CASE STUDY
PILOT TUBE | GUIDED PIPE RAMMING

Project Name:
Fort McMurray Project

Prime Contractor:
Total Trenchless Ltd.

Location:
Fort McMurray, AB

Ground Conditions:
Raveling Sand

Akkerman Equipment:
Akkerman 240A GBM, P100D Power Pack, Guidance System, Akkerman lube system, Weld-On Ramming Head

Pipe:
36-in x 0.625-wall x 40-ft long SC

Total Length/Longest:
345-lf

PROJECT OVERVIEW

This critical crossing took place under the important and busy HWY 63 near Fort McMurray, AB. Due to the raveling sand ground conditions, Total Trenchless Ltd. (step 1) established exact line and grade with their Akkerman 240A GBM system, (step 2) installed the 36-in steel casing directly behind the pilot tubes by pipe ramming with a TT Hammer, and then (step 3) cleaned the casing out with their MBM auger bore machine. This method allowed Total Trenchless to install the 36-in steel casing online and grade while maintaining positive face pressure.

THE CHALLENGES

- Unstable Ground Conditions: The presence of raveling sand posed a significant challenge, increasing the risk of ground loss and settlement during excavation.
- Highway 63 Crossing Constraints: Completing the installation under a critical and busy roadway required precision to prevent disruptions and ensure compliance with strict regulatory standards.
- Alignment and Grade Precision: Achieving an accurate line and grade for the casing installation was crucial to avoid costly deviations or rework.
- Maintaining Positive Face Pressure: Ensuring consistent face pressure was necessary to control ground movement and maintain stability throughout the bore.

THE SOLUTION

- To overcome these challenges, Total Trenchless Ltd. employed a multi-step approach utilizing Akkerman's advanced trenchless technology:
- Guided Boring for Accuracy – The Akkerman 240A GBM system was used to establish the pilot bore with precise line and grade control, mitigating risks associated with ground instability.
- Pipe Ramming for Stability – The 36-inch steel casing was installed directly behind the pilot tubes using a TT Hammer. This method provided robust casing support and helped stabilize the surrounding raveling sand.
- Auger Bore Machine for Cleanup – After casing installation, the MBM auger bore machine efficiently removed spoil material, ensuring a clean and structurally sound final bore.
- Lubrication and Pressure Management – Akkerman's lube system maintained optimal soil conditions and helped reduce friction during casing advancement, preventing potential ground loss.

OUTCOME

- 345 feet of 36-inch steel casing was installed accurately under HWY 63, despite raveling sand conditions.
- The method maintained face pressure and ground stability throughout the crossing.
- The multi-step approach minimized surface disruption and showcased innovative trenchless execution.

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