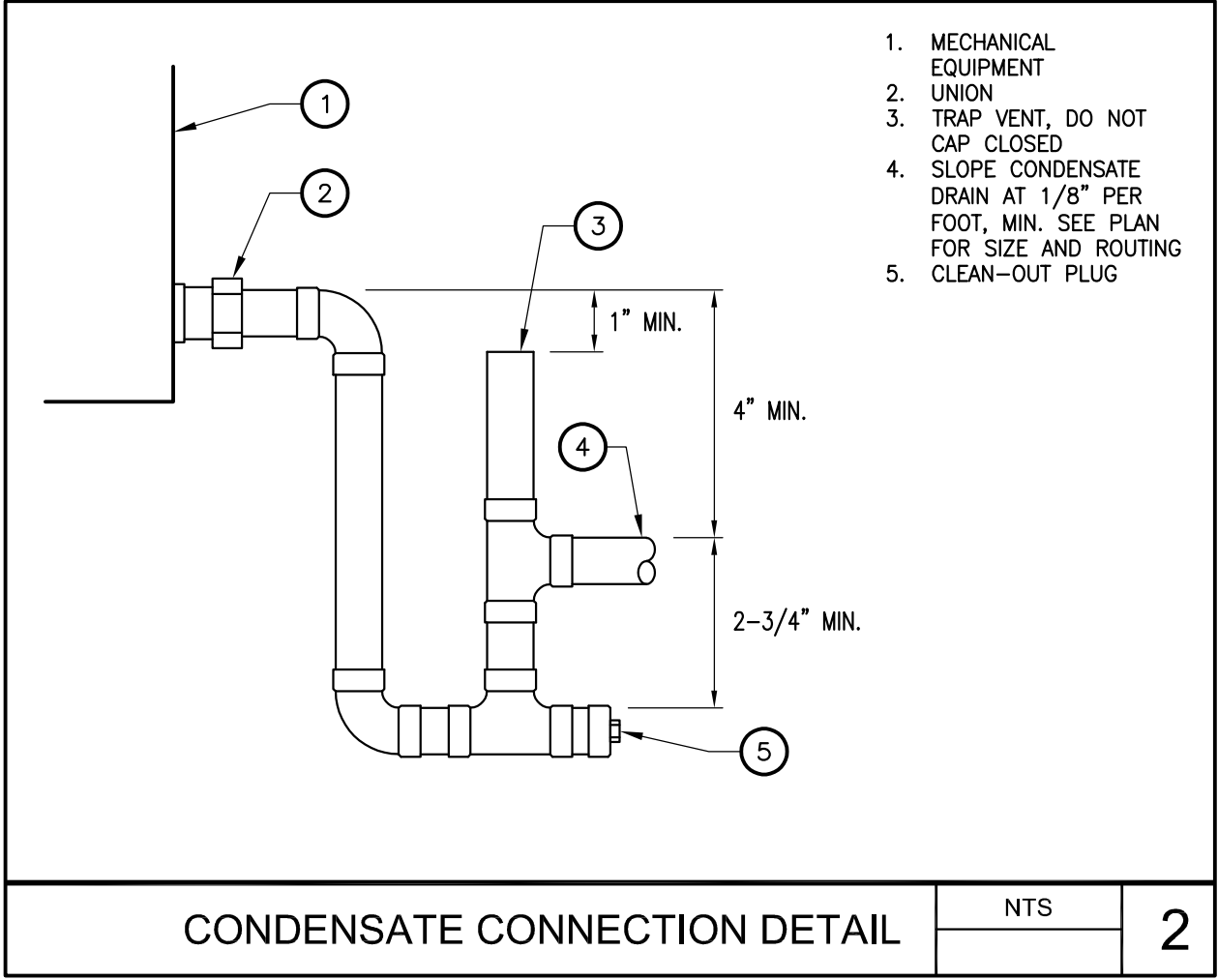
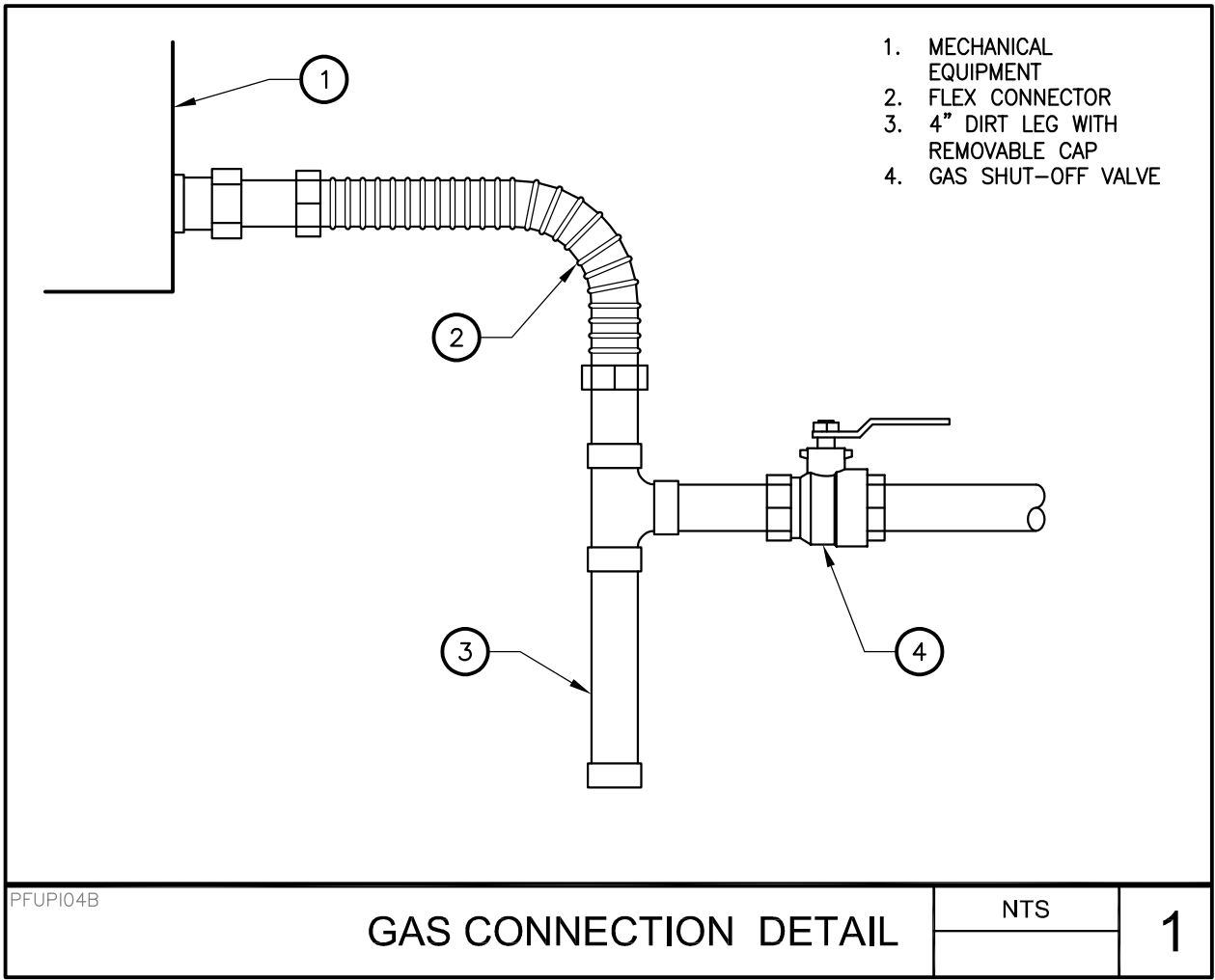
PLUMBING LEGEND		
SYMBOL	ITEM	ABBR.
	FIXTURE DESIGNATION UNIT ABBREVIATION NUMBER	
	DETAIL DESIGNATION DETAIL NUMBER SHEET NO. WHERE SHOWN	
	DOMESTIC COLD WATER	CW
	DOMESTIC HOT WATER	HW
	DOMESTIC HOT WATER SUPPLY	HWS
	DOMESTIC HOT WATER RETURN	HWR
	VENT	V
	GAS	G
	MEDIUM PRESSURE GAS	MG
	LIQUID PROPANE GAS	LPG
	SEWER	S
	GREASE WASTE	GW
	OIL/SAND WASTE	OS
	ACID WASTE	AW
	STORM DRAIN	SD
	ROOF DRAIN	RD
	OVERFLOW DRAIN	OD
	CONDENSATE DRAIN	C
	SECONDARY DRAIN	SCD
	DRAIN	D
	TEMPERATURE & PRESSURE RELIEF	T&P
	FIRE SPRINKLER	FS
	PIPE CAP	
	PIPE RISER/DROP	(R)/(D)
	SHUT-OFF VALVE IN BOX	SOV
	FLOOR CLEANOUT	FCO
	CLEANOUT TO GRADE	COTG
	WALL CLEANOUT	WCO
	CLEANOUT	CO
	HOSE BIBB	HB
	OVERFLOW DRAIN OUTLET	
	BALL VALVE	BV
	GATE VALVE	GV
	CHECK VALVE	CHKV
	TMV	TMV
	SHUT-OFF COCK	SQC
	CIRCULATION PUMP	CP
	BALANCING VALVE	BLV
	TRAP PRIMER	TP
	TYPICAL	(TYP)
	VENT THRU ROOF	VTR
	UNDERGROUND	UG
	UNDER FLOOR	UF
	ABOVE CEILING	ABC
	TO ABOVE/BELOW	TA/TB
	FROM ABOVE/BELOW	FA/TB
	CONTINUATION	CONT.
	NEW	(N)
	EXISTING	(E)
	POINT OF DIS/CONNECTION	POD/POC

PLUMBING SPECIFICATIONS	
A. THIS CONTRACTOR SHALL COMPLY WITH ALL CODES AND REGULATIONS IN EFFECT AT THE JOB SITE, INCLUDING, BUT NOT LIMITED TO: A.1. 2022 CALIFORNIA BUILDING CODE A.2. 2022 CALIFORNIA MECHANICAL CODE A.3. 2022 CALIFORNIA PLUMBING CODE A.4. 2022 CALIFORNIA ELECTRICAL CODE A.5. 2022 CALIFORNIA GREEN BUILDING STANDARDS A.6. 2022 CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS – TITLE 24 A.7. NATIONAL FIRE PROTECTION ASSOCIATION A.8. CALIFORNIA STATE FIRE MARSHAL B. ALL MATERIALS AND EQUIPMENT INSTALLED UNDER THIS CONTRACT SHALL BE GUARANTEED FREE FROM ALL MECHANICAL, ELECTRICAL AND WORKMANSHIP DEFECTS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING ALL DAMAGED ITEMS INSTALLED UNDER THIS CONTRACT WITHOUT ADDITIONAL COST TO OWNER. C. THE PLUMBING CONTRACTOR SHALL PROVIDE THE OWNER COPIES OF OPERATION, MAINTENANCE AND PREVENTATIVE MAINTENANCE MANUALS FOR EACH MODEL AND TYPE OF PLUMBING EQUIPMENT. D. CHECK AND VERIFY EXISTING CONDITIONS AT THE JOB SITE BEFORE BEGINNING WORK. ADJUST THE LOCATION AND CONFIGURATION OF THE WORK NECESSARY TO SUIT ACTUAL CONDITIONS AND OTHER TRADES. ANY CHANGES REQUIRED MUST FIRST BE APPROVED BY THE ARCHITECT OR ENGINEER. E. THE LOCATIONS OF EQUIPMENT, PIPING, AND SYSTEMS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC AND SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE. CHANGES REQUIRED TO SUIT EXISTING CONDITIONS AND DUE TO COORDINATION WITH OTHER TRADES SHALL BE MADE AT NO EXTRA COST TO THE OWNER. F. SUBMIT MANUFACTURER'S PRODUCT DATA INCLUDING NAME OF MANUFACTURER, TRADE NAME, MODEL, CAPACITY, OPTIONS, DIMENSIONS, WEIGHTS, INSTALLATION AND STARTUP DATA. EQUIPMENT PERFORMANCE SCHEDULES ARE MINIMUM CAPACITY, FLOW, EFFICIENCY, ETC. REQUIRED. WEIGHTS AND ELECTRICAL DATA SCHEDULED IS MAXIMUM AVAILABLE OR ALLOWABLE. G. ALL EQUIPMENT IS TO BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER. USING ALL ACCESSORY EQUIPMENT AVAILABLE FROM THE MANUFACTURER FOR SUPPORTS, CONTROLS, ETC., TO MAKE A COMPLETE SYSTEM. ALL EQUIPMENT OR ACCESSORIES NEEDED AND NOT SHOWN OR SPECIFIED SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR. ADJUST THE EQUIPMENT FOR PROPER OPERATION, CHECK ALL CONTROLS AND VERIFY THAT ALL SAFETY DEVICES ARE FUNCTIONING PROPERLY. H. PROVIDE ACCESS DOORS WHERE ACCESS THROUGH FLOORS, WALLS OR CEILINGS IS REQUIRED TO ACCESS PLUMBING COMPONENTS OR OTHER SYSTEMS REQUIRING ACCESS FOR MAINTENANCE, TESTING OR OBSERVATION. COORDINATE THE EXACT TYPE AND LOCATION OF ACCESS DOORS TO PROVIDE PROPER ACCESS TO THE ITEM CONCEALED. I. CHECK ALL SYSTEMS FOR LEAKS. CORRECT ANY DEFICIENCIES AS SOON AS DISCOVERED. OPERATE THE SYSTEMS AS A TEST AND DEMONSTRATE TO THE OWNER AND ARCHITECT OR ENGINEER THAT THE SYSTEM IS FUNCTIONING PROPERLY. J. BEFORE COMMENCING WORK CHECK INVERT ELEVATIONS REQUIRED FOR SEWER CONNECTIONS, CONFIRM INVERTS AND ENSURE THAT THESE CAN BE PROPERLY CONNECTED WITH SLOPE FOR DRAINAGE AND COVER TO AVOID FREEZING. VERIFY THE LOCATION OF ALL SERVICES. NO EXTRA COSTS SHALL BE ALLOWED IF SERVICES ARE NOT AS SHOWN. K. COORDINATE ALL NEW OR CHANGING UTILITY SERVICES WITH UTILITY PROVIDER AS SOON AS POSSIBLE. ALL WORK PERFORMED NOT IN ACCORDANCE WITH THE UTILITY COMPANIES REQUIREMENTS PRIOR TO COORDINATING WITH THE UTILITY COMPANY SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. L. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT. M. MAKE ALL CONNECTIONS TO EQUIPMENT AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER AS FAR AS TRAPS, DRAINS, FLEXIBLE CONNECTIONS, ETC. AND AS REQUIRED BY THE EQUIPMENT AND LOCATION. N. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS, FIXTURE MOUNTING HEIGHTS AND ADA ACCESSIBILITY REQUIREMENTS. O. PIPING INSULATION (INTERIOR APPLICATIONS): 0.1. GLASS FIBER INSULATION: ASTM C 547 AND ASTM C 795. "K" ("KSI") VALUE: 0.24 AT 75 DEGREES F, WHEN TESTED IN ACCORDANCE WITH ASTM C 177. MAXIMUM SERVICE TEMPERATURE: 850 DEGREES F. MAXIMUM MOISTURE ABSORPTION: 0.20 PERCENT BY VOLUME. 0.2. VAPOR BARRIER JACKET: WHITE KRAFT PAPER WITH GLASS FIBER YARN, BONDED TO ALUMINIZED FILM; MOISTURE VAPOR TRANSMISSION WHEN TESTED IN ACCORDANCE WITH ASTM E 96/E 96M OF 0.02. 0.3. INSULATION THICKNESS SCHEDULES: 0.3.1. DOMESTIC HOT AND TEMPERED WATER SUPPLY: 0.3.1.1. 2 INCH THICKNESS FOR PIPING 2 INCH AND LARGER. 0.3.1.2. 1-1/2 INCH THICKNESS FOR PIPING 1 INCH TO 1-1/2 INCH. 0.3.1.3. 1 INCH THICKNESS FOR PIPING LESS THAN 1 INCH. 0.3.2. DOMESTIC COLD WATER LOCATED IN UNHEATED AREAS: 0.3.2.1. 1 INCH THICKNESS FOR PIPING 1-1/2 INCHES AND LARGER. 0.3.2.2. 3/4 INCH THICKNESS FOR PIPING 1 INCHES AND SMALLER. P. INSULATE DOMESTIC HOT WATER, TEMPERED WATER AND WASTE PIPING BELOW HANDICAPPED PLUMBING FIXTURES WITH MOULDED SINGLE PIECE REMOVABLE INSULATION COVERS, FOAM, FIRE RESISTANT, TRUEBRO, OR EQUAL. INSTALL INSULATION COVERS IN ACCORDANCE WITH CBC ACCESS REQUIREMENTS. Q. FIXTURES, DOMESTIC WATER PIPING AND COMPONENTS SHALL BE PROVIDED AND INSTALLED IN COMPLIANCE WITH CALIFORNIA AB 1853 LEGISLATION WHICH LIMITS THE ALLOWABLE LEAD CONTENT IN CERTAIN DOMESTIC WATER SYSTEM COMPONENTS. R. PROVIDE COMPRESSION SHUTOFF CONTROL STOP VALVES WITH IPS INLETS AND THREADED BRASS NIPPLES AT PIPE CONNECTION ON WATER SUPPLIES TO EACH FIXTURE. S. PROVIDE CHROMIUM-PLATED FINISH ON FITTINGS AND ACCESSORIES EXPOSED TO VIEW. T. FIXTURE FITTINGS AND TRIM: CONFORM TO ASME A112.18.1M AND ASME A112.19.5, AS APPLICABLE. U. PROVIDE WATER HAMMER ARRESTORS AT END OF PIPE RUNS TO TWO OR MORE FIXTURES, PROPERLY SIZED WITH SUFFICIENT DISPLACEMENT VOLUME TO DISSIPATE CALCULATED ENERGY IN THE PIPING SYSTEMS. WATER HAMMER ARRESTORS SHALL BE STAINLESS STEEL SHELL WITH STAINLESS STEEL BELLOW CONTAINED WITHIN THE CASING. V. PROVIDE PIPE SLEEVES WHERE PIPES AND TUBING PASS THROUGH WALLS, FLOORS, ROOFS, AND PARTITIONS. FINISH FLUSH AT BOTH ENDS. EXTEND 2 INCHES (50 MM) ABOVE FINISHED FLOORS. PACK SPACE BETWEEN PIPE OR TUBING AND SLEEVE, AND CAULK. W. IDENTIFY PIPING WITH TAPE AND DECALS. INSTALL LABELING ON PIPE AT INTERVALS OF NOT MORE THAN 20 FEET (6 METERS) AND AT LEAST ONCE IN EACH ROOM AND EACH STORY TRAVERSED BY PIPELINE. X. PROVIDE NON-CONDUCTING DIELECTRIC CONNECTIONS WHEREVER JOINTING DISSIMILAR METALS. Y. ALL PLUMBING VENTS SHALL TERMINATE NOT LESS THAN 10' FROM ANY OUTSIDE AIR INTAKE OR OPENING TO THE BUILDING. Z. ALL EXPOSED MATERIAL SHALL BE PREPARED WITH A PRIME COAT AND THEN PAINTED.	

PLUMBING SHEET INDEX	
SHEET NUMBER	SHEET NAME
P0.0.1	PLUMBING SCHEDULES, LEGEND & NOTES
P0.0.2	PLUMBING DETAILS
P2.0.1D	PLUMBING DEMO ROOF PLAN
P2.0.1	PLUMBING ROOF PLAN
P6.4.1D	PLUMBING DEMO ENLARGED FLOOR PLAN
P6.4.1	PLUMBING ENLARGED FLOOR PLAN

SEAL			Project ALUM ROCK UNION SCHOOL DISTRICT HVAC & ROOFING UPGRADES
			
2830 GAY AVE SAN JOSE, CA 95127			
Drawing Title			
PLUMBING SCHEDULES, LEGEND, & NOTES			
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Project No.		©Date	
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PLUMBING DETAILS

NO.	DATE	ISSUE

Project

**ALUM ROCK UNION SCHOOL DISTRICT
HVAC & ROOFING UPGRADES**

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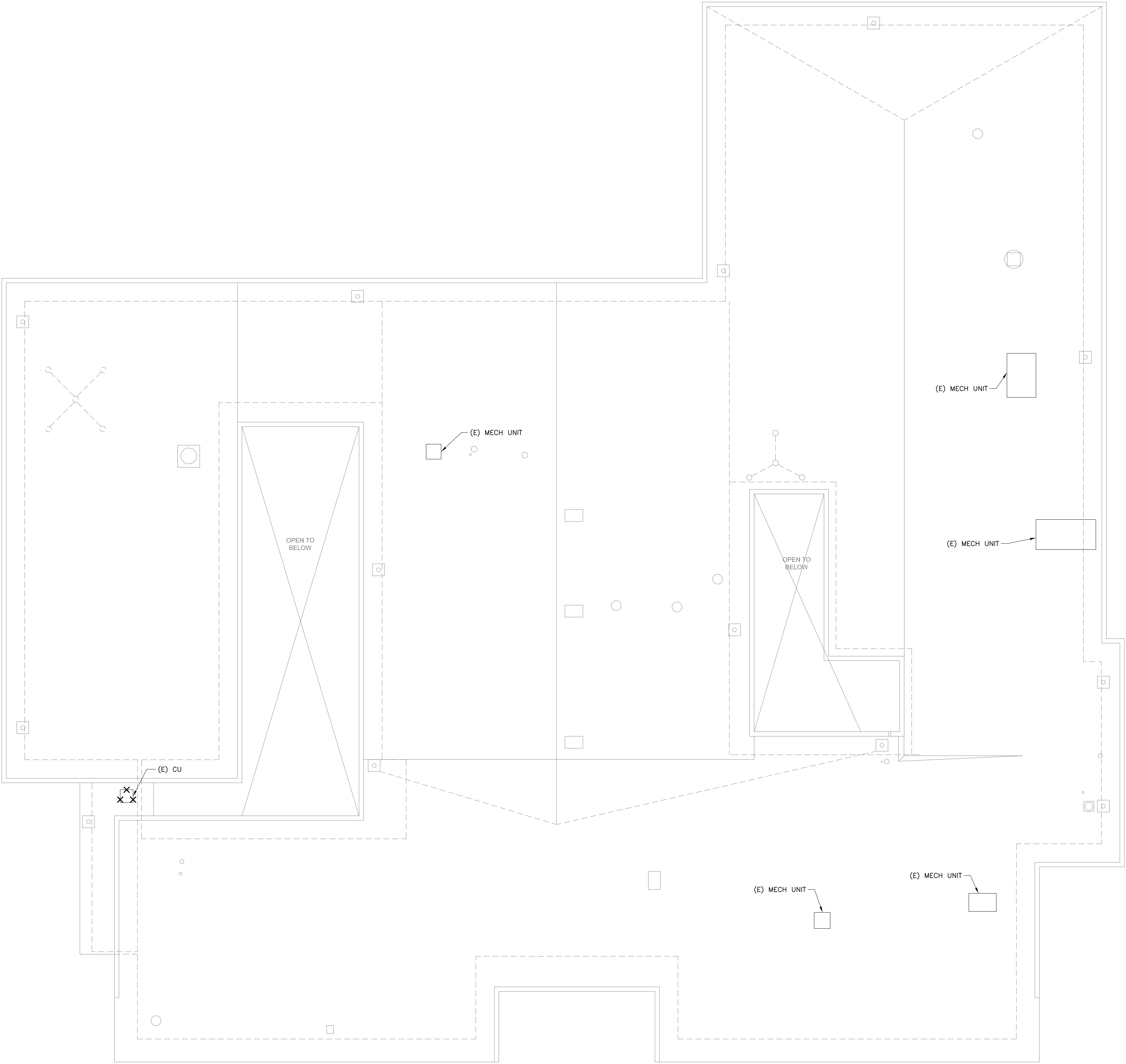
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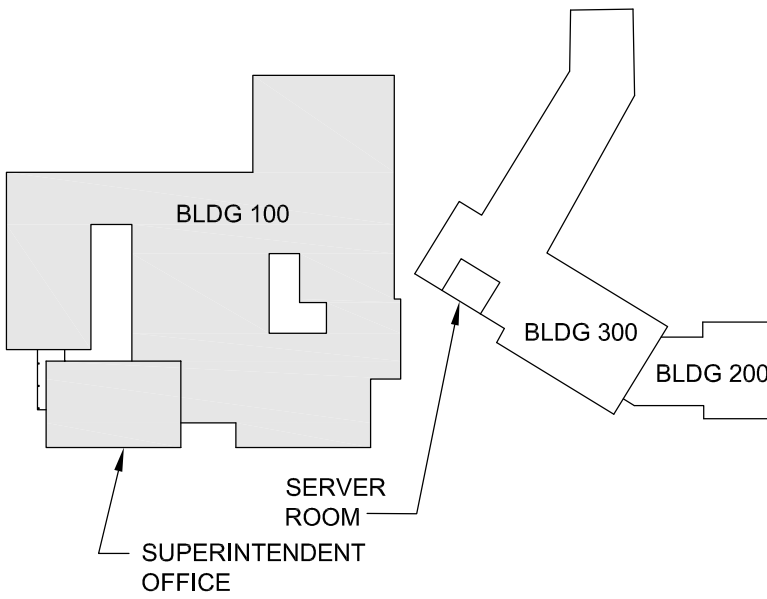
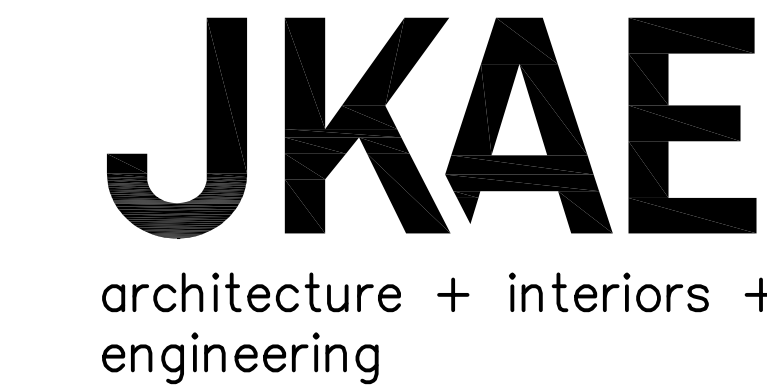


KEY NOTES

1. REMOVE EXISTING CONDENSING UNIT AND CONDENSATE PIPING SERVING FURNACES.

GENERAL NOTES

1. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK AND NOTIFY ARCHITECT/ENGINEER OF ANY CONFLICTS OR DISCREPANCIES.

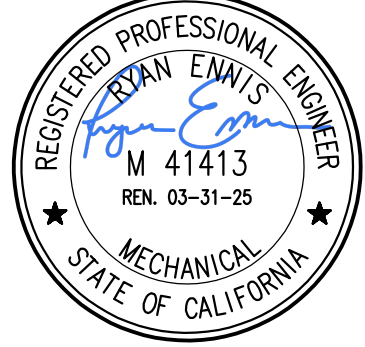


KEY PLAN



MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0178
www.lpengiineers.com
Job #: 23-2138

SEAL



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SAN JOSE, CA 95127

Drawing Title
**PLUMBING DEMO
OVERALL ROOF PLAN**

NO.	DATE	ISSUE

Project
**ALUM ROCK UNION SCHOOL DISTRICT
HVAC & ROOFING UPGRADES**

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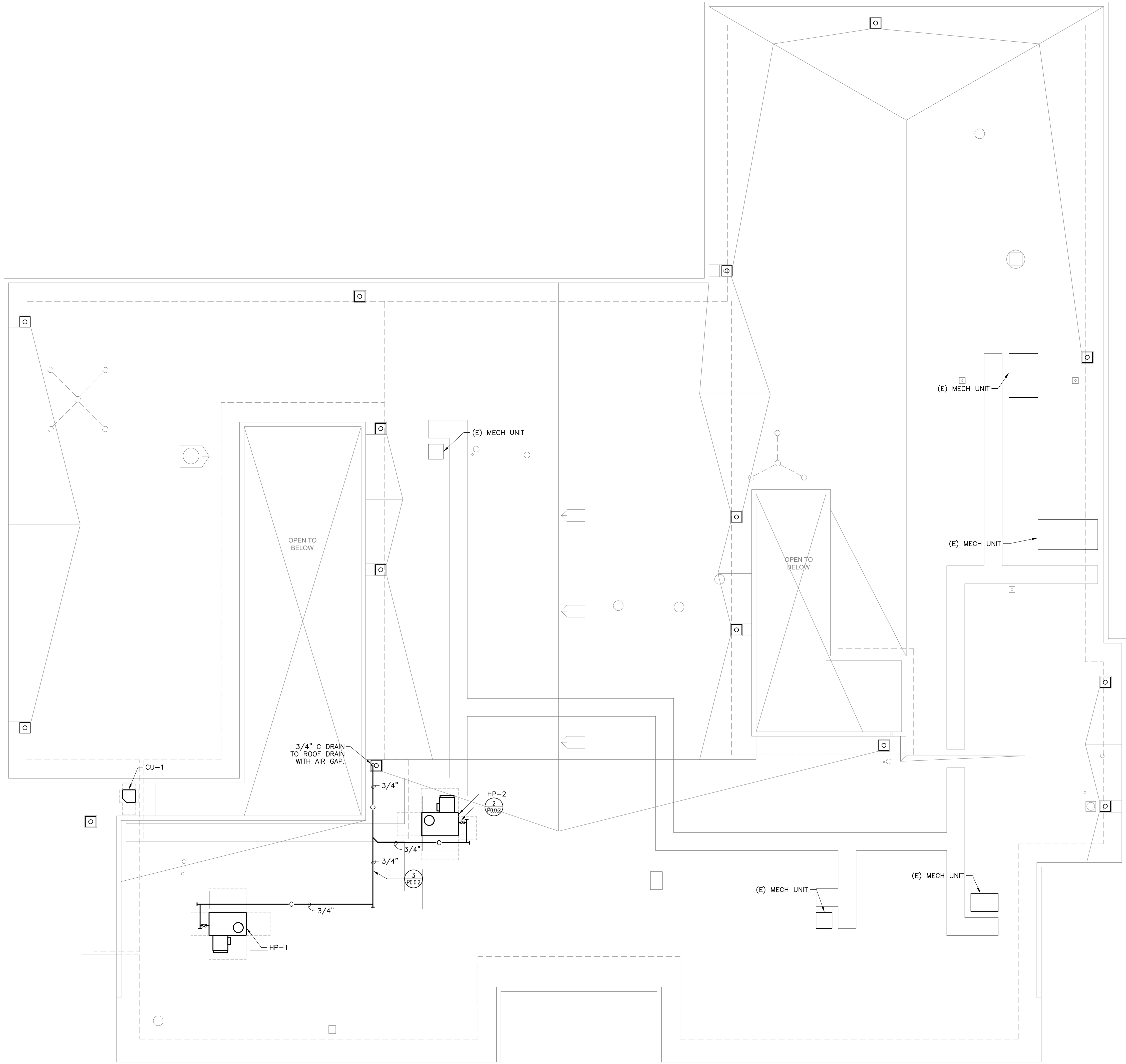
P2.0.1D

1

PLUMBING DEMO OVERALL ROOF PLAN

1/8" = 1'-0"

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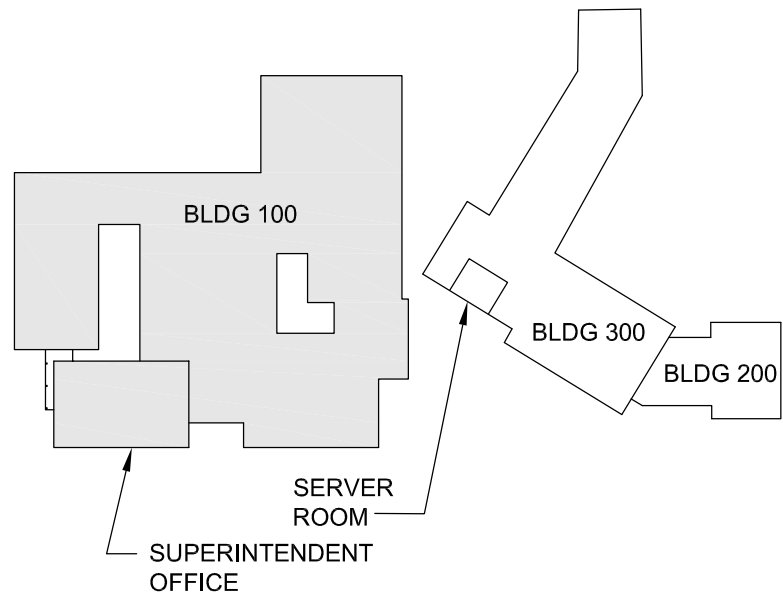


1 PLUMBING OVERALL ROOF PLAN
1/8" = 1'-0"

GENERAL NOTES

1. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK AND NOTIFY ARCHITECT/ENGINEER OF ANY CONFLICTS OR DISCREPANCIES.

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engineering

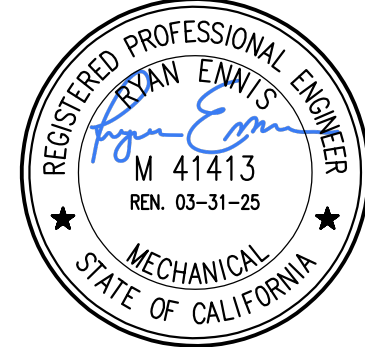


KEY PLAN



MEP & FS / Sustainability / CxA
1209 Pleasant Grove Blvd.
Roseville, CA 95678
p 916-771-0178
www.lpenghneers.com
Job #: 23-2138

SEAL



2830 GAY AVE
SAN JOSE, CA 95127

Drawing Title
PLUMBING ROOF PLAN

NO.	DATE	ISSUE

Project
**ALUM ROCK UNION SCHOOL DISTRICT
HVAC & ROOFING UPGRADES**

Drawn By

Checked By

Project No.

23-525

©Date

03/11/24

Drawing No.

P2.0.1

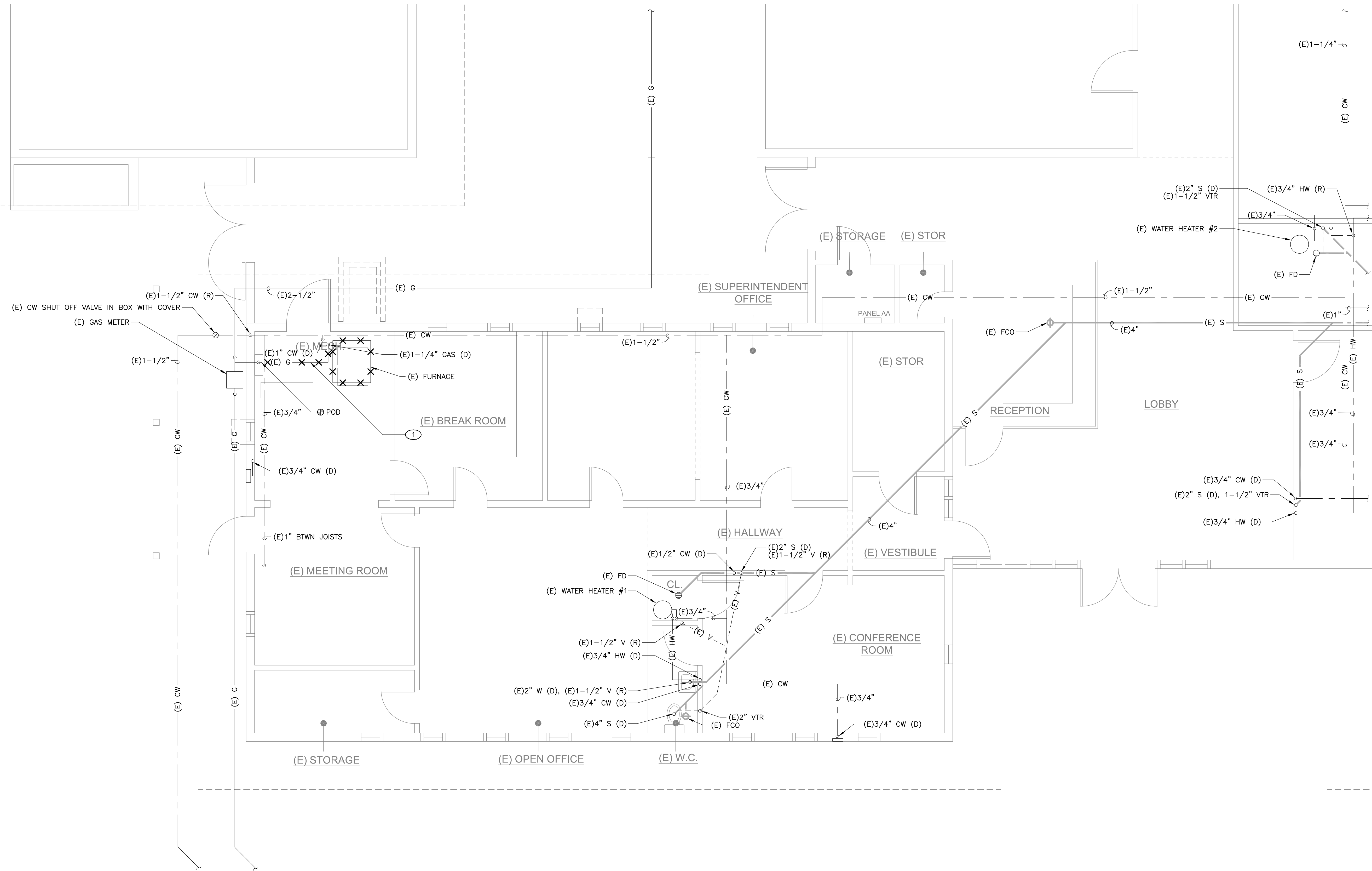
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KEY NOTES

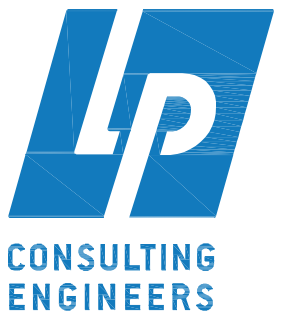
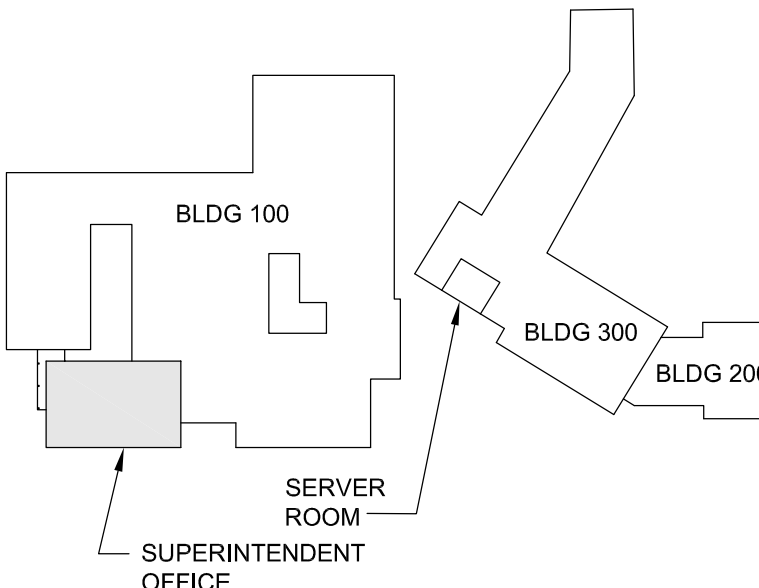
- ① REMOVE (E) GAS PIPING CONNECTED TO FURNACES BEING DEMOLISHED BACK TO POD.

GENERAL NOTES

1. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK AND NOTIFY ARCHITECT/ENGINEER OF ANY CONFLICTS OR DISCREPANCIES.

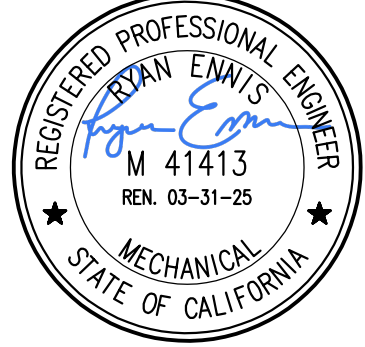


① PLUMBING DEMO ENLARGED FLOOR PLAN
1/4" = 1'-0"



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ENLARGED FLOOR
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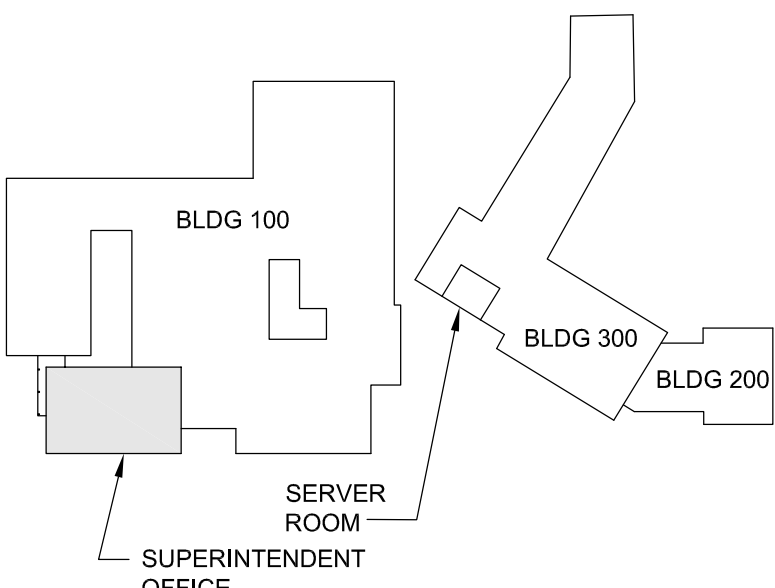
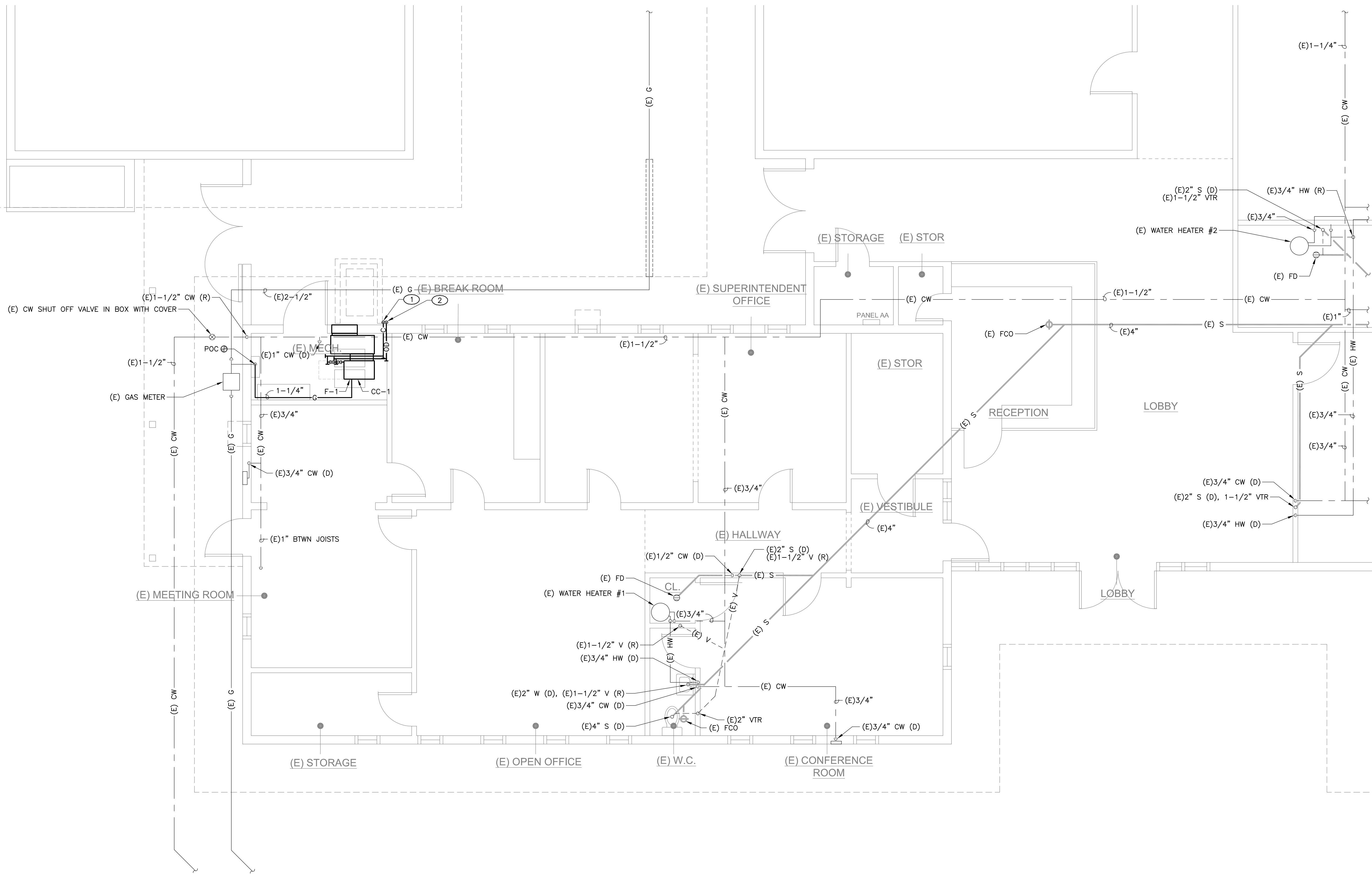
03/11/24

Drawing No.

P6.4.1D

- ① 3/4" CONDENSATE DRAIN FROM FURNACE AND COOLING COIL DROP DOWN IN EXTERIOR WALL. ELBOW OUT AND DOWN AT +8" ABOVE PLANTER.
- ② 3/4" OVERFLOW DRAIN FROM COOLING COIL DROP DOWN IN EXTERIOR WALL. ELBOW OUT AND DOWN AS HIGH AS POSSIBLE.

1. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK AND NOTIFY ARCHITECT/ENGINEER OF ANY CONFLICTS OR DISCREPANCIES.



KEY PLAN

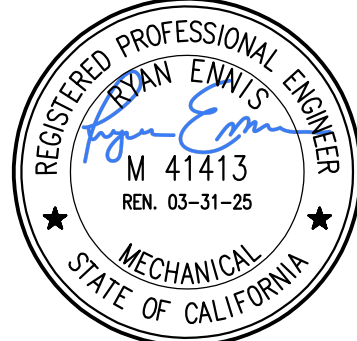


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PLUMBING ENLARGED FLOOR PLAN

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ALUM ROCK UNION SCHOOL DISTRICT

HVAC & ROOFING UPGRADES

P6.4.1

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC SECTIONS 1617A.1.17 THROUGH 1617A.1.20 & 1617A.1.23 AND ASCE 7-16 CHAPTERS 13, 26 AND 30.

1. ALL PERMANENT EQUIPMENT AND COMPONENTS,
2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

- A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
- B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2022 CBC, SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE-APPROVED INSTALLATION GUIDE (E.G., HCAI OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINE OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANG AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL
DISTRIBUTION SYSTEMS (E):

MP MD PP E OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT
☐ ☐ ☐ ☒ SPECIFIC NOTES AND DETAILS.

MP MD PP E OPTION 2: SHALL COMPLY WITH HCAI (OSHPD) PRE-APPROVAL INCLUDE
☐ ☐ ☐ ☐ IN THESE DRAWINGS WITH PROJECT-SPECIFIC NOTES
 AND DETAILS.

ALL DEMOLITION GENERAL NOTES SHOWN BELOW ARE NOT NECESSARILY USED ON PLANS IF NOT REQUIRED

1. ALL EXISTING EQUIPMENT, DEVICES, CONDUIT, AND WIRING, ETC., WHEN SHOWN ON PLANS OR BASED ON AVAILABLE EXISTING DOCUMENTS AND LIMITED SITE SURVEYS AND ARE SHOWN FOR CLARITY SHALL BE REMOVED OR AN APPROXIMATION ONLY. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE CONSTRUCTION OF THE PROJECT PRIOR TO SUBMITTING BID AND BEFORE START OF ANY ELECTRICAL WORK, CONTRACTOR SHALL VERIFY ON-SITE ALL EXISTING LOCATIONS AND CONDITIONS TO ASCERTAIN ALL WORK REQUIRED.
2. EXISTING ELECTRICAL MAIN SERVICE IS BEING REPLACED WITH NEW THAT IS TO BE INCLUDED IN THE SCOPE OF WORK. CONTRACTOR SHALL VERIFY AND COORDINATE THE SEQUENCE OF WORK WITH THE LOCAL UTILITY COMPANY, THE OWNER/DISTRICT'S REPRESENTATIVE, AND OTHER TRADES AT THE EARLIEST PART OF THE PROJECT FOR ALL REQUIREMENTS AND SCHEDULING OF THE REQUIRED WORK FOR A SMOOTH AND TIMELY TRANSFORMATION FROM THE EXISTING SERVICE TO THE NEW SERVICE TO ENSURE THAT ALL WORK PROCEEDS WITH A MINIMUM OF INTERFERENCE AND DELAY, LIMIT THE ELECTRICAL SHUTDOWN TO A MINIMUM SO IT WILL NOT AFFECT THE EXISTING FACILITY'S NORMAL DAILY FUNCTIONS AND OPERATION.
3. CAUSE AS LITTLE INTERFERENCE OR INTERRUPTION OF EXISTING UTILITIES AND/OR OTHER EXISTING FACILITY'S SYSTEMS AND SERVICES AS POSSIBLE. CONTRACTOR SHALL NOTIFY THE OWNER/DISTRICT'S REPRESENTATIVE AT LEAST 72 HOURS TO SCHEDULE ALL NECESSARY SHUTDOWN. SHUTDOWN WORK SHALL BE PERFORMED AFTER THE NORMAL OPERATION HOURS OF THE FACILITY, IF SO DIRECTED BY THE OWNER/DISTRICT'S REPRESENTATIVE.
4. ALL REMOVED AND/OR DEMOLISHED ELECTRICAL MATERIALS AND EQUIPMENT TO BE ACCUMULATED UNDER THIS CONTRACT, WHICH IN THE OPINION OF THE OWNER/DISTRICT'S REPRESENTATIVE ARE DESTROYED AND/OR UNRECOVERABLE SHALL REMAIN THE PROPERTY OF THE OWNER/DISTRICT. ALL ELECTRICAL MATERIAL AND EQUIPMENT CONSIDERED NOT SALVAGEABLE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR ACCORDINGLY.
5. WHERE REMOVAL OF AN EXISTING SYSTEM'S DEVICE WILL RESULT IN LOSS OF CIRCUIT CONTINUITY, THE ISOLATED PORTIONS OF THE CIRCUIT SHALL BE RECONNECTED TO PROVIDE SERVICE TO ALL REMAINING DEVICES, IF SITE CONDITIONS MAKE RECONNECTION IMPOSSIBLE, CONNECTION SHALL BE MADE FROM AN AVAILABLE ACCESSIBLE DEVICE AS NOTED AND/OR AS DIRECTED BY THE ARCHITECT AND/OR THE OWNER/DISTRICT'S REPRESENTATIVE.
6. WHERE EXISTING CONCEALED CONDUITS, WHETHER SHOWN OR NOT, OR SPECIFIED TO BE REUSED, WHICH BECAME EXPOSED DUE TO CONSTRUCTION CHANGES, IT SHALL BE REROUTED TO THE NEAREST AVAILABLE REUSED OUTLET.
7. ALL EXISTING EXPOSED CONDUITS AND/OR WIRING THAT ARE DETERMINED BY THE DISTRICT AND ARCHITECT TO BE MAINTAINED FOR EXISTING SYSTEM FUNCTION AND CONTINUITY, WHETHER SHOWN ON PLAN OR NOT, ARE TO BE REROUTED CONCEALED IN WALL AND/OR CEILING FOR A CLEAN FINISHED SURFACE WITH NO EXPOSED CONDUITS AND/OR WIRING WITHIN THE REMODELED AREA.
8. REMOVE ALL EXISTING EXPOSED CONDUITS, WIRING, ELECTRICAL OUTLETS, DEVICES, AND EQUIPMENT THAT ARE DETERMINED BY THE DISTRICT REPRESENTATIVE/OWNER AND ARCHITECT TO BE NON FUNCTIONAL AND/OR NOT BEING USED FROM WITHIN THE REMODELED AREA FOR A CLEAN FINISHED SURFACE.
9. WHERE EXISTING WIRING OR EQUIPMENT IS ABANDONED AS A RESULT OF THIS CONTRACT, IT SHALL BE REMOVED INSOFAR AS POSSIBLE. THIS INCLUDES BUT IS NOT LIMITED TO:
 - A. REMOVE ALL WIRE AND CABLE.
 - B. REMOVE ALL DEVICES AND EQUIPMENT.
 - C. REMOVE ALL EXPOSED CONDUIT AND CONDUIT IN ACCESSIBLE CONCEALED AREAS, AS FAR AS POSSIBLE.
 - D. CUT OFF AND CAP ALL ABANDONED CONDUIT. STUBS SHALL NOT BE PROTRUDED ABOVE FLOOR AND/OR FINISHED WALLS AND CEILINGS.
10. WHEREVER EXISTING ELECTRICAL DEVICES, PANELS, CONDUITS, CABLES, ETC., CONFLICT WITH REMODEL WORK, WHETHER SHOWN OR NOT, RELOCATE THESE ITEMS AS DIRECTED BY THE ARCHITECT AND/OR OWNER/DISTRICT'S REPRESENTATIVE.
11. WHERE SHOWN ON PLAN FOR REMOVAL OF EXISTING CONDUITS, REMOVE ALL PORTIONS OF CONDUITS WHERE IT IS ACCESSIBLE AND ABANDON PORTIONS OF CONDUITS WHERE IT IS INACCESSIBLE. CUT OFF AND CAP ALL ABANDONED CONDUITS. STUBS SHALL NOT BE PROTRUDED ABOVE FLOOR AND/OR FINISHED WALLS AND CEILINGS.
12. CONTRACTOR SHALL UPDATE WITH NEW TYPEWRITTEN PANEL DIRECTORIES TO EXISTING PANELS INVOLVED IN THIS RENOVATION WORK THAT SHALL REFLECT ALL CHANGES TO THE CIRCUIT DESIGNATIONS.
13. PROVIDE AND INSTALL PROTECTIVE COVERING OVER EXISTING EQUIPMENT IN AREA WHEN INSTALLING ANY NEW WORK.
14. COORDINATE WITH OTHER TRADES AND PROMPTLY TRANSMIT ALL INFORMATION REQUIRED BY THEM. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH OTHER TRADES TO ENSURE THAT ALL WORK PROCEEDS WITH A MINIMUM OF INTERFERENCE AND DELAY.
15. REFER TO MECHANICAL AND PLUMBING DRAWINGS FOR HEATERS, EXHAUST FANS, WATER HEATERS, PUMPS, ETC., WHICH ARE REQUIRED TO BE DISCONNECTED BY THE ELECTRICAL CONTRACTOR FOR REMOVAL OR ABANDONMENT BY THE MECHANICAL AND/OR PLUMBING CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL COORDINATE THE SEQUENCE OF WORK WITH THE MECHANICAL AND/OR PLUMBING CONTRACTOR FOR REMOVAL OF ALL APPLICABLE STARTERS, DISCONNECT SWITCHES, AND ASSOCIATED CONDUIT, AND WIRING.
16. ALL LIGHT FIXTURES INDICATED AS RELOCATED SHALL BE CLEANED AND RE-LAMPED PRIOR TO THE RE-INSTALLATION.

ALL GENERAL NOTES SHOWN BELOW ARE NOT NECESSARILY USED ON PLANS IF NOT REQUIRED.

1. THESE GENERAL NOTES ARE INTENDED TO ASSIST THE CONTRACTOR IN THE EXECUTION OF THE ELECTRICAL WORK AND TO BE INCLUDED IN CONJUNCTION WITH THE CONTRACT DOCUMENT DRAWINGS AND SPECIFICATION REQUIREMENTS. SOME OF THE GENERAL NOTES ARE EXCEPTS FROM THE SPECIFICATION.
2. COORDINATE ALL ELECTRICAL SERVICES WITH THE RESPECTIVE UTILITY COMPANIES AND PROVIDE ALL TRENCHING, CONDUITS, WIRING, METER FACILITIES AND OUTLETS REQUIRED BY THEM.
3. WORKMANSHIP SHALL BE OF THE HIGHEST GRADE. DEFECTIVE EQUIPMENT OR EQUIPMENT DAMAGED IN THE COURSE OF INSTALLATION OR TEST SHALL BE REPLACED OR REPAIRED IN A MANNER MEETING WITH THE ACCEPTANCE OF THE ARCHITECT.
4. INSTALL ALL EQUIPMENT, CONDUITS, OUTLETS, AND FIXTURES IN STRICT ACCORDANCE WITH THE CURRENT EDITION OF ALL APPLICABLE CODES (CEC, STATE, COUNTY AND CITY).
5. DO NOT SCALE PLANS FOR FIXTURES, DEVICES, OR APPLIANCE LOCATIONS. USE FIGURED DIMENSIONS IF GIVEN OR CHECK MECHANICAL AND ARCHITECTURAL PLANS. ALSO REFER TO ACTUAL ON-SITE CONDITIONS.
6. ALL MATERIAL AND EQUIPMENT IS TO BE LISTED AND INSTALLED PER MANUFACTURER'S SPECIFICATIONS AND CEC 110.3.
7. ALL ELECTRICAL DEVICES AND EQUIPMENT, FIXTURES, CONDUITS AND WIRING SHOWN ON THESE PLANS ARE NEW, UNLESS OTHERWISE NOTED.
8. OUTLET BOXES INSTALLED IN FIRE WALLS SHALL BE ONE-PIECE STEEL AND INSTALLED IN SEPARATE (STAGGERED) STUD PENETRATIONS, MINIMUM 24 INCHES HORIZONTAL SEPARATION. FIRE WALLS SHALL BE MADE IN ACCORDANCE WITH CBC AND ELECTRICAL CODES.
9. THE FINAL LOCATION OF ALL OUTLETS SHALL BE VERIFIED WITH THE ARCHITECT AND/OR OWNER AT TIME OF CONSTRUCTION.
10. ALL OUTDOOR ELECTRICAL EQUIPMENT SHALL BE WEATHER-PROTECTED.
11. CONTRACTOR SHALL VERIFY THAT ALL LIGHTING FIXTURES, CEILING TRIMS, AND FRAMES ARE COMPATIBLE WITH CEILING SYSTEM INSTALLED.
12. CONTRACTOR SHALL COORDINATE LIGHT FIXTURE LOCATIONS AND INSTALLATIONS WITH THE MECHANICAL CONTRACTOR. MAINTAIN REQUIRED CLEARANCES (MINIMUM 3 INCHES) BETWEEN THE LIGHT FIXTURES AND MECHANICAL DUCTS OR EQUIPMENT FOR PROPER OPERATION, INSTALLATION AND/OR REMOVAL OF FIXTURES.
13. ALL CONDUIT SHALL BE ROUTED CLEARLY UNLESS NOTED ON PLAN OR ACCEPTED BY THE ARCHITECT.
14. PROVIDE ALL NECESSARY SLEEVES AND INSERTS FOR ALL WORK PASSING THROUGH OR ATTACHING TO WALLS, FLOORS, OR CEILINGS.
15. ALL WIRING SHALL BE INSTALLED IN RIGID METALLIC CONDUIT, UNLESS OTHERWISE NOTED. CONDUITS INSTALLED CONCEALED IN WALL AND CEILING MAY BE EM'T WITH STEEL COMPRESSION TYPE FITTINGS. EMT WHEN INSTALLED IN GROUND AND/OR UNDER SLAB. ALL EXPOSED CONDUITS SHALL BE RIGID STEEL CONDUIT WITH THREADED TYPE FITTINGS. INSTALL ALL CONDUITS IN ACCORDANCE WITH CECA STANDARDS OF INSTALLATION.
16. ELECTRICAL NON-METALLIC TUBING (ENT) AND MC CABLE ARE NOT PERMITTED TO BE USED FOR THIS PROJECT, NO EXCEPTIONS.
17. WHERE EXISTING CONDUITS, CONCEALED OR EXPOSED, AND (WIRED)LD SURFACE RACEWAY IS NOT IN PLACE AS SHOWN ON PLANS, PROVIDE NEW CONDUITS AND (WIRED)LD SURFACE RACEWAY FOR THE NEW WORK. VERIFY EXISTING CONDITION ON SITE AND PROVIDE ALL NECESSARY NEW MATERIAL, APPARATUS, AND WORK THAT ARE REQUIRED TO BE INCLUDED IN THE BID PACKAGE.
18. CONDUCTORS, #8 AND LARGER, SHALL BE STRANDED COPPER WITH THHN/THWN INSULATION, UNLESS OTHERWISE NOTED.
19. PROVIDE WORKING CLEARANCE PER CEC 110.26 FOR SERVICE PANEL, SUBPANELS, MOTOR DISCONNECT SWITCHES, CONTROL SECTIONS. HVAC EQUIPMENT, APPLIANCES, ETC.
20. PROVIDE A WARNING LABEL (SIGN) CLEARLY VISIBLE TO QUALIFIED PERSONS TO COMPLY WITH NEC AND CEC 116.16 OF POTENTIAL ELECTRIC ARC FLASH HAZARDS AT SWITCHBOARDS, PANELBOARDS, AND INDUSTRIAL CONTROL PANELS AND MOTOR CONTROL CENTERS THAT ARE LIKELY TO REQUIRE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE WHILE ENERGIZED. SERVICE EQUIPMENT SHALL BE LEGIBLY MARKED WITH THE MAXIMUM AVAILABLE FAULT CURRENT PER CEC SECTION 110.24(A).
21. BUILDING SERVICE AND SUBPANELS TO COMPLY WITH CEC 110.9 AND 110.10 INTERRUPTING RATING AND BRACING. PROVIDE A.I.C. CALCULATIONS FOR SUBPANELS IF INTERRUPTING RATING TO BE USED IS LOWER THAN MAIN SERVICE RATING.
22. ALL APPLIANCE SHALL COMPLY WITH CEC ARTICLE 422. APPLIANCE CONTROL AND PROTECTION PER CEC 422-III; BRANCH CIRCUIT PER 422-II.
23. BUILDING EXPANSION JOINTS MAY OR MAY NOT BE INDICATED ON THE ELECTRICAL DRAWINGS. VERIFY THE LOCATIONS OF ALL APPLICABLE BUILDING EXPANSION JOINTS WITH THE ARCHITECTURAL DRAWINGS. WIRING METHODS ACROSS EXPANSION JOINTS SHALL INCLUDE USE OF FLEXIBLE FITTINGS OR OTHER DEVICES AS APPROPRIATE TO EACH APPLICATION. IN NO CASE SHALL CONDUIT CROSS SUCH A JOINT IN BUILDING CONSTRUCTION WITHOUT USE OF THE APPROPRIATE WIRING METHODS.
24. CONTRACTOR SHALL SIZE ALL THE INTERIOR AND EXTERIOR BUILDING PLUMB BOXES AND UNDERGROUND PULL BOXES TO COMPLY WITH CEC 314.16 AND COMPLY WITH CEC 314.28 FOR INSTALLATION OF RACEWAYS AND WIRING AS REQUIRED BY CODE, UNLESS OTHERWISE NOTED.
25. WHERE ACCESSIBILITY IS NOT AVAILABLE TO ELECTRICAL OUTLETS, DEVICES AND/OR EQUIPMENT, COORDINATE WITH THE ARCHITECT FOR PROVISIONS TO PROVIDE ACCESSIBILITY TO THEM.
26. CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE MECHANICAL DRAWINGS AND PROVIDES ALL CONDUITS AND CONTROL WIRING AND POWER WIRING SHOWN ON THE MECHANICAL DRAWINGS THAT IS NOT SHOWN ON THE ELECTRICAL PLANS.
27. CONTRACTOR SHALL REFER TO THE MECHANICAL DRAWINGS AND COORDINATE FOR THE EQUIPMENT LOCATIONS. COORDINATE ROOF PENETRATION WITH THE MECHANICAL CONTRACTOR FOR MECHANICAL CONNECTIONS. ENTER ROOF MOUNTED UNITS THROUGH EQUIPMENT MOUNTING CURBS WHERE POSSIBLE. VERIFY ON-SITE.
28. PROVIDE CONVENIENCE OUTLET WITHIN 25 FEET OF MECHANICAL EQUIPMENT PER U.M.C. WHERE AVAILABLE. PROVIDE WEATHER PROOF AND GFCI CONVENIENCE OUTLET. SECURE ROOF MOUNTED OUTLET TO THE MECHANICAL EQUIPMENT. VERIFY LOCATION IN FIELD WITH THE MECHANICAL CONTRACTOR.
29. VERIFY SINGLE-POINT CONNECTIONS TO ROOF MOUNTED HVAC UNITS WITH MECHANICAL CONTRACTOR ON-SITE PRIOR TO ELECTRICAL ROUGH-IN. PROVIDE DUAL DISCONNECTS IF TWO-POINT CONNECTIONS ARE REQUIRED, WHETHER SHOWN ON PLANS OR NOT.
30. SWITCH DEVICES CONTROLLING MECHANICAL EQUIPMENT SHALL BE SIZE AND TYPE REQUIRED AND SHALL BE DERIVED WITH QUANTITY OF WIRES AS REQUIRED. REFER TO DIVISION 23 MECHANICAL PLANS AND SPECIFICATIONS.
31. COORDINATE THE HVAC EQUIPMENT FOR FUSES REQUIRED. WHERE FUSES ARE REQUIRED, VERIFY FUSE SIZE ON-SITE AND PROVIDE FOR HVAC EQUIPMENT PER UNIT NAMEPLATE SPECIFICATIONS.
32. MOTOR DISCONNECT SWITCHES SHALL COMPLY WITH CEC 430-IX AND 440.II.
33. MOTOR STARTERS FOR HVAC EQUIPMENT ARE PROVIDED BY MECHANICAL CONTRACTOR AND CONNECTED BY ELECTRICAL CONTRACTOR, UNLESS NOTED OTHERWISE.
34. ALL CONNECTIONS FROM THE DISCONNECT SWITCHES TO HVAC UNITS SHALL BE COPPER CONDUCTORS. MOTOR DISCONNECT SWITCHES SHALL COMPLY WITH CEC 430-III, 430-VII, AND 440-III.
35. VERIFY LOCATION AND HEIGHT OF ALL MECHANICAL OR FIXTURE EQUIPMENT OUTLETS WITH SUPPLIER PRIOR TO ANY ROUGH-IN WORK. PROVIDE ALL RUNS AND CONNECTIONS TO EQUIPMENT.
36. ALL TERMINATION PROVISIONS OF EQUIPMENT, INCLUDING CIRCUITS RATED 100 AMPERES OR LESS, SHALL BE RATED AT 60 DEGREE, CENTIGRADE PER CEC 110.14(C).
37. ALL CONDUITS SHALL BE CONCEALED BELOW SLAB, IN WALLS AND/OR ABOVE CEILINGS EXCEPT IN ELECTRICAL ROOMS, MECHANICAL ROOMS, AND OTHER SIMILAR UTILITY ROOMS AS APPROVED BY THE ARCHITECT. NO CONDUIT SHALL BE EXPOSED ON EXTERIOR BUILDING SURFACES WITHOUT PRIOR APPROVAL FROM THE ARCHITECT.
38. PROVIDE A CODE SIZED GROUND CONDUCTOR IN ALL CONDUITS WHETHER INDICATED ON PLANS OR NOT.

SYMBOL	DESCRIPTIONS
AC	ABOVE COUNTER
AFCI	AMPERE FRAME OR FUSE
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AFFI	ABOVE FINISHED FLOOR
AFS	AUTOMATIC FIRE SPRINKLER
AIC	AMPS INTERRUPTING CAPACITY RATING
AMP, A	AMPERES
APPR	APPROVED
AT	AMPERE SWITCH RATING
AT	AMPERE TRIP RATING OF BREAKER
AUTO	AUTOMATIC
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BFC	BELOW FINISHED CEILING
BMS	BUILDING MANAGEMENT SYSTEM
BKR	BREAKER
C	CONDUIT
cd	CANDELA
cfc	CALIFORNIA ELECTRICAL CODE
CFL	COMPACT FLUORESCENT
CFI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CR	CIRCUIT
CNTRL	CONTROL
CO	CONDUIT ONLY w/PULL STRING
CSF	CALIFORNIA STATE FIRE MARSHALL
CT	CURRENT TRANSFORMER
CU	COPPER
CWP	COLD WATER PIPE
D	DEFROST
DISC	DISCONNECT
DIS	DISTRIBUTION
DWG	DRAWING
E	ELECTRICAL CONTRACTOR
EDF	ELECTRIC DRINKING FOUNTAIN
EL	EVENING LIGHT
ELEV	ELEVATION
EM	EMERGENCY LIGHT
EMERG	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EOL	END OF LINE RESISTOR
EP	ENERGY POWER
EQPT	EQUIPMENT
(EX)	EXHAUST
(X)	EXISTING
(ED)	EXISTING TO BE DEMOLISHED
(F)	FUTURE
FAA	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FF	FINISHED FLOOR
FG	FINISHED GRADE
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FLUOR	FLUORESCENT
GFCI	GROUND FAULT CURRENT INTERRUPTER
GND	GROUND
HP	HORSE POWER
HZ	HERTZ
IG	ISOLATED GROUND
INC	INCANDESCENT
ISC	SHORT CIRCUIT CURRENT
ISOL	ISOLATED
JBOX	JUNCTION BOX
kcmil	THOUSAND CIRCULAR MILS
KV	KILOVOLTS
KW	KILOWATT
KVA	KILOVOLT AMPERES
LTA, LTS	LIGHT, LIGHTS
LTC	LIGHTING
LVC	LOAD
M	MAXIMUM
MCA	MINIMUM CIRCUIT CAPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MLO	MAIN LUG ONLY
MMP	MAXIMUM OVERCURRENT PROTECTION
MPOE	MAIN POINT OF ENTRY
MS	MOTION SENSOR
MSB	MAIN SWITCHBOARD
MT	CONDUIT ONLY w/PULL STRING
MNTD	MOUNTED
N	NEW
NEMA	NATIONAL ELECTRIC MANUFACTURER ASSOCIATION
(NE)	NOT IN ELECTRICAL SECTION OF THESE PLANS & SPECIFICATIONS
N.L.C.	NOT IN CONTRACT
NLT	NIGHT LIGHT
NC	NOT TO SCALE
ON CENTER	ON CENTER
OFOI	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
P	OVERLOAD
PH, P	PHASE OR POLE
PB	PULLBOX
PFB	PROVIDE FOR FUTURE BREAKER
PV	POST INDICATING VALVE
PNL	PANEL
PVC	POLYVINYL CHLORIDE
PWR	POWER
(R)	RELOCATED
RC	REFLECTED CEILING PLAN
RECPT	RECEPTACLE
REQD	REQUIRED
ROSC	RED GALVANIZED STEEL CONDUIT
S	SHIELDED
SHT	SHEET
SPD	SURGE PROTECTION DEVICE
SPECS	SPECIFICATIONS
SW	SWITCH
SYM	SYMMETRICAL
TEMP	TEMPERATURE
TOT	TIMED OFF DELAY
TS	TAMPER SWITCH
TYSTAT	THERMOSTAT
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP	TYPICAL
UBC	UNIFORM BUILDING CODE
UGPS	UNDERGROUND PULL SECTION
UND	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
VFD	VARIABLE FREQUENCY DRIVE
V	VOLTS
VL	VERIFY LOCATION
W	WATTS
w/	WITH
WP	WEATHERPROOF
WPL	WEATHERPROOF LOCKING
WPU	WEATHERPROOF WHILE IN USE
X	REMOVE
XMR	TRANSFORMER

SHEET NO.	SHEET TITLE
E0.0.1	ELECTRICAL NOTES & ABBREVIATIONS
E0.0.2	ELECTRICAL SYMBOL LEGEND
E0.0.3	ELECTRICAL DETAILS
E0.0.4	ELECTRICAL SPECIFICATIONS
E0.0.5	ELECTRICAL SPECIFICATIONS
E2.0.1D	ELECTRICAL DEMO OVERALL ROOF PLAN
E2.0.1	ELECTRICAL OVERALL ROOF PLAN
E6.4.1D	ELECTRICAL DEMO ENLARGED FLOOR PLAN
E6.4.1	ELECTRICAL ENLARGED FLOOR PLAN
E6.4.2	ELECTRICAL PARTIAL ONE LINE DIAGRAM & PANEL SCHEDULES

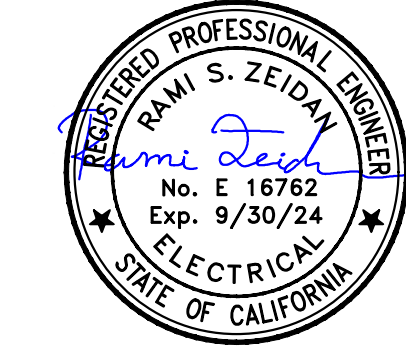
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ELECTRICAL NOTES & ABBREVIATIONS

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ALUM ROCK UNION SCHOOL DISTRICT

HVAC & ROOFING UPGRADES

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Project No.

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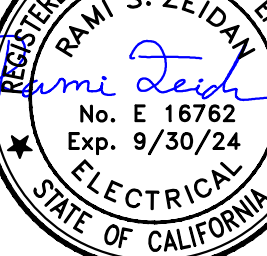
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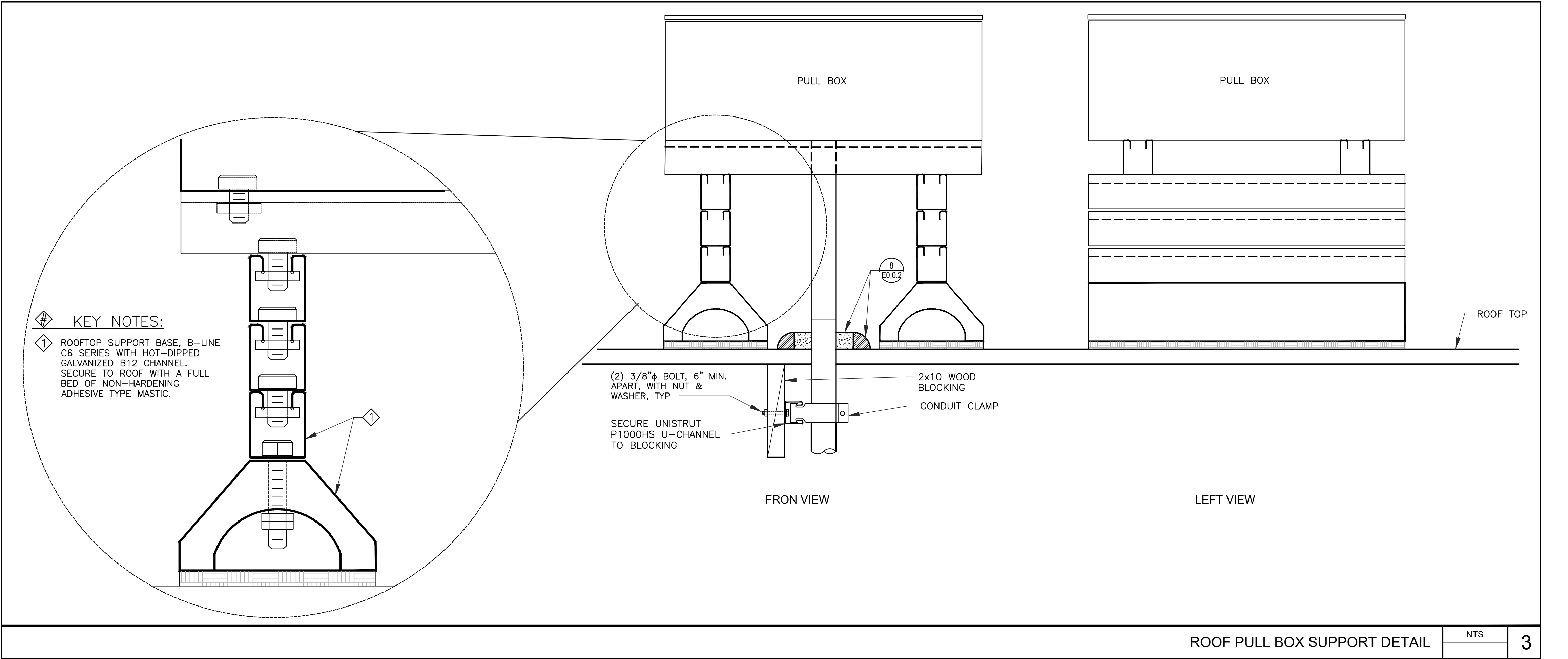
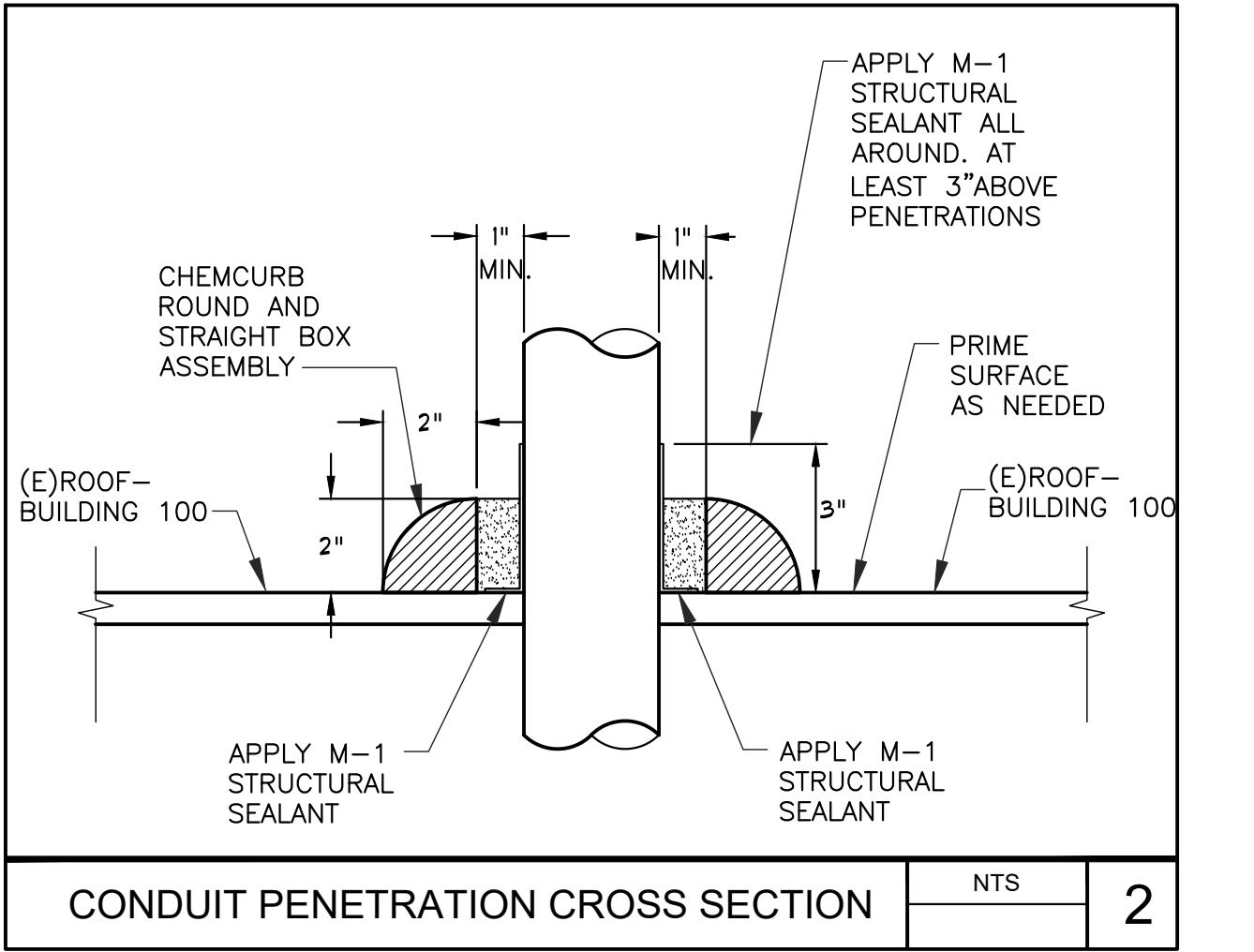
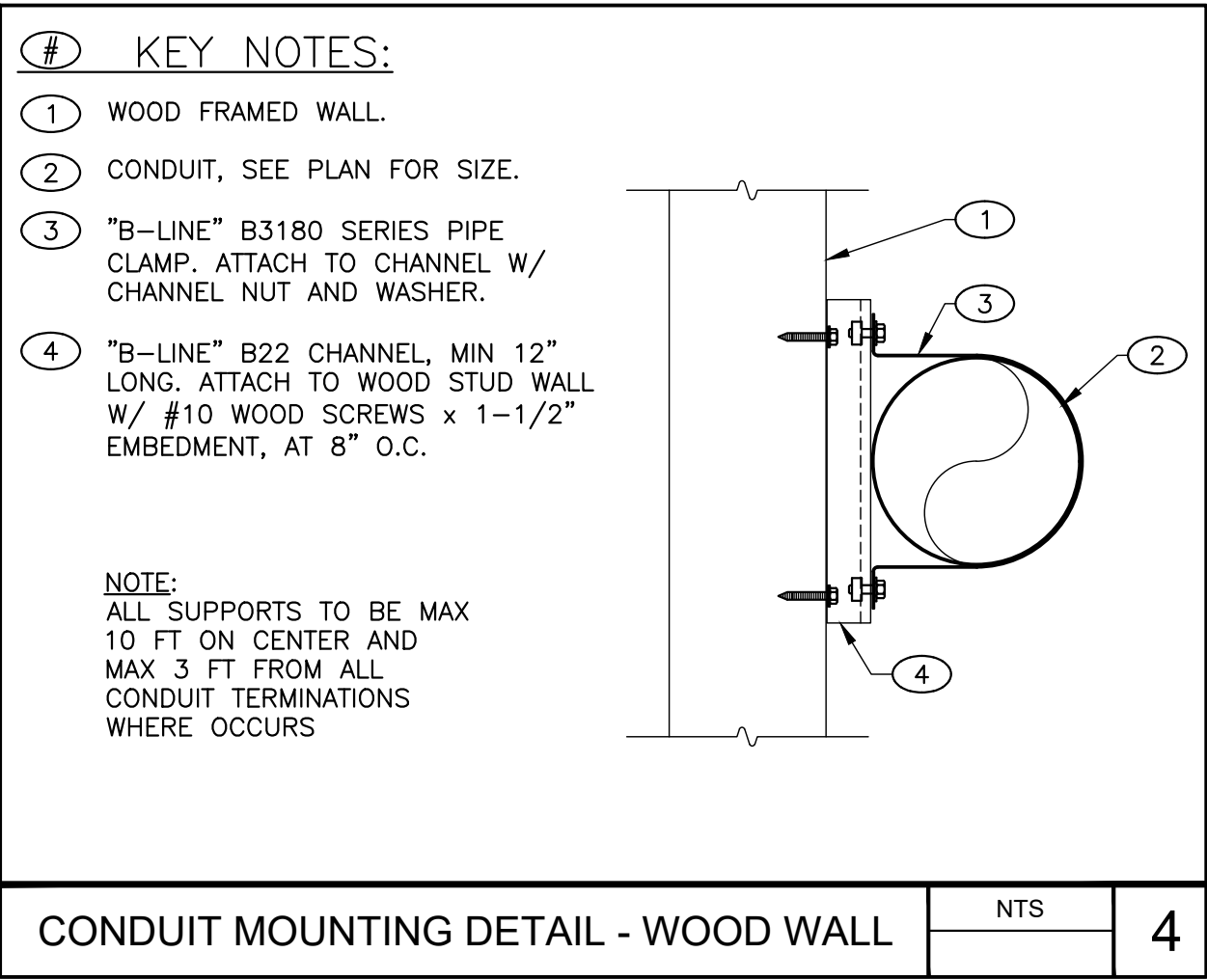
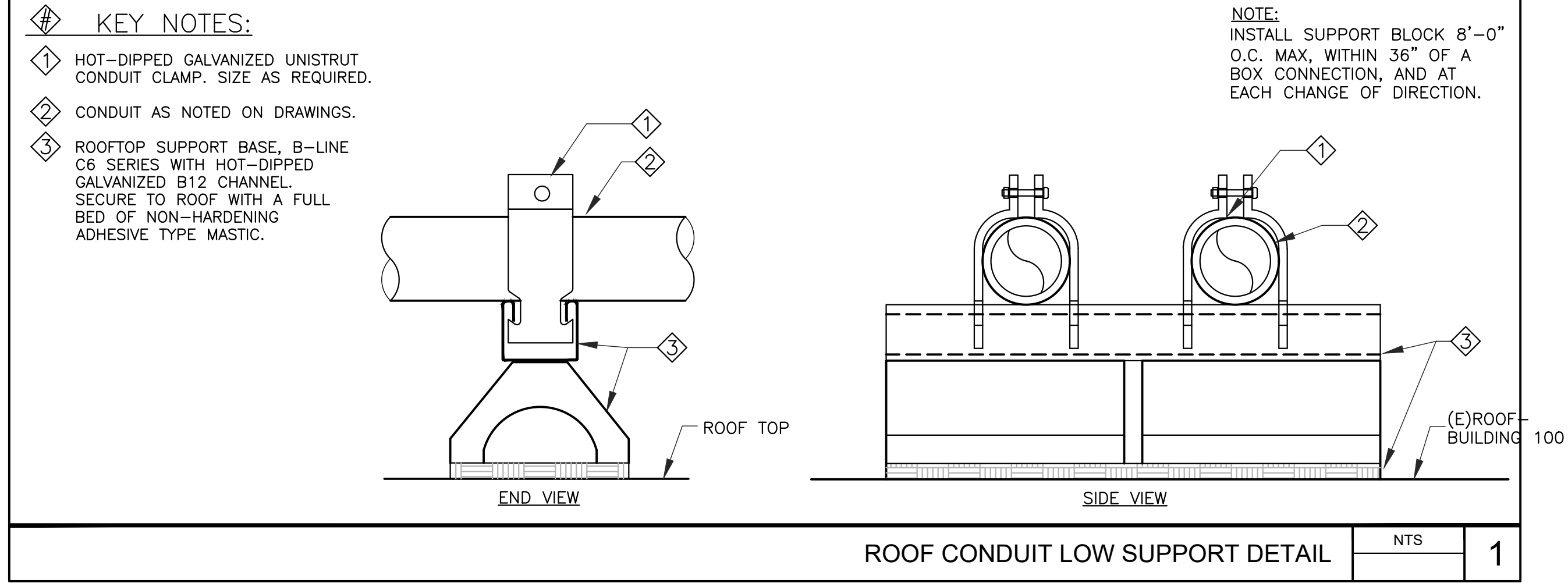
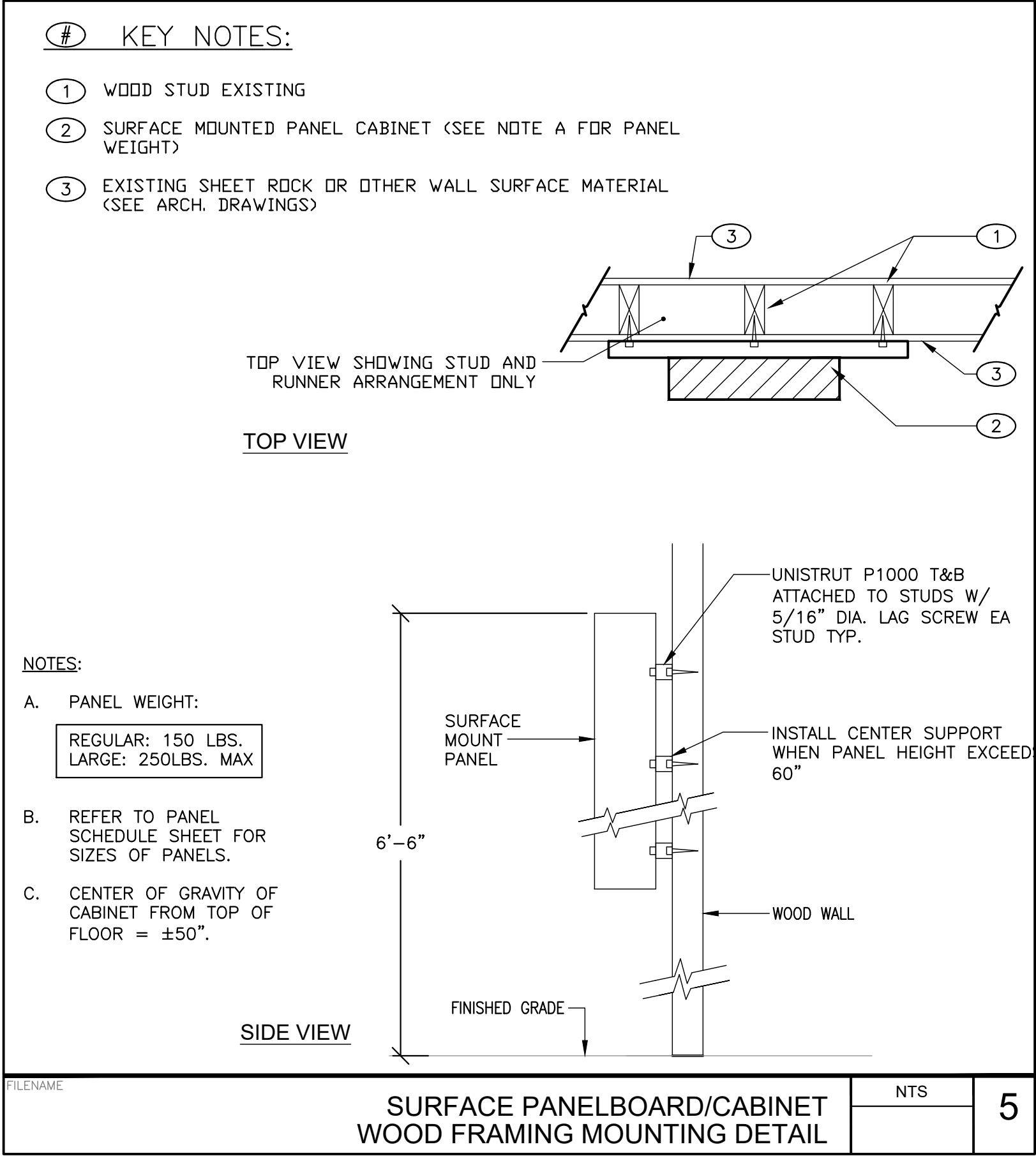
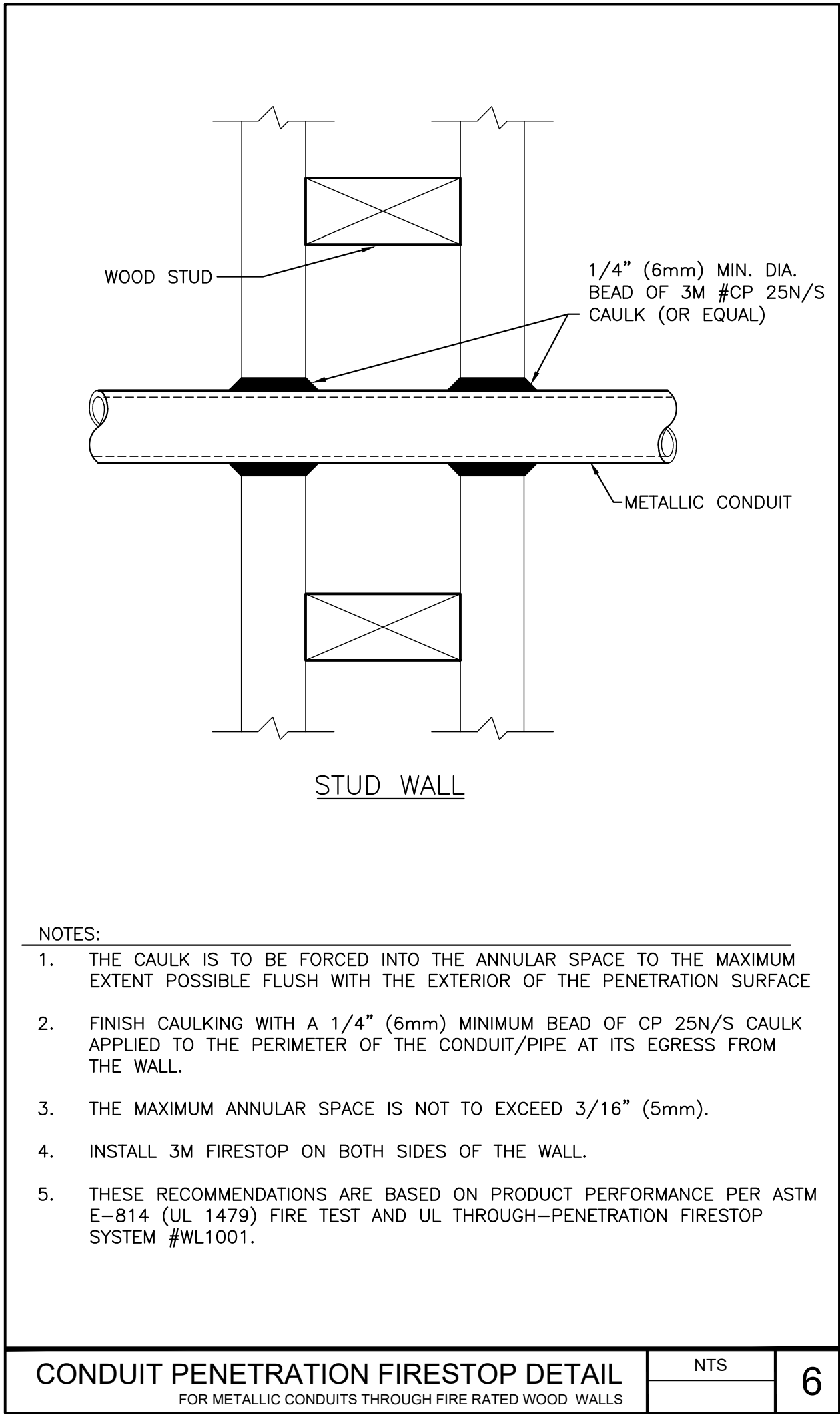
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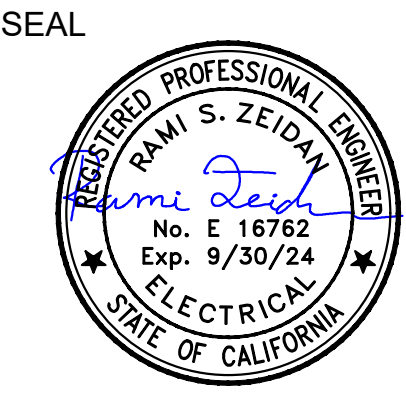
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Drawing Title
ELECTRICAL DETAILS

NO.	DATE	ISSUE

Project
**ALUM ROCK UNION SCHOOL DISTRICT
HVAC & ROOFING UPGRADES**

Drawn By
Checked By
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23-525
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ELECTRICAL SPECIFICATIONS

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. FURNISH ALL NECESSARY LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS REQUIRED TO INSTALL A COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM ACCORDING TO THE INTENT OF THIS SPECIFICATION WHETHER ITEMIZED OR NOT.
- B. EXAMINE THE MECHANICAL PLANS AND SPECIFICATIONS FOR MECHANICAL EQUIPMENT AND PROVIDE ALL STARTERS, CIRCUIT BREAKERS, SWITCHES, PUSHBUTTONS, AND APPURTENANCES, WHICH ARE NOT SPECIFIED TO BE WITH THE MECHANICAL EQUIPMENT. ERECT ALL ELECTRICAL EQUIPMENT NOT DEEMED TO BE ERECTED BY OTHERS, FURNISH AND INSTALL CONDUIT, WIRE, AND CABLE AND MAKE CONNECTIONS REQUIRED TO PLACE ALL EQUIPMENT IN COMPLETE OPERATION.
- C. THE GENERAL EXTENT OF THE ELECTRICAL WORK INCLUDES, AMONG OTHERS, THE FURNISHING AND INSTALLING OF THE FOLLOWING ITEMS:
1. PRIMARY AND SECONDARY SERVICE FACILITIES INCLUDING TRANSFORMER PADS, PRIMARY CONDUIT AND TRENCHING, SECONDARY CONDUIT, TRENCHING AND CONDUCTORS, AND MAIN SWITCHBOARD INCLUDING FACILITIES FOR METERING, DISTRIBUTION PANELS, AND PANELBOARDS.
 2. LIGHTING AND POWER INSTALLATION, INCLUDING FIXTURES, RECEPTACLE OUTLETS, SWITCHING, AND CIRCUITS AS INDICATED ON THE DRAWINGS.
 3. ALL SUPPORTS, BASES, ANCHORS, SLEEVES, HANGERS AND THE LIKE, ALL ELECTRICAL WORK SHOWN AND/OR SPECIFIED, NOT PARTICULARLY MENTIONED ABOVE.
 4. COMPLETE GROUNDING AND BONDING SYSTEMS.
 5. TELEPHONE (MPOE) SERVICE ENTRANCE CONDUIT, BACKBOARDS, AND INTERCONNECTING CONDUIT.
 6. CABLE TELEVISION SERVICE ENTRANCE CONDUIT, BACKBOARD OR CABINET, AND INTERCONNECTING CONDUIT.
 7. THE CONTRACTOR WILL COORDINATE WITH THE LOCAL UTILITY COMPANIES FOR VERIFICATION OF THEIR REQUIREMENTS PRIOR TO BID CLOSURE AND PRIOR TO INSTALLATION. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY VOLTAGE, PHASE, AND FREQUENCY, SIZE, TYPE AND QUANTITY, WIRE SIZE, TYPE AND QUANTITY, AND THE LOCATION OF ALL EQUIPMENT REQUIRED FOR THIS PROJECT.
 8. STANDBY EMERGENCY POWER GENERATOR, CONCRETE PAD, AND AUTO-TRANSFER SWITCH.
 9. POWER CONNECTION TO HVAC AND PLUMBING EQUIPMENT.

1.02 RELATED WORK INCLUDED IN OTHER DIVISIONS

- A. FINISH PAINTING EXCEPT FACTORY APPLIED FINISHES AND REPAIR OF FACTORY FINISHES SHALL BE PROVIDED IN ACCORDANCE WITH APPROPRIATE SECTIONS OF THIS SPECIFICATION. COORDINATE PAINTING REQUIREMENTS OF THIS DIVISION WITH OTHER TRADES AS REQUIRED TO ASSURE TIMELY AND SATISFACTORY COMPLETION OF REQUIRED WORK. IN FINISHED AREAS, ALL EXPOSED RACEWAY, BOXES, GALVANIZED STEEL BOX COVERS (WHERE ALLOWED), AND OTHER ELECTRICAL "STRUCTURE" SHALL BE FINISHED TO MATCH ADJACENT STRUCTURES. VERIFY THAT ALL RACEWAY OPENINGS ARE CLOSED AND BOX COVERS ARE IN PLACE PRIOR TO FINISHING WORK DONE BY OTHERS.
- B. EXAMINE THE DRAWINGS AND SPECIFICATIONS FOR MECHANICAL EQUIPMENT AND PROVIDE ELECTRICAL INSTALLATION FOR HEATING, VENTILATION AND AIR CONDITIONING EQUIPMENT, MOTORS, PUMPS AND ASSOCIATED MOTOR STARTERS AND CONTROLS AS DESCRIBED IN 1.15 EQUIPMENT IDENTIFICATION.
- C. EXAMINE THE DRAWINGS AND SPECIFICATIONS OF OTHER TRADES FOR ELECTRICAL EQUIPMENT WHICH MAY NOT BE SHOWN ON THE PLANS TO INCLUDE AND PROVIDE ELECTRICAL INSTALLATIONS AS DESCRIBED IN OTHER TRADES WORK, I.E. MODULAR OFFICE SYSTEM FURNITURE, INFORMATION TECHNOLOGY (I.T.) SYSTEM EQUIPMENT, AUDIO/VIDEO SYSTEMS EQUIPMENT, ETC.
- D. EXAMINE THE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR ELECTRICAL APPLIANCES AND EQUIPMENT WHICH MAY NOT BE SHOWN ON THE PLANS TO INCLUDE AND PROVIDE ELECTRICAL INSTALLATIONS AS DESCRIBED IN THE ARCHITECTURAL DIVISION OF WORK.
- E. EXAMINE THE ARCHITECTURAL DRAWINGS AND PROVIDE ALL CONSTRUCTION NECESSARY TO MAINTAIN THE INTEGRITY OF THE FIRE RATED BARRIERS.
- F. EXAMINE THE ARCHITECTURAL DRAWINGS AND COORDINATE WITH THE ARCHITECT TO PROVIDE ACCESS DOORS, WHETHER SHOWN ON DRAWINGS OR NOT, WHERE FLOORS, WALLS, OR CEILINGS MUST BE PENETRATED FOR ACCESS TO ELECTRICAL EQUIPMENT, OUTLET BOXES, DEVICES, ETC., AND AS SPECIFIED IN THIS SPECIFICATION.
- G. PROVIDE AND INSTALL, AS PART OF THE WORK DESCRIBED IN THIS DIVISION, ALL POWER AND CONTROL WIRING FED FROM A SOURCE OF 30 VOLTS OR MORE (I.E. ALL WIRING EXCEPT TEMPERATURE CONTROL WIRING) FOR MECHANICAL EQUIPMENT DESCRIBED IN 1.15 EQUIPMENT IDENTIFICATION.

1.03 APPLICATION OF OTHER DIVISIONS

- A. WHERE CARPENTRY, MASONRY, CONCRETE WORK, PAINTING, ETC., IS REQUIRED IN THE INSTALLATION OF EQUIPMENT SPECIFIED UNDER THIS DIVISION, THE WORK SHALL BE DONE IN ACCORDANCE WITH THE APPLICABLE DIVISION OF THESE SPECIFICATIONS. THIS WORK COULD INCLUDE FOR EXAMPLE: WORK ASSOCIATED WITH PANELBOARD INSTALLATION, EQUIPMENT PADS OR BASES, SUPPORT STRUCTURES, ETC.

1.04 DRAWINGS AND SPECIFICATIONS

- A. THE INFORMATION PRESENTED IN THESE SPECIFICATIONS AND ON THE DRAWINGS IS INTENDED TO DESCRIBE THE UTILITARIAN AND PHYSICAL ASPECTS OF THE SYSTEMS SHOWN AS WELL AS THE QUALITY OF THE ENTIRE INSTALLATION. ALL INFORMATION IS AS COMPLETE AND THOROUGH AS POSSIBLE, BUT EVERY CONDITION OR SITUATION CANNOT BE ANTICIPATED. EXACT LOCATIONS, DIMENSIONS, ELEVATIONS, ETC. MUST BE DETERMINED "ON THE JOB" WITH CAREFUL ATTENTION TO THE "INTENT" OF THE DRAWINGS AND SPECIFICATIONS.
- B. THE ABOVE PARAGRAPH SHALL NOT BE CONSTRUED AS TO ALLOW SIGNIFICANT DEVIATION FROM EITHER THE DRAWINGS OR SPECIFICATIONS WITHOUT PRIOR APPROVAL OF THE ARCHITECT, BUT MINOR CHANGES IN CONDUIT ROUTING OR EQUIPMENT LOCATIONS MAY BE REQUIRED OR DESIRED DUE TO SPECIFIC CONDITIONS ENCOUNTERED. THIS WORK SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE SPECIFICATIONS AND NO "EXTRA CHARGES" ARE TO BE CREATED FOR ANY UNANTICIPATED LABOR OR MATERIAL.
- C. ANY ERROR OR OMISSIONS OF DETAIL IN EITHER THE DRAWINGS OR THE SPECIFICATIONS SHALL NOT RELIEVE THE CONTRACTOR FROM CORRECTLY INSTALLING ALL MATERIALS NECESSARY FOR COMPLETE AND OPERATING ELECTRICAL SYSTEMS.
- D. CONTRACTOR SHALL INSPECT THE SITE AND VERIFY ALL MEASUREMENTS AND CONDITIONS. NO EXTRA COMPENSATION WILL BE ALLOWED BECAUSE OF DIFFERENCES BETWEEN WORK SHOWN ON THE DRAWINGS AND MEASUREMENTS AT THE SITE.
- E. THE DRAWINGS ARE DIAGNOSTIC IN NATURE, BUT THE LOCATIONS OF DEVICES, EQUIPMENT, OUTLETS, AND LIGHTING FIXTURES ARE SHOWN APPROXIMATELY WHERE INSTALLATIONS ARE INTENDED. ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND OTHER DRAWINGS SHALL BE EXAMINED, NOTING ALL CONDITIONS THAT MAY AFFECT THIS WORK. REPORT CONFLICTING CONDITIONS TO THE ARCHITECT/ENGINEER FOR ADJUSTMENT BEFORE PROCEEDING WITH THE WORK. SHOULD THE CONTRACTOR PROCEED WITH WORK WITHOUT REPORTING THE MATTER, HE DOES SO ON HIS OWN RESPONSIBILITY AND SHALL ALTER WORK IF DIRECTED BY THE ARCHITECT/ENGINEER AT HIS OWN EXPENSE.
- F. EXAMINE THE ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND MANUFACTURER'S DRAWINGS FOR VARIOUS EQUIPMENT IN ORDER TO DETERMINE EXACT ROUTING AND FINAL TERMINATIONS FOR ALL CONDUITS AND CABLES. CONDUITS SHALL BE STUBBED UP AS NEAR AS POSSIBLE TO EQUIPMENT ENCLOSURE.
- G. ALL EQUIPMENT SHALL BE LOCATED AND INSTALLED SO THAT IT WILL BE READILY ACCESSIBLE FOR OPERATION AND MAINTENANCE. THE OWNER RESERVES THE RIGHT TO REQUIRE MINOR CHANGES IN LOCATION OF OUTLETS OR EQUIPMENT, PRIOR TO ROUGH IN WITHOUT INCURRING ANY ADDITIONAL COST OR CHARGES.
- H. IF SIGNIFICANT DEPARTURES FROM THE DRAWINGS OR SPECIFICATIONS ARE CONSIDERED NECESSARY BY THE CONTRACTOR, DETAILS OF THE CHANGES AND THE REASONS THEREFOR SHALL BE SUBMITTED TO THE ARCHITECT WITHIN THIRTY DAYS AFTER AWARD OF CONTRACT. PRIOR WRITTEN ACCEPTANCE OF THE ARCHITECT IS REQUIRED FOR THESE DEPARTURES.
- I. CLARIFICATION OF PLANS AND SPECIFICATIONS FOR THE PURPOSE OF FACILITATING CONSTRUCTION, BUT NOT INVOLVING ADDITIONAL LABOR AND MATERIALS, MAY BE PREPARED DURING CONSTRUCTION BY THE ARCHITECT/ENGINEER. SAID REVISED PLANS AND SPECIFICATIONS SHALL BECOME A PART OF THE CONTRACT. THE CONTRACTOR SHALL CONFORM TO THE REVISED PLANS AND SPECIFICATIONS AT NO ADDITIONAL COST TO THE OWNER.
- J. WHERE EXISTING UNDERGROUND OR OTHERWISE CONCEALED FACILITIES ARE INDICATED ON THE DRAWINGS, THESE ARE LOCATED AS WELL AS CAN BE DETERMINED FROM AVAILABLE INFORMATION. THE CONTRACTOR IS REQUIRED TO VERIFY ACTUAL LOCATIONS AS NECESSARY FOR THIS CONSTRUCTION.

1.05 CODES AND STANDARDS

- A. ALL WORK SHALL CONFORM TO THE FOLLOWING CODES:
1. NFPA 70 – NATIONAL ELECTRICAL CODE 2020 EDITION WITH 2022 CALIFORNIA ELECTRICAL CODE (CEC) AMENDMENTS.
 2. TITLE 24 2022 – STATE OF CALIFORNIA ADMINISTRATIVE CODE
 3. UNIFORM BUILDING CODE – CURRENT EDITION
 4. CITY OR COUNTY ELECTRICAL CODE AS APPLICABLE
 5. APPLICABLE REGULATIONS OF LOCAL UTILITY COMPANIES
 6. E.U.S.E.R.C. STANDARDS
 7. ANY ADDITIONAL CODES EFFECTIVE AT THE JOB SITE
- B. FURNISH WITHOUT EXTRA CHARGE ANY ADDITIONAL MATERIAL AND LABOR WHICH MAY BE REQUIRED FOR COMPLIANCE WITH THESE LAWS, RULES, AND REGULATIONS, EVEN THOUGH THE WORK IS NOT MENTIONED IN THESE PARTICULAR SPECIFICATIONS.
- C. APPLY AND PAY FOR ALL PERMITS REQUIRED BY ANY OF THE LEGALLY CONSTITUTED PUBLIC AUTHORITIES FOR THE INSTALLATION OR CONSTRUCTION OF THE WORK INCLUDED UNDER THIS SPECIFICATION.
- D. ARRANGE AND PAY FOR ANY INSPECTIONS OR EXAMINATIONS SO REQUIRED AND DELIVER CERTIFICATES OF ALL SUCH INSPECTIONS TO THE OWNER. WHEN THESE SPECIFICATIONS CALL FOR MATERIALS OR CONSTRUCTION OF A BETTER QUALITY OR LARGER SIZES THAN REQUIRED BY THE ABOVE MENTIONED RULES AND REGULATIONS, THE PROVISIONS OF THE SPECIFICATIONS SHALL TAKE PRECEDENCE.

1.06 EXAMINATION OF THE SITE

- A. THE CONTRACTOR IS REQUIRED TO VISIT THE SITE OF CONSTRUCTION PRIOR TO BID TO DETERMINE EXISTING CONDITIONS AND THEIR EFFECT UPON THE WORK HE WILL BE REQUIRED TO PERFORM. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR ANY EXTRA EXPENSES INCURRED BY FAILURE TO DETECT AND EVALUATE ALL EXISTING CONDITIONS THAT WILL AFFECT HIS WORK TO BE INCLUDED IN THE BID TO ACCOMPLISH THIS CONTRACT DOCUMENT'S GOAL.

1.07 COORDINATION WITH OTHER TRADES

- A. EXAMINE THE ELECTRICAL DRAWINGS AND REFER TO THE DRAWINGS AND SPECIFICATIONS DESCRIBING OTHER WORK TO BE ACCOMPLISHED. VERIFY AND COORDINATE PRIOR TO BID. CONTINUE TO COORDINATE WORK PLANNING AND ALL WORK IN THE FIELD TO AVOID CONFLICTS, ERRORS, AND/OR DELAYS. NO COMPENSATION WILL BE ALLOWED FOR EXTRA WORK NECESSITATED BY LACK OF COORDINATION.

1.08 STRUCTURAL REQUIREMENTS

- A. SECURE ALL ANCHORS FOR ELECTRICAL EQUIPMENT IN A MANNER, WHICH WILL NOT DECREASE THE STRUCTURAL VALUE OF ANY STRUCTURE TO WHICH IT IS INSTALLED. IF THE STRUCTURE INVOLVED REQUIRES REINFORCEMENT, THE ARCHITECT IN ADVANCE AND PROVIDE DRAWINGS OF ANY PROPOSED MODIFICATIONS TO THE STRUCTURE THAT INVOLVES CUTTING OR PATCHING OF CONCRETE, MASONRY, STEEL, OR WOOD IN THIS PROJECT.

1.09 MANUFACTURER'S INSTRUCTIONS

- A. FOLLOW THE MANUFACTURER'S INSTRUCTIONS WHEN SPECIFIC INSTALLATION OR CONNECTION DETAILS ARE NOT INDICATED OR SPECIFIED ON THE CONTRACT DOCUMENTS.
- B. NOTIFY THE ARCHITECT/ENGINEER OF CONFLICTS BETWEEN THE MANUFACTURER'S INSTRUCTIONS AND INSTALLATION OR CONNECTION DETAILS PRIOR TO THE INSTALLATION OF MATERIALS.

1.10 SERVICE AND METERING

- A. NEW UNDERGROUND FACILITIES (CONDUIT) SHALL BE PROVIDED FOR THE POWER COMPANY'S PRIMARY LINES.
- B. NEW UNDERGROUND FACILITIES (CONDUIT AND CONDUCTORS) SHALL BE PROVIDED FOR THE POWER COMPANY'S SECONDARY LINES.
- C. PROVIDE TRANSFORMER PADS AND SERVICE AS SHOWN ON PLANS.
- D. PAY ALL COSTS AND POWER COMPANY CHARGES.
- E. POWER IS PROVIDED BY PG&E.
- F. COORDINATE ALL REQUIREMENTS WITH THE UTILITY COMPANY PRIOR TO BID.

1.11 INSPECTION

- A. COOPERATE WITH THE OWNER AND PROVIDE ASSISTANCE AT ALL TIMES FOR THE INSPECTION OF THE ELECTRICAL WORK. REMOVE COVERS, OPERATE MACHINERY, OR PERFORM ANY REASONABLE WORK, WHICH IN THE OPINION OF THE OWNER, WILL BE NECESSARY TO DETERMINE THE QUALITY OR ADEQUACY OF THE WORK.
- B. IF ANY MATERIAL DOES NOT CONFORM TO THESE SPECIFICATIONS, REMOVE THE MATERIALS FROM THE PREMISES, WITHIN THREE DAYS AFTER BEING NOTIFIED BY THE OWNER.
- C. WORK SHALL NOT BE CLOSED IN OR COVERED BEFORE INSPECTION AND APPROVAL BY THE OWNER.

1.12 QUALITY OF MATERIALS

- A. ALL ELECTRICAL MATERIALS USED ON THIS PROJECT SHALL BE NEW AND FREE FROM DEFECTS.
- B. ALL ELECTRICAL MATERIALS USED ON THIS PROJECT SHALL CONFORM WHERE APPLICABLE, TO THE FOLLOWING STANDARDS, UNLESS OTHERWISE NOTED:
1. NEMA – NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
 2. ANSI – AMERICAN NATIONAL STANDARDS INSTITUTE
 3. UL – UNDERWRITERS LABORATORIES, INC.
- C. EACH TYPE OF MATERIAL SHALL BE OF THE SAME MANUFACTURER AND QUALITY THROUGHOUT THE WORK.

1.13 SUBMITTAL & SHOP DRAWINGS

- A. SHOP DRAWINGS AND SUPPLEMENTAL DATA WHERE CALLED FOR, SHALL BE PREPARED AND SUBMITTED AS PER GENERAL CONDITIONS, FINAL CORRECTED COPIES OF SCHEDULES AND SHOP DRAWINGS OR SUPPLEMENTAL DATA TO ARCHITECT FOR REVIEW SHALL BE SUCH AS TO PROVIDE ONE (1) FOR ARCHITECT'S FILES, ONE (1) FOR ELECTRICAL ENGINEER'S FILES, TWO (2) FOR THE OWNER, ONE (1) TO THE CONTRACTOR'S FILES, AND SUCH ADDITIONAL COPIES AS CONTRACTOR MAY DESIRE FOR HIS OWN OFFICE FILES AND/OR FOR DISTRIBUTION BY HIM TO SUBCONTRACTORS OR VENDORS. EXCEPTIONS SHALL BE AS NOTED IN THE DIVISION 1 SPECIFICATION SECTIONS.
- B. SHOP DRAWINGS AND SUPPLEMENTAL DATA ARE REQUIRED UNLESS SPECIFICALLY NOT REQUESTED BY THE ENGINEER. SHOP DRAWINGS SHALL BE SUBMITTED FOR ALL ELECTRICAL EQUIPMENT PERTAINING TO JOB. (NOT LIMITED TO ELECTRICAL EQUIPMENT, LIGHTS, RECEPTABLES, BOXES AND ENCLOSURES, CONDUIT, WIRE, ETC.)
- C. THE SHOP DRAWINGS AND SUPPLEMENTAL DATA SHOWN CALLED FOR SHALL BE SUBMITTED AS THE INSTRUMENTS OF THE CONTRACTOR, EVEN THOUGH THEY MAY HAVE BEEN PREPARED BY A SUBCONTRACTOR, SUPPLIER, DEALER, MANUFACTURER, OR BY ANY OTHER PERSON, FIRM OR ORGANIZATION. PRIOR TO SUBMISSION, THE CONTRACTOR SHALL UNDERTAKE HIS OWN REVIEW AND STAMP WITH HIS ACCEPTANCE, THEN SUBMIT TO THE ENGINEER FOR HIS REVIEW. BY ACCEPTING AND SUBMITTING SHOP DRAWINGS AND SUPPLEMENTAL DATA, THE CONTRACTOR REPRESENTS THAT HE HAS DETERMINED AND VERIFIED ALL FIELD MEASUREMENTS, THE PHYSICAL CONSTRUCTION, THE QUALITY OF MATERIALS, THE APPLICABILITY OF CATALOG NUMBERS, AND SIMILAR DATA, OR WILL DO SO, AND THAT HE HAS CHECKED AND COORDINATED EACH SHOP DRAWING WITH THE REQUIREMENTS OF THE TRADES SHALL BE RESOLVED BY THE CONTRACTOR IN THE SHOP DRAWINGS, IF POSSIBLE, BUT IN ANY EVENT PRIOR TO THE ACTUAL CONSTRUCTION.
- D. ALL SHOP DRAWINGS SHALL BE DRAWN ACCURATELY ON PAPER SUITABLE FOR DUPLICATE COPYING BY BLACK OR BLUE LINE PRINTING PROCESSES, OR XEROX.
- E. SUPPLEMENTAL DATA SHALL INCLUDE INFORMATION AS NOTED IN THE SPECIFICATION PARAGRAPHS REQUIRING THEM, OR AS REQUESTED BY THE ARCHITECT.
- F. THE ENGINEER WILL REVIEW SHOP DRAWINGS AND SUPPLEMENTAL DATA SUBMITTED BY THE CONTRACTOR ONLY FOR GENERAL DESIGN CONFORMANCE WITH THE CONCEPT OF THE PROJECT AND COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS.
- G. IF MORE THAN ONE (1) SUBMISSION OF SHOP DRAWINGS OR SUPPLEMENTAL DATA IS REQUIRED FOR ANY GIVEN ITEM TO MEET THE PROJECT SPECIFICATIONS, THE COST OF REVIEWING THESE ADDITIONAL SUBMISSIONS SHALL BE CHARGED DIRECTLY AGAINST THE CONTRACTOR AND THE OWNER WILL WITHHOLD THE FUNDS NECESSARY TO COVER THESE COSTS.
- H. SHOP DRAWINGS, IF REQUESTED, MUST BE SUBMITTED TO AND FAVORABLY REVIEWED BY THE ARCHITECT AND/OR ENGINEER BEFORE BEING USED BY THE CONTRACTOR ON THE JOB.
- I. SHOP DRAWINGS DEADLINE: IN ADDITION TO REQUIREMENTS AS ESTABLISHED IN DIVISION 1 OF THE GENERAL CONDITIONS, THE CONTRACTOR SHALL, WITHIN 35 CALENDAR DAYS AFTER THE NOTICE TO PROCEED OF THE CONTRACT, SUBMIT TO THE ARCHITECT FOR APPROVAL THE SHOP DRAWINGS FOR EQUIPMENT AND/OR SPECIALTY ITEMS AS LISTED IN EACH DIVISION OF WORK. THE SHOP DRAWINGS SHALL BE SUBMITTED IN ADDITION TO THE LIST OF MATERIALS REQUIRED BY THE "SPECIFIED ITEMS – SUBSTITUTES" PARAGRAPH.
- J. SHOP DRAWINGS DELINEATION: THE SHOP DRAWINGS SHALL BE DRAWN TO SCALE AND SHALL BE COMPLETELY DIMENSIONED, BRINGING THE PLAN TOGETHER WITH SUCH SECTIONS AS ARE NECESSARY TO CLEARLY SHOW CONSTRUCTION DETAIL.
- K. RESPONSIBILITY: THESE SHOP DRAWINGS AND ALL SUPPORTING DATA, CATALOGS, ETC., SHALL BE PREPARED BY THE CONTRACTOR OR HIS SUPPLIERS, BUT SHALL BE SUBMITTED AS THE INSTRUMENTS OF THE CONTRACTOR. THEREFORE, THE CONTRACTOR SHALL CHECK THE DRAWINGS OF HIS SUPPLIERS AS WELL AS HIS OWN DRAWINGS BEFORE SUBMITTING THEM TO THE ARCHITECT. IN PARTICULAR, THE CONTRACTOR SHALL ASCERTAIN THAT THE SHOP DRAWINGS MEET ALL REQUIREMENTS OF THE FINAL DESIGN DRAWINGS AND SPECIFICATIONS AND ALSO CONFORM TO THE STRUCTURAL AND SPACE CONDITIONS. EACH SHOP DRAWING SUBMITTED FOR APPROVAL SHALL BEAR A STAMP CERTIFYING THAT IT HAS BEEN CHECKED BY THE CONTRACTOR IN ACCORDANCE WITH THE SPECIFICATIONS. IF SUCH SHOP DRAWINGS SHOW VARIATIONS FROM CONTRACT DOCUMENTS, WHETHER BECAUSE OF STANDARD SHOP PRACTICE OR OTHER REASONS, THE CONTRACTOR SHALL MAKE SPECIAL MENTION THEREOF IN HIS LETTER TRANSMITTAL. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR OBSERVING THE NEED FOR AND MAKING ANY CHANGES IN THE ARRANGEMENT OF PIPING, CONNECTIONS, WIRING, MANNER OF INSTALLATION ETC., WHICH MAY BE REQUIRED BY THE EQUIPMENT HE PROPOSES TO SUPPLY BOTH AS IT PERTAINS TO HIS OWN WORK AND ANY WORK AFFECTED UNDER OTHER PARTS, HEADINGS, OR DIVISIONS OF DRAWINGS AND SPECIFICATIONS.
- L. IDENTIFICATION: SHOP DRAWINGS SHALL BE ENTITLED WITH THE NAME OF THE PROJECT ON EACH SHEET AND SHALL OTHERWISE BE IDENTIFIED BY LISTING THE PARTICULAR DIVISION, SECTION, ARTICLE OR REFERENCE OF THE WORK PERTAINING. SUBMIT DIFFERENT ITEMS ON SEPARATE SHEETS. ALL SUBMITTALS SHALL BE NUMBERED SERIALLY.
- M. MANNER: FURNISH FOR ARCHITECT'S APPROVAL SEPARATE SHEETS OF SUBMITTAL OF EACH SPECIALTY ITEM IN THE FOLLOWING MANNER:
1. CATALOG CUTS SHALL BE PHOTOCOPIED OR REPRODUCED IN SOME OTHER ACCEPTABLE MANNER AND SUBMITTED SEVEN (7) COPIES ON ONE SIDE ONLY OF AN 8 1/2" X 11" SHEET, NOTING ONLY THE ITEMS IN QUESTION, TOGETHER WITH THE DESCRIPTIVE (SPECIFICATION) DATA COMPLETE. DRAWINGS SHALL BE SUBMITTED IN OPAID TRANSPARENCY FORM.
 2. EACH SHEET SHALL BE IDENTIFIED WITH THE DIVISION, SECTION, ARTICLE OR REFERENCE IN THE CONTACT DOCUMENTS, WHICH COVERS THE ITEM SUBMITTED FOR APPROVAL.
 3. EACH SHEET SHALL BE IDENTIFIED WITH THE PROJECT NAME AND THE ARCHITECT.
 4. EACH SHEET SHALL BEAR THE CONTRACTOR'S STAMP AND SIGNATURE OF APPROVAL.

1.14 SPECIFIED ITEMS – SUBSTITUTES

- A. WHEREVER CATALOG NUMBERS AND SPECIFIC BRANDS OR TRADE NAMES FOLLOWED BY THE DESIGNATION "OR EQUAL" ARE USED IN CONJUNCTION WITH A DESIGNATED MATERIAL, PRODUCT, THICKNESS, OR SERVICE MENTIONED IN THIS SPECIFICATION, THEY ARE USED TO ESTABLISH THE STANDARDS OF QUALITY, UTILITY AND APPEARANCE REQUIRED. SUBSTITUTIONS, WHICH ARE EQUAL IN QUALITY, UTILITY, AND APPEARANCE TO THOSE SPECIFIED, WILL BE APPROVED, SUBJECT TO THE FOLLOWING PROVISIONS: ALL SUBSTITUTIONS MUST BE APPROVED BY THE ARCHITECT AND/OR ENGINEER IN WRITING. FOR THIS PURPOSE, THE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT, WITHIN 30 CALENDAR DAYS AFTER THE DATE OF ORDER BREAKER, A PROPOSED SUBSTITUTE ITEM. THE ARCHITECT MAY INCREASE THE SUBMITTAL PERIOD BEYOND 30 CALENDAR DAYS IF THE SCHEDULE ALLOWS. SUFFICIENT DATA, DRAWINGS, SAMPLES, LITERATURE OR OTHER DETAILED INFORMATION THAT WILL DEMONSTRATE TO THE ARCHITECT THAT THE PROPOSED SUBSTITUTE IS EQUAL IN QUALITY, UTILITY, AND APPEARANCE TO THE MATERIAL SPECIFIED SHALL BE APPENDED TO THIS LIST. THE ARCHITECT WILL APPROVE, IN WRITING, SUCH PROPOSED SUBSTITUTION WHICH AFFECT OTHER PARTS OF THE CONTRACTOR'S OWN WORK OR THE WORK OF OTHERS.

- B. FAILURE OF THE CONTRACTOR TO SUBMIT PROPOSED SUBSTITUTIONS FOR APPROVAL, IN THE MANNER DESCRIBED ABOVE AND WITHIN THE TIME PRESCRIBED SHALL BE SUFFICIENT CAUSE FOR DISAPPROVAL BY THE ENGINEER OF ANY SUBSTITUTIONS OTHERWISE PROPOSED.
- C. WHEREVER CATALOG NUMBERS AND SPECIFIC BRANDS OR TRADE NAMES NOT FOLLOWED BY THE DESIGNATION "OR EQUAL" MATERIAL, PRODUCT, THING OR SERVICE MENTIONED IN THESE SPECIFICATIONS, NO SUBSTITUTIONS WILL BE ACCEPTED FOR APPROVAL.
- D. WHEREVER MORE THAN ONE MANUFACTURER'S PRODUCT IS SPECIFIED, THE FIRST NAME PRODUCT IS THE BASIS FOR THE PROJECT DESIGN AND THE USE OF ALTERNATIVE NAME MANUFACTURER'S PRODUCTS OR SUBSTITUTES MAY REQUIRE MODIFICATIONS IN THE PROJECT DESIGN AND CONSTRUCTION. IF SUCH ALTERNATIVES ARE PROPOSED BY THE CONTRACTOR AND ARE FAVORABLY REVIEWED BY THE ENGINEER THE CONTRACTOR SHALL ASSUME COSTS REQUIRED TO MAKE NECESSARY REVISIONS AND MODIFICATIONS INCLUDING ADDITIONAL COSTS TO THE OWNER FOR EVALUATIONS OF MODIFICATIONS OF THE PROJECT DESIGN SUBMITTED BY THE CONTRACTOR TO THE ARCHITECT.
- E. WHEN MATERIALS ARE SPECIFIED BY THE FIRST MANUFACTURER'S NAME, AND PRODUCT NUMBER, SECOND MANUFACTURER'S NAME, OR EQUAL, THE SECOND MANUFACTURER'S PRODUCT SHALL BE SUBMITTED IN ACCORDANCE WITH THE ABOVE PARAGRAPH.
- F. IF THE ENGINEER IN THIS REVIEW OF THE LIST OF MATERIALS AND EQUIPMENT REQUIRES REVISIONS OR CORRECTIONS TO BE MADE OR SHOP DRAWINGS AND/OR SUPPLEMENTAL DATA TO BE SUBMITTED, THE CONTRACTOR SHALL PROMPTLY DO SO. IF ANY PROPOSED MATERIAL IS JUDGED BY THE ENGINEER TO BE UNACCEPTABLE, THE SPECIFIED ITEM SHALL BE PROVIDED; FURTHER SUBMISSIONS WILL NOT BE ALLOWED, UNLESS DIRECTED BY THE ENGINEER.
- G. PHYSICAL SAMPLES MAY BE REQUIRED. IF TESTS FOR THE DETERMINATION OF EQUALITY AND UTILITY ARE REQUIRED BY THE ENGINEER THEY SHALL BE MADE BY A TESTING LABORATORY, WITH ACCEPTANCE OF THE TEST PROCEDURE FIRST GIVEN BY THE ENGINEER, AND AT THE EXPENSE OF THE CONTRACTOR.
- H. IN REVIEW OF THE DATA SUBMITTED IN SUPPORT OF SUBSTITUTIONS, THE ENGINEER WILL USE FOR PURPOSES OF COMPARISON ALL THE CHARACTERISTICS OF THE SPECIFIED ITEM AS THEY APPEAR IN THE MANUFACTURER'S PUBLISHED DATA EVEN THOUGH ALL THE CHARACTERISTICS OF THE SPECIFIED ITEM MAY NOT HAVE BEEN PARTICULARLY MENTIONED IN THE MANUFACTURER'S PUBLISHED DATA. IF MORE THAN TWO SUBMISSIONS OF DATA ARE REQUIRED, THE COST OF REVIEWING THE DATA GOES AGAINST THE CONTRACTOR, AND THE OWNER WILL WITHHOLD THE FUNDS NECESSARY TO COVER THESE COSTS. ONLY ONE (1) SUCH REQUEST MAY BE SUBMITTED. THE ENGINEER'S REJECTION OF ANY SUBSTITUTE SHALL AUTOMATICALLY REQUIRE THE CONTRACTOR TO FURNISH THE SPECIFIED ITEM WITHOUT FURTHER DISCUSSION OR DELAY.

1.15 EQUIPMENT IDENTIFICATION

- A. THE MAIN SWITCHBOARD, AND ALL PANELBOARDS, DISCONNECT SWITCHES, TRANSFORMERS, BOXES, ETC., SHALL BE PROPERLY IDENTIFIED WITH A DESCRIPTIVE NAMEPLATE. NAMEPLATES SHALL BE MADE OF 1/16 INCH LAMINATED PLASTIC WITH BLACK BACKGROUND AND WHITE LETTERS. SIZE OF LETTERS SHALL BE 1/4 INCH HIGH. LETTERS SHALL BE MACHINE ENGRAVED. ALL NAMEPLATES SHALL BE SCREW MOUNTED WITH OVAL HEAD MACHINE SCREWS TAPPED INTO FRONT OF PANEL.
- B. PROVIDE HOLDERS WITH IDENTIFICATION CARDS FILLED OUT IN A TYPEWRITTEN FORMAT OF CIRCUIT DESIGNATIONS FOR EACH PANELBOARD.
- C. EACH BRANCH CIRCUIT, CONTROL, AND SIGNAL CONDUCTOR SHALL BE LABELED WITH THE CIRCUIT NUMBER OR TERMINAL NUMBER IT IS CONNECTED TO. USE TABS VINYL OR BRANDY PERSHIELDED MYLAR MARKERS. CONDUCTORS SHALL BE LABELED AT EACH PANELBOARD, SWITCHBOARD, CONTROL CENTER, TERMINAL CABINET, PULL BOX, AND EACH POINT OF UTILIZATION SUCH AS FIXTURES, MOTORS, CONTROLS, ETC. LABELING SHALL CORRESPOND TO CONTROL DIAGRAMS WHERE APPLICABLE.

1.16 WARRANTY

- A. GUARANTEE ALL WORK FOR ONE YEAR FROM DATE OF ACCEPTANCE AGAINST ALL DEFECTS IN MATERIAL, EQUIPMENT AND WORKMANSHIP.

1.17 RECORD AS-BUILT DRAWINGS

- A. THE CONTRACTOR SHALL KEEP A SEPARATE SET OF ELECTRICAL DRAWINGS AT THE JOB SITE TO BE USED AS RECORD DRAWINGS. THESE DRAWINGS ARE TO BE KEPT CURRENT AND IN A NEAT AND CLEAN CONDITION AT ALL TIMES. THEY ARE TO BE AVAILABLE FOR INSPECTION BY THE ARCHITECT OR ENGINEER AT ANY TIME DURING SITE VISITATIONS. THESE DRAWINGS SHALL BE TIED UNTO TO INDICATE ALL CHANGES IN EQUIPMENT, DEVICE, AND OUTLET LOCATIONS, AND TO INDICATE THE TRUE LOCATIONS OF ALL CONCEALED OR UNDERGROUND WORK DIFFERENT FROM THAT SHOWN ON THE DRAWINGS. EACH SHEET OF THIS SET SHALL BE CLEARLY AND PERMANENTLY MARKED "RECORD AS-BUILT DRAWINGS".
- B. UPON COMPLETION OF THE PROJECT AND PRIOR TO FINAL PAYMENT, TRANSFER ALL RECORD DRAWINGS INFORMATION TO THE PROVIDED ORIGINAL DRAWINGS. ALL INFORMATION SHALL BE CLEARLY DRAWN WITH RED INK. THE DRAWINGS SHALL BE SCANNED, 100% EDITED, AND CONVERTED INTO AN AUTOCAD LWG VERSION 2000 (OR HIGHER) ELECTRONIC FILE. DELIVER THE ORIGINAL, FINAL SETS AND ELECTRONIC FILES (CD) TO THE ARCHITECT FOR REVIEW AND DELIVERY TO THE DISTRICT'S REPRESENTATIVE/OWNER.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. UNLESS SPECIFICALLY INDICATED OTHERWISE, ALL MATERIAL SHALL BE NEW AND FREE FROM DEFECTS; IT SHALL BE LISTED BY UNDERWRITERS LABORATORIES WHERE APPLICABLE. LIKE ITEMS SHALL BE OF THE SAME MANUFACTURER (EXCEPT LIGHTING FIXTURES – WHICH SHALL BE AS SPECIFIED).
- B. EXCEPT AS NOTED OTHERWISE, WHERE MATERIAL OF A PARTICULAR MANUFACTURER IS SPECIFIED, THE INTENT IS TO DESCRIBE THE QUALITY AND FUNCTION OF THE ITEM. THE TERM "…OR APPROVED EQUAL" IS IMPLIED, A SUBSTITUTION OF ANY OF THESE ITEMS WILL REQUIRE THAT THE ITEM BE PRESENTED IN A SUBMITTAL WHERE SPECIFICALLY LISTED IN THE "SUBMITTALS" PARAGRAPH ABOVE.

2.02 ENCLOSURES

- A. PROVIDE ENCLOSURES SUITABLE FOR THE SPECIFIC TYPE OF LOCATION IN WHICH THEY ARE INSTALLED.

1. PROVIDE NEMA 1 OR NEMA 12 BOXES AND ENCLOSURES FOR DRY LOCATIONS. DRY LOCATIONS ARE ALL INDOOR AREAS THAT DO NOT FALL WITHIN THE DEFINITIONS BELOW FOR WET OR DAMP LOCATIONS.
2. PROVIDE NEMA 3R BOXES AND ENCLOSURES FOR WET LOCATIONS. WET LOCATIONS ARE ALL LOCATIONS EXPOSED TO WEATHER, WHETHER UNDER A ROOF OR NOT.
3. PROVIDE NEMA 4 BOXES AND ENCLOSURES FOR DAMP LOCATIONS. DAMP LOCATIONS ARE ALL INDOOR SPACES WHOLLY OR PARTIALLY UNDERGROUND OR ANY AREA SUBJECT TO WATER SPRAY.

2.03 NOT USED.

2.04 NOT USED.

2.06 PANELBOARDS

- A. ACCEPTABLE MANUFACTURERS:
1. EATON
 2. SQUARE D
 3. SIEMENS
- B. PANELBOARDS SHALL BE OF A TYPE AND RATING AS INDICATED ON THE PANEL SCHEDULE(S) ON THE DRAWINGS. THEY SHALL BE DEAD FRONT WITH HARDWARE FOR ACCEPTING MOLDED CASE BOLT-ON CIRCUIT BREAKERS OF THE MAXIMUM SIZE ALLOWABLE IN EACH SPACE. THE ENTIRE ASSEMBLY INCLUDING CIRCUIT BREAKERS SHALL BE RATED FOR NOT LESS THAN THE AVAILABLE SHORT CIRCUIT CURRENT SHOWN ON THE DRAWINGS (22,000 AMPS SYMMETRICAL WHEN NOT OTHERWISE INDICATED).
- C. RATINGS:
1. SEE PANEL SCHEDULES.
 2. INTERRUPTING RATING: REFER TO ONE LINE DIAGRAM. COMPLY WITH CEC 110.9 AND 110.10. PROVIDE AIC CALCULATIONS IF REQUIRED.
 3. FINISH: ALL PAINTED STEEL WORK SHALL BE TREATED WITH A PRIMER COAT AND FINISH COAT OF THE MANUFACTURER'S STANDARD GRAY COLOR OR ANSI G1.
- D. BUSSING:
1. BUSSING SHALL BE RECTANGULAR CROSS SECTION COPPER.
 2. EACH PANELBOARD SHALL BE EQUIPPED WITH A GROUND BUS SECURED TO THE INTERIOR OF THE ENCLOSURE. THE BUS SHALL BE EQUAL TO THE PANELBOARD NEUTRAL BUS AND SHALL HAVE A SEPARATE LUG FOR EACH GROUND CONDUCTOR. NOT MORE THAN ONE CONDUCTOR SHALL BE INSTALLED PER LUG.
- F. BREAKERS:
1. VOLTAGE 240 VAC OR 480 VAC AS SHOWN ON PLANS.
 2. INTERRUPTING RATING: SEE PANEL SCHEDULES.
 3. MANUFACTURER SHALL BE THE SAME AS THE PANELBOARD OR SWITCHBOARD IN WHICH THEY ARE MOUNTED.
 4. WHERE TWO OR THREE POLE BREAKERS OCCUR IN THE PANELS, THEY SHALL BE COMMON TRIP UNITS. SINGLE POLE BREAKERS WITH THE BAR BETWEEN HANDLES WILL NOT BE ACCEPTED.
 5. BREAKERS SHALL HAVE TOGGLE, QUICK-MAKE, AND QUICK-BREAK OPERATING MECHANISMS WITH TRIP-FREE FEATURE TO PREVENT CONTACTS BEING HELD CLOSED AGAINST OVERCURRENT CONDITIONS IN THE CIRCUIT. TRIP POSITION OF THE BREAKERS SHALL BE CLEARLY INDICATED BY MOVEMENT OF THE OPERATING HANDLES TO THE CENTER POSITION.
 6. HACR RATED CIRCUIT BREAKERS SHALL BE PROVIDED TO PROTECT ALL FEEDERS AND BRANCH CIRCUITS TO NON-FUSED HVAC AND REFRIGERATION EQUIPMENT AND WHERE REQUIRED BY EQUIPMENT LISTING CONDITIONS.
- H. NAMEPLATES AND DIRECTORY: EACH PANEL SHALL HAVE A NEATLY TYPEWRITTEN DIRECTORY WITH THE NAME AND NUMBER OF THE ROOM OR THE EQUIPMENT SERVED BY EACH CIRCUIT BREAKER WHICH SHALL CORRESPOND WITH THE FINAL CIRCUIT ARRANGEMENT. SPACES IN DIRECTORIES FOR SPARE CIRCUIT BREAKERS SHALL BE NEARLY MARKED "SPARE" IN PENCIL. THE DIRECTORY SHALL ALSO INDICATE THE PANEL DESIGNATION, VOLTAGE AND PHASE AT THE TOP. EACH DIRECTORY SHALL BE MOUNTED IN METALLIC INDEX CARD HOLDER BEHIND A CLEAR PLASTIC WINDOW.

2.07 DISCONNECT SWITCHES

- A. HEAVY-DUTY TYPE SAFETY SWITCHES AS MANUFACTURED BY EATON, SIEMENS, OR SQUARE D. FURNISH WITH ENCLOSURE SUITABLE FOR APPLICATION. PROVIDE FUSED TYPE WHERE INDICATED OR REQUIRED BY CODE.

2.08 MOTOR STARTERS

- A. DISCONNECT SWITCH TYPE COMPLETE WITH (3) OVERLOAD RELAYS AND ENCLOSURE SUITABLE FOR APPLICATION. CUTLER-HAMMER, SIEMENS, OR SQUARE D.

2.09 FUSES

- A. FUSES SHALL BE PROVIDED PER MANUFACTURER'S EQUIPMENT NAMEPLATE FOR ALL FUSE HOLDERS AS SHOWN ON THE DRAWINGS AND AS REQUIRED FOR SUPPLEMENTAL PROTECTION AND SPECIFIED HEREIN. THEY SHALL BE CURRENT-LIMITING, NON-RENEWABLE AS INDICATED ON THE DRAWINGS – FUSETRON OR LIMITRON TYPE MANUFACTURED BY BUSSMAN OR EQUAL. ALL FUSES SHALL BE THE PRODUCT FROM THE SAME MANUFACTURER. PROVIDE (3) SPARE FUSES FOR EACH SIZE AND CLASS OF FUSE USED.

B. MAIN AND FEEDER PROTECTION:

1. WHERE RATING OF PROTECTIVE DEVICE IS GREATER THAN 600 AMPERE, PROVIDE BUSSMAN HI-CAP FUSES, CLASS L, CURRENT LIMITING, HAVING AN INTERRUPTING RATING OF 200,000 AMPERE RMS.
2. WHERE RATING OF PROTECTIVE DEVICE IS 600 AMPERE OR LESS, PROVIDE BUSSMAN CLASS R FUSES, CLASS RM CURRENT LIMITING FUSES, HAVING AN INTERRUPTING RATING OF 200,000 AMPERE RMS.

C. MOTOR PROTECTION:

1. WHERE RATING OF PROTECTIVE DEVICE IS 600 AMPERE OR LESS, PROVIDE BUSSMAN FUSETRON DUAL-ELEMENT FUSES, CLASS R3S, HAVING AN INTERRUPTING RATING OF 200,000 AMPERE RMS.
2. WHERE FUSES FEEDING MOTORS ARE INDICATED BUT NOT SIZED, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE FUSE SIZE WITH THE MOTOR TO PROVIDE PROPER MOTOR RUNNING PROTECTION.

2.10 RACEWAY AND FITTINGS

A. RIGID STEEL CONDUIT:

1. COMPLY WITH UNDERWRITERS LABORATORIES UL 6 SPECIFICATION, ANSI C80.1 AND FEDERAL SPECIFICATION WW_C-581E OR LATEST REVISIONS. HOT DIP GALVANIZED ON THE EXTERIOR, ZINC OR ENAMEL ON THE INTERIOR.
2. COUPLINGS, LOCKNUTS, AND ALL OTHER FITTINGS SHALL BE GALVANIZED OR SHERARDIZED, WATERPROOF AND THREADED TYPE ONLY. APPLETON, CROUSE-HINDS OR EQUAL.

B. INTERMEDIATE METALLIC CONDUIT (IMC):

1. COMPLY TO PROPOSED UNDERWRITERS LABORATORIES UL 1242 AND FEDERAL SPECIFICATION WW_C-581E OR LATEST REVISION. HOT DIPPED GALVANIZED ON THE EXTERIOR, CORROSION INHIBITING COATING ON THE INTERIOR.
2. COUPLINGS, LOCKNUTS, AND ALL OTHER FITTINGS SHALL BE GALVANIZED OR SHERARDIZED, WATERPROOF AND THREADED TYPE ONLY. SAME MATERIAL AS CONDUIT. APPLETON, CROUSE-HINDS OR EQUAL.

C. ELECTRICAL METALLIC TUBING (EMT):

1. COMPLY WITH UNDERWRITERS LABORATORIES UL 797, ANSI C80.3 AND FEDERAL SPECIFICATION WW_C-563 OR LATEST REVISIONS. EMT SHALL BE GALVANIZED OR SHERARDIZED.
2. COUPLINGS AND CONNECTORS FOR EMT SHALL BE GALVANIZED OR CADMIUM PLATED AND SHALL BE OF THE COMPRESSION TYPE REQUIRING THE TIGHTENING OF A NUT ON A GLAND RING OR AN APPROVED STEEL SET SCREW TYPE. APPLETON, CROUSE-HINDS OR EQUAL. NO DIE CAST TYPE ALLOWED.

D. FLEXIBLE METALLIC CONDUIT:

1. GALVANIZED INTERLOCKED SPIRALLY WOUND STEEL STRIP.

2. NEOPRENE JACKETED FLEXIBLE METALLIC CONDUIT SHALL BE USED IN ALL MOIST OR WEATHERPROOF LOCATIONS WHERE FLEXIBLE CONDUIT IS REQUIRED.

3. FITTINGS SHALL BE HOT DIPPED GALVANIZED COMPRESSION OR CLAMP TYPE. FITTINGS WHICH USE A SCREW TO BIND AGAINST TUBING OR WHICH SCREW INTO THE END OF THE CONDUIT, WILL NOT BE ACCEPTED. FITTINGS FOR NEOPRENE JACKETED FLEXIBLE CONDUIT SHALL BE OF THE SCREW IN TYPE. APPLETON STB SERIES. APPLETON, CROUSE-HINDS OR EQUAL MAY BE USED.

- E. POLYVINYLCHLORIDE (PVC): RIGID HEAVY WEIGHT TYPE, SCHEDULE 40, COMPLETE WITH PVC FITTINGS.

- F. ELECTRICAL NON-METALLIC TUBING (ENT): ELECTRICAL NON-METALLIC TUBING (ENT) IS NOT PERMISSIBLE FOR USE ON THIS PROJECT.

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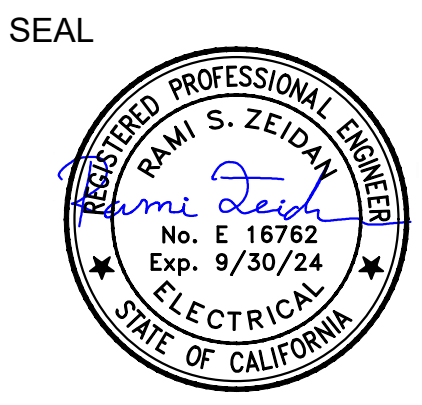


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ELECTRICAL SPECIFICATIONS

NO.	DATE	ISSUE

Project: **ALUM ROCK UNION SCHOOL DISTRICT**

HVAC & ROOFING UPGRADES

Drawn By

Checked By

Project No: 23-525

@Date: 03/11/24

Drawing No:

E0.0.4

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G. CONDUIT SUPPORTS:

- PIPE HANGERS FOR INDIVIDUAL CONDUITS SHALL BE THREADED SUSPENSION ROD. THE PIPE RING SHALL BE MALLEABLE IRON, SPLIT AND HINGED, OR SHALL BE SPRINGABLE WROUGHT STEEL. RINGS SHALL BE BOLTED TO OR INTERLOCKED WITH THE SUSPENSION ROD SOCKET.
- PIPE RACKS FOR GROUPS OF PARALLEL CONDUITS SHALL BE CONSTRUCTED OF GALVANIZED STRUCTURAL STEEL. PREFORMED CHANNELS OF LENGTH AS REQUIRED, SUSPENDED ON THREADED RODS AND SECURED THERETO WITH NUTS ABOVE AND BELOW THE CROSS BAR.
- FACTORY MADE PIPE STRAPS SHALL BE ONE-HOLE MALLEABLE IRON OR TWO-HOLE GALVANIZED CLAMPS.
- STRUT CHANNEL SHALL BE KINDORF, UNISTRUT, TAB, OR EQUAL.

H. OUTLET BOXES: GALVANIZED STEEL. BOXES INSTALLED IN ANY EXTERIOR LOCATION, WHERE EXPOSED TO RAIN OR WHERE EXPOSED TO MOISTURE LADEN ATMOSPHERE SHALL BE CAST SCREW HUB TYPE WITH GASKETED WEATHERPROOF COVERS. BOXES FOR VAPOR PROOF OR EXPLOSION PROOF APPLICATIONS SHALL BE DESIGNED SPECIALLY FOR SUCH USE.

- EACH BOX SHALL BE LARGE ENOUGH TO ACCOMMODATE THE REQUIRED NUMBER AND SIZES OF CONDUITS, WIRES, SPLICES AND DEVICES BUT NOT SMALLER THAN SIZE SHOWN OR SPECIFIED.

I. PULL BOXES AND CABINETS:

- PREFABRICATED CONCRETE TYPE, CRISTY CONCRETE PRODUCTS, BROOKS, OR EQUAL. ALL BOXES SHALL HAVE STANDARD BRASS HOLD-DOWN BOLTS AND HARDWARE. BOXES LOCATED IN PAVED AREAS OR OTHER AREAS OVER WHICH VEHICLES NORMALLY MAY TRAVEL SHALL HAVE TRAFFIC COVERS.
- ALL PULL BOXES AND CABINETS SHALL BE CODE GAUGE GALVANIZED STEEL.

2.11 WIRE AND CABLE

A. LABELING:

MARKED ON 24 INCH CENTERS AS FOLLOWS:

- UNDERWRITERS LABEL
- GUAGE
- VOLTAGE
- KIND OF INSULATION
- NAME OF MANUFACTURER
- TRADE NAME

B. INSULATION:

- ALL CONDUCTORS #10 AND SMALLER, SHALL BE 600 VOLT, TYPE THWN, THW, TW OR THHN UNLESS NOTED OTHERWISE.
- ALL CONDUCTORS FOR UNDERGROUND AND CONDUCTORS #8 AND LARGER SHALL BE 600 VOLT, TYPE XHHW OR THWN UNLESS NOTED OTHERWISE.
- INSULATION TYPE XHHW SHALL BE USED FOR WIRE SIZES #2 AND LARGER.
- ALL CIRCUIT CONDUCTORS INSTALLED WITHIN FLUORESCENT FIXTURE RACEWAYS SHALL BE 600 VOLT, 105-DEGREE TYPE RHH, OR THHN, EXCEPT IN FIXTURES THAT HAVE WIRING RACEWAYS SPECIFICALLY APPROVED FOR 75 DEGREE CENTIGRADE WIRE.

C. GROUNDING WIRE:

- GROUNDING WIRE #1/0 OR LARGER TINNED STRANDED COPPER CABLE. ALL SMALLER GROUND WIRES SHALL BE INSULATED WITH GREEN COLOR INSULATION

D. COLOR CODING OF CONDUCTORS:

- THE GUIDELINES OF THE NEC SHALL BE FOLLOWED WHEN SELECTING WIRE COLORS. GENERALLY, ALL PHASE WIRES FOR POWER CONDUCTORS OF THE SAME SYSTEM MAY BE THE SAME COLOR EXCEPT AS FOLLOWS:

PHASE	120/208 VOLTS	277/480 VOLTS
PHASE A	BLACK	BROWN
PHASE B	RED	ORANGE
PHASE C	BLUE	YELLOW
NEUTRAL	WHITE	GRAY
GROUND	GREEN	GREEN
ISOLATED GROUND	LIGHT GREEN OR LIGHT GREEN WITH WHITE STRIPE	

- THESE COLORS MAY BE THE CONDUCTOR INSULATION COLORS OR THE COLORS MAY BE APPLIED USING INDICATING TAPE MANUFACTURED FOR THE PURPOSE.

- IN ADDITION TO COLOR CODING, ALL POWER, CONTROL, AND ALARM WIRING SHALL BE NUMBERED AND IDENTIFIED BY MEANS OF WIRE MARKERS AT ALL SWITCHBOARDS, PANELBOARDS, AUXILIARY GUTTERS, JUNCTION BOXES, PULL BOXES, RECEPTACLE OUTLETS, LIGHT OUTLETS, DISCONNECT SWITCHES, AND CIRCUIT BREAKERS. THESE MARKERS SHALL CORRESPOND TO NUMBERS ON SHOP DRAWINGS.

- CONDUCTORS IN SIZES UP THROUGH #10 AWG SHALL HAVE SOLID COLOR FINISH AS LISTED ABOVE. NO. EIGHT (#8) AWG AND LARGER SHALL BE CODED BY APPLICATION OF PHASE TAPE FOR MINIMUM OF 6 INCH LENGTH ON CONDUCTOR. CODING SHALL OCCUR ON ALL SPLICES AND TERMINATION AND PULL BOXES.

E. CONDUCTORS:

- UNLESS SPECIFICALLY NOTED OTHERWISE HEREIN, ALL CONDUCTORS FOR GENERAL WIRING SHALL BE A MINIMUM OF 98% CONDUCTIVITY, STRANDED, SOFT DRAWN COPPER.
- CONDUCTORS FOR LIGHTING AND RECEPTACLE BRANCH CIRCUITS NO. 8 AND SMALLER SHALL BE SIMILAR TO THE ABOVE EXCEPT SOLID COPPER MAY BE USED.
- EXCEPT WHERE NOTED ON THE PLANS OR IN THIS SPECIFICATION, THE MINIMUM CONDUCTOR SIZE FOR BRANCH CIRCUITS SHALL BE NO. 12. MINIMUM SIZE MECHANICAL EQUIPMENT CONTROL CIRCUITS WHERE COVERED UNDER THIS SPECIFICATION SHALL BE NO. 14.
- ALUMINUM CONDUCTORS ARE NOT ALLOWED UNLESS SPECIFICALLY CALLED OUT FOR ON DRAWINGS.

F. PULLING LUBRICANT: UL APPROVED.

G. CONNECTIONS:

- NUMBER EIGHT (#8) AND SMALLER, PRE-INSULATED SPRING TYPE CONNECTORS. THREADED OR CRIMP TYPES WILL NOT BE ACCEPTED. USE SCOTCHLOCK, HYVENT, TAB OR EQUAL.
- TERMINALS FOR STRANDED CONDUCTORS NO. 8 AND SMALLER SHALL BE A PRE-INSULATED CRIMP TYPE.
- LUGS AND CONNECTORS FOR CONDUCTORS NO. 6 AND LARGER SHALL BE COMPRESSION TYPES OF ONE PIECE TUBULAR CONSTRUCTION WITH FLAT RECTANGULAR TONGUES. TWO HOLE LUGS SHALL BE USED FOR SIZES 4/0 AND LARGER. FITTINGS FOR COPPER CONDUCTORS SHALL BE TIN-PLATED COPPER. FITTINGS FOR ALUMINUM CONDUCTORS SHALL BE TIN-PLATED ALUMINUM, FACTORY FILLED WITH A CORROSION INHIBITING AND OXIDE PENETRATING COMPOUND.
- CAST RESIN KITS SHALL BE SCOTCHLOCK SEALING PACKS FOR WIRE SIZE TO #10 AND SCOTCHLOCK KITS FOR LARGER SPLICES AS RECOMMENDED BY 3M COMPANY.

2.12 WIRING DEVICES

A. NOT USED.

B. CONVENIENCE OUTLETS:

- GROUNDING, 20 AMPERE, 125 VOLT, NEMA 5-20R CONFIGURATION, NYLON HOUSING, SELF GROUNDING. COMPLY TO FEDERAL SPECIFICATION W_C_596E, NEMA WD1-4.02 AND UL 498 OR LATEST REVISIONS. COLOR AS SELECTED BY ARCHITECT OR OWNER.
 - SCHEDULE OF APPROVED TYPES:

OUTLET TYPE	COOPER	LEVITON	HUBBELL
20 A, 125 V; HEAVY USE DUPLEX	5362	5362A	5362
20 A, 125 V; DUPLEX	5362	5362A	5362
30 A, 125/250 V	5744N	278	9430A
50 A, 125/250 V	5754N**	279	9450A
20 A, 125 V; ISOLATED GND	IG5362	5362G	IG5362
20 A, 125 V; GFI	GFI5342	6899GFI	GFI5322.03
 - WEATHERPROOF RECEPTACLE "GFCI" - HUBBELL #5103-0.
 - WEATHERPROOF AND LOCKABLE RECEPTACLE WEATHERPROOF WITH PROVISION FOR PADLOCK-BRYANT #63101-PL.
 - WEATHERPROOF RECEPTACLE INTENDED FOR UNATTENDED USE (IRRIGATION CONTROLLER OUTLET, SLUMP PUMP OUTLET, ETC) - COVER PLATE SHALL BE PROVIDED WITH A POLYCARBONATE CORD CAP GASKET ENCLOSURE LISTED "SUITABLE FOR MET LOCATIONS WHILE IN USE". USE TYPING SAFETY OUTLET ENCLOSURE OR EQUAL.
 - ISOLATED GROUND RECEPTACLE, NEMA 5-20R WITH AN ORANGE COLOR TRIANGLE LOCATED ON THE FACE OF THE RECEPTACLE PER NEC 406.2(D).
- C. PLATES: PLATES SHALL BE SUPPLIED FOR EVERY LOCAL SWITCH, RECEPTACLE, ETC. PLATES SHALL BE STAINLESS STEEL OR NYLON TO MATCH WALL FINISH. FURNISH WITH ENGRAVED OR ETCHED DESIGNATIONS UNDER ANY ONE OF THE FOLLOWING CONDITIONS:
- THREE GANG OR LARGER GANG SWITCHES.

- SWITCHES IN LOCATIONS FROM WHICH THE EQUIPMENT OR CIRCUITS CONTROLLED CANNOT BE READILY SEEN.

- WHERE SO INDICATED ON THE DRAWINGS.

- AS REQUIRED ON ALL CONTROL CIRCUIT SWITCHES, SUCH AS HEATER CONTROLS, ETC.

- WHERE RECEPTACLES ARE OTHER THAN STANDARD DUPLEX RECEPTACLES, TO INDICATE VOLTAGE AND PHASE.

- PROVIDE COVER PLATES FOR ALL TELEPHONE AND COMPUTER OUTLETS.

- NOT USED.

- NOT USED.

- NOT USED.

2.16 TERMINAL CABINETS

- ALL TERMINAL CABINETS SHALL BE SIZED PER APPLICABLE ELECTRICAL CODE, U.L. LISTED, AND SUITABLE FOR THE CONDITIONS OF INSTALLATION. EACH CABINET SHALL BE PROVIDED HAVING SUFFICIENT VOLUME, PROPER DIMENSIONS, AND GEOMETRY FOR THE DEVICE(S) TO BE INSTALLED AND THE NUMBER OF CONDUITS AND WIRES AT THAT LOCATION.

- ALL TERMINAL CABINETS SHALL BE PROVIDED WITH HINGED LOCKABLE DOORS SUITABLE TO THE CONDITIONS OF THE INSTALLATION.

- CONSTRUCTION OF TERMINAL AND DEVICE CABINETS SHALL BE SIMILAR TO PANELBOARDS, FLUSH COMBINATION LATCH AND LOCK, RECESSED IN FINISHED AREAS, ETC. ALL LOCKS SHALL BE KEYS ALIKE BUT DIFFERENT FROM PANELBOARDS. ENCLOSURE SHALL BE NEMA 3 (RAIN AND DUST TIGHT) WHERE INSTALLED OUTDOORS UNLESS OTHERWISE SPECIFIED. A "PLAN POUCH" SHALL BE FACTORY ASSEMBLED TO THE INTERIOR OF THE CABINET DOOR SUITABLE FOR HOLDING A PLAN OF THE ASSOCIATED CONTROL SCHEME.

- BUILDING SIGNAL TERMINAL CABINET SIZES SHALL BE SUFFICIENT FOR THE RACEWAYS INDICATED ON THE DRAWINGS AND FOR THE TERMINATION AND CONTROL EQUIPMENT REQUIRED. THE CONTRACTOR SHALL SIZE THE CABINETS TO PROVIDE AMPLE WIRING AND TERMINATION SPACE FOR THE EQUIPMENT, WIRES, AND CABLES INDICATED ON THE DRAWINGS. THE SIZES SHALL NOT BE LESS THAN THOSE INDICATED ON THE DRAWINGS. MINIMUM TERMINAL CABINET SIZE FOR ANY LOCATION SHALL BE 24"H X 24"W X 6"D WHERE NOT NOTED OTHERWISE.

- A BACKBOARD OF 5/8" MINIMUM PLYWOOD, UNLESS NOTED ON PLANS, OR A METAL EQUIPMENT MOUNTING PANEL PROVIDED BY THE CABINET MANUFACTURER HAVING A SIZE APPROXIMATELY THE SAME AS THE DOOR OPENING SHALL BE INSTALLED WITHIN THE CABINET.

- METAL DIVIDERS SHALL BE PROVIDED WHERE INDICATED ON THE DRAWINGS. FINISH SAME AS PANEL INTERIOR.

- TERMINAL STRIPS OR BLOCKS SHALL BE DOUBLE ROW STRAP SCREW WITH CLAMP OR TUBE-SCREW TYPE WITH WRITE-ON STRIP DOWN THE CENTER. THEY SHALL ACCEPT WIRE SIZES AS INDICATED ON THE DRAWINGS AND HAVE BARRIERS BETWEEN THE POLES. EXCEPT WHERE NOTED OTHERWISE, PROVIDE AT LEAST 10% SPARE TERMINAL POINTS. PUNCH BLOCKS SHALL BE USED TO TERMINATE COMMUNICATIONS CABLES AND OTHER SMALL SIZE WIRES.

- EXCEPT WHERE OTHERWISE SPECIFICALLY NOTED, PROVIDE ALL TERMINAL STRIPS, WIRING CHANNELS, MARKERS, AND OTHER DEVICES AS REQUIRED.

PART 3 - EXECUTION

3.01 EXCAVATION AND BACKFILL

- PERFORM EXCAVATION AND BACKFILL REQUIRED FOR ELECTRICAL INSTALLATION. RESTORE ALL SURFACES, ROADWAYS, WALKS, CURBS, WALLS, EXISTING UNDERGROUND INSTALLATIONS, ETC., CUT BY INSTALLATIONS TO ORIGINAL CONDITION IN AN ACCEPTABLE MANNER.

- DIG TRENCHES STRAIGHT AND TRUE TO LINE AND GRADE, WITH BOTTOM SMOOTHED OF ANY ROCK POINTS. SUPPORT CONDUIT FOR ENTIRE LENGTH ON UNDISTURBED, ORIGINAL EARTH. MINIMUM CONDUIT DEPTH TO PIPE CROWN SHALL BE 24 INCHES BELOW FINISHED GRADE. CONSULT SERVING UTILITY COMPANIES FOR MINIMUM UTILITY CONDUIT DEPTHS.

- BACKFILL AND TAMP IN SIX-INCH LAYERS WITH EARTH FROM EXCAVATION TO FINISH GRADE. MAKE ALLOWANCES FOR SETTLEMENT.

3.02 INSTALLATIONS

- CIRCUIT BREAKERS AND FUSES ARE TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' INSTRUCTIONS. FUSES MUST SEAT SOLIDLY WITH ALL CONTACT SURFACES BEARING EVENLY. REPLACE WARPED, WEAK, OR BROKEN FUSE CLAMP TERMINALS. DO NOT ATTEMPT TO REPAIR OR BEND BACK INTO POSITION.

3.03 SWITCHBOARD INSTALLATION

- INSTALL A CONCRETE PAD THAT IS 3 INCHES HIGHER THAN SURROUNDING GRADE OR FLOOR, UNLESS NOTED ON PLAN. INSTALL ANCHORS FOR EACH SECTION PROVIDED. SET THE SWITCHBOARD IN POSITION AND LEVEL THE ENTIRE UNIT. RIGIDLY SECURE THE SWITCHBOARD TO THE PAD AND GROUT AROUND THE BASE AS REQUIRED TO MAKE WATERIGHT SEAL. PROVIDE SUPPORT FOR CABLES ENTERING THE SWITCHBOARD AS REQUIRED FROM POINT OF ENTRY TO THE TERMINATION POINT.

- WHERE THE SWITCHBOARD IS INSTALLED OUTDOORS AND EXPOSED TO THE WEATHER, FORM A 1/4" MINIMUM DRAIN PATH FROM EACH SECTION OF THE SWITCHBOARD INTERIOR TO GRADE LEVEL BEYOND THE PAD. THIS MAY BE ACCOMPLISHED BY PLACING A 1/4" PLASTIC OR COPPER TUBE WITHIN THE PAD FORM PRIOR TO CONCRETE POUR. SECURE THE TUBE AGAINST MOVEMENT DURING THE POUR. CUT TUBES OFF FLUSH WITH PAD AFTER SWITCHBOARD IS SET.

- THE GROUND FAULT COMPONENTS SHALL BE TESTED BY A QUALIFIED TECHNICIAN PRIOR TO ENERGIZING SWITCHBOARD.

- NEATLY ARRANGE WIRING WITHIN THE EQUIPMENT. BUNDLE AND WRAP CONDUCTORS #8 AWG AND SMALLER WITH PLASTIC WIRE TIES.

- EVERY CONDUIT ENTERING THE SWITCHBOARD SHALL BE IDENTIFIED, AND 100% ACCESSIBLE WITH INSULATED BUSHING INSTALLED.

F. FIELD ADJUSTMENTS:

- THE CONTRACTOR SHALL PERFORM FIELD ADJUSTMENTS OF THE PROTECTIVE DEVICES AS REQUIRED TO PLACE THE EQUIPMENT IN FINAL OPERATING CONDITION. THE SETTINGS SHALL BE IN ACCORDANCE WITH THE ACCEPTED SHORT-CIRCUIT STUDY, PROTECTIVE DEVICE EVALUATION STUDY, AND PROTECTIVE DEVICE COORDINATION STUDY.
- NECESSARY FIELD SETTINGS OF DEVICES, ADJUSTMENTS, AND MINOR MODIFICATIONS TO EQUIPMENT TO ACCOMPLISH CONFORMANCE WITH AN ACCEPTED SHORT CIRCUIT AND PROTECTIVE DEVICE COORDINATION STUDY SHALL BE CARRIED OUT BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

3.04 PANELBOARD INSTALLATION

- PANELBOARDS ARE TO BE INSTALLED PLUMB AND RIGIDLY SECURED TO STRUCTURE WITH WOOD SCREWS, MACHINE BOLTS AND CONCRETE ANCHORS, OR MACHINE BOLTS AND LOOKOUTS AS APPLICABLE.

- NAME PLATES SHALL BE INSTALLED AS INDICATED IN THIS SECTION.

- RECESSED PANELBOARDS SHALL HAVE COVERS FLUSH WITH THE WALL. INSTALL 1-SPARE 3/4" EMPTY CONDUIT FOR EACH (3) SINGLE POLE SPACES OR SPARE CIRCUIT BREAKER POLES. STUB AND CAP IN ACCESSIBLE ATTIC SPACE ABOVE THE CEILING, OR BELOW THE FLOOR AS APPLICABLE. WHERE BOTH ACCESSIBLE FLOOR AND ATTIC SPACES ARE AVAILABLE, STUB SPARE CONDUITS HALF EACH WAY (ONE EACH WAY MINIMUM). IDENTIFY SPARE CONDUITS. WHERE BUILDING CONSTRUCTION IS FIRE RATED, ENCLOSE RECESSED PANEL IN 5/8" GYPSUM BOARD AS DIRECTED BY THE ARCHITECT.

- COORDINATE FRAMING REQUIREMENTS WITH OTHERS TO ACCOMMODATE PANELBOARD LOCATIONS WITHOUT REQUIRING FRAMING MEMBERS TO BE CUT AWAY FOR INSTALLATION. PROVIDE ADEQUATE BLOCKING FOR SURFACE MOUNTED PANELBOARDS AS APPLICABLE.

3.05 RACEWAY INSTALLATION

A. CONDUIT APPLICATION:

- MINIMUM SIZE OF CONDUIT SHALL BE 1/2 INCH. IN NO CASE SHALL THE CONDUIT SIZE BE SMALLER THAN THAT SHOWN ON THE DRAWINGS.
- PVC CONDUIT, MINIMUM SIZE 1", MAY ONLY BE INSTALLED BENEATH GRADE OR IN CONCRETE; A MAXIMUM OF 4 FEET. PVC MAY BE INSTALLED IN ELECTRICAL ROOMS OR CONCEALED IN STUD SPACES WHEN DESIGNATED ON PLANS. PVC SHALL NOT BE INSTALLED IN FIRE RATED AREAS OR WHERE SUBJECT TO MECHANICAL DAMAGE. THE PVC IS TO EXTEND ONLY FROM THE CONCRETE SLAB TO THE BOTTOM OF THE SWITCHBOARD, PANELBOARD, OR SIMILAR EQUIPMENT. (CEC 300.5, 300.50, AND CEC 352).
- ALL CONDUIT RUNS EXPOSED ABOVE GRADE AND BELOW 8 FEET SHALL BE RIGID STEEL OR IMC, EXCEPT AS NOTED IN CONDUIT APPLICATIONS ITEMS 2 AND 4.
- ELECTRICAL METALLIC TUBING (EMT) MAY BE INSTALLED IN PROTECTED ATTIC SPACES AND HOLLOW STUD SPACES. IT MAY BE EXPOSED ON THE SURFACE OF ELECTRICAL AND MECHANICAL ROOMS WHERE DESIGNATED ON THE PLANS.
- FLEXIBLE METALLIC CONDUIT SHALL BE USED ONLY WHERE REQUIRED FOR CONNECTION TO MOTORS, ETC., OR WITH THE APPROVAL OF THE OWNER WHERE ABSOLUTELY NECESSARY DUE TO STRUCTURAL CONDITIONS.
- BOXES INSTALLED INDOORS OR EMBEDDED IN CONCRETE SHALL BE GALVANIZED STEEL TYPE. BOXES INSTALLED EXPOSED OR OUTDOORS SHALL BE GALVANIZED CAST STEEL WITH THREADED HUBS.
- CONDUIT FOR POWER COMPANY 12 KV PRIMARY LINES SHALL BE INSTALLED 54" BELOW GRADE.
- BRANCH CIRCUIT CONDUITS UNDER SLAB SHALL BE SEPARATED BY AT LEAST ONE INCH. IN ALL CASES TWO OR MORE CONDUITS INSTALLED IN A COMMON CONCRETE ENCASEMENT SHALL BE SEPARATED BY AT LEAST THREE INCHES.
- CONDUIT SHALL BE SECURELY FASTENED IN PLACE SO THAT ABSOLUTELY NO SHIFTING WILL OCCUR DURING PLACING OF CONCRETE ENCASEMENT.
- JOINTS IN ALL CONDUIT INSTALLED IN CONCRETE, OR EXPOSED TO WEATHER, SHALL BE LIQUID AND GAS TIGHT.

B. CONDUIT LOCATION:

- ALL CONDUITS SHALL BE RUN CONCEALED IN ALL FINISHED AREAS.

- EXPOSED CONDUIT SHALL BE NEATLY INSTALLED PARALLEL TO OR AT RIGHT ANGLES TO THE STRUCTURAL MEMBERS.

- EXPOSED CONDUIT STUBBING UP THROUGH THE FLOOR INTO THE BOTTOM OF EXPOSED PANELS, CABINETS OR EQUIPMENT SHALL BE LINED UP, PROPERLY SPACED AND SHALL BE STRAIGHT AND PLUMB. CONDUITS SHALL BE INSTALLED AT SUFFICIENT DEPTH BELOW THE FLOOR TO ELIMINATE ANY PART OF THE BEND ABOVE.

- MAINTAIN 12-INCH SEPARATION BETWEEN POWER AND INTERCOMMUNICATION CABLES.

- CONDUIT SHALL BE KEPT AT LEAST 6" FROM THE COVERING ON HOT WATER PIPES, AND 18" FROM THE COVERING ON FLUES AND BREECHINGS.

C. CONDUIT SUPPORT:

- CONDUIT SHALL BE SUPPORTED WITH FACTORY MADE PIPE STRAPS OR SUSPENDED WITH PIPE HANGERS OR RACKS.
- HANGER STRAPS, RODS, OR PIPE SUPPORTS UNDER WOOD SHALL BE ATTACHED TO THE WOOD STRUCTURE USING BOLTS, LAG BOLTS, OR LAG SCREWS. ATTACH TO TRUSSES USING BEAM CLAMPS.
- CONDUITS, WHICH ARE SUSPENDED ON RODS MORE THAN 2 FEET LONG SHALL BE RIGIDLY BRACED TO PREVENT HORIZONTAL MOTION OR SWAYING.
- CONDUIT SHALL BE SUPPORTED AT INTERVALS NOT EXCEEDING 10 FEET AND IN ALL CASES WITH A SUPPORT NOT MORE THAN 3 FEET FROM THE OUTLET AND AT ANY POINT WHERE IT CHANGES IN DIRECTION.
- PERFORATED STRAP AND PLUMBERS TAPE SHALL NOT BE USED IN THE SUPPORT OF CONDUITS.
- CONDUIT PLACED AGAINST CONCRETE OR MASONRY ABOVE GROUND SHALL BE FASTENED TO THE CONCRETE WITH PIPE STRAPS OR ONE-SCREW CONDUIT CLAMPS ATTACHED TO THE CONCRETE BY MEANS OF EXPANSION ANCHORS AND SCREWS. EXPANDERS AND SHIELDS SHALL BE STEEL OR MALLEABLE IRON. SIZES OF SHIELDS AND BOLTS SHALL BE SUCH THAT THE PROOF TEST LOAD WILL NOT BE LESS THAN FOUR TIMES THE ACTUAL WORKING LOAD.

D. CONDUIT BENDS:

- FIELD BENDS OR OFFSETS ARE PERMITTED IN 1 INCH AND SMALLER CONDUIT ONLY.
- ELBOWS IN 1-1/4 INCH CONDUIT AND LARGER SIZES SHALL BE FACTORY MADE.
- MINIMUM RADIUS BEND FOR TELEPHONE SERVICE ENTRANCE CONDUIT SHALL BE 36".
- CONDUIT BENDS, OTHER THAN FACTORY ELBOWS, SHALL HAVE A RADIUS OF NOT LESS THAN 10 TIMES THE INTERNAL DIAMETER OF THE CONDUIT.
- 90 DEGREE BENDS IN PVC LARGER THAN 2 INCHES SHALL BE STEEL.
- USE OF A BLOW TORCH TO BEND CONDUIT IS SPECIFICALLY PROHIBITED.

- EMPTY CONDUITS: ALL CONDUITS, WHICH ARE INSTALLED AT THIS TIME AND LEFT EMPTY FOR FUTURE USE OR WHERE CONDUCTORS ARE TO BE INSTALLED BY A REPRESENTATIVE OF THE TELEPHONE COMPANY SHALL HAVE A 3/16 INCH POLYPROPYLENE ROPE LEFT IN PLACE FOR FUTURE USE.

F. CONDUIT PROTECTION:

- CAP ALL CONDUIT DURING CONSTRUCTION BY MEANS OF MANUFACTURED SEALS. SWAB OUT ALL CONDUITS BEFORE PULLING IN WIRE.
- ALL CONDUIT SYSTEMS MUST BE INSTALLED COMPLETE BEFORE CONDUCTORS ARE PULLED IN.

G. OUTLET BOXES:

- BOXES MUST BE ACCURATELY PLACED FOR FINISH, INDEPENDENTLY AND SECURELY SUPPORTED BY MANUFACTURED BOX HANGERS. FIXTURE OUTLETS SHALL BE LOCATED SYMMETRICALLY.
- LOCAL SWITCHES SHALL BE LOCATED +46 INCHES ABOVE THE FLOOR (TOP OF BOX) UNLESS OTHERWISE NOTED.
- CONVENIENCE OUTLETS SHALL BE LOCATED +16 INCHES ABOVE THE FINISHED FLOOR (BOTTOM OF BOX) UNLESS OTHERWISE NOTED.
- CHANGES IN OUTLET LOCATIONS OF FIXTURES, WALL SWITCHES, RECEPTACLES, AND SPECIAL EQUIPMENT FOUND NECESSARY DUE TO INTERFERENCE WITH STRUCTURE, PIPES, DUCTS, ETC. SHALL BE REPORTED TO THE OWNER FOR APPROVAL.
- ALL BOXES SHALL BE OF PROPER CODE SIZE FOR THE NUMBER OF WIRES OR CONDUITS PASSING THROUGH OR TERMINATING THEREIN, BUT IN NO CASE SHALL ANY BOX BE LESS THAN 4" SQUARE, UNLESS SPECIFICALLY NOTED AS SMALLER. COVERS SHALL BE OF THE TYPES MOST SUITABLE FOR THE FIXTURE OR DEVICE USED AT THE OUTLET, AND SHALL FINISH FLUSH WITH PLASTER OR OTHER FINISHED SURFACE. APPROVED FACTORY MADE KNOCKOUT SEALS SHALL BE USED IN ALL BOXES WHERE KNOCKOUTS ARE NOT INTACT. BOXES IN CONCRETE SHALL BE A TYPE, WHICH WILL ALLOW THE PLACING OF CONDUIT WITHOUT DISPLACING THE REINFORCING BARS.
- OUTLET BOXES SHALL BE USED AS PULL BOXES WHEREVER POSSIBLE, AND JUNCTION OR PULL BOXES SHALL BE INSTALLED ONLY AS REQUIRED BY THE SPECIFICATIONS, OR AS DIRECTED.
- FOR LIGHT OUTLET BOXES USE MINIMUM OF 4" SQUARE, 1-1/2" DEEP, EQUIPPED WITH PLASTER RING AND FIXTURE SUPPORTING DEVICE AS REQUIRED BY THE UNIT.
- FOR WALL SWITCH OUTLETS, USE 4" BOXES WITH SINGLE OR TWO GANG PLASTER RINGS FOR ONE OR TWO SWITCHES AND SOLID GANG BOXES WITH GANG PLASTER RINGS FOR MORE THAN TWO SWITCHES, UNLESS NOTED OTHERWISE ON THE DRAWINGS.
- FOR CONVENIENCE OUTLETS, USE 4" BOXES WITH SINGLE GANG PLASTER RING.
- FOR TELEPHONE OUTLETS, USE 4" BOXES WITH SINGLE GANG PLASTER RING.

3.06 WIRE INSTALLATION

A. CLEANING:

- ALL DEBRIS AND MOISTURE SHALL BE REMOVED FROM RACEWAYS, BOXES, AND CABINETS BEFORE INSTALLING WIRE OR CABLE.

B. PULLING:

- NO OIL, GREASE OR SIMILAR SUBSTANCES SHALL BE USED TO FACILITATE THE PULLING IN OF CONDUCTORS. USE A UL APPROVED WIRE PULLING COMPOUND.
- NO WIRE OR CABLE SHALL BE PULLED IN UNTIL ALL CONSTRUCTION, WHICH MIGHT DAMAGE INSULATION OR FILL CONDUIT WITH FOREIGN MATERIAL IS COMPLETED.
- WIRE SHALL BE PULLED INTO CONDUITS WITH CARE TO PREVENT DAMAGE TO INSULATION. USE BASKET PULLING GRIPS TO AVOID SLIPPING OF INSULATION ON CONDUCTORS. NYLON ROPE OR OTHER "SOFT" SURFACE CABLE MUST BE USED FOR PULLING IN CONDUITS OTHER THAN STEEL.

C. CONNECTIONS:

- STRANDED CONDUCTORS NO. 8 AND SMALLER SHALL BE TERMINATED WITH TERMINALS OF APPROPRIATE SIZE WHERE CONNECTED TO SCREW TYPE LUGS.
- JOINTS, SPLICES AND TAPS IN DRY LOCATIONS FOR CONDUCTORS NO. 8 AND SMALLER SHALL BE MADE WITH TWIST ON CONNECTORS SUITABLY SIZED FOR THE NUMBER AND GAUGE OF THE CONDUCTORS.
- FURNISH AND INSTALL PROPER LUGS IN ALL PANELBOARDS, SWITCHBOARDS, AND GUTTERS AS REQUIRED TO PROPERLY TERMINATE EVERY CABLE. LUGS FOR ALUMINUM CONDUCTORS SHALL BE COMPRESSION TYPE.
- CONNECTIONS OF ALUMINUM CABLE TO ALUMINUM BUS BARS SHALL BE MADE USING ALL ALUMINUM COMPONENTS (LUGS, WASHER, BOLTS, NUTS). COPPER TO ALUMINUM CONNECTIONS OF BUS BARS AND LUGS SHALL BE MADE USING BELLEVILLE WASHERS AND FLAT WASHERS TO COMPENSATE FOR DIFFERING RATES OF THERMAL EXPANSION.
- ONLY CRIMPING TOOLS APPROVED BY THE MANUFACTURER OF THE TERMINALS OR LUGS SHALL BE USED.
- UNINSULATED LUGS AND WIRE ENDS SHALL BE INSULATED WITH LAYERS OF PLASTIC TAPE EQUAL TO INSULATION OF WIRE, WITH ALL IRREGULAR SURFACES PROPERLY PADDED WITH INSULATING PUTTY PRIOR TO APPLICATION OF TAPE.
- SPLICES IN UNDERGROUND PULL BOXES OR IN OTHER AREAS SUBJECT TO MOISTURE SHALL BE PROVIDED WITH CAST RESIN KITS. PREPARE ALL SPLICES AS HEREBEFORE SPECIFIED BEFORE RESIN KITS ARE APPLIED.

3.07 NOT USED.

3.08 RECEPTACLE INSTALLATION

- ALL RECEPTACLES IN FLUSH TYPE OUTLET BOXES SHALL BE INSTALLED WITH A BONDING JUMPER FOR GROUND BETWEEN THE GROUND OUTLET BOX AND THE RECEPTACLE GROUND TERMINAL, EXCEPT WHERE RECEPTACLE IS EQUIPPED WITH A UL APPROVED SELF-GROUNDING DEVICE. GROUNDING THROUGH THE RECEPTACLE MOUNTING STRIPS IS NOT ACCEPTABLE. BONDING JUMPER SHALL BE ATTACHED AT EACH OUTLET TO THE BACK OF THE BOX USING DRILLED AND TAPED HOLES AND WASHED HEAD SCREWS 6/32" OR LARGER. FOR RECEPTACLES IN SURFACE MOUNTED OUTLET BOXES DIRECT METAL TO METAL CONTACT BETWEEN RECEPTACLE MOUNTING STRIP (IF IT IS CONNECTED TO THE GROUNDING CONTACTS) AND OUTLET BOX MAY BE USED.

3.09 TERMINAL CABINET INSTALLATION

- CABINETS ARE TO BE INSTALLED PLUMB AND RIGIDLY SECURED TO STRUCTURE WITH WOOD SCREWS, BOLTS AND CONCRETE ANCHORS, OR MACHINE BOLTS AND LOOKOUTS AS APPLICABLE.
- RECESSED CABINETS SHALL HAVE COVERS FLUSH WITH THE WALL. WHERE BUILDING CONSTRUCTION IS FIRE RATED, ENCLOSE RECESSED CABINET IN 5/8" GYPSUM BOARD AS DIRECTED BY THE ARCHITECT.

- INSTALL (2) 1" EMPTY CONDUITS FROM ALL RECESSED CABINETS TO ACCESSIBLE SPACE ABOVE CEILINGS AND/OR BELOW FLOOR AS APPLICABLE (4 CONDUITS IF BOTH CAVITIES EXIST). IDENTIFY THE EMPTY CONDUITS.

- COORDINATE FRAMING REQUIREMENTS WITH OTHERS TO ACCOMMODATE CABINET LOCATIONS WITHOUT REQUIRING FRAMING MEMBERS TO BE CUT AWAY FOR INSTALLATION. PROVIDE ADEQUATE BLOCKING FOR SURFACE MOUNTED CABINETS AS APPLICABLE.

- FOR CONTROL EQUIPMENT CABINETS, A DRAWING OF THE CONTROL SCHEME SHALL BE PLACED IN THE DOOR RACK PROVIDED.

- ALL CONDUCTORS ENTERING OR LEAVING THE CABINET SHALL BE TERMINATED ON TERMINAL STRIPS OR PUNCH BLOCKS. EACH TERMINAL POINT SHALL BE LABELED, AND ALL WIRES WITHIN THE ENCLOSURE SHALL BE IDENTIFIED WITH BRADY OMM-GRP WIRE MARKERS OR OTHER SIMILAR METHOD.

- WIRES SHALL BE NEATLY ARRANGED WITHIN THE CABINET AND SECURED WITH TY-RAP OR RUN IN PANDUIT WIRE WAYS AS REQUIRED OR AS INDICATED ON THE DRAWINGS.

3.10 GROUNDING AND BONDING

- THE ENTIRE ELECTRICAL RACEWAY SYSTEM SHALL FORM A CONTINUOUS METALLIC ELECTRICAL CONDUCTOR FROM SERVICE POINT TO EVERY OUTLET AND SHALL BE GROUNDED BY CONNECTION TO THE MAIN SERVICE GROUND.
- A GROUND WIRE SHALL BE INSTALLED IN ALL PVC AND FLEXIBLE CONDUIT.
- ALL RACEWAY SYSTEMS, SUPPORTS, CABINETS, SWITCHBOARDS, CONTROL EQUIPMENT, MOTOR FRAMES, LIGHTING FIXTURES, AND UTILIZATION APPARATUS SHALL BE PERMANENTLY AND EFFECTIVELY GROUNDED.
- WHERE CABINETS ARE FURNISHED WITH GROUNDING BUS, ALL REQUIRED BONDING CONDUCTORS SHALL CONNECT THERETO, EACH WITH A SEPARATE LUG.
- ALL GROUNDING CONDUCTORS ARE TO BE COPPER ONLY. ALUMINUM WILL NOT BE ALLOWED.

3.11 TESTS

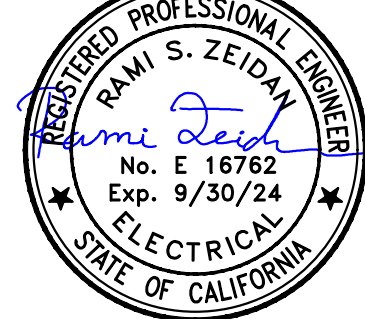
- UPON COMPLETION OF THE WORK AND ADJUSTMENTS OF ALL EQUIPMENT, ALL SYSTEMS SHALL BE TESTED TO DEMONSTRATE THAT ALL EQUIPMENT FURNISHED, INSTALLED, AND/OR CONNECTED UNDER THE PROVISIONS OF THESE SPECIFICATIONS SHALL FUNCTION IN THE REQUIRED MANNER.
- ALL SYSTEMS SHALL TEST FREE FROM SHORT CIRCUITS AND GROUNDS, AND BE FREE FROM MECHANICAL AND ELECTRICAL DEFECTS. ALL CIRCUITS SHALL BE TESTED FOR THE PROPER NEUTRAL CONNECTION, AND ROTATION OF MOTORS.
- WHERE TESTS INDICATE FAULTY INSTALLATION OR OTHER DEFECTS, THEY SHALL BE LOCATED, REPAIRED, AND RETESTED AT THE CONTRACTOR'S EXPENSE.

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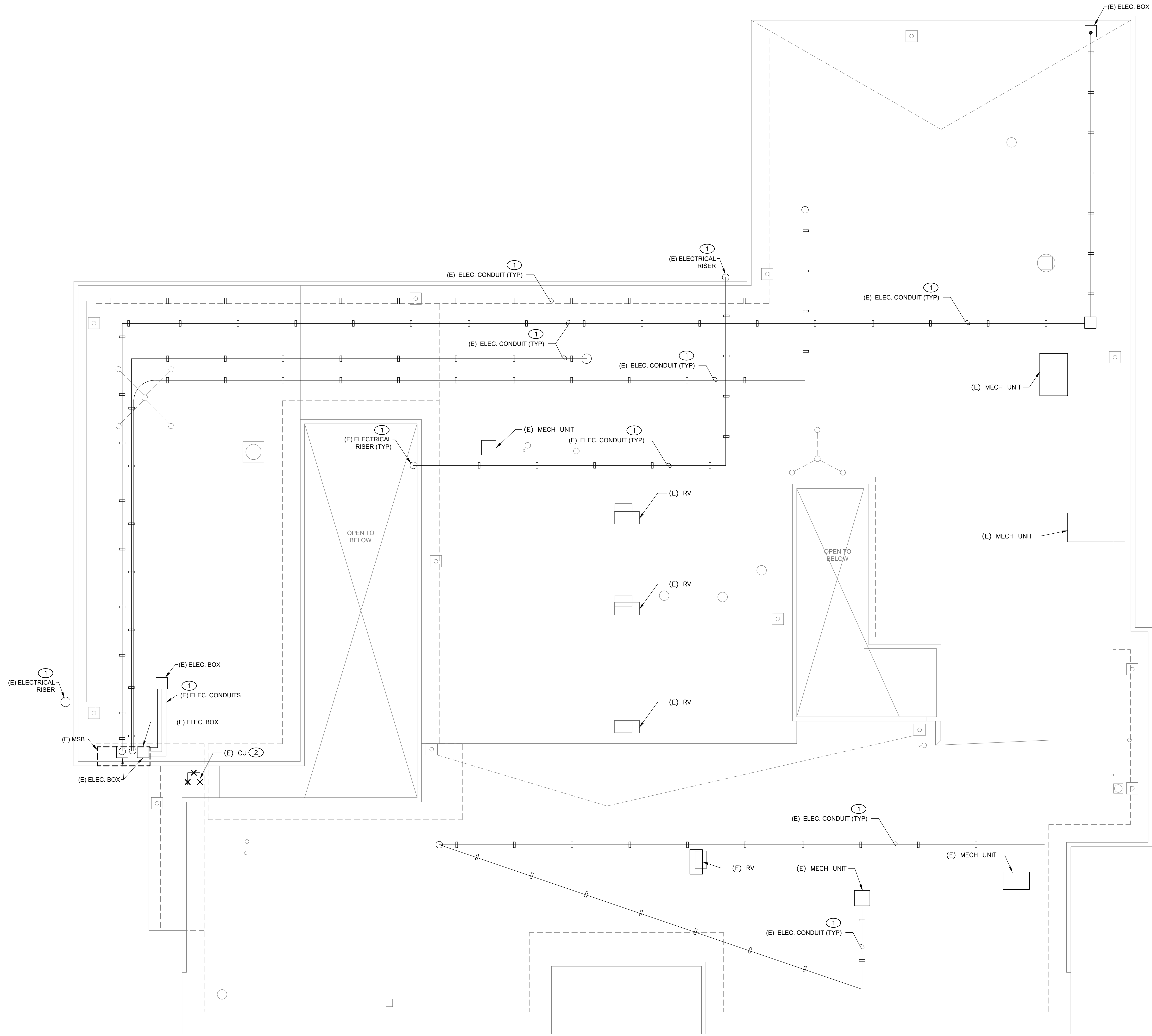
ELECTRICAL
SPECIFICATIONS

NO.	DATE	ISSUE

Project:
**ALUM ROCK UNION SCHOOL DISTRICT
HVAC & ROOFING UPGRADES**

Drawn By

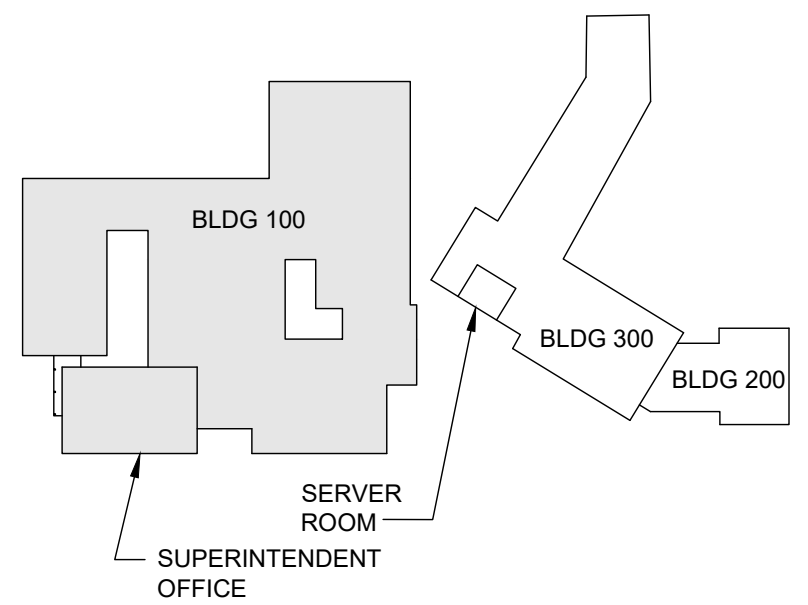
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- KEY NOTES**
- (E) ELECTRICAL CONDUITS TO BE LIFTED AND CAPPED/SAFED-OFF AS REQUIRED TO PERFORM ROOF WORK. ALL ELECTRICAL FEEDERS ARE TO BE REINSTALLED/RECONNECTED UPON COMPLETION OF ROOFING WORK, TYP.
 - DEMO EXISTING CONDENSING UNIT, DEMOLISH AND REMOVE ASSOCIATED ELECTRICAL CIRCUITING AND DISCONNECT.

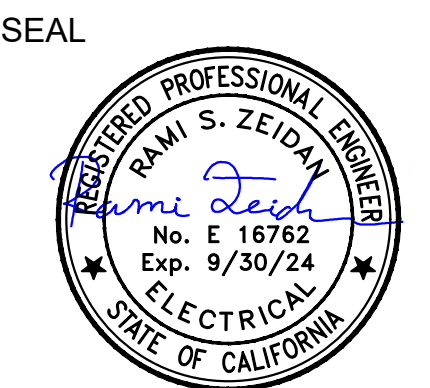
- KEY NOTES**
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KEY PLAN

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**ELECTRICAL DEMO
OVERALL ROOF PLAN**

NO.	DATE	ISSUE

Project: **ALUM ROCK UNION SCHOOL DISTRICT
HVAC & ROOFING UPGRADES**

Drawn By

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Project No.

23-525

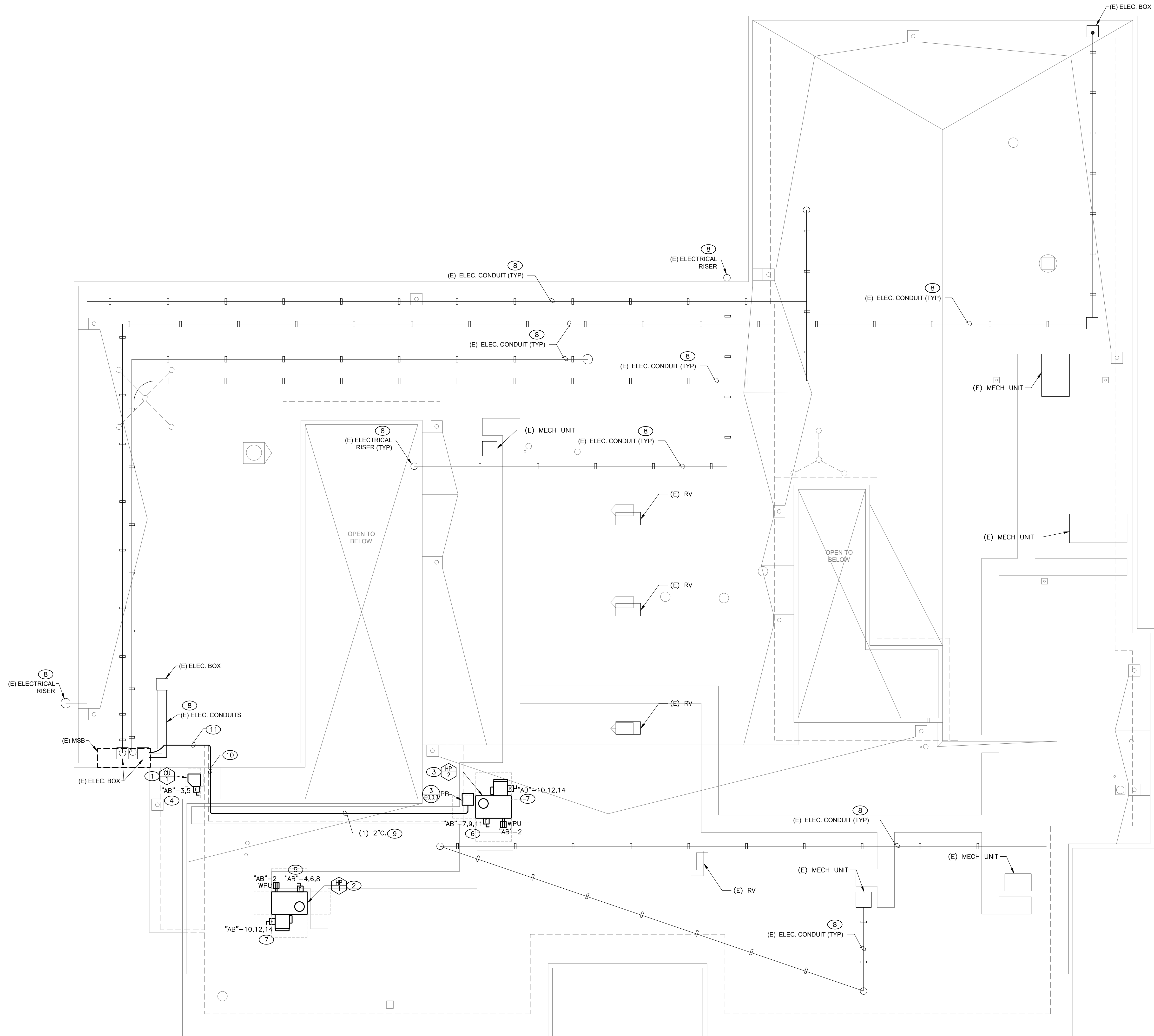
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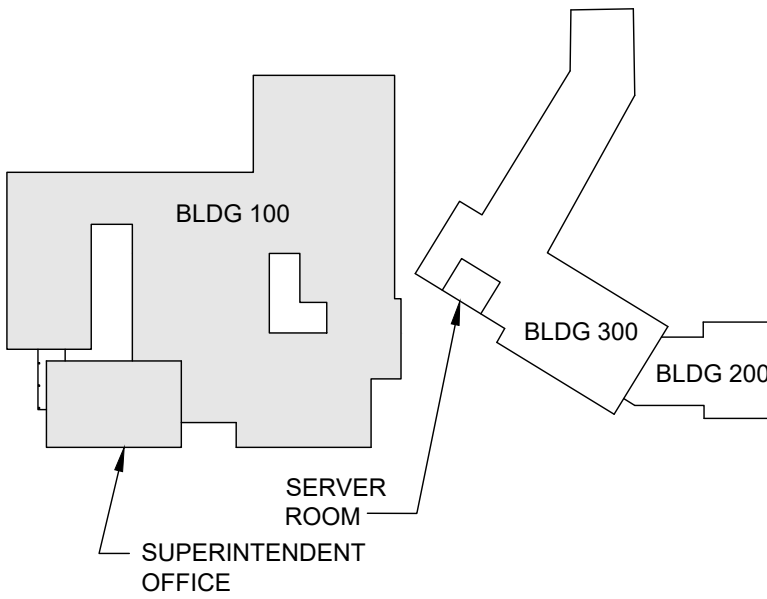
1 ELECTRICAL OVERALL ROOF PLAN
1/8" = 1'-0"

GENERAL NOTES

- FIELD VERIFY EXISTING CONDITIONS PRIOR TO STARTING ANY WORK. SHOULD ANY DISCREPANCY EXIST, CONTRACTOR SHALL NOTIFY ENGINEER AND SCHOOL DISTRICT REPRESENTATIVE.
- ALL NEW EXPOSED CONDUITS IN A SCOPE OF WORK SHALL BE IMC TYPE WITH THREADED CONNECTORS AND FITTINGS.
- EACH NEW DISCONNECT SWITCH SHALL BE PERMANENTLY MARKED WITH CORRESPONDING CIRCUIT NUMBER SERVING THAT UNIT.
- IN INSTANCES WHERE MORE THAN 3 CURRENT-CARRYING CONDUCTORS SHARE A COMMON RACEWAY CONDUCTOR AMPACITIES SHALL BE ADJUSTED IN ACCORDANCE WITH CEC 310.15(B)(3)(a) AND 310.15(B)(2)(c).
- CONTRACTOR SHALL UPDATE ELECTRICAL PANELBOARD DIRECTORIES TO REFLECT ANY CHANGES MADE TO A CIRCUIT ARRANGEMENT.
- RECEPTACLES OF 15 AND 20 AMPERES, 125 AND 250 VOLTS INSTALLED IN A WET LOCATION SHALL HAVE AN ENCLOSURE THAT IS WEATHERPROOF WHETHER OR NOT THE ATTACHMENT PLUG CAP IS INSERTED. AN OUTLET BOX HOOD INSTALLED FOR THIS PURPOSE SHALL BE LISTED AND SHALL BE IDENTIFIED AS "EXTRA-DUTY" PER CEC 406.9(B)(1).
- CONDUIT ROUTING FOR NEW ROOF-MOUNTED HVAC UNITS AND DEVICES' CIRCUITS ARE NOT SHOWN. THE CONTRACTOR SHALL ALL NEW CONDUITS ON THE ROOF FROM THE EQUIPMENT/DEVICES TO THE ELECTRICAL PANEL. PROVIDE CONDUIT PENETRATION AT THE ELECTRICAL ROOM ROOF.

KEY NOTES

- CU: 208V/1PH, 10.9 FLA, 14.2 MCA, 20 MOCAP. PROVIDE 20AF/2P/30AS HEAVY DUTY WEATHERPROOF FUSIBLE DISCONNECT SWITCH.
- ROOFTOP HP-1: 208V/3PH, 37 FLA, 39 MCA, 50 MOCAP AND POWERED EXHAUST; 208V/3PH, 2.2 RLA, 2.75 MCA, 4.95 MOCAP. PROVIDE 50AF/3P/60AS HEAVY DUTY WEATHERPROOF FUSIBLE DISCONNECT SWITCH FOR AC POWER AND 15AF/3P/30AS HEAVY DUTY WEATHERPROOF FUSIBLE DISCONNECT SWITCH FOR POWER EXHAUST.
- ROOFTOP HP-2: 208V/3PH, 29 FLA, 31 MCA, 35 MOCAP AND POWERED EXHAUST; 208V/3PH, 2.2 RLA, 2.75 MCA, 4.95 MOCAP. PROVIDE 40AF/3P/60AS HEAVY DUTY WEATHERPROOF FUSIBLE DISCONNECT SWITCH FOR AC POWER AND 15AF/3P/30AS HEAVY DUTY WEATHERPROOF FUSIBLE DISCONNECT SWITCH FOR POWER EXHAUST.
- PROVIDE 3/4" - 2#10 CU + 1#10 CU GND.
- PROVIDE 1" - 3#6 CU + 1#10 CU GND.
- PROVIDE 3/4" - 3#8 CU + 1#10 CU GND.
- PROVIDE 3/4" - 3#10 CU + 1#10 CU GND.
- (E) ELECTRICAL FEEDERS TO BE REINSTALLED/RECONNECTION AFTER REROOFING WORK IS DONE. COMPLETE CONNECTIONS AS OPERABLE SYSTEM. SEE KEY NOTE 1/E2.0.1D.
- PANEL "AB" FEEDER; INSTALL CONDUITS ON THE (E) ROOF. SEE ONE LINE DIAGRAM ON SHEET E6.4.2 FOR FEEDER INFO. FOR CONDUIT INSTALLATION DETAIL, SEE DETAIL 1/E2.0.3.
- PANEL "AB" FEEDER; INSTALL CONDUITS ON (E) WALL. SEE ONE LINE DIAGRAM ON SHEET E6.4.2 FOR FEEDER INFO. FOR CONDUIT INSTALLATION DETAIL, SEE DETAIL 4/E2.0.3.
- PANEL "AB" FEEDER; INSTALL CONDUITS ABOVE (E) COVERED WALKWAY ROOF. SEE ONE LINE DIAGRAM ON SHEET E6.4.2 FOR FEEDER INFO. FOR CONDUIT INSTALLATION DETAIL, SEE DETAIL 1/E2.0.3.

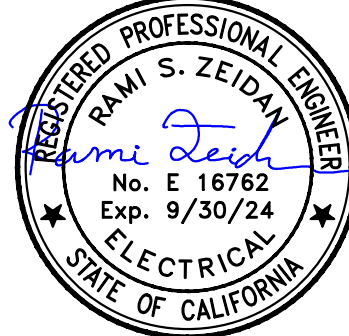


KEY PLAN



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2830 GAY AVE
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Drawing Title
**ELECTRICAL OVERALL
ROOF PLAN**

NO.	DATE	ISSUE

Project
**ALUM ROCK UNION SCHOOL DISTRICT
HVAC & ROOFING UPGRADES**

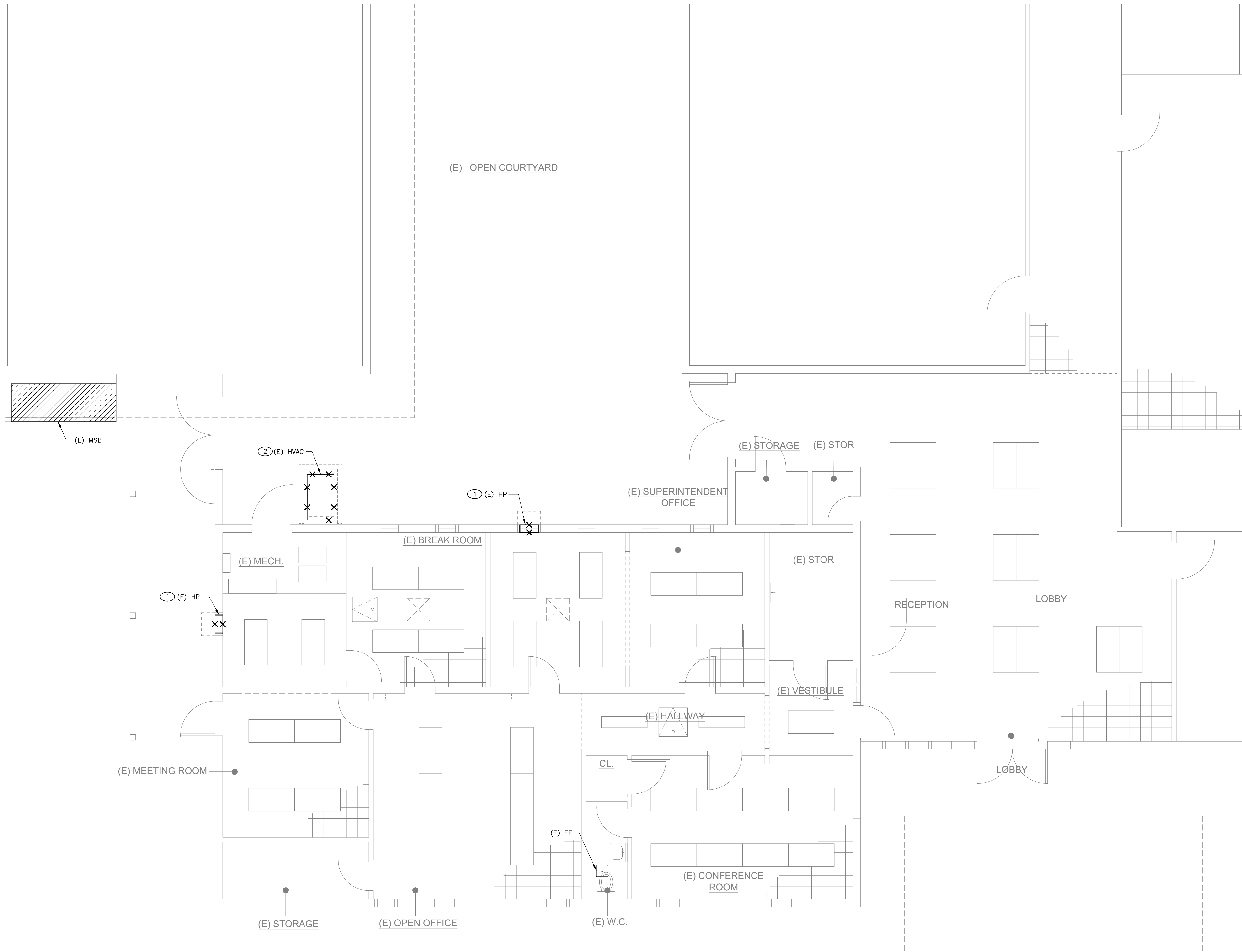
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E2.0.1

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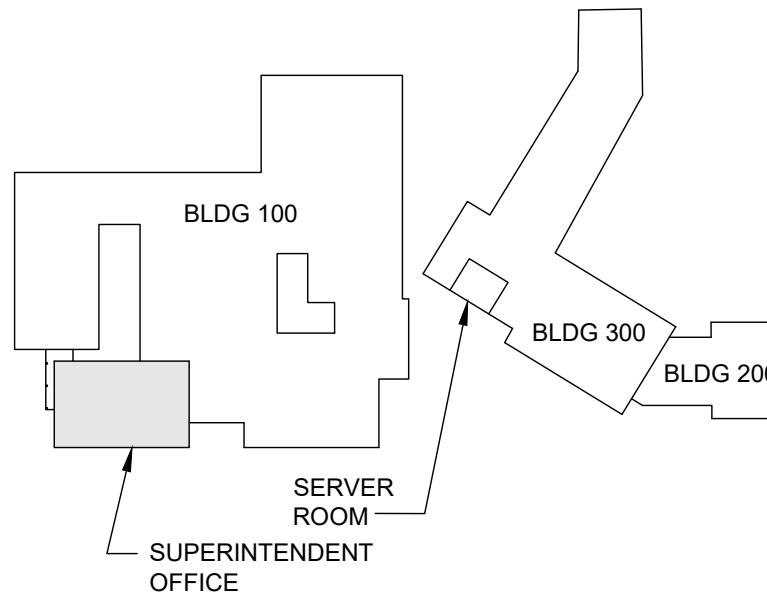
GENERAL NOTES

A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PERFORMING WORK AND NOTIFY ARCHITECT/ENGINEER OF ANY CONFLICTS OR DISCREPANCIES.

KEY NOTES

1. DEMO (E) WINDOW MOUNTED PTAC UNIT, DEMOLISH AND REMOVE ASSOCIATED ELECTRICAL CIRCUITING AND DISCONNECT.
2. DEMO (E) DEDICATED OUTSIDE AIR UNIT, DEMOLISH AND REMOVE ASSOCIATED ELECTRICAL CIRCUITING AND DISCONNECT.

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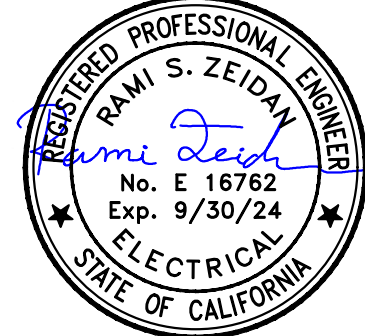


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2830 GAY AVE
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Drawing Title
**ELECTRICAL DEMO
ENLARGED FLOOR
PLAN**

NO.	DATE	ISSUE

Project
**ALUM ROCK UNION SCHOOL DISTRICT
HVAC & ROOFING UPGRADES**

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E6.4.1D

1 ELECTRICAL DEMO ENLARGED FLOOR PLAN
1/4" = 1'-0"

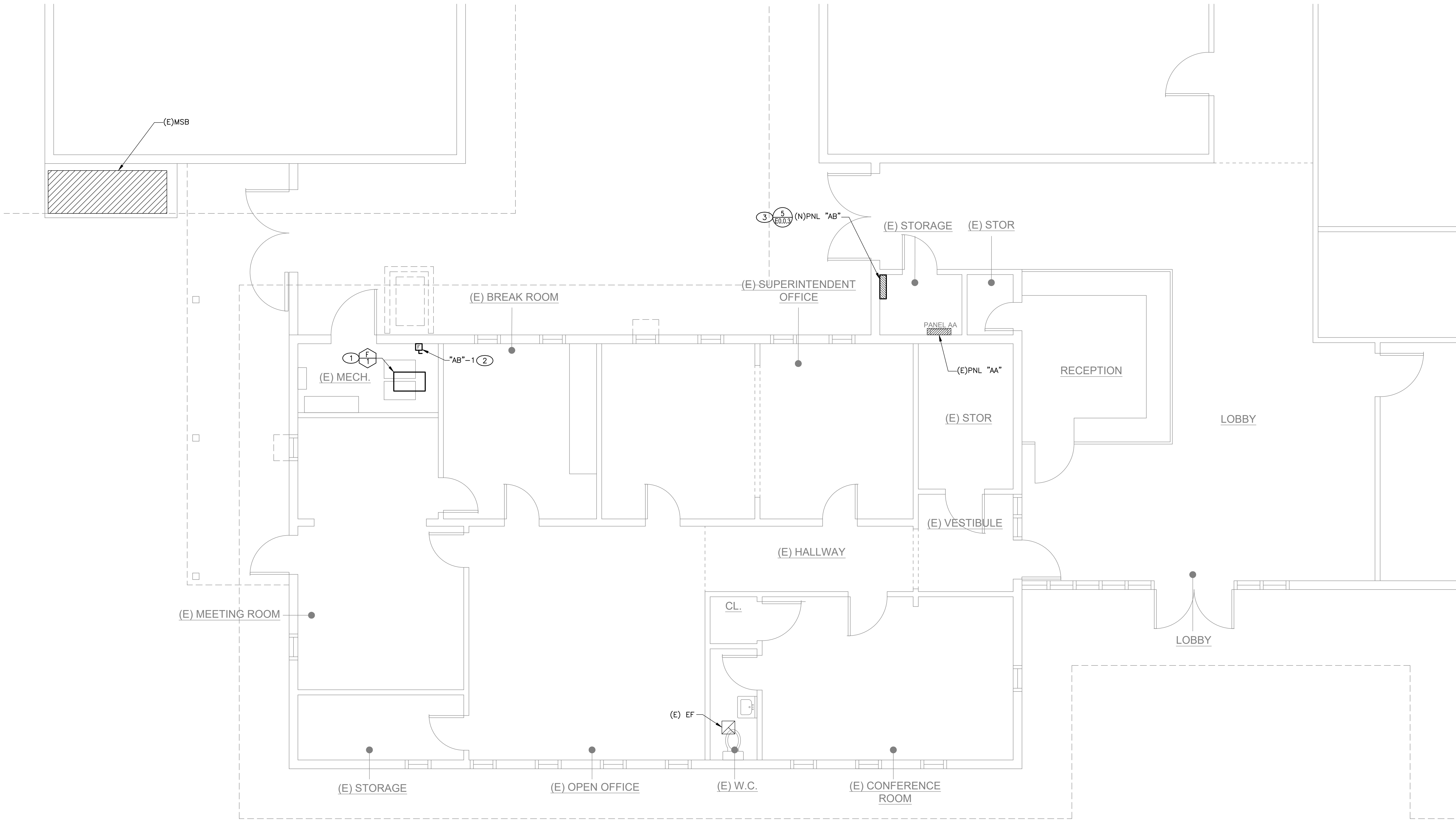
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GENERAL NOTES

A. FIELD VERIFY ALL EXISTING CONDITIONS, PRIOR TO ANY WORKS, AND REPORT TO ENGINEERS ANY DISCREPANCIES.

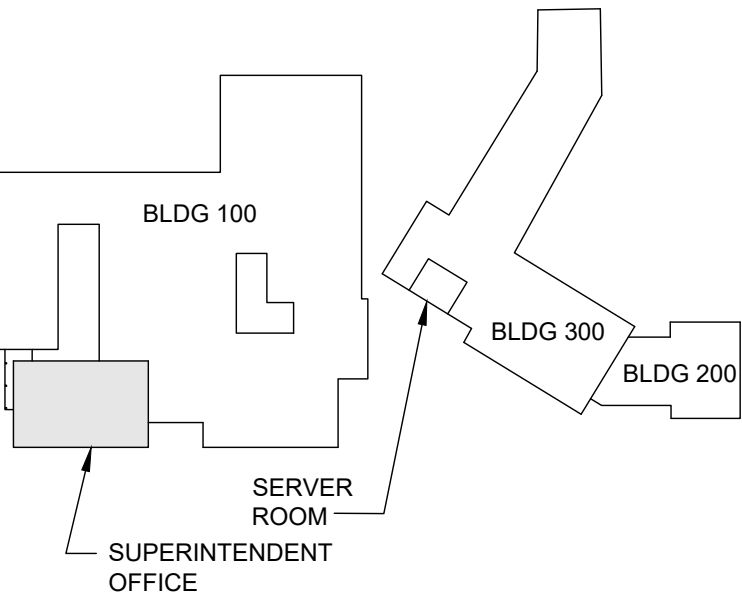
KEY NOTES

1. F: 115V/1PH, 8.8 FLA, 14.2 MCA, 15 MOCP. PROVIDE 15AF/1P/30AS HEAVY DUTY WEATHERPROOF FUSIBLE DISCONNECT SWITCH.
2. PROVIDE 3/4" - 3#12 CU + 1#12 CU GND.
3. PROVIDE POWER CONNECTION FROM (E) "MSB". SEE ONE LINE DIAGRAM ON SHEET E6.4.2 FOR FEEDER INFO. SEE CONDUIT ROUTING ON SHEET E2.0.1.

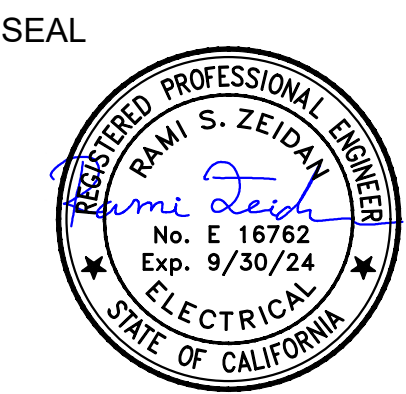


1 ELECTRICAL ENLARGED FLOOR PLAN
1/4" = 1'-0"

BLDG # 100



KEY PLAN



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Drawing Title
**ELECTRICAL
ENLARGED FLOOR
PLAN**

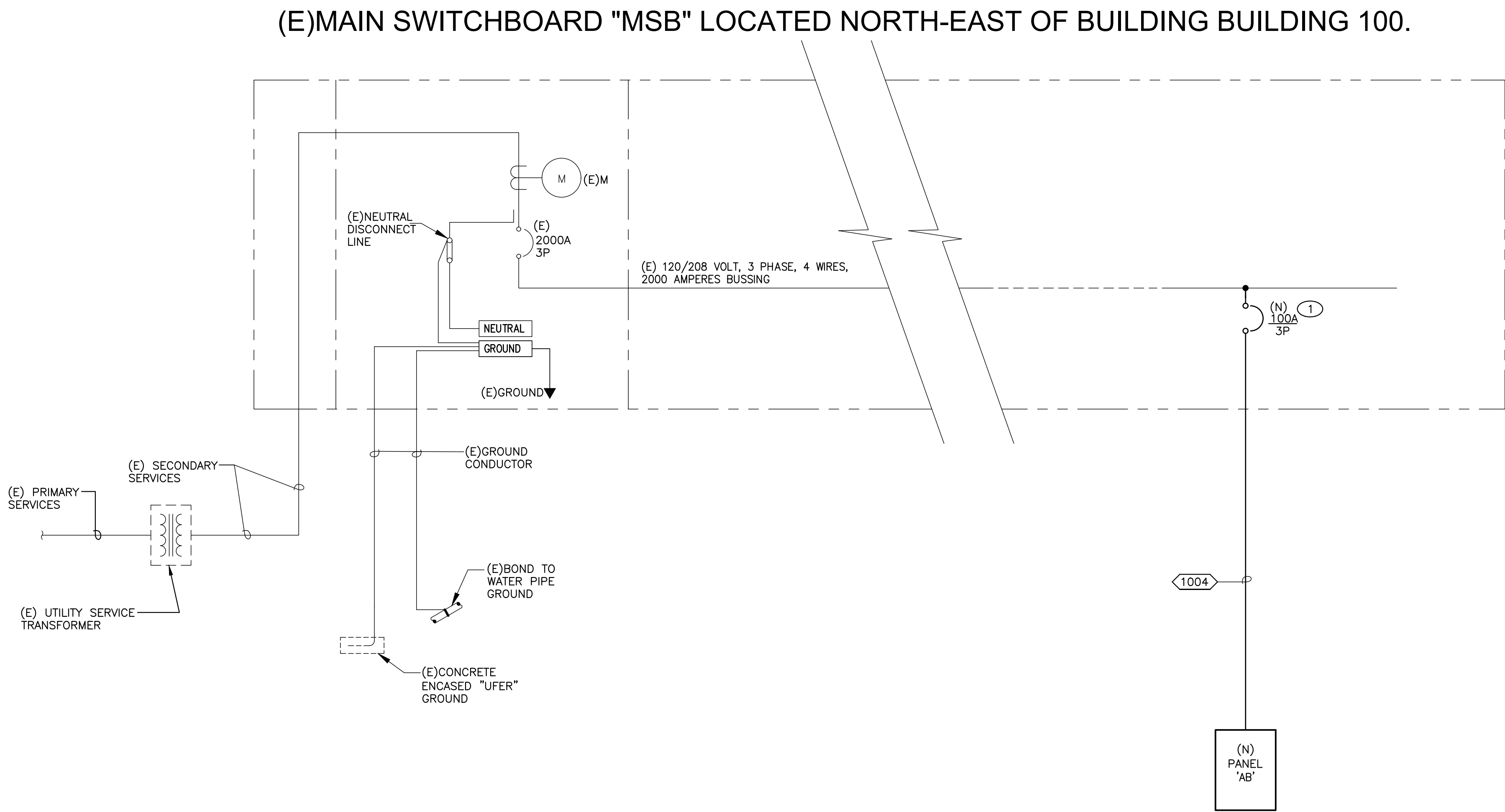
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Project
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HVAC & ROOFING UPGRADES**

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E6.4.1

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GENERAL NOTES

- A. PROVIDE ALL NECESSARY AUXILIARY EQUIPMENT AND ACCESSORIES REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM.

1

KEY NOTES

1. PROVIDE NEW CIRCUIT BREAKERS INSIDE THE (E) MAIN SWITCHBOARD "MSB" FOR (N) PANEL "AB" MATCH THE (E) AIC RATING.

FEEDERS SCHEDULE		
TAG	RATING	CONDUIT/CONDUCTOR
1004	100A/3P/4W	(1) 2" C - 4 # 1 CU + 1 # 8 CU GND.

PANEL "AB"						FEED FROM MSB at BLDG 100 22,000 AIC SURFACE MOUNT					
120/208 Volt, 3 Phase, 4 Wire 100 Amp BUS CU. 100 Amp MCB Amp MLO											
PHASE SUMMARY (WATTS)											
CKT	BKR	DESCRIPTION	A	B	C	A	B	C	DESCRIPTION	BKR	CKT
1	20/1	FURNACE UNIT/F	1,056			360			RECEPT	20/1	2
3	20/2	CU-1		1,134			4,443		HP-1	50/3	4
5	-	-			1,134			4,443	-	-	6
7	40/3	HP-2	3,482			4,443			-	-	8
9	-	-		3,482			264		PE/HP-1	15/3	10
11	-	-			3,482			264	-	-	12
13	15/3	PE/HP-2	264					264	-	-	14
15	-	-		264					SPARE	20/1	16
17	-	-			264				SPARE	20/1	18
19	20/1	SPARE							SPARE	20/1	20
21	20/1	SPARE							SPARE	20/1	22
23	20/1	SPARE							SPACE	PFB	24
25	PFB	SPACE							SPACE	PFB	26
27	PFB	SPACE							SPACE	PFB	28
29	PFB	SPACE							SPACE	PFB	30
PHASE TOTALS											
			A	B	C						
			9,869	9,587	9,587						
PANEL AND CIRCUIT BREAKER NOTES:											
[1] PROVIDE NEW CIRCUIT BREAKER IN SPACES FOR NEW CIRCUITS. PROVIDE THE CORRECT SIZE AS SHOWN. REPLACE THE EXISTING AS SHOWN/REQUIRED. MATCH THE EXISTING A.I.C RATING											
DEMAND LOADS											
LIGHTING / CONTINUOUS LOAD x 125%										Watts	
RECEPTACLES / OTHER x 100%										29,043 Watts	
LARGEST MOTOR x 25%										1,111 Watts	
TOTAL DEMAND LOADS										30,154 Watts	
TOTAL DEMAND AMPS										84 AMPS	

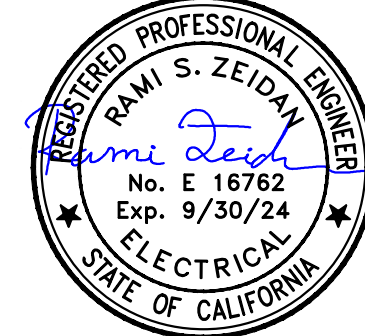


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Drawing Title

ELECTRICAL PARTIAL
ONE LINE DIAGRAM &
PANEL SCHEDULES

NO.	DATE	ISSUE

Project

ALUM ROCK UNION SCHOOL DISTRICT
SERVER ROOM HVAC UPGRADES

Drawn By

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Project No:
23-525

Date:
01/03/2024

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E6.4.2

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FIRE ALARM ABBREVIATIONS/SYMBOLS			
SYMBOL	DESCRIPTIONS	SYMBOL	DESCRIPTIONS
A	ABOVE CEILING	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
AF	ABOVE FINISHED FLOOR	NIC	NOT IN CONTRACT
AHJ	AUTHORITY HAVING JURISDICTION	NPU	NETWORK PROCESSING UNIT
ALM	ALARM	NTS	NOT TO SCALE
ANN	ANNUNCIATOR	PAP	PRE-ACTION PANEL
BMS	BUILDING MANAGEMENT SYSTEM	PB	PULL BOX
C	CONDUIT	PV	POST INDICATE VALVE
CBC	CALIFORNIA BUILDING CODE	(R)	RELOCATE / RELOCATED
CEC	CALIFORNIA ELECTRICAL CODE	(RC)	EXISTING TO REMOVE AND COVER
CFC	CALIFORNIA FIRE CODE	(RD)	EXISTING DEVICE TO BE RELOCATED
CM	CEILING MOUNTED	(RL)	RELOCATED DEVICE
CD	CANDELA RATING	(RR)	REMOVE EXISTING & REPLACE WITH NEW
DET	DETECTOR	SCC	STATUS COMMAND CENTER
DGP	DATA GATHERING PANEL	SLC	SIGNALING LINE CIRCUIT
(E)	EXISTING TO REMAIN	SMK	SMOKE
EC	EMPTY CONDUIT	SUPV	SUPERVISORY
EM	EMERGENCY	TOS	TOP OF SHAFT
EMT	ELECTRICAL METALLIC TUBING	TRBL	TROUBLE
EOL	END OF LINE	TS	TAMPER SWITCH
EPO	EMERGENCY POWER OFF	TYP	TYPICAL
FAA	FIRE ALARM ANNUNCIATOR	UNO	UNLESS NOTED OTHERWISE
FACP	FIRE ALARM CONTROL PANEL	VCC	VOICE COMMAND CENTER
FAPS	REMOTE FIRE ALARM POWER SUPPLY	VT	VALVE TAMPER
FATC	FIRE ALARM TERMINAL CABINET	W	WATTAGE
FBO	FURNISHED BY OTHERS	W/	WITH
FCC	FIRE COMMAND CENTER	W/O	WITHOUT
FS	FIRE SMOKE DAMPER	WF	WATERFLOW
FTR	FIRE ALARM TRANSPONDER	WG	WIRE GUARD
GB	GROUND BOX	WP	WEATHERPROOF
H	HIGH HUMIDITY	(X)	REMOVE
HT	HEIGHT	XFMR	TRANSFORMER
HVAC	HEATING VENTILATION & AIR CONDITIONING		
IMS	INFORMATION MANAGEMENT SYSTEM		
MAX	MAXIMUM		
MIN	MINIMUM		
(N)	NEW		
N/A	NOT APPLICABLE		
NA	NOT AVAILABLE		
NAC	NOTIFICATION APPLIANCE CIRCUIT		
NDU	NETWORK DISPLAY UNIT		
NEC	NATIONAL ELECTRICAL CODE		

FIRE ALARM GENERAL DEMO NOTES	
1.	ALL EXISTING FIRE ALARM EQUIPMENT, DEVICES, CONDUIT AND WIRING, ETC., WHERE SHOWN ON PLANS ARE BASED ON AVAILABLE EXISTING DOCUMENTS AND LIMITED SITE SURVEY AND ARE SHOWN FOR CLARITY. IT SHALL BE REGARDED AS AN APPROXIMATION ONLY. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, PRIOR TO SUBMITTING BID AND BEFORE START OF ANY ELECTRICAL WORK. CONTRACTOR SHALL VERIFY ON-SITE ALL EXISTING LOCATIONS AND CONDITIONS TO ASCERTAIN ALL WORK REQUIRED.
2.	EXISTING FIRE ALARM SYSTEM SHALL REMAIN ACTIVE UNTIL CONSTRUCTION IS COMPLETED. CAUSE AS LITTLE INTERFERENCE OR INTERRUPTION OF EXISTING FIRE ALARM SYSTEMS AND/OR OTHER EXISTING FACILITY'S SYSTEMS AND SERVICES AS POSSIBLE. CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE AT LEAST 72 HOURS TO SCHEDULE ALL NECESSARY SHUTDOWNS. SHUTDOWN WORK SHALL BE PERFORMED AFTER THE NORMAL OPERATION HOURS OF THE FACILITY, IF SO DIRECTED BY THE OWNER'S REPRESENTATIVE.
3.	FIRE WATCH IN CONFORMANCE WITH THE CALIFORNIA FIRE CODE SHALL BE PROVIDED AT THE DIRECTION OF THE CONTRACTOR FOR EVERY OFF-LINE BUILDING. THE SCHOOL SHALL ASSIST WITH FIRE WATCH ACTIVITIES DURING SCHOOL HOURS AND WHENEVER THE CAMPUS IS OCCUPIED BY STUDENTS, TEACHERS AND STAFF. THE CONTRACTOR SHALL PROVIDE ALL FIRE WATCH ACTIVITIES AFTER SCHOOL HOURS AND WHENEVER THE CAMPUS IS NOT OCCUPIED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MONITORING AND MAINTAINING ALL FIRE WATCH LOGS.
4.	ALL REMOVED AND/OR DEMOLISHED ELECTRICAL MATERIALS AND EQUIPMENT TO BE ACCOMPLISHED UNDER THIS CONTRACT, WHICH IN THE OPINION OF THE OWNER'S REPRESENTATIVE ARE DEEM SALVAGEABLE, SHALL REMAIN THE PROPERTY OF THE OWNER. ALL FIRE ALARM MATERIAL AND EQUIPMENT CONSIDERED NOT SALVAGEABLE SHALL BE REMOVED FROM THE SITE AND DISPOSED BY THE CONTRACTOR ACCORDINGLY.
5.	WHERE REMOVAL OF AN EXISTING SYSTEM'S DEVICE WILL RESULT IN LOSS OF CIRCUIT CONTINUITY, THE ISOLATED PORTIONS OF THE CIRCUIT SHALL BE RECONNECTED TO PROVIDE SERVICE TO ALL REMAINING DEVICES. IF SITE CONDITIONS MAKE RECONNECTION IMPOSSIBLE, CONNECTION SHALL BE MADE FROM AN ADJACENT AVAILABLE DEVICE AS NOTED AND/OR AS DIRECTED BY THE ARCHITECT AND/OR THE OWNER'S REPRESENTATIVE.
6.	WHENEVER EXISTING DEVICES, PANELS, CONDUITS, CABLES, ETC., CONFLICT WITH REMODEL WORK, WHETHER SHOWN OR NOT, RELOCATE THESE ITEMS AS DIRECTED BY THE ARCHITECT AND/OR OWNER'S REPRESENTATIVE AND REPAIR ALL SURFACES.
7.	COORDINATE WITH OTHER TRADES AND PROMPTLY TRANSMIT ALL INFORMATION REQUIRED BY THEM. COORDINATE THE SEQUENCE OF DEMOLITION WITH OTHER TRADES TO ENSURE THAT ALL WORK PROCEEDS WITH A MINIMUM OF INTERFERENCE AND DELAY.
8.	WHERE EXISTING WIRING OR EQUIPMENT IS ABANDONED AS A RESULT OF THIS CONTRACT, IT SHALL BE REMOVED INsofar as POSSIBLE. THIS INCLUDES BUT IS NOT LIMITED TO: a. REMOVE ALL WIRE AND CABLE. b. REMOVE ALL DEVICES AND EQUIPMENT. c. REMOVE ALL EXPOSED CONDUIT AND CONDUIT IN ACCESSIBLE CONCEALED AREA, AS FAR AS POSSIBLE. d. CUT OFF AND GAP ALL ABANDONED CONDUIT. STUBS SHALL NOT BE PROTRUDED ABOVE FLOOR AND/OR FINISHED WALLS AND CEILINGS.

FIRE ALARM GENERAL NOTES	
1.	THE INTENT OF THESE DRAWINGS AND/OR SPECIFICATIONS DESCRIBE A COMPLETE, FUNCTIONING FIRE ALARM SYSTEM (INCLUDING VOICE EVACUATION PER S857.3) WITH DEVICES, WIRING AND FIRE ALARM CONTROL PANEL TO MEET THE REQUIREMENTS OF NFPA 72 AND 2022 CALIFORNIA FIRE CODE AND APPLICABLE LOCAL FIRE MARSHAL REGULATIONS AND REQUIREMENTS.
2.	LOCATIONS OF EXISTING EQUIPMENT AND DEVICES SHOWN ON THESE PLANS ARE BASED ON AVAILABLE AS-BUILT PLANS AND LIMITED SITE SURVEYS. CONTRACTOR SHALL THOROUGHLY INSPECT THE EXISTING SYSTEM AND SITE CONDITIONS BEFORE BID. ADVISE THE SCHOOL'S REPRESENTATIVE OF ALL CONDITIONS REQUIRING IMMEDIATE ATTENTION. THESE DIFFICULTIES ARE NOT ADDRESSED, OR INFERRED TO, IN THE CONTRACT DRAWINGS AND SPECIFICATIONS PRIOR TO NEW CONSTRUCTION AND THE COMMENCEMENT OF THE GUARANTEE PERIOD.
3.	CONTRACTOR SHALL SUBMIT ANY ALTERATIONS OF THE APPROVED CONSTRUCTION DOCUMENTS TO THE SPECIAL INSPECTOR AND AHJ FOR NEW APPROVALS. START INSTALLATION OF THE SYSTEM AFTER DETAILED PLANS, SPECIFICATIONS, NEW SHOP DRAWINGS AND SUBMITTALS HAS BEEN APPROVED BY AHJ. CONTRACTOR SHALL BE TOTALLY RESPONSIBLE FOR ANY DELAY.
4.	PER AHJ IR F-2 SECTION 1. WHEN, AS PART OF AN ALTERATION OR MODERNIZATION PROJECT OR CONSTRUCTION OF NEW BUILDING A FIRE PROTECTION/LIFE SAFETY IS PLACED OUT OF SERVICE AND AFFECTS ANY OCCUPIED PORTION OF AN EXISTING BUILDING UNDERGOING RENOVATION OR OCCUPIED BUILDINGS OR PORTIONS OF THE CAMPUS, THEN THE SCHOOL DISTRICT, AHJ, AND THE ARCHITECT/ENGINEER IN GENERAL RESPONSIBLE CHARGE OF THE CONSTRUCTION PROJECT SHALL BE NOTIFIED IMMEDIATELY BY THE PROJECT INSPECTOR. IT WILL BE THE SCHOOL DISTRICT'S RESPONSIBILITY TO ESTABLISH, INSTRUCT AND MAINTAIN FIRE WATCH PERSONNEL IN/AT THE AFFECTED BUILDING(S). WHERE A FIRE ALARM SYSTEM IS OUT OF SERVICE, WARNING SIGNS SHALL BE POSTED AT ALL ENTRANCES TO ANY BUILDING TO INFORM THE OCCUPANTS. MODERNIZATIONS OF EXISTING BUILDINGS OR CONSTRUCTION OF NEW BUILDINGS THAT ARE NOT OCCUPIED BY THE PUBLIC, STAFF OR STUDENT DURING CONSTRUCTION, SHALL NOT REQUIRE A FIRE WATCH AS LONG AS THE CONSTRUCTION EFFORTS DO NOT AFFECT OTHER OCCUPIED AREAS OF THE BUILDING.
5.	REQUEST FOR ADDITIONAL COSTS ASSOCIATED WITH RE-USE OF ANY EXISTING SYSTEM COMPONENT, INCLUDING CONDUITS, BOXES, CONTROL PANELS, ETC. WILL NOT BE CONSIDERED.
6.	NO KNOWN EXISTING CEILING OR ATTIC SPACE IN ROOMS OR AREA WITH HARD CEILING. IF CEILING OR ATTIC SPACE OCCUR DURING FIELD CONSTRUCTION THAT REQUIRE ADDING DETECTORS ABOVE THE CEILING OR ATTIC SPACE, PROVIDE A CONSTRUCTION CHANGE DOCUMENT OR A SEPARATE SHEET OF PLANS SHALL BE SUBMITTED TO AND APPROVED BY AHJ BEFORE PROCEEDING WITH THE WORK.
7.	THE FIRE ALARM SYSTEM SHALL CONFORM TO THE 2022 CALIFORNIA FIRE CODE, ARTICLE 907, CBC 305 AND 2022 CALIFORNIA ELECTRICAL CODE, ARTICLE 760.
8.	FIRE ALARM SYSTEM SHALL TRANSMIT ALARM, SUPERVISORY AND TROUBLE SIGNAL TO AN APPROVED SUPERVISING STATION IN ACCORDANCE WITH 2022 NFPA 72 AND CBC 907.6.6.
9.	CONTRACTOR SHALL PROVIDE A COMPLETE AND FUNCTIONAL CODE COMPLIANT SYSTEM WITH ALL REQUIRED HARDWARE, DEVICES, PROGRAMMING AND POINT/DEVICE DESCRIPTION SCHEDULES.
10.	THE INSTALLING CONTRACTOR SHALL PROVIDE SYSTEM PROGRAMMING FOR SUPERVISORY MONITORING PER CBC 901.6.3.
11.	OWNER SHALL BE RESPONSIBLE FOR ESTABLISHING A FIRE SYSTEM MONITORING CONTRACT OR PROVISIONS.
12.	INSTALLATION OF THE FIRE ALARM SYSTEM SHALL NOT BE STARTED UNTIL DETAILED SPECIFICATIONS, INCLUDING CALIFORNIA STATE FIRE MARSHAL LISTING NUMBERS FOR EACH COMPONENT OF THE SYSTEM HAVE BEEN APPROVED BY THE CALIFORNIA STATE FIRE MARSHAL, AND THE LOCAL FIRE MARSHAL.
13.	UPON COMPLETION OF THE INSTALLATION OF THE FIRE ALARM SYSTEM, A SATISFACTORY TEST OF THE ENTIRE SYSTEM SHALL BE MADE IN THE PRESENCE OF THE ENFORCING AGENCY AND SPECIAL INSPECTOR. THE SCHOOL SHALL NOT BE IN OPERATION UNTIL THE IOR AND THE LOCAL FIRE MARSHAL HAS VERIFIED AND/OR SIGNED OFF ON OPERATIONAL CAPACITY OF THE FIRE ALARM SYSTEM.
14.	ARCHITECT/ENGINEER AND OWNER SHALL BE NOTIFIED A MINIMUM OF 48 HOURS PRIOR TO THE FINAL INSPECTION AND /OR TESTING.
15.	CONTRACTOR SHALL SUBMIT THE SPECIAL INSPECTOR NFPA CERTIFICATE OF COMPLIANCE FORM TO THE SCHOOL REPRESENTATIVE FOR SUBMISSION TO THE FIRE DEPARTMENT.
16.	BEFORE REQUESTING FINAL APPROVAL OF THE INSTALLATION, THE SYSTEM INSTALLING CONTRACTOR SHALL FURNISH A WRITTEN STATEMENT TO THE INSPECTOR OF RECORD TO THE EFFECT THAT THE SYSTEM HAS BEEN INSTALLED AND COMPLETELY TESTED IN ACCORDANCE WITH 2022 NFPA 72, SECTION 7.5.2 AND 7.6.
17.	CONTRACTOR SHALL PROVIDE INTELLIGIBILITY TESTING USING INTELLIGIBILITY METERS APPROVED FOR SUCH USE. REFERENCE NFPA 72 CHAPTER 24. AN STI SCORE OF 7.0 IS A MINIMUM REQUIREMENT. CONTRACTOR SHALL IDENTIFY ALL ACOUSTICALLY DISTINGUISHABLE SPACES (ADS) ON CONTRACTOR SHOP DRAWINGS.
18.	THE CONTRACTOR SHALL ADJUST/INSTALL ALL DEVICES TO MAXIMIZE PERFORMANCE AND TO MINIMIZE FALSE ALARMS.
19.	PROVIDE FIRE ALARM AUDIBLE SOUND LEVEL AT LEAST 15 DBA ABOVE THE AVERAGE AMBIENT SOUND LEVEL IN ALL OCCUPIED AREA, BUT NOT LESS THAN 75 DBA AT 10 FEET OR MORE THAN 120 DBA IN TOTAL, THROUGHOUT. SYNCHRONIZED TEMPORAL CODE 3 SOUND. (2022 NFPA 72, 18.4.2.1)
20.	WALL MOUNTED VISIBLE NOTIFICATION DEVICES SHALL HAVE THEIR BOTTOMS MOUNTED AT 80" MINIMUM AND THEIR TOPS AT 96" MAXIMUM FROM FINISHED FLOOR.
21.	WALL MOUNTED AUDIBLE NOTIFICATION DEVICES SHALL HAVE THEIR TOPS MOUNTED AT 90" MINIMUM FROM FINISHED FLOOR AND NO CLOSER THEN 6" TO A HORIZONTAL STRUCTURE.
22.	A FLASHING VISUAL WARNING DEVICE HAVING A FREQUENCY OF NOT MORE THAN 60 FLASHES PER MINUTE (TWO (2) FLASHES OR LESS THAN ONE (1) FLASH PER SECOND) SHALL BE INSTALLED TO WARN THE HEARING-IMPAIRED AS SHOWN ON THE DRAWINGS. FLASHING VISUAL WARNING DEVICES VISIBLE WITHIN THE SAME INTERIOR SPACE SHALL BE SYNCHRONIZED. (2022 NFPA 72, 18.5.3.1, 18.5.3.6 AND 18.5.5.7)
23.	SMOKE DETECTORS SHALL NOT BE ANY CLOSER THAN 1" FROM FIRE SPRINKLERS OR 3' FROM ANY SUPPLY DIFFUSER. IN AREA OF CONSTRUCTION OR POSSIBLE DAMAGE/CONTAMINATION ON NEWLY INSTALLED FIRE ALARM, DEVICES SHALL BE COVERED UNTIL THAT AREA IS READY TO BE TURNED OVER TO THE OWNER.
24.	LOCATE SMOKE AND HEAT DETECTORS AT LEAST ONE FOOT AWAY FROM FLUORESCENT LIGHT FIXTURES.
25.	CONTRACTOR SHALL AFFIX TO EACH FIELD DEVICE A DEVICE LABEL. DEVICE LABEL SHALL BE ARRANGED FOLLOWING DETAIL "FIRE ALARM CIRCUIT IDENTIFIERS". INITIATION DEVICES CONNECTED TO EQUIPMENT BY OTHERS SHALL HAVE A LABEL AFFIXED TO MODULE INDICATING THE EQUIPMENT CONNECTED.
26.	ALL PENETRATIONS THROUGH RATED ASSEMBLIES REQUIRING OPENING PROTECTION SHALL BE PROVIDED WITH A PENETRATION FIRE STOP SYSTEM AS IDENTIFIED IN CBC CHAPTER 7, UL OR OTHER APPROVED LAB TESTING CRITERIA. APPROVED TYPES OF MATERIALS SHALL BE IDENTIFIED WITHIN THE PROJECT SPECIFICATIONS WITHIN THE FIRE ALARM SECTION.
27.	UNDERGROUND AND EXTERIOR CONDUITS TO HAVE WATER TIGHT FITTINGS AND WIRE TO BE APPROVED FOR WET LOCATIONS.
28.	PER CEC STANDARDS, ALL WIRING IS TO BE PULLED THROUGH EACH JUNCTION BOX AND CONNECTED DIRECTLY TO EACH FIRE DEVICE. DO NOT SPLICE THE WIRE. ALL BOXES TO BE SIZED PER CEC.
29.	ALL FIRE ALARM CIRCUITS SHALL BE IN CONDUIT OR RACEWAY WHEN PASSING THROUGH A FLOOR OR WALL TO A HEIGHT OF 7 FEET ABOVE THE FLOOR. FIRE ALARM WIRING ABOVE CEILING SHALL BE SUPPORTED BY THE BUILDING STRUCTURE SO AS NOT TO DAMAGE THE CABLE.
30.	NO SPLICES SHALL BE ALLOWED FOR FIRE ALARM SYSTEM UNDERGROUND CABLES.
31.	NEW FIRE ALARM WIRING SHALL NOT BE INSTALLED IN ANY RACEWAY WITH WIRING IN EXCESS OF 24 VOLT.
32.	FIRE ALARM PANEL, REMOTES, AND COMPONENTS SHALL BE SECURED TO MOUNTING SURFACES PER MANUFACTURERS SPECIFICATIONS. NO SINGLE DEVICE SHALL EXCEED 20 LBS. WITHOUT SPECIAL MOUNTING DETAILS.
33.	ALL FIRE ALARM EQUIPMENT BRANCH CIRCUITS SHALL BE DEDICATED AS PER 2022 NFPA 72, 10.6.5.1.2 AND ITS LOCATION BE CLEARLY LABELED AT THE FIRE ALARM CONTROL PANEL.
34.	ALL FIRE ALARM EQUIPMENT POWER SOURCE CIRCUITS SHALL BE IDENTIFIED AT THE POWER SOURCE PER 2022 NFPA 72, 10.6.5.2, USING A RED CLEARLY MARKED DISCONNECT WITH LOCK-ON CAPABILITY. COORDINATE WITH ELECTRICAL.
35.	MICROPHONES ASSOCIATED WITH EMERGENCY VOICE ALARM COMMUNICATION SYSTEMS (EVAC) SHALL BE ACCESSIBLE FOR USE, INSTALLED IN COMPLIANCE WITH CBC SECTIONS 11B-305 AND 11B-308.
36.	WHERE ACCESSIBILITY IS NOT AVAILABLE TO THE NEW FIRE ALARM DEVICES LOCATED ABOVE THE CEILING/ATTIC SPACES, PROVIDE ACCESS PANELS TO THESE DEVICES, COORDINATE PRIOR TO THE EXECUTION OF WORK.
37.	THE CONTRACTOR SHALL PROVIDE AS-BUILT SHOP DRAWINGS INDICATING CIRCUITING OF ALL DETECTOR AS AND OTHER DEVICES IN ALL THE BUILDINGS OF THIS PROJECT. AS-BUILT DRAWINGS SHALL BE STORED IN FIRE ALARM DOCUMENT CABINET INSTALLED ADJACENT TO FIRE ALARM CONTROL PANEL OR LOCATION APPROVED BY AUTHORITY HAVING JURISDICTION.
38.	PROVIDE DOCUMENTATION CABINET TO BE INSTALLED PROXIMAL TO FACP (2022 NFPA 72, 7.2.2.1). ALL RECORD DOCUMENTATION SHALL BE STORED IN THE DOCUMENTATION CABINET (2022 NFPA 72 7.2.2.3). THE DOCUMENTATION CABINET TO BE PROMINENTLY LABELED "SYSTEM RECORD DOCUMENTS" (2022 NFPA 72 7.2.2.5).

GOVERNING CODES & APPLICABLE STANDARDS	
TITLE 24 CODES:	
1.	2022 CALIFORNIA BUILDING STANDARD ADMINISTRATIVE CODE (CAC), (PART 1, TITLE 24, CCR).
2.	2022 CALIFORNIA BUILDING CODE (CBC), VOLUMES 1 AND 2 (PART 2, TITLE 24, CCR), (2021 EDITION INTERNATIONAL BUILDING CODE WITH CALIFORNIA AMENDMENTS).
3.	2022 CALIFORNIA ELECTRICAL CODE, (PART 3, TITLE 24, CCR), (2020 EDITION NATIONAL ELECTRICAL CODE WITH CALIFORNIA AMENDMENTS).
4.	2022 CALIFORNIA MECHANICAL CODE (CMC), (PART 4, TITLE 24, CCR), (2021 EDITION IAPMO UNIFORM MECHANICAL CODE).
5.	2022 CALIFORNIA PLUMBING CODE (CPC), (PART 5, TITLE 24, CCR), (2021 EDITION IAPMO UNIFORM PLUMBING CODE WITH CALIFORNIA AMENDMENTS).
6.	2022 CALIFORNIA ENERGY CODE (CFC), (PART 6, TITLE 24, CCR), (2022 EDITION CALIFORNIA ENERGY COMMISSION BUILDING ENERGY EFFICIENCY STANDARDS).
7.	2022 CALIFORNIA FIRE CODE (CFC), (PART 9, TITLE 24, CCR) (2021 EDITION INTERNATIONAL FIRE CODE WITH CALIFORNIA AMENDMENTS).
8.	2022 CALIFORNIA REFERENCE CODE, (PART 12, TITLE 24. CCR).
REFERENCE CODE SECTIONS FOR APPLICABLE STANDARDS:	
1.	2022 CBC, CHAPTER 35.
2.	2022 CFC, CHAPTER 80.
3.	2022 NFPA 72, AS AMENDED.

FIRE ALARM MONITORING NOTE	
AUTOMATIC FIRE ALARM SYSTEMS SHALL TRANSMIT THE ALARM, SUPERVISORY AND TROUBLE SIGNALS TO AN APPROVED SUPERVISING STATION AS REQUIRED BY 2022 NFPA 72 AS AMENDED BY ARTICLE 91. THE SUPERVISING STATION SHALL BE LISTED AS EITHER ULFVX OR ULUS BY UNDERWRITERS LABORATORY OR SHALL MEET THE REQUIREMENTS OF FACTORY MUTUAL RESEARCH APPROVAL STANDARD 3011. SUPERVISION OF SYSTEM AND LEASED TELEPHONE LINES SHALL BE ARRANGED BY DISTRICT.	

SCOPE OF WORK AND BUILDING INFORMATION	
1. PROVIDE AND EXPAND THE EXISTING FIRE ALARM SYSTEM TO COVER THE EXISTING SERVER ROOM AND SUPERINTENDENT OFFICE. THIS INCLUDES TYING IN THE NEW INITIATION AND NOTIFICATION DEVICES TO SUPPORT THE EXISTING FUNCTIONAL FIRE ALARM SYSTEM.	
OCCUPANCY CLASSIFICATION: B_A,S	
TYPE OF CONSTRUCTION: V-B	
NUMBER OF STORIES: 1 STORY	
SPRINKLER PROTECTION: NO	
ALTERNATIVE PROTECTION: NOT APPLICABLE	
TYPE OF SYSTEM: MANUAL, AUTOMATIC FIRE ALARM SYSTEM	

FIRE ALARM SHEET INDEX	
SHEET NO.	SHEET TITLE
FA0.0.1	FIRE ALARM LEGEND, ABBREVIATIONS, AND NOTES
FA0.0.2	FIRE ALARM DETAILS
FA1.0.0	FIRE ALARM SITE PLAN
FA1.0.1	FIRE ALARM FLOOR PLANS
FA6.4.2	FIRE ALARM RISER DIAGRAM,CALCULATIONS, AND SEQUENCE OF OPERATIONS
FA9.0.1	FIRE ALARM SPECIFICATIONS

FIRE ALARM DEVICE LEGEND						
SYMBOL	QTY	EXISTING	MANUFACTURER	PART NO	DESCRIPTION	CSFM
	1	NEW	SPACE AGE ELECTRONICS	SSU00672	FIRE ALARM DOCUMENT BOX, RED 12" X 18" TALL 2 1/4 DEEP	7300-0653.0110
	1	EXISTING	GAMEWELL FCI	FC-72 SERIES	TEN ZONE FIRE ALARM CONTROL PANEL	
	1	EXISTING	GAMEWELL FCI	FC-72 MAIN BOARD		
	1	NEW	GAMEWELL FCI	GFANN-80	RED 80 CHARACTER LCD ANNUNCIATOR	7120-1703.0183
	1	NEW	GAMEWELL FCI	E3 SERIES VOICE EVAC ASSEMBLY (4 X AM-50-70)	E3 SERIES VOICE EVAC EVACUATION PANEL W/4 X AM-50-70	7165-1703.0125
	1	NEW	GAMEWELL FCI	PM-9	POWER SUPPLY CARD	7165-1703.0125
	1	NEW	GAMEWELL FCI	INCC-MIC	PAGING MICROPHONE MODULE OCCUPIES 1 SLOT ON INNER DOOR	7165-1703.0125
	1	NEW	GAMEWELL FCI	E3-INX-D-PLATE	TRANSFONDER MODULE MOUNTING PLATE, "D" SIZE	7165-1703.0125
	1	NEW	GAMEWELL FCI	ILMB-E3	INTELLIGENT LOOP INTERFACE-MAIN BOARD	7165-1703.0125
	1	NEW	GAMEWELL FCI	E388-8DINCC	ENCLOSURE, COMMAND CENTER, BLACK, "D" SIZE	7165-1703.0125
	1	NEW	GAMEWELL FCI	LCD-E3	LCD KEYPAD DISPLAY	7165-1703.0125
	4	NEW	GAMEWELL FCI	AM-50-70	AM-50-70 TVRMS AUDIO OUTPUT, 50 WATT, (MAX CURRENT)	7165-1703.0125
	1	NEW	GAMEWELL FCI	DACT-E3	DIGITAL ALARM COMMUNICATOR TRANSMITTER	7165-1703.0125
	1	NEW	GAMEWELL FCI	IN-VGX	TRANSPONDER VOICE GATEWAY (UTP ONLY)	7165-1703.0125
	1	NEW	GAMEWELL FCI	E3ID2-D	ASSY, INNER DOOR, 2-BAY, "D" SIZE	7165-1703.0125
	1	NEW	GAMEWELL FCI	1100-0455	PROGRAMMABLE SWITCH MODULE	7165-1703.0125
	5	NEW	GAMEWELL FCI	MS-7AF	VELOCTI ADDRESSABLE DOUBLE ACTION STATION	7150-1703.0109
	3	NEW	GAMEWELL FCI	ATD-13H W/B3006	THERMAL HEAT DETECTOR, 130°F HIGH TEMP, BRIGHT WHITE, VELOCITI W/ 6" FLANGED MOUNTING BASE, BRIGHT WHITE	7270-1703.0602 7300-1653.0109
	12	NEW	GAMEWELL FCI	ASD-PL3 W/B3006	PHOTOELECTRIC SMOKE DETECTOR, BRIGHT WHITE, VELOCITI W/ 6" FLANGED MOUNTING BASE, BRIGHT WHITE	7272-1703.0501 7300-1653.0109
	8	NEW	SYSTEM SENSOR	SPSCWL	SPEAKER/STROBE CEILING MOUNT, WHITE	7320-1653.0505
	1	NEW	SYSTEM SENSOR	SWL	STROBE, WHITE	7125-1653.0504

FIRE ALARM CABLE SCHEDULE					
TYPE	DESCRIPTION	JACKET COLOR	SERVES	ENVIRONMENT	NOTES
A	2#16 UTP FPLR, SOLID	RED/BLK	SLC INTELLIGENT LOOP	INTERIOR	
B	2#14 UTP FPLR, SOLID	RED/BLK	NAC STROBE (VISUAL)	INTERIOR	
C	2#16 STP FPLR, SOLID	RED/BLK	VOICE (SPEAKER)	INTERIOR	
D	2#16 UTP FPLR, SOLID	RED/BLK	IDC CIRCUIT	INTERIOR	
E	2#16 UTP FPLR, SOLID	RED/BLK	FAA RS485 COMM	INTERIOR	
P	2#14 UTP FPLR, SOLID	RED/BLK	24VDC POWER	INTERIOR	
R	2#16 UTP FPLR, SOLID	RED/BLK	SPEAKER RISER	INTERIOR	
AU	2#16 UTP WP#A0225	RED/BLK	SLC ADDRESS LOOP	EXTERIOR/UDGND	DIRECT BURIAL CABLE
BU	2#14 UTP WP#A0226	RED/BLK	NAC STROBE (VISUAL)	EXTERIOR/UDGND	DIRECT BURIAL CABLE
CU	2#16 STP WP#A0294	RED/BLK	NAC VOICE (SPEAKER)	EXTERIOR/UDGND	DIRECT BURIAL CABLE
DU	2#16 STP WP#A0225	RED/BLK	IDC CIRCUIT	EXTERIOR/UDGND	DIRECT BURIAL CABLE
EU	2#16 UTP WP#A0225	RED/BLK	FAA RS485 COMM	EXTERIOR/UDGND	DIRECT BURIAL CABLE
PU	2#14 UTP WP#A0226	RED/BLK	24VDC POWER	EXTERIOR/UDGND	DIRECT BURIAL CABLE
RU	2#16 UTP WP#A0225	RED/BLK	SPEAKER RISER	EXTERIOR/UDGND	DIRECT BURIAL CABLE

- NOTES:
- ALL CONDUCTORS SHALL BE COPPER AND SOLID – STRANDED CONDUCTOR IS NOT ACCEPTABLE
 - MINIMUM CONDUIT SIZE IS 3/4" – CONCEALED IN CEILING SPACE OR APPROPRIATE WALLS.
 - ALL SURFACE ROUTED RACEWAYS SHALL BE WIREMOLD OR APPROVED EQUAL.

CABLE ABBREVIATIONS:			
STP	SHIELDED TWISTED PAIR	PA	PUBLIC ADDRESS
SLC	SIGNAL LINE CIRCUIT	UTP	UNSHIELDED TWISTED PAIR
NAC	NOTIFICATION APPLIANCE CIRCUIT	WP	WEST PENN (CABLE MANUFACTURER)
IDC	INITIATE DEVICE CIRCUIT		

DEVICE DESIGNATION LEGEND	
EXAMPLE:	EXAMPLE:
DEVICE REFERENCE NUMBER	APPLIANCE CANDELA RATING
DEVICE TYPE D = DETECTORS M = MODULES	APPLIANCE REFERENCE NUMBER
SIGNALING LINE CIRCUIT	CIRCUIT REFERENCE NUMBER
DEVICE SYMBOL (SMOKE SENSOR)	FACP/POWER SUPPLY REFERENCE NUMBER
STYLE: A CLASS: B	APPLIANCE SYMBOL (HORN STROBE)
	STYLE: Y CLASS: B

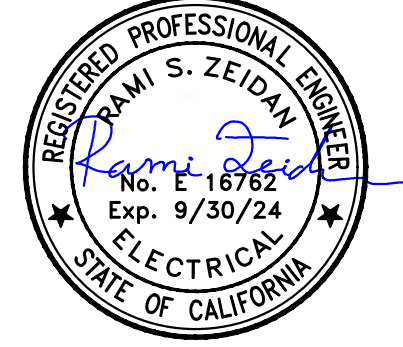


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Drawing Title: FIRE ALARM SYMBOL LEGEND, NOTES & ABBREVIATIONS

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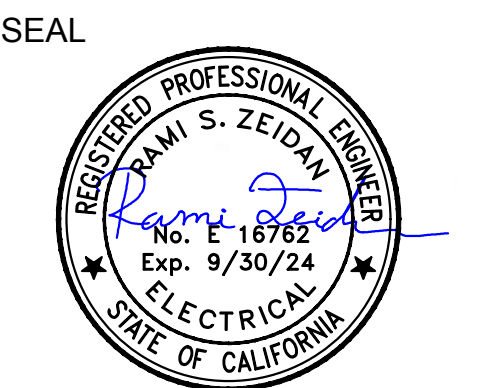
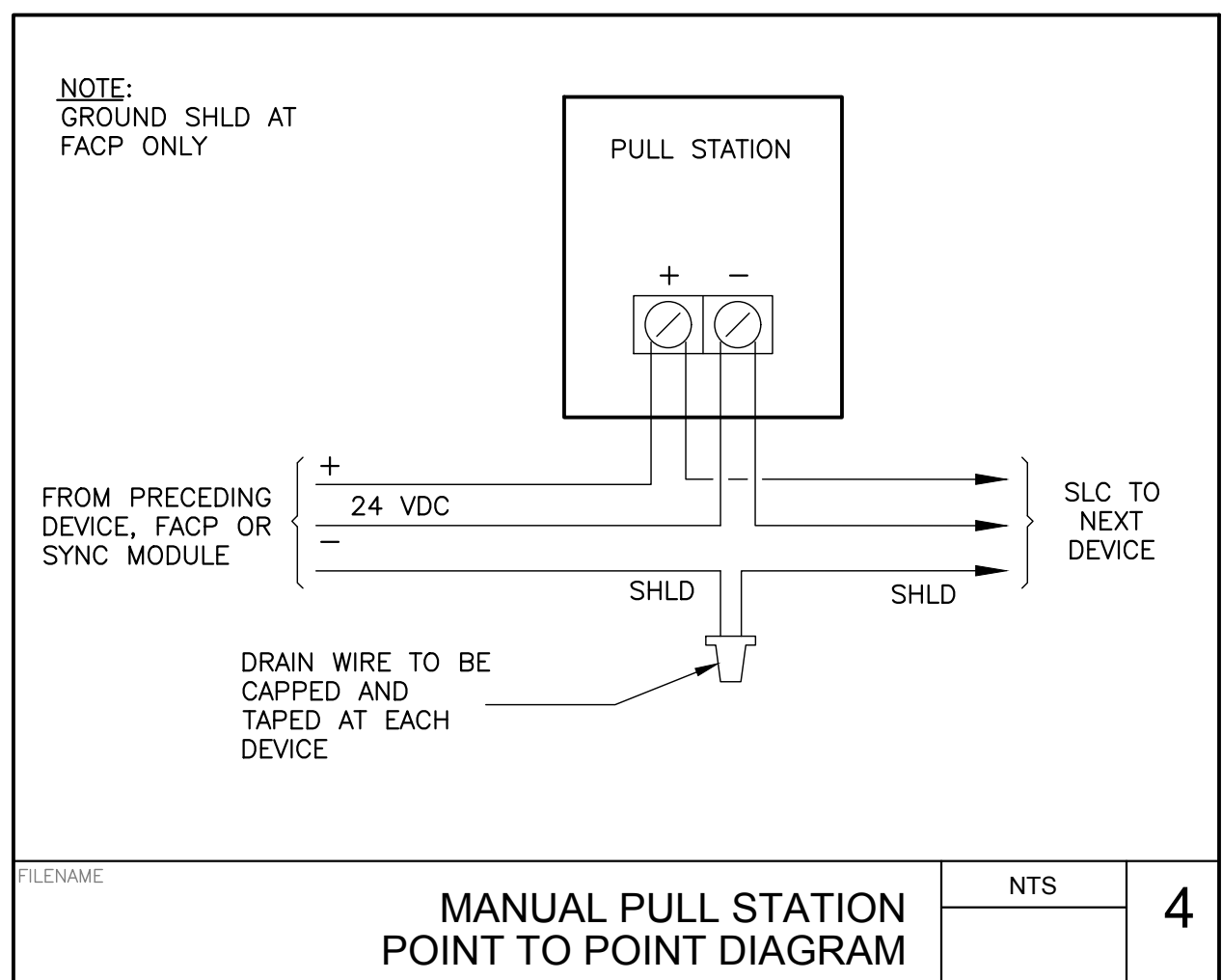
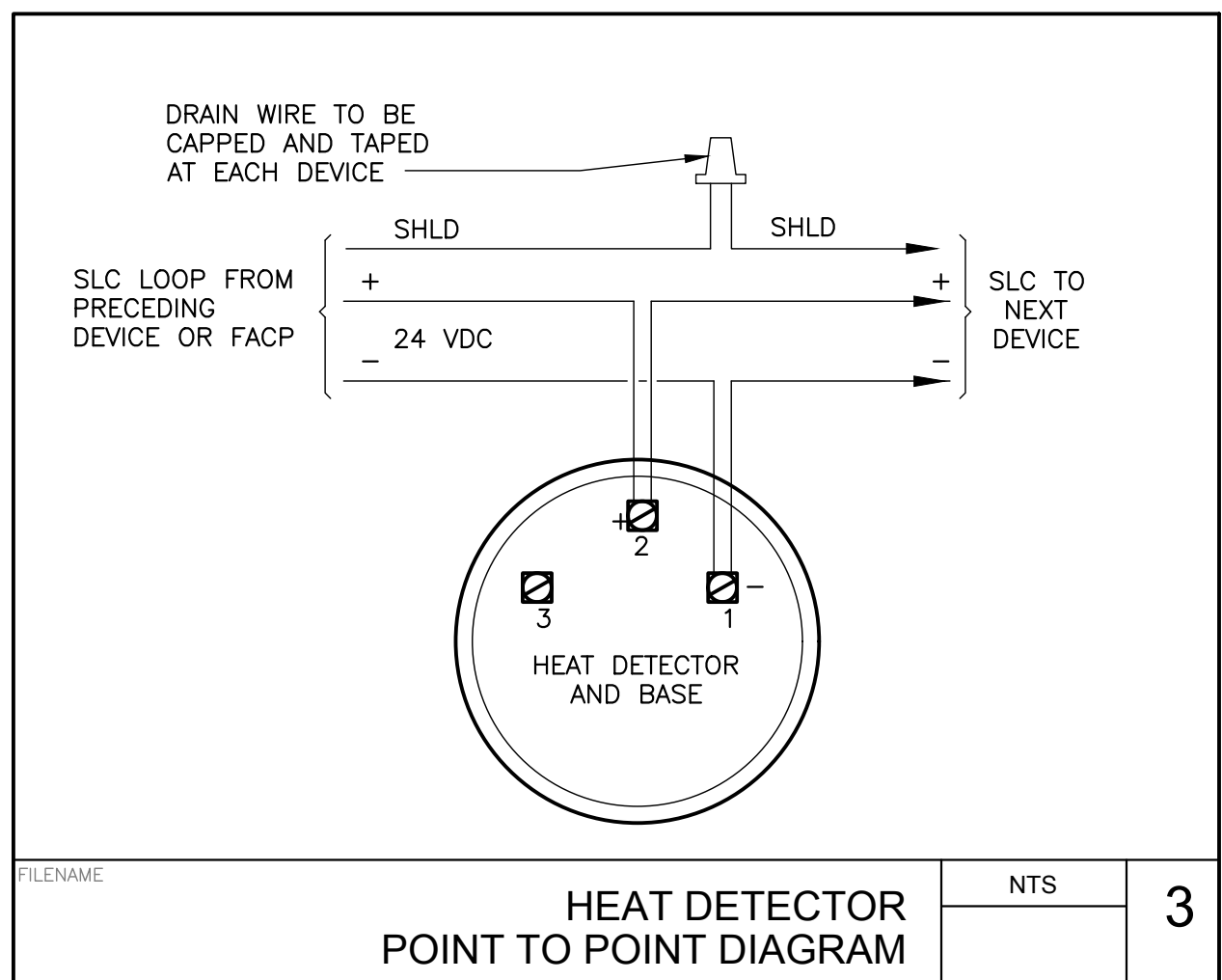
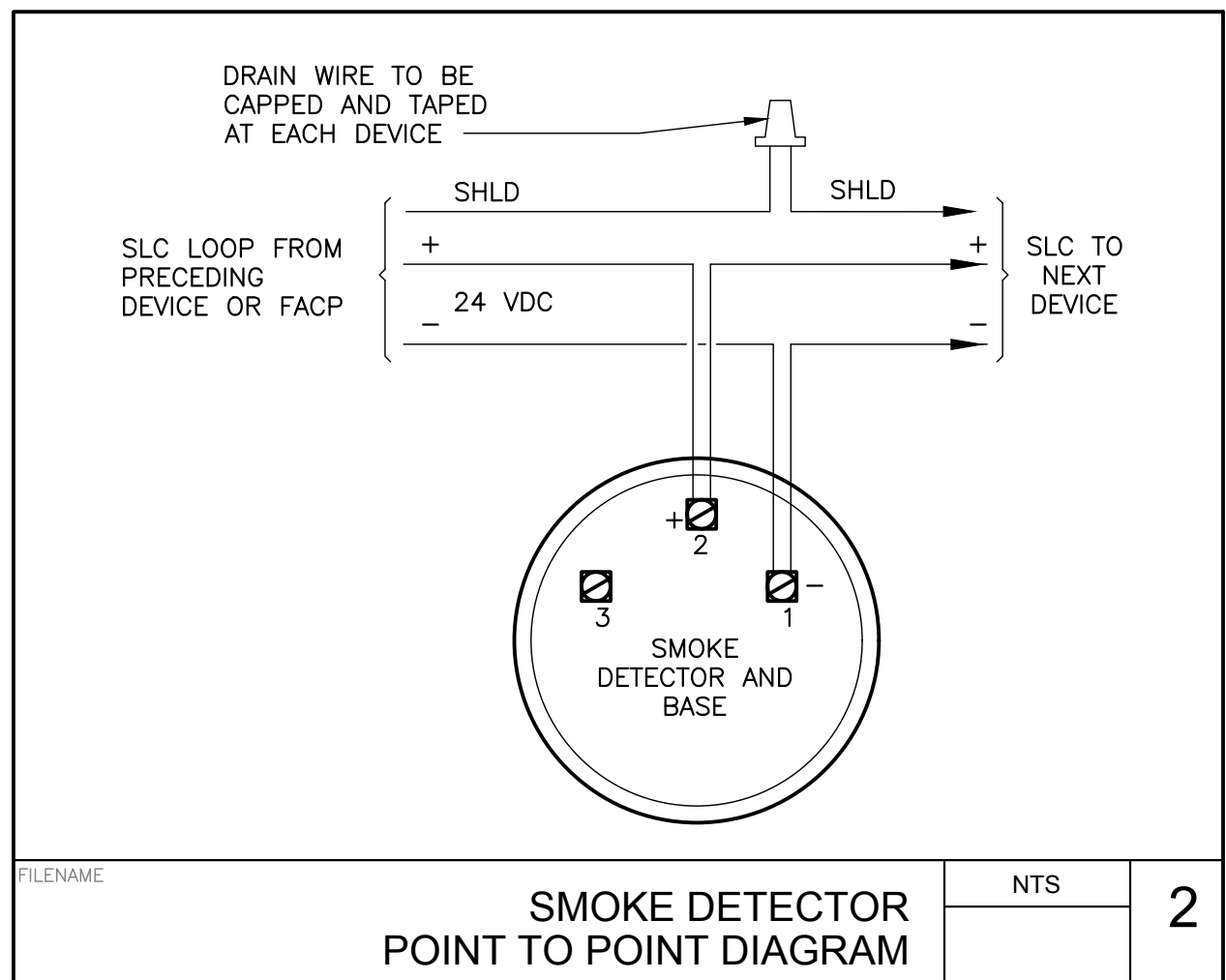
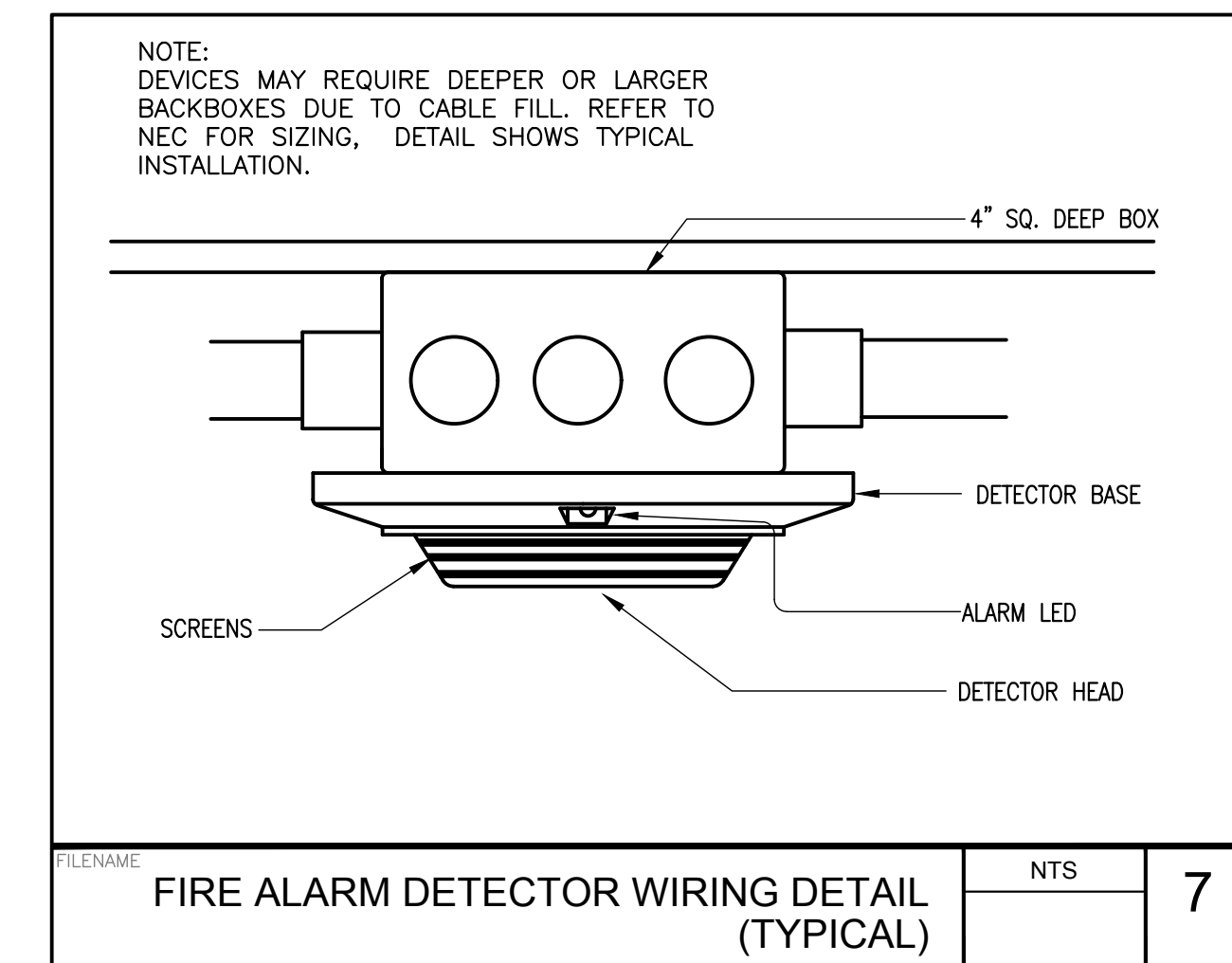
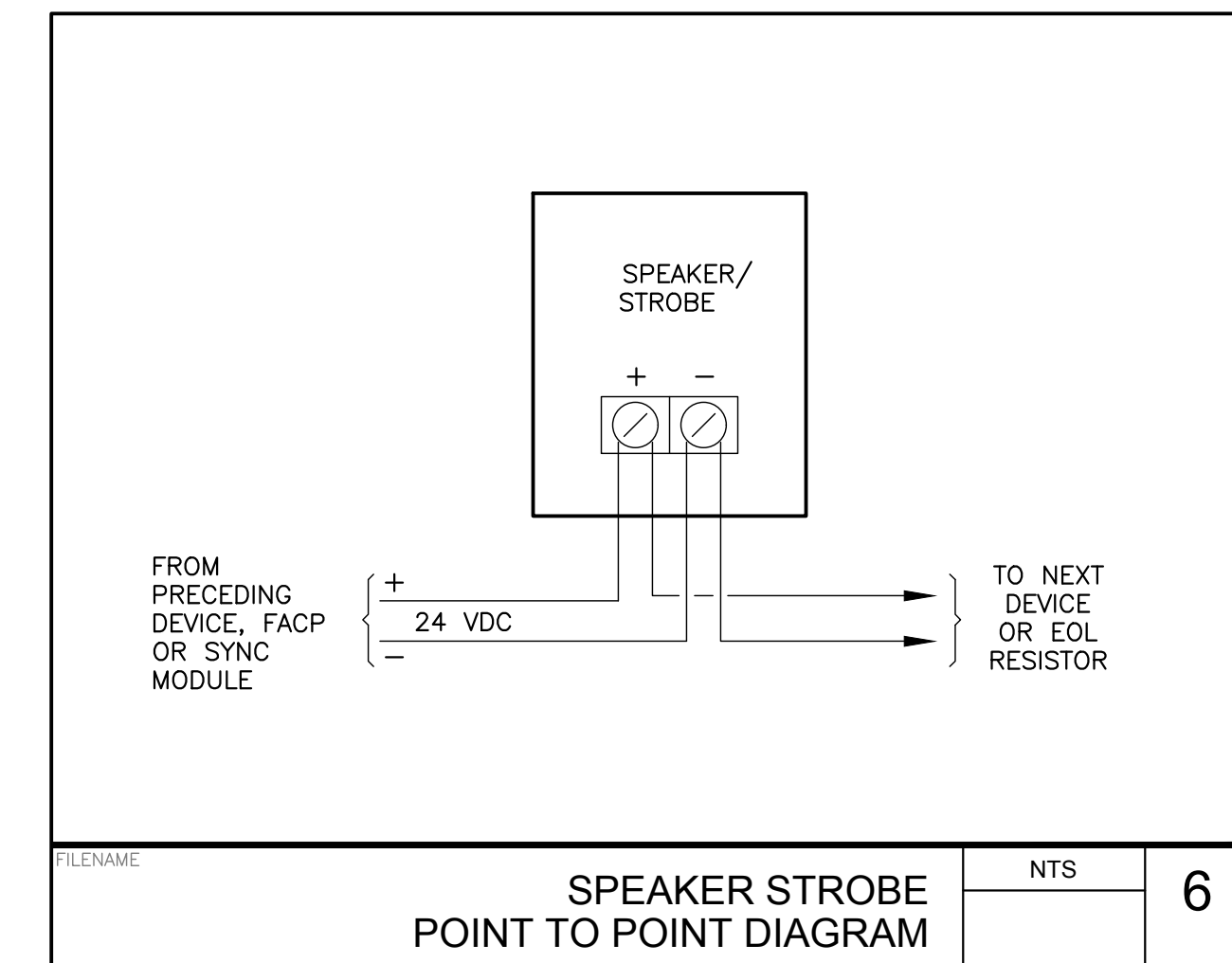
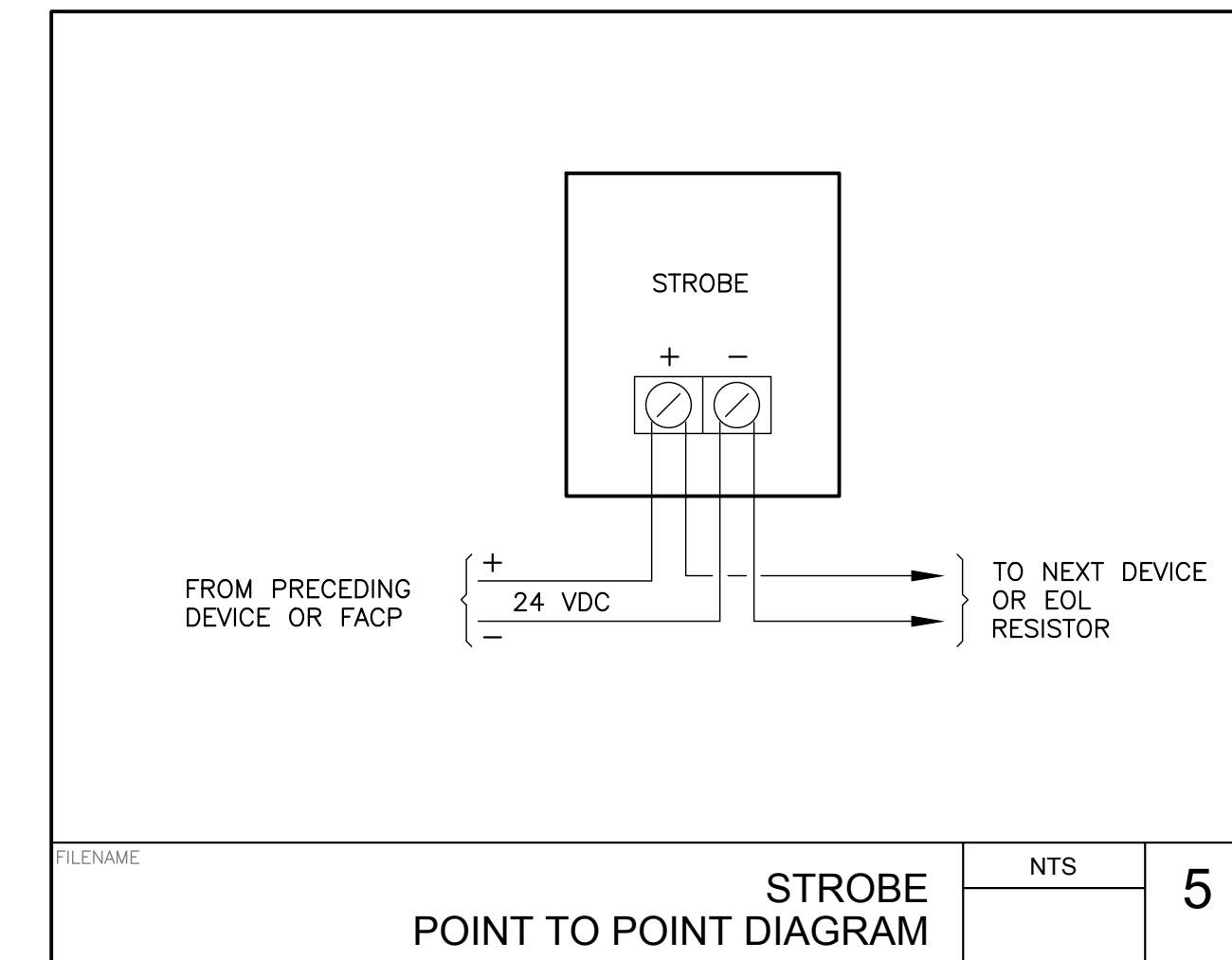
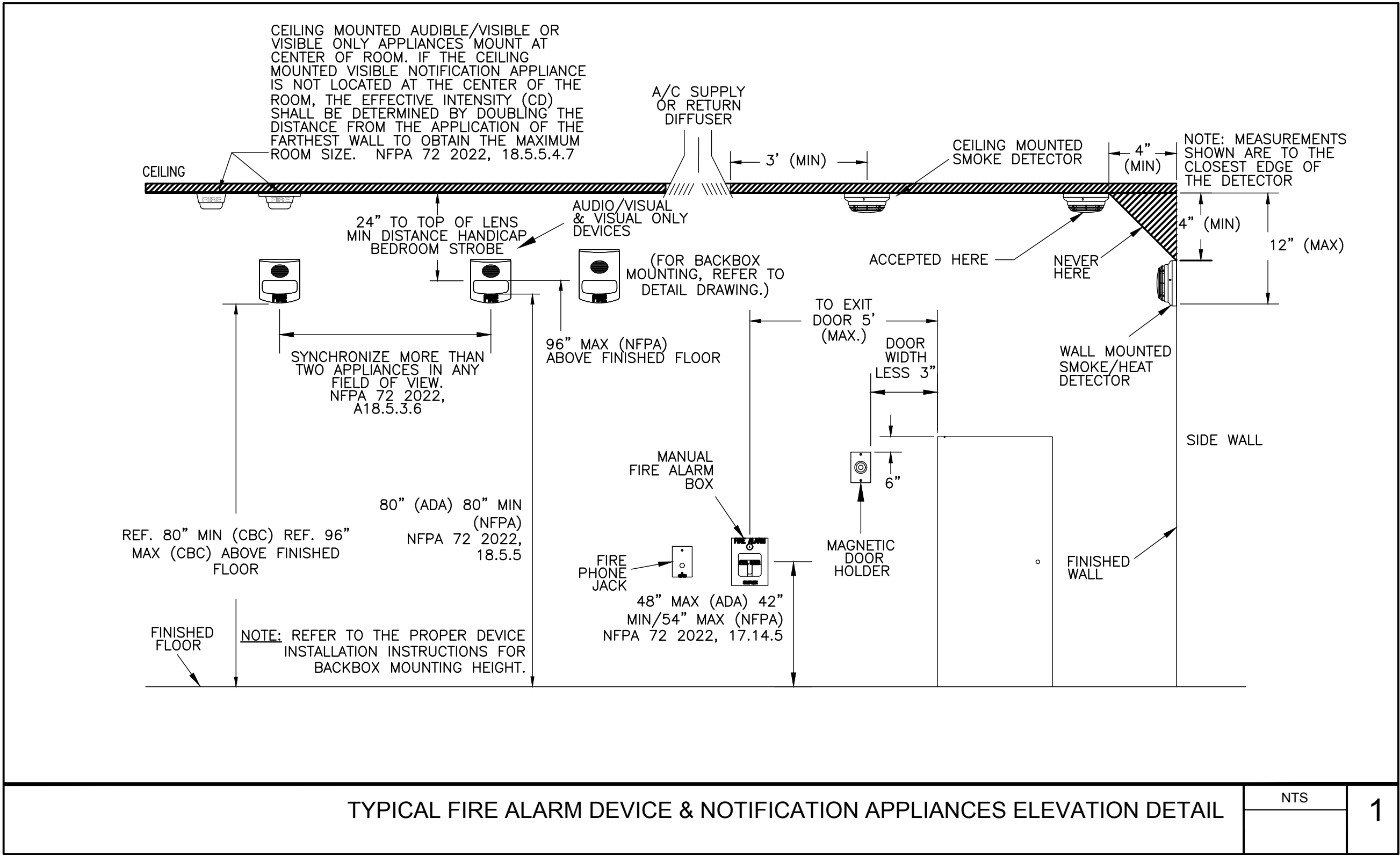
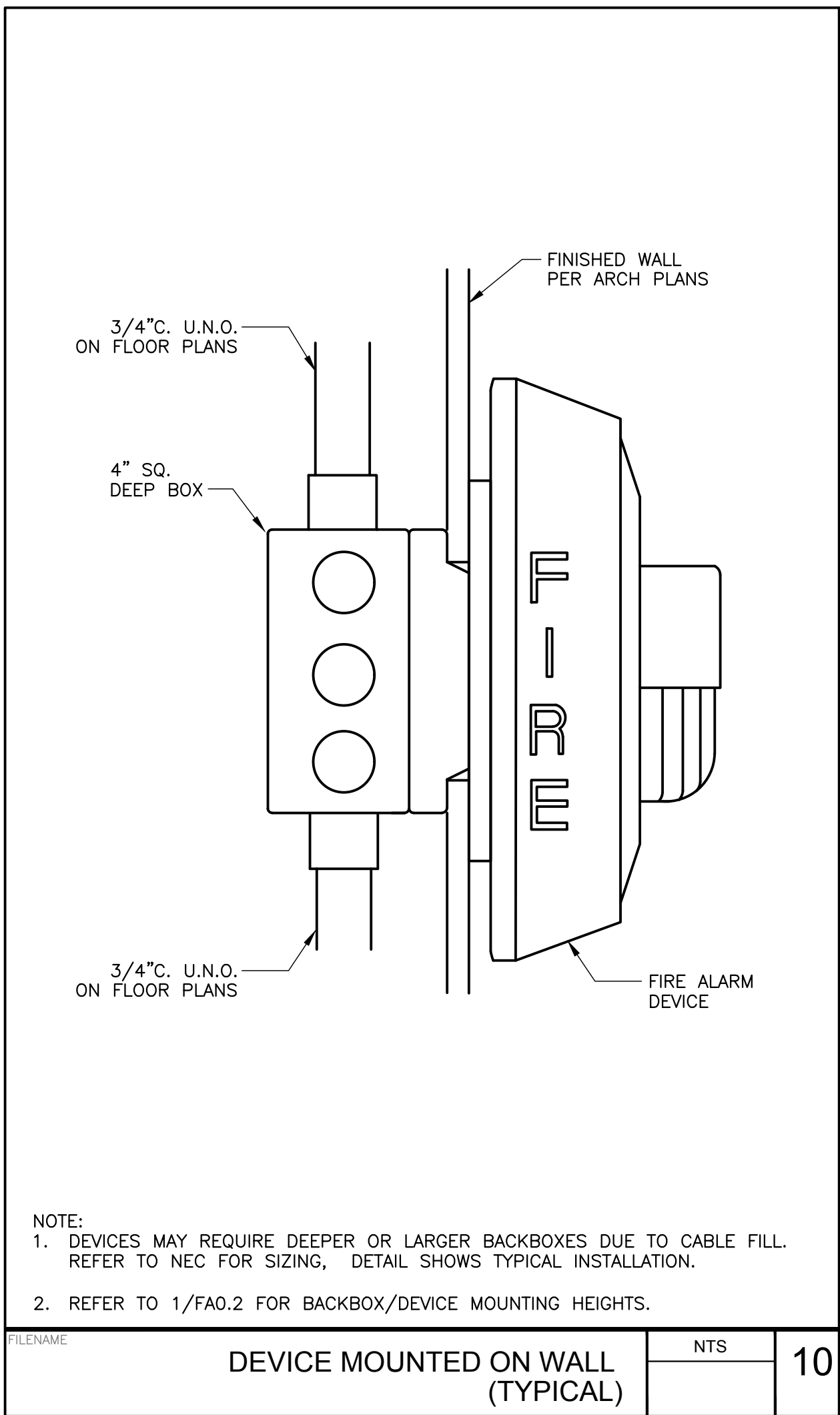
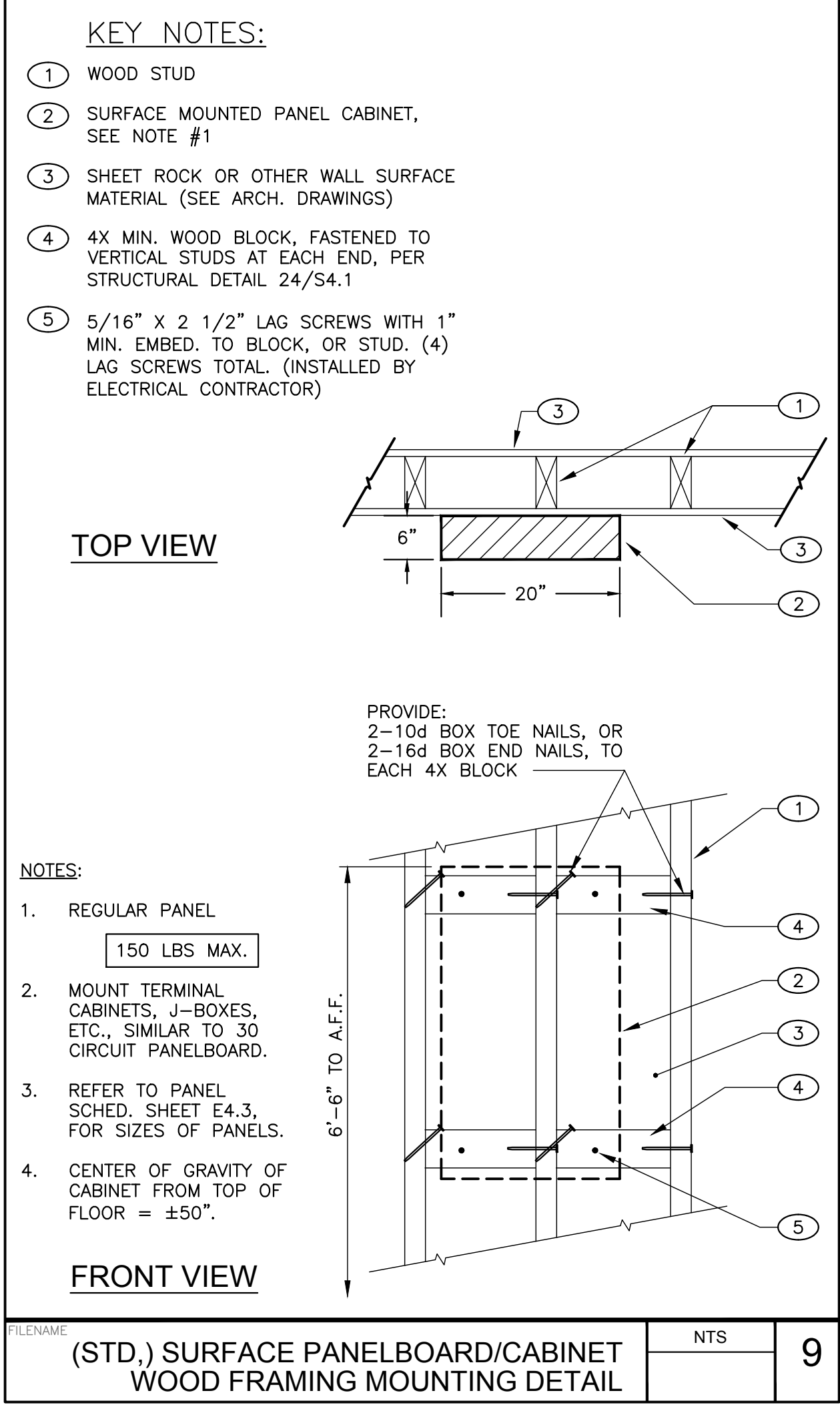
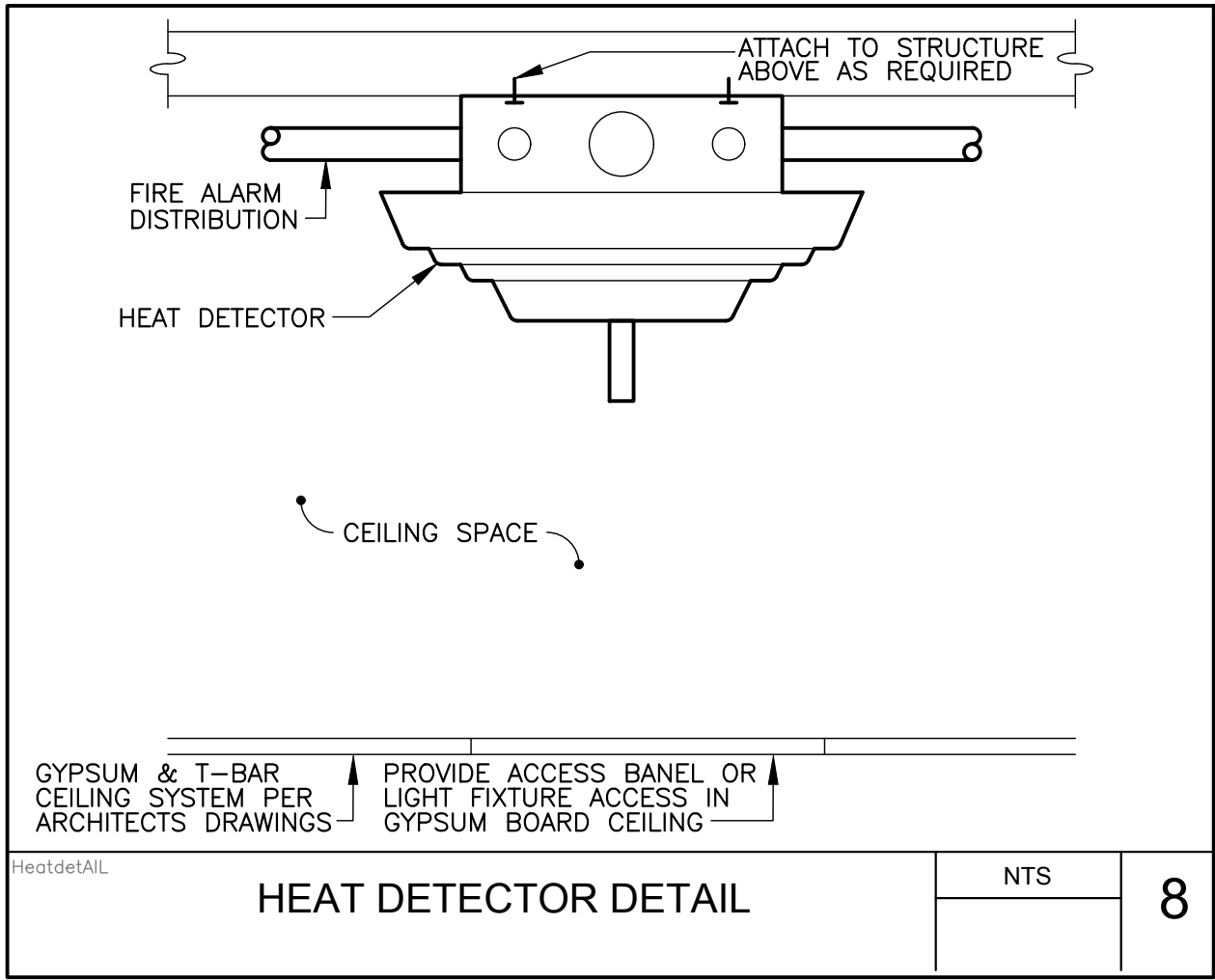
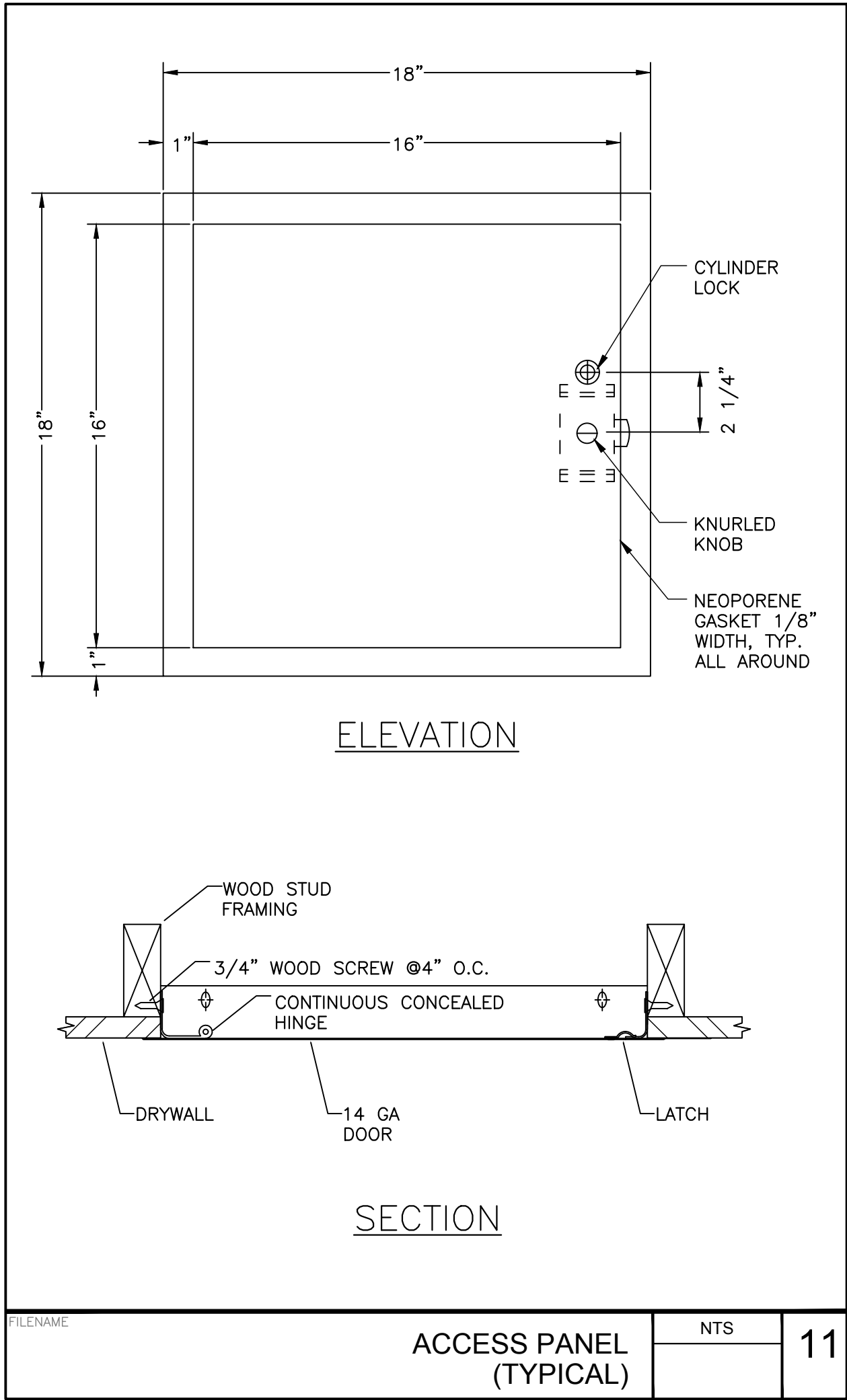
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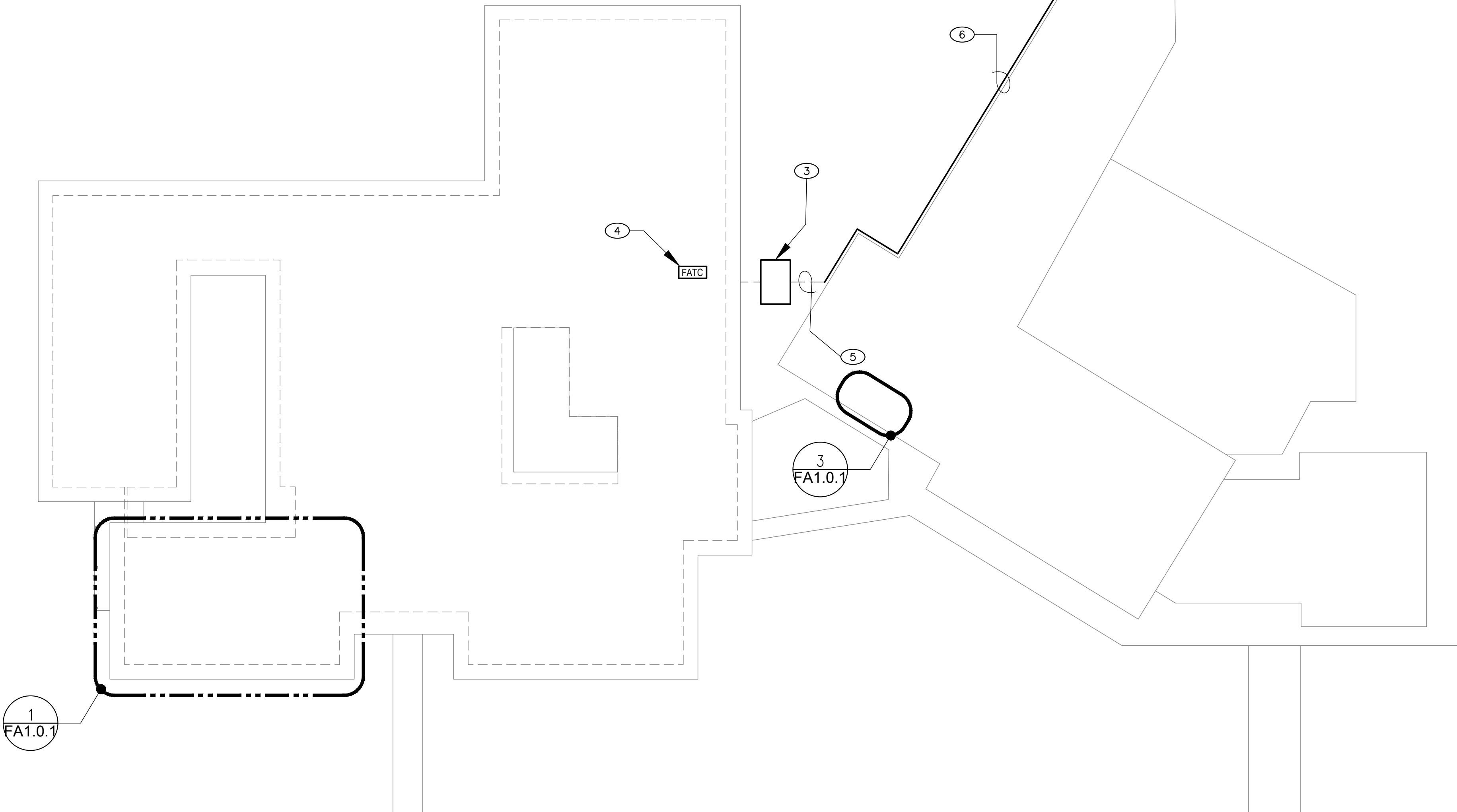
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FIRE ALARM DETAILS		
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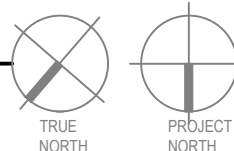
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HVAC & ROOFING UPGRADES

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1 FIRE ALARM SITE PLAN



KEY NOTES

- ① (E) GAMEWELL FCI-72 FIRE ALARM CONTROL PANEL (FCAP)
- ② (N) GAMEWELL FCI E3 SERIES VOICE EVACUATION PANEL W/
DOCUMENT CABINET MOUNTED BELOW
- ③ (E) UNDER GROUND PULL BOX
- ④ (E) FIRE ALARM TERMINAL CABINET
- ⑤ (E) UNDERGROUND 2" CONDUIT
- ⑥ (E) CONDUIT FLUSH MOUNTED TO THE SIDE OF THE BUILDING

GENERAL NOTES

1. FIELD VERIFY ALL EXISTING CONDITIONS, PRIOR TO ANY WORKS, AND REPORT TO ENGINEERS ANY DISCREPANCIES!
2. EXISTING UNDERGROUND CONDUITS SHALL BE CAREFULLY INSPECTED FOR ANY DAMAGE AND REUSED IF IN GOOD WORKING ORDER. IF DAMAGE OR CABLE FILL IS MAXED OUT, NEW SCH-40 PVC CONDUIT SHALL BE INSTALLED.

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FIRE ALARM SITE PLAN

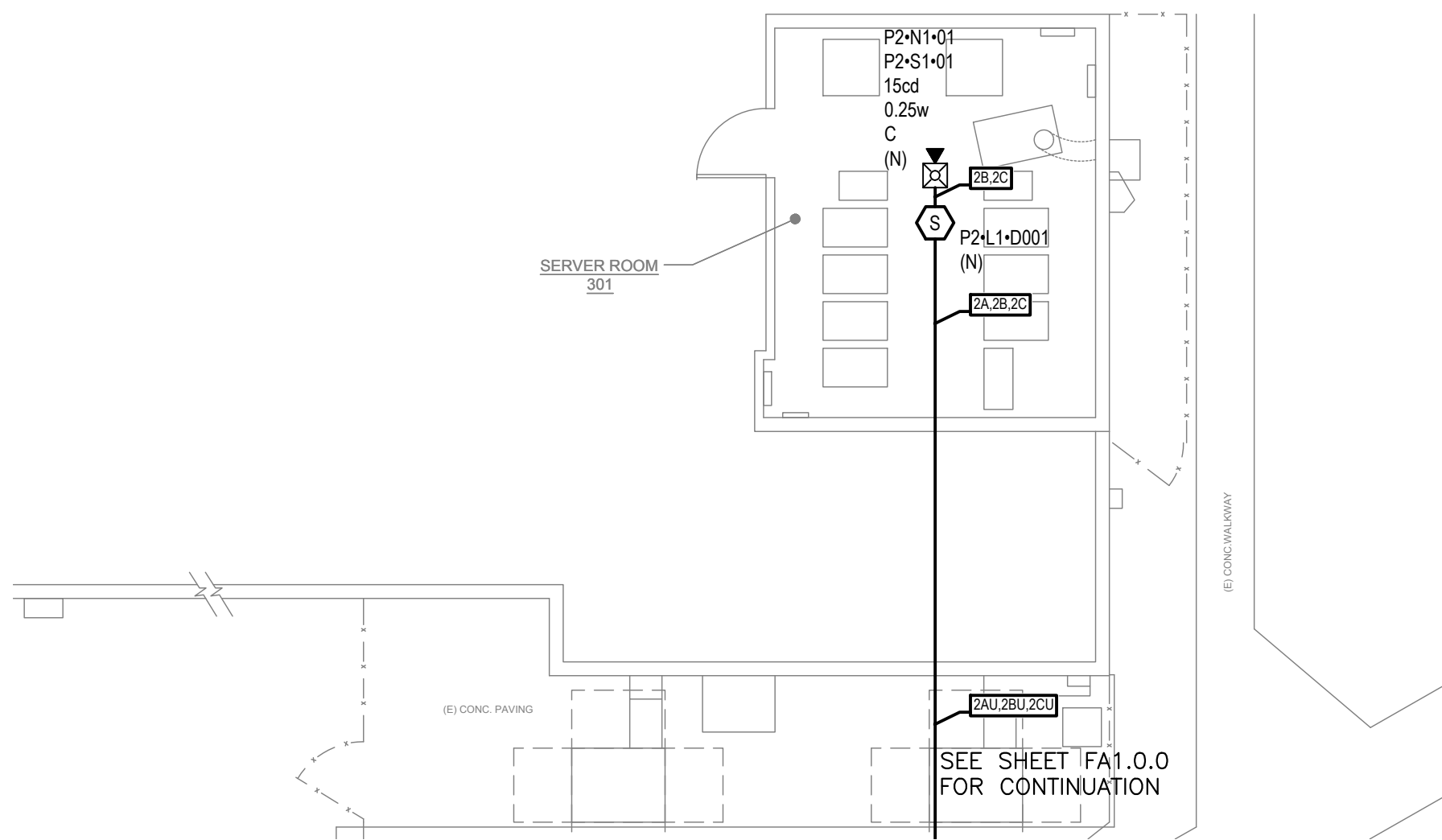
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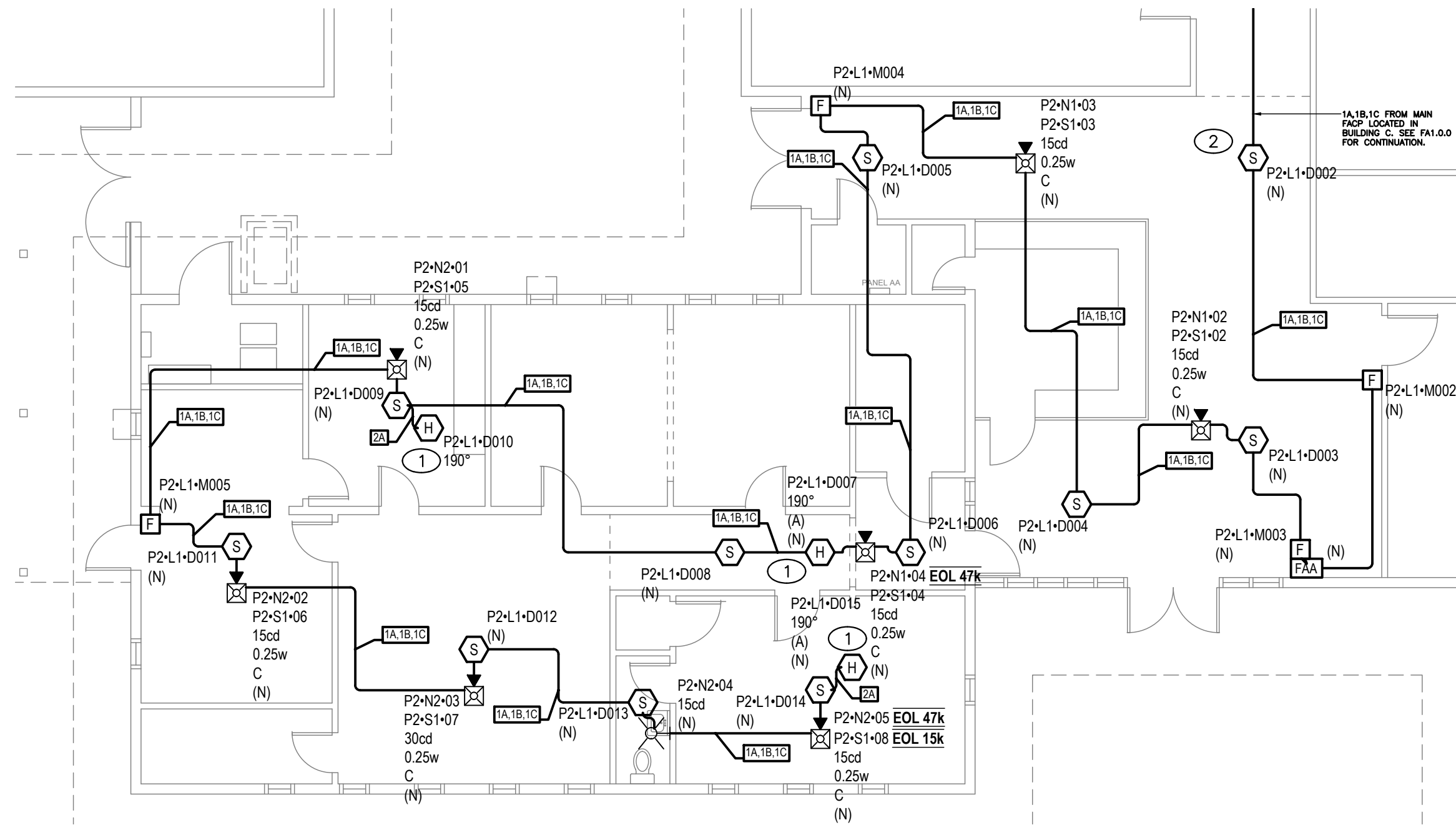
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2 FIRE ALARM DEMO FLOOR PLAN - SERVER ROOM
SCALE: 1/8" = 1'-0" **BLDG # 300**



3 FIRE ALARM FLOOR PLAN - SERVER ROOM
SCALE: 1/8" = 1'-0" **BLDG # 300**



1 FIRE ALARM ENLARGED FLOOR PLAN
1/8" = 1'-0"

KEY NOTES

- ① (N) ABOVE CEILING HEAT DETECTOR W/ ACCESS HATCH.
PROVIDE CEILING ACCESS PANEL TO SERVICE AND MAINTAIN
HEAT DETECTOR LOCATED ABOVE CEILING. REFERENCE ACCESS
PANEL DETAL 11/FA0.0.2
- ② (N) CEILING MOUNTED SMOKE DETECTOR (TYP.).

GENERAL NOTES

1. FIELD VERIFY ALL EXISTING CONDITIONS, PRIOR TO ANY WORKS, AND REPORT TO ENGINEERS ANY DISCREPANCIES.
2. ALL EXISTING FIRE ALARM EQUIPMENT, DEVICES, CONDUIT AND WIRING, ETC., WHERE SHOWN ON PLANS ARE BASED ON AVAILABLE EXISTING DOCUMENTS AND LIMITED SITE SURVEY AND ARE SHOWN FOR CLARITY. IT SHALL BE REMOVED AS AN APPROXIMATION ONLY. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE RESPONSIBLE FOR ASSESSING AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT. PRIOR TO SUBMITTING BID AND BEFORE START OF ANY ELECTRICAL WORK CONTRACTOR SHALL VERIFY ON-SITE ALL EXISTING LOCATIONS AND CONDITIONS TO ASCERTAIN ALL WORK REQUIRED.
3. EXISTING FIRE ALARM SYSTEM SHALL REMAIN ACTIVE UNTIL CONSTRUCTION IS COMPLETED. CAUSE AS LITTLE INTERFERENCE OR INTERRUPTION OF EXISTING FIRE ALARM SYSTEMS AS FOR OTHER EXISTING FACILITY'S SYSTEMS AND DEVICES AS POSSIBLE. CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE AT LEAST 72 HOURS TO SCHEDULE ALL NECESSARY SHUTDOWNS. SHUTDOWN WORK SHALL BE PERFORMED AFTER THE NORMAL OPERATION OF THE FACILITY. NO DIRECTED TO THE OWNER'S REPRESENTATIVE.
4. FIRE WATCH IN CONFORMANCE WITH THE CALIFORNIA FIRE CODE SHALL BE PROVIDED AT THE DIRECTION OF THE CONTRACTOR FOR EVERY OFF-LINE BUILDING. THE SCHOOL SHALL ASSIST WITH FIRE WATCH ACTIVITIES DURING SCHOOL HOURS AND WHENEVER THE CAMPUS IS OCCUPIED BY STUDENTS, TEACHERS AND STAFF. THE CONTRACTOR SHALL PROVIDE ALL FIRE WATCH ACTIVITIES AFTER SCHOOL HOURS AND WHENEVER THE CAMPUS IS NOT OCCUPIED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MONITORING AND MAINTAINING ALL FIRE WATCH LOGS.
5. ALL REMOVED AND/OR DEMOLISHED ELECTRICAL MATERIALS AND EQUIPMENT TO BE ACCUMULATED UNDER THIS CONTRACT. WHICH IN THE OPINION OF THE OWNER'S REPRESENTATIVE ARE DEEM SALVAGEABLE, SHALL REMAIN THE PROPERTY OF THE CONTRACTOR. ALL OTHER MATERIAL AND EQUIPMENT CONSIDERED NOT SALVAGEABLE SHALL BE REMOVED FROM THE SITE AND DISPOSED BY THE CONTRACTOR ACCORDINGLY.
6. WHERE REMOVAL OF AN EXISTING SYSTEM'S DEVICE WILL RESULT IN LOSS OF CIRCUIT CONTINUITY, THE ISOLATED PORTION OF THE CIRCUIT SHALL BE PROTECTED TO PROVIDE SERVICE TO ALL REMAINING DEVICES. IF SITE CONDITIONS MAKE RECONNECTION IMPOSSIBLE, CONNECTION SHALL BE MADE FROM AN ADJACENT AVAILABLE DEVICE AS NOTED BY OR AS DIRECTED BY THE ARCHITECT AND/OR THE OWNER'S REPRESENTATIVE.
7. WHEREVER EXISTING DEVICES, PANELS, CONDUITS, CABLES, ETC., ARE LOCATED WITHIN THE WORK AREA SHOWN OR NOT, RELOCATE THESE ITEMS AS DIRECTED BY THE ARCHITECT AND/OR OWNER'S REPRESENTATIVE AND REPAIR ALL SURFACES.
8. COORDINATE WITH OTHER TRADES AND PROMPTLY TRANSMIT ALL INFORMATION REQUIRED BY THEM. COORDINATE THE SEQUENCE OF DEMOLITION WITH OTHER TRADES TO ENSURE THAT THE WORK PROCEEDS WITH A MINIMUM OF INTERFERENCE AND DELAY.
9. WHERE EXISTING WIRING OR EQUIPMENT IS ABANDONED AS A RESULT OF THIS CONTRACT, IT SHALL BE REMOVED INsofar AS POSSIBLE. THIS INCLUDES BUT IS NOT LIMITED TO:
 - a. REMOVE ALL WIRE AND CABLE
 - b. REMOVE ALL DEVICES AND EQUIPMENT
 - c. REMOVE ALL EXPOSED CONDUIT AND CONDUIT IN ACCESSIBLE CONCEALED AREA, AS FAR AS POSSIBLE TO THE OFF AND CAP THE ENDS OF THE WIRING. PLUGS SHALL NOT BE PROTRUDED ABOVE FLOOR AND/OR FINISHED WALLS AND CEILINGS.
10. ALL CEILING MOUNTED FIRE ALARM APPLIANCES SHALL BE SURFACE MOUNTED ON PAINTED JUNCTION BOXES WITH SURFACE MOUNTED WIRE MOLD TO CONCEAL CONDUCTORS

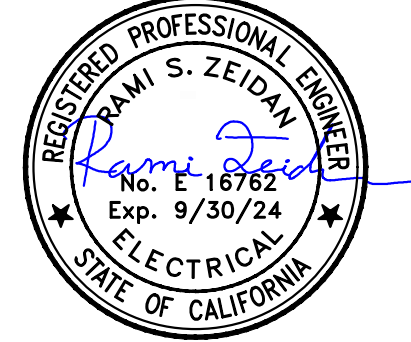


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FIRE ALARM FLOOR PLANS

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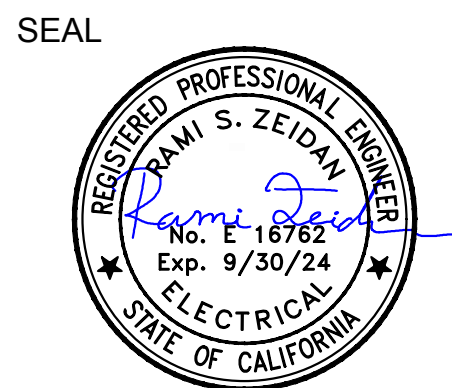
03/11/24

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				CIRCUIT SETTINGS		TOTALS	
P2 N1 LUMP SUM REPORT Circuit Wiring Properties: 1/2" 142 FPLRP (NAC) 14 AWG, 2 Cond. Solid Copper FPLRP Analog Unshielded Distance measured using drag segment lengths with 10.00 % additional length calculated				Starting Calculation Voltage	20.4	Max. Voltage Drop	0.69
				Min. Operational Voltage	16	End Of Line Voltage	19.71
				Max. Circuit Current (A)	2	Voltage Drop Percent:	3.37 %
				Wire Resistance (Ω/Kft)	3.07	Total Circuit Current (A)	0.164
				Total Circuit Length (Ft)	663	Spare Current (A)	1.035
				Total Circuit Resistance (Ω)	4.191723	Spare Current (A) Percent:	91.50 %
DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
		SPSCWL	Speaker/Stroke Ceiling Mount, White 15cd	4	0.041	0.164	
Calculation Methods: Total Resistance (Ω) = Wire Resistance (Ω/Ft) x 2 x Total Circuit Length (Ft) Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)							
				CIRCUIT SETTINGS		TOTALS	
P2 N2 LUMP SUM REPORT Circuit Wiring Properties: 1/2" 142 FPLRP (NAC) 14 AWG, 2 Cond. Solid Copper FPLRP Analog Unshielded Distance measured using drag segment lengths with 10.00 % additional length calculated				Starting Calculation Voltage	20.4	Max. Voltage Drop	1.63
				Min. Operational Voltage	16	End Of Line Voltage	19.37
				Max. Circuit Current (A)	2	Voltage Drop Percent:	5.06 %
				Wire Resistance (Ω/Kft)	3.07	Total Circuit Current (A)	0.246
				Total Circuit Length (Ft)	684	Spare Current (A)	1.1754
				Total Circuit Resistance (Ω)	4.19731	Spare Current (A) Percent:	87.70 %
DEVICE TOTALS	Symbol	Part No.	Description	Qty.	Device Current (A)	Total Current (A)	
		SPSCWL	Speaker/Stroke Ceiling Mount, White 15cd	3	0.041	0.123	
		SWL	Stroke, White 15cd	1	0.06	0.06	
		SPSCWL	Speaker/Stroke Ceiling Mount, White 30cd	1	0.063	0.063	
Calculation Methods: Total Resistance (Ω) = Wire Resistance (Ω/Ft) x 2 x Total Circuit Length (Ft) Total Voltage Drop = Total Resistance (Ω) x Total Circuit Current (A)							

3 FIRE
SCALE: NTS

[illegible]

FA6.4.2

Drawings and specifications prepared by JKAE and consultants are for use solely with respect to this project. JKAE and consultants are deemed the authors and owners of these documents and shall retain all copyright, law, statutory and other reserved rights, including copyrights. These documents shall not be used by the owner for future additions or alterations to this project or for other projects without the prior written agreement of JKAE. Any unauthorized use of these documents shall be at the Owner's sole risk and without liability to JKAE and consultants.

SECTION 28 40 00
FIRE DETECTION AND ALARM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fire alarm system design and installation, including all components, wiring, and conduit.
- B. Transmitters for communication with supervising station.
- C. Circuits from protected premises to supervising station, including conduit.
- D. Replacement and removal of existing fire alarm system components, wiring, and conduit indicated.
- E. Maintenance of the alarm system under contract for specified warranty period.
- F. The fire alarm system shall consist of all necessary hardware equipment and software programming to perform the following functions:
 - 1. Fire alarm detection conditions.
 - 2. Control and monitoring of elevators, smoke control equipment and other equipment as indicated in the drawings and specifications.
 - 3. System shall be into the existing Gamewell FCI 0510 and be fully integrated. New panel shall function as a backup unit to the existing FACP.
- G. Thoroughly inspect the existing system and site conditions before bid. Advise the District's Representative of all conditions requiring immediate attention or might cause difficulties that are not addressed or inferred to in the contract drawings and specifications prior to new construction and the commencement of system design.
- H. Review the Drawings and Specifications for work and material provided by others that will affect work specified under this Section. Carefully coordinate with other trades, equipment suppliers, contractors, etc. as required to provide a high quality reliable installation with a minimum of construction delays. All work required to be accomplished due to lack of coordination shall be done at the Contractor's expense.

2.01 RELATED REQUIREMENTS

- A. Section 07 54 00 - Finestopping: Materials and methods for work to be performed by the installer.

2.02 REFERENCE STANDARDS

- A. ADA Standards: 2010 ADA Standards for Accessible Design, 2010.
- B. IEEE C62.41 - IEEE Recommended Practice on Surge Voltages in Low-Voltage Power Circuits, 1991 (R1996).
- C. NFPA 70 - National Electrical Code, Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- D. NFPA 72 - National Fire Alarm and Signaling Code, Most Recent Edition Cited by Referencing Code or Reference Standard.
- E. NFPA 101 - Life Safety Code, Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

2.03 AMERICANS WITH DISABILITIES ACT (ADA)

- A. All visual notification appliances and manual pull stations shall comply with the requirements of the Americans with Disabilities Act or 2022 CBC, whichever is more stringent.

2.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Proposed Documents: Submit the following with deadline proposed:
 - 1. NFPA 72 "Record of Completion", filled out to the extent known at the time.
 - 2. Manufacturer's detailed data sheet for each control unit, initiating device, and notification appliance.
 - 3. Certification by the system design will comply with Contract Documents.
 - 4. Proposed maintenance contract.
- C. Drawings must be prepared: AutoCAD Release 2019
 - 1. Owner will provide floor plan drawings for 1 use; verify all dimensions on Owner-provided drawings.
- D. Evidence of designer qualifications.

E. Design Documents: Submit all information required for plan review and permitting by authorities having jurisdiction, including but not limited to floor plans, riser diagrams, and description of operation:

- 1. Copy of any of list of data required to authority having jurisdiction.
- 2. NFPA 72 "Record of Completion", filled out to the extent known at the time.
- 3. Clear and concise description of operation, with input/output matrix similar to that shown in NFPA 72 Appendix A-7.2-2(2), and complete listing of software required.
- 4. Location of all components, circuits, and accessories, mark components with identifiers used in control unit programming.
- 5. Circuit layouts, number, size, and type of raceways and conductors, conduit fill calculations, spare capacity calculations, notification appliance circuit voltage drop calculations.
- 6. List of all devices on each signaling line circuit, with spare capacity indicated.
- 7. Manufacturer's detailed data sheet for each component, including wiring diagrams, installation instructions, and circuit length limitations.
- 8. Description of power supply, if secondary power by battery include calculations demonstrating adequate battery power.
- 9. Certification by either the manufacturer of the control unit or by the manufacturer of each other component that the components are compatible with the control unit.
- 10. Certification by the manufacturer of the control unit that the system design complies with Contract Documents.
- 11. Certification by the system design complies with Contract Documents.
- 12. Certification by the system design complies with Contract Documents.
- 13. Do not show existing components to be removed.
- F. Evidence of installer qualifications.
- G. Evidence of contractor qualifications, training, license plan outline.
- H. Evidence of maintenance contractor qualifications, if different from installer.
- I. Inspection and Test Reports:
 - 1. Submit inspection and test plan prior to closest demonstration.
 - 2. Submit documentation of satisfactory inspections and tests.
 - 3. Submit NFPA 72 "Inspection and Test Form", filled out.
- J. Operating and Maintenance Data: See Section 01 78 00 for additional requirements; revise and resubmit until acceptable; have one set available during closeout demonstration:
 - 1. Complete set of specified design documents, as approved by authority having jurisdiction.
 - 2. Additional printed set of project record documents and closeout documents, bound or filed in same manuals.
 - 3. Contact information for firm that will be providing contract maintenance and trouble call-back service.
 - 4. List of recommended spare parts, tools, and instruments for testing.
 - 5. Replacement parts for with current prices, and source of supply.
 - 6. Detailed troubleshooting guide and large-scale troubleshooting matrix.
 - 7. Preventive maintenance, inspection, and testing schedule complying with NFPA 72; provide printed copy and computer format acceptable to Owner.
 - 8. Detailed but easy to read explanation of procedures to be taken by non-technical administrative personnel in the event of system trouble, when routine testing is being conducted, for fire drills, and when entering into contracts for remodeling.
- K. Project Record Documents: See Section 01 79 00 for additional requirements; have one set available during closeout demonstration:
 - 1. Complete set of floor plans showing actual installed locations of components, control, and zones.
 - 2. "As installed" wiring and schematic diagrams, with final terminal identifications.
 - 3. "As programmed" signaling sequences, including control events by device, updated input/output chart, and voice messages by event.
- L. Closeout Documents:
 - 1. Certification by manufacturer that the system has been installed in compliance with manufacturer's installation requirements, is complete, and is in satisfactory operating condition.
 - 2. NFPA 72 "Record of Completion", filled out completely and signed by installer and authorized representative of authority having jurisdiction.
 - 3. Certificate of Occupancy.
 - 4. Maintenance contract.
 - 5. Report on training results.

M. Maintenance Materials, Tools, and Software: Furnish the following for Owner's use in maintenance of project:

- 1. See Section 01 60 00 - Product Requirements, for additional provisions.
- 2. Furnish spare parts of same manufacturer and model as those installed, deliver in original packaging, labeled in same manner as in operating and maintenance data and place in spare parts cabinet.
- 3. In addition to the items in quantities indicated in PART 2, furnish the following:
 - a. All tools, software, and documentation necessary to modify the fire alarm system using Owner's personnel; minimum modification capability to include addition and deletion of devices, circuits, and zones, and changes to system description, operation, and evacuation and instructional messages.
 - b. One copy of all software not resident in read-only memory.

2.05 QUALITY ASSURANCE

- A. Copies of Design Criteria Documents: Maintain at the project site for the duration of the project, bound together, an original copy of NFPA 72, the relevant portions of applicable codes, and instructions and guidelines of authorities having jurisdiction; deliver to Owner upon completion.
- B. Designer Qualifications: NICET Level III or IV (3 or 4) or certified fire alarm technician or registered fire protection engineer; employed by fire alarm control panel manufacturer, or installer, with experience designing fire alarm systems in the jurisdictional area of the authorities having jurisdiction.
- C. Installer Qualifications: Firm with minimum 3 years documented experience installing fire alarm systems of the specified type and providing contract maintenance service, see a regular part of the business.
- D. Installer Personnel: At least 2 years of experience installing fire alarm systems:
 - 1. Authorized representative of control unit manufacturer; submit manufacturer's certification that installer is authorized, include name and title of manufacturer's representative making certification.
 - 2. Supervisor: NICET Level III or IV (3 or 4) or certified fire alarm technician; furnish name and address.
 - 3. Contract maintenance office located within 100 miles of project site.
 - 4. Certified in California as the fire alarm installer.
- E. Maintenance Contractor Qualifications: Same entity as installer.
- F. Inspector Qualifications: Experienced in technical instruction, understanding the alarm theory, and able to provide the required training; trained by fire alarm control unit manufacturer.

WARRANTY

- 1. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- 2. Provide control panel manufacturer's warranty that system components other than wire and conduit are free from defects and will remain so for 1 year after date of Substantial Completion.
- 3. Provide installer's warranty that the installation is free from defects and will remain so for 1 year after date of Substantial Completion.

PART 2 PRODUCTS

1.01 MANUFACTURERS (WATON CAMPUS EXISTING SYSTEM)

- A. Fire Alarm Control Units: Basis of Design: Honeywell Security & Fire Solutions/Gamewell-FCI - www.gamewell-fci.com - No known equal.
- B. Existing Gamewell FCI 0510 fire alarm control panel shall accommodate the new NODE panel. This integration shall result in a fully functional and integrated network as described in the plans and specifications.
- C. Fire Alarm Control Units and Accessories:
 - 1. Honeywell Security & Fire Solutions/Gamewell-FCI - www.gamewell-fci.com/usa.
- D. Initiating Devices and Notification Appliances:
 - 1. Honeywell Security & Fire Solutions/Gamewell-FCI - www.gamewell-fci.com/usa.
- E. Substitutions: See Section 01 60 00 - Product Requirements.
- F. For substitution of products by manufacturers not listed, submit product data showing features and certification by that the design will comply with Contract Documents.

FIRE ALARM SYSTEM

- A. Fire Alarm System: Provide a new automatic fire detection and alarm system:
 - 1. Provide all components necessary, regardless of whether shown in Contract Documents or not.
 - 2. Protected Premises: Server room and administration space as shown on plans.
 - 3. Comply with the following, where requirements conflict, order of precedence of requirements is as listed:
 - a. ADA Standards.
 - b. The requirements of the State Fire Marshal.
 - c. The requirements of the local authority having jurisdiction.
 - d. Applicable local codes.
 - e. Contract Documents (drawings and specifications).
 - f. NFPA 101.
 - g. NFPA 72, where the word "shall" is used consider that provision mandatory, where conflicts between requirements require deviation from NFPA 72, identify deviations clearly on design documents.
 - 4. Evacuation Alarm: Multiple smoke zones; allow for evacuation notification of any individual zone or combination of zones, in addition to general evacuation of entire premises.
 - 5. Voice Notification: Provide emergency voice/alarm communications with multilingual capability; digital.
 - 6. General Evacuation Zones: Each smoke zone is considered a general evacuation zone unless otherwise indicated; with alarm notification in all zones on the same floor, on the floor above, and the floor below.
 - 7. Program notification zones as directed by Owner.
 - 8. Having Impaired Occupants: Provide visible notification devices in all public areas and in dwelling units.
 - 9. Fire Command Center: Existing, located in building 400.
 - 10. Fire Alarm Control Unit: Existing, located at the command center.
- B. Control Systems: Do not combine fire alarm system with other non-fire systems.
- C. Supervising Stations and Fire Department Connections:
 - 1. Public Fire Department Notification: By on-premises supervising station.
 - 2. Remote Supervising Station: UL listed central station under contract to facility.
 - 3. Means of Transmission to Remote Supervising Station: Digital alarm communication transmitter (DACT), 2 telephone lines.
- D. Circuits:
 - 1. Initiating Device Circuits (IDC): Class B, Style A.
 - 2. Signaling Line Circuits (SLC) Within Single Building: Class B, Style 0.5.
 - 3. Notification Appliance Circuits (NAC): Class B, Style W.
- E. Spare Capacity:
 - 1. Initiating Device Circuits: Minimum 25 percent spare capacity.
 - 2. Notification Appliance Circuits: Minimum 25 percent spare capacity.
 - 3. Fire Alarm Control Units: Capable of handling all circuits utilized to capacity without requiring additional components other than plug-in control modules.
- F. Power Sources:
 - 1. Primary: Dedicated branch circuits of the facility power distribution system.
 - 2. Secondary: Storage batteries.
 - 3. Capacity: Sufficient to operate entire system for period specified by NFPA 72.

1.03 EXISTING COMPONENTS

- A. Existing Fire Alarm System: Modify existing components indicated and incorporate new system, under warranty as if they were new; do not take existing components of system out of service until new portions are fully operational, tested, and connected to existing system.
- B. Clearly label components that are "Not in Service."
- C. Remove unused existing components and materials from site and dispose of properly.

1.04 COMPONENTS

- A. General:
 - 1. Provide surface mounted units where installed in finish and in unfinished areas.
 - 2. Provide legible, permanent labels for each control device, using identification used in operation and maintenance data.
- B. Fire Alarm Control Units: Among, addressable type; tested, classified, and labeled as suitable for the purpose intended.
- C. Master Control Unit: As specified for Basis of Design above, or equivalent.
- D. Initiating Devices:
 - 1. Addressable Manual Pull Stations: Gamewell MS-7MF:
 - a. Provide 1 extra.
 - 2. Smoke Detectors: Gamewell ASD-PL3 WB300-4:
 - a. Sensor base: Gamewell Compatible.
 - b. Provide 1 extra.
 - 3. Heat Detectors: Gamewell ATD-L3H WB300-4:
 - a. Provide 1 extra.
- E. Notification Appliances:
 - 1. Strobes: System Sensor SWL:
 - a. Provide 1 extra.
 - 2. Strobes/Speakers: System Sensor SPSCWL:
 - a. Provide 1 extra.
 - 3. Notification Appliance Circuit provides synchronization of strobes at a rate of 1Hz and operates horns with a Temporal Code Pattern operation. The circuit shall provide the capability to silence the audible signals, while the strobes continue to flash, over a single pair of wires. The capability to synchronize multiple notification appliance circuits shall be provided.
- F. Alarms from the host fire panel shall signal the NEW panel to activate. The NEW panel shall monitor bell and each of its NACs for trouble conditions and shall report trouble conditions to the host panel.
- G. Emergency Power Supply:
 - 1. General: Components include battery, charger, and an automatic transfer switch.
 - 2. Battery: Sealed lead-acid or nickel cadmium type. Provide sufficient capacity to operate the complete alarm system in normal (non-alarm) mode for a period of 24 hours. Following the period of operation on battery power, the battery shall have sufficient capacity to operate all components of the system, including all alarm indicating devices in alarm or supervisory mode for a period of 5 minutes.
- H. Accessories: The contractor shall furnish the necessary accessories:
 - 1. Circuit Conductors: Copper - provide 50 feet extra; color code and label.
 - 2. Locks and Keys: Deliver keys to Owner.
 - a. Provide the same standard lock and key for each key-operated switch and lockable panel and cabinet; provide keys of each type.
- I. Instruction Charts: Printed instruction chart for operators, showing steps to be taken when a signal is received (normal, alarm, supervisory, and trouble); easily readable from normal operator's station.
 - 1. Frame: Stainless steel or aluminum with polycarbonate or glass cover.
 - 2. Provide one for each control unit where operations are to be performed.
 - 3. Obtain approval of Owner prior to mounting; mount in location accessible to Owner.
 - 4. Provide extra copy with operation and maintenance data submitted.
- L. Storage Cabinet for Spare Parts and Tools: Steel with baked enamel finish, size appropriate to quantity of parts and tools.
 - 1. Padlock eye and hang for lock furnished by Owner.
 - 2. Locks as directed by Owner.

PART 3 EXECUTION

1.01 INSTALLATION

- A. Install in accordance with applicable codes, NFPA 72, CEC 2022, and the contract documents.
- B. Installation personnel shall be supervised by persons who are qualified and experienced in the installation, inspection, and testing of the fire alarm systems. Examples of qualified personnel shall include, but not be limited to, the following:
 - 1. Factory trained and certified personnel.
 - 2. National Institute of Certification in Engineering Technologies (NICET) fire alarm level I certified personnel.
 - 3. Personnel licensed or certified by state or local authority.
- C. Surface mount all wiring, conduit, boxes, and supports where installed in finished areas.
- D. Install all wiring in conduit, 3/4" minimum or unless otherwise noted. No exception.
- E. Existing Fire Alarm Equipment shall be maintained, and new control equipment and devices shall be 100% compatible with the existing system.
- F. Install instruction cards and labels.
- G. CLEANING AND ADJUSTING:
 - A. Cleaning: Remove paint splatters and other spots, dirt, and debris. Clean unit internally using methods and materials recommended by manufacturer.
- H. Occupancy Adjustments: When requested within one year of date of Substantial Completion, provide on-site assistance in adjusting sound levels and adjusting controls and sensitivities to suit actual occupied conditions. Provide up to three visits to the site for this purpose.

1.02 INSPECTION AND TESTING FOR COMPLETION

- A. Notify Owner 7 days prior to beginning completion inspections and tests.
- B. Notify authorities having jurisdiction and comply with their requirements for scheduling inspections and tests and for observation by their personnel.
- C. Provide the services of the installer's supervisor or person with equivalent qualifications to supervise inspection and testing, coordination, and adjustments.
- D. Prepare for testing by ensuring that all work is complete and correct; perform pretest/pretest tests as required.
- E. Provide all tools, software, and supplies required to accomplish inspection and testing.
- F. Perform inspection and testing in accordance with NFPA 72 and requirements of local authorities; document each inspection and test.
- G. Correct defective work, adjust for proper operation, and retest until entire system complies with Contract Documents.
- H. Diagnostic Period: After successful completion of inspections and tests, operate system in normal mode for at least 14 days without any system or equipment malfunctions.
 - 1. Record all system operations and malfunctions.

- 2. If a malfunction occurs, start diagnostic period over after correction of malfunction.
- 3. Owner will provide attendant operator personnel during diagnostic period; schedule training to allow Owner personnel to perform normal duties.
- 4. At end of successful diagnostic period, fill out and submit NFPA 72 "Inspection and Testing Form."

4.01 OWNER PERSONNEL INSTRUCTION

- A. Provide the following instruction to designated Owner personnel:
 - 1. Hands-On Instruction: On-site, using operational system.
 - 2. Classroom Instruction: Owner furnished classroom, on-site or at other local facility.
 - 3. Theory Instruction: At control unit manufacturer's training facility.
 - 4. Basic Operation: One-hour sessions for attendant personnel, security officers, and engineering staff; combination of classroom and hands-on:
 - 1. Initial Training: 1 session pre-closeout.
 - 2. Detailed Operation: Two-hour sessions for engineering staff; assume NICET level I qualifications or equivalent; combination of classroom and hands-on:
 - 1. Initial Training: 1 session pre-closeout.
 - 2. Maintenance Techniques: Detailed training for electrical technicians, on programming, maintaining, repairing, and modifying factory training:
 - 1. Initial Training: One 3-day session, pre-closeout.
 - 5. Furnish the services of instructors and teaching aids; have copies of operation and maintenance data available during instruction.
 - 6. Provide means of evaluation of trainees suitable by type of training given; report results to Owner.

4.02 CLOSEOUT

- A. Closeout Demonstration: Demonstrate proper operation of all functions to Owner:
 - 1. Be prepared to conduct any of the required tests.
 - 2. Have at least one copy of operation and maintenance data, preliminary copy of project record drawings, input/output matrix, and operator instruction chart(s) available during demonstration.
 - 3. Have authorized technical representative of control unit manufacturer present during demonstration.
 - 4. Demonstration may be combined with inspection and testing required by authority having jurisdiction; notify authority having jurisdiction in time to schedule demonstration.
 - 5. Repeat demonstration until successful.

4.03 MAINTENANCE

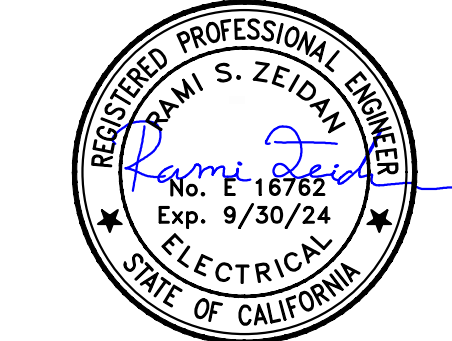
- A. See Section 01 70 00 - Execution and Closeout Requirements, for additional requirements relating to maintenance service.
 - 1. Provide to Owner, at no extra cost, a written maintenance contract for entire maintenance; warranty period, to include the work described below.
 - 2. Perform routine inspection, testing, and preventive maintenance required by NFPA 72, including:
 - 1. Maintenance of the safety interface and supervisory wiring required for the alarm system.
 - 2. Repairs required, unless due to improper use, accidents, or negligence beyond the control of the maintenance contractor.
 - 3. Record keeping required by NFPA 72 and authorities having jurisdiction.
 - 4. Provide trouble call-back service upon notification by Owner:
 - 1. Provide on-site response within 24 hours of notification.
 - 2. Include allowance for call-back service during normal working hours at no extra cost to Owner.
 - 3. Owner will pay for call-back service outside of normal working hours on an hourly basis, based on actual time spent at site and not including travel time; include hourly rate and definition of normal working hours in maintenance contract.
 - 5. Provide a complete description of preventive maintenance, systematic examination, adjustment, cleaning, inspection, and testing, with a detailed schedule.
 - 6. Maintain a log at each fire alarm control unit, listing the date and time of each inspection and call-back visit, the condition of the system, nature of the trouble, correction performed, and parts replaced. Submit duplicate of each log entry to Owner's representative upon completion of site visit.
 - 7. Comply with Owner's requirements for access to facility and security.

END OF SECTION 28 40 00

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SEAL



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SAN JOSE, CA 95127

Drawing Title
**FIRE ALARM
SPECIFICATIONS**

NO.	DATE	ISSUE

Project
**ALUM ROCK UNION SCHOOL DISTRICT
HVAC & ROOFING UPGRADES**

Drawn By
JC
Checked By
DS

Project No.
23-525
©Date
03/11/24
Drawing No.

FA9.0.1