Pipe Bursting Water Lines

Materials, Fitting, and Issues Related to Pipe Bursting Water Lines

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Typical Questions from Owner/Engineer

1. What Types of Pipe, Fittings, & Service Material Do I Have to Choose From for Pipe Bursting Water Lines?
2. What are the Required Equipment & Tooling Necessary to Pipe Burst Water Lines?
3. What Site Considerations Do I Need to be Aware for Pipe Bursting Water Lines?
4. Should I Specify Temporary Bypass or Pre-chlorination?
5. What is the Estimated Cost of Pipe Bursting Water Lines Vs. Open Cut?

1. What Types of Pipe, Fittings, & Service Material Do I Have to Choose From for Pipe Bursting Water Lines?

Top Three Options

1. HDPE Pipe, Fittings & Service Material

2. Fusible PVC Pipe, Fittings & Service Material

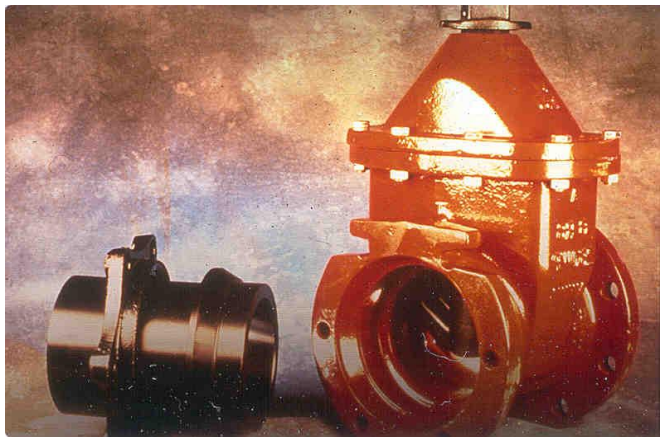
3. Ductile Iron Pipe, Fittings & Service Material

1. What Types of Pipe, Fittings, & Service Material Do I Have to Choose From for Pipe Bursting Water Lines?

- HDPE Pipe, Fittings & Service Material
  - HDPE Pipe
    - DR 9 (200 PSI)
    - DR 11 (160 PSI)
  - Ductile Iron Pipe Size (DIPS) Pipe Works Best for Water Lines
    - Same OD as Ductile Iron Pipe

1. What Types of Pipe, Fittings, & Service Material Do I Have to Choose From for Pipe Bursting Water Lines?

- HDPE Pipe, Fittings & Service Material
  - Fittings (Option 1)
    - MJ Fittings With Mechanical Joint Adaptors with Butt Fusion or Electrofusion Couplings



1. What Types of Pipe, Fittings, & Service Material Do I Have to Choose From for Pipe Bursting Water Lines?

- HDPE Pipe, Fittings & Service Material
  - Fittings (Option 2) Per AWWA M-55
    - MJ Fittings w/ Restrainer Style Glands (Mega Lugs)

    In Conjunction With Stainless Steel Insert/Stiffner & DIPS Pipe

1. What Types of Pipe, Fittings, & Service Material Do I Have to Choose From for Pipe Bursting Water Lines?

- HDPE Pipe, Fittings & Service Material
  - Service Connections
    - Mechanical Saddles
    - Electrofuse Saddles

1. What Types of Pipe, Fittings, & Service Material Do I Have to Choose From for Pipe Bursting Water Lines?

- Fusible PVC Pipe, Fittings & Service Material
  - Fusible PVC Pipe – One Size Smaller than HDPE?
    - DR 14 (305 PSI)
    - DR 18 (235 PSI)
  - Fusible PVC Is Made To AWWA Standards for C900 & C905

1. What Types of Pipe, Fittings, & Service Material Do I Have to Choose From for Pipe Bursting Water Lines?

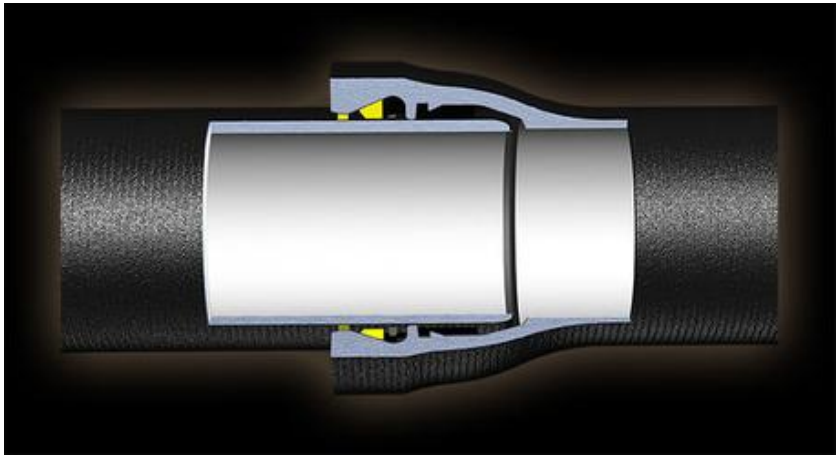
- Fusible PVC Pipe, Fittings & Service Material
  - Fittings MJ Fitting W/ Restrainer Style Glands (Megalugs) – No Need For Stainless Steel Stiffner

1. What Types of Pipe, Fittings, & Service Material Do I Have to Choose From for Pipe Bursting Water Lines?

- Fusible PVC Pipe, Fittings & Service Material
  - Service Connections
    - Mechanical Saddles
    - Directly Tapping FPVC Is Prohibited

1. What Types of Pipe, Fittings, & Service Material Do I Have to Choose From for Pipe Bursting Water Lines?

- Restrained Joint Ductile Iron Pipe, Fittings & Service Material
  - RJDIP
    - Class 250 (250 PSI) – Sizes 30” to 36”
    - Class 350 (350 PSI) – 4” to 24”
  - Must be Restrained Joint To Accommodate Pipe Bursting



1. What Types of Pipe, Fittings, & Service Material Do I Have to Choose From for Pipe Bursting Water Lines?

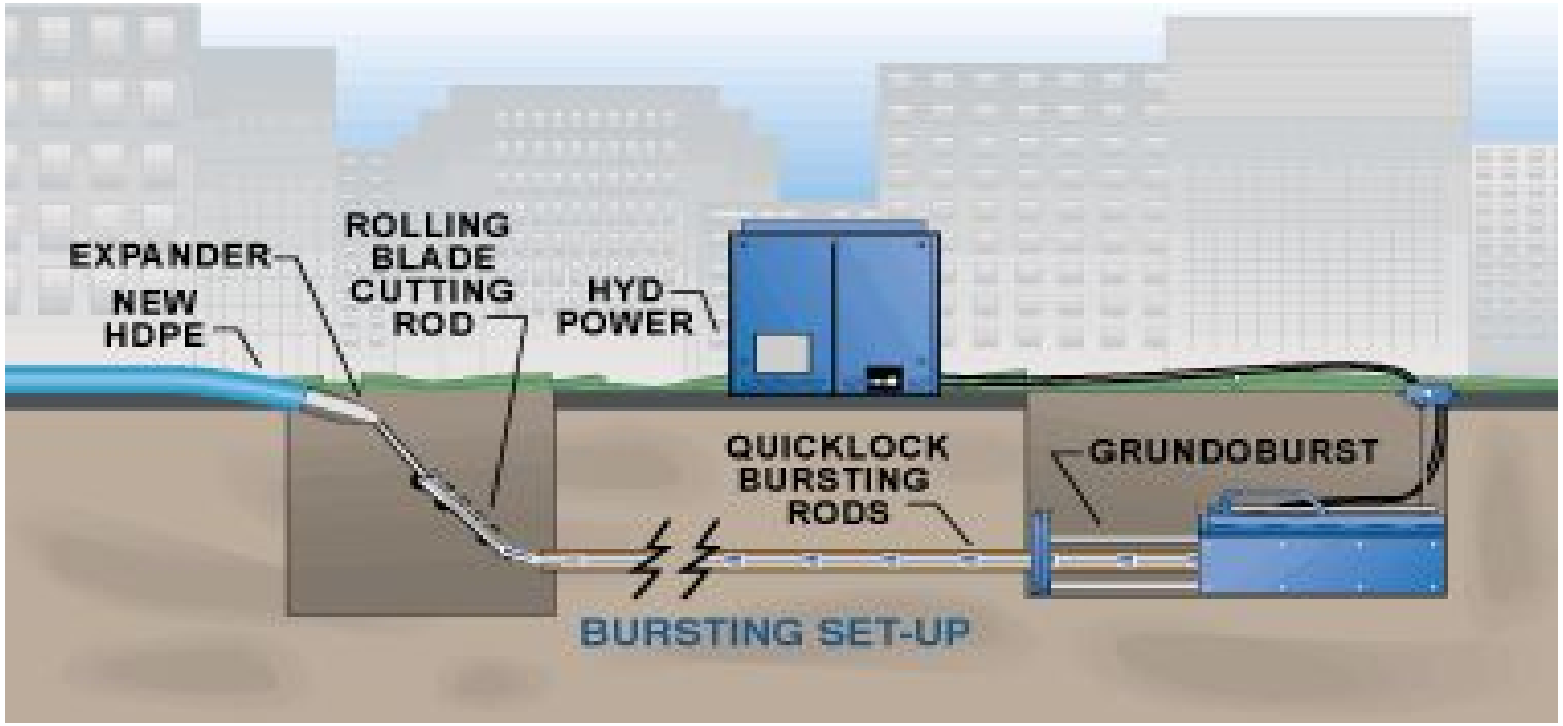
- Restrained Joint Ductile Iron Pipe, Fittings & Service Material
  - Fittings
    - MJ Fittings w/ Restrainer Style Glands (Megalugs)

1. What Types of Pipe, Fittings, & Service Material Do I Have to Choose From for Pipe Bursting Water Lines?

- Restrained Joint Ductile Iron Pipe, Fittings & Service Material
  - Service Connections
    - Mechanical Saddles
    - Directly Tapping RJDIP Is Allowed

2. What are the Required Equipment & Tooling Necessary to Pipe Burst Water Lines?

- Static Burst System
  - Required for FPVC & RJDIP
  - Recommended for Bacteriological Testing

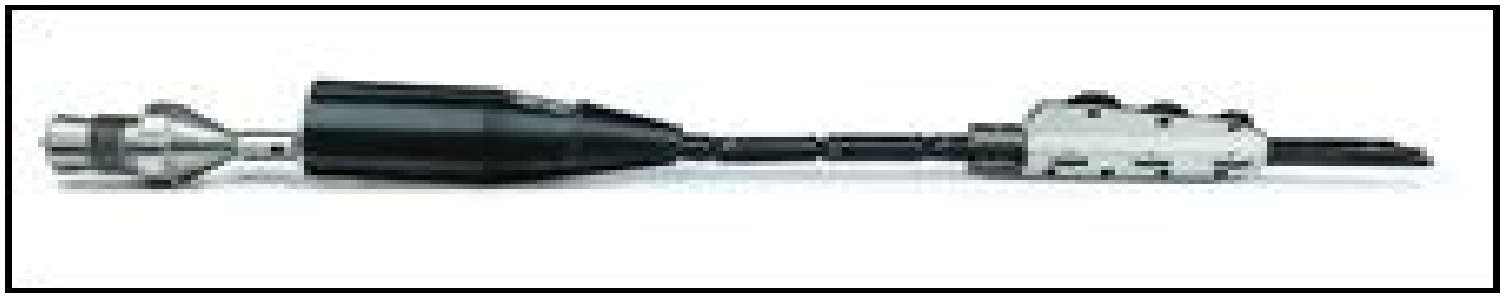


2. What are the Required Equipment & Tooling Necessary to Pipe Burst Water Lines?

- Static Burst System

HDPE Burst Head

FPVC Burst Head



Expander & Roller Cutter Assembly

3. What Site Considerations Do I Need to be Aware for Pipe Bursting Water Lines?

- Previous Repairs to Existing Water Lines
  - Unknown Repair Locations – No Problem
  - CCTV Typically Not Required
  - Cutter Technology Solves Most of These Issues Including Tees & Sleeves
- Bend Radius Of Existing Pipe
  - Rods Can Accommodate Horizontal & Vertical Bends That Can Be Installed by Deflecting Bells
  - Rods Cannot Accommodate Horizontal & Vertical Bends Made By Fittings

3. What Site Considerations Do I Need to be Aware for Pipe Bursting Water Lines?

- Impact of Depth On Water Line Pipe Bursting
  - Lack of Depth
    - Limited Potential For Ground Heave
    - Potential Conflict With Other Utilities
      - Potholing or Day Lighting To Remove Soil Between Utilities Relieves Pressure of Expansion

4. Should I Specify Temporary Bypass or Pre-chlorination?

- Temporary Bypass System
  - Provides The Least Amount of Service Disruption
- Materials
  - 2” HDPE or 2” Restrained Joint PVC

4. Should I Specify Temporary Bypass or Pre-chlorination?

- Temporary Bypass System
  - Driveway Crossings

4. Should I Specify Temporary Bypass or Pre-chlorination?

- Pre-chlorination Procedure
  - Process of disinfecting a new water line and passing bacteriological test prior to installing the water line
  - Performed in accordance with AWWA Standards
  - After installation, pipe is super-chlorinated and thoroughly flushed as a precautionary measure
- The newly installed main is put back in service within hours of installation, thus eliminating the need for a temporary bypass system

4. Should I Specify Temporary Bypass or Pre-chlorination?

- Temporary Bypass System
  - Advantages
    - Customer Service Disruption Is Minimized – Almost Nil
    - Once Temporary System Is In Place, Service is Assured During Any and All Delays That Occur During The Pipe Bursting Process (Reduces Pressure To Finish By A Certain Time)
  - Disadvantages
    - Cost
    - Potential Tampering
    - Working/Living around Temporary Bypass System

4. Should I Specify Temporary Bypass or Pre-chlorination?

- Pre-Chlorination
  - Advantages
    - No Working/Living around Temporary Bypass System
    - Cost
  - Disadvantages
    - Customers Have No Service Until Pipe Bursting Process Is Complete and Services Reconnected – 6-10 Hours
    - Without Temporary System Is In Place, Service is Not Assured During Any and All Delays That Occur During The Pipe Bursting Process (Increases Pressure To Finish By A Certain Time)

4. Should I Specify Temporary Bypass or Pre-chlorination?

- Temporary Bypass System Vs. Pre-chlorination
  - Trade Offs
  - There are situations where one is better than the other
  - There are situations where it simply doesn't matter and can be left to the contractor's decision

5. What is the Estimated Cost of Pipe Bursting Water Lines Vs. Open Cut?

- Primary Cost Benefits of Water Line Bursting Vs. Open Cut Replacement Are Related To Cost Savings For Surface Restoration & Backfill
- Typical Costs For A 500’ Run of Pipe
  - Asphalt = $36.66 (500’x5’ Wide x 6” Deep)
  - Backfill = $16.50 (500’x 5’ Wide x 3’ Deep)
  - Total Savings to Pipe Burst
    - $53.16 ($36.66 + $16.50)

5. What is the Estimated Cost of Pipe Bursting Water Lines Vs. Open Cut?

- Unit Prices From Recent Water Burst Project
  - 10” FPVC Pipe (10,000 LF) = $60.00/LF
  - 12” HDPE Pipe (10,000 LF) = $62.00/LF
  - Overall Cost Per LF of 10” FPVC Project = $86.58
  - Overall Cost Per LF of 12” HDPE Project = $90.03

5. What is the Estimated Cost of Pipe Bursting Water Lines Vs. Open Cut?

- Unit Prices From Recent Water Burst Project
  - 6” FPVC Pipe (9,737 LF) = $44.00/LF
  - 6” RJDIP by Open Cut (650 LF) = $124.00
  - Overall Cost Per LF of 6” FPVC Project = $98.00
    - Project had many more services & valves

Questions?

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