SOLENO

MASTERING WATER SUSTAINABLY



CASE STUDY : SEPTEMBER 2024

CULVERT REHABILITATION WITH KUSTOMFLO HIGH-DENSITY POLYETHYLENE PIPE

A cost-effective culvert rehabilitation in Patterson, NY

Culverts play a crucial role in directing water flow beneath roads, railways, and other infrastructure. Over time, their structural integrity can deteriorate due to factors such as freeze-thaw cycles, heavy traffic loads, and exposure to corrosive de-icing salts. High-density polyethylene (HDPE) pipes offer a durable and efficient solution for culvert rehabilitation, providing exceptional resistance to environmental stresses, including extreme temperatures, high loads, and chemical exposure.

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THE CONTEXT

The New York State Department of Transportation (NYS DOT), in collaboration with A. Colarusso & Son Inc., faced a critical infrastructure challenge along Route 311 in Patterson, NY. A failing corrugated metal pipe (CMP) posed a serious risk to roadway stability and public safety.

An immediate replacement was required to prevent a collapse and maintain safe transportation routes. Soleno's 72-inch KUSTOMFLO pipe was chosen to meet all technical and structural requirements while keeping the project on schedule. The site presented complex conditions, including a 25-foot-deep and 10-foot-wide trench beneath a heavily trafficked, paved roadway. This required a robust pipe capable of withstanding deep burial while ensuring proper backfill with modified subbase material.



THE SOLUTION

Soleno's KUSTOMFLO pipe was the optimal choice due to its immediate availability, structural integrity, and ease of installation. A total of 80 linear feet of 72-inch KUSTOMFLO pipe was installed using a direct burial method with 25 feet of cover. Its lightweight construction—21 times lighter than reinforced concrete pipe (RCP) of the same diameter made handling significantly easier and eliminated the need for heavy lifting equipment. Additionally, the 20-foot-long pipe sections were 2.5 times longer than RCP sections, reducing the number of joints and accelerating installation.

The lead installer from A. Colarusso & Son Inc. described the process: "It went together with ease—it was like butter. The installation was easy. It doesn't get any easier for pipe work." The pipe's structural strength and long-term durability made it the perfect choice for this deep-burial culvert application.

Soleno's KUSTOMFLO pipe meets ASTM F894 standards, ensuring high performance and reliability in demanding applications. Its profile can be customized to fit specific project constraints, providing tailored solutions for various infrastructure needs. The closed-profile KUSTOMFLO pipe features an RSC250 ring stiffness, making it ideal for heavy-duty installations requiring exceptional structural integrity and long-term durability.

THE BENEFITS

The use of KUSTOMFLO provided several key benefits that ensured the project's success. Its immediate availability allowed NYS DOT to avoid costly construction delays and keep the project on schedule. The pipe's lightweight design simplified handling, reduced jobsite risks, and lowered labor costs. Its long pipe sections required fewer joints, minimizing potential failure points and ensuring a faster, safer, and more efficient installation. Most importantly, KUSTOMFLO's structural reliability guaranteed long-term performance under heavy traffic loads, making it an ideal solution for critical infrastructure projects.

By selecting Soleno's KUSTOMFLO pipe, NYS DOT successfully rehabilitated the failing culvert, restoring roadway stability while minimizing construction time and costs. This project highlights how Soleno's innovative pipe solutions can address complex infrastructure challenges with efficiency, reliability, and sustainable performance.

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PRODUCT USED

KUSTOMFLO

KUSTOMFLO pipe is made using world-renowned KRAH technology, resulting from an adaptive process that allows the optimization of the pipe profile to meet the specific needs of any project or applicable standard. This custom manufacturing approach, drawing on over 100 different profiles, lets you build to your unique specifications today to help connect communities for generations to come.



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