Hampton Roads District
Structure & Bridge Program

November 19, 2013
James W. Long, III, P.E.
District Structure & Bridge Engineer
Hampton Roads District
Approximately 1,700 Bridges
• Largest Deck Area within Virginia
• 10 Movable Bridges
• Longest Bridge in Commonwealth
• Rural to Urban

Underwater Tunnels
• Hampton Roads Bridge Tunnel
• Monitor Merrimac Bridge Tunnel
• Chesapeake Bay Bridge Tunnel (O&M by CBBT Auth.)
• Downtown Tunnel (operated and maintained by ERC)
• Midtown Tunnel (operated and maintained by ERC)
Hampton Roads District
Bridge Inventory

Total Number of Structures – 1,692
VDOT Maintained Structures – 1,258
- Number of Bridge – 845
  - 5 Movable Bridges
- Number of Culverts – 413

Area of VDOT Bridge Deck = ~16,500,000 S.F.
Average age of VDOT Inventory = 42 Years Old
Oldest VDOT Bridge = 93 Years Old
Value of VDOT Inventory = $7 Billion
Longest VDOT Bridge = 4.4 Miles (23,300 ft.)
## Bridge Condition from Dashboard

<table>
<thead>
<tr>
<th>District</th>
<th>Red</th>
<th>Yellow</th>
<th>Green</th>
<th>% Green or Yellow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nova</td>
<td>48</td>
<td>270</td>
<td>1,779</td>
<td>97.7%</td>
</tr>
<tr>
<td>VDOT Hampton Roads</td>
<td>51</td>
<td>189</td>
<td>1,003</td>
<td>95.9%</td>
</tr>
<tr>
<td>All Hampton Roads</td>
<td>88</td>
<td>477</td>
<td>1,126</td>
<td>94.8%</td>
</tr>
<tr>
<td>Staunton</td>
<td>196</td>
<td>796</td>
<td>2,510</td>
<td>94.4%</td>
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<tr>
<td>Lynchburg</td>
<td>127</td>
<td>475</td>
<td>1,512</td>
<td>94.0%</td>
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<tr>
<td>Culpeper</td>
<td>124</td>
<td>360</td>
<td>1,212</td>
<td>92.7%</td>
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<td>Salem</td>
<td>270</td>
<td>666</td>
<td>2,130</td>
<td>91.2%</td>
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<tr>
<td>Richmond</td>
<td>237</td>
<td>661</td>
<td>1,696</td>
<td>90.9%</td>
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<tr>
<td>Bristol</td>
<td>319</td>
<td>956</td>
<td>2,150</td>
<td>90.7%</td>
</tr>
</tbody>
</table>
TYPES OF BRIDGES IN HAMPTON ROADS
Typical Small County Bridge
How Many Are in the Hampton Roads District?

• 173 Total
  • 142 Maintained by VDOT
  • 31 Maintained by Municipalities

>10% of the District’s Inventory
~1/3 are Structurally Deficient
Majority of District Maintained SD Bridges
Typical Small County Bridge

Value of Inventory - ~$20,000,000

Cost to Replace Deficient Structures - ~$6,700,000
Typical Interstate Bridges
Typical Interstate Bridges

There are None!

All Bridges Carrying or Over Interstate are Maintained by VDOT

Exceptions:
• Cunningham Drive over I-64 in Hampton
• Bland Blvd over I-64 in Newport News
• Atkinson Blvd over I-64 in Newport News (Future)
Large and Movable Bridges

Large Fixed Bridges
- HRBT Approaches
- MMMBT Approaches
- Willoughby Bay Bridges

Movable Bridges
- Berkley Bridges
- Coleman Bridge
- High Rise Bridge
- James River Bridge
1st Berkley Bridge - 1952
Current Berkley Bridges
James River Bridge
James River Bridge
Under Construction – June 1978
James River Bridge
Under Construction – June 1980
James River Bridge
Under Construction – June 1983
Coleman Bridge
Largest Double-Leaf Swing Bridge in US
2nd Largest in the World
Coleman Bridge
Float-In of Spans
Coleman Bridge
Float-In
HAMPTON ROADS DISTRICT BRIDGE PROGRAM
Hampton Roads District Bridge Annual Allocation

- **Maintenance**
  - **Safety Inspection**
    - State Forces: $1,000,000
    - Consultant: $2,800,000
    - Ratings: $50,000
  - **State Force Maintenance**
    - District: $2,350,000
  - **UPC Projects**
    - District: $13,500,000
  - **Overhead**
    - TOTAL: $460,000
    - TOTAL: $20,160,000

- **Construction**
  - **Dedicated Bridge Fund (Average Yearly)**
    - NHPP: $2,100,000 ($12,600,000 in current SYP)
    - On System: $5,350,000 ($32,000,000 in current SYP)
    - Off System: $1,570,000 ($9,400,000 in current SYP)
    - TOTAL: $9,020,000
Hampton Roads District Safety Inspection Program

- **2012 Completed Inspections**
  - 601 Bridges & Culverts
  - 25 Fracture Critical Bridges
  - 1,500 Ancillary Structures (Signs, Signals, Luminaires, etc.)
  - 2,126 Inspections

- **2013 Planned & Completed Inspections**
  - 611 Bridges & Culverts
  - 25 Fracture Critical Bridges
  - 2,100 Ancillary Structures (Signs, Signals, Luminaires, etc.)
  - 2,736 Inspections

- **Cost of Inspection Program (Annually)**
  - State Force Inspections $1,000,000
  - Consultant Inspections $2,800,000
  - Consultant Ratings $50,000

  **Total** = $3,850,000
Bridge Maintenance Contracts

Current:
- On-Call Districtwide Structural Repair - ~$2.5M
- Painting of Four Bridges - ~$2.5M
- Replace Fence on 28th Street Bridge in Newport News - ~$600k

Planned:
- Painting of Six Bridges - $2.5M
- Painting of 28th Street Bridge in Newport News - ~$2.5M

Future:
- On-Call Joint Repair and Overlay
- On-Call Districtwide Structural Repair
- Additional Painting Contracts
Bridge Maintenance Contracts

Ongoing Major Crossings:

• **MMMBT**:
  • South Approach Deck & Barrier Waterproofing - ~$8M

Future Major Crossings:

• **On-Call River/Harbor Crossings Structural Repair**
• **HRBT**:
  • Replace Pile Jackets – ~$19M
  • Replaced Eastbound Lanes Overlay – ~$2.5M
• **MMMBT**:
  • South Approach Waterproof Beams and Substructure – ~$16M
  • North Approach Deck & Barrier Waterproofing – ~$3.5M
  • North Approach Painting – ~$5M
• **JRB**:
  • JRB Overlay and Joint Closures – ~$12M
• **High Rise Bridge**:
  • Steel Repair and Paint Structural Steel – ~$11M
Bridge Replacement Projects

Interstate:
• I-95 over the Meherrin River

Primary:
• Route 58 over Railroad & Secondary Road in Carrsville
• Route 35 over Tarrara Creek
• Route 134 over Kiln Creek
• Route 189 over Blackwater River (South Quay Bridge)
• Route 308 over Three Creek
• Route 301 over Nottoway River
• Route 35 over Nottoway River (Design-Build)

Secondary:
• Orbit Rd over Nuby Run – Apparent Low Bidder
• Loafers Oak over Cypress Swamp – Bids due this Month
• 14 Additional Bridges in Design
Bridge Replacement Projects

• 22 Projects Replacing 25 Bridges
• Two Projects in Advertisement/Award
• First Bridge Replacements Advertised since 2003
  • **HRD Dedicated Bridge Fund used to fund two large projects:**
    • Chincoteague Channel Bridge Replacement
    • Gilmerton Bridge Replacement
    • No money available for smaller bridges
  • **Currently Limited to VDOT Bridge Replacements for less than $20M**
• Advertisements will pick up in FY15 & FY16 or sooner
Typical Tunnel Cross Section
Display 8

Downtown Tunnel
Midtown Tunnel
MLK Extension

Rendering of the Proposed Midtown Tunnel (Westbound)
Hampton Roads District Bridge Program Risk

• Interstate Bridges
  • Maintenance Timeframe Limited
  • Approaching Service Life
  • Will these bridges be replaced with larger widening projects?
  • If not, how do we plan to replace these structures?
    • HRBT WBL: 64 Years Old
    • HRBT EBL: 52 Years Old
  • How much money and effort do we put into bridges slated for corridor improvements?

• Maintenance Fund Availability
  • Will Bridges be given Priority when Projects Are Ready?
  • Need to invest in Maintenance of Large Structures
    • Repairs and Preventative Maintenance on HRBT
    • Preventative Maintenance on MMMBT, JRB and High Rise
QUESTIONS?

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