From Dust to Gold: Pipe Reaming Renaissance in El Dorado, Kansas

Michael A. Salinas, PE.
Diego J. Medrano.
Tuesday, March 4, 2025

OUR AGENDA

01. OVERVIEW OF EL DORADO
02. CONSTRUCTION METHOD
03. SPECIAL CASES
04. LESSONS LEARNED

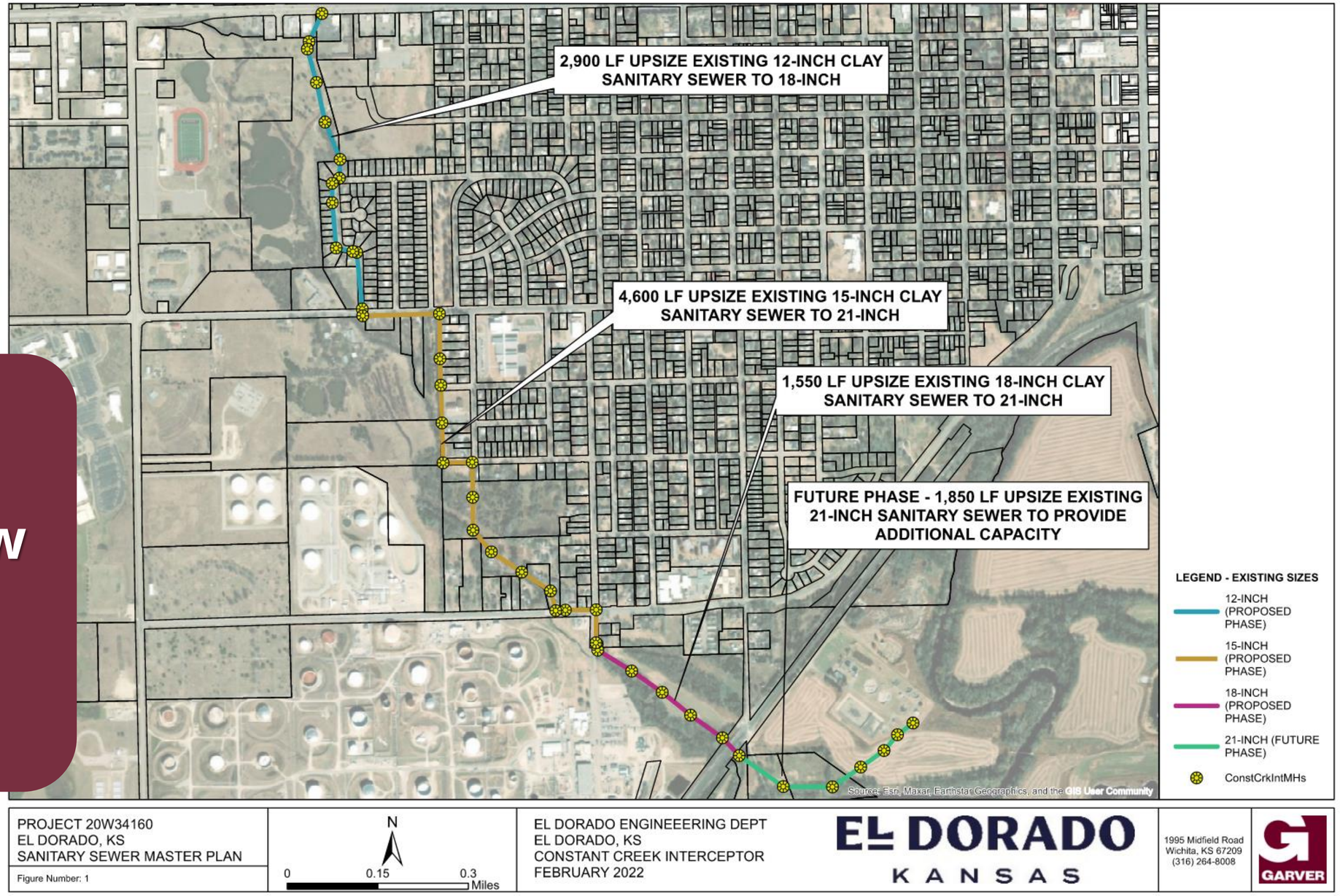
01 02 03 04

OVERVIEW OF EL DORADO

El Dorado Public Works:

- 129 miles of water mains
- 91 miles of sanitary sewer collection lines
- 1,872 manholes
- 11 lift stations

Improvements to Sanitary Sewer will allow for future Industrial growth



PROJECT 20W34160
EL DORADO, KS
SANITARY SEWER MASTER PLAN

Figure Number: 1

N

0 0.15 0.3 Miles

EL DORADO ENGINEEERING DEPT
EL DORADO, KS
CONSTANT CREEK INTERCEPTOR
FEBRUARY 2022

EL DORADO KANSAS

1995 Midfield Road
Wichita, KS 67209
(316) 264-8008

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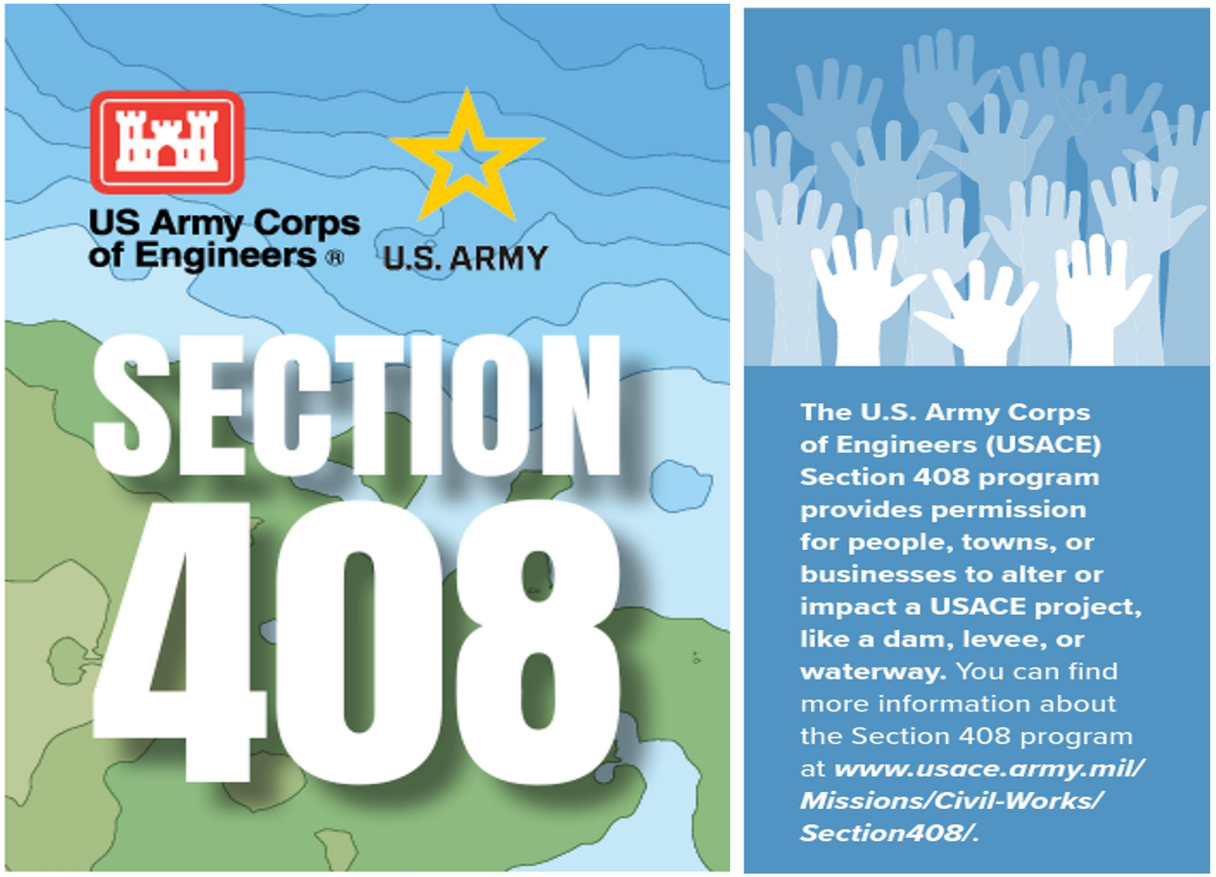
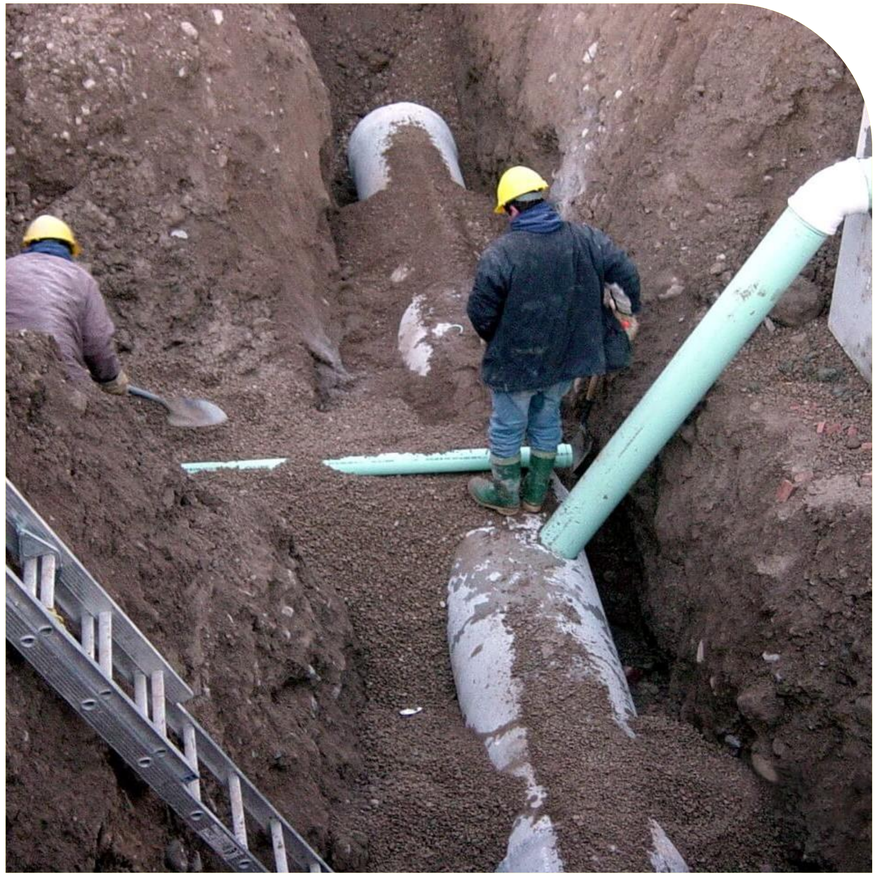
Federal funding resulted in environmental studies and USACE coordination





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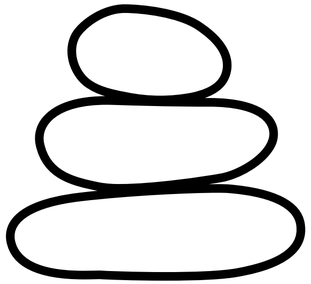
CONSTRUCTION METHOD

Multiple benefits from Trenchless Technologies

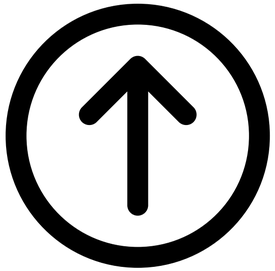
- Less disruption to the public.
- Minimal environmental impacts.
- Soil and groundwater conditions.
- Reduce pavement repairs.

Pipe Reaming Method Selection

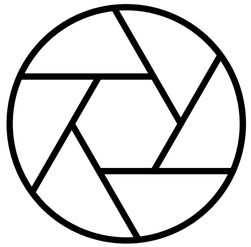
- Sedimentary rock conditions.



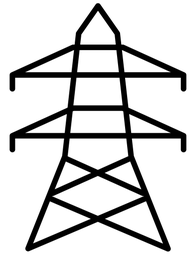
- Upsizing of the sanitary line.



- Use of HDPE pipe.



- Clearances grade/utilities.



LOCAL EXPERIENCE AS A MAJOR DRIVER IN METHOD SELECTION

EL DORADO
KANSAS

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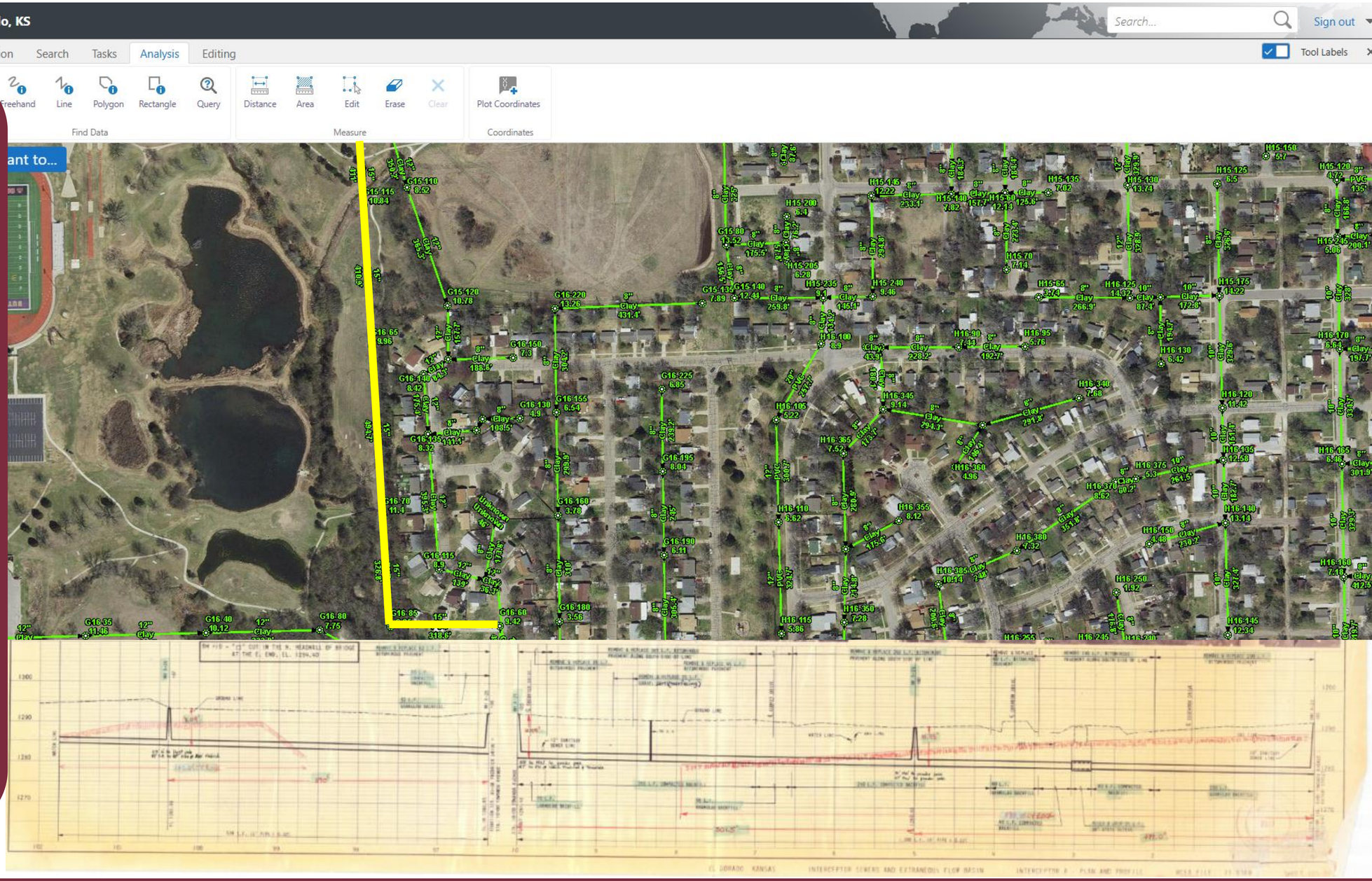
NOWAK CONSTRUCTION

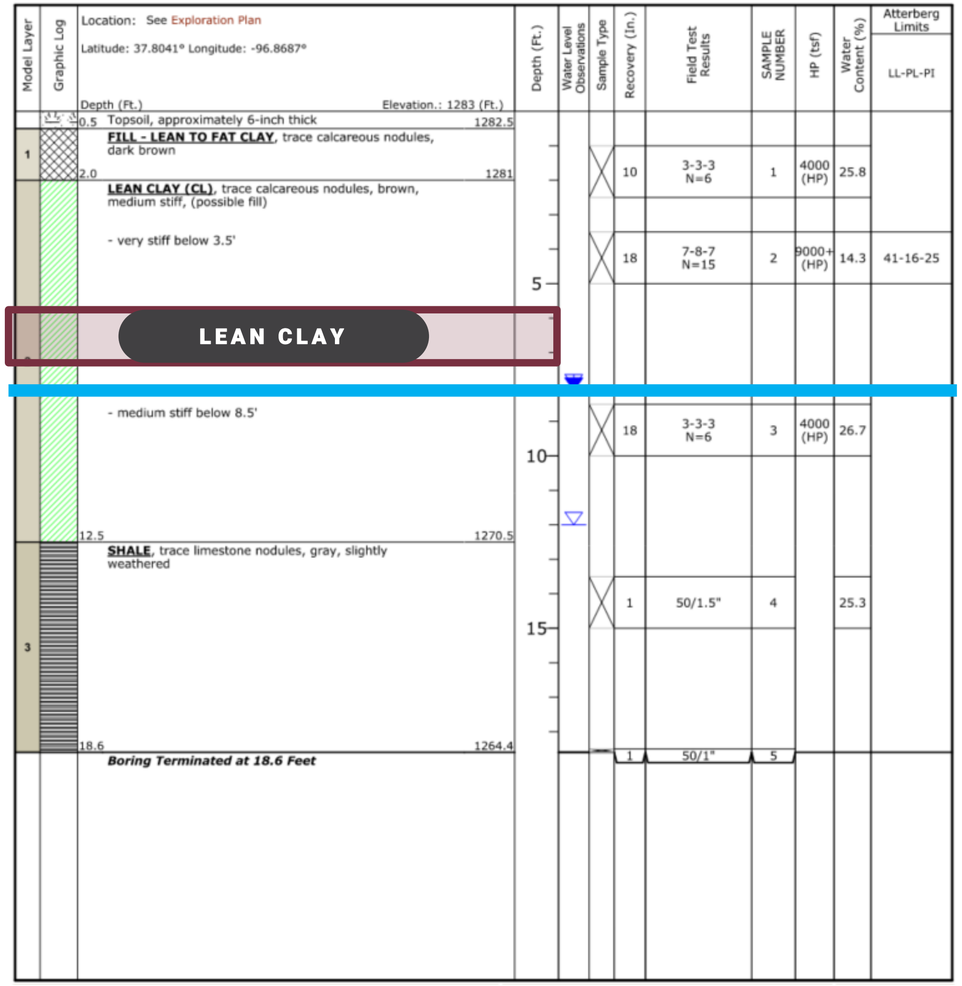
As-builts revision:

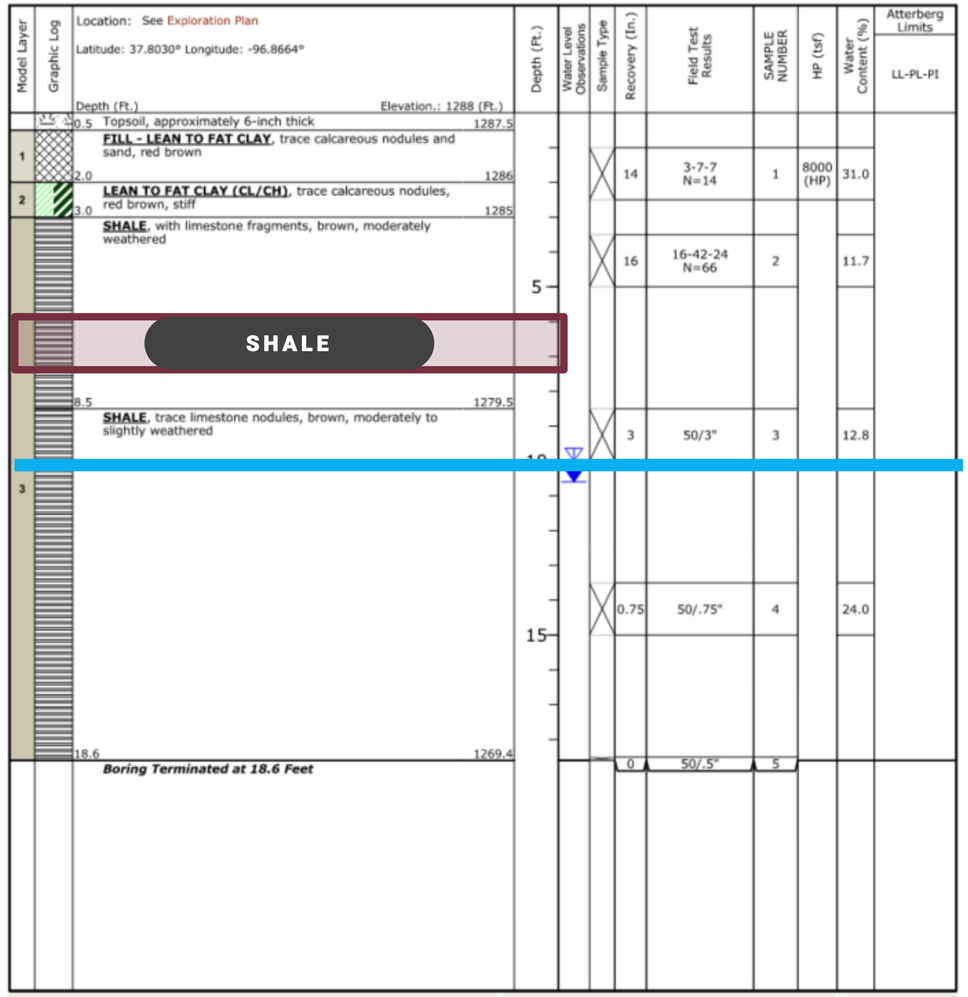
- Establish pit locations.
- Location of service lines.
- Proximity of other utilities and services.
- GIS materials.



Geotechnical bore holes confirmed pipe reaming is the optimal option.

- Hard rock.
- Soft rock.
- Clay.
- Silt.
- Sand.
- Fine gravel.
- Coarse gravel.
- Boulders.





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From Dust to Gold Pipe Reaming Renaissance in El Dorado, Kansas

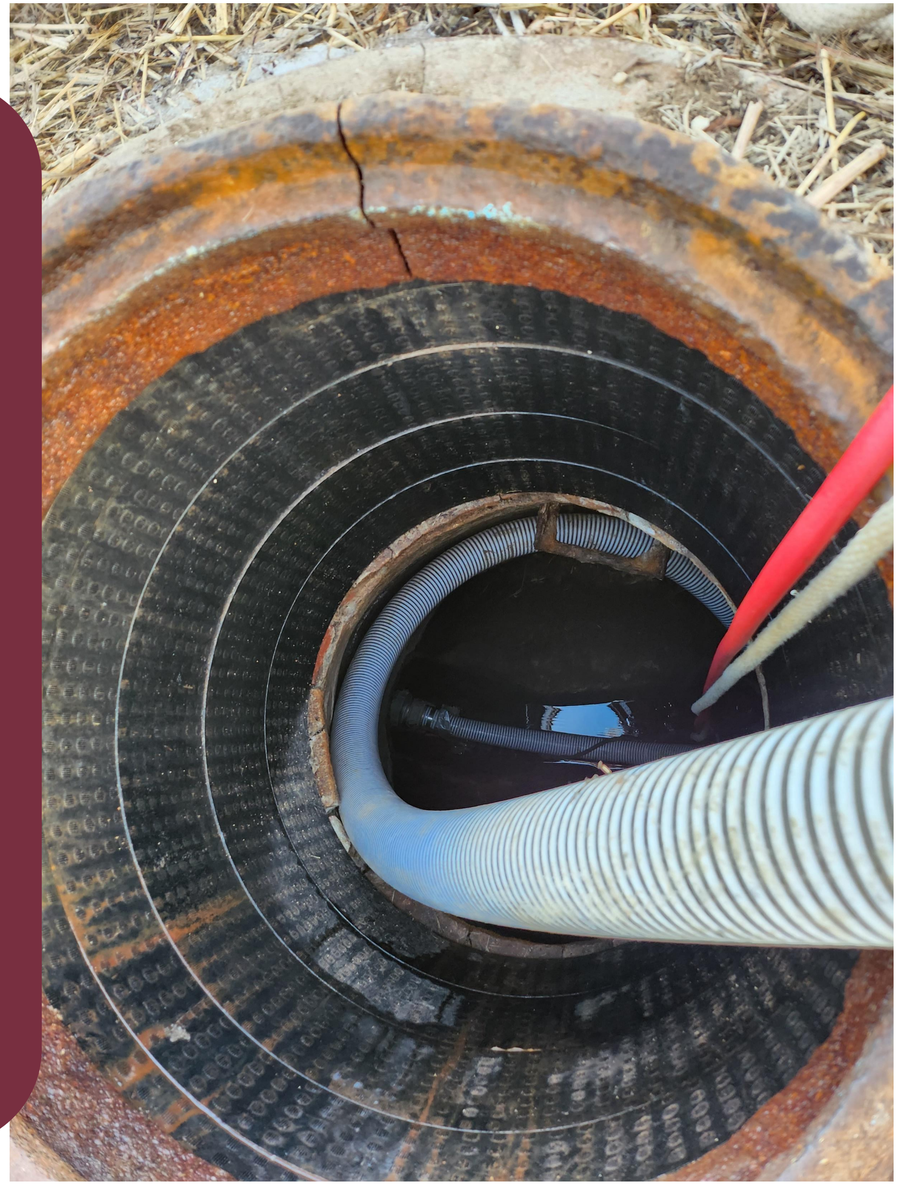
CCTV Inspection:

- Pipe Condition.
- Obstructions to the reamer.

1. Expose existing lateral connections.

2. Disconnect existing service lines.

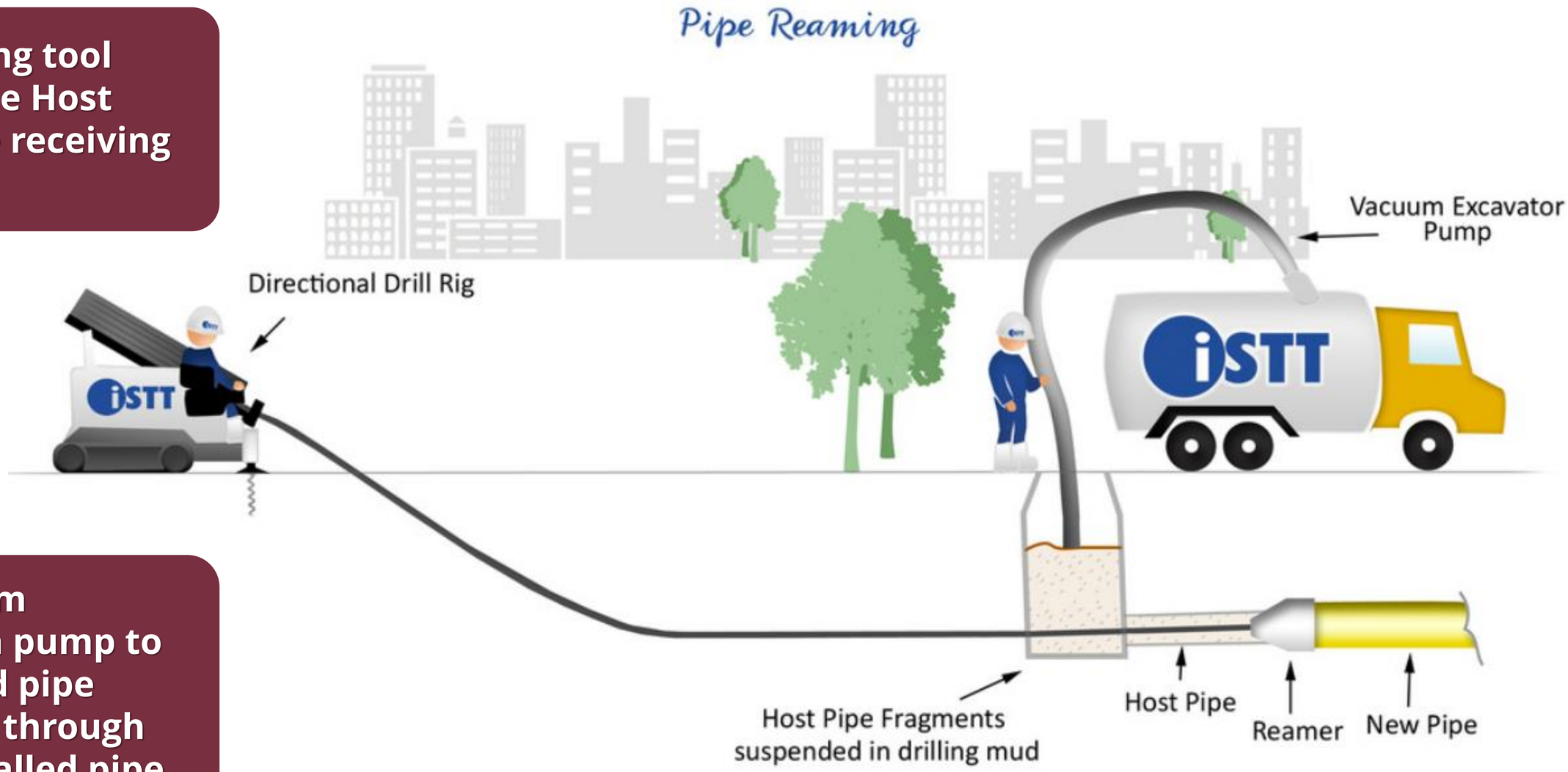
3. Provide temporary bypassing line.



4. Dig sending and receiving pits.

5. Connect reaming tool into New Pipe at the sending pit.

6. **Pull reaming tool through the Host Pipe at the receiving pit.**



7. **Use vacuum excavation pump to remove old pipe fragments through newly installed pipe.**

8. Connect laterals to new mainline sewer pipe.
9. Conduct quality control inspections.
10. Backfill pits and complete pavement restoration.

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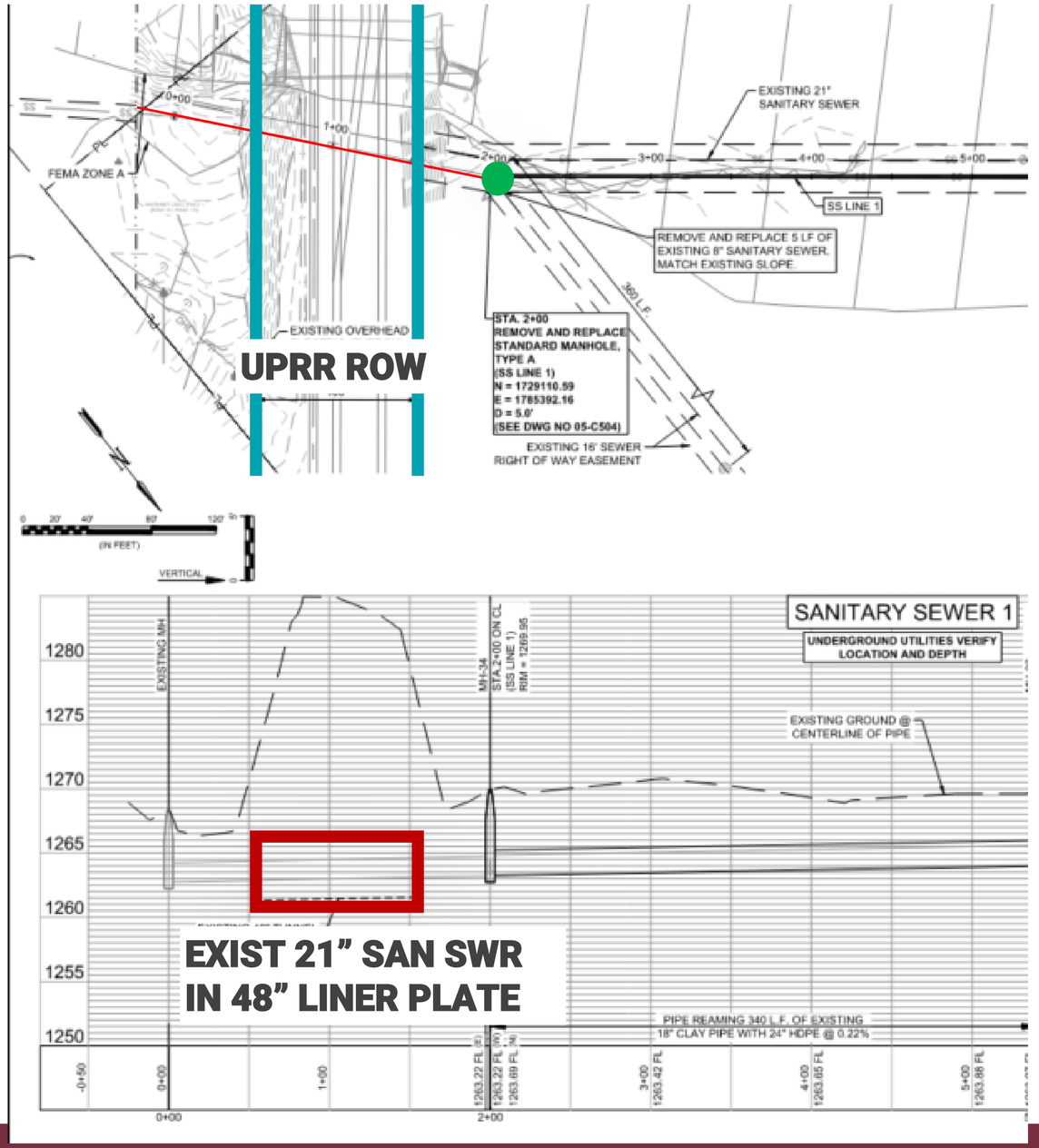
SPECIAL CASES

Existing sanitary sewer line crossed underneath a railroad and several trenchless techniques were vetted to improve collection line



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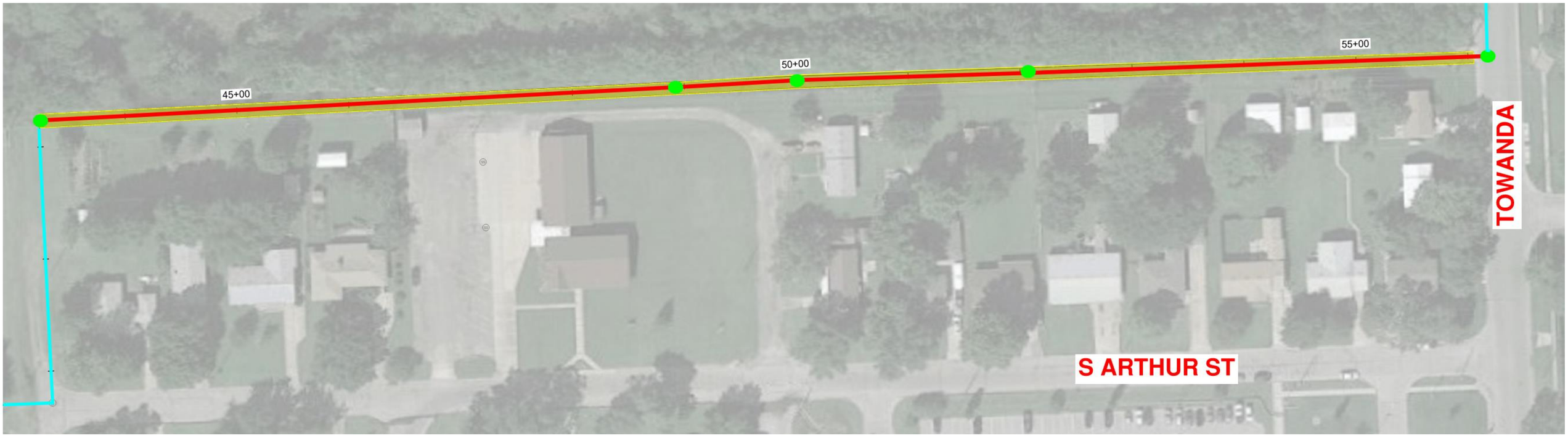
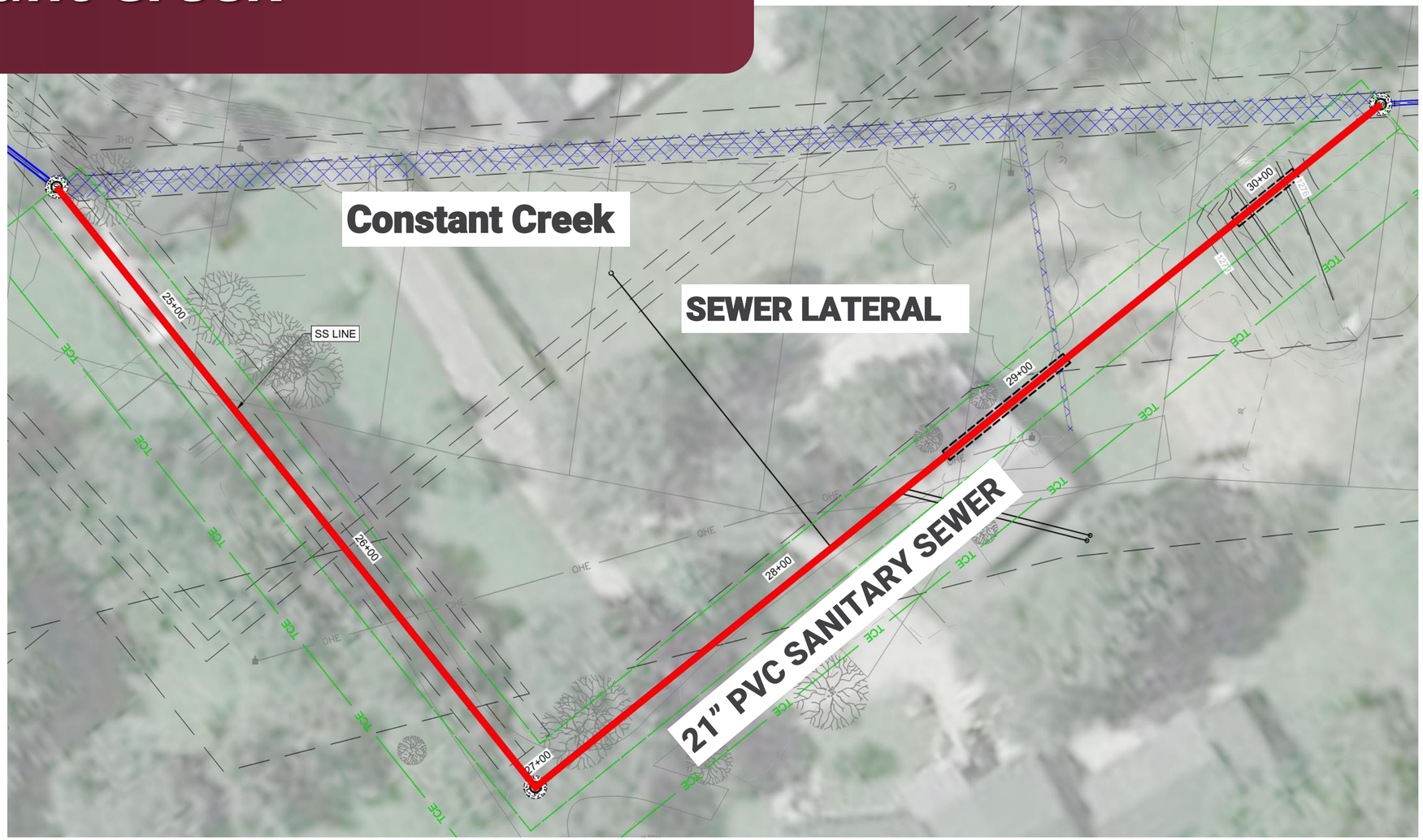
Existing sanitary sewer line is aligned within a concrete lined channel and drainage is required to be maintained

The entire drainage channel will be completed in one reaming operation

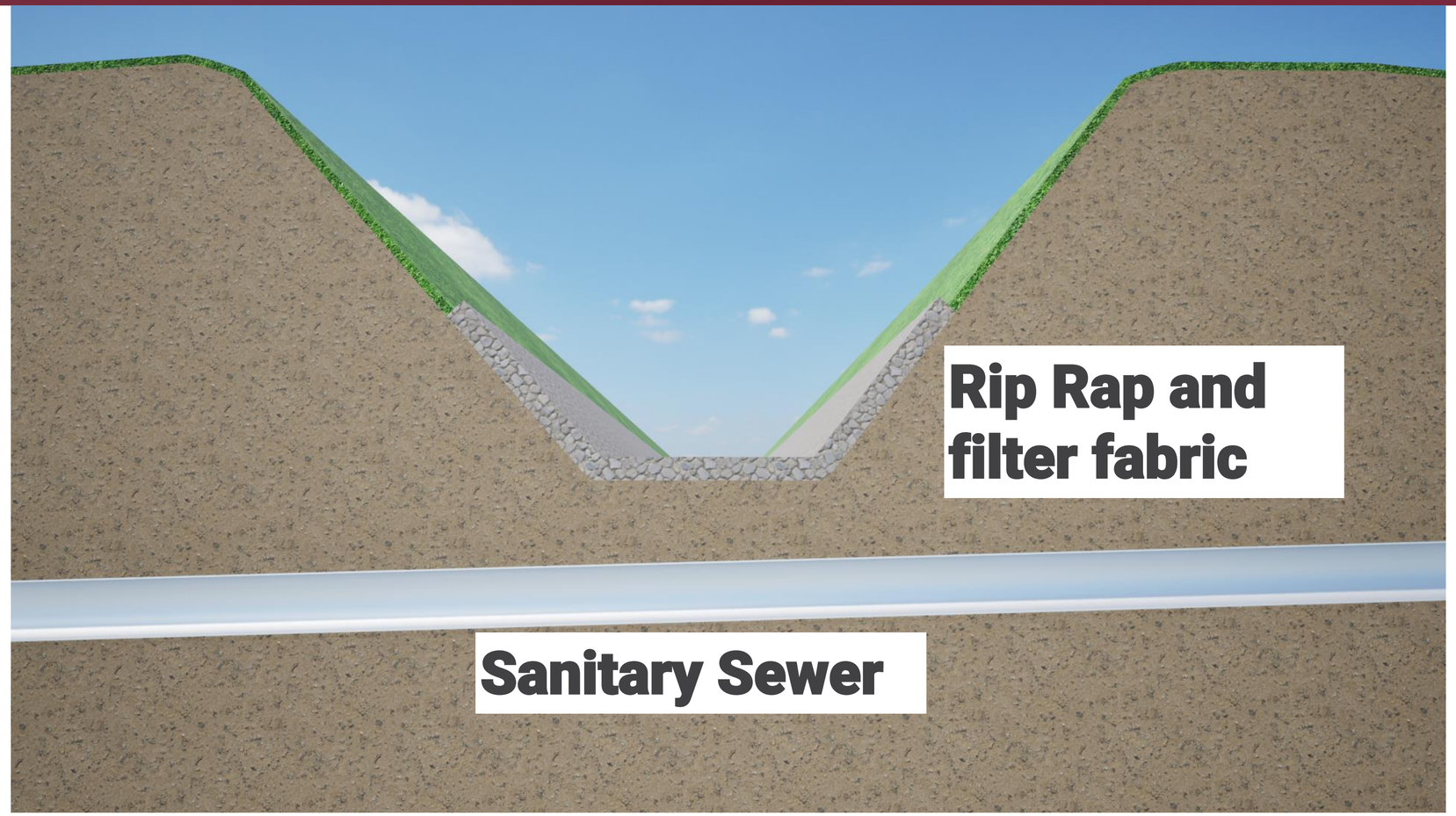


The sewer is encased in concrete as it crosses a Constant Creek which limited trenchless improvements

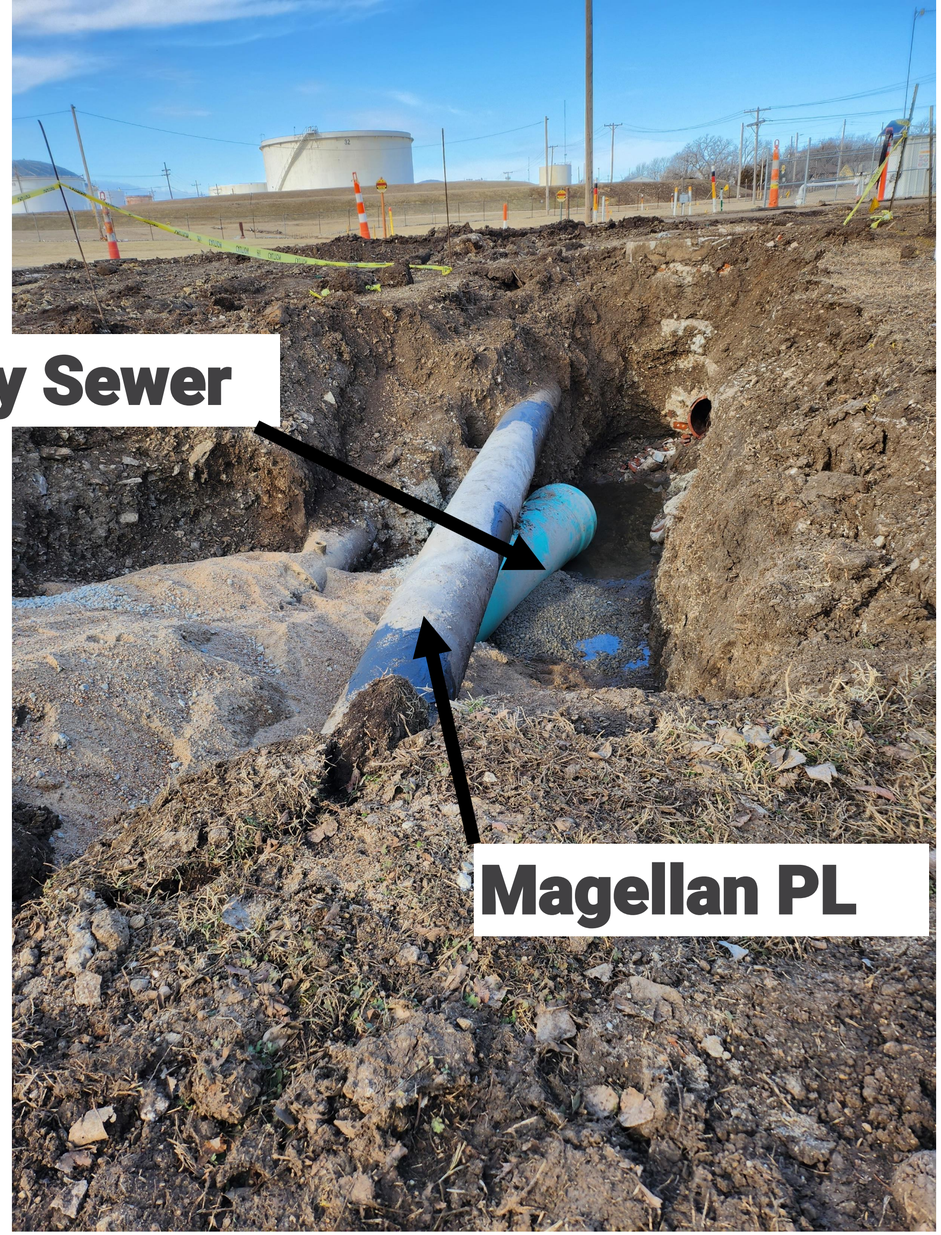
Realignment was developed to avoid impacting Constant Creek

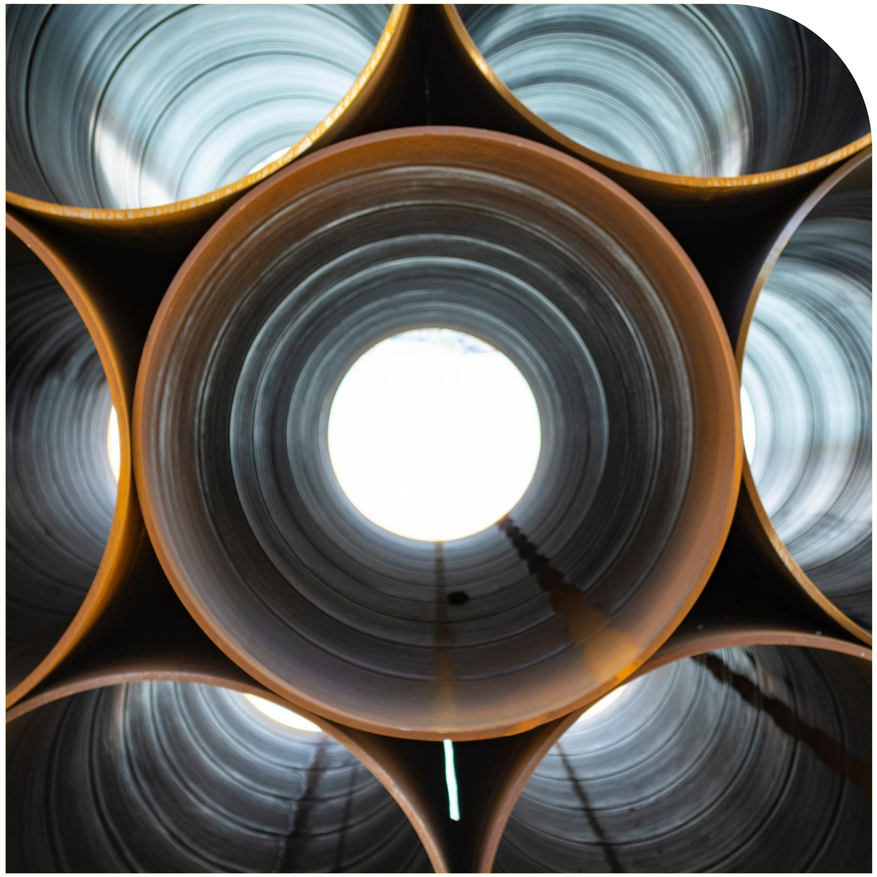


Additional improvements were implemented at Creek Crossings to meet jurisdictional requirements



Magellan crossing had limited cover and had to be exposed during construction.





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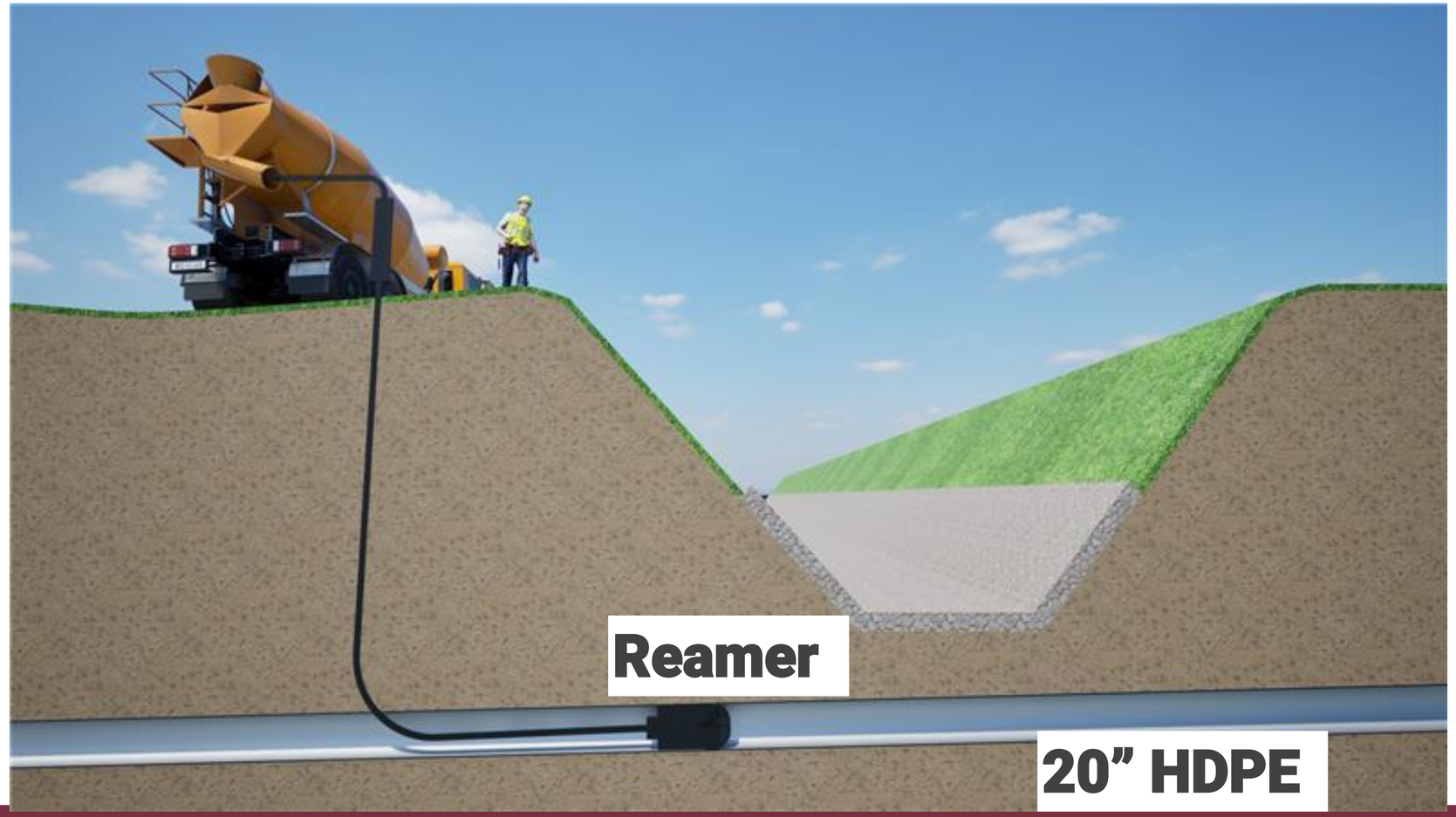
LESSONS LEARNED

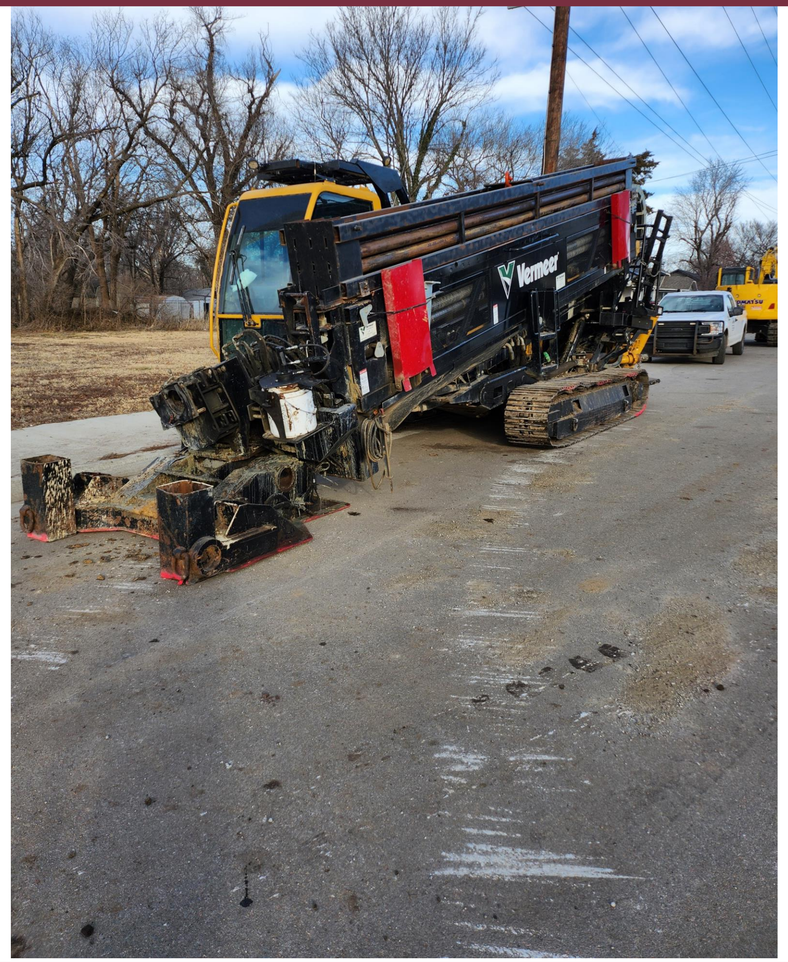
Pipe reaming is a practical installation method when constructing in sedimentary rock

Pipe reaming is a feasible option where there is limited cover.



While pipe reaming limits impacts to the surface, the lay down area shall be investigated to determine if there is suffice construction availability.

Alternative construction methods shall be considered in bid form to obtain a competitive bid



Utility coordination is vital in designing pipelines.

Any Questions?

Michael A. Salinas, PE
Diego J. Medrano
Tuesday, March 04, 2025