

PLUMBING SPECIFICATIONS

1. INTRODUCTION

1.1 THE CONTRACTOR FOR INSTALLATION OF PLUMBING SYSTEMS WILL BE ACCOMPLISHED IN THE FIELD AT THE DIVISION LEVEL (IN CASE OF A CONFLICT BETWEEN THIS SPECIFICATION AND THE CONTRACT DOCUMENTS AND/OR WRITTEN OR VERBAL INSTRUCTIONS PROVIDED BY THE CONSTRUCTION MANAGER, THE DIVISION'S INSTRUCTIONS SHALL PREVAIL). HEREAFTER IN THIS SPECIFICATION, THE WORD "PLUMBING CONTRACTOR" SHALL REFER TO THE INSTALLING PLUMBING CONTRACTOR AND "OWNER" SHALL REFER TO 7-ELEVEN.

1.2 SCOPE OF WORK

1.2.1 PLUMBING CONTRACTOR SHALL FURNISH AND INSTALL PLUMBING FIXTURES, ACCESSORIES, AND ATTENDANT PIPING AS STATED HEREIN. REFER TO THE PLUMBING PLANS AND THE "MATERIALS" PORTION OF THIS SPECIFICATION FOR EQUIPMENT TO BE FURNISHED. EXACT LOCATION OF ALL EQUIPMENT SHALL BE DETERMINED BY REFERENCE TO THE PLANS AND MEASUREMENTS AT THE BUILDING SITE AND IN COOPERATION WITH OTHER CONTRACTORS AND IN ALL CASES SHALL BE SUBJECT TO THE OWNERS APPROVAL.

1.3 GENERAL

1.3.1 ALL SAFETY PRECAUTIONS SHALL BE TAKEN TO PROTECT PERSON, PROPERTY, AND EQUIPMENT.

1.3.2 NO COMPENSATION FOR WORK PERFORMED OVER AND ABOVE PROJECTS SUM SHALL BE ALLOWED DUE TO CONDITIONS WITH WHICH THE PLUMBING CONTRACTOR SHOULD HAVE BEEN FAMILIAR.

1.3.3 ANY DEVIATION BY PLUMBING CONTRACTOR FROM THE PLANS AND SPECIFICATIONS, OR ANY SUBSTITUTION OF EQUIPMENT FROM THAT SPECIFIED, SHALL FIRST RECEIVE OWNER'S APPROVAL.

1.4 OPERATIONS AND INSTALLATION

1.4.1 ALL DELIVERIES TO COINCIDE WITH CONSTRUCTION SCHEDULE. MATERIALS SHALL BE STORED WHERE AND/OR AS DIRECTED BY THE GENERAL CONTRACTOR. STORAGE MUST BE IN SUCH A PLACE AS TO AVOID ACCIDENTAL MUTILATION BY EQUIPMENT BY ANY CONTRACTOR WHILE PERFORMING THEIR WORK, WHETHER ON SITE OR OFF.

1.4.2 ALL UNDER FLOOR PIPING SHALL BE INSTALLED IN CONJUNCTION WITH THE GENERAL CONTRACTOR'S WORK SCHEDULE. NO UNDERGROUND WORK SHALL BE COVERED OR ENCLOSED UNTIL IT HAS BEEN INSPECTED AND TESTED.

1.4.3 PLUMBING CONTRACTOR SHALL DO THE NECESSARY TRENCHING, SHORING AND BACKFILLING REQUIRED TO FULFILL HIS CONTRACT. BOTTOMS OF TRENCHES SHALL BE CUT TO GRADE.

1.4.4 ALL OPENINGS AND STUB-UP FOR PLUMBING PIPING AND FIXTURES SHALL BE CAREFULLY LOCATED AND COORDINATED, OTHERWISE, PLUMBING CONTRACTOR SHALL CUT NEW OPENINGS AT HIS OWN EXPENSE, AND REIMBURSE OTHER SUBCONTRACTORS FOR ANY DAMAGE DONE TO THEIR WORK.

1.5 CODE AND PERMIT REQUIREMENTS

1.5.1 ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE LOCAL LAWS, REGULATIONS, ORDINANCES, STATUTES, AND CODES, WHICH SHALL BE DELINEATED, AND ALL MODIFICATIONS REQUIRED BY THE INSPECTION AUTHORITIES SHALL BE MADE BY PLUMBING CONTRACTOR WITHOUT ADDITIONAL COST TO OWNER.

1.5.2 PLUMBING CONTRACTOR SHALL OBTAIN, PAY FOR AND FURNISH ALL PERMITS REQUIRED BY LOCAL OR STATE ORDINANCES OR CODES, AND THESE COSTS SHALL BE STATED SEPARATELY ON THE PLUMBING CONTRACTOR'S INVOICES.

2. MATERIALS

2.1 DOMESTIC WATER PIPING

2.1.1 ABOVE AND BELOW GRADE WATER PIPING SHALL BE PEX TUBING CONFORMING TO ASTM F877 CROSS-LINKED POLYETHYLENE TUBING HOT AND COLD WATER DISTRIBUTION SYSTEMS, ASTM F876 CROSS-LINKED POLYETHYLENE TUBE, ASTM F1807 FITTING AND ASTM F2159 FITTINGS, COMPLY WITH NSF STANDARD 14 AND 61, AND COMPLY WITH ASTM E84 AND CAN/ULC S102.2. PEX TUBING SHALL BE WATTS WATERPEX CROSS-LINKED POLYETHYLENE OR EQUAL. ALL PEX TUBING BELOW GRADE SHALL BE SLEEVED WITH PVC PIPE. 2.1.1.1 FITTINGS: FITTINGS SHALL BE MECHANICAL CRIMP FITTINGS IN COMPLIANCE WITH ASTM F1807 AND F2159. PEX FITTINGS SHALL BE WATTS BRASS CRIMPING FITTINGS USING EITHER WATTS COPPER CRIMPING OR STAINLESS STEEL CINCHCLAMP OR EQUAL. INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

2.1.2 ABOVE AND BELOW GRADE WATER PIPING SHALL BE TYPE "L" AND "M" HARD DRAWN SEAMLESS COPPER TUBING CONFORMING TO ASTM B88.

2.1.2.1 COPPER UNIONS: CAST-COPPER-ALLOY, HEXAGONAL-STOCK BODY, WITH BALL-AND-SOCKET, METAL-TO-METAL SEATING SURFACE AND SOLDER-JOINT. JOINING MATERIAL SHALL BE ASTM B813 WATER-FLUSHABLE, LEAD-FREE FLUX ALLOY SOLDER.

2.2 FILTERED WATER PIPING

2.2.1 ABOVE AND BELOW GRADE FILTERED WATER PIPING SHALL BE CPVC TUBING CONFORMING TO ASTM D2846 AND CSA B137 CHLORINATED POLY (VINYL CHLORIDE) PLASTIC HOT AND COLD WATER DISTRIBUTION SYSTEMS, ASTM D1784 RIGID AND CHLORINATED PVC COMPOUNDS, ASTM F493 SOLVENT CEMENTS, COMPLY WITH NSF STANDARD 14 AND 61, AND COMPLY WITH ASTM E84 AND CAN/ULC S102.2. CPVC TUBING SHALL BE FLOWGUARD GOLD CPVC CTS OR EQUAL.

2.2.1.1 FITTINGS: FITTINGS SHALL BE SOCKET TYPE JOINTS IN COMPLIANCE WITH ASTM D2846 AND CSA B137. CPVC FITTINGS SHALL BE FLOWGUARD GOLD CPVC CTS FITTINGS OR EQUAL. JOINING MATERIAL SHALL BE ASTM F493 SOLVENT CEMENT. INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

2.3 SOIL, WASTE AND VENT PIPES

2.3.1 ABOVE AND BELOW GRADE SOIL, WASTE AND VENT PIPING SHALL BE PVC PLASTIC, SCHEDULE 40 DWV PIPE CONFORMING TO ASTM D2665 WITH PLAIN ENDS, CELLULAR (FOAM) CORE PVC NOT ALLOWED. INSTALL PER ASTM D2665 AND ASTM D2321.

2.3.1.1 FITTINGS SHALL BE PVC SOCKET-TYPE DWV PIPE FITTINGS; ASTM D2665 MADE TO ASTM D3311 DRAIN, WASTE AND VENT PATTERNS.

2.3.2 ABOVE AND BELOW GRADE SOIL, WASTE AND VENT PIPING SHALL BE HUB-AND-BENT GOT CAST-IRON SOIL PIPE AND FITTINGS CONFORMING TO ASTM A74 WITH ASTM C564 RUBBER GASKETS. INSTALL CAST-IRON SOIL PIPING ACCORDING TO CISPI'S "CAST IRON SOIL PIPE AND FITTINGS" CHAPTER IV, "INSTALLATION OF CAST IRON SOIL PIPE AND FITTINGS."

2.3.3 ABOVE GRADE SOIL, WASTE AND VENT PIPING SHALL BE ALUMINUM COPPER DRAINAGE TUBING CONFORMING TO ASTM B306 AT PLUMBING CONTRACTOR'S OPTION.

2.4 FLASHING: SHEET LEAD 4 POUNDS PER SQUARE FOOT, MINIMUM.

2.5 INSULATION

2.5.1 DOMESTIC COLD WATER (WITHIN BUILDING)

COPPER PIPE: 1/2" WALL ONE-PIECE FIBERGLASS COVERING HAVING A CONDUCTIVITY NOT EXCEEDING 0.27 WITH FIRE RESISTANT JACKET WITH SELF-SEALING LAP TO PROVIDE A CONTINUOUS VAPOR BARRIER BY CERTAINTED, OWENS-CORNING OR ARMSTRONG. (SEE BELOW FOR PLUMBING FITTING INSULATION REQUIREMENTS)

PEX TUBING: IN CLIMATES WHERE TEMPERATURES CAN DROP BELOW FREEZING (0°C / 32°F) INSTALL 1/2" WALL ONE-PIECE FIBERGLASS COVERING HAVING A CONDUCTIVITY NOT EXCEEDING 0.27 WITH FIRE RESISTANT JACKET WITH SELF-SEALING LAP TO PROVIDE A CONTINUOUS VAPOR BARRIER BY CERTAINTED, OWENS-CORNING OR ARMSTRONG. (SEE BELOW FOR PLUMBING FITTING INSULATION REQUIREMENTS)

EXCEPTION: FOR NON-RECIRCULATING HOT WATER SYSTEM, PROVIDE 1/2" WALL ONE-PIECE FIBERGLASS COVERING HAVING A CONDUCTIVITY NOT EXCEEDING 0.27 WITH FIRE RESISTANT JACKET WITH SELF-SEALING LAP TO PROVIDE A CONTINUOUS VAPOR BARRIER BY CERTAINTED, OWENS-CORNING OR ARMSTRONG ON THE FIRST 8 FEET OF INLET PIPING AT WATER HEATER.

CPVC TUBING: IN CLIMATES WHERE TEMPERATURES CAN DROP BELOW FREEZING (0°C / 32°F) INSTALL 1/2" WALL ONE-PIECE FIBERGLASS COVERING HAVING A CONDUCTIVITY NOT EXCEEDING 0.27 WITH FIRE RESISTANT JACKET WITH SELF-SEALING LAP TO PROVIDE A CONTINUOUS VAPOR BARRIER BY CERTAINTED, OWENS-CORNING OR ARMSTRONG. (SEE BELOW FOR PLUMBING FITTING INSULATION REQUIREMENTS)

2.5.2 DOMESTIC HOT WATER

COPPER PIPE: 1/2" WALL ONE-PIECE FIBERGLASS COVERING HAVING A CONDUCTIVITY NOT EXCEEDING 0.27 WITH FIRE RESISTANT JACKET WITH SELF-SEALING LAP TO PROVIDE A CONTINUOUS VAPOR BARRIER BY CERTAINTED, OWENS-CORNING OR ARMSTRONG. (SEE BELOW FOR PLUMBING FITTING INSULATION REQUIREMENTS)

PEX TUBING: 1/2" WALL ONE-PIECE FIBERGLASS COVERING HAVING A CONDUCTIVITY NOT EXCEEDING 0.27 WITH FIRE RESISTANT JACKET WITH SELF-SEALING LAP TO PROVIDE A CONTINUOUS VAPOR BARRIER BY CERTAINTED, OWENS-CORNING OR ARMSTRONG. (SEE BELOW FOR PLUMBING FITTING INSULATION REQUIREMENTS)

FOR HOT WATER PIPING BEING SERVED BY SYSTEM WITH RECIRCULATING PUMP, PROVIDE 1" WALL ONE-PIECE FIBERGLASS COVERING HAVING A CONDUCTIVITY NOT EXCEEDING 0.27 WITH FIRE RESISTANT JACKET WITH SELF-SEALING LAP TO PROVIDE A CONTINUOUS VAPOR BARRIER BY CERTAINTED, OWENS-CORNING OR ARMSTRONG. (SEE BELOW FOR PLUMBING FITTING INSULATION REQUIREMENTS)

2.5.3 INDIRECT AND CONDENSATE DRAIN PIPING (WITHIN BUILDING)

COPPER PIPE: PROVIDE 1" FLEXIBLE UNICELLULAR INSULATION BY ARMACELL.

PVC PIPING: NO INSULATION REQUIRED.

FOR PIPING AT HANGERS, PROVIDE 8" LONG SECTIONS OF HIGH DENSITY, HIGH TEMPERATURE CALCIUM SILICATE BY JOHNS-MANVILLE, FIBERGLASS BY KNAUF, OR 8" LONG STYROFOAM BILLETS BY DOW. INSULATION SHALL BE CONTINUOUS ALONG THE PIPE SURFACE, EXCEPT AT VALVES, UNIONS, AND WHERE PIPING IS EXPOSED AT FIXTURES.

FOR HOT AND COLD WATER PIPING EXPOSED, CONCEALED IN WALLS, AND/OR INSTALLED INSIDE MASONRY UNITS OF WALLS, COVER FITTINGS WITH ZESTON, KNAUF, OR EQUAL ONE-PIECE PVC PREMOULDED INSULATING COVERS. FITTING COVERS, JACKETS AND ADHESIVES SHALL NOT EXCEED FLAME SPREAD RATING OF 25 AND SMOKE DEVELOPMENT RATING OF 50 PER ASTM E84. AT ALL ELBOWS AND TEES, FILL VOIDS BETWEEN COVERS AND PIPING WITH FIBERGLASS INSULATION AND TAPE JOINTS. INSTALL PIPE INSULATION IN COMPLIANCE WITH MANUFACTURER'S RECOMMENDATIONS. WHERE PREMOULDED INSULATING FITTINGS ARE NOT APPROVED BY LOCAL AUTHORITIES, MITER INSULATION AT FITTINGS.

2.6 INDIRECT AND CONDENSATE DRAIN LINES

PROVIDE HARD DRAWN, TYPE "M" OR "L" COPPER PIPE FOR ALL CONDENSATE DRAIN PIPING FROM COOLER AND FREEZER EVAPORATORS. PROVIDE HEAT TRACE FOR ALL CONDENSATE DRAIN PIPING LOCATED IN FREEZERS, AND ROUTE TO FLOOR DRAIN IN BUILDING.

PROVIDE PVC PIPE FOR ALL OTHER INDIRECT AND CONDENSATE DRAIN PIPING FROM HVAC, PLUMBING, AND BEVERAGE EQUIPMENT, AND ROUTE TO FLOOR DRAIN IN BUILDING.

3. TESTING AND INSPECTION:

3.1 THE ENTIRE PLUMBING SYSTEM SHALL BE TESTED BEFORE COVERING OR ENCLOSING.

3.2 INSPECTION:

WORK SHALL BE INSPECTED FOR COMPLIANCE WITH CODES, ORDINANCES, REGULATIONS AND ADHERENCE TO CONTRACT DOCUMENTS. PLUMBING CONTRACTOR SHALL SUPPLY OWNER WITH SIGNED FORMS OR PROOF OF ACCEPTANCE BY THE LOCAL AUTHORITY BEFORE CONTINUING FROM ONE STAGE TO ANOTHER. FINAL APPROVAL SHALL BE OBTAINED BEFORE FINAL PAYMENT IS MADE ON THE CONTRACT.

3.3 PERFORMANCE REQUIRED:

3.3.1 PLUMBING CONTRACTOR SHALL INSTALL ALL PLUMBING SYSTEMS LEAK FREE AND AS PER PLANS AND SPECIFICATIONS.

3.3.2 ALL EXPOSED EQUIPMENT SHALL BE INSTALLED IN A WORKMANLIKE MANNER AND WILL BE SUBJECT TO ARCHITECTURAL INSPECTION FOR AESTHETIC APPEARANCE.

4. CUTTING AND CLEANING:

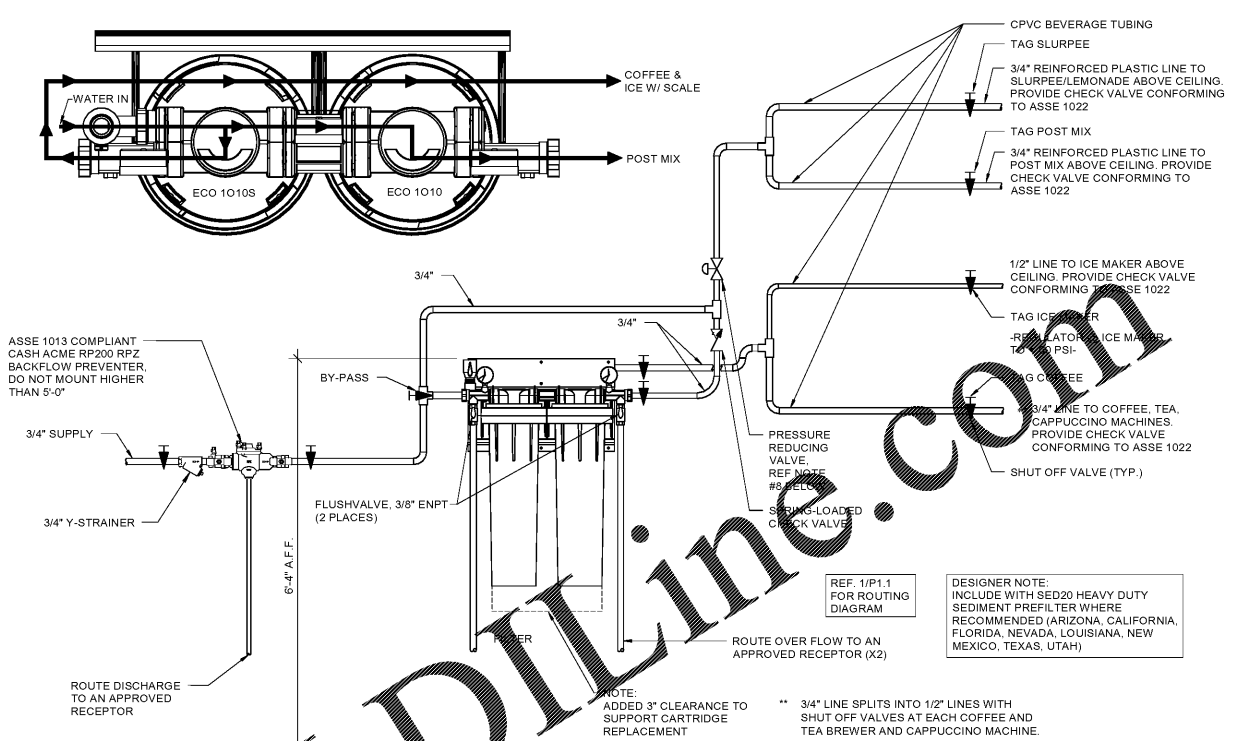
4.1 PLUMBING CONTRACTOR SHALL CLEAN ENTIRE SITE OF DEBRIS, TOOLS AND EQUIPMENT RELATED TO THIS WORK.

4.2 PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PAINTING OF HIS WORK WHICH MAY BE REQUIRED TO RELIEVE THE WORK OF OTHER CONTRACTORS.

5. GUARANTEES:

5.1 PLUMBING CONTRACTOR SHALL GUARANTEE ALL OF THE WORK AND THE COMPLETE OPERATION WILL BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS. PLUMBING CONTRACTOR AGREES TO REPLACE, WITHOUT EXPENSE TO THE OWNER, ANY PART OF HIS WORK ON THIS INSTALLATION WHICH PROVES TO BE DEFECTIVE WITHIN ONE (1) YEAR AFTER ACCEPTANCE OF THE WORK.

REV 03/03/15

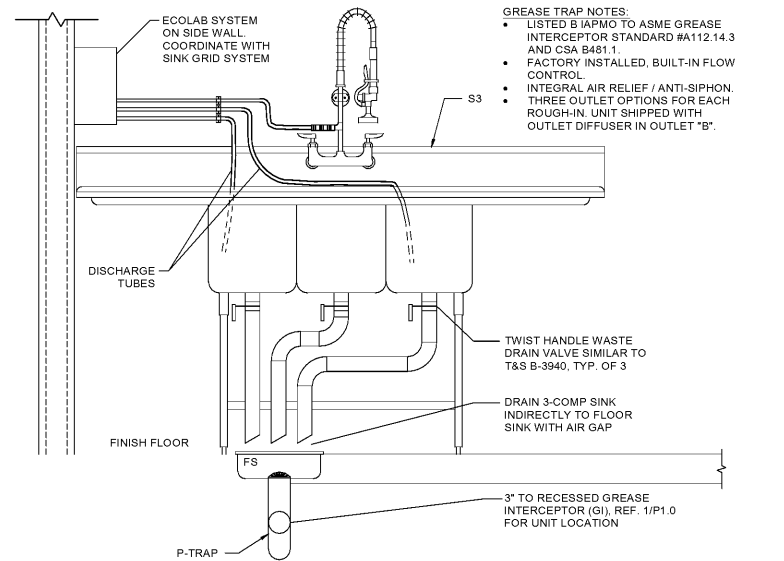


ECOLAB HIGH CAPACITY SPLIT TWIN FILTERED WATER SYSTEM

1. WATER SUPPLY MUST BE 3/4" INCH.
2. WATER SHUT OFF VALVE SHALL BE "BALL LOCK" TYPE. POSITIVE ON-OFF.
3. DRAIN MUST BE PROVIDED TO PERMIT FLUSHING OF FILTERS.
4. WATER FOR ICE MAKERS, COFFEE MAKERS AND CAPPUCCINO MACHINES SHALL BE ROUTED THROUGH THE ECOLAB ECO-1010S FILTER.
5. WATER FOR FSD AND FCB SHOULD NOT BE ROUTED THROUGH THE ECOLAB ECO-1010S (WILL REDUCE CARBONATION).
6. ECO-1010 OR ECO-1010S FILTERS MAY BE CHANGED INDIVIDUALLY / ADDITIONALLY AS NEEDED. NOTE: ECOLAB ECO-1010S WILL PROVIDE UP TO 50,000 GALLONS OF SCALE CONTROL.
7. HONEYWELL PRESSURE REDUCING VALVE MODEL DS0SC1030 (SET AT 65 PSI) INSTALLED BEFORE FIRST TEE TO BEVERAGE EQUIPMENT.
8. ECOLAB RECOMMENDS MINIMUM INLET PRESSURE OF 45 PSI AND WILL REPORT BACK / CALL OUT ANY UNITS WITH INLET FLOW BELOW 45 PSI FOR REVIEW. IN THIS CIRCUMSTANCE GRUNFOS MQ3-350 BOOSTER PUMP ASSEMBLY IS RECOMMENDED.
9. ECOLAB RECOMMENDS A SEPARATE ECO-1010S (SCALE CONTROL FILTER) INSTEAD OF THE 55-IMF SCALE STICKS FOR UNITS REQUIRING 15,000 GALLONS OR MORE OF SCALE CONTROL OR WHERE THE RAW WATER HARDNESS EXCEEDS 10 GPG HARDNESS TO PROTECT EQUIPMENT FROM EXCESS WATER HARDNESS SCALE BUILD-UP.
10. ECOLAB SED 20 PREFILTER IS AVAILABLE - ONLY REQUIRED IN EXTREME WATER CONDITION AREAS AND WILL REQUIRE EXTRA SINGLE MANIFOLD IN FRONT OF STANDARD SYSTEM.

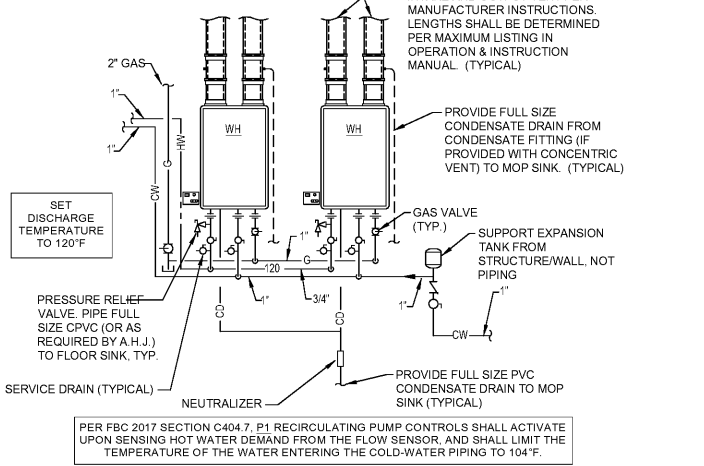
1 ECOLAB WATER PURIFICATION SYSTEM

N.T.S.



3-COMPARTMENT SINK DETAIL

N.T.S.



NOTE: LOCATIONS OF VALVES, PUMP AND PIPING ARE DIAGRAMMATIC ONLY AND MAY VARY FROM THAT SHOWN. INSTALL WATER HEATER, EXHAUST VENT, AIR INTAKE AND ROOF CAPS AS RECOMMENDED BY MANUFACTURER, PER CODE, AND TO MAXIMIZE SPACE FOR FUTURE MAINTENANCE. CONTRACTOR SHALL USE DIELECTRIC UNIONS FOR ALL PIPE CONNECTIONS BETWEEN DISSIMILAR METALS.

2 WATER HEATER

N.T.S.

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SHEET TITLE
PLUMBING DETAILS & SPECIFICATIONS

PROFESSIONAL ENGINEER
JOSE J. DIAZ-VELAZQUEZ
No. 78474
STATE OF FLORIDA
LICENSE

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P2.0