
VDOT
Virginia Department of Transportation

MAINTENANCE AND OPERATIONS PROGRAM COMPREHENSIVE REVIEW BACKGROUND

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September 20, 2022

Maintenance and Operations Program Comprehensive Review

Why?

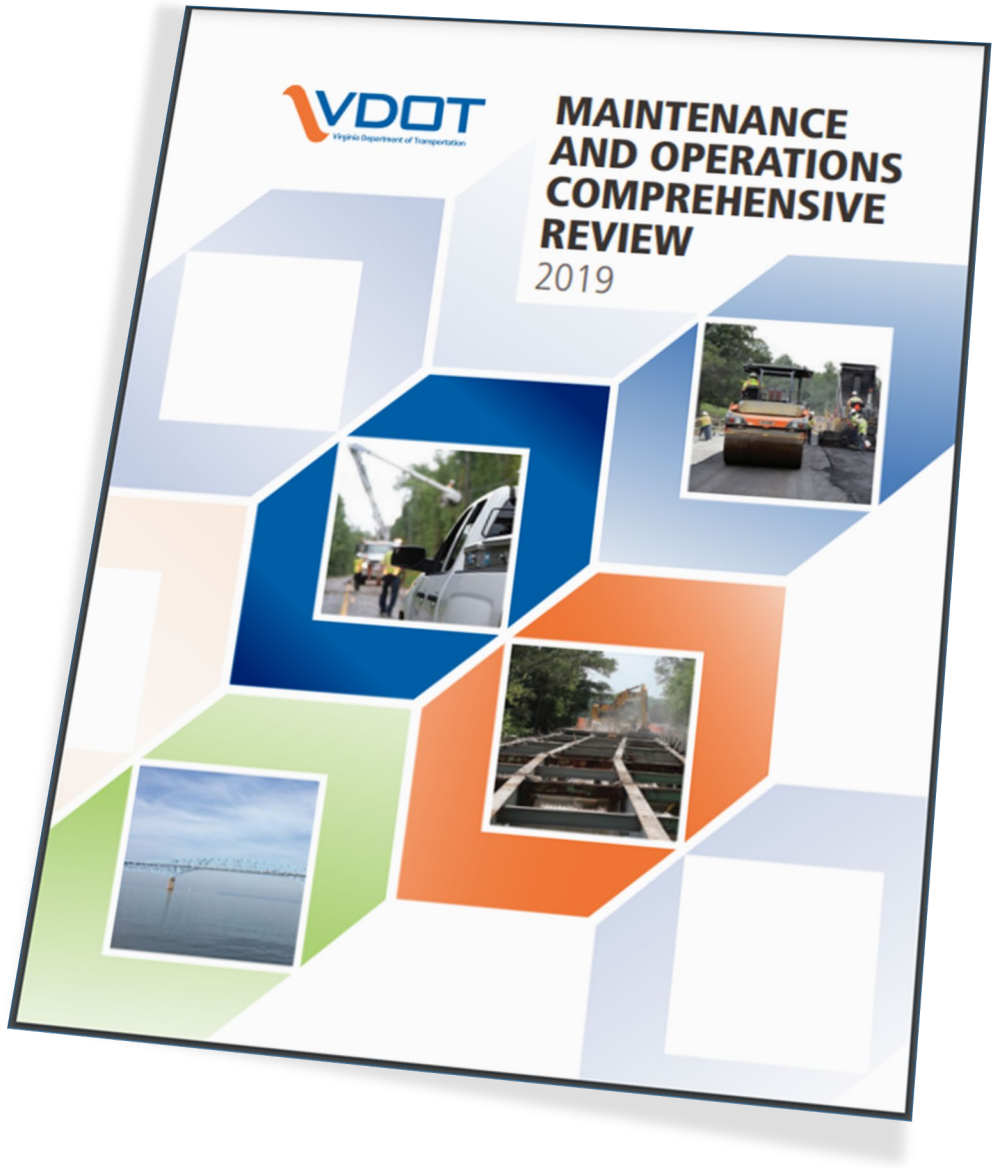
- Commissioner of Highways – business focus
- Impact on future generations – shift from short term
- Back to basics

Investment Strategy – Long-Term Sustainable Performance of Assets

- Pavements (20 Year)
- Bridges (50 Year)
- Special Structures
- Routine Maintenance

Investments

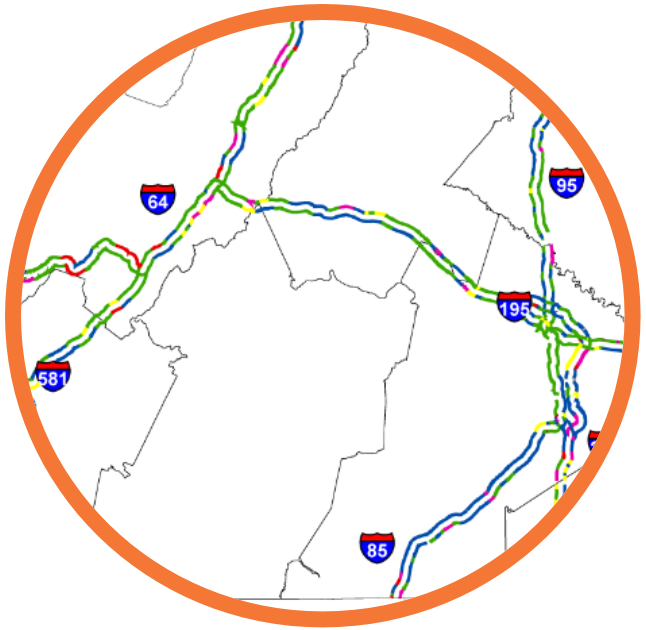
- Maintenance and Operations Program
- State of Good Repair Program



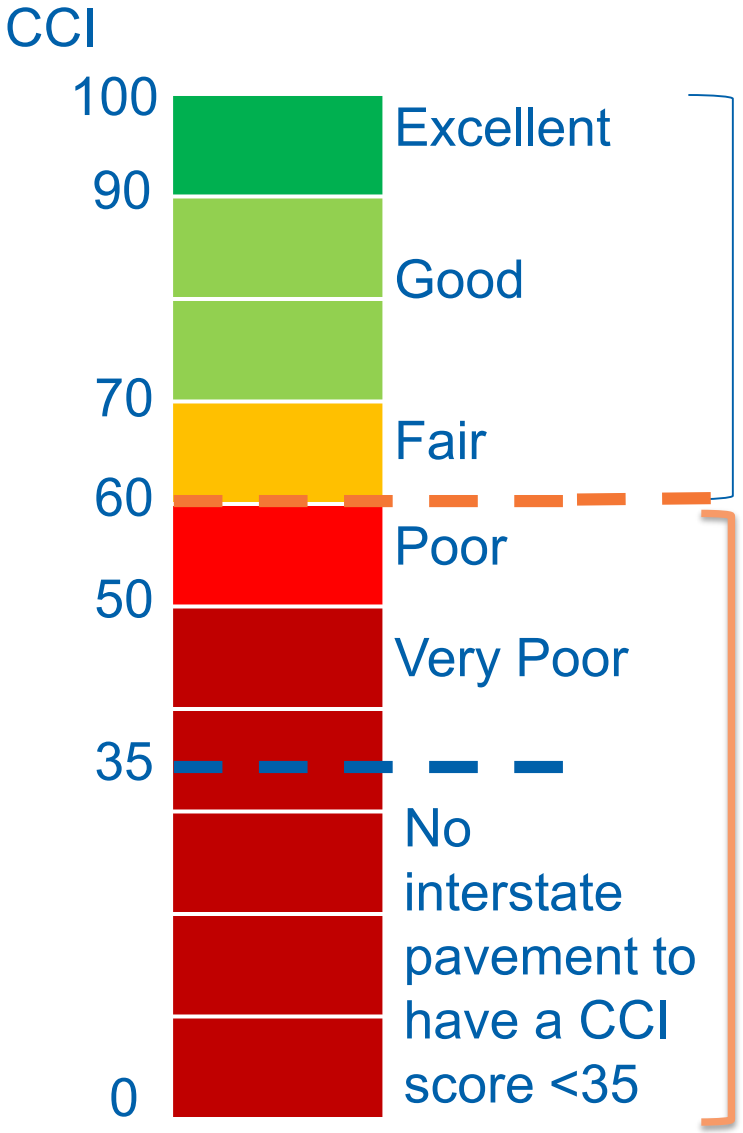
Pavement
Condition Assessment Process

Pavement Assessment Process

Interstate and Primary – annual
Secondary – 20% annually



Pavement Rating – Critical Condition Index (CCI)



Sufficiency Percentage is the percentage of lane miles with a CCI score ≥ 60

SGR Eligible is CCI < 60

What does CCI look like?

CCI 90-100 (Excellent)

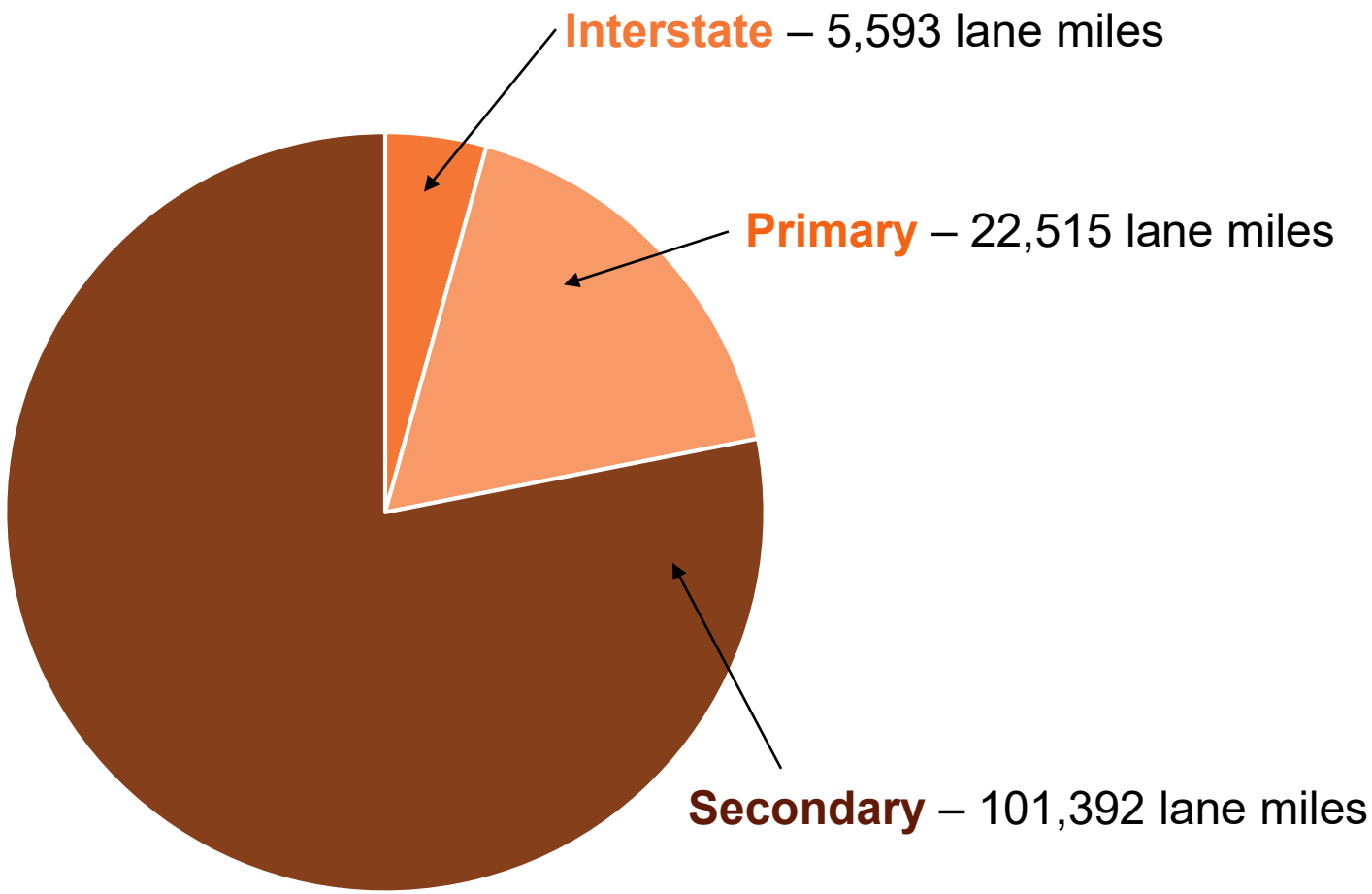
CCI 50-59 (Poor)

CCI<49 (Very Poor)

Image shows approximately CCI 35

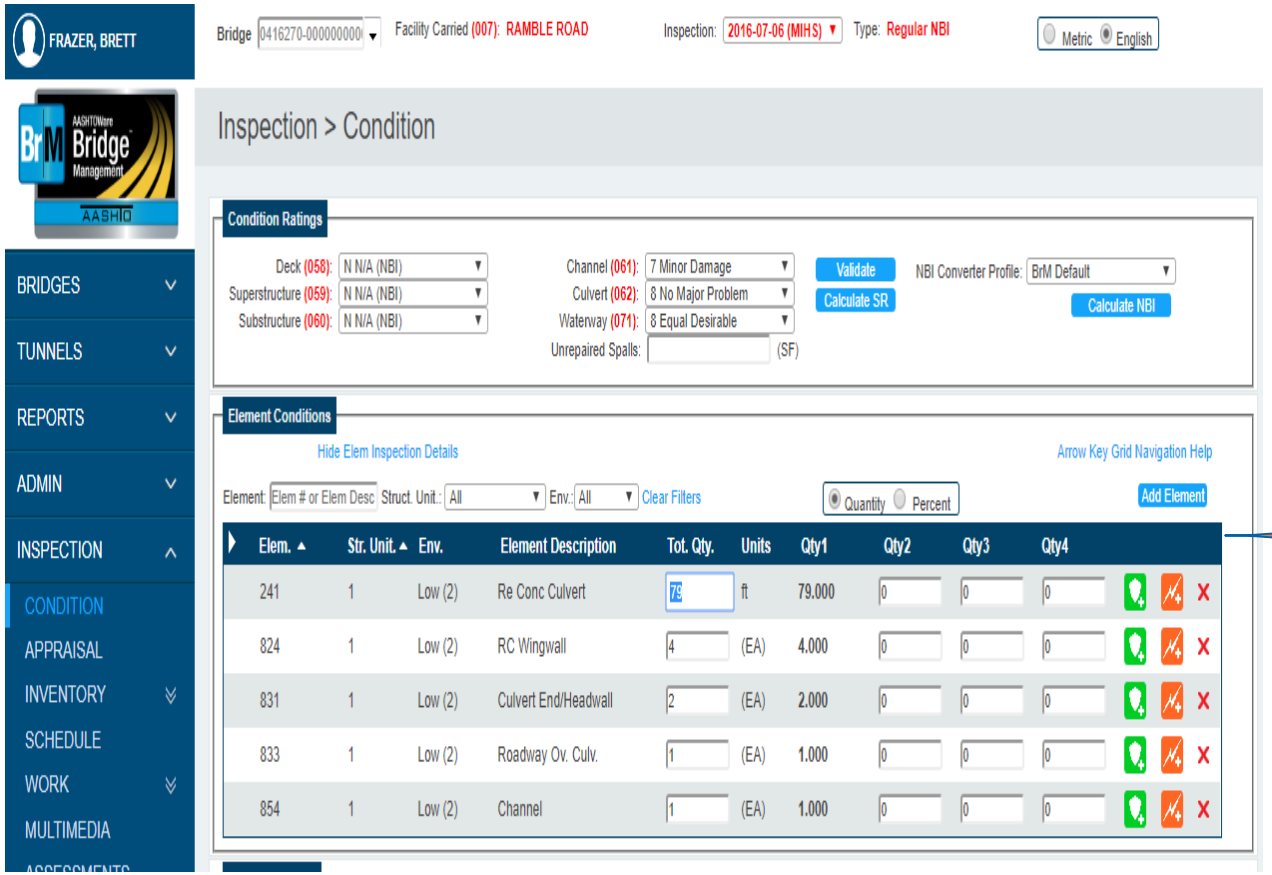
VDOT
Pavements – Inventory (Lane Miles)

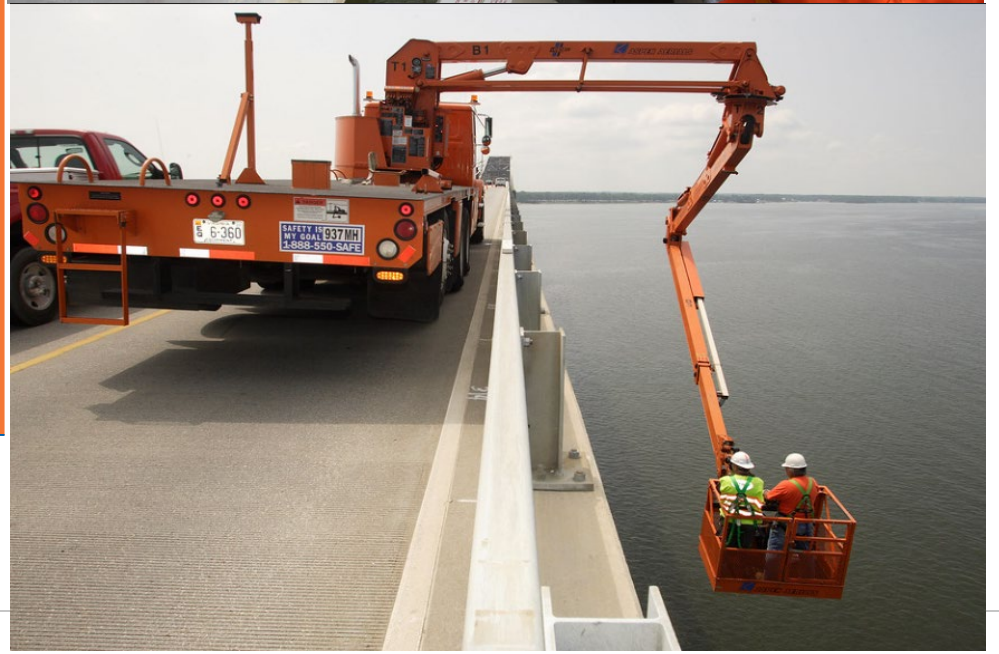
129,500
Total VDOT Lane Miles



Bridge
Condition Assessment Process

Structure Inspection & Assessment Process





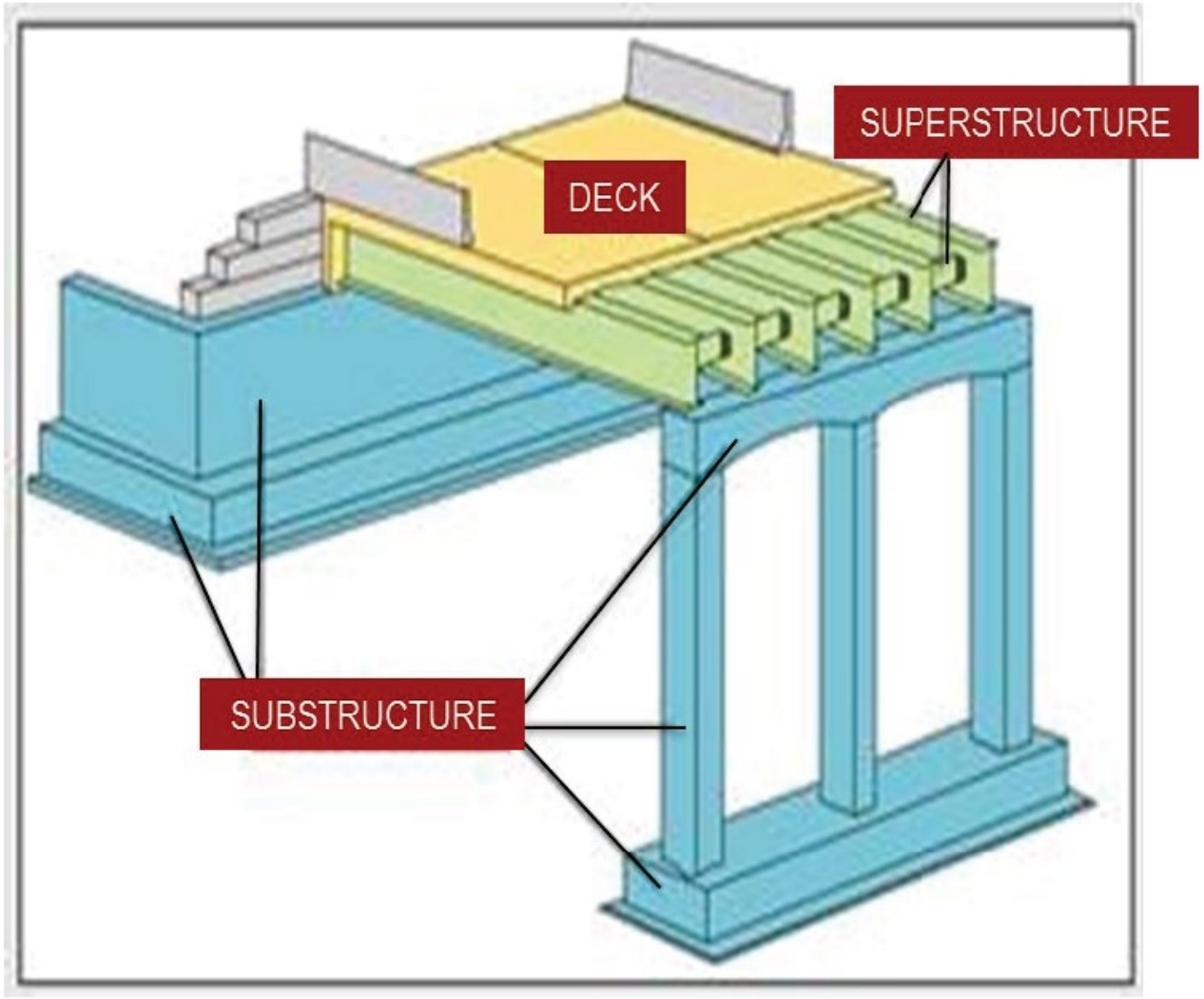
2 year cycle

What is a GCR (General Condition Rating)?

9	Excellent	**Good**
8	Very Good	
7	Good	
6	Satisfactory	**Fair**
5	Fair	
4	Poor	**Poor or** *Structurally Deficient**
3	Serious	
2	Critical	
1	Imminent Failure	
0	Failed	

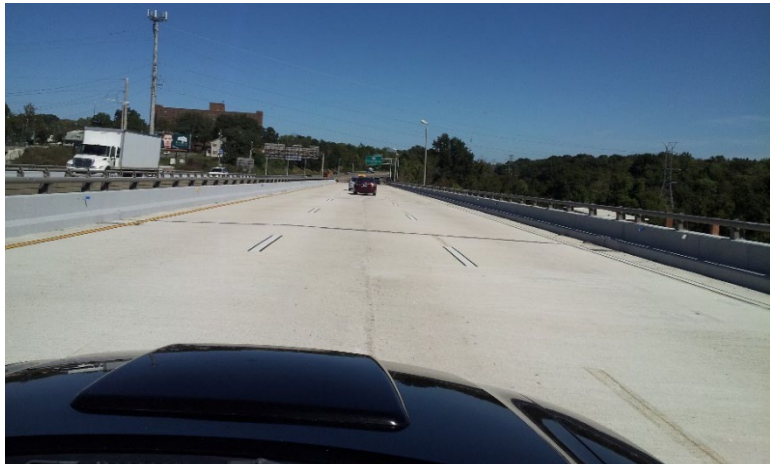
State of Good Repair Eligible

Bridge Components



*Poor is the new term. Structurally Deficient used due to Code of Virginia

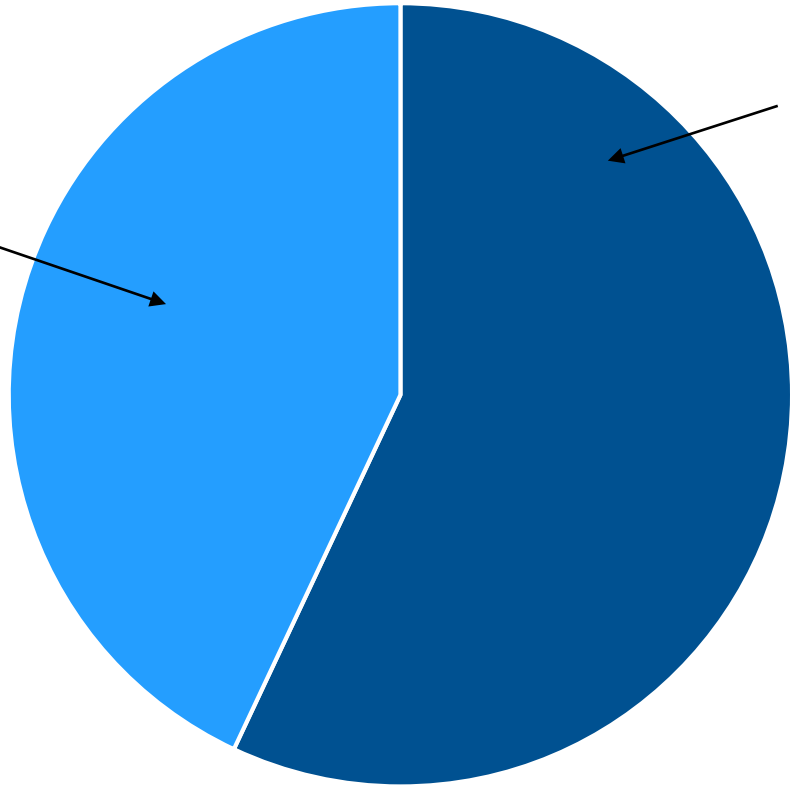
Examples of Good, Fair, and Poor Bridges

Good	Fair on the "CUSP" of Poor	Poor (Structurally Deficient)
		
		

VDOT and Locality Bridges – Inventory (Number)

21,160
Total Bridges

VDOT



19,690 Bridges

+

Locality

1,470 NBI* Bridges

*NBI = Bridges on National Bridge Inventory (>20')

Maintenance and Operations Program Comprehensive Review – Continued focus on targets

Performance Targets:

All Programs 2019 Investment Needed:

Pavements (20 Year)

Sufficiency = percent of lane miles with CCI ≥ 60

	MEASURES AND TARGETS SUFFICIENCY
Interstate	82%
Primary	82% FOR ≥ 3,500 AADT 75% FOR < 3,500 AADT
Secondary	82% FOR ≥ 3,500 AADT 60% FOR < 3,500 AADT

$463M*
per year until 2025
$499M* onwards

Bridges (50 Year)

Preservation Approach

Sufficiency = percent of structures with GCR ≥ 5

	NEW PERFORMANCE MEASURES AND TARGETS SUFFICIENCY
All Systems	AVERAGE WEIGHTED GCR≥5.6
Interstate	≥ 97%
Primary	≥ 93%
Secondary	≥ 90%

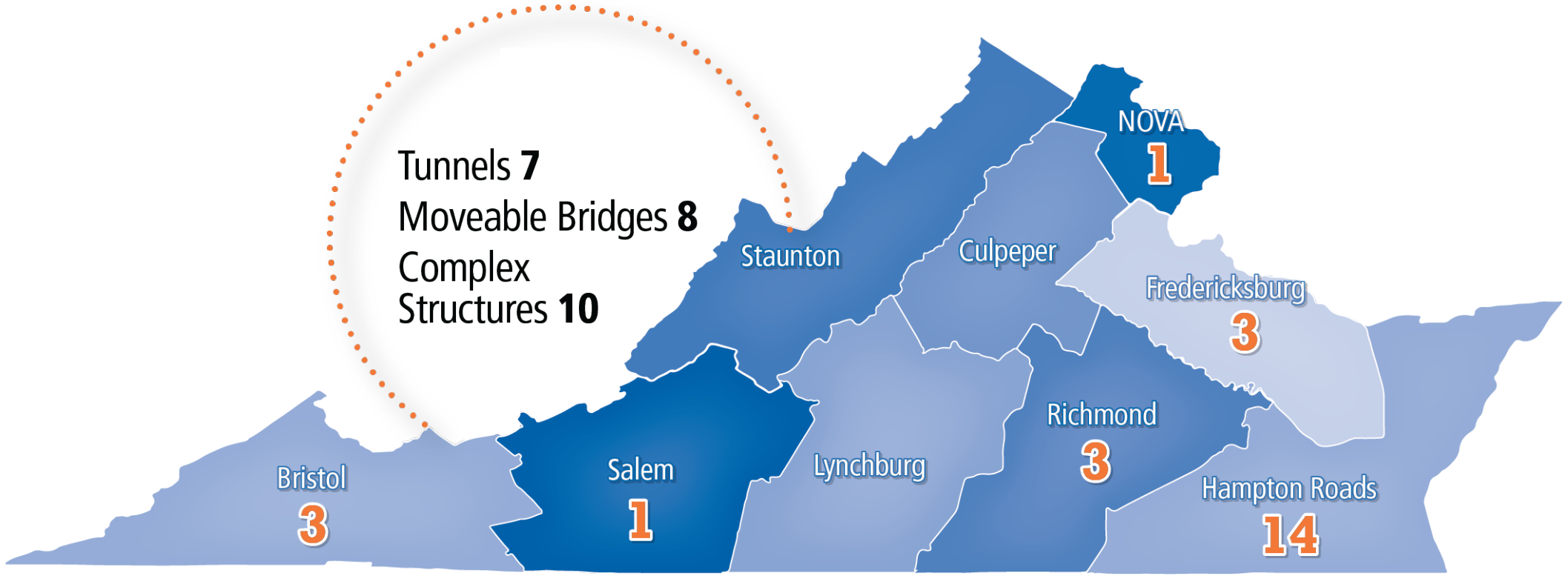
$384M*
per year

*2019 dollars.

GCR is a national (defined by FHWA) rating system (0-9 scale) for bridge components.

Special Structures

Special Structures – Current Inventory



Defined By:

- Risk/Complexity
- Maintenance Cost
- Importance

Long Detours, High Traffic, Economic Significance (Shipping and Vehicular), Access to Vital Facilities (Military and Ports)

Special Structures - Tunnels

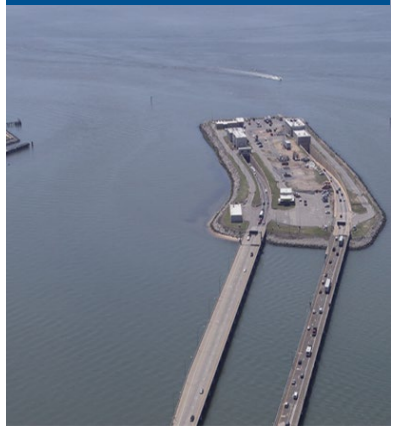
Mountain Tunnels

Big Walker Mountain Tunnel

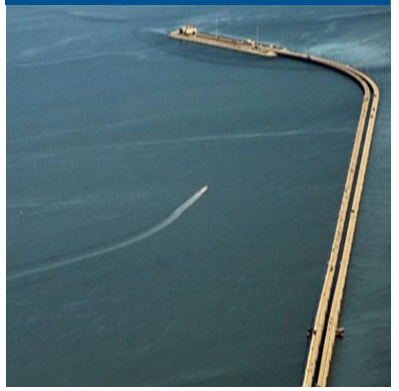
East River Mountain Tunnel

Water Tunnels

Hampton Roads Bridge-Tunnel

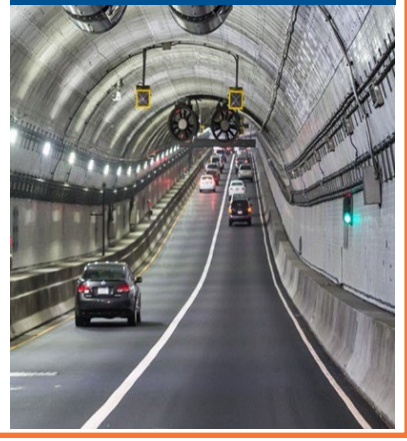


Monitor-Merrimac Memorial Bridge-Tunnel



Elizabeth River Tunnel (Midtown)

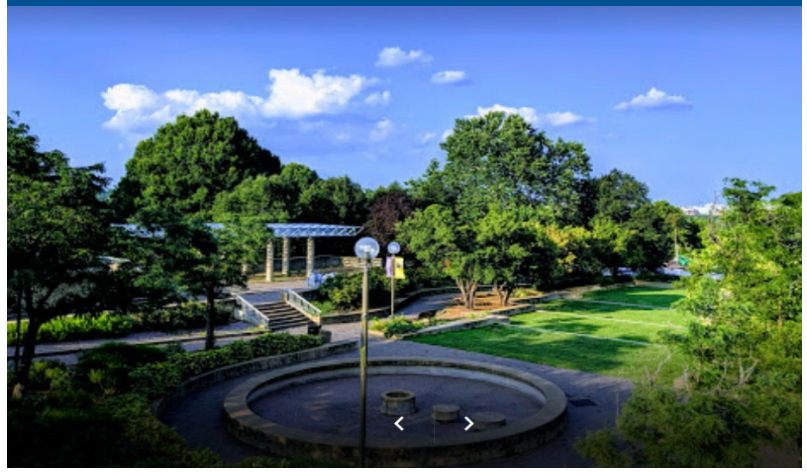
Elizabeth River Tunnel (Downtown)



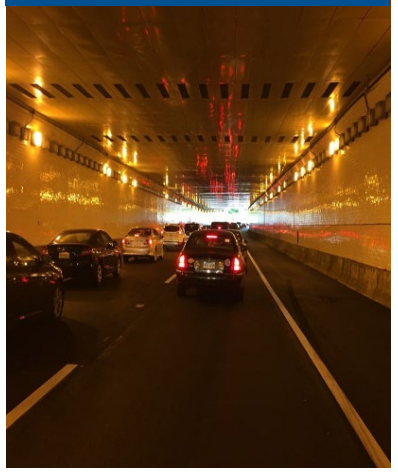
Gateway Park / Rosslyn Tunnel

3 Highway bridges, 7 Pedestrian bridges, 2 In-fill (deck or park) structure

Gateway Park



Rosslyn Tunnel

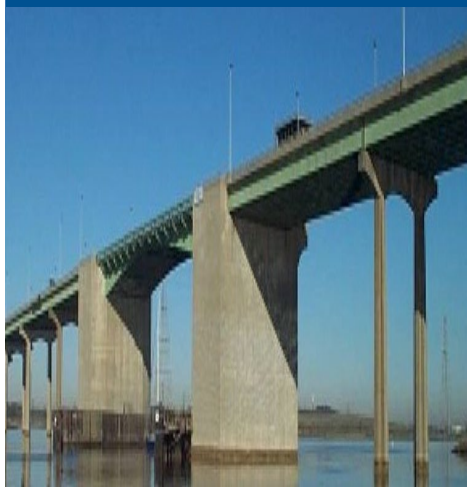


Special Structures - Movable Bridges

Benjamin Harrison Memorial Bridge

John B. Whealton Memorial Causeway Bridge (Chincoteague)

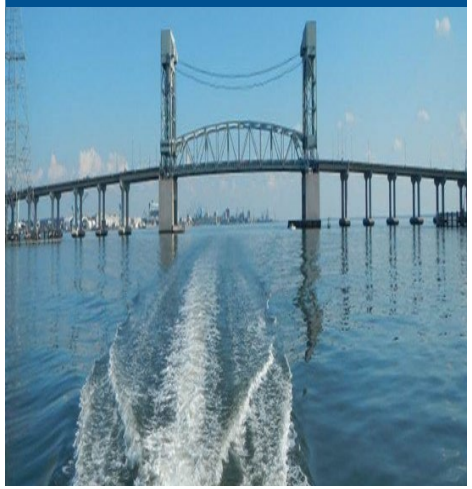
High Rise Bridge



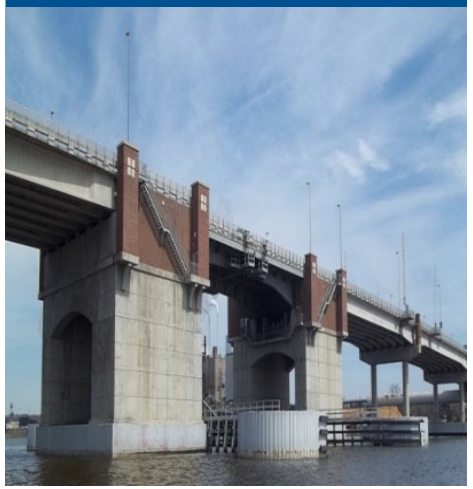
Berkeley Bridge

George P. Coleman Memorial Bridge

James River Bridge



Eltham Bridge



Gwynn's Island Bridge

Special Structures - Complex Structures

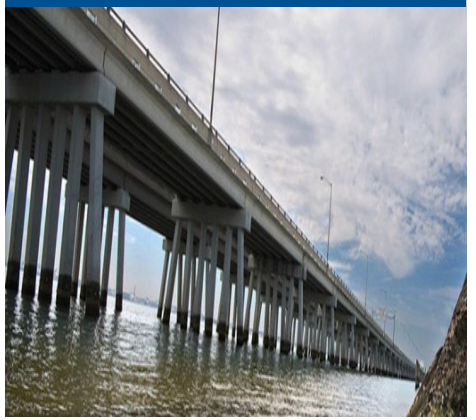
Grassy Creek Bridge (460 Connector)

Gordon C. Willis SMART Road Bridge

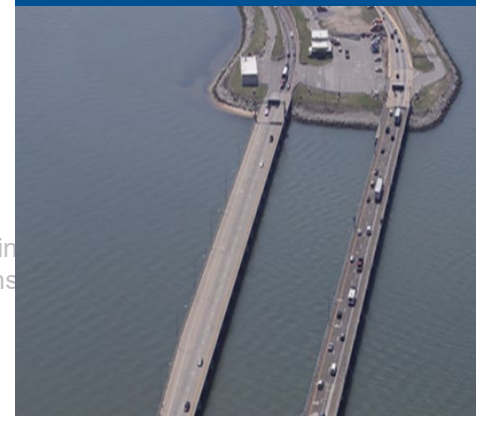
Varina-Enon Bridge

Pocahontas Parkway

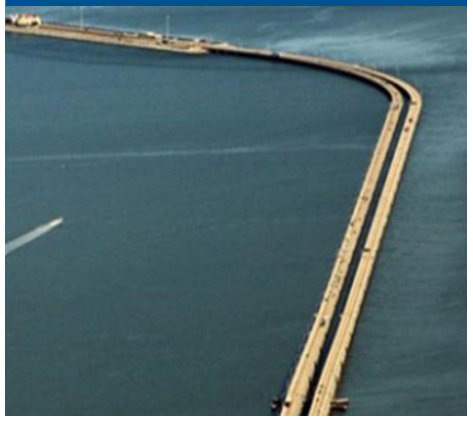
Hampton Road Bridge-Tunnel (Willoughby Bay)



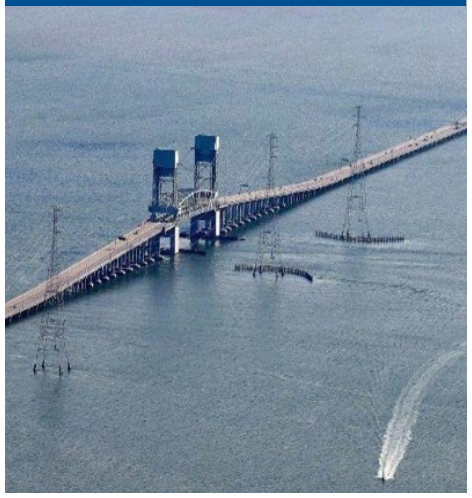
Hampton Roads Bridge-Tunnel Approach Bridges



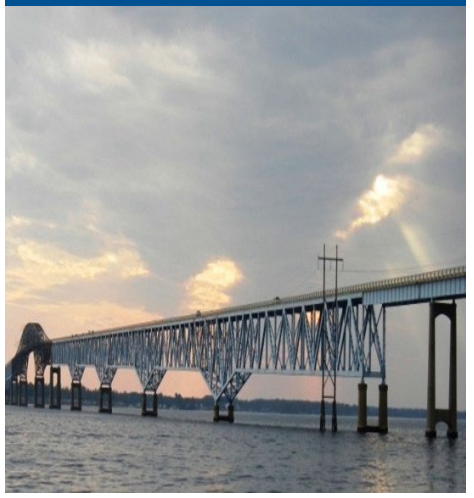
Monitor-Merrimac Memorial Bridge-Tunnel Approach Bridges



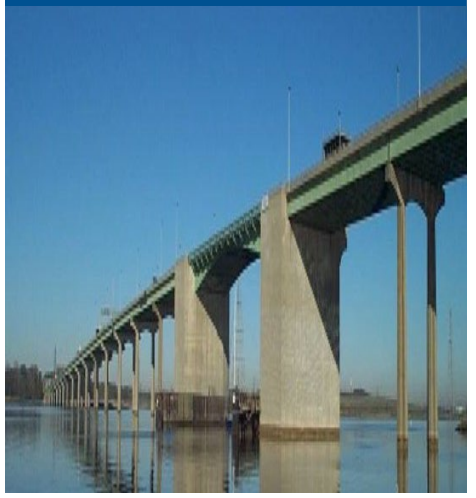
James River Bridge



Robert O. Norris Bridge



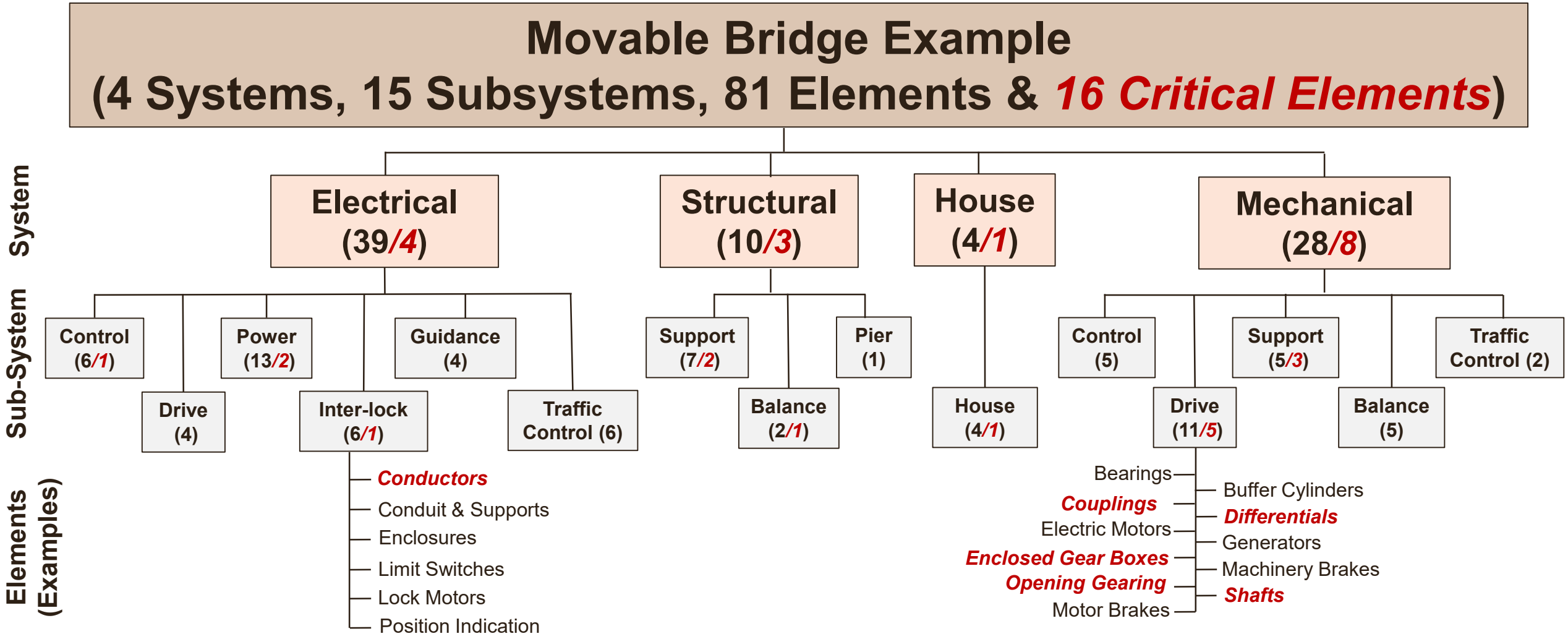
High Rise Bridge



Special Structures – Movable Inspection

Every two years

Special Structures - Movable Bridges Health Index



Special Structures - Movable Bridges Health Index

Health Index for Movable Bridges (CURRENT)					
Bridge	Electrical	House	Mechanical	Structural	Overall HI/Bridge
Benjamin Harrison					
Berkley EBL					
Berkley WBL					
Chincoteague					
Coleman					
Eltham					
Gwynn's Island					
High Rise					
James River					

Current: Percentage & Number of Systems in Each Condition Category	
Good	19% (7)
Fair	47% (17)
Poor	31% (11)
Severe	3% (1)

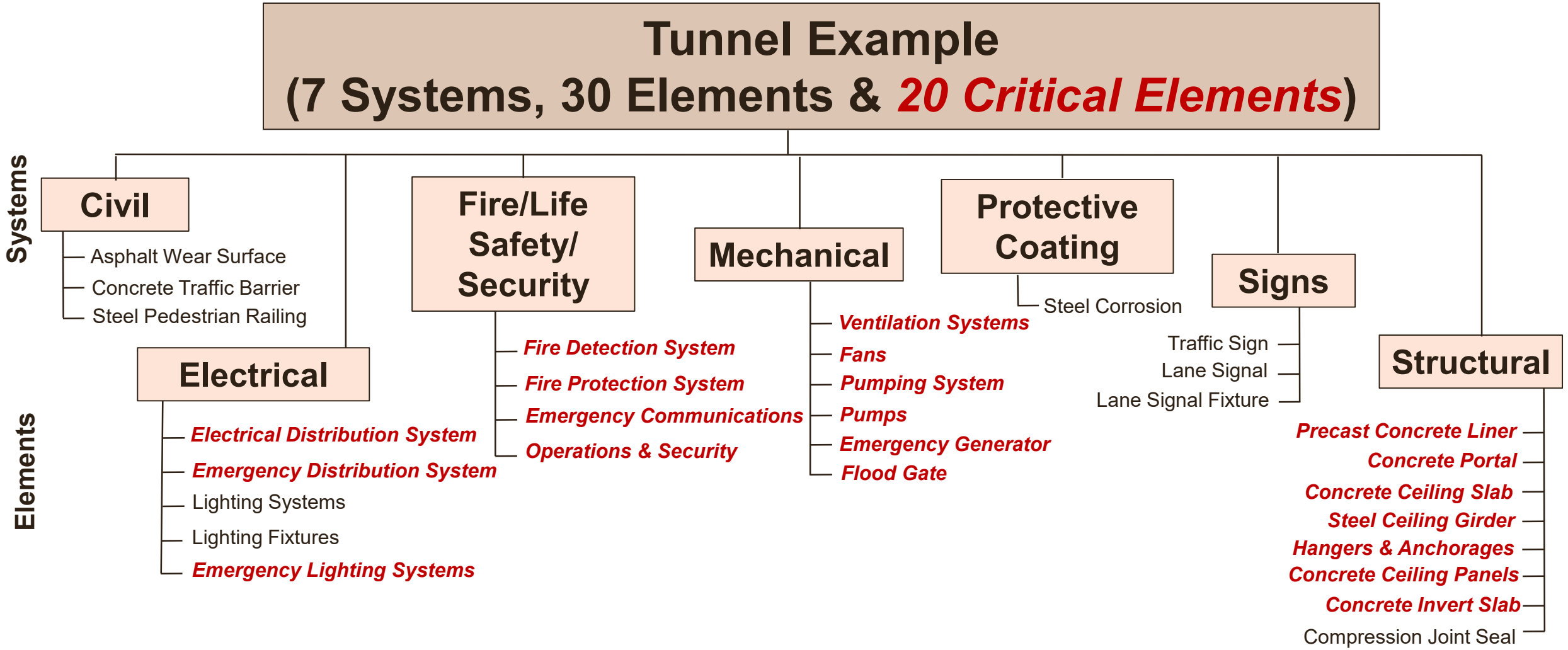
Health Index for Movable Bridges (10 YEAR PREDICTION)					
Bridge	Electrical	House	Mechanical	Structural	Overall HI/Bridge
Benjamin Harrison					
Berkley EBL					
Berkley WBL					
Chincoteague					
Coleman					
Eltham					
Gwynn's Island					
High Rise					
James River					

Predicted in 10 Years: Percentage & Number of Systems in Each Condition Category	
Good	47% (17)
Fair	50% (18)
Poor	3% (1)
Severe	0% (0)

Special Structures – Tunnel Inspection

Every two years

Special Structures - Tunnels Health Index



Special Structures - Tunnels Health Index

Health Index for Tunnels (CURRENT)						
Tunnel	Civil	Electrical	Fire/Life Safety/Security	Mechanical	Structural	Overall HI per Tunnel
Big Walker						
East River						
Hampton Roads Eastbound						
Hampton Roads Westbound						
Monitor Merrimac						
Rosslyn						

Current: Percentage & Number of Systems in Each Condition Category	
Good	33% (10)
Fair	53% (16)
Poor	13% (4)
Severe	0% (0)

Health Index for Tunnels (10 YEAR PREDICTION)						
Tunnel	Civil	Electrical	Fire/Life Safety/Security	Mechanical	Structural	Overall HI per Tunnel
Big Walker						
East River						
Hampton Roads Eastbound						
Hampton Roads Westbound						
Monitor Merrimac						
Rosslyn						

Predicted in 10 Years: Percentage & Number of Systems in Each Condition Category	
Good	73% (22)
Fair	27% (8)
Poor	0% (0)
Severe	0% (0)

Routine Maintenance

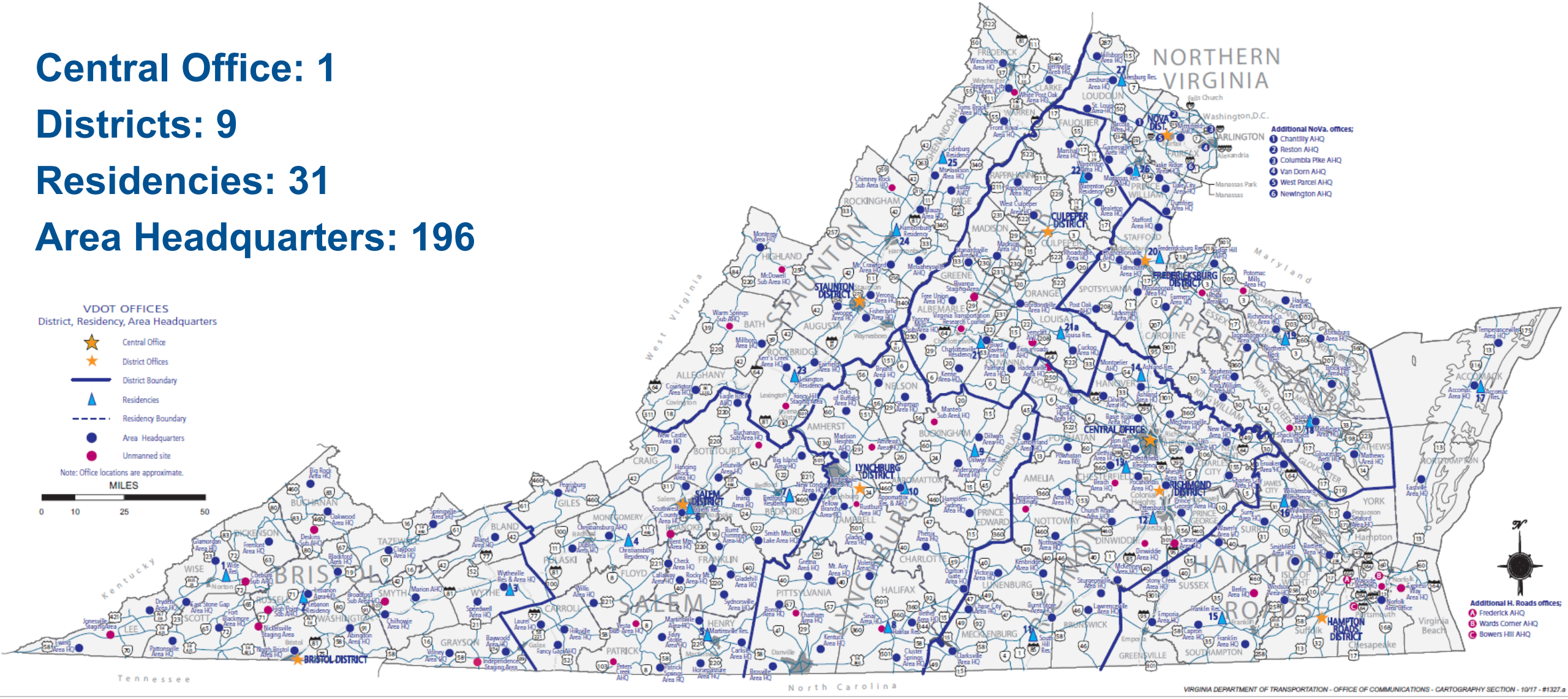
VDOT – Work Areas

Central Office: 1

Districts: 9

Residencies: 31

Area Headquarters: 196



Routine Maintenance

Back to Basics

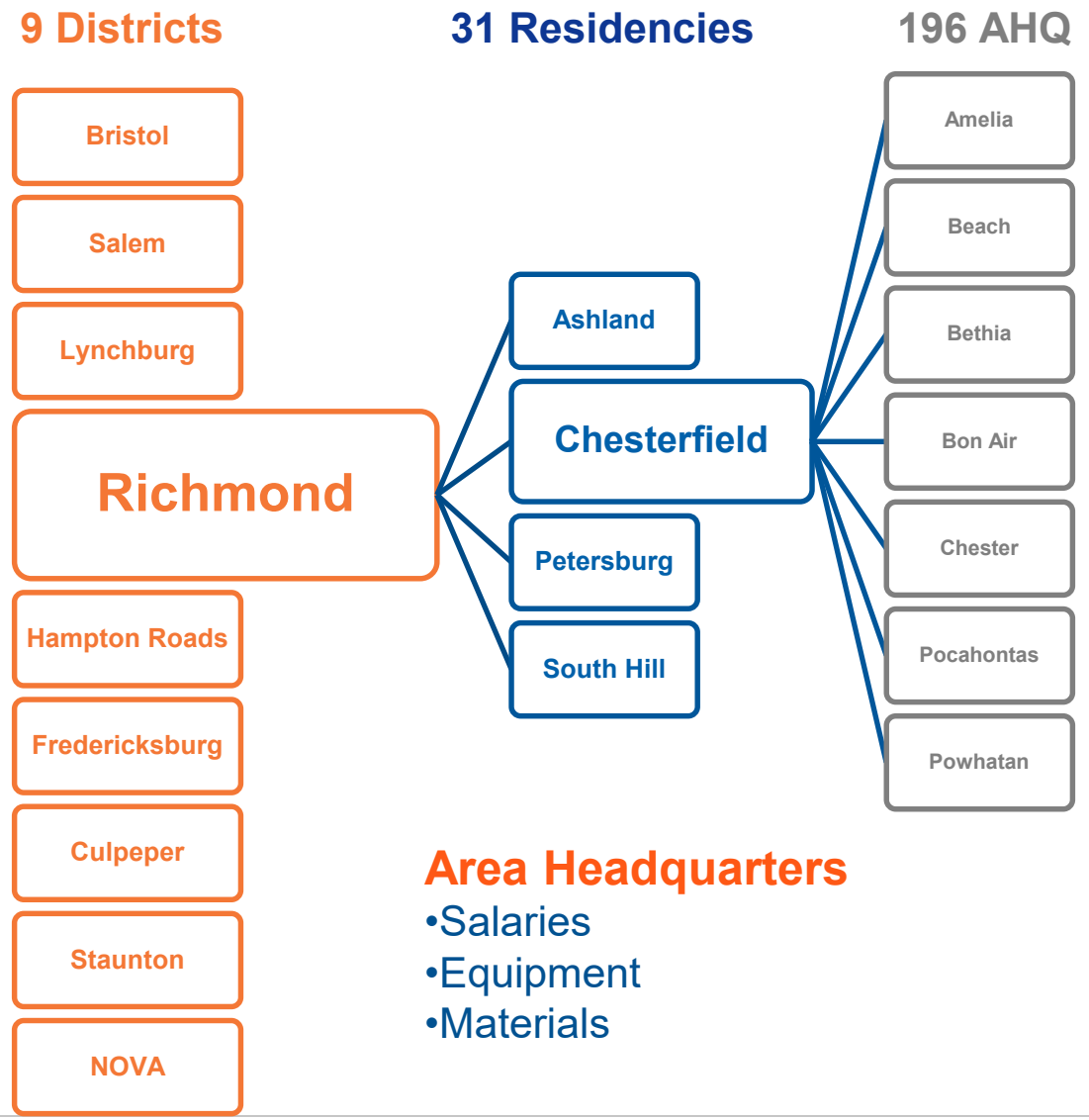
Targeted work

- Ditching
- Pipes
- Unpaved shoulders
- Roadway patching

Non-targeted work

- Sound walls/fences
- Daylighting of signs
- Maintenance of closed drainage facilities

Budget Distribution



Area Headquarters

- Salaries
- Equipment
- Materials

Routine Maintenance – Performance Metrics

Asset	Best Practice Frequency	2019 Target Frequency	Statewide Annual Target	
Turf (Mowing)	3 times / yr	IS: 3 times / yr PR: 3 times / yr SC: 2 times/ yr	340,600	acres
Trees	10% of inventory	6% of inventory	8,200	shoulder miles
Pipes	20% of inventory	10% of inventory	33,900	each
SWM Facilities	2 times / yr	2 times / yr	4,400	each
Ditches	20% of inventory	5% of inventory	4,400	ditch miles
Unpaved Roads	4 times / yr	4 times / yr	25,500	center line miles
Unpaved Shoulders	20% of inventory	20% of inventory	14,800	shoulder miles
Signs	7% of inventory	5% of inventory	47,300	each
Signals	20% of inventory	20% of inventory	630	each
Pavement Marking	Material dependent	70% of inventory	50,800	miles

Questions