Arlington Memorial Bridge Rehabilitation

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People Partners Projects
Presentation Overview

- EFLHD Introduction
- Arlington Memorial Bridge
- Project Location
- Historic & Cultural Significance
- Bridge Overview
- Design & Construction
Office of Federal Lands Highway

People  Partners  Projects
Overview

**FLH Core Business:**
- Project Delivery
  - Engineering Services
  - Technical Expertise
- Liaison with Federal Land Management Agencies
- Training and Development
- Deployment of New Technologies
- 706 FHWA Employees (approx. 23% of FHWA)

**Eastern Federal Lands Program:**
- $160-200 Million FLHP Funds Allocations In A Year
- 40-50 Construction Contracts Awarded Annually
Services Provided

- Program Administration
- Emergency Response
- Transportation Planning
- Highway Design
- Contract Procurement
- Construction Management
- Road Inventory
- Asset Management
  - Bridge and Pavement Management
- Environmental Compliance
- Bridge Inventory
- Training & Technical Support
Our Methods

- Design-Bid-Build
- Contract Manager/General Contractor (CMGC)
- Design-Build
Federal Partner Agencies

[Logos of various federal agencies]

People  Partners  Projects
Other Partners

- Federally recognized Indian tribal governments
- State DOTs
- Local Governments (Cities/Counties)
- U.S. Virgin Islands
- District of Columbia
- Private Entities (for example CSX)
- Other Federal Agencies
Our Niche

*flexible solutions for unique needs*

- Aesthetic, Historic, Cultural, and Environmentally Sensitive Projects
- Highly Visible, Politically Sensitive Projects with Security Requirements
- Hands-On Project Delivery
- Collaboration with Multiple Partners
- Independent 3rd Party Facilitator with Decision Making Responsibility
AMB – Location
Historic & Cultural Significance
Bridge Overview

- Built 1926-1932
- Opened in 1932
- 2,162 feet long
- 94 feet wide
Bridge Overview

- 11 Spans total
- 10 reinforced concrete arch spans
- Two 50-ft spans over roadways (underpasses)
- 8 spans over Potomac River, 166 – 180 ft
- Center double-leaf steel bascule span – 216 ft
Bridge Overview

- (6) 10-ft lanes of traffic
- (2) 14-ft sidewalks
- ≈ 65,000 vehicles per day
Bridge Overview - Bascule

• Largest & Heaviest at 8,650 kips total with a 6,508 kip counterweight
• Quickest to open when built
• Last opened in 1960’s
Bridge Overview - Bascule
Bridge Overview – Existing Condition
Bridge Overview – Existing Condition
Bridge Overview – Existing Condition
Increased Inspections

**Inspection Frequency:**

- Bascule Trunnion Post Inspection – Every 2 Months
- In-depth Inspection – semi annual inspections (rotate in-depth and interim) of deck, concrete beams, and bascule span – 6 Months
- Entire Bridge Routine Inspection – 24 Months
Design and Construction

Design-Build Project

2 Step Process to Select DB-Team

1) Request for Qualifications
   - Short list top firms

2) Request for Proposals
   - Select Best Value based on Technical and Price Proposals
Design and Construction

- Scope of Work
  - Complete Deck Replacement – Precast Panels, UHPC, LMC overlay
  - Replacement of Bascule Span with fixed span
  - Concrete repairs and Replacement of Pier Frames/Select Crosswalls
  - Granite removal and reset, cleaning and repair
  - Sidewalk replacement
  - Restoration of metal fascia, rail, light poles
Design and Construction

Contract Info:

- Overall $227M Project
- 1,000 Calendar Days Schedule
- Major Construction Started October 2018
- First phase complete November 2019
- Anticipated completion Early 2021
Design and Construction

NPS – Owner/Maintaining Agency

FHWA – Prelim Engineering and Construction Contract Administration

Kiewit – Design-Build Contractor

Stakeholders (DDOT, VDOT, Arlington County, SHPOs, CFA)
Design & Construction

Construction in 2 Phases

- Closed 3 lanes on one side for construction
- 3 lanes for traffic on other side
  - 2 lanes inbound and 1 outbound in morning
  - 1 lane inbound and 2 outbound in evening
Traffic Impacts

Traffic impacts analyzed with regional traffic models in Environmental Assessment and the Transportation Management Plan

3-lane closure on Arlington Memorial Bridge resulted in increased traffic volumes on adjacent bridges

Coordination with NPS, VDOT, DDOT and Arlington County
Traffic Control – Lane Use Control Signs
Design & Construction

Deck Replacement
- 10” precast deck with 2” LMC overlay
- UHPC closures between deck panels
- Stainless steel reinforcement
- Stainless steel prestressing strand
- Cast in place exposed aggregate sidewalk
Design & Construction

Variable depth truss bascule spans replaced with a variable depth steel plate girder

- Understory truss to replicate existing
- Shallow section at mid-span
- Required 70 ksi bottom flange
Design & Construction
Phase 1 Construction
Bascule Shoring
Bascule Fascia Removal
Bascule Removal
Deck and Beam Removal
Crosswalls after Deck Removal
Precast Deck Install
Precast Concrete Deck
UHPC Closure Pours
Steel Girder Install
Fascia Re-Install
Granite Reset
LMC Overlay
Exposed Aggregate Sidewalk
Near Completion of Phase 1
Any Questions?