

Municipal Case Study

NovaForm™ the Choice for Sanitary Sewer Rehabilitation in Murrysville, Pennsylvania

IPEX trenchless, expand-in-place, styrene-free PVC liner provides for fast, clean and environmentally friendly installation

NOVAFORM™
PVC LINER

Sizes:

6" – 36"

Contractor:

Snyder Environmental Solutions

Municipality:

Murrysville, Pennsylvania

- Trenchless Product
- Fast Installation
- Minimal Disruption
- A Fully Structural Liner
- Environmentally Friendly



THE CHALLENGE

Murrysville, Pennsylvania, a town of 21,000 people about 45 minutes from downtown Pittsburgh, was experiencing the deterioration of terra cotta sanitary mainline sewers installed more than 50 years ago. An environmental protection order required the Franklin Township Municipal Sanitary Authority to eliminate all sanitary sewage overflows during rain events.

Additionally challenging, Franklin Township's wastewater treatment plant has a limited amount of capacity left to service new homes beyond its existing 11,000 customers. So fixing defects to prevent inflows or infiltrations that tax the system was critical.

Terra cotta pipes require joints approximately every four feet which pose an increased risk of infiltrations and failure points, along with localized points where materials flowing through the pipe will collect and cause blockages.

This project required working off the road allowance and through a forested area, a huge challenge where trenches must be dug or heavy equipment is needed for conventional pipe installation methods.





Minimal disruption
to the existing
infrastructure
when NovaForm is
installed

THE SOLUTION

The municipality in Murrysville has worked with IPEX before and knew its NovaForm™ relining product could repair the failing pipes in place without digging, which is costly, time-consuming and disruptive for homeowners and businesses.

NovaForm™ offers a trenchless, expand-in-place option to repair sanitary sewers and stormwater pipes (alternatively called pipe-in-place) that is fast, clean and effective, while respecting the environment. Unlike the existing terra cotta pipes in Murrysville, NovaForm provides one continuous, joint-free pipe from manhole to manhole.

NovaForm can be installed to address a range of sewer and stormwater pipe failures such as fully or partially deteriorated host pipes, or corrosion and other defects that will lead to failure down the road. It is available in sizes from 6" to 36" and may be suitable for installation depths of up to 30 feet according to the ASTM F1216 calculation for a fully deteriorated host pipe condition. Also, it can be used to reline a wide variety of host pipe materials such as asbestos cement, terra cotta/clay, corrugated metal and concrete.

This product line is manufactured to meet ASTM F1504 and ASTM F1871 standards and undergoes rigorous testing at the manufacturing facility, on every single production run. So, the qualities of the material are evaluated before the lining material departs the manufacturing plant.

That quality control ensures reliable and durable performance in each installation because NovaForm does not require any manufacturing or curing processes on site, unlike cured-in-place (CIPP) rehabilitations.



The municipal customer is so thrilled with the results of this installation that they have just awarded us another \$3 million worth of work. We have a backlog of NovaForm™ work, which is definitely a good problem to have. We really believe in this product and working with IPEX has been a great experience. The support we get is great; in terms of the training we received, and the ongoing technical help. If we have any questions, the people at IPEX are always available.



JOHN BILLET,
NovaForm Superintendent,
Snyder Environmental Services



NovaForm is heated and conditioned at the job site using steam and then pulled from reels by high-powered winch into an existing sewer/stormwater pipe that remains buried.

Tests include pipe diameters (ASTM D 2122), wall thickness (ASTM D 2122), pipe flattening, pipe impact resistance (ASTM D 2444), pipe stiffness (ASTM D 2412), flexural properties (ASTM D 790), extrusion quality – acetone immersion (ASTM D 2152) and heat reversion (ASTM F1057).

The factory based production and quality control of NovaForm ensures reliable and durable performance in each installation because it does not require any in-site manufacturing or on-site curing process unlike cured-in-place (CIPP) technology. The latter is heavily reliant on the quality, experience and expertise of the contractor handling the project. With a field-manufactured CIPP liner, human error during installation can quickly lead to failure. Municipalities that have had negative installation outcomes in the past with CIPP are anxious to find a more reliable solution.

Being a Trenchless product, NovaForm can be installed much more quickly than conventional options and in a comparable time frame to CIPP methods. Depending on field conditions, approximately 800 feet of pipe can be installed in a day, with one install in the morning and another in the afternoon. That would be three to four days' worth of work in open-cut installation.

Before liner installation, the existing host pipe is inspected and cleared of roots and other forms of obstructions and then flushed.

The flattened or profiled NovaForm liner (fold pattern varies depending on diameter of liner) is heated and

conditioned at the job site using steam and then pulled from reels by high-powered winch into an existing sewer/stormwater pipe that remains buried. The liner is then plugged at both ends and expanded by introducing steam in a controlled fashion thus allowing the liner to form snugly against the inner diameter of the host pipe. Once the liner is sufficiently expanded, steam is replaced with compressed air so that the pipe cools and hardens, producing PVC pipe with no seams.

Once the plugs are removed, and laterals reinstated with the municipality's chosen method, the PVC liner is ready to use. Unlike CIPP, with NovaForm there's no need to wait for the material to cure before water can run through it because PVC liners do not have any curing process.

After installation, NovaForm greatly simplifies the jobsite inspection process because there is no need for cut-out coupons for post-installation testing as required for cured-in-place pipe as these tests were completed during the Quality Control process at the manufacturing plant.

Adding to its long list of benefits, NovaForm is a highly versatile product. The Murrysville installation included a segment with manhole access that was off the road allowance and through a forested area. IPEX's expand-in-place product meant trees did not have to be sacrificed. NovaForm is the best choice in many other applications, such as those requiring access under bridges or in proximity to buildings.

To expand on a major advantage of NovaForm, it has no negative environmental impact. In cured-in-place projects, when the material is exposed to steam to create the chemical bond between resin material, there is an airborne release of styrene particles, which is a hazardous material. If there is a dry trap in a nearby school, home or hospital, it could lead to the migration of the styrene-filled steam into those buildings. In most cured-in-place installations, curing liquid contaminated by styrene must be captured and treated.

In contrast, NovaForm PVC liner is simply heated and cooled to expand into hard and durable PVC pipes. That produces no by-product except warm water from steam condensation.

By-Product Comparison between Cured-In-Place & NovaForm PVC Liner

	Cured-in-Place	NovaForm PVC Liner
By-Product	 Styrene Particles	 Warm Water

THE RESULTS

Murrysville has used NovaForm on multiple occasions over the last several years and municipal staff have become steadfast supporters of the product. Public works officials happily share their positive experiences with IPEX. This installation happened in a fraction of the time of other methods, provided immediate results and caused minimal disruption. NovaForm has quickly proven itself as a terrific alternative to other forms of trenchless pipe replacement and repair.

IPEX also provides extensive hands-on and on-the-job training to contractors, so they fully understand the product and installation process.

SNYDER Environmental Services, the contractor on this project made the decision to use NovaForm for Murrysville project based on their positive experience with the product and IPEX in the past.. The company has provided trenchless services since 1979 and has become an enthusiastic proponent of NovaForm. Thanks to the success of Snyder's projects, contractors in other regions are interested in what the product has to offer.

4 TAKEAWAYS

- **Fast Installation**

Once NovaForm has been expanded and cooled, it is ready for service. Laterals can be quickly reinstated robotically, and the line can be placed back into service the same day – often only four or five hours from start to finish.

- **Minimal Disruption**

NovaForm requires no costly, time-consuming and dirty digging, which means there is very little disruption to traffic or the environment. Once the pipe is installed and the crew departs, there is virtually no sign they were ever there. No restoration work to the asphalt, sidewalk or ground is required, which also cuts the time on site.

- **A Fully Structural Liner**

NovaForm combines long-term strength with flexibility. It is ideal for projects where access is an issue and digging isn't possible, such as under bridges, close to buildings or in green spaces.

- **Environmentally Friendly**

NovaForm is the trenchless relining material that does not leave any harmful chemical residues in the air and water. Since this PVC liner does not contain any styrene, its risk of affecting the installation personnel, neighbouring residents and the environment is nonexistent.