

GENERAL NOTES

1. SEE EXISTING AS BUILT DRAWINGS FOR EXISTING AIR DISTRIBUTION
2. ALL NEW DUCTWORK AND CEILING PENETRATION SHALL BE COORDINATED WITH STRUCTURAL JOISTS AND BEAMS. PROVIDE OFFSETS IN PIPES AND DUCTS TO AVOID CUTTING OF BEAMS AND JOISTS.
3. SYMBOL AND ABBREVIATION LISTS ARE COMPOSITE. ALL SYMBOLS AND ABBREVIATIONS MIGHT NOT BE USED ON THIS PROJECT.
4. MAINTAIN CLEAR ACCESS TO SERVICE EQUIPMENT AND OTHER ACCESSORIES REQUIRING SERVICE, VISUAL INSPECTION OR HAND OPERATION PER MANUFACTURERS RECOMMENDATIONS AND LOCAL CODES WHERE INDICATED OR REQUIRED, PROVIDE ACCESS PANELS OF THE TYPE SELECTED TO SUIT MATERIALS IN WHICH INSTALLED.
5. ALL WORK SHALL BE DONE IN ACCORDANCE WITH LATEST APPLICABLE CODES AND REGULATIONS PER CALIFORNIA AND OTHER AUTHORITIES HAVING JURISDICTION.
6. THE MECHANICAL DRAWINGS ARE DIAGRAMMATIC AND SHOULD NOT BE SCALED TO ESTABLISH LOCATION OF WORK. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND MAKE ADJUSTMENTS TO DIMENSIONS AS NECESSARY TO COMPLETE THE WORK.
7. THE CONTRACTOR SHALL COORDINATE WITH THE INSPECTOR OF RECORD FOR TIMELY INSPECTIONS.
8. CONTRACTOR SHALL THOROUGHLY EXAMINE PREMISES AND OBSERVE ALL CONDITIONS AND CIRCUMSTANCES UNDER WHICH THE WORK SHALL BE PERFORMED. NO ALLOWANCES WILL BE MADE FOR ERRORS OR NEGLIGENCE IN THIS RESPECT.
9. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE IMPORTANCE OF PROPER SCHEDULING, STAGING AND PHASING OF THE WORK SO AS TO CAUSE MINIMUM DISTURBANCE TO THE ACTIVITIES IN THE OTHER AREAS WHICH REMAIN OCCUPIED THROUGHOUT THE DURATION OF THE CONTRACT. THE CONTRACTOR'S WORK SCHEDULE, PHASING AND STAGING AREAS SHALL BE SUBMITTED TO AND APPROVED BY THE USERS (EAFB) REPRESENTATIVE.
10. CONTRACTOR SHALL PERFORM WORK ONLY AFTER THE GATHERING OF EXACT FIELD DIMENSIONS OF THE BUILDING STRUCTURE AND CEILINGS ETC. WHICH MAY AFFECT THE INSTALLATION OF THE NEW SYSTEMS.
11. THE CONTRACTOR SHALL FULLY COORDINATE ALL WORK WITH OTHER TRADES TO ASSURE ALL WORK CAN BE PROPERLY INSTALLED WITHOUT INTERFERENCE OR DELAY.
13. CLEAN UP ALL WASTE AND DEBRIS AT THE END OF EACH WORKING DAY AND AT THE COMPLETE OF THE JOB.
14. THE CONTRACTOR SHALL NOT CORE DRILL CONCRETE SLABS WITHOUT THE KNOWLEDGE AND WRITTEN CONSENT OF THE COE ENGINEER AND THE BUILDING USER REPRESENTATIVE.
15. ALL SPECIFIED EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION, UPC, UMC CHAPTER 6 AND IBC SECTION 1632A AND OTHER AUTHORITIES HAVING JURISDICTION.
16. PROVIDE ONE YEAR WARRANTY FOR ALL WORKMANSHIP AND MATERIALS AFTER THE DATE OF FINAL ACCEPTANCE.
17. PRIOR TO STARTING WORK, SUBMIT SHOP DRAWINGS FOR ALL MECHANICAL EQUIPMENT & ACCESSORIES
18. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL HAVE ALL AH UNITS BALANCED TO INDICATED AIR FLOW QUANTITIES BY A CERTIFIED AABC BALANCING CONTRACTOR. PROVIDE PRE AND POST-CONSTRUCTION AIR BALANCE REPORT.
19. EXACT LOCATIONS OF ALL ZONE DAMPERS CONNECTIONS SHALL BE COORDINATED. DRAWINGS SHALL BE USED ONLY FOR GENERAL DUCT ROUTING AND AIR DISTRIBUTION. ACCESS DOORS SHALL BE PROVIDED ON ALL DAMPERS, AUTOMATIC DAMPERS, MANUAL DAMPERS, AND BYPASS DAMPERS.
20. DUCT SIZES SHOWN ON DRAWINGS ARE IN INCHES (CLEAR INSIDE DIMENSIONS) AND REPRESENT THE FREE OR UNOBSTRUCTED AREA REQUIRED ON THE INSIDE OF THE DUCT.
21. CONTRACTOR SHALL MOUNT AND CONNECT EACH ITEM OF EQUIPMENT IN STRICT ACCORDANCE WITH MANUFACTURE'S RECOMMENDATION, UPC, UMC CHAPTER 6 AND IBC SECTION 1632A. AND OTHER AUTHORITIES HAVING JURISDICTION.
22. ALL DUCTWORK SHALL BE GALVANIZED STEEL PER UMC CHAPTER 6 AND SMACNA GUIDELINES.
23. ALL NEW CONNECTING DUCTWORK SHALL BE GALVANIZE SHEET METAL PER UMC
24. ALL OPENINGS IN WALLS, CEILINGS, AND FLOORS RESULTING FROM NEW EQUIPMENT INSTALLATION SHALL BE CLOSED, SEALED AND FINISHED TO MATCH THE SURROUNDING.
25. RUN ALL NEW DUCTWORK AS HIGH AS POSSIBLE UNLESS OTHERWISE NOTED.
26. PROVIDE EXTERNAL TRAPS FOR CONDENSATE DRAIN LINES FOR ALL COOLING COILS. CONDENSATE LINES SHALL BE COPPER TYPE L, ISULATED PER CODES ABOVE CEILING.
27. ALL NEW SUPPLY & RETURN DUCTWORK SHALL BE INSULATED PER LATEST CODES AND TITLE-24 REQUIREMENT.
28. ALL DAMPERS & VALVES MAY NOT BE SHOWN ON PLANS. PROVIDE AS STATED.
29. PROVIDE AIR DISTRIBUTION WITH BLOW PATTERNS INDICATED ON THE DRAWING.
30. CONTRACTOR SHALL FURNISH AND INSTALL DUCT AND PIPE SUPPORT AND BRACING PER LATEST UPC, UMC AND SMACNA REQUIREMENT.
31. ANY EQUIPMENT, DUCTWORK, OR PIPING INSTALLED MORE THAN 1 FT FROM THE LOCATION SHOWN ON THE DRAWINGS SHALL BE CLEARLY DOCUMENTED IN THE FIELD. CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS THAT CLEARLY SHOW THE LOCATION OF THE THE EQUIPMENT BEFORE THAN COMPLETION OF THE PROJECT. ALL EXPENSE RELATING TO VERIFY THE AS-BUILT DRAWINGS BY THE OWNER OR ITS REPRESENTATIVE(S) DUE TO INACCURATE OR INCOMPLETE RECORD SHALL BE BORN BY THE CONTRACTOR.
32. ALL MECHANICAL WORK SHALL COMPLY WITH T24 PART 4 UMC-2006.
33. NOTE THE CRITICAL SPACE AVAILABLE. PROVIDE TRANSITION PIECES AT CROSSOVERS, UNDER BEAMS, OVER/UNDER PIPES, AS REQUIRE ACCOMMODATE NEW WORK WITHIN SPACE AVAILABLE, PROVIDING EQUIVALENT SIZES TO THE DIMENSION SHOWN. COORDINATE CLOSELY WITH OTHER SECTIONS TO REDUCE NECESSITY OF TRANSITIONS TO A MINIMUM. NO ADDITIONAL COSTS WILL BE PAID FOR ANY REQUIRED TRANSITIONS OR OTHER SPECIAL CHANGE SHAPE PIECES.
34. PROVIDE NEW CONTROLS WHERE INDICATED ON THESE DRAWINGS.
35. CONTROLS SHALL BE INSTALLED BETWEEN 36" AND 48" ABOVE FINISHED FLOOR.
36. ALL MECHANICAL IS BRACED OR ANCHORED TO RESIST A HORIZONTAL FORCE ACTING IN ANY DIRECTION USING CBC 2007, SEC. 1632A AND TABLE 16A-0. A COPY OF THE GUIDELINES PUBLISHED BY SMACNA AND APPROVED BY LOCAL AUTHORITIES HAVING JURISDICTION SHALL BE PROVIDED BY THE CONTRACTOR AND KEPT ON THE JOB SITE AT ALL TIMES.
37. THE SEISMIC ANCHORAGE OF MECHANICAL AND ELECTRICAL EQUIPMENT SHALL CONFORM TO C.C.R. TITLE 24, 2001 CBC SECTION 1632A AND TABLE 16A-0. ANCHORAGE DETAILS FOR ROOF/FLOOR MOUNTED EQUIPMENT SHALL BE SHOWN ON PLANS.
ALL BRACING OF DUCTS AND PIPING SHALL BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES AS APPROVED BY AUTHORITIES HAVING JURISDICTION .
38. ALL CONTROL CONDUIT AND WIRING SHALL BE BY THE BASE CONTRACTED CONTROL CONTRACTOR
39. MAINTAIN FRESH AIR INTAKE A MINIMUM OF 10" FROM OR 3" BELOW ANY VENT, FLUE OR EXHAUST TERMINATION.
40. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO THE SUBMISSION OF BID AND THOROUGHLY FAMILIARIZE HIMSELF WITH THE WORKING CONDITIONS AND THE EXACT NATURE AND EXTENT OF THE WORK. HE SHALL VERIFY ALL DIMENSIONS AND CONDITIONS SHOWN ON DRAWINGS AND SHALL NOTIFY THE OWNER'S REPRESENTATIVE OF ANY OMISSION AND/OR DISCREPANCIES AND OBTAIN A WRITTEN DECISION. SUBMISSION OF A BID ACKNOWLEDGES FULL RESPONSIBILITY FOR FURNISHING A COMPLETE AND FUNCTIONAL SYSTEM. ABSOLUTELY NO CHANGES IN THE CONTRACT WILL BE CONSIDERED TO ACCOMMODATE OR ALLOW EXTRA FUNDS FOR ANY OMISSION WHICH RESULTS FROM A FAILURE TO THOROUGHLY EXAMINE THE SCOPE OF WORK.
41. ALL WORK SHALL BE COORDINATED WITH THE OWNER'S REPRESENTATIVE WHO MAY ALSO BE REFERRED TO AS FACILITIES PROJECT MANAGER.
42. CONTRACTOR SHALL PREPARE SCALED DRAWINGS OF EQUIPMENT ROOMS SHOWING THE PROPOSED LAYOUT OF SUBMITTED EQUIPMENT AND SHALL SHOW THE PROPOSED CODE REQUIRED CLEARANCES IN ALL DIRECTIONS AS PART OF THE SUBMITTAL PACKAGE. MINIMUM SCALE OF DRAWINGS SHALL BE 1/4"=1'-0".
43. ANY SUBMITTALS FOR EQUIPMENT DIFFERENT FROM THE SPECIFIED ITEMS SHOWN ON THE PLANS SHALL BE ACCOMPANIED BY CUT SHEETS FOR THE ORIGINAL SPECIFIED ITEM(S). SUBMITTALS WITHOUT THE SPECIFIED CUT SHEETS WILL BE REJECTED AS INCOMPLETE.
44. COORDINATE THE MECHANICAL WORK WITH THE WORK OF OTHER TRADES. ALL MECHANICAL WORK SHALL BE PER THE APPLICABLE CODE. CONTRACTOR SHALL INCLUDE IN HIS BID ALL REQUIRED LABOR, MATERIAL, EXPERTISE AND QUALIFIED PERSONNEL TO COMPLETELY INSTALL IN A CODE COMPLIANT MANNER, ALL WORK SHOWN ON THE PLANS OR REFERRED TO IN THE CONTRACT DOCUMENTS
45. WHEN THERE ARE DISCREPANCIES BETWEEN CONTRACT DOCUMENTS DRAWINGS), OBTAIN CLARIFICATION FROM THE ENGINEER BEFORE START OF WORK. THE MORE STRINGENT OR MORE EXPENSIVE REQUIREMENT(S) SHALL APPLY.

DEMOLITION NOTES

WORK UNDER THIS SECTION: THE WORK UNDER THIS SECTION SHALL INCLUDE ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED TO COMPLETE ALL DEMOLITION AS INDICATED AND SPECIFIED.

WORK:

1. REMOVAL OF THE EXISTING SYSTEMS AND MECHANICAL EQUIPMENT AS INDICATED AND/OR AS DIRECTED ON THE PLANS.

MATERIALS:

1. ALL MATERIALS, RUBBISH AND DEBRIS SHALL BE PROMPTLY REMOVED FROM THE BUILDINGS AND FROM THE SITE. ACCUMULATION OF SAME SHALL NOT BE PERMITTED.
2. THE CONTRACTOR SHALL PROTECT PART OF ALL STRUCTURES NOT INCLUDED IN ALTERATION. ANY DAMAGE RESULTING DUE TO ALTERATION SHALL BE REPAIRED AND/OR REPLACED TO THE ORIGINAL CONDITION AS APPROVED BY THE OWNERS REPRESENTATIVE.
3. ANY ITEMS REMOVED TO BE REUSED ARE TO BE PROTECTED AND REINSTALLED IN UNDAMAGED AND WORKABLE CONDITION.
4. THE CONTRACTOR SHALL PROTECT ALL THE TEMPORARILY REMOVED MATERIAL WHICH ISTO BE REINSTALLED AS INDICATED ON THE PLAN.

MEASURES:

1. PROTECTION MEASURES SHALL BE IN EFFECT PRIOR TO COMMENCEMENT OF ANY DEMOLITION WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COMPLETELY ISOLATE HIS WORK FROM ADJACENT IN-SERVICE AREAS OF THE BUILDING.
2. UTILITY SHUT DOWN MUST BE COORDINATED WITH USER FOR A MINIMUM OF 48 HOURS IN ADVANCE.
3. THE LOCATION AND ACTIVE/ INACTIVE STATUS OF ALL EXISTING UTILITIES IN THE IMMEDIATE AREA OF THE WORK MUST BE VERIFIED PRIOR TO ANY CUTTING OPERATIONS.
4. DEBRIS FROM DEMOLITION SHALL BE COLLECTED AND REMOVED AT THE BEGINNING OF THE FOLLOWING WORK DAY. ROUTING OF ANY DEBRIS THROUGH ANY PORTION OF THE EXISTING BUILDING SHALL BE DONE UNDER STRICT OBSERVATION OF THE OWNER'S REPRESENTATIVE. ONLY THOSE ROUTES AND TIMES DESIGNATED BY OWNER SHALL BE ALLOWED.
5. THIS SITE SHALL REMAIN IN OPERATION WHILE THIS WORK IS BEING DONE, COORDINATE WITH THE STATION MANAGER FOR THE PHASING OF THIS WORK SO NOT TO INTERFERE WITH THE NORMAL OPERATION OF THIS SITE.
6. AFTER DEMOLITION COORDINATE FOR THE PATCHING OF ALL WALL, FLOOR AND ROOF OPENINGS IN ACCORDANCE WITH OWNER'S REQUIREMENTS.

LIFE SAFETY CONTROL NOTES

1. INTERCONNECT NEW AH UNITS WITH THE BUILDING FIRE ALARM SYSTEM FOR SHUT DOWN UPON A SIGNAL FROM THE FIRE ALARM SYSTEM.
2. THE EXISTING DUCT SMOKE DETECTORS WILL BE RE-INSTALLED (REFER TO LIFE SAFETY DRAWINGS FOR DETAIL). TO SIGNAL THE FIRE ALARM SYSTEM. THE FIRE ALARM SYSTEM SHALL SHUT DOWN THE AH'S UNITS AS DESCRIBED IN NOTE NO. 1. REFER TO THE LIFE SAFETY DRAWINGS CONTROL PLANS.

TITLE 24 NOTES

1. CONTROLS SHALL BE INSTALLED BETWEEN 36" AND 48" ABOVE FINISHED FLOOR.
2. ALL EQUIPMENT DESIGNED TO BE FIXED IN POSITION SHALL BE SECURELY FIXED IN PLACE, AND IN ACCORDANCE WITH SEISMIC REQUIREMENTS.
3. REQUIRED ROUTINE MAINTENANCE ACTION SHALL BE CLEARLY STATED AND INCORPORATED ON A READILY ACCESSIBLE PERMANENT LABEL. THE LABEL MAY BE LIMITED TO CROSS REFERENCING THE MAINTENANCE MANUAL IF SUCH MAINTENANCE ACTION IS DESCRIBED THEREIN FOR THE LABELED ITEM.
4. AIR HANDLING DUCT SYSTEMS SHALL BE CONSTRUCTED, INSTALLED, SEALED AND INSULATED AS PROVIDED IN THE LATEST EDITION OF THE UNIFORM MECHANICAL CODE CHAPTER 6 OR SMACNA AS A MINIMUM.
5. ALL EQUIPMENT SHALL CONFORM TO AND BE CERTIFIED IN ACCORDANCE WITH THE APPLIANCE STANDARDS AND THE REQUIREMENTS FOR SUCH DEVICES GIVEN IN THE PLANS AND SPECIFICATIONS APPROVED BY THE LOCAL ENFORCEMENT AGENCY.
6. ALL EQUIPMENT SHALL BE LABELED AS TO FUNCTION AND SPACES SERVED. (SEE SCHEDULE).

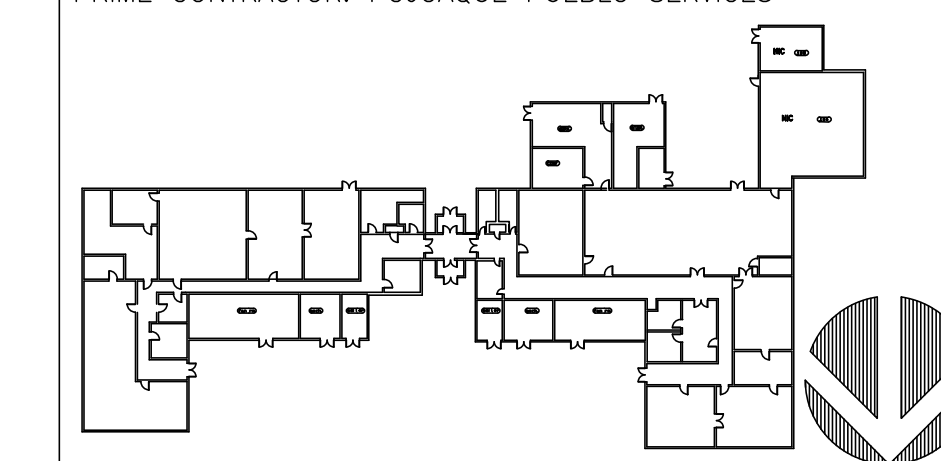
PROJECT NOTES

1. THE INTENT OF THIS PROJECT IS TO REPLACE THE EXISTING NOTED EQUIPMENT WITH NEW INCLUDING BUT NOT LIMITED TO THAT NOTED IN THE PLANS, STATEMENT OF WORK AND GENERAL NOTES. NEW T-24 CONTROLS, NEW VFD MOTORS NEW SEISMIC RESTRAINTS AND ISOLATION, COILS, ACCESSORIES, ETC., WHETHER SHOWN OR NOT, AND TO PROVIDE A COMPLETE WORKABLE SYSTEMS. NEW ECONOMIZER SYSTEM AND WATER SYSTEMS FLUSHING, CLEANING AND BALANCE IS REQUIRED. AIR FLOW (CFM), WATER GPM, AIR DISTRIBUTION SIZES AND EQUIPMENT SIZES ARE UNCHANGED.
2. DRAWING BACKGROUNDS AND EXISTING HVAC SYSTEM CONFIGURATION AND SIZES HAVE BEEN PROVIDED BY THE OWNER AND FIELD VERIFIED (EXPOSED AND VISIBLE EQUIPMENT ONLY). WHILE EXISTING HVAC SYSTEMS CONFIGURATION AND SIZING IS GENERALLY CONSIDERED ACCURATE. SOME INFORMATION AND CONFIGURATION MAY HAVE BEEN CHANGED.
3. SIZE OF THE CONDITIONED SPACE AND EQUIPMENT SIZES HAVE NOT CHANGED. ONLY THE NEW EQUIPMENT MUST MEET THE LATEST CODES AND ENERGY EFFICIENCY STANDARDS.

SHEET INDEX

M0.1	LEGEND AND NOTES
M0.2	SYMBOLS AND SEQUENCE OF OPERATIONS
M1.1	EQUIPMENT SCHEDULES
M1.2	EQUIPMENT SCHEDULES
M1.3	EQUIPMENT SCHEDULES
M2.1D	ZONE 1 DEMOLITION WORK
M2.1	ZONE 1 NEW WORK
M2.2D	ZONE 2 DEMOLITION WORK
M2.2	ZONE 2 NEW WORK
M2.3D	ZONE 3 DEMOLITION WORK
M2.3	ZONE 3 NEW WORK
M3.1	DIAGRAMS
M3.2	DIAGRAMS
M3.3	DIAGRAMS
M3.4	DIAGRAMS
M3.5	DIAGRAMS
M4.1	CONTROLS
M4.2	CONTROLS

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JOB NO. 08-038

DESIGN FOR:
BUILDING 1408
REPLACE CHILLER, BOILER AND AHU'S
EDWARDS AIR FORCE BASE, CALIFORNIA 93523-8450

QUOTE/DWG #:

DRAWN BY:
TS

CHECKED BY:

DATE:
12/05/2008

SCALE:
AS NOTED

REVISION HISTORY

1	
2	
3	
4	
5	

PROJECT
FA9301-06-D-0010

M0.1

RECORD DRAWINGS
SUBMITTED 11/21/2008

SYMBOLS AND ABBREVIATION

<p>RECTANGULAR DUCTWORK (WIDTH X DEPTH)</p> <p>FLAT OVAL DUCTWORK</p> <p>ROUND DUCTWORK (SIZE, DIAMETER)</p> <p>1" ACOUSTICALLY LINED DUCTWORK (UNO)</p> <p>SQUARE-THROATED ELBOW W/TURNING VANES</p> <p>RADIUS ELBOW</p> <p>MANUAL VOLUME DAMPER (MVD)</p> <p>TRANSITION WITH FLAT SIDE</p> <p>TRANSITION ON CENTER</p> <p>RECTANGULAR-TO-ROUND TRANSITION</p> <p>TAKE-OFF TAP TO RECTANGULAR DUCT AND VOLUME DAMPER</p> <p>CONICAL TAP TO RECTANGULAR DUCT AND VOLUME DAMPER</p> <p>FLEXIBLE CONNECTOR</p> <p>EXISTING DUCTWORK TO REMAIN</p>	<p>ACCESS REQUIRED FOR EQUIPMENT SERVICE</p> <p>SIDE WALL REGISTER/GRILLE</p> <p>CEILING DISTRIBUTION 4-WAY THROW</p> <p>RETURN AIR GRILLE</p> <p>EXHAUST GRILLE</p> <p>8X8 (200) THERMOSTAT (MAX. 48" A.F.F.)</p> <p>SM CARBON MONOXIDE DETECTOR</p> <p>FCU EQUIPMENT TAG, DESCRIPTION FCU, FLOOR LEVEL "1" (GROUND=1, FIRST=2, SECOND=3), UNIT NUMBER "5"</p> <p>M-1 DETAIL REFERENCE, DETAIL 1, SHEET NUMBER M-1</p> <p>D.L. DOOR LOUVER - UNDER ARCHITECT SECTION</p> <p>D.U. DOOR UNDERCUT - UNDER ARCHITECT SECTION</p> <p>CFSD COMBINATION FIRE SMOKE DAMPER (CFSD)</p> <p>FD FIRE DAMPER (FD)</p>
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PIPING SYMBOLS

<p>ELBOW TURNED UP</p> <p>ELBOW TURNED DOWN</p> <p>TEE TURNED UP</p> <p>TEE TURNED DOWN</p> <p>CAP</p> <p>RISE OR DROP IN PIPE UNION</p> <p>PIPE CONTINUES</p> <p>POINT OF CONNECTION</p> <p>POINT OF DISCONNECTION</p> <p>CHS CHILLED WATER SUPPLY PIPING</p> <p>CHR CHILLED WATER RETURN PIPING</p> <p>HWS HEATING HOT WATER SUPPLY PIPING</p> <p>HWR HEATING HOT WATER RETURN PIPING</p> <p>D COOLING COIL CONDENSATE OR EQUIPMENT DRAIN PIPING</p> <p>VALVE IN RISER</p> <p>FLOW IN DIRECTION OF ARROW GATE VALVE</p> <p>CHECK VALVE</p> <p>BUTTERFLY VALVE (FOR SIZES 2 1/2" AND LARGER) AND BALL VALVE (FOR 2" AND SMALLER)</p> <p>MANUAL AIR VENT</p> <p>REFRIGERANT SIGHT GLASS</p>	<p>TEMPERATURE AND PRESSURE TEST PORT</p> <p>CONTROL VALVE</p> <p>SOLENOID VALVE</p> <p>ISOLATION VALVE</p> <p>PIPE DROP</p> <p>PIPE RISE</p> <p>LOCK SHIELD VALVE</p> <p>CHECK VALVE, SWING OR LIFT</p> <p>SILENT CHECK VALVE</p> <p>STOP CHECK VALVE</p> <p>ANGLE STOP CHECK VALVE</p> <p>BUTTERFLY VALVE</p> <p>BALL VALVE</p> <p>SQUARE HEAD COCK</p> <p>BALANCING VALVE</p> <p>PLUG VALVE (TYPE AS NOTED)</p> <p>PRESSURE REDUCING VALVE</p> <p>TWO-WAY AUTOMATIC CONTROL VALVE</p> <p>THREE-WAY AUTOMATIC CONTROL VALVE</p> <p>FLOW CONTROL VALVE</p>
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AIR SIDE SEQUENCE OF OPERATIONS

1. OCCUPIED HOURS:
DURING OCCUPIED HOURS ALL THE MAIN SYSTEMS FANS WILL START AND THE OUTSIDE AIR (OSA) DAMPERS SHALL BE SET AT THEIR MINIMUM AIR SETTINGS.
2. UNOCCUPIED HOURS:
DURING UNOCCUPIED HOURS ALL THE MAIN SYSTEMS WILL BE SHUT DOWN AND THE OUTSIDE AIR DAMPERS SHALL BE COMPLETELY CLOSED.
3. AH SYSTEM SEQUENCE OF OPERATIONS
NEW AIR HANDLING UNITS (SEE SCHEDULE)
 - A. UNIT TO BE CONTROLLED BY AN EXISTING DDC-EMS SYSTEM
 1. EACH UNIT CONSIST OF CONSTANT VOLUME VFD AIR FANS, FILTERS, ECONOMIZERS CHILLED WATER AND NEW HOT WATER COILS. A DDC UNITARY CONTROLLER WILL BE MOUNTED ON EACH UNIT TO MONITOR AND CONTROL UNIT OPERATION.
 2. THE UNITS AIR DISTRIBUTION IS EXISTING
 3. THE UNITS ARE NEW, PROVIDE ZONE DAMPERS AS PER SCHEDULES
 4. EACH UNIT START/STOP WILL FOLLOW AN OPERATOR INPUT OPERATION SCHEDULE. IF AN UNIT SUPPLY FAN FAILS DURING OPERATION, THE DDC CONTROLLER WILL INITIATE AN ALARM.
 5. A MICROPROCESSOR BASED TEMPERATURE CONTROLLER IS EXISTING IN EACH ZONE TO MONITOR SPACE TEMPERATURE AND ALLOW LOCAL SETPOINT ADJUSTMENTS. THE DDC CONTROLLER WILL RESET THE UNIT SUPPLY AIR TEMPERATURE ACCORDING TO SPACE ZONE COOLING OR HEATING DEMAND. THE DDC CONTROLLER WILL MODULATE THE CHILLED WATER OR HOT WATER COIL VALVE OPENING BY MEANS OF PID CONTROL TO ACHIEVE THE SUPPLY AIR TEMPERATURE SETPOINT.
 6. IF THE SPACE TEMPERATURE IS WITHIN THE DEADBAND BETWEEN THE COOLING AND HEATING SETPOINTS, BOTH THE CHILLED WATER AND HOT WATER COIL VALVES WILL BE CLOSED. THE UNIT SUPPLY AIR FAN WILL CONTINUE TO OPERATE UNTIL THE SCHEDULED STOP TIME IS REACHED.
 7. FILTER CLEANLINESS WILL BE CONTINUOUSLY MONITORED VIA A DIFFERENTIAL PRESSURE SENSOR.
 8. AN ON/OFF SWITCH WILL BE PROVIDED ON THE UNITARY CONTROLLER TO PERMIT MANUAL ON/OFF OF EACH UNIT.
 9. WHEN THE SCHEDULED STOP TIME IS REACHED, THE DDC CONTROLLER WILL SHUT OFF THE UNIT. THE CONTROLLER WILL CLOSE CHILLED WATER AND HOT WATER COIL VALVES, AND RETURN ANY MOTORIZED DAMPERS TO THE NORMAL POSITION.
 10. THE EXISTING SMOKE DETECTORS WILL BE RE-INSTALLED IN EACH UNIT SUPPLY AND RETURN AIR STREAMS, UPON DETECTION OF SMOKE, THE DETECTOR WILL SEND A SIGNAL TO THE FIRE ALARM CONTROL PANEL WHICH WILL SHUT OFF THE SUPPLY FAN. THE SMOKE DETECTOR WILL HAVE AN AUXILIARY CONTACT TO CONNECT TO THE DDC CONTROLLER.
 11. THE OPERATOR SHALL DEFINE HIGH AND LOW LIMITS FOR SPACE TEMPERATURE. IF SPACE TEMPERATURE EXCEEDS THESE LIMITS, THE DDC CONTROLLER WILL INITIATE A HIGH OR LOW TEMPERATURE ALARM FOR THAT SPACE.
 - UNITS (SEE SCHEDULE) WITH 100% ECONOMIZER CONTROL SET AT 55°F AIR HANDLERS WITH FACTORY ECONOMIZERS OR WITH FIELD SUPPLIED ECONOMIZERS
AS OSA TEMPERATURE DROPS BELOW THE SET POINT, A CONTROLLER SHALL BE ABLE, FROM AN OUTDOOR AIR SENSOR AND A RETURN AIR SENSOR, TO PROVIDE TEMPERATURE INPUTS TO FULLY OPEN THE (OSA) OUTSIDE AIR & RELIEF AIR DAMPERS, CLOSE THE (RA) RETURN AIR DAMPER, START THE RELIEF/EXHAUST AIR FAN AND DEENERGIZE THE CHILLED WATER SYSTEM (CHILLERS LOCK OUT) TO PROVIDE FREE ENERGY COOLING FOR THE SPACE. (100% OSA & DESIGNED RELIEF/EXHAUST).

AS OSA TEMPERATURE GOES ABOVE THE SET POINT, THE CONTROLLER SHALL BE ABLE, BY THE OSA SENSOR, TO PROVIDE TEMPERATURE INPUTS TO CLOSE THE OSA DAMPER TO THE MINIMUM POSITION, CLOSE THE RELIEF AIR DAMPER, OPEN THE RETURN AIR DAMPER, DEENERGIZE THE RELIEF/EXHAUST FAN, AND REENERGIZE THE CHILLERS(S) TO NORMAL OPERATION.

BY THE OSA SENSOR, TO PROVIDE TEMPERATURE INPUTS TO CLOSE THE OSA DAMPER TO THE MINIMUM POSITION, CLOSE THE RELIEF AIR DAMPER, OPEN THE RETURN AIR DAMPER, DEENERGIZE THE RELIEF/EXHAUST FAN, AND REENERGIZE THE CHILLERS(S)
12. GAS/ELECTRIC UNITS WITH MODULATING POWER EXHAUST/ECONOMIZERS: (ROOFTOP UNITS)
NORMAL OPERATION IS INITIATED BY A REMOTE ELECTRONIC CONTROL SYSTEMS AS SCHEDULED SET AT THE USERS OR LOAD REQUIREMENTS.

NORMAL START-UP SEQUENCE SHALL ENERGIZE INDOOR FAN, OUTDOOR FAN AND COMPRESSOR(S). COOLING TO MODULATE AS REQUIRED.
 - A. UNIT TO BE CONTROLLED BY A PROGRAMMABLE THERMOSTAT WITH FAN AND OFF-HEAT/COOL CONTROL
 - B. UNIT OPERATION AT STARTUP, UNIT INDOOR EVAPORATOR FAN WILL BE ENERGIZED TO RUN CONTINUOUSLY AND THE ECONOMIZER/OSA DAMPERS WILL BE OPEN TO THE MINIMUM OUTSIDE AIR (OSA) POSITION.
 - C. COOLING-WHEN THE THERMOSTAT CALLS FOR COOLING, THE MECHANICAL COOLING CYCLES ON (THE COMPRESSOR(S) AND OUTDOOR CONDENSER FAN(S) WILL START.) AS CONDITIONED SPACE TEMPERATURE APPROACHES THE THERMOSTAT'S COOLING SET POINT, THE MECHANICAL COOLING STAGE CYCLES OFF. AFTER MECHANICAL COOLING SHUTS OFF, THE EVAPORATOR (INDOOR) FAN CONTINUES TO RUN.
 - D. HEATING-UPON CALL FOR HEAT, THE INDUCED DRAFT MOTOR IS ENERGIZED TO START, THE MAIN GAS VALVE IS ENERGIZED AND THE HEATING CYCLES ON.
AS SPACE TEMPERATURE APPROACHES THE HEATING TEMPERATURE SET POINT, HEATING STAGE CYCLES OFF.
AFTER BURNERS ARE DEENERGIZED, THE UNIT INDOOR EVAPORATOR-FAN MOTOR CONTINUES TO RUN.
 - E. NORMAL SHUTDOWN SEQUENCE SHALL STOP ALL THE FANS AND COMPRESSOR(S) AND DE-ENERGIZE THE ENTIRE SYSTEM ALL. THE DAMPERS SHALL RETURNS TO A FULLY CLOSED POSITION
 - F. 100% ECONOMIZER CONTROL SET AT 55°F
AS OSA TEMPERATURE DROPS BELOW THE SET POINT, A CONTROLLER SHALL BE ABLE, FROM AN OUTDOOR AIR SENSOR AND A RETURN AIR SENSOR, TO PROVIDE TEMPERATURE INPUTS TO FULLY OPEN THE (OSA) OUTSIDE AIR DAMPER, CLOSE THE (RA) RETURN AIR DAMPERS, MODULATE THE POWER EXHAUSTER AND ECONOMIZER OSA AIR DAMPER AND DEENERGIZE THE CONDENSING UNIT (COMPRESSOR LOCK OUT) TO PROVIDE FREE ENERGY COOLING FOR THE SPACE. (100% OSA & RELIEF/EXHAUST).

AS OSA TEMPERATURE GOES ABOVE THE SET POINT, THE CONTROLLER SHALL BE ABLE, BY THE OSA SENSOR, TO PROVIDE TEMPERATURE INPUTS TO CLOSE THE OSA DAMPERS TO THE MINIMUM POSITION, OPEN THE RETURN AIR DAMPER, MODULATE THE RELIEF/EXHAUST FAN, AND REENERGIZE THE CONDENSING UNIT TO NORMAL OPERATION.
13. VARIABLE SPEED AIR FAN:
NEW SUPPLY FANS SERVING THE NEW AH UNITS SHALL BE VARIABLE SPEED FANS. FAN START/STOP WILL FOLLOW AN OPERATOR INPUT SCHEDULE WHICH WILL BE THE SAME AS THE OPERATION SCHEDULE OF COILS THEY SERVE.
A DUCT STATIC PRESSURE SENSOR WILL BE PROVIDED FOR EACH FAN. FAN SPEED WILL BE MODULATED USING PID CONTROL LOGIC TO ACHIEVE THE STATIC PRESSURE SETPOINT.
UPON FAN STARTUP, THE DDC CONTROLLER WILL GRADUALLY INCREASE FAN SPEED UNTIL THE MINIMUM FLOW STATIC PRESSURE SETPOINT IS ACHIEVED. WHEN ANY COIL IS ACTIVATED THE OUTSIDE AIR DAMPER OF THE CORRESPONDING AH UNIT WILL BE OPENED TO THE MAXIMUM POSITION. THE DDC CONTROLLER WILL RESET THE OUTSIDE AIR DUCT STATIC PRESSURE SETPOINT HIGHER TO FORCE A HIGHER OUTSIDE AIR FAN SPEED. WHEN ALL OUTSIDE DAMPERS ARE AT THE MAXIMUM POSITIONS, THE STATIC PRESSURE SETPOINT WILL BE SET TO THE MAXIMUM FLOW STATIC PRESSURE LIMIT.
THE STATIC PRESSURE SENSOR WILL BE LOCATED IN THE SUPPLY AIR FAN SECTION

THE DDC CONTROLLER WILL INITIATE A LOW FLOW ALARM AND SHUT OFF THE OUTSIDE SUPPLY FAN WHEN:
a) THE FAN CANNOT DEVELOP SUFFICIENT AIRFLOW TO ACHIEVE THE MINIMUM FLOW STATIC PRESSURE SETPOINT WITHIN AN OPERATOR DEFINABLE TIME DELAY AFTER STARTUP.
b) THE FAN CANNOT ACHIEVE THE STATIC PRESSURE SETPOINT WITHIN AN OPERATOR DEFINABLE TIME DELAY AFTER THE SETPOINT IS RESET, OR
c) THE FAN FAILS TO MAINTAIN THE STATIC PRESSURE SETPOINT.
14. COORDINATE CONTROLS WITH UNIT MANUFACTURER, CONTROL AND ELECTRICAL CONTRACTORS FOR CONNECTION TO POWER AND LIFE SAFETY SYSTEMS AS REQUIRED BY CODE.
INSTALLATION OF FIELD DEVICES SUCH AS RELAYS, SENSORS, LOCAL CONTROL DEVICES, ETC SHALL FOLLOW THE INSTRUCTIONS IN THE CONTRACT DOCUMENTS. OTHERWISE THE CONTROLS CONTRACTOR SHALL FIELD VERIFY THE OPTIMUM LOCATIONS FOR MOUNTING THE DEVICES.
15. THE CONTROL CONTRACTOR SHALL, AS PART OF HIS SHOP DRAWING ACTIVITY, PREPARE AND SUBMIT TO THE USERS ENGINEER CONTROL/WIRING & PIPING DIAGRAMS WHICH INDICATES, GRAPHICALLY AND WITH SUFFICIENT DETAIL, THE INTENT OF THE ABOVE DESCRIBED SEQUENCE OF OPERATIONS. THESE CONTROL WIRING AND/OR PIPING DIAGRAMS SHALL BE SUPPORTED WITH APPROPRIATE MANUFACTURERS' CATALOG DATA AND POWER REQUIREMENT.

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JOB NO. 08-038

BUDLONG & ASSOCIATES, INC.

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DESIGN FOR:

BUILDING 1408

REPLACE CHILLER, BOILER AND AHU'S

EDWARDS AIR FORCE BASE, CALIFORNIA 93523-8450

QUOTE/DWG #:

DRAWN BY:
TS

CHECKED BY:

DATE:
12/05/2008

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PROJECT
FA9301-06-D-0010

M0.2

GAS HOT WATER BOILERS SCHEDULE

B UNIT	MANUFACTURER & MODEL NO.	LOCATION	TYPE	INPUT MBH	OUTPUT MBH MAX./DESIGN	% EFF.	PD (FT)	GALLON	GPM	HW ENT. °F	HW LVG. °F	MOTOR				VENT INCHES	OPER. WT. (LBS.)	REMARKS
												FLA	VOLT	PH	HZ			
B-1	RAYPAK H3-0402B	BLDG. 1408 MECH. ROOM ZN 1	GAS	399	335/323	84	MAX 7.2 MIN 0.8	2.4	MAX 34 MIN 32	160	180	15.5	120	1	60	6	575	① THRU. ⑧
B-2	RAYPAK H3-0302B	BLDG. 1408 MECH. ROOM ZN 2	GAS	500/	252/212	84	MAX 7.2 MIN 0.8	2.7	MAX 25 MIN 21	160	180	15.5	120	1	60	5	500	① THRU. ⑧

NOTES:

- ① PROVIDE BOILER WITH LOW NOX EMISSIONS.
- ② PROVIDE COLD START KIT BYPASS KIT AND LPV.
- ③ SCHEDULE FLA INCLUDE BOILER CONTROLS 6.7 FLA AND CP 8.8 FLA
- ④ INDOOR BOILER. PROVIDE WITH FACTORY INLET AIR FILTER AND FILTER BOX
- ⑤ PROVIDE ALL TRIM PER MANUFACTURERS RECOMMENDATIONS AND PER CALIFORNIA CODE REQUIREMENTS.
- ⑥ SCHEDULE OPERATING WEIGHT INCLUDES ALL ACCESSORIES.
- ⑦ PROVIDE BOILER WITH LOW TEMPERATURE SWITCH, ALARM BELL, FLOW SWITCH, MANUAL LIMIT TOGGLE SWITCHES
- ⑧ PROVIDE BOILER SYSTEM CIRCULATING (CP) PUMP SIZED PER MANUFACTURERS RECOMMENDATIONS

EXPANSION TANK SCHEDULE

ET SYMBOL	MANUFACTURER & MODEL NO.	SERVICE AND LOCATION	EXPANSION CAPACITY (GAL)	OPER. WT (LBS)	REMARKS
ET-1	TACO CBX84-3B	B-1 HW SYSTEM	22	150	BLADDER TYPE
ET-2	TACO CBX84-3B	B-2 HW SYSTEM	22	150	BLADDER TYPE

AIR SEPARATOR SCHEDULE

AS SYMBOL	MANUFACTURER & MODEL NO.	SERVICE AND LOCATION	CAPACITY (GPM)	P.D. (FT.)	OPER. WT. (LBS.)	REMARKS
AS-1G	TACO AC2F4	B-1 HW SYSTEM	-	-	-	①
AS-1G	TACO AC2F4	B-2 HW SYSTEM	-	-	-	①

- NOTES:** ① ASME SECTION VIII IN LINE CONSTRUCTION WITH STRAINER.

PIPING SCHEDULE

GPM RANGE	SIZE (INCH)
0 - 3	3/4
3.1 - 5.6	1
5.7 - 18	1-1/2
19 - 35	2
36 - 56	2-1/2
57 - 102	3
103 - 208	4
209 - 617	6
618 - 1,275	8
1,276 - 2,320	10
2,321 - 3,525	12

PUMPS SCHEDULE

P SYMBOL	TOTAL QNTY.	MANUFACTURER MAKE & MODEL	SIZE	MOTOR FRAME	BUILDING AND LOCATION	SERVICE	G.P.M.	TOTAL HEAD (FT)	PUMP RPM	MOTOR				OPER. WT (LBS)	REMARKS		
										BHP	HP	FLA	VOLT			PH	HZ
HWP-1	1	TACO FI-1509-7.8	2.5x1.5	145T	1408 MECH. ROOM	HOT WATER SYSTEM	75	62	1800	-	3	-	208	3	60	200	① ②
HWP-2	1	TACO FI-1507-7.3	2.5x1.5	145T	1408 MECH. ROOM	HOT WATER SYSTEM	75	53	1800	-	3	-	208	3	60	200	① ②
CP-1	2	BY BOILER MANUFACTURER	-	-	1408 B-1 BOILER PIPING	B-1A & 2A BOILER SYSTEM	74.7	7.9	-	-	-	8.8	120	1	60	50	③
CP-2	2	BY BOILER MANUFACTURER	-	-	1408 B-2 BOILER PIPING	B-1G & 2G BOILER SYSTEM	21.8	0.5	-	-	-	8.8	120	1	60	50	③

- NOTES:** ① WITH SUCTION DIFFUSER MP VALVE AND FLEXIBLE CONNECTIONS. ② SCHEDULE OPERATING WEIGHT INCLUDES ALL ACCESSORIES. ③ PROVIDED AND SIZED BY BOILER MANUFACTURER SEE BOILER NOTES ABOVE.

CHEMICAL FEEDER SCHEDULE

CSF SYMBOL	SERVICE	MAKE & MODEL	LOCATION	CAPACITY (GAL)	FLANGE SIZE	REMARKS
HSF-1	HOT WATER B-1	CHARDON LABS	MECH ROOM	5	NONE	①
HSF-2	HOT WATER B-2	CHARDON LABS	MECH ROOM	5	NONE	①

- NOTES:** ① PROVIDED AS PART OF THE HOT WATER SYSTEM

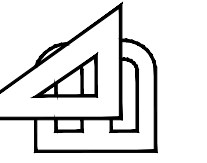
HOT WATER COIL SCHEDULE (EXISTING AH)

HC SYMBOL	TOTAL QNTY.	MANUFACTURER & MODEL NO.	LOCATION	SERVICE	CFM (EA)	CAP. (MBH) (EA)	GPM (EA)	ROWS-FINS/FT (EA)	ENT. WATER /LVG. WATER (°F) (EA)	WATER PD (FT) (EA)	CONN. PIPE SIZE (EA)	ENT. AIR /LVG. AIR (°F) (EA)	AIR PD (FT) (EA)	OPERATING WEIGHT (LBS.) (EA)	ANCHORAGE DETAIL (EA)	COIL SIZE (EA)	REMARKS (EA)
HC-1	1	TRANE D5WB18	(E) TRANE AH UNITS SIZE 06	EXISTING AH-1	3,000	107.4	4.75	1-135	180/160	0.07	1-1/2	45/78	0.20	80	COIL SECTION IN (E) UNIT	FIT UNIT SIZE	① ③ ④ ⑤ ⑥
HC-2	1	TRANE D5WB18	(E) TRANE AH UNITS SIZE 10	EXISTING AH-2	4,400	178.9	6.97	1-112	180/160	0.17	2-00	45/78	0.24	65	COIL SECTION IN (E) UNIT	FIT UNIT SIZE	① ③ ④ ⑤ ⑥
HC-3	1	TRANE D5WB18	(E) TRANE AH UNITS SIZE 12	EXISTING AH-3	6,000	214.7	9.51	1-113	180/160	0.84	2-1/2	45/78	0.30	70	COIL SECTION IN (E) UNIT	FIT UNIT SIZE	② ③ ④ ⑤ ⑥

- NOTE :** ① REPLACE EXISTING DUCT STEAM COIL WITH NEW HW COILS. ② ADD NEW COILS TO EXSTING TRANE AH UNITS. ③ HOT WATER GPM ARE BASED ON 180°F HWS AND 160°F HWR. ④ PROVIDE WITH 304 STAINLESS STEEL DRAIN PAN. ⑤ SCHEDULE OPERATING WEIGHT INCLUDES ALL ACCESSORIES. ⑥ RATING MBH IS BASED ON THE EXISTING SYSTEMS AIR HANDLERS CFM AND NEW ESTIMATED HEAT LOADS

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RECORD DRAWINGS

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PRIME CONTRACTOR: POJUAQUE PUEBLO SERVICES

CHILLER SCHEDULE

SYMBOL	MANUFACTURER & MODEL NUMBER	TYPE	LOCATION	NOMINAL TONS	EWT (°F)	LWT (°F)	GPM	WATER P.D. (FT. H2O)	OUTDOOR FANS			COMPRESSOR			UNIT ELECTRICAL					OPER. WT. (LBS.)	SIZE (MAX.)	REFRIGERANT IPLV/EER	REMARKS
									QTY.	FLA EA	HP EA	QTY.	RLA EA	LRA EA	VOLTS	PH	HZ	MCA	MOCP				
CH-1	TRANE CGAFC6	AIR COOLED SCROLL CHILLER	1408 GRADE	60	55.78	44	106.2	5.83	6	1.8	1.0	4	25.4	178	460	3	60	120	125	6000	114Lx88W x78H	R407C 13.4/7.0	①②③④
CH-2	TRANE CGAFC5	AIR COOLED SCROLL CHILLER	1408 GRADE	50	56.86	44	75.9	4.56	6	1.8	1.0	2	24.2	178	460	3	60	96	110	5000	114Lx88W x78H	R407C 13.7/7.1	①②③④

NOTES: ① PROVIDE EACH CHILLER WITH A WYE-DELTA STARTER. ② PROVIDE AUTOMATED DDC CONTROL PANEL. ③ PROVIDE AUTOMATIC SHUT-OFF VALVES. ④ PROVIDE chilled water system with 25% Glycol

CHILLED WATER COIL SCHEDULE (EXISTING AH)

SYMBOL	TOTAL QTY.	MANUFACTURER & MODEL NO.	LOCATION	SERVICE	AIR FLOW (CFM)	TOTAL CAP. (MBH)	SENS. CAP. (MBH)	WATER FLOW (GPM)	ROWS-FINS/FT	ENT. WATER/LVG. WATER (°F)	WATER PD (FT)	CONN. PIPE SIZE (IN.)	ENT. AIR/LVG. AIR (°F)	AIR PD (IN. WC)	OPERATING WEIGHT (LBS.)	ANCHORAGE	COIL SIZE	REMARKS (EA)
CC-1	1	TRANE DUWB23	(E) TRANE AH UNIT SIZE 06	EXISTING AH-1	3000	84.9	84.9	17.0	8-112	44/55	1.81	1-1/2	83/57	0.73	200	COIL SECTION IN (E) UNIT	FIT UNIT SIZE	① ③④⑤⑥
CC-2	1	TRANE DW-B24	(E) TRANE AH UNIT SIZE 10	EXISTING AH-2	4400	124.6	124.6	24.9	6-145	44/55	1.43	2	83/57	0.78	300	COIL SECTION IN (E) UNIT	FIT UNIT SIZE	① ③④⑤⑥
CC-3	1	TRANE DW-B30	(E) TRANE AH UNIT SIZE 12	EXISTING AH-3	6000	169.9	169.9	34.0	4-121	44/55	15.00	2	83/57	0.41	300	COIL SECTION IN (E) UNIT	FIT UNIT SIZE	②③④⑤⑥

NOTE : ① REPLACE EXISTING DUCT STEAM COIL WITH NEW CW COILS. ② ADD NEW COILS TO EXSTING TRANE AH UNITS. ③ CHILLED WATER GPM ARE BASED ON 55°F CHWS AND 45°F CHWR. ④ PROVIDE WITH 304 STAINLESS STEEL DRAIN PAN. ⑤ SCHEDULE OPERATING WEIGHT INCLUDES ALL ACCESSORIES. ⑥ RATING MBH IS BASED ON THE EXISTING SYSTEMS AIR HANDLERS CFM AND NEW ESTIMATED HEAT LOADS

CHILLED WATER PUMP SCHEDULE

SYMBOL	SERVICE	MAKE & MODEL	LOCATION	SIZE	G.P.M.	TOTAL HEAD (FT.)	PUMP EFF. (%)	PUMP RPM	BHP	HP	POWER			REMARKS
											VOLTS	PH	HZ	
CHWP-1	CH-1 CHILLED WATER	TACO FI-2007-7.1	MECH ROOM	2.5x2	106.2	53	--	1800	---	3	460	3	60	①
CHWP-2	CH-2 CHILLED WATER	TACO FI-1509-8.8	MECH ROOM	2.5x1.5	75.9	81	--	1800	---	5	460	3	60	①

EXPANSION TANK SCHEDULE

SYMBOL	SERVICE	MAKE & MODEL	LOCATION	VOLUME (GAL.)		OPERATING WEIGHT (LBS.)	REMARKS
				TANK	ACCEPTANCE		
ET-1	CH-1 CHILLED WATER	TACO CBX170-3B	MECH ROOM	4	24	250	BLADDER TYPE WITH CAL CODE SIGHT GLASS
ET-2	CH-2 CHILLED WATER	TACO CBX170-3B	MECH ROOM	4	24	240	BLADDER TYPE WITH CAL CODE SIGHT GLASS

AIR/DIRT SEPARATOR SCHEDULE

SYMBOL	SERVICE	MAX. FLOW	MAKE & MODEL	LOCATION	CAPACITY (GPM)	CONNECTION SIZE (IN)	OPERATING WEIGHT (LBS.)	REMARKS
AS-1	CHILLED WATER CH-1	125# WP	TACO 4903AD-4	MECH ROOM	113	3"	110	①
AS-2	CHILLED WATER CH-2	125# WP	TACO 4903AD-4	MECH ROOM	113	3"	110	①

CHEMICAL FEEDER SCHEDULE

SYMBOL	SERVICE	MAKE & MODEL	LOCATION	CAPACITY (GAL)	FLANGE SIZE	REMARKS
CSF-1	CHILLED WATER CH-1	CHARDON LABS	MECH ROOM	5	NONE	②
CSF-2	CHILLED WATER CH-2	CHARDON LABS	MECH ROOM	5	NONE	②

NOTES: ① WITH SUCTION DIFFUSER MP VALVE AND FLEXIBLE CONNECTIONS. ② PROVIDED AS PART OF THE CHILLED WATER SYSTEM

PIPING SCHEDULE

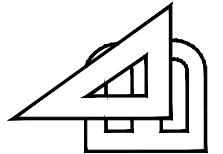
GPM RANGE	SIZE (INCH)
0 - 3	3/4
3.1 - 5.6	1
5.7 - 18	1-1/2
19 - 35	2
36 - 56	2-1/2
57 - 102	3
103 - 208	4
209 - 617	6
618 - 1,275	8
1,276 - 2,320	10
2,321 - 3,525	12

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3
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PRIME CONTRACTOR: POJOAQUE PUEBLO SERVICES



AIR CONDITIONING UNIT SCHEDULE

AC SYMBOL	MANUFACTURER & MODEL NO.	SERVICE	LOCATION	SUPPLY FAN DATA				COOLING				% EER/ IPLV	HEATING GAS (MBTUH)		FILTERS (MERV-8)		UNIT ELECTRICAL							CONTROLS	REFRIGERANT	OPER. WT. (LBS)	REMARKS						
				DRIVE	CFM	E.S.P. IN. W.G.	BHP	MIN. OSA CFM	TOTAL (MBTUH)	SENSIBLE (MBTUH)	EAT		LAT	INPUT	OUTPUT	QNTY	SIZE	COMP.(S)		IFM FLA	POWER EXHA- USTER	FLA	MCA					MOCP	POWER				
											DB							WB	DB										WB	QNTY	RLA (EA)	VOLTS	PHASE
AC-1	TRANE YSC072	1408 CONF/WORK	GRADE	BELT	2,400	0.8	1.07	400	68.24	56.69	78.00	62.80	55.25	52.24	11.0/11.5	80.0	64.80	4	16x25x2	1	10.6	-	4.0	19.6	23.2	34.0	460	3	60	PROGRAMMABLE T'STAT	R-410A	2000	① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

AC NOTES:

- ① PROVIDE WITH 2" THROW AWAY FILTERS (MERV 81 TO MEET ASHRAE TEST STANDARD 52.2) AT MAXIMUM 300 FPM (650 CFM) EACH FILTER.
- ② AMBIENT TEMPERATURE FOR DRY BULB COOLING IS 100°F FOR SELECTION OF ALL AC UNITS. DESIGN AMBIENT FOR "EAT" IS 102°F. MEAN COINCIDENT WET BULB VALUE IS 68°F.
- ③ THE AC UNITS SHALL BE MOUNTED ON LEVEL PREFABRICATED ISOLATION/SEISMIC CURBS COORDINATE INSTALLATION AND NEW LEVEL PAD WITH GENERAL CONTRACTOR.
- ④ PROVIDE FREEZE STAT AT THE COOLING COIL DISCHARGE. DISPLAY ALARM MESSAGE ON ROOM THERMOSTAT.
- ⑤ PROVIDE UNITS WITH A 100% INTEGRATED MODULATING ECONOMIZER/ MODULATING POWER EXHAUSTER (CENTRIFUGAL FAN TYPE) SYSTEM. ECONOMIZERS SHALL BE GEAR DRIVEN LINKAGE TYPE EQUIPPED WITH EXTRA LARGE RELIEF DAMPERS FOR UP TO 100% RELIEF CAPACITY.
- ⑥ PROVIDE STAND ALONE 7 DAY PROGRAMMABLE THERMOSTAT WITH LOCKING COVER AND WITH DISPLAYS.
- ⑦ SCHEDULE OPERATING WEIGHT INCLUDES ALL ACCESSORIES.
- ⑧ PROVIDE STARTER WITH SINGLE POINT POWER CONNECTION MOUNTED AT UNIT WITH DISCONNECT. (SCHEDULE FLA, MCA AND MOCP INCLUDES ALL ACCESSORIES)
- ⑨ PROVIDE WITH HIGH EFFICIENCY MOTOR(S).
- ⑩ PROVIDE WITH VWT SYSTEM INCLUDING CONTROLS AND SENSORS
- ⑪ PROVIDE SMOKE CONTROL PER CMC 609

AIR HANDLING UNITS

SYMBOL	SERVICE	TYPE	LOCATION	SA FAN DATA				COOLING COIL DATA										HEATING COIL DATA						FILTERS			OUTSIDE AIR (CFM)		UNIT ELECTRICAL				OPERATING WEIGHT LBS. (MAX.)	SIZE (MAX.)	REMARKS (SEE AH NOTES.)							
				CFM	S.P. (IN.)	SIZE	MOTOR HP	CAPACITY (MBH)		ENT. COND.		LVG. COND.		WATER FLOW (GPM)	PRESS. DROP		ROWS -FPF	MAX. FACE VELOCITY (FPM)	CAPACITY (MBH)	WATER		PRESS. DROP		AIR		ROWS	EFF. (%)	QTY.	SIZE	MIN. (T-24)	EXIST. (DESIGN)	MCA				FLA	MOCC	VOLT-PH-HZ				
								EXT.	TOTAL	DB	WB	WTR (°F)	AIR °F		WTR (°F)	AIR °F				WTR (°F)	AIR (IN.)	WTR (FT.)	AIR (IN.)	WTR (FT.)	ENT. (°F)														LVG. (°F)	ENT. (°F)	LVG. (°F)	
AH-1	ZONE 1 1ST FLOOR	BLOW THRU	1408 MECH. ROOM	21,550	1.8	3.5	25	25	19.8	332.9	332.9	83.0	63.0	44	68.9	57.7	55	66.6	0.27	2.53	3 98	575	206,895	180	160	21.0	0.4	1.1	65.0	75.0	1	⑬	16	24X24X2	1913	2080	⑪ ⑫	⑪ ⑫	460-3-60	7000	L SHAPE MATCH EXISTING	① THRU. ⑨ ⑫
AH-2	ZONE 2 COMP. ROOM	BLOW THRU	1408 MECH. ROOM	10,005	2.0	3.6	24	10	9.6	197.8	197.8	83.0	63.0	44	62.0	56.4	55	36.9	0.15	1.65	4 87	327	116,200	180	160	11.6	0.14	0.32	58.5	70.2	1	⑬	9	24X24X2	2877	2000	⑪ ⑫	⑪ ⑫	460-3-60	4500	L SHAPE MATCH EXISTING	① THRU. ⑧ ⑩

AH NOTES:

- ① PROVIDE WITH INTERNAL ISOLATION AND SEISMIC RESTRAINT
- ② HARDWIRE EXISTING SA & RA SMOKE DETECTOR TO AIR HANDLING UNIT SHUT-DOWN.
- ③ CONTROL PANEL MOUNTED AT UNIT
- ④ ALL CONTROL PROVIDED AND INSTALLED BY THE BASE CONTRACTED CLIMATEC CONTROL CONTRACTOR
- ⑤ UNIT SHALL BE OF SECTIONALIZED CONSTRUCTION (MAXIMUM 5 FOOT SECTIONS) TO FIT THRU EQUIPMENT ROOM DOOR.
- ⑥ CONTRACTOR SHALL RECORD EXISTING AHU CFM, WATER & AIR TEMPERATURES AND STATIC PRESSURE PRIOR TO DEMOLITION OF EXISTING UNIT.
- ⑦ PROVIDE WITH SINGLE POINT POWER CONNECTION
- ⑧ PROVIDE MOTORS WITH VFDS
- ⑨ PROVIDE WITH T-24 100% ECONOMIZERS AND CONTROLS
- ⑩ NO ECONOMIZER ON EXISTING UNIT
- ⑪ PROVIDED BY ELECTRICAL
- ⑫ PROVIDE WITH ZONE DAMPERS (to be field verified)
- ⑬ PROVIDE WITH 2" FILTER RACK AND 2" THROW AWAY FILTERS (MERV 7 TO MEET ASHRAE TEST STANDARD 52.2) AT MAXIMUM 300FPM (650CFM) EACH FILTER

VVT SCHEDULE

MECHANICAL VENTILATION

A	MANUFACTURER AND MODEL	SIZE	LENGTH	WEIGHT LBS	CFM RANGE		MAX DAMPER SET CFM	REMARKS	B	C	D	E	F	G	H	I	M
					MIN.	MAX.			COND. AREA SQ.FT.	CFM PER SQ.FT.	MIN. CFM AREA	NUM. OF PEOPLE	CFM PER PEO.	MIN. CFM OCCUP.	REQ. D V.A. MAX.	DESIGN V.A. CFM	VVT DMPR MIN. SET CFM
ZD1-1	ZD SEE NOTE #3	14"φ	20"	27	640	1710	1100	SEE VVT NOTES.	600	.15	90	4	15	60	90	-	90
ZD1-2	ZD SEE NOTE #3	14"φ	20"	27	640	1710	1000	SEE VVT NOTES.	300	.15	45	10	15	150	150	-	120
CV-3	---	---	---	---	---	---	300	---	400	.15	60	0	15	0	60	-	60
BP-6	BP SEE NOTE #3	20"φ	20"	30	470	2400	1500	SEE VVT NOTES.	(1300)	-	(195)	(14)	-	(210)	(300)	(300)	-

- VVT NOTES:**
- 24VAC TRANSFORMER (FIELD SUPPLIED AND INSTALLED).
 - PROVIDE 120V-1PHASE LESS THAN 1AMP.
 - ALL VVT BOXES SHALL BE WITH DDC CONTROL OR EQUAL.
 - ALL DAMPERS SHALL BE AS INDICATED OR EQUAL.
 - ALL DAMPERS SHOULD BE PROVIDED WITH 120V OR 24 VAC POWER.
 - PROVIDE TRANSITIONS FROM SCHEDULED CONNECTING DUCT SIZES TO DAMPER SIZES.

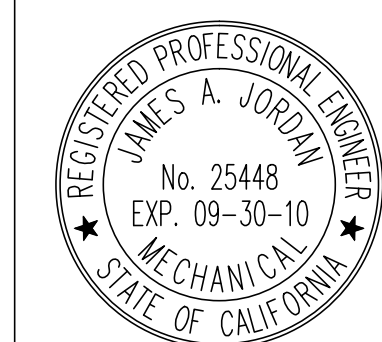
V.A. NOTES:
1. TOTALS ARE SHOWN AS: (XXX).

FORMULA
D=BxC
G=ExF
H=MAX. OF E OR G
I=SYSTEM MIN. OSA SETTING

AIR OUTLET SCHEDULE

SYMBOL	TYPE	NECK SIZE IN.	FRAME SIZE IN.	RATED CFM	AT RATED CFM		CONN DUCT SIZE UON	REMARKS
					MAX. PD IN.WG	MAX. NOISE CRITERIA		
CD-1	SUPPLY	15X15	24X24	0-600	0.09	35	12"φ	KRUEGER PERFORATED TYPE 1100 W/ O.B.D. & R.N.R. WHERE REQD.
CD-2	SUPPLY	16"φ	4 RING	0-1100	0.09	35	16"φ	KRUEGER ROUND TYPE RM1 W/ O.B.D.
CD-3	SUPPLY	8x6	10x8	0-460	0.09	35	8x6	KRUEGER SIDE WALL TYPE 880 W/ O.B.D.
RAR/ER-1	RETURN	22X22	24X24	1000-1300	0.09	35	16"φ	KRUEGER PERFORATED TYPE 1190 W/ O.B.D. & R.N.R. WHERE REQD.
RAR/ER-2	RETURN	22X22	24X24	1000-1300	0.09	35	16X16	↓ ↓ ↓

PRIME CONTRACTOR: POJUAQUE PUEBLO SERVICES



CAMARILLO OFFICE: 2011 GLENDALE OFFICE
 11000 CAMARILLO BLVD. #100 GLENDALE, CA 91203
 TEL: (626)987-4001 TEL: (626)987-4000
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BUDLONG & ASSOCIATES, INC.
 CONSULTING ENGINEERS

DESIGN FOR:
BUILDING 1408
REPLACE CHILLER, BOILER AND AHU'S
 EDWARDS AIR FORCE BASE, CALIFORNIA 93523-8450

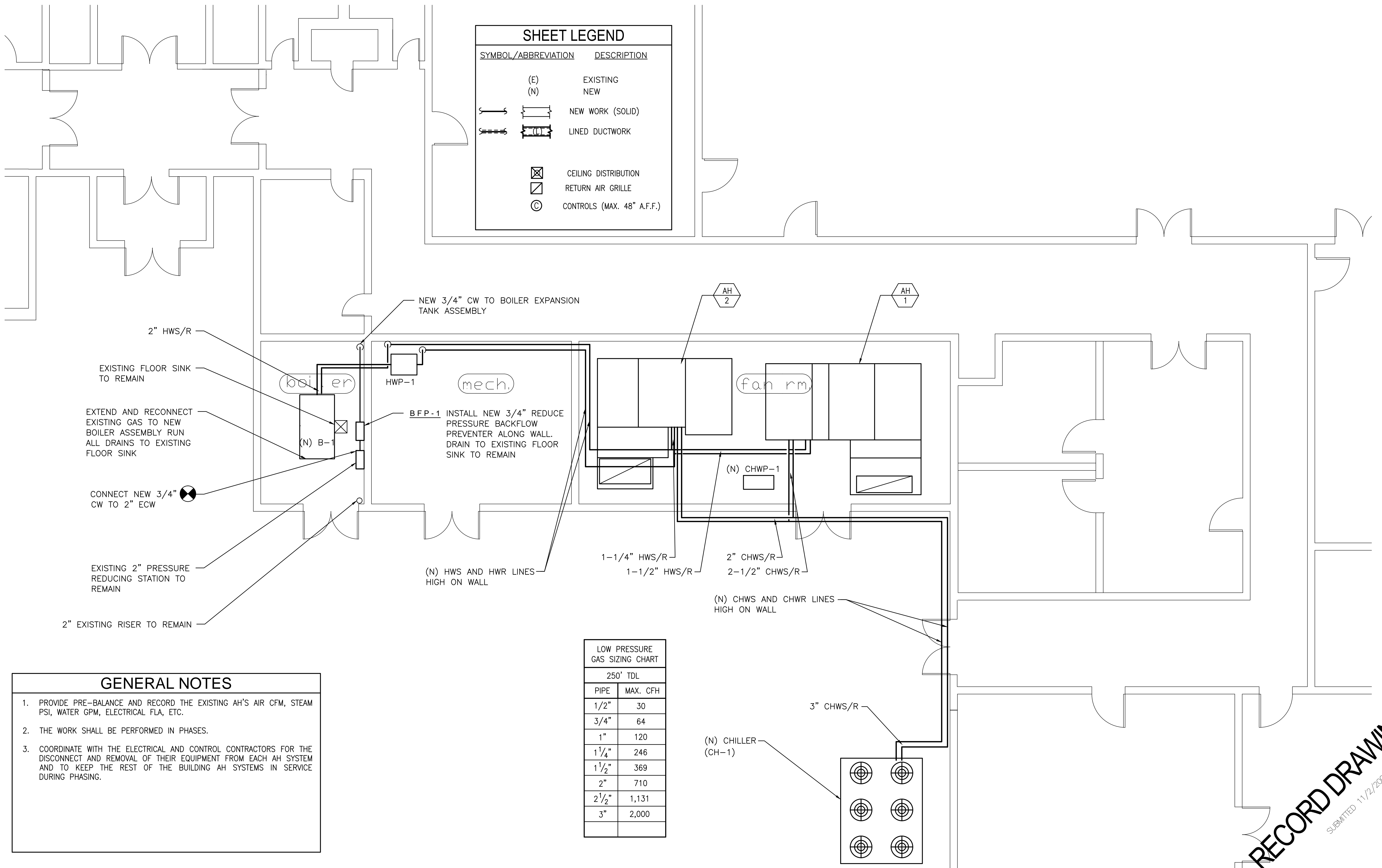
QUOTE/DWG #: _____
 DRAWN BY: TS
 CHECKED BY: _____
 DATE: 12/05/2008
 SCALE: AS NOTED
 REVISION HISTORY
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 3 _____
 4 _____
 5 _____
 PROJECT: FA9301-06-D-0010
M1.3

RECORD DRAWINGS

SUBMITTED 11/21/2008

J:\08-008 - EMB Building 1408 - Chiller, Boiler, AHU's - Western\08-008 - M1.3 Equipment Schedules.dwg, 11/2/2008 9:20:51 AM

SHEET LEGEND	
SYMBOL/ABBREVIATION	DESCRIPTION
(E)	EXISTING
(N)	NEW
	NEW WORK (SOLID)
	LINED DUCTWORK
	CEILING DISTRIBUTION
	RETURN AIR GRILLE
	CONTROLS (MAX. 48" A.F.F.)

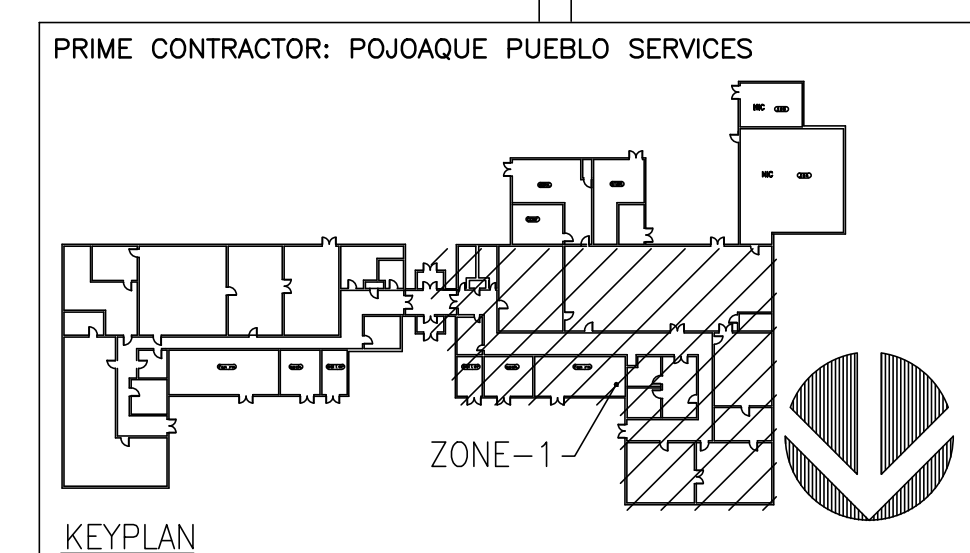


- GENERAL NOTES**
1. PROVIDE PRE-BALANCE AND RECORD THE EXISTING AH'S AIR CFM, STEAM PSI, WATER GPM, ELECTRICAL FLA, ETC.
 2. THE WORK SHALL BE PERFORMED IN PHASES.
 3. COORDINATE WITH THE ELECTRICAL AND CONTROL CONTRACTORS FOR THE DISCONNECT AND REMOVAL OF THEIR EQUIPMENT FROM EACH AH SYSTEM AND TO KEEP THE REST OF THE BUILDING AH SYSTEMS IN SERVICE DURING PHASING.

LOW PRESSURE GAS SIZING CHART
250' TDL

PIPE	MAX. CFH
1/2"	30
3/4"	64
1"	120
1 1/4"	246
1 1/2"	369
2"	710
2 1/2"	1,131
3"	2,000

1 ZONE-1 MECHANICAL ROOM NEW WORK
SCALE: 1/4"=1'-0"



RECORD DRAWINGS
SUBMITTED 11/21/2008

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EDWARDS AIR FORCE BASE, CALIFORNIA 93523-8450

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CHECKED BY:

DATE: 12/05/2008
SCALE: AS NOTED

REVISION HISTORY

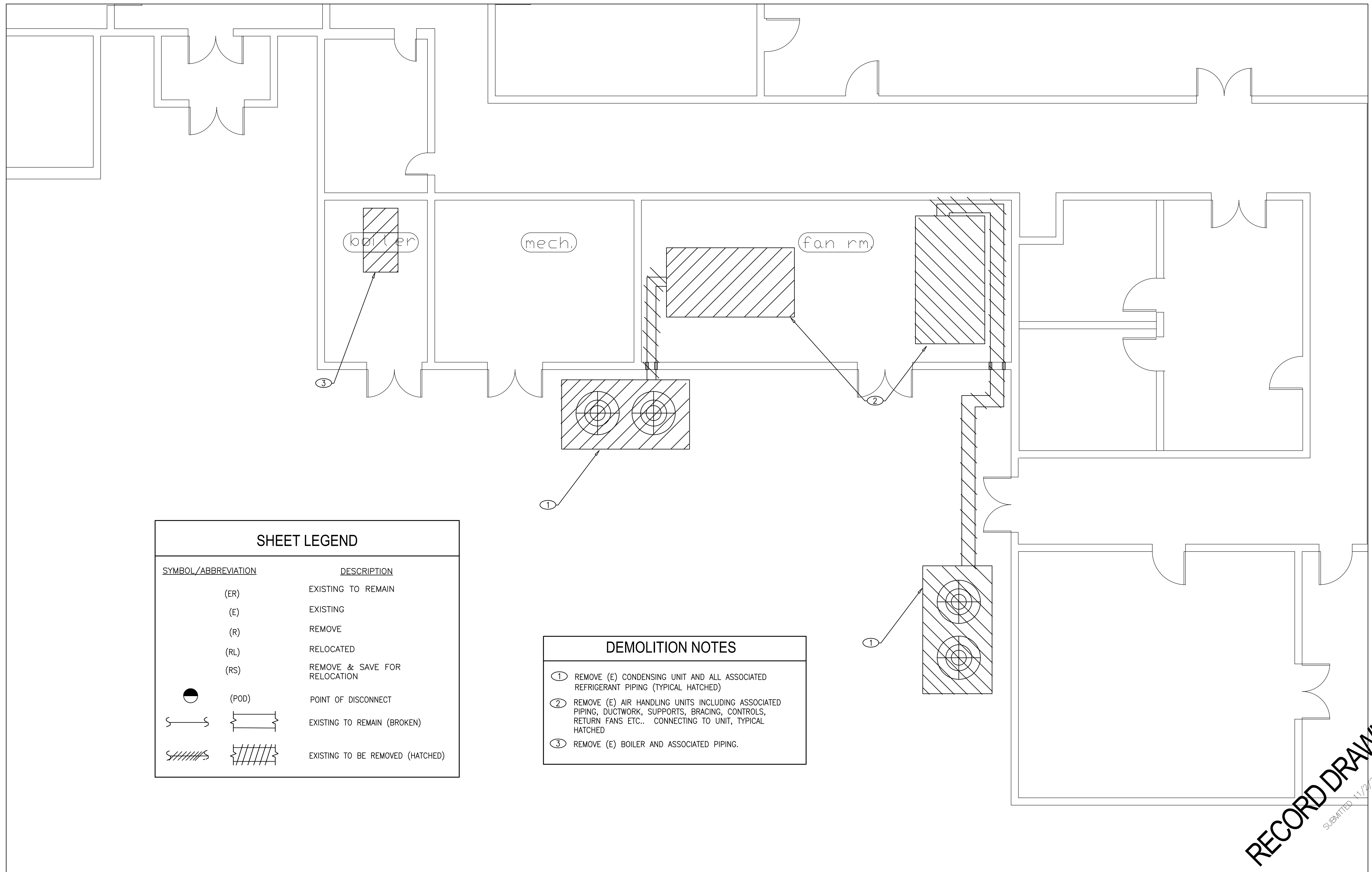
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PRIME CONTRACTOR: POJOAQUE PUEBLO SERVICES

PROJECT
FA9301-06-D-0010
M2.1

J:\08-038 - EMB Building 1408 - Chiller, Boiler, AHU's - Western\08-038 - M2.1\Zone 1 - New work.dwg, 11/22/2008 9:21:09 AM

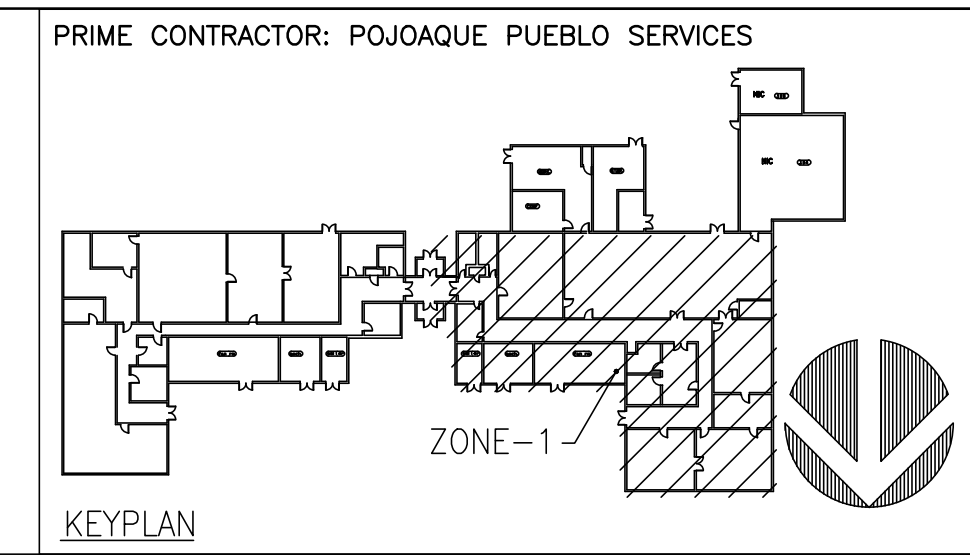
J:\08-038 - EMB Building 1408 - Chiller, Boiler, AHU's - Western\08-038 - M2.1D Zone 1 - Demolition.dwg, 11/2/2008 9:21:25 AM



SHEET LEGEND	
SYMBOL/ABBREVIATION	DESCRIPTION
(ER)	EXISTING TO REMAIN
(E)	EXISTING
(R)	REMOVE
(RL)	RELOCATED
(RS)	REMOVE & SAVE FOR RELOCATION
● (POD)	POINT OF DISCONNECT
	EXISTING TO REMAIN (BROKEN)
	EXISTING TO BE REMOVED (HATCHED)

DEMOLITION NOTES	
①	REMOVE (E) CONDENSING UNIT AND ALL ASSOCIATED REFRIGERANT PIPING (TYPICAL HATCHED)
②	REMOVE (E) AIR HANDLING UNITS INCLUDING ASSOCIATED PIPING, DUCTWORK, SUPPORTS, BRACING, CONTROLS, RETURN FANS ETC.. CONNECTING TO UNIT, TYPICAL HATCHED
③	REMOVE (E) BOILER AND ASSOCIATED PIPING.

1
-
ZONE-1 MECHANICAL ROOM DEMOLITION
SCALE: 1/4"=1'-0"



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DESIGN FOR:
BUILDING 1408
REPLACE CHILLER, BOILER AND AHU'S
 EDWARDS AIR FORCE BASE, CALIFORNIA 93523-8450

QUOTE/DWG #:

DRAWN BY:
TS

CHECKED BY:

DATE:
12/05/2008

SCALE:
AS NOTED

REVISION HISTORY

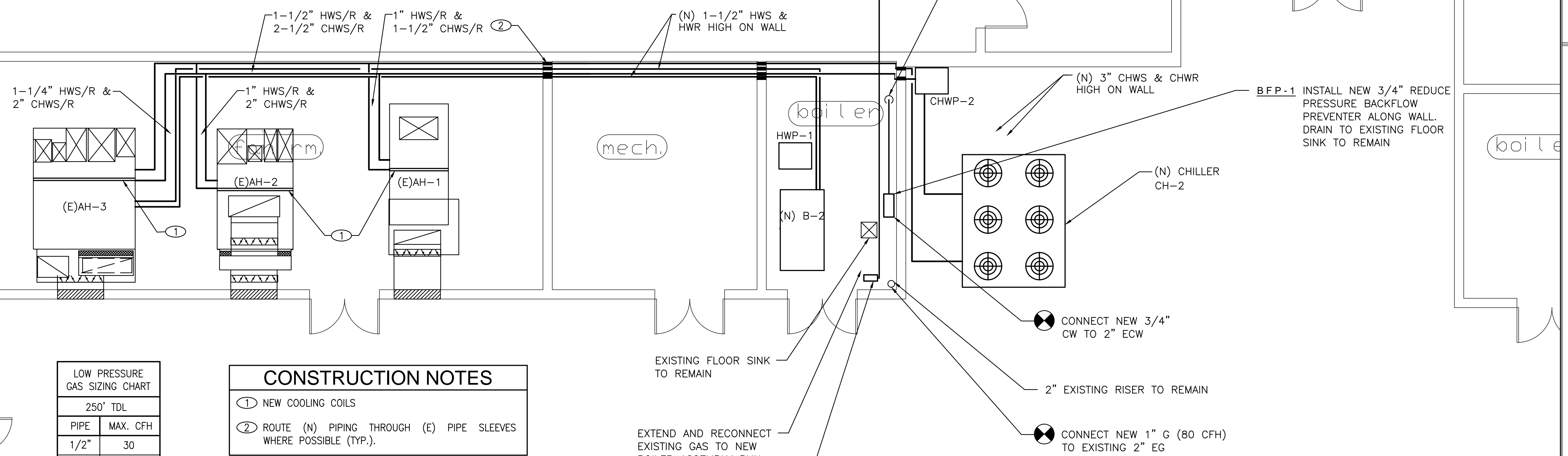
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PROJECT
FA9301-06-D-0010

M2.1D

RECORD DRAWINGS
 SUBMITTED 11/24/2008

SHEET LEGEND	
SYMBOL/ABBREVIATION	DESCRIPTION
(E)	EXISTING
(N)	NEW
	NEW WORK (SOLID)
	LINED DUCTWORK
	CEILING DISTRIBUTION
	RETURN AIR GRILLE
	CONTROLS (MAX. 48" A.F.F.)



PIPE	MAX. CFH
1/2"	30
3/4"	64
1"	120
1 1/4"	246
1 1/2"	369
2"	710
2 1/2"	1,131
3"	2,000

CONSTRUCTION NOTES

① NEW COOLING COILS

② ROUTE (N) PIPING THROUGH (E) PIPE SLEEVES WHERE POSSIBLE (TYP.).

GENERAL NOTES

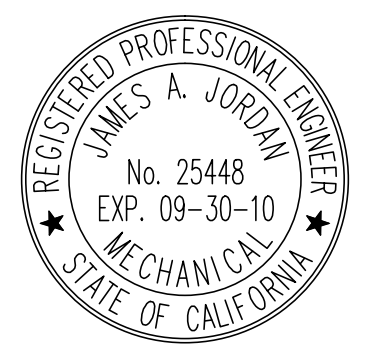
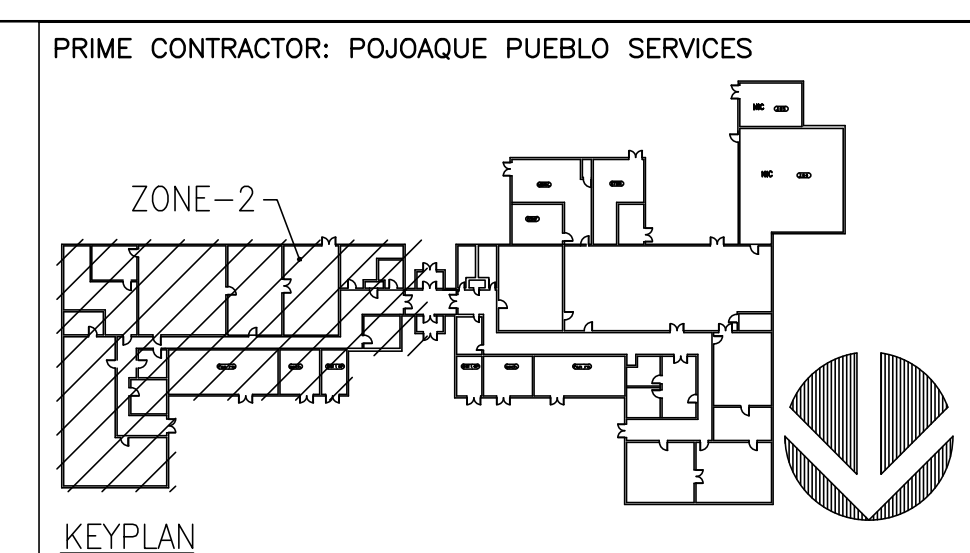
1. PROVIDE PRE-BALANCE AND RECORD THE EXISTING AH'S AIR CFM, STEAM PSI, WATER GPM, ELECTRICAL FLA, ETC.
2. THE WORK SHALL BE PERFORMED IN PHASES.
3. COORDINATE WITH THE ELECTRICAL AND CONTROL CONTRACTORS FOR THE DISCONNECT AND REMOVAL OF THEIR EQUIPMENT FROM EACH AH SYSTEM AND TO KEEP THE REST OF THE BUILDING AH SYSTEMS IN SERVICE DURING PHASING.

EXISTING FLOOR SINK TO REMAIN

EXTEND AND RECONNECT EXISTING GAS TO NEW BOILER ASSEMBLY RUN ALL DRAINS TO EXISTING FLOOR SINK

EXISTING 2" PRESSURE REDUCING STATION TO REMAIN

1
ZONE-2 MECHANICAL ROOM NEW WORK
SCALE: 1/4"=1'-0"



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2012
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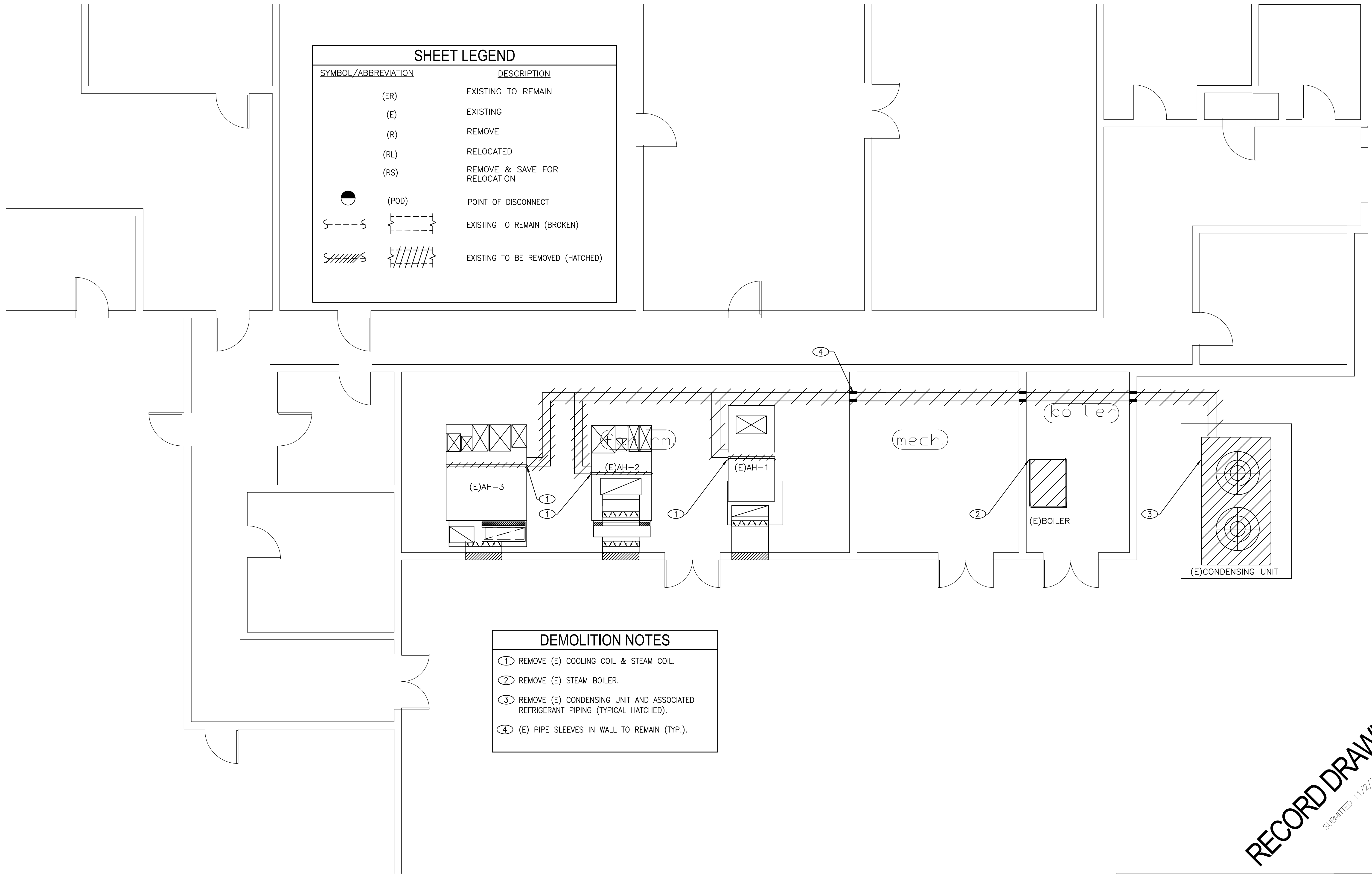


DESIGN FOR:
BUILDING 1408
REPLACE CHILLER, BOILER AND AHU'S
EDWARDS AIR FORCE BASE, CALIFORNIA 93523-8450

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DRAWN BY: TS
CHECKED BY:
DATE: 12/05/2008
SCALE: AS NOTED
REVISION HISTORY
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PROJECT FA9301-06-D-0010
M2.2

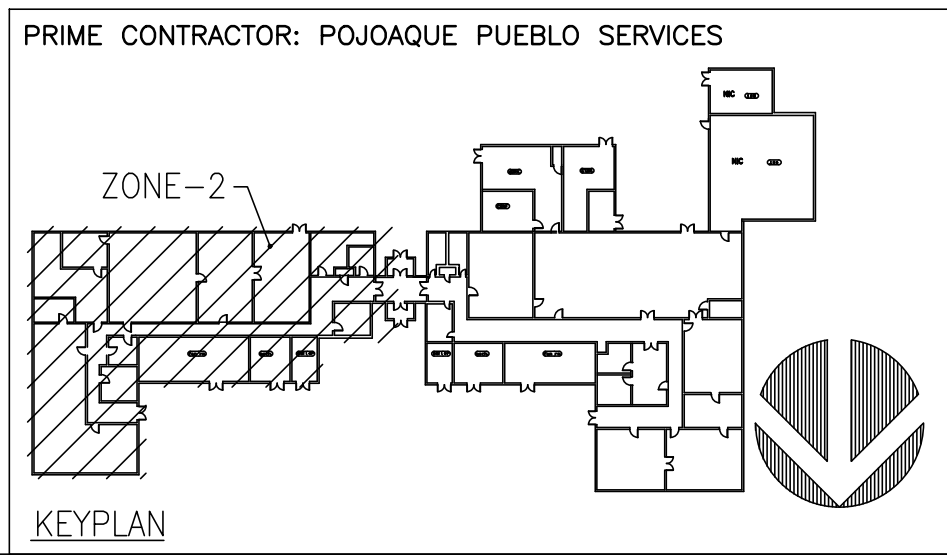
RECORD DRAWINGS
SUBMITTED 11/21/2008

SYMBOL/ABBREVIATION	DESCRIPTION
(ER)	EXISTING TO REMAIN
(E)	EXISTING
(R)	REMOVE
(RL)	RELOCATED
(RS)	REMOVE & SAVE FOR RELOCATION
●	(POD) POINT OF DISCONNECT
⋯	EXISTING TO REMAIN (BROKEN)
////	EXISTING TO BE REMOVED (HATCHED)



DEMOLITION NOTES	
①	REMOVE (E) COOLING COIL & STEAM COIL.
②	REMOVE (E) STEAM BOILER.
③	REMOVE (E) CONDENSING UNIT AND ASSOCIATED REFRIGERANT PIPING (TYPICAL HATCHED).
④	(E) PIPE SLEEVES IN WALL TO REMAIN (TYP.).

1
-
ZONE-2 MECHANICAL ROOM NEW WORK
SCALE: 1/4"=1'-0"



RECORD DRAWINGS
SUBMITTED 11/21/2008

GLENDALE OFFICE
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JOB NO. 08-036

DESIGN FOR:
BUILDING 1408
REPLACE CHILLER, BOILER AND AHU'S
EDWARDS AIR FORCE BASE, CALIFORNIA 93523-8450

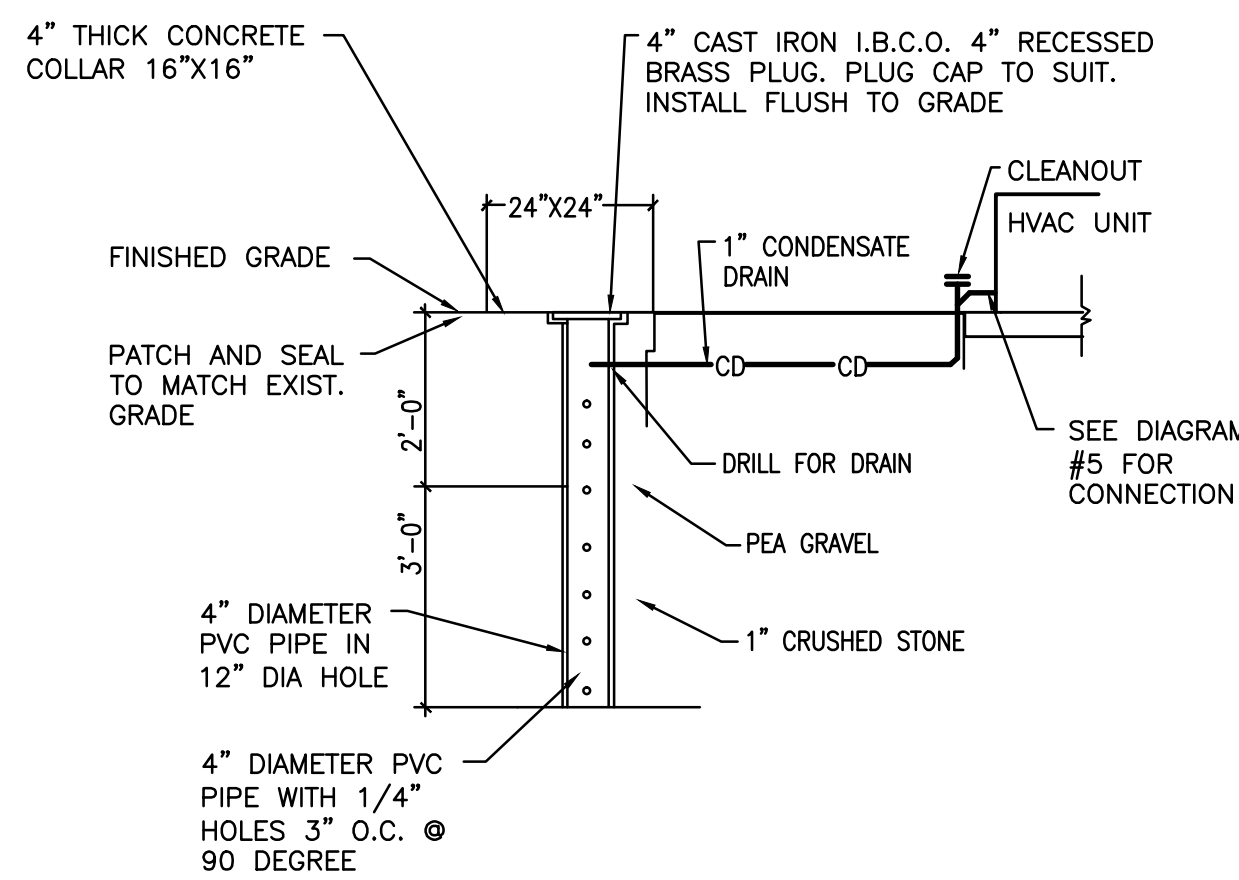
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CHECKED BY:	
DATE:	12/05/2008
SCALE:	AS NOTED
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PROJECT	FA9301-06-p-0010
M2.2D	

LOW PRESSURE GAS SIZING CHART	
250' TDL	
PIPE	MAX. CFH
1/2"	30
3/4"	64
1"	120
1 1/4"	246
1 1/2"	369
2"	710
2 1/2"	1,131
3"	2,000

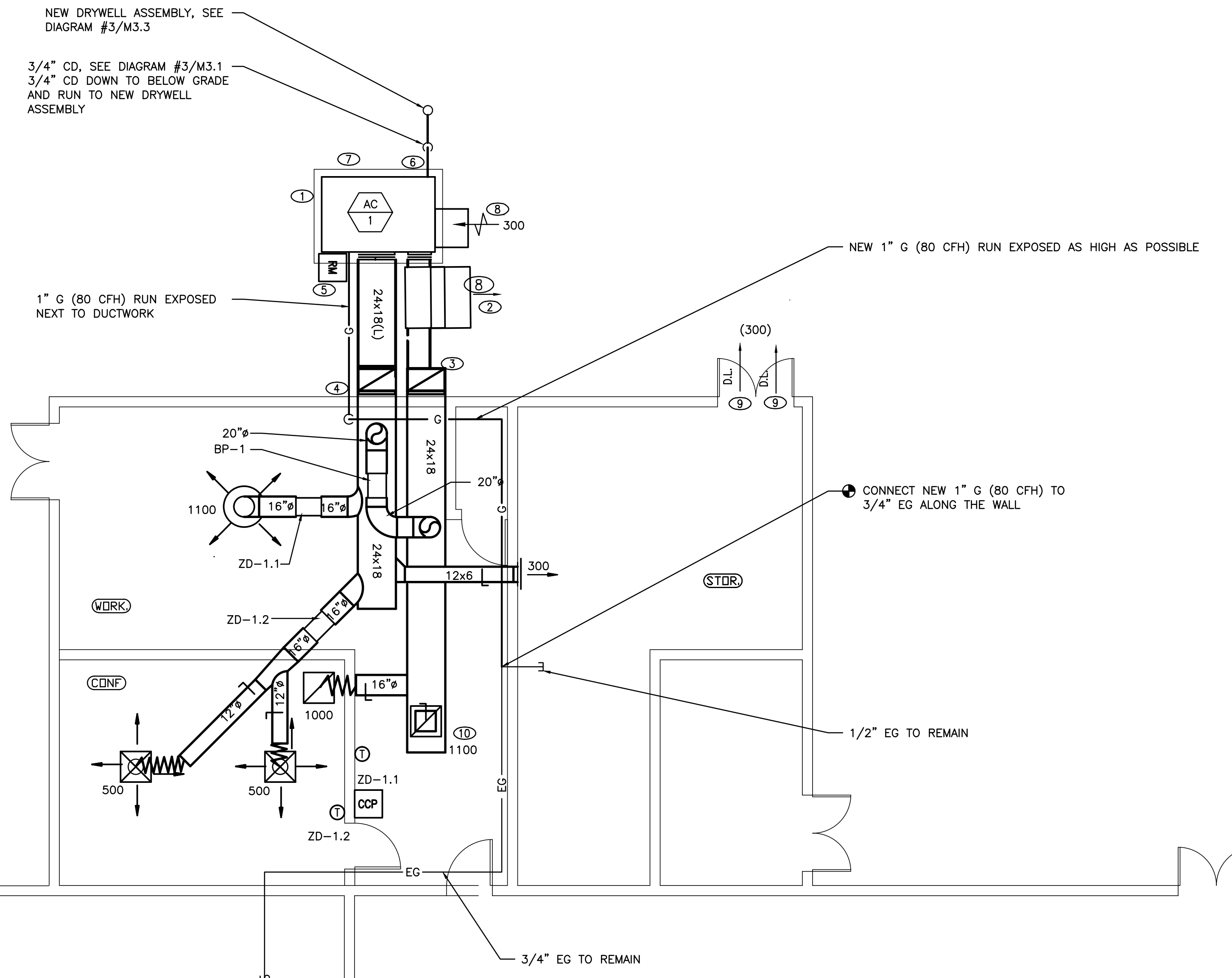
- CONSTRUCTION NOTES**
- 6" CONCRETE PAD ON GRADE BY GC.
 - MODULATING POWER EXHAUSTER
 - RA 18x24(1L) UP WALL & ELBOW INTO ATTIC SPACE. CAP AIRTIGHT AT BOTTOM AND CONNECT 16x26(1L) INTO SIDE OF 18x28 DUCT.
 - SA 24x18(1L) ELBOW UP WALL & ELBOW INTO ATTIC SPACE. PROVIDE TURN VANES AT ALL ELBOWS. CONTINUE AND CONNECT TO UNIT OPENING SIZE WITH
 - RELAY MODULE CONNECTS TO FIRE ALARM SYSTEM TO SHUT DOWN UNIT IF THERE IS SMOKE (SEE ELECTRICAL DRAWINGS FOR EXACT LOCATION).
 - DIVISION 16 SHALL BE RESPONSIBLE FOR LIGHT FIXTURE TEMPORARY REMOVAL AND RECONNECT AFTER PROJECT COMPLETION.
 - EXTEND EXISTING GAS FROM CAPPED STUB IN STORAGE ROOM (SEE PLUMBING).
 - DISCHARGE CONDENSATE DRAIN TO GRADE (SEE PLUMBING).
 - RELIEF THROUGH EXISTING DOOR LOUVERS.
 - 16x16 DROP FROM UNDERSIDE OF DUCT WITH MVD AND RAR.

SHEET LEGEND

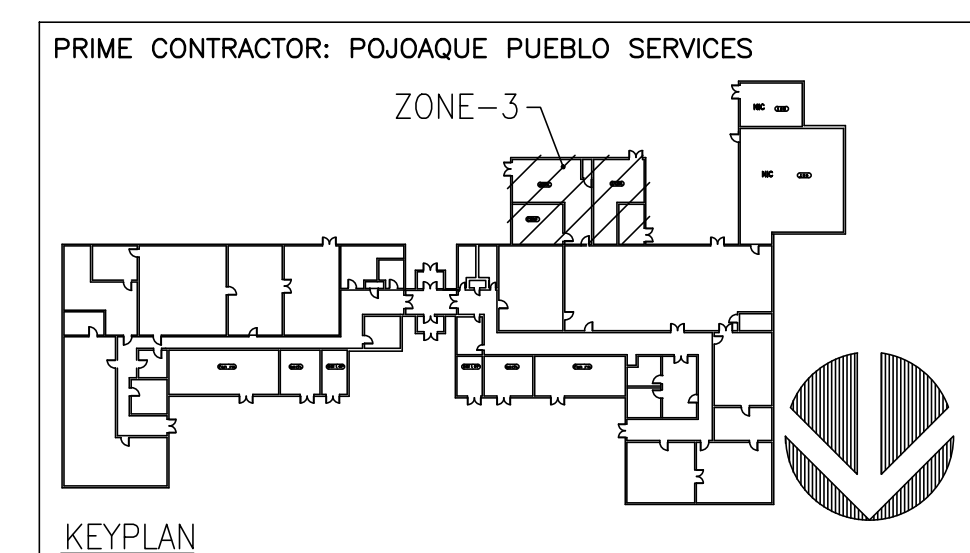
SYMBOL/ABBREVIATION	DESCRIPTION
(E)	EXISTING
(N)	NEW
—	NEW WORK (SOLID)
---	LINED DUCTWORK
○	ROUND DIFFUSER
⊠	CEILING DISTRIBUTION
⊞	RETURN AIR GRILLE
⊙	THERMOSTAT (MAX. 48" A.F.F.)
D.L.	DOOR LOUVER
—	SIDE WALL REGISTER/GRILLE



DRYWELL DIAGRAM
SCALE: NONE



1
ZONE-3 MECHANICAL ROOM NEW WORK
SCALE: 1/4"=1'-0"



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10000 CAMARILLO BLVD.
CAMARILLO, CA 93012
TEL: (805)987-4001
FAX: (805)987-4044

JOB NO. 08-036

BUDLONG & ASSOCIATES, INC.
CONSULTING ENGINEERS

DESIGN FOR:
BUILDING 1408
REPLACE CHILLER, BOILER AND AHU'S
EDWARDS AIR FORCE BASE, CALIFORNIA 93523-8450

QUOTE/DWG #:

DRAWN BY:
TS

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DATE:
12/05/2008

SCALE:
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REVISION HISTORY

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PROJECT
FA9301-06-D-0010

M2.3

RECORD DRAWINGS
SUBMITTED 11/21/2008

KEY NOTES

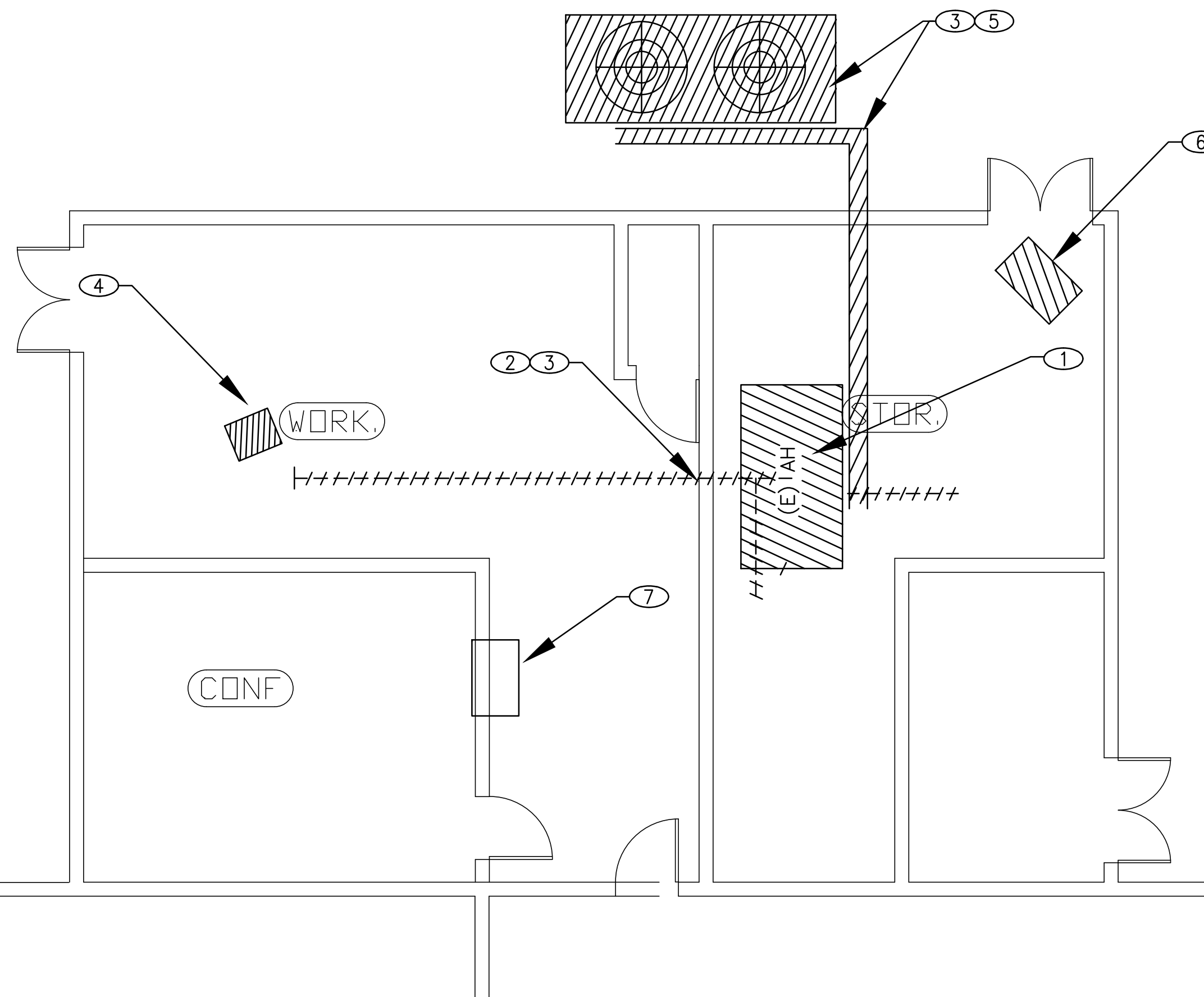
1. PROVIDE PRE-BALANCE AND RECORD THE EXISTING AH'S AIR CFM, STEAM PSI, AND WATER GPM, ELECTRICAL FLA ETC.
2. THE WORK SHALL BE PERFORM IN PHASES
3. COORDINATE WITH THE ELECTRICAL AND THE CONTROL CONTRACTORS FOR THE DISCONNECT AND REMOVAL OF THEIR EQUIPMENT FROM EACH AH SYSTEMS AND TO KEEP THE REST OF THE BUILDING AH SYSTEMS IN SERVICE DURING PHASING.

DEMOLITION NOTES

- 1 REMOVE (E) AIR HANDLING UNITS INCLUDING ASSOCIATED PIPING, DUCTWORK, SUPPORTS, BRACING, CONTROLS, RETURN FANS ETC... CONNECTING TO UNIT, TYPICAL HATCHED
- 2 REMOVE EXISTING DUCTWORK, AIR DISTRIBUTION DEVICES, SUPPORTS, BRACING, ETC. FROM EXISTING TO BE REMOVED AH, UP WALL AND ACROSS CEILING.
- 3 PATCH AND SEAL ALL WALL PENETRATIONS TO MATCH EXISTING CONDITIONS.
- 4 REMOVE EXISTING RADIANT HEATER. INCLUDING ASSOCIATED PIPING, SUPPORTS, BRACING, CONTROLS, ELECTRICAL ETC. CONNECTING TO UNIT, CAP AND SEAL EXISTING GAS LINE AND FLUE
- 5 REMOVE EXISTING CONDENSING UNIT AND ASSOCIATED REFRIGERANT PIPING, CONTROLS, ELECTRICAL, ETC.
- 6 REMOVE EXISTING SPACE HEATER. INCLUDING ASSOCIATED PIPING, SUPPORTS, BRACING, CONTROLS, ELECTRICAL ETC. CONNECTING TO UNIT, CAP AND SEAL EXISTING GAS LINE AND FLUE
- 7 (E) THROUGH-WALL AC UNIT AND ASSOCIATED PIPING, CONTROLS, ELECTRICAL, ETC TO REMAIN.

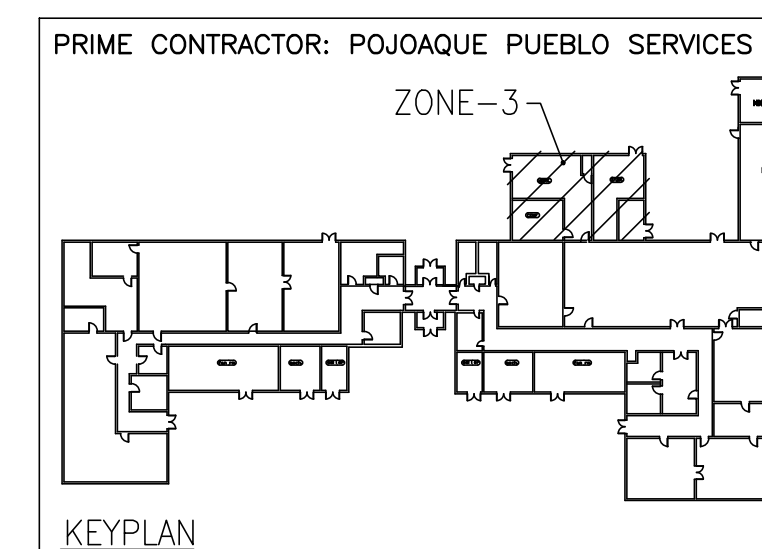
SHEET LEGEND

SYMBOL/ABBREVIATION	DESCRIPTION
(ER)	EXISTING TO REMAIN
(E)	EXISTING
(R)	REMOVE
(RL)	RELOCATED
(RS)	REMOVE & SAVE FOR RELOCATION
●	(POD) POINT OF DISCONNECT
--- ---	EXISTING TO REMAIN (BROKEN)
////	EXISTING TO BE REMOVED (HATCHED)



1
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ZONE-3 MECHANICAL ROOM NEW WORK
SCALE: 1/4"=1'-0"

RECORD DRAWINGS
SUBMITTED 11/21/2008



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10101 GLENDALE BLVD. SUITE 201
GLENDALE, CA 91205
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FAX: (626)987-4004

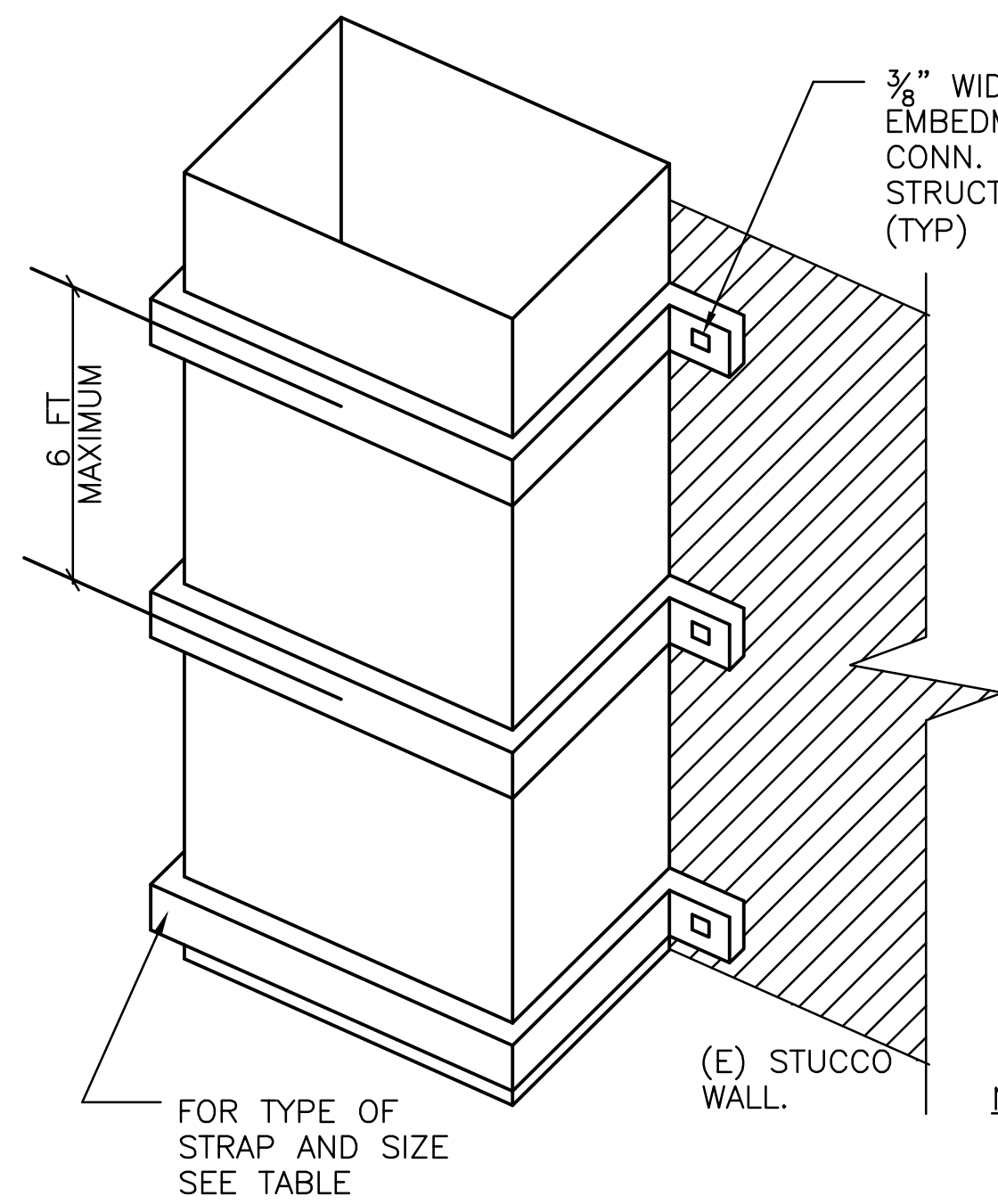
CAMARILLO OFFICE
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CAMARILLO, CA 93012
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FAX: (805)987-4004

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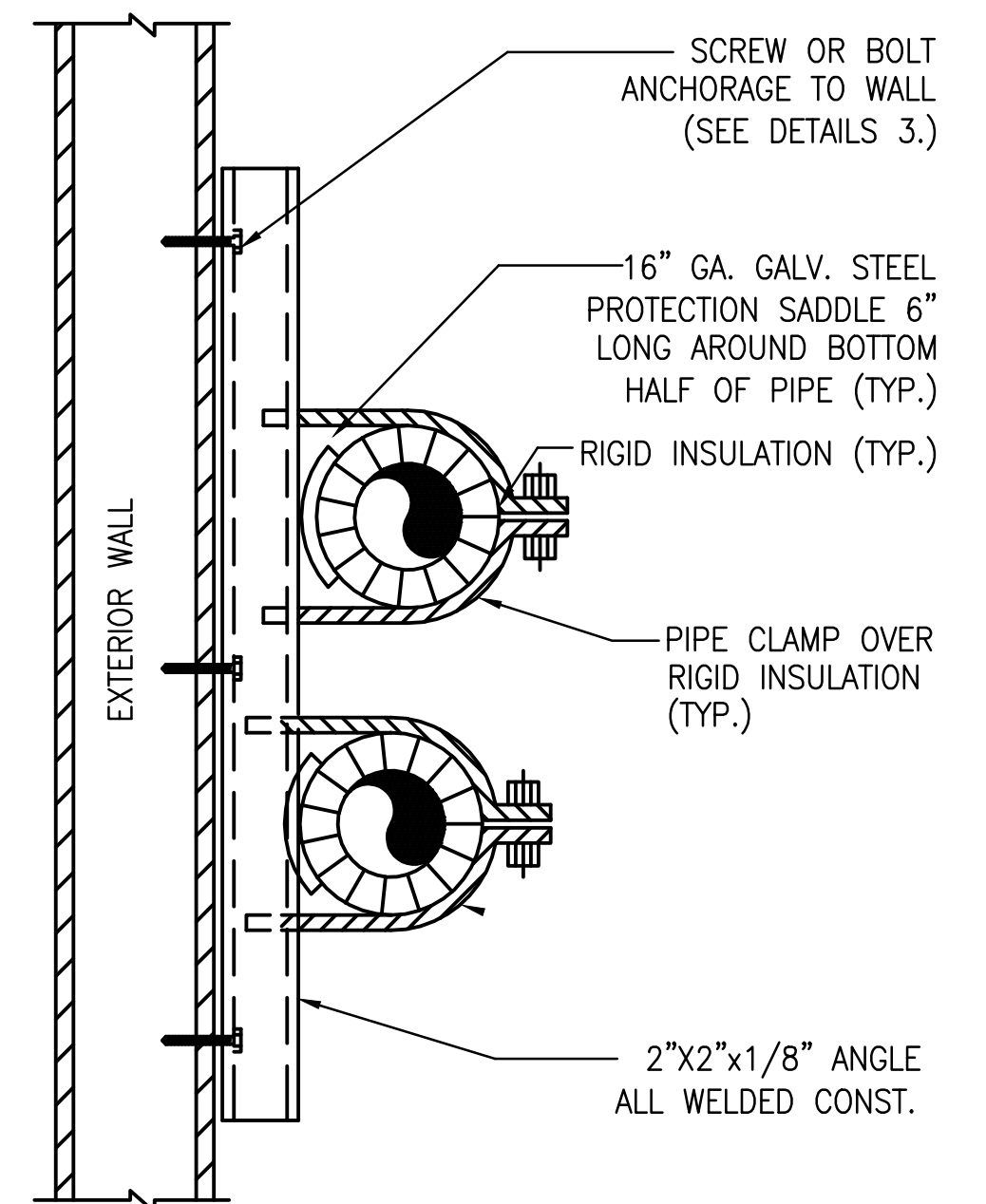
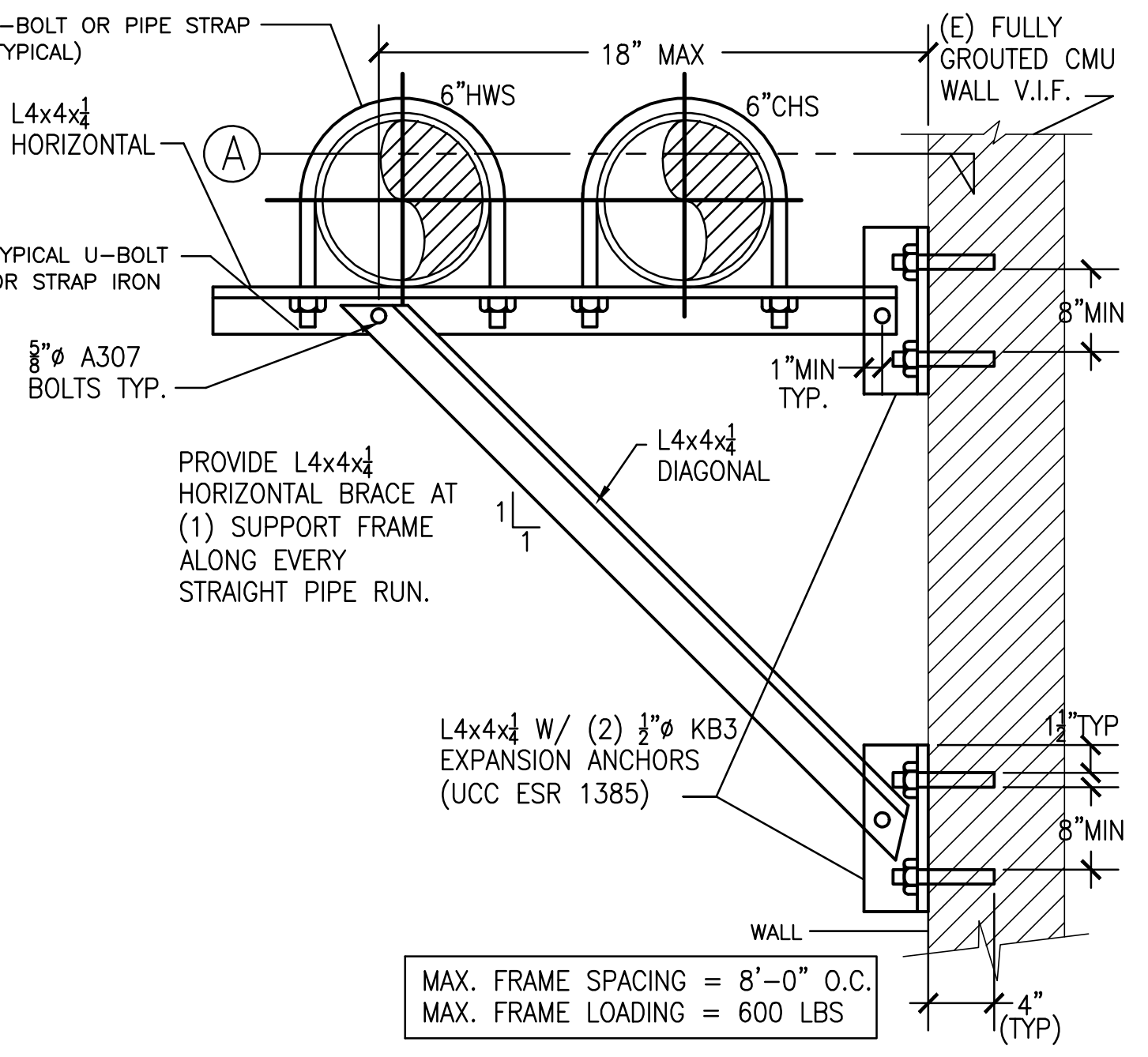
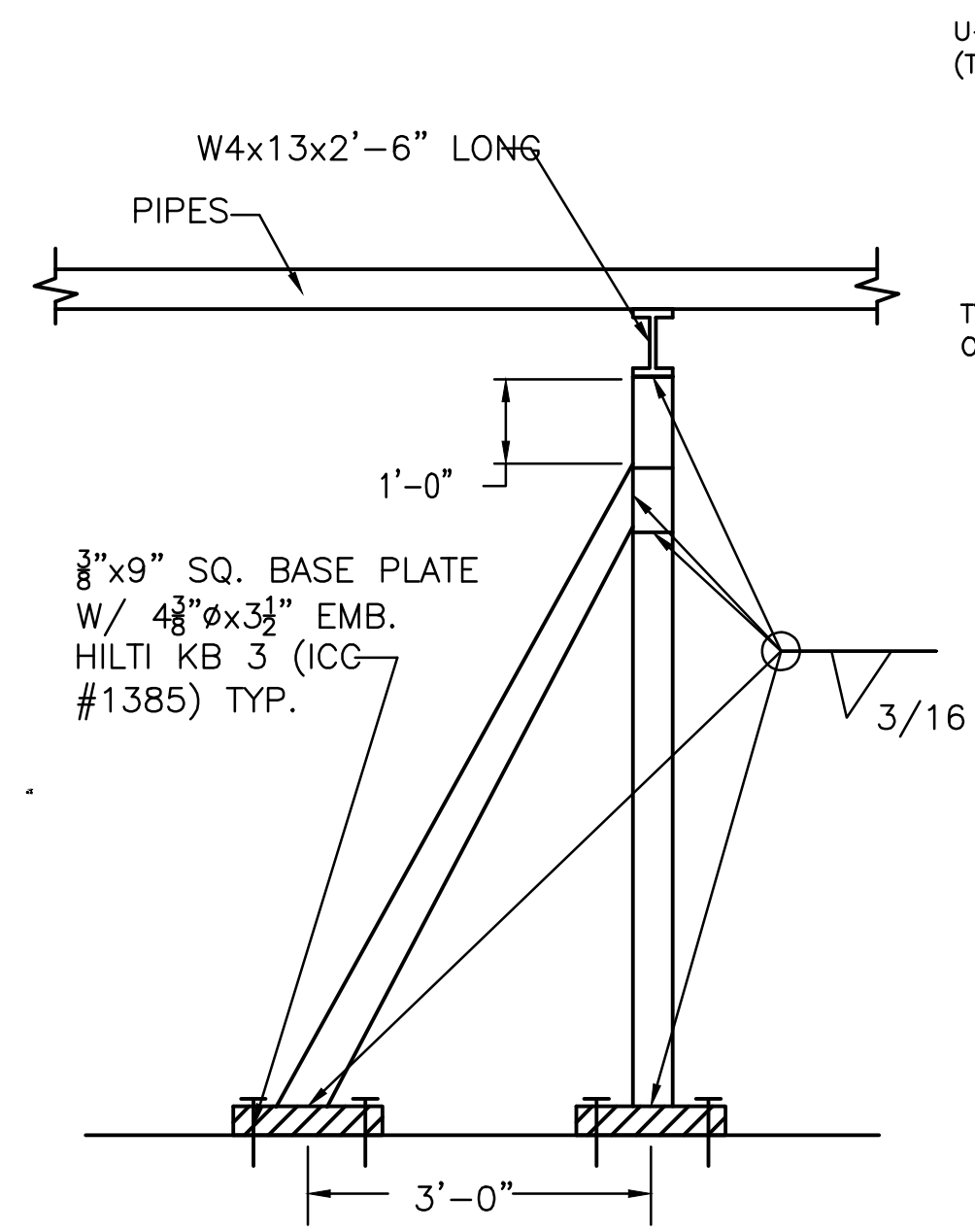
DESIGN FOR:
BUILDING 1408
REPLACE CHILLER, BOILER AND AHU'S
EDWARDS AIR FORCE BASE, CALIFORNIA 93523-8450

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DATE:	12/05/2008
SCALE:	AS NOTED
REVISION HISTORY	
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PROJECT	FA9301-06-D-0010
M2.3D	



VERTICAL DUCTS SUPPORT			
MAXIMUM SIDE OF RECTANGULAR DUCT	METAL STRAP OR ANGLE BRACKET	MAXIMUM DIAMETER OF ROUND DUCTS	STRAP
24"	1"x $\frac{1}{8}$ " STRAP \odot	10"	0.047" (NO. 18 GAGE) GALVANIZED STEEL 2" WIDE \odot
36"	1"x1"x $\frac{1}{8}$ " ANGLE \odot	20"	0.058" (NO. 16 GAGE) GALVANIZED STEEL 2" SIDE \odot
48"	1 $\frac{1}{8}$ "x1 $\frac{1}{8}$ "x $\frac{1}{8}$ " ANGLE \odot	40"	$\frac{1}{8}$ " STEELx1 $\frac{1}{2}$ " \odot
60"	1 $\frac{1}{2}$ "x1 $\frac{1}{2}$ "x $\frac{1}{8}$ " ANGLE \odot	60"	$\frac{1}{8}$ " STEELx2" \odot
OVER 60"	2"x2"x $\frac{1}{8}$ " STRAP \odot	OVER 60"	$\frac{3}{16}$ " STEELx2" \odot

NOTE:
 ① SPACED VERTICALLY NOT MORE THAN 12 FEET ON CENTERS.

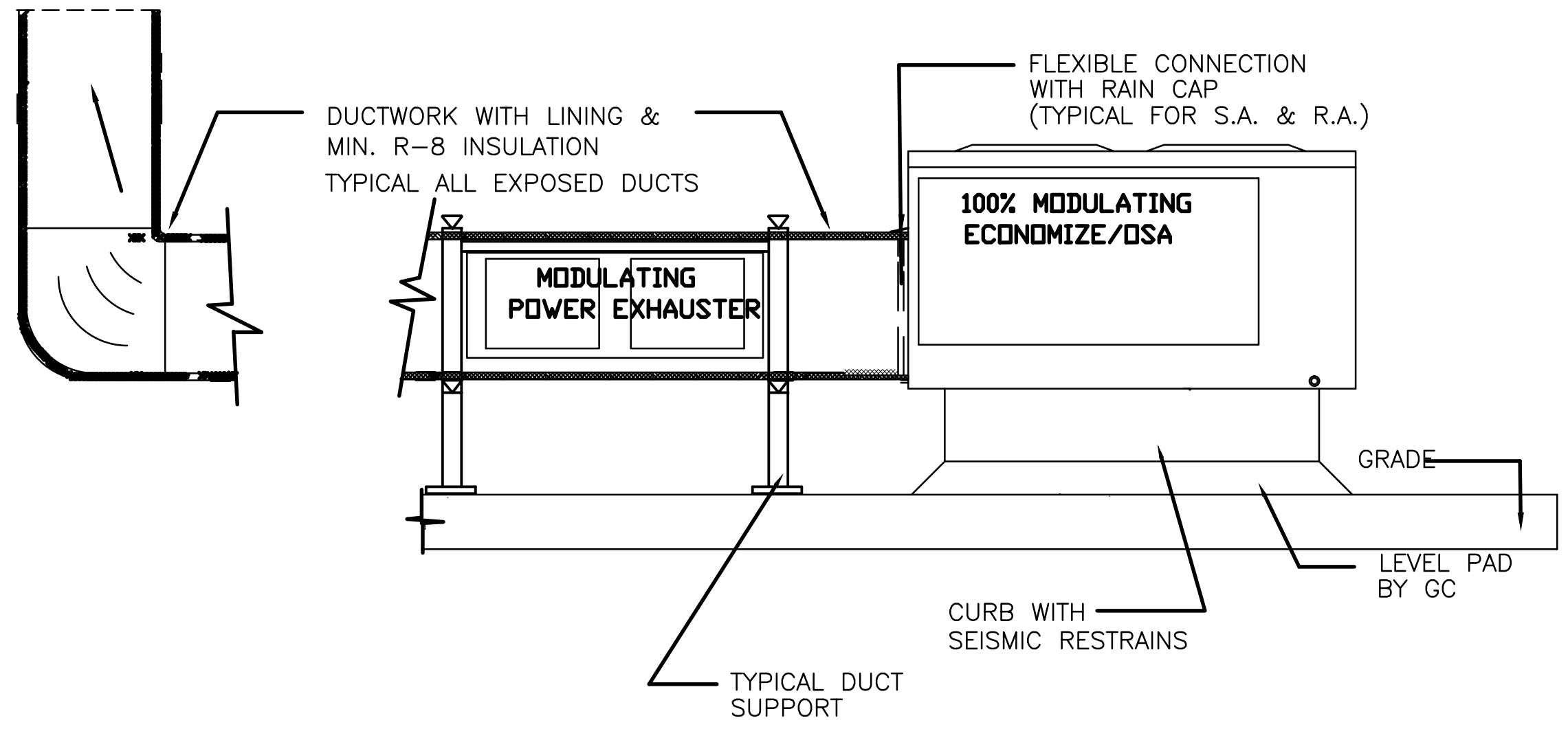


DUCT SUPPORT FROM WALL DETAIL

SCALE NONE 4

PIPE MOUNTING DETAIL

SCALE NONE 1

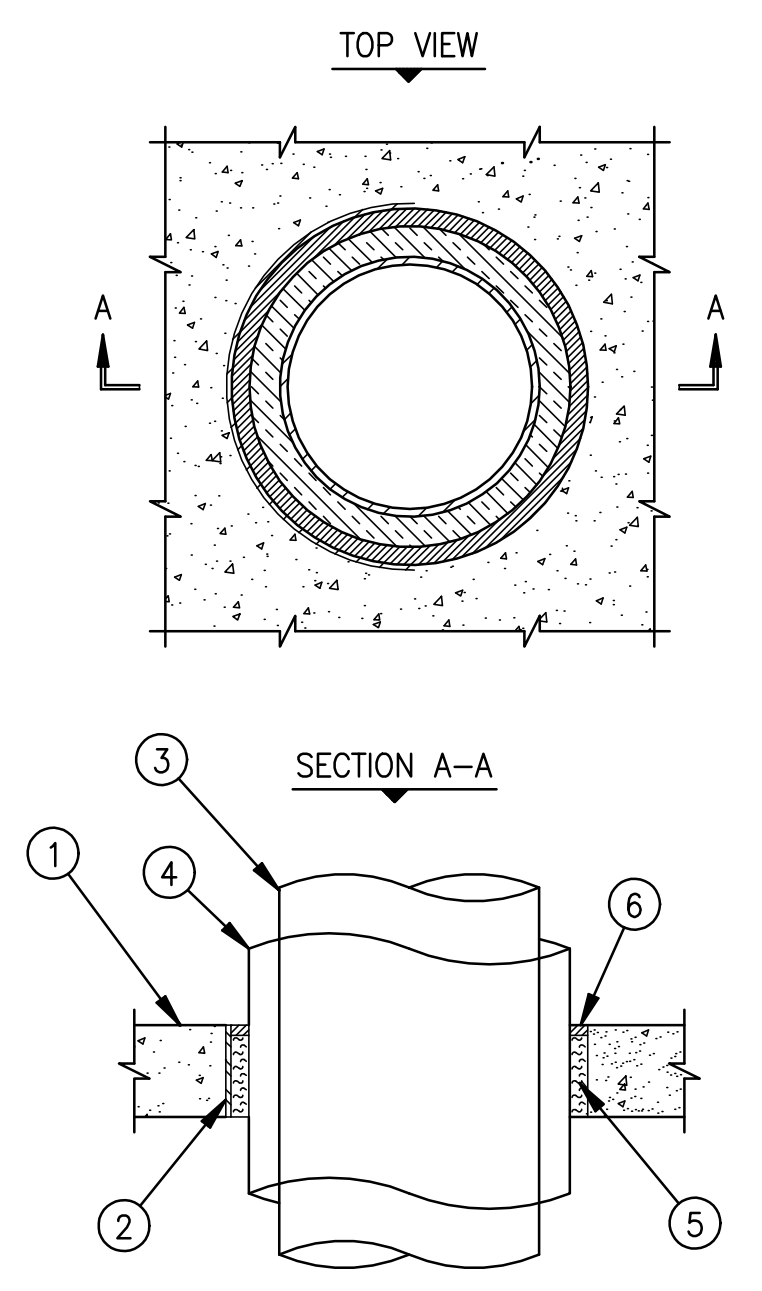


TYPICAL FOR AC-1

SCALE NONE 5

- CONCRETE FLOOR OR WALL ASSEMBLY (2-HR FIRE-RATING):
 - LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR OR WALL (MINIMUM 4-1/2" THICK).
 - ANY UL/ULC CLASSIFIED CONCRETE BLOCK WALL.
- OPTIONAL: MAXIMUM 20" NOMINAL DIAMETER STEEL PIPE SLEEVE (SCHEDULE 10 OR HEAVIER).
- PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
 - MAXIMUM 12" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
 - MAXIMUM 6" NOMINAL DIAMETER COPPER PIPE.
- MAXIMUM 2" THICK GLASS FIBER INSULATION.
- MINIMUM 4" THICKNESS MINERAL WOOL (MIN. 4 PCF DENSITY) TIGHTLY PACKED.
- MINIMUM 1/2" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.

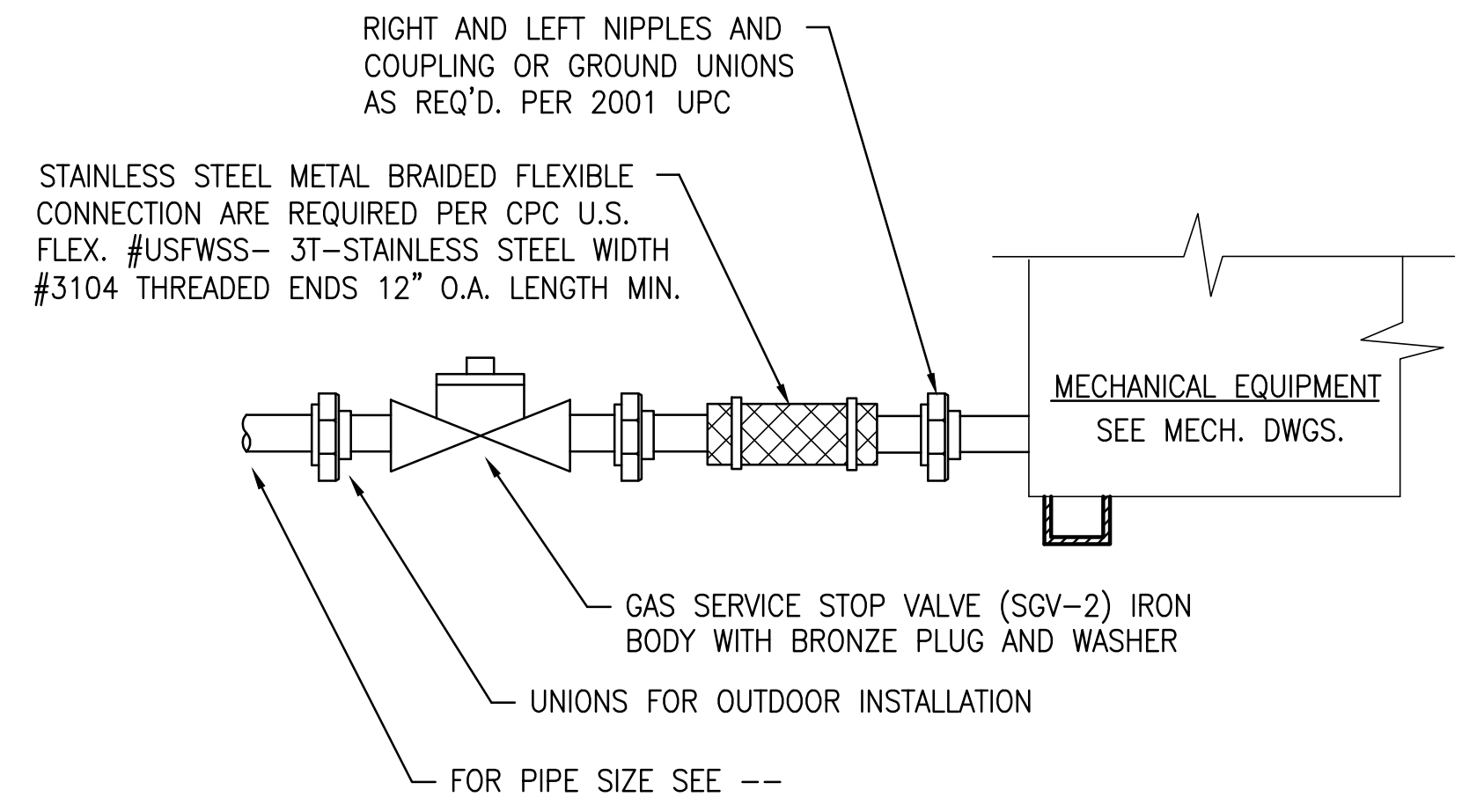
NOTES : 1. MAXIMUM DIAMETER OF OPENING = 20".
 2. ANNULAR SPACE = MINIMUM 1/2", MAXIMUM 2-1/4".
 3. MINIMUM 1/2" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT IS REQUIRED ON BOTH SIDES OF A WALL.



UL/cUL SYSTEM NO. CAJ5091
 F RATING = 2-HR.
 T RATING = 1-HR.
 L RATING AT AMBIENT = 4 CFM/SQ. FT.
 L RATING AT 400°F = LESS THAN 1 CFM/SQ. FT.

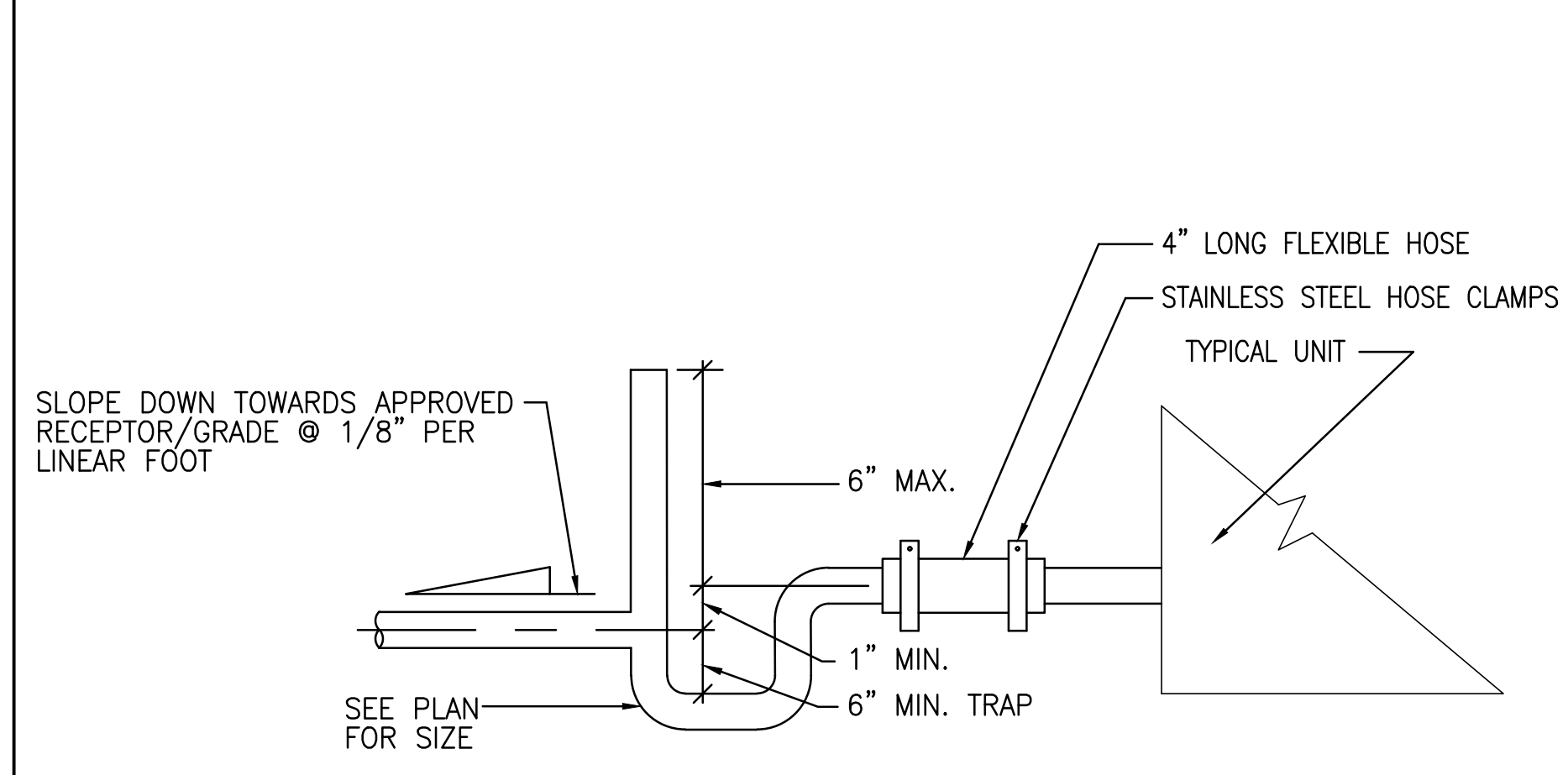
INSULATED PIPE THUR CONCRETE FLOOR/WALL OR BLOCK WALL DIAGRAM

SCALE NONE 2



GAS CONNECTION DIAGRAM

SCALE NONE 6



CONDENSATE DRAIN CONNECTION

SCALE NONE 3

RECORD DRAWINGS
 SUBMITTED 11/21/2008



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JOB NO. 08-038

DESIGN FOR:
BUILDING 1408
REPLACE CHILLER, BOILER AND AHU'S
 EDWARDS AIR FORCE BASE, CALIFORNIA 93523-8450

QUOTE/DWG #:

DRAWN BY: TS
 CHECKED BY:

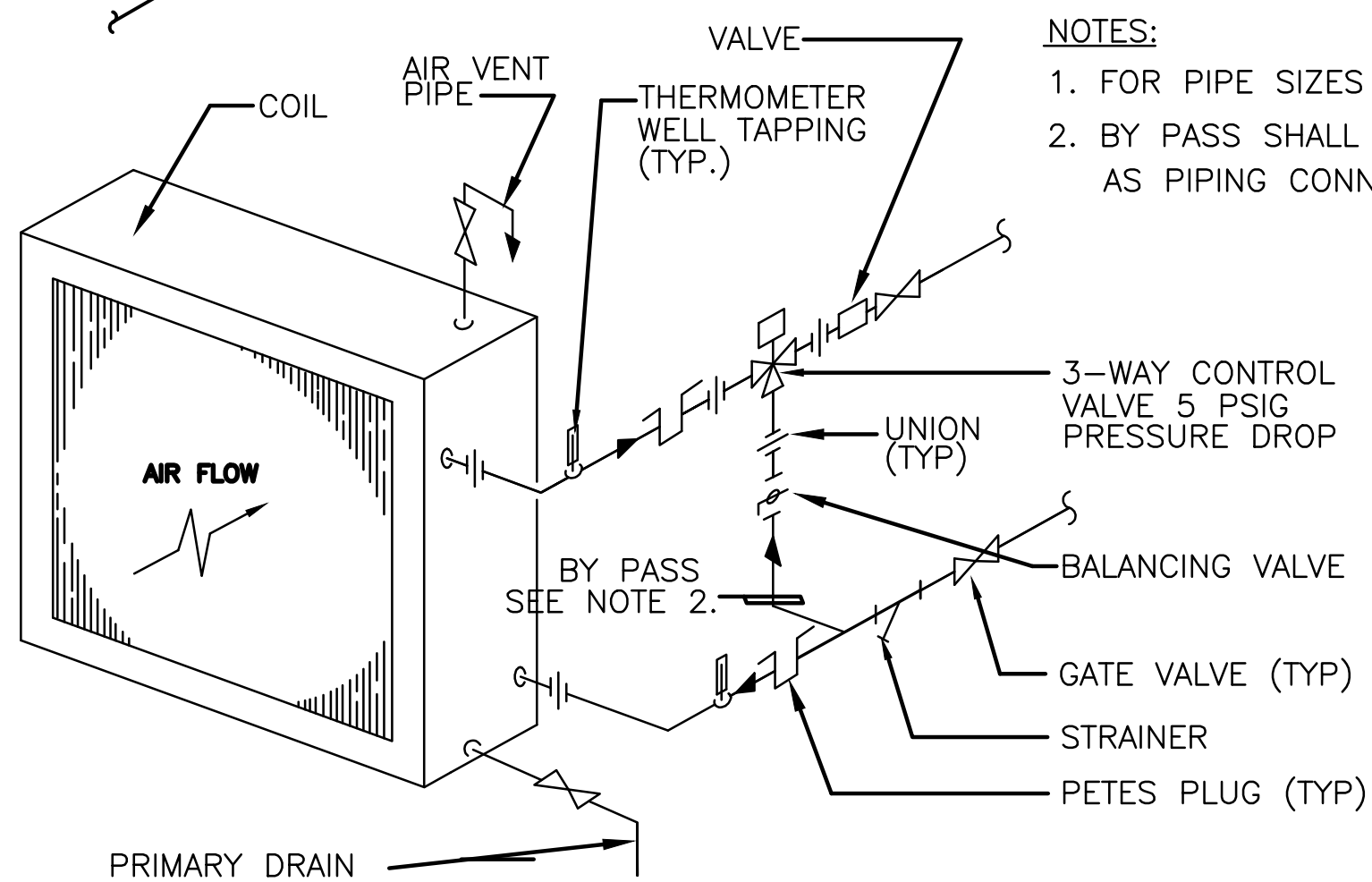
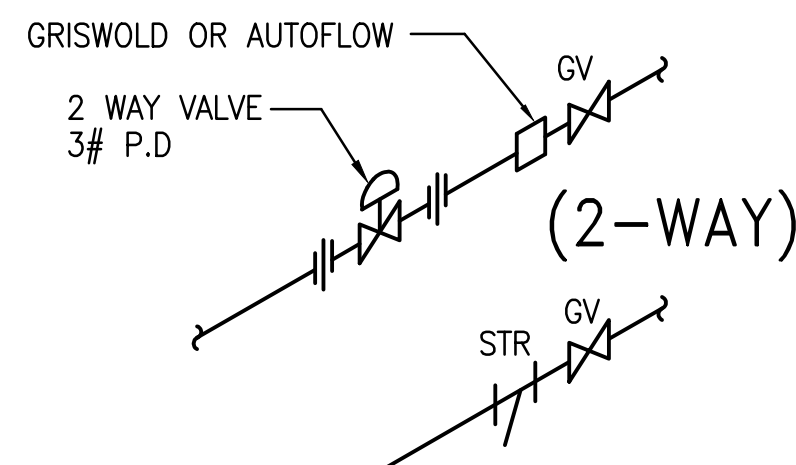
DATE: 12/05/2008
 SCALE: AS NOTED

REVISION HISTORY

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PROJECT
 FA9301-06-D-0010

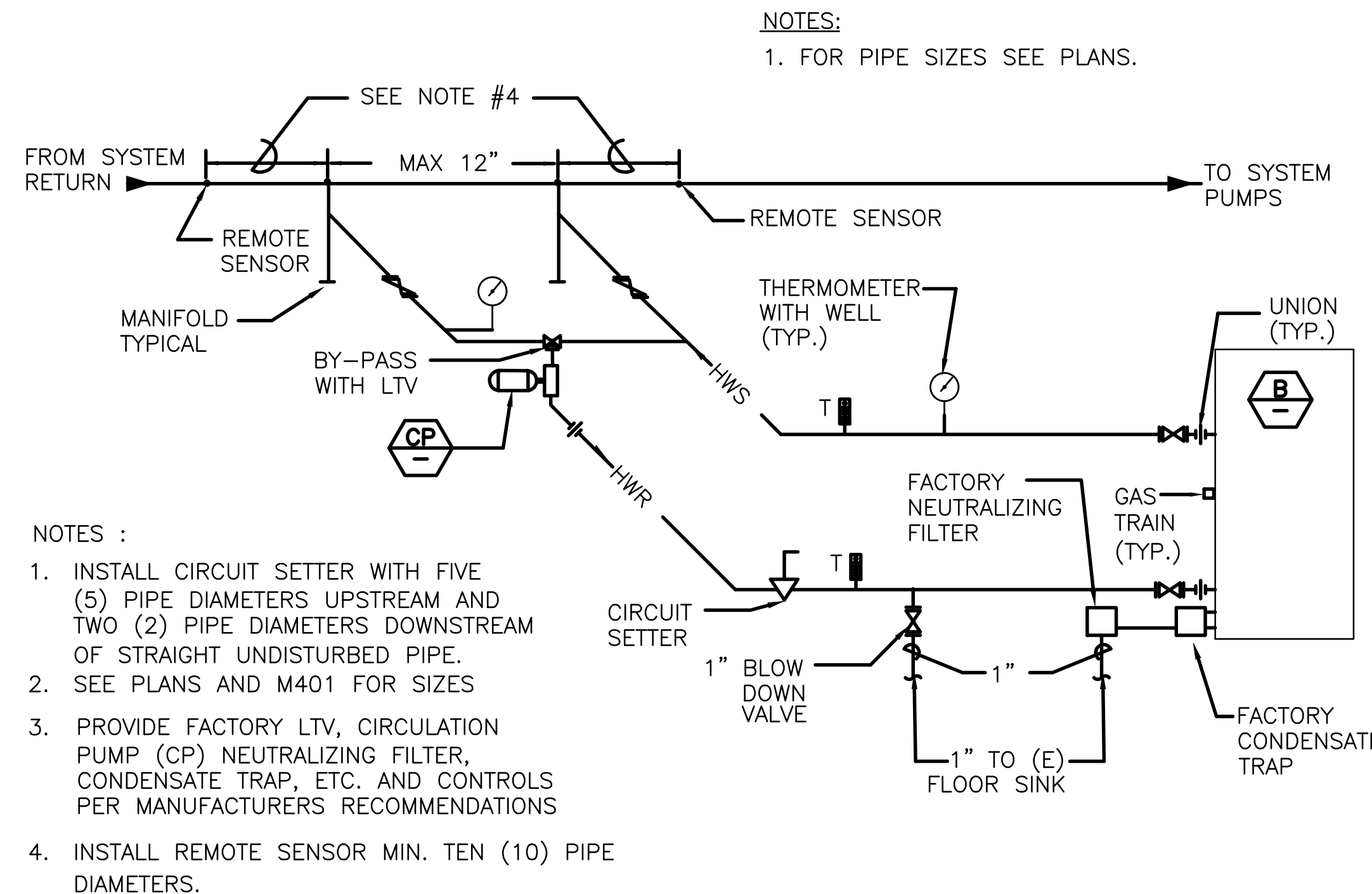
M3.1



NOTES:
 1. FOR PIPE SIZES SEE PLANS.
 2. BY PASS SHALL BE SAME SIZE AS PIPING CONNECTIONS TO COIL.

WATER COIL PIPING (3 WAY VALVE)

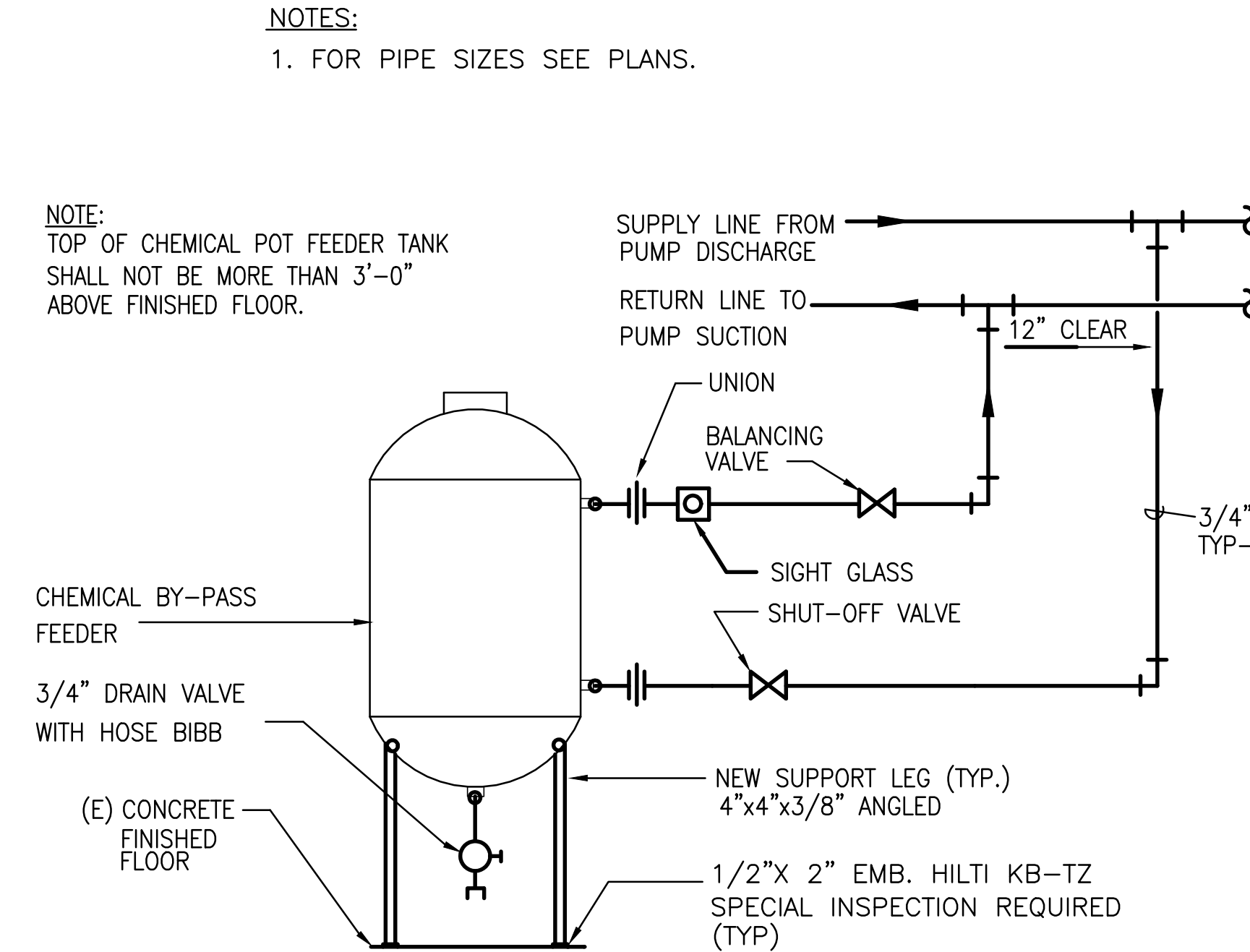
SCALE NONE 5



NOTES:
 1. INSTALL CIRCUIT SETTER WITH FIVE (5) PIPE DIAMETERS UPSTREAM AND TWO (2) PIPE DIAMETERS DOWNSTREAM OF STRAIGHT UNDISTURBED PIPE.
 2. SEE PLANS AND M401 FOR SIZES
 3. PROVIDE FACTORY LTV, CIRCULATION PUMP (CP) NEUTRALIZING FILTER, CONDENSATE TRAP, ETC. AND CONTROLS PER MANUFACTURERS RECOMMENDATIONS
 4. INSTALL REMOTE SENSOR MIN. TEN (10) PIPE DIAMETERS.

TYPICAL BOILER PIPING

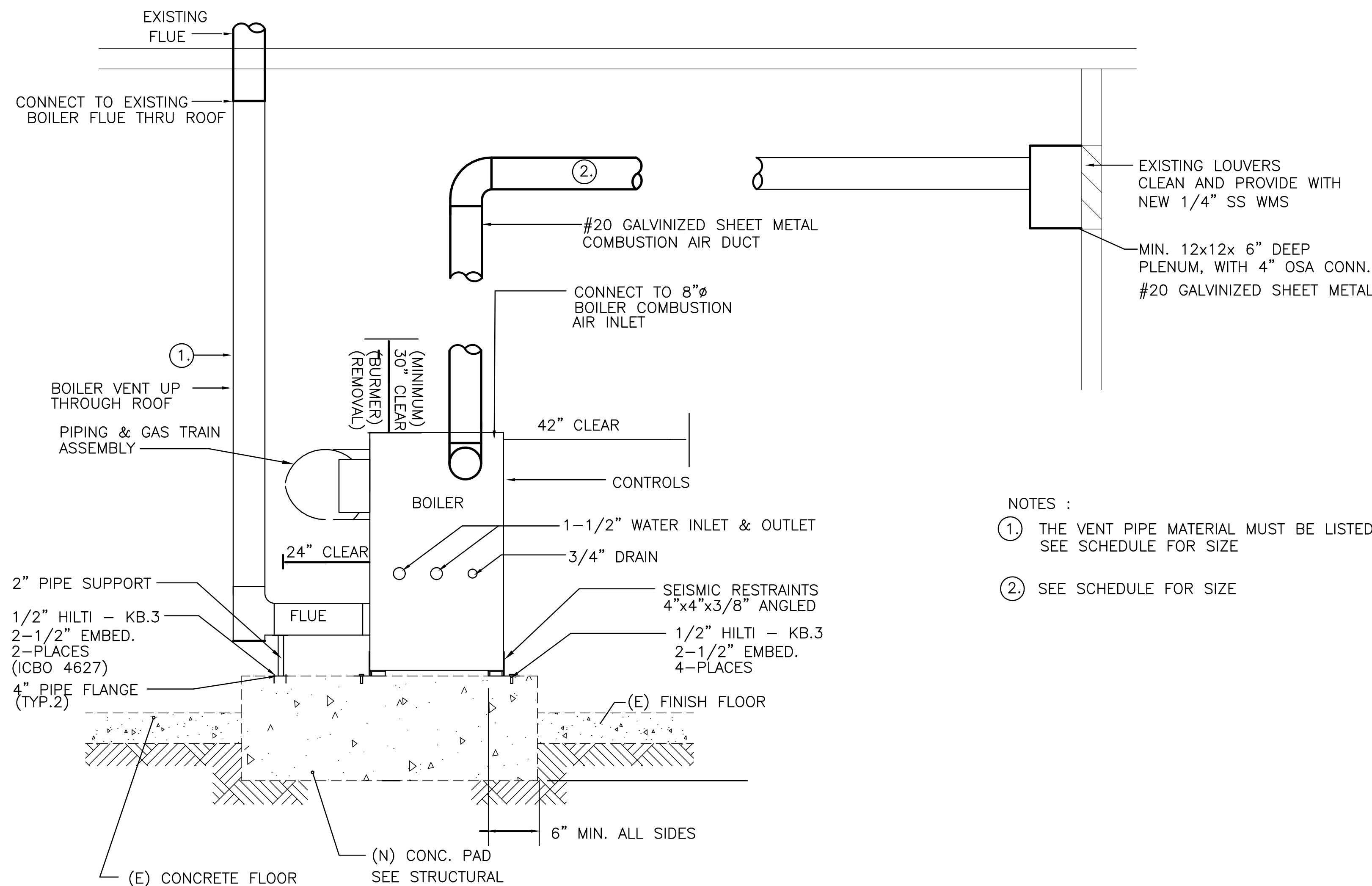
SCALE NONE 4



NOTE:
 TOP OF CHEMICAL POT FEEDER TANK SHALL NOT BE MORE THAN 3'-0" ABOVE FINISHED FLOOR.

TYPICAL CHEMICAL BY-PASS FEEDER PIPING

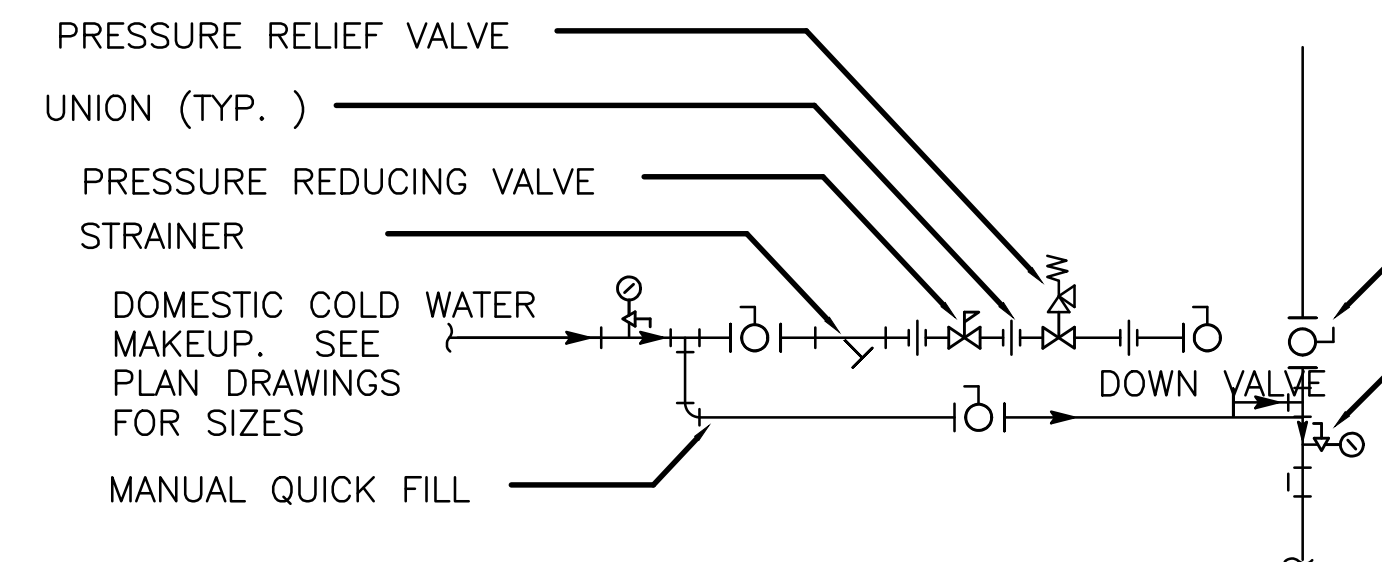
SCALE NONE 1



NOTES:
 ① THE VENT PIPE MATERIAL MUST BE LISTED CATEGORY I SEE SCHEDULE FOR SIZE
 ② SEE SCHEDULE FOR SIZE

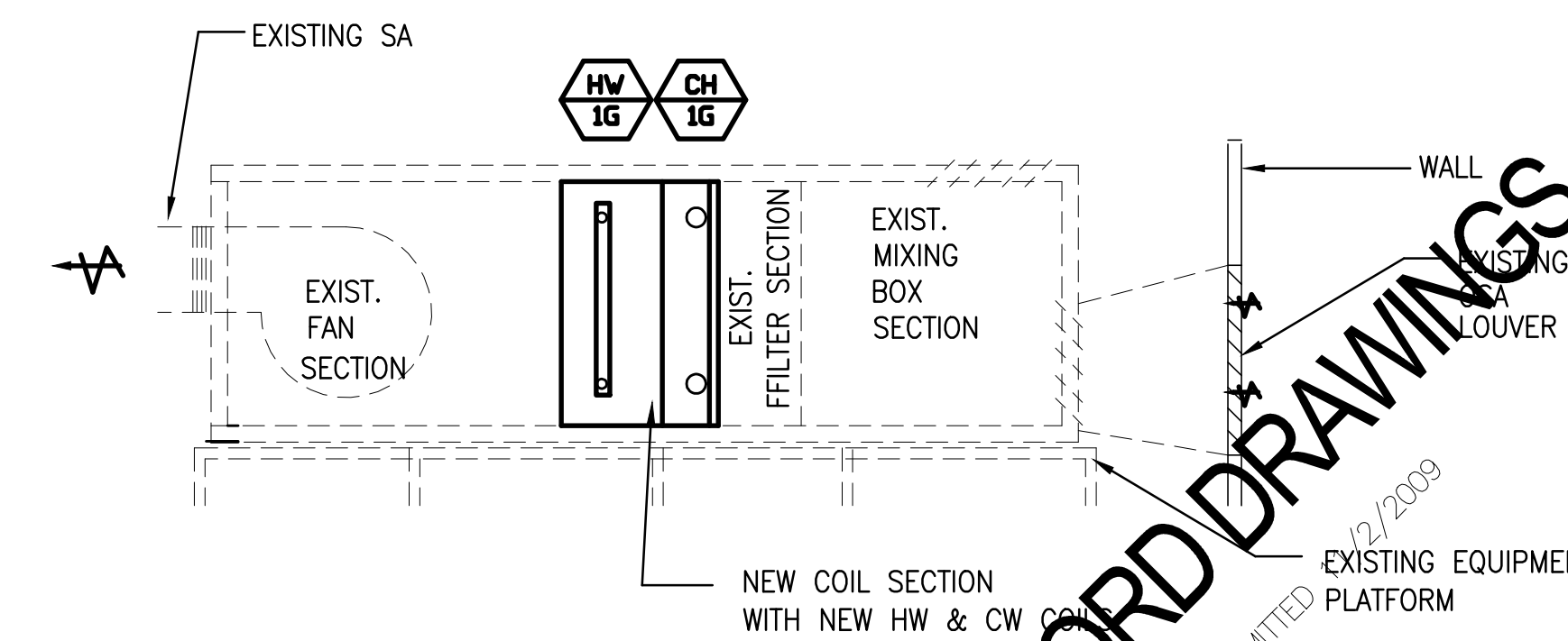
NEW GAS BOILER DETAIL

SCALE NONE 6



TYPICAL MAKE UP WATER

SCALE NONE 2



TYPICAL EXISTING AHU UNIT

SCALE NONE 3

PRIME CONTRACTOR: POJOAQUE PUEBLO SERVICES



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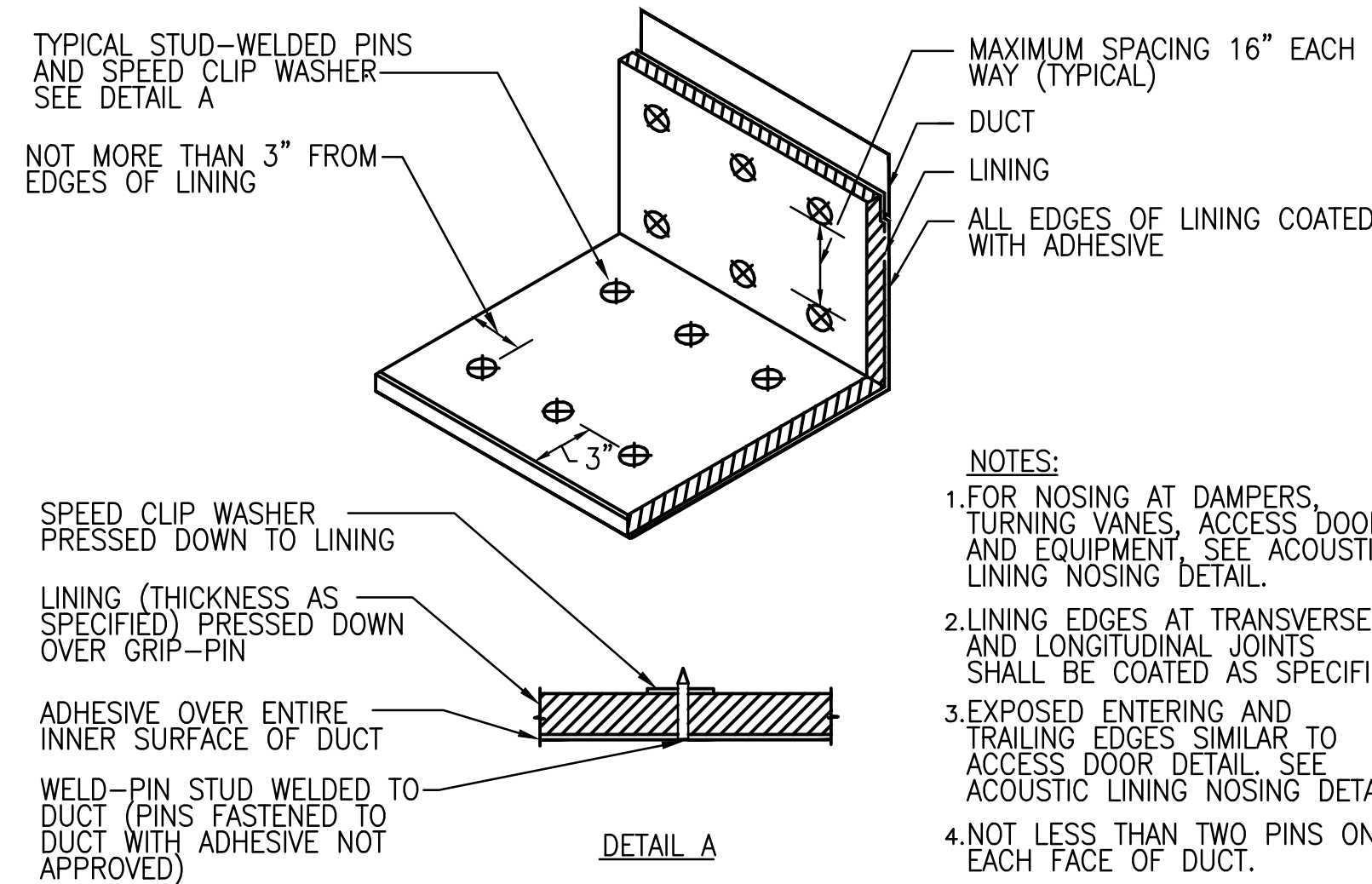
PROJECT
 FA9301-06-D-0010

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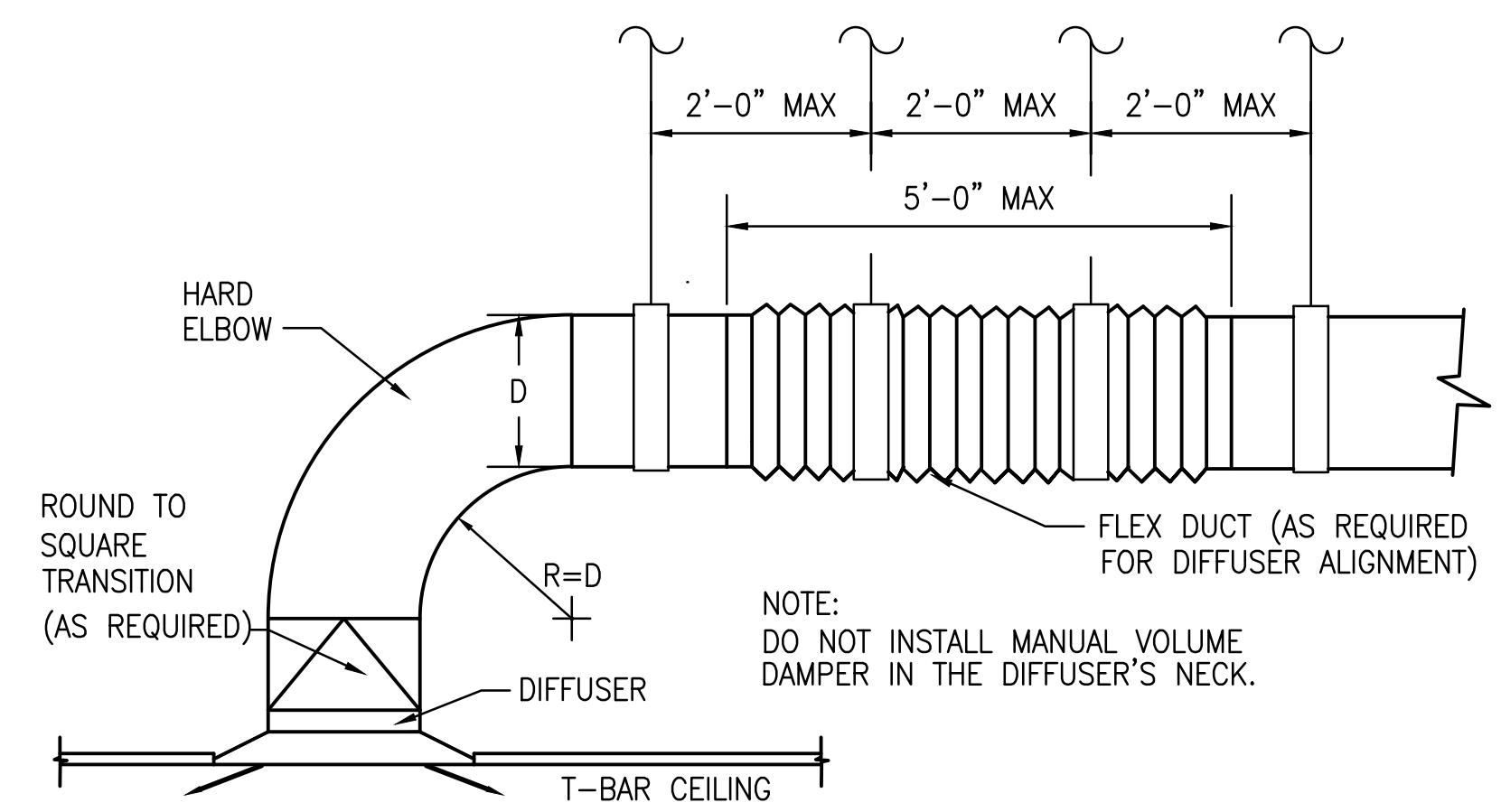
GLENDALE OFFICE
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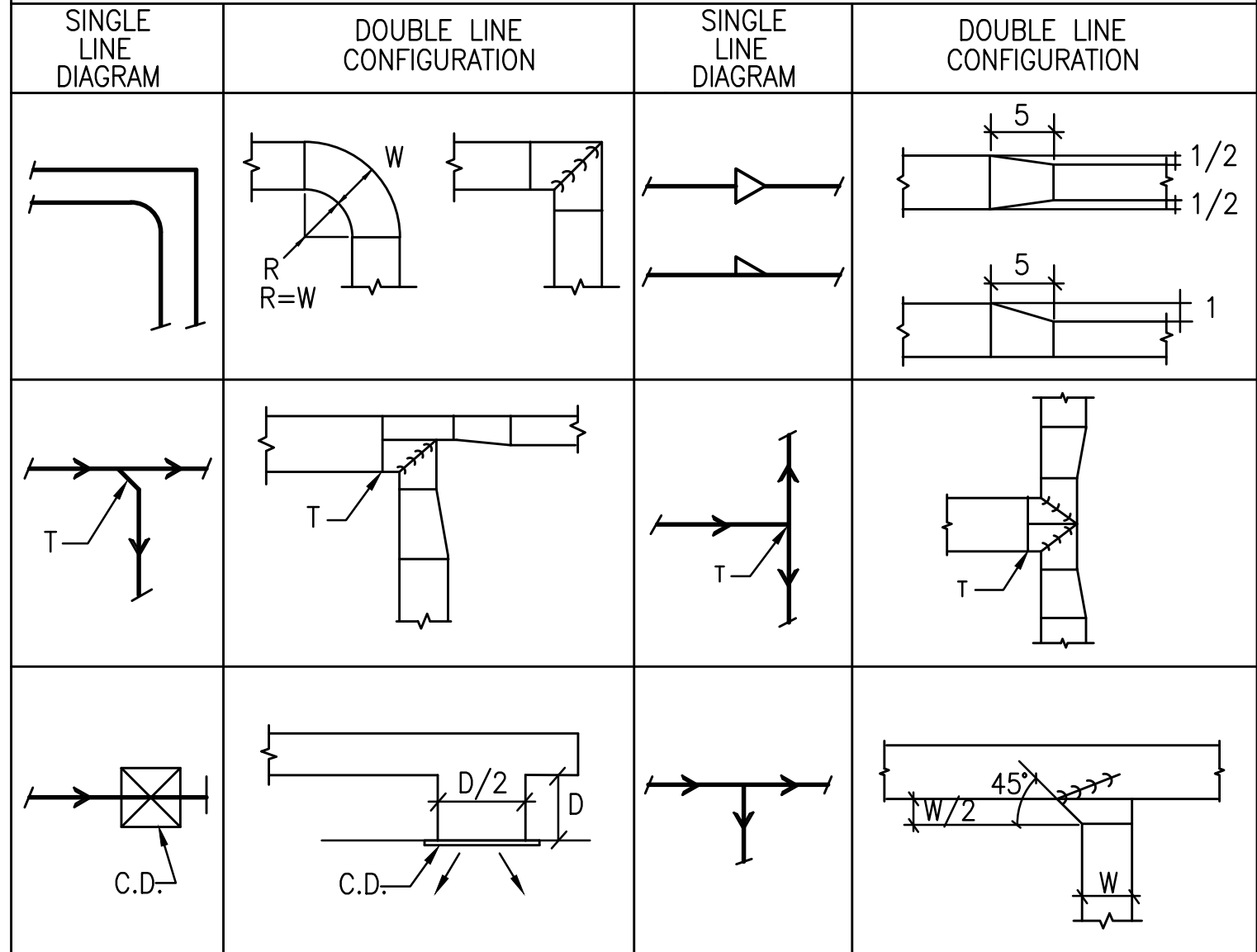


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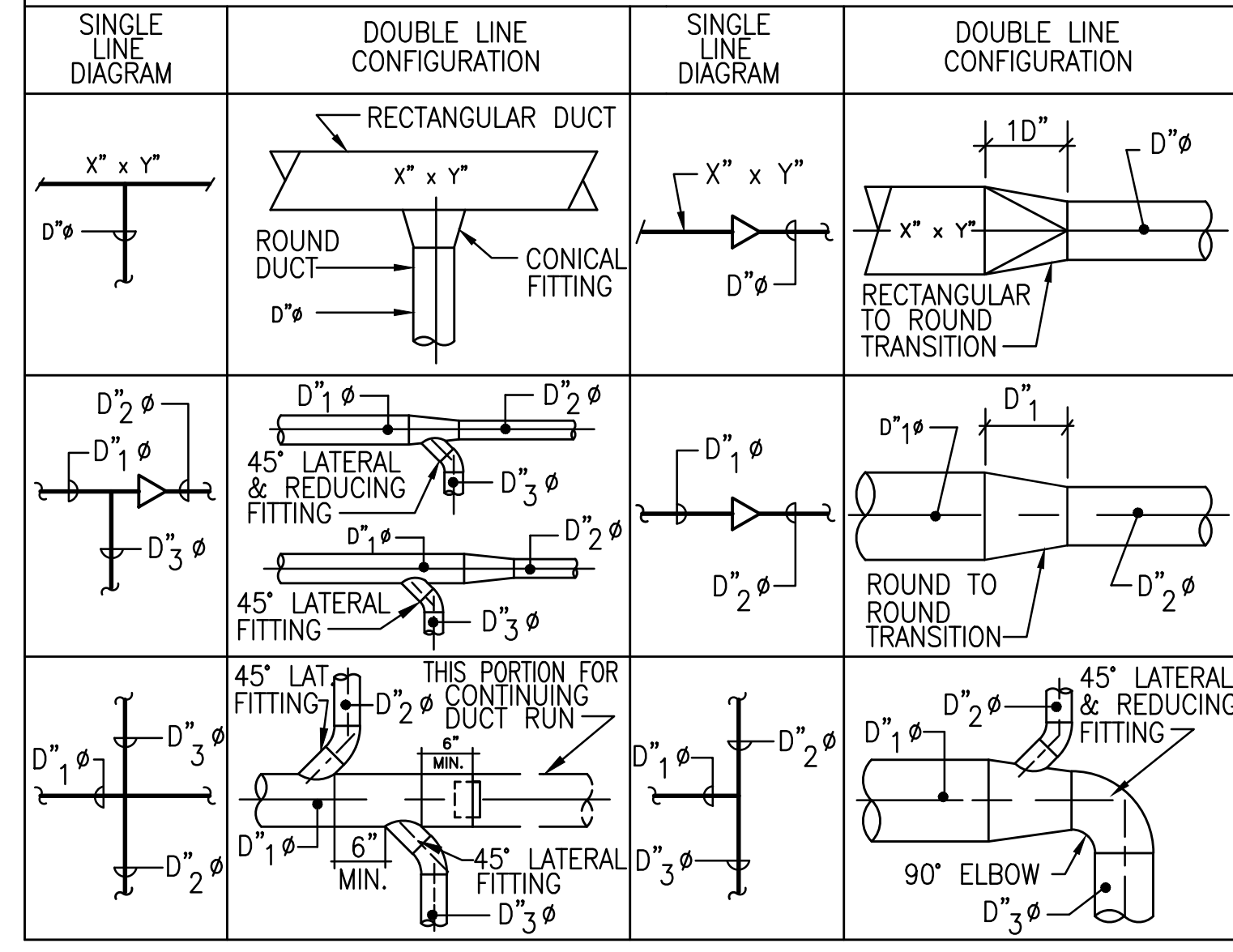


SCALE NONE 2

RECTANGULAR LOW PRESSURE DUCTWORK

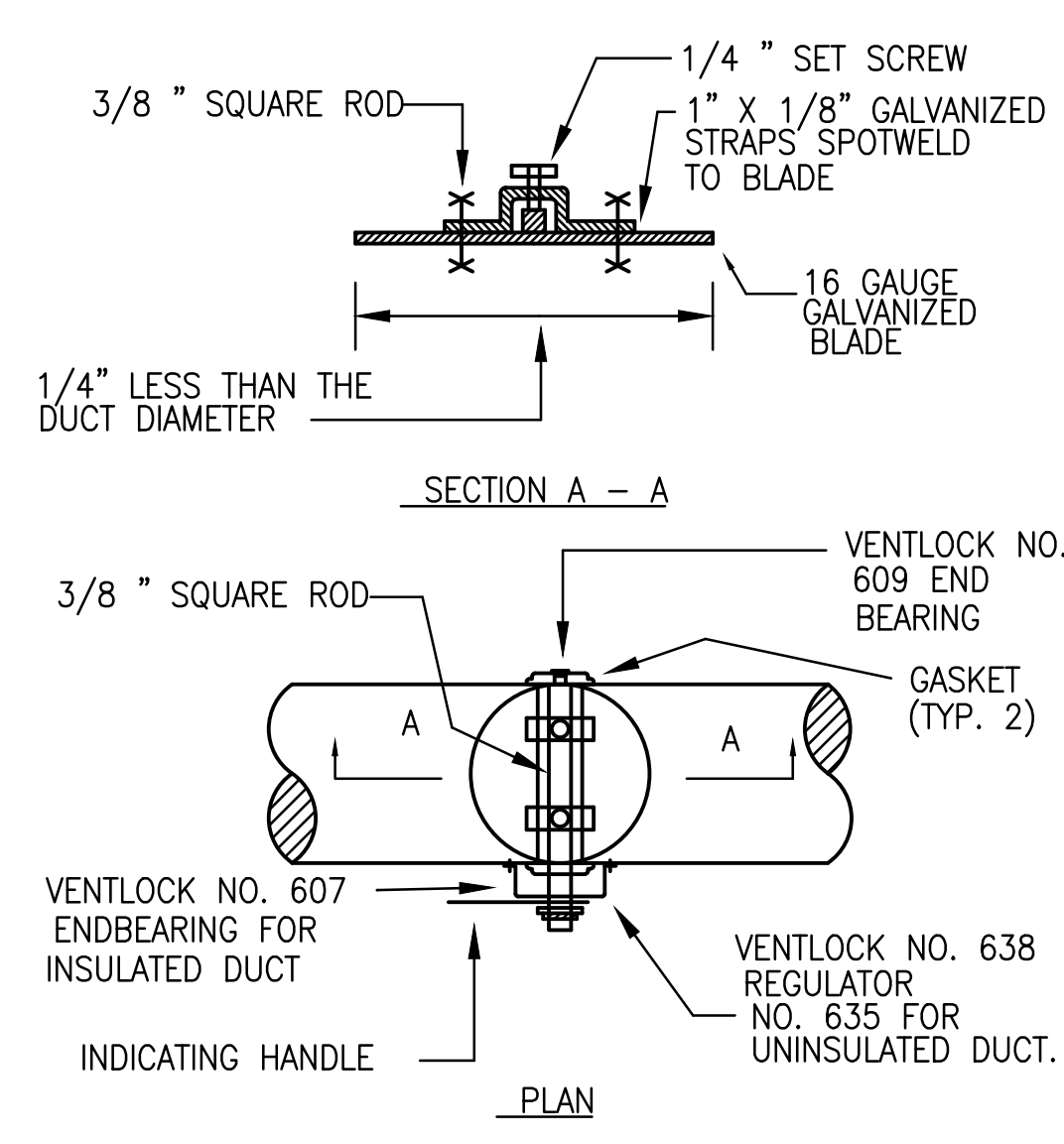


ROUND LOW PRESSURE DUCTWORK



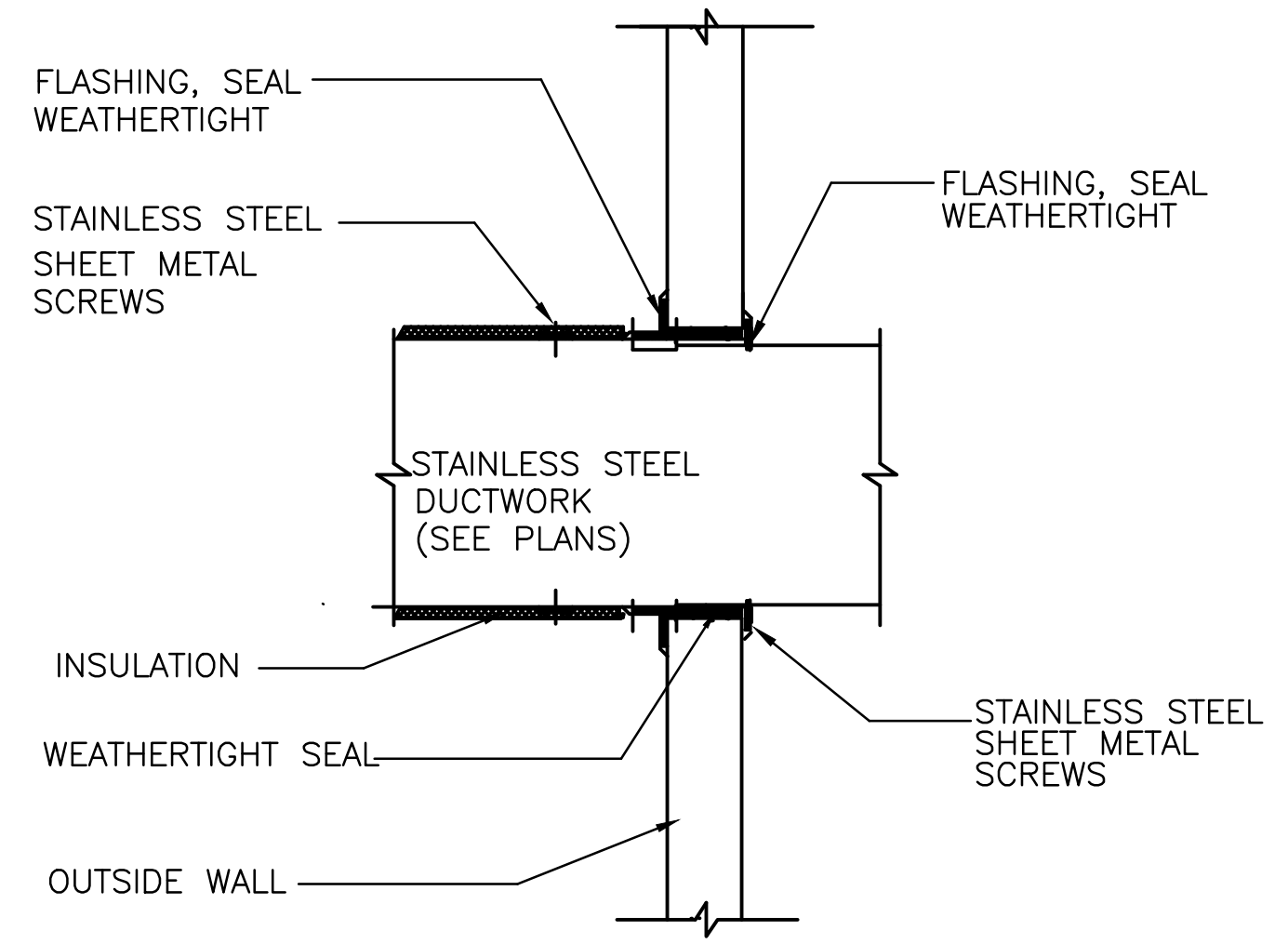
SCALE NONE 6

FLEXIBLE CONNECTION DIAGRAM



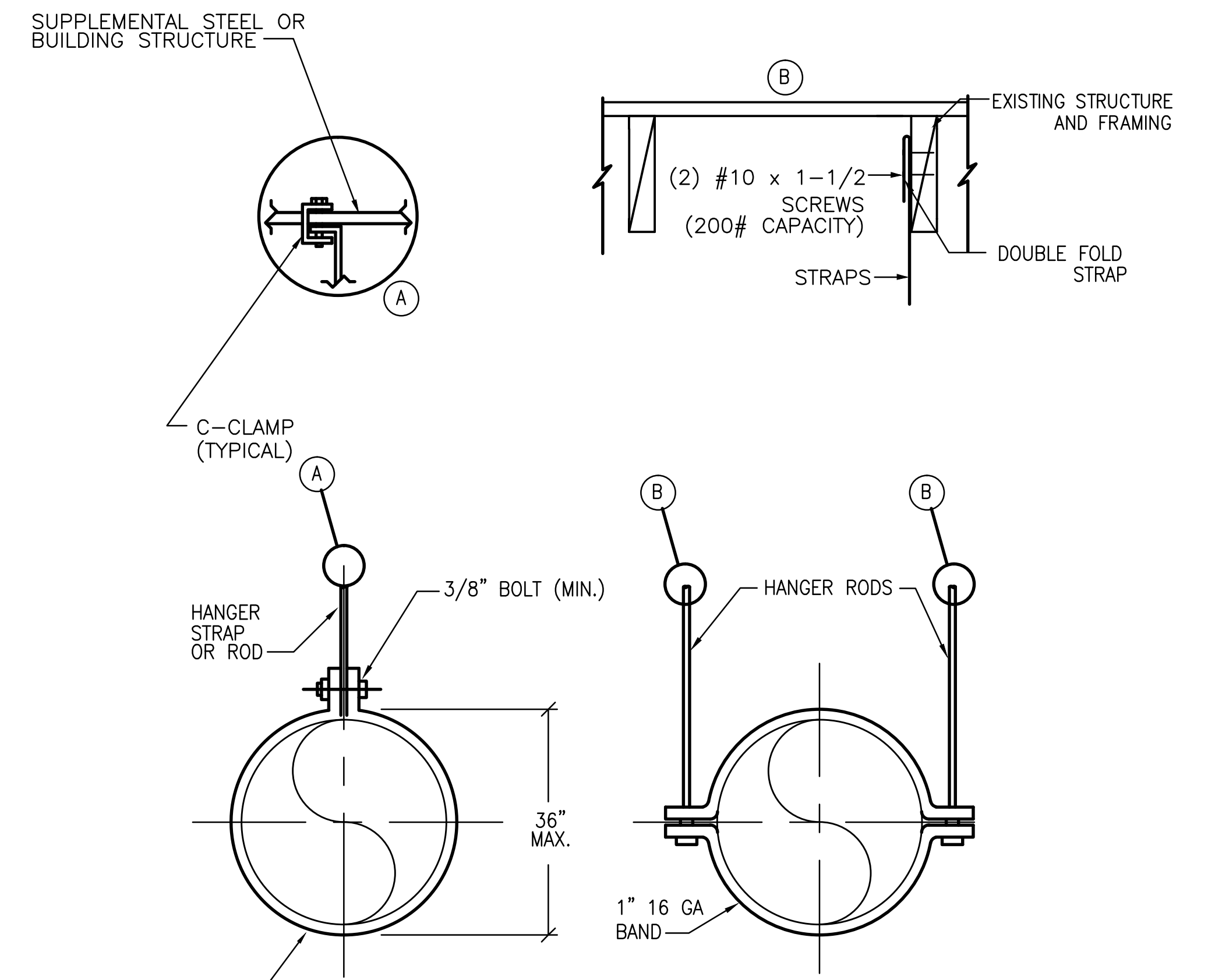
SCALE NONE 3

ROUND VOLUME DAMPER DIAGRAM



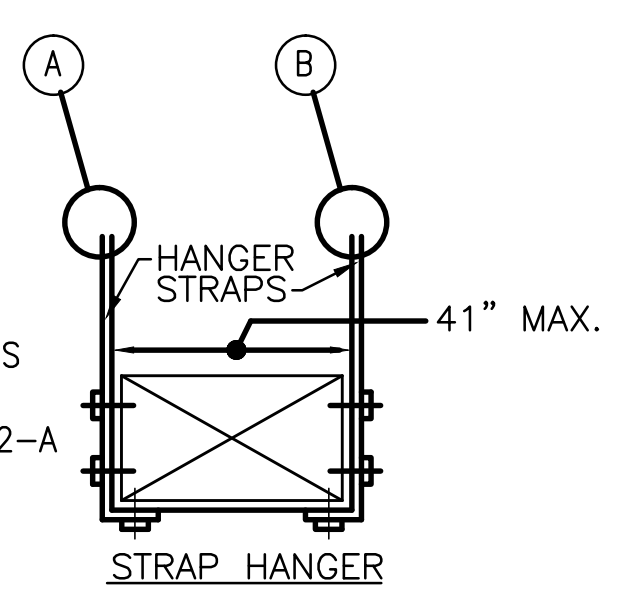
SCALE NONE 4

DUCT THRU WALL



ROUND DUCT HANGERS			
DUCT DIA	MAX SPACING	ROD	STRAP
10" DOWN	12'-0"	1/4"	1"x0.030 (22 GA)
11" TO 24"	12'-0"	1/4"	1"x0.030 (22 GA)
25" TO 36"	12'-0"	1/4"	1"x0.036 (20 GA)
37" TO 94"	12'-0"	TWO 3/8"	-

ROUND DUCT HANGERS



FOR RECTANGULAR DUCT HANGERS MINIMUM SIZE SEE CALIFORNIA MECHANICAL CODE TABLE # 6-2-A

NOTES:
NO POP RIVETS ALLOWED, USE SELF-TAPPING SHEETMETAL SCREWS ONLY.

DUCT HANGERS

SCALE NONE 1

PRIME CONTRACTOR: POJUAQUE PUEBLO SERVICES



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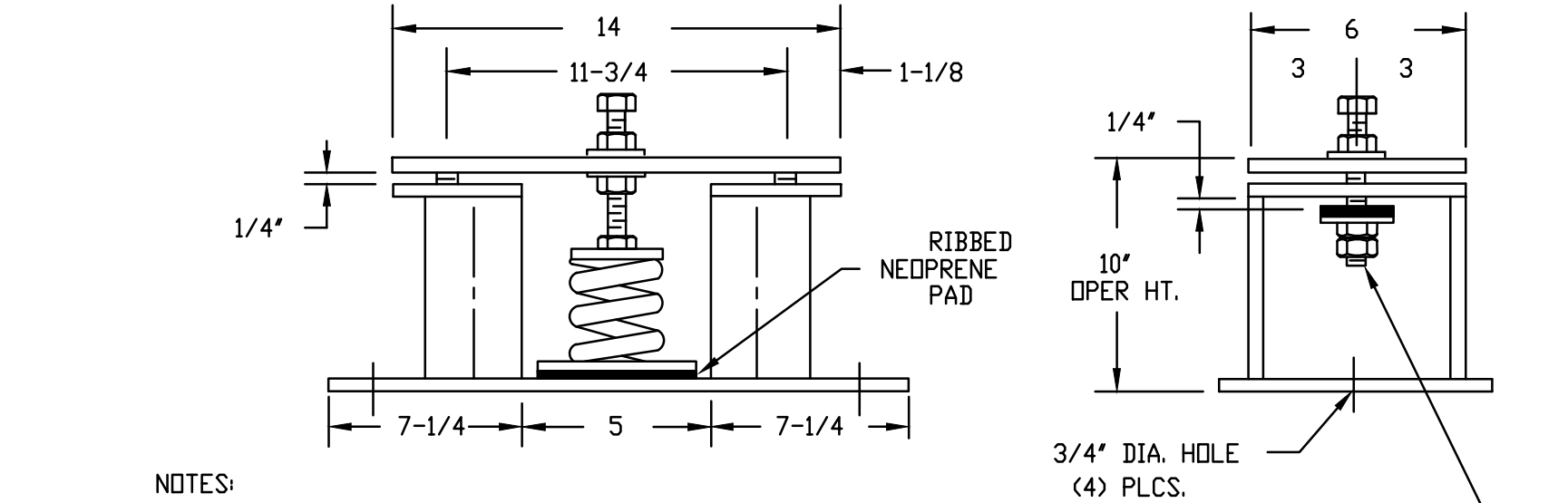
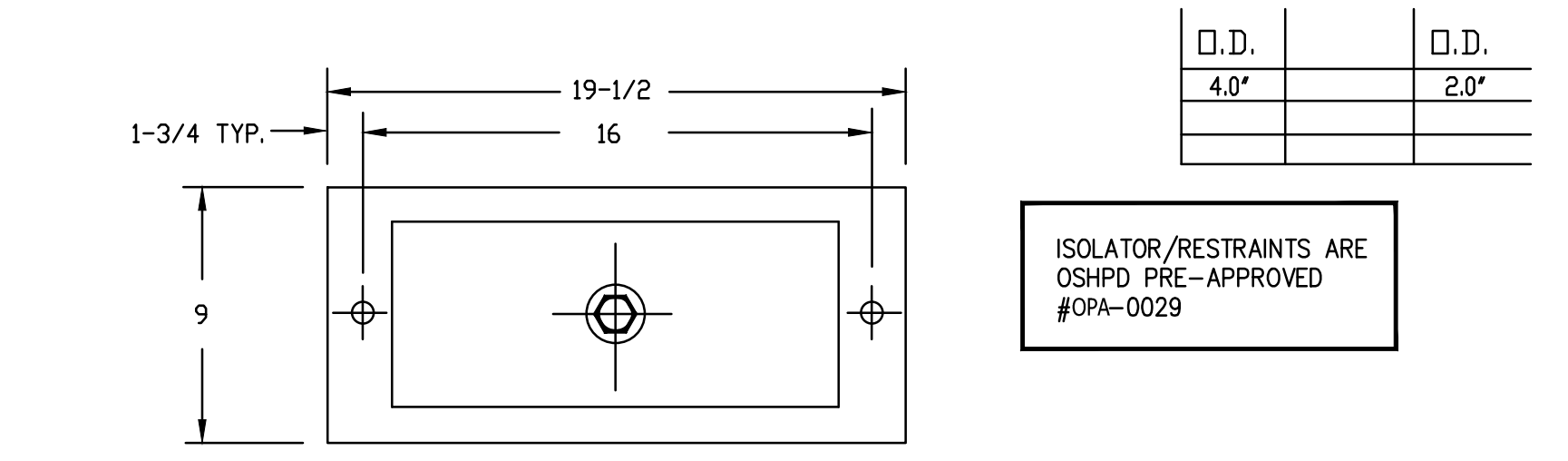
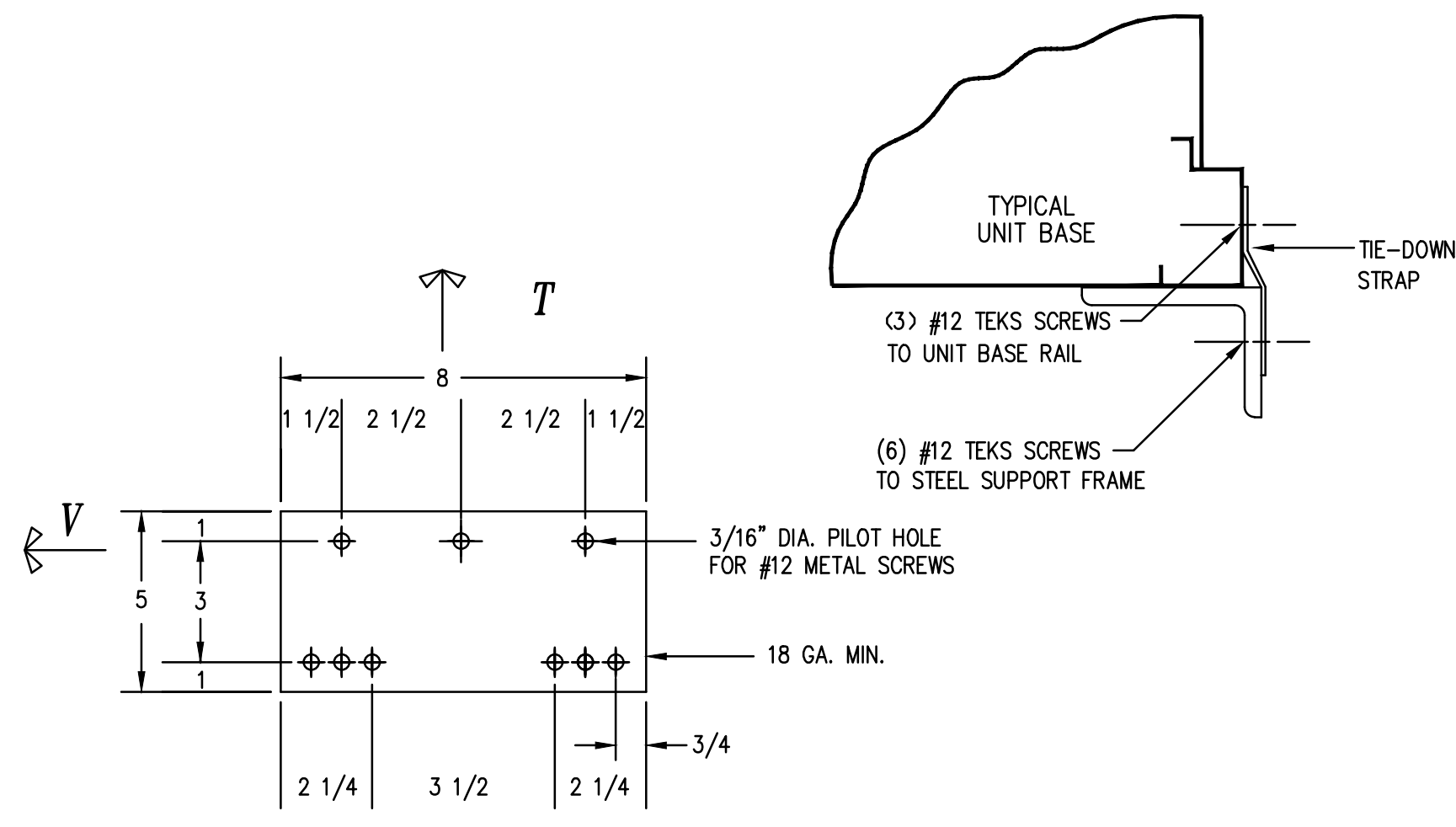
PROJECT
FA9301-06-D-0010

M3.3

RECORD DRAWINGS

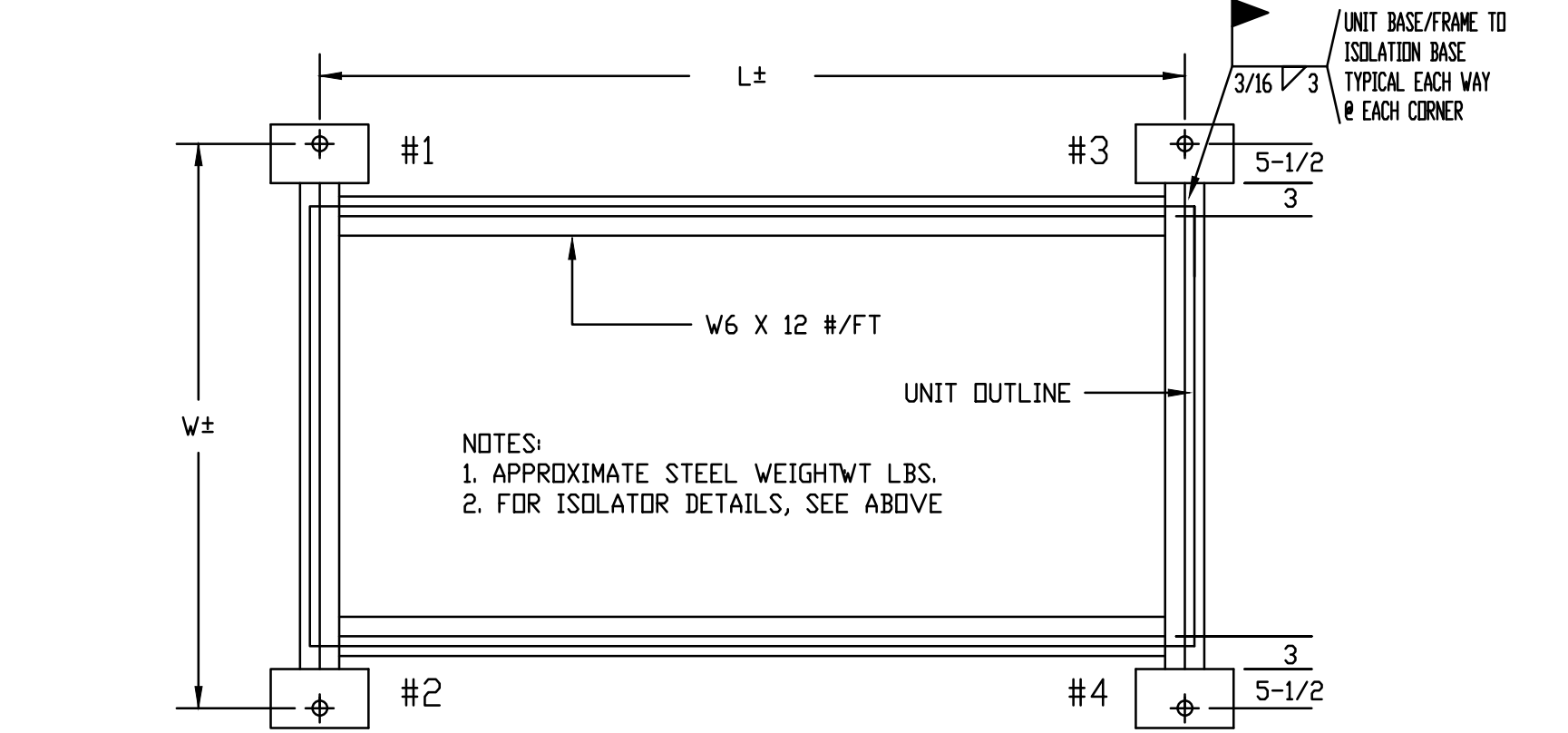
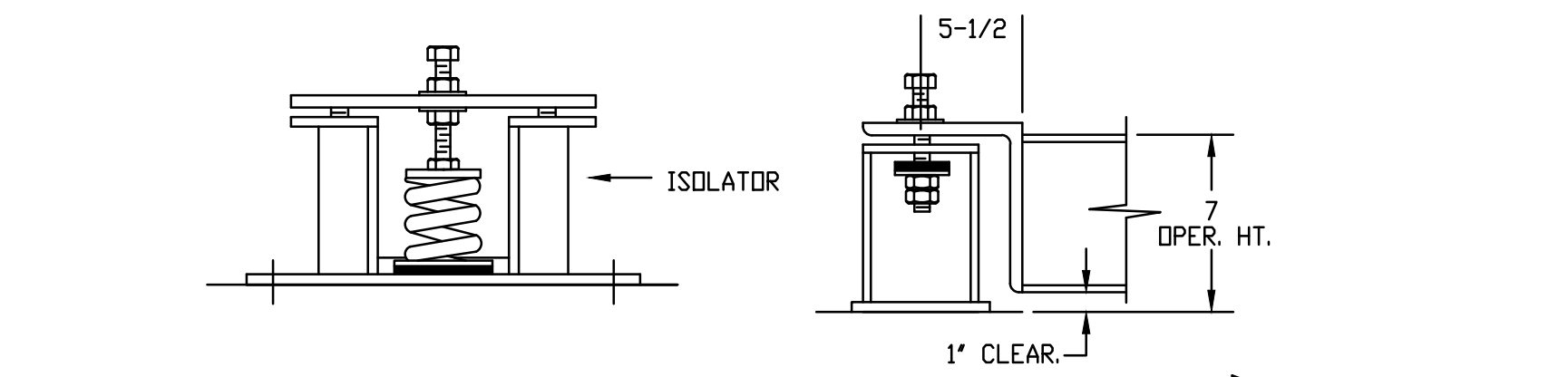
SUBMITTED 11/20/08

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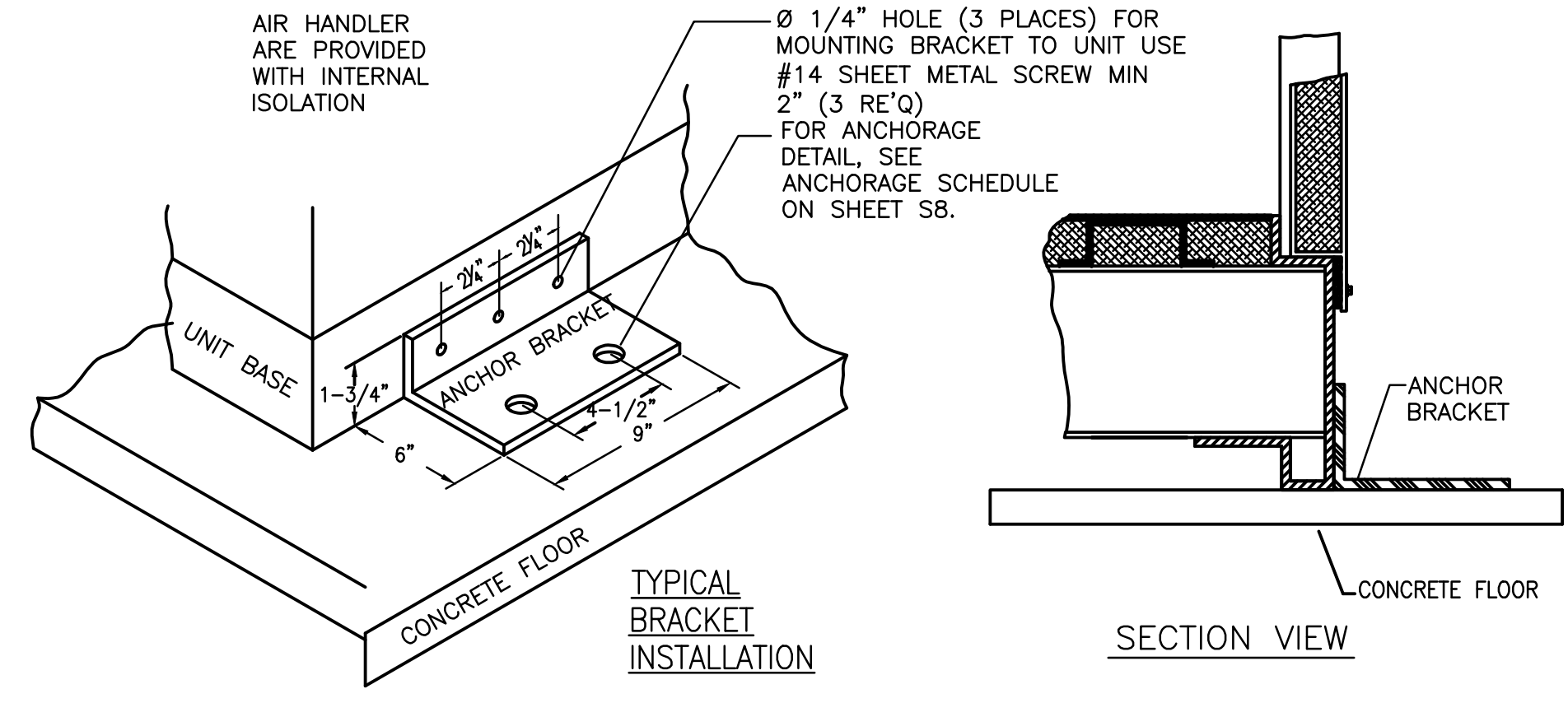


NOTES:
1. ANCHORAGE: USE 5/8\"/>

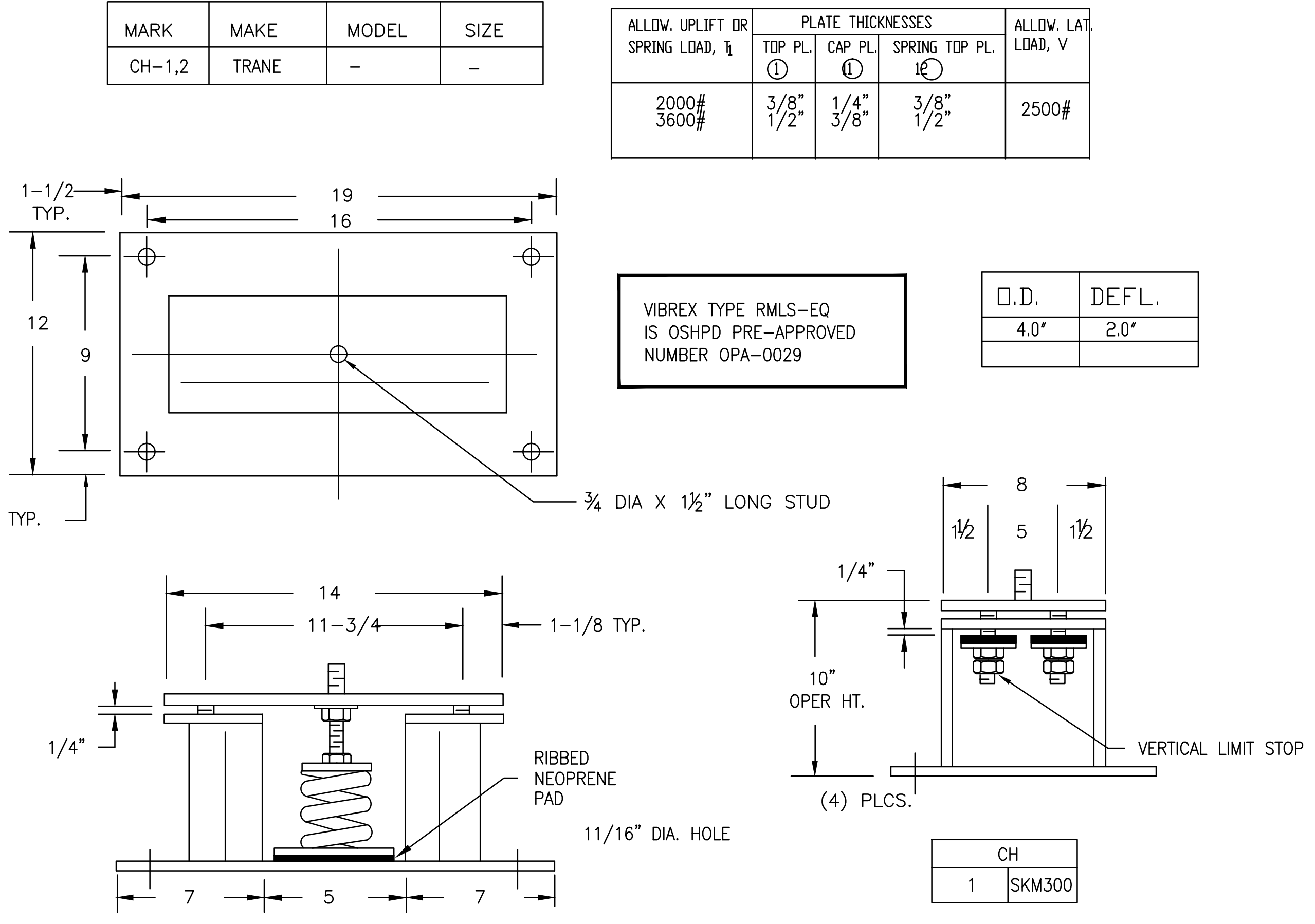
MARK	MAKE	MODEL	SIZE	L	W	WT
	trane	-	vareys	101	78	360 LBS.



TYPICAL SIDE DISCHARGE AC UNIT MOUNTING

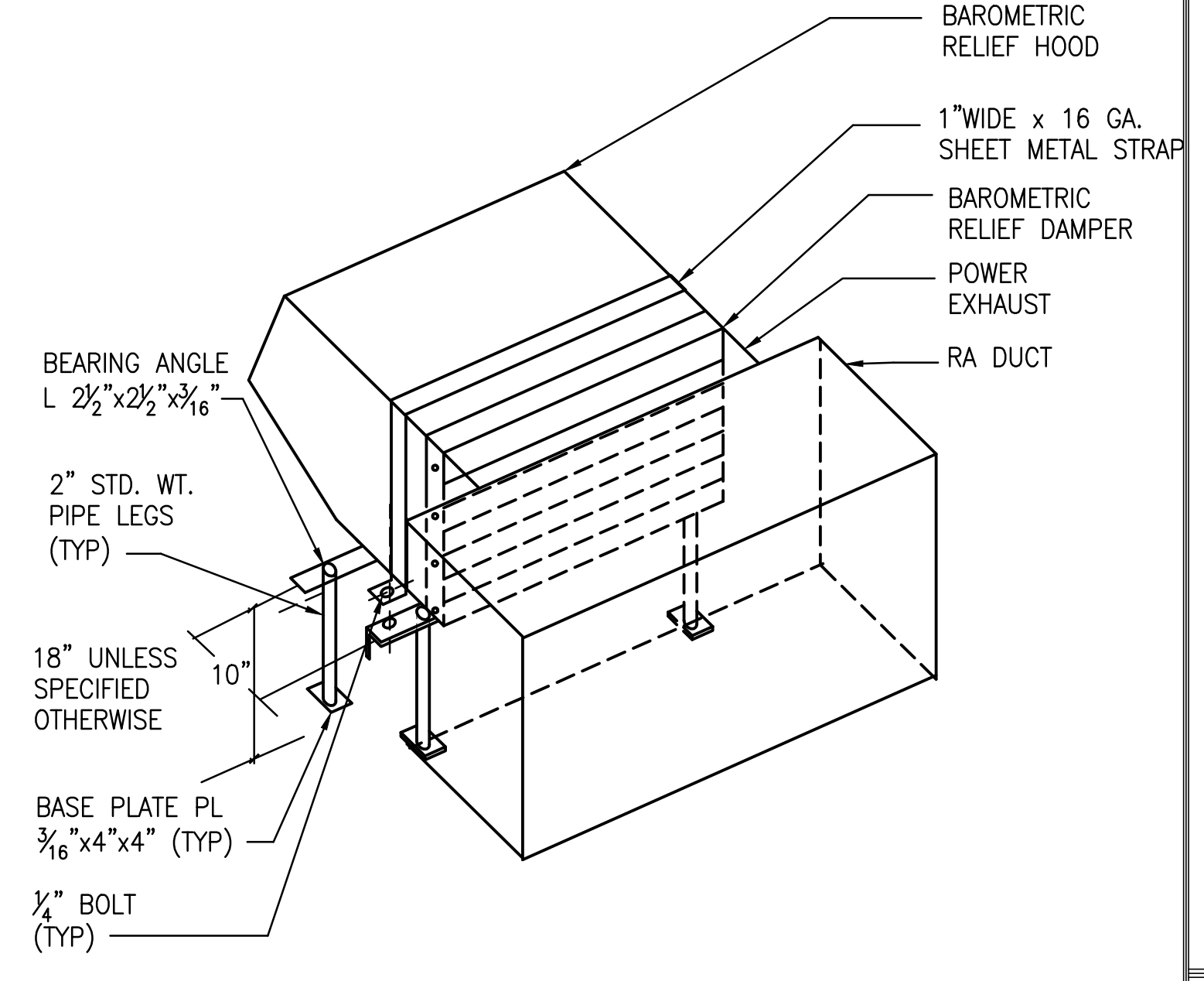


AIR HANDLING UNIT MOUNTING

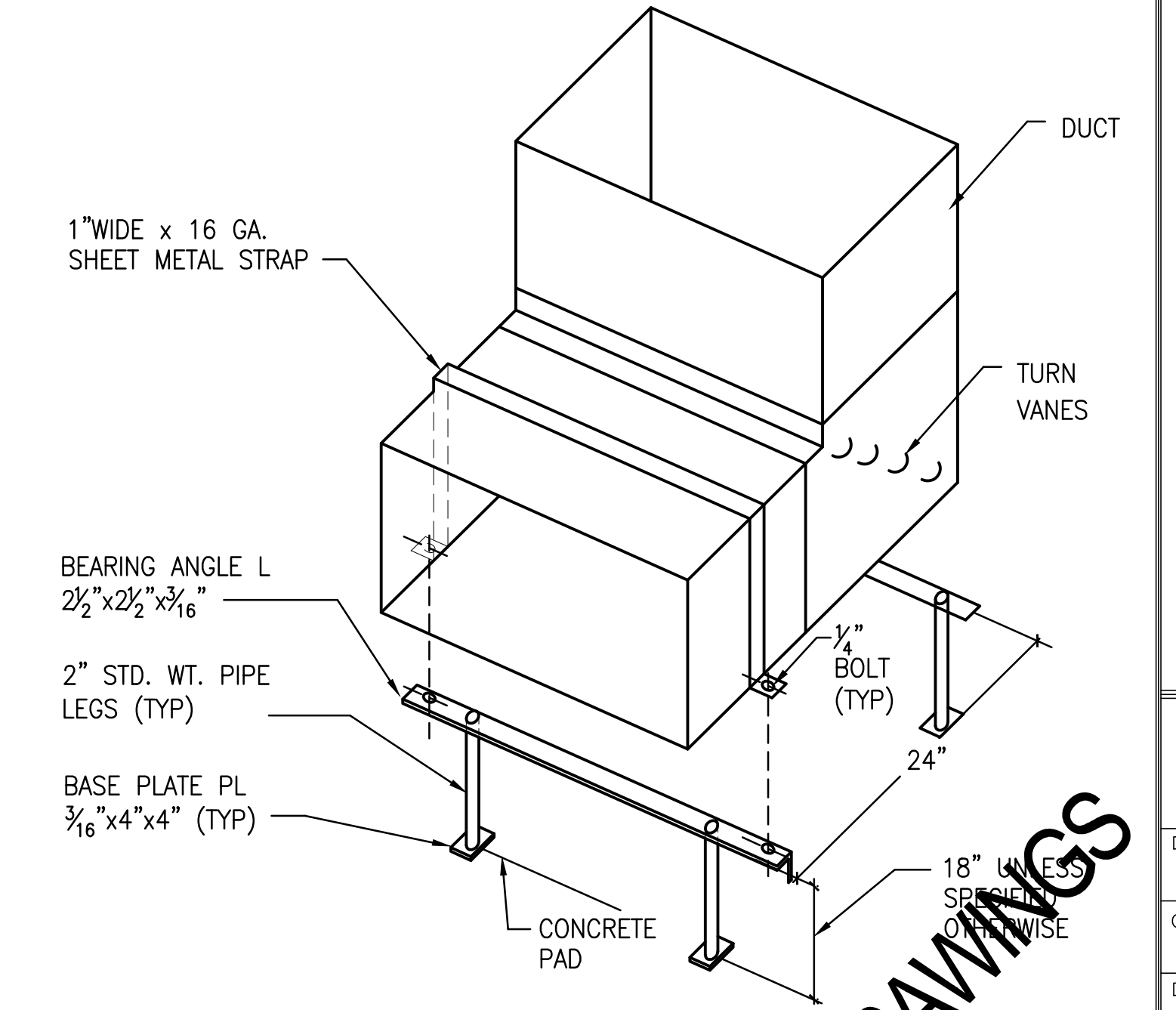


NOTES:
1. ANCHORAGE: USE 5/8\"/>

CHILLER DIAGRAM CH-1 & CH-2



POWER EXHAUST SUPPORT DETAIL



DUCT SUPPORT DETAIL

PRIME CONTRACTOR: POJUAQUE PUEBLO SERVICES



DESIGN FOR:
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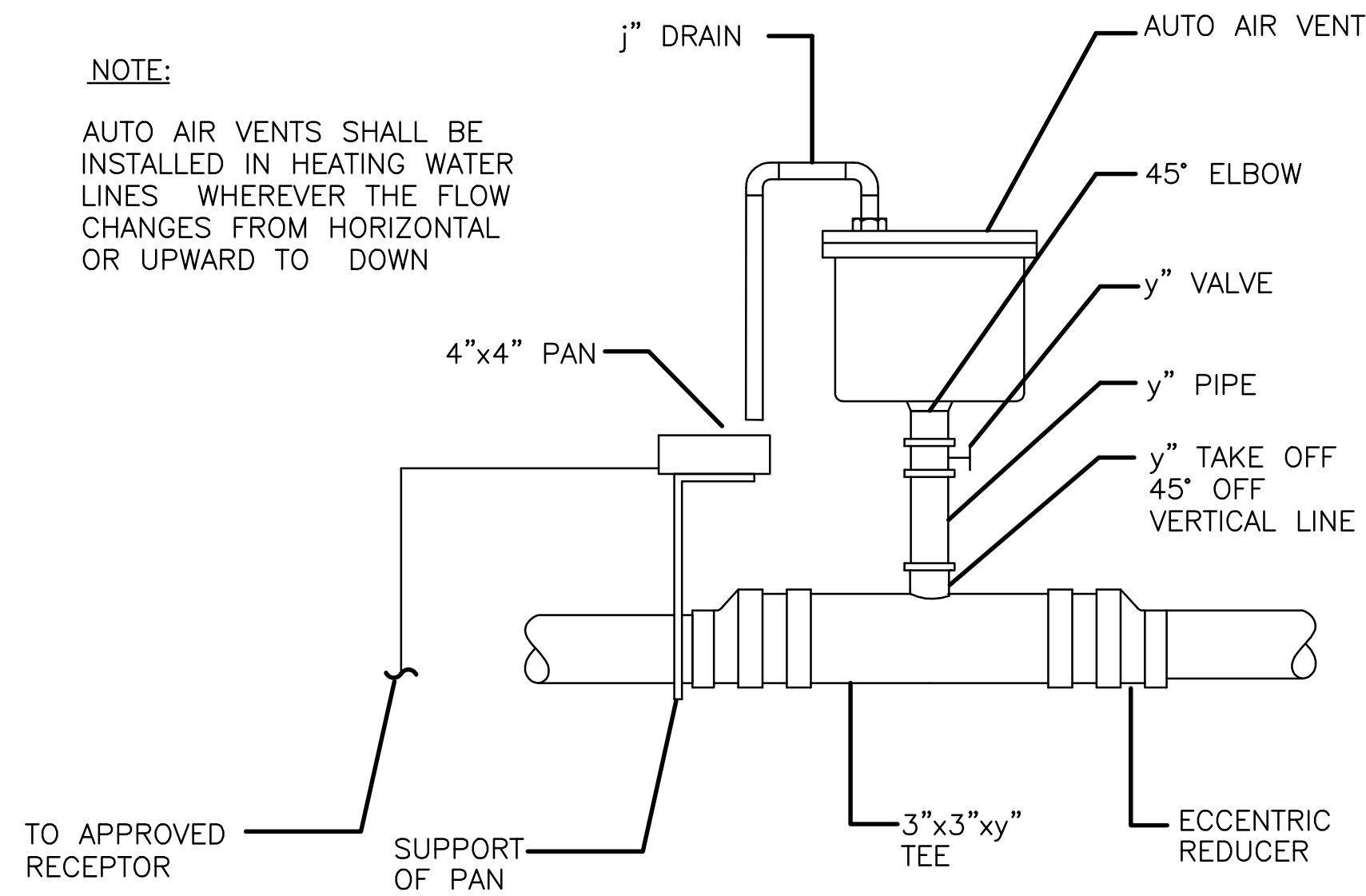
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PROJECT FA9301-06-D-0010

RECORD DRAWINGS
SUBMITTED 11/21/2008

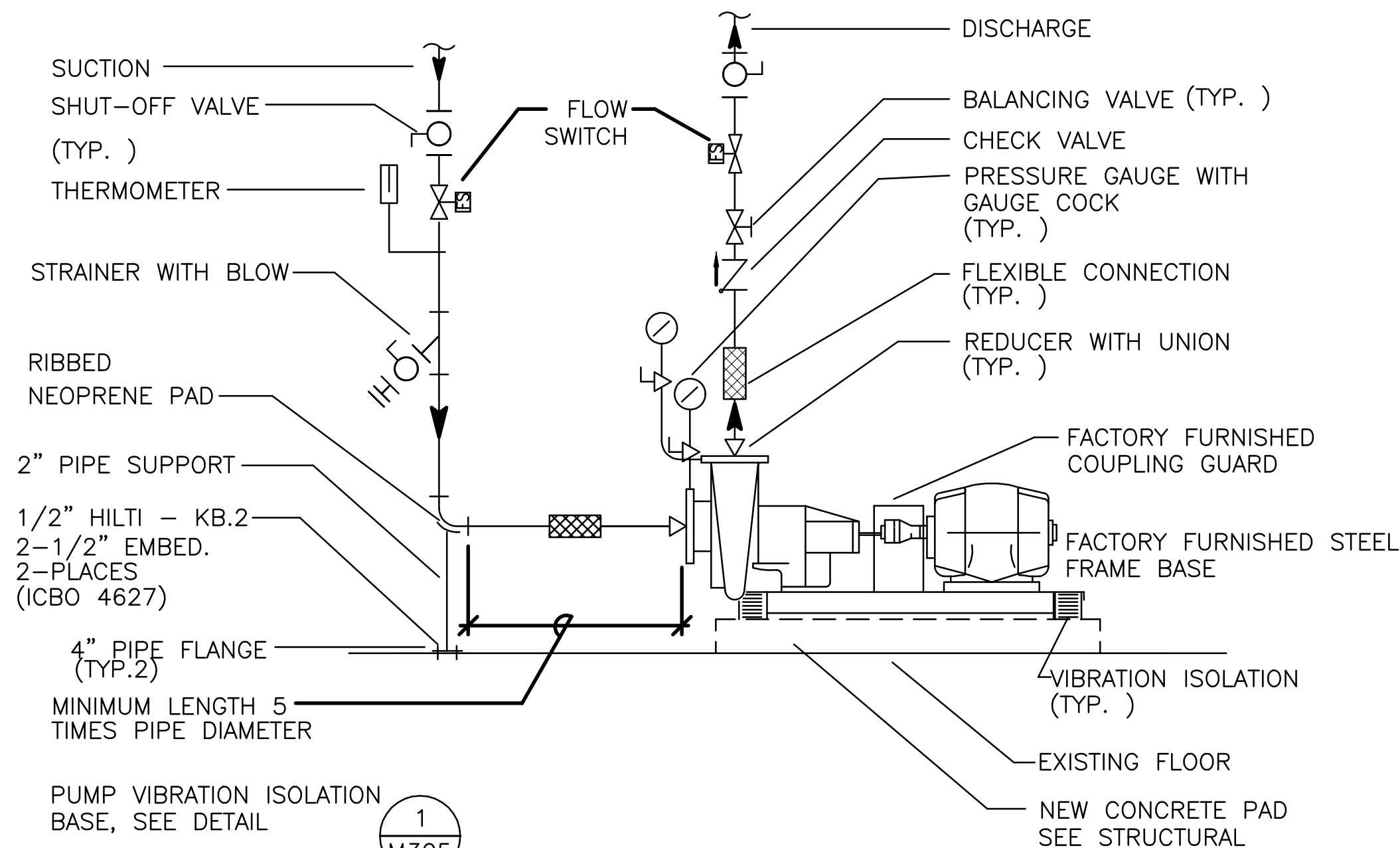
NOTE:

AUTO AIR VENTS SHALL BE INSTALLED IN HEATING WATER LINES WHEREVER THE FLOW CHANGES FROM HORIZONTAL OR UPWARD TO DOWN



TYPICAL AIR VENT DIAGRAM

SCALE NONE 4



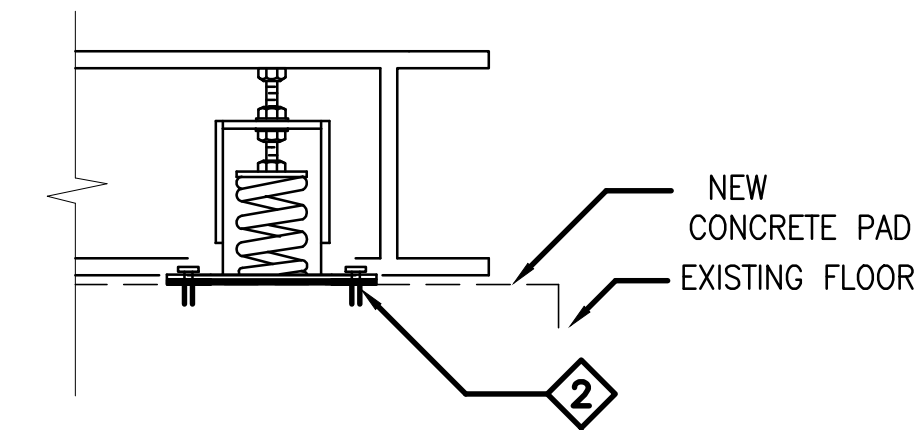
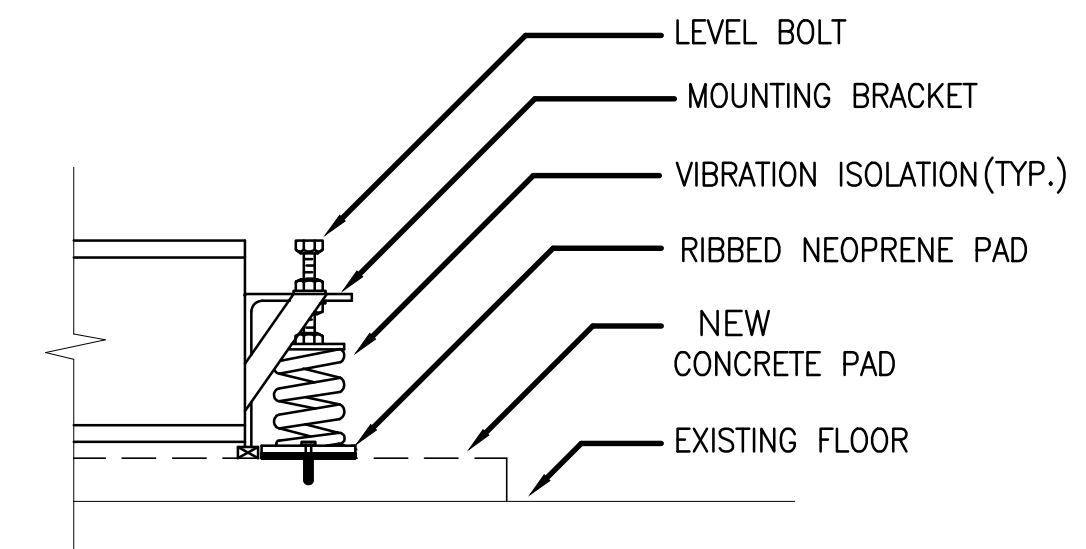
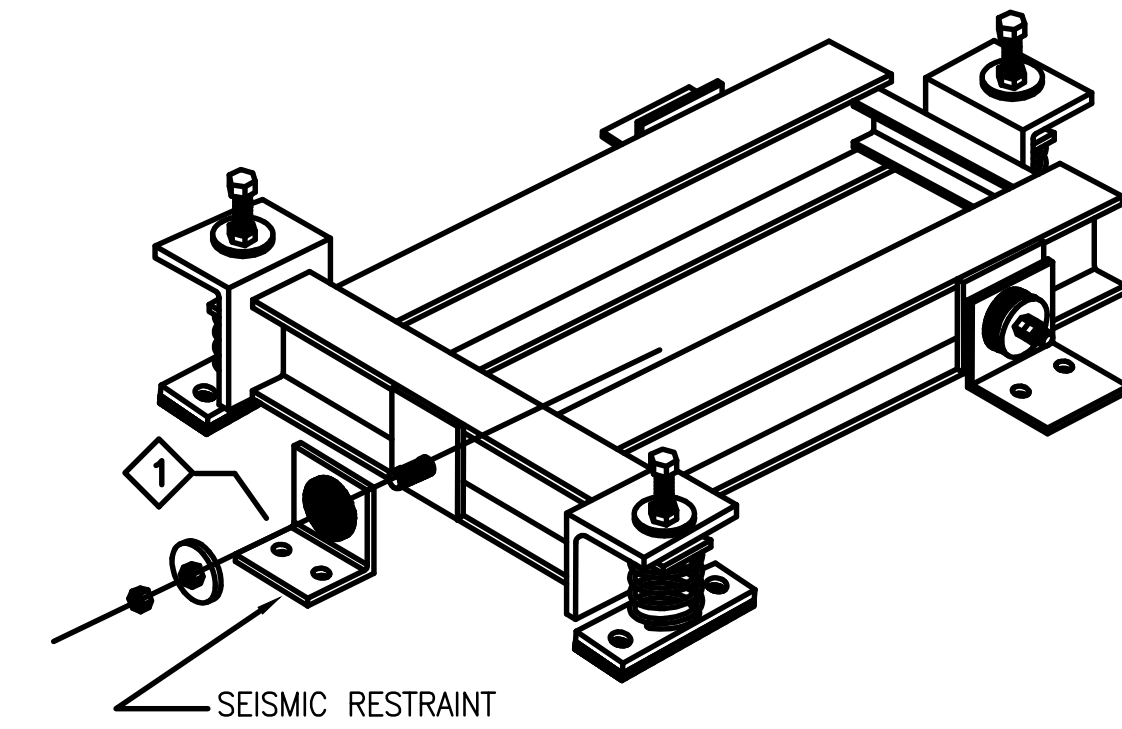
NOTES :

1. INSTALL CONSTRUCTION STRAINERS ON THE HEATING HOT WATER SYSTEM. REMOVE CONSTRUCTION STRAINERS TWO WEEKS AFTER START OF NORMAL OPERATION.
2. VALVES, STRAINERS AND CONNECTORS SHALL BE PUMP CONNECTION SIZE OR LARGER.
3. PROVIDE NEW FLOW SWITCH ON ALL PUMP SYSTEMS. (NEW & EXISTING TO REMAIN.)

TYPICAL WATER PUMP PIPING DIAGRAM

SCALE NONE 2

VIBREX TYPE RMSBP-3200
STRUCTURAL STEEL BASE WITH ALL-WELDED CONSTRUCTION, STABLE SPRINGS, HEIGHT SAVING BRACKETS AND OSHPD PRE-APPROVED NUMBER R-0437 SEISMIC RESTRAINTS
2" STATIC DEFLECTION:
APPROVED OSHPD # R-0029.



NOTES:

- 1 3200KE SEISMIC RESTRAINTS TO RESTRAIN MOVEMENT IN ALL DIRECTIONS.
- 2 3/4" DIA. TRUBOLT REDHEAD EXPANSION ANCHORS WITH MIN. 3-1/4" EMBED. IN EXISTING HARDROCK CONCRETE. OR 3/4" HILTI KB-II BOLTS (ICBO #ER-4627) WITH 3-1/4" EMBEDMENT IN NEW 3000 PSI HARDROCK CONCRETE.

THREADED PIPING

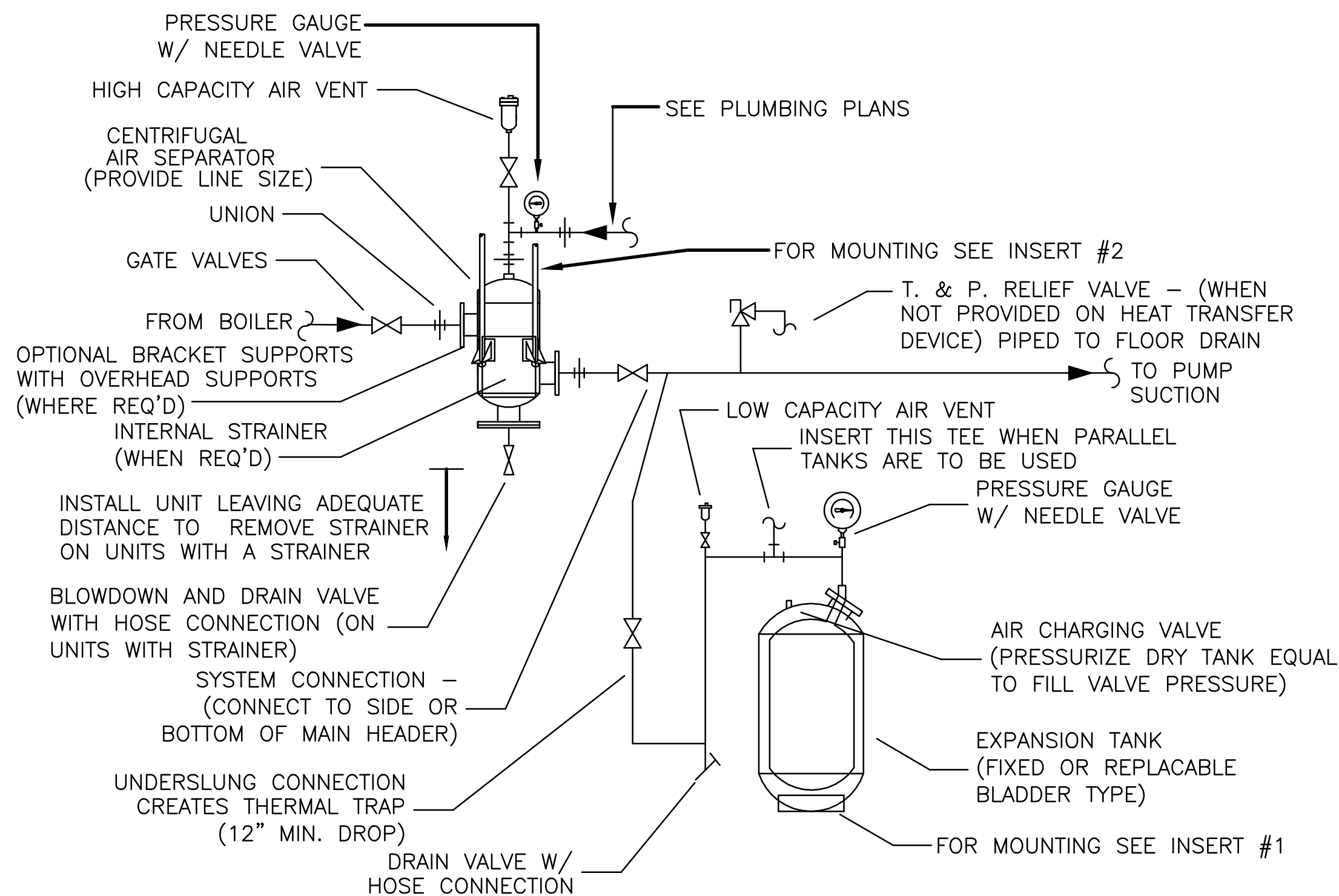
KEY NOTE: THIS IS A TYPICAL DRAWING AND IS SUBMITTED FOR APPROVAL OF ISOLATION TYPE ONLY. CERTIFIED SUBMITTALS INCLUDING ANCHORAGE CALCULATIONS WILL BE FURNISHED AFTER RECEIPT OF EQUIPMENT SUBMITTALS.

TYPICAL WATER PUMP MOUNTING DIAGRAM

SCALE NONE 1

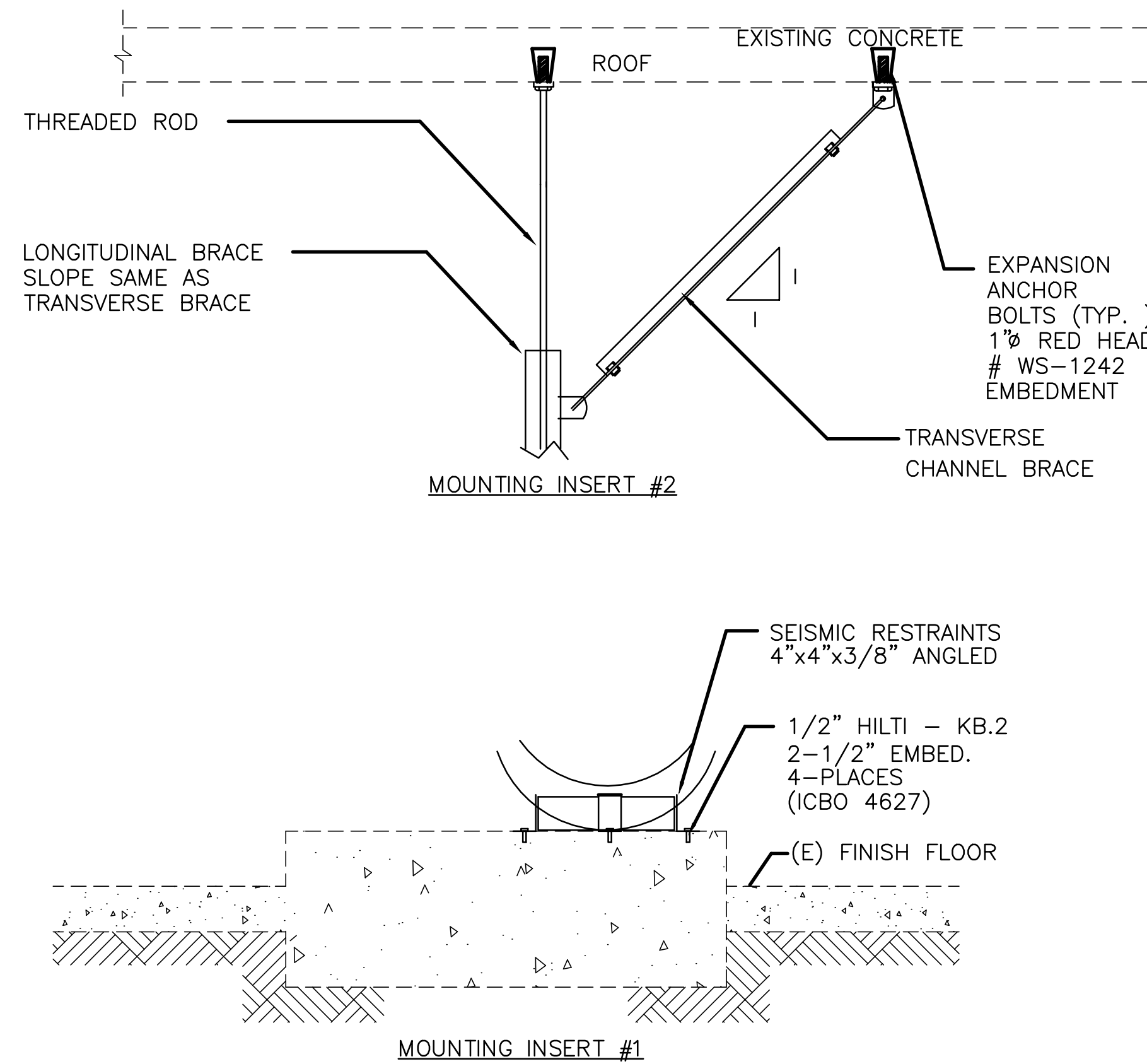
NOTES:

1. PROVIDE ANCHOR BOLTS, STRUCTURAL STEEL SUPPORTS AND TRANSVERSE BRACING IN ACCORDANCE WITH SMACNA GUIDELINE FOR SEISMIC RESTRAINTS OF MECHANICAL & PLUMBING SYSTEMS.



AIR SEPARATOR AND EXPANSION TANK DETAIL

SCALE NONE 3



PRIME CONTRACTOR: POJUAQUE PUEBLO SERVICES



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DRAWN BY:
TS

CHECKED BY:

DATE:
12/05/2008

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PROJECT
FA9301-06-D-0010

M3.5

RECORD DRAWINGS
SUBMITTED 11/21/2008

J:\08-038 - EMB Building 1408 - Chiller, Boiler, AHU's - Western\08-038 - M3.5.dwg, 11/22/2008 9:22:57 AM

WATER SIDE SEQUENCE OF OPERATIONS

1. GAS HOT WATER SYSTEMS SEQUENCE OF OPERATIONS (B-1 & B-2)

(A) GENERAL

THE NEW GAS HOT WATER SYSTEMS WILL CONSIST OF ONE NEW HOT WATER BOILERS AND ONE HOT WATER PUMPS THE BOILER WILL BE FACTORY FURNISHED WITH A PREWIRED BOILER CONTROL PANEL WHICH WILL PERFORM BOILER CAPACITY, LIMIT AND SAFETY CONTROLS, MONITOR AND ALARM BOILER OPERATION.

(B) HOT WATER COIL LOOP

HOT WATER FLOW TO HOT WATER COILS AND PANEL SYSTEMS WILL BE REGULATED THROUGH EXISTING HOT WATER COIL VALVES. WHEN HEATING IS REQUIRED, THE HOT WATER VALVES WILL BE MODULATED TO SATISFY THE HEATING DEMAND. WHEN HEATING IS NOT REQUIRED, THE HOT WATER VALVES WILL BE FULLY CLOSED. EXCESS WATER IN THE COIL LOOP WILL BE BYPASSED THROUGH THE HOT WATER BYPASS VALVE. A DIFFERENTIAL PRESSURE SENSOR WILL BE INSTALLED ACROSS THE HOT WATER SUPPLY AND RETURN LINES. THE EXISTING CONTROLLER WILL MODULATE THE OPENING OF THE BYPASS VALVE TO MAINTAIN THE DIFFERENTIAL PRESSURE SETPOINT.

(C) STARTUP

THE OPERATOR WILL ASSIGN PUMP AND BOILER ORDER OF ACTIVATION PRIOR TO SYSTEM STARTUP. THIS SEQUENCE OF OPERATIONS ASSUMES THE FOLLOWING ORDER: NEW B-1 & HWP-1, AND NEW B-2 & HWP-2

THE HOT WATER SYSTEM WILL BE ACTIVATED WHEN EITHER:

1. THE OPERATOR SCHEDULED START TIME IS REACHED, OR
2. ANY HEATING SYSTEM IS ENERGIZED.

AT STARTUP, THE EXISTING CONTROLLER WILL OPEN THE BOILER ISOLATION VALVE AND THEN START THE MATCHING HOT WATER PUMP. PUMP WATER FLOW WILL BE CONFIRMED BY AN EXISTING DIFFERENTIAL PRESSURE SENSOR.

WHEN ANY SYSTEM REQUIRES HEATING, THE HOT WATER BYPASS VALVE OPENING WILL BE DECREASED. WHEN THE VALVE OPENING HAS BEEN DECREASED TO THE 50% POSITION FOR TEN MINUTES, THE EXISTING CONTROLLER WILL ENERGIZE THE BOILER.

(D) BOILER OPERATION

UPON RECEIPT OF THE STARTUP SIGNAL FROM THE CONTROLLER, THE OLIER CONTROL PANEL WILL INITIATE BOILER STARTUP SEQUENCE AND PERFORM ALL SAFETY AND LIMIT CONTROL. THE BOILER HOT WATER SUPPLY TEMPERATURE SETPOINT WILL BE ADJUSTABLE AT THE BOILER CONTROL PANEL OR CONTROLLER. AT STARTUP, BOILER WILL OPERATE AT 40% CAPACITY. IF THE SUPPLY TEMPERATURE SETPOINT CANNOT BE ACHIEVED, THE BOILER CONTROL PANEL WILL GRADUALLY MODULATE BOILER CAPACITY UP TO 100%.

(E) SYSTEM HOT WATER SUPPLY TEMPERATURE

THE OPERATOR WILL INPUT A SYSTEM HOT WATER SUPPLY TEMPERATURE SETPOINT AT THE EXISTING CONTROLLER THERMOWELLS WILL BE PROVIDED AT THE NEW COMMON HOT WATER SUPPLY AND RETURN LINES FOR WATER TEMPERATURE MONITORING. THE CONTROLLER WILL MODULATE THE FAN COIL MIXING VALVE TO ACHIEVE THE SYSTEM WATER SUPPLY TEMPERATURE SETPOINT.

(F) SYSTEM CAPACITY CONTROL

THE EXISTING CONTROLLER WILL MODULATE THE HOT WATER MIXING VALVE, BOILERS AND PUMPS OPERATION TO MAINTAIN THE HOT WATER SUPPLY TEMPERATURE SETPOINT. AT STARTUP, THE MIXING VALVE BOILER AND BYPASS PORTS WILL BOTH BE AT THE 50% POSITION. IF THE SUPPLY TEMPERATURE SETPOINT CANNOT BE ACHIEVED WITH THIS INITIAL MIXING VALVE SETTING, THE EXISTING CONTROLLER WILL GRADUALLY INCREASE THE BOILER PORT OPENING AND DECREASE THE BYPASS PORT OPENING. CONVERSELY, IF THE SUPPLY WATER TEMPERATURE IS TOO HIGH, THE EXISTING CONTROLLER WILL DECREASE THE BOILER PORT OPENING AND INCREASE THE BYPASS PORT OPENING.

(G) SHUT OFF CYCLE

WHEN SYSTEM HEATING DEMAND DECREASES, THE HOT WATER BYPASS VALVE WILL EVENTUALLY BE MODULATED FULLY OPEN. WHEN THE BYPASS VALVE HAS BEEN FULLY OPEN FOR FIFTEEN MINUTES, THE EXISTING CONTROLLER WILL DE-ACTIVATE NEW B-1A. AND EXISTINGHOT WATER PUMP P-1/P-2 WILL CONTINUE TO RUN UNTIL THE OPERATOR SCHEDULED STOP TIME IS REACHED.

(H) BOILER WATER FLOW

BOILER OPERATION WILL BE CONTINGENT UPON A MINIMUM WATER FLOW RATE. A FLOW SENSOR WILL BE INSTALLED UPSTREAM OF THE BOILER. WHEN WATER FLOW THROUGH A BOILER APPROACHES THE LOW FLOW LIMIT DEFINED BY THE OPERATOR, THE CONTROLLER WILL SHUT DOWN THE BOILER DE-ENERGIZE THE CORRESPONDING EXISTING PUMPS, AND CLOSE THE BOILER ISOLATION VALVE. THE BOILER FACTORY SAFETY CONTROLS WILL ALSO SHUT-OFF THE BOILER, WHEN THE WATER FLOW IS TOO LOW.

(I) ALARM OPERATION

IF THE PUMP FAILS TO START OR FAILS DURING OPERATION, AND IF THE BBOILER FAILS TO START OR FAILS DURING OPERATION, THE BOILER CONTROLLER WILL IMMEDIATELY SOUND AN ALARM.

(J) MANUAL OPERATION

HOA SWITCHES WILL BE PROVIDED ON THE EXISTING CONTROLLER FOR ALL HOT WATER PUMPS AND BOILER ISOLATION VALVES. THE HOT WATER BYPASS VALVE WILL BE PROVIDED WITH A MANUAL MODULATION CONTROL SWITCH.

CHILLER CONTROL SEQUENCE

SEQUENCE OF OPERATION

1. AIR COOLED CHILLERS, PUMPS

A. CHILLER INCLUDING CHILLER PRIMARY CHILLED WATER PUMPS AND OTHER ASSOCIATED COMPONENTS.

1. GENERAL:

- WHEN OUTDOOR AIR TEMPERATURE IS ABOVE 50°F (ADJ.) OR ON A CALL FOR INCREASED COOLING, THE CHILLER PLANT SHALL BE ENABLED.
- PROVIDE INTEGRATOR PANEL AND WIRING TO CONNECT CHILLER CONTROL CENTER INTERFACE CONTROLS TO THE BMCS FOR EACH CHILLER. CHILLER CONTROL CENTER INTERFACE CONTROLS ARE FURNISHED UNDER SECTION 15950. ALL INPUT DATA SPECIFIED UNDER SECTION 15950 SHALL BE CAPABLE OF BEING MONITORED THROUGH THE BMCS WITHOUT LOSS OF DATA.

2. CHILLER CONTROL

- WHEN CHILLER PLANT IS ENABLED, THE FIRST (LEAD) CHILLER SHALL BE ENABLED.
- THE SECOND CHILLER SHALL BE ENABLED IN SEQUENCE AS REQUIRED TO MAINTAIN A MINIMUM SECONDARY CHILLED WATER SUPPLY TEMPERATURE OF 42°F (ADJ.), OR HIGHER AS DICTATED BY RESET PRIMARY CHILLED WATER SUPPLY TEMPERATURE. IF SYSTEMS ARE FUNCTIONING PROPERLY, THE PRIMARY AND SECONDARY CHILLED WATER SUPPLY TEMPERATURES WILL BE THE SAME. THE PRIMARY CHILLED SUPPLY TEMPERATURE SET POINT FOR EACH CHILLER SHALL BE RESET TO A MAXIMUM OF 48°F (ADJ.) AS REQUIRED TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SET POINTS OF THE MAIN AIR HANDLING UNITS. IF THE CONTROL VALVE FOR THE CHILLED WATER COIL FOR ANY OF THE LISTED AIR HANDLING UNITS IS FULLY OPEN WITHOUT SATISFYING DISCHARGE AIR TEMPERATURE SET POINT, THE PRIMARY CHILLED WATER SUPPLY TEMPERATURE SETPOINT SHALL BE GRADUALLY RETURNED TO 42°F (ADJ.).

4. CHILLED WATER PUMPS

- WHEN A CHILLER IS ENABLED, ITS ASSOCIATED CHILLED WATER PUMP SHALL BE ENABLED BY THE BMCS. THE ASSOCIATED CHILLED WATER, NORMALLY OPEN CONTROL VALVE AT THE CHILLER SHALL BE OPENED. CONTROL VALVES SHALL HAVE ELECTRIC ACTUATOR AND SHALL BE LINE SIZE. CONTROL VALVE AND ACTUATOR SHALL BE CONSTRUCTED? OF CORROSION RESISTANT MATERIALS AT THE CHILLER, THE CONTROL VALVE SHALL HAVE END SWITCH WHICH SHALL BE DIRECTLY INTERLOCKED WITH THE CHILLER INDEPENDENT OF THE BMCS.

1) CH-1 SHALL BE ASSOCIATED WITH CHP-1.

2) CH-2 SHALL BE ASSOCIATED WITH CHP-2.

WHEN CH-1 IS ENABLED, PRIMARY CHILLED WATER PUMP CHP-1 SHALL BE ENABLED.

WHEN CH-2 IS ENABLED, PRIMARY CHILLED WATER PUMP CHP-2 SHALL BE ENABLED.

NOTE: CH-1 AND CH-2 PUMPS AND START SEQUENCE AS PREVIOUSLY PROGRAMMED THROUGH EXISTING BMCS PROTOCOL.

- PROVIDE EACH PUMP WITH CURRENT SWITCH FOR OPERATING STATUS.

5. MISCELLANEOUS:

- PROVIDE WIRING TREATMENT SYSTEM FURNISHED. IF CHEMICAL CONTROLLER SENSES ALARM CONDITION, AN ALARM SIGNAL SHALL BE RECEIVED BY THE BMCS.

- WHEN CHILLER PLANT IS ENABLED, THE PUMP SHALL BE ENABLED. PROVIDE CURRENT SENSOR FOR PUMP STATUS.

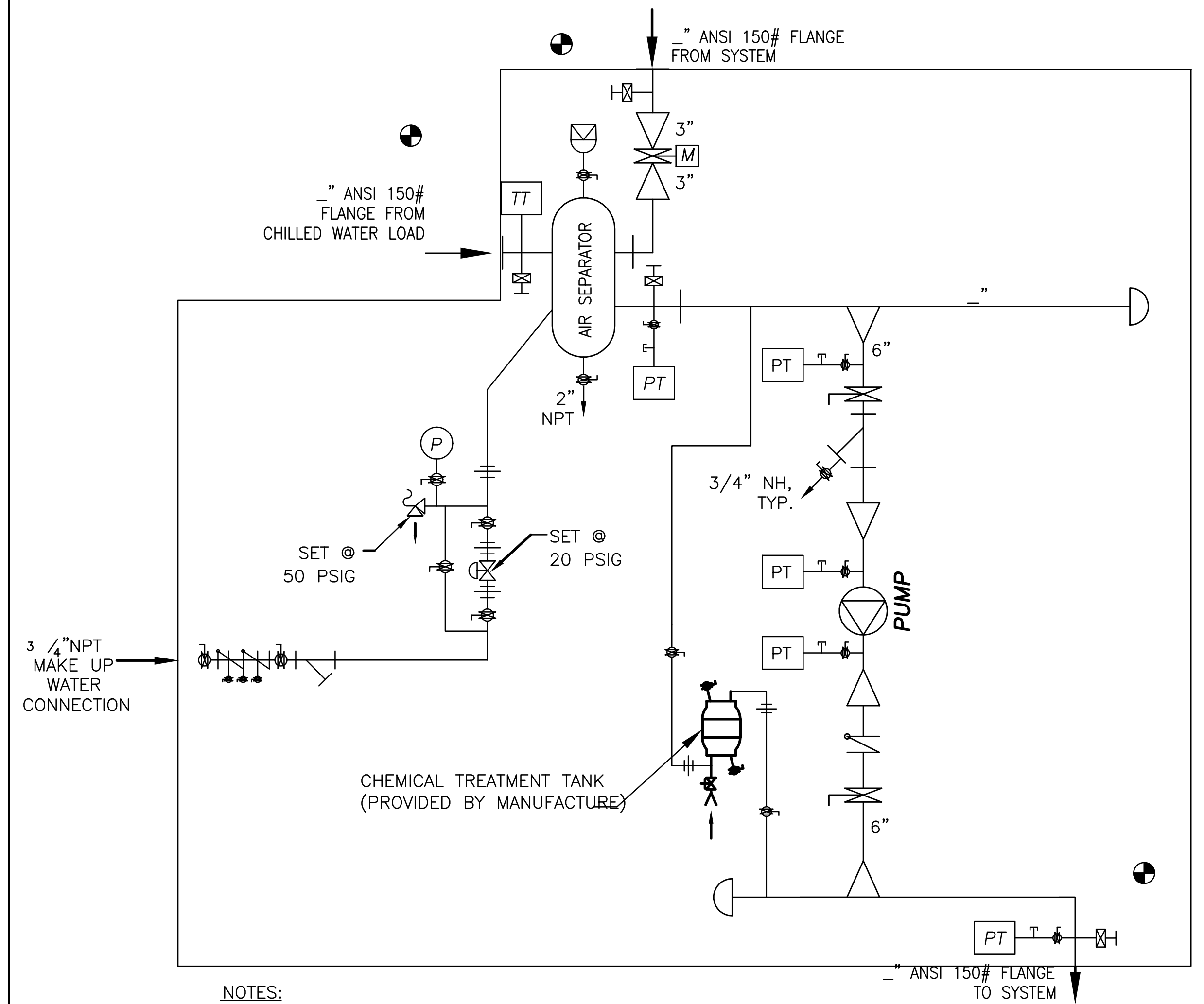
6. MAKE UP WATER CONTROL:

- PROVIDE ALL WIRING BETWEEN LEVEL SENSING DEVICE AND MAKE-UP WATER CONTROL VALVES TO OPEN CONTROL VALVE WHEN WATER IS REQUIRED. ALL WIRING SHALL BE INDEPENDENT OF THE BMCS.

13. COORDINATE CONTROLS WITH UNIT MANUFACTURER, CONTROL AND ELECTRICAL CONTRACTORS FOR CONNECTION TO POWER AND LIFE SAFETY SYSTEMS AS REQUIRED BY CODE.

14. INSTALLATION OF FIELD DEVICES SUCH AS RELAYS, SENSORS, LOCAL CONTROLLERS, ETC SHALL FOLLOW THE INSTRUCTIONS IN THE CONTRACT DOCUMENTS. OTHERWISE THE CONTROLS CONTRACTOR SHALL FIELD VERIFY THE OPTIMUM LOCATIONS FOR MOUNTING THE DEVICES.

15. THE CONTROL CONTRACTOR SHALL, AS PART OF HIS SHOP DRAWING ACTIVITY, PREPARE AND SUBMIT TO THE USERS ENGINEER CONTROL/WIRING & PIPING DIAGRAMS WHICH INDICATES, GRAPHICALLY AND WITH SUFFICIENT DETAIL, THE INTENT OF THE ABOVE DESCRIBED SEQUENCE OF OPERATIONS. THESE CONTROL WIRING AND/OR PIPING DIAGRAMS SHALL BE SUPPORTED WITH APPROPRIATE MANUFACTURERS' CATALOG DATA AND POWER REQUIREMENT.



NOTES:
1. FOR PIPE SIZES SEE PLANS.

TYPICAL WATER PUMP PACKAGE PIPING DIAGRAM

SCALE
NONE

1

RECORD DRAWINGS

SUBMITTED 11/21/2008

PRIME CONTRACTOR: POJOAQUE PUEBLO SERVICES



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BUDLONG
& ASSOCIATES, INC.
CONSULTING ENGINEERS

DESIGN FOR:
**BUILDING 1408
REPLACE CHILLER, BOILER AND AHU'S**
EDWARDS AIR FORCE BASE, CALIFORNIA 93523-8450

QUOTE/DWG #:

DRAWN BY:
TS

CHECKED BY:

DATE:
12/05/2008

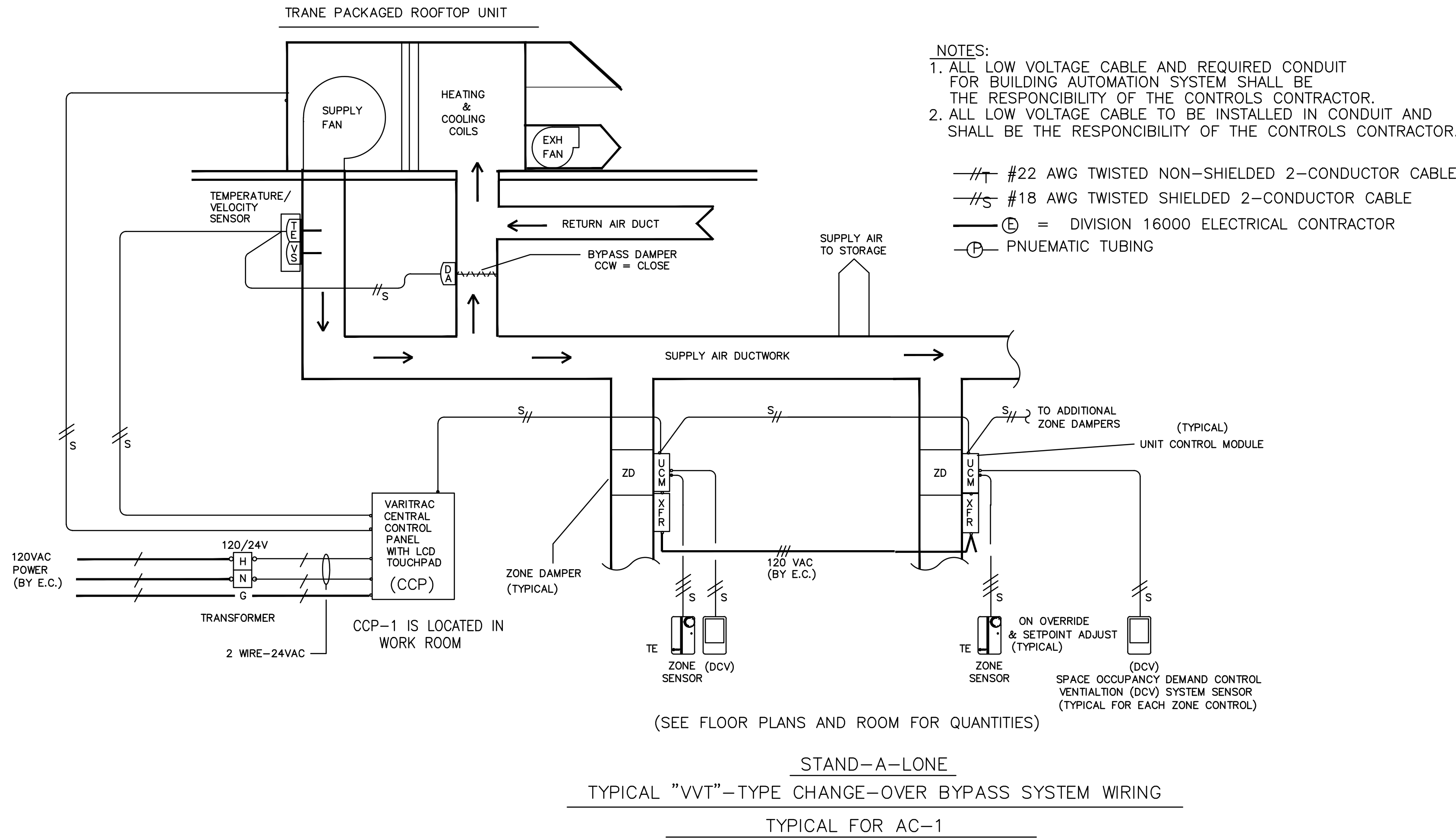
SCALE:
AS NOTED

REVISION
HISTORY

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2
3
4
5

PROJECT
FA9301-06-D-0010

M4.1



TYPICAL "VVT"-TYPE UNIT DIAGRAM

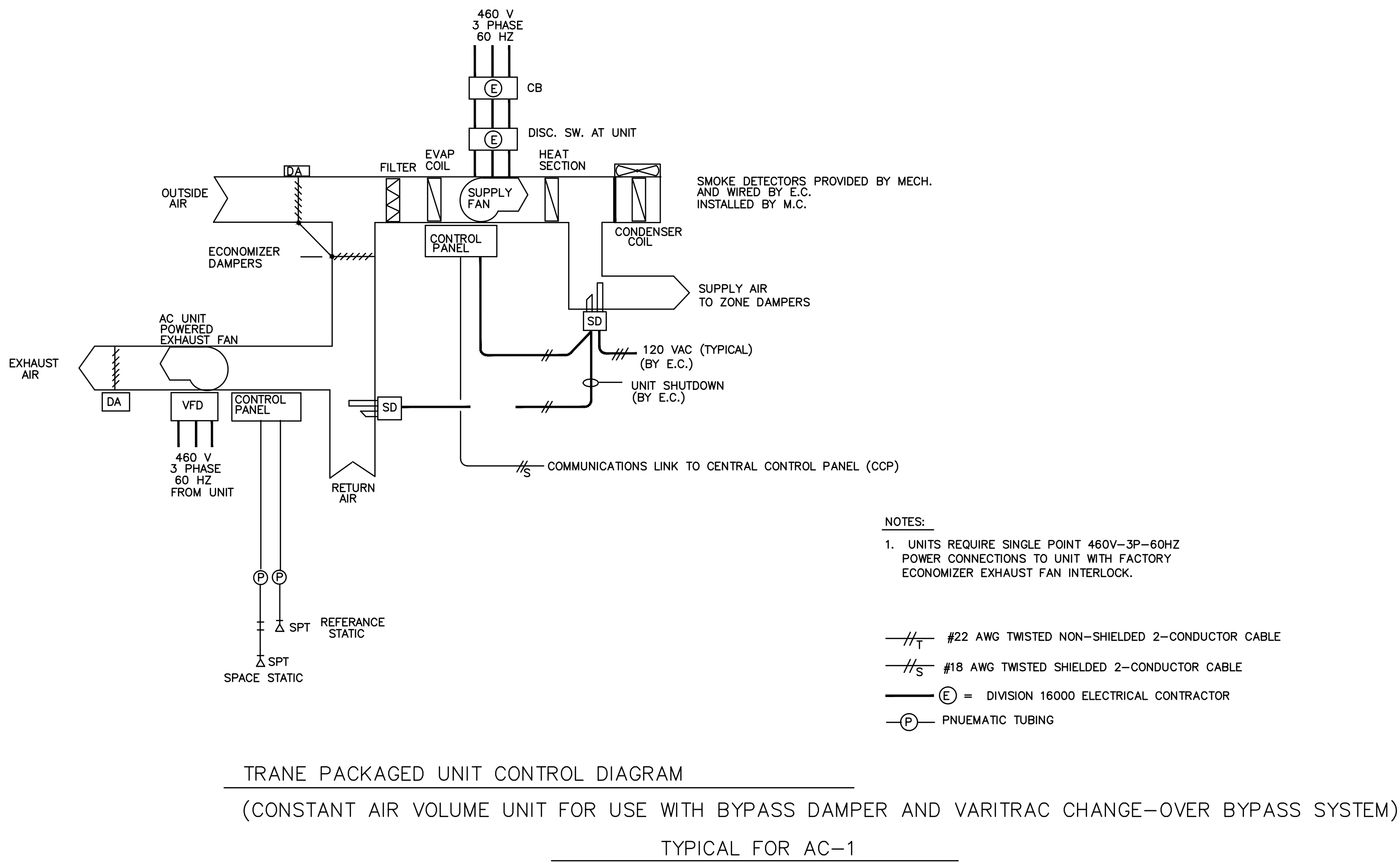
SCALE NONE 2

VARIABLE AIR VOLUME SYSTEM (VAV) & OCCUPANCY CONTROLS. (TYPICAL FOR AC-1)
 (AC UNIT WITH VAV SYSTEMS AS SCHEDULED.)

- A. THE CHANGE-OVER/BYPASS VAV SYSTEM SHALL PROVIDE TEMPERATURE CONTROL OF MULTIPLE COMFORT ZONES THROUGH THE USE OF CONSTANT VOLUME SINGLE ZONE HVAC UNITS. VARIABLE AIR VOLUME CONTROL SHALL BE PROVIDED FOR EACH ZONE TO MAINTAIN ZONE TEMPERATURE WITHIN THE HEATING/COOLING SETPOINTS. THE SYSTEM SHALL MONITOR THE TEMPERATURE AND SETPOINTS OF THE ZONES AND AUTOMATICALLY CHANGE THE HEAT/COOL MODE OF THE HVAC UNIT TO SATISFY ZONE REQUIREMENT. THE SYSTEM SHALL MAINTAIN PROPER AIRFLOW THROUGH THE DUCT SYSTEM AND HVAC UNIT BY BYPASSING AIR FROM THE SUPPLY TO THE RETURN DUCT AS NECESSARY TO MAINTAIN REQUIRED STATIC PRESSURE NEEDED IN THE SYSTEM.
- B. THE CHANGE-OVER/BYPASS VAV SYSTEM SHALL HAVE ALL ANCILLARY DEVICES, SENSORS AND OPERATING PARAMETERS VIEWABLE AND EDITABLE FROM A CENTRAL PANEL OR FROM A COMPUTER COMMUNICATING EITHER DIRECTLY OR REMOTELY WITH THE CENTRAL SYSTEM PANEL.
- C. THE CONTROL SYSTEM SHALL BE DESIGNED AS INDICATED ON THE DRAWINGS AND AS DESCRIBED IN THE SPECIFICATIONS.
- D. DIRECT DIGITAL CONTROL (DDC) TECHNOLOGY SHALL BE USED TO PROVIDE THE FUNCTIONS NECESSARY FOR CONTROL OF MECHANICAL SYSTEMS ON THIS PROJECT.

AC-1 SEQUENCE OF OPERATIONS

SCALE NONE 1



TYPICAL UNIT DIAGRAM

SCALE NONE 3

INTENTIONALLY LEFT BLANK

SCALE NONE —

PRIME CONTRACTOR: POJUAQUE PUEBLO SERVICES



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 SCALE:
 AS NOTED

REVISION HISTORY

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PROJECT
 FA9301-06-D-0010
M4.2

REGISTERED PROFESSIONAL ENGINEER
 JAMES A. JORDAN
 No. 25448
 EXP. 09-30-10
 MECHANICAL
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JOB NO. 08-038

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