Design/Build: US 69 Bridge over the Missouri River

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Topics

• Project Overview
• Bridge Design
  – Superstructure
  – Substructure
• Construction
Selection Process

Typically three phases to a D/B project:

• Qualifications
• Pre-Award (preliminary design, 2-4 months)
• Post-Award (final design, 4-12 months)
Schedule

• Shortlist  February 20, 2014
• Award      July 9, 2014
• Construction  September 2014
• New Bridge Open  December 2016
Third Parties

- KDOT
- Corps of Engineers
- Fairfax Drainage District Levee
- Riverside Quindaro Bend Levee
- Coast Guard
- Unified Government
- City of Riverside
- UPRR
- FAA
Roadway Design – US 69

- Minimize Earthwork
- Minimize Bridge Length
- Constructability
Roadway Design – Argosy Parkway

• New Alignment & Bridge
Roadway Design – Fairfax District
Bridge Design

- Span Layout
- Superstructure
  - Typical section
- Substructure
  - Typical Bent
  - Bents 3-4
- Settlement
Bridge Design
Bridge Design – Unit 1 Typical Section
Bridge Design – Midas vs. MDX
Bridge Design – Unit 2 Typical Section
Unit 2 Superstructure
Substructure

• Typical Bents
• Bents 3-4
Substructure—Typical Bent
Bridge Design – Bents 3 & 4
Bridge Design – Full Barge Vessel Collision

Full Model

Transverse Vessel Collision

Longitudinal Vessel Collision
Bridge Design – Full Barge Vessel Collision

Moment

Shear

Torsion
Bridge Design – End Bent 10

- Construct MSE Wall with pile spacer
- Allow settlement
- Prebore with polymer slurry
- Drive pile to rock
- Place concrete & remove slurry
- Fill pile spacer with sand
Settlement

• Evaluate effects on Existing Bents
• Additional fill due to Roadway Approach
• Analysis of Existing Superstructure and Substructure
Settlement – Existing Bents
Settlement – Existing Bents
Settlement – Additional Fill
Existing Bridge Considerations

• Settlement Analysis
Settlement – Additional Fill
Settlement
Settlement

• Settlement Monitoring Plan
Construction
Roadway Construction
Demolition
Demolition
Roadway Design – Argosy Parkway

- Roundabout
Construction
Drilled Shaft Construction
Bridge Construction
Bridge Construction
Bridge Construction
Credits

• MoDOT
• KDOT
• Design Team
  – Terracon
  – Hg Consult
  – Leigh & O’Kane
  – SK Design
Questions?