



# US 60 Cumberland River Bridge Pre-Bid Meeting

February 28, 2020

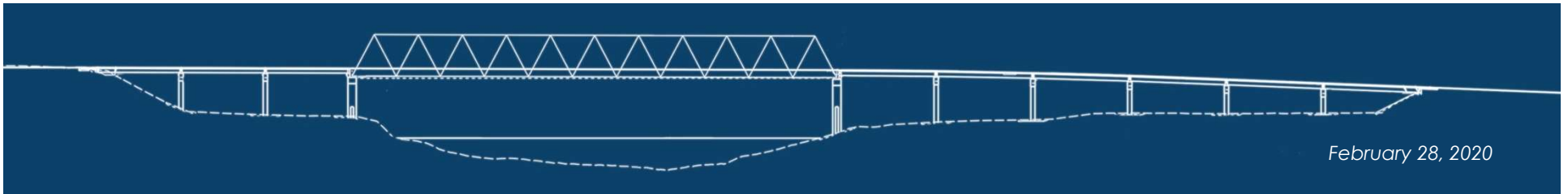




# US 60 Cumberland River Bridge – Pre-Bid Meeting

## Key Project Personnel

- Kyle Poat  
D-1 Chief District Engineer
- Chris Kuntz  
D-1 Project Development
- Brad Whybark  
D-1 Environmental
- Mike Shuecraft  
D-1 Utilities
- Jason Looper  
Project Delivery
- Austin Hart  
Smithland Section Supervisor
- Darrin Beckett  
Geotechnical Branch
- Danny Peake  
Division of Env Analysis
- Cassandra Cruikshank  
Division of Env Analysis
- Tony Hunley  
Stantec Project Manager
- Taylor Perkins  
Stantec Deputy PM



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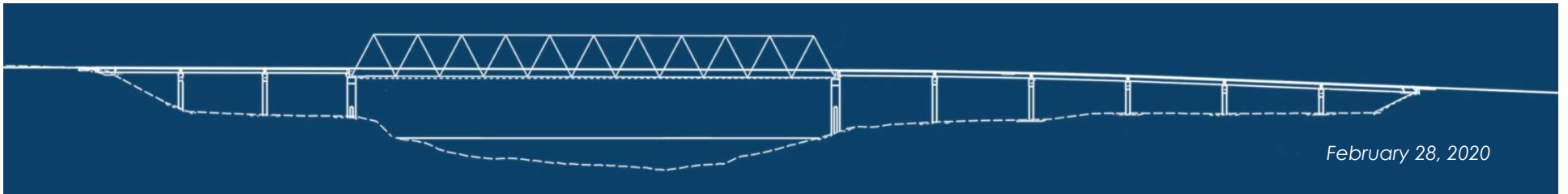




# US 60 Cumberland River Bridge – Pre-Bid Meeting

## Agenda

- Project Overview
- Roadway Approaches
- Utilities
- Existing Bridge
- River Bridge
- Geotechnical & Foundations
- Environmental Commitments
- DBE Requirements
- Schedule



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# US 60 Cumberland River Bridge – Pre-Bid Meeting

## Project Overview: Vicinity Map







## US 60 Cumberland River Bridge – Pre-Bid Meeting

# Project Overview: Existing Bridge Aerial



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# Project Overview: Bridge Rendering

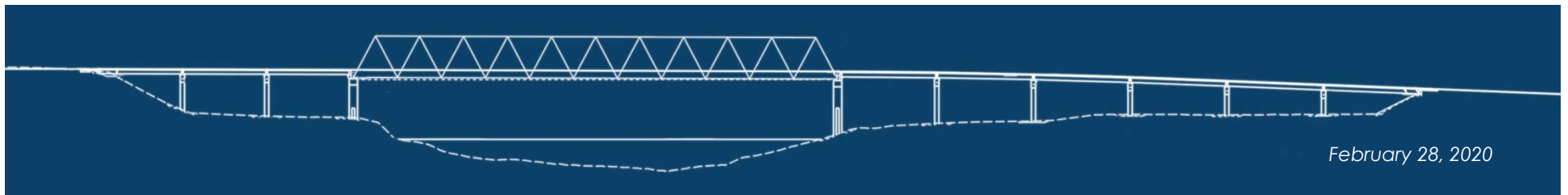






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## Project Overview: Roll Plot

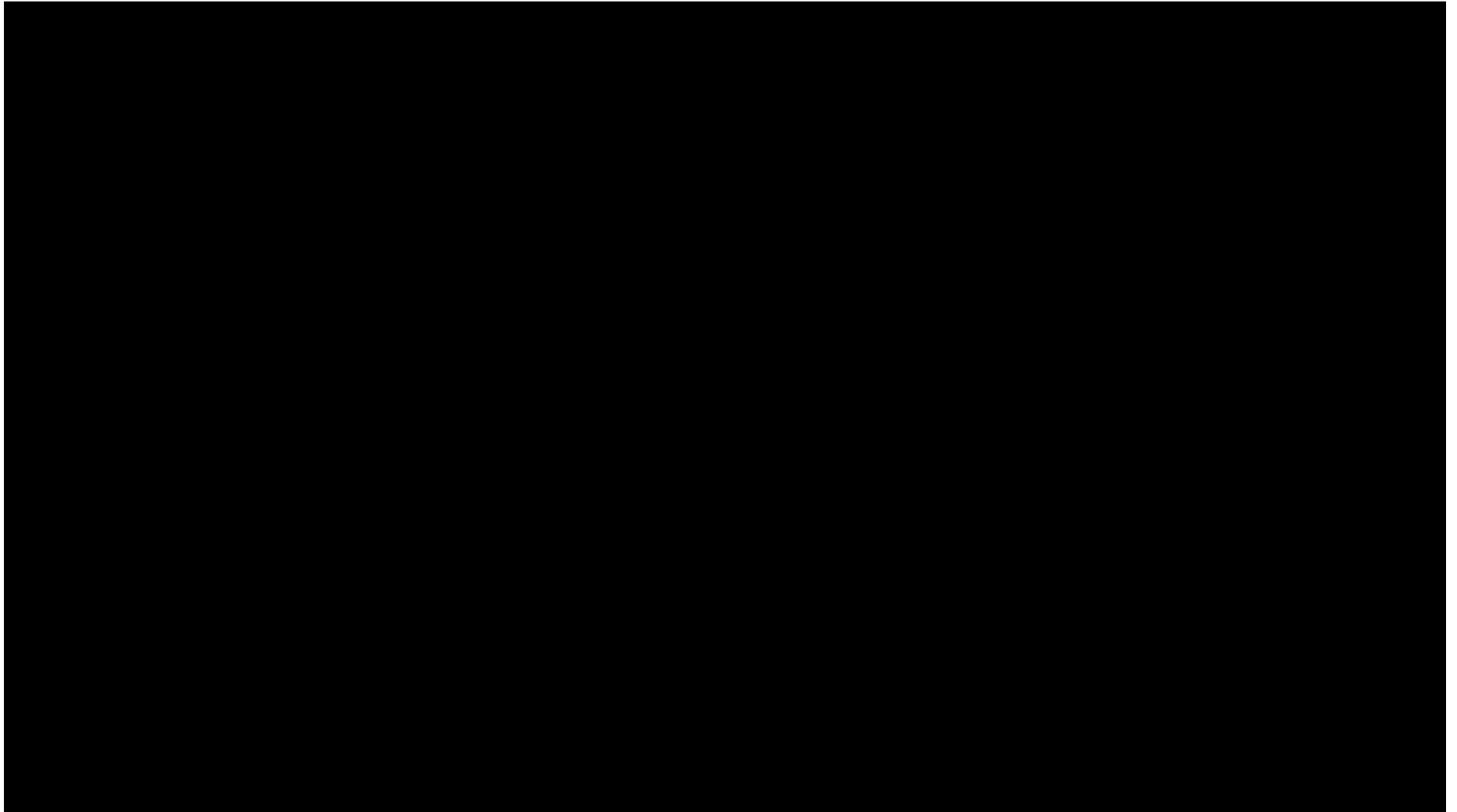


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# Project Overview: Fly-Thru Video







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## Procurement: Special Notes

### General

- Completion Date
- CPM Scheduling
- Web Camera Construction Monitoring System
- Provision of Compression Testing Machine
- Automated Gate

### Existing Bridge

- Maintaining Existing Bridge
- Milestone Completion Date & Liquidated Damages on Existing Bridge Repairs
- Traffic Control on Bridge Repair Contracts
- Concrete Patching Repair
- Structures with Fiber Reinforced Polymer Wrap

### Structures

- USCG Section 9 Permit
- Steel Paint Color
- Steel Erection
- Structure Lightning Protection
- Disc Bearings

### Roadway

- Class 1A Geotextile Fabrics Used in Structural Pavement Designs
- Concrete Slurry
- Pipeline Inspection

### Environmental

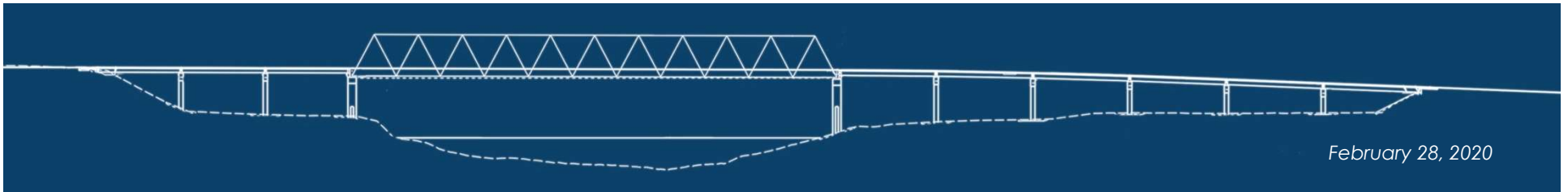
- Mitigation of Impacts to Cumberland River (Mussels)
- Mitigation of Impacts to Osprey
- Pending US Army Corps of Engineers 404 Permit
- Tree Removal
- Construction Activities
- Bridge Demolition, Renovation, and Asbestos Abatement
- eNOI for KPDES Construction Stormwater Permit

### Geotechnical

- Project Specific Drilled Shaft Requirements
- Cone Penetration Test Data
- Non-destructive Testing of Drilled Shafts
- Pile Dynamic Testing
- Instrumentation on Existing Bridge

### Utility Relocation

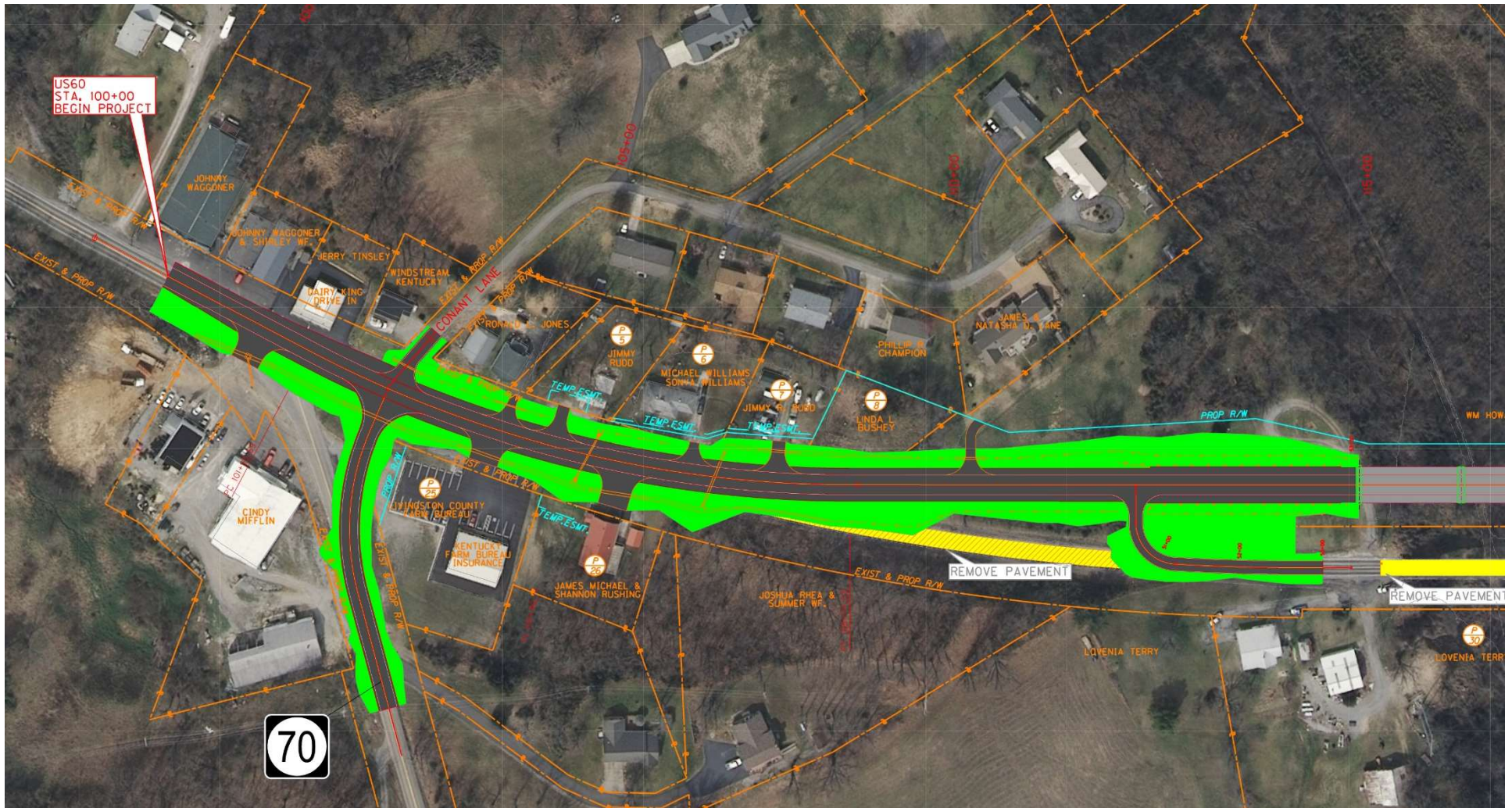
- Earth Moving
- Municipal Water Distribution
- Municipal Sanitary Sewers





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## Roadway: South Approach

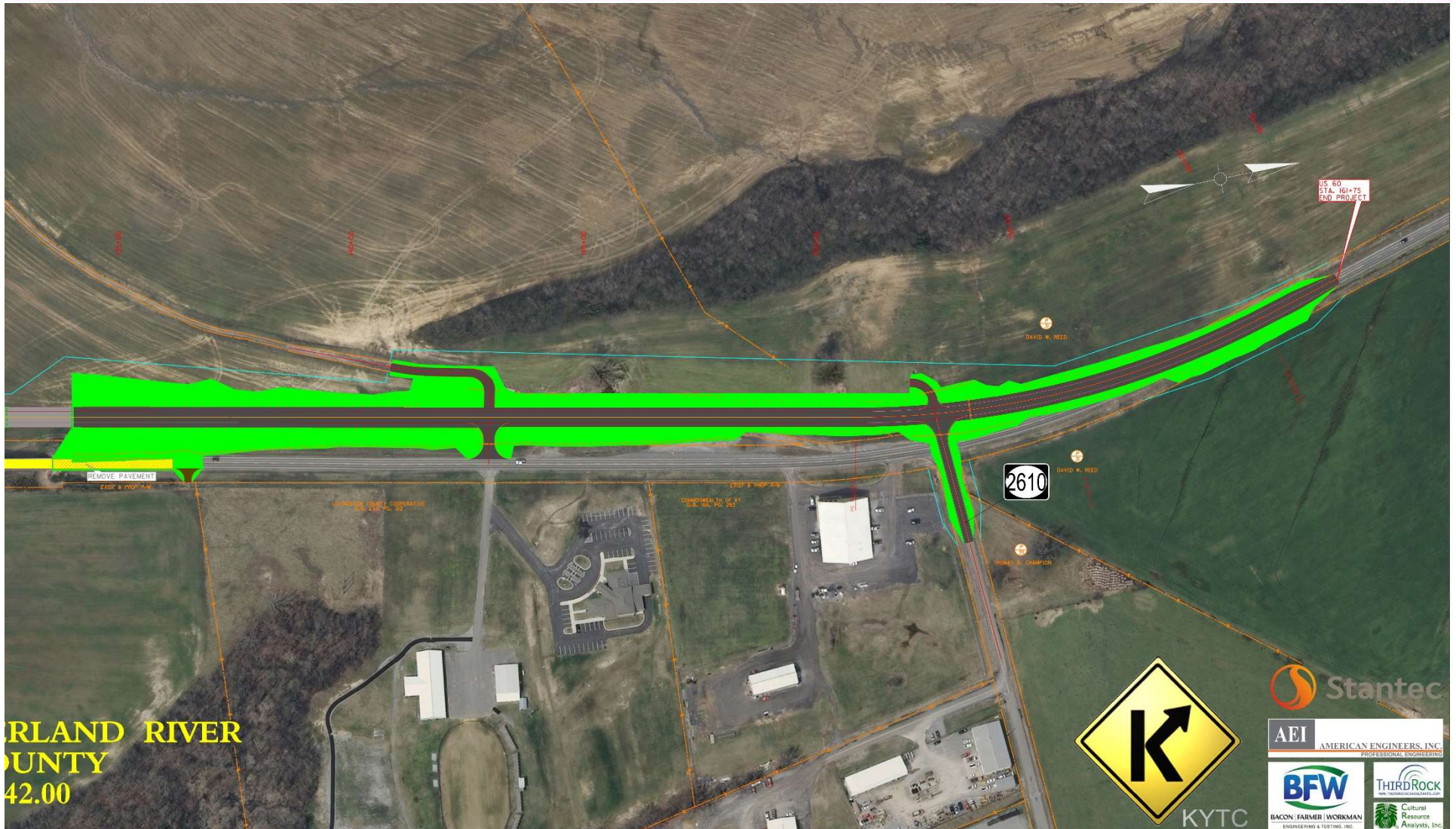






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## Roadway: North Approach

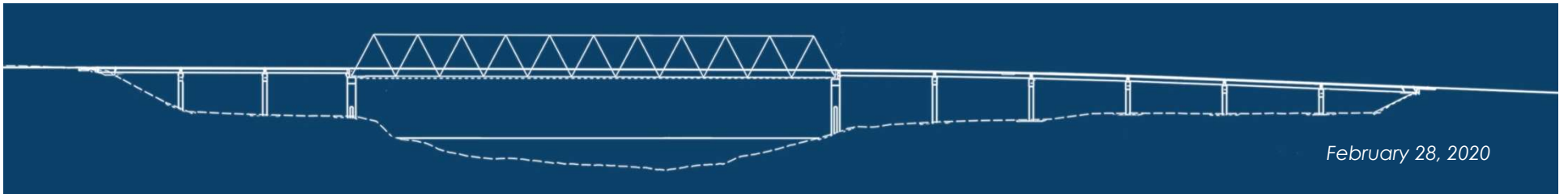




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## Roadway:

- South Approach Waste
- North Approach Embankment
- Existing Bridge Weight Restrictions

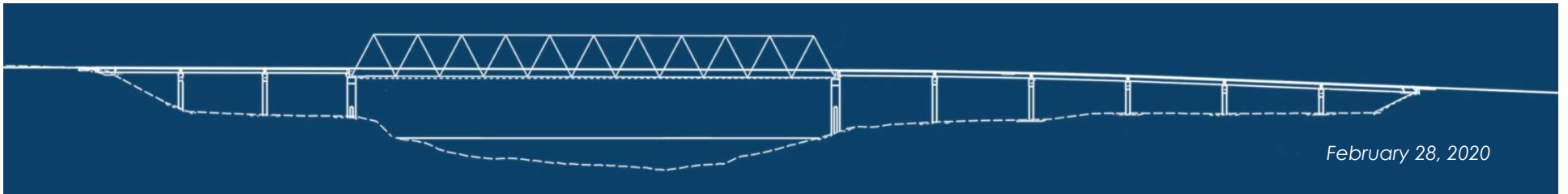






# Utilities: Waterline Relocation

- Smithland Water Works
  - Water & Sewer Line Relocations
- Crittenden-Livingston County Water District
  - Water Line Relocation
- 2,599 LF PVC

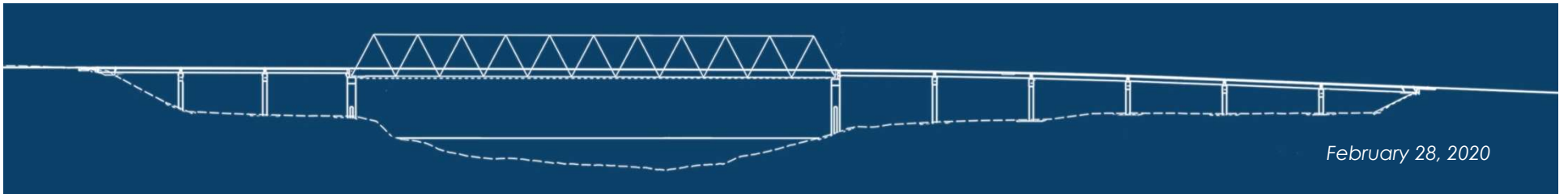


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## Utilities: Relocation Status

- Jackson Purchase Energy Corporation
  - 4/30/20
- Windstream dba Kentucky Data Link
  - During construction

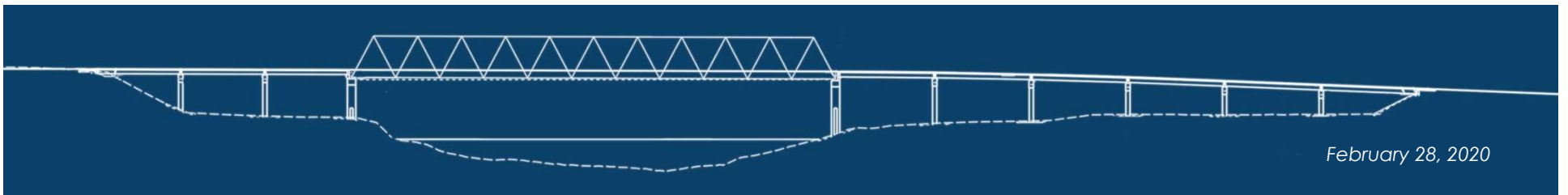






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# Existing Bridge: Immediate Repairs

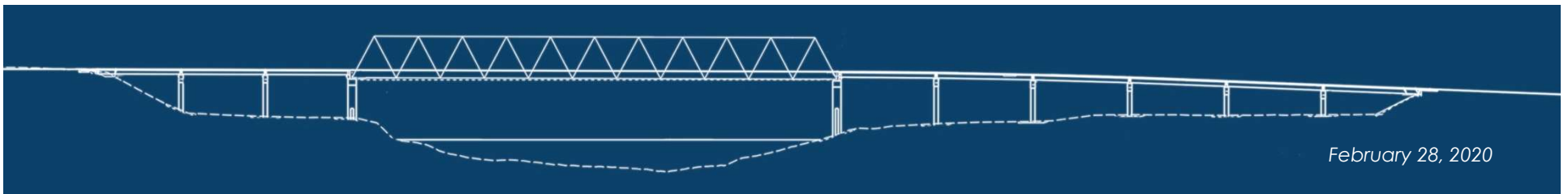
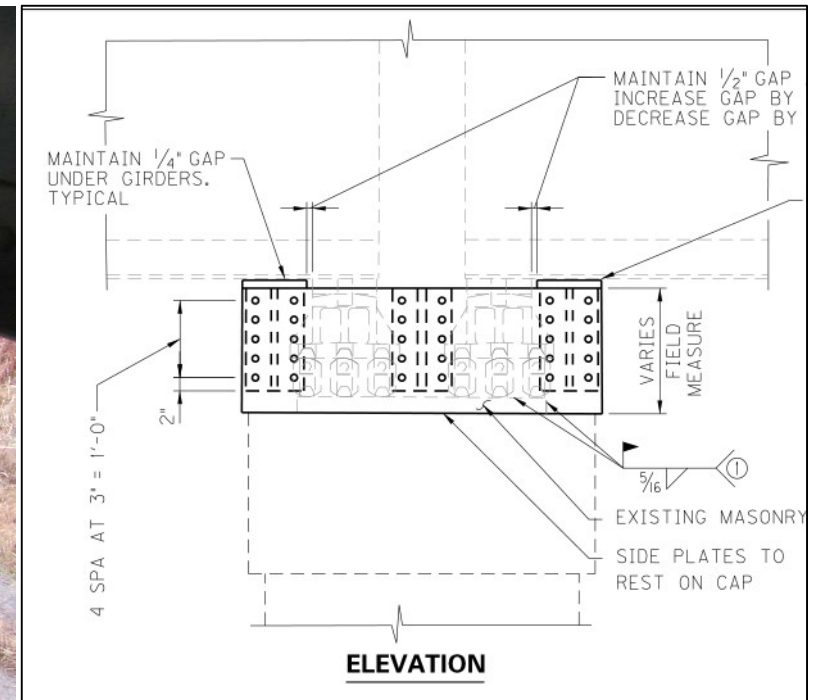


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# US 60 Cumberland River Bridge – Pre-Bid Meeting

## Existing Bridge: Immediate Repairs

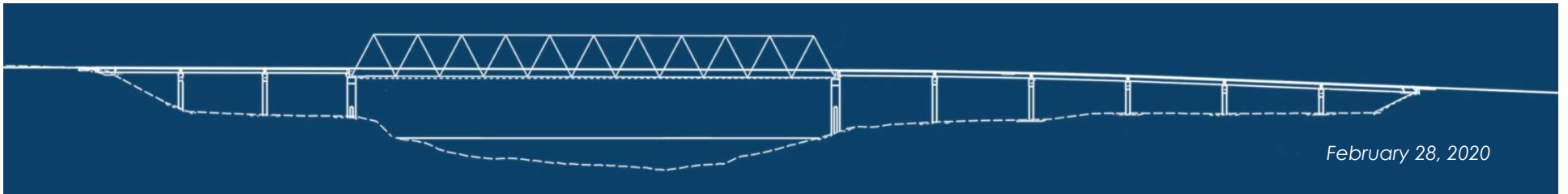






## US 60 Cumberland River Bridge – Pre-Bid Meeting

# Existing Bridge: Maintenance Bid Item



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1912'-10" END TO END

TO SMITHLAND

TO BURINA

SPAN 1 120'-10"

SPAN 2 121'-10"

SPAN 3 125'-4"

SPAN 4 700'-4"

SPAN 5 143'-4"

SPAN 6 139'-10"

SPAN 7 139'-10"

SPAN 8 139'-10"

SPAN 9 139'-10"

SPAN 10 138'-10"

7'-6"

ABUTMENT 1

PIER 1

PIER 2

PIER 3

PIER 4

PIER 5

PIER 6

PIER 7

PIER 8

PIER 9

ABUTMENT 2

MAXIMUM REGULATED FLOOD E. = 445.00

NAVIGATION CLEARANCE ENVELOPE

NORMAL POOL E. 302.00

0.34%

8'-0" DIA. DRILLED SHAFT, TYP. PIER 3, 4

30" DIA. x 1/2" STEEL PIPE PILES, PIER 5

HP14x89

3ERM E. 366.3

20'

4.00%

APPROXIMATE GROUND LINE

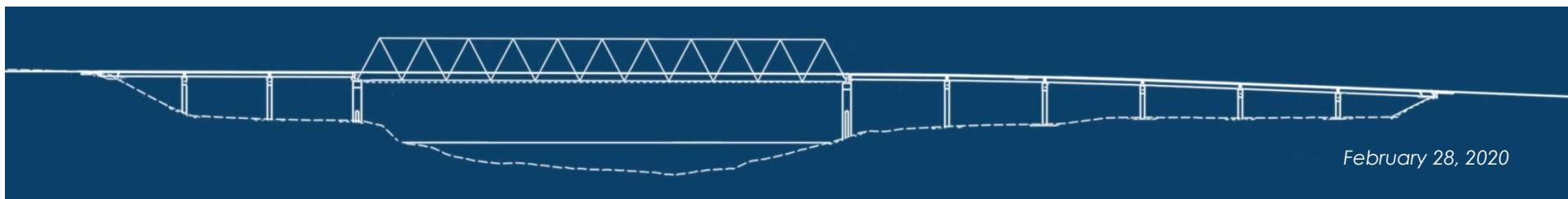
APPROXIMATE ROCK LINE

113+00 114+00 115+00 116+00 117+00 118+00 119+00 120+00 121+00 122+00 123+00 124+00 125+00 126+00 127+00 128+00 129+00 130+00 131+00 132+00 133+00 134+00 135+00 136+00

SPANS 1 THRU 3: 4N 66x49 HYBRID PCIB (CONTINUOUS FOR LIVE LOAD);  
SPAN 4: STEEL THROUGH TRUSS (SIMPLE SPAN);  
SPANS 5 THRU 10: 11N 78x49 HYBRID PCIB (CONTINUOUS FOR LIVE LOAD);  
0° SKEW; KYHL-93 LIVE LOADING; 40'-0" ROADWAY ON BRIDGE;  
48'-0" OUT TO SHOULDER; 2:1 FILL SLOPES AT BRIDGE ENDS.



(LOOKING AHEAD)  
 (\*) HN 66x49 BEAMS IN SPANS 1-3  
 HN 78x49 BEAMS IN SPANS 5-10



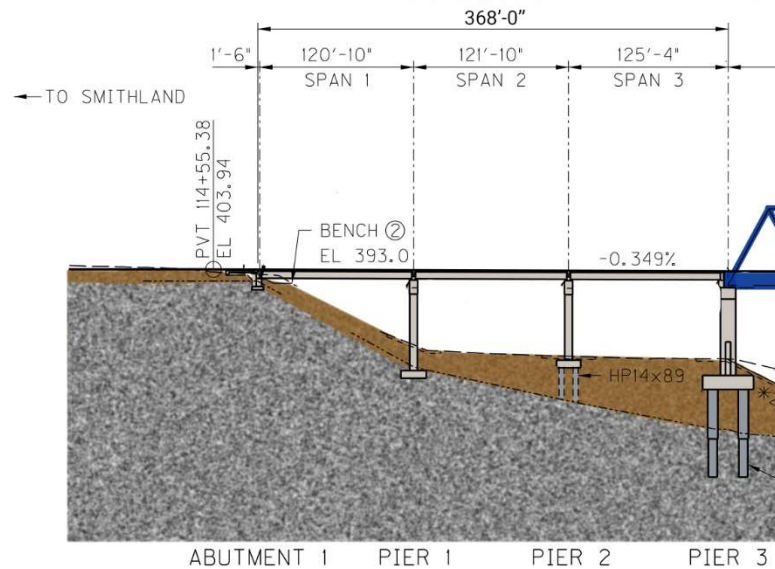
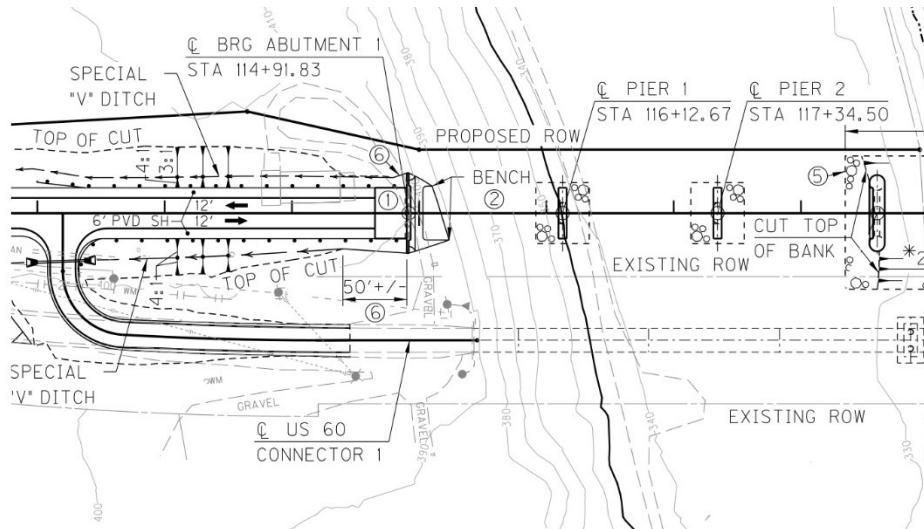
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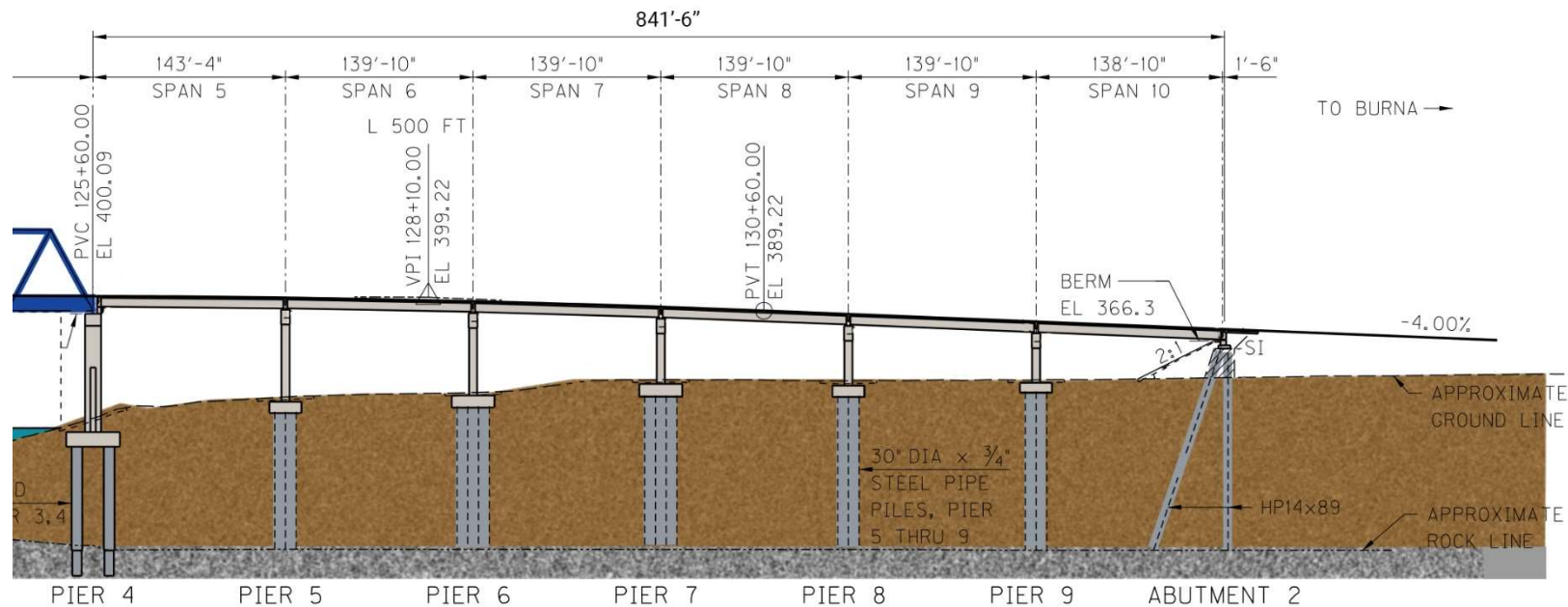
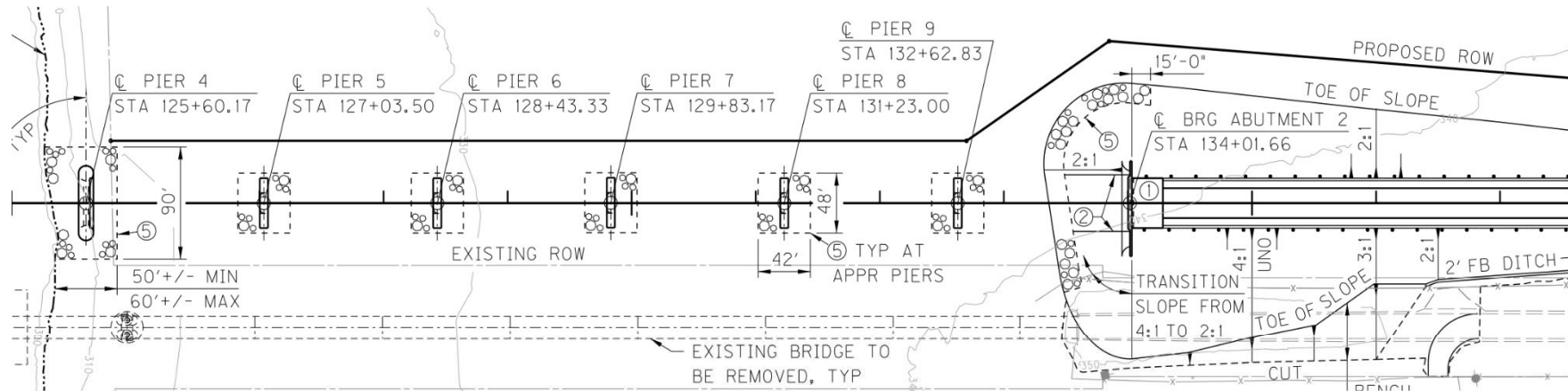
## Bridge: South Approach Spans





# US 60 Cumberland River Bridge – Pre-Bid Meeting

## Bridge: North Approach Spans

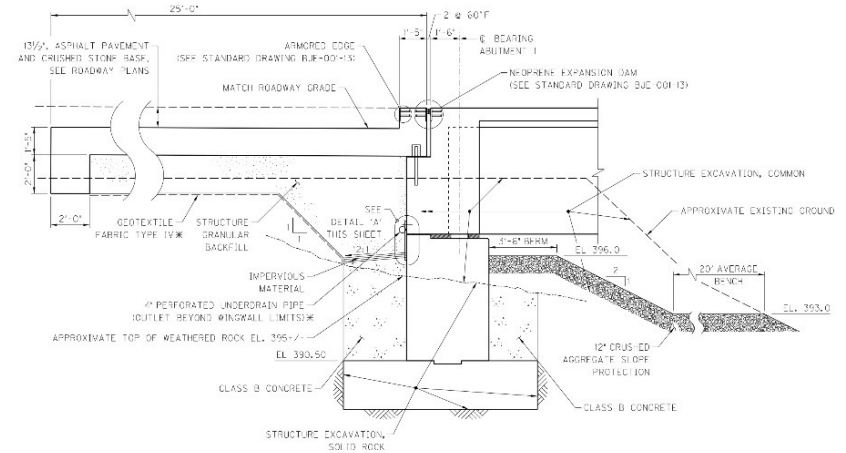
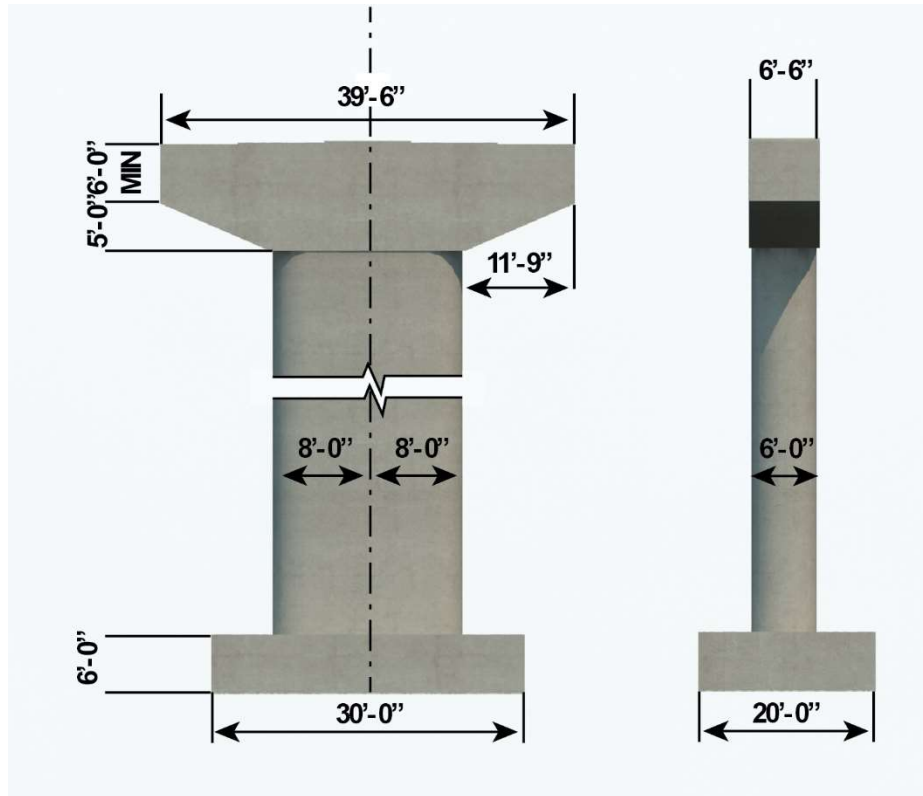




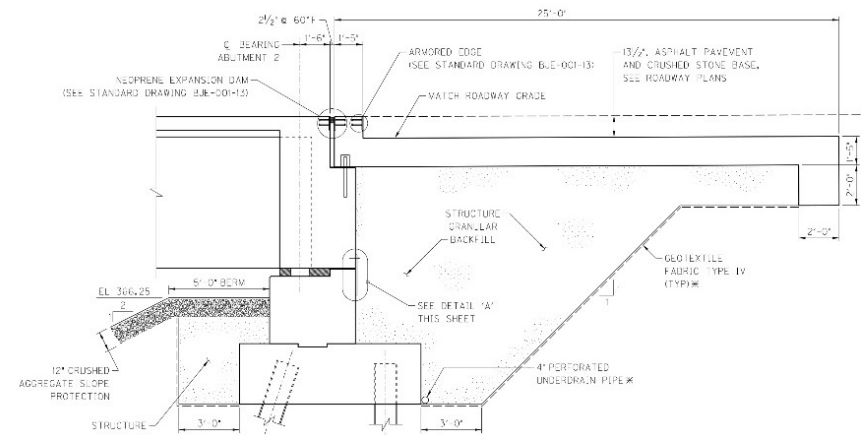


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## Bridge: Approach Substructures



**EARTHWORK SECTION AT ABUTMENT 1**

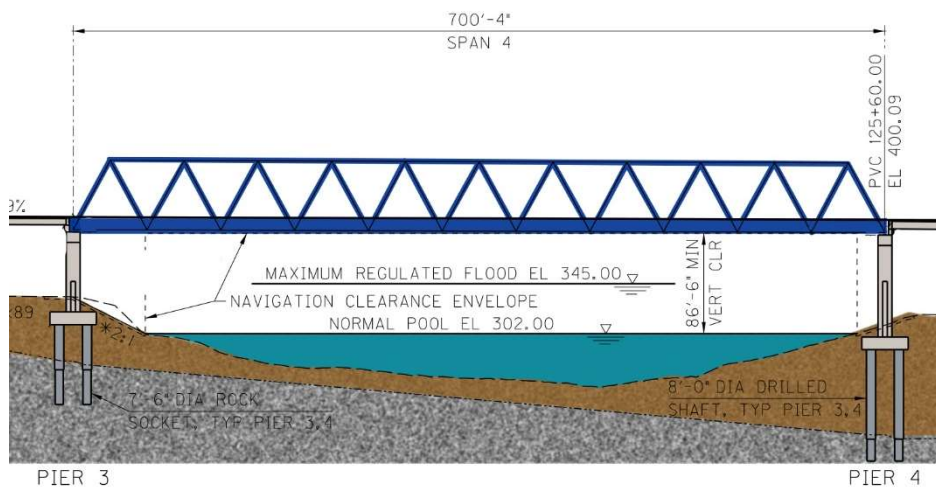
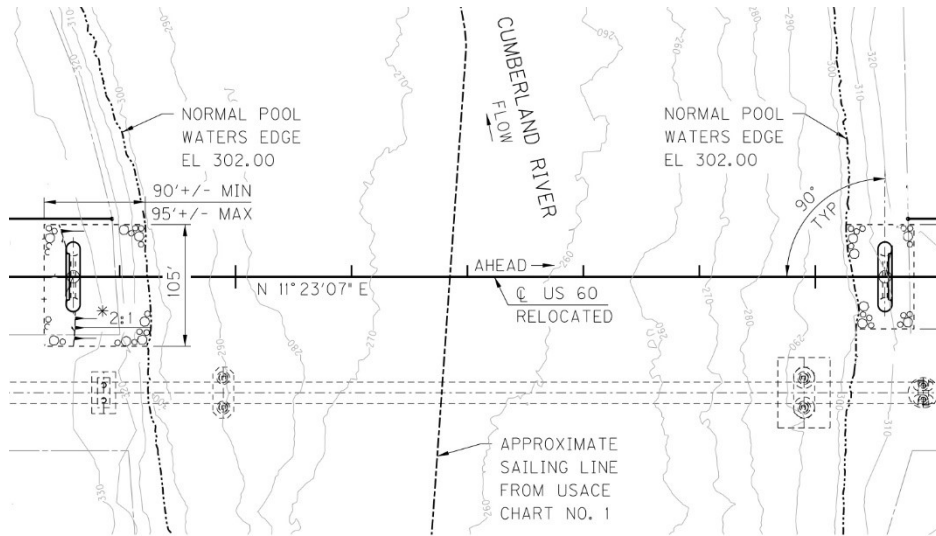


**EARTHWORK SECTION AT ABUTMENT 2**



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## Bridge: Main Span Layout

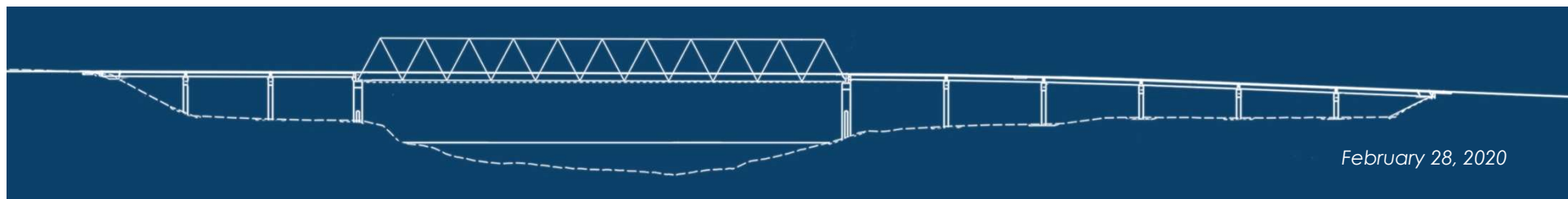
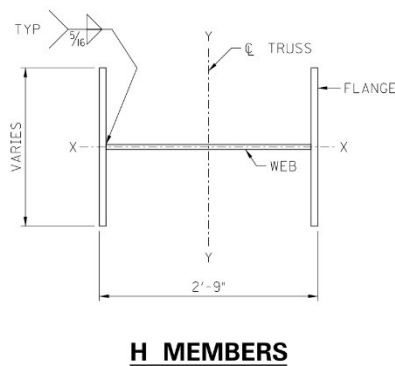
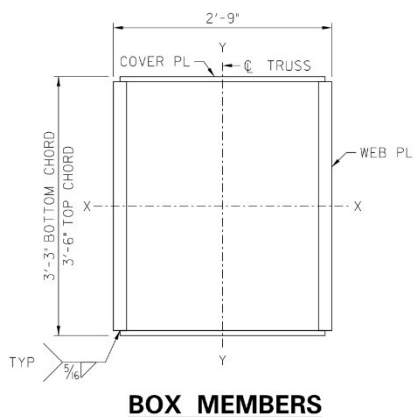
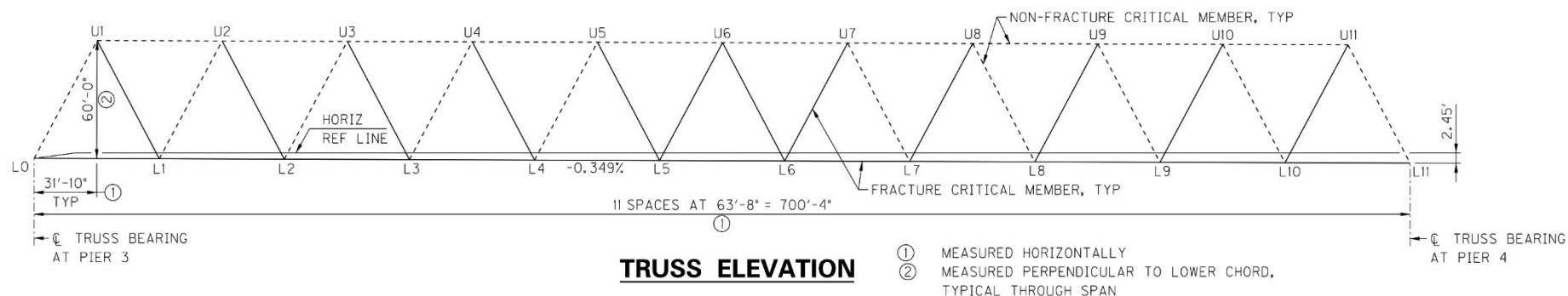






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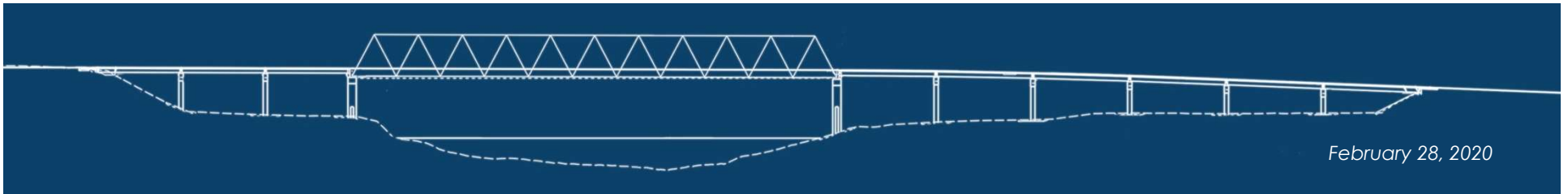
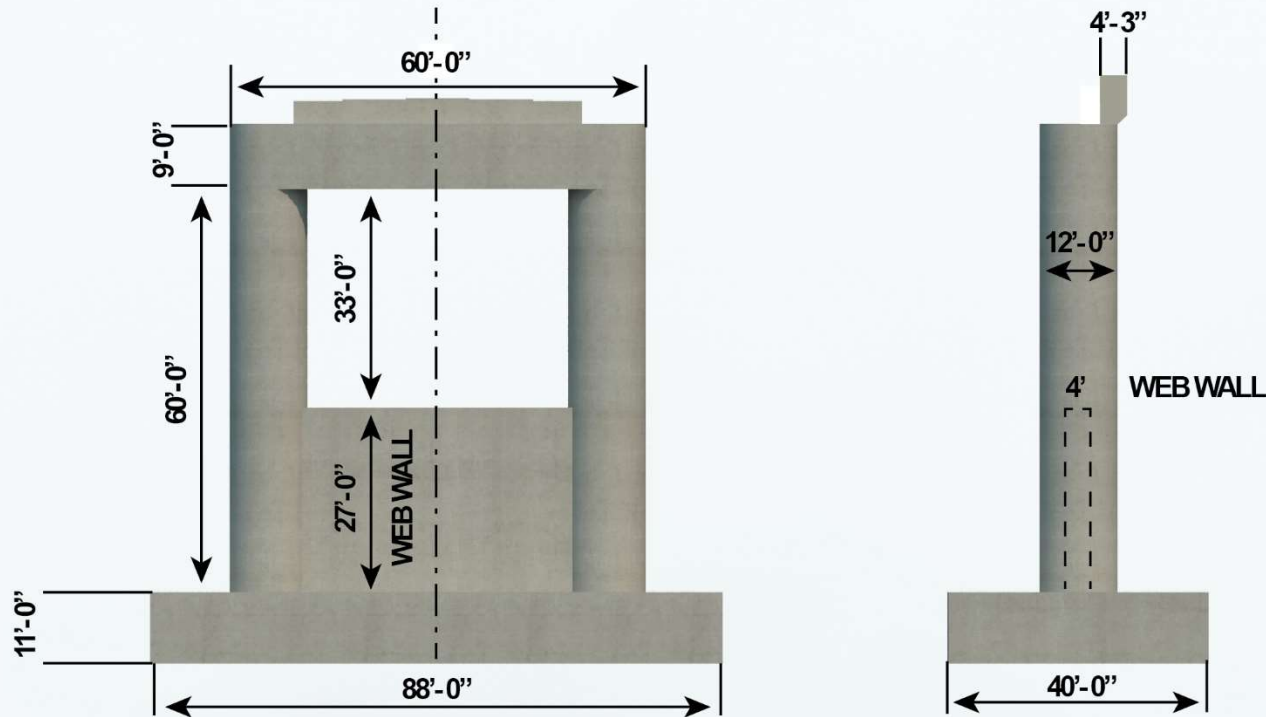
## Bridge: Truss Typical Dimensions



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## Bridge: Main Span Pier Types







Technical drawing of a truss sole plate showing dimensions and bolt locations. The drawing includes the following labels and dimensions:

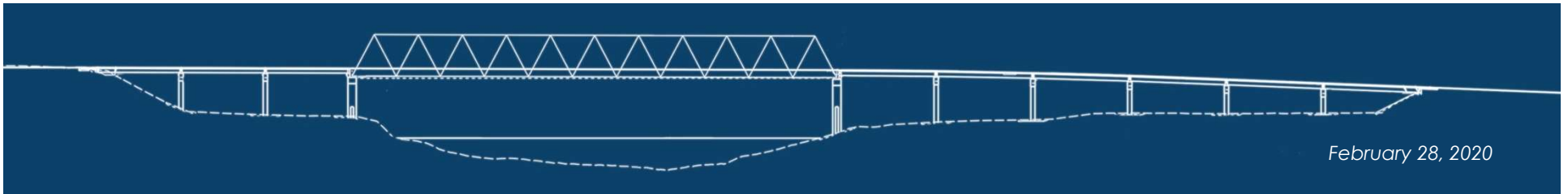
- TRUSS SOLE PLATE**: Label pointing to the top horizontal member.
- BEARING PIER 3 & FLOORBEAM LO**: Label pointing to the top vertical member.
- RIGHT TRUSS**: Label pointing to the right vertical member.
- AHEAD**: Label with an arrow pointing to the right.
- 1/4" DIA HOLES TO ACCOMMODATE 1/4" DIA ASTM F3125 GR A490 BOLTS, 21 LOCATIONS, TYPICAL**: Label pointing to a hole in the bottom horizontal member.
- 2 3/4"**: Dimension for the width of the top and bottom horizontal members.
- 5"**: Dimension for the spacing between the first and second holes from the ends of the top horizontal member.
- 4"**: Dimension for the spacing between the third and fourth holes from the ends of the top horizontal member.
- 3 1/4"**: Dimension for the spacing between the fifth and sixth holes from the ends of the top horizontal member.
- 4"**: Dimension for the spacing between the seventh and eighth holes from the ends of the top horizontal member.
- 5"**: Dimension for the spacing between the ninth and tenth holes from the ends of the top horizontal member.
- 2'-1"**: Dimension for the length of the top horizontal member.
- 4'-2" BEVELED LOAD PLATE**: Label pointing to the bottom horizontal member.
- 10 SPACES AT 4 1/2" = 3'-9"**: Dimension for the length of the bottom horizontal member.
- 2'-1"**: Dimension for the length of the bottom horizontal member.
- 4'-2" BEVELED LOAD PLATE**: Label pointing to the bottom horizontal member.





# Bridge: Steel Fabrication Notes

- H & Box Section Truss Members
- Bolts (ASTM F3125)
  - $\frac{7}{8}$ " Grade A325 Typical UNO
  - $1\frac{1}{8}$ " Grade A490 Gussets & Other Connections
- Structural Steel
  - Grade 50W Typical Typical
  - Grade HPS 70W Gusset Plates (2  $\frac{1}{2}$ " Max Thickness)
- Paint
  - Kentucky Blue (Federal Standard 595B Color X5095)

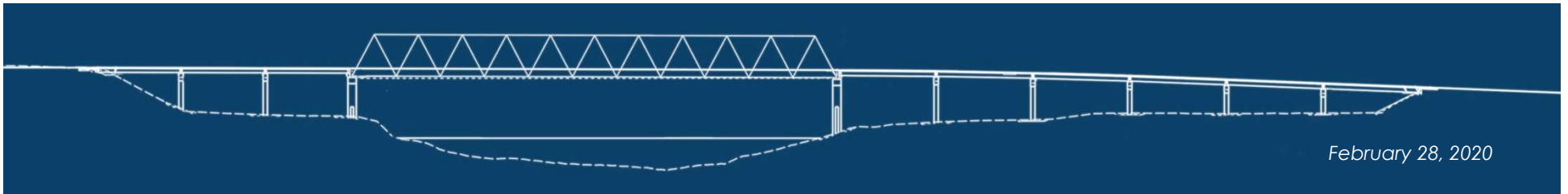
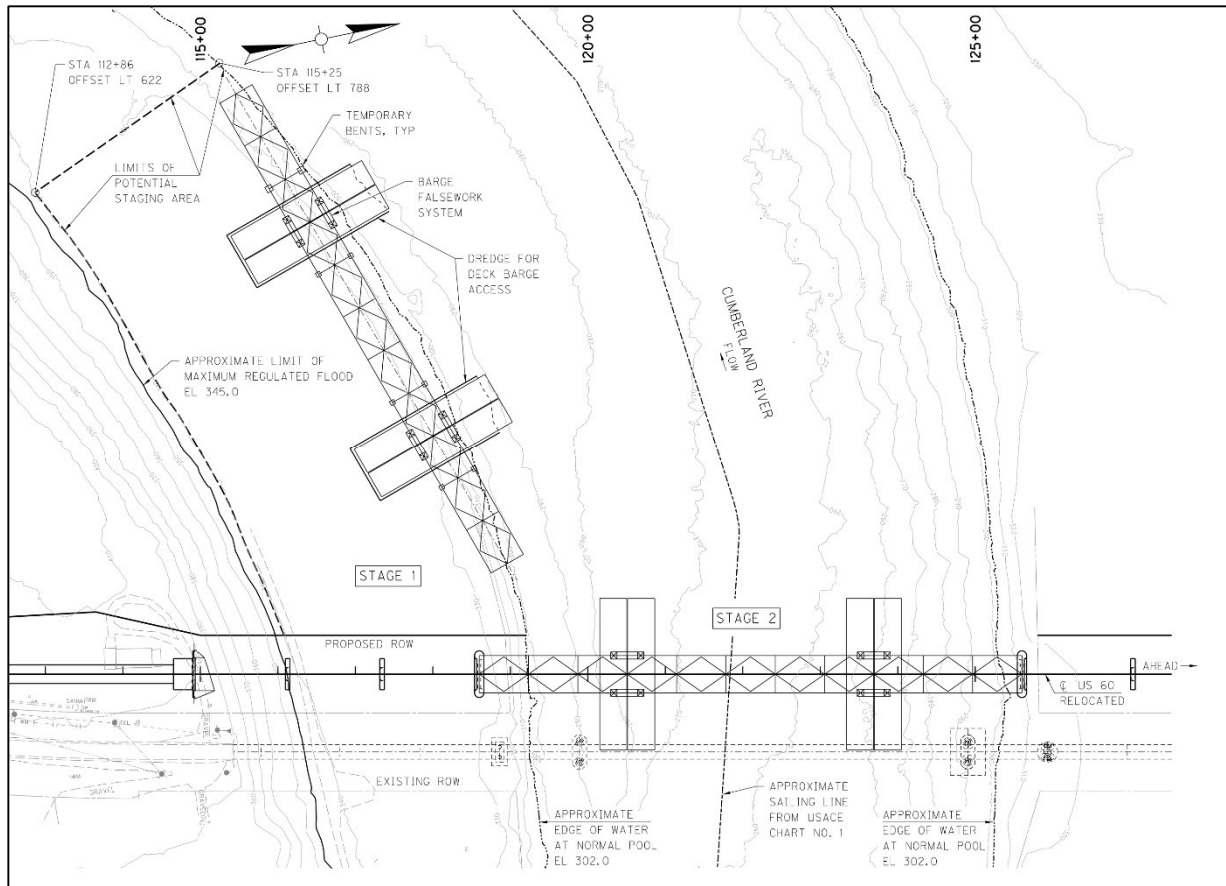






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## Bridge: Erection – Staging Area



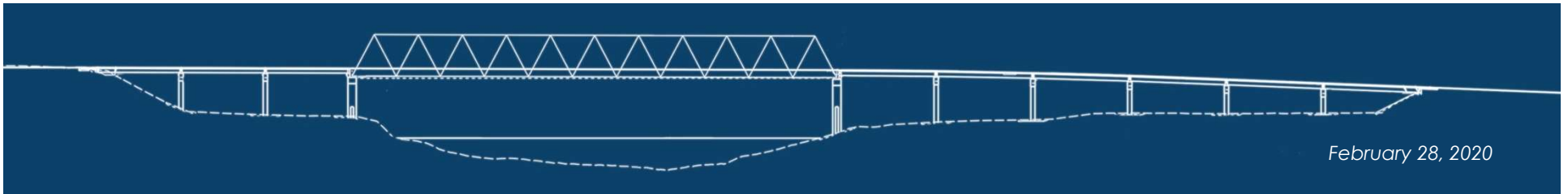
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# US 60 Cumberland River Bridge – Pre-Bid Meeting

## Geotech:

- Overview of Subsurface Conditions & Foundations
- Foundation-Related Special Notes
- Drilled Shaft Considerations & Requirements
- Non-Destructive Testing of Drilled Shafts
- Dynamic Pile Testing
- Instrumentation on Existing Bridge
- Construct North Embankment ASAP

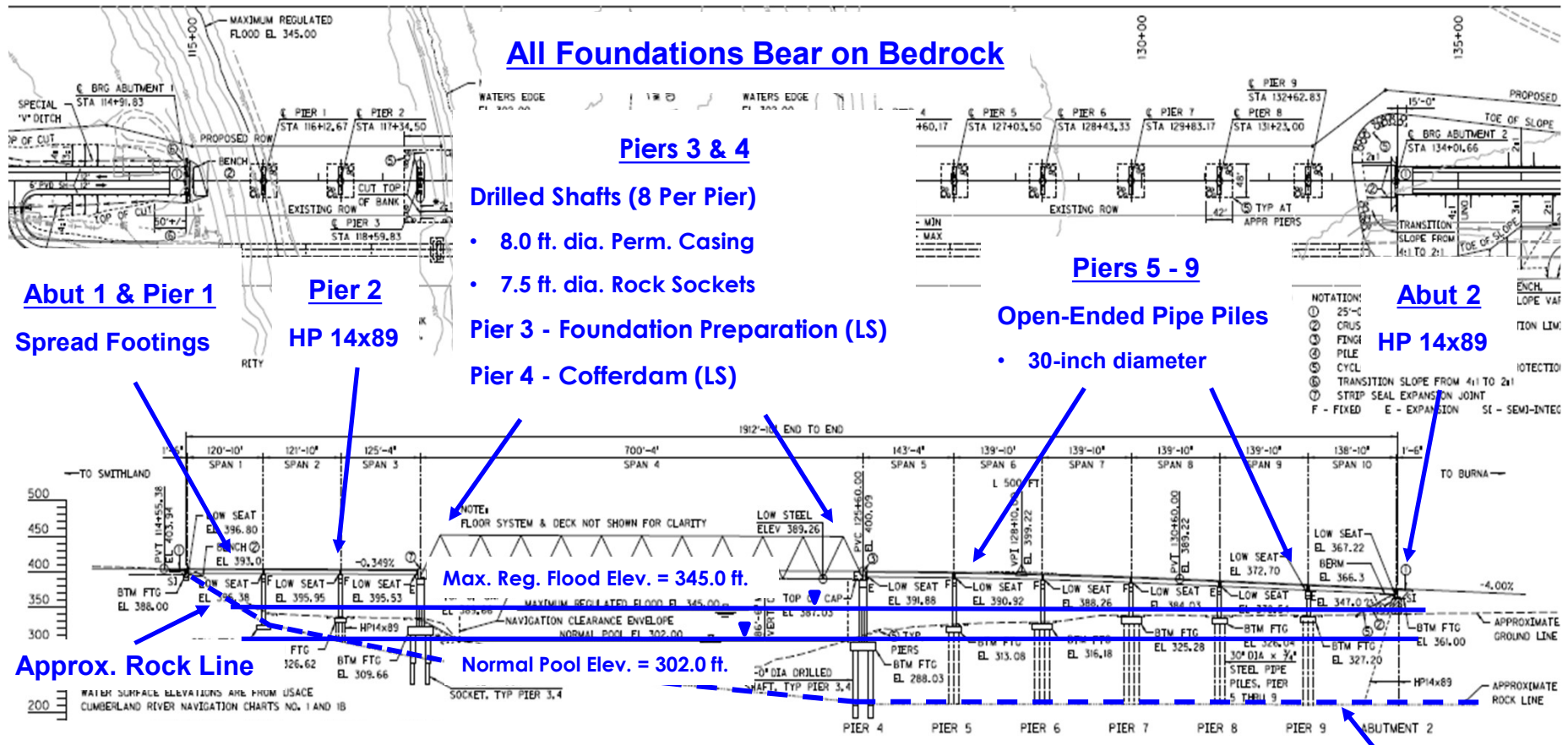






# US 60 Cumberland River Bridge – Pre-Bid Meeting

## Geotech: Overview of Subsurface Conditions & Foundations



≈ 6 to 62 ft. Lean Clay w/ some Sand & Gravel  
≈ 4 ft. thick Sandstone Boulder Encountered at P1  
Soft Shale Bedrock (Sandstone Encountered at A1)

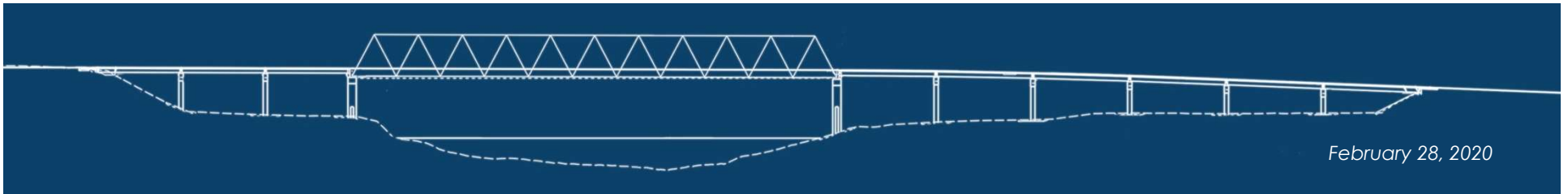
≈ 95 to 130 ft. Lean Clay & Sand  
Hard Sandstone Bedrock (Shale Encountered at P8, P9, A2)



# US 60 Cumberland River Bridge – Pre-Bid Meeting

## Geotech: Special Notes Applicable to Foundations

- Drilled Shafts (11C)
  - “Standard Special Note” Posted on Division of Construction Website
- Project Specific Drilled Shaft Requirements
  - Supplemental & Controls over Special Note for Drilled Shafts (11C)
- Non-Destructive Testing of Drilled Shafts
- Pile Dynamic Testing
- Cone Penetration Test Data
  - For Information Only (No Work Specified)
- Instrumentation on Existing Bridge
- Completion Date
  - Not exclusive to foundations but addresses high water



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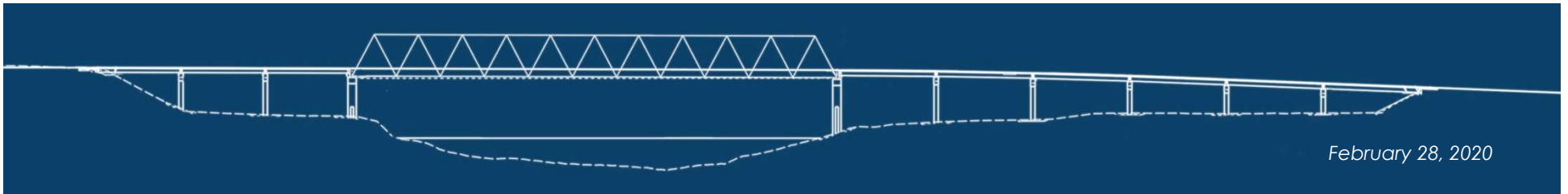




# US 60 Cumberland River Bridge – Pre-Bid Meeting

## Geotech: Drilled Shaft Considerations

- Separate Bid Items at Pier 3 and Pier 4
  - Drilled Shaft, Common and Solid Rock
  - Drilled Shaft Testing - Sonar Calipering, CSL and TIP
- Subsurface Exploration at Each Shaft Location
  - Special Note for Drilled Shafts Section 3.5 & Sheet S12
  - Perform by Consultant Pre-Qualified by KYTC  
for Geotechnical Drilling Services (Stantec Not Eligible)
  - Bid Items not separated by pier
- Rock Cores available for viewing in Frankfort
  - Special Note for Drilled Shafts Section 3.1.2
  - Call 502-564-2374 or email [darrin.beckett@ky.gov](mailto:darrin.beckett@ky.gov) (business card)



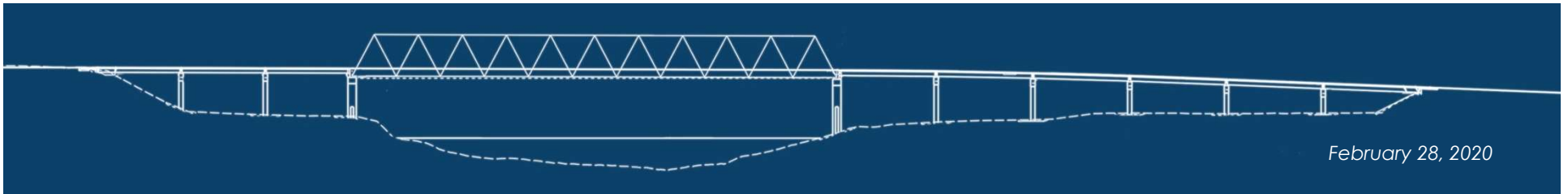
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## US 60 Cumberland River Bridge – Pre-Bid Meeting

### Geotech: Project Specific Drilled Shaft Requirements

- Special Note for Project Specific Drilled Shaft Requirements
  - Controls over Special Note for Drilled Shafts (11C)
  - Sequencing – Interior shafts until testing accepted on first shaft (applies from rock excavation through concreting)
  - Drilled Shaft Supervisor experience requirements
  - SID or Mini-SID to inspect shaft bottoms
  - 2% Verticality Tolerances
  - Polymer Slurry at Pier 3



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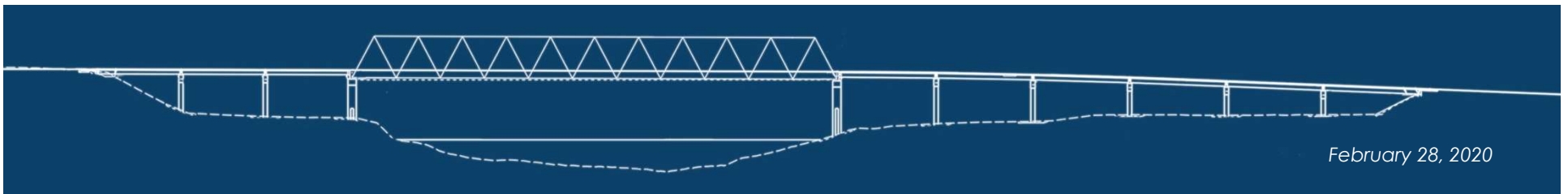


## US 60 Cumberland River Bridge – Pre-Bid Meeting

### Geotech: Project Specific Drilled Shaft Requirements

Polymer Slurry required at Pier 3 due to non-durable shales being subject to degradation when exposed to water

- Required during rock excavation through concreting
- Supplier Technical Representative
- Contractor responsible for testing with checks by Department
- 130% of Theoretical Shaft Volume (34,000 gal.) in tanks
- Incidental to Pier 3 Drilled Shafts
- Consider space constraints relative to Pier 2

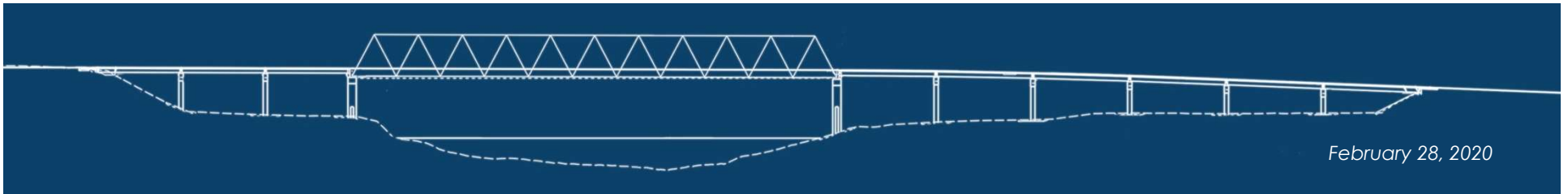




## US 60 Cumberland River Bridge – Pre-Bid Meeting

### Geotech: Non-Destructive Testing of Drilled Shafts

- Sonar Caliper Testing used to evaluate verticality, and provide profiles of the rock sockets
  - “Dry Runs” required in casing but not in rock socket
  - Plan Quantity = 9 tests at each pier
- Crosshole Sonic Logging (CSL)
  - Plan Quantity = 16 tests at each pier
  - Quantities to test at 3 to 10 days & retest at 28 days
  - Goal is to eliminate 28 day testing on later shafts at each pier
- Thermal Integrity Profiling (TIP) to be evaluated in conjunction with CSL
  - Embedded Sensors
- Experience requirements specified for testing consultants



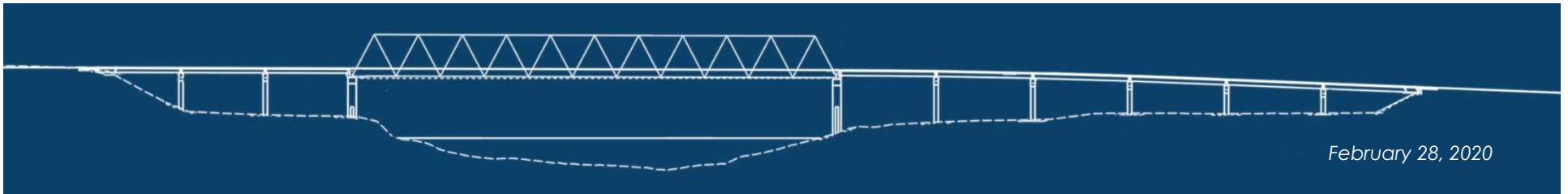
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# US 60 Cumberland River Bridge – Pre-Bid Meeting

## Geotech: Dynamic Pile Testing

- Special Note for Pile Dynamic Testing
  - Plan Quantity = 1 Test per Pier at Piers 5 – 9  
(30-inch Open-Ended Pipe Piles)
  - Department reserves right to add or reduce testing quantities
  - Pipe Piles may be driven to Elev. 217 ft. at any time
  - Dynamic monitoring required below elevation 217 ft. to verify piles adequately seated into bedrock and evaluate potential for damage
  - Restrikes not required
  - Experience requirements specified for testing consultants



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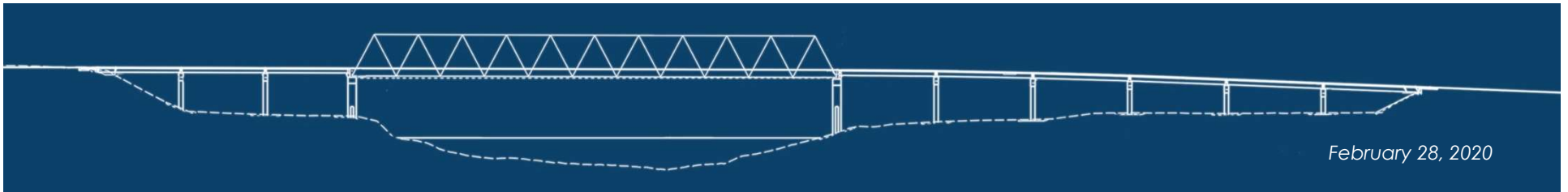




# US 60 Cumberland River Bridge – Pre-Bid Meeting

## Geotech: Instrumentation on Existing Bridge

- Special Note for Instrumentation on Existing Bridge
  - Primarily to monitor during foundation construction activities
  - Pre-Construction & Post-Construction Condition Surveys
  - Tiltmeters & Crackmeters installed prior to foundation construction & removed after traffic is moved to the new bridge
  - Instrumentation will become property of the Department
  - Experience requirements specified for condition survey & instrumentation consultants



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# US 60 Cumberland River Bridge – Pre-Bid Meeting

## Environmental: USCG Section 9

U.S. Department of Homeland Security  
UNITED STATES COAST GUARD

28 JAN 2020

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**BRIDGE PERMIT**  
(4-19-8)

WHEREAS by Title V of an act of Congress approved August 2, 1946, entitled "General Bridge Act of 1946," as amended (33 U.S.C. 525-533), the consent of Congress was granted for the construction, maintenance and operation of bridges and approaches thereto over the navigable waters of the United States;

AND WHEREAS the Secretary of Homeland Security has delegated the authority of Section 502(b) of that act to the Commandant, U.S. Coast Guard by Department of Homeland Security Delegation Number: 0170.1;

AND WHEREAS before construction is commenced, the Commandant must approve the location and plans of any such bridge and may impose any specific conditions relating to the construction, maintenance and operation of the structure deemed necessary in the interest of public navigation, such conditions to have the force of law;

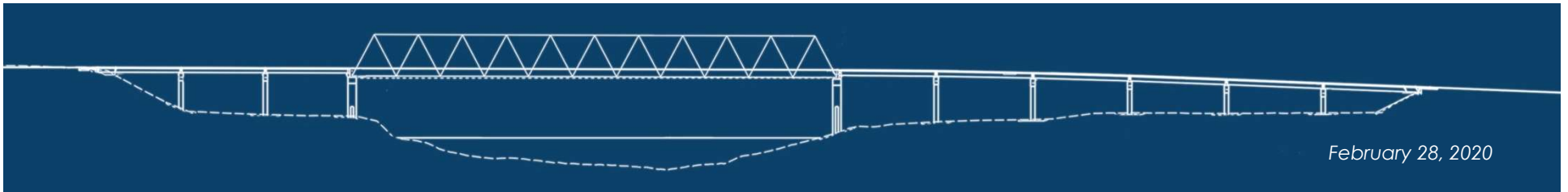
AND WHEREAS the Commandant of the Coast Guard has further delegated to the District Commanders, by Section 1.01-60(b) of Title 33, Code of Federal Regulations, authority to issue permits of the construction, reconstruction, or alteration of bridges across navigable waters of the United States.

AND WHEREAS the - STATE OF KENTUCKY - has submitted for approval the location and plans of a bridge to be constructed across the Cumberland River at Smithland, Livingston County, Kentucky;

NOW THEREFORE, This is to certify that the location and plan sheets 1, 2, 3 and 4 (of 4) dated October 25, 2019 are hereby approved by the Commander, Eighth Coast Guard District, subject to the following conditions:

1. No deviation from the approved plans may be made either before or after completion of the structure unless the modification of said plans has previously been submitted to and received the approval of the District Commander.
2. The construction of falsework, pilings, cofferdams or other obstructions, if required, shall be in accordance with plans submitted to and approved by the District Commander, prior to construction of the bridge. All work shall be so conducted that the free navigation of the waterway is not unreasonably interfered with and the present navigable depths are not impaired. Timely notice of any and all events that may affect navigation shall be given to the District Commander during construction of the bridge. The channel or channels through the structure shall be promptly cleared of all obstructions placed therein or caused by the construction of the bridge to the satisfaction of the District Commander, when in the judgment of the District Commander the construction work has reached a point where such action should be taken, but in no case

- Cofferdam Submittal
- Construction/Falsework Submittal
  - Addendum (Helper Boat, Falsework, Navigation)
- Demolition Submittal



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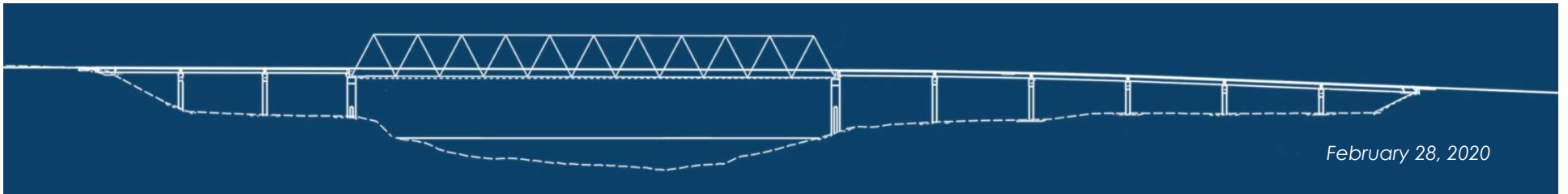




## US 60 Cumberland River Bridge – Pre-Bid Meeting

### Environmental: 401/404 Status

- KDOW Water Quality Certification (401) – **APPROVED**
- US Coast Guard Bridge Permit – **APPROVED**
- USACE 404 Permit – **PENDING**
- FAA/KAZC
  - Not required for permanent construction
  - Contractor responsible for temporary equipment



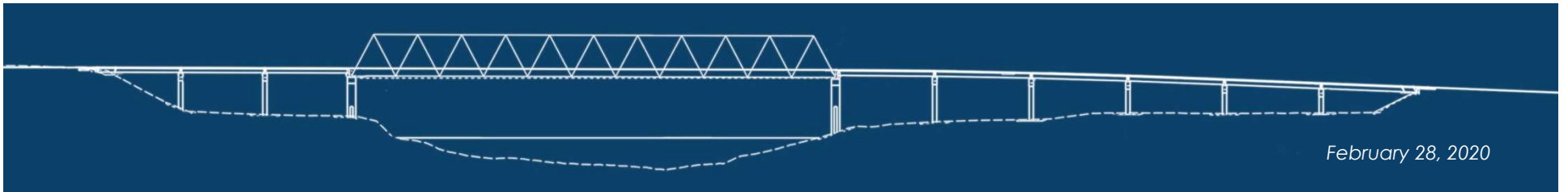


## US 60 Cumberland River Bridge – Pre-Bid Meeting

### Environmental: Env Commitments (Section 7 & Osprey)



- Nesting Season  
(March – August)
- 150' Buffer  
(can be reduced to 75')
- KYTC Biologist Oversight
- Demolition restriction  
(April-July)



February 28, 2020

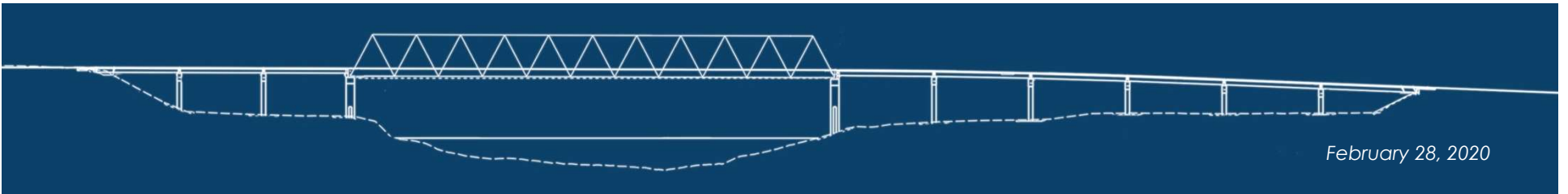


## US 60 Cumberland River Bridge – Pre-Bid Meeting

### Environmental: Env Commitments (Mussel Impact)



- Bridge demolition requirements
- Dredged Area backfill & regrading
- Turbidity Monitoring



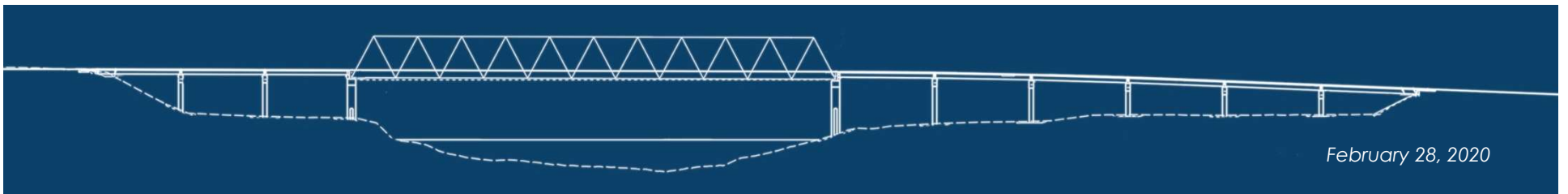
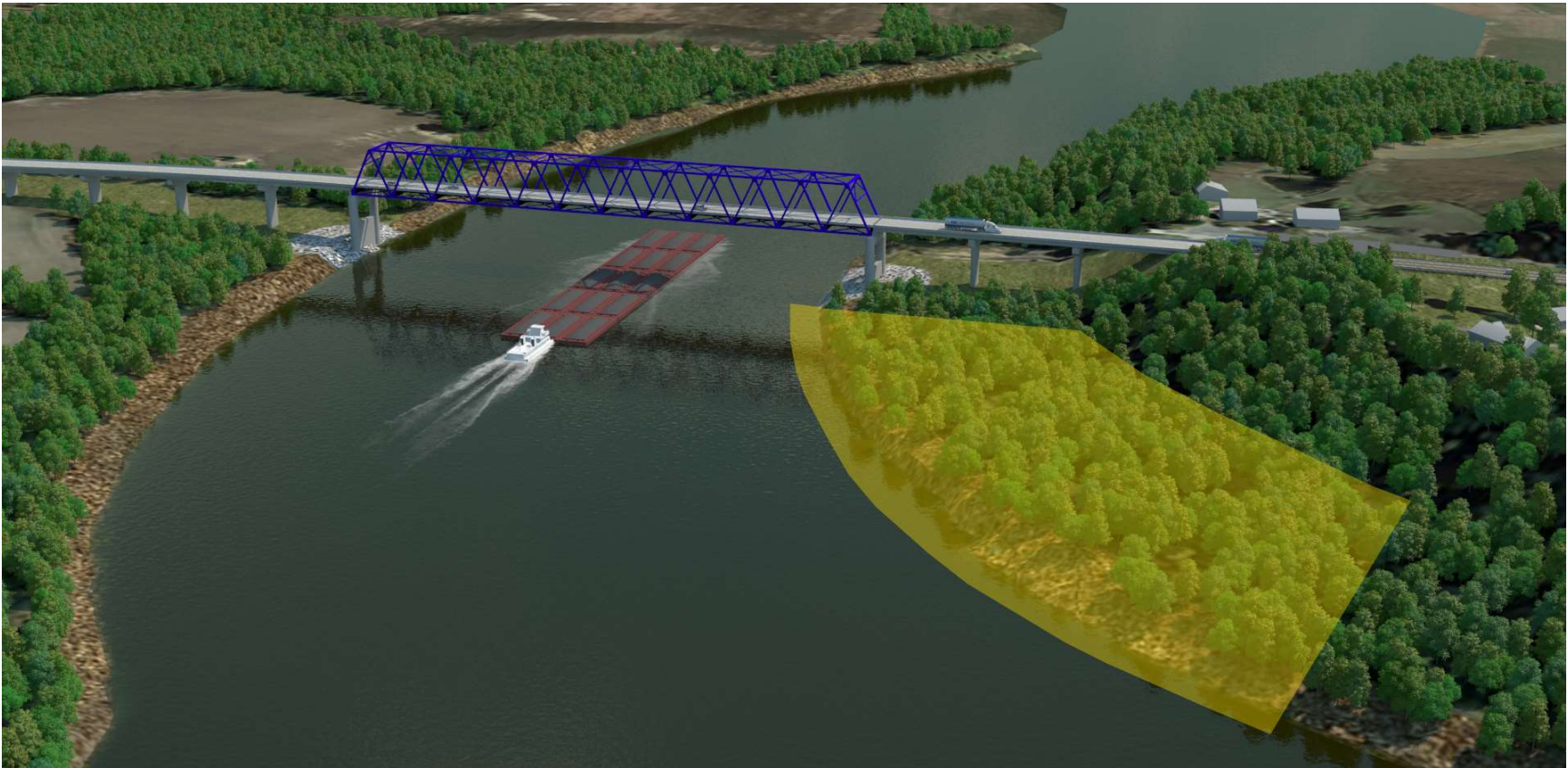
February 28, 2020





## US 60 Cumberland River Bridge – Pre-Bid Meeting

# Environmental: Additional Cleared Areas

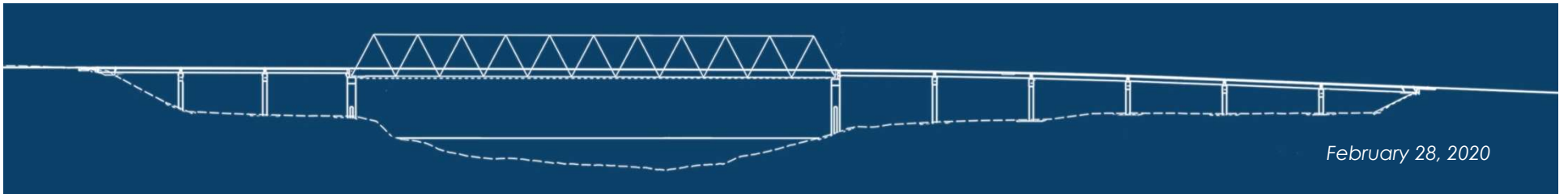


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# DBE Requirements

- 6.5% Goal
- Details in the proposal & Procurement website



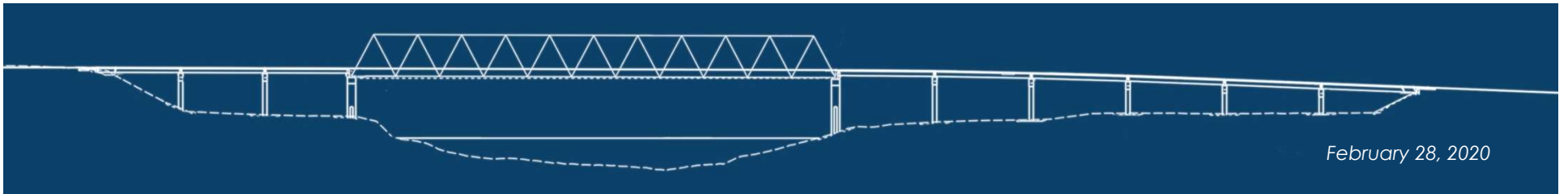
February 28, 2020



# US 60 Cumberland River Bridge – Pre-Bid Meeting

## Schedule: Timeline

- Bid Letting  
March 20, 2020
- Existing Bridge Repairs  
August 1, 2020
- Project Completion  
December 1, 2023

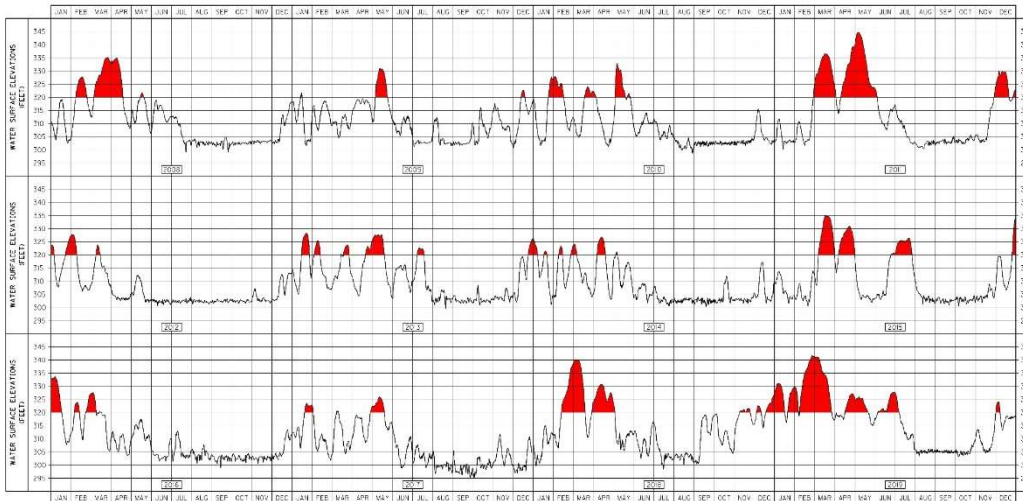




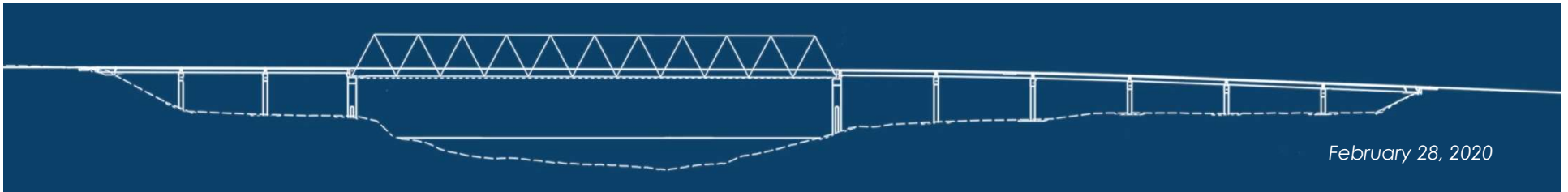


# US 60 Cumberland River Bridge – Pre-Bid Meeting

## Schedule: High Water Impact



- Fixed Completion Date acknowledges High-Water Impact days.
- Defined as El. 320.0
- 244 Days of lost time assumed and to be included in bid.
- Time extension and/or cost implications – See Special Note.

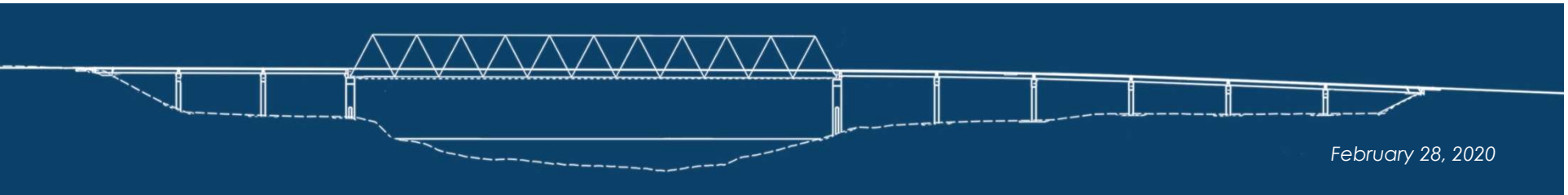


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# US 60 Cumberland River Bridge – Pre-Bid Meeting

## Q & A



February 28, 2020

# **SPECIAL NOTE FOR MITIGATION OF IMPACTS TO THE CUMBERLAND RIVER IN ACCORDANCE WITH THE BIOLOGICAL OPINION CONCERNING FAT POCKETBOOK MUSSELS**

## **Livingston County Item No. 1-1142 US 60 Bridge over Cumberland River**

**DRAFT**

1. KYTC is bound by the tenets of Kentucky Pollution Discharge System (KPDES), permit number KYR10, to reduce erosion and sedimentation effects from projects involving soil disturbance. As required under Section 213 of the KYTC Standard Specifications, a site-specific Erosion Control Plan, including Best Management Practices (BMP), will be developed prior to on-site activities to ensure continuous erosion control throughout the construction and post-construction period. The plan will identify individual Disturbed Drainage Areas (DDA) where stormwater from the construction area will be discharged off site or into waters of the Commonwealth. This measure will reduce the amount of sediment and other contaminants introduced into the Action Area, minimizing impacts to mussels.
2. During demolition of the existing bridge, if the concrete deck is removed prior to demolition of the truss, the contractor will be responsible for assuring that decking debris falling into the river will be kept to a minimum.
3. Removal of the existing piers will be conducted as outlined in the U.S. Coast Guard permit dated January 28, 2020. To the maximum extent practicable, all material from the demolition of the existing piers will be removed from the river bed.
4. Once the new truss has been set and coffer cells/barge slips are no longer needed, any dredged areas along the riverbank and/or channel will be filled with natural stable material (not demolition debris), graded back to original contours, stabilized to prevent erosion, and re-vegetated.
5. All materials excavated from dredging or during truss removal will be stored at an upland site and precluded from re-entry into any aquatic resource. Sediment and erosion control measures should be installed at the upland site to prevent any material from entering the adjacent waterways.
6. The contractor will conduct daily turbidity monitoring 100-foot upstream of the existing US Highway 60 bridge, as well as 500-foot and 1,000-foot downstream at both the substrate level and mid-water column during riverbed/riverbank disturbance activities such as dredging, cofferdam installation/removal, as well as pre-and post truss demolition. Monitoring results will be provided to the KYTC inspector on site for inclusion in the daily KYTC work reports. Costs associated with turbidity monitoring will be incidental to the work.
7. Should the contractor propose alternate construction/demolition methodologies, a proposed



plan will be submitted to the Department for coordination with the appropriate resource and permitting agencies.

# **SPECIAL NOTE FOR MITIGATION OF IMPACTS TO OSPREY**

**Livingston County  
Item No. 1-1142  
US 60 Bridge over Cumberland River**

**DRAFT**

Osprey nests on the existing US 60 bridge shall not be removed or disturbed. Construction activities shall not be permitted within a 150-foot buffer of any Osprey nest during the nesting season from March 1 to August 31, the work buffer is not required outside of these dates. During this period, construction equipment shall not be placed between the existing and new bridge and equipment, including concrete trucks, shall not be allowed to work from the existing bridge. The buffer zone may be reduced to a minimum of 75-ft pending tests to evaluate the Ospreys' tolerance to certain construction activities. Tests shall be conducted on warm, dry days in the presence of a trained biologist designated by the KYTC. The Biologist shall have authority to specify a new buffer distance as well as shut down construction activities. The Biologist shall record all observations and report them to the KYTC as well as the KDFWR. The buffer requirement may be ended before August 31, if the biologist observes that young ospreys have fledged from a nest and left the area. The Contractor should note that the most crucial time for the nesting Osprey occurs between April and July, during this time there is an increased likelihood that nesting Osprey will be present and greater potential for the birds to be disturbed by construction activities. Consequently, demolition of the existing bridge shall not occur between the months of April and July.