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## **Suggested Specification for PEX Plumbing Supply Systems**

### PEX Plumbing Supply System

1. Provide a complete plumbing supply system as shown on the plans and as specified. All labor, materials, transportation, equipment and services to install plumbing system where indicated on project drawings shall be supplied for the project. System shall be complete with all materials and accessories from one manufacturer. System shall be AquaSeal as manufactured by ComfortPro Systems or engineer approved equal that meet or exceed all of the requirements.
2. Piping installed in the system shall be CTSOD SDR-9 polyethylene (PEX) cross-linked piping of the minimum sizes indicated on the plans. ASTM, NSF, and IAPMO approved tubing shall be installed to supply the fixtures as shown on the drawings. PEX pipe shall have a minimum operating temperature of 180F at an operating pressure of 90 psig. The installation shall be in strict accordance with all manufacturers' instructions in accordance with their warranty policy.
3. All PEX piping routed through walls and floors within the heated space shall not require insulation. All piping installed within cast concrete or locations that would not allow easy replacement shall be sleeved with an outer corrugated plastic jacket that will allow the replacement of the center carrier. All PEX tubing that will be installed underground or in unheated spaces will be pre-insulated PEX tubing as manufactured by MicroFlex.
4. Piping shall be color coded to cold and hot to be easily recognizable during construction and for owner's service afterward.
5. Piping Flow Rates – each run of tubing shall be designed to handle maximum flow to all connected fixtures. Maximum flow rates for plumbing tubing shall not exceed:

3/8" PEX Tubing – 3 gpm

1/2" PEX Tubing - 9 gpm

3/4" PEX Tubing – 14 gpm

6. Tubing supply system shall be engineered in a modified Home Run arrangement. Every fixture group shall have a separate set of cold and hot supply mains, with individual shutoffs at the manifold. Insure that a minimal bending radius of 6 times the pipe diameter is maintained and that no piping is twisted or kinked.
7. Contractor shall prepare a shop drawing of all plumbing supply piping for approval by the engineer.
8. Where tubing penetrates building structural components, holes shall be drilled large enough to avoid damaging tubing. Where tubing passes from one floor to another, fire stopping caulk shall be employed as contained in the general architectural specifications. Tubing secured to building structural elements shall be protected by plastic talon type clamps to avoid any noise or rubbing damages. At any location that tubing is to be sharply re-routed, a plastic bend support shall be employed to permanently prevent kinking.

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9. Fittings – All PEX tubing shall be connected with manufacturers supplied barbed fittings. Fittings and tubing must be acquired and approved from a single source manufacturer. Mixing of manufacturers products shall not be allowed. Fittings installed above grade shall be ProPlas plastic fittings manufactured to ASTM standard F-2169. All fittings to be installed below grades shall be brass fittings.
10. Contractor shall store all plumbing materials in a suitable manner after delivery to jobsite. Tubing shall not be exposed to sunlight either prior to or after installation into floor areas. After tubing runs are installed, the ends of the PEX tubing shall be protected by tape over each end to avoid entry of any foreign materials or liquids.
11. Provide factory pre-fabricated modular plastic manifolds for all plumbing supplies. Each circuit manifold module shall incorporate a barbed end for the connection of plumbing tubing. Manifold assemblies shall include and not be limited to:
  - a. Color coded bodies for cold and hot supplies.
  - b. Individual quarter turn isolation valves for each supply.
  - c. Union connection for main supply
  - d. Top End Union connection for extension into second manifold where required
  - e. Straight or Angled Swivel Connector for each supply to avoid stress on tubing or manifold
12. Tubing Attachment – at every location where the 3/8" through 1" tubing shall attach to a fitting, manifold, or fixture, the tubing shall be secured with an ASTM 2098 pinch lock clamp. Clamps shall be stainless steel non-adjustable, with a manufacturer's lifetime warranty. Contractor shall use the appropriate domestic cinch tool to make all connections. Tool shall tighten clamp with a single closure of the handles. If handles are not fully closed to complete clamp action, it shall be not able to be removed from clamp.
13. System Trim – lavatory risers, toilet risers, ice makers, etc. shall be fitted with PEX connections during the finish stage of installation. Local service valves installed shall be barbed ends, and secured with the same stainless steel clamps as used on the distribution system.
14. After installation of tubing and before pouring of floor, AquaSeal piping and system shall be pressure tested to a minimum of 60 psig and a maximum of 100 psig for a 24 hour period. Contractor shall notify owners and general contractor representatives for verification both before and after testing period. All piping shall be bled of air pockets and minimum 4 inch test gauges shall be installed temporarily for testing. If test pressure drop more than 2 psig over the 24 hour period, system shall be re-checked and re-tested. Any tubing showing signs of damage at the jobsite before pour shall be replaced without any concealed joints whatsoever. Tubing shall remain pressurized and monitored during the entire floor pour to be certain integrity is maintained.
15. Installing contractor shall be responsible for all necessary adjustments to plumbing system after activation. All loops shall be tested, balanced, and operating to prove system operation.
16. All materials shall come complete with a Manufacturers Standard 10 Year Warranty to include both material and consequential repair/replacement costs included for the owner's protection. Manufacturers that provide replacement materials only shall not be acceptable. Materials shall also carry an additional 15 year warranty after the initial 10 years.
17. Provide the services of a factory authorized local representative to supervise initial startup of the system at the jobsite. Contractor shall submit a letter of compliance with all manufacturers installation recommendations from the manufacturers representative with final operating and instruction manuals.