



COMMONWEALTH of VIRGINIA

Commonwealth Transportation Board

Shannon Valentine
Chairperson

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Agenda item #3

RESOLUTION OF THE COMMONWEALTH TRANSPORTATION BOARD

October 20, 2021

MOTION

Made By: Mr. Rucker **Seconded By:** Ms. Hynes
Action: Motion carried, unanimously

Title: Approval of the Special Structure 50-Year Long-Term Plan

WHEREAS, §33.2-374 of the *Code of Virginia*, enacted in 2020, requires the Commonwealth Transportation Board (Board) to establish the Special Structure Program; and

WHEREAS, more specifically, pursuant to §33.2-374 (C) the Board is to establish (i) a program for the maintenance, rehabilitation and replacement of special structures and (ii) develop and maintain, with the assistance of the Department of Transportation, a plan for the maintenance, rehabilitation, and replacement of special structures in the Commonwealth, covering a minimum of 30 years; and

WHEREAS, §33.2-374 (D) provides that the Board shall use the funds dedicated to the Special Structure Fund pursuant to § [33.2-1532](#) for maintenance, rehabilitation, and replacement of special structures to implement the plan developed pursuant to subsection C.

WHEREAS, by resolution, dated December 11, 2019, the Board approved the Comprehensive Review Report related to the Robert O. Norris Bridge and Statewide Special Structure Fund required pursuant to Chapters 83 and 349 of the 2019 Acts of Assembly (Comprehensive Review), which report, among other things, set forth a 50-Year Long-Term Plan for Special Structures with a view to inform the development of a Statewide Special Structure Fund as defined by §33.2-1532, and required the Commissioner of Highways to report on the Comprehensive Review to the Board, on an annual basis; and

WHEREAS, the Commissioner of Highways presented to the Board an updated draft of the 50-Year Long Term Plan for Special Structures on September 14, 2021.

NOW, THEREFORE, BE IT RESOLVED, that pursuant to §33.2-374 (C), the Board approves the Special Structure Program - 50-Year Long Term Plan as set forth in Attachment A.

BE IT FURTHER RESOLVED, in keeping with the resolution dated December 11, 2019, requiring the Commissioner of Highways to present annually to the Board on the Comprehensive Review, the Commissioner is directed to present the Special Structure Program – 50-Year Long-Term Plan with any updates to the Board annually for approval.

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CTB Decision Brief

Special Structures Program – 50-Year Long-Term Plan

Issue: Section 33.2-374 (C) of the *Code of Virginia*, requires the Commonwealth Transportation Board (Board) to (i) establish a program for the maintenance, rehabilitation and replacement of special structures and (ii) develop and maintain, with assistance of the Department of Transportation, a plan for the maintenance, rehabilitation, and replacement of special structures in the Commonwealth covering a minimum of 30 years. VDOT seeks the Board’s approval of a revised 50-Year Long-Term Plan for Special Structures.

Facts:

On December 11, 2019, the Board approved the Comprehensive Review Report related to the Robert O. Norris Bridge and Statewide Special Structures Fund required pursuant to Chapters 83 and 349 of the 2019 Acts of Assembly (Comprehensive Review), which report, among other things, set forth a 50-Year long-Term Plan for Special Structures with a view to inform the development of a Statewide Special Structure Fund as defined by §33.2-1532, and required the Commissioner of Highways to report on the Comprehensive Review to the Board, on an annual basis.

The Commissioner of Highways presented to the Board an updated draft of the 50-Year Long Term Plan for Special Structures on September 14, 2021 and VDOT is now recommending and seeking Board approval of the 50-Year Long Term Plan.

Recommendation: VDOT recommends approval of the Special Structure Program – 50-Year Long Term Plan as revised and set forth in Attachment A. VDOT also recommends that any updates to the Plan be presented to the Board annually for approval.

Action Required by CTB: The *Code of Virginia* requires a majority of the Board’s members to approve the Special Structure Program – 50-Year Long Term Plan.

Result if Approved: N/A

Options: Approve, Deny or Defer

Public Comments/Reaction: N/A

Special Structures

50-Year Long Term Plan

FY 2022 - FY 2071

ATTACHMENT A

Special Structures - 50-Year Long Term Plan											
Bristol District											
By Fiscal Year (\$ in Millions)											
Special Structure Type	Special Structure	Program	Work Description	2022 - 2031	2032 - 2041	2042 - 2051	2052 - 2061	2062 - 2071			
Tunnel	Big Walker	Special Structure Fund	Alarms	0.4	-	0.5	0.7	-			
			Building Addition Portico Storage	-	0.5	-	-	-			
			Fans	10.0	-	-	-	-			
			Cameras (CCTV)	0.6	0.7	0.9	1.1	1.2			
			Central Traffic Control System Replacement	5.0	0.1	6.9	0.2	-			
			CO monitoring	0.1	-	0.1	0.2	-			
			Complete Lighting Replacement with Emergency Lighting	7.9	3.1	-	18.2	-			
			Cross Passage upgrades	0.5	-	-	-	-			
			Diversion Valve Automation	0.1	-	-	-	-			
			Façade	-	3.2	4.0	5.4	-			
			Generator Replacement	5.0	-	-	9.0	-			
			HAZMAT	0.5	-	-	0.8	-			
			Major Fan Rehabilitation/Repair/Replacement - Long Term (post-Saccardo)	-	12.3	15.7	17.5	17.0			
			Major Fan Rehabilitation/Repair/Replacement - Short Term (pre-Saccardo)	9.9	0.6	14.1	-	-			
			Median crossovers	5.2	-	-	-	-			
			Movable Exhaust Canopies	1.2	-	-	-	-			
			Phone and PA	0.1	-	0.1	0.2	-			
			Radio and Emergency	0.3	0.3	0.4	0.4	0.5			
			Saccardo Nozzle	2.8	-	-	-	-			
			Security	0.6	-	0.7	1.0	-			
			Septic Tank and Field Replacement	-	-	0.1	-	0.1			
			Standpipe	22.0	1.9	1.9	43.2	2.5			
			Structural Repairs - Buildings	4.5	-	6.5	-	8.9			
			Structural Repairs - Concrete and Steel Components, Repairs to the ceiling	5.2	-	6.8	9.9	-			
			Supervisory Control and Data Acquisition System Control	3.5	4.0	-	5.6	7.0			
			Switchgear and Power Distribution Replacement	19.5	-	-	34.1	-			
			Tunnel Drainage	0.5	0.6	0.8	0.9	1.1			
			Tunnel Liner Leak Repair	3.0	3.4	4.4	5.3	6.0			
			Tunnel Wall Tiles	5.3	-	-	9.2	-			
			Special Structure Fund Total				\$ 113.6	\$ 30.6	\$ 63.8	\$ 162.7	\$ 44.2
			Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)				\$ 34.7	\$ 34.7	\$ 34.7	\$ 34.7	\$ 34.7
			Big Walker Tunnel Total				\$ 148.3	\$ 65.3	\$ 98.5	\$ 197.4	\$ 78.9

Special Structures - 50-Year Long Term Plan											
Bristol District											
By Fiscal Year (\$ in Millions)											
Special Structure Type	Special Structure	Program	Work Description	2022 - 2031	2032 - 2041	2042 - 2051	2052 - 2061	2062 - 2071			
Tunnel	East River	Special Structure Fund	Alarms	0.4	-	0.5	0.7	-			
			Cameras (CCTV)	0.5	0.6	0.7	0.9	1.0			
			Central Traffic Control System Replacement	5.0	0.1	6.9	0.2	9.8			
			CO monitoring	0.1	-	0.1	0.2	-			
			Complete Lighting Replacement with Emergency Lighting	10.1	2.5	-	21.0	-			
			Cross Passage Upgrades	1.1	-	-	-	-			
			Diversion Valve Automation	0.1	-	-	-	-			
			Façade	-	1.8	2.4	3.2	-			
			Generator Replacement	11.6	-	-	20.8	-			
			Generators (2) - fire suppression system backup	-	1.0	0.8	0.8	-			
			HAZMAT	2.0	-	-	3.3	4.0			
			Major Fan Rehabilitation/Repair/Replacement - Long Term (post-Saccardo)	-	13.6	18.3	22.7	22.1			
			Major Fan Rehabilitation/Repair/Replacement - Short Term (pre-Saccardo)	11.6	0.7	17.5	-	-			
			Median crossovers	5.2	-	-	-	-			
			Movable Exhaust Canopies	1.2	-	-	-	-			
			Add structural elements to the fan monorail beams in all 4 quadrants to allow lifting of maximum fan component weight	0.3	-	-	0.6	-			
			Phone and PA	0.1	-	0.1	0.2	-			
			Power distribution	4.4	-	-	-	-			
			Radio and Emergency	0.3	0.3	0.4	0.4	0.5			
			Saccardo Nozzle	2.8	-	-	-	-			
			Security	0.6	-	0.7	1.0	-			
			Standpipe	25.4	1.4	1.9	48.8	2.5			
			Structural Repairs - Buildings	1.7	-	2.5	-	3.4			
			Structural Repairs - Concrete and Steel Components, Repairs to the ceiling	5.0	-	6.5	9.5	-			
			Supervisory Control and Data Acquisition System Control	3.5	9.1	6.8	14.8	7.0			
			Switchgear and Power Distribution Replacement	22.1	-	-	38.7	-			
			Tunnel Drainage	0.5	0.6	0.8	0.9	1.1			
			Tunnel Liner Leak Repair	3.0	3.4	4.4	5.3	6.0			
			Tunnel Wall Tiles	8.3	-	-	14.8	-			
			Special Structure Fund Total				\$ 126.7	\$ 35.0	\$ 71.2	\$ 208.7	\$ 57.4
			Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)				\$ 37.4	\$ 37.4	\$ 37.4	\$ 37.4	\$ 37.4
			East River Tunnel Total				\$ 164.1	\$ 72.4	\$ 108.6	\$ 246.1	\$ 94.8

Special Structures - 50-Year Long Term Plan Bristol District								
By Fiscal Year (\$ in Millions)								
Special Structure Type	Special Structure	Program	Work Description	2022 - 2031	2032 - 2041	2042 - 2051	2052 - 2061	2062 - 2071
Complex Structure	460 Connector	Special Structure Fund	Epoxy Overlay	-	-	-	-	2.1
			Mill, Hydromilling, Latex Overlay	-	-	-	-	14.9
			Structural Health Monitoring	1.2	-	-	-	-
			Superstructure and Substructure Repairs	-	-	-	-	1.0
			Special Structure Fund Total	\$ 1.2	-	-	-	\$ 18.0
		Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)	\$ 2.5	\$ 2.5	\$ 2.5	\$ 2.5	\$ 2.5	
460 Connector Bridge Total				\$ 3.7	\$ 2.5	\$ 2.5	\$ 2.5	\$ 20.5
Bristol District Total				\$ 316.1	\$ 140.1	\$ 209.6	\$ 446.0	\$ 194.2

Special Structures - 50-Year Long Term Plan Salem District								
By Fiscal Year (\$ in Millions)								
Special Structure Type	Special Structure	Program	Work Description	2022 - 2031	2032 - 2041	2042 - 2051	2052 - 2061	2062 - 2071
Complex Structure	Smart Road Bridge	Special Structure Fund	Bearing Replacement	-	-	-	-	1.0
			Concrete Color Coating	-	-	-	-	0.2
			Deck Rehabilitation	-	-	-	-	4.3
			Epoxy Overlay	-	-	-	-	1.0
			Structural Health Monitoring	1.2	-	-	-	-
			Substructure Concrete Repairs	-	-	-	-	0.5
			Superstructure Concrete Repairs	-	-	-	-	0.5
			Tendon Repairs	-	-	-	-	2.1
			Special Structure Fund Total	\$ 1.2	-	-	-	\$ 9.6
		Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)	\$ 1.2	\$ 1.2	\$ 1.2	\$ 1.2	\$ 1.2	
Smart Road Bridge Total			\$ 2.4	\$ 1.2	\$ 1.2	\$ 1.2	\$ 10.8	
Salem District Total			\$ 2.4	\$ 1.2	\$ 1.2	\$ 1.2	\$ 10.8	

**Special Structures - 50-Year Long Term Plan
Richmond District**

By Fiscal Year (\$ in Millions)

Special Structure Type	Special Structure	Program	Work Description	2022 - 2031	2032 - 2041	2042 - 2051	2052 - 2061	2062 - 2071			
Movable Bridge	Benjamin Harrison	Special Structure Fund	Air buffer replacement	0.5	-	-	-	0.9			
			Clearance Gauge signs	-	0.1	-	-	0.1			
			Close Joints & Repair joints	1.5	-	-	-	-			
			Deck Overlay	0.4	-	-	-	0.8			
			Fender	13.0	-	-	-	-			
			Footing Repair	-	5.5	-	-	-			
			Generator Replacement	6.3	-	2.5	7.4	-			
			Grid	-	3.8	-	-	-			
			Lifting Cable Replacement	-	-	-	6.1	-			
			Painting (Overcoat truss)	-	6.0	-	-	-			
			Replace Barrier Gates, Span Locks	3.0	-	3.9	5.6	-			
			Replace Drive System	11.7	-	-	21.1	-			
			Replace Overhead detection	0.6	-	0.8	-	-			
			Replace portable message signs	-	-	-	-	0.1			
			Replace Power Supply Aerial Cable	3.0	-	-	5.6	-			
			Replace sign structures	-	-	-	-	0.1			
			Replace Structure	-	-	234.0	42.6	-			
			Scour Protection and foundation strengthening	3.5	-	-	-	-			
			Structure and Deck Repairs	1.8	-	-	3.1	-			
			Structural Cathodic Protection maintenance	-	0.8	0.8	12.1	0.4			
			Structural maintenance	6.5	-	-	10.7	-			
			Upgrade Controls	-	2.1	-	3.7	-			
			Warp Clutch Replacement	-	-	0.8	-	-			
			Special Structure Fund Total				\$ 51.7	\$ 18.2	\$ 242.9	\$ 118.1	\$ 2.4
			Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)				\$ 19.9	\$ 19.9	\$ 19.9	\$ 19.9	\$ 19.9
			Benjamin Harrison Bridge Total				\$ 71.6	\$ 38.1	\$ 262.8	\$ 138.0	\$ 22.3

Special Structures - 50-Year Long Term Plan Richmond District											
By Fiscal Year (\$ in Millions)											
Special Structure Type	Special Structure	Program	Work Description	2022 - 2031	2032 - 2041	2042 - 2051	2052 - 2061	2062 - 2071			
Complex Structure	Varina-Enon	Special Structure Fund	Access Platform for Main Span	0.8	-	-	-	-			
			Corrosion Inhibitor and external tendons	2.5	-	-	-	-			
			Corrosion Inhibitor transverse tendons	6.0	-	-	-	-			
			Corrosion Inhibitor Vertical Post Tendons	4.0	-	-	-	-			
			Crack Sealing and Epoxy Grit Median	0.2	0.2	0.4	0.3	-			
			Deck Overhang Repairs and Waterproofing	3.6	4.1	0.3	5.4	7.2			
			Epoxy Overlay	-	-	1.6	-	-			
			Feasibility Study	-	-	-	-	1.0			
			Hydrodemolition and reconstruction	8.5	-	-	15.3	-			
			Latex Concrete Overlay	-	-	11.1	-	-			
			Parapet Rehabilitation	0.6	-	-	-	-			
			Post-Tensioned Girder Concrete Non-Destructive Evaluation	1.0	-	-	-	-			
			Repair and Supplemental Foundation	10.9	11.3	14.6	38.1	-			
			Replace conduit and wiring in pylons and navigation/aviation lights	0.4	-	-	0.7	-			
			Replace elastomeric bearings	1.0	3.5	3.0	3.7	4.0			
			Replace external tendons	1.0	5.7	2.7	-	-			
			Replace Pot bearings	-	-	12.1	-	-			
			Replace selected stay cables	2.0	-	-	-	-			
			Substructure Sealing	1.1	-	-	-	-			
			Supplemental Post Tension	-	-	-	16.6	-			
			Trough Replacement	0.5	-	0.6	0.9	-			
			Vertical PT in column repairs and Pier Seat/Column Repair	3.6	-	-	-	-			
			Weather Station and Cameras (511 and Security)	0.3	-	-	-	-			
			Special Structure Fund Total				\$ 47.9	\$ 24.8	\$ 46.5	\$ 80.9	\$ 12.3
			Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)				\$ 16.2	\$ 16.2	\$ 16.2	\$ 16.2	\$ 16.2
			Varina-Enon Bridge Total				\$ 64.1	\$ 41.0	\$ 62.7	\$ 97.2	\$ 28.5
			Richmond District Total				\$ 135.7	\$ 79.1	\$ 325.5	\$ 235.1	\$ 50.8

**Special Structures - 50-Year Long Term Plan
Hampton Roads District**

By Fiscal Year (\$ in Millions)

Special Structure Type	Special Structure	Program	Work Description	2022 - 2031	2032 - 2041	2042 - 2051	2052 - 2061	2062 - 2071			
Tunnel	Hampton Roads Bridge Tunnel (New)	Special Structure Fund	Alarms	-	-	-	-	2.1			
			Cameras (CCTV)	-	-	-	-	2.1			
			CO monitoring	-	-	-	-	3.1			
			Electrical Switchgear Replacement	-	-	-	-	131.4			
			Generator Replacement	-	-	-	-	10.5			
			Portal HOMA Submersible Pumps	-	-	-	-	4.2			
			Radio Communications Upgrade	-	-	-	-	3.1			
			Special Structures Holding	0.1	-	-	-	-			
			Supervisory Control and Data Acquisition System Control	-	-	-	-	8.4			
			Switchgear Battery Replacement	-	-	-	-	1.0			
			Tidal Gate Pin Pocket Upgrade	-	-	-	-	1.1			
			Tunnel Lighting	-	-	-	-	44.1			
			Variable Message Signs	-	-	-	-	8.4			
			Special Structure Fund Total				\$ 0.1	-	-	-	\$ 219.5
			Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)				\$ 70.0	\$ 100.0	\$ 100.0	\$ 100.0	\$ 100.0
Hampton Roads Bridge Tunnel (New) Total				\$ 70.1	\$ 100.0	\$ 100.0	\$ 100.0	\$ 319.5			
Tunnel	Hampton Roads Bridge Tunnel (Old)	Special Structure Fund	Alarms	1.0	1.2	1.5	1.8	2.3			
			Cameras (CCTV)	0.9	0.1	1.0	1.5	-			
			Central Traffic Control System Replacement	3.0	3.7	4.5	5.5	6.0			
			CO monitoring	1.5	1.9	2.3	2.8	3.0			
			Concrete Invert Slab Repairs and Concrete Overlay	5.8	-	-	-	-			
			Control Room Upgrade	-	-	-	-	10.5			
			Electrical Switchgear Replacement	-	-	-	-	109.9			
			Generator Replacement	-	-	-	-	4.2			
			Hampton Roads Overheight Project	75.0	-	-	-	-			
			Portal HOMA Submersible Pumps (12)	2.0	2.2	2.9	3.5	4.0			
			Radio	-	-	-	-	-			
			First year is to upgrade from analog to digital	-	1.0	2.1	2.6	-			
			Supervisory Control and Data Acquisition System Control	-	-	5.9	7.2	-			
			Switchgear Battery Replacement	-	0.6	0.7	0.9	-			
			Tiles	-	1.2	-	1.8	-			
			Tunnel Lighting	10.0	-	-	16.3	-			
			Variable Message Signs	-	4.5	5.8	7.0	8.0			
			Ventilation Fan Overhaul and replacement in Out Years	1.4	-	-	-	-			
			WB Pin pocket at 60+ years, EB pin pocket at 40+ years	0.5	-	-	0.9	-			
Special Structure Fund Total				\$ 101.1	\$ 16.5	\$ 26.6	\$ 51.8	\$ 148.0			
Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)				\$ 141.1	\$ 141.1	\$ 141.1	\$ 141.1	\$ 141.1			
Hampton Roads Bridge Tunnel (Old) Total				\$ 242.1	\$ 157.6	\$ 167.7	\$ 192.9	\$ 289.1			

**Special Structures - 50-Year Long Term Plan
Hampton Roads District**

By Fiscal Year (\$ in Millions)

Special Structure Type	Special Structure	Program	Work Description	2022 - 2031	2032 - 2041	2042 - 2051	2052 - 2061	2062 - 2071			
Tunnel	Monitor-Merrimac Memorial Tunnel	Special Structure Fund	Alarms	-	1.0	2.8	1.8	-			
			Cameras (CCTV)	-	0.5	0.8	-	-			
			Central Traffic Control System Replacement	-	2.2	2.7	3.4	3.9			
			CO monitoring	-	1.5	4.3	2.8	-			
			Communications System Upgrade - UHF, VHF, AM, FM, Emergency Rebroadcast	-	1.0	2.1	2.6	-			
			Concrete Invert Slab Repairs and Concrete Overlay	-	6.2	-	-	-			
			Control Room Upgrade	-	-	0.7	-	-			
			Fire Detection	-	1.0	2.8	1.8	-			
			Firemain Piping	-	2.0	5.7	3.7	-			
			HOMA Submersible (5)	-	0.9	1.3	-	-			
			Lane Control Use Signals	-	7.2	-	13.2	-			
			Roadway Lighting	-	28.2	-	47.0	-			
			Safety Emergency Egress Upgrade	-	2.1	-	-	-			
			Supervisory Control and Data Acquisition System Control	-	4.7	5.7	7.9	7.9			
			Switchgear Battery Replacement	-	0.5	1.4	0.9	-			
			Utility Power, Switchgear and generator upgrade includes SCADA	40.4	-	-	68.0	-			
			Variable Message Signs	-	10.0	12.9	24.6	7.9			
			Ventilation Fans Upgrade	-	5.1	7.7	-	-			
			Ventilation Upgrade	-	4.0	-	-	-			
			Special Structure Fund Total				\$ 44.4	\$ 74.2	\$ 51.0	\$ 177.8	\$ 19.6
			Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)				\$ 95.3	\$ 95.3	\$ 95.3	\$ 95.3	\$ 95.3
			Monitor-Merrimac Memorial Tunnel Total				\$ 139.7	\$ 169.5	\$ 146.3	\$ 273.1	\$ 114.9
			Movable Bridge	Berkley	Special Structure Fund	Blast-clean, paint and inspect cross-girder (westbound) - Superstructure	0.8	-	-	-	-
Clearance Gauge Sign Replacement	-	0.1				-	0.2	-			
Cross-girder replacement (westbound)	-	3.6				-	-	-			
Deck Overlay - Eastbound	1.2	-				-	2.2	-			
Deck Overlay - Westbound	-	1.3				-	-	2.4			
Deck Rehabilitation	-	7.3				-	-	12.8			
EBL Machinery	24.2	-				-	40.7	-			
Fender	20.5	-				-	-	-			
Gate Replacement	5.9	6.6				8.0	10.4	11.5			
Generator Replacement	11.1	-				-	17.9	-			
Ladders and Railings	1.0	-				-	-	-			
Painting - Superstructure	10.0	-				14.5	-	20.1			
Replace Pipe, Heat Trace, Insulation on Water Line for Bridge Use	0.5	-				-	-	-			
Replace Traffic Control System (signals, signs, rewire, fiber optic)	3.1	3.7				4.5	5.6	6.3			
Superstructure Rehabilitation (Eastbound approach)	-	1.8				-	-	-			
Superstructure Rehabilitation (Westbound approach)	2.0	-				-	-	-			
WBL Building and Sub Cables	13.4	-				-	3.7	22.6			
WBL Drives and Machinery	34.1	-				0.4	55.0	-			
Special Structure Fund Total						\$ 127.7	\$ 24.4	\$ 27.4	\$ 135.7	\$ 75.6	
Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)						\$ 14.5	\$ 14.5	\$ 14.5	\$ 14.5	\$ 14.5	
Berkley Bridge Total						\$ 142.1	\$ 38.8	\$ 41.8	\$ 150.1	\$ 90.0	

**Special Structures - 50-Year Long Term Plan
Hampton Roads District**

By Fiscal Year (\$ in Millions)

Special Structure Type	Special Structure	Program	Work Description	2022 - 2031	2032 - 2041	2042 - 2051	2052 - 2061	2062 - 2071			
Movable Bridge	Chincoteague	Special Structure Fund	Barrier Gate	-	0.3	-	0.5	-			
			Deck Overlay	-	3.1	-	-	2.1			
			Fender	-	0.2	-	-	21.6			
			Generator Replacement	-	-	-	-	5.4			
			Install stiffeners on trunnion girder and shim live load bearings	-	0.5	-	-	-			
			Mechanical and Electrical Rehabilitation	-	-	13.6	-	-			
			Paint superstructure	-	-	-	-	15.4			
			Pier Rehabilitation	-	2.4	-	-	-			
			Pile jackets (approaches)	-	2.5	-	-	-			
			Rehabilitate Span Locks	-	0.1	-	0.2	-			
			Repair Pier Wall above doorway to fender system	-	0.5	-	-	-			
			Replace bearing pads (approaches)	-	-	-	-	2.1			
			Special Structures Holding	0.1	-	-	-	-			
			Submarine Cables Replacement	-	-	-	-	21.1			
			Superstructure Rehabilitation	-	-	-	-	4.1			
			Special Structure Fund Total				\$ 0.1	\$ 9.6	\$ 13.6	\$ 0.7	\$ 71.8
			Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)				\$ 6.5	\$ 6.5	\$ 6.5	\$ 6.5	\$ 6.5
Chincoteague Bridge Total				\$ 6.6	\$ 16.1	\$ 20.1	\$ 7.2	\$ 78.3			
Movable Bridge	Coleman	Special Structure Fund	Balance Wheel Track Anchor Bolt and Grout Repair, Repair Grout pads below Center Pivot and Wedges, Balance Spans	2.7	-	-	-	-			
			Deck Rehabilitation	-	4.4	4.4	12.9	-			
			Electrical Rehabilitation	1.0	25.6	-	47.6	-			
			Epoxy Beam ends and superstructure repairs (approaches)	-	0.3	-	-	0.5			
			Fender	-	43.7	-	-	-			
			Install Variable Speed limit Signs on Bridge	0.1	0.2	0.2	0.2	0.3			
			Mechanical Rehabilitation, hydraulic overhaul, and lock rehabilitation	-	24.5	12.7	-	-			
			Movable grating	8.4	-	-	-	-			
			Overhaul Motors & Gear Reducers for Lock Bar and Wedge Drives	0.5	-	-	-	-			
			Submarine Cables Replacement	-	-	-	18.0	-			
			Substructure rehabilitation (approaches)	-	2.2	-	3.4	-			
			Superstructure Painting	-	0.4	15.7	23.0	-			
			Traffic and Barrier Gate Rehabilitation(platforms redesigned to code in year 5)	6.1	7.3	8.8	11.0	12.2			
			Traffic Control Upgrade	-	6.0	21.7	18.0	-			
			Special Structure Fund Total				\$ 18.8	\$ 114.3	\$ 63.5	\$ 134.2	\$ 13.0
			Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)				\$ 15.0	\$ 15.0	\$ 15.0	\$ 15.0	\$ 15.0
			Coleman Bridge Total				\$ 33.8	\$ 129.3	\$ 78.5	\$ 149.2	\$ 28.0

**Special Structures - 50-Year Long Term Plan
Hampton Roads District**

By Fiscal Year (\$ in Millions)

Special Structure Type	Special Structure	Program	Work Description	2022 - 2031	2032 - 2041	2042 - 2051	2052 - 2061	2062 - 2071
Movable Bridge	High Rise	Special Structure Fund	Bascule Repairs (machinery base, bearing seat and misc. repairs)	1.5	-	-	-	-
			Generator Replacement	3.0	-	-	4.8	-
			Grid Deck Replacement	7.0	-	-	13.2	-
			Waterproof operations house	0.3	-	-	-	-
			Special Structure Fund Total	\$ 11.8	-	-	\$ 18.0	-
		Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)	\$ 8.0	\$ 8.0	\$ 8.0	\$ 8.0	\$ 8.0	
High Rise Bridge Total				\$ 19.7	\$ 8.0	\$ 8.0	\$ 26.0	\$ 8.0
Movable Bridge	James River Bridge	Special Structure Fund	Buffer System Replacement	1.7	-	-	3.0	-
			Building Upgrades, Asbestos Removal and Elevator Replacement	4.0	-	-	-	-
			Deck Rehabilitation	-	6.6	-	-	-
			Drive System and Machinery (Includes aerial cables)	27.5	-	-	46.4	-
			Fender	7.3	-	-	-	-
			Install new clearance gauge signs on bridge	0.1	-	0.2	-	0.2
			Ladder and Railing Replacement	-	0.1	-	-	0.2
			Paint Towers and Truss	-	-	14.2	-	20.1
			Purchase/Install New moveable span guide wheels/rollers	-	0.1	-	0.2	-
			Remove existing barrier gate and remove concrete deadman	-	0.1	-	-	-
			Replace drive system (Auxiliary)	2.9	-	-	5.3	-
			Replace lifting cables	6.0	-	-	4.8	6.9
			Replace Wrist Pins for Span Lock Drives	0.1	-	-	-	-
			South End Traffic Control System & Light Diesel Generator	0.7	-	-	1.2	-
			South Tower Staircase	-	0.5	-	-	-
			Utility and Roadway Lighting Distribution Equipment	9.5	-	-	17.1	-
			Variable Message Signs	4.4	-	-	-	-
			Special Structure Fund Total	\$ 64.0	\$ 7.4	\$ 14.4	\$ 77.9	\$ 27.4
			Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)	\$ 24.0	\$ 24.0	\$ 24.0	\$ 24.0	\$ 24.0
		James River Bridge Total				\$ 88.0	\$ 31.4	\$ 38.4
Complex Structure	High Rise Bridge Approaches	Special Structure Fund	Bridge Railing Replacement	-	0.3	-	-	-
			Deck Rehabilitation w/ Epoxy Overlay	-	5.5	-	-	-
			Replace Bridge - Full structure	-	-	327.2	-	-
			Special Structures Holding	0.1	-	-	-	-
			Structural Repairs and Cleaning and Painting of Beam Ends	-	24.6	-	-	-
			Substructure Repairs	-	8.2	0.8	11.6	-
			Superstructure Painting - steel plate girder spans	-	7.1	8.6	-	-
		Special Structure Fund Total	\$ 0.1	\$ 45.7	\$ 336.6	\$ 11.6	-	
Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)	\$ 7.2	\$ 7.2	\$ 7.2	\$ 7.2	\$ 7.2			
High Rise Bridge Approaches Total				\$ 7.3	\$ 52.9	\$ 343.7	\$ 18.7	\$ 7.2
Complex Structure	HRBT Bridge Approaches	Special Structure Fund	Waterproofing - Superstructure & Substructure	-	-	-	-	16.3
		Special Structure Fund Total	-	-	-	-	\$ 16.3	
		Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)	\$ 2.4	\$ 2.4	\$ 2.4	\$ 2.4	\$ 2.4	
HRBT Bridge Approaches Total				\$ 2.4	\$ 2.4	\$ 2.4	\$ 2.4	\$ 18.7

Special Structures - 50-Year Long Term Plan Hampton Roads District								
By Fiscal Year (\$ in Millions)								
Special Structure Type	Special Structure	Program	Work Description	2022 - 2031	2032 - 2041	2042 - 2051	2052 - 2061	2062 - 2071
Complex Structure	James River Bridge Approaches	Special Structure Fund	Bridge Railing Replacement	-	0.2	-	-	-
			Concrete Superstructure and Substructure Repairs	10.5	-	14.5	-	8.2
			Hybrid Cathodic Protection Study	-	1.6	-	-	-
			Overlay - NBL and SBL	-	-	42.2	-	35.7
			Latex Overlay - SBL Only	4.0	4.2	12.3	-	16.7
			Pile jacket - Batch installation - Install 5% of piles every 5 years	6.1	14.2	17.4	21.7	24.5
			Realign Pier 3NV from previous collision and wrap with FRP	4.0	-	-	-	-
			Waterproofing of beam ends	-	15.8	4.6	19.1	-
		Special Structure Fund Total	\$ 24.6	\$ 35.9	\$ 91.0	\$ 40.8	\$ 85.2	
		Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)	\$ 8.4	\$ 8.4	\$ 8.4	\$ 8.4	\$ 8.4	
		James River Bridge Approaches Total	\$ 33.0	\$ 44.3	\$ 99.4	\$ 49.2	\$ 93.6	
Complex Structure	MMMMBT Approach North	Special Structure Fund	Deck Rehabilitation	-	17.1	7.7	15.8	29.8
			Epoxy Overlay	-	-	57.5	76.3	-
			Joint Rehabilitation	0.5	0.5	0.7	0.8	0.9
			Minor Superstructure Repairs, As needed	-	-	-	-	0.5
			Replace hatches on box beam caps with accessible water tight hatches	2.5	0.1	-	-	-
			Structural Steel and Concrete Substructure Repairs	-	12.6	-	20.3	-
			Structural Steel and Concrete Superstructure Repairs	-	10.5	-	17.0	-
			Superstructure Painting	-	94.2	-	-	-
		Special Structure Fund Total	\$ 2.9	\$ 135.0	\$ 65.9	\$ 130.2	\$ 31.2	
		Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)	\$ 3.2	\$ 3.2	\$ 3.2	\$ 3.2	\$ 3.2	
		MMMMBT Approach-North Total	\$ 6.1	\$ 138.2	\$ 69.1	\$ 133.5	\$ 34.4	
Complex Structure	MMMMBT Approach South	Special Structure Fund	Deck Rehabilitation	-	0.6	18.6	-	29.4
			Fender	-	0.5	0.7	1.3	0.5
			Pile Jacket	-	11.3	14.9	20.1	-
			Special Structures Holding	0.1	-	-	-	-
			Substructure Rehabilitation	-	10.7	-	16.6	-
			SuperStructure Rehabilitation	-	55.7	-	85.3	-
			Waterproofing - Superstructure & Substructure	-	13.2	7.6	15.8	-
			Special Structure Fund Total	\$ 0.1	\$ 92.1	\$ 41.8	\$ 139.1	\$ 30.0
		Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)	\$ 8.7	\$ 8.7	\$ 8.7	\$ 8.7	\$ 8.7	
		MMMMBT Approach-South Total	\$ 8.8	\$ 100.8	\$ 50.5	\$ 147.8	\$ 38.6	
		Complex Structure	Willoughby Bay	Special Structure Fund	Full Replacement - PE	-	-	-
Rehabilitation - after the new HRBT tunnel project is complete	39.6				-	52.3	75.3	-
Waterproofing - Superstructure & Substructure	-				8.3	10.6	13.8	-
Special Structure Fund Total	\$ 39.6			\$ 8.3	\$ 62.9	\$ 89.1	\$ 3.3	
Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)	\$ 1.5			\$ 1.5	\$ 1.5	\$ 1.5	\$ 1.5	
Willoughby Bay Bridge Total	\$ 41.1	\$ 9.7	\$ 64.4	\$ 90.5	\$ 4.8			
Hampton Roads District Total				\$ 840.9	\$ 999.1	\$ 1,230.4	\$ 1,442.5	\$ 1,176.4

**Special Structures - 50-Year Long Term Plan
Fredericksburg District**

By Fiscal Year (\$ in Millions)

Special Structure Type	Special Structure	Program	Work Description	2022 - 2031	2032 - 2041	2042 - 2051	2052 - 2061	2062 - 2071			
Movable Bridge	Eltham	Special Structure Fund	Bascule Span Balancing	0.3	-	-	-	-			
			Clearance Gauge Signs	0.5	-	0.6	0.1	0.9			
			Deck Overlay	-	-	-	-	2.1			
			Deck Replacement	-	-	-	-	7.2			
			Epoxy Beam Ends (Approach)	-	-	-	-	0.6			
			Fender	-	-	-	-	16.4			
			Fender Repairs	1.0	2.3	2.9	3.6	4.0			
			Fire Detection System	0.3	-	0.2	0.3	-			
			Generator Replacement	-	-	3.8	-	-			
			Generator Replacement - Rewire	-	0.2	-	-	-			
			Painting (Approaches)	-	-	-	-	7.3			
			Painting and minor superstructure repairs	-	7.2	-	11.4	-			
			Pier cap (epoxy) sealant	-	-	-	-	0.6			
			Pile Jackets	-	-	-	7.4	-			
			Post-Tensioned Girder Concrete Non-Destructive Evaluation (PT girders)	1.5	-	2.3	-	-			
			Post-Tensioned Girder Concrete Rehabilitation (approaches)	1.0	-	-	-	2.0			
			Post-Tensioned Girder Concrete Rehabilitation (PT girders)	2.5	-	-	4.0	-			
			Post-tensioning Superstructure Replacement (approaches)	-	-	-	-	115.9			
			Replace Barrier gate	-	1.1	-	1.7	-			
			Replace Drive System	-	-	-	-	12.6			
			Replace electrical system	-	-	-	-	14.8			
			Replace Navigation lights	-	-	-	-	0.2			
			Replace submarine cables	-	-	-	5.4	-			
			Span Lock Rehabilitation and Motor Replacement	-	-	-	-	6.2			
			Substructure Rehabilitation (Movable)	-	-	-	-	0.6			
			Tender house repair (e.g. Stairs)	-	0.4	-	-	0.6			
			Special Structure Fund Total				\$ 7.1	\$ 11.2	\$ 9.8	\$ 33.9	\$ 191.8
			Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)				\$ 5.2	\$ 5.2	\$ 5.2	\$ 5.2	\$ 5.2
Eltham Bridge Total				\$ 12.3	\$ 16.5	\$ 15.1	\$ 39.2	\$ 197.0			

**Special Structures - 50-Year Long Term Plan
Fredericksburg District**

By Fiscal Year (\$ in Millions)

Special Structure Type	Special Structure	Program	Work Description	2022 - 2031	2032 - 2041	2042 - 2051	2052 - 2061	2062 - 2071			
Movable Bridge	Gwynn's Island	Special Structure Fund	Approach Span Replacement	-	-	15.7	3.4	-			
			Electrical Rehabilitation and Generator	5.4	-	2.9	5.5	-			
			Epoxy Overlay	-	-	-	-	0.6			
			Feasibility Study for Replacement Options	-	0.4	-	-	-			
			Fender	1.0	-	-	-	-			
			Gate Replacement	-	-	-	-	0.6			
			Impact Repair	-	0.8	-	-	-			
			Mechanical Rehabilitation	4.5	-	-	-	-			
			Replace Navigation Lights	-	0.1	-	-	-			
			Structural Repairs	5.9	-	-	-	-			
			Substructure and Superstructure	-	-	-	-	1.0			
			Swing Span replacement	-	43.9	-	-	-			
			Tender house repair	-	0.4	-	-	-			
			Special Structure Fund Total				\$ 16.8	\$ 45.7	\$ 18.6	\$ 9.0	\$ 2.3
			Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)				\$ 6.4	\$ 6.4	\$ 6.4	\$ 6.4	\$ 6.4
<i>Gwynn's Island Bridge Total</i>				\$ 23.2	\$ 52.1	\$ 25.0	\$ 15.4	\$ 8.7			
Complex Structure	Norris Bridge	Special Structure Fund	Bearing Replacement	2.1	-	-	-	-			
			Existing bridge - Demo and Construction	-	316.3	69.9	-	-			
			Concrete Rehabilitation	-	-	-	-	1.0			
			Concrete Substructure Rehabilitation	0.5	-	-	0.9	-			
			Epoxy Overlay	-	-	-	-	10.5			
			Fracture Critical Element	-	0.9	1.7	1.5	0.8			
			Geotechnical investigation	-	2.0	-	-	-			
			Pile Jacket	3.0	-	3.9	5.3	-			
			Preliminary Engineering - Replacement	2.0	-	-	-	-			
			Preservation	4.0	5.7	6.4	8.1	9.0			
			Rosphalt Overlay Replacement	-	7.1	9.6	-	12.8			
			Scan of river bottom for planning of replacement	-	0.1	-	-	-			
			Structural Steel Rehabilitation	9.4	-	-	-	-			
			Support to retrofit structural steel upon removal of electrical attachment	-	-	-	-	0.3			
			Maintenance (New Bridge)	-	-	-	-	43.3			
Special Structure Fund Total				\$ 20.9	\$ 332.1	\$ 91.4	\$ 15.7	\$ 77.7			
Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)				\$ 36.6	\$ 36.6	\$ 36.6	\$ 36.6	\$ 36.6			
<i>Norris Bridge Total</i>				\$ 57.5	\$ 368.7	\$ 128.0	\$ 52.3	\$ 114.3			
<i>Fredericksburg District Total</i>				\$ 93.1	\$ 437.2	\$ 168.1	\$ 106.8	\$ 320.0			

Special Structures - 50-Year Long Term Plan Northern Virginia District											
By Fiscal Year (\$ in Millions)											
Special Structure Type	Special Structure	Program	Work Description	2022 - 2031	2032 - 2041	2042 - 2051	2052 - 2061	2062 - 2071			
Tunnel	Rosslyn	Special Structure Fund	Cameras (CCTV)	-	0.1	0.2	0.1	-			
			Control Room upgrade	-	0.2	-	0.3	-			
			Emergency	-	0.4	-	0.7	-			
			Fire Detection, Suppression & Safety	-	0.2	-	0.4	-			
			Install Jet Fans with remote monitoring control	-	6.3	-	-	-			
			Generator System power	-	0.3	-	0.5	-			
			Lane Control System	-	0.9	-	1.7	-			
			Mechanical Room Grate System	-	-	-	0.3	-			
			Rehabilitation Project (Structural Repair, Fireproof System, Hanging Tile Replacement, Lighting Replacement) - EB	11.9	-	2.7	16.3	-			
			Rehabilitation Project (Structural Repair, Fireproof System, Hanging Tile Replacement, Lighting Replacement) - WB	11.9	-	2.7	16.3	-			
			Repair/Rehabilitation	-	6.7	-	-	-			
			Replacing fan unit	-	4.1	-	-	-			
			Control lane systems, fan systems, fire systems and electrical systems	-	0.3	0.4	0.6	-			
			Replacement/Rehabilitation - Bridges	-	-	-	-	923.3			
			Variable Message Signs	-	0.5	0.8	-	-			
			Waterproofing Repair	-	1.6	-	-	-			
			Special Structure Fund Total				\$ 23.9	\$ 21.6	\$ 6.8	\$ 37.2	\$ 923.3
			Maintenance and Operations Program Fund Total (labor, equipment, utilities, inspection and materials)				\$ 4.3	\$ 4.3	\$ 4.3	\$ 4.3	\$ 4.3
			Rosslyn Tunnel Total				\$ 28.2	\$ 25.9	\$ 11.0	\$ 41.5	\$ 927.6
			Northern Virginia District Total				\$ 28.2	\$ 25.9	\$ 11.0	\$ 41.5	\$ 927.6