The PipeLine Newsletter

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www.pipeliningsupply.com

When to Dig When to Burst & When to Line

Your customer has a lateral problem. He's called you or your competitors to clean out the line several times, and he's at his wits end. He wants it fixed. He's looking to you for advice and you have an chance to help him find a solution that will work for him. So, you ask yourself, which options should I give him? Here's the advantages and disadvantages of the options, and you may want to talk about each with him.

Dig up and replace the line: This method is still the most widely used method for fixing a sewer. It has a time proven advantage in that most everyone knows that's how the pipe was originally installed and are comfortable that it be replaced using the same method. If the line needs to be rerouted, or any sags in the line need to be corrected, this is the only tried and true method of accomplishing that goal. This method can be used for up-sizing lines that are too small. The downside of this method is the mess. You are going to tear up yards, sidewalks, driveways and the street to get it done, and it's the most costly to you to install. Prices will vary depending on what the site conditions are. The replacement cost can be as low as $50.00 per linear foot to well over $400.00 per linear foot or more, when you account for restoration work in the total price. Installer time will require 2 to 4 days depending on site conditions, and usually a crew of 3.

Cured In Place Lining (CIPP):

Cured in place pipe lining has been around for almost 35 years in the sewer main industry and has now branched into the lateral market. This method allows the installer to cast a new pipe inside the old pipe, using access from a clean out or floor drain. If the lateral align-

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Materials/Resin & Tube

Two components of a Cured In Place Pipe lining system are the tube and resin. In order to better understand the system, it's a good idea to understand what the components bring to the table when lining a sewer lateral.

Tube: The tube is best described as the sponge that holds the liquid resin in place until it cures. The tube can be made of any material that is absorbent, pliable, and will encapsulate the resin and hold it in place until it is cured. After curing, the tube becomes part of the composite and serves no further useful purpose. The tube is typically made from a polyester felt batting. It can be manufactured using a needle punch technique that aligns and locks the individual fibers into a felt like material. This material is then coated with a polyurethane, polyethylene or PVC coating that acts as the liquid barrier to hold the resin within the tube. The needled felt tube is semi flexible and can negotiate some bends and turns, but will wrinkle on the inside of the turn. It does not lend itself to transitions between differing size pipes, and is used mostly where the pipe is straight and of the same physical size throughout. **Woven** materials are also used in the CIPP applications where turns, bends, and pipe sizes change. This material also has the sponge-like characteristic, but can form to differing sizes by stretching. In order to hold enough resin to meet the thickness required, this material tends to be thicker, over compensating for the smaller diameter in order to make the required thickness for the larger portion of the pipe. This material also is coated with the same coating as the needled felt.

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When to Dig, When to Burst & When to LIne (Continued from page 1)

ment is acceptable and the existing size acceptable, this is a more cost effective method to replace the pipe. The new pipe forms inside the old pipe. It is jointless and seamless, and can be installed where there is a round hole in the ground. In other words, pipe may be missing and this method can still be employed. The downsides include the necessity of cleaning the existing pipe before lining it, and it cannot be installed if the existing pipe has collapsed. In the case of a collapse, the pipe needs to be excavated to open up the hole. Pricing for this method has varied from $50.00 per linear foot to $125.00 per linear foot. Several manufacturers have provided equipment that make this a one man job, and takes about 4 to 5 hours to complete an installation.

Pipe Bursting: Pipe Bursting affords the customer a brand new line in the original alignment. It's less disruptive than digging up and replacing the

line, and gives the installer the advantage of upsizing the existing line if it is too small. It will not correct any sags in the line as the new line will follow the same alignment as the old pipe, but the slicker surface of the plastic replacement pipe may solve the collection of solids in a sag depending on the severity of the sag. A downside to this method is the need to dig a start pit and an end pit at the main in the street for the tie in., and the run has to be pretty straight. Turns and bends are not easy to perform if not impossible. Pricing for this method tends to fall in the $60.00 to $175.00 per foot, again depending on site conditions. This method uses a winch, a bursting head that breaks up existing clay sewer, and pulls in a plastic pipe at the same time to replace the old sewer. The broken pieces of the old sewer are pushed and compacted into the surrounding soils, and there is no need to haul away the remains. In older areas where 3" sewers are common, this method is a winner. You can pull into place 4" or 6" easily behind the bursting head, and give the property owner a brand new line that will serve him for years. Installation time will be accomplished in one day with a 2 to 3 man crew.

Materials/Resin & Tube

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Resin: There are a number of resins available for CIPP lining systems. They include polyester, vinyl-ester,epoxy, and urethane based resins. Each has a uniqueness that affords its niche in the market. Polyester, the least expensive resin, required heat to cure and has a pungent styrene odor. Temperature requirements to cure this resin are typically 180F. This resin will not pass the California Green book pickle jar test. Most Vinyl-ester resin will, however, pass the pickle jar test, but require heat to cure, similar to the polyester resin. It is a little more expensive, and contains VOC's (volatile organic compounds) to cure. As most sewer laterals are so close to the home, the odor is not acceptable and thus few lateral lining jobs allow this resin. Today, most lateral lining systems are using an epoxy based product or a polyurethane product. Of the two, the epoxy product is the only one that will pass the pickle jar test, and the only one that will bond to the host pipe where it comes in contact. The polyurethane resins, when cured in a moist condition, tend to encapsulate air bubbles. In the pickle jar test, these air bubbles absorb liquid, thus absorbing weight and failing the test. The polyurethane material doesn't stick to the host pipe, thus allowing sewage to track between the host pipe and the new liner. Both polyurethane and epoxy resin can be formulated to

adjust the working time or "pot life" from virtually 0 minutes to several hours. The temperature of the resin also contributes to the working time. A fifteen minute resin at 72F may turn into an hour working time resin if the temperature of the resin is 48F. Check with your vendor to determine the working time you need for your specific application. Working time usually affects curing time, so a longer working time resin will require you to wait longer for the resin to cure. This "cure time" can also be adjusted. Just as we cooled down the resin to change our working "pot life" time, we can heat up the other end to reduce the wait time. This can be accomplished by blowing hot air down the liner, or introducing hot water into the liner. Depending on the amount of heat (btu's) you add, will determine the length of time it takes to cure, if you are trying to cure faster than the ambient or ground temperature method. Your local supplier can help you with this calculation for your particular site .

Technical Corner

How can I end my liner exactly where I want it? Sometimes I overshoot and end up in the main, and other times I undershoot and don't cover the last joint of pipe before the main.

We get this question almost continuously. Here are a few steps that will help you get to end your liner exactly where you want it.

1) The first step in the process is to get an accurate measurement of the line you are lining. Make sure that you verify that it's exactly 24 feet 3 inches from installation point to the main. Add enough tube for the back end piece that takes you from the installation point back to the end of the tube that is in your hand. If that distance is 5 feet 4 inches, you will need to add that to the tube length. Once you've determined how much tube you need, cut your calibration tube longer than the liner tube. If the cal tube is the same length or shorter, it won't "round out the end of the tube nearest the main, and you will end up with a poor installation.

2) After 'wetting out' the tube, load it into the Liner Gun and invert it

3) After inverting the tube, but before installing the calibration tube, run your camera down the throat of the Liner Gun all the way down to the end of the tube. You can pull the liner to where you want the end to be by looking at your camera and adjusting accordingly. Once you have the tube exactly where you want it, you can remove the camera.

4) Invert the cal tube through the liner and complete the cure as planned.

5) After the prescribed cure time is completed, pull out the cal tube and your finished with your liner exactly where you wanted it.

Success Stories:

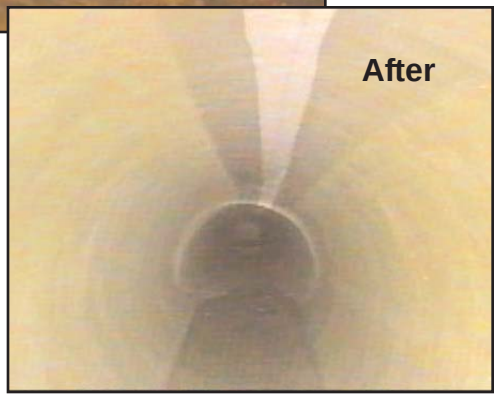
Cured in Place Pipe (CIPP) Lining Keeps the

Ball Rolling

at Sports Complex

The new Home Depot Sports Center had a problem. A sewer line was cut when a piling excavator drilled

through it. While the pipe did not extend through the existing line, only a void was left between the severed pipe. The trickiest part of the job was to extract the mud left in the void to get it open enough to install a liner. In order to contain the CIPP pipe, a pre liner was used to span the void, ensuring that the CIPP liner would follow the alignment of the host pipe through the void. Once installed, the finished product was perfect. The materials and tools used for the project were the Maxliner Liner Gun, a pinch roller to get the exact thickness all the way throughout the tube, a vacuum pump to extract any air voids in the tube, a compressor using 25 CMF, Maxliner tube, a preliner, a calibration tube, and epoxy resin. To prep the line, a jetter was used with special nozzles to clean out the dirt left from the excavation of the column.



LINERGUN SYSTEM

USER FRIENDLY

BEFORE

AFTER

NO DIGGING OR DAMAGED LANDSCAPING
COMPLETE REPAIRS IN HOURS, NOT DAYS
STOPS PIPE ECORROSION INSTANTLY
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