VTCA CONFERENCE 2018
Structure and Bridge Update

Kendal R. Walus, PE
State Structure and Bridge Engineer

April 13, 2018
Structure and Bridge Division

• **Assistant S&B Engineers**
  • Design Engineering – Prasad Nallapaneni
  • Engineering Services – Junyi Meng
  • Maintenance – Adam Matteo
  • Safety Inspection – Chris Williams

• **District Bridge Engineers**
  • Bristol – Gary Lester
  • Culpeper – Teresa Gothard
  • Fredericksburg – Annette Adams
  • Hampton Roads – TBD
  • Lynchburg – Frank Lukanich
  • Northern Virginia – Gary Runco
  • Richmond – Jeff Hill
  • Salem – Dean Hackett
  • Staunton – Rex Pearce

**S&B Strength:**
• Admin/Program Management/Design = 145
• Safety Inspection = 127
• Bridge Maintenance = 291
• Grand Total = 563
National Steel Bridge Alliance 2018 Award Winner

- 2018 NSBA Prize Bridge Award
  - Short Span Category
- 1st Bridge in USA to Use 50CR for:
  - Tampered Girder Webs
  - Cross Frames
  - Stainless Steel High Strength Bolts

Route 340 over South River – Waynesboro, Virginia
Continual Improvement - SD Structures Trend

As of Today: SD = 886!
Culvert Inventory Improvements

- VDOT has Approximately 7,800 Culverts
- 6,000 Concrete and 1,800 Steel
- Structurally Deficient Status:
  - Concrete = 14 or 0.2%
  - Steel = 120 or 6.7%

- 2012 Steel SD Culverts = 240
  - Reduced SD by 50% in 5 Years
  - Accomplished with Close Coordination with Environmental Division

- Concrete Culvert Performance is Superior to Steel
PERFORMANCE MEASURES

- **VDOT’s Bridge Performance Measure**
  - Statewide Goal of Total Number of Non-SD NBI and All Structures > 95.5%
  - District Goal of Total Number of Non-SD NBI and All Structures > 94%
  - 0.5% Condition Improvement of Bridge Joints in Condition States 1 & 2 by December 31, 2018
  - 0.5% Reduction in the Number of NBI and All Structures with a Minimum General Condition Rating 5 (Fair) by July 1, 2019
  - 15% Reduction in the Number of Fracture Critical Structures
  - FHWA - % Deck Area of SD (Poor) NBI NHS Structures < 10.0%
  - FHWA - % Deck Area of Good (GCR =>7) NBI NHS Structures
Annual National Ranking of State DOT Bridge Programs

- Only National Bridge Inventory (NBI) Bridges (20 feet or greater) = 13,932
- Data is Based on Inventory as of April 1, 2017
- Misses One Complete Construction Cycle
- Includes Federal, Border and Closed Bridges
- Delta in SD Count from April 2017 to Today = -159

Ranking Based on Number of SD Bridges:

- 2016 Rank = 23\textsuperscript{rd} 2017 Rank = 24\textsuperscript{th}
- Ranking Based on Most SD = 1\textsuperscript{st} Place
- Decreasing in Ranking is Good!

Ranking Based on Percentage of SD Bridges:

- 2016 Rank = 32\textsuperscript{nd} 2017 Rank = 35\textsuperscript{th} (17\textsuperscript{th} in Nation for Smallest %)
- Ranking Based on Highest Percentage = 1\textsuperscript{st} Place
S&B Consultant Procurement

- **Current Design Contracts**
  - **Ten (10) Contracts Statewide**
    - Three Contracts Expired
    - Seven Contracts in Term III
    - Executed 216 Task Orders - $36.1M
    - Procurement Statewide Five (5) New Contracts – Ongoing
  - **Three (3) VSBEP Term Contracts**
    - All in Term III
    - Executed 17 Task Orders - $3.2M
  - **One (1) Movable Bridge Contract**
  - **One (1) Corrosion Contract**
  - **Two (2) Statewide Limited Services Tunnel Contracts**
S&B Consultant Procurement

- Underway Limited Services Term Contracts
  - Inspection Contracts
    - Staunton District – Multiple (2) Award, Maximum $2.0M per Term
    - Salem District – Single Award, Maximum $2.0M per Term

- Upcoming Limited Services Term Contracts
  - Inspection Contract
    - Lynchburg District – Single Award, Maximum $2.0M per Term
  - Survey (L &D) Contract
    - SW Survey & Monitoring Deformation of Structures Contract 2018 – Single Award, Maximum $3.0M per Term
Engineering Services Program Area

January 2018 Release:
• Use of Anchor Bolt Sleeves for Bearings
• Squaring Insert Plate for PSC Beams and Simplifying Welding
• Guidelines for ASTM A709 Grade 50CR Steel
• Use of Virginia Alternate Pier Cap – Shall vs. Consider
• Updates to Chapter for Piles
• Prestressed Inverted T-Beam Standards
• Updated Water Line Standards

May 2018 Release:
• MASH Compliant Bridge Railing and Terminal Walls
• Update to Joints Standards
• Update to Camber Management and Tolerance Specs
Safety Inspection Program Area

• Professional Services Contracts – FY17
  • 20 Limited Services Term Contracts for Safety Inspection
  • 3,185 Bridge Safety Inspections Performed by Contracts - $20M
  • 6,338 Ancillary Safety Inspections Performed by Contracts - $6M

• All Baseline Tunnel Inspections Completed – August 2017
  • 2 Limited Services Term Contracts for Tunnel Engineering

• AASHTOWare Bridge Management (BrM)
  • BrM 5.2.3 Upgrade Project Deployed August 2017
  • NTIS Tunnel Module Included in BrM 5.2.3 Upgrade Project
  • BrM 5.3 Upgrade Project Deployed February 2018
Safety Inspection Program Area

- Highway Maintenance Management System (HMMS)
  - VUEWorks and Mobile App (MobileVUE) Replaced Signs Program
  - Production Deployment Completed December 2017

- AASHTOWare Bridge Rating (BrR)
  - BrR v.6.7 Deployed on 3/2/2017 and is the Current Production System
  - SHV and FAST Act Vehicles (EV1 and EV2) Load Ratings in Progress
  - New R12-V2 and R12-V4 Signs for Legal and SHV Trucks

- NHI Training for Bridge Safety Inspectors
  - New 130056 Safety Inspection of In-Service Bridges for Professional Engineers – 5 Days
Maintenance and Bridge Management

State of Good Repair

- In the Middle of the Third Round Selection
  - Emphasizes Cost Effective Solutions

House Bill 1887 Requires 45% of Virginia’s Capital Budget be used to Repair Deficient Bridges and Pavements (State of Good Repair)

- Total Capital Program Bridge Funding Averages \( \approx \$200M \) per year
- Funds are Distributed Between Pavements and Bridges per District by Percentage of Total Need
- Projects are Prioritized by a Selection Formula

Projects Must Meet the Following Criteria:

- Bridge Must be Structurally Deficient (SD)
- National Bridge Inventory Only
- Work Must Take Bridge Out of SD Status
- Must Initiate the Preliminary Engineering or the Construction Phase within 24 Months of Award of Funding or Become Subject to De-allocation
Maintenance and Bridge Management

Plan for Bridges that are Currently SD

Number of SD NBI Bridges

- 628 SD Bridges
  - February, 2018

- In SGR/Construction Program to be Addressed by 2023
  - 222

- Remaining SD Structures Since 2014
  - 406
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