

SPECIAL STRUCTURES

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Keep Virginia Moving



Chapter 2 (2018) Requirements for Virginia's Large & Unique Bridge and Tunnel Structures

- **CTB Report by December 1, 2018**
 - Overall condition
 - Funding needs
 - Recommendations for addressing funding* within the State of Good Repair program
- **Assess the Impact of**
 - Establishing a set-aside from the State of Good Repair program
 - Limited use of allowing district minimum cap waiver (§ 33.2-369(B))
 - Other options the Board identifies

**Eligibility*

Special Structures Challenges

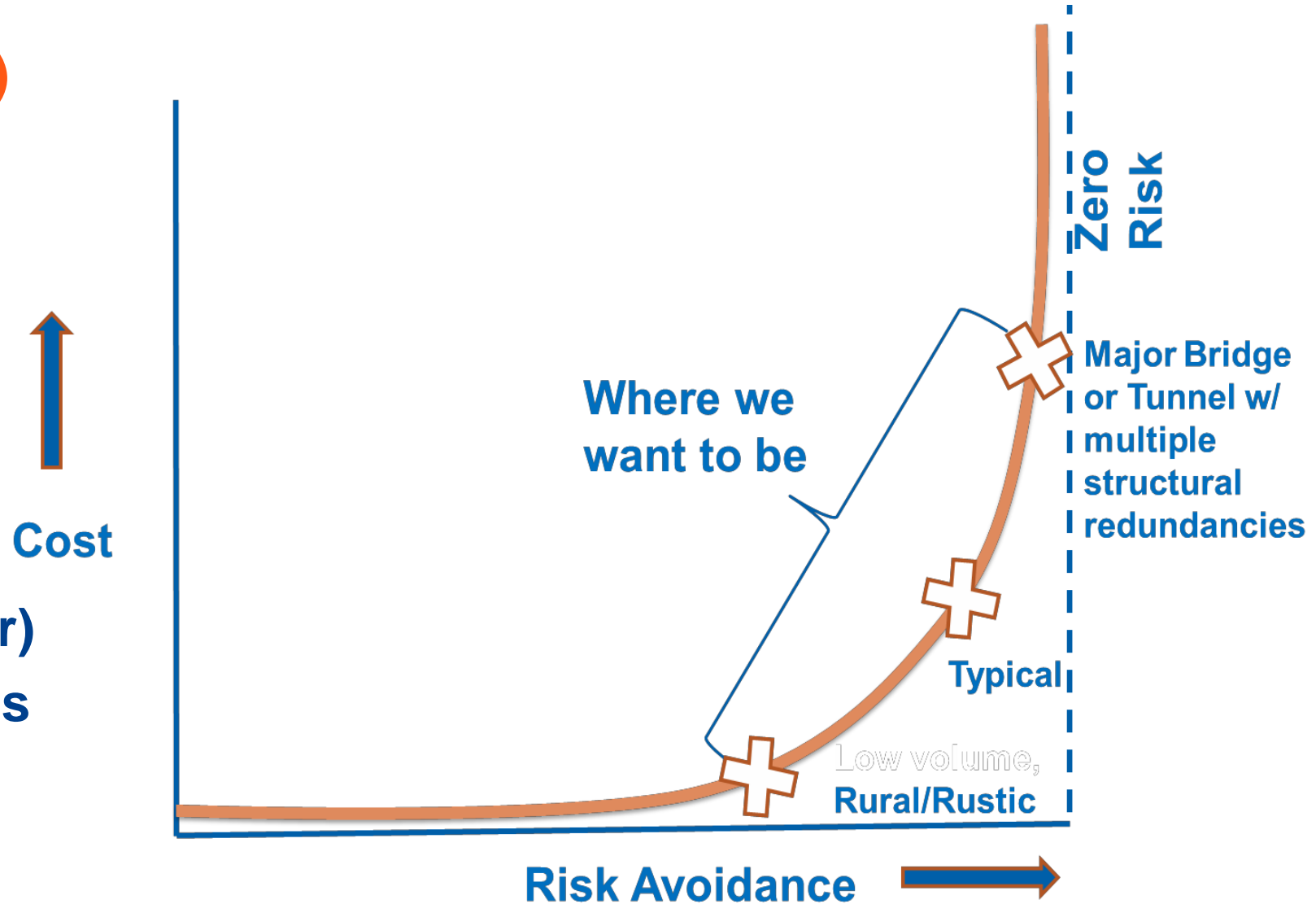
- **Currently no dedicated funding mechanism in code**
- **Typically do not qualify as structurally deficient**
 - **Legislative requirement for State of Good Repair (SGR) funding**
- ***No end of life decision protocol within current code***
 - **Continue to maintain**
 - **Rebuild**
- **SGR fund not big enough**
 - **Potential for Reserve Fund**

Special Structures Challenges

Special Structure Needs	Estimated \$1.7 B over 30 years in FY 2017 dollars
SGR Funding	Projected FY 2019 – FY 2024 - \$961 M* or Projected ITD - FY 2017 – FY 2024 - \$1.1 B
Structurally Deficient Bridges	*935 Structurally Deficient Bridges as of July 1, 2017 (851 as of July 10, 2018) 243 funded with State of Good Repair 326 funded with other funds

What Makes Structures Special

- Risk (Fracture-Critical)
- Complexity
- Maintenance Cost
- Importance
 - Long Detours
 - High Traffic
 - Economic Significance (Shipping and Vehicular)
 - Access to Vital Facilities (Military and Ports)



Special Structures – Categories – VDOT Owned

- **Tunnels**

- Big Walker
- East River
- Hampton Roads Bridge Tunnel
- Monitor-Merrimac Memorial
- Elizabeth River Downtown
- Elizabeth River Midtown
- Rosslyn

- **Movable Bridges**

- Chincoteague*
- High Rise*
- Berkley*
- Coleman*
- James River*
- Benjamin Harrison*
- Eltham*
- Gwynn's Island*

- **Complex Fixed Spans Structures**

- Varina-Enon
- Norris*
- I-64 over Willoughby Bay
- MMMBT Approach Bridges
- James River Bridge Approach Spans
- High Rise Bridge Approach Spans
- Smart Road
- Pocahontas Parkway
- 460 Connector

**Fracture Critical*

Virginia - 16% of America's Highway Tunnels Over 3,000 feet (2nd Behind Pennsylvania)

East River Mountain Tunnel – Bristol District

July, 2014 Fire



Monitor Merrimac Bridge Tunnel

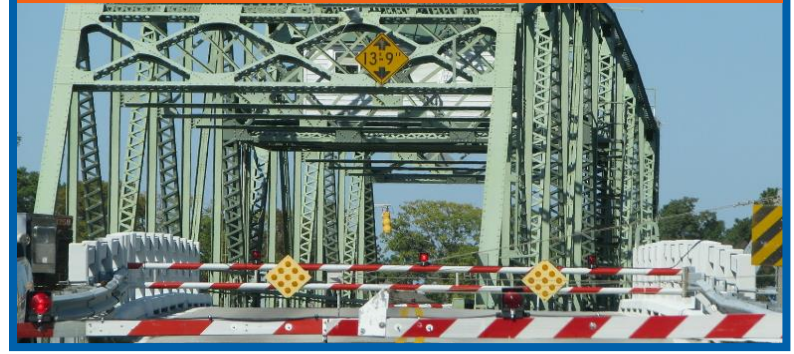


Big Walker Mountain Tunnel
Bristol District



Variety of Movable Bridges

Gwynn's Island – Sole Access to Island



Coleman Bridge – Largest Double Swing Span in America



Chincoteague – Replaced in 2010



James River Bridge – VDOT's Longest Bridge 4.4 Miles Long



Benjamin Harrison Bridge – Lift Span



Movable Bridges

Critical to Maritime and Highway Traffic

Berkley Bridge – Hampton Roads District



Coleman Bridge - Serves Naval Vessels



Benjamin Harrison Bridge after 1977 Ship Impact



Movable Bridges - Aging, Complex Components. Custom Parts with Long Lead Times (Up to 2 Years) to Replace

Gwynn's Island Aging Generator



Benjamin Harrison Bridge Machinery



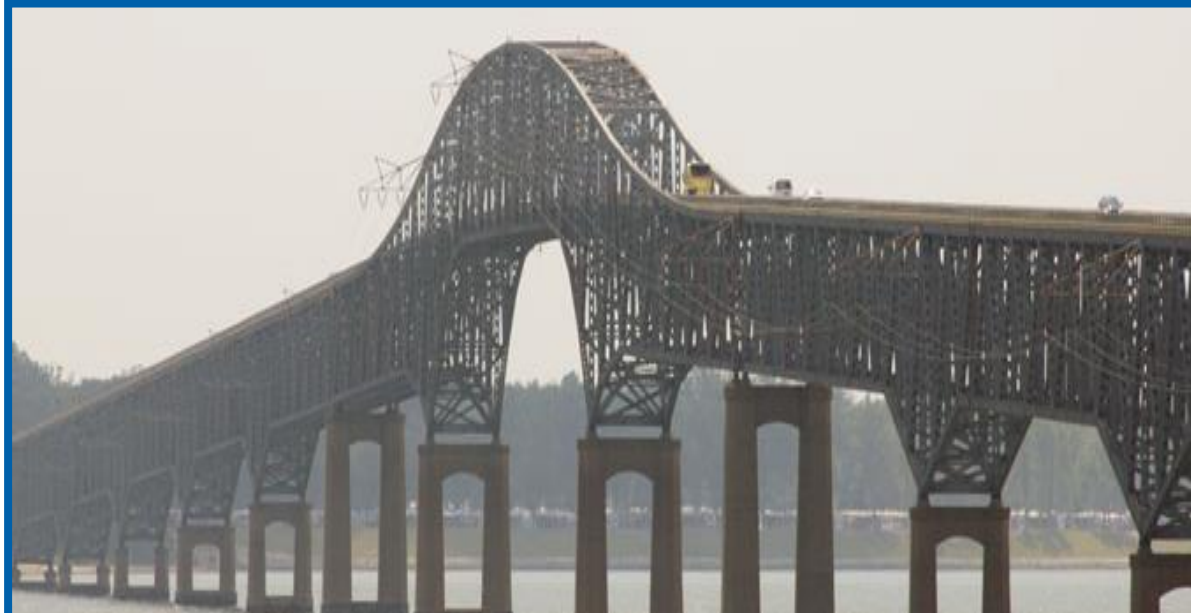
Berkley Bridge Drive Gear



Drive Gear



Large and Complex Spans



Norris Bridge - Fredericksburg District

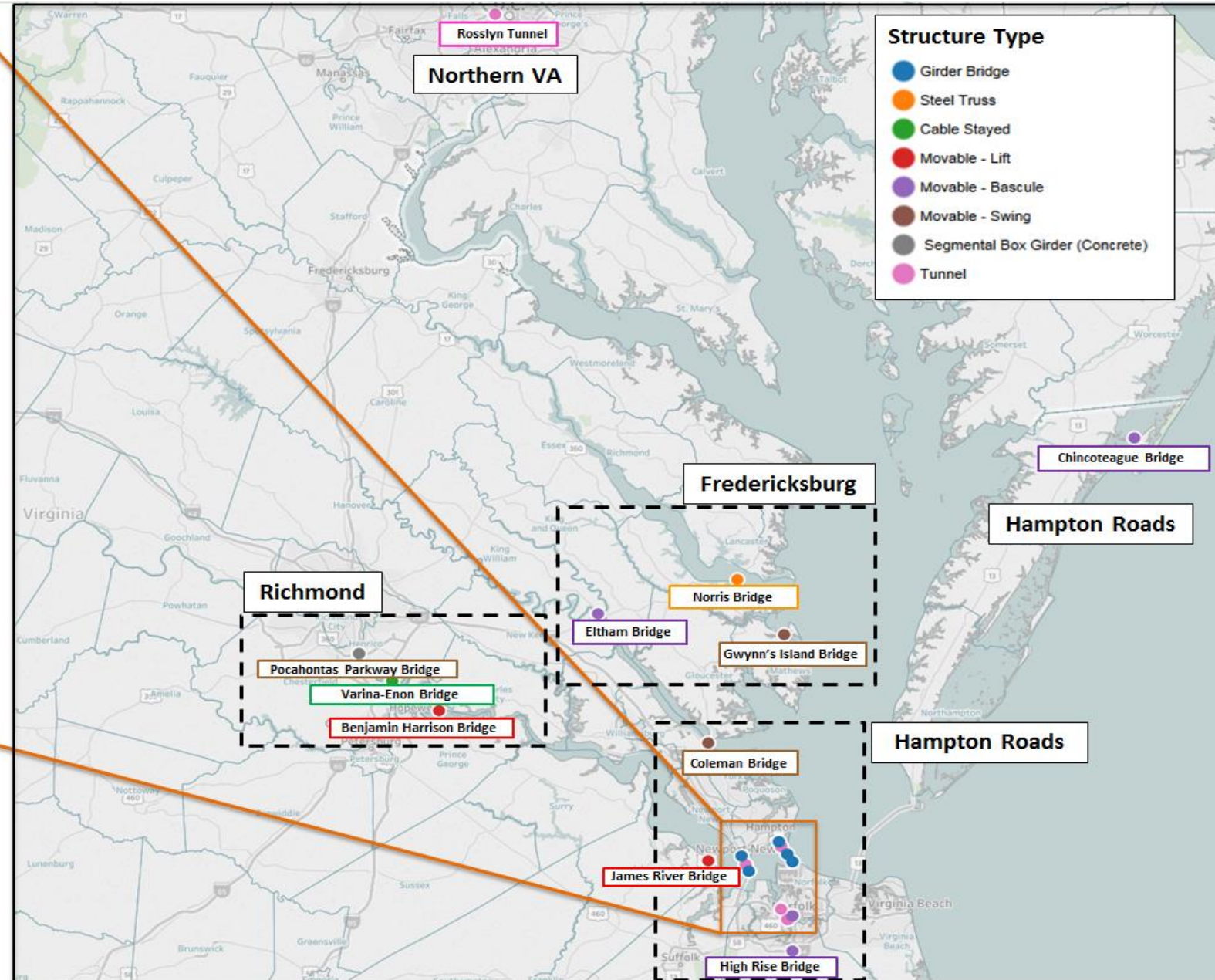
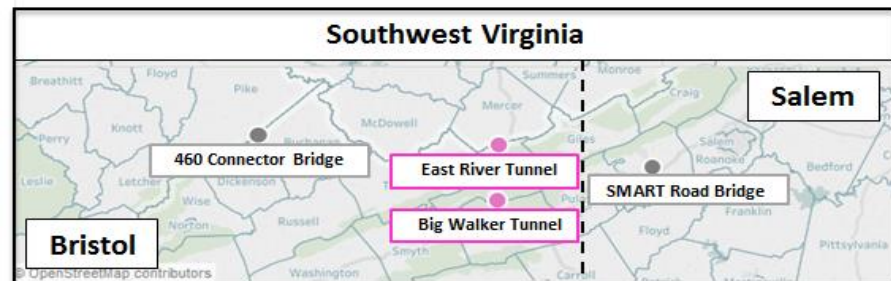
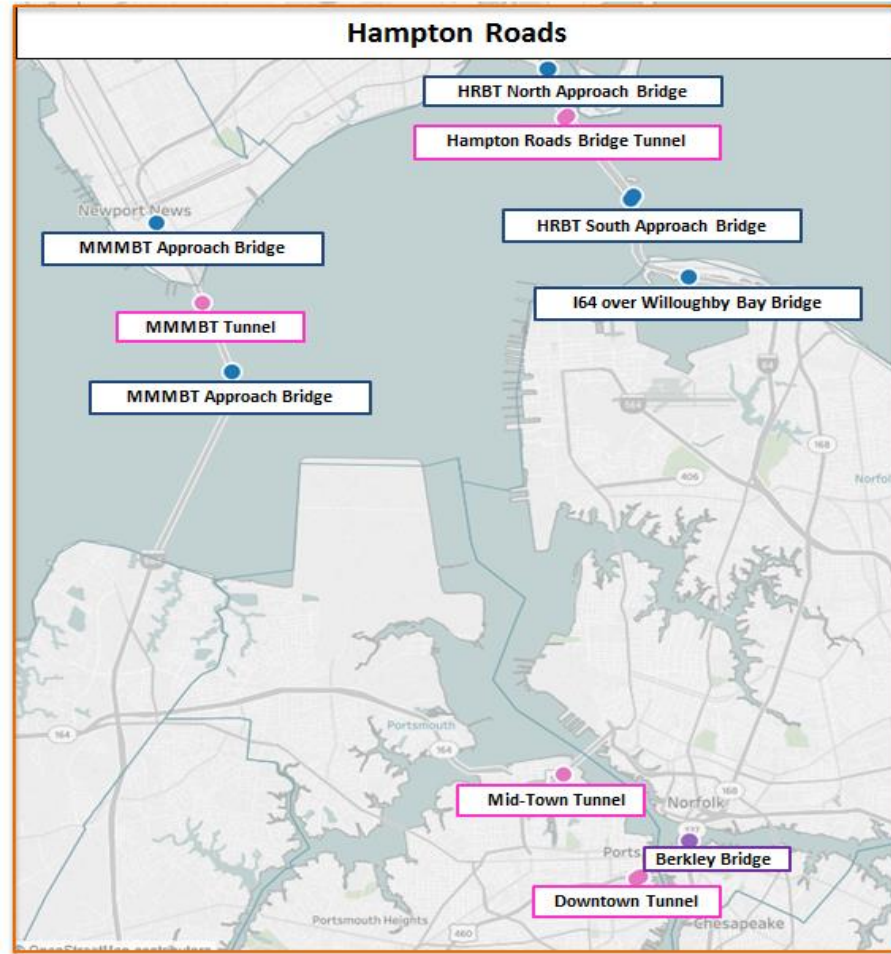


460 Connector- Bristol District



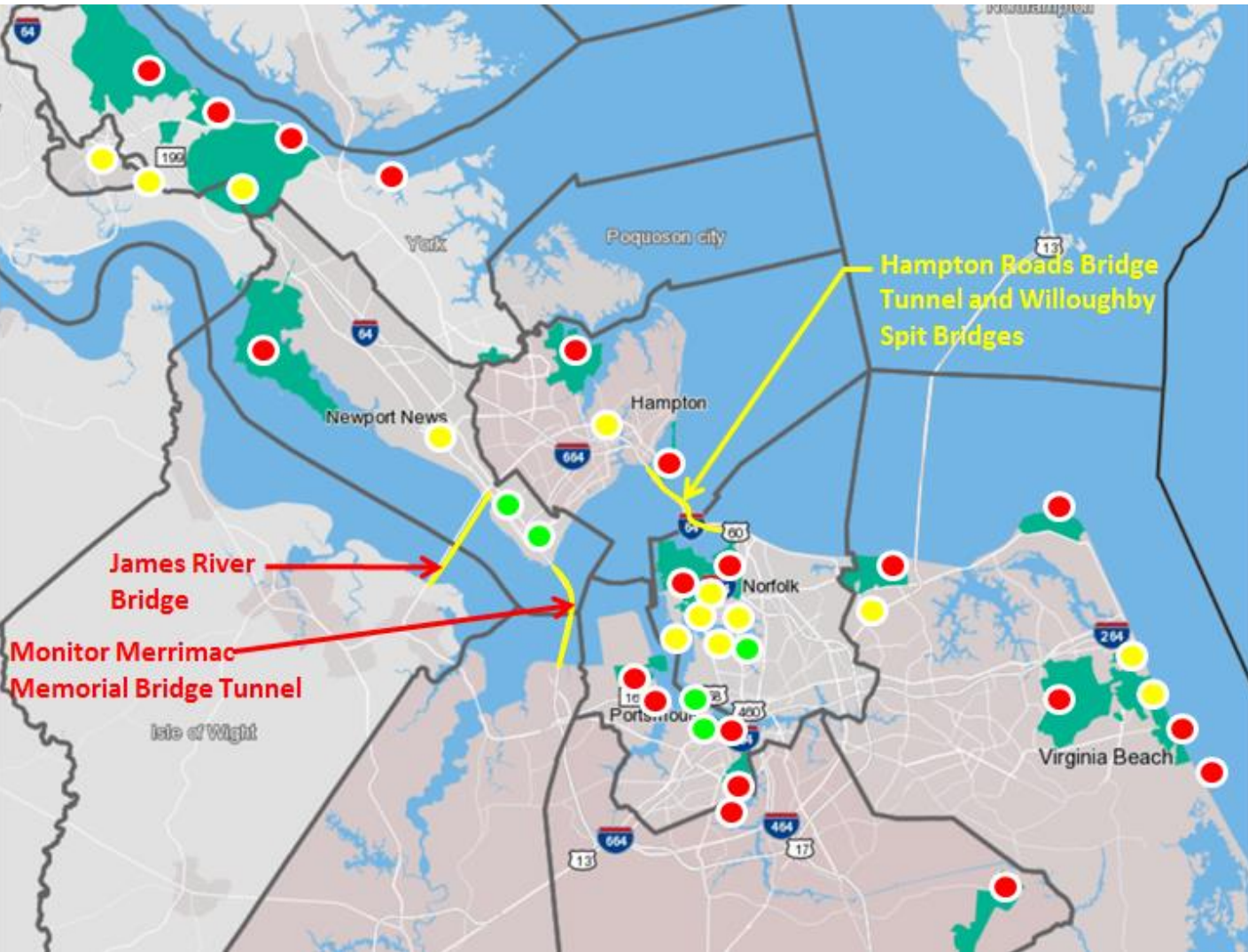
Varina-Enon Bridge – Richmond District

Special Structures - Location



Special Structures in Hampton Roads

Critical Access to Military and Commercial Facilities



20 Major Military Facilities
Including Norfolk Shipyard and Naval Airbase - Home of the Atlantic Fleet

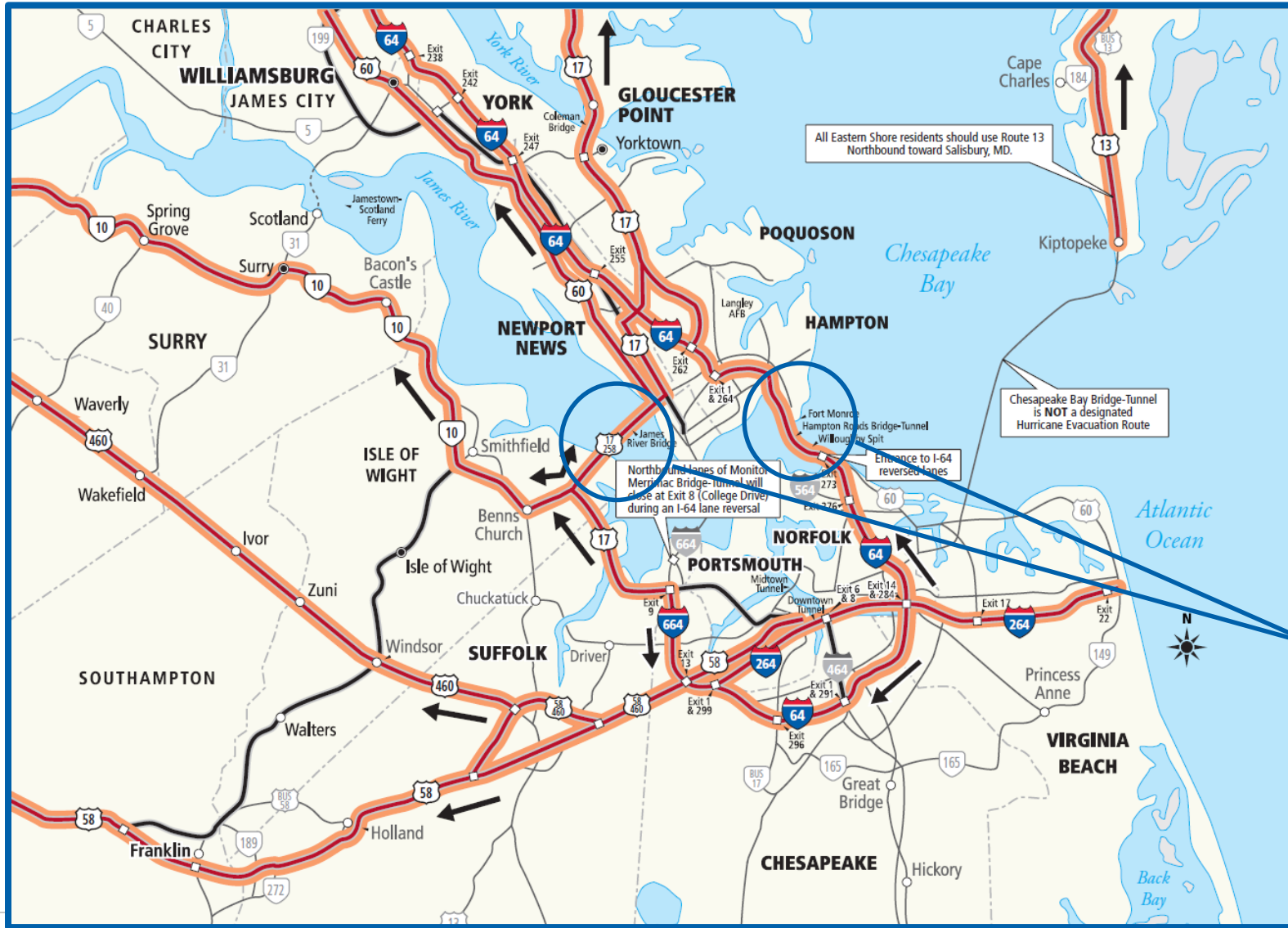
Critical Commercial Facilities

- Port of Virginia
- CSX Terminal
- Newport News Shipbuilding

Other Facilities

- 4 Universities & 1 Medical School
- VA Beach Waterfront
- Busch Gardens
- Colonial Williamsburg
- Parks & Cultural Centers

Special Structures Importance Hurricane Evacuation



Special Structures part of the Hurricane Evacuation Routes

Funding For Special Structures

- **State of Good Repair Funds defined for SD – not eligible**
 - Work to keep these structures off SD
 - Tunnels do not have an SD designation
- **SMART SCALE – not eligible unless new capacity**
- **Majority of Special Structures Funding provided by M&O Program**
 - **Maintenance and Operations Program funds**
 - Federally-mandated inspection and load rating
 - Movable bridge operations
 - Routine maintenance
- **High replacement costs**
 - Typically in the hundreds of millions or billions

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Special Structures

Next Steps

- **Review other states**
 - Current practices
 - Lessons learned
- **Identify Needs**
 - Useful life of the structures and components
- **Review of potential funding sources**
- **Present findings to the Board**

QUESTIONS

