MAINTENANCE AND OPERATIONS COMPREHENSIVE REVIEW BRIEFING

Kevin Gregg, Chief of Maintenance and Operations

October 14, 2025

Comprehensive Review Update

- Pavements
- Structures
- Routine Maintenance
- Special Structures
- Emergencies

VDOT's Maintenance and Operations Program

Maintenance and Operations
$3.0 Billion Annually less $638 Million Localities

VDOT - $2.4 Billion Annually

MAINTENANCE

$770 *million*



Pavement

$220 *million*



Bridges

$480 *million*



Routine Maintenance

$260 *million*



Roadside

$225 *million*



Emergency Funds

TRAFFIC AND OPERATIONS

$40 *million*



Guardrail

$25 *million*



Ferries

$210 *million*



Traffic Items

$70 *million*



Special Structures
Daily Operations

$100 *million*



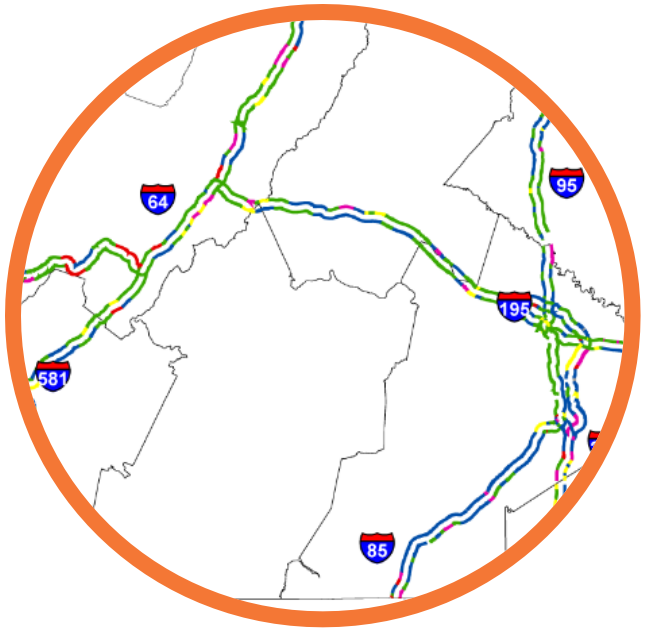
Operations Centers/SSP

Pavements

Pavement Assessment Process

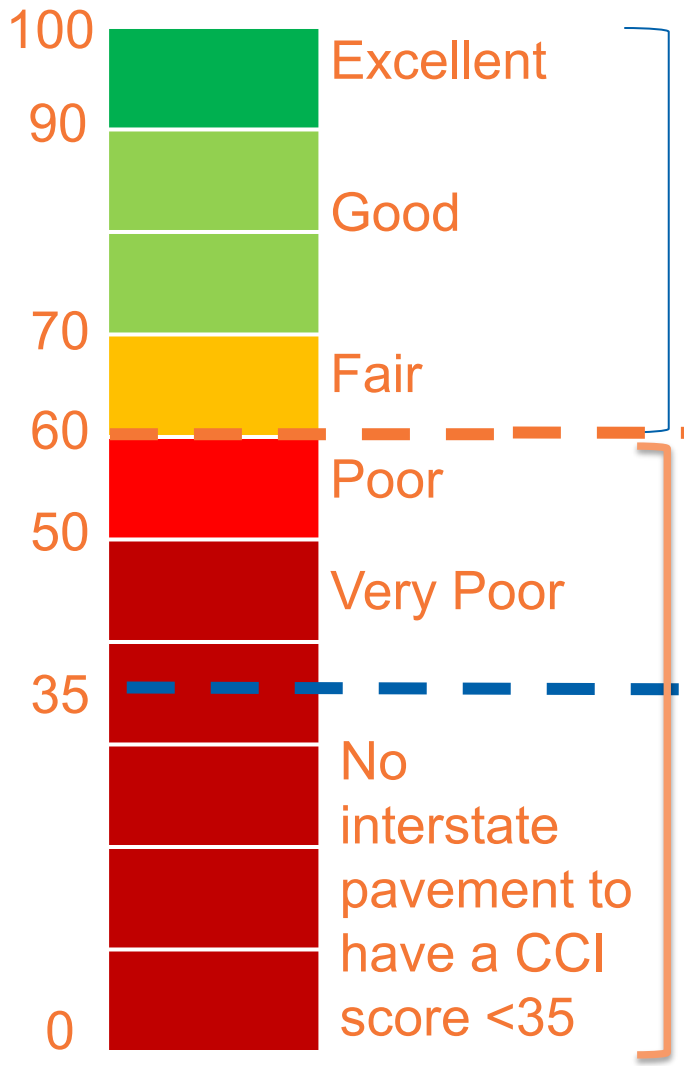
Interstate, Primary, Secondary ≥ 3500 – annual
Secondary < 3500 - 20% annually







Pavement Rating – What is Critical Condition Index (CCI)?



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

What does CCI look like?



CCI 90-100 (Excellent)



CCI 50-59 (Poor)





Images show approximately CCI 35

Pavement Treatment - Maintenance Activities

Preventive (CCI 88-66)*





Surface Layer (covered)
Intermediate Layer
Base Layer
Subbase Layer
Subgrade

Preserves good pavements in good condition at low costs

* All CCI ranges are for plant mix, across all system categories

Corrective (CCI 65-41)*





Surface Layer (replaced)
Intermediate Layer
Base Layer
Subbase Layer
Subgrade

Addresses moderate distresses

4 times more expensive than PM

Restorative (CCI 59-26)*





Surface Layer (replaced)
Int. Layer (replaced)
Base Layer
Subbase Layer
Subgrade

Addresses moderate to heavy distresses

2 times more expensive than CM

Reconstruction (CCI <37)*





Surface Layer (replaced)
Int. Layer (replaced)
Base Layer (replaced)
Subbase Layer (replaced)
Subgrade

Addresses pavements under heavy distresses or in failed condition

2 times more expensive than RM

Pavements - Performance Measures

Performance Measure	Current Policy (CTB Approved December 2019) % Sufficiency*
Interstate	**82% No Section Critical Condition Index** less than 35**
Primary	**82% for ≥ AADT*** 3,500 75% for < AADT 3,500**
Secondary	**82% for ≥ AADT 3,500 60% for < AADT 3,500**

*% Sufficiency – the percent of the pavement inventory with a CCI of 60 or better
**Critical Condition Index – (CCI) – rating system
***Annual Average Daily Traffic - AADT

Pavement Performance – Updates since 2019

VDOT experienced ongoing impacts

- Commodity Pricing
- Fuel Price Adjustments
- Related Inflationary costs to activities and contracts
- Award costs (asphalt, markings, MOT, etc.) up by 45% - (2019 – 2024)

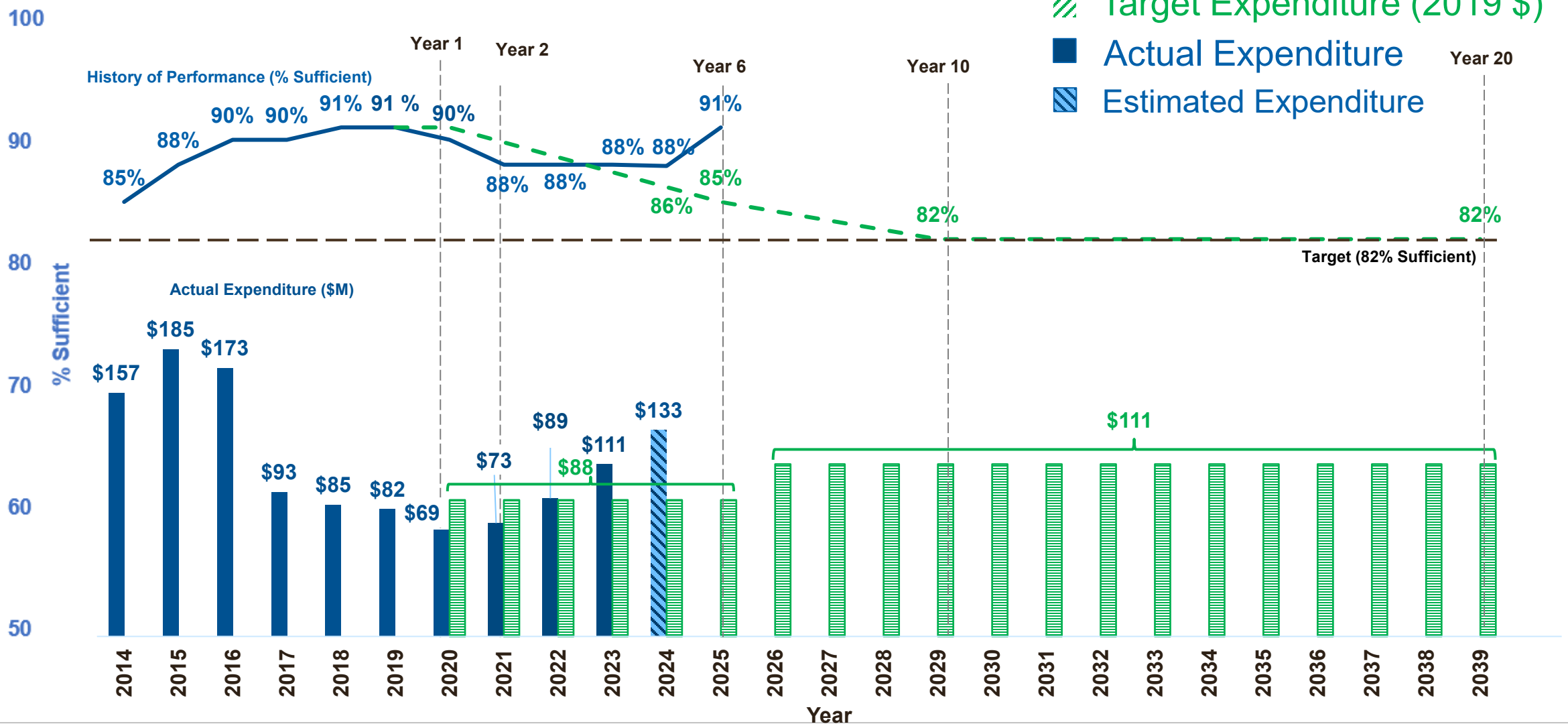
Pavements

- Interstate
  - Approximately 250 new lane miles in inventory additions which provided new pavement surface
  - Approximately 50% of the additions were in 2022 – 2024
    - Example – I-66 – 23 new lane miles in each direction; I-64 gap projects – when completed will add an additional 30 lane miles each direction but 90 miles total of new pavement in each direction.

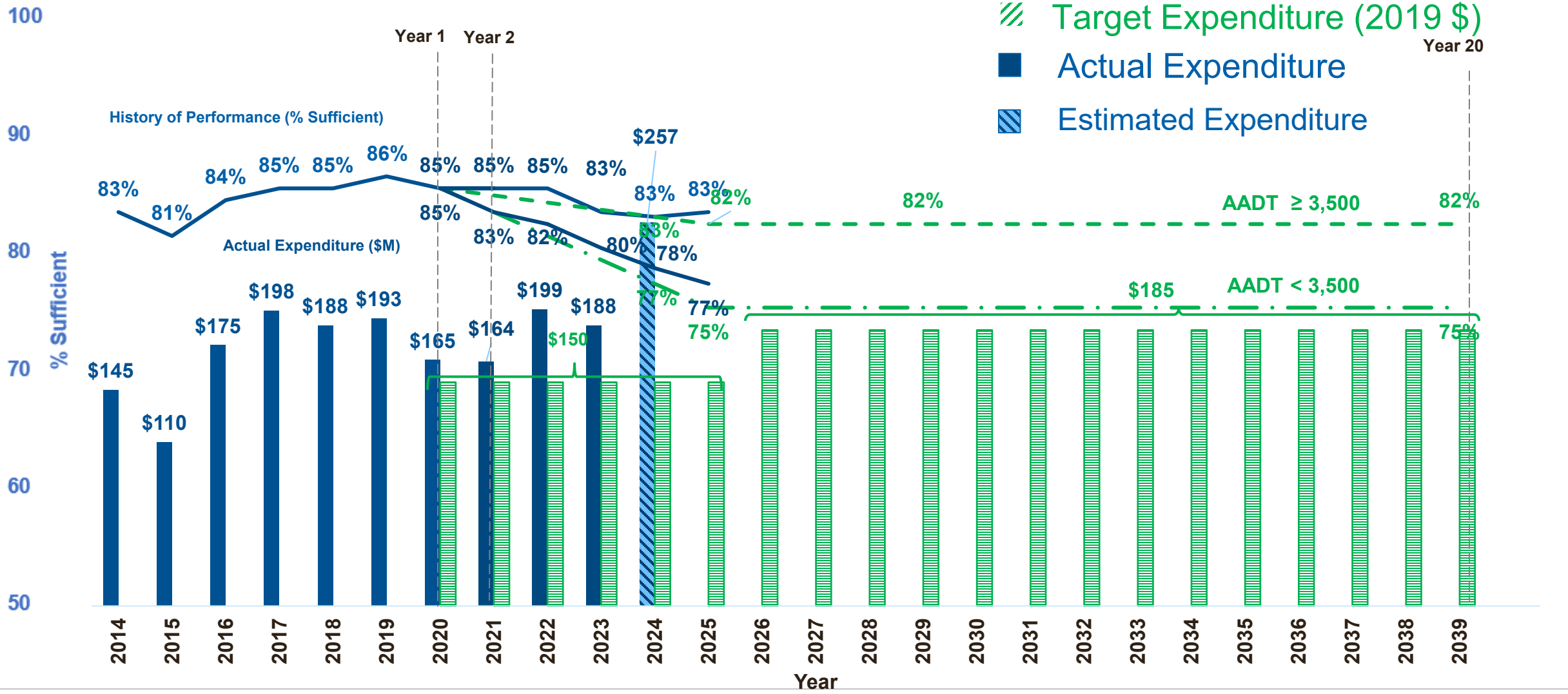
Interstate Network – 20 Year Outlook

(*Target* & *Actual* Performance)

5,729 lane miles were evaluated



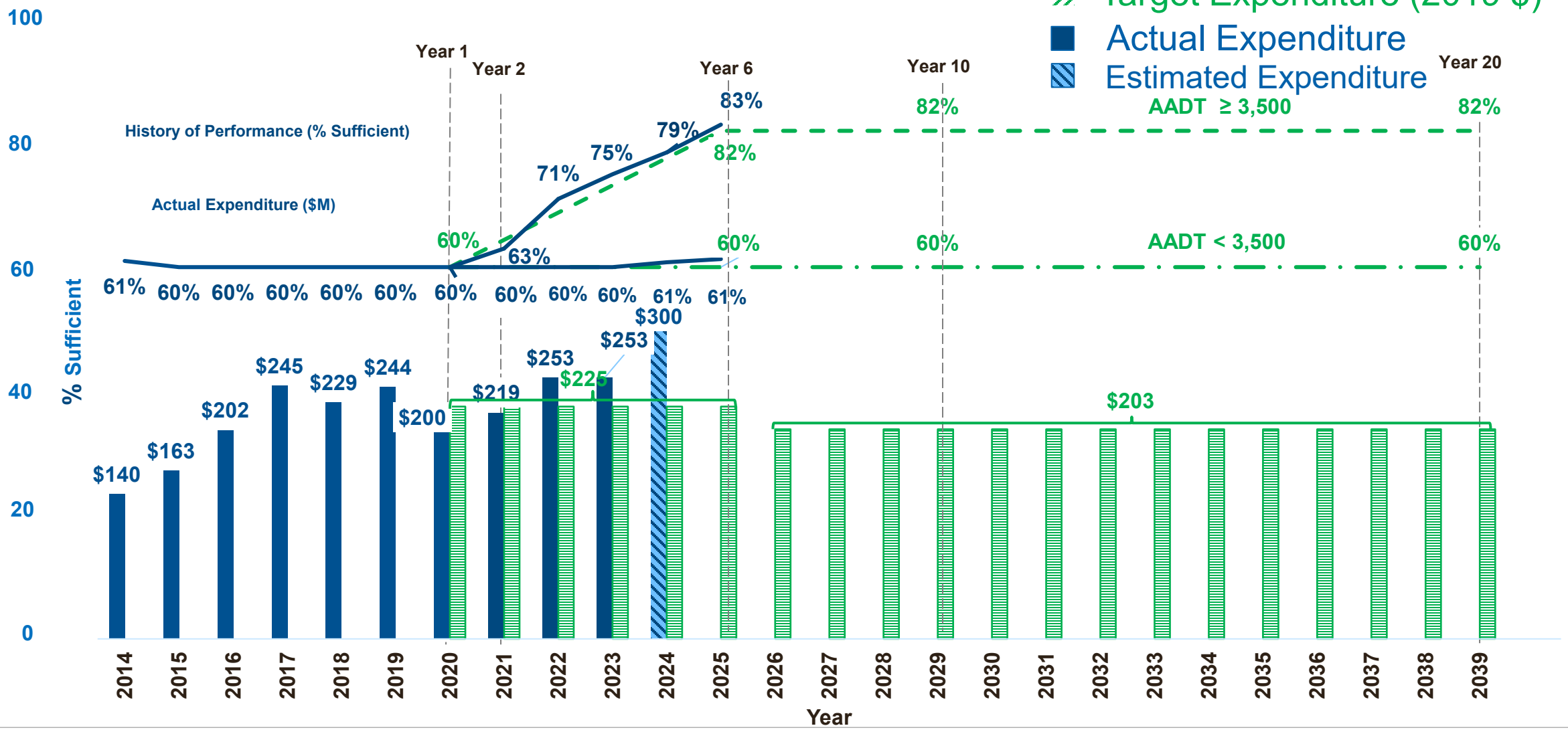
Primary Network – 20 Year Outlook
(*Target* & *Actual* Performance)
22,116 lane miles were evaluated



Secondary Network – 20 Year Outlook

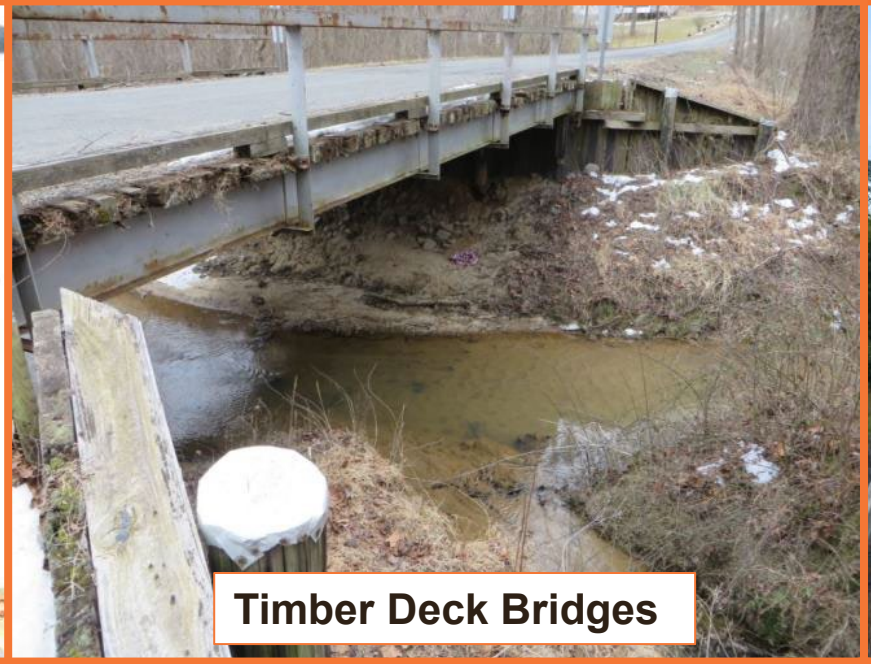
(*Target* & *Actual* Performance)

90,150 lane miles were evaluated



Structures

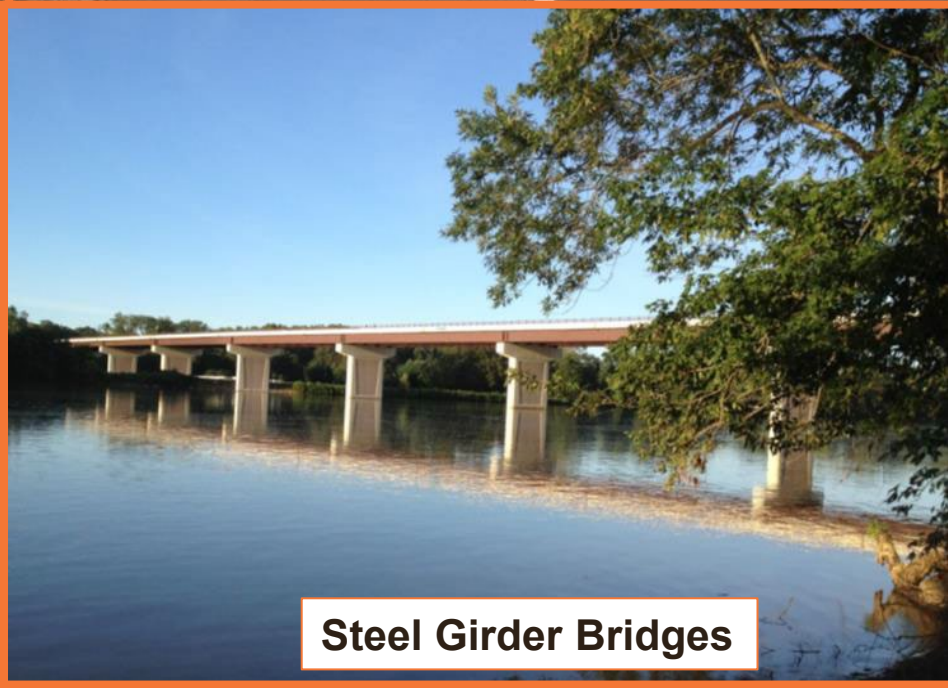








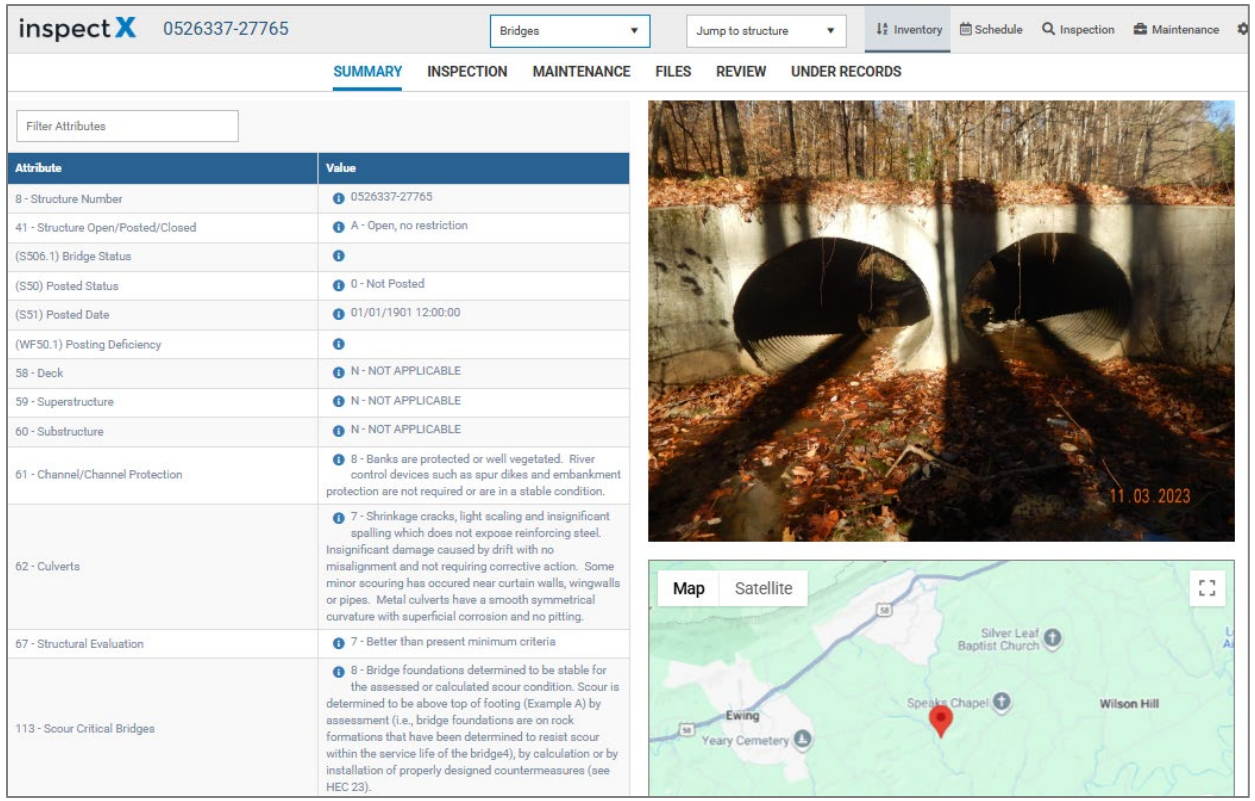




VDOT

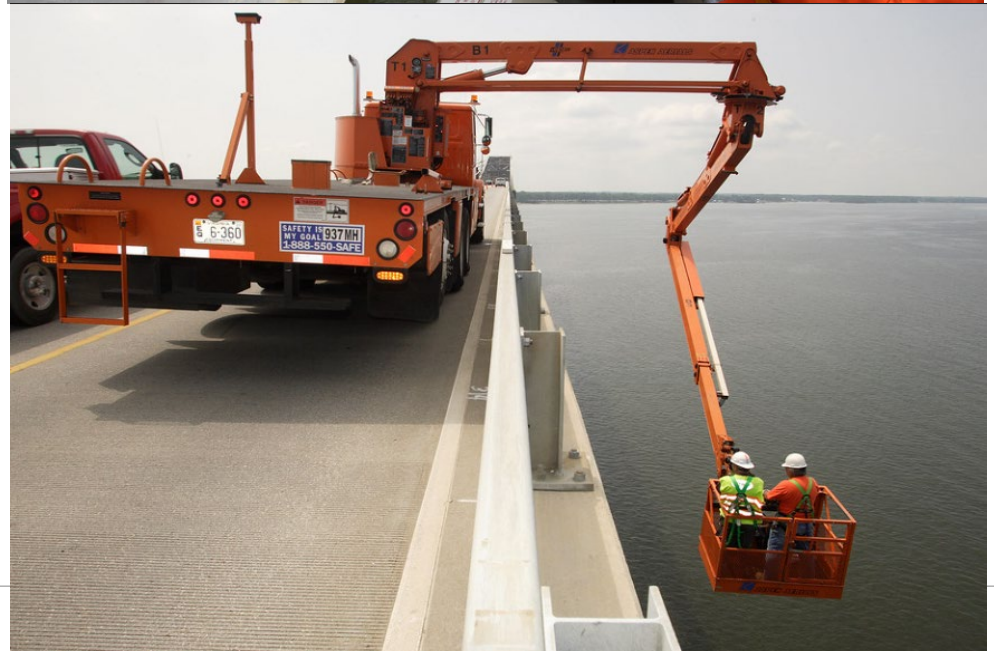
Structures Inventory – by Type

Structure Inspection & Assessment Process



2-year cycle

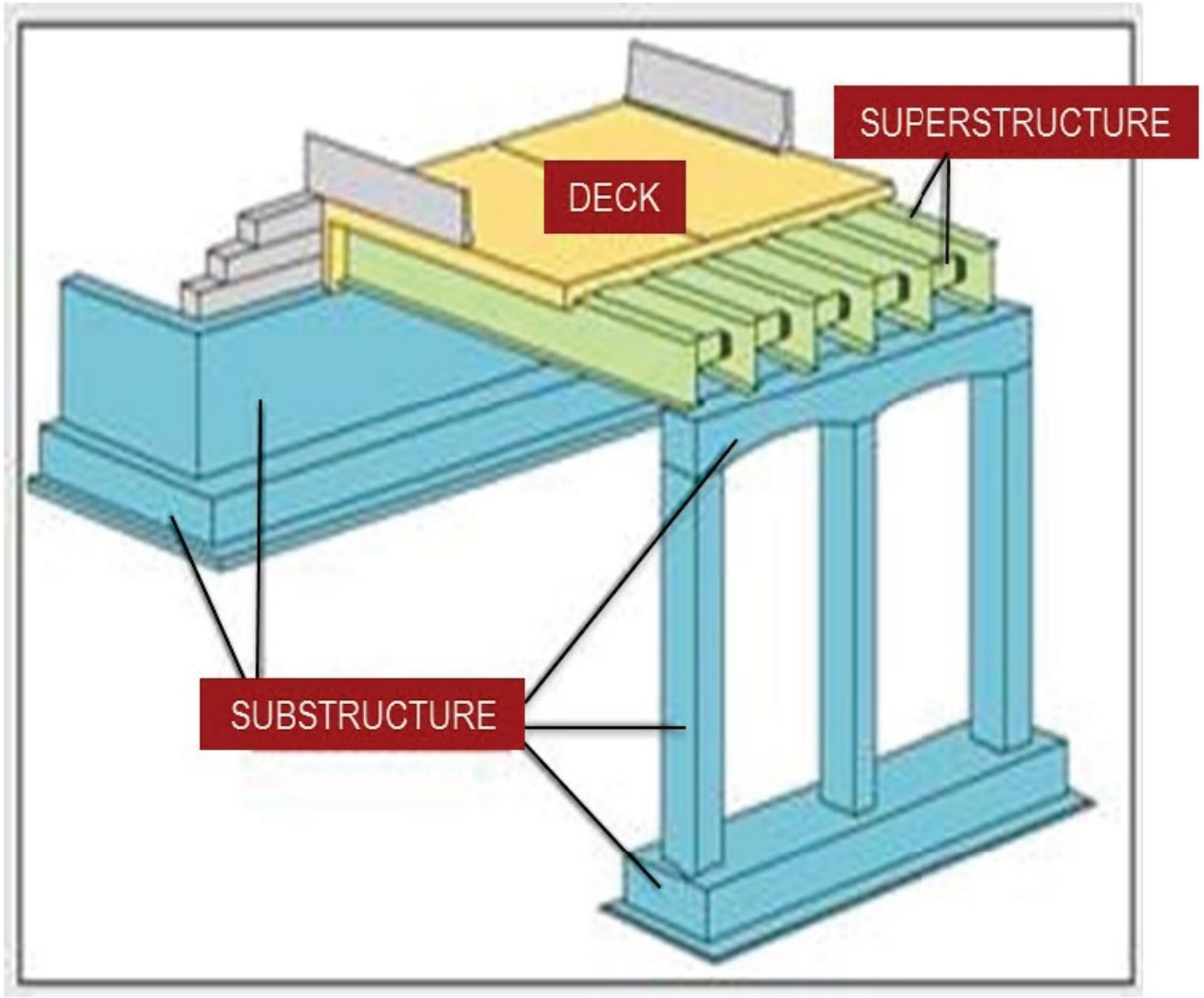




Bridge Rating - What is a GCR (General Condition Rating)?

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

Bridge Components



Structures - Performance Measures

Performance Measure Description	Current Policy Preservation (CTB Approved December 2019)	
	Average General Condition Rating (GCR)	% Not Poor
All Systems	≥ 5.6	N/A
Interstate		97% No Postings
Primary		93%
Secondary		90%

% Not Poor – percentage of structures with a GCR of 5 (Fair) or better

Bridge Performance – Updates since 2019

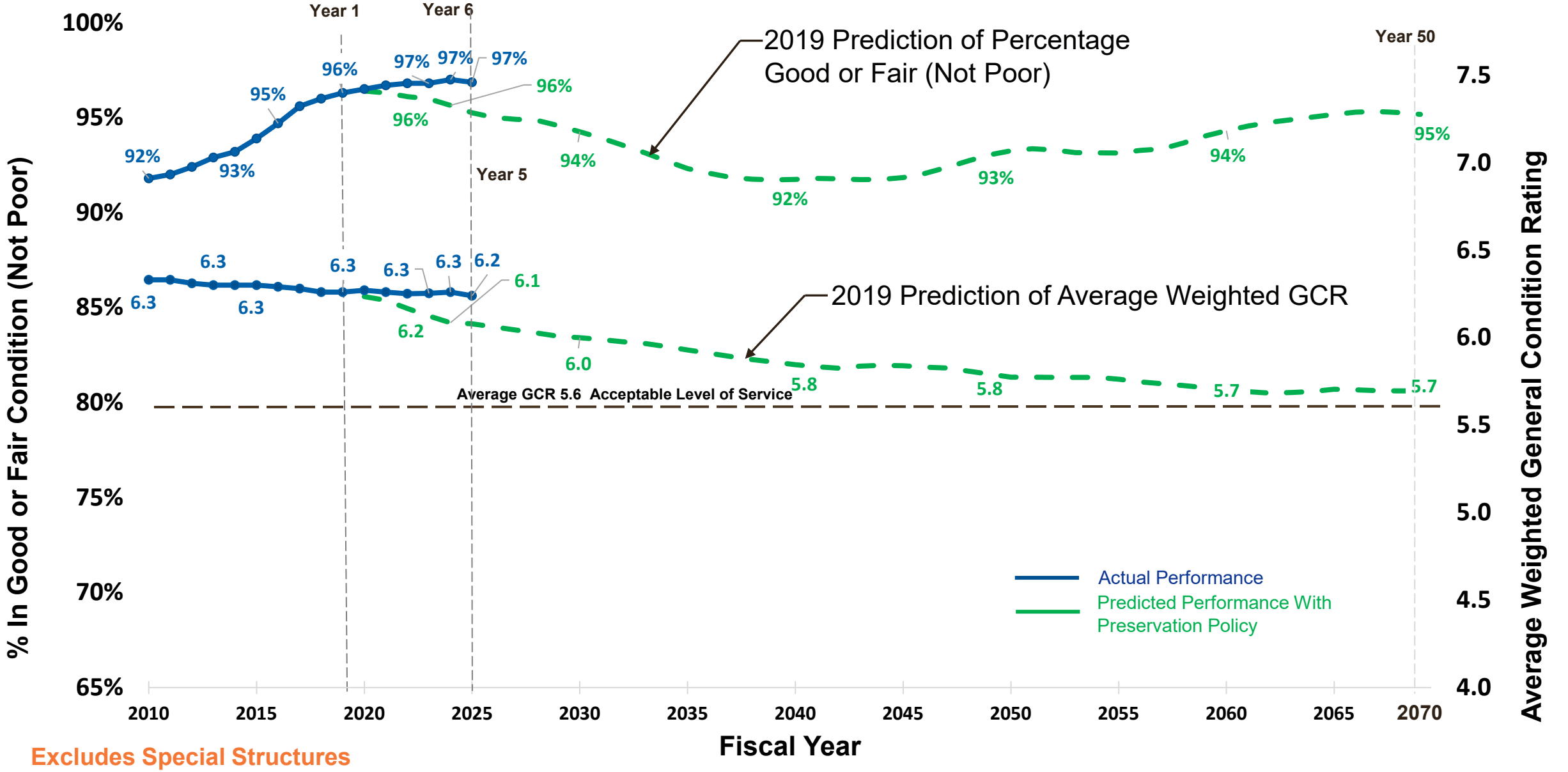
Preservation Approach – CTB approved December 2019

- **Preservation Activities and Investment Levels Evaluated (75%)**
  - Deck repair and preservation (overlays & joints)
  - Superstructure repair (beam ends) and preservation
  - Substructure repair and preservation
  - Culvert (liners)
- **Replacement Activities (25%)**
  - Components or whole structures

Infrastructure Investment and Jobs Act (IIJA) – December 2021

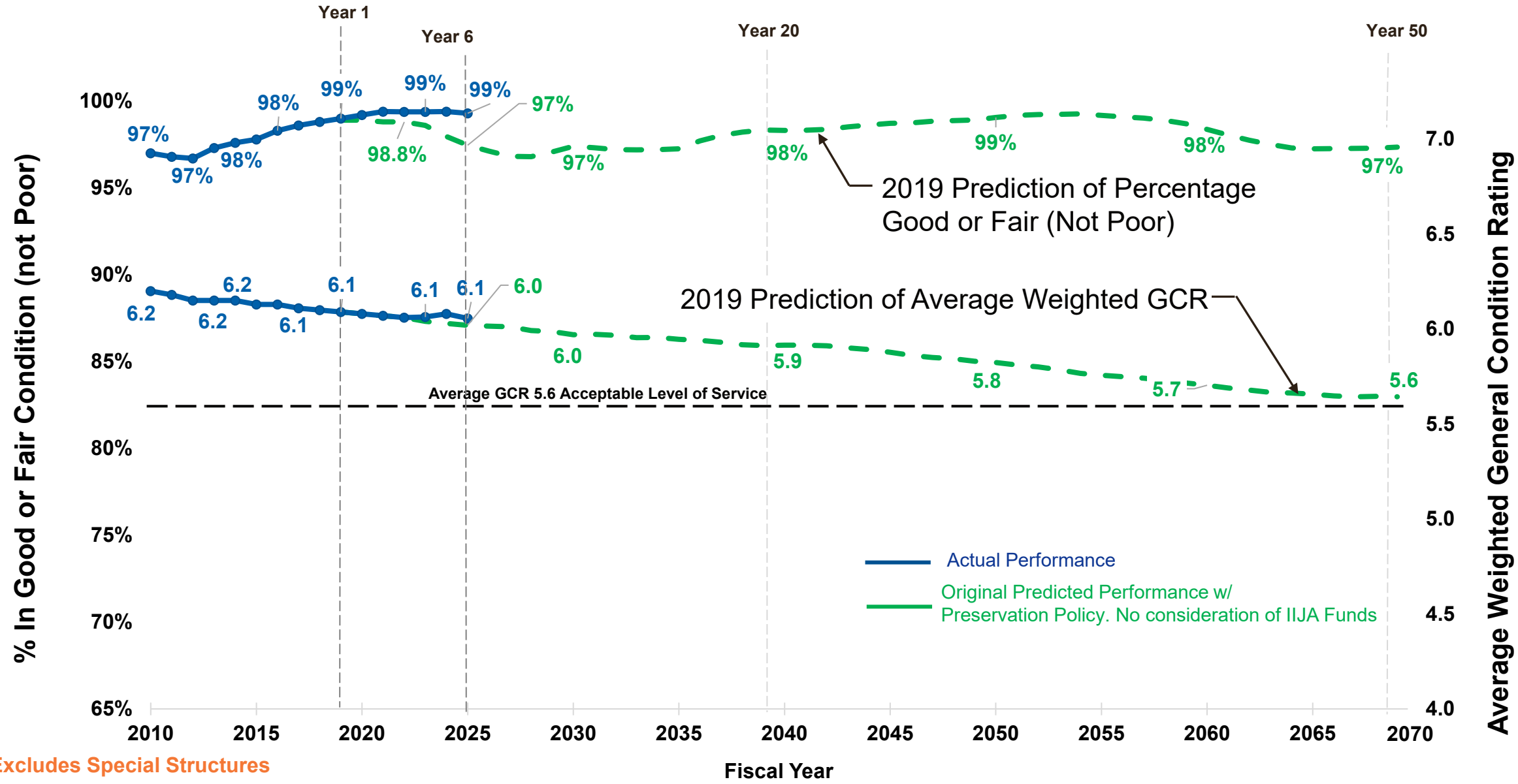
- **Over $570M – over 5 years for bridges**
- **VDOT accelerated the delivery schedule**
  - Focus on preservation of interstate bridges
  - Results apparent within first year
  - Prioritized overlays and joints

All Networks Combined – 50 Year Outlook - 21,302 Structures



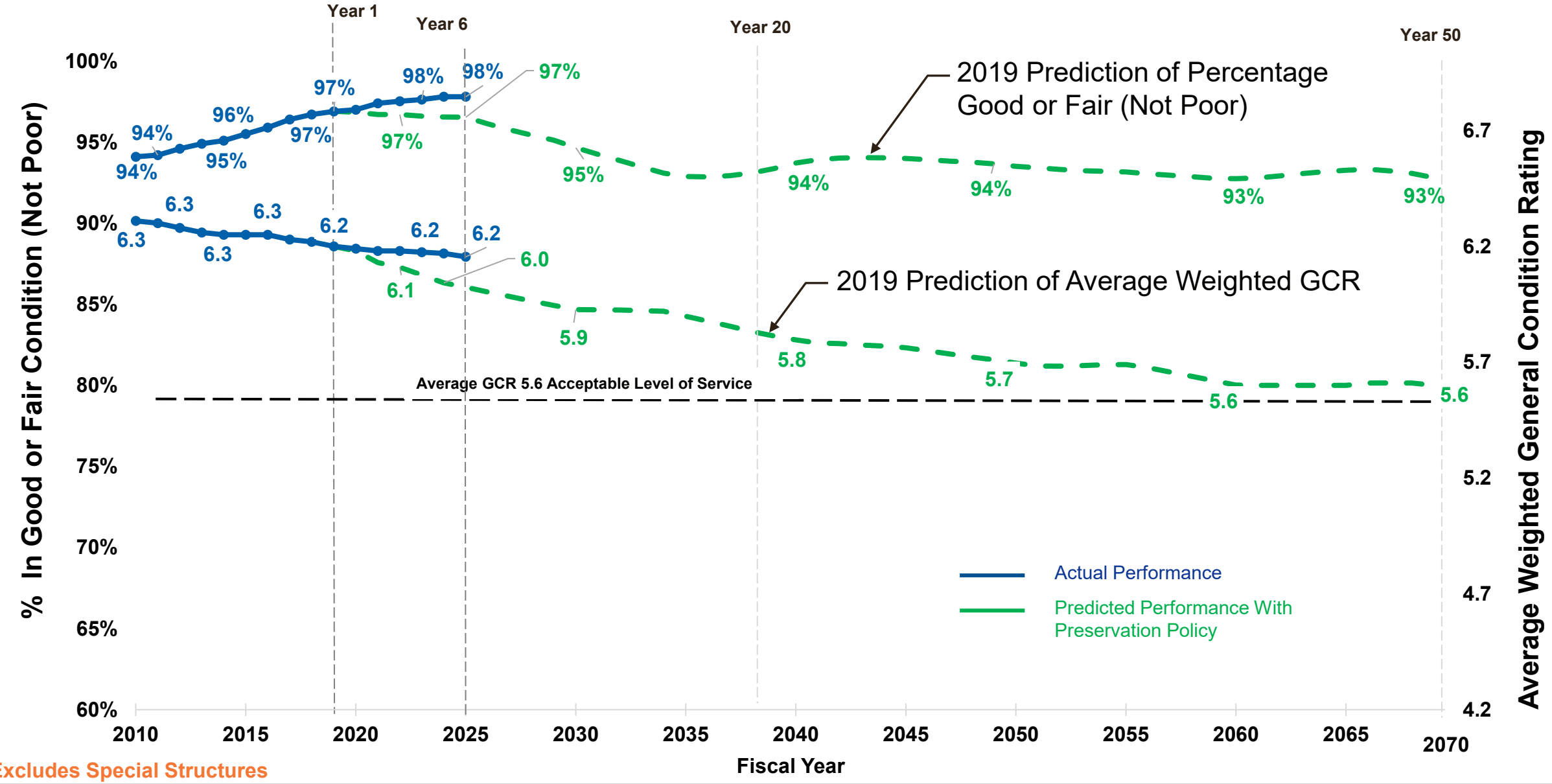
- Excludes Special Structures

Interstate Network – 50 Year Outlook - 2,443 Structures



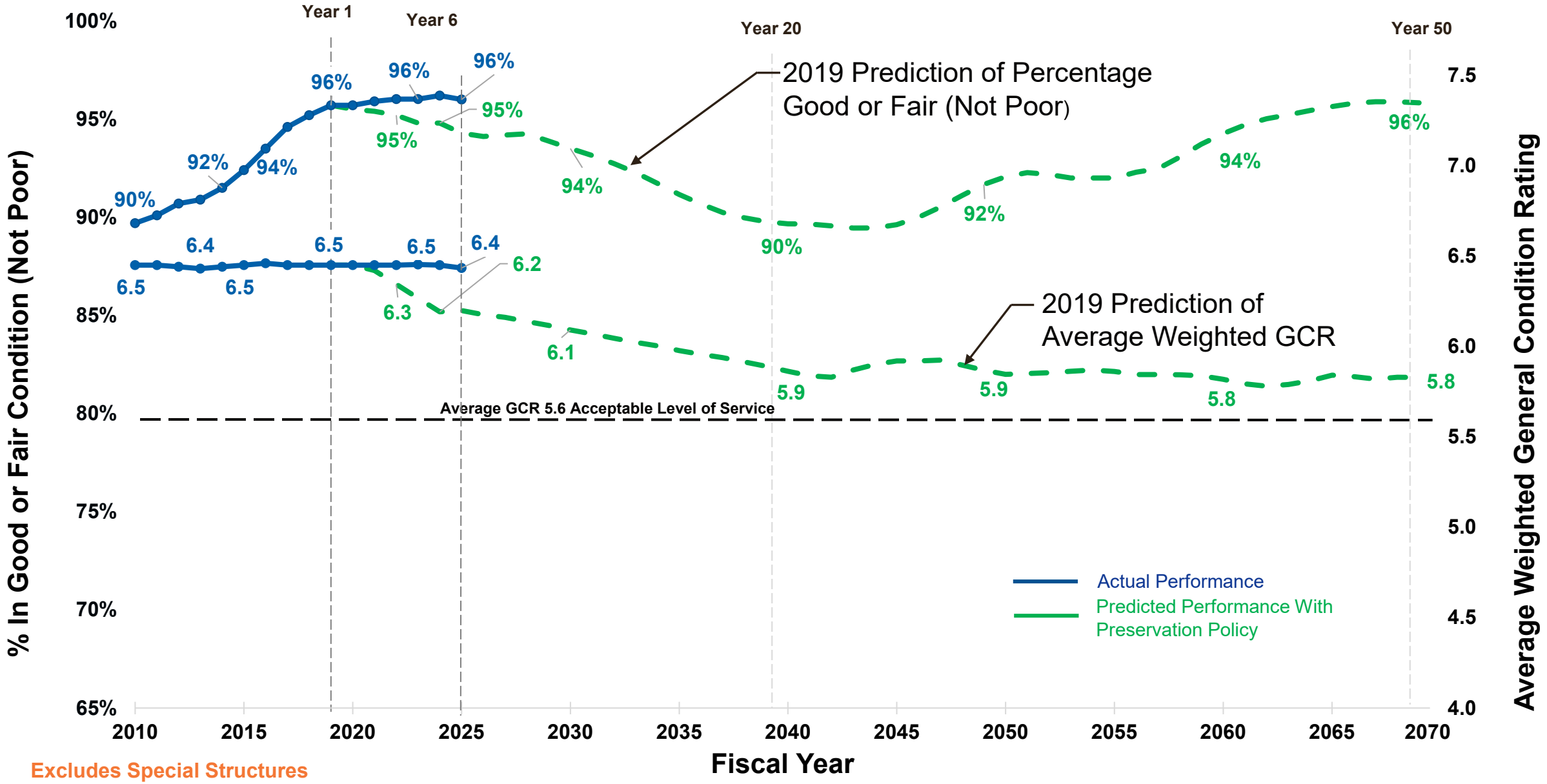
- Excludes Special Structures

Primary Network – 50 Year Outlook - 5,818 Structures



- Excludes Special Structures

Secondary Network – 50 Year Outlook - 13,041 Structures



- Excludes Special Structures

Routine Maintenance

Routine Maintenance – Performance Metrics

Asset	2019 Interim Target			FY 2024 Frequency Avg. / yr	FY 2024 Additional Funding (One Time Infusion - $50M)	FY 2025 Frequency Avg. / yr
	Frequency	Quantity				
Turf (Mowing)	IS: 3 times / yr PR: 3 times / yr SC: 2 times/ yr	340,600	acres	IS: 2 times / yr PR: 3 times / yr SC: 2 times/ yr	$0	IS: 2 times / yr PR: 3 times / yr SC: 2 times/ yr
Trees	6% of inventory	8,200	shoulder miles	19%	$10M	15%
Pipes	10% of inventory	33,900	each	25%	$20M	16%
SWM Facilities	2 times / yr	4,400	each	3 times / yr	$4M	2 times / yr
Ditches	5% of inventory	4,400	ditch miles	8%	$10M	4%
Unpaved Roads	4 times / yr	25,500	center line miles	5 times / yr	$0	5 times / yr
Unpaved Shoulders	20% of inventory	14,800	shoulder miles	24%	$6M	17%
Signs	5% of inventory	47,300	each	5%	$0	4%
Signals	20% of inventory	630	each	14%	$0	Developing New Performance Measures and New System
Pavement Marking	70% of inventory	50,800	miles	57%	$0	51%

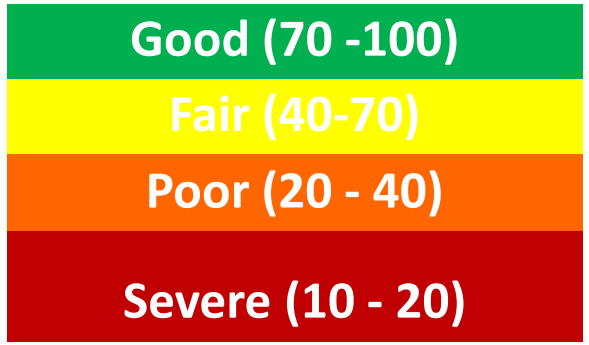
Special Structures

Special Structures – Health Index

- **Unique Health Index Developed for Each Category**
  - Movable Bridges (introduced in 2021)
  - Tunnels (introduced in 2021)
  - Fixed-Span Structures (introduced in 2022)
- **Current Briefing**
  - 4 Year of progress on movable bridge health index
  - 4 Year of progress on tunnel health index
  - 3 Year of progress on fixed-span structure index

Special Structures – Health Index

- **Measures the Overall Health from 0 (Worst) to 100 (Best)**
  - Assesses individual structures and systems within a structure

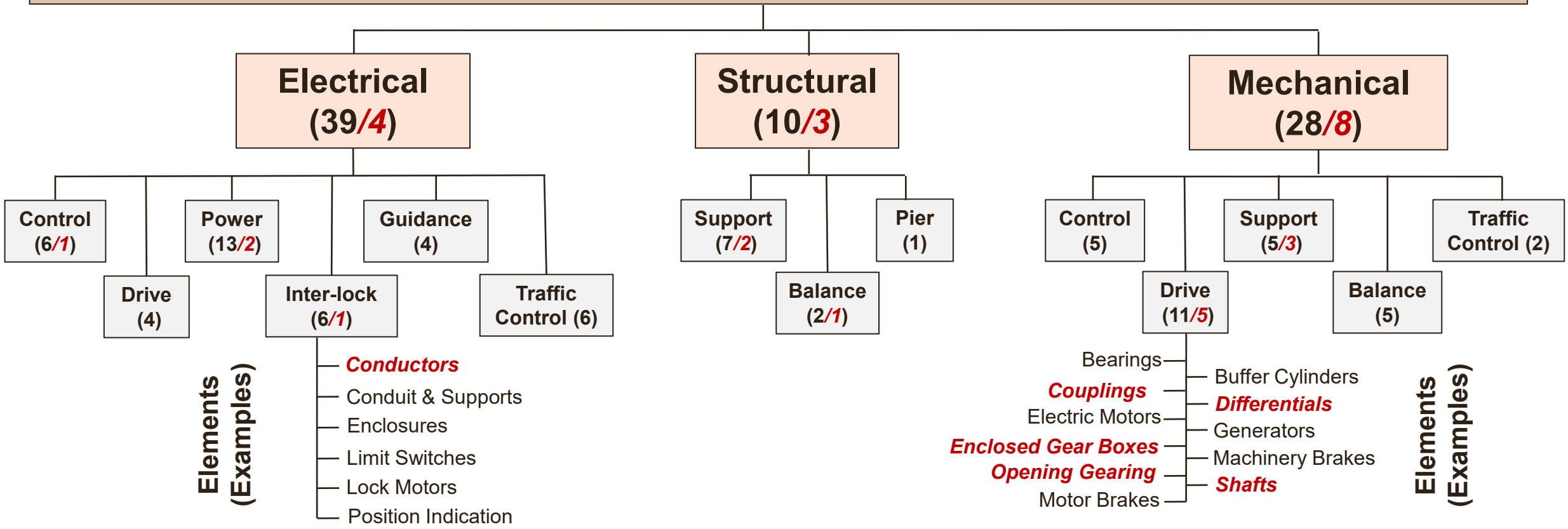


- **Data Collection and Inspection**
  - Each element on each structure evaluated
  - Assigned “condition states”, which can vary from Good to Severe
  - Inspected every 2 years

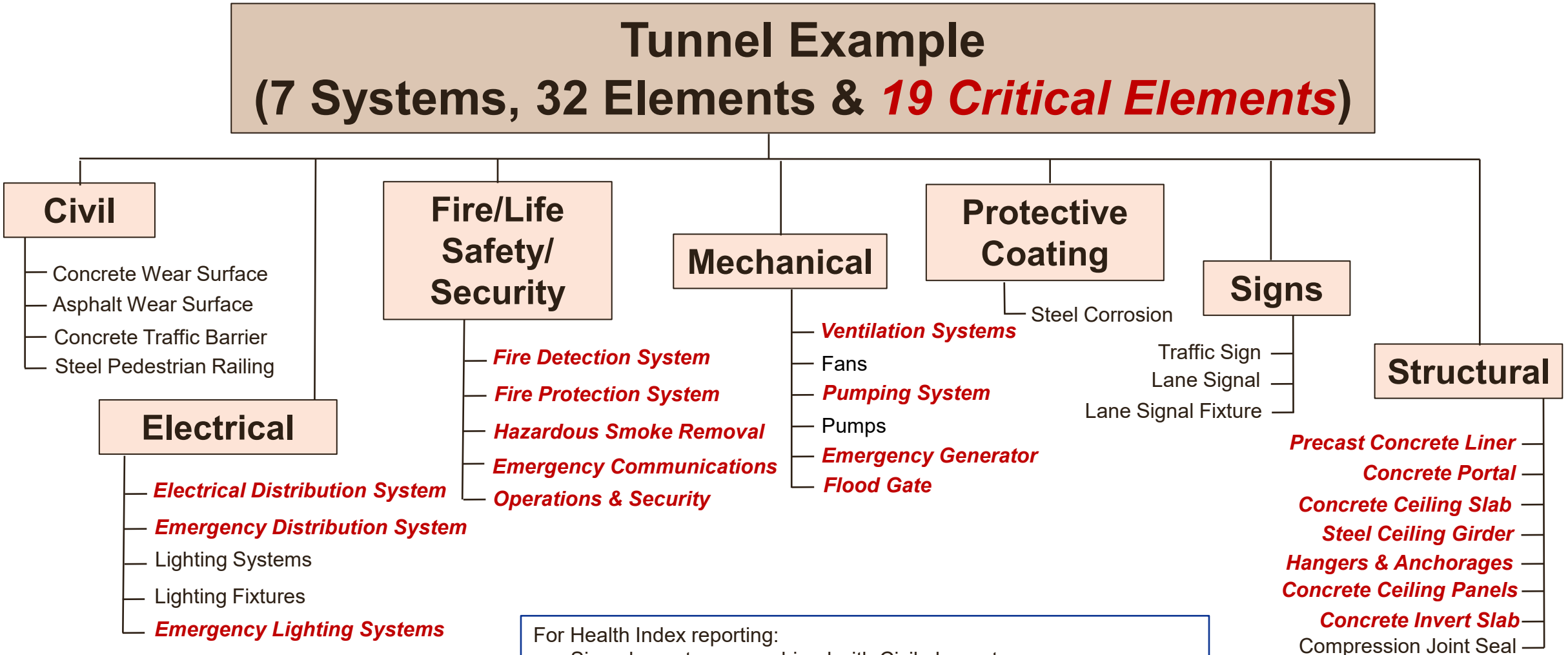
- **Health Index Calculated by Weighting Elements by Safety & Risk**

Health Index Sample Methodology- Movable Bridges

Movable Bridge Example
(3 Systems, 14 Subsystems, 81 Elements & *16 Critical Elements*)



Health Index Sample Methodology- Tunnels



For Health Index reporting:

- Sign elements are combined with Civil elements.
- Protective Coating elements are combined with Structural elements

Movable Bridge Health Index: Changes 2024 - 2025

2024 Summary of Health Index for each System or Component on Each Movable Bridge

Bridge	Movable Span Systems				Approach (Fixed) Span Components			
	Electrical	Mechanical	Structural	Overall HI Movable Bridge	Deck	Super-structure	Sub-structure	Overall HI Approach Spans
Benjamin Harrison	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair
Berkley EBL	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair
Berkley WBL	Poor	Poor	Fair	Poor	Fair	Good	Fair	Fair
Chincoteague	Good	Good	Good	Good	Good	Good	Good	Good
Coleman	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair
Eltham	Fair	Good	Good	Fair	Fair	Fair	Good	Fair
Gwynn's Island	Fair	Good	Fair	Fair	Good	Good	Fair	Fair
High Rise	Fair	Poor	Fair	Fair	Good	Fair	Fair	Fair
James River	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair

2024 Percentage & Number of Systems in Each Condition Category

Good	32% (17)
Fair	59% (32)
Poor	7% (4)
Severe	2% (1)

2025 Summary of Health Index for each System or Component on Each Movable Bridge

Bridge	Movable Span Systems				Approach (Fixed) Span Components			
	Electrical	Mechanical	Structural	Overall HI Movable Bridge	Deck	Super-structure	Sub-structure	Overall HI Approach Spans
Benjamin Harrison	Poor ↓	Fair	Fair	Fair	Fair	Fair	Fair	Fair
Berkley EBL	Severe	Fair	Fair	Fair	Fair	Good	Fair	Fair
Berkley WBL	Poor	Poor	Fair	Poor	Fair	Good	Fair	Fair
Chincoteague	Good	Fair ↓	Good	Good	Good	Good	Good	Good
Coleman	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair
Eltham	Fair	Fair ↓	Fair ↓	Fair	Fair	Poor ↓	Good	Fair
Gwynn's Island	Fair	Good	Fair	Fair	Good	Good	Fair	Fair
High Rise	Poor ↓	Poor	Fair	Fair	Fair ↓	Good ↑	Fair	Fair
James River	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair

2025 Percentage & Number of Systems in Each Condition Category

Good	26% (14)
Fair	59% (32)
Poor	13% (7)
Severe	2% (1)

Improvements ↑

- Fair to Good: **High Rise** - Superstructure

7 Deteriorations ↓

Good to Fair: **Chincoteague & Eltham** - Mechanical; **Eltham** – Structural; **High Rise** - Deck

Fair to Poor: **Benjamin Harrison & High Rise** – Electrical; **Eltham** - Superstructure

Work is underway on:

- Benjamin Harrison
- Berkley EBL & WBL
- Eltham
- Gwynn's Island
- James River

VDOT

Tunnel Health Index: Changes 2024 - 2025

2024 Summary of Health Index for Each System on Each Tunnel						
Tunnel	Civil	Electrical	Fire/Life Safety/Security	Mechanical	Structural	Overall HI
Big Walker						
East River						
Hampton Roads Eastbound						
Hampton Roads Westbound						
Monitor Merrimac						
Rosslyn						
I-564						

2024 Percentage & Number of Systems in Each Condition Category	
Good	28% (10)
Fair	63% (22)
Poor	9% (3)
Severe	0% (0)

2025 Summary of Health Index for Each System on Each Tunnel						
Tunnel	Civil	Electrical	Fire/Life Safety/Security	Mechanical	Structural	Overall HI
Big Walker						
East River						
Hampton Roads Eastbound		↑				
Hampton Roads Westbound				↓		
Monitor Merrimac						
Rosslyn				↑		
I-564			↓			

2025 Percentage & Number of Systems in Each Condition Category	
Good	28% (10)
Fair	63% (22)
Poor	9% (3)
Severe	0% (0)

2 Improvements
Fair to Good: **Hampton Roads EBL** - Electrical
Poor to Fair: **Rosslyn** - Mechanical

2 Deteriorations
Fair to Poor: **Hampton Roads WBL** - Mechanical
Good to Fair: **I-564** - Fire/Life Safety/Security

Work is underway on:
- Big Walker & East River
- HRBT
- MMMBT
- Rosslyn
- I-564

Fixed Span Bridge* Health Index: Changes 2024 - 2025

2024 Summary of Health Index for Each Component on Each Fixed Span Bridge				
Bridge Name	**Deck**	**Superstructure**	**Substructure**	**Overall**
460 Connector Bridges				
HRBT** Approaches				
MMMBT*** Approaches				
Norris Bridge				
Smart Road Bridge				
Varina Enon Bridge				
Willoughby Bay Bridges				

2024 Percentage & Number of Components in Each Condition Category	
Good	43% (9)
Fair	52% (11)
Poor	5% (1)
Severe	0% (0)

2025 Summary of Health Index for Each Component on Each Fixed Span Bridge				
Bridge Name	**Deck**	**Superstructure**	**Substructure**	**Overall**
460 Connector Bridges				
HRBT Approaches				
MMMBT Approaches				
Norris Bridge				
Smart Road Bridge				
Varina Enon Bridge				
Willoughby Bay Bridges				

2025 Percentage & Number of Components in Each Condition Category	
Good	43% (9)
Fair	52% (11)
Poor	5% (1)
Severe	0% (0)

Notable Elements of 10 Year Plan
- HRBT Approaches and Willoughby Bay Bridges will be complete
- Preservation emphasis for:
  - Varina-Enon
  - James River Approaches
  - MMMBT Approaches
- Norris advertisement in 2028

*Condition information for High Rise Bridge Approach Spans & James River Bridge Approach Spans is provided on the Movable Bridge Health Index slide

**Hampton Roads Bridge Tunnel

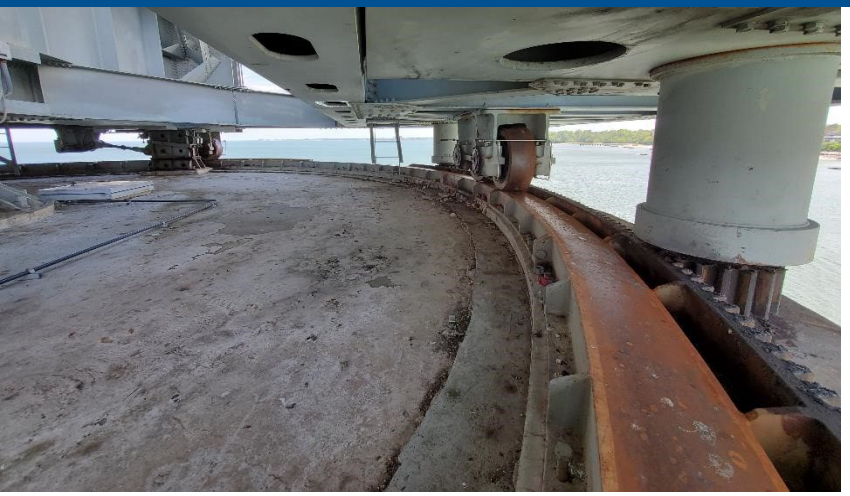
***Monitor Merrimac Memorial Bridge-Tunnel

No Improvements

No Deteriorations

Special Structures - Accomplishments

Hampton Roads District





Coleman Bridge
Balance Wheel

Hampton Roads Bridge Tunnel
Invert Slab

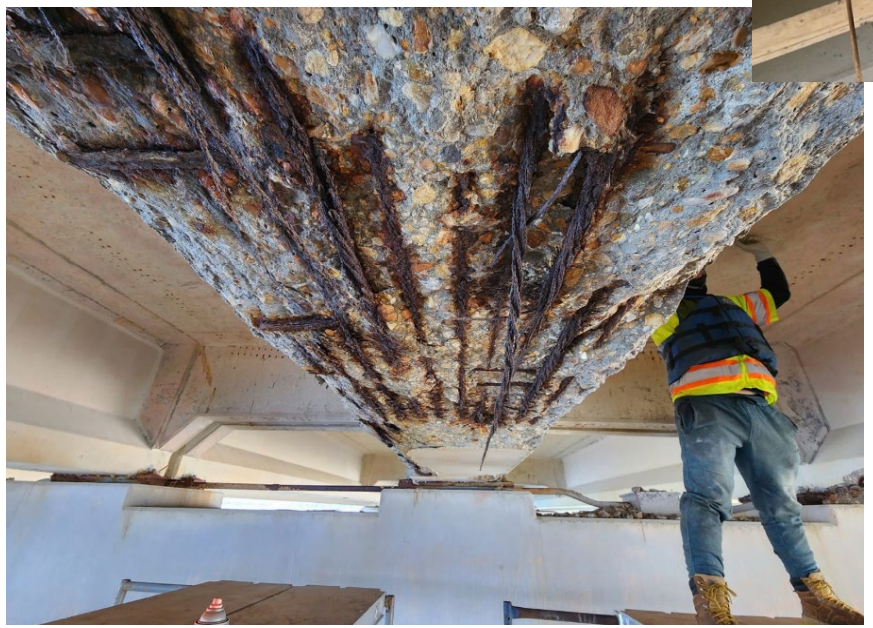




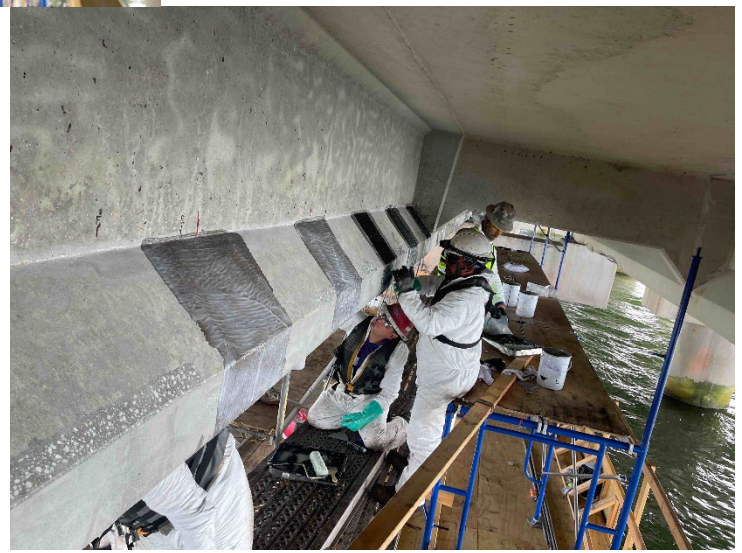
Hampton Roads District
James River Bridge Beam Strengthening











NOVA District – Rosslyn Tunnel

Tunnel Ceiling Panel Conditions Before Rehabilitation



Corroded Steel Framing and Hangers



Cracked Ceiling Panel



Corroded Steel Sheeting in the Underside of Ceiling Panel

NOVA District – Rosslyn Tunnel

Wall Tile Conditions Before Rehabilitation



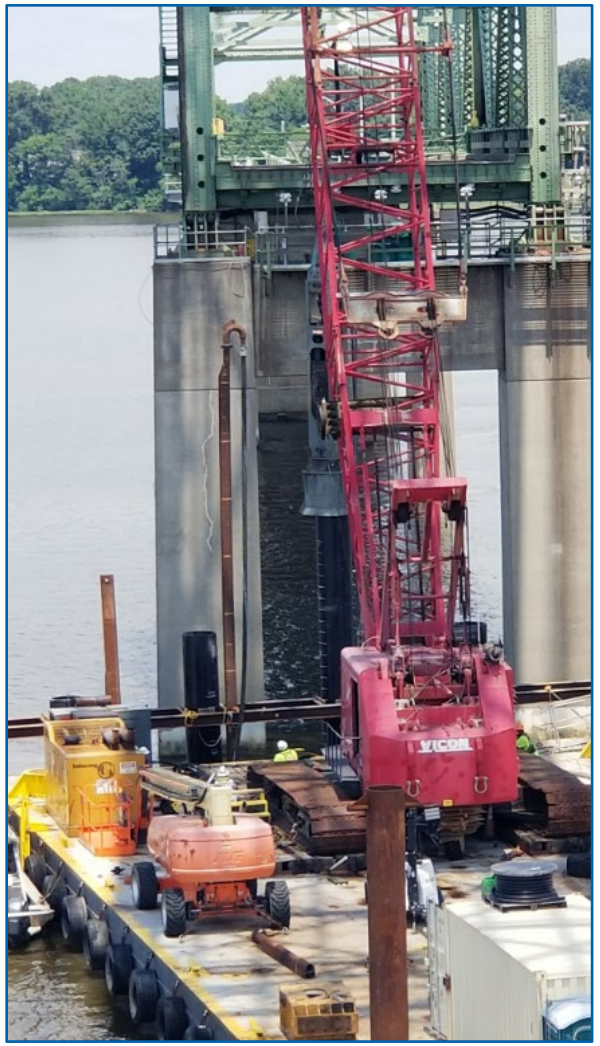
NOVA District – Rosslyn Tunnel

Ceiling Removed, Beams Fireproofed, Wall Tiles Repaired & New Lighting Installed

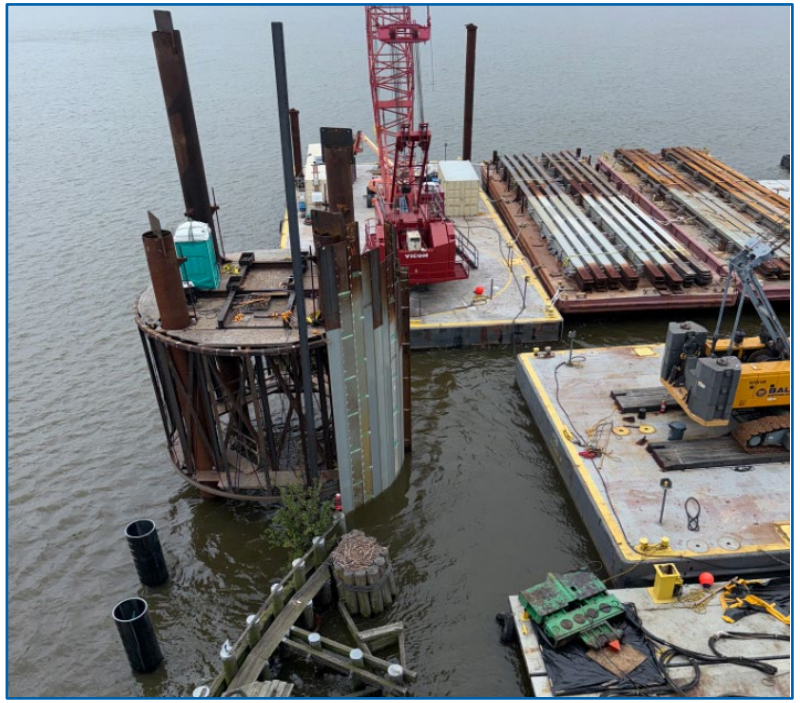


Richmond District – Benjamin Harrison Movable Bridge

Fender & Dolphin Pier Protection Project



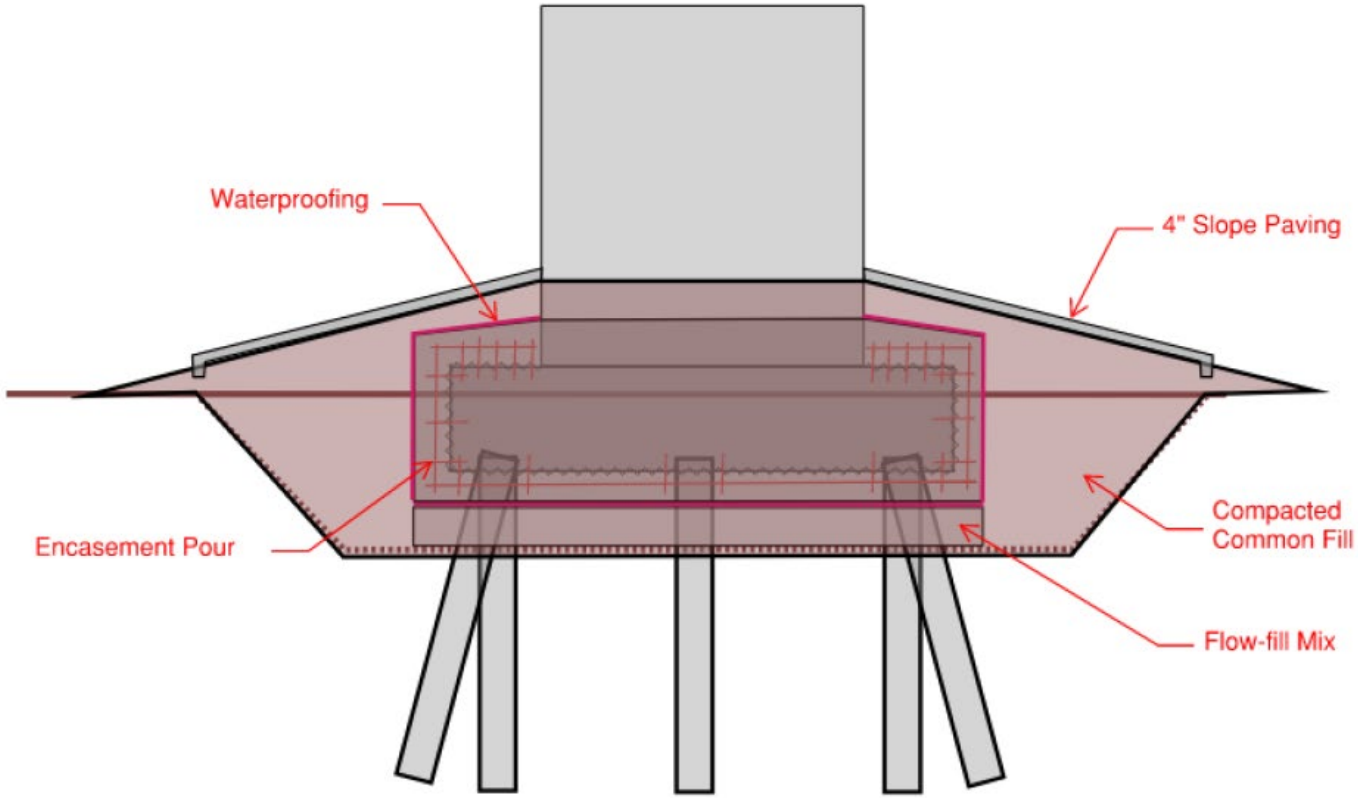




Richmond District – Varina Enon Bridge

Footing Crack Monitoring Gauges & North Approach Footing ASR Encasement





Emergencies

Maintenance and Operations Program - Flexibility

Emergencies

- **Extreme weather events (Statewide storms 2025 - $645M)**
  - Snow and ice (2025 - $407M)
  - Hurricanes/Floods (2025 - $238M)
- **Unexpected events**
  - Bridge hits
  - Sinkhole

FY 2025 Action and Repayment Status	Amount (in millions)
Final Loan Amount from Construction Fund	$159.2
Repayments to date from reimbursements	($12.0)
Remaining Balance	$147.2









Need to Retain Flexibility


VDOT
Virginia Department of Transportation


VDOT
Virginia Department of Transportation