

# I-205 Improvements: Stafford Road to OR 213



- Please remember to mute your microphone.
- Use raise hand feature when you have questions.
- If you want to enter questions anonymously, please use Slido – [www.Slido.com](http://www.Slido.com) event code #i205drilledshaft.

**Abernethy Bridge Drilled Shaft Constructability  
Review Meeting - May 21, 2021**

**I-205 IMPROVEMENTS**  
*Stafford Road to OR 213*



# Agenda

- 9:00–9:20 am Introductions and Project Overview
- 9:20–9:40 am Drilled Shafts and Site Geology
- 9:40–11:40 am Key Topics For Discussion
  - Drilled Shaft Construction
  - Work Bridge and Site Access
  - Construction Sequence and Schedule
  - A+C+D Procurement and Contracting
- 11:40am–12:00pm General Q&A and Feedback

# Introductions

## ODOT

Mandy Putney, ODOT Project Director

**Allen Hendy, ODOT Resident Engineer**

Susan Ortiz, ODOT Senior Geotechnical Engineer

Thomas Braibish, ODOT Senior Geotechnical Engineer

**Christopher Aguon, ODOT Resident Engineer**

Tim Smith, ODOT Assistant Resident Engineer

Ellen Sweeney, ODOT Meeting Moderator

Roxane Glynn, ODOT Meeting Facilitator

## Consultant Team

Karen Tatman, Quincy Engineering, Project Design Lead

Jeff Olson, Quincy Engineering, Project Bridge Lead

**Mikal Mitchell, HDR Engineering, Abernethy Substructure Lead**

Jed Bingle, HDR Engineering, Drilled Shaft Structural Design Lead

Park Piao, Shannon & Wilson, Geotechnical Lead

**Kathryn Petek, Shannon & Wilson, Abernethy Geotechnical Lead**

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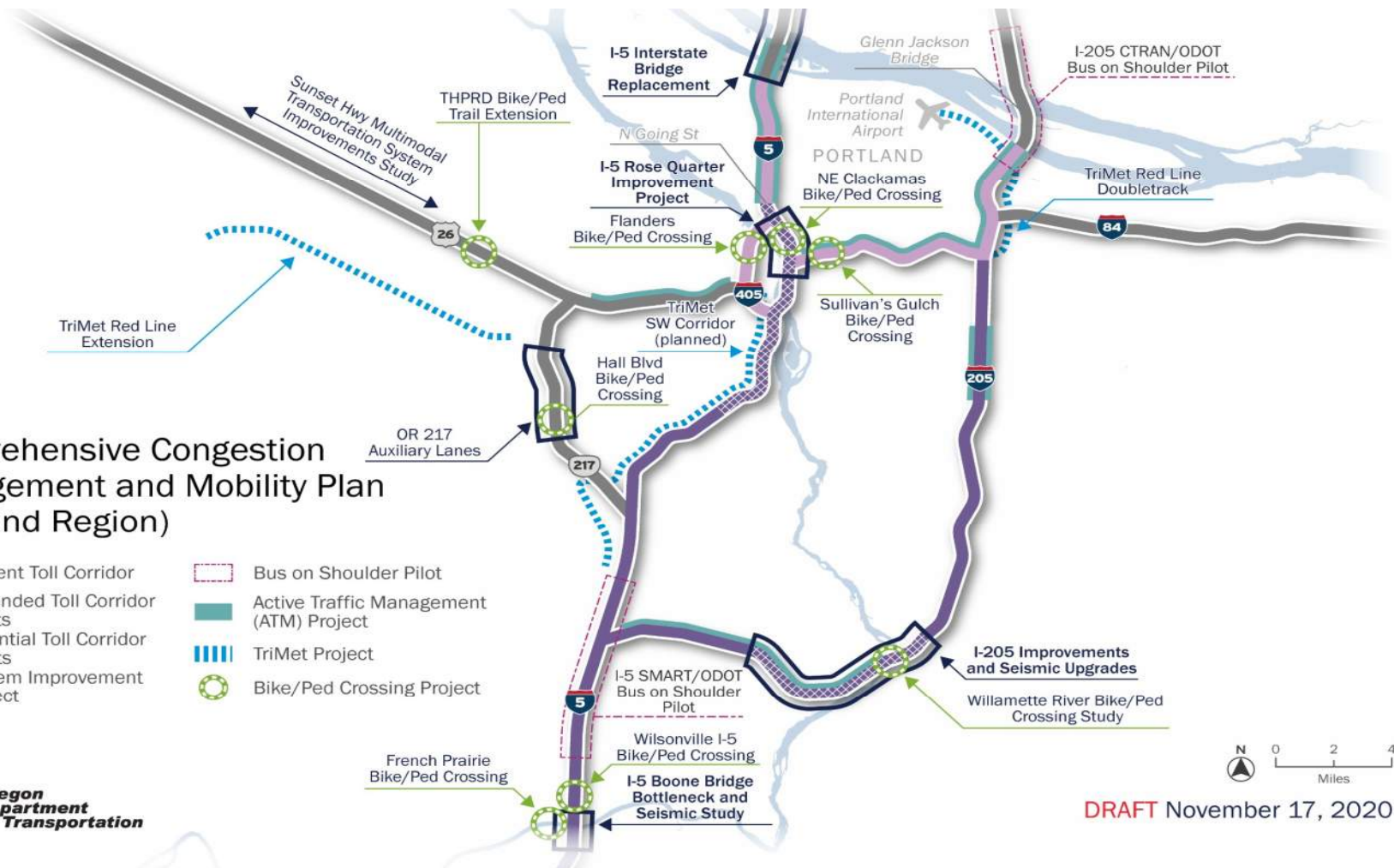




# Comprehensive Congestion Management and Mobility Plan

## Comprehensive Congestion Management and Mobility Plan (Portland Region)

-  Current Toll Corridor
-  Expanded Toll Corridor Limits
-  Potential Toll Corridor Limits
-  System Improvement Project
-  Bus on Shoulder Pilot
-  Active Traffic Management (ATM) Project
-  TriMet Project
-  Bike/Ped Crossing Project



DRAFT November 17, 2020

# I-205 Program: Issues and Purpose

***A safer, less congested I-205 will provide access to work, health and play, and support a healthy Oregon economy.***

## THE ISSUES

- The two-lane section of I-205 between the Abernethy Bridge and the Stafford Road interchange creates a bottleneck that causes congestion and crashes, creating delays for travelers and freight.
- Closely spaced on-ramps on I-205 northbound on Abernethy Bridge contribute to safety and travel-time predictability issues.
- The Abernethy Bridge and eight bridge sites in the project area are seismically vulnerable in the event of a major earthquake.

## The Purpose

This project will address congestion, traveler safety, and seismic resiliency on seven miles of I-205 between Stafford Road and OR 213. More than 100,000 vehicles use this section of I-205 each day and drivers experience 6.75 hours of congestion daily. This corridor is vital to our region.





# I-205 Program: Phase 1 & 2 Overview

## Phase 2: 10<sup>th</sup> Street - Stafford

## Phase 1: OR213 – 10<sup>th</sup> Street



Phase 1 - advertise early December 2021

Phase 2 - start construction early 2025

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# Phase 1 Sub-Phasing – 4 Packages



1A - Abernethy Bridge, OR43 and OR99E – bridge and highway construction, RAB construction, stormwater, retaining walls, signing, striping, sign structures, illumination

1B - OR99E to OR213 - Main St Bridge, NB Aux, and Sound wall - bridge and highway construction, sound wall, stormwater, signing, striping, sign structures, illumination

1C - 10<sup>th</sup> St to Sunset Bridge - Broadway Bridge Demo, West A Bridge, Sunset Bridge, Rock Cut, Highway Widening - bridge and highway construction, rock blasting, stormwater, signing, striping, sign structures, illumination

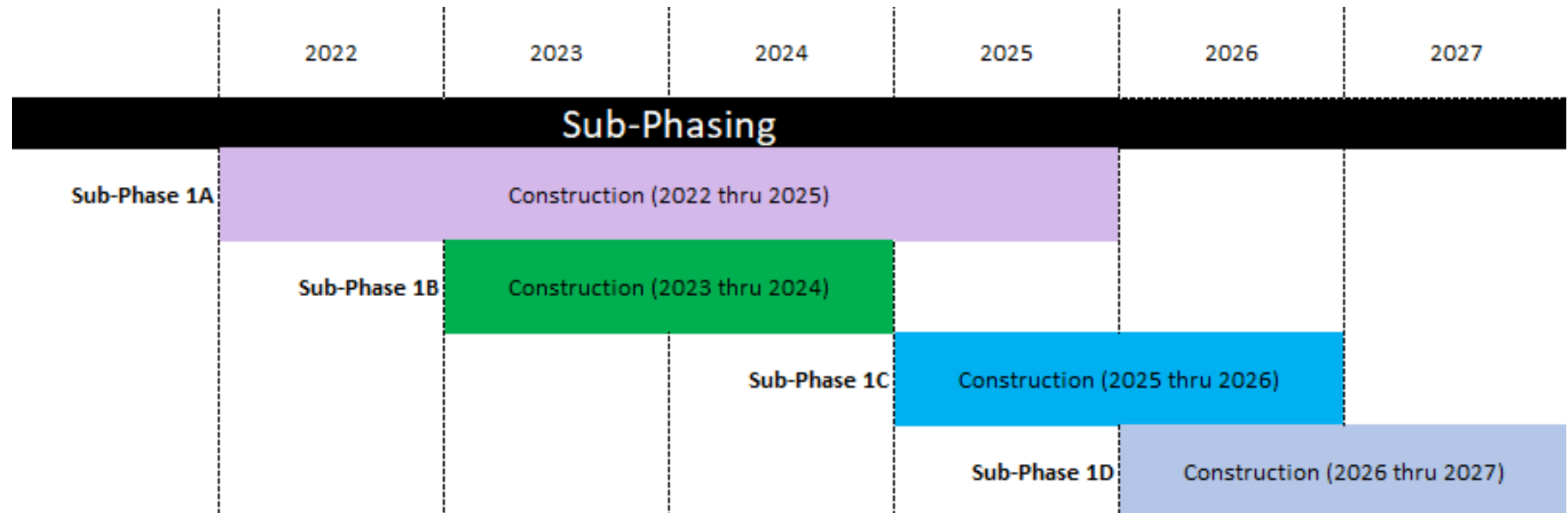
1D – OR43 to 10<sup>th</sup> Street - Highway Widening, 10<sup>th</sup> Street Bridges & CRCP overlay: bridge and highway construction, stormwater, signing, striping, sign structures, illumination

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# Phase 1 Sub-Phasing Schedule – 4 Packages



## Schedule Critical Item:

In-water work windows Jul 1 – Oct 31, 2022 (future year extensions pending)

OR43 and OR99 construction complete (1B) prior to the bridge slide (1A)

Pier 3 Ground improvements to be completed prior to drilled shafts (1A)

Abernethy super structure (1A) completed prior to rock blasting, West A & Broadway Demo (1C)

West A and Sunset Bridge (1C) completed prior to CRCP overlay (1D)

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# Phase 1A - Limits and Elements





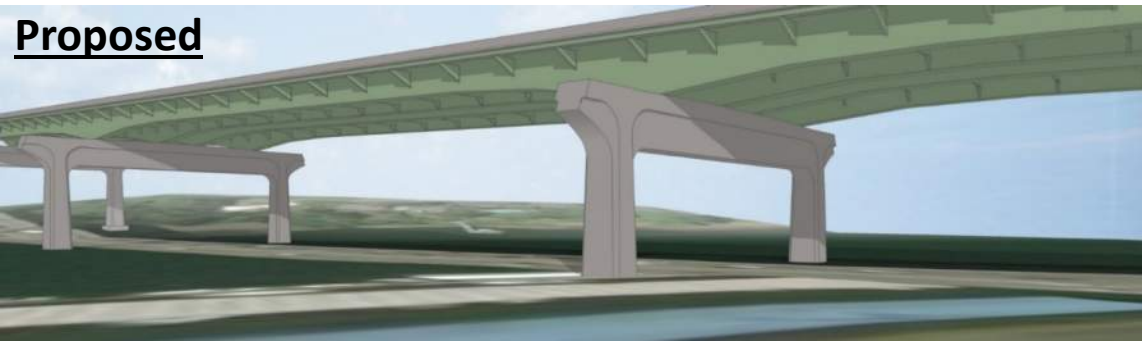
# Abernethy Bridge: Overview



Existing

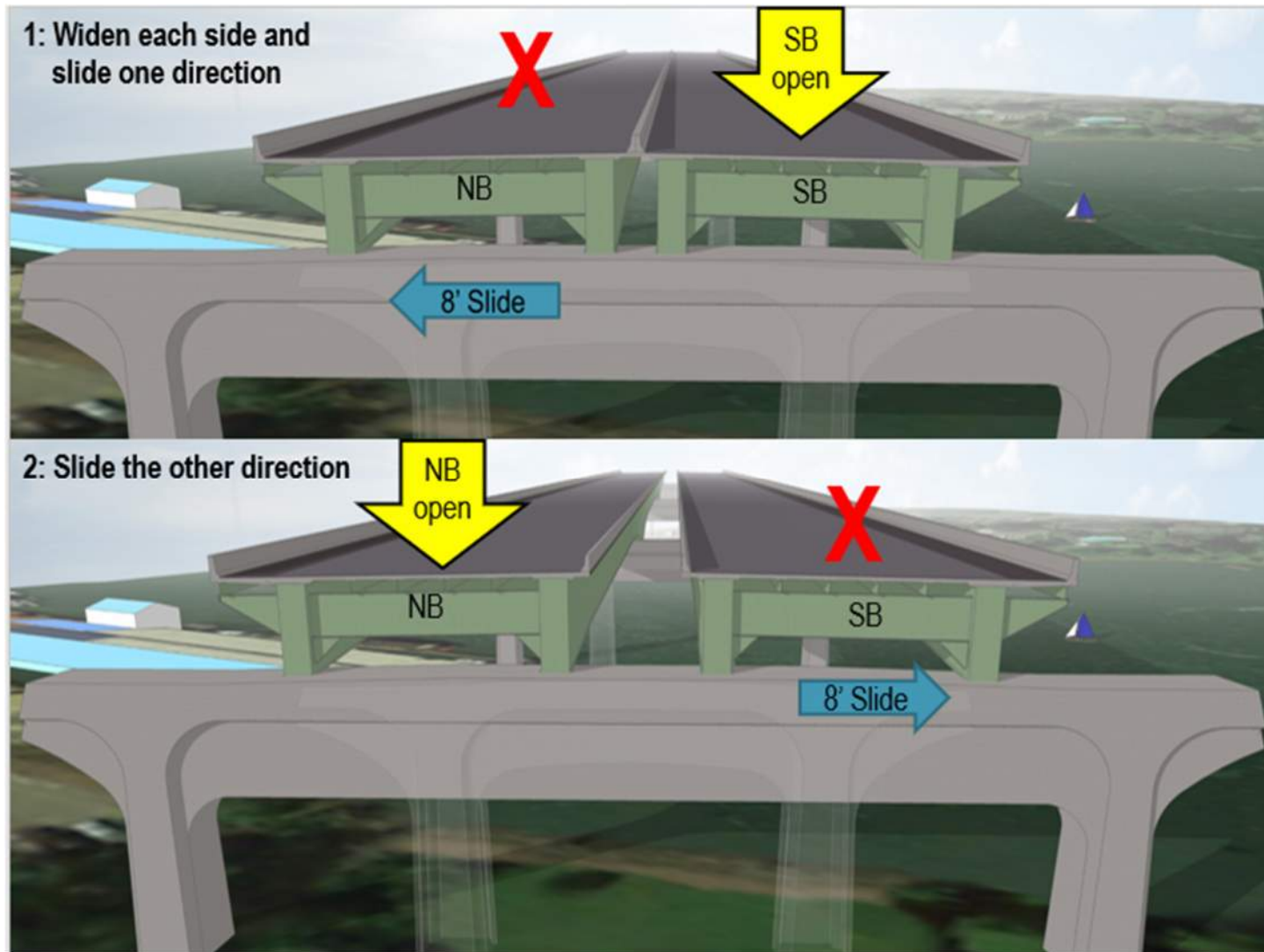


Proposed





# Abernethy Bridge: Overview

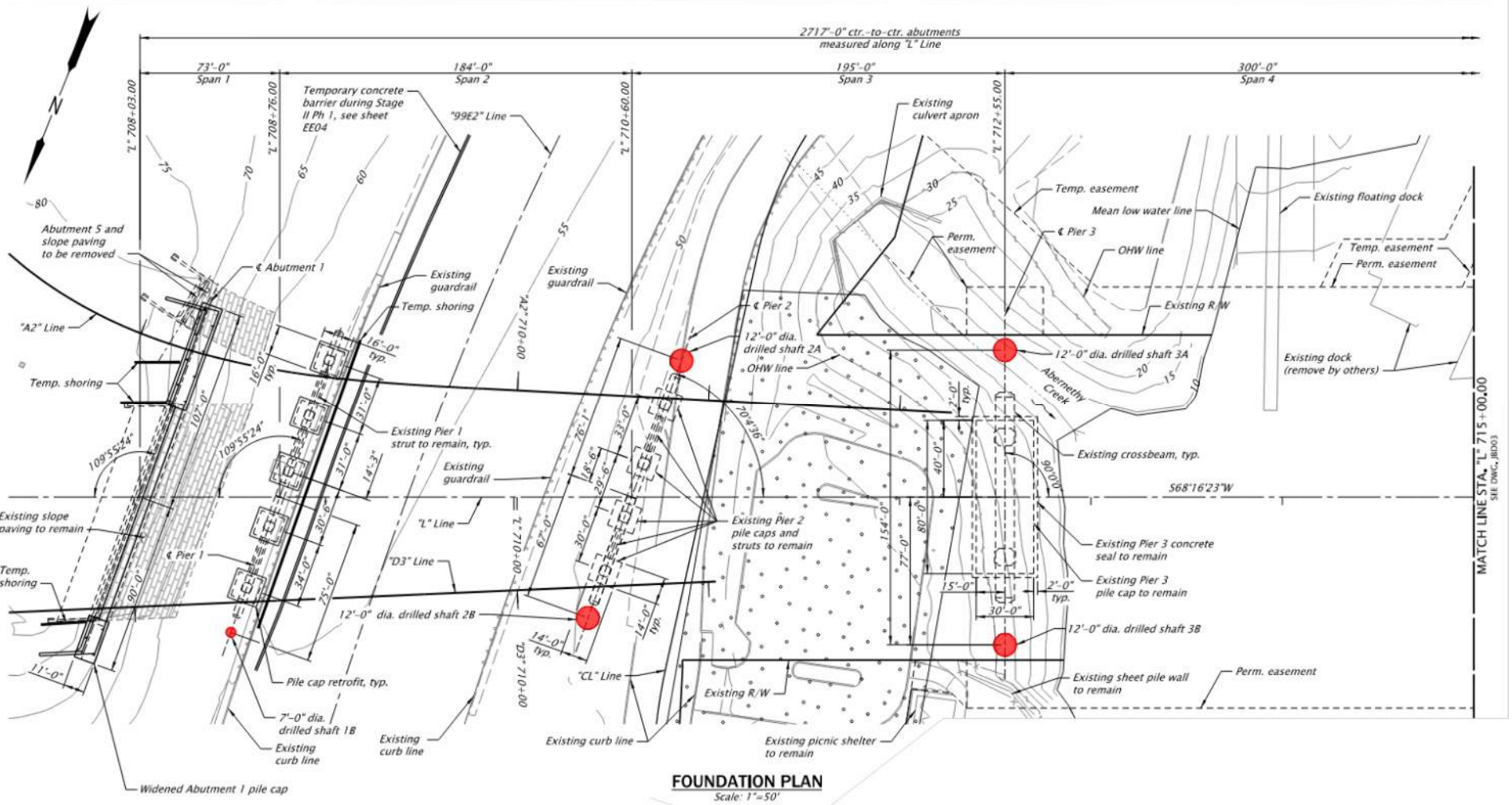


# Agenda

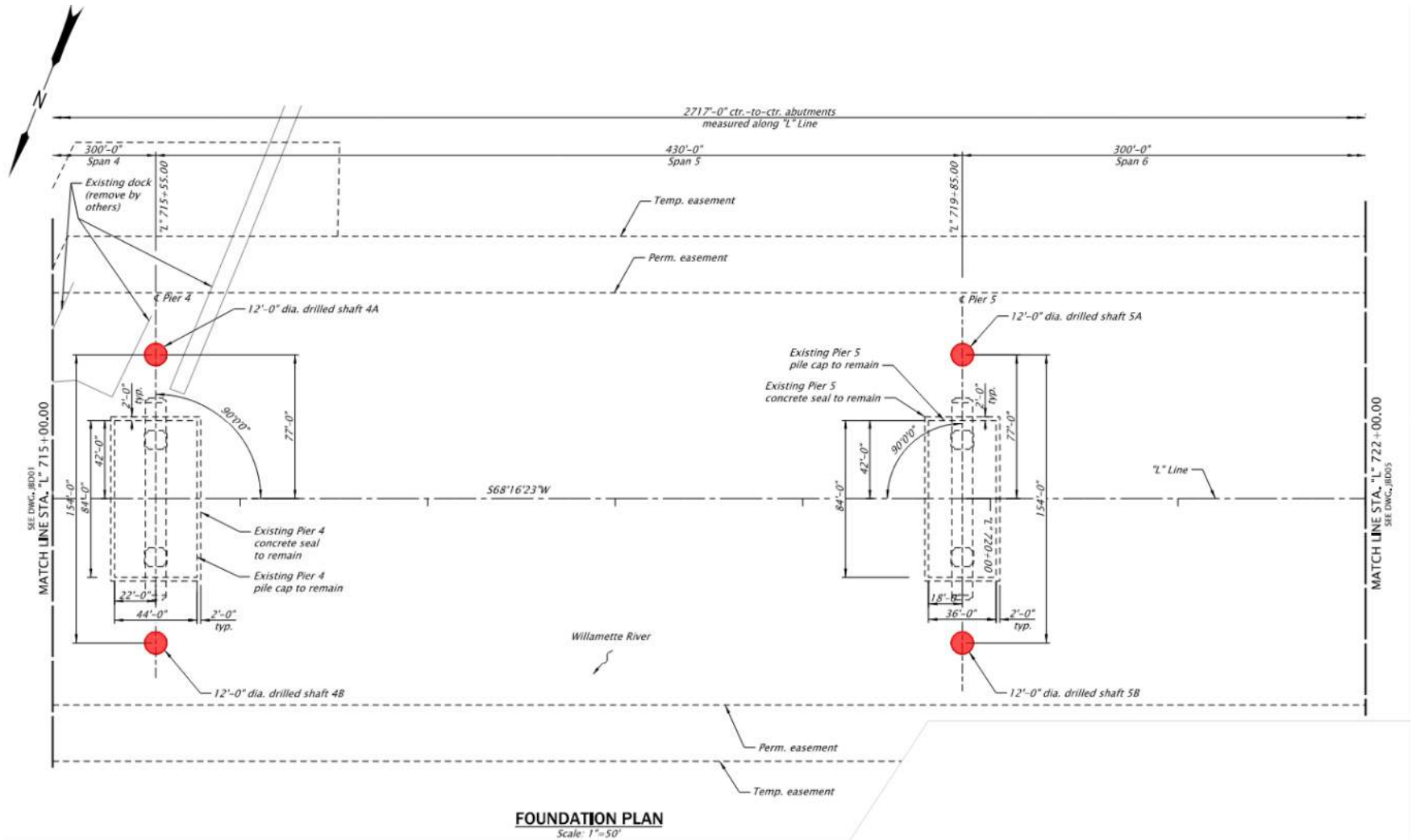
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# Abernethy Bridge: Foundations

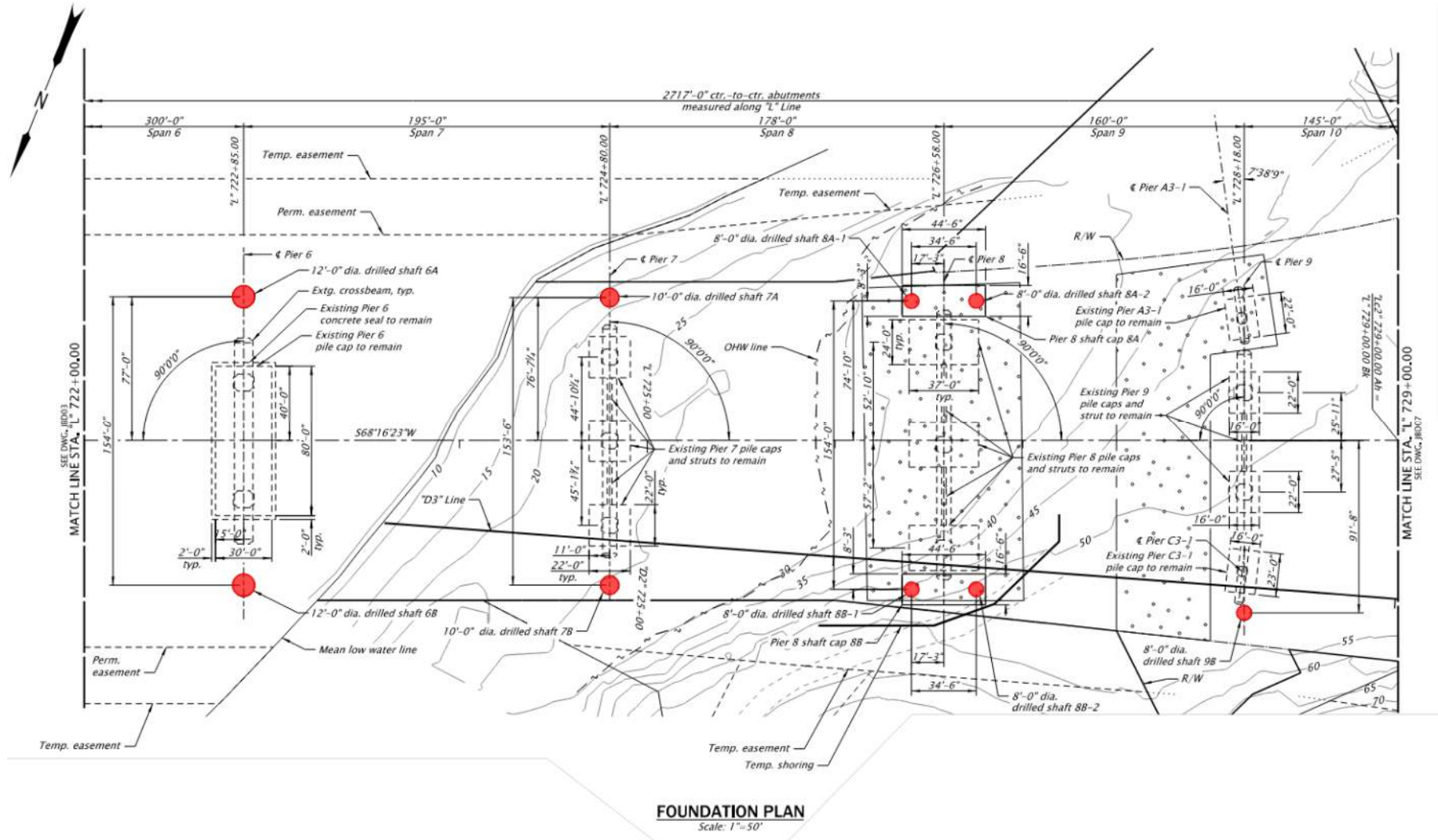


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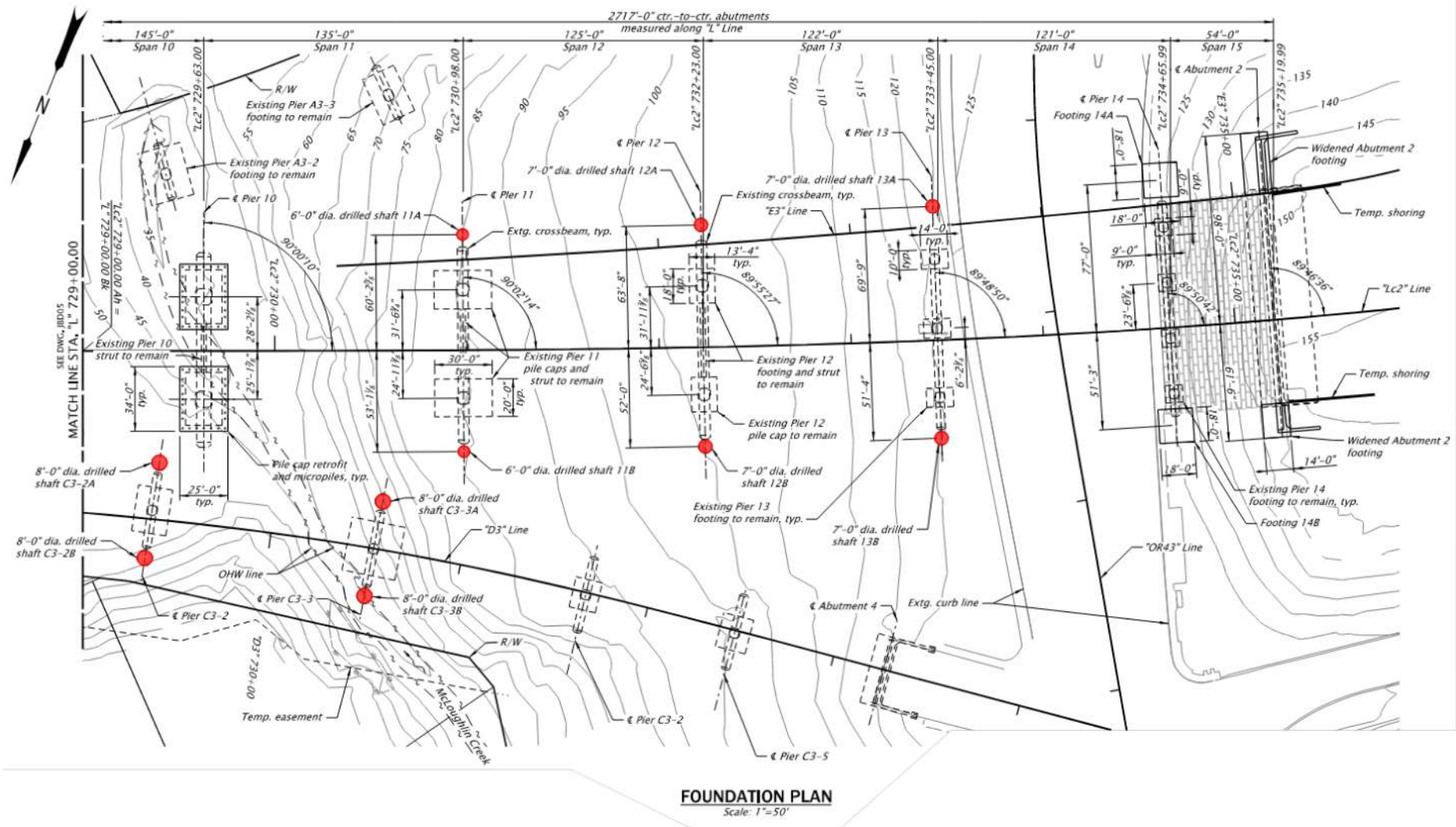




# Abernethy Bridge: Foundations



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# Abernethy Bridge: Drilled Shafts

12'-0" dia. shafts – 10 total – Approx. 1790 feet total

10'-0" dia. shafts – 2 total – Approx. 270 feet total

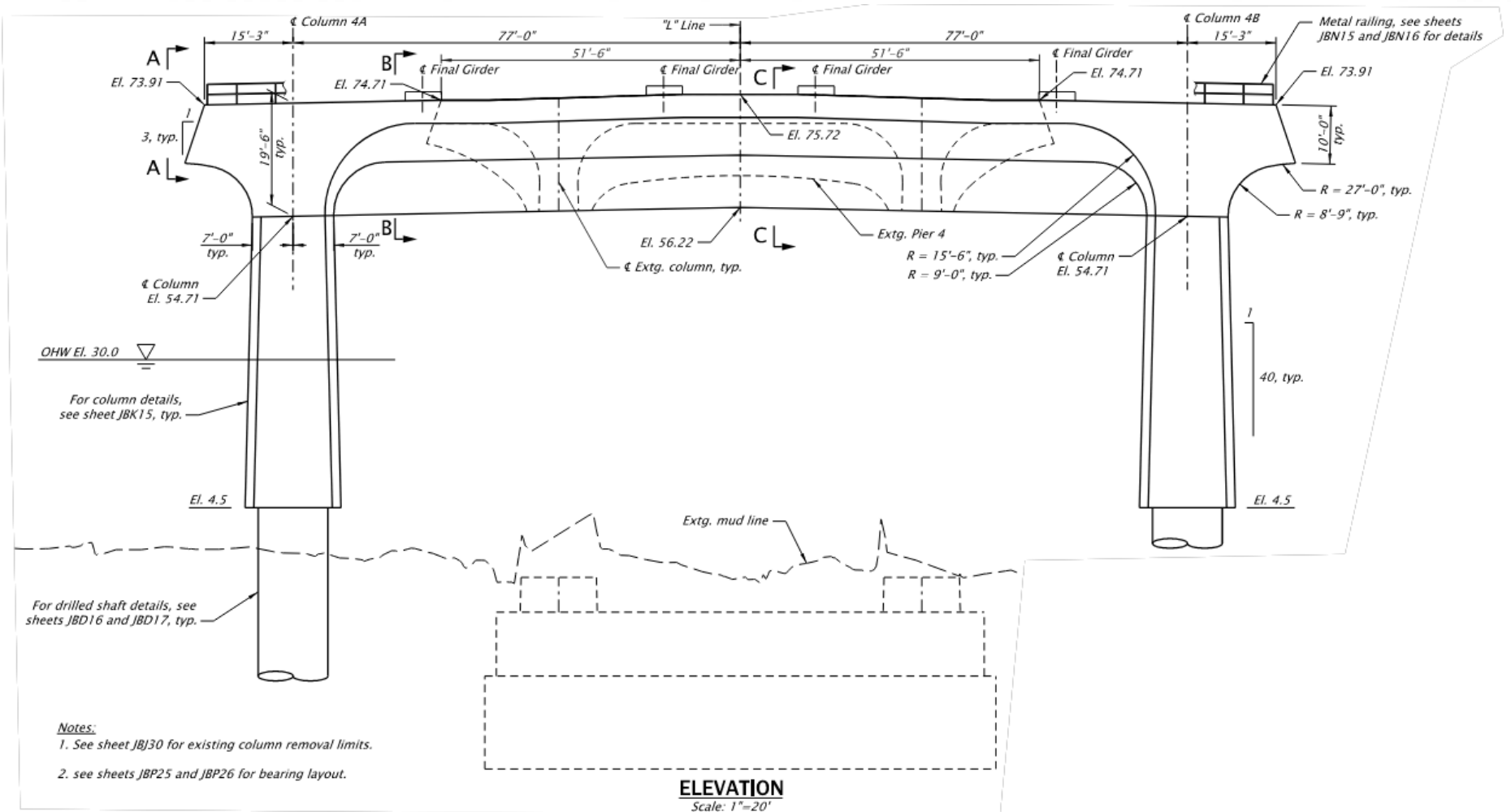
8'-0" dia. shafts – 9 total – Approx. 1040 feet total

7'-0" dia. shafts – 5 total – Approx. 410 feet total

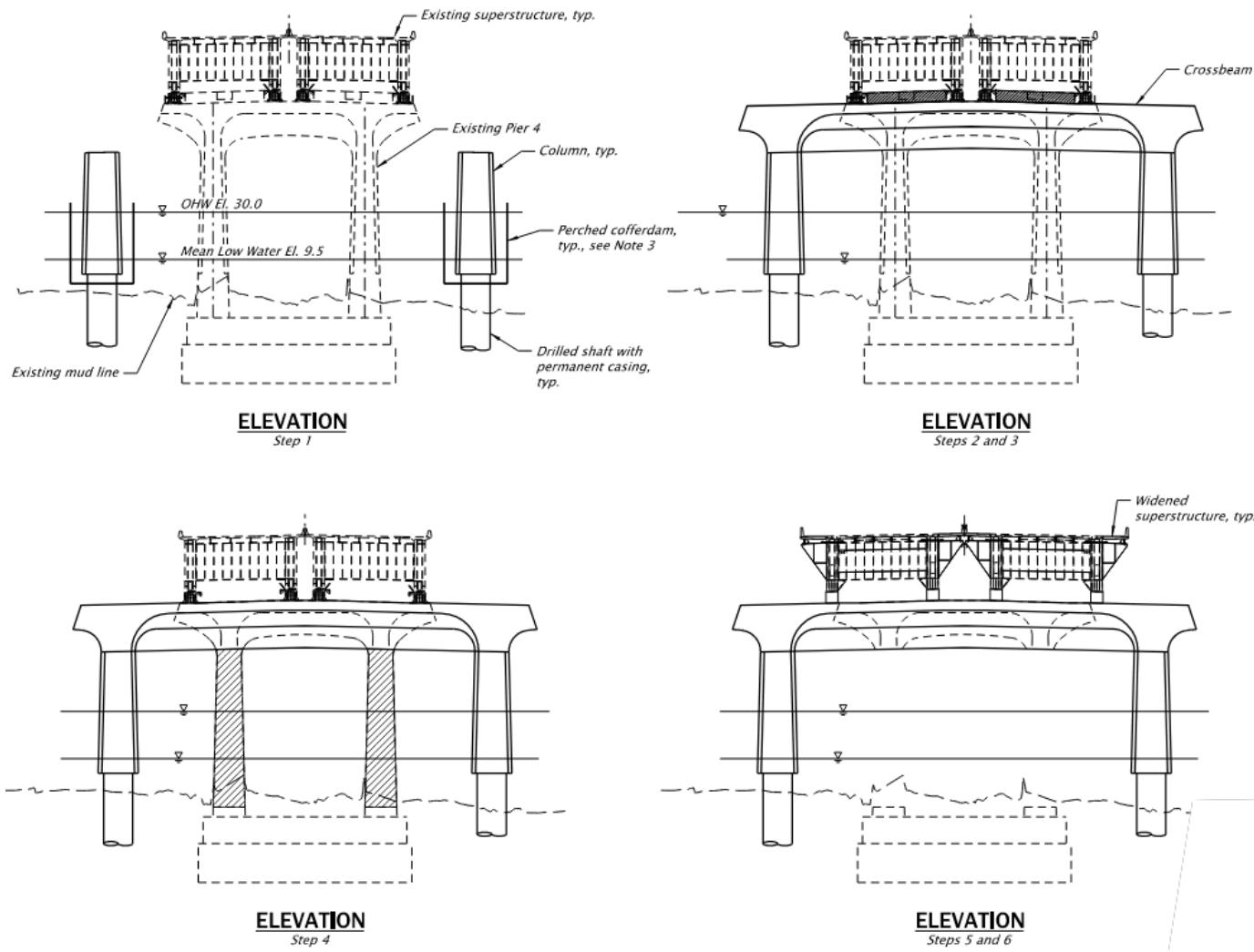
6'-0" dia. shafts – 2 total – Approx. 100 feet total



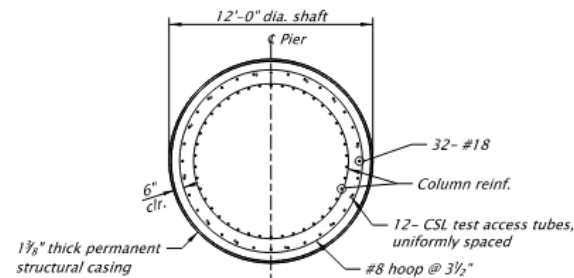
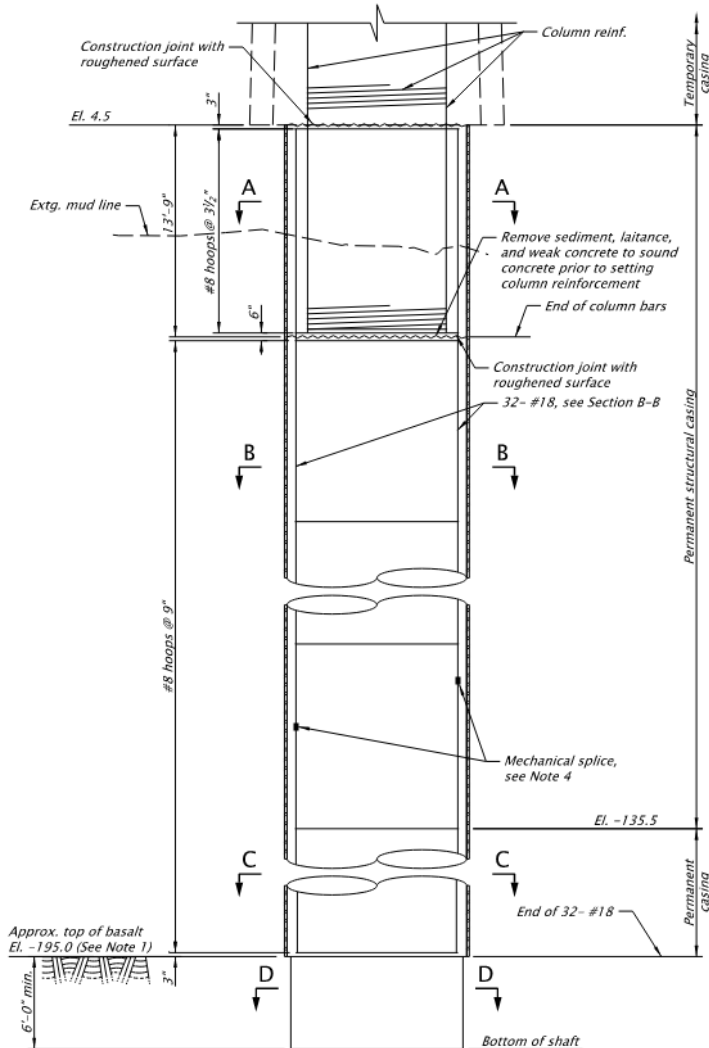
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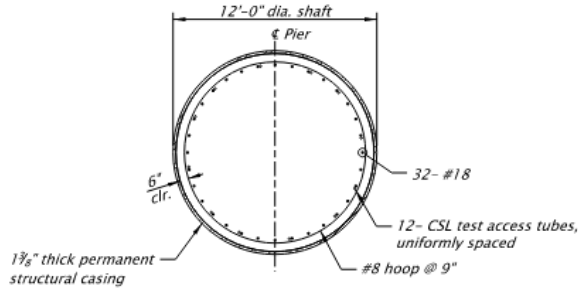


# Abernethy Bridge: Drilled Shafts



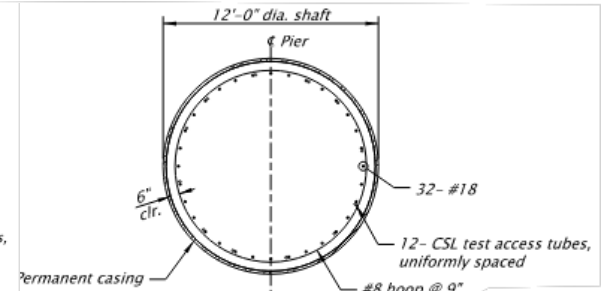
**SECTION A-A**

Scale: 1/8"=1'-0"



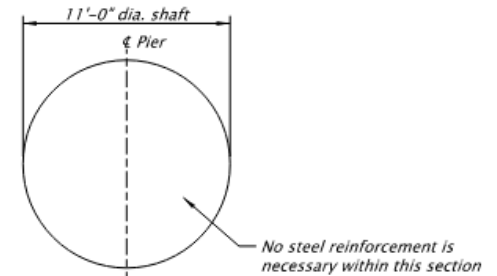
**SECTION B-B**

Scale: 1/8"=1'-0"



**SECTION C-C**

Scale: 1/8"=1'-0"

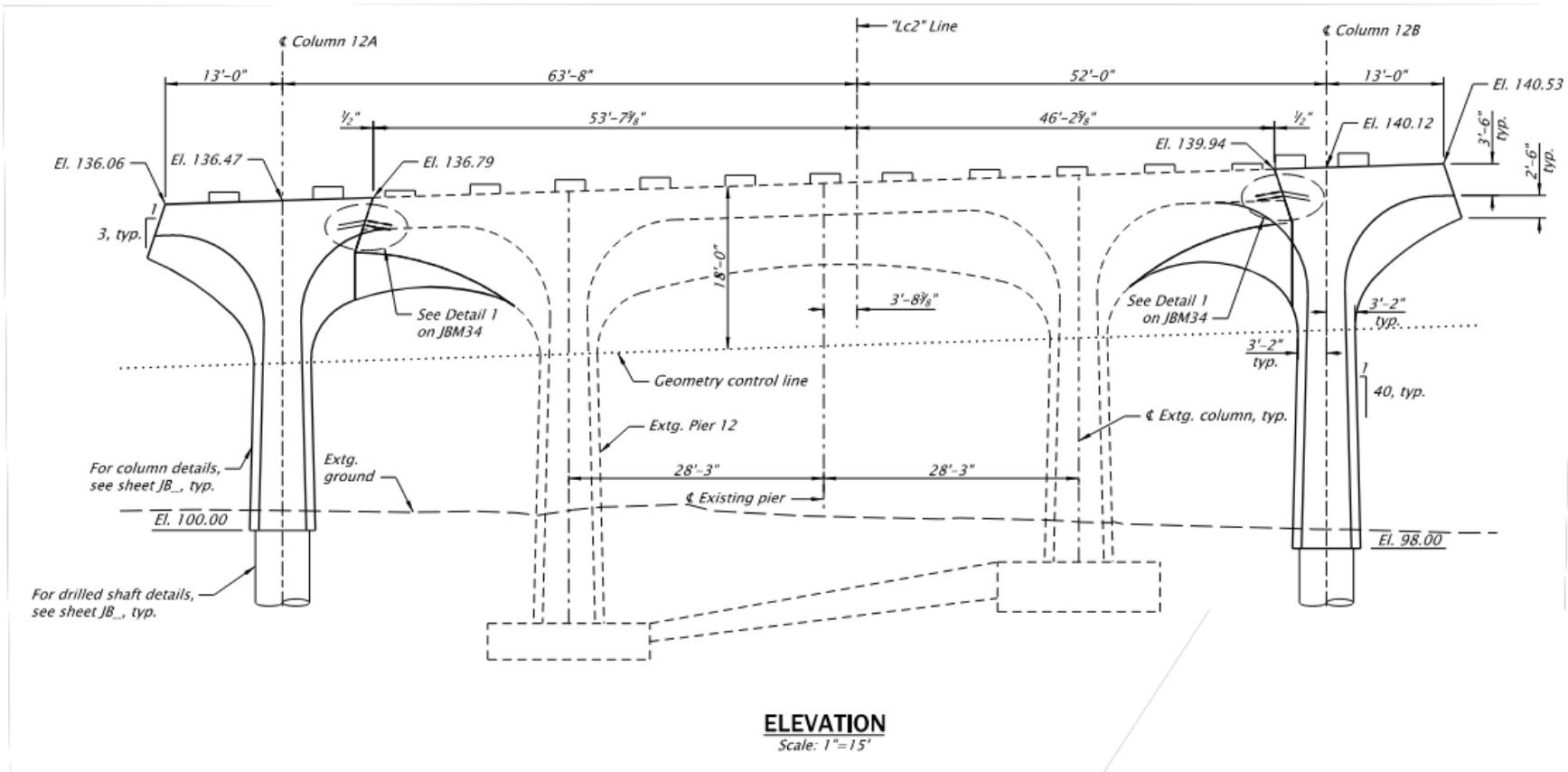


**SECTION D-D**

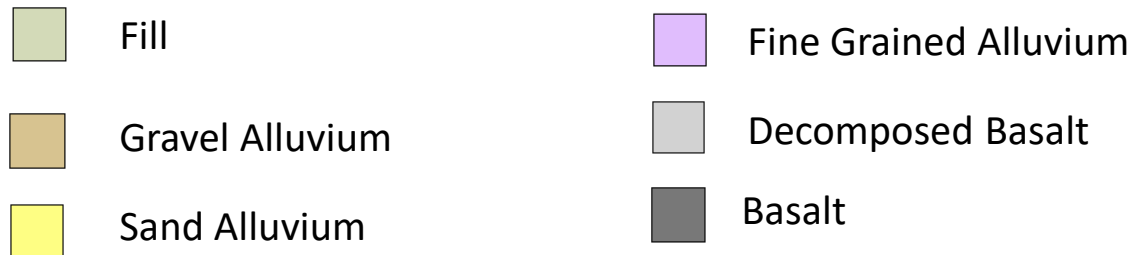
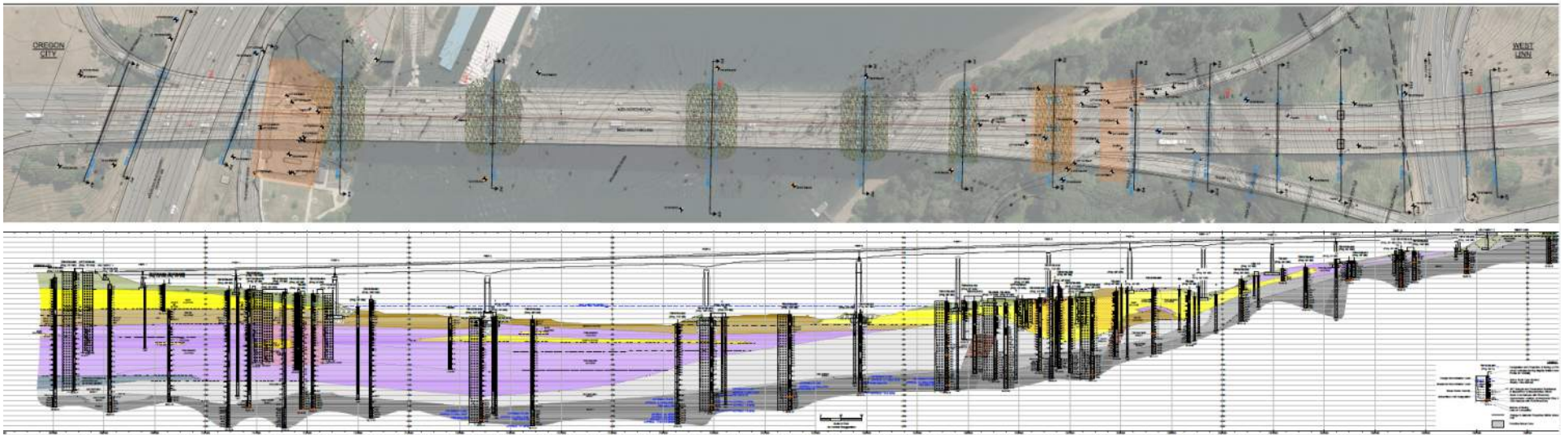
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# Abernethy Bridge: Drilled Shafts

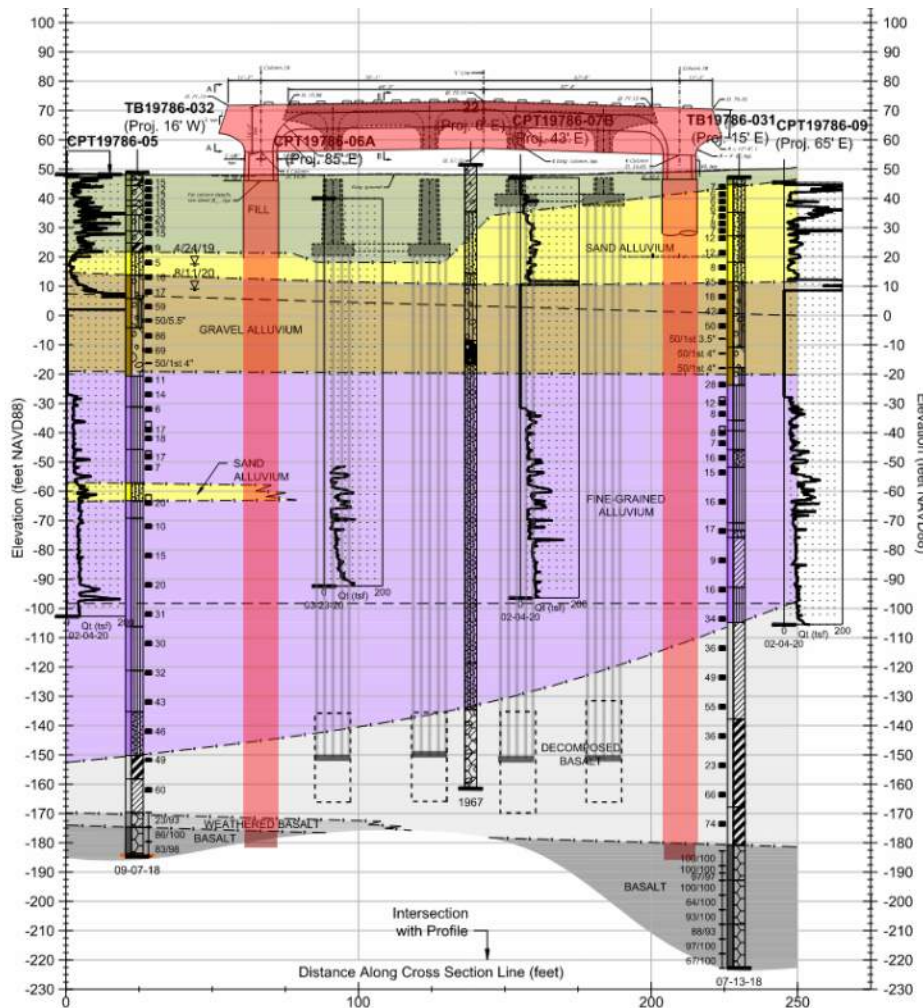


# Abernethy Bridge: Site Geology





# Abernethy Bridge: Site Geology

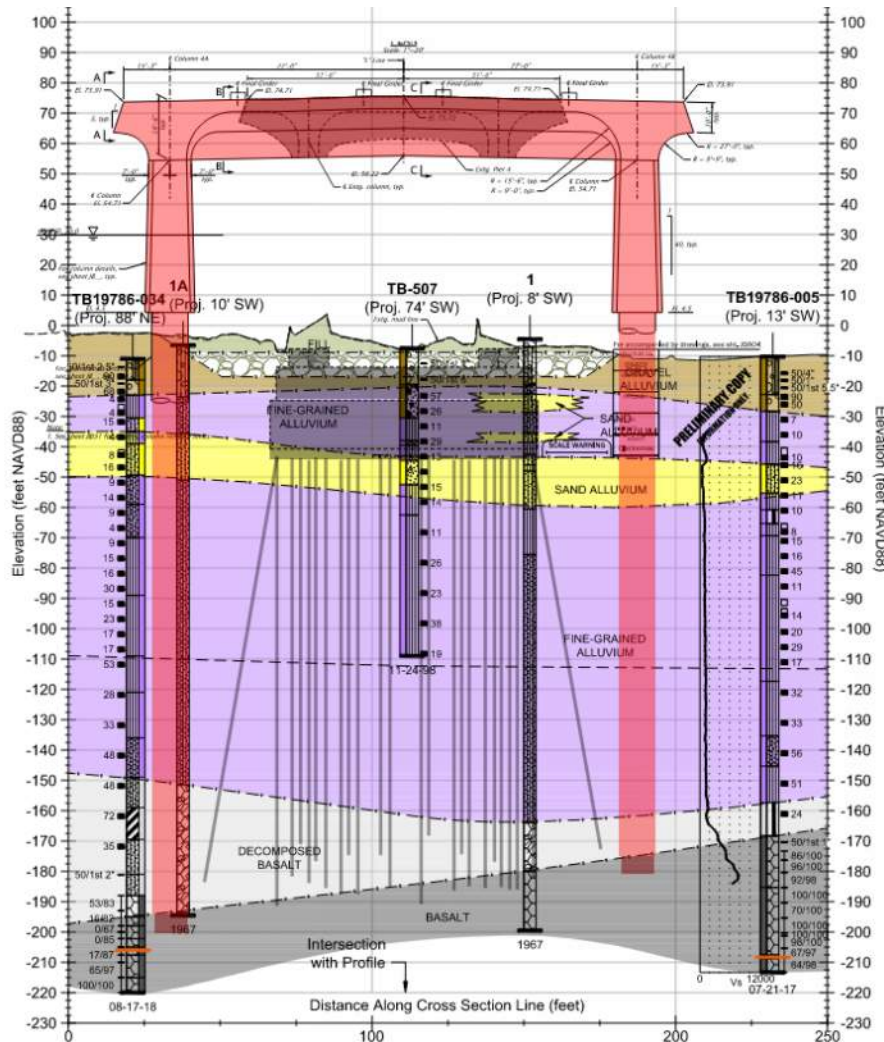


## PIER 2

Shafts: 12-ft-diameter, 230 ft long

- Fill
- Gravel Alluvium
- Sand Alluvium
- Fine Grained Alluvium
- Decomposed Basalt
- Basalt

# Abernethy Bridge: Site Geology



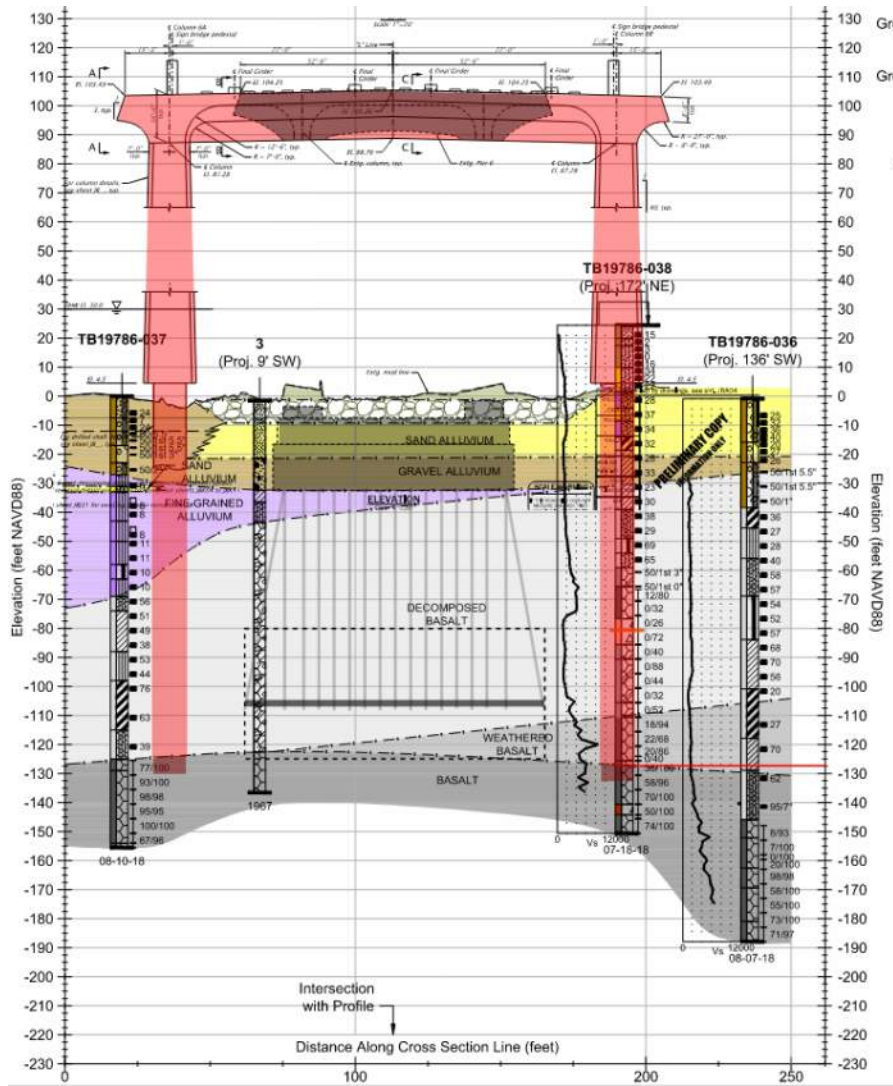
## PIER 4

Shafts: 12-ft-diameter, 180 to 205 ft long

-  Fill
-  Gravel Alluvium
-  Sand Alluvium
-  Fine Grained Alluvium
-  Decomposed Basalt
-  Basalt



# Abernethy Bridge: Site Geology



## PIER 6

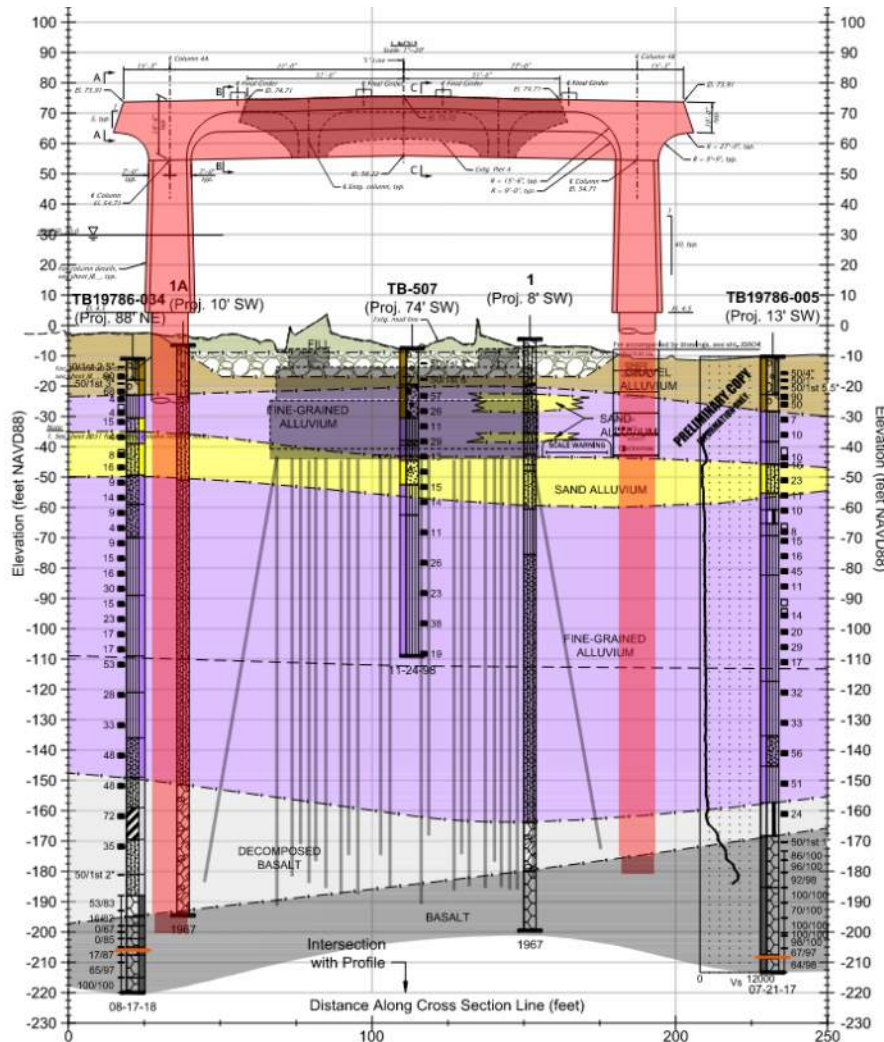
Shafts: 12-ft-diameter, 130 ft long

- Fill
- Gravel Alluvium
- Sand Alluvium
- Fine Grained Alluvium
- Decomposed Basalt
- Basalt

# Agenda

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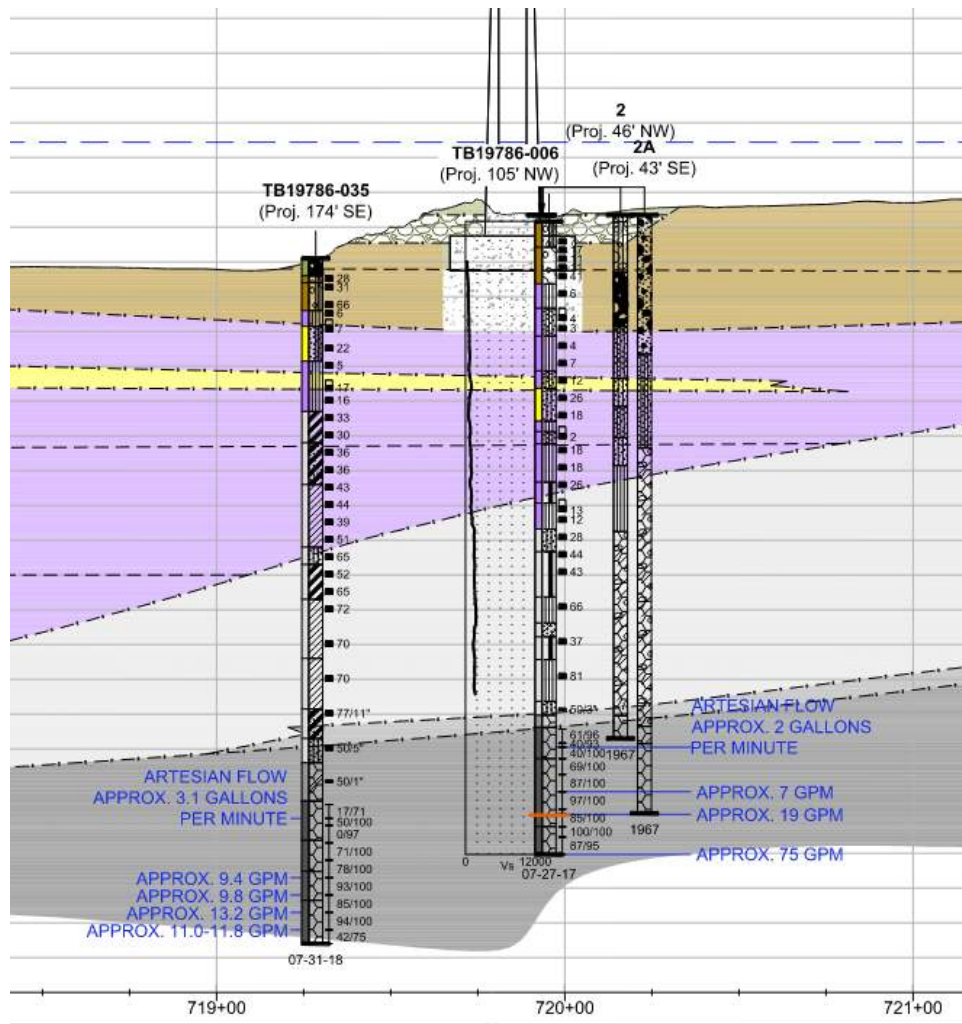
# Drilled Shaft Construction



- The Agency anticipates this work will require an oscillator to advance the larger diameter casing to the required depths. Can non-oscillator methods be used to advance the larger diameter casing to the required depths?
- What conditions/considerations will dictate drilled shaft construction means and methods?



# Drilled Shaft Construction



- What challenges do you foresee with constructing the drilled shafts given the anticipated artesian conditions?

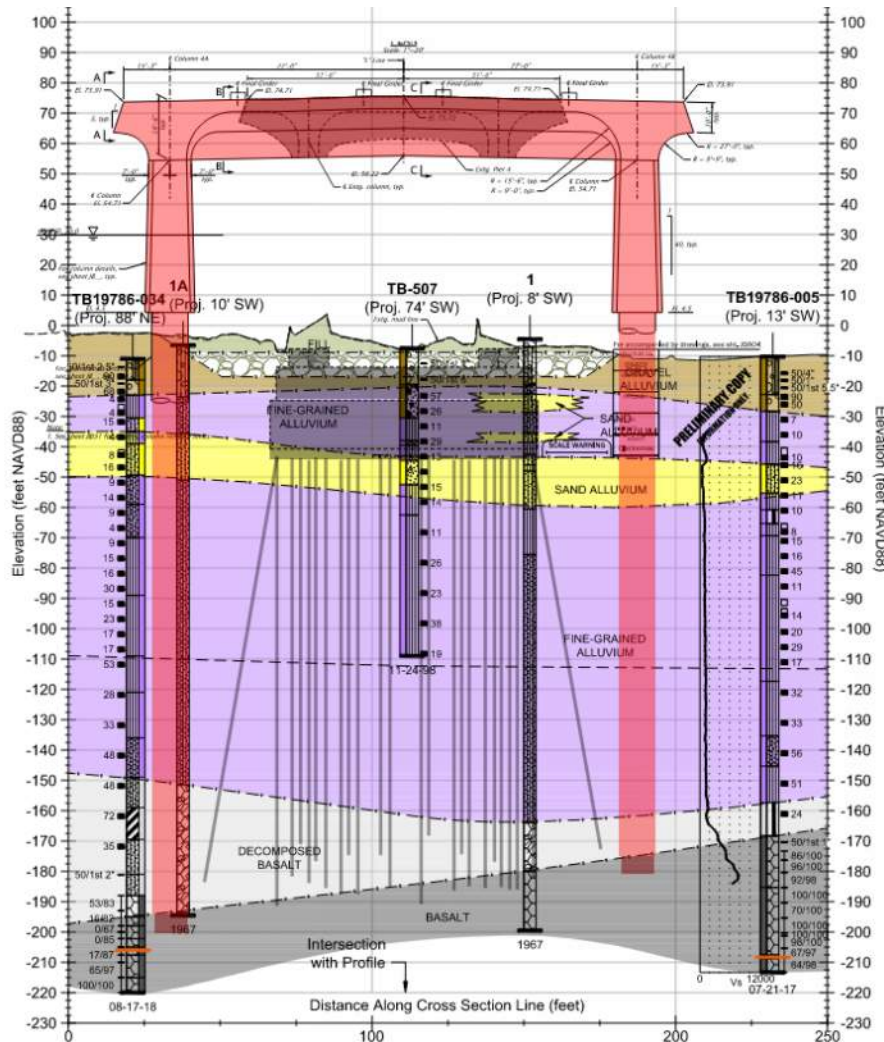
Artesian Head Elev.: ~+30 feet

Mudline/GS Elev.: -20 to +0 feet

River Elevation: +14 feet

Work Platform Elev.: +30 feet

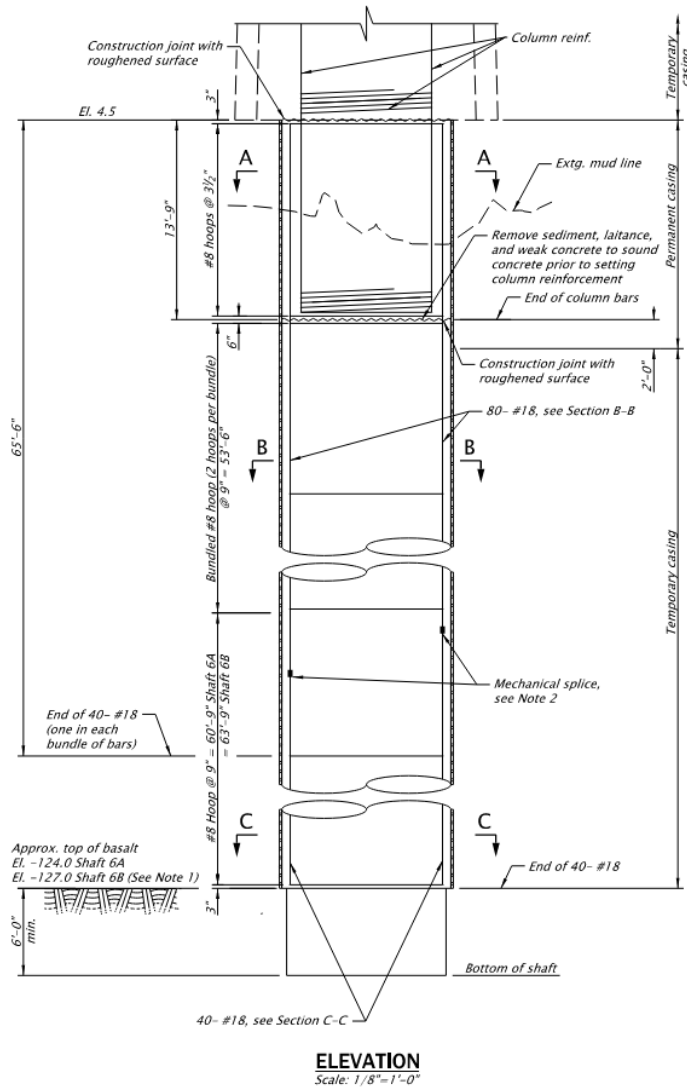
# Drilled Shaft Construction



- Contractors will be required to provide plans for addressing:
  - Variable subsurface conditions
  - Obstructions
  - Construction risks such as casing “freeze” when casing advancement is stopped for welding.

What “best practices” or experience on past project with similar large-diameter drilled shafts can be applied to this project?

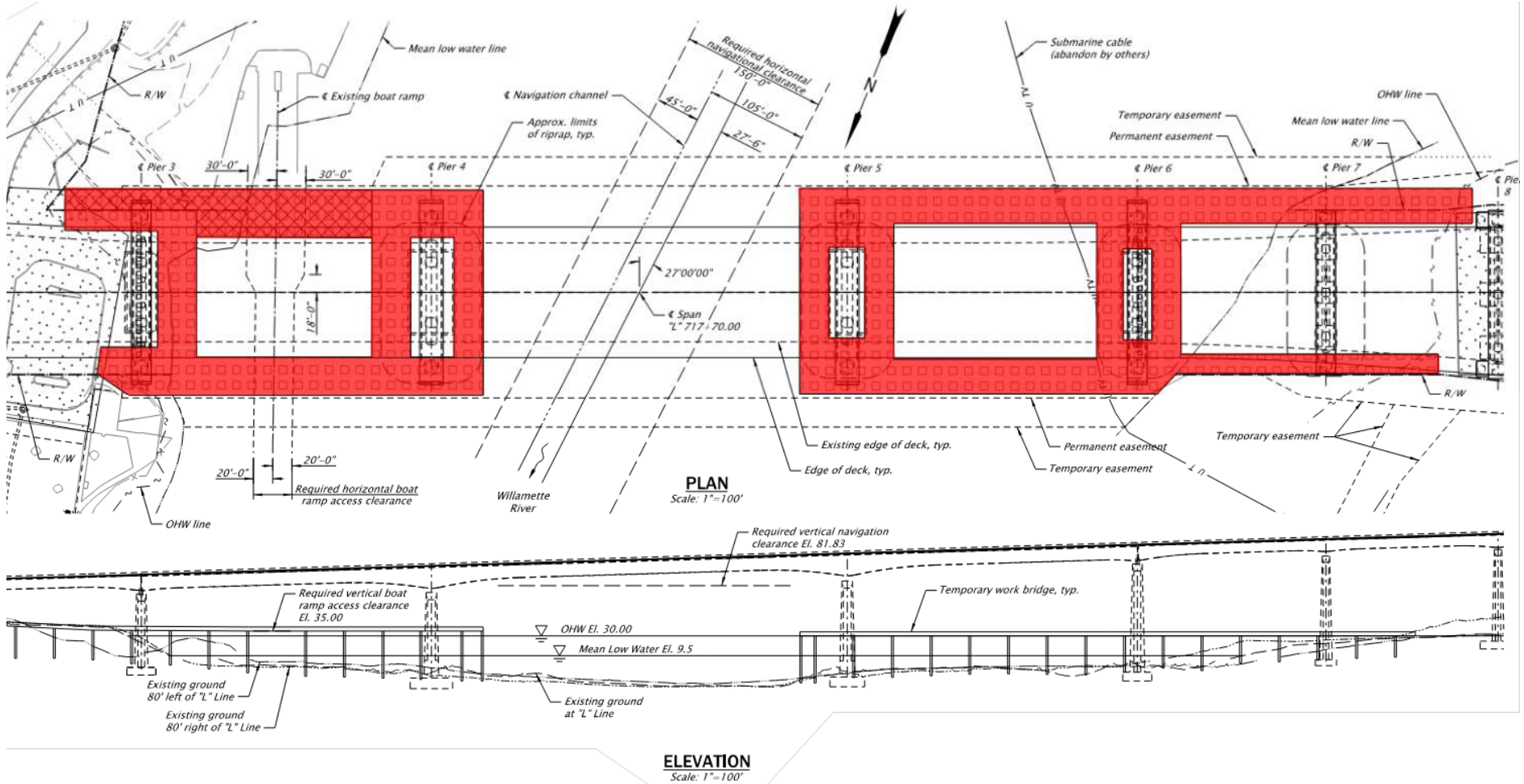
# Drilled Shaft Construction



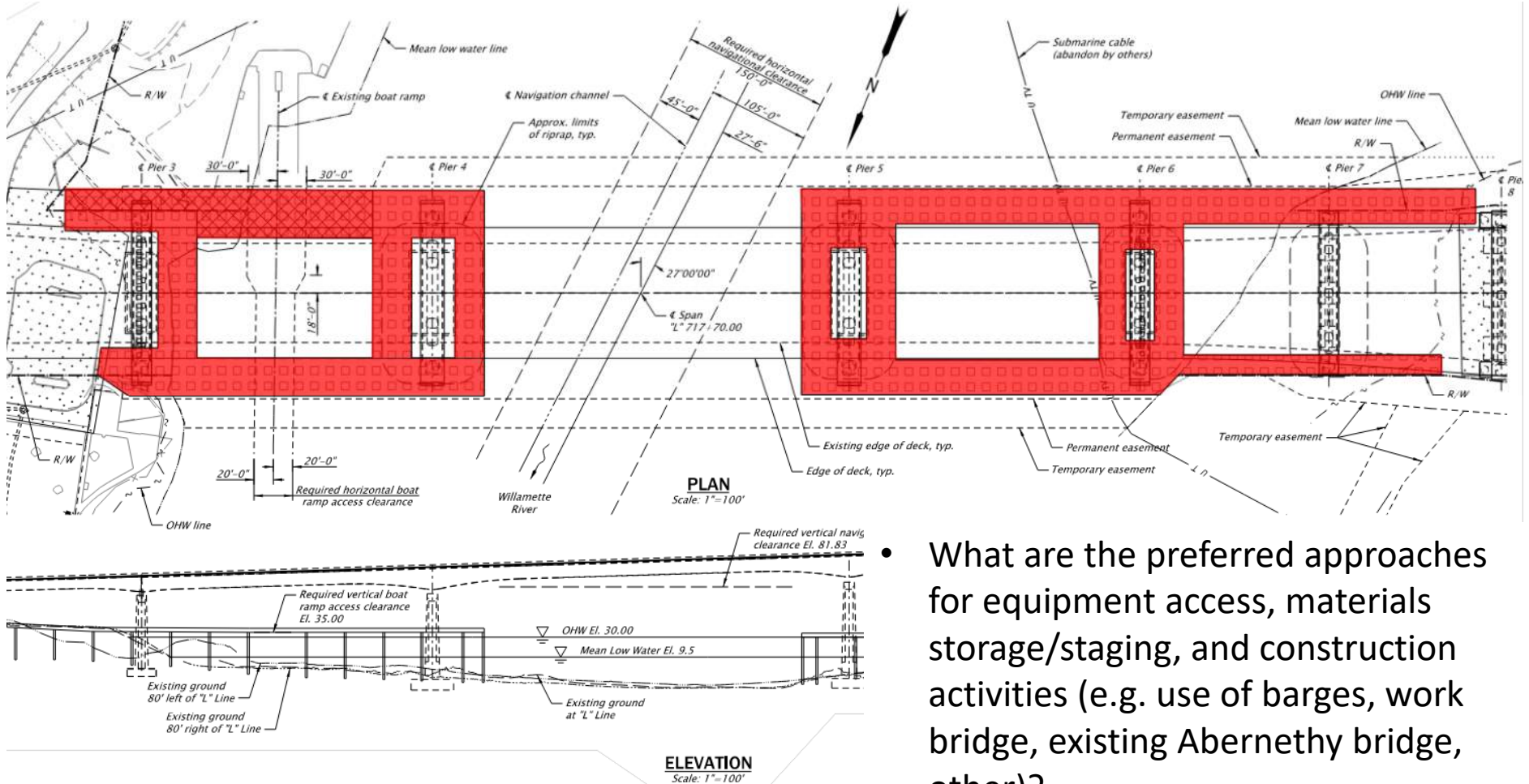
- What is the maximum temporary casing length that can be extracted for 12-ft.-diameter shafts constructed from the temporary work bridge platform?



# Work Bridge and Site Access

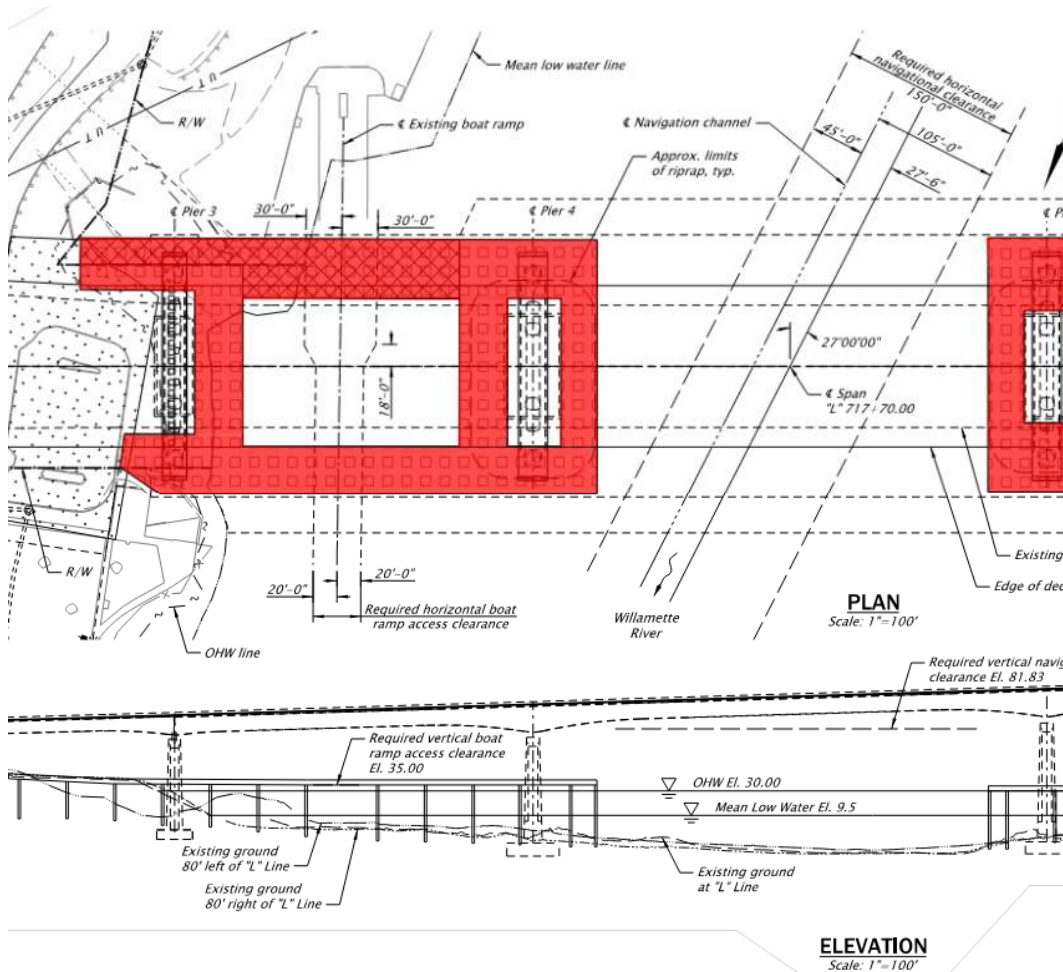


# Work Bridge and Site Access



- What are the preferred approaches for equipment access, materials storage/staging, and construction activities (e.g. use of barges, work bridge, existing Abernethy bridge, other)?

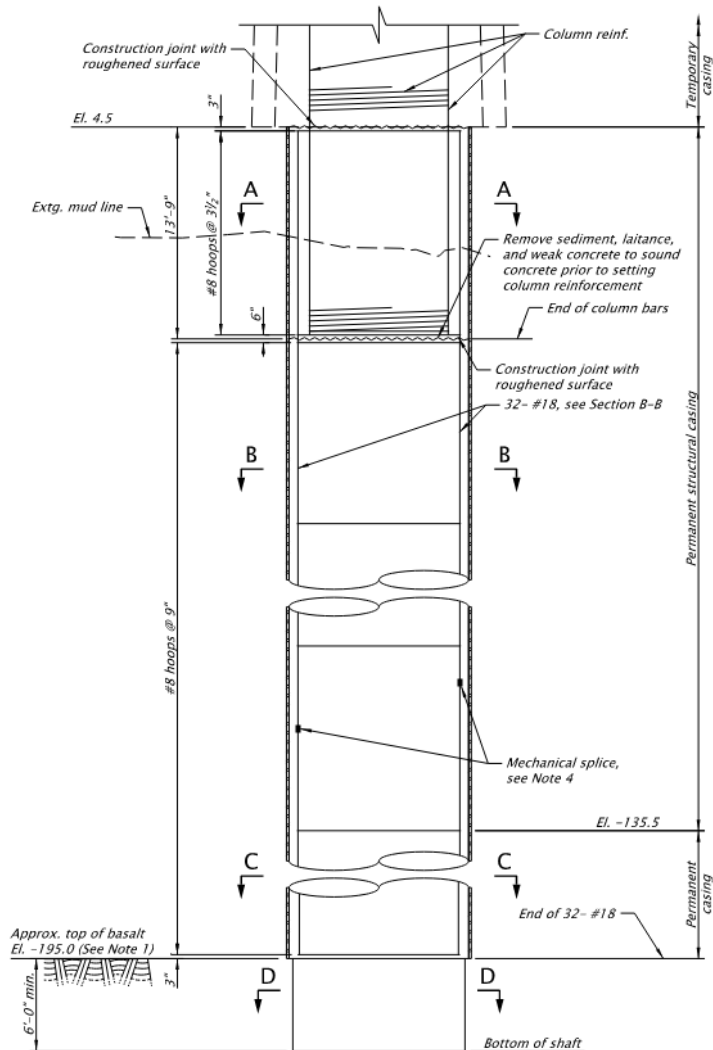
# Work Bridge and Site Access



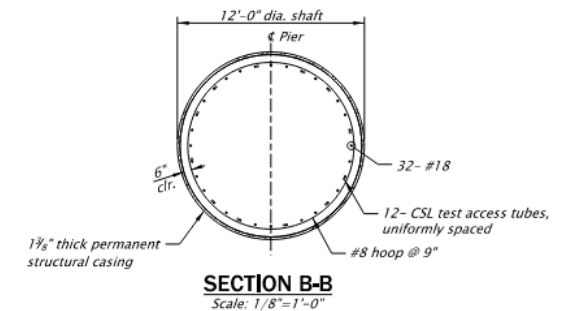
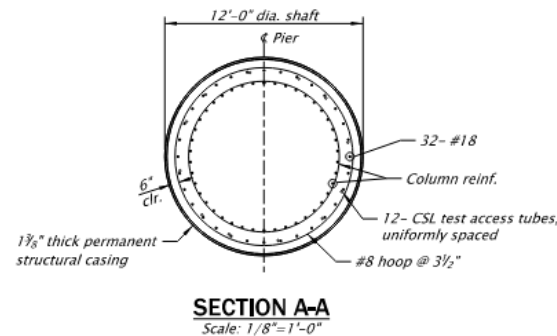
- The prime contractor will be required to submit descriptions of the equipment and materials that will be on the work bridge at a given time. The intent is to help ensure the work bridge will be designed and constructed to accommodate the loads and deformations from the drilled shaft construction (e.g. tolerable deformation under torsional loads from the oscillator). Considering your experience with other work bridges, what other considerations should be included with respect to the performance of the work bridge? Do you have any specific recommendations with regard to bracing and support?



# Construction Sequence and Schedule



- Given the proposed work, how long do you anticipate it will take to complete one 12-ft.-diameter, 180-ft.-long, permanently-cased, drilled shaft with 20 ft. of drilling in weathered and intact rock and 130 ft of permanent structural casing with full penetration welds? What factors have the greatest impact on this estimate?

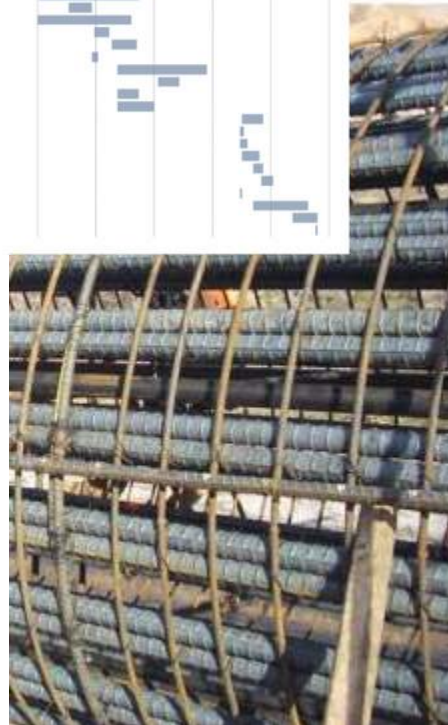


# Construction Sequence and Schedule

CONSTRUCTION PROJECT TIMELINE



- What are the long lead time items that will impact the construction schedule? How can the Agency and Contractor reduce risk associated with these long lead time items?
- What are the critical path or high risk elements that should have a contingency plan identified before shaft construction begins (e.g. adequate supply of concrete)?



# A+C+D Bidding and Contracting



## Technical Approach and Qualifications:

- Bridge Construction – slide, drilled shafts, ground improvements, marine access, temporary work bridges
- Maintenance of Traffic
- Permit Compliance
- Diversity, Equity and Inclusion

## Schedule Critical Item:

- Advertisement – 11 weeks (Anticipated early December 2021)
  - 8 weeks for technical, 3 weeks for price
- Joint Venture Insurance requirements
- DBE and TERO requirements
- Anticipated Notice of Intent to Award - early March 2022
- Anticipate NTP – mid-April 2022



# A+C+D Bidding and Contracting



- What level of Contractor's project experience will provide a competitive bidding pool of qualified drilled shaft contractors?
- How can opportunities for DBE contractors be optimized during construction of the drilled shafts to help support achieving DBE goals?

# Feedback and Q&A

Three ways to comment:

Open conversation:

Drop a comment in the chat, raise your hand, or speak up....

Use Slido for anonymous comments:

[www.Slido.com](http://www.Slido.com) - Event code #i205drilledshaft

After the meeting: email Allen Hendy

(Allen.Hendy@odot.state.or.us)

# Thank You

## **For more information, contact:**

Allen Hendy, PE – ODOT Resident Engineer Consultant Projects

Phone: 971-235-3861

Email: [Allen.Hendy@odot.state.or.us](mailto:Allen.Hendy@odot.state.or.us)

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