



2013 Partnering Conference

New Bridges Over Lake Barkley and Kentucky Lake US 68/Ky 80



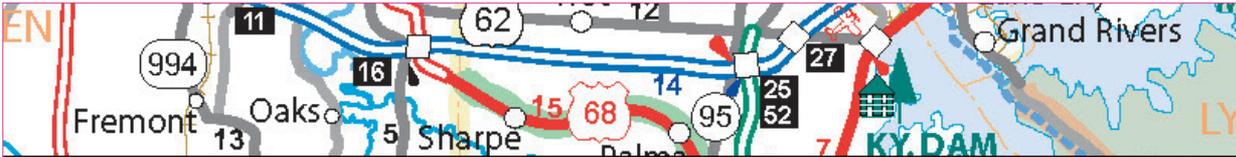
September 10, 2013



Baker



US68/KY80 Corridor



Acquiring R/W

In Design

Completed

Potential D/B

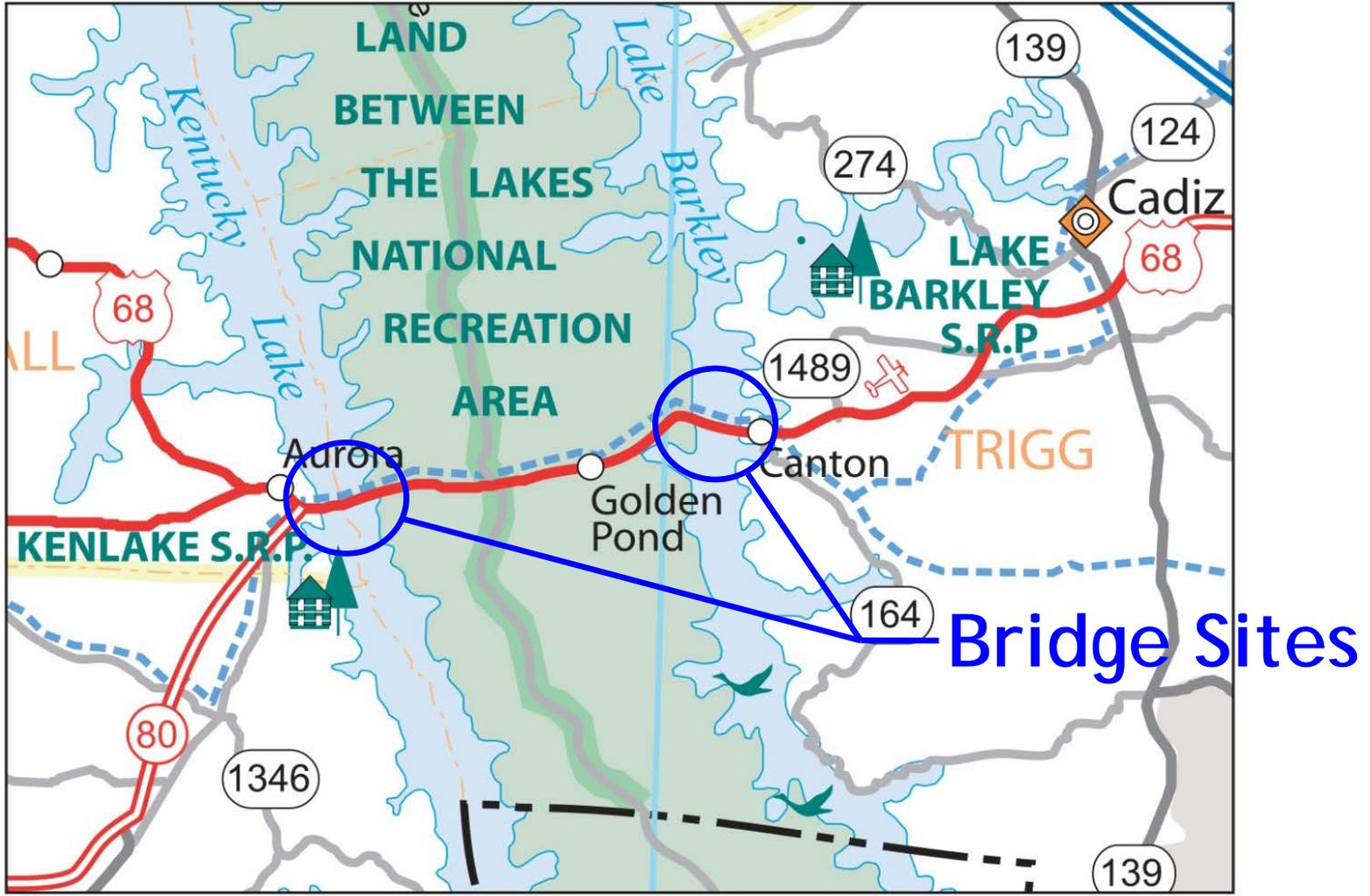
Acquiring R/W

Completed



- KYTC, District 1
- Baker
 - Project Management
 - Arch Design
- Palmer
 - Approach Span Design
 - Roadway Design
- Terracon
 - Geotechnical
- Specialty Firms
- Minority Firms

Site Map



Kentucky Lake



Lake Barkley



**FINDING OF NO SIGNIFICANT IMPACT
and
SECTION 4(F) EVALUATION**

**US 68/KY 80
IMPROVEMENTS FROM AURORA TO THE CADIZ BYPASS
MARSHALL AND TRIGG COUNTIES
ITEM No. 1-180.00**

Submitted Pursuant to 42 U.S.C. 4332 (2)(c) by The U.S. Department of Transportation, Federal Highway Administration, and Kentucky Transportation Cabinet, Division of Environmental Analysis

Cooperating Agencies:
United States Department of Agriculture, Forest Service
Tennessee Valley Authority
United States Coast Guard

September 2006

Environmental Assessment (EA) Approved
January 1995

This document assesses the proposal by the Kentucky Transportation Cabinet to widen and improve US 68/KY 80, from KY 84 in Kentucky State Resort Park in Marshall County to the western terminus of the Cadiz bypass in Trigg County. The total length of the proposed improvements is approximately 17 miles. The project will cross both Kentucky Lake (Tennessee River) and Lake Barkley (Cumberland River) on new bridges. Portions of the roadway are proposed to be built on new location while other portions will follow the existing roadway. The project passes through Kentucky State Resort Park and the Land Between The Lakes (LBL) National Recreation Area.

[Signature]
Date of Approval

[Signature]
For Kentucky Transportation Cabinet

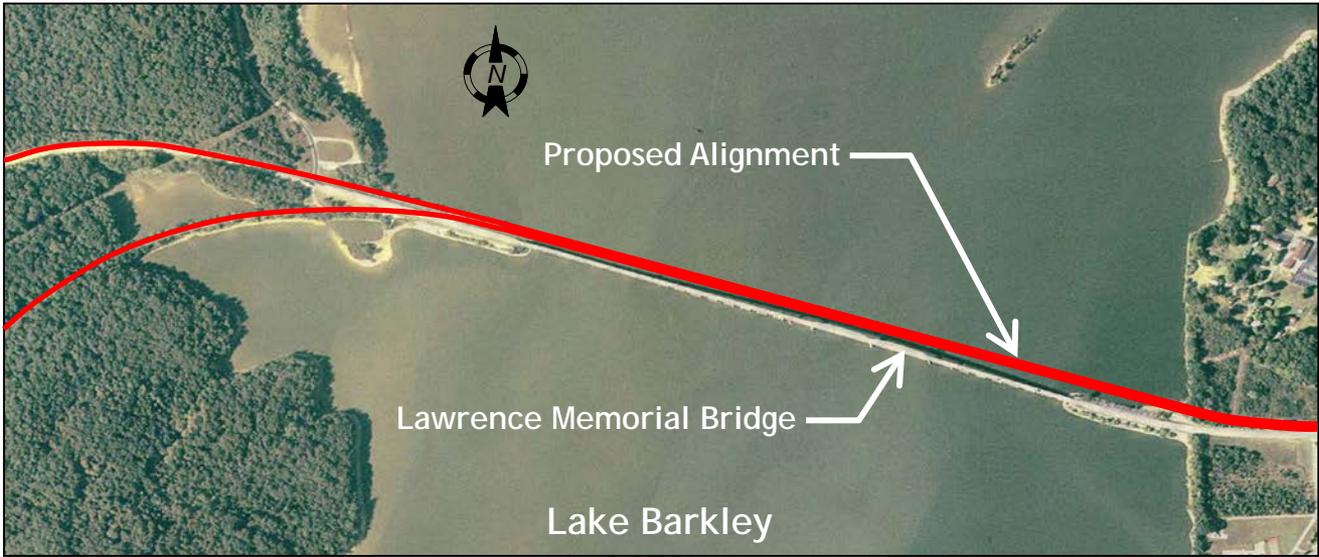
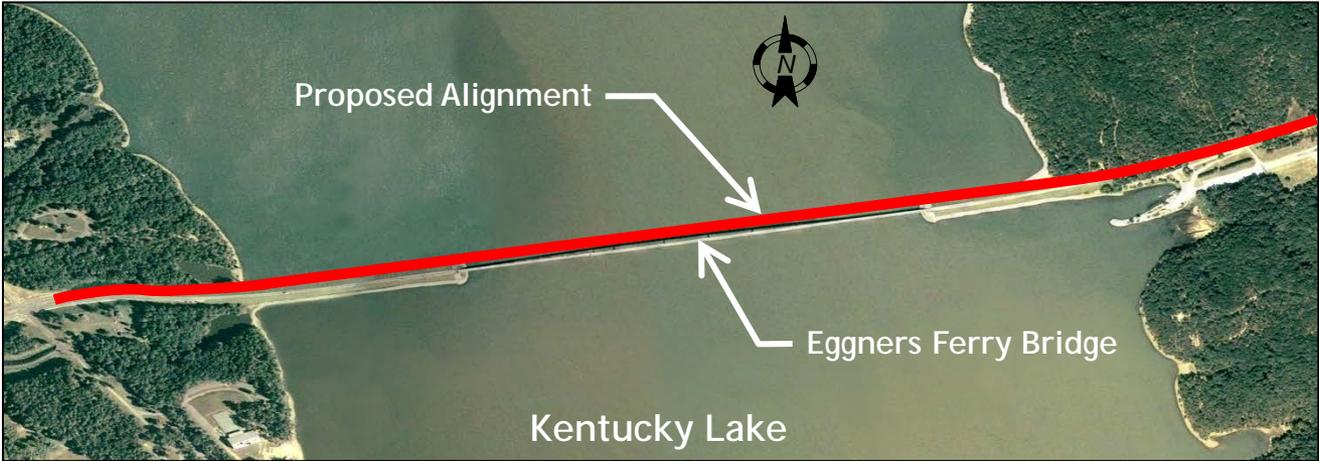
[Signature]
Date of Approval

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For Federal Highway Administration

Purpose and Need

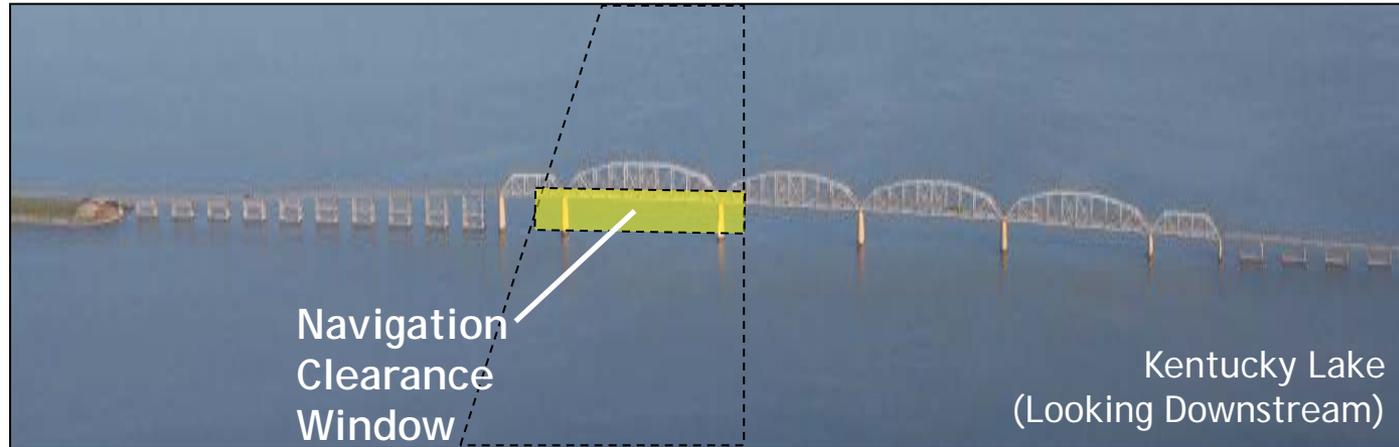
- Address Bridge Deficiencies
- Address Roadway Deficiencies
 - Lane Widths
 - Clear Zones
 - Sharp Curves
 - Steep Grades
 - Sight Distances

Project Alignment



Navigation Clearance

- 502' Minimum Horizontal Clearance



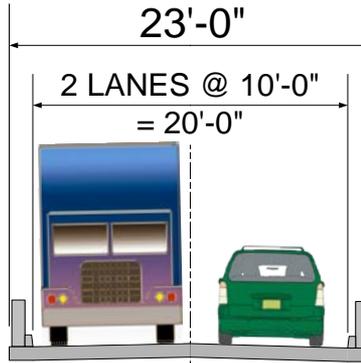
- 60' Minimum Vertical Clearance



FONSI Bridge Cross Section



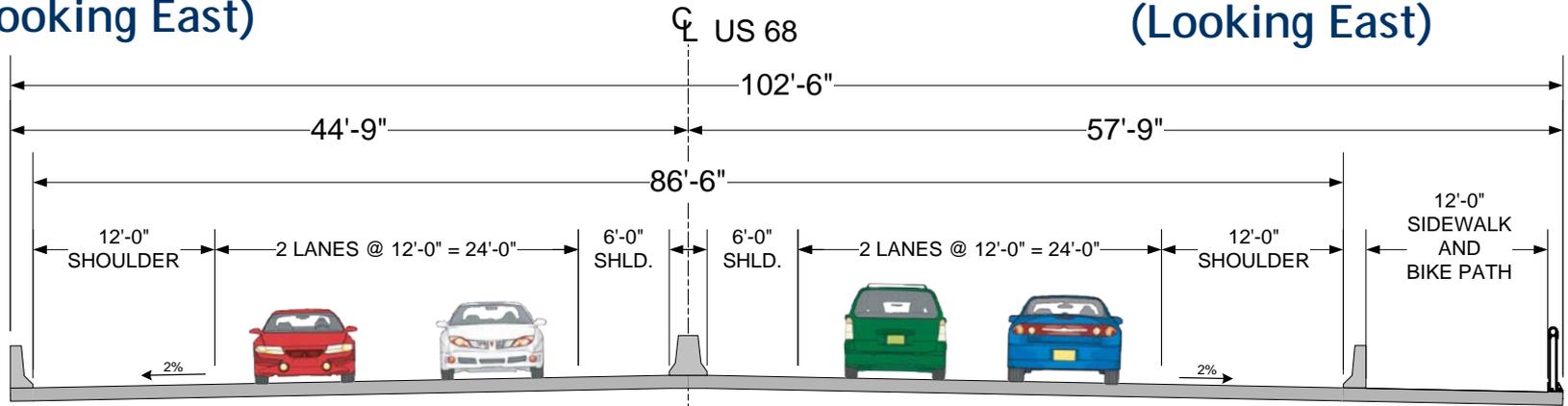
**Kentucky Lake
(Looking East)**



**EXISTING TYPICAL SECTION
(Looking East)**

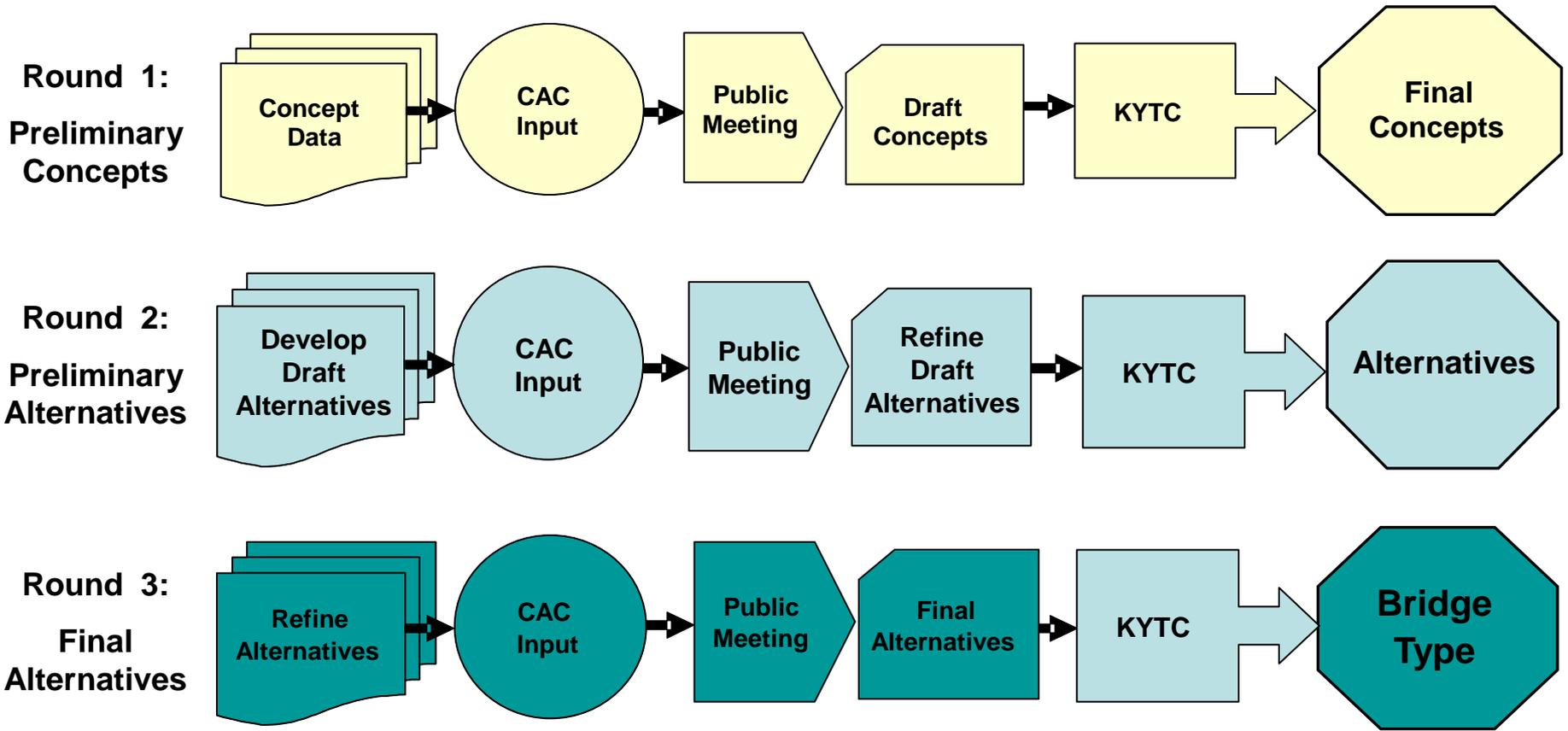


**Lake Barkley
(Looking East)**



**ORIGINAL TYPICAL SECTION
(Looking East)**

Bridge Type Selection Process



16 Person Committee

- 4 Elected Officials
- 2 Industry Representatives
- 3 Chamber of Commerce, Tourism Representatives
- 3 Planning, Development Agency Representatives
- 2 Friends of L.B.L. Representatives
- 1 Ky. Western Waterland Representative
- 1 US Forestry Service Representative

Counties Represented

Calloway

Marshall

Trigg

Round 3 Results



Preliminary Costs 102'-6" wide bridge

Option	Kentucky Lake	Lake Barkley	(2008\$)
<i>Alternative 1</i> Diamond Tower Cable Stay	\$ 240 M	\$220 M	\$ 460 M
<i>Alternative 2</i> Single Tower Cable Stay	\$ 220 M	\$ 210 M	\$ 430 M
<i>Alternative 3</i> Girder	\$ 200 M	\$ 190 M	\$ 390 M
<i>Alternative 4</i> Median Tower Cable Stay	\$ 250 M	\$ 240 M	\$ 490 M

Includes 20% Contingency

KYTC Practical Solutions Initiative

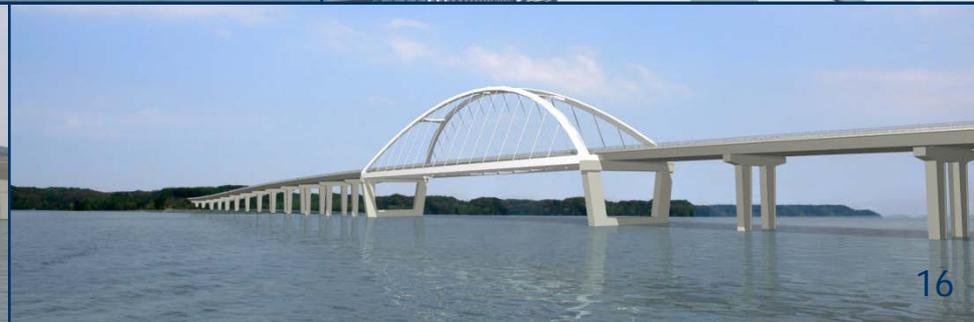
- Consider Lower Cost Bridge Types
- Consider Reduced Bridge Width
- Bridge Type - Be Aesthetically Pleasing
- Stay on Schedule

Alternative 5 Vertical Rib Tied Arch

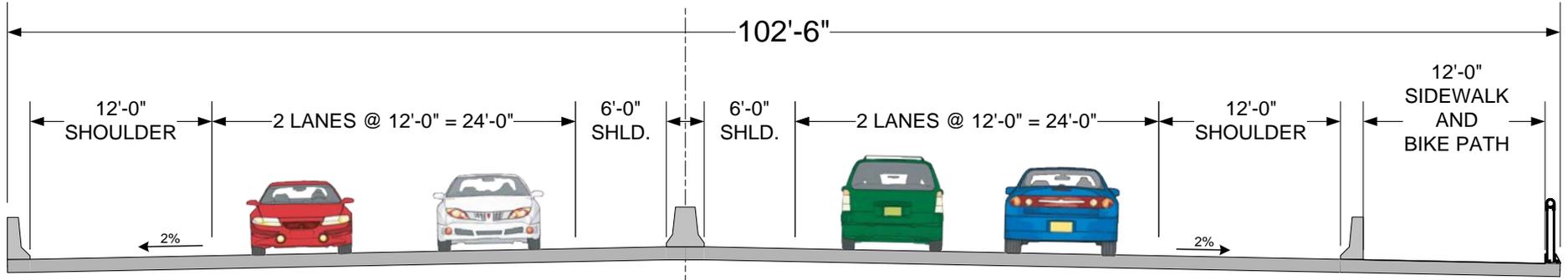


Alternative 6

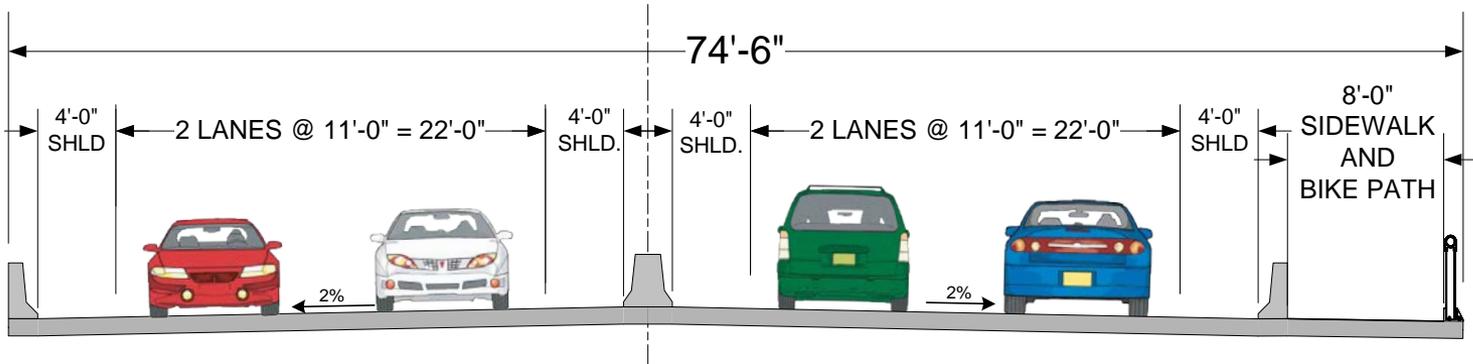
Basket-Handle Tied Arch



Bridge Cross Section Reduced



ORIGINAL TYPICAL SECTION



REDUCED SECTION

Preliminary Costs Summary

Option		Kentucky Lake	Lake Barkley	Total (2008\$)
<i>Alternative 1</i> Diamond Tower Cable Stay		\$ 190 M	\$ 180 M	\$ 370 M
<i>Alternative 2</i> Single Tower Cable Stay		\$ 180 M	\$ 170 M	\$ 350 M
<i>Alternative 3</i> Girder Bridge		\$ 160 M	\$ 150 M	\$ 310 M
<i>Alternative 4</i> Median Tower Cable Stay		\$ 200 M	\$ 190 M	\$ 390 M
<i>Alternative 5</i> Vertical Rib Tied Arch		\$ 160 M	\$ 160M	\$ 320 M
<i>Alternative 6</i> Basket-Handle Tied Arch		\$ 160 M	\$ 160 M	\$ 320 M

74'-6" wide bridge

Preliminary Costs Include

- Environmental Commitments
- 6,200 Ft Roadway Approaches
- 11,700 Ft Ped/Bikeway
- Shore to Shore Bridge

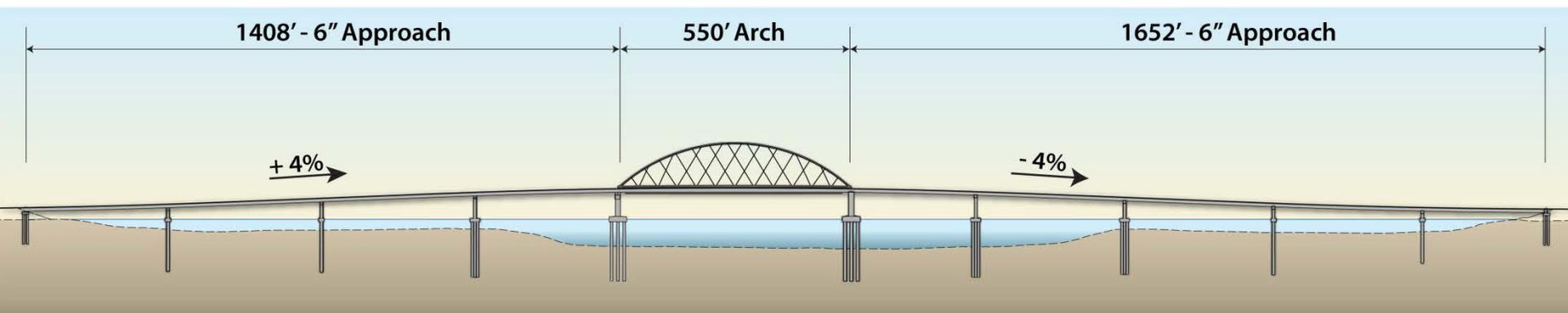
NOW MAXIMUM USE OF CAUSEWAYS

Basket-Handle Arch



Project Lengths

- 9080 Ft Total
- 1400 Ft West Causeway
- 1000 Ft East Causeway
- 580 Ft Lagoon Bridge
- 3611 Ft Lake Bridge
 - 1410 Ft West Approach
 - 550 Ft Arch
 - 1651 Ft East Approach



Advance Construction Letting

- Lagoon Bridge Construction
- Causeway Fill Material
- Pile Load Tests

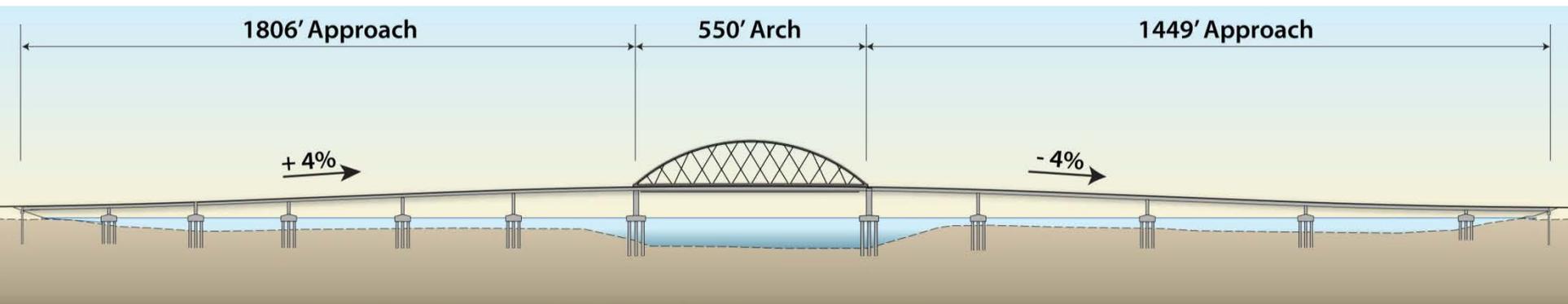
Final Design

- Basket-Handle Arch
- Approach Spans
- Final Paving & Multi-Use Paths

December 17, 2013 Letting

Project Lengths

- 6050 Ft Total
- 650 Ft West Causeway
- 1000 Ft East Causeway
- 3805 Ft Lake Bridge
 - 1806 Ft West Approach
 - 550 Ft Arch
 - 1449 Ft East Approach



TS&L/Prel. Engineering Begun

Subsurface Exploration

- Main Span Piers Drilled
- Approach Span Piers - Spring 2014

December 2014 Letting

New Madrid Fault Zone



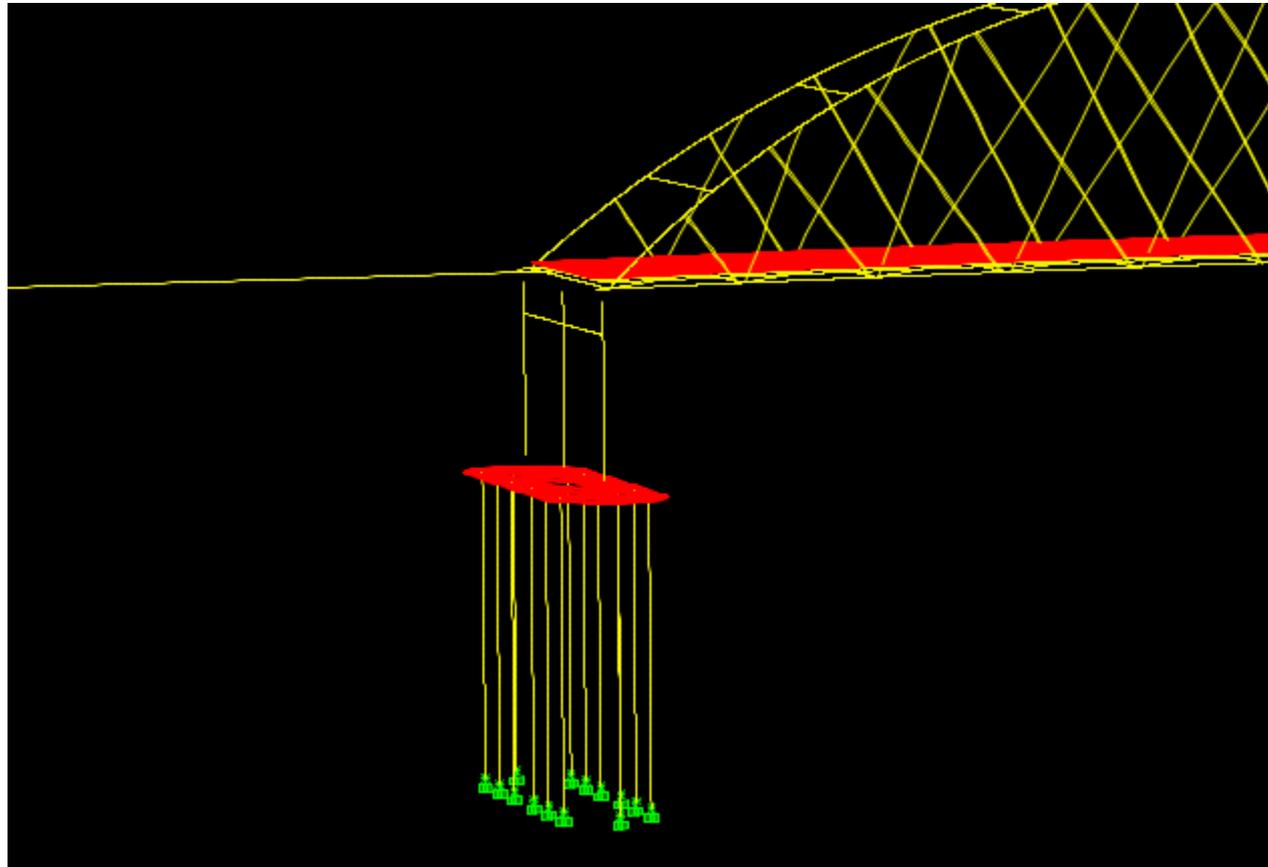
It Was A BIG One !

- Dec. 16, 1811, M 7.7
- Jan. 23, 1812, M 7.5
- Feb. 7, 1812, M 7.7
- 1800 Aftershocks through Mar. 1812
- Total of 10 of M 6 or Greater

Criteria and Objectives

- AASHTO LRFD Seismic Design
- “Essential” Bridge Classification
- 1000 Year Return Period
- Elastic During Seismic Event
- Remain Open After Seismic Event
- Minor Repairs After Seismic Event

The Hula Dancer

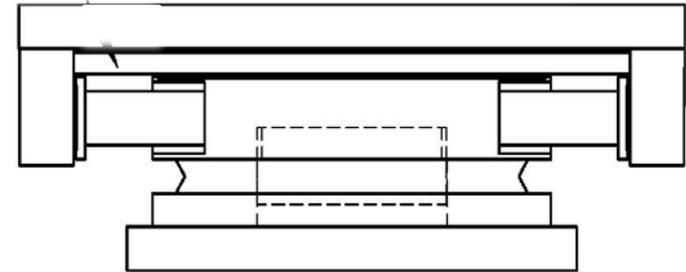


Solutions

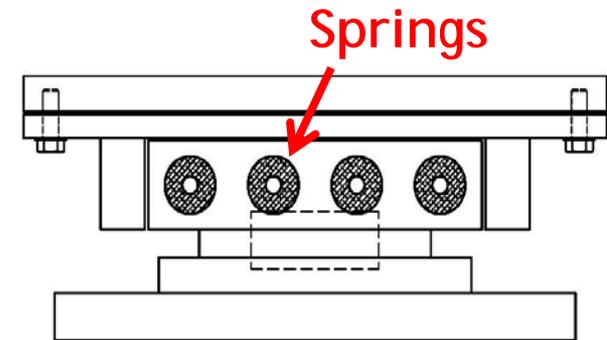


**FLUID VISCOUS DAMPERS
& LOCK-UP DEVICES**

- Seismic Dampers



Corner Bearings (4)

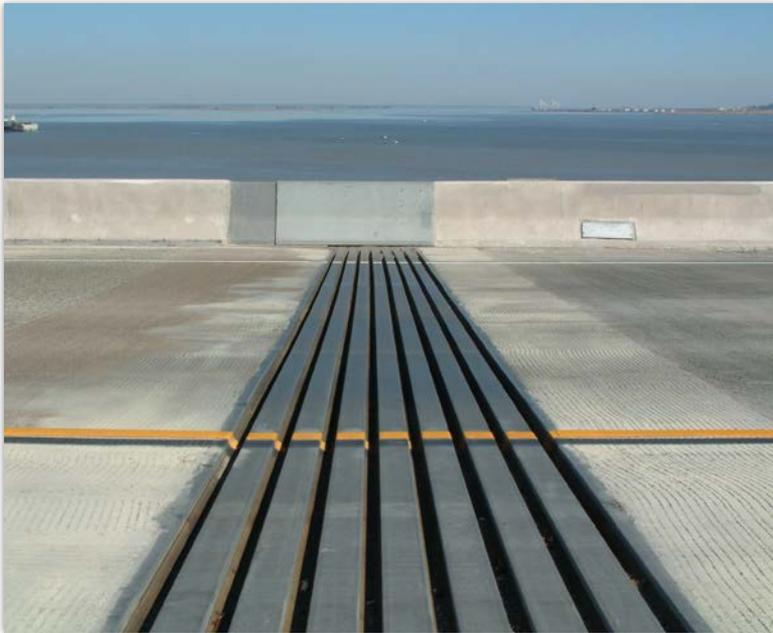


Middle Bearings (2)

- Isolation Bearings

Solutions

- Modular Exp. Joints
 - 18" Long. Movement
 - 9" Lat. Movement



Construction Letting

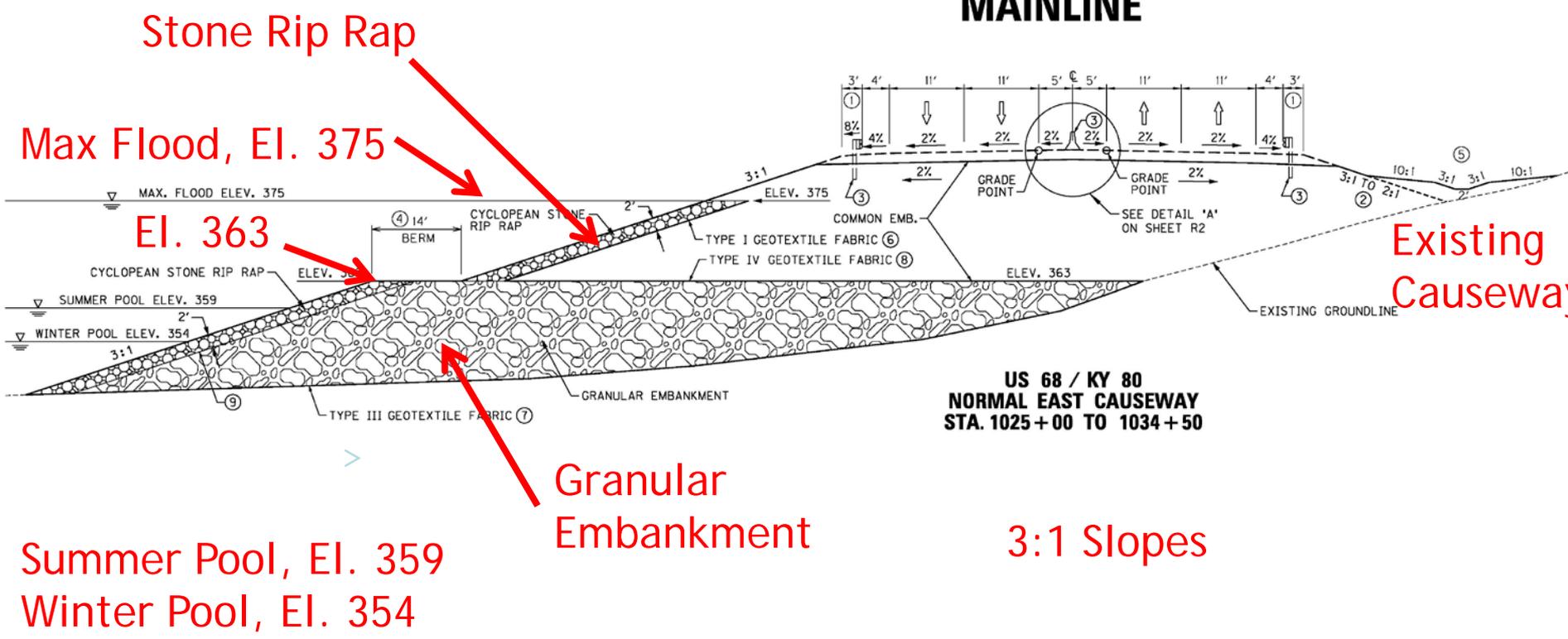
- Initial Letting - November 2012
 - 1 Bid
 - Above Engineer's Estimate
 - Pile Load Testing Concerns
- 2nd Letting - February 22, 2013
 - 2 Bids
 - Jim Smith Contracting Co. LLC
 - \$24,212,491.14
 - 420 Calendar Days Total
 - Below Engineer's Estimate
- Award Date - March 01, 2013
- Notice to Proceed - April 18, 2013

Activities

- Causeway Fill
- Construct Lagoon Bridge
- Pile Load Testing

Causeway Section

TYPICAL SECTION MAINLINE



QUANTITIES

Granular Embankment
165,400 CY

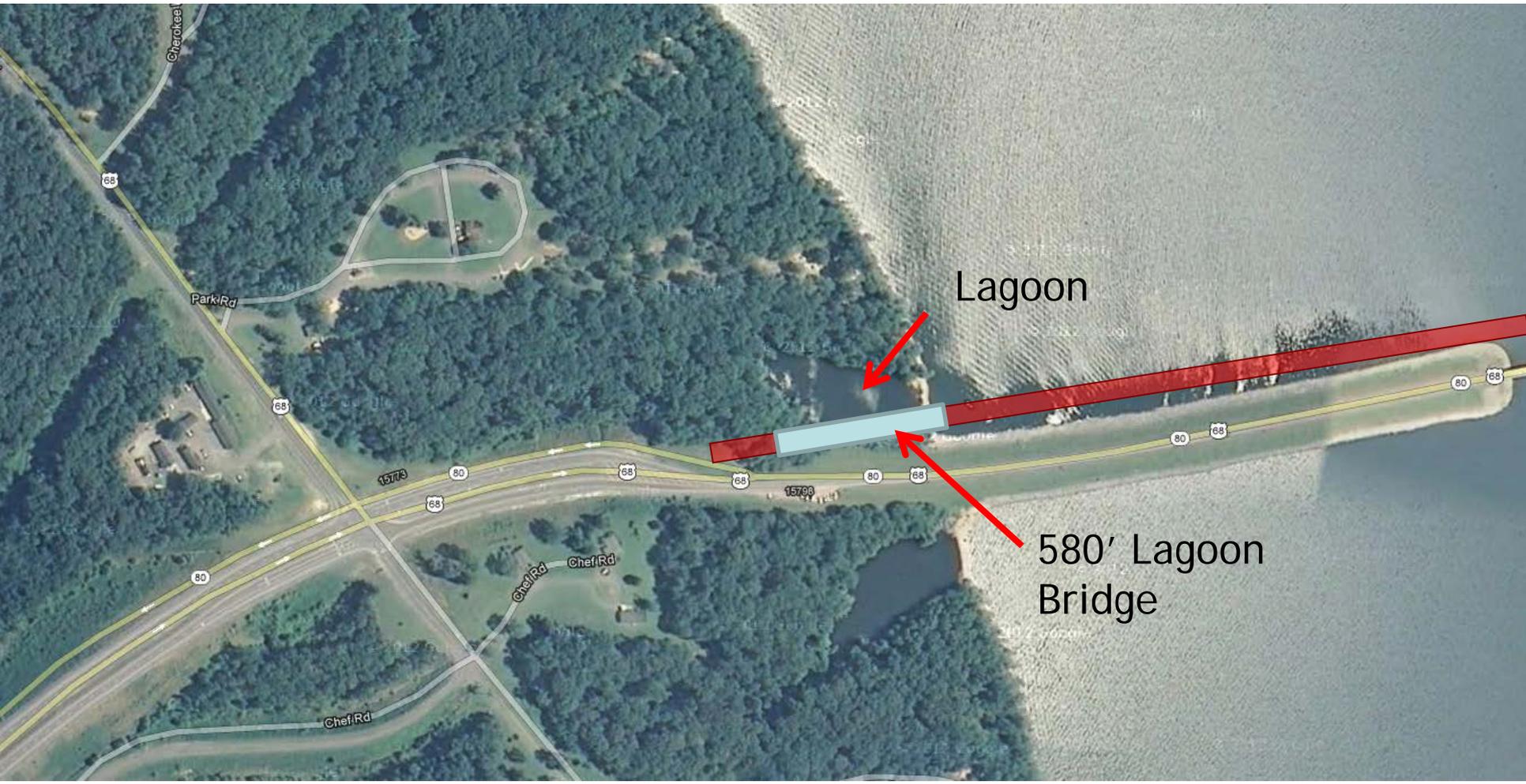
Embankment in Place
172,500 CY



Causeway Construction



Lagoon Bridge

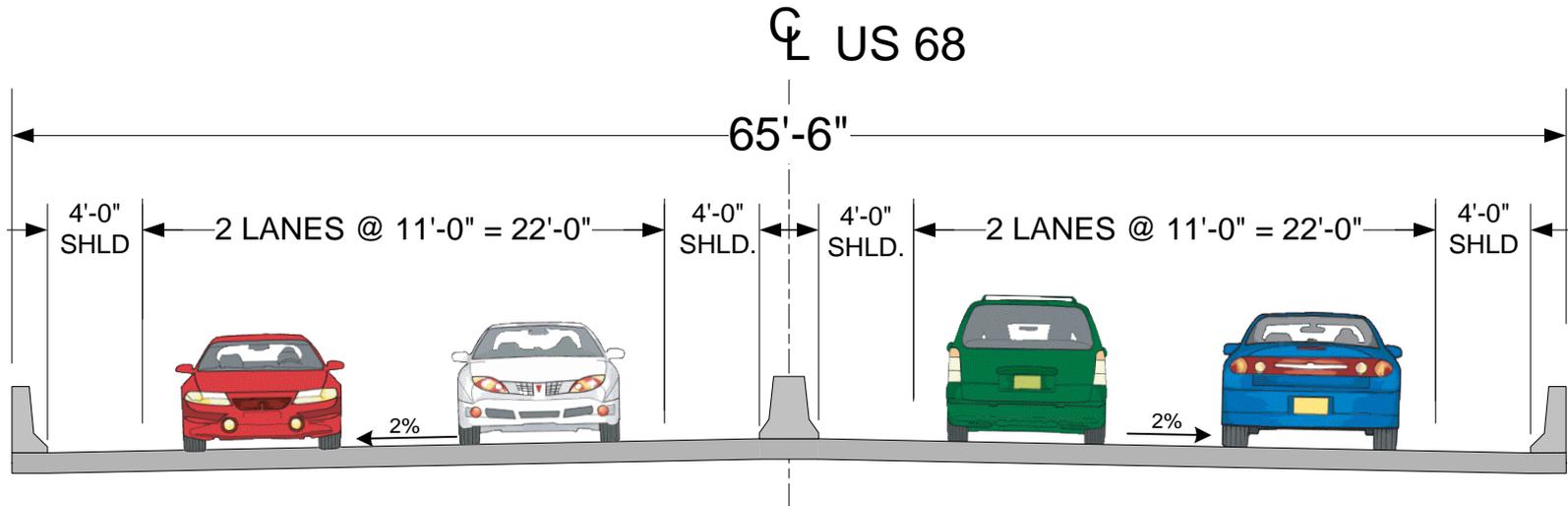




Lagoon Bridge

ADD Plan/Elevation

Lagoon Bridge



TYPICAL SECTION
(Looking East)

Lagoon Bridge



Advance Construction



The Lagoon



Lagoon



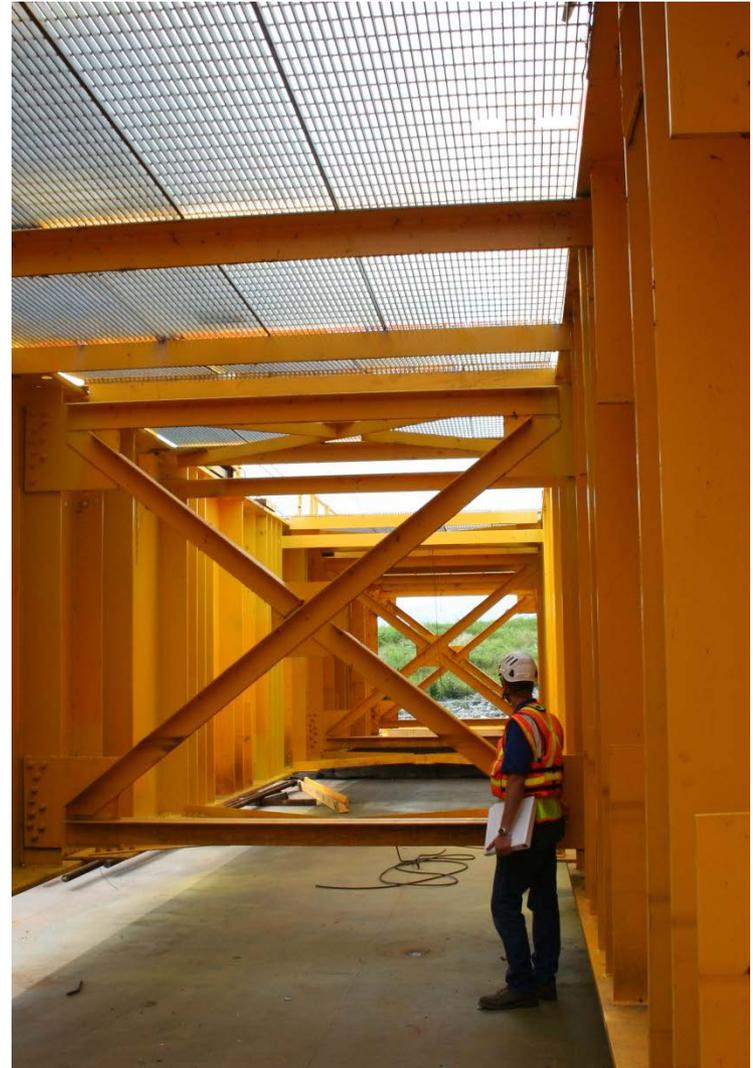
Purpose

- Confirm Geot. Parameter
- Test Drivability
- Refine Ground Response
- Test Pile Capacity



Test Requirements

- Vert. & Lateral
- Dynamic Pile Load
- Statnamic Load
- Static Load
- Fully Instrumented Piles
 - Soil Resistance
 - Depth Response



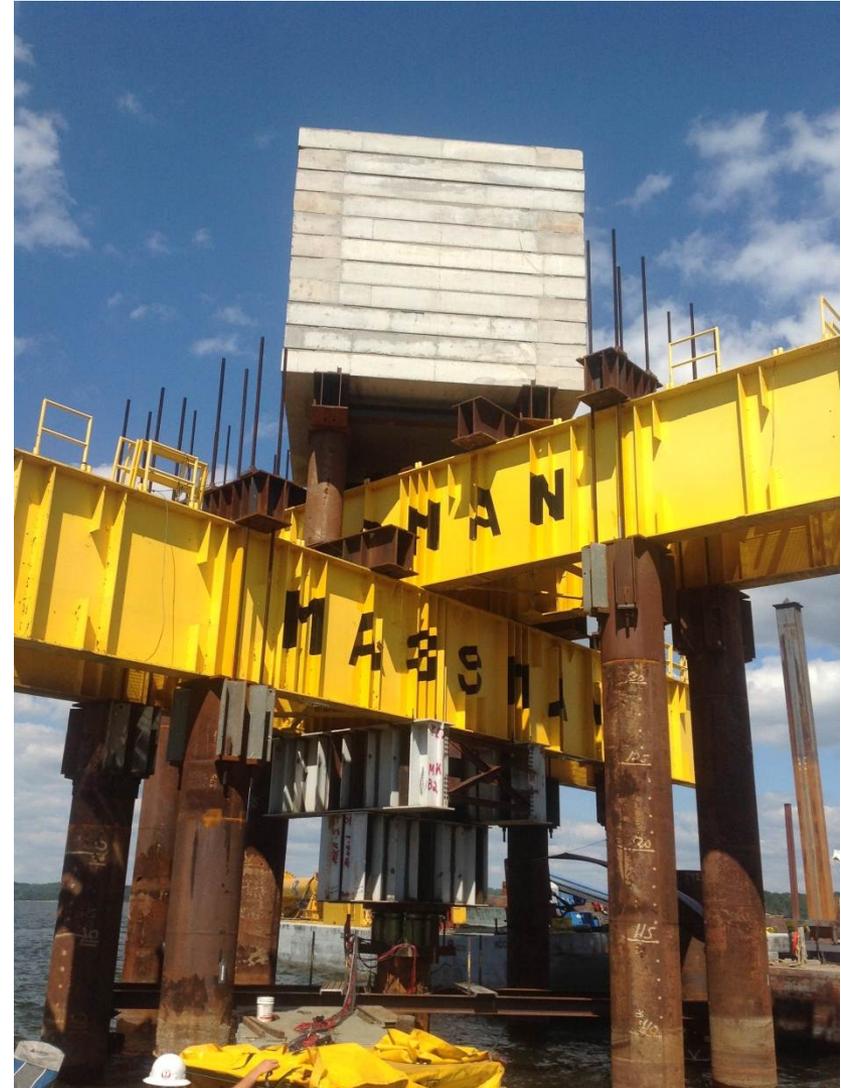
Test Piles

- 48" Piles
- 72" Piles
- 1.5" Wall
- 2" Wall
- Near Causeway
- Deep Water
- Open End
- Constrictor Plate

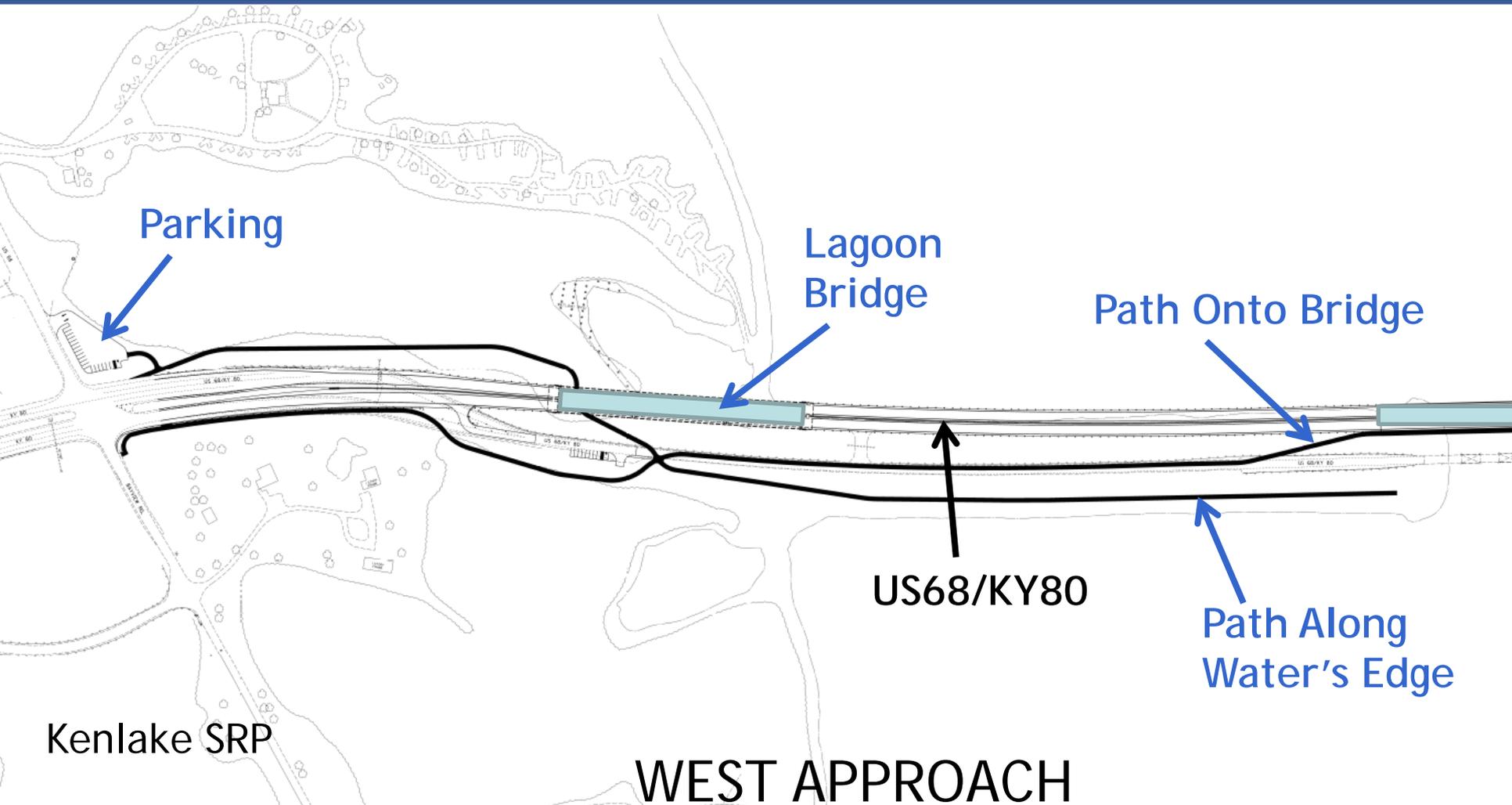


Early Results

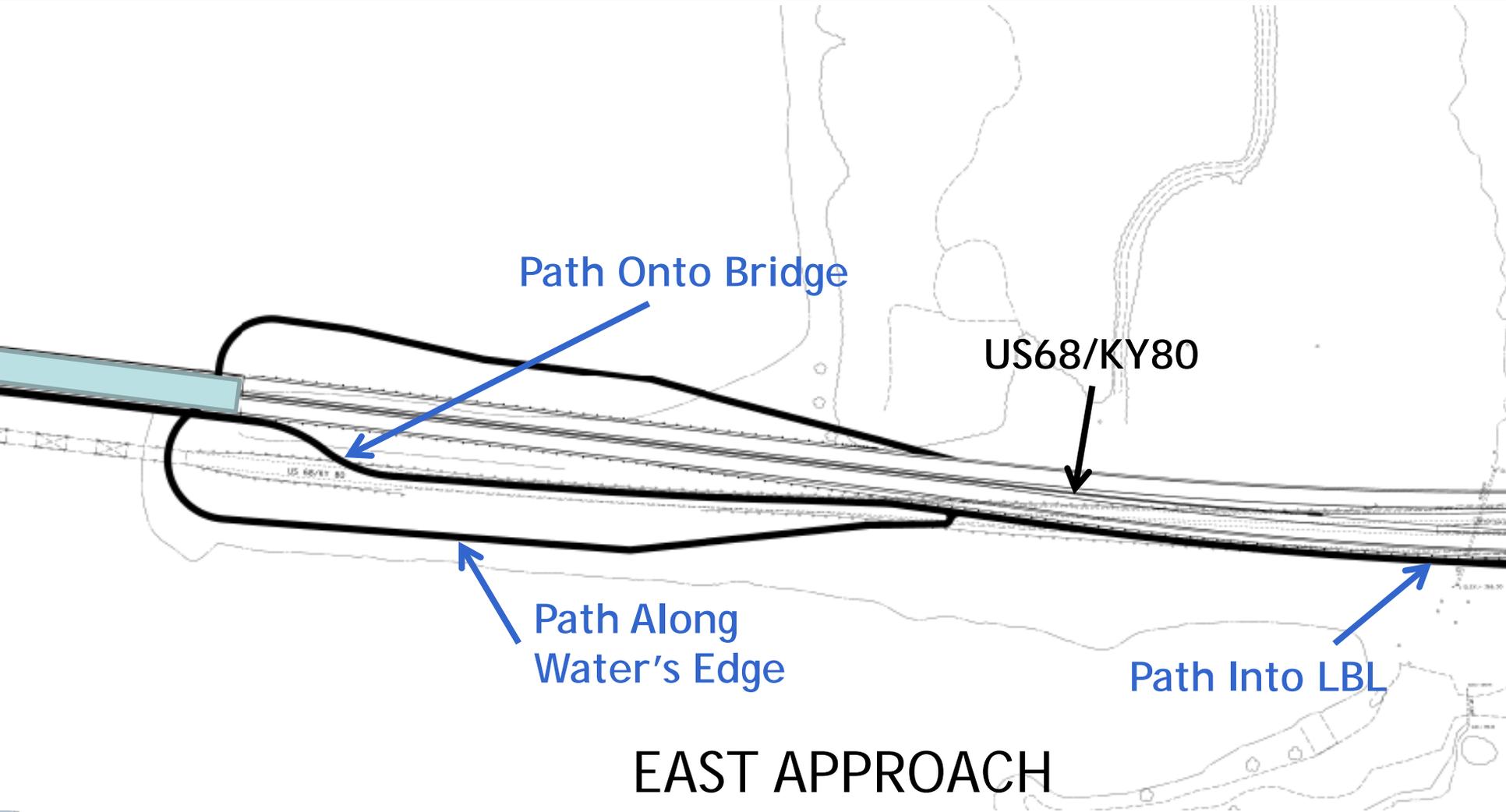
- Easy to Drive
- Constrictor Plate Appears Effective
- Tip Resistance May be Achieved at Higher Elev.
- Thinner Walls May be Usable



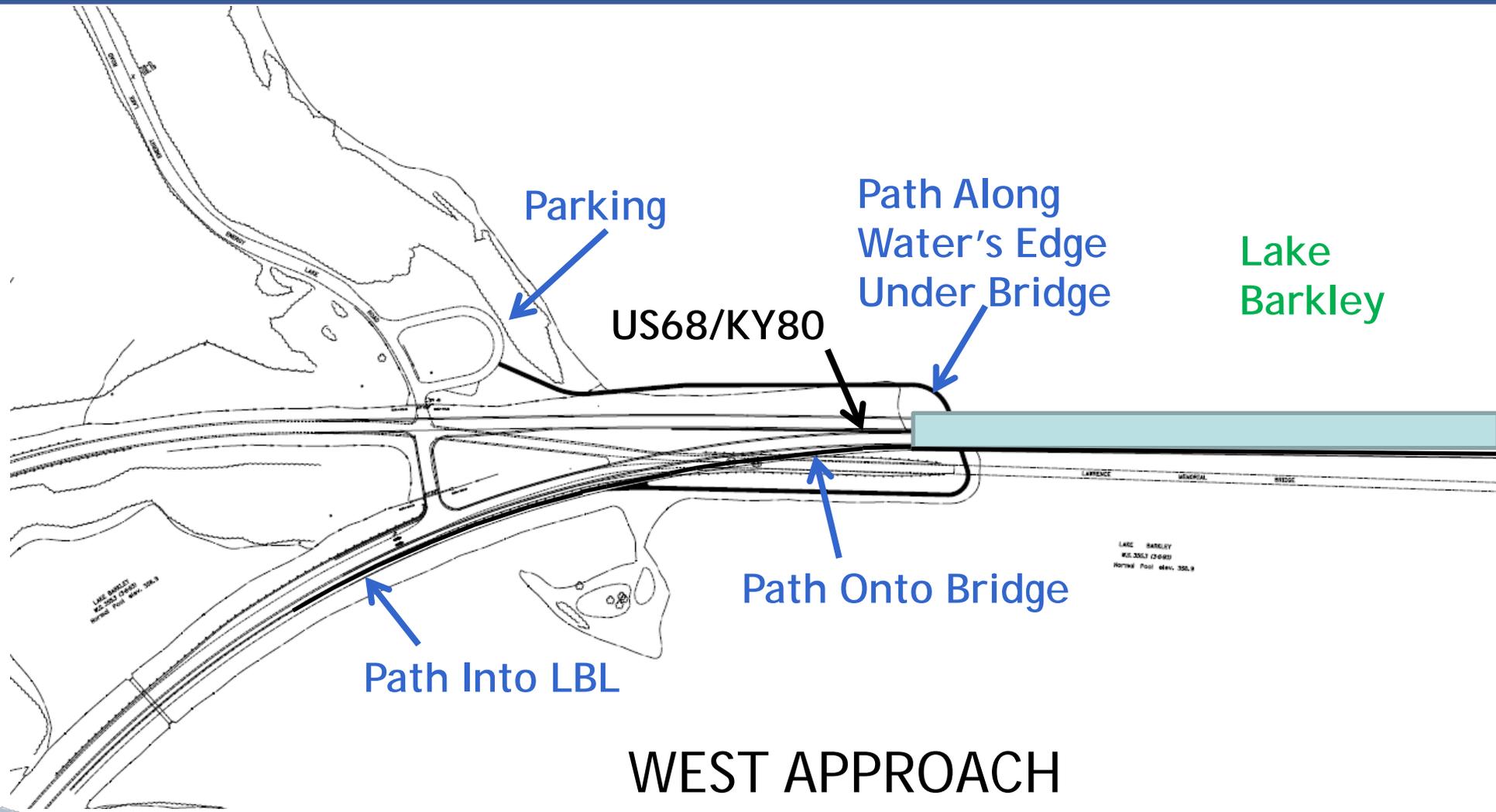
KY Lake Multi-Use Path



KY Lake Multi-Use Path

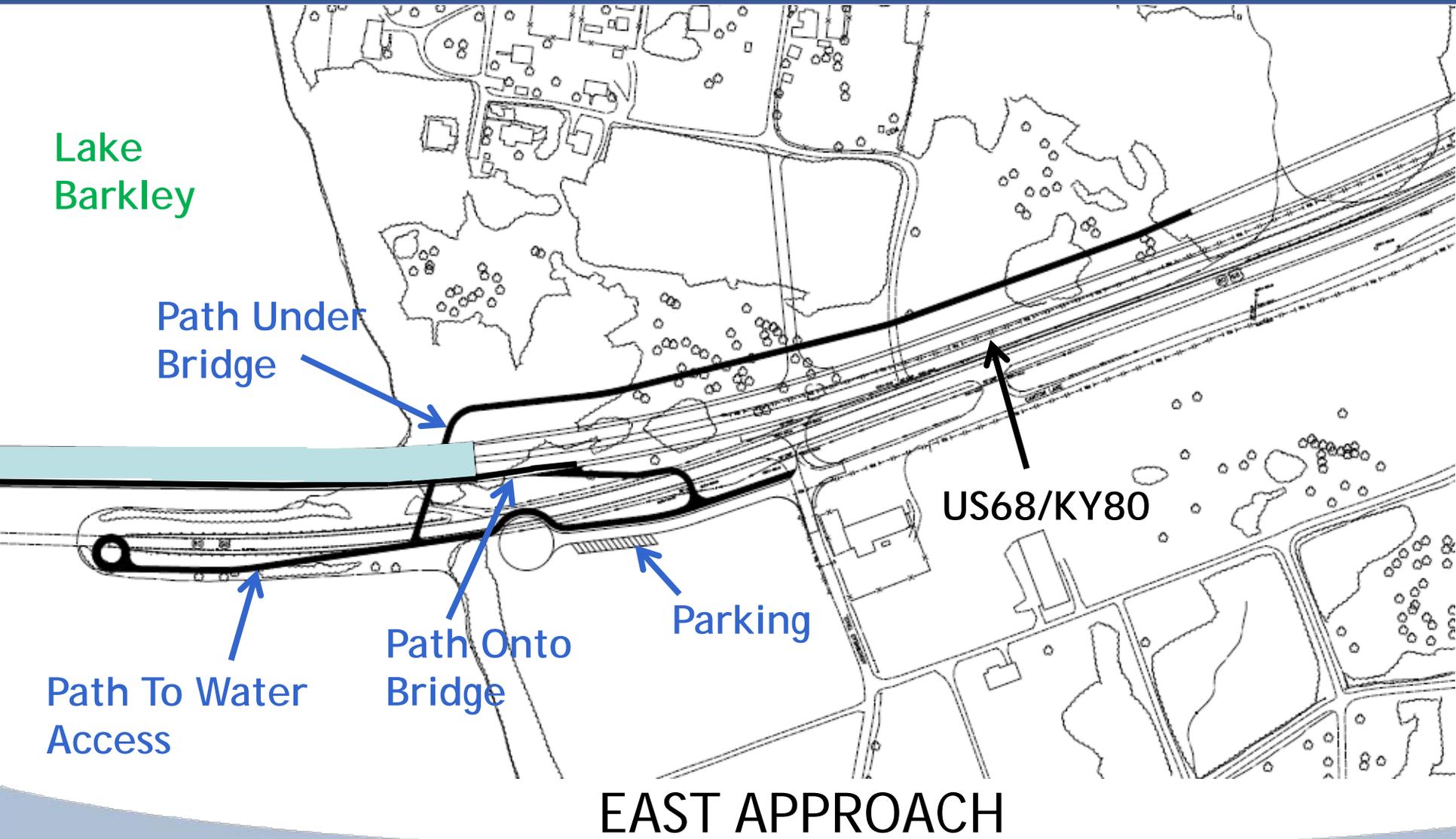


Lake Barkley Multi-Use Path



WEST APPROACH

Lake Barkley Multi-Use Path



KY Lake



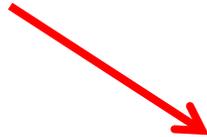
KY Lake Arch



KY Lake Arch



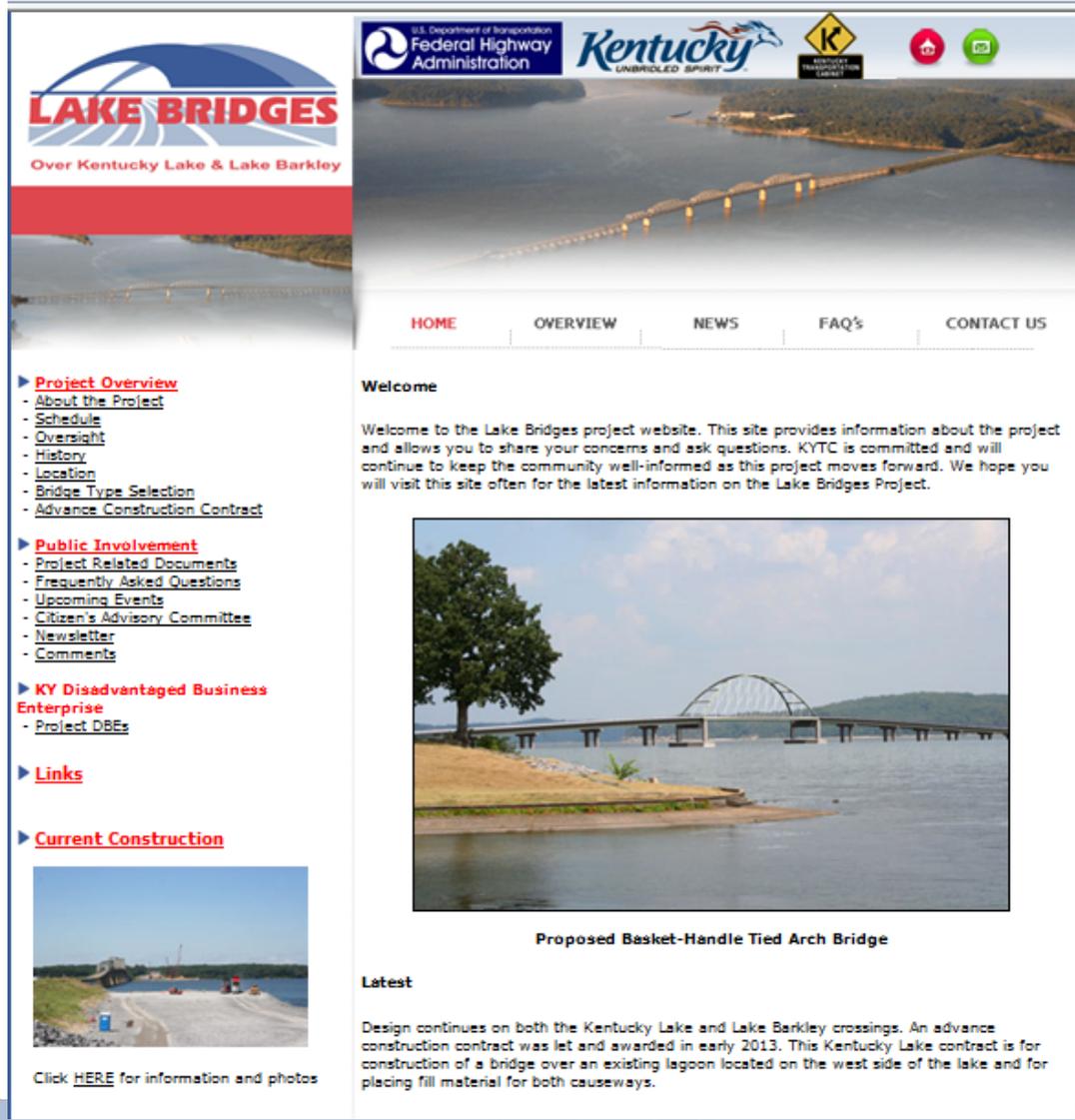
Project Overview



Public Involvement



Current Construction

The screenshot shows the website's navigation menu on the left and the main content area on the right. The navigation menu includes links for Project Overview, Public Involvement, KY Disadvantaged Business Enterprise, Links, and Current Construction. The main content area features a 'Welcome' message, a photo of a proposed bridge, and a 'Latest' news item about construction progress.