



# **Underground Construction Technology**

## **The Underground Utilities Event**

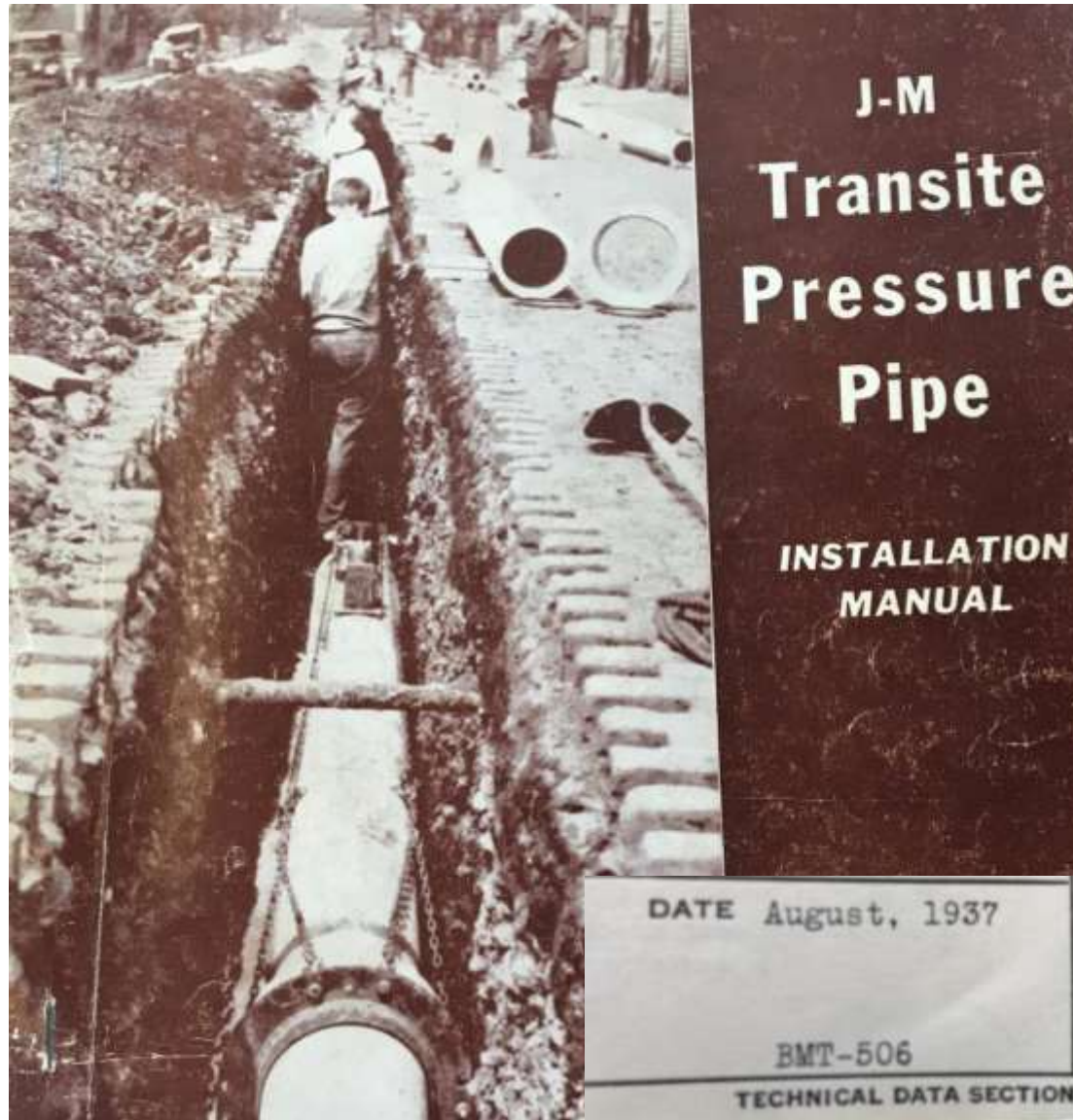
Jan. 28-30, 2020 | Fort Worth Convention Center | Fort Worth, Texas

# **CLOSE TOLERANCE PIPE SLURRIFICATION (CTPS)**

# **HDD ASBESTOS CEMENT PIPE REMOVAL AND REPLACEMENT**

Patent # US 8,641,326 & US 10,557,587

# Since 1937 AC Water Mainline Pipe History

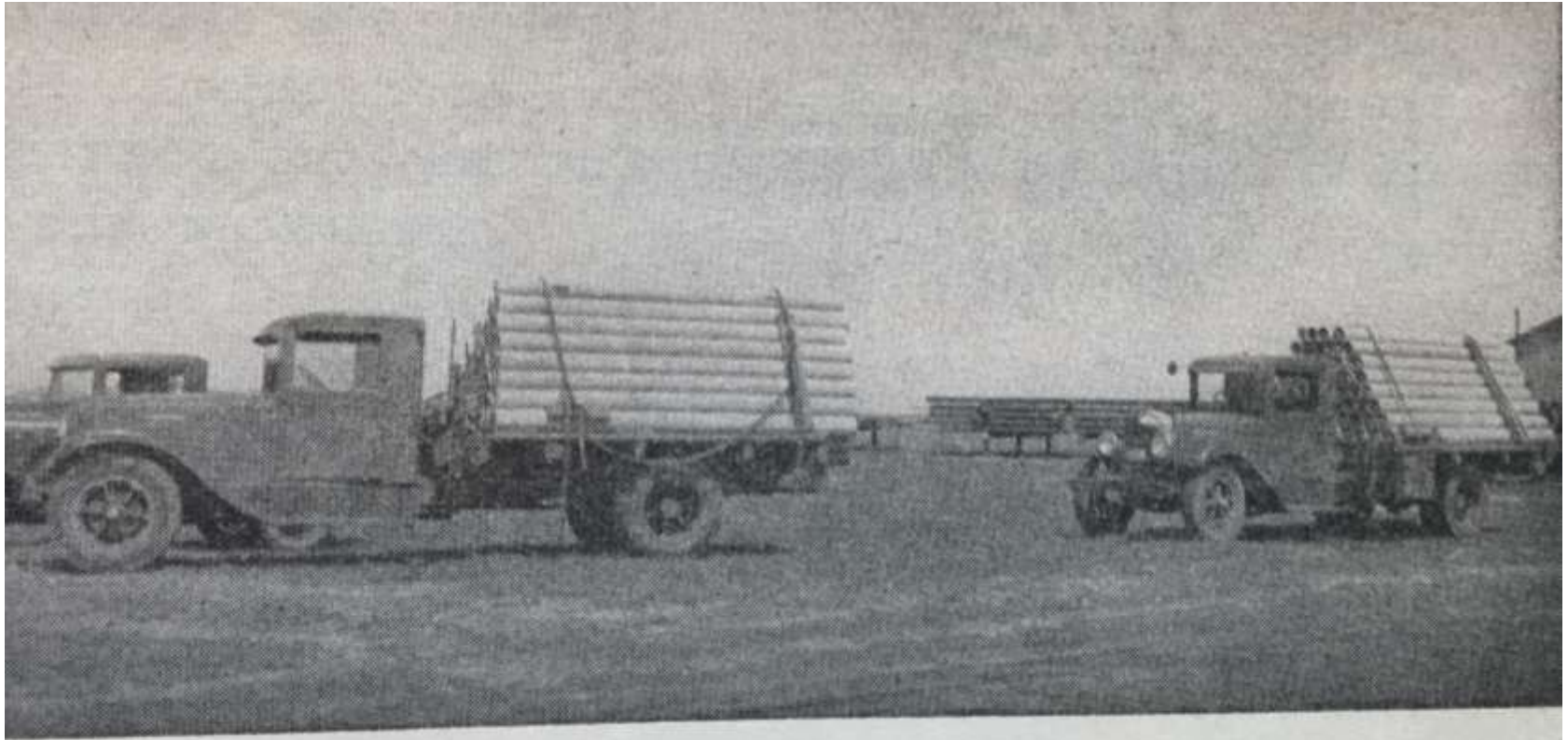


# AC Water Mainline Pipe History



*Cutting Transite Pipe with a handsaw*

# AC Water Mainline Pipe History



*Pyramid stacking of pipe on trucks*

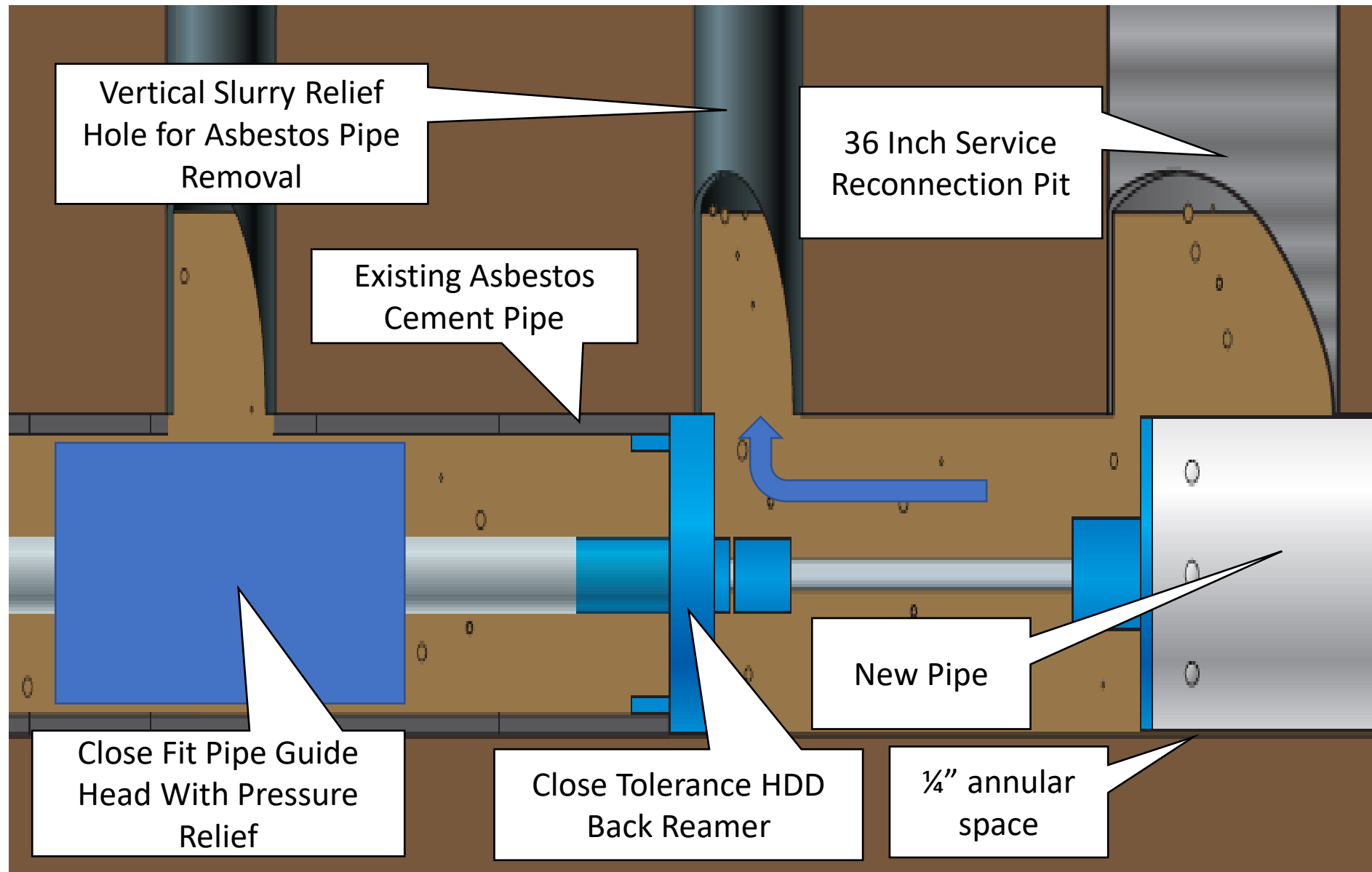
Over 7 years to develop this new HDD method of asbestos pipe removal and replacement process. Industry name is "Close Tolerance Pipe Slurrification or CTPS. I worked with the US Environmental Protection Agency for 2.5 years to get full approval. This is the only EPA approved trenchless method to remove and replace asbestos cement pipes. CTPS uses existing HDD equipment that can meet the required minimum drill stem rotation speed along with specially built tooling and a special drilling fluid recipe.

Advantages: no fluid pressure, quick process, upsizing not a problem, existing pipe can be very shallow without concerns for the surface area, easy process to learn. HDD equipment can be used for many other applications.

## **Manufactures Formula That Makes up AC Pipe**

- 45-55% Portland Cement
- 25-35% Silica Flour
- 15-25% Chrysotile Asbestos

# Close Tolerance HDD AC Pipe Slurrification Process



# Close Tolerance HDD Asbestos Pipe Replacement Back Reamer and Guide Head



**Wide Sharp Edge Carbide Cutters Rotating at a minimum  
240+ RPM's Creates Slurry and Reactivates Portland Cement**



# HDD Rig Setup Installing 14" Fusible PVC



# HDD Pilot Stem Through 14" AC Pipe and AC Slurry



# Asbestos Cement Pipe Slurry



# Close Tolerance Pipe Fit No Voids



## Close Tolerance Pipe Slurrification Annular Space Information:

The EPA's approval considered the amount of asbestos material

left within the close fit annular space to be a trace and the amount.

The trace material will be encapsulated within

the portland cement and additives.

The amount of asbestos is only considered a trace and can easily

be reduced by turning up the drilling fluid gallons per minute or

by upsizing the pipe by one pipe size.

This is the best estimate of what makes up the quarter inch

annular space around the newly installed pipe.

The annular space information listed below is based on replacing

8 inch AC pipe with 8" DIP fusible HDPE or PVC.

Annular		Material		Material
<u>Space</u>		<u>Fractions</u>	<u>What Makes Up The Slurry Material</u>	<u>Inches</u>
		0.1250	Portland Cement	1/8"
	0.250	0.0625	Silica Flour/Sand	1/16"
		0.0313	Drilling Fluids & Additional Portland Cement	1/32"
		0.0156	Surrounding Soils	1/64"
		0.0156	Asbestos	1/64"

# THANK YOU

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