

1	2	3	4	5	6	7	8	9	10	11	12	13
PLUMBING SPECIFICATION SHEETS ARE INTENDED TO BE ALL-INCLUSIVE AND INCLUDE SPECIFICATION SECTIONS THAT MAY OR MAY NOT APPLY TO THIS PARTICULAR PROJECT. REFER TO THE DRAWINGS FOR SCOPE OF WORK.												
DIVISION 15 - MECHANICAL												
SECTION 15000 MECHANICAL GENERAL PROVISIONS												
<p>A. GENERAL CONDITIONS</p> <p>1. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND ALL OTHER SPECIFICATION SECTIONS ARE A PART OF THIS CONTRACT AND APPLY TO THIS AND THE OTHER SECTIONS OF DIVISION 15.</p> <p>2. THE CONTRACTOR FOR THIS WORK IS REQUIRED TO READ THE ENTIRE SPECIFICATIONS AND REVIEW DRAWINGS FOR ALL OTHER TRADES.</p> <p>3. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING HIS/ HER SUBCONTRACTORS WITH A FULL SET OF BID SET DOCUMENTS (INCLUDING SPECIFICATIONS) AND THE COORDINATION OF HIS WORK AND INSPECTIONS AND THE WORK AND INSPECTIONS OF HIS SUBCONTRACTORS WITH ALL OTHER TRADES ON SITE CONFORMING TO THE GENERAL CONTRACTOR'S TIME SCHEDULE.</p> <p>4. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING HIS BID TO DETERMINE CONDITIONS AFFECTING THE WORK. BIDS SHALL BE AS EVIDENCE OF KNOWLEDGE OF EXISTING CONDITIONS AND ANY MODIFICATIONS WHICH ARE REQUIRED TO MEET THE INTENT OF THE DRAWINGS AND SPECIFICATIONS. FAILURE TO VISIT THE SITE DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY IN PERFORMANCE OF WORK.</p> <p>5. WHEN USED, THE TERM "PROVIDED BY CONTRACTOR" SHALL BE INTERPRETED AS MEANING "FURNISHED AND INSTALLED" WITH THE EXCEPTION WHERE ITEMS ARE "PROVIDED BY OWNER" WHICH MEANS "FURNISHED ONLY" (INSTALLED BY CONTRACTOR), EXCEPT AS SPECIFICALLY NOTED OTHERWISE.</p> <p>B. GENERAL REQUIREMENTS</p> <p>1. THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, TOOLS, TRANSPORTATION, INCIDENTALS AND DETAILS NECESSARY TO PROVIDE A COMPLETE AND FULLY FUNCTIONAL MECHANICAL SYSTEM AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS, AND AS REQUIRED BY JOB CONDITIONS. ALL WORK NOT SPECIFICALLY NOTED AS BEING BY THE LANDLORD SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR. CLOSELY COORDINATE THE ENTIRE INSTALLATION WITH THE OWNER, AS REQUIRED. FIELD VERIFY THE EXACT TYPE, SIZE AND LOCATION, ETC. OF EXISTING PIPE AND DUCTS IN THE TENANT SPACE PRIOR TO BID.</p> <p>2. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT EACH OTHER AND ANY MATERIAL OR LABOR CALLED FOR IN ONE SHALL BE PROVIDED EVEN THOUGH NOT SPECIFICALLY MENTIONED IN BOTH. ANY MATERIAL OR LABOR WHICH IS NEITHER SHOWN ON THE DRAWINGS NOR CALLED FOR IN THE SPECIFICATIONS, BUT WHICH IS OBVIOUSLY NECESSARY TO COMPLETE THE WORK, AND WHICH IS USUALLY INCLUDED IN WORK OF SIMILAR CHARACTER, SHALL BE PROVIDED AS PART OF CONTRACT.</p> <p>3. WHERE THE DRAWINGS OR SPECIFICATIONS CALL FOR ITEMS WHICH EXCEED CODES, THE CONTRACTOR IS STILL RESPONSIBLE FOR PROVIDING THE SYSTEM AS DESIGNED AND DESCRIBED ON THESE DRAWINGS, UNLESS SPECIFICALLY NOTED OTHERWISE.</p> <p>4. ALL MECHANICAL WORK SHALL BE INSTALLED SO AS TO BE READILY ACCESSIBLE FOR OPERATING, SERVICING, MAINTAINING, AND REPAIRING. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SUFFICIENT ACCESS TO ALL EQUIPMENT FOR SERVICE.</p> <p>5. THE CONTRACTOR SHALL DO ALL CUTTING, CORE DRILLING, CHASING OR CHANNELING AND PATCHING REQUIRED FOR ANY WORK UNDER THIS DIVISION. CUTTING SHALL HAVE PRIOR APPROVAL BY THE CONSTRUCTION MANAGER. PATCHING SHALL BE INSTALLED WITH DOWELING AND REINFORCED CONCRETE, MATCH FINISH OF SURROUNDING AREA.</p> <p>C. CODES</p> <p>1. ALL WORK SHALL BE PERFORMED IN A NEAT PROFESSIONAL MANNER USING GOOD ENGINEERING PRACTICES. ALL WORK SHALL CONFORM TO THE OWNER'S CRITERIA, THE STATES, COUNTY'S, CITY'S AND LOCAL CODES AND ORDINANCES, SAFETY AND HEALTH CODES, NFPA CODES, ENERGY CODES AND ALL OTHER APPLICABLE CODES AND REQUIREMENTS. THE CONTRACTOR SHALL INQUIRE INTO AND COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, AND REGULATIONS. AFTER CONTRACT IS ISSUED, NO ADDITIONAL COST DUE TO CODE ISSUES SHALL BE REIMBURSED BY THE OWNER TO THE CONTRACTOR.</p> <p>D. LICENSES, PERMITS, INSPECTIONS & FEES</p> <p>1. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL LICENSES, PERMITS, INSPECTIONS, AND FEES REQUIRED OR RELATED TO HIS WORK.</p> <p>2. FURNISH TO THE CONSTRUCTION MANAGER ALL CERTIFICATES OF INSPECTION AND FINAL INSPECTION APPROVAL AT SUBSTANTIAL COMPLETION DATE OF PROJECT.</p> <p>E. DRAWINGS</p> <p>1. DRAWINGS (PLANS, SPECIFICATIONS, AND DETAILS) ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION AND INTENT OF THE MECHANICAL SYSTEMS. BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL DUCT AND PIPING OFFSETS, FITTINGS AND ACCESSORIES THAT MAY BE REQUIRED.</p> <p>2. THE LAYOUT SHOWN ON THE DRAWINGS IS BASED ON A PARTICULAR MAKE OF EQUIPMENT. IF ANOTHER MAKE OF EQUIPMENT IS USED WHICH REQUIRES MODIFICATION OR CHANGE OF ANY DESCRIPTION FROM THE DRAWINGS OR SPECIFICATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE AS PART OF THIS WORK, FOR MAKING ALL SUCH MODIFICATIONS AND CHANGES, INCLUDING THOSE INVOLVING OTHER TRADES WITH THE COST THEREOF INCLUDED IN HIS BID. IN SUCH CASE, CONTRACTOR SHALL SUBMIT DRAWINGS AND SPECIFICATIONS PRIOR TO STARTING WORK SHOWING ALL SUCH MODIFICATIONS AND CHANGES. HIS PROPOSAL SHALL BE SUBJECT TO THE APPROVAL OF THE CONSTRUCTION MANAGER.</p> <p>F. EXISTING SHELL SPACE CONDITIONS</p> <p>1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF THE DEMOLITION OF EXISTING MECHANICAL WORK SHOWN ON THE MECHANICAL DRAWINGS AND THE MECHANICAL DEMOLITION SHOWN ON THE ARCHITECTURAL DRAWINGS.</p> <p>2. THE CONTRACTOR SHALL INCLUDE, AND WILL BE HELD RESPONSIBLE FOR, THE REMOVAL OF ALL EXISTING FIRE PROTECTION, PLUMBING FIXTURES, PIPING, HVAC UNITS, REFRIGERANT RECAPTURE, EXHAUST FANS, ETC. AND ASSOCIATED ROOF CURBS NOT TO BE REUSED ON THIS PROJECT, UNLESS SPECIFICALLY NOTED OTHERWISE. CONTRACTOR MUST VERIFY WITH THE CONSTRUCTION MANAGER ALL PRESUMED ABANDONED EQUIPMENT, PIPES, DUCTWORK, AND EQUIPMENT PRIOR TO REMOVAL. ROOF CURBS SHALL BE REMOVED AND THE ROOF PATCHED UNLESS NOTED FOR REUSE OR RECONFIGURATION ON PLANS. ROOF PATCHING SHALL BE PERFORMED AT THE CONTRACTOR'S EXPENSE BY A ROOFING CONTRACTOR APPROVED BY THE CONSTRUCTION MANAGER. ALL EXTRANEOUS ITEMS IN THE SPACE OR ON THE ROOF (ABOVE THE SPACE) NOT APPLICABLE TO THE NEW WORK OR PART OF THE ACTIVE SYSTEM MUST BE REMOVED AND ROOF/WALL/FLOOR PATCHED/REPAIRED TO MATCH EXISTING STRUCTURE. EXISTING ABANDONED PIPES, DUCTS, OR EQUIPMENT IN THE FLOOR, EMBEDDED IN CONCRETE, OR OTHERWISE INACCESSIBLE ARE TO BE CUT OFF AND SEALED BELOW OR WITHIN FLOOR OR WALL LEVEL WHEN THEY ARE NOT TO BE REUSED IN THIS PROJECT. IF REQUIRED BY OWNER OR CODES, ABANDONED PIPING AND/OR DUCTWORK MUST BE REMOVED TO POINT OF ORIGIN. CONFIRM THE EXTENT OF DEMOLITION PRIOR TO BID AND INCLUDE IN BID PROPOSAL.</p> <p>3. ACTIVE UTILITIES OR SERVICES ENCOUNTERED IN WORK SHALL BE PROTECTED AND SUPPORTED. IF EXISTING SERVICES NOT ANTICIPATED REQUIRE RELOCATION, CONTACT THE CONSTRUCTION MANAGER IMMEDIATELY. ALL COSTS FOR REPAIR OF DAMAGES TO ACTIVE SERVICES DURING CONSTRUCTION SHALL BE PAID FOR BY THE CONTRACTOR CAUSING THE DAMAGE.</p> <p>4. TIE-INS AND MODIFICATIONS TO EXISTING SERVICES MUST BE DONE WITH MINIMUM INTERRUPTION OF OWNER'S OPERATION AND DURING HOURS SPECIFIED BY THE OWNER. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING EXACT WORKING HOURS OF THIS WORK WITH THE OWNER PRIOR TO SUBMITTING HIS BID. THE CONTRACTOR SHALL INCLUDE IN HIS BID, ALL PRELIMINARY TIME REQUIRED TO PERFORM MODIFICATIONS DURING OTHER THAN NORMAL WORKING HOURS. ALL SUCH WORK MUST BE COORDINATED WITH THE OWNER.</p> <p>G. DISCREPANCIES IN DOCUMENTS</p> <p>1. DRAWINGS (PLANS, SPECIFICATIONS, AND DETAILS) ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION AND INTENT OF THE MECHANICAL SYSTEMS WHERE DRAWINGS, EXISTING SITE CONDITIONS, SPECIFICATIONS OR OTHER TRADES CONFLICT OR ARE UNCLEAR, ADVISE THE GENERAL CONTRACTOR IN WRITING, PRIOR TO SUBMITTAL OF BID. THE GENERAL CONTRACTOR IS RESPONSIBLE TO ADVISE THE CONSTRUCTION MANAGER, IN WRITING, OF VARIATIONS TO CONTRACT DOCUMENTS PRIOR TO SUBMISSION OF BID. OTHERWISE, CONSTRUCTION MANAGER'S INTERPRETATION OF CONTRACT DOCUMENTS OR CONDITIONS SHALL BE FINAL WITH NO ADDITIONAL COMPENSATION PERMITTED.</p> <p>H. TRADE NAMES AND MANUFACTURERS</p> <p>1. WHERE TRADE NAMES AND MANUFACTURERS ARE USED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THE EXACT EQUIPMENT SHALL BE USED AS A MINIMUM STANDARD FOR THE BASE BID. MANUFACTURERS CONSIDERED AS AN EQUAL OR BETTER IN ALL ASPECTS TO THAT SPECIFIED WILL BE SUBJECT TO APPROVAL IN WRITING BY THE CONSTRUCTION MANAGER PRIOR TO ACCEPTANCE. THE USE OF ANY UNAUTHORIZED EQUIPMENT SHALL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.</p> <p>I. SHOP DRAWINGS</p> <p>1. SUBMIT SIX COPIES OF MATERIAL LISTS AND SHOP DRAWINGS FOR ALL EQUIPMENT AND DUCT FABRICATION DRAWINGS TO THE CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO ORDERING EQUIPMENT. SUBMISSIONS MUST BE EARLY ENOUGH TO ALLOW THE CONSTRUCTION MANAGER EIGHT WORKING DAYS FOR REVIEW WITHOUT CAUSING DELAYS OR CONFLICTS TO THE JOB'S PROGRESS. SUBMITTALS SHALL BE IN ACCORDANCE WITH THE GENERAL CONDITIONS USING THE MANUFACTURERS LISTED ON THE DRAWINGS. SHOP DRAWINGS SHALL INCLUDE ALL DATA THAT PERTAINS TO THE REQUIREMENTS SET FORTH ON THE DRAWINGS AND IN THE SPECIFICATIONS. THE SUBMITTAL SHALL INCLUDE BUT NOT BE LIMITED TO CUTS OR CATALOGS INCLUDING DESCRIPTIVE LITERATURE AND CHARACTERISTICS OF EQUIPMENT SUBMITTALS SHALL SHOW MAJOR DIMENSIONS, ROUGHING-IN DATA, CAPACITY, CURVES, PRESSURE DROP, CODE COMPLIANCE, MOTOR AND DRIVE DATA AND ELECTRICAL DATA. OBSERVE SPECIAL INSTRUCTIONS WHEN REQUIRED. SUBMITTALS SHALL BEAR THE STAMP OF THE GENERAL AND SUB-CONTRACTOR SHOWING THAT HE HAS REVIEWED AND CONFIRMED THAT THEY ARE IN CONFORMANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS OR INDICATE WHERE EXCEPTIONS TAKE PLACE. LACK OF SUCH CONTRACTOR'S REVIEW AND APPROVAL WILL BE CAUSE FOR REJECTION WITHOUT REVIEW BY CONSTRUCTION MANAGER. ALL SHOP DRAWINGS MUST APPEAR IN THE OPERATION AND MAINTENANCE MANUAL LEFT ON SITE AT JOB COMPLETION.</p> <p>2. CONSTRUCTION MANAGER'S REVIEW OF SHOP DRAWINGS OR SCHEDULES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR OMISSIONS, COMPLETION OR OTHER DEFICIENCIES OR DEVIATIONS IN THE SHOP DRAWINGS FROM THE CONTRACT DRAWINGS AND SPECIFICATIONS.</p> <p>J. RECORD DRAWINGS</p> <p>1. THE CONTRACTOR SHALL MAINTAIN ONE COPY OF DRAWINGS AND SPECIFICATIONS SUCH AS:</p> <p>A. LOCATION OF CONCEALED PIPING, VALVES AND DUCTS. REVIEWS, ADDENDUMS, AND CHANGE ORDERS. SIGNIFICANT DEVIATIONS MADE NECESSARY BY FIELD CONDITIONS. APPROVED EQUIPMENT FITTINGS, AND CONTRACTOR'S COORDINATION WITH OTHER TRADES.</p> <p>D. EXACT ROUTING OF ALL SANITARY AND DOMESTIC WATER PIPING UNDER FLOOR.</p> <p>2. AT COMPLETION OF THE PROJECT AND BEFORE FINAL APPROVAL, THE CONTRACTOR SHALL MAKE ANY FINAL CORRECTIONS TO DRAWINGS AND CERTIFY THE ACCURACY OF EACH PRINT BY SIGNATURE THEREON. THE DRAWINGS ARE TO BE TURNED OVER TO THE CONSTRUCTION MANAGER.</p> <p>K. GUARANTEE</p> <p>1. THE CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORK UNDER HIS RESPECTIVE FLOOR, WALL OR PARTITION AND SHALL BE CUT FLUSH WITH EACH SURFACE EXCEPT SLEEVES THAT PENETRATE THE FLOOR, WHICH SHALL EXTEND 2" ABOVE THE FLOOR.</p> <p>2. ALL SLEEVES AND OPENINGS THROUGH FIRE RATED WALLS AND/OR FLOORS SHALL BE FIRE SEALED WITH CALCIUM SILICATE, SILICONE "RTV" FOAM, "3M" FIRE RATED SEALANTS OR EQUAL, SO AS TO RETAIN THE FIRE RATING OF THE FLOOR OR WALL. CONFORM TO U.L. ASSEMBLY RATING OF FLOOR OR WALL.</p> <p>3. SLEEVES IN BEARING AND MASONRY WALLS, FLOORS, AND PARTITIONS SHALL BE STANDARD WEIGHT STEEL PIPE FINISHED WITH SMOOTH EDGES. FOR OTHER THAN MASONRY PARTITIONS, THROUGH SUSPENDED CEILING, OR FOR CONCEALED VERTICAL PIPING, SLEEVES SHALL BE NO. 22 U.S.G. GALVANIZED STEEL MINIMUM.</p> <p>4. SLEEVES TO BE MINIMUM 14 GAUGE STEEL.</p> <p>L. OPERATIONS MANUALS</p> <p>1. ONE COPY OF EACH OPERATION AND MAINTENANCE MANUAL FOR ALL EQUIPMENT FURNISHED ON JOB SHALL BE COLLECTED AND INSERTED IN A 3" THREE RING BINDER AND TURNED OVER TO THE CONSTRUCTION MANAGER. EACH NOTEBOOK SHALL INCLUDE BUT NOT BE LIMITED TO INSTALLATION, MAINTENANCE AND OPERATING INSTRUCTIONS, PAMPHLETS OR BROCHURES, APPROVED SHOP DRAWINGS AND WARRANTIES OBTAINED FROM EACH MANUFACTURER OF PRINCIPAL ITEMS OF EQUIPMENT.</p> <p>M. SLEEVES</p> <p>1. THE CONTRACTOR SHALL PROVIDE SLEEVES TO PROTECT EQUIPMENT OR FACILITIES IN THE INSTALLATION. EACH SLEEVE SHALL EXTEND THROUGH IT'S RESPECTIVE FLOOR, WALL OR PARTITION AND SHALL BE CUT FLUSH WITH EACH SURFACE EXCEPT SLEEVES THAT PENETRATE THE FLOOR, WHICH SHALL EXTEND 2" ABOVE THE FLOOR.</p> <p>2. ALL SLEEVES AND OPENINGS THROUGH FIRE RATED WALLS AND/OR FLOORS SHALL BE FIRE SEALED WITH CALCIUM SILICATE, SILICONE "RTV" FOAM, "3M" FIRE RATED SEALANTS OR EQUAL, SO AS TO RETAIN THE FIRE RATING OF THE FLOOR OR WALL. CONFORM TO U.L. ASSEMBLY RATING OF FLOOR OR WALL.</p> <p>3. SLEEVES IN BEARING AND MASONRY WALLS, FLOORS, AND PARTITIONS SHALL BE STANDARD WEIGHT STEEL PIPE FINISHED WITH SMOOTH EDGES. FOR OTHER THAN MASONRY PARTITIONS, THROUGH SUSPENDED CEILING, OR FOR CONCEALED VERTICAL PIPING, SLEEVES SHALL BE NO. 22 U.S.G. GALVANIZED STEEL MINIMUM.</p> <p>4. SLEEVES TO BE MINIMUM 14 GAUGE STEEL.</p> <p>N. HANGERS</p> <p>1. HANGERS SHALL INCLUDE ALL MISCELLANEOUS STEEL SUCH AS ANGLE IRON, BANDS, C-CLAMPS WITH RETAINING CLIPS, CHANNELS, HANGER RODS, ETC., NECESSARY FOR THE INSTALLATION OF WORK.</p> <p>2. HANGERS SHALL BE FASTENED TO BUILDING STEEL, CONCRETE, OR MASONRY, BUT NOT TO PIPING OR DUCTWORK. HANGING FROM METAL DECK IS NOT PERMITTED. HANGERS MUST BE ATTACHED TO UPPER CHORD OF BAR JOIST, WHERE INTERFERENCES OCCUR, IN ORDER TO SUPPORT DUCTWORK OR PIPING, THE CONTRACTOR MUST INSTALL TRAPEZOID TYPE HANGERS OR SUPPORTS WHICH SHALL BE LOCATED WHERE THEY DO NOT INTERFERE WITH ACCESS TO FIRE DAMPERS, VALVES, ACCESS DOORS AND OTHER EQUIPMENT SERVICE REQUIREMENTS AND/OR OTHER TRADES. HANGERS TYPE AND INSTALLATION METHODS ARE SUBJECT TO ENGINEER'S CRITERIA.</p> <p>3. HANGERS FOR ALL INSULATED PIPING SHALL BE SIZED AND INSTALLED FOR THE OUTER DIAMETER OF INSULATION. INSTALL 6" LONG SPLIT CIRCLE GALVANIZED SADDLE BETWEEN THE HANGER AND THE PIPE INSULATION.</p> <p>4. HANGERS AND PIPING OF DISSIMILAR METALS SHALL BE DI-ELECTRICALLY SEPARATED FROM ONE ANOTHER.</p> <p>O. ACCESS DOORS</p> <p>1. FURNISH STEEL ACCESS DOORS AND FRAMES, MIN. 16" X 20" OR SHOWN ON DRAWINGS, TO GENERAL CONTRACTOR FOR INSTALLATIONS WHERE NECESSARY TO PROVIDE ACCESS TO CONCEALED VALVES, ACCESS DOORS, OR EQUIPMENT REQUIRING SERVICE OR INSPECTION. LOCATION, TYPE, SIZE AND NUMBER ARE DETERMINED BY CONTRACTOR AND APPROVED BY CONSTRUCTION MANAGER TO SUIT EQUIPMENT REQUIREMENTS. GENERAL CONTRACTOR WILL INSTALL ACCESS DOORS AND FRAMES.</p> <p>2. ACCESS DOORS LOCATED IN FIRE RATED WALLS, FLOORS, CEILING-FLOOR OR CEILING-ROOF ASSEMBLIES SHALL BE FIRE RATED, UNDERWRITERS LABORATORIES, INSTALLED AND LABELED.</p> <p>3. ACCESS DOORS SHALL BE SHIP TYPE MANUFACTURED FROM NO. 14 GAUGE STEEL, COMPLETE WITH FLANGE TYPE FRAMES MANUFACTURED FROM NO. 16 GAUGE STEEL PROVIDED WITH ANCHORS. ACCESS DOORS SHALL BE SUITABLE FOR INSTALLATION IN WALL OR CEILING MATERIALS SHOWN IN ROOM FINISH SCHEDULE.</p> <p>P. ELECTRICAL MOTORS</p> <p>1. FURNISH, INSTALL AND ALIGN ALL MOTORS REQUIRED FOR THIS EQUIPMENT, UNLESS THEY ARE FACTORY INSTALLED ON THE UNIT. ALL STARTERS AND ASSOCIATED WIRING AND SAFETY SWITCHES FOR SUCH MOTORS SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. STARTERS SHALL MEET ALL REQUIREMENTS AS DEFINED IN THE ELECTRICAL DIVISION OF THE SPECIFICATIONS.</p> <p>2. DESIGN, CONSTRUCTION AND PERFORMANCE CHARACTERISTICS OF MOTORS SHALL CONFORM TO ALL APPLICABLE PROVISIONS OF LATEST NEMA, ANSI, ISEE STANDARDS FOR ELECTRICAL EQUIPMENT. ALL MOTORS SHALL BE SUITABLE FOR OPERATION ON VOLTAGE VARIATION OF PLUS OR MINUS 10%, 40 DEGREES C AMBIENT TEMPERATURE; HAVE A SERVICE FACTOR OF NOT LESS THAN 1.15.</p> <p>Q. LOW VOLTAGE (24 VOLT) WIRING</p> <p>1. THE CONTRACTOR IS TO INSTALL ALL LOW VOLTAGE WIRING REQUIRED FOR HIS EQUIPMENT. THIS WORK INCLUDES ALL TRANSFORMERS AND DEVICES TO MAKE THIS A COMPLETE FUNCTIONAL SYSTEM.</p> <p>2. ALL WORK IS TO CONFORM TO THE LATEST ADDITION N.E.C AND TO DIVISION 16 ELECTRICAL SPECIFICATIONS.</p> <p>3. ANY CONDUIT REQUIRED BY CODE OR THE OWNER'S EQUIPMENT WILL BE INSTALLED BY THE ELECTRICAL SUBCONTRACTOR.</p>												
SECTION 15200 PLUMBING												
<p>A. SCOPE OF WORK</p> <p>1. THIS CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, TOOLS, TRANSPORTATION AND FACILITIES NECESSARY FOR, REASONABLY IMPLIED AND INCIDENTAL TO, THE FURNISHING, INSTALLATION, COMPLETION AND TESTING OF ALL THE WORK FOR THE PLUMBING SYSTEMS AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS, AND AS REQUIRED BY JOB CONDITIONS, TO INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING: (REFER TO RESPONSIBILITY SCHEDULE FOR EXACT RESPONSIBILITIES)</p> <p>A. COMPLETE SANITARY PIPING SYSTEMS OF WASTE, DRAINS, AND VENTS.</p> <p>B. COMPLETE COLD AND HOT WATER PIPING SYSTEMS, APURTANCES AND INSULATION.</p> <p>C. PLUMBING FIXTURES AND EQUIPMENT AS SCHEDULED.</p> <p>D. COMPLETE NATURAL GAS PIPING SYSTEMS (AS APPLICABLE, REFER TO PLANS).</p> <p>E. TESTS AND ADJUSTMENTS.</p> <p>2. BEFORE STARTING WORK, THIS CONTRACTOR SHALL EXAMINE THE ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL PLANS AND SPECIFICATIONS TO SEQUENCE, COORDINATE, AND INTEGRATE THE VARIOUS ELEMENTS OF THE PLUMBING SYSTEM, MATERIALS, AND EQUIPMENT WITH OTHER CONTRACTORS TO AVOID INTERFERENCES AND CONFRONTATIONS.</p> <p>3. RELOCATION OF EXISTING WATER, GAS, WASTE, VENT, OR DRAINAGE LINES TO FACILITATE NEW LAYOUT MUST BE INCLUDED IN BID PROPOSAL.</p> <p>B. PLUMBING FIXTURES AND SPECIALTIES</p> <p>1. FURNISH AND INSTALL COMMERCIAL GRADE PLUMBING FIXTURES AND SPECIALTIES AS SCHEDULED. ALL FIXTURES AND SPECIALTIES SHALL BE OF THE SAME MANUFACTURER WHERE POSSIBLE. SEE DRAWINGS FOR QUANTITIES AND DESCRIPTIONS. ACCEPTABLE MANUFACTURERS ARE AS FOLLOWS:</p> <p>A. CHINA FIXTURES: KOHLER, AMERICAN STANDARD OR CRANE.</p> <p>B. STAINLESS STEEL SINKS: WILLOUGHBY, ELKAY OR JUST.</p> <p>C. MOLDED OR PRECAST SINKS: FIAT, ACON, OR STERN-WILLIAMS.</p> <p>D. FAUCETS: KOHLER, AMERICAN STANDARD OR CHICAGO.</p> <p>E. FLUSH VALVES: SLOAN, DELANEY OR ZURN.</p> <p>F. DRAINS, CLEANOUTS AND CARRIERS: ZURN, SMITH, JOSAM OR WAGE.</p> <p>G. HYDRANTS: WOODFORD, ZURN, SMITH, JOSAM OR WAGE.</p> <p>H. SHOCK ARRESTORS: SLOUX CHIEF, PRECISION PLUMBING PRODUCTS OR ZURN.</p> <p>I. TRAP PRIMERS: SLOUX CHIEF, PRECISION PLUMBING PRODUCTS OR SMITH.</p> <p>2. ALL FIXTURES SHOWN ON THE DRAWINGS OR SPECIFIED HEREBY SHALL BE FURNISHED AND INSTALLED, SET FIRM AND CONNECTED TO ALL REQUIRED PIPING SERVICES, THOROUGHLY CLEANED, AND READY FOR USE. ALL EXPOSED FITTINGS AND PIPING IN THE FIXTURES SHALL BE CHROME-PLATED, AND SUPPLY PIPING SHALL BE AT EACH FLOOR LEVEL FIXTURE GROUP AS INDICATED ON THE DRAWINGS.</p> <p>3. WATER HAMMER ARRESTORS SHALL BE PROVIDED AT ALL SEALS AND LUBRICATED PISTON AND P.D.I. APPROVED.</p> <p>4. TRAP PRIMERS SHALL HAVE BRASS BODY WITH INTERNAL VACUUM BREAKER. PROVIDE DISTRIBUTION MANIFOLD WHERE MORE THAN ONE TRAP IS TO BE SUPPLIED.</p> <p>WATER HEATERS</p> <p>1. WATER HEATERS SHALL BE OF THE TYPE SCHEDULED. NOT ALL HEATER TYPES MAY BE USED. REFER TO PLUMBING PLANS.</p> <p>2. ELECTRIC, INSTANTANEOUS TYPE HEATERS SHALL BE U.L. LISTED WITH INTEGRAL CONTROLS. PROVIDE FLOW CONTROL DEVICE WITH HEATER. HEATERS SHALL BE CHRONOMITE OR APPROVED EQUAL BY EEMAX.</p> <p>3. ELECTRIC STORAGE TYPE HEATERS SHALL BE U.L. LISTED WITH GLASS LINED TANK, STEEL JACKET, 2" FOAM INSULATION, MAGNESIUM ANODE AND TEMPERATURE AND PRESSURE RELIEF VALVE. HEATERS SHALL BE BY RHEEM OR APPROVED EQUAL BY A.O. SMITH OR BRADFORD-WHITE.</p> <p>D. GENERAL PIPING REQUIREMENTS</p> <p>1. FIELD VERIFY EXACT CONNECTION POINTS PRIOR TO SUBMITTING BID AND NOTIFY THE CONSTRUCTION MANAGER IF CONDITIONS ARE NOT AS SHOWN ON THE PLANS OR AS STATED IN THE SPECIFICATIONS. CONTRACTOR MUST VERIFY THE OPERABILITY OF ENTIRE SYSTEM PRIOR TO TIE IN AS FOLLOWS:</p> <p>A. SNAKE SANITARY FOR A DISTANCE OF 100 FEET AND REPORT ANY BLOCKAGE.</p> <p>B. TEST WATER PRESSURE TO ENSURE MINIMUM OF 50 PSI.</p> <p>2. INSTALL ALL NECESSARY PIPE HANGERS, SADDLES, AND CARRIERS TO PROPERLY SUPPORT ALL PIPING AND FIXTURES. HANGERS SHALL SUIT TYPE OF PIPING PROVIDED AND BE SPACED AT A MAXIMUM SPAN OF 5 FEET. PROVIDE SWAY AND SEISMIC BRACING WHERE REQUIRED BY CODES.</p> <p>3. ESCUTCHEONS SHALL BE CHROME PLATED, SIZE AS REQUIRED AND PLACED AT ALL PIPE PENETRATIONS AT WALLS, FLOORS, AND CEILING FINISHED AREAS.</p> <p>4. FLASHING SHALL BE SEALED WATERTIGHT AND PERFORMED IN ACCORDANCE TO THE ARCHITECT'S CRITERIA. USE AN OWNER APPROVED ROOFING CONTRACTOR WHERE APPLICABLE.</p> <p>5. ALL MATERIALS SPECIFIED OR NOTED ON THE DRAWINGS ARE SUBJECT TO THE APPROVAL OF LOCAL CODE AUTHORITIES. CONTRACTOR SHALL VERIFY APPROVAL BEFORE INSTALLING ANY MATERIAL OR JOINING METHOD.</p> <p>E. PIPING</p> <p>1. SANITARY AND STORM PIPING</p> <p>A. DRAIN, WASTE AND VENT PIPING SHALL BE SERVICE WEIGHT, CAST IRON SOIL PIPE OR SCHEDULE 40 GALVANIZED STEEL PIPE. IF CODE ALLOWS, SCHEDULE 40 PVC OR ABS WITH SOLVENT JOINTS ARE ACCEPTABLE. (NOTE THAT PVC OR ABS PIPING IS NOT ALLOWED FOR USE IN RETURN AIR PLenums.)</p> <p>B. JOINTS:</p> <p>1. CAST IRON PIPE: BELOW FLOOR SLAB - BELL AND SPIGOT WITH RUBBER GASKET COMPRESSION JOINTS. ABOVE FLOOR SLAB - NO-HUB WITH MISSION COUPLINGS.</p> <p>2. STEEL PIPE: GALVANIZED SCREWED RECESSED DRAINAGE PATTERN FITTINGS.</p> <p>C. FITCH WASTE LINES 2" AND SMALLER NOT LESS THAN 1/4" PER FOOT. FITCH LARGER MAINS NOT LESS THAN 1/8" PER FOOT.</p> <p>D. INSTALL A CLEANOUT AT BASE OF EACH SOIL STACK, AT EACH CHANGE IN DIRECTION, AT INTERVALS NOT OVER 30 FEET, AND ELSEWHERE AS SHOWN ON DRAWINGS OR REQUIRED BY LOCAL CODE. CLEANOUTS SHALL NOT BE INSTALLED IN PUBLIC AREAS WITHOUT SPECIFIC PERMISSION BY CONSTRUCTION MANAGER; BUT WHERE NECESSARY, THE WALL COVERS ARE TO BE STAINLESS STEEL, AND THE FLOOR COVERS ARE TO BE BRASS (FLUSH WITH FINISHED FLOOR). PROVIDE COVERS WITH INSET AREA FOR CARPETED FLOOR LOCATIONS. ALL CLEAN-OUT LOCATIONS SHALL BE APPROVED BY THE CONSTRUCTION MANAGER.</p> <p>2. CONDENSATE PIPING SHALL BE TYPE "L" DRAWN COPPER TUBE WITH 95-5 TIN-ANTIMONY SOLDERED JOINTS AND DRAUGHT COPPER FITTINGS WITH DIELECTRIC SEPARATION BETWEEN DISSIMILAR METALS.</p> <p>3. POTABLE WATER PIPING:</p> <p>A. BELOW GRADE: TYPE "K", ANNEALED, UNTERFED COPPER PIPE FOR PIPE SIZES 2 INCHES AND SMALLER. BRAZE JOINTS.</p> <p>B. ABOVE GRADE: TYPE "K", ANNEALED COPPER PIPE WITH WRLOUGBY COPPER FITTINGS AND 95-5 TIN-ANTIMONY SOLDER.</p> <p>C. INSTALL A CHAMBER SHOCK ARRESTERS IN THE SYSTEM TO PREVENT NOISE AND DAMAGE DUE TO WATER HAMMER.</p> <p>D. ALL SHOCK PIPING SHALL HAVE ACCESSIBLE THREADED BALL VALVES FOR ISOLATION SERVICE. PROVIDE SHUT OFF VALVES IN THE SUPPLY PIPING TO EACH FIXTURE. PROVIDE ACCESS DOORS WHERE NECESSARY.</p> <p>E. PROVIDE WATER METER AND REMOTE READER PER LOCAL UTILITIES REQUIREMENTS, IF APPLICABLE. REFER TO PLANS TO DETERMINE IF WATER METER IS REQUIRED.</p> <p>F. SINK PIPE AT EACH FIXTURE SHALL BE INSTALLED AT A MINIMUM OF 1/4" ABOVE FINISHED FLOOR.</p> <p>G. PROVIDE FLEXIBLE JOINTS AT ALL PIPE PENETRATIONS THROUGH FRAMING TO KEEP PIPES FROM HITTING FRAME WHEN IN OPERATION. WHERE WATER PIPING OCCURS IN EXTERIOR WALLS, INSTALL PIPING AS CLOSE AS POSSIBLE TO THE INTERIOR FACE OF THE WALL. INSTALL BATT INSULATION (MINIMUM R-8) BETWEEN THE PIPING AND THE EXTERIOR WALL FACE.</p> <p>GAS PIPING</p> <p>A. PROVIDE A COMPLETE GAS PIPING SYSTEM IF APPLICABLE. REFER TO PLANS TO DETERMINE IF A GAS SYSTEM IS REQUIRED.</p> <p>B. LOW PRESSURE (14" W.C. AND BELOW) GAS LINES SHALL BE BLACK STEEL, SCHEDULE 40, ALL GAS PIPING SHALL HAVE WELDED JOINTS.</p> <p>C. PROVIDE A GAS COCK, DIRT LEG, AND UNION CONNECTION TO EACH PIECE OF EQUIPMENT. PROVIDE GAS METER AND/OR REGULATOR AS REQUIRED. REGULATOR TO BE VENTED TO THE EXTERIOR.</p> <p>D. FITCH PIPING AT A UNIFORM GRADE OF 1/4" IN 15 FEET UPWARD IN DIRECTION OF FLOW. SUPPORT PIPING EVERY 5 FEET. SUPPORT AS REQUIRED BY CODES, AS DETAILED ON DRAWINGS, OR BY STANDARD INDUSTRY PRACTICE, WHICHEVER IS MORE STRINGENT.</p> <p>E. GAS PIPING EXPOSED ON ROOF MUST BE PAINTED WITH RUST-INHIBITING PAINT.</p> <p>F. INSTALLATION, TESTING AND PURGING OF GAS PIPING SHALL BE DONE PER THE REQUIREMENTS OF THE LOCAL GAS COMPANY, LOCAL CODES, AND APPLICABLE NFPA 54 CODES.</p> <p>G. CONTACT AND COORDINATE GAS SERVICE AND METER REQUIREMENTS WITH THE LOCAL GAS COMPANY AND THE CONSTRUCTION MANAGER PRIOR TO BID.</p> <p>INSULATION</p> <p>A. ACCEPTABLE MANUFACTURERS: OWENS-CORNING, KNAUF, MANVILLE, CERTAIN-TEED, ARMSTRONG OR RUBATEX.</p> <p>B. INSULATE DOMESTIC COLD WATER AND CONDENSATE PIPING (WITHIN BUILDING) WITH 1/2" THICK (K=23 @ 75 F) SNAP-ON FIBERGLASS PIPE INSULATION WITH AN ALL SERVICE JACKET TO MEET LOCAL CODES AND UL FLAME SPREAD RATING OF 25 AND SMOKE DEVELOPED RATINGS OF 50.</p> <p>C. INSULATE ALL DOMESTIC HOT WATER AND INTERIOR ROOF DRAIN PIPING AND ROOF DRAIN Sumps WITH 1" FIBERGLASS OR 3/4" FLEXIBLE ELASTOMERIC.</p> <p>D. COVER INSULATION AT FITTINGS WITH ZESTON, KNAUF OR APPROVED EQUAL PREMOLDED INSULATION FITTINGS.</p> <p>E. INSULATE THE TRAP, SANITARY AND SUPPLY PIPING UNDER A.D.A. LAVATORIES AND SINKS WITH "TRUEBRO" MODEL 102W "HANDI LAV GUARD" OR APPROVED EQUAL INSULATION KIT.</p> <p>F. DOMESTIC WATER PIPING LOCATED IN EXTERIOR WALLS OR OUTSIDE OF CONDITIONED SPACE SHALL BE PROVIDED WITH HEAT TAP.</p> <p>TEST & STERILIZATION</p> <p>A. LEAKAGE TESTS SHALL BE PER LOCAL CODES. MINIMUM AS FOLLOWS:</p> <p>1. TEST POTABLE WATER PIPING AND CONDENSATE PIPING AT 125 PSIG FOR SIX HOURS.</p> <p>2. TEST DRAIN, WASTE, VENT PIPING BY A 10" WATER COLUMN FOR TWO HOURS. ALL JOINTS SHALL BE GAS AND WATER TIGHT.</p> <p>3. TEST GAS PIPING WITH PER NFPA 54 CODES.</p> <p>4. STERILIZE POTABLE HOT & COLD WATER LINES UPON COMPLETION OF SYSTEM. STERILIZE WATER SYSTEM IN ACCORDANCE WITH LOCAL CODES.</p>												
<p>Order</p> <p>peems design group</p> <p>2225 East Randol Mill Road, Suite #300 Arlington, Texas 76011 817.633.4200 P. • 817.633.4153 F</p> <p>DR DANIEL A. REEVES, P.E. 2225 E. Randol Mill Rd., Suite 300 Arlington, TX 76011 (817)701-4808 FAX (817)633-4153 Tennessee License #116073</p> <p>Project No. 180165 Scale AS NOTED Drawn AH Checked DAR Date 06/29/2018 Drawing Title PLUMBING SPECIFICATIONS Drawing No. P4.0</p>												