

Water Research Foundation

**Large Pressure Pipe Structural Rehabilitation Conference**

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# Large Diameter Pipe Bursting

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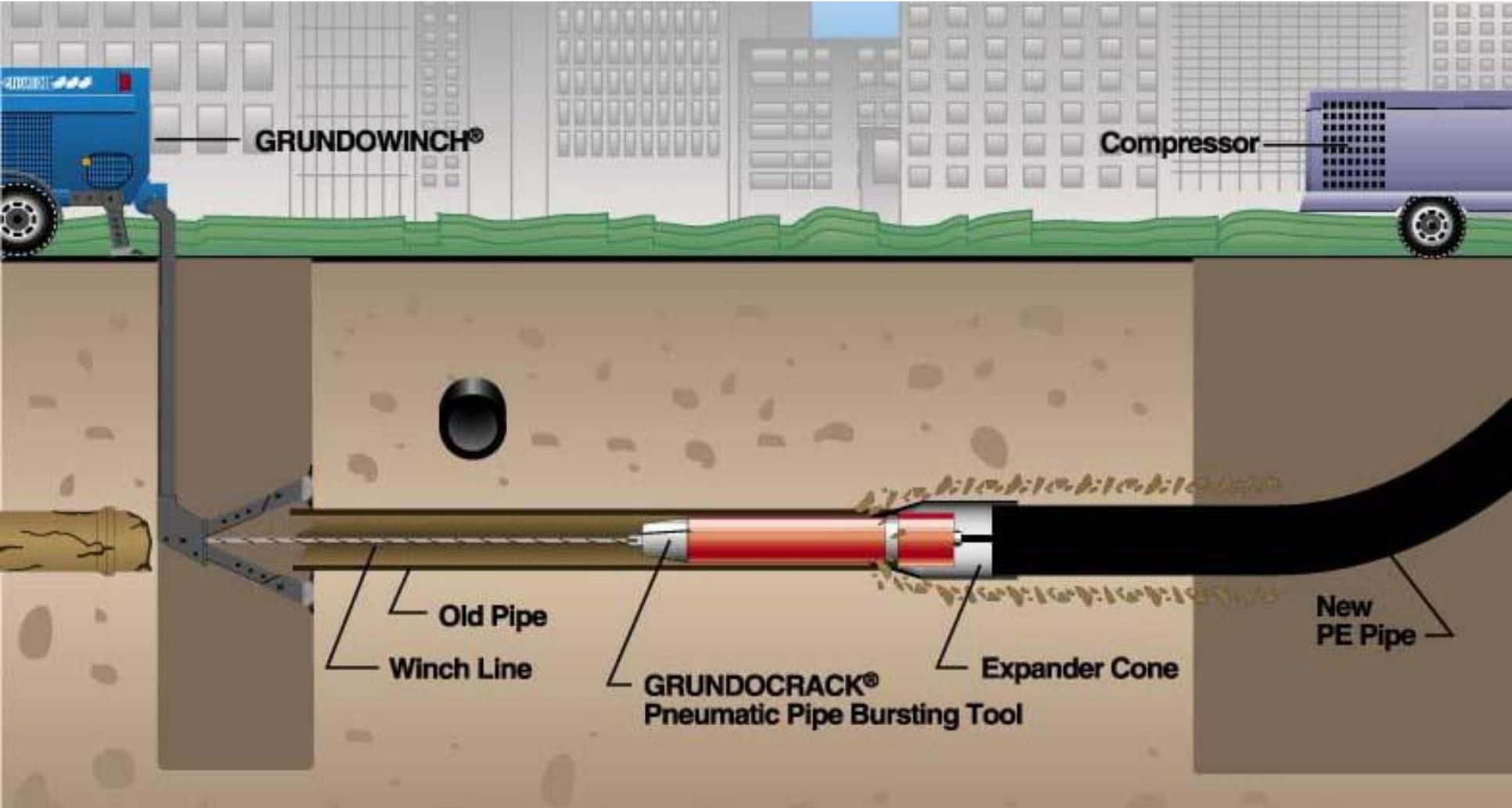
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# What is Pipe Bursting?



- **trenchless rehabilitation and replacement technology**
- **fracture or split existing pipeline while simultaneously installing new “factory manufactured” pipe**
- **replace aging or capacity deficient mainline and lateral systems with same size or larger diameter pipe**
- **4 inches to 36 inches in diameter**

# Pneumatic Pipe Bursting System



# Large Diameter Pipe Bursting Projects

- **30" VCP to 42" HDPE**
- **36" Hobas to 36" HDPE**
- **36" CMP to 42" HDPE**
- **24" Existing Steel, Cast Iron, and PVC Common**
- **Limited demand for larger diameter pipe bursting**
- **Can be developed and accomplished with investment**

# Savings by Water Agencies...

	<u>City of Billings, MT</u>	<u>Consolidated Water, CO</u>	<u>Cheyenne Water, WY</u>	<u>Lee's Summit, MO</u>	<u>Greensboro, NC</u>
Approx. Footage thru 2014	18,215	167,740	20,990	43,100	38,080
Existing Pipe Diameter	4-8"	4-8"	4-8"	4-8"	2-8"
New Pipe Diameter	8-12"	4-8"	8-12"	6-8"	6-8"
Savings over Open Cut	50%	50%	20%	23%	20% +

**Nationally – Savings between 20-50% using pipe bursting over traditional open cut.**

# Process and Systems

## Two Main Types or Classes of Pipe Bursting Systems

- **Pneumatic**



- **Static**



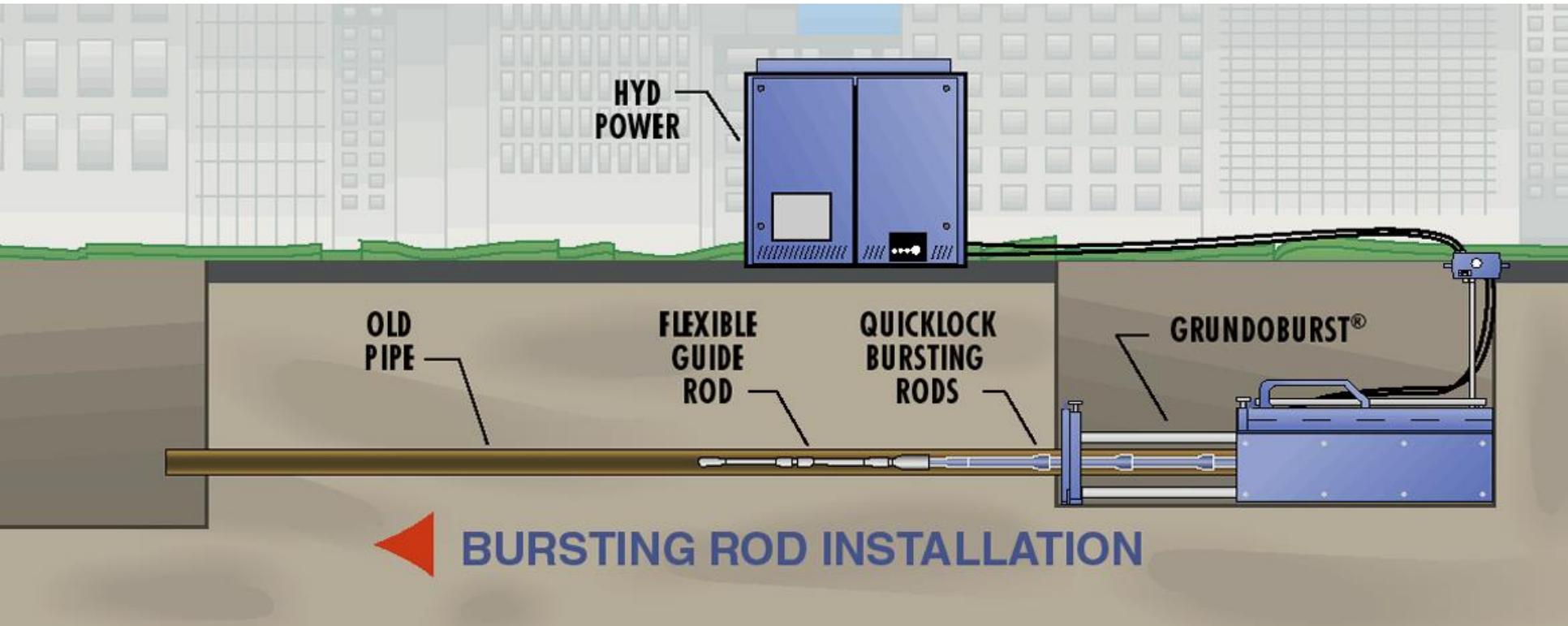


# Capabilities – Pneumatic Systems



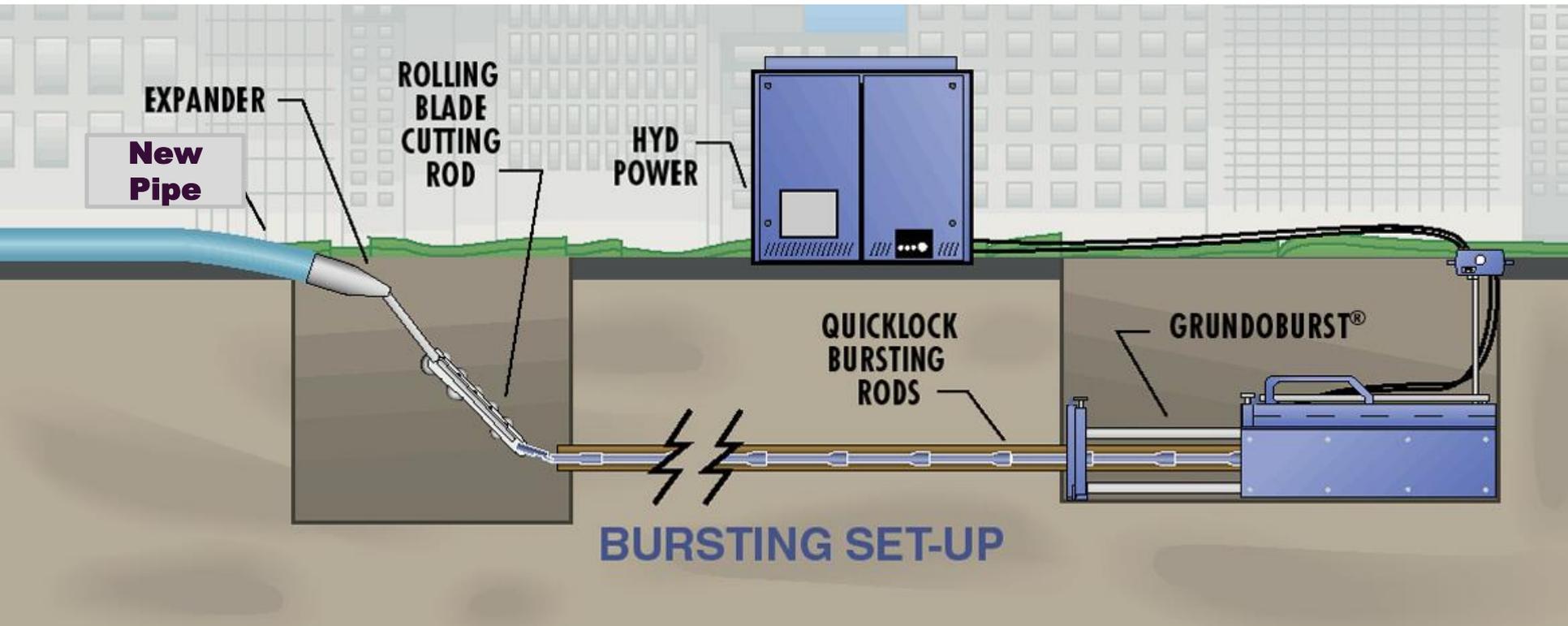
- **Pipe Burst Existing Fracturable pipes only  
(Cast Iron, PVC, Concrete, and  
Asbestos Cement “Transite”)**
- **New Pipe - only HDPE**

# Static Pipe Bursting System - Step 1

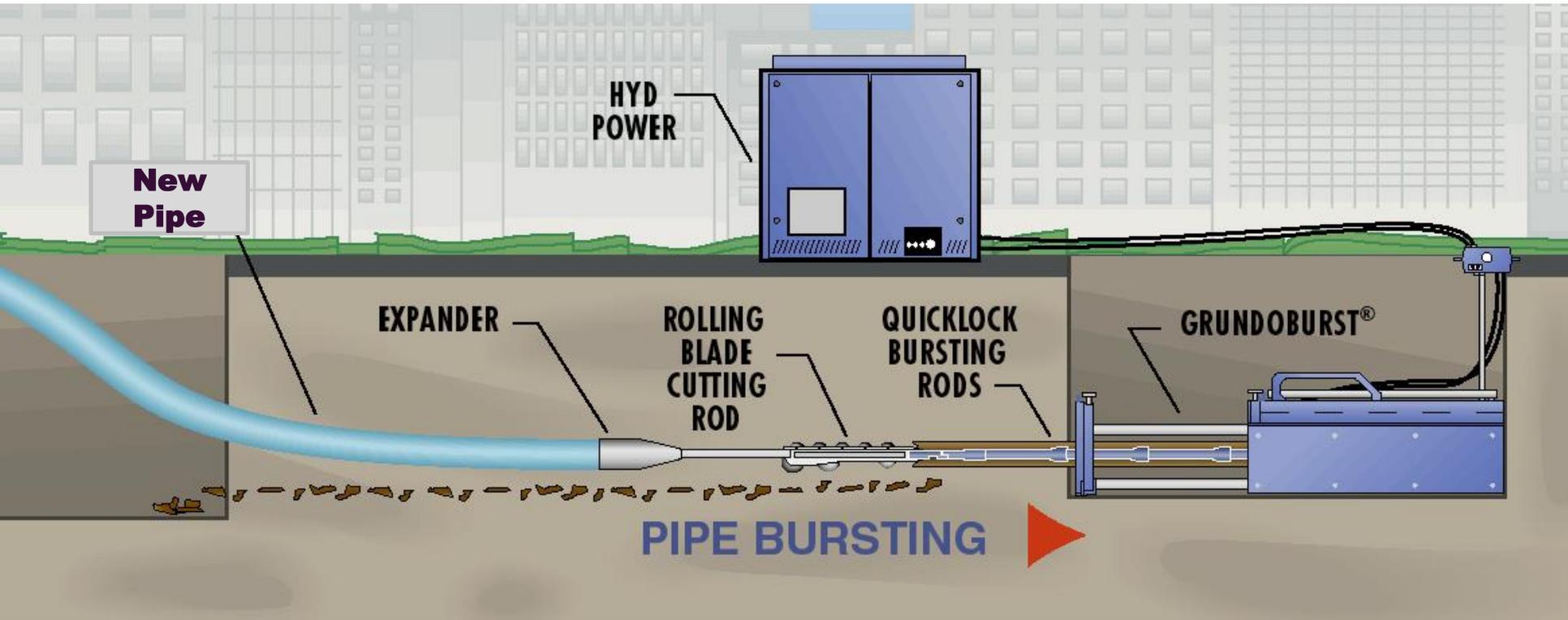


(most commonly used system in water pipeline bursting)

# Static Pipe Bursting System - Step 2



# Static Pipe Bursting System - Step 3







Special Tooling to Split Steel,  
Ductile Iron, and Certain Fittings

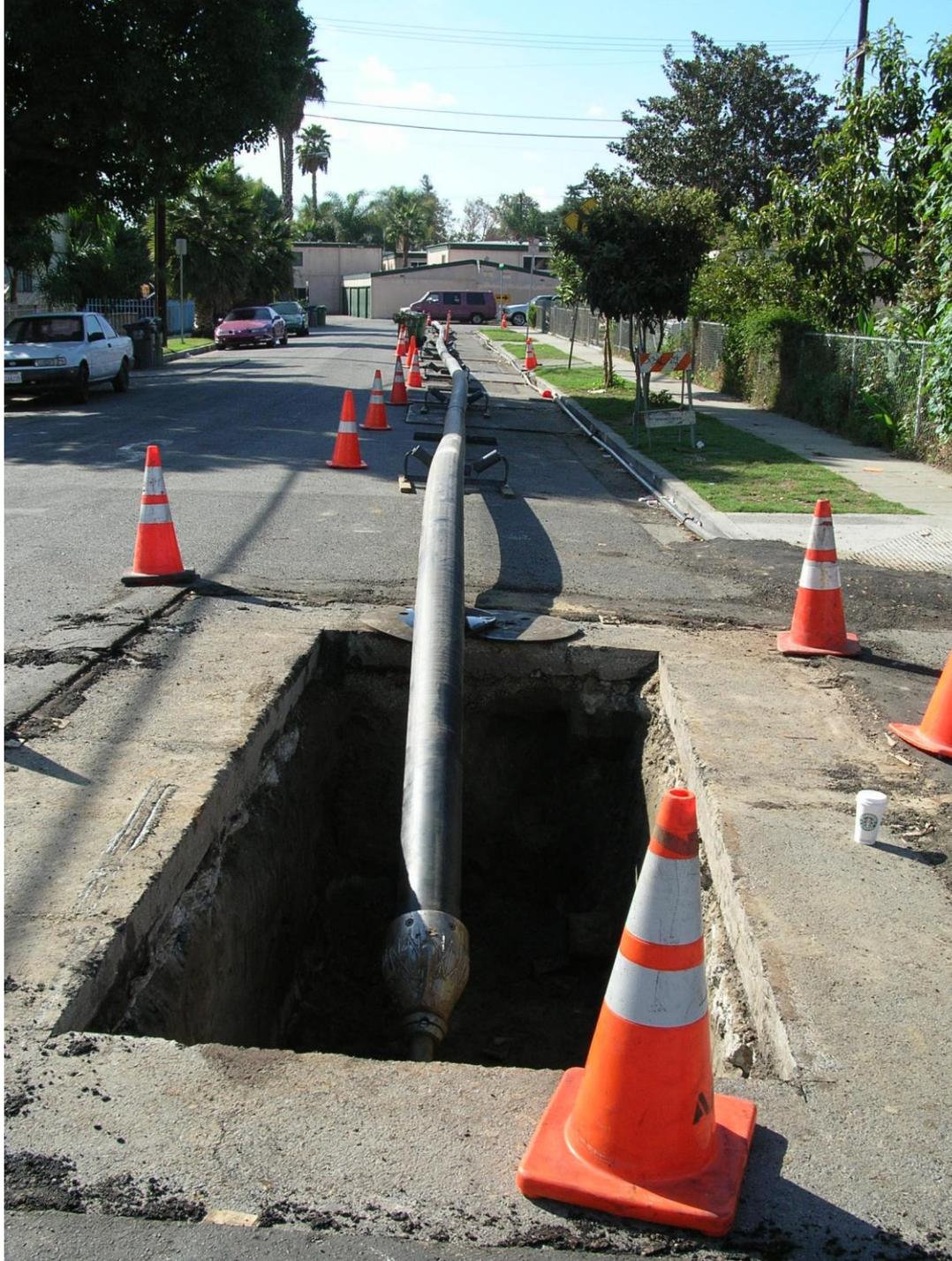


# Capabilities – Static Systems



- **Pipe Burst Not Only Existing Fracturable Pipe but, also Non-Fracturable Pipe (HDPE, Ductile Iron, Steel)**
- **Accessories used to help split fittings & repairs**
- **New Pipe - All types (FPVC, HDPE, Restrained Joint PVC, Restrained Joint Ductile Iron)**

# Fused HDPE

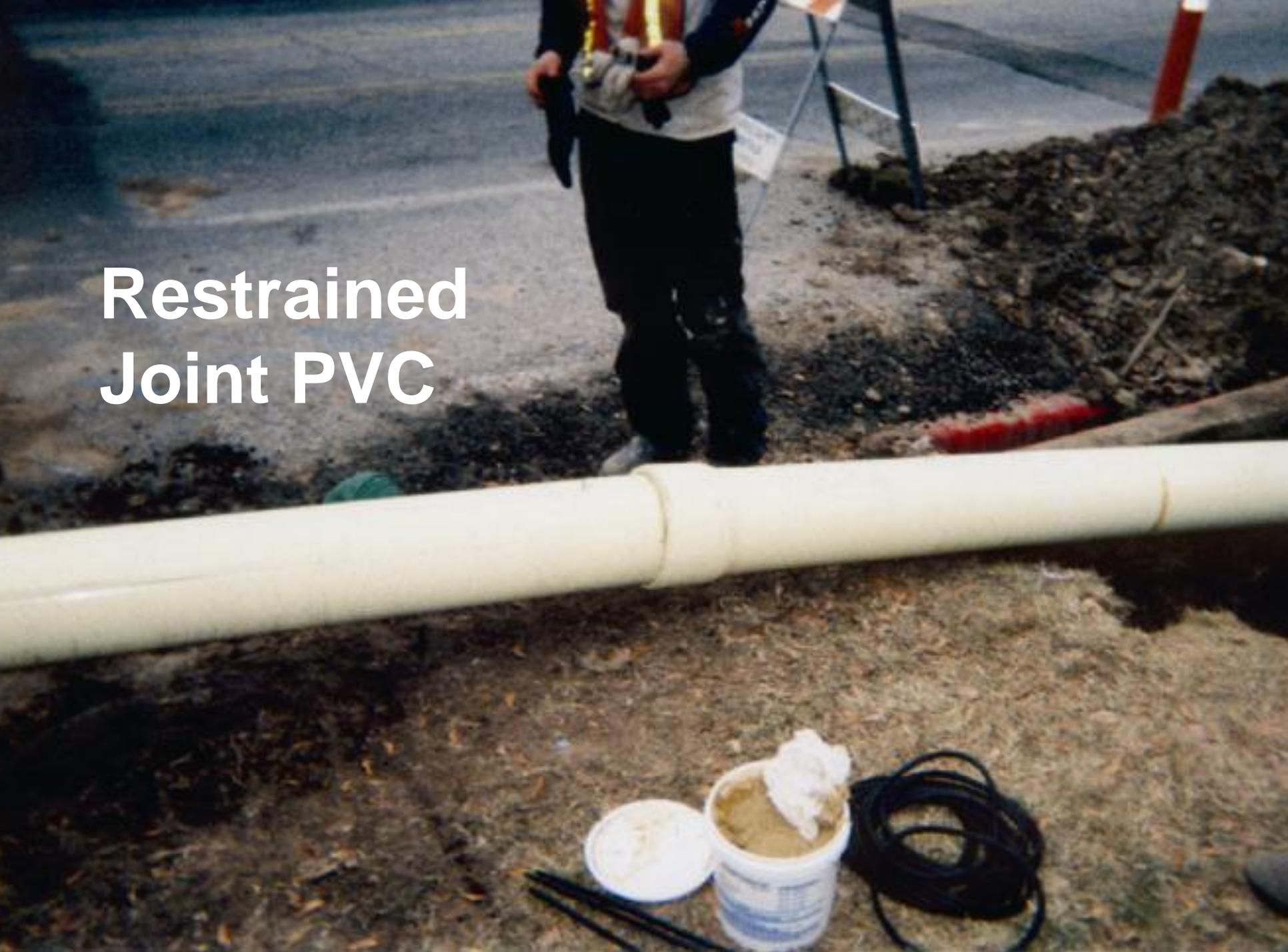




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# Fusible PVC

# Restrained Joint PVC

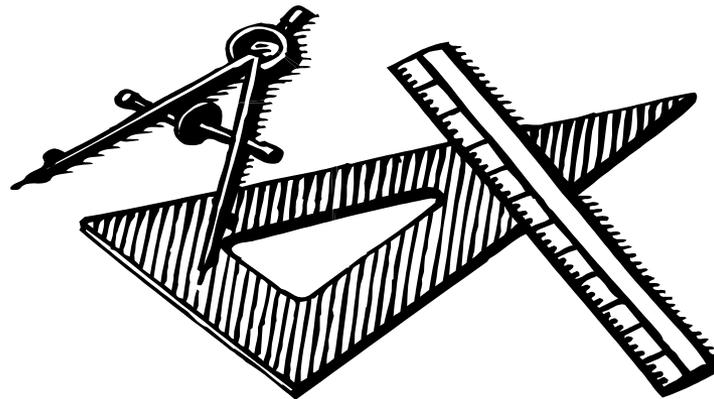


# Restrained Joint Ductile Iron



# Pneumatic Pipe Burst Project

## **Pipe Bursting of existing 36" Diameter Hobas Pipe Pulling in 36" HDPE Pipe**



# Pneumatic Pipe Burst Project

## 20 ton Constant Tension Winch and Taurus 24" Hammer



# Pneumatic Pipe Burst Project

## Launch and Receiving Excavations



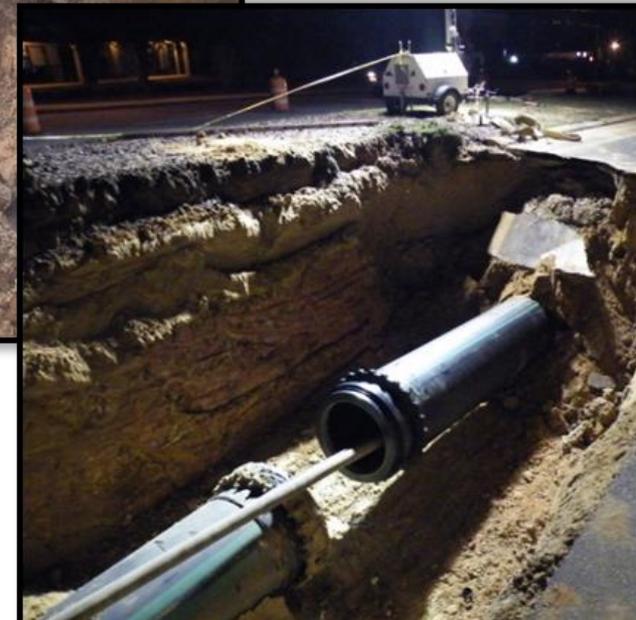
# Pneumatic Pipe Burst Project

## HDPE Pipe Fusing



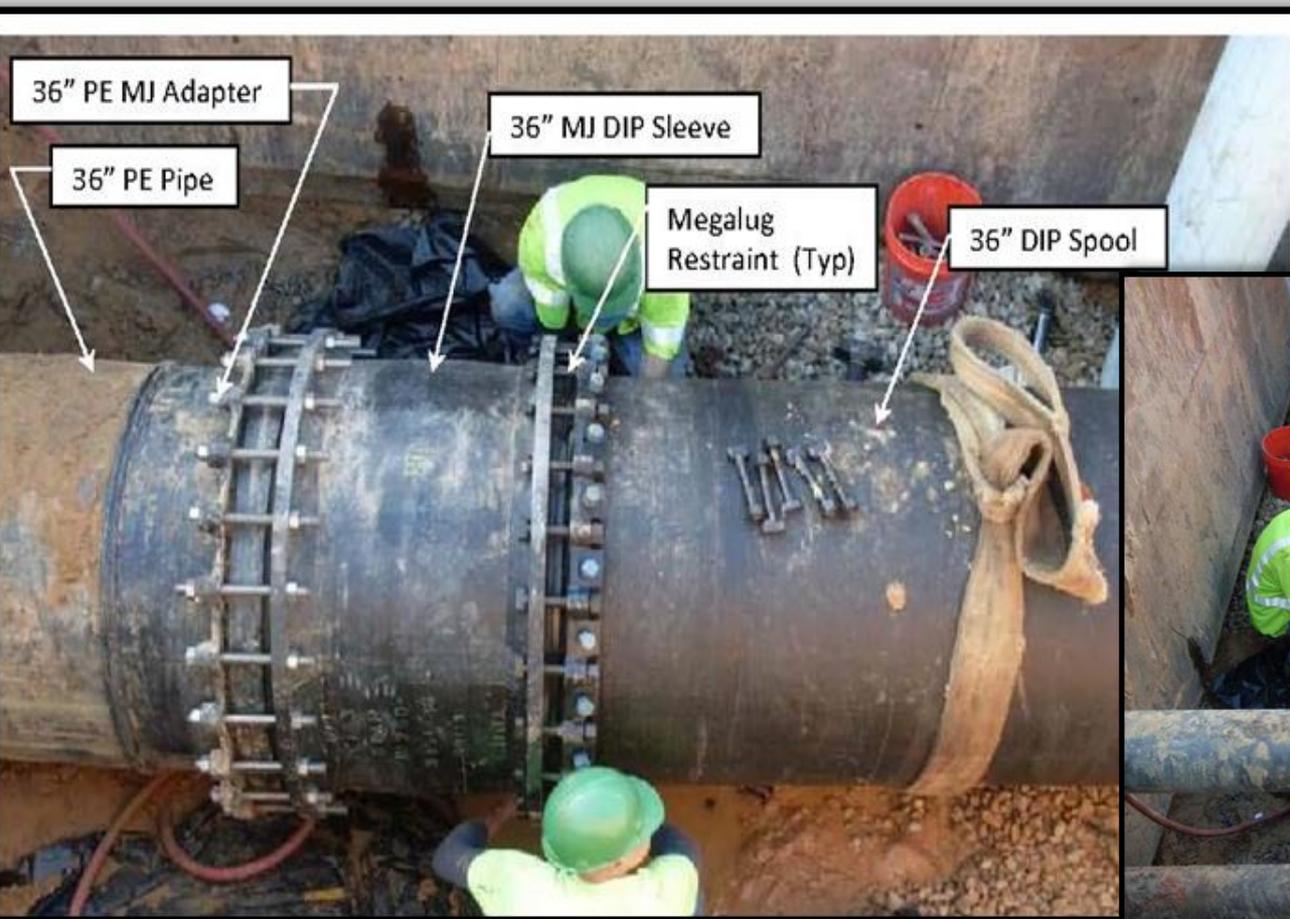
# Pneumatic Pipe Burst Project

## Pipe Bursting Operation



# Pneumatic Pipe Burst Project

## Pipe Closure Sections



# Pneumatic Pipe Burst Project

## Restoration



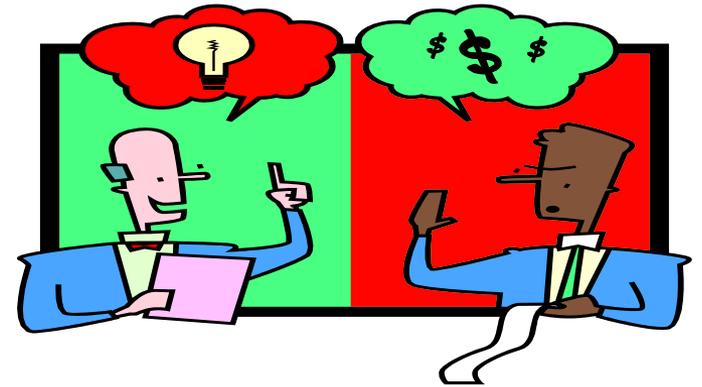
# Pipe Bursting vs. Open Cut

## “Direct Costs”

- Less material removed and replaced
- Less Dewatering
- Less equipment and labor
- Utilizes existing utility corridor and ROW
- Lower cost overall



# Pipe Bursting vs. Open Cut



## “Indirect Costs”

- Smaller work zone or “footprint”
- Less disturbance to traffic
- Less time
- Less Impact to businesses & residents
- Less emissions – lower carbon foot print “Green Benefits”

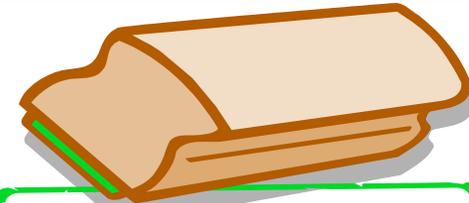


# Bursting vs. other rehabilitation options (Slip-lining, CIPP, etc.)

- No reduction in inside diameter (improved hydraulic capacity)
- Same size or Increased pipe diameters
- Factory Manufactured Pipe (vs. “field manufactured” CIPP, epoxy, and CML, etc.)
- Hard service reconnects (not simply “reinstated”)
- Better return on investment - engineering economic life (new pipe)

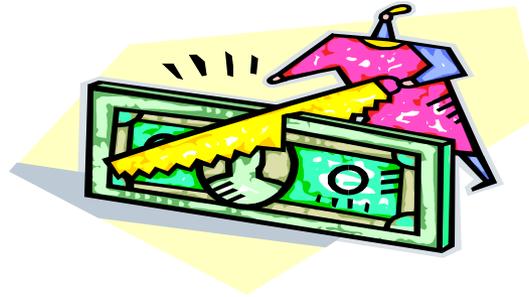


# In Summary, Pipe Bursting is...



**GUARANTEED**

- Proven, has history, and widely used (not new, you will not be the first!)
- Effective (it works!)
- Costs less
- Lower impact to all
- New factory manufactured pipe
- “Green Technology” – environmentally friendly



# Questions?

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# Pneumatic Pipe Burst Project

## **Failed existing 36" Diameter Hobas Pipe**

