

FLEXIBLE CONNECTORS IN STORM SEWERS

Save Money for Vermont Towns



Since the days of the Roman Empire, brick and mortar have been used to seal the connection between pipes and structures in sewer systems. For an equally long time those connections have leaked, allowing backfill material to erode into the system, leaving soil voids behind. As all public works officials know, those soil voids lead to subsidence, potholes, broken curbs, street repairs, traffic disruption, and a very high level of potential liability.

Flexible rubber connectors have been used in sanitary sewer systems for many years to prevent those problems, but until recently, they haven't been widely used in storm systems. Thanks largely to the efforts of Neil Boyden, Director of Public Works, Williston, VT, they are now widely used in cities and towns in our part of the state.

Boyden was keenly aware that many brick and mortar connections failed within a few years of their installation, sometimes in as little as two or three years. In busy streets and intersections, these failures could quickly create huge liabilities for the municipality. When the brick and mortar connections failed, the resulting leaks could allow large amounts of backfill material to be washed away. More than once, sinkholes up to four feet deep appeared in a street over night.

COSTLY REPAIRS

The cost of repairing leaks varies widely, but usually falls within the \$2,000 to

Paul O'Leary, Jr., P.E.

Mr. O'Leary is Founder, O'Leary-Burke Civil Associates, PLC, Essex Junction, Vermont. He is Town Engineer for Jericho, Vermont, and provides consulting services for Colchester, Essex, Richmond, South Burlington, and Williston, all in Vermont.

\$5,000 range. Since Williston often has two dozen of these repairs each year, the total cost is significant. But, the dollar amount of the repair is not the end of the costs. The social cost of the digging, danger, and disruption is also significant. In addition, city crews occupied by point repairs are prevented from doing other badly-needed work.

Unfortunately, subsidence is almost never detected nor repaired when it first occurs. As a result, vehicles pound the depression, often damaging a storm sewer structure, or being damaged by the structure. While damage to motorists' vehicles usually goes unreported, costs are

are certainly attached, both financial and political. To make matters even worse, the original error of using brick and mortar cannot be corrected completely. It is usually necessary to make the repairs with brick and mortar, so the necessity of a future repair is very likely.

When a road's surface is cut and patched, the chances for water intrusion through the surface increase. And, no matter how carefully the repair crew works, a bump almost always results. So, in addition to being unsightly, patches certainly shorten the useful life of a road.

"We are heavily developed now," Boyden said. "And, new subdivisions are going in all the time. We add 2 or 3 miles of new storm sewer to our maintenance program every year, and every new connection between the pipe and a structure must be made with a flexible connector."

When brick and mortar connections fail, resulting leaks usually cause subsidence which necessitates costly repairs.

SEWER PIPELINE MAINTENANCE

These 'boots' have already made a huge difference in our long-term maintenance, and the difference will grow in the future. It just boils down to a dollar-and-cents thing. With the flexible connectors, we get a high-quality product which prevents leaks, liability, and costly repairs."

Flexible connectors also make it easier to inspect the work. It is physically difficult to inspect a brick and mortar connection. The inspector must crawl into each catch basin and carefully check to make sure there are no small holes the contractor failed to fill. The boot makes it easy. There's no question when you go out and look at the finished product. It's neat, clean, and completely sealed.

Contractors working in South Burlington, Colchester, Essex, Jericho, and Williston have all reported increased production and fewer callbacks without increased costs as a result of using flexible connectors. Randy Laframboise, Vice President, S.D. Ireland Brothers, Burlington, VT, said his company had found fewer maintenance problems with flexible connectors.

"From a contractor's standpoint, the flexible connectors make installation a lot easier," Laframboise said. "It is a lot faster. You can run a pipe up to a structure, set the structure to the pipe and then slide the next section of pipe into the other side of the structure. Setting a structure is almost like setting another section of pipe. And, you can backfill immediately. We used to have a guy come along behind the pipelaying crew to mortar in the pipe stubs. He'd put brick and mortar around the connections, then you'd have to let the mortar set. Usually, you'd have to leave

the holes open over night. With the flexible connectors, we can clean up right behind ourselves. Now, we can just keep right on moving. The boots make installation a lot faster and a lot better. They're also better from a safety standpoint," Laframboise explained.

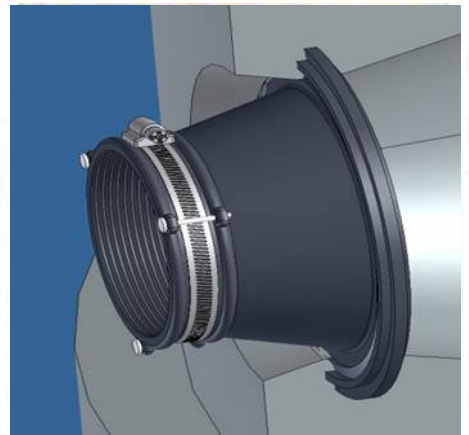
In addition to being cost-effective, flexible connectors help contractors deliver a cleaner product to their clients. Sometimes, if connections must be left open overnight, rain can wash a lot of silt and sand into the pipe. In these cases, the contractors must clean the catch basin and pipe with a fire hose or a jet truck. The municipalities all want their systems to be clean before they accept the new work.

Flexible rubber connectors in storm water sewers seem to create a win-win situation for everyone involved. They are a benefit to consultants because they allow the consultants to turn over a better product to the owner. Contractors benefit because the connectors are more cost-effective than brick and mortar, and the municipalities certainly benefit because they get a watertight system which will result in a longer service life and far fewer maintenance headaches down the road.

Top Photo: **Flexible connectors can be cast into the concrete structure when it is made, or added to the structure later.**

Middle Photo: **Field-installed flexible connectors can be locked into place quickly with a hydraulic tool.**

Bottom Photo: **A flexible connector seen from inside a precast concrete structure.**



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697 MAIN STREET • PO BOX 1647 • TULLYTOWN, PA 19007

Phone: 800-822-2565 • 215-547-3366 • Fax: 215-547-5260

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