Bridges of Georgia

Bill DuVall, P.E., M.S.C.E.
State Bridge Engineer

December 11, 2019
December Bridge Update

Agenda / Overview

• Office Overview
• Bridge Inventory
• Bridge Bonds
• Replacement
• Innovations
Office of Bridge Design and Maintenance

- Design
- Maintenance and Inspection
Office of Bridge Design and Maintenance

Design Unit

• Located at One Georgia Center
• 6 Bridge Design Groups
• 1 Bridge Hydraulics Group
• Policy and Standards Team
• Technical Services Team
• 3 Licensed Drone Pilots and Emergency Response Teams
Office of Bridge Design and Maintenance

Maintenance Unit

- Headquartered at Transportation Management Center
- 12 Topside Inspection Teams
- 2 Specialized Teams
- 2 Underwater Teams
- 2 Licensed Drone Pilots and Emergency Response Teams

- 8,800 Inspections performed in FY 2019
- Hurricane Dorian Response – 86 bridges inspected
# Georgia Bridge Inventory

## Total On and Off System

<table>
<thead>
<tr>
<th></th>
<th># Bridges</th>
<th># Posted</th>
<th># Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Owned</td>
<td>6,760</td>
<td>43</td>
<td>0</td>
</tr>
<tr>
<td>Not State Owned</td>
<td>8,044</td>
<td>1,270</td>
<td>24</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14,804</strong></td>
<td><strong>1,313</strong></td>
<td><strong>24</strong></td>
</tr>
</tbody>
</table>
## Inventory Growth

<table>
<thead>
<tr>
<th>Year</th>
<th># Bridges</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>14,603</td>
<td>--</td>
</tr>
<tr>
<td>2016</td>
<td>14,640</td>
<td>37</td>
</tr>
<tr>
<td>2017</td>
<td>14,668</td>
<td>28</td>
</tr>
<tr>
<td>2018</td>
<td>14,689</td>
<td>21</td>
</tr>
<tr>
<td>2019</td>
<td>14,725</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Net Increase</td>
<td>122</td>
</tr>
</tbody>
</table>

Note: excludes federally owned bridges
Georgia Bridge Inventory

ARTBA 2019 Report (based on 2018 FHWA NBI Records)
Georgia Bridge Inventory

ARTBA 2019 Report (based on 2018 FHWA NBI Records)

Shows % of bridges structurally deficient

- 0 - 4.9%
- 5 - 8.9%
- 9% or higher
Building the Bridge Replacement Program

1,551 Bridge Structures

- Poor Condition / Weight Restricted
- Critical Features / Structure Types
- Temporary Shoring
- Priority Routes / Freight Corridors
- Life-cycle cost for Replacement vs. Rehabilitation
Bridge Maintenance

Rehabilitation and Preservation
Bridge Bonds
FY 16 thru FY 19

- State Route Bridges
- Funds for ROW and CST
- 69 Bridges Affected
Bridge Bond Projects

US 221 (SR 135) / Whitehead Creek, Jeff Davis County
Bridge Bond Projects

SR 369 / Chattahoochee River, Forsyth County
Bridge Bond Projects
Sanford Drive / Tanyard Creek, Clarke County
Bridge Bond Projects
SR 334 / Sandy Creek, Jackson County
Bridge Bond Projects

Proposed FY 21

- FY 16 thru FY 19 – Red Dots
- FY 21 – Blue Dots
- 24 Potential Projects
- Proposed $75 Million
Local Bridge Program

- 92 Bridges
- Selected Bridges using Data Driven Approach
- Solicited Support from Local Governments
LIBP
Low Impact Bridge Program

- 80 Bridges Programmed with 25 Opened to Traffic since 2015
- Streamlined Design, Environmental and Construction
- Typically closed 6 to 9 months
- No Cost to Local
- Requires Off Site Detour
- $21 million Program
**SFBP**

State Funded Bridge Program

- 56 Bridges
- GEPA Document Not Required
- Similar to LIBP
- $30 million Program per Year
Innovations

Bridge Maintenance Unit
Innovations
2D Bridge Hydraulic Modeling - Need and Comparison

- 1-D models assume constant velocity and water surface elevations over entire cross-section
- 2-D models where velocities, depths, momentum, loads and other hydraulic parameters can be determined at any node on the mesh model.

Images courtesy of FHWA
Innovations
2D Bridge Hydraulic Modeling
Innovations
2D Bridge Hydraulic Modeling
Innovations
2D Bridge Hydraulic Modeling – other applications
Innovations
Elliott Road / Walnut Creek, Henry County
Innovations
Blackhall Road / Rum Creek, Henry County
Innovations
Blackhall Road / Rum Creek, Henry County
Innovations
Blackhall Road / Rum Creek, Henry County
Questions?