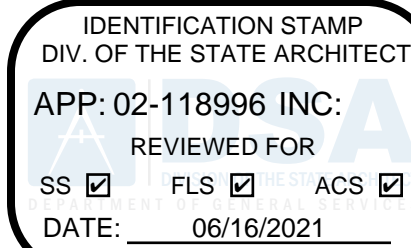


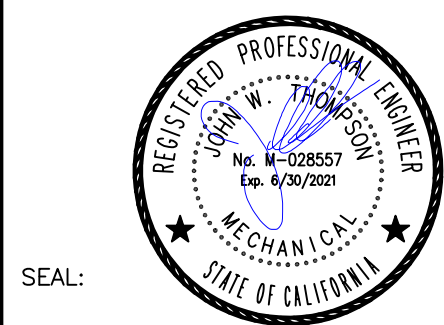
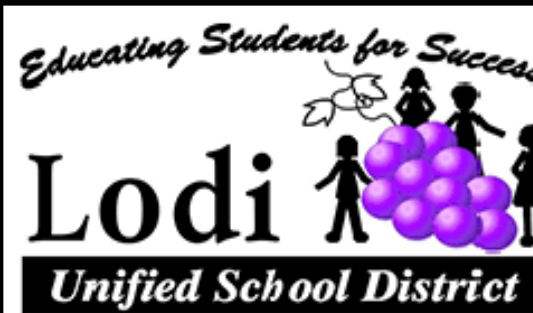
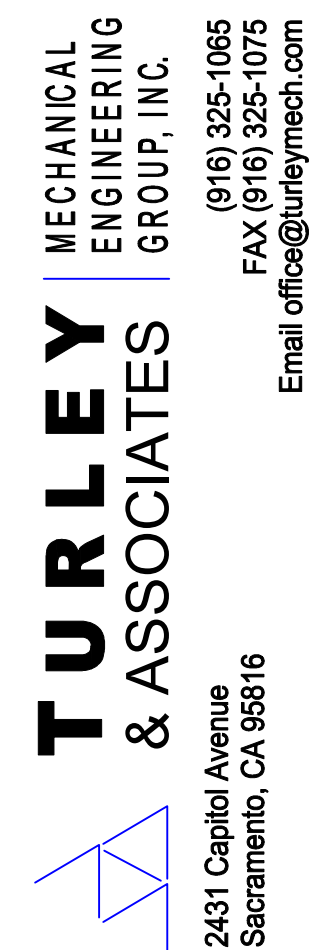
LODI UNIFIED SCHOOL DISTRICT WOODBIDGE ELEMENTARY

HVAC REPLACEMENT
1290 LILAC STREET
WOODBIDGE, CA. 95242

AGENCY APPROVAL:



DSA 02-118996



LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT
1290 LILAC STREET
WOODBIDGE, CA. 95242

SHEET TITLE:

TITLE SHEET

NO.	REVISIONS	DATE

SHEET NUMBER:

M0.00

Project Engineer:	27	Job Number:	2090
Project Manager:	27	Proj. Date:	Jun 16, 2021 - 8:05am
Project Designer:	27	Design:	CSM

APPLICABLE CODES	SHEET INDEX	OWNER	SITE PLAN																																																																																																																																																																																																																											
<p>CALIFORNIA CODE OF REGULATIONS (C.C.R.), TITLE 24 --- A PORTION OF THE CALIFORNIA BUILDING STANDARDS CODE, INCLUDE THE FOLLOWING PARTS:</p> <p>2019 CALIFORNIA ADMINISTRATIVE CODE (C.A.C.) TITLE 24, PART 1, C.C.R.</p> <p>2019 CALIFORNIA BUILDING CODE (C.B.C.) INCORPORATE BY REFERENCE THE 2018 IBC, WITH 2019 CALIFORNIA AMENDMENTS --- TITLE 24, PART 2, VOL. 1&2 C.C.R.</p> <p>2019 CALIFORNIA ELECTRICAL CODE (C.E.C.) INCORPORATE BY REFERENCE THE 2017 NATIONAL ELECTRICAL CODE, WITH 2019 CALIFORNIA AMENDMENTS --- TITLE 24, PART 3, C.C.R.</p> <p>2019 CALIFORNIA MECHANICAL CODE (C.M.C.) INCORPORATE BY REFERENCE THE 2018 IAPMO UNIFORM MECHANICAL CODE, WITH 2019 CALIFORNIA AMENDMENTS --- TITLE 24, PART 4, C.C.R.</p> <p>2019 CALIFORNIA PLUMBING CODE (C.P.C.) INCORPORATE BY REFERENCE THE 2018 IAPMO UNIFORM PLUMBING CODE, WITH 2019 CALIFORNIA AMENDMENTS --- TITLE 24, PART 5, C.C.R.</p> <p>2019 CALIFORNIA FIRE CODE INCORPORATE BY REFERENCE THE 2018 IFC, WITH 2019 CALIFORNIA AMENDMENTS --- TITLE 24, PART 9, C.C.R.</p> <p>2019 CALIFORNIA REFERENCED STANDARDS CODE CALIFORNIA CODE OF REGULATIONS TITLE 24, PART 12, C.C.R.</p>	<table><tr><th>NO. 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52	E4.02	PARTIAL ONE-LINE POWER DIAGRAM AND PANEL SCHEDULES-PORTABLES																																																																																																																																																																																																																												
53	F5.01	FIRE ALARM CUT SHEETS AND CSFM LISTINGS																																																																																																																																																																																																																												
54	F5.02	FIRE ALARM CUT SHEETS AND CSFM LISTINGS																																																																																																																																																																																																																												
55	F5.03	FIRE ALARM CUT SHEETS AND CSFM LISTINGS																																																																																																																																																																																																																												
56	E6.01	ELECTRICAL SPECIFICATIONS AND DETAILS																																																																																																																																																																																																																												
57	S1.0	GENERAL NOTES																																																																																																																																																																																																																												
58	S2.1	PARTIAL (E) ROOF FRAMING PLAN (BLDG-A)																																																																																																																																																																																																																												
59	S2.2	PARTIAL (E) ROOF FRAMING PLAN (BLDG-B)																																																																																																																																																																																																																												
60	S2.3	PARTIAL (E) ROOF FRAMING PLAN (BLDG-C, D, & E)																																																																																																																																																																																																																												
61	S2.4	(E) 24'X40' PORTABLES																																																																																																																																																																																																																												
DR. CATIY WASHER SUPERINTENDENT	LODI UNIFIED SCHOOL DISTRICT 1305 E. VINE STREET LODI, CA 95240	(209)331-7010	cwasher@lodiud.net																																																																																																																																																																																																																											
TIM EDELL MECHANICAL SYSTEMS SUPERVISOR	LODI UNIFIED SCHOOL DISTRICT 1305 E. VINE STREET LODI, CA 95240	(209) 331-7184	mslater@lodiud.net																																																																																																																																																																																																																											
CONSULTANTS																																																																																																																																																																																																																														
	COMPANY	PHONE#	FAX#	EMAIL ADDRESS																																																																																																																																																																																																																										
MECHANICAL ENGINEER	TURLEY & ASSOCIATES 2431 CAPITOL AVE. SACRAMENTO, CA 95816 CONTACT: JOHN THOMPSON	(916) 325-1085	(916) 325-1075	jthompson@turleymech.com																																																																																																																																																																																																																										
STRUCTURAL ENGINEER	BEVIER STRUCTURAL ENGINEERING, INC. 2479 SUNRISE BOULEVARD GOLD RIVER, CA 95670-4344 CONTACT: BILL BEVIER	(916) 631-3030	(916) 631-8996	bill@bevier.net																																																																																																																																																																																																																										
ELECTRICAL ENGINEER	WHITTINGTON ELECTRIC, INC. 1940 INDUSTRIAL DRIVE, AUBURN, CA 95603	(530) 823-3055 OFFICE (530) 355-5228		nathan@whittingtonelectricinc.com																																																																																																																																																																																																																										
SCOPE OF WORK	SCOPE OF WORK IS TO REMOVE AND REPLACE THE EXISTING WALL MOUNTED HEAT PUMP UNITS FOR THE PORTABLE BUILDINGS, 6 UNITS TOTAL. REMOVE AND REPLACE THE EXISTING AC UNITS ON ROOF FOR BUILDINGS A, B, C, D, AND E, 25 TOTAL UNITS. PROJECT SHALL HAVE AN INSPECTOR OF RECORD HIRED BY THE THE DISTRICT.																																																																																																																																																																																																																													
GENERAL NOTES	<ul style="list-style-type: none">ENGINEER OF RECORD (EOR) SHALL SUBMIT ALL ADDENDUM, CHANGE ORDER OR ANY SUBSTITUTION RELATED TO STRUCTURAL AND FIRE LIFE SAFETY TO DSA FOR REVIEW AND APPROVAL.CONTRACTOR SHALL SUBMIT FOR ALL SUBSTITUTION RELATED TO STRUCTURAL, FIRE LIFE SAFETY, ANCHORING AND EQUIPMENT TO EOR FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.ROOFING WORK SHALL BE BY D7 ROOFING SERVICES INC. CONTACT MARK WILSON (916)825-4553.FABRICATION AND INSTALLATION OF DEFERRED SUBMITTAL ITEMS SHALL NOT BE STARTED UNTIL CONTRACTOR'S DRAWINGS, SPECIFICATIONS, AND ENGINEERING CALCULATIONS FOR THE ACTUAL SYSTEMS TO BE INSTALLED HAVE BEEN ACCEPTED AND SIGNED BY THE ARCHITECT OR STRUCTURAL ENGINEER AND APPROVED BY THE DSA. LIST DEFERRED SUBMITTAL ITEMS FOR THIS PROJECT.CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY AN ADDENDUM OR A CONSTRUCTION CHANGED DOCUMENT (CCD) APPROVED BY THE DIVISION OF THE STATE ARCHITECT, AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24, CCR.A "DSA CERTIFIED CLASS 3" PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DSA SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, PART 1, TITLE 24, CCR.A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE DISTRICT (OWNER) SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT.THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS THAT THE WORK OF THE ALTERATION, REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CCR. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CCR, A CONSTRUCTION CHANGE DOCUMENT (CCD), OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK. (SECTION 4-317(C), PART 1, TITLE 24, CCR)GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.ALL WORK SHALL CONFORM TO 2019 TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).																																																																																																																																																																																																																													
DESIGN CRITERIA	<p>1. Code: 2019 California Building Code (CBC)</p> <p>2. Design Live Loads:</p> <p>Area Roof</p> <p>A) Flat to < 4:12</p> <p>code B) 4:12 to ≤ 12:12</p> <p>Floor</p> <p>3. Snow Design Parameters: N/A</p> <p>Ground Snow Load</p> <p>Flat-Roof Snow Load</p> <p>Snow Exposure Factor</p> <p>Snow Load Importance Factor</p> <p>Thermal Factor</p> <p>4. Wind Design Parameters:</p> <p>Ultimate Design Wind Speed (3-sec gust)</p> <p>Risk Category</p> <p>Exposure Category</p> <p>Internal Pressure Coefficient</p> <p>Analysis Method</p> <p>5. Earthquake Design Parameters:</p> <p>5.1. Seismic Importance Factor</p> <p>5.2. Risk Category</p> <p>5.3. Soil Site Classification</p> <p>5.4. Seismic Design Category</p> <p>5.5. Mapped Spectral Response Accel</p> <p>A) Short period</p> <p>B) 1-sec period</p> <p>5.6 Design Spectral Response Accel</p> <p>A) Short Period</p> <p>B) 1-sec period</p> <p>5.7 Seismic Force Resisting System</p> <p>5.8 Seismic Base Shear</p> <p>5.9 Seismic Response Coefficient</p> <p>5.10 Response Modification Factor</p> <p>5.11 Component Amplification Factor</p> <p>A) HVAC, AC-2</p> <p>5.12 Component Response Modification Factor</p> <p>A) HVAC, AC-2</p> <p>5.13 Analysis Procedure</p> <p>Live Load</p> <p>Remarks</p> <p>Lr = 20 psf</p> <p>Reducible per</p> <p>code</p> <p>Reducible per code</p> <p>Reducible per code</p> <p>Pg = N/A</p> <p>Pr = N/A</p> <p>Ce = N/A</p> <p>Ie = N/A</p> <p>Gr = N/A</p> <p>Vult = 100 mph</p> <p>III</p> <p>C</p> <p>±0.18</p> <p>Directional Procedure</p> <p>Ie = 1.25(BLDG)/1.0 (MECH ANCHORAGE)</p> <p>III</p> <p>' D ' Default</p> <p>' D '</p> <p>Ss = 0.623</p> <p>Si = 0.26</p> <p>Sps = 0.541</p> <p>Sol = 0.329</p> <p>N/A</p> <p>V = N/A</p> <p>Cs = N/A</p> <p>R = N/A</p> <p>ap = 2.5</p> <p>Rp = 6.0</p> <p>Equivalent Lateral Force</p>			<p>SITE ADDRESS</p> <p>WOODBIDGE ELEMENTARY 1290 LILAC STREET WOODBIDGE, CA. 95242</p>																																																																																																																																																																																																																										
SITE ADDRESS	WOODBIDGE ELEMENTARY 1290 LILAC STREET WOODBIDGE, CA. 95242																																																																																																																																																																																																																													
VICINITY MAP	<p>VICINITY MAP</p> <p>NOT TO SCALE</p>																																																																																																																																																																																																																													

DSA EQUIP. ANCHOR. & BRACING NOTES

M/E/P COMPONENT 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 2019 CBC SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTER 13, 26 AND 30.

- ALL PERMANENT EQUIPMENT AND COMPONENTS.
- TEMPORARY OR MOVABLE 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.
- TEMPORARY, MOVEABLE 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 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 TRAVERSE AND LONGITUDINAL DIRECTIONS.

- COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
- 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 THE DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTES:

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENT PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTION 13.6.5, 13.6.6, 13.6.7, 13.6.8, AND 2019 1617A.1.24, 1617A.1.25 AND 1617A.1.26.

THE METHOD OF SHOWING THE BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM AREA AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G. OSHPD OPMO 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 #) # _____.

MECHANICAL ABBREVIATIONS

AAV	AUTOMATIC AIR VENT	MBH	BTU PER HOUR (THOUSAND)
ABV	ABOVE	MC	MECHANICAL CONTRACTOR
ABC, OH	ABOVE CEILING, OVERHEAD	MIN	MINIMUM
AC	AIR CONDITIONING	MPS	MEDIUM PRESSURE STEAM
AD	ACCESS DOOR	(N) (E)	NEW, EXISTING
ADA	AMERICANS W/ DISABILITIES ACT	N.C.	NORMALLY CLOSED
AE	AIR EXTRACTOR	NEG	NEGATIVE
AFF	ABOVE FINISHED FLOOR	NIC	NOT IN CONTRACT
AL	ACOUSTICALLY LINED	N.O.	NORMALLY OPEN
AHU	AIR HANDLING UNIT	OBD	OPPOSED BLADE DAMPER
APD	AIR PRESSURE DROP	OC	ON CENTER
BHP	BRAKE HORSEPOWER	OP	OPERATING
BOD	BOTTOM OF DUCT	PH	PHASE
BR	BRANCH	POC	POINT OF CONNECTION
BTU	BRITISH THERMAL UNIT	PSI	POUNDS PER SQUARE INCH
BTUH	BTU PER HOUR	PT	PRESSURE TREATED
CAV	CONSTANT AIR VOLUME	PTDF	PRESSURE TREATED DOUGLAS FIR
CD	CONDENSATE DRAIN	P&TRV	PRESSURE & TEMPERATURE RELIEF VALVE
CFM, f	CUBIC FEET OF AIR PER MINUTE	RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
CFS	CUBIC FEET PER SECOND	(R) (D)	RISE, DROP
CL	CENTERLINE	RD, OFL	ROOF DRAIN, OVERFLOW
CO	CLEANOUT	REF	REFRIGERANT SUCTION
CONN.	CONCRETE	REQ'D	REQUIRED
CR	CONNECT	RL	REFRIGERANT LIQUID
CS	CONDENSATE RETURN (STEAM)	RPM	REVOLUTIONS PER MINUTE
CU	CURRENT SENSOR	RS	REFRIGERANT SUCTION
CU FT	CONDENSING UNIT	SAD	SEE ARCHITECTURAL DRAWINGS
CU IN	CUBIC FEET	SED	SEE ELECTRICAL DRAWINGS
CW	CUBIC INCHES	SM	SHEET METAL
DB	CONSTANT VOLUME BOX	SMS	SHEET METAL SCREWS
DW	COLD WATER	SOV	SHUT OFF VALVE
DB	DRY BULB	SS	STAINLESS STEEL
DF	DOUGLAS FIR	SSD	SEE STRUCTURAL DRAWING
DIA, Ø	DIAMETER	STL	STEEL
DSP	DUCT STATIC PRESSURE SENSOR	TA, FA	TO ABOVE, FROM ABOVE
EA, OA, RA, SA	EXHAUST, OUTSIDE, RETURN & SUPPLY AIR	TB, FB	TO BELOW, FROM BELOW
E.C.	ELECTRICAL CONTRACTOR	TBR	TO BE REMOVED
ESP	EXTERNAL STATIC PRESSURE	TCC	TEMPERATURE CONTROL CONTRACTOR
EWT	ENTERING WATER TEMPERATURE	TCP	TEMPERATURE CONTROL PANEL
FA	FACE AREA (SQUARE FEET)	THK	THICK
FC	FLEXIBLE CONNECTION	TR	TO REMAIN
FLA	FULL LOAD AMPS	TSP	TOTAL STATIC PRESSURE
FPI	FINS PER INCH	TV	TURNING VANES
FPM	FEET PER MINUTE	TYP	TYPICAL
GALV.	GALVANIZED	UG, UF	UNDERGROUND, UNDER FLOOR
GA	GAUGE	UON	UNLESS OTHERWISE NOTED
GC	GENERAL CONTRACTOR	UTR	UP THROUGH ROOF
GSM	GALVANIZED SHEET METAL	VAC	VOLTS ALTERNATING CURRENT
HP	HORSE POWER	VFD	VARIABLE FREQUENCY DRIVE
HWS	HOT WATER SUPPLY	VIF	VERIFY IN FIELD
HWR	HOT WATER RETURN	WB	WET BULB
HZ	FREQUENCY (HERTZ)	WG	WATER GAUGE
LBS	POUNDS	WOG	WATER OIL GAS PRESSURE RATING
LRA	LOCKED ROTOR AMPS	WP	WATER PRESSURE
LWT	LEAVING WATER TEMPERATURE	WPD	WATER PRESSURE DROP
MAV	MANUAL AIR VENT	WT, AT	WATERTIGHT, AIRTIGHT
MAX	MAXIMUM		

COMPLIANCE NOTES

MECHANICAL AND PLUMBING EQUIPMENT SHALL CONFORM TO THE FOLLOWING AS STATED IN THE ENERGY EFFICIENCY STANDARDS, 2019.

- BE CERTIFIED BY THE MANUFACTURER AS COMPLYING WITH THE EFFICIENCY REQUIREMENTS AS PRESCRIBED IN SECTIONS:
 - 110.1 APPLIANCES REGULATED BY THE APPLIANCE EFFICIENCY STANDARDS:
 - 110.2 HVAC EQUIPMENT EFFICIENCY AND PACKAGED CONTROLS:
 - 110.3 SERVICE WATER HEATING EFFICIENCY AND CONTROLS:
 - 110.4 POOL AND SPA HEATING EFFICIENCY AND CONTROLS:
 - 110.5 RESTRICTIONS ON PILOT LIGHTS:
- BE SPECIFIED AND INSTALLED IN ACCORDANCE WITH SECTIONS:
 - 120.1 REQUIREMENTS FOR VENTILATION:
 - 120.2 REQUIRED CONTROLS FOR HVAC SYSTEMS:
 - 102.2 (H) DEMAND SHED CONTROLS.
 - 120.2 (I) ECONOMIZER FAULT DETECTION & DIAGNOSTIC.
 - 120.3 REQUIREMENTS FOR PIPE INSULATION:
 - 120.4 REQUIREMENTS FOR DUCT INSULATION:
 - 120.5 REQUIREMENTS FOR MECHANICAL SYSTEMS
 - 120.8 BUILDING COMMISSIONING
 - 120.9 REQUIREMENTS FOR COMMERCIAL BOILERS

MECHANICAL LEGEND

	UNIT TYPE UNIT NUMBER DETAIL NUMBER SHEET NUMBER ON WHICH DETAIL IS FOUND SECTION NUMBER SHEET ON WHICH SECTION IS FOUND ACOUSTICALLY LINED DUCT - DIMENSIONS ARE OUTSIDE BRANCH TAKE-OFF WITH SPLITTER DAMPER & W/ THROAT SIZE AS INDICATED. TRANSITION TO DUCT SIZES SHOWN. DUCT RISE (DROP) IN DIRECTION OF AIR FLOW DUCT - WIDTH x DEPTH LATERAL WITH CONICAL TRANSITION TO DUCT SIZES INDICATED CONICAL TEE FROM RECTANGULAR TO ROUND BRANCH 45° ENTRY TEE, RECTANGULAR BRANCH, RECTANGULAR MAIN 45° WYE, CONICAL MAIN AND BRANCH WITH 45° ELBOW, BRANCH 90° TO MAIN TEE WITH ADJUSTABLE EXTRACTOR. RECTANGULAR MAIN, RECTANGULAR BRANCH RADIUS ELL. SEE SPECS. SQUARE ELL WITH TURNING VANES TRANSITION ROUND TO RECTANGULAR VERTICAL DUCT RISE OR DROP DUCTS, PIPES, OR EQUIPMENT TO BE REMOVED DUCT DROP OR RISE THRU ROOF OR FLOOR RETURN, OUTSIDE, OR EXHAUST AIR DUCT SUPPLY DUCT ACCESS DOOR AUTOMATIC CONTROL DAMPER MANUAL AIR DAMPER VOLUME DAMPER WITH REMOTE BALANCING DEVICE FIRE DAMPER FIRE SMOKE DAMPER SMOKE DETECTOR DUCT STATIC PRESSURE SENSOR THERMOSTAT MOUNT AT 48" AFF HOT GAS LINE REFRIGERANT LIQUID REFRIGERANT SUCTION BALANCING VALVE BALL VALVE BUTTERFLY VALVE CHECK VALVE FLEXIBLE CONNECTION FLOW SENSOR GATE VALVE PETE'S PLUG SHUT OFF COCK PRESSURE GAUGE PRESSURE REDUCING VALVE REDUCER PRESSURE & TEMPERATURE RELIEF VALVE SHUT OFF VALVE SIGHT GLASS STRAINER STRAINER & DRAIN VALVE WITH HOSE FITTING SOLENOID VALVE THERMOMETER TWO WAY CONTROL VALVE THREE WAY CONTROL VALVE UNION
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APPLICABLE CODES

CODES:

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE REGULATIONS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

- STATE OF CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, BUILDING STANDARDS:
 - 2019 EDITION OF THE CALIFORNIA BUILDING CODE.
 - 2019 EDITION OF THE CALIFORNIA ELECTRICAL CODE.
 - 2019 EDITION OF THE CALIFORNIA MECHANICAL CODE.
 - 2019 EDITION OF THE CALIFORNIA PLUMBING CODE.
 - 2019 EDITION OF THE CALIFORNIA ENERGY CODE.
- NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) LIFE SAFETY CODE, CR.

AGENCY APPROVAL:

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-118996 INC:
REVIEWED FOR
SS ☒ FLS ☒ ACS ☒
DATE: 06/16/2021

DSA 02-118996

TURLEY
& ASSOCIATES

MECHANICAL
ENGINEERING
GROUP, INC.
2431 Capitol Avenue
Sacramento, CA 95816
(916) 925-1085
FAX (916) 925-1075
Email: office@turleymech.com

Educating Students for Success

Lodi Unified School District
Unified School District

REGISTERED PROFESSIONAL ENGINEER
MECHANICAL
STATE OF CALIFORNIA
No. 41-008557
Exp. 6/30/2025
SEAL:

LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT
1290 LILAC STREET
WOODBIDGE, CA. 95242

SHEET TITLE:





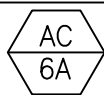





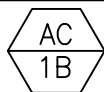

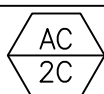

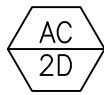
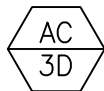






MECHANICAL
LEGEND,
SCHEDULES, AND
NOTES

NO.	REVISIONS	DATE







SHEET NUMBER:

M0.01

Project Engineer:	JT	Job Number:	2090
Project Manager:	JT	Proj Date:	Jun 16, 2021 - 8:08am
Project Owner:	DS	Design:	LODI

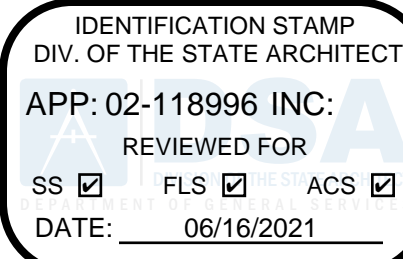
AIR CONDITIONING UNIT																										
SYMBOL	MANUFACTURER	MODEL	NOMINAL TONS	COOLING CAPACITY						FAN			HEATING CAPACITY			COMPRESSOR	CONDENSER	UNIT ELECTRICAL					MIN. UNIT OA CFM	OPERATING WEIGHT LBS.	REMARKS	
				TOTAL MBH	SENSIBLE MBH	EDB °F	EWB °F	AMB °F	SEER @ ARI	CFM	ESP IN WG	FLA	MBH INPUT	MBH OUTPUT	AFUE			RLA	FLA	VOLTS	PHASE	HZ				MCA
	LENNOX	LGH092H4M	7.5	88.2	63.1	80	67	105	12.5 EER	3000	0.8	7.5	130	104	80	26.2	4.8	208	3	60	42	50	270/410	1350	1,2,3,4,6	
	LENNOX	LGH092H4M	7.5	88.2	63.1	80	67	105	12.5 EER	3000	0.8	7.5	130	104	80	26.2	4.8	208	3	60	42	50	270/410	1350	1,2,3,4,6	
	LENNOX	LGH048H4E	4	48.3	35.8	80	67	105	17.6	1500	0.8	6.1	60	48	80	11.7	4.1	208	3	60	25	35	185/285	800	1,2,3,4,6	
	LENNOX	LGH048H4E	4	48.3	35.8	80	67	105	17.6	1600	0.8	6.1	60	48	80	11.7	4.1	208	3	60	25	35	150/330	800	1,2,3,4,6	
	LENNOX	LGH048H4E	4	48.3	35.8	80	67	105	17.6	1600	0.8	6.1	60	48	80	11.7	4.1	208	3	60	25	35	120/320	800	1,2,3,4,6	
	LENNOX	LGH060H4E	5	60.9	45.1	80	67	105	17.1	2000	0.8	7.4	60	48	80	14.0	4.1	208	3	60	29	40	225/450	875	1,2,3,4,6	
	LENNOX	LGH048H4E	4	48.3	35.8	80	67	105	17.6	1600	0.8	6.1	60	48	80	11.7	4.1	208	3	60	25	35	145/375	800	1,2,3,4,6	
	LENNOX	LGH048H4E	4	48.3	35.8	80	67	105	17.6	1500	0.8	6.1	60	48	80	11.7	4.1	208	3	60	25	35	100/345	800	1,2,3,4,6	
	LENNOX	LGH048H4E	4	48.3	35.8	80	67	105	17.6	1500	0.8	6.1	60	48	80	11.7	4.1	208	3	60	25	35	100/345	800	1,2,3,4,6	
	LENNOX	LGH060H4E	5	60.9	45.1	80	67	105	17.1	2000	0.8	7.4	60	48	80	14.0	4.1	208	3	60	29	40	180/450	875	1,2,3,4,6	
	LENNOX	LGH048H4E	4	48.3	35.8	80	67	105	17.6	1600	0.8	6.1	60	48	80	11.7	4.1	208	3	60	25	35	140/345	800	1,2,3,4,6	
	LENNOX	LGH060H4E	5	60.9	45.1	80	67	105	17.1	2000	0.8	7.4	60	48	80	14.0	4.1	208	3	60	29	40	130/420	875	1,2,3,4,6	
	LENNOX	LGH048H4E	4	48.3	35.8	80	67	105	17.6	1600	0.8	6.1	60	48	80	11.7	4.1	208	3	60	25	35	125/375	800	1,2,3,4,6	
	LENNOX	LGH060H4E	5	60.9	45.1	80	67	105	17.1	1900	0.8	7.4	60	48	80	14.0	4.1	208	3	60	29	40	135/445	875	2,3,4,5,6	
	LENNOX	LGH060H4E	5	60.9	45.1	80	67	105	17.1	1900	0.8	7.4	60	48	80	14.0	4.1	208	3	60	29	40	125/445	875	2,3,4,5,6	
	LENNOX	LGH060H4E	5	60.9	45.1	80	67	105	17.1	1950	0.8	7.4	60	48	80	14.0	4.1	208	3	60	29	40	110/445	875	2,3,4,5,6	
	LENNOX	LGH060H4E	5	60.9	45.1	80	67	105	17.1	1950	0.8	7.4	60	48	80	14.0	4.1	208	3	60	29	40	145/405	875	2,3,4,5,6	
	LENNOX	LGH060H4E	5	60.9	45.1	80	67	105	17.1	1950	0.8	7.4	60	48	80	14.0	4.1	208	3	60	29	40	145/405	875	2,3,4,5,6	
	LENNOX	LGH060H4E	5	60.9	45.1	80	67	105	17.1	1950	0.8	7.4	60	48	80	14.0	4.1	208	3	60	29	40	145/405	875	2,3,4,5,6	
	LENNOX	LGH060H4E	5	60.9	45.1	80	67	105	17.1	1950	0.8	7.4	60	48	80	14.0	4.1	208	3	60	29	40	145/405	875	2,3,4,5,6	
	LENNOX	LGH060H4E	5	60.9	45.1	80	67	105	17.1	1950	0.8	7.4	60	48	80	14.0	4.1	208	3	60	29	40	145/405	875	2,3,4,5,6	
	LENNOX	LGH060H4E	5	60.9	45.1	80	67	105	17.1	1950	0.8	7.4	60	48	80	14.0	4.1	208	3	60	29	40	145/405	875	2,3,4,5,6	

- NOTES:
1) PROVIDE 12" ROOF CURB.
2) PROVIDE COMPLETE ECONOMIZER (OUTDOOR INTAKE HOOD) WITH BAROMETRIC RELIEF HOOD
3) T-24 COMPLIANT FAULT DETECTION & DIAGNOSTIC (FDD)
4) PROVIDE MINIMUM OF 2" THICK MERV-13 DISPOSABLE FILTERS
5) PROVIDE CDI MODEL 1-5005-2060 CURB ADAPTOR, CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS FOR PROPER SIZING.
6) 7 DAY PROGRAMMABLE THERMOSTAT, "PELICAN" TS-250 WIRELESS WITH CO2 SENSOR. PROVIDE PELICAN PEARL CONTROLLER FOR DEMAND VENTILATION FOR UNITS WITH ECONOMIZERS.
7) AUTOMATIC UNIT SHUT DOWN IS PROVIDED THROUGH THE TOTAL AREA COVERAGE BUILDING SMOKE DETECTION FIRE ALARM SYSTEM, SEE SHEET E0.01.

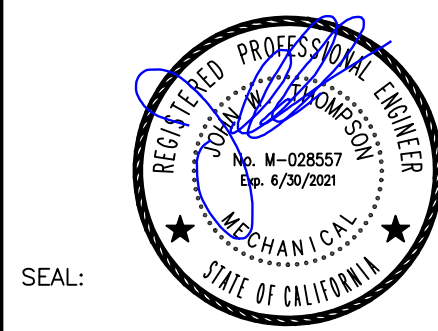
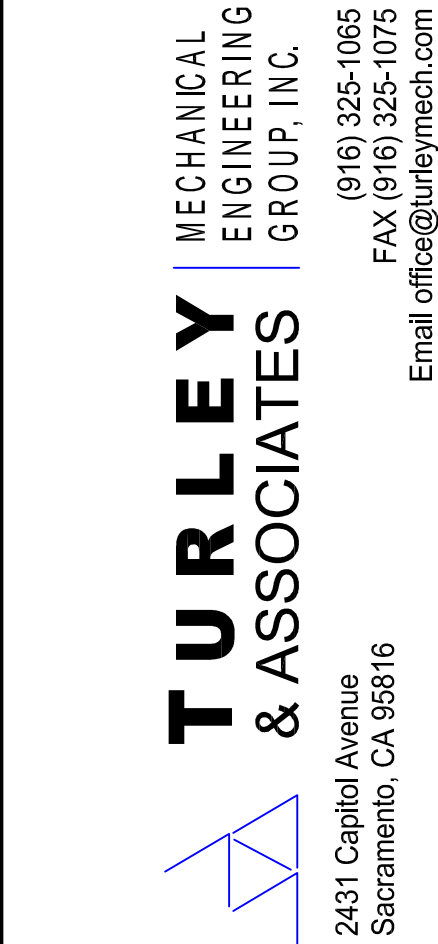
HEAT PUMP UNIT																										
SYMBOL	MANUFACTURER	MODEL	NOMINAL TONS	COOLING CAPACITY						FAN			HEATING CAPACITY			SUPPLEMENTAL HEAT		UNIT ELECTRICAL					MIN. UNIT OA CFM	OPERATING WEIGHT LBS.	REMARKS	
				TOTAL MBH	SENSIBLE MBH	EDB °F	EWB °F	AMB °F	EER @ ARI	CFM	ESP IN WG	FLA	TOTAL INTERGRATED MBH	AMB °F	EDB °F	KW	FLA	VOLTS	PHASE	HZ	MCA	MOCp				
	BARD	T48H1	4	43.2	34.7	80	67	105	11.0	1550	0.2	2.5	30.5	30	68	8	33.3	230	1	60	79	90	135/435	575	1,2,3,4,5,6	
	BARD	T48H1	4	43.2	34.7	80	67	105	11.0	1550	0.2	2.5	30.5	30	68	8	33.3	230	1	60	79	90	135/435	575	1,2,3,4,5,6	
	BARD	T48H1	4	43.2	34.7	80	67	105	11.0	1550	0.2	2.5	30.5	30	68	8	33.3	230	1	60	79	90	135/435	575	1,2,3,4,5,6	
	BARD	T48H1	4	43.2	34.7	80	67	105	11.0	1550	0.2	2.5	30.5	30	68	8	33.3	230	1	60	79	90	135/435	575	1,2,3,4,5,6	
	BARD	T48H1	4	43.2	34.7	80	67	105	11.0	1550	0.2	2.5	30.5	30	68	8	33.3	230	1	60	79	90	135/435	575	1,2,3,4,5,6	
	BARD	T48H1	4	43.2	34.7	80	67	105	11.0	1550	0.2	2.5	30.5	30	68	8	33.3	230	1	60	79	90	135/435	575	1,2,3,4,5,6	

- PROVIDE:
1. 7 DAY PROGRAMMABLE THERMOSTAT, "PELICAN" TS-250 WIRELESS WITH CO2 SENSOR. PROVIDE PELICAN PEARL CONTROLLER FOR DEMAND VENTILATION FOR UNITS WITH ECONOMIZERS.
2. DISPOSABLE FILTER, 2" THICK PLEATED, MERV 13.
3. R-410A REFRIGERANT.
4. BUILT-IN ECONOMIZER (ECONWMT) WITH RELAY KIT (BARD 8620-220 2-STAGE HEAT PUMP WITH ECONOMIZER). ECONOMIZER WITH BUILT-IN EXHAUST AIR DAMPER, CO2 CONTROL.
5. DAMPER ACTUATOR SHALL BE BELIMO
6. SINGLE CIRCUIT ELECTRICAL.

AGENCY APPROVAL:



DSA 02-118996



LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT
1290 LILAC STREET
WOODBIDGE, CA. 95242

SHEET TITLE:

MECHANICAL
LEGEND,
SCHEDULES, AND
NOTES

NO.	REVISIONS	DATE

SHEET NUMBER:

M0.02

Project Engineer:	JT	2/6/14/2021	2020
Project Manager:	JT	2/11/2021	2021
Project Designer:	DT	2/11/2021	2021

**LODI UNIFIED SCHOOL DISTRICT
WOODBRIDGE ELEMENTARY
HVAC REPLACEMENT**
1290 LILAC STREET
WOODBRIDGE, CA. 95242

SHEET TITLE:

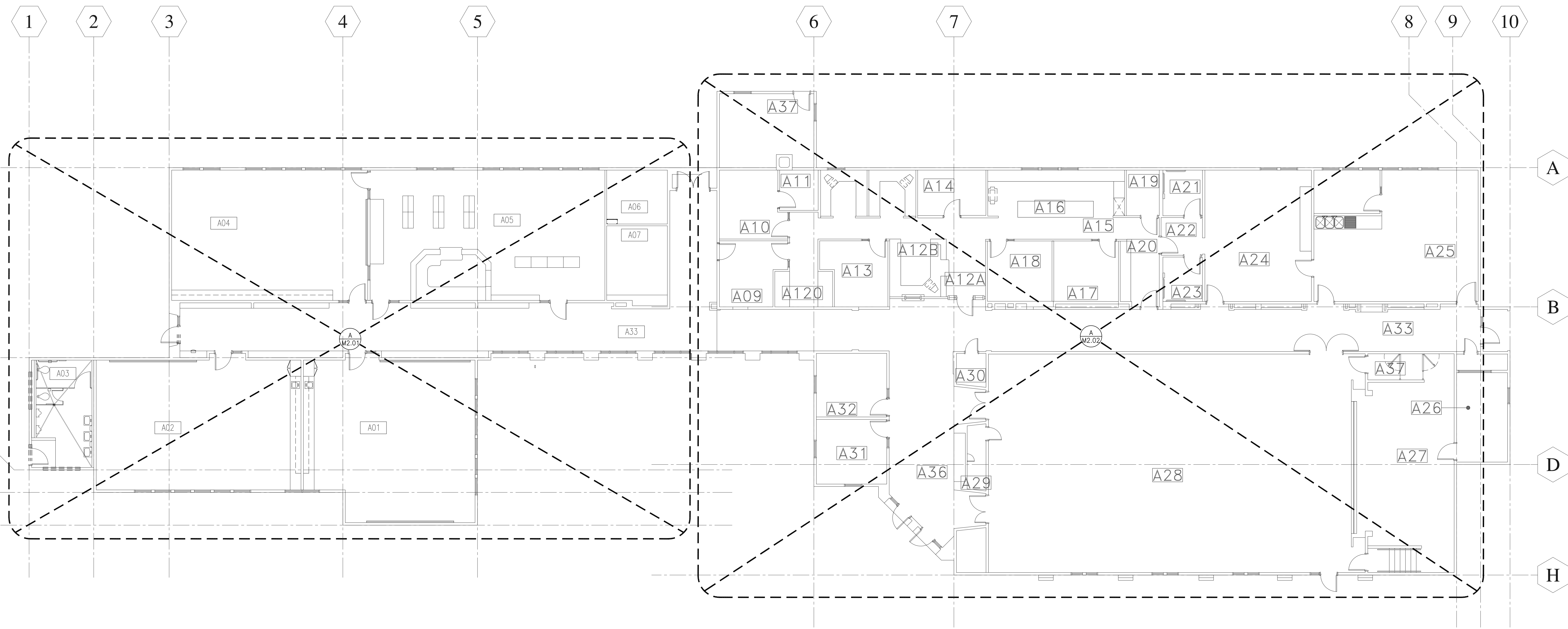
**MECHANICAL
OVERALL FLOOR
PLAN BUILDING A**

NO.	REVISIONS	DATE

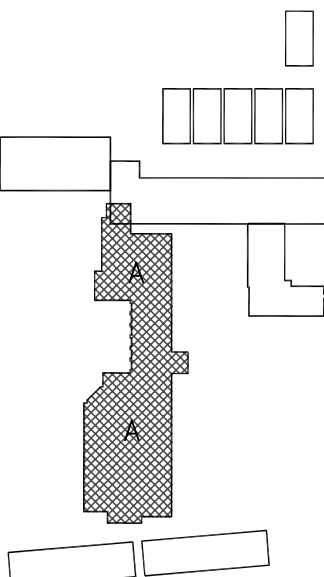
SHEET NUMBER:

M1.00

Project Engineer	JT	Job Number	2090
Project Manager	JT	Proj Date	Jun 15, 2021 - 8/8/21
Project Designer	DS	Design	LOG

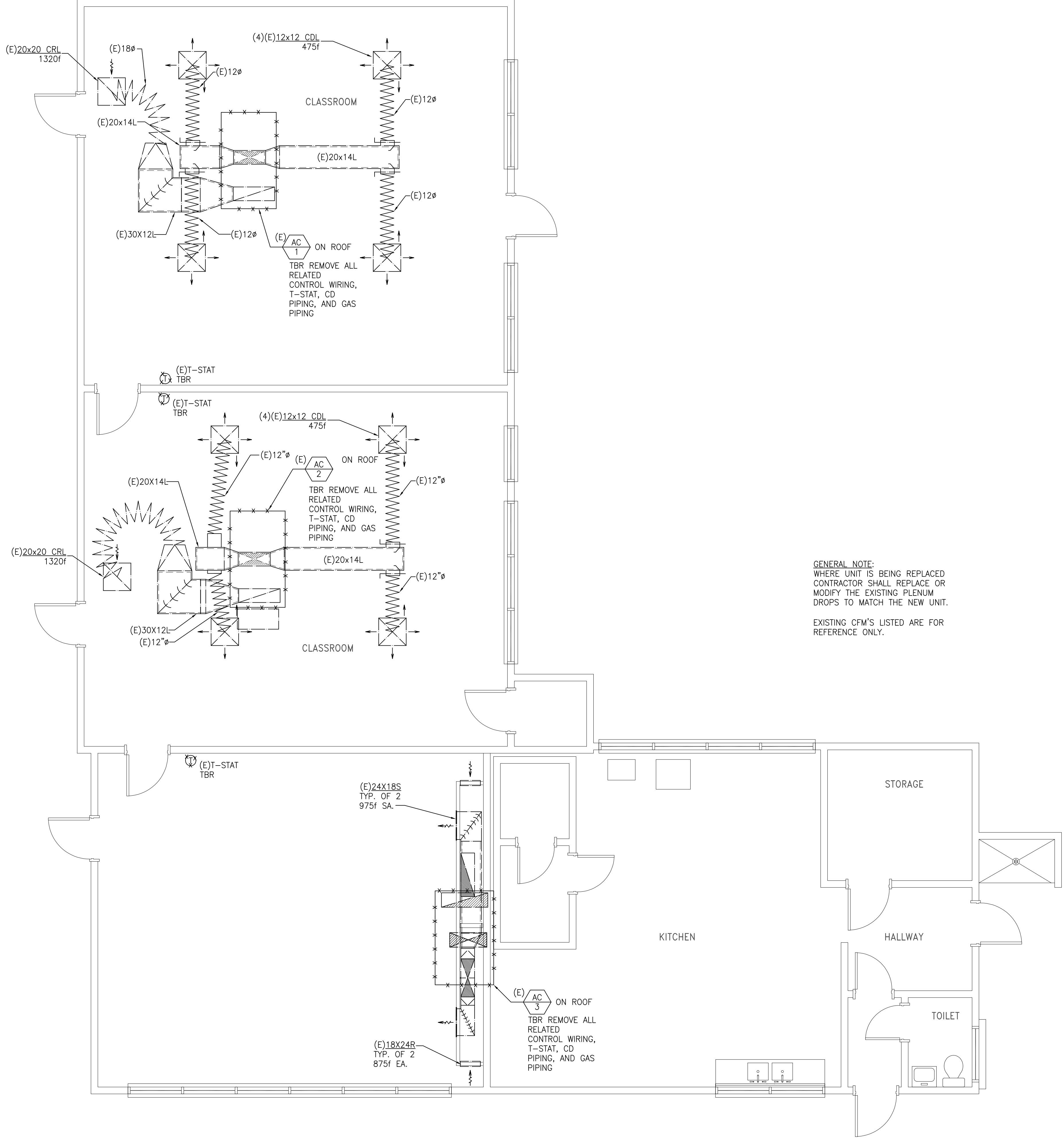


KEY PLAN



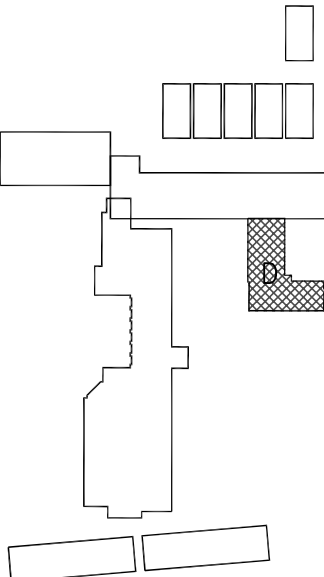
**MECHANICAL
OVERALL FLOOR PLAN**
SCALE: 1/8"=1'-0"
A

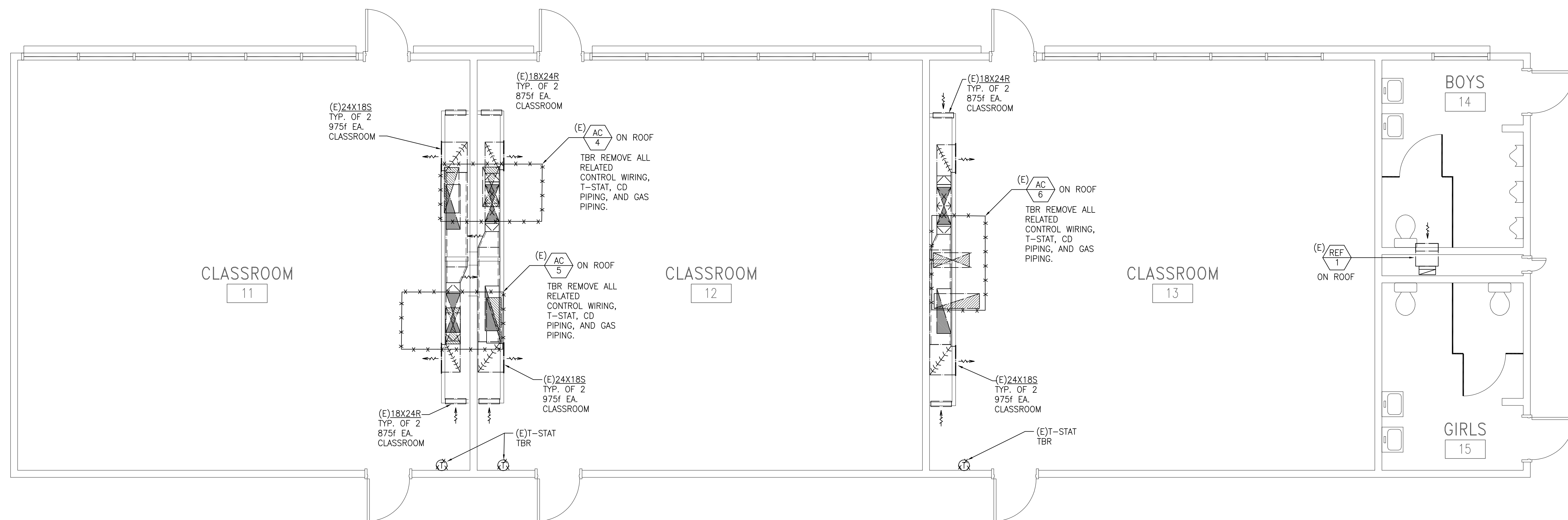
NO.	REVISIONS	DATE



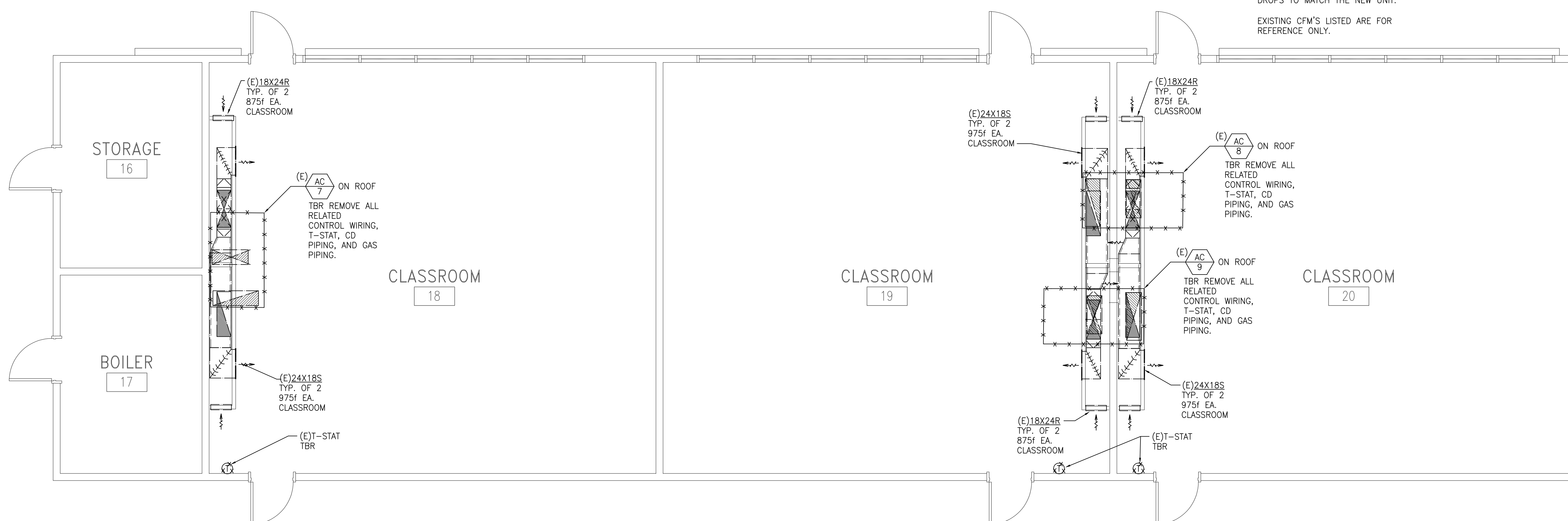
**MECHANICAL BUILDING D
DEMOLITION FLOOR PLAN**
SCALE: 1/4"=1'-0"

KEY PLAN





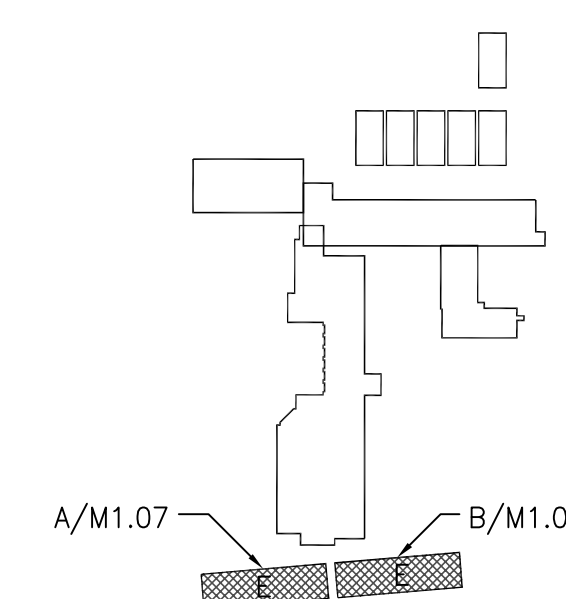
A MECHANICAL DEMOLITION FLOOR PLAN
SCALE: 1/4"=1'-0"



B MECHANICAL DEMOLITION FLOOR PLAN
SCALE: 1/4"=1'-0"

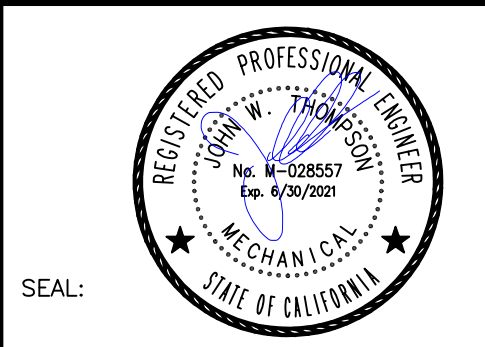
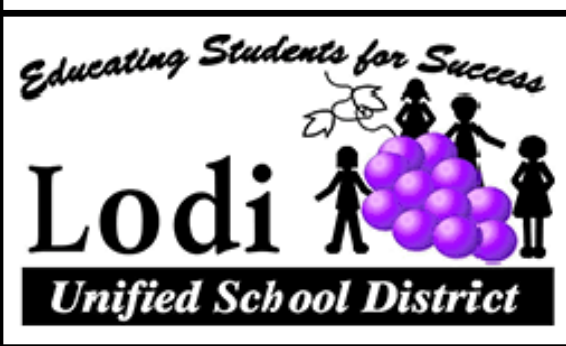
GENERAL NOTE:
WHERE UNIT IS BEING REPLACED
CONTRACTOR SHALL REPLACE OR
MODIFY THE EXISTING PLENUM
DROPS TO MATCH THE NEW UNIT.
EXISTING CFM'S LISTED ARE FOR
REFERENCE ONLY.

KEY PLAN



DSA 02-118996

TURLEY MECHANICAL
ENGINEERING GROUP, INC.
& ASSOCIATES
2431 Capitol Avenue
Sacramento, CA 95816
(916) 295-1085
FAX (916) 295-1075
Email: office@turleymech.com



LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT
1290 LILAC STREET
WOODBIDGE, CA. 95242

SHEET TITLE:

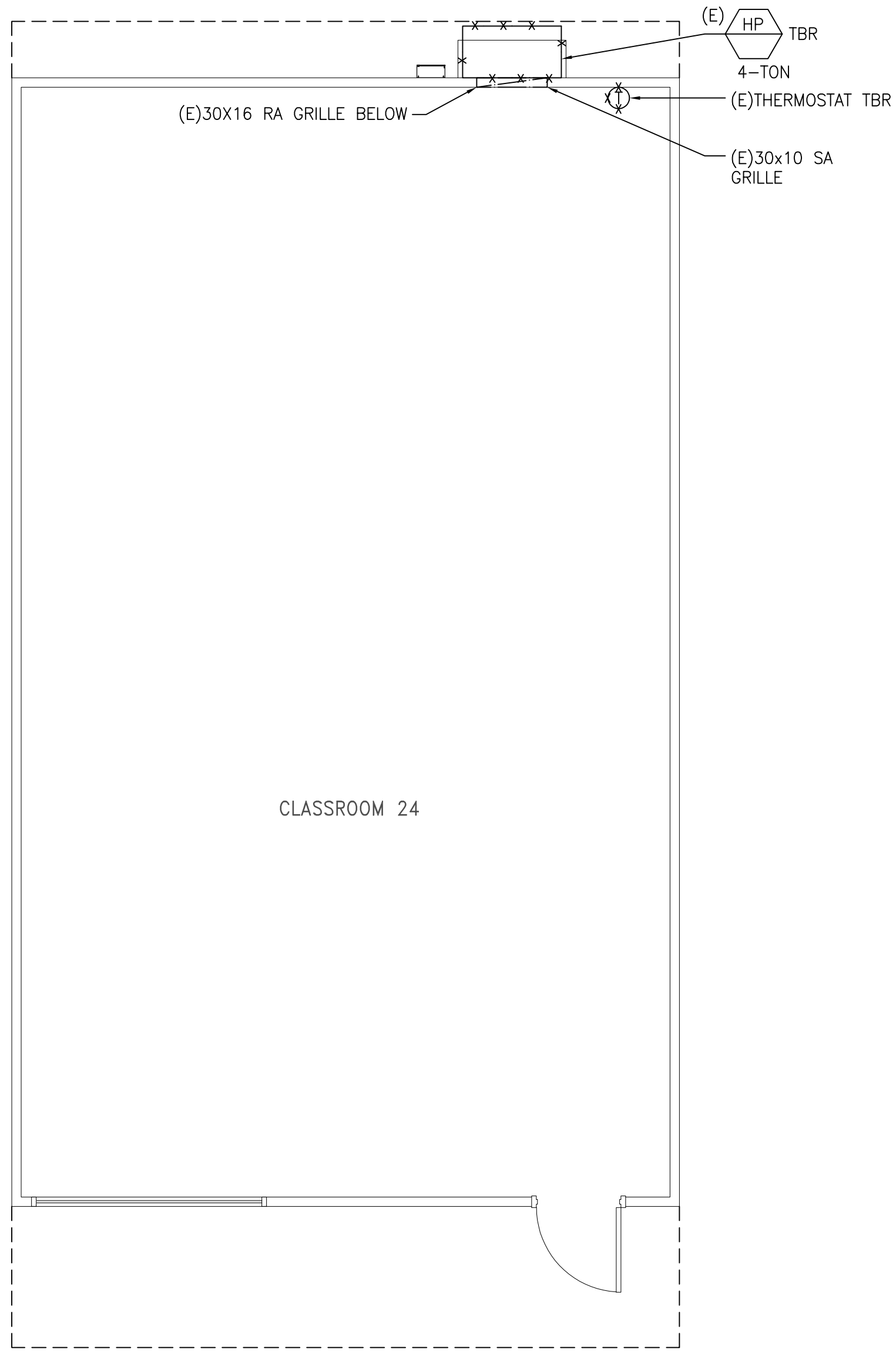
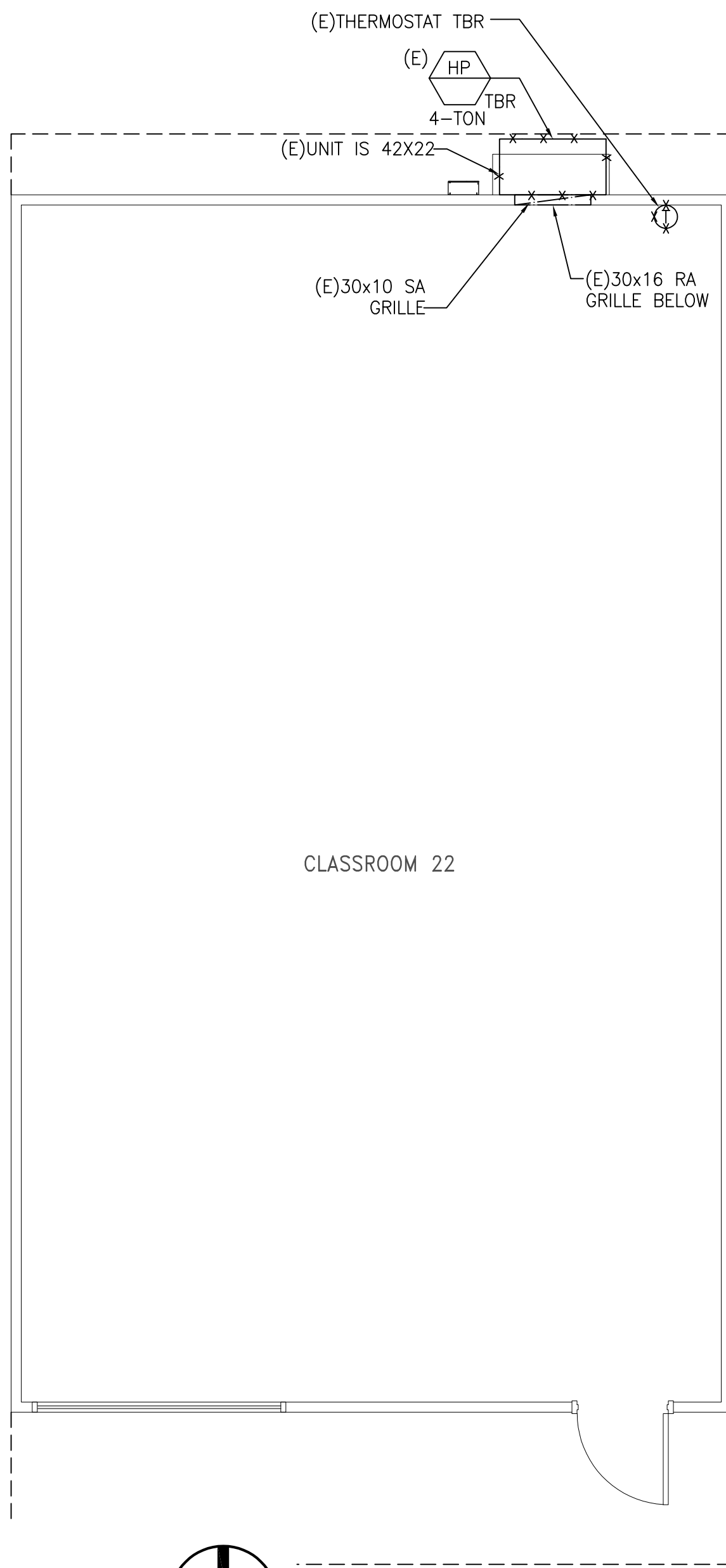
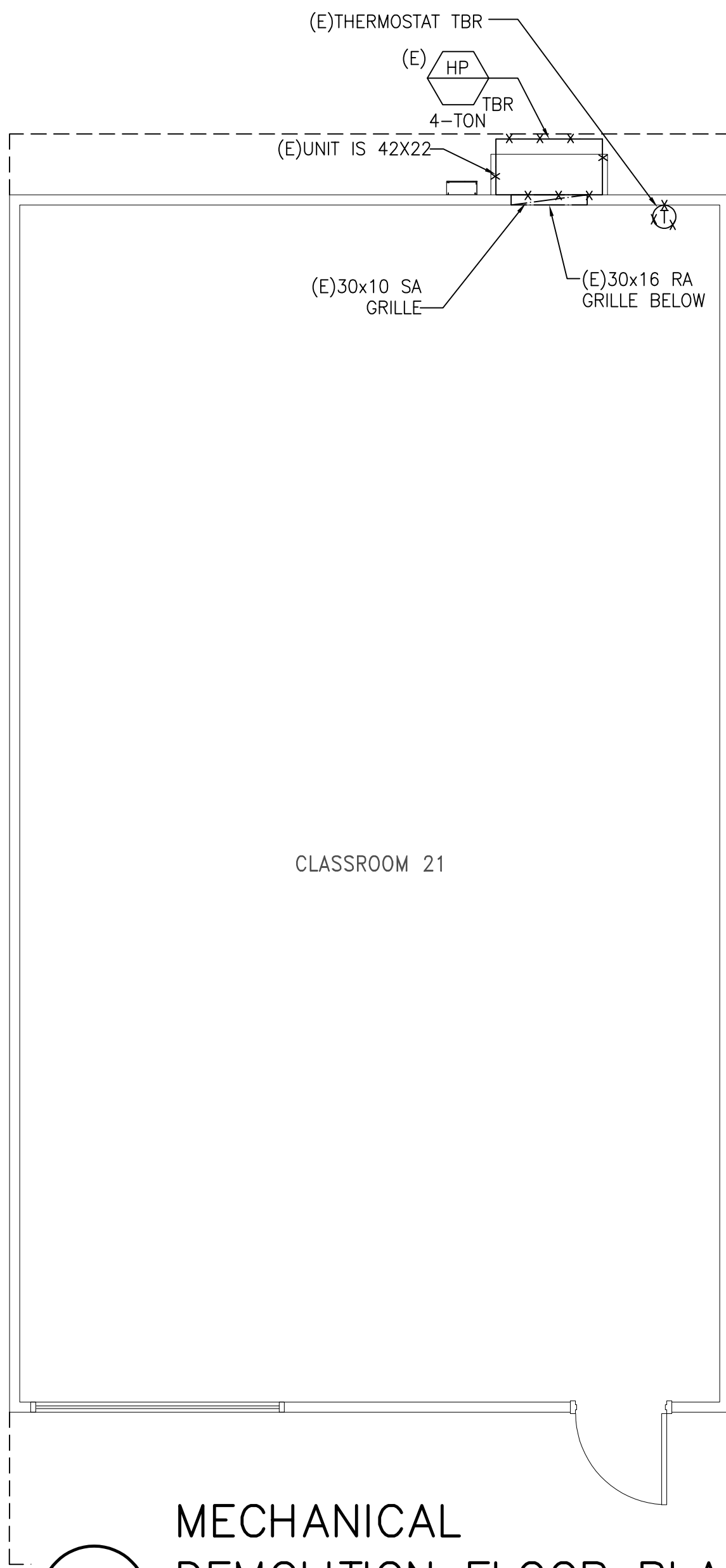
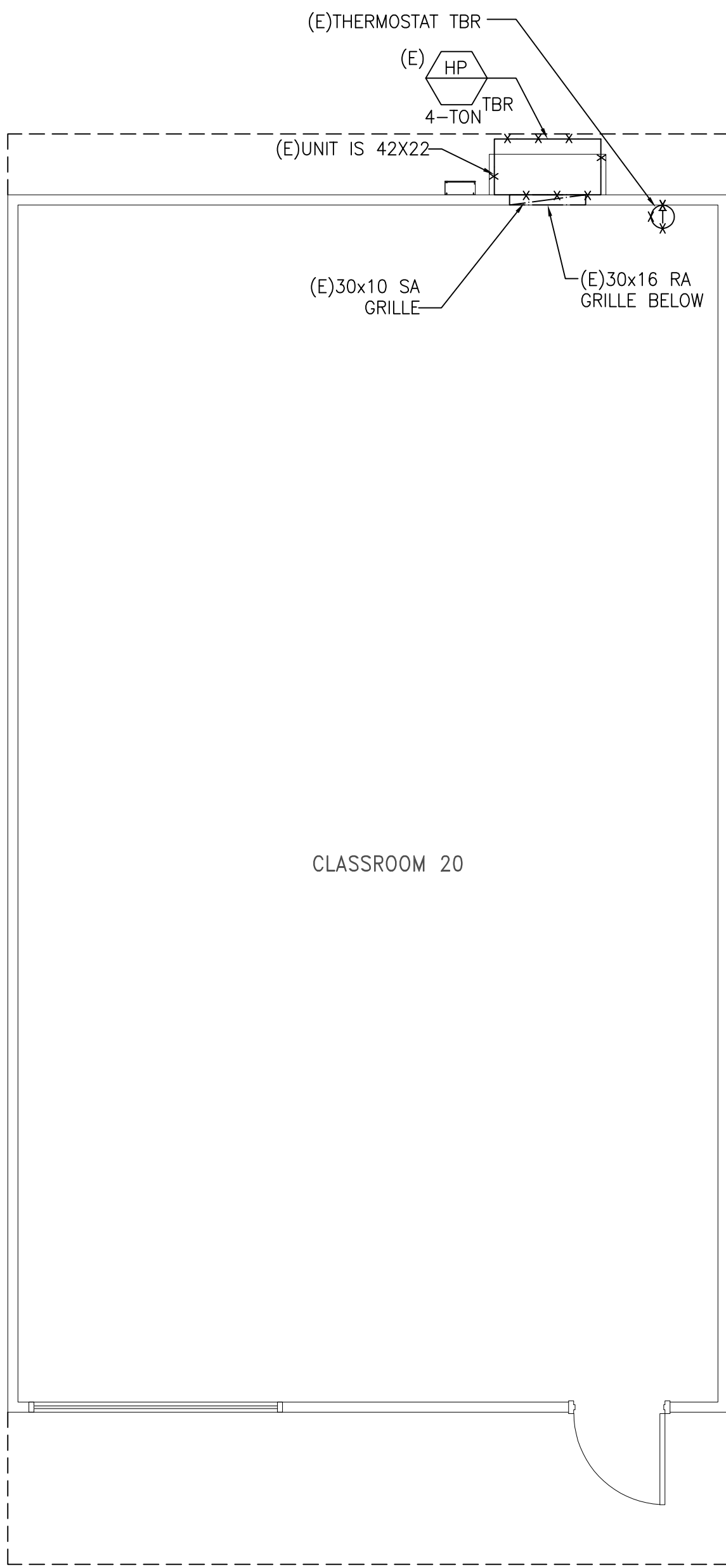
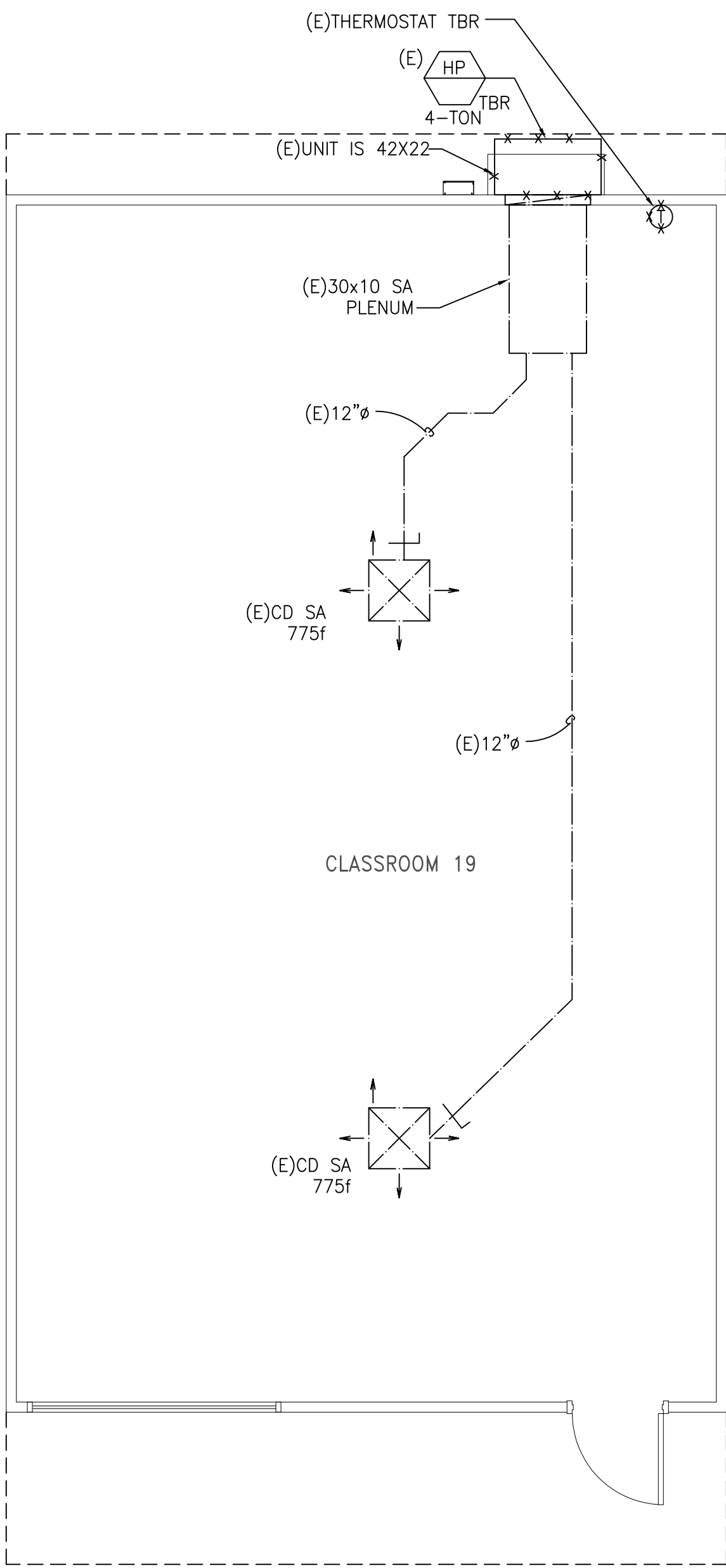
MECHANICAL DEMOLITION FLOOR PLAN BUILDING E

NO.	REVISIONS	DATE

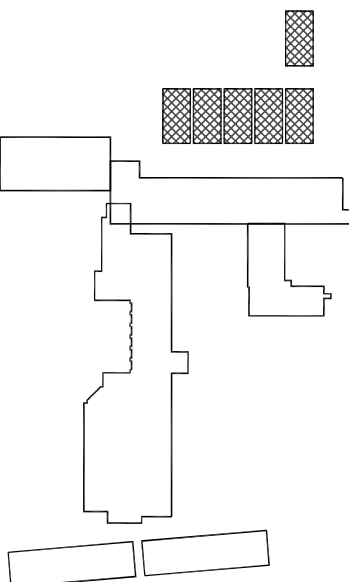
SHEET NUMBER:

M1.07

Project Engineer:	JT	Job Number:	2090
Project Manager:	JT	Proj Date:	Jun 16, 2021 - 8:00am
Project Owner:	DS	Design:	LODI



KEY PLAN



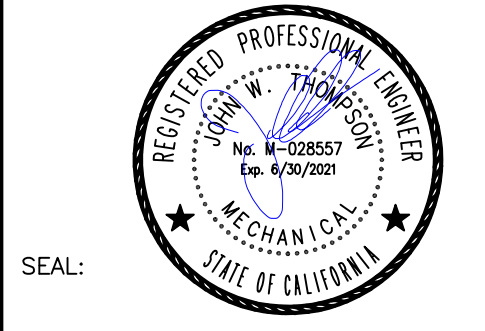
**MECHANICAL
DEMOLITION FLOOR PLAN**
SCALE: 1/4"=1'-0"

AGENCY APPROVAL:

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-118996 INC.
REVIEWED FOR
SS ☒ FLS ☒ ACS ☒
DATE: 06/16/2021

DSA 02-118996

TURLEY
& ASSOCIATES
MECHANICAL
ENGINEERING
GROUP, INC.
2431 Capitol Avenue
Sacramento, CA 95816
(916) 395-1085
FAX (916) 395-1075
Email: office@turleymech.com



**LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT**
1290 LILAC STREET
WOODBIDGE, CA. 95242

SHEET TITLE:

**MECHANICAL
DEMOLITION FLOOR
PLAN 24'x40'
PORTABLES**

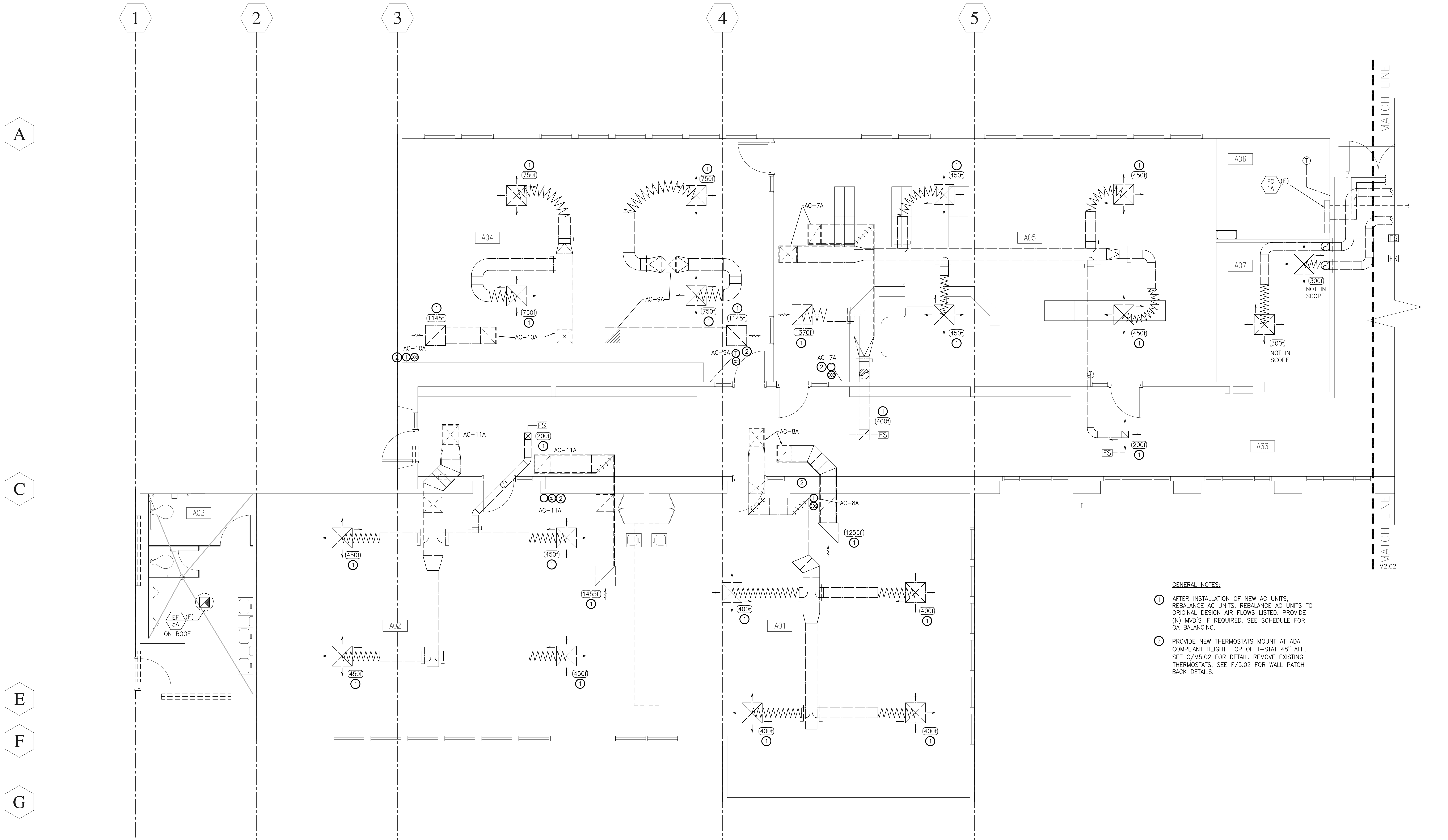
NO.	REVISIONS	DATE

SHEET NUMBER:

M1.08

Project Engineer:	JT	Job Number:	2090
Project Manager:	JT	Proj Date:	Jun 16, 2021 - 8:00am
Project Owner:	DS	Design:	COG

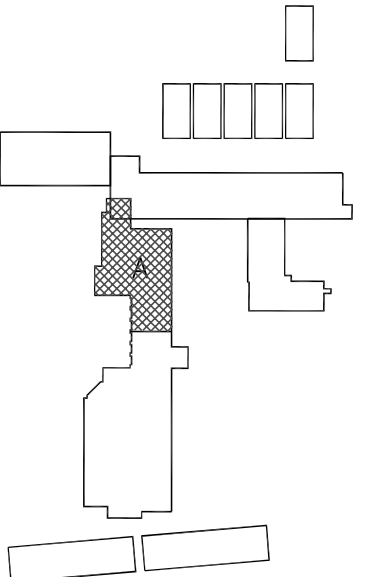
NO.	REVISIONS	DATE

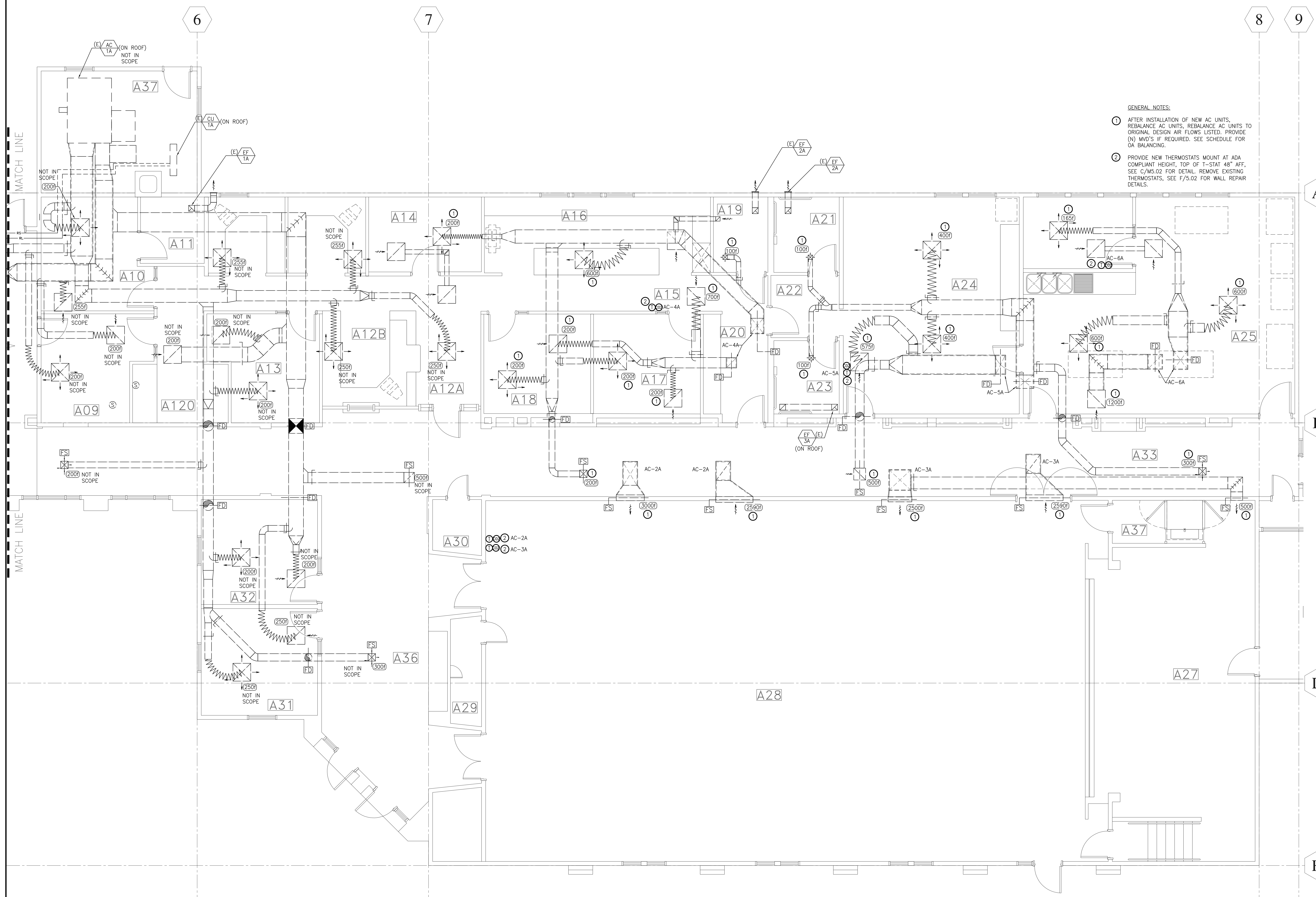


GENERAL NOTES:
① AFTER INSTALLATION OF NEW AC UNITS, REBALANCE AC UNITS, REBALANCE AC UNITS TO ORIGINAL DESIGN AIR FLOWS LISTED. PROVIDE (N) MVD'S IF REQUIRED. SEE SCHEDULE FOR OA BALANCING.
② PROVIDE NEW THERMOSTATS MOUNT AT ADA COMPLIANT HEIGHT, TOP OF T-STAT 48" AFF. SEE C/M5.02 FOR DETAIL. REMOVE EXISTING THERMOSTATS, SEE F/5.02 FOR WALL PATCH BACK DETAILS.

**MECHANICAL NEW
AIR BALANCE FLOOR PLAN BUILDING A**
SCALE: 1/4"=1'-0"

KEY PLAN

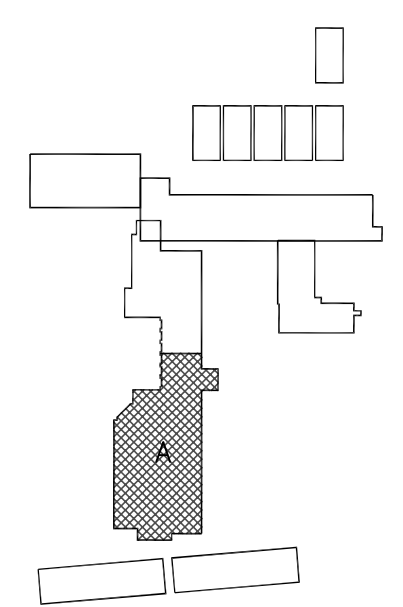




GENERAL NOTES:
1 AFTER INSTALLATION OF NEW AC UNITS, REBALANCE AC UNITS, REBALANCE AC UNITS TO ORIGINAL DESIGN AIR FLOWS LISTED. PROVIDE (N) MVD'S IF REQUIRED. SEE SCHEDULE FOR OA BALANCING.
2 PROVIDE NEW THERMOSTATS MOUNT AT ADA COMPLIANT HEIGHT, TOP OF T-STAT 48" AFF. SEE C/M5.02 FOR DETAIL. REMOVE EXISTING THERMOSTATS, SEE F/5.02 FOR WALL REPAIR DETAILS.

A MECHANICAL NEW
AIR BALANCE FLOOR PLAN BUILDING A
SCALE: 1/4"=1'-0"

KEY PLAN



AGENCY APPROVAL:

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-118996 INC:
REVIEWED FOR
SS ☒ FLS ☒ ACS ☒
DATE: 06/16/2021

DSA 02-118996

TURLEY
MECHANICAL
ENGINEERING
& ASSOCIATES
GROUP, INC.
2431 Capitol Avenue
Sacramento, CA 95816
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Email: office@turleymech.com

Educating Students for Success

Lodi
Unified School District

REGISTERED PROFESSIONAL ENGINEER
No. 4108557
Exp. 6/30/2025
MECHANICAL
STATE OF CALIFORNIA

SEAL:

LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT
1290 LILAC STREET
WOODBIDGE, CA. 95242

SHEET TITLE:

MECHANICAL NEW
AIR BALANCE FLOOR
PLAN BUILDING A

NO.	REVISIONS	DATE

SHEET NUMBER:

M2.02

Project Engineer	JT	Job Number	2000
Project Manager	JT	Proj Date	Jan 16, 2021 - 8/8/21
Project Designer	DT	Design Date	

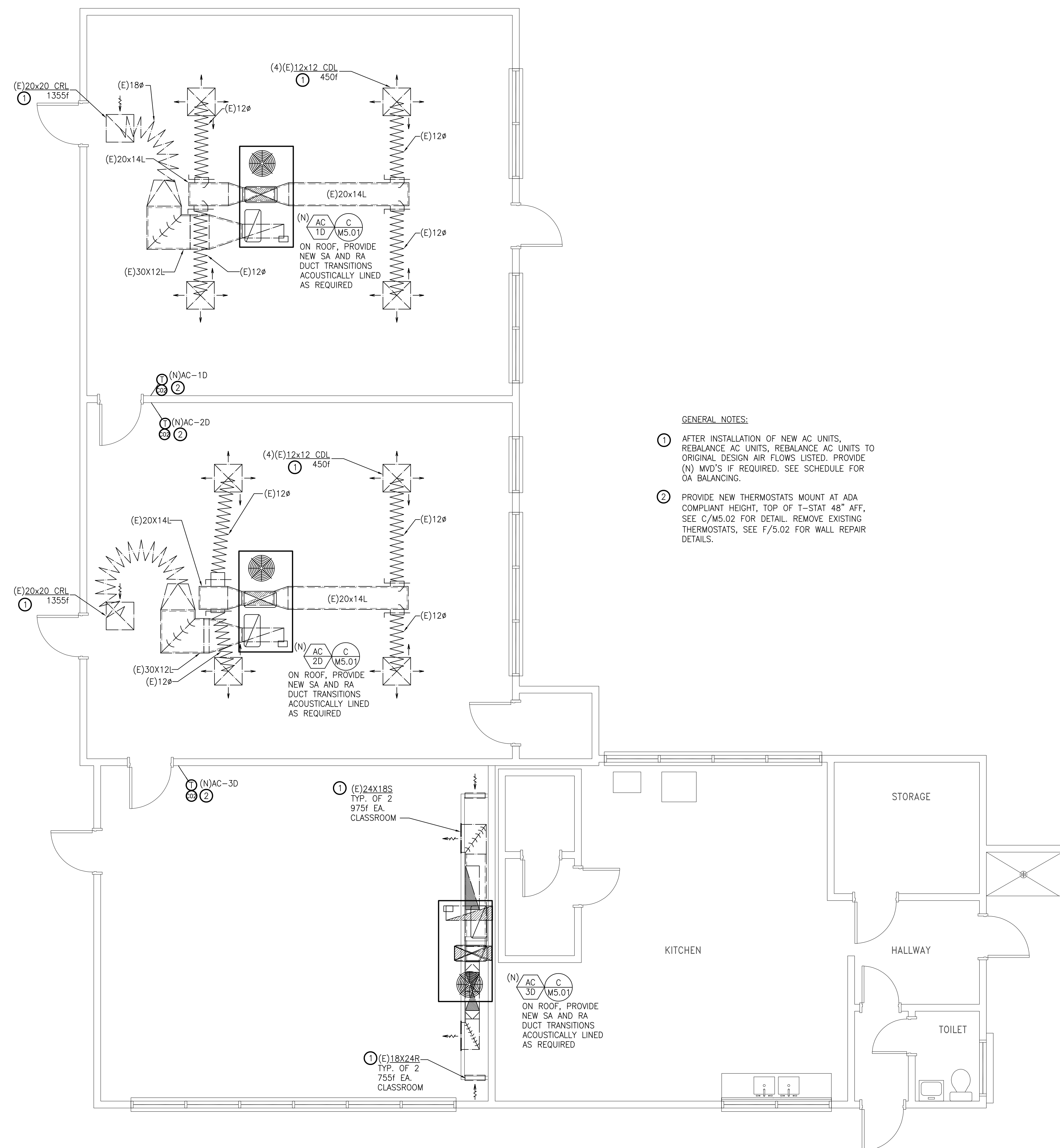


**LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT**
1290 LILAC STREET
WOODBIDGE, CA 95242

MECHANICAL FLOOR
PLAN BUILDING D

M2.06

Project Engineer:	JT	Job Number:	2021
Project Manager:	JT	Plot Date:	Jun 15, 2021 - 9:0
Project Drafter:	ZH	Login:	LCox

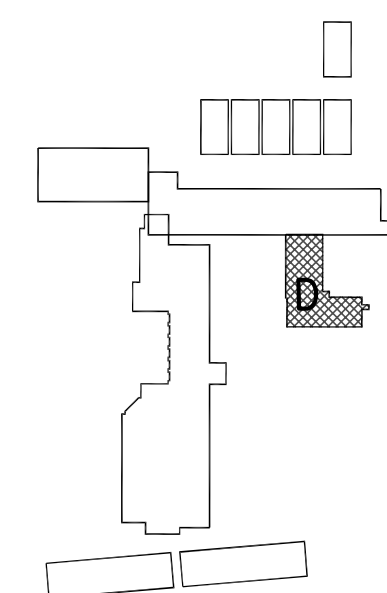


- ① AFTER INSTALLATION OF NEW AC UNITS, REBALANCE AC UNITS, REBALANCE AC UNITS TO ORIGINAL DESIGN AIR FLOWS LISTED. PROVIDE (N) MVD'S IF REQUIRED. SEE SCHEDULE FOR OA BALANCING.
- ② PROVIDE NEW THERMOSTATS MOUNT AT ADA COMPLIANT HEIGHT, TOP OF T-STAT 48" AFF, SEE C/5.02 FOR DETAIL. REMOVE EXISTING THERMOSTATS, SEE F/5.02 FOR WALL REPAIR DETAILS.

MECHANICAL FLOOR PLAN BLDG-D

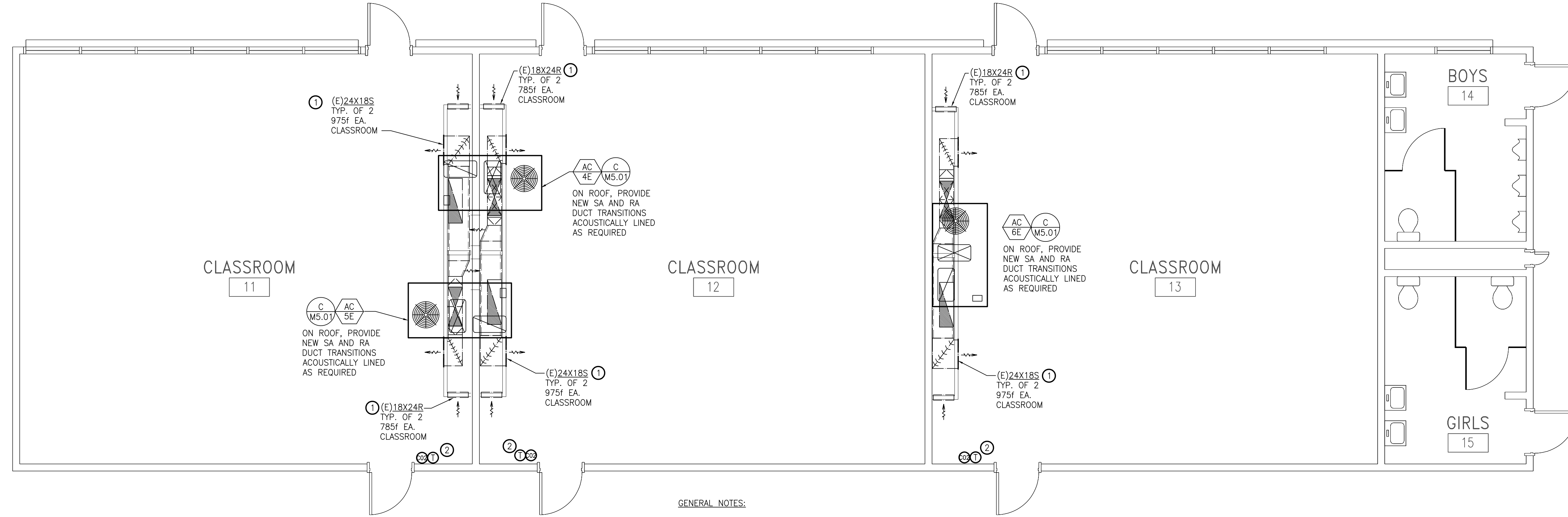
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KEY PLAN



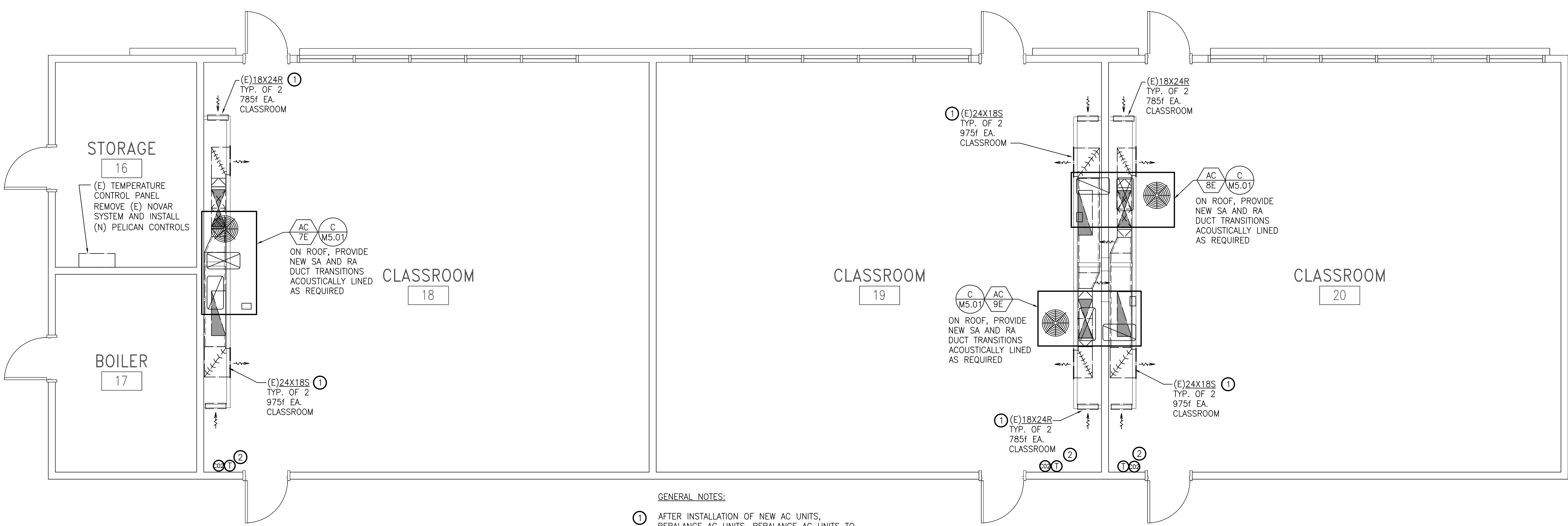
NO.	REVISIONS	DATE

Project Engineer:	JT	Job Number:	2090
Project Manager:	JT	Proj. Date:	Jun 15, 2021 - 8/8/21
Project Designer:	DS	Design:	LODI



- GENERAL NOTES:
- 1 AFTER INSTALLATION OF NEW AC UNITS, REBALANCE AC UNITS, REBALANCE AC UNITS TO ORIGINAL DESIGN AIR FLOWS LISTED. PROVIDE (N) MVD'S IF REQUIRED. SEE SCHEDULE FOR OA BALANCING.
 - 2 PROVIDE NEW THERMOSTATS MOUNT AT ADA COMPLIANT HEIGHT, TOP OF T-STAT 48" AFF. SEE C/M5.02 FOR DETAIL. REMOVE EXISTING THERMOSTATS, SEE F/5.02 FOR WALL REPAIR DETAILS.

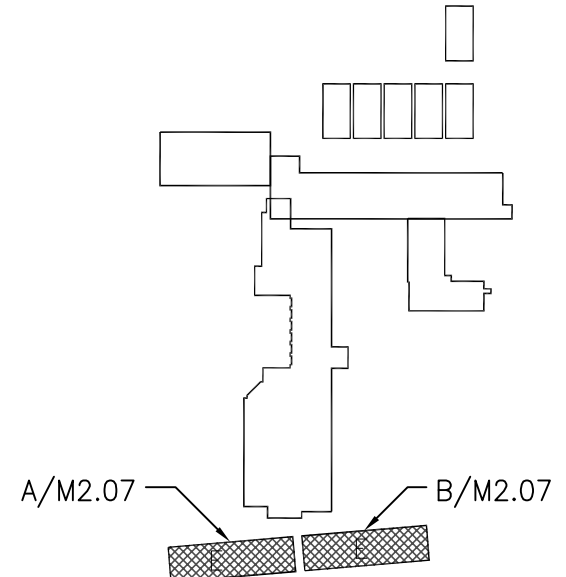
A MECHANICAL FLOOR PLAN BLDG-E
SCALE: 1/4"=1'-0"

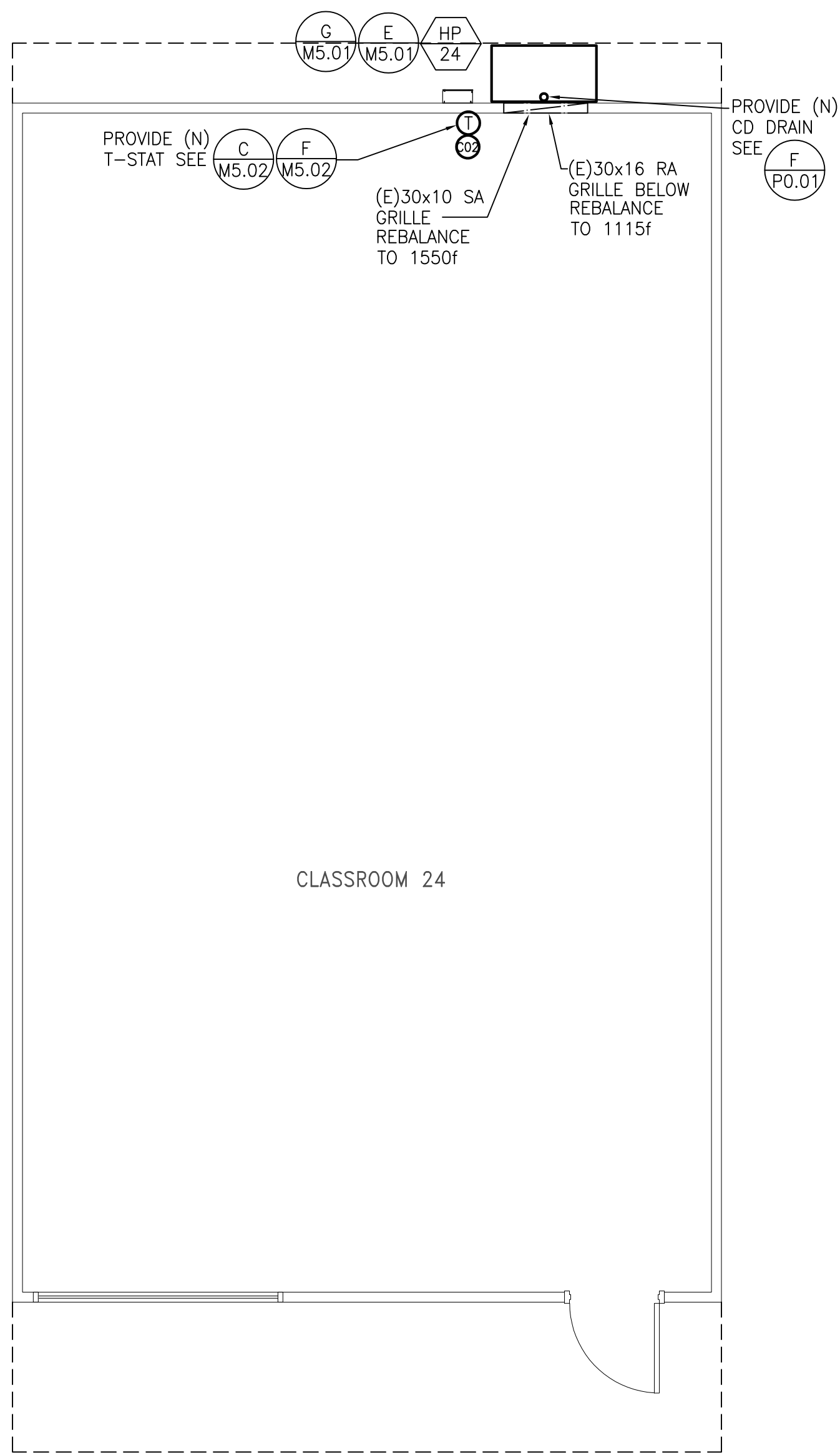
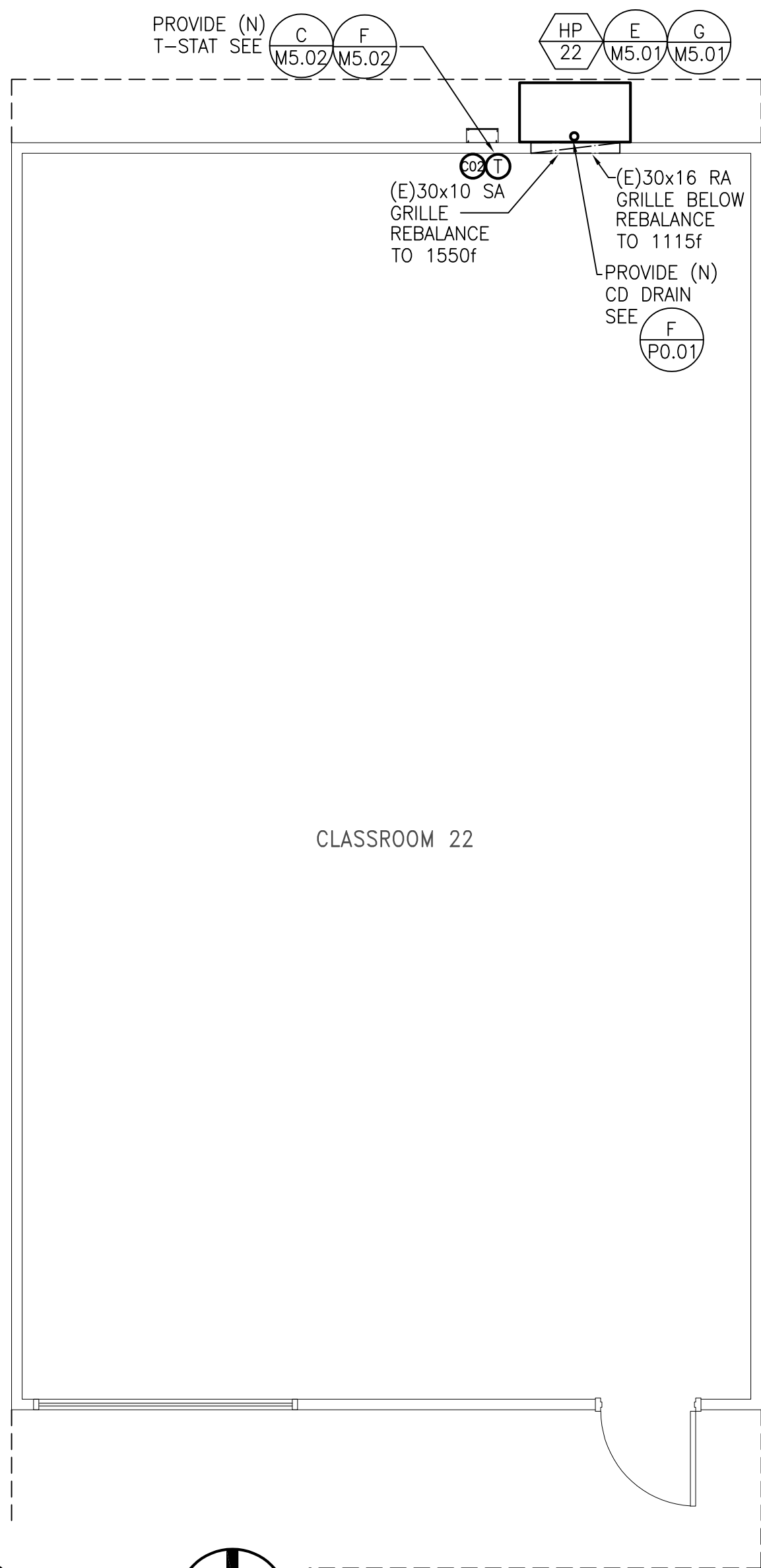
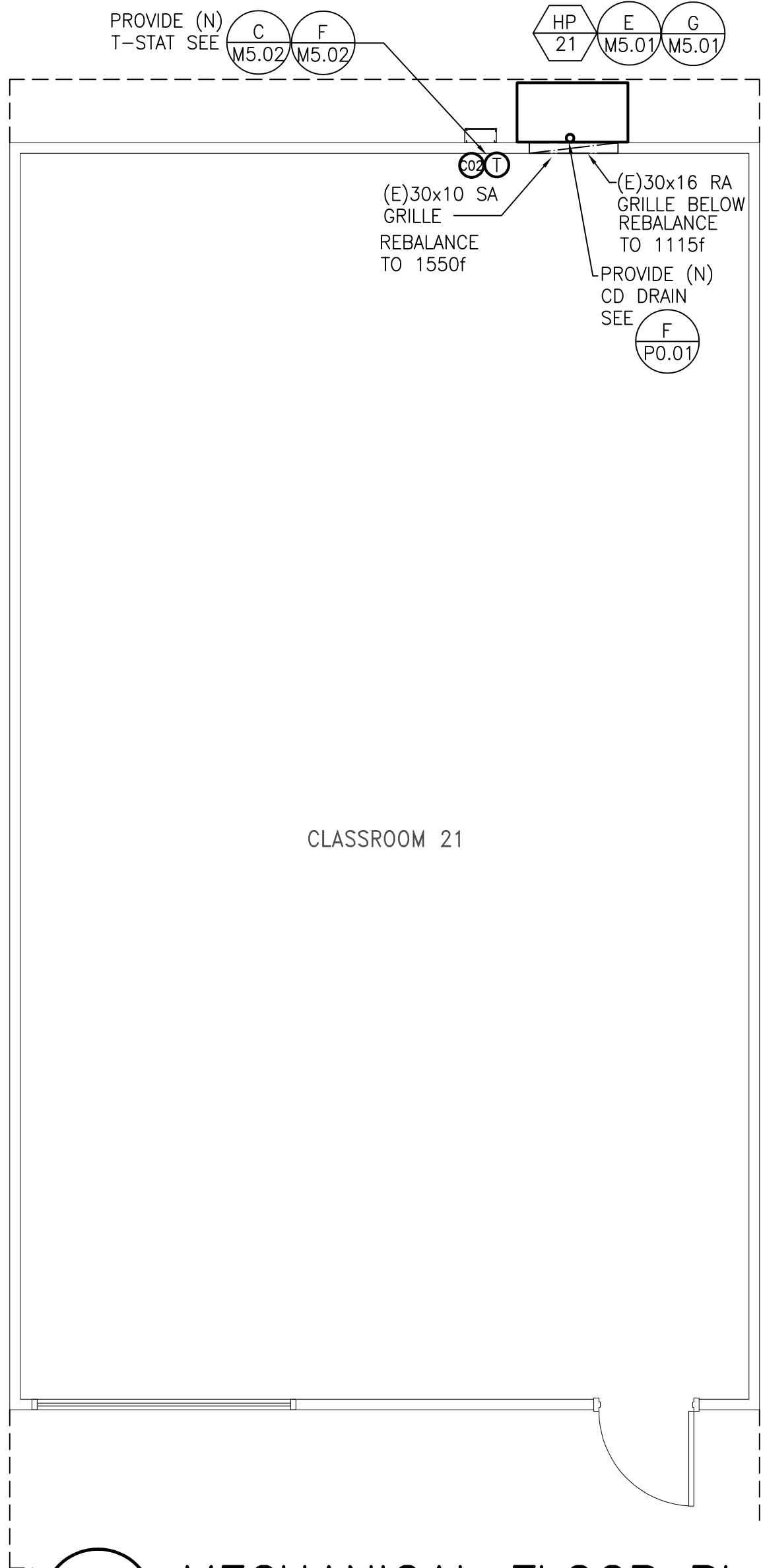
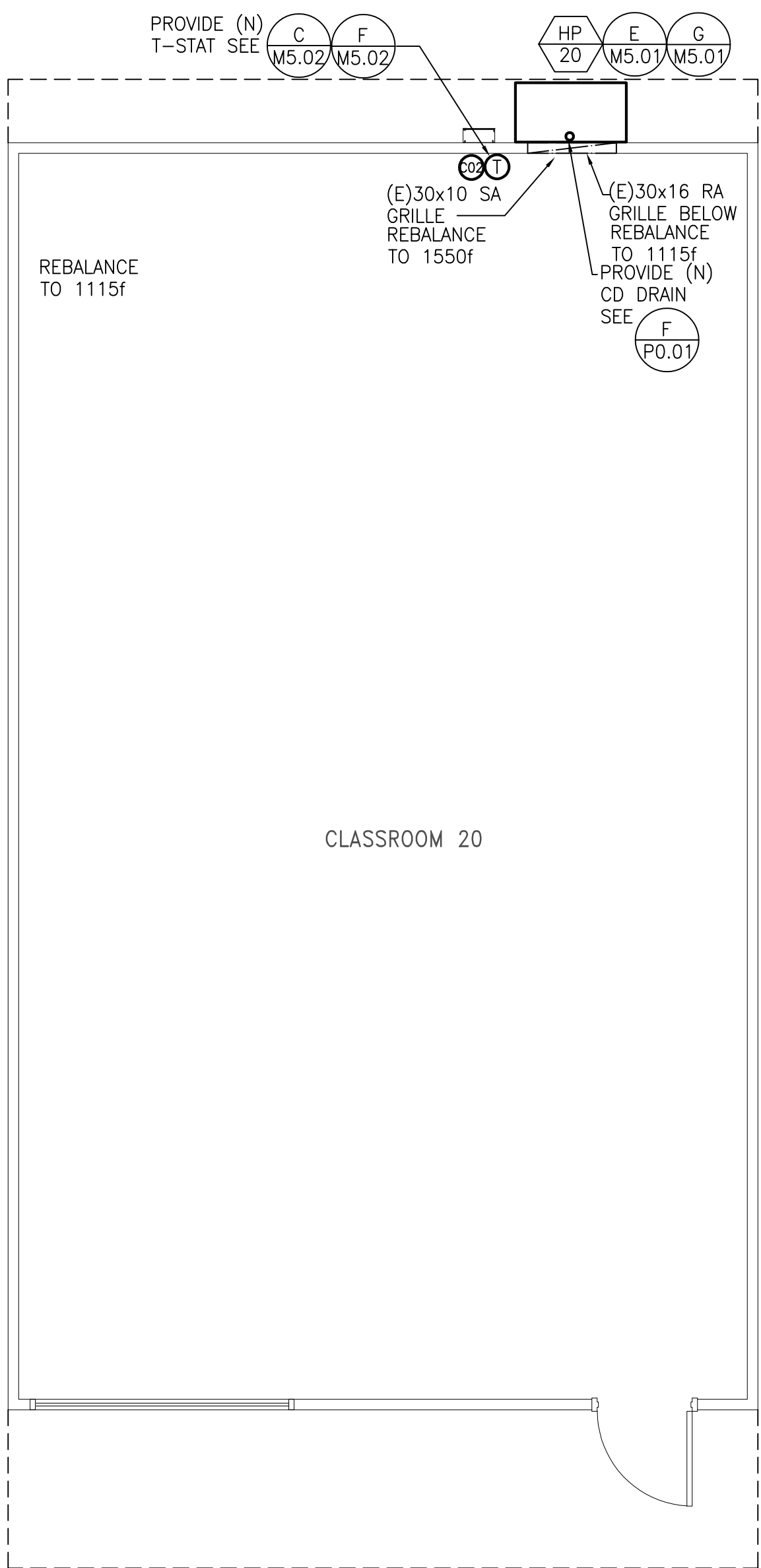
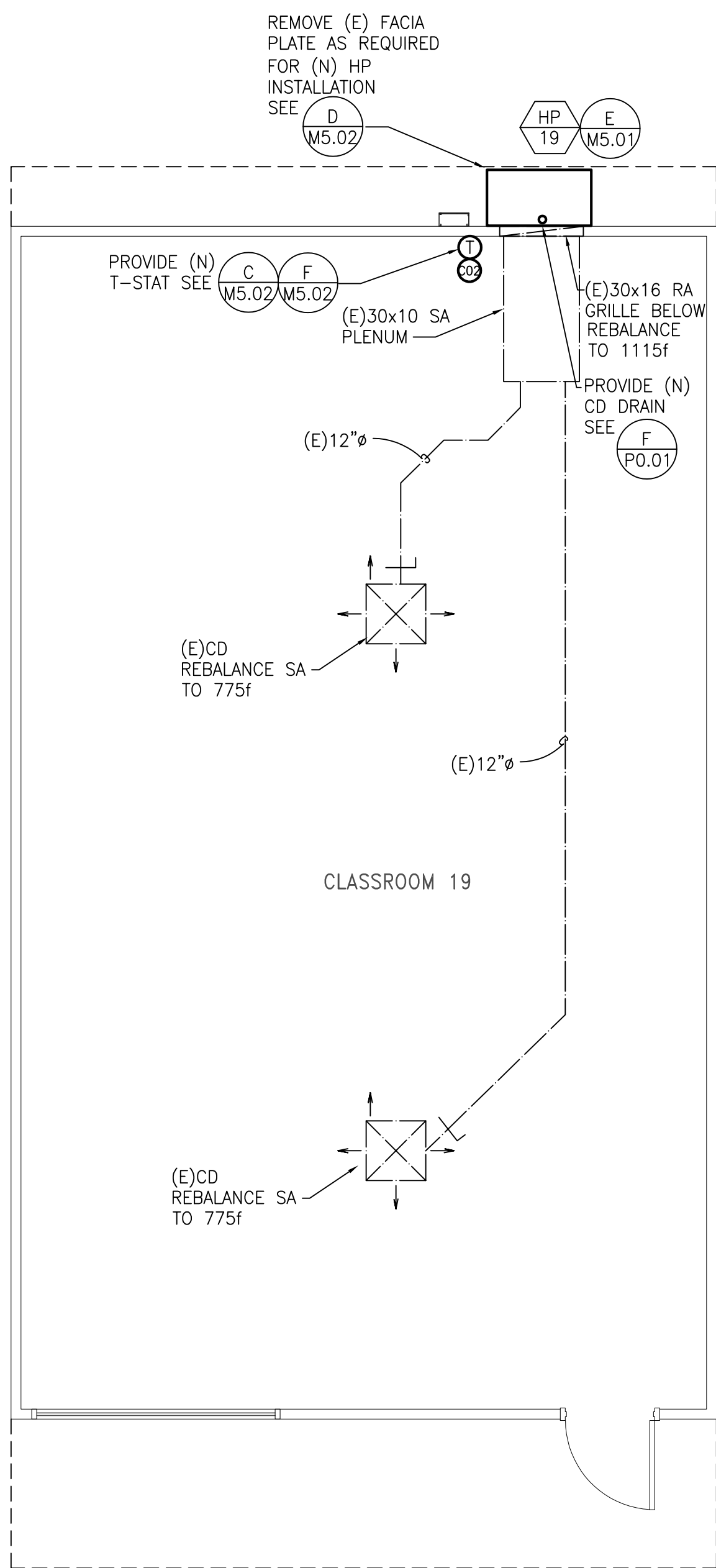


- GENERAL NOTES:
- 1 AFTER INSTALLATION OF NEW AC UNITS, REBALANCE AC UNITS, REBALANCE AC UNITS TO ORIGINAL DESIGN AIR FLOWS LISTED. PROVIDE (N) MVD'S IF REQUIRED. SEE SCHEDULE FOR OA BALANCING.
 - 2 PROVIDE NEW THERMOSTATS MOUNT AT ADA COMPLIANT HEIGHT, TOP OF T-STAT 48" AFF. SEE C/M5.02 FOR DETAIL. REMOVE EXISTING THERMOSTATS, SEE F/5.02 FOR WALL REPAIR DETAILS.

B MECHANICAL FLOOR PLAN BLDG-E
SCALE: 1/4"=1'-0"

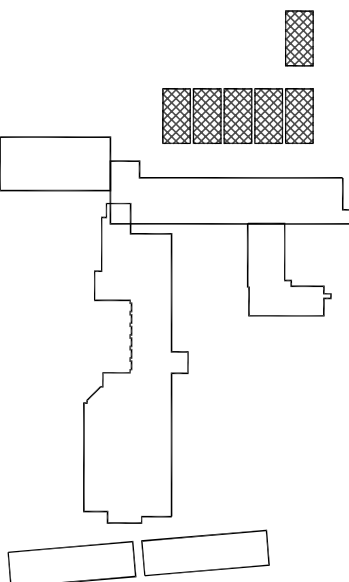
KEY PLAN





A MECHANICAL FLOOR PLANS
SCALE: 1/4"=1'-0"

KEY PLAN



AGENCY APPROVAL:

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-118996 INC:
REVIEWED FOR
SS ☒ FLS ☒ ACS ☒
DATE: 06/16/2021

DSA 02-118996

TURLEY MECHANICAL ENGINEERING & ASSOCIATES
2431 Capitol Avenue
Sacramento, CA 95816
(916) 395-1085
FAX (916) 395-1075
Email: office@turleymech.com

Educating Students for Success
Lodi Unified School District

SEAL:

**LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT**
1290 LILAC STREET
WOODBIDGE, CA. 95242

SHEET TITLE:

**MECHANICAL FLOOR
PLANS 24'x40'
PORTABLES**

NO. REVISIONS DATE

SHEET NUMBER:

M2.08

Project Engineer:	JT	Job Number:	2090
Project Manager:	JT	Proj Date:	Jun 16, 2021 - 8:00am
Project Designer:	DT	Design:	COG

GENERAL NOTE:

1

AFTER INSTALLATION OF NEW AC UNIT, RE-BALANCE THE EXISTING GRILLES TO THE ORIGINAL CFM'S LISTED. PROVIDE (N) MVD'S IF REQUIRED. SEE SCHEDULE FOR OA CFMS.

2

NEW THERMOSTAT MOUNT AT ADA COMPLIANT HEIGHT, TOP OF T-STAT 48" AFF. SEE C/M5.02 FOR DETAILS. SEE F/M5.02 FOR (E) THERMOSTAT WALL REPAIR DETAILS.

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Lodi Unified School District

REGISTERED PROFESSIONAL MECHANICAL ENGINEER
No. 44-008557
Exp. 6/30/2025
STATE OF CALIFORNIA

SEAL:

LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT
1290 LILAC STREET
WOODBIDGE, CA. 95242

SHEET TITLE:

MECHANICAL FLOOR
PLAN BUILDING B &
C

NO.	REVISIONS	DATE

SHEET NUMBER:

M2.09

Project Engineer: JT

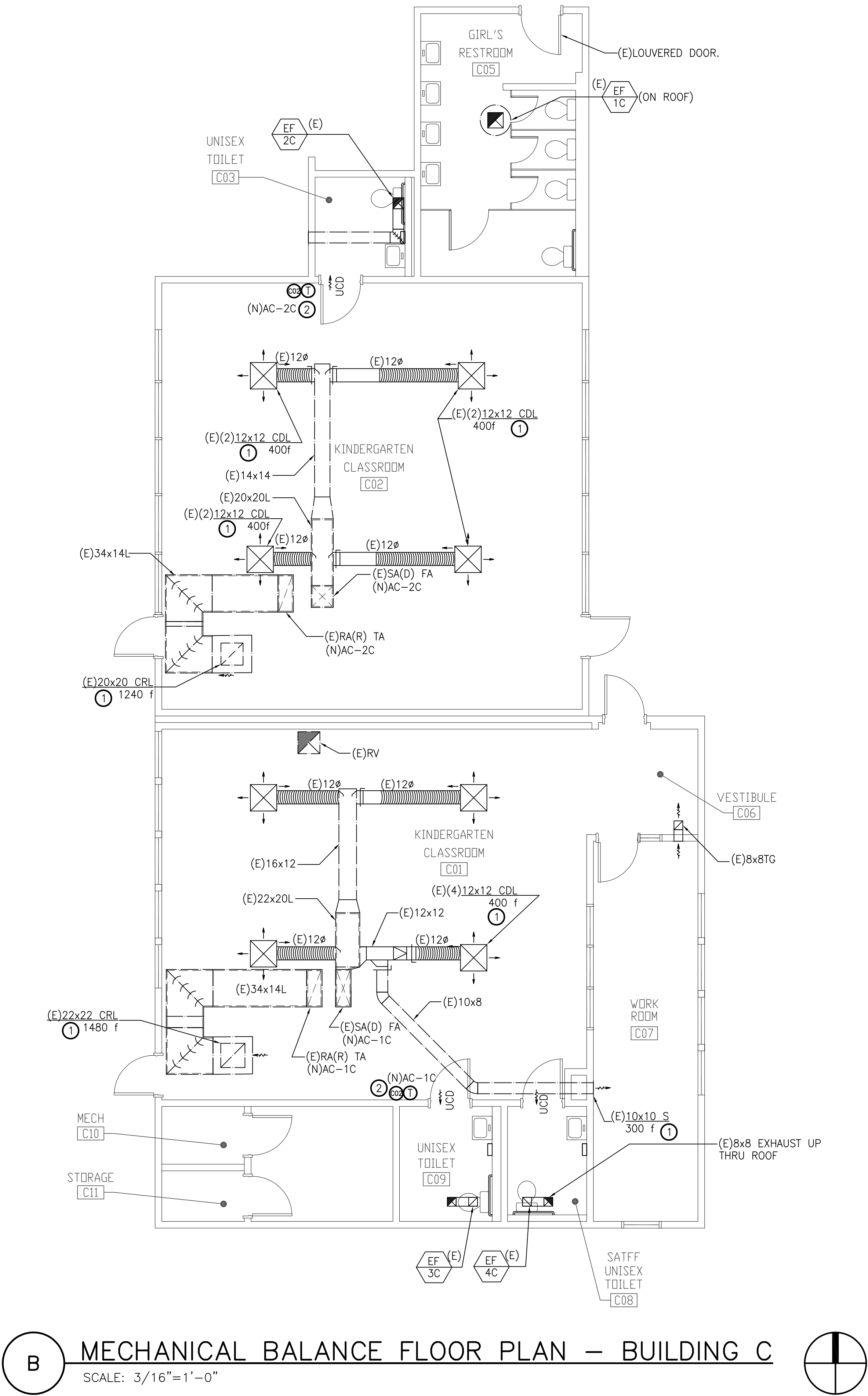
Project Manager: JT

Project Designer: DS

Job Number: 20090

Proj Date: Jan 15, 2021 - 8/8/24

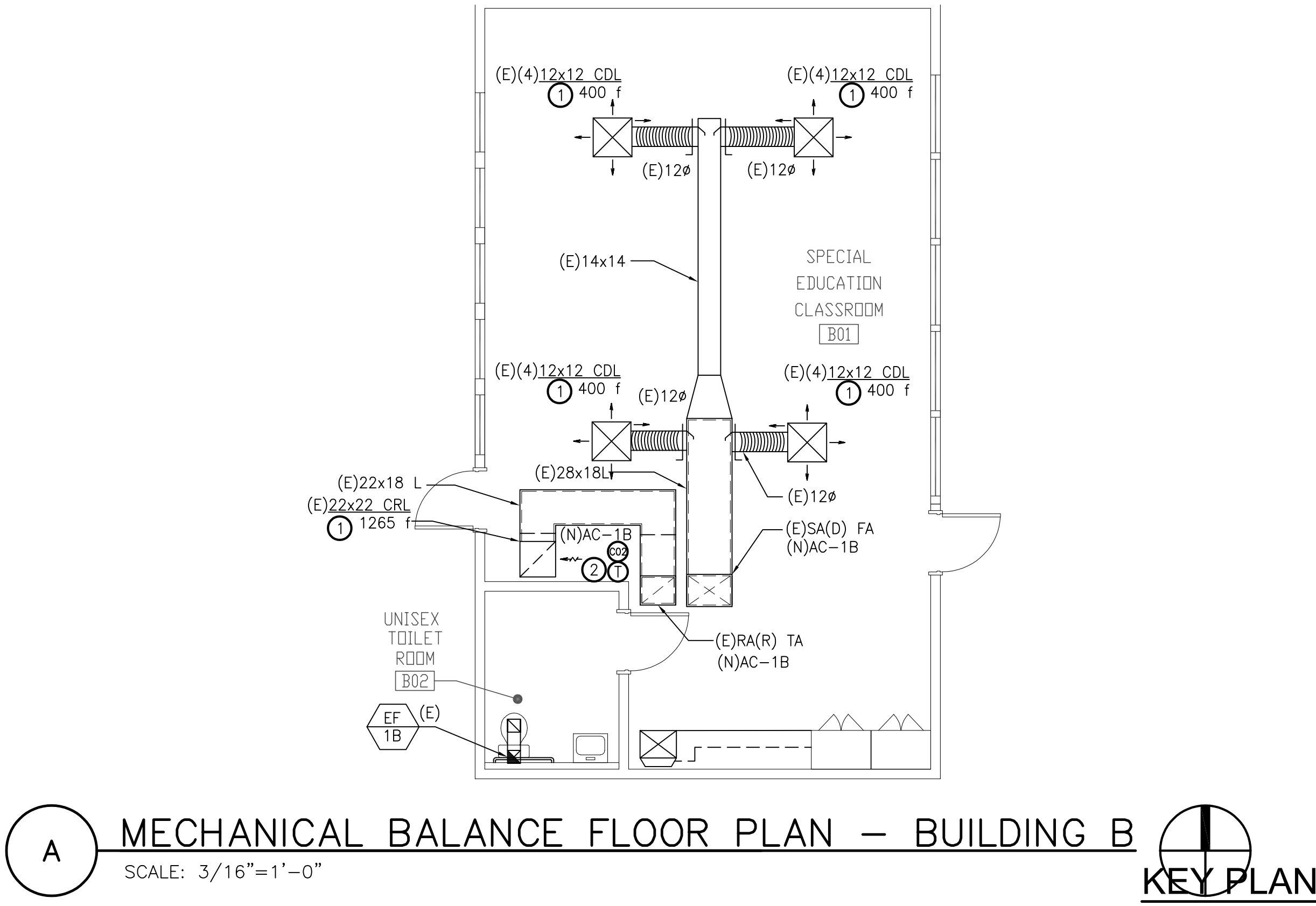
Design: LCO



B

MECHANICAL BALANCE FLOOR PLAN – BUILDING C

SCALE: 3/16"=1'-0"

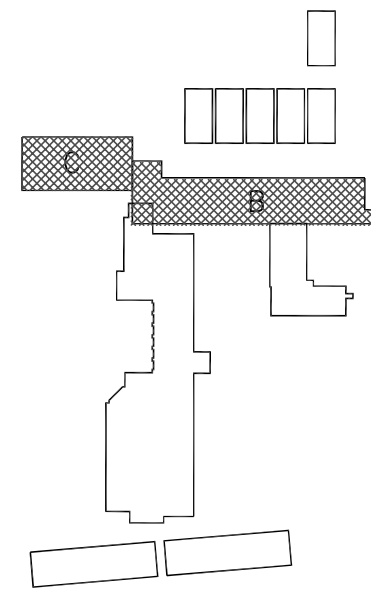


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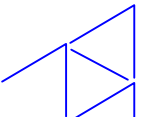
MECHANICAL BALANCE FLOOR PLAN – BUILDING B

SCALE: 3/16"=1'-0"

KEY PLAN

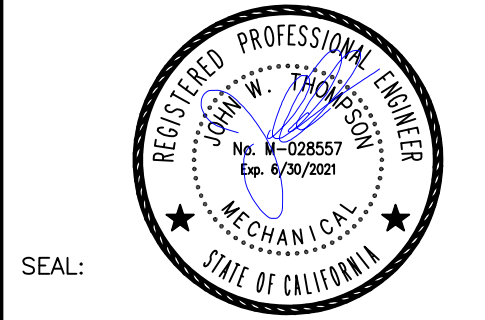


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WOODBIDGE ELEMENTARY
HVAC REPLACEMENT
1290 LILAC STREET
WOODBIDGE, CA. 95242

SHEET TITLE:

MECHANICAL
DEMOLITION ROOF
PLAN BUILDING B

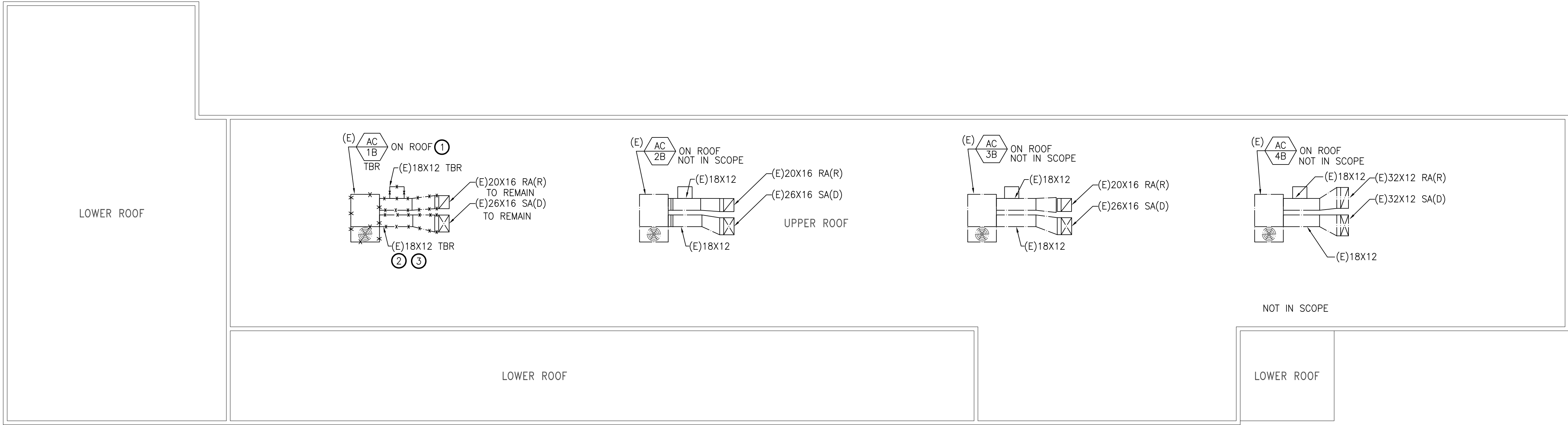
NO.	REVISIONS	DATE

SHEET NUMBER:

M3.01

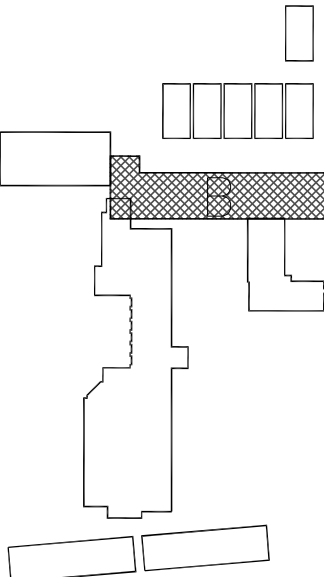
Project Engineer:	JT	Job Number:	2020
Project Manager:	JT	Proj Date:	Jun 15, 2021 - 8:00am
Project Owner:	DS	Design:	CSG

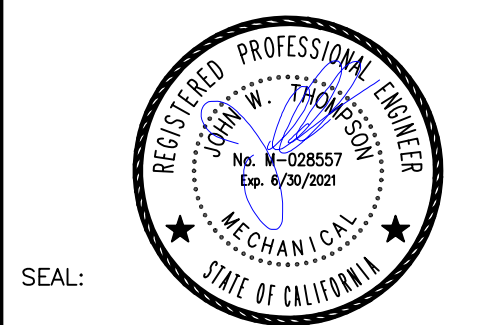
- GENERAL NOTES:
- 1 DISCONNECT EXISTING GAS PIPING AND CONDENSATE DRAIN PIPE.
 - 2 REMOVE ALL EXISTING DUCT SUPPORTS.
 - 3 ALL ROOFING WORK SHALL BE COMPLETED BY LICENCED ROOFING CONTRACTOR. SUBMIT ALL MATERIALS COMPATIBLE WITH AND SIMILAR TO THE EXISTING ROOFING SYSTEM. FIELD VERIFY THE EXISTING ROOFING SYSTEM FOR EACH BUILDING. SUBMIT ROOFING MATERIAL FOR EACH BUILDING SEPARATELY. PROVIDE 5 YEAR WARRANTY FOR ROOFING REPAIRS. PROVIDE ROOFING REPAIRS FOR ALL AREAS OF MODIFICATIONS, AND DEMOLITION WHERE EQUIPMENT, PIPES, OR DUCTS WERE REMOVED ETC.



MECHANICAL
DEMOLITION ROOF PLAN BLDG- B
SCALE: 1/8"=1'-0"

KEY PLAN





**LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT**
1290 LILAC STREET
WOODBIDGE, CA. 95242

SHEET TITLE:

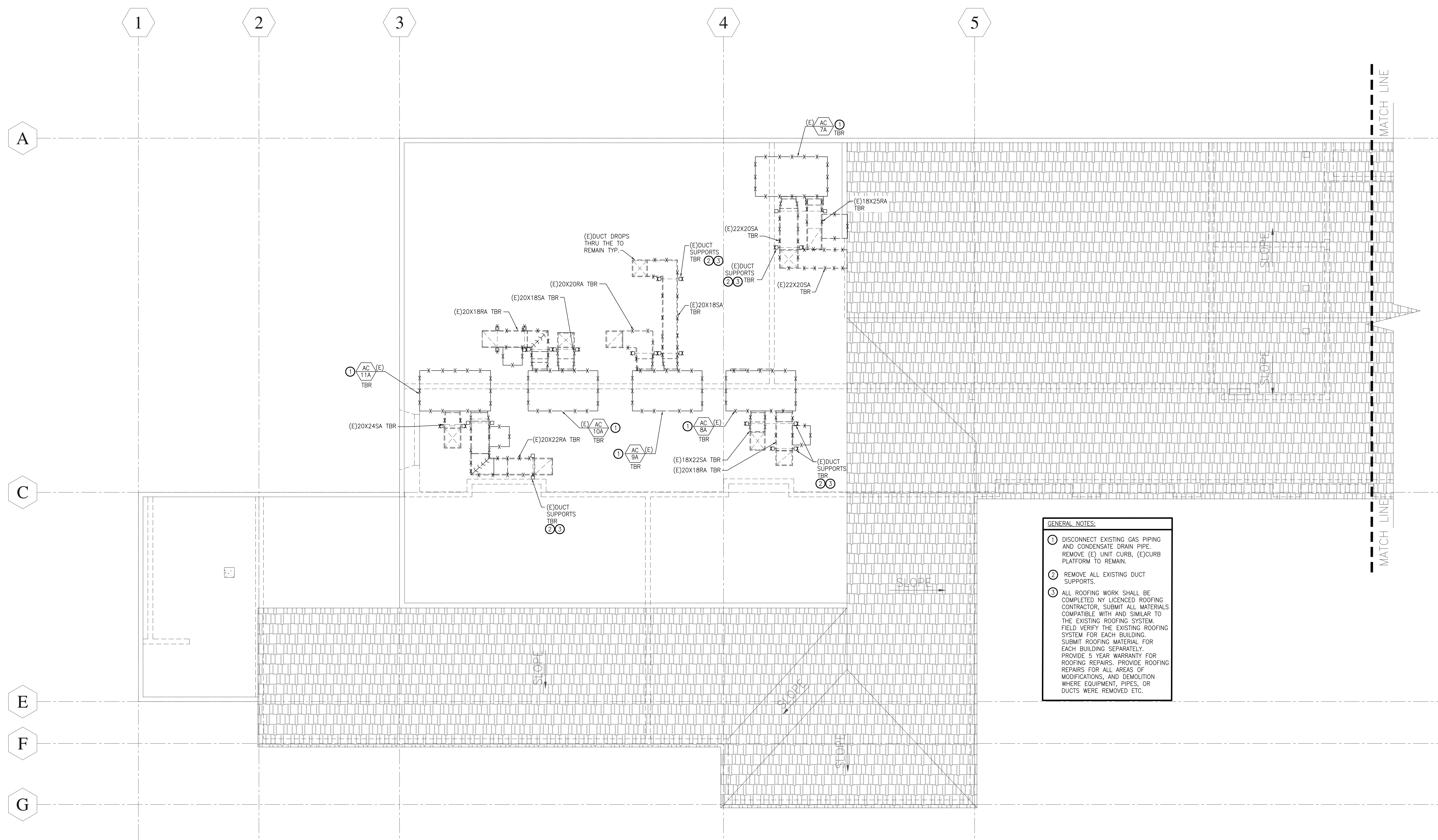
MECHANICAL
DEMOLITION ROOF
PLAN BUILDING A

[illegible]

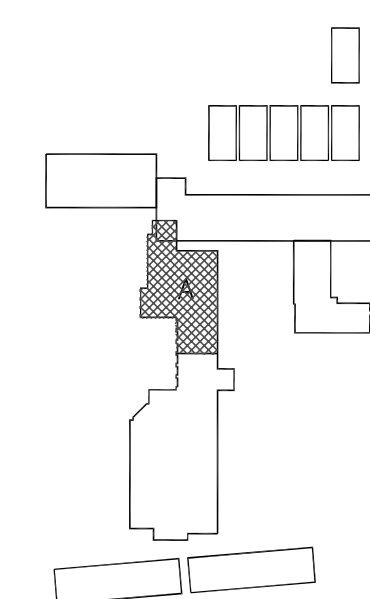
SHEET NUMBER:

M3.03

Project Engineer:	JT	Job Number:	20290
Project Manager:	JT	Plot Date:	Jun 15, 2021 - 9:08am
Project Officer:	ZH	Login:	LCox



KEY PLAN

MECHANICAL
DEMOLITION ROOF PLAN BUILDING A

SCALE: 1/4"=1'-0"

MATCH LINE

MATCH LINE

6

7

8

9

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B

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H

- GENERAL NOTES:
- 1 DISCONNECT EXISTING GAS PIPING AND CONDENSATE DRAIN PIPE. REMOVE (E) UNIT CURB, (E)CURB PLATFORM TO REMAIN.
 - 2 REMOVE ALL EXISTING DUCT SUPPORTS.
 - 3 ALL ROOFING WORK SHALL BE COMPLETED BY LICENCED ROOFING CONTRACTOR, SUBMIT ALL MATERIALS COMPATIBLE WITH AND SIMILAR TO THE EXISTING ROOFING SYSTEM. FIELD VERIFY THE EXISTING ROOFING SYSTEM FOR EACH BUILDING. SUBMIT ROOFING MATERIAL FOR EACH BUILDING SEPARATELY. PROVIDE 5 YEAR WARRANTY FOR ROOFING REPAIRS. PROVIDE ROOFING REPAIRS FOR ALL AREAS OF MODIFICATIONS, AND DEMOLITION WHERE EQUIPMENT, PIPES, OR DUCTS WERE REMOVED ETC.

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REGISTERED PROFESSIONAL ENGINEER
MECHANICAL
No. 4108557
Exp. 4/1/2025
STATE OF CALIFORNIA

SEAL:

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WOODBIDGE ELEMENTARY
HVAC REPLACEMENT
1290 LILAC STREET
WOODBIDGE, CA. 95242

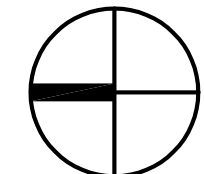
SHEET TITLE:

MECHANICAL
DEMOLITION ROOF
PLAN BUILDING A

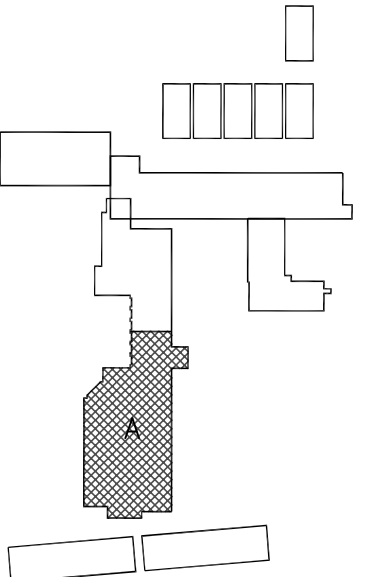
NO.	REVISIONS	DATE

SHEET NUMBER:			
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Project Engineer:	JT	Job Number:	2090
Project Manager:	JT	Proj Date:	Jun 16, 2021 - 8/8/21
Project Designer:	DS	Design:	COG

A MECHANICAL
DEMOLITION ROOF PLAN BUILDING A
SCALE: 1/4"=1'-0"

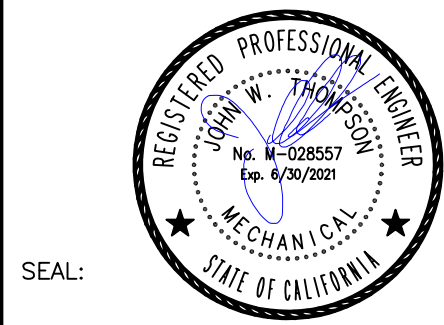


KEY PLAN



DSA 02-118996

TURLEY MECHANICAL
& ASSOCIATES
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HVAC REPLACEMENT
1290 LILAC STREET
WOODBIDGE, CA. 95242

SHEET TITLE:

MECHANICAL ROOF
PLAN BUILDING B

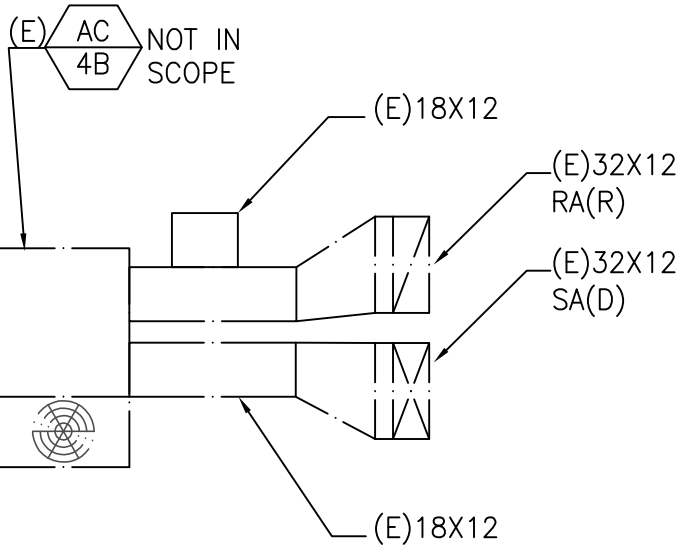
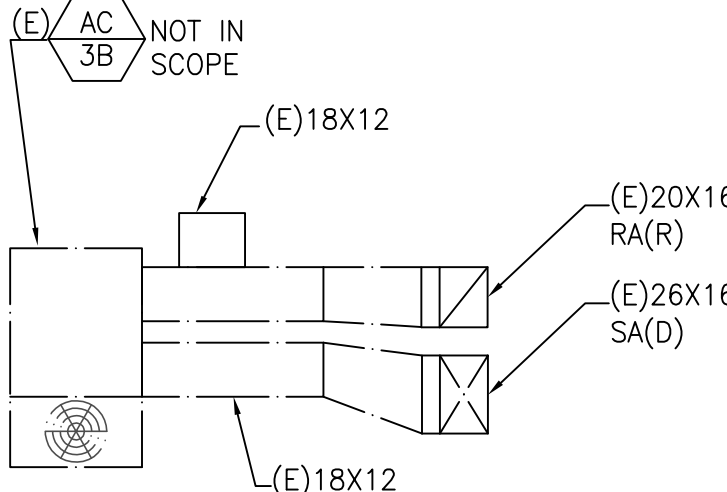
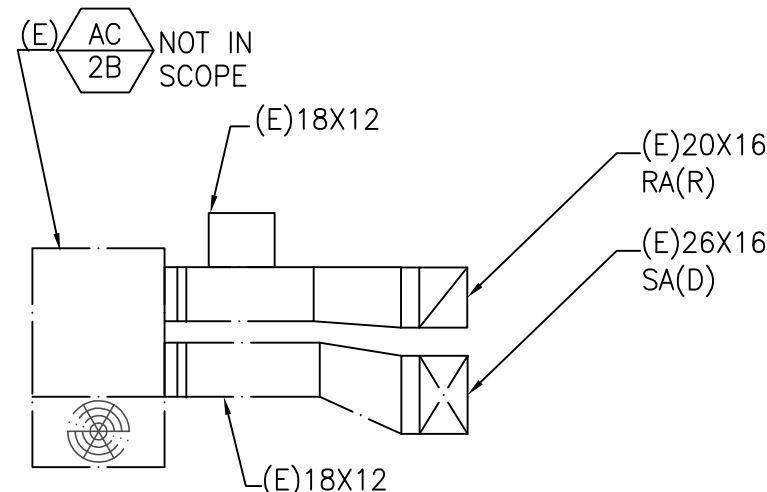
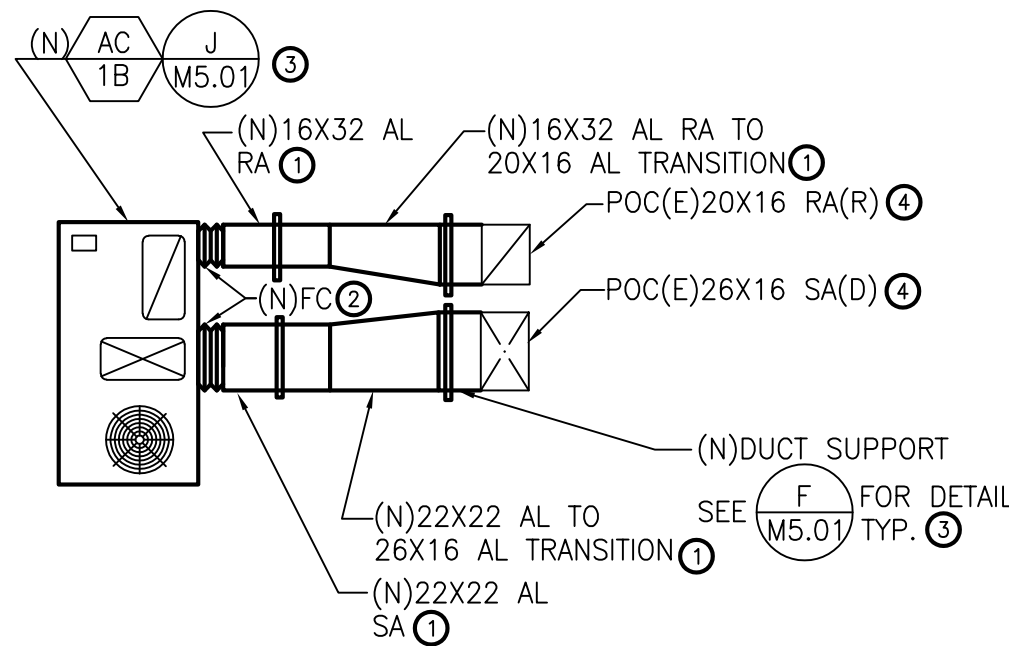
NO.	REVISIONS	DATE

SHEET NUMBER:

M3.11

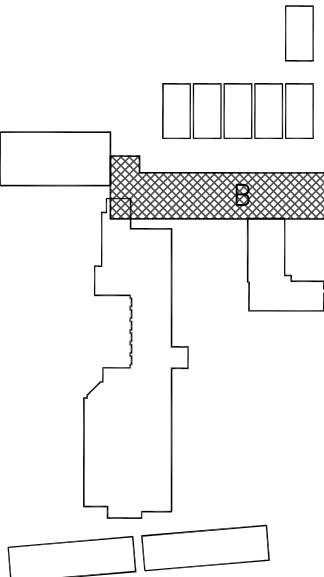
Project Engineer:	JT	Job Number:	2090
Project Manager:	JT	Proj Date:	Jan 15, 2021 - 8/8/21
Project Owner:	DS	Design:	COG

- GENERAL NOTES:
- NEW DUCT WORK TO HAVE INTERNAL R-8 INSULATION SEE SPECIFICATIONS.
 - SEE 1/MS.01 FOR FLEX CONNECTION DETAIL.
 - ALL ROOFING WORK SHALL BE COMPLETED BY LICENSED ROOFING CONTRACTOR. SUBMIT ALL MATERIALS COMPATIBLE WITH AND SIMILAR TO THE EXISTING ROOFING SYSTEM. FIELD VERIFY THE EXISTING ROOFING SYSTEM FOR EACH BUILDING. SUBMIT ROOFING MATERIAL FOR EACH BUILDING SEPARATELY. PROVIDE 5 YEAR WARRANTY FOR ROOFING REPAIRS. PROVIDE ROOFING REPAIRS FOR ALL AREAS OF MODIFICATIONS, AND DEMOLITION WHERE EQUIPMENT, PIPES, OR DUCTS WERE REMOVED ETC.
 - SEAL EXISTING DUCTING ON ROOF TO ENSURE SYSTEM IS WATER TIGHT. PROVIDE REPAIR OF EXISTING DUCT LINER ON ROOF DUCTWORK. PROVIDE LINER END COATINGS TO NOT HAVE LOOSE FIBERGLASS FIBERS IN AIR STREAM.



A MECHANICAL ROOF PLAN BUILDING B
SCALE: 3/16"=1'-0"

KEY PLAN



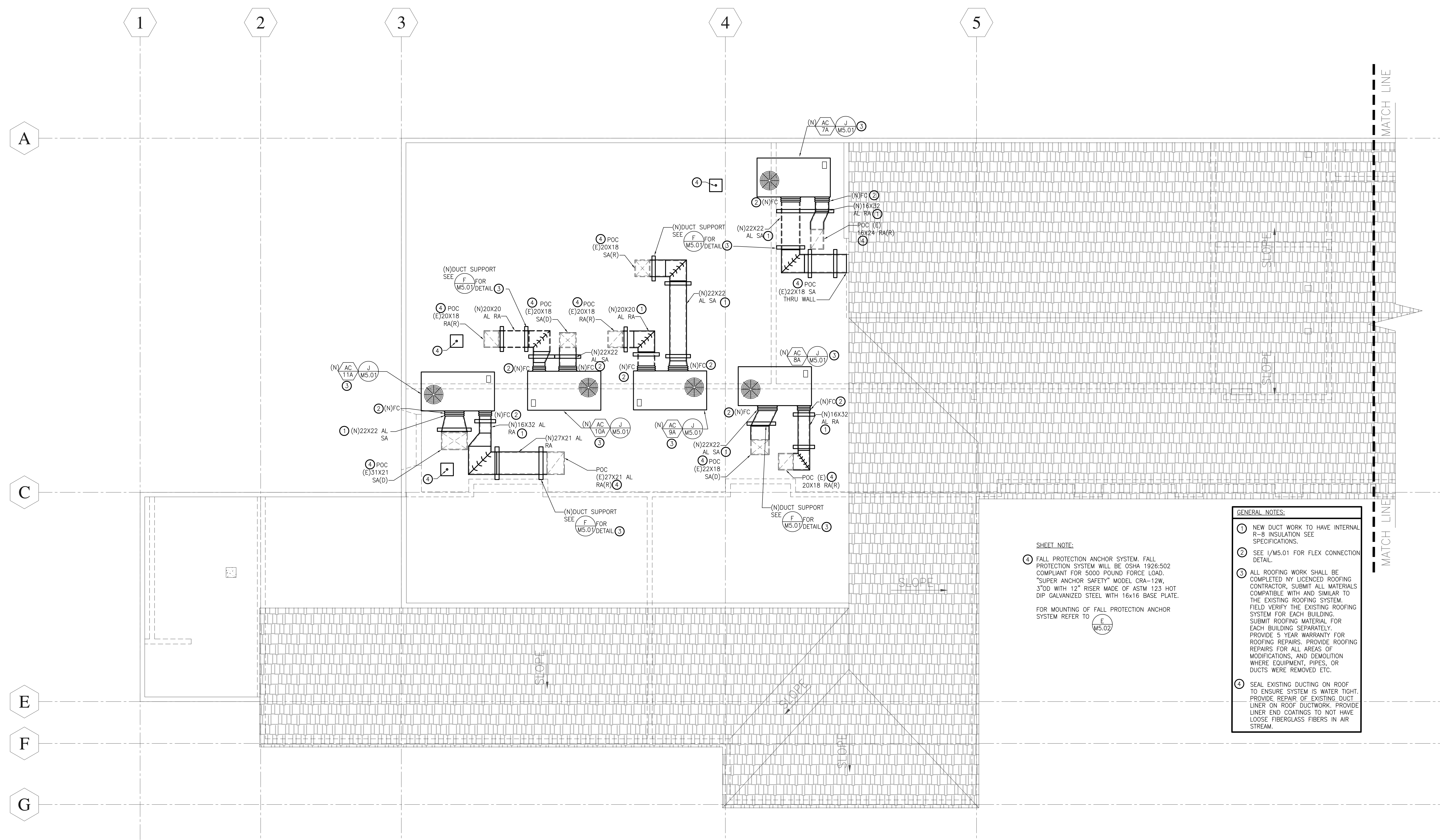
LODI UNIFIED SCHOOL DISTRICT
WOODBRIDGE ELEMENTARY
HVAC REPLACEMENT
1290 LILAC STREET
WOODBRIDGE, CA. 95242

MECHANICAL ROOF
PLAN BUILDING A

SHEET NUMBER:

M3.13

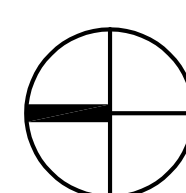
Project Engineer:	JT	Job Number:	20290
Project Manager:	JT	Plot Date:	Jun 15, 2021 - 9:09am
Project Drafter:	ZH	Login:	LCox



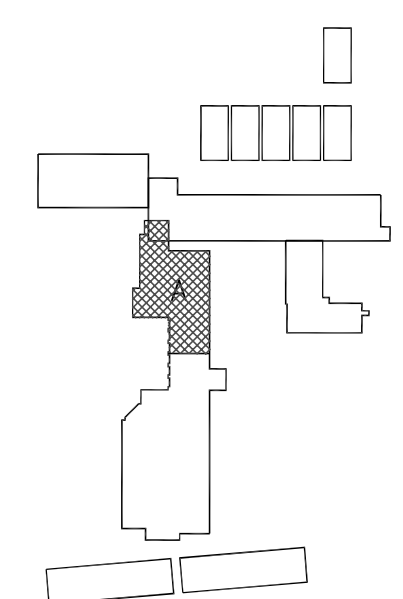
MECHANICAL

BUILDING A ROOF PLAN

SCALE: 1/4"=1'-0"



KEY PLAN



MATCH LINE

MATCH LINE

6

7

8

9

A

B

D

H

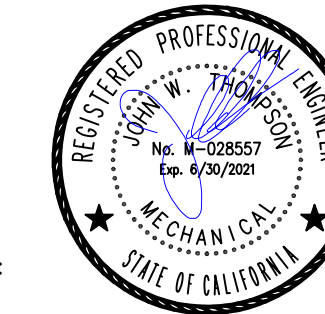
- GENERAL NOTES:
- NEW DUCT WORK TO HAVE INTERNAL R-8 INSULATION SEE SPECIFICATIONS.
 - SEE 1/M5.01 FOR FLEX CONNECTION DETAIL.
 - ALL ROOFING WORK SHALL BE COMPLETED BY LICENCED ROOFING CONTRACTOR. SUBMIT ALL MATERIALS COMPATIBLE WITH AND SIMILAR TO THE EXISTING ROOFING SYSTEM. FIELD VERIFY THE EXISTING ROOFING SYSTEM FOR EACH BUILDING. SUBMIT ROOFING MATERIAL FOR EACH BUILDING SEPARATELY. PROVIDE 5 YEAR WARRANTY FOR ROOFING REPAIRS. PROVIDE ROOFING REPAIRS FOR ALL AREAS OF MODIFICATIONS, AND DEMOLITION WHERE EQUIPMENT, PIPES, OR DUCTS WERE REMOVED ETC.
 - SEAL EXISTING DUCTING ON ROOF TO ENSURE SYSTEM IS WATER TIGHT. PROVIDE REPAIR OF EXISTING DUCT LINER ON ROOF DUCTWORK. PROVIDE LINER END COATINGS TO NOT HAVE LOOSE FIBERGLASS FIBERS IN AIR STREAM.

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WOODBIDGE ELEMENTARY
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1290 LILAC STREET
WOODBIDGE, CA. 95242

SHEET TITLE:

MECHANICAL ROOF
PLAN BUILDING A

NO. REVISIONS DATE

SHEET NUMBER:

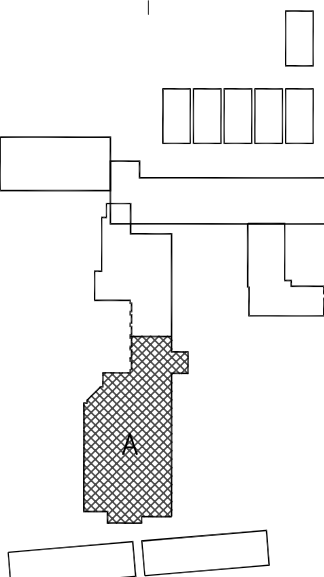
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Project Engineer:	JT	Job Number:	2090
Project Manager:	JT	Proj Date:	Jun 16, 2021 - 8:09am
Project Designer:	DS	Design:	100%

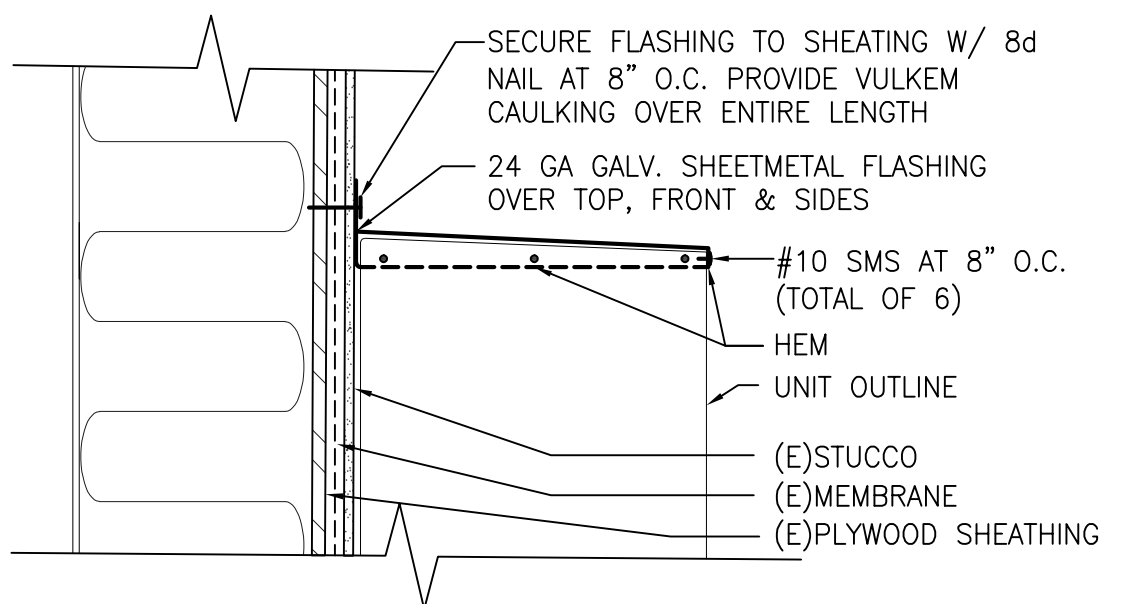
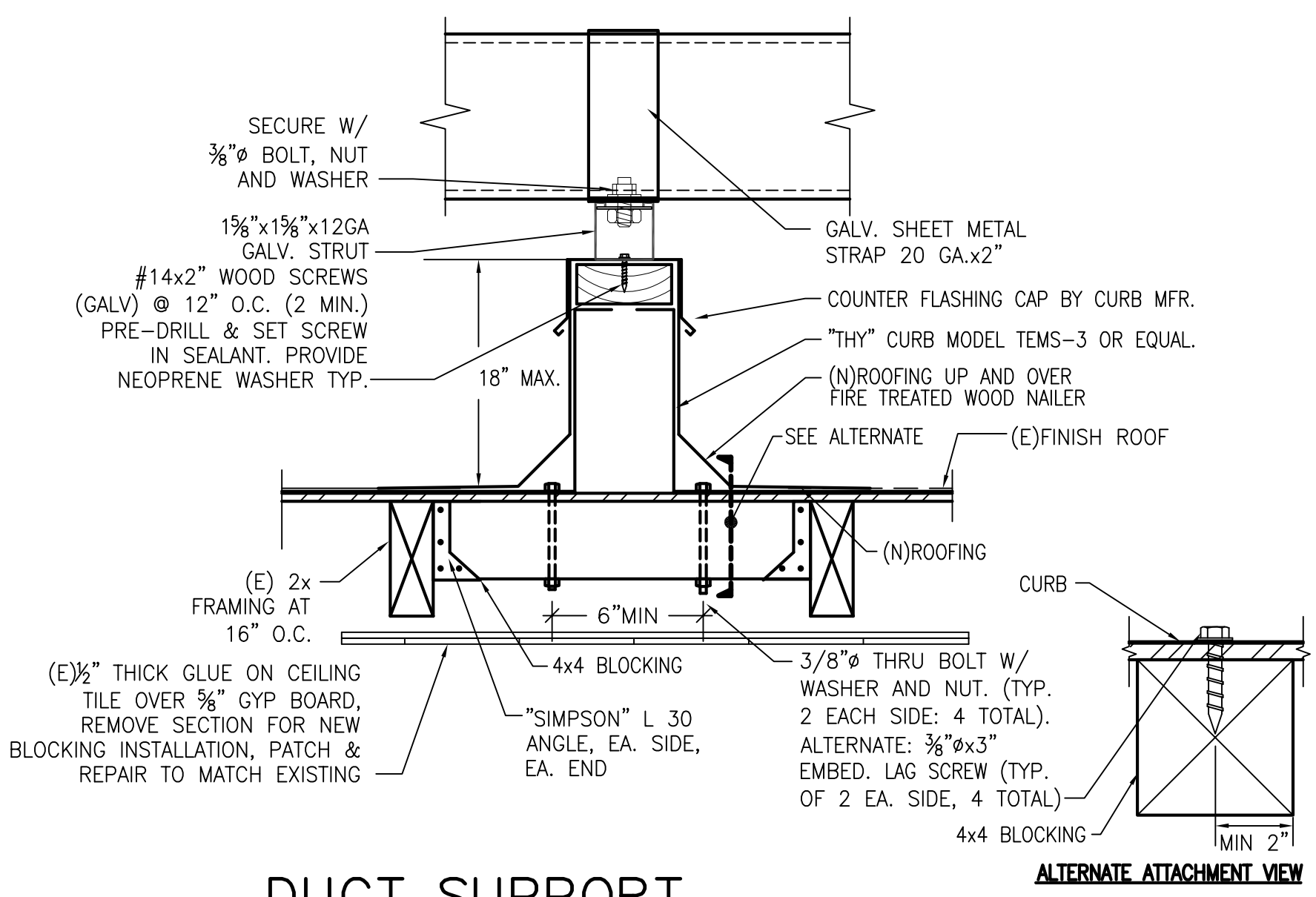
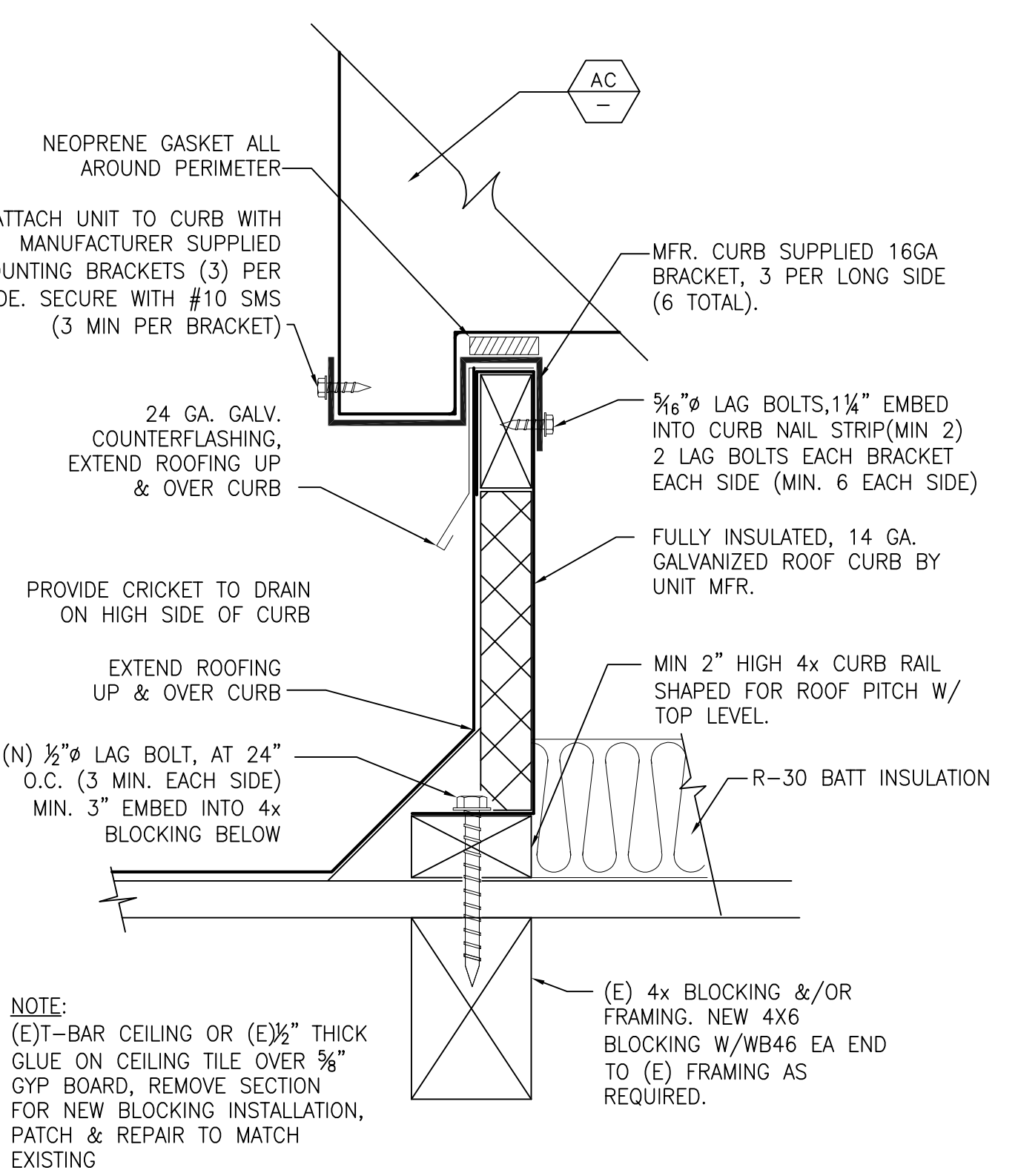
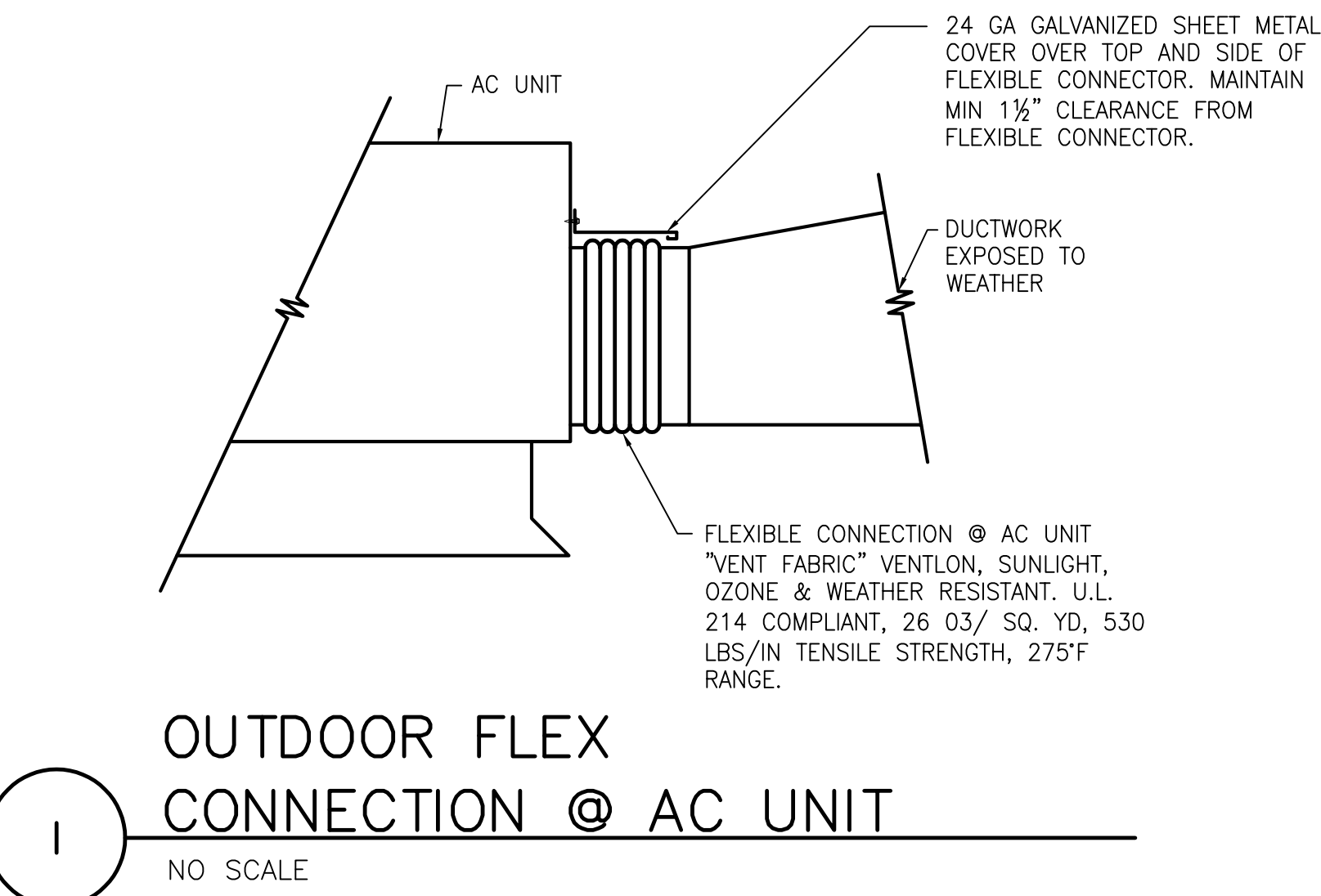
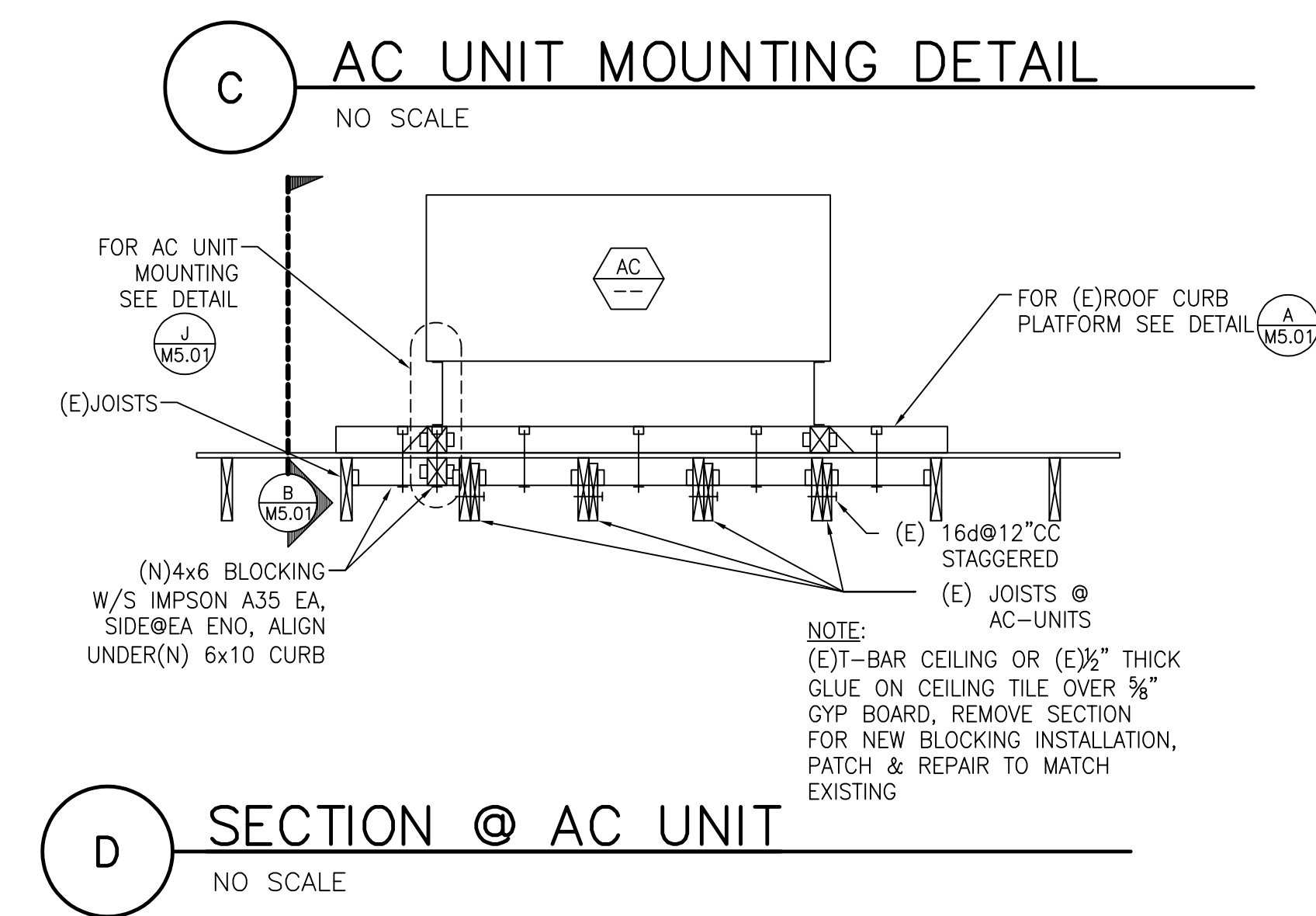
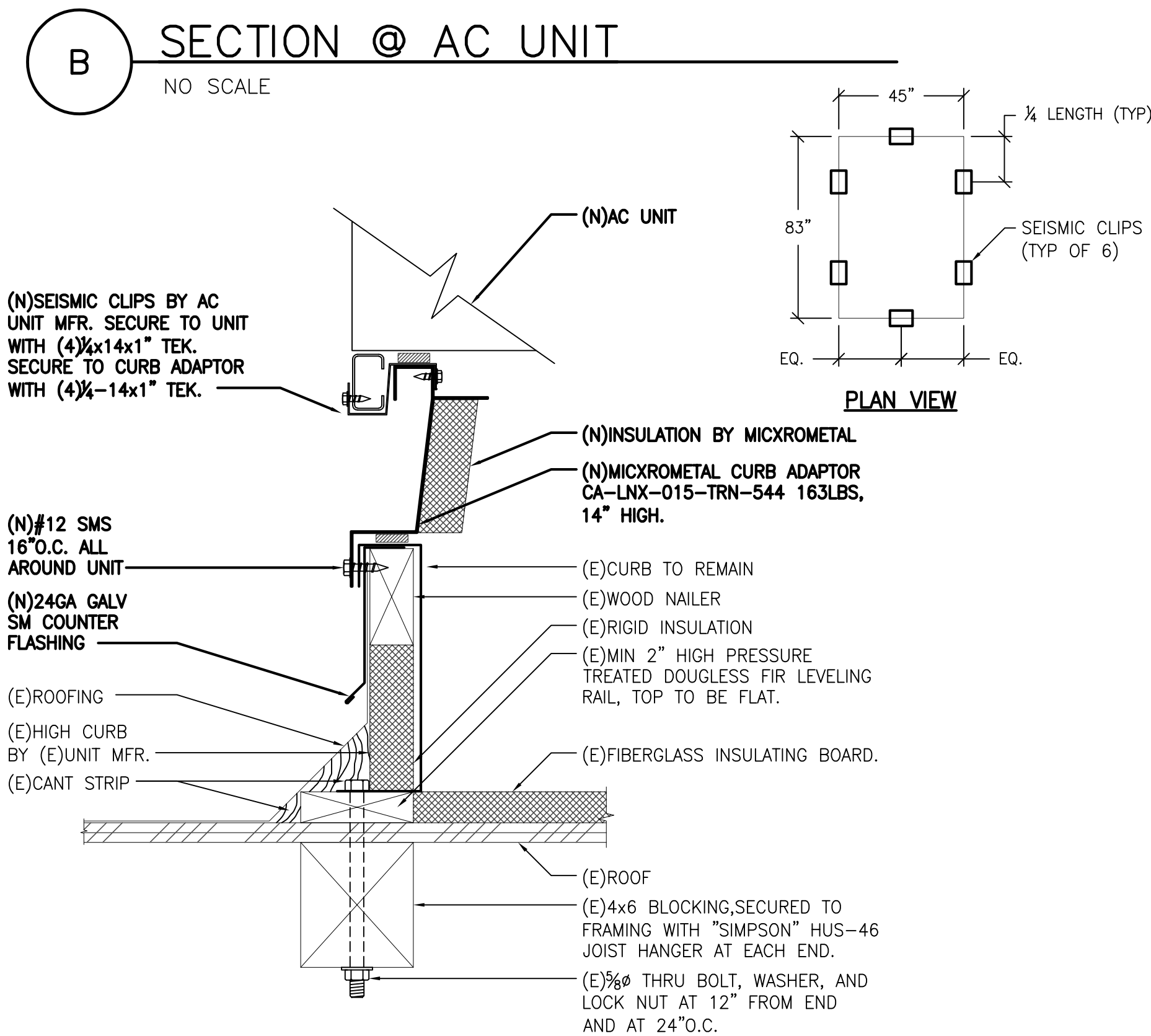
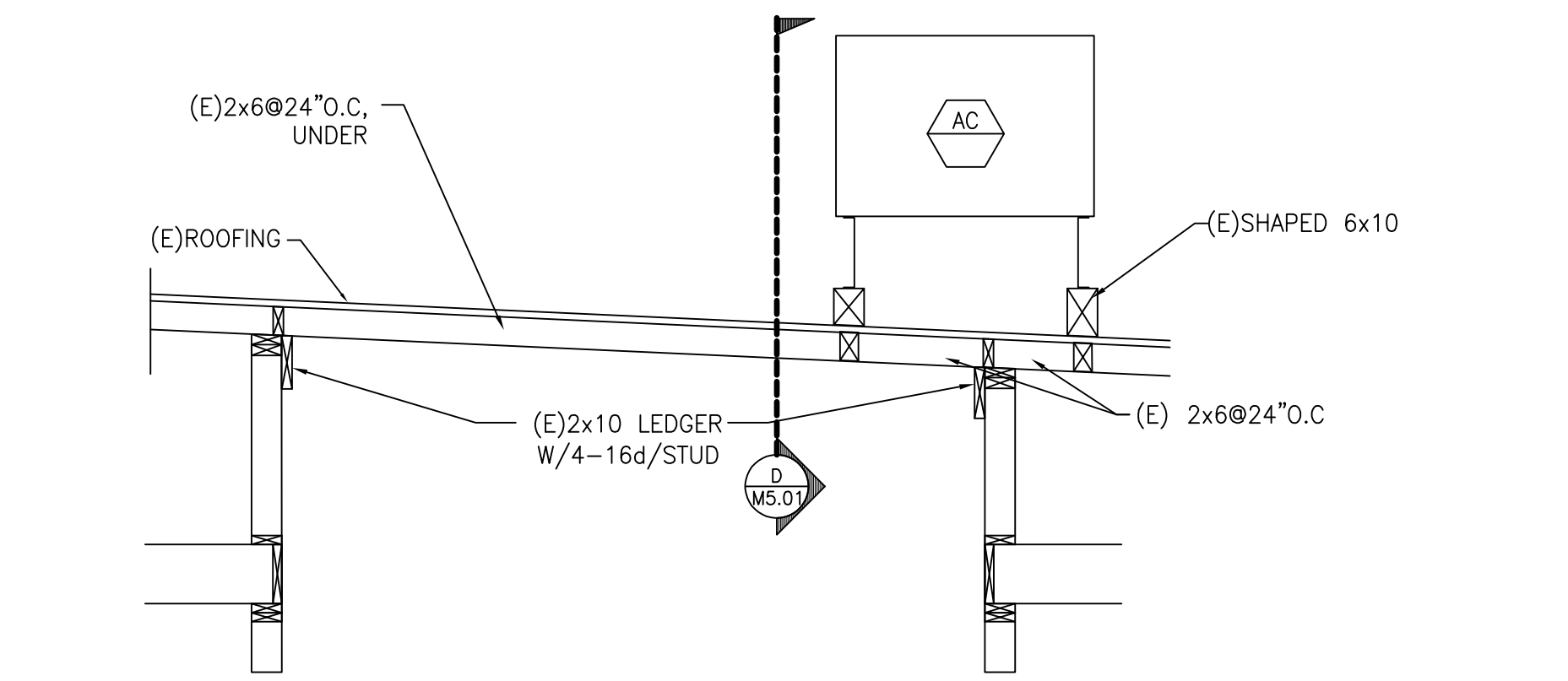
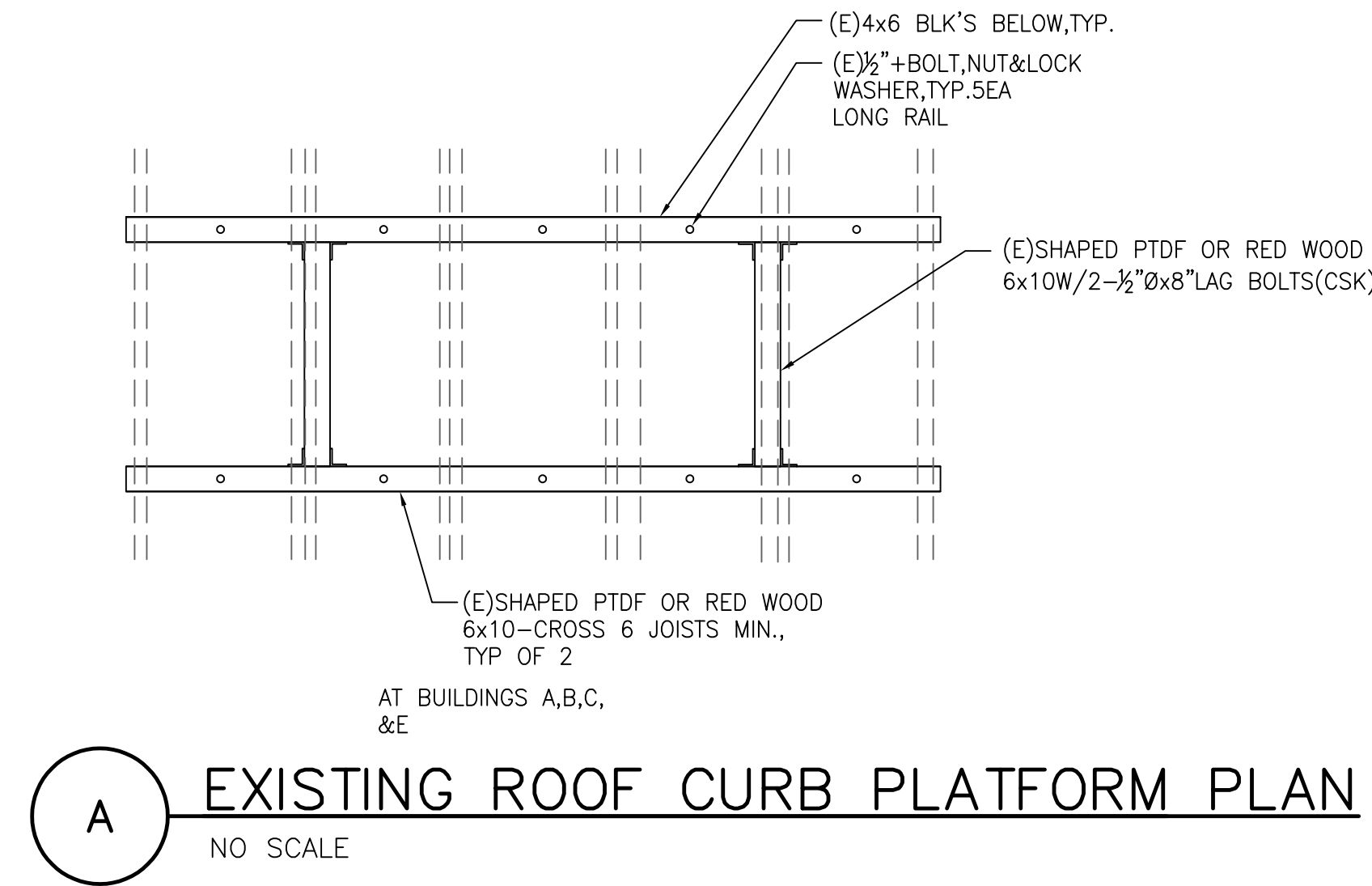
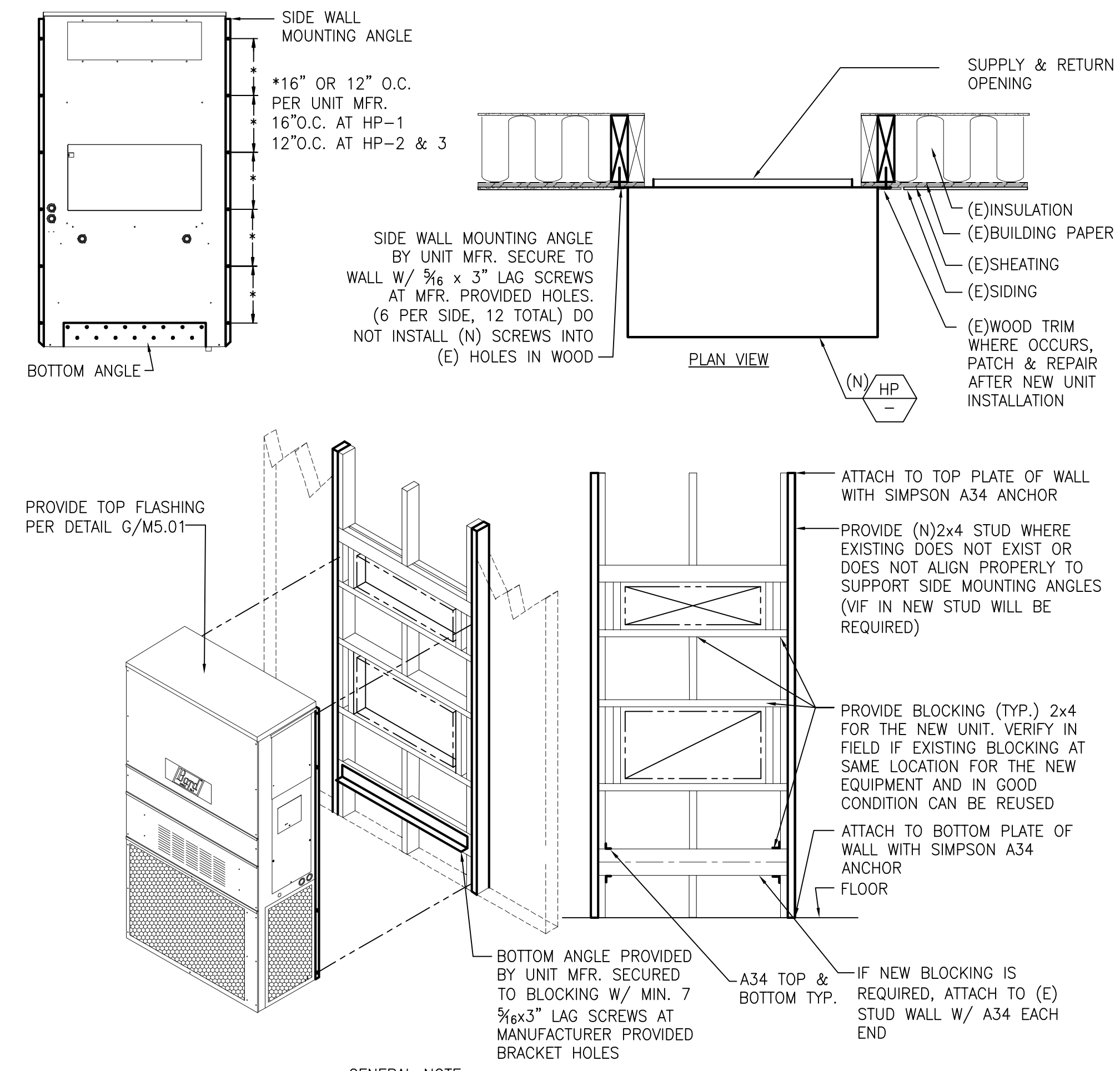
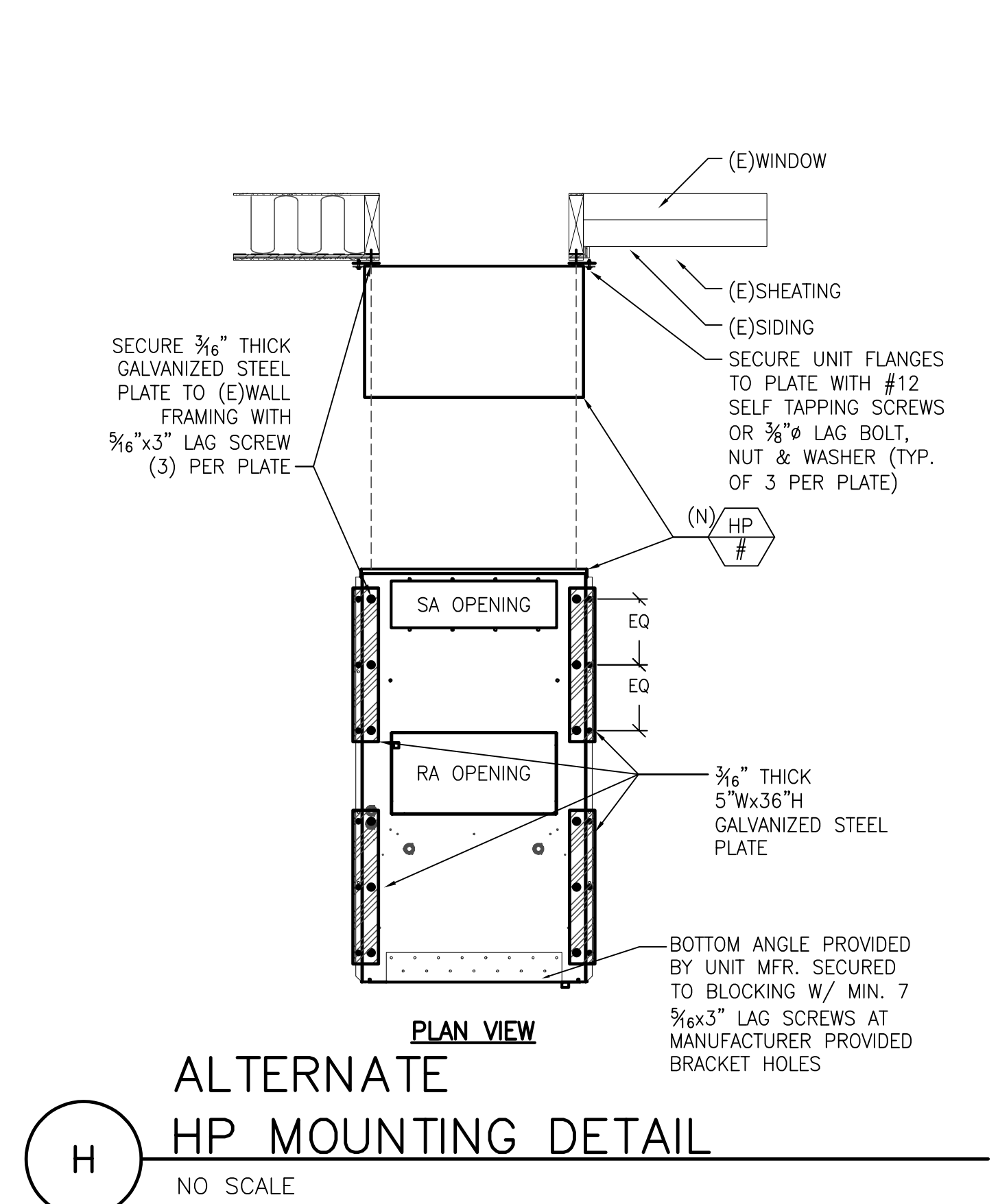
MECHANICAL
BUILDING A ROOF PLAN

SCALE: 1/4"=1'-0"

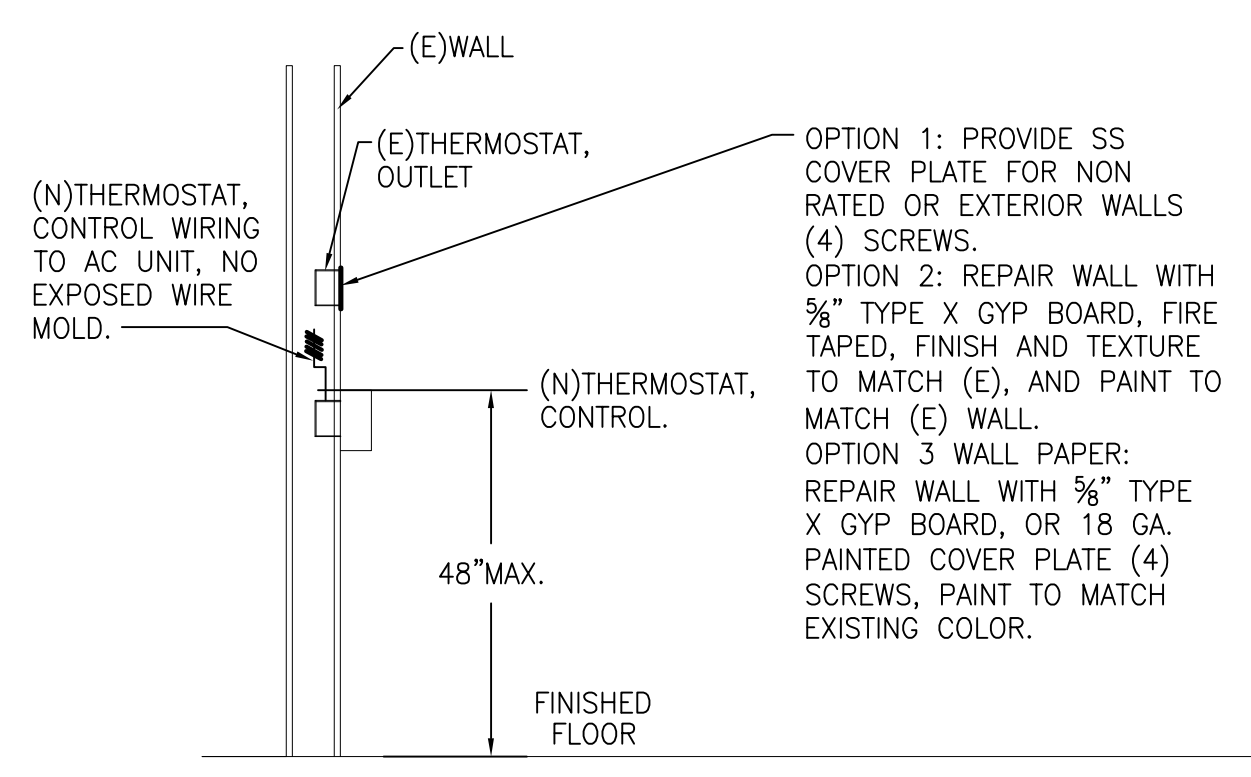
KEY PLAN



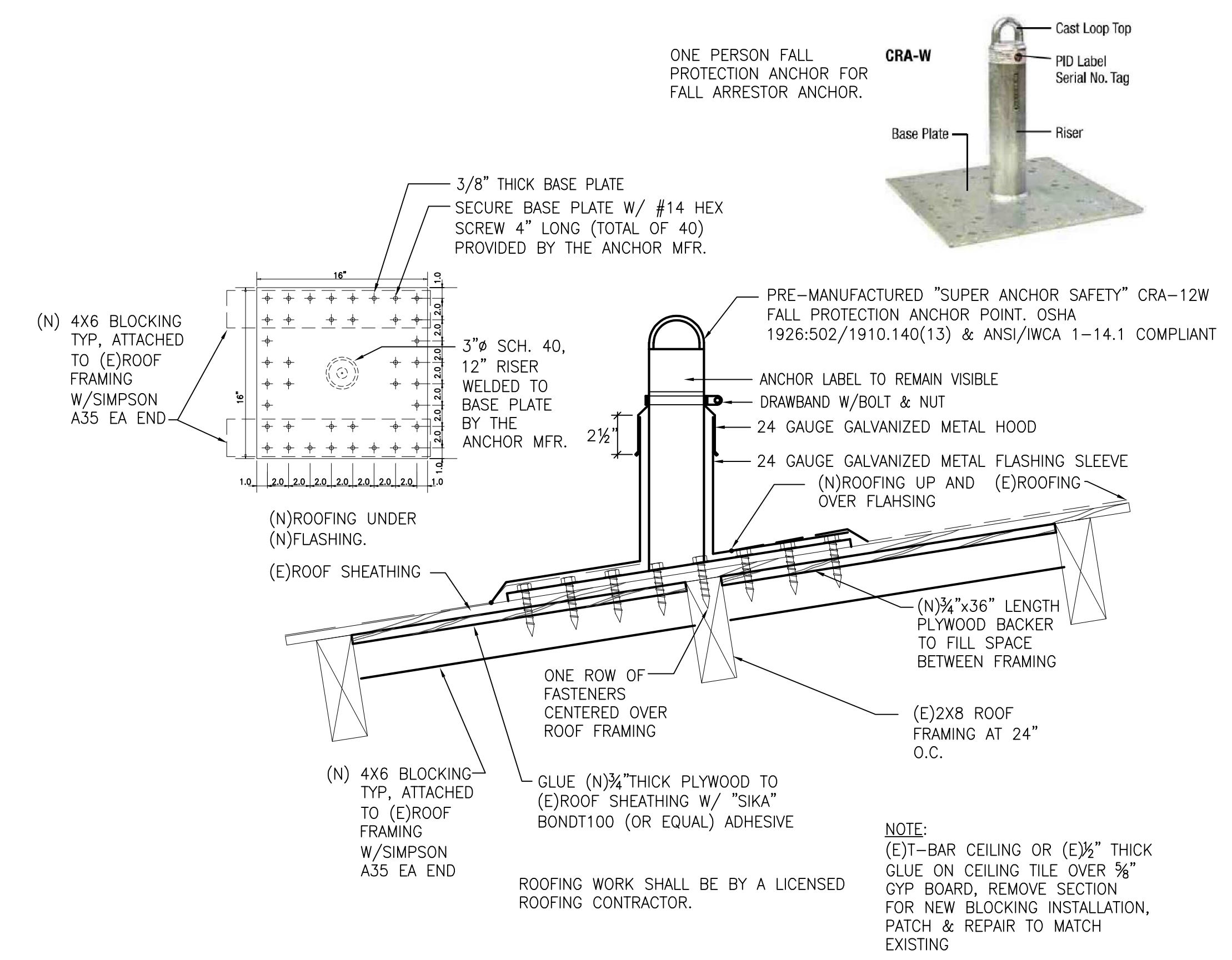
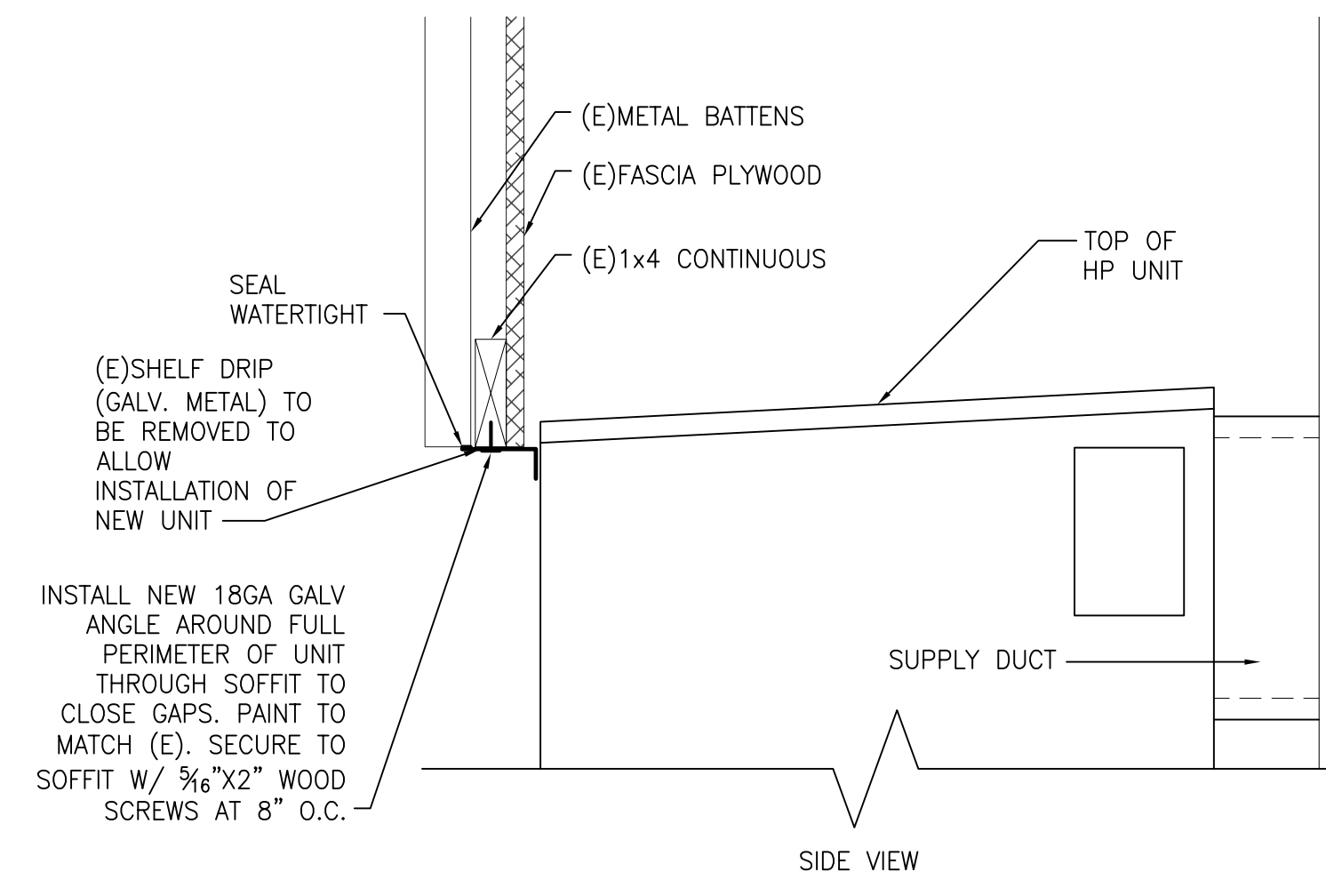
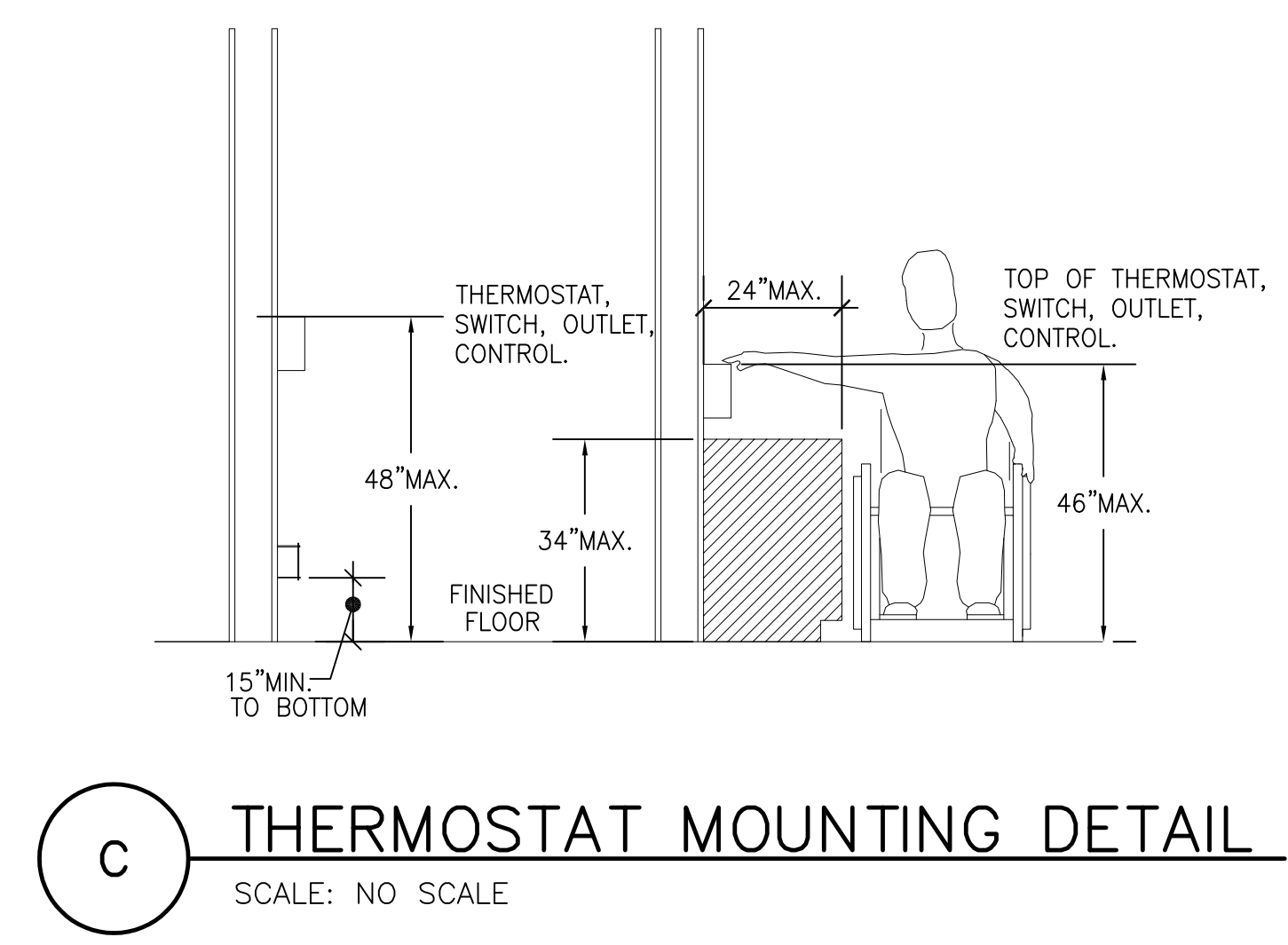
GENERAL NOTE:
EXPOSED METAL AND FASTENERS
SHALL BE GALVANIZED OR
STAINLESS STEEL.



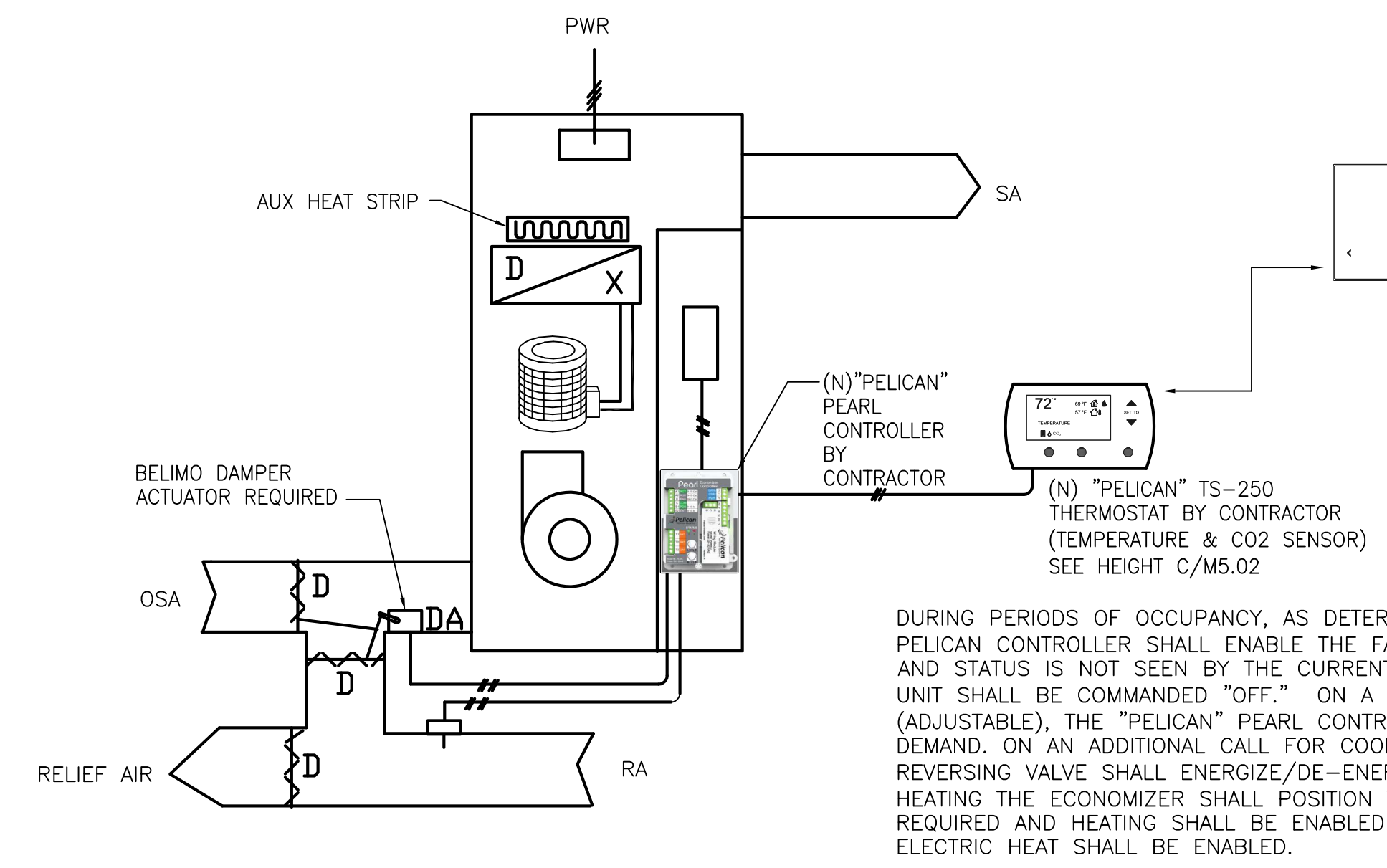
NOTE:
(E)T-BAR CEILING OR (E)1/2\"/>



F THERMOSTAT WALL PATCH DETAIL
SCALE: NO SCALE



E FALL PROTECTION ANCHOR POINT INSTALLATION DETAIL
SCALE: NO SCALE

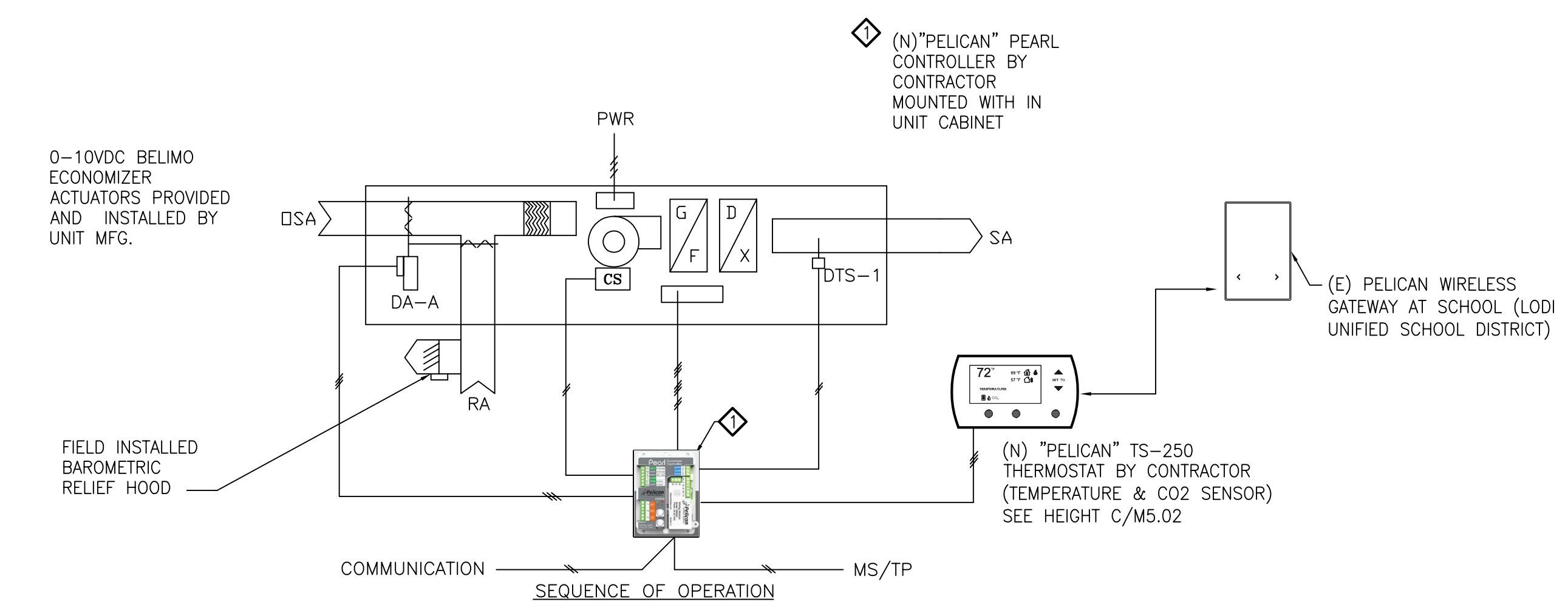


- QUANTITIES TO BE DETERMINED AT JOB WALK
- EXISTING TS-200 SPACE TEMPERATURE SENSORS TO BE REMOVED & NEW (TS-250) TO BE LOCATED AT SAME EXISTING LOCATION. CONFRIM EXISTING LOCATION IS ADA COMPLIANT MAX. 48" ABOVE FINISHED FLOOR

CO2 AND MINIMUM DAMPER CONTROL: CO2 SENSOR (CO2) SHALL RESET THE MINIMUM OUTSIDE AIR ACCORDING TO THE FOLLOWING SCHEDULE (ADJ.).

SPACE CO2 (PPM)	MIN. OA POSITION
<900 PPM	OUTSIDE AIR MIN. DMPR. POS. - 0.15 CFM/SQFT = 135 CFM
>901 PPM	OUTSIDE AIR DAMPER POSITION - 15 CFM/OCC. = 450 CFM

A TYP. "BARD" HEAT PUMP UNIT CONTROL DIAGRAM WITH ECONOMIZER
NO SCALE



PROVIDE TITLE 24 REQUIRED CO2 SENSORS OR OCCUPANCY SENSORS FOR EACH UNIT. ECONOMIZER CONTROL SHALL BE LISTED WITH CEC AS AN APPROVED FDD ECONOMIZER CONTROLLER WITH FAULT DETECTION LIGHT AT SPACE TEMPERATURE SENSOR.

CO2 AND MINIMUM DAMPER CONTROL: CO2 SENSOR (CO2) SHALL RESET THE MINIMUM OUTSIDE AIR ACCORDING TO THE FOLLOWING SCHEDULE (ADJ.).

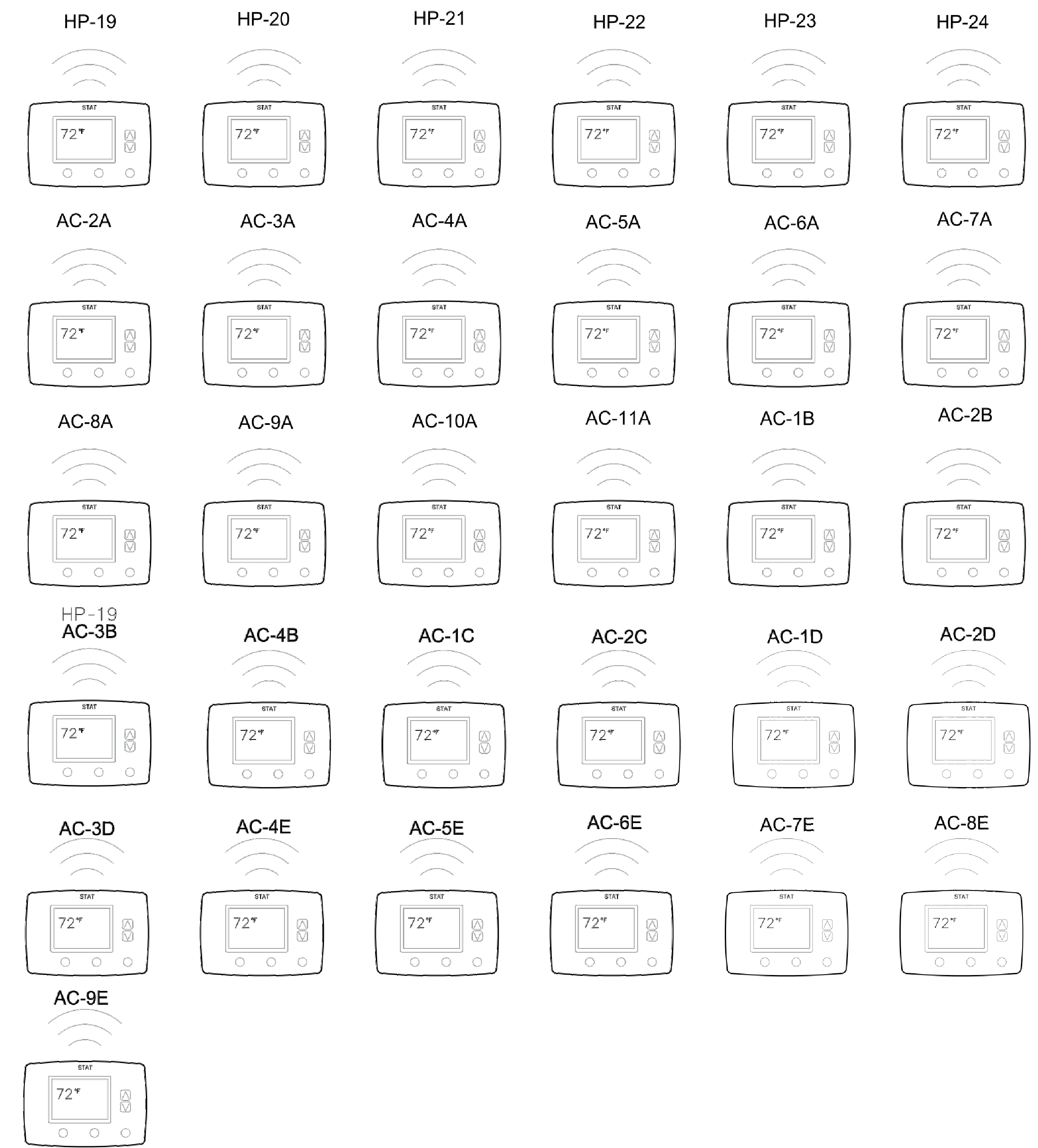
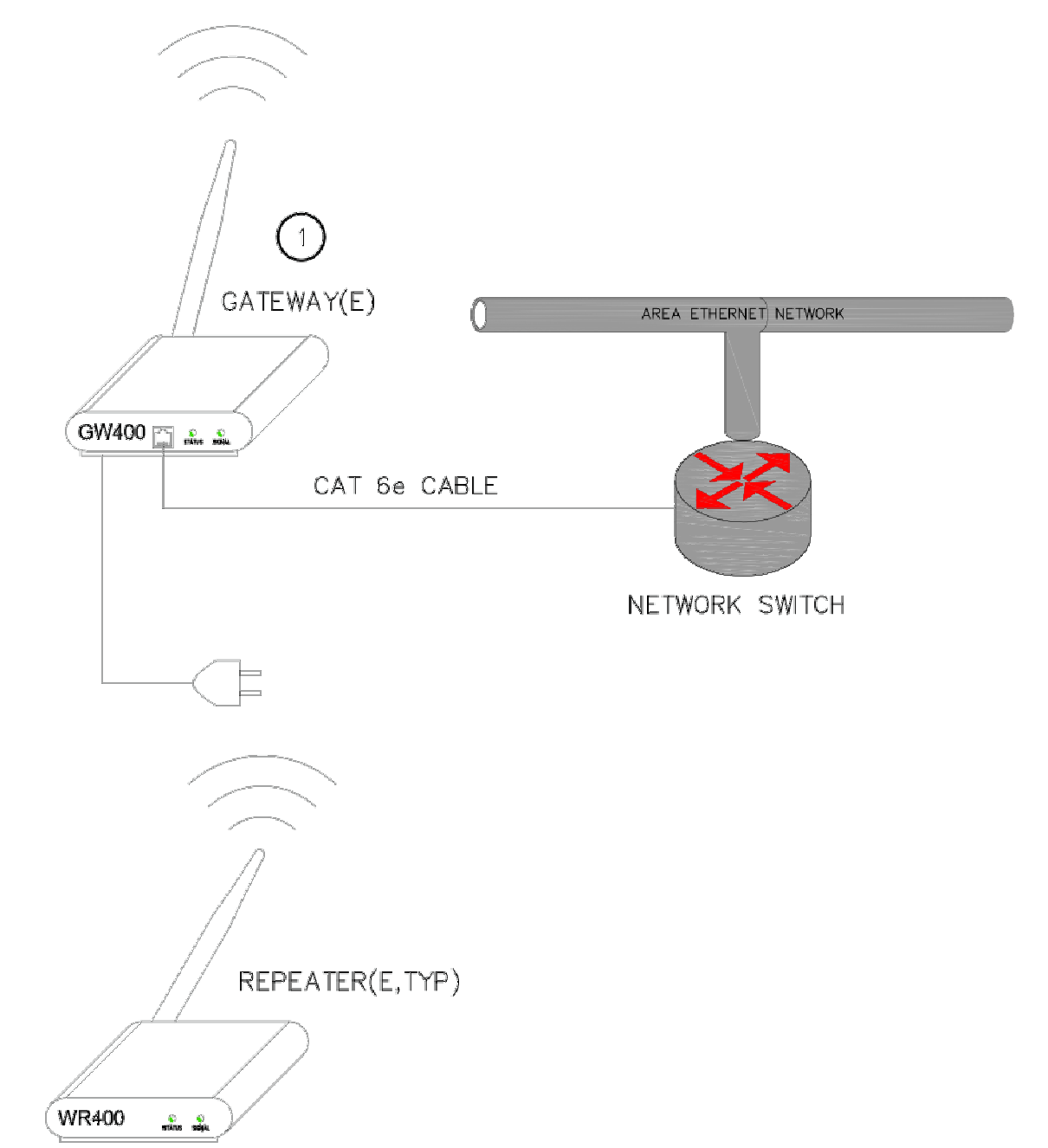
SPACE CO2 (PPM)	MIN. OA POSITION
<900 PPM	OUTSIDE AIR MIN. DMPR. POS. - 0.15 CFM/SQFT - ADJUST TO SPECIFIED AMOUNT ON M0.2
>901 PPM	OUTSIDE AIR DAMPER POSITION - 15 CFM/OCC. - ADJUST TO SPECIFIED AMOUNT ON M0.2

B ROOFTOP PACKAGED AIR CONDITION UNIT WITH ECONOMIZER CONTROL
NO SCALE

NO.	REVISIONS	DATE

Sheet Notes

- ① LOCATED IN BUILDING E STORAGE 16



1 LAN ARCHITECTURE

LAN ARCHITECTURE

SECTION 220500 – PLUMBING AND UTILITIES

SECTION 220500 – PLUMBING AND UTILITIES

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK:

A. THE REQUIREMENTS OF THE GENERAL CONDITIONS APPLY TO ALL WORK HEREUNDER; ALSO, APPLICABLE PROVISIONS OF SECTION 230500 MECHANICAL WORK – GENERAL REQUIREMENTS.

B. FURNISH AND INSTALL ALL PLUMBING WORK INDICATED ON THE DRAWINGS AND DESCRIBED HEREIN. ALSO, ANY INCIDENTAL WORK NOT SHOWN OR SPECIFIED NECESSARY TO PROVIDE THE COMPLETE SYSTEM.

1.02 SERVICES:

A. MAKE ALL ARRANGEMENTS FOR THE UTILITIES REQUIRED. PAY ALL COSTS INVOLVED IN OBTAINING THE SERVICES, INCLUDING GAS SERVICE AND METER, WATER METER AND ACCESS BOX, STREET WORK, IN LIEU FEES FOR SEWER, ETC.

B. VERIFY THE LOCATION OF ALL SERVICES. NO EXTRA COST SHALL BE ALLOWED IF SERVICES ARE NOT AS SHOWN.

C. DETERMINE STORM AND SANITARY SEWER ELEVATION AT POINT OF CONNECTION BEFORE INSTALLING ANY SEWER PIPING. NOTIFY ARCHITECT IMMEDIATELY IF INDICATED GRADES CANNOT BE MAINTAINED.

1.03 RECORD DRAWINGS:

A. A PRINT OF THE PLUMBING PLAN SHOWING UNDERGROUND PIPING WILL BE FURNISHED BY THE CONTRACTOR ON WHICH HE SHALL INDICATE THE LOCATIONS OF THE UNDERGROUND INSTALLATIONS AS THE WORK PROGRESSES. THIS SHALL BE RETURNED TO ARCHITECT AT COMPLETION OF JOB.

PART 2 – PRODUCTS

2.01 NOT USED:

2.02 PIPE AND FITTINGS INSIDE BUILDING:

A. SEE GENERAL REQUIREMENTS, SECTION 230500, FOR DIELECTRIC FITTINGS AND PIPE PROTECTION. TERMINATE 5'-0" OUTSIDE THE BUILDING LINE OR WHERE MARKED.

B. WASTE AND VENT PIPE ABOVE GROUND CONDENSATE DRAINS SHALL BE TYPE L OR TYPE DWV HARD COPPER, WITH LONG SWEEP ELBOWS AND CLEANOUT TEES AT EACH CHANGE IN DIRECTION. CONNECT CONDENSATE DRAINS TO AIR CONDITIONING UNITS WITH P-TRAP AND RUN TO AN APPROVED RECEPTOR AND DRY WELL OR LANDSCAPE.

2.03 PIPE AND FITTINGS OUTSIDE BUILDINGS:

A. SEE GENERAL REQUIREMENTS SECTION FOR DIELECTRIC FITTINGS AND PIPE CORROSIVE PROTECTION. CONNECT TO BUILDING SERVICES WHERE TERMINATED 5' OUTSIDE FOOTING LINE.

2.04 NOT USED:

2.05 NOT USED:

PART 3 – EXECUTION

3.01 SERVICES:

B. MAKE ALL ARRANGEMENTS FOR THE UTILITIES REQUIRED. PAY ALL COSTS INVOLVED IN OBTAINING THE SERVICES INCLUDING GAS SERVICE AND METER, WATER METER, PRESSURE REDUCING VALVE, ACCESS BOXES, STREET WORK.

C. VERIFY THE LOCATION OF ALL SERVICES. NO EXTRA COST SHALL BE ALLOWED IF SERVICES ARE NOT AS SHOWN.

D. DETERMINE STORM AND SANITARY SEWER ELEVATION AT POINT OF CONNECTION BEFORE INSTALLING ANY SEWER PIPING. NOTIFY ARCHITECT IMMEDIATELY IF INDICATED GRADES CANNOT BE MAINTAINED.

3.02 RECORD DRAWINGS:

A. A PRINT OF THE PLUMBING PLAN SHOWING UNDERGROUND PIPING WILL BE FURNISHED TO THE CONTRACTOR ON WHICH HE SHALL INDICATE THE LOCATIONS OF THE UNDERGROUND INSTALLATIONS AS THE WORK PROGRESSES. THIS SHALL BE RETURNED TO THE ARCHITECT AT COMPLETION OF JOB.

END OF SECTION

SECTION 230500– MECHANICAL WORK– GENERAL REQUIREMENTS

SECTION 230500 – MECHANICAL WORK – GENERAL REQUIREMENTS

CONDITIONS OF CONTRACT APPLY TO THIS SECTION.

PART 1 – GENERAL

1.01 INCLUSIONS:

A. THIS SECTION APPLIES FOR ALL DIVISION 23 MECHANICAL SECTIONS. ALL CONDITIONS AND MATERIALS ARE PERTINENT TO THE OTHER SECTIONS AS IF REPEATED IN THOSE SECTIONS.

B. FURNISH AND INSTALL ANY INCIDENTAL WORK NOT SHOWN OR SPECIFIED WHICH IS NECESSARY TO PROVIDE A COMPLETE AND WORKABLE SYSTEM.

1.02 DRAWINGS:

A. EXAMINE ALL DRAWINGS PRIOR TO BIDDING OF WORK AND REPORT ANY DISCREPANCIES IN WRITING TO THE ARCHITECT.

CONTRACTOR SHALL VISIT THE SITE OF WORK AND EXAMINE EXISTING CONDITIONS IN ORDER TO BECOME FAMILIAR WITH THE SCOPE. IF DIMENSIONS ARE SHOWN ON THE PLANS, THEY SHALL BE VERIFIED AT THE SITE. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT. FAILURE TO EXAMINE THE SITE SHALL NOT CONSTITUTE BASIS FOR CLAIMS FOR ADDITIONAL WORK BECAUSE OF LACK OF KNOWLEDGE OR LOCATION OF HIDDEN CONDITIONS WHICH COULD AFFECT THE SCOPE.

B. DRAWINGS SHOWING LOCATION OF EQUIPMENT, PIPING, DUCTWORK, ETC., ARE DIAGRAMMATIC AND JOB CONDITIONS WILL NOT ALWAYS PERMIT THEIR INSTALLATION IN THE LOCATION SHOWN. THE MECHANICAL DRAWINGS SHOW THE GENERAL ARRANGEMENT OF ALL PIPING, DUCTWORK, EQUIPMENT, ETC., AND SHALL BE FOLLOWED AS CLOSELY AS EXISTING CONDITIONS, ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHER TRADES WILL PERMIT. THE ARCHITECTURAL AND STRUCTURAL DRAWINGS SHALL BE CONSIDERED A PART OF THE WORK INsofar AS THESE DRAWINGS FURNISH THE CONTRACTOR WITH INFORMATION RELATING TO DESIGN AND CONSTRUCTION OF THE BUILDING. ARCHITECTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER MECHANICAL DRAWINGS. BECAUSE OF THE SMALL SCALE OF THE MECHANICAL DRAWING, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS AND ACCESSORIES WHICH MAY BE REQUIRED. THE CONTRACTOR SHALL INVESTIGATE THE STRUCTURAL AND FINISH CONDITIONS AFFECTING THE WORK AND SHALL ARRANGE HIS WORK ACCORDINGLY PROVIDING SUCH FITTINGS, VALVES AND ACCESSORIES AS MAY BE REQUIRED TO MEET CONDITIONS. WHEN JOB CONDITIONS DO NOT PERMIT INSTALLATION OF EQUIPMENT, PIPING, DUCTWORK, ETC., IN THE LOCATIONS SHOWN, IT SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION IMMEDIATELY AND THE RELOCATION DETERMINED IN A JOINT CONFERENCE. CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE RELOCATION OF ANY ITEMS WITHOUT FIRST OBTAINING THE ARCHITECT'S APPROVAL. CONTRACTOR SHALL REMOVE AND RELOCATE SUCH ITEMS AT HIS OWN EXPENSE IF SO DIRECTED BY THE ARCHITECT.

C. EXECUTE WORK MENTIONED IN THE SPECIFICATIONS AND NOT SHOWN ON THE DRAWINGS, OR VICE VERSA, THE SAME AS IF SPECIFICALLY MENTIONED IN BOTH.

1.03 CODES:

A. PROVIDE ALL WORK AND MATERIALS IN FULL ACCORDANCE WITH THE LATEST RULES AND REGULATIONS OF THE CALIFORNIA CODE OF REGULATIONS (CCR), TITLE 21, TITLE 22, AND TITLE 24, AS APPLICABLE; SAFETY ORDERS OF THE DIVISION OF INDUSTRIAL SAFETY, (CAL OSHA); THE CALIFORNIA ELECTRIC CODE; THE CALIFORNIA PLUMBING CODE; THE CALIFORNIA BUILDING CODE; CALIFORNIA MECHANICAL CODE; CALIFORNIA FIRE CODE; STATE FIRE MARSHAL; AND OTHER APPLICABLE LAWS OR REGULATIONS. NOTHING IN THESE PLANS OR SPECIFICATIONS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES. FURNISH WITHOUT EXTRA CHARGE, ANY ADDITIONAL MATERIAL AND LABOR REQUIRED TO COMPLY WITH THESE RULES AND REGULATIONS.

B. WHERE MATERIAL OR EQUIPMENT IS SPECIFIED TO CONFORM TO STANDARDS SUCH AS AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM), UNDERWRITERS' LABORATORIES, ETC., (UL), AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) AND THE LIKE, IT SHALL BE ASSUMED THAT THE MOST RECENT EDITION OF THE STANDARD IN EFFECT AT THE TIME OF BID SHALL BE USED.

1.04 FEES AND PERMITS:

A. PROCURE AND PAY FOR ALL PERMITS AND LICENSES REQUIRED.

1.05 FRAMING, CUTTING AND PATCHING:

A. SPECIAL FRAMING, RECESSES, CHASES AND BACKING FOR WORK OF THIS SECTION, UNLESS SPECIFIED OTHERWISE, IS COVERED UNDER OTHER SECTIONS. BE RESPONSIBLE FOR PROPER PLACEMENT OF ALL PIPE SLEEVES, HANGERS AND SUPPORTS AND LOCATION AND SIZING OF OPENINGS FOR WORK OF THIS SECTION.

1.06 SUBSTITUTIONS AND MATERIAL LIST:

A. PRODUCT NAMES ARE USED AS STANDARDS OF QUALITY, ITEMS FURNISHED AS STANDARD ON SPECIFIED EQUIPMENT SHALL BE FURNISHED ON ALL SUBSTITUTED EQUIPMENT AT NO EXTRA COST TO THE CONTRACTOR BEYOND THE SUBMITTAL DATA. MATERIALS OR METHODS SHALL NOT BE USED UNLESS APPROVED IN WRITING BY THE ARCHITECT. THE BURDEN OF PROOF AS TO THE EQUALITY OF ANY PROPOSED MATERIAL SHALL BE UPON THE CONTRACTOR; ARCHITECT'S DECISION IS FINAL. ONLY ONE REQUEST FOR SUBSTITUTION SHALL BE CONSIDERED FOR EACH ITEM. EQUIPMENT CAPACITIES SPECIFIED ARE MINIMUM ACCEPTABLE. SUBMITTALS WILL NOT BE ACCEPTED UNTIL COMPLIANCE WITH THE REQUIREMENTS OF CONTRACT DOCUMENTS HAS BEEN CONFIRMED BY THE CONTRACTOR.

B. UNLESS STIPULATED OTHERWISE IN GENERAL CONDITIONS AND DIVISION 1, SUBMIT A LIST OF 7 COPIES OF MATERIALS FOR APPROVAL WITHIN 35 DAYS AFTER THE AWARD OF THE CONTRACT. IT SHALL BE ACCOMPANIED BY SHOP DRAWINGS, PUMP PERFORMANCE CURVES, FAN CURVES, AND OTHER PERTINENT DATA, SHOWING THE SIZE AND CAPACITY OF THE PROPOSED MATERIALS. ALL MATERIALS TO BE USED, WHETHER SUBSTITUTIONS OR NOT, SHALL BE LISTED IN THE ORDER IN WHICH THEY APPEAR IN THE SPECIFICATIONS.

C. ANY MECHANICAL, ELECTRICAL, STRUCTURAL OR OTHER CHANGES REQUIRED FOR THE INSTALLATION OF ANY APPROVED SUBSTITUTED EQUIPMENT SHALL BE MADE TO THE SATISFACTION OF THE ARCHITECT AND WITHOUT ADDITIONAL COST TO THE OWNER. APPROVAL BY THE ARCHITECT OF THE SUBSTITUTED EQUIPMENT AND/OR DIMENSIONAL DRAWINGS DOES NOT WAIVE THESE REQUIREMENTS. UPON REQUEST, SUBMIT DRAWINGS OF MECHANICAL EQUIPMENT SPACES SHOWING SUBSTITUTED EQUIPMENT BEFORE INSTALLATION.

D. REVIEW OF MATERIAL SHALL NOT BE CONSTRUED AS AUTHORIZING ANY DEVIATIONS FROM THE SPECIFICATIONS UNLESS THE ATTENTION OF THE ARCHITECT HAS BEEN DIRECTED TO THE SPECIFIC DEVIATIONS.

E. FURNISH TO THE PROJECT REPRESENTATIVE, UPON REQUEST, COMPLETE INSTALLATION INSTRUCTIONS ON ALL MATERIALS AND EQUIPMENT BEFORE STARTING INSTALLATION OF SAME.

F. SUBMITTALS SHALL BEAR THE SPECIFICATION REFERENCE OR DRAWING LOCATION WHERE THEY ARE SPECIFIED. SUBMITTALS SHALL NOT BE ACCEPTED IN INCOMPLETE FORM. SUBMITTALS SHALL BE ORGANIZED INTO BOOKLETS FOR EACH SPECIFICATION SECTION AND SUBMITTED IN AN INDEXED LOOSE LEAF BINDERS WITH NOTATION WHEN IT IS A DEVIATION FROM THE SPECIFICATIONS.

G. HAVE FIRE DAMPER INSTALLATION INSTRUCTIONS AVAILABLE AT THE SITE DURING CONSTRUCTION FOR USE BY THE INSPECTOR.

1.07 SITE CONDITIONS:

A. INFORMATION ON THE DRAWINGS RELATIVE TO EXISTING CONDITIONS IS APPROXIMATE ONLY. DEVIATIONS FOUND NECESSARY DURING PROGRESS OF CONSTRUCTION TO CONFORM TO ACTUAL CONDITIONS, AS APPROVED BY THE ARCHITECT, SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY DAMAGE CAUSED TO EXISTING SERVICES. PROMPTLY NOTIFY THE ARCHITECT IF SERVICES ARE FOUND WHICH ARE NOT SHOWN ON DRAWINGS.

1.08 GUARANTEE:

A. REPAIR OR REPLACE ANY DEFECTIVE WORK, MATERIALS OR PART WHICH MAY APPEAR WITHIN 1 YEAR OF THE DATE OF ACCEPTANCE. THIS SHALL INCLUDE DAMAGE BY LEAKS.

B. ON FAILURE TO COMPLY WITH THE ABOVE GUARANTEE WITHIN A REASONABLE LENGTH OF TIME AFTER NOTIFICATION IS GIVEN, THE ARCHITECT SHALL HAVE THE REPAIRS MADE AT THE CONTRACTOR'S EXPENSE.

1.09 MAINTENANCE AND OPERATING INSTRUCTIONS:

A. INSTRUCT THE OWNER'S AUTHORIZED REPRESENTATIVES IN OPERATION, ADJUSTMENT AND MAINTENANCE OF ALL MECHANICAL EQUIPMENT AND SYSTEMS. PROVIDE THREE COPIES OF CERTIFICATE SIGNED BY OWNER'S REPRESENTATIVES ATTESTING TO THEIR HAVING BEEN INSTRUCTED.

B. FURNISH THREE COMPLETE SETS OF OPERATING AND MAINTENANCE INSTRUCTIONS BOUND IN A HARDBACK BINDER AND INDEXED. START COMPLETING THE DATA UPON APPROVAL OF LIST OF MATERIALS. FINAL OBSERVATION WILL NOT BE MADE UNTIL BOOKLETS ARE APPROVED BY ARCHITECT.

C. THESE SETS SHALL INCORPORATE THE FOLLOWING:

1. COMPLETE OPERATING INSTRUCTIONS FOR EACH ITEM OF HEATING, VENTILATING, AIR CONDITIONING AND PLUMBING EQUIPMENT.
2. TEST DATA AND AIR AND WATER BALANCING REPORTS AS SPECIFIED.
3. TYPEWRITTEN MAINTENANCE INSTRUCTIONS FOR EACH ITEM OF EQUIPMENT LISTING IN DETAIL THE LUBRICANT TO BE USED, FREQUENCY OF LUBRICATION, INSPECTIONS REQUIRED, ADJUSTMENT, ETC.
4. MANUFACTURER'S BULLETINS WITH PARTS NUMBERS, INSTRUCTIONS, ETC., FOR EACH ITEM OF EQUIPMENT, PROPERLY STRIPPED AND ASSEMBLED.
5. TEMPERATURE CONTROL DIAGRAMS AND LITERATURE.
6. A COMPLETE LIST OR SCHEDULE OF ALL MAJOR VALVES GIVING THE NUMBER OF THE VALVE, LOCATION AND THE ROOMS OR AREA CONTROLLED BY THE VALVE. IDENTIFY EACH VALVE WITH A PERMANENTLY ATTACHED METAL TAG STAMPED WITH NUMBER TO MATCH SCHEDULE. POST LIST IN FRAME UNDER PLASTIC ON WALL IN MECHANICAL ROOM OR WHERE DIRECTED.

C. EXECUTE WORK MENTIONED IN THE SPECIFICATIONS AND NOT SHOWN ON THE DRAWINGS, OR VICE VERSA, THE SAME AS IF SPECIFICALLY MENTIONED IN BOTH.

1.10 SCHEDULE OF WORK:

A. ALL TEMPORARY CONNECTIONS REQUIRED TO MAINTAIN SERVICES, INCLUDING ADEQUATE HEAT AND COOLING, DURING THE COURSE OF THIS CONTRACT SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER. THE NORMAL FUNCTION OF THE BUILDING MUST NOT BE INTERRUPTED; NOTIFY THE OWNER SEVEN (7) DAYS IN ADVANCE BEFORE DISTURBING ANY SERVICE.

1.11 RECORD DRAWINGS:

A. UPON COMPLETION OF THE WORK AND AS A PRECEDENT TO FINAL PAYMENT, DELIVER TO THE ARCHITECT ORIGINALS OF ALL DRAWINGS SHOWING THE WORK EXACTLY AS INSTALLED. ALSO DELIVER TO THE ARCHITECT ONE COMPLETE SET OF REPRODUCTIONS OF ALL DRAWINGS SHOWING THE WORK EXACTLY AS INSTALLED. ALL RECORD DRAWINGS SHALL BE SIGNED BY THE CONTRACTOR VERIFYING THEIR ACCURACY.

1.12 DELIVERY AND STORAGE:

A. PROCURE AND PAY FOR ALL PERMITS AND LICENSES REQUIRED.

PART 2 – PRODUCTS

2.01 GENERAL:

A. MATERIALS OR EQUIPMENT OF THE SAME TYPE SHALL BE OF THE SAME BRAND WHEREVER POSSIBLE. ALL MATERIALS SHALL BE NEW AND IN GOOD CONDITION.

2.02 ELECTRIC MOTORS:

A. SHALL BE ALLIS-CHALMERS, GENERAL ELECTRIC, GOULD, LINCOLN, OR EQUAL, SELECTED FOR QUIET OPERATION. FURNISH MOTORS WITH SPLASH-PROOF OR WEATHER-PROOF HOUSINGS, WHERE REQUIRED OR RECOMMENDED BY THE MANUFACTURER. MATCH THE NAMEPLATE VOLTAGE RATING WITH THE ELECTRICAL SERVICE SUPPLIED. CHECK ELECTRICAL DRAWINGS. PROVIDE A TRANSFORMER FOR EACH MOTOR NOT WOUND SPECIFICALLY FOR SYSTEM VOLTAGE. THE MINIMUM EFFICIENCIES SHALL BE AS DEFINED BY IEEE 112 TEST METHOD B AND NEMA STANDARD MG1-112-53B.

2.03 MOTOR STARTERS:

A. FURNISH STARTERS WITH THE PROPER SIZE THERMAL OVERLOAD UNITS, AMBIENT COMPENSATED. PROVIDE 3-PHASE MOTOR STARTERS WITH 3-PHASE OVERLOADS. MAGNETIC STARTERS SHALL HAVE HAND-OFF-AUTOMATIC SWITCHES AND CONTROL TRANSFORMERS FURNISHED INTEGRAL WITH THE STARTER WHEN STARTER IS SERVING AN AUTOMATICALLY CONTROLLED MOTOR. STARTERS SHALL BE SQUARE D, ALLEN BRADLEY, OR EQUAL, IN NEMA TYPE I ENCLOSURE INSIDE AND NEMA TYPE IIR OUTSIDE AS REQUIRED. MINIMUM STARTER SIZE SHALL BE 1.

2.04 NOT USED:

2.05 PIPE HANGERS AND SUPPORTS:

N. VIBRATION ISOLATION AND SUPPORTS

1. FOR REFRIGERATION, AIR CONDITIONING, HYDRAULIC, PNEUMATIC, AND OTHER VIBRATING SYSTEM APPLICATIONS, USE A CLAMP THAT HAS A VIBRATION DAMPENING INSERT AND A NYLON INSERTED LOCKNUT. FOR COPPER AND STEEL TUBING USE TOLSTRUT CUSHION CLAMP.

2. FOR LARGER TUBING OR PIPING SUBJECTED TO VIBRATION, USE NEOPRENE OR SPRING HANGERS AS REQUIRED, OR AS SPECIFIED ELSEWHERE.

3. FOR BASE MOUNTED EQUIPMENT USE VIBRATION PADS, MOLDED NEOPRENE MOUNTS, OR SPRING AS REQUIRED. REFER TO DRAWINGS FOR REQUIREMENTS.

O. ACCESSORIES

1. HANGER RODS SHALL BE THREADED BOTH ENDS, OR CONTINUOUS THREADED RODS OF CIRCULAR CROSS SECTION TOLCO FIG. 100 OR FIG. 103. USE ADJUSTING LOCKNUTS AT UPPER ATTACHMENTS AND HANGERS. NO WIRE, CHAIN, OR PERFORATED STRAPS ARE ALLOWED.

2. SHIELDS SHALL BE 180° GALVANIZED SHEET METAL, 12 INCH MINIMUM LENGTH, 18 GAUGE MINIMUM THICKNESS, DESIGNED TO MATCH OUTSIDE DIAMETER OF THE INSULATED PIPE, TOLCO FIG. 220.

P. INDOOR FINISHES

1. HANGERS AND CLAMPS FOR SUPPORT OF BARE COPPER PIPING SHALL BE COATED WITH COPPER COLORED EPOXY PAINT. ADDITIONAL PVC COATING OF THE EPOXY PAINTED HANGER SHALL BE USED WHERE NECESSARY.

2. HANGERS FOR OTHER THAN BARE COPPER PIPE SHALL BE ZINC PLATED IN ACCORDANCE WITH ASTM B633 – SC3.

3. STRUT CHANNELS SHALL BE PRE-GALVANIZED IN ACCORDANCE WITH ASTM A653 G90.

Q. OUTDOOR AREA FINISHES

1. HANGERS AND STRUT LOCATED OUTDOORS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. ALL HANGER HARDWARE SHALL BE HOT DIP GALVANIZED. ZINC PLATED HARDWARE IS NOT ACCEPTABLE FOR OUTDOOR OR CORROSIVE USE.

2.06 SERVICE MARKERS:

A. 4" ROUND BY 30" LONG CONCRETE MARKER, HALEY MFG., CO., PINKERTON, OR EQUAL WITH ENGRAVED BRASS IDENTIFICATION PLATE

2.07 NOT USED:

2.08 ACCESS DOORS:

MILCOR, NEWMAN, OR EQUAL, WITH CONCEALED HINGES, SCREWDRIVER LOCKS, PRIME COATED WITH RUST INHIBITIVE PAINT, AND STYLE OF DOOR TO SUIT CEILING OR WALL CONSTRUCTION. ACCESS DOORS IN ACOUSTICAL TILE CEILINGS SHALL BE "SESAME" WITH TILE RECESS. DOORS SHALL BE 14 GAGE C.R. STEEL AND SHALL BE 22" X 30", 24" X 24" IN TILE CEILING, UNLESS OTHERWISE NOTED OR REQUIRED, FIRE RATED TO MATCH RATING OF SURFACE IN WHICH INSTALLED. DOORS IN WALLS OF TOILET ROOMS, SHALL BE STAINLESS STEEL.

2.09 NOT USED:

2.10 INSULATION:

A. REFER TO PART 3.

2.11 NOT USED:

2.12 FLASHING:

ALL FLASHINGS SHALL BE MADE OF FOUR POUND SHEET LEAD WITH 8" MINIMUM SKIRT, SEMCO S1100-2 OR S1100-4, STONEMAN #1110-2 OR 1110-4, OR EQUAL, AND COUNTER FLASHING.

PART 3 – EXECUTION

3.01 ELECTRICAL REQUIREMENTS:

A. PROVIDE ADEQUATE WORKING SPACE AROUND ELECTRICAL EQUIPMENT IN COMPLIANCE WITH THE CALIFORNIA ELECTRIC CODE AND OTHER APPLICABLE CODES OR ORDINANCES. THE MECHANICAL WORK SHALL BE COORDINATED WITH THE ELECTRICAL WORK IN ORDER TO COMPLY WITH THESE REQUIREMENTS. ANY WORK WHICH DOES NOT CONFORM TO THESE REGULATIONS SHALL BE PROPERLY CORRECTED WITHOUT ADDITIONAL COST TO THE OWNER.

B. FURNISH AND SET IN PLACE ALL MOTORS. FURNISH NECESSARY CONTROL DIAGRAMS AND INSTRUCTIONS FOR CONTROLS. BEFORE PERMITTING OPERATION OF ANY EQUIPMENT WHICH IS FURNISHED, INSTALLED OR MODIFIED UNDER THIS SECTION, REVIEW ALL ASSOCIATED ELECTRICAL WORK INCLUDING OVERLOAD PROTECTION DEVICES AND ASSUME COMPLETE RESPONSIBILITY FOR CORRECTNESS OF ELECTRICAL CONNECTIONS AND PROTECTIVE DEVICES.

C. MOTORS AND CONTROL EQUIPMENT SHALL CONFORM TO STANDARDS OF NATIONAL ELECTRICAL MANUFACTURERS' ASSOCIATION. ALL EQUIPMENT AND CONNECTIONS EXPOSED TO THE WEATHER SHALL BE NEMA IIR WITH FACTORY WIRED STRIP HEATERS IN EACH STARTER ENCLOSURE, AND TEMPERATURE CONTROL PANEL TO INHIBIT CONDENSATION.

D. ALL POWER WIRING, CONDUIT, FUSES, THERMAL OVERLOADS, AND DISCONNECT SWITCHES, AND CONNECTION OF ALL MOTORS ARE UNDER ELECTRICAL WORK, DIVISION 26. ALL WIRING AND CONDUIT ASSOCIATED WITH THE TEMPERATURE CONTROL AND INDICATING SYSTEM IS INCLUDED IN THIS SECTION. RUN ALL WIRING IN CONDUIT IN ACCORDANCE WITH DIVISION 26.

E. ELECTRIC MOTORS: ALL MOTORS SHALL BE RATED FOR CONTINUOUS OPERATION AT 115% OF NAMEPLATE AMPERAGE THROUGHOUT THE ENTIRE OPERATING CYCLE. MOTORS FOUND EXCEEDING THE NAMEPLATE AMPERAGE SHALL BE PROMPTLY REPLACED AT NOT COST TO THE OWNER. HORSEPOWERS SHOWN ARE MINIMUM AND SHALL BE INCREASED AS NECESSARY TO COMPLY WITH ABOVE REQUIREMENTS.

F. MOTOR STARTERS: FURNISH MAGNETIC MOTOR STARTER FOR ALL EQUIPMENT FURNISHED UNDER THIS SECTION EXCEPT THOSE SHOWN IN MOTOR CONTROL CENTERS.

G. PROVIDE OSHA LABEL INDICATING DEVICE STARTS AUTOMATICALLY.

3.02 PRIMING AND PAINTING:

A. PERFORM ALL PRIMING AND PAINTING ON THE EQUIPMENT AND MATERIALS AS SPECIFIED HEREIN.

B. PRIMING: EXPOSED FERROUS METALS, INCLUDING PIPING, WHICH ARE NOT GALVANIZED OR FACTORY FINISHED SHALL BE PRIMED. BLACK STEEL PIPE EXPOSED TO THE WEATHER SHALL BE PAINTED ONE COAT OF RUST-OLEUM #769 PRIMER AND ONE COAT OF #960 PRIMER. ITEMS TO BE PRIMED SHALL BE PROPERLY CLEANED BY EFFECTIVE MEANS, FREE OF RUST, DIRT, SCALE, GREASE, WAX AND OTHER DELETERIOUS MATTER. ANY ABRASION OR OTHER DAMAGE TO THE SHOP OR FIELD PRIME COAT SHALL BE PROPERLY REPAIRED AND TOUCHED UP WITH THE SAME MATERIAL USED FOR THE ORIGINAL PRIMING.

C. FINISH PAINTING:

1. EQUIPMENT AND MACHINERY LOCATED AT LOCATIONS WHEN SPECIFIED, SHALL BE FURNISHED WITH A STANDARD FACTORY-APPLIED BAKED ENAMEL FINISH IN APPROVED UNIFORM COLORS. AT THE CONTRACTOR'S OPTION, EQUIPMENT AND MACHINERY MAY BE FIELD-PAINTED HEREUNDER WITH TWO COATS CONSISTING OF AN AIR-DRYED SYNTHETIC INDUSTRIAL ENAMEL UNDERCOATER AND ENAMEL AS APPROVED OVER THE SHOP OR FACTORY-APPLIED PRIMER. ALL EXPOSED FERROUS METALS SHALL BE PAINTED ONE COAT OF AN APPROVED PAINT, OF COLOR SELECTED, OVER THE PRIMER.

D. SEE PAINTING SECTION FOR DETAIL REQUIREMENTS AND FINISHES.

3.03 NOT USED:

3.04 NOT USED:

3.05 NOT USED:

3.06 NOT USED:

3.07 NOT USED:

3.08 NOT USED:

3.09 NOT USED:

3.10 NOT USED:

3.11 NOT USED:

3.12 ACCESS DOORS:

A. FURNISH AND INSTALL ACCESS DOORS WHEREVER REQUIRED WHETHER SHOWN OR NOT FOR EASY MAINTENANCE OF MECHANICAL SYSTEM; FOR EXAMPLE, AT CONCEALED VALVES, STRAINER, TRAPS, ARRESTORS, CLEANOUTS, DAMPERS, MOTORS, CONTROLS, OPERATING EQUIPMENT, ETC. ACCESS DOORS SHALL PROVIDE FOR COMPLETE REMOVAL AND REPLACEMENT OF EQUIPMENT.

3.13 NOT USED:

3.14 INSULATION WORK:

A. GENERAL:

1. ALL INSULATION SHALL BE DONE BY A CONTRACTOR SPECIFICALLY LICENSED FOR INSULATION WORK. INSULATION APPLIED BY THE MECHANICAL AND PLUMBING CONTRACTOR IS NOT ACCEPTABLE.

2. THE TERM "PIPING" USED HEREIN SHALL INCLUDE PIPE, AIR SEPARATORS, VALVES, STRAINERS AND FITTINGS. APPLY INSULATING CEMENT TO FITTINGS, VALVES AND STRAINERS AND TROWEL SMOOTH TO THE THICKNESS OF ADJACENT COVERING. COVER WITH JACKET TO MATCH PIPING. EXTEND COVERING ON VALVES UP TO THE BONNET. LEAVE STRAINER CLEANOUT PLUGS ACCESSIBLE. VALVE AND FITTING COVERS MAY BE PREFORMED PVC. PROVIDE RIGID INSULATION, 18" MINIMUM LENGTH AT EACH PIPE HANGER. SEAL ENDS OF INSULATION WITH JACKET.

3. DO NOT INSULATE FLANGES AND UNIONS ON HIGH TEMPERATURE PIPING. INSULATE UNIONS AND PUMP BODIES ON CHILLED WATER AND COMBINATION HOT AND CHILLED WATER SYSTEMS WITH THREE HEAVY LAYERS OF MORTLELL'S NO-DROP PAINT, 1/16" MINIMUM TOTAL THICKNESS OR ARMSTRONG ARMAFLEX TAPE PER MANUFACTURER'S RECOMMENDATIONS.

4. CLEAN THOROUGHLY, TEST, AND HAVE APPROVED, ALL PIPING AND EQUIPMENT BEFORE INSTALLING COVERING.

5. ALL INSULATION, ADHESIVE COVERINGS AND JACKETS INCLUDING PRE-INSULATED FLEXIBLE DUCTWORK SHALL HAVE A FLAME SPREAD OF 25 OR LESS AND DEVELOPED SMOKE RATING OF 50 OR LESS TESTED IN ACCORDANCE WITH ASTM E84.

6. REPAIR ALL DAMAGE TO EXISTING PIPE AND DUCT INSULATION WHETHER OR NOT IT WAS CAUSED DURING THE WORK OF THIS CONTRACT. MATCH EXISTING ADJACENT INSULATION FOR THICKNESS AND FINISH BUT CONFORMING TO FLAME SPREAD AND SMOKE RATINGS SPECIFIED ABOVE.

B. DUCT INSULATION:

1. WRAP ALL UNLINED CONCEALED SUPPLY AND RETURN DUCTS WITH O.C. FIBERGLAS ALL-SERVICE DUCT WRAP WITH A REINFORCED FOIL KRAFT VAPOR BARRIER FACING 2" THICK AND 3/4" PER CUBIC FOOT DENSITY. WRAP INSULATION ENTIRELY AROUND DUCT AND WIRE SECURELY IN PLACE WITH #16 WIRE 12" O.C. AND EACH SIDE OF EACH STANDING SEAM AND OVER EACH INSULATION JOINT. LAP ALL INSULATION JOINTS 3" MINIMUM. INSULATE DUCTS INSTALLED TIGHT AGAINST OTHER WORK BEFORE HANGING IN LINE.

2. INSTALL ACOUSTICAL LINING IN ALL SUPPLY, RETURN AND MIXED AIR DUCTS AND PLENUMS EXPOSED OUTSIDE THE BUILDING AND WHERE MARKED; EXTERIOR DUCT INSULATION TO BE R-8 "ARMAFLEX" SR, 2" THICK, CLOSED CELL, WITH MICROBAN. LINING SHALL BE AS SPECIFIED.

3. SEAL AIRTIGHT ALL SEAMS OF ALL SUPPLY, RETURN AND EXHAUST DUCTS EXCEPT THOSE EXPOSED IN THE CONDITIONED SPACE WITH HARDCAST INC. FOIL GRIP 1402 181 BFX INDOOR / OUTDOOR ROLL SEALANT WITH 12 MIL BUTYL BACKING.

4. SEAL WATERRIGHT ALL JOINTS OF ALL DUCTWORK EXPOSED TO THE WEATHER WITH FOIL GRIP 1402 181 BFX.

3.15 EQUIPMENT IDENTIFICATION:

B. IDENTIFY EACH PIECE OF EQUIPMENT WITH 2" HIGH STENCIL PAINTED IDENTIFICATION. INDICATE ON EACH PIECE OF EQUIPMENT SUITE SERVED BY EQUIPMENT. FOR EXAMPLE: AC-2 SUITE 401.

3.17 GUARDS:

C. GENERAL: BELT DRIVE, GEAR DRIVE SHAFTS, COUPLINGS, FAN INLETS AND OUTLETS, AND RUNNING EQUIPMENT SHALL BE PROPERLY PROTECTED BY GUARDS AS REQUIRED BY THE CCR, TITLE 8, DIVISION OF INDUSTRIAL SAFETY, SUB CHAPTER 7, GENERAL INDUSTRY SAFETY ORDERS, ARTICLES 31 THROUGH 36, WHETHER SHOWN ON THE DRAWINGS OR NOT.

D. CONSTRUCTION: GUARDS SHALL BE FACTORY FURNISHED OR MADE OF EXPANDED METAL WITH ANGLE IRON FRAMEWORK. GUARDS FOR BELT DRIVES SHALL HAVE AN EASILY REMOVABLE SECTION FOR REPLACEMENT OF BELTS. OPENINGS SHALL BE PROVIDED AT SHAFT ENDS FOR TAKING RPM READINGS.

3.18 ANTI-VIBRATION BASES AND HANGERS:

A. ALL VENTILATING AND AIR CONDITIONING EQUIPMENT SHALL OPERATE UNDER CONTINUOUS DEMAND WITHOUT OBJECTIONABLE VIBRATION. CONTRACTOR SHALL BE SURE THAT ABOVE RESULT IS ACHIEVED. ISOLATE ALL EQUIPMENT CONNECTIONS, INCLUDING CONDUIT, PIPING, DRAINS, ETC.

B. AIR CONDITIONING UNITS AND ALL FANS SHALL BE SUPPORTED ON ANTI-VIBRATION BASES OR HANGERS, OR AS OTHERWISE SHOWN ON DRAWINGS. OTHER EQUIPMENT AND PUMPS SHALL BE SUPPORTED ON ANTI-VIBRATION BASES, PADS OR HANGERS, WHEN SHOWN ON DRAWINGS OR SPECIFIED WITH EQUIPMENT. ISOLATORS AND SUPPORTING BASES SHALL BE SUPPLIED BY SINGLE MANUFACTURER, KINETICS, MASON, OR EQUAL. TYPE OF MOUNTING AND SUPPORTING BASE FOR EACH PIECE OF EQUIPMENT SHALL BE AS TABULATED ON EQUIPMENT SCHEDULE OR AS HEREINAFTER SPECIFIED. INDIVIDUAL MOUNTS SHALL BE KINETICS TYPE FPS, OR EQUAL. CONTRACTOR SHALL PROVIDE CALCULATIONS FOR ISOLATORS AND MOUNTING ACCEPTABLE TO REVIEWING AUTHORITY.

C. ISOLATOR MANUFACTURER'S SUBMITTAL SHALL INCLUDE COMPLETE DESIGN FOR SUPPLEMENTARY BASES, TABULATED DATA ON ISOLATORS, INCLUDING O.D. FREE OPERATING, AND SOLID HEIGHTS OF SPRINGS, FREE AND OPERATING HEIGHTS OF NEOPRENE OR FIBERGLASS ISOLATORS, AND ISOLATION EFFICIENCY BASED ON LOWEST OPERATING SPEED OF EQUIPMENT SUPPORTED.

3.19 NOT USED:

3.20 NOT USED:

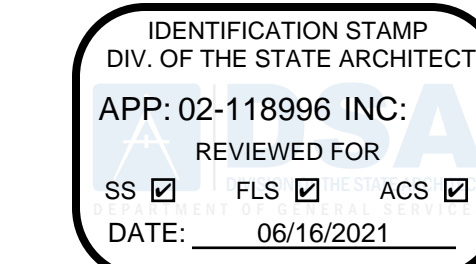
3.21 NOT USED:

3.22 CARE AND CLEANING:

A. ENSURE AREAS ARE KEPT CLEAN AND NEAT THROUGHOUT PROJECT. REMOVE SURPLUS MATERIALS.

END OF SECTION

AGENCY APPROVAL:



SECTION 230510 – HEATING, VENTILATING AND AIR CONDITIONING

SECTION 230510 – HEATING, VENTILATING AND AIR CONDITIONING

CONDITIONS OF THE CONTRACT APPLY TO THIS SECTION.

PART 1 – GENERAL

1.01 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THE GENERAL CONDITIONS APPLY TO ALL WORK HEREUNDER, ALSO APPLICABLE PROVISIONS OF SECTION 230505 MECHANICAL WORK – GENERAL REQUIREMENTS.

B. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS APPLY TO THE WORK OF THIS SECTION.

1.02 DESCRIPTION OF WORK:

A. FURNISH AND INSTALL ALL HEATING, VENTILATING AND AIR CONDITIONING WORK INDICATED ON THE DRAWINGS AND DESCRIBED HEREIN, ALSO ANY INCIDENTAL WORK NOT SHOWN OR SPECIFIED THAT IS NECESSARY TO PROVIDE THE COMPLETE SYSTEM.

1.03 COORDINATED LAYOUTS:

A. SINCE SCALE OF CONTRACT DRAWINGS IS SMALL, AND ALL OFFSETS AND FITTINGS ARE NOT SHOWN, CONTRACTOR SHALL MAKE ALLOWANCES IN BID FOR ADDITIONAL COORDINATION TIME, DETAILING, FITTINGS, OFFSETS, HANGERS AND THE LIKE TO ACHIEVE A FULLY COORDINATED INSTALLATION. IF CHANGES IN DUCT SIZE ARE REQUIRED, EQUIVALENT AREA SHALL BE MAINTAINED AND THE ASPECT RATIO SHALL NOT BE IN EXCESS OF 2 TO 1 UNLESS APPROVED BY THE ENGINEER. DRAWINGS SHALL BE SUBMITTED FOR REVIEW PRIOR TO FABRICATION AND INSTALLATION.

B. CHECK ROUTING ON ALL DUCTWORK BEFORE FABRICATING. REPORT ANY DISCREPANCIES TO ARCHITECT. NO EXTRA COST WILL BE ALLOWED FOR FAILURE TO CONFORM TO ABOVE.

C. IT SHALL BE RESPONSIBILITY OF HEATING, VENTILATING AND AIR CONDITIONING CONTRACTOR TO COORDINATE THE OTHER MECHANICAL AND ELECTRICAL TRADES SO THAT COMPLETE JOB IS NEAT AND IN CONFORMITY WITH PLANS AND SPECIFICATIONS.

1.04 PLUMBING:

A. ALL PLUMBING WORK REQUIRED IN THE COURSE OF THIS CONTRACT SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL CODES AND REGULATIONS. PLUMBING WORK DONE UNDER THIS CONTRACT SHALL NOT ADVERSELY AFFECT THE OPERATION OF THE EXISTING PLUMBING SYSTEMS. ALL MATERIALS SHALL BE NEW AND SHALL MATCH EXISTING.

PART 2 – PRODUCTS

2.01 PIPE AND FITTINGS:

A. SEE GENERAL REQUIREMENTS SECTION FOR DIELECTRIC FITTINGS AND PIPE PROTECTION.

B. WATER DRAIN, OR GAS CONNECTIONS TO EQUIPMENT SHALL MATCH CONNECTED PIPING.

C. CONDENSATE DRAIN PIPING: TYPE DWV COPPER TUBING AND FITTINGS

2.02 FANS:

A. ALL FANS AMCA LABELED WITH SELF ALIGNING, ENCLOSED BALL BEARINGS, ACCESSIBLE FOR LUBRICATION, UNLESS SPECIFIED OTHERWISE.

2.03 FAN DRIVES:

A. DRIVE DESIGN: THE DESIGN HORSEPOWER RATING OF EACH DRIVE SHALL BE AT LEAST 1.5 TIMES, SINGLE BELT DRIVES 2 TIMES, THE NAME PLATE RATING OF THE MOTOR WITH PROPER ALLOWANCES FOR SHEAVE DIAMETERS, SPEED RATIO, ARCS OF CONTACT AND BELT LENGTH.

1. ALL DRIVES SHALL BE VARIABLE SPEED, DAYCO, BROWNING OR WOODS. ALLOW FOR REPLACEMENT OF FAN DRIVE AND BELT AS REQUIRED TO SUITE THE BALANCE REQUIREMENTS OF THE PROJECT.

2. ALL DRIVES FOR 5 HORSEPOWER MOTORS AND LARGER SHALL HAVE A MINIMUM OF 2 BELTS.

3. BELTS SHALL BE WITHIN 1 DEGREE 30 MINUTES OF TRUE ALIGNMENT IN ALL CASES.

4. ALL VARIABLE SPEED DRIVES SHALL BE SELECTED TO ALLOW AN INCREASE OR DECREASE OF MINIMUM OF 10% OF DESIGN FAN SPEED.

5. MOTORS OF 25 HP AND LESS SHALL HAVE ADJUSTABLE TRIP SHEAVES; SHEAVES ON MOTORS ABOVE 25 HP MAY BE NON-ADJUSTABLE. CHANGE, AT NO EXTRA COST TO OWNER, THE NON-ADJUSTABLE SHEAVES TO OBTAIN DESIRED AIR QUANTITIES.

B. SHEAVES: SHEAVES SHALL BE CAST OR FABRICATED, BORED TO SIZE OR BUSHED WITH FULLY SPLIT TAPERED BUSHINGS TO FIT PROPERLY ON THE SHAFTS. ALL SHEAVES SHALL BE SECURED WITH KOSV AND SET SCREWS.

C. BELTS: ALL BELTS SHALL BE FURNISHED IN MATCHED SETS.

2.04 FILTERS:

A. FILTERS SHALL BE 2" THICK FARR 30/30, THROWAWAY AS SCHEDULED ON THE DRAWINGS.

B. AIR FILTERS SHALL BE OF AN APPROVED TYPE TESTED IN ACCORDANCE WITH TEST METHOD SFM-12-71-1 AS SHOWN IN PART 12, TITLE 24, CALIFORNIA CODE OF REGULATIONS. PREPARED FILTERS HAVING COMBUSTIBLE FRAMING SHALL BE TESTED AS A COMPLETE ASSEMBLY.

C. AIR FILTERS SHALL BE ACCESSIBLE FOR CLEANING.

2.05 DAMPERS:

A. BACKDRAFT DAMPERS: RUSKIN CBD2, COUNTERBALANCED.

B. MANUAL AIR AND BALANCE DAMPERS: RUSKIN C03S, OPPOSED BLADE.

2.06 DUCTWORK:

A. GALVANIZED SHEET METAL, SEE PART 3.

2.07 TEMPERATURE CONTROL SYSTEM:

SEE CONTROLS SPECIFICATIONS

PART 3 – EXECUTION

3.01 EQUIPMENT START-UP:

A. INITIAL START-UP OF SUPPLY, EXHAUST AND RETURN FAN SYSTEMS AND PUMPS SHALL BE UNDER THE DIRECT SUPERVISION OF THE TESTING AND BALANCING CONTRACTOR.

3.02 NOT USED:

3.03 NOT USED:

3.04 ANTI-VIBRATION BASES AND HANGERS:

A. ISOLATE ALL VENTILATING AND AIR CONDITIONING EQUIPMENT CONNECTIONS INCLUDING CONDUIT, PIPING, DRAINS, ETC., SO THAT EQUIPMENT WILL OPERATE UNDER CONTINUOUS DEMAND WITHOUT OBJECTIONABLE VIBRATION.

B. SET ALL AIR CONDITIONING UNITS ON NEPRENE GASKETS. OTHER EQUIPMENT SHALL BE SUPPORTED ON ANTI-VIBRATION BASES, PADS, OR HANGERS, AS SHOWN ON THE DRAWINGS OR SPECIFIED WITH THE EQUIPMENT. INDIVIDUAL FANS SHALL HAVE INTEGRAL FAN AND MOTOR BASES, SPRING-TYPED UNLESS NOTED.

C. SELECTION OF THE BASES OR SUPPORTING UNITS SHALL BE IN ACCORDANCE WITH THE VIBRATION ELIMINATOR MANUFACTURER'S RECOMMENDATIONS. MINIMUM STATIC DEFLECTION SHALL BE 1-1/2" OR AS MARKED ON THE DRAWINGS.

D. THE EQUIPMENT MANUFACTURER SHALL FURNISH THE WEIGHT OF EQUIPMENT AT EACH POINT OF SUPPORT.

3.05 SHEET METAL WORK:

A. CONSTRUCT AND INSTALL ALL SHEET METAL IN ACCORDANCE WITH LATEST SMACNA RECOMMENDATIONS FOR 2" STATIC PRESSURE. PROVIDE VARIATIONS IN DUCT SIZES, FITTINGS AND ADDITIONAL SIZES AS REQUIRED TO CLEAR OBSTRUCTIONS AND MAINTAIN CLEARANCES, AS APPROVED BY THE ARCHITECT, AT NO EXTRA COST TO OWNER.

B. PROVIDE DRIVE SLIP OR EQUIVALENT FLAT SEAMS FOR DUCTS WHERE NECESSARY DUE TO SPACE LIMITATIONS. ON DUCTS WITH FLAT SEAMS, PROVIDE STANDARD REINFORCING ON INSIDE OF DUCT. DUCT CONNECTION TO OUTLET ON EXPOSED DUCT SHALL BE FULL SIZE OF OUTER PERIMETER OF OUTLET FLANGE.

1. DUCTS EXPOSED IN THE CONDITIONED SPACE SHALL BE FREE OF DENTS AND BLEMISHES AND BE MOUNTED TIGHT AGAINST ADJACENT SURFACE WITH FLAT HANGERS.

2. ALL DUCTWORK, ADHESIVES, LINING, SEALANTS, FLEX DUCT AND THE LIKE SHALL HAVE A FLAME SPREAD OF 25 OR LESS AND DEVELOPED SMOKE RATING OF 50 OR LESS WHEN TESTED IN ACCORDANCE WITH ASTM E84.

C. ROUND DUCTS WITH EQUIVALENT EFFECTIVE CROSS SECTIONAL AREA AS DETERMINED BY ASHRAE GUIDE, LATEST EDITION, MAY BE USED IN LIEU OF CONCEALED RECTANGULAR DUCTS SHOWN. SPACE PERMITTING, ROUND AND OVAL SHEET METAL DUCTS SHALL BE SPIRAL LOCK SEAM OR LONGITUDINAL CONSTRUCTION SEAM CONSTRUCTION. FITTINGS SHALL BE CHANGES IN DUCT SIZE ARE REQUIRED, EQUIVALENT AREA SHALL BE MAINTAINED AND THE ASPECT RATIO SHALL NOT BE IN EXCESS OF 2 TO 1 UNLESS APPROVED BY THE ENGINEER. DRAWINGS SHALL BE SUBMITTED FOR REVIEW PRIOR TO FABRICATION AND INSTALLATION.

D. THE THROAT RADIUS OF ALL BENDS SHALL BE 1-1/2 TIMES THE WIDTH OF THE DUCT WHEREVER POSSIBLE AND IN NO CASE SHALL THE THROAT RADIUS BE LESS THAN ONE WIDTH OF THE BRANCH DUCT. PROVIDE SQUARE ELBOWS WITH TITUS OR HOOPE DOUBLE THICKNESS TURNING VANES WHERE SPACE DOES NOT PERMIT THE ABOVE RADII, OR WHERE SQUARE ELBOWS ARE SHOWN.

E. THE SLOPES OF TRANSITIONS SHALL BE APPROXIMATELY ONE TO FIVE UNLESS SHOWN OTHERWISE, AND NO ABRUPT CHANGES OR OFFSETS OF ANY KIND IN THE DUCT SYSTEM SHALL BE PERMITTED.

F. PROVIDE SHEET METAL ANGLE FRAME AT ALL DUCT PENETRATIONS TO WALL, FLOOR, OR CEILING.

G. ALL ROUND DUCTWORK SHALL BE UNITED SHEET METAL SPIRAL DUCT AND FITTINGS, ASSEMBLE WITH HARDCAST VERSA GRIP 181 DUCT SEALER AND SHEET METAL SCREWS.

H. EXPOSED ROUND DUCTS SHALL BE UNITED SHEET METAL SPIRAL DUCT AND FITTINGS, 22 GAUGE MINIMUM FOR DUCT, 20 GAUGE MINIMUM FOR FITTINGS. ASSEMBLE WITH HARDCAST VERSA GRIP 181 DUCT SEALER AND SM SCREWS.

I. PROVIDE VENTLOK FLEXIBLE CONNECTIONS ON INLET AND OUTLET OF AC UNIT, AIR HANDLER, AND HEATING/EVAPORATOR COILER UNIT. PROVIDE GALVANIZED WEATHER HOOD OVER FLEXIBLE CONNECTIONS EXPOSED TO THE WEATHER.

J. DUCT SIZE SHOWN ON UNED DUCT IS THROUGHOUT THE ENTIRE DIMENSION.

K. PAINT INSIDE OF DUCTS, VISIBLY THROUGH GRILLE, DULL BLACK.

L. FLEXIBLE DUCTS NOT USED

M. PROVIDE SEISMIC BRACING PER SMACNA STANDARDS FOR DUCTWORK 28" DIAMETER AND LARGER AND DUCTWORK 6 SQUARE FEET AND LARGER.

N. DUCTS SHALL CLEAR COMBUSTIBLE CONSTRUCTION BY 1" MINIMUM.

O. SEAL AIRIGHT TRANSVERSE SEAMS OF ALL SUPPLY AND RETURN DUCTS WITH HARDCAST FOL GRIP 1402-181 BFX, SEAL INSULATED DUCTS BEFORE INSULATING.

P. PROVIDE VENTLOK #699 TEST HOLE FITTINGS WHERE INDICATED OR SPECIFIED.

Q. ALL MATERIALS EXCEPT SHEET METAL INCLUDING DUCT LINER SHALL BE APPROVED BEFORE INSTALLATION.

3.06 ANTI-VIBRATION ISOLATION:

A. ISOLATE ALL VENTILATING AND AIR CONDITIONING EQUIPMENT CONNECTIONS INCLUDING CONDUIT, PIPING, DRAINS, ETC., SO THAT EQUIPMENT WILL OPERATE UNDER CONTINUOUS DEMAND WITHOUT OBJECTIONABLE VIBRATIONS.

3.07 DAMPERS:

A. ALL DAMPERS AUTOMATICALLY CONTROLLED BY DAMPER MOTORS ARE SPECIFIED UNDER "TEMPERATURE CONTROL SYSTEM" EXCEPT THOSE SPECIFIED WITH ITEMS OF EQUIPMENT.

B. PROVIDE OPPOSED BLADE MANUAL AIR DAMPERS AT EACH BRANCH DUCT CONNECTION AND AT LOCATIONS INDICATED ON THE DRAWINGS AND WHERE NECESSARY TO CONTROL AIR FLOW FOR BALANCING SYSTEM. PROVIDE VENTLOK REGULATORS WITH LOCKING QUADRANT AND STAND-OFF. DAMPER BLADES SHALL BE 16 GAUGE MINIMUM GALVANIZED STEEL WITH 3/8" MINIMUM SHAFT, AND 10" MAXIMUM BLADE WIDTH. PROVIDE AN ACCESS PANEL OR VENTLOK FLUSH-TYPE DAMPER REGULATOR ON CEILING OR WALL FOR EACH CONCEALED DAMPER.

1. PROVIDE VENTLOK ACCESS DOORS WITH SERIES 100 HARDWARE FOR CONVENIENT ACCESS TO ALL AUTOMATIC DAMPERS AND OTHER COMPONENTS OF THE SYSTEM, INSULATED TYPE IN INSULATED DUCTS. PROVIDE VENTLOK #202 FOR LIGHT DUTY UP TO 2" THICK DOORS, #260 HEAVY DUTY UP TO 2 1/2" THICK DOORS AND #310 HEAVY DUTY FOR GREATER THAN 2 1/2" THICK DOORS. PROVIDE #260 HINGES ON ALL HINGED AND PERSONNEL ACCESS DOORS, INCLUDE GASKETING.

2. PROVIDE VENTLOK ACCESS DOORS WITH SERIES 100 HARDWARE FOR CONVENIENT ACCESS TO ALL AUTOMATIC DAMPERS AND OTHER COMPONENTS OF THE SYSTEM, INSULATED TYPE IN INSULATED DUCTS. PROVIDE VENTLOK #202 FOR LIGHT DUTY UP TO 2" THICK DOORS, #260 HEAVY DUTY UP TO 2 1/2" THICK DOORS AND #310 HEAVY DUTY FOR GREATER THAN 2 1/2" THICK DOORS. PROVIDE #260 HINGES ON ALL HINGED AND PERSONNEL ACCESS DOORS, INCLUDE GASKETING.

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26. PROVIDE VENTLOK ACCESS DOORS WITH SERIES 100 HARDWARE FOR CONVENIENT ACCESS TO ALL AUTOMATIC DAMPERS AND OTHER COMPONENTS OF THE SYSTEM, INSULATED TYPE IN INSULATED DUCTS. PROVIDE VENTLOK #202 FOR LIGHT DUTY UP TO 2" THICK DOORS, #260 HEAVY DUTY UP TO 2 1/2" THICK DOORS AND #310 HEAVY DUTY FOR GREATER THAN 2 1/2" THICK DOORS. PROVIDE #260 HINGES ON ALL HINGED AND PERSONNEL ACCESS DOORS, INCLUDE GASKETING.

27. PROVIDE VENTLOK ACCESS DOORS WITH SERIES 100 HARDWARE FOR CONVENIENT ACCESS TO ALL AUTOMATIC DAMPERS AND OTHER COMPONENTS OF THE SYSTEM, INSULATED TYPE IN INSULATED DUCTS. PROVIDE VENTLOK #202 FOR LIGHT DUTY UP TO 2" THICK DOORS, #260 HEAVY DUTY UP TO 2 1/2" THICK DOORS AND #310 HEAVY DUTY FOR GREATER THAN 2 1/2" THICK DOORS. PROVIDE #260 HINGES ON ALL HINGED AND PERSONNEL ACCESS DOORS, INCLUDE GASKETING.

28. PROVIDE VENTLOK ACCESS DOORS WITH SERIES 100 HARDWARE FOR CONVENIENT ACCESS TO ALL AUTOMATIC DAMPERS AND OTHER COMPONENTS OF THE SYSTEM, INSULATED TYPE IN INSULATED DUCTS. PROVIDE VENTLOK #202 FOR LIGHT DUTY UP TO 2" THICK DOORS, #260 HEAVY DUTY UP TO 2 1/2" THICK DOORS AND #310 HEAVY DUTY FOR GREATER THAN 2 1/2" THICK DOORS. PROVIDE #260 HINGES ON ALL HINGED AND PERSONNEL ACCESS DOORS, INCLUDE GASKETING.

SECTION 230923 – WIRELESS ENERGY MANAGEMENT SYSTEM

SECTION 23 09 23

WIRELESS ENERGY MANAGEMENT SYSTEM

PART 1 GENERAL

1.01 SUMMARY

SECTION INCLUDES EQUIPMENT AND PERFORMANCE CRITERIA FOR FURNISHING ALL LABOR AND MATERIALS FOR THE INSTALLATION AND PROGRAMMING FOR ENERGY MANAGEMENT SYSTEM FOR HVAC SYSTEMS UTILIZING WIRELESS (NON DOG) COMMUNICATION WITH CLOUD BASED SERVERS.

1.02 RELATED SECTIONS:

A. SECTION 23- HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)

1.03 SUBMITTALS:

A. FIELD SURVEY. PROVIDE FIELD SURVEY OF THE SCHOOL TO UNDERSTAND THE SCOPE, QUANTITY OF SYSTEMS, RESTRICTIONS, ROUTING LOCATIONS, ETC. FIELD SURVEY OF EACH SCHOOL IS MANDATORY PRIOR TO BID.

B. SYSTEM DOCUMENTATION

INCLUDE THE FOLLOWING IN SUBMITTAL PACKAGE:

1. SYSTEM CONFIGURATION DIAGRAMS IN SIMPLIFIED BLOCK FORMAT.

2. ALL INPUT/OUTPUT EQUIP LISTINGS AND AN ALARM POINT SUMMARY LISTING.

3. ELECTRICAL DRAWINGS THAT SHOW ALL SYSTEM INTERNAL AND EXTERNAL CONNECTION POINTS, TERMINAL BLOCK LAYOUTS, AND TERMINAL IDENTIFICATION.

4. COMPLETE BILL OF MATERIALS, SEQUENCE OF OPERATIONS, MANUFACTURER'S INSTRUCTIONS AND DRAWINGS FOR INSTALLATION, MAINTENANCE, AND OPERATION OF ALL PURCHASED ITEMS.

5. OVERALL SYSTEM OPERATION AND MAINTENANCE INSTRUCTIONS--INCLUDING PREVENTIVE MAINTENANCE AND TROUBLESHOOTING INSTRUCTIONS.

6. UPON COMPLETION OF THE WORK, PROVIDE A SET OF "RECORD DRAWINGS" INCLUDING MANUFACTURER'S DESCRIPTIVE LITERATURE, OPERATING INSTRUCTIONS, AND MAINTENANCE AND REPAIR DATA ALL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL MECHANICAL SPECIFICATION SECTION. PROVIDE ELECTRONIC COPIES OF ALL CONTROL SYSTEM AS-BUILT AUTOCAD DRAWINGS.

C. ALL SHOP DRAWINGS SHALL BE PREPARED IN AUTOCAD 2010 OR NEWER. IN ADDITION, CONTRACTOR SHALL PROVIDE DRAWINGS IN ELECTRONIC FORMAT WITH X-REF AND LAYER INFORMATION TO OTHER TRADES AS REQUIRED. DRAWINGS SHALL BE SUBMITTED ON 11X17.

D. ALL SUBMITTALS SHALL BE BOUND OR IN A THREE RING BINDER WITH A TABLE OF CONTENTS AND RELATED SECTIONS. SUBMITTALS SHALL ALSO BE ELECTRONIC IN PDF FORMAT.

E. SHOP DRAWINGS SHALL INCLUDE BASIC FLOOR PLANS DETECTING LOCATIONS OF ALL EQUIPMENT AND WIRING, INSTALLED BY OTHERS, TO BE CONTROLLED BY SYSTEM AND LOCATIONS OF THERMOSTATS, GATEWAYS AND OTHER EQUIPMENT PROVIDED UNDER THIS SECTION. DRAWINGS SHALL ALSO SHOW LOCATION OF ELECTRICAL, POWER, LOW VOLTAGE WIRING AND DATA PORTS, PROVIDED BY OTHERS, REQUIRED FOR PROPER INSTALLATION OF SYSTEMS OF THIS SECTION.

F. SUBMITTAL DATA SHALL CONTAIN MANUFACTURER'S DATA ON ALL HARDWARE AND SOFTWARE PRODUCTS, BILL OF MATERIALS, SEQUENCE OF OPERATION, ENGINEERED DRAWINGS.

G. SUBMIT FIVE (5) COPIES OF SUBMITTAL DATA AND SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO ORDERING OR FABRICATION OF THE EQUIPMENT. THE CONTRACTOR PRIOR TO SUBMITTING SHALL CHECK ALL DOCUMENTS FOR ACCURACY.

H. THE DISTRICTS REVENUE ENGINEER WILL MAKE CORRECTIONS, IF REQUIRED, AND RETURN TO THE CONTRACTOR. THE CONTRACTOR WILL THEN RESUBMIT WITH THE CORRECTED OR ADDITIONAL DATA. THIS PROCEDURE SHALL BE REPEATED UNTIL ALL CORRECTIONS ARE MADE TO THE SATISFACTION OF THE DISTRICTS ENGINEER AND THE SUBMITTALS ARE FULLY APPROVED.

I. INSTRUMENTS USED FOR TESTING AND BALANCING OF SYSTEMS SHALL HAVE BEEN CALIBRATED WITHIN A PERIOD OF SIX (6) MONTHS AND SHALL BE CHECKED FOR ACCURACY PRIOR TO START OF WORK.

J. THREE (3) COPIES OF COMPLETE TEST REPORT SHALL BE SUBMITTED PRIOR TO FINAL ACCEPTANCE OF PROJECT.

K. TABULATE MAGNETIC STARTERS: SIZE, TYPE, AND MANUFACTURER WITH HEATER STRIP, SIZE, TYPE, AND RATING ALONG WITH MOTOR NAMEPLATE DATA.

L. AIR BALANCE SHALL BE ACHIEVED USING VARIABLE FAN SPEEDS.

M. ADJUST SINGLE OR DOUBLE DEFLECTION REGISTERS AND VARIABLE PATTERN DIFFUSERS TO EVENLY DISTRIBUTE AIR WITHIN THE CONDITIONED SPACE. THE TERMINAL AIR VELOCITY AT 5' ABOVE THE FLOOR

SECTION 075216– ROOFING WORK– GENERAL REQUIREMENTS

SECTION 075216.11 - SBS MODIFIED BITUMINOUS MEMBRANE ROOFING, HOT-APPLIED

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT.

1.2 SUMMARY

A. SECTION INCLUDED

1. [HYBRID] STYRENE-BUTADIENE-STYRENE (SBS) MODIFIED BITUMINOUS MEMBRANE ROOFING SYSTEM ON WOOD DECK, INCLUDING BUT NOT LIMITED TO:

A. ROOF MEMBRANE AND MEMBRANE BASE FLASHINGS.

B. ROOF SURFACING CONSISTING OF MINERAL GRANULATED CAP SHEET.

1.3 DEFINITIONS

A. ROOFING TERMINOLOGY: SEE ASTM D 1079 AND GLOSSARY OF NRCA'S "THE NRCA ROOFING AND WATERPROOFING MANUAL" FOR DEFINITION OF TERMS RELATED TO ROOFING WORK IN THIS SECTION.

B. HOT ROOFING ASPHALT: ROOFING ASPHALT HEATED TO ITS EQUIVISCIOUS TEMPERATURE, THE TEMPERATURE AT WHICH ITS VISCOSITY IS 125 CENTIPOISE FOR MOP-APPLIED ROOFING ASPHALT AND 75 CENTIPOISE FOR MECHANICAL SPREADER-APPLIED ROOFING ASPHALT, WITHIN A RANGE OF PLUS OR MINUS 25 DEG. F, MEASURED AT THE MOP CART OR MECHANICAL SPREADER IMMEDIATELY BEFORE APPLICATION.

1.4 ACTION SUBMITTALS

A. PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED.

1.5 INFORMATIONAL SUBMITTALS

A. CONTRACTOR'S PRODUCT CERTIFICATE: SUBMIT CERTIFICATE, INDICATING PRODUCTS INTENDED FOR WORK OF THIS SECTION, INCLUDING PRODUCT NAMES AND NUMBERS AND MANUFACTURERS' NAMES, WITH STATEMENT INDICATING THAT PRODUCTS TO BE PROVIDED MEET THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

B. QUALIFICATION DATA: FOR INSTALLER, MANUFACTURER, AND ROOFING INSPECTOR.

1. INCLUDE LETTER FROM MANUFACTURER WRITTEN FOR THIS PROJECT INDICATING APPROVAL OF INSTALLER.

C. MANUFACTURER CERTIFICATES: SIGNED BY ROOFING MANUFACTURER CERTIFYING THAT ROOFING SYSTEM COMPLIES WITH REQUIREMENTS SPECIFIED IN "PERFORMANCE REQUIREMENTS" ARTICLE.

1. SUBMIT EVIDENCE OF COMPLIANCE WITH PERFORMANCE REQUIREMENTS, INCLUDING UL LISTING CERTIFICATE.

2. INDICATE THAT PROPOSED SYSTEM COMPONENTS ARE COMPATIBLE.

D. PRODUCT TEST REPORTS: BASED ON EVALUATION OF COMPREHENSIVE TESTS PERFORMED BY MANUFACTURER AND WITNESSED BY A QUALIFIED TESTING AGENCY, FOR COMPONENTS OF BUILT-UP ROOFING.

E. WARRANTIES: UNEXECUTED SAMPLE COPIES OF SPECIAL WARRANTIES.

F. FIELD QUALITY CONTROL REPORTS: DAILY REPORTS OF ROOFING INSPECTOR. INCLUDE WEATHER CONDITIONS, DESCRIPTION OF WORK PERFORMED, TESTS PERFORMED, DEFECTIVE WORK OBSERVED, AND CORRECTIVE ACTIONS TAKEN TO CORRECT DEFECTIVE WORK.

1.6 CLOSEOUT SUBMITTALS

A. MAINTENANCE DATA: TO INCLUDE IN MAINTENANCE MANUALS.

B. WARRANTIES: EXECUTED COPIES OF WARRANTIES.

1.7 QUALITY ASSURANCE

A. INSTALLER QUALIFICATIONS: AN EMPLOYER OF WORKERS TRAINED AND CERTIFIED BY MANUFACTURER, INCLUDING A FULL-TIME ON-SITE SUPERVISOR WITH A MINIMUM OF FIVE YEARS' EXPERIENCE INSTALLING PRODUCTS COMPARABLE TO THOSE SPECIFIED, ABLE TO COMMUNICATE VERBALLY WITH CONTRACTOR, ARCHITECT, AND EMPLOYEES, AND QUALIFIED BY THE MANUFACTURER TO INSTALL MANUFACTURER'S PRODUCT AND FURNISH WARRANTY OF TYPE SPECIFIED.

B. MANUFACTURER QUALIFICATIONS: APPROVED MANUFACTURER WITH UL LISTED ROOFING SYSTEMS COMPARABLE TO THOSE SPECIFIED FOR THIS PROJECT, WITH MINIMUM FIVE YEARS' EXPERIENCE IN MANUFACTURE OF COMPARABLE PRODUCTS IN SUCCESSFUL USE IN SIMILAR APPLICATIONS, AND ABLE TO FURNISH WARRANTY WITH PROVISIONS MATCHING SPECIFIED REQUIREMENTS.

C. MANUFACTURER'S INSTALLATION INSTRUCTIONS: OBTAIN AND MAINTAIN ON-SITE MANUFACTURER'S WRITTEN RECOMMENDATIONS AND INSTRUCTIONS FOR INSTALLATION OF PRODUCT

1.8 DELIVERY, STORAGE, AND HANDLING

A. DELIVER ROOFING MATERIALS TO PROJECT SITE IN ORIGINAL CONTAINERS WITH SEALS UNBROKEN AND LABELED WITH MANUFACTURER'S NAME, PRODUCT BRAND NAME AND TYPE, DATE OF MANUFACTURE, APPROVAL OR LISTING AGENCY MARKINGS, AND DIRECTIONS FOR STORING AND MIXING WITH OTHER COMPONENTS.

B. STORE LIQUID MATERIALS IN THEIR ORIGINAL UNDAMAGED CONTAINERS IN A CLEAN, DRY, PROTECTED LOCATION AND WITHIN THE TEMPERATURE RANGE REQUIRED BY ROOFING SYSTEM MANUFACTURER. PROTECT STORED LIQUID MATERIAL FROM DIRECT SUNLIGHT.

1. DISCARD AND LEGALLY DISPOSE OF LIQUID MATERIAL THAT CANNOT BE APPLIED WITHIN ITS STATED SHELF LIFE.

C. PROTECT ROOF INSULATION MATERIALS FROM PHYSICAL DAMAGE AND FROM DETERIORATION BY SUNLIGHT, MOISTURE, SOILING, AND OTHER SOURCES. STORE IN A DRY LOCATION, COMPLY WITH INSULATION MANUFACTURER'S WRITTEN INSTRUCTIONS FOR HANDLING, STORING, AND PROTECTING DURING INSTALLATION.

D. HANDLE AND STORE ROOFING MATERIALS AND PLACE EQUIPMENT IN A MANNER TO AVOID PERMANENT DEFLECTION OF DECK.

1.9 PROJECT CONDITIONS

A. WEATHER LIMITATIONS: PROCEED WITH INSTALLATION ONLY WHEN EXISTING AND FORECASTED WEATHER CONDITIONS PERMIT ROOFING SYSTEM TO BE INSTALLED ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS AND WARRANTY REQUIREMENTS.

B. DAILY PROTECTION: COORDINATE INSTALLATION OF ROOFING SO INSULATION AND OTHER COMPONENTS OF ROOFING SYSTEM NOT PERMANENTLY EXPOSED ARE NOT SUBJECTED TO PRECIPITATION OR LEFT UNCOVERED AT THE END OF THE WORKDAY OR WHEN RAIN IS FORECAST.

1. PROVIDE TIE-OFFS AT END OF EACH DAY'S WORK TO COVER EXPOSED ROOFING AND INSULATION WITH A COURSE OF ROOFING SHEET SECURELY IN PLACE WITH JOINTS AND EDGES SEALED.

2. COMPLETE TERMINATIONS AND BASE FLASHINGS AND PROVIDE TEMPORARY SEALS TO PREVENT WATER FROM ENTERING COMPLETED SECTIONS OF ROOFING.

3. REMOVE TEMPORARY PLUGS FROM ROOF DRAINS AT END OF EACH DAY.

4. REMOVE AND DISCARD TEMPORARY SEALS BEFORE BEGINNING WORK ON ADJOINING ROOFING.

1.10 WARRANTY

A. WARRANTY, GENERAL. WARRANTIES SPECIFIED SHALL BE IN ADDITION TO, AND RUN CONCURRENT WITH, OTHER WARRANTIES REQUIRED BY THE CONTRACT DOCUMENTS. MANUFACTURER'S DISCLAIMERS AND LIMITATIONS ON PRODUCT WARRANTIES DO NOT RELIEVE CONTRACTOR OF OBLIGATIONS UNDER REQUIREMENTS OF THE CONTRACT DOCUMENTS.

B. MANUFACTURER'S WARRANTY: MANUFACTURER'S STANDARD OR CUSTOMIZED FORM, IN WHICH MANUFACTURER AGREES TO REPAIR OR REPLACE COMPONENTS OF ROOFING SYSTEM THAT FAIL IN MATERIALS OR WORKMANSHIP WITHIN SPECIFIED WARRANTY PERIOD. FAILURE INCLUDES ROOF LEAKS.

1. MANUFACTURER'S WARRANTY INCLUDES ROOFING MEMBRANE, BASE FLASHINGS, FASTENERS, ROOFING MEMBRANE ACCESSORIES AND OTHER COMPONENTS OF ROOFING SYSTEM SPECIFIED IN THIS SECTION.

2. WARRANTY PERIOD: TWO YEARS FROM DATE OF SUBSTANTIAL COMPLETION.

C. INSTALLER'S WARRANTY: SUBMIT ROOFING INSTALLER'S WARRANTY, COVERING THE WORK OF THIS SECTION, INCLUDING ALL COMPONENTS OF ROOFING SYSTEM SUCH AS ROOFING MEMBRANE, BASE FLASHING, FASTENERS, COVER BOARDS, SUBSTRATE BOARDS, VAPOR RETARDERS, AND WALKWAY PRODUCTS, FOR THE FOLLOWING WARRANTY PERIOD:

1. WARRANTY PERIOD: TWO YEARS FROM DATE OF SUBSTANTIAL COMPLETION

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. BASIS-OF-DESIGN MANUFACTURER/PRODUCT: THE ROOF SYSTEM SPECIFIED IN THIS SECTION IS BASED UPON PRODUCTS OF TREMCO, INC., NAMED IN OTHER PART 2 ARTICLES. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE THE NAMED PRODUCT OR AN ARCHITECT APPROVED EQUAL.

B. SOURCE LIMITATIONS: OBTAIN COMPONENTS FOR ROOFING SYSTEM FROM SAME MANUFACTURER AS MEMBRANE ROOFING OR MANUFACTURER APPROVED BY MEMBRANE ROOFING MANUFACTURER.

2.2 PERFORMANCE REQUIREMENTS

A. GENERAL PERFORMANCE: ROOFING SHALL WITHSTAND EXPOSURE TO WEATHER WITHOUT FAILURE OR LEAKS DUE TO DEFECTIVE MANUFACTURE OR INSTALLATION.

1. ACCELERATED WEATHERING: ROOFING SYSTEM SHALL WITHSTAND 2000 HOURS OF EXPOSURE WHEN TESTED ACCORDING TO ASTM G 152, ASTM G 154, OR ASTM G 155.

2. IMPACT RESISTANCE: ROOFING SYSTEM SHALL RESIST IMPACT DAMAGE WHEN TESTED ACCORDING TO ASTM D 3746 OR ASTM D 4272.

B. MATERIAL COMPATIBILITY: PROVIDE ROOFING MATERIALS THAT ARE COMPATIBLE WITH ONE ANOTHER UNDER CONDITIONS OF SERVICE AND APPLICATION REQUIRED, AS DEMONSTRATED BY MEMBRANE ROOFING MANUFACTURER BASED ON TESTING AND FIELD EXPERIENCE.

C. FLASHINGS AND FASTENING: COMPLY WITH REQUIREMENTS OF DIVISION 07 SECTIONS "SHEET METAL FLASHING AND TRIM" AND "ROOF SPECIALTIES." PROVIDE BASE FLASHINGS, PERIMETER FLASHINGS, DETAIL FLASHINGS AND COMPONENT MATERIALS AND INSTALLATION TECHNIQUES THAT COMPLY WITH REQUIREMENTS AND RECOMMENDATIONS OF THE FOLLOWING:

1. NRCA ROOFING MANUAL (SIXTH EDITION) FOR CONSTRUCTION DETAILS AND RECOMMENDATIONS.

2. SMACNA ARCHITECTURAL SHEET METAL MANUAL (SEVENTH EDITION) FOR CONSTRUCTION DETAILS.

D. EXTERIOR FIRE-TEST EXPOSURE: ASTM E 108, CLASS A; FOR APPLICATION AND ROOF SLOPES INDICATED, AS DETERMINED BY TESTING IDENTICAL MEMBRANE ROOFING MATERIALS BY A QUALIFIED TESTING AGENCY. MATERIALS SHALL BE IDENTIFIED WITH APPROPRIATE MARKINGS OF APPLICABLE TESTING AGENCY

E. FIRE-RESISTANCE RATINGS: WHERE INDICATED, PROVIDE FIRE-RESISTANCE-RATED ROOF ASSEMBLIES IDENTICAL TO THOSE OF ASSEMBLIES TESTED FOR FIRE RESISTANCE PER ASTM E 119 BY A QUALIFIED TESTING AGENCY. IDENTIFY PRODUCTS WITH APPROPRIATE MARKINGS OF APPLICABLE TESTING AGENCY.

F. ENERGY PERFORMANCE: ROOFING SYSTEM SHALL HAVE AN INITIAL SOLAR REFLECTANCE INDEX OF NOT LESS THAN 0.70 AND AN EMISSIVITY OF NOT LESS THAN 0.75 WHEN TESTED ACCORDING TO CRC-1.

2.3 ROOFING MEMBRANE MATERIALS

A. SHEATHING PAPER: RED ROSIN TYPE, MINIMUM 3 LB./100 SQ. FT. (0.16 KG/SQ. M).

B. HYBRID SYSTEM ASPHALT PLY SHEETS:

1. ASTM D 2178 TYPE IV ASPHALT-IMPREGNATED GLASS-FIBER PLY SHEET.

A. BASIS OF DESIGN PRODUCT: TREMCO, THERMGLOSS TYPE IV.

B. NET DRY MASS, ASTM D 146: 7.5 LB/100 SQ FT.

C. BREAKING STRENGTH, ASTM D 146: 44 LBF/IN.

C. SBS MODIFIED BITUMINOUS CAP SHEET:

1. ASTM D 6163 TYPE I GRADE G SBS-MODIFIED ASPHALT-COATED GLASS-FIBER-REINFORCED SHEET, GRANULAR SURFACED.

A. BASIS OF DESIGN PRODUCT: TREMCO, POWERPLY STANDARD FR.

B. EXTERIOR FIRE-TEST EXPOSURE, ASTM E 108: CLASS A.

C. TENSILE STRENGTH AT 73 DEG. F (23 DEG. C), MINIMUM, ASTM D 5147: MACHINE DIRECTION 80.0 LBF/IN (14.0 KNM); CROSS MACHINE DIRECTION 70.0 LBF/IN (12.0 KNM).

D. TEAR STRENGTH AT 73 DEG. F (23 DEG. C), MINIMUM, ASTM D 5147: MACHINE DIRECTION, 100 LBF (440 N); CROSS MACHINE DIRECTION 100 LBF (440 N).

E. ELONGATION AT 73 DEG. F (23 DEG. C), MINIMUM, ASTM D 5147: MACHINE DIRECTION 7.5 PERCENT; CROSS MACHINE DIRECTION 7.5 PERCENT.

F. LOW TEMPERATURE FLEX, MAXIMUM, ASTM D 5147: -15 DEG. F (-26 DEG. C).

G. THICKNESS, MINIMUM, ASTM D 5147: 0.120 INCH (3 MM).

D. BASE FLASHING BACKER SHEET:

1. ASTM D 4601 TYPE II NONPERFORATED ASPHALT-IMPREGNATED, POLYESTER REINFORCED, AND ASPHALT COATED GLASS-FIBER SHEET, DUSTED WITH FINE MINERAL SURFACING ON BOTH SIDES.

A. BASIS OF DESIGN PRODUCT: TREMCO, BURMASTIC COMPOSITE PLY HT.

E. BASE FLASHING SHEET:

1. ASTM D 6163 TYPE I GRADE G SBS-MODIFIED ASPHALT-COATED GLASS-FIBER-REINFORCED SHEET, GRANULAR SURFACED.

A. BASIS OF DESIGN PRODUCT: TREMCO, POWERPLY STANDARD FR.

B. EXTERIOR FIRE-TEST EXPOSURE, ASTM E 108: CLASS A.

C. TENSILE STRENGTH AT 73 DEG. F (23 DEG. C), MINIMUM, ASTM D 5147: MACHINE DIRECTION 80.0 LBF/IN (14.0 KNM); CROSS MACHINE DIRECTION 70.0 LBF/IN (12.0 KNM).

D. TEAR STRENGTH AT 73 DEG. F (23 DEG. C), MINIMUM, ASTM D 5147: MACHINE DIRECTION, 100 LBF (440 N); CROSS MACHINE DIRECTION 100 LBF (440 N).

E. ELONGATION AT 73 DEG. F (23 DEG. C), MINIMUM, ASTM D 5147: MACHINE DIRECTION 7.5 PERCENT; CROSS MACHINE DIRECTION 7.5 PERCENT.

F. LOW TEMPERATURE FLEX, MAXIMUM, ASTM D 5147: -15 DEG. F (-26 DEG. C).

G. THICKNESS, MINIMUM, ASTM D 5147: 0.120 INCH (3 MM).

F. DETAILING FABRIC:

1. WOVEN GLASS FIBER MESH, VINYL-COATED; NON-SHRINKING, NON-ROTTING, VINYL-COATED WOVEN GLASS MESH FOR REINFORCING FLASHING SEAMS, MEMBRANE LAPS, AND OTHER ROOF SYSTEM DETAILING.

A. BASIS OF DESIGN PRODUCT: TREMCO, BURMESH.

B. TENSILE STRENGTH, 70 DEG. F, ASTM D 146: WARP, 65 LBF/IN (289 N); FILL, 75 LBF/IN (311 N).

2.4 ASPHALT MATERIALS

A. ASPHALT PRIMER, WATER-BASED, POLYMER MODIFIED.

1. BASIS OF DESIGN PRODUCT: TREMCO, TREMPRIME WB.

2. VOLATILE ORGANIC COMPOUNDS (VOC), MAXIMUM, ASTM D 3960: 2 G/L.

B. ASTM D 312 TYPE IV HOT-MELT ASPHALT.

1. BASIS OF DESIGN PRODUCT: TREMCO, PREMIUM IV.

2. SOFTENING POINT, MIN/MAX, ASTM D 36: 215-225 DEG. F (102-107 DEG. C).

3. DUCTILITY AT 77 DEG. F, MINIMUM, ASTM D 113: 2.5 CM.

4. PENETRATION AT 77 DEG. F (25 DEG. C), MIN/MAX, ASTM D 5: 15-30 DMM.

C. ASPHALT ROOFING CEMENT: ASTM D 4586, ASBESTOS FREE, OF CONSISTENCY REQUIRED BY ROOFING SYSTEM MANUFACTURER FOR APPLICATION.

2.5 AUXILIARY ROOFING MATERIALS

A. GENERAL: AUXILIARY MATERIALS RECOMMENDED BY ROOFING SYSTEM MANUFACTURER FOR INTENDED USE AND COMPATIBLE WITH ROOFING MEMBRANE.

1. LIQUID-TYPE AUXILIARY MATERIALS SHALL COMPLY WITH VOC LIMITS OF AUTHORITIES HAVING JURISDICTION.

B. JOINT SEALANT: ELASTOMERIC JOINT SEALANT COMPATIBLE WITH ROOFING MATERIALS, WITH MOVEMENT CAPABILITY APPROPRIATE FOR APPLICATION.

1. JOINT SEALANT, POLYURETHANE: ASTM C 920, TYPE 5, GRADE NS, CLASS 50 SINGLE-COMPONENT MOISTURE CURING SEALANT, FORMULATED FOR COMPATIBILITY AND USE IN DYNAMIC AND STATIC JOINTS; PAINTABLE.

A. BASIS OF DESIGN PRODUCT: TREMCO, TREMSEAL PRO.

B. VOLATILE ORGANIC COMPOUNDS (VOC), MAXIMUM, ASTM D 3960: 40 G/L.

C. HARDNESS, SHORE A, ASTM C 661: 40.

D. ADHESION TO CONCRETE, ASTM C 794: 35 PLI.

E. TENSILE STRENGTH, ASTM D 412: 350 PSI.

F. COLOR: CLOSEST MATCH TO SUBSTRATE.

C. FASTENERS: FACTORY-COATED STEEL FASTENERS AND METAL OR PLASTIC PLATES MEETING CORROSION-RESISTANCE PROVISIONS IN FM GLOBAL 4470, DESIGNED FOR FASTENING ROOFING COMPONENTS TO SUBSTRATE, TESTED BY MANUFACTURER FOR REQUIRED PULLOUT STRENGTH, AND ACCEPTABLE TO ROOFING SYSTEM MANUFACTURER.

D. METAL FLASHING SHEET, METAL FLASHING SHEET IS SPECIFIED IN DIVISION 07 SECTION "SHEET METAL FLASHING AND TRIM."

E. MISCELLANEOUS ACCESSORIES: PROVIDE MISCELLANEOUS ACCESSORIES RECOMMENDED BY ROOFING SYSTEM MANUFACTURER

2.6 SURFACING MATERIALS

A. ACRYLIC ROOF COATING, HIGHLY-REFLECTIVE ELASTOMERIC: HIGH-SOLIDS ACRYLIC LATEX ELASTOMERIC ROOF COATING FORMULATED FOR USE ON BITUMINOUS ROOF SURFACES; WATER-BASED, ENERGY STAR QUALIFIED, CRC LISTED AND CALIFORNIA TITLE 24 ENERGY CODE COMPLIANT.

1. BASIS OF DESIGN PRODUCT: TREMCO, ICE COATING.

2. VOLATILE ORGANIC COMPOUNDS (VOC), ASTM D 3960: 40 G/L.

3. EMISSIVITY, MINIMUM, ASTM C 1370: 0.83.

4. SOLAR REFLECTANCE INDEX (SRI), ASTM E 1980: 103.

5. REFLECTANCE, MINIMUM, ASTM C 1549: 84 PERCENT.

6. SOLIDS, BY VOLUME: 65 PERCENT.

PART 3 - EXECUTION

3.1 EXAMINATION

A. EXAMINE SUBSTRATES, AREAS, AND CONDITIONS, WITH INSTALLER PRESENT, FOR COMPLIANCE WITH THE FOLLOWING REQUIREMENTS AND OTHER CONDITIONS AFFECTING PERFORMANCE OF ROOFING SYSTEM:

1. VERIFY THAT, BLOCKING, CURBS, AND NAILERS ARE SECURELY ANCHORED TO ROOF DECK AT PENETRATIONS AND TERMINATIONS AND THAT NAILERS MATCH THICKNESSES OF INSULATION, WOOD CANTS

2. WOOD ROOF DECK: VERIFY THAT WOOD DECK IS SECURELY FASTENED WITH NO PROJECTING FASTENERS AND WITH NO ADJACENT UNITS IN EXCESS OF 1/16 INCH (1.6 MM) OUT OF PLANE RELATIVE TO ADJOINING DECK.

3. VERIFY THAT EXISTING INSULATION AND SUBSTRATE IS SOUND AND DRY.

B. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

3.2 PREPARATION

A. CLEAN SUBSTRATE OF DUST, DEBRIS, MOISTURE, AND OTHER SUBSTANCES DETRIMENTAL TO ROOFING INSTALLATION ACCORDING TO ROOFING SYSTEM MANUFACTURER'S WRITTEN INSTRUCTIONS. REMOVE SHARP PROJECTIONS.

B. PREVENT MATERIALS FROM ENTERING AND CLOGGING ROOF DRAINS AND CONDUCTORS AND FROM SPILLING OR MIGRATING ONTO SURFACES OF OTHER CONSTRUCTION. REMOVE ROOF-DRAIN PLUGS WHEN NO WORK IS TAKING PLACE OR WHEN RAIN IS FORECAST.

3.3 INSTALLATION, GENERAL

A. INSTALL ROOFING SYSTEM IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

3.4 INSULATION INSTALLATION

A. COMPLY WITH BUILT-UP ROOFING MANUFACTURER'S WRITTEN INSTRUCTIONS FOR INSTALLING ROOF INSULATION.

B. CANT STRIPS: INSTALL AND SECURE PREFORMED 45-DEGREE CANT STRIPS AT JUNCTURES OF BUILT-UP ROOFING WITH VERTICAL SURFACES OR ANGLE CHANGES GREATER THAN 45 DEGREE

D. INSTALL TAPERED EDGE STRIPS AT PERIMETER EDGES OF ROOF THAT DO NOT TERMINATE AT VERTICAL SURFACES

3.5 HOT-APPLIED ROOFING MEMBRANE INSTALLATION, GENERAL

H. INSTALL ROOFING MEMBRANE SYSTEM ACCORDING TO ROOFING SYSTEM MANUFACTURER'S WRITTEN INSTRUCTIONS AND APPLICABLE RECOMMENDATIONS IN ARMA/NCA'S "QUALITY CONTROL GUIDELINES FOR THE APPLICATION OF POLYMER MODIFIED BITUMEN ROOFING" AND AS FOLLOWS:

1. DECK TYPE: WOOD DECK.

2. NUMBER OF GLASS-FIBER BASE-PLY SHEETS: THREE.

A. ADHERING METHOD: MOPPED.

3. GRANULAR-SURFACED SBS-MODIFIED ASPHALT CAP SHEET:

A. ADHERING METHOD: MOPPED.

I. START INSTALLATION OF ROOFING MEMBRANE IN PRESENCE OF ROOFING SYSTEM MANUFACTURER'S TECHNICAL PERSONNEL.

J. COOPERATE WITH TESTING AGENCIES ENGAGED OR REQUIRED TO PERFORM SERVICES FOR INSTALLING ROOFING SYSTEM.

K. COORDINATE INSTALLATION OF ROOFING SYSTEM SO INSULATION AND OTHER COMPONENTS OF THE ROOFING MEMBRANE SYSTEM NOT PERMANENTLY EXPOSED ARE NOT SUBJECTED TO PRECIPITATION OR LEFT UNCOVERED AT THE END OF THE WORKDAY OR WHEN RAIN IS FORECAST.

1. PROVIDE TIE-OFFS AT END OF EACH DAY'S WORK CONFIGURED AS RECOMMENDED BY NRCA ROOFING MANUAL APPENDIX: QUALITY CONTROL GUIDELINES - INSULATION TO PROTECT NEW [AND EXISTING] ROOFING.

2. COMPLETE TERMINATIONS AND BASE FLASHINGS AND PROVIDE TEMPORARY SEALS TO PREVENT WATER FROM ENTERING COMPLETED SECTIONS OF ROOFING.

3. REMOVE TEMPORARY PLUGS FROM ROOF DRAINS AT END OF EACH DAY.

4. REMOVE AND DISCARD TEMPORARY SEALS BEFORE BEGINNING WORK ON ADJOINING ROOFING.

L. HOT ROOFING ASPHALT HEATING: HEAT ASPHALT TO ITS EQUIVISCIOUS TEMPERATURE, MEASURED AT THE MOP CART OR MECHANICAL SPREADER IMMEDIATELY BEFORE APPLICATION. CIRCULATE ASPHALT DURING HEATING. DO NOT RAISE ASPHALT TEMPERATURE ABOVE EQUIVISCIOUS TEMPERATURE RANGE MORE THAN ONE HOUR BEFORE TIME OF APPLICATION. DO NOT EXCEED ASPHALT MANUFACTURER'S RECOMMENDED TEMPERATURE LIMITS DURING ASPHALT HEATING. DO NOT HEAT ASPHALT WITHIN 25 DEG. F (14 DEG. C) OF FLASH POINT. DISCARD ASPHALT MAINTAINED AT A TEMPERATURE EXCEEDING FINISHED BLOWING TEMPERATURE FOR MORE THAN FOUR HOURS.

1. APPLY HOT ROOFING ASPHALT WITHIN PLUS OR MINUS 25 DEG. F (14 DEG. C) OF EQUIVISCIOUS TEMPERATURE AND ADHERE COMPONENTS TO ASPHALT HEATED TO NOT LESS THAN 425 DEG. F (236 DEG. C)

F. SUBSTRATE-JOINT PENETRATIONS: PREVENT ROOFING ASPHALT AND ADHESIVES FROM PENETRATING SUBSTRATE JOINTS, ENTERING BUILDING, OR DAMAGING ROOFING SYSTEM COMPONENTS OR ADJACENT BUILDING CONSTRUCTION.

3.6 SBS-MODIFIED BITUMINOUS MEMBRANE INSTALLATION

A. INSTALL MODIFIED BITUMINOUS ROOFING MEMBRANE SHEET AND CAP SHEET ACCORDING TO ROOFING MANUFACTURER'S WRITTEN INSTRUCTIONS, STARTING AT LOW POINT OF ROOFING SYSTEM. EXTEND ROOFING MEMBRANE SHEETS OVER AND TERMINATE BEYOND CANTS, INSTALLING AS FOLLOWS:

1. UNROLL ROOFING MEMBRANE SHEETS AND ALLOW THEM TO RELAX FOR MINIMUM TIME PERIOD REQUIRED BY MANUFACTURER.

2. ADHERE TO SUBSTRATE IN A SOLID MOPPING OF HOT ROOFING ASPHALT APPLIED AT NOT LESS THAN 425 DEG. F (236 DEG. C).

B. LAPS: ACCURATELY ALIGN ROOFING MEMBRANE SHEETS, WITHOUT STRETCHING, AND MAINTAIN UNIFORM SIDE AND END LAPS. STAGGER END LAPS. INSTALL ROOFING MEMBRANE SHEETS SO SIDE AND END LAPS SHED WATER. COMPLETELY BOND AND SEAL LAPS, LEAVING NO VOIDS.

1. REPAIR TEARS AND VOIDS IN LAPS AND LAPPED SEAMS NOT COMPLETELY SEALED.

2. APPLY ROOFING GRANULES TO COVER EXJUED READ AT LAPS WHILE READ IS HOT.

3.7 FLASHING AND STRIPPING INSTALLATION

A. INSTALL BASE FLASHING OVER CANT STRIPS AND OTHER SLOPED AND VERTICAL SURFACES, AT ROOF EDGES, AND AT PENETRATIONS THROUGH ROOF; SECURE TO SUBSTRATES ACCORDING TO ROOFING SYSTEM MANUFACTURER'S WRITTEN INSTRUCTIONS, AND AS FOLLOWS:

1. EXTEND BASE FLASHING UP WALLS OR PARAPETS A MINIMUM OF 12 INCHES (300 MM) ABOVE BUILT-UP ROOFING AND 6 INCHES (150 MM) ONTO FIELD OF ROOF MEMBRANE.

2. PRIME SUBSTRATES WITH ASPHALT PRIMER IF REQUIRED BY ROOFING SYSTEM MANUFACTURER.

3. BACKER SHEET APPLICATION: INSTALL BACKER SHEET AND ADHERE TO SUBSTRATE IN A SOLID MOPPING OF HOT ROOFING ASPHALT.

4. FLASHING SHEET APPLICATION: ADHERE FLASHING SHEET TO SUBSTRATE IN A SOLID MOPPING OF HOT ROOFING ASPHALT APPLIED AT NOT LESS THAN 425 DEG. F (236 DEG. C). APPLY HOT ROOFING ASPHALT TO BACK OF FLASHING SHEET IF RECOMMENDED BY ROOFING SYSTEM MANUFACTURER. MECHANICALLY FASTEN TOP OF BASE FLASHING SECURELY AT TERMINATIONS AND PERIMETER OF ROOFING.

5. FLASHING SHEET BOTTOM TERMINATION: ADHERE FLASHING SHEET TO ROOF MEMBRANE SHEET CONTINUOUSLY ALONG BOTTOM OF FLASHING SHEET.

B. SEAL TOP TERMINATION OF BASE FLASHING WITH A METAL TERMINATION BAR.

C. INSTALL ROOFING MEMBRANE CAP-SHEET STRIPPING WHERE METAL FLANGES AND EDGINGS ARE SET ON MEMBRANE ROOFING ACCORDING TO ROOFING SYSTEM MANUFACTURER'S WRITTEN INSTRUCTIONS.

D. ROOF DRAINS: SET 30 BY 30 INCH (760 BY 760 MM) SQUARE METAL FLASHING IN BED OF ASPHALT ROOFING CEMENT ON COMPLETED ROOFING MEMBRANE. COVER METAL FLASHING WITH ROOFING MEMBRANE CAP-SHEET STRIPPING AND EXTEND A MINIMUM OF 6 INCHES BEYOND EDGE OF METAL FLASHING ONTO FIELD OF ROOFING MEMBRANE. CLAMP ROOFING MEMBRANE, METAL FLASHING, AND STRIPPING INTO ROOF-DRAIN CLAMPING RING.

1. INSTALL STRIPPING ACCORDING TO ROOFING SYSTEM MANUFACTURER'S WRITTEN INSTRUCTIONS.

3.8 SURFACING AND COATING INSTALLATION

A. ACRYLIC EMULSION COATING

1. ACRYLIC EMULSION COATING: APPLY COATING TO ROOFING MEMBRANE AND BASE FLASHINGS IN NOT LESS THAN TWO COATS, WITH NUMBER OF COATS, THICKNESS OF APPLICATION, AND APPLICATION METHOD AS RECOMMENDED IN WRITING BY COATING MANUFACTURER.

3.9 FIELD QUALITY CONTROL

A. FINAL ROOF INSPECTION: ARRANGE FOR ROOFING SYSTEM MANUFACTURER'S TECHNICAL PERSONNEL TO INSPECT ROOFING INSTALLATION AT COMMENCEMENT AND UPON COMPLETION.

1. NOTIFY ARCHITECT AND OWNER 48 HOURS IN ADVANCE OF DATE AND TIME OF INSPECTION.

B. REPAIR OR REMOVE AND REPLACE COMPONENTS OF BUILT-UP ROOFING WHERE TEST RESULTS OR INSPECTIONS INDICATE THAT THEY DO NOT COMPLY WITH SPECIFIED REQUIREMENTS.

1. ADDITIONAL TESTING AND INSPECTING, AT CONTRACTOR'S EXPENSE, WILL BE PERFORMED TO DETERMINE IF REPLACED OR ADDITIONAL WORK COMPLIES WITH SPECIFIED REQUIREMENTS.

3.10 PROTECTING AND CLEANING

A. PROTECT ROOFING SYSTEM FROM DAMAGE AND WEAR DURING REMAINDER OF CONSTRUCTION PERIOD. WHEN REMAINING CONSTRUCTION WILL NOT AFFECT OR ENDANGER ROOFING, INSPECT ROOFING FOR DETERIORATION AND DAMAGE, DESCRIBING ITS NATURE AND EXTENT IN A WRITTEN REPORT, WITH COPIES TO ARCHITECT AND OWNER.

B. CORRECT DEFICIENCIES IN OR REMOVE ROOFING SYSTEM THAT DOES NOT COMPLY WITH REQUIREMENTS, REPAIR SUBSTRATES, AND REPAIR OR REINSTALL ROOFING SYSTEM TO A CONDITION FREE OF DAMAGE AND DETERIORATION AT TIME OF SUBSTANTIAL COMPLETION AND ACCORDING TO WARRANTY REQUIREMENTS.

C. CLEAN OVERSPRAY AND SPILLAGE FROM ADJACENT CONSTRUCTION USING CLEANING AGENTS AND PROCEDURES RECOMMENDED BY MANUFACTURER OF AFFECTED CONSTRUCTION.

END OF SECTION 075216.11

DSA 02-118996

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Educating Students for Success

Lodi Unified School District

Unified School District

REGISTERED PROFESSIONAL ENGINEER
No. E-000557
Exp. 12/31/2025
MECHANICAL
State of California

SEAL:

LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT
1290 LILAC STREET
WOODBIDGE, CA. 95242

SHEET TITLE:

MECHANICAL AND PLUMBING SPECIFICATION

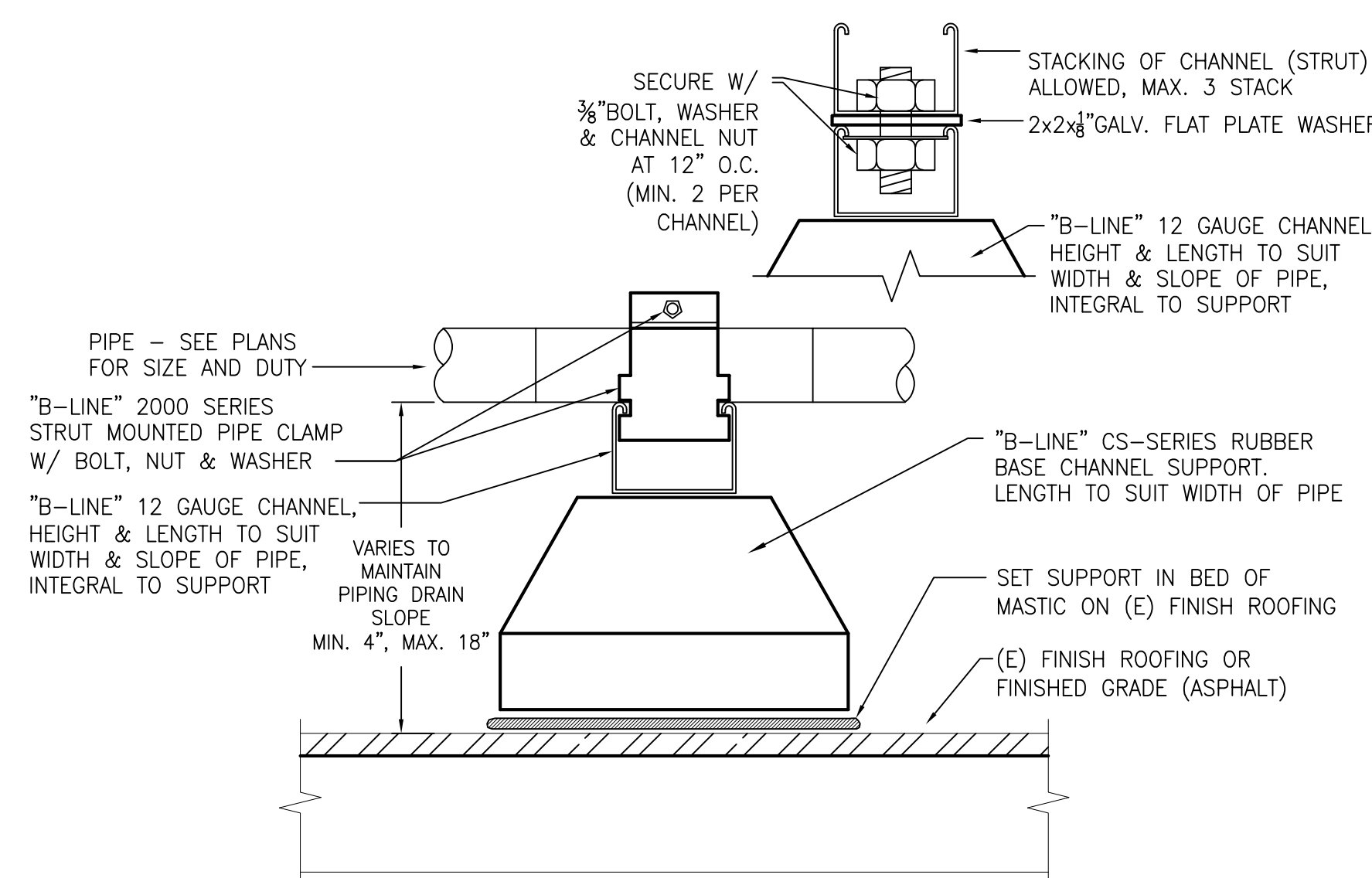
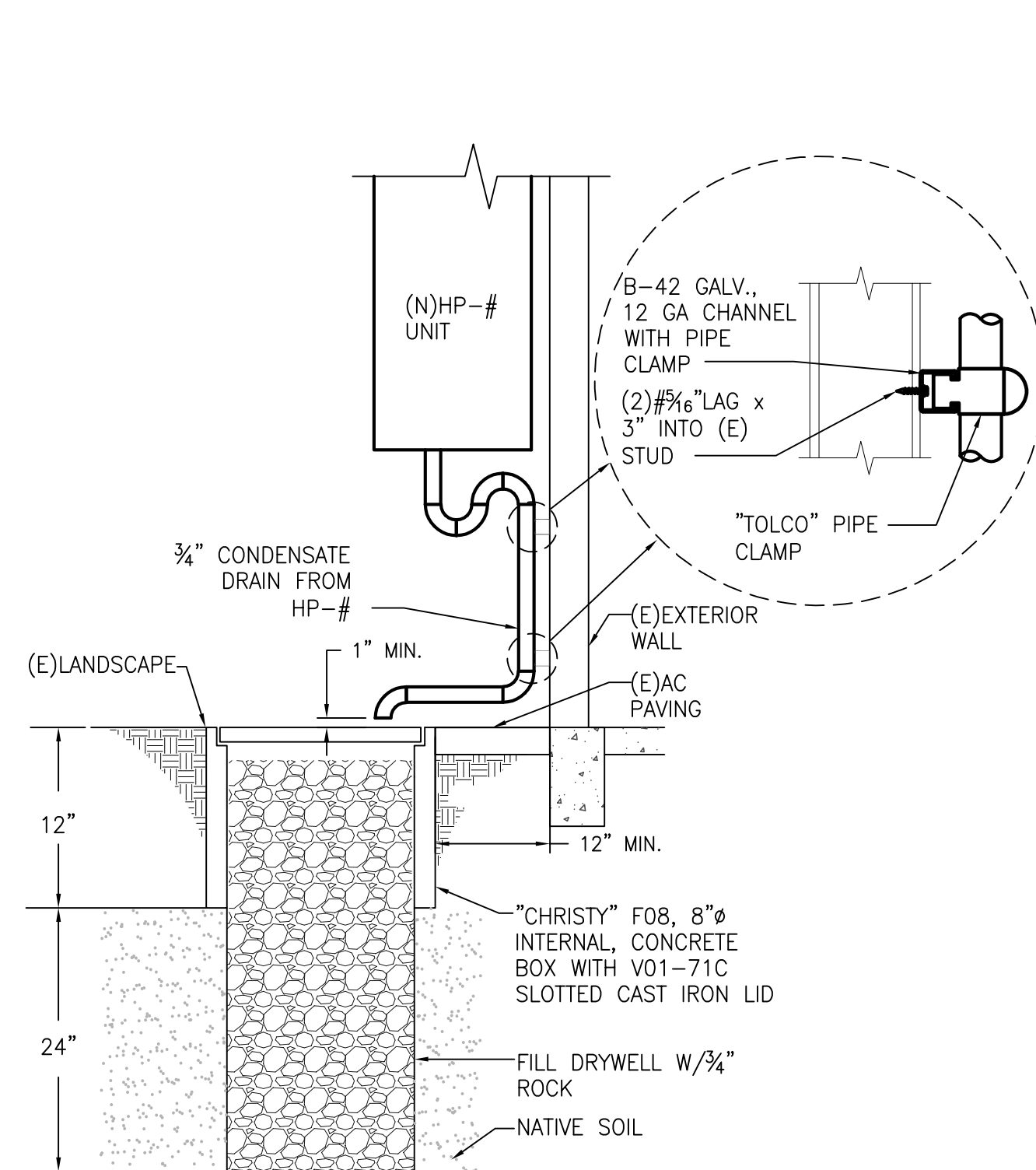
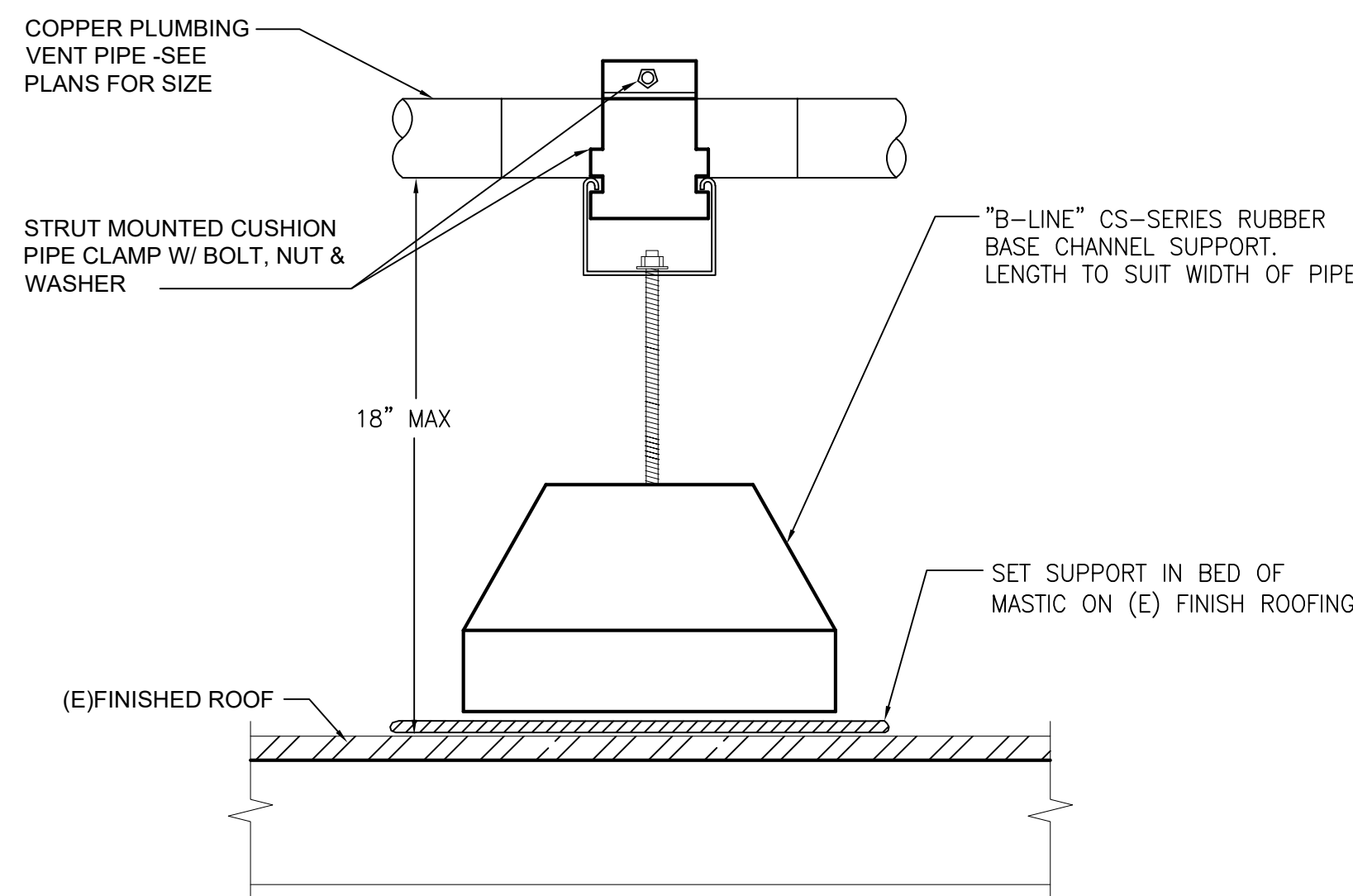
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SHEET NUMBER:

M6.03

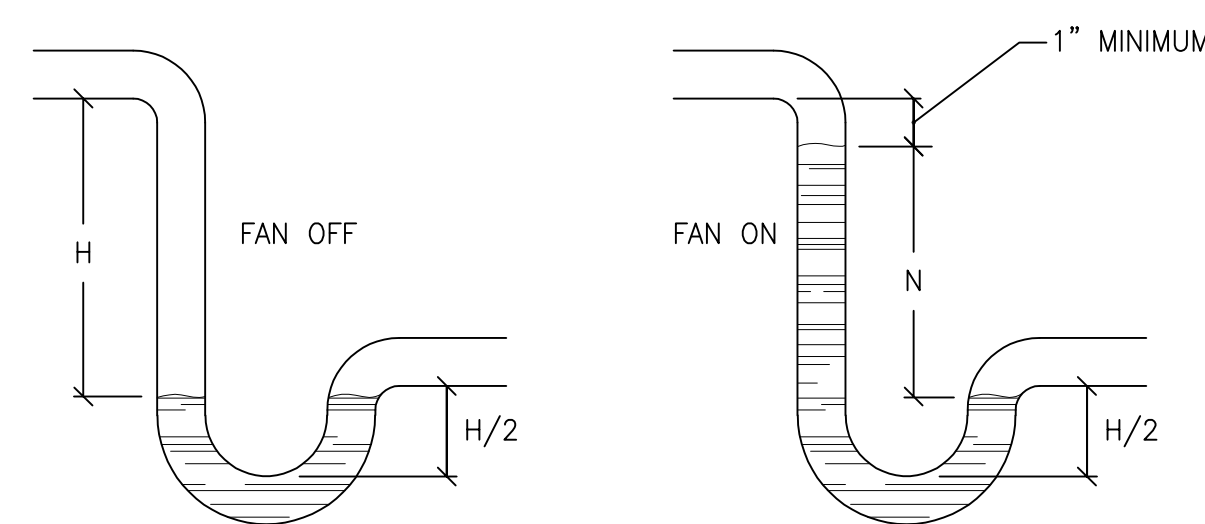
Project Engineer:	CT	Job Number:	2090
Project Manager:	CT	Proj Date:	Jan 16, 2021 1:09PM
Project Designer:	DS	Design:	COG

3. SUPPORT SHALL BE INSTALLED WITHIN 12" OF EACH HORIZONTAL ELBOW OR BRANCH CONNECTION

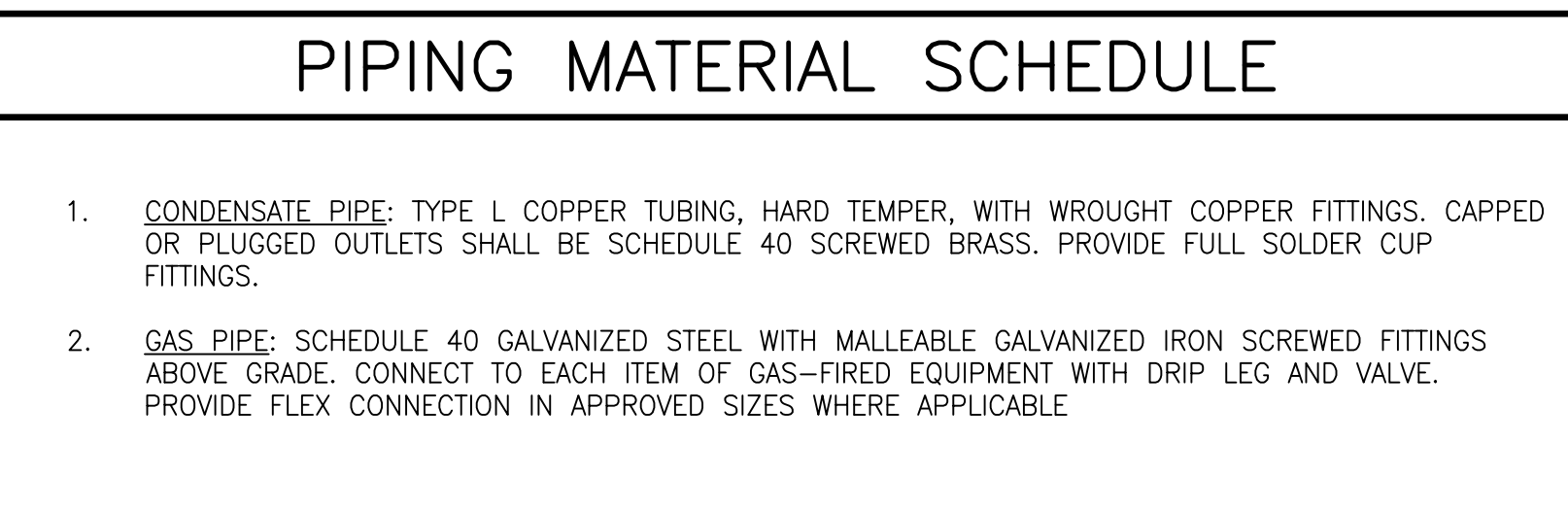
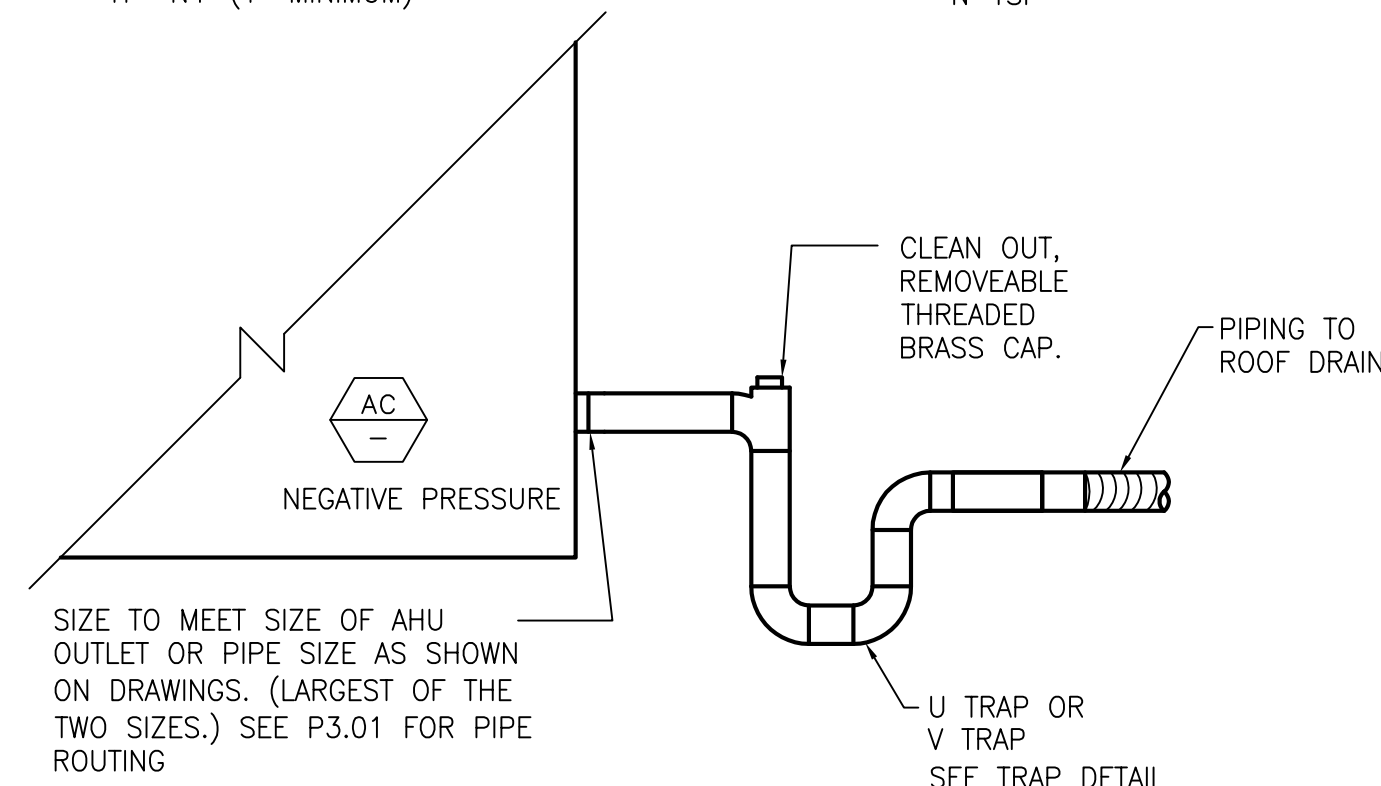


NOTE:
APPLICABLE FOR CONDENSATE PIPING TO AC UNITS
ALL CONDENSATE PIPE SHALL BE TYPE L COPPER

CONDENSATE PIPING HAS $IP < 1.0$ AND THEREFORE DOES NOT REQUIRED TO MEET THE SEISMIC CRITERIA OF ASCE 7 SECTION 13.6.8 AND EXCEPTION 3 IN SECTION 13.6.8.3



NEGATIVE PRESSURE TRAP - DRAW THRU CONFIGURATION
N= NEGATIVE FAN PRESSURE (" W.C.)
H= N+ (1" MINIMUM)



M/E/P COMPONENT 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 2019 CBC SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTER 13, 26 AND 30.

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY OR MOVABLE 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, MOVEABLE 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 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 TRAVERSE AND LONGITUDINAL DIRECTIONS.

- A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE 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 THE DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.

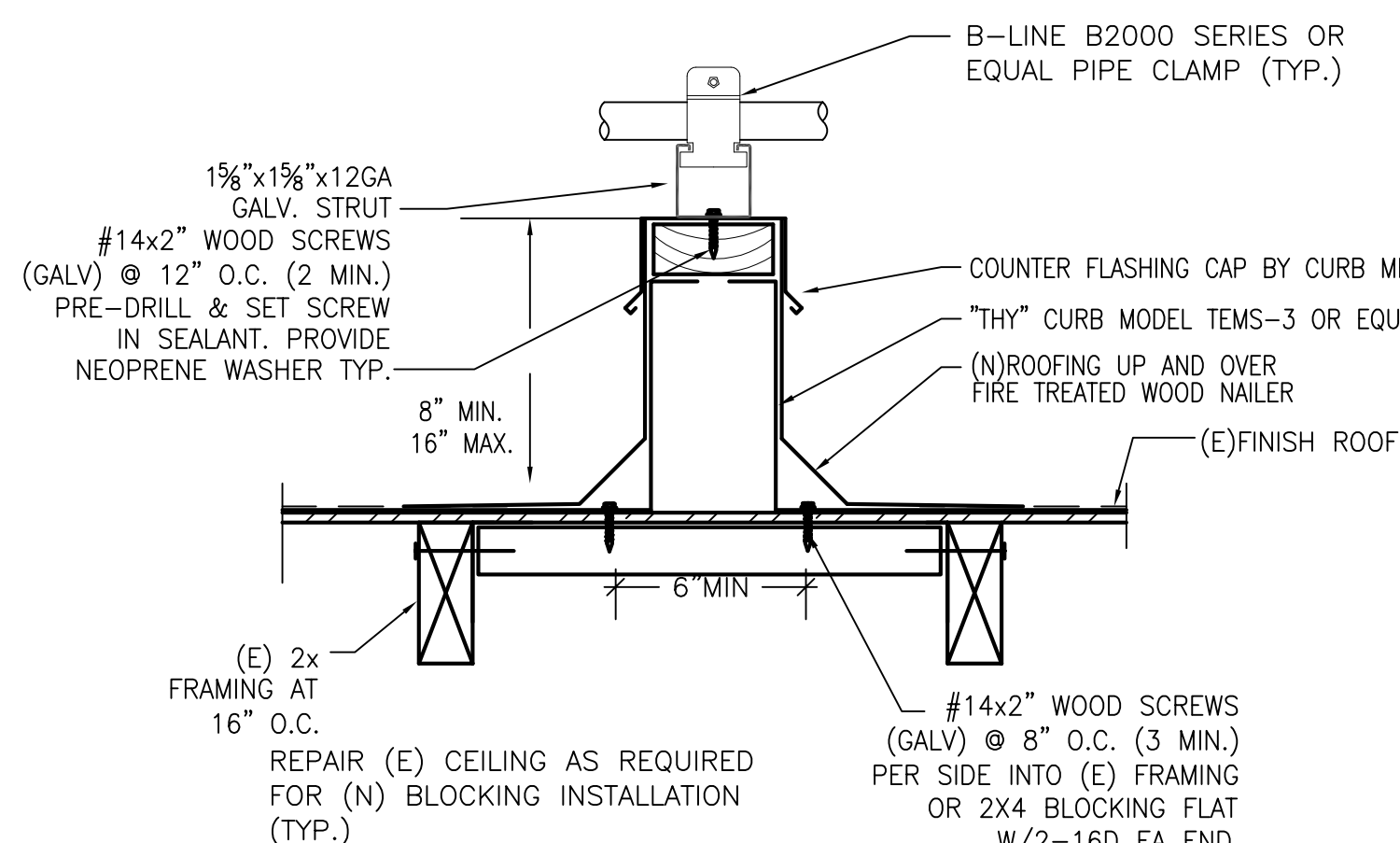
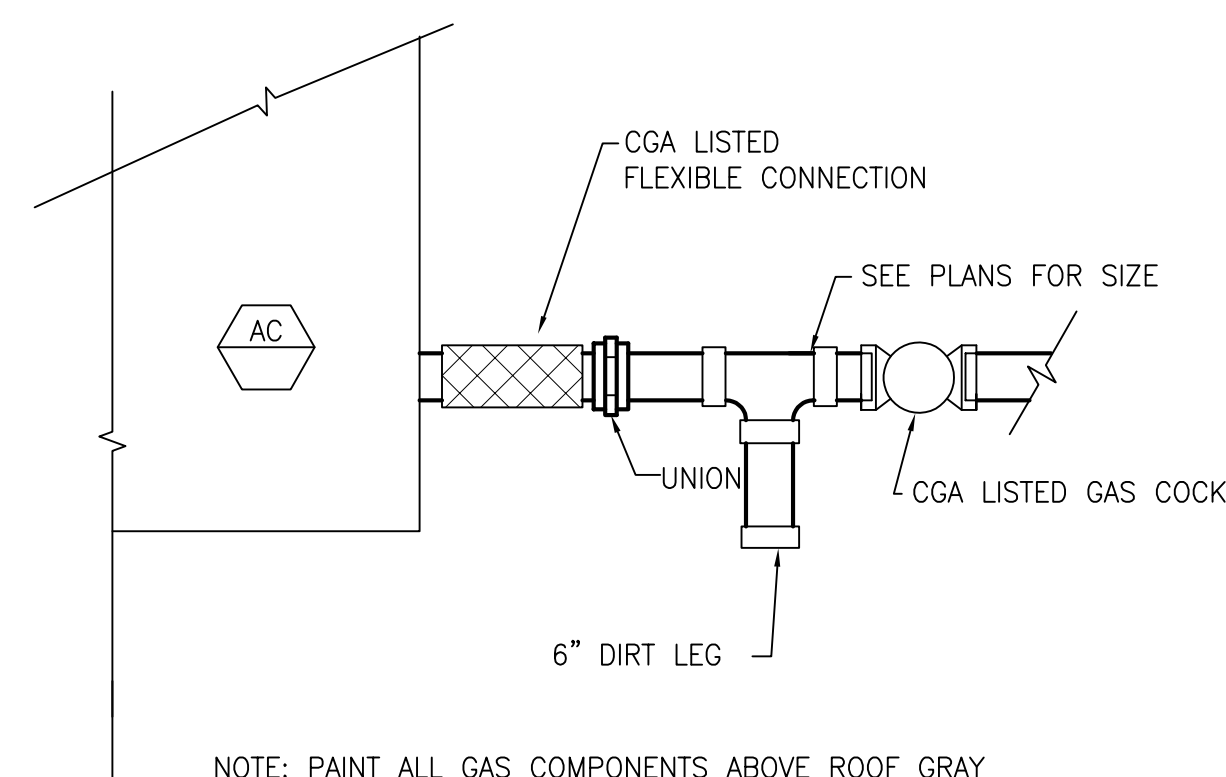
PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTES

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENT PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTION 13.6.5, 13.6.6, 13.6.7, 13.6.8, AND 2019 1617A.1.24, 1617A.1.25 AND 1617A.1.26.

THE METHOD OF SHOWING THE BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM AREA AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G. OSHDP OPMO 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 #) #_____.



	COLD WATER LINE
	CONDENSATE DRAIN
	FIRE SERVICE LINE
	GAS
	HOT WATER LINE
	HOT WATER RETURN
	LIQUID PETROLEUM GAS
	OVERFLOW
	PIPING OR EQUIPMENT TO BE REMOVED
	RAINWATER LEADER
	RISE OR DROP IN DIRECTION OF FLOW
	SANITARY SOIL OR WASTE LINE
	SECONDARY CONDENSATE DRAIN LINE
	TRAP PRIMER LINE
	VENT
	CLEANOUT & WALL CLEANOUT
	FIRE DEPARTMENT CONNECTION
	FLOOR/ GRADE CLEAN OUT
	FLOOR DRAIN
	HOSE BIBB/ WALL HYDRANT
	TRAP
	TRAP PRIMER
	BALANCING VALVE
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	FLEXIBLE CONNECTION
	GATE VALVE
	SHUT OFF COOK
	PRESSURE GAUGE
	PRESSURE REDUCING VALVE
	REDUCER
	PRESSURE & TEMPERATURE RELIEF VALVE
	SHUT OFF VALVE
	STRAINER
	STRAINER & DRAIN VALVE WITH HOSE FITTING
	SOLENOID VALVE
	THERMOMETER
	UNION

ABV	ABOVE
ABC, OH	ABOVE CEILING, OVERHEAD
AD	ACCESS DOOR
ADA	AMERICANS WITH DISABILITIES ACT
AFF	ABOVE FINISHED FLOOR
BR	BRANCH
CL	CENTERLINE
CO	CLEANOUT
CW	COLD WATER
DHW	DOMESTIC HOT WATER
DHWR	DOMESTIC HOT WATER RETURN
DIA, Ø	DIAMETER
FC	FLEXIBLE CONNECTION
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FSR	FIRE SPRINKLER RISER
GCO	GRADE CLEANOUT
HW	HOT WATER
HWV	HOT WATER RETURN
I.E.	INVERT ELEVATION
(N) (E)	NEW, EXISTING
NIC	NOT IN CONTRACT
POC	POINT OF CONNECTION
P, TRV	PRESSURE & TEMPERATURE RELIEF VALVE
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
(R) (D)	RISE, DROP
RD, OFL	ROOF DRAIN, OVERFLOW
RI	ROUGH-IN
RO	RUN-OUT
SMS	SHEET METAL SCREWS
SOV	SHUT OFF VALVE
TA, FA	TO ABOVE, FROM ABOVE
TB, FB	TO BELOW, FROM BELOW
TBR	TO BE REMOVED
TP	TRAP PRIMER
UG, UF	UNDERGROUND, UNDERFLOOR
UON	UNLESS OTHERWISE NOTED
UTN	UP THROUGH ROOF
V, VR, VTR	VENT, VENT RISER, VENT THRU ROOF
WT	WATERTIGHT
WCO	WALL CLEANOUT
ZV	ZONE VALVE

CODES:

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE REGULATIONS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

- A) STATE OF CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, BUILDING STANDARDS:
2019 EDITION OF THE CALIFORNIA BUILDING CODE.
2019 EDITION OF THE CALIFORNIA ELECTRICAL CODE.
2019 EDITION OF THE CALIFORNIA MECHANICAL CODE.
2019 EDITION OF THE CALIFORNIA PLUMBING CODE.
2019 EDITION OF THE CALIFORNIA ENERGY CODE.
- B) NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) LIFE SAFETY CODE, CR.

DSA 02-118996

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Educating Students for Success
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Unified School District



**LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT**
1290 LILAC STREET
WOODBIDGE, CA. 95242

SHEET TITLE:

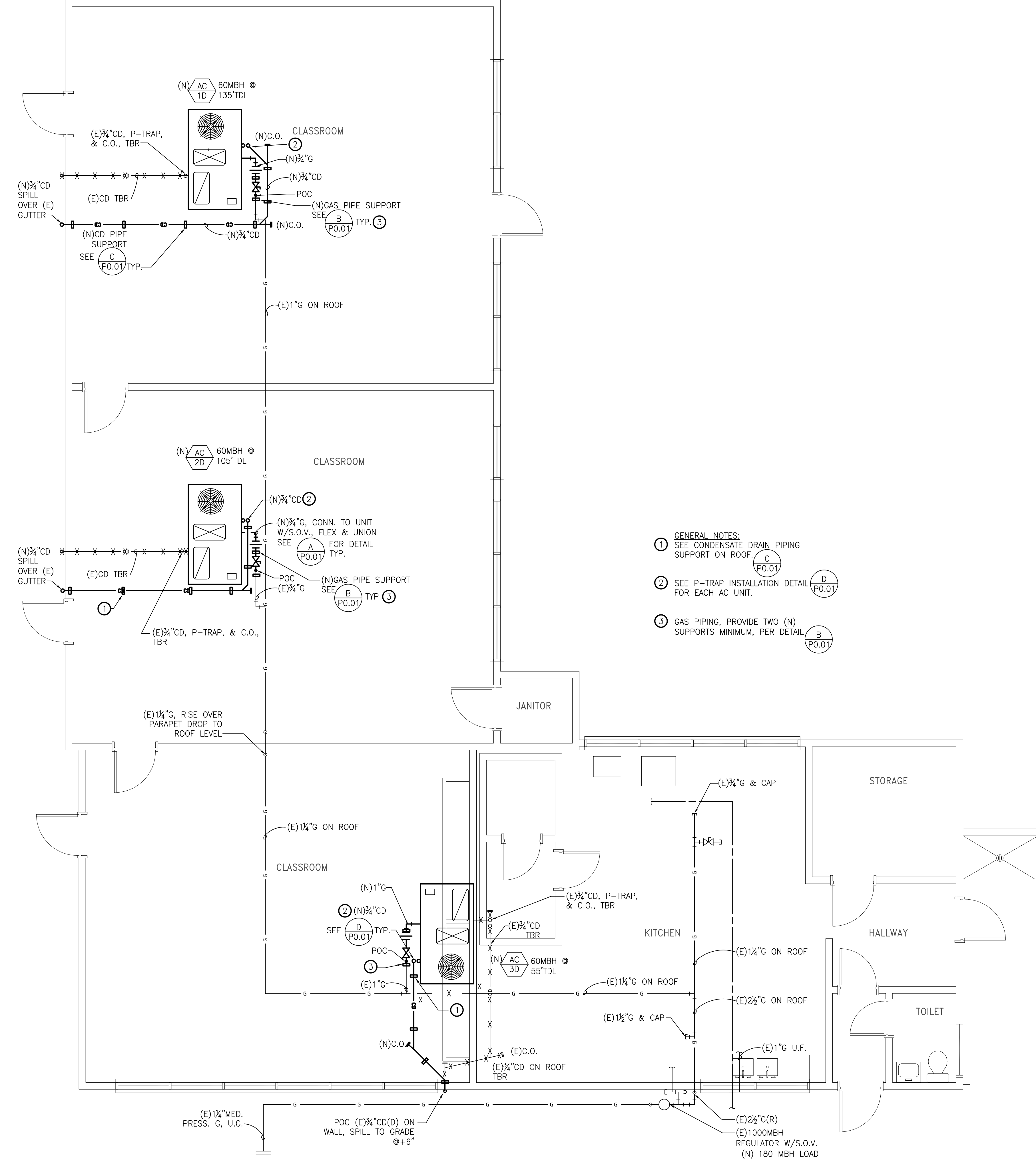
PLUMBING LEGEND, SCHEDULES, AND NOTES

SHEET NUMBER:

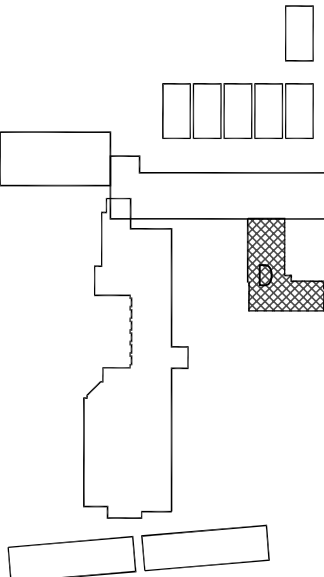
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Project Engineer:	JT	Job Number:	20290
Project Manager:	JT	Plot Date:	Jun 15, 2021 - 9:09am
Project Drafter:	ZH	Locker:	L Cox

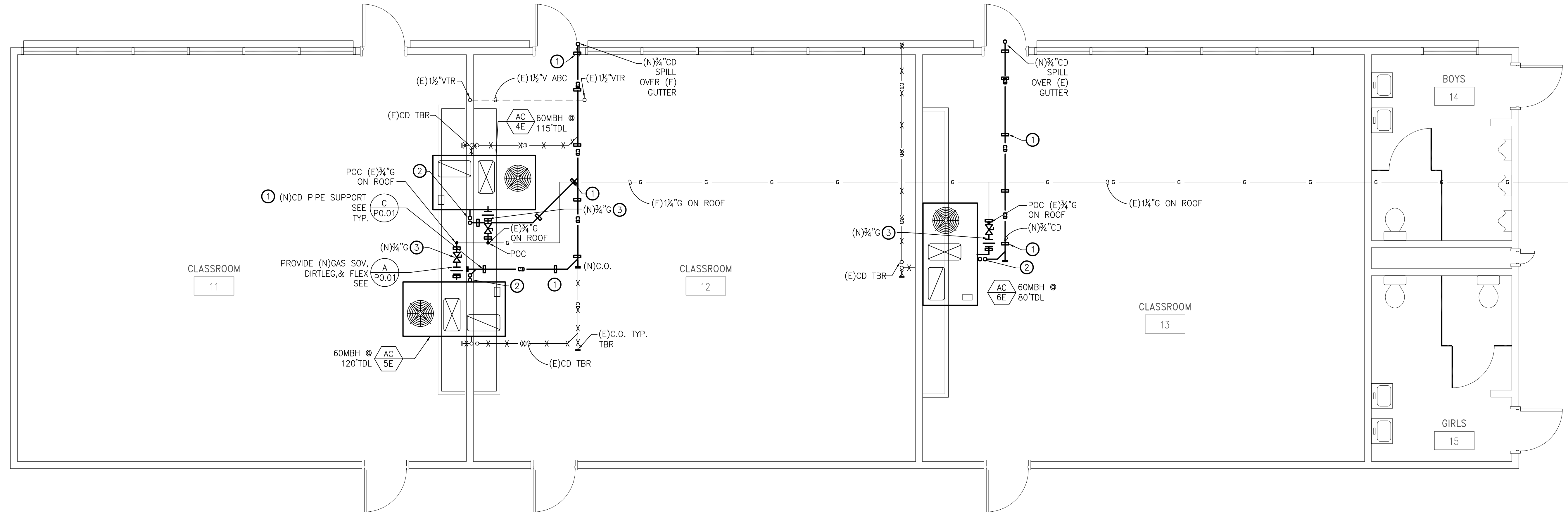
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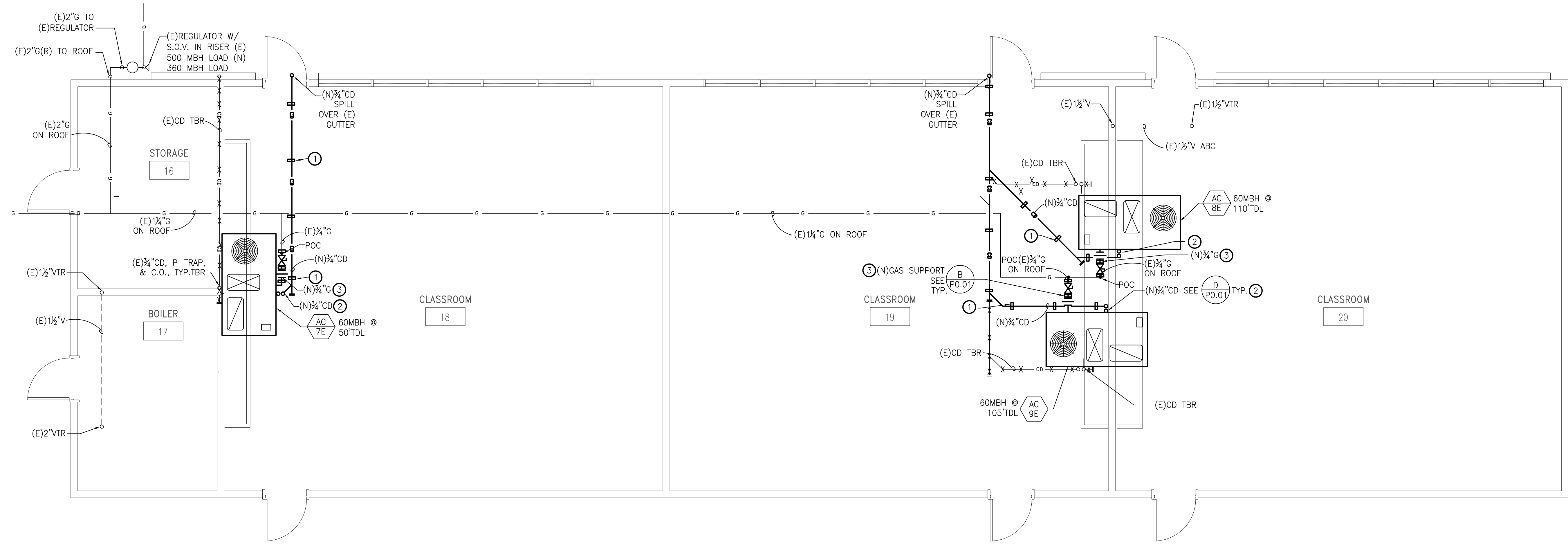
KEY PLAN



NO.	REVISIONS	DATE

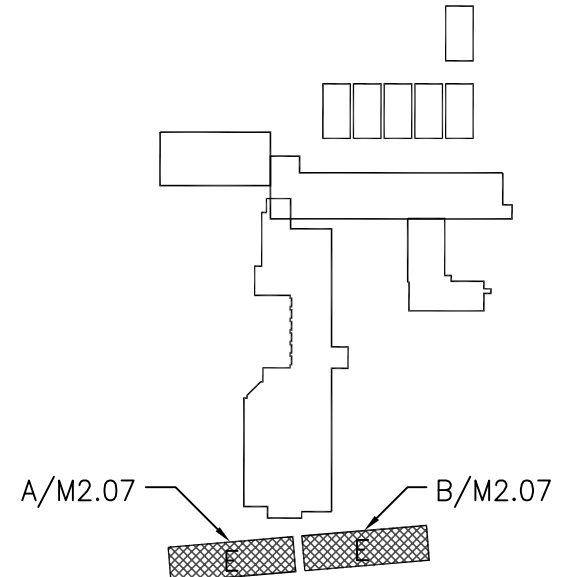


A PLUMBING FLOOR PLAN
SCALE: 1/4"=1'-0"

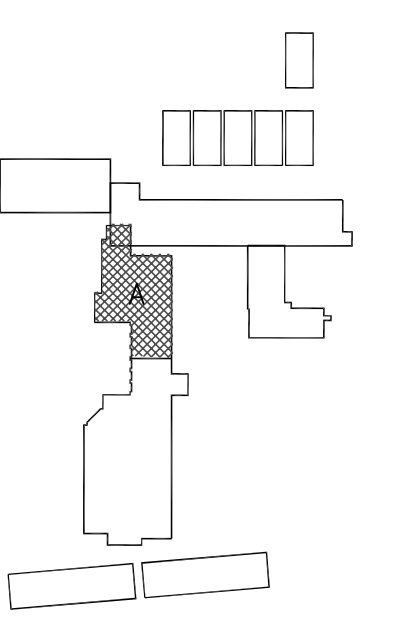


**B BUILDING E
PLUMBING FLOOR PLAN**
SCALE: 1/4"=1'-0"

KEY PLAN

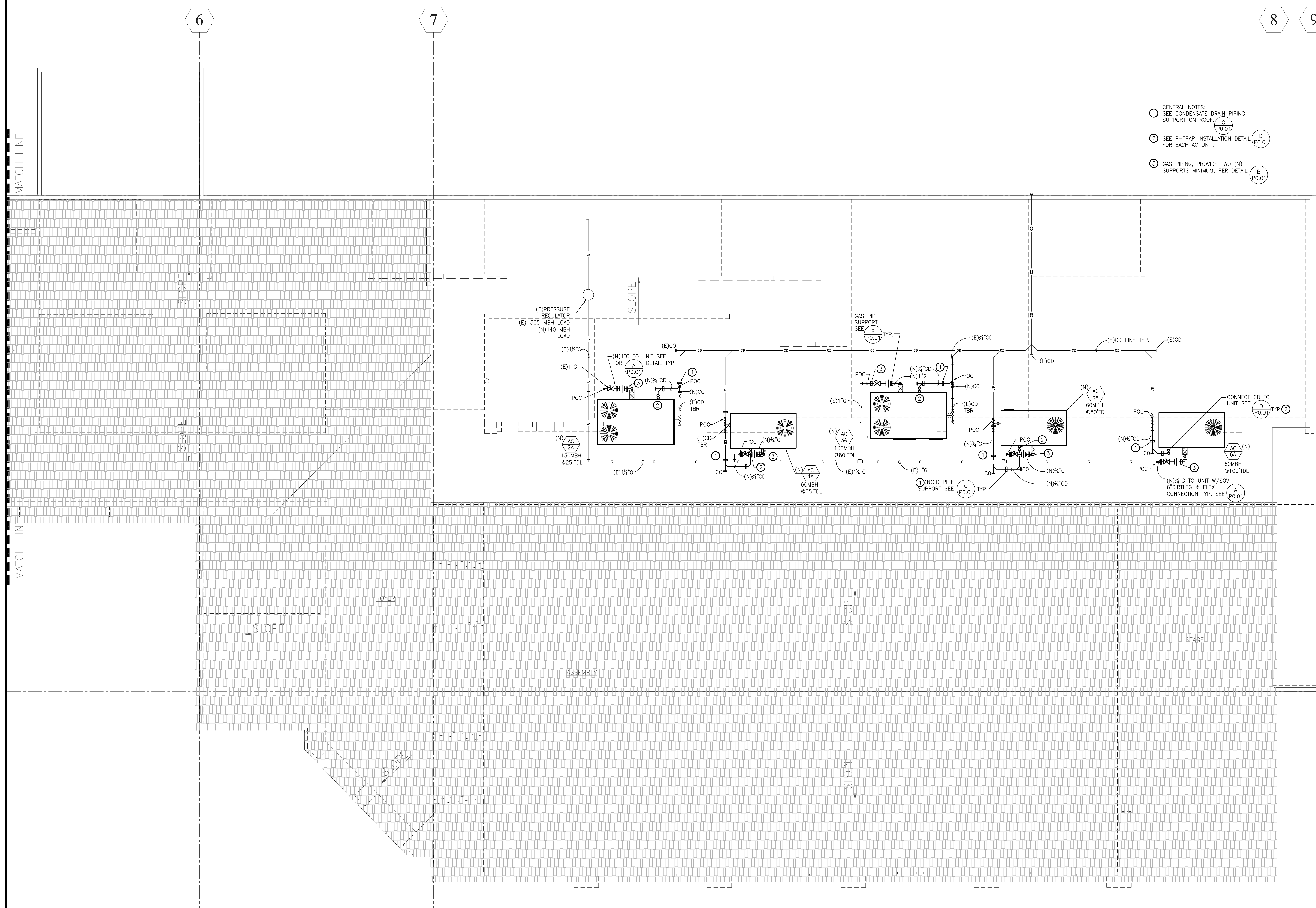


Project Engineer:	JT	Job Number:	20290
Project Manager:	JT	Plot Date:	Jun 15, 2021 - 9:08am
Project Drafter:	ZH	Login:	LCox



PLUMBING
BUILDING A ROOF PLAN
SCALE: 1/4"=1'-0"

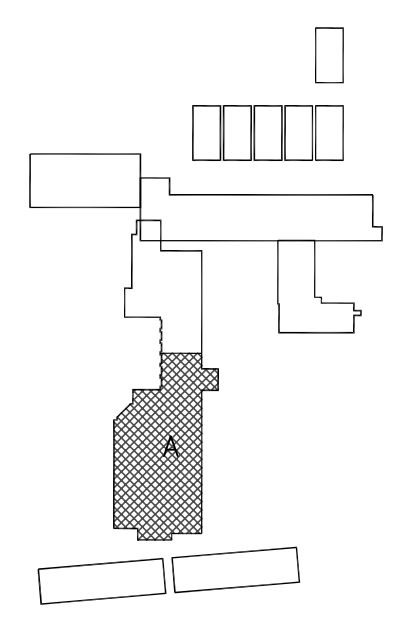
- GENERAL NOTES:
- SEE CONDENSATE DRAIN PIPING SUPPORT ON ROOF. (C) (P.O.01)
 - SEE P-TRAP INSTALLATION DETAIL FOR EACH AC UNIT. (D) (P.O.01)
 - GAS PIPING, PROVIDE TWO (N) SUPPORTS MINIMUM, PER DETAIL. (B) (P.O.01)



A PLUMBING
ROOF PLAN BUILDING A

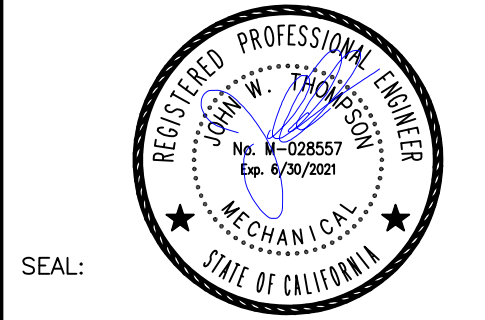
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KEY PLAN



DSA 02-118996

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LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT
1290 LILAC STREET
WOODBIDGE, CA. 95242

SHEET TITLE:

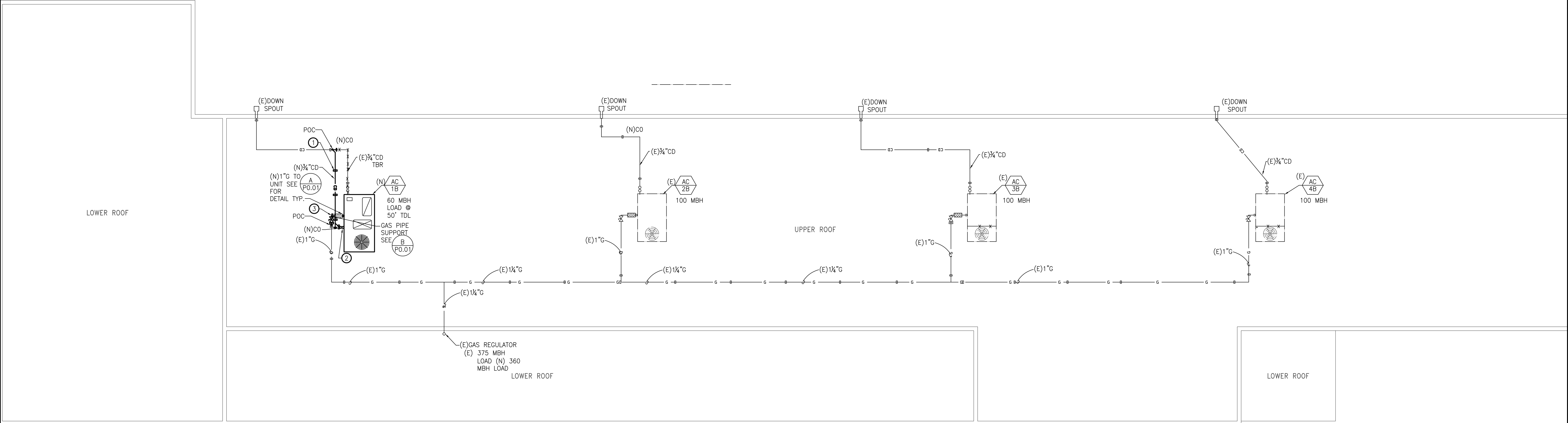
PLUMBING ROOF
PLAN BUILDING B
GAS & CD

NO.	REVISIONS	DATE

SHEET NUMBER:

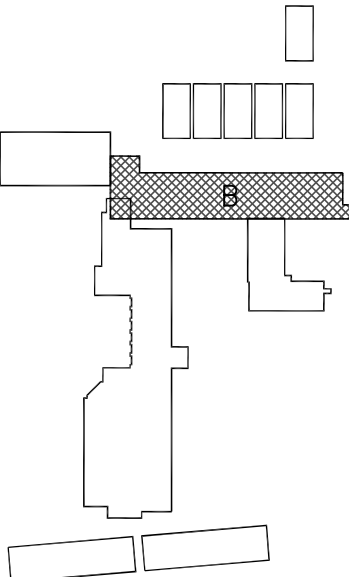
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Project Manager:	JT	Plot Date:	Jun 15, 2021 - 8:09am
Project Designer:	DL	Design:	CD



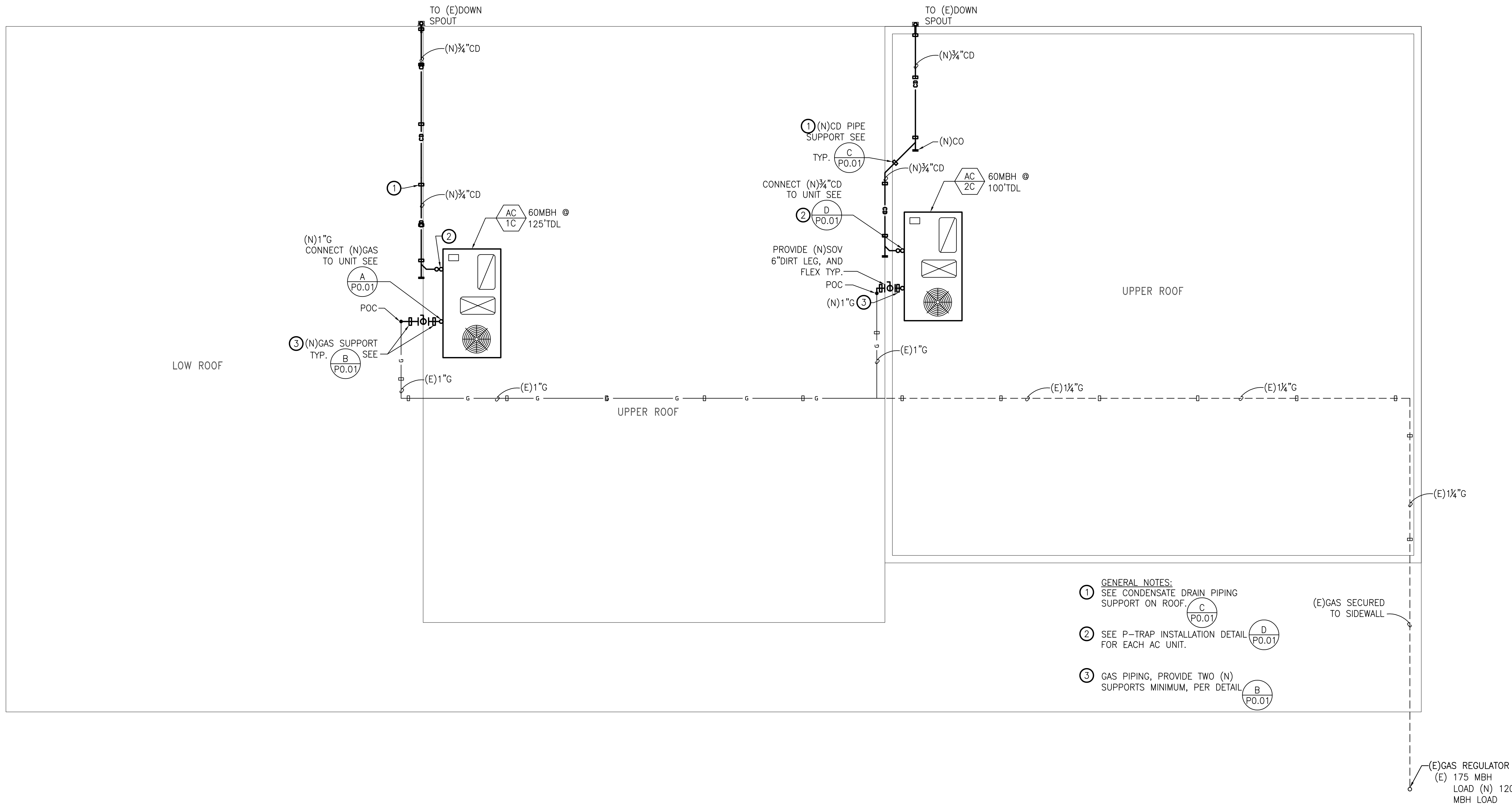
A PLUMBING ROOF PLAN BUILDING B GAS & CD
SCALE: 3/16"=1'-0"

KEY PLAN



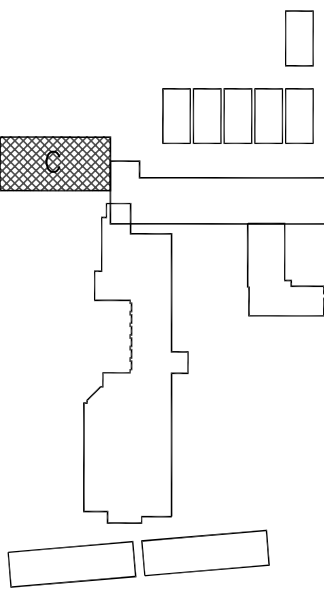
NO.	REVISIONS	DATE

Project Engineer:	JT	Job Number:	2090
Project Manager:	JT	Proj Date:	Jun 15, 2021 - 8:09am
Project Designer:	DL	Design:	CD



A **PLUMBING ROOF PLAN BUILDING C GAS & CD**
SCALE: 1/4"=1'-0"

KEY PLAN



STATE OF CALIFORNIA
Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-MCH-E

Project Name: WOODBRIDGE ES HVAC REPLACEMENT

Report Page: (Page 16 of 17)

Project Address: 1290 LILAC STREET

Date Prepared: 3/13/2021

Q. MANDATORY MEASURES DOCUMENTATION LOCATION

This table is used to indicate where mandatory measures are documented in the plan set or construction documentation.

	01	02
Compliance with Mandatory Measures documented through MCH Mandatory Measures Note Block	Yes	Plan sheet or construction document location M-Sheets

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance

Registration Date/Time: Report Version: 2019.1.003
Schema Version: rev 20200601

Registration Provider: Enersoft

Report Generated: 2021-03-19 12:10:50

STATE OF CALIFORNIA
Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-MCH-E

Project Name: WOODBRIDGE ES HVAC REPLACEMENT

Report Page: (Page 17 of 17)

Project Address: 1290 LILAC STREET

Date Prepared: 3/13/2021

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: TIM FLAGG

Company: Turley & Associates

Address: 2431 Capitol Ave

City/State/Zip: Sacramento CA 95816

Phone: 916-325-1065

Documentation Author Signature: [Signature]

Signature Date: [Date]

CEAH/HERS Certification Identification (if applicable):

Responsible Person's Declaration Statement

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.

2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).

3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.

4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of the Certificate of Compliance is required to be included with the documentation the builder provides to the building owner or occupant.

Responsible Designer Name: John W. Thompson

Responsible Designer Signature: [Signature]

Date Signed: 2021-03-19

Company: Turley & Associates

Address: 2431 Capitol Ave

City/State/Zip: Sacramento CA 95816

Phone: 916-325-1065

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance

Registration Date/Time: Report Version: 2019.1.003
Schema Version: rev 20200601

Registration Provider: Enersoft

Report Generated: 2021-03-19 12:10:50

STATE OF CALIFORNIA
Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-MCH-E

Project Name: WOODBRIDGE ES HVAC REPLACEMENT

Report Page: (Page 13 of 17)

Project Address: 1290 LILAC STREET

Date Prepared: 3/13/2021

H. FAN SYSTEMS & AIR ECONOMIZERS

System Name:	AC-2C	Economizer:	N/A: <=54 kbtu/h cooling	Economizer Controls:	Designed per §149.4(a) and (m)	System Fan Type:	Variable Air Volume	
01	02	03	04	05	06	07	08	
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit?	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B	Device	Design Airflow through Device (CFM)
SF	Supply	1	0	BHP	0			
Total System Design Supply Airflow (CFM):			0	Total System Design (BHP):	0	Maximum System Fan Power (BHP):		0

¹ FOOTNOTES: Computer room economizers must meet requirements of §149.3(a) and will be documented on the NRCC-PRCE document.
² The unit used for HP must be consistent for all fans within a system.

I. SYSTEM CONTROLS

This section does not apply to this project.

J. VENTILATION AND INDOOR AIR QUALITY

This section does not apply to this project.

K. TERMINAL BOX CONTROLS

This section does not apply to this project.

L. DISTRIBUTION (DUCTWORK and PIPING)

This section does not apply to this project.

M. COOLING TOWERS

This section does not apply to this project.

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance

Registration Date/Time: Report Version: 2019.1.003
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Registration Provider: Enersoft

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STATE OF CALIFORNIA
Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-MCH-E

Project Name: WOODBRIDGE ES HVAC REPLACEMENT

Report Page: (Page 14 of 17)

Project Address: 1290 LILAC STREET

Date Prepared: 3/13/2021

N. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCC/

Yes	No	Form/Title	Field Inspector	
			Pass	Fail
<input checked="" type="radio"/>	<input type="radio"/>	NRCC-MCH-01-E: Must be submitted for all buildings	<input type="checkbox"/>	<input type="checkbox"/>

O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCC/

Yes	No	Form/Title	Systems To Be Field Verified	Field Inspector	
				Pass	Fail
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-02-A: Outdoor Air must be submitted for all newly installed HVAC units. Note: MCH-02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap.		<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-03-A: Constant Volume Single-Zone HVAC NOTE: This form does not automatically move to "Yes". If Constant Volume Single-Zone HVAC Systems are included in the scope, permit applicant should move this form to "Yes".		<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-04-A: Air Distribution Duct Leakage		<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-05-A: Air Economizer Controls		<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-06-A Demand Control Ventilation Systems must be submitted for all systems required to employ demand controlled ventilation (refer to §120.1(c)) can vary outside ventilation flow rates based on maintaining interior carbon dioxide (CO ₂) concentration setpoints.		<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-07-A Supply Fan Variable Flow Controls		<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-08-A Valve Leakage Test		<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-09-A Supply Water Temperature Reset Controls		<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-10-A Hydronic System Variable Flow Controls		<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-11-A Automatic Demand Shed Controls		<input type="checkbox"/>	<input type="checkbox"/>

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance

Registration Date/Time: Report Version: 2019.1.003
Schema Version: rev 20200601

Registration Provider: Enersoft

Report Generated: 2021-03-19 12:10:50

STATE OF CALIFORNIA
Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-MCH-E

Project Name: WOODBRIDGE ES HVAC REPLACEMENT

Report Page: (Page 15 of 17)

Project Address: 1290 LILAC STREET

Date Prepared: 3/13/2021

P. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-12-A FDD for Packaged Direct Expansion Units		<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-13-A Automatic FDD for Air Handling Units and Zone Terminal Units Acceptance		<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-14-A Distributed Energy Storage DX AC Systems Acceptance NOTE: This form does not automatically move to "Yes". If Distributed Energy System DX AC Systems are included in the scope, permit applicant should move this form to "Yes".		<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-15-A Thermal Energy Storage (TES) System Acceptance NOTE: This form does not automatically move to "Yes". If Chilled water Storage, Ice-on-Coil Internal Melt, Ice-on-Coil External melt, Ice Harvesting, Brine, Ice-Slurry, Eutectic Salt, Chloride Hydrate Slurry (CHS), Cryogenic or Encapsulated (Ice Ball) Systems are included in the scope, permit applicant should move this form to "Yes".		<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-16-A Supply Air Temperature Reset Controls		<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-17-A Condenser Water Temperature Reset Controls		<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-18-A Energy Management Control Systems		<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-19-A Occupancy Sensor Controls		<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-20 Multi-Family Ventilation		<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-21 Multi-Family Envelope Leakage		<input type="checkbox"/>	<input type="checkbox"/>

Q. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E Additional Remarks. These documents must be completed by a HERS Rater and provided to the building inspector during construction. The final documents must be created by a HERS Provider's registry, but drafts can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCC/

Yes	No	Form/Title	Field Inspector	
			Pass	Fail
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-04-H Duct Leakage Test NOTE: Must be completed by a HERS Rater	<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-24 Envelope Air Leakage Worksheet NOTE: Must be completed by a HERS Rater	<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-27 High-rise Residential NOTE: Must be completed by a HERS Rater	<input type="checkbox"/>	<input type="checkbox"/>
<input type="radio"/>	<input checked="" type="radio"/>	NRCC-MCH-32 Local Mechanical Exhaust NOTE: Must be completed by a HERS Rater	<input type="checkbox"/>	<input type="checkbox"/>

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance

Registration Date/Time: Report Version: 2019.1.003
Schema Version: rev 20200601

Registration Provider: Enersoft

Report Generated: 2021-03-19 12:10:50

STATE OF CALIFORNIA
Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-MCH-E

Project Name: WOODBRIDGE ES HVAC REPLACEMENT

Report Page: (Page 10 of 17)

Project Address: 1290 LILAC STREET

Date Prepared: 3/13/2021

H. FAN SYSTEMS & AIR ECONOMIZERS

System Name:	AC-9E	Economizer:	Differential Temperature	Economizer Controls:	Designed per §149.4(a) and (m)	System Fan Type:	Variable Air Volume	
01	02	03	04	05	06	07	08	
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit?	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B	Device	Design Airflow through Device (CFM)
SF	Supply	1	0	BHP	0			
Total System Design Supply Airflow (CFM):			0	Total System Design (BHP):	0	Maximum System Fan Power (BHP):		0

¹ FOOTNOTES: Computer room economizers must meet requirements of §149.3(a) and will be documented on the NRCC-PRCE document.
² The unit used for HP must be consistent for all fans within a system.

I. SYSTEM CONTROLS

This section does not apply to this project.

J. VENTILATION AND INDOOR AIR QUALITY

This section does not apply to this project.

K. TERMINAL BOX CONTROLS

This section does not apply to this project.

L. DISTRIBUTION (DUCTWORK and PIPING)

This section does not apply to this project.

M. COOLING TOWERS

This section does not apply to this project.

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance

Registration Date/Time: Report Version: 2019.1.003
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STATE OF CALIFORNIA
Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-MCH-E

Project Name: WOODBRIDGE ES HVAC REPLACEMENT

Report Page: (Page 11 of 17)

Project Address: 1290 LILAC STREET

Date Prepared: 3/13/2021

H. FAN SYSTEMS & AIR ECONOMIZERS

System Name:	AC-6E	Economizer:	Differential Temperature	Economizer Controls:	Designed per §149.4(a) and (m)	System Fan Type:	Variable Air Volume	
01	02	03	04	05	06	07	08	
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit?	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B	Device	Design Airflow through Device (CFM)
SF	Supply	1	0	BHP	0			
Total System Design Supply Airflow (CFM):			0	Total System Design (BHP):	0	Maximum System Fan Power (BHP):		0

System Name:	AC-1B	Economizer:	N/A: <=54 kbtu/h cooling	Economizer Controls:	Designed per §149.4(a) and (m)	System Fan Type:	Variable Air Volume	
01	02	03	04	05	06	07	08	
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit?	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B	Device	Design Airflow through Device (CFM)
SF	Supply	1	0	BHP	0			
Total System Design Supply Airflow (CFM):			0	Total System Design (BHP):	0	Maximum System Fan Power (BHP):		0

System Name:	AC-2B	Economizer:	Differential Temperature	Economizer Controls:	Designed per §149.4(a) and (m)	System Fan Type:	Variable Air Volume	
01	02	03	04	05	06	07	08	
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit?	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B	Device	Design Airflow through Device (CFM)
SF	Supply	1	0	BHP	0			
Total System Design Supply Airflow (CFM):			0	Total System Design (BHP):	0	Maximum System Fan Power (BHP):		0

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance

Registration Date/Time: Report Version: 2019.1.003
Schema Version: rev 20200601

Registration Provider: Enersoft

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STATE OF CALIFORNIA
Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-MCH-E

Project Name: WOODBRIDGE ES HVAC REPLACEMENT

Report Page: (Page 12 of 17)

Project Address: 1290 LILAC STREET

Date Prepared: 3/13/2021

H. FAN SYSTEMS & AIR ECONOMIZERS

System Name:	AC-3B	Economizer:	Differential Temperature	Economizer Controls:	Designed per §149.4(a) and (m)	System Fan Type:	Variable Air Volume	
01	02	03	04	05	06	07	08	
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit?	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B	Device	Design Airflow through Device (CFM)
SF	Supply	1	0	BHP	0			
Total System Design Supply Airflow (CFM):			0	Total System Design (BHP):	0	Maximum System Fan Power (BHP):		0

System Name:	AC-4B	Economizer:	Differential Temperature	Economizer Controls:	Designed per §149.4(a) and (m)	System Fan Type:	Variable Air Volume	
01	02	03	04	05	06	07	08	
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit?	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B	Device	Design Airflow through Device (CFM)
SF	Supply	1	0	BHP	0			
Total System Design Supply Airflow (CFM):			0	Total System Design (BHP):	0	Maximum System Fan Power (BHP):		0

System Name:	AC-1C	Economizer:	Differential Temperature	Economizer Controls:	Designed per §149.4(a) and (m)	System Fan Type:	Variable Air Volume	
01	02	03	04	05	06	07	08	
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit?	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B	Device	Design Airflow through Device (CFM)
SF	Supply	1	0	BHP	0			
Total System Design Supply Airflow (CFM):			0	Total System Design (BHP):	0	Maximum System Fan Power (BHP):		0

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance

Registration Date/Time: Report Version: 2019.1.003
Schema Version: rev 20200601

Registration Provider: Enersoft

Report Generated: 2021-03-19 12:10:50

AGENCY APPROVAL:

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT

APP: 02-118996 INC:

REVIEWED FOR

SS ☒ FLS ☒ ACS ☒

DATE: 06/16/2021

DSA 02-118996

TURLEY MECHANICAL ENGINEERING GROUP, INC.

& ASSOCIATES

2431 Capitol Avenue
Sacramento, CA 95816

(916) 325-1065
FAX (916) 325-1075
Email: office@turleymeet.com

Educating Students for Success

Lodi Unified School District

Unified School District

REGISTERED PROFESSIONAL ARCHITECT

NO. A-208557

EXPIRATION DATE 6/30/2025

SEAL

LODI UNIFIED SCHOOL DISTRICT

WOODBRIDGE ELEMENTARY

HVAC REPLACEMENT

1290 LILAC STREET

WOODBRIDGE, CA. 95242

SHEET TITLE:


TITLE 24
COMPLIANCE

NO.	REVISIONS	DATE

SHEET NUMBER:

T-24.2

Project Engineer:	JT	Job Number:	2090
Project Manager:	JT	Proj Date:	Jan 16, 2021 8:10am
Project Owner:	DS	Design:	COO

FIRE ALARM EQUIPMENT LIST						
SYMBOL	QTY	MODEL #	DESCRIPTION	MANUFACTURER	CSFM LISTING	ELECTRICAL
	17	SIGA-PCD SIGA-SB	ADDRESSABLE COMBO SMOKE AND CO DETECTOR EXISTING DETECTOR BASE	EDWARDS	7275-1657-0334 EXISTING	EXISTING
	1	SIGA-COD SIGA-SB	ADDRESSABLE CO DETECTOR DETECTOR BASE	EDWARDS	5278-1657-0335 7300-1657-0120	EDWARDS 4S BOX
	14	SIGA-CR	ADDRESSABLE RELAY MODULE	EDWARDS	7300-1657-0121	4S DEEP BOX
EXISTING DEVICES (FOR REFERENCE ONLY)						
SYMBOL	QTY	MODEL #	DESCRIPTION	MANUFACTURER	CSFM LISTING	ELECTRICAL
	1	EST QS4	(E) FIRE ALARM CONTROL PANEL	EDWARDS (EST)	FBO	FBO
	-	(E)	(E) FIRE ALARM TERMINAL CABINET	(E)	FBO	FBO
	-	(E)	(E) HEAT DETECTOR	(E)	FBO	FBO
	-	(E)	(E) SMOKE DETECTOR	(E)	FBO	FBO
	-	(E)	(E) DUCT SMOKE DETECTOR	(E)	FBO	FBO
	-	(E)	(E) MANUAL PULL STATION	(E)	FBO	FBO
	-	(E)	(E) NOTIFICATION STROBE	(E)	FBO	FBO
	-	(E)	(E) NOTIFICATION HORN/STROBE	(E)	FBO	FBO
	-	(E)	(E) NOTIFICATION HORN	(E)	FBO	FBO

FIRE ALARM CABLE LEGEND				
SYMBOL	MODEL	DESCRIPTION	MANUFACTURER	USE
A	60975B	#18/2 SOLID TWISTED/SHIELED FPLP CABLE	WEST PENN OR EQUAL	INITIATING DEVICES

EXAMPLE:

NEW, EXISTING, REMOVE, ETC.
QUANTITY OF CABLES
WIRE TYPE (SEE LEGEND SYMBOL)

(N) 2A

FIRE ALARM SCOPE OF WORK
<p>CONTRACTOR SHALL PROVIDE FIRE ALARM SHOP DRAWINGS FOR DEFERRED APPROVAL PRIOR TO START OF CONSTRUCTION. FIRE ALARM SCOPE AS FOLLOWS:</p> <p>PROVIDE CARBON MONOXIDE DETECTION IN CLASSROOMS WITHIN THE BUILDINGS CONTAINING FUEL-BURNING EQUIPMENT BEING MODIFIED AS REQUIRED BY CODE. NEW CARBON MONOXIDE DETECTORS SHALL BE CONNECTED TO EXISTING FIRE ALARM SYSTEM.</p> <p>PROVIDE HVAC FAN SHUTDOWN CONTROL UPON AREA SMOKE DETECTOR AND DUCT DETECTOR ALARM.</p> <p>EXISTING FIRE ALARM DEVICES AND EQUIPMENT ARE NOT BEING MODIFIED OR UPGRADED IN THIS SCOPE OF THE WORK.</p>

A	AMPERE	LFMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
AC	ALTERNATING CURRENT	LT	LIGHT
A/C	AIR CONDITIONER	LV	LOW VOLTAGE
AFF	ABOVE FINISHED FLOOR	MAX	MAXIMUM
AHJ	AUTHORITY HAVING JURISDICTION	MECH	MECHANICAL
AHU	AIR HANDLING UNIT	MFR	MANUFACTURER
AL	ALUMINUM	MIN	MINIMUM
AUX	AUXILIARY	MISC	MISCELLANEOUS
AWG	AMERICAN WIRE GAUGE	MLO	MAIN LUGS ONLY
BC	BARE COPPER	MT	EMPTY CONDUIT W/ PULL LINE
BLDG	BUILDING	MTD	MOUNTED
C	CONDUIT	MTG	MOUNTING
CAB	CABINET	(N)	NEW
CEC	CALIFORNIA ELECTRICAL CODE	N/A	NOT APPLICABLE
CKT	CIRCUIT	NC	NORMALLY CLOSED
CLG	CEILING	NEC	NATIONAL ELECTRICAL CODE
CO	CONDUIT ONLY	NEMA	NATIONAL ELECTRICAL MANUFACTURER ASSOCIATION
CU	COPPER	NIC	NOT IN CONTRACT
DC	DIRECT CURRENT	NIES	NOT INCLUDED IN ELECTRICAL SCOPE
DIA	DIAMETER	NO	NORMALLY OPEN
DN	DOWN	NTS	NOT TO SCALE
(E)	EXISTING	OC	ON CENTER
EA	EACH	OFCl	OWNER FURNISHED CONTRACTER INSTALLED
EC	ELECTRICAL CONTRACTOR	OFOf	OWNER FURNISHED OWNER INSTALLED
ELEC	ELECTRICAL	P	POLE
EM	EMERGENCY	PB	PULLBOX
EMT	ELECTRICAL METALLIC TUBING	PH	PHASE
EOL	END OF LINE	PNL	PANEL
EQUIP	EQUIPMENT	PVC	POLYVINYL CHLORIDE
FA	FIRE ALARM	(R)	REMOVE
FACP	FIRE ALARM CONTROL PANEL	RCPT	RECEPTACLE
FATC	FIRE ALARM TERMINAL CABINET	(RE)	RELOCATE EXISTING
FBO	FURNISHED BY OTHERS	RM	ROOM
FLA	FULL LOAD AMPERES	RMC	RIGID METAL CONDUIT
FLEX	FLEXIBLE	SM	SHEET METAL
FLR	FLOOR	SMS	SHEET METAL SCREW
FMC	FLEXIBLE METAL CONDUIT	SP	SPARE
FS	FLOW SWITCH	SPKR	SPEAKER
FSD	FIRE SMOKE DAMPER	STD	STANDARD
FT	FOOT OR FEET	TEL	TELEPHONE
G	GROUND	TS	TAMPER SWITCH
GA	GAUGE	TYP	TYPICAL
GALV	GALVANIZED	UF	UNDERFLOOR
GC	GENERAL CONTRACTOR	UG	UNDERGROUND
HP	HORSEPOWER	UL	UNDERWRITERS LAB
HZ	HERTZ	UON	UNLESS OTHERWISE NOTED
IMC	INTERMEDIATE METAL CONDUIT	V	VOLT
JB	JUNCTION BOX	VA	VOLT-AMPERE
KO	KNOCK-OUT	W	WATT
KVA	KILOVOLT AMPERE	W/	WITH
KW	KILOWATT	WP	WEATHERPROOF
KWH	KILOWATT HOUR		

EXISTING FIRE ALARM SYSTEM NOTES	
1.	EXISTING FIRE ALARM CONTROL PANEL IS NOT BEING UPGRADED OR REPLACED. BATTERY LOADS AND RUNTIME IS NOT BEING MODIFIED.
2.	EXISTING FIRE ALARM NOTIFICATION DEVICES AND CIRCUITS IS NOT BEING MODIFIED. CIRCUIT VOLTAGE DROPS IS NOT CHANGING FROM EXISTING.

APPLICABLE CODES AND STANDARDS

ALL WORK PERFORMED UNDER THIS CONTRACT IS TO CONFORM TO THE FOLLOWING CODES AND REGULATIONS:

CALIFORNIA CODE OF REGULATIONS (CCR):

TITLE 19 - PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS
TITLE 24 - CALIFORNIA BUILDING STANDARDS CODE (CBCS)
2019 CALIFORNIA ADMINISTRATIVE CODE (CAC)
PART 1, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)

2019 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24, CCR
BASED ON THE 2018 INTERNATIONAL BUILDING CODE (IBC)

2019 CALIFORNIA BUILDING CODE (CBC), PART 3, TITLE 24, CCR
BASED ON THE 2018 INTERNATIONAL BUILDING CODE (IBC)

2019 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24, CCR
BASED ON THE 2017 NATIONAL ELECTRICAL CODE (NEC)

2019 CALIFORNIA ENERGY CODE (CEnc), PART 6, TITLE 24, CCR

2019 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24, CCR
BASED ON THE 2018 INTERNATIONAL FIRE CODE (IFC)

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS:

NFPA 72 - NATIONAL FIRE ALARM AND SIGNALING CODE
NFPA 720 - STANDARD FOR THE INSTALLATION OF CARBON MONOXIDE(CO) DETECTION AND WARNING EQUIPMENT

DISTRICT OF THE STATE ARCHITECT (DSA) INTERPRETATION OF REGULATIONS (IR)

OCCUPATIONAL SAFETY HEALTH ACT (OSHA)
















LOCAL REGULATIONS AND STANDARDS

FIRE ALARM GENERAL NOTES

1. INSTALLATION OF NEW FIRE ALARM DEVICES SHALL BE PERFORMED BY A CERTIFIED TECHNICIAN ONLY.
2. PROVIDE NEW INITIATING FIRE ALARM DEVICES AT LOCATION INDICATED ON PLANS. CONNECT NEW FIRE ALARM DEVICES TO EXISTING ADDRESSABLE FIRE ALARM CONTROL PANEL AS INDICATED ON FIRE ALARM RISER DIAGRAM.
3. ALL NEW FIRE ALARM WIRING SHALL BE INSTALLED IN 3/4" MINIMUM CONDUIT.
4. EXISTING DEVICES ARE SHOWN BASED UPON OWNER PROVIDED AS-BUILT DRAWINGS. FIELD VERIFY EXISTING CONDITIONS PRIOR TO START OF WORK.
5. RACEWAYS AND CONDUITS SHOWN ON PLANS ARE DIAGRAMMATIC. CONTRACTOR SHALL DETERMINE ROUTING IN FIELD TO BEST SUITE EXISTING CONDITIONS.
6. NEW INITIATING FIRE ALARM CIRCUITS ARE CLASS B.
7. ALL DEVICES IN ALARM SYSTEM SHALL BE COMPATIBLE AND INSTALLED PER MANUFACTURERS SPECIFICATIONS.
8. ALL CIRCUITS SHALL BE SUPERVISED AGAINST OPENS, SHORTS, AND GROUNDS.
9. CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS IDENTIFYING
10. NEW ADDRESSABLE DEVICES SHALL BE ASSIGNED AN AVAILABLE ADDRESS AND RECORDED.
11. NOTIFY LOCAL FIRE AUTHORITY AND CENTRAL MONITORING STATION AT LEAST 48 HOURS IN ADVANCE OF ANY SHUTDOWN OF EXISTING FIRE ALARM SYSTEM.
12. ALL FIRE ALARM DEVICES INSTALLED SHALL BE APPROVED AND LISTED BY THE STATE FIRE MARSHALL.
13. IN ACCORDANCE WITH CCR TITLE 24, PART 1, SECTION 7-125(c), CHANGES TO THE DRAWINGS AND SPECIFICATIONS MADE AFTER THE FIRST SUBMISSION FOR APPROVAL (OTHER THAN CHANGES MADE IN COMPLIANCE WITH DSA COMMENTS) MUST BE BROUGHT TO THE ATTENTION OF THE OFFICE IN WRITING OR BY SUBMISSION OF REVISED DRAWINGS IDENTIFYING THOSE CHANGES. FAILURE TO DO SO VOIDS ANY SUBSEQUENT APPROVALS GIVEN TO THE DRAWINGS AND SPECIFICATIONS.
14. WIRING SHALL NOT BE LOOPED THROUGH DEVICES. WIRE MUST BE CUT IN AND OUT.
15. T-TAPPING OR PARALLEL BRANCHING OF ADDRESSABLE INITIATING DEVICE CIRCUITS IS PERMITTED ONLY ON CLASS B CIRCUITS ONLY.
16. RATED ASSEMBLIES SHALL ONLY BE PENETRATED WITH A UL LISTED SYSTEM WITH A "T" RATING EQUAL TO THE RATING OF THE ASSEMBLY BEING PENETRATED.
17. NON-RATED PENETRATIONS SHALL BE SEALED WITH WATERTIGHT CAULKING.
18. UPON COMPLETION OF INSTALLATION OF NEW FIRE ALARM DEVICES A SATISFACTORY TEST OF THE ENTIRE SYSTEM SHALL BE MADE IN THE PRESENCE OF THE LOCAL AFD.
19. INSTALLER SHALL PREPARE AND PROVIDE A CERTIFICATE OF COMPLIANCE TO THE LOCAL FIRE MARSHAL UPON COMPLETION OF THE INSTALLATION.
20. CARBON MONOXIDE ALARM SHALL SOUND A TEMPORAL FOUR PULSE PATTERN (NFPA 720, 5.8.6.5.1)
21. AUTOMATIC FIRE ALARM SYSTEMS SHALL BE MONITORED AND SHALL TRANSMIT THE ALARM, SUPERVISORY, AND TROUBLE SIGNALS TO AN APPROVED SUPERVISING STATION IN ACCORDANCE WITH NFPA 72. (NFPA 907.6.6.3)

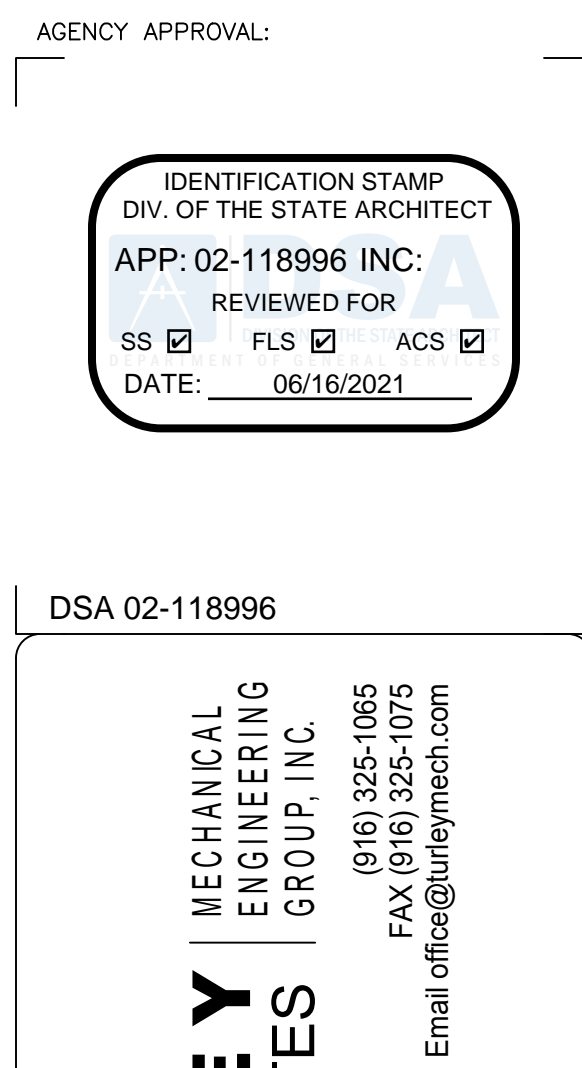
	FIRE ALARM CONTROL PANEL	REMOTE ANNUNCIATOR	SUPERVISING STATION	NOTIFICATION	FIRE SAFETY FUNCTIONS
(E) MANUAL PULL STATION	●				
(E) AREA SMOKE DETECTORS	●				
(E) DUCT SMOKE DETECTORS	●				
(E) HEAT DETECTORS	●				
AC POWER LOSS					
SINGLE OPEN					
SINGLE GROUND					
WIRE-TO-WIRE SHORT (IDC)	●				
WIRE-TO-WIRE SHORT (SLC)					
WIRE-TO-WIRE SHORT (NAC)					
(NEW) CARBON MONOXIDE DETECTOR	●				

SHEET INDEX			
SHEET NO.	DESCRIPTION		
E0.01	ELECTRICAL AND FIRE ALARM COVER SHEET	E3.06	FIRE ALARM FLOOR PLAN BUILDING E
E2.01	ELECTRICAL ROOF PLAN BUILDING A	E4.01	ONE-LINE DIAGRAM, MECHANICAL EQUIPMENT REPLACEMENT SCHEDULE, AND PANEL SCHEDULES
E2.02	ELECTRICAL ROOF PLAN BUILDING A		
E2.03	ELECTRICAL ROOF PLAN BUILDING B		
E2.04	ELECTRICAL ROOF PLAN BUILDING C	E4.02	PARTIAL ONE-LINE DIAGRAM AND PANEL SCHEDULES - PORTABLES
E2.05	ELECTRICAL ROOF PLAN BUILDING D		
E2.06	ELECTRICAL ROOF PLAN BUILDING E	E5.01	FIRE ALARM CUTSHEETS AND CSFM LISTINGS
E2.07	ELECTRICAL FLOOR PLAN PORTABLES	E5.02	FIRE ALARM CUTSHEETS AND CSFM LISTINGS
E3.01	FIRE ALARM FLOOR PLAN BUILDING A	E5.03	FIRE ALARM CUTSHEETS AND CSFM LISTINGS
E3.02	FIRE ALARM FLOOR PLAN BUILDING A	E6.01	ELECTRICAL SPECIFICATIONS, DETAILS, AND ANCHORAGE AND BRACING NOTES
E3.03	FIRE ALARM FLOOR PLAN BUILDING B		
E3.04	FIRE ALARM FLOOR PLAN BUILDING C		
E3.05	FIRE ALARM FLOOR PLAN BUILDING D		

ELECTRICAL SYMBOLS LIST	
	DUPLEX RECEPTACLE, NEMA 5-20R, MOUNT AT +18" AFF UON.
	DUPLEX RECEPTACLE, GFCI TYPE, NEMA 5-20R, MOUNT AT+18" AFF UON.
<u>RECEPTACLE AND OUTLET SUBSCRIPTS:</u>	
WP	- WEATHER PROOF
1,2,3...	- NUMBER DENOTES CIRCUIT
	JUNCTION BOX, SIZE AS INDICATED OR REQUIRED PER CODE
	SINGLE DATA OUTLET, 4-11/16" SQUARE X 2-1/8" DEEP BOX WITH 2-DEVICE RING AND PLATE. MOUNT AT +18" AFF UON. RE-USE EXISTING CABLE PATHWAY.
	FUSED DISCONNECT SWITCH, HEAVY DUTY. EXTERNALLY OPERATED. PROVIDE FUSES SIZED AS INDICATED OR PER MANUFACTURER REQUIREMENTS
	ELECTRICAL PANELBOARD - SURFACE MOUNTED. SEE PANEL SCHEDULE.
	ELECTRICAL PANELBOARD - FLUSH MOUNTED. SEE PANEL SCHEDULE.
	SWITCHBOARD
	BRANCH CIRCUIT WITHOUT CROSS HATCHES INDICATES 3/4" CONDUIT WITH 2 #12 AWG AND 1 #12 AWG GROUND, UON.
	BRANCH CIRCUIT WITH STRAIGHT CROSS HATCHES NUMBER OF #12 AWG CONDUCTORS. CURVED HATCH INDICATES NUMBER OF #12 AWG GROUNDING ELECTRODE, 3/4" CONDUIT, UON.
	BRANCH CIRCUIT HOMERUN TO PANELBOARD INDICATED.
	EXISTING CONDUIT RUN. FIELD VERIFY ROUTING.
	NUMBERED SHEET NOTE TAG
	MECHANICAL EQUIPMENT TAG. SEE MECH EQUIPMENT SCHEDULE AND DRAWINGS.
	PLAN OR DETAIL REFERENCE TAG. TOP VALUE DENOTES DETAIL NUMBER. BOTTOM VALUE DENOTES SHEET.

ELECTRICAL GENERAL NOTES

1. WHERE PROVIDED, THROUGH-PENETRATION FIRESTOP SYSTEM AND MEMBRANE PENETRATION DETAILS ARE FOR REFERENCE ONLY. THROUGH-PENETRATIONS AND MEMBRANE PENETRATIONS SHALL BE PROTECTED BY AN APPROVED PENETRATION FIRESTOP SYSTEM OR MEMBRANE PENETRATION FIRESTOP SYSTEM INSTALLED AS TESTED IN ACCORDANCE WITH ASTM E 814 OR UL 1479, WITH A MINIMUM POSITIVE PRESSURE DIFFERENTIAL OF 0.01 INCH (2.49 Pa) OF WATER OR AS OTHERWISE PERMITTED IN CBC, SECTION 714. LISTED THROUGH-PENETRATION FIRESTOP SYSTEMS AND MEMBRANE PENETRATIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE INSTALLATION DETAILS FOR THE LISTED SYSTEMS. LISTED THROUGH-PENETRATION FIRESTOP SYSTEMS, MEMBRANE PENETRATION PROTECTION SHALL BE SUBMITTED FOR OSHPD FDD REVIEW AND APPROVAL PRIOR TO INSTALLATION.
2. WHEN INSTALLING DRILLED-IN ANCHORS AND/OR POWDER DRIVEN PINS IN EXISTING NON-PRESTRESSED REINFORCED CONCRETE, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE EXISTING REINFORCING BARS. WHEN INSTALLING THEM INTO EXISTING PRE-STRESSED CONCRETE (PRE- OR POST-TENSIONED) LOCATE THE PRE-STRESSED TENDONS BY USING A NON-DESTRUCTIVE METHOD PRIOR TO INSTALLATION. EXERCISE EXTREME CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE TENDONS DURING INSTALLATION. MAINTAIN A MINIMUM CLEARANCE OF ONE INCH BETWEEN THE REINFORCEMENT AND THE DRILLED-IN ANCHOR AND/OR PIN.



**LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT**



SHEET TITLE:

ELECTRICAL AND

FIRE ALARM COVER

SHEET

NO. | REVISIONS | DATE

SHEET NUMBER:

E0.01

Project Engineer

NS

Job Number

20200

Project Manager

NS

Plot Date

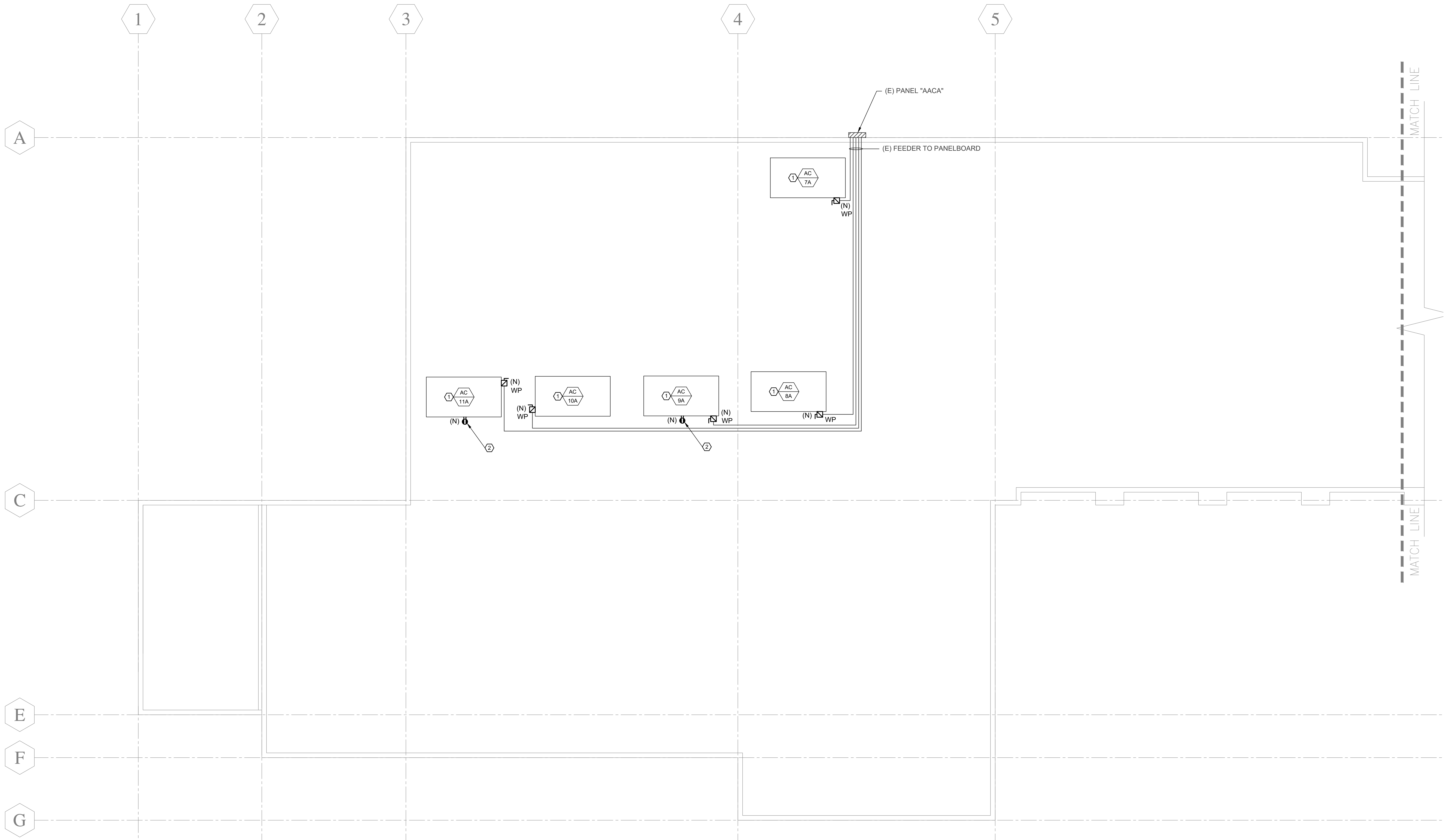
Jun 15, 2002 7:23pm

Project Drafter

NS

Login

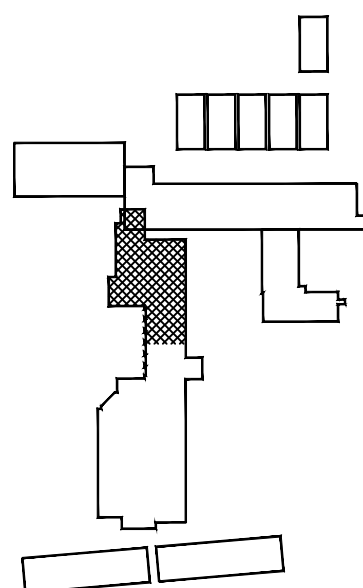
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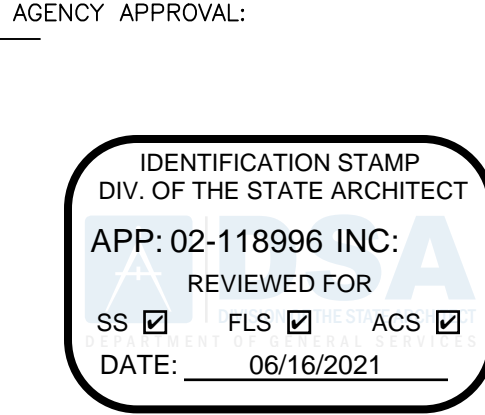
1 ELECTRICAL ROOF PLAN BUILDING A
SCALE: 1/4" = 1'-0"

- NUMBERED SHEET NOTES
- EXISTING UNIT TO BE REPLACED. DISCONNECT AND SAFE OFF ELECTRICAL CIRCUIT AND REMOVE EXISTING DISCONNECT FROM EXISTING UNIT. PROVIDE NEW FUSED DISCONNECT AS SHOWN ON MECHANICAL EQUIPMENT REPLACEMENT SCHEDULE ON SHEET E4.01 AND RECONNECT CIRCUIT TO NEW UNIT.
 - REPLACE EXISTING DUPLEX RECEPTACLE WITH GFCI TYPE RECEPTACLE. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY CIRCUIT PRIOR TO START OF WORK.

KEY PLAN



Whittington Electric Inc.
1940 Industrial Drive • Auburn, CA 95603
Office (530) 823-3055 • Fax (530) 823-3086
Project #: 421-003



DSA 02-118996

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LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT
1290 LILAC STREET
LODI, CA. 95242

SHEET TITLE:

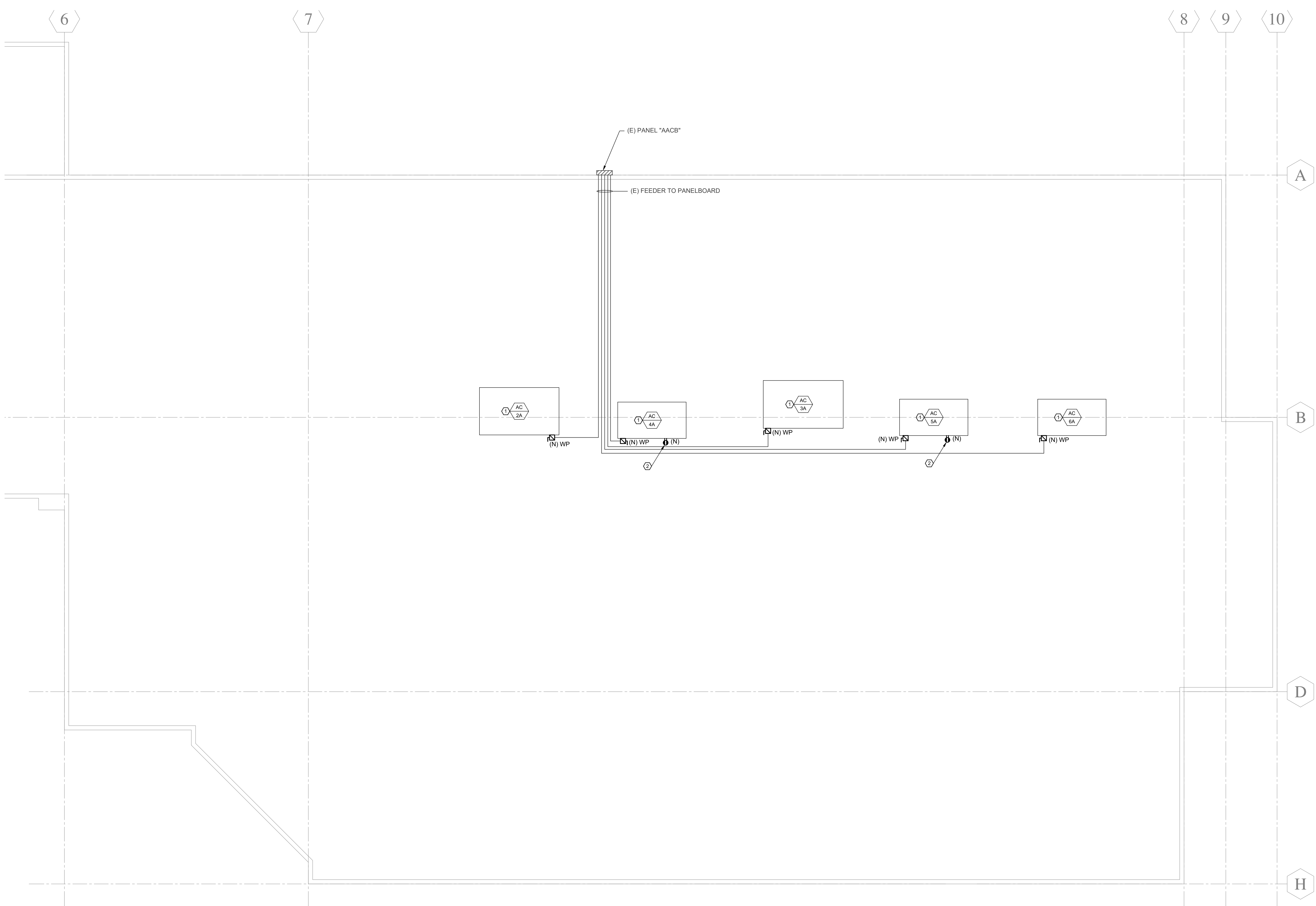
ELECTRICAL ROOF PLAN BUILDING A

NO.	REVISIONS	DATE

SHEET NUMBER:

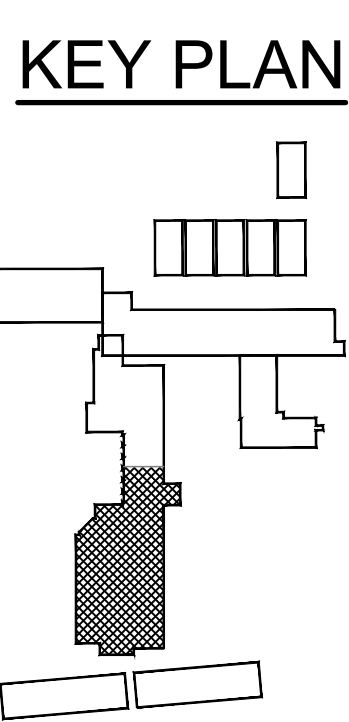
E2.01

Project Engineer:	NB	Job Number:	2090
Project Manager:	NB	Proj Date:	Jun 15, 2021 2:23pm
Project Designer:	NB	Logn:	nbcr



1 ELECTRICAL ROOF PLAN BUILDING A
SCALE: 1/4" = 1'-0"

- NUMBERED SHEET NOTES
- ① EXISTING UNIT TO BE REPLACED. DISCONNECT AND SAFE OFF ELECTRICAL CIRCUIT AND REMOVE EXISTING DISCONNECT FROM EXISTING UNIT. PROVIDE NEW FUSED DISCONNECT AS SHOWN ON MECHANICAL EQUIPMENT REPLACEMENT SCHEDULE ON SHEET E4.01 AND RECONNECT CIRCUIT TO NEW UNIT.
 - ② REPLACE EXISTING DUPLEX RECEPTACLE WITH GFCI TYPE RECEPTACLE. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY CIRCUIT PRIOR TO START OF WORK.



Whittington Electric Inc.
1940 Industrial Drive • Auburn, CA 95603
Office (530) 823-3055 • Fax (530) 823-3086
Project #: 421-003

AGENCY APPROVAL:

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-118996 INC:
REVIEWED FOR
SS ☒ FLS ☒ ACS ☒
DATE: 06/16/2021

DSA 02-118996

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Educating Students for Success
Lodi Unified School District

SEAL:

**LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT**
1290 LILAC STREET
LODI, CA. 95242

SHEET TITLE:

**ELECTRICAL ROOF
PLAN BUILDING A**

NO.	REVISIONS	DATE

SHEET NUMBER:

E2.02

Project Engineer:	NB	Job Number:	20290
Project Manager:	NB	Proj Date:	Jun 15, 2021 2:24pm
Project Designer:	NB	Design:	nsd

NUMBERED SHEET NOTES

①

EXISTING UNIT TO BE REPLACED. DISCONNECT AND SAFE OFF ELECTRICAL CIRCUIT AND REMOVE EXISTING DISCONNECT FROM EXISTING UNIT. PROVIDE NEW FUSED DISCONNECT AS SHOWN ON MECHANICAL EQUIPMENT REPLACEMENT SCHEDULE ON SHEET E4.01 AND RECONNECT CIRCUIT TO NEW UNIT.

②

REPLACE EXISTING DUPLEX RECEPTACLE WITH GFCI TYPE RECEPTACLE. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY CIRCUIT PRIOR TO START OF WORK.

AGENCY APPROVAL:

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Educating Students for Success

Lodi

Unified School District

SEAL:

REGISTERED PROFESSIONAL ELECTRICIAN

NO. 0208557

EXPIRATION DATE 6/30/2025

JOSEPH A. CHAN, P.E.

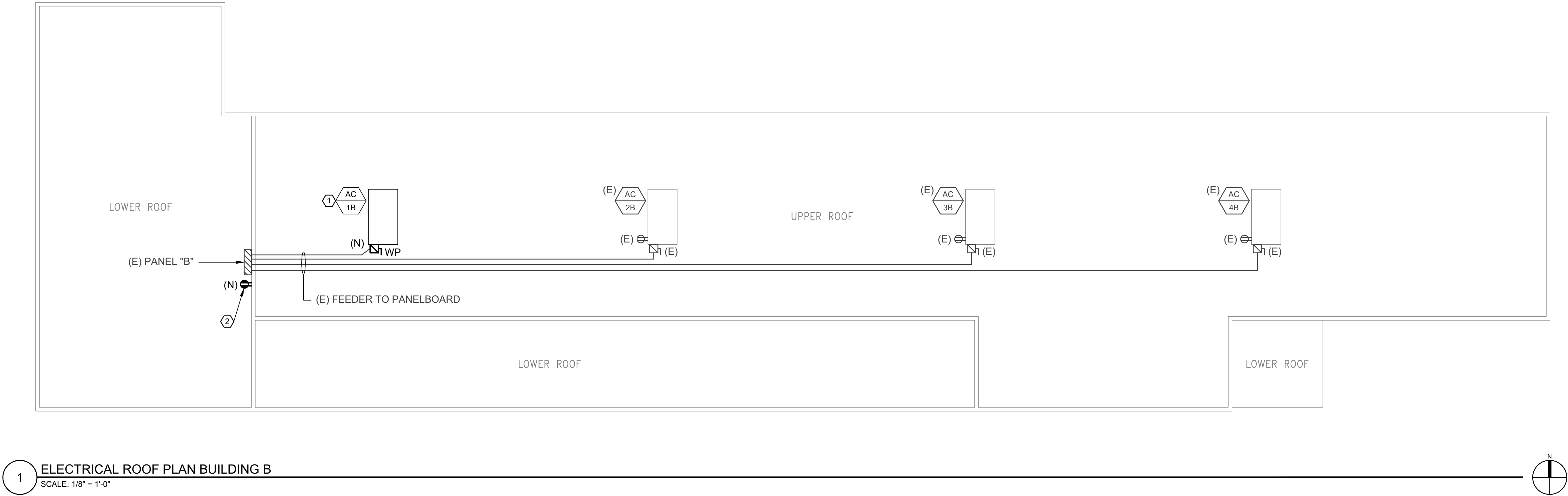
STATE OF CALIFORNIA

LODI UNIFIED SCHOOL DISTRICT

WOODBIDGE ELEMENTARY

HVAC REPLACEMENT

1290 LILAC STREET
LODI, CA. 95242



REGISTERED PROFESSIONAL ELECTRICIAN

NO. E21078

EXPIRATION DATE 03-31-23

Whittington Electric Inc.

STATE OF CALIFORNIA

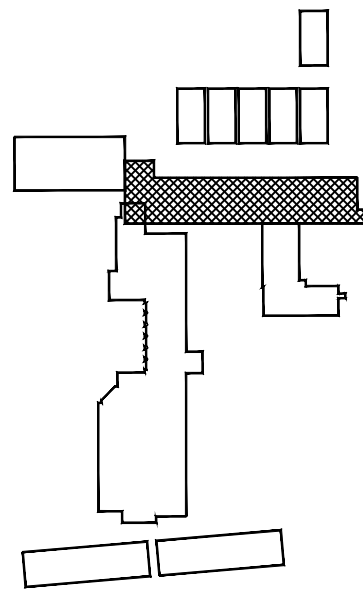
Whittington Electric Inc.

1940 Industrial Drive • Auburn, CA 96803

Office (530) 823-3055 • Fax (530) 823-3086

Project #: 421-003

KEY PLAN



SHEET TITLE:

ELECTRICAL ROOF PLAN BUILDING B

SHEET NUMBER:

E2.03

NO.	REVISIONS	DATE

Project Engineer:	NB	Job Number:	2090
Project Manager:	NB	Proj Date:	Jun 15, 2021 2:24pm
Project Drafter:	NB	Logn:	nbcr

NUMBERED SHEET NOTES

- ① EXISTING UNIT TO BE REPLACED. DISCONNECT AND SAFE OFF ELECTRICAL CIRCUIT AND REMOVE EXISTING DISCONNECT FROM EXISTING UNIT. PROVIDE NEW FUSED DISCONNECT AS SHOWN ON MECHANICAL EQUIPMENT REPLACEMENT SCHEDULE ON SHEET E4.01 AND RECONNECT CIRCUIT TO NEW UNIT.
- ② REPLACE EXISTING DUPLEX RECEPTACLE WITH GFCI TYPE RECEPTACLE. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY CIRCUIT PRIOR TO START OF WORK.

AGENCY APPROVAL:

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DATE: 06/16/2021

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**LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT**
1290 LILAC STREET
LODI, CA. 95242

SHEET TITLE:

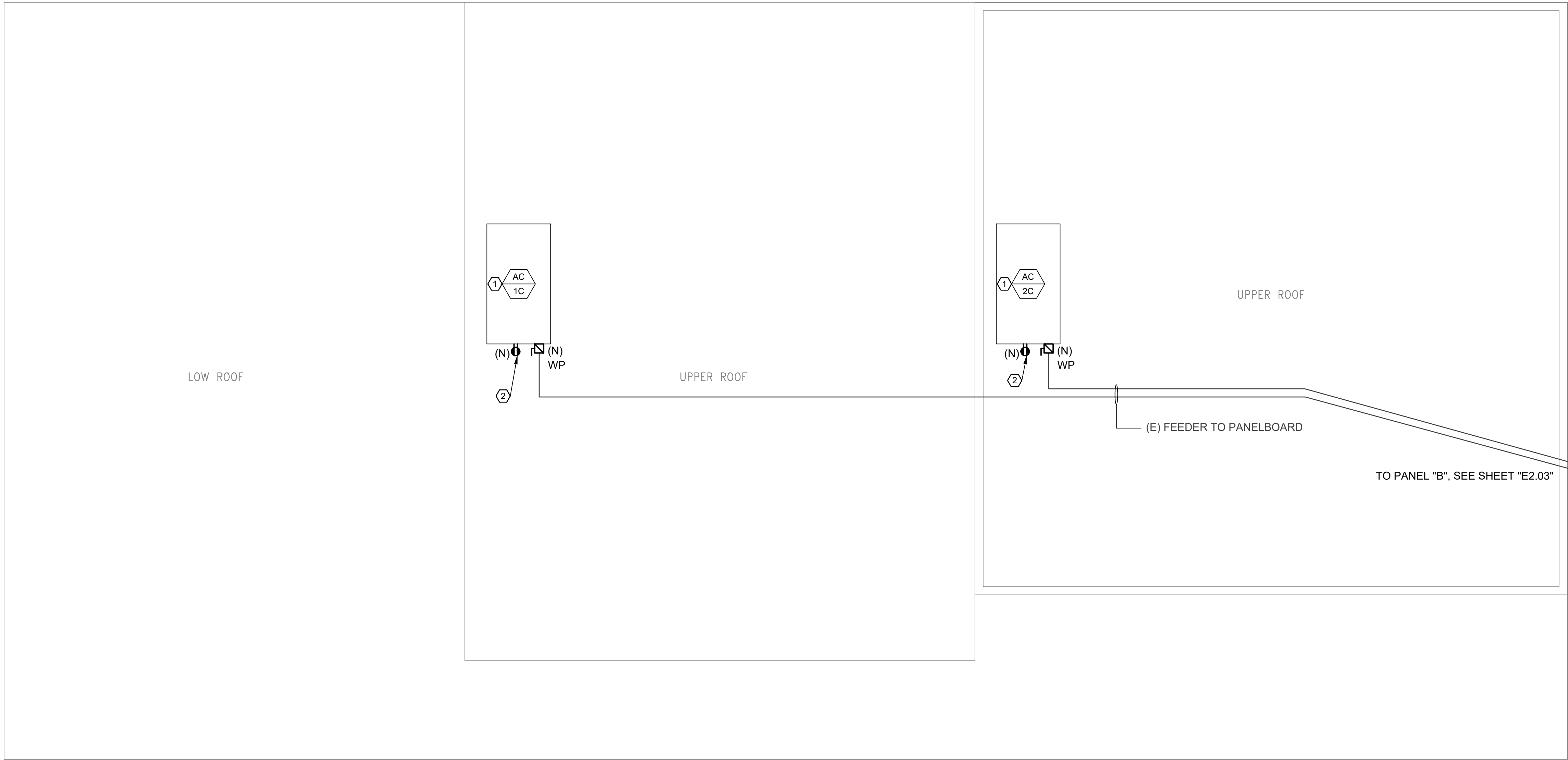
**ELECTRICAL ROOF
PLAN BUILDING C**

NO.	REVISIONS	DATE

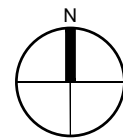
SHEET NUMBER:

E2.04

Project Engineer:	NB	Job Number:	2090
Project Manager:	NB	Proj Date:	Jun 15, 2021 2:24pm
Project Draftsman:	NB	Logn:	nbcr

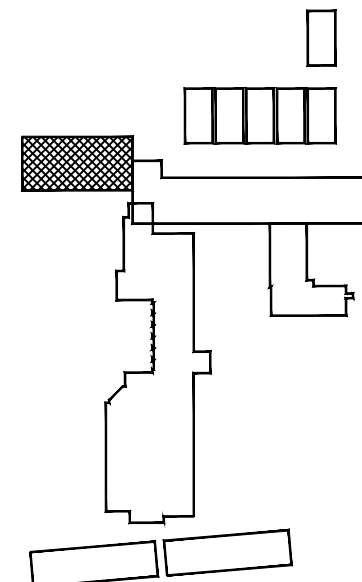


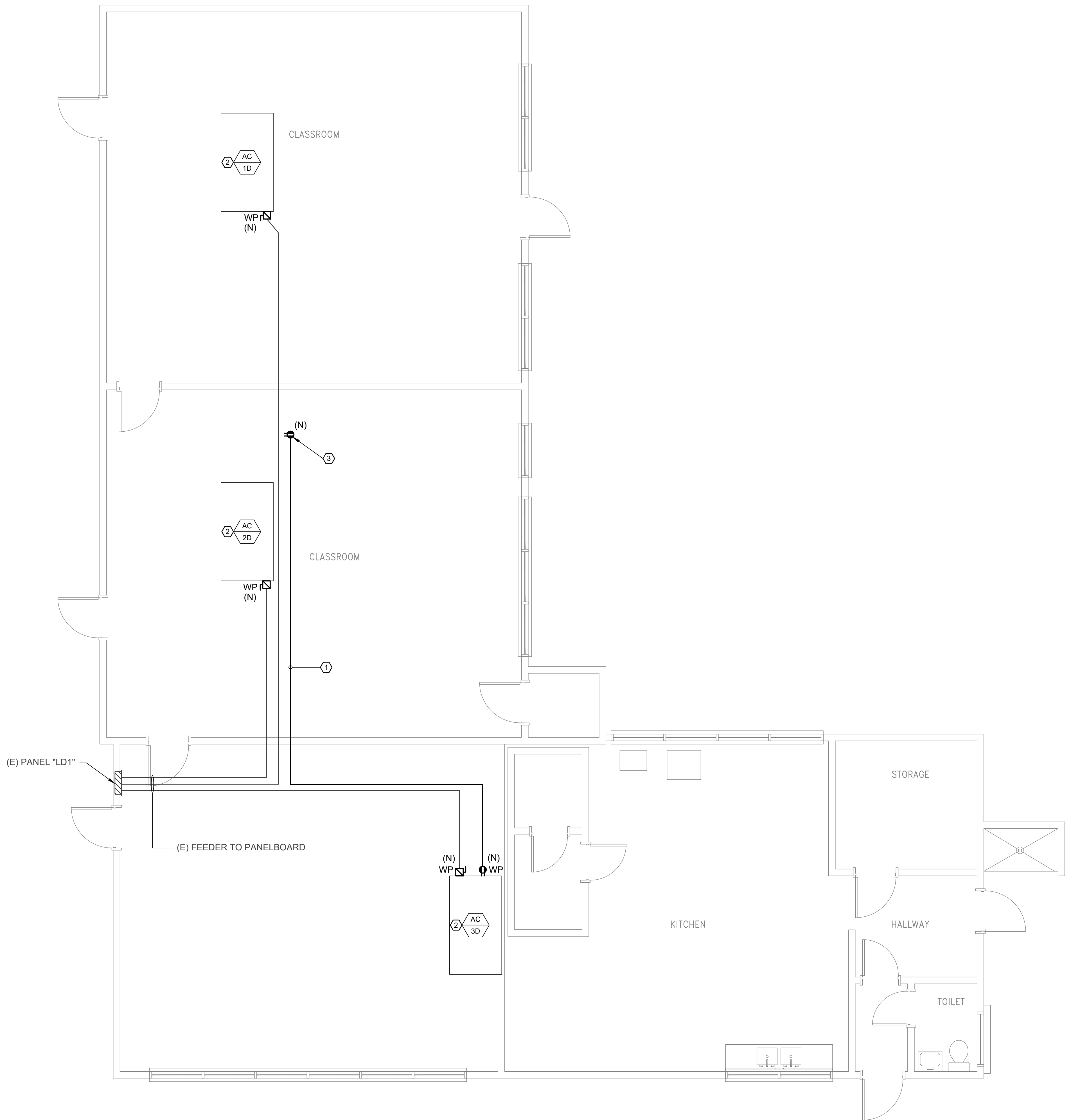
1 ELECTRICAL ROOF PLAN BUILDING C
SCALE: 1/4" = 1'-0"



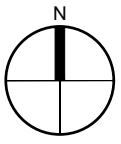
Whittington Electric Inc.
1940 Industrial Drive • Auburn, CA 95603
Office (530) 823-3055 • Fax (530) 823-3086
Project #: 421-003

KEY PLAN

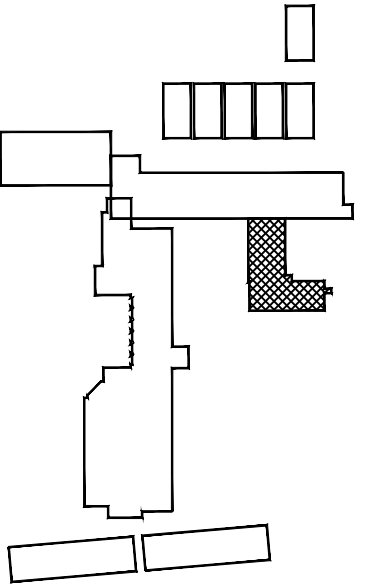




1 ELECTRICAL FLOOR PLAN BUILDING D
SCALE: 1/4" = 1'-0"



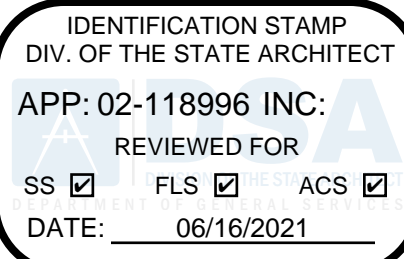
KEY PLAN



NUMBERED SHEET NOTES

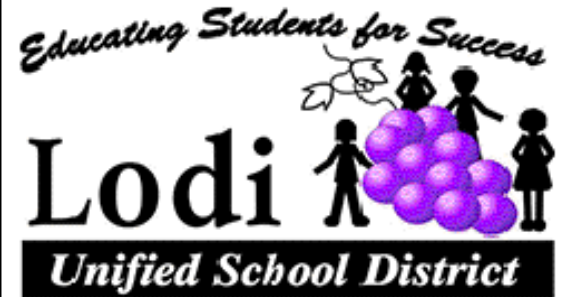
- 1 EXTEND CIRCUIT FROM EXISTING ROOFTOP GFCI RECEPTACLE AND CONNECT TO NEW GFCI RECEPTACLE WITH WHILE-IN-USE WEATHERPROOF COVER.
- 2 EXISTING UNIT TO BE REPLACED. DISCONNECT AND SAFE OFF ELECTRICAL CIRCUIT AND REMOVE EXISTING DISCONNECT FROM EXISTING UNIT. PROVIDE NEW FUSED DISCONNECT AS SHOWN ON MECHANICAL EQUIPMENT REPLACEMENT SCHEDULE ON SHEET E4.01 AND RECONNECT CIRCUIT TO NEW UNIT.
- 3 REPLACE EXISTING DUPLEX RECEPTACLE WITH GFCI TYPE RECEPTACLE. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY CIRCUIT PRIOR TO START OF WORK.

AGENCY APPROVAL:



DSA 02-118996

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1290 LILAC STREET
LODI, CA. 95242

SHEET TITLE:

ELECTRICAL ROOF
PLAN BUILDING D

NO.	REVISIONS	DATE

SHEET NUMBER:

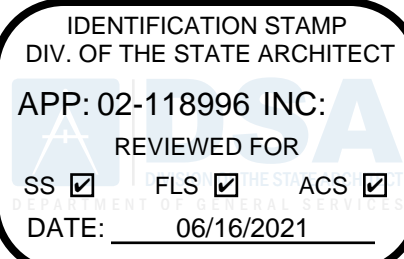
E2.05

Project Engineer:	NB	Job Number:	20990
Project Manager:	NS	Proj Date:	Jun 15, 2021 2:24pm
Project Draftsman:	NS	Logn:	nsar

NUMBERED SHEET NOTES

- ① EXISTING UNIT TO BE REPLACED. DISCONNECT AND SAFE OFF ELECTRICAL CIRCUIT AND REMOVE EXISTING DISCONNECT FROM EXISTING UNIT. PROVIDE NEW FUSED DISCONNECT AS SHOWN ON MECHANICAL EQUIPMENT REPLACEMENT SCHEDULE ON SHEET E4.01 AND RECONNECT CIRCUIT TO NEW UNIT.
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AGENCY APPROVAL:



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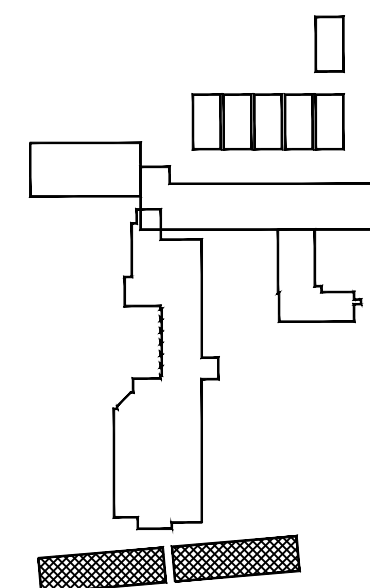
SEAL:

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WOODBIDGE ELEMENTARY
HVAC REPLACEMENT
1290 LILAC STREET
LODI, CA. 95242



Whittington Electric Inc.
1940 Industrial Drive • Auburn, CA 95603
Office (530) 823-3055 • Fax (530) 823-3086
Project #: 421-003

KEY PLAN



SHEET TITLE:

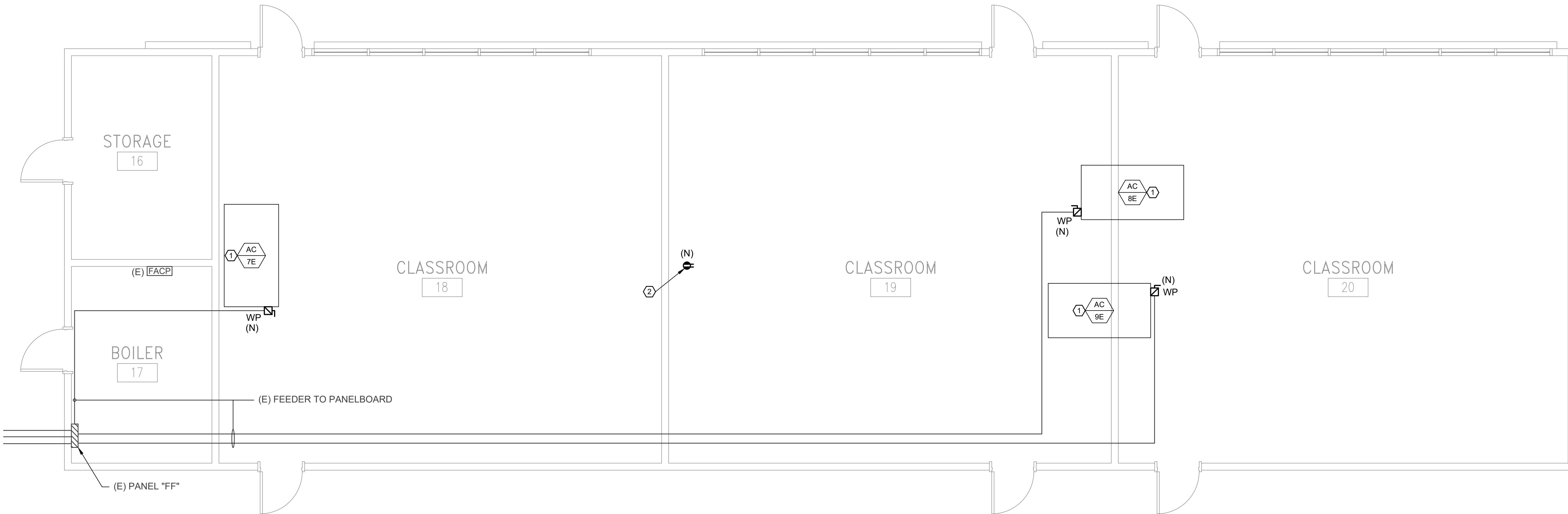
ELECTRICAL ROOF PLAN BUILDING E

NO.	REVISIONS	DATE

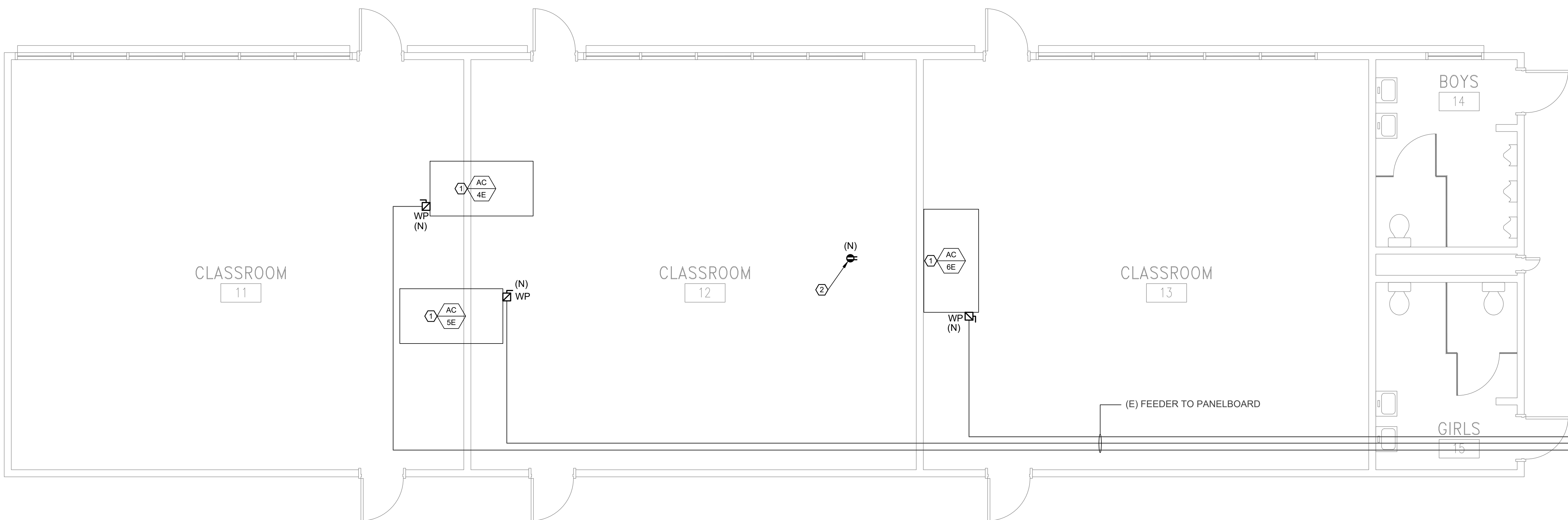
SHEET NUMBER:

E2.06

Project Engineer:	NB	Job Number:	20290
Project Manager:	NB	Proj Date:	Jun 15, 2021 - 2:24pm
Project Draftsman:	NB	Logn:	nbear



2 ELECTRICAL FLOOR PLAN BUILDING E
SCALE: 1/4" = 1'-0"



1 ELECTRICAL FLOOR PLAN BUILDING E
SCALE: 1/4" = 1'-0"

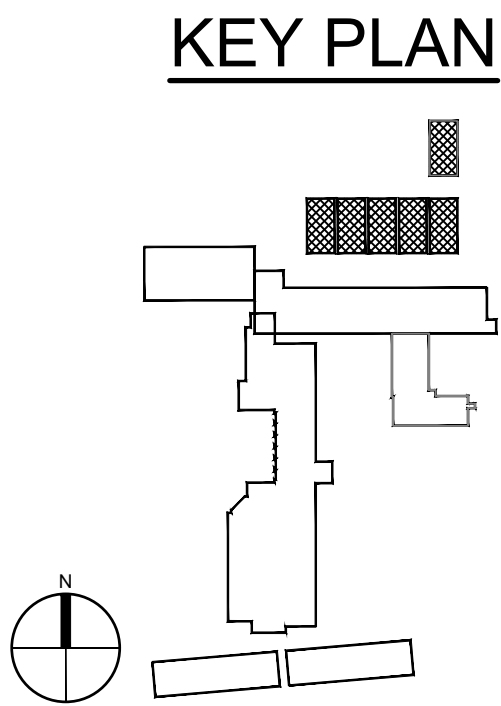
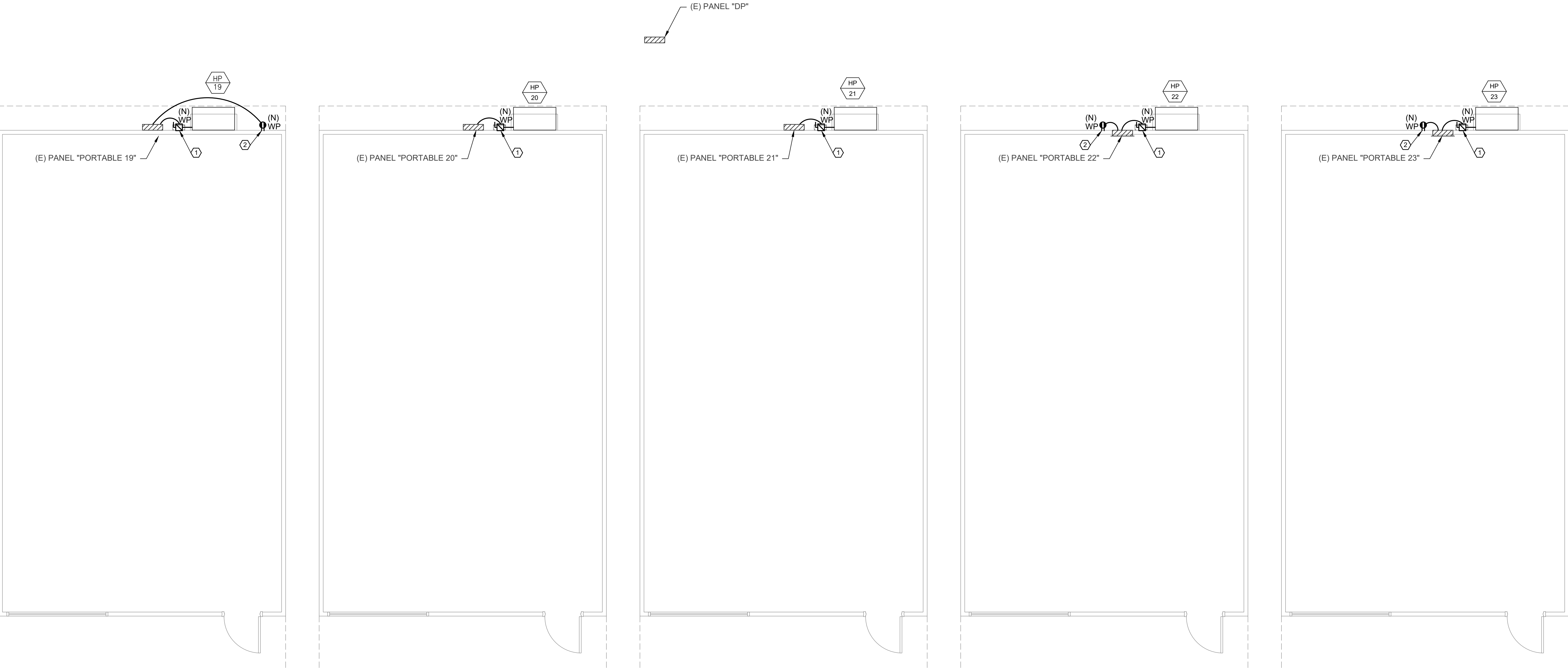
NUMBERED SHEET NOTES

1

REPLACE EXISTING HVAC UNIT CIRCUIT. REPLACE HVAC CIRCUIT BREAKERS WITH ONE (1) NEW 90A/2P CIRCUIT BREAKER, SEE PANEL SCHEDULES, SHEET "E4.02". PROVIDE NEW FUSED DISCONNECT AND BRANCH CIRCUITING TO HVAC UNIT PER MECHANICAL EQUIPMENT CONNECTION SCHEDULE.

2

PROVIDE WEATHERPROOF GFCI RECEPTACLE AT +18" ABOVE GRADE WITH LOCKABLE COVER. PROVIDE AND CONNECT TO NEW 20A/1P CIRCUIT BREAKER IN PANELBOARD, SEE PANEL SCHEDULES, SHEET "E4.02".



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Project #: 421-003

AGENCY APPROVAL:

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DATE: 06/16/2021

DSA 02-118996

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Email: office@turleymech.com

Lodi Unified School District
Educating Students for Success

SEAL:

**LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT**
1290 LILAC STREET
LODI, CA. 95242

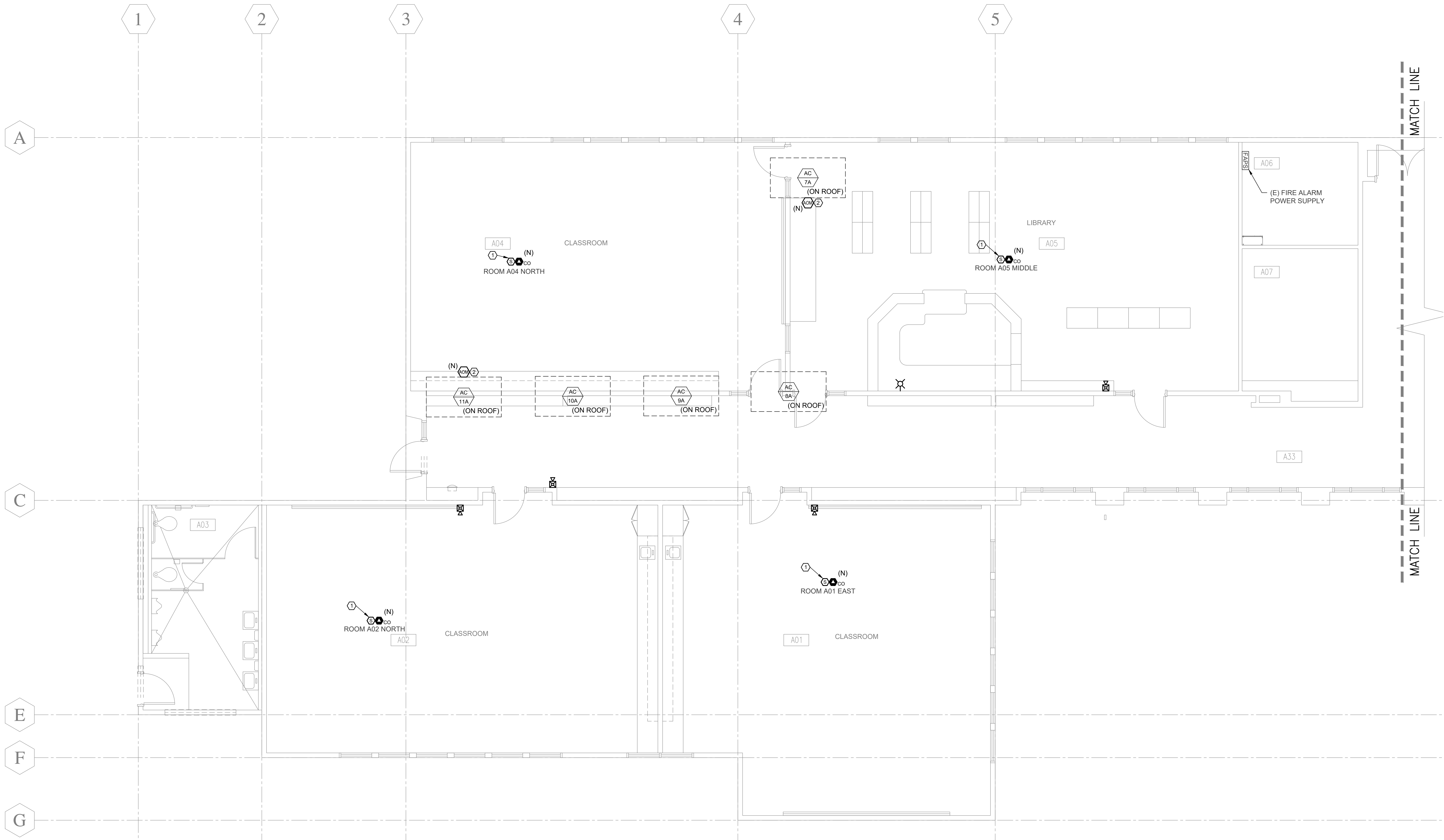
SHEET TITLE:

**ELECTRICAL FLOOR
PLAN PORTABLES**

SHEET NUMBER:

E2.07

Project Engineer:	NB	Job Number:	2090
Project Manager:	NB	Proj Date:	Jun 15, 2021 - 2:24pm
Project Draftsman:	NB	Logon:	nbear



1 FIRE ALARM FLOOR PLAN BUILDING A
SCALE: 1/4" = 1'-0"

GENERAL SHEET NOTES

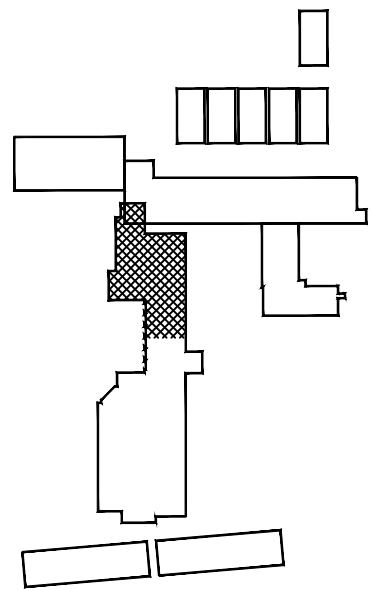
1. EXISTING FIRE ALARM DEVICES NOT APPLICABLE TO THE SCOPE OF WORK ARE NOT SHOWN. MAINTAIN COMPLETE FIRE ALARM SYSTEM AND UPDATE FIRE ALARM RECORD DRAWINGS WITH NEW DEVICES SHOWN.

NUMBERED SHEET NOTES

① REPLACE EXISTING SMOKE DETECTOR WITH COMBINATION SMOKE AND CARBON MONOXIDE DETECTOR. RE-USE EXISTING DETECTOR BASE AND WIRING. PROGRAM FA SYSTEM FOR CODED OUTPUT FOR CARBON MONOXIDE ALARM (TC4).

② PROVIDE ADDRESSABLE INPUT MODULE AT AC UNIT FOR FAN SHUTDOWN UPON AREA SMOKE DETECTOR ALARM. CONNECT TO NEAREST FA SLC DEVICE AND CONNECT TO AC UNIT FOR FAN SHUT DOWN.

KEY PLAN



AGENCY APPROVAL:

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-118996 INC.
REVIEWED FOR
SS ☒ FLS ☒ ACS ☒
DATE: 06/16/2021

DSA 02-118996

TURLEY & ASSOCIATES
MECHANICAL ENGINEERING GROUP, INC.
2431 Capitol Avenue
Sacramento, CA 95816
(916) 325-1085
FAX (916) 325-1075
Email: office@turleymech.com

Educating Students for Success

Lodi Unified School District

SEAL:

REGISTERED PROFESSIONAL ENGINEER
M. W. GALT
E21078
Exp. 03-31-23
STATE OF CALIFORNIA

**LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT**
1290 LILAC STREET
LODI, CA. 95242

SHEET TITLE:

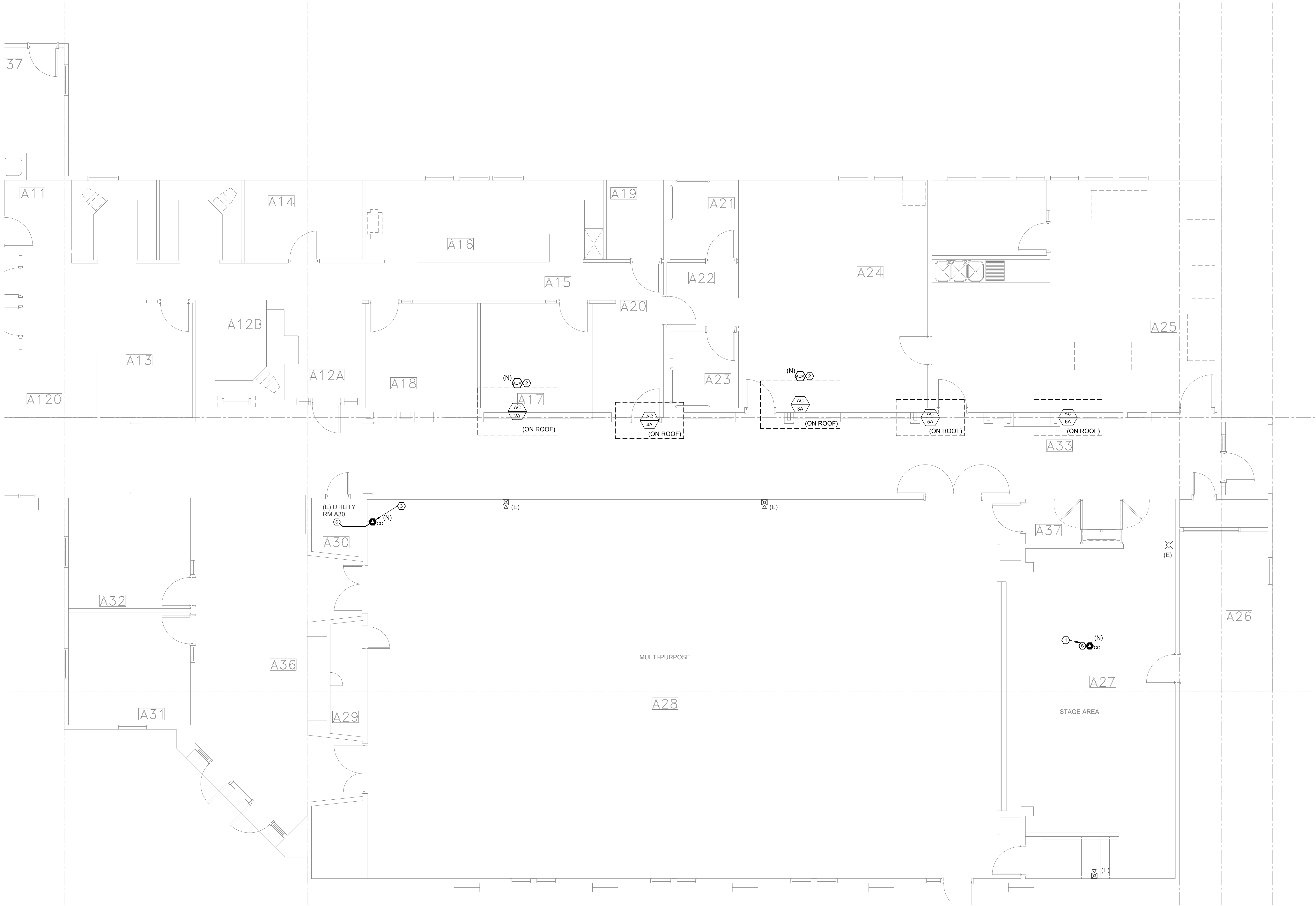
FIRE ALARM FLOOR PLAN BUILDING A

NO.	REVISIONS	DATE

SHEET NUMBER:

E3.01

Project Engineer:	NB	Job Number:	2090
Project Manager:	NB	Proj Date:	Jun 15, 2021 2:24pm
Project Drafter:	NB	Logn:	nbaw

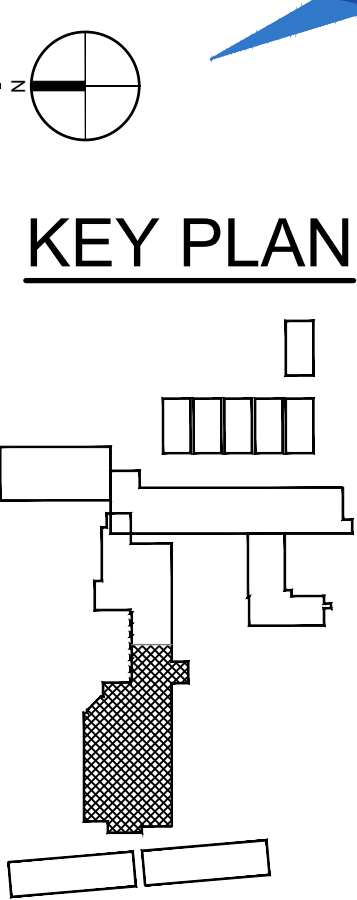


1 FIRE ALARM FLOOR PLAN BUILDING A
SCALE: 1/4" = 1'-0"

GENERAL SHEET NOTES

1. EXISTING FIRE ALARM DEVICES NOT APPLICABLE TO THE SCOPE OF WORK ARE NOT SHOWN. MAINTAIN COMPLETE FIRE ALARM SYSTEM AND UPDATE FIRE ALARM RECORD DRAWINGS WITH NEW DEVICES SHOWN.

- NUMBERED SHEET NOTES
- ① REPLACE EXISTING SMOKE DETECTOR WITH COMBINATION SMOKE AND CARBON MONOXIDE DETECTOR, RE-USE EXISTING DETECTOR BASE AND WIRING. PROGRAM FA SYSTEM FOR CODED OUTPUT FOR CARBON MONOXIDE ALARM (TC4).
- ② PROVIDE ADDRESSABLE INPUT MODULE AT AC UNIT FOR FAN SHUTDOWN UPON AREA SMOKE DETECTOR ALARM. CONNECT TO NEAREST FA SLC DEVICE AND CONNECT TO AC UNIT FOR FAN SHUT DOWN.
- ③ PROVIDE NEW ADDRESSABLE CARBON MONOXIDE DETECTOR ON WALL. EXTEND EXISTING SLC CIRCUIT FROM NEAREST FA SLC DEVICE.



AGENCY APPROVAL:

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-118996 INC:
REVIEWED FOR
SS ☒ FLS ☒ ACS ☒
DATE: 06/16/2021

DSA 02-118996

TURLEY & ASSOCIATES
MECHANICAL ENGINEERING GROUP, INC.
2431 Capitol Avenue
Sacramento, CA 95816
(916) 325-1085
FAX (916) 325-1075
Email: office@turleymech.com

Educating Students for Success
Lodi Unified School District

REGISTERED PROFESSIONAL ENGINEER
M. W. GILBERT
E21078
Exp. 03-31-23
ELECTRICAL
STATE OF CALIFORNIA

SEAL:

LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT
1290 LILAC STREET
LODI, CA. 95242

SHEET TITLE:

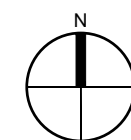
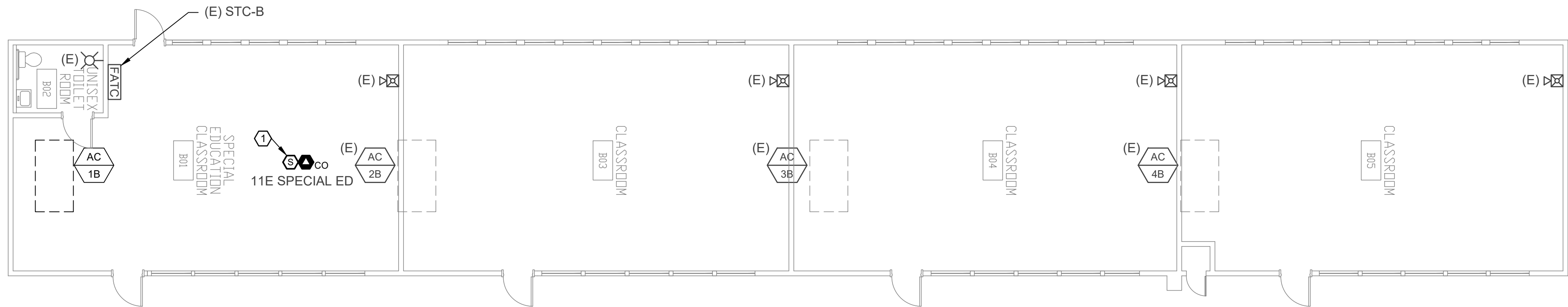
FIRE ALARM FLOOR PLAN BUILDING A

SHEET NUMBER:

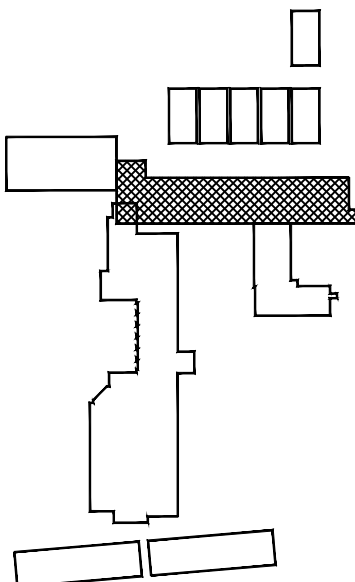
E3.02

Project Engineer:	NB	Job Number:	2090
Project Manager:	NB	Proj Date:	Jun 15, 2021 2:24pm
Project Draftsman:	NB	Logn:	nbaw

1 FIRE ALARM FLOOR PLAN BUILDING B
SCALE: 1/8" = 1'-0"



KEY PLAN



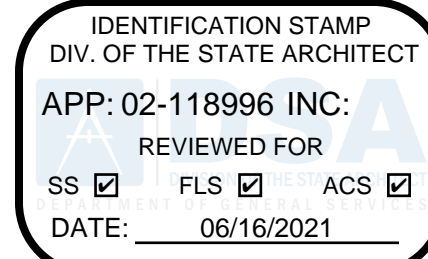
NUMBERED SHEET NOTES

1. REPLACE EXISTING SMOKE DETECTOR WITH COMBINATION SMOKE AND CARBON MONOXIDE DETECTOR, RE-USE EXISTING DETECTOR BASE AND WIRING. PROGRAM FA SYSTEM FOR CODED OUTPUT FOR CARBON MONOXIDE ALARM (TC4).
2. PROVIDE ADDRESSABLE INPUT MODULE AT AC UNIT FOR FAN SHUTDOWN UPON AREA SMOKE DETECTOR ALARM. CONNECT TO NEAREST FA SLC DEVICE AND CONNECT TO AC UNIT FOR FAN SHUT DOWN.

GENERAL SHEET NOTES

1. EXISTING FIRE ALARM DEVICES NOT APPLICABLE TO THE SCOPE OF WORK ARE NOT SHOWN. MAINTAIN COMPLETE FIRE ALARM SYSTEM AND UPDATE FIRE ALARM RECORD DRAWINGS WITH NEW DEVICES SHOWN.

AGENCY APPROVAL:



DSA 02-118996

TURLEY & ASSOCIATES
MECHANICAL ENGINEERING GROUP, INC.
2431 Capitol Avenue
Sacramento, CA 95816
(916) 325-1085
FAX (916) 325-1075
Email: office@turleymech.com



SEAL:

LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT
1290 LILAC STREET
LODI, CA. 95242

SHEET TITLE:

FIRE ALARM FLOOR
PLAN BUILDING B

NO.	REVISIONS	DATE

SHEET NUMBER:

E3.03

Project Engineer:	NB	Job Number:	22990
Project Manager:	NB	Proj Date:	Jun 15, 2021 - 2:24pm
Project Designer:	NB	Design:	MECH

NUMBERED SHEET NOTES

1

REPLACE EXISTING SMOKE DETECTOR WITH COMBINATION SMOKE AND CARBON MONOXIDE DETECTOR, RE-USE EXISTING DETECTOR BASE AND WIRING. PROGRAM FA SYSTEM FOR CODED OUTPUT FOR CARBON MONOXIDE ALARM (TC4).

2

PROVIDE ADDRESSABLE INPUT MODULE AT AC UNIT FOR FAN SHUTDOWN UPON AREA SMOKE DETECTOR ALARM. CONNECT TO NEAREST FA SLC DEVICE AND CONNECT TO AC UNIT FOR FAN SHUT DOWN.

GENERAL SHEET NOTES

1. EXISTING FIRE ALARM DEVICES NOT APPLICABLE TO THE SCOPE OF WORK ARE NOT SHOWN. REFER TO FIRE ALARM RECORD DRAWINGS FOR COMPLETE SYSTEM. MAINTAIN COMPLETE FIRE ALARM SYSTEM AND UPDATE FIRE ALARM RECORD DRAWINGS WITH NEW DEVICES SHOWN.

AGENCY APPROVAL:

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-118996 INC:
REVIEWED FOR
SS ☒ FLS ☒ ACS ☒
DATE: 06/16/2021

DSA 02-118996

TURLEY
& ASSOCIATES

MECHANICAL
ENGINEERING
GROUP, INC.
2431 Capitol Avenue
Sacramento, CA 95816
(916) 395-1085
FAX (916) 395-1075
Email: office@turleymech.com

Educating Students for Success

Lodi Unified School District

REGISTERED PROFESSIONAL ENGINEER
ELECTRICAL
No. E21078
Exp. 03-31-23
Whittington Electric Inc.
STATE OF CALIFORNIA

SEAL:

LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT
1290 LILAC STREET
LODI, CA. 95242

SHEET TITLE:

FIRE ALARM FLOOR
PLAN BUILDING C

NO.	REVISIONS	DATE

SHEET NUMBER:

E3.04

Project Engineer:	NB	Job Number:	20990
Project Manager:	NB	Proj Date:	Jun 15, 2021 - 2:24pm
Project Designer:	NB	Design:	nbear

1 FIRE ALARM FLOOR PLAN BUILDING C
SCALE: 1/4" = 1'-0"

KEY PLAN

REGISTERED PROFESSIONAL ENGINEER
ELECTRICAL
No. E21078
Exp. 03-31-23
Whittington Electric Inc.
STATE OF CALIFORNIA

Whittington
Electric Inc.

1940 Industrial Drive • Auburn, CA 96903
Office (530) 823-3055 • Fax (530) 823-3086
Project #: 421-003

- ① REPLACE EXISTING SMOKE DETECTOR WITH COMBINATION SMOKE AND CARBON MONOXIDE DETECTOR, RE-USE EXISTING DETECTOR BASE AND WIRING. PROGRAM FA SYSTEM FOR CODED OUTPUT FOR CARBON MONOXIDE ALARM (TC4).
- ② PROVIDE ADDRESSABLE INPUT MODULE AT AC UNIT FOR FAN SHUTDOWN UPON AREA SMOKE DETECTOR ALARM. CONNECT TO NEAREST FA SLC DEVICE AND CONNECT TO AC UNIT FOR FAN SHUT DOWN.

1. EXISTING FIRE ALARM DEVICES NOT APPLICABLE TO THE SCOPE OF WORK ARE NOT SHOWN. MAINTAIN COMPLETE FIRE ALARM SYSTEM AND UPDATE FIRE ALARM RECORD DRAWINGS WITH NEW DEVICES SHOWN.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-118996 INC:
REVIEWED FOR
SS ☒ FLS ☒ ACS ☒
DATE: 06/16/2021

 **TURLEY**
& ASSOCIATES

MECHANICAL
ENGINEERING
GROUP, INC.

(916) 325-1065
FAX (916) 325-1075
Email: office@turleymech.com

2431 Capitol Avenue
Sacramento, CA 95816

Lodi 
Unified School District



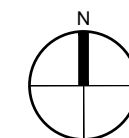
**LODI UNIFIED SCHOOL DISTRICT
WOODBRIDGE ELEMENTARY
HVAC REPLACEMENT**
1290 LILAC STREET
LODI, CA. 95242

E3.05

Project Engineer:	NB	Job Number:	20290
Project Manager:	NB	Plot Date:	Jun 15, 2021 - 2:34pm
Project Drafter:	NB	Login:	nbaer



SCALE: 1/4" = 1'-0"



NUMBERED SHEET NOTES

① REPLACE EXISTING SMOKE DETECTOR WITH COMBINATION SMOKE AND CARBON MONOXIDE DETECTOR, RE-USE EXISTING DETECTOR BASE AND WIRING. PROGRAM FA SYSTEM FOR CODED OUTPUT FOR CARBON MONOXIDE ALARM (TC4).

② PROVIDE ADDRESSABLE INPUT MODULE AT AC UNIT FOR FAN SHUTDOWN UPON AREA SMOKE DETECTOR ALARM. CONNECT TO NEAREST FA SLC DEVICE AND CONNECT TO AC UNIT FOR FAN SHUT DOWN.

GENERAL SHEET NOTES

1. EXISTING FIRE ALARM DEVICES NOT APPLICABLE TO THE SCOPE OF WORK ARE NOT SHOWN. MAINTAIN COMPLETE FIRE ALARM SYSTEM AND UPDATE FIRE ALARM RECORD DRAWINGS WITH NEW DEVICES SHOWN.

AGENCY APPROVAL:

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-118996 INC.
REVIEWED FOR
SS ☒ FLS ☒ ACS ☒
DATE: 06/16/2021

DSA 02-118996

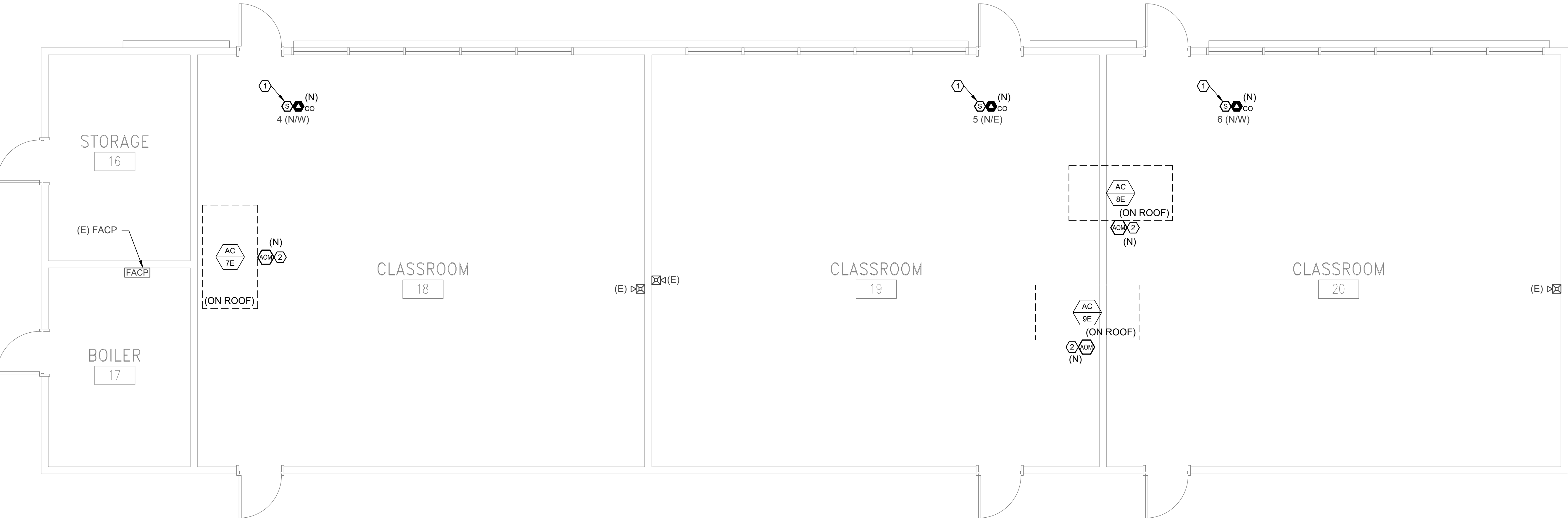
TURLEY & ASSOCIATES
MECHANICAL
ENGINEERING
GROUP, INC.
2431 Capitol Avenue
Sacramento, CA 95816
(916) 395-1085
FAX (916) 395-1075
Email: office@turleymech.com

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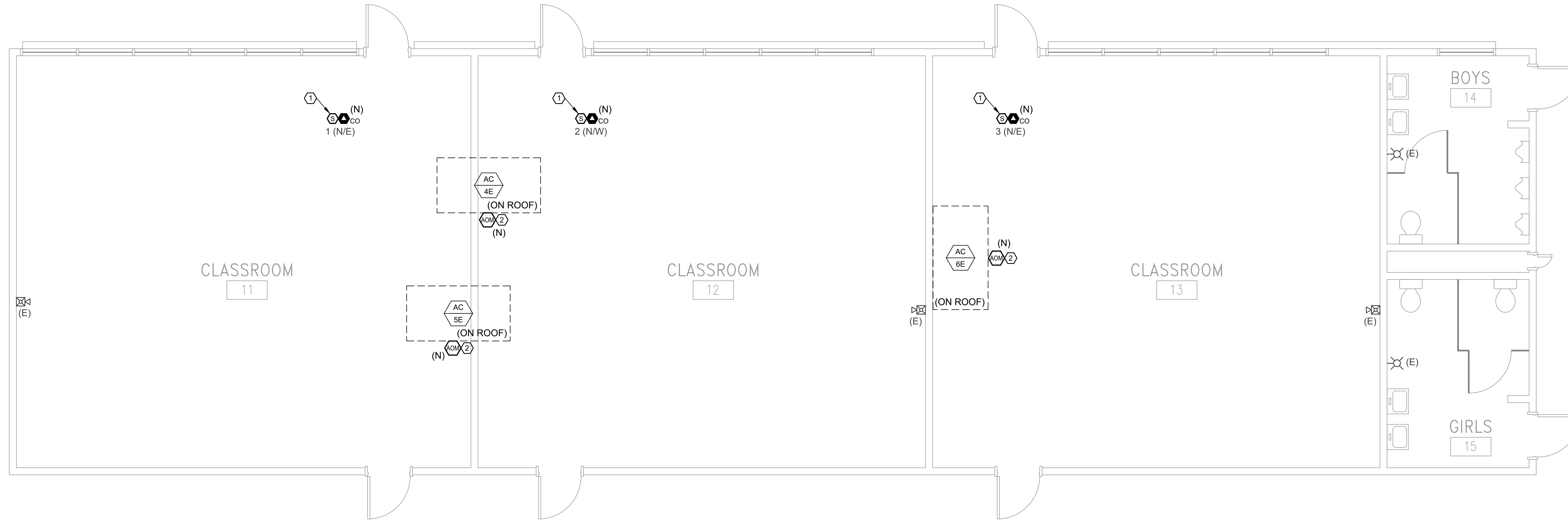
Lodi Unified School District

SEAL:

LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT
1290 LILAC STREET
LODI, CA. 95242



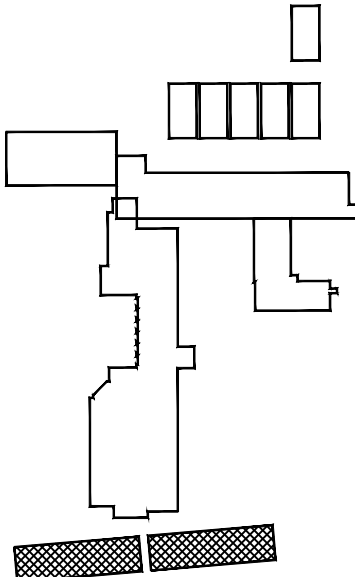
2 ELECTRICAL FLOOR PLAN BUILDING E
SCALE: 1/4" = 1'-0"



1 FIRE ALARM FLOOR PLAN BUILDING E
SCALE: 1/4" = 1'-0"

Whittington Electric Inc.
1940 Industrial Drive • Auburn, CA 96803
Office (530) 823-3055 • Fax (530) 823-3086
Project #: 421-003

KEY PLAN



SHEET TITLE:		
FIRE ALARM FLOOR PLAN BUILDING E		
NO. REVISIONS		DATE
SHEET NUMBER:		
E3.06		
Project Engineer:	NB	Job Number: 20990
Project Manager:	NB	Proj Date: Jun 15, 2021 2:25pm
Project Draftsman:	NB	Logon: nbar

Existing Panel:		B																	
Location:		Bldg B Roof		Volts:		120/208Y				Mains:		MLO							
Supply From:		MSB		Phases:		3				Bus Rating:		225A							
Mounting:		Surface		Wires:		4				A/C Rating:		EXISTING							
Load Description		Load (VA)	Load Type	Phase	Circuit Breaker Amp	Breaker Pole	Ckt #	Ckt # Amps	Breaker Poles	Phase	Load Type	Load (VA)	Load Description						
(E) AC-3B		3180	5	A	50	3	1	2	50	3	A	4	3180	(E) AC-4B					
-		3180	5	B	-	-	3	4	-	-	B	4	3180	-					
-		3180	5	C	-	-	5	6	-	-	C	4	3180	-					
(E) AC-2B		3180	4	A	50	3	7	8	50	3	A	4	3482	(N) AC-1C [1]					
-		3180	4	B	-	-	9	10	-	-	B	4	3482	-					
-		3180	4	C	-	-	11	12	-	-	C	4	3482	-					
(N) AC-1B [1]		3482	4	A	40	3	13	14	40	3	A	4	3482	(N) AC-2C [1]					
-		3482	4	B	-	-	15	16	-	-	B	4	3482	-					
-		3482	4	C	-	-	17	18	-	-	C	4	3482	-					
(E) RCPT - ROOF		720	1	A	20	1	19	20	20	1	A	3	1920	(E) LOAD [2]					
(E) RCPT - ROOF		360	1	B	20	1	21	22	PFB	1	B			(E) SPACE					
(E) SECURITY LIGHT		200	2	C	20	1	23	24	PFB	1	C			(E) SPACE					
(E) SPACE				A	PFB	1	25	26	PFB	1	A			(E) SPACE					
(E) SPACE				B	PFB	1	27	28	PFB	1	B			(E) SPACE					
(E) SPACE				C	PFB	1	29	30	PFB	1	C			(E) SPACE					
Load Type		Connected Load (kVA)		Demand Multiplier				Demand Load				Connected Load kVA/Phase							
1 - Receptacles		1.08	x	CEC 220.44				=	1.08 kVA				Phase A: 22.63 kVA						
2 - Continuous (lighting)		0.20	x	1.25				=	0.25 kVA				Phase B: 20.35 kVA						
3 - Non-Continuous		1.92	x	1.00				=	1.92 kVA				Phase C: 20.19 kVA						
4 - Motor		50.42	x	1.00				=	50.42 kVA				Total Demand Load						
5 - Largest Motor		9.54	x	1.25				=	11.93 kVA				65.59 kVA						
												182.05 Amps							
Notes:																			
1. Re-use existing circuit breaker.																			
2. Unknown load calculated at maximum 16 amps.																			

Existing Panel:		LD-1											
Location:		Building D		Volts:		120/208Y		Mainss:		225A			
Supply From:		MSB		Phases:		3		Bus Rating:		225A			
Mounting:		Surface		Wires:		4		A/C Rating:		EXISTING			
Load Description	Load (VA)	Load Type	Phase	Circuit Breaker Amps	Pole	Ckt #	Ckt #	Circuit Breaker Amps	Poles	Phase	Load Type	Load (VA)	Load Description
(E) LIGHTING			A	20	1	1	2	20	1	A			(E) RECEPTACLES
(E) LIGHTING			B	20	1	3	4	20	1	B			(E) RECEPTACLES
(E) PROJECTOR			C	20	1	5	6	20	1	C			(E) RECEPTACLES
(E) INTRUSION			A	20	1	7	8	20	1	A			(E) RECEPTACLES
(E) RECEPTACLE			B	20	1	9	10	20	1	B			(E) RECEPTACLES
(E) RECEPTACLE			C	20	1	11	12	20	1	C			(E) RECEPTACLES
(E) SPARE			A	20	1	13	14	20	1	A			(E) RECEPTACLES
(E) SPARE			B	20	1	15	16	20	1	B			(E) SPARE
(E) SPARE			C	20	1	17	18	30	1	C			(E) SPARE
(E) RECEPTACLE			A	20	1	19	20	20	1	A			(E) HOT SERVER
(E) SPARE			B	20	1	21	22	20	1	B			(E) COLD SERVER
(E) RCPT - ROOF			C	20	1	23	24	20	1	C			(E) LOAD
(N) AC-3D [1]	3482		A	50	3	25	26	20	1	A			(E) LOAD
-	3482		B	-	-	27	28	50	2	B			(E) KITCHEN
-	3482		C	-	-	29	30	-	-	C			-
(N) AC-1D [1]	3482		A	50	3	31	32	50	3	A	3482		(N) AC-2D [1]
-	3482		B	-	-	33	34	-	-	B	3482		-
-	3482		C	-	-	35	36	-	-	C	3482		-
(E) SPACE			A	37		37	38	?	3	A			(E) SPARE
(E) SPACE			B	39		39	40	-	-	B			-
(E) SPACE			C	41		41	42	-	-	C			-

Notes:

1. Re-use existing circuit breaker.
2. Units replaced in kind, no net load addition to panel.

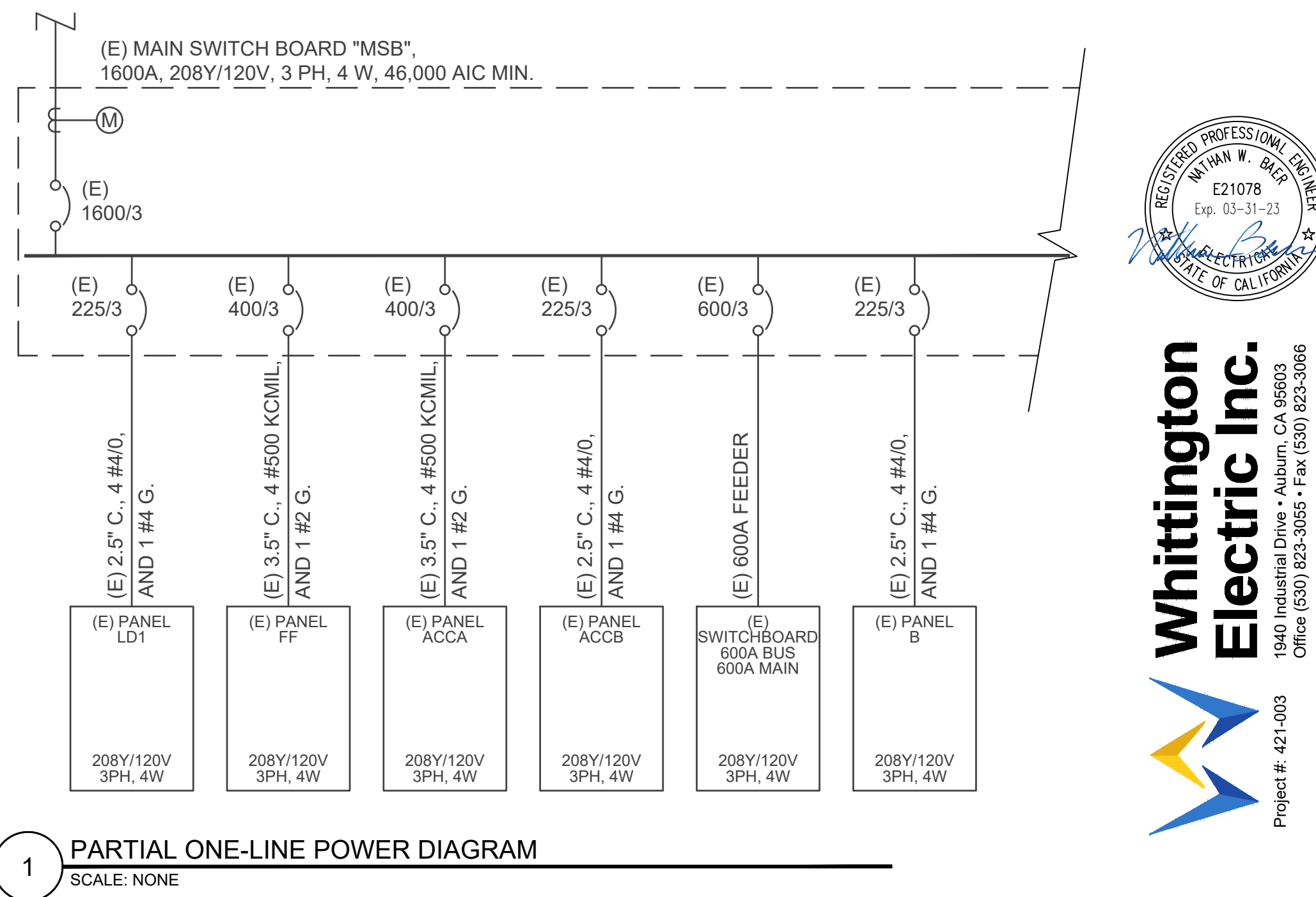
Existing Panel:		FF													
Location:		Building F Boiler Rm				Volts:		120/208Y		Mains:		400A			
Supply From:		MSB				Phases:		3		Bus Rating:		400A			
Mounting:		Surface				Wires:		4		A/C Rating:		EXISTING			
Load Description		Load (VA)	Load Type	Phase	Circuit Amps	Breaker Pole	Ckt #	Ckt #	Circuit Breaker Amps	Poles	Phase	Load Type	Load (VA)	Load Description	
(N) AC-4E [1]		3482	5	A	50	3	1	2	50	3	A	4	3482	(N) AC-5E [1]	
		3482	5	B	-	-	3	4	-	-	B	4	3482	-	
		3482	5	C	-	-	5	6	-	-	C	4	3482	-	
(N) AC-6E [1]		3482	4	A	50	3	7	8	50	3	A	4	3482	(N) AC-7E [1]	
		3482	4	B	-	-	9	10	-	-	B	4	3482	-	
		3482	4	C	-	-	11	12	-	-	C	4	3482	-	
(N) AC-8E [1]		3482	4	A	50	3	13	14	50	3	A	4	3482	(N) AC-9E [1]	
		3482	4	B	-	-	15	16	-	-	B	4	3482	-	
		3482	4	C	-	-	17	18	-	-	C	4	3482	-	
(E) WATER HEATER			A	30	2	19	20	PFB	1	1	A			(E) SPACE	
			B	-	-	21	22	PFB	1	1	B			(E) SPACE	
(E) SPACE			C	PFB	1	23	24	PFB	1	1	C			(E) SPACE	
(E) SPACE			A	PFB	1	25	26	PFB	1	1	A			(E) SPACE	
(E) SPACE			B	PFB	1	27	28	PFB	1	1	B			(E) SPACE	
(E) SPACE			C	PFB	1	29	30	PFB	1	1	C			(E) SPACE	

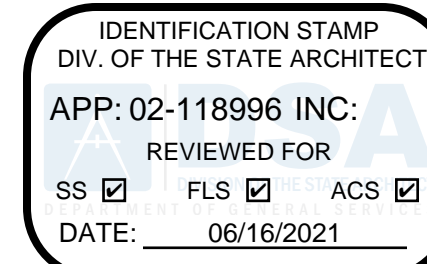
Notes:

- Re-use existing circuit breaker.
- Units replaced in kind. No net load addition to panel.

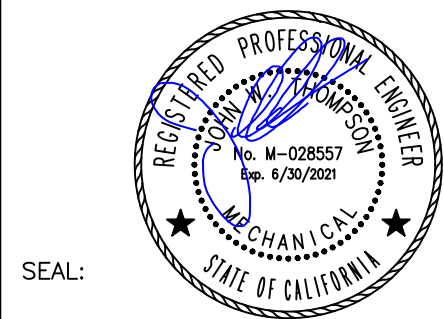
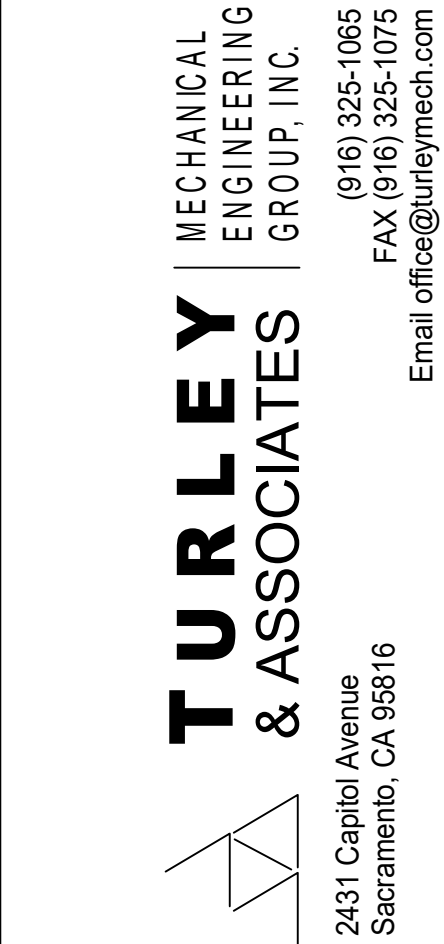
Existing Panel:		AACB		Location:		Volts:		Mains:		MLO (400A OCP)			
Supply From:		Building "A" Exterior		Phases:		120/208Y		Bus Rating:		400A			
Mounting:		Surface		Wires:		4		AIC Rating:		EXISTING			
Load Description	Load (VA)	Load Type	Phase	Circuit Breaker Amp	Breaker Pole	Ckt #	Ckt #	Amps	Poles	Phase	Load Type	Load (VA)	Load Description
(E) SPARE			A	20	1	1	2	20	1	A			(E) SPARE
(E) SPARE			B	20	1	3	4	20	1	B			(E) SPARE
(E) SPARE			C	20	1	5	6	20	1	C			(E) SPARE
(N) AC-8A [2]	2894	4	A	40	3	7	8	50	3	A	5	3182	(N) AC-7A [2]
-	2894	4	B	-	-	9	10	-	-	B	5	3182	-
-	2894	4	C	-	-	11	12	-	-	C	5	3182	-
(N) AC-9A [2]	2894	4	A	40	3	13	14	50	3	A	4	2894	(N) AC-11A [2]
-	2894	4	B	-	-	15	16	-	-	B	4	2894	-
-	2894	4	C	-	-	17	18	-	-	C	4	2894	-
(N) AC-10A [2]	2894	4	A	40	3	19	20	50	3	A			(E) SPARE
-	2894	4	B	-	-	21	22	-	-	B			-
-	2894	4	C	-	-	23	24	-	-	C			-
(E) SPARE			A	40	3	25	26	50	3	A			(E) SPARE
-			B	-	-	27	28	-	-	B			-
-			C	-	-	29	30	-	-	C			-
(E) SPARE			A	40	3	31	32	PFB	1	A			(E) SPACE [1]
-			B	-	-	33	34	PFB	1	B			(E) SPACE [1]
-			C	-	-	35	36	PFB	1	C			(E) SPACE [1]
-			A	20	1	37	38	PFB	1	A			(E) SPACE [1]
(E) SPACE			B	PFB	1	39	40	PFB	1	B			(E) SPACE [1]
(E) SPACE			C	PFB	1	41	42	PFB	1	C			(E) SPACE [1]
Load Type	Connected Load (kVA)		Demand Multiplier					Demand Load			Connected Load kVA/Phase		
1 - Receptacles	0.00	x		CEC 220.42	=		0.00	kVA		Phase A:	14.76 kVA		
2 - Continuous (Lighting)	0.00	x		1.25	=		0.00	kVA		Phase B:	14.76 kVA		
3 - Non-Continuous	0.00	x		1.00	=		0.00	kVA		Phase C:	14.76 kVA		
4 - Motor	34.73	x		1.00	=		34.73	kVA		Total Demand Load			
5 - Largest Motor	9.55	x		1.25	=		11.93	kVA		46.66 kVA			
										129.50 Amps			
Notes:													
1. Exposed bussing. Provide breaker space cover.													
2. Re-use existing circuit breaker.													

Existing Panel:		AACB																	
Location:		Building "A" Exterior						Volts: 120/208Y				Mainss:		MLO (225A OCP)					
Supply From:		MSB						Phases: 3				Bus Rating:		225A					
Mounting:		Surface						Wires: 4				A/C Rating:		EXISTING					
Load Description		Load (VA)	Load Type	Phase	Circuit Breaker Amp	Pole	#	Ckt #	Circuit Amps	Breaker Poles	Phase	Load Type	Load (VA)	Load Description					
(E) RCPT - ROOF		360	1	A	20	1	1	2	40	3	A	4	3482	(N) AC-4A [1]					
(E) SPACE				B	PFB	1	3	4	-	-	B	4	3482	-					
(E) RCPT - ROOF		360	1	C	20	1	5	6	-	-	C	4	3482	-					
(N) AC-2A [1]		5044	5	A	60	3	7	8	40	3	A	4	3482	(N) AC-5A [1]					
-		5044	5	B	-	-	9	10	-	-	B	4	3482	-					
-		5044	5	C	-	-	11	12	-	-	C	4	3482	-					
(N) AC-3A [1]		5044	4	A	60	3	13	14	40	3	A	4	3482	(N) AC-6A [1]					
-		5044	4	B	-	-	15	16	-	-	B	4	3482	-					
-		5044	4	C	-	-	17	18	-	-	C	4	3482	-					
(E) SPACE				A	PFB	1	19	20	PFB	1	A			(E) SPACE					
(E) SPACE				B	PFB	1	21	22	PFB	1	B			(E) SPACE					
(E) SPACE				C	PFB	1	23	24	PFB	1	C			(E) SPACE					
(E) SPACE				A	PFB	1	25	26	50	3	A			(E) SPARE					
(E) SPACE				B	PFB	1	27	28	-	-	B			-					
(E) SPACE				C	PFB	1	29	30	-	-	C			-					
(E) SPACE				A	PFB	1	31	32	50	3	A			(E) SPARE					
(E) SPACE				B	PFB	1	33	34	-	-	B			-					
(E) SPACE				C	PFB	1	35	36	-	-	C			-					
(E) SPACE				A	PFB	1	37	-	-	-				UNUSABLE SPACE					
(E) SPACE				B	PFB	1	39	-	-	-				UNUSABLE SPACE					
(E) SPACE				C	PFB	1	41	-	-	-				UNUSABLE SPACE					
Load Type	Connected Load (kVA)	Demand Multiplier						Demand Load				Connected Load kVA/Phase							
1 - Receptacles	0.72 x	CEC 220.42 =						0.72 kVA				Phase A: 20.89 kVA							
2 - Continuous (Lighting)	0.00 x	1.25 =						0.00 kVA				Phase B: 20.53 kVA							
3 - Non-Continuous	0.00 x	1.00 =						0.00 kVA				Phase C: 20.89 kVA							
4 - Motor	46.47 x	1.00 =						46.47 kVA				Total Demand Load							
5 - Largest Motor	15.13 x	1.25 =						18.92 kVA				66.11 kVA 183.47 Amps							
Notes:																			
1. Re-use existing circuit breaker.																			





DSA 02-118996



SEAL:

LODI UNIFIED SCHOOL DISTRICT
 WOODBRIDGE ELEMENTARY
 HVAC REPLACEMENT
 1290 LILAC STREET
 LODI, CA. 95242



SHEET TITLE:

PARTIAL ONE-LINE
 POWER DIAGRAM
 AND PANEL
 SCHEDULES -
 PORTABLES

NO. REVISIONS DATE

SHEET NUMBER:

E4.02

Project Engineer: NB Job Number: 2090
 Project Manager: NS Proj Date: Jun 15, 2021 2:28pm
 Project Draftsman: NS Login: rbar

Existing Panel:		Portable 19											
Location:		Portable 19		Volts:		120/240		Mains:		100A			
Supply From:		Panel DP		Phases:		1		Bus Rating:		125A			
Mounting:		Surface		Wires:		3		A/C Rating:		10,000A			
Load Description		Load (VA)	Load Type	Phase	Circuit Breaker Amp	Pole	Ckt #	Circuit Breaker Amps	Poles	Phase	Load Type	Load (VA)	Load Description
(E) RCPT		1080	1	A	20	1	1	2	90	2	A	4	8544 (N) HP-19 [1]
(E) LTS		960	2	B	20	1	3	4	-	-	B	4	8544 -
(E) LTS		1060	2	A	20	1	7	8	60	2	A	4	0 (R) BREAKER
(E) PROJECTOR		500	1	B	20	1	9	10	-	-	B	0	0 -
(N) RCPT - GFCI [2]		180	1	A	20	1	13	14	PFB	1	A	0	(E) SPACE
(E) SPACE				B	20	1	15	16	PFB	1	B	0	(E) SPACE
Load Type		Connected Load (kVA)		Demand Multiplier		Demand Load		Connected Load kVA/Phase					
1 - Receptacles		1.76	x	CEC 220.44		=	1.76 kVA	Phase A:		10.86 kVA			
2 - Continuous (Lighting)		2.02	x	1.25		=	2.53 kVA	Phase B:		10.00 kVA			
3 - Non-Continuous		0.00	x	1.00		=	0.00 kVA						
4 - HVAC		17.09	x	1.00		=	17.09 kVA						
												Total Demand Load	
												21.37 kVA	
												89.05 Amps	
Notes:													
1. Remove existing circuit breaker and provide new matching existing hardware with trip ratings shown.													
2. Provide new circuit breaker with trip rating shown matching existing hardware.													

Existing Panel:		Portable 20											
Location:		Portable 20		Volts:		120/240		Mains:		100A			
Supply From:		Panel DP		Phases:		1		Bus Rating:		125A			
Mounting:		Surface		Wires:		3		A/C Rating:		10,000A			
Load Description	Load (VA)	Load Type	Phase	Circuit Breaker Amp	Pole	Ckt #	Ckt #	Circuit Breaker Poles	Phase	Load Type	Load (VA)	Load Description	
(E) LTS	960	2	A	20	1	1A	2	90	2	A	4	(N) HP-20 [1]	
(E) PROJECTOR	500	1	A	20	1	1B	4	-	-	B	4		8544
(E) LTS	1060	2	B	20	1	3	4	-	-	B	4	8544	-
(E) CLOCK	360	1	A	20	1	5A	6	125	2	A		(E) MAIN BREAKER	
(E) RCPT	720	1	A	20	1	5B	8	-	-	B		-	
(E) RCPT	720	1	B	20	20	7A							
(E) RCPT	720	1	B	20	1	7B							
Load Type	Connected Load (kVA)	Demand Multiplier				Demand Load		Connected Load kVA/Phase					
1 - Receptacles	3.02	x		CEC 220.44	=		3.02	kVA		Phase A:	11.08 kVA		
2 - Continuous (Lighting)	2.02	x		1.25	=		2.53	kVA		Phase B:	11.04 kVA		
3 - Non-Continuous	0.00	x		1.00	=		0.00	kVA					
4 - HVAC	17.09	x		1.00	=		17.09	kVA					
										Total Demand Load			
										22.63 kVA			
										94.30 Amps			
Notes:													
1. Remove existing circuit breaker and provide new matching existing hardware with trip ratings shown.													

Existing Panel:			Portable 21												
Location:			Portable 21			Volts:			120/240		Mains:			100A	
Supply From:			Panel DP			Phases:			1		Bus Rating:			125A	
Mounting:			Surface			Wires:			3		A/C Rating:			10,000A	
Load Description		Load (VA)	Load Type	Phase	Circuit Breaker Amp	Pole	Ckt #	Ckt #	Circuit Breaker Amps	Poles	Phase	Load Type	Load (VA)	Load Description	
(E) LTS		960	2	A	20	1	1	2	90	2	A	4	8544	(N) HP-21 [1]	
(E) LTS		1060	2	B	20	1	3	4	-	-	B	4	8544	-	
(E) RCPT		1080	1	A	20	1	5	6	125	2	A			(E) MAIN BREAKER	
(E) PROJECTOR		500	1	B	20	20	7A	8	-	-	B			-	
(E) PROJECTOR		500	1	B	20	1	7B								
Load Type	Connected Load (kVA)	Demand Multiplier				Demand Load				Connected Load kVA/Phase					
1 - Receptacles	2.08	x			CEC 220.44	=		2.08	kVA				Phase A:	10.58 kVA	
2 - Continuous (Lighting)	2.02	x			1.25	=		2.53	kVA				Phase B:	10.60 kVA	
3 - Non-Continuous	0.00	x			1.00	=		0.00	kVA						
4 - HVAC	17.09	x			1.00	=		17.09	kVA						
													Total Demand Load		
													21.69 kVA		
													90.39 Amps		
Notes:															
1. Remove existing circuit breaker and provide new matching existing hardware with trip ratings shown.															

Existing Panel:			Portable 22													
Location:			Portable 22		Volts:		120/208Y		Mains:		100A					
Supply From:			Panel DP		Phases:		1		Bus Rating:		125A					
Mounting:			Surface		Wires:		3		A/C Rating:		10,000A					
Load Description			Load (VA)		Load Type	Phase	Circuit Breaker Amps	Pole	Ckt #	Circuit Breaker Amps	Poles	Phase	Load Type	Load (VA)	Load Description	
(E) MAIN						A	100	2	1	2	90	2	A	4	8544	(N) HP-22 [1]
						B	-	-	3	4	-	-	B	4	8544	-
(E) RCPT - WALL			1080	1	A	20	1	5	6	20	1	A	2	1060	(E) LIGHTS	
(E) RCPT - CLOCK & TIMER			360	1	B	20	1	7	8	20	1	B	2	960	(E) LIGHTS	
(N) RCPT - GFCI [2]			180	1	A	20	1	9	10	20	1	A	1	500	(E) RCPT - PROJECTOR	
(E) SPACE					B	PFB	1	13	12	PFB	1	B			(E) SPACE	
(E) SPACE					A	PFB	1	15	14	PFB	1	A			(E) SPACE	
(E) SPACE					B	PFB	1	17	16	PFB	1	B			(E) SPACE	
Load Type		Connected Load (kVA)		Demand Multiplier		Demand Load		Connected Load kVA/Phase								
1 - Receptacles		2.12	x	CEC 220.44		=	2.12 kVA	Phase A:		11.36 kVA						
2 - Continuous (Lighting)		2.02	x	1.25		=	2.53 kVA	Phase B:		9.86 kVA						
3 - Non-Continuous		0.00	x	1.00		=	0.00 kVA									
4 - HVAC		17.09	x	1.00		=	17.09 kVA									
										Total Demand Load						
										21.73 kVA						
										90.55 Amps						
Notes:																
1. Remove existing circuit breaker and provide new matcing existing hardware with trip ratings shown.																
2. Provide new circuit breaker with trip rating shown matching existing hardware.																

Existing Panel:			Portable 23										
Location:		Portable 23		Volts:		120/208Y		Mains:		100A			
Supply From:		Panel DP		Phases:		1		Bus Rating:		125A			
Mounting:		Surface		Wires:		3		A/C Rating:		10,000A			
Load Description		Load (VA)	Load Type	Phase	Circuit Breaker Amp	Pole	Ckt #	Circuit Breaker Amps	Poles	Phase	Load Type	Load (VA)	Load Description
(E) MAIN				A	100	2	1	2	90	2	A	4	8544 (N) HP-23 [1]
				B	-	-	3	4	-	-	B	4	8544 -
(E) RCPT - WALL	1080	1	A	20	1	5	6	20	1	A	2	1060	(E) LIGHTS
(E) RCPT - CLOCK & TIMER	360	1	B	20	1	7	8	20	1	B	2	960	(E) LIGHTS
(N) RCPT - GFCI [2]	180	1	A	20	1	9	10	20	1	A	1	500	(E) RCPT - PROJECTOR
(E) SPACE			B	PFB	1	13	12	PFB	1	B			(E) SPACE
(E) SPACE			A	PFB	1	15	14	PFB	1	A			(E) SPACE
(E) SPACE			B	PFB	1	17	16	PFB	1	B			(E) SPACE
Load Type	Connected Load (kVA)	Demand Multiplier		Demand Load		Connected Load kVA/Phase							
1 - Receptacles	2.12	x		CEC 220.44	=	2.12	kVA	Phase A:	11.36 kVA				
2 - Continuous (Lighting)	2.02	x		1.25	=	2.53	kVA	Phase B:	9.86 kVA				
3 - Non-Continuous	0.00	x		1.00	=	0.00	kVA						
4 - HVAC	17.09	x		1.00	=	17.09	kVA						



LIFE SAFETY & INCIDENT MANAGEMENT

Control Relay Modules

SIGA-CR, SIGA-MCR, SIGA-CRR, SIGA-MCRR



Overview

The Control Relay Module and the Polarity Reversal Relay Module are part of the Signature Series system. They are intelligent analog addressable devices available in either plug-in (UIO) versions, or standard 1-gang mount versions.

The **SIGA-CR/MCR** Control Relay Module provides a Form "C" dry relay contact to control external appliances such as door closers, fans, dampers etc. This device does not provide supervision of the state of the relay contact. Instead, the on-board microprocessor ensures that the relay is in the proper ON/OFF state. Upon command from the loop controller, the SIGA-CR/MCR relay activates the normally open or normally-closed contact.

The **SIGA-CRR/MCRR** Polarity Reversal Relay Module provides a Form "C" dry relay contact to power and activate a series of SIGA-AB4G Audible Sounder Bases. Upon command from the Signature loop controller, the SIGA-CRR reverses the polarity of its 24 Vdc output, thus activating all Sounder Bases on the data loop.

Standard-mount versions (SIGA-CR and SIGA-CRR) are installed to standard North American 1-gang electrical boxes, making them ideal for locations where only one module is required. Separate I/O and data loop connections are made to each module.

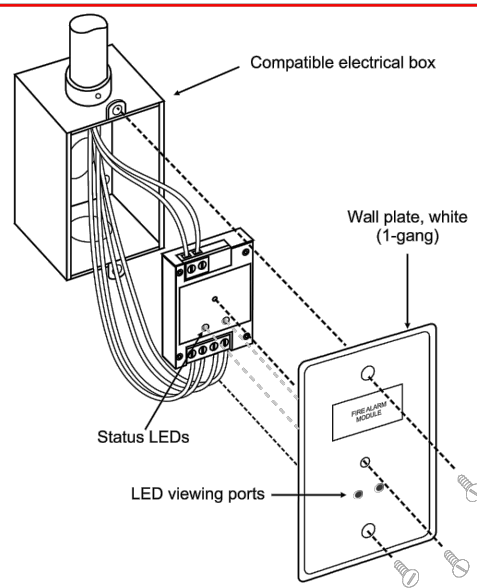
Plug-in UIO versions (SIGA-MCR and SIGA-MCRR) are part of the UIO family of plug-in Signature Series modules. They function identically to the standard mount versions, but take advantage of the modular flexibility and easy installation that characterizes all UIO modules. Two- and six-module UIO motherboards are available. All wiring connections are made to terminal blocks on the motherboard. UIO assemblies may be mounted in EDWARDS enclosures.

Standard Features

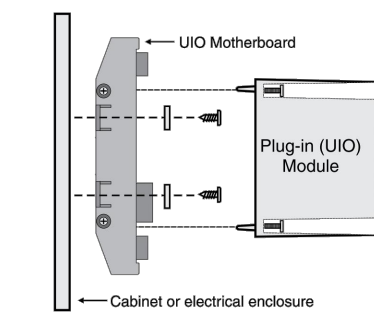
- Provides one no/nc contact (SIGA-CR/MCR)**
Form "C" dry relay contact can be used to control external appliances such as door closers, fans, dampers etc.
- Allows group operation of sounder bases**
The SIGA-CRR/MCRR reverses the polarity of its 24 Vdc output, thus activating all Sounder Bases on the data loop.
- Plug-in (UIO) or standard 1-gang mount**
UIO versions allow quick installation where multiple modules are required. The 1-gang mount version is ideal for remote locations that require a single module.
- Automatic device mapping**
Signature modules transmit information to the loop controller regarding their circuit locations with respect to other Signature devices on the wire loop.
- Electronic addressing**
Programmable addresses are downloaded from the loop controller, a PC, or the SIGA-PRO Signature Program/Service Tool; there are no switches or dials to set.
- Intelligent device with microprocessor**
All decisions are made at the module to allow lower communication speed with substantially improved control panel response time and less sensitivity to line noise and loop wiring properties; twisted or stranded wire is not required.

Installation

SIGA-CR and SIGA-CRR: modules mount to North American 2 1/2 inch (64 mm) deep 1-gang boxes and 1 1/2 inch (38 mm) deep 4 inch square boxes with 1-gang covers and SIGA-MP mounting plates. The terminals are suited for #12 to #18 AWG (2.5 mm² to 0.75 mm²) wire size.



SIGA-MCR and SIGA-MCRR: mount the UIO motherboard inside a suitable EDWARDS enclosure with screws and washers provided. Plug the module into any available position on the motherboard and secure the module to the motherboard with the captive screws. Wiring connections are made to the terminals on the motherboard (see wiring diagram). UIO motherboard terminals are suited for #12 to #18 AWG (2.5 mm² to 0.75 mm²) wire size.



Electronic Addressing - The loop controller electronically addresses each module, saving valuable time during system commissioning. Setting complicated switches or dials is not required. Each module has its own unique serial number stored in its on-board memory. The loop controller identifies each device on the loop and assigns a "soft" address to each serial number. If desired, the modules can be addressed using the SIGA-PRO Signature Program/Service Tool.

EDWARDS recommends that this module be installed according to latest recognized edition of national and local fire alarm codes.

Application

The operation of Signature Series control relays is determined by their sub-type code or "Personality Code".

- Personality Code 8: CONTROL RELAY (SIGA-CR/MCR)**
 - Dry Contact Output.** This setting configures the module to provide one Form "C" DRY RELAY CONTACT to control Door Closers, Fans, Dampers, etc. Contact rating is 2.0 amp @ 24 Vdc; 0.5 amp @ 120 Vac or 0.25A @ 220 Vac for non-UL applications. Personality Code 8 is assigned at the factory. No user configuration is required.
- Personality Code 8: POLARITY REVERSAL RELAY MODULE (SIGA-CRR/MCRR).** This setting configures the module to reverse the polarity of its 24 Vdc output. Contact rating is 2.0 amp @ 24 Vdc (pilot duty). Personality Code 8 is assigned at the factory. No user configuration is required.

Compatibility

These modules are part of EDWARDS's Signature Series intelligent processing and control platform. They are compatible with EST3, EST3X and iO Series control panels.

Warnings & Cautions

This module will not operate without electrical power. As fires frequently cause power interruption, we suggest you discuss further safeguards with your local fire protection specialist.

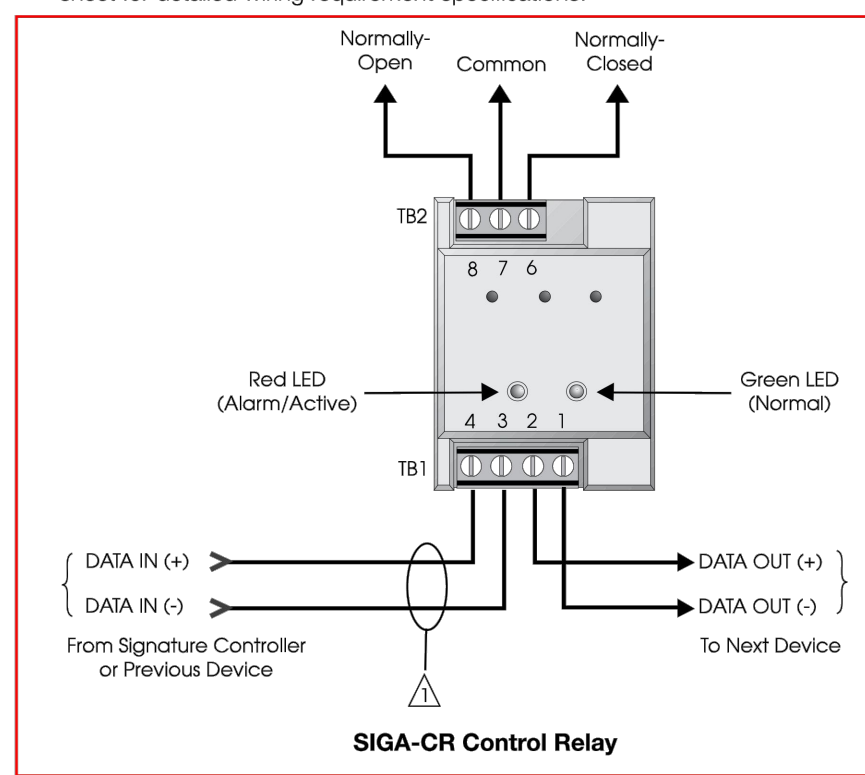
Testing & Maintenance

The module's automatic self-diagnosis identifies when it is defective and causes a trouble message. The user-friendly maintenance program shows the current state of each module and other pertinent messages. Single modules may be turned off (deactivated) temporarily, from the control panel. Availability of maintenance features is dependent on the fire alarm system used. Scheduled maintenance (Regular or Selected) for proper system operation should be planned to meet the requirements of the Authority Having Jurisdiction (AHJ). Refer to current NFPA 72 and UL/C CAN/ULC-538 standards.

Typical Wiring

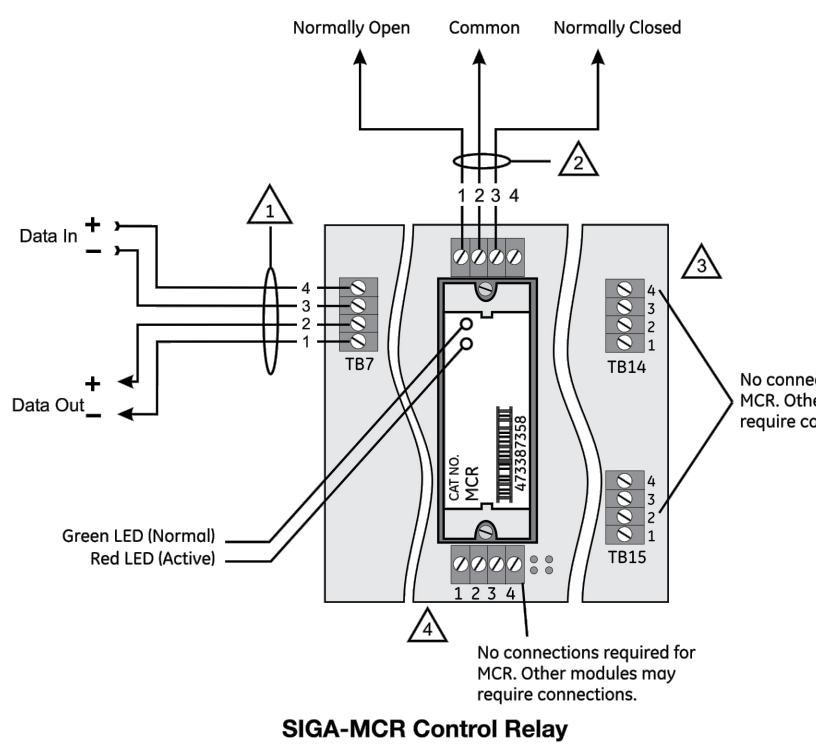
Modules will accept #18 AWG (0.75mm²), #16 (1.0mm²), #14 AWG (1.50mm²) and #12 AWG (2.5mm²) wire sizes.

Note: Sizes #16 AWG (1.0mm²) and #18 AWG (0.75mm²) are preferred for ease of installation. See Signature Loop Controller catalog sheet for detailed wiring requirement specifications.



Notes

- Refer to Signature Loop Controller Installation Sheet for wiring specifications.
- NFPA 72 requires that the SIGA-CR/SIGA-MCR be installed in the same room as the device it is controlling. This requirement may not apply in all markets. Check with your local AHJ for details.
- The SIGA-UIOR and the SIGA-UIOR2 do not come with TB14.
- The SIGA-UIOR6 does not come with TB8 through TB13.
- Supervised and power-limited.
- If the source is nonpower-limited, maintain a space of 1/4 inch from power-limited wiring or use FPL, FPLR, FPLR, or an equivalent in accordance with the National Electrical Code.
- Maximum #12 AWG (2.5mm²) wire. Min. #18 (0.75mm²).

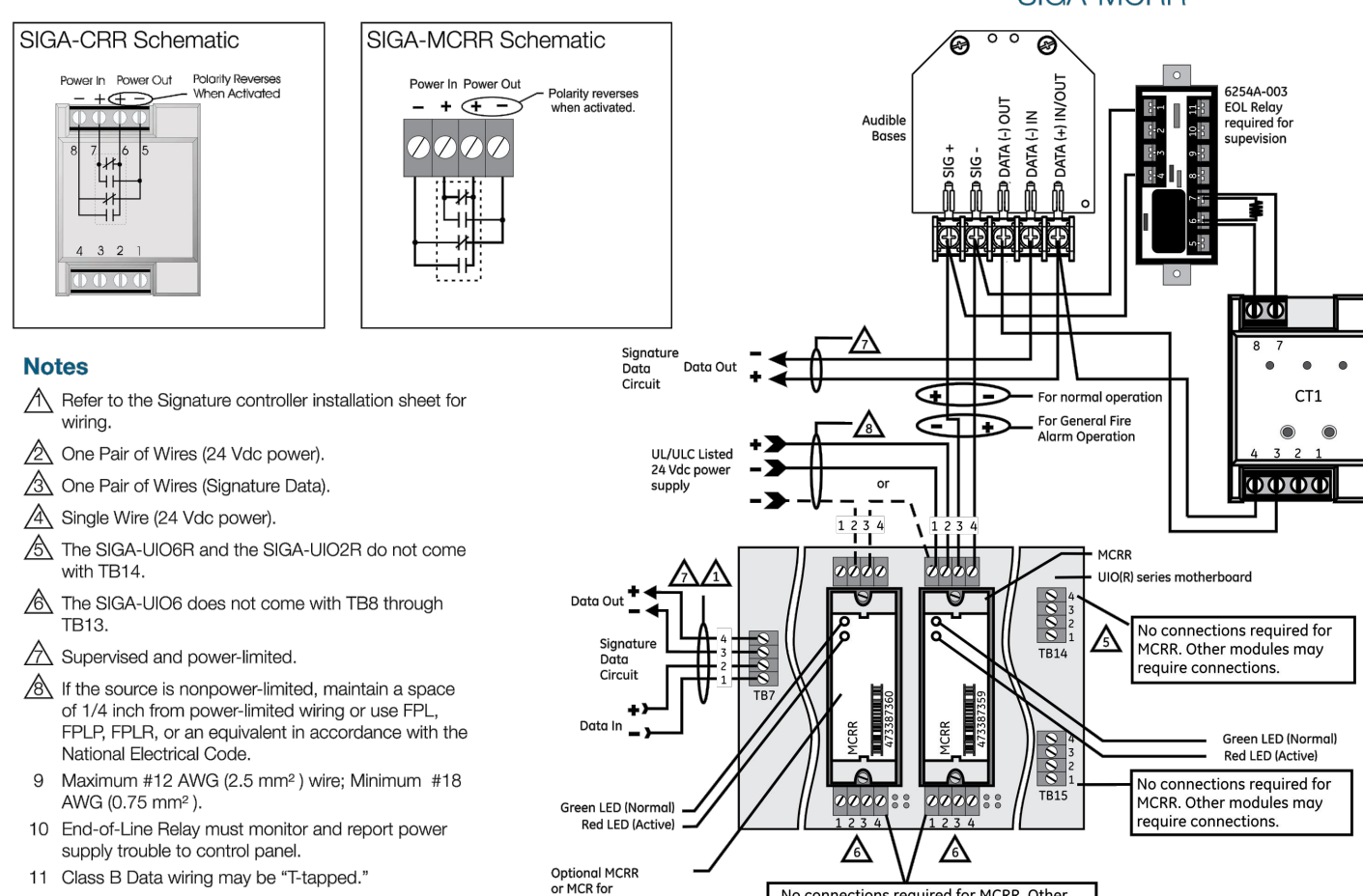
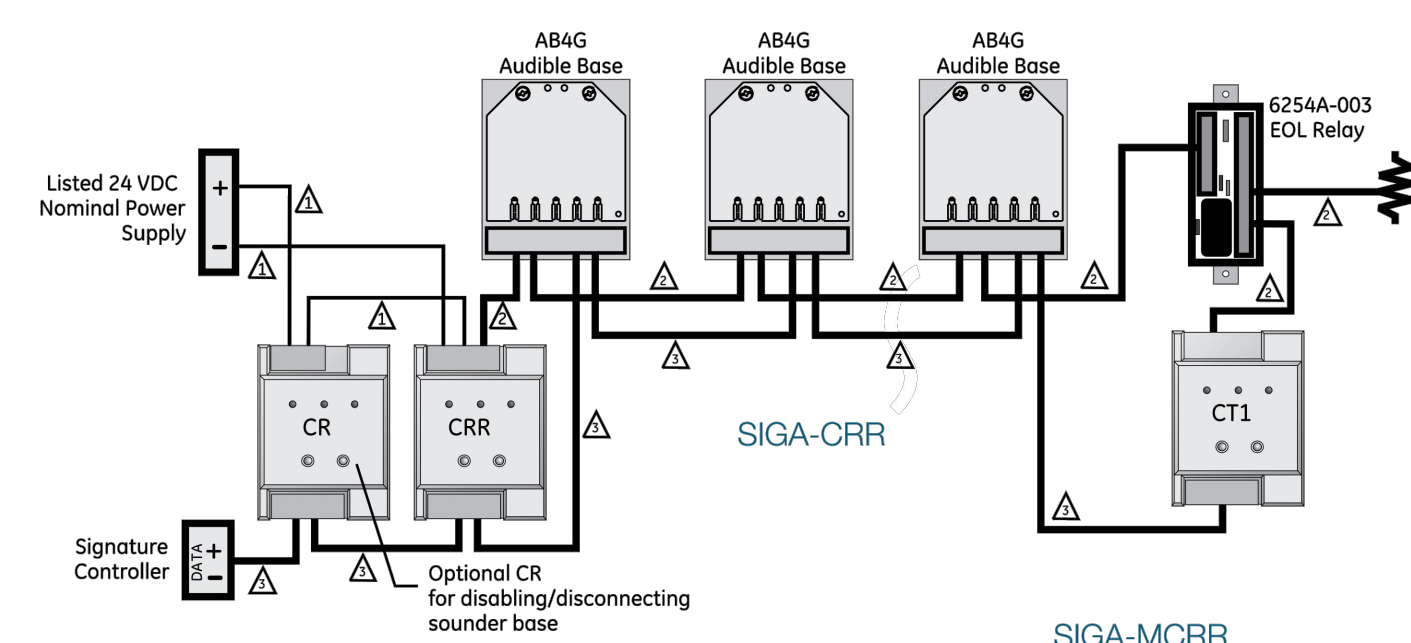


SIGA-MCR Control Relay

Typical Wiring

Modules will accept #18 AWG (0.75mm²), #16 (1.0mm²), #14 AWG (1.50mm²) and #12 AWG (2.5mm²) wire sizes.

Note: Sizes #16 AWG (1.0mm²) and #18 AWG (0.75mm²) are preferred for ease of installation. See Signature Loop Controller catalog sheet for detailed wiring requirement specifications.



Notes

- Refer to the Signature controller installation sheet for wiring.
- One Pair of Wires (24 Vdc power).
- One Pair of Wires (Signature Data).
- Single Wire (24 Vdc power).
- The SIGA-UIOR and the SIGA-UIOR2 do not come with TB14.
- The SIGA-UIOR6 does not come with TB8 through TB13.
- Supervised and power-limited.
- If the source is nonpower-limited, maintain a space of 1/4 inch from power-limited wiring or use FPL, FPLR, FPLR, or an equivalent in accordance with the National Electrical Code.
- Maximum #12 AWG (2.5 mm²) wire; Minimum #18 AWG (0.75 mm²).
- End-of-Line Relay must monitor and report power supply trouble to control panel.
- Class B Data wiring may be "T-tapped."

Page 1 of 6

DATA SHEET E85001-0239
Not to be used for installation purposes. Issue 1.1

Page 2 of 6

DATA SHEET E85001-0239
Not to be used for installation purposes. Issue 1.1

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DATA SHEET E85001-0239
Not to be used for installation purposes. Issue 1.1

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DATA SHEET E85001-0239
Not to be used for installation purposes. Issue 1.1

Specifications

Catalog Number	SIGA-CR	SIGA-MCR	SIGA-CRR	SIGA-MCRR
Description	Control Relay		Polarity Reversal Relay	
Type Code	Personality Code 8 (Factory Set)		Personality Code 8 (Factory Set)	
Address Requirements		Uses 1 Module Address		
Operating Current		Standby = 75 μ A 15.2 to 19.95 Vdc (10 Vdc nominal)		
Operating Voltage		15.2 to 19.95 Vdc (10 Vdc nominal)		
Relay Type and Rating	Form C, 2 Amps @ 24 Vdc (pilot duty), 0.5 Amps @ 120 Vac and 0.25 Amps @ 220 Vac (220 Vac is non-UL) Not rated for capacitive loads.			
Mounting	North American 2 1/2 inch (64 mm) deep 1-gang boxes and 1 1/2 inch (38 mm) deep 4 inch square boxes with 1-gang covers and SIGA-MP mounting plates	Plugs into UIOR, UIOR2 or UIOR6 Motherboards	North American 2 1/2 inch (64 mm) deep 1-gang boxes and 1 1/2 inch (38 mm) deep 4 inch square boxes with 1-gang covers and SIGA-MP mounting plates	Plugs into UIOR2, UIOR2R or UIOR6 Motherboards
Construction & Finish		High Impact Engineering Polymer		
Storage and Operating Environment		Operating Temperature: 32°F to 120°F (0°C to 49°C) Storage Temperature: -4°F to 140°F (-20°C to 60°C) Humidity: 0 to 95% RH		
LED Operation	On-board Green LED - Flashes when polled On-board Red LED - Flashes when in alarm/active			
Compatibility	Use With: Signature Loop Controller			
Agency Listings	UL, UL/C, CSFM, MEA			

Ordering Information

Catalog Number	Description	Ship Weight - lbs (kg)
SIGA-CR	Control Relay Module (Standard Mount)	0.4 (0.15)
SIGA-MCR	Control Relay Module (UIO Mount)	0.18 (0.08)
SIGA-CRR	Polarity Reversal Relay Module (Standard Mount)	0.4 (0.15)
SIGA-MCRR	Polarity Reversal Relay Module (UIO Mount)	0.18 (0.08)
Related Equipment		
Z7193-11	Surface Mount Box - Red, 1-gang	1 (0.6)
Z7193-16	Surface Mount Box - White, 1-gang	1 (0.6)
SIGA-UIOR2	Universal Input-Output Module Board w/Flser Inputs - Two Module Positions	0.22 (0.13)
SIGA-UIOR4	Universal Input-Output Module Board w/Flser Inputs - Six Module Positions	0.62 (0.28)
SIGA-UIOR6	Universal Input-Output Module Board - Six Module Positions	0.56 (0.25)
SIGA-AB4G	Audible (Sounder) Detector Base	0.3 (0.15)
Accessories		
MFC-A	Multifunction Fire Cabinet - Red, supports Signature Module Mounting Plates	7.0 (3.1)
SIGA-MB4	Transponder Mounting Bracket (allows for mounting two 1-gang modules in a 2-gang box)	0.4 (0.15)
SIGA-MP1	Signature Module Mounting Plate, 1 footprint	1.5 (0.70)
SIGA-MP2	Signature Module Mounting Plate, 1/2 footprint	0.5 (0.23)
SIGA-MP2L	Signature Module Mounting Plate, 1/2 extended footprint	1.02 (0.46)

Page 5 of 6

DATA SHEET E85001-0239
Not to be used for installation purposes. Issue 1.1

Page 6 of 6

DATA SHEET E85001-0239
Not to be used for installation purposes. Issue 1.1

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION OFFICE OF THE STATE FIRE MARSHAL FIRE ENGINEERING - BUILDING MATERIALS LISTING PROGRAM LISTING SERVICE



LISTING No. 7300-1857-0121
CATEGORY: 7300 - FIRE ALARM CONTROL UNIT ACCESSORIES/MISC. DEVICES

Page 1 of 1

LISTE: EDWARDS, A Division of UTC Fire & Security Americas Corporation, Inc. 8885 Town Center Parkway, Bradenton, FL 34202 United States
Contact: Jewell Conover (941) 739-4358 Fax (941) 308-8123
Email: rhonda.mccohen@carrier.com

DESIGN: Models SIGA-CC1, SIGA-CC2, SIGA-CT1, SIGA-CTHT, SIGA-CTZ, SIGA-CR, SIGA-IM, SIGA-MM1, SIGA-WTM, SIGA-IM, SIGA-MM2, SIGA-MDM, SIGA-MB, SIGA-MCT2, SIGA-MCC1, SIGA-MCC2, SIGA-MCR, and SIGA-MCRR Remote Transponders. Models SIGA-AA30 and SIGA-AA50 audio amplifiers. Models SIGA-APS and SIGA-APS-220 power supplies. Models SIGA-MB4, SIGA-MP1, SIGA-MP2 and SIGA-MP2L mounting plates. Models SIGA-UIOR2, SIGA-UIOR6 and SIGA-UIOR6R motherboards. Model CS-SIGA-CC1P releasing module. Models SIGA-CC1S and SIGA-MCC1S Auto-Sync Output Modules. Models MFC-A and MFC-AD Enclosures. Model SIGA-CR2 Control Relay Module. Model SIGA-CTHT Signature Series High Temperature Single Input Module. SIGA-CRH High Power Control Relay Module.

Refer to listee's data sheet for additional detailed product description and operational consideration.

RATING: 15.2 - 19.95 VDC

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes and ordinances, and in a manner acceptable to the authority having jurisdiction.

MARKING: Listee's name, model number, electrical rating, and UL label.

APPROVAL: Listed as control unit accessories for use with separately listed compatible fire alarm control units. Refer to listee's Installation Instruction Manual for details.

NOTE: Formerly 7300-1591:121 and 7300-1388:178

*Revision 10-30-20 VWW



This listing is based upon technical data submitted by the applicant. CSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other

Date Issued: **July 01, 2020** Listing Expires **June 30, 2021**

Authorized By: **DAVID CASTILLO, M.E., F.P.E.**
Fire Engineering Division

AGENCY APPROVAL:

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT	
APP: 02-118996 INC:	
REVIEWED FOR	
SS <input checked="" type="checkbox"/>	FLS <input checked="" type="checkbox"/>
DATE: 06/16/2021	

DSA 02-118996

TURLEY MECHANICAL ENGINEERING GROUP, INC.
2431 Capitol Avenue
Sacramento, CA 95816
(916) 325-1085
FAX (916) 325-1075
Email: office@turleymech.com



SEAL:

**LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT**
1290 LILAC STREET
LODI, CA. 95242



Whittington Electric Inc.
1940 Industrial Drive • Auburn, CA 95603
Office (530) 825-3055 • Fax (530) 823-3886
Project #: 421-003

SHEET TITLE:

**FIRE ALARM
CUTSHEETS AND
CSFM LISTINGS**

NO. REVISIONS DATE

SHEET NUMBER:

E5.01

Project Engineer:	NB	Job Number:	2090
Project Manager:	NB	Proj Date:	Jun 15, 2021 - 2:25pm
Project Draftsman:	NB	Sign:	nbw

PART 1 - GENERAL

1.01 SUMMARY

- A. The intent of Division 26, Specifications and Drawings is to provide a complete and workable facility with complete systems as shown, specified and required by applicable codes. Include all work specified in these Specifications and shown on the Drawings.
- B. The Division 26 Specifications and Drawings are complementary; what is called for by one is binding, as if called for by both. Items shown on the Drawings are not necessarily included in the Specifications and vice versa.
- C. Use the more stringent requirement when specified materials or methods exceed the applicable code standards.
- D. The Drawings that accompany the Division 26 Specifications are diagrammatic. They do not show every offset, bend, conduit body, elbow or junction box that may be required to install work in the space provided and avoid conflicts. Follow the Drawing as closely as is practical and install additional bends, offsets and elbows where needed by local job site conditions. Provide necessary junction boxes to meet code regulations for the allowed number of conduit bends. The right is reserved to make minor field order changes within 12 inches in outlet location prior to pre-fabrication/roughing-in without additional cost to the owner.

1.02 APPLICABLE CODES

- A. Publications and standards listed below form a part of this specification to the extent referenced. The publications and standards are referred to in the text by basic designation only.
- 2019 California Building Code - Part 2, Title 24, CCR
 - 2019 California Electrical Code - Part 3, Title 24, CCR
 - 2019 California Mechanical Code - Part 4, Title 24, CCR
 - 2019 California Fire Code - Part 9, Title 24, CCR
 - National Fire Protection Association (NFPA).
 - Occupational Health and Safety Act (OSHA).
 - Division of the State Architect (DSA) regulations.
 - All applicable State and Local codes and regulations.

1.03 QUALITY ASSURANCE

- A. Nothing in the Contract Documents shall be construed to permit Work not conforming to applicable codes, laws, ordinances, rules or regulations.
- B. Provide materials and apparatus that comply with NEC, NEMA and ANSI standards.
- C. Provide materials and apparatus that bear the UL label where such label is applicable or nationally recognized testing agency approved by the authority having jurisdiction.

1.04 SITE EXAMINATION

- A. Examine the site prior to bidding and become familiar with existing conditions and other factors which may affect the execution of work. Include all related costs in the initial bid proposal.

1.05 GUARANTEE

- A. Provide one year guarantee for installed project materials and equipment unless otherwise indicated in other Division 26 Sections. Guarantee period effective from time of work acceptance.
- Lamps excluded from one year guarantee.

1.06 RECORD DRAWINGS

- A. Provide record Drawings that fully represent installed conditions including actual location of outlets, true panel board connections following phase balancing routines, correct conduit and wire sizing as well as routing for feeder and branch homeruns, diagrammatic branch circuit wiring, revised fixture schedule listing actual manufacturer and products installed, and revised panel board schedules.
- B. Maintain up to date record set of electrical prints during the course of construction. The prints re subject to monthly review by the owner's representative to ascertain that they are current. If not current, monthly payments may be withheld.

1.07 SUBSTITUTIONS

- A. Products or systems listed as "no substitutions": Provide as specified.
- B. Products or systems noted as "or equivalent": A product or system of equivalent design, construction and performance will be considered. Submit all pertinent data and product information for review. Provide the specified products or systems if proposed equivalent is found unacceptable.

1.08 EQUIPMENT SUPPORT

- A. Perform necessary equipment seismic anchorage in compliance with the California Building Code Title 24, Uniform Building Code and requirements of any local agency having jurisdiction. Support shall be per manufacturer's recommendation for Seismic zone 4.
- B. For instances where a pre-approved seismic support detail cannot be used because of field conditions, submit details and calculations signed and stamped by a registered structural engineer in the State of California for approval by the authority having jurisdiction.
- C. Once the exact location of all pipes have been established, detailed shop drawings showing the location of all seismic supports, braces, and anchors shall be submitted to the Structural Engineer of Record to verify adequacy of the supporting structure to ensure that the original design is still adequate.

1.09 COORDINATION OF WORK

- A. Conduct work in a manner to cooperate with all other trades for proper installation of all items of equipment. Consult the Drawings of all other trades or crafts to avoid conflicts with cabinets, counters, equipment, structural members, in general, the architectural drawings govern but resolve conflicts with the Architect prior to rough-in.
- B. Verify the physical dimension of each item of electrical equipment to fit the available space. The Contractor is responsible for coordinating electrical equipment space requirements with the allotted space provisions, and access routes through the construction area.
- C. Coordinate rough-in and wiring requirements for all equipment provided by other trades requiring electrical connections. Make installation in accordance with rough-in and wiring diagrams provided for Contractor's use.
- D. Coordinate underground work with other contractors working on the site. Perform coordination with contractors installing storm sewer, sanitary sewer, water and irrigation lines, to avoid conflicts. Common trenches may be used with other trades, providing clearances required by codes and ordinances are maintained. To the extent possible, locate electrical conduits and duct banks aside from plumbing and hydronic piping in common trench.

1.10 PROTECTION OF WORK

- A. Protect all electrical work and equipment installed under this Division against damage by other trades, weather conditions or any other causes. Equipment found damaged or in other than new condition will be rejected as defective.
- B. Keep, luminaires and all electrical equipment covered or closed to exclude dust, dirt and splashes of plaster cement or paint and shall be free of all such contamination before acceptance. Keep enclosures and trims in new condition, free of rust, scratches and other finish defects. If damaged, properly refinish and repaint in a manner acceptable to the Architect.

1.11 DEMOLITION

- A. Disconnect, remove or relocate electrical material, equipment and other work noted and required by removal or changes in existing construction.
- B. Provide new material and equipment required for relocated equipment.
- C. Disconnect load and line end of conductors feeding existing equipment.
- D. Remove conductors from existing raceways to be rewired.
- E. Remove conductors and cap outlets on raceways to be abandoned.
- F. Cut and cap abandoned floor raceways flush with concrete floor or behind walls and ceilings.
- G. Remove conductors back to nearest power source; junction box or panel board.
- H. Provide new type written panel board directories.
- I. Dispose of removed raceways and wire.
- J. Turn over removed electrical equipment to Owner as directed. Dispose of unwanted equipment and accessories.

1.12 INSTALLATION

- A. Provide a complete properly operating system for each item of equipment called for under this work. Installation in accordance to equipment manufacturer's instructions, the best industry practices and the contract documents.
- B. Make installation in a neat, finished and safe manner, according to the latest published NECA Standard of Installation under competent supervision.
- C. Verify all dimensions by field measurements.
- D. Coordinate the installation of required supporting devices and sleeves to be set in poured-in place concrete and other structural components as they are constructed.
- E. Install systems, materials, and equipment to comply with approved submittal data, including coordination drawings, to greatest extent possible. Comply with arrangements indicated by the Contract Documents, recognizing that portions of the work are shown only in diagrammatic form. Where coordination requirements conflict with individual system requirements refer conflict to the Architect.
- F. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components, where installed exposed in finished spaces.
- G. Coordinate electrical systems, equipment, and materials installations with other building components.
- H. Install new work and connect to existing work with minimum interference to existing facilities.
- I. Connect new work to existing work in neat and acceptable manner.

- J. Restore existing disturbed work to original condition including maintenance of wiring and continuity as required.

PART 2 - PRODUCTS

2.01 CONDUIT

- A. ELECTRICAL METALLIC TUBING (EMT):
- ANSI C80.3; rolled steel tubing.
 - Fittings: ANSI/NEMA FB 1 steel set screw type, insulated throat connectors.
 - Maximum size 2".
- B. Liquid-tight flexible metal conduit:
- Interlocked steel construction with PVC jacket.
 - Fittings: ANSI/NEMA FB 1, all steel fittings. Provide insulated throat connectors.
 - Maximum length 18 inches, allow slack to allow movement of connected equipment.
- C. RIGID METAL CONDUIT (RMC):
- ANSI C80.1; rolled steel tubing.
 - Fittings: ANSI/NEMA FB 1; Threaded fittings, Galvanized.
 - Conduit Bodies: ANSI/NEMA FB 1; steel or malleable iron.
 - Minimum Size: 3/4".

2.02 SUPPORT DEVICES

- A. CONDUIT SUPPORTS:
- Dry Location: Galvanized steel straps and hangers, OZ/Gedney, T&B, Mineralac or equivalent.
- C. ANCHORS:
- Solid Masonry: Zinc plated carbon steel expasion anchors, Hilti Kwik Bolt series or equivalent.
 - Hollow Masonry: Plated steel screw expansion anchor, Molly Bolt or equivalent.
 - Concrete surface: Self drilling anchors, or powder driven studs.
 - Metal surface: Machine screws, bolts, or welded studs.
 - Wood surface: Wood screws, lag bolts.

2.03 WIRE AND CABLE

- A. Wire Color:
- 208Y/120V, 3 Phase, 4 wire system:
 - Phase A - Black
 - Phase B - Red
 - Phase C - Blue
 - Neutral - White
 - Ground - Green
- B. Copper conductors rated for 600 Volt and 90 Degree Celcius.
- C. THWN-2 Insulation.

2.04 WIRE CONNECTIONS

- A. Binding post terminal: For #10 AWG and smaller conductors, compression type, nylon, self-insulated grip spade lugs, 3M, T&B, Panduit or equivalent.
- B. Wire Splices: For #10 AWG and smaller conductors, twist on solderless, insulated spring connectors, 3M, T&B, or equivalent.

2.05 BOXES

- A. Standard Outlet Box:
- Galvanized, one-piece die formed or drawn steel, knock-out type of size and configuration best suited to the application or as per drawings.
 - For duplex receptacle, provide boxes not less than 4 inch square by 1-1/2 inch deep.
 - For quadplex receptacle, provide boxes not less than 4-11/16 inch square by 1-1/2 inch deep.
 - Telecommunication boxes: No less than 4-11/16 inch square by 2-1/8 inch deep.
 - ANSI/NEMA OS 1.
- 2.06 DISCONNECT SWITCHES
- A. Fusable Switches
- Heavy Duty, 600 VAC, UL 98 and NEMA KS 1, horsepower rated witch clips or bolt pads to accommodate specified fuses. Provide with lockable handle with capacity to accept three padlocks and defeatable interlock with cover in closed position.
 - 100% rated, quick make, quick break mechanism.
 - Manufacturer's: Cutler Hammer, General Electric, Square D or equal.
 - Dry locations: Nema 250, Type 1.
 - Wet locations: Nema 250, Type 3R.
 - Provide phenolic identification label matching Kaiser facility standards.

2.07 FUSES

- A. NEMA FU 1, current-limiting, time-delay, non-renewable cartridge fuses with voltage ratings consistent with circuit voltages and 200 kAIC.
- B. Up to 600 amps: Type RK-1.
- C. Over 600 amps: Type L.
- D. Coordinate fuse ratings with utilization equipment nameplate limitatins of maximum fuse size and with system short-circuit current levels.
- E. Manufacturers: Ferraz-Shawmut or equal.

PART 3 - EXECUTION

3.01 CONDUIT

- A. Install all wiring in conduit. Coordinate location of conduit with other divisions.
- B. ELECTRICAL METALLIC TUBING (EMT):
- Suitable in concealed dry areas or exposed areas above 8 feet only.
- D. Liquid-tight flexible metal conduit:
- Suitable in damp and/or wet areas.
- E. RIGID METAL CONDUIT (RMC):
- Suitable for use in all above grade locations.
- F. Conduit supports:
- Support conduits at intervals not to exceed 10 feet.
 - Support individual conduits with conduit hangers or clamps.
 - Spring steel fasteners may be used to fasten EMT to individual hanger wires, minimum #12 AWG, specifically used to hang conduit only.
 - Support all electrical equipment located in the ceiling space in accordance with CBC Sections 1613A and 1614A.
 - Firmly attach items weighing less than 20 pounds to main cross runners.
 - Seal and fireproof all conduit penetrations in walls requiring protected openings. Use only fire stop material of a tested assembly approved by the California State Fire Marshal.
- G. Conduit Bends:
- No more than (3) 90-degree bends or cumulative amount of bends between boxes.
 - Maximum of 400 feet between boxes minus 100 feet for every 90-degrees of cumulative bends.

3.02 WIRE AND CABLE

- A. Identify and color code wire under provisions of Section 2.03A(a). Identify every conductor at each terminal and boxes with circuit number or other designation indicated.
- B. Take all precautions when pulling conductors to avoid damaging the conductors or insulation.
- C. Connections:
- Size lugs in accordance with manufacturer's recommendations terminating wire sizes.
 - For splicing receptacle circuits #10 AWG or smaller use twist-on solderless connectors.

3.03 BOXES

- A. Install wall mounted boxes at elevations to accomodate mounting heights as indicated on Drawings.
- B. Locate outlet boxes as close to that as indicated on Drawings. Coordinate with other equipment and divisions.
- C. Flush mounted boxes: Secure between studs with stamped steel adjustable bar type hangers. Fasten hanger to both studs and both sides of box.
- D. Support boxes independently of conduit.
- E. Install blank wall plates on pull boxes.

3.05 GROUNDING

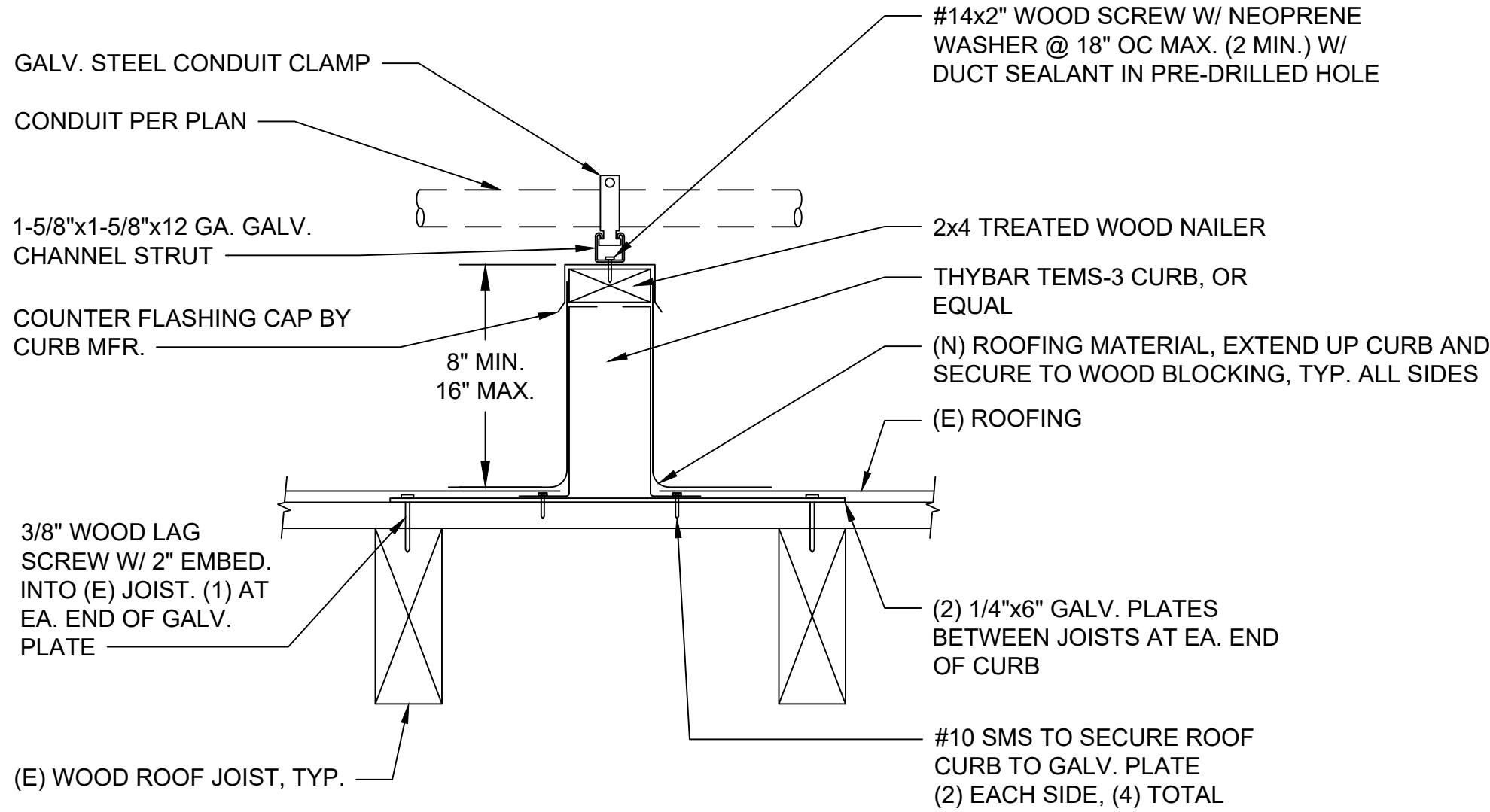
- A. For conduit carrying circuits at or over 100V provide ground wire bonded at each end to equipment.
- B. Permanently and effectively ground all raceways, boxes, supports, equipment and other utilization apparatus.

3.06 DISCONNECT SWITCHES

- A. Coordinate layout and installation with mechanical contractor and the equipment served. Maintain required workspace clearances.

- B. Provide with all mounting hardware and accessories.
- C. Install indicated fuses in fusible devices.
- D. Install at uniform height and comply with NFPA 70 and NECA 1 requirements.

END OF SECTION

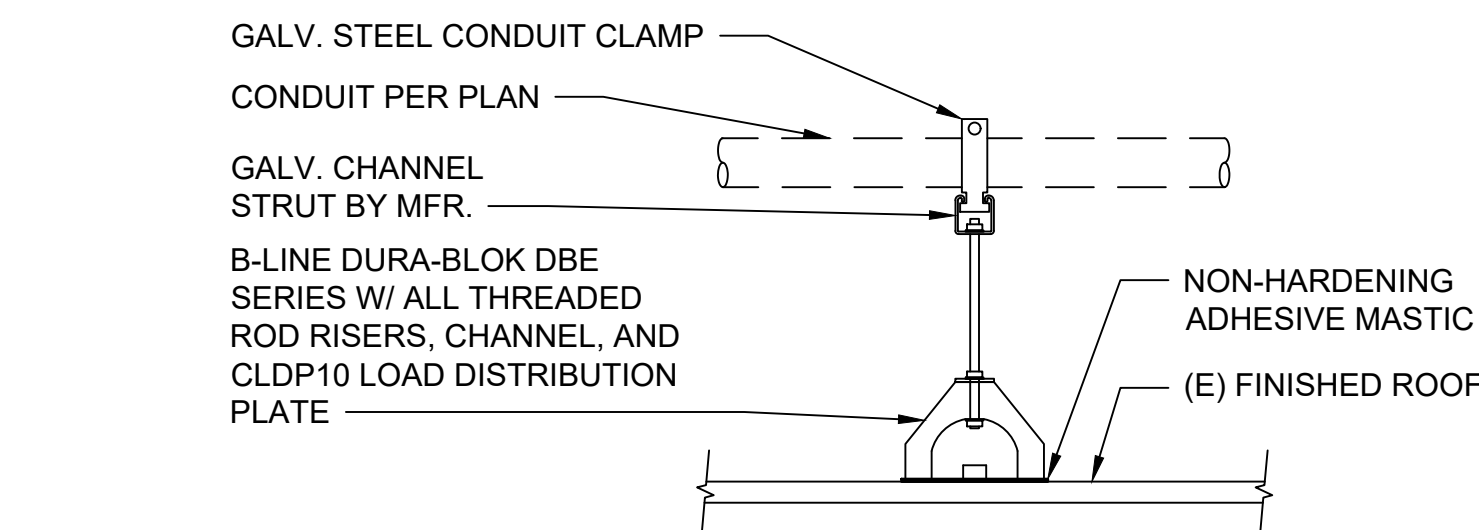


NOTE:

- SECURE CONDUIT TO ROOF STRUCTURE @ 24'-0" OC MAXIMUM.
- REQUIRED FOR MULTIPLE CONDUIT RUNS AND CONDUITS 1-1/4" AND LARGER.
- ROOFING WORK SHALL BE PERFORMED BY A LICENSED ROOFING CONTRACTOR. PROVIDE WORK WITH 5 YEAR WARRANTY.
- DO NOT LEAVE ANY DEPRESSED AREAS IN ROOF. PROVIDE POSITIVE DRAIN AT AREAS OF WORK. PROVIDE ADDITIONAL FIBERBOARD WHERE NEEDED.

1 CONDUIT ROOF CURB SUPPORT - ANCHOR

SCALE: NONE



NOTE:

- SECURE CONDUIT TO ROOF STRUCTURE @ 24'-0" OC MAXIMUM. SEE DETAIL "1/E6.01".
- PROVIDE INTERMEDIATE ROOF CURB SUPPORT @ 8'-0" OC MAX.
- DO NOT PENETRATE OR CUT ROOF MEMBRANE.

2 CONDUIT ROOF CURB SUPPORT - INTERMEDIATE

SCALE: NONE

DSA EQUIPMENT ANCHORAGE & BRACING NOTES

M/E/P COMPONENT 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 2019 CBC SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26, AND 30:

- ALL PERMANENT EQUIPMENT AND COMPONENTS.
- 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.
- 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:

- COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVING A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
- 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 THE ABOVE REQUIREMENTS.

PIPING, DUCTWORK, AND ELECTRICAL 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 2019 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 PREAPPROVED INSTALLATION GUIDE (E.G., OSHPD 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 #) #_____.



Whittington Electric Inc.
1940 Industrial Drive • Auburn, CA 95603
Office (530) 825-3055 • Fax (530) 823-3086



Project #: 421-003

SHEET TITLE:

ELECTRICAL
SPECIFICATIONS,
DETAILS, AND
ANCHORAGE AND
BRACING NOTES

SHEET NUMBER:

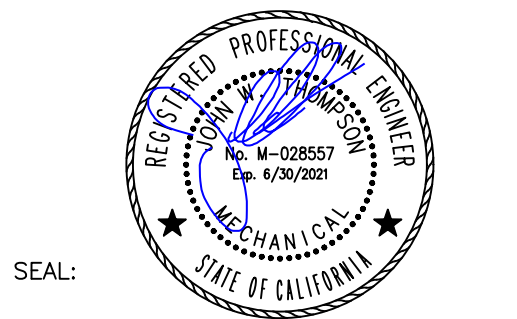
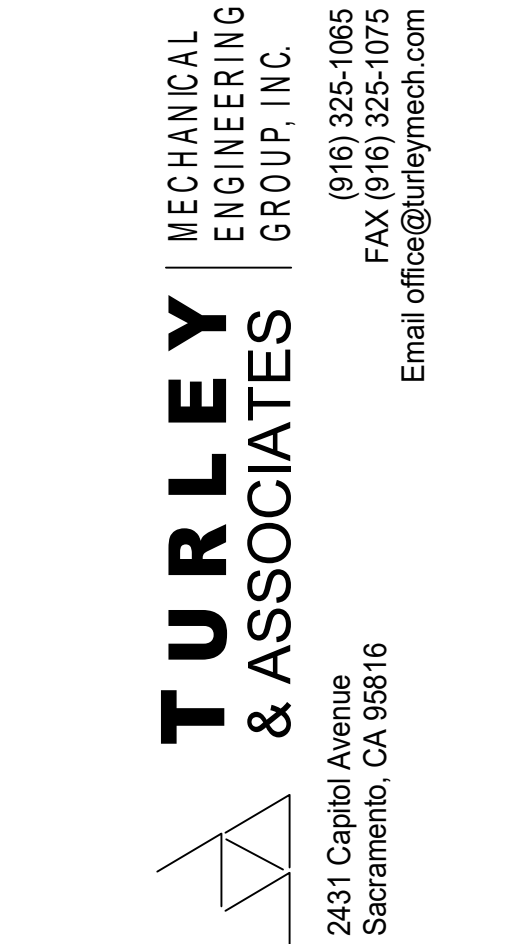
NO.	REVISIONS	DATE

SHEET NUMBER:

E6.01

Project Engineer:	NB	Job Number:	2090
Project Manager:	NB	Proj Date:	Jun 15, 2021 - 2:28pm
Project Drafts:	NB	Logn:	nbear

DSA 02-118996



SEAL:

General

1. Interpretation of drawings & specifications
- A) For convenience, specifications have been prepared for this project and are arranged in several sections, but such separation shall not be considered as the limits of or restriction by any separate trade. The terms and conditions of such limitations are wholly between the contractor and his subcontractors.
- B) In general, the working details will indicate dimensions, positions and kind of construction and the specifications indicate quantities and methods. Any work indicated on the working details mentioned but not in the specifications, or vice versa, shall be furnished as though fully set forth in both. Work not particularly detailed, marked, or specified shall be the same as similar parts that are detailed, marked, or specified. If conflicts occur between drawings and specifications, the most expensive materials or methods will prevail.
- C) Should an error appear in the working details or specifications or in work done by others affecting this work, the contractor shall notify the architect at once and in writing. If the Contractor proceeds with the work so affected without having given such written notice and without receiving the necessary approval, decision or instruction in writing from the owner, then he shall have no valid claim against the owner, for the cost of so proceeding and shall make good any resulting damage or defect. No verbal approval, decision, or instruction shall be valid or be the basis for any claim against the owner, its officers, employees or agents. The foregoing includes typical errors in the specifications or notational errors in the working details where the interpretation is doubtful or where the error is sufficiently apparent as to place a reasonably prudent contractor on notice that, should he elect to proceed, he is doing so at his own risk.
2. Construction shall conform to all applicable codes and regulations.
3. Shop Drawing Note:
- A) Shop drawings shall be submitted in the form of one reproducible and two copies of each sheet.
- B) The purpose of shop drawing submittals by the Contractor is to demonstrate to the Structural Engineer that he understands the design concept by indicating which materials he intends to furnish and install, and by detailing the fabrication and installation methods he intends to use.
- C) Prior to fabrication, shop drawings shall be submitted for review to the Structural Engineer. Shop drawing submittals shall include, but are not necessarily limited to structural steel, reinforcing steel, glued laminated beams, and pre-fabricated wood roof framing items such as joists and trusses.
- D) Prior to submission the Contractor shall review all submittals for conformance with the contract documents and shall stamp submittals as being "Reviewed for Conformance".
- E) Shop drawing submittals processed by the Structural Engineer are not change orders.
- F) Any detail on the shop drawing that deviates from the contract documents shall clearly be marked with the note "This is a Change".
- G) Shop drawings or calculations submitted for review that require resubmittal for re-review shall be billed hourly for such time to the General Contractor. Re-review will not proceed without written approval from the General Contractor for additional engineering review services.
4. Safety Note:
- A) It is the Contractors responsibility to comply with the pertinent sections, as they apply to this project, of the "Construction Safety Orders" issued by the State of California latest edition, and all OSHA requirements.
- B) The owner and the Structural Engineer do not accept any responsibility for the Contractor's failure to comply with these requirements.
- C) The Contractor shall be responsible for adequate design and construction of all forms and shoring required.
5. The Contractor shall notify the Architect and Structural Engineer where a conflict in a discrepancy occurs between the structural drawings and any other portion of the contract documents or existing field conditions. Such notification shall be given in due time so as not to affect the construction schedule. In case of a conflict between structural drawings and specifications, the more restrictive condition shall take precedence unless written approval has been given for the least restrictive. Contractor shall verify all dimensions with architectural and structural drawings prior to commencing any work.
6. Where no specific detail is shown, the construction shall be identical or similar to that indicated for like cases of construction on this project. Should there be any question, contact the Architect and Structural Engineer prior to proceeding.
7. When construction attaches to an existing building, a complete set of drawings of the existing building shall be kept on the job site. Contractor to obtain these drawings from the owner.
8. Contractor shall provide an allowance equal to 2% of the bid for structural steel, misc., iron, light gauge framing, and reinforcing steel to be used at the discretion of the structural engineer. Unused amount to revert to the owner upon completion of the job.
9. Any substitutions for structural members, hardware, or details shall be reviewed by the Architect and Structural Engineer. Such review will be billed on a time and materials basis to the General Contractor with no guarantee that the substitution will be allowed.
10. Do not scale drawings. Contact the Architect or Structural Engineer for any dimensions not shown.
11. These drawings are not complete until reviewed and accepted by the local building official and signed by the owner and the Structural Engineer.
12. All drawings and written material appearing herein constitutes the original and unpublished work of the Structural Engineer and the same may not be duplicated, used or disclosed without written consent of the Structural Engineer.
13. The structure shown on these drawings is structurally sound only in its completed form. The stability of this structure depends on the diaphragms and the bracing members shown. The Contractor is to provide for the design and construction of shoring for all earth, forms, concrete, steel, wood and masonry to resist gravity, earth, wind, seismic, and construction loads. Shoring shall remain in place until all diaphragms and lateral resisting elements are in place in their entirety. Construction materials shall be spread out if placed on framed floors or roofs. Load shall not exceed the design live load per square foot.

Design Criteria

1. Code, 2018 California Building Code (CBC)
2. Design Live Loads:
- | Area | Live Load | Remarks |
|---|--|--------------------|
| Roof | L _r = 20 psf | Reducible per code |
| 3. Snow Design Parameters: | N/A | |
| 4. Wind Design Parameters: | N/A | |
| Basic Design Wind Speed (3-sec. gust) | V = 100 mph | |
| Nominal Design Wind speed (3-sec gust) | V _{bas} = 76 mph | |
| Risk Category | III | |
| Exposure Category | C | |
| Internal Pressure Coefficient | ±0.18 | |
| Analysis Method | Directional Procedure | |
| 5. Earthquake Design Parameters: | | |
| 5.1. Seismic Importance Factor | I _e = 1.25 (blg)/I.O (mech anchorage) | |
| 5.2. Risk Category | III | |
| 5.3. Soil Site Classification | D' | |
| 5.4. Seismic Design Category | | |
| 5.5. Mapped Spectral Response Accel | | |
| A) Short period | S _s = 0.623g | |
| B) 1-sec period | S ₁ = 0.26g | |
| 5.6. Design Spectral Response Accel | | |
| A) Short Period | S _{ps} = 0.541g | |
| B) 1-sec period | S ₁ = 0.241g | |
| 5.7 Seismic Force Resisting System | N/A | |
| 5.8 Seismic Base Shear | N/A | |
| 5.9 Seismic Response Coefficient | N/A | |
| 5.10 Component Amplification Factor | a _p = 2.5 | |
| 5.11 Component Response Modification Factor | R _p = 6.0 | |
| 5.12 Analysis Procedure | Equivalent Lateral Force | |

Demolition

1. Safety Notes:
- A. It is the Contractor's responsibility to comply with the pertinent sections, as they apply to this project, of the "Construction Safety Orders" issued by the State of California, latest edition, and all OSHA requirements.
- B. The Structural Engineer and Owner do not accept any responsibility for the Contractor's failure to comply with these requirements.
2. Shore or brace trusses, beams, columns, and walls as required to maintain the stable integrity of the existing structure prior to demolition. It is the contractor's sole responsibility to design and provide competent shoring and bracing for all loads imposed during and after demolition through completion of new construction.
3. All dimensions given to and of the existing structure are approximate. Verify by field measurements the dimensions of the existing structure. Where actual conditions deviate from the details shown on the drawings, notify the Structural Engineer for instructions prior to proceeding with work.
4. Demolition and removal of existing construction shall be made in such a manner as to avoid or minimize damage to adjacent construction.
5. Extent of demolition is to be as indicated on plans, sections and details. Demolition is to include removal and disposal construction.

Wood

1. All sawn lumber shall be Douglas Fir-Larch as graded by the West Coast Lumber Inspection Bureau (NCLIB) in accordance with Standard Grading Rules No. 17 typical unless noted otherwise. All members shall have a minimum grade of No. 1 except 2x4 and 2x6 wall studs, plates, and blocking may be No. 2.
2. All structural sheathing used for shearnails and roof sheathing shall conform to the requirements for their type in DGC P51, DGC P52 or ANSI/APA PRP 210. Each panel or member shall be identified for grade, board classification, and performance category by the trademarks of an approved testing and grading agency.
3. All foundation plates or sills on concrete slabs which are in direct contact with earth, and plates or sills on concrete or masonry foundations, shall be pressure treated.
4. All wood shall have a moisture content of not more than 19% when sheathing is applied.
5. 8" minimum clearance shall be maintained at all exterior walls between finish grade and bottom of wood walls.
6. Bearing and shearnails shall have double top plates lapped at wall corners and intersections and plates shall be installed with 3-16d at such locations. For plate splice details, see drawings.
7. Sill plate anchor bolts shall be installed with plate washers 3x3x0.224 between nut and plate.
8. Provide solid blocking between joists and rafters at all supports.
9. Provide blocking at all ceiling levels.
10. Joists under and parallel to partitions shall be doubled and nailed together.
11. Holes for bolts in wood shall be bored with a bit of the same nominal diameter as the bolt plus 1/8".
12. Holes for lag screws shall be bored as follows:
- a. The clearance hole for the shank shall have the same diameter as the shank, and the same depth of penetration as the length of unthreaded shank.
- b. The lead hole for the threaded portion shall have a diameter equal to 60% to 75% of the shank diameter and a length equal to at least the length of the threaded portion.
13. Lag screws and wood screws shall be screwed and not driven into place. Soap may be used to lubricate the screws.
14. All bolts and lag screws shall be provided with metal washers under heads and nuts which bear on wood. Applies also to inserted expanding fasteners, Red Head, etc.

Bolt Diameter	M1 Washer	Steel Washer
3/8"ø	2 3/8"øx1/2"	3"x3"x1/4"
3/4"ø	3"øx3/8"	3"x3"x3/8"
1/2"ø	3 1/2"øx1/2"	3 1/2"x3 1/2"x3/8"
1"ø	4"øx1/2"	3 3/4"x3 3/4"x3/8"

15. All bolts and lag screws shall be tightened at installation and retightened before closing in or at completion of job.
16. Lay all structural sheathing on roof and floors with face grain perpendicular to support typical unless noted otherwise. Use ply-clips at unsupported sheathing edges.
17. Connector hardware model number are those for Simpson Strong-Tie Company. All joist hangers shall be Simpson U series unless noted otherwise. Equivalent connections with ICC acceptance may be submitted for review as an alternate.
18. Notify Structural Engineer after wall, floor, and roof sheathing nailing has been completed and a minimum of 48 hours prior to concealing sheathing.
19. Fasteners, nuts, and washers in contact with SBX/DOT must be borate treated wood in interior dry conditions may be carbon steel. Fasteners in other preservative-treated wood (Anchor bolts, nails, screws) shall be approved silicon bronze or copper, stainless steel or hot-dipped zinc-coated steel per CBC 2304.10.51 UNO.

Nailing Schedule

1. All nails for structural work shall be common wire nails conforming to the following minimum sizes:
- | | Ø |
|------------|---------------------------------------|
| 10d | 0.131"øx2 1/2" |
| 10d shorts | 0.148"øx3" |
| 16d | 0.148"øx1 3/8" plus thickness of shdg |
| 20d | 0.162"øx3 1/2" |
| 20d | 0.162"øx4" |
2. Provide nails at connections as indicated on the structural drawings. Where nails at connections are not indicated nail per nailing schedule in note 5.
3. Nailing not noted in schedule or on plans shall be a minimum of two nails at each contact. 8d nails for 1" material and 16d nails for 2" material.
4. Holes shall be pre-drilled where necessary to prevent splitting.
5. Nailing schedule:

Connection	Fastening	Location
1. Joist to sill or girder.	3-8d common (2 1/2"x0.131") 3-3"x0.131" nails	toe nail
2. Bridging to joist.	2-8d common (2 1/2"x0.131") 2-3"x0.131" nails	toe nail ea end
3. 1"x6" subfloor or less	2-8d common (2 1/2"x0.131")	face nail
4. Plender than 1"x6" subfloor	3-8d common (2 1/2"x0.131")	face nail
5. 2" subfloor to joist or girder	2-16d common (3 1/2"x0.162")	blind & face nail
6. Sole plate to joist or blocking	16d (3 1/2"x0.135") ø 16"cc 3"x0.131" nails ø 8"cc	typical face nail
Sole plate to joist or blocking at braced nail panel	3-16d (3 1/2"x0.135") ø 16"cc 4-3"x0.131" nails ø 16"cc	braced nail panels
7. Top plate to stud.	2-16d common (3 1/2"x0.162") 3-3"x0.131" nails	end nail
8. Stud to sole plate	4-8d common (2 1/2"x0.131") 4-3"x0.131" nails	toe nail
9. Double studs.	2-16d common (3 1/2"x0.162") 3-3"x0.131" nails	end nail
10. Double top plates.	16d (3 1/2"x0.135") ø 16"cc 3"x0.131" nail ø 12"cc	typical face nail
11. Blocking between joists or rafters to top plate.	8-16d common (3 1/2"x0.162") 12-3"x0.131" nails	lap splice
12. Rim joist to top plate	8d (2 1/2"x0.131") ø 6"cc 3"x0.131" nail ø 6"cc	toe nail
13. Top plates, laps and intersections.	2-16d common (3 1/2"x0.162") 3-3"x0.131" nails	face nail
14. Cont. header, two pieces.	16d common (3 1/2"x0.162")	16"cc along edge
15. Ceiling joists to plate.	3-8d common (2 1/2"x0.131") 5-3"x0.131" nails	toe nail
16. Continuous header to stud.	4-8d common (2 1/2"x0.131")	toe nail
17. Ceiling joists, laps over partitions, (Section 2308.10.4.1, Table 2308.10.4.1)	3-16d common (3 1/2"x0.162") min. Table 2308.10.4.1 4-3"x0.131" nails	face nail
18. Ceiling joists to parallel rafters, (Section 2308.10.4.1, Table 2308.10.4.1)	3-16d common (3 1/2"x0.162") min. Table 2308.10.4.1 4-3"x0.131" nails	face nail
19. Rafter to plate.	3-8d common (2 1/2"x0.131") 3-3"x0.131" nails	toe nail
20. 1" diagonal brace to stud & plate.	2-8d common (2 1/2"x0.131") 2-3"x0.131" nails	face nail
21. 1"x8" & wider sheathing to ea bearing.	3-8d common (2 1/2"x0.131")	face nail
22. Built-up corner studs.	16d (3 1/2"x0.162") ø 24"cc 3"x0.131" nail ø 16"cc	
23. Built-up girder & beams.	20d common (4"x0.142") ø 32"cc 3"x0.131" nail ø 24"cc	face nail at t&b, staggered on opposite sides
	2-20d common (4"x0.142") 3-3"x0.131" nails	face nail ø ends and ø ea splice

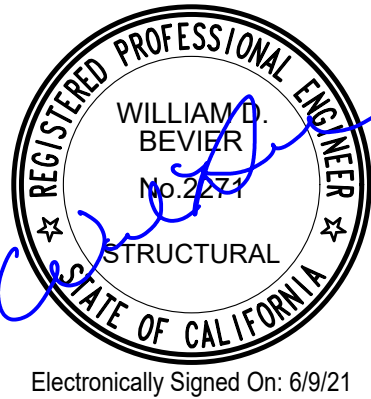
Abbreviations

add Additional
alt Alternate
AISC American Institute of Steel Construction
APA American Plywood Association
ASTM American Society for Testing and Materials
AWS American Welding Society
AB Anchor bolt
Ø And
arch Architect/Architectural
B Between
b.o Bottom of
bm Beam
br Bearing
btr Better
btwn Between
B Both sides
B.S Blocking
BN Boundary nail
c/g Ceiling
cc Center to center
C Center line
cl Clear
C Column
CP Complete Penetration
con Concrete
CMU Concrete masonry unit
conn Connection
C Construction Joint
cont Continuous
csk Countersink
C Control Joint
DL Dead Load
det Detail
diag Diagonal
dia Diameter
ds Ditto
D.F Douglas Fir
dbl Double
dn Down
dng Drawing
E Each
EF Each Face
embed Embedment
EN Edge Nail
E.N Each Way
elev. el Elevation
eq Equal
equip Equipment
E Existing
EJ Expansion Joint
FC Face of concrete
FB Face of Block
FM Face of Masonry
FP Face of Plywood/Sheathing
FS Face of Stud
fin Finish
F.F Finish floor
F.G Finish grade
fl Floor
fr Framing
fnd Foundation
f.o Face of
frmg Framing
galv Galvanized
ga Gage
glb Glued-laminated beam
gl Glue Line
hgr Hanger
hdr Header
ht Height
HSB High strength bolt
HSS Hollow Steel Section
hk Hook
horiz Horizontal
ld Inside diameter
int Interior
inv Inverted
jst Joist
jh Joist hanger
LS Lag screw
L.H L.H. height
LL Live Load

LLH Long leg horizontal
LLV Long leg vertical
LVL Laminated Veneer Lumber
MB Machine bolt
mfr Manufacturer
max Maximum
mech Mechanical
MI Malleable iron
min Minimum
misc Miscellaneous
mtl Metal
N.C Not in contract
n New
ns Not to scale
..... Number or pounds
o Over
Ø On center
O.N Open web joist
opng Opening
OPN Opposite
OH Opposite Hand
Ø Outside diameter
PP Partial penetration
pc Piece
P Plate
ply, plynd Plywood
pcf Pounds per cubic foot
psf Pounds per square foot
psi Pounds per square inch
PSA Powder Actuated Fasteners
PTDF Pressure Treated Douglas Fir
r. rad Radius
RND Roundwood
reinf Reinforcing
req'd Required
R Roof
R.O Rough opening
R Round or diameter
sched Schedule
SAD See architectural drawings
SED See electrical drawings
SMD See mechanical drawings
S Sheathing
SDS Simpson Strong-Drive Screw
SDS15 Self drilling self tapping screw
SC shear connector 3/4"ø UNO
shg Sheathing
shf Sheet
SMS Sheet metal screw
sim Similar
s.o.g Slab on grade
sq Square
stagg Staggered
std Standard
stl Steel
ssli Stainless Steel
stfr Stiffener
strct Structural
SP structural plywood
SPEN structural plywood edge nailing
sym Symmetrical
T Tie nail
t&b Top & bottom
Lo Top of concrete
Lo Top of framing
Lo Top of plate
Lo Top of Steel
Lo Top of Wall
t&g Tongue & Groove
TS Tube steel
typ Typical
UNO Unless noted otherwise
vert Vertical
v.f Verify in field
w With
w/o Without
WS Wood screw
WP Working point
WWS Welded headed studs
WVF Welded wire fabric
NCLIB West Coast Lumber Inspection Bureau

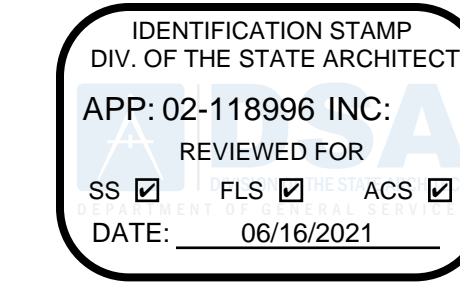


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Fax: (916) 631-8996
Web: www.bevier.net
Bevier Job No: 21020



Electronically Signed On: 6/9/21

AGENCY APPROVAL:



DSA 02-118996

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& ASSOCIATES
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SEAL:

LODI UNIFIED SCHOOL DISTRICT
WOODBIDGE ELEMENTARY
HVAC REPLACEMENT
1290 LILAC STREET
LODI, CA. 95242

SHEET TITLE:

GENERAL NOTES

NO.	REVISIONS	DATE
	DSA PLAN CHECK	06/09/2021

SHEET NUMBER:

S1.0

Project Engineer:	JT	Job Number:	2090
Project Manager:	JT	Plot Date:	Jun 09, 2021 12:30pm
Project Draftsman:	DA	Scale:	1/8"

Note:
Do not cut (e) roof framing.

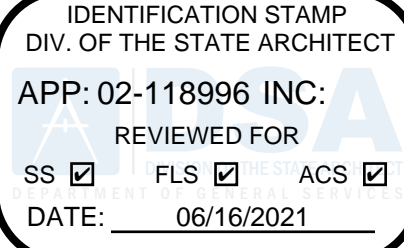


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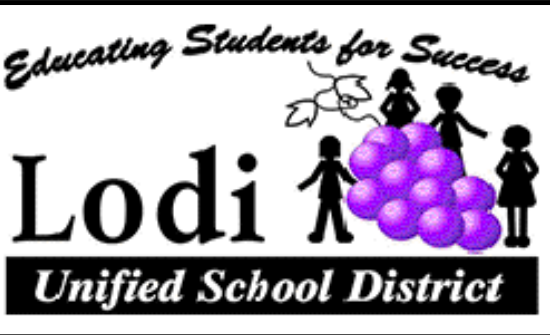
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LODI, CA. 95242

SHEET TITLE:

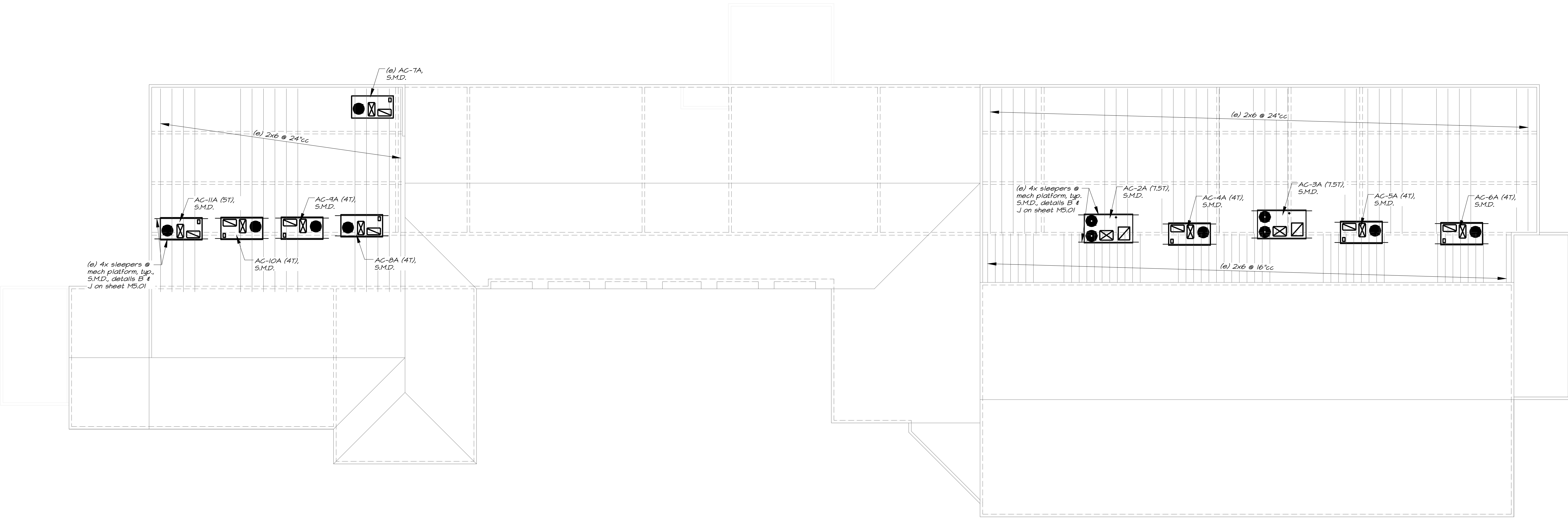
PARTIAL (E) ROOF
FRAMING PLAN
(BLDG A)

NO.	REVISIONS	DATE
1	DSA PLAN CHECK	06/09/2021

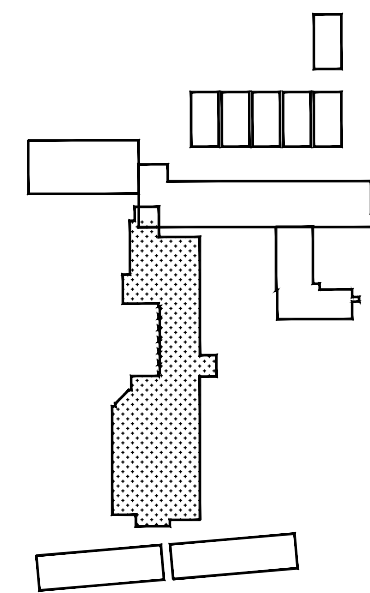
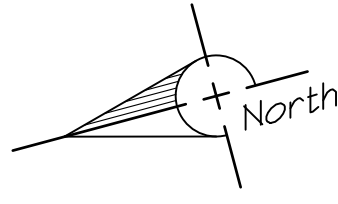
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S2.1

Project Engineer:	JT	Job Number:	20200
Project Manager:	JT	Plot Date:	Jun 09, 2021 - 12:30pm
Project Draftsman:	DA	Scale:	1/8" = 1'-0"



Partial Existing Roof Framing Plan
1/8"=1'-0" Building A (Reinforcing of the existing roof framing is Not Req'd)

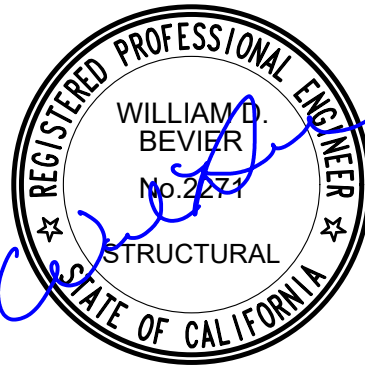


Key Plan

Note:
Do not cut (e) roof framing.

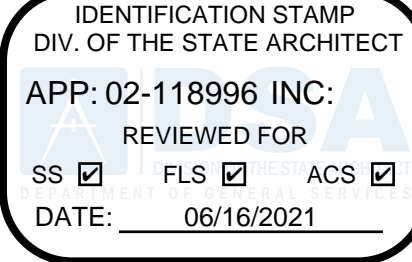


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HVAC REPLACEMENT
1290 LILAC STREET
LODI, CA. 95242

SHEET TITLE:

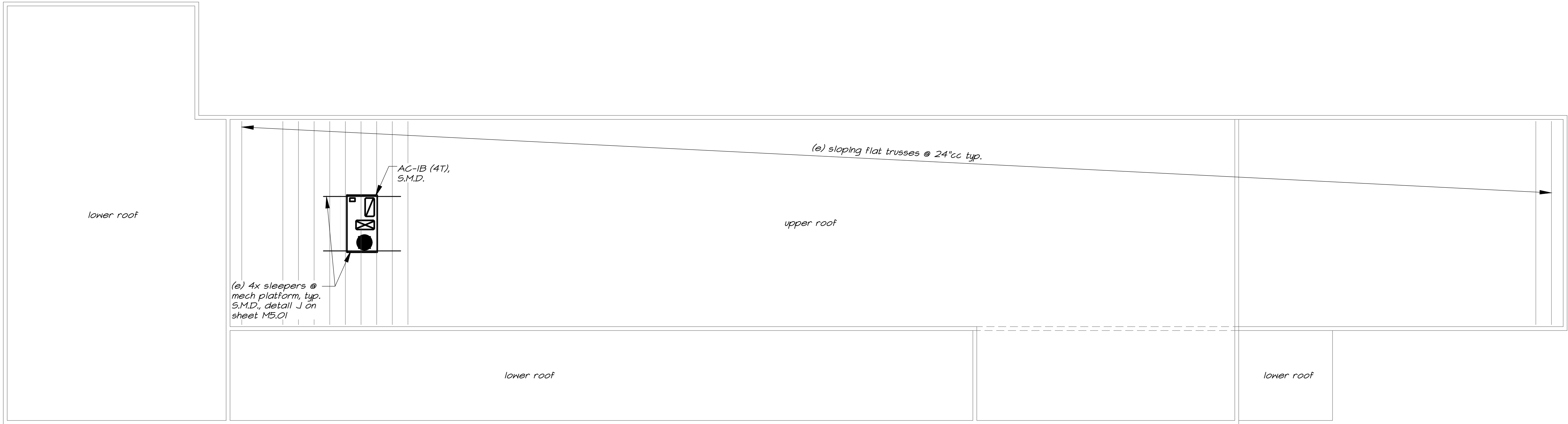
PARTIAL (E) ROOF
FRAMING PLAN
(BLDG B)

NO.	REVISIONS	DATE
1	DSA PLAN CHECK	06/09/2021

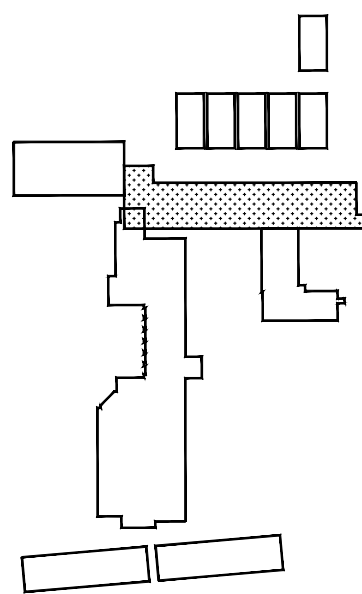
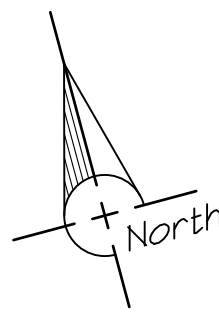
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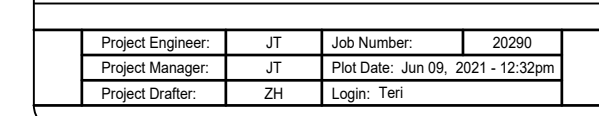
Project Engineer:	JT	Job Number:	20090
Project Manager:	JT	Plot Date:	Jun 09, 2021 - 12:30pm
Project Draftsman:	DA	Scale:	1/8" = 1'-0"



Partial Existing Roof Framing Plan
1/8" = 1'-0" Building B



Key Plan



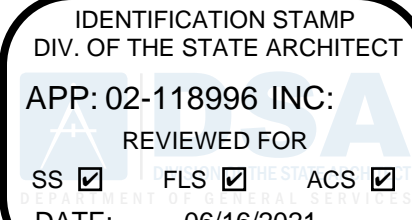


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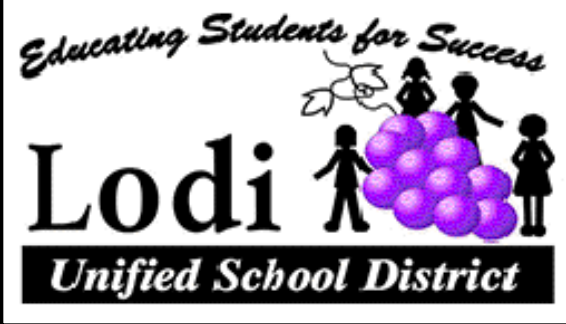


Electronically Signed On: 6/9/21

AGENCY APPROVAL:



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WOODBIDGE ELEMENTARY
HVAC REPLACEMENT
1290 LILAC STREET
LODI, CA. 95242

SHEET TITLE:

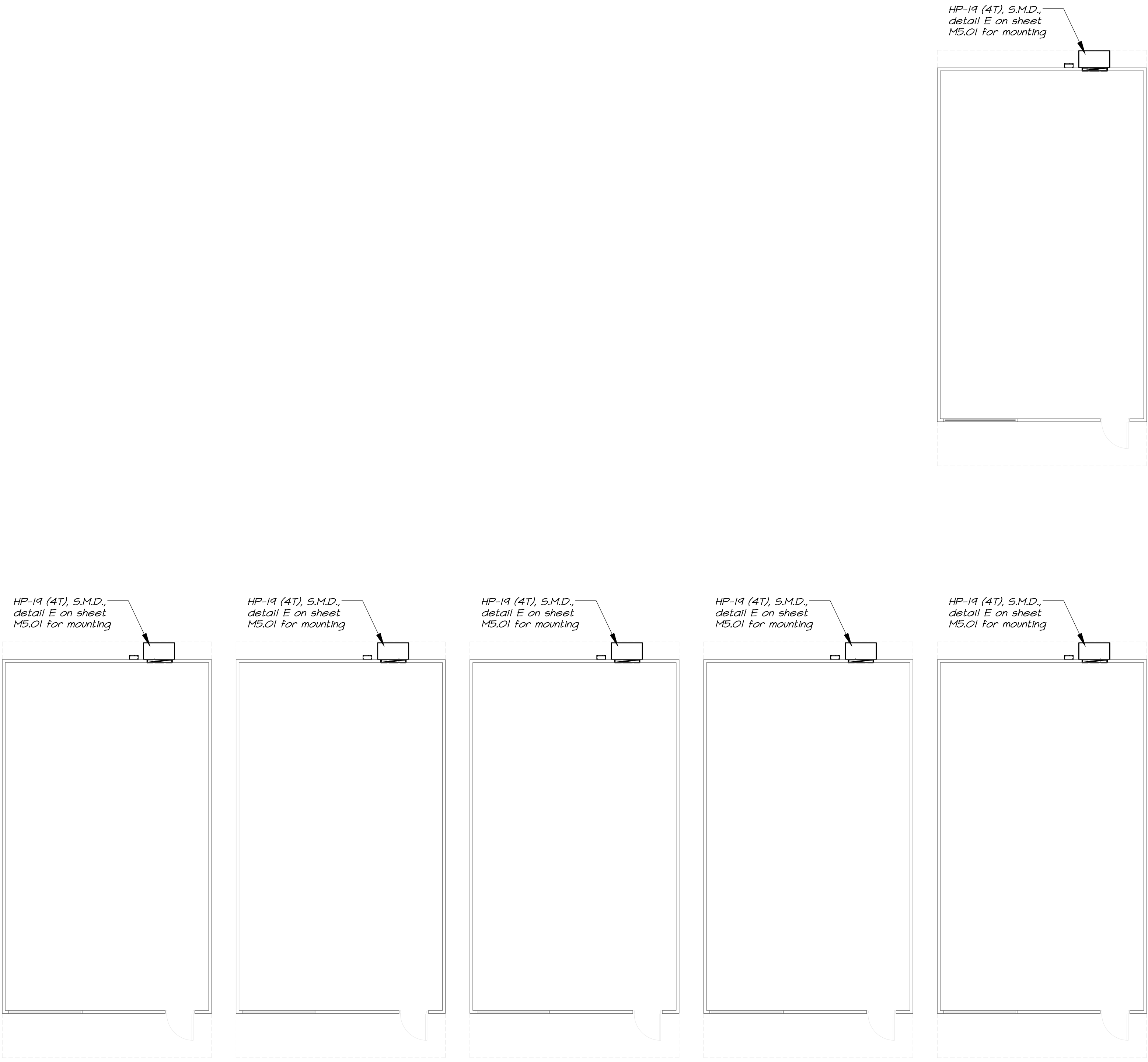
(E) 24'x40'
PORTABLES

NO.	REVISIONS	DATE
1	DSA PLAN CHECK	06/09/2021

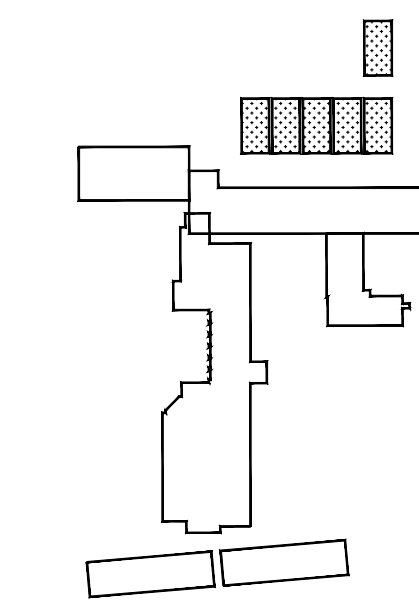
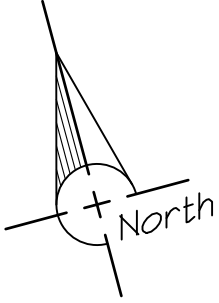
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S2.4

Project Engineer	JT	Job Number	20090
Project Manager	JT	Plot Date	Jun 09, 2021 - 12:30pm
Project Draftsman	JT	Logos	100



Existing 24'x40' portable units



Key Plan

52.1