

1/2024/04/17/01_08_Plan Station 227/25_SML-QCMechanical/2024/04/17_M01.dwg
08/22/2025 8:57AM

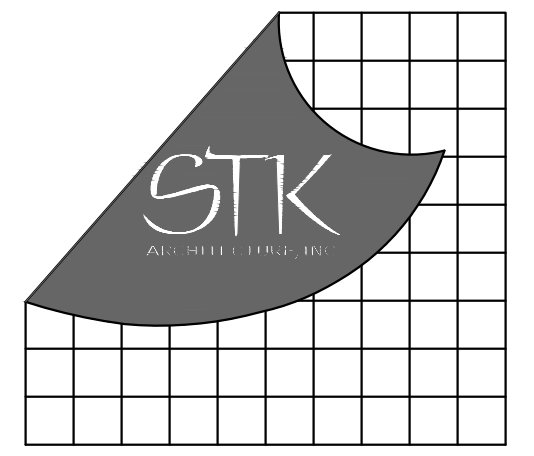
GENERAL NOTES	
1. THESE DOCUMENTS MAY NOT BE USED FOR ANY REPRODUCTION, BIDDING, OR CONSTRUCTION UNLESS AUTHORIZED IN WRITING, BY SALAS O'BRIEN AND THE ENGINEER OF RECORD RESPONSIBLE FOR THEIR PREPARATION.	
2. ALL BRANCH DUCTS SHALL HAVE BALANCE DAMPERS WITH QUADRANT LOCKS.	
3. ALL DUCT SIZES SHOWN ARE NET INSIDE DIMENSIONS.	
4. DUCTWORK SHALL BE GALVANIZED SHEET METAL IN COMPLETE CONFORMANCE WITH C.M.C., AND SMACNA HVAC DUCT CONSTRUCTION STANDARDS. FLEXIBLE DUCTS MAY BE USED TO CONNECT INTO AIR OUTLETS AND INLETS. MAXIMUM LENGTH OF FLEXIBLE DUCTWORK SHALL BE 5'-0".	
DUCTWORK ON ROOF SHALL BE INTERNALLY LINED AND PAINTED. ALL JOINTS AND SEAMS SHALL BE WEATHERPROOF.	
ALL BRACING OF DUCTS AND PIPING SHALL BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.	
DUCTS SERVING TYPE 1 KITCHEN HOODS SHALL BE CONSTRUCTED OF MINIMUM 16 GAUGE CARBON STEEL OR MINIMUM 18 GAUGE STAINLESS STEEL WITH FULLY WELDED JOINTS. DISHWASHER EXHAUST SHALL BE MINIMUM 18 GAUGE STAINLESS STEEL.	
5. ALL FLEXIBLE DUCTS SHALL BE INSULATED. MINIMUM BEND RADIUS SHALL BE TWICE THE DUCT DIAMETER.	
6. SUPPLY AND RETURN DROPS SHALL BE LINED SHEET METAL PLENUMS.	
7. DUCT AND PLENUM INSULATION SHALL BE IN ACCORDANCE WITH THE 2022 CALIFORNIA CODE OF REGULATIONS, TITLE-24, PART 6, ENERGY EFFICIENCY STANDARDS (E.E.S.), TABLE 150.1-A AND THE 2022 CALIFORNIA MECHANICAL CODE (C.M.C.) SECTION 605.0.	
8. ALL SHEET METAL DUCTS SHALL BE INSULATED BY MEANS OF FOIL WRAP, 3/4 LB. DENSITY FIBERGLASS INSULATION. INSULATION SHALL BE UL LISTED. DUCT LINERS SHALL BE NON-FIBERGLASS TYPE WITH THICKNESS AS REQUIRED TO MEET T-24 REQUIREMENTS.	
9. THERMOSTATS SHALL BE LOCATED AT 4' - 0" ABOVE FINISHED FLOOR (46" MAX. IF MOUNTED OVER CASEWORK OR OTHER OBSTRUCTION) IN ACCORDANCE WITH A.D.A. REQUIREMENTS, UNLESS NOTED OTHERWISE.	
10. CONDENSATE DRAIN PIPING SHALL BE COPPER TYPE "L", AND SHALL BE ROUTED TO AN APPROVED RECEPTOR.	
11. PROVIDE FLEXIBLE CONNECTIONS AT THE INLET AND OUTLET OF ALL FANS.	
12. COORDINATE FINAL LOCATIONS OF AIR DISTRIBUTION DEVICES WITH THE ARCHITECTURAL REFLECTED CEILING PLANS, I.E. LIGHTS, SPEAKERS, TILES AND SPRINKLER HEADS.	
13. ALL SUPPLY CEILING DIFFUSERS SHALL HAVE 4-WAY AIR FLOW DISTRIBUTION PATTERNS, UNLESS INDICATED OTHERWISE.	
14. COORDINATE FINAL LOCATIONS OF THERMOSTATS WITH ARCHITECT AND OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION. FIELD COORDINATE LOCATIONS WITH OTHER TRADES INCLUDING ELECTRICAL, TELEPHONE, ETC.	
15. FIRE/SMOKE DAMPERS SHALL BE INSTALLED ON ALL DUCTWORK PASSING THROUGH FIRE SEPARATING WALLS, AND SHALL BE INSTALLED AS PER 2022 CMC SECTION 606.0, 2022 CBC SECTION 717, AND U.L., LOCAL, STATE, AND N.F.P.A. FIRE CODES.	
16. ALL ROOF PENETRATIONS, CUTTING, PATCHING, BLOCKOUTS, STRUCTURAL SUPPORT, ROOF OPENINGS, LEVELING OF PRE-FAB CURBS SHALL BE BY GENERAL CONTRACTOR. CONTRACTOR SHALL VERIFY EXACT ROOF OPENING SIZES WITH UNIT MANUFACTURER PRIOR TO START OF WORK AND SHALL MAKE ALL NECESSARY ADJUSTMENTS AT NO EXTRA COST TO OWNER.	
17. LOCATION OF ALL MECHANICAL EQUIPMENT SHOWN ARE SCHEMATIC. CONTRACTOR SHALL FIELD COORDINATE EXACT LOCATIONS AND REQUIRED SERVICE/MAINTENANCE CLEARANCES PRIOR TO START OF WORK.	
18. CONTRACTOR SHALL VERIFY WEIGHTS OF ALL MECHANICAL EQUIPMENT WITH THEIR MANUFACTURER PRIOR TO START OF WORK. IF DIFFERENT THAN THE WEIGHTS INDICATED ON DRAWINGS, CONTRACTOR SHALL INFORM THE ARCHITECT AND STRUCTURAL ENGINEER PRIOR TO START OF WORK.	
19. CONTRACTOR SHALL VERIFY ALL ELECTRICAL LOADS W/MFR. AND COORDINATE WITH THE ELECTRICAL CONTRACTOR AND THE MANUFACTURER PRIOR TO START OF WORK. NOTIFY THE ARCHITECT IN WRITING, IN CASE OF ANY DISCREPANCIES, PRIOR TO START OF WORK.	
20. ALL HVAC EQUIPMENT, APPLIANCES, AND DUCTWORK SHALL CONFORM TO THE LATEST GUIDELINES OF U.L., A.G.A., N.F.P.A., C.M.C., C.P.C., AND ALL OTHER LOCAL CODES HAVING JURISDICTION.	
21. TEST AND BALANCE THE HVAC SYSTEM AS PER REQUIREMENTS OF THE MANDATORY HVAC MEASURES INDICATED ON THIS SHEET.	
22. CONTRACTOR SHALL FIELD VERIFY EXACT CEILING SPACE AVAILABLE FOR ROUTING OF DUCT, PRIOR TO START OF WORK, INFORM ARCHITECT, IN WRITING, IN CASE OF ANY DISCREPANCY OR POTENTIAL CONFLICTS PRIOR TO FABRICATING AND/OR PURCHASE OF ANY DUCTWORK.	
23. ALL HVAC UNITS SYSTEMS SUPPLYING AIR IN EXCESS OF 2000 CFM OR SERVING A COMMON AIR SPACE MUST BE INTERCONNECTED TO SHUT DOWN IMMEDIATELY UPON ALARM CONDITION FROM DUCT DETECTORS (OR FIRE ALARM SYSTEM WHEN USING AREA SMOKE DETECTORS IN LIEU OF DUCT DETECTORS) WITHOUT INTERFACE FROM EMS OR ANY OTHER SYSTEMS. ALL CONTROL RELAYS USED FOR SHUT DOWN MUST BE CALIFORNIA STATE FIRE MARSHAL LISTED FOR RELEASING SERVICE.	
24. ACCESS PANELS SHALL BE PROVIDED TO ALL EQUIPMENT, MANUAL VOLUME DAMPERS, ETC. LOCATED IN INACCESSIBLE AREAS.	
25. MAINTAIN MINIMUM 10'-0" BETWEEN ALL OA INTAKES AND EXHAUST AIR DISCHARGES OR VENTS.	

LEGEND		
SYMBOL	ABBREV.	DESCRIPTION
	FSD	FIRE SMOKE DAMPER
	OA	OUTSIDE AIR
		ROUND DUCT UP
		ROUND DUCT DOWN
		CEILING SUPPLY AIR DIFFUSER (4-WAY THROW UNLESS NOTED OTHERWISE)
	SA	SUPPLY AIR
	RR/RG	RETURN AIR REGISTER/GRILLE
	RA	RETURN AIR
	ER/EG	EXHAUST AIR REGISTER/GRILLE
	EA	EXHAUST AIR
	AP	CEILING ACCESS PANEL
	SA	RECTANGULAR SUPPLY DUCT UP
	RA	RECTANGULAR RETURN DUCT UP
	EA	RECTANGULAR EXHAUST DUCT UP
	SA	RECTANGULAR SUPPLY DUCT DOWN
	RA	RECTANGULAR RETURN DUCT DOWN
	EA	RECTANGULAR EXHAUST DUCT DOWN
	TSTAT	THERMOSTAT
	CO	CARBON MONOXIDE SENSOR
	SD	DUCT MOUNTED SMOKE DETECTOR INTERLOCK WITH FIRE ALARM. SEE ELECT. DWGS.
	CFM	CUBIC FEET PER MINUTE
	ACI	AMERICAN CONCRETE INSTITUTE
	A.D.A.	AMERICANS WITH DISABILITIES ACT
	A.F.F.	ABOVE FINISH FLOOR
	A.G.A.	AMERICAN GAS ASSOCIATION
	AL	ALUMINUM
	AMB.	AMBIENT
	APRX.	APPROXIMATE(LY)
	ARCH.	ARCHITECT OR ARCHITECTURAL
	ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
	BHP	BRAKE HORSEPOWER
	BLDG	BUILDING
	BTU(H)	BRITISH THERMAL UNIT (PER HOUR)
	B.U.R.	BUILT-UP ROOFING
	CAP.	CAPACITY
	C.B.C.	CALIFORNIA BUILDING CODE
	C.E.C.	CALIFORNIA ENERGY COMMISSION
	C.M.C.	CALIFORNIA MECHANICAL CODE
	C.P.C.	CALIFORNIA PLUMBING CODE
	CD	CONDENSATE DRAIN
	CGBSC	CALIFORNIA GREEN BUILDING STANDARDS COMMISSION
	CONC.	CONCRETE
	COND.	CONDITIONS
	CONN.	CONNECTIONS
	COORD.	COORDINATE
	C.O.P.	COEFFICIENT OF PERFORMANCE
	CORR.	CORRIDOR
	CU	COPPER
	CW	COLD WATER
	DB	DRY BULB
	DET.	DETAIL
	DIM.	DIMENSIONS
	DN.	DOWN
	DWG(S).	DRAWING(S)
	TSP	TOTAL STATIC PRESSURE
	TYP.	TYPICAL
	U/C	UNDERCUT DOOR
	U.L.	UNDERWRITER'S LABORATORIES
	U.F.C.	UNIFIED FACILITIES CRITERIA
	V	VOLTAGE/VOLTS
	VEL.	VELOCITY
	WB	WET BULB
	WT.	WEIGHT

LEGEND (CONT.)		
SYMBOL	ABBREV.	DESCRIPTION
	DX	DIRECT EXPANSION
	(E)	EXISTING
	EAT	ENTERING AIR TEMPERATURE
	EDB.	ENTERING DRY BULB
	ENT.	ENTERING
	EQ.	EQUAL
	EWI	ENTERING WATER TEMPERATURE
	EER	ENERGY EFFICIENCY RATIO
	E.E.S.	ENERGY EFFICIENCY STANDARDS
	EFF.	EFFICIENCY
	ELEC.	ELECTRICAL
	ESP	EXTERNAL STATIC PRESSURE (INCHES OF WATER)
	FAB	FABRICATED
	F.A.R.	FREE AREA REQUIRED
	FLA	FULL LOAD AMPS
	FPM	FEET PER MINUTE
	FT.	FEET
	GA.	GAUGE
	GALV.	GALVANIZED
	GPM	GALLONS PER MINUTE
	GSM	GALVANIZED SHEET METAL
	HERS	HOME ENERGY RATING SYSTEM
	HP	HORSEPOWER
	HSPF	HEATING SEASONAL PERFORMANCE FACTOR
	HVAC	HEATING, VENTILATION AND AIR CONDITIONING
	I.B.C.	INTERNATIONAL BUILDING CODE
	I.M.C.	INTERNATIONAL MECHANICAL CODE
	I.P.C.	INTERNATIONAL PLUMBING CODE
	IN.	INCHES
	KW	KILOWATT
	LAT	LEAVING AIR TEMPERATURE
	LBS.	POUNDS
	LVG.	LEAVING
	MECH.	MECHANICAL
	MAX.	MAXIMUM
	MB	MACHINE BOLT
	MBH	1000 BTUH
	MCA	MINIMUM CIRCUIT AMPACITY
	MFR	MANUFACTURER
	MIN.	MINIMUM
	MOCP	MAXIMUM OVERCURRENT PROTECTION
	MTG.	MOUNTING
	MVD	MANUAL VOLUME DAMPER
	NA	NOT APPLICABLE
	N.F.P.A.	NATIONAL FIRE PROTECTION ASSOCIATION
	NIC	NOT IN CONTRACT
	NC	NOISE CRITERIA
	NO.	NUMBER
	OBD	OPPOSED BLADE DAMPER
	OPER.	OPERATING
	PH	PHASE
	QTY.	QUANTITY
	RPM	REVOLUTIONS PER MINUTE
	SEER	SEASONAL ENERGY EFFICIENCY RATIO
	SF	SQUARE FEET
	SQ.	SQUARE
	SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION
	S.M.S.	SHEET METAL SCREW
	SPD	STATIC PRESSURE DROP
	SQFT	SQUARE FEET
	STRUC.	STRUCTURAL
	STL.	STEEL
	TEMP.	TEMPERATURE
	THRU	THROUGH

MANDATORY HVAC SYSTEM MEASURES	
1. ALL WORK INDICATED ON DRAWINGS AND/OR SPECIFICATIONS SHALL BE COORDINATED WITH WORKS OF OTHER TRADES PRIOR TO START OF WORK.	
2. ALL HVAC EQUIPMENT LISTED IN SECTION 100(H) OF THE E.E.S. MUST BE C.E.C. CERTIFIED.	
3. ALL PIPING INSULATION SHALL BE CONSISTENT WITH THE REQUIREMENTS OF C.M.C. SECTIONS 1201.2 AND TABLE E 502.5, AND E.E.S. SECTION 120.3-A.	
4. ALL DUCTWORK INSULATION SHALL BE CONSISTENT WITH THE REQUIREMENTS OF SECTIONS C.M.C. SECTION 605.0 TITLE 24 E.E.S. TABLE 150.1-A.	
5. ALL HVAC EQUIPMENT AND APPLIANCE SHALL MEET THE REQUIREMENTS PER SECTIONS 110.1-110.2, 110.5 AND 120.1-120.7 E.E.S.	
6. ALL HVAC SYSTEMS SHALL MEET THE CONTROL REQUIREMENTS PER SECTION 110.2 AND 120.2 E.E.S.	
7. ALL VENTILATION SYSTEMS SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH THE C.M.C.	
8. THE CONTRACTOR SHALL PROVIDE THE BUILDING OWNER, MANAGER, AND THE ORIGINAL OCCUPANTS A LIST OF THE HEATING, VENTILATION, AND AIR CONDITIONING FEATURES, MATERIALS, AND COMPONENTS INSTALLED IN THE BUILDING AND OPERATING INSTRUCTIONS.	
9. INSULATION MATERIAL SHALL MEET THE CALIFORNIA QUALITY STANDARD PER SECTION 120.3 AND 120.4 E.E.S.	
10. ALL SPACE CONDITIONING AND VENTILATION SYSTEMS SHALL BE BALANCED TO THE QUANTITIES SPECIFIED IN THESE PLANS, IN ACCORDANCE WITH THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) PROCEDURAL STANDARDS, OR ASSOCIATED AIR BALANCE COUNCIL (AABC) NATIONAL STANDARDS. TESTING AND BALANCING SHALL BE DONE BY AN INDEPENDENT QUALIFIED AGENCY.	
11. ALL SYSTEMS SHALL PROVIDE THE MINIMUM OUTSIDE AIR AS SHOWN ON THE MECHANICAL DRAWINGS, AND SHALL BE MEASURED AND CERTIFIED BY AN INDEPENDENT QUALIFIED TESTING AGENCY.	
12. DUCT INSULATION SHALL HAVE A MINIMUM INSTALLED R-VALUE OF 8.0.	
13. DURING CONSTRUCTION, ENDS OF DUCT OPENINGS SHALL BE SEALED AND MECHANICAL EQUIPMENT SHALL BE COVERED TO PROTECT INTEGRITY OF SYSTEM CLEANLINESS. CGBSC 5.504.3.	
14. PRIOR TO FINAL APPROVAL OF THE BUILDING, THE LICENSED CONTRACTOR, ARCHITECT, OR ENGINEER IN RESPONSIBLE CHARGE OF THE OVERALL CONSTRUCTION MUST COMPLETE AND SIGN THE GREEN BUILDING STANDARDS CERTIFICATION FORM AND GIVE TO THE BUILDING DEPARTMENT OFFICIAL TO BE FILED WITH THE APPROVED PLANS.	
15. PROVIDE TEMPORARY MEANS OF BUILDING VENTILATION DURING CONSTRUCTION IN ACCORDANCE WITH CGBSC SECTION 5.504.1.	
16. BUILDING FLUSH-OUT SHALL BE PERFORMED AND MONITORED UPON CONSTRUCTION COMPLETION IN ACCORDANCE WITH CGBSC SECTION A5.504.2.	
17. ALL ENVELOPE AND MECHANICAL CERTIFICATE OF ACCEPTANCE FORMS AND ALL RELATED ACCEPTANCE DOCUMENTS SHALL BE SUBMITTED TO THE FIELD INSPECTOR DURING CONSTRUCTION. CERTIFICATE OF OCCUPANCY WILL NOT BE ISSUED UNTIL THESE FORMS ARE REVIEWED AND APPROVED.	
18. FOR NEW BUILDINGS OVER 10,000 SQUARE FEET IN FLOOR AREA, UNLESS NOTED OTHERWISE, FUNDAMENTAL BUILDING COMMISSIONING, LIGHTING AND DOMESTIC HOT WATER SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH SPECIFICATION SECTION 23 08 00 AND THE CGBSC SECTION 5.410.2.	
19. THERMOSTATIC CONTROLS FOR ALL SINGLE ZONE AIR CONDITIONERS AND HEAT PUMPS SHALL COMPLY WITH THE REQUIREMENTS OF EES SECTION 110.2(C) AND REFERENCE JOINT APPENDIX JAS. THERMOSTAT SHALL BE CAPABLE OF COMMUNICATING THROUGH EITHER (1) AT LEAST ONE EXPANSION PORT WITH A REMOVABLE MODULE TO ENABLE COMMUNICATION; OR (2) ON BOARD COMMUNICATION DEVICE.	
20. DUCTWORK SHALL BE LEAK TESTED IN ACCORDANCE WITH SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL FOR A REPRESENTATIVE TOTAL NOT LESS THAN 10% OF INSTALLED DUCTWORK IN ACCORDANCE WITH THE REQUIREMENTS OF SMC 603.9.2.	

VEHICLE EXHAUST SYSTEM NOTES	
A. THE GENERAL CONTRACTOR SHALL PROVIDE:	
1. ADEQUATE ACCESS TO THE JOB SITE.	
2. INFORMATION ON CONSTRUCTION SCHEDULING TO FACILITATE PROGRESSIVE INSTALLATION.	
3. ELECTRICAL POWER TO THE VEHICLE EXHAUST CONTROL PANEL. (208V/3)	
4. ELECTRICAL POWER/CONTROL WIRING FROM THE VEHICLE EXHAUST CONTROL PANEL TO THE EXHAUST FAN.	
5. COMPRESSED AIR SOURCE WITH A MINIMUM OF 85 PSI FOR SYSTEM OPERATION.	
6. (4) FOUR OPEN ENDED 1/4" AIR LINES FROM THE STATION AIR SOURCE TO A POSITION ABOVE THE ENDS OF EACH RAIL.	
7. MOUNTING PROVISIONS FOR THE CONTROL PANEL.	
8. NECESSARY STRUCTURE AND BACKING TO SUPPORT VEHICLE EXHAUST RAILS AND SUPPORT SYSTEM USING A MAXIMUM LEG SPACING OF 10 FEET. (COORDINATE WITH ARCHITECT.)	
9. THE CODE REQUIRED FUSE DISCONNECT AT THE FAN.	
10. LOW VOLTAGE CONDUIT FROM THE CONTROL PANEL OR PANELS TO A POINT ABOVE THE CENTER OF EACH TRACK OR RAIL.	
11. ALL NECESSARY LINE AND LOW VOLTAGE WIRING AND CONDUIT TO CONTROL PANEL AND FROM THE CONTROL PANEL TO THE EXHAUST FAN.	
12. EQUIPMENT PAD FOR MOUNTING THE EXHAUST FAN.	
13. FLASHING FOR ROOF/WALL PENETRATIONS.	
14. TREATING/FINISHING OF ALL FLASHING AND EQUIPMENT ASSOCIATED WITH EXHAUST REMOVAL SYSTEM.	
B. THE VEHICLE EXHAUST SUBCONTRACTOR SHALL PROVIDE:	
1. STRAIGHT RAIL SYSTEMS.	
2. RADIAL HIGH STATIC EXHAUST FAN, SIZED FOR ADEQUATE AIR FLOW FOR THE NUMBER OF DROPS, AT THE VOLTAGE AND PHASE FOR THE PARTICULAR STATION. AS REQUIRED.	
3. CONTROL PANELS WHICH HOUSE THE MOTOR STARTER, OVERLOAD RELAYS, TIMER, STEP-DOWN TRANSFORMER. AS REQUIRED.	
4. SENSORS TO ACTIVATE THE EXHAUST FAN UPON VEHICLE START-UP. AS REQUIRED.	
5. COMPLETE SUPPORT STRUCTURE FOR TRACKS OR RAILS.	
6. ALL SYSTEM DUCTWORK (MIN. 22 GAGE GALVANIZED STEEL ALL SIZES), HANGERS, AND GRABBERS.	
7. ALL MISC. FITTINGS, AND AIR DRYER, REGULATOR, ETC. FOR COMPLETE SYSTEM OPERATION.	
8. INSTALLATION OF SECONDARY AIRLINES FOR COMPLETE OPERATION OF GRABBERS.	
9. COMPLETE THE CONNECTION OF LOW VOLTAGE WIRING FROM POINT(S) ABOVE RAILS AS PROVIDED BY THE GENERAL CONTRACTOR TO THE PROVIDED PRESSURE SENSORS.	
10. COMPLETE START-UP OF THE SYSTEM.	
11. TRAINING OF THE FIRE FIGHTING CREWS.	
12. TRAINING VIDEO.	



43095 ZEVO DR., TEMECULA, CALIFORNIA 92590-3760
Phone: 951.296.8110 Fax: 951.296.6079 Email: sk@salasobrien.com

CONSULTANT:



3220 Executive Ridge, Suite 210
Vista, CA 92081
760.660.0100
06-22-20 #2024-03417
www.salasobrien.com

PROJECT ADMINISTERED BY:
SAN BERNARDINO COUNTY
PROJECT & FACILITIES
MANAGEMENT DEPARTMENT

385 N. ARROWHEAD AVE.
SAN BERNARDINO, CA 92415

PROJECT NAME:
SAN BERNARDINO
COUNTY FIRE
DEPARTMENT:
FIRE STATION 227

PROJECT # 10J0J202

CIP #22-105

APN Part of 0164-281-01

180 W. 38TH STREET
SAN BERNARDINO,
CA 92405

ISSUE INFORMATION:	
DATE:	INFORMATION:
9-11-24	D.D.s
10-26-24	PROGRESS
12-20-24	95% CDs
03-14-25	Plan Check 
05-09-25	Plan Check 
07-25-25	BID SET
08-25-25	BID SET

SHEET INFORMATION:
STK PROJECT NO.: 374-193-24
SCALE: AS NOTED
DATE: DECEMBER 2024
PLOT DATE: -
DRAWING NAME:

SEAL:



SHEET TITLE:
MECHANICAL
LEGEND AND
GENERAL
NOTES

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MULTI ZONE SPLIT SYSTEM HEAT PUMP UNIT SCHEDULE																																								
HEAT PUMP																			FAN COIL UNIT																					
TAG	MANUFACTURER & MODEL NO.	COOLING NET CAPACITY			SEER2 (EER2)	HEATING CAPACITY		HSPF (COP)	ELECTRICAL								TAG	MANUFACTURER & MODEL NO.	SERVES	CFM	ESP (IN. W.G.)	MIN. OA CFM	COOLING			HEATING			ELECTRICAL				FILTERS		OPER. WEIGHT (LBS.)	REMARKS				
		TOTAL (MBH)	SENS. (MBH)	AMB. (°F)		SENS. (MBH)	AMB. (°F)		COND. FAN NO.	HP	FLA	COMPRESSOR NO.	RLA	LRA	MCA	MOCPP							V	PH	EDB (°F)	EWB (°F)	EDB (°F)	EVAP. FAN NO.	HP	FLA	MCA	MOCPP	V	PH			QTY	SIZE		
HP 5	CARRIER MCY-MAP036	36.9	24.0	102	22.8	40.0	27	10.52	2				1			36.3	40	208	1	345	FC 5-A	CARRIER MMU-UP018	GYM	480	0.0	125	83.6	66.7	57.0	5	5	5	5	5	5	5	1	9	60	1 2 3 4 5 6 7 8 9 10
																					FC 5-B	CARRIER MMU-UP018	GYM	480	0.0	125	83.6	66.7	57.0	5	5	5	5	5	5	5	1	9	60	1 2 3 4 5 6 7 8 9 10

- 1 PROVIDE REFRIGERANT PIPING AND INSULATION INCLUDING FULL REFRIGERANT CHARGE. SIZES SHALL BE BASED ON FINAL DEVELOPED LENGTH AND MANUFACTURER'S REQUIREMENTS. PROVIDE ALL REFRIGERANT ACCESSORIES AS PER MANUFACTURER'S RECOMMENDATION. VERIFY SIZING WITH MANUFACTURER'S REP. PRIOR TO INSTALLATION. SEE DETAILS 5/M5.1, 6/M5.1.

2 PROVIDE WITH NON-CFC REFRIGERANT BASED SYSTEM.

3 PROVIDE WITH PROGRAMMABLE THERMOSTAT AND GROUP CONTROL. SEE DETAIL 1/M5.1.
- 4 PROVIDE CONDENSING UNIT WITH VIBREX VIBRATION ISOLATOR TYPE RC 2"x2" NEOPRENE PADS, SEE DETAIL 8/M5.1.

5 INDOOR FAN COIL UNIT RECEIVES POWER FROM OUTDOOR CONDENSING UNIT.

6 PROVIDE WITH DISCONNECT. FOR CONTROL DIAGRAM, SEE 1/M5.3.

7 PROVIDE ALL CONTROL WIRING INSIDE CONDUIT AND ALL OTHER ACCESSORIES REQUIRED BY MANUFACTURER FOR PROPER OPERATION.
- 8 FIELD VERIFY EXACT ELECTRICAL REQUIREMENTS WITH MANUFACTURER AND COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO START OF WORK.

9 PROVIDE MANUFACTURER FILTERS.

10 MOUNT CASSETTE FAN COIL PER DETAIL 9/M5.2.

GAS FURNACE SCHEDULE																				REMARKS	
TAG	MANUFACTURER & MODEL NO.	SERVES	CFM	ESP (IN. W.G.)	MIN. CFM	INPUT (MBH)	AFUE (%)	ELECTRICAL					QTY	SIZE	OPER. WEIGHT (LBS.)	FURNACE					REMARKS
								SUPPLY FAN NO.	HP	FLA	MCA	MOCPP	V	PH							
FAU 1	CARRIER 59SU5804	SLEEP QTRS & TOILETS	800	0.5	150	40	95.0	1	0.5	0.6	8.8	15	115	1	1	16x24x2	150				1 2 3 4 5 6 7 8 9 10 11 12
FAU 2	CARRIER 59SU5804	SLEEP QTRS	800	0.5	160	40	95.0	1	0.5	0.6	8.8	15	115	1	1	16x24x2	150				1 2 3 4 5 6 7 8 9 10 11 12
FAU 3	CARRIER 59SU5804	KITCHEN & LIVING ROOM	800	0.5	225	40	95.0	1	0.5	0.6	8.8	15	115	1	1	16x24x2	150				1 2 3 4 5 6 7 8 9 10 11 12
FAU 4	CARRIER 59SU5804	OFFICES/ LAUNDRY ROOMS & TOILETS	800	0.5	130	40	95.0	1	0.5	0.6	8.8	15	115	1	1	16x24x2	150				1 2 3 4 5 6 7 8 9 10 11 12

- 1 FOR FURNACE MOUNTING, SEE DETAIL 7/M5.1.

2 PROVIDE WITH DUCT MOUNTED SMOKE DETECTOR. SEE FLOOR PLAN FOR LOCATION. SEE ELECTRICAL PLAN FOR POWER REQUIREMENTS.

3 PROVIDE UV EMITTERS. 80 WATT/120V/1PH.

4 PROVIDE DOOR SWITCH.

5 PROVIDE NATURAL GAS BURNER.
- 6 PROVIDE PVC FURNACE FLUE PIPES WITH CONCENTRIC VENT TERMINATION KIT. SIZE SHALL BE BASED ON THE FINAL DEVELOPED LENGTH AND MANUFACTURER'S RECOMMENDATIONS. SEE DETAIL 3/M5.2.

7 PROVIDE WITH PROGRAMMABLE THERMOSTAT, SEE DETAIL 1/M5.1.

8 PROVIDE UL 900 (CLASS 1 OR 2) (MERV-13) PLEATED FILTER.

9 PROVIDE WITH STAINLESS STEEL DRAIN PAN.

10 PROVIDE WITH DISCONNECT. FOR CONTROL DIAGRAM, SEE DETAIL 11/M5.1.
- 11 PROVIDE ALL CONTROL WIRING INSIDE CONDUIT AND ALL OTHER ACCESSORIES FOR PROPER OPERATION REQUIRED BY MANUFACTURER.

12 FIELD VERIFY EXACT ELECTRICAL REQUIREMENTS WITH MANUFACTURER AND COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO START OF WORK.

DX COOLING COIL SCHEDULE										REMARKS	
TAG	MANUFACTURER & MODEL NO.	CAPACITY (MBH)		DESIGN COND. EDB (°F)	COND. EWB (°F)	CFM	S.P. DROP (IN. WC)	OPER. WEIGHT (LBS.)			
		TOTAL	SENSIBLE								
CC 1	CARRIER CAPMP	27.6	19.6	78.3	63.5	800	0.5	70			1 2 3
CC 2	CARRIER CAPMP	27.9	19.6	78.3	63.9	800	0.5	65			1 2 3
CC 3	CARRIER CAPMP	27.7	21.1	80.1	63.6	800	0.5	75			1 2 3
CC 4	CARRIER CAPMP	27.2	19.7	78.5	63.4	800	0.5	75			1 2 3

- 1 SWEAT SUCTION TUBE & LIQUID TUBE CONNECTIONS.

2 COIL LOCATION ON SUPPLY SIDE OF FORCED AIR UNIT. COIL NUMBER CORRESPONDS WITH FURNACE NUMBER.
- 3 PROVIDE FAN COIL WITH DRAIN PAN AND SECONDARY CONDENSATE DRAIN OVERFLOW CUTOFF SWITCH

CONDENSING UNIT (COOLING ONLY) SCHEDULE																			
TAG	MANUFACTURER & MODEL NO.	SERVES	COOLING NET CAPACITY			SEER2 (EER2)	ELECTRICAL								OPER. WEIGHT (LBS.)	REMARKS			
			TOTAL (MBH)	SENSIBLE (MBH)	AMB. (°F)		COMPRESSOR			CONDENSER FAN			UNIT POWER SUPPLY						
							NO.	RLA	LRA	NO.	HP	FLA	MCA	MOCPP	V	PH			
CU 1	CARRIER 24SCA518	DORMS	27.6	19.6	102	16.0 (13.5)	1	8.8	42.6	1	1/5	0.40	11.4	20	208	1	140	1 2 3 4 5 6 7	
CU 2	CARRIER 24SCA524	DORMS	27.9	19.6	102	15.2 (12.5)	1	10.9	59.5	1	1/5	0.60	14.2	20	208	1	160	1 2 3 4 5 6 7	
CU 3	CARRIER 24SCA536	KITCHEN/ LIVING	27.7	21.1	102	14.3 (12.0)	1	12.2	80.1	1	1/5	1.40	16.7	25	208	1	190	1 2 3 4 5 6 7	
CU 4	CARRIER 24SCA530	COMMON	27.2	19.7	102	15.2 (12.0)	1	11.7	71.3	1	1/5	0.60	15.2	25	208	1	180	1 2 3 4 5 6 7	

- 1 PROVIDE REFRIGERANT PIPING AND INSULATION INCLUDING FULL REFRIGERANT CHARGE. SIZE SHALL BE AS PER MFR.'S REQUIREMENT AND FINAL DEVELOPED LENGTH. PROVIDE ALL REFRIGERANT ACCESSORIES AS PER MFR.'S RECOMMENDATION. VERIFY SIZING WITH MFR.'S REP. PRIOR TO INSTALLATION. SEE DETAILS 5/M5.1 AND 6/M5.1.

2 PROVIDE WITH CRANKCASE HEATER AND LIQUID LINE SOLENOID VALVE FOR LONG LINE APPLICATIONS.
- 3 PROVIDE WITH EVAPORATOR FREEZE THERMOSTAT, ISOLATION RELAY, LOW-AMBIENT CONTROL KIT AND WINTER START CONTROL KIT FOR LOW-AMBIENT COOLING APPLICATIONS.

4 MOUNT ON LEVEL PLATFORM, SEE DETAIL 8/M5.1.

5 PROVIDE WITH DISCONNECT. FOR CONTROL DIAGRAM, SEE DETAIL 11/M5.1.
- 6 PROVIDE ALL CONTROL WIRING INSIDE CONDUIT AND ALL OTHER ACCESSORIES FOR PROPER OPERATION REQUIRED BY MANUFACTURER.

7 FIELD VERIFY EXACT ELECTRICAL REQUIREMENTS WITH MANUFACTURER AND COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO START OF WORK.

BOOSTER FAN SCHEDULE																
TAG	MANUFACTURER & MODEL NO.	SERVES	CFM	ESP (N. W.G.)	DRIVE TYPE	RPM	HP (WATTS)	MAX. SONES	V	PH	FAN TYPE	OPER. WEIGHT (LBS.)	REMARKS			
BF 1	S&P TD-100X	GYM	60	0.25	DIRECT	2096	(33)	N/A	120	1	INLINE	10	1 2 3 4 5 6 7			
BF 2	S&P TD-100X	GYM	60	0.25	DIRECT	2096	(33)	N/A	120	1	INLINE	10	1 2 3 5 6 7 8			
BF 3	S&P TD-150	UTILITY ROOM DRYING CABINET	200	0.25	DIRECT	1710	(65)	N/A	120	1	INLINE	20	1 2 3 5 6 7 9			

- 1 PROVIDE WITH BACKDRAFT DAMPER.

2 MOUNT INLINE WITH DUCTWORK, SEE DETAIL 2/M5.3.

3 PROVIDE THERMAL OVERLOAD PROTECTION ON FAN MOTOR.
- 4 INTERLOCK WITH FC-5-A.

5 PROVIDE WITH DISCONNECT SWITCH, BY OTHERS.

6 PROVIDE WITH MANUFACTURERS FAN SPEED CONTROLLER.
- 7 FIELD VERIFY EXACT ELECTRICAL REQUIREMENTS WITH MANUFACTURER AND COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO START OF WORK.

8 INTERLOCK WITH FC-5-B.

9 INTERLOCK WITH DRYING CABINET OPERATION.

CIRCULATING CEILING FAN SCHEDULE										REMARKS	
TAG	MANUFACTURER & MODEL NO.	SERVES	VELOCITY (RPM)	ELECTRICAL DATA				OPER. WEIGHT (LBS.)			
				NO.	HP	AMPS	V				
F 1	MACRO AIR MA12XL1006	APP BAY	84	1	1	10.8	208	3	225		1 2 3 4 5
F 2	MACRO AIR MA12XL1006	APP BAY	84	1	1	10.8	208	3	225		1 2 3 4 5
F 3	MACRO AIR MA12XL1006	APP BAY	84	1	1	10.8	208	3	225		1 2 3 4 5

- 1 PROVIDE WITH MANUFACTURER'S INSTALLATION KIT. SEE MANUFACTURER'S INSTALLATION MANUAL FOR MOUNTING DETAILS.

2 INTERLOCK WITH MANUFACTURER'S CONTROLLER. SEE 8/M5.2.

3 PROVIDE WITH DISCONNECT SWITCH BY ELECTRICAL.
- 4 PROVIDE ALL CONTROL WIRING IN CONDUIT AND ALL ACCESSORIES REQUIRED BY MANUFACTURER FOR PROPER OPERATION.

5 FIELD VERIFY EXACT ELECTRICAL REQUIREMENTS WITH MANUFACTURER AND COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO START OF WORK.

AIR DEVICE SCHEDULE					REMARKS	
TAG	MANUFACTURER & MODEL NO.	TYPE	FRAME STYLE	OBD (YES/NO)		
A	TITUS PMC	PERFORATED SUPPLY	BORDER TYPE 3	NO	1 2 3 4	
B	TITUS PAR	PERFORATED RETURN/EXHAUST	BORDER TYPE 3	NO	1 2 4	
C	TITUS MCD	MODULAR CORE SUPPLY	BORDER TYPE 1	YES	1 2 3 4 5	
D	TITUS 350RL	LOUVER FACE RETURN/EXHAUST	BORDER TYPE 3	YES	2 4	
E	TITUS 300	LOUVER FACE SUPPLY	BORDER TYPE 1	YES	1 2 4	
F	TITUS PMC	PERFORATED SUPPLY	BORDER TYPE 3	YES	1 2 4 6	

- 1 SQUARE NECK WITH ROUND ADAPTOR.

2 STEEL CONSTRUCTION.

3 MODULAR CORE WITH 4-WAY DEFLECTION, U.N.O.
- 4 SEE DETAIL 4/M5.1.

5 PROVIDE YOUNG REGULATOR CABLE TYPE REMOTE MANUAL VOLUME DAMPER.

6 MODULAR CORE WITH 2-WAY DEFLECTION, U.N.O.

EXHAUST FAN SCHEDULE																				
TAG	MANUFACTURER & MODEL NO.	SERVES	CFM	ESP (IN. W.G.)	DRIVE TYPE	RPM	BHP (AMPS)	HP (WATTS)	MAX. SONES (dB(A))	V	PH	FAN TYPE	OPER. WEIGHT (LBS.)	REMARKS						
EF 1	PLYMOVENT TEV-585-60	PLYMOVENT	3250	6.0	BELT	3450	(30)	7.5	(69)	230	3	UTILITY SET	190	1 2 11 12						
EF 2	COOK GC-622	ELEC	350	0.25	DIRECT	1137	-	(107)	2.0	115	1	CEILING MOUNT	35	3 4 5 7 8 9 10						
EF 3	COOK GC-168	JAN	150	0.25	DIRECT	1093	-	(53)	3.0	115	1	CEILING MOUNT	21	3 4 5 6 8 9 10						
EF 4	COOK GC-342	TOILET/SHOWER	150	0.25	DIRECT	1093	-	(53)	3.0	115	1	CEILING MOUNT	21	3 4 5 6 8 9 10						
EF 5	COOK GC-342	LAUNDRY	200	0.25	DIRECT	1620	-	(70)	3.5	115	1	CEILING MOUNT	32	3 4 5 6 8 9 10						
EF 6	COOK GC-342	BATH 2	200	0.25	DIRECT	1620	-	(70)	3.5	115	1	CEILING MOUNT	32	3 4 5 6 8 9 10						
EF 7	COOK GC-622	TEL	350	0.25	DIRECT	1137	-	(107)	2.0	115	1	CEILING MOUNT	35	3 4 5 7 8 9 10						
EF 8	COOK GC-342	BATH 3	200	0.25	DIRECT	1620	-	(70)	3.5	115	1	CEILING MOUNT	32	3 4 5 6 8 9 10						
EF 9	COOK GC-342	BATH 4	200	0.25	DIRECT	1620	-	(70)	3.5	115	1	CEILING MOUNT	32	3 4 5 6 8 9 10						
EF 10	COOK GC-342	BATH 5	200	0.25	DIRECT	1620	-	(70)	3.5	115	1	CEILING MOUNT	32	3 4 5 6 8 9 10						
EF 11	COOK GC-342	ICE	200	0.25	DIRECT	1620	-	(70)	3.5	115	1	CEILING MOUNT	32	3 4 5 7 8 9 10						
EF 12	COOK GC-342	LAUNDRY	200	0.25	DIRECT	1620	-	(70)	3.5	115	1	CEILING MOUNT	32	3 4 5 6 8 9 10						
EF 13	COOK GC-342	BATH 1	200	0.25	DIRECT	1620	-	(70)	3.5	115	1	CEILING MOUNT	32	3 4 5 6 8 9 10						
EF 14A	COOK GC-146	TOILET/SHOWER	100	0.25	DIRECT	900	-	(35)	1.3	115	1	CEILING MOUNT	12	3 4 5 6 8 9 10						
EF 14B	COOK GC-146	TOILET/SHOWER	100	0.25	DIRECT	900	-	(35)	1.3	115	1	CEILING MOUNT	12	3 4 5 6 8 9 10						
EF 15	COOK GC-342	TOILET	200	0.25	DIRECT	1620	-	(70)	3.5	115	1	CEILING MOUNT	32	3 4 5 6 8 9 10						
EF 16	COOK 165SQN17D	SCUBA	1980	0.3	DIRECT	1002	0.34	0.75	10.7	115	1	INLINE	150	2 4 5 8 9 10 13						
EF 17	COOK GC-342	UTILITY ROOM	200	0.25	DIRECT	1620	-	(70)	3.5	115	1	CEILING MOUNT	32	3 4 5 6 8 9 10						

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CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD			NRCC-PRF-E
Nonresidential Performance Compliance Method			(Page 1 of 17)
Project Name: Fire Station 227		Date Prepared: 2025-04-15	

A. General Information			
1	Project Name	Fire Station 227	
2	Run Title	Title 24 Analysis	
3	Project Location	180 W. 38th St.	
4	City	San Bernardino	5 Standards Version Compliance 2022
6	Zip code	92405	7 Compliance Software (version) EnergyPro 9.1
8	Climate Zone	10	9 Building Orientation (deg) 0
10	Building Type(s)	• Nonresidential	11 Weather File RIVERSIDE_STYP20.apw
12	Project Scope	• New envelope and mechanical	13 Number of Dwelling Units 0
14	Total Conditioned Floor Area in Scope (ft ²)	4739	15 Total # of hotel/motel rooms 0
16	Total Unconditioned Floor Area (ft ²)	0	17 Fuel Type Natural gas
18	Nonresidential Conditioned Floor Area	4739	19 Total # of Stories (Habitable Above Grade) 1
20	Residential Conditioned Floor Area	0	

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CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD		NRCC-PRF-E
Nonresidential Performance Compliance Method		(Page 2 of 17)

B. PROJECT SUMMARY						
Table B shows which building components are included in the performance calculation. If indicated as not included, the project must show compliance prescriptively if within the permit application.						
Building Components Complying via Performance					Building Components Complying Prescriptively	
Envelope (See Table G)	Nonres	Performance	Solar Thermal Water Heating (See Table I3)	☐ Performance	The following building components are ONLY eligible for prescriptive compliance and should be documented on the NRCC form listed if within the scope of the permit application (i.e. compliance will not be shown on the NRCC-PRF-E).	
	Multifam	Not Included		☒ Not Included		
Mechanical (See Table H)	Nonres	Performance	Covered Process: Commercial Kitchens (See Table J)	☐ Performance	Indoor Lighting (Unconditioned) 140.6 & 170.2(e)	
	Multifam	Not Included		☒ Not Included	Outdoor Lighting 140.7 & 170.2(e)	
Domestic Hot Water (See Table I)	Nonres	Performance	Covered Process: Laboratory Exhaust (See Table J)	☐ Performance	Sign Lighting 140.8 & 170.2(e)	
	Multifam	Not Included		☒ Not Included	Building Components Complying with Mandatory Measures	
Lighting (Indoor Conditioned, see Table K)	Nonres	Not Included	Photovoltaics (see Table F)	☒ Performance	Electrical power systems, commissioning, solar ready, elevator and escalator requirements are mandatory and should be documented on the NRCC form listed if applicable (i.e. compliance will not be shown on the NRCC-PRF-E.)	
				☐ Not Included	Electrical Power Distribution 110.11	
	Multifam	Not Included	Battery (see Table F)	☐ Performance	NRCC-CXR-E is required	
				☒ Not Included	Solar and Battery 110.10	

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CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD		NRCC-PRF-E
Nonresidential Performance Compliance Method		(Page 3 of 17)

C1. COMPLIANCE SUMMARY			
	COMPLIES ¹		
	Time Dependent Valuation (TDV)		Source Energy Use
	Efficiency ² (kBtu/ft ² - yr)	Total ² (kBtu/ft ² - yr)	Total ² (kBtu/ft ² - yr)
Standard Design	199.56	183.69	16.8
Proposed Design	133.27	133.27	13.15
Compliance Margins	66.29	50.42	3.65
Pass			
¹ Efficiency measures include improvements like a better building envelope and more efficient equipment			
² Compliance Totals include efficiency, photovoltaics and batteries			
³ Building complies when efficiency and total compliance margins are greater than or equal to zero and unmet load hour limits are not exceeded			

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CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD		NRCC-PRF-E
Nonresidential Performance Compliance Method		(Page 4 of 17)

C2. TDV ENERGY COMPLIANCE RESULTS FOR PERFORMANCE COMPONENTS (Annual TDV Energy Use, kBtu/ft ² - yr)			
COMPLIES ²			
Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV) ¹
Space Heating	8.66	12.06	-3.4
Space Cooling	56.32	53.54	2.78
Indoor Fans	91.28	27.93	63.35
Heat Rejection	0	0	0
Pumps & Misc.	0	0	0
Domestic Hot Water	8.71	5.15	3.56
Indoor Lighting	34.59	34.59	0
Flexibility	---	---	---
EFFICIENCY COMPLIANCE TOTAL	199.56	133.27	66.29 (33.2%)
Photovoltaics	-15.87	---	-15.87
Batteries	---	---	---
TOTAL COMPLIANCE	183.69	133.27	50.42 (27.4%)
¹ Notes: This number in parenthesis following the Compliance Margin in column 4, represents the Percent Better than Standard.			

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance Report Version: 2022.0.000 Report Generated: 2025-04-15 16:02:07
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CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD		NRCC-PRF-E
Nonresidential Performance Compliance Method		(Page 5 of 17)

C3. TDV ENERGY RESULTS FOR NON-REGULATED COMPONENTS ¹			
Non-Regulated Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV) ¹
Receptacle	90.73	90.73	---
Process	28.75	28.75	---
Other Ltg	---	---	---
Process Motors	---	---	---
TOTAL (TOTAL COMPLIANCE + NON-REGULATED COMPONENTS)	303.17	252.75	50.42 (16.6%)
¹ Notes: This table is not used for Energy Code Compliance.			

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Schema Version: rev 20220601 Compliance ID: EnergyPro-5511-0425-0359

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD		NRCC-PRF-E
Nonresidential Performance Compliance Method		(Page 6 of 17)

C4. SOURCE ENERGY COMPLIANCE RESULTS FOR PERFORMANCE COMPONENTS (Annual SOURCE Energy Use, kBtu/ft ² / yr)			
COMPLIES ²			
Energy Component	Standard Design (SOURCE)	Proposed Design (SOURCE)	Compliance Margin (SOURCE) ¹
Space Heating	1.32	3.66	-2.34
Space Cooling	2.53	2.39	0.14
Indoor Fans	8.55	2.62	5.93
Heat Rejection	0	0	0
Pumps & Misc.	0	0	0
Domestic Hot Water	2.39	1.86	0.53
Indoor Lighting	2.62	2.62	0
Flexibility	---	---	---
EFFICIENCY COMPLIANCE TOTAL	17.41	13.15	4.26 (24.5%)
Photovoltaics	-0.61	---	-0.61
Batteries	---	---	---
TOTAL COMPLIANCE	16.8	13.15	3.65 (21.7%)
¹ Notes: This number in parenthesis following the Compliance Margin in column 4, represents the Percent Better than Standard.			

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Schema Version: rev 20220601 Compliance ID: EnergyPro-5511-0425-0359

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD		NRCC-PRF-E
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C5. SOURCE ENERGY RESULTS FOR NON-REGULATED COMPONENTS ¹			
Non-Regulated Energy Component	Standard Design (SOURCE)	Proposed Design (SOURCE)	Compliance Margin (SOURCE) ¹
Receptacle	11.44	11.44	---
Process	3.17	3.17	---
Other Ltg	---	---	---
Process Motors	---	---	---
TOTAL (TOTAL COMPLIANCE + NON-REGULATED COMPONENTS)	31.41	27.76	3.65 (11.6%)
¹ Notes: This table is not used for Energy Code Compliance.			

C6. ABOVE CODE QUALIFICATIONS	
☐ This project is pursuing CalGreen Tier 1	☐ This project is pursuing CalGreen Tier 2

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CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD		NRCC-PRF-E
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C7. ENERGY USE SUMMARY						
Energy Component	Standard Design Site (MWh)	Proposed Design Site (MWh)	Margin (MWh)	Standard Design Site (MBtu)	Proposed Design Site (MBtu)	Margin (MBtu)
Space Heating	1.3	0.2	1.1	---	17.9	---
Space Cooling	7.6	7.3	0.3	---	---	---
Indoor Fans	15.2	4.7	10.5	---	---	---
Heat Rejection	---	---	---	---	---	---
Pumps & Misc.	---	---	---	---	---	---
Domestic Hot Water	0.5	---	---	10.9	9.6	1.3
Indoor Lighting	6.4	6.4	0	---	---	---
Flexibility	---	---	---	---	---	---
EFFICIENCY TOTAL	31	18.6	12.4	10.9	27.5	-16.6
Photovoltaics	-3.6	---	---	---	---	---
Batteries	---	---	---	---	---	---
ENERGY USE SUBTOTAL	27.4	18.6	8.8	10.9	27.5	-16.6
Receptacle	13.9	13.9	0	32.3	32.3	0
Process	4.8	4.8	0	---	---	---
Other Ltg	---	---	---	---	---	---
Process Motors	---	---	---	---	---	---
ENERGY USE TOTAL	46.1	37.3	8.8	43.2	59.8	-16.6

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CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD		NRCC-PRF-E
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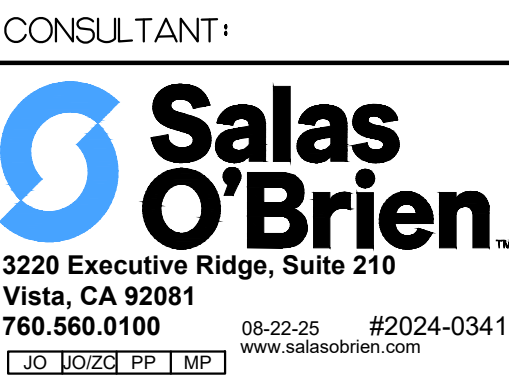
C8. ENERGY USE INTENSITY (EUI)				
	Standard Design (kBtu/ft ² / yr)	Proposed Design (kBtu/ft ² / yr)	Margin (kBtu/ft ² / yr)	Margin Percentage
GROSS EUI ¹	44.9	39.47	5.43	12.09
NET EUI ¹	42.31	39.47	2.84	6.71
¹ Notes: Gross EUI is Energy Use Total (not including PV)/Total Building Area. Net EUI is Energy Use Total (including PV)/Total Building Area.				

D1. EXCEPTIONAL CONDITIONS	
• The project uses the Simplified Geometry Performance Modeling Approach which is not capable of modeling daylighting controls and assumes the prescriptive Secondary Daylit Control requirements are met. PRESCRIPTIVE COMPLIANCE documentation (form NRCC-LTI-02-E) for the requirements of section 140.6(d) Automatic Daylighting Controls in Secondary Daylit Zones is required.	
• Project is claiming Exception 1 to Section 140.10(b): No battery storage system is required if the installed PV system size is less than 15 percent of the size determined by Equation 140.10-A.	
• Project is claiming Exception 3 to Section 140.10(b): No battery storage system required for tenant spaces less than or equal to 5,000 ft ² .	
• PV/Battery Building Type has been modified from software defaults for one or more spaces. Review project's PV/Battery Building Type(s) with documentation author. Refer to Energy Code section 140.10 for Nonresidential or 170.2(g) for more information.	

F1. REQUIRED PV SYSTEMS											
01	02	03	04	05	06	07	08	09	10	11	12
DC System Size (kWdc)	Exception ¹	Module Type	Array Type	Power Electronics	CFI	Azimuth (deg)	Tilt Input	Array Angle (deg)	Tilt: (x in 12)	Inverter EFF. (%)	Annual Solar Access (%)

¹See Table D1 for any PV exceptions used.

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Schema Version: rev 20220601 Compliance ID: EnergyPro-5511-0425-0359



PROJECT ADMINISTERED BY:
SAN BERNARDINO COUNTY
PROJECT & FACILITIES
MANAGEMENT DEPARTMENT

385 N. ARROWHEAD AVE.
SAN BERNARDINO, CA 92415

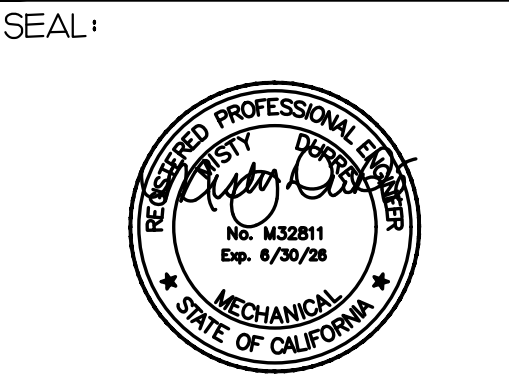
PROJECT NAME:
SAN BERNARDINO
COUNTY FIRE
DEPARTMENT:
FIRE STATION 227

PROJECT # 10J01202
CIP #22-105
APN Part of 0164-281-01

180 W. 38TH STREET
SAN BERNARDINO,
CA 92405

ISSUE INFORMATION:	
DATE:	INFORMATION:
9-11-24	D.D.s
10-26-24	PROGRESS
12-20-24	95% CDs
03-14-25	Plan Check
05-09-25	Plan Check
07-25-25	BID SET
08-25-25	BID SET

SHEET INFORMATION:
STK PROJECT NO.: 374-193-24
SCALE: AS NOTED
DATE: DECEMBER 2024
PLOT DATE:
DRAWING NAME:



SHEET TITLE:

TITLE 24

SHEET NO.:

M0.3

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CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD				NRCC-PRF-E			
Nonresidential Performance Compliance Method				(Page 10 of 17)			
F1B. PV BATTERY BUILDING TYPE(S)							
01		02		03			
Building Occupancy Type ¹ (From Table 140.10-A/9 and 170.2-U/V)		Conditioned Floor Area (ft ²)		Unconditioned Floor Area (ft ²)			
Grocery		0		0			
High-Rise Multifamily		0		0			
Office, Financial Institutions, Unleased Tenant Space		0		0			
Retail		0		0			
School		0		0			
Warehouse		0		0			
Auditorium, Convention Center, Hotel/Motel, Library, Medical Office Building/Clinic, Restaurant, Theater		4739		0			
None		0		0			
Building Occupancy Types are defined in Section 100.1 of the Energy Code							
G1. ENVELOPE GENERAL INFORMATION (conditioned spaces only)							
01		02		03		04	
Opaque Surfaces & Orientation		Total Gross Surface Area (ft ²)		Total Fenestration Area (ft ²)		Window to Wall Ratio (%)	
North-Facing ¹		928		156		16.81	
East-Facing ¹		80		0		0	
South-Facing ¹		855		106		12.4	
West-Facing ¹		800		64		8	
Total		2663		326		12.24	
Roof		4739		0		0	
Notes							
¹ North-Facing is oriented to within 45 degrees of true north, including 45 00'00" east of north (NE), but excluding 45 00'00" west of north (NW).							
² East-Facing is oriented to within 45 degrees of true east, including 45 00'00" south of east (SE), but excluding 45 00'00" north of east (NE).							
³ South-Facing is oriented to within 45 degrees of true south, including 45 00'00" west of south (SW), but excluding 45 00'00" east of south (SE).							
⁴ West-Facing is oriented to within 45 degrees of true west, including 45 00'00" north of west (NW), but excluding 45 00'00" south of west (SW).							
CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance							
Report Version: 2022.0.000							
Report Generated: 2025-04-15 16:02:07							
Schema Version: rev 20220601							
Compliance ID: EnergyPro-5511-0425-0359							

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD										NRCC-PRF-E		
Nonresidential Performance Compliance Method										(Page 11 of 17)		
G4. NONRESIDENTIAL AIR BARRIER												
01				02								
Building Story Name				Air Barrier								
Com-Level 1				No air barrier								
Com-Level 1 + Roof				No air barrier								
G5. OPAQUE SURFACE ASSEMBLY SUMMARY												
01	02	03	04	05	06		07	08	09			10
Surface Name	Construction Type	Area (ft ²)	Framing Type	Cavity R-Value	Continuous R-Value		Units	Value	Description of Assembly Layers			Status ¹
					Interior	Exterior						
R-21 Wall8	Exterior Wall	2,663	Wood	21	N/A	N/A	U-factor	0.0691	Stucco - 7/8 in. Vapor permeable felt - 1/8 in. Composite-1 Gypsum Board - 1/2 in.			N
R-30 Roof Attic14	Roof	4,739	Wood	30	N/A	N/A	U-factor	0.0383	AsphaltShingles0_25in Vapor permeable felt - 1/8 in. Plywood - 1/2 in. Air - Cavity - Wall Roof Ceiling - 4 in. or more Composite-2 Gypsum Board - 1/2 in.			N
Slab On Grade16	Underground Floor	4,739	N/A	0	N/A	N/A	F-factor	0.73	Slab Type -Unheated slab on grade Insulation R-Value =None Insulation R-Value =none			N
¹ Status: N - New, A - Altered, E - Existing												
CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance												
Report Version: 2022.0.000												
Report Generated: 2025-04-15 16:02:07												
Schema Version: rev 20220601												
Compliance ID: EnergyPro-5511-0425-0359												

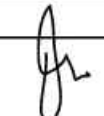
CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD												NRCC-PRF-E	
Nonresidential Performance Compliance Method												(Page 12 of 17)	
G7A. FENESTRATION ASSEMBLY SUMMARY (NONRESIDENTIAL)													
01	02		03	04	05	06	07	08	09				
Fenestration Assembly Name	Fenestration Type/ Product Type / Frame Type		Certification Method ¹	Assembly Method	Area (ft ²)	Overall U-factor	Overall SHGC	Overall VT	Status ²				
SBFS Window	Vertical fenestration Fixed window N/A		NFRC	Manufactured	326	0.5	0.4	0.5	N				
¹ Notes: Newly installed fenestration shall have a certified NFRC Label Certificate or use the CEC default tables found in Table 110.6-A and Table 110.6-B. Center of Glass (COG) values are for the glass-only, determined by the manufacturer, and are shown for ease of verification. Site-built fenestration values are calculated per Nonresidential Appendix N46 and are used in the analysis.													
² Status: N - New, A - Altered, E - Existing													
H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)													
01	02	03	04	05	06	07	08	09	10	11	12		
Equipment Name	Equipment Type	Qty	Heating			Cooling			Economizer Type (if present)	Status ¹			
			Total Heating Output (kBtu/h)	Supp Heat Output (kBtu/h)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit			Efficiency		
CU/CC/FAU-1	Single Zone Air Conditioner (SZAC) Air System	1	24	0	AFUE	90	23.04	EER SEER	12.5 16	No Economizer	N		
CU/CC/FAU-2	Single Zone Air Conditioner (SZAC) Air System	1	24	0	AFUE	90	23.04	EER SEER	12.5 16	No Economizer	N		
CU/CC/FAU-3	Single Zone Air Conditioner (SZAC) Air System	1	36	0	AFUE	90	34.56	EER SEER	12.5 16	No Economizer	N		
¹ Status: N - New, A - Altered, E - Existing													
CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance													
Report Version: 2022.0.000													
Report Generated: 2025-04-15 16:02:07													
Schema Version: rev 20220601													
Compliance ID: EnergyPro-5511-0425-0359													

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD													NRCC-PRF-E	
Nonresidential Performance Compliance Method													(Page 13 of 17)	
H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)														
01	02	03	04	05	06	07	08	09	10	11	12			
Equipment Name	Equipment Type	Qty	Heating			Cooling			Economizer Type (if present)	Status ¹				
			Total Heating Output (kBtu/h)	Supp Heat Output (kBtu/h)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit			Efficiency			
CU/CC/FAU-4	Single Zone Air Conditioner (SZAC) Air System	1	36	0	AFUE	90	34.56	EER SEER	12.5 16	No Economizer	N			
FC-SA/B	Single Zone Heat Pump (SZHP) Air System	2	25	0	N/A	NA	23.04	EER SEER	12.2 15	No Economizer	N			
¹ Status: N - New, A - Altered, E - Existing														
H3. NONRESIDENTIAL / COMMON USE AREA FAN SYSTEMS SUMMARY														
01	02	03	04	05	06	07	08	09	10	11	12	13		
Name or Item Tag	Qty	Design OA CFM	Supply Fan			Return / Relief Fan							Status ¹	
			CFM	Power	Power Units	Control	Fan Type	CFM	Power	Power Units	Control			
CU/CC/FAU-1	1	150.6	700	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N		
CU/CC/FAU-2	1	160.5	800	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N		
CU/CC/FAU-3	1	225.5	1,050	0.15	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N		
CU/CC/FAU-4	1	128.25	1,050	0.2	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N		
FC-SA/B	2	43.5	700	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N		
¹ Status: N - New, A - Altered, E - Existing														
CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance														
Report Version: 2022.0.000														
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Compliance ID: EnergyPro-5511-0425-0359														

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD								NRCC-PRF-E	
Nonresidential Performance Compliance Method								(Page 14 of 17)	
H5. GENERAL EXHAUST FAN SUMMARY									
01	02	03	04	05	06	07	08		
System ID	Zone Name	Qty	CFM	Power	Power Units	Continuous Operation?	Status ¹		
Main Room24	3-Main Room	2	600	0.1	BHP	No	N		
¹ Status: N - New, A - Altered, E - Existing									
H8. SYSTEM SPECIAL FEATURES									
01	02	03	04						
System Name	Equipment Type	Interlocks per 140.4(n)	Other Special Features and Controls						
WH-11 - SHW	Service Hot Water	N/A	Fixed Temperature Control						
Notes: This table includes controls related to the performance path only. For projects using the prescriptive path, mandatory and prescriptive controls requirements are documented on the NRCC-MCH-E.									
¹ Yes = interlocks are provided, No = interlocks are not provided, NA means no operable openings.									
H9. NONRESIDENTIAL / COMMON USE AREA & HOTEL/MOTEL VENTILATION									
01	02	03	04	05	06	07			
Zone Name	Ventilation Function	# of People	Supply OA CFM	Exhaust CFM	Conditioned Area (sf)	DCV or Occupant Sensor Controls, or Both			
1-Sleeping Quarters 1-3 and-Trm	Misc - All others	5.02	180.6	0	1004	N/A			
2-Sleeping Quarters 4-9	Misc - All others	5.35	160.5	0	1070	N/A			
3-Main Room	Exhaust - Kitchensettes	9.08	225.5	1200	1230	N/A			
4-Lobby/Office/Corridor	Office - Office space	4.28	128.25	0	855	N/A			
5-Fitness	Sports/Entertainment - Health club/weight rooms	5.8	87	0	580	N/A			
CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance									
Report Version: 2022.0.000									
Report Generated: 2025-04-15 16:02:07									
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Compliance ID: EnergyPro-5511-0425-0359									

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD														NRCC-PRF-E	
Nonresidential Performance Compliance Method														(Page 15 of 17)	
H11. ZONAL SYSTEM AND TERMINAL UNIT SUMMARY															
01	02	03	04	05	06	07	08	09	10	11	12				
System ID	System Type	Qty	Rated Capacity (kBtu/h)	Airflow (cfm)			Fan			VSD					
				Heating	Cooling	Design	Min.	Min. Ratio	Power		Power Units	Cycles			
1-Sleeping Quarters 1-3 and-Trm	Uncontrolled	1	N/A	N/A	700	N/A	0	N/A	N/A	N/A	□				
2-Sleeping Quarters 4-9-Trm	Uncontrolled	1	N/A	N/A	800	N/A	0	N/A	N/A	N/A	□				
3-Main Room-Trm	Uncontrolled	1	N/A	N/A	1,050	N/A	0	N/A	N/A	N/A	□				
4-Lobby/Office/Corridor-Trm	Uncontrolled	1	N/A	N/A	1,050	N/A	0	N/A	N/A	N/A	□				
5-Fitness-Trm	Uncontrolled	2	N/A	N/A	1,400	N/A	0	N/A	N/A	N/A	□				
I1. WATER HEATER EQUIPMENT SUMMARY															
01	02	03	04	05	06	07	08	09	10	11	12	13	14		
Name	Heater Element Type	Tank Type	Qty	Tank Vol (gal)	Rated Input	Rated Input Unit	Efficiency	Efficiency Unit	Tank Insulation R-value Int/Ext	Standby Loss Fraction	1st Hr. Rating or Flow Rate (gal)	Heat Pump Type	Tank Location or Ambient Condition		
WH-12	Natural Gas	Storage	1	60	120	kBtu/Hr	0.8	TE	N/A	0.01	N/A	N/A	N/A		
L. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION															
Selections made by Documentation Author indicate which Certificates of Installation must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online															
Building Component		Form/Title													
Envelope	NRCI-ENV-01-E - Must be submitted for all buildings														
Envelope	NRCI-ENV-E - Envelope (for all buildings)														
Mechanical	NRCI-MCH-01-E - Must be submitted for all buildings														
Mechanical	NRCI-MCH-E - For all buildings with Mechanical Systems														
Plumbing	NRCI-PLB-01-E - Must be submitted for all buildings														
CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance															
Report Version: 2022.0.000															
Report Generated: 2025-04-15 16:02:07															
Schema Version: rev 20220601															
Compliance ID: EnergyPro-5511-0425-0359															

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD		NRCC-PRF-E	
Nonresidential Performance Compliance Method		(Page 16 of 17)	
L. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION			
Selections made by Documentation Author indicate which Certificates of Installation must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online			
Building Component		Form/Title	
Plumbing	NRCI-PLB-E - For all buildings with Plumbing Systems		
Covered Process	NRCI-PRC-01-E - Must be submitted for all Covered Processes		
M. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE			
Selections made by Documentation Author indicate which Certificates of Acceptance must be submitted for the features to be recognized for compliance. These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification Provider (ATTCP).			
Building Component		Form/Title	
Envelope	NRCA-ENV-02-F - NFRC label verification for fenestration		
Covered Process	NRCA-PRC-02-F Kitchen Exhaust		
Mechanical	NRCA-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		
Mechanical	NRCA-MCH-03-A - Constant Volume Single Zone HVAC		
N. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION			
Selections made by Documentation Author indicate which Certificates of Verification must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online			
There are no Certificates of Verification applicable to this project			
CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance			
Report Version: 2022.0.000			
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Schema Version: rev 20220601			
Compliance ID: EnergyPro-5511-0425-0359			

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD				NRCC-PRF-E	
Nonresidential Performance Compliance Method				(Page 17 of 17)	
Documentation Author's Declaration Statement					
1. I certify that this Certificate of Compliance documentation is accurate and complete.					
Documentation Author Name: Jeffrey Ogile			Documentation Author Signature: 		
Company: Salas O'Brien Engineers			Signature Date: 04/16/2025		
Address: 3220 Executive Ridge Suite 210			CEA/HERS Certification Identification (if applicable):		
City/State/Zip: Vista, CA 92081			Phone:		
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 understand that a registered 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, and I will take the necessary steps to accomplish this requirement.					
6. I understand that a registered copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy, and I will take the necessary steps to accomplish these requirements.					
Responsible Designer Name: Misty DuPre			Responsible Designer Signature: 		
Company: Salasobrien			Date Signed: 04/16/2025		
Address: 3220 Executive Ridge Suite 210			License #: M32811		
City/State/Zip: Vista, CA 92081			Title: Mechanical Engineer		
Phone:			Scope: Mechanical & Plumbing		
CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance					
Report Version: 2022.0.000					
Report Generated: 2025-04-15 16:02:07					
Schema Version: rev 20220601					
Compliance ID: EnergyPro-5511-0425-0359					



PROJECT ADMINISTERED BY:
SAN BERNARDINO COUNTY
PROJECT & FACILITIES
MANAGEMENT DEPARTMENT

385 N. ARROWHEAD AVE.
SAN BERNARDINO, CA 92415

PROJECT NAME:
SAN BERNARDINO
COUNTY FIRE
DEPARTMENT:
FIRE STATION 227

PROJECT # 10J01202

CIP #22-105

APN Part of 0154-281-01

180 W. 38TH STREET
SAN BERNARDINO,
CA 92405

ISSUE INFORMATION:	
DATE:	INFORMATION:
9-11-24	D.D.s
10-26-24	PROGRESS
12-20-24	95% CDs
03-14-25	Plan Check 
05-09-25	Plan Check 
07-25-25	BID SET
08-25-25	BID SET

SHEET INFORMATION:
STK PROJECT NO.: 374-193-24
SCALE: AS NOTED
DATE: DECEMBER 2024
PLOT DATE: -
DRAWING NAME: -

SEAL:



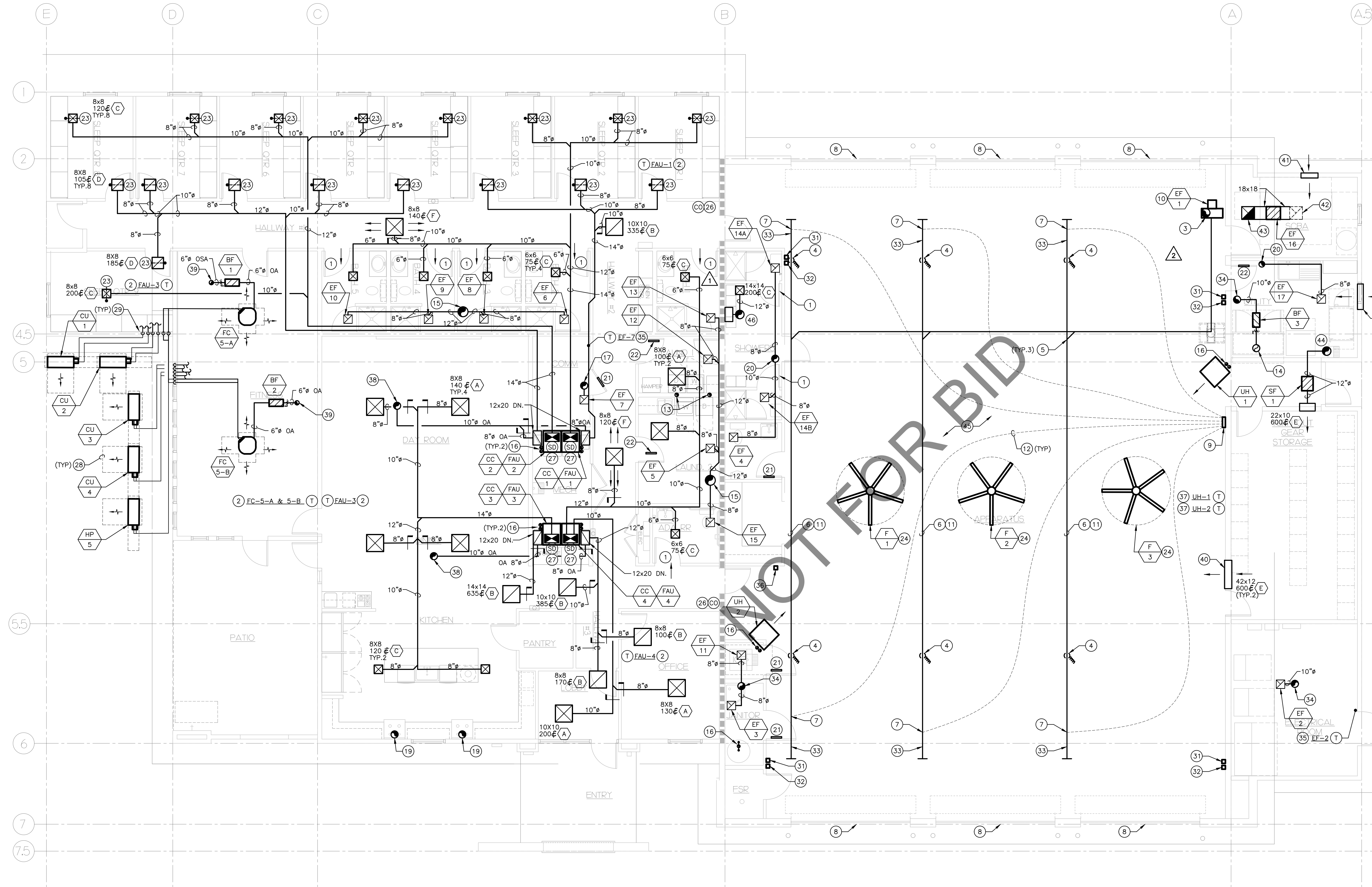
SHEET TITLE:

TITLE 24

SHEET NO.:

M0.4

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8/22/2025 5:59AM



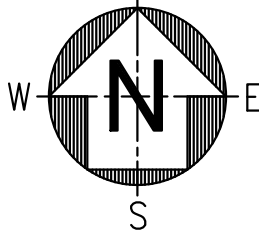
MECHANICAL FLOOR PLAN

GENERAL NOTES

- CONTRACTOR SHALL COORDINATE WITH ALL OTHER TRADES. IN CASE OF DISCREPANCIES OR ANY POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.
- FOR DUCT TAKE-OFFS SUPPORTING & INSULATION, SEE DETAILS 3/M5.1, 2/M5.1 & 3/M5.3.
- FOR DUCT SMOKE DETECTOR, SEE DETAIL 7/M5.2.

KEY NOTES

- UNDERCUT DOOR 1".
- FULLY PROGRAMMABLE TITLE-24 COMPLIANT THERMOSTAT. SEE 1/M5.1. VERIFY EXACT LOCATION WITH ARCHITECT AND OWNER'S REP. PRIOR TO START OF WORK.
- 12" VEHICLE EXHAUST DUCT UP THRU ROOF TO ROOF CAP. TERMINATE MINIMUM 3' ABOVE FINISHED ROOF. MAINTAIN DUCT MINIMUM 3' AWAY FROM EXTERIOR WALLS AND 10'-0" FROM BUILDING OPENINGS.
- FLEXIBLE EXHAUST HOSE WITH FITTINGS AND CONNECTIONS AS SPECIFIED AND PER MANUFACTURER'S RECOMMENDATIONS.
- 7" VEHICLE EXHAUST DUCT. SEE DETAIL 1/M5.2 ATTACHMENT TO RAIL SYSTEM. SEE SPECIFICATIONS FOR MATERIAL, SEE DETAIL 2/M5.2 FOR SUPPORT.
- STRAIGHT RAIL SYSTEM FOR VEHICLE EXHAUST MOUNTING SHALL BE FIELD VERIFIED BY THE MANUFACTURER'S REPRESENTATIVE. SEE ARCHITECTURAL DRAWINGS FOR RAIL SUPPORT. MOUNT BOTTOM OF RAIL AT 14'-0" A.F.F.
- SENSOR LOCATION FOR AUTO START. LOCATION SHALL BE WITHIN 5 FEET OF FRONT AND BACK OF RAIL. PROVIDE COMPRESSOR FITTING FOR ADDITIONAL DETAILS SEE SPECIFICATIONS AND MANUFACTURER'S INSTALLATION GUIDE.
- ROLL UP APPARATUS DOOR. INSTALL WITHOUT WEATHER STRIPPING TO MAINTAIN 4.5 SF F.A.R. FOR VEHICLE EXHAUST MAKE UP AIR.
- VEHICLE EXHAUST REMOVAL SYSTEM CONTROL PANEL. VERIFY EXACT LOCATION WITH OWNER PRIOR TO START OF WORK. MOUNT AS PER MANUFACTURER'S WRITTEN RECOMMENDATIONS.
- VEHICLE EXHAUST FAN. FOR INSTALLATION, SEE DETAIL 10/M5.1.
- CONTRACTOR SHALL PROVIDE STRUCTURAL CROSS MEMBERS AS REQUIRED BY THE MANUFACTURER FOR SUPPORT OF EXHAUST REMOVAL SYSTEM.
- ROUTE LOW VOLTAGE CONTROL WIRING IN CONDUIT TO SENSOR CONNECTION LOCATION. PROVIDE CONDUIT CONTROL WIRING AND INSTALL AS PER MANUFACTURER'S REQUIREMENTS.
- DRYER VENT UP THRU ROOF. PROVIDE DRYER VENT BACK DRAFT DAMPER. VERIFY SIZE WITH MANUFACTURER'S REQUIREMENTS.
- 10" EXHAUST DUCT DOWN TO DRYING CABINET. TRANSITION AS NECESSARY TO MAKE FINAL CONNECTION AT CABINET.
- 14" EXHAUST DUCT UTR. SEE M2.2 FOR CONTINUATION.
- 3" COMBUSTION AIR & FLUE PIPE UP TO CONCENTRIC VENT KIT THRU THE ROOF. SEE DETAIL 3/M5.2.
- 10" EXHAUST DUCT UTR. SEE M2.2 FOR CONTINUATION.
- 12" EXHAUST DUCT UTR. SEE M2.2 FOR CONTINUATION.
- 10" RANGE VENT DUCT UP THRU ROOF TO ROOF CAP. 600 CFM KITCHEN HOOD. VERIFY EXACT SIZE WITH HOOD MANUFACTURER PRIOR TO START OF WORK.
- 8" EXHAUST DUCT UTR. SEE M2.2 FOR CONTINUATION.
- 18x14 DOOR LOUVER. MINIMUM 0.88 SQFT. F.A.R. SEE ARCHITECTURAL DRAWINGS FOR EXACT SIZE, LOCATION, COLOR AND STYLE.
- 18x12 DOOR LOUVER. MINIMUM 0.75 SQFT. F.A.R. SEE ARCHITECTURAL DRAWINGS FOR EXACT SIZE, LOCATION, COLOR AND STYLE.
- PROVIDE 1HR FUSED LINK FIRE DAMPER AT CEILING. DIFFUSER. SEE DETAIL 11/M5.2.
- MOUNT FAN BLADES AT 13'-6" A.F.F. REFER TO MANUFACTURER INSTRUCTIONS FOR MOUNTING.
- 30x30 ARCHITECTURAL WALL LOUVER. MINIMUM 3.0 SQFT F.A.R. MOUNT BELOW WINDOW.
- PROVIDE CO DETECTION WITH AUDIBLE AND VISUAL ALARM.
- DUCT SMOKE DETECTOR. INTERLOCK WITH FIRE ALARM. COORDINATE WITH FIRE ALARM CONTRACTOR. SEE DETAIL 7/M5.2.
- MANUFACTURER'S MIN. CLEARANCE. KEEP CLEAR FROM ALL OBSTACLES.
- MANUFACTURER SPECIFIED SIZED REFRIGERANT PIPING UP THRU WALL TO CEILING SPACE. ROUTE TO CORRESPONDING COOLING COIL & CASSETTE UNIT. SEE DETAIL 6/M5.1. VERIFY PIPE SIZING AND LENGTH BEFORE START OF WORK.
- NOT USED.
- VEHICLE EXHAUST CRAB CRAWL RETURN SYSTEM EMERGENCY STOP SWITCH. COORDINATE FINAL LOCATION WITH END USER BEFORE START OF WORK. MOUNT PER MANUFACTURER INSTRUCTIONS AND PROVIDE ALL CONTROL WIRING IN CONDUIT.
- VEHICLE EXHAUST CRAB CRAWL RETURN SYSTEM MANUAL START SWITCH. COORDINATE FINAL LOCATION WITH END USER BEFORE START OF WORK. MOUNT PER MANUFACTURER INSTRUCTIONS AND PROVIDE ALL CONTROL WIRING IN CONDUIT.
- VEHICLE EXHAUST CRAB CRAWL SYSTEM. PROVIDE ALL CONTROL WIRING IN CONDUIT. SEE ELECTRICAL DESIGN FOR POWER REQUIREMENTS.
- 10" EXHAUST DUCT UTR. SEE M2.2 FOR CONTINUATION.
- PROVIDE LINE VOLTAGE THERMOSTAT. SEE DETAIL 12/M5.1. MOUNT PER DETAIL 1/M5.1.
- F-1, F-2 & F-3 FAN CONTROLLERS. COORDINATE WITH ELECTRICAL TO PROVIDE CONDUIT FOR CONTROL WIRING.
- PROVIDE MANUFACTURER THERMOSTAT CONTROLLER. COORDINATE WITH ELECTRICAL TO PROVIDE CONDUIT FOR CONTROL WIRING. SEE 1/M5.1 FOR MOUNTING & 5/M5.2 FOR CONTROLS. VERIFY EXACT LOCATION WITH ARCHITECT AND OWNER'S REP. PRIOR TO START OF WORK.
- 10" OUTSIDE AIR DUCT UTR. SEE M2.2 FOR CONTINUATION.
- 6" OUTSIDE AIR DUCT UTR. SEE M2.2 FOR CONTINUATION.
- 42x12 WALL TRANSFER LOUVER. MOUNT AT 6" BELOW LOCKER ROOM FINISH CEILING.
- 24x60 ARCHITECTURAL WALL LOUVER. MINIMUM 4.95 SQFT F.A.R. 6" A.F.F. TO BOTTOM OF LOUVER.
- 18x18 DUCT DOWN TO EQUIPMENT. TRANSITION TO CONNECTION SIZE FOR FINAL CONNECTION. PROVIDE FLEXIBLE CONNECTION AT EQUIPMENT.
- 18x18 DUCT UP THROUGH ROOF. SEE M2.2 FOR CONTINUATION.
- 12" DUCT UTR TO ROOF CAP. SEE M2.2 FOR CONTINUATION.
- THERE SHALL BE NO EXPOSED CONDUIT WITHIN THE APPARATUS BAY.
- 14" DUCT UP TO LOUVER SEE M2.2 FOR CONTINUATION.



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

1



CONSULTANT



PROJECT ADMINISTERED BY:
SAN BERNARDINO COUNTY
PROJECT & FACILITIES
MANAGEMENT DEPARTMENT

385 N. ARROWHEAD AVE.
SAN BERNARDINO, CA 92415

PROJECT NAME:
SAN BERNARDINO
COUNTY FIRE
DEPARTMENT:
FIRE STATION 227

PROJECT # 10J01202

CIP #22-105

APN Part of 0154-281-01

180 W. 38TH STREET
SAN BERNARDINO,
CA 92405

ISSUE INFORMATION:

DATE:	INFORMATION:
9-11-24	D.D.s
10-26-24	PROGRESS
12-20-24	95% CD.s
03-14-25	Plan Check
05-09-25	Plan Check
07-25-25	BID SET
08-25-25	BID SET

SHEET INFORMATION:

STK PROJECT NO.: 374-193-24
SCALE: AS NOTED
DATE: DECEMBER 2024
PLOT DATE:
DRAWING NAME:

SEAL:



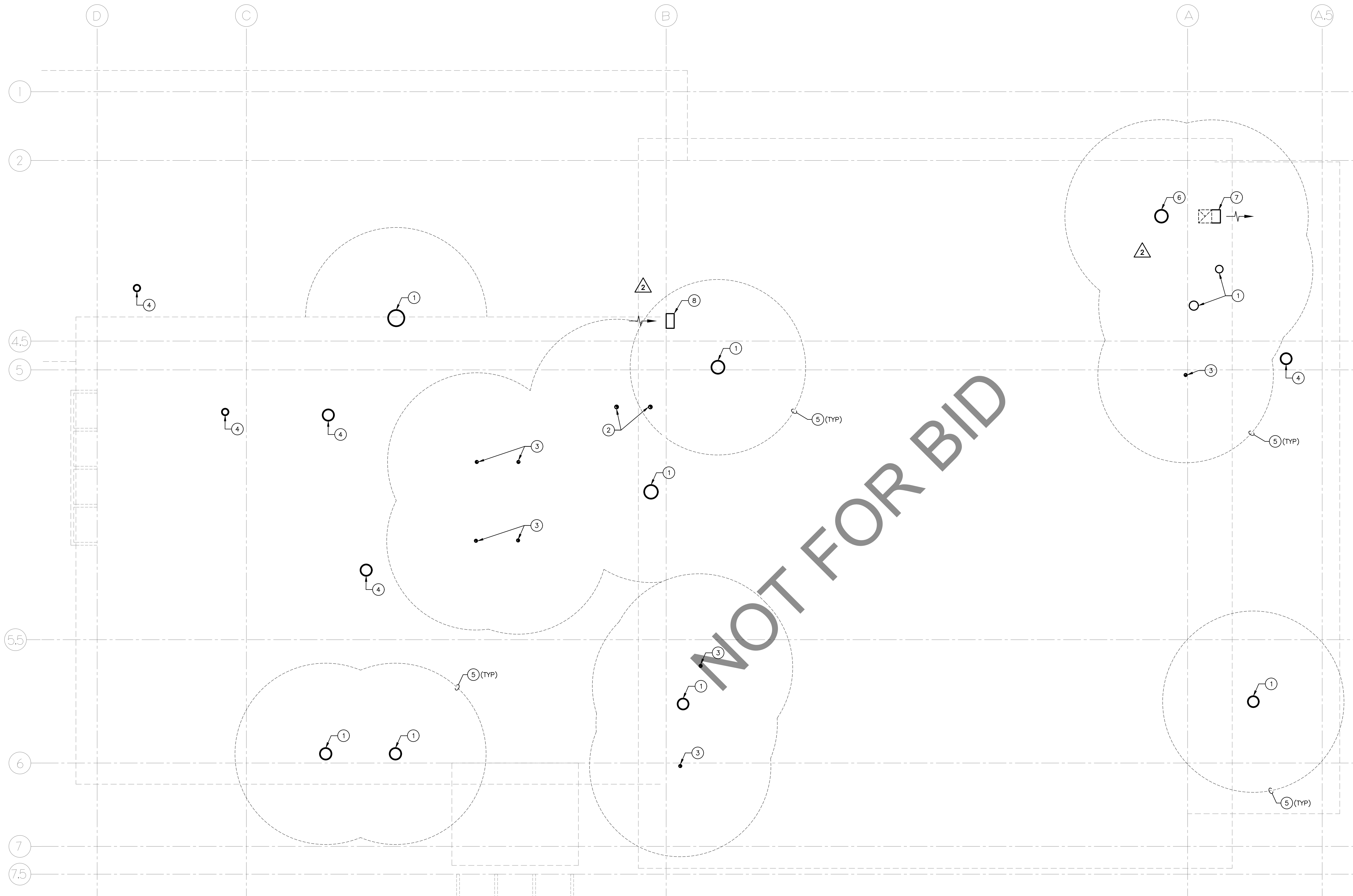
SHEET TITLE:

MECHANICAL
FLOOR PLAN

SHEET NO.:

M2.1

08/22/2025 5:58AM T:\2024\0417-20 - SB Fire Station 227\05 - BIM\AEC\Mechanical\2024\0417_M2.2.rvt

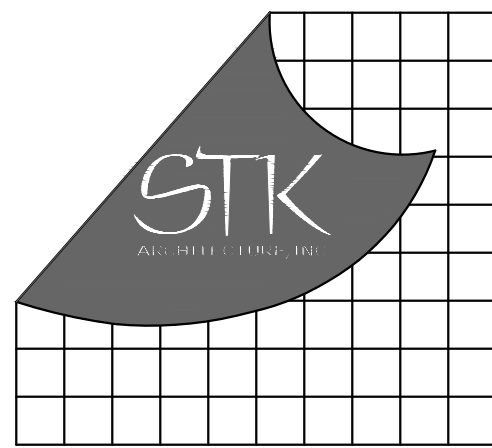


GENERAL NOTES

A. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS, DETERMINING EXTENT OF DEMOLITION, AND COORDINATE WITH ALL OTHER TRADES. IN CASE OF DISCREPANCIES OR ANY POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

KEY NOTES

- 1 EXHAUST ROOF CAP. SEE DETAIL 4/M5.2.
- 2 DRYER VENT ROOF CAP. SEE DETAIL 10/M5.2.
- 3 CONCENTRIC FLUE AND COMBUSTION AIR TERMINATION KIT. SEE DETAIL 3/M5.2.
- 4 OUT SIDE AIR ROOF CAP. SEE DETAIL 4/M5.2.
- 5 MAINTAIN MINIMUM 10'-0" FROM ALL OUTSIDE AIR INTAKES.
- 6 MANUFACTURER'S VEHICLE EXHAUST ROOF CAP.
- 7 EXHAUST TERMINATION AT ROOF. SEE DETAIL 6/M5.3.
- 8 20x20 EXTERIOR WALL MOUNTED MAKE UP AIR LOUVER. MOUNT AT 16' A.F.F. SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION AND COORDINATE ON SITE BEFORE FINAL PLACEMENT.



CONSULTANT:



PROJECT ADMINISTERED BY:
SAN BERNARDINO COUNTY
PROJECT & FACILITIES
MANAGEMENT DEPARTMENT

385 N. ARROWHEAD AVE.
SAN BERNARDINO, CA 92415

PROJECT NAME:
SAN BERNARDINO
COUNTY FIRE
DEPARTMENT:
FIRE STATION 227

PROJECT # 10101202

CIP #22-105

APN Part of 0154-281-01

180 W. 38TH STREET
SAN BERNARDINO,
CA 92405

ISSUE INFORMATION:

DATE:	INFORMATION:
9-11-24	D.D.s
10-26-24	PROGRESS
12-20-24	95% CDs
03-14-25	Plan Check
05-09-25	Plan Check
07-25-25	BID SET
08-25-25	BID SET

SHEET INFORMATION:

STK PROJECT NO.: 374-193-24
SCALE: AS NOTED
DATE: DECEMBER 2024
PLOT DATE: -
DRAWING NAME:

SEAL:

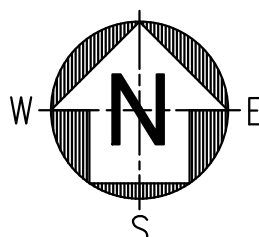


SHEET TITLE:

MECHANICAL
ROOF PLAN

SHEET NO.:

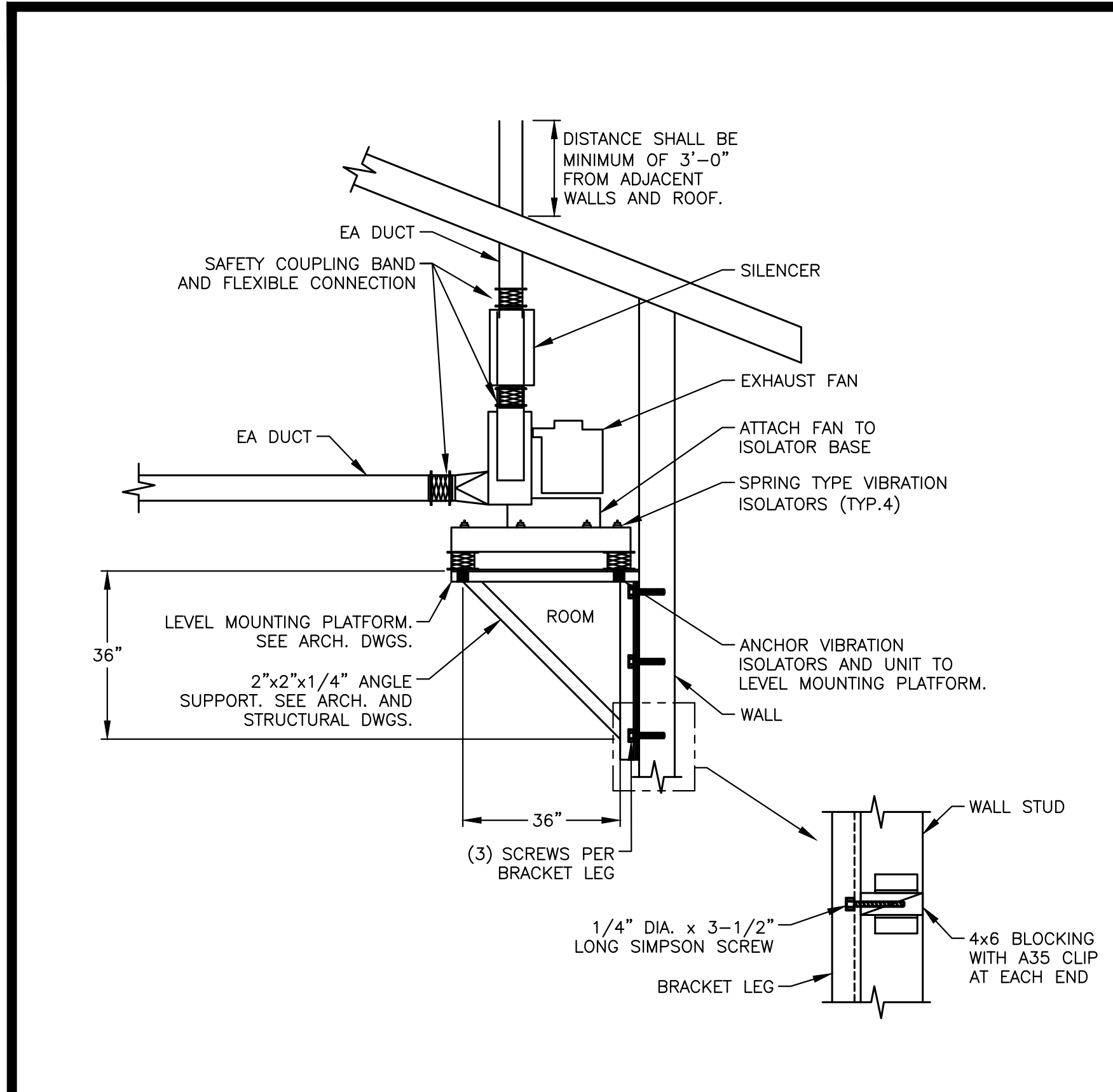
M2.2



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

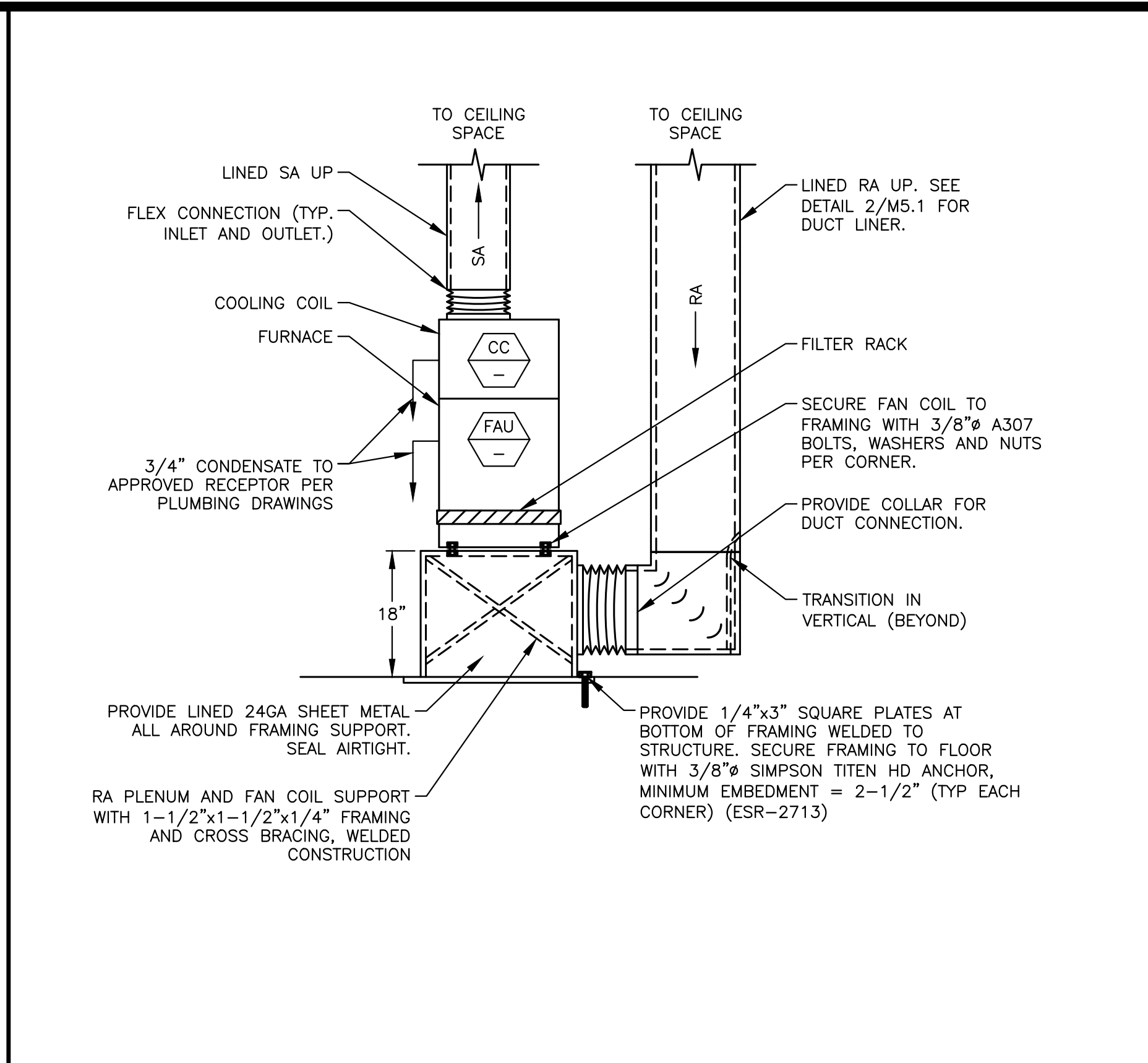
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MECHANICAL ROOF PLAN



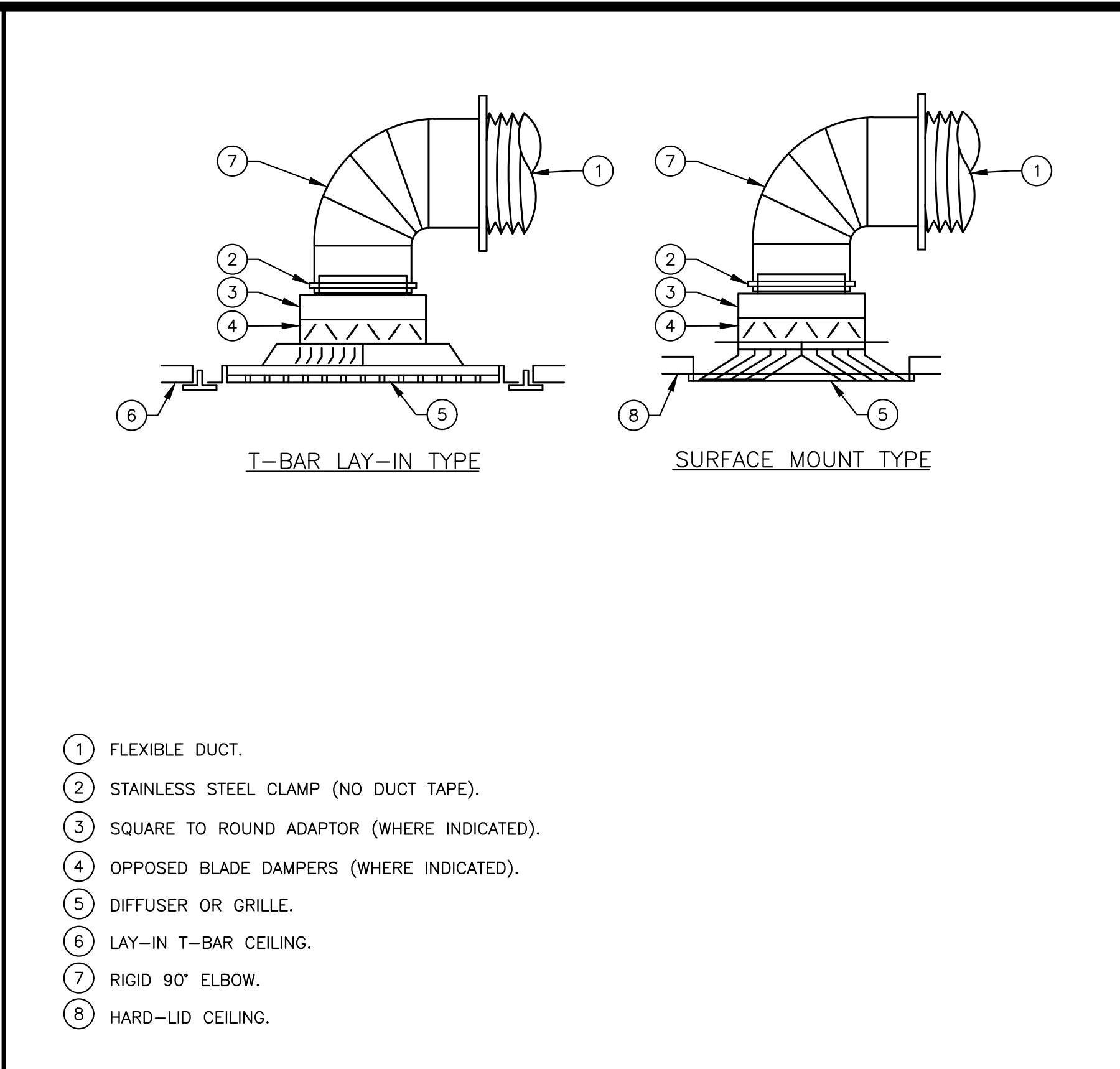
VEHICLE EXHAUST FAN MOUNTING DETAIL

SCALE: NONE 10



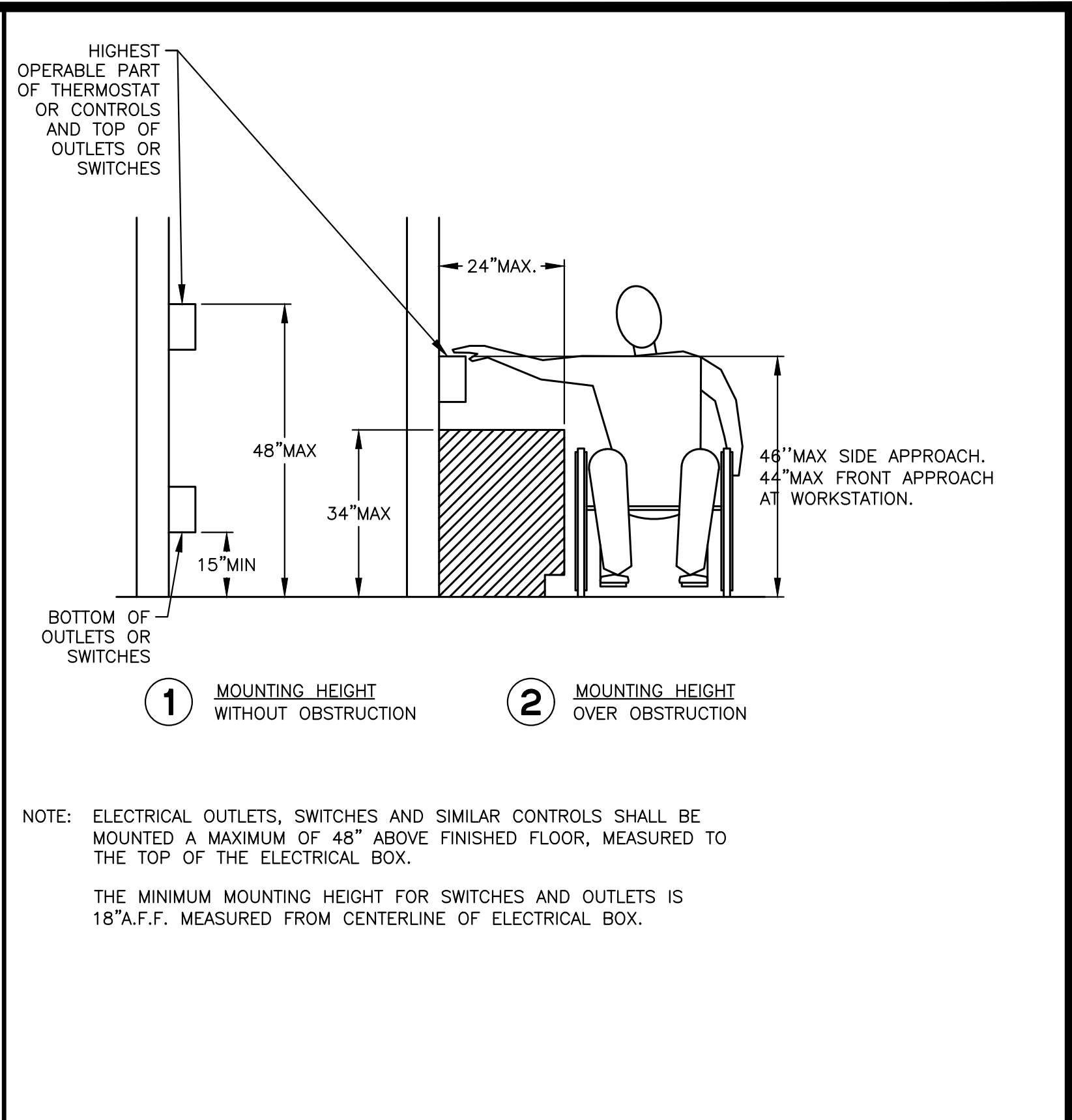
VERTICAL FURNACE INSTALLATION DETAIL

SCALE: NONE 7



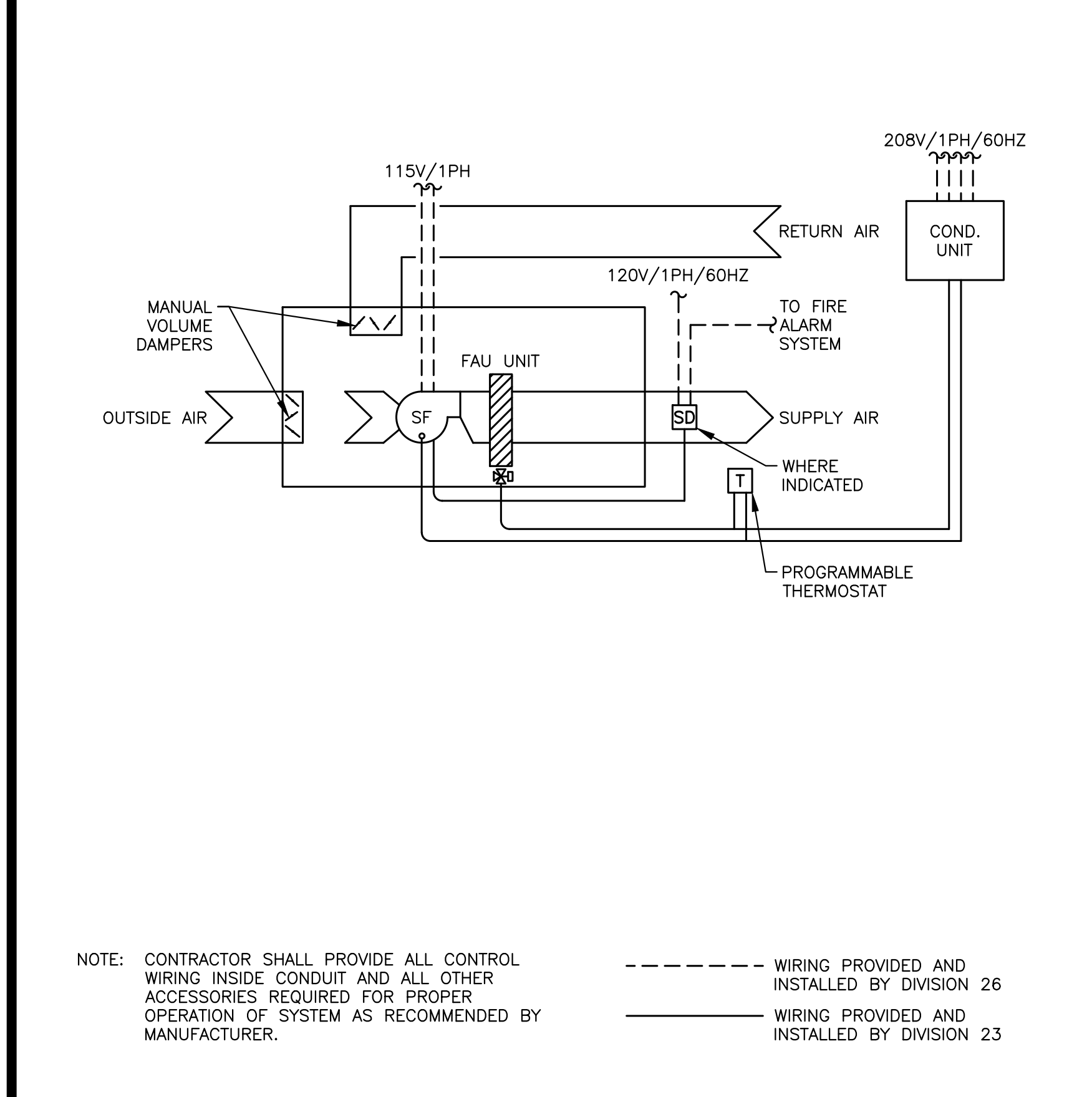
CEILING DIFFUSER/REGISTER DETAIL

SCALE: NONE 4



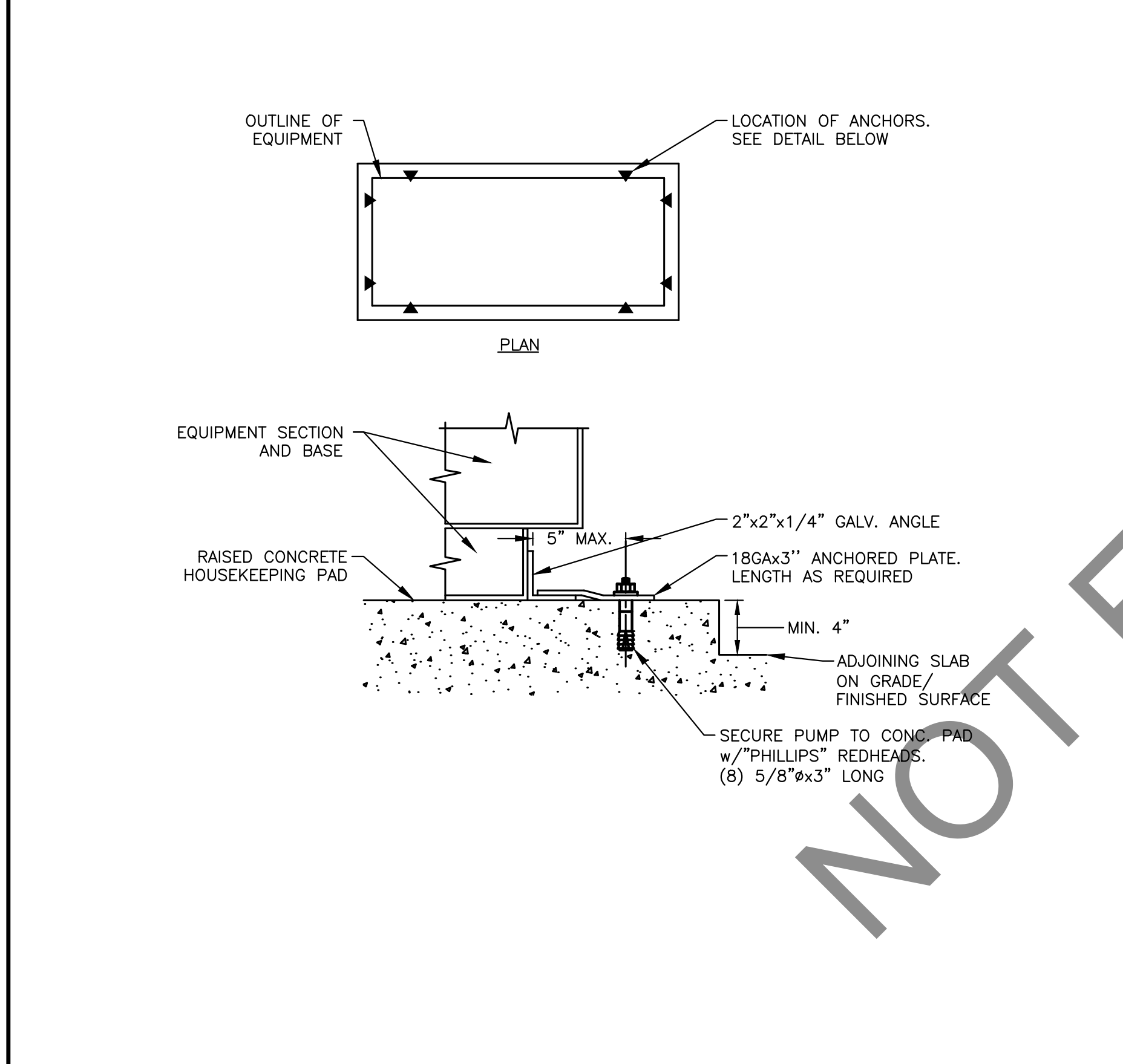
THERMOSTAT MOUNTING DETAIL

SCALE: NONE 1



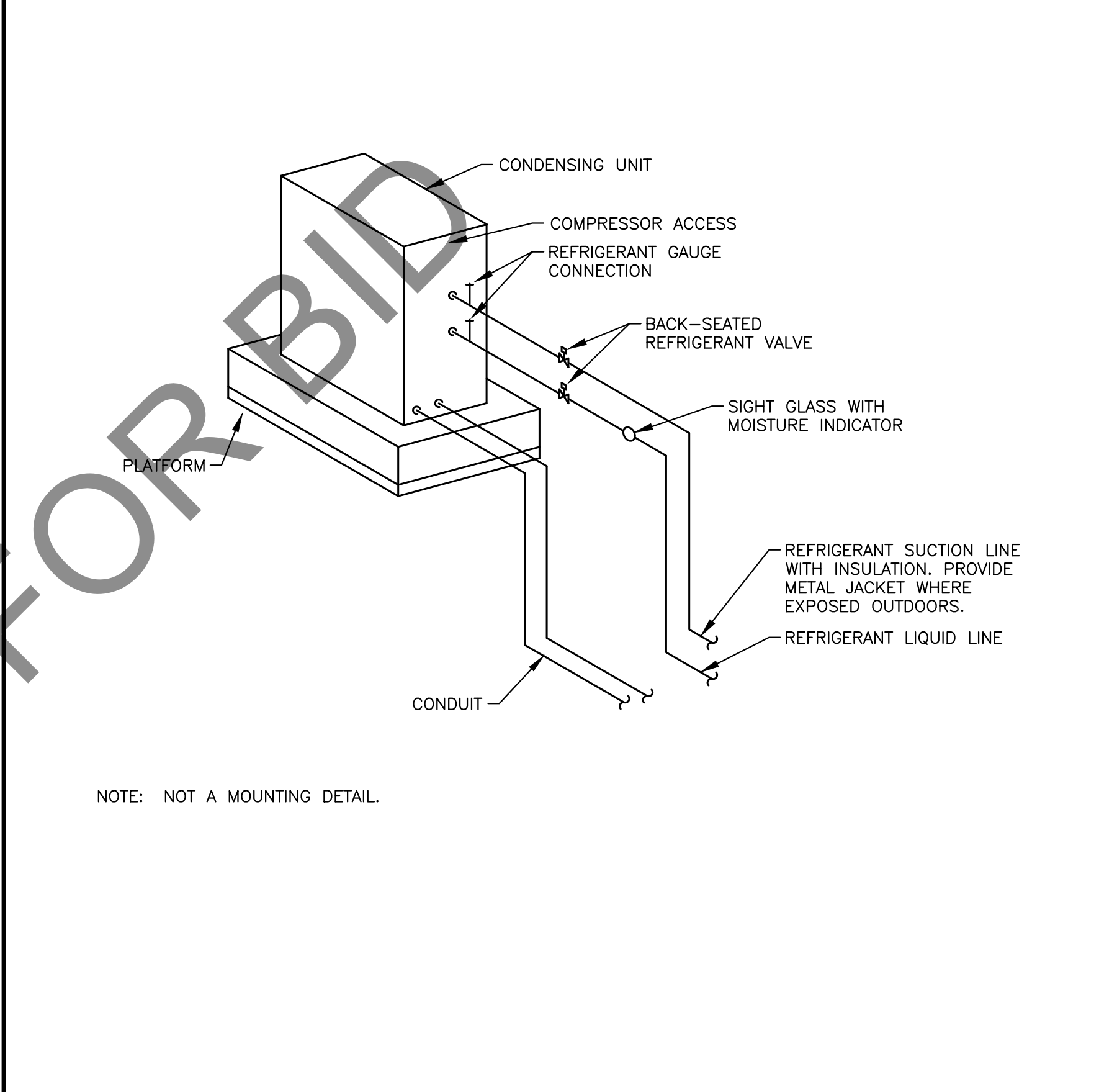
SPLIT SYSTEM CONTROL DIAGRAM

SCALE: NONE 11



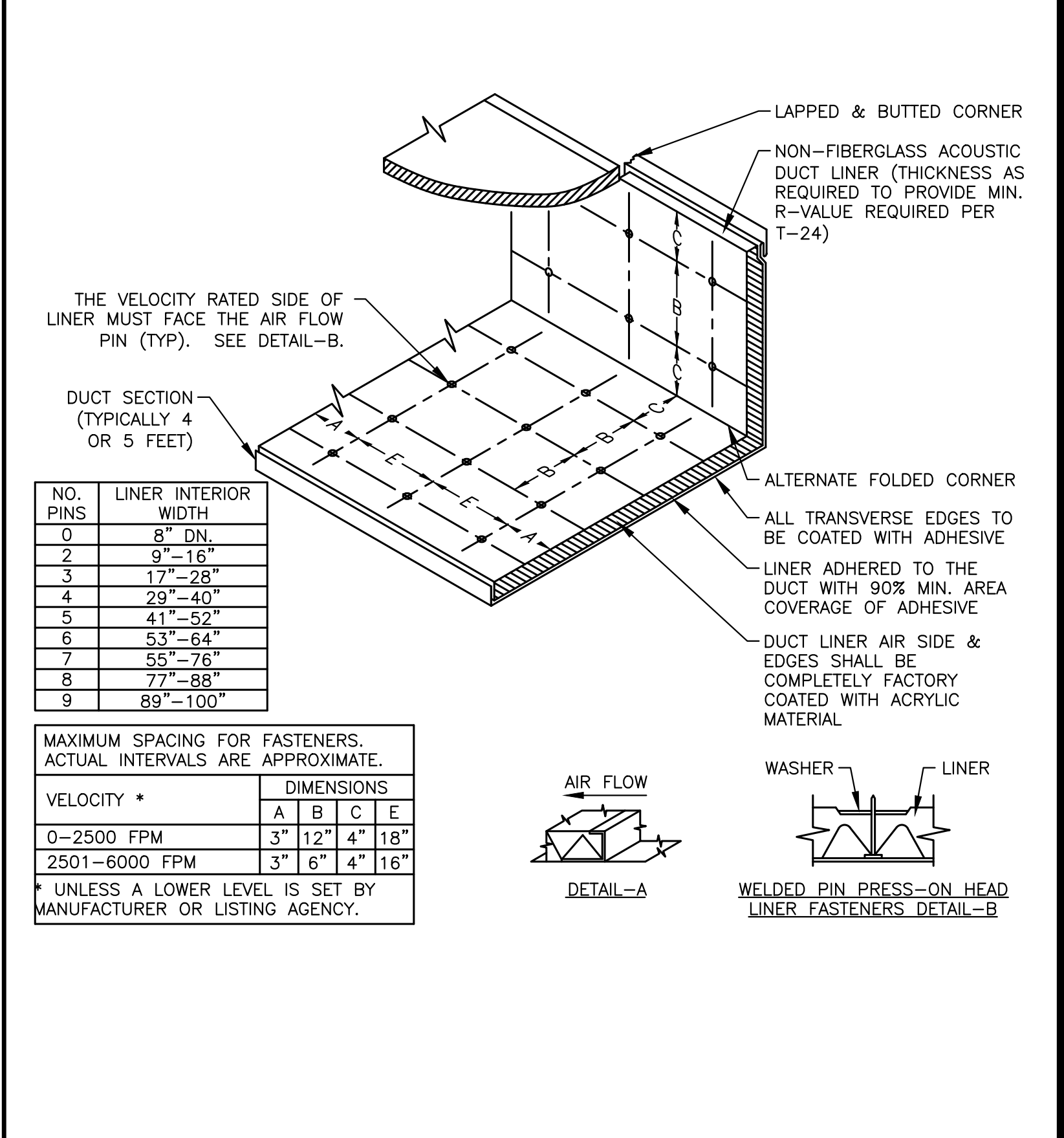
CONDENSING UNIT MOUNTING DETAIL

SCALE: NONE 8



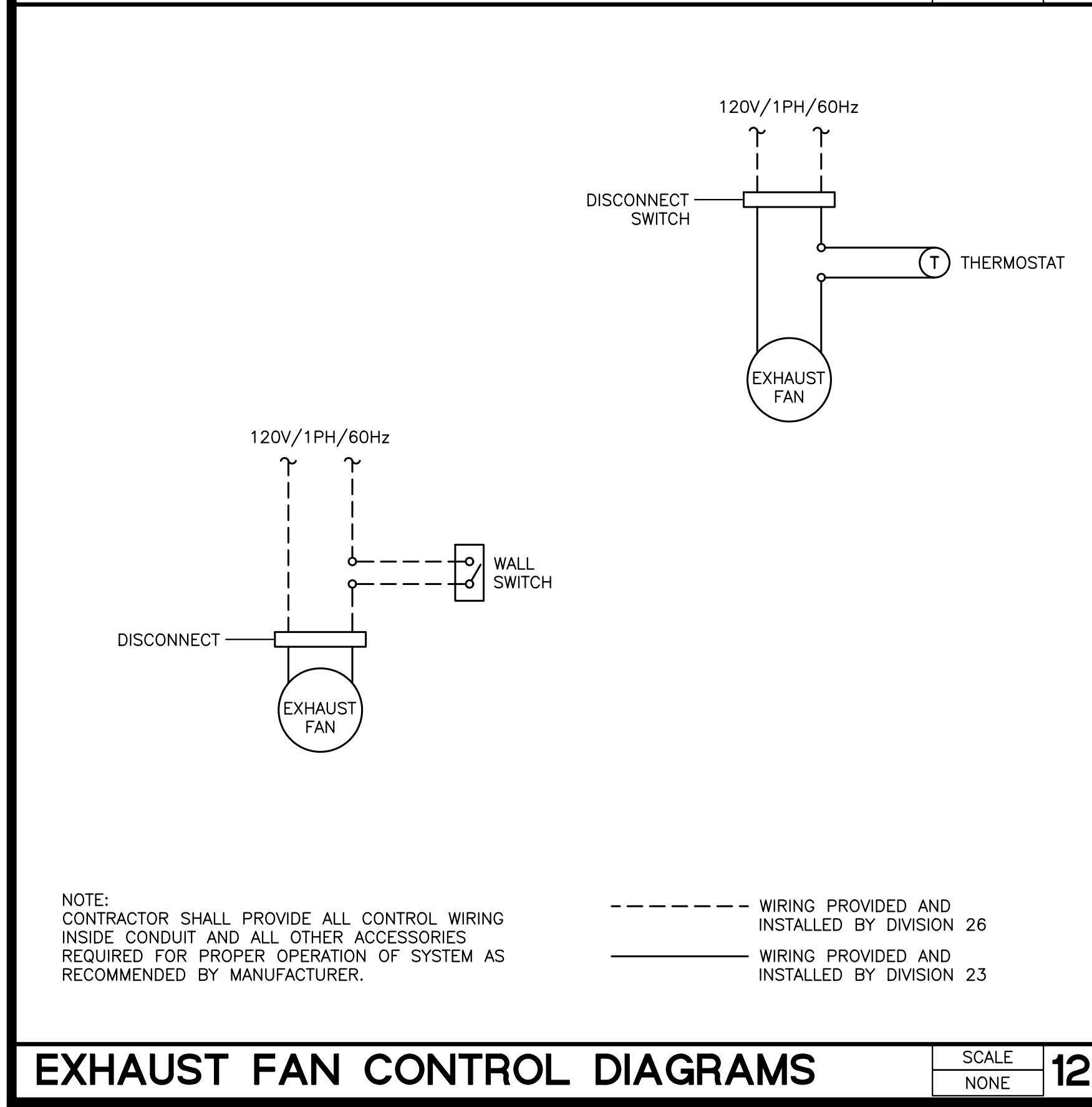
CONDENSING UNIT PIPING DIAGRAM

SCALE: NONE 5



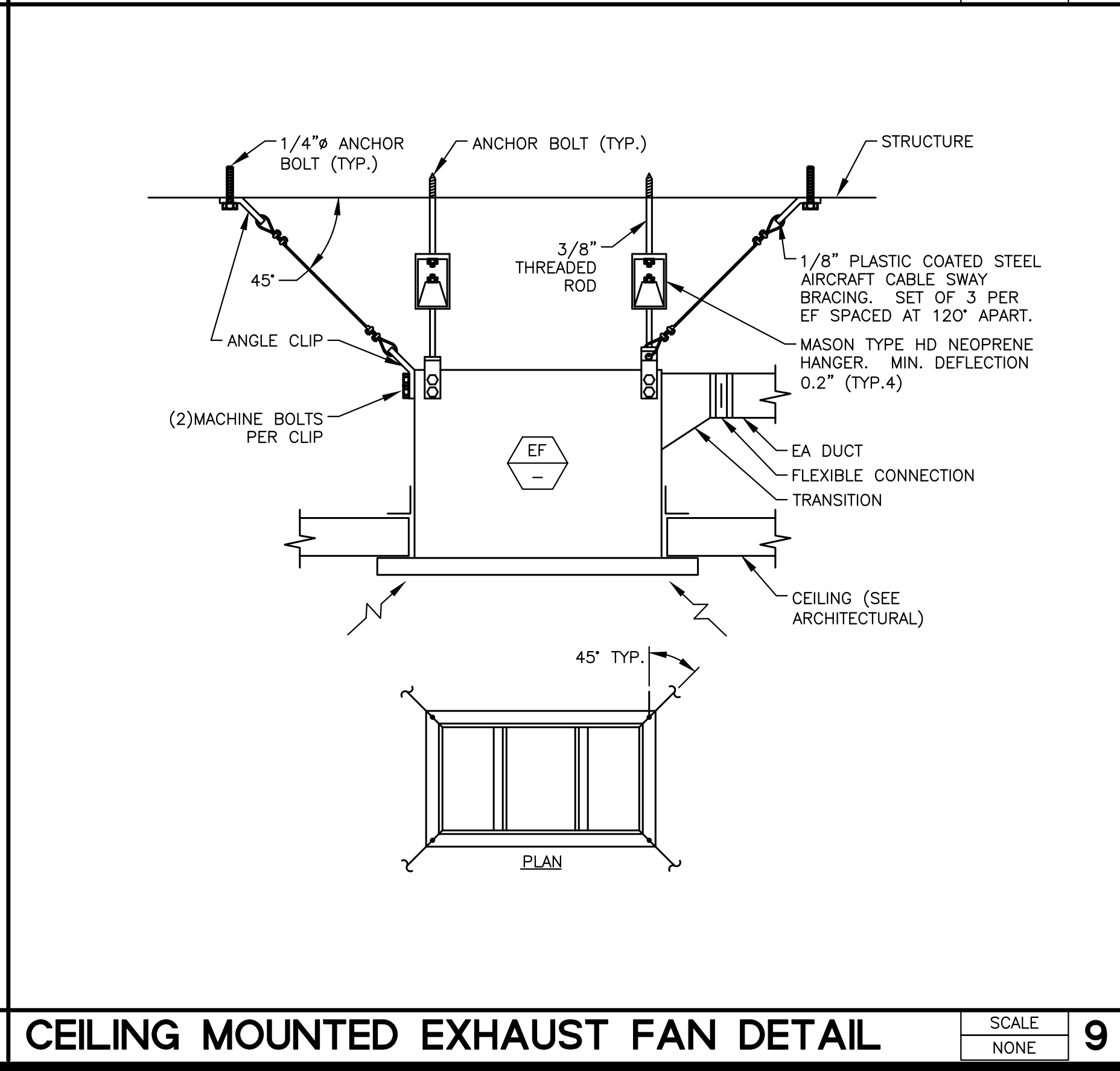
DUCT LINER DETAIL

SCALE: NONE 2



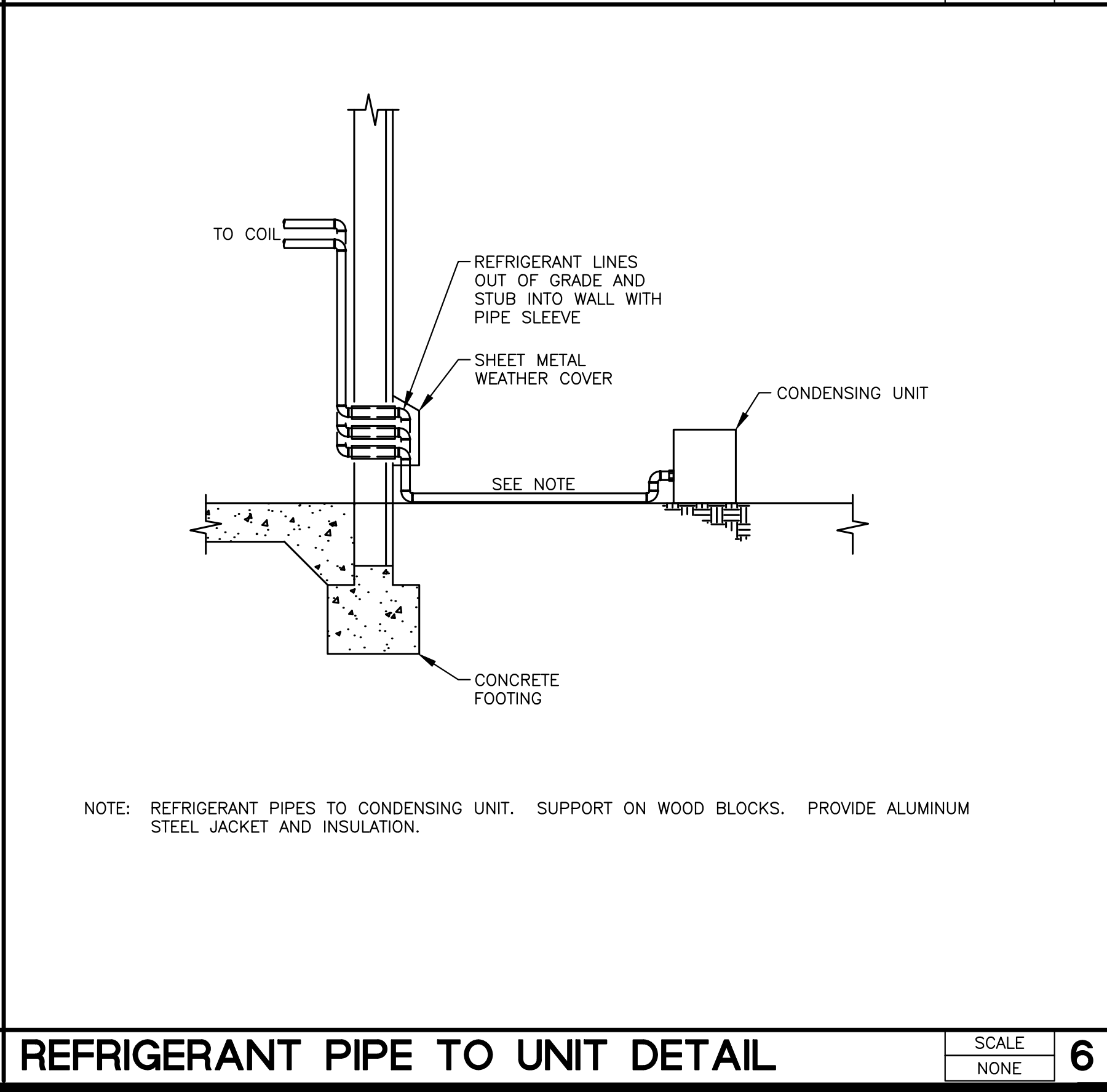
EXHAUST FAN CONTROL DIAGRAMS

SCALE: NONE 12



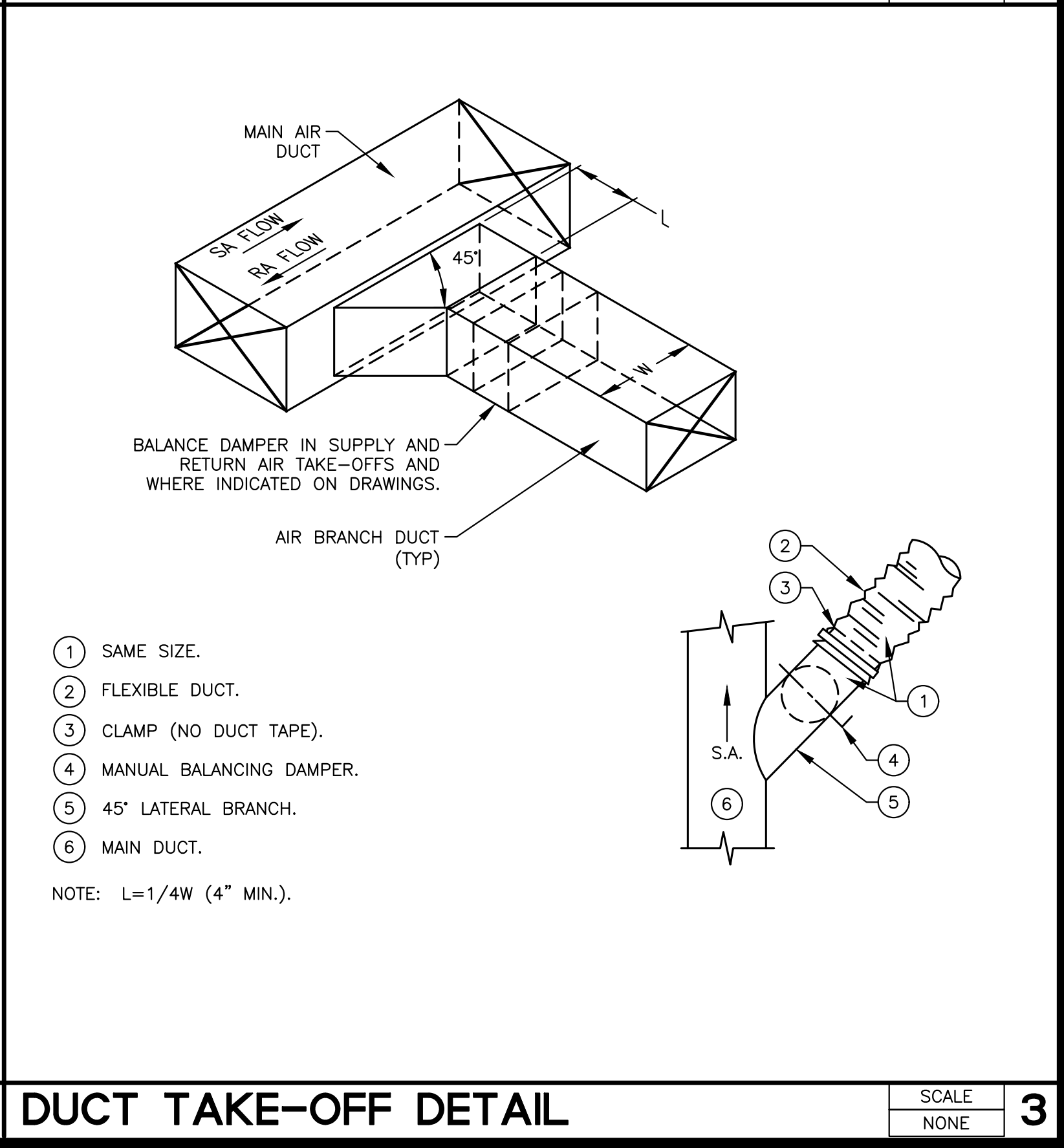
CEILING MOUNTED EXHAUST FAN DETAIL

SCALE: NONE 9



REFRIGERANT PIPE TO UNIT DETAIL

SCALE: NONE 6



DUCT TAKE-OFF DETAIL

SCALE: NONE 3

STK

4095 ZEVO DR., TEMECULA, CALIFORNIA 92590-3760
Phone: 951.296.8110 Fax: 951.296.6079 Email: stk@stkinc.com

CONSULTANT

Salas O'Brien

3220 Executive Ridge, Suite 210
Vista, CA 92081
760.560.0100
www.sobobrien.com

PROJECT ADMINISTERED BY:

SAN BERNARDINO COUNTY
PROJECT & FACILITIES
MANAGEMENT DEPARTMENT

PROJECT NAME:

SAN BERNARDINO
COUNTY FIRE
DEPARTMENT:
FIRE STATION 227

PROJECT #

#10J0202

CIP #

#22-105

APN Part of

O154-281-01

180 W. 38TH STREET
SAN BERNARDINO,
CA 92405

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9-11-24	D.D.s
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12-20-24	95% CDs
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05-09-25	Plan Check
07-25-25	BID SET
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SHEET INFORMATION:

STK PROJECT NO.: 374-193-24
SCALE: AS NOTED
DATE: DECEMBER 2024
PLOT DATE:
DRAWING NAME:

SEAL:

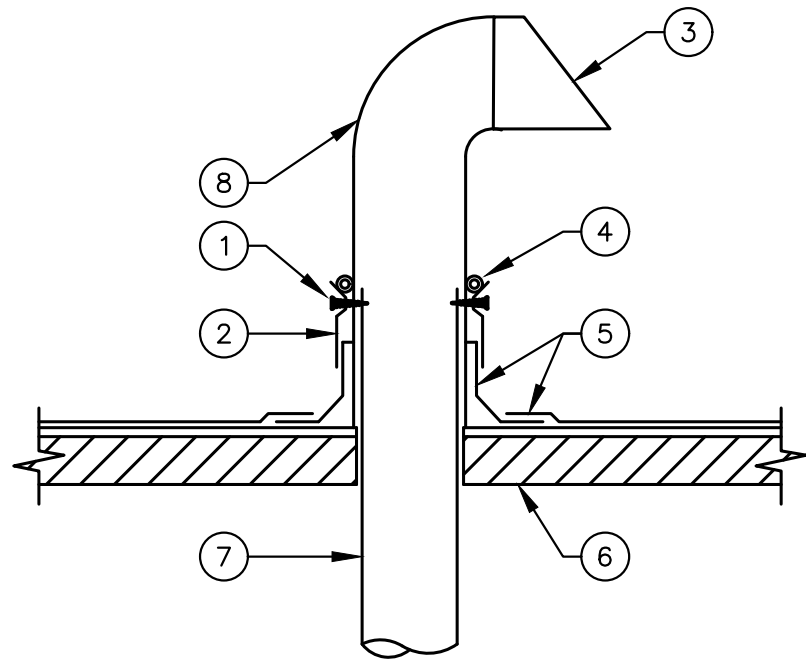
REGISTERED PROFESSIONAL ENGINEER
No. 43281
EXPIRES 12/31/2028
STATE OF CALIFORNIA

SHEET TITLE:

MECHANICAL
DETAILS

SHEET NO.:

M5.1

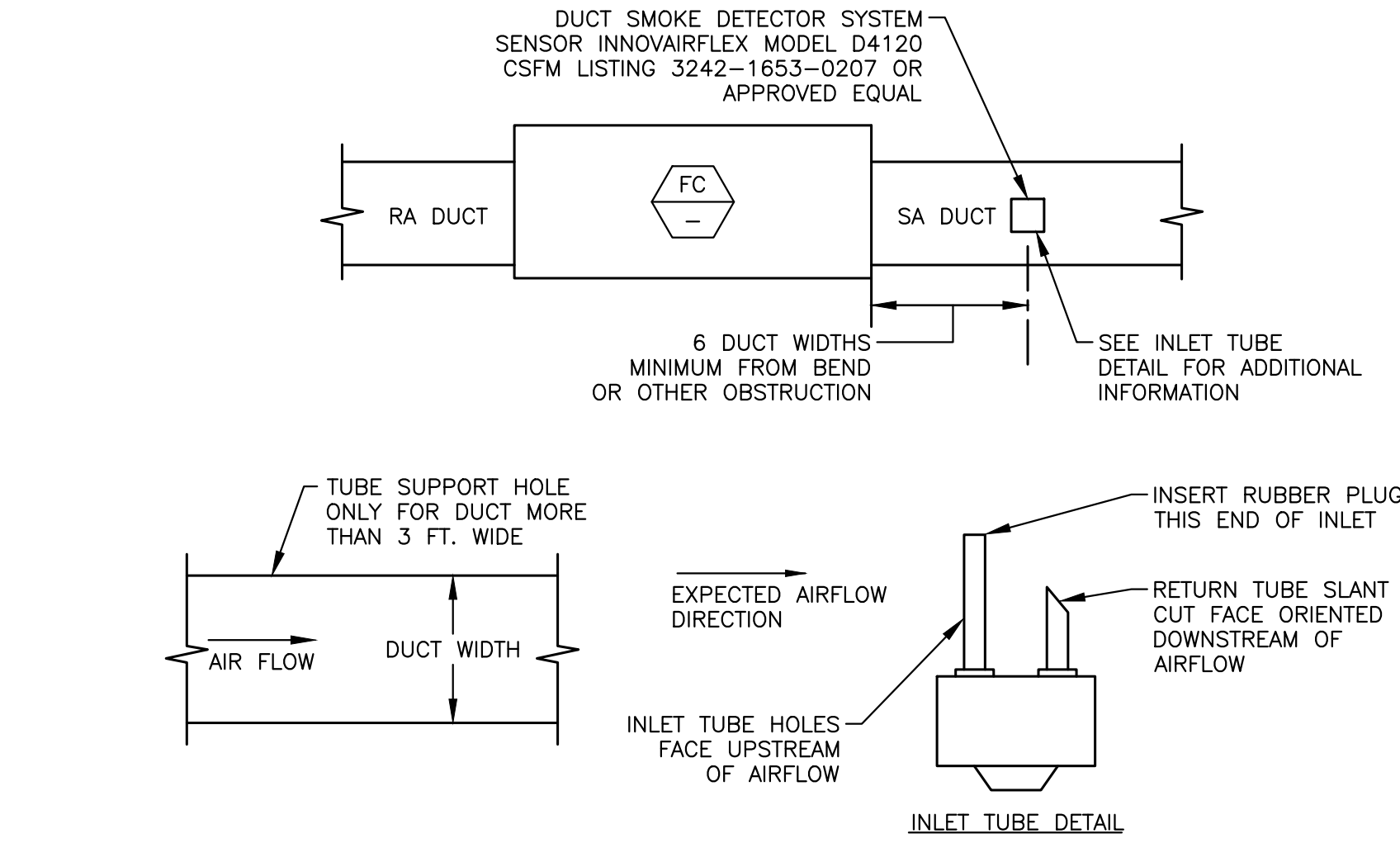


- 1 SECURE w/#10 S.M.S. (2) EACH SIDE.
- 2 COUNTER FLASHING.
- 3 PROVIDE WITH DRYER VENT HOOD WITH BACKDRAFT DAMPER.
- 4 WATER PROOF SEALANT ALL AROUND.
- 5 ROOFING AS PER ARCH. DRAWING'S.
- 6 ROOF STRUCTURE.
- 7 EXHAUST DUCT THROUGH ROOF.
- 8 G.I. GOOSENECK.

DRYER VENT ROOF CAP

SCALE
NONE

10

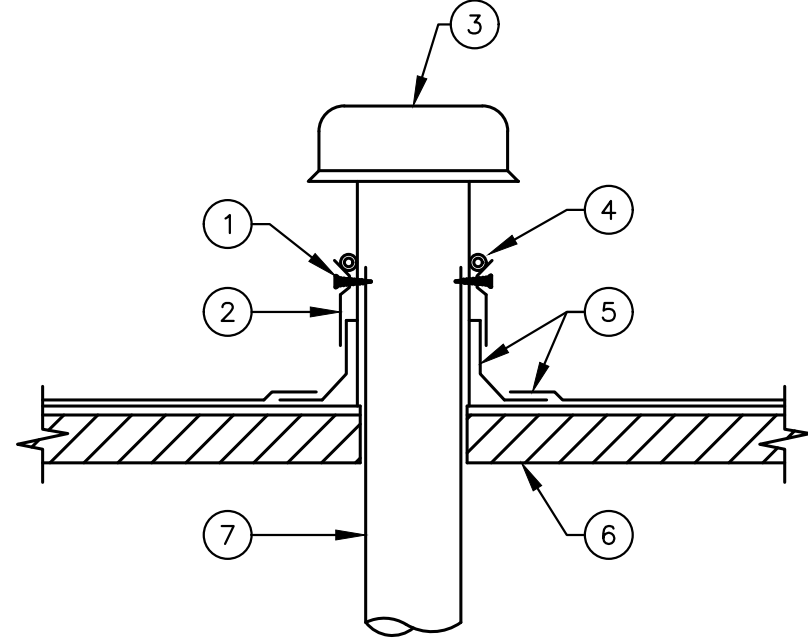


NOTE: PROVIDE WITH U.L. 268A AND CSFM LISTED, PHOTOELECTRIC-TYPE DUCT SMOKE DETECTOR IN SUPPLY DUCT, DIVISION 23 TO PROVIDE DETECTOR, DIVISION 26 TO PROVIDE 120V-1PH POWER.

DUCT SMOKE DETECTOR MOUNTING DETAIL

SCALE
NONE

7

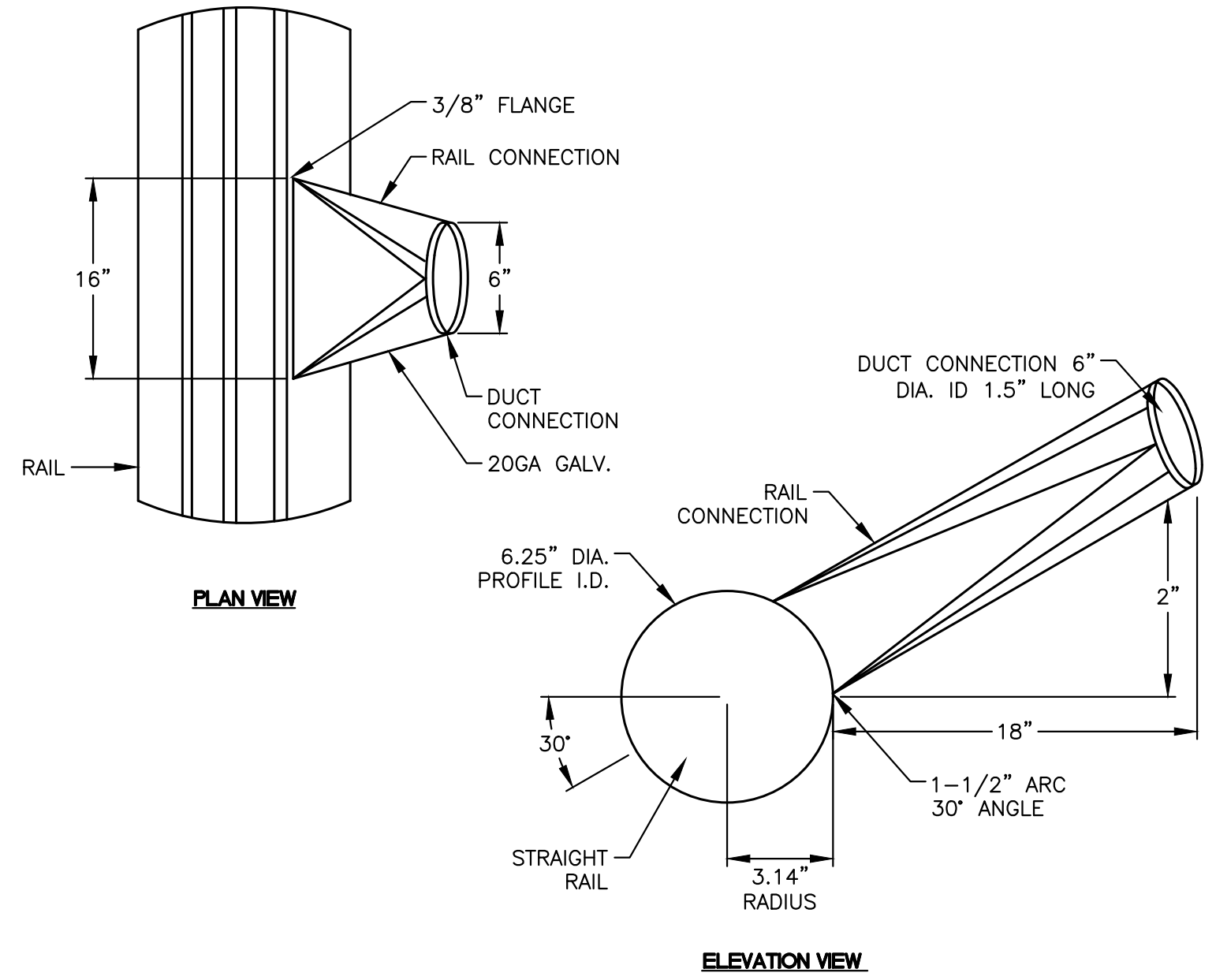


- 1 SECURE w/#10 S.M.S.-2 EACH SIDE
- 2 COUNTER FLASHING
- 3 ROOF CAP
- 4 WATER PROOF SEALANT ALL AROUND
- 5 ROOFING AS PER ARCH. DWGS.
- 6 ROOF STRUCTURE
- 7 EXHAUST DUCT THROUGH ROOF

ROOF CAP DETAIL

SCALE
NONE

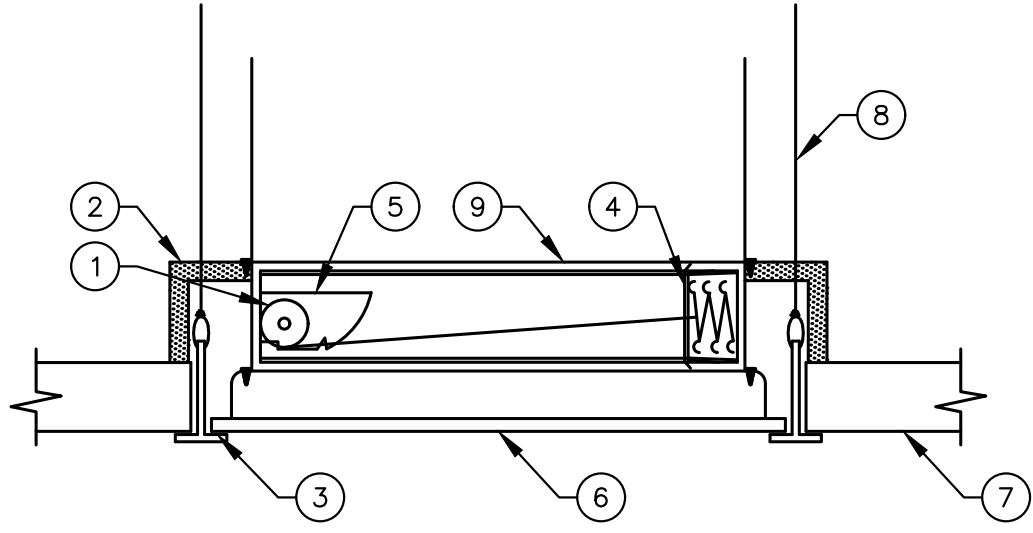
4



VEHICLE EXHAUST ATTACHMENT DETAIL

SCALE
NONE

1

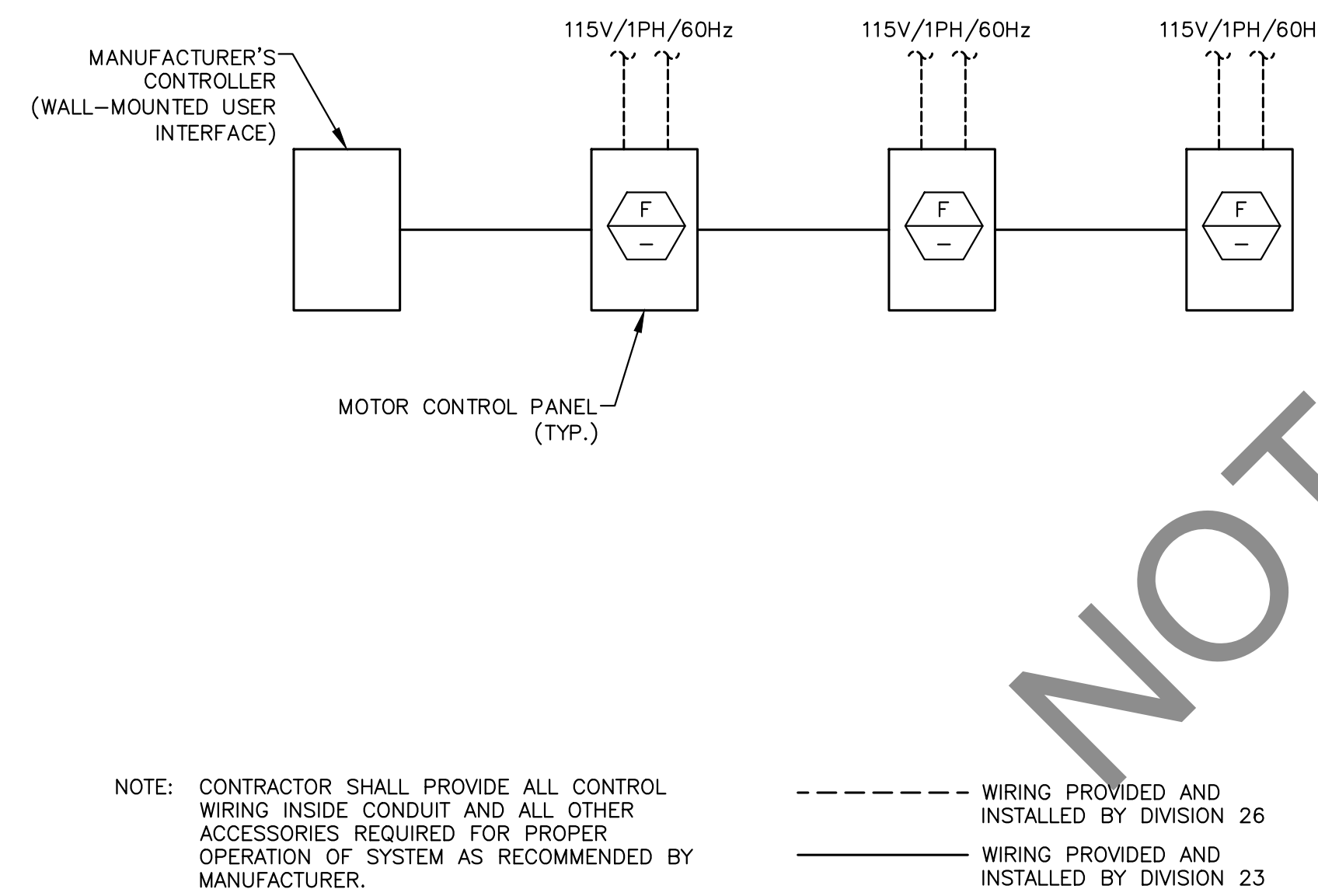


- 1 STAINLESS STEEL NEGATOR CLOSURE SPRING.
- 2 1-HR FIRE PROTECTION.
- 3 CEILING GRID.
- 4 FUSIBLE LINK.
- 5 BLADE LOCK.
- 6 DIFFUSER OR REGISTER.
- 7 SUSPENDED ACOUSTIC CEILING.
- 8 12GA STEEL WIRE (TYP.2).
- 9 FIRE DAMPER IN FRAME.

FIRE DAMPER IN CEILING

SCALE
NONE

11



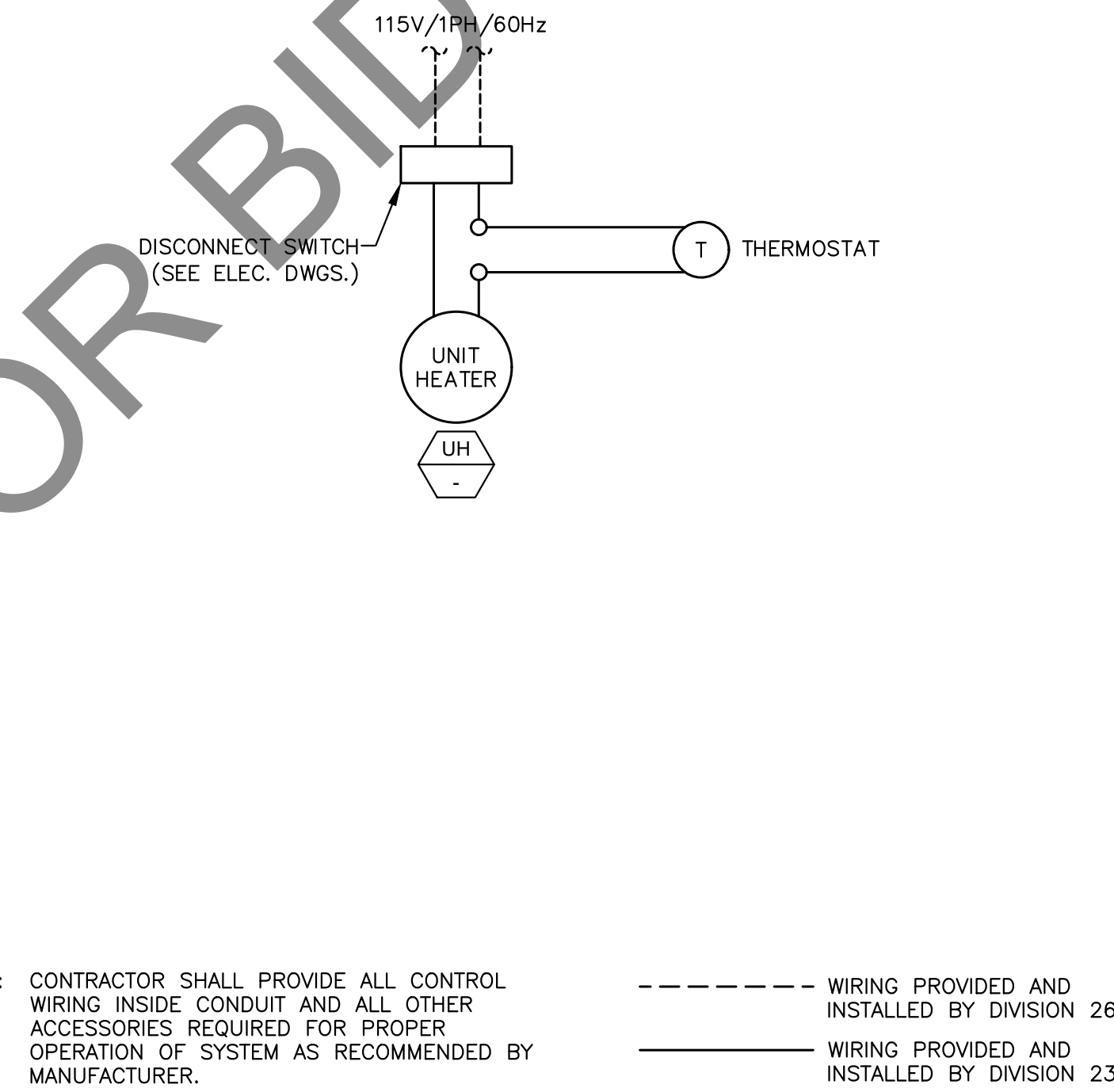
NOTE: CONTRACTOR SHALL PROVIDE ALL CONTROL WIRING INSIDE CONDUIT AND ALL OTHER ACCESSORIES REQUIRED FOR PROPER OPERATION OF SYSTEM AS RECOMMENDED BY MANUFACTURER.

----- WIRING PROVIDED AND INSTALLED BY DIVISION 26
----- WIRING PROVIDED AND INSTALLED BY DIVISION 23

CIRCULATING FAN CONTROL

SCALE
NONE

8



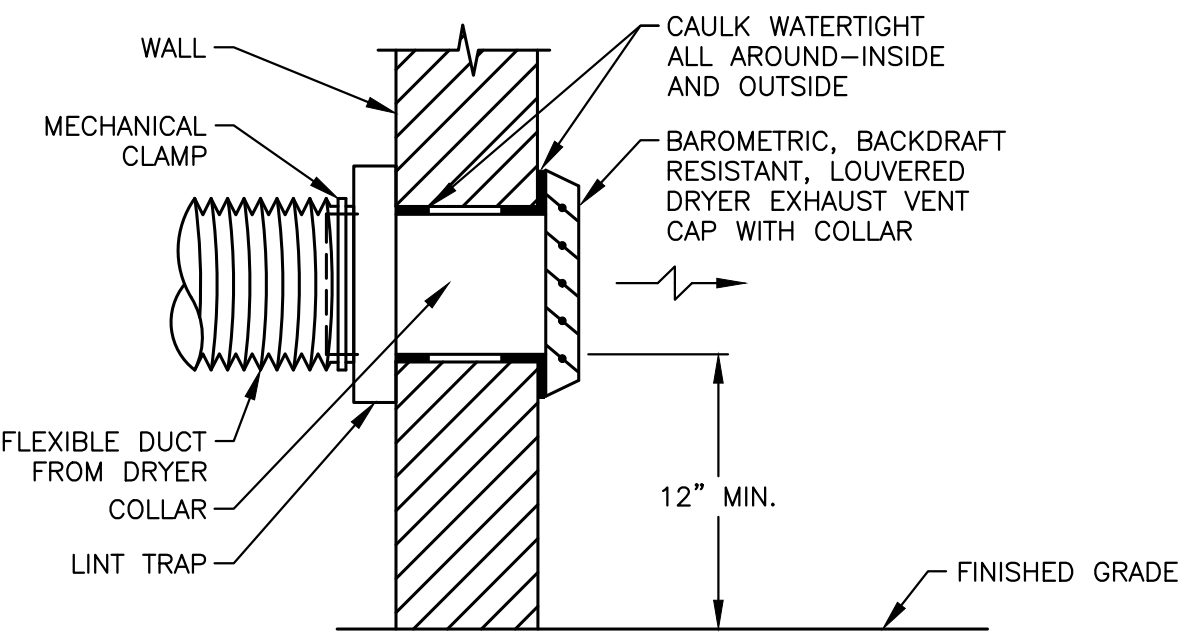
NOTE: CONTRACTOR SHALL PROVIDE ALL CONTROL WIRING INSIDE CONDUIT AND ALL OTHER ACCESSORIES REQUIRED FOR PROPER OPERATION OF SYSTEM AS RECOMMENDED BY MANUFACTURER.

----- WIRING PROVIDED AND INSTALLED BY DIVISION 26
----- WIRING PROVIDED AND INSTALLED BY DIVISION 23

UNIT HEATER CONTROL DIAGRAM

SCALE
NONE

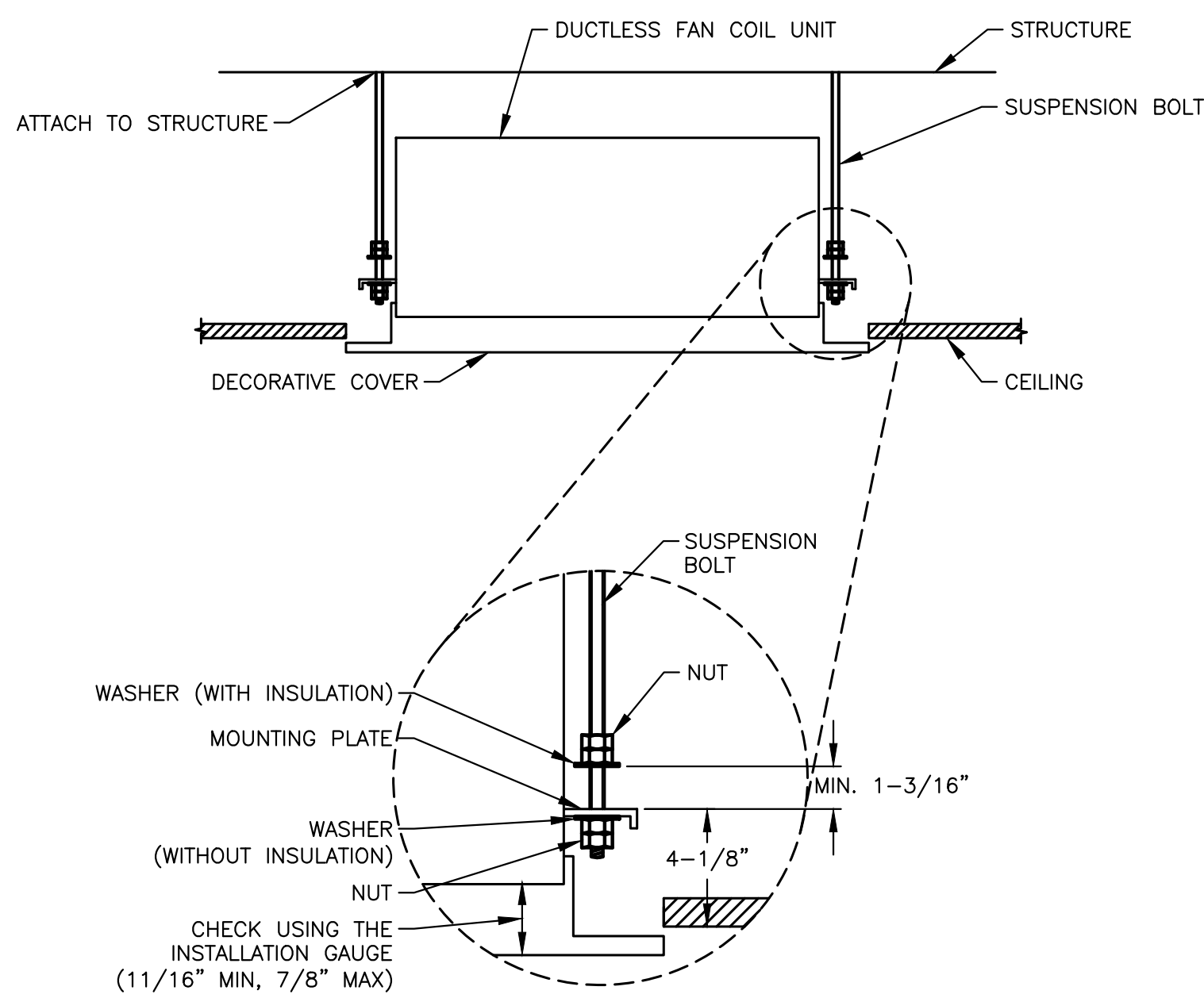
5



DRYER VENT DETAIL

SCALE
NONE

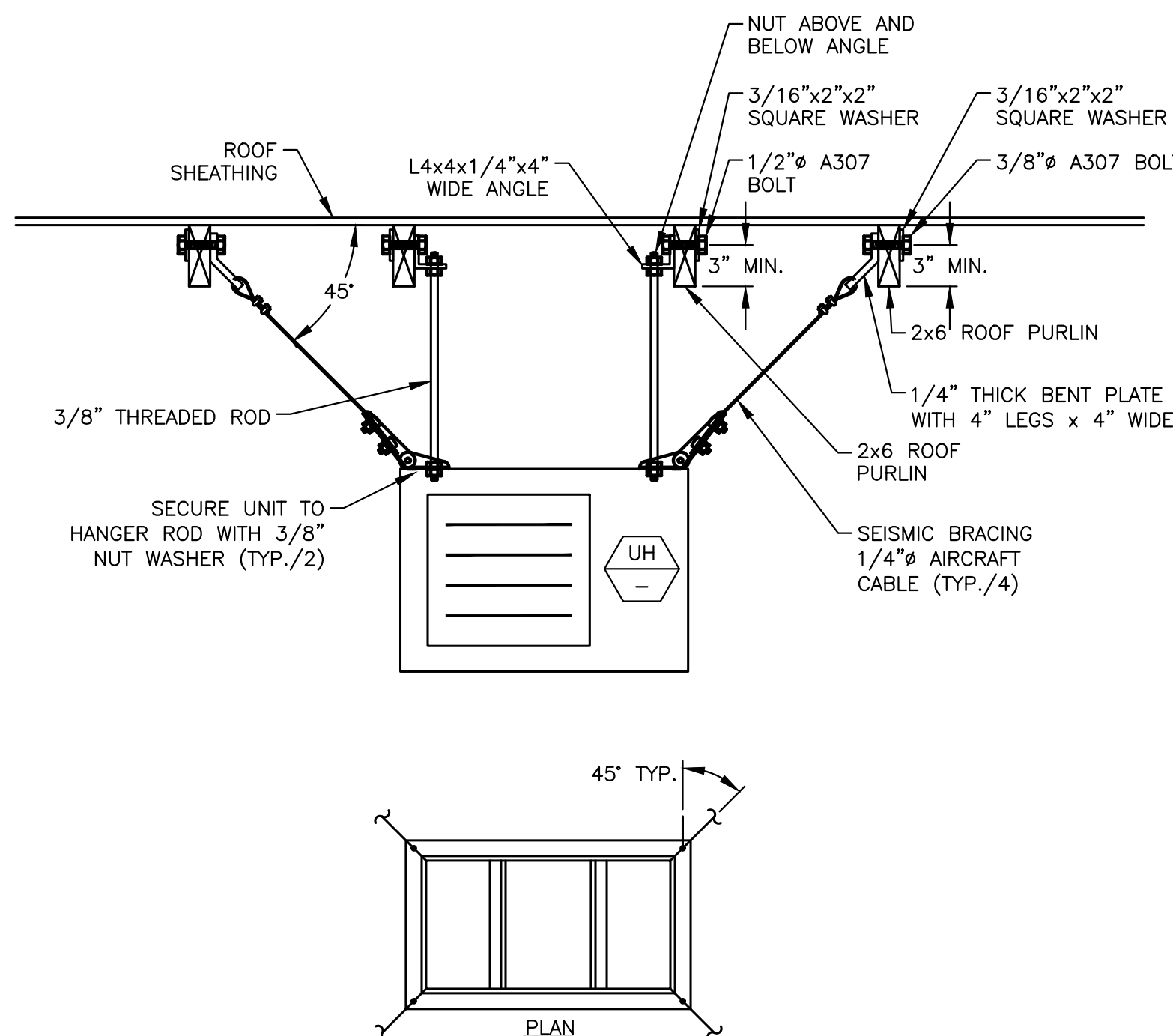
12



DUCTLESS CEILING MOUNTED FAN COIL DETAIL

SCALE
NONE

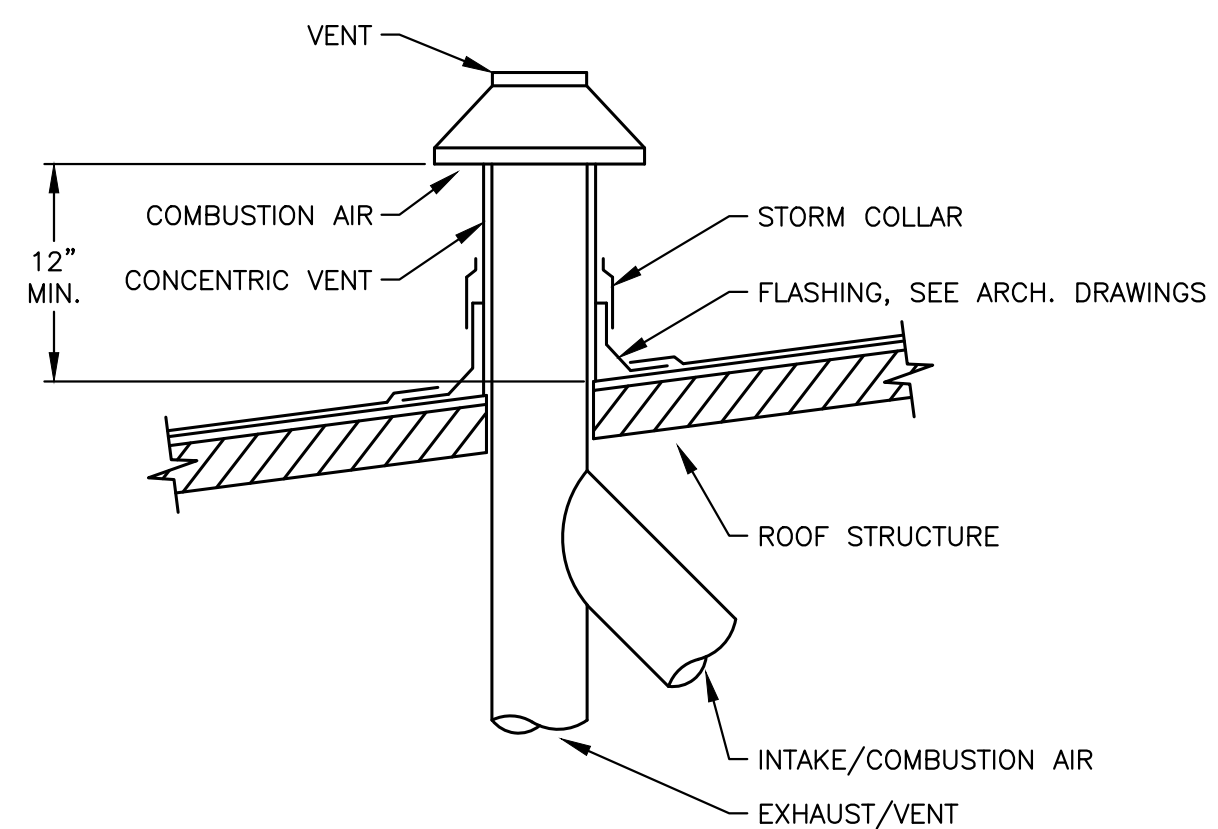
9



UNIT HEATER MOUNTING DETAIL

SCALE
NONE

6



CONCENTRIC VENT TERMINATION DETAIL

SCALE
NONE

3

ISSUE INFORMATION:	
DATE:	INFORMATION:
9-11-24	D.D.s
10-26-24	PROGRESS
12-20-24	95% CDs
03-14-25	Plan Check
05-09-25	Plan Check
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08-25-25	BID SET

SHEET INFORMATION:	
STK PROJECT NO.:	374-193-24
SCALE:	AS NOTED
DATE:	DECEMBER 2024
PLOT DATE:	-
DRAWING NAME:	-

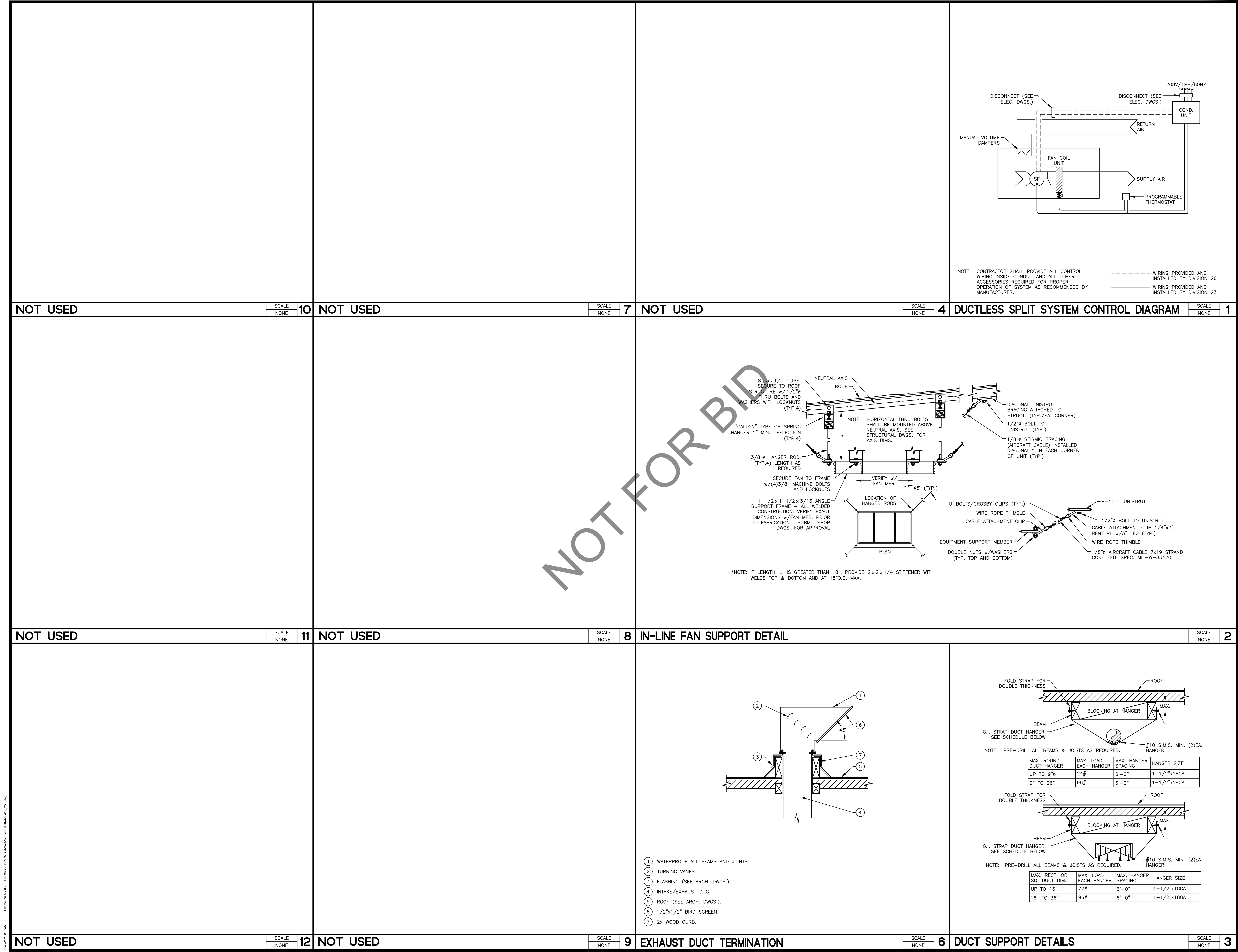


SHEET TITLE:

MECHANICAL
DETAILS

SHEET NO.:

M5.2



T:\2024\0417-01_08_Plan Room\27105_S&B\CD Plumbing\2024-0417_P01.dwg
8/22/2025 5:59AM

PLUMBING LEGEND				
SYMBOL	ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
-----S-----	S	SEWER PIPE	ABV	ABOVE
-----OW-----	OW	OILY WASTE PIPE	A/C	ABOVE CEILING
-----GW-----	GW	GREASE WASTE PIPE	AGA	AMERICAN GAS ASSOCIATION
-----PW-----	PW	PUMPED (FORCED) WASTE PIPE	ANSI	AMERICAN NATIONAL STANDARD INSTITUTE
-----IW-----	IW	INDIRECT WASTE PIPE	ASME	AMERICAN SOCIETY FOR MECHANICAL ENGINEERS
-----V-----	V	VENT PIPE	ASSE	AMERICAN SOCIETY FOR SANITARY ENGINEERS
-----CW-----	CW	COLD WATER PIPE	ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
-----ICW-----	ICW	INDUSTRIAL COLD WATER PIPE	ADA	AMERICANS WITH DISABILITIES ACT
-----SCW-----	SCW	SOFT COLD WATER PIPE	AFF	ABOVE FINISHED FLOOR
-----HW-----	HW	HOT WATER PIPE	AFG	ABOVE FINISHED GRADE
-----IHW-----	IHW	INDUSTRIAL HOT WATER PIPE	A/G	ACCESS PANEL
-----HWR-----	HWR	HOT WATER RETURN PIPE	AP	ARCHITECT OR ARCHITECTURAL
-----140-----	140	140°F HOT WATER PIPE	ARCH	ARCHITECT
-----R-----	R	RECLAIMED WATER PIPE	BT	BATH TUB
-----G-----	G	LOW PRESSURE NATURAL GAS PIPE	BEL	BELOW
-----MPG-----	MPG	MEDIUM PRESSURE NATURAL GAS PIPE	B/F	BELOW FLOOR
-----HPG-----	HPG	HIGH PRESSURE NATURAL GAS PIPE	B/G	BELOW GRADE
-----LPG-----	LPG	LIQUEFIED PETROLEUM GAS PIPE	BOP	BOTTOM OF PIPE
-----CD-----	CD	CONDENSATE DRAIN PIPE	B/S	BELOW SLAB
-----SCD-----	SCD	SECONDARY CONDENSATE DRAIN PIPE	BTU	BRITISH THERMAL UNIT
-----PCD-----	PCD	PUMPED CONDENSATE DRAIN PIPE	BTUH	BRITISH THERMAL UNITS PER HOUR
-----RD-----	RD	ROOF DRAIN PIPE	CBG	CALIFORNIA BUILDING CODE
-----ORD-----	ORD	OVERFLOW ROOF DRAIN PIPE	CEC	CALIFORNIA ELECTRICAL CODE
-----CA-----	CA	COMPRESSED AIR PIPE	CFC	CALIFORNIA FIRE CODE
-----FCO-----	FCO	FLOOR CLEAN OUT	CMC	CALIFORNIA MECHANICAL CODE
-----GCO-----	GCO	GRADE CLEAN OUT	CPC	CALIFORNIA PLUMBING CODE
-----WCO-----	WCO	WALL CLEAN OUT	CI	CAST IRON
-----FC-----	FC	FLEXIBLE CONNECTION	CISPI	CAST IRON SOIL PIPE INSTITUTE
-----SOV-----	SOV	SHUT OFF VALVE	CLG	CEILING
-----GC-----	GC	GAS COCK	CP	CIRCULATION PUMP
-----IBC-----	IBC	CHECK VALVE	CL	CLARIFIER
-----CV-----	CV	BALL VALVE	CLR	CLEAR
-----PRV-----	PRV	PRESSURE REDUCING VALVE	CONC	CONCRETE
-----BLV-----	BLV	BALANCING VALVE	CONN	CONNECT OR CONNECTION
-----PTR-----	PTR	PRESSURE AND TEMPERATURE RELIEF VALVE	CONTR	CONTRACTOR
-----U-----	U	UNION	CPH	CUBIC FEET PER HOUR
-----CAPPED PIPE-----		CAPPED PIPE	CFM	CUBIC FEET PER MINUTE
-----CONT-----	CONT	CONTINUED OR CONTINUATION	°C	DEGREES CELSIUS
-----TP-----	TP	TRAP PRIMER LINE	°F	DEGREES FAHRENHEIT
-----WHA-----	WHA	WATER HAMMER ARRESTOR	DIV	DIVISION
-----RPBP-----	RPBP	REDUCED PRESSURE BACKFLOW PREVENTER	DWG(S)	DRAWING(S)
-----HB-----	HB	HOSE BIBB	EA	EACH
-----PIPE DOWN OR DROP-----		PIPE DOWN OR DROP	(E)	EXISTING
-----PIPE UP OR RISE-----		PIPE UP OR RISE	ELEC	ELECTRICAL
-----VALVE ON DROP-----		VALVE ON DROP	ELEV	ELEVATION
-----VALVE ON RISE-----		VALVE ON RISE	ET	EXPANSION TANK
-----T-----	T	THERMOMETER	FF	FINISHED FLOOR
-----AS-----	AS	AQUASTAT	FFM	FEET PER MINUTE
-----P.O.D.-----	P.O.D.	POINT OF DISCONNECT	FLR	FLOOR
-----POC-----	POC	POINT OF CONNECTION	FT	FEET OR FOOT
-----AD, FD-----	AD, FD	AREA DRAIN OR FLOOR DRAIN	FU	FAT, OIL, AND GREASE
-----FS, RR-----	FS, RR	FLOOR SINK OR ROOF RECEPTOR	FOG	GAUGE
-----VTR-----	VTR	VENT THROUGH ROOF	GALV	GALVANIZED
-----DEMO-----	DEMO	DEMOLITION OR DEMOLISH	GPC	GALLONS PER CYCLE
-----RELO-----	RELO	RELOCATE	GPF	GALLONS PER FLUSH
-----CIRC PUMP-----	CIRC PUMP	CIRCULATING PUMP	GPH	GALLONS PER HOUR
-----DIA, DIAM-----	DIA, DIAM	DIAMETER	GPM	GALLONS PER MINUTE
			GP	GARBAGE DISPOSAL
			HD	HEAD
			GI	GREASE INTERCEPTOR
			HDR	HEADER
			HR	HOUR
			IM	ICE MAKER SUPPLY BOX
			IES	ILLUMINATING ENGINEERS SOCIETY
			IND	INDIRECT
			INT	INTERNATIONAL ASSOCIATION OF PLUMBERS AND MECHANICAL OFFICIALS
			IPBC	INTERNATIONAL BUILDING CODE
			IPC	INTERNATIONAL MECHANICAL CODE
			INV	INTERNATIONAL PLUMBING CODE
			KEC	KITCHEN EQUIPMENT CONTRACTOR
			KG	KILOGRAMS
			KPS	KILOPOUNDS
			KS	KITCHEN SINK
			LS	LAUNDRY SINK
			L, LAV	LAVATORY
			L/S	LITERS PER SECOND
			LPF	LITERS PER FLUSH
			MH	MANHOLE
			MFR	MANUFACTURER
			MSS	MANUFACTURERS STANDARDIZATION SOCIETY
			MAX	MAXIMUM
			MECH	MECHANICAL
			MSA	MEDIUM PRESSURE GAS METER SET ASSEMBLY
			MIL	0.001 INCH
			mm	MILLIMETER
			MIN	MINIMUM
			MOP	MOP SINK
			MS	MOUNTED
			MTD	NATIONAL SANITATION FOUNDATION
			NSF	NET POSITIVE SUCTION HEAD
			NPSH	NOT IN CONTRACT
			NOM	NOT TO SCALE
			NTS	NOT TO SCALE
			NO	NO
			PLBG	PLUMBING
			PDI	PLUMBING AND DRAINAGE INSTITUTE
			PE	POLYETHYLENE
			PBS	POUNDS PER SQUARE INCH GAUGE
			PSIG	POUNDS PER SQUARE INCH GAUGE
			PD	PRESSURE DROP
			QTY	QUANTITY
			REQ'D	REQUIRED
			RI	ROUGH-IN
			SCH	SCHEDULE
			SH	SHOWER
			SOV	SHUT-OFF VALVE
			SPEC	SPECIFICATION
			SQ	SQUARE FEET
			SS	STAINLESS STEEL
			STRUC	STRUCTURAL
			TEMP	TEMPERATURE
			MBH	THOUSANDS OF BRITISH THERMAL UNITS PER HOUR
			THRU	THROUGH
			TDH	TOTAL DEVELOPED HEAD
			TDL	TOTAL DEVELOPED LENGTH
			TEL	TOTAL EQUIVALENT LENGTH
			TP	TYPICAL
			UNO	UNLESS NOTED OTHERWISE
			UL	UNDERWRITERS LABORATORIES
			UBC	UNIFORM BUILDING CODE
			UMC	UNIFORM MECHANICAL CODE
			UPC	UNIFORM PLUMBING CODE
			UR	URINAL
			VCP	VITRIFIED CLAY PIPE
			V/PH/Hz	VOLTS/PHASE/HERTZ
			WB, WSB	WASHING MACHINE SUPPLY BOX
			WC	WATER CLOSET
			WHA	WATER HAMMER ARRESTOR
			WH	WATER HEATER
			YB	YARD BOX

PLUMBING GENERAL NOTES:

- THESE DOCUMENTS MAY NOT BE USED FOR ANY REPRODUCTION, BIDDING, OR CONSTRUCTION UNLESS AUTHORIZED, IN WRITING, BY SALAS O'BRIEN AND THE ENGINEER OF RECORD RESPONSIBLE FOR THEIR PREPARATION.
- CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS OF ALL EXISTING UTILITY PIPES PRIOR TO START OF WORK. NECESSARY ADJUSTMENTS TO THE PLUMBING LAYOUT SHALL BE DONE AT NO EXTRA COST.
- CONTRACTOR SHALL NOTIFY ALL LOCAL UTILITY COMPANIES INCLUDING BUT NOT LIMITED TO THE GAS COMPANY, ELECTRIC COMPANY, TELEPHONE COMPANY, AND THE WATER DEPARTMENT, ABOUT THE EXTENT OF PLUMBING WORK. ALL EXCAVATION WORK SHALL BE APPROVED BY ALL UTILITY COMPANIES TO ASSURE PREVENTION OF INTERRUPTION OF EXISTING SERVICES PRIOR TO START OF WORK.
- ALL PLUMBING WORK SHALL MEET OR EXCEED THE REQUIREMENTS OF THE CALIFORNIA PLUMBING CODE, CALIFORNIA BUILDING CODE, CALIFORNIA MECHANICAL CODE, CALIFORNIA ADMINISTRATIVE CODE, TITLE 24, AMERICANS WITH DISABILITIES ACT (ADA), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), THE LOCAL CITY AND COUNTY CODES, AND ALL OTHER CODES HAVING JURISDICTION. IN CASE OF CONFLICT, THE MORE STRICT REGULATIONS SHALL GOVERN.
- ALL PLUMBING WORK SHALL BE COORDINATED WITH THE WORKS OF OTHER TRADES PRIOR TO START OF WORK. NECESSARY ADJUSTMENTS SHALL BE MADE AT NO EXTRA COST.
- FOR MINIMUM PIPE SIZE CONNECTIONS TO EACH PLUMBING FIXTURE SEE PLUMBING FIXTURE SCHEDULE. THESE VALUES ARE MINIMUM; LARGER CONNECTIONS MAY RESULT BASED ON THE DIFFERENT MANUFACTURER'S RECOMMENDATIONS.
- MANUFACTURER'S NAMES AND MODEL NUMBERS SHOWN FOR PLUMBING FIXTURES AND EQUIPMENT ARE FOR REFERENCE ONLY. OTHER MANUFACTURERS WHICH CAN MEET THE DESIGN REQUIREMENTS OF THE PLUMBING SYSTEM MAY BE SUBSTITUTED UPON APPROVAL FROM THE ARCHITECT AND THE OWNER.
- PROVIDE DIELECTRIC FITTINGS FOR DISSIMILAR METALS IN CONTACT.
- PROVIDE HANGERS AND SUPPORTS FOR PIPING IN ACCORDANCE WITH THE RECOMMENDATIONS OF MSS SP-69-2003.
- PROVIDE VALVES AT THE FOLLOWING LOCATIONS:
 - WATER MAIN SHUT-OFF VALVE IN VALVE BOX.
 - VALVE WITH HOSE CONNECTION ON DOWNSTREAM SIDE OF THE MAIN SHUT-OFF VALVE.
 - SHUT-OFF VALVE ON EACH SUPPLY TO EACH FIXTURE AND EQUIPMENT ITEM NOT PROVIDED WITH CONTROL, STOP OR OTHER AUXILIARY SHUT-OFF VALVE. INSTALL SHUT-OFF VALVES SO THAT STEMS EITHER ARE VERTICAL WITH HANDWHEELS OR OPERATORS ON TOP OR ARE HORIZONTAL AND SO THAT VALVES ARE EASILY ACCESSIBLE FOR OPERATION, SERVICE, REMOVAL AND REPLACEMENT.
- PROVIDE SLEEVES FOR ALL PIPE AND TUBING PASSING THROUGH FLOORS, ROOFS, AND WALLS. PACK CAULK INTO THE SPACE AROUND THE PIPE OR TUBING. PROVIDE FLASHING FOR ALL PIPES EXTENDING THROUGH THE ROOF.
- ALL VENT TERMINATIONS AT ROOF SHALL BE AT LEAST 10 FEET AWAY FROM OUTSIDE AIR INTAKES, OPERABLE WINDOWS, AND BUILDING OPENINGS.
- FOR SEWER CLEANOUT SIZING REFER TO CPC 2022 TABLE 707.1.
- FILL CRACKS BETWEEN FIXTURES AND WALL/FLOORS WITH SILICONE RUBBER SEALANT.
- LOCATE, SIZE, AND INSTALL WATER HAMMER ARRESTERS IN ACCORDANCE WITH PLUMBING AND DRAINAGE INSTITUTE STANDARD NO. WH-201.
- INSTALL FIXTURES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND ALL APPLICABLE CODES. SECURE FLOOR OUTLET OF FLOOR-MOUNTED FIXTURES TO DRAINAGE CONNECTIONS AND FLOOR IN A RIGID MANNER. RIGIDLY SUPPORT WALL-HUNG FIXTURES BY MEANS OF METAL SUPPORTING MEMBERS. USE CHROMIUM-PLATED BRASS BOLTS, NUTS, AND WASHERS WHERE EXPOSED. ALL CONNECTIONS SHALL BE MADE GAS-TIGHT AND WATER-TIGHT. USE OF PUTTY AND PLASTICS FOR GASKETS WILL NOT BE PERMITTED.
- PROVIDE ALL FIXTURE COMPONENTS AS INDICATED ON DRAWINGS. PROVIDE ADDITIONAL COMPONENTS AS PER MANUFACTURER'S RECOMMENDATIONS FOR PROPER OPERATION OF THE FIXTURES.
- PROVIDE EACH PLUMBING FIXTURE (INCLUDING HOSE BIBBS) WITH AN INDIVIDUAL STOP OR COMPRESSION VALVE OF POLISHED CHROME-PLATED LOOSE KEY TYPE.
- WHERE DEBRIS OR INVERTS ELEVATIONS ARE NOT INDICATED, PROVIDE MINIMUM COVERAGE ABOVE TOP OF PIPES) AS FOLLOWS:
 - ANY PIPING UNDER SLAB (TOP OF PIPE TO UNDERSIDE OF SLAB): 18 INCHES.
 - CAST IRON AND COPPER PIPES IN OTHER LOCATIONS: 18 INCHES.
 - EXCAVATE TO UNDISTURBED EARTH: OUT LEVEL AND FORM TRUE. REMOVE DEBRIS, RUBBISH AND SOFT MATERIAL (SUCH AS MUD), WHERE ROCK IS ENCOUNTERED, UNDERCUT TRENCHES 6-INCHES AND FILL WITH WELL TAMPED NEUTRAL SAND AND PEA GRAVEL TO PROPER PIPE ELEVATION. DURING EXCAVATION FREE OF STANDING WATER. UNDERCUT TRENCH 6-INCHES AND INSTALL PIPING IN A 6-INCH NEUTRAL SAND ENVELOPE.
- BACKFILL TO A POINT 12-INCHES ABOVE TOP OF PIPING WITH EARTH (EXCAVATED MATERIAL MAY BE USED) FREE OF CLAY, DEBRIS, RUBBISH, ROCKS, OR CLODS OVER 4-INCHES IN THE GREATEST DIMENSION. BACKFILL ABOVE 12-INCHES FROM TOP OF PIPING MAY BE WITH EXCAVATED MATERIAL. APPLY BACKFILL BY HAND IN 6-INCH DEEP LAYERS THE FULL WIDTH OF THE TRENCH. MOISTEN EACH LAYER (DO NOT FLOOD OR PUDDLE), AND HAND TAMP TO A MINIMUM 90 PERCENT COMPACTION BEFORE PROCEEDING WITH THE NEXT LAYER OF BACKFILL.
- DO NOT EXCAVATE UNDER FOUNDATIONS OR FOOTINGS EXCEPT IN MANNER PERMITTED BY THE ARCHITECT. DO NOT BACKFILL UNTIL INSTALLED PIPING HAS BEEN SUCCESSFULLY TESTED.
- VERIFICATION OF WATER AGENCY APPROVAL SHALL BE SUBMITTED TO THE BUILDING AND SAFETY DIVISION PRIOR TO ISSUANCE OF A PLUMBING PERMIT FOR THIS PROJECT.
- ALL PENETRATIONS THRU FIRE RATED ASSEMBLIES SHALL BE PACKED WITH APPROVED FIRE PROOFING. FOR LOCATIONS OF FIRE RATED ASSEMBLIES, SEE ARCHITECTURAL PLANS.
- ROUTE ALL PIPES AS HIGH AS POSSIBLE IN EXPOSED LOCATIONS. COORDINATE ROUTING WITH ALL OTHER TRADES PRIOR TO START OF WORK.
- NO SPRAY FOAM INSULATION SHALL BE APPLIED TO AREAS CONTAINING PEX PIPING.

PLUMBING MANDATORY MEASURES

- ALL PLUMBING SYSTEM COMPONENTS SHALL MEET OR EXCEED THE REQUIREMENTS OF CURRENT CBC, CMC, CPC, NEC, NFPA, ASTM, ANSI, AND ALL LOCAL AND STATE CODE REQUIREMENTS. (SEE BELOW)
- ALL PLUMBING EQUIPMENT LISTED IN OF THE 2022 CALIFORNIA CODE OF REGULATIONS (CCR), TITLE-24, PART 6, SECTION 110.3 ENERGY EFFICIENCY STANDARDS MUST BE CERTIFIED BY THE MANUFACTURER TO MEET OR EXCEED SPECIFICATIONS OR EFFICIENCIES ADOPTED BY THE CEC.
- ALL HEATERS FOR DOMESTIC HOT WATER MUST BE CERTIFIED BY THE MANUFACTURER TO MEET THE SPECIFICATIONS OR EFFICIENCIES AS ADOPTED BY THE CEC IN ACCORDANCE WITH THE 2022 CALIFORNIA CODE OF REGULATIONS (CCR), TITLE-24, PART 6, SECTION 110.3 RESIDENTIAL NON-RESIDENTIAL.
- ALL INSULATING MATERIALS INSTALLED MUST BE INSTALLED AS PER THE LATEST ENERGY COMMISSION TO MEET 2022 CALIFORNIA CODE OF REGULATIONS, TITLE-24, PART 6, ENERGY EFFICIENCY STANDARDS, SECTION 120.3 AND TABLE 4-15.
- ALL INSULATION INSTALLED SHALL MEET THE FLAME SPREAD AND SMOKE DENSITY REQUIREMENTS OF 2022 CBC, PART 1, SECTION 720 AND 2022 CMC, SECTION 602.2.
- ALL PIPING EXPOSED TO WEATHER SHALL BE METALLIC.
- ALL FERROUS PIPING EXPOSED TO WEATHER SHALL BE GALVANIZED AND PAINTED.
- ALL PIPES, FITTINGS AND FIXTURES USED TO CONVEY POTABLE WATER SHALL BE LEAD FREE IN COMPLIANCE WITH CPC SECTION 604.2.
- ALL FIXTURES REQUIRED TO BE ACCESSIBLE SHALL BE INSTALLED AS PER THE LATEST REQUIREMENTS OF TITLE 24 AND ADA (AMERICANS WITH DISABILITIES ACT).
- CROSS CONNECTION PROTECTION SHALL BE PROVIDED AT ALL POTABLE WATER SUPPLIED APPLIANCES AND EQUIPMENT (OTHER THAN THOSE LISTED IN INFORMATION BULLETIN 103).
- A WATER HEATER PRESSURE AND TEMPERATURE RELIEF DRAIN THAT TERMINATES OUTSIDE THE BUILDING SHALL COMPLY WITH CPC SECTION 608.5.
- WATER HEATER SHALL BE ANCHORED OR STRAPPED TO RESIST HORIZONTAL DISPLACEMENT DUE TO EARTHQUAKE MOTION PER CPC SECTION 507.2.
- WATER HEATER SHALL COMPLY WITH CPC SECTION 608.3, FOR THERMAL EXPANSION REQUIREMENTS.
- LAVATORY FAUCETS IN PUBLIC RESTROOM SHALL BE SELF CLOSING TYPE.
- TUB AND SHOWER COMBINATIONS SHALL BE PROVIDED WITH MIXING VALVES PER CPC SECTION 408.3.
- SHOWERHEADS SHALL BE 1.8 GPM AT 80PSI.
- NONRESIDENTIAL LAVATORY FAUCETS SHALL BE 0.4 GPM MAXIMUM.
- KITCHEN FAUCETS AND WASH FOUNTAINS SHALL BE 1.8 GPM MAXIMUM.
- METERING FAUCETS SHALL BE 0.2 GPC MAXIMUM.
- WATER CLOSETS (GRAVITY TANK TYPE, FLUSHOMETER TANK, FLUSHOMETER VALVE AND ELECTROMECHANICAL HYDRAULIC TYPE) SHALL BE 1.28 GPF MAXIMUM.
- FLOOR-MOUNT URINALS SHALL BE 0.5 GPF MAXIMUM. WALL-MOUNT URINALS SHALL BE 0.125 GPF MAXIMUM.
- NEW OR REPAIRED POTABLE WATER SYSTEMS SHALL BE DISINFECTED PRIOR TO USE ACCORDING TO THE METHOD SET IN SECTION 609.9 OF THE PLUMBING CODE.
- ALL INSTALLATION OF PEX PIPE INSTALLED IN NEW CONSTRUCTION SHALL BE FLUSHED TWICE OVER A PERIOD OF AT LEAST ONE WEEK PER CPC SECTION 604.1.2. PEX.
 - AT THE TIME OF FILL, EACH NEW PLUMBING FIXTURE SHALL HAVE A REMOVABLE TAG APPLIED STATING:

o THIS NEW PLUMBING SYSTEM SHALL BE FIRST FILLED AND FLUSHED ON (DATE) BY (NAME). THE STATE OF CALIFORNIA REQUIRES THAT THE SYSTEM BE FLUSHED AFTER STANDING AT LEAST ONE WEEK AFTER THE FILL DATE SPECIFIED ABOVE. IF THIS SYSTEM IS USED EARLIER THAN ONE WEEK AFTER THE FILL DATE ABOVE, IF THIS SYSTEM IS USED EARLIER THAN ONE WEEK AFTER THE FILL DATE, THE WATER MUST BE ALLOWED TO RUN FOR AT LEAST TWO MINUTES PRIOR TO USE FOR HUMAN CONSUMPTION. THE TAG MAY NOT BE REMOVED PRIOR TO THE COMPLETION OF THE REQUIRED SECOND FLUSHING, EXCEPT BY BUILDING OWNER OR OCCUPANT.
- PRIOR TO ISSUING A BUILDING PERMIT TO INSTALL PEX PIPE, THE BUILDING OFFICIAL SHALL REQUIRE AS PART OF THE PERMITTING PROCESS THAT THE CONTRACTOR; OR THE APPROPRIATE PLUMBING SUBCONTRACTORS, PROVIDE WRITTEN CERTIFICATION THAT HE OR SHE WILL COMPLY WITH THE FLUSHING PROCEDURES SET FORTH BY CODE.
- THE BUILDING OFFICIAL SHALL NOT GIVE FINAL PERMIT APPROVAL FOR ANY PEX PLUMBING INSTALLATION UNLESS HE OR SHE FINDS THAT THE MATERIAL HAS BEEN INSTALLED IN COMPLIANCE WITH THE REQUIREMENTS OF THE CODE, INCLUDING THE REQUIREMENTS TO FLUSH AND TAG THE SYSTEMS.
- ANY CONTRACTOR OR SUBCONTRACTOR FOUND TO HAVE FAILED TO COMPLY WITH THE PEX FLUSHING REQUIREMENTS SHALL BE SUBJECT TO THE PENALTIES IN HEALTH AND SAFETY CODE, DIVISION 13, PART 1.5, CHAPTER 6 (SECTION 17995, et seq.).

APPLICABLE CODES

- 2022 CALIFORNIA ADMINISTRATIVE CODE (CAC), CCR PART 1, TITLE 24
- 2022 CALIFORNIA BUILDING CODE (CBC), CCR TITLE 24, PARTS 1 & 2 (BASED ON THE 2021 EDITION INTERNATIONAL BUILDING CODE, VOLS. 1 & 2)
- 2022 CALIFORNIA ELECTRICAL CODE (CEC), CCR TITLE 24, PART 3 (BASED ON THE 2020 EDITION NATIONAL ELECTRICAL CODE WITH CALIFORNIA AMENDMENTS)
- 2022 CALIFORNIA MECHANICAL CODE (CMC), CCR TITLE 24, PART 4, TITLE 24 CCR (BASED ON THE 2021 EDITION UNIFORM MECHANICAL CODE WITH CALIFORNIA AMENDMENTS)
- 2022 CALIFORNIA PLUMBING CODE (CPC), CCR TITLE 24, PART 5, (BASED ON THE 2021 EDITION UNIFORM PLUMBING CODE WITH CALIFORNIA AMENDMENTS)
- 2022 CALIFORNIA ENERGY CODE (CEC), CCR TITLE 24, PART 6, AND ASSOCIATED ADMINISTRATIVE REGULATION IN PART 1.
- 2022 CALIFORNIA FIRE CODE (CFC), CCR TITLE 24, PART 9 (BASED ON THE 2021 EDITION INTERNATIONAL FIRE CODE WITH CALIFORNIA AMENDMENTS)
- 2022 CALIFORNIA EXISTING BUILDING CODE (CEBC), CCR TITLE 24, PART 10, (BASED ON THE 2021 EDITION INTERNATIONAL EXISTING BUILDING CODE WITH CALIFORNIA AMENDMENTS)
- 2022 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGreen), CCR TITLE 24, PART 11
- 2022 CALIFORNIA REFERENCED STANDARDS CODE, CCR TITLE 24, PART 12
- TITLE 19 CCR, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS



4055 DEVIS DR., TEMECULA, CALIFORNIA 92590-3760
Phone: 951.296.8110 Fax: 951.296.6079 Email: info@stkinc.com

CONSULTANT



3220 Executive Ridge, Suite 210
Vista, CA 92081
760.560.0100
08-22-24 #2024-03417
www.sobrien.com

PROJECT ADMINISTERED BY:
SAN BERNARDINO COUNTY
PROJECT & FACILITIES
MANAGEMENT DEPARTMENT

385 N. ARROWHEAD AVE.
SAN BERNARDINO, CA 92415

PROJECT NAME:
SAN BERNARDINO
COUNTY FIRE
DEPARTMENT:
FIRE STATION 227

PROJECT # 10J0J020

CIP #22-105

APN Part of 0164-281-01

180 W. 38TH STREET
SAN BERNARDINO,
CA 92405

ISSUE INFORMATION:

DATE:	INFORMATION:
9-11-24	D.D.s
10-26-24	PROGRESS
12-20-24	95% CDs
03-14-25	Plan Check 
05-09-25	Plan Check 
07-25-25	BID SET
08-25-25	BID SET

SHEET INFORMATION:

STK PROJECT NO.: 374-193-24
SCALE: AS NOTED
DATE: DECEMBER 2024
PLOT DATE: -
DRAWING NAME: -

SEAL:



SHEET TITLE:
PLUMBING
LEGEND AND
GENERAL
NOTES

SHEET NO.:

P0.1

MANDATORY CALGREEN CHECKLIST	
WATER EFFICIENCY AND CONSERVATION INDOOR WATER USE	MANDATORY
5.303.1 METERS. SEPARATE METERS SHALL BE INSTALLED FOR THE USES DESCRIBED IN SECTIONS 5.303.1.1 AND 5.303.1.2. 5.303.1.1 BUILDINGS IN EXCESS OF 50,000 SQUARE FEET. SEPARATE SUBMETERS SHALL BE INSTALLED AS FOLLOWS: 1. FOR EACH INDIVIDUAL LEASED, RENTED OR OTHER TENANT SPACE WITHIN THE BUILDING PROJECTED TO CONSUME MORE THAN 100GAL/DAY. 2. WHERE SEPARATE SUBMETERS FOR INDIVIDUAL BUILDINGS TENANTS ARE UNEASABLE, FOR WATER SUPPLIED TO THE FOLLOWING SUBSYSTEMS: a. MAKEUP WATER FOR COOLING TOWERS WHERE FLOW THROUGH IS GREATER THAN 500 GPM (30L/S) b. MAKEUP WATER FOR EVAPORATIVE COOLERS GREATER THAN 6 GPM (0.04 L/S) c. STEAM AND HOT-WATER BOILERS WITH ENERGY INPUT MORE THAN 500,000 Btu/h (147 kW) 5.303.1.2 EXCESS CONSUMPTION. ANY BUILDING OR A SPACE WITHIN A BUILDING THAT IS PROJECTED TO CONSUME MORE THAN 1,000 GAL/DAY (3800 L/DAY) SHALL BE INSTALLED AS FOLLOWS: 1. THE INSTALLATION OF WATER-CONSERVING FIXTURES OR 2. UTILIZING NONPOTABLE WATER SYSTEMS. 5.303.2 20 PERCENT SAVINGS. A SCHEDULE OF PLUMBING FIXTURES AND FIXTURE FITTINGS THAT WILL REDUCE THE OVERALL USE OF POTABLE WATER WITHIN THE BUILDING BY 20 PERCENT SHALL BE PROVIDED. (CALCULATE SAVINGS BY WATER USE WORKSHEETS) 5.303.2.1 MULTIPLE SHOWERHEADS SERVING ONE SHOWER. WHEN A SHOWER IS SERVED BY MORE THAN ONE SHOWERHEAD, THE COMBINED FLOW RATE OF ALL THE SHOWERHEADS CONTROLLED BY A SINGLE VALVE SHALL NOT EXCEED THE MAXIMUM FLOW RATE AT ≥ 20 PERCENT REDUCTION CONTAINED IN TABLE 5.303.2.3 OR THE SHOWER SHALL BE DESIGNED TO ONLY ALLOW ONE SHOWERHEAD TO BE IN OPERATION AT A TIME. 5.303.4 WASTEWATER REDUCTION. EACH BUILDING SHALL REDUCE THE GENERATION OF WASTEWATER BY ONE OF THE FOLLOWING METHODS: 1. THE INSTALLATION OF WATER-CONSERVING FIXTURES OR 2. UTILIZING NONPOTABLE WATER SYSTEMS. 5.303.6 PLUMBING FIXTURES AND FITTINGS. PLUMBING FIXTURES (WATER CLOSETS AND URINALS) AND FITTINGS (FAUCETS AND SHOWERHEADS) SHALL COMPLY WITH THE REQUIREMENTS LISTED FOR EACH TYPE IN ITEMS LISTED IN TABLE 5.303.6. 1. WATER CLOSETS (TOILETS) – FLUSHMETER TYPE 2. WATER CLOSETS (TOILETS) – TANK TYPE 3. URINALS 4. PUBLIC LAVATORY FAUCETS 5. PUBLIC METERING SELF-CLOSING FAUCETS 6. RESIDENTIAL BATHROOM LAVATORY SINK FAUCETS 7. RESIDENTIAL KITCHEN FAUCETS 8. RESIDENTIAL SHOWER HEADS 9. SINGLE SHOWER FIXTURES SERVED BY MORE THAN ONE SHOWERHEAD	

WATER REDUCTION FIXTURE FLOW RATES	
PER 2022 CALIFORNIA GREEN BUILDING CODE – TABLE A5.303.2.3.1	
FIXTURE TYPE	MAXIMUM FLOW RATE
KITCHEN FAUCETS	1.8 GPM AT 60 PSI
WASH FOUNTAINS	1.8 [RM SPACE (IN.)/20 GPM AT 60 PSI]
METERING FAUCETS	0.20 GALLONS/CYCLE
METERING FAUCETS FOR WASH FOUNTAINS	0.20 GALLONS/CYCLE/20 [RM SPACE (IN.)@ 60 PSI]

WATER CONSERVATION FIXTURE FLOW RATES	
PER 2022 CALIFORNIA GREEN BUILDING CODE SECTION 5.303.3	
FIXTURE TYPE	MAXIMUM BASELINE FLOW RATE
WATER CLOSETS	1.28 GALLONS PER FLUSH
URINALS (FLOOR-MOUNT/WALL-MOUNT)	0.5/0.125 GALLONS PER FLUSH
SHOWERHEADS	1.8 GPM AT 80 PSI

PLUMBING FIXTURES (WATER CLOSETS AND URINALS) AND FITTINGS (FAUCETS AND SHOWERHEADS) SHALL COMPLY WITH 5.303.3.

PLUMBING FIXTURES AND FIXTURE FITTINGS	
PER 2022 CALIFORNIA PLUMBING CODE – TABLE 1701.1	
REQUIRED STANDARDS	
WATER CLOSETS (TOILETS) – FLUSHMETER VALVE TYPE SINGLE FLUSH, MAXIMUM FLUSH VOLUME	ASME A 112.19.2/CSA B45.1 – 1.28 GPF (4.8 L)
WATER CLOSETS (TOILETS) – FLUSHMETER VALVE TYPE DUAL FLUSH, MAXIMUM FLUSH VOLUME	ASME A 112.19.2 AND USEPA WATERSENSE TANK-TYPE HIGH-EFFICIENCY TOILET SPECIFICATION – 1.28 GPF (4.8 L)
WATER CLOSETS (TOILETS) – TANK TYPE	U.S. EPA WATERSENSE TANK-TYPE HIGH EFFICIENCY TOILET SPECIFICATION
URINALS, MAXIMUM FLUSH VOLUME	ASME A 112.19.2/CSA B45.1 – 0.5 GPF (1.9 L)
URINALS, NONWATER URINALS	ASME A 112.19.19 (VITREOUS CHINA) ANSI Z124.9–2004 OR IAPMO Z124.9 (PLASTIC)
PUBLIC LAVATORY FAUCETS: MAXIMUM FLOW RATE – 0.5 GPM (1.9 L/MIN.)	ASME A 112.18.1/CSA B125.1
PUBLIC METERING SELF-CLOSING FAUCETS: MAXIMUM FLOW RATE – 0.25 (1.0 L) PER METERING CYCLE	ASME A 112.18.1/CSA B125.1
RESIDENTIAL BATHROOM LAVATORY SINK FAUCETS: MAXIMUM FLOW RATE – 1.5 GPM (5.7 L/MIN)	ASME A 112.18.1/CSA B125.1

PLUMBING FIXTURES (WATER CLOSETS AND URINALS) AND FITTINGS (FAUCETS AND SHOWERHEADS) SHALL MEET THE STANDARDS REFERENCED IN TABLE 5.303.6.

PLUMBING PIPE MATERIAL SCHEDULE			
SERVICE	LOCATION	PIPE MATERIAL	SLOPE
WATER	ABOVE GRADE	ASTM B88 TYPE "L" HARD DRAWN COPPER WITH WROUGHT COPPER FITTINGS.	1/32" PER 1'
	BELOW GRADE	ASTM B88 TYPE "K" HARD DRAWN COPPER, FACTORY INSULATED, WITH WROUGHT COPPER FITTINGS.	1/32" PER 1'
SEWER AND VENT	ABOVE GRADE	ASTM A888 HUBLESS CAST IRON PIPE AND DWV FITTINGS SHALL CONFORM TO CPC AND BEAR THE COLLECTIVE TRADEMARK OF CISPI AND NSF.	1/4" PER 1'
	BELOW GRADE	SOLID CORE PVC–DNV PER ASTM D1785/D2665. PVC SOCKET FITTINGS PER ASTM D2665.	1/4" PER 1'
ROOF DRAIN	ABOVE GRADE	ASTM A888 HUBLESS CAST IRON PIPE AND DWV FITTINGS SHALL CONFORM TO CPC AND BEAR THE COLLECTIVE TRADEMARK OF CISPI AND NSF.	1/4" PER 1'
	BELOW GRADE	SOLID CORE PVC–DNV PER ASTM D1785/D2665. PVC SOCKET FITTINGS PER ASTM D2665.	1/4" PER 1'
NATURAL GAS	ABOVE GRADE	ASTM A53 SCHEDULE 40 "BLACK STEEL" PIPE AND FITTINGS SHALL CONFORM TO CPC. EXPOSED PIPING SHALL BE PAINTED.	1/4" PER 15'
	BELOW FLOOR (INTERIOR)	ASTM A53 SCHEDULE 40 GALVANIZED STEEL "BLACK" PIPE AND FITTINGS SHALL CONFORM TO CPC. PIPING INSTALLED UNDERGROUND BENEATH BUILDING SHALL CONFORM TO CPC 1210.1.6.	1/4" PER 15'
	BELOW GRADE (EXTERIOR)	ASTM D2513–16a POLYETHYLENE "PE" PIPE. ALL FITTINGS SHALL BE AS PER CPC.	1/4" PER 15'
CONDENSATE	ABOVE GRADE	ASTM B88 TYPE "L" HARD DRAWN COPPER WITH WROUGHT COPPER FITTINGS.	1/4" PER 1'
COMPRESSED AIR	ABOVE GRADE	ASTM B88 TYPE "L" HARD DRAWN COPPER WITH WROUGHT COPPER FITTINGS.	
	BELOW GRADE	ASTM B88 TYPE "K" HARD DRAWN COPPER, FACTORY INSULATED, WITH WROUGHT COPPER FITTINGS.	

PIPE INSULATION THICKNESS									
PER 2022 CALIFORNIA ENERGY CODE TABLE 120.3-A									
FLUID OPERATING TEMPERATURE RANGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE DIAMETER(INCHES)						
	CONDUCTIVITY (IN BTU-IN/H·SQ. FT²·°F)	MEAN RATING TEMPERATURE (°F)	<1	1 – < 1.5	1.5 – < 4	4 – < 8	8 AND LARGER		
			INSULATION THICKNESS REQUIRED (IN INCHES)						
SPACE HEATING, SERVICE WATER HEATING SYSTEMS (STEAM, STEAM CONDENSATE, REFRIGERANT, SPACE HEATING, SERVICE HOT WATER)			MINIMUM PIPE INSULATION REQUIRED (THICKNESS IN INCHES OR R-VALUE)						
ABOVE 350	0.32 – 0.34	250	INCHES R-VALUE	4.5 R37	5.0 R41	5.0 R37	5.0 R27	5.0 R23	
251–350	0.29 – 0.31	200	INCHES R-VALUE	3.0 R24	4.0 R34	4.5 R35	4.5 R26	4.5 R22	
201–250	0.27 – 0.30	150	INCHES R-VALUE	2.5 R21	2.5 R20	2.5 R17.5	3.0 R17	3.0 R14.5	
141–200	0.25 – 0.29	125	INCHES R-VALUE	1.5 R11.5	1.5 R11	2.0 R14	2.0 R11	2.0 R10	
105–140	0.22 – 0.28	100	INCHES R-VALUE	1.0 R7.7	1.5 R12.5	1.5 R11	1.5 R9	1.5 R8	
			NOMINAL PIPE DIAMETER(INCHES)						
			<=1	1 – < 1.5	1.5 – < 4	4 – < 8	8 <		
SPACE COOLING SYSTEMS (CHILLED WATER, REFRIGERANT AND BRINE)			MINIMUM PIPE INSULATION REQUIRED (THICKNESS IN INCHES OR R-VALUE)						
40–60	0.21 – 0.27	75	INCHES R-VALUE	NONRES 0.5 R3	RES 0.5 R6	NONRES 1.0 R3	RES 1.0 R5	1.0 R3	
BELOW 40	0.20 – 0.26	50	INCHES R-VALUE	1.0 R8.5	1.5 R14	1.5 R12	1.5 R10	1.5 R9	

WATER HEATER CALCULATION			
FROM TABLE 6–1 ASPE HANDBOOK VOL.2			
FIXTURE	QTY	GPH	TOTAL GPH
LAVATORY	7	3	35
SHOWER	7	20	20
EXTRACTOR	1	75	75
DECON SERVICE SINK	1	15	15
COFFEE SINK	1	10	10
KITCHEN SINK	1	10	10
MOP SINK	1	20	20
LAUNDRY SINK	1	15	15
SMALL CLOTH WASHER	2	20	40
DISH WASHER	2	21	42
SCBA CLEANING MACHINE	1	29	42
TOTAL DOMESTIC HOT WATER DEMAND			417
DEMAND FACTOR			100%
INCOMING CW TEMP.			60°
STORAGE TEMP.			140°
GAS REQUIRED TO HEAT WATER			402X8.33X(140–60)
GPH X 8.33 X TEMP RISE 80°			268,000 BTUH
USING SINGLE WATER HEATER, A MINIMUM WATER HEATER SIZE MUST BE MINIMUM 476,000 BTU'S WITH 118 GAL. TANK CAPACITY.			

FUTURE FIXTURE DATA							
SYMBOL	DESCRIPTION	NO. OF UNITS	DOMESTIC WATER		NO. OF UNITS	SEWER	
			F.U. PER UNIT ①	TOTAL FIXTURE UNITS		F.U. PER UNIT ②	TOTAL FIXTURE UNITS
			CW	HW			
BT 1	BATHTUB	0	4.0	0.0	0	2.0	0.0
WB 1	CLOTHES WASHER SUPPLY BOX	2	4.0	8.0	2	3.0	6.0
EX 1	EXTRACTOR	1	6.0	6.0	1	INDIRECT	--
DW 1	DISHWASHER	2	1.5	3.0	2	INDIRECT	--
DF 1	DRINKING FOUNTAIN	0	0.5	0.0	0	0.5	0.0
HB 1	HOSE BIBB	1	2.5	2.5	1	--	--
HB 1	ADDITIONAL HOSE BIBB	6	1.0	6.0	6	--	--
L 1	LAVATORY	7	1.0	7.0	7	1.0	7.0
S 2	COFFEE COUNTER SINK	0	1.5	0.0	0	2.0	0.0
KS 1	KITCHEN SINK	1	1.5	1.5	1	2.0	2.0
LS 1	LAUNDRY SINK	1	1.5	1.5	1	2.0	2.0
MS 1	SERVICE/MOP BASIN SINK	1	3.0	3.0	1	3.0	3.0
W 1	WASHUP	1	2.0	2.0	1	2.0	2.0
SH 1	SHOWER	7	2.0	14.0	7	2.0	14.0
UR 1	URINAL	1	20.0	20.0	--	1	2.0
WC 1	WATER CLOSET (TANK)	7	2.5	17.5	--	7	4.0
WC 1	WATER CLOSET (VALVE)	0	5.0	0.0	--	0	4.0
	SCBA	1	12	12.0	--	0	0.0
FD 1	FLOOR DRAIN	12	--	--	--	12	0.0
FS 1	FLOOR SINK	3	--	--	--	3	2.0
FS 2	FLOOR SINK	1	--	--	--	1	3.0
	TOTAL			104.0	34.5		75.0

① WATER FIXTURE UNITS PER CPC TABLE A 103.1 ② SEWER FIXTURE UNITS PER CPC TABLE 702.1

WATER CALCULATIONS							
DOMESTIC COLD WATER PRESSURE CALCULATION (AVG PSI / 100 FT)				DOMESTIC COLD WATER SIZING			
RESIDUAL PRESSURE CONTRACTOR TO FIELD VERIFY STREET WATER PRESSURE PRIOR TO START OF WORK. IN CASE OF ANY DISCREPANCIES NOTIFY ARCHITECT/ENGINEER PRIOR TO START OF WORK.				FRICTION LOSS 2.4 PSI PER 100 FT AVG, AT 8 FPS MAX. VELOCITY			
				PIPE SIZE	WSFU	GPM	FPS
MAX. SYSTEM INLET PRESSURE [AT WATER METER INLET]				1/2"	1	–	2.6
MIN. SYSTEM INLET PRESSURE [AT PRESSURE REDUCING VALVE INLET]				3/4"	6	–	5.4
				1"	15	–	11
				1–1/4"	19	–	19
SYSTEM PRESSURE LOSSES				1–1/2"	49	13	30
2" WATER METER @ 38 GPM	=	4	PSI	2"	165	68	64
2" BACKFLOW PREVENTER	=	13	PSI	2–1/2"	400	279	115
2" PRESSURE REDUCING VALVE	=	5	PSI	3"	710	605	170
TOTAL OF SYSTEM PRESSURE LOSSES		22.0	PSI				
RESIDUAL PRESSURE AT PRV		28					
PRESSURE REDUCING VALVE SETPOINT	=	52	PSI				
STATIC HEIGHT PRESSURE LOSS (25' x .433)				FRICTION LOSS 2.4 PSI PER 100 FT AVG, AT 5 FPS MAX. VELOCITY			
RESIDUAL PRESSURE REQUIRED AT GOVERNING FIXTURE [WATER CLOSET 25 PSI, EXTRACTOR 30 PSI]	=	30	PSI	PIPE SIZE	WSFU	GPM	FPS
				1/2"	1	–	2.6
				3/4"	6	–	5.4
				1"	15	–	11
				1–1/4"	19	–	19
				1–1/2"	49	–	28
				2"	119	–	48
TOTAL SYSTEM PRESSURE LOSSES (DOWNSTREAM OF PRV)	=	40.8	PSI				
PRESSURE AVAILABLE FOR PIPE SIZING (PRV SETPOINT – TOTAL SYSTEM PRESSURE LOSSES DOWNSTREAM OF PRV)	=	9.2	PSI				
ACTUAL LENGTH OF SYSTEM	=	280	FT				
DEVELOPED LENGTH OF SYSTEM (260' X 1.5)	=	390	FT				
AVERAGE PRESSURE DROP (PRESSURE AVAILABLE FOR PIPE SIZING) X 100 FT / (DEVELOPED LENGTH OF SYSTEM)	=	2.4	PSI/100 FT AVG				
SUMMARY							
PIPE SIZING BASED UPON 2.4 PSI LOSS PER 100' AVG							



PROJECT ADMINISTERED BY:
SAN BERNARDINO COUNTY
PROJECT & FACILITIES
MANAGEMENT DEPARTMENT

385 N. ARROWHEAD AVE.
SAN BERNARDINO, CA 92415

PROJECT NAME:
SAN BERNARDINO
COUNTY FIRE
DEPARTMENT:
FIRE STATION 227

PROJECT # 10J01202

CIP #22-105

APN Part of 0164-281-01

180 W. 38TH STREET
SAN BERNARDINO,
CA 92405

ISSUE INFORMATION:	
DATE:	INFORMATION:
9-11-24	D.D.s
10-26-24	PROGRESS
12-20-24	95% CDs
03-14-25	Plan Check
05-09-25	Plan Check
07-25-25	BID SET
08-25-25	BID SET

SHEET INFORMATION:
STK PROJECT NO.: 374-193-24
SCALE: AS NOTED
DATE: DECEMBER 2024
PLOT DATE:
DRAWING NAME:

SEAL:



SHEET TITLE:

PLUMBING
SCHEDULES

SHEET NO.:

P0.2