Manifold Supply Plumbing

The first copper pipes were used in plumbing systems nearly 5,000 years ago. Today, a majority of homes use copper pipes for water distribution. Copper holds certain advantages over other metals like lead and iron. In comparison to these metals, copper is softer and easier to work with and is relatively non-toxic. The availability and water-resistant properties of copper also continue to make it the first choice for most homebuilders. But as new materials are developed and new technologies are created, copper piping may no longer be the obvious choice for today's homebuilders.

To ensure a comfortable living environment, a plumbing system should meet the demands of the homeowner. It should be durable and free from leaky connections, joints, or fittings, which can all cause water issues. The more connections in a home's plumbing system, the greater the chance that one of them will fail over time, leading to water damage, rot, and even mold.

The old way: copper pipe

The conventional copper pipe method of plumbing requires that the water supply line branch at the water heater, with the hot water line running through the water heater and then running in tandem with the cold water line throughout the home. Smaller-diameter lines branch off from the main lines to serve water-using fixtures and appliances. This system requires more fittings, and pipe sizes vary according to the loads they carry. With this method, the water supply is subject to pressure loss if several fixtures on a branch are used at once.

Copper pipe also has to be run around obstacles, so more connections and intersections are required. With copper, sweating and connecting the joints takes time. After construction, the pipe connections are inaccessible within the walls. Since many of the joints are hidden behind finished walls, if there's a leak, the homeowner may not realize it until substantial damage has been done to the home. Repairs from such a leak can be costly and difficult.

The new way: manifold plumbing system

A new method for water distribution in residential homes is gaining popularity among homebuilders. A manifold plumbing system is a control center that feeds flexible hot and cold water supply lines to individual fixtures. Flexible plastic piping is used because it's resistant to extreme temperatures and is therefore suitable for hot water use. This piping is also resistant to chemicals that can corrode copper pipes and will retain its shape and strength over time.

A good alternative to traditional copper pipe is a manifold plumbing system with PEX (cross-linked polyethylene) piping. Manifold plumbing systems are similar in concept to a home's electrical circuit breaker system. Separate manifolds serve hot and cold water lines. The cold water manifold is fed from the main water supply line, and the hot water manifold is fed from the hot water heater.

Water pressure in the manifolds is maintained by the incoming service line, and a dedicated water supply line feeds each fixture from a port in the manifold. Because each fixture has its own supply line, the size of the PEX pipe can be adjusted for a fixture's specific use.

Flexible plastic piping is quieter than other types of piping. It expands and contracts less and is less likely to cause a

tapping sound in the water pipes.

Installing a manifold plumbing system

The plumbing manifold and flexible plastic piping are relatively quick and easy to install. Because of its easy installation, a manifold system can help builders save on labor costs.

- The manifold is typically installed near the water heater to minimize lengthy supply runs. Plumbing manifolds are placed in a spot that the homeowner can easily access, such as a service closet or basement wall. Opposing port manifolds can be placed between stud framing.

- The flexible plastic pipe slides over the fittings, and a metal collar is crimped to seal the connection. Shutoff valves are built into each port for individual control of the lines and of the flow to individual fixtures.

- Flexible plastic piping can be installed with only two fittings for each line—one fitting at the manifold and one transition fitting at the fixture. A single length of PEX piping can run directly from a manifold through studs and around obstacles. The PEX pipe is pulled, much like a wire, from the manifold location to the fixture locations. The pipe is secured with clips and then cut.

Manifold plumbing systems allow the builder to design and install a hot and cold water delivery system in the home quickly, because the flexible tubing can be easily run around and through obstacles in the home. They cut down on the chance of a connection failure, because there are far fewer connections in the system. Service is also relatively simple, since manifolds are corrosion-resistant and the connections are visible. Even though the initial cost to the homeowner may be higher, the extra cost pays for itself in the long run. For more information about plumbing manifolds, click here.