OHIO RIVER BRIDGES PROJECT

TWO BRIDGES, ONE PROJECT

GENE BALTER, P.E., CONSULTANT PROJECT MANAGER
POINTS TO COVER

• The Early Years
  • Brand New Corvette Dreams
  • 1984 Bronco II Budget

• New Life
  • Okay, A Used Corvette
  • Bringing It Home
  • Delivery Methods

• Oversight Assistance Role

• Project Progress

• Project Challenges
The Early Years

• 1969
  • Project placed in long range plan
• 1998
  • GEC selected
• Environmental Documents
  • APRIL 2003 – FEIS
  • SEPT 2003 – ROD
  • 9 Historic Preservation Plans & Easements

BY PAT McDONOUGH, THE COURIER-JOURNAL
Charles Raymer, project manager for Community Transportation Solutions, stood next to the bridge study, composed of thousands of pages.
The Early Years

- One Project – Six Sections
  - Sections 1 & 4 KY Funded
  - Sections 3 & 6 IN Funded
  - Sections 2 & 5 KY/IN Funded
- Design-Bid-Build
- Six Sub-Consultants managed by GEC
- 2004 - Design began
- $4.1 Billion
- 2009 – Interest wanes
New Life

• 2011: Cost saving measures investigated
  • Rebuild Kennedy Interchange “Spaghetti Junction” within existing footprint.
  • East End tunnel and river crossing reduced from six lanes to four
  • $2.6 Billion
  • Kentucky fund & administer Downtown Crossing
  • Indiana fund & administer East End Crossing

• 2012 April: SFEIS
• 2012 June: Revised ROD
## Delivery Scenarios

<table>
<thead>
<tr>
<th>1. Design-Bid-Build (DBB)</th>
<th>2. Design-Build (DB)</th>
<th>3. Design-Build and Operate &amp; Maintain</th>
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</table>
| • Traditional DBB approach.  
  • Standard KYTC and InDOT procurement methods.  
  • Public sector is responsible for:  
    • Project financing  
    • Operations and recurring maintenance  
    • Life cycle (non-recurring maintenance) costs | • Single DB contract for the entire project.  
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    • Life cycle (non-recurring maintenance) costs | • Single DB contract for the entire project.  
  • Private operations and recurring maintenance contracts compliant with IRS restrictions on tax-exempt debt:  
    • Maximum 15-year term  
    • Periodic “rolling” contracts  
  • Public sector is responsible for:  
    • Project financing  
    • Lifecycle (non-recurring maintenance) costs  
    • Changed terms of “rolling” O&M contracts |

**KYTC option**
<table>
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<tr>
<td>• Single DB contract for entire project.</td>
<td>• Single concession</td>
<td>• Single concession</td>
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<tr>
<td>• Private sector finances construction, public sector refines with tax-exempt debt upon construction completion.</td>
<td>• Private sector responsible for project financing, long term operations, recurring maintenance and life cycle costs</td>
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<tr>
<td>• Private operations and recurring maintenance contracts compliant with IRS restrictions on tax-exempt debt.</td>
<td>• Concessionaire may collect tolls on behalf of public sector</td>
<td>• Private sector assumes traffic and toll revenue risk</td>
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<td>• Maximum 15-year term</td>
<td>• Public sector responsible for:</td>
<td>• Public sector responsible for:</td>
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<td>• Periodic “rolling” contracts</td>
<td>• Contract monitoring to ensure performance</td>
<td>• Contract monitoring</td>
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<tr>
<td>• Public sector responsible for:</td>
<td>• Making performance-based Availability Payments to concessionaire</td>
<td>• Scenario 6b represents a sensitivity analysis which increases annual traffic growth by 1% relative to the baseline concession revenue forecast</td>
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<tr>
<td>• Refinancing</td>
<td>• Any cash flow differences between Availability Payments and toll revenue receipts</td>
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<tr>
<td>• Lifecycle costs</td>
<td><strong>INDOT option</strong></td>
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<td>• Changed terms of “rolling” O&amp;M contracts</td>
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</table>
New Life

- Downtown Procurement Timeline - 2012
New Life cont.

- East End Procurement Timeline - 2012

- Industry Day
- 6 Responses Received
- Draft RFP 1 Industry Review Period
- Q&A ATC’s One-on-One’s
- Preferred Proponent Announced
- Financial Close/NTP2
  
- RFQ Issued
- 4 Teams Shortlisted
- Draft RFP 2
- Final RFP

- 4 Proposals Received
- Commercial Close/NTP1
  
- NTP2 allowed
  construction to commence
  (May 2013)

- NTP1 allowed
Design to Start
Design-Build Selection

- Value Based Selection

\[ S_B = 100 \left[ 0.25 \left( \frac{T_B}{T_H} \right) + 0.70 \left( \frac{P_L}{P_B} \right) + 0.05 \left( \frac{D_L}{D_B} \right) \right] \]

- \[ P_B = A + (B \times C) + D \]
- \[ C = \$80,000/\text{Calendar Day} \]

- Walsh 99.2  $860,000,000  1,380 Days
- SFD 98.8  $849,630,093  1,408 Days
- ORTC 90.4  $959,000,000  1,614 Days
Downtown Crossing Funding

- Traditional Federal Funds
- Toll Revenue Bond Proceeds
- TIFIA Loan Proceeds

= Construction Financing
Global Dollars & Cents

- Total D-B Contract $895,505,709
- $72,600,000
  - Mobilization
  - Contract Execution
  - Public Information
  - Demobilization
- $59,700,000 – Earned thru August (82%)
Section 1 Dollars & Cents

- $59,000,000 – Design
  - 100% Complete

- $355,100,000 – Construction
  - $338,989,585 – Earned thru August (95%)
Section 2 Dollars & Cents

- $35,000,000 – Design
  - 100% Complete

- $213,000,000 – Construction
  - $202,007,751 – Earned thru August (95%)
Section 3 Dollars & Cents

• $18,500,000 – Design
  • 100% Complete

• $106,800,000 – Construction
  • $103,485,260 – Earned thru August (97%)
Downtown Crossing Organization

Kentucky Transportation Cabinet (KYTC)
- Responsible for procurement process and contracting entity for State of Kentucky
- Bi-State Development Agreement – full responsibility for development of Downtown Crossing

Walsh Construction
- Design-Build Contractor
- Milestone Contractors
- Jacobs - Lead Designer, Buckland & Taylor – Lead Bridge Designer

Indiana Department of Transportation (INDOT)
- Bi-State Development Agreement – assigns responsibility for Indiana portion to KYTC
- Provides liaison for coordination during design/construction
P3 Contract Relationships

P3 Owner

Owner Rep & Support

P3 Developer

PUBLIC-PRIVATE AGREEMENT

DEVELOPER, EQUITY MEMBERS, LEAD O&M CONTRACTOR

WVB East End Partners

33-1/3%

VINCI

33-1/3%

BILFINGER BERGER

33-1/3%

DESIGN-BUILD CONTRACT

Walsh-VINCI Construction Joint Venture

60%

40%

DESIGN AGREEMENT

LEAD ENGINEERING FIRM

JACOBS
HDR’s Role on the Project
Oversight Assistance Consultant

Scope of Services

• Construction Engineering and Inspection services including off-site pre-cast inspection
• Project Documentation
• Materials Sampling/Testing
• Project (Document) Controls
• Environmental Compliance Oversight
• Monitor Certified Payroll/EEO-DBE, perform field wage and CUF interviews
Consultant Oversight Assistance Team

- HDR – Prime Consultant
- Subconsultants
  - Greenman-Pedersen, Inc.
  - FIGG Bridge Inspectors, Inc.
  - Parsons, Cunningham & Shartle Engineers, Inc.*
  - Redwing Ecological Services, Inc.*
  - Multivista
  - S&ME, Inc.
    - American Engineers, Inc.
    - Thelen Associates, Inc.
    - KHAFA*RA*

*DBE Firms
Project Progress

Section 1
Downtown Louisville Interchange
Project Progress

Section 2
Ohio River Cable-Stay Crossing
Project Progress

Section 3
Indiana Approaches
Project Challenges
Drilled Shaft Problem

Crosshole sonic logging (CSL) showed the bottom half of approx. 120’ long shaft had unsound concrete

Numerous corrective options were investigated

Ultimate decision was to drill out the center of the shaft inside the reinforcing cage and replace the concrete

This option required a vertical beam in the shaft to address stiffness requirements – and not just any beam....
Nicknamed “Frankenbeam”

With approximately 5,140 Nelson Studs to engage the concrete, there was a lot of opportunities for snags and bends with the installed reinforcing cage.
Preparing to Lift
With over 170,000 pounds of plate steel alone, this was no small lift
End View of the Beam
Setting the beam into the shaft
Clearance was very tight, but no snags occurred
Cable-Stay Deck Rosphalt Wearing Surface

Why?
• Creates a “belt & suspender” system to protect the precast deck panels from water

What is Rosphalt?
• Dry mix concentrated thermoplastic additive
• Placed with standard paving equipment
• Creates a waterproof wearing surface resistant to rutting and shoving
• Lasts longer than standard Hot Mix Asphalt designs (up to 3½ times longer)
• Lower life cycle cost
Applying Sealer (1st Coat)
Waterproof Membrane (2nd and 3rd Coats)
Tack Coat
Rosphalt Paving
Finished Product
QUESTIONS?
Project Staff
Project Progress

Section 1
November 2014
Project Progress

Section 1
January 2016
Project Progress

Section 2

December 2014
Project Progress

Section 2
December 2015
Project Progress

Section 3
November 2014
Project Progress

Section 3
December 2015