PLUMBING POINTERS FOR REMODELERS

by Dodge Woodson

For accurate estimates, learn how to identify plumbing pitfalls on your pre-bid walkthrough

Relocating and adding to plumbing systems can be very expensive on a remodeling job. Since plumbing codes are stringent and complicated, it's always best to call in a professional plumber before giving a final estimate. Still, there are many red flags you can learn to recognize on an initial visit to a site. Sizing up the system can help you and your client plan well and avoid surprises.

For any plumbing system you should ask four basic questions:

- Has the existing plumbing caused hidden damage you will be responsible for once the job is started?
- Will your plumber be able to work with the existing plumbing, or will it be impractical to connect the new to the old?
- Will the existing system handle the increased demands of your remodeling work?
- Are there existing code violations your plumber will have to correct in performing the desired work?

All of these questions must be answered before you can compile accurate cost projections.

Hidden Damage

Water is a powerful force; it can carve rock, erode the earth, and destroy your remodeling budget. If you fail to disclaim unseen damage or don't notice evidence pointing to a problem, you could lose serious money.

In bathrooms, look for places where water may be getting behind and underneath fixtures. Check to see that the trim plates around faucets, drains, and overflow outlets are well-sealed with plumber's putty. Look at the caulking around tubs and showers; if it's dried and cracking, you may have rotted lumber in the walls or floors. Check around the base of the toilet. Water damage can be caused by faulty wax seals or condensation dripping off the tank — particularly where cold well water is used.

In the kitchen inspect every area you can gain access to. Whenever possible, go below all the plumbing fixtures and inspect the structure supporting them. This will often reveal subfloor stained by water.

Remove the access panel of the dishwasher if there is one and look under the appliance. Refrigerators with ice makers can leak and rot the floor underneath. Look also for any water heaters, washing machines, and well and water conditioning equipment that might be installed in the living areas of the house.

Water will penetrate the wall *at the faucet handles (above) whenever the shower is used. The holes should have been covered with trim plates sealed with plumber's putty. The curling and torn linoleum around the toilet (right) indicates water damage to the underlayment, probably from a faulty toilet seal.*

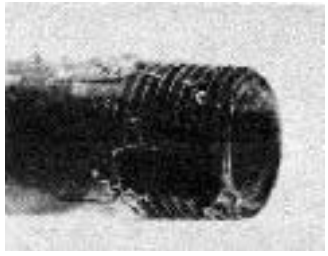
Assessing Existing Supply Lines

One of the main things to look out for, especially with an older home, is the type of water supply lines.

Galvanized. Galvanized water pipes are commonly found in older homes. Get rid of them; if you don't, you're asking for trouble. Galvanized pipe will gradually close up with rust and mineral deposits until, ultimately, pressure is reduced to a trickle.

Worn threads on galvanized fittings are a frequent cause of leaks. When working around old galvanized fittings, any significant jarring or vibration can cause the fittings to let go at any moment. If this happens to a riser hidden in a wall, it will cause a lot of trouble and expense to fix.

When tying into old galvanized pipe, you may want to protect yourself in the contract. If the client doesn't want to replace the galvanized pipes and you have to tie into it, your plumber may have to remove several sections to find solid pipe to make a good connection. This will increase your costs unless your contract has a clause disclaiming responsibility for the condition of existing piping.



Galvanized pipe *should be replaced when found in older homes. The threads rust, causing leaks, and can eventually break off altogether if the pipe is jarred.*

CPVC. Another type to watch out for is CPVC plastic water pipe. It's fragile and hard to work with. Also, do-it-yourself types like CPVC because it does not require soldering skills. They can cut it with a hacksaw and glue it together. If I see CPVC in a house my men have to work on, I automatically increase the expected labor to allow for potential problems.

Polybutylene. This pipe is gray and very pliable, but unlike CPVC, polybute is very rugged. In freezing temperatures, it will expand to reduce the risk of splitting. When polybute was first introduced, there were problems with faulty connections, so you may want to watch out for these. Remodeling plumbers like polybute because it can be snaked through walls without any joints being concealed.

PVC. If you find PVC supply pipe, you'd better talk with your plumber. Most codes limit the use of PVC water distribution pipe to cold water. The code generally requires your cold water piping to be of the same material as the hot water pipe, and since PVC cannot be used for hot water, it's not suitable for residential use.

Copper. If you find copper supply line you're probably in good shape. It's easy to repair, add on to, and install.

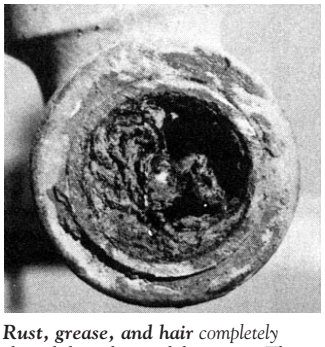
Main shut-off. Locate and test the main water shut-off valve to see if it works properly. If water leaks past the valve, the plumber will have trouble soldering copper connections (the water turns to steam and causes voids in the solder joint). With CPVC pipe, water will prevent the glue from setting up properly. With polybutylene connections, a small amount of water will have no adverse effects on the connection.

Accessibility. Keep in mind that the plumber not only has to be able to see the plumbing, he will need room to work with it. In general, if you can easily put your hand around the water pipes, the plumber will be able to do his job. But if the pipes are tight against the subfloor, or notched into the top of floor joists, you may have to remove the floor to make a connection.

Placement of lines. In cold climates, pipes in attics, crawl spaces, and outside walls may freeze and burst if not insulated properly. In some cases, pipes in an outside wall may have been saved from freezing only because there was no insulation in the wall. In a house where you encounter distribution lines in an outside wall, make sure that you don't isolate the pipe by insulating on the wrong side — the insulation must not be between the pipe and the heated space.

Assessing Existing Drainage

Residential drains are typically installed with a grade of 1/4 inch per foot, and you'll have to maintain this pitch with any new lines. Make sure that any new drain pipe will not be lower than the existing pipe when it reaches the point of connection — an installed, sewage-ejector system can cost in excess of $1,000.



Rust, grease, and hair *completely clogged this galvanized drain pipe. The author attempted to unclog the pipe with a snake, but succeeded only in punching a hole through the blockage.*

The plumber will need 18 to 24 inches of straight pipe to work with to cut a new fitting into the existing drain line. Also, make sure he has the room to install any new pipe and traps that may be necessary.

Cast-iron drain lines. Most of the main drain lines in older homes are cast iron, usually 3 to 4 inches in diameter. As long as these pipes are properly graded, they will give years of good service. Cast iron is generally easy to tie into, using a rubber coupling with stainless-steel hose clamps.

However, because cast iron can rust, the interior of the pipe becomes

rough and can catch hair, grease, and other objects. Cast iron can also rust through from the inside. Rust stains on the outside of the pipe are reason for some concern.

Galvanized and lead drain lines. Galvanized and lead drain pipe are the ones to watch out for. Galvanized pipe is a metallic color, with heavy fittings at the connections. It was used as recently as 20 years ago for sink, shower, and tub connections (it's still code-approved for drainage). Over the years, it becomes restricted with rust and accumulated buildup of hair and grease.

As with galvanized supply lines, galvanized drains are prone to leaking because of rusted threads. This can cause water damage as well as health hazards, since sewer gas can escape. If the connections show a buildup of rust or a white efflorescence around the threads, the pipe will probably leak in the near future. Or the threads may simply break off when worked with. It's best to replace galvanized drain pipe.

In very old homes, you might find lead pipe and traps. These will be a dull gray color and very soft. The drains will rarely be straight and properly graded. When lead is bent, it creases and cracks and will leak. If the pipe runs through a spongy area of the floor, the effects of walking across the floor can take its toll on the soft material. When you see lead plumbing, plan to replace it.

Copper. You may find copper in the drain-waste-vent (DWV) system. Copper drains usually work very well and cause few problems, remaining smooth and blockage-free. Except for rare circumstances, there will be no reason to replace a copper DWV system.

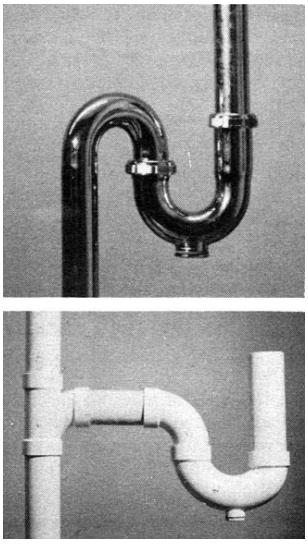
Plastic. Schedule 40 plastic pipe — either PVC or ABS — is now the most commonly used DWV material. Your plumber should have no problems tying into a correctly installed plastic DWV system.

Fixtures

It is not unusual to find odd-sized bathtubs and sinks. Trying to find a modern unit with comparable measurements may be impossible. If you have to alter the opening for a bathtub, it is best to know it before you submit your proposal.

When choosing a location for tubs or showers, provide an access wall for the faucet in case it ever needs to be replaced. Also, if you are replacing a bathtub with a shower, you'll need to increase the size of the drain. Bathtubs, even those with showers, require a 1½-inch trap and drain. Shower stalls, though, require a 2-inch trap and drain. This conversion may require removing the bathroom floor, or the ceiling below the floor.

If the customer wants to replace a lavatory or vanity with a pedestal sink, you'll have to relocate the plumbing; pedestal sinks require special spacing on the waste and water lines.



The chrome S-trap *at top does not meet code because it is unvented. A fixture drain should have a vented P-trap (above).*

Assessing the Demand: Water Distribution

Undersized water pipe is a common problem. It was not unusual in the past for plumbers to install ½-inch pipe throughout a house. Unfortunately, this is not in keeping with current codes and creates problems. In a house with all ½-inch pipe, if someone is taking a shower when another fixture is turned on, they get drenched with cold or hot water. Adding another bathroom can make the water pressure even worse.

If you are unable to see what size the water pipe is, run a test. Turn the water on at full volume in the tub and notice the pressure. With the tub running, have someone turn on the kitchen sink. Then flush the toilet near the tub. Watch the pressure at the tub. If the house has more than one bathroom, try the test with both tubs running at full capacity. You may find some extreme differences between an upstairs and downstairs bath.

Sizing distribution lines. You should never have more than two fixtures being fed by a single ½-inch pipe. There should be at least a ¾-inch line up until the point of the last two fixtures. With a ¾-inch water service, most houses will have adequate pressure and be in code compliance.

Assessing the Demand: Drainage

The size of a house's building drain will be determined by the number of fixtures it handles. Most codes will not allow more than two toilets or bathrooms grouped on a 3-inch drain. A 4-inch drain can handle all ordinary residential demands.

Slow drains. When your work involves tying into the existing DWV system, you may become responsible for slow or clogged drains. Kitchen remodeling, for instance, may include the addition of a garbage disposer. When this device is installed, the existing kitchen drain may no longer be adequate.

To test a kitchen drain, fill the sink to the flood rim with water. If it is double-bowl, fill both sides. Release all the water at the same time. Repeat this procedure two or three times. Occasionally, if there is a clog down the line, a single bowl of water may appear to drain fine, even with the clog. By draining several bowls of water quickly, though, you'll discover the problem.

Check any fixtures your work may involve. Flush the toilet, fill and drain the tub, and test the lavatory. Follow this rule: If it has a drain, test it.

The absence of a vent can cause a drain to operate slowly. If you have a fixture that drains, but does so without force, it may need a vent. In any case, note existing drain problems and have the customer acknowledge the condition before you begin work.

Code Violations

Beware of existing code violations. If you alter existing plumbing, you may be required to correct all code deficiencies. Remodeling can expose all types of plumbing code violations.

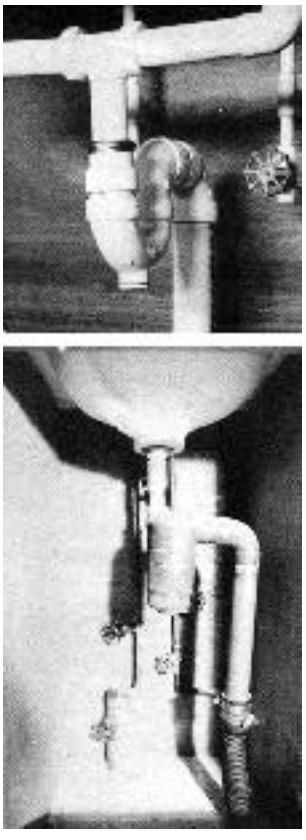
Undersized distribution pipe. Undersized water distribution pipe is a common code problem. If the whole house is piped in ½-inch pipe, the plumber may connect to it, in most cases, without changing the existing pipe. However, if there is larger pipe available in an accessible location, the plumber will be required to make his connections to the larger pipe. This can mean running pipe for a much longer distance than you planned.

Unvented fixtures. Unvented fixtures are a frequent problem with older homes (most states require every fixture drain to be vented). If the drain goes straight down through the floor, the fixture is not properly vented and your plumber will have to install a vent for the new fixture being installed. Under remodeling conditions, you may be able to use a mechanical vent, a small plastic device that screws into a female fitting installed in the fixture drain line. Check with the local code official to see if mechanical vents are allowed.

Illegal traps. If the drain comes straight up through the floor, to an "S" trap, you have a code violation. But if the drain comes out of the wall, into a "P" trap, you should be okay. Drum traps are prohibited in most states.

Illegal drains. Sink drains dumping into a sump-pump pit are in violation of code. If this condition exists, your plumber will have to tie the drain into the sanitary drainage system. This could result in additional costs of several hundred dollars.

Space requirements. If you are doing an extensive bathroom remodel, you may have to expand the size of the bathroom to meet modern code requirements. For example, the center of the toilet drain must have 15 inches of clear space on each side and 18 inches of clear space in front.



Illegal materials and connections *are a frequently encountered code problem. Top is an unvented S-trap. The lavatory drain, above, is not only unvented, but is also connected to an unapproved material — a flexible rubber hose. The old drum trap is illegal in many areas.*

Septic capacity. Another issue to consider, if you are adding space to a home, is whether the existing septic system will be adequate. Adding bedrooms may necessitate enlarging the septic system, which can cost several thousand dollars, depending on the soil type and the local code requirements. Locate and inspect the septic system. If you find the leach field to be soggy and saturated with liquid, the system may be defective. Strong odor in the air is another warning of a failed system.

Conclusion

Even if the plumbing you anticipate seems trivial, give the entire system a full inspection. A checklist is helpful. After a general walk-through, go back over the specific plumbing you plan to deal with. With the expense of plumbing work, this phase of your estimate deserves your concentrated attention. ■

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