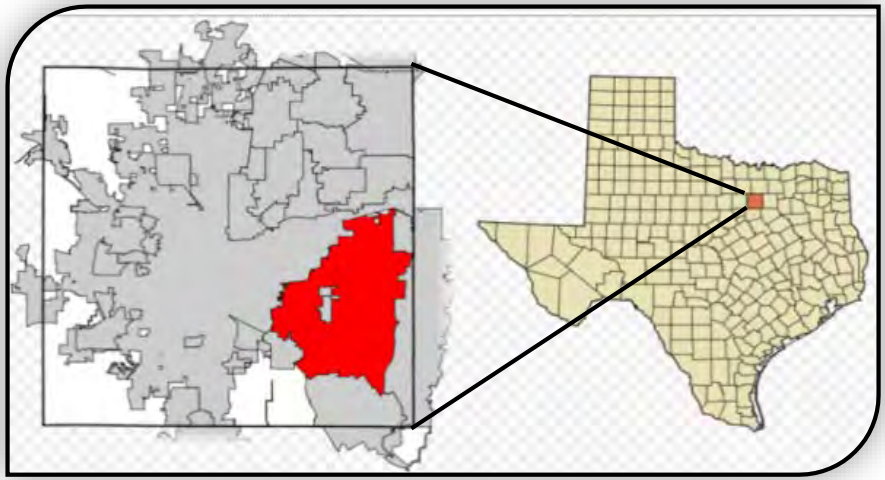
Pre-chlorinated Pipe Bursting Invigorates Arlington Water Utilities Main Replacement Program

ARLINGTON℠
THE AMERICAN DREAM CITY

MPC
Murphy Pipeline
Contractors, Inc.

City of Arlington & Water Main Background

- Population over 370,000 (50th Largest in USA)
- Daily Water Demands 35 MGD to 115 MGD
- 1,425 miles of public water mains
  - 564 miles of asbestos cement (AC) mains
- Average 450 water main breaks annually
  - 2015 – 72% of 533 water main breaks were on AC pipe



UNIVERSITY OF TEXAS ARLINGTON

GM

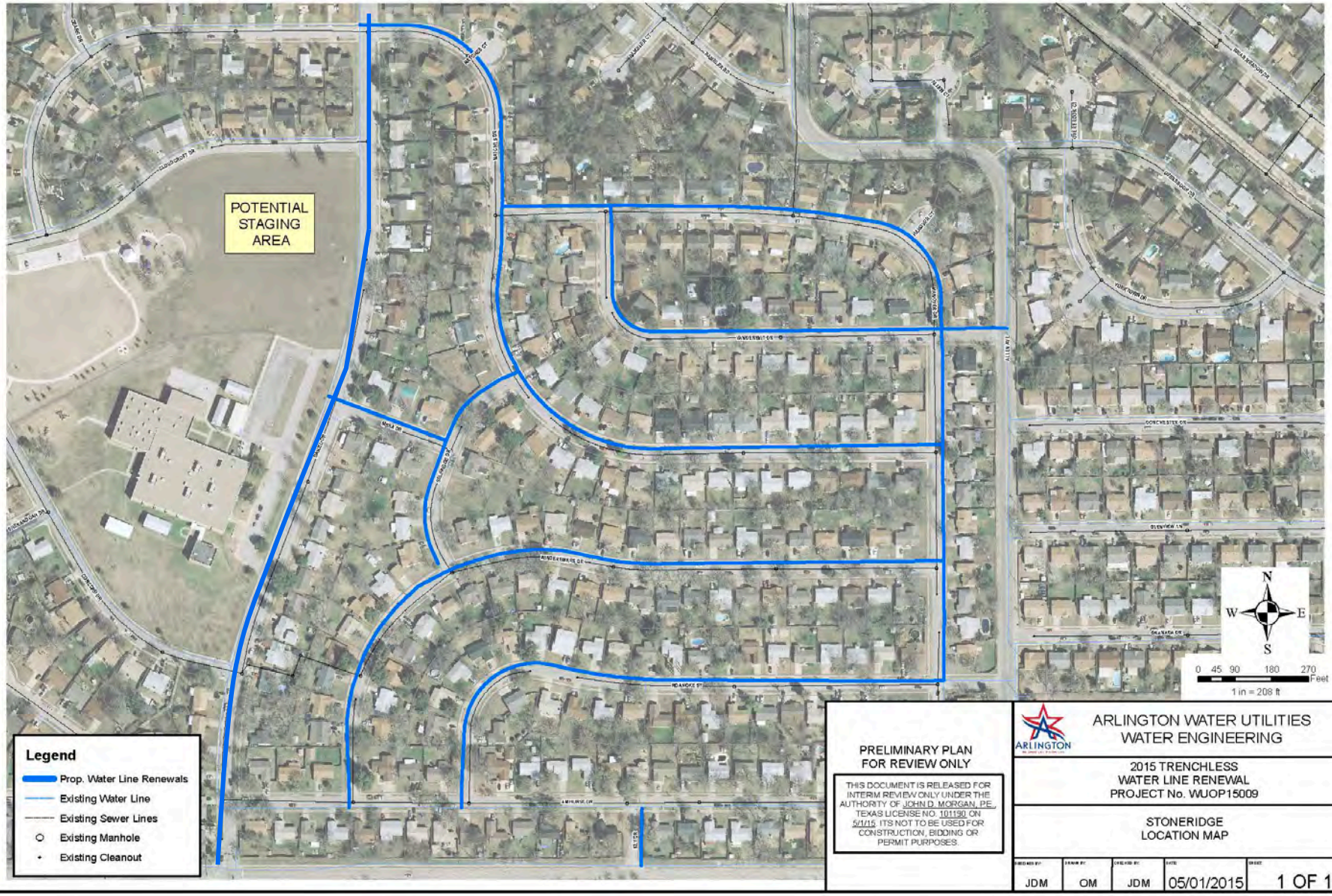
Six Flags OVER TEXAS

Program Overview

- Replace high maintenance water mains
- Reduce construction time and customer impact
- Utilize in-house design
- Reduced staff time (project managers and construction inspections)

2016 Pilot: 13,125 LF pre-chlorinated pipe bursting to replace AC water mains in residential neighborhoods

2018 Project: 20,545 LF of pre-chlorinated pipe bursting to replace AC water mains in residential neighborhoods



PRELIMINARY PLAN FOR REVIEW ONLY

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ARLINGTON WATER UTILITIES
WATER ENGINEERING

2015 TRENCHLESS
WATER LINE RENEWAL
PROJECT No. WUOP15009

STONERIDGE
LOCATION MAP

DESIGNED BY	DRAWN BY	CHECKED BY	DATE	SHEET
JDM	OM	JDM	05/01/2015	1 OF 1

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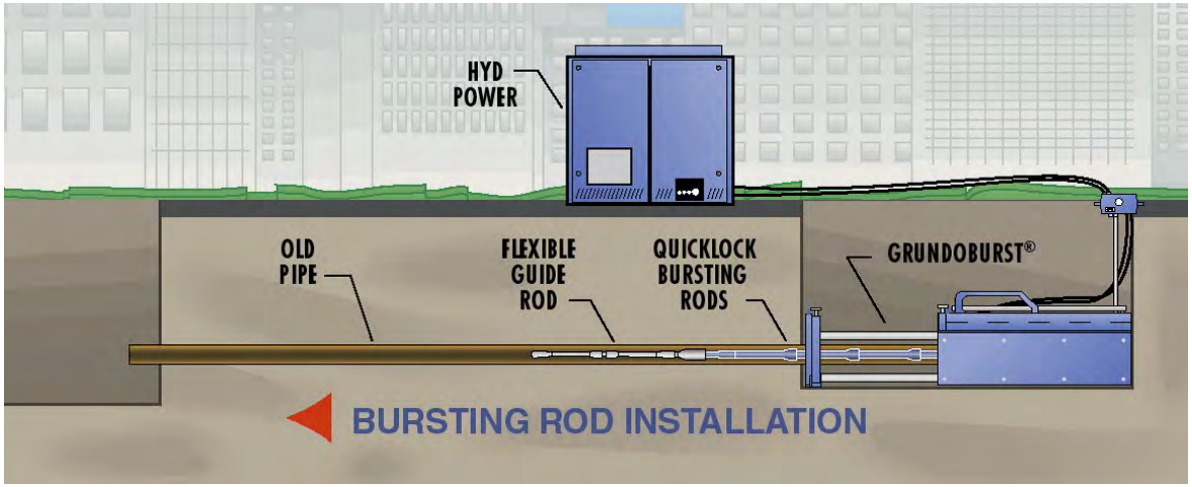
Fusing & Pre-chlorination of HDPE

- Staging area located away from burst locations to minimize site impact
- Butt fusion is used to connect pipe sections to corresponding burst lengths
- Pressure testing
- Lines capped and disinfected with hypochlorite solution of at least 25 mg/L
- Two consecutive days of samples, taken 24 hours apart

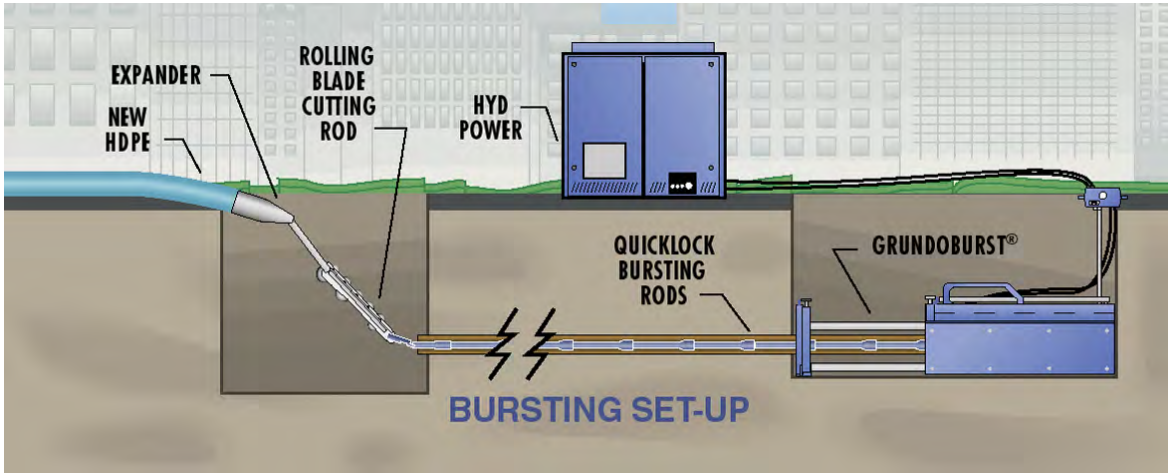
Pipe Bursting Operations 8:00 AM

- Entry and exit pits excavated 4’ x 12’
- Service connections pits 3’ x 3’
- 8:00 AM – Decommission Main
- Bursting equipment is set in pit and rods are shuttled through host pipe



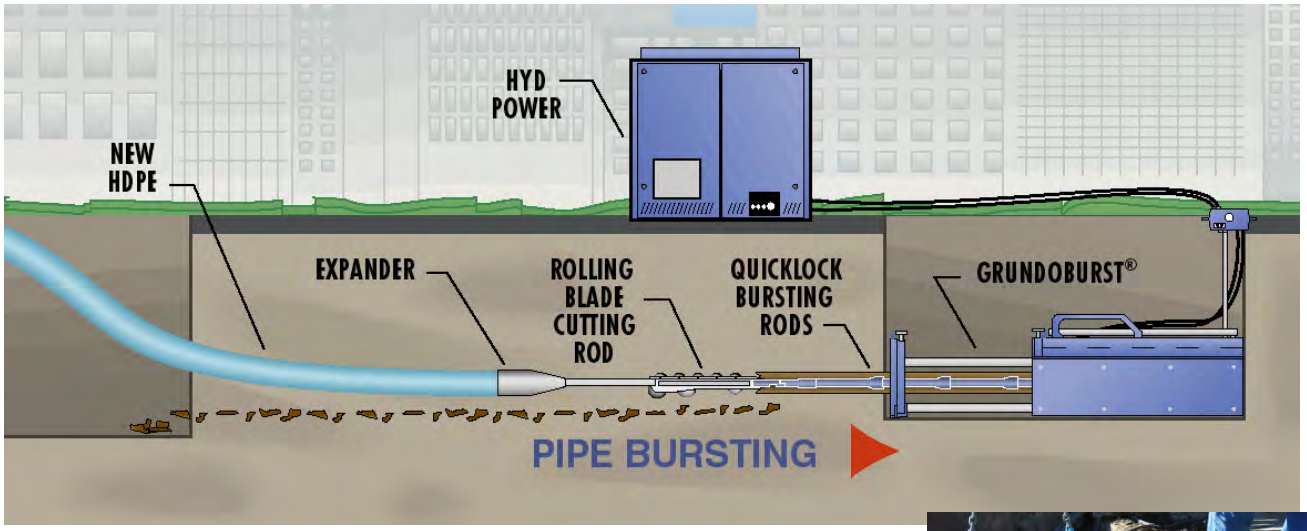
Pipe Bursting Operations 10:30 AM

- 10:30 AM – Bursting head (or ductile slitter) and expander are attached to the rods which have reached the entry pit
- Pre-chlorinated and sealed HDPE pipe attached to the expander
- Pull back begins



Pipe Bursting Operations Noon

- Rods are removed from the exit pit as pipe is pulled into place
- Noon – New pipe is installed



Pipe Bursting Operations Noon to 3:00 PM

- Noon to 3:00 PM – Connections made
- Ductile Irion fittings, mega lugs, stainless steel inserts, mechanical service saddles

Pipe Bursting Operations 3:00 PM

- 3:00 PM – Post Chlorination Process
- Hypo-chlorus solution sprayed on all connections
- Super-chlorinate new pipeline with slug of chlorine to 300ppm
- 4:00 PM – New main back live


3205


ROAD
CLOSED

Pipe Bursting Results

- Engineering costs reduced by 94.6% due to following existing utility path and using as-builts
- Construction costs reduced by 36% vs. open cut
- HDPE pipe provides 100 year plus new design life with zero allowance for water loss with fused joints
- Production rate of 300 – 600 feet per day with project completed 44% faster vs. open cut
- Crew visible to each area for one day
- Surgical excavations along project with a reduction in restoration of 87% vs. open cut
- Compact equipment
- Sensitive areas of neighborhoods not impacted
- Zero change orders
- Social costs reduced as intersections remained open, no streets were closed and all residents had full access to homes

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