US 60 Cumberland River Bridge
Pre-Bid Meeting
February 28, 2020
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
Agenda

• Project Overview
• Roadway Approaches
• Utilities
• Existing Bridge
• River Bridge
• Geotechnical & Foundations
• Environmental Commitments
• DBE Requirements
• Schedule
Project Overview: Vicinity Map
Project Overview: Existing Bridge Aerial
Project Overview: Bridge Rendering
Project Overview: Roll Plot
Project Overview: Fly-Thru Video
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
Roadway: South Approach
Roadway: North Approach
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
Utilities: Relocation Status

- Jackson Purchase Energy Corporation
  - 4/30/20

- Windstream dba Kentucky Data Link
  - During construction
Existing Bridge: Immediate Repairs
Existing Bridge: Immediate Repairs
Existing Bridge: Maintenance Bid Item

$500,000 Bid Budget
Bridge: Layout

SECTION ALONG US 60 RELOCATED
SPAN 1, 2, 3, & 4 ARE WIDE HOLLOW-SECTION DECK BOX SPANS FOR LIVE LOAD
SPAN 5 IS STEEL THROUGH TRUSS DECK SPAN
SPAN 6 IS PRE-TENSIONED HOLLOW-SECTION SPAN
ADJACENT SPANS SUPPORT NAVIGATION CLEARANCE
NAVIGATION CLEARANCE ENCLOSED PATHWAY & NARROW PATHWAY
NAVIGATION CLEARANCE ENCLOSED PATHWAY & NARROW PATHWAY

TYPICAL SECTION – APPROACH SPANS
5' HD DECK BEAMS IN SPAN 1-3
5' HD DECK BEAMS IN SPAN 5-10
Bridge: South Approach Spans
Bridge: North Approach Spans
Bridge: Approach Substructures
Bridge: Main Span Layout
Bridge: Main Span Pier Types

- Main span dimensions:
  - Width: 88’-0”
  - Height: 60’-0”
  - Pier height: 33’-0”

- Details:
  - WEB WALL: 4’
  - 6’-3”
  - 12’-0”

- Adjacent pier dimensions:
  - Length: 40’-0”
  - Height: 11’-0”

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Bridge: Bridge Bearings

**SECTION A-A**

Legend:
- **INDICATES THE PARTS OF THE BEARING ASSEMBLY TO BE DESIGNED AND SUPPLIED BY THE BEARING MANUFACTURER WITHIN THE PARAMETERS SHOWN ON THESE PLANS.**

- **1/2" DIA. ASTMT F569 OR A325 BOLT, TYPICAL**
- **CAM NUT**
- **HEAVY-HICKET NUT WASH**
- **2" DIA. PRESTRESSED HOLE, FILL WITH NON-SHRINK EPOXY, TYPICAL**
- **PREVENT WATER FROM ENTERING HOLE PRIOR TO GRouting**
- **3/4" DIA. ASTMT F569 OR A325 BOLT, TYPICAL**
- **SIDE ELEVATION**

Drill and tap 1/4" dia. ASTM F569 or A325 bolt, typical.

Dimensions and specifications for the bridge bearings are indicated in the diagram.

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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 ½” Max Thickness)
- **Paint**
  - Kentucky Blue (Federal Standard 595B Color X5095)
Bridge: Erection – Staging Area
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
Geotech: Overview of Subsurface Conditions & Foundations

South Side of River

- ≈ 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)

North Side of River

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

All Foundations Bear on Bedrock

Piers 3 & 4
- Drilled Shafts (8 Per Pier)
  - 8.0 ft. dia. Perm. Casing
  - 7.5 ft. dia. Rock Sockets

Pier 2
- HP 14x89

Pier 3 - Foundation Preparation (LS)

Pier 4 - Cofferdam (LS)

Piers 5 - 9
- Open-Ended Pipe Piles
  - 30-inch diameter

Abut 1 & Pier 1
- Spread Footings

Abut 2
- HP 14x89
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
Geotech: Drilled Shaft Considerations

- Separate Bid Items at Pier 3 and Pier 4
  - Drilled Shaft, Common and Solid Rock
  - Drilled Shaft Testing - Sonar Caliper, 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 (business card)
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
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
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
Geotech: Dynamic Pile Testing

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

- Cofferdam Submittal
- Construction/Falsework Submittal
  - Addendums (Helper Boat, Falsework, Navigation)
- Demolition Submittal
Environmental: SCI Navigation Model
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
Environmental: Env Commitments (Section 7 & Osprey)

- Nesting Season (March – August)
- 150’ Buffer (can be reduced to 75’)
- KYTC Biologist Oversight
- Demolition restriction (April-July)
Environmental: Env Commitments (Mussel Impact)

- Bridge demolition requirements
- Dredged Area backfill & regrading
- Turbidity Monitoring
Environmental: Additional Cleared Areas
DBE Requirements

• 6.5% Goal

• Details in the proposal & Procurement website
Schedule: Timeline

- Bid Letting
  March 20, 2020

- Existing Bridge Repairs
  August 1, 2020

- Project Completion
  December 1, 2023
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.
Q & A
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

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.