Keep Those Residents Happy! Pipe Bursting in Constrained Jobsites

By Brian Goad

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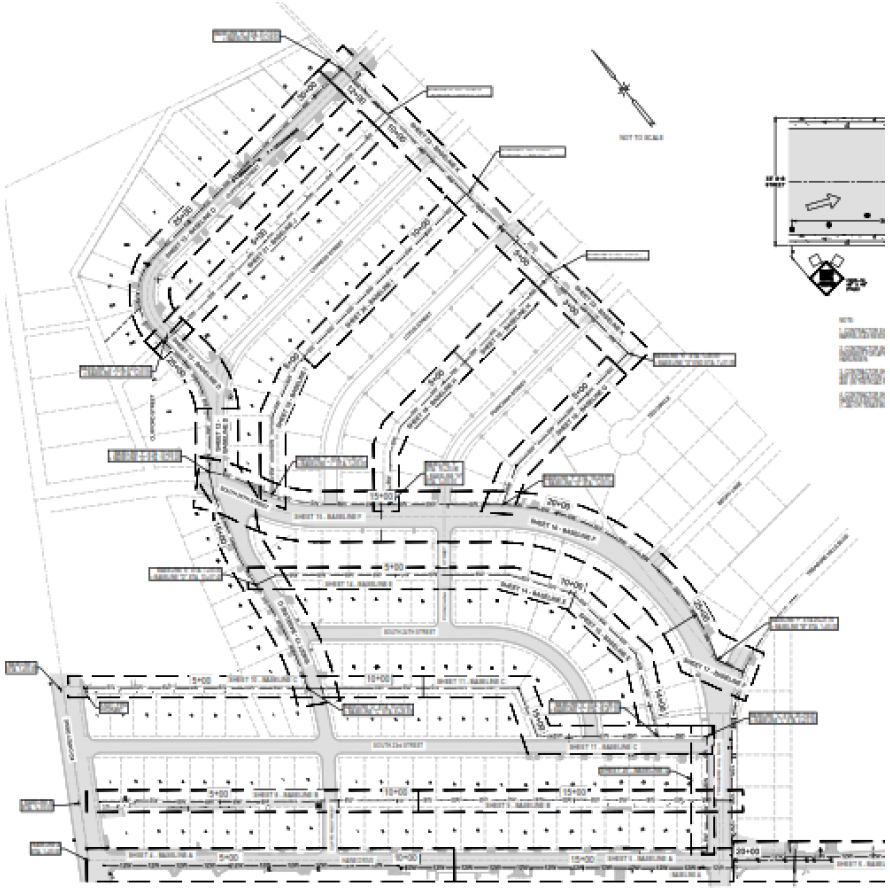
NAPCO Pipe & Fittings

Treasure Hills Waterline Burst

Treasure Hills Zone 1 Waterline Replacement



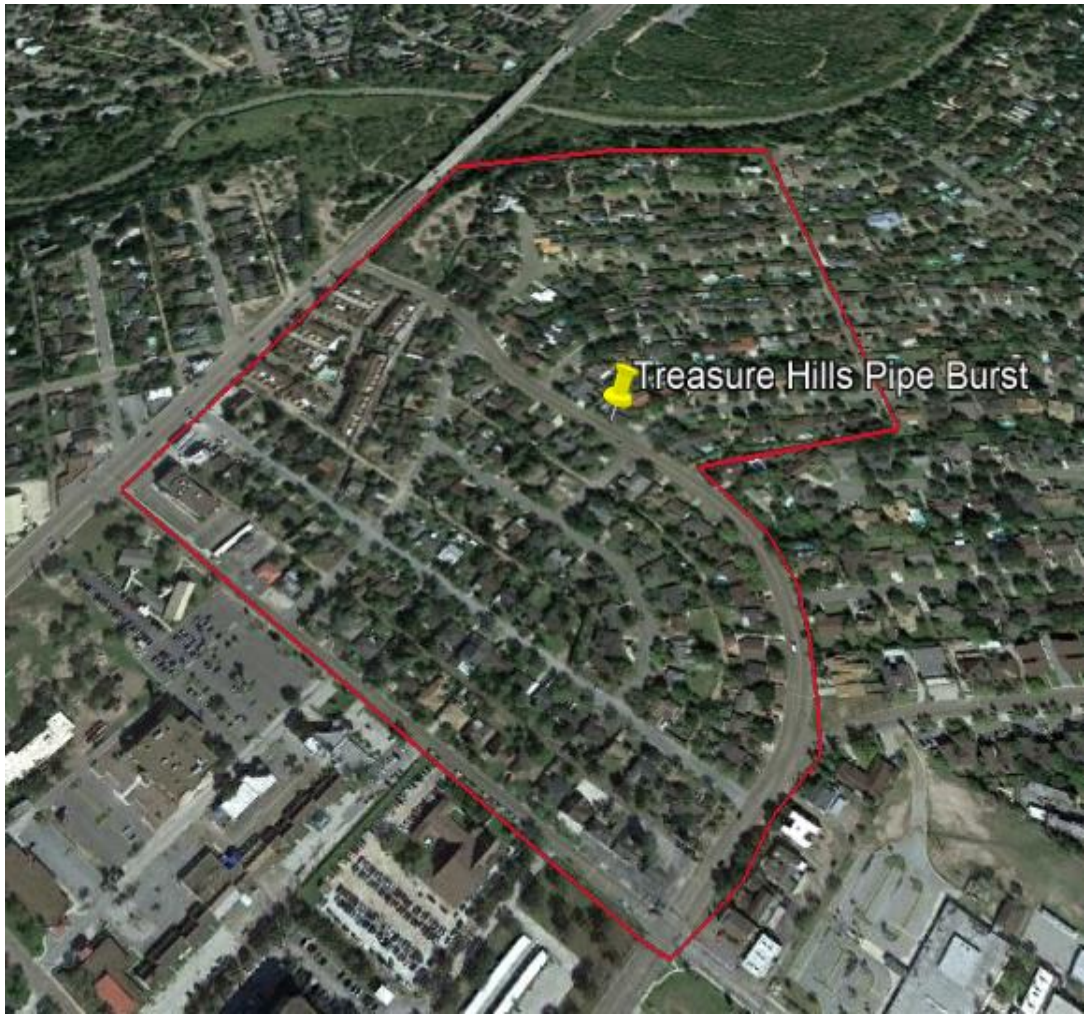
Sizes	Proposed Material	Linear Feet
4”	RJ PVC	802
6”	RJ PVC	6,518
8”	RJ PVC	6,350
12”	RJ PVC	3,903

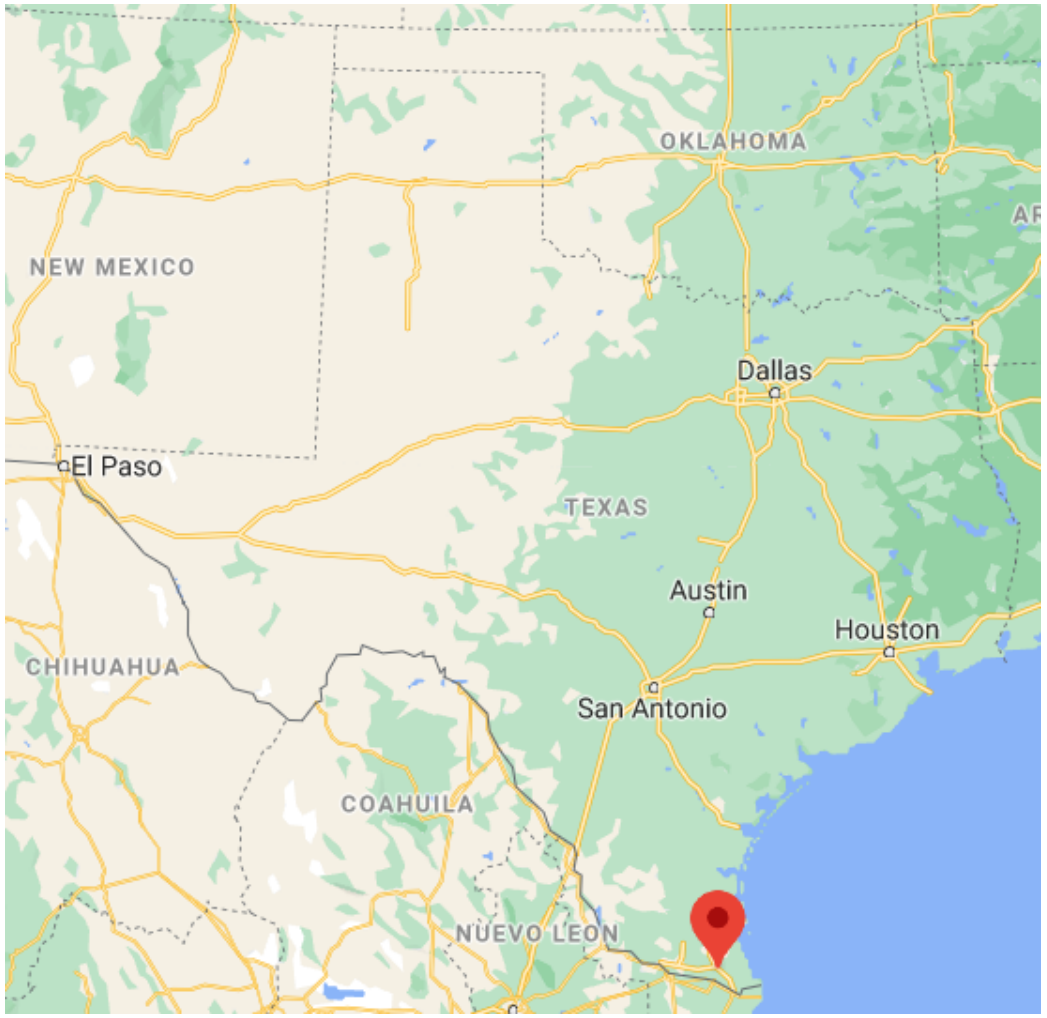
Total Project Length = 17,573 LF

Project Challenges

- Existing Fracturable Material installed in the 1960s - 1970s and was nearing the end of its design life.
- Inside a Subdivision – minimum impact on residents was preferred
- Quickly Install Pipe without disturbing local residents
- No Layout room for fusion
- Pipe required constant maintenance

Project Location





Job Site Location

- Harlingen, TX
- Population = 65,000
- Fourth largest city in Rio Grande Valley
- Experienced rapid growth from 1950's

Open-Cut vs Pipe Bursting

Open-Cut	Pipe Bursting
Access to utilities	Smaller job site footprint
Large job site footprint	Able to bypass most existing utilities
Utilities close together	Faster installation than open-cut
Time	Reducing impact to residents
Tear up trees/driveways	Reduces service disruption

Installation Methods Selection

- No room to relocate utilities
- Pipe Bursting was selected as the preferred method of installation
- Very Active Neighborhood – residents would be less interested in open-cut
- Driveways will not be blocked
- Existing Tree will not be cut down

Approved Pipe Materials

Certa-Lok®

Fusible PVC

Difference Between Material Options

- Fusible PVC
  - Uniform Size
  - Requires Fusion Areas
  - Requires Longer Entrance Pits

- Certa-Lok®
  - Designed for Constrained Jobsites
  - Can be Cartridge-Style Loaded
  - Doesn’t Require Fusion

Contractor Selection

- Certa-Lok® was selected as the restrained joint material for project

Site Conditions

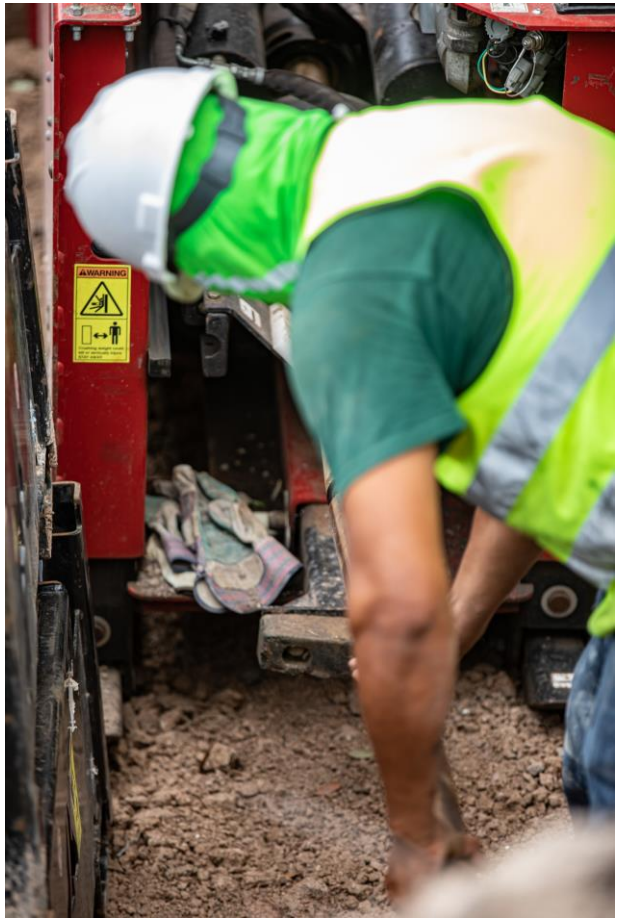
- Residential Neighborhood With Active Residents
- No Layout Room
- Alleys
- No Room To Relocate Utilities
- Established 1960-1970
- Driveways
- Landscaping
- Mature Trees
- Very Clayey Soil

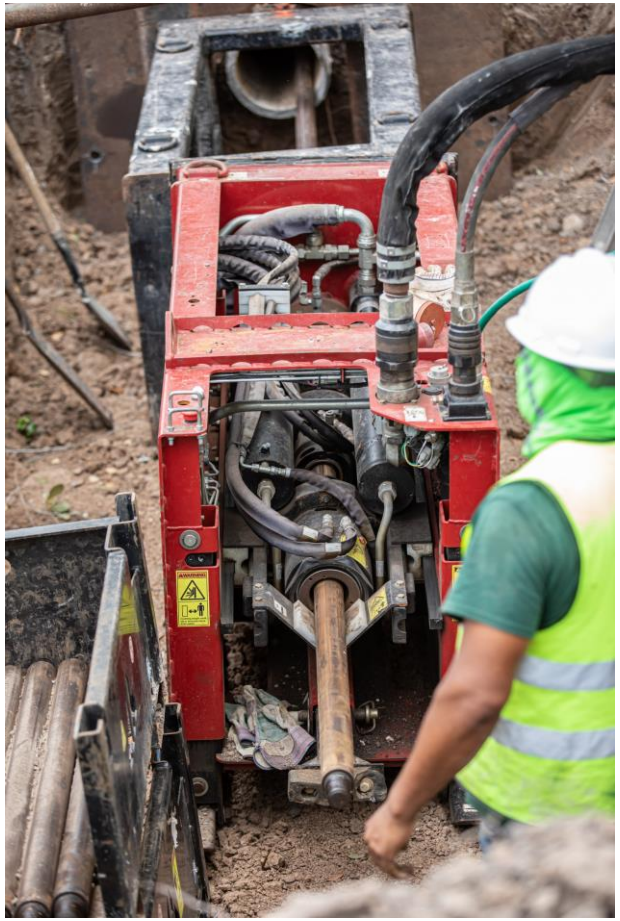
Site Preparation

- Digging the Receiving/Bursting Pits
- Saddle Taps Locations
- Setup Bypass Pumping
- Locate Existing Utilities

HammerHead 100XT Static Bursting Machine

Pipe Burst Process





Pipe Burst Putting on the Puller Head

Attached to the Expander Head

Product Installation

Clean, lubricate & assemble joint

Insert spline

Pullback continues

Video of Pipe Bursting Time-lapse

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Waterline Pipe Bursting in Constrained Jobsites – Pipe Installation

Difficulties Encountered

- Repair clamps on existing lines
  - 16 clamps on a 250 LF 4” Pull
- Damaged utilities
  - Utilities installed too closely to existing waterlines and were not shown on plans
  - Depth of bury was not well documented
- Limitations of previous bury depth
- Surface heave was experienced in shallow buried utilities

Bursting Through Clamps

Bid Results

- Bid Results - $2.7 million versus engineer estimate of $4.5 million

	Southern Trenchless	Cornett Construction
Bid & Alternate & PVC Fittings	$2.7 million	$3.35 million

Timeline

- Originally Project Estimated Timeframe is 12 Months


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Lessons Learned

- Keep gas & sewer lines out of the same pit
- All new pipe is installed at 5’ depth, some initial waterlines were buried under 2.5’ to 3’ of cover
- No issues with bursting through repair clamps
- Good bypass plan, struggle with isolation with older valves
- Governed by how the existing pipe was laid

New Ideas

- PVC Fittings to reduce corrosion
- Pipe Bursting develops a complete restrained system which reduces the needs for thrust blocking

Results from Waterline Replacement

- Harlingen was pleased with results due to ROW limitations
- Minor issues with surface heave
- Residents happy with the installation
- Will consider more waterline bursting projects in the future as needed

Contributors

- Municipalities – Harlingen Water Works System (Harlingen, TX)
  - Robert Canterbury, PE - Systems Engineer
  - Tim Skoglund, PE – General Manager
- Engineer – Ferris & Flinn, LLC
  - David Flinn, PE – Project Manager
- Contractor
  - G & G – General Contractor
  - Southern Trenchless - Subcontractor

Conclusion

- Additional Questions?

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