

MECHANICAL SPECIFICATIONS

PART 1 - GENERAL

- 1.01 INSTRUCTIONS
A. SCOPE OF WORK SHALL INCLUDE ALL MATERIALS, EQUIPMENT AND LABOR NECESSARY FOR A COMPLETE AND PROPERLY FUNCTIONING INSTALLATION IN ACCORDANCE WITH LOCAL AND STATE CODES, AND CONTRACT DRAWINGS AND SPECIFICATIONS.
1.02 LOCAL CONDITIONS
A. CONTRACTOR SHALL VISIT THE SITE AND OBSERVE ALL EXISTING LOCAL CONDITIONS WHICH WOULD AFFECT WORK UNDER THIS CONTRACT.
1.03 PERMITS AND FEES
A. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND INSPECTIONS REQUIRED FOR PERTAINING TO WORK UNDER THIS CONTRACT AND PAY ALL CHARGES INCURRED THEREON. DELIVER TO ARCHITECT ALL CERTIFICATES OF INSPECTION ISSUED BY AUTHORITIES HAVING JURISDICTION.
1.04 CODES AND STANDARDS
FURNISH AND INSTALL MECHANICAL SYSTEMS TO MEET ALL CURRENT REQUIREMENTS OF NATIONAL, STATE AND MUNICIPAL CODES, RULES, REGULATIONS, LAWS, AND STANDARDS AS THEY ARE ADOPTED BY THE GOVERNING AGENCY AND AS THEY MAY APPLY.
1.05 SUBMITTALS
A. MATERIAL LIST: WITHIN TWENTY (20) DAYS OF AWARD OF CONTRACT, CONTRACTOR SHALL SUBMIT TO ARCHITECT A COMPLETE LIST OF MATERIALS TO BE PROVIDED FOR THE HVAC WORK.
B. SHOP DRAWINGS: SUBMIT TO THE ARCHITECT FOR APPROVAL, BEFORE COMMENCING WORK, SHOP DRAWINGS FOR ALL MATERIALS AND EQUIPMENT TO BE PROVIDED UNDER THIS CONTRACT.
C. APPROVAL GRANTED ON SHOP DRAWINGS IS RENDERED AS A SERVICE ONLY AND DOES NOT CONSTITUTE A GUARANTEE OF MEASUREMENTS OF BUILDING CONDITIONS, NOR SHALL IT BE CONSTRUED AS RELIEVING THE MECHANICAL CONTRACTOR OF BASIC RESPONSIBILITIES UNDER THIS CONTRACT.
D. CHANGES IN FOUNDATIONS, BASES, CONNECTIONS, PIPING, CONTROLS, STARTERS, ELECTRICAL EQUIPMENT, WIRING AND CONDUIT, SPACE OPENINGS, WALLS AND CEILINGS, AND VIBRATION ISOLATION IN ORDER TO ACCOMMODATE SUBSTITUTE EQUIPMENT SHALL BE MADE AT NO ADDITIONAL COST TO THE OWNER.
E. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND RECEIVE ENGINEER'S APPROVAL BEFORE INSTALLING MATERIALS OR EQUIPMENT.
F. APPROVAL OF ANY SUBMITTED DATA OR SHOP DRAWINGS FOR MATERIALS, EQUIPMENT, APPARATUS DEVICES, ARRANGEMENTS AND/OR LAYOUTS WILL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY OF FURNISHING SAME OF PROPER DIMENSIONS, CAPACITIES, SIZES, QUANTITIES AND INSTALLATION DETAILS TO EFFICIENTLY PERFORM REQUIREMENTS AND INTENT OF CONTRACT.
1.06 CONNECTING TO WORK OF OTHERS
A. BEFORE STARTING HIS WORK, AND FROM TIME TO TIME AS WORK PROGRESSES, MECHANICAL CONTRACTOR SHALL EXAMINE WORK AND MATERIALS INSTALLED BY OTHERS INsofar AS THEY APPLY TO HIS WORK AND SHALL NOTIFY ENGINEER IMMEDIATELY IN WRITING IF CONDITIONS EXIST WHICH WILL PREVENT SATISFACTORY RESULTS IN INSTALLATION OF SYSTEM.
B. SHOULD CONTRACTOR START HIS WORK WITHOUT SUCH NOTIFICATION, IT SHALL BE CONSTRUED AS AN ACCEPTANCE BY HIM OF ALL CLAIMS OR QUESTIONS AS TO SUITABILITY OR WORK OF OTHERS TO RECEIVE HIS WORK. HE SHALL REMOVE AND REPLACE, AT HIS OWN EXPENSE, ALL WORK UNDER THIS CONTRACT WHICH MAY BE DEFECTIVE OR BE REMOVED ON ACCOUNT OF SUCH DEFECTS.
1.07 CONTRACT DRAWINGS
A. IT IS THE INTENT OF DRAWINGS AND SPECIFICATIONS TO OBTAIN A COMPLETE AND FULLY OPERATIONAL AND SATISFACTORY INSTALLATION. AN ATTEMPT HAS BEEN MADE TO SEPARATE AND COMPLETELY DEFINE WORK UNDER THIS CONTRACT. HOWEVER, SUCH SEPARATE DIVISIONAL DRAWINGS AND SPECIFICATIONS SHALL NOT RELIEVE CONTRACTOR FROM FULL RESPONSIBILITY OF COMPLIANCE WITH WORK OF HIS TRADE WHICH MAY BE INDICATED ON ANY DRAWING OR IN ANY SECTION OF THE SPECIFICATIONS.
B. CONTRACTOR SHALL CAREFULLY EXAMINE ARCHITECTURAL, STRUCTURAL, ELECTRICAL, AND MECHANICAL DRAWINGS PRIOR TO SUBMITTING BID. CONTRACTOR WILL BE REQUIRED TO FURNISH, INSTALL AND CONNECT WITH APPROPRIATE SERVICES ALL ITEMS SHOWN ON ANY DRAWINGS WITHOUT ADDITIONAL EXPENSE TO OWNER.
1.08 DAMAGE TO OTHER WORK
A. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER PROTECTIVE MEASURES WHEN WORKING OVERHEAD OR IN FINISHED AREAS. HE/SHE SHALL REPAIR, REPLACE OR TOUCH-UP ALL FINISHED SURFACES WHICH MAY BE DAMAGED AS A RESULT OF HIS OPERATIONS.
1.09 STORAGE AND WORK AREAS
A. ALL EQUIPMENT AND MATERIALS SHALL BE PROTECTED FROM THE WEATHER, DAMAGE, MOISTURE, DIRT, DEBRIS, ETC. USE OF CARDBOARD, VISQUEEN, OR OTHER SIMILAR MATERIALS WHILE STORED OUTSIDE IS NOT ACCEPTABLE. DO NOT INSTALL DAMAGED EQUIPMENT.
1.10 APPROVAL OF MATERIAL
A. EQUIPMENT OTHER THAN SPECIFIED IN THE CONTRACT DOCUMENTS REQUIRES APPROVAL FROM ENGINEER 10 DAYS PRIOR TO BID DATE.
B. WRITTEN REQUEST FOR PRIOR APPROVAL MUST BE RECEIVED IN ENGINEER'S OFFICE BY CLOSE OF BUSINESS NO LATER THAN 10 DAYS PRIOR TO SCHEDULED BID DATE. LIST MUST CONTAIN DETAILED INFORMATION ON THE PROPOSED ITEM. THIS SHALL INCLUDE:
1. CATALOG CUT SHEETS
2. DETAILED SPECIFICATIONS
3. DESCRIPTION OF DEVIATION FROM SPECIFIED ITEM.

- 1.10 APPROVAL OF MATERIAL (CONT)
C. AN ADDENDA SHALL BE ISSUED LISTING ALL PROSPECTIVE CONTRACTORS LISTING ALL PRIOR AND CURRENT MANUFACTURERS AND PRODUCTS.
PART 2 - PRODUCTS
2.01 SPLIT SYSTEM HEAT PUMPS
A. GENERAL: FURNISH AND INSTALL SPLIT SYSTEM HEAT PUMPS OF THE CAPACITY, OPERATING CHARACTERISTICS, AND ELECTRICAL CHARACTERISTICS INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN.
B. MANUFACTURER: TRANE, CARRIER, OR LENNOX MAY BE SUBMITTED FOR APPROVAL PROVIDED THEY CONFORM TO ALL REQUIREMENTS OF THESE SPECIFICATIONS.
C. WARRANTY: CONTRACTOR SHALL INCLUDE IN HIS PRICE THE COST OF ONE YEAR'S WARRANTY ON ENTIRE SYSTEM PLUS AN ADDITIONAL FOUR YEAR WARRANTY ON COMPRESSOR. THE CONTRACTOR SHALL WARRANT EACH SYSTEM IN ITS ENTIRETY FOR ONE (1) FULL YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER. CONTRACTOR SHALL ALSO PROVIDE AN ADDITIONAL FOUR-YEAR WARRANTY ON EACH COMPRESSOR TO INCLUDE PARTS, REFRIGERANT AND OIL, EXCLUSIVE OF LABOR.
D. INDOOR UNITS:
1. FAN SECTION: SHALL BE INSULATED AND CONSTRUCTED OF GALVANIZED STEEL, BONDERIZED AND FINISHED WITH BAKED ENAMEL. THE VARIABLE-SPEED FAN MOTOR SHALL BE FACTORY LUBRICATED, HAVE INTERNAL OVERLOAD PROTECTION AND BE RESILIENTLY MOUNTED. FAN-MOTOR ASSEMBLY SHALL SLIDE OUT FOR SERVICE. REVERSIBLE FILTER RACK SHALL BE EQUIPPED WITH PERMANENT TYPE FILTER THAT SLIDES OUT FOR SERVICE.
2. COILS: SHALL BE CONSTRUCTED WITH ALUMINUM PLATE FINS MECHANICALLY BONDED TO NONFERROUS TUBING (FOR UNITS 5 TONS AND SMALLER) OR SEAMLESS COPPER TUBING (FOR UNITS LARGER THAN 5 TONS) WITH ALL JOINTS BRAZED. COILS SHALL HAVE A FACTORY-INSTALLED REFRIGERANT METERING DEVICE AND BE EQUIPPED WITH REFRIGERANT LINE FITTINGS WHICH PERMIT MECHANICAL CONNECTION TO GASING. COIL CASING SHALL BE INSULATED AND CONSTRUCTED OF GALVANIZED STEEL, BONDERIZED AND FINISHED WITH BAKED ENAMEL.
3. ELECTRIC HEATER: ENCLOSURE SHALL BE INSULATED AND HAVE LARGE FRONT SERVICE ACCESS DOOR. HEATING ELEMENTS SHALL BE STAGED AS INDICATED IN THE DRAWINGS AND SPECIFIED ON THE MECHANICAL PLANS. HEATER SHALL BE EQUIPPED WITH BOTH THERMAL AND CURRENT OVERLOAD DEVICES, AND THE REQUIRED HEATING AND COOLING SYSTEM CONTROLS, INCLUDING CONTROL CIRCUIT 24-V TRANSFORMER.
E. OUTDOOR UNIT:
1. GENERAL: HOUSING SHALL BE CONSTRUCTED OF GALVANIZED STEEL, BONDERIZED AND FINISHED WITH BAKED ENAMEL. THE UNIT SHALL BE DESIGNED AND TESTED FOR USE WITH HIGH AMBIENT TEMPERATURES. SERVICE VALVES WITH REFRIGERANT LINE FITTINGS AND SERVICE PARTS SHALL BE LOCATED IN EXTERIOR OF UNIT.
2. COIL: SHALL CONSIST OF ALUMINUM FINS MECHANICALLY BONDED TO COPPER TUBING (FOR UNITS LARGER THAN 5 TONS) OR ALUMINUM TUBING (FOR UNITS 5 TONS AND SMALLER) WITH ALL JOINTS BRAZED. FACTORY INSTALLED COIL REFRIGERANT METERING DEVICE SHALL BE MOUNTED ON UNIT LIQUID SERVICE VALVE. LIQUID LINE SHALL INCLUDE A BI-FLOW FILTER DRIER.
3. FAN: SHALL BE PROPELLER TYPE, DIRECT DRIVEN, AND ARRANGED FOR VERTICAL DISCHARGE. FAN MOTOR SHALL BE FACTORY LUBRICATED, INHERENTLY PROTECTED AND RESILIENTLY MOUNTED. TWO-SPEED FAN MOTOR SHALL HAVE AN AUTOMATIC SWITCH TO HIGH SPEED ABOVE 95 DEGREES F AND BELOW 55 DEGREES F OUTDOOR TEMPERATURE.
4. COMPRESSOR: SHALL BE OF THE WELDED-HERMETIC TYPE WITH INTERNAL VIBRATION ISOLATION AND BE COVERED WITH A SHIELD TO MUFFLE OPERATING SOUND. COMPRESSOR MOTOR SHALL HAVE BOTH THERMAL AND CURRENT SENSITIVE OVERLOAD DEVICES, AND START CAPACITOR AND RELAY. COMPRESSOR SHALL BE EQUIPPED WITH A CRANKCASE HEATER AND HAVE INTERNAL HIGH PRESSURE PROTECTION.
5. CONTROLS: SHALL BE FACTORY WIRED AND LOCATED IN A READILY ACCESSIBLE LOCATION ON UNIT SWING-OUT SERVICE DOOR. CONTROLS AND PROTECTIVE DEVICE SHALL INCLUDE A LIQUID LINE W/LOW-PRESSURE SWITCH, SUCTION LINE ACCUMULATOR AND PRESSURE RELIEF DEVICE. AN AUTOMATIC DEFROST CONTROL SHALL BE INCLUDED TO ACCOMPLISH DEFROSTING (ONLY IF COIL TEMPERATURES) EVERY 90 MINUTES SATURATED SUCTION TEMPERATURE INDICATES FREEZING FOR A PERIOD OF NOT MORE THAN 10 MINUTES. CONTROL WIRING TERMINAL BOARD SHALL BE DESIGNED TO MATCH INDUOOR UNIT TERMINAL BOARD FOR STANDARDIZED POINT-TO-POINT CONNECTION. A TIME-DELAY RELAY SHALL PREVENT THE COMPRESSOR FROM SHORT-CYCLING AT LESS THAN 5-MINUTE INTERVALS.
F. SPACE TEMPERATURE AND HUMIDITY THERMOSTAT SHALL BE A FULLY-PROGRAMMABLE, 7-DAY, 4-EVENT PER DAY.
2.03 LIGHT DUTY CEILING EXHAUST FANS
A. PROVIDE FAN OF THE SIZE, CAPACITY, AND ELECTRICAL CHARACTERISTICS INDICATED ON THE DRAWINGS. FANS SHALL BE AMCA CERTIFIED AS TO BOTH SOUND AND PERFORMANCE RATINGS.
B. MANUFACTURER: PRODUCTS OF LOREN COOK, AOME, GREENHECK, OR PENN MAY BE SUBMITTED FOR REVIEW.
2.04 AIR DISTRIBUTION SYSTEMS
A. LOW PRESSURE SHEET METAL DUCTWORK: LOW PRESSURE SHEET METAL DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEET STEEL. CONSTRUCTION OF JOINT CONNECTIONS, CROSS-BRACING AND SUPPORTS SHALL CONFORM TO THE LATEST EDITION OF THE SMACNA "LOW PRESSURE SHEET DUCT CONSTRUCTION STANDARDS".
B. LOW PRESSURE FLEXIBLE DUCTS: FLEXIBLE DUCT SHALL CONSIST OF A ZINC COATED SPRING STEEL HELIX PERMANENTLY BONDED TO A FULL INTERIOR LINER TO FORM THE DUCT CORE WITH POSITIVE INTERIOR AIR SEAL. CORE SHALL BE COVERED WITH FACTORY APPLIED ONE INCH, ONE POUND PER CUBIC FOOT FIBERGLASS INSULATION OF 0.25 THERMAL CONDUCTANCE SHEATHED IN A SEAMLESS EXTERIOR CLASS 1 VAPOR BARRIER JACKET WITH A VAPOR CUFF ON BOTH ENDS. DUCT SHALL BE MADE FOR USE WITH QUADRANT DAMPERED TWIST THROUGH SCROOPS SUITABLE FOR SHEET METAL OR FIBROUS GLASS DUCTWORK. DUCT SHALL BE NFPA 90A, CLASS 1 (UL-181) PROVIDE IN FACTORY FINISHED LENGTHS NOT IN EXCESS OF LENGTHS REQUIRED TO MAKE SUITABLE CONNECTIONS WITH MINIMUM PRESSURE DROP. ACCEPTABLE: GENFLEX TYPE SLR WITH STAPLES AND TIGHTENING SYSTEM. CONTROL WIRING TERMINAL BOARD SHALL BE DESIGNED TO MATCH INDUOOR UNIT TERMINAL BOARD FOR STANDARDIZED POINT-TO-POINT CONNECTION. A TIME-DELAY RELAY SHALL PREVENT THE COMPRESSOR FROM SHORT-CYCLING AT LESS THAN 5-MINUTE INTERVALS.
C. DUCT SYSTEM ACCESSORIES:
1. BALANCE, QUIET AND DRAFTLESS DISTRIBUTION AND CONVEYANCE, AND MINIMIZATION OF TURBULENCE, NOISE AND PRESSURE DROP FOR ALL SUPPLY, RETURN, EXHAUST AND VENTILATION AIR QUANTITIES INDICATED. ACCESSORIES SHALL BE RECOMMENDED BY THE MANUFACTURER FOR EACH SPECIFIC APPLICATION.
2. FLEXIBLE DUCT CONNECTIONS: PROVIDE WHERE AIR HANDLERS, FANS AND BLOWERS CONNECT TO THEIR DUCTWORK. SHALL BE AT LEAST 4-INCHES LONG CONNECTED ON EACH SIDE TO METAL (EITHER METAL DUCTWORK, AIR HANDLING APPARATUS, OR HEAVY GAUGE STEEL SLEEVES) AND BE SUITABLE FOR USE IN MEDIUM AND/OR LOW PRESSURE DUCT SYSTEMS. PROVIDE BRAIDED COPPER BRIDGE STRAP EQUAL TO THOMPSON LIGHTNING PROTECTION, INC. NO. 868 ACROSS EACH CONNECTION. ACCEPTABLE: VENTFABRICS, INC. "VENTGLAS METAL-EDGE" OR PRIOR APPROVED EQUIVALENT.
3. LOW PRESSURE METAL TURNING VANES: PROVIDE IN ALL ELBOWS, BENDS AND TEES OF ALL LOW VELOCITY SUPPLY AIR DUCTS WHETHER OR NOT SHOWN IN DETAIL; PROVIDE IN ALL ELBOWS, BENDS AND TEES OF ALL OTHER LOW VELOCITY DUCTS WHERE PORTIONS OF SUCH DUCTS CONVEY AIR AT GREATER THAN 700 FPM AVERAGE VELOCITY. UNIT TO BE OF THE PERMANENT FINISH TYPE PROVIDING ADEQUATE RIGIDITY AND STRENGTH TO BE COMPLETELY FLUTTER-PROOF. ALUMINUM, OR STEEL WITH CORROSION RESISTANT COATING, OR GALVANIZED STEEL. AIRFOIL TYPE IN ALL MITERED ELBOWS, MITERED BENDS AND MITERED TEES. AIR FOIL TYPE MUST BE MANUFACTURED BY TUTTLE & BAILEY, ANEMOSTAT, METALAIRE, BARBER-COLMAN OR OTHER APPROVED MANUFACTURER AND MUST BE EQUAL TO BARBER-COLMAN "AIRTURNS", TUTTLE & BAILEY "DUCTURNS", OR DURA-DYNE "VR" WITH 24-GAUGE RALES AND HOLLOW VANES.
4. MANUAL VOLUME DAMPERS (OTHER THAN THOSE SPECIFIED AS BEING INTEGRAL WITH EACH REGISTER, DIFFUSER AND OTHER AIR OUTLET OR INLET): PROVIDED IN THE SUPPLY, RETURN, EXHAUST AND OTHER AIR DISTRIBUTION SYSTEMS (INCLUDING DUCTWORK, RETURN AIR PLenums, ETC.) TO ALLOW COMPLETE BALANCING OF THE AIR SUPPLY, RETURN, VENTILATION AND EXHAUST SYSTEMS. DAMPERS SHALL BE OPPOSED BLADE TYPE WITH 8-INCH MAXIMUM BLADE WIDTH. DAMPERS SHALL BE MADE OF GALVANIZED STEEL, OR STEEL WITH A SPRAYED OR DIPPED ALUMINUM RUST RESISTANT FINISH AND BE FLUTTER-PROOF. ONE INCH IN LOW PRESSURE DUCT SYSTEMS ONLY. BASED UPON LOCATION OF THE DUCT IN WHICH THE DAMPER IS TO BE INSTALLED, PROVIDE THE FOLLOWING TYPES OF OPERATORS: DAMPERS IN DUCTS WHICH ARE EXPOSED OR LOCATED ABOVE "LAY-IN" OR "ACCESSIBLE" CEILINGS: YOUNG REGULATOR COMPANY MODEL 817. DAMPERS IN DUCTS WHICH ARE LOCATED IN CEILING OR BELOW DRY WALL CONSTRUCTION: YOUNG REGULATOR COMPANY MODEL 817A. ACCEPTABLE: PRODUCTS OF TUTTLE & BAILEY, ANEMOSTAT, METALAIRE, KRUEGER, OR BARBER-COLMAN.
5. FIRE DAMPERS: PROVIDE FIRE DAMPERS WHERE INDICATED ON DRAWINGS AND/OR WHERE OTHERWISE NECESSARY TO MAINTAIN FIRE RESISTANCE. FIRE DAMPERS SHALL BE COMPLETELY FIRE ACTUATED, FOR HORIZONTAL OR VERTICAL MOUNTING AS REQUIRED. DAMPER BLADES SHALL BE HELD IN POSITION BY A 165 DEGREE F FUSIBLE LINK. DAMPER SLEEVES SHALL BE 14-GAUGE MINIMUM AND ALL OTHER DETAILS SHALL BE AS SHOWN ON THE UL INSTALLATION DATA SHEETS. FIRE DAMPERS FURNISHED WITH THE DAMPERS. OPENINGS BETWEEN THE FIRE DAMPER SLEEVES AND THE WALL OR FLOOR OPENINGS SHALL BE FILLED WITH FIBERGLASS BATTING TO PREVENT SOUND FLANKING. CLUSTER BLADES SHALL COMPLETELY OUTSIDE AIR STREAM FOR ALL DUCT SYSTEMS (TYPE B). ACCEPTABLE: RUSKIN, AIR BALANCE; AMERICAN WARMING AND VENTILATING; TUTTLE & BAILEY; UNITED SHEET METAL; OR APPROVED EQUAL.

- 6. LOW PRESSURE DUCT ACCESS DOORS: PROVIDED FOR EACH MANUAL AND MOTORIZED DAMPER; FIRE DAMPER; ELECTRIC DUCT HEATER; AND WHERE ACCESS IS OTHERWISE NECESSARY. FACTORY PREFABRICATED DOUBLE WALL INSULATED TYPE OF 24-GAUGE GALVANIZED STEEL (OF SAME OR THICKER GAUGE THAN DUCTWORK PANEL IN WHICH INSTALLED, WHICHEVER IS GREATER) SHALL BE AS LARGE AS IS COMPATIBLE WITH DUCT SIZE BUT IN NO CASE LESS THAN THE FOLLOWING (PROVIDE LARGER SIZES IF NECESSARY TO PERMIT PROPER ACCESS OPERATION):
MAXIMUM DUCT DIMENSIONS ACCESS DOOR SIZE
11" AND LESS 12" THROUGH 16"
17" AND OVER 6 X 24"
DOORS SHALL BE PROVIDED WITH HAND OPERATED ADJUSTABLE TENSION CATCHES AND SHALL BE COMPLETELY GASKETED AROUND THEIR PERIMETERS. DOORS SHALL BE VENTILATION "ACCESS DOORS" INSTALL IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS USING VENTLOK #360 SEALANT.
D. AIR DISTRIBUTION DEVICES:
1. SCOPE: PROVIDE ALL AIR DISTRIBUTION DEVICES AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN FOR A COMPLETE AND OPERABLE SYSTEM FREE FROM DRAFTS AND EXCESSIVE NOISE.
2. RELATION TO OTHER WORK: COORDINATE WITH WORK OF THE CEILING, DRYWALL AND PLASTERING TRADES AS REQUIRED TO INSURE AN ORDERLY PROGRESSION OF WORK AND FIRST CLASS FINISHED SYSTEM WITH RESPECT TO PLACEMENT, ALIGNMENT, FINISH AND GENERAL FIT.
3. DESIGN CONDITIONS:
A. ACOUSTICAL: COORDINATE AIR DISTRIBUTION DEVICES, SOUND ATTENUATION MEASURES, AND EQUIPMENT ACTUALLY INSTALLED TO ASSURE THAT THE DESIGN GOALS ARE NOT EXCEEDED BY THE SYSTEM INSTALLED.
B. PRESSURE DROP: PRESSURE DROP ACROSS ANY AIR DISTRIBUTION DEVICE SHALL NOT EXCEED 0.15 IN W.G. STATIC PRESSURE UNLESS OTHERWISE INDICATED.
C. VIBRATION: AIR DISTRIBUTION DEVICES SHALL BE MAINTAINED BY THE MANUFACTURER TO OPERATE WITHOUT EXCESSIVE NOISE AND WITH VELOCITIES IN THE FIVE FOOT OCCUPANCY ZONE, WHEN HANDLING AIR WITH TEMPERATURE DIFFERENTIALS AS HIGH AS 25 DEGREES, NOT TO EXCEED 30 FPM AT A 2 DEGREE DIFFERENCE, 50 FPM AT 1-1/2 DEGREE DIFFERENCE, OR 75 FPM AT 1 DEGREE DIFFERENCE WHEN OPERATING WITH AN AVERAGE 75 DEGREE ROOM TEMPERATURE AND MEASURED NO CLOSER THAN 8 INCHES FROM A WALL SURFACE.
4. MANUFACTURER: TITUS, METAL-AIRE, CARNES, KRUEGER, ANEMOSTAT OR TUTTLE & BAILEY. MANUFACTURERS MODEL NUMBERS INDICATED ARE EXAMPLES OF PRODUCTS TO BE PROVIDED.
5. MANUFACTURERS MUST BE MEMBERS OF THE AIR DISTRIBUTION COUNCIL UNLESS OTHERWISE INDICATED.
6. ALL AIR DISTRIBUTION DEVICES SHALL BE CONSTRUCTED OF EXTRUDED ALUMINUM UNLESS OTHERWISE INDICATED.
7. WHERE CONTINUOUS LINEAR SUPPLY AND RETURN DEVICES ARE SHOWN AS ABUTTING ONE ANOTHER IN A SINGLE DIRECTION, THEN THE TOTAL UNBROKEN VISIBLE LENGTH OF THE LINEAR SUPPLY DEVICE SHALL EQUAL THE SUM OF THE NOMINAL LENGTHS OF THE ABUTTING DEVICES.
2.04 AIR DISTRIBUTION SYSTEMS (CONT)
D. AIR DISTRIBUTION DEVICES (CONT)
8. EACH AIR DISTRIBUTION DEVICE WHICH HAS A PORTION THEREOF (FRAME, CORE, ETC.) EXPOSED TO VIEW IN THE FINISHED AREA SHALL HAVE A FACTORY APPLIED FINISH WHICH MATCHES AND IS COMPATIBLE WITH THE COLOR OF THE SURROUNDING SURFACE ON WHICH THE DEVICE IS INSTALLED. COLORS MUST BE APPROVED BY ARCHITECT PRIOR TO FABRICATION.
9. ALL DAMPERS, BLANK-OFF BALES AND OTHER COMPANION DEVICES WHICH FORM AN INTEGRAL PART OF AN AIR DISTRIBUTION DEVICE SHALL BE FACTORY MADE ITEMS PRODUCED BY THE MANUFACTURER OF THE AIR DISTRIBUTION DEVICE.
PART 3 - EXECUTION
3.01 METAL DUCTWORK
A. APPLICATION: SELECT METAL DUCT FOR EXHAUST AND OUTSIDE AIR DUCTWORK.
B. SEAM AND JOINT SEALING: SEAL ALL TRANSVERSE JOINTS AND LONGITUDINAL SEAMS.
3.02 AIR DISTRIBUTION SYSTEMS
A. GENERAL: CONSTRUCT ALL DUCTWORK AND ACCESSORIES IN ACCORDANCE WITH LATEST EDITION OF THE SMACNA MANUALS. APPLY THE FOLLOWING SPECIFICATIONS TO THE FULL EXTENT PRACTICAL AND EQUIP WITH PROPER AND ADEQUATE DEVICES TO ASSURE PROPER BALANCE AND QUIET DRAFTLESS DISTRIBUTION OF INDICATED AIR QUANTITIES. PROTECT ALL DUCTWORK AND SYSTEM ACCESSORIES FROM DAMAGE DURING CONSTRUCTION UNTIL ARCHITECT'S FINAL ACCEPTANCE OF WORK. PRIOR TO DUCTWORK FABRICATION, VERIFY IF ALL DUCTWORK IS AS DIMENSIONED AND GENERALLY SHOWN WILL SATISFACTORILY FIT ALLOCATED SPACES. TAKE PRECAUTIONS TO AVOID SPACE INTERFERENCE WITH BEAMS, COLUMNS, JOISTS, PIPES, LIGHTS, CONDUIT, EQUIPMENT, AND OTHER DUCTS, EQUIPMENT, ETC. INTERFERENCES SHALL BE CORRECTED AND THEN OBTAIN ARCHITECT'S APPROVAL OF NECESSARY ROUTING. MAKE ANY SUCH NECESSARY REVISIONS WHICH ARE MINOR AT NO ADDITIONAL COST. CAREFULLY CORRELATE ALL DUCT CONNECTIONS TO AIR HANDLING UNITS AND FANS TO PROVIDE PROPER CONNECTIONS, ELBOWS AND BENDS WHICH MINIMIZE NOISE AND PRESSURE DROP. PROVIDE ALL CURVED ELBOWS WITH RADIUS RATIOS OF 1.5 UNLESS OTHERWISE SHOWN OR APPROVED BY ARCHITECT. PROVIDE ALL MITERED ELBOWS WITH TURNING VANES. COORDINATE ANY AND ALL DIMENSIONS AT INTERFACES OF DISSIMILAR TYPES OF DUCTWORK AND AT INTERFACES OF DUCTWORK WITH EQUIPMENT SO THAT PROPER OVERLAPS, INTERFACES, ETC. OF INSULATION AND CONTINUITY OF VAPOR BARRIERS ARE MAINTAINED. IF NECESSARY, WHERE INTERFACING DIFFERENT TYPES OF INSULATION PROVIDE TRANSITIONS SO THAT INTERNAL FREE AREA OF DUCT REMAINS UNCHANGED. INSTALL HORIZONTAL RIGID DUCTWORK AS HIGH AS PRACTICAL ABOVE SUSPENDED CEILING SO THAT MOVABLE LIGHT FIXTURES MAY BE RELOCATED WITHOUT INTERFERENCE TO MEET ANY FUTURE PARTITION RELOCATION REQUIREMENTS.
B. HANGERS AND SUPPORTS:
1. HANGERS: PROVIDE AS FOLLOWS:
A. SHEET METAL DUCT HANGERS: SUPPORT DUCTS FROM THE BUILDING STRUCTURE WITH GALVANIZED STEEL HANGERS TO EACH SIDE OF THE DUCT. HANGERS FOR DUCT TO 60-IN. SHALL BE 1" X 1/8" GALVANIZED STEEL BAND. SPACE HANGERS APPROXIMATELY 8'- FT. (8') ALONG THE LENGTH OF DUCT. HANGERS SHALL EXTEND DOWN THE FULL LENGTH OF DUCT AND TURN UNDER. SHALL BE SECURED TO DUCT BY TWO OR MORE #14 SHEET METAL SCREWS. WHERE SPRAYED FIRE-PROOFING OCCURS, INSTALL HANGERS BEFORE APPLICATION OF SUCH TREATMENT AND PROVIDE INSTALLATION OF DUCTS UNTIL AFTER APPLICATION.
B. FIBERGLASS DUCT HANGERS:
1. SUPPORT GLASS FIBER DUCT FROM THE BUILDING STRUCTURE WITH 3/4-IN. PERFORATED 24 GAUGE STEEL STRAPS OR #12 WIRE, SECURELY ANCHORED TO STRUCTURE ABOVE AND TO 2" X 1" 24 GAUGE STEEL ANGLE, OR EQUIVALENT, CROSS SUPPORT UNDER THE DUCT. SPACE HANGERS AT ALL TURNS AND TRANSITIONS, AT NOT MORE THAN EIGHT FOOT (8') CENTERS ON STRAIGHT RUNS, AND ELSEWHERE AS NECESSARY TO MAINTAIN TRUE ALIGNMENT.
2. SUPPORTS: VERTICAL RISERS AND OTHER DUCT RUNS WHERE THE METHOD OF SUPPORT SPECIFIED ABOVE IS NOT APPLICABLE SHALL BE SUPPORTED BY SUBSTANTIAL ANGLE BRACKETS DESIGNED TO MEET FIELD CONDITIONS AND INSTALLED TO ALLOW FOR DUCT EXPANSION.
3. FASTENERS: SECURE HANGERS TO STEEL BEAMS OR METAL DECK WITH BEAM CLAMPS OR DROP THROUGH CONNECTIONS FROM THE METAL OR CONCRETE DECK.
C. FLEXIBLE DUCT: INSTALL ALL FLEXIBLE ROUND DUCT WITHOUT KINKS OR SIMILAR OBSTRUCTIONS SO THAT PRESSURE DROP IS MINIMIZED. CUT AND REMOVE EXCESS LENGTHS AS NECESSARY.
D. CHANGE IN SHAPE OR DIMENSION: WHERE DUCT SIZE OR SHAPE IS CHANGED TO EFFECT A CHANGE IN AREA, THE FOLLOWING SHALL APPLY:
1. WHERE THE AREA AT THE END OF THE TRANSFORMATION RESULTS IN AN INCREASE IN AREA OVER THAT AT THE BEGINNING, THE SLOPE OF THE TRANSFORMATION SHALL NOT EXCEED ONE INCH IN SEVEN INCHES.
2. WHERE THE AREA AT THE END OF THE TRANSFORMATION RESULTS IN A DECREASE IN AREA FROM THAT AT THE BEGINNING, THE SLOPE OF THE TRANSFORMATION MAY BE ONE INCH IN FOUR INCHES, BUT ONE INCH IN SEVEN INCHES IS PREFERRED, SPACE PERMITTING.
3. THE ANGLE OF TRANSFORMATION AT CONNECTIONS TO HEATING OR COOLING EQUIPMENT SHALL NOT EXCEED 90 DEGREES.
4. CHANGES IN DIRECTION: CHANGES IN DIRECTION SHALL BE BASICALLY AS INDICATED ON THE DRAWINGS AND THE FOLLOWING SHALL APPLY:
1. SUPPLY DUCT TURNS OF NINETY DEGREES IN LOW PRESSURE DUCT SHALL BE MADE WITH MITERED ELBOWS FITTED WITH CLOSELY SPACED TURNING VANES DESIGNED FOR MAINTAINING A CONSTANT VELOCITY THROUGH THE ELBOW.
2. RETURN AND EXHAUST DUCT TURNS OF NINETY DEGREES IN LOW PRESSURE DUCT SHALL BE MADE WITH MITERED ELBOWS, AS SPECIFIED HEREIN BEFORE, FOR SUPPLY DUCTS, UNLESS RADIUS IS OTHERWISE INDICATED IN WHICH CASE THEY SHALL BE VANED AND CONSTRUCTED WITH A THROAT RADIUS THREE-QUARTERS THE DUCT WIDTH AND A FULL RADIUS HEEL.
TEES IN LOW PRESSURE DUCT SHALL CONFORM TO THE DESIGN REQUIREMENTS SPECIFIED HEREIN BEFORE FOR ELBOWS.
5. BRANCH TAKE-OFFS IN LOW PRESSURE DUCT SHALL BE MADE WITH SPLITTER DAMPERS, AS INDICATED, IN SQUARE TAKE OFFS.

- 1. BRANCH TAKE-OFFS IN HIGH PRESSURE DUCT SHALL BE MADE WITH CONICAL TAPS. LOW PRESSURE GLASS FIBER DUCTWORK: MITER ALL LONGITUDINAL CORNERS (EXCEPT SEAMS) WITH JACKET UNLUBRATED. PROVIDE SHIP LAP CONSTRUCTION WITH 1-1/2 INCH MINIMUM TAPE OVERLAP ON ALL SIDES OF ALL LONGITUDINAL SEAMS AND TRANSVERSE JOINTS. PROVIDE ALL REINFORCEMENT, BRACING, SUSPENSION, WORKMANSHIP AND CONSTRUCTION DETAILS FOR THIS DUCTWORK AND ITS ACCESSORIES IN STRICT ACCORD WITH THE MANUFACTURER'S RECOMMENDATIONS OR THE SHEET METAL AND AIR CONDITIONING CONTRACTOR'S NATIONAL ASSOCIATION'S LATEST EDITION OF THE FIBROUS GLASS DUCT CONSTRUCTION STANDARDS, WHICHEVER IS MORE STRINGENT. COMPLETED DUCT SYSTEM(S) SHALL BE STABLE AND AIRTIGHT AT 24 INCHES W.G. INTERNAL STATIC PRESSURE. ENTIRE DUCT SYSTEM(S) SHALL BE INSTALLED BY AN A/E APPROVED, MANUFACTURER'S LICENSED CONTRACTOR. ENTIRELY COMPLY WITH NFPA BULLETIN 90A AND BE U.L.-181, CLASS I, TAPED JOINTS ON FIBERGLASS DUCTWORK SHALL BE MADE BY FIRST TAPING THE JOINT, THEN STAPLING THROUGH THE TAPE ON BOTH SIDES OF THE JOINT INTERFACE, AND THEN ADDING ANOTHER LAYER OF TAPE OVER THE STAPLED AND TAPED JOINT. STAPLES SHALL BE IN PAIRS WITH ONE STAPLE ON EACH SIDE OF THE JOINT INTERFACE AND WITH A DISTANCE BETWEEN STAPLE PAIRS OF NOT GREATER THAN 3 INCHES AS MEASURED AROUND THE PERIMETER OF THE TAPED JOINTS. STAPLES SHALL BE MINIMUM 1/2" X 1/2"; PROVIDE MASTIC MINIMUM TWO INCHES ON EITHER SIDE OF CLOSURE TAPE.
PART 3 - EXECUTION
3.04 OPENINGS, CUTTING AND PATCHING
A. GENERAL: CONTRACTOR SHALL SET IN POSITION ALL SLEEVES AND INSERTS REQUIRED IN WALLS, PARTITIONS, CEILINGS, OR FLOORS, AND SHALL HAVE A REPRESENTATIVE ON-SITE DURING POURING OF CONCRETE TO MAINTAIN POSITION OF SLEEVES AND INSERTS UNTIL CONCRETE IS SET. CLOSE COORDINATION IS REQUIRED TO INSURE THAT ALL SLEEVES ARE PROPERLY SET. CORRECTNESS OF SIZE AND LOCATION OF OPENINGS SHALL BE VERIFIED BY CONTRACTOR AFTER FRAMING IS IN PLACE. CONTRACTOR SHALL DO ALL CUTTING AND PATCHING OF EXISTING AND/OR NEW BUILDING MATERIALS REQUIRED FOR INSTALLATION OF WORK HEREIN SPECIFIED. NO STRUCTURAL MEMBERS SHALL BE CUT WITHOUT APPROVAL OF STRUCTURAL ENGINEER AND ALL SUCH CUTTING SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER, MEETING THE APPROVAL OF STRUCTURAL ENGINEER TO MATCH ADJOINING SURFACES AND FINISHES, BY MECHANICS OF PARTICULAR TRADE INVOLVED. SLEEVES AND OPENINGS NOT USED DURING CONSTRUCTION SHALL BE SEALED WITH GROUT BY CONTRACTOR. OPENINGS BETWEEN PIPES AND SLEEVES THROUGH FIRE AND SMOKE WALLS OR FLOORS SHALL BE SEALED TO PREVENT PASSAGE OF SMOKE OR HEAT USING AN UNDERWRITERS' LABORATORIES APPROVED METHOD RATED AT LEAST EQUAL TO THE RATING OF THE WALL OR FLOOR BEING PENETRATED. METHOD OF SEALING SHALL BE SUBMITTED WITH PROOF OF U.L. APPROVAL WITH OTHER SUBMITTALS. ALL OPENINGS REQUIRED IN CONCRETE WHICH WERE OMITTED WHEN CONCRETE WAS POURED SHALL BE CAREFULLY MADE BY USE OF CORE BORING OPERATION WITH 5-IN. MAXIMUM HOLE SIZE UNLESS LARGER SIZE IS APPROVED BY STRUCTURAL ENGINEER. CUT NO OPENINGS IN PRESTRESSED OR PRECAST MEMBERS WITHOUT APPROVAL OF STRUCTURAL ENGINEER.
B. SLEEVES:
1. WALLS AND PARTITIONS:
A. PIPE SLEEVES 8-INCH DIAMETER AND SMALLER (ABOVE GRADE): SLEEVES SHALL BE MILD STEEL PIPE OR PLASTIC SLEEVES BUILT INTO WALL, PARTITION OR BEAM, SIZED TO PASS PIPE AND COVERING, LEAVING A CLEAR SPACE OF 1/4-INCH MINIMUM BETWEEN COVERING AND PENETRATIONS OF FIRE RATED BARRIERS SHALL HAVE MILD STEEL SLEEVES.
B. PIPE SLEEVES INSTALLED IN EXTERIOR WALLS BELOW GRADE: SCHEDULE 40 STEEL HOT DIPPED GALVANIZED AFTER FABRICATION OR CAST IRON SLEEVE WITH 1/4-INCH X 3-INCH CENTER FLANGE (WATER STOP) AROUND THE OUTSIDE.
2. PIPE SLEEVES IN FLOORS (ABOVE GRADE): SLEEVES SHALL BE 14 GAUGE STEEL SHEET PILING UNTIL ARCHITECT'S FINAL ACCEPTANCE OF WORK. SLEEVES SHALL BE SIZED TO PASS PIPE AND COVERING, LEAVING A CLEAR SPACE OF 1/4-INCH BETWEEN COVERING AND SLEEVE, AND SHALL EXTEND 1/2-INCH ABOVE FINISHED FLOOR.
3. DUCT SLEEVES: SLEEVES OR OPENINGS SIZED TO PASS MECHANICAL DUCTS AND COVERING SHALL BE OF FRAMED CONSTRUCTION IN ROOF, WALL, OR PARTITIONS.
C. SEALING OF SLEEVES:
1. SLEEVES BELOW GRADE: CAULK ANNULAR SPACE BETWEEN PIPE AND SLEEVE USING OKALUM AND POURED LEAD BOTH SIDES MINIMUM ONE INCH DEEP TO MAKE WALL PENETRATION WATER TIGHT.
2. SLEEVES ABOVE GRADE: OPENINGS AROUND PIPES, DUCT, ETC., PASSING THROUGH SLEEVES SHALL BE MADE DRAFT FREE AND VERMIN-PROOF BY PACKING SOLIDLY WITH MINERAL WOOL OR FIBERGLASS.
3. SEALING OF SLEEVES THROUGH FIRE RATED BARRIERS: OPENINGS AROUND PIPES, ETC., THROUGH FIRE RATED BARRIERS SHALL BE SEALED USING AN U.L. APPROVED METHOD RATED AT LEAST EQUAL TO THE WALL BEING PENETRATED.
3.05 REMOVAL OF RUBBISH
CONTRACTOR SHALL AT ALL TIMES KEEP PREMISES FREE FROM ACCUMULATIONS OF WASTE MATERIAL OR RUBBISH GENERATED BY WORK UNDER THIS CONTRACT.
3.06 EXCAVATION, BACKFILLING AND COMPACTION
ALL EXCAVATION, BACKFILLING, COMPACTION, TESTING, ETC. REQUIRED FOR THE INSTALLATION OF UNDERGROUND PIPING IN THIS DIVISION OF THE SPECIFICATIONS SHALL BE DONE BY THE MECHANICAL CONTRACTOR. THIS WORK SHALL BE DONE IN STRICT ACCORDANCE WITH EXCAVATION AND BACKFILLING SECTION OF DIVISION 2.
3.07 CLEANING AND ADJUSTMENTS
UPON COMPLETION OF WORK, CONTRACTOR SHALL CLEAN, OIL AND GREASE ALL FANS, MOTORS AND OTHER RUNNING EQUIPMENT AND APPARATUS WHICH HE INSTALLS AND MAKE CERTAIN ALL SUCH APPARATUS AND MECHANISMS ARE IN PROPER WORKING ORDER AND READY FOR TEST. REFER TO SECTION ENTITLED "SYSTEMS COMPLETION".
3.08 AS-BUILT DRAWINGS
UPON COMPLETION OF INSTALLATION, THE CONTRACTOR SHALL FURNISH TO THE ARCHITECT A SET OF DRAWINGS, MARKED TO SCALE, INDICATING THE SIZE AND LOCATION OF PIPING AND DUCTS, AND NOTING ALL MAJOR CHANGES MADE DURING CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN THE DRAWINGS FROM THE ARCHITECT AND SHALL BEAR ALL COSTS IN OBTAINING THE DRAWINGS AND PROVIDING THE AS-BUILT DRAWINGS. THE CONTRACTOR SHALL DELIVER THE DRAWINGS PLUS TWO SETS OF AS-BUILT DRAWINGS AT THE ARCHITECT SHEET IN EACH SET SHALL BE SIGNED BY A PRINCIPAL REPRESENTATIVE OF THE CONTRACTOR, DATED AND HAVE "AS-BUILT" STAMPED IN THE SIGNATURE. DRAWINGS SHALL GIVE ACCURATE DIMENSIONS MEASURED FROM COLUMNS, WALLS, BEAMS AND OTHER FIXED PARTS OF THE BUILDING TO THE CONCEALED MATERIALS. THE CONTRACTOR SHALL MAINTAIN A SET OF DRAWINGS AT THE PROJECT SITE AND EACH DAY SHALL RECORD INSTALLATION OF PIPE, DUCTS, ETC. TO INSURE ACCURATE "AS-BUILT" DRAWINGS. THE CONTRACTOR SHALL ALSO FURNISH A SET OF DRAWINGS AND TWO SETS OF CONTRACTOR SIGNED AND DATED AS-BUILT DRAWINGS OF THE CONTROLS.
3.09 GUARANTEE AND SERVICE
A. IN ADDITION TO THE GUARANTEE OF EQUIPMENT BY THE MANUFACTURER OF EACH PIECE OF EQUIPMENT SPECIFIED HEREIN, THE MECHANICAL CONTRACTOR SHALL GUARANTEE OTHER EQUIPMENT AND SHALL BE HELD RESPONSIBLE FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE FOR NECESSARY ADJUSTMENTS AND/OR REPLACEMENTS OF ALL DEFECTIVE EQUIPMENT, MATERIALS AND WORKMANSHIP WITHOUT EXPENSE TO THE OWNER. PROVIDE A LETTER TO THE OWNER STATING THE CONTRACTOR'S GUARANTEE AND DATES OF GUARANTEE COVERAGE.
B. CLEANING OF PERMANENT TYPE FILTERS: LUBRICATION, AND CLEANING OF STRAINERS SHALL BE TO BE DONE BY THE CONTRACTOR. EQUIPMENT SHALL BE HELD RESPONSIBLE FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE FOR NECESSARY ADJUSTMENTS AND/OR REPLACEMENTS OF ALL DEFECTIVE EQUIPMENT, MATERIALS AND WORKMANSHIP WITHOUT EXPENSE TO THE OWNER. PROVIDE A LETTER TO THE OWNER STATING THE CONTRACTOR'S GUARANTEE AND DATES OF GUARANTEE COVERAGE.
C. THE CONTRACTOR SHALL PROVIDE FOR A REPRESENTATIVE OF HIS FIRM, THE CONTROL SYSTEM CONTRACTOR, AND THE OWNER'S REPRESENTATIVE TO RETURN TO THE JOB AT THE CHANGE OF SEASONS, (SUMMER TO WINTER OR WINTER TO SUMMER) FOR THE FIRST YEAR ONLY, TO ADJUST THE AIR CONDITIONING SYSTEMS AND RECHECK OR RECALIBRATE CONTROLS AS MAY BE REQUIRED OF THE SEASON CHANGE FROM COOLING TO HEATING OR VICE VERSA.

PHILLIPS NORTH TERRACES 400 PERIMETER CENTER TERRACE SUITE 650 ATLANTA, GEORGIA 30346
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CONSULTANT
ISSUE & REVISION RECORD
# DATE DESCRIPTION
07/07/14 BID SET
PROJECT SPRINGS AT FREMAUX TOWN CENTER SLIDELL, LA
CLIENT
CONTINENTAL PROPERTIES CONTINENTAL 294 FUND LLC W134 N0675 EXECUTIVE PARKWAY MEMPHIS, TN 38119 262.502.5500 FAX 262.502.5522
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DRAWN BY/CHECKED BY PEM
DRAWING TITLE MECHANICAL SPECIFICATIONS
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