



Let's Go Deeper

DWU's Cedar Crest Water Line Replacement

Justin Reeves PE, LEED AP



Background

- 72-Inch AWWA C301 (PCCP) Pipe
- 1989 Installation
- Located in South Dallas
- Crossing of the Trinity River
- **Catastrophic Pipeline Failure**

October 2006



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January 2013



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July 2021



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LARGE WATER MAIN BREAK
Near I-45 -- South of Downtown Dallas



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Background

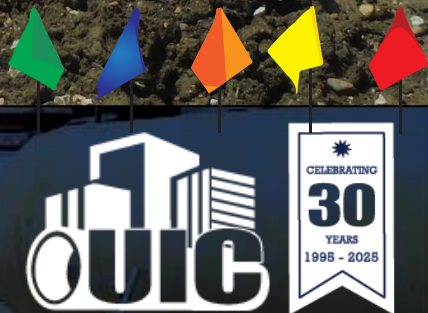
- Emergency Response
- Pipe Repair Performed
- Bank “Stabilization” Completed
- **Temporary Solution**
- Pipe Remained Compromised



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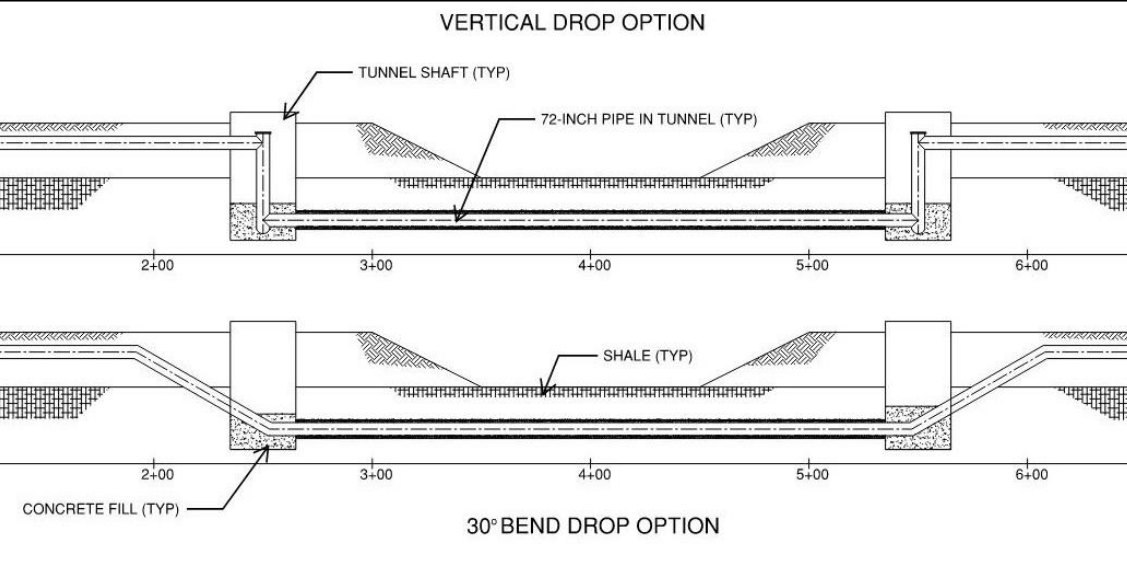
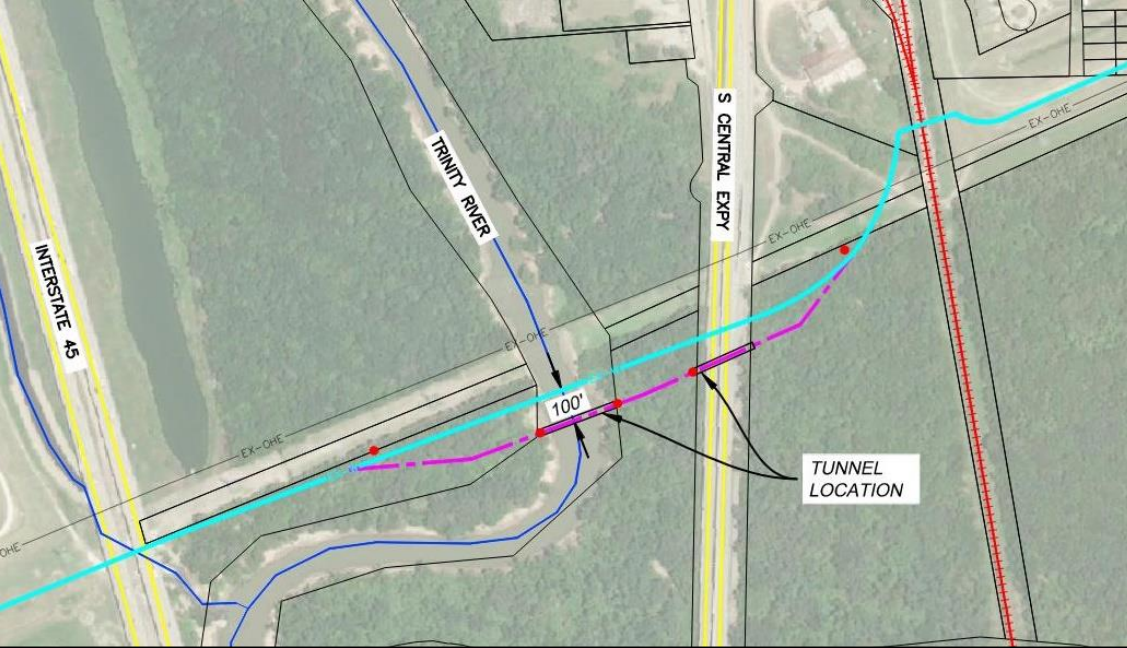
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Construction Risk •



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Design Decisions

- Offset Alignment (Service) •
- 84-Inch Diameter (Master Plan) •
- AWWA C200 Steel Pipe (Thrust) •
- Owner Procured Valves (Isolation) •
- Vertical Drop (Risk) •



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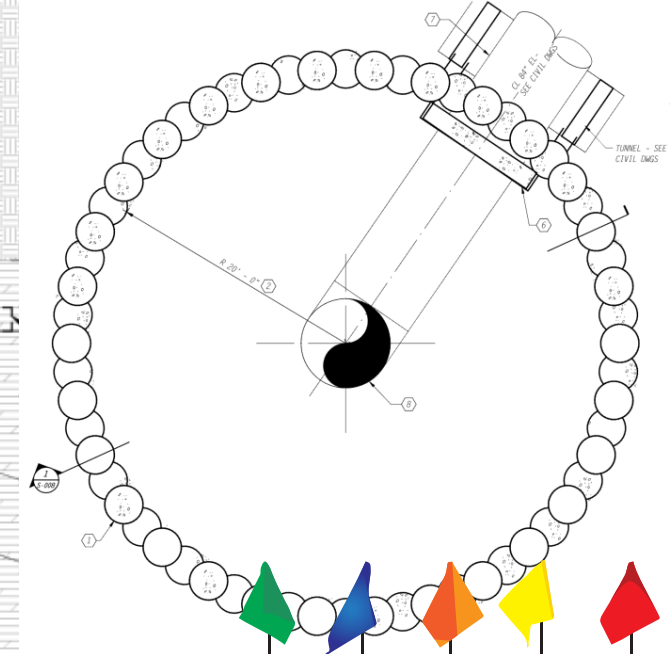
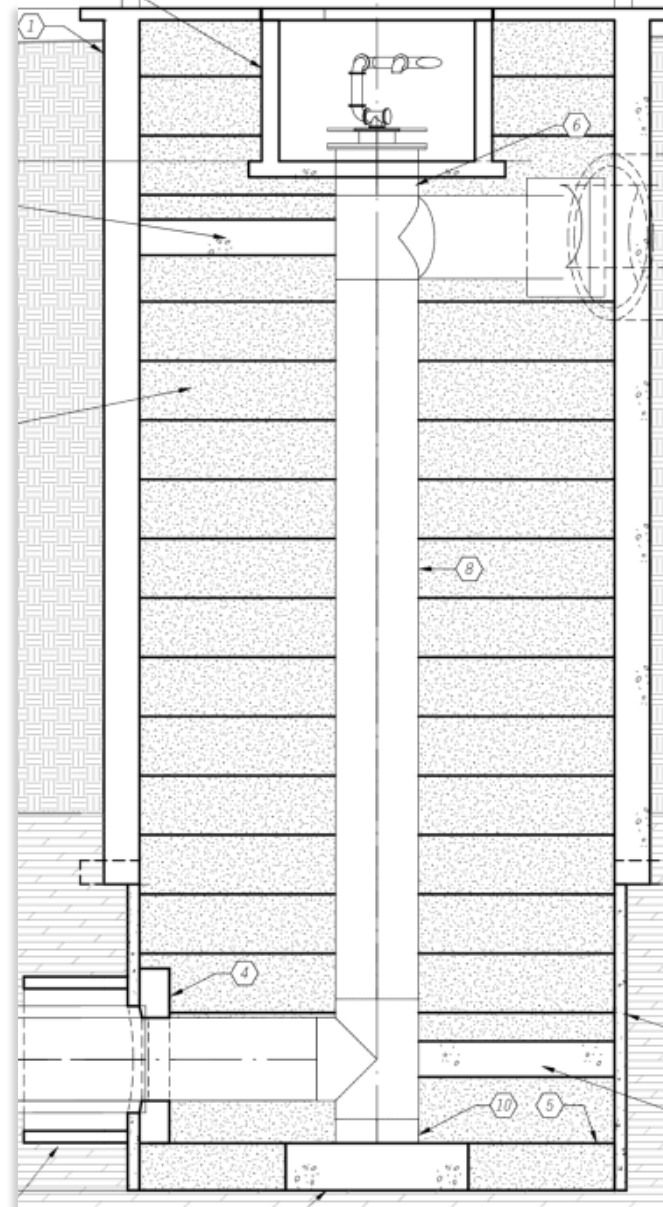
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Vertical Drop

- Clayey Sands to 40-ft
- Seams or Fractures to 70-ft
- **Stable Material at 85-ft**
- Secant Pile Shafts
- Short Lifts of CLSM Backfill
- Lean Concrete Behind Tees



Risk



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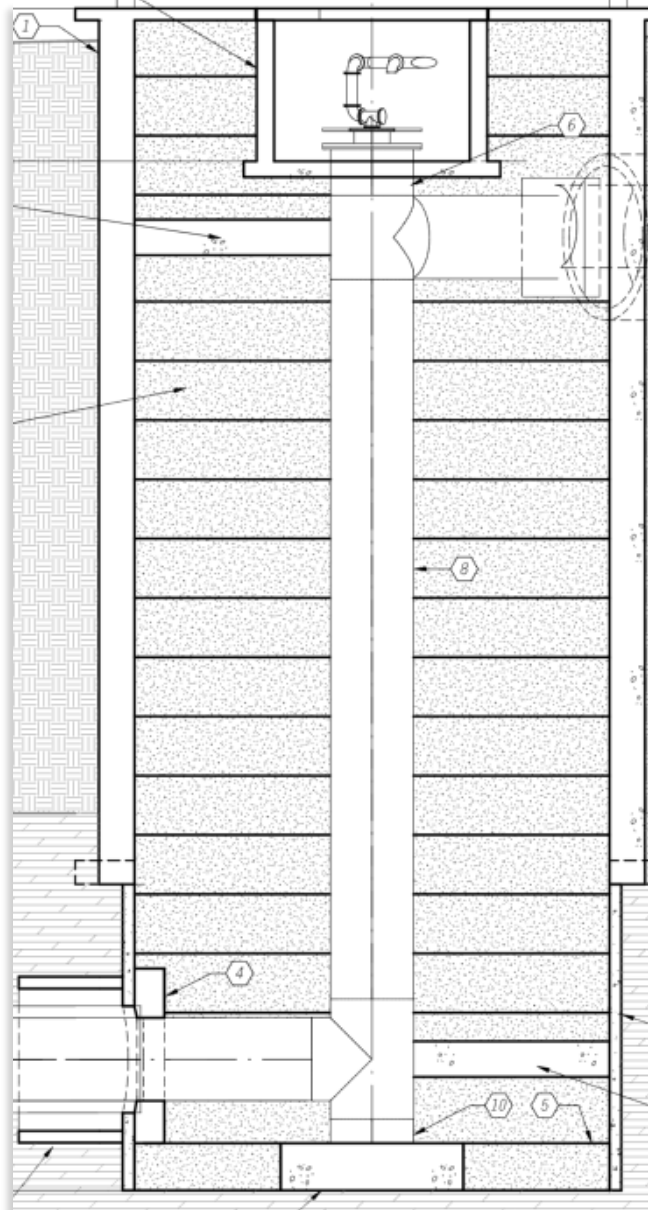
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Risk



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Valve Procurement

- 84-Inch Diameter
- Rubber-Seated Butterfly Valve
- Provided by Crispin Valve, LLC
- **250-PSI Rated Working Pressure**
- EPDM Seats



Isolation



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Pipe Design

150
psi

Existing
Pressure

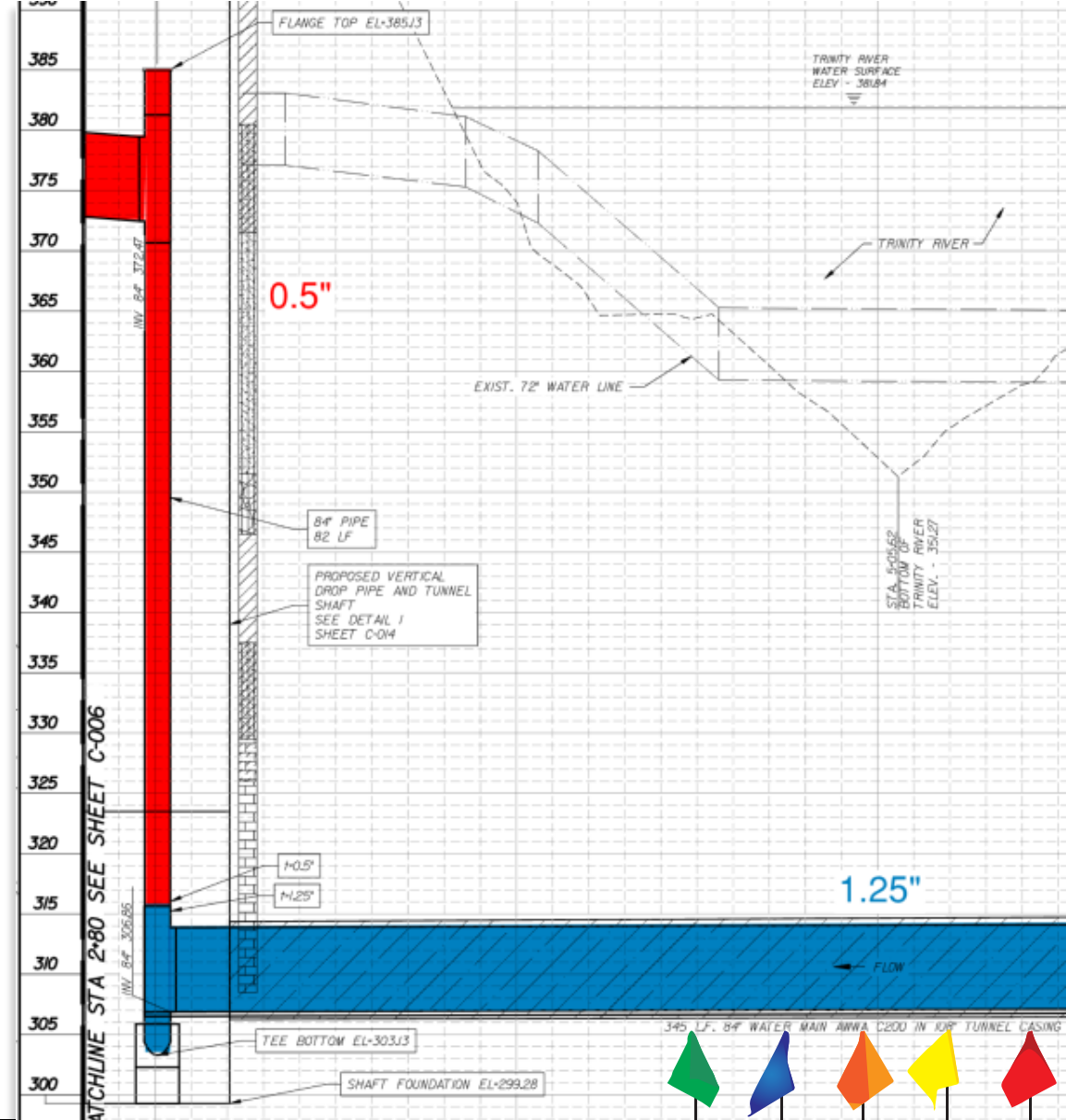
208
psi

Working
Pressure

300
psi

Design Surge
Pressure

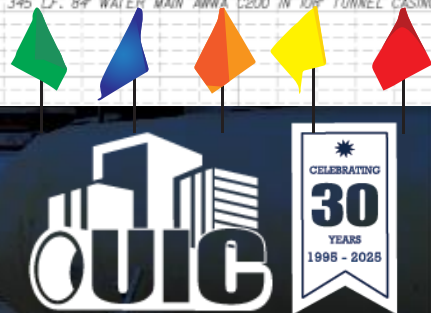
Thrust



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Project Challenges



High
Pressure



Floodplain
Risk



Tunnel
Design



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Current Status

Tunnel Complete

Carrier Pipe Installed

Going “Vertical”

Preparing for Shut Down | Tie-In



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Questions?

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