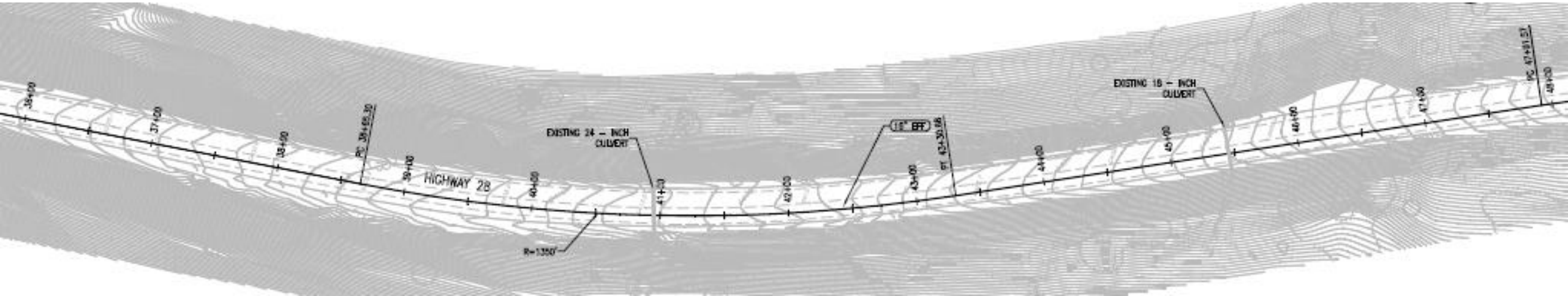
Specific Challenges & Requirements

A Contractor's Perspective

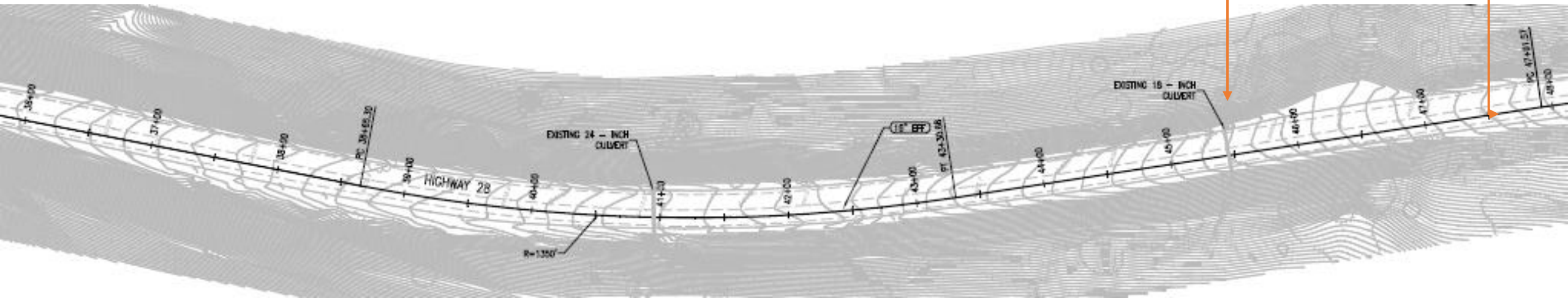
ALIGNMENT & ACCESS
OPERATING CONDITIONS & DESIGN
OWNER'S O&M PLAN

Alignment & Access

- Understand the pipeline alignment is a critical step towards exposing potential challenges.
- Field changes to pipe alignments and as-built plans are often overlooked, misplaced or non-existent.

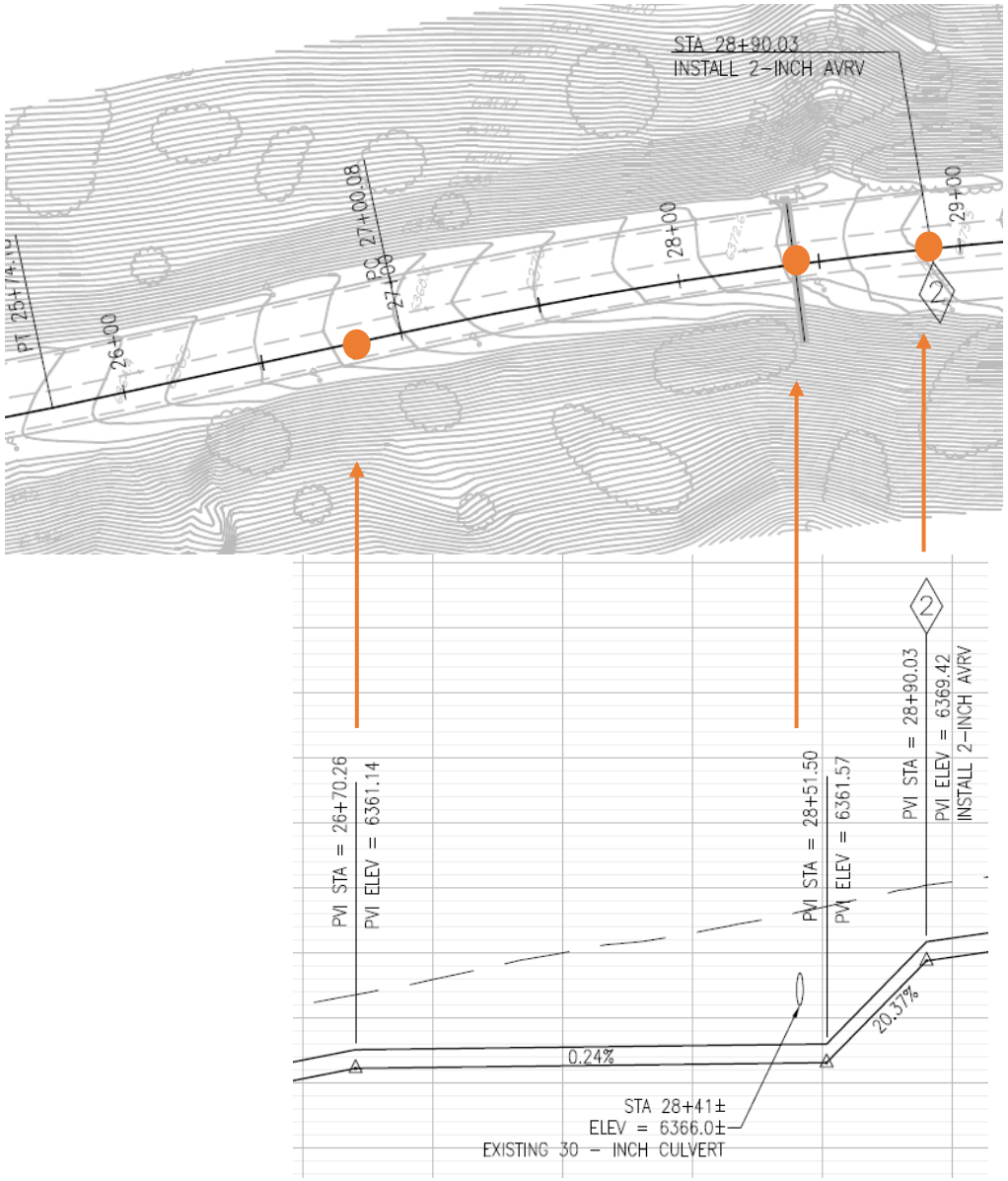


- Is location as-built, or original plan.
- Are there vertical alignment changes?
- Locate pipeline (blue-stake, pot-hole confirmation, etc.)
- Pipe type/construction method?
- Degree of deflection if bell & spigot (why this is important)



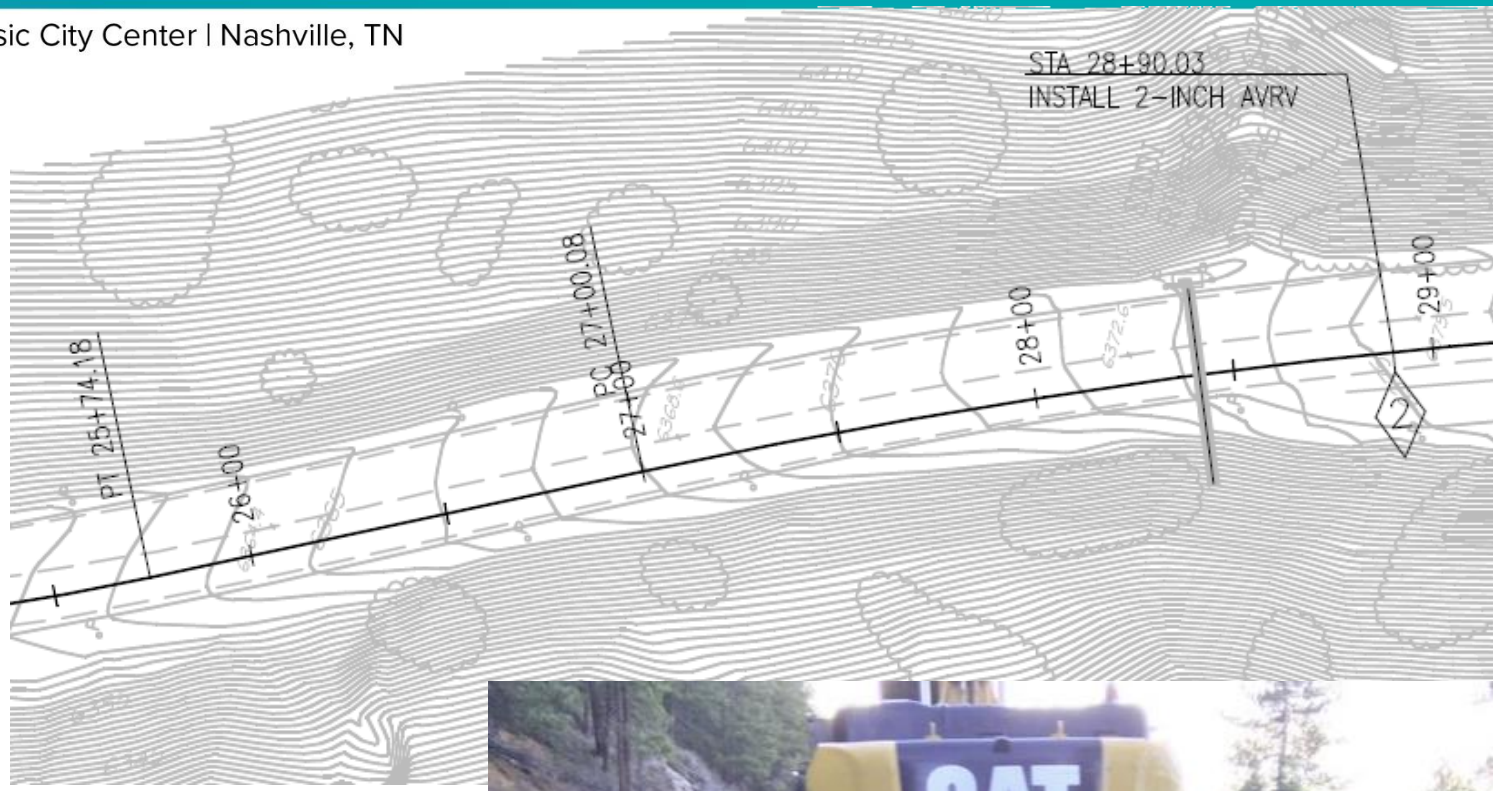
Challenges

- Additional alignment changes can exist that may not be depicted on plans, as-builts, or even through pipe locating.
- Internal inspection is important prior to planning and materials order.
- Ideally, the investigation should be completed prior to construction pricing.



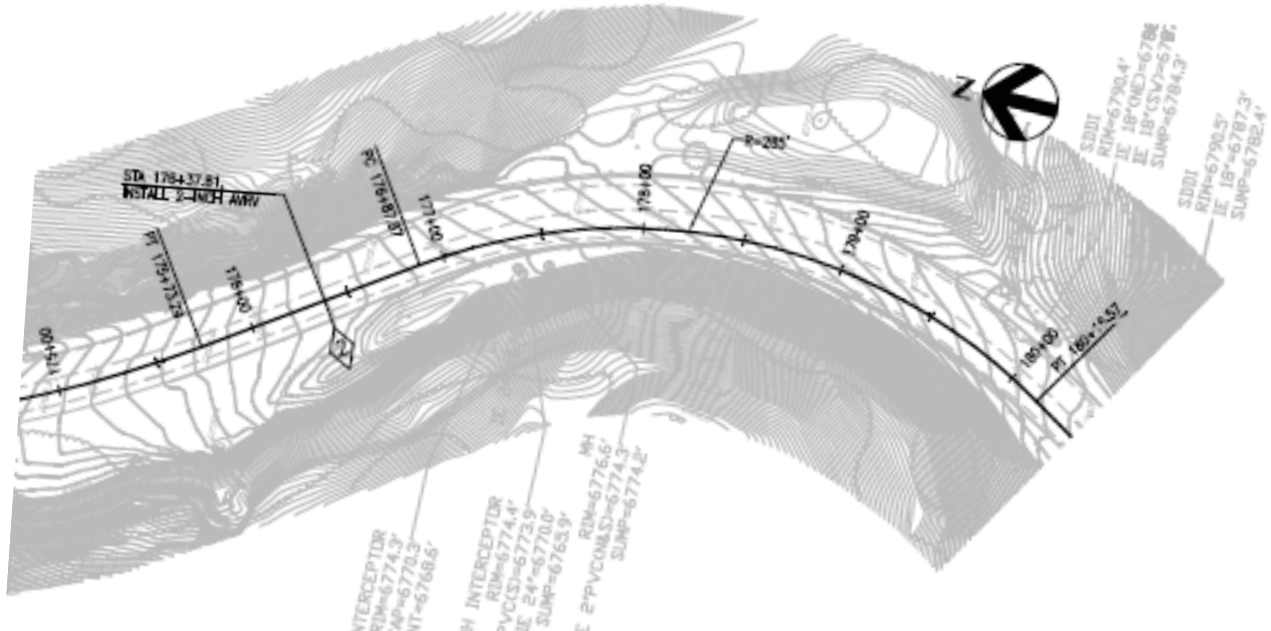
Challenges

- Are the access pit locations placed where construction equipment and personnel can safely access the pipe?
- Access is a big challenge rehabilitation contractors.



Considerations

- Verify accessibility to pipeline.
- Conduct internal inspection and combine with survey.
- Understand operating window or be prepared to highline.
- Be prepared to reinstate pipeline operation between inspection and construction.



Operating Conditions & Design

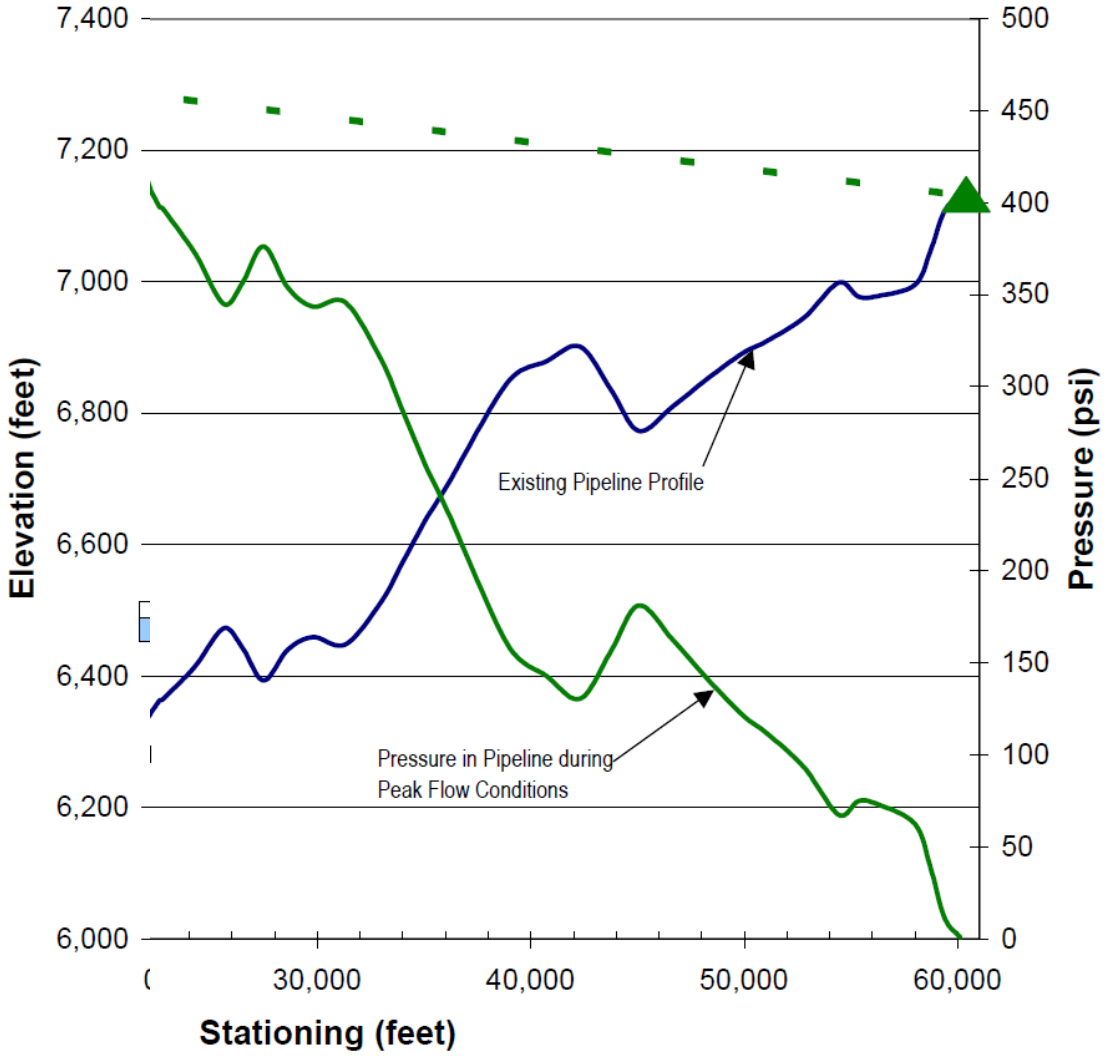
Understand the pipeline's operating pressures and conditions.

- Pressures
- Materials
- Operating Conditions
- Objective of Repair

Construction Risk is always an element considered and factored into a proposal.

Pressure?

- Design pressure?
- Max operating pressure (MAOP)?
- Surge pressure?
- Vacuum pressure?



Host Pipe Material

- What is the host pipe material?
- How was it constructed?
- What is the problem we are trying to solve?

Structural Requirement

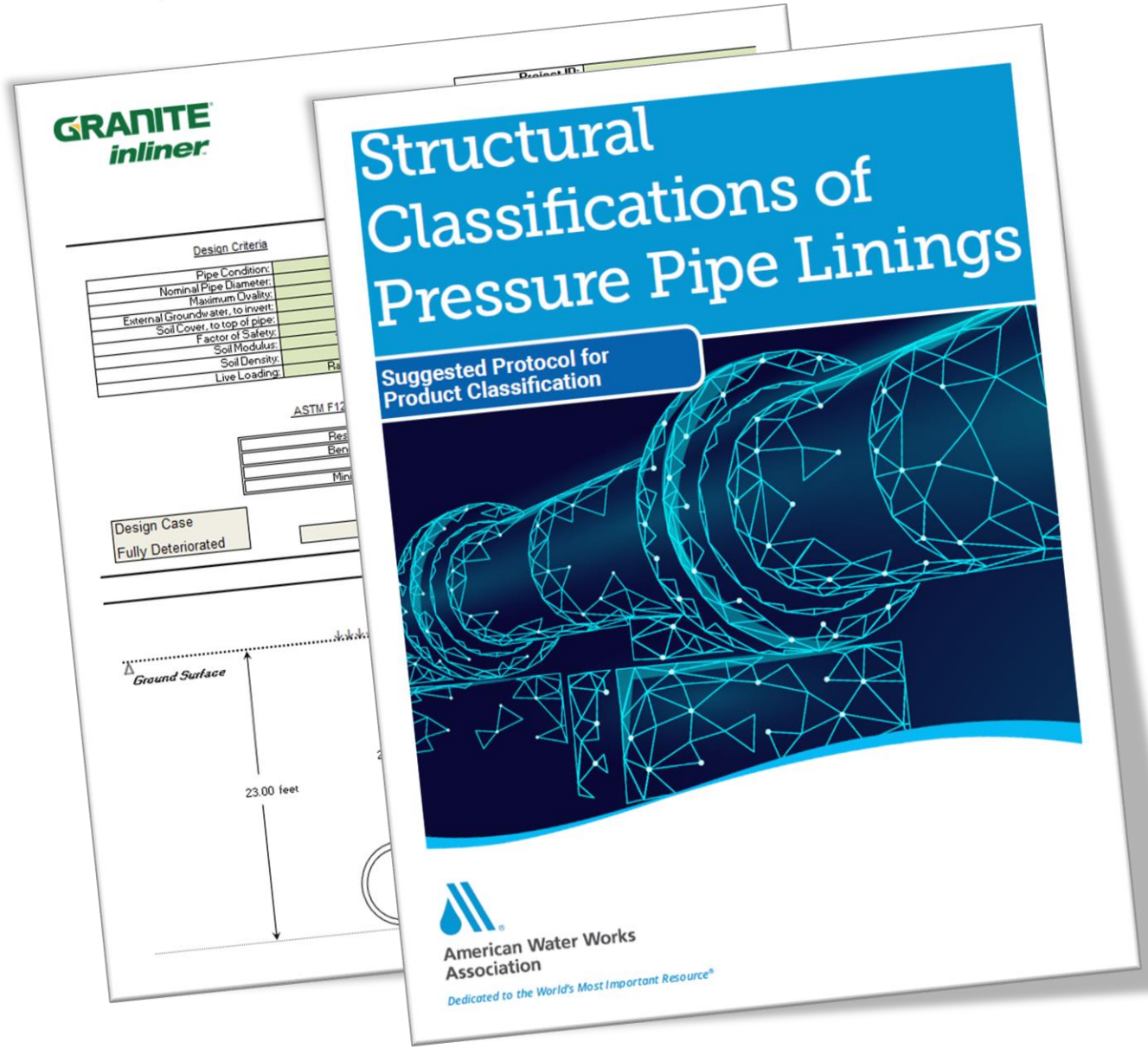
- Is the proposed solution to be an AWWA Class IV (fully structural), or a semi-structural classification?
- For example, if rehabilitating with an AWWA Class III lining system, then what is the host pipe's ability to resist external corrosion?

Design Calculations

- Fully Structural, capable of both internal pressure & live loads?
- AWWA Class IV

- Semi-Structural for Internal pressure only?
- AWWA Class III

- Other AWWA Structural Classes



Considerations

- What is the problem the owner is trying to solve and what type of structural solution is needed?
- What are the operating pressures, host pipe material and method of construction.
- What is the alignment and access?

Owner's O&M Plan

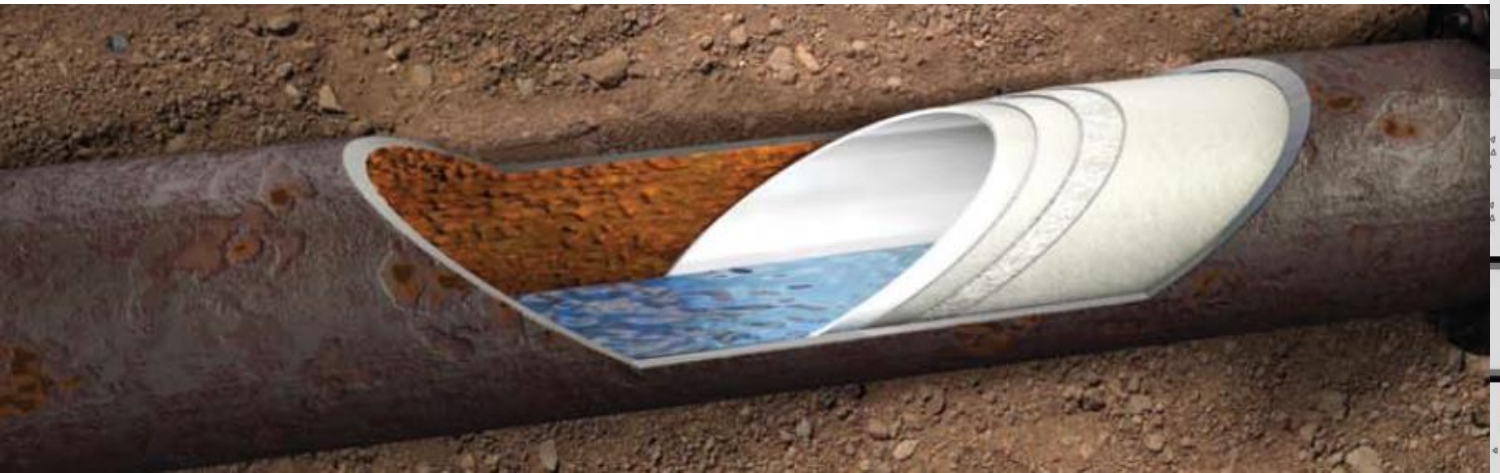
What is the pipe used for, is a high-line necessary, and what methods and fittings are the owner's maintenance team accustomed to using for new connections?

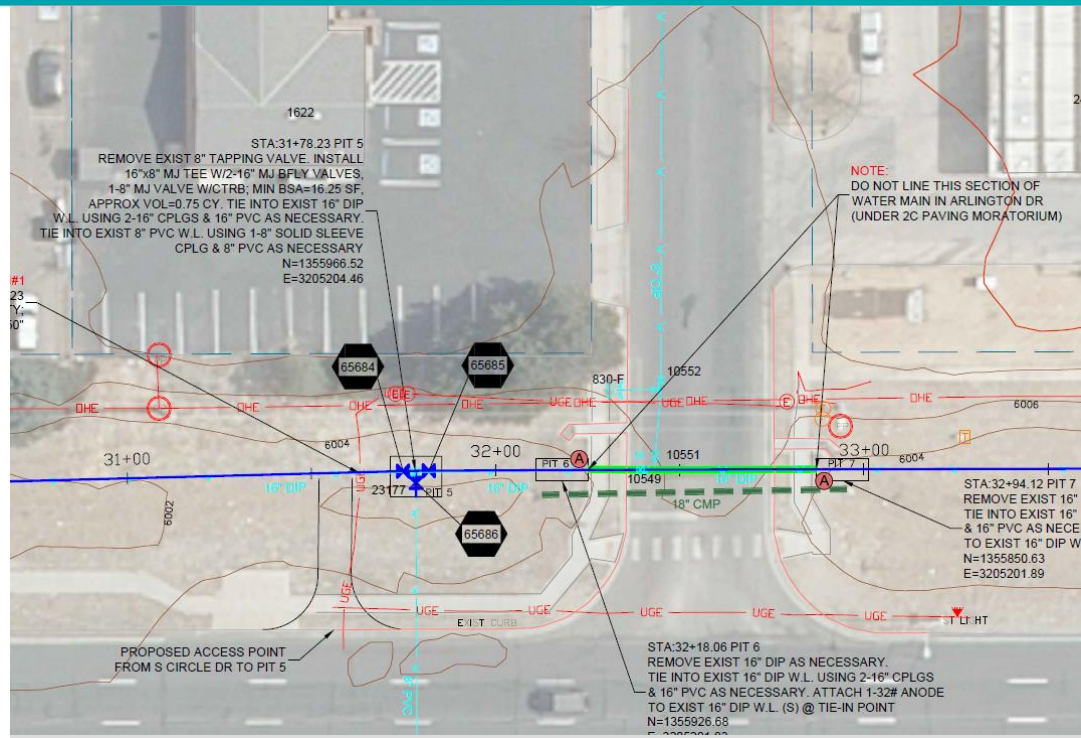
Operating Conditions

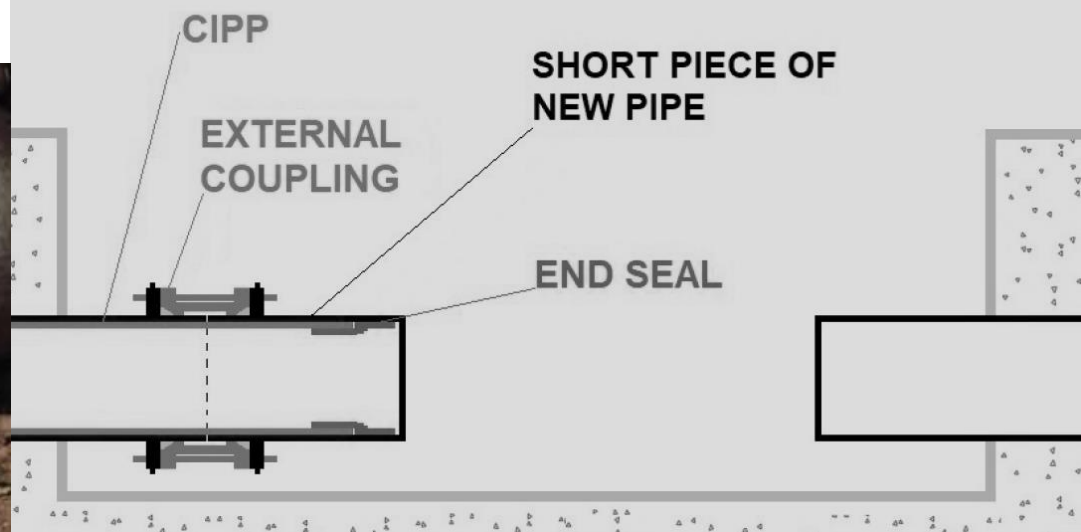
- What is the pipe used for?
- Highline, or bypass, required?
- Is there a pump cycle that has limits on operational shutdown?

Maintenance

- What are the owner's maintenance crews accustomed to?
- Is there special training required for installing new connections, or making repairs, and what is the owner's procedure for as-builts and record keeping?







Summary

- **Inspect and survey the pipeline.**
  - Understand alignment, location of bends and degree of deflection.
  - Identify location of valves, connections, air-release valves, etc., and bends and joint deflections.
- **Understand the pipeline's operating pressures and conditions.**
  - Identify pipe material and method of construction (bell/spigot, welded, etc.).
  - Identify potential for surge pressure and host pipe's corrosive resistance to soil.
- **Understand the owner's operation and maintenance protocols.**
  - Understand what is the pipe used for, operating windows and what methods and fittings are the owner's maintenance team accustomed to using.