Cable-Stay Bridge Construction and Progress

Presented by:
Gene Balter, P.E.
Chet Parsons, P.E.

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Oversight Assistance Consultant Team

HDR – Prime Consultant
Subconsultants
• Parsons, Cunningham & Shartle Engineers, Inc.
• Greenman-Pedersen, Inc.
• FIGG Bridge Inspectors, Inc.
• Redwing Ecological Services, Inc.
• S&ME, Inc.
  o American Engineers, Inc.
  o Thelen Associates, Inc.
  o KHAFRA
Louisville-Southern Indiana Ohio River Bridges Project
Construction Timeline

- November 2012: Walsh Construction chosen as Downtown Crossing design/builder
- June 2013: Community groundbreaking is held
- July 2013: Construction begins in earnest
- December 2015: New cable-stay bridge to open to traffic
- December 2016: Downtown Crossing project to be substantially complete
Section 2: New I-65 Northbound Bridge
12’ Diameter Drilled Shafts

- 4 Shafts at each cable-stay pier
- Rock socket (embedment) lengths from 24 to 32 feet
- Designed for 1’ embedment of casing into rock
- Performed Crosshole Sonic Logging (CSL) integrity testing on shafts
12’ Diameter Shaft Casing
Hain Drilling Machine
Placing Drilled Shaft Steel Cage
Wet Shaft Concrete Placement
“World Record” Osterberg Cell Load Test (15,000 psi* – gauge max.)

* Greater than 122,000 tons
Lateral Static Load Testing
Lateral Statnamic Load Testing
Precast Soffit Slab Formwork
Completed Precast Soffit Slabs
Pilecap Formwork
Setting Pilecap Formwork
Pilecap and Cross Beam
Pedestal Construction
Cranes and Pumps Everywhere
Pump to Pump to Placement
Tower Leg Construction
Jump Forms on Tower Leg
Edge Girders
Initial Pier Table Edge Girders
Deck Edge Girder Cable Anchors
Tower Cable Boxes on Barge
Edge Girders, Floor Beams & Precast Deck Panels
Setting Precast Deck Panel
Areas for Deck Closure Pours
Precast Deck Panels and Infill Strips
Shack for Welding HDPE Stay Pipe
HDPE Stay Pipe Welder
Deck Cable Anchor
Tower Cable Anchor
Feeding Strand Through Stay Pipe to Tower

7 cables each side, each leg
Towers 3 and 5

8 cables each side, each leg
Tower 4
Cutting Strand to Length
Cutting Sheathing off Strand
Preparing to Feed Cable into Deck Anchor
View of Cables and Anchor in Tube
Stressing with Mono-Strand Jack
Strands in Cable

Strands per cable range from 36 to 103
Pier 5 As of Two Days Ago
Drilled Shaft Problem
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
Clearances were very close, but no snags occurred
Once set, and until the concrete was placed, the beam was suspended like the world’s largest plumb bob.
Questions?