

CSST: the good, the bad and the ugly

BY ROBERT PHILBRICK,
contributing writer

“Load the threader...” These words, if you’re like me, or any employee I’ve ever had, are deeply dreaded. Cutting and threading black steel pipe on site is a laborious task indeed. If you are a

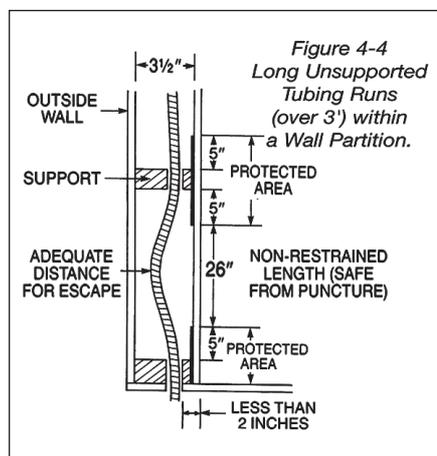


Figure 4.4. Courtesy of Omegaflex Inc. Always follow your manufacturer's installation instructions.

business owner or lead mechanic, it is a chore you eagerly assign to someone else. Black “iron” pipefitting is a dirty, time-consuming and monotonous job — and unfortunately, quite necessary.

Surely there has to be an easier way to install gas piping in this age of PVC and PEX piping — for everything from drainage to fire suppression. I’m of the philosophy work smarter, not harder, so when I discovered corrugated stainless steel tubing (CSST), I was thrilled. Finally, a quick, easy and clean gas piping product.

Could it be that simple? Of course not. There are pros and cons to everything in life, and flexible CSST gas piping being no exception.

CSST: easily installed — easily damaged

Although it’s quick, clean and easy, CSST is also vulnerable to puncturing or cutting by nails, screws or power saws. That’s why ANSI LC-1, the product standard that governs CSST products, requires a striker plate to protect the piping when penetrating a structural member. (CSST’s tried-and-true counterpart, black steel, is virtually bulletproof by comparison. You couldn’t puncture schedule 40 steel pipe with a pneumatic nail gun if you tried.)

And the possibility of popping a hole in CSST tubing is not limited to the installation phase or during construction, but at any time after the system is installed. Picture a homeowner or handyman putting nails or screws in

the wall willy-nilly and you can imagine the ramifications. By-the-book installation of CSST is paramount to avoid a potential catastrophe.

A recent class-action lawsuit illustrates the inherent frailties of CSST. The plaintiffs alleged that CSST poses an unreasonable risk of fire due to lightning strikes. Apparently, lightning can cause a breach, via electrical arcing, in the sidewall of CSST. A simple bonding kit to connect one fitting in the system to an appropriate ground is sufficient to protect the tubing from this sort of failure. For more information, visit www.csstsettlement.com.

Protection — the mother of safe installation

A great deal of thought about protecting this type of pipe is in order on any installation. Special carbon steel protection plates are required where the CSST passes through wood or metal framing. Heavy gauge flexible steel conduit is required at termination points and wherever piping is anchored in a vertical wall space. The manufacturers believe that in a vertical run, the piping should NOT be anchored as you would anchor water or drain piping. It is deemed preferable to have the CSST “move” within the wall if a nail or screw comes into contact with it. (Figure 4-4)

In basements, you should run CSST along floor joists or beams, not across. Supply drops should also be reinforced and not left hanging in mid-air. We’ve installed a 2x4 from floor to ceiling at water heaters for proper support. For those of you in slab and crawlspace country, these preventive measures are obviously not required, but where full basements are the norm, you have to protect homeowners from themselves. I see people hanging everything from garment bags to woodworking projects from overhead piping. Think about that next time you’re installing CSST.

Training and Certification

Following the tragic death of a young girl in a gas explosion unrelated to CSST in 2003, the State of New Hampshire enacted a requirement that all persons who install natural or propane gas piping (steel and CSST) must be tested and licensed to ensure code compliance. Until nationwide mandatory licensing is a reality, it is incumbent upon us, as professional tradespeople, to be vigilant when using this product.

Wisely, CSST manufacturers insist that contractors wishing to purchase and install their products attend a seminar to receive certification. I

attended one such meeting at a local supply house, which included a one-hour presentation introducing the tubing, fittings, etc. Samples were passed around, and everyone made up a pipe connection. This was followed by a brief discussion of installation methods. We were encouraged to read the manual to size the tubing and install the required protection plates and steel conduit correctly. An open-book quiz wrapped up the training session, and voila, you sir are a bonafide CSST technician.

Or are you? Realistically, a company principal can acquire certification, purchase the product and have any number of non-certified employees perform the installations. ANSI LC-1 requires training for anyone who installs CSST, and it’s clear why: the liability potential here is staggering. It is in your best interest to be sure your people are up to speed on the importance of pipe protection.

Bottom line — save time

So why choose CSST? We employ a hybrid gas piping system, comprised of steel mains and CSST branches. It works for us (plus, Mrs. Jones can hang her laundry off the overhead steel piping.) The main distribution pipe is typically a nice, straight run, which doesn’t require a lot of cutting or threading.

The branches are where CSST really pays off, with multiple twists and turns to each fixture met easily with the flexibility of the corrugated tubing. The man-hour trade-off is well worth it, especially in the retrofit market. I would estimate a conservative 50% savings in installation time for CSST vs. steel, even though the pipe and fittings are more costly than steel (and the protection plates, don’t forget). But let’s face it, labor costs are the big bear on any job, so it’s worth trying this new product. Just remember what the desk sergeant on “Hill St. Blues” used to say: “Let’s be careful out there.”

CSST

- Lightweight
- Flexible
- Easy installation (labor saving)
- Clean

But

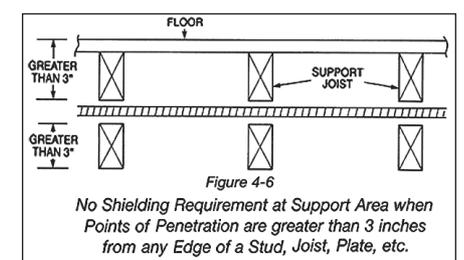
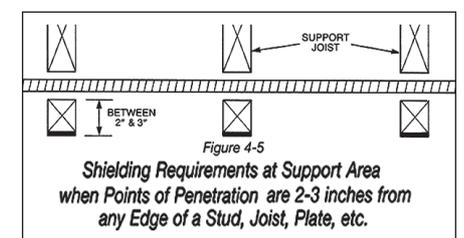
- Higher tubing cost
- Very expensive fittings
- Special carbon steel protector plate required
- Larger tubing size
- Vulnerable to puncturing, damage
- Requires grounding for lightning protection

- Cut and threaded steel
- Lower material cost
- No nail protection required
- Higher flow capacities in straight runs (due to smaller pipe sizes)

But

- Labor intensive
- Expensive threading equipment required
- Heavy, dirty
- Bulky (10-21-foot pipe section) ■

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Images courtesy of Omegaflex Inc.

founded RDP Water Systems in Milford, N.H. He writes on behalf of the Partnership for Advancing Technology in Housing (www.path-net.org), administered by the U.S. Department of Housing and Urban Development. Philbrick uses a number of advanced plumbing technologies, including CSST, tankless water heaters, radiant floor heating and outdoor wood boilers. Learn more about RDP Water Systems at www.pipes4life.com.

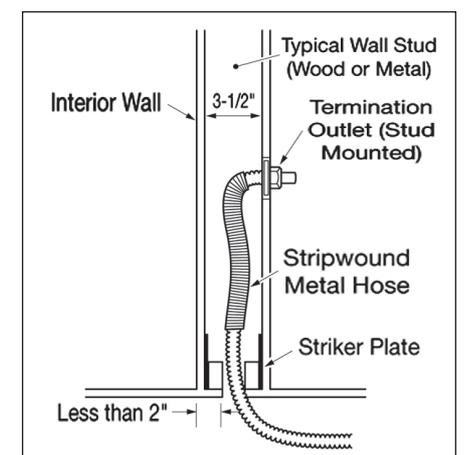


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