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CORTE MADERA/CA/94925



IVO SKIBOLA, PE

REVISIONS	
02.03.25	— LL ISSUE
04.03.25	— LL COMMENT RESPONSE
04.04.25	— PERMIT SET
04.09.25	— BID ISSUE
05.30.25	— DOB COMMENT RESPONSE

MECHANICAL SPECIFICATIONS

SHEET NUMBER

M-100

HVAC SPECIFICATIONS

A. SCOPE OF WORK:

PROVIDE ALL LABOR, MATERIALS, EQUIPMENT AND CONTRACTOR'S SERVICES NECESSARY FOR A COMPLETE SAFE INSTALLATION OF ALL WORK INDICATED IN CONTRACT DOCUMENTS, IN FULL CONFORMITY WITH REQUIREMENTS OF BUILDING CODES AND OF ALL AUTHORITIES HAVING JURISDICTION, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

- SECURE CERTIFICATES, PAY ALL FEES AND CHARGES FOR ALL WORK INSTALLED CERTIFYING COMPLIANCE WITH LATEST RELEVANT CODES AND LOCAL REGULATIONS HAVING JURISDICTION. DELIVER CERTIFICATES TO OWNER BEFORE FINAL BILLING.
- DEMOLITION AND REMOVAL FROM SITE OF EXISTING MECHANICAL EQUIPMENT INCLUDING DUCTWORK UNLESS OTHERWISE NOTED.
- NEW LOW PRESSURE DUCTWORK AND ACCESSORIES.
- AC UNITS AND LOW VOLTAGE THERMOSTATS.
- VAV'S, FANS AND CONTROLLERS.
- DIFFUSERS, REGISTERS AND GRILLES.
- INSULATION AND ACOUSTICAL LINING.
- VIBRATION ISOLATION FOR ALL EQUIPMENT.
- MOTORS, STARTERS AND MISCELLANEOUS ELECTRICAL EQUIPMENT.
- CONDENSER WATER PIPING SYSTEM WITH VALVES AND ACCESSORIES.
- CONDENSATE DISPOSAL SYSTEM.
- SHOP DRAWINGS AND RECORD DRAWINGS.
- OBTAINING GOVERNMENT APPROVALS AND PERMITS INCLUDING CONTROLLED INSPECTIONS.
- COMPLETE AUTOMATIC CONTROL SYSTEMS FOR ALL THE UNITS.
- TESTING AND BALANCING OF SYSTEMS AND FURNISHING BALANCING REPORT.
- STORING AND PROTECTION OF EQUIPMENT AND/OR APPURTENANCES SPECIFIED HEREIN.
- CUTTING AND ROUGH PATCHING REQUIRED FOR THE WORK OF THIS TRADE.
- PIPE HANGERS.
- TESTING OF NEW PIPING.
- INSTALLATION AND TESTING OF SMOKE DETECTORS.

C. CLEANING AND PROTECTION:

- STORE MATERIALS IN A MANNER THAT WILL MAINTAIN AN ORDERLY, CLEAN APPEARANCE. IF STORED ON SITE IN UNPROTECTED AREAS, ALL EQUIPMENT AND MATERIALS SHALL BE KEPT OFF THE GROUND BY MEANS OF PALLETS OR RACKS, AND COVERED WITH TARPAILINS.
- INLET AND DISCHARGE OPENINGS OF ALL EQUIPMENT SHALL BE KEPT COVERED UNTIL THE EQUIPMENT IS READY TO RUN.
- EQUIPMENT AND MATERIAL DAMAGED IS SUBJECT TO REJECTION AND REPLACEMENT.
- DURING CONSTRUCTION, PROTECT ALL DUCTWORK, PIPING AND EQUIPMENT FROM DAMAGE AND DIRT. CAP THE OPENINGS OF ALL DUCTWORK, PIPING AND EQUIPMENT NOZZLES.
- AFTER COMPLETION OF PROJECT, CLEAN THE EXTERIOR SURFACES OF THE EQUIPMENT.

D. CODES AND REGULATIONS:

- WORK SHALL MEET OR EXCEED THE LATEST REQUIREMENTS OF NATIONAL, STATE, COUNTY, MUNICIPAL, AND OTHER AUTHORITIES EXERCISING JURISDICTION OVER THE CONSTRUCTION WORK AT THE PROJECT.
- ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.
- CONTRACTOR SHALL GIVE NECESSARY NOTICES, FILE DRAWINGS AND SPECIFICATIONS WITH ALL DEPARTMENTS HAVING JURISDICTION, AND OBTAIN ALL NECESSARY PERMITS AND CERTIFICATES, AND PAY ALL FEES AND CHARGES CONNECTED THEREWITH. ALL CERTIFICATES SHALL BE DELIVERED TO THE OWNER BEFORE THE WORK IS FULLY ACCEPTED. ALL EQUIPMENT SHALL BE APPROVED AS REQUIRED BY THE GOVERNING CODES. THE CONTRACTOR SHALL PROVIDE THE CONTROLLED INSPECTION.

E. GUARANTEE AND CERTIFICATION:

THE CONTRACTOR SHALL GUARANTEE WORK PERFORMED AND MATERIALS INSTALLED TO BE FREE FROM DEFECTS AND SHALL REPLACE ANY DEFECTIVE MATERIAL OR WORKMANSHIP, FREE OF COST TO THE OWNER, FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE, EVIDENCED BY THE DATE OF FINAL PAYMENT.

F. SUBMITTALS AND RECORD DRAWINGS:

- PRIOR TO ASSEMBLING OR INSTALLING THE WORK, THE FOLLOWING SHALL BE SUBMITTED FOR APPROVAL:
 - 3/8" SCALE SHEET METAL DRAWINGS INDICATING DUCT LAYOUT.
 - 1/4" SCALE DRAWING INDICATING PIPING.
 - AUTOMATIC CONTROLS DEVICES AND DIAGRAMS WITH SEQUENCE OF OPERATION DESCRIPTION.
 - CUTS AND TECHNICAL DATA ON EACH EQUIPMENT, LOUVER, DIFFUSER, GRILLE, DAMPER, ACCESS DOOR, THERMOSTAT, VIBRATION ISOLATION EQUIPMENT INSTALLATION DETAIL.
- SHEET METAL DRAWINGS WILL NOT BE ACCEPTED FOR APPROVAL UNLESS:
 - DRAWINGS SHALL BE FULLY COORDINATED WITH EXISTING FIELD CONDITIONS AND WORK OF OTHER TRADES AND SHALL BE SO STATED ON THE SHOP DRAWINGS.
 - TOP AND BOTTOM OF HEIGHTS ARE LABELED FOR ALL DUCTWORK AND EQUIPMENT.
 - REQUIRED ACCESS SPACE FOR ALL EQUIPMENT IS SHOWN.
- RECORD DRAWINGS: RECORD ALL DEVIATIONS FROM CONTRACT DRAWINGS AND DELIVER TO OWNER DRAWINGS SHOWING WORK AS ACTUALLY INSTALLED.

G. CONNECTIONS TO EXISTING WORK:

- PLAN INSTALLATION OF NEW WORK AND CONNECTIONS TO EXISTING WORK TO INSURE MINIMUM INTERFERENCE WITH REGULAR OPERATION OF EXISTING FACILITIES. SUBMIT TO OWNER FOR APPROVAL, DATE SCHEDULE OF NECESSARY TEMPORARY SHUT-DOWNS OF EXISTING SERVICES. ALL SHUTDOWNS SHALL BE MADE AT SUCH TIMES AS WILL NOT INTERFERE WITH REGULAR OPERATION OF EXISTING FACILITIES AND ONLY AFTER WRITTEN APPROVAL OF THE BUILDING.
 - CONNECT NEW WORK TO EXISTING WORK IN NEAT AND APPROVED MANNER. RESTORE EXISTING WORK DISTURBED TO ORIGINAL CONDITION.
- H. WIRING:
- THE RESPONSIBILITY OF THIS TRADE IN CONNECTION WITH ELECTRICAL WORK IS AS FOLLOWS:
- FURNISH AND DELIVER TO THE SITE ACTUATING DEVICES WHICH REQUIRE ELECTRICAL CONNECTION ONLY (SUCH AS PUSH-BUTTON STATIONS, WALL-MOUNTED ELECTRICAL CONTACTING THERMOSTATS, ETC.) FOR MOUNTING AND CONNECTION BY THE ELECTRICAL TRADE.
 - PROVIDE NECESSARY INFORMATION, SUPERVISION, AND COORDINATION AS REQUIRED TO IMPLEMENT THE WIRING DIAGRAMS AND OTHER INFORMATION FOR WORK OF THE ELECTRICAL TRADE.
 - FURNISH AND INSTALL AUTOMATIC CONTROL WIRING BELOW 100 VOLT. WIRING SHALL CONFORM TO THE NATIONAL ELECTRIC CODE AND TO AND LOCAL AND/OR STATE CODES THAT APPLY.

I. MOTORS:

- ALL MOTOR AND MOTOR CONTROL EQUIPMENT SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE AND THE LOCAL PUBLIC UTILITY FURNISHING CURRENT TO THE BUILDING.
- MOTOR CONTROL:
 - FURNISH SUITABLE STARTING AND CONTROLLING EQUIPMENT FOR MOTORS FURNISHED AS PART OF THE AIR CONDITIONING SYSTEMS.
 - FURNISH PUSH BUTTONS AND OTHER DEVICES, INCLUDING PILOT LIGHTS REQUIRED FOR THE MANUAL OR AUTOMATIC ACTUATING OF MOTOR STARTING EQUIPMENT AS NOTED ON THE PLANS. DEVICES INDICATED AS BEING REQUIRED IN STARTER COVERS SHALL BE DELIVERED SO MOUNTED TO THE PROJECT, WHERE PLANS INDICATE THAT DEVICES ARE TO MOUNTED SEPARATELY FROM THE MOTOR STARTERS, SUCH DEVICES SHALL BE FURNISHED COMPLETE WITH NEMA CLASS I GENERAL PURPOSE ENCLOSURES.
 - STARTERS FOR MOTORS 1/2 HP AND LARGER SHALL BE OF THE MAGNETIC CIRCUIT BREAKER TYPE. EACH MAGNETIC STARTER SHALL BE FURNISHED WITH COMBINATION MAGNETIC CIRCUIT BREAKER TYPE OVERLOAD UNITS IN ALL PHASE LEGS FOR THE MOTOR CONTROLLED, AND SHALL PROVIDE EITHER LOW VOLTAGE PROTECTION OR LOW VOLTAGE RELEASE AS DETERMINED BY THE CONTROL WIRING METHOD INTERLOCKED WITH THE HANDLE OF THE DISCONNECT MEANS TO PREVENT OPENING WHEN THE HANDLE IS IN THE CLOSED POSITION.
 - STARTING EQUIPMENT FOR ALL MOTORS SHALL BE THE PRODUCT OF CUTLER-HAMMER, WESTINGHOUSE, GENERAL ELECTRIC, OR ALLEN BRADLEY.
 - PILOT LIGHTS SHALL BE NEON TUBE TYPE WITH CANDELABRA BASE AND CLEAR GLASS.
 - PUSH BUTTONS SHALL BE THE SPRING RELEASE TYPE.
 - PROVIDE PERMANENT NAMEPLATES MOUNTED ON THE COVER OF EVERY STARTER, SWITCH, OR CIRCUIT BREAKER, REGARDLESS OF ITS LOCATION.
 - PROVIDE "HANDS-OFF AUTOMATIC," (HOA) STARTERS FOR ALL CYCLING EQUIPMENT.

J. CUTTING AND PATCHING:

ALL CUTTING AND ROUGH PATCHING FOR THE INSTALLATION OF THE NEW WORK SHALL BE INCLUDED. FINISH PATCHING SHALL BE BY THE GENERAL CONTRACTOR.

K. SLEEVES AND OPENINGS:

- PROVIDE SLEEVES FOR ALL PIPING AND DUCTWORK PASSING THROUGH WALLS.
- SLEEVES SHALL BE 20 USSO GALVANIZED IRON.
- SEAL OPENINGS BETWEEN SLEEVES AND PIPE OR PIPE INSULATION, FOR FULL DEPTH OF SLEEVE, WITH MINERAL WOOL OR EQUIVALENT NON-ASBESTOS, NON-COMBUSTIBLE MATERIAL.

L. PIPING FOR HVAC SYSTEMS:

- GENERAL
 - NO PIPING SHALL BE LESS THAN 3/4", UNLESS OTHERWISE NOTED
 - FOR PIPE SIZES NOT INDICATED ON PLANS, SEE MANUFACTURER'S EQUIPMENT CONNECTION DETAILS
 - PROVIDE FITTINGS FOR CHANGE IN PIPE SIZE FOR FINAL CONNECTION AT EQUIPMENT AS REQUIRED
 - PROVIDE UNION CONNECTIONS AT EACH PIECE OF EQUIPMENT AND ON EACH SIDE OF ALL VALVES AND IN-LINE EQUIPMENT FOR EASY REMOVAL AND FOR SERVICING.
 - PROVIDE VALVED AND CAPPED CONNECTIONS AT ALL LOW POINTS IN PIPING SYSTEMS REQUIRED FOR DRAINING SYSTEMS
 - ALL PIPING BETWEEN STEEL OR BRONZE DIELECTRIC FITTINGS SHALL BE BRAZED USING SILVER SOLDER AND ALL COPPER FITTINGS TO COPPER PIPE SHALL BE BRAZED USING PHSC0, OR APPROVED 99.4 % COPPER SOLDER ALLOY.
 - PRESSURE RATING OF STRAINER TO MATCH THAT OF THE VALVES IN THE SAME LINE. PROVIDE DIELECTRIC UNIONS BETWEEN ALL FERROUS AND NON-FERROUS PIPING.
 - HIGH POINTS OF ALL WATER PIPING SHALL BE PROVIDED WITH MANUAL VENTS, AND ALL LOW POINTS SHALL HAVE DRAIN VALVES WITH HOSE CONNECTIONS FOR COMPLETE DRAINING OF THE LINES, RATED FOR 200 #S.W.P.
 - PROVIDE DIELECTRIC GASKETS BETWEEN JOINTS OF DISSIMILAR METALS AND SLEEVES AND WASHERS BETWEEN FLANGES, BOLTS AND NUTS.
 - ALL PIPING SHALL BE LABELED TO INDICATE SIZE, PURPOSE AND DIRECTION OF FLOW IN SUCH A MANNER THAT IT CAN EASILY BE READ FROM THE FLOOR. LETTERS SHALL NOT BE LESS THAN 2".
 - BALANCE AND ADJUST ALL MANUAL BALANCING VALVES.
 - PROVIDE MINIMUM PITCH TO INSURE ADEQUATE VENTING AND DRAINAGE.
 - PROVIDE, AS REQUIRED, AUTOMATIC AIR VENTS, MANUAL AIR VENTS AND RELIEF AIR VENTS.
 - AVOID ENTRY OF FOREIGN MATTER INTO PIPING DURING CONSTRUCTION. AFTER COMPLETION OF PIPING, FLUSH SYSTEM WITH WATER FOR AN 8 HOUR PERIOD. REMOVE AND CLEAN STRAINERS, AND BLOW OFF ALL PIPING LOW POINTS AT THE END OF THE 8 HOUR PERIOD. REFILL SYSTEM WITH WATER OR, FOR GLYCOL SYSTEMS, REFILL WITH 40% OF ETHYLENE GLYCOL SOLUTION WITH INHIBITORS. COORDINATE AND PROVIDE WATER TREATMENT IN ACCORDANCE WITH THE BUILDING STANDARDS.
 - MOTORIZED TWO WAY CHILLED WATER VALVES TO BE HONEYWELL OR APPROVED EQUAL, SELECTED BY THE MANUFACTURER AT 150 #S.W.P. AND SUITABLE FOR 110 VOLT PRIMARY SUPPLY AND 24 VOLT CONTROL ACTUATION.
- COMPLETE WITH:
 - PIPE
 - FITTINGS
 - VALVES
 - HANGERS, SUPPORTS
 - ACCESSORIES
- MATERIALS:

- CONDENSER WATER, CONDENSATE DRAIN, AND WATER MAKE-UP PIPING SHALL BE TYPE "L" COPPER TUBING.
- REFRIGERATION PIPING SHALL BE TYPE "L" COPPER TUBING OF THE SIZE SHOWN ON THE DRAWINGS OR AS RECOMMENDED BY THE MANUFACTURER OF THE EQUIPMENT INSTALLED. ALL NEW REFRIGERATION PIPING SHALL BE TESTED AS PER THE MANUFACTURER'S REQUIREMENTS.
- FITTINGS AND VALVES:
 - COMPRESSION AND FLARED FITTINGS: CAST BRASS ANSI B16.26, FLANGE GASKETS FOR JOINTS OF DISSIMILAR METALS: ISOLATING GASKETS, SLEEVES AND WASHERS BETWEEN FLANGES, BOLTS AND NUTS.
 - PROVIDE 1/2" DRAIN VALVE AND CAPPED CONNECTIONS AT LOW POINTS. PROVIDE 3/4" CAPPED CONNECTION FOR DRAINING CONNECTION AT THE LOWEST POINT IN THE SYSTEM AND IN EQUIPMENT ROOM.
 - TRAP SEAL IN CONDENSATE DRAIN PIPING SHALL BE MINIMUM 1" GREATER THAN THE STATIC PRESSURE IN THE SYSTEM.
 - COPPER PIPING EXCEPT CITY WATER AND CONDENSATE DISCHARGE: (SILVER SOLDER) HIGH TEMPERATURE BRAZING ALLOY CONNECTION.
 - COPPER PIPING FOR WATER MAKE-UP AND CONDENSATE DISCHARGE PIPING: 95-5 SOLDER JOINT CONNECTIONS.

f. VALVES SHALL BE SUITABLE FOR THE SERVICE PRESSURE AND TEMPERATURE AND SHALL BE:

- GLOBE VALVE "NIBCO" MODEL T-275 OR APPROVED EQUAL. BRONZE, 300 LBS S.W.P., INSIDE SCREW, UNION BONNET, RENEWABLE DISC
- CHECK VALVE "NIBCO" MODEL T-473 OR APPROVED EQUAL. BRONZE, 300 LBS S.W.P., INSIDE SCREW, UNION BONNET
- BALANCING VALVE BELL AND GOSSETT "CIRCUIT SETTER"
- STRAINER: "MEULLER STEAM SPECIALTY" MUESSCO NO. 11 OR APPROVED EQUAL. SCREWED ENDS UP TO 2 1/2", 300 LBS S.W.P., FORGED STEEL BOR CAST STEEL BODY, 316 STAINLESS STEEL OR MONEL SCREEN WITH 1/8" PERFORATIONS

1. PRESSURE RELIEF VALVES:

- PRESSURE RELIEF VALVE BODIES SHALL HAVE SCREWED ENDS AND BE CONSTRUCTED OF BRONZE. THE MAIN VALVE IS TO BE MADE OF STAINLESS STEEL IN SIZES 1/2" TO 1 1/2" AND OF BRONZE IS SIZES 2" TO 3". MANUFACTURER IS TO RECOMMEND LOADING SPRING SIZE BASED UPON APPROVED EQUIPMENT SPECIFICATIONS AND INTENDED APPLICATIONS. SPRINGS ARE TO BE CADMIUM PLATED STEEL. SPRING RATINGS SHALL COVER 5 TO 35 PSIG AND 25 TO 100 PSIG. THE SET PRESSURE SHALL BE ADJUSTABLE BY A STEEL SET SCREW.
- PRESSURE RELIEF VALVES SHALL BE OF THE SIZES AND CAPACITIES REQUIRED TO RELIEVE THE FLOW QUANTITIES INDICATED ON THE DRAWINGS IN ACCORDANCE WITH APPLICABLE ASME CODES.
- PRESSURE RELIEF VALVES SHALL GENERALLY BE SET FOR 10 PSI HIGHER THAN PRESSURE REDUCING VALVES DISCHARGE PRESSURE OR 10 PSI GREATER THAN THE WATER SYSTEM. PIPE TO DRAIN.
- PRESSURE RELIEF VALVES SHALL HAVE BRONZE BODIES WITH PRESSURE RATING IN EXCESS OF THAT ENCOUNTERED IN SERVICE. VALVES SHALL BE AS MANUFACTURED BY J.B. LONERGAN, WATSON McDANIEL, CONSOLIDATED OR APPROVED EQUAL.

6. PRESSURE GAUGES:

PRESSURE GAUGES SHALL BE PHOSPHOR BRONZE BOURDON TUBE ACTUATED WITH A 4 1/2" CAST ALUMINUM CASE. THE RANGE OF THE GAUGE SHALL BE SUITABLE FOR THE SERVICE INTENDED. ALL PRESSURE GAUGES SHALL BE INSTALLED WITH BRASS GAUGE COCKS. PRESSURE GAUGES SHALL BE TAYLOR, WEKSLER, ASHCROFT AND MARSH INSTRUMENT CO.

7. THERMOMETERS:

ALL TEMPERATURE GAUGES ARE TO BE 3 1/2" DIAL, VAPOR TENSION TYPE WITH 180 DEGREE ROTATION ADJUSTMENT, MARSH TYPE 59V OR APPROVED EQUAL, WITH SUITABLE SCALE, DRAWN BLACK STEEL CASE AND BLACK SLIP RING. SCALE SELECTED FOR OPERATING TEMPERATURE IN MID-RANGE AND SUITABLE FOR 150 LBS W.O.G.

8. SOLDERED JOINTS:

95-5 TIN ANTIMONY SOLDER HAVING A MELTING POINT GREATER THAN 450 DEGREES F. EXCESS SOLDER SHALL BE REMOVED WHILE STILL IN THE MOLTEN STATE WITH A FILL LEFT AT THE FACE OF THE FITTING.

9. AUTOMATIC AIR VENTS:

PROVIDE AUTOMATIC AIR VENTS, FLOAT OPERATED AT HIGH POINTS OF WATER PIPING SYSTEMS AS INDICATED AND REQUIRED FOR SYSTEM FILLING, DRAINAGE AND AIR FREE SYSTEM OPERATION. GATE VALVE AND PIPING FROM OUTLET TO NEAREST OPEN-SIGHT DRAIN OR SINK.

10. PIPING TAPS AND FITTINGS:

PROVIDE PIPE FITTINGS, WELLS, PETE'S PLUGS, AND CONNECTION TO ACCOMMODATE THERMOMETERS, GAUGES, FLOW AND TEMPERATURE SENSING ELEMENTS, THAT ARE REQUIRED IN THE PIPING SYSTEMS.

11. PIPE HANGERS AND SUPPORTS:

- PROVIDE HANGERS, ANCHORS AND SUPPORTS FOR PIPING TO SUPPORT PIPE AND ITS CONTENTS, PREVENT VIBRATION AND SWAYING AND ALLOW FOR EXPANSION AND CONTRACTION.
- ALL SUPPORTS SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE ANSI CODE FOR PRESSURE PIPING B31.10 AND MSS STANDARD PRACTICE SP-58.
- HANGER SHALL BE MANUFACTURED BY GRINNEL CO., CENTRAL IRON, FEE AND MASON, BLACKNOX CO. OR AN APPROVED EQUAL.
- PIPE HANGERS, RODS, INSERTS AND CLAMPS SHALL BE THOSE APPROVED FOR THEIR RESPECTIVE USE BY THE UNDERWRITER'S LABORATORIES, INC.
- PROVIDE ADDITIONAL SUPPORTS AT CHANGE OF DIRECTION, RUNOUTS AND CONCENTRATED LOADS DUE TO VALVES, ETC.
- VERTICAL PIPING SHALL BE SUPPORTED WITH BEARING PLATE ON STRUCTURAL SUPPORT. PROVIDE GUIDES AT EVERY SECOND FLOOR (SPACING NOT TO EXCEED 25 FT.) SUPPORT AT TOP SHALL BE PROVIDED WITH SPRING HANGER HAVING A PROVISION FOR EXPANSION.
- HANGER RODS SHALL BE OF THE FOLLOWING SIZE AND SPACING:

COPPER:

PIPE SIZE	ROD DIAMETER	HANGER SPACING
1-1/4" AND SMALLER	3/8"	6 FEET
1-1/2" TO 2"	3/8"	8 FEET
2-1/2" TO 3"	1/2"	9 FEET
4"	1/2"	12 FEET
5"	5/8"	13 FEET
6"	5/8"	14 FEET
8"	3/4"	16 FEET

NOTE: FOR PIPING SIZES OVER 8", OR FOR ANY PIPE MATERIAL NOT LISTED, CONSULT WITH ATSM STANDARDS.

- PROVIDE ESCUTCHEONS FOR ALL EXPOSED PIPING, BOTH BARE AND INSULATED, WHERE PASSING THROUGH WALLS, CEILINGS, OR PARTITIONS. ESCUTCHEONS SHALL BE CHROMIUM PLATED BRASS OR CHROMIUM PLATED CAST IRON.

M. VALVE TAGS:

- PROVIDE VALVE TAGS FOR EACH VALVE AND CONTROL DEVICE EXCEPT EQUIPMENT SHUTOFF VALVES LOCATED AT EQUIPMENT.
- TAGS SHALL BE MINIMUM 2" DIAMETER, NO. 18 BS GAUGE BRASS, STAMPED IDENTIFYING LETTER AND NUMBER FILLED IN WITH BLACK PAINT, FASTENED BY HEAVY BRASS HOOK OR CHAIN.
- USE DIFFERENT PATTERN TAGS THAN THOSE USED FOR PLUMBING OR SPRINKLER WORK.

N. EXPANSION JOINTS, GUIDES AND ANCHORS:

- MAKE ADEQUATE PROVISIONS FOR EXPANSION IN ALL PIPING BY MEANS OF LOOPS, BENDS, OR OFFSETS. WHERE PIPE LINES JOIN OR WHERE BRANCHES OCCUR, MAKE PROVISIONS FOR THE EXPANSION OF BOTH LINES.
- GUIDES:
 - LOCATE AND CONSTRUCT WHEREVER REQUIRED TO PERMIT FREE AXIAL MOVEMENT ONLY.
 - A MINIMUM OF TWO GUIDES SHALL BE INSTALLED ON EACH END OF AN EXPANSION JOINT PLUS AT LEAST ONE GUIDE BETWEEN TWO JOINTS.
- ANCHOR PIPING WHERE NECESSARY TO CONTROL EXPANSION AND PREVENT UNDUE STRAIN ON THE FITTINGS AND APPARATUS.
- ANCHORS: HEAVY CONSTRUCTION ATTACHED TO PIPE AND FASTENED TO STRUCTURE.
- PROVIDE NECESSARY STEEL FOR CONNECTION TO STRUCTURE.

HVAC SPECIFICATIONS

P. INSULATION:

ALL INSULATION (INCLUDING JACKET OR FACING AND ADHESIVE) SHALL HAVE COMPOSITE FIRE AND SMOKE HAZARD RATINGS AS TESTED BY PROCEDURE ASTM E-84, NFPA 255 AND UL 723 NOT EXCEEDING A "FLAME SPREAD" OF 25 AND "SMOKE DEVELOPED" OF 50.

1. PIPING INSULATION:

- INSULATE ALL CHILLED WATER, CONDENSER WATER, GLYCOL, HOT WATER AND CONDENSATE DRAIN PIPING.
- INSULATION FOR PIPING SHALL BE MOLDED FIBERGLASS, MAXIMUM 0.23 K-FACTOR AT 75 DEG. F MEAN TEMPERATURE, 4 LB. DENSITY WITH ALL PURPOSE JACKET. THE VAPOR BARRIER JACKET SHALL BE OF LAMINATED CONSTRUCTION USING ALUMINUM FOIL, REINFORCING, FLAME EXTINGUISHING ADHESIVE AND EMBOSSED KRAFT PAPER. ALL LONGITUDINAL JOINTS SHALL HAVE A 1 1/2" OVERLAP AND AT END JOINTS 3" WIDE STRIPS TO PROVIDE A POSITIVE AND CONTINUOUS VAPOR SEAL BARRIER.
- PIPE FITTINGS SHALL BE COVERED WITH THE SAME TYPE AND THICKNESS OF INSULATION AS THE ADJACENT PIPE LINES AND JACKETING. MITERED SEGMENTS OF PIPE INSULATION MAY BE USED WHERE PREMOLDED IS NOT MANUFACTURED.
- ENDS OF INSULATION AT SECTIONS OF PIPING WHICH ARE NOT TO BE INSULATED SHALL BE TAPERED TO A NEAT FINISH WITH OWENS CORNING CC-110 INSULATION.
- INSULATION THICKNESS SHALL BE AS FOLLOWS:

WATER MAKE-UP AND CONDENSATE PIPING:

CONDENSER WATER PIPING

1/2"

1"
- FOR INSULATED PIPING EXPOSED TO OUTDOOR WEATHER, OUTER FINISH SHALL BE 0.016 IN THICK WEATHERPROOF ALUMINUM JACKET WITH LOCK SEAMS.
- INSULATE ALL REFRIGERANT PIPING WITH 1" THICK CELLULAR PLASTIC INSULATION.

2. DUCT INSULATION

- INSULATE ALL NEW INTERIOR SUPPLY AND OUTSIDE AIR DUCTWORK (EXCEPT WHERE ACOUSTICALLY LINED) WITH A 1" THICKNESS, 1-1/2 POUND DENSITY, FIBROUS GLASS BLANKET DUCT INSULATION WITH FACTORY APPLIED FOIL-SCRIM-KRAFT FACING.
- ALL SUPPLY AND RETURN AIR DUCTWORK RUNNING THROUGH AN UNCONDITIONED INTERIOR SPACE SHALL BE INSULATED WITH A MINIMUM R-VALUE OF 4.2.
- INSULATE ALL EXTERIOR SUPPLY AND RETURN AIR DUCTWORK WITH FIBROUS GLASS BLANKET INSULATION WITH A MINIMUM R-VALUE OF 6. ALL EXTERIOR DUCTWORK SHALL ALSO HAVE A WEATHERPROOFED WRAPPING.
- ALL EXHAUST DUCTWORK AND ANY RETURN AIR DUCTWORK LOCATED WITHIN A CONDITIONED SPACE OR RETURN AIR PLENUM DOES NOT REQUIRE ANY INSULATION.
- APPLY ADHESIVE TO DUCT WITH A 2" OVERLAP OF FACING AT ALL INSULATION JOINT AND SEAMS. ALL JOINTS SHALL BE SEALED WITH "GLASFAB" TO FORM A CONTINUOUS VAPOR BARRIER. SECURE WITH TYING CORD.
- DUCT INSULATION SHALL BE OWENS CORNING ALL SERVICE FACED DUCT WRAP, OR APPROVED EQUAL.
- INSULATE/REINSULATE ALL EXISTING TO REMAIN DUCTWORK WHERE INSULATION HAS BEEN REMOVED OR IS MISSING.
- INSULATE PLENUMS AND DUCTS ASSOCIATED WITH OUTSIDE AIR INTAKES AND CONDENSER AIR INTAKES AND DISCHARGES WITH 1.5" THICK FIBERGLASS BOARD WITH VAPOR BARRIER.
- INTERIOR KITCHEN EXHAUST DUCT INSULATION SHALL BE 2 LAYERS OF 1-1/2" THICK, 2 HR FIRE RATED DUCTWRAP MADE BY MORGAN THERMAL CERAMICS CORP. FIREMASTER SERIES. ME# 417-92-M VOLUME 4.

3. INSULATION INSTALLATION:

PRIOR TO APPLYING ANY INSULATION, ALL PRESSURE AND LEAK TESTS SHALL BE COMPLETE AND APPROVED. ALL INSULATION SHALL BE BUTTED FIRMLY, USE 2" LAP STRIPS AT ALL SEAMS SECURED WITH ADHESIVE. NO STAPLES ARE PERMITTED. APPLY COAT OF VAPOR SEAL ADHESIVE WHERE REQUIRED.

Q. ACOUSTICAL TREATMENT:

- WHERE SHOWN ON THE DRAWINGS, LOW PRESSURE DUCTWORK SHALL BE LINED WITH 1" THICK, 1-1/2 POUND MINIMUM DENSITY, NEOPRENE COATED, FLEXIBLE FIBERGLASS DUCT LINER. LINING SHALL COMPLY WITH NFPA 90A AND SHALL HAVE A FLAME SPREAD CLASSIFICATION OF NOT MORE THAN 25 AND A SMOKE DEVELOPED RATING NOT MORE THAN 50. DUCT SIZES WHERE LINING IS INDICATED ON PLANS ARE MINIMUM INSIDE CLEAR DIMENSIONS REQUIRED.
- WHERE ACOUSTICAL LINING IS INSTALLED, THE DUCT SHALL BE INCREASED IN SIZE SO THAT THE CLEAR INSIDE LINING DIMENSIONS MATCH THE DUCT SIZES ON THE DRAWINGS.
- LINING SHALL BE SUITABLE FOR OPERATION UP TO A VELOCITY OF 4000 FPM. ADHERE LINING TO DUCTWORK WITH ADHESIVE OVER 100% OF CONTACT AREA.

R. AIR OUTLETS AND TERMINAL UNITS:

- REFER TO NOTES ON DRAWING M-300.

S. WATER COOLED AIR CONDITIONING UNITS:

- A/C UNITS TO BE WATER SOURCE HEAT PUMPS DESIGN AND TESTED IN ACCORDANCE WITH UL 559 AND E.T.L LISTED. HEAT PUMPS TO BE RATED FOR AN E.E.R. OF 12.0 OR BETTER AND A C.O.P OF 4.2 OR BETTER WHEN TESTED IN ACCORDANCE WITH ARI STANDARD 320-86. ALL UNITS TO BE FACTORY TESTED.
- EXTERIOR CASING AND INTERNAL SHEET METAL COMPONENTS SHALL BE FABRICATED WITH HEAVY GAUGE FORMED GALVANIZED STEEL. CABINET SHALL INCLUDE REMOVABLE ACCESS PANELS AND DISCHARGE DUCT COLLARS. CASING SHALL BE THERMALLY AND ACOUSTICALLY INSULATED. MOUNTING BRACKETS WITH REMOVABLE RUBBER ISOLATORS SHALL BE FURNISHED FOR FIELD INSTALLATION.
- REFRIGERANT CIRCUIT SHALL BE CAPABLE OF OPERATING AT PRESSURES OF 300 PSI AND SHALL BE COMPLETELY PIPED, TESTED, DEHYDRATED AND CHARGED. REFRIGERANT CIRCUIT COMPONENTS SHALL INCLUDE COMPRESSOR, WATER COIL, AIR COIL, 4-WAY REVERSING VALVE, HIGH AND LOW SIDE ACCESS FITTINGS AND CAPILLARY TUBES.
- COMPRESSOR TO BE HIGH EFFICIENCY SUCTION COOLED, HERMETIC TYPE MOUNTED OUTSIDE OF AIR STREAM. COMPRESSOR SHALL INCLUDE CENTRIFUGAL FEED LUBRICATION, INTERNAL AND EXTERNAL VIBRATION ISOLATORS AND THERMAL OVERLOAD PROTECTION.
- WATER COIL SHALL BE A COAXIAL TUBE-IN TUBE TYPE WITH THE INNER TUBE CONSTRUCTED OF COPPER (WATER SIDE) AND THE OUTER TUBE CONSTRUCTED OF STEEL (REFRIGERANT SIDE). THE WATER SIDE SHALL BE CAPABLE OF WITHSTANDING PRESSURES UP TO 450 PSI.
- AIR COIL SHALL BE CONSTRUCTED OF SEAMLESS COPPER TUBING EXPANDED INTO ALUMINUM CORRUGATED FINS AND SHALL BE FURNISHED WITH A GALVANIZED STEEL DRAIN PAN.
- THE BLOWER WHEEL SHALL BE A FORWARD CURVED TYPE AND SHALL BE DIRECT DRIVE. THE MOTOR SHALL BE PERMANENT SPLIT CAPACITOR TYPE WITH MAXIMUM 1075 RPM AND SHALL INCLUDE PERMANENTLY LUBRICATED SLEEVE BEARINGS.
- CONDENSATE PUMPS:

NEW CONDENSATE PUMPS SHALL BE VCMA-20 SERIES AS MANUFACTURED BY LITTLE GIANT OR APPROVED EQUAL. PUMP TO DELIVER 45 GPH AT 10 FEET HEAD. NOMINAL UNITS ELECTRICAL CHARACTERISTICS SHALL BE 115 VOLTS, SINGLE PHASE, 60 HERTZ. UNITS SHALL HAVE FLOAT OPERATED HIGH WATER ALARM SWITCH AND AUTOMATIC CUT OUT SWITCH TO PREVENT RECEIVER OVERFLOW.

U. VIBRATION ISOLATION:

- ALL MOTOR DRIVEN MECHANICAL EQUIPMENT SHALL BE MOUNTED ON SPRING ISOLATION SUPPORTS. THE ISOLATION MANUFACTURER SHALL SUPPLY ALL ISOLATION EQUIPMENT, WHERE AIR HANDLING PACKAGE TYPE UNITS ARE FLOOR MOUNTED, ISOLATION UNITS ARE TO BE MOUNTED BETWEEN UNIT AND HEAVY- ANGLE IRON FRAMEWORK. PLATFORM FURNISHED AND INSTALLED BY THE HVAC CONTRACTOR.
- ALL ROTATING EQUIPMENT SHALL BE PROVIDED WITH VIBRATION ISOLATION DEVICES IN GENERAL ACCORDANCE WITH ASHRAE GUIDELINES AND ACHIEVING A MINIMUM EFFICIENCY OF 98%.
- VIBRATION CONTROL EQUIPMENT SHALL BE BY MASON INDUSTRIES, VIBRATION ELIMINATOR CO., OR VIBRATION MOUNTING AND CONTROLS.
- SPRING ISOLATORS SHALL BE EQUIPPED WITH SOUND DEADENING PADS AND LEVELING BOLTS AND SHALL BE UNHOUSED, FREE STANDING AND STABLE. ISOLATORS SHALL BE DESIGNED AND CONSTRUCTED SO THAT ENDS OF SPRINGS REMAIN PARALLEL DURING DEFLECTION AND ANY HORIZONTAL MOVEMENT OF THE ISOLATION BASE BE LIMITED TO A MAXIMUM OF 1/4". SPRINGS SHALL HAVE A RUNOUT OF AT LEAST 50% OF THE DESIGNED DEFLECTION. WHERE TO FLOOR SUPPORT IS NOT CONSIDERED NECESSARY BY THE ISOLATION MANUFACTURERS, ISOLATORS SHALL BE EQUIPPED WITH NON-SKID RUBBER PADS.
- FANS SHALL BE MOUNTED ON RUBBER-IN SHEAR VIBRATION HANGERS.
- A/C UNITS SUSPENDED ABOVE CEILING SHALL BE INSTALLED ON SPRING HANGERS.

V. MISCELLANEOUS PROVISIONS:

- PAINT ALL SUPPORTING STEEL. PATCH EXISTING BEAM FIREPROOFING WHERE STEEL IS EXPOSED.
- TOUCH UP WITH MATCHING PAINT ALL EQUIPMENT WHERE NECESSARY.
- PROVIDE CONDENSATE DRAIN PIPING WITH CLEANABLE P-TRAPS. DRAIN SHALL BE FULL SIZE OF THE COIL DRAIN CONNECTIONS, BUT NOT LESS THAN 3/4".
- SEAL OPENINGS AROUND DUCTS AND PIPE THROUGH FULL HEIGHT WALLS WITH MINERAL WOOL OR OTHER NON-COMBUSTIBLE MATERIAL. MAINTAIN INTEGRITY OF SOUND ISOLATION AROUND DUCTS PENETRATING SOUND INSULATED WALLS.
- PROVIDE A SPARE SET OF FILTERS FOR EACH AIR CONDITIONING UNIT.

W. EQUIPMENT OPERATING INSTRUCTIONS:

- ON COMPLETION AND ACCEPTANCE OF WORK, THIS CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS TO THE OWNER ON THE PROPER START-UP, OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.
- THESE INSTRUCTION SHALL BE TYPED ON 8 1/2"x11" PAPER AND BOUND IN THREE-RING BINDERS WITH CLEAR ACETATE COVERS. THE CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTION TO THE OWNER.

X. TESTING AND BALANCING:

- GENERAL:
 - WORK OF THIS SECTION INCLUDES ALL LABOR, EQUIPMENT, AND SERVICES NECESSARY FOR COMPLETING THE INSPECTION, TESTING, INITIAL START-UP AND BALANCING OF ALL EQUIPMENT AND SYSTEMS OF THE HVAC WORK AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.
 - THE CONTRACTOR SHALL OBTAIN THE SERVICES OF AN INDEPENDENT AIR/WATER BALANCE TESTING COMPANY, SPECIALIZING IN, AND WHOSE BUSINESS IS LIMITED TO, TESTING AND BALANCING OF HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS. THE BALANCING CONTRACTOR SELECTED SHALL MEET ALL REQUIREMENTS NECESSARY FOR MEMBERSHIP IN THE ASSOCIATED AIR BALANCE COUNCIL.
 - BALANCING CONTRACTOR SHALL TEST AND BALANCE ALL AIR SYSTEMS AS FURTHER SPECIFIED HEREIN. ALL WORK BY THIS CONTRACTOR SHALL BE UNDER THE DIRECT SUPERVISION OF A QUALIFIED TEST AND BALANCE ENGINEER EMPLOYED BY THEM. ALL INSTRUMENTS USED BY THIS CONTRACTOR SHALL BE ACCURATELY CALIBRATED AND MAINTAINED IN GOOD WORKING ORDER. EVIDENCE SHALL BE SUBMITTED SATISFACTORY TO THE GENERAL CONTRACTOR, SHOWING THAT THE INSTRUMENTS HAVE BEEN CALIBRATED AND CERTIFIED FOR THIS PROJECT.
 - ALL SYSTEMS SHALL BE BALANCED BY A COMPANY REGULARLY ENGAGED IN THIS TYPE AND SCOPE OF WORK, HAVING ENGINEERS AND TECHNICIANS IN ITS EMPLOY WHO HAVE A THOROUGH KNOWLEDGE OF THE SEVERAL INTERRELATED PARTS OF THE HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS. IT SHALL BE THE FUNCTION OF THE SUBCONTRACTOR TO COORDINATE THE ACTIVITIES OF ALL PERSONS CONNECTED IN ANY MANNER WITH THE ABOVE SYSTEMS IN THEIR ENTIRETY SO THAT AIR SYSTEMS CAN BE BALANCING AND ADJUSTING OF PROPERLY BALANCED TO ACHIEVE THE ENVIRONMENTAL DESIGN CONDITIONS.
 - THE HVAC CONTRACTOR SHALL COMPLETE ALL SYSTEMS IN FULL WORKING ORDER BEFORE BALANCING TESTS BEGIN.
 - PROVIDE BALANCING REPORTS TO SPONSOR AND ARCHITECT FOR APPROVAL.
- AIR SYSTEMS:
 - ALL FANS AND DUCTWORK (NEW OR EXISTING) SERVING THIS SCOPE OF WORK SHALL BE PROPERLY ADJUSTED TO DELIVER EXHAUST, RETURN, OR SUPPLY AIR QUANTITIES AS INDICATED ON THE DRAWINGS. ALL SUCH ADJUSTMENTS SHALL BE MADE BY THE SUBCONTRACTOR. AIR BALANCING SHALL BE IN ACCORDANCE WITH SMACNA AND AABC STANDARDS, BY THE USE OF A DIRECT READING INSTRUMENT SUCH AS AN "ANEMOTHERM" OR VELOMETER.
 - THE HVAC CONTRACTOR SHALL (AS A PART OF HIS WORK) ADJUST FAN SPEED (RPM) ON ALL FANS (EXISTING IN THE SPACE OR NEW) TO MEET REQUIRED AIRFLOW. THIS WORK INCLUDES CHANGING OF THE PULLEYS, BELTS, AND DAMPERS, AS WELL AS THE ADDITION OF NEW DAMPERS AS REQUIRED FOR CORRECT BALANCE. THIS WORK MUST BE APPROVED BY THE ARCHITECT, AT NO ADDITIONAL EXPENSE TO THE OWNER.
 - THE SUBCONTRACTOR SHALL EXAMINE ALL AIR HANDLING SYSTEMS TO SEE THAT THEY ARE FREE FROM OBSTRUCTION, DETERMINE THAT ALL DAMPERS AND REGISTERS ARE OPEN, THAT MOVING EQUIPMENT IS LUBRICATED, THAT FILTERS ARE FUNCTIONING, AND PERFORM OTHER INSPECTION AND MAINTENANCE ACTIVITIES NECESSARY FOR PROPER OPERATION OF THE SYSTEM.
 - THE AIRFLOW AT EACH OUTLET SHALL BE WITHIN 10% OF THE AMOUNT SHOWN ON THE DRAWINGS.
 - THE AIRFLOW ACROSS EACH FAN SHALL BE WITHIN 5% OF THE TOTAL OF THE ASSOCIATED OUTLETS.
 - BLANK-OFF SUFFICIENT FILTER AREA TO SIMULATE A DIRTY FILTER CONDITION (MAXIMUM PRESSURE DROP ACROSS FILTER BANK).
 - FURNISH TYPEWRITTEN DATED REPORT TAKEN AT EACH FAN TABULATING THE FOLLOWING:
 - FLOW OF SUPPLY AIR IN CFM.
 - FLOW OF RETURN AIR, EXHAUST AIR, AND/OR OUTSIDE AIR TO THE FAN IN CFM.
 - RPM OF EACH MOTOR AND FAN OR BLOWER.
 - VOLTAGE AND AMPERE INPUT OF EACH MOTOR (ONE READING FOR EACH PHASE LEG ON 3 PHASE MOTORS)
 - PRESSURE IN INCHES WATER GAUGE AT INLET AND DISCHARGE OF EACH FAN.
 - DRY AND WET BULB TEMPERATURES AT THE TIME OF ALL MEASURED AIRFLOWS.
 - SUBMIT CERTIFIED, TYPEWRITTEN AIR BALANCING REPORT ON AABC TEST FORMS, SHOWING THE FOLLOWING DATA:
 - QUANTITY OF AIR IN CFM AT EACH AIR OUTLET AND INLET.
 - MAKE AND MODEL OF INSTRUMENTS USED.
 - THE ABOVE BALANCING SHOULD BE DONE FOR THE FIRST SEASON OF THE YEAR WHICH OCCURS AT THE BUILDING COMPLETION. ADDITIONAL BALANCING (WHICH MAY BE REQUIRED FOR THE SEASON NEXT FOLLOWING) SHALL BE PERFORMED UNDER THIS SECTION ALSO.
 - THE CONTRACTOR SHALL INCLUDE IN HIS BID PRICE THE COST OF "FINE-TUNING" APPROXIMATELY 15% OF THE TOTAL NUMBER OF AIR OUTLETS AFTER FIRST REVIEW OF BALANCING REPORT BY THE ENGINEER.
 - TENANT'S CONTRACTOR SHALL SUBMIT TEST REPORT FOR LANDLORD REVIEW AND APPROVAL INDICATING THE SUCCESSFUL OPERATION OF THE DEMAND CONTROL VENTILATION SYSTEM AS INSTALLED BY THE TENANT.

2. AIR SYSTEMS:

- ALL FANS AND DUCTWORK (NEW OR EXISTING) SERVING THIS SCOPE OF WORK SHALL BE PROPERLY ADJUSTED TO DELIVER EXHAUST, RETURN, OR SUPPLY AIR QUANTITIES AS INDICATED ON THE DRAWINGS. ALL SUCH ADJUSTMENTS SHALL BE MADE BY THE SUBCONTRACTOR. AIR BALANCING SHALL BE IN ACCORDANCE WITH SMACNA AND AABC STANDARDS, BY THE USE OF A DIRECT READING INSTRUMENT SUCH AS AN "ANEMOTHERM" OR VELOMETER.
- THE HVAC CONTRACTOR SHALL (AS A PART OF HIS WORK) ADJUST FAN SPEED (RPM) ON ALL FANS (EXISTING IN THE SPACE OR NEW) TO MEET REQUIRED AIRFLOW. THIS WORK INCLUDES CHANGING OF THE PULLEYS, BELTS, AND DAMPERS, AS WELL AS THE ADDITION OF NEW DAMPERS AS REQUIRED FOR CORRECT BALANCE. THIS WORK MUST BE APPROVED BY THE ARCHITECT, AT NO ADDITIONAL EXPENSE TO THE OWNER.
- THE SUBCONTRACTOR SHALL EXAMINE ALL AIR HANDLING SYSTEMS TO SEE THAT THEY ARE FREE FROM OBSTRUCTION, DETERMINE THAT ALL DAMPERS AND REGISTERS ARE OPEN, THAT MOVING EQUIPMENT IS LUBRICATED, THAT FILTERS ARE FUNCTIONING, AND PERFORM OTHER INSPECTION AND MAINTENANCE ACTIVITIES NECESSARY FOR PROPER OPERATION OF THE SYSTEM.
- THE AIRFLOW AT EACH OUTLET SHALL BE WITHIN 10% OF THE AMOUNT SHOWN ON THE DRAWINGS.
- THE AIRFLOW ACROSS EACH FAN SHALL BE WITHIN 5% OF THE TOTAL OF THE ASSOCIATED OUTLETS.
- BLANK-OFF SUFFICIENT FILTER AREA TO SIMULATE A DIRTY FILTER CONDITION (MAXIMUM PRESSURE DROP ACROSS FILTER BANK).
- FURNISH TYPEWRITTEN DATED REPORT TAKEN AT EACH FAN TABULATING THE FOLLOWING:
 - FLOW OF SUPPLY AIR IN CFM.
 - FLOW OF RETURN AIR, EXHAUST AIR, AND/OR OUTSIDE AIR TO THE FAN IN CFM.
 - RPM OF EACH MOTOR AND FAN OR BLOWER.
 - VOLTAGE AND AMPERE INPUT OF EACH MOTOR (ONE READING FOR EACH PHASE LEG ON 3 PHASE MOTORS)
 - PRESSURE IN INCHES WATER GAUGE AT INLET AND DISCHARGE OF EACH FAN.
 - DRY AND WET BULB TEMPERATURES AT THE TIME OF ALL MEASURED AIRFLOWS.
- SUBMIT CERTIFIED, TYPEWRITTEN AIR BALANCING REPORT ON AABC TEST FORMS, SHOWING THE FOLLOWING DATA:
 - QUANTITY OF AIR IN CFM AT EACH AIR OUTLET AND INLET.
 - MAKE AND MODEL OF INSTRUMENTS USED.
- THE ABOVE BALANCING SHOULD BE DONE FOR THE FIRST SEASON OF THE YEAR WHICH OCCURS AT THE BUILDING COMPLETION. ADDITIONAL BALANCING (WHICH MAY BE REQUIRED FOR THE SEASON NEXT FOLLOWING) SHALL BE PERFORMED UNDER THIS SECTION ALSO.
- THE CONTRACTOR SHALL INCLUDE IN HIS BID PRICE THE COST OF "FINE-TUNING" APPROXIMATELY 15% OF THE TOTAL NUMBER OF AIR OUTLETS AFTER FIRST REVIEW OF BALANCING REPORT BY THE ENGINEER.
- TENANT'S CONTRACTOR SHALL SUBMIT TEST REPORT FOR LANDLORD REVIEW AND APPROVAL INDICATING THE SUCCESSFUL OPERATION OF THE DEMAND CONTROL VENTILATION SYSTEM AS INSTALLED BY THE TENANT.

3. WATER SYSTEMS:

- PROVIDE NECESSARY PIPING AND CONNECTIONS FOR BALANCING ALL WATER SYSTEMS. OPERATE WATER SYSTEMS AT FULL FLOW AND PERFORM NECESSARY ADJUSTMENTS AND BALANCING TO DELIVER WATER QUANTITIES TO ALL SYSTEM COMPONENTS AS SCHEDULED ON THE DRAWINGS.
- SUBMIT FLOW TEST DATA FOR WATER SYSTEMS, INCLUDING GPM, TEMPERATURES AND PRESSURE DROPS.
- STRAINERS SHALL BE CLEANED AT COMPLETION OF FLOW TEST. AFTER THE ENTIRE SYSTEM HAS BEEN ADJUSTED, OPERATE THE SYSTEM UNDER CONDITIONS, MAKING ALL ADDITIONAL ADJUSTMENTS UNTIL ALL PERFORMANCE REQUIREMENTS ARE MET.
- A SYSTEM FLUSH IS REQUIRED BEFORE CONNECTING THE LANDLORD SYSTEM.
- AFTER THE WATER PIPING IS INSTALLED AND BEFORE THE PIPING IS CONNECTED TO THE COOLING TOWER OR CHILLER AND THE A/C UNITS, THE CONTRACTOR SHALL PERFORM A HYDROSTATIC PIPE TEST TO 1.5X OPERATING PRESSURE AND TEST THE PIPING SYSTEM FOR LEAKS. THE PRESSURE SHALL BE MAINTAINED WHILE VISUAL INSPECTION IS WITNESSED BY THE BUILDING ENGINEER AND OWNER'S REPRESENTATIVE AND THE PIPING SHALL HOLD ITS PRESSURE FOR A MINIMUM PERIOD OF TWO HOURS. CAULKING OF LEAKY JOINTS SHALL NOT BE PERMITTED. PROTECT GAUGES, AND ANY OTHER EQUIPMENT THAT MAY BE DAMAGED.
- CONDENSER WATER PIPING SYSTEMS AND ALL ASSOCIATED COMPONENTS SUCH AS VALVES, AC UNITS, EQUIPMENT, ETC SHALL BE DESIGNED TO A MINIMUM ASME/ANSI CLASS 150 RATING. INDICATE THIS RATING IN THE SPECIFICATIONS FOR ALL SYSTEM COMPONENTS (AC UNITS, PIPING, FITTINGS, VALVES, ETC).

Y. AUTOMATIC CONTROLS:

MECHANICAL CONTRACTOR TO RETAIN THE SERVICES OF A QUALIFIED AUTOMATIC CONTROLS CONTRACTOR.

THE INTENT OF THIS SECTION IS TO DESCRIBE THE COMPLETE FUNCTIONAL CONTROL OF ALL MECHANICAL EQUIPMENT, SYSTEMS AND DEVICES OF THE PROJECT. THIS CONTRACTOR IS TO FURNISH AND INSTALL AS REQUIRED ELECTRIC/ELECTRONIC CONTROLS INCLUDING ALL NECESSARY COMPONENTS, CONTROL WIRING, INTERLOCK WIRING, WIRING CONTRACTORS, THERMOSTATS, RELAYS, P.E.S, CONTROL TRANSFORMERS, STARTERS, ALARMS, CONTROL VALVES, ETC. TO ACHIEVE THE DESIRED CONTROL OPERATION FOR THE AIR CONDITIONING SYSTEMS.

1. NEW AIR CONDITIONING UNITS:

UNITS SHALL BE CONTROLLED BY A 7-DAY/24-HOUR PROGRAMMABLE SOLID STATE THERMOSTAT WITH A BUTTON TYPE REMOTE SPACE TEMPERATURE SENSOR (FOR EACH INDOOR UNIT).

THERMOSTAT SHALL HAVE SUBBASE WITH FAN 'ON-AUTO', COMPRESSOR 'OFF-AUTO' SWITCHES. CONTROL SEQUENCE SHALL BE AS FOLLOWS:

- PROGRAMMABLE THERMOSTAT SHALL BE SET TO A SCHEDULE AS DETERMINED BY THE OWNER. WHEN SPACE IS UNOCCUPIED, AC UNITS SHALL OPERATE IN NIGHT SETBACK MODE.
- SUPPLY AIR FAN SHALL RUN CONTINUOUSLY WHEN THE AIR CONDITIONING UNIT IS ACTIVATED DURING OCCUPIED HOURS, AND SET TO "AUTO" DURING NIGHT SETBACK MODE.
- IN THE COOLING/HEATING MODE, THE UNIT'S COMPRESSOR SHALL CYCLE TO MAINTAIN THERMOSTAT SET POINT.
- UNITS SHALL BE PROVIDED WITH DUCT MOUNTED SMOKE DETECTORS AS SHOWN ON DRAWINGS. SHUT DOWN THE SYSTEM UPON SENSING PRODUCT OF COMBUSTION, AND SHALL HAVE CAPABILITY TO INITIATE LOCAL OR REMOTE ALARM.
- EXISTING TOILET EXHAUST FAN:
 - TOILET EXHAUST FAN SHALL BE INTERLOCKED WITH THE LIGHT SWITCH. CONNECTION SHALL BE COORDINATED WITH ELECTRICAL CONTRACTOR. ASSOCIATED MOTORIZED DAMPER SHALL BE OPENED AS FAN ACTIVATED, AND CLOSED AS FAN DEACTIVATES.

DATE: 02/03/25

JOB NO: 25114

DRAWN: -

CHECKED: -



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IVO SKIBOLA, PE

- REVISIONS
- 02.03.25 - LL ISSUE
 - 04.03.25 - LL COMMENT RESPONSE
 - 04.04.25 - PERMIT SET
 - 04.09.25 - BID ISSUE
 - 05.30.25 - DOB COMMENT RESPONSE

DEPARTMENT OF BUILDING USE

MECHANICAL SPECIFICATIONS

SHEET NUMBER

M-101

MECHANICAL DUCTWORK NOTES

1. PROVIDE ACTIVE SUPPLY PLENUMS FOR THE LINEAR DIFFUSERS. SUPPLY PLENUMS SHALL BE 8"x6" AND 1" ACOUSTICALLY LINED AND RATED FOR 80 CFM PER LINEAR FOOT. INACTIVE PORTIONS OF LINEAR DIFFUSER USED FOR RETURN AIR. REFER TO PLANS FOR AIR FLOW AT EACH PLENUM TO DETERMINE THE EXACT LENGTH OF EACH PLENUM.
2. PROVIDE LINEAR DIFFUSER AS INDICATED ON THE PLANS. LINEAR DIFFUSERS SHALL BE "FREE FLOW" MODEL FFBF-100 (SINGLE 1" SLOT WITH BEVELED FLANGE.) COORDINATE EXACT LENGTH OF DIFFUSERS AND FRAME/BORDER TYPE WITH ARCHITECTURAL PLANS AND FIELD CONDITIONS. EACH BRANCH DUCT TAP SERVING THE LINEAR DIFFUSERS SHALL BE PROVIDED WITH A CABLE OPERATED VOLUME DAMPER WHICH SHALL OPERATE THROUGH THE ROOM SIDE FACE OF THE DIFFUSER. ALL SECTIONS OF THE LINEAR DIFFUSER SHALL BE PROVIDED WITH DEFLECTOR PLATE OR PATTERN CONTROL DEVICES.
3. EACH AIR HANDLING UNIT SHALL HAVE A REMOTE FLUSH MOUNTED BUTTON TYPE TEMPERATURE SENSOR INSTALLED AT A HEIGHT OF 4'-6" AFF. THERMOSTAT AND THERMOSTAT SENSOR LOCATIONS ARE SUBJECT TO RELOCATION FROM THE POSITIONS SHOWN ON THE DRAWINGS. EXACT LOCATIONS SUBJECT TO FINAL APPROVAL BY ARCHITECT PRIOR TO INSTALLATION.
4. EACH AIR HANDLING UNIT TO BE SUPPLIED WITH STAINLESS STEEL DRIP PAN WITH LEAK DETECTOR. LEAK DETECTOR SHALL HAVE CAPABILITY OF SHUTTING DOWN THE UNIT AND SOUNDING AN AUDIBLE ALARM.
5. ALL EXPOSED SUPPLY DUCTS AS WELL AS THE FIRST 15 FEET OF SUPPLY DUCT FROM THE UNIT SHALL HAVE 1" INTERNAL ACOUSTICAL INSULATION. ALL OTHER DUCTS SHALL HAVE 1" EXTERNAL INSULATION. DUCT SIZES SHOWN ON PLAN INDICATE CLEAR INSIDE DIMENSIONS.
6. ANY EXPOSED OUTDOOR AIR DUCTS WITHIN THE TENANT SPACE SHALL BE PROVIDED WITH EXTERIOR INSULATION (1.5" VAPOR BOARD.)
7. ALL DUCTWORK BRANCHES TO BE PROVIDED WITH CABLE OPERATED DAMPERS. VOLUME DAMPERS MAY BE USED WHERE DAMPER IS ACCESSIBLE THROUGH CEILING. CABLE OPERATED DAMPERS ON SUPPLY, RETURN, AND EXHAUST AIR DUCTS SHALL BE SIMILAR TO YOUNG REGULATOR RECTANGULAR VOLUME CONTROL DAMPERS MODEL 800AW.
8. ALL NECESSARY OFFSETS AND ELEVATION CHANGES ARE NOT SHOWN ON THE DRAWINGS. CONTRACTOR TO REFLECT/COORDINATE THE REQUIRED RISE/DROPS WITH FIELD CONDITIONS.
9. REFER TO MECHANICAL SPECIFICATIONS ON DRAWING M-101 FOR AUTOMATIC CONTROL SEQUENCE FOR ALL MECHANICAL MECHANISM.
10. ALL EXISTING TO REMAIN DUCTWORK TO HAVE DAMAGED INSULATION REPLACED.
11. CONTRACTOR TO PROVIDE NEW AUTOMATIC CONTROLS SYSTEM.

PIPING NOTES

1. ALL MECHANICAL WORK MUST CONFORM TO MECHANICAL CODE. CONTRACTOR TO VERIFY CONDITIONS, CLEARANCES AND DIMENSIONS IN FIELD.
2. ALL NECESSARY OFFSETS AND ELEVATION CHANGES ARE NOT SHOWN ON THE DRAWINGS. CONTRACTOR TO REFLECT/COORDINATE THE REQUIRED RISE/DROPS WITH FIELD CONDITIONS.
3. PROVIDE A STAINLESS STEEL AUXILIARY DRAIN PAN UNDER BOTH THE EVAPORATOR UNIT AND THE ASSOCIATED CONDENSATE PUMP. THE PANS SHALL BE 3" LARGER THAN THE UNITS, HAVE A 2" UP AND SEAMS WELDED WATER TIGHT. THE PANS SHALL BE MOUNTED INDEPENDENT OF THE UNITS. INCLUDE THE PRICE FOR THE COMPLETE INSTALLATION OF A WATER DETECTION SYSTEM FOR EACH DRAIN PAN. THE WATER DETECTION SYSTEM SHALL BE SIMILAR TO LIEBERT LIQUIDTECT SENSOR. ELECTRICAL CONNECTIONS ARE TO BE INCLUDED IN LINE ITEM PRICE.
- UPON DETECTION OF WATER IN ANY DRAIN PAN, A LOCAL ALARM WILL SOUND AND BOTH THE EVAPORATOR SECTION AND THE CONDENSATE PUMP WILL SHUT DOWN.
4. REFRIGERANT PIPE SIZES SHALL BE PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO COORDINATE THE EXACT PIPE ROUTING, LENGTH OF REFRIGERANT PIPING, INCLUDING THE NUMBER OF ELBOWS, WITH THE MANUFACTURER TO DETERMINE REQUIRED MAIN AND BRANCH PIPE SIZES PRIOR TO INSTALLATION.
5. ALL TRADES TO COORDINATE WITH LANDLORD REPRESENTATIVE TO PROVIDE ACCESS TO ALL BASE BUILDING EQUIPMENT.

DEMOLITION NOTES

1. ALL MECHANICAL WORK MUST CONFORM TO MECHANICAL CODE. CONTRACTOR TO VERIFY CONDITIONS, CLEARANCES AND DIMENSIONS IN FIELD.
2. CONTRACTOR TO REMOVE ALL REFRIGERANT PIPING ASSOCIATED WITH TENANT FCU'S. COORDINATE WITH LL PRIOR TO ANY REMOVAL.
3. CONTRACTOR TO CAP ALL OPENINGS IN DUCTWORK AIR TIGHT.
4. CONTRACTOR TO REPLACE/REPAIR ANY DAMAGED OR MISSING DUCT OR PIPING INSULATION.

AIR COOLED SPLIT SYSTEM AIR CONDITIONING SCHEDULE																														
INDOOR FAN COIL UNIT															OUTDOOR CONDENSER UNIT															
TAG NO.	MANUF.	MODEL	NOMINAL TONS	FAN DATA			COOLING CAPACITY TOTAL (MBH)	CAPACITY SENSIBLE (MBH)	HEATING CAPACITY (MBH)	ELECTRICAL DATA				WEIGHT (LBS)	ORIENTATION	TAG NO.	MODEL	NOMINAL TONS	EER	IEER	COP	COOLING CAPACITY (MBH)	HEATING CAPACITY (MBH)	ELECTRICAL DATA				WEIGHT (LBS)	LOCATION	REMARKS
				DB	E.S.P.	HP				VOLTS/PH/HZ		MCA	MOCP											VOLTS/PH/HZ		MCA	MOCP			
AHU-1	TRANE	TWE090	6	2400	1	1.5	80.0	58.2	67.0	480/3/60		5	15	336	HORIZONTAL	CU-1	TWA072	6	11.3	14.1	3.4	80.0	67.0	460/3/60		17	20	445	-	-
AHU-2	TRANE	TWE090	6	2400	1	1.5	80.0	58.2	67.0	480/3/60		5	15	336	HORIZONTAL	CU-2	TWA072	6	11.3	14.1	3.4	80.0	67.0	460/3/60		17	20	445	-	-

- NOTES:
1. PERFORMANCE SHALL BE BASED ON 80°F DB, 67°F WB FOR THE INDOOR UNIT AND 95°F DB, 75°F WB FOR THE OUTDOOR UNIT.
 2. PROVIDE 24 HOUR/ 7 DAY PROGRAMMABLE THERMOSTAT FOR EACH UNIT. EACH THERMOSTAT SHALL BE SUPPLIED WITH A REMOTE PLASTIC BUTTON TYPE TEMPERATURE SENSOR.
 3. PROVIDE CONDENSING UNITS WITH LSW AMBIENT KITS.
 4. PROVIDE ALL AHU'S WITH MERV 13 FILTERS.
 5. ALL HORIZONTAL UNITS SHALL BE PROVIDED WITH CONDENSATE DRAIN PANS. CONDENSATE DRAIN PANS SHALL BE STAINLESS STEEL, WITH A MASTIC COATING ON THE REVERSE SIDE TO PROHIBIT SWEATING. PROVIDE WITH A LEAK DETECTOR THAT SHALL DEACTIVATE THE UNIT AND ACTIVATE AN AUDIBLE ALARM UPON SENSING WATER.
 6. R454B REFRIGERANT.

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GENERAL NOTES

1. WORK SHALL CONFORM TO THE REQUIREMENTS OF APPLICABLE GOVERNMENTAL REGULATIONS AND SHALL BEAR APPROVAL CERTIFICATES AS APPLICABLE, INCLUDING COMPLIANCE WITH MECHANICAL CODE 2014. CONFIRM THAT THE TENANT WILL PROVIDE REQUIRED ALL-RISK INSURANCE AS REQUIRED BY THE LANDLORD.
2. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE BUILDING STANDARDS AND BE APPROVED BY THE BUILDING'S REPRESENTATIVES BEFORE COMMENCING WORK. THE TENANT SHALL TAKE FULL RESPONSIBILITY FOR THE TENANT'S WORK. THE LANDLORD AND THE LANDLORD'S REPRESENTATIVE WILL REVIEW THE WORK FOR THE IMPACT ON THE BASE BUILDING SYSTEMS ONLY. NEITHER THE LANDLORD OR THE LANDLORD'S REPRESENTATIVE WILL APPROVE OR TAKE RESPONSIBILITY FOR THE TENANT'S WORK.
3. INVESTIGATE EACH SPACE THROUGH WHICH EQUIPMENT MUST BE MOVED. WHEN NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN CRATED SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH RESTRICTED SPACES AVAILABLE. ASCERTAIN FROM BUILDING OWNER AT WHAT TIMES OF DAY EQUIPMENT COULD BE MOVED THROUGH THE BUILDING.
4. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATING, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES OF MAGNITUDE WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
5. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK SHALL BE NECESSARY FOR THE PERFORMANCE OF GENERAL WORK. ALL EXISTING CONDITIONS ARE NOT COMPLETELY DETAILED ON THE DRAWINGS. THIS CONTRACTOR SHALL SURVEY THE SITE AND MAKE ALL NECESSARY CHANGES REQUIRED BASED ON EXISTING CONDITIONS FOR PROPER INSTALLATION OF NEW WORK, AND INCLUDE ALL MATERIALS AND LABOR IN THEIR BID PRICE. NO ALLOWANCE WILL BE MADE FOR FAILURE TO DO SO.
6. THE DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL ARRANGEMENT OF THE VENTILATION AND AIR CONDITIONING SYSTEMS. DETAILS OF CONSTRUCTION AND OF WORKMANSHIP WHERE NOT SPECIFICALLY DESCRIBED HEREIN OR INDICATED ON THE DRAWINGS SHALL BE SUBJECT TO THE ENGINEERS APPROVAL. IT IS THE INTENT OF THESE SPECIFICATIONS TO PROVIDE COMPLETE SYSTEMS, LEFT IN GOOD WORKING ORDER, READY FOR OPERATION, INCLUDING NECESSARY LABOR AND MATERIALS, WHETHER OR NOT SPECIFICALLY SHOWN ON THE DRAWINGS OR MENTIONED HEREIN. IT IS NOT THE INTENTION OF THESE DRAWINGS TO SHOW ALL NECESSARY OFFSETS, OBSTRUCTIONS OR STRUCTURAL CONDITIONS. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO INSTALL HIS WORK IN SUCH A MANNER TO AVOID OBSTRUCTIONS, PRESERVE HEADROOM AND KEEP OPENINGS AND PASSAGEWAYS CLEAR WITHOUT FURTHER COST OR INSTRUCTIONS.
7. BEFORE SUBMITTING PROPOSAL, BIDDERS SHALL CAREFULLY EXAMINE FIELD CONDITIONS AND CONTRACT DRAWINGS OF ALL TRADES. SUBMISSION OF PROPOSAL WILL BE CONSTRUCTED AS EVIDENCE THAT REQUIRED EXAMINATION HAS BEEN MADE. LATER CLAIMS FOR EXTRA LABOR, EQUIPMENT AND MATERIALS REQUIRED DUE TO DIFFICULTIES WHICH COULD HAVE BEEN FORESEEN, WILL NOT BE RECONSIDERED. VERIFICATION SHALL BE MADE AS TO THE ACTUAL LOCATIONS WHERE NEW DUCT AND PIPE LINE RUNS WILL BE INSTALLED, AS WELL AS CLEARANCES BETWEEN NEW AND EXISTING DUCTWORK, PIPING AND STRUCTURAL MEMBERS. SHOULD THE CONTRACTOR FIND ANY EQUIPMENT OR CONDITION THAT IS NOT IN AGREEMENT WITH THE PLANS, HE SHALL REFER THE MATTER TO THE ENGINEER'S ATTENTION BEFORE PROCEEDING WITH THE DEMOLITION OR CONSTRUCTION.
8. CONTRACTOR SHALL BRING TO THE IMMEDIATE ATTENTION OF THE OWNER ANY CHANGES IN THE SIZE OR LOCATION OF THE MATERIAL OR EQUIPMENT WHICH MAY BE NECESSARY IN ORDER TO MEET FIELD CONDITIONS, OR IN ORDER TO AVOID CONFLICT WITH THE EQUIPMENT OF OTHER SECTIONS. OBTAIN THE OWNER'S APPROVAL BEFORE SUCH DEVIATIONS ARE MADE.
9. SUPPORT ALL DUCTWORK FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OF SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL FRAMING. THE TENANT SHALL SUBMIT TO THE LANDLORD'S STRUCTURAL ENGINEER ALL CONCENTRATED POINT LOADS AND METHOD OF ATTACHMENT TO THE BUILDING STRUCTURE FOR REVIEW.
10. BEFORE COMPLETION OF THIS PROJECT, THE MECHANICAL CONTRACTOR SHALL TEST ALL EQUIPMENT. ALL EQUIPMENT SHALL BE OPERATED SUFFICIENTLY LONG TO PROVE TO THE OWNER THAT EACH UNIT PERFORMS SATISFACTORILY AND MEETS THE REQUIREMENTS SPECIFIED.
11. THE MECHANICAL CONTRACTOR SHALL INCLUDE WITH HIS BASE BID AN ADDED ALTERNATE TO PROVIDE COMPLETE SERVICING OF THE MECHANICAL EQUIPMENT WHICH HE HAS INSTALLED FORM THE PERIOD STATING WITH THE WRITTEN ACCEPTANCE OF THE COMPLETE INSTALLATION FOR THE ONE (1) YEAR WARRANTY UP TO ITS CONCLUSION DATE. SERVICING SHALL CONSIST OF, BUT NOT BE LIMITED TO, LUBRICATION OF UNITS, ADJUSTMENTS, CLEANING, FILTER CHANGES AND REPLACEMENT OF CEILING TILES.
12. FOR EXACT LOCATIONS OF CEILING DIFFUSERS, GRILLES AND REGISTERS, REFER TO ARCHITECTURAL PLANS AND DETAILS.
13. OBTAIN FROM THE ENGINEER THE LOCATION OF ANY APPARATUS NOT DEFINITELY LOCATED ON THE DRAWINGS. LOCATE EQUIPMENT AND ACCESSORIES IN SUCH A MANNER AS TO PROVIDE EASY ACCESS FOR PROPER SERVICE AND MAINTENANCE OF ALL EQUIPMENT AND ITEMS REQUIRING MAINTENANCE.
14. REVIEW WITH THE ENGINEER AND THE BUILDING MANAGER ANY CONDITION WHICH PREVENTS ADEQUATE ACCESSIBILITY FOR MAINTENANCE PRIOR TO INSTALLATION OF THE WORK. ALL EQUIPMENT AND/OR ACCESSORIES THAT ARE INSTALLED WITHOUT PROPER ACCESS, IN THE OPINION OF THE BUILDING MANAGER, AND INSTALLED WITHOUT THE BUILDING MANAGER'S AND/OR ENGINEER'S APPROVAL, SHALL BE REMOVED AND REVISED AS DIRECTED BY THE BUILDING MANAGER AND/OR ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
15. THE CONTRACTOR'S WORK SHALL INCLUDE THE COST OF BREAKING DOWN AND REASSEMBLY OF THE NEW EQUIPMENT AS NECESSARY TO FIT THE EQUIPMENT INTO THE BUILDING.
16. THIS CONTRACTOR SHALL REPAIR AND RESTORE TO ORIGINAL CONDITION AND EXISTING EQUIPMENT OR MATERIALS DAMAGED IN THE PROCESS OF INSTALLATION, TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVES.
17. THIS CONTRACTOR SHALL BE RESPONSIBLE TO ENGAGE THE SERVICES OF A QUALIFIED PROFESSIONAL ENGINEER TO INITIATE THE NECESSARY CONTROLLED INSPECTIONS AND PERMITS. THIS CONTRACTOR IS TO FILE THE REQUIRED DOCUMENTS WITH THE CITY OF NEW YORK.
18. ALL MATERIALS SHALL COMPLY WITH THE BASE BUILDING APPROVED MANUFACTURERS' LIST.
19. SUBMIT AS BUILT DRAWINGS TO THE LANDLORD UPON COMPLETION AND TESTING OF ALL MECHANICAL SYSTEMS, AND INDICATE THAT AS-BUILT DRAWINGS SHALL BE SUBMITTED TO THE LANDLORD IN FULL SIZE HARD COPY FORMAT AND IN AUTOCAD DWG AND DXF FORMATS.
20. ALL BASE BUILDING SHUT DOWNS, TESTING, TIE-INS AND CONNECTIONS MUST BE COORDINATED IN ADVANCE WITH THE LANDLORD USING THE REQUEST FORMS PROVIDED BY LL.

DRAWING LIST

- | | |
|-------|---|
| M-100 | MECHANICAL SPECIFICATIONS |
| M-101 | MECHANICAL SPECIFICATIONS |
| M-102 | MECHANICAL SCHEDULES, GENERAL NOTES AND SYMBOL LIST |
| M-300 | MECHANICAL PLAN |
| M-400 | MECHANICAL PIPING PLAN |
| M-500 | MECHANICAL DETAILS |
| M-501 | MECHANICAL DETAILS |
| M-600 | MECHANICAL TITLE 24 |
| M-601 | MECHANICAL TITLE 24 |
| M-602 | MECHANICAL TITLE 24 |

SYMBOL LIST AND ABBREVIATIONS

- | | |
|---------|--------------------------------------|
| | NEW WORK |
| | NEW DUCTWORK WITH ACOUSTIC LINING |
| | EXISTING DUCTWORK TO REMAIN |
| | EXISTING WORK TO BE REMOVED |
| | NEW LINEAR DIFFUSER |
| | NEW CEILING DIFFUSER/REGISTER/GRILLE |
| | NEW ACCESS DOOR |
| | NEW THERMOSTAT |
| | NEW THERMOSTAT SENSOR |
| | HUMIDISTAT |
| | VOLUME DAMPER |
| | CABLE OPERATED DAMPER |
| | UNDERCUT |
| | LOUVERED DOOR |
| | MOTORIZED DAMPER |
| | DUCT MOUNTED SMOKE DETECTOR |
| | AIR FLOW FOR TOP REGISTER |
| | DIRECTION OF RETURN AIR FLOW |
| | CONDENSATE PUMP |
| | CHECK VALVE |
| | SPLITTER DAMPER |
| | PITCH |
| | SHUT-OFF VALVE |
| | 2-WAY CONTROL VALVE |
| | CONNECT TO EXISTING |
| (###) | CUBIC FEET PER MINUTE (AIR FLOW) |
| AL | ACOUSTIC LINING |
| AFF | ABOVE FINISHED FLOOR |
| BTUH | BRITISH THERMAL UNITS PER HOUR |
| CFM | CUBIC FEET PER MINUTE |
| EAT | ENTERING AIR TEMPERATURE |
| LAT | LEAVING AIR TEMPERATURE |
| FC | FLEXIBLE CONNECTION |
| N | NEW |
| E | EXISTING |
| R | RELOCATED |
| OA | OUTSIDE AIR |
| OED | OPEN ENDED DUCT |
| NK | NECK |
| RA | RETURN AIR |
| SA | SUPPLY AIR |
| SQ.FT. | SQUARE FOOT |
| TO | TRANSFER OPENING |
| WMS | WIRE MESH SCREEN |
| FCU-#-# | FAN COIL UNIT |
| TX | TOILET EXHAUST |
| EF-#-# | EXHAUST FAN |
| EDH-#-# | ELECTRIC DUCT HEATER |
| EAC-#-# | ELECTRIC AIR CURTAIN |
| TR | TOP REGISTER |
| RR | RETURN REGISTER |
| CHW S&R | CHILLED WATER SUPPLY AND RETURN |
| FSD/AD | FIRE SMOKE DAMPER WITH ACCESS DOOR |
| HTW | HOT WATER |
| STM | STEAM |
| LPS | LOW PRESSURE STEAM |

DEPARTMENT OF BUILDING USE

DATE: 02/03/25

JOB NO: 25114

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MANGO AT CORTE MADERA
THE VILLAGE AT CORTE MADERA CENTER
1618 REDWOOD HIGHWAY, SPACE #D039
CORTE MADERA/CA/94925



IVO SKIBOLA, PE

REVISIONS

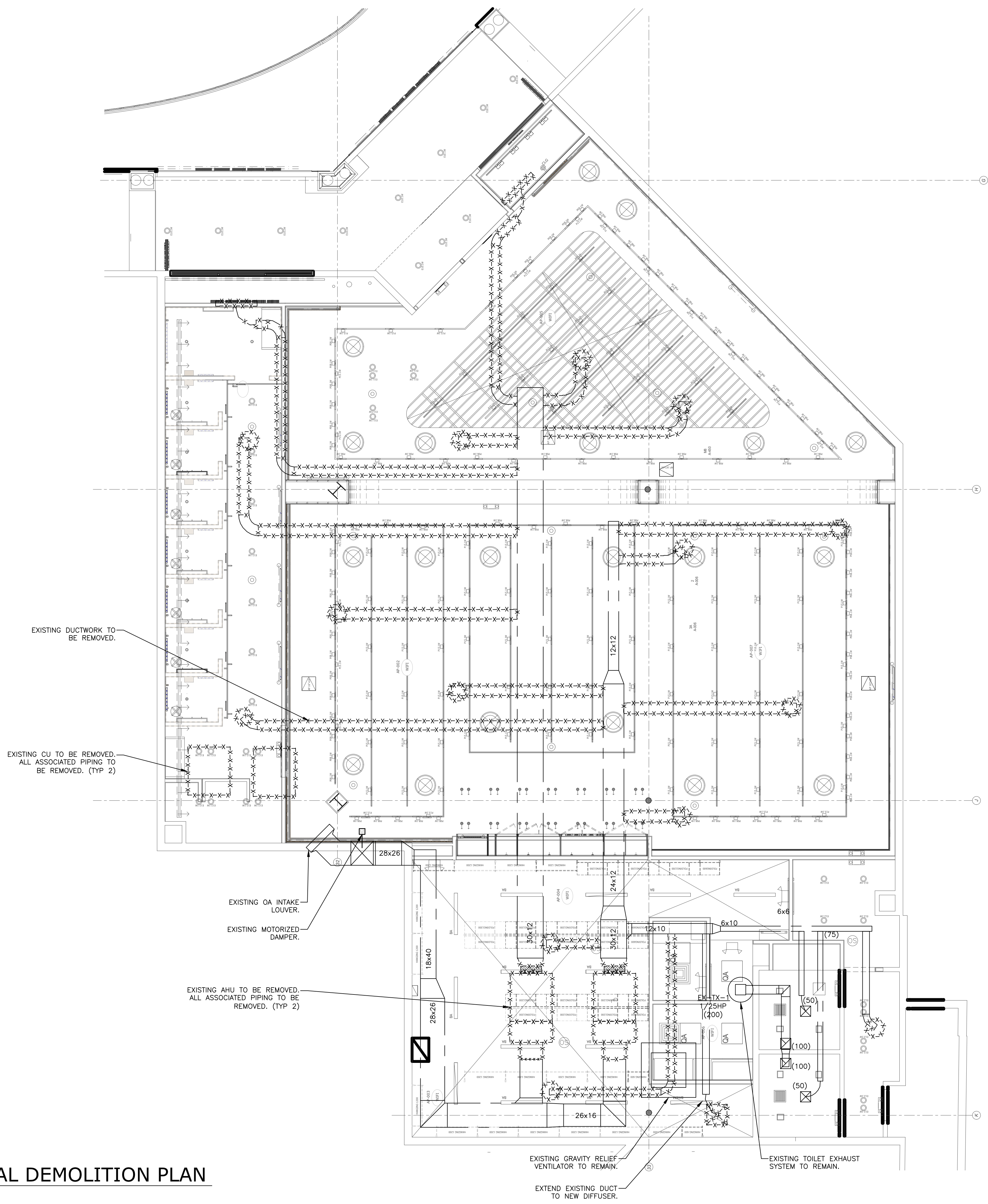
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| 04.04.25 | - | PERMIT SET |
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MECHANICAL GENERAL
NOTES, SCHEDULES
AND SYMBOL LIST

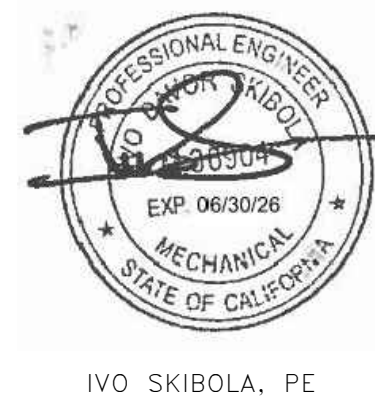
SHEET NUMBER

M-102

1 MECHANICAL DEMOLITION PLAN
Scale: 3/16" = 1'-0"



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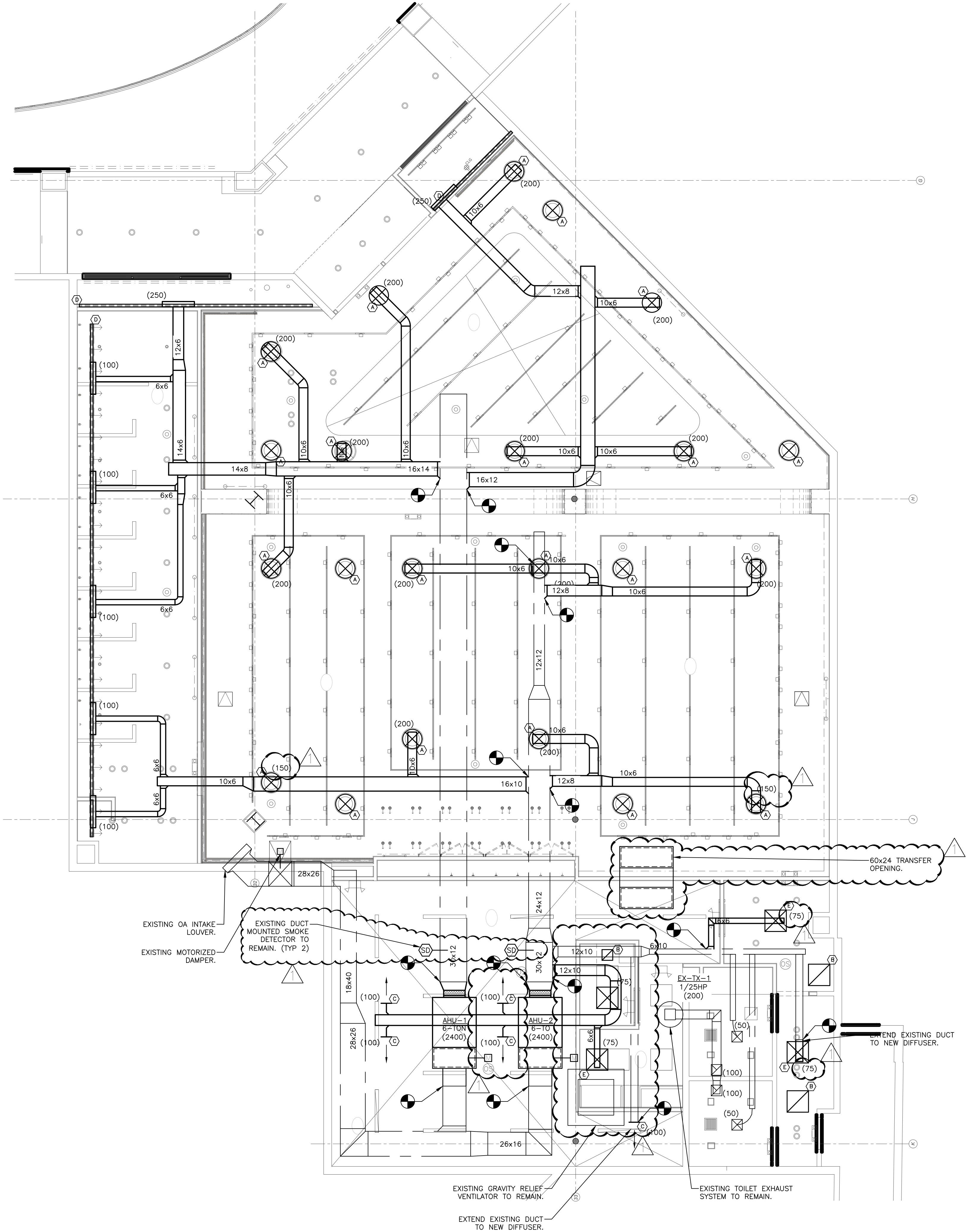
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04.09.25	- BID ISSUE
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DEPARTMENT OF BUILDING USE

MECHANICAL
DEMOLITION PLAN

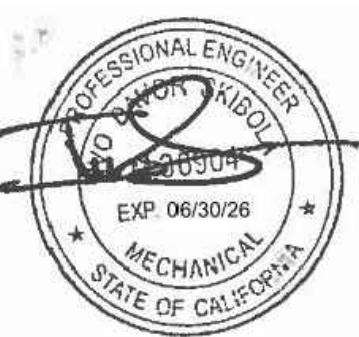
SHEET NUMBER

M-200



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DEPARTMENT OF BUILDING USE

MECHANICAL
PLAN

SHEET NUMBER

M-300

1 MECHANICAL PIPIONG PLAN
Scale: 3/16" = 1'-0"

TRANE

Weights

Heat Pump Condenser

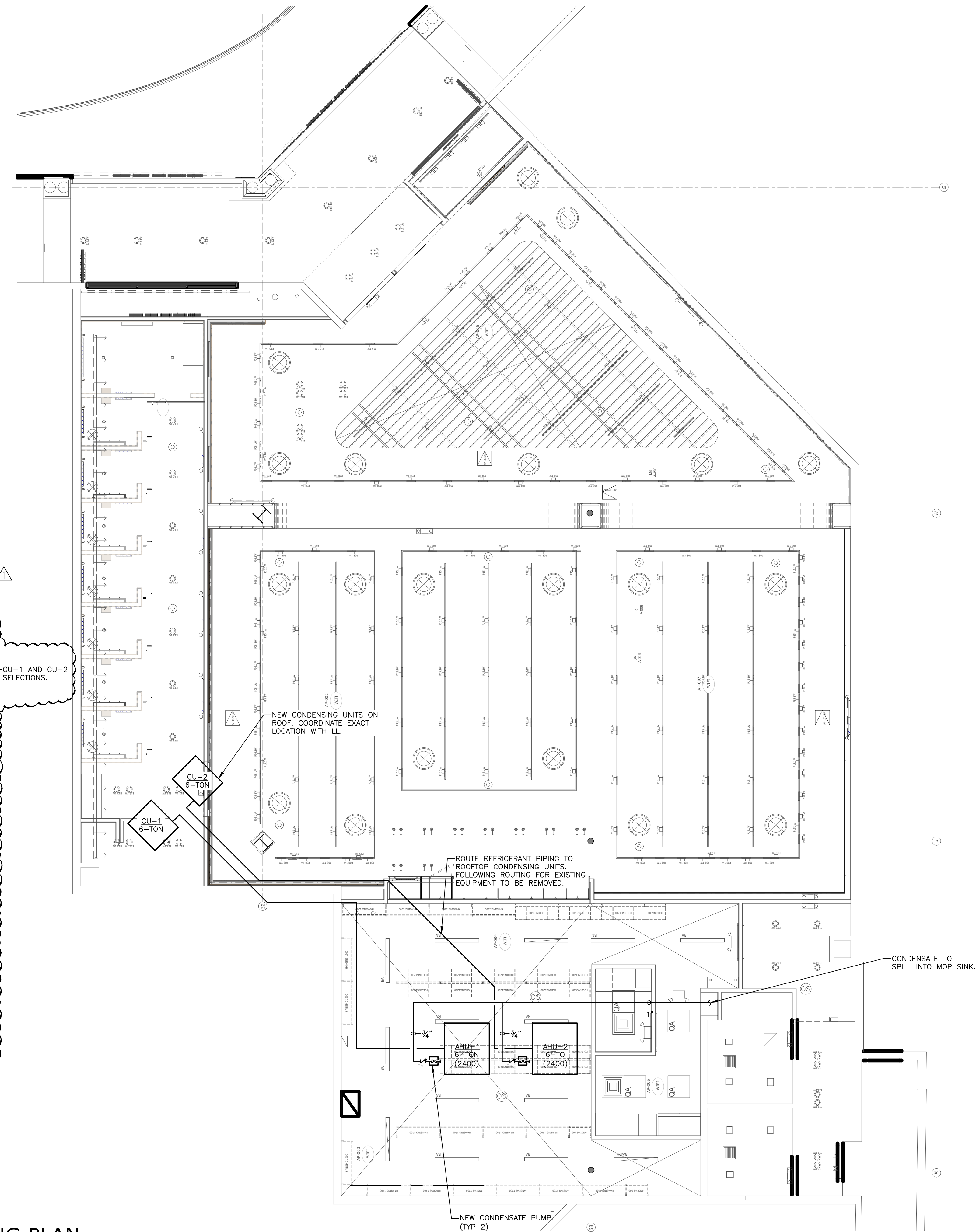
Table 69. TWA R-454B unit and corner weights — lbs (60 Hz)

Tons	Model No.	Shipping Max (lbs)	Net Max (lbs)	Corner Weights			
				1	2	3	4
6	TWA060K'A	360	320	112	80	56	76
	TWA060K'D	375	335	112	80	56	76
7.5	TWA075K'A	464	445	156	105	73	73
	TWA075K'D	485	460	156	103	71	71
10	TWA100K'A	487	448	157	106	74	74
	TWA100K'D	474	432	152	103	71	71
15	TWA150K'A	874	792	242	172	119	119
	TWA150K'D	1004	914	274	205	140	140

Figure 40. TWA060, 120, 150

Figure 41. TWA180, 240

SS-PRC050B-EN



DATE: 02/03/25

JOB NO: 25114

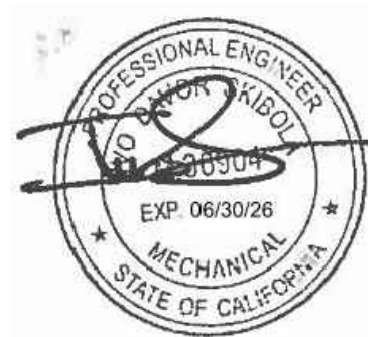
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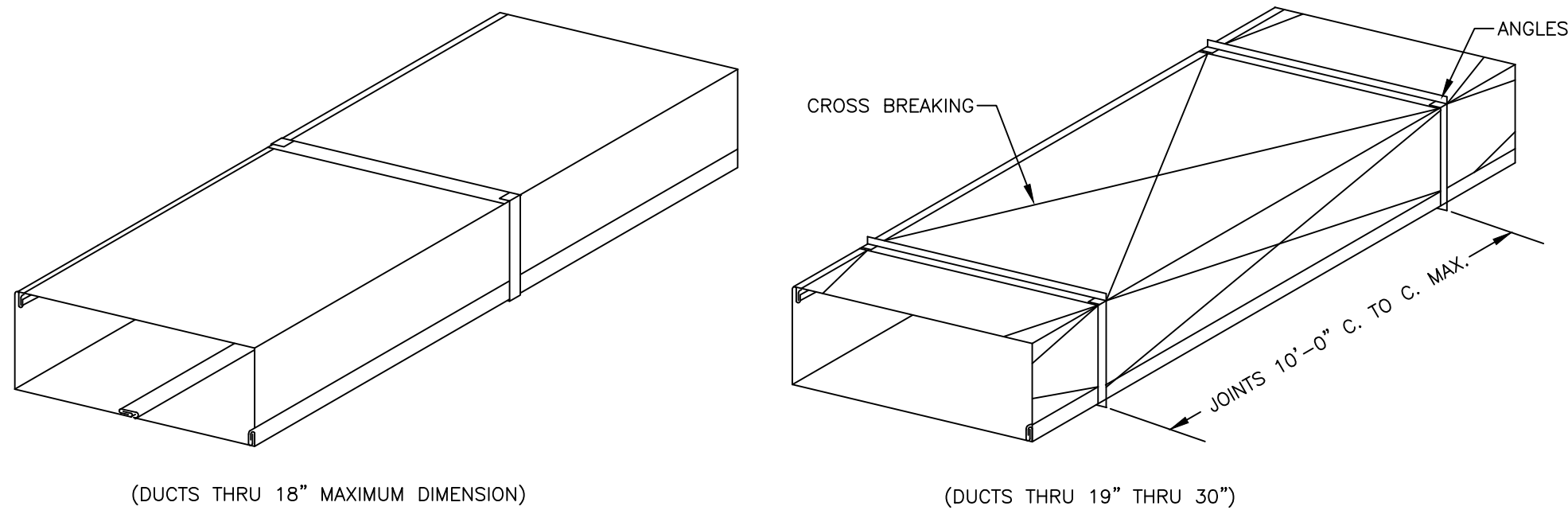
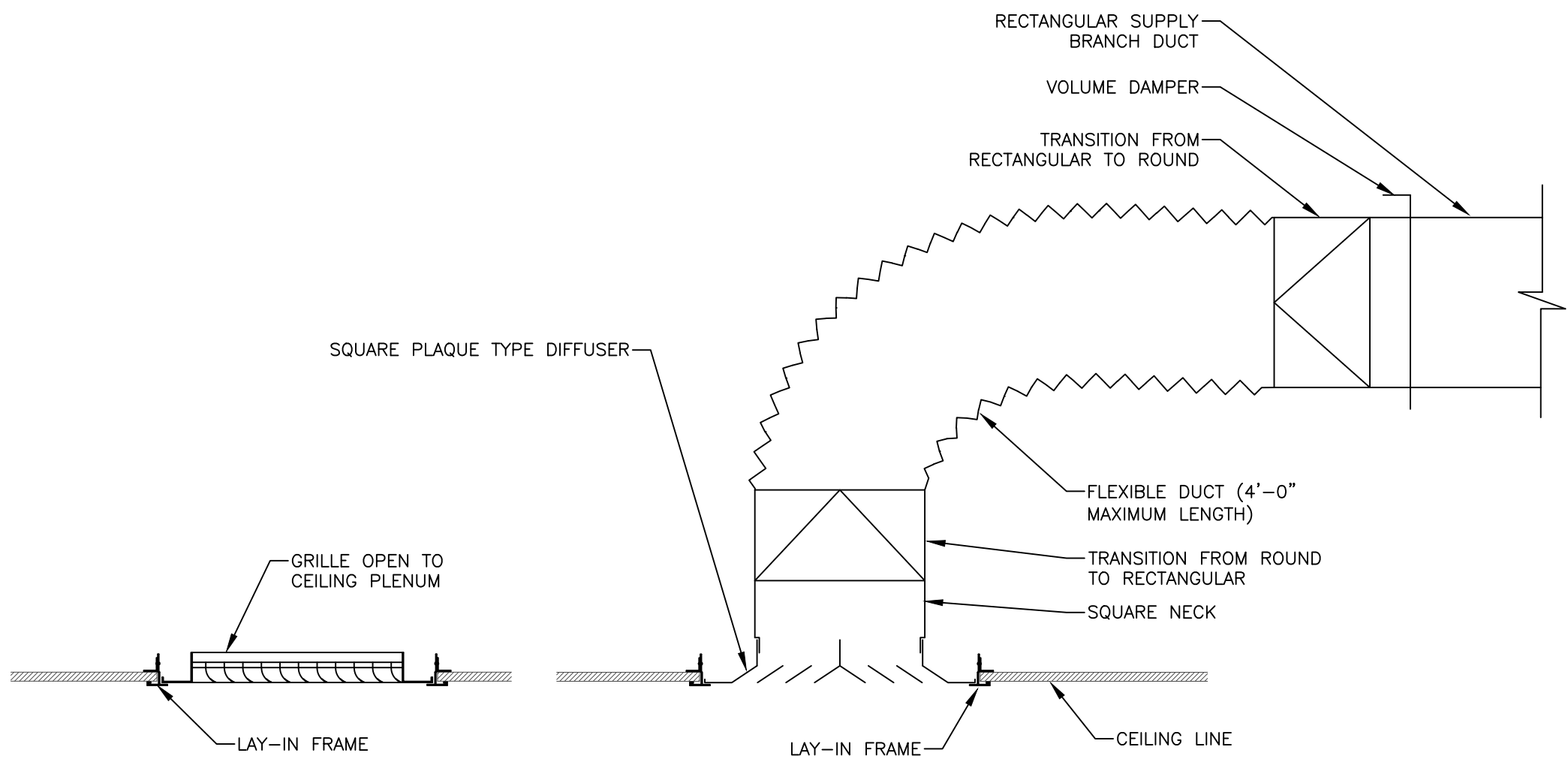
DEPARTMENT OF BUILDING USE

MECHANICAL
PIPING PLAN

SHEET NUMBER

M-400

CEILING GRILLE AND DIFFUSER INSTALLATION DETAIL



DUCT CONSTRUCTION DETAIL

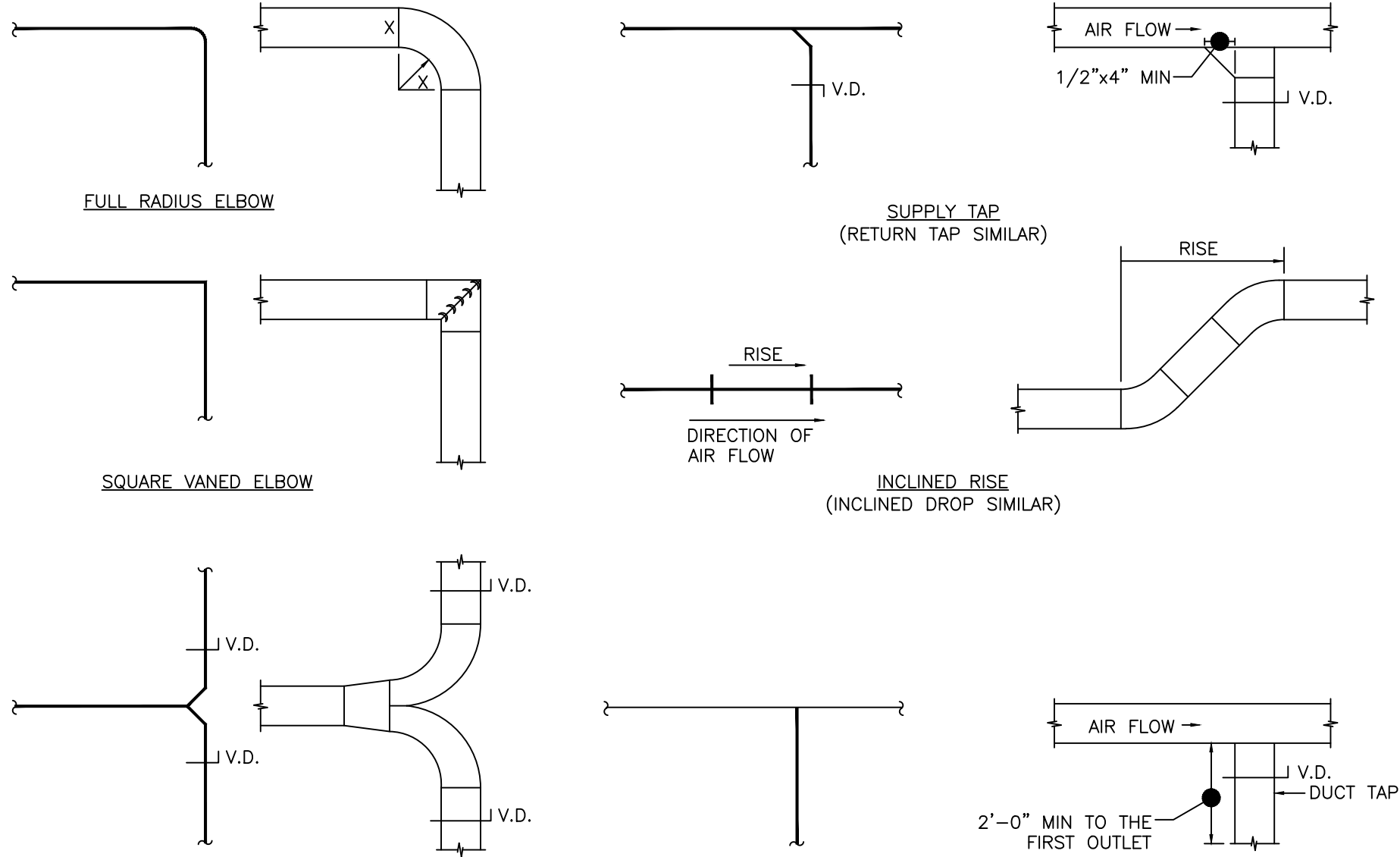
SINGLE LINE
DUCTWORK

EQUIVALENT DOUBLE
LINE DUCTWORK

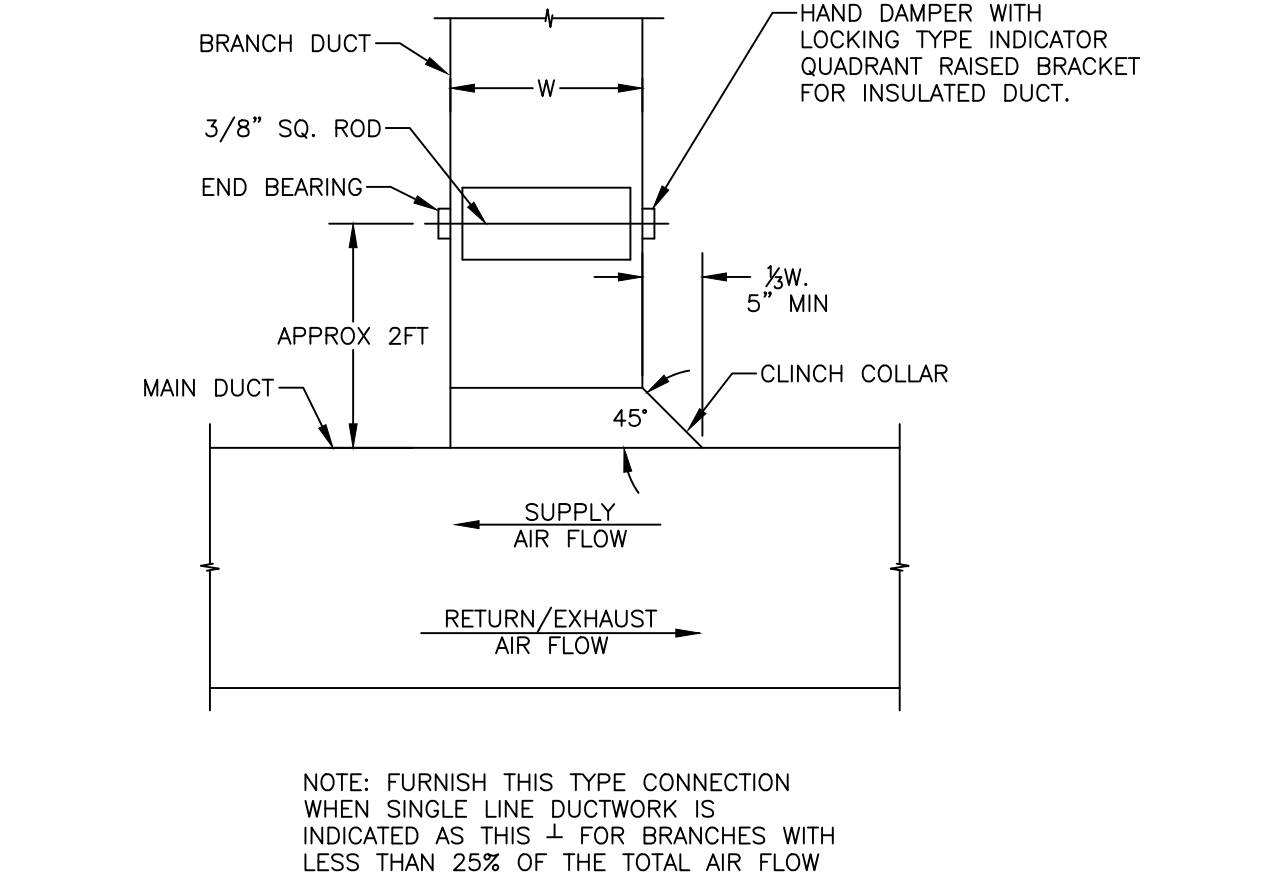
SINGLE LINE
DUCTWORK

EQUIVALENT DOUBLE
LINE DUCTWORK

TYPICAL SUPPLY OR EXHAUST DUCT CONNECTION

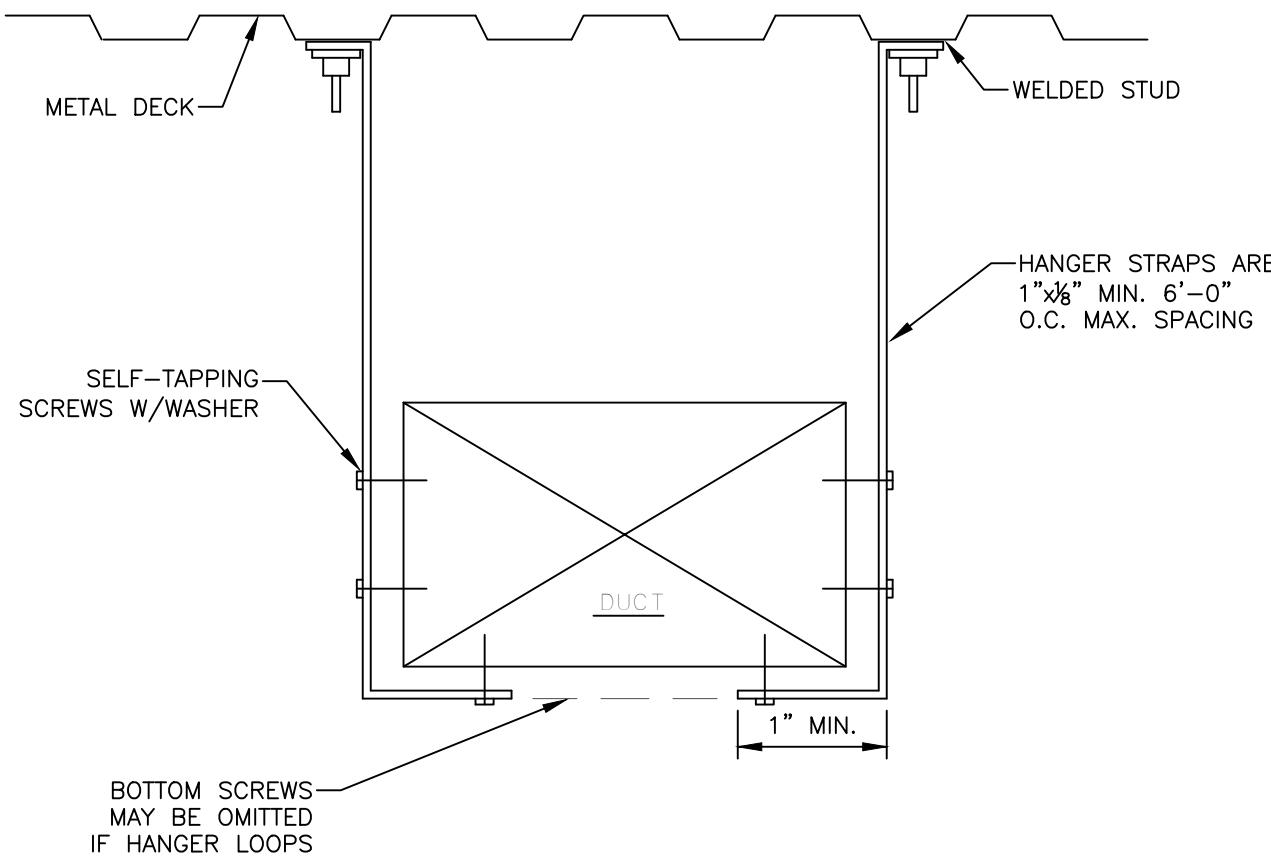


RECTANGULAR DUCT WITH VOLUME DAMPER

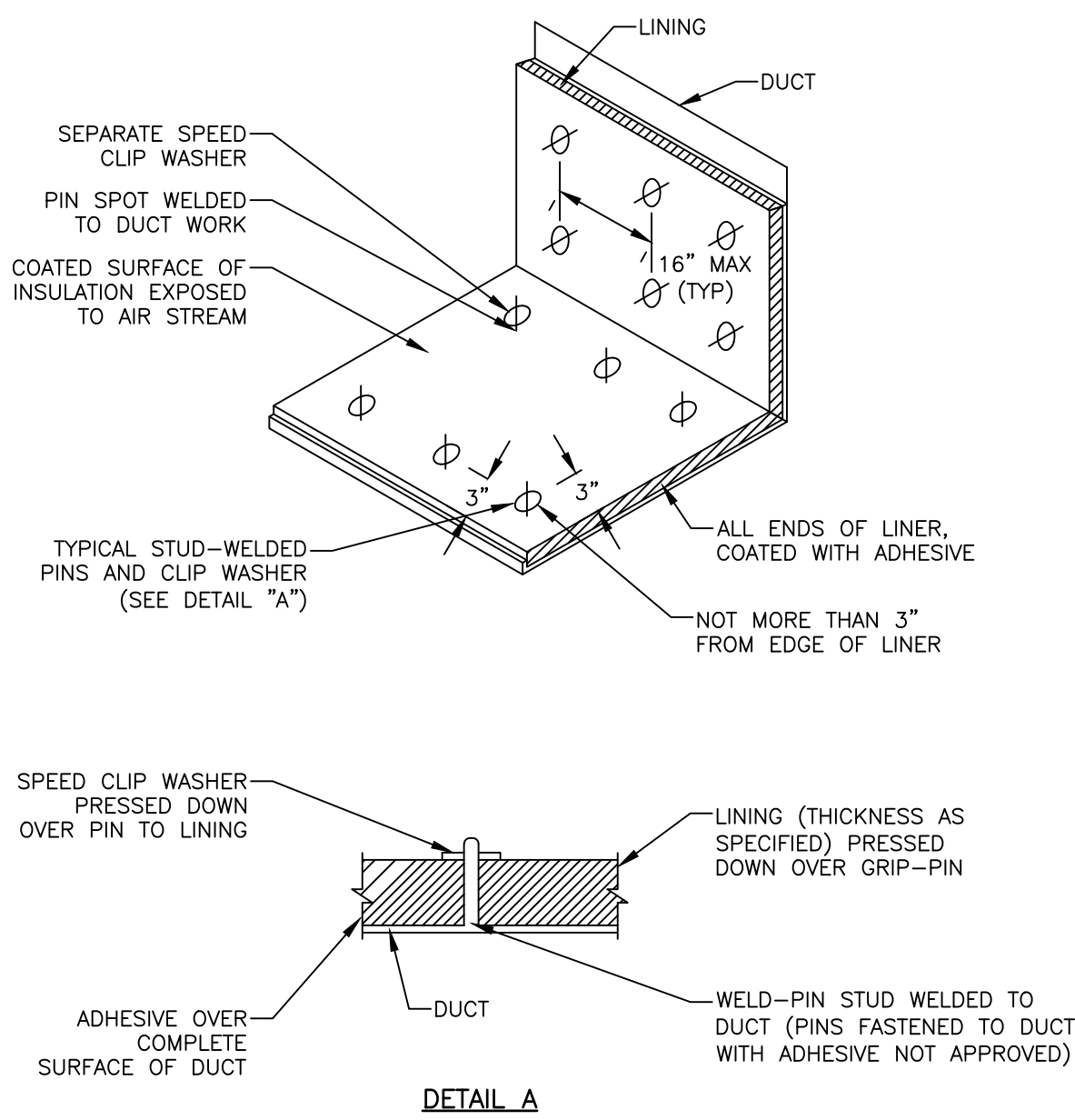


NOTE: FURNISH THIS TYPE CONNECTION
WHEN SINGLE LINE DUCTWORK IS
INDICATED AS THIS $\perp$ FOR BRANCHES WITH
LESS THAN 25% OF THE TOTAL AIR FLOW

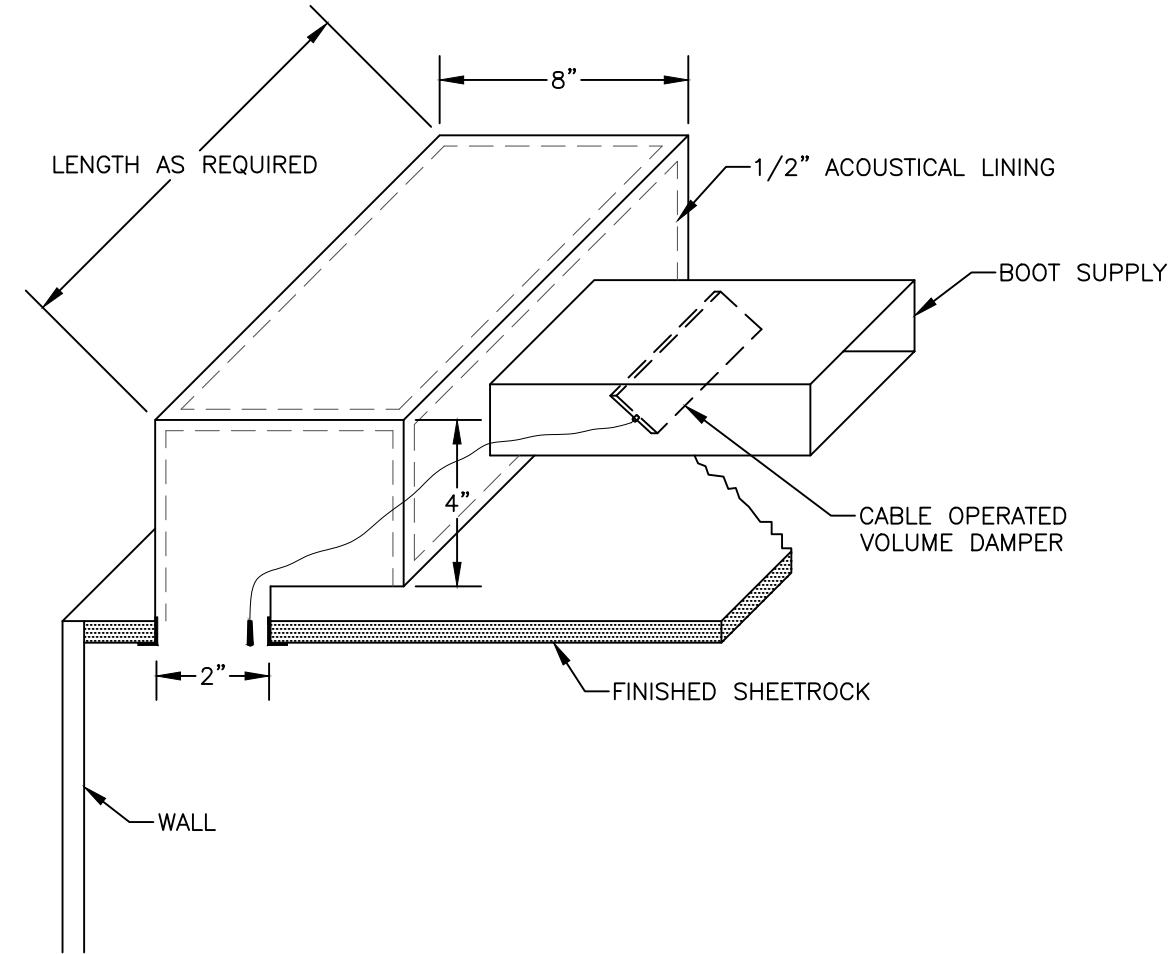
DUCT HANGING DETAIL



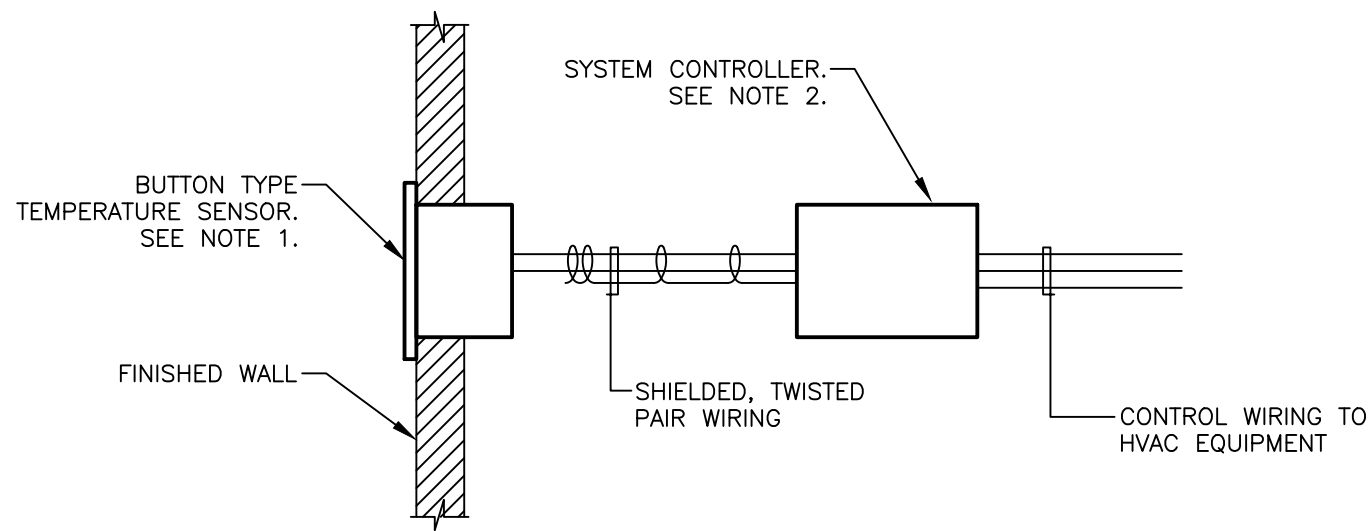
SOUND LINING INSTALLATION DETAIL



LINEAR DIFFUSER & PLENUM CONNECTION



REMOTE ROOM TEMPERATURE SENSOR



NOTES:

1. FLUSH MOUNT TEMPERATURE SENSOR SHALL BE APPROXIMATELY 1" DIAMETER AND INSTALLED THROUGH A 7/16" HOLE IN THE FINISHED WALL WHERE SHOWN ON PLANS. SENSOR SHALL BE EQUAL TO ACI MODEL "A/XX-PBS".
2. SYSTEM CONTROLLER SHALL PROVIDE USER INTERFACE FOR ADJUSTMENT OF ROOM TEMPERATURE SETPOINT, OPERATING SCHEDULE OF HVAC SYSTEM AND CONTROL OF FUNCTION OF HVAC COMPONENTS. SYSTEM CONTROLLER SHALL BE INSTALLED WHERE INDICATED ON PLANS.

DEPARTMENT OF BUILDING USE

MECHANICAL
DETAILS

SHEET NUMBER

M-500

DATE: 02/03/25

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REVISIONS

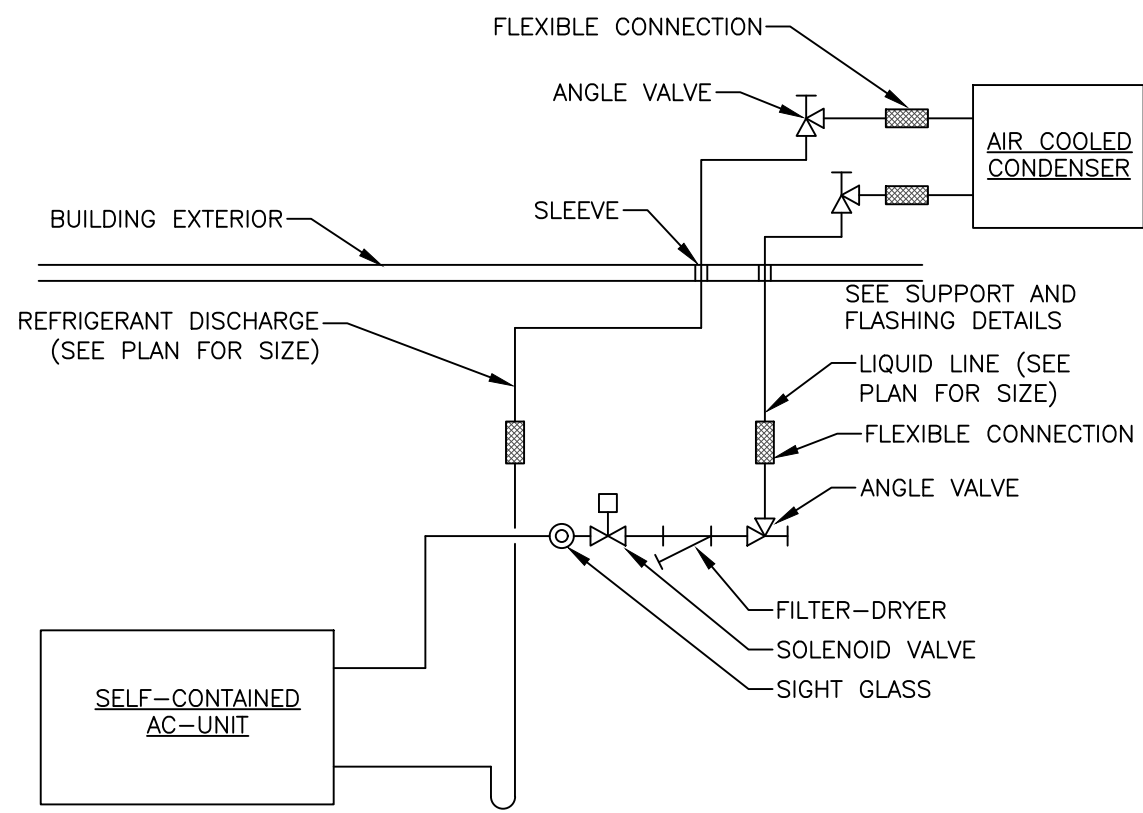
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DEPARTMENT OF BUILDING USE

MECHANICAL
DETAILS

SHEET NUMBER

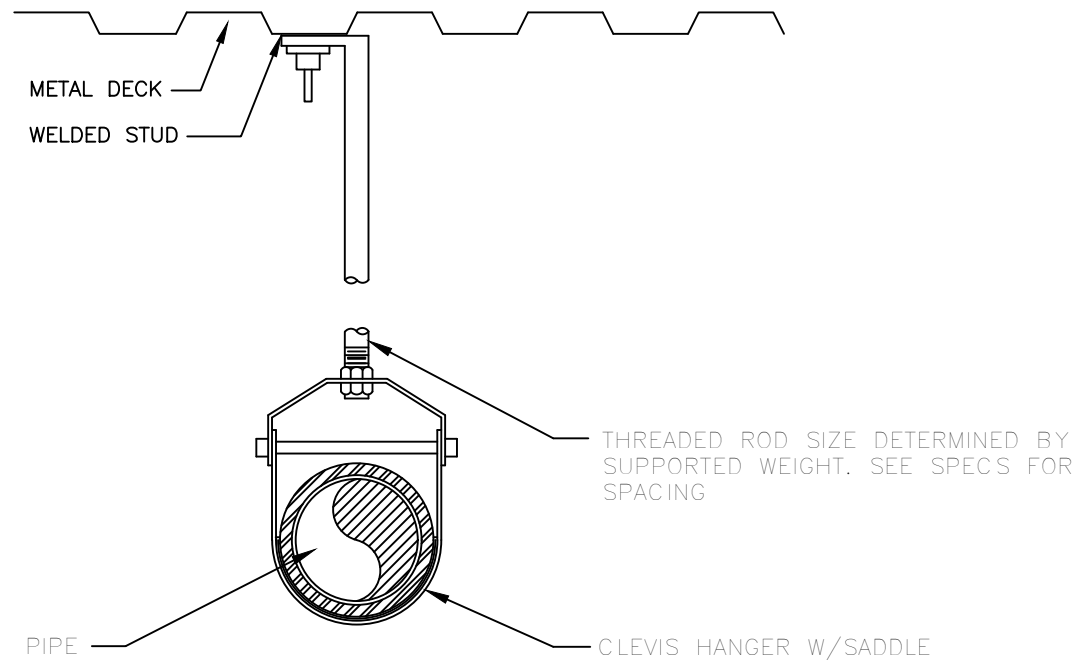
M-501



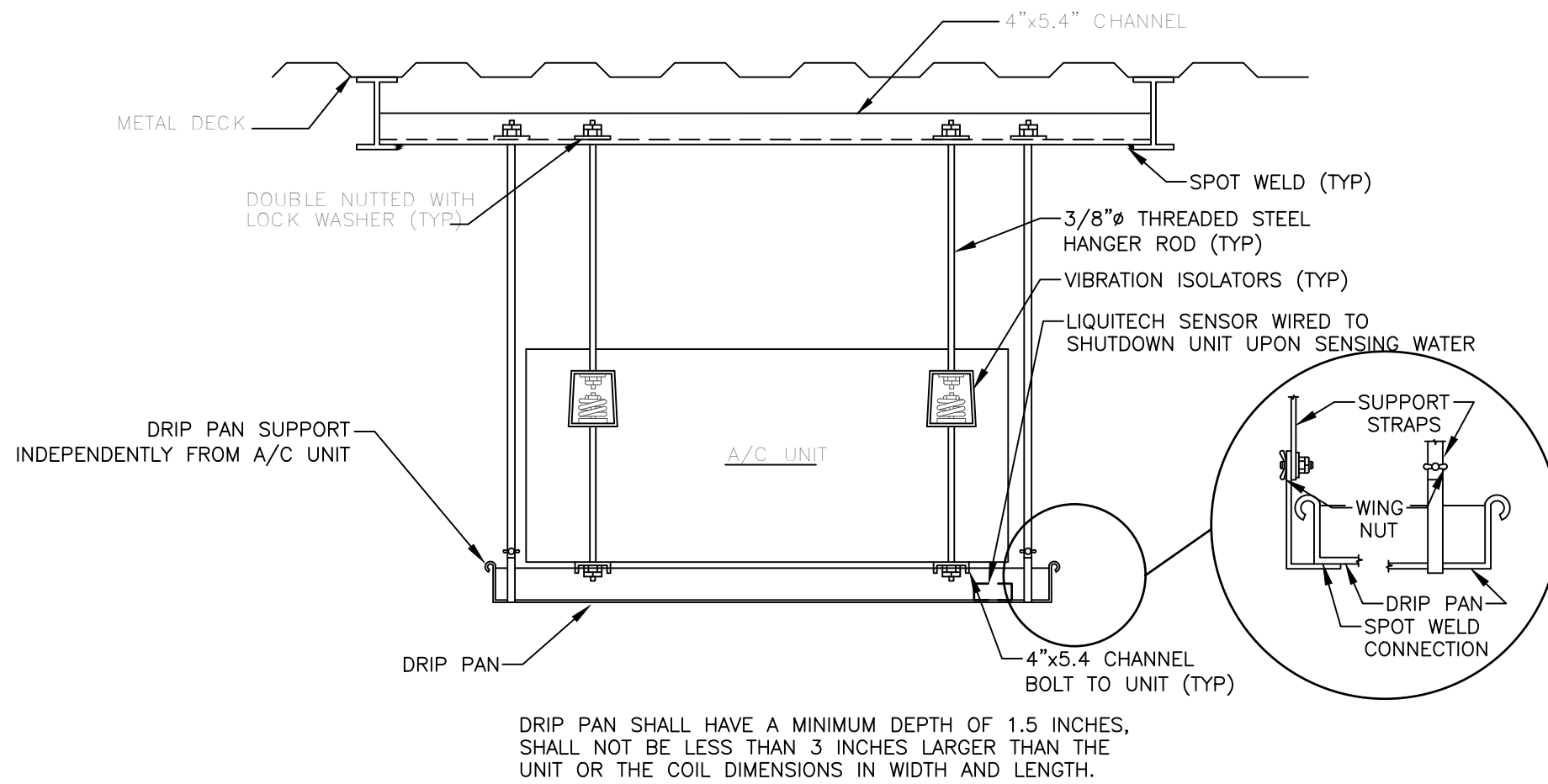
REFRIGERATION PIPING DIAGRAM

NOTE:

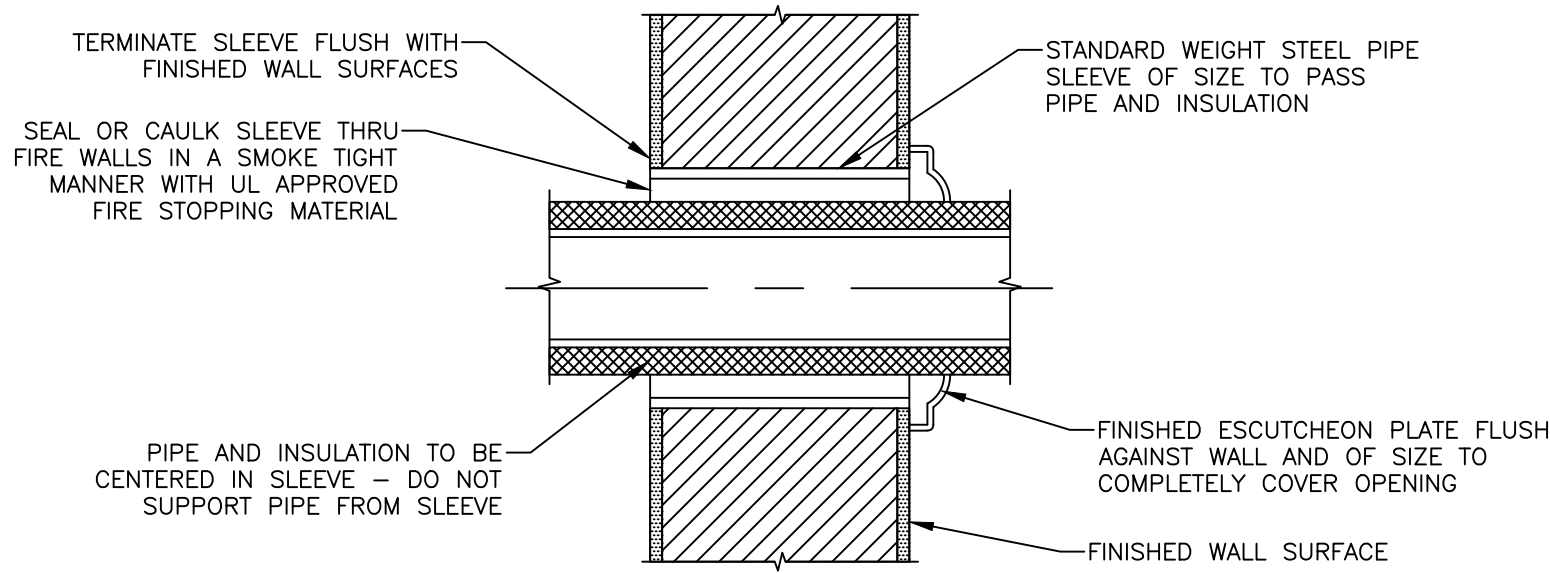
PIPING SIZES TO BE DETERMINED BY MANUFACTURER



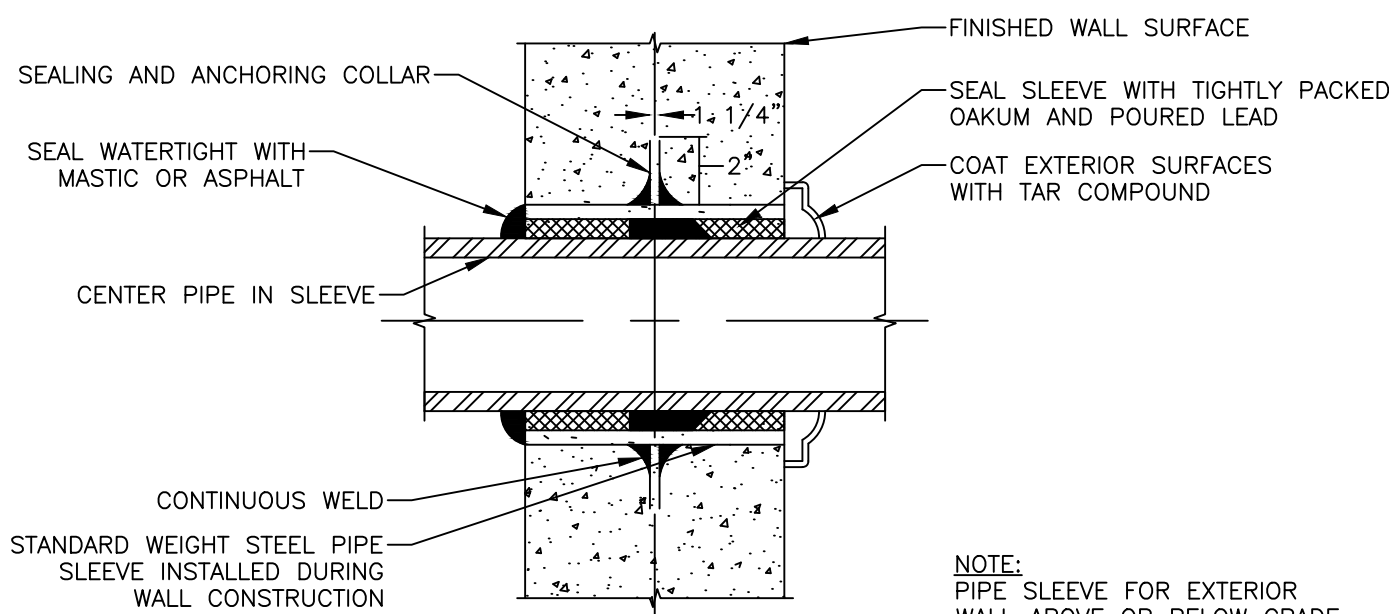
PIPE HANGING DETAIL



CEILING HUNG SUPPLEMENTAL EQUIPMENT

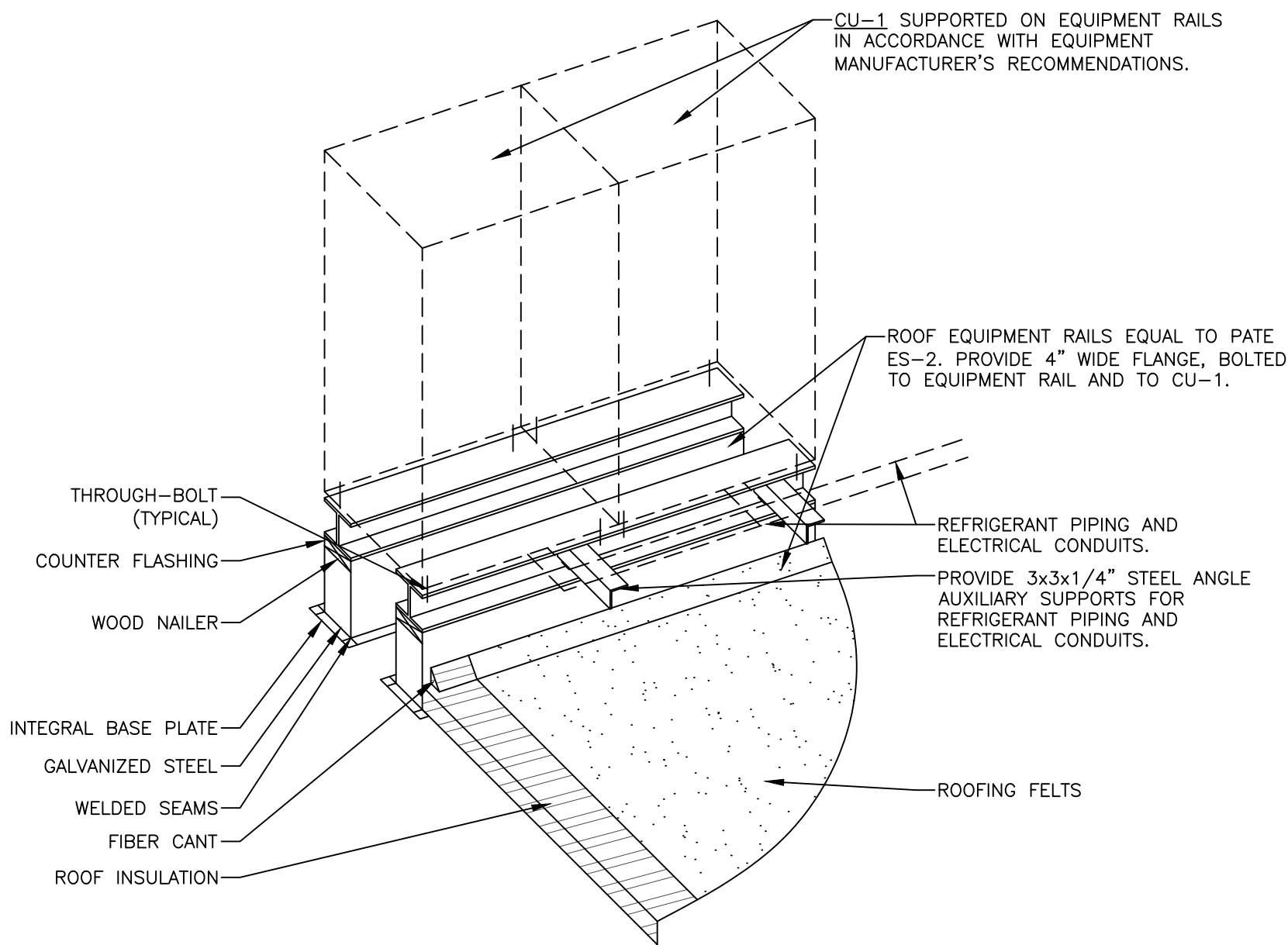


INTERIOR WALLS



EXTERIOR WALLS

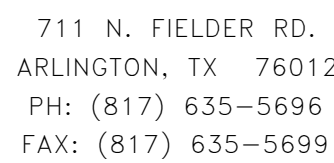
PIPE PENETRATION DETAILS



NOTES:

1. PROVIDE 1/4" THICK RUBBER VIBRATION PAD AT EACH MOUNTING BOLT.
2. COORDINATE HEIGHT OF EACH RAIL WITH LOCAL ROOF INSULATION THICKNESS.
3. RAIL TO BE INSTALLED ON TOP OF CONCRETE DECK.

OUTDOOR CONDENSING UNIT INSTALLATION



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M-6000

STATE OF CALIFORNIA

Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

NRCC-MCH-E

This document is used to demonstrate compliance for mechanical systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.4, or 141.0(b)2 for alterations.

Project Name: Altores Corte Madera

Report Page: (Page 1 of 11)

Project Address: 1618 REDWOOD HIGHWAY, SPACE#D039, CORTE MADERA, CA, 94925

Date Prepared: 2025-04-03T22:09:38-04:00

A. GENERAL INFORMATION

01 Project Location (city)	Corte Madera	04 Total Conditioned Floor Area	5200
02 Climate Zone	3	05 Total Unconditioned Floor Area	0
03 Occupancy Types Within Project:		06 # of Stories (Habitable Above Grade)	1

• Office • Retail • Warehouse

B. PROJECT SCOPE

This table includes mechanical systems or components that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.4, 170.2(b) or 141.0(b)2 and 180.2(b)2 for alterations.

01	02	03
Air System(s)	Wet System Components	Dry System Components
☒ Heating Air System	☐ Water Economizer	☒ Air Economizer
☒ Cooling Air System	☐ Pumps	☐ Electric Resistance Heat
Mechanical Controls	☐ System Piping	☒ Fan Systems
☒ Mechanical Controls (existing to remain, altered or new)	☐ Cooling Towers	☒ Ductwork (existing to remain, altered or new)
	☐ Chillers	☒ Ventilation
	☐ Boilers	☐ Zonal Systems/ Terminal Boxes

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Documentation Software: Energy Code Ace

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 20220101

Compliance ID: 286237-0425-0002

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STATE OF CALIFORNIA

Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Report Page:

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Project Name:

Mango Corte Madera

Page 3 of 11

2025-05-29T14:02:46-04:00

F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

Dry System Equipment Sizing (includes air conditioners, condensers, heat pumps, VRF, furnaces and unit heaters and DOAS systems)

01	02	03	04	05	06	07	08	09	10	11
Name or Item Tag	Equipment Category per Tables 110.2, 140.4(a)2 and 170.2(c)3a1	Equipment Type per Tables 110.2 and Title 20	Smallest Size Available ¹ 140.4(a) and 170.2(c)1	Equipment Sizing per Mechanical Schedule (kBtu/h)						
				140.4(a&b), 170.2(c)1 & 170.2(c)2						
				Heating Output ^{2,3}		Cooling Output ^{2,3}		Load Calculations ^{3,4}		
				Per Design (kBtu/h)	Rated (kBtu/h)	Supp. Heating Output (kBtu/h)	Sensible Per Design (kBtu/h)	Rated (kBtu/h)	Total Heating Load (kBtu/h)	Total Sensible Cooling Load (kBtu/h)
AHU-1/CU-1 & AHU-2/CU-2	Unitary Heat Pumps (no elec. resistance)	Air-cooled, split (3 phase)	Yes	67	67	0	58.2	80	37	55

¹FOOTNOTES: Equipment shall be the smallest size, within the available options of the desired equipment line, necessary to meet the design heating and cooling loads of the building per 140.4(a) and 170.2(c)1. Healthcare facilities are excepted.

²It is common practice to show rated output capacity on the equipment schedule. Sensible cooling output comes from specification sheet tables.

³ If equipment is heating only, leave cooling output and load blank. If equipment is cooling only, leave heating output and load blank.

⁴ Authority Having Jurisdiction may ask for load calculations used for compliance per 140.4(b) and 170.2(c).

Dry System Equipment Efficiency (other than Package Terminal Air Conditioners (PTAC) and Package Terminal Heat Pumps (PTHP), DX-DOAS and Dual Fuel Heat Pumps)

01	02	03	04	05	06	07	08	09
Name or Item Tag	Size Category (Btu/h)	Heating Mode			Cooling Mode			
		Rating Condition ("F)	Efficiency Unit	Minimum Efficiency Required per Tables 110.2 / Title 20	Design Efficiency	Efficiency Unit	Minimum Efficiency Required per Tables 110.2 / Title 20	Design Efficiency
AHU-1/CU-1 & AHU-2/CU-2	>=65,000 and <135,000	47 °Fdb/ 43 °Fwb OSA	COP	3.4	3.4	EER IEEER	10.8 12	11.3 14.1

to PUMPS

This section does not apply to this project.

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CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 20220101

Compliance ID: 286237-0525-0003

Report Generated: 2025-05-29 11:03:01

STATE OF CALIFORNIA

Mechanical Systems

CERTIFICATE OF COMPLIANCE

Report Page:

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Project Name:

Mango Corte Madera

Date Prepared:

2025-05-29T14:02:46-04:00

C. COMPLIANCE RESULTS

Table C will indicate if the project data input into the compliance document is compliant with mechanical requirements. This table is not editable by the user. If this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D, or the table indicated as not compliant for guidance.

01	02	03	04	05	06	07	08	09
System Summary 110.1, 110.2, 140.4, 170.2(c)	AND Pumps 140.4(k), 170.2(c)(4)	AND Fans/ Economizers 140.4(c), 140.4(e), 170.2(c)	AND System Controls 110.2, 120.2, 140.4(f), 170.2(c)	AND Ventilation 120.1, 160.2	AND Terminal Box Controls 140.4(d), 170.2(c)(4)(8)	AND Distribution 120.3, 140.4(i), 160.2, 160.3	AND Cooling Towers 110.2(e)(2)	Compliance Results
(See Table F)	(See Table G)	(See Table H)	(See Table I)	(See Table J)	(See Table K)	(See Table L)	(See Table M)	
Yes	AND	AND	Yes	AND	Yes	AND	Yes	COMPLIES with Exceptional Conditions
Mandatory Measures Compliance (See Table Q for Details)								COMPLIES

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

Transfer air is being used in at least one zone to meet minimum ventilation requirements. See Table J for details. Transfer air must be designed per §120.1(g) for air classification and recirculation limitations and be documented within construction documents.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

Space Conditioning System Information

01	02	03	04	05	06
System Name	Quantity	System Serving	System Status	Space Type	Utilizing Recovered Heat
AHU-1/CU-1 & AHU-2/CU-2	2	Single zone	Alteration		☐

Generated Date/Time:

Documentation Software: Energy Code Ace

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Report Version: 2022.0.000

Schema Version: rev 2020101

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Report Generated: 2025-05-29 11:03:01

STATE OF CALIFORNIA

Mechanical Systems

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name: Mango Corte Madera

Report Page: (Page 4 of 11)

Date Prepared: 2025-04-03T22:09:38-04:00

H. FAN SYSTEMS & AIR ECONOMIZERS

This table is used to demonstrate compliance with prescriptive requirements found in 140.4(c), 140.4(e), 140.4(f), 170.2(c)3, and 170.2(c)4A for fan systems. Fan systems serving only process loads are exempt from these requirements and do not need to be included in Table H.

System Name	Supply air Fan 1	Quantity	2	Fan System Status	Alteration	System Zoning	all other systems	Serving Dwelling Units	Not Serving Dwelling Units	Fan System Airflow (cfm)	2,500	Site Elevation	39	Economizer	Differential Enthalpy
01	02	03		04		05		06	07	08		09		10	11
									Allowance					Design	
Fan Name or Item Tag	Fan Type	Qty		Component		Airflow through Component (%)		Water Gauge (w.g)	Component Allowance (watt/cfm)	Fan Allowance (watt/cfm) ³		Design Electrical Input Power Method		Motor Nameplate Horsepower	Fan Electrical Input Power (kW)
AHU-1&AHU-2	Supply	1		Hydronic/DX cooling coil or heat pump coil		100			0.139		0.4717	Default per Table 140.4-D/141.0-D		>=1.5 and <2	1.72
				Economizer Return Damper		19			0.046						
				Air Blender		100			0.046						
				Altered:Supply Fan System		100			0.139						
				MERV 13-16 Filter upstream of thermal conditioning equipment		100			0.139						
Supply Fan Base Allowance (watt/cfm)		0.232		Exhaust/Return/Relief/Transfer Fan Base Allowance(watt/cfm)				0	Fan System Allowance (kW) ³		1.75			Fan System Electrical Input Power (kW)	1.72

1 FOOTNOTES: Fans serving spaces with design background noise goals below NC35

2 Low-turndown single-zone VAV fan system must be capable of and configured to reduce airflow to 50 percent of design airflow and use no more than 30 percent of the design wattage at that airflow. No more than 10 percent of the design load served by the equipment shall have fixed loads.

3 Fan system allowance includes fan system base allowance.

4 Filter pressure loss can only be counted once per fan system.

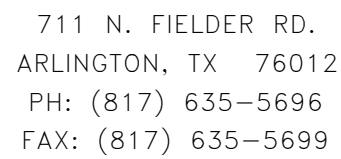
5 Complex Fan System means a fan system that combines a single cabinet fan system with other supply fans, exhaust fans, or both.

Generated Date/Time: Documentation Software: Energy Code Ace

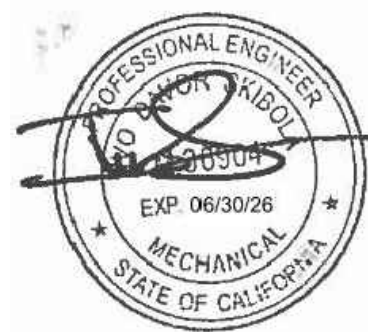
Report Version: 2022.0.000 Schema Version: rev 20220101

Compliance ID: 286237-0425-0002 Report Generated: 2025-04-03 19:09:43

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance



MANGO AT CORTE MADERA
THE VILLAGE AT CORTE MADERA CENTER
1618 REDWOOD HIGHWAY, SPACE #D039
CORTE MADERA/CA/94925



02.03.25 - LL ISSUE
04.03.25 - LL COMMENT RESPONSE
04.04.25 - PERMIT SET
04.09.25 - BID ISSUE
05.30.25 - DOB COMMENT RESPON

DEPARTMENT OF BUILDING USE

M-601

² FOOTNOTES: System CFM should include both mechanical and natural ventilation for the zone/system
³ Air filtration requirements apply to the following three system types per 120.1(c)(1a): space conditioning systems utilizing ducts to supply air to occupiable space; supply-only ventilation systems providing outside air to occupiable space; supply side of balanced ventilation systems including heat recovery and energy recovery ventilation systems providing outside air to occupiable space.
⁴ Uniform Mechanical Code may have more stringent ventilation requirements; the most stringent code requirement takes precedence.
⁵ See Standards Tables 120.1-A and 120.1-B.
⁶ For lecture halls with fixed seating, the expected number of occupants shall be determined in accordance with the California Building Code.
⁷ 120.1(c)(3) requires systems serving rooms that are required by 120.1(c) to have lighting occupancy sensing controls to also have occupancy sensing zone controls for ventilation. Examples of spaces which require lighting occupancy sensors include offices 250sf² or smaller, multipurpose rooms less than 1,000 ft², classrooms, conference rooms, restrooms, aisles and open areas in warehouses, library book stack aisles, corridors, stairwells, parking garages, and loading and unloading zones, unless exempted by 130.1(c).

This section does not apply to this project.

This table is used to show compliance with mandatory pipe insulation requirements found in 120.3 and mandatory requirements found in 120.4(g) for duct sealing.

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CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance	Report Version: 2022.0.000 Schema Version: rev 20220101	Compliance ID: 286237-0425-0002 Report Generated: 2025-04-03 19:09:43

13	Yes	The space conditioning system serves less than 5,000 ft² of conditioned floor area.
14	No	The <u>combined</u> surface area of the ducts is more than 25% of the total surface area of the entire duct system:
15	No	The scope of the project includes extending an existing duct system, which is constructed, insulated or sealed with asbestos.
16	No	The scope of the project includes an existing duct system that is documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Reference Nonresidential Appendix NA2.
17	Yes	All Ductwork and plenums with pressure class ratings shall be constructed to Seal Class A
18	No	All ductwork is an extension of an existing duct system
19	No	Ductwork serving individual dwelling unit
20		< 25 ft of new or replacement space conditioning ducts installed
21	R-4.2	Duct Insulation R-value
22	Yes	Ductwork Existing To Remain
23	Yes	Duct System Connected To Altered Space Conditioning System

This section does not apply to this project.

	Generated Date/Time:	Documentation Software: Energy Code Ace
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DATE: 02/03/25

JOB NO: 25114

DRAWN: —

CHECKED: —



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MANGO AT CORTE MADERA
THE VILLAGE AT CORTE MADERA CENTER
1618 REDWOOD HIGHWAY, SPACE #D039
CORTE MADERA/CA/94925



IVO SKIBOLA, PE

REVISIONS

- 02.03.25 – LL ISSUE
04.03.25 – LL COMMENT RESPONSE
04.04.25 – PERMIT SET
04.09.25 – BID ISSUE
05.30.25 – DOB COMMENT RESPONSE

DEPARTMENT OF BUILDING USE

MECHANICAL
TITLE 24

SHEET NUMBER

M-602

STATE OF CALIFORNIA		CALIFORNIA ENERGY COMMISSION	
Mechanical Systems		CERTIFICATE OF COMPLIANCE	
Project Name: Mango Corte Madera		Report Page: (Page 9 of 11)	
Date Prepared: 2025-04-03T22:09:38-04:00		NRCC-MCH-E	
N. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION			
Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency-4			
Form/Title			
NRCC-MCH-01-E - Must be submitted for all buildings			
O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE			
Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency-4			
Form/Title		Systems/Spaces To Be Field Verified	
NRCA-MCH-02-A - Outdoor Air must be submitted for all newly installed HVAC units. Note: MCH-02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap.		AHU-1&2	
NRCA-MCH-03-A - Constant Volume Single Zone HVAC NOTE: This form does not automatically move to "Yes". If Constant Volume Single Zone HVAC Systems are included in the scope, permit applicant should move this form to "Yes".		AHU-1/AHU-2	
NRCA-MCH-05-A - Air Economizer Controls		Supply air Fan 1	
NRCA-MCH-16-A Supply Air Temperature Reset Controls		AHU-1/AHU-2	
P. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION			
There are no NRCV forms required for this project.			
Generated Date/Time:		Documentation Software: Energy Code Ace	
CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance		Report Version: 2022.0.000 Schema Version: rev 20220101	
Compliance ID: 286237-0425-0002		Report Generated: 2025-04-03 19:09:43	

STATE OF CALIFORNIA		CALIFORNIA ENERGY COMMISSION	
Mechanical Systems		CERTIFICATE OF COMPLIANCE	
Project Name: Mango Corte Madera		Report Page: (Page 10 of 11)	
Date Prepared: 2025-04-03T22:09:38-04:00		NRCC-MCH-E	
Q. MANDATORY MEASURES DOCUMENTATION LOCATION			
This table is used to indicate where mandatory measures are documented in the plan set or construction documentation.			
01		02	
Compliance with Mandatory Measures documented through MCH	No	Plan sheet or construction document location	
Mandatory Measures Note Block			
03		04	
Mandatory Measure		Plan sheet or construction document location	
Heating Equipment Efficiency per 110.1		Air Cooled Split System Schedule on M-102	
Cooling Equipment Efficiency per 110.1		Air Cooled Split System Schedule on M-102	
Furnace Standby Loss Control per 110.2(d)		Not Applicable	
Duct Insulation per 120.4		HVAC Specifications section P.2 on M-101	
Heat Pump with Supplemental electric Resistance Heater Controls per 110.2(b)		Not Applicable	
The air duct and plenum system is designed per 120.4(a)-(f)		See HVAC specifications section O on M-100 and mechanical details on M-500	
Kitchen range hoods shall be rated for sound in accordance with Section 7.2 of ASHRAE 62.2		Not Applicable	
Generated Date/Time:		Documentation Software: Energy Code Ace	
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STATE OF CALIFORNIA		CALIFORNIA ENERGY COMMISSION	
Mechanical Systems		CERTIFICATE OF COMPLIANCE	
Project Name: Mango Corte Madera		Report Page: (Page 11 of 11)	
Project Address: 1618 REDWOOD HIGHWAY, SPACE#D039, CORTE MADERA, CA, 94925		Date Prepared: 2025-04-03T22:09:38-04:00	
DOCUMENTATION AUTHOR'S DECLARATION STATEMENT			
I certify that this Certificate of Compliance documentation is accurate and complete.			
Documentation Author Name: Patrick Shanley		Documentation Author Signature: Patrick Shanley	
Company: ROSINI ENGINEERING		Signature Date: 2025-05-29	
Address: 24-02 40TH AVENUE		CEA/ HERS Certification Identification (if applicable):	
City/State/Zip: LIC, NY 11101		Phone: (212) 904-0422	
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 5 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: IVO SKIBOLA		Responsible Designer Signature: IVO SKIBOLA	
Company: ROSINI ENGINEERING		Date Signed: 2025-05-29	
Address: 24-02 40TH AVENUE		License: M36904	
City/State/Zip: LIC, NY 11101		Phone: (212) 904-0422	
Generated Date/Time:		Documentation Software: Energy Code Ace	
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