



CASE STUDY

HDD PIPELINE PROJECT

HDD Pipeline Protection

BREAKING GROUND, NOT COATINGS: BORE-WRAP'S HDD VICTORY IN ITALY

DENSO'S BORE-WRAP® - A FIELD-APPLIED ARO



Project Data

Location	Italy
Completion	2024
Project Type	HDD Full Encapsulation
Products Used	Denso Bore-Wrap®

Project Details

A pipeline installation beneath a rocky riverbed in Italy presented significant challenges due to a constrained right-of-way and steep entry/exit angles. The rocky terrain posed a high risk of coating damage during the horizontal directional drilling (HDD) process, prompting the operator to trial Bore-Wrap as a protective solution.

Methodology

Following consultation with the Denso distributor, a three-layer Bore-Wrap application was deemed optimal for abrasion resistance. To demonstrate its effectiveness, Bore-Wrap was applied starting several feet from the pipeline's leading edge, leaving the standard three-layer polyethylene coating exposed to initial impacts. The application process involved:

- Roughening a 6-foot section of the polyethylene coating using a grinding wheel.
- Applying Bore-Wrap from front to back with minimal overlap to achieve three layers.
- Spray water on the Bore-Wrap as it is applied, to activate the resin curing mechanism and immediately wrap the product with Denso Poly-Wrap to compress the resin and hold the Bore-Wrap tightly to the surface
- Perforate the Poly-Wrap with a porcupine roller to allow off-gassing and excess resin and water to escape while the Bore-Wrap cures.
- Allow the Bore-Wrap to cure with the Poly-Wrap in place. Leave the poly-wrap on until Bore-Wrap reaches a Shore-D of 65 or greater, then the product is ready to be pulled through the HDD.

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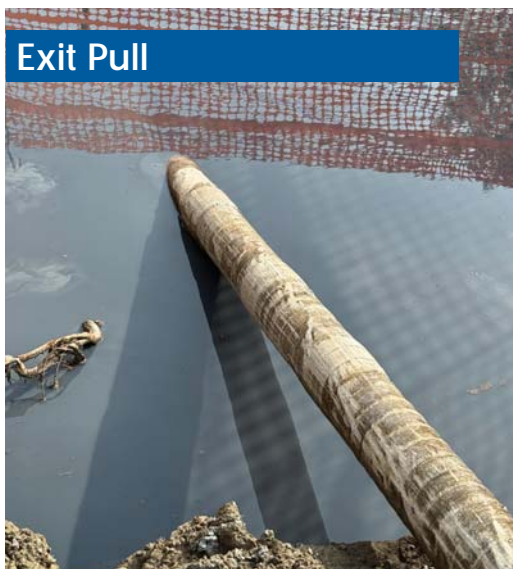
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Shore D



Exit Pull



Gouge Protection



Results

Post-installation evaluation revealed severe gouging on the unprotected polyethylene coating, exposing bare steel. In contrast, the Bore-Wrap-protected section absorbed the impact, preventing further gouging and sustaining only minor surface abrasion. The pipeline remained intact beyond this point, with no additional coating damage observed.

Conclusion

This project unequivocally demonstrated Bore-Wrap's ability to protect pipelines in abrasive environments, even when applied over polyethylene coatings. As a result, the Italian operator has adopted Bore-Wrap into its specifications for HDD and direct pipe installations, affirming its value in enhancing pipeline durability and corrosion resistance.

Recommendation

We recommend specifying Bore-Wrap for HDD and direct pipe projects to minimize coating damage, reduce maintenance costs, and ensure long-term pipeline integrity. Contact us to explore how Bore-Wrap can enhance your pipeline protection strategy.

What is Denso Bore-Wrap®

Denso Bore-Wrap is an Abrasion Resistant Outerwrap (ARO) that has excellent performance against impact, gouge, abrasion, shearing, and fracture to protect anti-corrosion coatings during pipeline installations in difficult terrain or by means of trenchless installation methods such as directional drilling, HDD, or boring. Bore-Wrap creates an abrasion-resistant, sacrificial outer laminate that protects pre-approved field joint coatings and mainline coatings such as epoxies, shrink sleeves, 3LPE, 3LPP and FBE.

Project Key Performance Highlights

Key performance highlights from the use of the Denso Bore-Wrap® on this project include:

- **Challenging Installation Conditions:** The HDD pipeline installation in Italy faced extreme conditions, including rocky terrain and steep entry/exit angles, increasing the risk of coating damage.

Strategic Bore-Wrap Application: Bore-Wrap was applied in three layers starting just after the pipe's leading edge, allowing for a side-by-side comparison with unprotected polyethylene coating.

Clear Performance Contrast: After installation, the standard coating suffered severe gouging and exposed steel, while the Bore-Wrap-protected section only showed minor surface abrasion.

Demonstrated Protective Strength: Bore-Wrap effectively absorbed mechanical impacts, preventing further coating damage and maintaining pipeline integrity.

Operator Endorsement and Adoption: Impressed by the results, the Italian pipeline operator integrated Bore-Wrap into its specifications for future HDD and direct pipe projects.

Company Profile

Denso, Inc. a subsidiary Winn & Coales international, specialize in the manufacture and supply of corrosion and chemical resistant coatings and linings for the long-term protection of steel, concrete and timber surfaces in the toughest corrosive environments. The company is at the forefront of innovative corrosion prevention technology, focused upon developing an extensive range of custom solutions to meet the specific needs of different industries. Our full range of products are manufactured to comply with the strict quality standards. The products are designed for longevity, with corrosion prevention solutions that can offer up to 30+ years of maintenance free service.

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