MAKING IT WORK

PERFORMANCE-BASED FLEXIBLE SOLUTIONS ON A MEGA PROJECT

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The Missing Link

- I-69 ORX is needed to complete I-69 in Indiana and Kentucky
- Both states are completing major improvements to the I-69 corridor
- More than 260 miles of roadway being improved to interstate standards
- Improvements extend from Mayfield, KY to Martinsville, IN
A Second Chance

- Draft Environmental Impact Statement completed in 2004
- Focus on possibilities, not financial feasibility
- Without funding, project stalled

Since then:
- New crossing is the final connection to maximize investment
- Focus on financial feasibility
- Tolling is likely part of a funding solution
Environmental Process

• Required federal environmental review underway
• Study will take 2 to 3 years
• Will identify route, bridge location, funding and financing solutions
• Record of Decision expected in late 2019
Project Timeline

- Identify range of alternatives: Spring 2017
- Identify short list of alternatives: Summer 2017
- Select preferred alternative; publish DEIS: Summer/Fall 2018
- Record of Decision: Fall 2019
Purpose and Need

• Complete the I-69 connection between Indiana and Kentucky
• Find affordable solution to address long-term cross-river mobility
• Reduce congestion and delay
• Improve safety
Using Flexible Solutions

- Toll Revenue
- Minimize Road Fund Dollars and Federal Apportionment
- Alternative Selection
- Roadway Geometry
- Hydraulic/Hydrologic Constraints
Maximize Existing Infrastructure

- Use already constructed Pennyrile Parkway
- Upgrade to interstate standards
- Result: Three corridors moving forward use as much of existing parkway as possible
Consider

Life-Cycle Costs

• Future of US 41 bridges is part of the decision
• Must consider long-term maintenance of existing facilities in the overall cost
FLOODWAY DESIGN
I-69 ORX
A feature of interest to the project team is the FEMA regulatory floodway.

Cross Section of a typical stream.

- Ground Line
- Water Surface Elevation
The floodway is the **river channel** and any **adjacent land** that must be reserved in order to discharge the base flood without increasing the flood waters more than a designated height.
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Kentucky uses the FEMA standard, which is a maximum allowable surcharge of 1.0 foot.
When modeling a floodway, HEC-RAS follows an encroachment methods analysis. The software constricts the flow between two encroachments, one on each side of the main channel.
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Indiana uses a surcharge of 0.1 feet.
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Kentucky floodway
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Kentucky floodway
When KYTC has a project that involves a floodway:

1. If the proposed structure **spans** the floodway and the low chord is above the floodway elevation, no floodway assessment is required.

2. If the proposed structure **encroaches** within the floodway limits, analyze the structure to determine if a **No Rise** can be achieved.

3. If the proposed structure **encroaches** within the floodway limits and a No Rise can not be achieved, then a **CLOMR** and subsequent **LOMR** will be required.

**CLOMR** - Conditional Letter of Map Revision
Consider a floodway below. If a design stays outside the floodway limits and above the low chord, then we have spanned the floodway and no action is required.
The design below shows embankment up to the floodway limits and the bridge above the low chord. No action is required.
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14,500’
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1. If the proposed structure spans the floodway and the low chord is above the floodway elevation, no floodway assessment is required.
2. If the proposed structure encroaches within the floodway limits, analyze the structure to determine if a No Rise can be achieved.
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No Rise

- If the structure encroaches into the floodway zone or
- The low chord encroaches into the floodway, then
- The change in the flood elevation caused by the proposed structure and its approaches must be less than 0.1 feet in order to achieve a No Rise.
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2. If the proposed structure **encroaches** within the floodway limits, analyze the structure to determine if a **No Rise** can be achieved.
3. If the proposed structure **encroaches** within the floodway limits and a No Rise can not be achieved, then a **CLOMR** and subsequent **LOMR** will be required.
When KYTC has a project that involves a floodway:

• The structure encroaches into the floodway zone. This includes encroaching with the low chord. A No Rise can not be achieved.

• A CLOMR is required in order to change the FEMA floodway mapping and the elevations to incorporate the proposed roadway and bridge/culvert design.

• The change in flood elevation cannot be greater than 1.0 foot.

• A CLOMR requires the approval of the local floodplain coordinator and involves the local community.
• A LOMR is required within six months of the completion of construction.
• The existing US 41 that crosses the Ohio River has:
  • the main bridge over the Ohio River and
  • three smaller bridges north of the main bridge on the Indiana side of the river.
• Because of split flow and a large, flat floodplain, two-dimensional modeling will be used to analyze the design storm for these structures.
• With the two-dimensional analysis, the flow patterns of the Ohio River will be determined.
• Because Indiana has not approved the use of two-dimensional modeling for its flood boundaries, one-dimensional modeling will be used to redesign the FEMA floodway.
• Indiana is agreeable to changing their floodway to the 1.0’ surcharge if there are easements purchased to account for the differences between the existing 0.1’ floodway boundary and the proposed 1.0’ floodway boundary.
Potential Cost Reductions

• Reducing bridge length by 3,000 feet could save $60 million.
• Average bridge cost: $200/sq ft.
Potential Cost Reductions

- Reducing bridge length by 5,000 feet could save $100 million.
- Average bridge cost: $200/sq ft.
FOLLOWING I-69 ORX
Public Involvement

- Open House Public Meetings
- River Cities Advisory Council
- Environmental Justice Subcommittee
- Interagency Advisory Committee
- 106 Consulting Parties
- Technical Working Group
- Government Leader Briefings
- Evansville Project Office
- Henderson Project Office
Stay Informed

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