

| LEGEND | |
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| | GOLD WATER PIPE |
| | HOT WATER PIPE |
| | HOT WATER RETURN PIPE |
| | SANITARY PIPE |
| | VENT PIPE |
| | NATURAL GAS PIPE |
| | GREASE WASTE PIPE |
| | FIRE SPRINKLER PIPE |
| | STORM PIPE |
| | EMERGENCY STORM PIPE |
| | INDIRECT WASTE PIPE |
| | PUMPED DISCHARGE |
| | FILTERED WATER PIPE |
| | PIPE UP / PIPE DOWN |
| | PIPE TEE FROM TOP / TEE FROM BOTTOM |
| | PIPE CAP / PIPE CONTINUATION |
| | DIRECTIONAL FLOW ARROW |
| | BALL VALVE / CHECK VALVE |
| | MIXING VALVE / PRESSURE REDUCING VALVE |
| | BACKFLOW PREVENTER ASSEMBLY |
| | WALL HYDRANT / HOSE BIBB |
| | FLOOR DRAIN / FLOOR SINK |
| | WATER HAMMER ARRESTOR |
| | GAS COCK / GAS SOLENOID VALVE |
| | P-TRAP |
| | HUB DRAIN |
| | TRAP PRIMER |
| | FLOOR CLEANOUT / GRADE CLEANOUT |
| | VENT THROUGH ROOF |
| | PIPE CLEANOUT / WALL CLEANOUT |

| ABBREVIATIONS | | | |
|---------------|----------------------------|--------|----------------------------|
| AAV | AIR ADMITTANCE VALVE | IMB | ICE MACHINE BOX |
| AVC | ABOVE CEILING | IE | INVERT ELEVATION |
| AF | ABOVE FLOOR | IWH | INSTANTANEOUS WATER HEATER |
| AF, AFG | ABOVE FINISHED FLOOR/GRADE | L, LAV | LAVATORY |
| B/F, B/G | BELOW FLOOR/GRADE | MBH | 1000 BTU/Hr |
| BRP | BACKFLOW PREVENTER | MS | MOP SINK |
| CD | CONDENSATE DRAIN | MV | MIXING VALVE |
| CONT | CONTINUATION | OH | OVERHEAD |
| CW | COLD WATER | G | NATURAL GAS |
| DN | DOWN | PD | PUMPED DISCHARGE |
| ET | EXPANSION TANK | PRV | PRESSURE REDUCING VALVE |
| EW | ELECTRIC WATER COOLER | RP | RECIRCULATION PUMP |
| ex. | EXISTING | S, SAN | SANITARY |
| FCO | FLOOR CLEANOUT | SH | SHOWER |
| FD | FLOOR DRAIN | SK | SINK |
| FHB | FREEZEPROOF HOSE BIBB | TP | TRAP PRIMER |
| FS | FLOOR SINK | TP | TYPICAL |
| FRH | FREEZEPROOF ROOF HYDRANT | UR | URINAL |
| FWH | FREEZEPROOF WALL HYDRANT | V | VENT |
| GCO | GRADE CLEANOUT | VTR | VENT THROUGH ROOF |
| GI | GREASE INTERCEPTOR | WC | WATER CLOSET |
| HB | HOSE BIBB | W.C. | WATER COLUMN |
| HD | HUB DRAIN | WCO | WALL CLEANOUT |
| HW | HOT WATER | WHA | WATER HAMMER ARRESTER |
| HW | HOT WATER RETURN | WMB | WASHING MACHINE BOX |

| SPECIFICATIONS | |
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| <p>GENERAL</p> <p>ALL WORK SHALL COMPLY WITH ALL STATE, CITY AND LOCAL CODES, RULES AND REGULATIONS. CONTRACTOR SHALL SECURE ALL REQUIRED PERMITS AND INSPECTIONS ASSOCIATED WITH THIS WORK, AND SHALL PAY ALL COSTS AND FEES INVOLVED.</p> <p>ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE BEST RECOGNIZED PRACTICE IN THE FIELD CONCERNED. MANUFACTURED ITEMS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS PRINTED DIRECTIONS, SPECIFICATIONS AND RECOMMENDATIONS.</p> <p>CONTRACTOR SHALL REVIEW ALL CONTRACT DOCUMENTS AND SHALL BE FAMILIAR WITH THE SCOPE AND REQUIREMENTS OF THIS PROJECT. ANY DISCREPANCIES OR LACK OF CLARITY IN THE DOCUMENTS SHALL BE IDENTIFIED TO THE ARCHITECT OR ENGINEER PRIOR TO THE SUBMISSION OF PRICING BIDS. WITH A SUBMITTED BID, CONTRACTOR IS ACCEPTING THESE DOCUMENTS AS SUFFICIENT DEFINITION OF THE SCOPE OF WORK, AND ANY ADDITIONAL COSTS BASED ON UNCLEARITY OF CONTRACT DOCUMENTS WILL NOT BE CONSIDERED.</p> <p>CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND LOCATIONS FOR EQUIPMENT INSTALLATION PRIOR TO THE SUBMITTAL OF SHOP DRAWINGS. ALL EQUIPMENT AND DEVICES SHALL BE INSTALLED SUCH THAT THEY ARE EASILY ACCESSIBLE AND SERVICEABLE. THIS EQUIPMENT INCLUDES, BUT IS NOT LIMITED TO: PLUMBING FIXTURES, WATER HEATERS, EXPANSION TANKS, PUMPS, BACKFLOW PREVENTERS, VALVES, MIXING VALVES, THERMOMETERS, GAUGES, TRAP PRIMERS AND CLEANOUTS.</p> <p>THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE FULL SET OF CONSTRUCTION DOCUMENTS, INCLUDING ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL & ELECTRICAL DRAWINGS (AS APPLICABLE) TO ENSURE ALL PLUMBING WORK IS COORDINATED WITH PHYSICAL CONDITIONS AND ALL OTHER TRADES.</p> <p>THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE ARCHITECTURAL DRAWINGS TO ENSURE THERE IS ADEQUATE WALL THICKNESS SUCH THAT ALL PIPING, FIXTURE CARRIERS, WALL CLEANOUTS, WALL BOXES, WALL HYDRANTS AND ACCESS PANELS WILL FIT IN THE WALL SPACE. CONTRACTOR SHALL NOTIFY THE ARCHITECT IF WALL SPACE IS INADEQUATE PRIOR TO COMMENCING WORK.</p> <p>THE CONTRACTOR SHALL OBTAIN EXACT WALL, FIXTURE, AND LAYOUT DIMENSIONS FROM THE ARCHITECTURAL DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ROUGH-IN AND INSTALLATION DRAWINGS FOR ALL PLUMBING FIXTURES, KITCHEN EQUIPMENT AND OWNER FURNISHED EQUIPMENT (AS APPLICABLE), AND SHALL COORDINATE THE PLUMBING INSTALLATION PRIOR TO COMMENCING THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND INSTALLING ALL NECESSARY VALVES, CONNECTIONS, TRAPS, ACCESS PANELS, UNIONS, ESCUTCHEONS, WATER HAMMER ARRESTORS, VACUUM BREAKERS, RELIEF VALVES, PIPE INSULATION, AND EQUIPMENT SPECIALLY DESIGNED AS REQUIRED TO FACILITATE COMPLETE AND OPERATIONAL CONDITIONS WHICH ARE IN STRICT COMPLIANCE WITH THE MANUFACTURERS INSTALLATION INSTRUCTIONS.</p> <p>THESE DRAWINGS ARE DIAGRAMMATIC AND DO NOT REFLECT ALL POSSIBLE PHYSICAL CONDITIONS. REFER TO ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS AND EXACT LOCATIONS OF EQUIPMENT AND FIXTURES. PROVIDE NECESSARY PIPING OFFSETS TO COORDINATE WITH THE BUILDING STRUCTURE, WORK OF OTHER TRADES, AND CONNECTION TO SITE UTILITIES (AS APPLICABLE).</p> <p>COORDINATE THE ELECTRICAL REQUIREMENTS AND CHARACTERISTICS OF ALL PLUMBING EQUIPMENT WITH THE ELECTRICAL CONTRACTOR PRIOR TO ISSUING SUBMITTALS OR PURCHASING EQUIPMENT.</p> <p>UNLESS NOTED OTHERWISE, ALL DRAINAGE PIPING SHALL BE SLOPED AT A MINIMUM OF 1/8" PER FOOT. 2" SANITARY PIPING AND ALL GREASE WASTE PIPING SHALL BE SLOPED AT 1/4" PER FOOT.</p> <p>DOMESTIC WATER PIPING SHALL BE PURGED OF DELETERIOUS MATTER AND DISINFECTED PRIOR TO UTILIZATION. PIPING TO BE FLUSHED AND STERILIZED IN ACCORDANCE WITH IPC 610.1 AND ALL APPLICABLE LOCAL AND STATE HEALTH DEPARTMENT STANDARDS.</p> <p>ALL DOMESTIC WATER PIPING SUBJECT TO FREEZING SHALL BE INSULATED AND PROVIDED WITH HEAT TRACE. CONDENSATE PIPING SUBJECT TO FREEZING WITHIN WALK-IN FREEZERS SHALL BE INSULATED AND PROVIDED WITH HEAT TRACE. PIPING INSTALLED IN EXTERIOR WALLS SHALL BE WRAPPED IN PIPE INSULATION AND BE LOCATED ON THE INTERIOR SIDE OF THE BUILDING INSULATION.</p> <p>IN CONCEALED LOCATIONS WHERE PIPING, OTHER THAN CAST-IRON OR GALVANIZED STEEL, IS INSTALLED THROUGH HOLES OR NOTCHES IN STUDS, JOISTS, OR SIMILAR MEMBERS LESS THAN 1/2" FROM THE NEAREST EDGE OF MEMBER, PIPE SHALL BE PROTECTED BY STEEL SHIELD PLATES IN ACCORDANCE WITH IPC 305.6.</p> <p>PIPE PENETRATIONS THROUGH FIRE RATED WALLS OR FLOORS SHALL HAVE EQUIVALENTLY RATED SLEEVES AND SHALL BE SEALED AND FIRE CAULKED WITH A U.L. LISTED FIRE STOPPING SYSTEM INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS LISTED DETAILS AND SPECIFICATIONS.</p> <p>THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE REQUIREMENTS OF THE COUNTY HEALTH DEPARTMENT AND OTHER LOCAL AUTHORITIES HAVING JURISDICTION REGARDING CROSS CONNECTION CONTROL OR OBTAINING A FOOD SERVICE PERMIT (AS APPLICABLE). REPORT ANY OBSERVED DISCREPANCIES TO THE ARCHITECT OR ENGINEER PRIOR TO COMMENCING WITH THE WORK.</p> <p>CONTRACTOR SHALL CONFIRM PLUMBING FIXTURE FINISHES WITH THE ARCHITECTURAL SCHEDULES & DETAILS (AS APPLICABLE).</p> <p>SUBMITTALS</p> <p>FURNISH SHOP DRAWINGS FOR MANUFACTURED PRODUCTS. ALL ITEMS SHALL BE CLEARLY MARKED TO MATCH ELECTRICAL MARKS ON THE PLUMBING DRAWINGS. ALL OPTIONS MUST BE CLEARLY MARKED ON THE SUBMITTAL SHEET. A MODEL NUMBER LISTING ON A COVER SHEET IS NOT AN ACCEPTABLE SUBSTITUTE FOR MARKING THE ACTUAL SUBMITTAL SHEET. ELECTRICAL DATA FOR POWERED EQUIPMENT MUST BE INDICATED ON THE SUBMITTAL SHEET FOR THAT ITEM.</p> <p>ALL ITEMS MUST BE SUBMITTED IN ONE PACKAGE AT THE SAME TIME, IN ELECTRONIC PDF FORMAT. SEPARATE SUBMITTALS FOR FIXTURES AND EQUIPMENT IS NOT ACCEPTABLE.</p> <p>SUBMITTAL REVIEW IS CONSIDERED A GENERAL ACCEPTANCE OF THE BASIC APPLICABILITY OF THE EQUIPMENT. CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION AND/OR ALTERNATE ARRANGEMENT OF THE EQUIPMENT WITHIN A GIVEN SPACE. WHEN SUBSTITUTED EQUIPMENT IS INSTALLED, CONTRACTOR SHALL BE RESPONSIBLE FOR ANY COORDINATION OR ADDITIONAL COST BROUGHT ON BY THE USE OF THIS EQUIPMENT.</p> <p>HANGERS AND SUPPORTS</p> <p>HANGERS SHALL BE COMPLETE WITH RODS AND SUPPORTS PROPORTIONED TO THE SIZE OF PIPE TO BE SUPPORTED, IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.</p> <p>SIZE HANGERS FOR INSULATED PIPING TO BEAR ON OUTSIDE OF INSULATION. PROVIDE INSULATION PROTECTORS AT HANGERS BEARING ON THE OUTSIDE OF INSULATION. PROVIDE A RIGID INSERT OR RIGID INSULATION AT EACH INSULATION PROTECTOR.</p> <p>WHERE SEVERAL PIPES 3/4" AND SMALLER RUN PARALLEL AND IN THE SAME PLANE, THEY MAY BE SUPPORTED ON GANG OR MULTIPLE HANGERS. LARGER PIPING SHALL BE INDEPENDENTLY HUNG, RUN PARALLEL AND BE EQUALLY SPACED.</p> <p>PIPES SHALL BE SUPPORTED IN ACCORDANCE WITH IPC SECTION 308, AND SPACING OF HANGERS SHALL NOT EXCEED THE LIMITS SET FORTH IN TABLE 308.5. PIPES SHALL BE SUPPORTED WITHIN 1'-0" OF EACH ELBOW.</p> <p>VERTICAL PIPE SUBJECT TO MOVEMENT SHALL BE SUPPORTED FROM THE WALL BY MEANS OF A PIPE CLAMP.</p> <p>SUPPORT DOMESTIC WATER PIPING IN SPACES BEHIND PLUMBING FIXTURES BY BRACKETS AND U-BOLTS SECURED TO WASTE AND VENT STACKS. SIZE U-BOLTS TO BEAR ON THE PIPING.</p> <p>AFTER HANGER RODS ARE INSTALLED IN FINISHED CONCRETE CEILING, FILL THE REMAINING OPENING WITH CEMENT SO THAT NO HOLE SHOWS AT THE CEILING.</p> <p>WHERE COPPER PIPING IS USED, NONFERROUS METAL SUPPORT(S) OR PROPER ISOLATION BETWEEN DISSIMILAR MATERIALS SHALL BE PROVIDED.</p> <p>PIPE HANGERS AND SUPPORTS SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH RECOMMENDATIONS SET FORTH IN MANUFACTURERS STANDARDIZATION SOCIETY STANDARD PRACTICES NO. SP-69 AND SP-58.</p> <p>SLEEVES</p> <p>SLEEVES SHALL BE PROVIDED WHERE PIPES PASS THROUGH WALLS, FLOORS AND ROOFS.</p> <p>PROVIDE STANDARD WEIGHT STEEL SLEEVES IN CONCRETE AND MASONRY CONSTRUCTION, PROVIDE 26GA GALVANIZED SHEET METAL SLEEVES IN INTERIOR DRYWALL CONSTRUCTION. SLEEVES SHALL BE THE FULL THICKNESS OF WALLS AND SHALL ALLOW FOR THE FULL THICKNESS OF PIPE INSULATION, WHERE APPLICABLE.</p> <p>SLEEVES MAY BE OMITTED WHEN OPENINGS ARE CORE DRILLED FOR CONCEALED VERTICAL AND HORIZONTAL PIPING. SLEEVES ARE NOT REQUIRED AT INDIVIDUAL PLUMBING FIXTURES OR IN CONCRETE FLOOR SLABS ON GRADE, UNLESS OTHERWISE NOTED.</p> <p>SLEEVES FOR ALL PIPING PENETRATING FIRE RATED WALLS AND FLOORS SHALL BE PROVIDED WITH 3M PIPE BARRIER NO. CP-25 FIRE PROOFING CAULKING, OR EQUAL, IN ANNULAR SPACE BETWEEN SLEEVE AND PIPING. CONTRACTOR SHALL VERIFY THE RATING OF THE WALL AND CONFIRM THE PENETRATION PROTECTION PROVIDED MEETS THAT RATING.</p> <p>PENETRATIONS THROUGH OUTSIDE WALLS SHALL BE WATERTIGHT. CAULK BETWEEN PLUMBING PIPE AND SLEEVE. PACK WITH FIBERGLASS AND CAULK, 1" DEEP AT EACH FACE WITH NON-HARDENING SEALANT BETWEEN PIPE AND SLEEVE.</p> | |

| SPECIFICATIONS | |
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| <p>WASTE AND VENT PIPING SYSTEMS AND ACCESSORIES</p> <p>SANITARY PIPING SHALL BE PVC SCHEDULE 40 SOLID WALL PIPE AND DWV FITTING SYSTEM.</p> <p>PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 12454 PER ASTM D-1784 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM D-1785 AND ASTM D-2565. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM D-2565. FABRICATED FITTINGS SHALL CONFORM TO ASTM F-1866. SOLVENT CEMENTS SHALL CONFORM TO ASTM D-2564. PRIMER SHALL CONFORM TO ASTM F-656. BURIED PIPE SHALL CONFORM TO ASTM D-2321.</p> <p>WASTE AND VENT PIPING SHALL BE TESTED IN ACCORDANCE WITH THE GOVERNING CODES. AT A MINIMUM, WASTE PIPING SHALL BE TESTED WITH AT LEAST 10 FOOT OF WATER HEAD PRESSURE APPLIED.</p> <p>ALL VENTS THROUGH ROOF SHALL BE LOCATED AT LEAST 10'-0" AWAY FROM ANY AIR INTAKE, EVAPORATIVE COOLER, OR ANY OTHER DEVICE THAT WOULD DRAW AIR FROM THE VENT. FLASH AROUND ALL PIPES PENETRATING THROUGH ROOF WITH STANDARD MANUFACTURED FLASHINGS. FLASHING SHALL BE SHEET METAL WITH RUBBER GASKETS AND SHALL EXTEND INTO ROOFING AND UP PIPE DISTANCES IN ACCORDANCE WITH THE LOCAL CODE.</p> <p>NO DOUBLE COMBINATION FITTINGS MAY BE UTILIZED IN THE HORIZONTAL.</p> <p>WHERE TWO HORIZONTAL PIPES (BACK-TO-BACK WATER CLOSETS OR TWO SANITARY BRANCHES) COMBINE IN THE VERTICAL, A DOUBLE COMBINATION WYE EIGHTH BEND FITTING SHALL BE INSTALLED. DOUBLE SANITARY TEE OR SANITARY CROSS IS NOT ACCEPTABLE.</p> <p>WHERE DRAWINGS REQUIRE CONNECTION TO EXISTING SANITARY SEWER PIPING IN BUILDING, IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD DETERMINE EXACT LOCATION, DEPTH AND DIRECTION OF FLOW PRIOR TO COMMENCING WORK. CONTRACTOR SHALL ALERT ARCHITECT/ENGINEER IF THERE IS A POTENTIAL ISSUE MAINTAINING PROPER SLOPE IN CONNECTING TO EXISTING, OR IF THERE IS A MORE DIRECT CONNECTION POSSIBLE. CONTRACTOR SHALL CONFIRM THAT ANY EXISTING PIPING TO BE REVISED IS CLEAN, FREE OF DEFECTS, ADEQUATELY SLOPED (W/IT MINIMUM) AND THAT THERE ARE NO DIPS THAT COULD HOLD WATER. PROVIDE CAMERA SCOPING TO DOCUMENT THIS INFORMATION. CONTRACTOR SHALL ALERT ARCHITECT/ENGINEER OF ANY DEFICIENCIES.</p> <p>DOMESTIC WATER SYSTEMS AND ACCESSORIES</p> <p>WATER PIPING ABOVE SLAB: TYPE L HARD DRAWN COPPER TUBING, ASTM B88, WROUGHT SOLDER JOINTS, ANSI B16.22.</p> <p>WATER PIPING BELOW SLAB: TYPE K SOFT DRAWN COPPER TUBING, WITH NO JOINTS BELOW SLAB, ASTM B88.</p> <p>ALL DOMESTIC HOT WATER PIPING SHALL HAVE A MINIMUM PRESSURE RATING OF 100PSI AT 180°F.</p> <p>DOMESTIC WATER PIPING SHALL BE TESTED IN ACCORDANCE WITH ALL GOVERNING CODES. PIPING SHALL BE PURGED OF DELETERIOUS MATTER AND DISINFECTED PRIOR TO UTILIZATION. PIPING TO BE FLUSHED AND STERILIZED IN ACCORDANCE WITH IPC 610.1 AND ALL APPLICABLE LOCAL AND STATE HEALTH DEPARTMENT STANDARDS.</p> <p>BALL VALVES SHALL BE TWO-PIECE BRONZE BODY, LARGE PORT WITH SOLID, SMOOTH BORE CHROME PLATED BRASS BALL. SEATS SHALL BE REINFORCED TPE WITH TEFLON PACKING RING AND THREADED ADJUSTABLE PACKING NUT. PROVIDE STEM EXTENSION AS NEEDED TO PROVIDE HANDLE ON OUTSIDE OF PIPE INSULATION. VALVES SHALL BE APOLLO 70 OR EQUAL.</p> <p>BACKFLOW PREVENTERS SHALL BE INSTALLED IN ACCESSIBLE ISOLATION VALVES FOR EASE OF TESTING AND SERVICING. FOR BACKFLOW PREVENTERS WITH VENT CONNECTIONS, ROUTE VENT LINE TO NEAREST DRAIN AND DISCHARGE WITH AIR GAP. BACKFLOW PREVENTERS SHALL BE TESTED IN ACCORDANCE WITH IPC 312.10.2. CONTRACTOR SHALL PROVIDE CERTIFICATIONS THAT STATE DEVICES HAVE BEEN TESTED AND APPROVED.</p> <p>THERMOMETERS SHALL BE 9" ADJUSTABLE ANGLE, 30"-180°F RANGE (TERCIE BV9 OR EQUAL). PRESSURE GAUGES SHALL BE 4 1/2" DIAL SIZE, 0-1 GPM/SI (TERCIE G00CB OR EQUAL).</p> <p>CONTRACTOR SHALL FIELD VERIFY INCOMING DOMESTIC WATER PRESSURE. WHERE PRESSURE EXCEEDS 80PSI, PROVIDE PRESSURE REGULATING VALVE (WATTS LF223) AND UPSTREAM STRAINER (WATTS LSF777).</p> <p>CONTRACTOR SHALL FIELD COORDINATE LOCATION OF ACCESSIBLE ISOLATION VALVES ON DOMESTIC HOT & COLD WATER SUPPLIES TO FIXTURES OR GROUPS OF FIXTURES SUCH THAT THEY MAY BE SHUT OFF FOR SERVICING. SERVICE AND HOSE BIBB VALVES SHALL BE IDENTIFIED. ALL OTHER VALVES INSTALLED IN LOCATIONS THAT ARE NOT ADJACENT TO THE FIXTURE(S) SHALL BE IDENTIFIED, INDICATING THE FIXTURE(S) SERVED.</p> <p>RETURN AIR FLENUMS</p> <p>ALL EXPOSED MATERIALS WITHIN RETURN AIR FLENUMS SHALL BE NONCOMBUSTIBLE OR HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50, AS DETERMINED IN ACCORDANCE WITH ASTM E84UL723. COPPER AND CAST IRON PIPING IS APPROVED. CPVC WATER PIPING SHALL COMPLY WITH THE ABOVE CRITERIA (SPRINKLER VERTUPT OR EQUAL). THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL RETURN AIR FLENUM LOCATIONS WITH THE MECHANICAL CONTRACTOR.</p> <p>INSULATION</p> <p>INSULATE ALL DOMESTIC HOT WATER AND HOT WATER RECIRCULATION PIPING IN ACCORDANCE WITH IECC TABLE C403.2.10. PIPE UP TO 1/2": 1" THICK INSULATION. PIPE 1/2" OR LARGER: 1/2" THICK INSULATION</p> <p>INSULATE ALL HORIZONTAL COLD WATER PIPING LOCATED ABOVE CEILING, VERTICAL PIPING LOCATED IN AN EXTERIOR WALL, EXPOSED PIPING (I.E. MECH ROOMS). PIPE UP TO 1 1/2" THICK. PIPING 1/2" AND OVER: 1" THICK INSULATION.</p> <p>ALL JOINTS SHALL BE SEALED WITH MATCHING VAPOR BARRIER TAPE.</p> <p>INSULATION SHALL HAVE A K-FACTOR (AVERAGE THERMAL CONDUCTIVITY) NOT TO EXCEED 0.27 BTU-IN/Hr x SQFT x °F.</p> <p>PROTECTION OF PIPING</p> <p>PIPING PASSING UNDER FOOTINGS OR THROUGH FOUNDATION WALLS SHALL BE PROVIDED WITH A SLEEVE TWICE THE DIAMETER OF THE PIPE. OPEN ENDS OF SLEEVES SHALL BE SEALED. PIPING PASSING THROUGH CONCRETE OR CINDER WALLS AND FLOORS OR OTHER CORROSIVE MATERIAL SHALL BE PROTECTED IN ACCORDANCE WITH IPC 305.1. ALL PIPING INSTALLED THROUGH HOLES OR NOTCHES IN STUDS, JOISTS, RAFTERS OR SIMILAR MEMBERS SHALL BE PROTECTED BY STEEL SHIELD PLATES IN ACCORDANCE WITH IPC 305.6. VERTICAL STACKS IN WOOD CONSTRUCTION SHALL BE PROTECTED FROM BUILDING SETTLING WITH COMPRESSION/EXPANSION FITTINGS AND PIPE CLAMPS INSTALLED PER MANUFACTURERS RECOMMENDATIONS (FERNCO XJ SERIES OR EQUAL).</p> <p>NATURAL GAS SYSTEMS AND ACCESSORIES</p> <p>IT IS THE CONTRACTORS RESPONSIBILITY TO CONTACT THE LOCAL GAS UTILITY PROVIDER TO CONFIRM THE AVAILABILITY OF THE INDICATED DESIGN DELIVERY PRESSURE PRIOR TO COMMENCING WORK.</p> <p>ALL GAS PIPING SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE INTERNATIONAL FUEL GAS CODE AND NFPA 54.</p> <p>GAS PIPING SHALL BE SCHEDULE 40 BLACK STEEL (ASTM A53/A53M). FITTINGS SHALL BE ASME B16.3 MALLEABLE IRON OR ASTM A234/A234M WROUGHT STEEL WELDING TYPE. JOINTS SHALL BE THREADED OR WELDED TO ASME B31.1.</p> <p>SHUTOFF VALVES SHALL BE PROVIDED AND LOCATED IN PLACES SO AS TO PROVIDE ACCESS FOR OPERATION AND SHALL BE INSTALLED SO AS TO BE PROTECTED FROM DAMAGE.</p> <p>ALL GAS FIRED APPLIANCES ARE PROVIDED WITH A GAS PRESSURE OF 7" W.C. AT FINAL EQUIPMENT CONNECTION. IF 7" W.C. EXCEEDS EQUIPMENTS SPECIFIC INLET PRESSURE REQUIREMENT, CONTRACTOR SHALL PROVIDE APPROPRIATE PRESSURE REGULATING VALVE.</p> <p>GAS PIPING ON ROOF SURFACES SHALL BE ELEVATED NO LESS THAN 3 1/2" INCHES ABOVE ROOF SURFACE AND SHALL BE CLAMPED TO RUBBER CHANNEL SUPPORTS (MIFAB C10 SERIES OR EQUAL). PROVIDE SUPPORT AT EVERY ELBOW. THE MAXIMUM SPACING OF SUPPORTS SHALL BE: 1/2" PIPE: 5'-0", 3/4" TO 1/2": 4'-0", 1/2" AND LARGER: 12'-0". VERTICAL PIPING SHALL BE SUPPORTED AT BASE, TOP AND AT 10' INTERVALS (MINIMUM).</p> <p>ALL EXTERIOR GAS PIPING ON ROOF SHALL BE PRIMED AND PAINTED 0.5 H.A. YELLOW. GAS PIPING RUNNING ON EXTERIOR WALLS SHALL BE PRIMED AND PAINTED TO MATCH BUILDING WALL.</p> <p>EXPOSED GAS PIPING SHALL BE IDENTIFIED BY A YELLOW LABEL MARKED 'GAS' IN BLACK LETTERS. ALL PIPING GREATER THAN 7" W.C. SERVICE PRESSURE SHALL BE IDENTIFIED BY A YELLOW LABEL WITH BLACK LETTERS INDICATING THE PIPING SYSTEM PRESSURE. THE SYSTEM SHALL BE MARKED AT THE BEGINNING, ALL ENDS AND AT INTERVALS NOT EXCEEDING 5 FEET ALONG ITS EXPOSED LENGTH.</p> <p>BALL VALVES: THREE PIECE BODY, FULL PORT, CHROME PLATED BALL, BLOWOUT PROOF STEM, TPE SEATS, UL LISTED FOR FLAMMABLE LIQUIDS, 600 PSI WOG, THREADED ENDS.</p> <p>PRESSURE REGULATOR VALVE: SINGLE STAGE AND SUITABLE FOR NATURAL GAS, STEEL JACKET AND CORROSION RESISTANT COMPONENTS, THREADED FOR REGULATORS NPS 2 AND SMALLER. PROVIDE SHUTOFF VALVE IMMEDIATELY AHEAD OF REGULATOR, AND INSTALL TEST PORTS ON EITHER SIDE REGULATOR, WITH UPSTREAM TEST PORT DOWNSTREAM OF SHUTOFF VALVE. REGULATORS SHALL BE INSTALLED PER IFGC SECTION 410. FOR 2PSI INLET, PROVIDE MAXITROL 325-L SERIES. PROVIDE VENT PROTECTOR FOR EXTERIOR APPLICATIONS. FOR INTERIOR APPLICATIONS, VENT SHALL BE PIPED TO THE EXTERIOR WITH TURNDOWN AND SCREEN PROTECTOR.</p> <p>SHUTOFF VALVES SHALL BE PROVIDED IN ACCORDANCE WITH IFGC 409. INSTALL MANUAL GAS SHUTOFF VALVE FOR EACH GAS APPLIANCE AHEAD OF CORRUGATED STAINLESS STEEL TUBING OR COPPER CONNECTOR. SHUTOFF SHALL BE WITHIN 6' OF APPLIANCE.</p> <p>INSTALL UNIONS IN PIPES NPS 2 AND SMALLER, ADJACENT TO EACH VALVE, AT FINAL CONNECTION TO EACH PIECE OF EQUIPMENT.</p> <p>ALL NATURAL GAS PIPING INSTALLED BENEATH THE BUILDING SLAB SHALL BE ENCASED IN WROUGHT IRON CONDUIT. PIPING SHALL BE PROTECTED AND INSTALLED ACCORDING TO THE INTERNATIONAL FUEL GAS CODE SECTION 404.14.</p> | |



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