

GENERAL NOTES

- GENERAL NOTES -----
- ENTIRE INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF THE 2013 CALIFORNIA MECHANICAL CODE, 2013 CALIFORNIA BUILDING CODE, AND ALL OTHER APPLICABLE CODES AND REGULATIONS, INCLUDING 2016 BUILDING ENERGY EFFICIENCY STANDARDS DIVISION T-24.
 - 2016 CALIFORNIA GREEN BUILDING STANDARDS (CALGREEN) CODE INCLUDING THE APPLICABLE MANDATORY MEASURES:
 - 5.201.1 CALIFORNIA ENERGY CODE, FOR THE PURPOSES OF MANDATORY ENERGY EFFICIENCY STANDARDS IN THIS CODE, THE CALIFORNIA ENERGY COMMISSION WILL CONTINUE TO ADOPT MANDATORY STANDARDS.
 - 5.504.3: COVERING OF DUCT OPENINGS AND PROTECTION OF MECHANICAL EQUIPMENT DURING CONSTRUCTION, AT THE TIME OF ROUGH INSTALLATION AND DURING STORAGE ON THE CONSTRUCTION SITE UNTIL FINAL STARTUP OF THE HEATING, COOLING AND VENTILATING EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, SHEET METAL OR OTHER METHODS ACCEPTABLE TO THE ENFORCING AGENCY TO REDUCE THE AMOUNT OF DUST, WATER AND DEBRIS WHICH MAY ENTER THE SYSTEM.
 - 5.504.5.3.1 FILTERS, IN MECHANICALLY VENTILATED BUILDINGS, PROVIDE REGULARLY OCCUPIED AREAS OF THE BUILDING WITH AIR FILTRATION MEDIA FOR OUTSIDE AND RETURN AIR PRIOR TO OCCUPANCY THAT PROVIDES AT LEAST A MINIMUM EFFICIENCY REPORTING VALUE (MERV) OF 8. MERV 8 FILTERS SHALL BE INSTALLED PRIOR TO OCCUPANCY AND RECOMMENDATIONS FOR MAINTENANCE WITH FILTERS OF THE SAME VALUE SHALL BE INCLUDED IN THE OPERATION AND MAINTENANCE MANUAL. EXCEPTIONS:
 - AN ASHRAE 10-PERCENT TO 30-PERCENT EFFICIENCY FILTER SHALL BE PERMITTED FOR AN HVAC UNIT MEETING THE 2013 CALIFORNIA ENERGY CODE HAVING 60,000 BTU/H OR LESS CAPACITY PER FAN COIL IF THE ENERGY USE OF THE AIR DELIVERY SYSTEM IS 0.4 W/CFM OR LESS AT THE DESIGN AIR FLOW.
 - EXISTING MECHANICAL EQUIPMENT.
 - 5.506.1 OUTSIDE AIR DELIVERY, FOR MECHANICALLY VENTILATED SPACES IN BUILDINGS, MEET THE MINIMUM REQUIREMENTS OF SECTION 121 (REQUIREMENTS FOR VENTILATION) OF THE 2013 CALIFORNIA ENERGY CODE, OR THE APPLICABLE LOCAL CODE, WHICHEVER IS MORE STRINGENT, AND DIVISION 1, CHAPTER 4 OF CCR, TITLE 8.
 - 5.508.1 OZONE DEPLETION AND GREENHOUSE GAS REDUCTIONS. INSTALL HVAC AND REFRIGERATION AND FIRE SUPPRESSION EQUIPMENT SHALL COMPLY WITH 5.508.1.1 AND 5.508.1.2.
 - 5.508.1.1 CHLOROFLUOROCARBONS (CFCS). INSTALL HVAC, REFRIGERATION AND FIRE SUPPRESSION EQUIPMENT THAT DO NOT CONTAIN CFCS.
 - 5.508.1.2 HALONS. INSTALL HVAC, REFRIGERATION AND FIRE SUPPRESSION EQUIPMENT THAT DO NOT CONTAIN HALONS.
 - ADHESIVES, SEALANTS AND CAULKS SHALL MEET CALGREEN REQUIREMENTS.
 - INSTALLER AND SPECIAL INSPECTORS SHALL MEET ALL QUALIFICATIONS LISTED IN SECTION 702 OF THE 2013 CALIFORNIA GREEN BUILDING STANDARDS CODE.
 - COORDINATE ENTIRE INSTALLATION OF THE HVAC SYSTEM WITH THE WORK OF ALL OTHER TRADES PRIOR TO ANY FABRICATION OR INSTALLATION. PROVIDE ALL FITTINGS, OFFSETS, AND TRANSITIONS AS REQUIRED FOR A COMPLETE WORKABLE INSTALLATION. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE ITEMS TO BE PROVIDED BY OTHER TRADES WHERE MENTIONED IN THE CONTRACT DOCUMENTS PRIOR TO BID - NO EXCEPTIONS.
 - COORDINATE THE LOCATIONS OF ALL CEILING DIFFUSERS, REGISTERS, AND GRILLES WITH THE ARCHITECTURAL REFLECTIVE CEILING PLAN, ELECTRICAL LIGHTING LAYOUT AND ARCHITECTURAL ROOM ELEVATIONS. THE ARCHITECT AND ENGINEER SHALL BE IMMEDIATELY NOTIFIED OF ANY CONFLICTS PRIOR TO FABRICATION AND INSTALLATION.
 - CONTRACTOR SHALL NOTIFY OWNER AND ENGINEER OF CONSTRUCTION PHASING PRIOR TO START OF CONSTRUCTION, REMOVAL, AND/OR REPLACEMENT OF ANY EQUIPMENT. CONTRACTOR SHALL RECEIVE PERMISSION IN WRITING PRIOR TO THE START OF ANY WORK DURING ANY PHASE FOR WORK SHOWN HEREIN. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT WORK AND ARRANGE HIS WORK IN A MANNER THAT WILL CAUSE MINIMAL INTERFERENCE WITH DAILY FUNCTIONS WITHIN THE FACILITY. ANY EXPECTED DOWNTIME SHALL BE COORDINATED WITH THE OWNER.
 - ALL EQUIPMENT, DUCTS, PIPING, AND OTHER DEVICES AND MATERIALS INSTALLED OUTSIDE OF THE BUILDING OR OTHERWISE EXPOSED TO THE WEATHER SHALL BE COMPLETELY WEATHER-PROOFED AND PAINTED TO MATCH, COORDINATE WITH ARCHITECT PRIOR TO PAINTING.
 - THE OWNER ACKNOWLEDGES THAT THE DESIGN PROFESSIONAL'S PLANS ARE INSTRUMENTS OF PROFESSIONAL SERVICE. NEVERTHELESS, THE PLANS PREPARED UNDER THIS AGREEMENT SHALL BECOME THE PROPERTY OF THE OWNER UPON COMPLETION OF

- THE WORK. THE OWNER AGREES TO HOLD HARMLESS AND INDEMNIFY THE DESIGN PROFESSIONAL AGAINST ALL DAMAGES, CLAIMS AND LOSSES, INCLUDING DEFENSE COSTS, ARISING OUT OF ANY RESCUE OF THE PLANS WITHOUT THE WRITTEN AUTHORIZATION OF THE DESIGN PROFESSIONAL.
- ALL DIMENSIONS SHOWN ON THESE PLANS ARE APPROXIMATE AND MUST BE CONFIRMED ON SITE.
 - PRIOR TO OCCUPANCY, THE ENTIRE H.V.A.C. SYSTEMS SHALL BE BALANCED IN ACCORDANCE WITH (AABC) ASSOCIATED AIR BALANCE COUNCIL STANDARDS BY AN INDEPENDENT AIR BALANCE CONTRACTOR. CERTIFICATION SHALL BE PROVIDED BY THE CONTRACTOR FOR AIR AND HYDRONIC AS APPLICABLE. SYSTEMS SHALL BE BALANCED AS INDICATED ON PLANS INCLUDING FRESH AIR VENTILATION, WHERE THERE IS A CONFLICT WITH THE MECHANICAL PLANS, THE AIR BALANCE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO BALANCING OF SYSTEM. IF NOT THE AIR BALANCE CONTRACTOR SHALL BEAR ALL COSTS INCURRED FOR WORK THAT MUST BE RE-BALANCED DUE TO CONFLICTS ON CONTRACT DOCUMENTS. CONTRACTOR SHALL PROVIDE THREE COPIES OF THE AIR BALANCE REPORT TO THE ENGINEER FOR APPROVAL.
 - FOR INACCESSIBLE AREAS THE CONTRACTOR SHALL PROVIDE ACCESS PANELS FOR ALL DAMPERS, EQUIPMENT, SMOKE DETECTORS, AND CONTROL DEVICES. THESE PANELS SHALL MATCH THE RATING OF THE WALL AND/OR CEILING THAT THEY ARE LOCATED IN. MINIMUM ACCESS PANEL SIZES SHALL BE AS FOLLOWS:
 - HAND ACCESS: 12"x12"
 - BODY ACCESS: 30"x30" MIN. WHERE A LARGER ACCESS SIZE IS REQUIRED DUE TO INSTALLATION CONSTRAINTS, THE CONTRACTOR SHALL DO SO AT NO ADDITIONAL COST AND SHALL NOTIFY THE ARCHITECT AND ENGINEER OF DEVIATIONS PRIOR TO INSTALLATION.
 - COORDINATE THE LOCATION OF ALL ROOF OPENINGS AND THE LOCATION OF ALL ROOF MOUNTED EQUIPMENT WITH THE STRUCTURAL AND ARCHITECTURAL PLANS PRIOR TO ANY INSTALLATION.
 - PLATFORMS, CURBS, AND FLASHINGS FOR MECHANICAL EQUIPMENT SHALL BE AS INDICATED ON THE STRUCTURAL AND ARCHITECTURAL PLANS, UNLESS NOTED OTHERWISE. WHERE THERE IS A CONFLICT WITH THE MECHANICAL PLANS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND ENGINEER PRIOR TO FABRICATION AND INSTALLATION.
 - ALL EQUIPMENT, ACCESSORIES, AND RELATED PIPING SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL FITTINGS, TRANSITIONS, DAMPERS, VALVES, AND OTHER DEVICES REQUIRED FOR A COMPLETE WORKABLE INSTALLATION.
 - MAINTENANCE LABEL SHALL BE AFFIXED TO ALL MECHANICAL EQUIPMENT AND A MAINTENANCE MANUAL SHALL BE PROVIDED FOR THE OWNER'S USE.
 - PROVIDE 30% MIN. EFFICIENCY THROWAWAY FILTERS FOR ALL AIR CONDITIONING UNITS. SEE EQUIPMENT SCHEDULE AND SPECIFICATIONS FOR TYPE SIZES SHALL BE AS RECOMMENDED BY THE MANUFACTURER, UNLESS OTHERWISE SPECIFIED.
 - AIR FILTERS SHALL BE STATE FIRE MARSHALL APPROVED AND LISTED. PREFORMED FILTERS HAVING COMBUSTIBLE FRAMING SHALL BE TESTED AS A COMPLETE ASSEMBLY. AIR FILTERS SHALL BE ACCESSIBLE FOR CLEANING OR REPLACEMENT.
 - ALL EQUIPMENT WITH MOVING PARTS SHALL BE PROVIDED WITH FLEXIBLE DUCT AND PIPE CONNECTIONS.
 - ALL EQUIPMENT SHALL BE LABELED AS TO THE SPACE IT SERVES.
 - ALL HVAC EQUIPMENT SHALL BE CERTIFIED BY THE CALIFORNIA ENERGY COMMISSION TO COMPLY WITH LATEST EFFICIENCY STANDARDS.
 - PROVIDE MANUAL VOLUME DAMPERS AND BACKDRAFT DAMPERS FOR FRESH AIR INTAKES ON ALL AIR HANDLING EQUIPMENT AND EXHAUST FANS SERVING CONDITIONED SPACES. EXCEPTION: EQUIPMENT WITH FACTORY ECONOMIZERS.
 - ALL AIR HANDLING EQUIPMENT SERVING CONDITIONED SPACES SHALL PROVIDE CONTINUOUS FRESH AIR TO SPACES IN OCCUPIED MODE.
 - CONTRACTOR SHALL VERIFY ALL CLEARANCES AND AVAILABLE SPACE FOR DUCTWORK PRIOR TO ORDERING AND/OR FABRICATING MATERIAL.
 - CONTRACTOR TO SUBMIT ALL EQUIPMENT, DUCTWORK, AIR DISTRIBUTION DEVICES, AND OTHER ACCESSORIES TO THE ENGINEER FOR APPROVAL PRIOR TO ANY ORDERING OF SUCH ITEMS.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR COMMISSIONING OF EQUIPMENT AS STIPULATED ON MECH-1C FORM ON PLANS UNLESS NOTED OTHERWISE.
 - PAINT EXPOSED SURFACES, WHETHER OR NOT COLORS ARE DESIGNATED IN SCHEDULES, EXCEPT FOR A SURFACE OR MATERIAL IS SPECIFICALLY INDICATED NOT TO BE PAINTED OR IS TO REMAIN NATURAL. WHERE AN ITEM OR SURFACE IS NOT SPECIFICALLY MENTIONED, PAINT THE SAME AS SIMILAR ADJACENT MATERIALS OR SURFACES. IF COLOR OR FINISH IS NOT DESIGNATED, THE OWNER'S REPRESENTATIVE WILL SELECT FROM STANDARD COLORS OR FINISHES AVAILABLE.
 - PAINTING INCLUDES FIELD PAINTING EXPOSED BARE AND COVERED PIPES AND DUCTS (INCLUDING COLOR CODING), HANGERS, EXPOSED STEEL AND IRON WORK, AND PRIMED METAL SURFACES OF MECHANICAL AND ELECTRICAL EQUIPMENT.

- CONTROLS -----
- CONTROL SCHEMATICS ARE FOR SEQUENCE ONLY. REFER TO ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR ALL ELECTRICAL DEVICES REQUIRED.
 - ALL LINE VOLTAGE WIRING SHALL BE INSTALLED IN CONDUIT. ALL LINE VOLTAGE CONDUIT AND WRING, INCLUDING FINAL CONNECTIONS, SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR AS INDICATED ON THE ELECTRICAL DRAWINGS OR SPECIFIED IN THE ELECTRICAL SECTION OF THE SPECIFICATIONS. ALL ELECTRICAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE CODES AND REGULATIONS OF ALL GOVERNING BODIES HAVING JURISDICTION THEREOF.
 - ALL LOW VOLTAGE CONDUIT AND WRING AS APPLICABLE, INCLUDING FINAL CONNECTIONS, SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR AS INDICATED ON THE MECHANICAL DRAWINGS.
 - ALL LOW VOLTAGE WIRING SHALL BE INSTALLED IN CONDUIT.
 - ALL LOW VOLTAGE WIRING SHALL BE PLENUM - RATED.
 - WHERE THE CONTROLS CONTRACTOR IS RETAINED BY THE OWNER, THEY SHALL BE RESPONSIBLE FOR THE FOLLOWING:
 - FURNISH AND INSTALL ALL DEVICES, WRING, AND TERMINATIONS REQUIRED FOR A COMPLETE AND FUNCTIONAL INSTALLATION.
 - COORDINATE ALL WORK AND REQUIREMENTS WITH OTHER TRADES INCLUDING GENERAL, MECHANICAL, AND ELECTRICAL CONTRACTORS PRIOR TO BID.
 - CONTRACTOR SHALL FOLLOW ALL SUBMITTAL REQUIREMENTS PER DRAWINGS.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR ORDERING AIR CONDITIONING EQUIPMENT WITH THRU-THE-BASE POWER, CONTROL, AND GAS CONNECTIONS. VERIFY ALL CONNECTION LOCATIONS WITH UNIT MANUFACTURER AND COORDINATE WITH OTHER TRADES AS NECESSARY.
 - ELECTRICAL CONTRACTOR SHALL PROVIDE REQUIRED RELAY ACCESSORIES FOR CONNECTION OF 120 VOLT 1 PHASE VENTILATION EQUIPMENT TO 277 VOLT 1 PHASE LIGHTING AS APPLICABLE.
 - ALL THERMOSTATS SHALL HAVE LOCKABLE COVERS (WHERE INDICATED ON PLANS) AND SHALL BE OF THE ELECTRONIC, PROGRAMMABLE, AUTOMATIC CHANGE-OVER TYPE TO SEQUENCE HEATING OR COOLING. SET POINT RANGE SHALL BE 10 DEGREES F. BETWEEN FULL HEATING AND COOLING. THEY SHALL HAVE CAPABILITY OF TERMINATING ALL HEATING AT A TEMPERATURE NO MORE THAN 70 DEGREES F., AND COOLING AT A TEMPERATURE NOT LESS THAN 78 DEGREES F. ADJUSTABLE TEMPERATURE DIFFERENTIAL SHALL BE 1 - 1/2 DEGREES F. CONTROL LIMITS SHALL BE FROM 55 DEGREES F. TO 85 DEGREES F. MOUNT AT 48 INCHES ABOVE FLOOR OR AS REQUIRED BY LOCAL AUTHORITIES OR HANDICAP CODES.
 - THERMOSTATS THAT ARE PART OF AN ENERGY MANAGEMENT SYSTEM SHALL FOLLOW CONTROL SPECIFICATIONS AND DRAWING REQUIREMENTS.
 - SHOULD THE LOCATION OF THE THERMOSTAT NOT MEET THE ADA HEIGHT REQUIREMENTS DUE TO OBSTRUCTIONS, THEN AN ALTERNATE LOCATION SHALL BE PROPOSED OR REQUESTED BY THE CONTRACTOR THAT SHALL BE APPROVED BY THE ENGINEER AND ARCHITECT.
 - LINE VOLTAGE THERMOSTATS SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
 - CONTROLS CONTRACTOR AND AIR BALANCE CONTRACTOR SHALL COORDINATE WORK AND PERFORM NECESSARY TASKS AS REQUIRED TO OBTAIN AIR AND WATER FLOW QUANTITIES FOR SYSTEMS SHOWN HEREIN.
 - CONTROLS SHALL BE PROVIDED TO PROVIDE THE MINIMUM RATE OF OUTDOOR AIR REQUIRED BY THE STATE ENERGY REGULATIONS.
 - PROVIDE AUTOMATIC SMOKE FIRE DAMPERS AT ALL PENETRATIONS OF FIRE-RATED CEILINGS AND WALLS THROUGHOUT. CONTRACTOR SHALL COORDINATE FIRE-RATED AREAS WITH THE ARCHITECTURAL DRAWINGS AND OTHER TRADES PRIOR TO INSTALL AND SHALL NOTIFY PERTINENT PARTIES PRIOR TO ANY WORK PERFORMED IN THESE AREAS. IN ADDITION, CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE PROPER ACCESS FOR DAMPERS INSTALLED. THE DAMPER FIRE RATING SHALL BE COMPATIBLE WITH THE CEILING/WALL RATING.
 - LOCATION OF FIRE-RATED CEILINGS AND WALLS ARE AS INDICATED ON THE ARCHITECTURAL DRAWINGS.
 - FIRE AND/OR SMOKE DAMPER(S) SHALL BE PROVIDED AS REQUIRED BY THE LATEST UNIFORM/CALIFORNIA BUILDING CODE.
 - CONTRACTOR SHALL FURNISH FLUSH MOUNTED FIRE AND/OR SMOKE DAMPERS, SO THAT DAMPER DO NOT EXTEND PASS WALLS, FOR AREAS WITHOUT CEILINGS FOR QUALITY WORKMANSHIP.

- AIR DISTRIBUTION -----
- ALL DUCTWORK SHALL BE SHEET METAL CONSTRUCTED OR SPIRAL, ERECTED, AND TESTED IN ACCORDANCE WITH THE MOST RESTRICTIVE OF LOCAL REGULATIONS, PROCEDURES DETAILED IN THE ASHRAE HANDBOOK OF FUNDAMENTALS, CHAPTER 6 OF THE MECHANICAL CODE, OR THE APPLICABLE STANDARDS ADOPTED BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION.
 - ALL FLEXIBLE DUCTWORK SHALL NOT EXCEED SEVEN FEET IN LENGTH TO RESPECTIVE DIFFUSERS, GRILLES, AND REGISTERS, OR OTHER AIR DEVICES.
 - PROVIDE SEISMIC RESTRAINTS TO ALL DUCTWORK, PIPE, AND EQUIPMENT SUPPORTS IN ACCORDANCE WITH THE LATEST SMACNA GUIDELINES FOR SEISMIC RESTRAINT OF MECHANICAL SYSTEMS. SUSPENDED EQUIPMENT SHALL BE PROVIDED WITH SEISMIC ANCHORAGE AND ISOLATION SUPPORTS.
 - ALL DUCT TURNS IN SUPPLY, RETURN, AND EXHAUST DUCTS SHALL HAVE SINGLE WALL TURNING VANES WITH TRAILING EDGE, UNLESS OTHERWISE NOTED.
 - DUCTWORK HANDLING CONDITIONED AIR SHALL BE INSULATED OR LINED AS INDICATED ON DRAWINGS. SUPPLY AND RETURN DUCT INSULATION SHALL BE MIN. 1.5" THICK, 3/4 LB./CUBIC FT. DENSITY AND HAVE A MIN. VALUE OF R-8 WHERE LOCATED IN ONE OR MORE OF THE FOLLOWING SPACES:
 - OUTDOORS, OR
 - IN A SPACE BETWEEN THE ROOF AND AN UNINSULATED CEILING, OR
 - IN A SPACE DIRECTLY UNDER A ROOF WITH FIXED VENTS OR OPENINGS TO THE OUTSIDE OR UNCONDITIONED SPACES, OR
 - IN AN UNCONDITIONED CRAWLSPACE; OR
 - OTHER UNCONDITIONED SPACES

PER 2016 CEC, OTHERWISE PROVIDE R-4.2 WHEN LOCATED IN CONDITIONED ATTIC SPACES ABOVE CEILINGS. ALL DUCTWORK EXPOSED ON ROOF SHALL BE INTERNALLY LINED WITH 1.5" THICK, 1.5LB./CUBIC FT. DENSITY DUCT LINER UNLESS OTHERWISE INDICATED OR SPECIFIED. ALL DUCT SIZES ARE NET CLEAR INSIDE DIMENSIONS. ALL DUCT JOINTS SHALL BE SEALED PER CHAPTER 6 MECHANICAL CODE REQUIREMENTS. PROVIDE PIPING AND DUCT INSULATION IN ACCORDANCE WITH THE LATEST STANDARDS OF THE CALIFORNIA ENERGY COMMISSION.
 - ALL INSULATION SHALL HAVE A FLAME SPREAD OF NOT MORE THAN 25 AND A SMOKE DENSITY NOT EXCEEDING 50.
 - MANUAL VOLUME DAMPERS SHALL BE PROVIDED IN ALL DUCT BRANCHES TO INDIVIDUAL DIFFUSERS, GRILLES, AND REGISTERS, AS WELL AS FRESH AIR INTAKE DUCTS. DAMPERS SHALL BE LOCATED AT THE BRANCH DUCT LOCATIONS. THE MECHANICAL CONTRACTOR SHALL COORDINATE LOCATIONS OF DAMPERS WITH THE AIR BALANCE CONTRACTOR PRIOR TO BID, SO THEY ARE ACCESSIBLE PRIOR TO INSTALLATION. IN LOCATIONS WHERE THESE DAMPERS ARE INACCESSIBLE, CABLE OPERATED ADJUSTMENT CONTROLS SHALL BE PROVIDED AT NO ADDITIONAL COST. OPPOSED BLADE DAMPERS SHALL NOT BE PERMITTED UNLESS NOTED OTHERWISE.
 - AUTOMATIC SMOKE FIRE DAMPER REQUIREMENTS ARE AS FOLLOWS:
 - PROVIDE AUTOMATIC SMOKE FIRE DAMPERS AT ALL PENETRATIONS OF FIRE-RATED CEILINGS AND WALLS THROUGHOUT. CONTRACTOR SHALL COORDINATE FIRE-RATED AREAS WITH THE ARCHITECTURAL DRAWINGS AND OTHER TRADES PRIOR TO INSTALL AND SHALL NOTIFY PERTINENT PARTIES PRIOR TO ANY WORK PERFORMED IN THESE AREAS. IN ADDITION, CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE PROPER ACCESS FOR DAMPERS INSTALLED. THE DAMPER FIRE RATING SHALL BE COMPATIBLE WITH THE CEILING/WALL RATING.
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LEGEND

SYMBOL	ABBR.	DESCRIPTION
	-	SUPPLY AIR RISER
	-	RETURN AIR RISER
	-	EXHAUST AIR RISER
	SAG	SUPPLY AIR GRILLE
	RAG	RETURN AIR GRILLE
	EAG	EXHAUST AIR GRILLE
	SWR	SIDEWALL REGISTER
	(L)	LINED DUCTWORK
	-	FLEXIBLE CONNECTION
	FC	FLEXIBLE CONNECTION
	-	NEW DUCT (SEE PLAN)
	-	EXISTING DUCT (SEE PLAN)
	-	DEMO DUCT (SEE PLAN)
	MVD	MANUAL VOLUME DAMPER
	BDD	BACKDRAFT DAMPER
	SFD	SMOKE / FIRE DAMPER
	FD	FIRE DAMPER
	DL	DOOR LOUVER
	UC	UNDERCUT DOOR 3/4"
	RS	REFRIGERANT SUCTION LINE
	RL	REFRIGERANT LIQUID LINE
	CD	CONDENSATE DRAIN
	S.D.	SMOKE DETECTOR
	P.O.C.	POINT OF CONNECTION
	T-STAT	THERMOSTAT
	H	HUMIDISTAT
	TS	TEMPERATURE SENSOR
	OS	OVERRIDE SWITCH
	PD	PRESSURE DIFFERENTIAL SWITCH
	S	SWITCH
	O.C.	ON CENTER
	HWR	HOT-WATER RETURN
	HWS	HOT-WATER SUPPLY
	I.D.	INSIDE DIAMETER
	O.D.	OUTSIDE DIAMETER
	W/	WITH
	S/M	SHEET METAL
	G.C.	GENERAL CONTRACTOR
	VTR	VENT THRU ROOF
	EMS	ENERGY MANAGEMENT SYSTEM
	OBD	OPPOSED BLADE DAMPER
	FSC	FAN SPEED CONTROL
	E	ITEMS FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR AS SPECIFIED ON THE ELECTRICAL CONTRACT DOCUMENTS
	M	ITEMS FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR AS SPECIFIED ON THE MECHANICAL CONTRACT DOCUMENTS
	EM	ITEMS FURNISHED BY ELECTRICAL CONTRACTOR AND INSTALLED BY MECHANICAL CONTRACTOR
	ME	ITEMS FURNISHED BY MECHANICAL CONTRACTOR AND INSTALLED BY ELECTRICAL CONTRACTOR
	C.C.	CONTROLS CONTRACTOR
	CBD	COUNTER-BALANCE DAMPER
	D.S.	DOOR SWITCH

MECHANICAL SHEET LIST

Sheet Number	Sheet Title
M0.1	MECHANICAL GENERAL NOTES AND LEGEND
M0.2	MECHANICAL SCHEDULES
MD2.0	MECHANICAL FLOOR PLAN - DEMOLITION
M2.0	MECHANICAL FLOOR PLAN - NEW
M5.0	MECHANICAL CONTROLS
M6.0	MECHANICAL DETAILS
M7.0	TITLE 24 COMPLIANCE REPORT

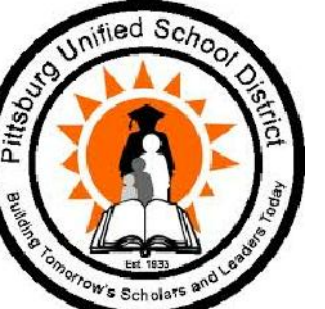


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STAMP



PROJECT NAME:



PITTSBURG UNIFIED SCHOOL DISTRICT
 2000 RAILROAD AVENUE
 PITTSBURG, CA 94565
 (925) 473-2347

SERVER ROOM MECHANICAL UPGRADE

No. Rev. Date Description

No.	Rev.	Date	Description

JOB NO: 516503

DATE: 08-05-2016

DRAWN: GC, JC

CHECK: GC

ARCHITECT: N/A

ENGINEER:

CONSULTANT

STAMP

STATE:

SHEET DESCRIPTION:
MECHANICAL GENERAL NOTES AND LEGEND

SHEET NO:

MO.1

COMPUTER ROOM A/C UNIT SCHEDULE

SYM	MFR & MODEL #	AREA SERVICED	COOLING CAPACITY		SEER/EER	CFM	ESP	BLOWER HP	ELECTRICAL					WT	REMARKS	
			TOTAL	SENSIBLE					V	PH	FLA	MCA	MOCP			
AC 1	EMERSON CRO35	SEE PLAN	41.5KW	39.5KW	-	3260	0.2	1.40	208	3	45.4	-	-	805	1	
AC 2	EMERSON CRO35	SEE PLAN	41.5KW	39.5KW	-	3260	0.2	1.40	208	3	45.4	-	-	805	1	

1. LOCKING DISCONNECT, CONDENSATE PUMP, LT410 SPOT LEAK DETECTOR, SEISMIC ANCHOR RAIL, SEISMIC STAND, PROVIDE WNSA-8 WITH ICOM DISPLAY TO PROVIDE U2U COMMUNICATION, TEAM MODE OPERATION, AND HAVE ALL UNITS RUN (N+1 DESIGN)

OUTDOOR AIR COOLED CONDENSER

SYM	MFR & MODEL #	AREA SERVICED	COOLING CAPACITY	HEATING CAPACITY	COP	SEER/EER	ELECTRICAL					WT	REMARKS
							V	PH	FLA	MCA	MOCP		
CU 1	LIEBERT MC MCL055E1	SEE PLAN	41.5KW	-	-	-	208	3	5.7	-	-	552	1, 2
CU 2	LIEBERT MC MCL055E1	SEE PLAN	41.5KW	-	-	-	208	3	5.7	-	-	552	1, 2

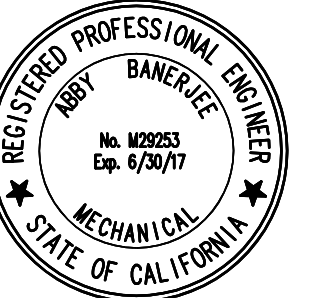
1. OUTDOOR DESIGN AMBIENT 97F.
2. THE INSTALLING MECHANICAL CONTRACTOR MUST VERIFY THE FINAL REFRIGERANT PIPE SIZES WITH THE MANUFACTURER BASED ON THE ACTUAL TOTAL EQUIVALENT DISTANCE, AND SUBMIT TO OED ENGINEERS FOR REVIEW AND APPROVAL.

EXHAUST FAN SCHEDULE

SYM	MFR & MODEL #	AREA SERVICED	CFM	ESP	HP	ELECTRICAL		FAN RPM	TIP SPEED	WT	REMARKS
						V	PH				
EF 1	GREENHECK CW-180-VG	SEE PLAN	5000	0.25	2.0	208	1	938	2455	85	1, 2, 3, 4, 5

1. INTEGRAL BIRD SCREEN
2. BUILT IN CURB CAP
3. PROVIDE 1 HOUR BATTERY BACK UP
4. PROVIDE SECURITY BARS IN EXHAUST FAN WALL OPENING.
5. PROVIDE SIDEWALL CURB

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PROJECT NAME:



PITTSBURG UNIFIED SCHOOL DISTRICT
 2000 RAILROAD AVENUE
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SERVER ROOM MECHANICAL UPGRADE

No.	Rev.	Date	Description
△			
△			
△			
△			

JOB NO: 516503
 DATE: 08-05-2016
 DRAWN: GC, JC
 CHECK: GC
 ARCHITECT: N/A
 ENGINEER:
 CONSULTANT

STAMP

STATE:

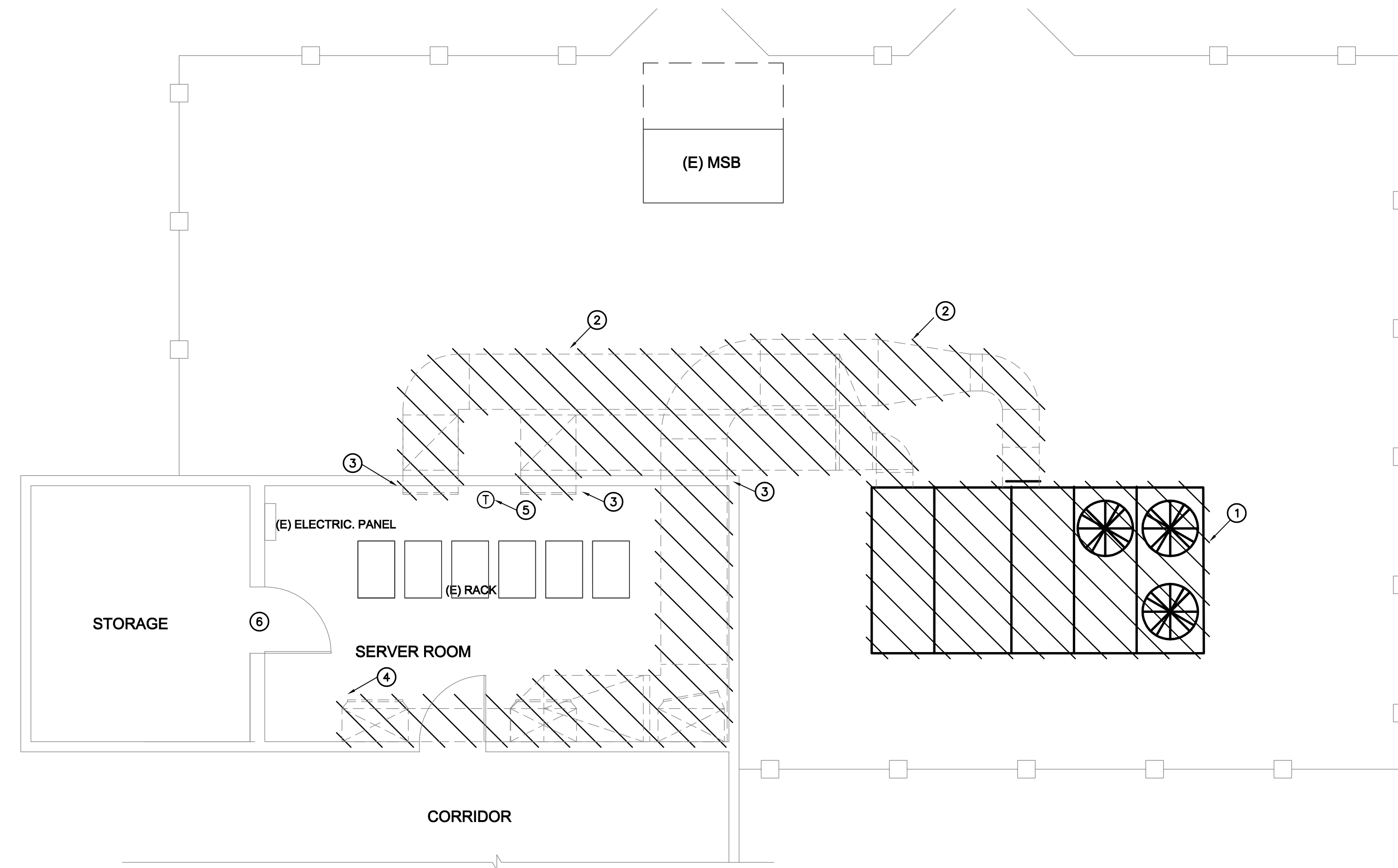
SHEET DESCRIPTION:
MECHANICAL SCHEDULES

SHEET NO:

M0.2

DEMOLITION KEY NOTES:

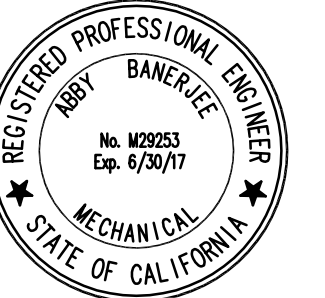
- ① REMOVE, CLEAN, AND SALVAGE (E) UNIT. RELOCATE (E) UNIT TO SSSC. CONTRACTOR SHALL COORDINATE WITH OWNER FOR FINAL DIRECTION AND LOCATION UNIT. DEMOLISH ALL (E) DUCTWORK.
- ② PATCH (E) PENETRATION AT EXTERIOR WALL. INSULATE PATCH AND PAINT TO MATCH (EXISTING) INTERIOR AND EXTERIOR WALLS.
- ③ DEMOLISH (E) DUCTWORK INSIDE SERVER ROOM AND PATCH ALL HOLES UTILIZED FOR DUCT SUPPORT.
- ④ REMOVE (E) THERMOSTAT.
- ⑤ REMOVE (E) THERMOSTAT.
- ⑥ REMOVE EXISTING DOOR



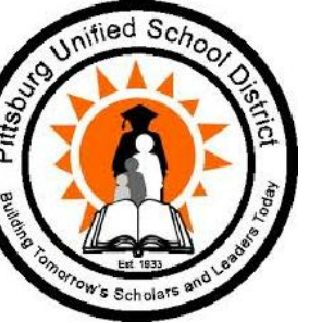
MECHANICAL DEMOLITION FLOOR PLAN - SERVER ROOM

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

STAMP



PROJECT NAME:



**PITTSBURG
UNIFIED SCHOOL
DISTRICT**
2000 RAILROAD AVENUE
PITTSBURG, CA 94565
(925) 473-2347

**SERVER ROOM
MECHANICAL
UPGRADE**

No.	Rev.	Date	Description
△			
△			
△			
△			

JOB NO:	516503
DATE:	08-05-2016
DRAWN:	GC, JC
CHECK:	GC
ARCHITECT:	N/A
ENGINEER:	
CONSULTANT:	

STAMP

STATE:

SHEET DESCRIPTION:
**MECHANICAL
DEMOLITION FLOOR
PLAN - SERVER ROOM**

SHEET NO:

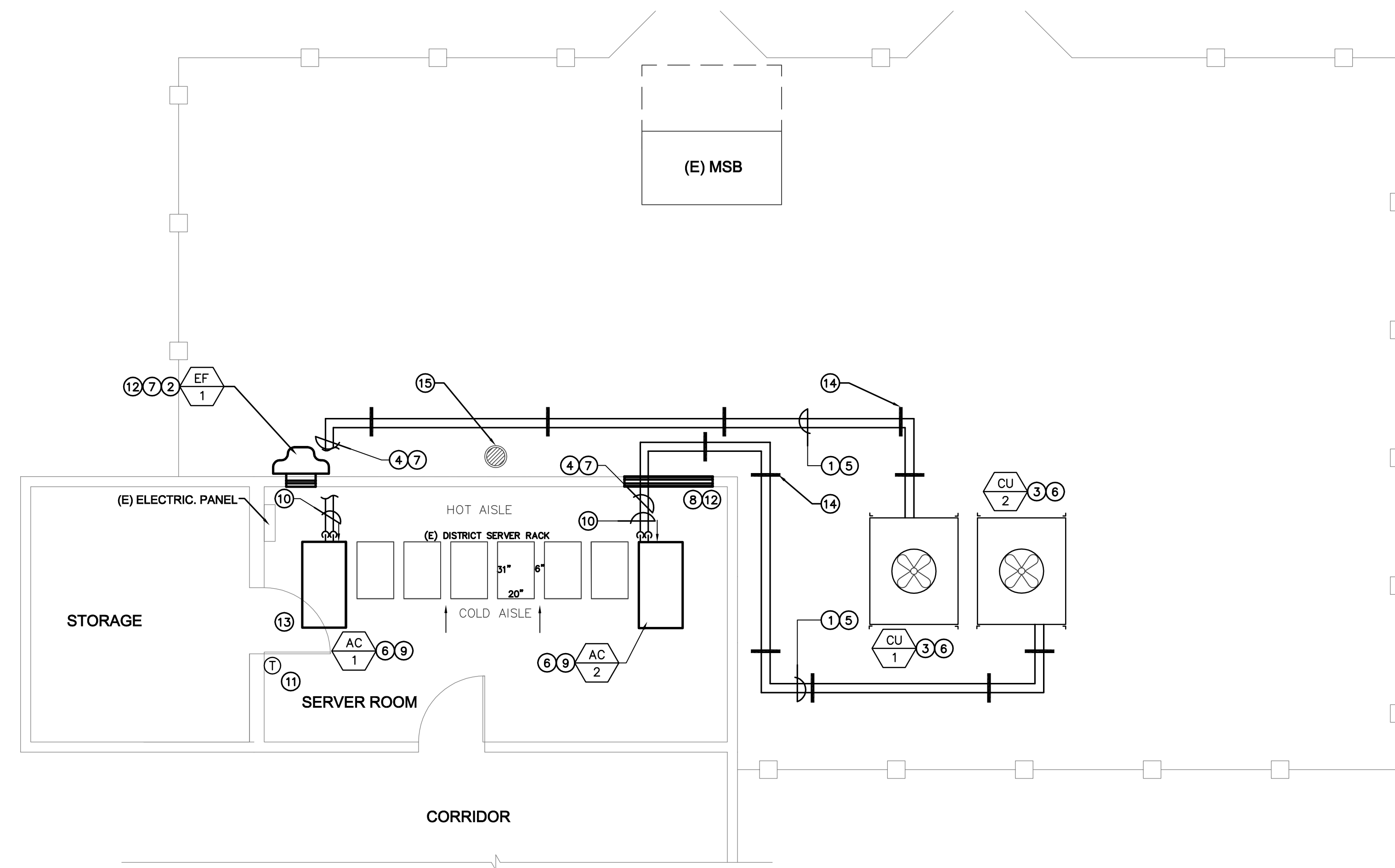
MD2.0

CONSTRUCTION NOTES:

1. CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES AS NECESSARY PRIOR TO INSTALLATION.
2. CONTRACTOR SHALL MAINTAIN PROPER CLEARANCES FROM ALL ELECTRICAL EQUIPMENT AND SERVICE CLEARANCES FOR MECHANICAL EQUIPMENT.
3. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS WITHIN 45 DAYS OF AWARD OF CONTRACT. SEE 15800 SPECIFICATIONS FOR REQUIREMENTS. IF SHOP DRAWINGS ARE NOT PROVIDED TO THE ENGINEER FOR APPROVAL, AND ANY CONFLICTS OCCUR BETWEEN TRADES, DURING CONSTRUCTION, & ETC. THEN, THE CONTRACTOR SHALL BE RESPONSIBLE AND BEAR ALL COST INCURRED FOR ANY REVISIONS, AT NO ADDITIONAL COST TO THE DISTRICT. THE DISTRICT AND ENGINEER SHALL BE NOTIFIED IMMEDIATELY PRIOR TO FABRICATION AND INSTALLATION OF ANY CONFLICTS BETWEEN TRADES, DURING CONSTRUCTION, & ETC.
4. CONTRACTOR SHALL CONFIRM FINAL VENT, COMBUSTION, AND REFRIGERANT PIPE SIZING UPON DETERMINATION OF ACTUAL DEVELOPED LENGTH AND PER MFRG. GUIDELINES. ALL PIPE MATERIALS SHALL BE PER MFRG. GUIDELINES.
5. CONTRACTOR SHALL INSULATE ALL REFRERANT PIPING SUCTION LINES.
6. CONTRACTOR SHALL INSTALL PIPING SUCH THAT EQUIPMENT AND ALL APPURTENANCES ARE EASILY SERVICEABLE.
7. MECHANICAL CONTRACTOR SHALL PROVIDE SLEEVES FOR ALL PIPING THRU' MASONARY WALLS AND FOOTINGS. SLEEVE MIN. TWO PIPE SIZES LARGER THAN THE PIPE GOING THRU' IT.
8. CONTRACTOR SHALL COORDINATE EXACT EQUIPMENT PAD SIZES AND LOCATIONS WITH OTHER TRADES PRIOR TO INSTALLATION.
9. CONTRACTOR SHALL INSULATE ALL REFRIGERANT PIPING SUCTION LINES, AND PROVIDE WEATHER JACKETING FOR ALL REFRIGERANT PIPING.

CONSTRUCTION KEY NOTES:

- ① FULLY INSULATE AND WRAP REFRIGERANT PIPING
- ② PROVIDE 1-HR BATTERY BACKUP FOR EXHAUST FAN
- ③ MOUNT CONDENSING UNIT ON EXISTING CONCRETE HOUSEKEEPING PAD.
- ④ CONTRACTOR SHALL REUSE EXISTING PENETRATIONS FOR INSTALLING NEW HVAC PIPE/POWER ROUTING.. PATCH REMAINING OPENING, FULLY SEAL AND WEATHERPROOF PENETRATIONS ONCE COMPLETE, PAINT TO MATCH (E) ADJACENT WALL FINISHES.
- ⑤ CONTRACTOR SHALL SIZE REFRIGERANT PIPING PER MANUFACTURER'S REQUIREMENTS.
- ⑥ ANCHOR UNIT TO (E) SLAB (FLOOR) PER MANUFACTURER'S REQUIREMENTS.
- ⑦ PATCH AND SEAL (E) PENETRATIONS THRU WALL.
- ⑧ PROVIDE NEW 48"x64" OSA INTAKE LOUVER GREENHECK MODEL EADC-601 WITH BELIMO ACTUATOR(S), FULLY SEAL AROUND LOUVER, INTERLOCK LOUVER WITH EXHAUST FAN.
- ⑨ ROUTE CONDENSATE TO DRY WELL IN YARD, PROVIDE CONDENSATE LIFT PUMP FOR EACH AC UNIT.
- ⑩ PIPING SHALL BE INSTALLED TIGHT TO STRUCTURE (ON CEILING).
- ⑪ ELECTRONIC PROGRAMMABLE T-STAT (MICROSET II OR APPROVED EQUAL). MOUNT AT 48" A.F.F.
- ⑫ PROVIDE SECURITY BARS FOR EXHAUST FAN AND LOUVER OPENING
- ⑬ (E) DOOR TO STORAGE ROOM SHALL BE REMOVED, AS DIRECTED BY THE DISTRICT REPRESENTATIVE.
- ⑭ PROVIDE PIPE SUPPORT TO REFRIGERANT LINES SECURED TO GRADE.
- ⑮ PROVIDE (N) CONDENSATE DRYWELL. SEE DETAIL 6/M6.0



MECHANICAL NEW FLOOR PLAN - SERVER ROOM

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

STAMP



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 2000 RAILROAD AVENUE
 PITTSBURG, CA 94565
 (925) 473-2347

SERVER ROOM MECHANICAL UPGRADE

No. Rev. Date Description

No.	Rev.	Date	Description

JOB NO: 516503

DATE: 08-05-2016

DRAWN: GC, JC

CHECK: GC

ARCHITECT: N/A

ENGINEER:

CONSULTANT

STAMP

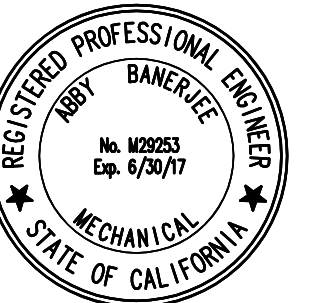
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SHEET DESCRIPTION:
MECHANICAL NEW FLOOR PLAN - SERVER ROOM

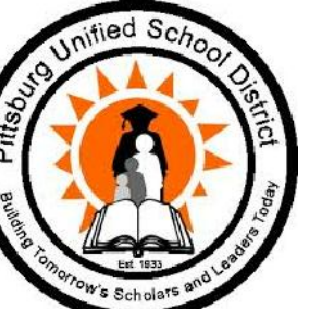
SHEET NO:

M2.0

STAMP



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CONSULTANT:	

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STATE:

SHEET DESCRIPTION:
MECHANICAL CONTROLS

SHEET NO:

M5.0

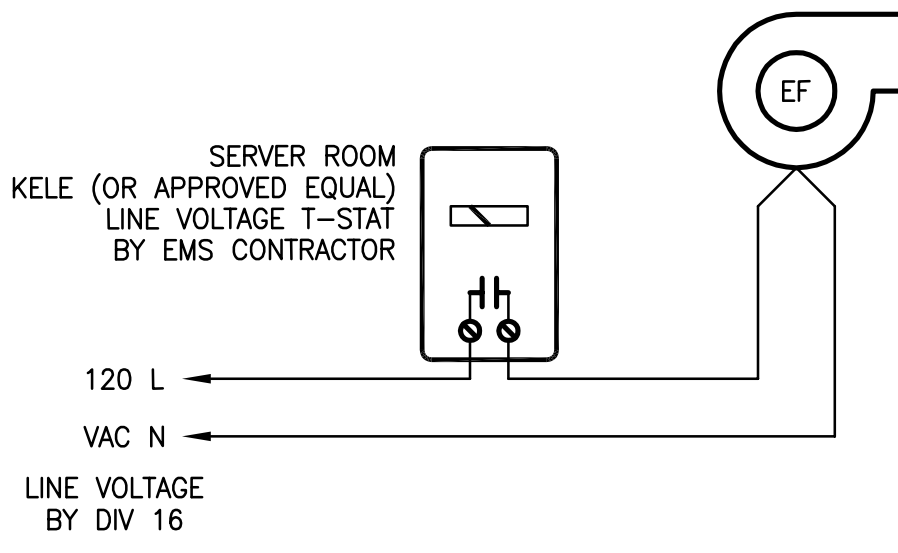
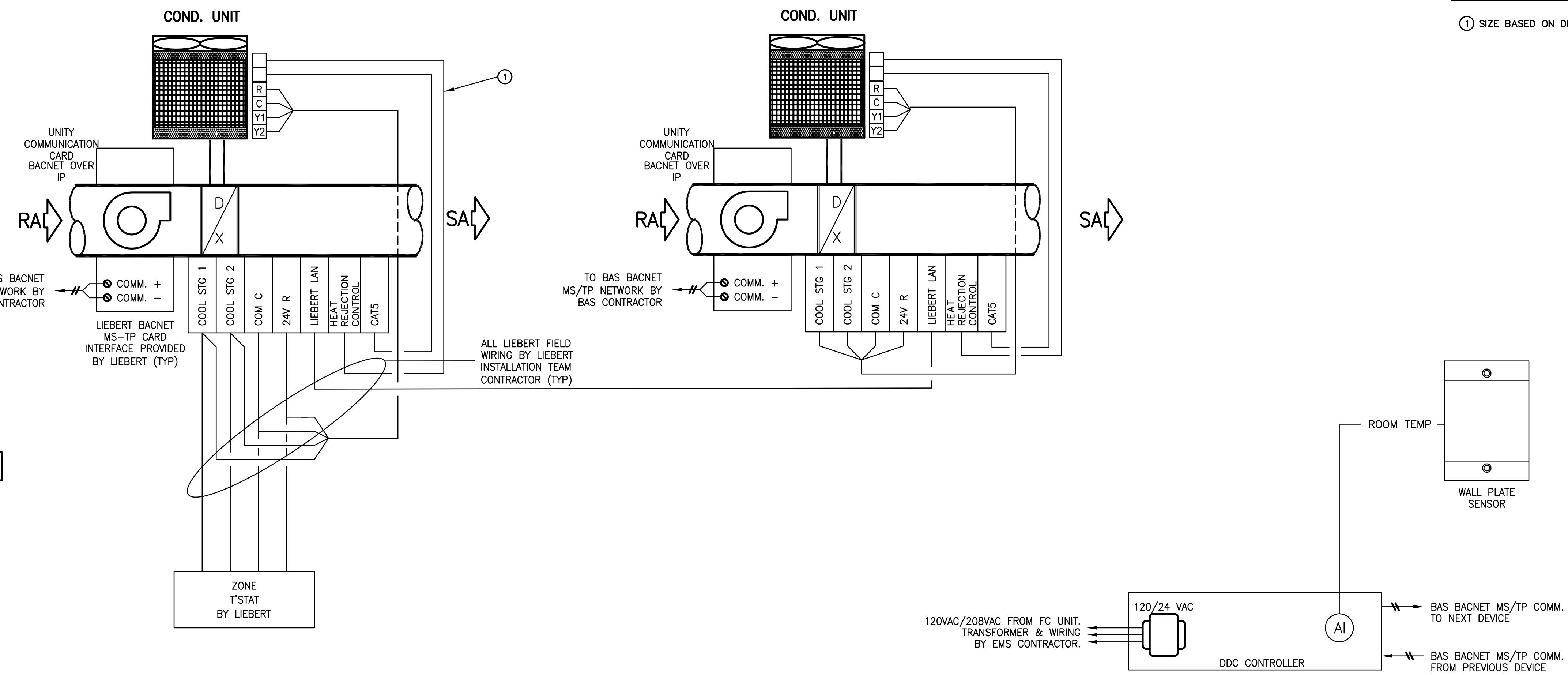
5 OF 7

CONSTRUCTION KEY NOTES:

① SIZE BASED ON DISTANCE.

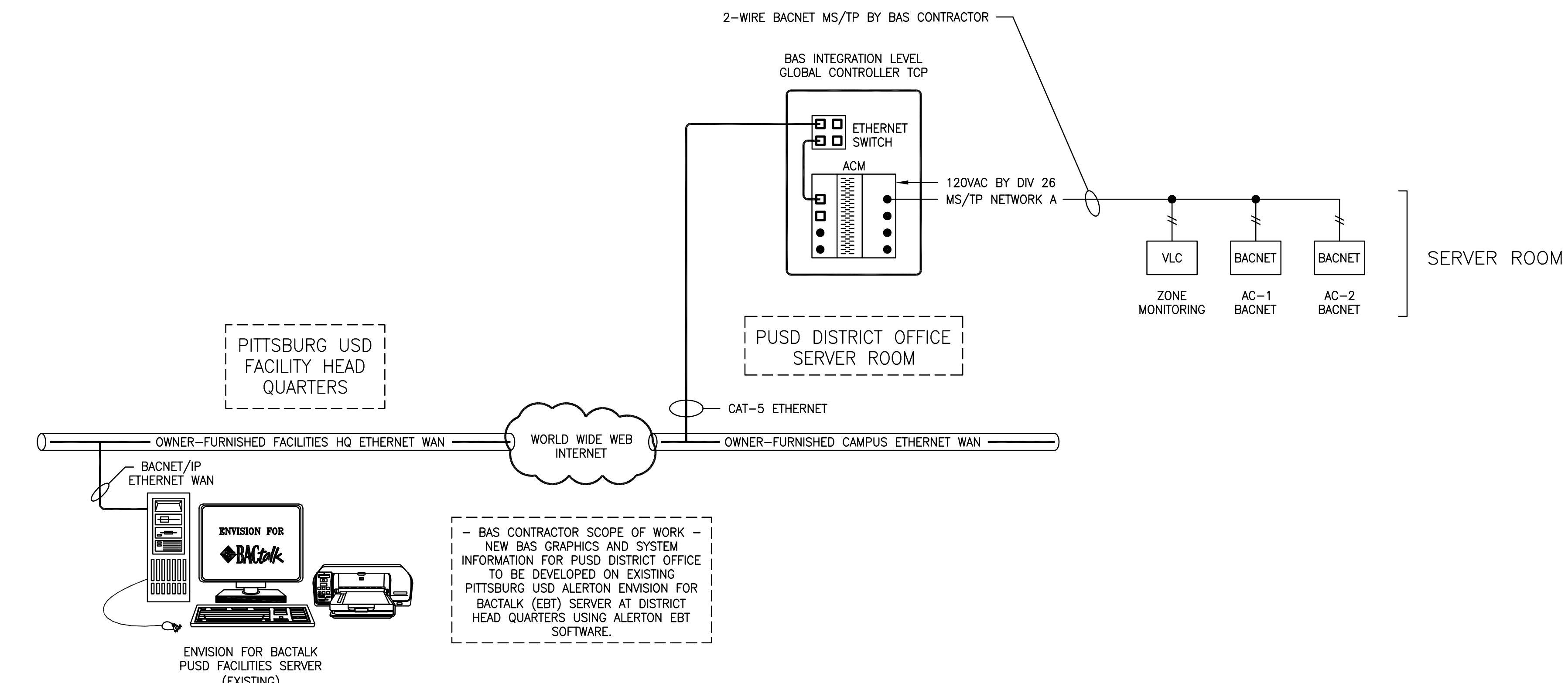
- Fan Coil Operation**
- The Fan Coil units will operate under their own factory-provided Liebert system controls to maintain room temperature setpoint.
 - Room temperature setpoint shall be commanded from Alerton BAS to Liebert system via BACnet MS-TP interface.
 - Liebert fan coil units shall operate in lead-lag mode to maintain room temperature setpoint.
 - Unit to unit Liebert LAN communications provided and installed by Liebert Installation Team Contractor.
 - Monitoring - The following conditions shall be monitored by the Alerton BAS via BACnet integration:
 - Zone temp.
 - Liebert unit alarm(s)
 - Alarm - If the zone temp exceeds 80°F (adjustable), an alarm shall be displayed and announced at the PUSD central Alerton Server PC operator's console.

- Exhaust Fan Operation**
- The exhaust fan will be controlled by a line-voltage thermostat mounted in the space.
 - The initial setpoint for the thermostat shall be 85 deg. F.
 - The thermostat will start the fan when the space temperature rises above 85 deg. F.



SERVER ROOM COOLING SYSTEM

SCALE NONE 2

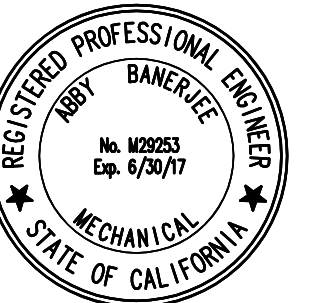


PITTSBURG USD DISTRICT OFFICE - ALERTON BACNET NETWORK ARCHITECTURE

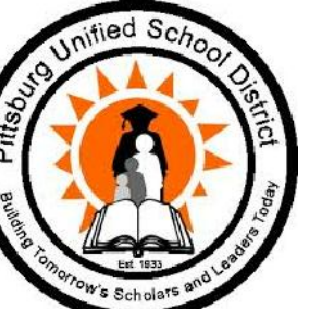
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FILE: M:\P - Projects\2016\516503 - Pittsburg USD - Server Room\Mech\516503 - M-5.0.dwg Jul 07, 2017 - 4:17pm GCarrillo

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 (925) 473-2347

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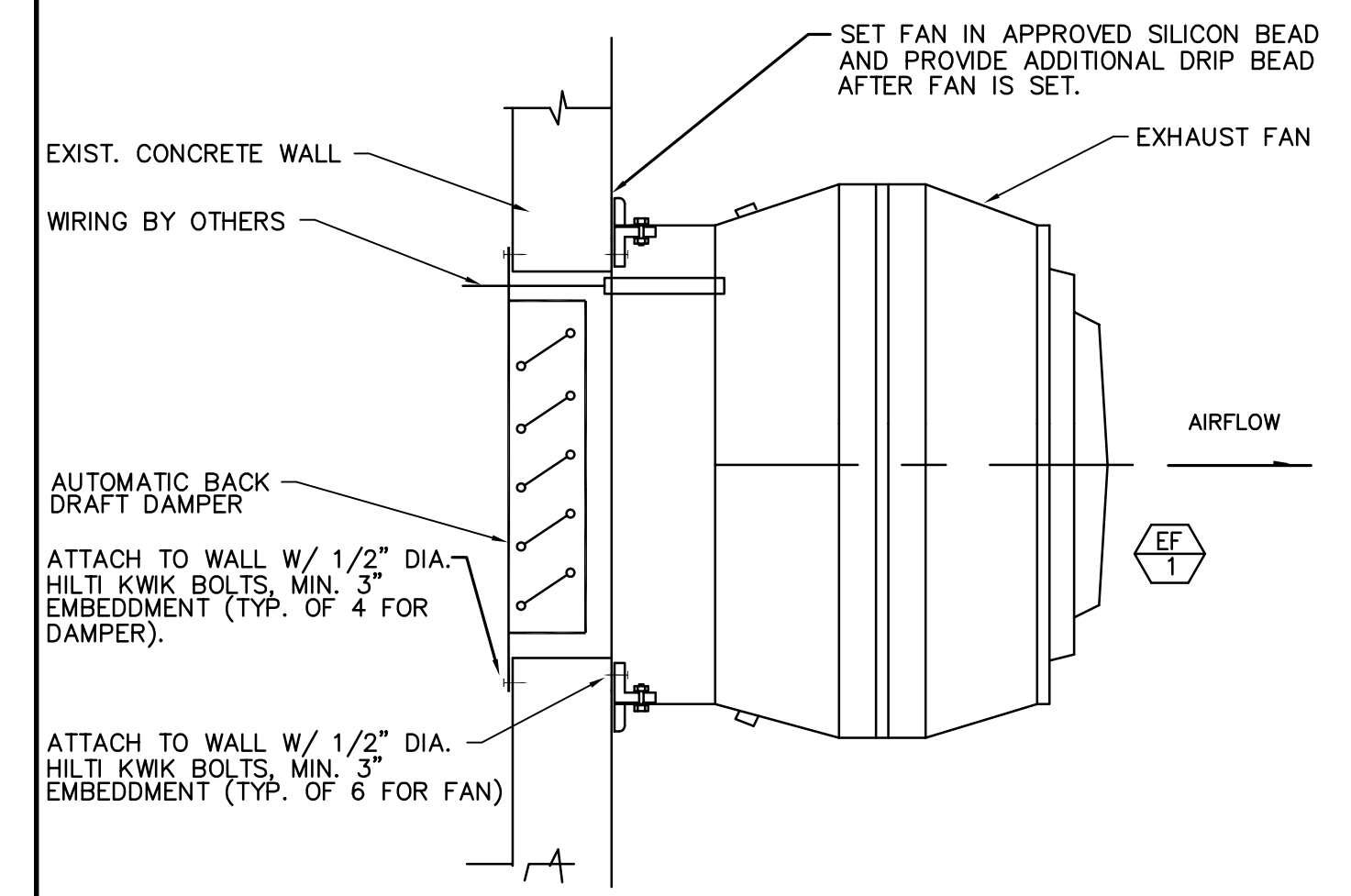
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STATE:

SHEET DESCRIPTION:
MECHANICAL DETAILS

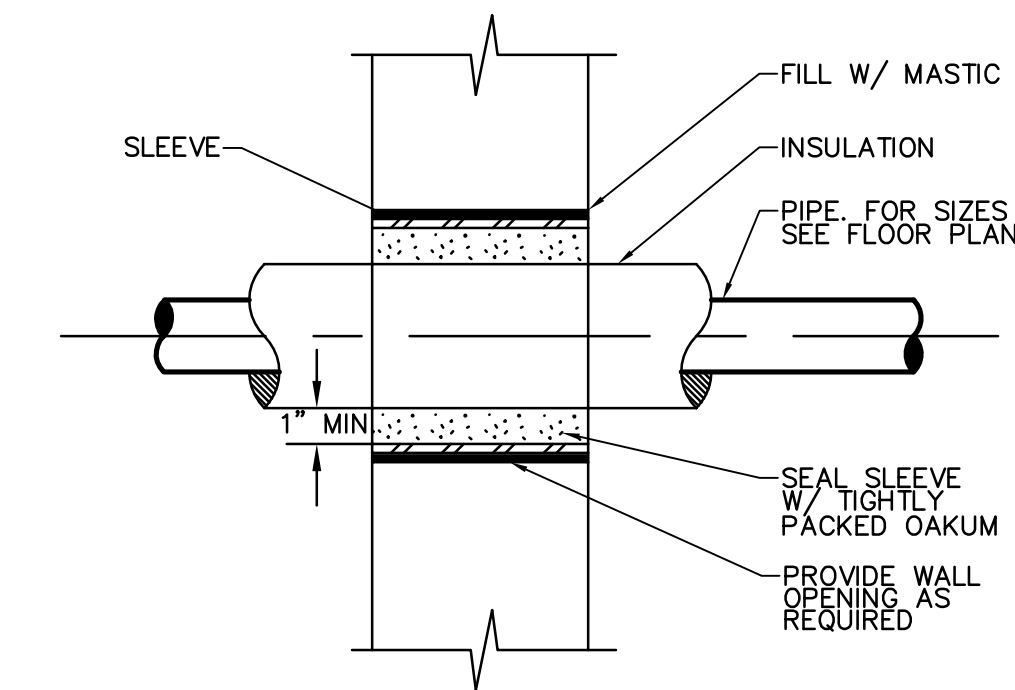
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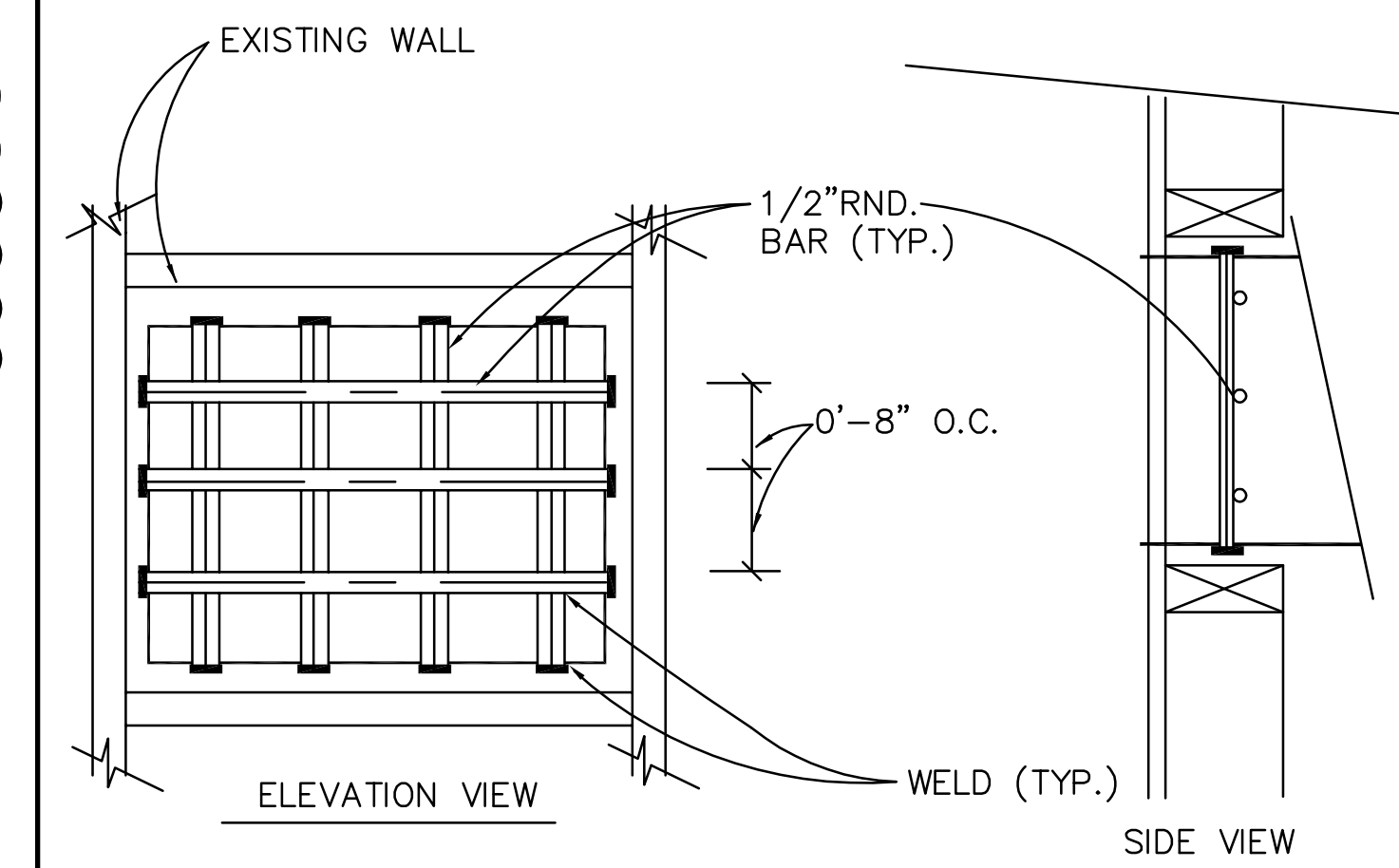
EXHAUST FAN DETAIL

SCALE: NONE 4



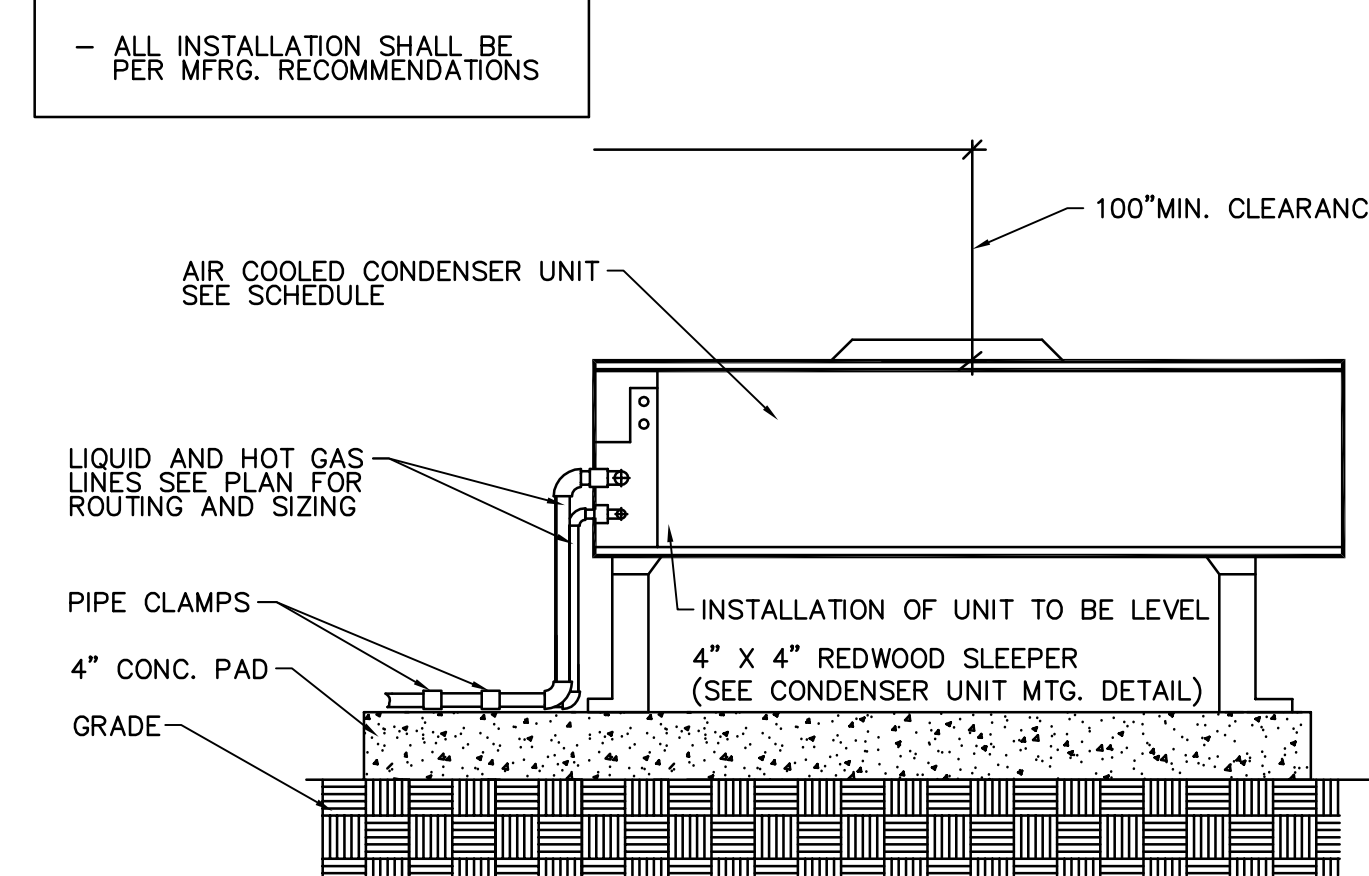
PIPE THRU WALL DETAIL

SCALE: NONE 3



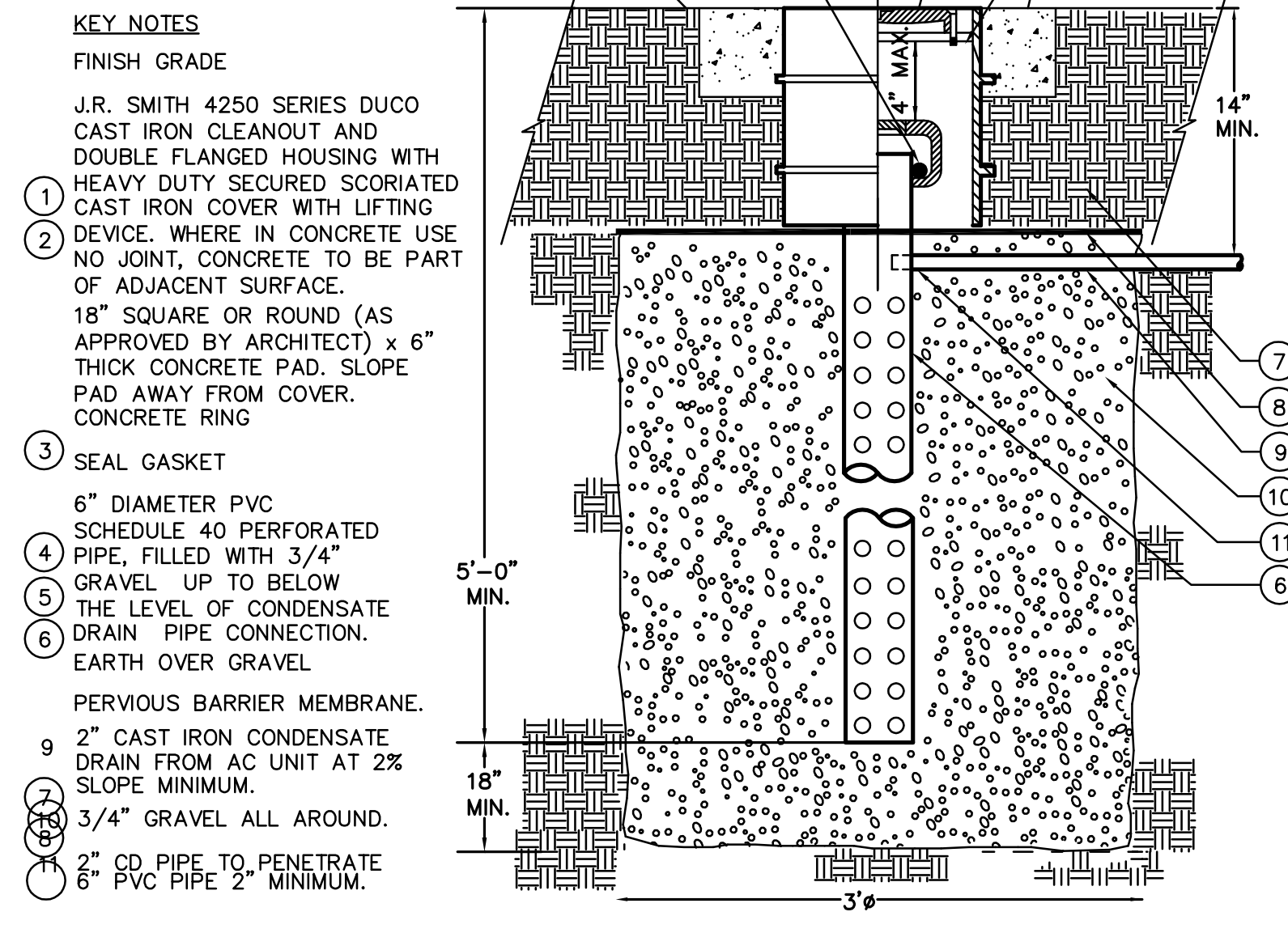
SECURITY BAR DETAIL

SCALE: NONE 2



CONDENSER UNIT DETAIL

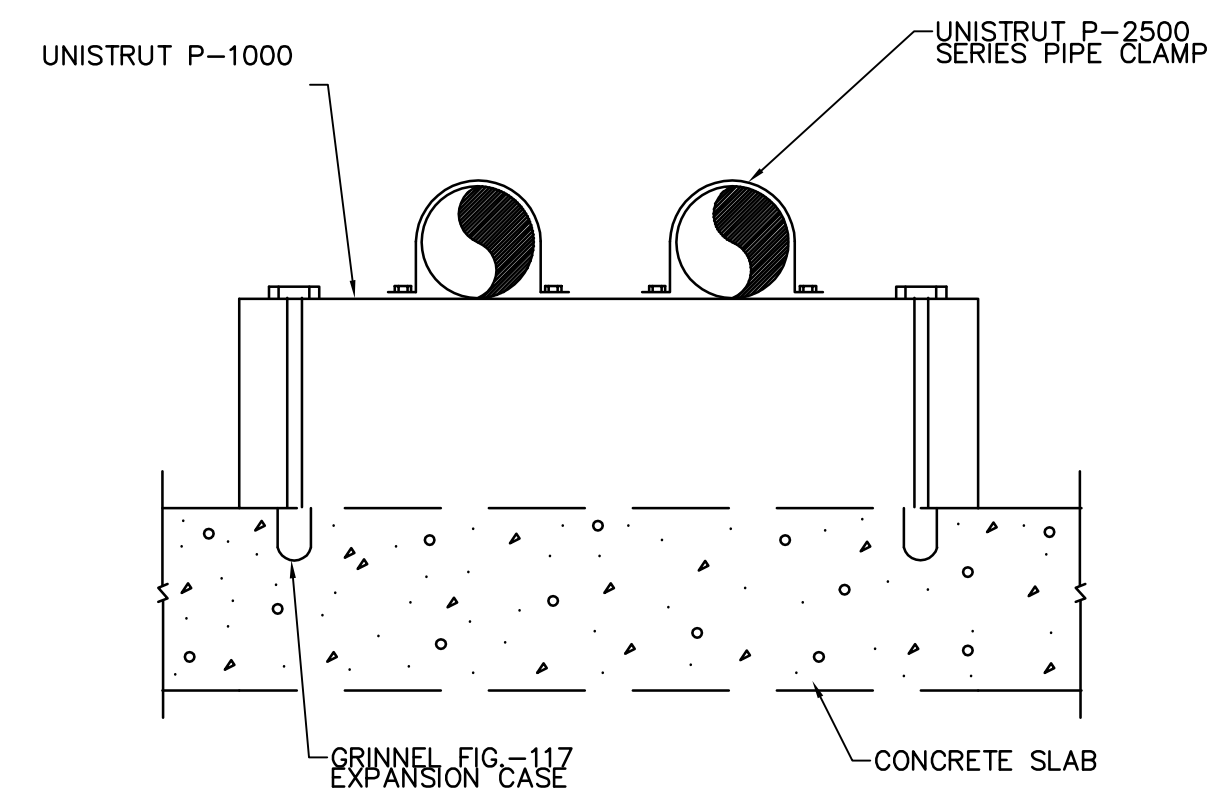
SCALE: NONE 7



CONDENSATE DRAIN DRYWELL DETAIL

SCALE: NONE 6

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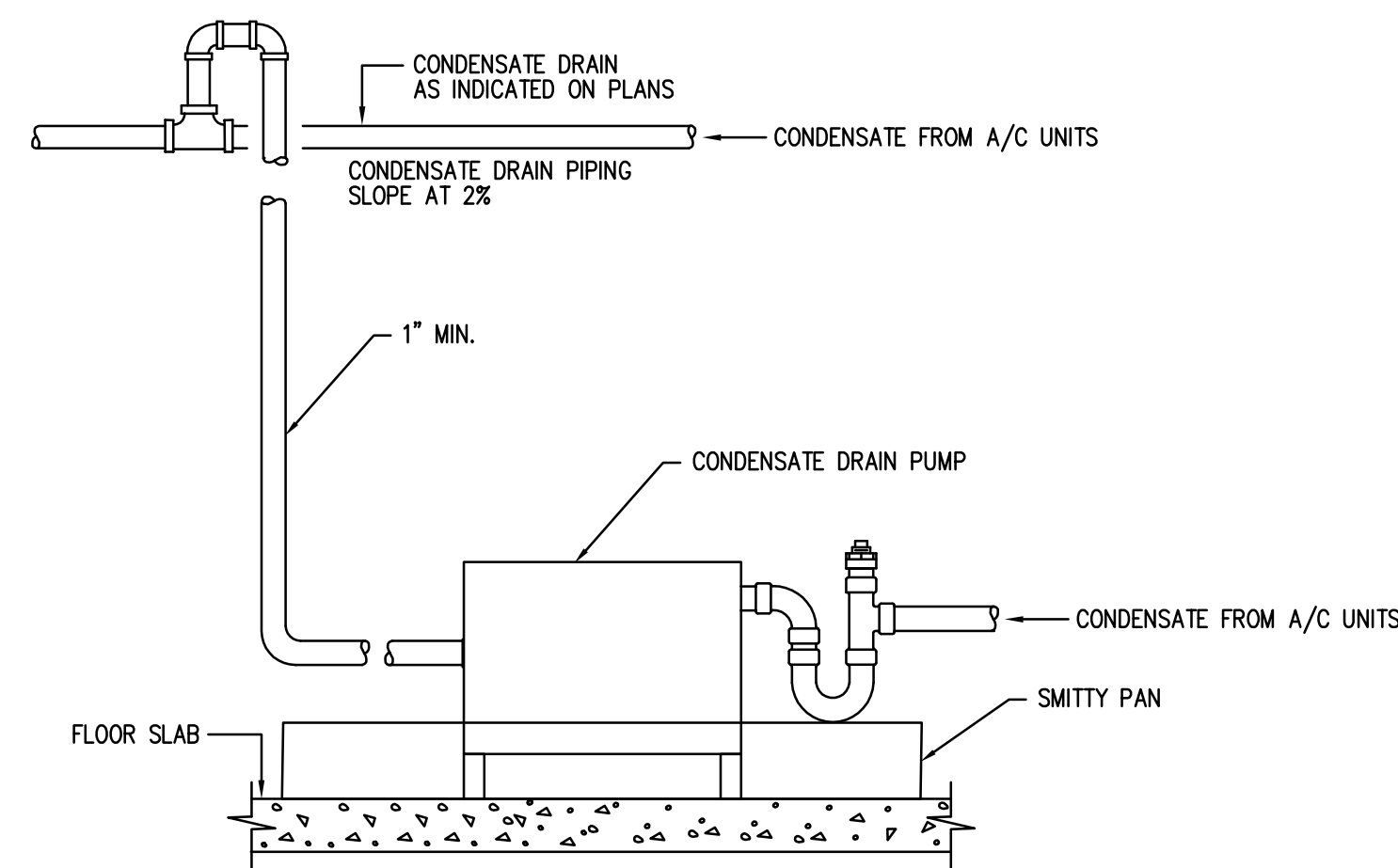


PIPE MOUNTING DETAIL

SCALE: NONE 7

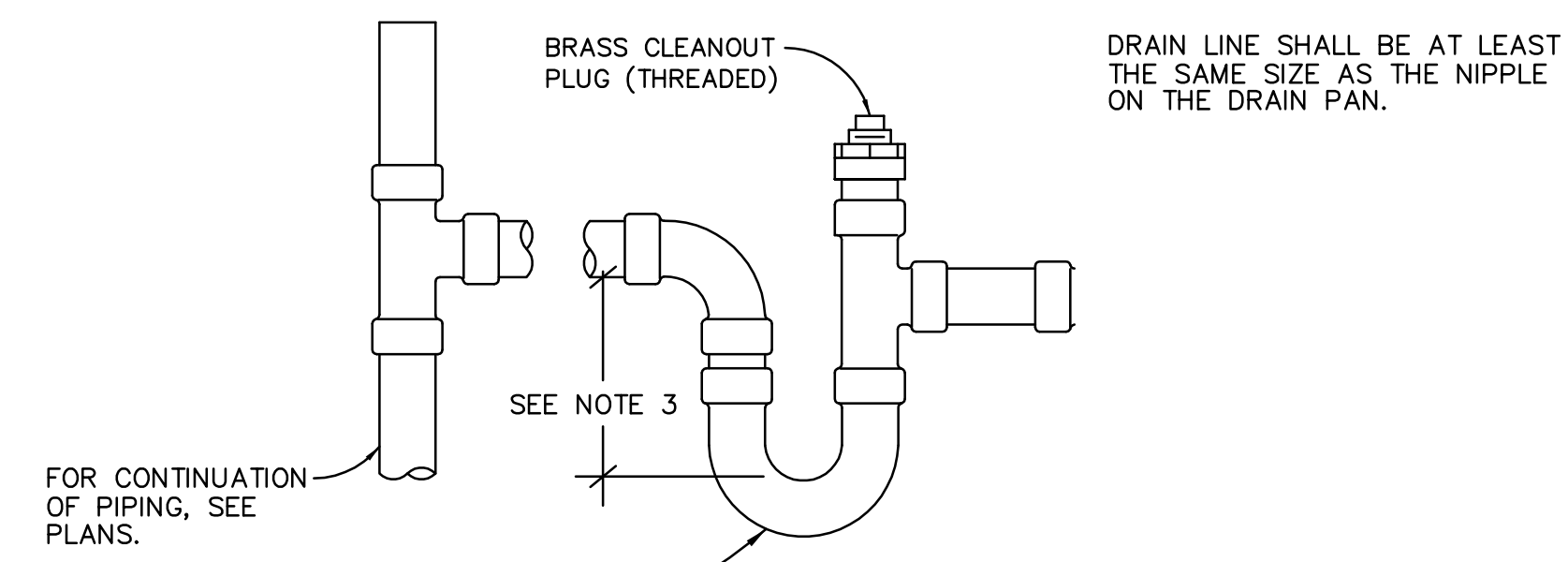
NOTES:

1. PROVIDE 24" DIAMETER GALVANIZED SHEET METAL SMITTY PAN WITH 6" LIP FOR OVERFLOW CONTAINMENT.
2. PROVIDE A 3" GAP BETWEEN BASE OF CONDENSATE PUMP ASSEMBLY AND SMITTY PAN.
3. PROVIDE AN AUDIBLE ALARM UPON FAILURE OF PUMP.



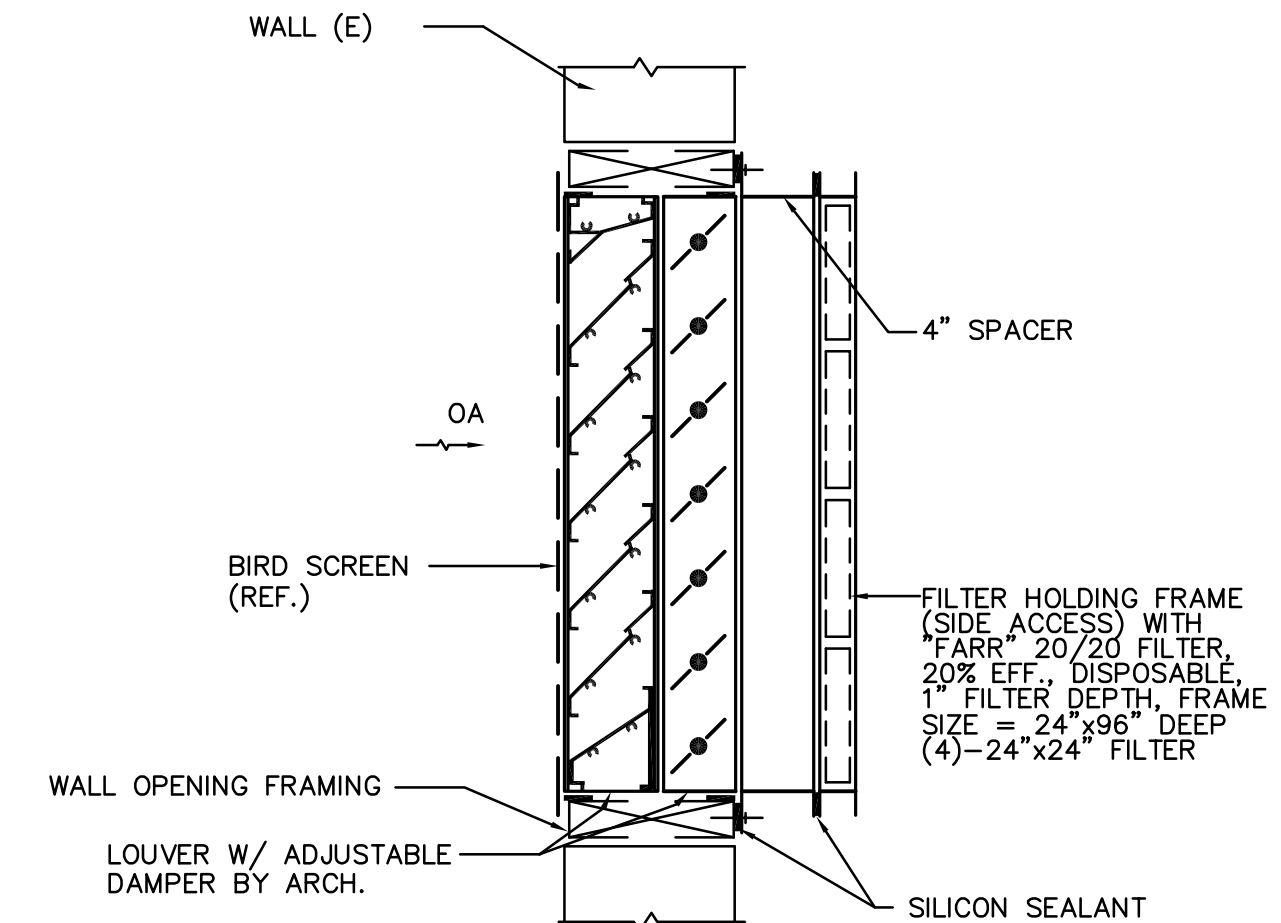
CONDENSATE DRAIN DRYWELL DETAIL

SCALE: NONE 9



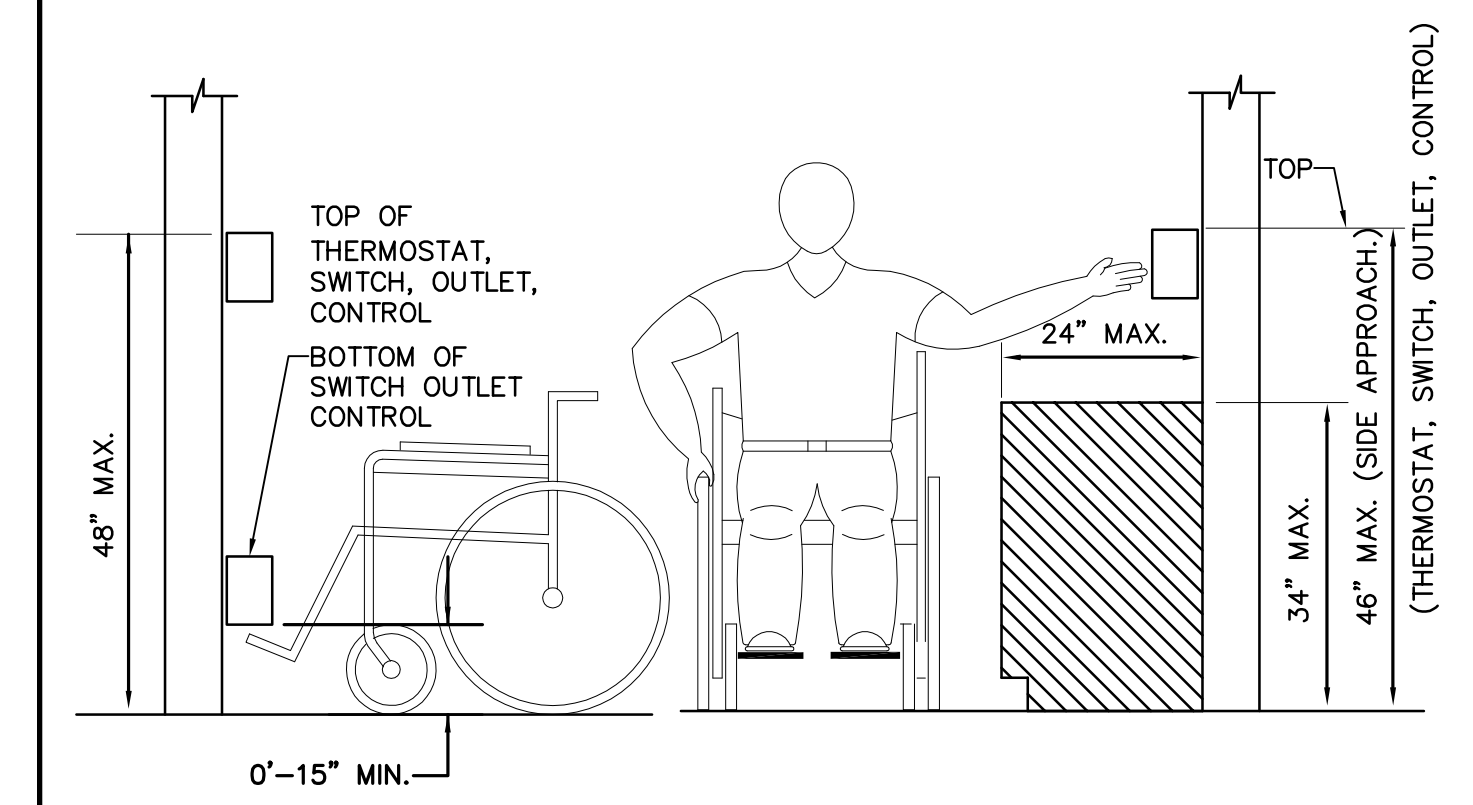
CONDENSATE TRAP DETAIL

SCALE: NONE 8



INTAKE WALL LOUVER DETAIL

SCALE: NONE 5



ADA CONTROL DEVICE MOUNTING HEIGHT DETAIL

SCALE: NONE 1

FILE: M:\P - Projects\2016\516503 - Pittsburg USD - Server Room\Mech\516503 - M-7.0.dwg Jul 07, 2017 - 4:19pm GCarrillo

STATE OF CALIFORNIA
COMPUTER ROOM REQUIREMENTS
 CEC-NRCC-PRC-04-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE NRCC-PRC-04-E
 Computer Room Requirements (Page 1 of 2)
 Project Name: Pittsburg Unified School District - Server Room Mechanical Upgrade Date Prepared: 2017-05-02

TOTAL INSTALLED COOLING CAPACITY (TONS): 22 Tons

Equipment Tags and System Description ¹	AC-1	AC-2
PRESCRIPTIVE MEASURES T-24 Sections Reference to the Requirements in the Contract Documents ²		
Economizers 140.9(a)1	140.9(a)-1 - Exception 2	140.9(a)-1 - Exception 2
Reheat 140.9(a)2	N/A	N/A
Humidification 140.9(a)3	N/A	N/A
Fan Power 140.9(a)4	M-0.2	M-0.2
Fan Control 140.9(a)5	M-5.0	M-5.0
Containment 140.9(a)6	N/A	N/A

Notes:
 1. Enter the total installed cooling capacity for all computer rooms under this permit
 2. Provide equipment tags (e.g. CRAC-1 to 10, AHU 1 to 5 and CH 1 to 3) for all cooling systems that are covered by these requirements. Groups of equipment that are similar can be combined into one column.
 3. Provide references to plans (i.e. Drawing Sheet Numbers) and/or specifications (including Section name/number and relevant paragraphs) where each requirement is specified. Enter "N/A" if the requirement is not applicable to this system. Explicitly list any exceptions used to avoid a requirement.

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance January 2016

STATE OF CALIFORNIA
COMPUTER ROOM REQUIREMENTS
 CEC-NRCC-PRC-04-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE NRCC-PRC-04-E
 Computer Room Requirements (Page 2 of 2)
 Project Name: Pittsburg Unified School District - Server Room Mechanical Upgrade Date Prepared: 2017-05-02

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT
 1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Gustavo D. Carrillo	Documentation Author Signature:
Company: Optimum Energy Design	Signature Date: 05-02-2017
Address: 2600 Tenth Street, Suite 500	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Berkeley, CA, 94710	Phone: 510-837-9182

RESPONSIBLE PERSON'S DECLARATION STATEMENT
 I certify the following under penalty of perjury, under the laws of the State of California:
 1. The information provided on this Certificate of Compliance is true and correct.
 2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
 3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
 4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
 5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

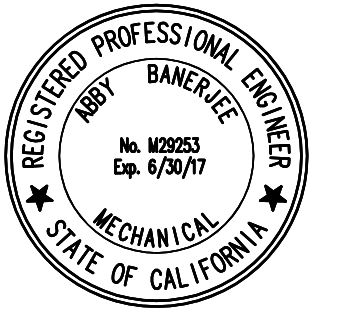
Responsible Designer Name: Abby Banerjee	Responsible Designer Signature:
Company: Optimum Energy Design	Date Signed: 05-02-2017
Address: 2600 Tenth Street, Suite 500	License: M29253
City/State/Zip: Berkeley, CA 94710	Phone: 510-837-9182

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance January 2016



Consulting Engineers
 2600 10th Street #500 Project #: 516503
 Berkeley, CA 94710 Contact: Gus Carrillo
 Telephone: (510) 837-9182

STAMP



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SHEET DESCRIPTION:
TITLE 24 COMPLIANCE REPORT

SHEET NO:

M7.0