



SOLENO
MASTERING WATER SUSTAINABLY



KUSTOMFLO

NASON BASIN STORM SEWER

KUSTOMFLO delivered design flexibility, constructability in constrained conditions, lower project costs, adaptability to field challenges, and hands-on contractor support.

STORM SEWER

Location: Willoughby, OH

Installation: September, 2025

PROJECT DETAILS

Owner: City of Willoughby

Contractor: Trax Construction

Engineer: Verdantas

PRODUCT DESCRIPTION

Diameter: 84in and 60in

Length: 2100ft

Profile Information: Both open and closed profiles to meet the needs of varying cover conditions, loading conditions, and groundwater conditions

Accessories: Two-miter bends with tangential risers, 84in to 60in two-miter reducer

SITE CONDITIONS

Trench Depth: 28 feet

Trench Width: 12 feet

Type of Existing Soil: Clay with sand and silt

Backfill Material: Crushed stone

Surface Material: Asphalt Pavement

Other Site Concerns:

Pockets of weaker native soil, and narrow construction footprint

CONTEXT

The Nason Basin Storm Sewer Project in Willoughby, Ohio, was designed to improve stormwater management infrastructure in a challenging installation environment. The project, owned by the City of Willoughby, engineered by Verdantas, and constructed by Trax Construction, required the installation of 84-inch and 60-inch KUSTOMFLO HDPE pipe through a combination of deep tunnel and open-cut construction methods.

CHALLENGE

Deep Tunnel Installation

This phase of the project involved a steel-hoop and wood slat tunnel, dug underneath a highway, with a KUSTOMFLO liner grouted in place within the tunnel. This section had the deepest cover on the project and varying levels of groundwater. The access pits for the tunnel were limited to 15 by 15 feet boxes on the upslope and downslope ends of the tunnel.

Open-Cut Construction

The open-cut portions of the project were constructed adjacent to existing roadways, where trench widths were limited. These space constraints required careful material selection and installation planning to ensure efficient construction while minimizing impacts to surrounding infrastructure.

Weak Native Soil

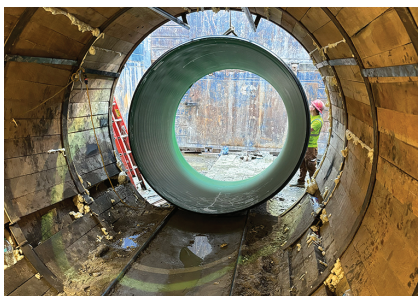
During construction, an unanticipated pocket of weak native soil was encountered in one phase of the project, creating concerns regarding pipe deflection. Soleno worked closely with the contractor to adjust the installation methodology to accommodate the changing site conditions, helping ensure long-term system performance and project success.



SOLUTION

KUSTOMFLO HDPE pipe was selected for its adaptability to both tunnel and direct-bury installations. 10-foot long sections of closed profile pipe were utilized for the tunneling section, while 12-16 feet sections of open profile pipe were used for the direct bury sections of the project, in order to meet the needs of the shoring and trench support across the project. Integrated access manholes and custom risers reduced the need for costly concrete structures while meeting the owner's accessibility requirements. Soleno worked with the City and the engineer to customize the access structures to meet their preferred operations and maintenance requirements and install offset landings and access steps down to the pipe invert.

Throughout construction, Soleno provided technical expertise to the contractor and engineer to help resolve unforeseen site conditions, including grouting recommendations, joint testing support, field repairs, and ongoing field assistance. With this being the first installation of KUSTOMFLO pipe by the site contractor and engineer, Soleno representatives were onsite for several key steps in installation.



WHY KUSTOMFLO MADE THE DIFFERENCE

- **Faster installation** due to the lightweight nature of HDPE pipe.
- **Reduced project costs** through efficient installation and elimination of large concrete manhole structures.
- **Design flexibility**, with variable pipe profiles and varying lengths designed to meet the needs of pipe runs.
- **Customized solutions** that supported both tunnel and direct-bury construction methods.
- **Responsive engineering support**, enabling quick adaptation to changing site conditions and unexpected soil challenges.
- **Reduced site impact**, as custom structures required less excavation and disturbance than traditional alternatives.
- **Long-term accessibility**, achieved through integrated manned-access features tailored to the owner's maintenance needs.

Bottom line: KUSTOMFLO delivered significant value throughout the project by providing design versatility, efficient tunnel and open-cut installation, customized access structures, and responsive field expertise.

For more information and to learn more about our products and services, please visit www.solenousa.com.

