

# SPECIFICATIONS

### GENERAL

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.

ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE FIELD CONCERNED. MANUFACTURED ITEMS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S PRINTED DIRECTIONS, SPECIFICATIONS AND RECOMMENDATIONS.

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.

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 SERVICABLE. 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.

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.

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.

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 SPECIALTY DEVICES AS REQUIRED TO FACILITATE COMPLETE AND OPERATIONAL CONDITIONS WHICH ARE IN STRICT COMPLIANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

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).

COORDINATE THE ELECTRICAL REQUIREMENTS AND CHARACTERISTICS OF ALL PLUMBING EQUIPMENT WITH THE ELECTRICAL CONTRACTOR PRIOR TO ISSUING SUBMITTALS OR PURCHASING EQUIPMENT.

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.

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.

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.

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 1/2" FROM THE NEAREST EDGE OF MEMBER, PIPE SHALL BE PROTECTED BY STEEL SHIELD PLATES IN ACCORDANCE WITH IPC 305.6.

PIPE PENETRATIONS THROUGH FIRE RATED WALLS OR FLOORS HAVE EQUIVALENTLY RATED SLEEVES AND SHALL BE SEALED AND FIRE CAULKED WITH A U.L. LISTED FIRE STOPPING SYSTEM INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S LISTED DETAILS AND SPECIFICATIONS.

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.

CONTRACTOR SHALL CONFIRM PLUMBING FIXTURE FINISHES WITH THE ARCHITECTURAL SCHEDULES & DETAILS (AS APPLICABLE).

### SUBMITTALS

FURNISH SHOP DRAWINGS FOR MANUFACTURED PRODUCTS. ALL ITEMS SHALL BE CLEARLY MARKED TO MATCH EQUIPMENT 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.

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.

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.

### HANGERS AND SUPPORTS

HANGERS SHALL BE COMPLETE WITH RODS AND SUPPORTS PROPORTIONED TO THE SIZE OF PIPE TO BE SUPPORTED, IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

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.

WHERE SEVERAL PIPES 2 1/2" 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.

PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH IPC SECTION 308, AND SPACING OF HANGERS SHALL NOT EXCEED THE LIMITS SET FORTH IN TABLES B.5. PIPES SHALL BE SUPPORTED WITHIN 1'-0" OF EACH END.

VERTICAL PIPE SUBJECT TO MOVEMENT SHALL BE SUPPORTED FROM THE WALL BY MEANS OF A PIPE CLAMP.

SUPPORT DOMESTIC WATER PIPING IN SPACES BEHIND PLUMBING FIXTURES BY BRACKETS AND U-BOLTS SECURED TO WALL AND VENT STACKS SHALL BE BOLTS TO BEAR ON THE PIPING.

AFTER HANGER RODS ARE INSTALLED IN FINISHED CONCRETE CEILING, FILL THE REMAINING OPENING WITH CEMENT SO THAT NO GAPS SHOW AT THE CEILING.

WHERE COPPER PIPING IS USED, NONFERROUS METAL SUPPORT(S) OR PROPER ISOLATION BETWEEN DISSIPATIVE MATERIALS SHALL BE PROVIDED.

PIPE HANGERS AND SUPPORTS SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH RECOMMENDATIONS SET FORTH IN MANUFACTURER'S STANDARDIZATION SOCIETY STANDARD PRACTICES NO. 5P-69 AND 5P-58.

### WASTE AND VENT PIPING SYSTEMS AND ACCESSORIES

SANITARY AND VENT PIPING AND FITTINGS SHALL BE CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE CAST IRON SOIL PIPE INSTITUTE (CISPI) STANDARD 301, ASTM A888 OR ASTM A74 (LATEST EDITIONS). PIPE SHALL BE MARKED WITH THE CRESTIVE TRADEMARK OF CISPI OR RECEIVE PRIOR APPROVAL OF THE ENGINEER.

JOINTS FOR HUBLESS CAST IRON SOIL PIPES AND FITTINGS SHALL CONFORM TO THE MANUFACTURER'S INSTALLATION INSTRUCTIONS, THE CISPI STANDARD 310 (LATEST EDITION) AND BE CERTIFIED BY NSF FOR COMPLIANCE TO LISTED REQUIREMENTS FROM APPROVAL OF THE ENGINEER. HUBLESS COUPLING GASKETS SHALL CONFORM TO ASTM STANDARD C564. NO GASKET COUPLINGS SHALL BE ANY DUTY TYPE BY MISSION, HUSKY, OR APPROVED EQUAL.

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. TESTING WITH AIR IS NOT ALLOWED.

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.

NO DOUBLE COMBINATION FITTINGS MAY BE UTILIZED IN THE HORIZONTAL.

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.

WHERE DRAWINGS REQUIRE CONNECTION TO EXISTING SANITARY SEWER PIPING IN BUILDING, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD DETERMINE EXACT LOCATION, DEPTH AND DIRECTION OF FLOW PRIOR TO COMMENCING WORK. PROVIDE SCOPING OF BELOW FLOOR PIPING AS NECESSARY TO GATHER THIS INFORMATION. CONTRACTOR SHALL ALERT ENGINEER IF THERE IS A POTENTIAL ISSUE MAINTAINING PROPER SLOPE IN CONNECTING TO EXISTING, OR IF THERE IS A MORE DIRECT CONNECTION POSSIBLE.

# SPECIFICATIONS

### SLEEVES

SLEEVES SHALL BE PROVIDED WHERE PIPES PASS THROUGH WALLS, FLOORS AND ROOFS. 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.

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.

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 ANNUAL SPACE BETWEEN SLEEVE AND PIPING. CONTRACTOR SHALL VERIFY THE RATING OF THE WALL AND CONFIRM THE PENETRATION PROTECTION PROVIDED MEETS THAT RATING.

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.

### DOMESTIC WATER SYSTEMS AND ACCESSORIES

WATER PIPING ABOVE SLAB: TYPE 1' HARD DRAWN COPPER TUBING, ASTM B88, WROUGHT SOLDER JOINTS, ANSI B1 6.22.

WATER PIPING BELOW SLAB: TYPE K SOFT DRAWN COPPER TUBING, WITH NO JOINTS BELOW SLAB, ASTM B88.

ALL DOMESTIC HOT WATER PIPING SHALL HAVE A MINIMUM PRESSURE RATING OF 100PSI AT 180°F.

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.

BALL VALVES SHALL BE TWO-PIECE BRONZE BODY, LARGE PORT WITH SOLID, SMOOTH BORE CHROME PLATED BRASS BALL. SEATS SHALL BE REINFORCED TFE WITH TEFLO 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.

BACKFLOW PREVENTERS SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS 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 312.1.0.2. CONTRACTOR SHALL PROVIDE CERTIFICATIONS THAT STATE DEVICES HAVE BEEN TESTED AND APPROVED.

THERMOMETERS SHALL BE 9" ADJUSTABLE ANGLE, 30°-180°F RANGE (TERRICE BX9 OR EQUAL). PRESSURE GAUGES SHALL BE 4 1/2" DIA SIZE, 0-1 1/2GPM (TERRICE 600CB OR EQUAL).

CONTRACTOR SHALL FIELD VERIFY INCOMING DOMESTIC WATER PRESSURE. WHERE PRESSURE EXCEEDS 80PSI, PROVIDE PRESSURE REGULATING VALVE (WATTS LF223) AND UPSTREAM STRAINER (WATTS L5F777).

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.

### INSULATION

INSULATE ALL DOMESTIC HOT WATER AND HOT WATER RECIRCULATION PIPING IN ACCORDANCE WITH IECC TABLE C403.2.10. PIPE 1/2" - 1 1/4": 1" THICK INSULATION. PIPE 1 1/2" OR LARGER: 1 1/2" THICK INSULATION

INSULATE ALL HORIZONTAL COLD WATER PIPING LOCATED ABOVE CEILING, VERTICAL PIPING LOCATED IN AN EXTERIOR WALL EXPOSED PIPING IN MECH ROOMS, PIPE UP TO 1 1/2" THICK. PIPING 1 1/4" AND OVER: 1" THICK INSULATION.

ALL JOINTS SHALL BE SEALED WITH MATCHING VAPOR BARRIER TAPE.

INSULATION SHALL HAVE A K-FACTOR (AVERAGE THERMAL CONDUCTIVITY) NOT TO EXCEED 0.27 BTU IN/HR x SQFT

### NATURAL GAS SYSTEMS AND ACCESSORIES

IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE LOCAL GAS UTILITY PROVIDER TO CONFIRM THE AVAILABILITY OF THE INDICATED DESIGN DELIVERY PRESSURE PRIOR TO COMMENCING WORK.

ALL GAS PIPING SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE INTERNATIONAL FUEL GAS CODE AND NFPA 54.

GAS PIPING SHALL BE SCHEDULE 40 BLACK STEEL (ASTM A53/A53M) FITTING SHALL BE ASME B31.3 MALLEABLE IRON OR ASTM A234/A234M WROUGHT STEEL WELDING TYPE. JOINTS SHALL BE THREADED OR WELDED TO ASME B31.1.

ALL GAS FIRED APPLIANCES ARE PROVIDED WITH A GAS PRESSURE OF 7" W.C. AT FINAL EQUIPMENT CONNECTION. IF 7" W.C. EXCEEDS EQUIPMENT'S SPECIFIC INLET PRESSURE REQUIREMENT, CONTRACTOR SHALL PROVIDE APPROPRIATE PRESSURE REGULATING VALVE.

GAS PIPING ON ROOF SURFACES SHALL BE ELEVATED AT LEAST 6" INCHES ABOVE ROOF SURFACE AND SHALL BE CLAMPED TO RUBBER CHANNEL SUPPORTS (MIFAB C10 SERIES OR EQUAL). PROVIDE SUPPORT AT EVERY 6' BELOW THE MINIMUM SPACING OF SUPPORTS SHALL BE: 1/2" PIPE: 5'-0", 3/4" TO 1 1/4" PIPING: 6'-0", 1 1/2" AND LARGER: 12'-0". VERTICAL PIPING SHALL BE SUPPORTED AT 6' E, TOP AND AT 10' INTERVALS (MINIMUM).

ALL EXTERIOR GAS PIPING SHALL BE PRIME AND PAINTED 0.5 H.A. YELLOW ON ROOF OR PAINTED TO MATCH BUILDING'S EXTERIOR WALLS WHERE VISIBLE.

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 LONG EXPOSED LENGTHS.

BALL VALVES: THREE-PIECE BODY, FULL PORT, CHROME PLATED BALL, BLOWOUT PROOF STEM, TFE SEATS, UL LISTED FOR FLAMMABLE LIQUIDS, 600 PSI WOG, THREADED ENDS.

PRESSURE REGULATOR VALVES: SHUTOFF AND SUITABLE FOR NATURAL GAS, STEEL JACKET AND CORROSION RESISTANT COMPONENTS, THREADED FOR REGULATORS NOT 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 MAXIFROL 325-L SERIES. PROVIDE VENT PROTECTOR FOR EXTERIOR APPLICATIONS. FOR INTERIOR APPLICATIONS, VENT SHALL BE PIPED TO THE EXTERIOR WITH TURNDOWN AND SCREEN PROTECTOR.

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.

INSTALL UNIONS IN PIPES NPS 2 AND SMALLER, ADJACENT TO EACH VALVE, AT FINAL CONNECTION TO EACH PIECE OF EQUIPMENT.

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.

### TANK TYPE WATER HEATERS

WATER HEATERS SHALL BE U.L. LISTED AND SHALL MEET OR EXCEED THE STANDBY LOSS REQUIREMENTS OF U.S. DEPT. OF ENERGY AND CURRENT EDITION OF ASHRAE/IESNA 90.1.

WATER HEATERS SHALL HAVE 150PSI WORKING PRESSURE AND BE EQUIPPED WITH EXTRUDED HIGH DENSITY ANODE ROD AND HIGH TEMPERATURE CUTOFF SWITCH. WATER HEATERS SHALL BE THERMOSTATICALLY CONTROLLED AND SET TO 120° UNLESS OTHERWISE NOTED. WATER HEATERS SHALL BE INSTALLED ON SUSPENDED PLATFORM, STEEL STAND OR CONCRETE PAD, AS INDICATED ON DRAWINGS.

WATER HEATERS SHALL HAVE A MINIMUM 3 YEAR LIMITED WARRANTY.

WATER HEATERS SHALL BE INSTALLED LEVEL AND PLUMB. FIELD COORDINATE EXACT WATER HEATER LOCATION. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCES, AND INSTALL SUCH THAT CONTROLS AND DEVICES ARE ACCESSIBLE FOR SERVICING.

INSTALL SHUTOFF VALVES IN COLD WATER INLET AND HOT WATER OUTLET. INSTALL THERMOMETER ON HOT WATER OUTLET. WATER HEATER SHALL HAVE ASME RATED COMBINATION TEMPERATURE AND PRESSURE RELIEF VALVE IN TOP PORTION OF TANK FACTORY OR FIELD INSTALLED. PIPE RELIEF VALVE OUTLET TO FLOOR DRAIN, MOP SINK, INDIRECT WASTE RECEPTOR OR TO EXTERIOR. MAINTAIN CONTINUOUS DOWNWARD PITCH TOWARD DISCHARGE LOCATION, AND PROVIDE AIR GAP AT DISCHARGE LOCATION. WHERE WATER HEATER DRAIN PAN IS INDICATED ON PLANS, ROUTE DRAIN TO SAME LOCATION AS RELIEF VALVE AND DISCHARGE WITH AIR GAP.



PROFICIENT ENGINEERING

# FIRE PROTECTION SPECIFICATION

EXISTING SPRINKLER SYSTEM SHALL BE MODIFIED AS NECESSARY TO COORDINATE WITH NEW DRAWINGS, WALLS AND ARCHITECTURAL FEATURES SUCH AS SOFFITS. THE CONTRACTOR SHALL OBTAIN ANY NECESSARY PERMITS, CONNECTIONS AND ANY OTHER FEES ASSOCIATED WITH THE INSTALLATION OF FIRE PROTECTION SYSTEM.

ALL ELEMENTS OF THE FIRE PROTECTION SYSTEM SHALL BE U.L. LISTED. ALL ELEMENTS OF THE FIRE PROTECTION SYSTEM SHALL CONFORM TO ALL REQUIREMENTS OF THE FOLLOWING:  
NFPA 13, 14, 20 AND 24  
ALL LOCAL, COUNTY AND STATE REGULATIONS  
LOCAL FIRE MARSHAL  
OWNER'S INSURANCE UNDERWRITER

LISTED WET TYPE PENDENT SPRINKLER SHALL BE INSTALLED IN ALL AREAS UNLESS OTHERWISE NOTED. INSTALL UPRIGHT SPRINKLERS IN AREAS WITH FINISHED CEILING. PENDENT-TYPE SEMI-RECESSED OR CONCEALED SPRINKLERS SHALL BE INSTALLED IN FINISHED CEILING. INSTALL SIDEWALL SPRINKLERS AS NEEDED FOR FLOOR COVERAGE.

ENSURE THERE IS AN EXISTING FIRE ALARM LINE CONNECTION FOR EACH SYSTEM NOT LESS THAN 1" DIA. IN ACCORDANCE WITH NFPA 13, 14, 20 AND 24. INSTALL AS NECESSARY.

CONTRACTOR SHALL FULLY COORDINATE ALL PHASES OF WORK WITH THE ARCHITECT AND ALL OTHER TRADES PRIOR TO COMMENCING THE COURSE OF THE INSTALLATION IN ITS ENTIRETY. PIPING INSTALLATION AND THE PLACEMENT OF SPRINKLER HEADS AND SYSTEM DEVICES MUST BE COORDINATED WITH ARCHITECTURAL REFLECTED CEILING PLAN, MECHANICAL DUCTWORK AND EQUIPMENT ELECTRICAL CONDUIT AND DEVICES, PLUMBING PIPING, AND THE STRUCTURAL CONSTRUCTION OF THE BUILDING.

ANY DISCREPANCIES ENCOUNTERED BY THE CONTRACTOR IN THE REPRESENTATION OF THESE DRAWINGS AND OR SPECIFICATIONS SHALL IMMEDIATELY BE COORDINATED WITH THE ARCHITECT.

AS APPLICABLE, COORDINATE WITH ELECTRICAL CONTRACTOR FOR WIRING OF DEVICES REQUIRING INTERLOCK TO THE FIRE ALARM SYSTEM, SUCH AS TAMPER SWITCHES AND FLOW SWITCHES.

FIRE PROTECTION CONTRACTOR TO PROVIDE SHOP DRAWINGS AND HYDRAULIC CALCULATIONS WITH ALL PIPE SIZES, SPRINKLER LOCATIONS, FLOW AND TAMPER SWITCHES, INSPECTOR TESTS, ETC. THE SHOP DRAWINGS SHALL BE SUBMITTED TO ALL AUTHORITIES HAVING JURISDICTION. AFTER APPROVAL HAS BEEN OBTAINED, THE SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR FINAL REVIEW.

WHERE A DRY PIPE SPRINKLER SYSTEM IS PROVIDED, THE AIR COMPRESSOR SHALL BE BY VIKING CORPORATION OR GENERAL AIR PRODUCTS (OR EQUAL) AND LISTED FOR FIRE PROTECTION USE.

CROSSFIELDS  
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REVISIONS:		
NO.	DATE	DESCRIPTION

DRAWN BY: DS  
CHECKED BY: MR  
DATE: 09.24.19  
PROJECT NUMBER: 17125-IC  
SHEET NO: PO.1

ISSUED FOR PERMITTING