

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

LEGEND	
-----	COLD WATER PIPE
-----	HOT WATER PIPE
-----	HOT WATER RETURN PIPE
-----	NATURAL GAS PIPE
-----	SANITARY PIPE
-----	GREASE WASTE PIPE
-----	EMERGENCY STORM PIPE
-----	STORM PIPE
-----	VENT 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
-----	WALL CLEANOUT / HOSE BIBB
-----	FLOOR DRAIN / FLOOR SINK
-----	WATER HAMMER ARRESTER
-----	GAS COCK / GAS SHUTOFF VALVE
-----	P TRAP
-----	TUB DRAIN
-----	TRAP PRIMER
-----	FLOOR CLEANOUT / GRADE CLEANOUT
-----	VENT THROUGH ROOF
-----	PIPE CLEANOUT / WALL CLEANOUT
-----	CONNECTION TO EXISTING

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 BEST RECOGNIZED PRACTICE IN 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 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.

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 ARRESTERS, 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 DIAGNOMATIC 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 WALLS OR FLOORS SHALL BE INSULATED AND PROVIDED WITH HEAT TRACE. PIPING INSTALLED WITHIN EXTERIOR WALLS SHALL BE WRAPPED IN PIPE INSULATION AND BE LOCATED ON THE INTERIOR SIDE OF THE BUILDING ENVELOPE.

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 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 GOOD SERVICE PERMITS (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 SCHEDULE AND DETAILS (AS APPLICABLE).

SUBMITTALS
 FURNISH SHOP DRAWINGS FOR MANUFACTURED PRODUCTS. ALL ITEMS SHALL BE CLEARLY MARKED TO SHOW EQUIPMENT MARKS ON THE PLUMBING DRAWINGS. ALL OPTIONS MUST BE CLEARLY MARKED ON THE SUBMITTALS. A MODEL NUMBER LISTING ON A COVER SHEET IS NOT AN ACCEPTABLE SUBSTITUTE FOR MARKING THE ACTUAL SUBMITTALS. ELECTRICAL DATA FOR POWERED EQUIPMENT MUST BE INDICATED ON THE SUBMITTALS. MARK THAT THE EQUIPMENT IS NOT ACCEPTABLE.

ALL ITEMS MUST BE SUBMITTED BY 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 ASSURANCE OF THE APPLICABILITY OF THE EQUIPMENT. CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION AND/OR ALTERATION OF ANY EQUIPMENT WITHIN A GIVEN SPACE. WHEN SUBSTITUTED EQUIPMENT IS INSTALLED, CONTRACTOR SHALL BE RESPONSIBLE FOR ANY COORDINATION OR ADDITIONAL COST BROUGHT ON BY THE USER OF THIS EQUIPMENT.

HANGERS AND SUPPORTS
 HANGERS SHALL BE COMPLETED WITH ROOFS 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 OF AN EQUAL OR SIMILAR SIZE ARE PARALLEL AND IN THE SAME PLANE, THEY MAY BE SUPPORTED ON GANG OR MULTIPLE HANGERS. HANGER RODS SHALL BE INDIVIDUALLY RIGID, 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 TABLE 308.5. PIPES SHALL BE SUPPORTED WITHIN 1'-0" OF EACH ELBOW.

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 WASTE AND VENT EFFECTS. SIZE U-BOLTS TO BEAR ON THE PIPING.

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

WHERE COPPER PIPING IS USED, NONFERROUS METAL SUPPORT(S) OR PROPER ISOLATION BETWEEN DISSIMILAR 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. 5F-69 AND 5F-56.

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 ANNULAR 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.

SPECIFICATIONS

WASTE AND VENT PIPING SYSTEMS AND ACCESSORIES
 SANITARY PIPING SHALL BE PVC SCHEDULE 40 SOLID WALL PIPE AND DWV FITTING SYSTEM.

PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 1-2454 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-2665. INJECTION MOULDED FITTINGS SHALL CONFORM TO ASTM D-2665. FABRICATED FITTINGS SHALL CONFORM TO ASTM F-1966. SOLVENT CEMENTS SHALL CONFORM TO ASTM D-2564. PRIMER SHALL CONFORM TO ASTM F-656.

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 RUBBER PENETRATING THROUGH ROOF WITH STANDARD MANUFACTURED FLASHINGS. FLASHING SHALL BE SHEET METAL WITH RUBBER GASKETS AND SHALL EXTEND INTO ROOFING AND UP THE DISTANCES IN ACCORDANCE WITH THE LOCAL CODE.

NO DOUBLE COMBINATION FITTINGS MAY BE UTILIZED IN THE HORIZONTAL.

BACK-TO-BACK WATER CLOSETS COMBINING IN THE VERTICAL SHALL UTILIZE A DOUBLE COMBINATION WYE WITH DOUBLE FITTINGS. DOUBLE SANITARY TEE OR SANITARY CROSS IS NOT ACCEPTABLE.

DOMESTIC WATER SYSTEMS AND ACCESSORIES
 WATER PIPING ABOVE FLOOR, HOT AND COLD WATER PIPING ABOVE GROUND SHALL BE CPVC (OR POLYETHYLENE GLYCOL (PEX) OR POLYETHYLENE TEREPHTHALATE (PET) WITH SOLVENT WELD JOINTS WHEN APPROVED BY THE AUTHORITY HAVING JURISDICTION. PIPING SHALL CONFORM TO ASTM D-2648 AND SHALL BE CERTIFIED BY THE NSF INTERNATIONAL FOR USE WITH POTABLE WATER. JOINTS SHALL BE MADE WITH SOLVENT CEMENTS FOR CPVC. PLASTIC PIPING SHALL MEET ASTM F437, ASTM F458 AND ASTM F459.

WATER PIPING BELOW SLAB - TYPE K SOFT DRAWN COPPER PIPING, WITH NO JOINTS BELOW SLAB PER ASTM F1363.

ALL DOMESTIC HOT WATER PIPING SHALL HAVE A MINIMUM PRESSURE RATING OF 100 PSI (1.6 MPa).

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 THREE PIECE BODY, FULL PORT, WITH SMOOTH BORE CHROME PLATED BRASS BALL SEATS. SEATS SHALL BE REINFORCED WITH TEFLOON RING AND THREADS TO ADJUSTABLE PACKING NUT. PROVIDE STEM EXTENSION AS NEEDED TO PROVIDE CLEARANCE FOR OPERATING HANDLE ON OUTSIDE. BALL VALVES SHALL BE APOLLO 70 OR EQUAL.

BACKFLOW PREVENTERS SHALL BE INSTALLED AT 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 610.2. CONTRACTOR SHALL PROVIDE CERTIFICATIONS THAT STATE DEVICES HAVE BEEN TESTED AND APPROVED.

THERMOMETERS SHALL BE 90° ANGLE, 30°-180° RANGE (TERICE BX9 OR EQUAL). PRESSURE GAUGES SHALL BE 1/2" DIAL SIZE (60PSI) (TERICE 3000 OR EQUAL).

CONTRACTOR SHALL VERIFY INCOMING DOMESTIC WATER PRESSURE. WHERE PRESSURE EXCEEDS 80PSI, PROVIDE PRESSURE REGULATING VALVE (R229) AND UPSTREAM STRAINER (WATTS L3F777).

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 PIPING REGARDLESS OF MATERIAL, WHERE RECIRCULATED HOT WATER IS SHOWN, INSULATE ALL HOT WATER AND RECIRCULATION PIPING WITH 1" THICK INSULATION PER CHAPTER 5 OF IECC. FOR NON-RECIRCULATED HOT WATER SYSTEMS, INSULATION THICKNESS SHALL BE AS FOLLOWS: PIPE UP TO 1 1/2" THICK INSULATION, PIPE 1 1/2" TO 2" 1" THICK INSULATION. 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 1/2" AND OVER: 1" THICK INSULATION. INSULATION MAY BE OMITTED FOR HORIZONTAL CPVC PIPING LESS THAN 1/2".

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

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 PUEL GAS CODE AND NFPA 54.

GAS PIPING SHALL BE SCHEDULE 40 BLACK STEEL (ASTM A334/ASME), 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.

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

GAS PIPING ON ROOF SURFACES SHALL BE ELEVATED NO LESS THAN 3" INCHES ABOVE ROOF SURFACE AND SHALL BE CLAMPED TO RUBBER CHANNEL SUPPORTS (MIPAB C-10 SERIES OR EQUAL). PROVIDE SUPPORT AT EVERY ELBOW. THE MAXIMUM SPACING OF SUPPORTS SHALL BE: 1/2" PIPE: 5'-0"; 3/4" PIPE: 6'-0"; 1" PIPE: 6'-0"; 1 1/2" AND LARGER: 12'-0". VERTICAL PIPING SHALL BE SUPPORTED AT BASE, TOP AND AT 10' INTERVALS (MINIMUM).

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

BALL VALVES: THREE PIECE BODY, FULL PORT, CHROME PLATED BALL, BLOWOUT PROOF STEM, THE SEATS, U.L. LISTED FOR FLAMMABLE LIQUIDS, COO PSI WOG, THREADED ENDS.

PRESSURE REGULATING 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 TENDS 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 MAXTRUL 325-U 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 PUEL GAS CODE SECTION 404.1.4.

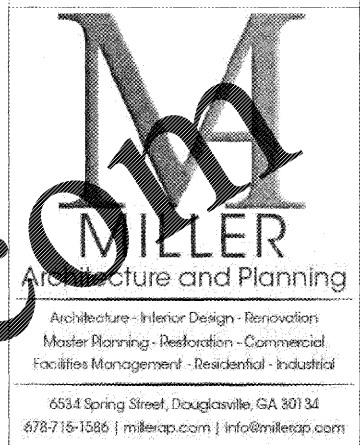
TANK TYPE WATER HEATERS
 WATER HEATERS SHALL BE U.L. LISTED AND SHALL MEET OR EXCEED THE STANDBY LOSS REQUIREMENTS OF U.S. DEPT. OF ENERGY AND CURRENT EDITION OF ASHRAE/IESNA 90.1.

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 TANK TO SAME LOCATION AS RELIEF VALVE AND DISCHARGE WITH AIR GAP.

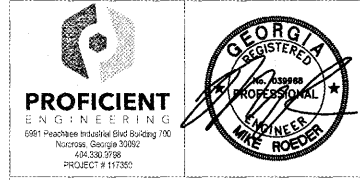


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GENERAL CONSTRUCTION NOTES:

- THE CONTRACTOR SHALL GUARANTEE TO THE OWNER ALL WORKMANSHIP AND MATERIALS, WHETHER FURNISHED BY THE CONTRACTOR OR SUB-CONTRACTORS, AGAINST DEFECTS FOR A MINIMUM PERIOD OF ONE (1) YEAR AFTER THE DATE OF FINAL ACCEPTANCE BY OWNER. FAILURE OF ANY SUCH ITEMS SHALL BE MADE GOOD BY THE CONTRACTOR AT THE CONTRACTOR'S OWN EXPENSE.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT FROM DAMAGE OR DESTRUCTION ALL EXISTING MATERIALS AND FINISHES TO REMAIN IN ADJACENT OR NEARBY AREAS. THE CONTRACTOR SHALL REPLACE ANY DAMAGED OR DESTROYED ITEMS BY OPERATIONS UNDER THIS CONTRACT.
- PRODUCTS, TRADE NAMES AND/OR MANUFACTURERS NOTED WITHIN THESE DOCUMENTS ARE PROVIDED TO ESTABLISH A STANDARD OF QUALITY. UNLESS OTHERWISE INDICATED, APPROVED EQUAL PRODUCTS OF ANOTHER MANUFACTURER MAY BE USED WITH THE WRITTEN PERMISSION OF THE ARCHITECT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND SUPPLIER TO PROVE TO THE ARCHITECT BEFORE THE DATE OF BID THAT THEIR PRODUCT IS EQUAL TO OR BETTER THAN THOSE PRODUCTS SPECIFIED. IF AN "OR EQUAL" PRODUCT IS USED, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE ANY NECESSARY CHANGES TO THE STRUCTURE AND INTERIOR LAYOUT AT THE CONTRACTOR'S OWN EXPENSE, AFTER OBTAINING THE ARCHITECT'S ACCEPTANCE OF SUCH CHANGES.
- THE CONTRACTOR SHALL COORDINATE WITH THE OWNER A DESIGNATED SITE OR SPACES FOR STORAGE OF MATERIALS AND EQUIPMENT FOR THE DURATION OF THE CONSTRUCTION CONTRACT.
- DIMENSIONS SHOWN ON THE DRAWINGS ARE TO ROUGH SURFACES, EXCLUSIVE OF FINISH MATERIALS, EXCEPT AS NOTED OTHERWISE. DO NOT SCALE THE DRAWINGS.
- THE CONTRACTOR SHALL COMPLY WITH ALL RELEVANT AND CURRENTLY ENFORCED BUILDING CODES BY ALL GOVERNING JURISDICTIONS, INCLUDING BUT NOT LIMITED TO ALL PROVISIONS OF THE AMERICAN WITH DISABILITIES ACT.

The contractor shall be responsible for all fees and obtaining all necessary and relevant permits and approvals relating to staging and construction of this project. The contractor shall comply with all relevant building, construction and work safety codes. The contractor shall verify all dimensions and elevations in the field before starting work and immediately report to the architect any discrepancies discovered.



DOUGLAS COUNTY FIRE STATION 3

CLIENT: Owner

DRAWING TITLE: GENERAL

ISSUANCE: DATE: 03/11/17 DRAWING NO: P-01

COMMISSION: Project Number

DRAWN BY: ds

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