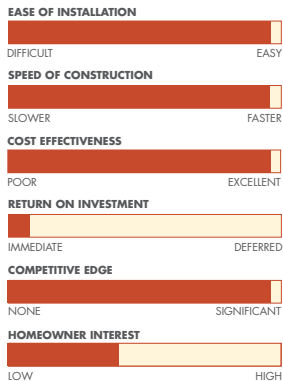


CSST: For the Short Run, It's the Gas Line of Choice

Contractor's Experience



Challenges: Protecting the pipes behind the wall

Would he do it again? Yes

CSST Flex Pipe Attributes:

Affordability

Contractor Tips: "Because the pipe is self-flaring, you should inspect any cuts that you make to ensure there are no metal burrs, which can cause gas to leak out."

Contractor:

Kevin Wagner
Wagner Heating and Cooling
Lititz, Pennsylvania

Contractor Type:

Small Residential HVAC Contractor

The Technology:

CSST Flex Pipe

The Project:

A development of four two-story townhomes with unfinished basements built by Pusey and Raffensberger. These 2,000- to 2,400-square-foot homes range in price from \$285,000 to \$355,000. Wagner used 1/2" flex pipe on a manifold to run gas lines between the main gas line and each unit's fireplace, dual-fuel furnace, and water heater.

"I use CSST exclusively. On top of the time savings, I don't have to purchase a \$5,000 threader, which is required for steel pipe."

— Kevin Wagner

WAGNER'S STORY

Pennsylvania builders Pusey and Raffensberger hired Kevin Wagner to rough in and install a dual fuel furnace using heat pumps and natural gas for a four-townhome development. He won the contract largely because of his affordable bid. Wagner's bid was less expensive because he proposed to use CSST flex pipe for the gas line, which would allow him to complete the project faster than contractors using steel.

"I use flex pipes on smaller projects such as this one because it cuts down on labor time," Wagner says. "This project took about two-and-a-half hours to do everything, including the final touch ups and putting the manifold in. If I used black steel pipe, I would have had to thread the pipe, which probably would have taken me 4 to 6 hours."

"Overall, it costs less in materials to use black iron pipe and thread it, but when you factor the labor in, flex pipe is much cheaper since CSST is so much faster to install in short runs. However, if you're



This townhome—which looks like a single-family home—has an elevator and other accessibility features.

doing a long run, maybe a 100-foot straight length, flex pipe doesn't make financial sense since black iron pipe is pretty quick on straight runs."

PROJECT DETAILS

"I ran about 60 feet of the 3/4" CSST for the main line, and probably close to 60 feet of 1/2" line for the furnace, fireplace, and water heater lines," Wagner says.

"I put a manifold in the basement down by the HVAC unit so the homeowners could add lines if they remodel, but it doesn't really matter where you put the manifold. You don't even have to use a manifold. Instead, you can just put in t-fittings. You might save some time, but it's less handy in the long run than the manifold, which has extra spaces for future retrofits. You can also turn the main gas line off right there."

"Flex pipes come with all sorts of accessories, including the manifold and other fittings. Each manufacturer has a

Kevin Wagner of Wagner Heating and Cooling has been in the heating and cooling industry for 17 years. He has been using CSST flex pipe since 1999, when it first became available in his area.

Why he switched to CSST:

"I use flex pipe because it cuts down on labor time. Overall, it costs less in materials to use black iron pipe and thread it, but when you factor the labor in, flex pipe is much cheaper since it's so much faster to install in short runs."



Yellow, flexible gas pipe is run from the main with 3/4" line through a manifold, and then to the water heater and fireplace with 1/2" lines. The furnace is fueled almost directly from the manifold with a few inches of fittings.

TECHNOLOGY HIGHLIGHTS

This project included the following PATH-profiled technologies:

- CSST flex pipe

The Partnership for Advancing Technology in Housing (PATH) brings together builders, manufacturers, researchers, government agencies, and other members of the housing industry. PATH partners work to improve the quality and affordability of new and existing homes. The program is administered by the U.S. Department of Housing and Urban Development's Office of Policy Development and Research.

To learn more about PATH, visit www.pathnet.org.
To learn more about PATH-profiled technologies, visit www.toolbase.org/techinv.



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slightly different manifold, but they all have about four or five ports of 1/2" outlets, with one 3/4" outlet for the main. Most are made of black iron."

"Materials probably cost about twice as much for the CSST as for the black pipe. For this project, they cost about \$350. Flex pipe costs about \$1.70 a foot, fittings are about \$7 to \$12 depending on the size, and the manifold costs about \$27."

INSTALLATION TIPS

"You have to pay attention when you install flex pipe because the pipe has a memory when you uncoil it," Wagner says. "If you get a loop in it, you can't just untwist it to get it straight. It's not like an electrical wire where if there's a little twist in it, you can still make it look good."

"CSST is flexible, but it is also sort of thin, so it can kink. You're not supposed to make a sharp 90-degree turn with it. If you do need to make a 90-degree turn, use a fitting."

"You have to treat it somewhat like water pipe. You have to protect it wherever it goes through studs and where nails can get to it. But the manufacturer gives you all kinds of stud protective plates."

"You also have to make all the other tradesmen aware of the flex pipe because it is more vulnerable than steel," says builder Dave Pusey. "It is possible to put a leak in the CSST pipe with a drywall screw or shoot a nail through it if it's not protected properly, which you don't have to worry about with conventional cast iron pipe."

WHEN TO USE FLEX PIPE

"If you only have straight runs in the basement, it probably wouldn't be economical, but flex pipe is a real time saver if you're also roughing gas pipe into the second and higher floors," Wagner says. "If you had to get gas piping up to

the third floor of an apartment for a washer and dryer, for example, the time savings would be huge. Once you start going up a wall, across a floor, up another wall, and across another floor, with black pipe you would have all those joints that you're trying to fish hook a pipe through. That's where you're saving your time with CSST."

"Another place where it would be a big time saver would be on a remodel job," says Pusey. "If somebody wants a gas fireplace over in a certain part of the house, flex pipe is going to be so much easier to install because once you get a hold of the end of it, it's almost like you're fishing wire. That makes CSST the least invasive way to install a natural gas line, which homeowners like because it's very economical and clean."

CERTIFICATION

"Most manufacturers require certification to install their flex pipe product," Wagner says. "The supplier gives you a book and tells you about the product, and then they give you a test that's essentially open book. The entire process takes about an hour. It's an easy certification."

HOW IT WORKS

CSST is a flexible, stainless steel pipe wrapped in PVC. It is most often installed in a central manifold configuration with home run lines that extend to gas appliances. Flexible gas piping is lightweight, bends easily, and can be easily routed around obstacles. It also requires fewer connections than traditional gas piping. The multiport manifold allows for expansion of the system to accommodate room additions or new appliances.

Read a PATH Field Evaluation:

- Model reMODEL, Philadelphia, PA