Mid-American Group

Steam Pipe Insertion
Cost Savings Project

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Newport, MI 48166
Phone:: 734-586-8868

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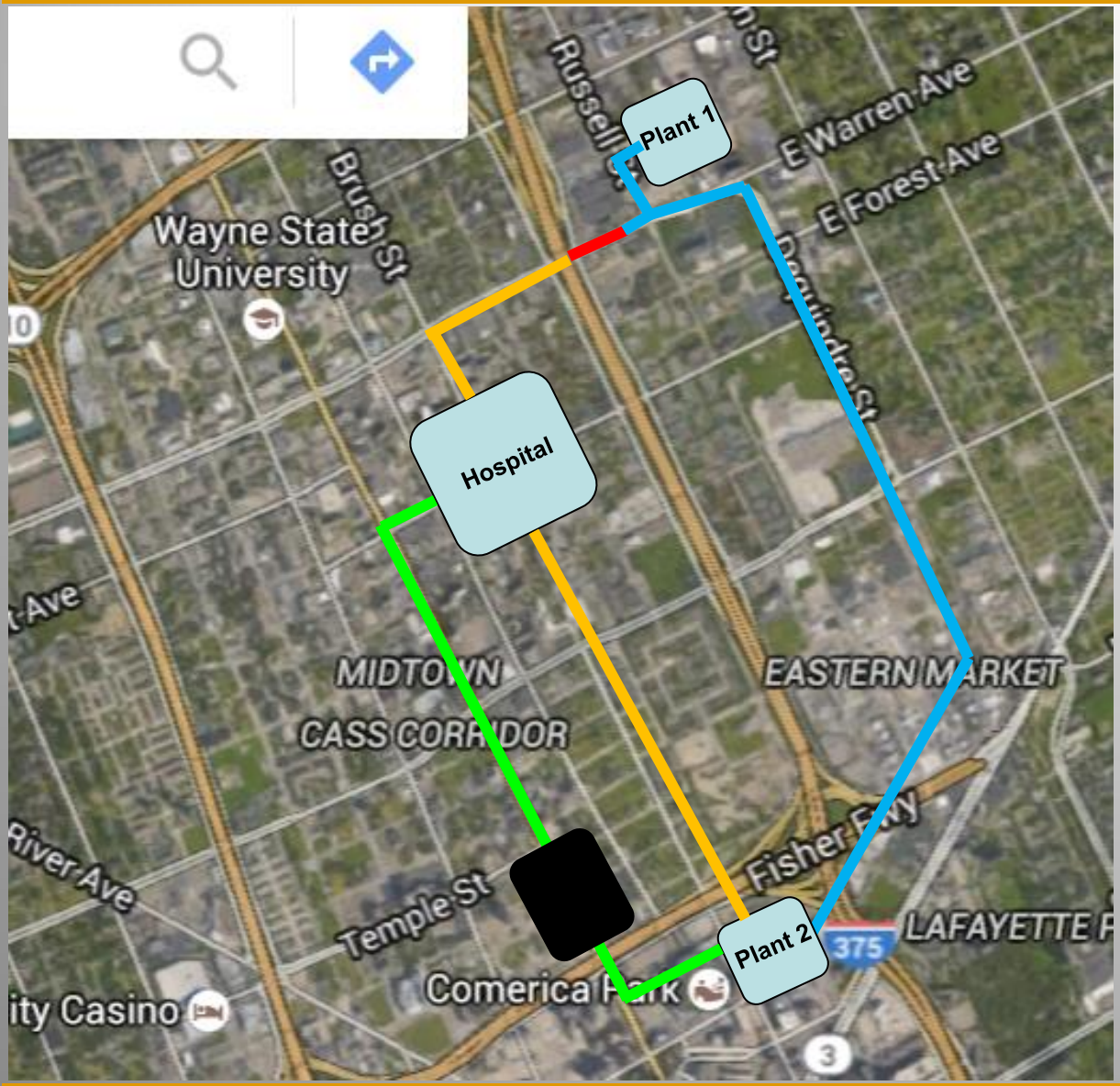
Excavation and 10” pipe insertion



In 2010 a section o pipe illustrated in RED was abandoned due to operation issues and was not required to serve any customers.

In 2015, a new rail system was put in place cutting a back-up feed for a critical Hospital Customer. This is shown in the Black Rectangle

Pressure: 235p.s.i. nominal
Diameter:26”

Pressure:120 p.s.i. nominal
Diameter: 10” up Warren tying into 16” on Brush

Pressure:120 p.s.i. nominal
Diameter: 16”

Pressure: 235 p.s.i. nominal
Diameter: 20” reducing to 10” at manhole #5

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Task:

- Maintain a back up feed for a critical Hospital customer requiring steam 24-7 for heat, air-conditioning, and medical sterilization.
  - The Back-up was fed by the Green line shown previously, but was scheduled to be cut due to the installation of a new rail system and be down for an extended period of time.
- A previously abandoned section of pipe shown in Red on the previous slide from Plant 1 was chosen to take the place of the back-up due to economical and logistics reasons.
  - Refurbish Ø20” Steam Pipe that connects the 26”- 235p.s.i. from the Plant 1 steam line to the critical Hospital Customer 120# feeder.
- Option 1: Open cut entire length of 450’, excavate down to pipe, install shoring, remove concrete, cut pipe out in sections and remove, install new pipe Ø20” , pour concrete around pipe, backfill, pour concrete.
- Option 2: Open cut 2 sections 20’x10’, excavate down to pipe, install shoring, remove 1 section of pipe in each location, lower Ø10” pre-insulated pipe into excavation, weld pipe and pull into adjacent manhole.
  - Existing Ø20” pipe was actually oversized for the requirements to customers on that loop. A Ø10” Steam pipe would suffice without any negative impacts.
- Option 2 was chosen as a cost and time reduction option.

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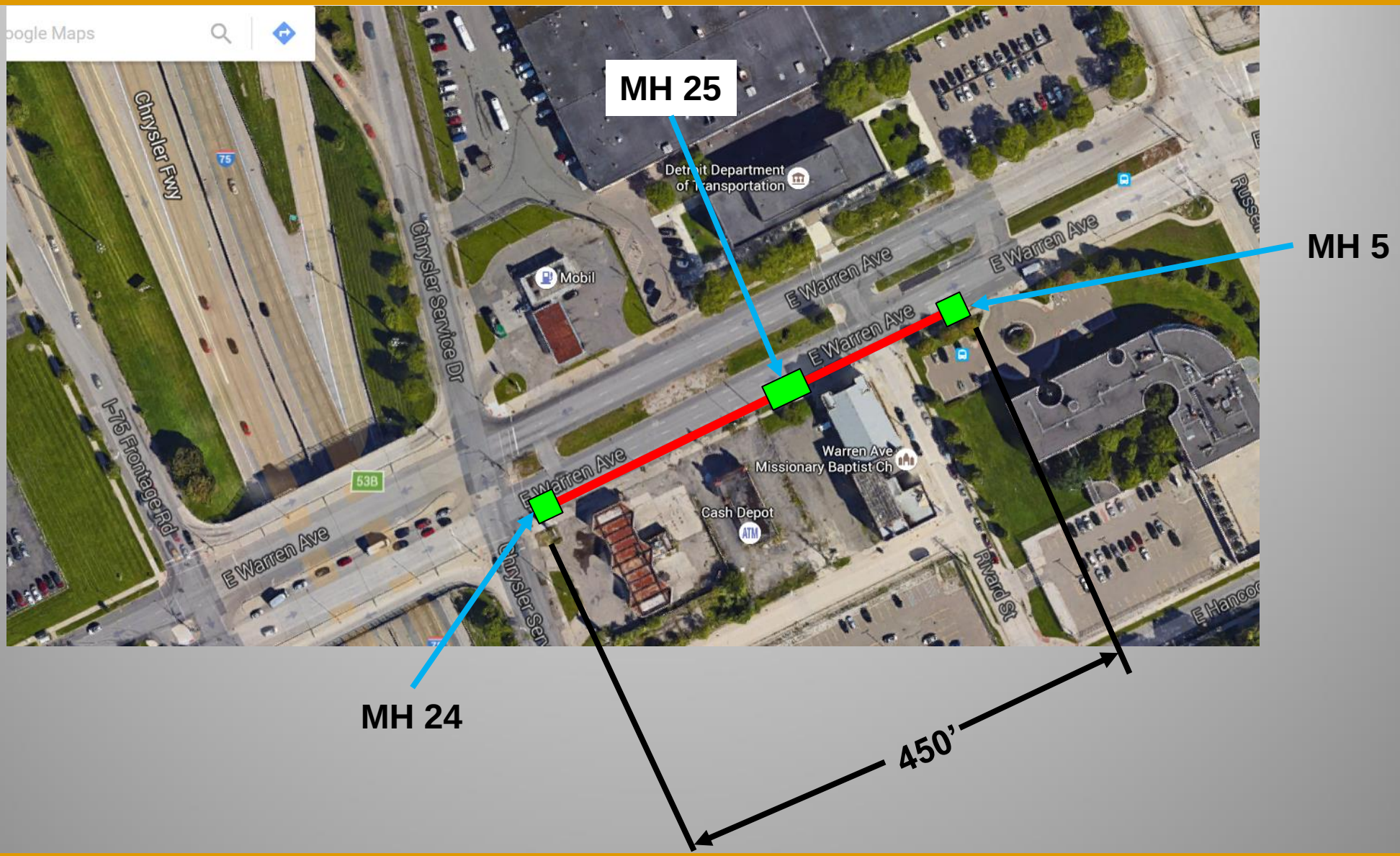

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Excavation East of Manhole 25

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Cutting existing 20” pipe

Hand jackhammer required to expose existing 20” pipe

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Removing existing 20” pipe

A concrete anchor or thrust support was removed in the excavation, approximately 20’ long, 8’ deep, 6’ wide.

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Bottom of excavation East of manhole 25

First Pipe being lowered into Excavation East of MH 25

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First Pipe being lowered into Excavation East of MH 25

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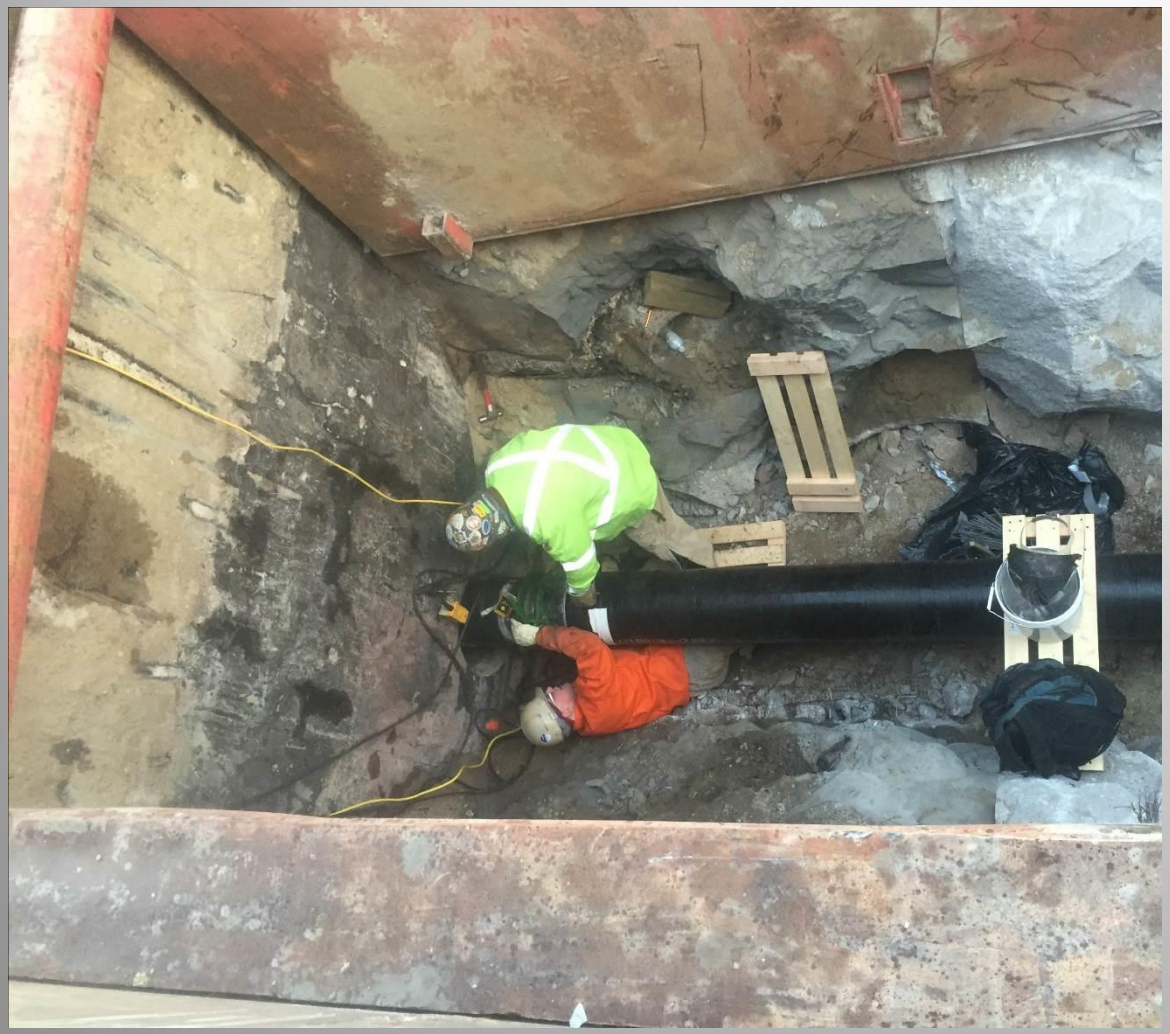

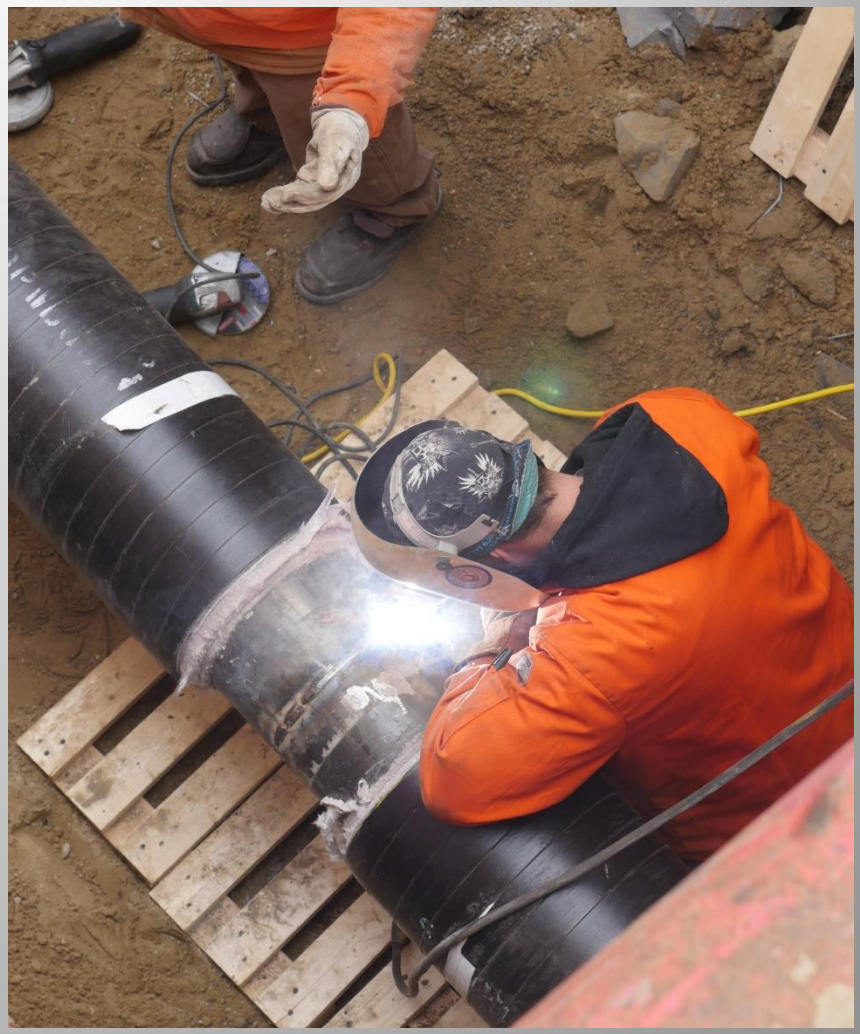

Pipe being welded in excavation
east of MH 25

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Anchor being Installed East of MH 25

Concrete being poured

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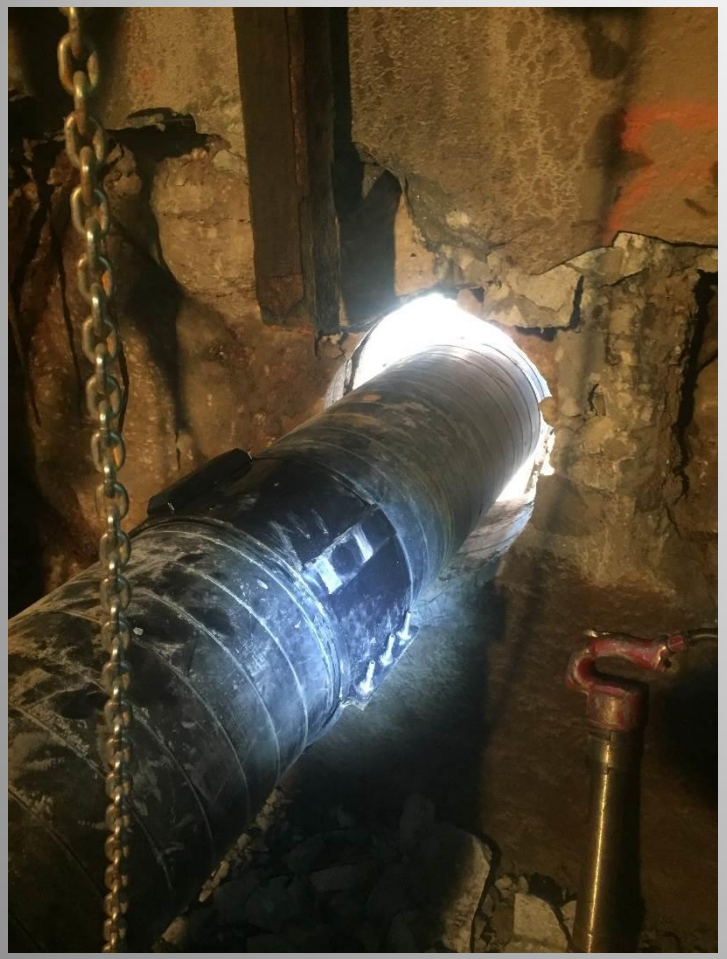
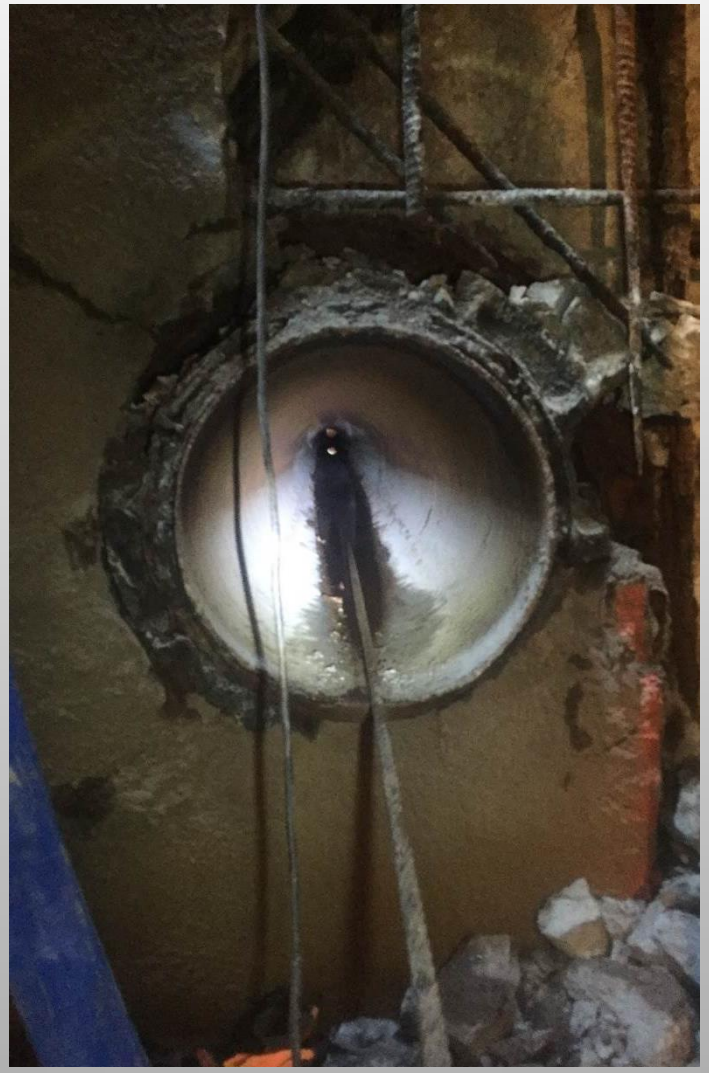
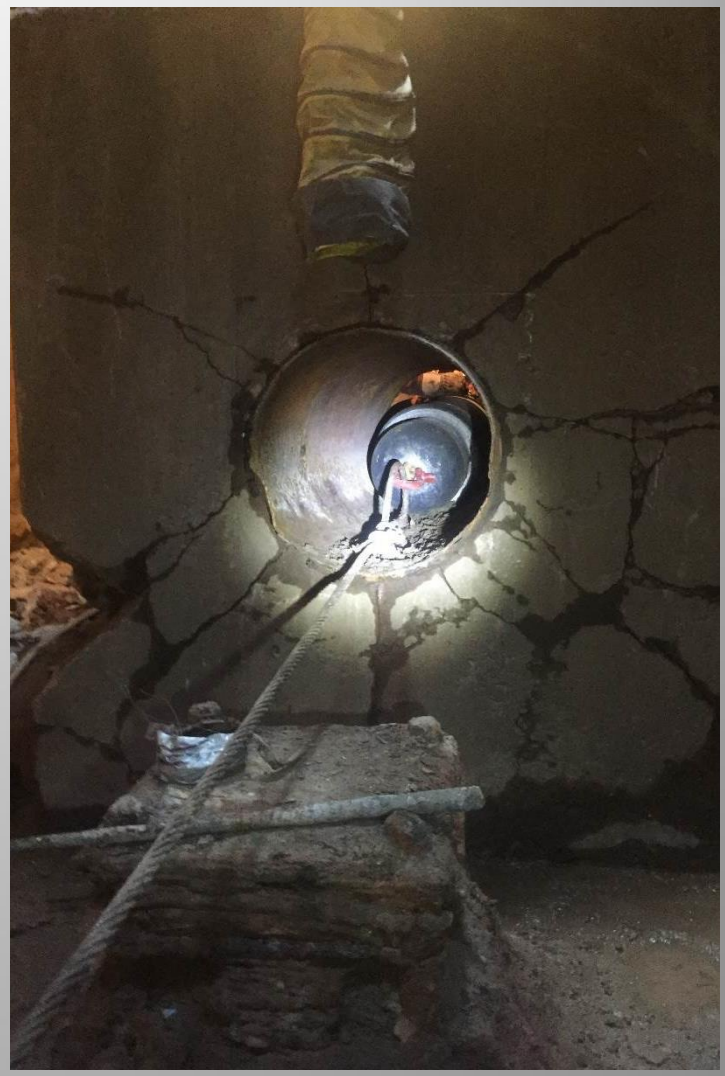


New 10” pipe is inserted from Excavation East of MH 25 into MH 25



Cable is installed through pipe between MH 24 to MH 25



Cable is installed to first section of new 10” pipe

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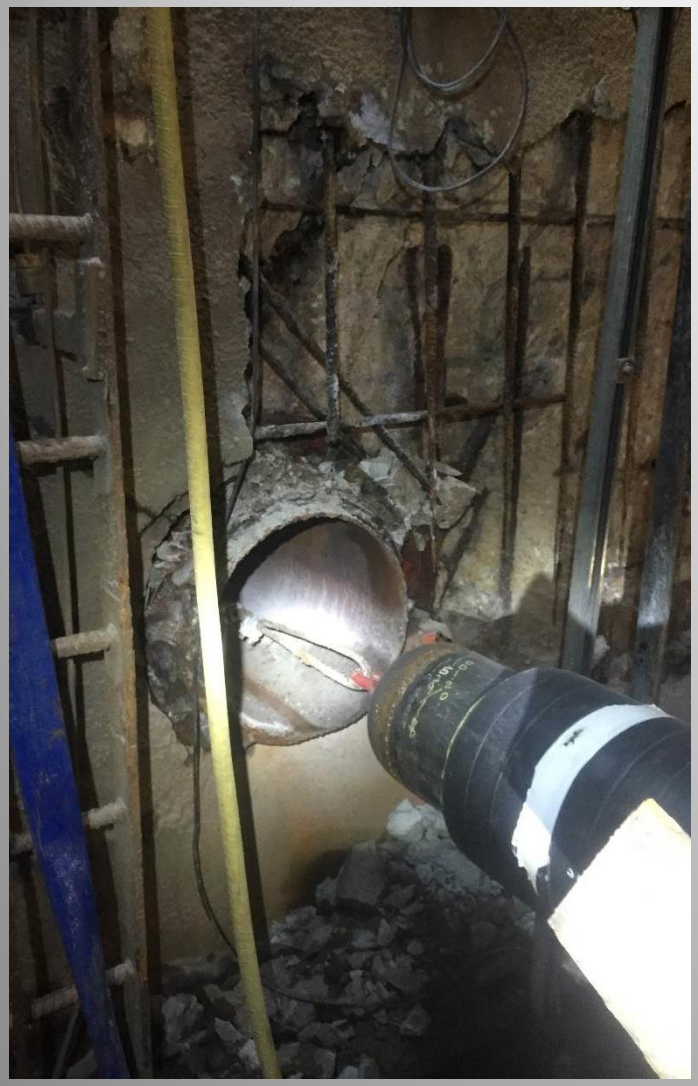

Cable pulling 10” pipe into existing 20” pipe

10” pipe pulled into 20”pipe between MH 25 and MH 24. Guide can be seen. 2 are installed per pipe section

Guides being installed on new 10” pipe inside of MH 25

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Installing Insulation kit on newly welded pipe in Manhole 25

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Excavation being dug west of MH 5

Installing Pipe in Excavation West of Manhole 5

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Manhole 24 wall repairs

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Manhole 25 wall repair started by removing compromised concrete

Manhole 25 wall repair Completed

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Manhole 25 wall repairs

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Pressure reducing valves, pressure isolation valves, and expansion joints installed in MH 25

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Manhole 5 before repair started

Manhole 5 wall repairs, material removed and new rebar installed

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Shotcrete being sprayed in Manhole 5

Shotcrete repair complete in Manhole 5

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Anchor being prepared in Manhole 5

Anchor poured and completed in Manhole 5

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Blowdown of entire 450’ of new pipe

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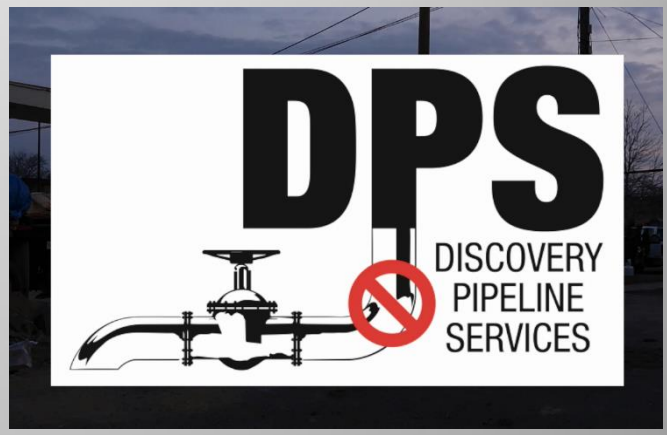

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Conclusion:

- Project allows an old connection to be re-established so that one of the critical hospital customers is provided with a back-up feed of critical Steam. The new lite rail system being built in Detroit has a section of about 600 feet of tracks running directly over the steam line. It was a concern that if major work had to be done on the steam line under this section of tracks, a disruption to the rail would be imminent. By re-establishing this section there would be no disruption to the rail while still providing redundancy to the hospitals and north end of the steam system.
- Project was completed with about a 40% Cost Savings compared to Excavating all 450’ of open excavation / installing shoring / removing old pipe / new pipe installation / backfilling / concrete and asphalt installation.
    - The Cost savings would have been even more if Asbestos abatement had been required.
- All Anchors / valves / expansion joints / drip legs required could be installed in the 3 existing manholes.
- Project was completed with a 50% reduction in overall project time
    - City was satisfied with a shorter road closure duration and disruption of traffic flow
- Safety was improved with less confined space time for the crew