CASE STUDY
PIPE JACKING | TUNNEL BORING

Project Name:
I-76 PTC Beaver River Bridge Reconstruction

Prime/Sub Contractors:
Capitol Tunneling Inc. - Columbus, OH

Location:
Beaver County, PA

Owner:
Pennsylvania Turnpike Commission

Ground Conditions:
Ground shifted from clayey sand with gravel to sandstone (UCS: 2,594-8,390 PSI)

Akkerman Equipment:
WM720-II TBM with rock DCH, 5200 Pipejaking System, 1548 Haul System, Tunnel Laser Guidance

Pipe:
72-in Rinker™ Class V RCP - Jacking Pipe

Total Length/Longest:
280-lf w/ depths to 30-ft

PROJECT OVERVIEW

This 280-LF long tunnel installation was required for a sewer relocation provision by the Pennsylvania Turnpike Commission as part of a roadway and bridge reconstruction project in Beaver County, PA. Capitol Tunneling used an Akkerman TBM with a rock DCH fitted with 11.5-in single-disc cutters to navigate the crossing.

THE CHALLENGES

- Tunnel required for a sewer relocation as part of a major bridge and roadway reconstruction project
- Variable ground conditions shifted from clayey sand with gravel to high-strength sandstone (UCS: 2,594–8,390 PSI)
- Project depth reached up to 30 feet, increasing the need for precise alignment and stable operation
- Demanding geological transition required equipment capable of handling both soft and hard ground efficiently

THE SOLUTION

- Capitol Tunneling Inc. utilized an Akkerman WM720-II TBM equipped with a Rock DCH and 11.5-in single-disc cutters to handle the sandstone
- Paired with the 5200 Pipejacking System, 1548 Haul System, and Tunnel Laser Guidance to maintain accuracy and control throughout the 280-LF tunnel
- Equipment combination allowed for seamless transition through mixed ground while maintaining productivity
- Robust setup ensured alignment precision at depths up to 30 feet with minimal disruption to surrounding infrastructure

OUTCOME

- Successfully completed the 280-LF sewer relocation tunnel as part of the I-76 bridge reconstruction
- Akkerman equipment delivered precise alignment and efficient performance across varied ground conditions
- Handled transition from soft soils to high-strength sandstone with minimal delays
- Project met Pennsylvania Turnpike Commission requirements with a reliable and timely installation
- Demonstrated the versatility and power of the WM720-II system in complex infrastructure environments

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