

# Tri-City Outfall: 2,370LF Microtunneling with 90" Flowcrete and 2,400LF Opencut with 90" FRPM



Tucker Toelke, EIT

**MICHEL'S**<sup>®</sup>



Carl Pitzer, PE

 **THOMPSON**<sup>™</sup>  
PIPE GROUP

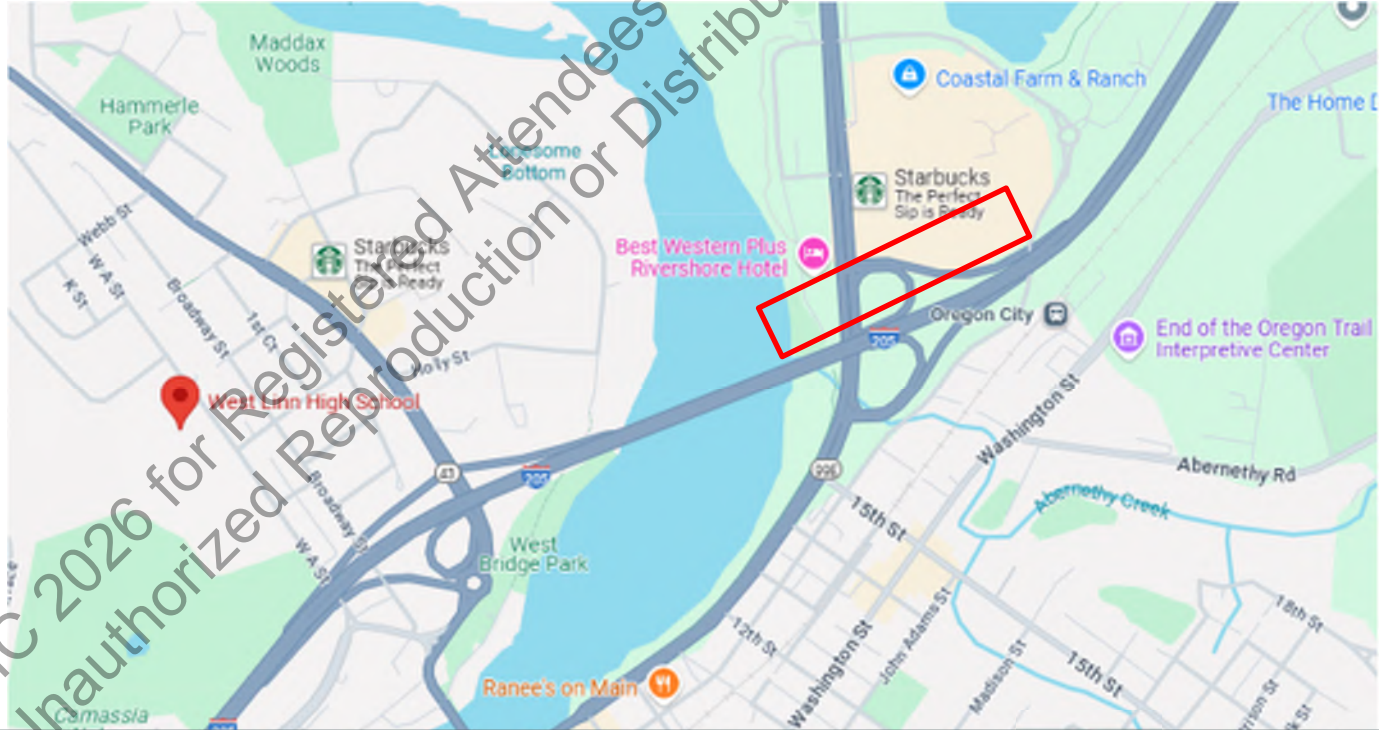
January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas





# GO LIONS!



UIC 2026 for Registered Attendees Only  
Unauthorized Reproduction or Distribution Prohibited

January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas





# PROGRESSIVE DESIGN BUILD



**Jacobs**



**MICHELS®**

**AECOM**

## **RFP: The Project is to be designed and constructed in two phases:**

- Phase 1: Prepare design to 60% complete, as defined in RFP Attachment B (Scope of Design-Build Services), and a Guaranteed Maximum Price (GMP) proposal.
- Phase 2: Complete design, construction and post-construction tasks, including performance testing, startup commissioning and operator training and support (if GMP proposal is accepted by the Owner.).

January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas



# PROGRESSIVE DESIGN BUILD

Initial Plan – 10%

Two pass Tunnel

Multiple shaft Options

- STEP 1** Install Casing/Ground Support
- STEP 2** Insert/Line with Carrier Pipe
- STEP 3** Grout Annular Space

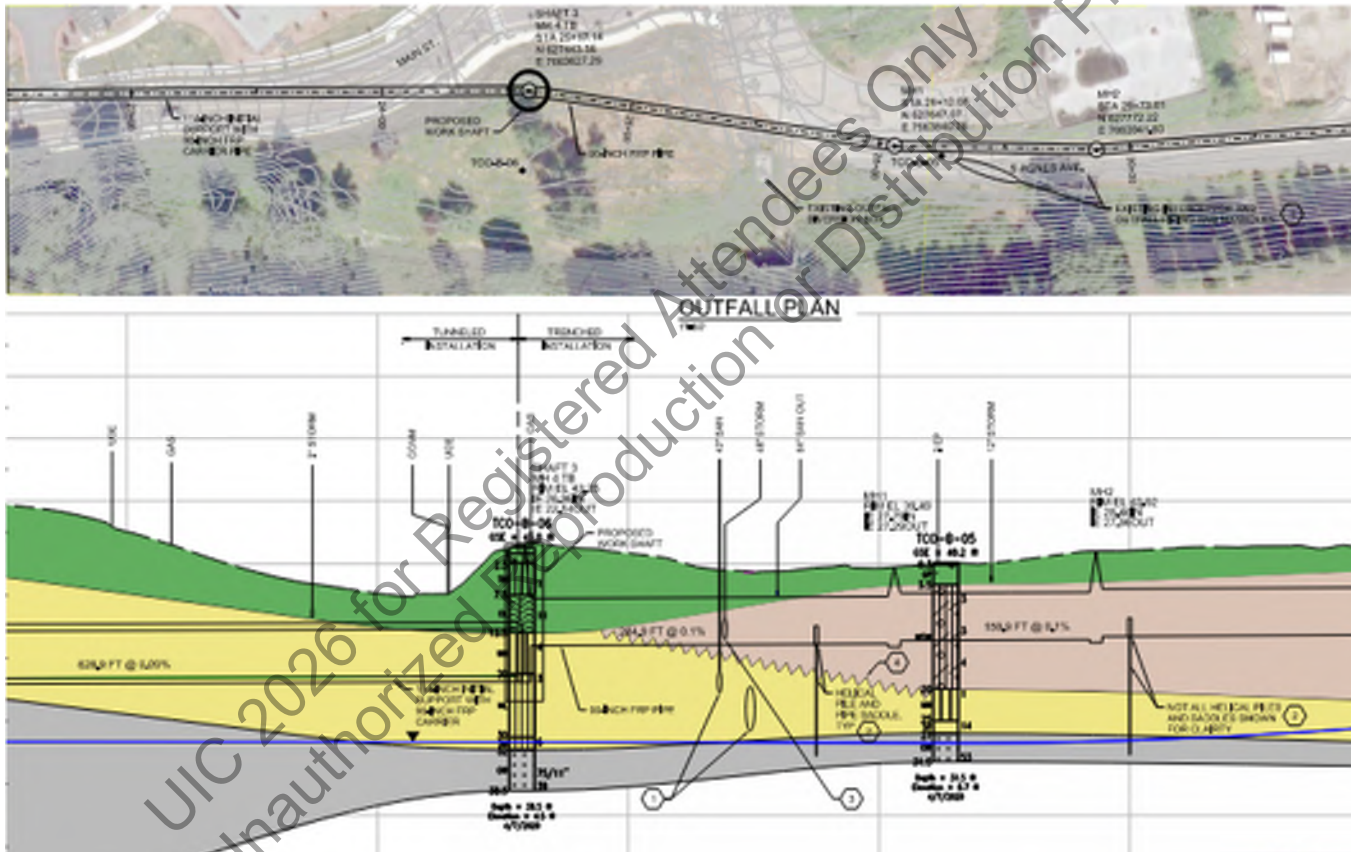


January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas



# ORIGINAL PLAN – 10% - 2 PASS

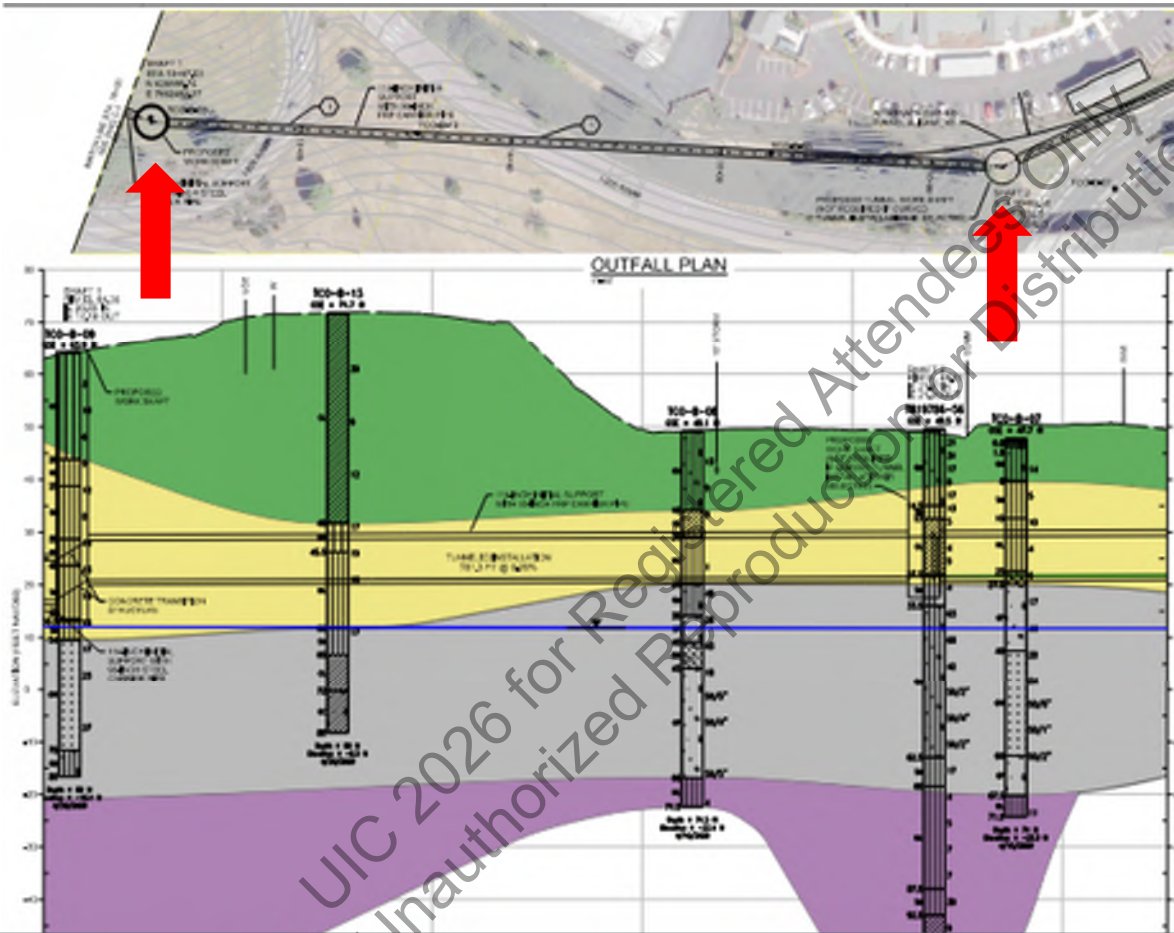


January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas



# GEOLOGY

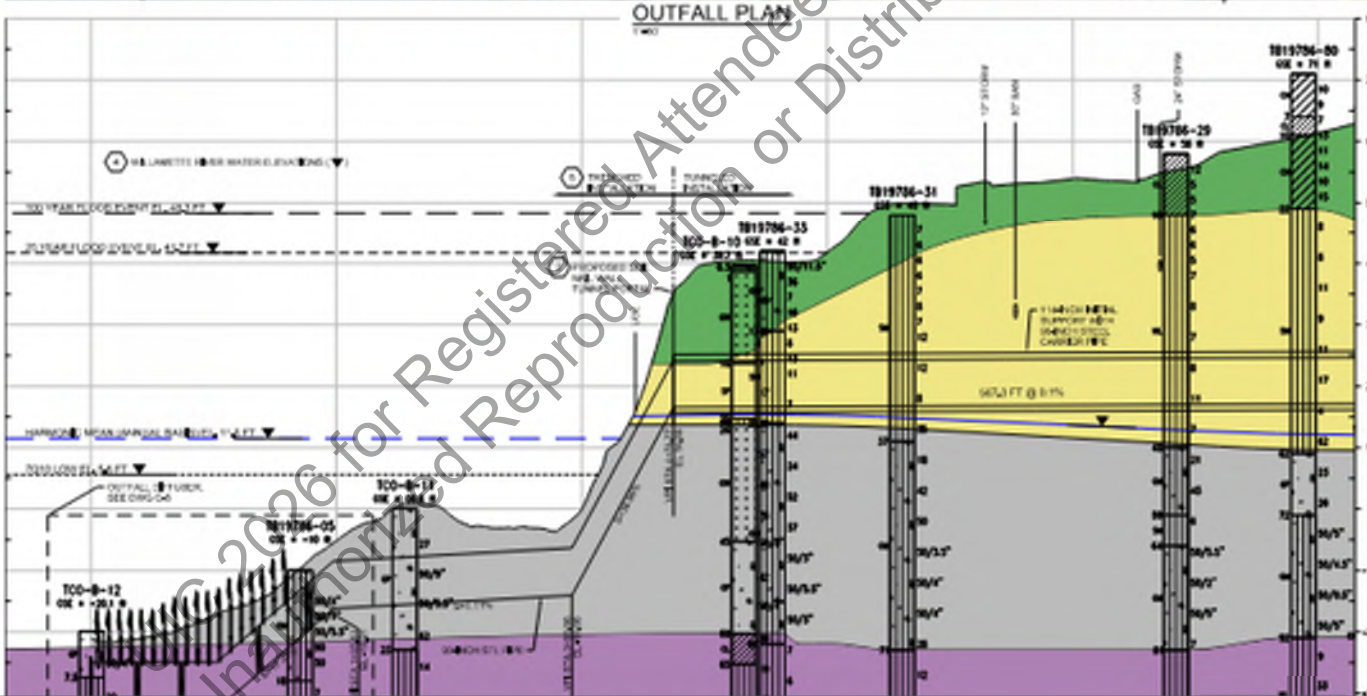
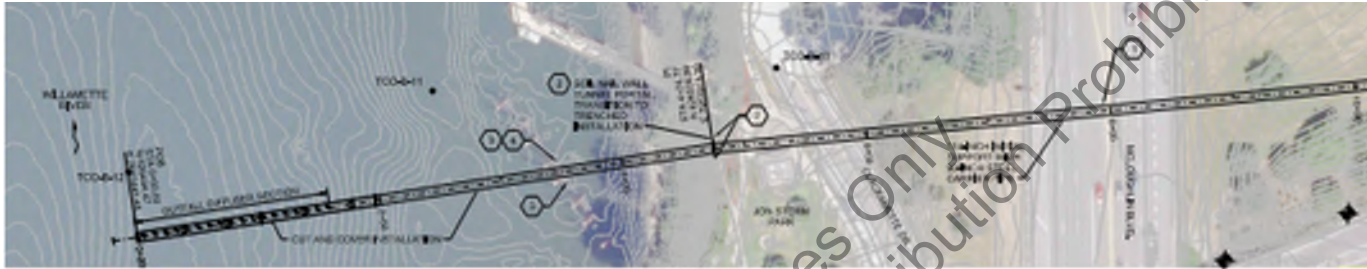


# SHAFT OPTIONS

January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas





January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas



# PROGRESSIVE DESIGN BUILD

## I 205 ABERNATHY BRIDGE

- Tunnel termination conflict
- Kiewit building and staging site conflicts
- Eliminate site conflicts – Single pass



January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas



# PROGRESSIVE DESIGN BUILD

## NEW PLAN

- Single push – 2,400LF
- Single Shaft (Launch)
- Eliminate remaining shafts
- Utilize (4) Curves
- $R=1000-1100ft$
- Tap into the Willamette River
- Wet retrieval



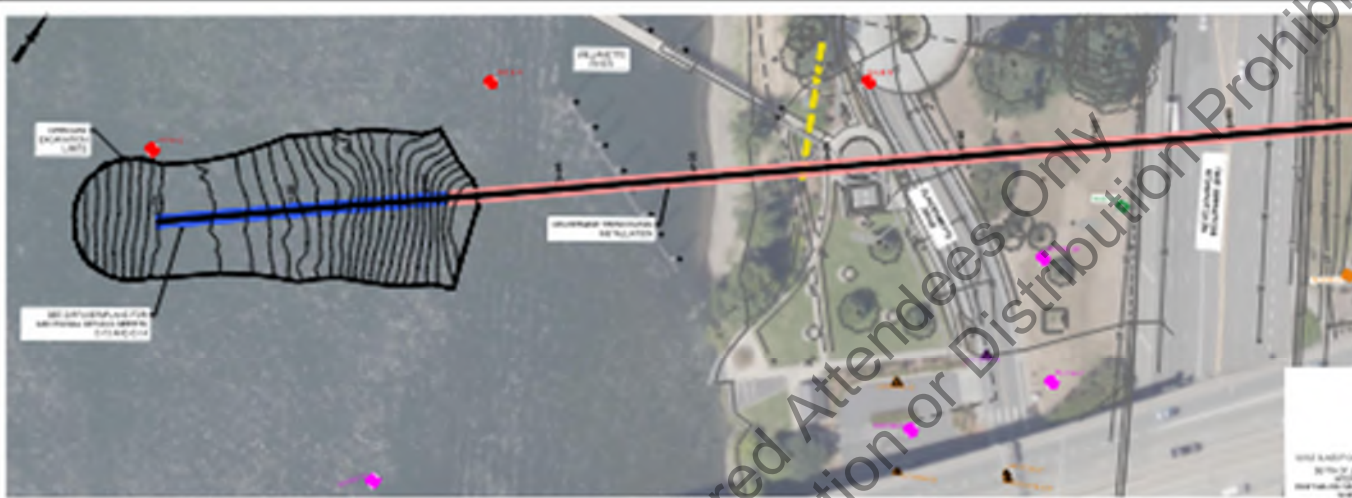
January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas









**AECOM**

PROJECT  
Tri-City WRRF Outfall

**MICHEL'S**  
TRENCHLESS, INC.

CONTRACT No. F032241

OWNER  
Clackamas County Water  
Environment Services  
5000 Riverway Road  
Clackamas, OR 97015  
www.clackamas.gov

DESIGN CONSULTANT  
AECOM  
1111 Market Street, Suite 400  
Portland, OR 97201  
www.aecom.com

DATE: 08/20/2018

PROJECT NUMBER: F032241-01

PROJECT NAME: Tri-City WRRF Outfall

PROJECT LOCATION: Clackamas County, Oregon

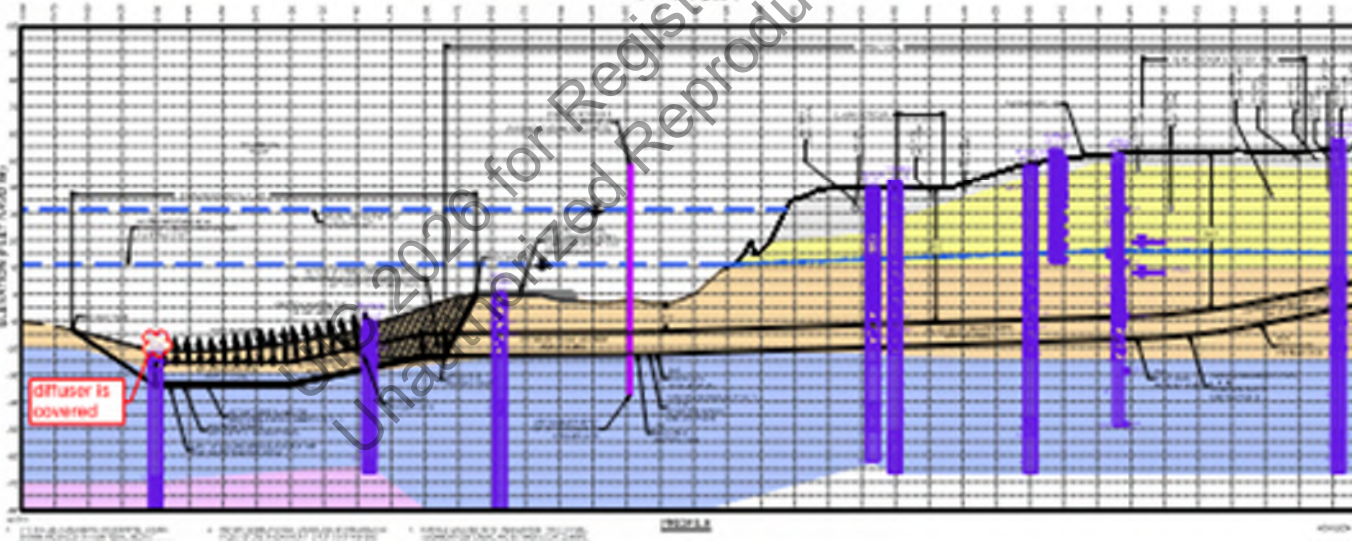
PROJECT DESCRIPTION: Design and construction of a trenchless sewer line.

PROJECT NUMBER: F032241-01

PROJECT NAME: Tri-City WRRF Outfall

PROJECT LOCATION: Clackamas County, Oregon

PROJECT DESCRIPTION: Design and construction of a trenchless sewer line.



Unauthorized Reproduction or Distribution Prohibited  
Copyright © 2018 AECOM  
All Rights Reserved

# MICROTUNNEL BORING MACHINE

## CLACK-A-MOLE



January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas

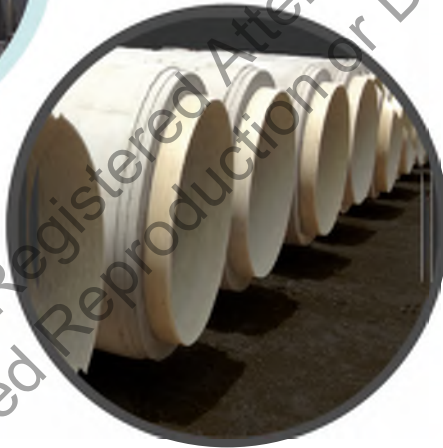




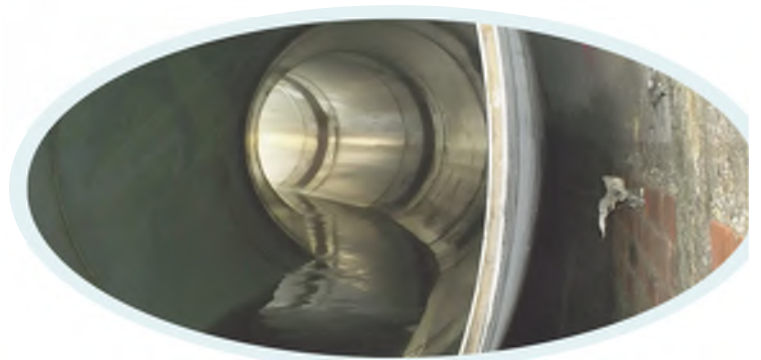
**Steel**



**FRP  
Jacking  
Pipe**



**Flowcrete**



**FRP Pipe**



**RCP**

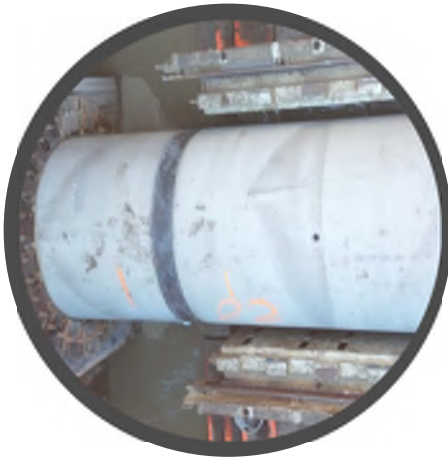
Unauthorized Reproduction or Distribution Prohibited  
2026 for Registered Attendees Only

January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas



# Two Pass vs Single Pass



**FRP Lined  
RCP**



UIC 2026 for Registered Attendees Only  
Unauthorized Reproduction or Distribution Prohibited

January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas



# FRP LINED CONCRETE JACKING PIPE

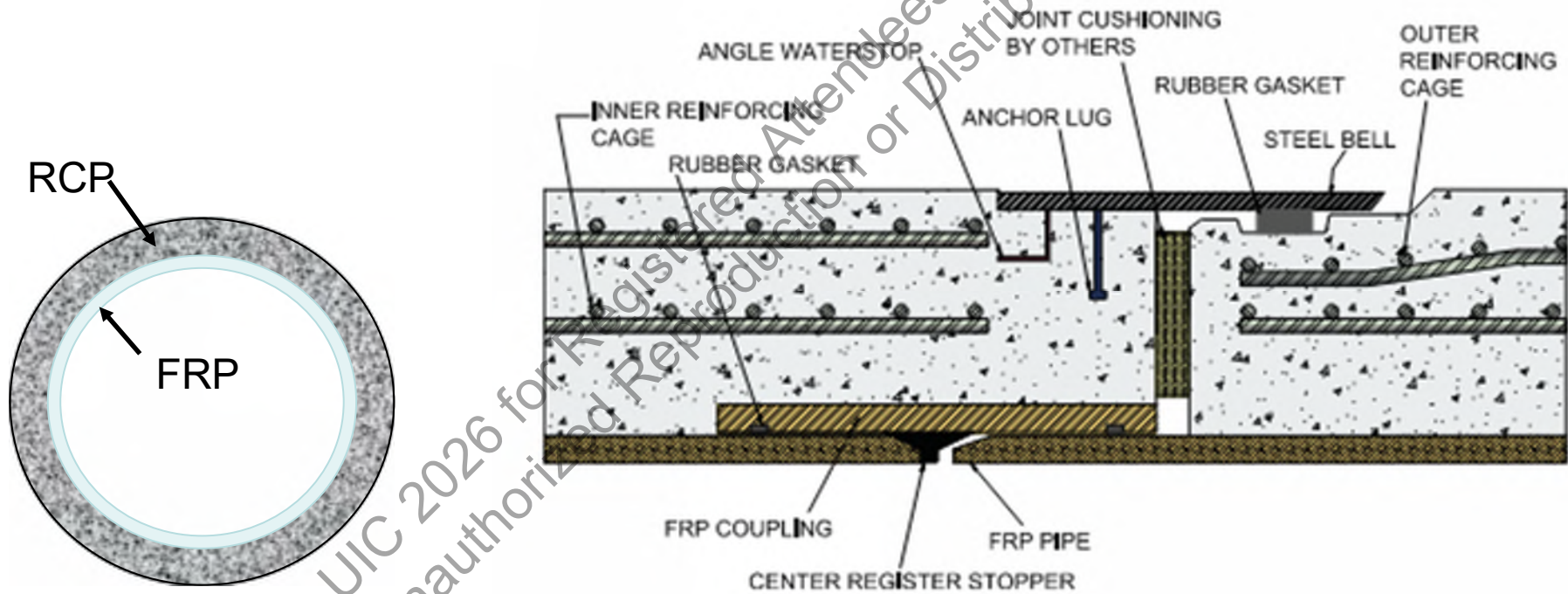


January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas



# FRP LINED CONCRETE PIPE



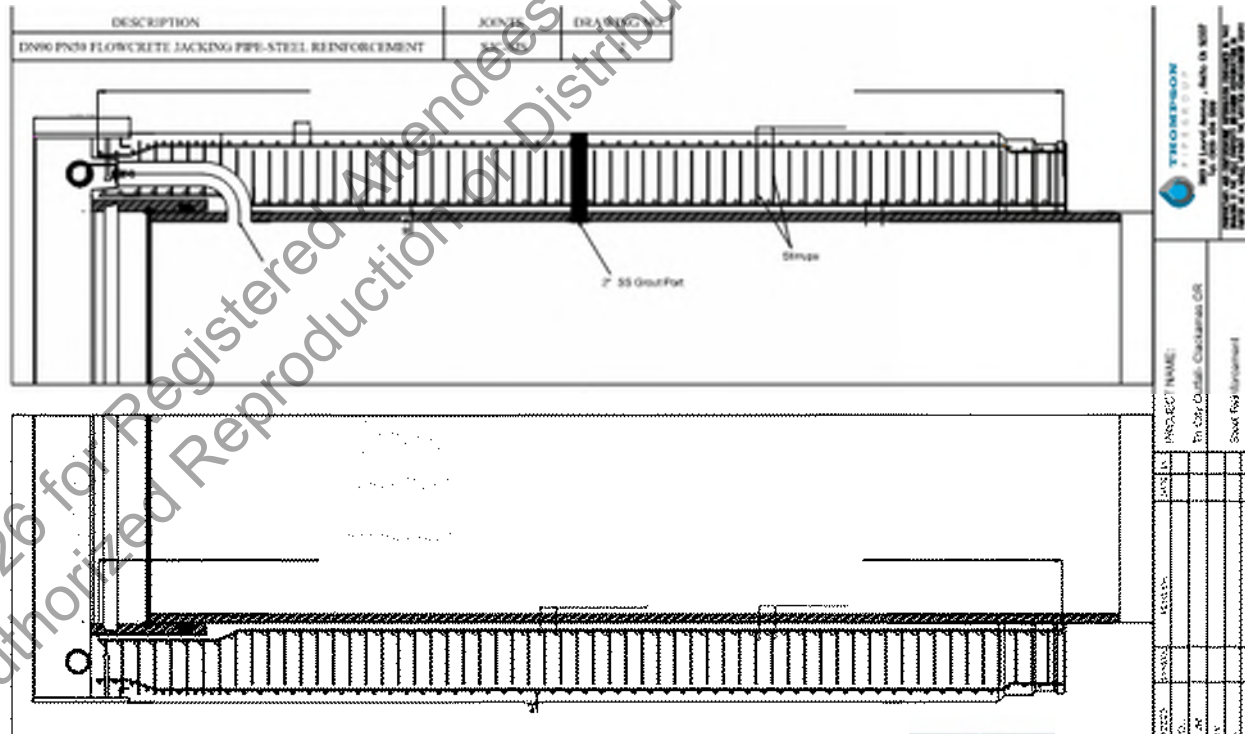
January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas



# Pipe Design

- C76 Class V
- Thick Wall
- 360 degree Stirrups
- ASCE 36-15 Tolerances
- Special Lead Pipe

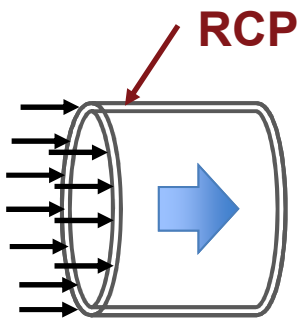


# JOINT PACKER

Wooden



Hydraulic Hose

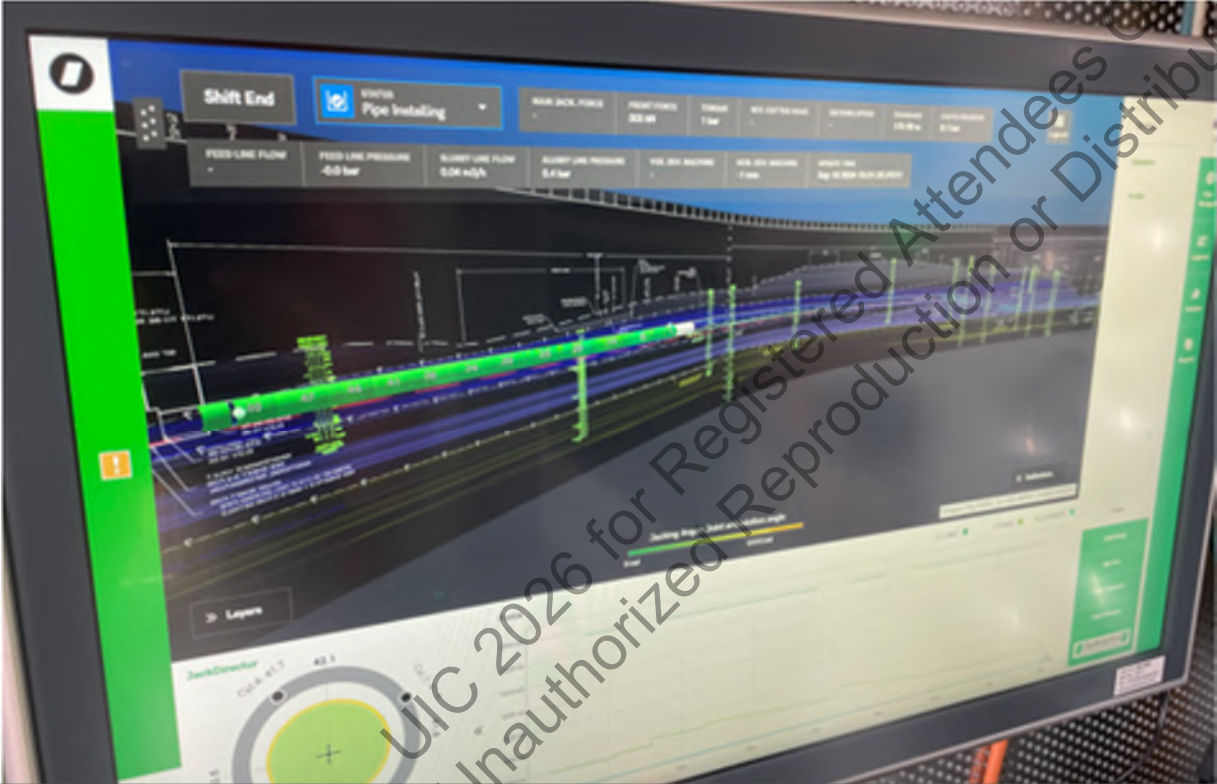


January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas

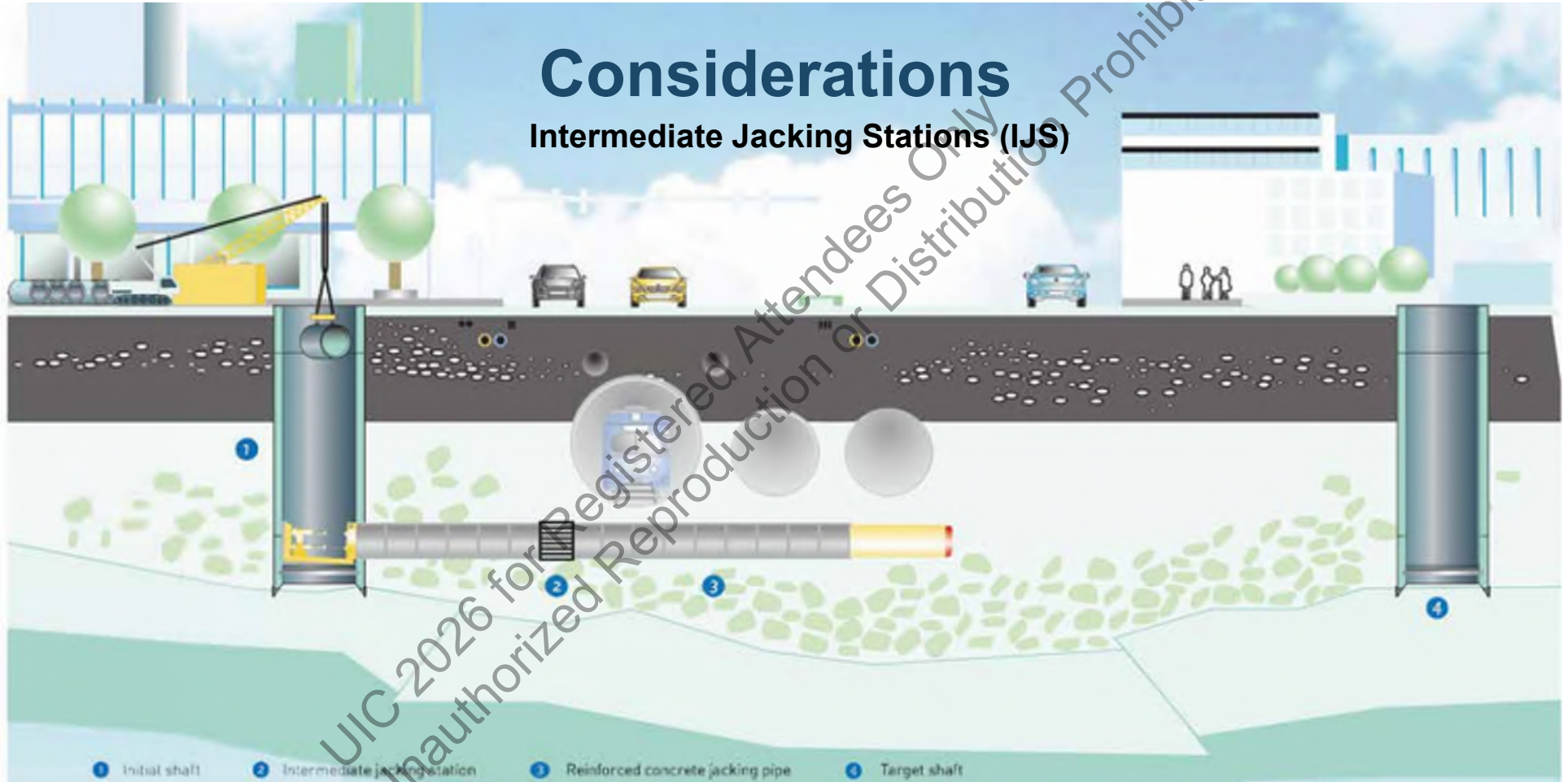


# Hydraulic Packer



# Considerations

## Intermediate Jacking Stations (IJS)



January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas





January 27 – 28, 2026  
Henry B. Gonzalez Convention Center, San Antonio, Texas



# Pipe Installation



January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas



# Project Execution



UIC 2026 for Registered Attendees Only  
Unauthorized Reproduction or Distribution Prohibited

January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas





UIG 2026 for Registered Attendees Only  
Unauthorized Reproduction or Distribution Prohibited

January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas

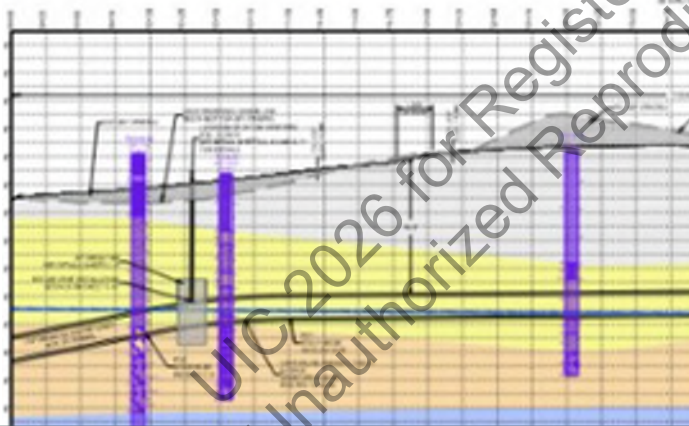




January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas





Unauthorized Reproduction or Distribution Prohibited

January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas





January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas





January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas



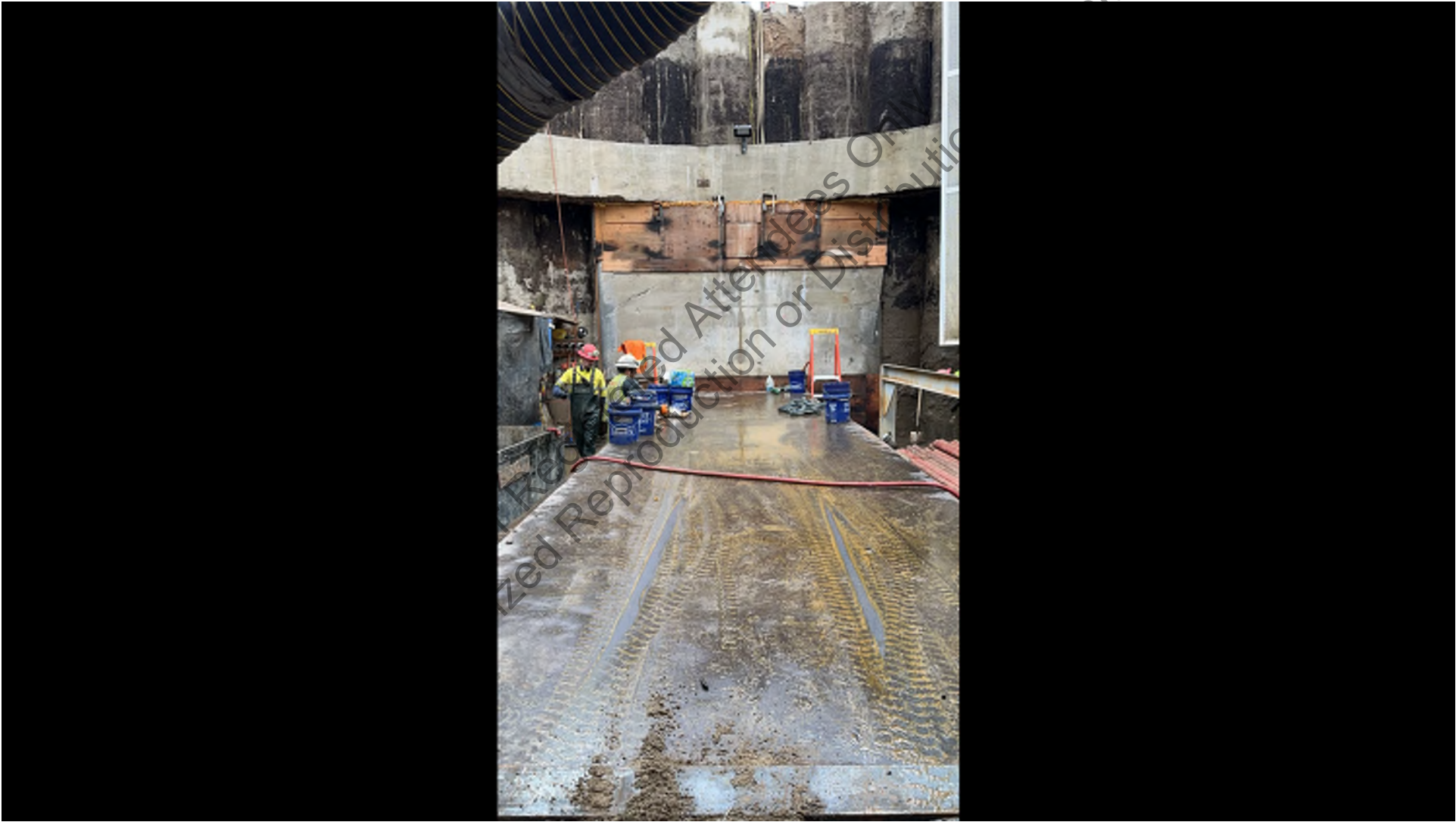
# Open Cut



January 27 – 28, 2026

Henry B. Gonzalez Convention Center, San Antonio, Texas





# Thank you!



# Jacobs

# MICHELS®

# AECOM



UIC 2026 for Registered Attendees Only  
Unauthorized Reproduction or Distribution Prohibited



Questions?

**Tucker Toelke**  
**920-539-8061**  
**ttoelke@michels.us**  
**Carl Pitzer**  
**971-227-3920**  
**cpitzer@thompsonpipegroup.com**