

DIVISION 15010 - GENERAL REQUIREMENTS

1.0 GENERAL

1.1 SPECIFICATIONS ARE APPLICABLE TO ALL CONTRACTORS AND/OR CONTRACTORS FOR MECHANICAL SYSTEMS.

1.2 CHECK OTHER PLANS AND SPECIFICATIONS AND FULLY COORDINATE WITH OTHER TRADES, OWNER AND ARCHITECT REQUIREMENTS.

1.3 CONFORM TO ALL GENERAL AND SPECIAL CONDITIONS OF CONTRACTS SPECIFIED BY ARCHITECT AND/OR OWNER.

1.4 VISIT SITE, CHECK FACILITIES AND CONDITIONS AND MAKE ALL NECESSARY OBSERVATIONS AND MEASUREMENTS, NOTE CONDITIONS, UNDER WHICH WORK IS TO BE PERFORMED AND TAKE ALL ITEMS INTO CONSIDERATION IN BID.

1.5 SYSTEMS ARE TO BE COMPLETE AND WORKABLE IN ALL RESPECTS, PLACED IN OPERATION AND PROPERLY ADJUSTED.

1.6 EACH CONTRACTOR SHALL PROVIDE FOR HIS OWN CLEAN UP, REMOVAL AND LEGAL DISPOSAL OF ALL RUBBISH DAILY.

1.7 CONTRACTOR SHALL PROTECT HIS WORK, THE EXISTING AND ADJACENT PROPERTY AGAINST WEATHER.

1.8 CONTRACTOR SHALL PROTECT HIS WORK, MATERIALS, APPARATUS AND FIXTURES FROM DAMAGE. ANY WORK DAMAGED BY FAILURE TO PROVIDE PROTECTION REQUIRED, SHALL BE REMOVED AND REPLACED WITH NEW MATERIAL AT THE CONTRACTORS EXPENSE.

1.9 CONTRACTOR MUST CONFIRM ALL UTILITY COMPANY REQUIREMENTS AND CONNECTIONS POINTS IN FIELD PRIOR TO STARTING WORK.

1.10 ARRANGE FOR AND OBTAIN OWNER'S AND INSURANCE REPRESENTATIVE'S PERMISSION FOR ANY SERVICE SHUTDOWNS.

1.11 THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, SEQUENCES OF CONSTRUCTION AND THE SAFETY OF WORKMEN.

1.12 NO PIPING, DUCTWORK, WIRING, ETC., SHALL BE INSTALLED OR ROUTED ABOVE ELECTRICAL PANELS AND EQUIPMENT OR THROUGH ELEVATOR EQUIPMENT ROOMS.

1.13 THE MECHANICAL CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR AND OBTAIN A WRITTEN APPROVAL, IDENTIFYING THE ELECTRICAL CHARACTERISTICS OF ALL MECHANICAL EQUIPMENT PRIOR TO ORDERING OF EQUIPMENT. NO ADDITIONAL PAYMENT WILL BE MADE FOR LACK OF CONTRACTOR COORDINATION OF ELECTRICAL CHARACTERISTICS.

1.14 DURING CONSTRUCTION THE CONTRACTOR MAY UNCOVER AN EXISTING CONDITION THAT WILL HAVE TO BE ACCOMMODATED. ANY SUCH WORK WHICH COMES UNDER THE JURISDICTION OF THIS CONTRACTOR SHALL BE DONE BY THE CONTRACTOR WITHOUT EXTRA COST TO THE OWNER, AS THOUGH FULLY DETAILED PLANS AND/OR DESCRIBED IN THE SPECIFICATIONS.

1.15 WORK RELATED TO THE EXISTING BUILDING SHALL BE COORDINATED TO MINIMIZE INTERFERENCE OR INTERRUPTION OF NORMAL BUILDING USE BY OWNER. REFER TO ARCHITECTURAL PLANS FOR FINISHING REQUIREMENTS.

2.0 CODES, PERMITS, STANDARDS, AND REGULATIONS

2.1 CONFORM TO APPLICABLE CODES (LOCAL, STATE, NATIONAL, CODES, NFPA, OSHA, ETC.) GOVERNMENT REGULATIONS, UTILITY COMPANY REQUIREMENTS, AND APPLICABLE STANDARDS.

2.2 OBTAIN PERMITS AND PAY ALL FEES. ARRANGE FOR ALL REQUIRED INSPECTIONS AND APPROVALS.

3.0 DRAWINGS

3.1 THE SYSTEMS AS SHOWN ON MECHANICAL DRAWINGS ARE DIAGRAMMATIC, CONFORM TO ALL DIMENSIONS BY FIELD MEASUREMENTS.

3.2 THE EXACT LOCATIONS FOR FIXTURES, EQUIPMENT AND PIPING WHICH IS NOT COVERED IN BY DRAWINGS, SHALL BE OBTAINED FROM THE ARCHITECT OR HIS REPRESENTATIVE IN THE FIELD AND THE WORK SHALL BE LAID OUT ACCORDINGLY.

3.3 DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT ONE ANOTHER. ANY MATERIALS OR LABOR CALLED FOR IN ONE BUT NOT THE OTHER SHALL BE FURNISHED AS IF BOTH WERE MENTIONED IN THE SPECIFICATIONS AND SHOWN ON THE DRAWINGS.

4.0 BASE EQUIPMENT, MATERIALS AND SUBSTITUTIONS

4.1 ALL EQUIPMENT AND MATERIALS SHALL BE NEW, FREE OF DEFECTS AND U.L. LABELED.

4.2 BASE BID MANUFACTURERS ARE INCLUDED IN THE SPECIFICATIONS OR LISTED IN SCHEDULES ON THE DRAWINGS. ALL OTHER MANUFACTURERS ARE CONSIDERED A SUBSTITUTION.

4.3 THE NAME OR MAKE OF ANY ARTICLE, DEVICE, MATERIAL, FORM OF CONSTRUCTION, FIXTURE, ETC., STATED IN THIS SPECIFICATION, WHETHER OR NOT THE WORDS "OR APPROVED EQUAL" ARE USED, SHALL BE KNOWN AS "STANDARD."

4.4 ALL PROPOSALS SHALL BE BASED ON "STANDARDS" LISTED.

4.5 THE EQUIPMENT SCHEDULES ON THE DRAWINGS INDICATE MANUFACTURER'S EQUIPMENT MODEL NUMBERS THAT THIS DESIGN IS BASED ON. THE USE OF OTHER MANUFACTURERS EQUIPMENT THAT IS EQUIVALENT AS APPROVED EQUALS SHALL BE THE GENERAL CONTRACTOR'S RESPONSIBILITY. MECHANICAL, ELECTRICAL, AND PLUMBING ARE THE CONTRACTOR'S RESPONSIBILITY. APPROVED EQUALS SUCH CHANGES SHALL BE PAID BY THE CONTRACTOR SUBMITTING SUCH ALTERNATES. ANY CHANGES WHICH NECESSITATES CHANGES IN INSTALLING SCHEDULES, SUBSTITUTIONS, OR ALTERNATE EQUIPMENT, EVEN THOUGH SUCH COST MAY BE A PART OF THE DESIGNATION OF WORK.

4.6 SUBSTITUTIONS ARE SUBJECT TO THE APPROVAL OF THE OWNER. IF A SUBSTITUTION IS SUBMITTED, IT IS THE CONTRACTOR'S RESPONSIBILITY TO EVALUATE IT AND CERTIFY THAT THE SUBSTITUTION IS EQUIVALENT IN ALL RESPECTS TO THE SPECIFICATIONS.

4.7 IF SUBSTITUTIONS ARE APPROVED, NOTIFY ALL OTHER CONTRACTORS, SUBCONTRACTORS AND TRADES AFFECTED BY THE SUBSTITUTION AND FULLY COORDINATE WITH THE GENERAL CONTRACTOR REGARDING THE SUBSTITUTION, WHETHER BY THIS CONTRACTOR OR OTHERWISE. THE RESPONSIBILITY OF AND PAID FOR BY THE SUBSTITUTING CONTRACTOR. APPROVED EQUALS ON DRAWINGS DO NOT ASSOLVE THIS CONTRACTOR FROM THE RESPONSIBILITY.

4.8 ALL EQUIPMENT SHALL BE INSTALLED IN FULL ACCORDANCE WITH THE MANUFACTURER'S DATA AND INSTALLATION INSTRUCTIONS. IF THE CONTRACTORS REQUIREMENTS CHECK AND CONFORM THESE REQUIREMENTS PRIOR TO STARTING WORK.

5.0 WARRANTY

5.1 FULLY WARRANTY ALL MATERIALS, EQUIPMENT AND WORKMANSHIP FOR ONE (1) YEAR FROM DATE OF ACCEPTANCE.

5.2 EXTEND ALL MANUFACTURER'S WARRANTIES TO OWNER, INCLUDING FIVE (5) YEAR COMPRESSOR EXTENDED WARRANTY ON HVAC EQUIPMENT.

5.3 REPAIR OR REPLACE WITHOUT CHARGE TO THE OWNER ALL ITEMS FOUND DEFECTIVE DURING THE WARRANTY PERIOD. IN THE CASE OF REPLACEMENT OR PAIR DUE TO FAILURE WITHIN THE WARRANTY PERIOD, THE WARRANTY ON THAT PORTION OF THE WORK SHALL BE EXTENDED FOR A MINIMUM PERIOD OF ONE (1) YEAR FROM THE DATE OF SUCH REPLACEMENT OR REPAIR.

DIVISION 15050 - BASIC MATERIALS AND METHODS

1.0 GENERAL

1.1 PROVIDE ALL MATERIALS, LABOR, EQUIPMENT, AND ACCESSORIES REQUIRED TO FURNISH AND INSTALL THE MECHANICAL ITEMS IDENTIFIED IN THIS SECTION.

1.2 THIS SECTION INCLUDES BASIC MECHANICAL MATERIALS AND METHODS TO COMPLEMENT OTHER DIVISION 15 SECTIONS IN THIS SPECIFICATION AND REQUIREMENTS INDICATED ON THE MECHANICAL DRAWINGS.

2.0 SUPPORTS AND HANGERS

2.1 HANGERS AND SUPPORTS ARE TO BE PROVIDED TO PROPERLY SUPPORT, SECURE AND ALIGN PIPING AND TO MEET FIELD CONDITIONS AND AS MANUFACTURED BY GRINNELL OR MICHIGAN.

2.2 SPACING TO COMPLY WITH ASHRAE STANDARDS AND LOCAL CODE REQUIREMENTS.

3.0 ESCUTCHEONS

3.1 FIT ALL PIPE PASSING THROUGH WALLS, FLOORS OR CEILINGS IN FINISHED ROOMS WITH STEEL OR BRASS ESCUTCHEONS, WHERE SURFACE IS TO RECEIVE A PAINT FINISH MAKE ESCUTCHEONS PRIME PAINTED; OTHERWISE MAKE ESCUTCHEONS NICKEL OR CHROME PLATED, WHERE PIPING IS INSULATED, FIT ESCUTCHEONS OUTSIDE INSULATION.

4.0 PIPE IDENTIFICATION

4.1 IDENTIFY EACH PIPE, VALVE IN EQUIPMENT ROOMS, ABOVE ACCESSIBLE CEILINGS AND IN ACCESSIBLE SHAFTS.

4.2 COLOR CODE IDENTIFICATION BANDS OR MARKER BACKGROUNDS TO IDENTIFY CONTENTS OF PIPE AND DIRECTION OF FLOW LOCATED NEAR EACH VALVE AND FITTING, ON BOTH SIDES OF PIPE PASSING THROUGH WALLS AND ON LONG RUNS AT NOT OVER 10 FOOT INTERVALS.

5.0 ROOF CURBS

5.1 CURBS SHALL BE 18 GAUGE GALVANIZED STEEL WITH CONTINUOUS WELDED SEAMS, WOOD NAILER, COUNTER FLASHING AND INSULATION. TOP OF CURB SHALL BE A MINIMUM OF 12" ABOVE THE FINISHED ROOF SURFACE.

5.2 PROVIDE CURB FOR ALL ROOF PENETRATIONS OF DUCTS AND PIPING.

6.0 FIRE STOPPING

6.1 ALL ROOF OPENINGS THROUGH FIRE RATED WALLS, FLOORS, AND/OR ROOFS FOR DUCTWORK, PIPING, ETC., SHALL BE FIRE SEALED WITH CALCIUM SILICATE SILICONE "FRY FOAM," 3/4" FIRE RATED SEALANTS, HULL FIRESTOP SYSTEMS, OR APPROVED EQUAL TO MAINTAIN THE INTENDED FIRE RATING AND ASSOCIATED U.L. RATINGS.

7.0 CUTTING, PATCHING AND DRILLING

7.1 ALL CUTTING AND PATCHING OF THE BUILDING CONSTRUCTION REQUIRED FOR THE WORK SHALL BE BY THIS CONTRACTOR UNLESS SHOWN ON ARCHITECTURAL DRAWINGS AND CONFIRMED AS TO SIZE AND LOCATION PRIOR TO NEW CONSTRUCTION. CUTTING SHALL BE IN A NEAT AND WORKMANLIKE MANNER.

7.2 NEATLY SAW CUT ALL RECTANGULAR OPENINGS. SET SLEEVE THROUGH OPENING, AND FINISH PATCH OR PROVIDE TRIM FLANGE AROUND OPENING.

7.3 CONTRACTOR SHALL FIELD VERIFY SLAB ON GROUND OR SUPPORTS FOR CONSTRUCTION TYPE PRIOR TO CUTTING. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR CUT A STRUCTURAL FLOOR SLAB, EITHER ON A SIDE OR TOP, WITHOUT PRIOR WRITTEN APPROVAL FROM THE ARCHITECT. IF FLOOR SLABS INDICATED TO BE CUT ON MECHANICAL PLANS IS FOUND TO BE STRUCTURAL IN NATURE, DO NOT CUT. CONTACT ARCHITECT IMMEDIATELY FOR FURTHER DIRECTIONS.

8.0 CORE DRILL AND SLEEVE ALL ROUND OPENINGS

8.1 DO NOT CUT ANY STRUCTURAL COMPONENTS WITHOUT ARCHITECT'S WRITTEN APPROVAL INCLUDING, BUT NOT LIMITED TO ROOF JOISTS, COLUMNS, FLOOR JOIST, BEAMS, GIRDERS, STRUCTURAL FLOOR SLABS, ETC.

9.0 PATCHING AND FINISHING

9.1 CONTRACTOR SHALL PATCH ALL AREAS THAT HAVE BEEN CUT, DAMAGED OR MODIFIED AS A RESULT OF THE INSTALLATION OF THE MECHANICAL SYSTEMS. FIRE STOP ALL PENETRATIONS THROUGH FIRE RATED CONSTRUCTION IN A CODE APPROVED MANNER.

9.2 CONTRACTORS SHALL CONFORM WITH OWNER, PRIOR TO BID, TIMES AVAILABLE FOR NEW PRODUCTION OF SUCH AS CUTTING AND CORE DRILLING OF FLOORS, WALLS, CEILING, AND ROOF FOR WORK WHICH REQUIRES ACCESS INTO ADJOINING SPACES. THIS INCLUDE ANY PREVIOUS TIME IN BID.

10.0 EXACT LOCATION OF ROOF TOP AIR CONDITIONING UNITS SHALL BE APPROVED BY THE ARCHITECT. MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY STRUCTURAL SUPPORT STEEL FOR EQUIPMENT AND ROOF PENETRATIONS AFTER APPROVAL OF STRUCTURAL ENGINEER.

10.1 THE MECHANICAL CONTRACTOR SHALL COORDINATE WITH THE GENERAL CONTRACTOR PRIOR TO CONSTRUCTION. THE MECHANICAL CONTRACTOR SHALL PROVIDE INFORMATION REGARDING OPENINGS IN WALLS, FLOORS, ETC., CONCRETE EQUIPMENT PADS AND FOUNDATIONS TO THE GENERAL CONTRACTOR. IF THE MECHANICAL CONTRACTOR FAILS TO COMPLY WITH THIS REQUEST, OR IF INCORRECT INFORMATION IS GIVEN, THE NECESSARY CUTTING AND PATCHING WILL BE PERFORMED BY THE GENERAL CONTRACTOR. AT THE MECHANICAL CONTRACTOR'S EXPENSE.

11.0 DEMOLITION AND REMOVAL

11.1 DISCONNECT, CAP AND REMOVE ALL PIPING, DUCTWORK AND EQUIPMENT INDICATED ON THE DRAWINGS OR AS REQUIRED FOR THE PROJECT.

11.2 ANY EQUIPMENT DESIGNATED BY OWNER TO BE SALVAGED SHALL BE PROTECTED AND DELIVERED TO THE OWNER ON SITE.

11.3 DEMOLITION SHALL BE DONE IN A MANNER SO AS NOT TO DAMAGE ADJACENT WORK AND NOT AFFECT THE OPERATION OF SYSTEMS TO REMAIN IN ANY ITEM TO REMAIN THAT IS DAMAGED BY THE CONTRACTOR SHALL BE REPLACED AND/OR REPAIRED AT THE CONTRACTOR'S EXPENSE.

11.4 ALL OPEN ENDED PIPING AND DUCTWORK THAT IS TO REMAIN SHALL BE CAPPED AND PROPERLY SECURED.

MECHANICAL SPECIFICATIONS

DIVISION 15100 - INSULATION

1.0 GENERAL

1.1 FURNISH ALL MATERIAL, LABOR AND EQUIPMENT AS REQUIRED TO INSTALL COMPLETE PLUMBING AND HVAC INSULATION AS INDICATED ON MECHANICAL DRAWINGS AND IN THESE SPECIFICATIONS.

1.2 INSTALL IN FULL ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

2.0 PLUMBING INSULATION

2.1 INSULATE ALL ABOVE GRADE HOT AND COLD WATER PIPING WITH MOLDED FIBERGLASS HAVING AN ALL SERVICE JACKET.

2.1.0 INSULATION THICKNESS SCHEDULE:

2.1.01 LESS THAN 1-1/2" DIAMETER PIPE: 3/4" THICK

2.1.02 1-1/2" DIAMETER PIPE: 1" THICK

2.2 INCLUDE INSULATION OF FITTINGS AND VALVES, KEEP VAPOR BARRIERS INTACT, APPLY TO MANUFACTURER'S RECOMMENDATIONS.

2.3 HANDICAPPED LAVATORY INSULATION - INSULATE ALL EXPOSED WASTE WATER SUPPLY PIPING UNDER LAVATORY WITH SAFETY COVERS PER ADA REQUIREMENTS. MANUFACTURED BY PLUMBERTEX SPECIALTY PRODUCTS, JACGURE, OR RUEBRO.

2.4 REPAIR SECTIONS OF EXISTING PIPING INSULATION DAMAGED OR DAMAGED DURING THIS CONSTRUCTION PERIOD. USE INSULATION OF SAME THICKNESS AS EXISTING INSULATION. INSTALL NEW JACKET LAPPING AND SEAL OVER EXISTING.

3.0 HVAC INSULATION

3.1 INSULATE ALL SUPPLY, RETURN, AND EXHAUST DUCTS WITH 1/2" THICK FOL FACED REINFORCED KRAFT JACKET FIBERGLASS FIBERGLASS INSULATION. LAP AND TAPE SEAMS AND SEALS TIGHTLY TO MEET WITH U.L. RATINGS.

3.2 ALL INSULATION TO BE APPLIED IN FULL ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND COMPLY WITH FLAME AND SMOKE HAZARD RATING ASTM E-84, NFPA 265 AND UL 723.

3.3 INSULATE REFRIGERANT SUCTION LINE WITH 1/2" ELASTOMER FOAM INSULATION UNITS AND SEALS TIGHT.

3.4 INSULATE AIR CONDENSATE DRAIN PIPING WITH 1/2" THICK MOLDED FIBERGLASS INSULATION.

3.5 PROVIDE VAPOR BARRIER INSULATION SECTION TO COVER PARTS OF EQUIPMENT WHICH MUST BE PERIODICALLY MAINTAINED. INCLUDE METAL VESSEL COVERS, FASTENERS, CHILLED WATER PIPING, FRAMES AND ACCESSORIES.

3.6 REPAIR DAMAGED SECTIONS OF EXISTING MECHANICAL INSULATION DAMAGED DURING THIS CONSTRUCTION PERIOD. USE INSULATION OF SAME THICKNESS AS EXISTING INSULATION. INSTALL NEW JACKET LAPPING AND SEAL OVER EXISTING.

3.7 REPLACE DAMAGED INSULATION WHICH CANNOT BE REPAIRED SATISFACTORILY, INCLUDING UNITS WITH VAPOR BARRIER DAMAGE AND MOISTURE SATURATED UNITS.

DIVISION 15200 - PIPING AND VALVES

1.0 GENERAL

1.1 FURNISH ALL MATERIAL, LABOR, EQUIPMENT AND ACCESSORIES AS REQUIRED TO INSTALL COMPLETE PLUMBING AND HVAC PIPING SYSTEMS AS INDICATED ON MECHANICAL DRAWINGS AND IN THESE SPECIFICATIONS.

1.2 INSTALL IN FULL ACCORDANCE WITH LOCAL CODE REQUIREMENTS, OTHER SPECIFICATION SECTION REQUIREMENTS AND MANUFACTURER RECOMMENDATIONS.

2.0 CONNECTIONS TO EQUIPMENT FURNISHED BY OTHERS

2.1 PROVIDE VALVED WATER AND/OR GAS CONNECTION FOR EQUIPMENT FURNISHED BY OTHER CONTRACTORS OR OWNER.

2.2 INCLUDE ACCESSORIES REQUIRED BY CODE, DRAWING OR MANUFACTURER'S INSTRUCTIONS.

2.3 FULLY COORDINATE WITH KITCHEN EQUIPMENT AND LAUNDRY SUPPLIERS AND CONFIRM ALL ROUGH IN REQUIREMENTS PRIOR TO STARTING WORK.

3.0 SANITARY AND STORM SEWERS

3.1 INSTALL SANITARY AND STORM SEWERS, STACKS, VENTS, DRAINS, CLEANOUTS, ETC. AS INDICATED ON THE DRAWINGS.

3.2 SEWERS TO BE PITCHED A MINIMUM OF 1/4" PER FOOT FOR 3' SEAS AND UNDER AND 1/8" PER FOOT FOR 4' SEAS AND LARGER OR TO GRADES INDICATED ON PLANS.

3.3 CHANGES IN DIRECTION AND BRANCH CONNECTIONS SHALL BE MADE WITH APPROVED DRAINAGE FITTINGS COMPATIBLE WITH THE PIPING SYSTEM MATERIAL WHICH IS IDENTIFIED ON THE DRAWINGS.

3.4 ALL FIXTURES AND SANITARY DRAINS SHALL BE VENTED AS INDICATED ON DRAWINGS AND IN ACCORDANCE WITH CODE.

3.5 VENTS ARE TO BE EXTENDED THROUGH ROOF AS INDICATED ON DRAWINGS AND FLASHED WITH A LB. LEAD WITH VENT FLASHING TOP TURNED DOWN TWO (2) INCHES MINIMUM INSIDE PIPE.

3.6 PVC PIPING SHALL NOT BE INSTALLED UNLESS PERMITTED BY CODE AND SHALL NOT BE INSTALLED IN RETURN AIR FLENUMS.

3.7 SANITARY AND VENT MATERIAL SHALL BE AS FOLLOWS:

3.7.0 BELOW GRADE STORM AND SANITARY INSIDE BUILDING.

3.7.1 SERVICE HEIGHT - CAST IRON PIPE ASTM A-174-82 WITH ASTM C-564-70 NEOPRENE COMPRESSION JOINTS OR NO HUB WITH CLAMPS.

3.7.2 PVC-DMV PLASTIC ASTM D-1785 WITH ASTM D-2645 DMV SOLVENT WELD SOCKET FITTINGS.

3.7.3 ABOVE GRADE SANITARY/STORM SEWER AND VENT MATERIAL SHALL BE AS FOLLOWS:

3.7.3.1 NO HUB CAST IRON PIPE CSP1 1-301.78.

3.7.3.2 SCH. 40 GALVANIZED STEEL PIPE ASTM A-120-83 WITH CAST IRON SCREWED FITTINGS ANSI B 16.22 1983.

4.0 DOMESTIC WATER PIPING

4.1 INSTALL DOMESTIC WATER PIPING AS INDICATED ON DRAWINGS. INCLUDE ALL FITTINGS, VALVES, HANGERS, AND OTHER ACCESSORIES INCLUDING WATER METER AND BACKFLOW PREVENTER, EXTEND DOMESTIC WATER PIPING TO ALL FIXTURES AND EQUIPMENT REQUIRED FOR COMPLETE INSTALLATION.

4.2 INCLUDE UNIONS OR OTHER DISCONNECT MEANS, STOPS OR VALVES FOR ISOLATION OF FIXTURES AND EQUIPMENT, VALVES TO BE FULLY COMPATIBLE WITH PIPING FOR SERVICE INTENDED AS MANUFACTURED BY NIBCO, CRANE OR MILWAUKEE.

4.3 HOSE OR DRAIN VALVES AT LOW POINTS WHERE FIXTURES CANNOT BE USED FOR DRAINAGE.

4.4 INSTALL SHOCK ABSORBERS AT EACH QUICK CLOSING VALVE AND WHERE REQUIRED TO PREVENT WATER HAMMER AS MANUFACTURED BY JACOBS OR CHIEF OF DUFF.

4.5 HANGERS ON INSULATED PIPE TO BE MADE OF INSULATION, SEES ACCORDINGLY AND WITH A SUFFICIENT SADDLE TO PROTECT INSULATION AS MANUFACTURED BY GRINNELL OR MICHIGAN.

4.6 DOMESTIC WATER PIPING SHALL BE AS FOLLOWS:

4.6.0 ABOVE GRADE - TYPE 1" HARD COPPER ASTM B-88-832 WITH WROUGHT COPPER FITTINGS TO 8 1/2" AND NON-FERROUS OR ANTIMONY BRASS JOINTS.

4.6.1 BELOW GRADE - TYPE "K" SOFT COPPER BUTT JOINT.

4.6.2 VENT AND VENTILATE ALL WATER PIPING WITH URNINE AS REQUIRED PER AWWA (WATER SUPPLY) DEPARTMENT AND HEALTH DEPARTMENT CODES.

4.7 DO NOT INSTALL COLD WATER PIPING UNDER CONCRETE FLOOR TO BE COVERED BY FINISH. THAT PIPING WILL NOT BECOME EMBEDDED IN THE FLOOR.

4.8 PIPING UNDER CONCRETE FLOOR SHALL BE TYPE "K" SOFT COPPER. COPPER JOINTS OR FITTINGS WILL BE ALLOWED.

4.9 EXTREME CAUTION MUST BE TAKEN SO THAT NO COPPER PIPING AND INSULATION UNDER CONCRETE FLOOR BECOMES CRUSHED, CUT, SPLIT OR DEFORMED DURING THE POURING OF THE FLOOR SLAB.

5.0 FIRE PROTECTION PIPING

5.1 SEE SECTION 15300, FIRE PROTECTION SYSTEMS.

6.0 FIRE STOPPING

6.1 SEE SECTION 15050, BASIC MATERIALS AND METHODS.

DIVISION 15500 - HEAT GENERATION EQUIPMENT

1.0 GENERAL

1.1 FURNISH ALL MATERIAL, LABOR, EQUIPMENT, AND ACCESSORIES AS REQUIRED TO INSTALL EQUIPMENT AS INDICATED ON MECHANICAL DRAWINGS.

1.2 INSTALL IN FULL ACCORDANCE WITH LOCAL CODE REQUIREMENTS, OTHER SPECIFICATION SECTION REQUIREMENTS, AND MANUFACTURER RECOMMENDATIONS.

2.0 EQUIPMENT SCHEDULES

2.1 SEE EQUIPMENT SCHEDULES ON MECHANICAL DRAWINGS.

DIVISION 15600 - REFRIGERATION EQUIPMENT

1.0 GENERAL

1.1 FURNISH ALL MATERIAL, LABOR, EQUIPMENT, AND ACCESSORIES AS REQUIRED TO INSTALL EQUIPMENT AS INDICATED ON MECHANICAL DRAWINGS.

1.2 INSTALL IN FULL ACCORDANCE WITH LOCAL CODE REQUIREMENTS, OTHER SPECIFICATION SECTION REQUIREMENTS, AND MANUFACTURER RECOMMENDATIONS.

2.0 EQUIPMENT SCHEDULES

2.1 SEE EQUIPMENT SCHEDULES ON MECHANICAL DRAWINGS.

DIVISION 15700 - HVAC SYSTEMS AND EQUIPMENT

1.0 GENERAL

1.1 FURNISH ALL EQUIPMENT, MATERIALS, LABOR, TOOLS, ETC., FOR THE COMPLETE HVAC SYSTEM, INSTALL, COMPLETE AND PLACE IN OPERATION.

1.2 CONTRACTORS BIDDING THIS PROJECT SHALL VISIT THIS SITE AND FAMILIARIZE THEMSELVES WITH ALL CONDITIONS AFFECTING THEIR WORK. SUBMISSION OF A BID ON THIS PROJECT SHALL BE CONSIDERED AS HAVING SUCH KNOWLEDGE.

1.3 VERIFY EXACT CONDITIONS IN FIELD AND COORDINATE WITH THESE DRAWINGS AND OTHER TRADES BEFORE BEGINNING NEW WORK.

1.4 DETERMINE EXACT LOCATIONS FOR ALL NEW AND RELOCATED EQUIPMENT, PIPING, CONDUNITS AND DUCTWORK IN FIELD.

1.5 COORDINATE WORK OF THIS CONTRACT WITH OTHER TRADES. CONFLICTS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ARCHITECT. ARCHITECTS DECISION TO CONFLICTS SHALL BE FINAL.

1.6 ANY DISCREPANCIES BETWEEN WHAT IS SHOWN ON DRAWINGS OR SPECIFIED AND THE ACTUAL CONDITIONS IN THE FIELD SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ARCHITECT BEFORE PROCEEDING.

1.7 BUILDING AND SURFACE DAMAGED DURING INSTALLATION SHALL BE REPAIRED, REPLACED, AND/OR RESTORED TO ORIGINAL CONDITION AFTER COMPLETION OF WORK AND BEFORE ACCEPTANCE BY OWNER.

2.0 EQUIPMENT

2.1 MECHANICAL CONTRACTOR TO FURNISH ALL HVAC EQUIPMENT INDICATED AND/OR SCHEDULED ON THE DRAWINGS COMPLETE WITH BASES, ISOLATORS, SUPPORTS AND OTHER REQUIRED ACCESSORIES.

2.2 INSTALL COMPLETE AND PLACE IN PROPER OPERATION PER MANUFACTURER'S RECOMMENDATIONS. LUBRICATE AND ADJUST AS REQUIRED. FURNISH AND INSTALL CLEAN SET OF FILTERS PRIOR TO BALANCING.

2.3 EQUIPMENT TO BE MADE AND MODEL AS SCHEDULED UNLESS ALTERNATE EQUIPMENT OF EQUIVALENT QUALITY AND PERFORMANCE IS SUBMITTED AS A SUBSTITUTION PRIOR TO BIDDING. ALL SUBSTITUTIONS ARE SUBJECT TO ACCEPTANCE WITHOUT QUALIFICATION BY OWNER, ENGINEER AND ARCHITECT.

2.4 CONTRACTOR SHALL PERFORM ROUGH SERVICE INSPECTION OF EXISTING HVAC EQUIPMENT TO REPAIR, LUBRICATE, SERVICING, SERVICE FILTERS, CLEAN, AND REPLACE FAN BELTS AND INSTALL NEW FILTERS IN EACH R-40 UNIT.

2.5 CONTRACTOR SHALL FIELD VERIFY REFRIGERANT CHARGE TO ADD REFRIGERANT IF THE CHARGE IS LESS THAN MANUFACTURERS RECOMMENDATION.

2.6 SUBMIT SERVICE REPORT TO TENANT INDICATING CONDITIONS OF WORK AND REPORT TO SERVICE ALL MALFUNCTIONING OR DAMAGED ITEMS. COST SHALL INCLUDE PARTS AND LABOR. EQUIPMENT SHALL BE PLACED IN FULL OPERATION WITH CONTROLS OPERATING UPON COMPLETION OF PROJECT.

3.0 COOLING COIL CONDENSATE DRAINS

3.1 PROVIDE EACH ROOM WITH ONE (1) FOUR (4) INCH DEEP TRAPPED CONDENSATE DRAIN WITH A MINIMUM OF SCHEDULE 40 PVC. TERMINATE OVER CONCRETE SPLASH ON ROOF AS REQUIRED PER LOCAL CODE.

4.0 EQUIPMENT SCHEDULES

4.1 SEE EQUIPMENT SCHEDULES ON MECHANICAL DRAWINGS.

DIVISION 15800 - AIR DISTRIBUTION SYSTEMS

1.0 GENERAL

1.1 FURNISH ALL MATERIALS, LABOR, EQUIPMENT AND ACCESSORIES REQUIRED TO INSTALL COMPLETE AIR DISTRIBUTION SYSTEMS.

1.2 CONTRACTORS BIDDING THIS PROJECT SHALL VISIT THIS SITE AND FAMILIARIZE THEMSELVES WITH ALL CONDITIONS AFFECTING THEIR WORK. SUBMISSION OF A BID ON THIS PROJECT SHALL BE CONSIDERED AS HAVING SUCH KNOWLEDGE.

1.3 VERIFY EXACT CONDITIONS IN FIELD AND COORDINATE WITH THESE DRAWINGS AND OTHER TRADES BEFORE BEGINNING NEW WORK.

1.4 DETERMINE EXACT LOCATIONS FOR ALL NEW AND RELOCATED DUCTWORK AND ACCESSORIES IN FIELD.

1.5 COORDINATE WORK OF THIS CONTRACT WITH OTHER TRADES.

1.6 ANY DISCREPANCIES BETWEEN WHAT IS SHOWN ON DRAWINGS OR SPECIFIED AND THE ACTUAL CONDITIONS IN THE FIELD SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ARCHITECT BEFORE PROCEEDING.

1.7 BUILDING AND SURFACE DAMAGED DURING INSTALLATION SHALL BE REPAIRED, REPLACED, AND/OR RESTORED TO ORIGINAL CONDITION AFTER COMPLETION OF WORK AND BEFORE ACCEPTANCE BY OWNER.

1.8 PROVIDE ACCESS PANELS AT ALL GYPSUM BOARD CEILING WHERE MECHANICAL OR PLUMBING ARE CONCEALED ABOVE.

2.0 DUCTWORK

2.1 FABRICATE AND ERECT ALL DUCTWORK TO ASHRAE AND SMACNA STANDARDS FROM NO. 1 GALVANIZED STEEL, COMPLY WITH NFPA 90A REQUIREMENTS.

2.2 DUCTWORK SHALL BE SMACNA LOW PRESSURE CONSTRUCTION 2" STATIC PRESSURE RATING WITH SEAL CLASS B SEAMS AND JOINTS.

2.3 INCLUDE ALL ACOUSTIC, AIRFLOW SHAPED PERFORATED ALUMINUM TURNING VANES