

CASE STUDY

PIPE JACKING | CONVENTIONAL TUNNEL BORING



Project Name:
Inver Grove Heights Trunk Utility Extensions

Prime Contractor:
Minger Construction Co., Inc.

Location:
Inver Grove Heights, MN

Owner:
City of Inver Grove Heights, MN

Ground Conditions:
Sand, Clays, Boulders

Akkerman Equipment:
Akkerman WM420-I TBM, 5200 Pump Unit, 524 Haul System, Pipe Jacking System

Pipe:
42-in RCP

Total Length/Longest:
280-lf

PROJECT OVERVIEW

Initially designed as a Guided Auger Boring project to install 30-in steel casing with their Akkerman 240A GBM, Minger quickly took note of the large boulders along the profile. To accommodate the geology, they successfully changed methods and used their Akkerman WM420-I TBM to install 42-in RCP to allow better access to the face while maintaining line and grade.

THE CHALLENGES

- **Unpredictable Ground Conditions:** The presence of sand, clays, and especially large boulders created a highly variable and difficult excavation environment.
- **Initial Method Limitation:** The project was originally designed as a Guided Auger Boring installation using a 30-in steel casing, which would have posed major difficulties with boulder removal and face control.
- **Maintaining Line and Grade:** Achieving precision while navigating shifting ground and hard inclusions required reliable control and consistent power.
- **Tight Timeline:** Switching methods mid-project meant quickly mobilizing alternative equipment without delaying the construction schedule.

THE SOLUTION

- **Method Adjustment for Geology:** Upon discovering the challenging subsurface conditions, Minger Construction pivoted from Guided Auger Boring to a more robust TBM pipe jacking method, allowing better control and excavation in mixed-face ground.
- **Deployment of Akkerman WM420-I TBM:** The use of the WM420-I provided the cutting capability and face access needed to manage

boulders while maintaining line and grade through the variable soil profile.

- **Enhanced Support Equipment:** The 5200 Pump Unit and 524 Haul System supported continuous excavation and spoil removal, minimizing delays and maximizing efficiency.
- **Optimized Pipe Selection:** Upgrading to 42-in RCP allowed for more efficient installation in the enlarged bore, and better accommodated the TBM operations.

OUTCOME

- **Successful Method Shift:** Minger Construction's proactive decision to pivot from Guided Auger Boring to TBM pipe jacking enabled the team to overcome difficult geology without compromising the project timeline.
- **Accurate and Efficient Installation:** Despite challenging conditions, the team installed 280 linear feet of 42-in RCP with precise alignment and grade control throughout.
- **Minimal Disruption and Downtime:** The robust Akkerman TBM system and support equipment allowed for steady progress with limited delays, even when encountering large boulders.
- **Client Satisfaction and Future Readiness:** The project was completed to the satisfaction of the Inver Grove Heights, highlighting the value of adaptable trenchless methods and well-matched equipment solutions.

