



WTA

Joe Baratka

SUBSURFACE, INC

Drainage Structure Maintenance & Repair

Who are we?

Pipe Rehabilitation & Maintenance Company

- ✓ Family Owned and Operated since 2007
- ✓ Innovators within the Industry.
- ✓ Specializing in: UV CIPP Lining, Culvert Joint Repair, Void Filling, & Soil Stabilization.
- ✓ Offering Quality Solutions.

We have your Solution!

(UV CIPP) UV Cured in Place Pipe Lining



Here's where we begin!

- ✓ Deteriorated pipe identified.
- ✓ Pre-inspection information.
- ✓ Pipe personally inspected, measured for GPS accuracy, and evaluated.
- ✓ Recommendations & quote



UV CIPP Process

Step 1: Cleaning Existing Pipe

Cofferdam

Install patented portable steel cofferdams (if needed) to isolate culvert to be lined and enable dewatering and cleaning.

Dewater

Dewater culvert using pumps or truck mounted suction tube.

Clean

Clean pipe using high-pressure water jet or other method.

Televise

Conduct CCTV inspection of the pipe to ensure cleanliness and assess condition of pipe.



UV CIPP Process

Step 2: Installing Liner

Setup

Move liner in the crate to the end of the pipe, or spool liner on patented installation reel (Omega Liner Co.).

Glide Foil

Install plastic gliding foil through pipe.

Begin

Begin un-reeling liner, continuously folding liner upon entering host pipe. Ensure the liner remains on the gliding foil.

Inspect

Inspect Liner for any defects during un-reeling.

Pull

Pull liner completely through host pipe using a cable winch or other means.



UV CIPP Process

Step 3: Installing “Cans” & Inserting Light Train

Open Liner

Cut the liner end open to install the aluminum “cans”.

Install Can

Place can into liner and secure.

Sluiceway

Remove bolted lid and install plastic sluiceway containing the light train.

Temporarily
Inflate

Partially inflate.

Insert Light
Train

Insert light train, remove sluiceway, and replace lid.



UV CIPP Process

Step 4: Preparing “Cans” & Light Train

Assemble

Attach blower hose, cable guide, and light train cable.

Expand
to Fit

Pressurize in steps to get best fit.

Inspect
Fit

Light train is pulled through with camera on (no UV light) to the opposite end.



UV CIPP Process

Step 5: Full Pressure & Curing Liner

Full
Pressure

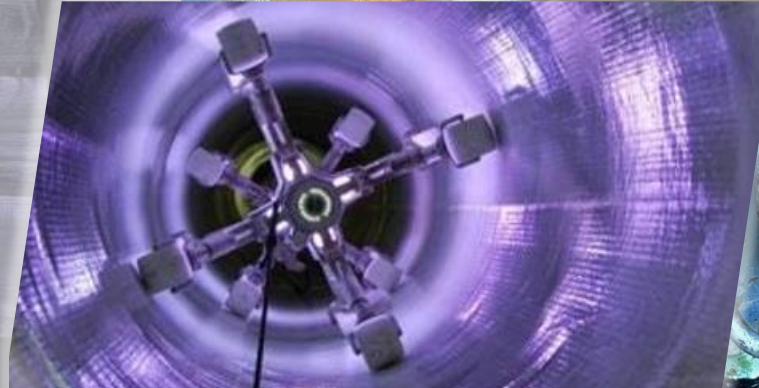
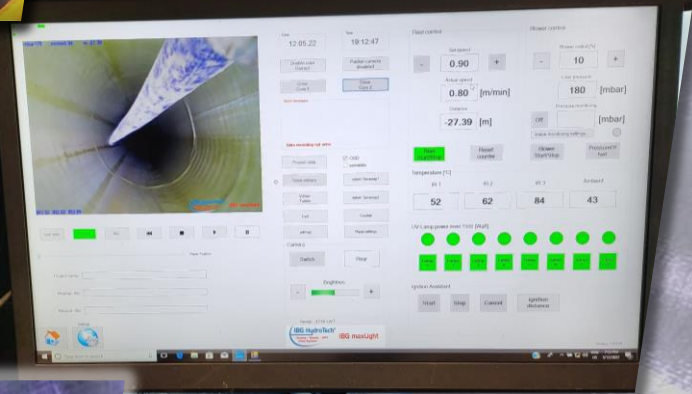
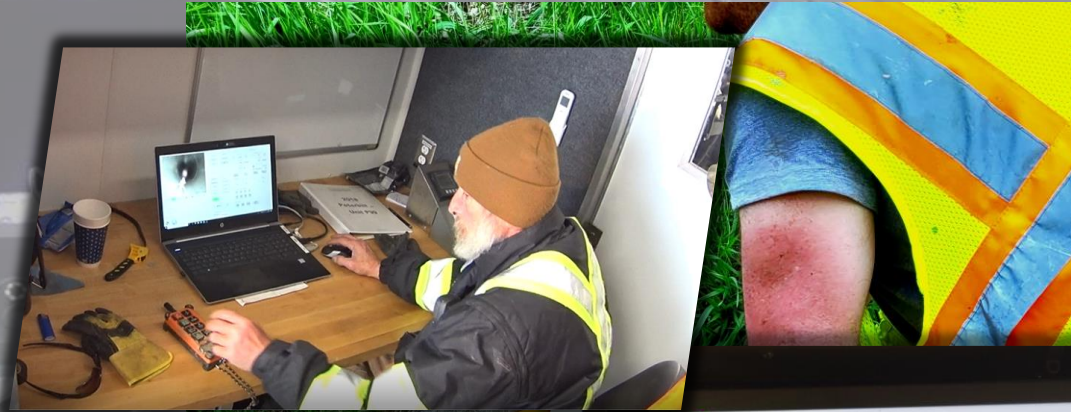
Slowly reach full pressure.
Full Pressure = 2.9 to 4.4 (PSI)

Activate
Light Train

Activate the light train and begin
computer-controlled pull.

Monitor

Monitor the pressure, temperature, and rate
of pull. Adjust rate based on temperatures
being achieved.
Curing temp = 200-250 (Fahrenheit).





UV CIPP Benefits

(Continued)

- ✓ Environmentally Friendly Process
- ✓ No Road Closures
- ✓ Trenchless
- ✓ Increased Hydraulic capacity
- ✓ Small work area



UV CIPP Host Pipe

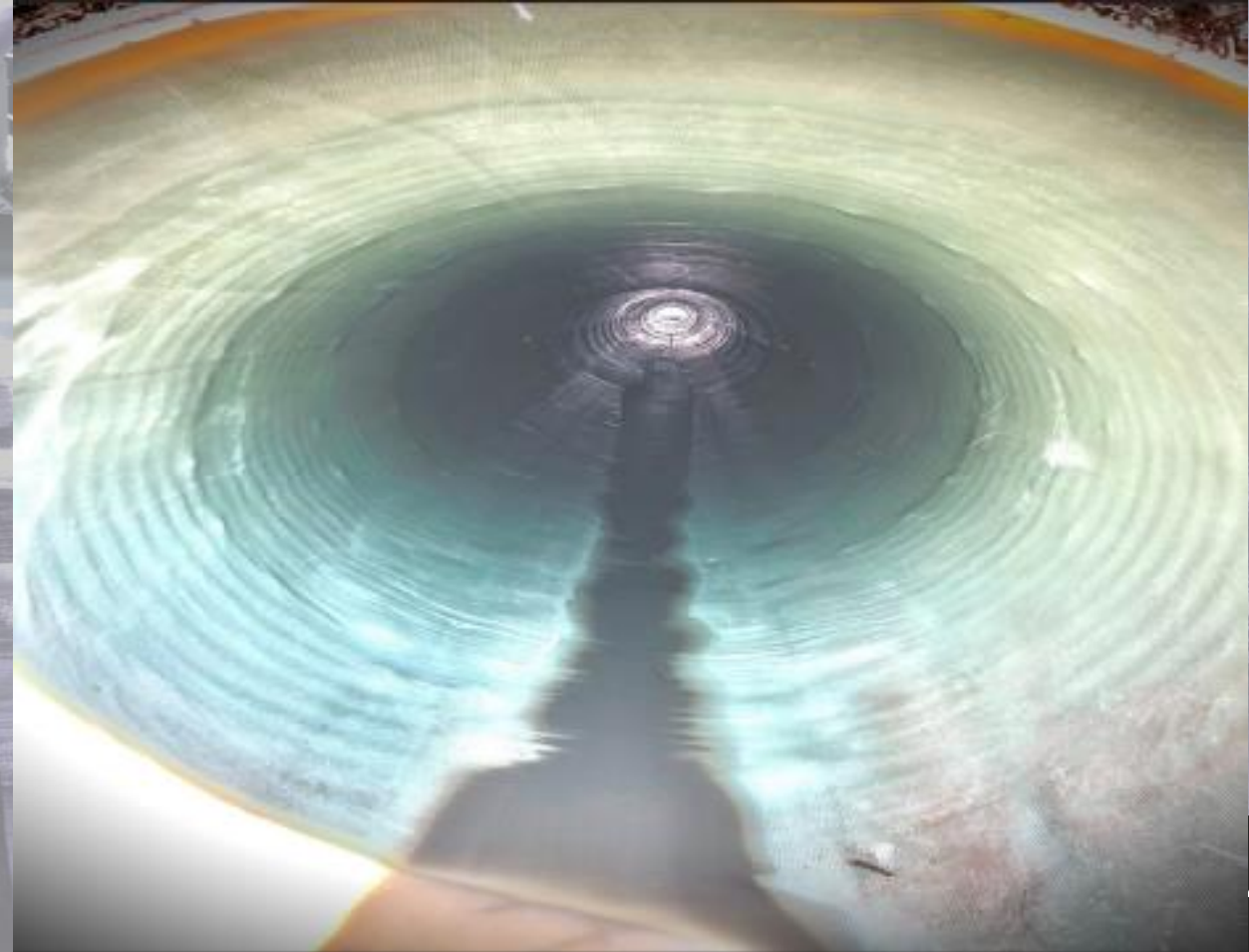
Capable of Lining Various Shapes, Sizes, & Types!

SD DOT 60" CMP





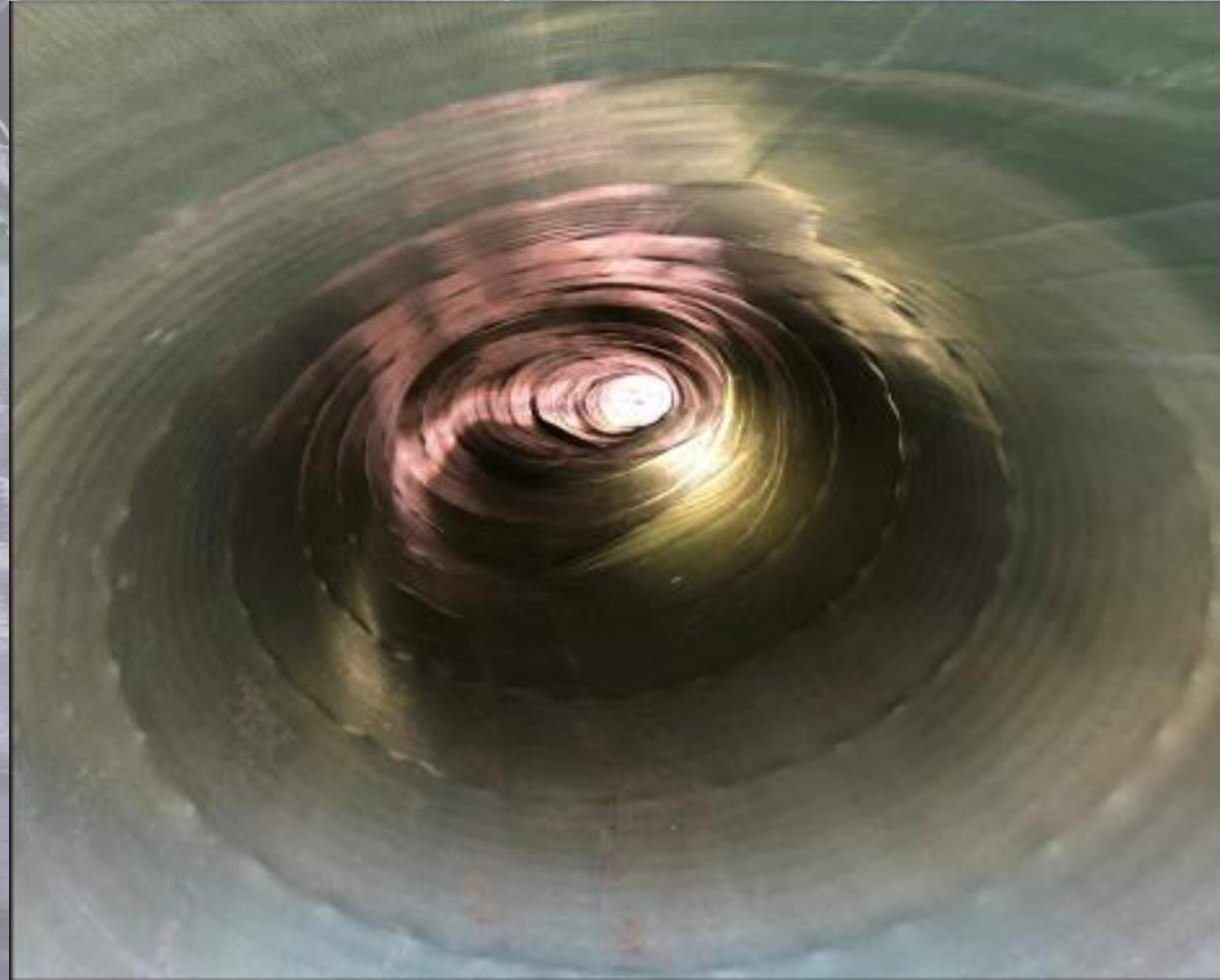
SD DOT 42" Asphalt Coated CMP

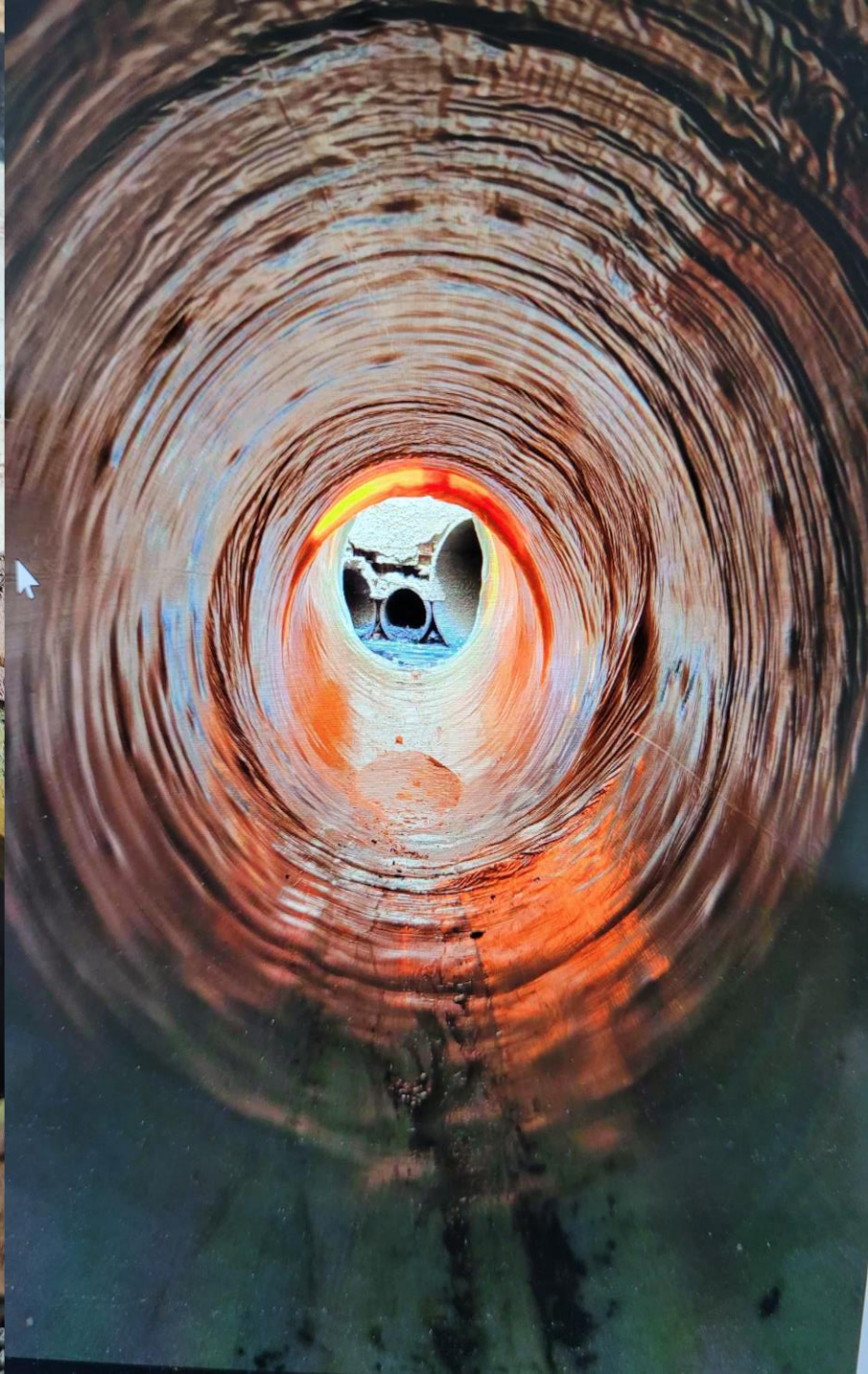


30" RCP w/ Joint Separation



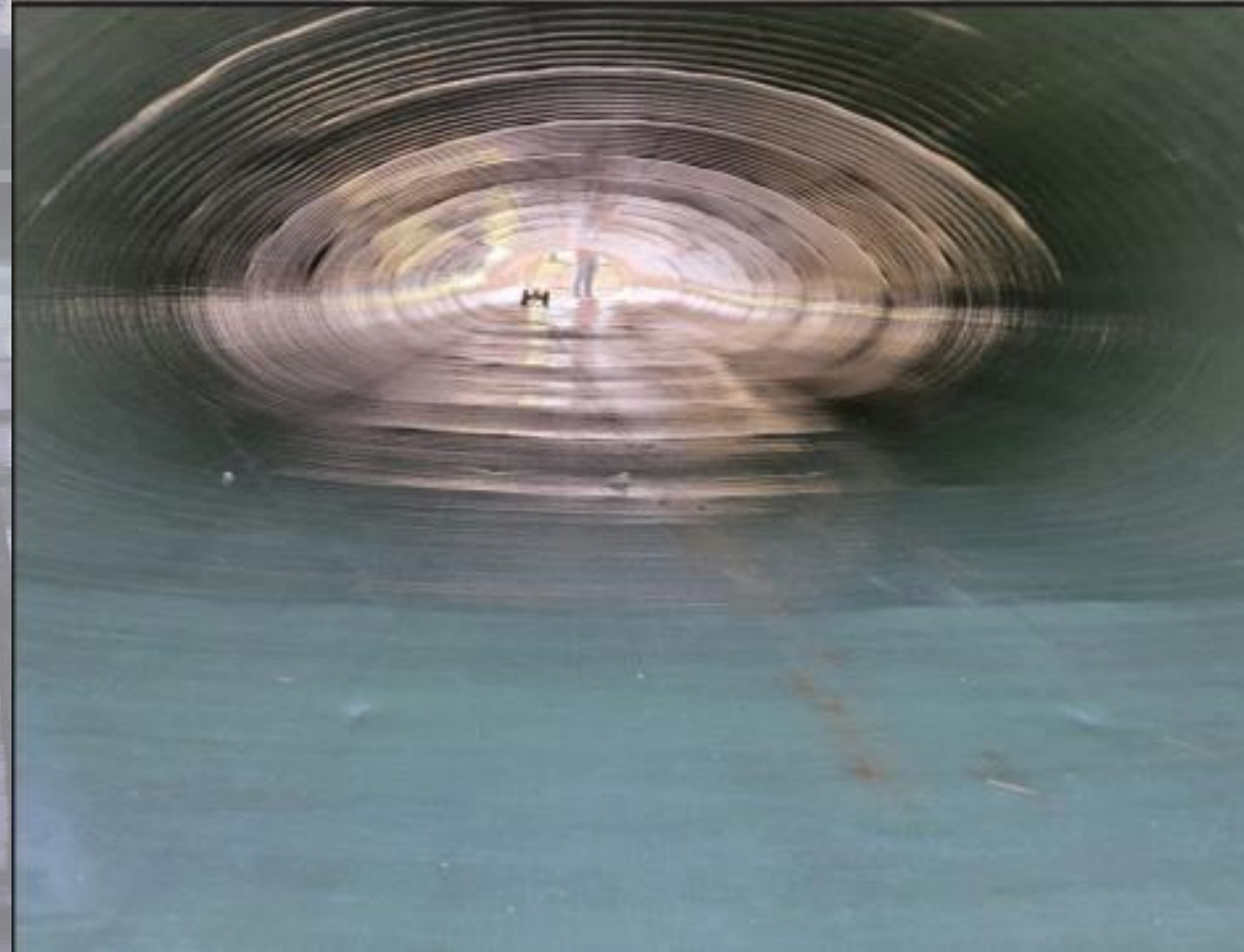
48" SD DOT





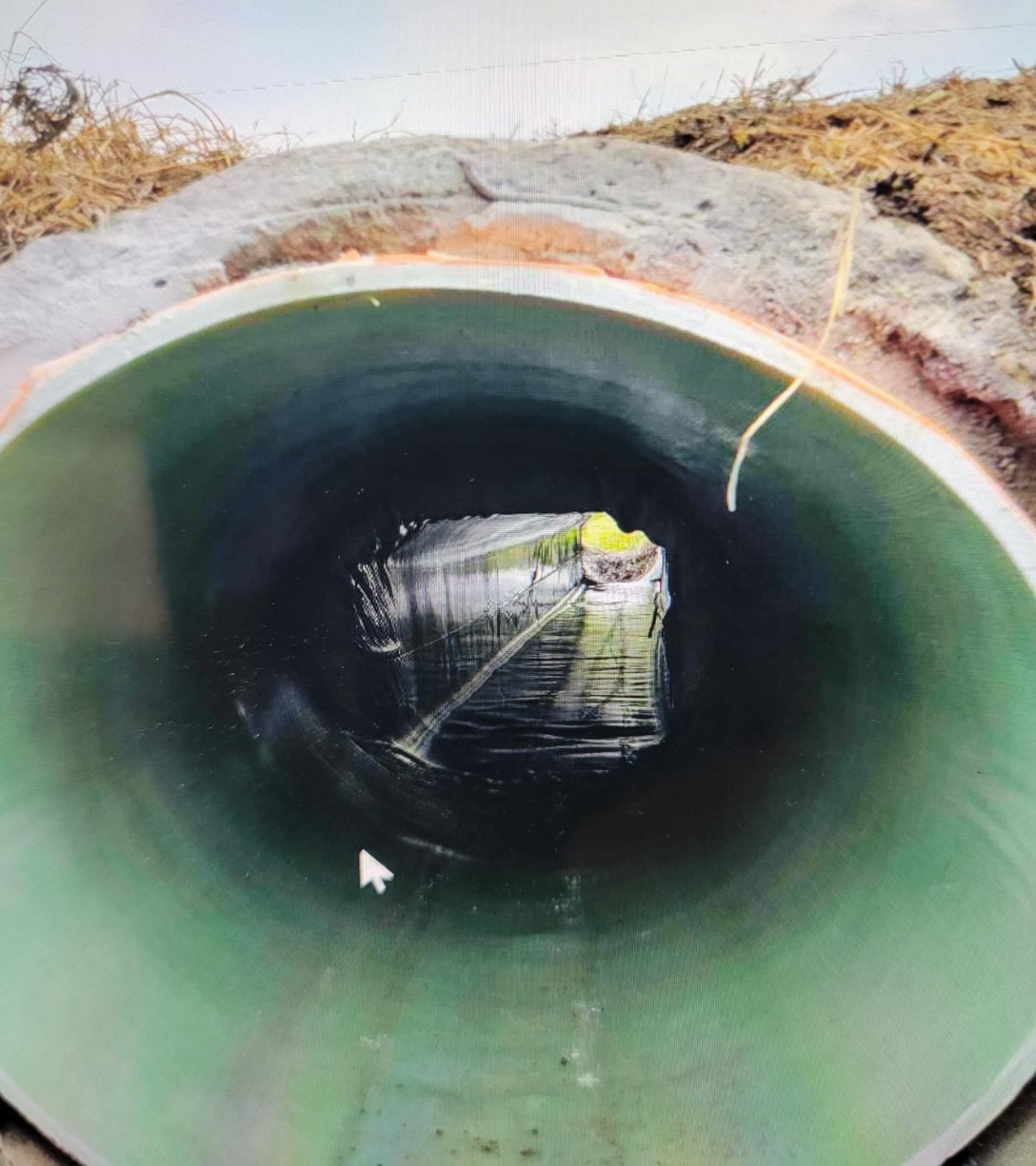
Oct 2, 2024, 11:08:2
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46 34298 03 034

48" Arch Pipe



CMP w/ Deteriorated Invert







24" RCP ND DOT w/ Lateral Cracking

USMH: A 13475+35
DSMH: B 13475+35

47.3 ft. 26.08.20

LC2: -0000.60 ft
LC1: +0048.00 ft

USMH: A 13475+35
DSMH: B 13475+35

45.1 ft. 26.08.20

LC2: -0000.60 ft
LC1: +0048.20 ft

48" (WI) Compromised Slipliner

USMH: B 4
DSMH: A 4

0 ft. 08.09.21

LC2: -0000.60 ft
LC1: +0000.00 ft

USMH: B 4
DSMH: A 4

4.9 ft. 08.09.21

LC2: -0000.60 ft
LC1: +0005.50 ft

Slipliner Fail (Iowa)



Slipliner Fail (Iowa)



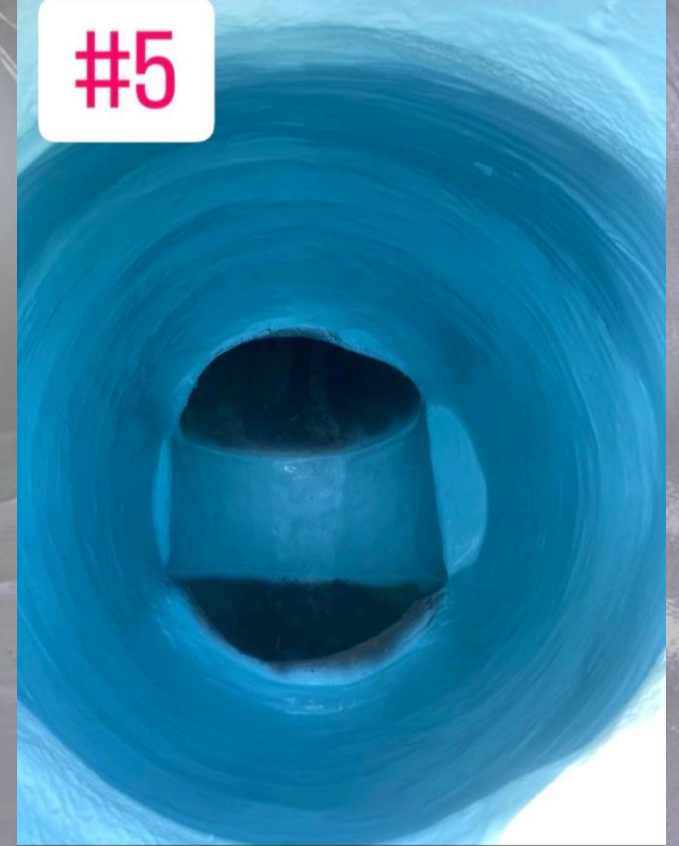
Joint Repair & Void Grouting

Consider when any of the following are visible:

- ✓ **Joint Decay**
- ✓ **Joint Damage**
- ✓ **Joint Separation**
- ✓ **Joint Displacement**
- ✓ **Manhole Rehabilitation**



Manhole Rehabilitation



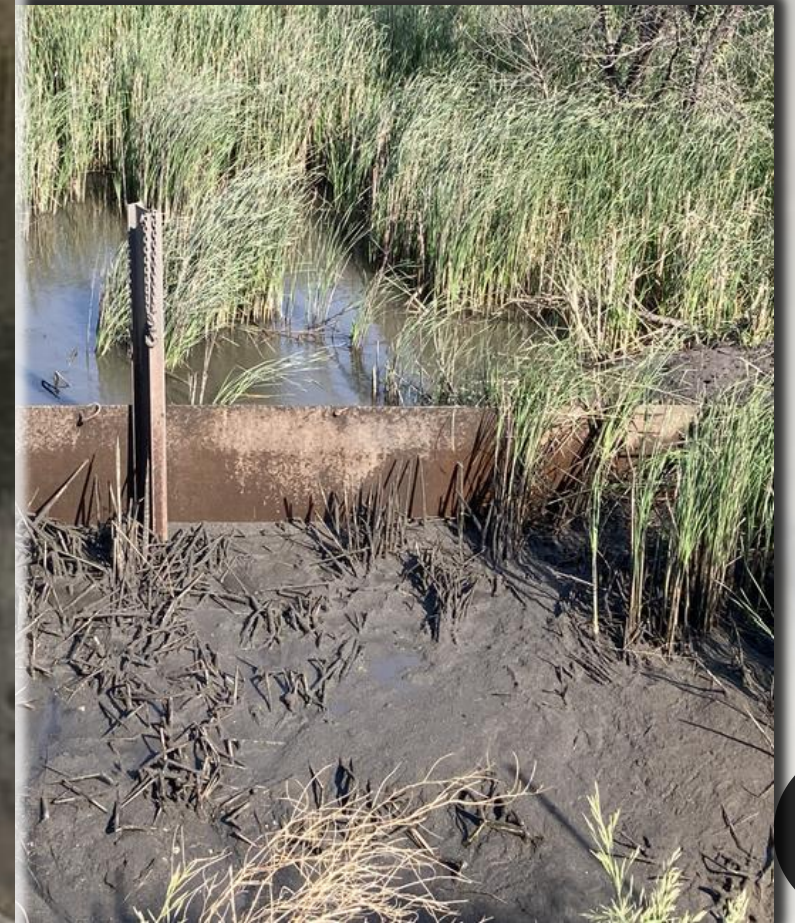
Joint Repair & Void Grouting



Deltas



Step 1: Cleaning Culvert and Joints



Step 2: Drill Injection and Observation Holes

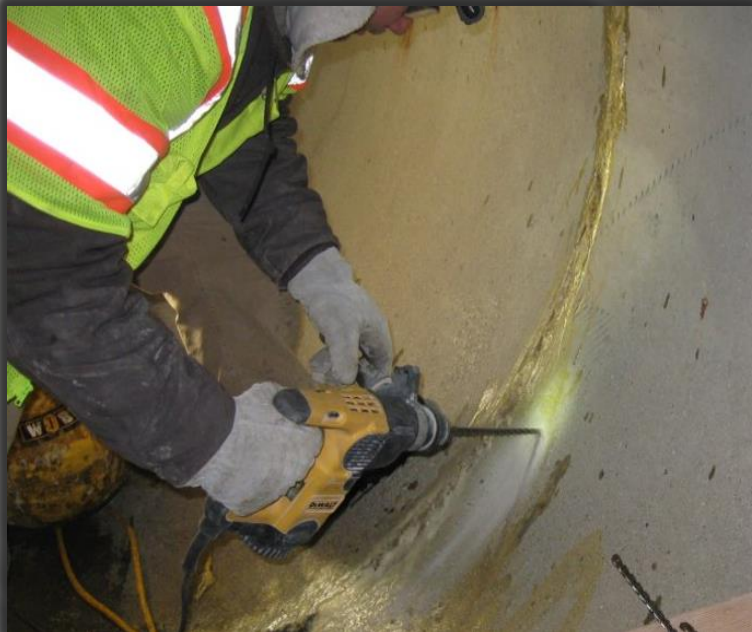


Step 3: Install Oakum Rope and Gel Foam II



Step 4: Injection of Ultra to backside of the joint

- The outside of the joint is filled through the drilled injection holes to seal the joint from the backside of the structure.
- The polyurethane resin used is flexible, adhesive, and long lasting.



Step 5: Void Filling Outside of the structure

- Replaces Loss of Soil and Voids
- Travels well through Soil
- Lightweight and Load Bearing



Step 6: Trim the Oakum, Apply Gel Coat, and place Tie Bars



Let's Talk A Little Bit About Funding



UV-CIPP is a stand-alone structure Pipe!

In my opinion this UV-CIPP solution should be considered a capital improvement and included in design projects and 5-year Capital Improvement Plan!

Collaborate with in your region municipalities for more location to secure a better L/F pricing and reduced Mobilization rates.

- **Utilize current and future design projects to maximize State and Federal funding to minimize the use of local funding sources intended for maintenance.**
- **. Wisconsin DOT has a Spec for UV-CIPP! Anyone in need of this spec, see me after the presentation & I can share it with you.**
- **Work with County's to address current problem pipe and plant the seed for them to look at UV-CIPP in your B&C Aid improvement projects.**
- **Possibly look into Multi year contract. Minnesota does a lot of these. Let me know if you would like more information regarding this.**

A robotic probe with a central black body and four white sensor arms is positioned in the center of a large, circular, metallic tunnel. The tunnel's interior is highly reflective, showing concentric rings of light and shadow. A thick black cable extends from the probe down towards the bottom of the frame. The overall lighting is dramatic, with strong highlights and deep shadows.

QUESTIONS??

The background of the slide is a photograph of a tunnel inspection robot, also known as a crawlspace camera, positioned inside a large, circular pipe. The robot is a small, white, box-like device with four legs and a camera lens. It is illuminated by a bright light, creating a strong reflection on the wet, metallic surface of the pipe. The pipe's interior is dark, and the robot's position is centered in the frame, looking towards the viewer.

THANK YOU!

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