STATE OF GOOD REPAIR as of July 1, 2015

9 VDOT Districts

86 Localities maintain system roadways

Bridges

National Bridge Inventory
13,467

VDOT Structurally Deficient
889 National Bridge Inventory
amount of needs $3.1 Billion

Locally-Owned Structurally Deficient
141 National Bridge Inventory
amount of needs $609 Million

Pavements

VDOT maintained lane miles (All Systems)
over 127,000

VDOT maintained deteriorated Interstate
27,100 and Primary lane miles
amount of needs $270 Million

Locally maintained lane miles
over 30,000

VDOT maintained deteriorated primary
3,610 extension lanes miles
amount of needs $409 Million

Locally maintained deteriorated primary
amount of needs
$756 Million
## State of Good Repair

### Prioritization Process Schedule

<table>
<thead>
<tr>
<th>Description</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepare Draft Prioritization Process Internally</td>
<td>7/2015 to present</td>
</tr>
<tr>
<td>Provide Draft Prioritization Process to CTB</td>
<td>4/19/2016</td>
</tr>
<tr>
<td>CTB Action</td>
<td>6/14/2016</td>
</tr>
<tr>
<td>Prioritization Effective</td>
<td>7/1/2016</td>
</tr>
<tr>
<td>Continued Outreach on Approved Prioritization</td>
<td>7/1/2016</td>
</tr>
</tbody>
</table>
## State of Good Repair Requirements

§ 33.2-369(B) and (C)

<table>
<thead>
<tr>
<th>Description</th>
<th>Pavement</th>
<th>Bridge</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose</strong></td>
<td>Reconstruction/Rehabilitation (Deteriorated)</td>
<td>Reconstruction/Replacement (Structurally Deficient)</td>
</tr>
<tr>
<td><strong>System</strong></td>
<td>Interstate/Primary/Primary Extensions</td>
<td>All Systems (VDOT and Locally Maintained)</td>
</tr>
<tr>
<td><strong>Priority Consideration</strong>*</td>
<td>Mileage, Condition, Costs</td>
<td>Number, Condition, Costs</td>
</tr>
<tr>
<td><strong>Distribution</strong></td>
<td>All nine construction districts</td>
<td>Based on needs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min 5.5% and Max 17.5% per year</td>
</tr>
<tr>
<td><strong>Waivers</strong></td>
<td>Key Project - extraordinary circumstances only – cap can be waived</td>
<td>20% - Secondary Pavements (if VDOT secondary target not met)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N/A</td>
</tr>
</tbody>
</table>

*More priority items are considered and explained later*
State of Good Repair Definition
VDOT’s Internal

For a project to receive State of Good Repair funds, all three tests need to be met

<table>
<thead>
<tr>
<th>Tests</th>
<th>Pavement</th>
<th>Bridge</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Improves to fair or better status</td>
<td>Removes from structurally deficient status</td>
</tr>
<tr>
<td>2</td>
<td>Meets definition of pavement rehabilitation and reconstruction in Federal Highway Administration’s memo dated 9/12/2005 (see link below)</td>
<td>Meets definition of bridge rehabilitation and replacement in Federal Highway Administration’s Bridge Preservation Guide dated August 2011 (see link below)</td>
</tr>
<tr>
<td>3</td>
<td>Adds or restores strength</td>
<td></td>
</tr>
</tbody>
</table>

**FHWA Memo Links**
- [FHWA's Memo – September 12, 2005 - Pavement Preservation Definitions](#)
- [FHWA's Memo - February 25, 2016 - Pavement Preservation](#)
- [FHWA's Bridge Preservation Guide – August 2011 – Maintaining a State of Good Repair Using Cost Effective Investment Strategies](#)
# State of Good Repair – Prioritization

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Statute Reference</th>
<th>Pavement</th>
<th>Bridge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation Date</td>
<td>Chapter 684</td>
<td>July 1, 2016</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Enactment 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State Statute</td>
<td>§ 33.2-369(B)</td>
<td>Mileage</td>
<td>Number</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Condition</td>
<td>Condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cost</td>
<td>Cost</td>
</tr>
<tr>
<td>Federal Statute</td>
<td>MAP-21/FAST ACT</td>
<td>Asset Management Plan</td>
<td></td>
</tr>
<tr>
<td>VDOT Practice</td>
<td></td>
<td>Traffic Volumes</td>
<td>Importance to Users</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Condition</td>
<td>Structure Capacity</td>
</tr>
</tbody>
</table>

**State Statute**

- § 33.2-369(B)

**Federal Statute**

- MAP-21/FAST ACT

**VDOT Practice**

- Traffic Volumes
- Importance to Users
- Condition
- Structure Capacity
State of Good Repair
Needs Based Funding Distribution

- Total Needs (Bridge/Pavement)
  - Bridge Needs
    - County Network Locality
    - Non-National Bridge Inventory Needs (reduction) - VDOT managed
  - Pavement Needs
    - County Network Locality
    - Secondary Needs (reduction) - VDOT managed

- Non-structurally Deficient Bridges Needs
- Structurally Deficient Bridges Needs
- Deteriorated Pavements Needs
- Non-deteriorated Pavements Needs

State of Good Repair Needs
State of Good Repair - Needs Based Funding Distribution

Statewide Funding Distribution

- Bristol District SGR Funds
- Salem District SGR Funds
- Lynchburg District SGR Funds
- Richmond District SGR Funds
- Hampton Roads District SGR Funds
- Fredericksburg District SGR Funds
- Culpeper District SGR Funds
- Staunton District SGR Funds
- Northern VA District SGR Funds

Typical District Funding Distribution

- District “X” SGR Funds

- VDOT Pavement SGR Funds
- VDOT Bridges SGR Funds
- Locality Pavement SGR Funds
- Locality Bridges SGR Funds
Pavement Prioritization

- **Data Used**
  - Pavement Distresses and Roughness
  - Average Annual Daily Traffic, Truck Traffic Volume
  - Strength of Pavement Layers and Subgrade
  - Last Maintenance Type and History
- **Distribution based on costs**
- **Eligible lane miles will be determined based on needs through a multi-constraint optimization process**
- Decision matrices are used to generate recommended treatments
- **VDOT - publish target lane miles by district and system**
- **Localities – similar to primary extension process**
- **November 2016, § 33.2-232 – Annual Report item 5 requires a prioritized list of needs for pavement and bridges.**
## Bridge Prioritization

<table>
<thead>
<tr>
<th>Factor</th>
<th>Factor Weight</th>
<th>Data Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition</td>
<td>25%</td>
<td>Bridge Safety Inspections</td>
</tr>
<tr>
<td>Importance of Bridge to Users</td>
<td>30%</td>
<td>Traffic, Truck Traffic, Detour, Highway System, Proximity to Critical Facilities</td>
</tr>
<tr>
<td>Cost Effectiveness</td>
<td>20%</td>
<td>Bridge Management System</td>
</tr>
<tr>
<td>Risk</td>
<td>15%</td>
<td>Fracture Critical, Scour, Fatigue Prone Details and Seismic Vulnerability</td>
</tr>
<tr>
<td>Structure Capacity</td>
<td>10%</td>
<td>Posting and Clearances</td>
</tr>
</tbody>
</table>
Prioritization Process – How Does It Work?

- **Pavements**
  - VDOT - Lane Miles
  - Localities – similar to primary extension process

- **Bridges**
  - Two prioritized lists per district for structurally deficient bridges
    - VDOT
    - Locality
  - May skip structures in list? Why?
    - Lots of reasons
    - Examples
      - Cost of work
        - 1st ranked - $2B
        - 2nd ranked - $20M
      - Economy of Scale
        - Maybe the contract prices are better for two structures such as 1st rank structure and 6th rank structure are cheaper to contract together
      - Maintenance of Traffic
        - Interstate 95 bridges
      - Deficiency addressed with maintenance funds or other funds
State of Good Repair
Proposed Process

Funding
- Needs Based
- VDOT Pavements
- Local Primary Extensions
- VDOT Bridges
- Local Bridges

Prioritization
- Deteriorated Pavements
- Structurally Deficient Bridges
- Must follow VDOT Best Practices

Ranking
- Location
- Treatment
- Estimate
- Fund Request

Selection
- Condition
- Traffic Volume
- On National Highway System
State of Good Repair – Preliminary Percentage by District

<table>
<thead>
<tr>
<th>District</th>
<th>FY 2017 (Based on previously proposed distribution)</th>
<th>VDOT</th>
<th>Localities</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pavement</td>
<td>Bridge</td>
<td>Total</td>
<td>Pavement</td>
<td>Bridge</td>
</tr>
<tr>
<td>Bristol</td>
<td>11.7%</td>
<td>21%</td>
<td>64%</td>
<td>85%</td>
<td>2%</td>
<td>13%</td>
</tr>
<tr>
<td>Culpeper</td>
<td>6.0%</td>
<td>25%</td>
<td>45%</td>
<td>70%</td>
<td>3%</td>
<td>27%</td>
</tr>
<tr>
<td>Fredericksburg</td>
<td>12.1%</td>
<td>18%</td>
<td>77%</td>
<td>95%</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>Hampton Roads</td>
<td>14.8%</td>
<td>7%</td>
<td>38%</td>
<td>45%</td>
<td>25%</td>
<td>30%</td>
</tr>
<tr>
<td>Lynchburg</td>
<td>7.6%</td>
<td>29%</td>
<td>63%</td>
<td>92%</td>
<td>5%</td>
<td>3%</td>
</tr>
<tr>
<td>Northern Virginia</td>
<td>10.6%</td>
<td>27%</td>
<td>61%</td>
<td>88%</td>
<td>11%</td>
<td>1%</td>
</tr>
<tr>
<td>Richmond</td>
<td>17.4%</td>
<td>25%</td>
<td>65%</td>
<td>90%</td>
<td>4%</td>
<td>6%</td>
</tr>
<tr>
<td>Salem</td>
<td>12.1%</td>
<td>21%</td>
<td>67%</td>
<td>88%</td>
<td>3%</td>
<td>9%</td>
</tr>
<tr>
<td>Staunton</td>
<td>7.9%</td>
<td>13%</td>
<td>76%</td>
<td>89%</td>
<td>4%</td>
<td>7%</td>
</tr>
</tbody>
</table>
State of Good Repair – Scoring Process – Pavement (Locality)

- Applications accepted along with the Primary Extension Paving Program
- Accept applications on an annual basis to support pavement overlay, rehabilitation, or reconstruction projects
  - Maximum request of $1M per locality, per year
  - Roadway must have Critical Condition Index rating of 60 or less
  - Projects must be advertised within 6 months of allocation. Projects that are selected and do not meet this criteria may be subject to deallocation.
  - Maintenance of Effort Certification – funding supplements, not replaces, the current level of funding/level of effort on the part of the locality
- Prioritize projects for funding based on technical score that considers pavement condition, traffic volume, and prior expenditures
  - Pavement Condition (CCI) – 45%
  - On the National Highway System (NHS) – 10%
  - Traffic Volume – 30%
  - Prior Expenditures – 15%
- Requires regular collection of pavement condition data on the locally maintained primary extensions.
State of Good Repair – Scoring Process
Bridges (Localities)

• Annual basis for selection of bridge rehabilitation, or reconstruction projects
  • Bridge must be structurally deficient
  • National Bridge Inventory Only
  • Proposed work must take bridge out of structurally deficient status
  • Localities must be current on bridge inspections
  • Projects receiving funding under this program must initiate the Preliminary Engineering or the Construction Phase within 24 months of award of funding or become subject to deallocation

• Selection of projects for funding considers bridge prioritization and cost effectiveness
## Locality Bridge Ranking Example

### State of Good Repair - Locality Bridge Ranking Example

<table>
<thead>
<tr>
<th>Bridge #</th>
<th>Variables</th>
<th>System-Level Values</th>
<th>Final Values After Scoring</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IF</td>
<td>CF</td>
<td>RF</td>
</tr>
<tr>
<td>18399</td>
<td>0.99</td>
<td>0.82</td>
<td>0.10</td>
</tr>
<tr>
<td>16020</td>
<td>0.95</td>
<td>0.90</td>
<td>0.10</td>
</tr>
<tr>
<td>2466</td>
<td>0.95</td>
<td>0.98</td>
<td>0.00</td>
</tr>
<tr>
<td>17087</td>
<td>0.77</td>
<td>0.83</td>
<td>0.00</td>
</tr>
<tr>
<td>5275</td>
<td>0.87</td>
<td>0.54</td>
<td>0.00</td>
</tr>
<tr>
<td>8204</td>
<td>0.85</td>
<td>0.82</td>
<td>0.00</td>
</tr>
<tr>
<td>18419</td>
<td>0.98</td>
<td>0.60</td>
<td>0.10</td>
</tr>
<tr>
<td>16384</td>
<td>0.30</td>
<td>0.97</td>
<td>0.75</td>
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<tr>
<td>18724</td>
<td>0.89</td>
<td>0.55</td>
<td>0.00</td>
</tr>
<tr>
<td>2439</td>
<td>0.79</td>
<td>0.48</td>
<td>0.00</td>
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<tr>
<td>10335</td>
<td>0.60</td>
<td>0.70</td>
<td>0.00</td>
</tr>
<tr>
<td>17878</td>
<td>0.52</td>
<td>0.98</td>
<td>0.00</td>
</tr>
</tbody>
</table>