

PLUMBING VENT: CONNECT PLUMBING VENT PIPES TO FIXTURE DRAIN PIPES AS INDICATED ON THE DRAWINGS OR AS REQUIRED BY THE INSTALLATION PRACTICES ADOPTED AND ENFORCED BY LOCAL CODES OFFICIAL, AND EXTEND VENT PIPES FULL SIZE THROUGH THE ROOF LINE. GRADE PIPE TO A UNIFORM SLOPE SO AS TO DRAIN BACK BY GRAVITY TO THE DRAINAGE PIPING SYSTEM. VENTS PASSING THROUGH THE ROOF SHALL BE MINIMUM 3" SIZE EXCEPT IN TROPICAL CLIMATES, PER LOCAL CODES. TURN FLASHING DOWN INTO STACKS AT LEAST 2", AND EXTEND FLASHING 24" IN ALL DIRECTIONS FROM THE PIPE AT THE ROOF LINE. APPLY WHITE LEAD PIPE DOPE ON MALE STEEL PIPE THREADS. VENT LINES SHALL BE AIR AND WATER TIGHT. VENT FLOOR DRAINS INDIVIDUALLY OR CONNECT THEM TO A HORIZONTALLY VENTED LINE AS SHOWN ON THE DRAWINGS.

DOMESTIC WATER: ARRANGE COLD AND HOT WATER PIPING TO DRAIN AT THE LOWEST POINT IN EACH SYSTEM. INSTALL AT LEAST ONE PIPE UNION ADJACENT TO ALL SHUTOFF VALVES, AT CONNECTION POINTS OF EACH PIECE OF EQUIPMENT, AND ELSEWHERE IN THE SYSTEM WHERE REQUIRED TO ALLOW PROPER MAINTENANCE. PROVIDE UNIONS OF THE GROUND JOINT TYPE. MAKE ALLOWANCE FOR EXPANSION AND CONTRACTION WHERE REQUIRED BY THE INSTALLATION. WHERE WATER PIPING OCCURS IN EXTERIOR WALLS, HOLD PIPE AS CLOSE AS POSSIBLE TO THE INTERIOR FACE OF WALL AND INSTALL INSULATION BATT OR OTHER INSULATION (MINIMUM R8) BETWEEN PIPING AND THE EXTERIOR WALL FACE.

NATURAL GAS: PITCH NATURAL GAS PIPING, AND PROVIDE ACCESSIBLE DIRT LEGS AT THE LOW POINTS. TAKE BRANCH PIPES OFF THE TOP OR SIDES OF MAIN PIPES, TO PREVENT ACCUMULATION OF WATER IN THE BRANCHES. INSTALL GAS PIPING VALVES AND UNIONS ONLY IN ACCESSIBLE LOCATIONS. DO NOT INSTALL GAS PIPE BELOW THE BASE SLAB.

15B 2-5 PIPING SANITIZATION

SANITIZE THE ENTIRE DOMESTIC WATER PIPING SYSTEM (COLD AND HOT WATER) WITH A SOLUTION CONTAINING NOT LESS THAN 50 PPM AVAILABLE CHLORINE. KEEP SOLUTION IN THE SYSTEM FOR A MINIMUM OF 24 HOURS, WITH EACH VALVE BEING OPERATED SEVERAL TIMES DURING THE PERIOD. AFTER COMPLETION, FLUSH SYSTEM WITH CITY WATER UNTIL CHLORINE RESIDUAL IS LOWERED TO INCOMING CITY WATER LEVEL.

15B 2-6 PIPE AND VALVE MARKERS

PROVIDE MANUFACTURER'S STANDARD PRE-PRINTED, SEMI-RIGID SNAP-ON OR PERMANENT ADHESIVE, PRESSURE-SENSITIVE VINYL PIPE MARKERS. PIPE MARKERS SHALL BE COLOR-CODED COMPLYING WITH ANSI A13.1.

INSTALL PIPE MARKERS ON EACH PLUMBING PIPING SYSTEM AND INCLUDE ARROWS TO SHOW NORMAL DIRECTION OF FLOW.

15B3 PLUMBING SPECIALTIES

15B 3-1 WATER HAMMER ARRESTORS, AND TRAPS

PROVIDE WATER HAMMER ARRESTORS AT VALVES OR BATTERIES OF FIXTURES AS INDICATED ON THE DRAWINGS TO PREVENT WATER HAMMER. ARRESTORS SHALL BE JOSAM, SMITH, PRECISION PLUMBING PRODUCTS, SIOUX CHIEF, WADE, WATTS, OR ZURN, STAINLESS STEEL BELLOW TYPE, OR O-RING SEALED AND LUBRICATED ACETAL PISTON. INSTALL WATER HAMMER ARRESTORS PER THE PLUMBING AND DRAINAGE INSTITUTE PDI WH-201 INSTALLATION INSTRUCTIONS. INSTALLATION OF ARRESTORS AT BATTERIES OF FIXTURES PRECLUDES THE REQUIREMENT FOR INDIVIDUAL AIR CHAMBERS AT EACH BATTERY FIXTURE.

PROVIDE WATER-SEAL TRAPS ON FLOOR DRAINS, FIXTURES AND EQUIPMENT WITH DRAIN CONNECTIONS, INCLUDING TRAPS NOT FURNISHED IN COMBINATION WITH FIXTURES AND EQUIPMENT. PLACE TRAP AS CLOSE TO THE FIXTURE OR DRAIN AS POSSIBLE. EXPOSED TRAPS IN FINISHED SPACES SHALL BE CHROME-PLATED BRASS.

PROVIDE CONVENTIONAL "P" TYPE TRAP, WATER-SEALED SELF-CLEANING DESIGN. FULL "S" TRAPS OR TRAP STANDARDS SHALL BE USED ONLY WHERE SPECIFICALLY CALLED FOR ON THE DRAWINGS OR ELSEWHERE IN THIS SPECIFICATION. TRAP WATER SEALS SHALL NOT BE LESS THAN 2", AND DEEP SEAL TRAPS SHALL BE PROVIDED WHERE SPECIFIED OR INDICATED. EACH TRAP NOT INTEGRAL WITH THE FIXTURE OR FLOOR DRAIN OR INSTALLED BELOW THE BASE SLAB SHALL BE PROVIDED WITH AN ACCESSIBLE CLEANOUT OF ADEQUATE SIZE. PROVIDE TRAP PRIMERS WHERE REQUIRED BY CODE AND WHERE INDICATED ON THE DRAWINGS.

15B 3-2 CLEANOUTS AND FLOOR DRAINS

CLEANOUTS AND FLOOR DRAINS SHALL BE BY ONE MANUFACTURER IF POSSIBLE. ACCEPTABLE MANUFACTURERS ARE JOSAM, SMITH, WADE, WATTS, AND ZURN. PROVIDE LONG SWEEP FITTINGS FOR CLEANOUT EXTENSIONS; SHORT SWEEPS AT START OF RUNS OR CHANGE IN DIRECTION AND COMBINATION WYE AND EIGHT BEND FITTINGS IN HORIZONTAL RUNS. INSTALL CLEANOUTS WITH A MINIMUM OF 18" CLEAR ALL AROUND, CONSULT LOCAL CODES FOR OTHER REQUIREMENTS, FOR EASY SYSTEM MAINTENANCE. INSTALL PLUG WITH TEFLON JOINT COMPOUND.

FLOOR DRAINS: SHALL BE AS SCHEDULED ON THE DRAWINGS.

FLOOR CLEANOUTS: SHALL BE AS SCHEDULED ON THE DRAWINGS. INSTALL CLEANOUTS AT POINTS AS NOTED ON THE DRAWINGS, AT THE BUILDING EXIT; AT A MINIMUM OF EVERY 50 FEET IN HORIZONTAL SOIL AND WASTE LINES; AND AT TURNS OF PIPE GREATER THAN 45 DEGREES. CLEANOUTS SHALL BE FULL SIZE OF THE PIPE UP TO 4", AND 4" SIZE FOR PIPES LARGER THAN 4". DETERMINE THE TYPE OF FLOOR COVERING TO BE USED AT EACH FLOOR CLEANOUT LOCATION AND PROVIDE TOP WITH VARIATIONS SUITABLE FOR FLOOR COVERING (CARPET MARKERS, RECESSED FOR TILE AND SCORATED FOR UNFINISHED FLOOR). ROUGH-IN AND INSTALL EACH FLOOR CLEANOUT FLUSH WITH THE FINISHED FLOOR CONSTRUCTION.

EXTERIOR CLEANOUTS: SHALL BE AS SCHEDULED ON THE DRAWINGS. INSTALL CLEANOUTS AT POINTS AS NOTED ON THE DRAWINGS, AT THE BUILDING EXIT; AT A MINIMUM OF EVERY 100 FEET IN HORIZONTAL SOIL, WASTE AND STORM SERVICE LINES. EMBED EACH EXTERIOR CLEANOUT IN AN 18" X 18" X 8" BLOCK OF CONCRETE, FLUSH WITH FINISHED GRADE.

WALL CLEANOUTS: SHALL BE AS SCHEDULED ON THE DRAWINGS. INSTALL WALL CLEANOUTS AT POINTS AS NOTED ON THE DRAWINGS; AT THE FOOT OF EACH SOIL, WASTE OR INTERIOR DOWNSPOUT STACK; AT HORIZONTAL SOIL AND WASTE BRANCHES LONGER THAN FIVE FEET NOT SERVED BY A FLOOR CLEANOUT; CONSULT LOCAL CODES FOR INSTALLATION AT SPECIFIC FIXTURE TYPES. INSTALL WALL CLEANOUTS ABOVE THE FLOOR FIN OF THE FIXTURE SERVED WITHIN FOUR FEET OF THE FLOOR AND INSTALL EXTENSIONS FROM THE CLEANOUT TEE TO THE WALL TO LOCATE THE PLUG WITHIN 2" OF THE WALL WHERE REQUIRED. INSTALL CLEANOUTS ON URINALS AND SINKS WHERE REQUIRED BY CODE.

15B 3-3 VALVES, STRAINERS, HOSE BIBBS, AND UNIONS

PLUMBING SYSTEM VALVES SHALL BE CRANE COMPANY OR NIBCO OF MODELS HEREIN SPECIFIED, OR APPROVED EQUAL BY HAMMOND, WALWORTH, STOCKHAM OR MUELLER VALVES. VALVES SHALL BE OF THE BEST QUALITY, DESIGNED FOR 125 PSI STEAM WORKING PRESSURE. INSTALL VALVES ON THE HOT AND COLD WATER LINES AT THE WATER HEATER CONNECTIONS AND OTHER ITEMS OF EQUIPMENT, AT BRANCHES FROM MAINS SERVING GROUPS OF FIXTURES, AND AT OTHER PLACES INDICATED OR REQUIRED BY THE INSTALLATION TO ALLOW EASE OF FUTURE MAINTENANCE.

BALL VALVES (MAY BE USED IN LIEU OF GATE VALVES UP TO 2"): 2" AND SMALLER, NIBCO #1580; TWO PIECE BRONZE BODY, WITH SCREWED ENDS, CHROME PLATED BRONZE BALL WITH CONVENTIONAL PORT, 400 PSI, BLOW-OUT PROOF STEM.

CHECK VALVES: CHECK VALVES SHALL BE CLASS 125. CHECK VALVES FOR INSTALLATION IN HORIZONTAL PIPE RUNS SHALL BE OF THE "SWING DISC" DESIGN. HORIZONTAL CHECK VALVES 2-1/2" AND SMALLER SHALL BE CRANE #137 OR NIBCO #T-413 WITH SCREWED BRONZE BODY AND BRONZE DISC. VERTICAL CHECK VALVES 2-1/2" AND SMALLER SHALL BE CRANE #29 OR NIBCO #T-480 WITH SCREWED BRONZE BODY AND BRONZE DISC.

GAS COCKS: GAS COCKS 2-1/2" AND SMALLER SHALL BE HOMESTEAD #611, SCREWED IRON BODY WITH BRASS TRIM AND FLAT HEAD. APPROVED EQUAL ARE MCDONALD, ROCKWELL-NORDSTROM OR DEZURIK.

STRAINERS: STRAINERS 2-1/2" AND SMALLER SHALL BE WATTS #745 WITH SCREWED IRON BODY, BRASS CAP AND MONEL 40 MESH SCREEN.

WALL HYDRANTS: SMITH #5609-OT "NON-FREEZE" SURFACE TYPE WITH CAST BRONZE SATIN NICKEL PLATED FACE, WITH INTEGRAL VACUUM BREAKER, 3/4" HOSE CONNECTION, ADJUSTABLE WALL CLAMP, REMOVABLE KEY HANDLE OPERATOR; OR EQUAL BY WOODFORD, JOSAM, PRIER, WADE, WATTS OR ZURN. PROVIDE ACCESSIBLE STOP VALVE AND WATER HAMMER ARRESTOR INSIDE BUILDING.

UNIONS: FERROUS UNIONS SHALL BE CRANE OR EQUAL, COMBINATION IRON AND BRASS, GROUND JOINT WITH SCREWED ENDS. COPPER UNIONS SHALL BE STREAMLINE OR EQUAL, CAST BRONZE SWEAT TYPE WITH GROUND JOINT. FERROUS TO COPPER UNIONS SHALL BE UNIVERSAL CONTROLS OR EQUAL, DIELECTRIC TYPE WITH THREADED NYLON INSERT.

15B 3-4 WATER SERVICE ENTRANCE: PRESSURE REDUCING VALVE AND BACKFLOW PREVENTER

PROVIDE A BACKFLOW PREVENTER (BFP) OF TYPE REQUIRED BY LOCAL CODE, AND A PRESSURE REDUCING VALVE (PRV) IF REQUIRED BY EXCESSIVE WATER PRESSURE ON THE DOMESTIC WATER SERVICE IMMEDIATELY DOWNSTREAM FROM THE POINT OF WATER SERVICE ENTRY.

DOUBLE CHECK VALVE (DCV) SHALL BE AS SPECIFIED ON THE DRAWINGS, WATTS OR EQUIVALENT BY FEBCO, CONBRACO, OR WILKINS. 2" AND SMALLER SHALL BE BRONZE BODY WITH STAINLESS STEEL TRIM, BRONZE BALL VALVE SHUT-OFFS ON INLET AND OUTLET, AND BRONZE STRAINER WITH STAINLESS STEEL SCREEN AND CLEANOUT. FOR 2-1/2" AND LARGER PROVIDE IRON BODY WITH FUSED EPOXY COATING, RESILIENT WEDGE AWMA C509 IRON GATE VALVES ON INLET AND OUTLET, IRON STRAINER WITH FUSED EPOXY COATING, ALL FLANGE CONNECTED. UNIT SHALL BE SUITABLE FOR 175 PSI WORKING PRESSURE.

REDUCE PRESSURE ZONE ASSEMBLY (RPZ) SHALL BE AS SPECIFIED ON THE DRAWINGS, WATTS OR EQUIVALENT BY FEBCO, CONBRACO, OR WILKINS. FOR 2" AND SMALLER PROVIDE BRONZE BODY WITH STAINLESS STEEL TRIM, BRONZE BALL VALVE SHUT-OFFS ON INLET AND OUTLET, AND BRONZE STRAINER WITH STAINLESS STEEL SCREEN AND CLEANOUT. FOR 2-1/2" AND LARGER PROVIDE IRON BODY WITH FUSED EPOXY COATING, RESILIENT WEDGE AWMA C509 IRON GATE VALVES ON INLET AND OUTLET, IRON STRAINER WITH FUSED EPOXY COATING, ALL FLANGE CONNECTED, BRONZE TRIM, EPDM ELASTOMERS AND STAINLESS STEEL SPRING. UNIT SHALL BE RATED FOR 175 PSI WORKING PRESSURE. PROVIDE AIR GAP FITTING ON INTERMEDIATE VENT AND PIPE IT TO DISCHARGE OVER NEARBY FLOOR DRAIN.

15B 3-5 SYSTEM ACCESSORIES

TRAP PRIMERS SHALL BE AS SPECIFIED ON THE DRAWINGS, PRECISION PLUMBING PRODUCTS "PRIME RITE" OR EQUAL BY MIFAB OR SIOUX CHIEF WITH BRASS BODY AND INTEGRAL VACUUM BREAKER. PROVIDE DISTRIBUTION BOX WHERE MORE THAN ONE TRAP IS INDICATED TO BE PRIMED ON THE DRAWINGS. PROVIDE ACCESS PANEL WHERE REQUIRED.

15B4 PLUMBING FIXTURES AND EQUIPMENT

15B 4-1 PLUMBING FIXTURES

FURNISH AND INSTALL COMMERCIAL GRADE PLUMBING FIXTURES, SEE THE DRAWINGS FOR QUANTITIES AND DESCRIPTIONS. PROVIDE CHINA FIXTURES AS SCHEDULED BY AMERICAN STANDARD OR APPROVED EQUAL BY CRANE, ELKER, GERBER, KOHLER OR TOTO-KIKI. PROVIDE STAINLESS STEEL SINKS AS SCHEDULED BY ELKAY OR EQUAL BY JUST. PROVIDE ELECTRIC WATER COOLERS AS SCHEDULED BY ELKAY OR APPROVED EQUAL BY ACORN / AQUA, HALSEY TAYLOR OR HAWS. PROVIDE MOP SINKS AS SCHEDULED BY STERN-WILLIAMS OR EQUAL BY ACORN ENGINEERING CO., FIAT OR FLORESTONE. PROVIDE FIXTURES OF SAME MANUFACTURER WHERE POSSIBLE.

FIXTURES SHOWN ON THE DRAWINGS OR SPECIFIED HEREIN SHALL BE FURNISHED AND INSTALLED, SET FIRM AND TRUE, CONNECTED TO REQUIRED PIPING SERVICES, THOROUGHLY CLEANED, LEFT CLEAN AND READY FOR USE. EXPOSED FITTINGS AND PIPING AT THE FIXTURES SHALL BE CHROME-PLATED, AND WATER SUPPLY PIPING SHALL BE VALVED AT EACH FIXTURE.

VITREOUS CHINA FIXTURES SHALL BE OF THE BEST GRADE VITREOUS WARE, WITHOUT PIT HOLES OR BLEMISHES, AND THE OUTLINES SHALL BE GENERALLY TRUE. THE ENGINEER RESERVES THE RIGHT TO REJECT ANY PIECES WHICH, IN HIS OPINION, ARE FAULTY. FIXTURES SET AGAINST WALLS SHALL HAVE GROUND BACKS AND SHALL BE CAULKED WITH SILICONE SEALANT OF A MATCHING COLOR.

15B 4-2 PLUMBING FIXTURE TRIM

FAUCETS AND TRIM IN CONTACT WITH DRINKING WATER SHALL MEET OR EXCEED THE SAFE WATER DRINKING ACT (SWDA) LEAD-FREE STANDARDS OF ANSI/NSF STANDARD 61, SECTION 9.

FIXTURE TRIM SHALL HAVE THE MANUFACTURER'S NAME STAMPED CLEARLY AND VISIBLY ON EACH ITEM.

PROVIDE FAUCETS AS SCHEDULED ON DRAWINGS: BY CHICAGO, KOHLER, SPEAKMEN, ZURN, OR T&S BRASS.

FIXTURE P-TRAPS SHALL BE 17 GAUGE BRASS BODY WITH CLEANOUT, 17 GAUGE SEAMLESS TUBULAR WALL BEND WITH CAST BRASS SLIP NUT, SHALLOW STEEL FLANGE, ALL CHROME PLATED; BY MCGUIRE, BRASS CRAFT, DEARBORN BRASS, EBC, PROFLO OR ZURN.

LAVATORY AND WATER CLOSET SUPPLIES SHALL BE SOLID BRASS ANGLE OR STRAIGHT TYPE WITH FULL TURN BRASS STEM, WHEEL HANDLE OR LOOSE KEY TYPES AS NOTED ON DRAWINGS. SHALLOW STEEL FLANGE, 3/8" COPPER RISER FLANGE, ALL CHROME PLATED, FINAL CONNECTION AS REQUIRED: BY MCGUIRE, BRASS CRAFT, EBC OR ZURN.

LAVATORY DRAINS SHALL BE GRID TYPE CHROME PLATED 17 GAUGE BRASS OPEN GRID WITH 1-1/4" X 6" LONG SEAMLESS BRASS TAILPIECE AND BRASS LOCKNUT WITH HEAVY RUBBER BASIN WASHER AND FIBER FRICTION WASHER, BY MCGUIRE, BRASS CRAFT, DEARBORN BRASS, EBC, PROFLO OR ZURN.

PROVIDE HANDICAP INSULATION KITS FOR LAVATORIES ON EXPOSED WATER AND WASTE PIPES AND FITTINGS, INCLUDING OFFSET DRAIN AND CONTINUOUS WASTE COVERS WHERE REQUIRED; BY BROCAR, MCGUIRE, PLUMBEREX "PRO-2000", TRAP-WRAP OR TRU-BRO.

PROVIDE SMITH, JOSAM, WADE, WATTS, OR ZURN CHAIR CARRIERS FOR MOUNTING WALL MOUNTED LAVATORIES AS DESCRIBED ON THE DRAWINGS. SECURELY FASTEN CARRIERS TO FLOOR AND TEST PER MANUFACTURER'S RECOMMENDATIONS PRIOR TO INSTALLATION OF PARTITIONS. SECURE LAVATORY CHAIR CARRIERS TO FLOOR WITH 1/2" ANCHOR BOLTS.

15B 4-3 WATER HEATER

INSTANTANEOUS WATER HEATER SHALL BE CHRONOMITE, EEMAX, HOT AQUA OR PVI WITH CAPACITY AS SCHEDULED ON THE DRAWINGS. UNIT SHALL BE WALL-MOUNTED, TANKLESS, POINT-OF-USE TYPE WITH THERMOSTATIC CONTROL, FLOW SWITCH, COMPLETELY PRE-WIRED AND JACKET, UL APPROVED.

TANK TYPE WATER HEATER SHALL BE BY STATE, BRADFORD-WHITE, LOCHINVAR, A.O.SMITH OR RHEEM WITH CAPACITY AS SCHEDULED ON THE DRAWINGS. UNIT SHALL BE ELECTRIC GLASSLINED TANK TYPE COMPLETE WITH STEEL JACKET, FIBERGLASS INSULATION, MAGNESIUM ANODE, INTEGRAL THERMOSTATS AND CONTROLS, AND TEMPERATURE & PRESSURE RELIEF VALVE. WATER HEATER SHALL BE UL LISTED AND MEET ASHRAE 90.1B STANDARDS FOR THERMAL EFFICIENCY AND STANDBY HEAT LOSS.

RELIEF VALVE: WATER HEATER RELIEF VALVE SHALL BE OF THE TEST LEVER TYPE, WITH AUTOMATIC RESET, COMBINATION TEMPERATURE AND PRESSURE RELIEF, APPROVED AND STAMPED BY THE AMERICAN GAS ASSOCIATION. IT SHALL BE INSTALLED DIRECTLY ON THE HEATER TANK, OR IN THE HOT WATER OUTLET, NOT MORE THAN 3' FROM THE TANK. THE TEMPERATURE SHALL BE NORMALLY SET TO RELIEVE AT 210°F AND THE PRESSURE RELIEF SHALL BE AT 125 PSI. THE RELIEF VALVE DISCHARGE LINE SHALL BE PIPED DOWN AND TERMINATE AS INDICATED ON DRAWINGS.

VACUUM RELIEF VALVE: WATTS #N36 OR WILKINS #VR-10 WITH BRONZE BODY AND SILICON DISC. VALVE SHALL OPEN AT 0.5" HG VACUUM AND BE RATED FOR 200 PSIG WORKING PRESSURE AND 250°F TEMPERATURE. INSTALL IN COLD WATER SUPPLY TO EACH WATER HEATER DOWNSTREAM OF THE SHUTOFF AND CHECK VALVES.

EXPANSION TANK: EXPANSION TANK SHALL BE AMTROL "THERM-X-TROL" AS SCHEDULED ON THE DRAWINGS OR EQUAL BY ARMSTRONG, BELL & GOSSETT, TACO, OR WATTS. UNIT SHALL BE CONSTRUCTED OF WELDED CARBON STEEL LISTED FOR 150 PSIG WORKING PRESSURE, WITH A FDA APPROVED BUTYL RUBBER DIAPHRAGM, TAPS FOR PRESSURE GAGE, AIR CHARGING FITTING, AND DRAIN FITTING. SUPPORT AS DETAILED ON THE DRAWINGS. CHARGE TANK WITH AIR PRESSURE EQUAL TO THE STATIC WATER PRESSURE.

END OF SECTION 15B

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