

SECTION 15: PLUMBING SPECIFICATIONS

THE WORK INCLUDES MODIFICATION TO THE EXISTING PLUMBING SYSTEM AND PROVIDING NEW MATERIALS, FITTINGS AND ACCESSORIES NECESSARY FOR A COMPLETE FUNCTIONING PLUMBING SYSTEM. ALL WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND/OR ORDINANCES AND IS SUBJECT TO INSPECTION.

THE INTENT OF THE DRAWINGS IS TO INDICATE THE GENERAL EXTENT OF WORK REQUIRED FOR THE PROJECT. THE DRAWINGS FOR PLUMBING WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, FIXTURES AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. REFER TO MANUFACTURER'S STANDARD ROUGH-IN DRAWINGS FOR PLUMBING FIXTURE INSTALLATION REQUIREMENTS. COMPLY WITH ALL APPLICABLE ADA INSTALLATION REQUIREMENTS.

COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE.

UTILITY CONNECTIONS: THIS CONTRACTOR SHALL PROVIDE ALL UTILITY CONNECTIONS REQUIRED AND INDICATED ON THE DRAWINGS. ALL INTERIOR OR EXTERIOR CONNECTIONS TO "MANS" AND EXISTING SERVICE LINES SHALL BE INSTALLED COMPLETE AND IN COMPLIANCE WITH THE REQUIREMENTS OF THE CODES HAVING JURISDICTION, LANDLORD REQUIREMENTS AND THE SERVING UTILITY INVOLVED. ALL SERVICE LINES AND CONNECTIONS SHALL BE VERIFIED IN THE FIELD BY CONTRACTOR. CONTRACTOR SHALL WORK IN CONJUNCTION WITH THE UTILITY INVOLVED IN THE INSTALLATION OF ALL SERVICES. THIS CONTRACTOR SHALL PROVIDE ALL SERVICE PIPING AND ACCESSORIES REQUIRED TO COMPLETE CONNECTION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE SERVING UTILITY COMPANY REGARDING THE ITEMS FURNISHED, THE WORK PERFORMED, INSPECTIONS REQUIRED, AND ANY ASSOCIATED FEES, CHARGES, OR PERMITS.

DELETE REMAINING PLUMBING SECTION IF EXISTING PLUMBING FIXTURES ARE TO REMAIN. IF PARTIAL PLUMBING IS INSTALLED DELETE ITEMS AS REQUIRED. PROVIDE ALL FITTINGS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY TO FACILITATE THE PLUMBING SYSTEM'S FUNCTIONING AS INDICATED BY THE DESIGN AND THE EQUIPMENT INDICATED.

PLUMBING PIPING: (NOTE: ALL MATERIALS SPECIFIED OR NOTED ON THE DRAWINGS ARE SUBJECT TO THE APPROVAL OF LOCAL CODE AUTHORITIES. CONTRACTOR SHALL VERIFY APPROVAL BEFORE INSTALLING ANY MATERIAL OR JOINING METHOD.)

WATER DISTRIBUTION PIPING: LAYOUT WATER PIPING SO THAT THE ENTIRE SYSTEM CAN BE DRAINED. ABOVE GRADE HOT AND COLD WATER PIPING SHALL BE 1/2" MINIMUM TYPE L COPPER TUBING WITH WROUGHT COPPER FITTINGS AND SWEAT CONNECTIONS. BELOW GRADE HOT AND COLD WATER PIPING SHALL BE 1/2" MINIMUM TYPE K COPPER TUBING WITH WROUGHT COPPER FITTINGS, AND SWEAT CONNECTIONS. PROVIDE WATER HAMMER ARRESTERS AT EACH FIXTURE OR GROUP OF FIXTURES AS REQUIRED. INSTALL CHROME PLATED BRASS ESCUTCHEON PLATES AT ALL PENETRATIONS THROUGH FINISHED SURFACES (INCLUDING CABINET INTERIORS). USE LEAD FREE OR TIN-ANTIMONY SOLDER, 95/5 FOR ALL SWEAT FITTINGS OF COPPER PIPING.

SANITARY SEWER PIPING: PROVIDE ALL DRAINS AND PIPING WITHIN THE PROJECT SPACE WITH CONNECTION TO THE EXISTING DRAINAGE SYSTEMS ON-SITE. SANITARY DRAINAGE PIPING ABOVE FLOOR SHALL BE ABS/PVC PLASTIC PIPE, WITH SOLVENT WELD FITTINGS, OR HUBLESS CAST-IRON PIPE AND FITTINGS AND CONNECTIONS. SANITARY DRAINAGE PIPING BELOW GRADE SHALL BE ABS/PVC PLASTIC PIPE WITH SOLVENT WELD FITTINGS. SERVICE-WEIGHT HUB AND SPIGOT TYPE CAST-IRON WITH NEOPRENE GASKET JOINT SYSTEM. NO ABS/PVC PLASTIC PIPING IS ALLOWED WITHIN THE CEILING VOIDS IF USED FOR NON-DUCTED RETURN AIR PLENUM. ALL DRAINAGE PIPING SHALL BE UNIFORMLY PITCHED AT 1/4" PER FOOT FOR PIPE SIZES 3" AND SMALLER AND 1/8" PER FOOT FOR PIPE SIZES 4" AND LARGER, UNLESS OTHERWISE REQUIRED BY EXISTING CONDITIONS, OR INDICATED ON THE DRAWINGS.

SANITARY VENT PIPING: PROVIDE A COMPLETE SYSTEM OF ABS/PVC PLASTIC PIPE, WITH SOLVENT WELD FITTINGS, OR STANDARD WEIGHT CAST IRON NO-HUB PIPE AND FITTINGS. NO ABS/PVC PIPING IS ALLOWED WITHIN THE CEILING VOIDS IF USED FOR NON-DUCTED RETURN AIR PLENUMS. THE VENT SYSTEM SHALL BE CONNECTED TO THE LANDLORD SYSTEM OR CARRIED THROUGH THE ROOF WITH APPROPRIATE FLASHING.

INTERIOR CONDENSATE DRAIN PIPING: ALL CONDENSATE DRAIN PIPING SHALL BE TYPE "L" HARD TYPED COPPER TUBE WITH WROUGHT COPPER FITTINGS AND SOLDERED CONNECTIONS MADE UP WITH 95/5 SOLDER. PROVIDE CLEANOUTS AT ALL PIPE ELBOWS AND END OF PIPE.

ACCESS PANELS SHALL BE PROVIDED WHERE CONCEALED CONTROL DEVICES, VALVES, ETC. ARE CONCEALED WITHIN WALLS WHERE ACCESS FOR ADJUSTMENT AND MAINTENANCE IS POSSIBLE THROUGH LAY-IN SUSPENDED CEILING. ACCESS PANELS ARE NOT REQUIRED.

SHUTOFF VALVES WITH UNIONS SHALL BE PROVIDED FOR SERVICE TO EACH PLUMBING FIXTURE OR OTHER EQUIPMENT ITEM, TO FACILITATE ISOLATION FOR REPAIR OR REPLACEMENT. PIPE LINE VALVES SHALL BE EQUAL TO CRANE SERIES #9200 QUARTER TURN BALL VALVE. CONSTRUCTION - TWO PIECE, BRONZE BODY, FULL PORTED, CHROME PLATED BRASS BALL, REPLACEABLE "TEFLON OR TFE" SEATS AND SEALS. RATING - 150 PSI WSP, 600 PSI WOG. CONNECTIONS - SOLDER OR THREADED ENDS TO MATCH PIPING. STANDARDS COMPLIANCE - BRONZE OR BRASS VALVES: MSS-SP-110. WHEN SHUTOFF VALVES ARE PLACED IN THE CEILING THE VALVES WILL BE LOCATED AT A MAXIMUM OF 12" ABOVE THE CEILING, AND NOTHING SHALL BE PLACED BETWEEN THE CEILING ACCESS AND THE VALVE.

CLEANOUTS: PROVIDE CLEANOUTS AT THE END OF EACH HORIZONTAL RUN, AND AT THE BASE OF ALL VERTICAL WASTE AND DRAIN PIPES. CLEANOUTS SHALL BE OF THE SAME SIZE AS THE PIPES THEY SERVE, CONFORMING TO CODE REQUIREMENTS. PROVIDE SUITABLE WALL OR FLOOR CLEANOUTS WITH ACCESSORIES TO OBSCURE FROM VIEW.

PIPE INSULATION: RIGIDICEL PIPE, FIBERGLASS PIPE INSULATION WITH FOAM BACKING, OR OTHER APPROVED INSULATION. SELF-SEALING ADHESIVE LAP JOINTS. JOINTS SHALL BE REINFORCED WITH STRIPS FOR TRANSVERSE JOINTS. JACKETING SHALL CONFORM TO ASTM C 86, TYPE 1, MAINTAIN VAPOR TRANSMISSION RATING OF 0.02 PER INCH WHEN TESTED ACCORDING TO ASTM E 96, PROCEDURES A (K) AND (J) 0.25 BTU/IN<sup>2</sup> HR. @ 1" @ 75 °F AT 75 °F MEAN TEMPERATURE WITH MINIMUM R-VALUE OF R4.

PIPE INSULATION THICKNESS AS INDICATED: DOMESTIC COLD WATER PIPING 1" AND SMALLER: 1/2" THICKNESS. DOMESTIC COLD WATER PIPING 1-1/4" - 2": 3/4" THICKNESS. PLUMBING VENT PIPING WITHIN 6 FEET OF ROOF OUTLET: 1" THICKNESS. CONDENSATE PIPING: 1/2" THICKNESS.

DOMESTIC HOT WATER PIPING 2" AND SMALLER: 1" THICKNESS. DOMESTIC HOT WATER RETURN PIPING: 3/4" THICKNESS.

INSULATE WATER AND WASTE PIPING BELOW HANDICAP LAVATORIES/SINKS.

PIPING INSTALLATION: PIPE SHALL BE ACCURATELY CUT FROM JOB MEASUREMENTS AND SHALL BE NEATLY ALIGNED, SECURELY CONNECTED, AND PROPERLY SUPPORTED. PIPING SHALL BE THOROUGHLY CLEANED BEFORE INSTALLATION. PROVIDE PIPE SLEEVES WHERE PIPING PASSES THROUGH STRUCTURE. THREADED, WELDED, AND SOLDERED JOINTS SHALL BE MADE IN A WORKMANLIKE MANNER ACCORDING TO GOOD PIPERITTING PRACTICES. WELDING SHALL BE PERFORMED BY A CERTIFIED WELDER. SET FIXTURES LEVEL AND IN PROPER ALIGNMENT. INSTALL SUPPLIES IN PROPER ALIGNMENT WITH FIXTURES. INSTALL SILICONE SEALANT BETWEEN FIXTURES AND ADJACENT MATERIAL, FOR SANITARY JOINT, AND OMIT ESCUTCHEONS.

REPAIR EXISTING PLUMBING SYSTEM COMPONENTS DAMAGED BY CONSTRUCTION OPERATIONS AND RESTORE TO ORIGINAL CONDITIONS.

SEAL ALL PENETRATIONS THRU EXTERIOR ELEMENTS WATERTIGHT AND WEATHERTIGHT. PENETRATIONS THRU FIRE RATED ELEMENTS SHALL BE CAULKED WITH 3M CP-25 FIRE BARRIER CAULK (THICKNESS AS REQUIRED AND RECOMMENDED BY MANUFACTURER) TO MAINTAIN FIRE RESISTANCE RATING OF FIRE-RATED ASSEMBLIES.

CONTRACTOR SHALL VERIFY THAT INSTALLATION WILL TIE INTO THE LANDLORD'S SEWER STUB-OUT OR EXISTING SEWER LINE ELEVATION POINT PRIOR TO BEGINNING INSTALLATION. IF THE WASTE LINE POINT OF CONNECTION IS TOO HIGH TO MAINTAIN THE REQUIRED FALL, THEN CONTRACTOR SHALL NOTIFY ENGINEER, SO THAT AN ALTERNATE ROUTING MAY BE WORKED OUT.

FERROUS PIPE HANGERS SHALL BE FEE & MASON FIGURE 215 OR EQUAL UNISTRUT MALLEABLE IRON SPLIT RING HANGER; COPPER PIPE HANGERS SHALL BE FIGURE 361 CAST BRASS WITH PLATED ADJUSTER. NO PERFORATED STRAP IRON HANGERS WILL BE PERMITTED. FEE & MASON #400 "AUTO-GRIP" TYPE HANGERS ARE AN ACCEPTABLE ALTERNATIVE HANGER. CONCRETE INSERTS, WHERE REQUIRED, SHALL BE UNISTRUT, MIDWEST, OR TRUSCON. HANGERS SHALL BE SPACED AT TEN FOOT INTERVALS OR LESS, AS REQUIRED TO AVOID SAG, PREVENT VIBRATION, AND ALL SHALL BE ACCURATELY LEVELING OR GRADING. VERTICAL PIPING SHALL BE SUPPORTED BY FEE & MASON FIGURE 241 OR EQUAL CLAMP FOR FERROUS PIPING, AND FIGURE 368 FOR COPPER. PROVIDE SHEET METAL SADDLES FOR INSULATED PIPING.

PIPING STERILIZATION: STERILIZE THE ENTIRE DOMESTIC WATER PIPING SYSTEM (COLD, HOT, AND HOT WATER RETURN) WITH A SOLUTION CONTAINING NOT LESS THAN 1% AVAILABLE CHLORINE. SOLUTION SHALL REMAIN IN THE SYSTEM 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.

TESTING: ALL WATER PIPING SHALL BE TESTED WITH 25 PSI OVER STATIC WATER PRESSURE BUT NOT LESS THAN 100 PSI HYDROSTATIC PRESSURE. GAS PIPING SHALL BE TESTED WITH 30 PSIG AIR PRESSURE. ALL WASTE PIPING SHALL BE TESTED WITH ALL STACKS FILLED WITH WATER, AND ANY OTHER TESTS REQUIRED BY THE PLUMBING INSPECTOR. ALL PIPING SHALL BE TESTED BEFORE ANY INSULATION IS INSTALLED, AND BEFORE BACKFILL, AND SHALL BE SUBJECT TO THE ABOVE PRESSURE FOR AN UNINTERRUPTED PERIOD OF NOT LESS THAN 24 HOURS. ALL LINES, JOINTS, FLANGES, VALVE STEMS, ETC., SHALL BE LEAK TIGHT.

PLUMBING SPECIALTIES: PROVIDE THE FOLLOWING AS REQUIRED: WATER HAMMER ARRESTERS: AS SCHEDULED ON THE DRAWINGS.

FLOOR AND WALL CLEANOUTS: AS SCHEDULED ON THE DRAWINGS OR EQUAL JOSAM, ZURN, OR WADE. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO DETERMINE THE TYPE OF FLOOR COVERING TO BE USED AT EACH CLEANOUT LOCATION, AND TO REMOVE IT AND INSTALL EACH CLEANOUT FLUSH WITH THE FINISHED FLOOR CONSTRUCTION. CLEANOUTS SHALL BE INSTALLED AT POINTS AS NOTED ON THE DRAWINGS, AS WELL AS AT THE FOOT OF EACH SOIL, WASTE OR INTERIOR DOWNSPOUT STACK, MINIMUM EVERY 50 FEET IN HORIZONTAL SOIL AND WASTE LINES, AND AT OTHER POINTS AS REQUIRED FOR EASY SYSTEM MAINTENANCE. CLEANOUTS SHALL BE FULL SIZE OF THE PIPE UP TO 4", AND 4" SIZE FOR PIPES ABOVE 4". GREASE ALL CLEANOUT PLUGS.

GATE VALVES 2" AND SMALLER: CLASS 125, RISING STEM, SOLDERED LEAD FREE CAST BRONZE BODY AND PARTS, SWEAT ENDS, WITH WEDGE DISC. BY APOLLO # 1025-LF, HAMMOND UP-668, MILWAUKEE # UP668 OR NIBCO # S-113-LF

BALL VALVES 2" AND SMALLER: (MAY BE USED IN PLACE OF GATE VALVES UP TO 2") CLASS 150, TWO PIECE LEAD FREE CAST BRONZE BODY, WITH SWEAT ENDS, CHROME PLATED BALL WITH CONVENTIONAL PORT, 600 PSI, BLOW-OUT PROTECTIVE SYSTEM BOLL # 70-LF-200, HAMMOND # UP8501, MILWAUKEE # PBA-15

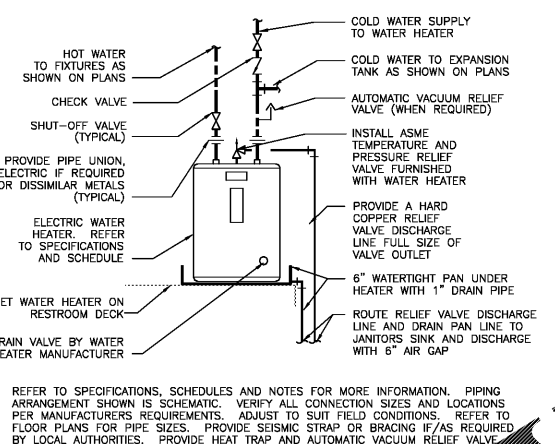
FERROUS UNIONS: SHALL BE CRANE OR EQUAL CONNECTION IRON AND BRASS, END AND JOINT WITH SWEATED ENDS. COPPER UNIONS SHALL BE CRANE OR EQUAL CAST BRONZE WREAT TYPE WITH GROUNDED JOINT. FERROUS COPPER UNIONS SHALL BE UNISTRUT, CONSTRUCTION OR EQUAL DIETZ TYPE WITH THREADED NYLON PORT.

PLUMBING FIXTURES: FURNISH AND INSTALL PLUMBING FIXTURES AS SCHEDULED, APPROVED EQUAL AMERICAN-STANDARD, KOHLER, ELKAY, SERRA, WILLIAMS, CRANE, OR JUST. ALL FIXTURES SHALL BE OF SAME MANUFACTURE WHERE POSSIBLE. FIXTURES SHALL BE SET FIRM AND SQUARE, CONNECTED TO ALL REQUIRED PIPING SERVICES READY TO USE; ALL FIXTURES SHALL BE LEFT CLEAN. SEE DRAWINGS FOR QUANTITIES AND DESCRIPTIONS.

WATER HEATER: SHALL BE OF THE TYPE MANUFACTURER SCHEDULED. ELECTRIC HEATER SHALL BE UL LISTED. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE CORRECT VOLTAGE, PHASE, AMPS AND WATTS OF WATER HEATER WITH THE ELECTRICAL CONTRACTOR.

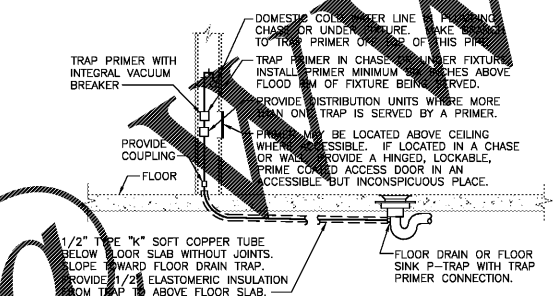
EQUIPMENT FURNISHED BY OTHERS: CONTRACTOR SHALL PROVIDE ROUGH-IN IN WASTES, VENTS AND WATER SERVICES, AND SHALL COMPLETELY INSTALL AND CONNECT THE EQUIPMENT FURNISHED BY OTHERS, IN LOCATIONS AS INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECT ROUGH-IN DIMENSIONS, AND SHALL VERIFY SAME WITH ARCHITECT AND/OR EQUIPMENT SUPPLIER PRIOR TO SERVICE INSTALLATIONS.

MARK	MANUFACTURER	MODEL	DESCRIPTION	NOTES
EW-C-1	ELKAY	VRCGRNTL8WSK	ELECTRIC WATER COOLER	PROVIDE 1/4 TURN ANGLE BALL STOP WITH METAL HANDLE, P-TRAP WITH CLEANOUT AND WASTE ARM TO WALL. COLOR FINISH SHALL BE TWO-TONE GRAY UPPER SHROUD WITH TEXTURED GRAY LOWER SHROUD
ET-1	AMTROL	ST-5	SMALL EXPANSION TANK	
LAV-1	AMERICAN STANDARD	0124024	28"X18" LAVATORY	CHICAGO FAUCET #802-311, 4" CENTER SET WITH 4" WRIST BLADE HANDLES, 0.5 GPM AERATOR, GRID STRAINER DRAIN WITH TAILPIECE, CHROME PLATED CAST BRASS P-TRAP WITH CLEANOUT, 1/4 TURN ANGLE STOPS, TRUEBRO LAV GUARD
MB-1	FIAT	MSB-2424	ONE PIECE MOLDED STONE 24"x24"x10" MOP BASIN WITH 3" STAINLESS STEEL DRAIN WITH INTEGRAL CHECKS	#MSG-2424 STAINLESS STEEL WALL GUARD, #835-AA SERVICE FAUCET, #832-A HOSE AND BRACKET
TMV-1	SYMMONS	5-225-CK MAXLINE	THERMOSTATIC MIXING VALVE	#SSSCT OPEN FRONT SEAT LESS COVER WITH STAINLESS STEEL SELF SUSTAINING CHECK HINGE;
WC-1	AMERICAN STANDARD	2835 128	ADA COMPLIANT ELONGATED WATER CLOSET 1.28 GPF	#4021 613 TANK WITH TANK COVER LOOKING DEVICE
WH-1	A.O SMITH	DEL-6	ELECTRIC WATER HEATER	208V, SINGLE PHASE, 2800 W, PROVIDE T&P RELIEF VALVE
WHA	PRECISION PLUMBING PRODUCTS		WATER HAMMER ARRESTOR	HARD DRAWN COPPER BODY WITH WROUGHT COPPER FITTINGS, PISTON TYPE WITH LUBRICATED EDPM "O" RING SEALS MEETING ASSE 1010 OR PDI WH-201

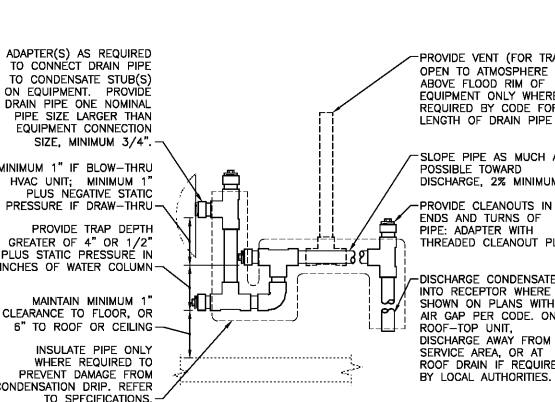


REFER TO SPECIFICATIONS, SCHEDULES AND NOTES FOR MORE INFORMATION. PIPING ARRANGEMENT SHOWN IS SCHEMATIC. VERIFY ALL CONNECTION SIZES AND LOCATIONS PER MANUFACTURER'S REQUIREMENTS. ADJUST TO SUIT FIELD CONDITIONS. REFER TO FLOOR PLANS FOR PIPE SIZES. PROVIDE SEISMIC STRAP OR BRACING IF/AS REQUIRED BY LOCAL AUTHORITIES. PROVIDE HEAT TRAP AND AUTOMATIC VACUUM RELIEF VALVE WHEN REQUIRED BY LOCAL AUTHORITIES.

4 WATER HEATER DETAIL NO SCALE



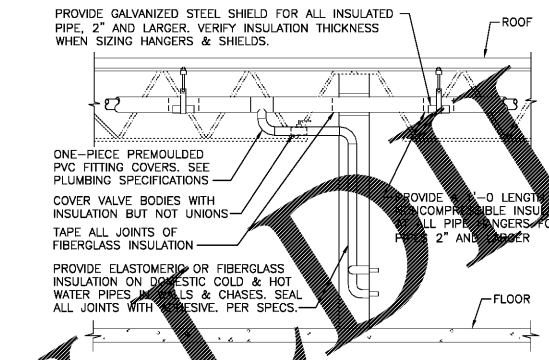
5 TRAP PRIMER NO SCALE



6 CONDENSATE DRAIN INSTALLATION NO SCALE

PLUMBING FIXTURE SCHEDULE

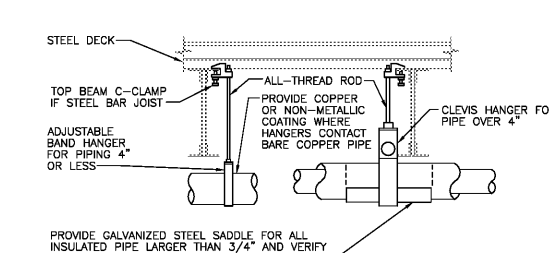
MARK	MANUFACTURER	MODEL	DESCRIPTION	NOTES
EW-C-1	ELKAY	VRCGRNTL8WSK	ELECTRIC WATER COOLER	PROVIDE 1/4 TURN ANGLE BALL STOP WITH METAL HANDLE, P-TRAP WITH CLEANOUT AND WASTE ARM TO WALL. COLOR FINISH SHALL BE TWO-TONE GRAY UPPER SHROUD WITH TEXTURED GRAY LOWER SHROUD
ET-1	AMTROL	ST-5	SMALL EXPANSION TANK	
LAV-1	AMERICAN STANDARD	0124024	28"X18" LAVATORY	CHICAGO FAUCET #802-311, 4" CENTER SET WITH 4" WRIST BLADE HANDLES, 0.5 GPM AERATOR, GRID STRAINER DRAIN WITH TAILPIECE, CHROME PLATED CAST BRASS P-TRAP WITH CLEANOUT, 1/4 TURN ANGLE STOPS, TRUEBRO LAV GUARD
MB-1	FIAT	MSB-2424	ONE PIECE MOLDED STONE 24"x24"x10" MOP BASIN WITH 3" STAINLESS STEEL DRAIN WITH INTEGRAL CHECKS	#MSG-2424 STAINLESS STEEL WALL GUARD, #835-AA SERVICE FAUCET, #832-A HOSE AND BRACKET
TMV-1	SYMMONS	5-225-CK MAXLINE	THERMOSTATIC MIXING VALVE	#SSSCT OPEN FRONT SEAT LESS COVER WITH STAINLESS STEEL SELF SUSTAINING CHECK HINGE;
WC-1	AMERICAN STANDARD	2835 128	ADA COMPLIANT ELONGATED WATER CLOSET 1.28 GPF	#4021 613 TANK WITH TANK COVER LOOKING DEVICE
WH-1	A.O SMITH	DEL-6	ELECTRIC WATER HEATER	208V, SINGLE PHASE, 2800 W, PROVIDE T&P RELIEF VALVE
WHA	PRECISION PLUMBING PRODUCTS		WATER HAMMER ARRESTOR	HARD DRAWN COPPER BODY WITH WROUGHT COPPER FITTINGS, PISTON TYPE WITH LUBRICATED EDPM "O" RING SEALS MEETING ASSE 1010 OR PDI WH-201



INSULATE IN UNCONDITIONED SPACE. DO NOT INSULATE IN CONDITIONED SPACE.

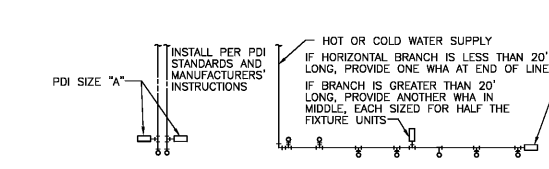
PROVIDE FIBERGLASS INSULATION WITH ALL-SERVICE JACKET WITH VAPOR BARRIER ON ALL COLD/HOT WATER PIPING AND CONDENSATE DRAIN PIPE. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION REGARDING INSULATION. INSTALL ALL INSULATION PER SPECIFICATIONS AND MANUFACTURERS INSTRUCTIONS. MAINTAIN VAPOR BARRIER ON COLD PIPING BY MEANS OF SEALANT AND TAPE. FLAME-SPREAD AND SMOKE-DEVELOPED INDEXES SHALL NOT EXCEED 25/50, SEAL EXPOSED ENDS OF FIBERGLASS INSULATION WITH ADHESIVE MASTIC.

1 PIPE INSULATION DETAIL NOT TO SCALE



PROVIDE GALVANIZED STEEL SADDLE FOR ALL INSULATED PIPE LARGER THAN 3/4" AND VERIFY INSULATION SIZE WHEN SIZING HANGERS

2 PIPE HANGER NO SCALE



PDI SIZE	SINGLE FIXTURE		MULTIPLE FIXTURES	
	PIPE SIZE	FIXTURE UNIT LOAD	FIXTURE UNIT TABULATION	FIXTURE
A	1/2"	1-11	VALVE WATER CLOSET	COLD
B	3/4"	12-32	URINAL	HOT
C	1"	33-60	COUNTER SINK	5 ---
D	1-1/4"	61-113	LAVATORY	1.5 1.5
E	1-1/2"	114-154	MOP BASIN	2.25 2.25
F	2"	155-330	WATER COOLER	.25 ---

3 WATER HAMMER ARRESTORS NO SCALE

GENERAL NOTES:

- PRIOR TO SUBMITTING BID, THE CONTRACTOR AND SUBCONTRACTORS SHALL VISIT THE JOB SITE AND FULLY ACQUAINT THEMSELVES WITH THE EXISTING CONDITIONS OF THE PROJECT. CONTRACTORS AND SUB-CONTRACTORS SHALL CAREFULLY REVIEW THE CONSTRUCTION DOCUMENTS. INFORMATION REGARDING THE COMPLETE WORK IS DISPRESSED THROUGHOUT THE DOCUMENT SET AND CANNOT BE ACCURATELY DETERMINED WITHOUT REFERENCE TO THE COMPLETE DOCUMENT SET.
- COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF THE OWNER, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE. PROVIDE PIPE RISERS, DROPS, AND OFFSETS AS REQUIRED FOR FIELD INSTALLATION AND TRADE COORDINATION. NOTIFY ARCHITECT OF ANY DISCREPANCIES BEFORE STARTING WORK.
- DRAWINGS FOR PLUMBING WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS. PROVIDE PIPING CONNECTIONS, FITTINGS, VALVES, OFFSETS, ETC. ET CETERA AND ALL MATERIALS NECESSARY FOR A COMPLETE SYSTEM.
- ALL WORK SHALL COMPLY WITH STATE AND LOCAL CODE REQUIREMENTS AS APPROVED AND AMENDED BY THE GOVERNING CITY AND THE AUTHORITY HAVING JURISDICTION. PURCHASE ALL PERMITS ASSOCIATED WITH THE WORK. OBTAIN ALL INSPECTIONS REQUIRED BY CODE.
- PROVIDE WATER HAMMER ARRESTORS THROUGHOUT WATER SYSTEMS AS REQUIRED. REFER TO "WATER HAMMER ARRESTERS" DETAIL.
- PROVIDE BACKFLOW PREVENTION DEVICES IN WATER LINES FEEDING PLUMBING FIXTURES AND/OR EQUIPMENT AS SHOWN ON PLANS AND ELSEWHERE AS REQUIRED BY AUTHORITY HAVING JURISDICTION. USE DEVICES OF APPROVED MANUFACTURER AND TYPE IN ACCORDANCE WITH REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
- CONTRACTOR SHALL VERIFY WATER PRESSURE PRIOR TO CONSTRUCTION. IF PRESSURE AT BUILDING ENTRY PRIOR TO ALL LOCALLY REQUIRED DEVICES IS LESS THAN 80 PSI, STATIC CONTACT OWNER'S REPRESENTATIVE IF PRESSURE EXCEEDS 80 PSIG, PROVIDE PRESSURE REDUCING VALVE.
- CONTRACTOR SHALL VERIFY LOCATION, DIRECTION OF FLOW AND DEPTH OF UTILITIES AT POINTS OF CONNECTION BEFORE START OF PROJECT.
- REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF PLUMBING FIXTURES. DO NOT SCALE FLOOR PLAN DRAWINGS FOR EXACT HORIZONTAL LOCATION OF PIPE RUNS.
- PROVIDE SHUT OFF VALVES AT ALL PLUMBING FIXTURE WATER SUPPLY CONNECTIONS. VALVES SHALL BE FULL PORT, LINE SIZE UNLESS OTHERWISE NOTED.
- COORDINATE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
- USE OF COMBUSTIBLE MATERIALS IS NOT ALLOWED IN THE RETURN AIR PLENUM. MATERIALS USED IN THE PLENUM SHALL HAVE FLAME SPREAD RATING NOT TO EXCEED 25, AND SMOKE DEVELOPED RATING NOT TO EXCEED 50 WHEN TESTED IN ACCORDANCE WITH ASTM E84.
- SUSPEND HORIZONTAL SERVICE PIPING FROM UNDERSIDE OF ROOF OR FLOOR STRUCTURE UNLESS OTHERWISE INDICATED. INSTALL PIPING AS HIGH AS POSSIBLE. EXTEND PIPING DOWN IN WALLS, PARTITIONS, AND CHASES TO SERVE FIXTURES AND EQUIPMENT.
- CAP ALL PIPING OPENINGS DURING CONSTRUCTION UNTIL FINAL CONNECTIONS TO EQUIPMENT AND ACCESSORIES ARE MADE.
- IF EXISTING PLUMBING FIXTURES ARE TO REMAIN, CLEAN AND REPAIR EXISTING FIXTURES TO PROPER WORKING ORDER AND LIKE NEW CONDITION.
- SANITARY PIPE 3" AND SMALLER SHALL BE SLOPED AT 1/4" PER FOOT. SANITARY PIPE 4" AND LARGER SHALL BE SLOPED AT 1/8" PER FOOT. CONDENSATE PIPING SHALL BE SLOPED A MINIMUM OF 1/4" PER FOOT.
- ALL PENETRATIONS THROUGH SLAB SHALL BE SLEEVED, FIRE STOPPED AND SEALED IN ACCORDANCE WITH THE LANDLORD'S STANDARD PROJECT DETAILS.

FIXTURE CONNECTION SCHEDULE

FIXTURE	CW	HW	WASTE	VENT
LAV	1/2"	1/2"	2"	2"
EW/C	1/2"	--	2"	1/12"
WC	1-1/4"	--	4"	2"
FD	--	--	2"	2"
MB	3/4"	3/4"	3"	2"

**HENDERSON ENGINEERS**  
 8345 LENEVA DRIVE, SUITE 300  
 LENOVA, KS 66211  
 TEL (913) 742-5000 FAX (913) 742-5001  
 WWW.HENDERSONENGINEERS.COM  
 1750003858  
 FL CERTIFICATE OF AUTHORIZATION # EB 7906  
 EXPIRES 02/28/19

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REVISIONS	DATE
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PLUMBING NOTES, DETAILS, SCHEDULES AND SPECIFICATIONS

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