SHEN

GIP Report

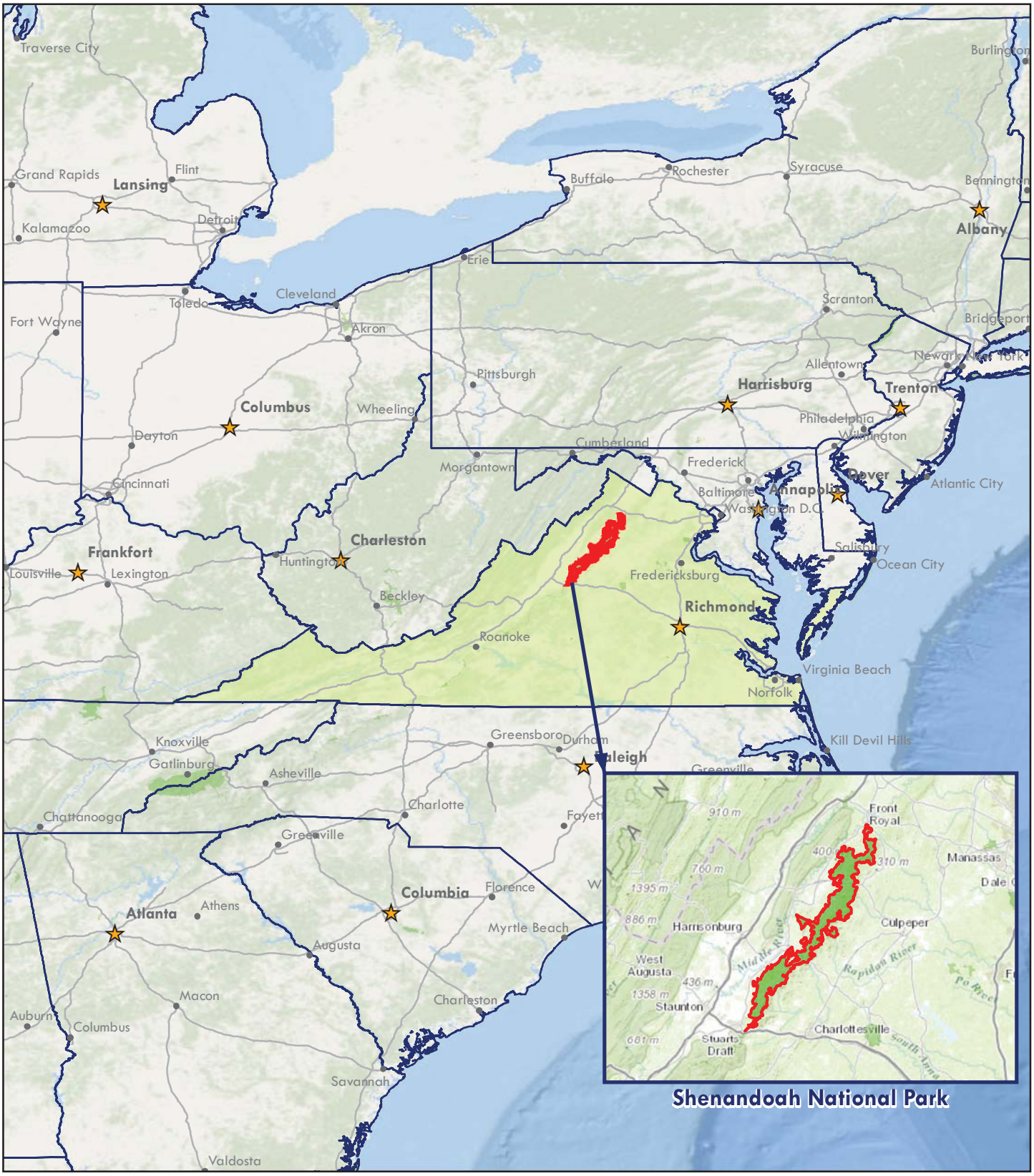
NPS Guardwall/Rail Inventory Program
Shenandoah National Park

Federal Lands Highway
Road Inventory Program

Prepared By:
Federal Highway Administration
Eastern Federal Lands Highway Division
Road Inventory Program (RIP)

Data Collection Date: September 2010
Report Date: December 2015

Shenandoah National Park
in
Virginia



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Introduction

Shenandoah National Park

Federal Lands Highway
Road Inventory Program

Introduction

In support of the NPS Facility Management Software System (FMSS) asset management program, FHWA- contracted staff completed the Guardwall/Rail Inventory Program (GIP) inspections within selected National Park Service (NPS) units between 2010 and 2011. This inventory provides static information to FMSS regarding barrier characteristics such as height, length and location, as well as dynamic information about the condition of the barrier. In addition, when barrier deficiencies were identified, repair recommendations and estimated costs, suitable for use as FMSS work orders, were generated to bring the barrier back to its "new" condition.

In over 30 parks, numerous crashworthy barriers inspected maybe in poor condition by simply applying a new overlay of asphalt without milling previous layers. In instances such as this, basically the critical element of barrier height decreased as the elevation of the roadway increased. Resulting work orders were drafted to raise w-beam barriers or to remove and reset stone masonry barriers to their original design height.

This inventory provides static information and a condition assessment of each barrier inventoried. In addition, when barrier deficiencies were identified, repair recommendations and estimated costs were drafted to bring the barrier back to its "new" condition.

Drafted work orders have been classified as being either deferred maintenance or capital improvement. This classification is based on the type of work recommended, as defined below.

- *Deferred Maintenance* can be classified as repair or replace in kind. Work done to the barrier does not include any upgrading.
- *Capital Improvement* can be classified as upgrading part of or the entire existing barrier. Typically the upgrade will be from a non-crashworthy to a crashworthy device. Other examples of capital improvements would be the addition of a curb to improve drainage.

Care was taken to maintain the cultural significance of historic barriers located in the NPS. While historic traffic barriers likely would not withstand current crashworthiness performance criteria, they are considered by the NPS to be important resources for the historic and/or cultural value. Historic barriers may be "character defining features" that contribute to the cultural significance of historic roadways. As such, these barriers have resource value in and of themselves which may be somewhat independent from their functionality as barriers as previously defined. The consideration of both the crashworthiness and resource value of historic barriers was a significant challenge for the NPS and the FHWA when designing the GIP, to the point that for historic stone masonry barriers, the barrier height had to be more than 6-in below its design height before any work would be considered to deal with height issues. To preserve historic stone masonry barriers, typical drafted work orders for historic barriers were to remove and reset the barrier to the barrier's original design height on a concrete footer, as compared to replacing it with a similar crashworthy barrier.

This report is organized in a tiered approach from the broad park overview perspective (Tier 1) to a route overview perspective (Tier 2), then down to the details of each barrier (Tier 3). Tier 1 presents park barrier location maps and an overall park-specific summary narrative of the results of the guardwall/rail inventory program. Tier 2 presents route overview maps with associated barrier summary information. Tier 3 presents individual barrier information in a one-page detailed format, including a photograph of each barrier. Appendix A provides a condensed summary of guardwall/rail inventory definitions and assessment categories to assist in reading this report.

Park Barrier Location Maps

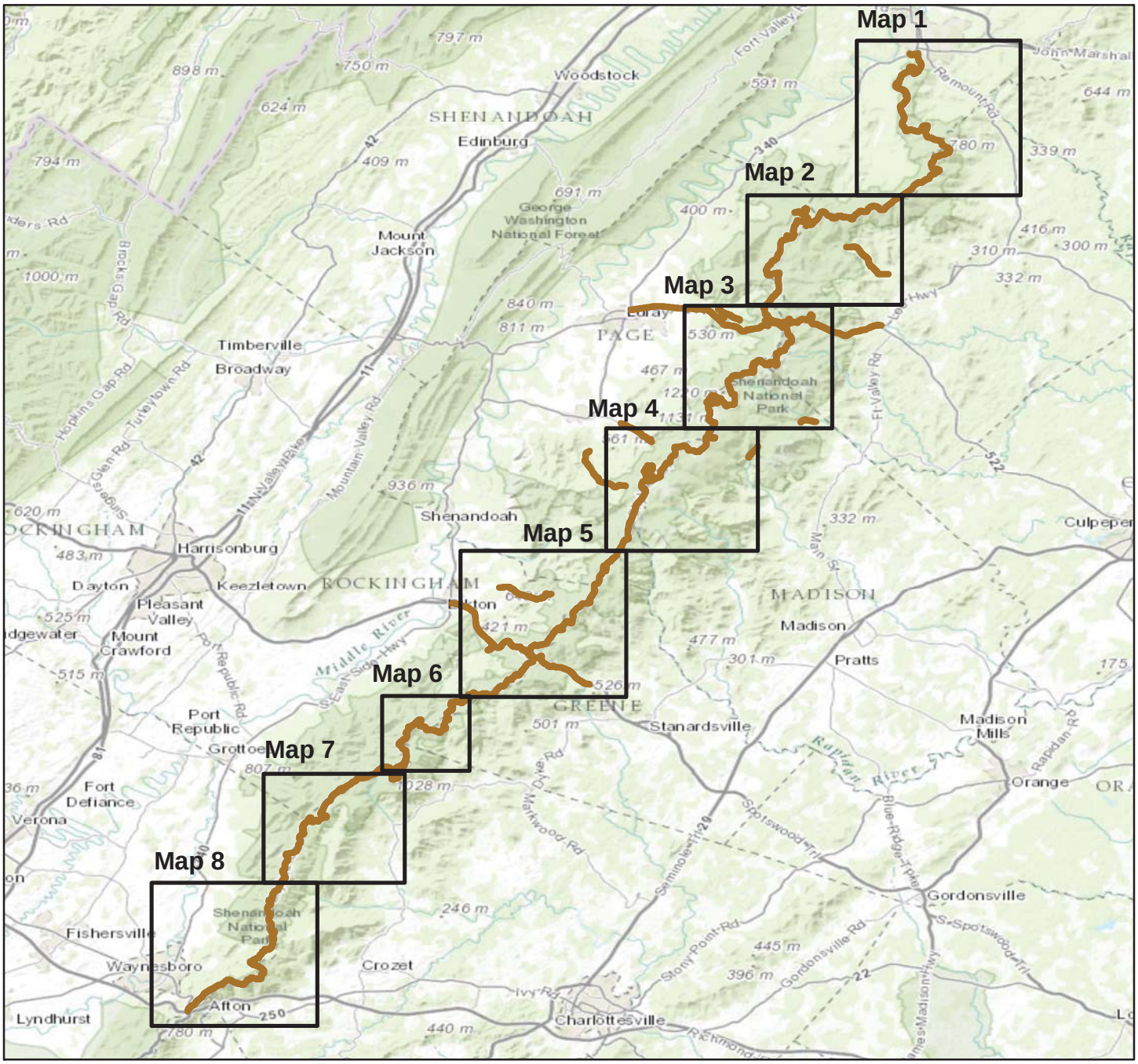
Shenandoah National Park

Federal Lands Highway
Road Inventory Program

Shenandoah National Park

BARRIER LOCATION MAP

Key Map



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

RIP Collected Routes

Miles

0 10 20

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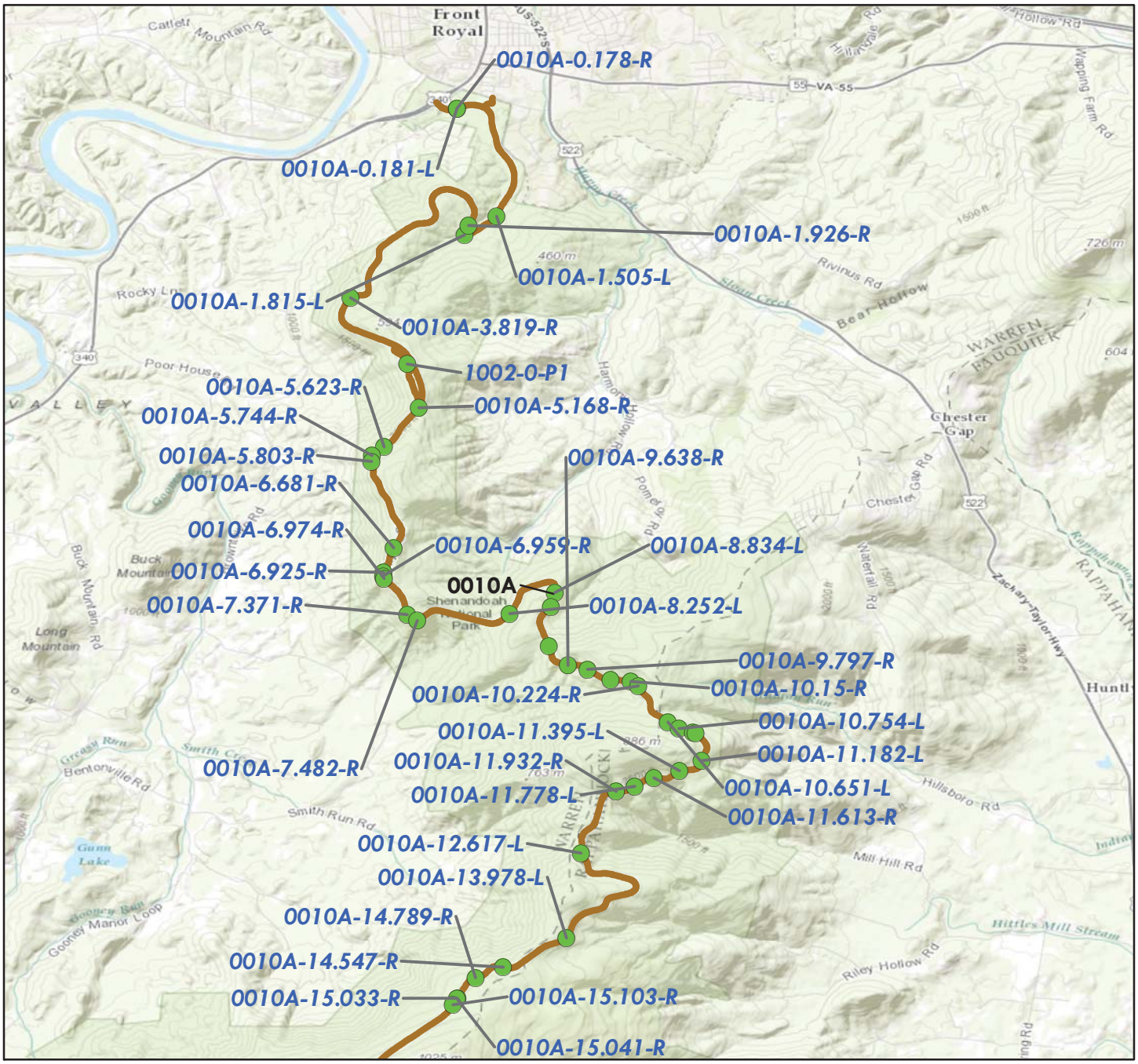
Shenandoah National Park

BARRIER LOCATION MAP

Map 1



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier Locations (Not all labeled)

RIP Collected Routes

Miles

0 1 2

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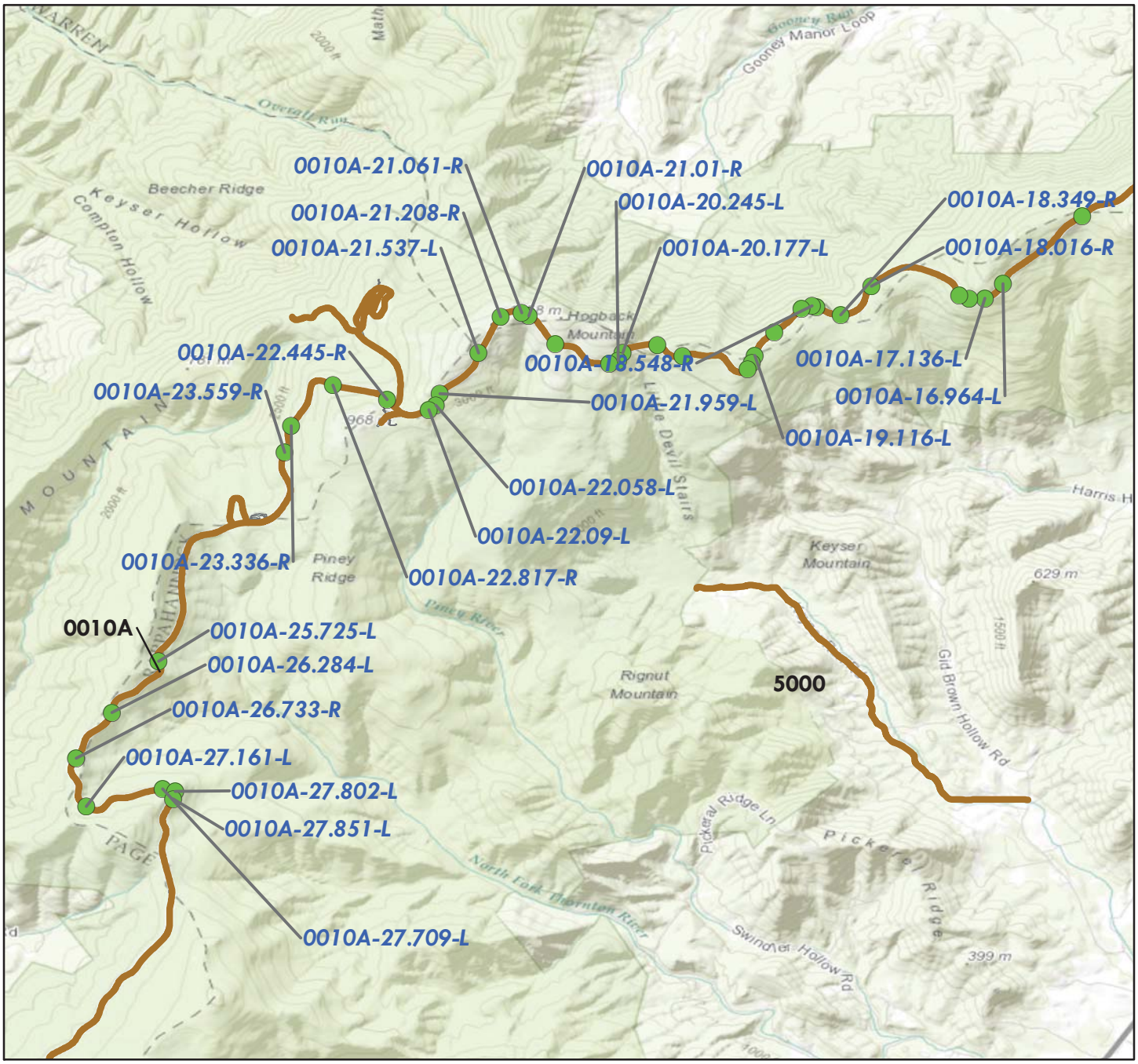
Shenandoah National Park

BARRIER LOCATION MAP

Map 2



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Barrier Locations (Not all labeled)

RIP Collected Routes

Miles

0 1 2

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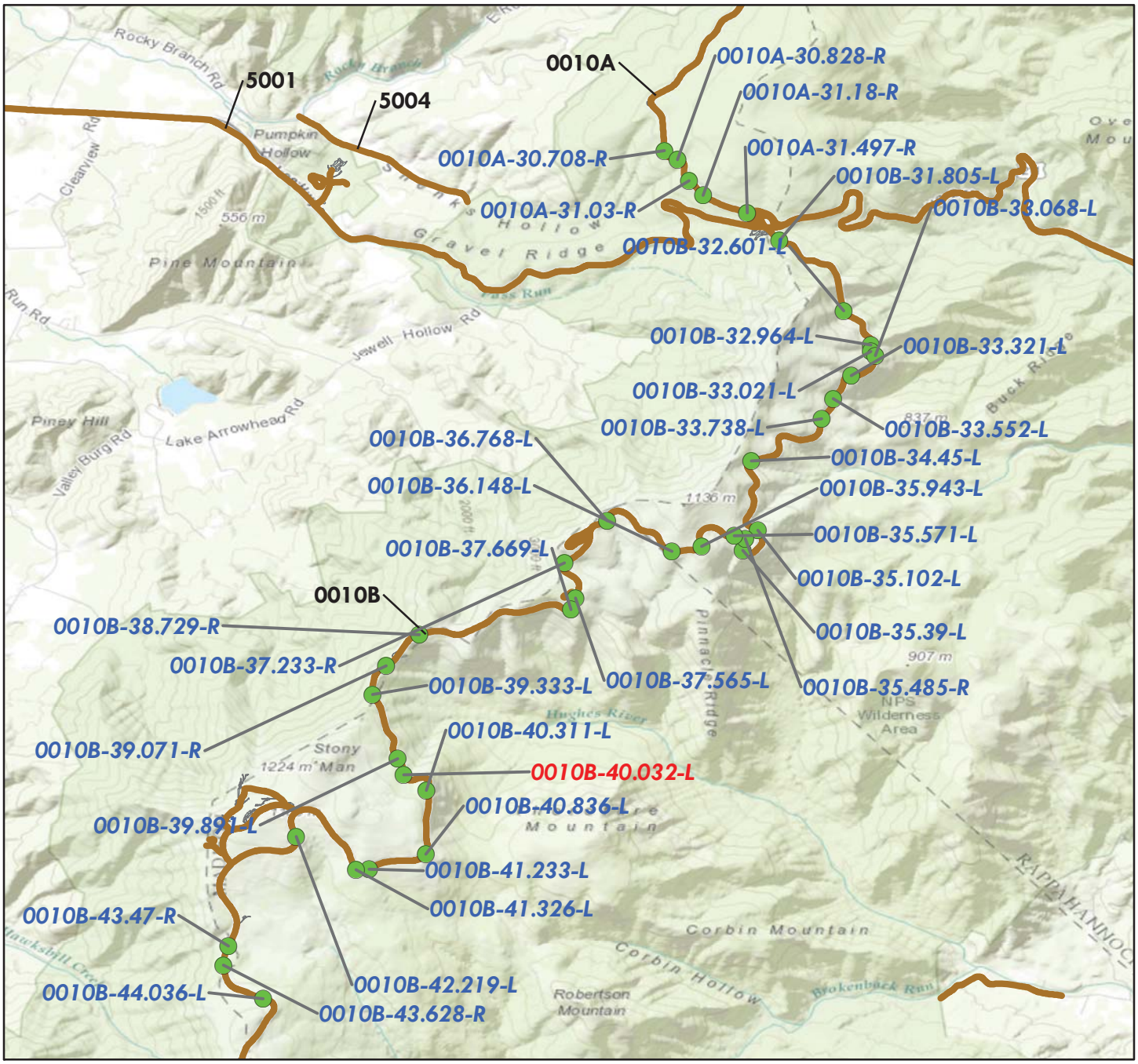
Shenandoah National Park

BARRIER LOCATION MAP

Map 3



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier Locations

RIP Collected Routes

Miles

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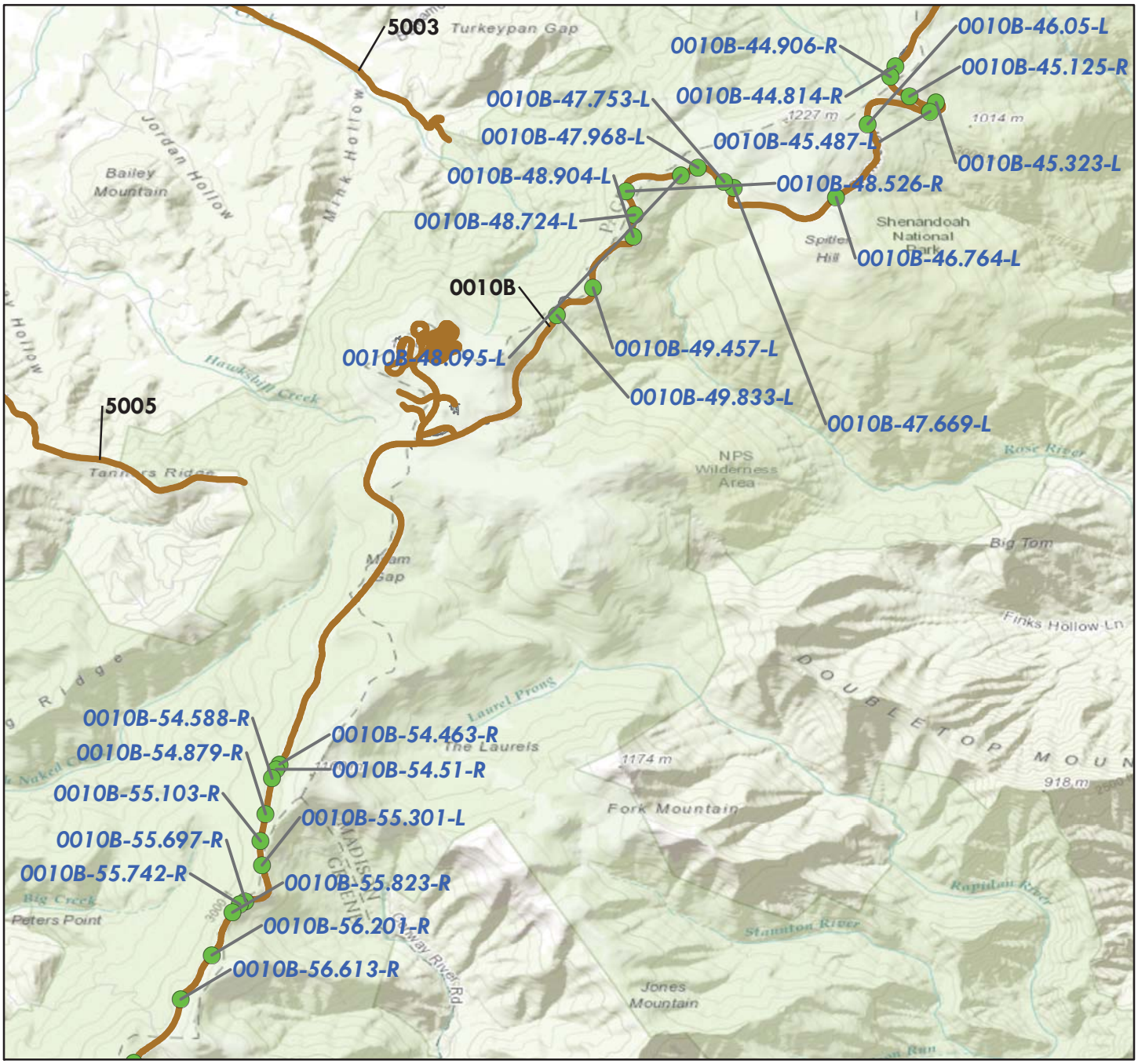
Shenandoah National Park

BARRIER LOCATION MAP

Map 4



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier Locations

RIP Collected Routes

Miles

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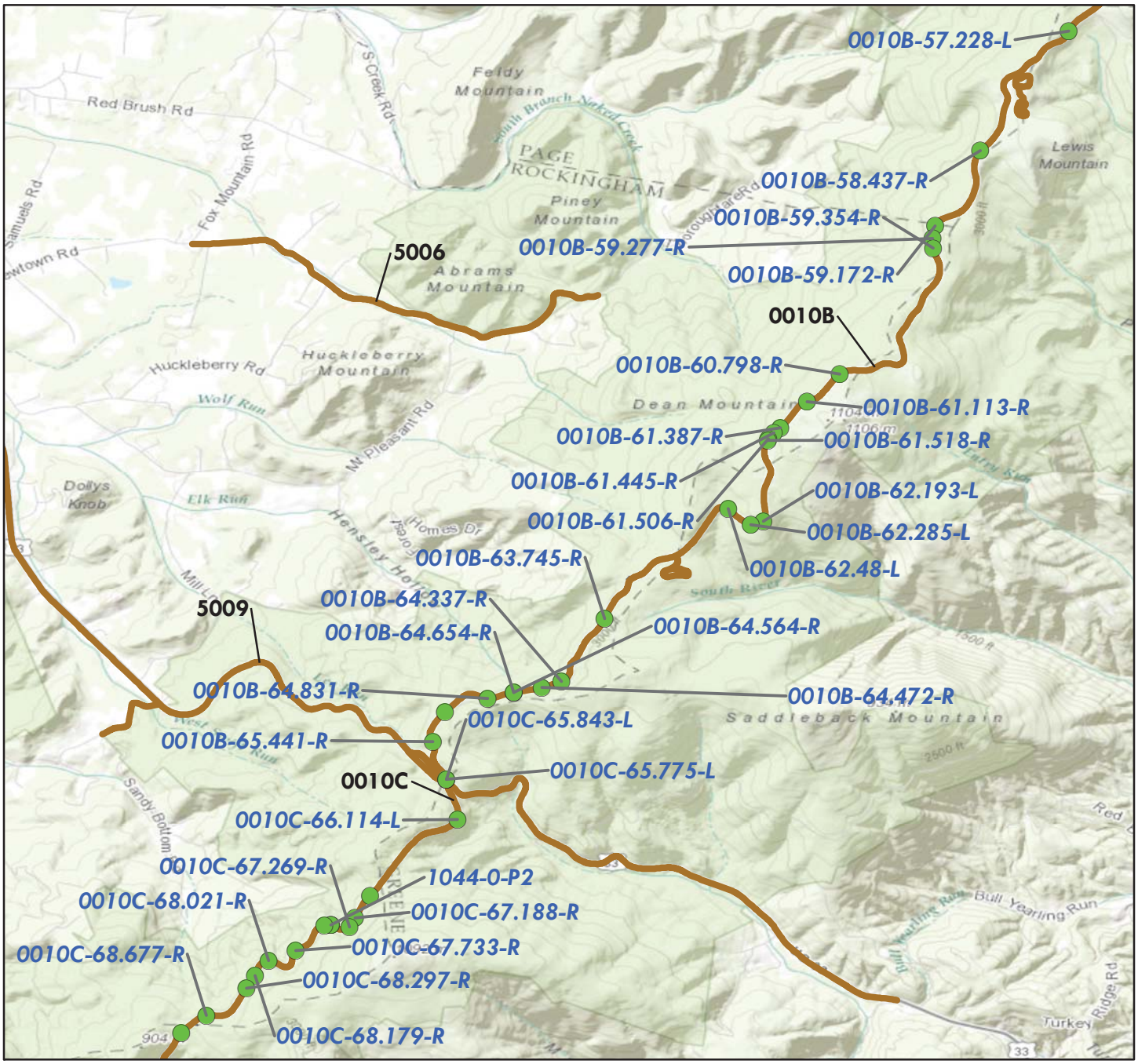
Shenandoah National Park

BARRIER LOCATION MAP

Map 5



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

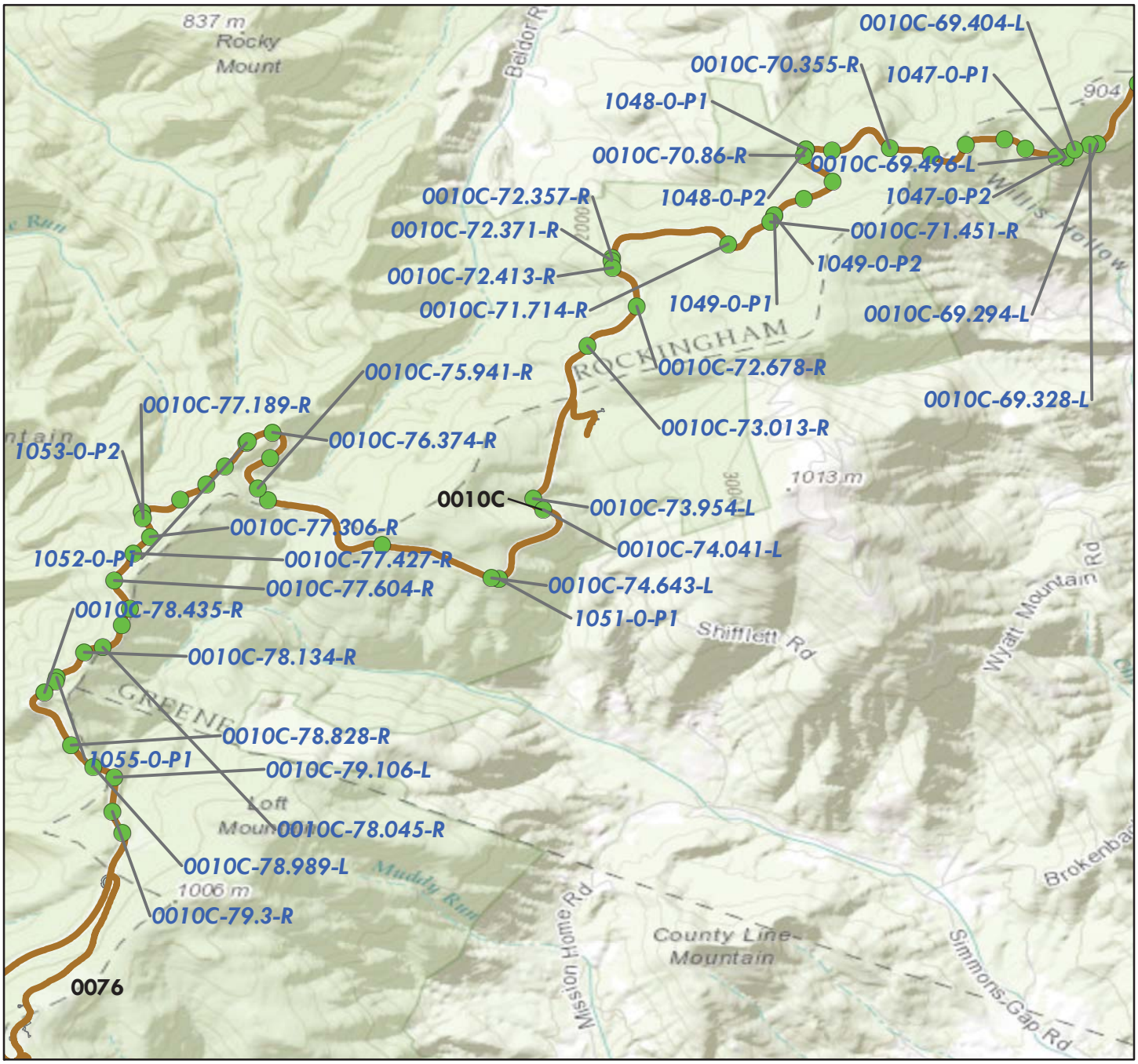
Barrier Locations

RIP Collected Routes

Shenandoah National Park

BARRIER LOCATION MAP

Map 6



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Barrier Locations (Not all labeled)

RIP Collected Routes

Miles

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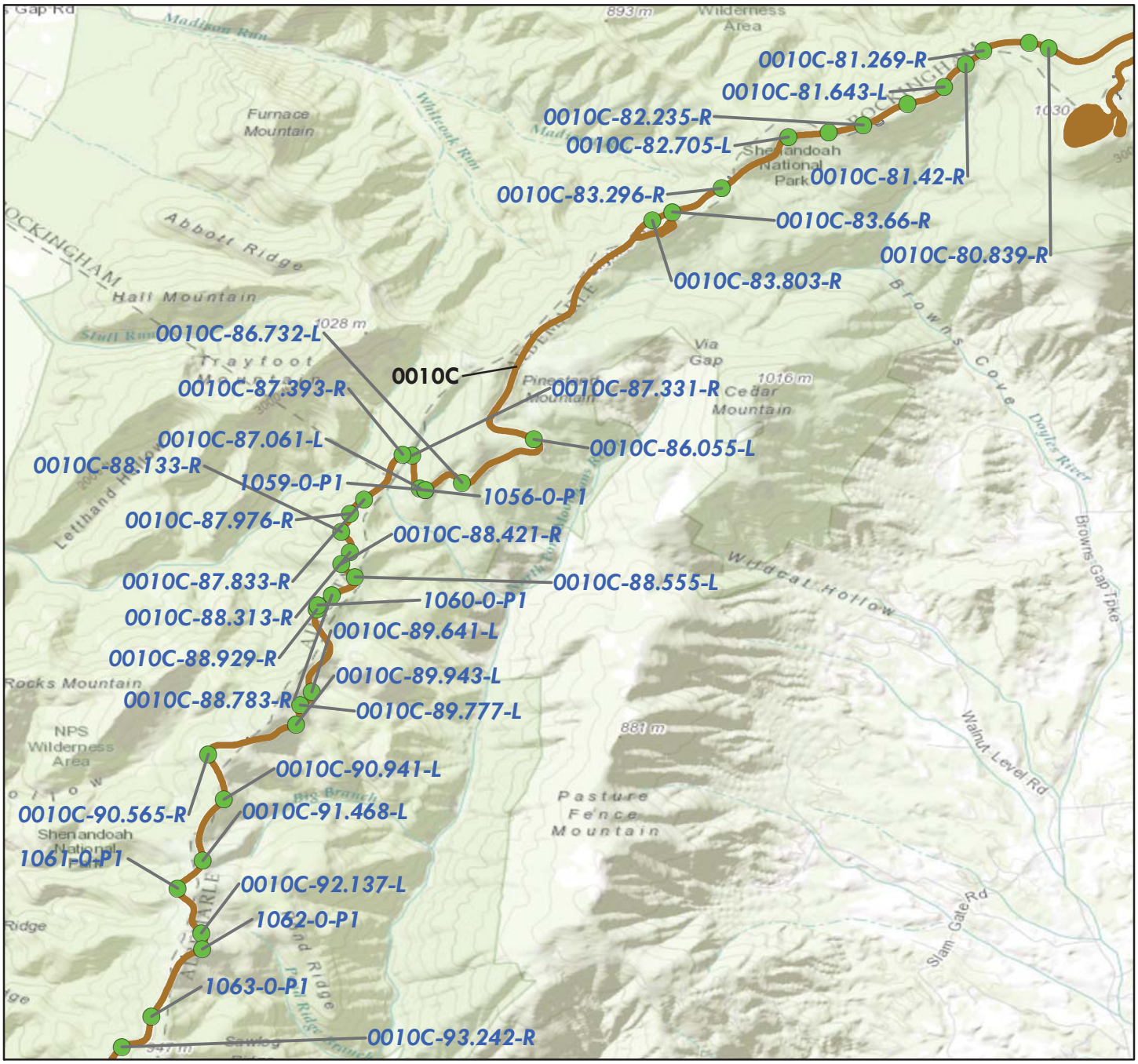
Shenandoah National Park

BARRIER LOCATION MAP

Map 7



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier Locations

RIP Collected Routes

Miles

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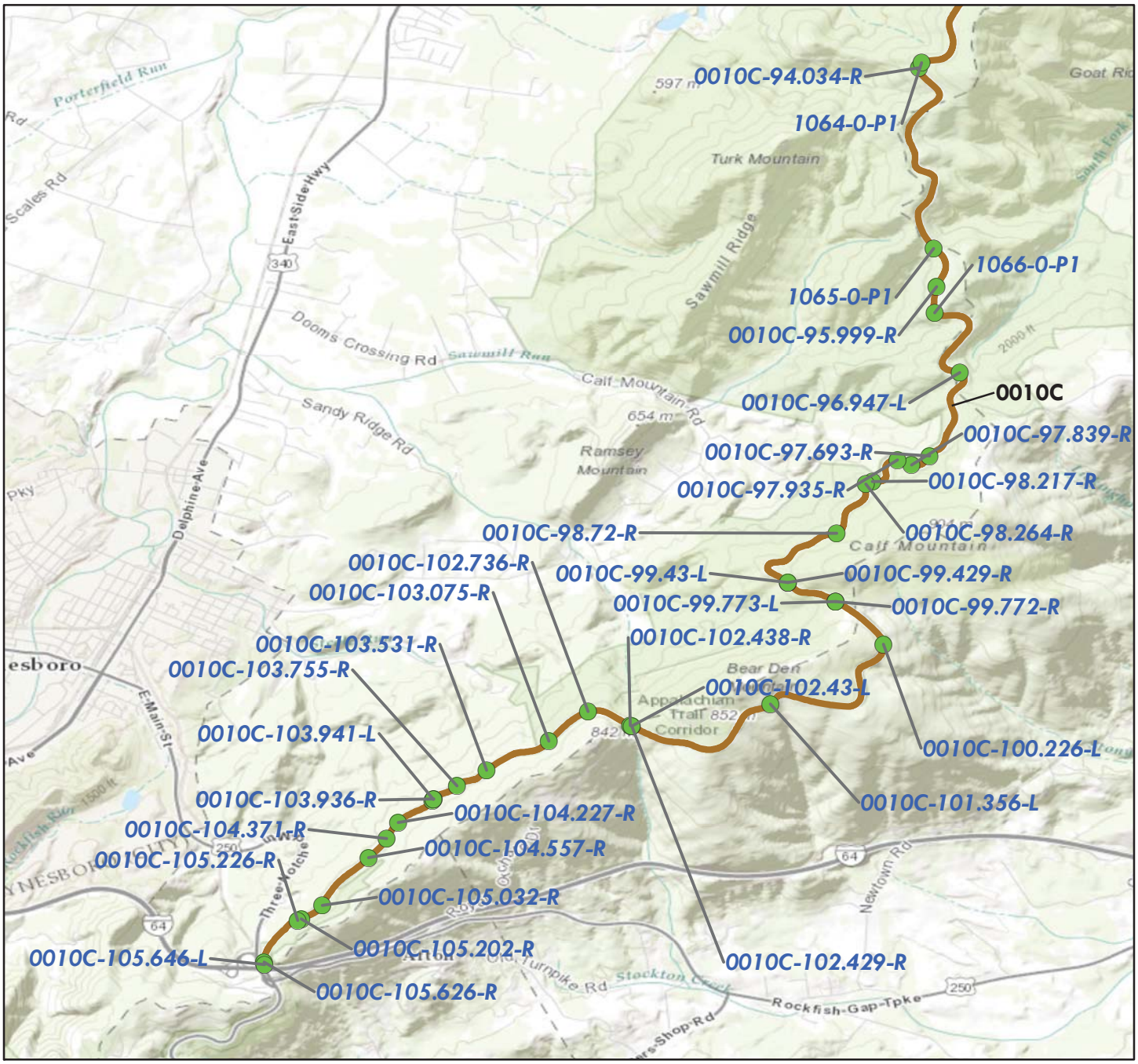
Shenandoah National Park

BARRIER LOCATION MAP

Map 8



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier Locations

RIP Collected Routes

Miles

0 1 2

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Tier 1
Park Barrier Overview

Shenandoah National Park

Federal Lands Highway
Road Inventory Program

Parkwide Summary: Shenandoah National Park

Initial barrier inspections were conducted at Shenandoah National Park in 2010, and encompassed all known barriers associated with Park roadways. In general, walls are not included in this assessment, but were inspected for Shenandoah National Park in 2007 under a separate effort as part of the Retaining Wall Inventory Program (WIP). A report for WIP is available under separate cover.

All paved roadways and parking areas listed in the RIP Route Identification Report were inspected for barriers.

The following tables provide an overview of the findings of this inspection and assessment effort. In all, 314 barriers were inventoried on the routes listed below.

Table 1: Number of Barriers by Route

Route Number	Route Name	No. of Barriers
0010A	SKYLINE DRIVE (NORTH)	84
0010B	SKYLINE DRIVE (CENTRAL)	81
0010C	SKYLINE DRIVE (SOUTH)	125
1002	DICKEY RIDGE VISITOR CENTER PARKING	1
1044	SWIFT RUN OVERLOOK PARKING	2
1047	BACON HOLLOW OVERLOOK PARKING	2
1048	EATON HOLLOW OVERLOOK PARKING	2
1049	ROCKY MOUNT OVERLOOK PARKING	2
1051	LOFT MOUNTAIN OVERLOOK PARKING	1
1052	TWO MILE RUN OVERLOOK PARKING	1
1053	BROWN MOUNTAIN OVERLOOK PARKING	2
1054	IVY CREEK OVERLOOK PARKING	1
1055	ROCKY TOP OVERLOOK PARKING	1
1056	BIG RUN OVERLOOK PARKING	1
1059	TRAYFOOT MOUNTAIN OVERLOOK PARKING	1
1060	HORSEHEAD OVERLOOK PARKING	1
1061	RIPRAP OVERLOOK PARKING	1
1062	MOORMANS RIVER OVERLOOK PARKING	1
1063	CRIMORA LAKE OVERLOOK PARKING	1
1064	TURK MOUNTAIN OVERLOOK PARKING	1
1065	SAWMILL RUN OVERLOOK PARKING	1
1066	SAWMILL RIDGE OVERLOOK PARKING	1

Due to the different GIP assessment criteria of barriers based on their intended use, barriers were classified as being either traffic barriers or non-traffic barriers.

- *Traffic* barriers are physical devices intended to keep vehicles or people from straying into dangerous or off-limits areas. For the purpose of this inventory, a traffic barrier is categorized as roadside hardware placed longitudinally, excluding pedestrian railing and fencing.

- *Non-traffic* barriers provide a physical delineation between public access areas and restricted or protected areas in locations such as a parking lot, viewpoint or turnout. **Non-traffic barriers which inhibit access of vehicles are included in this report; non-traffic barriers which only inhibit access of pedestrians or bicyclists are not included. For the purpose of this inventory, non-traffic barriers are guidewalls and guiderails. Note: rocks, stones, boulders, fences or curbs were excluded from this inventory.**

There are instances in parks where a single barrier can switch between being classified as a traffic barrier and a non-traffic barrier. Such instances typically occur at pullouts, where a traffic barrier along the road will continue through the pullout without interruption. In such instances, the traffic barrier and non-traffic barrier were assessed using different criteria. Due to the different criteria, the GIP database was designed to record the traffic barrier and non-traffic barrier as multiple distinct barriers, even though to the eye, they appear as one barrier. Other instances where a single barrier is split into multiple barriers would be when the barrier is placed continuously along two legs of an intersection, so that one portion of the barrier may be on one road and the remaining portion of the barrier is on a different road.

Table 2: Number of Barriers by Function

Barrier Function	No. of Barriers
TRAFFIC	269
NON-TRAFFIC	45

The following table shows the barrier types that were inventoried and assessed.

Table 3: Number of Barriers by Type

Primary Barrier Type	No. of Barriers
Other: Dry-Stack Stone W/O Core Wall	4
Stone Masonry Without Concrete Core Wall	91
Steel-Backed Log Rail	6
Other: Log Rail On Log Posts	2
Other: Timber Rail On Concrete Posts	2
Steel-Backed Timber Without Blockout	14
Stone Masonry With Concrete Core Wall	195

The following table shows the number of barriers by one of four categories of recommended action along with associated work order costs and the number of barriers that are in each recommended action. All work order information is presented for individual barriers, even though some work orders were not accepted by the Park. Some work orders were later combined to simplify route deferred maintenance requests.

Table 4: Number of Barriers by Recommended Action and Associated 2008 Cost

Recommended Action	Repair Costs*	No. of Barriers
No Action	$0	136
Monitor	$0	0
Repair	$37,900,343	176
Replace	$30,828	2
Totals	**$37,931,171**	**314**

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

The following table categorizes the number of barriers that fall into one of ten cost ranges, based on the prepared work orders. The locations, work descriptions, and cost of the recommended repairs for these barriers are listed by individual barrier in Tier 3 of this report.

Table 5: Number of Barriers Grouped by Associated 2008 Cost

Cost Range*	No. of Barriers
$0	136
$1 - $25,000	113
$25,001 - $50,000	5
$50,001 - $100,000	9
$100,001 - $250,000	11
$250,001 - $500,000	14
$500,001 - $1,000,000	12
$1,000,001 - $2,000,000	13
$2,000,001 - $3,000,000	1
$3,000,001 - $4,000,000	0
Total Number of Barriers	**314**

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Data for end terminals was collected on the GIP data collection form and indicates if an end terminal meets current crashworthiness standards. End terminals are specially designed barrier ends that attenuate impacts to the ends of barriers. This is supplemental information that WASO designed into the inventory program.

A total of 38 end terminals were found on barriers at the Park. There are generally a greater number of end treatments than actual barriers because end treatments are located at both the beginning and end of each barrier.

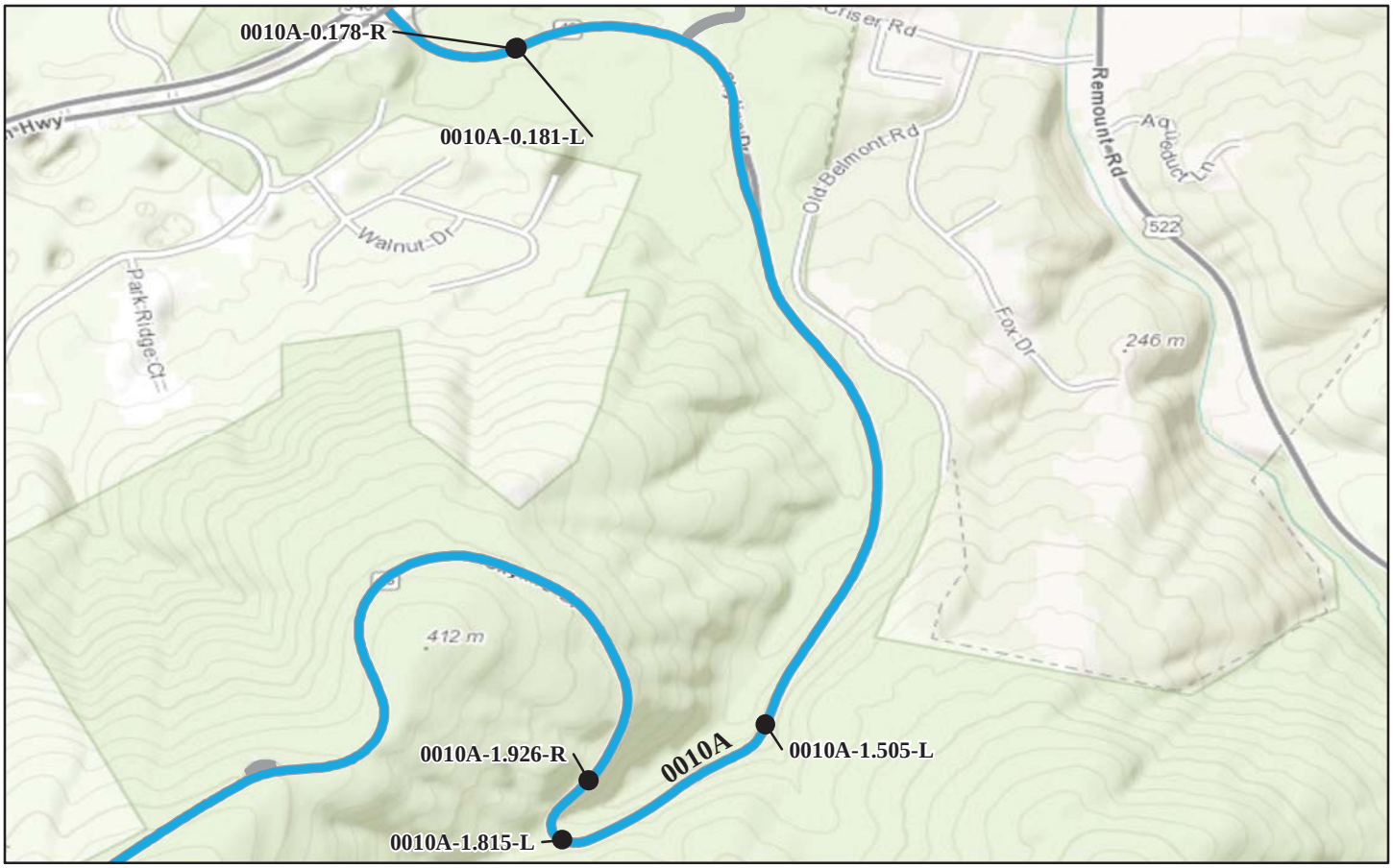
Tier 2
Route Barrier Overview

Shenandoah National Park

Federal Lands Highway
Road Inventory Program

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)



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Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010A-0.178-R 9/12/2010	256	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010A-0.181-L 9/12/2010	247	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010A-1.505-L 9/12/2010	252	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010A-1.815-L 9/12/2010	253	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010A-1.926-R 9/12/2010	542	STEEL-BACKED LOG RAIL	SBT/LOG FLARED	SBT/LOG FLARED	$6,380.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010A-3.819-R 9/12/2010	2,244	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$3,097.00
SHEN-0010A-5.168-R 9/12/2010	2124	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,932.00
SHEN-0010A-5.623-R 9/12/2010	637	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010A-5.744-R 9/12/2010	311	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010A-5.803-R 9/12/2010	3116	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,426.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010A-6.681-R 9/12/2010	1,307	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$1,942.00
SHEN-0010A-6.925-R 9/16/2010	105	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$93,363.00
SHEN-0010A-6.959-R 9/16/2010	79	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$35,970.00
SHEN-0010A-6.974-R 9/15/2010	870	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,107.00
SHEN-0010A-7.371-R 9/15/2010	235	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010A-7.482-R 9/15/2010	372	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010A-8.252-L 9/15/2010	1616	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,932.00
SHEN-0010A-8.834-L 9/15/2010	619	OTHER: DRY-STACK STONE W/O CORE WALL	NONE	NONE	$49,995.00
SHEN-0010A-8.972-L 9/15/2010	334	OTHER: DRY-STACK STONE W/O CORE WALL	NONE	NONE	$77,028.00
SHEN-0010A-9.386-R 9/15/2010	1200	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$1,942.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

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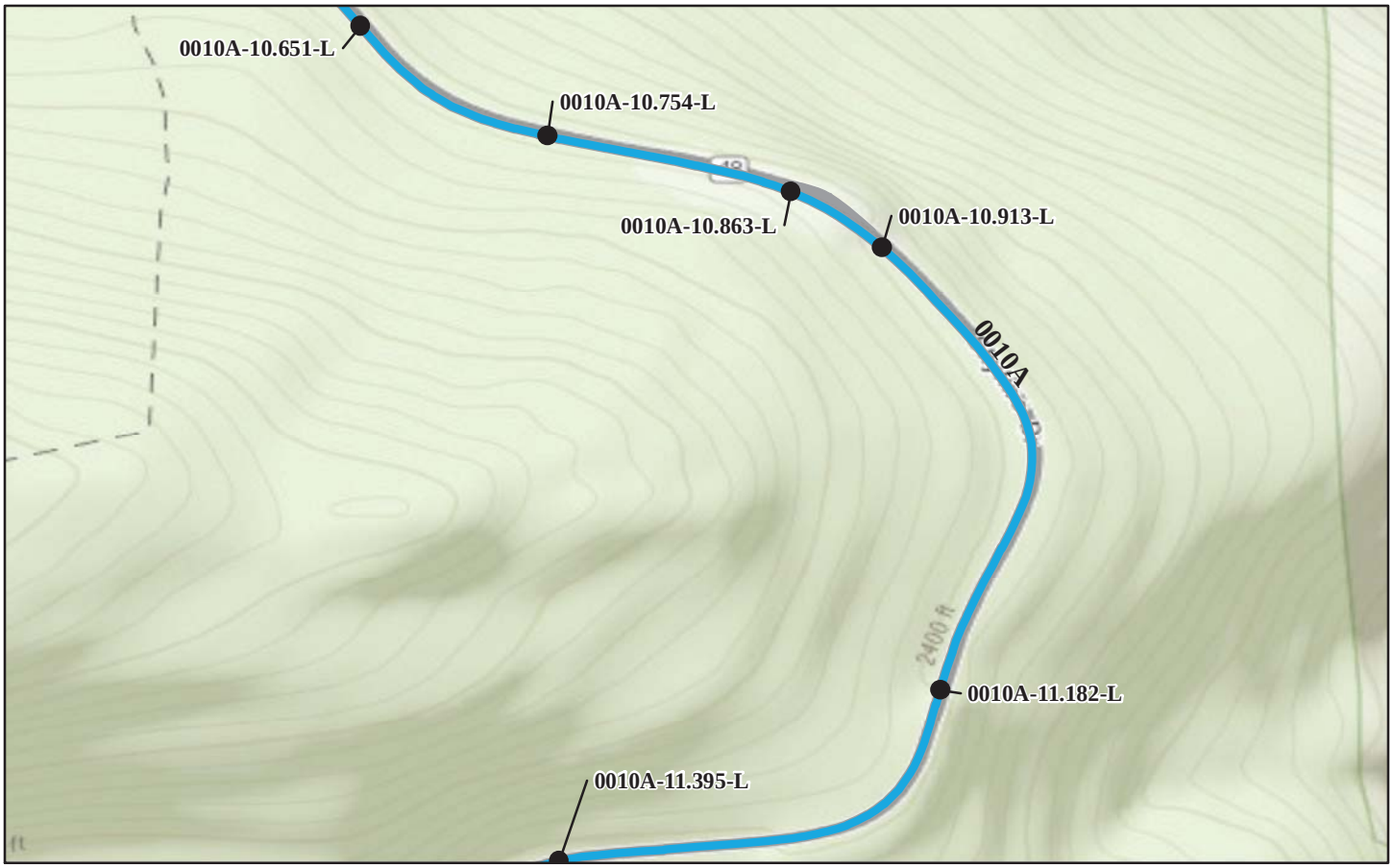
Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010A-9.638-R 9/15/2010	416	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$1,777.00
SHEN-0010A-9.797-R 9/15/2010	445	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,272.00
SHEN-0010A-9.997-R 9/15/2010	350	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010A-10.150-R 9/15/2010	307	OTHER: DRY-STACK STONE W/O CORE WALL	NONE	NONE	$55,825.00
SHEN-0010A-10.224-R 9/15/2010	160	OTHER: DRY-STACK STONE W/O CORE WALL	NONE	NONE	$9,543.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)



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Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment Begin	 End	*Repair Cost
SHEN-0010A-10.651-L 9/15/2010	341	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$1,942.00
SHEN-0010A-10.754-L 9/15/2010	601	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,250.00
SHEN-0010A-10.863-L 9/15/2010	127	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$1,788.00
SHEN-0010A-10.913-L 9/15/2010	1152	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,602.00
SHEN-0010A-11.182-L 9/15/2010	703	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$3,262.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010A-11.395-L 9/15/2010	974	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$4,692.00
SHEN-0010A-11.613-R 9/15/2010	285	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,107.00
SHEN-0010A-11.778-L 9/15/2010	540	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$3,240.00
SHEN-0010A-11.932-R 9/15/2010	298	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,437.00
SHEN-0010A-12.617-L 9/15/2010	703	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$6,991.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010A-13.978-L 9/14/2010	340	STEEL-BACKED LOG RAIL	NONE	SBT/LOG BURIED	$0.00
SHEN-0010A-14.547-R 9/14/2010	1174	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$11,704.00
SHEN-0010A-14.789-R 9/14/2010	596	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,932.00
SHEN-0010A-15.033-R 9/14/2010	116	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$155,458.00
SHEN-0010A-15.041-R 9/14/2010	286	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010A-15.103-R 9/14/2010	117	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$237,958.00
SHEN-0010A-16.213-L 9/14/2010	1989	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$13,508.00
SHEN-0010A-16.964-L 9/14/2010	769	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,107.00
SHEN-0010A-17.136-L 9/14/2010	593	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,756.00
SHEN-0010A-17.235-L 9/14/2010	380	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$1,942.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

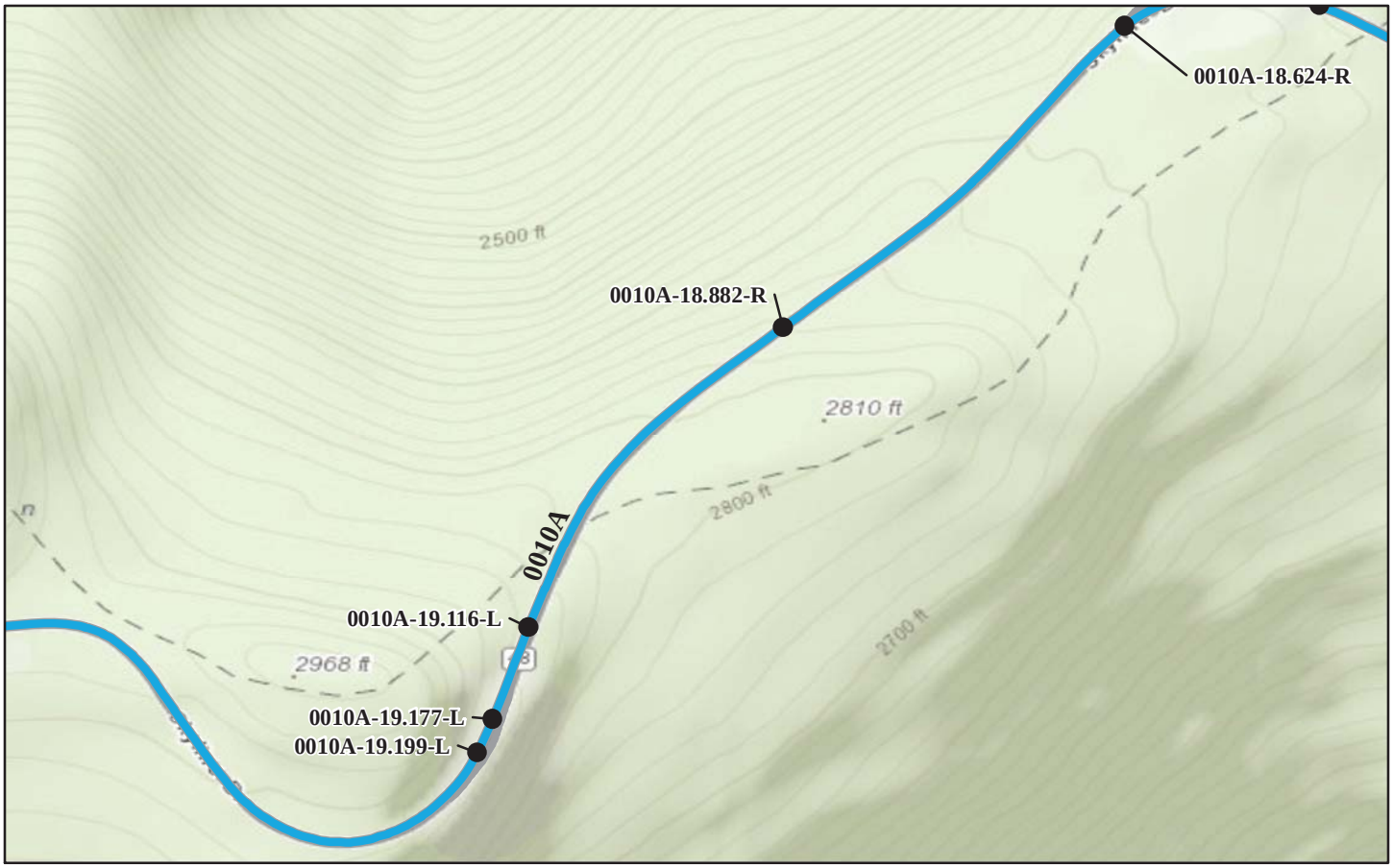
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010A-17.307-L 9/14/2010	499	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$3,229.00
SHEN-0010A-18.016-R 9/14/2010	477	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,910.00
SHEN-0010A-18.349-R 9/14/2010	525	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$3,064.00
SHEN-0010A-18.521-R 9/14/2010	140	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$201,080.00
SHEN-0010A-18.548-R 9/14/2010	403	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$545,133.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010A-18.624-R 9/14/2010	53	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$73,618.00
SHEN-0010A-18.882-R 9/14/2010	487	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$4,197.00
SHEN-0010A-19.116-L 9/14/2010	342	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$4,065.00
SHEN-0010A-19.177-L 9/14/2010	118	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$1,788.00
SHEN-0010A-19.199-L 9/14/2010	716	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$5,154.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

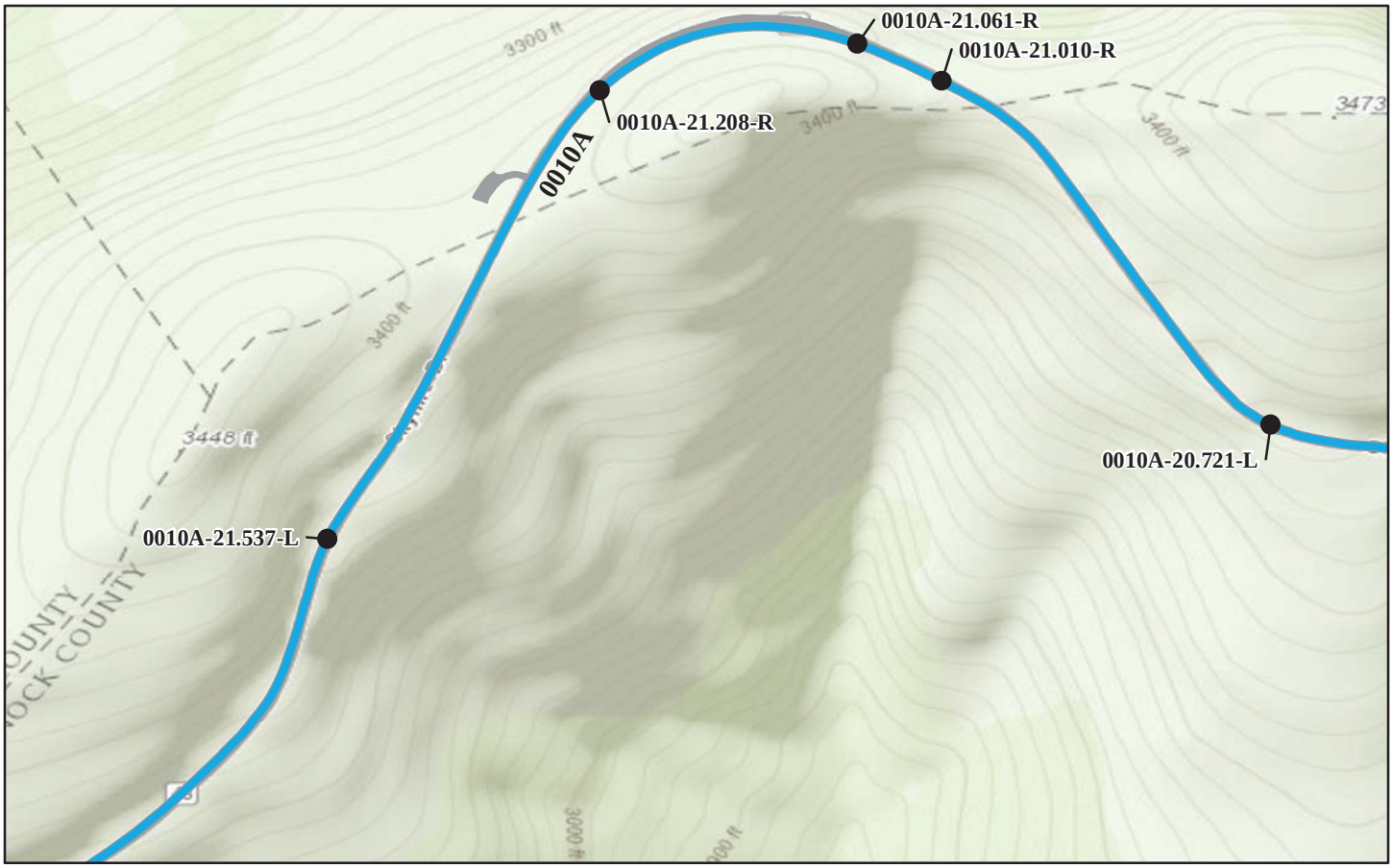
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010A-19.734-L 9/14/2010	528	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,910.00
SHEN-0010A-19.934-R 9/14/2010	875	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$3,680.00
SHEN-0010A-20.177-L 9/13/2010	357	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$5,209.00
SHEN-0010A-20.245-L 9/13/2010	307	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$10,027.00
SHEN-0010A-20.303-L 9/13/2010	515	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$7,508.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010A-20.721-L 9/13/2010	1,381	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$3,240.00
SHEN-0010A-21.010-R 9/13/2010	271	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$3,922.00
SHEN-0010A-21.061-R 9/13/2010	778	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$7,211.00
SHEN-0010A-21.208-R 9/13/2010	92	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010A-21.537-L 9/13/2010	1237	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$7,733.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

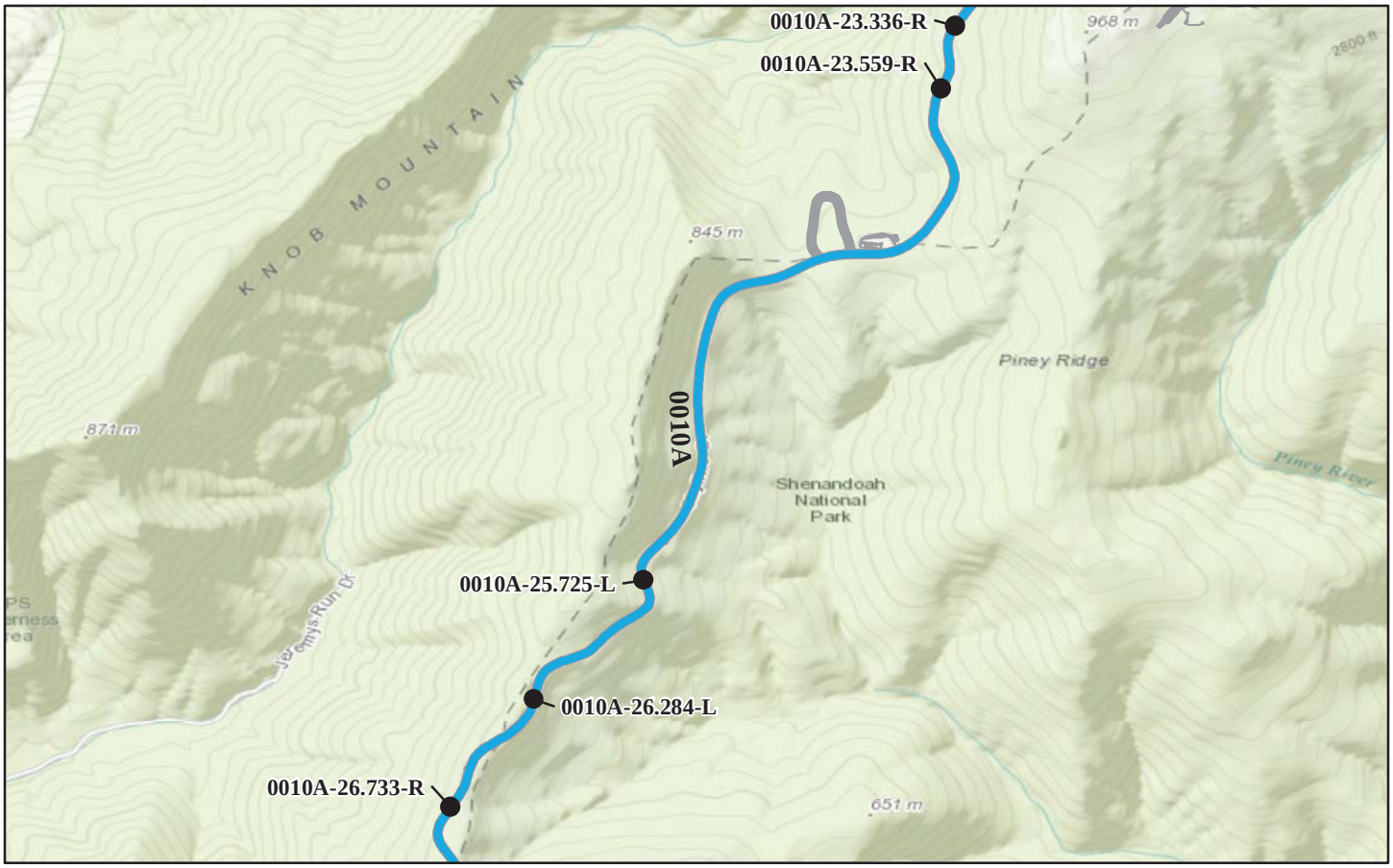
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010A-21.959-L 9/13/2010	525	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$6,012.00
SHEN-0010A-22.058-L 9/13/2010	171	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$9,532.00
SHEN-0010A-22.090-L 9/13/2010	354	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$3,097.00
SHEN-0010A-22.445-R 9/13/2010	733	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$7,205.00
SHEN-0010A-22.817-R 9/13/2010	1141	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,734.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)



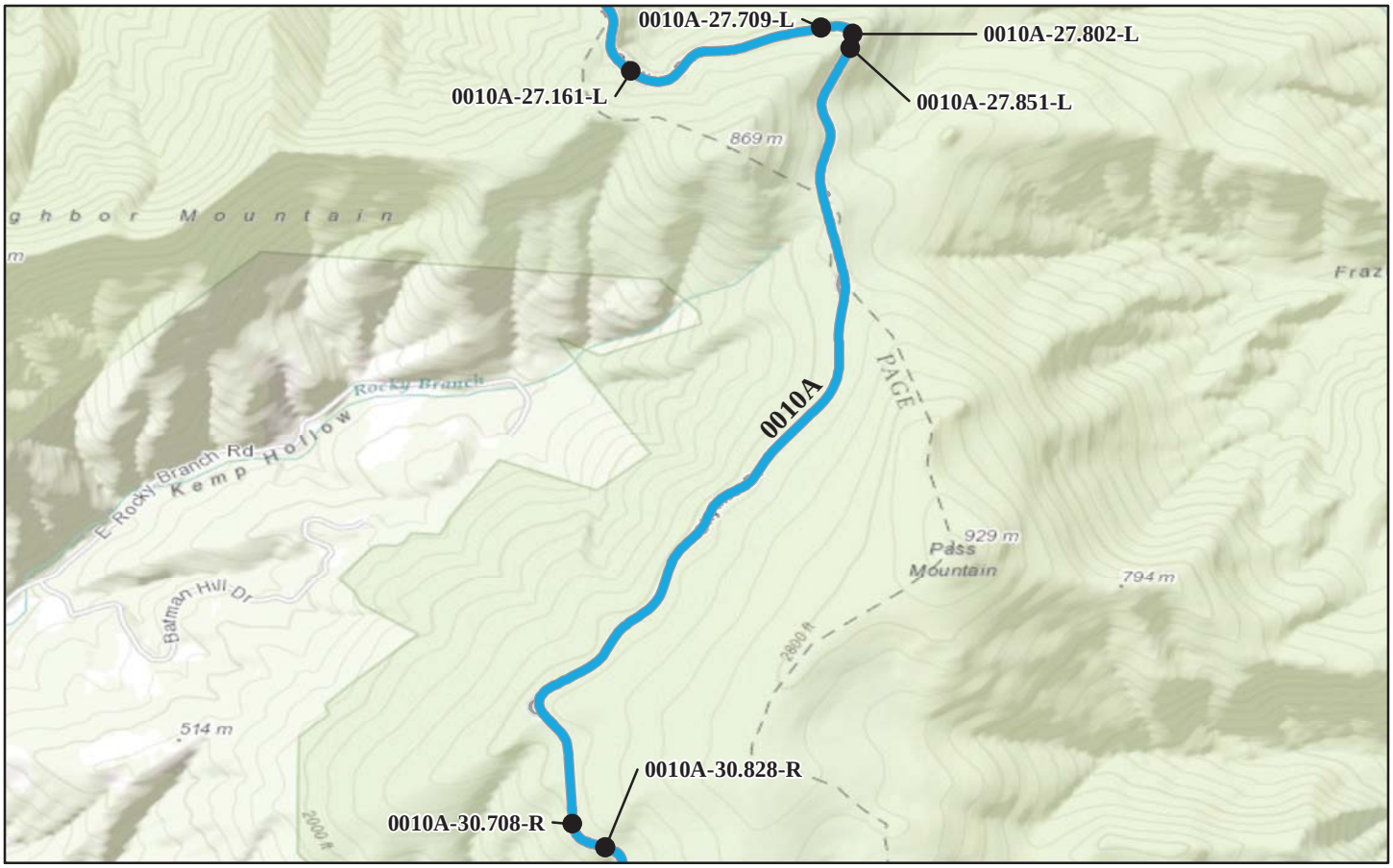
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010A-23.336-R 9/13/2010	483	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,404.00
SHEN-0010A-23.559-R 9/13/2010	1573	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$11,814.00
SHEN-0010A-25.725-L 9/13/2010	652	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,932.00
SHEN-0010A-26.284-L 9/13/2010	803	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,602.00
SHEN-0010A-26.733-R 9/13/2010	692	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,107.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)



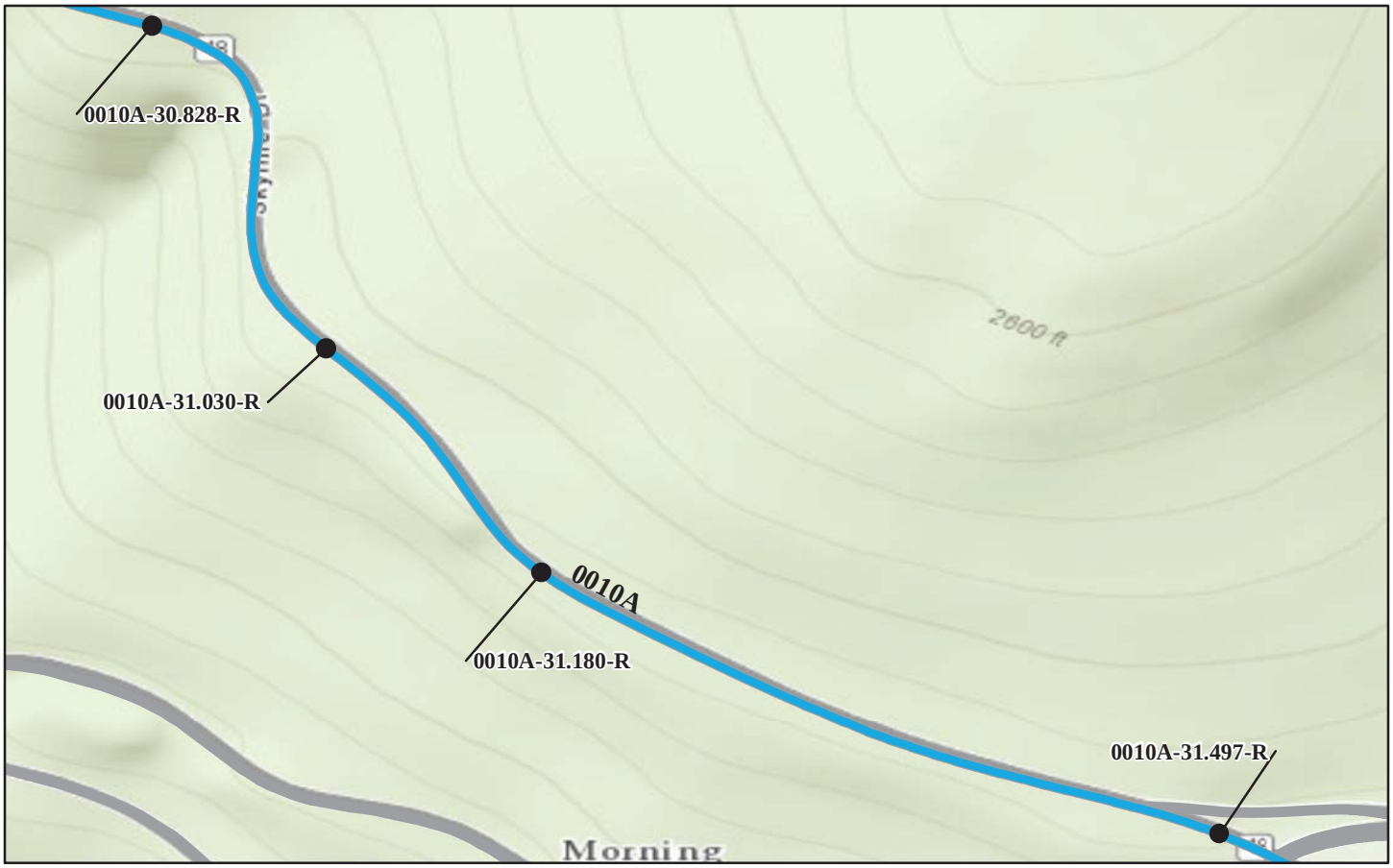
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010A-27.161-L 9/13/2010	1,468	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$4,065.00
SHEN-0010A-27.709-L 9/13/2010	548	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,767.00
SHEN-0010A-27.802-L 9/13/2010	260	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$3,768.00
SHEN-0010A-27.851-L 9/13/2010	210	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,602.00
SHEN-0010A-30.708-R 9/13/2010	395	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$1,788.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010A-30.828-R 9/13/2010	797	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010A-31.030-R 9/13/2010	662	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$1,942.00
SHEN-0010A-31.180-R 9/11/2010	1124	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$3,097.00
SHEN-0010A-31.497-R 9/11/2010	53	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$70,593.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

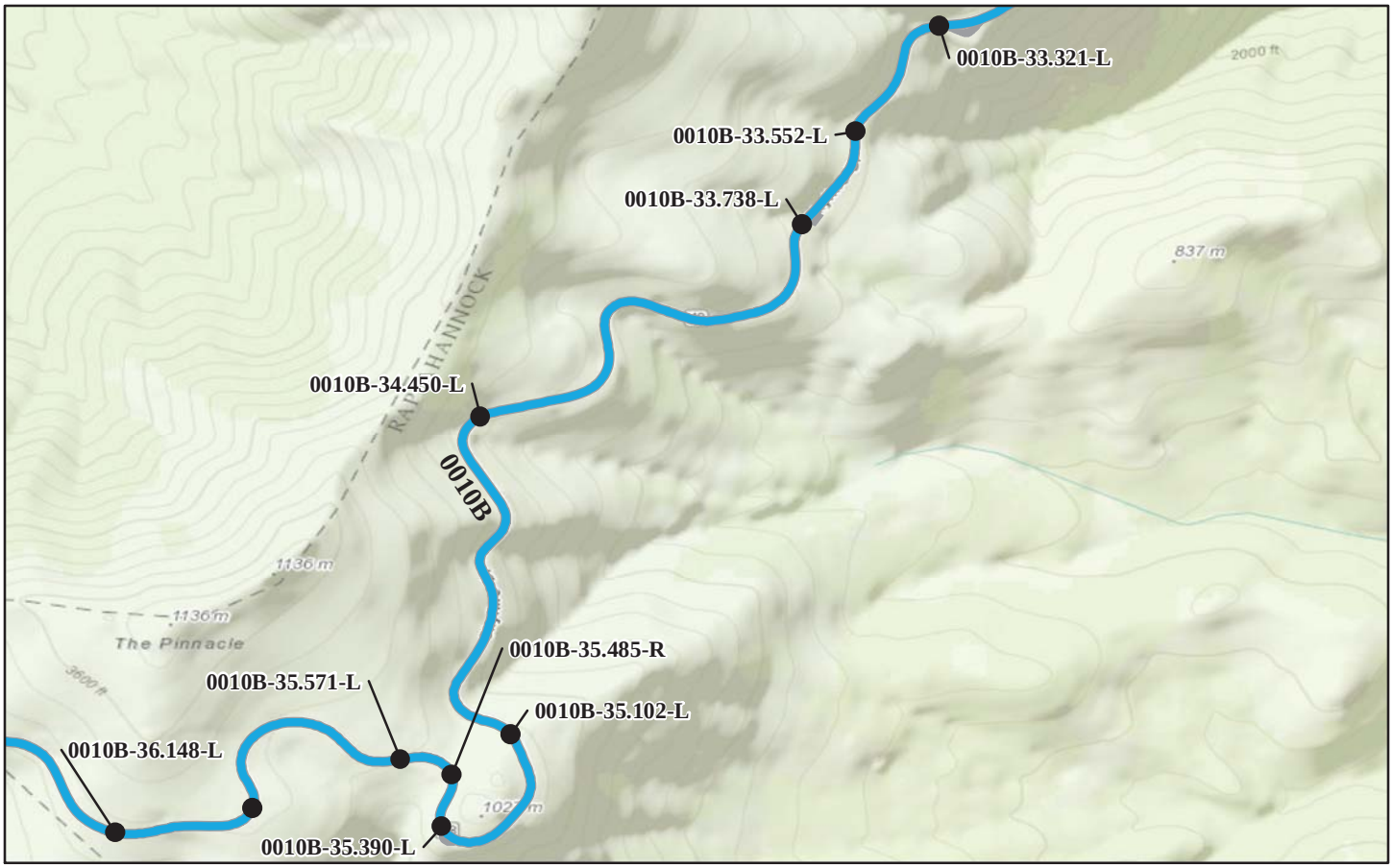
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010B-31.805-L 9/11/2010	2,793	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$3,086.00
SHEN-0010B-32.601-L 9/11/2010	1815	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$1,118,315.00
SHEN-0010B-32.964-L 9/11/2010	389	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$239,910.00
SHEN-0010B-33.021-L 9/11/2010	250	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-33.068-L 9/11/2010	932	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$1,788.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)



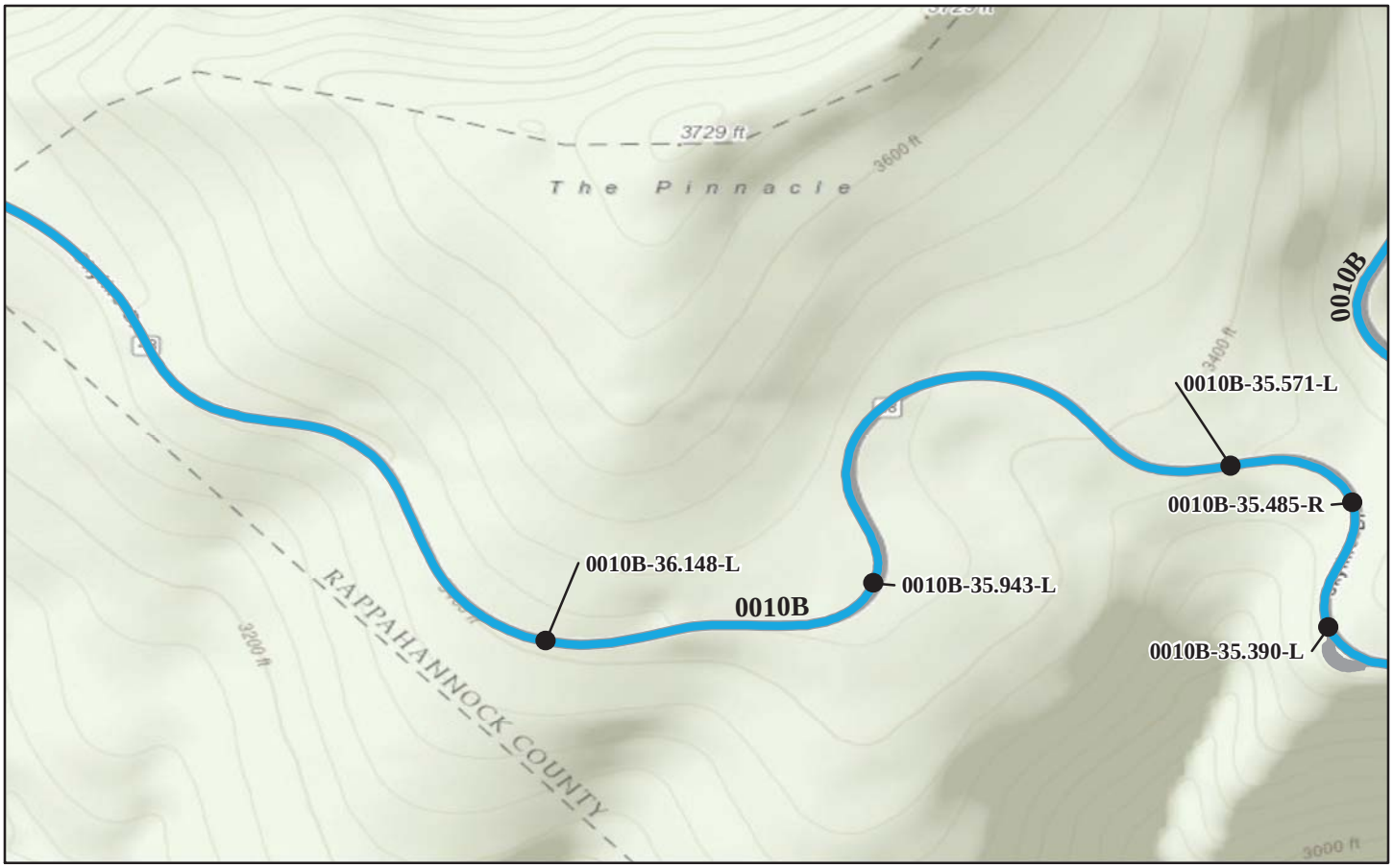
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010B-33.321-L 9/11/2010	1,114	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,437.00
SHEN-0010B-33.552-L 9/11/2010	781	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$1,942.00
SHEN-0010B-33.738-L 9/11/2010	3171	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$1,951,730.00
SHEN-0010B-34.450-L 9/11/2010	3164	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$1,947,880.00
SHEN-0010B-35.102-L 9/11/2010	1330	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$3,229.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010B-35.390-L 9/11/2010	224	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-35.485-R 9/11/2010	321	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$1,777.00
SHEN-0010B-35.571-L 9/11/2010	371	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-35.943-L 9/11/2010	421	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$1,942.00
SHEN-0010B-36.148-L 9/11/2010	2367	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$6,661.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

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Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010B-36.768-L 9/10/2010	315	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,437.00
SHEN-0010B-37.233-R 9/10/2010	321	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,107.00
SHEN-0010B-37.565-L 9/10/2010	362	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$1,942.00
SHEN-0010B-37.669-L 9/10/2010	2105	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$4,571.00
SHEN-0010B-38.729-R 9/10/2010	426	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,107.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

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Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010B-39.071-R 9/10/2010	1,051	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,437.00
SHEN-0010B-39.333-L 9/10/2010	2765	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$5,385.00
SHEN-0010B-39.891-L 9/10/2010	514	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,107.00
SHEN-0010B-40.032-L 9/10/2010	1213	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$3,889.00
SHEN-0010B-40.311-L 9/10/2010	2501	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$4,241.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010B-40.836-L 9/9/2010	290	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-41.233-L 9/10/2010	406	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$1,942.00
SHEN-0010B-41.326-L 9/10/2010	2467	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,756.00
SHEN-0010B-42.219-L 9/10/2010	285	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$1,953.00
SHEN-0010B-43.470-R 9/10/2010	437	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$1,953.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010B-43.628-R 9/10/2010	275	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$1,942.00
SHEN-0010B-44.036-L 9/10/2010	2151	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$4,252.00
SHEN-0010B-44.814-R 9/10/2010	431	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-44.906-R 9/10/2010	622	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-45.125-R 9/9/2010	1030	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$9,532.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

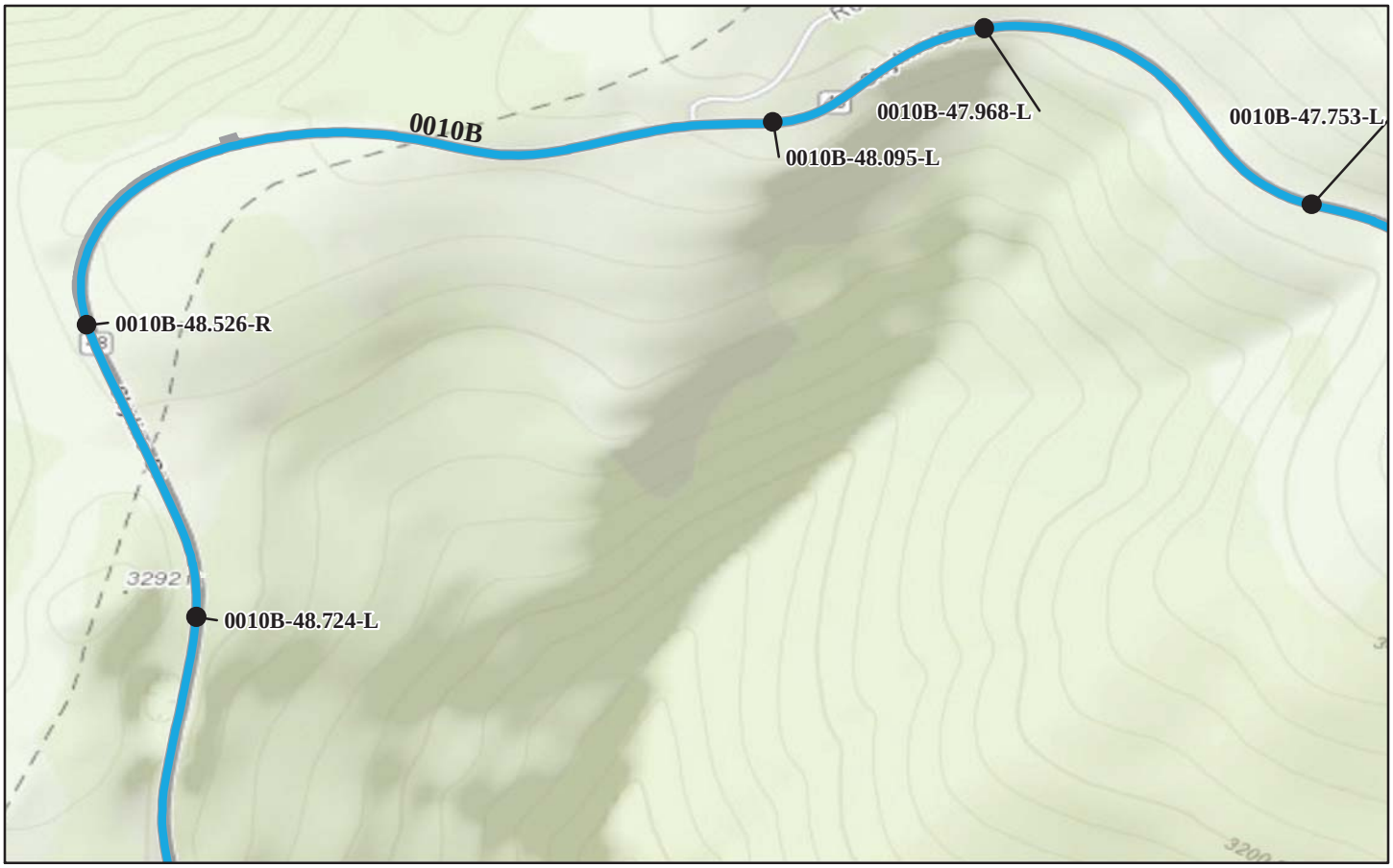
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010B-45.323-L 9/9/2010	728	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,437.00
SHEN-0010B-45.487-L 9/9/2010	550	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-46.050-L 9/9/2010	3142	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$3,427.00
SHEN-0010B-46.764-L 9/9/2010	247	OTHER: LOG RAIL ON LOG POSTS	OTHER: LOG FLARED	OTHER: LOG FLARED	$0.00
SHEN-0010B-47.669-L 9/9/2010	266	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)



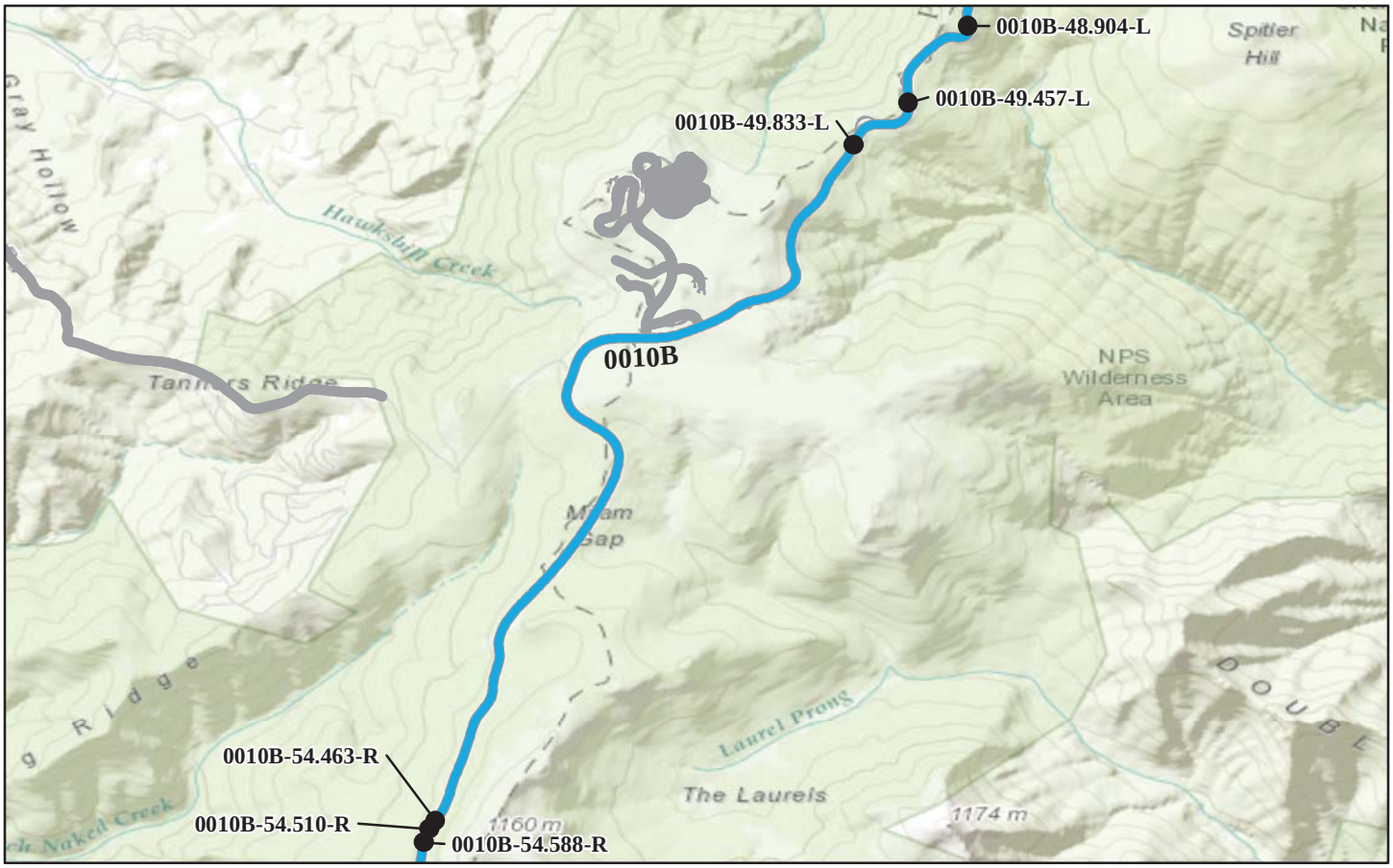
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010B-47.753-L 9/9/2010	642	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,118.00
SHEN-0010B-47.968-L 9/9/2010	535	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,107.00
SHEN-0010B-48.095-L 9/9/2010	940	STEEL-BACKED LOG RAIL	SBT/LOG FLARED	SBT/LOG FLARED	$16,060.00
SHEN-0010B-48.526-R 9/9/2010	918	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$711,508.00
SHEN-0010B-48.724-L 9/9/2010	770	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$1,942.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)



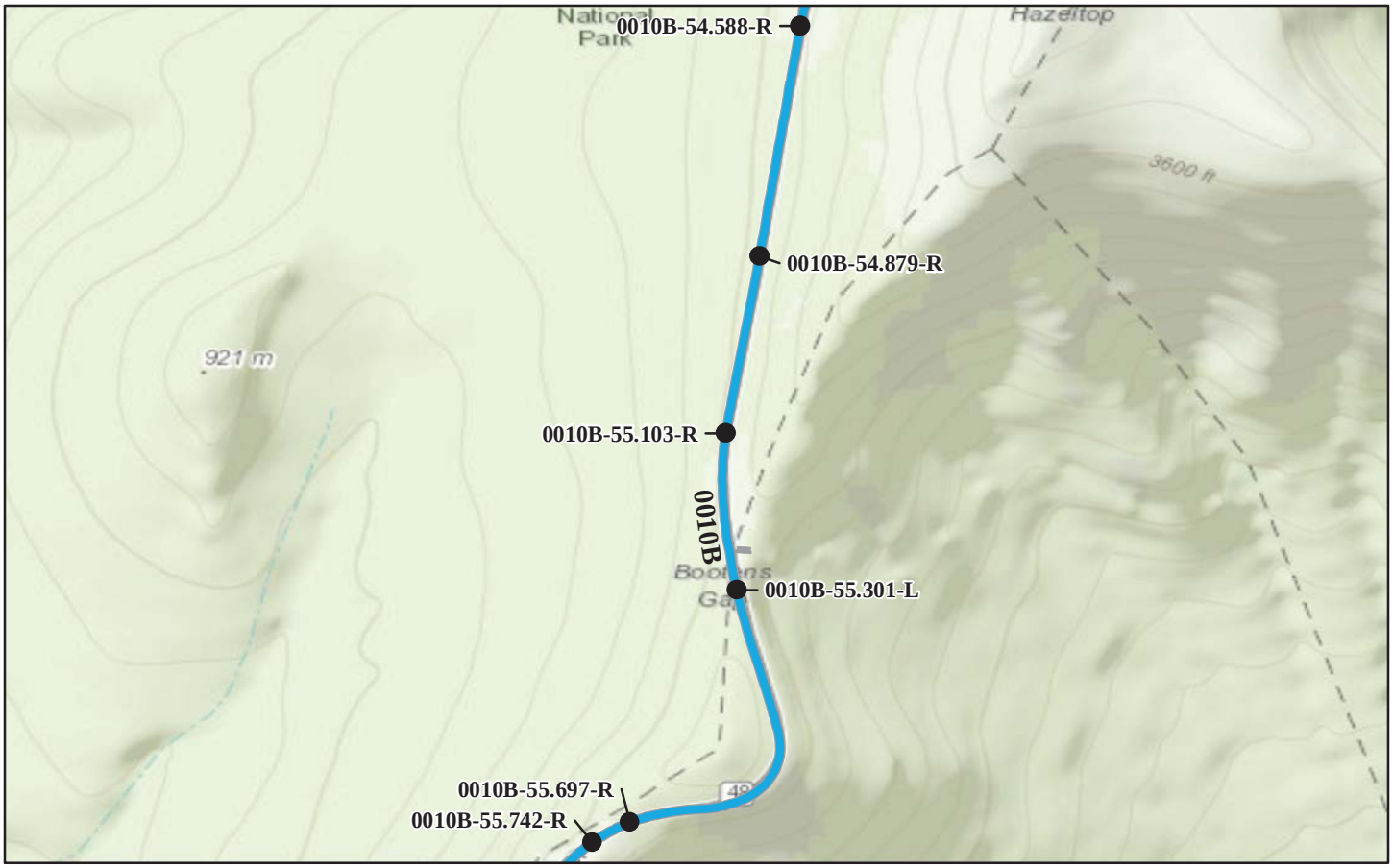
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010B-48.904-L 9/9/2010	260	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-49.457-L 9/9/2010	834	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$2,118.00
SHEN-0010B-49.833-L 9/9/2010	4158	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$6,056.00
SHEN-0010B-54.463-R 9/9/2010	319	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-54.510-R 9/9/2010	283	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$199,953.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)



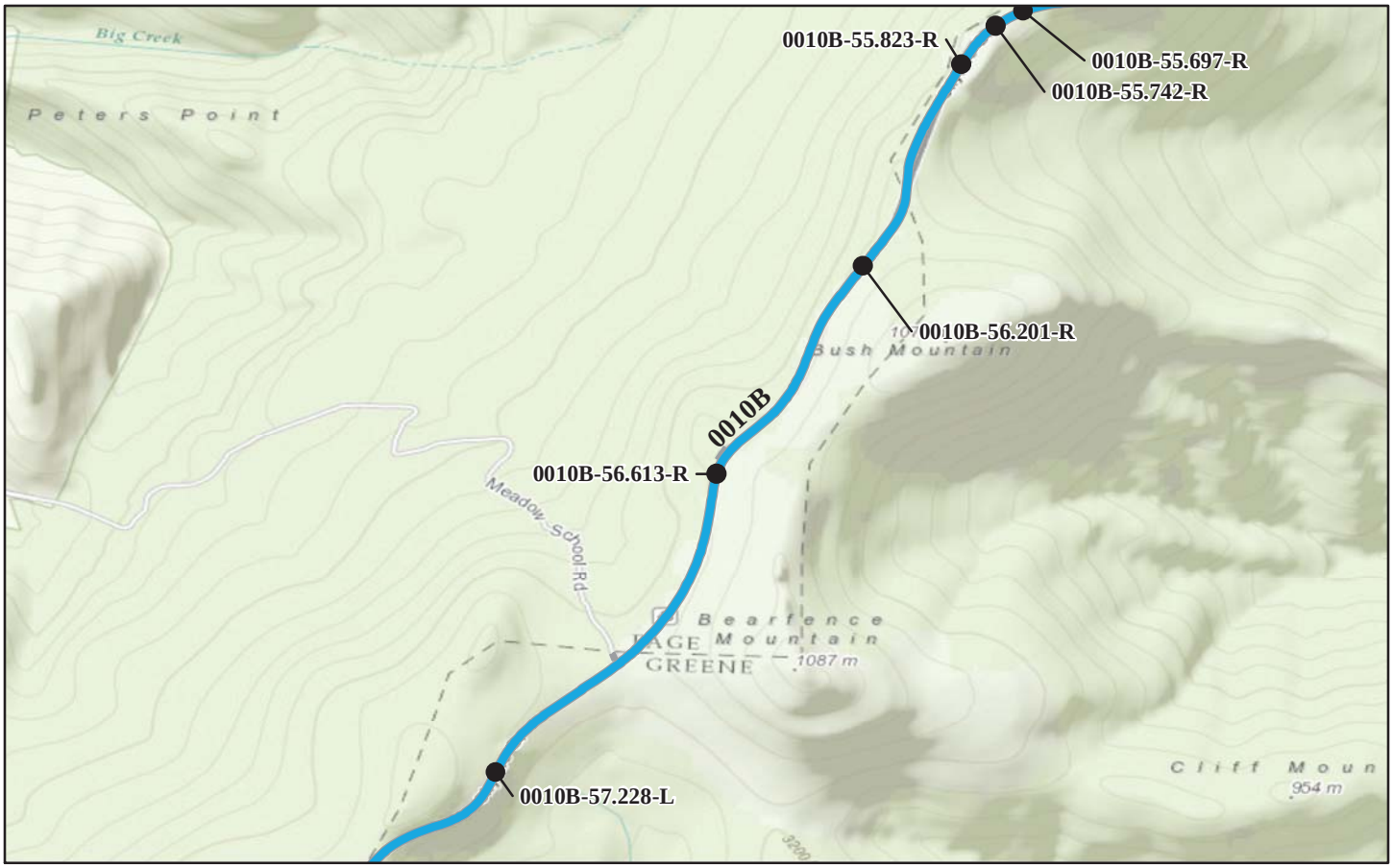
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010B-54.588-R 9/9/2010	266	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-54.879-R 9/9/2010	1060	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-55.103-R 9/9/2010	825	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-55.301-L 9/9/2010	1845	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-55.697-R 9/9/2010	320	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010B-55.742-R 9/9/2010	270	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-55.823-R 9/9/2010	799	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-56.201-R 9/9/2010	1395	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-56.613-R 9/9/2010	885	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-57.228-L 9/9/2010	991	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

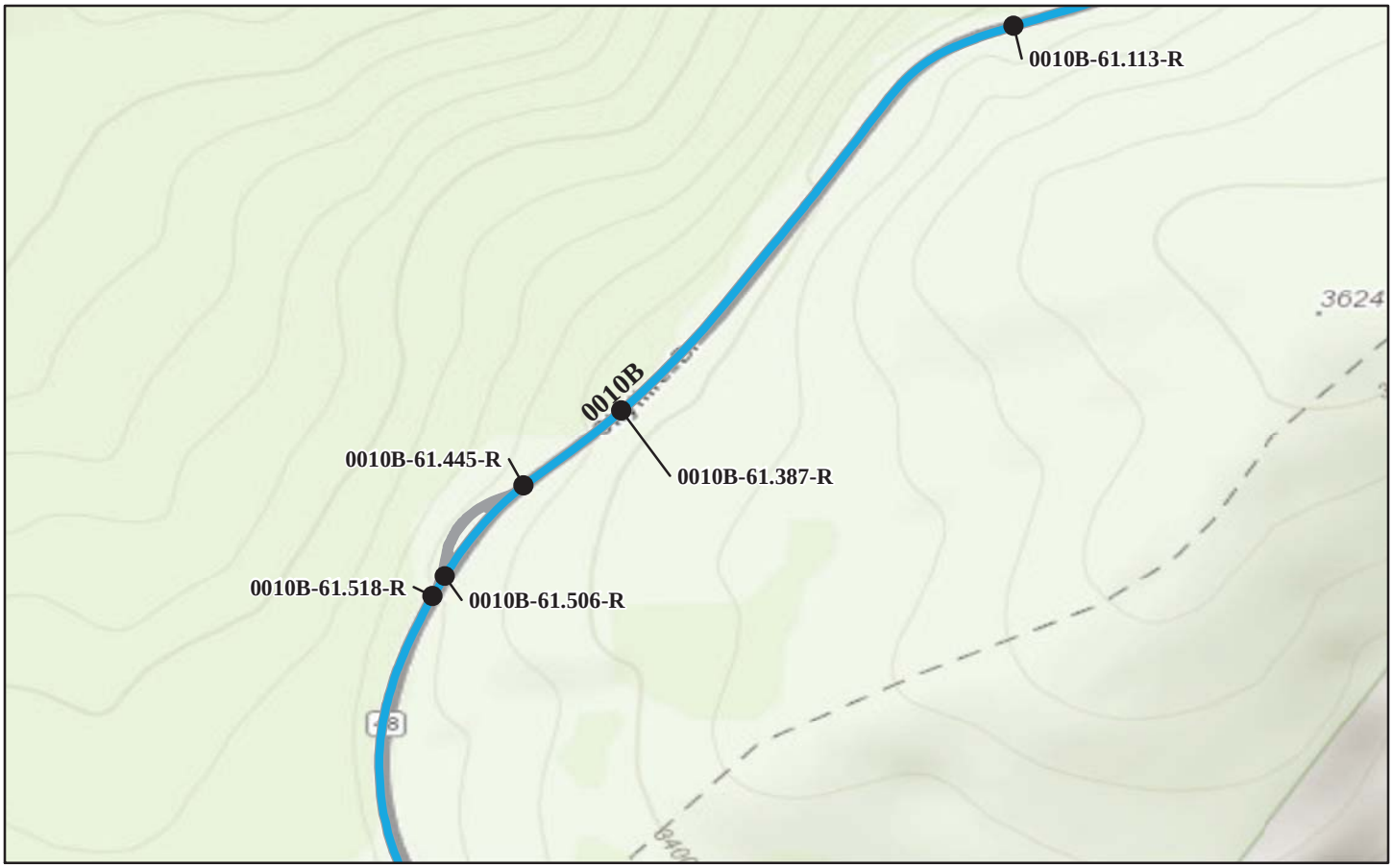
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010B-58.437-R 9/9/2010	1,265	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-59.172-R 9/9/2010	651	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-59.277-R 9/9/2010	214	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-59.354-R 9/9/2010	510	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-60.798-R 9/9/2010	769	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)



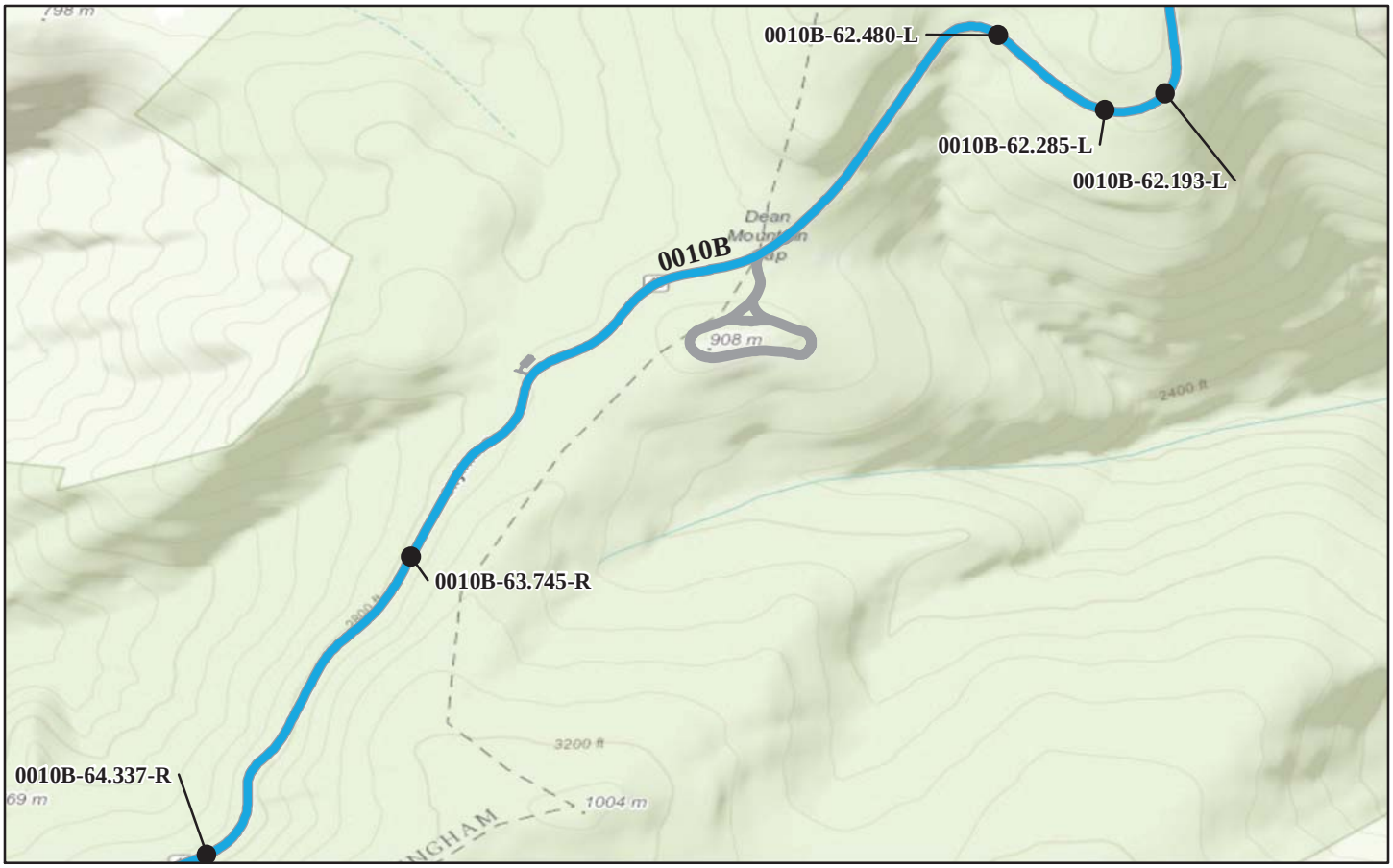
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010B-61.113-R 9/9/2010	1,164	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-61.387-R 9/9/2010	337	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-61.445-R 9/9/2010	50	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-61.506-R 9/9/2010	63	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-61.518-R 9/9/2010	775	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010B-62.193-L 9/9/2010	342	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-62.285-L 9/9/2010	423	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-62.480-L 9/9/2010	463	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-63.745-R 9/10/2010	2896	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010B-64.337-R 9/10/2010	543	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$784,080.00
SHEN-0010B-64.472-R 9/11/2010	576	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$762,053.00
SHEN-0010B-64.564-R 9/11/2010	261	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$360,525.00
SHEN-0010B-64.654-R 9/11/2010	879	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-64.831-R 9/11/2010	503	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$609,263.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

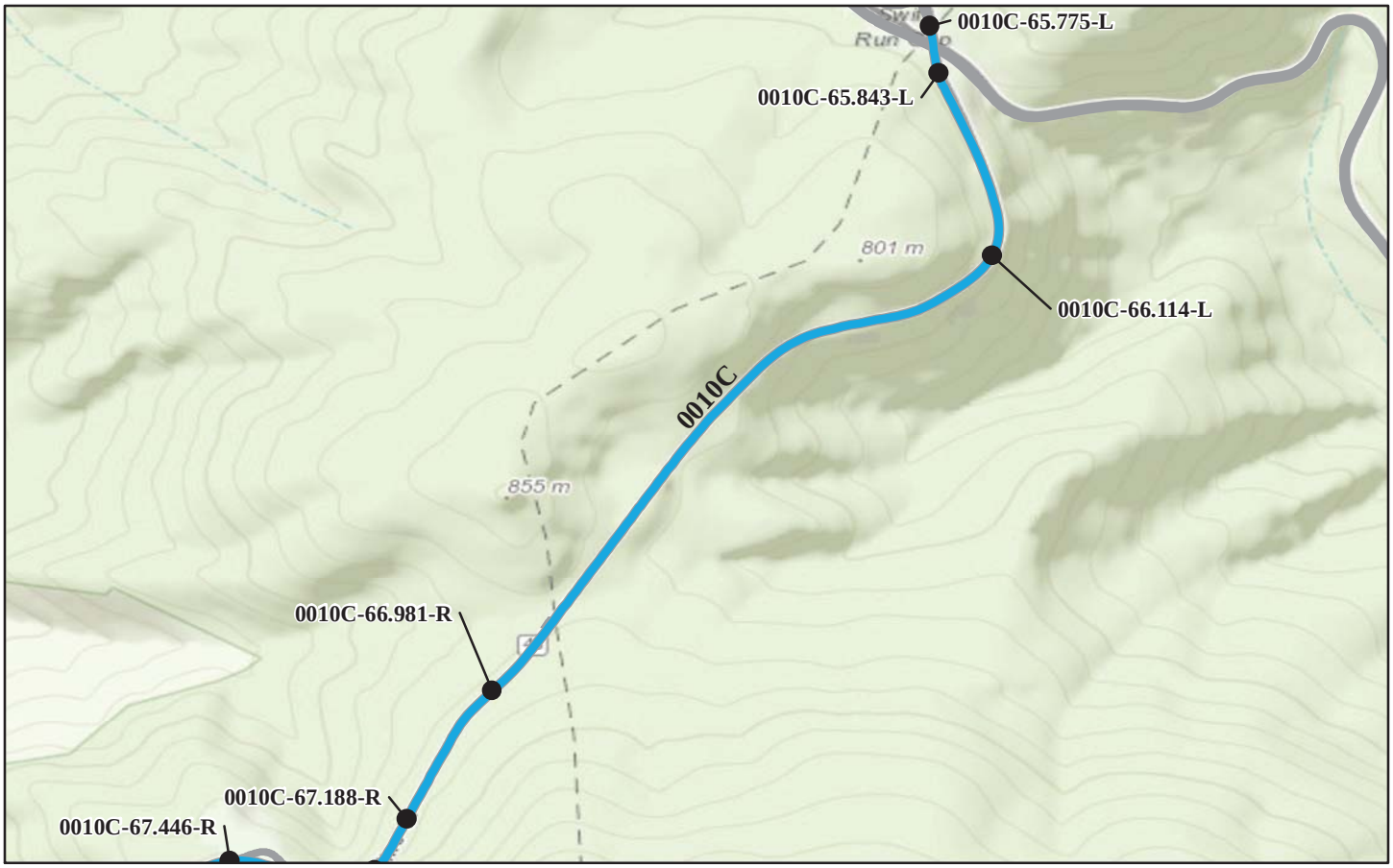
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010B-65.172-R 9/10/2010	1,057	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010B-65.441-R 9/10/2010	1197	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)



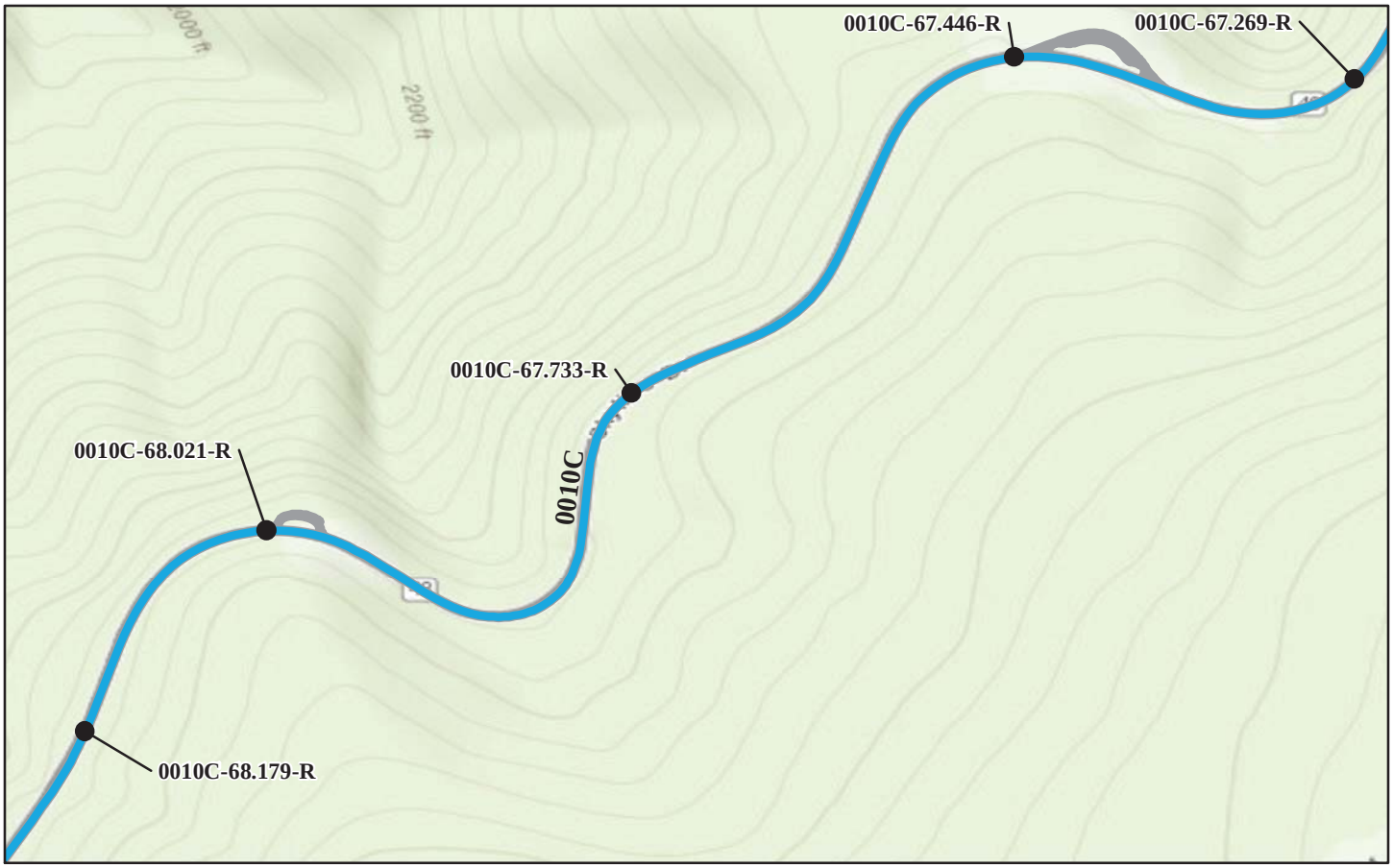
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-65.775-L 9/10/2010	42	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$5,319.00
SHEN-0010C-65.843-L 9/10/2010	1303	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$1,733,435.00
SHEN-0010C-66.114-L 9/10/2010	658	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$905,465.00
SHEN-0010C-66.981-R 9/10/2010	910	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-67.188-R 9/10/2010	191	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$270,050.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)



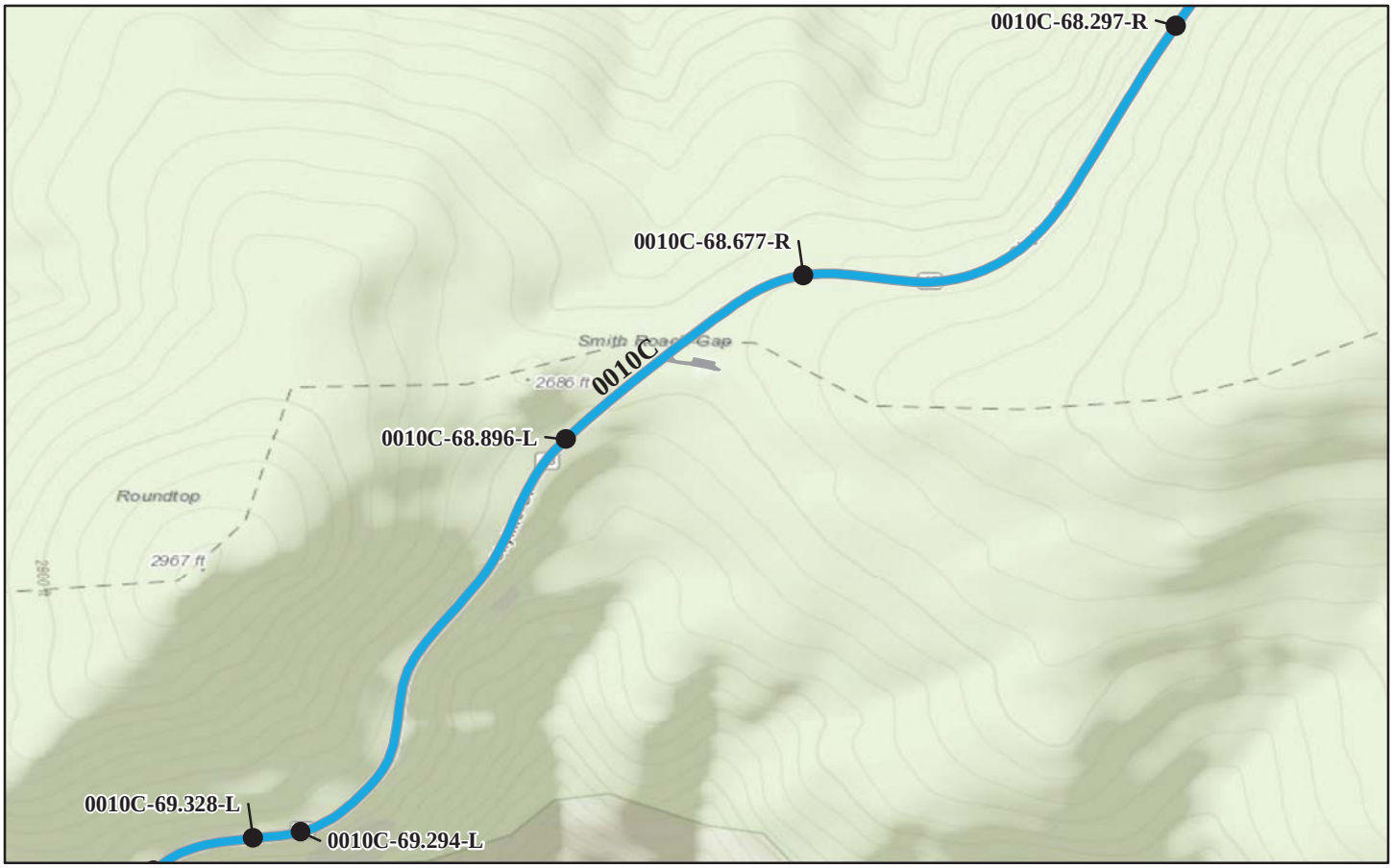
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-67.269-R 9/10/2010	511	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-67.446-R 9/10/2010	732	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$1,006,830.00
SHEN-0010C-67.733-R 9/10/2010	1343	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$1,844,480.00
SHEN-0010C-68.021-R 9/10/2010	496	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-68.179-R 9/10/2010	288	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$418,963.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-68.297-R 9/10/2010	865	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$1,119,965.00
SHEN-0010C-68.677-R 9/10/2010	630	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$941,243.00
SHEN-0010C-68.896-L 9/10/2010	2016	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$2,428,195.00
SHEN-0010C-69.294-L 9/10/2010	139	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$182,380.00
SHEN-0010C-69.328-L 9/10/2010	134	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$186,230.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

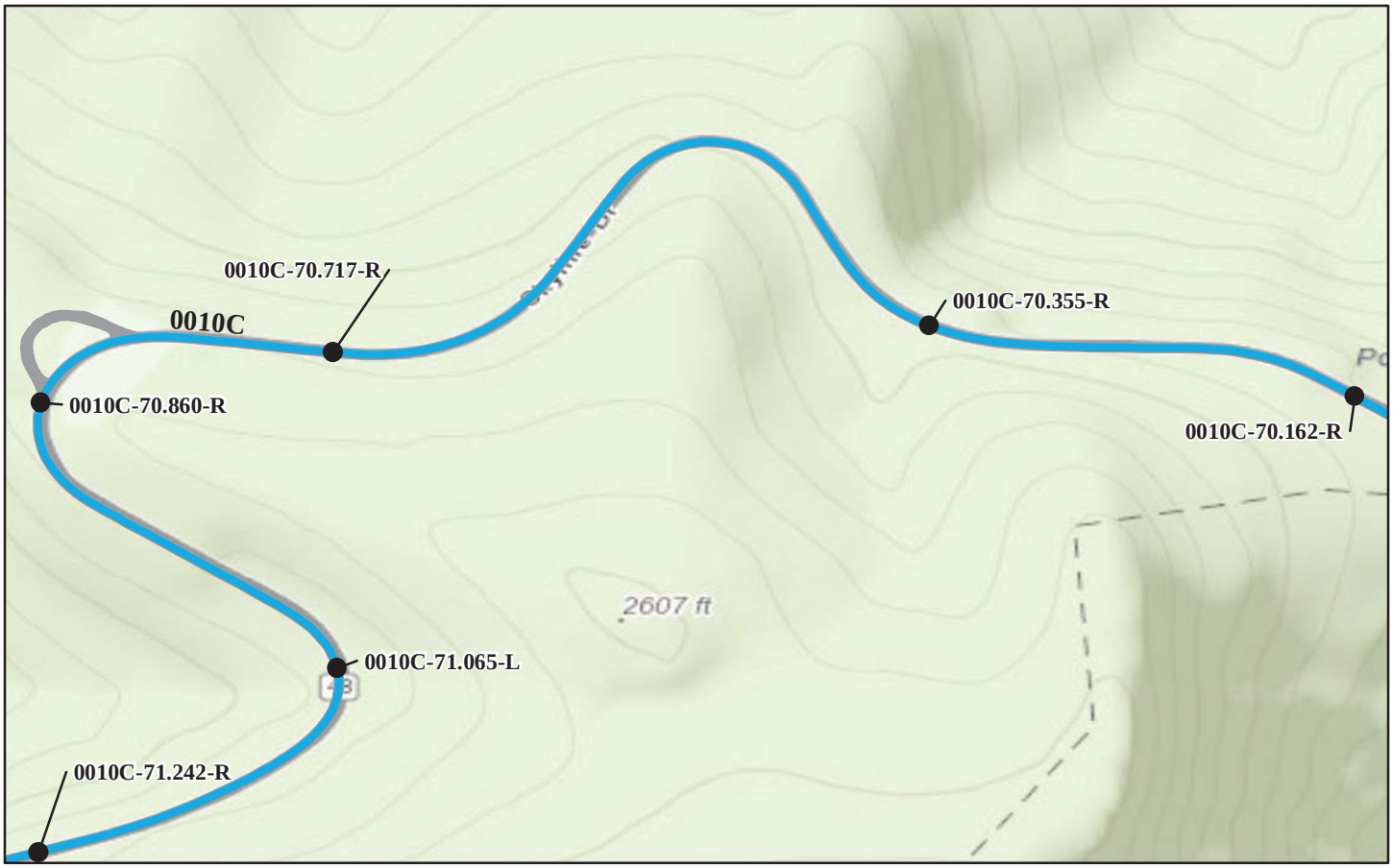
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-69.404-L 9/11/2010	140	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$4,087.00
SHEN-0010C-69.496-L 9/11/2010	628	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-69.643-L 9/11/2010	463	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$684,365.00
SHEN-0010C-69.756-L 9/11/2010	373	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$481,553.00
SHEN-0010C-69.937-L 9/11/2010	419	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$573,595.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-70.162-R 9/11/2010	731	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-70.355-R 9/11/2010	890	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-70.717-R 9/11/2010	460	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$632,940.00
SHEN-0010C-70.860-R 9/11/2010	865	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$1,067,303.00
SHEN-0010C-71.065-L 9/11/2010	208	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$321,970.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

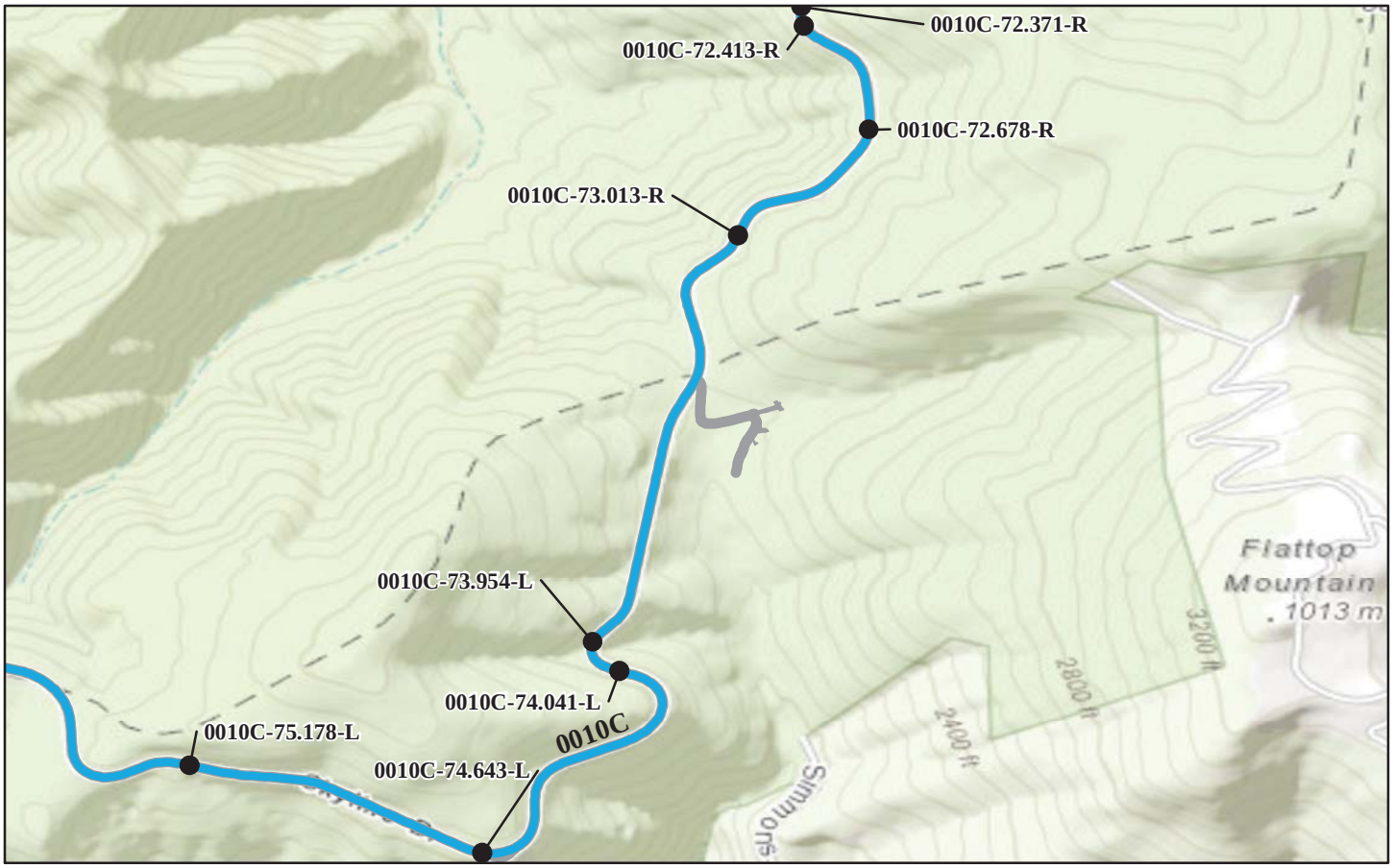
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-71.242-R 9/11/2010	728	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$313,225.00
SHEN-0010C-71.451-R 9/11/2010	589	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-71.714-R 9/11/2010	1308	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$1,277,475.00
SHEN-0010C-72.357-R 9/11/2010	135	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-72.371-R 9/11/2010	119	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)



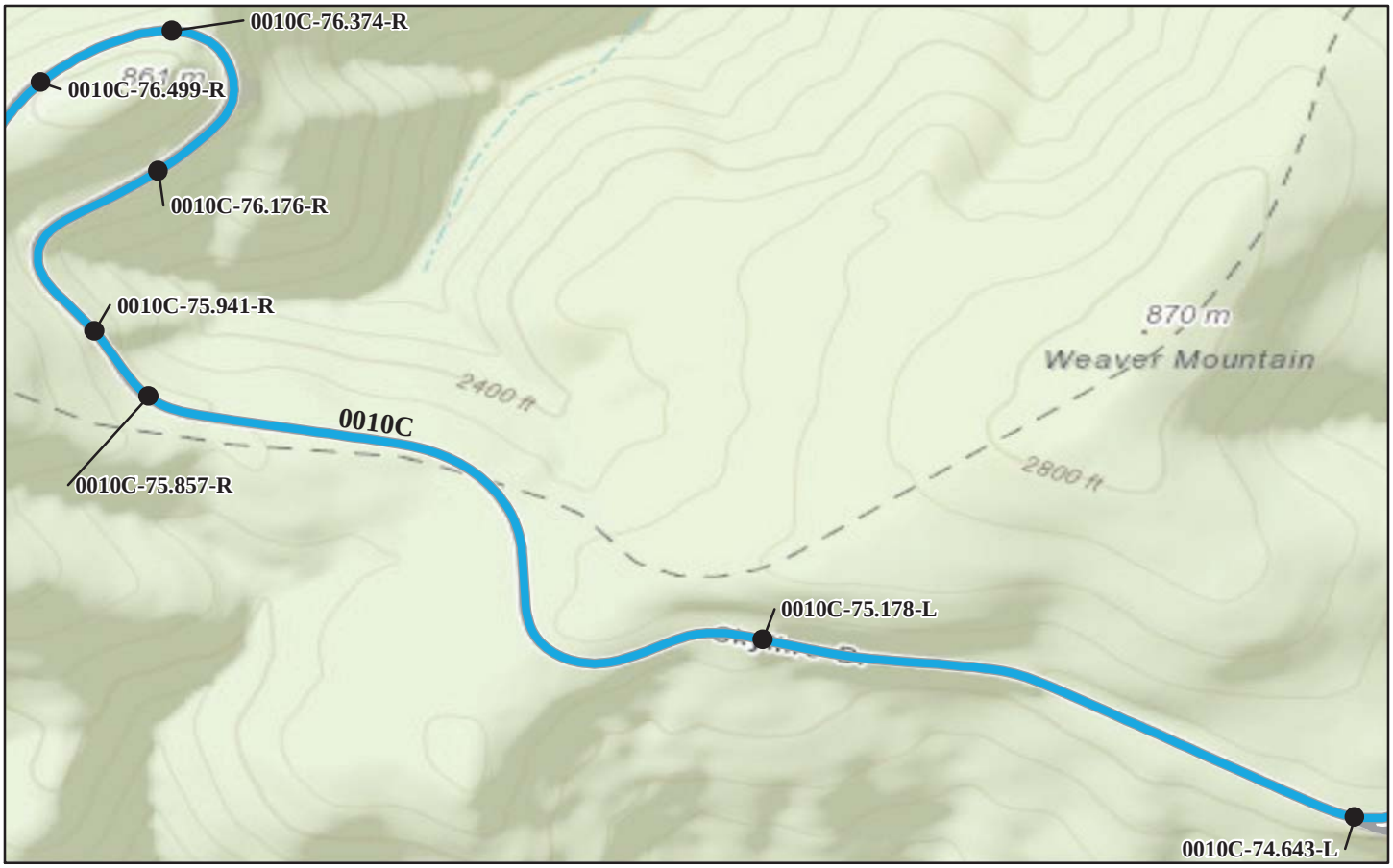
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-72.413-R 9/11/2010	908	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-72.678-R 9/11/2010	1547	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-73.013-R 9/11/2010	1261	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$1,758,515.00
SHEN-0010C-73.954-L 9/11/2010	274	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-74.041-L 9/11/2010	2815	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)



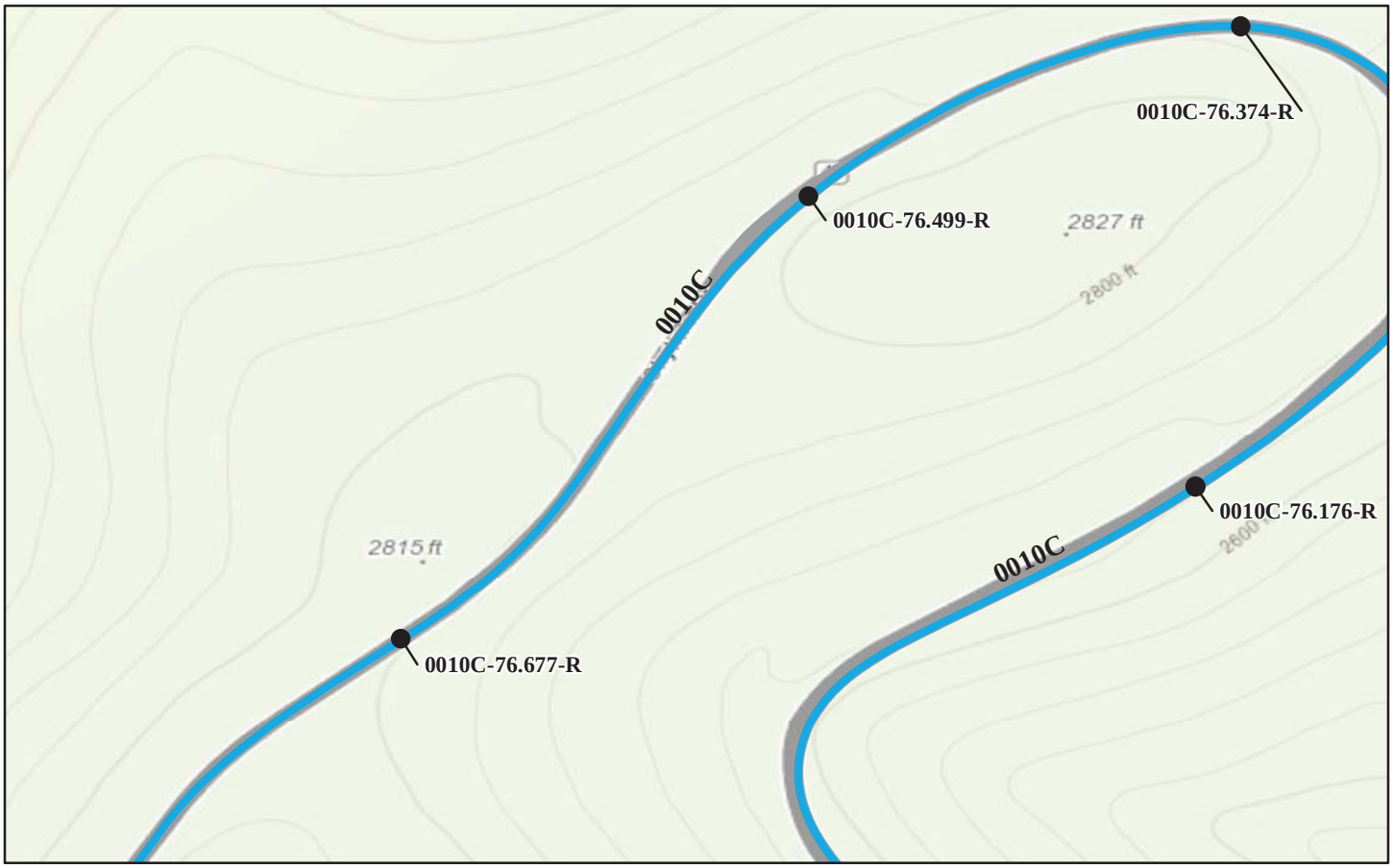
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-74.643-L 9/11/2010	67	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$95,865.00
SHEN-0010C-75.178-L 9/11/2010	800	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-75.857-R 9/11/2010	323	STEEL-BACKED LOG RAIL	SBT/LOG FLARED	SBT/LOG FLARED	$6,798.00
SHEN-0010C-75.941-R 9/11/2010	930	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$1,259,280.00
SHEN-0010C-76.176-R 9/12/2010	809	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-76.374-R 9/12/2010	694	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-76.499-R 9/12/2010	71	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$64,515.00
SHEN-0010C-76.677-R 9/12/2010	482	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

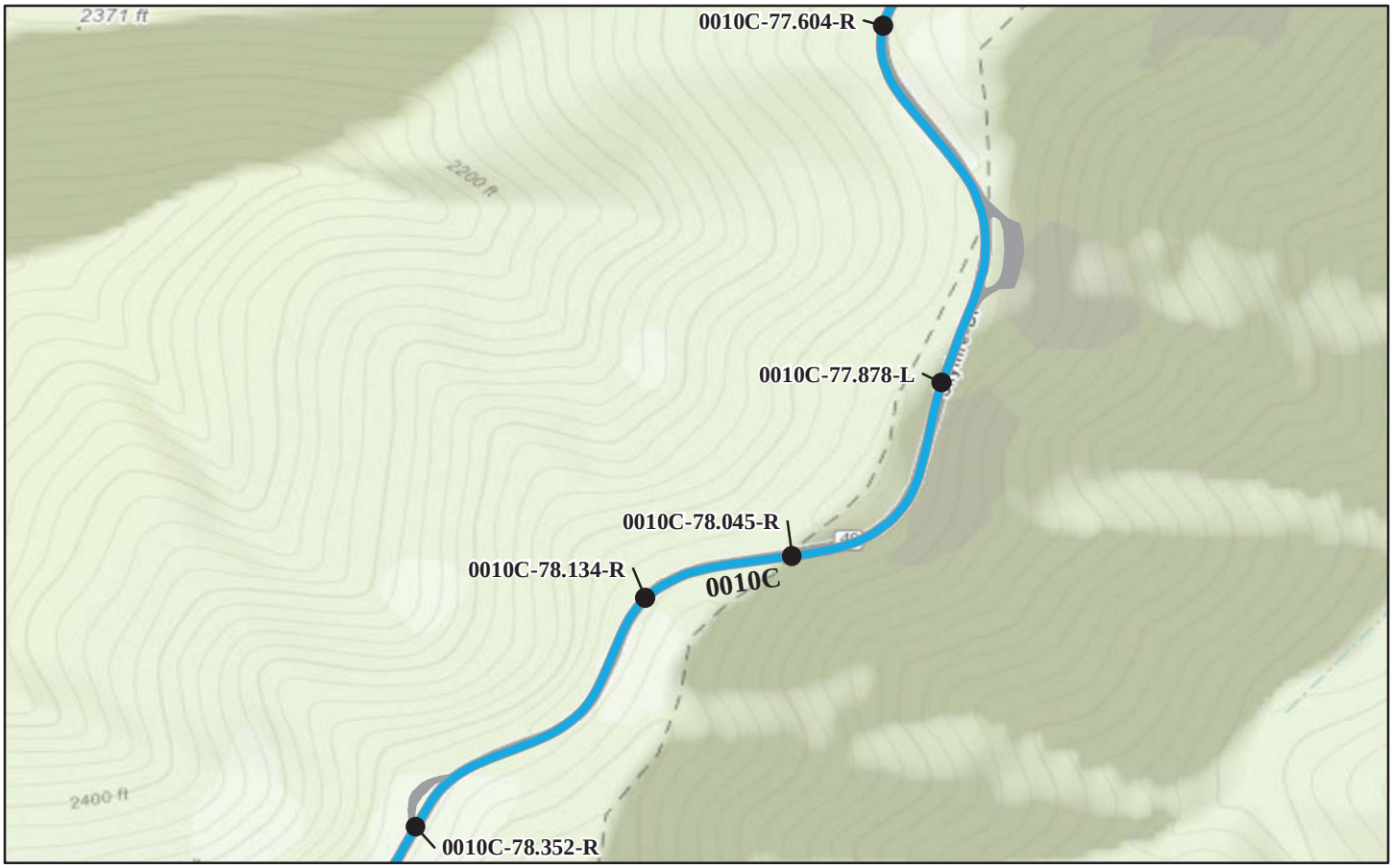
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-76.811-R 9/12/2010	585	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-76.960-R 9/12/2010	881	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-77.189-R 9/12/2010	377	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-77.306-R 9/12/2010	516	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-77.427-R 9/12/2010	754	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)



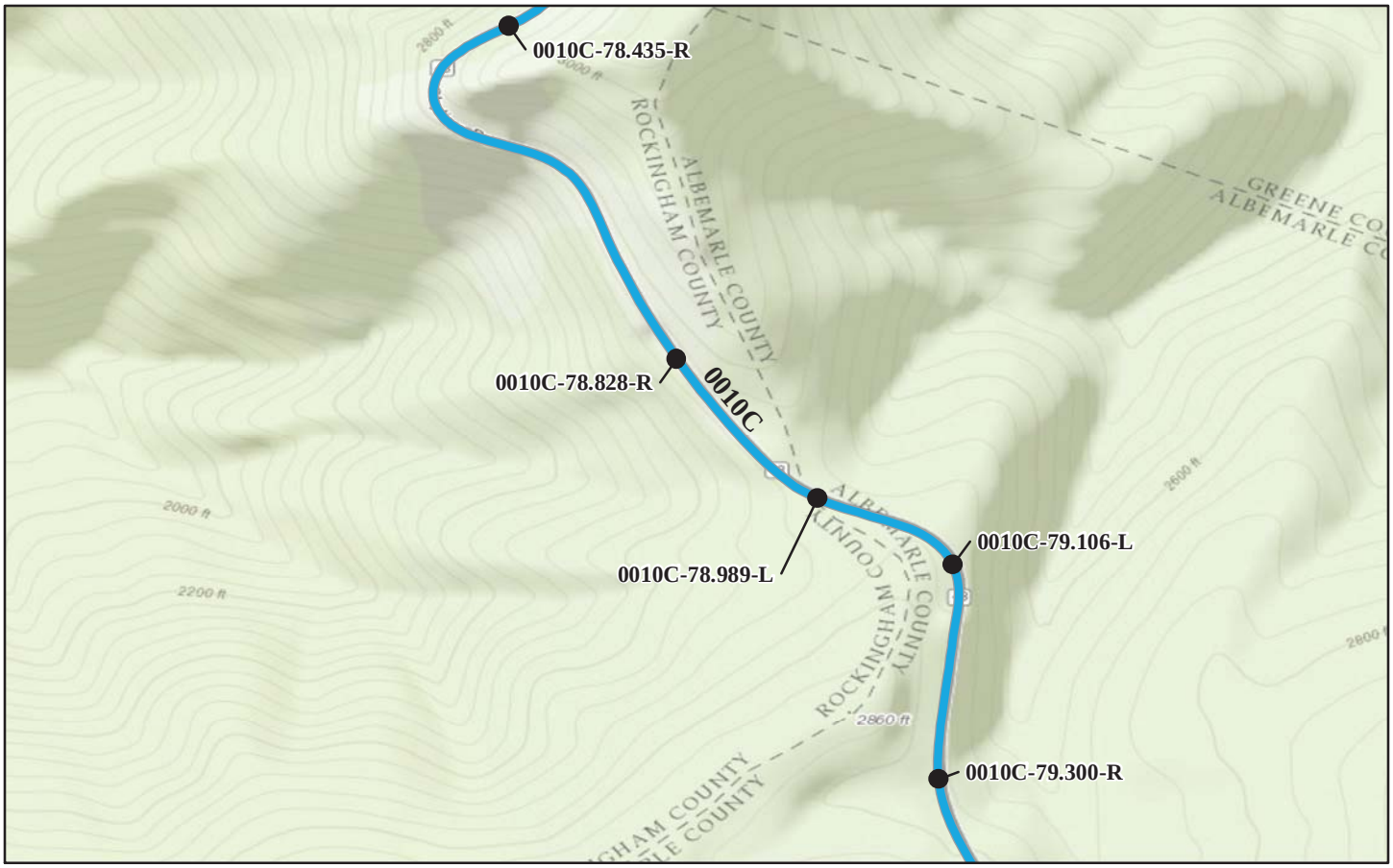
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-77.604-R 9/12/2010	331	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-77.878-L 9/12/2010	767	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-78.045-R 9/12/2010	402	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-78.134-R 9/12/2010	925	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-78.352-R 9/12/2010	63	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$90,640.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)



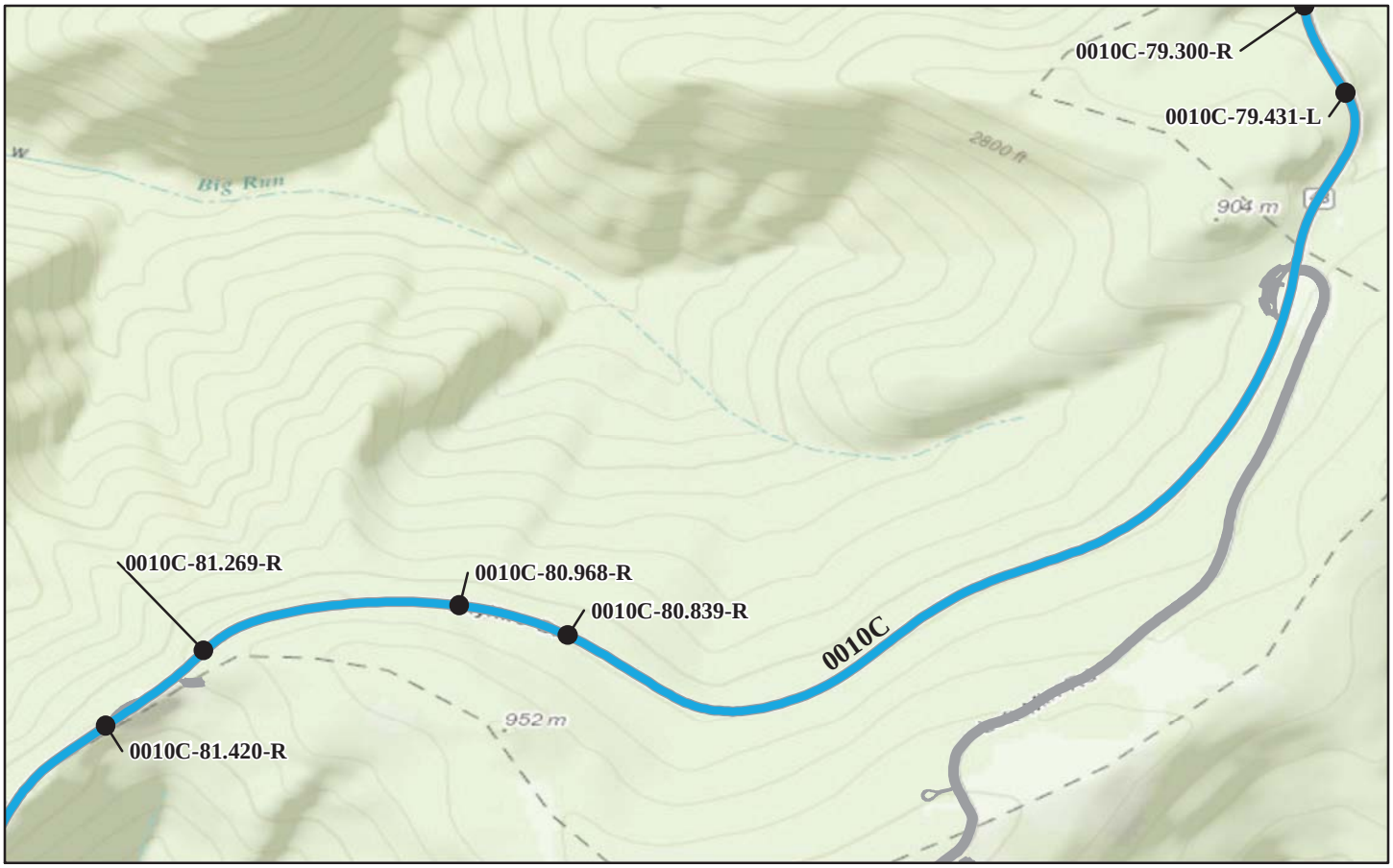
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-78.435-R 9/12/2010	1,891	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-78.828-R 9/12/2010	851	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-78.989-L 9/12/2010	402	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-79.106-L 9/12/2010	432	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-79.300-R 9/12/2010	308	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$421,383.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-79.431-L 9/12/2010	441	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-80.839-R 9/12/2010	582	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-80.968-R 9/12/2010	1375	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-81.269-R 9/12/2010	486	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-81.420-R 9/12/2010	579	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

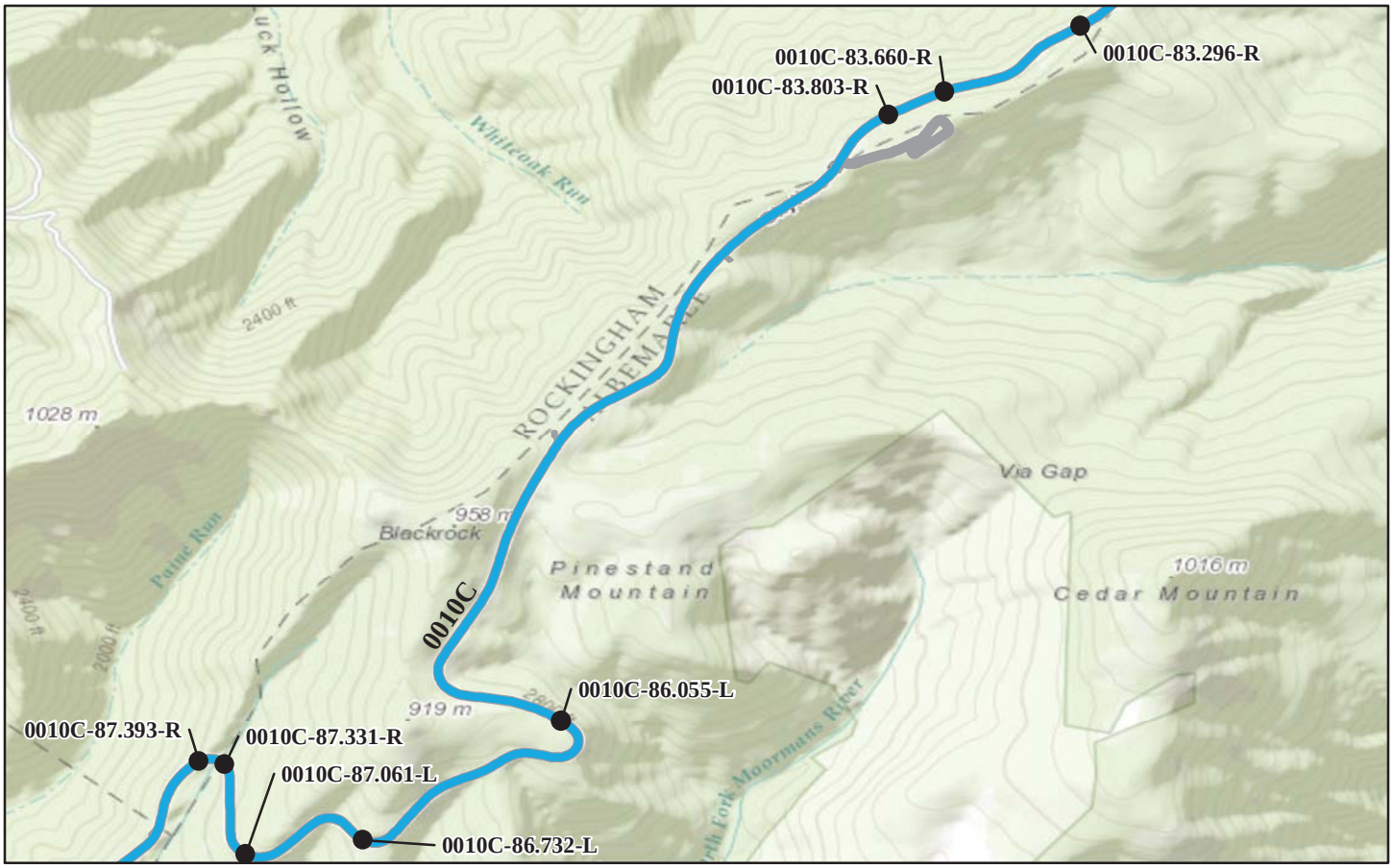
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-81.643-L 9/12/2010	903	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-81.916-R 9/12/2010	845	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$1,183,518.00
SHEN-0010C-82.235-R 9/13/2010	1215	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$1,690,645.00
SHEN-0010C-82.457-L 9/13/2010	1073	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-82.705-L 9/13/2010	1762	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)



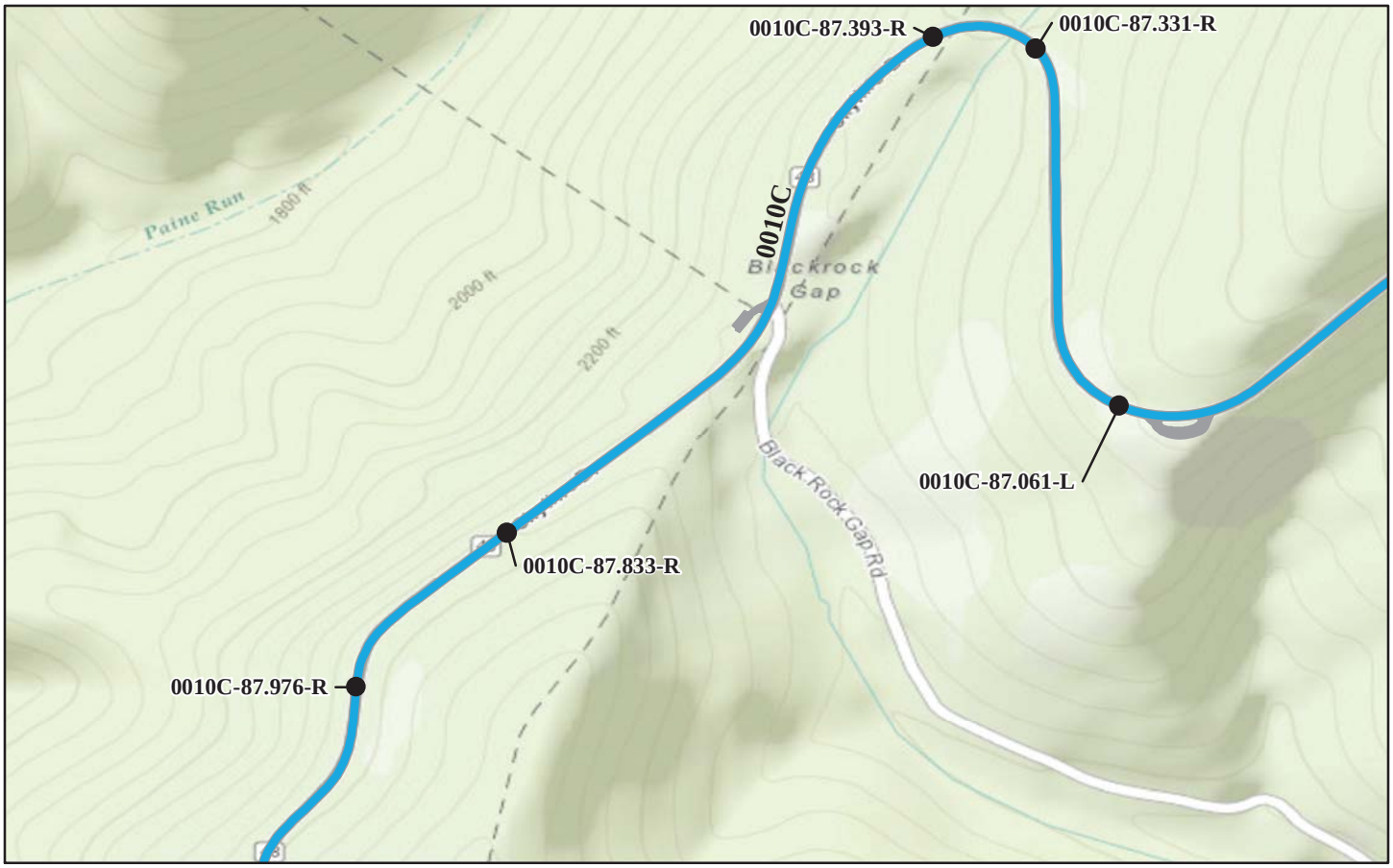
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-83.296-R 9/13/2010	1,508	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-83.660-R 9/13/2010	410	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-83.803-R 9/13/2010	481	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-86.055-L 9/13/2010	547	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-86.732-L 9/13/2010	749	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)



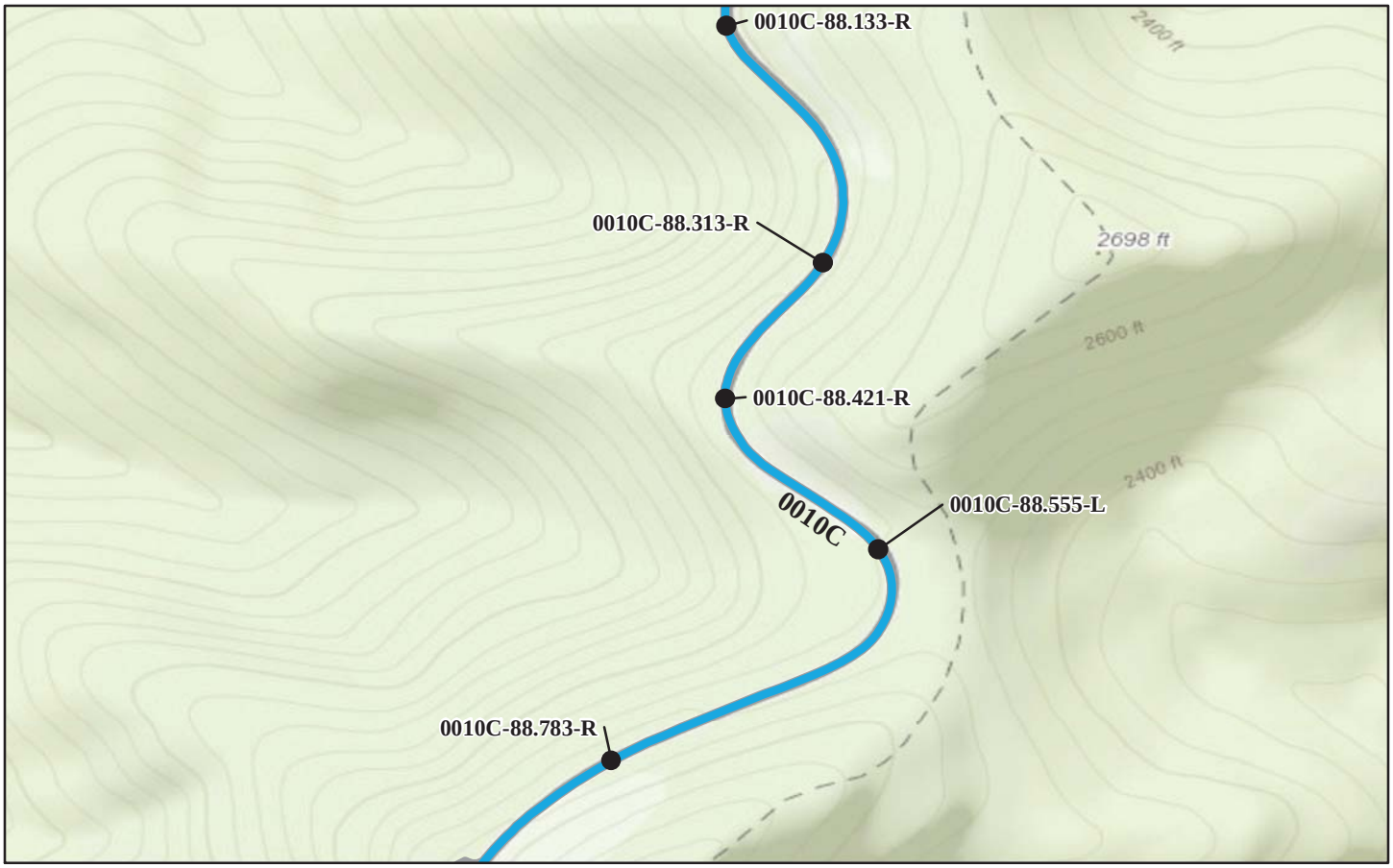
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-87.061-L 9/13/2010	342	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-87.331-R 9/13/2010	210	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-87.393-R 9/13/2010	642	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-87.833-R 9/13/2010	650	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-87.976-R 9/13/2010	647	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-88.133-R 9/13/2010	493	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-88.313-R 9/13/2010	397	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-88.421-R 9/13/2010	395	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-88.555-L 9/13/2010	305	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-88.783-R 9/13/2010	423	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

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Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-88.929-R 9/13/2010	358	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-89.641-L 9/13/2010	274	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-89.777-L 9/13/2010	695	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-89.943-L 9/13/2010	676	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-90.565-R 9/13/2010	671	STEEL-BACKED LOG RAIL	SBT/LOG FLARED	SBT/LOG FLARED	$6,545.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

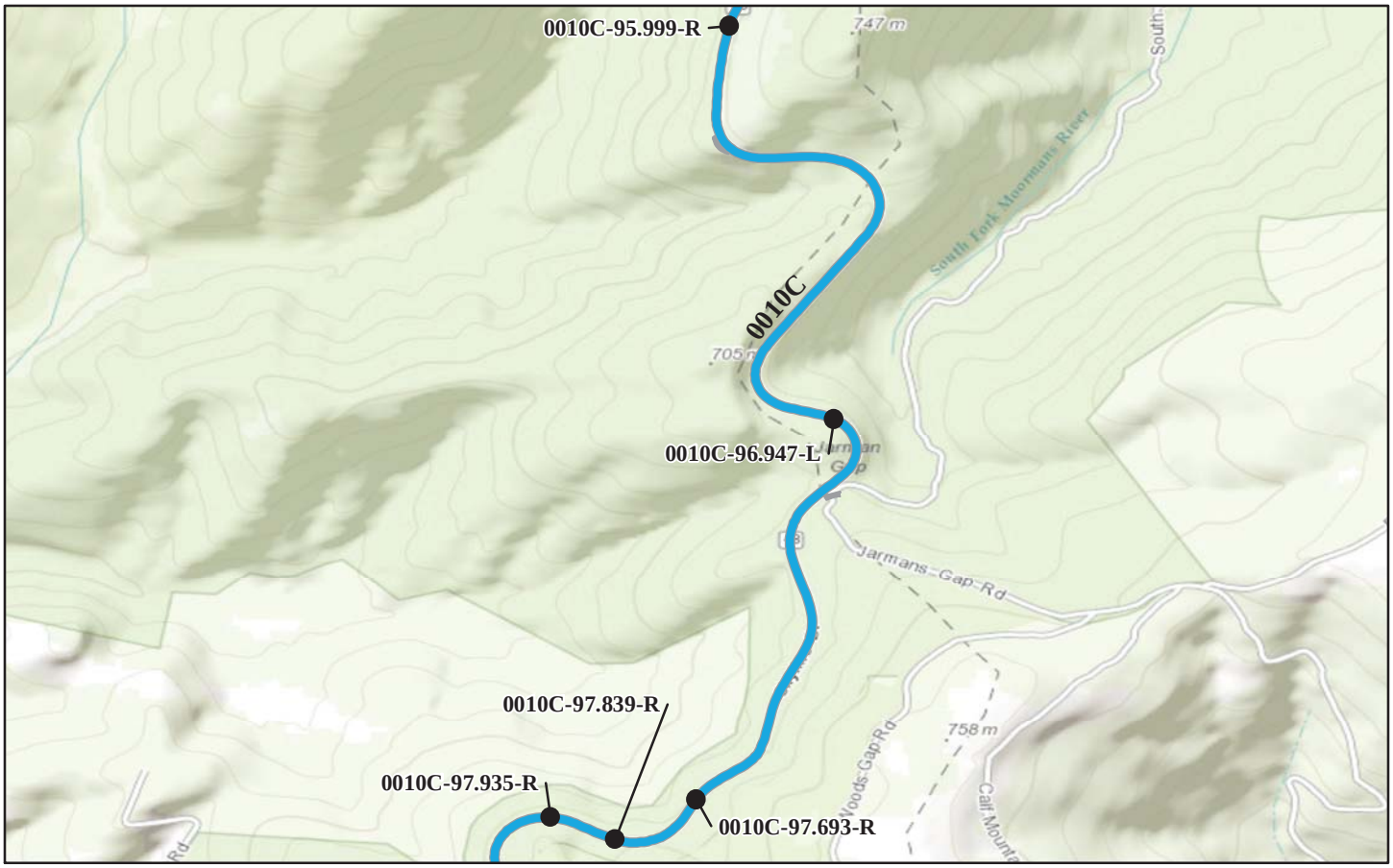
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-90.941-L 9/13/2010	374	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-91.468-L 9/13/2010	338	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-92.137-L 9/13/2010	510	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-93.242-R 9/13/2010	128	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$121,413.00
SHEN-0010C-94.034-R 9/13/2010	330	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)



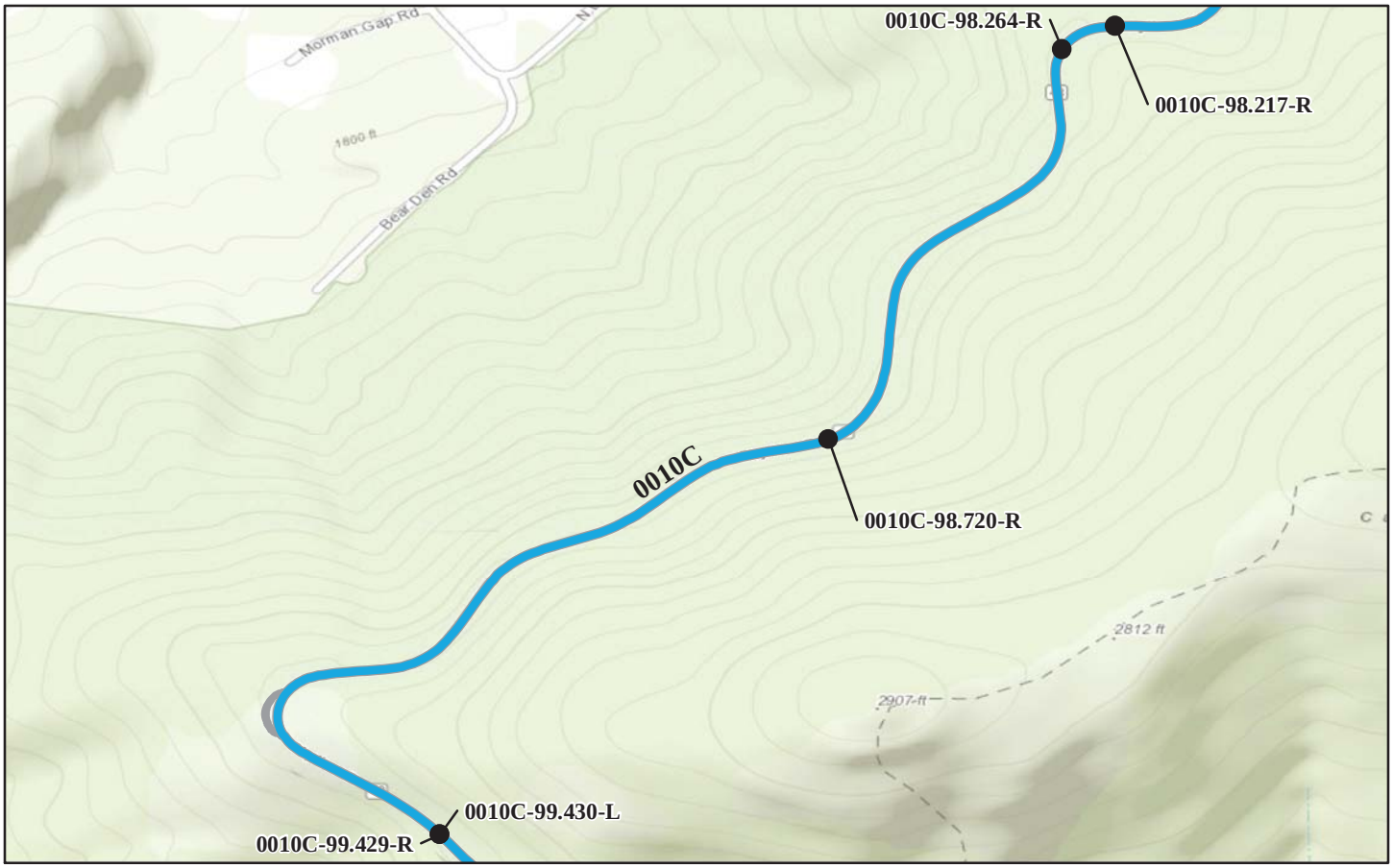
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-95.999-R 9/13/2010	713	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-96.947-L 9/13/2010	667	STEEL-BACKED LOG RAIL	SBT/LOG FLARED	SBT/LOG FLARED	$12,205.00
SHEN-0010C-97.693-R 9/13/2010	395	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$539,000.00
SHEN-0010C-97.839-R 9/14/2010	280	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-97.935-R 9/14/2010	288	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$410,713.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)



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Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-98.217-R 9/14/2010	188	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$261,525.00
SHEN-0010C-98.264-R 9/14/2010	509	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-98.720-R 9/14/2010	430	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$568,068.00
SHEN-0010C-99.429-R 9/14/2010	52	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-99.430-L 9/14/2010	51	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

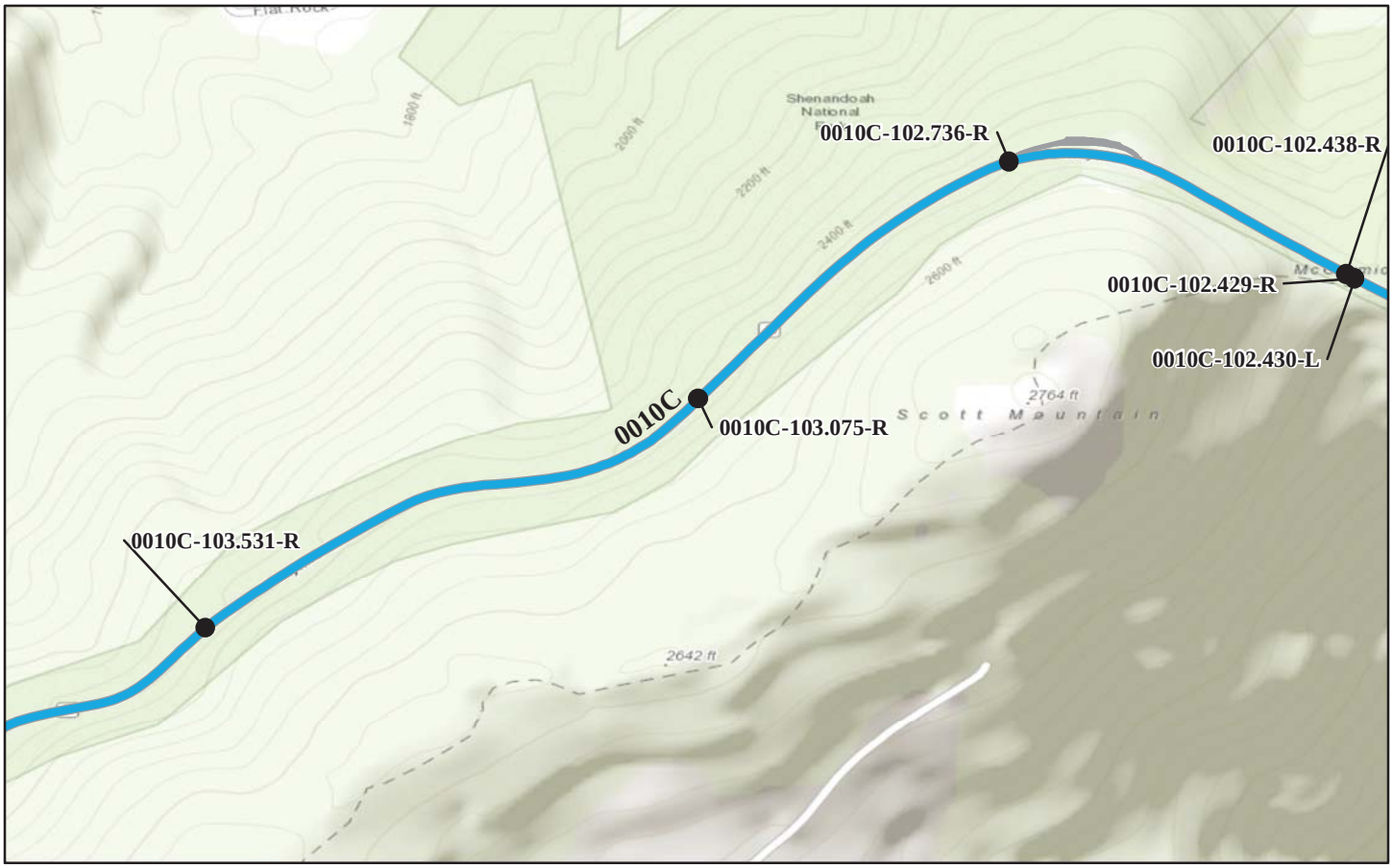
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-99.772-R 9/14/2010	56	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-99.773-L 9/14/2010	59	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-100.226-L 9/14/2010	167	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	$0.00
SHEN-0010C-101.356-L 9/14/2010	520	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	$0.00
SHEN-0010C-102.429-R 9/14/2010	42	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)



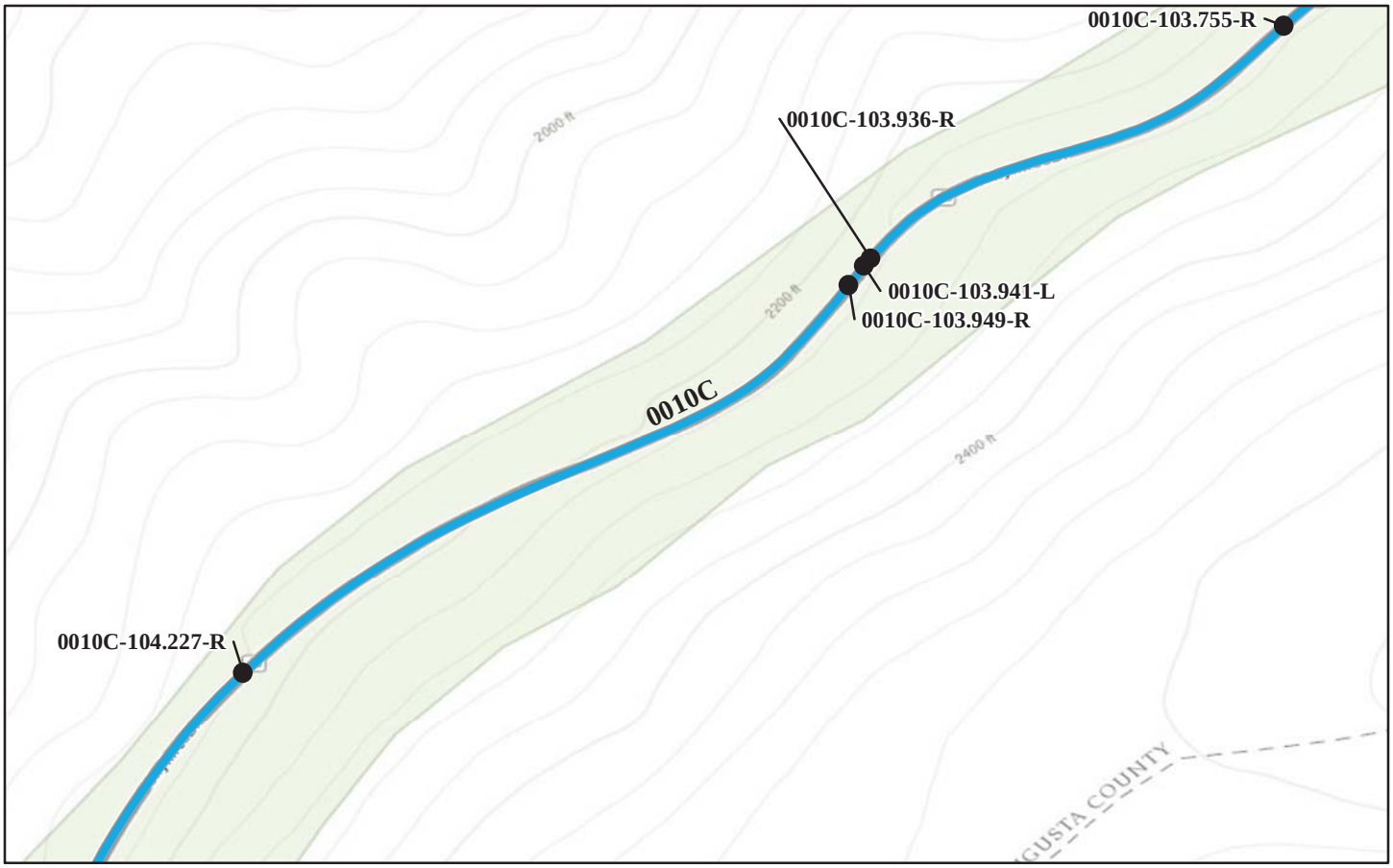
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-102.430-L 9/14/2010	45	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-102.438-R 9/14/2010	984	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	NONE	SBT/LOG FLARED	$0.00
SHEN-0010C-102.736-R 9/14/2010	1382	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	$3,163.00
SHEN-0010C-103.075-R 9/14/2010	1058	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	$8,745.00
SHEN-0010C-103.531-R 9/14/2010	847	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	$3,273.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)



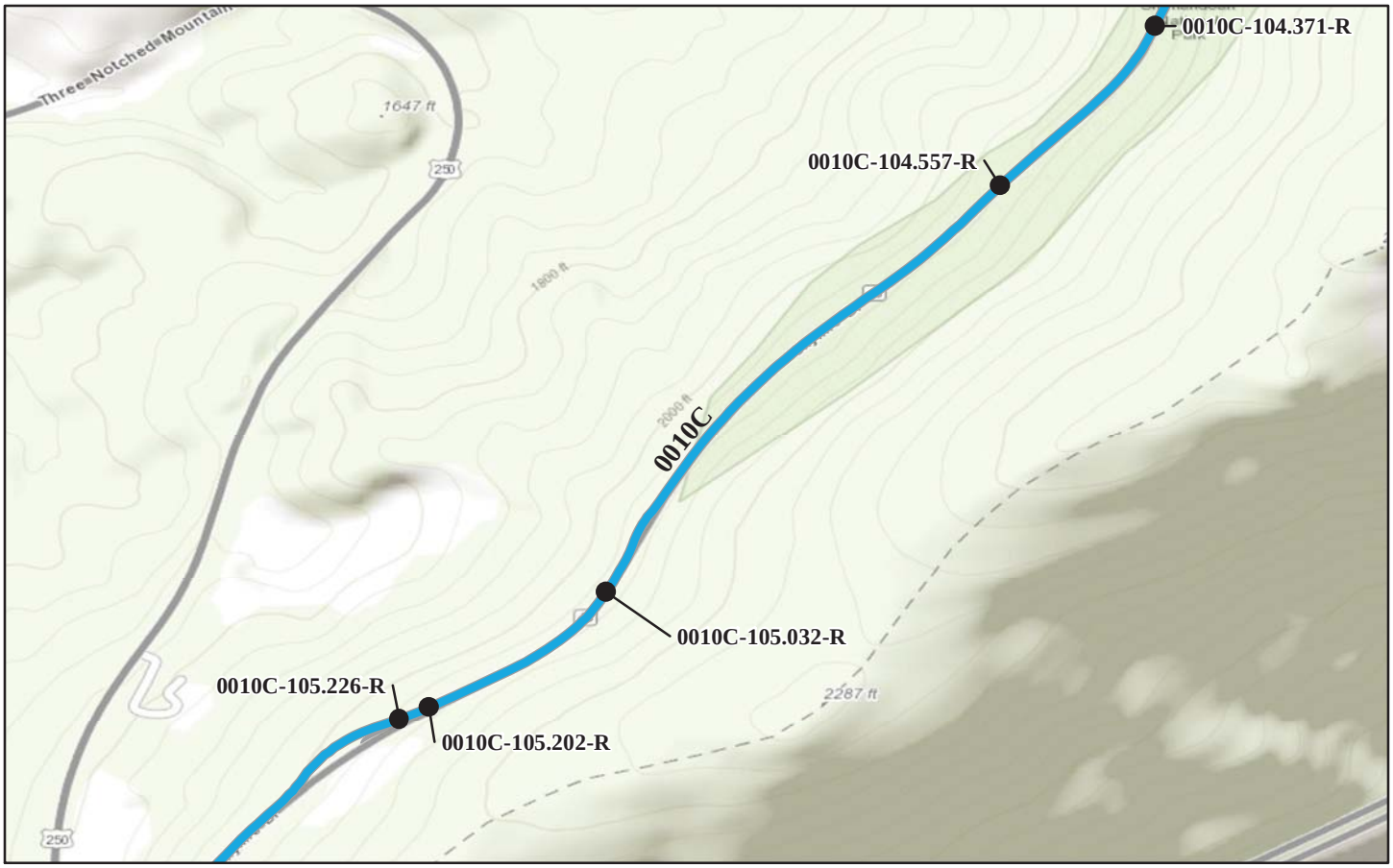
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-103.755-R 9/14/2010	565	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	$8,195.00
SHEN-0010C-103.936-R 9/14/2010	66	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-103.941-L 9/14/2010	53	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-0010C-103.949-R 9/14/2010	675	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	$4,373.00
SHEN-0010C-104.227-R 9/14/2010	476	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)



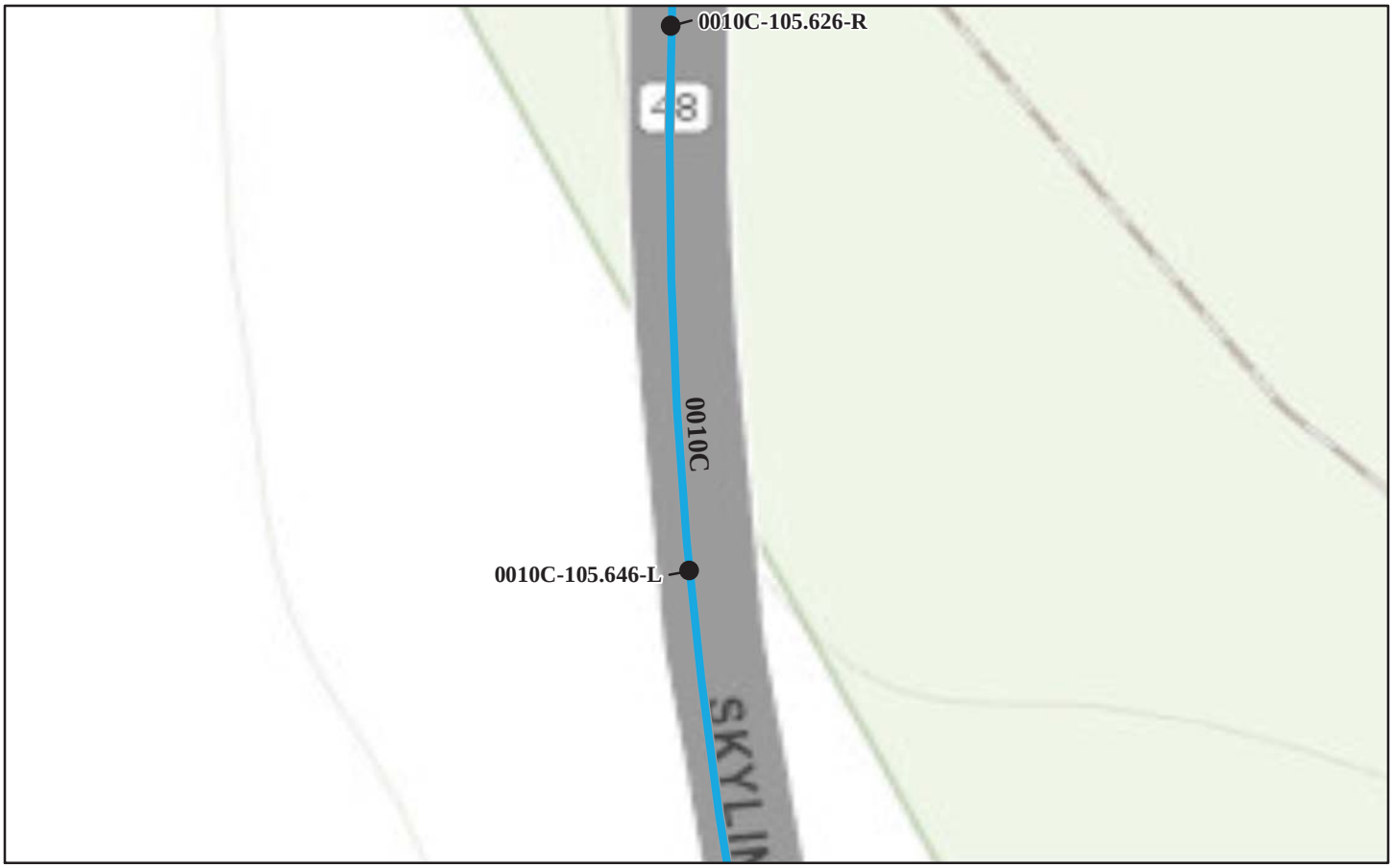
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment Begin	 End	*Repair Cost
SHEN-0010C-104.371-R 9/14/2010	726	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	$2,723.00
SHEN-0010C-104.557-R 9/14/2010	715	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	$0.00
SHEN-0010C-105.032-R 9/14/2010	918	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	NONE	$0.00
SHEN-0010C-105.202-R 9/14/2010	77	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	NONE	NONE	$0.00
SHEN-0010C-105.226-R 9/14/2010	903	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	NONE	SBT/LOG FLARED	$2,723.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)



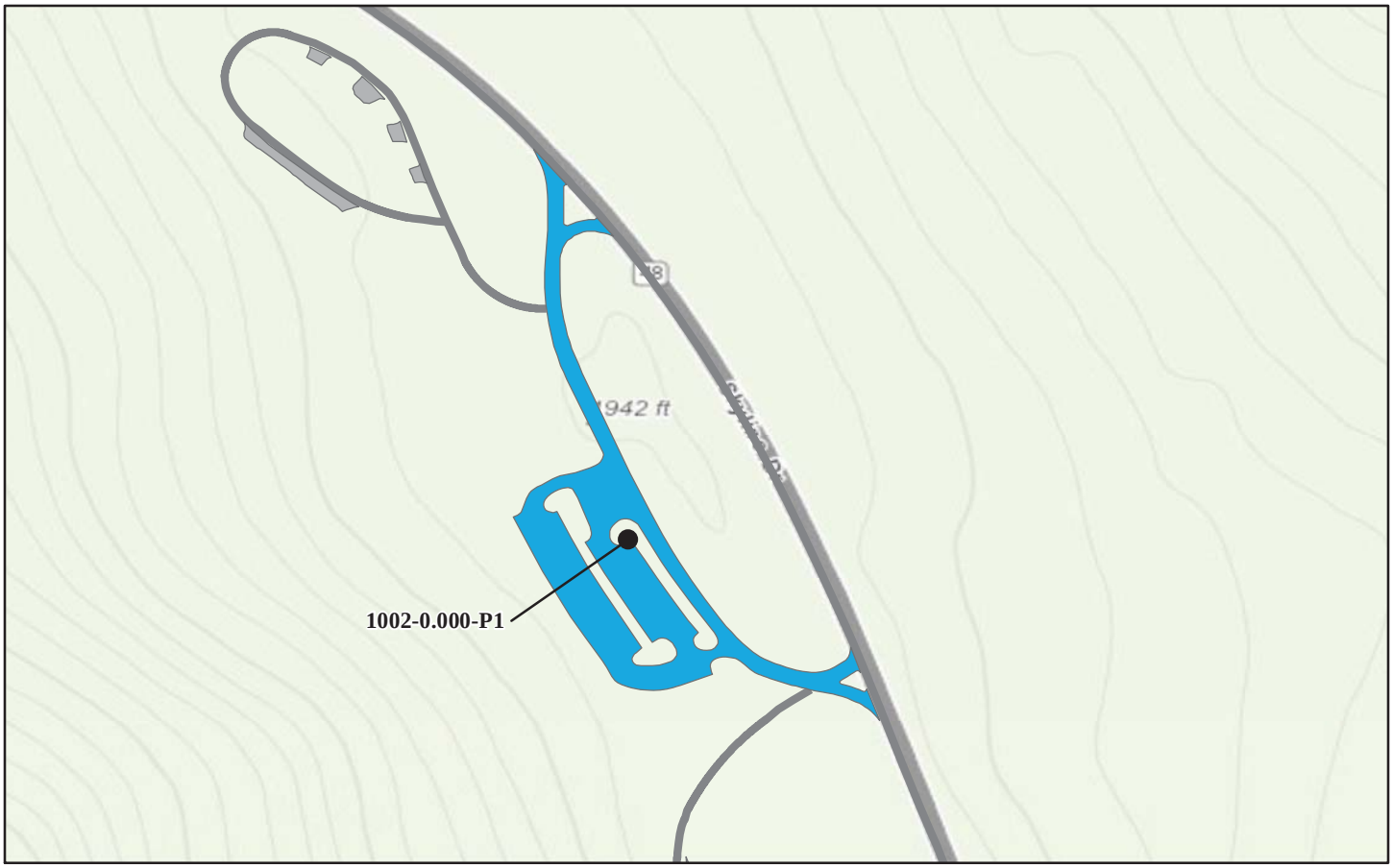
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-0010C-105.626-R 9/14/2010	149	OTHER: TIMBER RAIL ON CONCRETE POSTS	NONE	NONE	$21,758.00
SHEN-0010C-105.646-L 9/14/2010	51	OTHER: TIMBER RAIL ON CONCRETE POSTS	NONE	NONE	$9,070.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1002: DICKEY RIDGE VISITOR CENTER PARKING



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-1002-0.000-P1 9/12/2010	593	OTHER: LOG RAIL ON LOG POSTS	OTHER: LOG FLARED	OTHER: LOG FLARED	$11,666.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1044: SWIFT RUN OVERLOOK PARKING

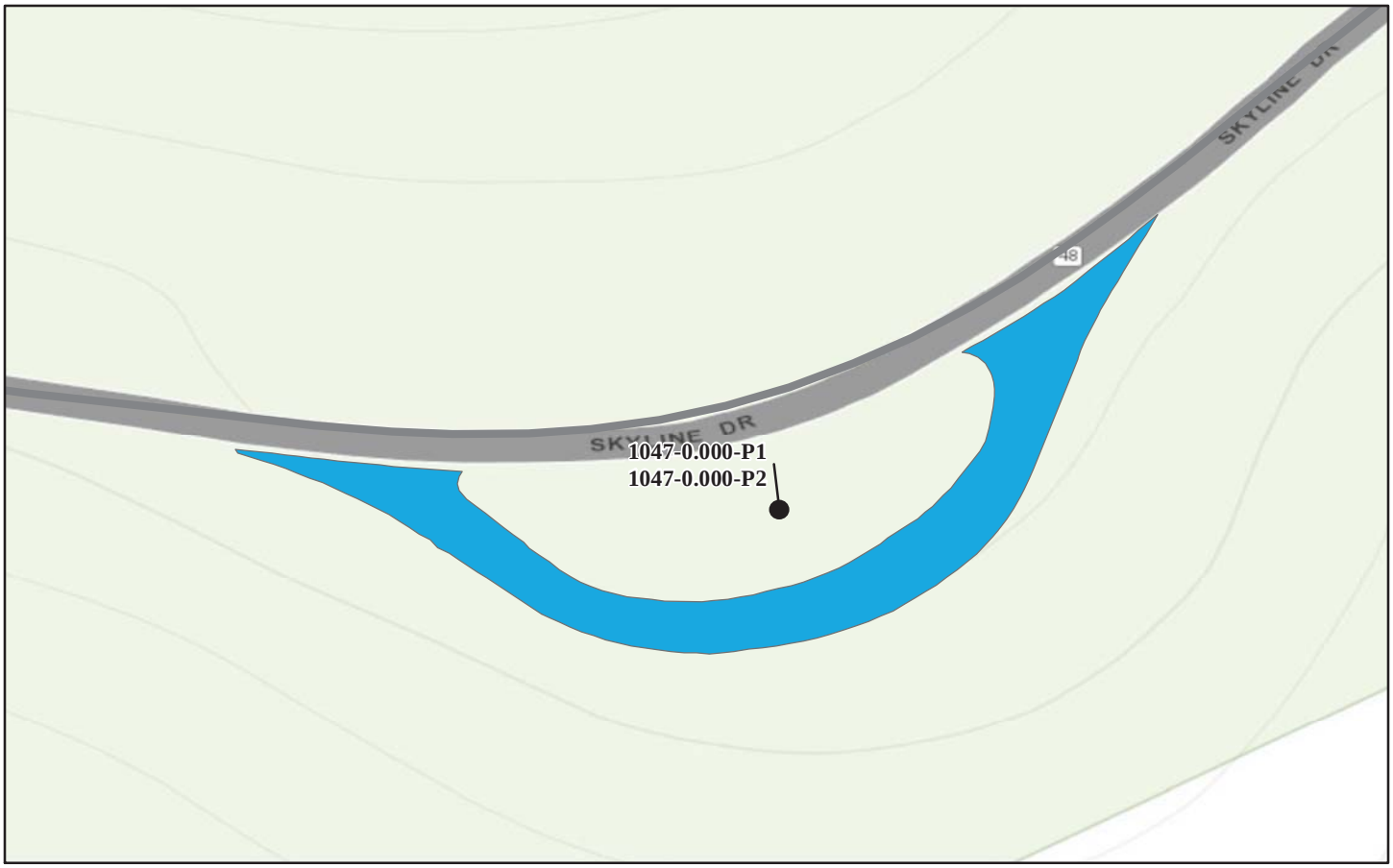
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment Begin	 End	*Repair Cost
SHEN-1044-0.000-P1 9/10/2010	68	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$4,241.00
SHEN-1044-0.000-P2 9/10/2010	54	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$3,163.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1047: BACON HOLLOW OVERLOOK PARKING



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-1047-0.000-P1 9/11/2010	57	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-1047-0.000-P2 9/11/2010	36	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1048: EATON HOLLOW OVERLOOK PARKING

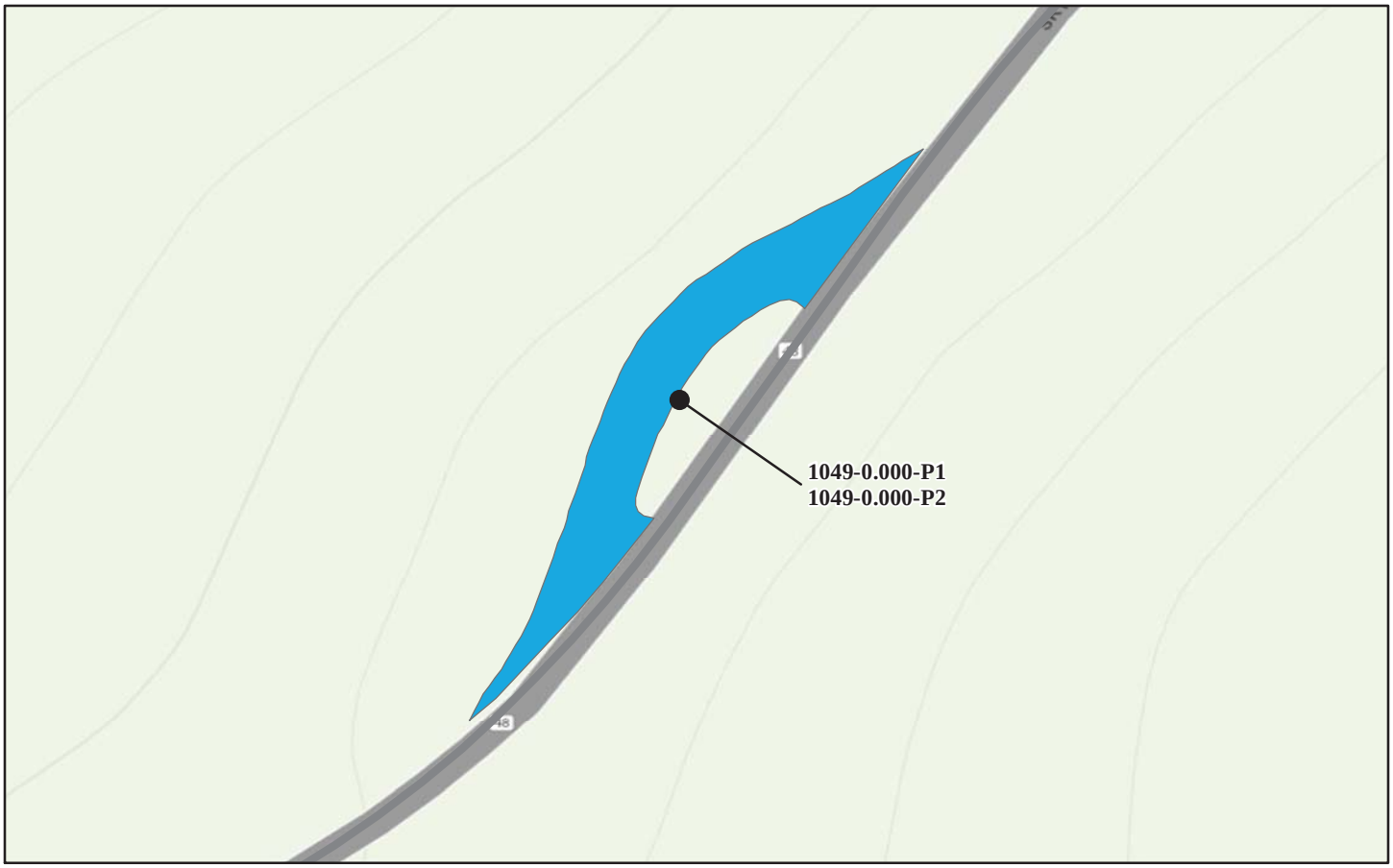
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-1048-0.000-P1 9/11/2010	21	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$32,120.00
SHEN-1048-0.000-P2 9/11/2010	23	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$39,820.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1049: ROCKY MOUNT OVERLOOK PARKING



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment Begin	 End	*Repair Cost
SHEN-1049-0.000-P1 9/11/2010	39	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$39,061.00
SHEN-1049-0.000-P2 9/11/2010	22	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$2,393.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1051: LOFT MOUNTAIN OVERLOOK PARKING

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment Begin	 End	*Repair Cost
SHEN-1051-0.000-P1 9/11/2010	458	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$6,705.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1052: TWO MILE RUN OVERLOOK PARKING

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment Begin	 End	*Repair Cost
SHEN-1052-0.000-P1 9/12/2010	112	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1053: BROWN MOUNTAIN OVERLOOK PARKING

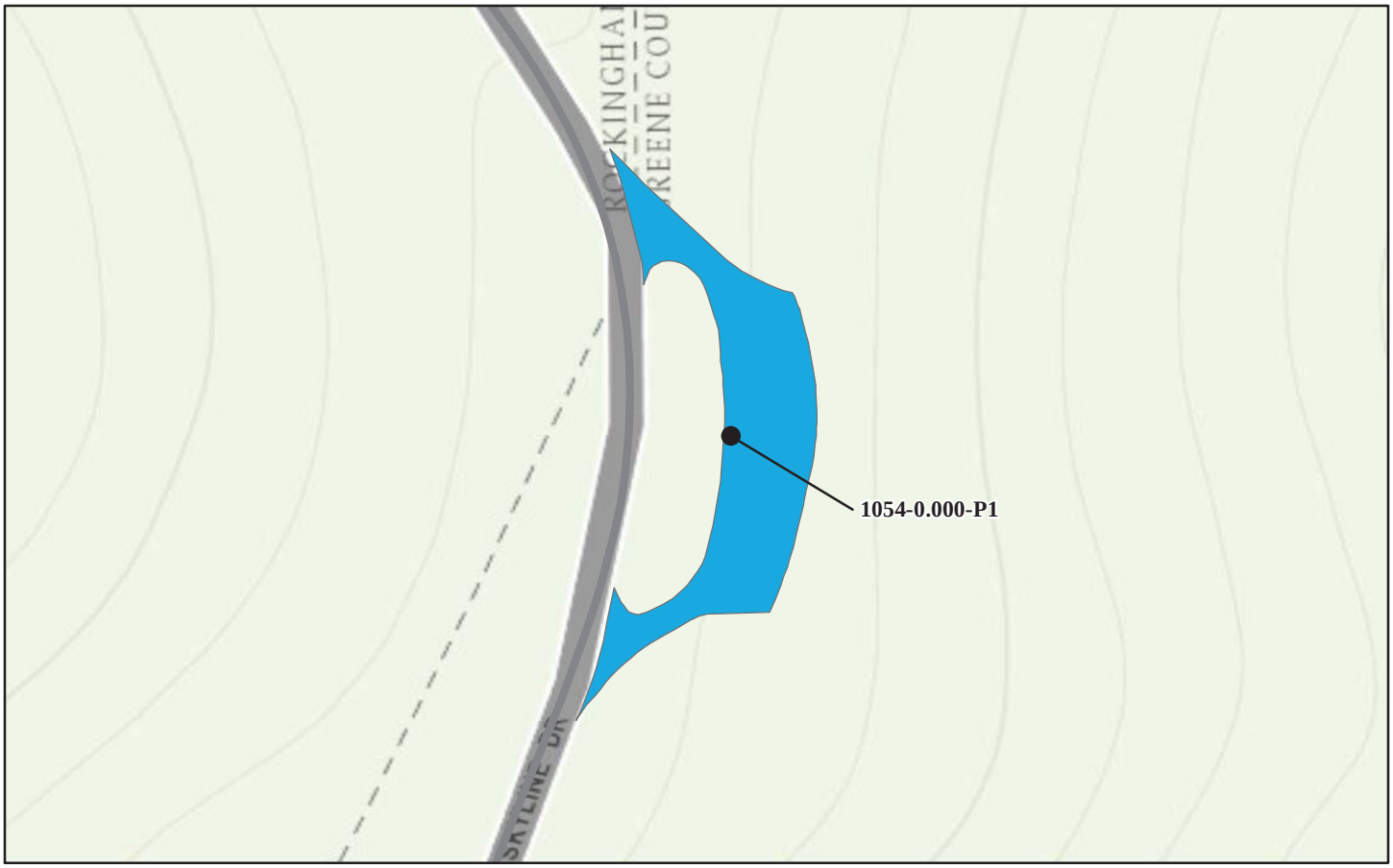
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-1053-0.000-P1 9/12/2010	40	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00
SHEN-1053-0.000-P2 9/12/2010	40	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1054: IVY CREEK OVERLOOK PARKING



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment Begin	 End	*Repair Cost
SHEN-1054-0.000-P1 9/12/2010	277	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$113,845.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1055: ROCKY TOP OVERLOOK PARKING

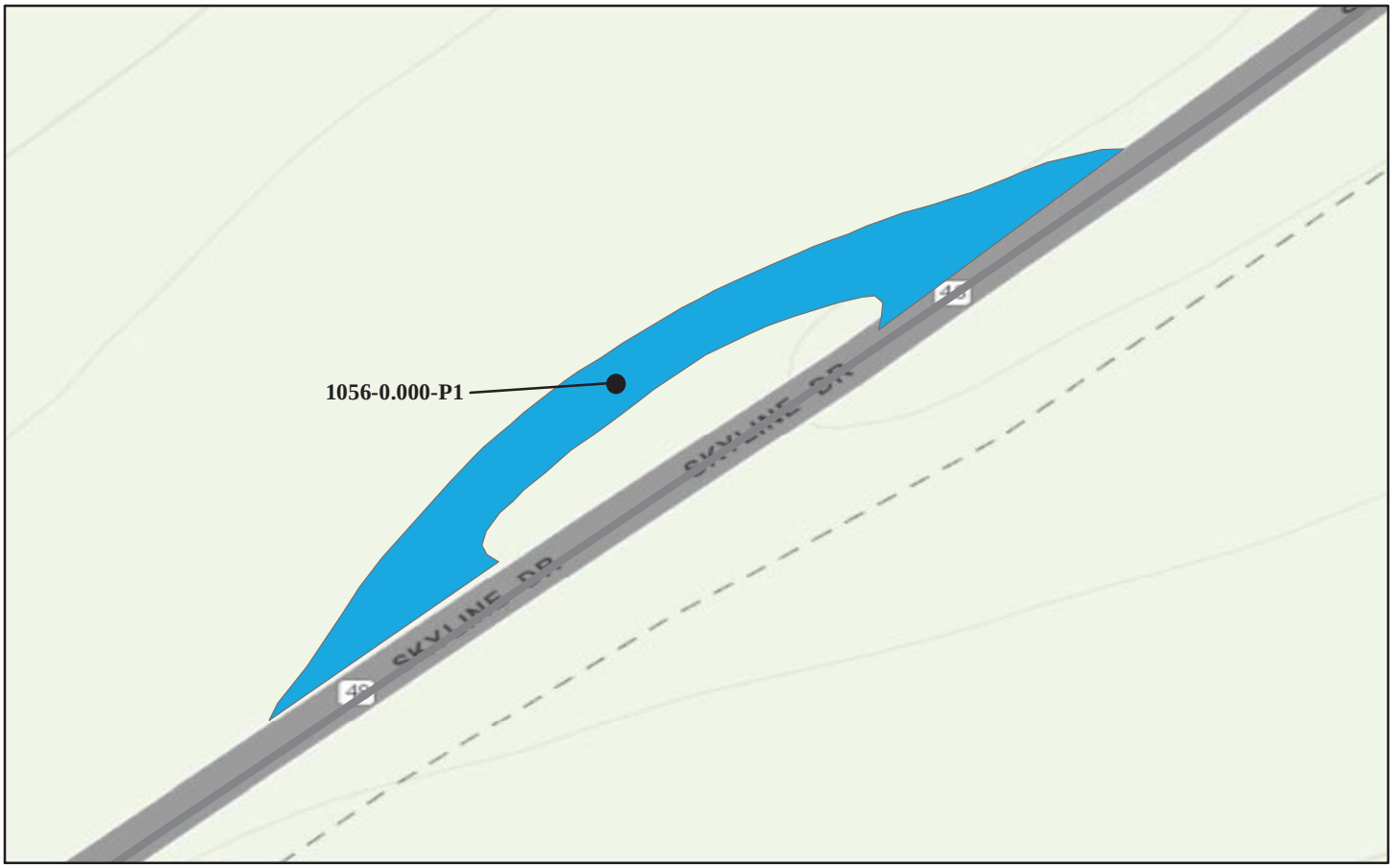
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-1055-0.000-P1 9/12/2010	273	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$256,025.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1056: BIG RUN OVERLOOK PARKING



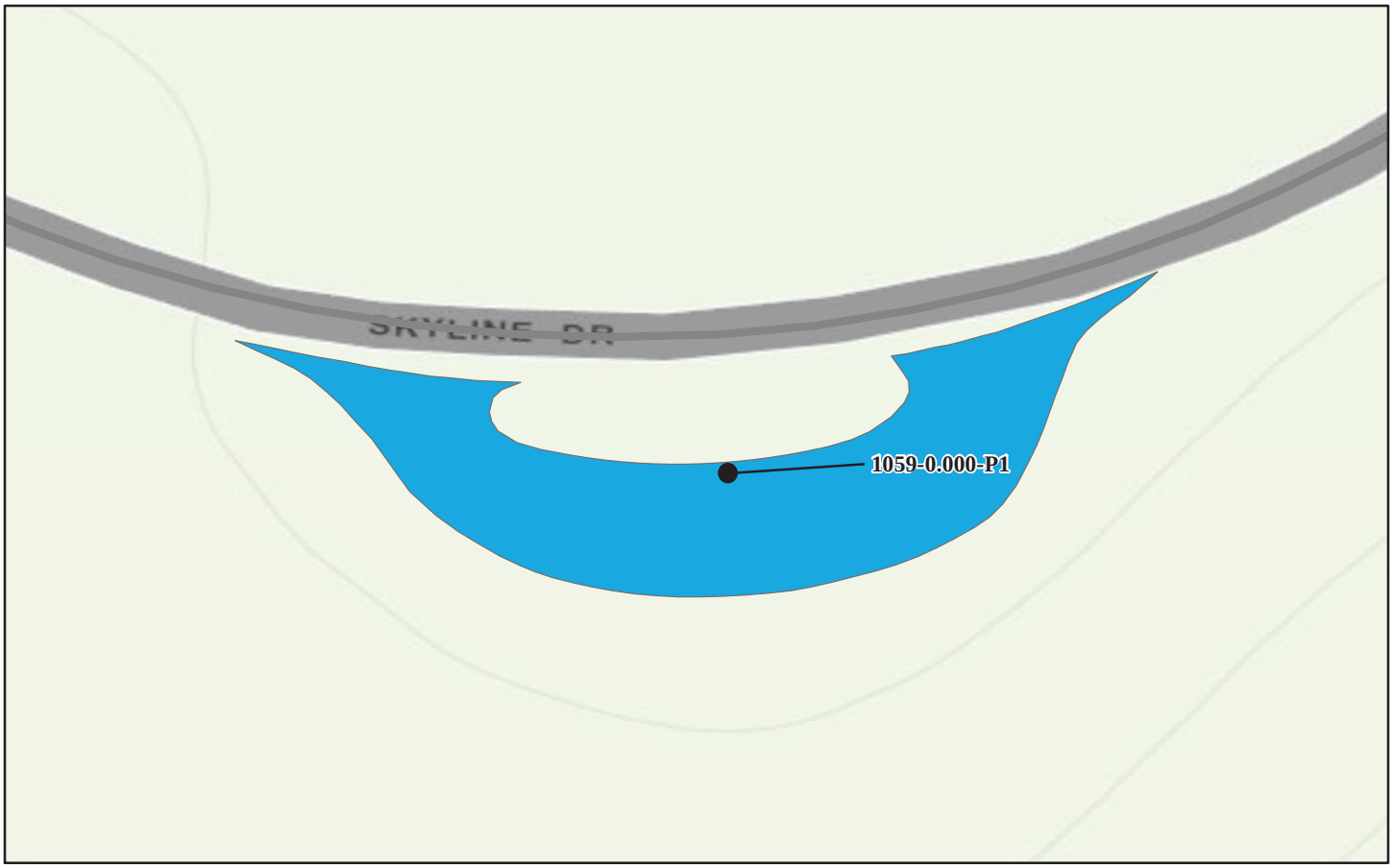
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-1056-0.000-P1 9/12/2010	273	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$18,733.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1059: TRAYFOOT MOUNTAIN OVERLOOK PARKING



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-1059-0.000-P1 9/13/2010	145	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$55,743.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1060: HORSEHEAD OVERLOOK PARKING

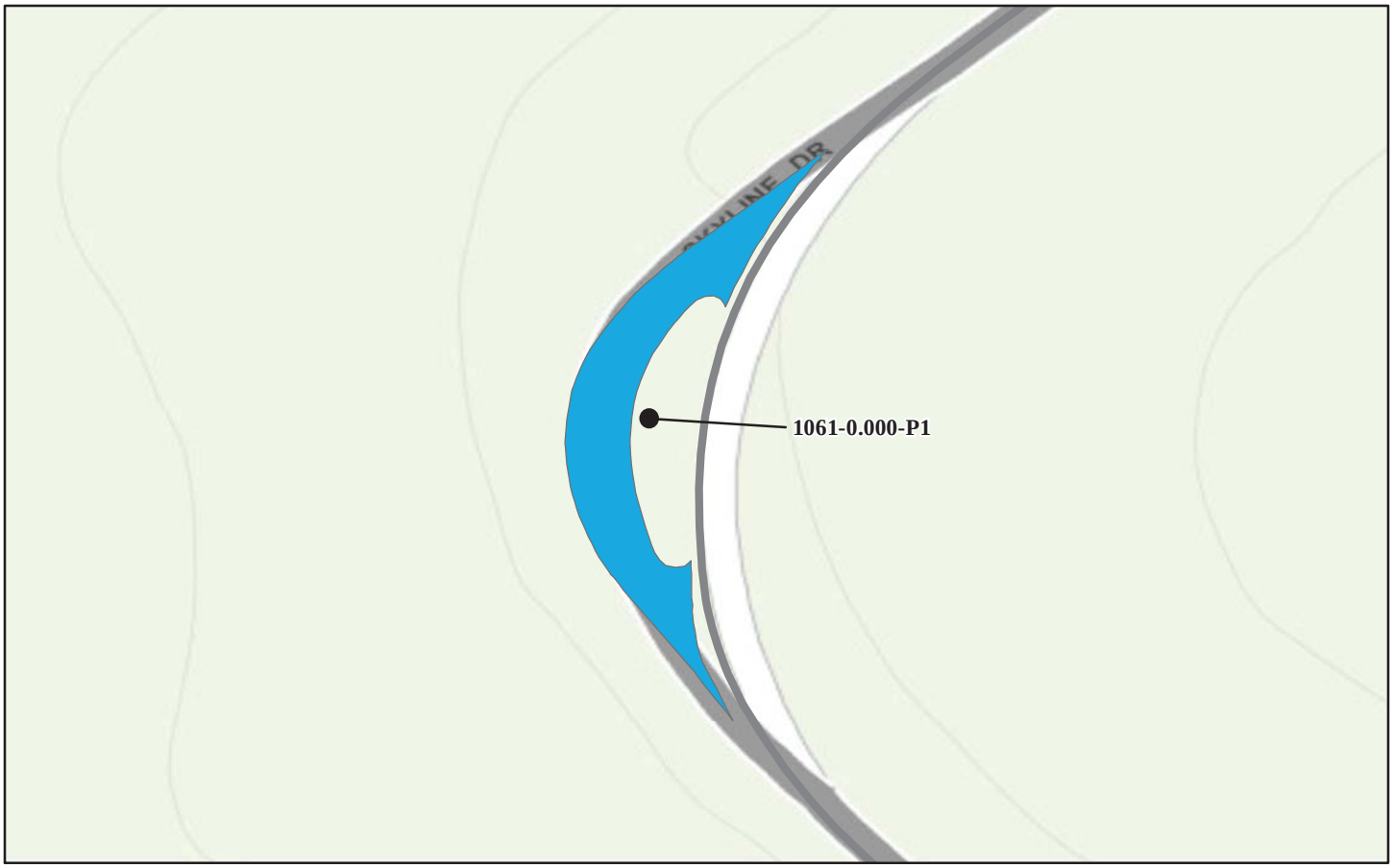
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment Begin	 End	*Repair Cost
SHEN-1060-0.000-P1 9/13/2010	179	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$245,025.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1061: RIPRAP OVERLOOK PARKING



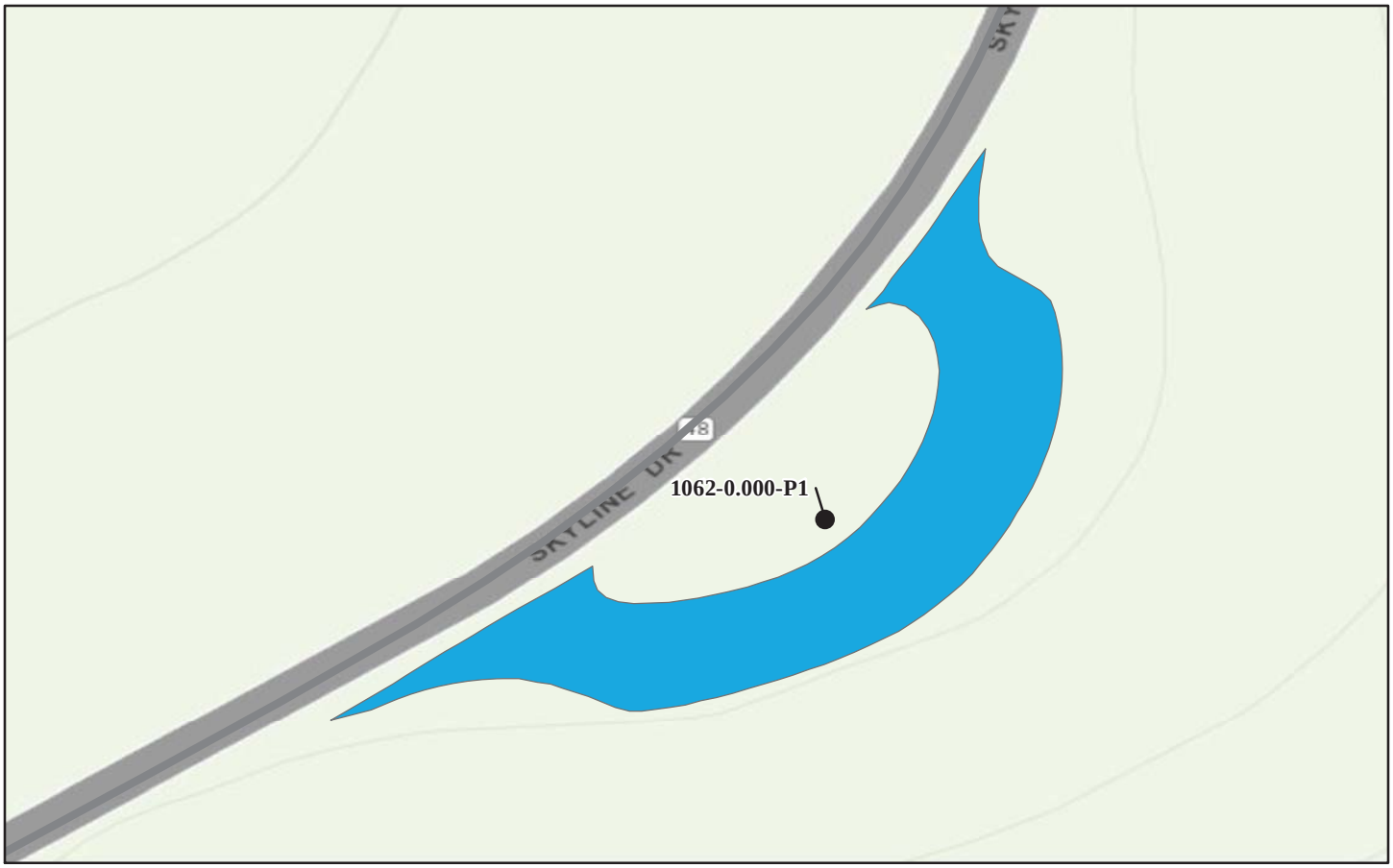
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-1061-0.000-P1 9/13/2010	247	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$0.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1062: MOORMANS RIVER OVERLOOK PARKING



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment Begin	 End	*Repair Cost
SHEN-1062-0.000-P1 9/13/2010	253	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$320,705.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1063: CRIMORA LAKE OVERLOOK PARKING

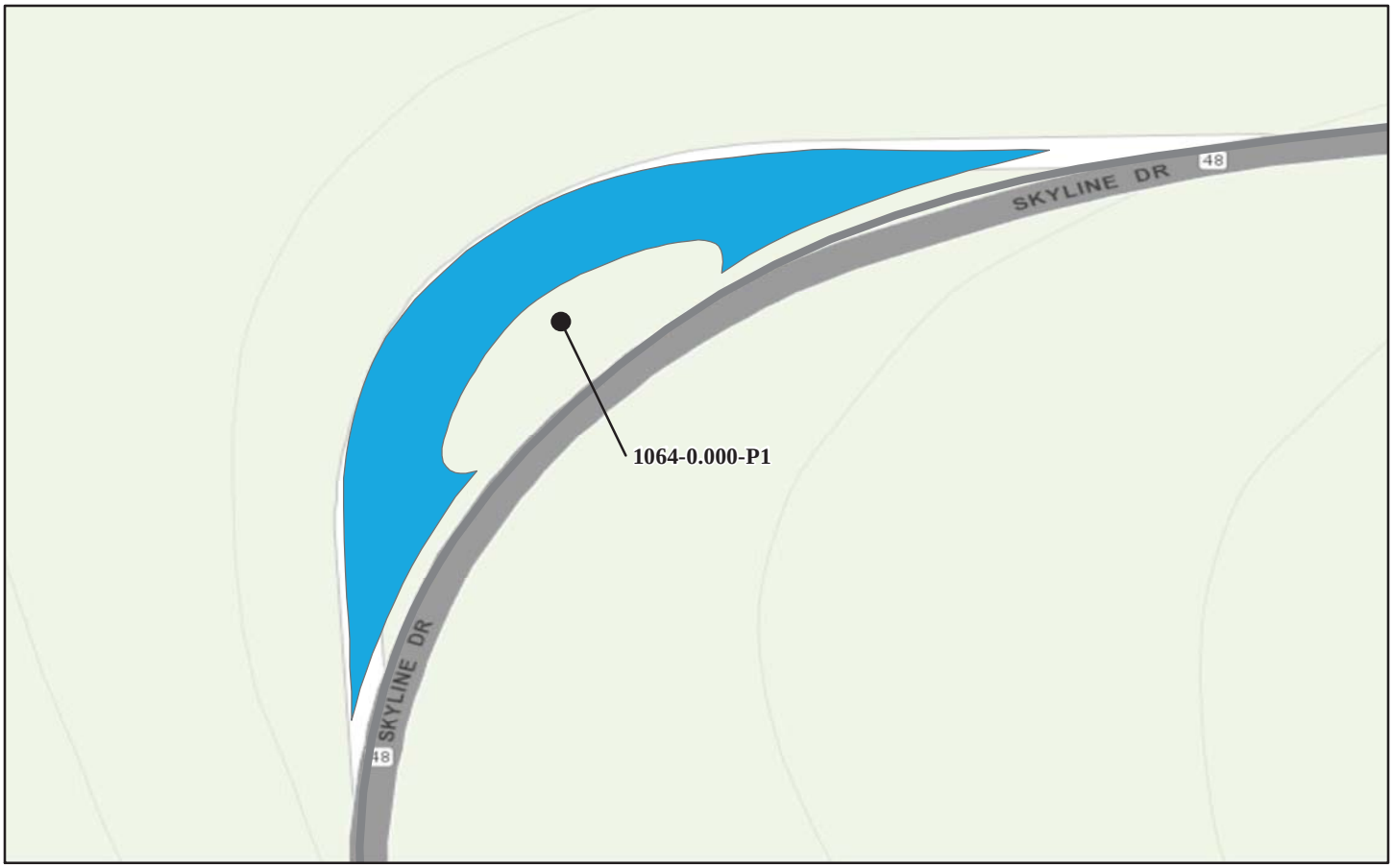
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-1063-0.000-P1 9/13/2010	247	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$354,668.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1064: TURK MOUNTAIN OVERLOOK PARKING



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-1064-0.000-P1 9/13/2010	365	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$371,140.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1065: SAWMILL RUN OVERLOOK PARKING

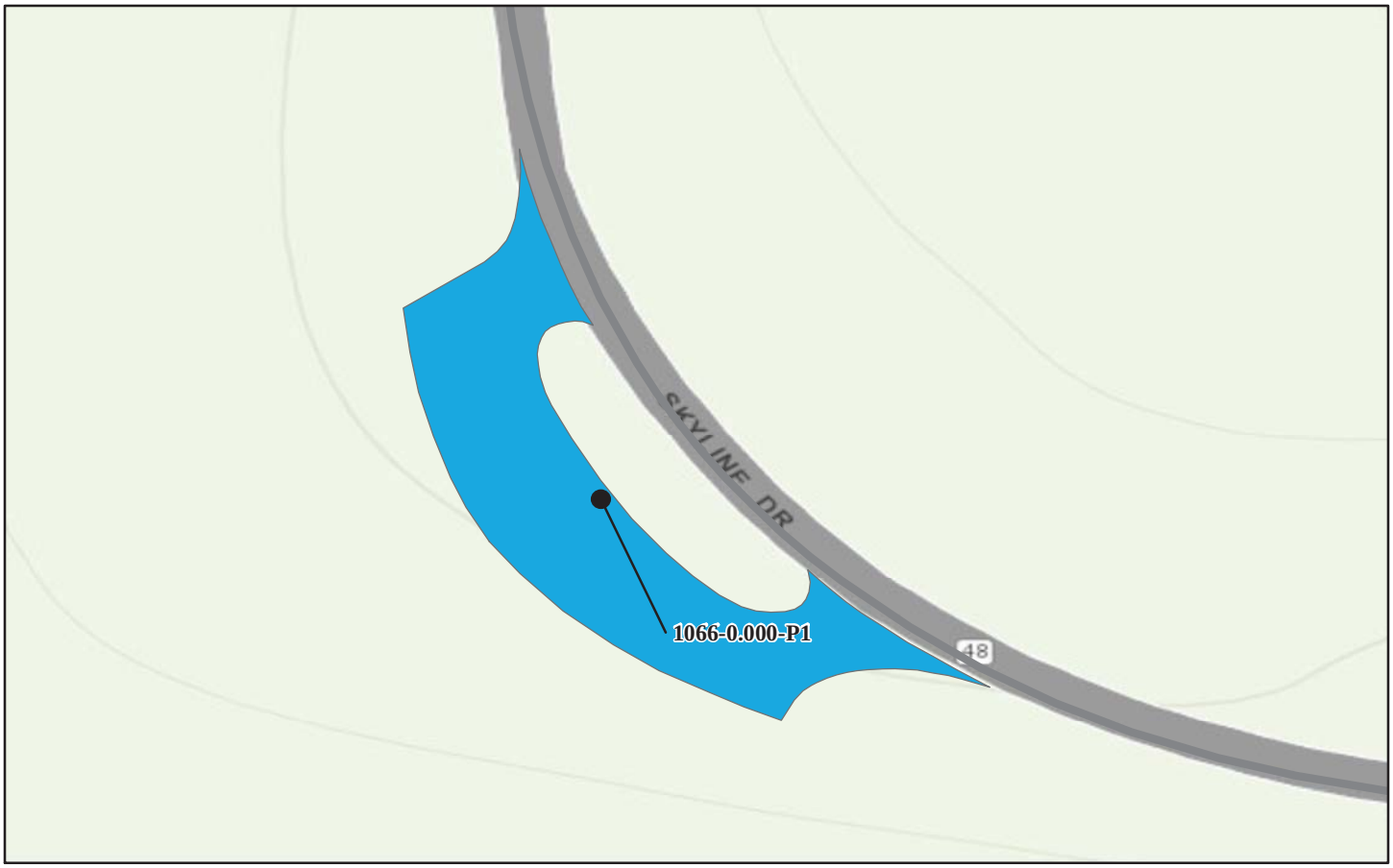
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment Begin	 End	*Repair Cost
SHEN-1065-0.000-P1 9/13/2010	233	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$316,443.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1066: SAWMILL RIDGE OVERLOOK PARKING



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
SHEN-1066-0.000-P1 9/13/2010	208	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	$140,113.00

*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Tier 3
Barrier Details

Shenandoah National Park

Federal Lands Highway
Road Inventory Program

Barrier ID:	**SHEN-0010A-0.178-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	16.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	256
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	28.2	**Lateral Offset (In.):**	90.3	**Road Grade (%):**	4.40

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. The barrier height was 0-3in. greater than the 27 in design height for the entire length.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-0.178-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	16.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_0.178_R_1.jpg

Barrier ID:	**SHEN-0010A-0.181-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	17.80

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	247
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	28.5	**Lateral Offset (In.):**	94.3	**Road Grade (%):**	5.30

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. The entire barrier exceeded the 27in. design height by 0-3 in.
	Breaking and Cracking:	Minor cracking of less than 1/4 in observed.
	Missing Elements:	No elements appear to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-0.181-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	17.80

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_0.181_L_1.jpg

Barrier ID:	**SHEN-0010A-1.505-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	35.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	252
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	54.5	**Road Grade (%):**	5.70

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is less than the 27 in design height by 1 to 2 in.
	Breaking and Cracking:	No breaks or cracks greater than 1/4 in width observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-1.505-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	35.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_1.505_L_1.jpg

Barrier ID:	**SHEN-0010A-1.815-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	29.30

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	253
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	26.0	**Lateral Offset (In.):**	57.5	**Road Grade (%):**	3.20

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. The barrier height was below the 27 in design height for the entire length by 1 to 2 in.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	No corrosion/weathering was observed.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-1.815-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	29.30

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_1.815_L_1.jpg

Barrier ID:	**SHEN-0010A-1.926-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	48.40

Barrier Description

Type:	STEEL-BACKED LOG RAIL	**Barrier Function:**	TRAFFIC
Barrier Material:	STEEL-BACKED TIMBER/LOG	**Post Material:**	WOOD
Blockout Type:	WOOD	**Length (ft.):**	542
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-2	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	**Is Beg. End Trtmt Crashhworthy?:**	NO	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	**Ending End Trtmt Crashhworthy?:**	NO		

Average Measurements

Design Height (In.):	31	**Width (In.):**	0.0	**Post Spacing (In.):**	119.8
Height (In.):	27.5	**Lateral Offset (In.):**	76.0	**Road Grade (%):**	4.50

Physical Condition

Barrier	**Alignment and Height:**	Alignment deflection is less than 6 in. 50 ft of the barrier was 1 to 3 in below design height (31 ines). 235 ft of the barrier was more than 3 ines below design height (31 ines).
	Breaking and Cracking:	No impact related breaking or cracking observed.
	Missing Elements:	No elements appear to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	Alignment is acceptable. Height is within 1-in of 31-in design height.
	Breaking and Cracking:	No impact related breaking or cracking observed.
	Missing Elements:	No elements appear to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.

Barrier ID:	**SHEN-0010A-1.926-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	48.40

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$6380
Brief Workorder:	Raise 285 feet of barrier to design height of 31 inches.				
Workorder:	Adjust Guardrail at $10- per -Lin. Ft. for 285 LF = $2850. Raise 285 feet of low barrier to 31 inch design height. Low Speed Traffic Control at $1475- per -Day for 2 Day(s) = $2950.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_1.926_R_1.jpg

Barrier ID:	**SHEN-0010A-3.819-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	31.30

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	2244
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.1	**Post Spacing (In.):**	0.0
Height (In.):	26.2	**Lateral Offset (In.):**	75.3	**Road Grade (%):**	5.70

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 3in. below to 1in. above the 27 in design height.
	Breaking and Cracking:	Minor cracking in grout with cracks less than 1/4 in width observed. There were 3 stones observed to be loose due to cracked grout.
	Missing Elements:	There were 8 stones observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-3.819-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	31.30

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$3097
Brief Workorder:	Replace 8 missing stones. Repoint grout around 3 loose stones.				
Workorder:	Replace missing stones at $150- per -Stone for 8 = $1200. Replace 8 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. Repoint grout around 3 loose stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_3.819_R_1.jpg

Barrier ID:	**SHEN-0010A-5.168-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	34.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	2124
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	25.5	**Lateral Offset (In.):**	71.4	**Road Grade (%):**	5.00

Physical Condition

Barrier	**Alignment and Height:**	Alignment deflection was less than 6 in. The entire barrier is 0-4in. below the 27 in design height.
	Breaking and Cracking:	Minor cracking of less than 1/4 in observed.
	Missing Elements:	7 stones were missing.
	Corrrosion and Weathering:	8 stones were loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-5.168-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	34.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2932
Brief Workorder:	Replace 7 missing stones and repoint 8 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 1 sq ft x 8 stone = 8 sq ft / 9 = 1 SY Replace stones at $150- per -each for 7 = $1050. Replace missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_5.168_R_1.jpg

Barrier ID:	**SHEN-0010A-5.623-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	637
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	24.8	**Lateral Offset (In.):**	70.9	**Road Grade (%):**	5.80

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is 0-4in. below the 27 in design height.
	Breaking and Cracking:	No cracks greater than 1/4 in width were observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-5.623-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_5.623_R_1.jpg

Barrier ID:	**SHEN-0010A-5.744-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	11.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	311
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	25.5	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. The barrier height is between 4in. below to 1in. above the 27 in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-5.744-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	11.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_5.744_R_1.jpg

Barrier ID:	**SHEN-0010A-5.803-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	31.30

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	3116
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.3	**Post Spacing (In.):**	0.0
Height (In.):	26.7	**Lateral Offset (In.):**	67.4	**Road Grade (%):**	3.30

Physical Condition

Barrier	**Alignment and Height:**	Alignment deflection is less than 6 in. The entire barrier is between 2in. below to 3in. above the 27 in design height.
	Breaking and Cracking:	Minor cracking of less than 1/4 in observed.
	Missing Elements:	3 stones were missing.
	Corrrosion and Weathering:	14 stones were loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-5.803-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	31.30

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2426
Brief Workorder:	Replace 3 missing stones and re-point 14 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 2 SY = $280. 1 sq ft x 14 stones / 9 = 1.6 sq yd Replace stones at $150- per -each for 3 = $450. Replace missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

Condition photos are not available for SHEN-0010A-5.803-R.

Barrier ID:	**SHEN-0010A-6.681-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	40.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1307
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.8	**Post Spacing (In.):**	0.0
Height (In.):	26.3	**Lateral Offset (In.):**	67.0	**Road Grade (%):**	6.10

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 2in. below to 1in. above the 27 in design height.
	Breaking and Cracking:	Minor cracking in grout with cracks no greater than 1/4 in width observed. There was 1 stone observed to be loose due to cracked grout.
	Missing Elements:	There was 1 stone observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-6.681-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	40.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1942
Brief Workorder:	Replace 1 missing stone. Repoint grout around 1 loose stone.				
Workorder:	Replace missing stones at $150- per -Stone for 1 = $150. Replace 1 missing stone. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 1sf / 9sf/sy => 1sy. Repoint grout around 1 loose stone. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_6.681_R_1.jpg

Barrier ID:	**SHEN-0010A-6.925-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/16/2010	**Barrier Rating:**	23.60

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	105
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	25.0	**Post Spacing (In.):**	0.0
Height (In.):	16.7	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. The barrier height is 9-6in. below the 24 in design height.
	Breaking and Cracking:	Breaks and cracks up to 1/4 in in width were observed.
	Missing Elements:	No elements appeared to be missing.
	Corrrosion and Weathering:	The grout was deteriorated in many areas throughout the entire length causing unsecure stones.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-6.925-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/16/2010	**Barrier Rating:**	23.60

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$93363
Brief Workorder:	Raise guardwall 7-in. Remove and reset 105-ft of stone masonry guardwall on concrete footer to design height of 24-in.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 294 CF = $73500. [(1.4ft)(2ft)(105ft)] = 294 cf. Structural Concrete at $1000- per -Cu. Yd. for 4 CY = $4000. [(1.4ft)(0.6ft)(105ft)] /27 = 3.3 cy. Low Speed Traffic Control at $1475- per -Day for 5 Day(s) = $7375. 1 day removal and 4 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

Condition photos are not available for SHEN-0010A-6.925-R.

Barrier ID:	**SHEN-0010A-6.959-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/16/2010	**Barrier Rating:**	17.10

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	79
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	27.2	**Post Spacing (In.):**	0.0
Height (In.):	17.7	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	Alignment deflection was less than 6 in. 54ft. of barrier is 3-6in. below the 24in. design height and 25ft. is more than 6in. below the 24in. design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less observed.
	Missing Elements:	No elements appear to be missing.
	Corrrosion and Weathering:	Monitor deterioration of grout.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-6.959-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/16/2010	**Barrier Rating:**	17.10

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$35970
Brief Workorder:	Raise guardwall 3-in. Remove and reset 25-ft. of stone masonry guardwall on concrete footer to design height of 24-in.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 115 CF = $28750. [(2.3ft)(2ft)(25ft)] = 115 cf. Structural Concrete at $1000- per -Cu. Yd. for 1 CY = $1000. [(2.3ft)(0.5ft)(25ft)] /27 = 1 cy. Low Speed Traffic Control at $1475- per -Day for 2 Day(s) = $2950. 1 day removal and 1 day installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

Condition photos are not available for SHEN-0010A-6.959-R.

Barrier ID:	**SHEN-0010A-6.974-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	38.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	870
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	26.2	**Lateral Offset (In.):**	67.1	**Road Grade (%):**	6.40

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height was within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	2 stones were missing.
	Corrrosion and Weathering:	6 stones were loose due to weathering of the grout.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-6.974-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	38.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2107
Brief Workorder:	Replace 2 stones and repoint grout around 6 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. Replace Stone at $150- per -Each for 2 = $300. Replace 2 stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

Condition photos are not available for SHEN-0010A-6.974-R.

Barrier ID:	**SHEN-0010A-7.371-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	28.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	235
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	27.0	**Lateral Offset (In.):**	76.5	**Road Grade (%):**	5.20

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 1-in below to 1-in above the 27-in design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less observed.
	Missing Elements:	No elements appear to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-7.371-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	28.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_7.371_R_1.jpg

Barrier ID:	**SHEN-0010A-7.482-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	20.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	372
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	26.0	**Lateral Offset (In.):**	80.0	**Road Grade (%):**	5.70

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	Barrier is in like new condition.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-7.482-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	20.70

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_7.482_R_1.jpg

Barrier ID:	**SHEN-0010A-8.252-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	29.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1616
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.1	**Post Spacing (In.):**	0.0
Height (In.):	26.0	**Lateral Offset (In.):**	61.7	**Road Grade (%):**	2.20

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	7 stones were missing.
	Corrrosion and Weathering:	2 stones were loose.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-8.252-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	29.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2932
Brief Workorder:	Replace 7 missing stones and repoint grout around 2 loose stones.				
Workorder:	Replace Stone at $150- per -Each for 7 = $1050. Replace 7 stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 2 (1 ft x 1 ft) stones divided by 9 sq ft per sq yd equals 1 sq yd. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_8.252_L_1.jpg

Barrier ID:	**SHEN-0010A-8.834-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	41.20

Barrier Description

Type:	OTHER: DRY-STACK STONE W/O CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	619
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	25.5	**Post Spacing (In.):**	0.0
Height (In.):	13.0	**Lateral Offset (In.):**	73.5	**Road Grade (%):**	4.10

Physical Condition

Barrier	**Alignment and Height:**	Alignment deflection was less than 6 in. Barrier is 2.5 to 3.5 in below assumed 16-in. design height.
	Breaking and Cracking:	68 ft of the barrier has been knocked down.
	Missing Elements:	2 stones were missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-8.834-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	41.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$49995
Brief Workorder:	Remove and reset 68 feet of guardwall and replace 2 missing stones.				
Workorder:	Replace stones at $150- per -Each for 2 Unit(s) = $300. Replace missing stones. Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 157 CF = $39250. (1.1ft)(2.1ft)(68ft)=157 cf. Low Speed Traffic Control at $1475- per -Day for 4 Day(s) = $5900. 1 day removal and 3 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_8.834_L_1.jpg

Barrier ID:	**SHEN-0010A-8.972-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	39.50

Barrier Description

Type:	OTHER: DRY-STACK STONE W/O CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	334
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	22.7	**Post Spacing (In.):**	0.0
Height (In.):	14.0	**Lateral Offset (In.):**	77.6	**Road Grade (%):**	4.40

Physical Condition

Barrier	**Alignment and Height:**	Some stones have been shifted 6 or more in out of alignment. Height was 1.5 - 2.5 in below the assumed 16in. design height.
	Breaking and Cracking:	Approximately 106 ft of the barrier is in need of re-stacking.
	Missing Elements:	There were 16 stones observed to be missing.
	Corrrosion and Weathering:	Loose/missing stones appear caused by weathering.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-8.972-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	39.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$77028
Brief Workorder:	Remove & reset 106LF of guardwall and replace 16 missing stones.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 241 CF = $60250. [(1.2ft)(1.9ft)(106ft)] = 241 cf. Replace stones at $150- per -EA for 16 = $2400. Replace stones. Low Speed Traffic Control at $1475- per -Day for 5 Day(s) = $7375. 1 day removal and 4 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_8.972_L_1.jpg

Barrier ID:	**SHEN-0010A-9.386-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	29.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1200
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.1	**Post Spacing (In.):**	0.0
Height (In.):	26.2	**Lateral Offset (In.):**	63.5	**Road Grade (%):**	6.50

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 1-in below to 3-in above the 27-in design height.
	Breaking and Cracking:	Minor breaking/cracking up to 1/4 in in width was observed.
	Missing Elements:	1 stone was missing.
	Corrrosion and Weathering:	8 stones were loose due to weathering of the grout.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-9.386-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	29.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1942
Brief Workorder:	Replace 1 missing stone and repoint grout around 8 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 8 (1 ft x 1 ft) stones / 9 sq ft per sq yd = 1 sq yd. Replace Stone at $150- per -Each for 1 = $150. Replace 1 stone. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_9.386_R_1.jpg

Barrier ID:	**SHEN-0010A-9.638-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	25.60

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	416
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	24.5	**Lateral Offset (In.):**	61.5	**Road Grade (%):**	5.40

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 1-4-in below the 27-in design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less observed.
	Missing Elements:	No elements appear to be missing.
	Corrrosion and Weathering:	2 stones were loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-9.638-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	25.60

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1777
Brief Workorder:	Re-point 2 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 1 sq ft x 2 stones = 2 sq ft / 9 = .22 sy. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_9.638_R_1.jpg

Barrier ID:	**SHEN-0010A-9.797-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	24.30

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	445
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.5	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	59.7	**Road Grade (%):**	7.00

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking in grout with cracks no greater than 1/4 in width observed.
	Missing Elements:	There were 3 stones observed to be missing.
	Corrrosion and Weathering:	There were 3 stones observed to be loose due to cracked/weathered grout. Otherwise the barrier is in like new condition.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-9.797-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	24.30

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2272
Brief Workorder:	Replace 3 missing stones. Repoint grout around 3 loose stones.				
Workorder:	Replace missing stones at $150- per -Stone for 3 = $450. Replace 3 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 3sf / 9sf/sy = 0.3sy => 1sy. Repoint grout around 3 loose stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_9.797_R_1.jpg

Barrier ID:	**SHEN-0010A-9.997-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	22.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	350
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	25.0	**Lateral Offset (In.):**	60.0	**Road Grade (%):**	6.20

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-9.997-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	22.70

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_9.997_R_1.jpg

Barrier ID:	**SHEN-0010A-10.150-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	OTHER: DRY-STACK STONE W/O CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	307
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	25.2	**Post Spacing (In.):**	0.0
Height (In.):	14.8	**Lateral Offset (In.):**	64.5	**Road Grade (%):**	6.20

Physical Condition

Barrier	**Alignment and Height:**	Alignment deflection was 6 in or less. Height was 0.5 to 1.5 in below the assumed 16in. design height.
	Breaking and Cracking:	69 ft of the barrier has been knocked down.
	Missing Elements:	9 stones were missing.
	Corrrosion and Weathering:	Loose/missing stones appear caused by weathering.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-10.150-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$55825
Brief Workorder:	Remove & reset 69LF of guardwall and replace 16 missing stones.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 174 CF = $43500. [(1.2ft)(2.1ft)(69ft)] = 174 cf. Replace stones at $150- per -EA for 9 = $1350. Replace missing stones. Low Speed Traffic Control at $1475- per -Day for 4 Day(s) = $5900. 1 day removal and 3 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_10.150_R_1.jpg

Barrier ID:	**SHEN-0010A-10.224-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	21.10

Barrier Description

Type:	OTHER: DRY-STACK STONE W/O CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	160
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	25.5	**Post Spacing (In.):**	0.0
Height (In.):	17.2	**Lateral Offset (In.):**	72.0	**Road Grade (%):**	6.60

Physical Condition

Barrier	**Alignment and Height:**	Several stones were deflected 6 in or more. Barrier is 1.5 in below to 3 ines above the assumed 16in. design height.
	Breaking and Cracking:	No breaks or cracks greater than 1/4 in width observed. 9 ft of the barrier has been knocked down.
	Missing Elements:	There were 3 stones observed to be missing.
	Corrrosion and Weathering:	Missing/loose stones appear caused by weathering.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-10.224-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	21.10

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$9543
Brief Workorder:	Remove and reset 9 LF of guardwall and replace 3 missing stones.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 27 CF = $6750. [(1.4ft)(2.1ft)(9ft)] = 27 cf. Replace stones at $150- per -EA for 3 = $450. Replace missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_10.224_R_1.jpg

Barrier ID:	**SHEN-0010A-10.651-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	23.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	341
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	75.6	**Road Grade (%):**	0.80

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 1-4-in below the 27-in design height.
	Breaking and Cracking:	Minor cracking in grout with cracks no greater than 1/4 in width observed.
	Missing Elements:	There was 1 stone observed to be missing.
	Corrrosion and Weathering:	There were 4 stones observed to be loose due to cracked/weathered grout.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-10.651-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	23.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1942
Brief Workorder:	Replace 1 missing stone. Repoint grout around 4 loose stones.				
Workorder:	Replace missing stones at $150- per -Stone for 1 = $150. Replace 1 missing stone. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 4sf / 9sf/sy = 0.4sy => 1sy. Repoint grout around 4 loose stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_10.651_L_1.jpg

Barrier ID:	**SHEN-0010A-10.754-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	33.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	601
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	23.8	**Lateral Offset (In.):**	74.8	**Road Grade (%):**	0.60

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 1-5-in below the 27-in design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less observed.
	Missing Elements:	1 stone was missing.
	Corrrosion and Weathering:	25 stones were loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-10.754-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	33.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2250
Brief Workorder:	Replace 1 missing stone and re-point 25 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 3 SY = $420. 1 sq ft x 25 stones = 25 sq ft / 9 = 2.8 sy. Replace stone at $150- per -each for 1 = $150. Replace missing stone Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_10.754_L_1.jpg

Barrier ID:	**SHEN-0010A-10.863-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	8.60

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	127
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	20.2	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height between 3 and 6in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	1 stone was missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-10.863-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	8.60

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1788
Brief Workorder:	Replace 1 missing stone				
Workorder:	Replace stone at $150- per -EA for 1 = $150. Replace stone Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

Condition photos are not available for SHEN-0010A-10.863-L.

Barrier ID:	**SHEN-0010A-10.913-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	34.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1152
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	74.8	**Road Grade (%):**	1.70

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking in grout with cracks no greater than 1/4 in width observed.
	Missing Elements:	There were 5 stones observed to be missing.
	Corrrosion and Weathering:	There were 8 stones observed to be loose due to cracked/weathered grout.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-10.913-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	34.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2602
Brief Workorder:	Replace 5 missing stones. Repoint grout around 8 loose stones.				
Workorder:	Replace missing stones at $150- per -Stone for 5 = $750. Replace 5 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 8sf / 9sf/sy = 1sy. Repoint grout around 8 loose stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

Condition photos are not available for SHEN-0010A-10.913-L.

Barrier ID:	**SHEN-0010A-11.182-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	703
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	24.1	**Lateral Offset (In.):**	68.5	**Road Grade (%):**	0.80

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 2-4-in below the 27-in design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less observed.
	Missing Elements:	9 stones were missing.
	Corrrosion and Weathering:	4 stones were loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-11.182-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$3262
Brief Workorder:	Replace 9 missing stones and re-point 4 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 1 sq ft x 4 stones = 4 sq ft / 9 = 0.4 sy. Replace stones at $150- per -each for 9 = $1350. Replace missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_11.182_L_1.jpg

Barrier ID:	**SHEN-0010A-11.395-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	36.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	974
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.3	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	70.0	**Road Grade (%):**	1.00

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracks up to 1/4 in in width were observed.
	Missing Elements:	13 stones were missing.
	Corrrosion and Weathering:	53 stones were loose due to deterioration in the grout.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-11.395-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	36.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$4692
Brief Workorder:	Replace 13 missing stones and repoint grout around 53 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 6 SY = $840. 53 (1 ft x 1 ft) stones divided by 9 sq ft per sq yd equals 6 sq yds. Replace Stone at $150- per -Each for 13 = $1950. Replace 13 stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_11.395_L_1.jpg

Barrier ID:	**SHEN-0010A-11.613-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	29.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	285
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	86.6	**Road Grade (%):**	0.30

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaks or cracks greater than 1/4 in width observed.
	Missing Elements:	There were 2 stones observed to be missing.
	Corrrosion and Weathering:	Weathering of grout is minimal and has only caused 2 stones to become dislodged.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-11.613-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	29.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2107
Brief Workorder:	Replace 2 missing stones and repoint grout around 2 loose stones.				
Workorder:	Replace missing stones at $150- per -Stone for 2 = $300. Replace 2 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_11.613_R_1.jpg

Barrier ID:	**SHEN-0010A-11.778-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	540
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	25.5	**Lateral Offset (In.):**	82.3	**Road Grade (%):**	0.80

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less observed.
	Missing Elements:	7 stones were missing.
	Corrrosion and Weathering:	26 stones were loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-11.778-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$3240
Brief Workorder:	Replace 7 missing stones and re-point grout around 26 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 3 SY = $420. 1 sq ft x 26 stones = 26 sq ft / 9 = 2.8 sy. Replace stones at $150- per -each for 7 = $1050. Replace missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_11.778_L_1.jpg

Barrier ID:	**SHEN-0010A-11.932-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	29.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	298
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	78.8	**Road Grade (%):**	1.10

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracks up to 1/4 in in width were observed.
	Missing Elements:	4 stones were missing.
	Corrrosion and Weathering:	7 stones were loose due to deterioration of the grout.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-11.932-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	29.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2437
Brief Workorder:	Replace 4 missing stones and repoint grout around 7 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 7 (1 ft x 1 ft) stones divided by 9 sq ft per sq yd equals 1 sq yd. Replace Stone at $150- per -Each for 4 = $600. Replace 4 stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_11.932_R_1.jpg

Barrier ID:	**SHEN-0010A-12.617-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	40.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	703
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.3	**Post Spacing (In.):**	0.0
Height (In.):	24.0	**Lateral Offset (In.):**	81.0	**Road Grade (%):**	5.40

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking in grout with cracks no greater than 1/4 in width observed.
	Missing Elements:	There were 26 stones observed to be missing.
	Corrrosion and Weathering:	There were 60 stones observed to be loose due to cracked/weathered grout. Deteriorating grout should be monitored.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-12.617-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/15/2010	**Barrier Rating:**	40.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$6991
Brief Workorder:	Replace 26 missing stones. Repoint grout around 60 loose stones.				
Workorder:	Replace missing stones at $150- per -Stone for 26 = $3900. Replace 26 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 7 SY = $980. 60sf / 9sf/sy = 6.7sy => 7sy. Repoint grout around 60 loose stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_12.617_L_1.jpg

Barrier ID:	**SHEN-0010A-13.978-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	32.90

Barrier Description

Type:	STEEL-BACKED LOG RAIL	**Barrier Function:**	TRAFFIC
Barrier Material:	STEEL-BACKED TIMBER/LOG	**Post Material:**	WOOD
Blockout Type:	STEEL	**Length (ft.):**	340
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-2	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	SBT/LOG BURIED	**Ending End Trtmt Crashhworthy?:**	YES		

Average Measurements

Design Height (In.):	31	**Width (In.):**	0.0	**Post Spacing (In.):**	118.5
Height (In.):	33.0	**Lateral Offset (In.):**	69.5	**Road Grade (%):**	4.40

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier exceeds 31 in design height by 1 to 2.5 in.
	Breaking and Cracking:	Minor longitudinal cracking with cracks no greater than 1/8 in width observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	Alignment is acceptable. Height is within 1-in of 31-in design height.
	Breaking and Cracking:	No breaking or cracking observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.

Barrier ID:	**SHEN-0010A-13.978-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	32.90

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_13.978_L_1.jpg

Barrier ID:	**SHEN-0010A-14.547-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	36.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1174
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	24.2	**Lateral Offset (In.):**	81.4	**Road Grade (%):**	2.50

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor breaking/cracking up to 1/4 in in width was observed.
	Missing Elements:	41 stones were missing.
	Corrrosion and Weathering:	99 stones were loose due to grout deterioration. The barrier should be monitored for further grout deterioration.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-14.547-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	36.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$11704
Brief Workorder:	Replace 41 missing stones and repoint grout around 99 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 11 SY = $1540. 99 (1 ft x 1 ft) stones divided by 9 sq ft per sq yd equals 11 sq yds. Replace Stone at $150- per -Each for 41 = $6150. Replace 41 stones. Low Speed Traffic Control at $1475- per -Day for 2 Day(s) = $2950.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_14.547_R_1.jpg

Barrier ID:	**SHEN-0010A-14.789-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	29.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	596
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	23.8	**Lateral Offset (In.):**	80.8	**Road Grade (%):**	4.10

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less observed.
	Missing Elements:	7 stones were missing.
	Corrrosion and Weathering:	7 stones were loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-14.789-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	29.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2932
Brief Workorder:	Replace 7 missing stones and re-point grout around 7 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 1 sq ft x 7 stones = 7 sq ft / 9 = 0.8 sy. Replace stones at $150- per -each for 7 = $1050. Replace missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_14.789_R_1.jpg

Barrier ID:	**SHEN-0010A-15.033-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	40.50

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	116
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	14.8	**Lateral Offset (In.):**	61.0	**Road Grade (%):**	6.80

Physical Condition

Barrier	**Alignment and Height:**	Alignment deflection was less than 6 in. Barrier is between 8-11in. below the 24 in design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less observed.
	Missing Elements:	No elements appear to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-15.033-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	40.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$155458
Brief Workorder:	Raise guardwall 11 inches. Remove and reset 116 feet of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 488 CF = $122000. [(2ft)(2.1ft)(116ft)] = 487.2 cf. Structural Concrete at $1000- per -Cu. Yd. for 9 CY = $9000. [(2ft)(.9ft)(116ft) /27] = 8.1 cy. Low Speed Traffic Control at $1475- per -Day for 7 Day(s) = $10325. 2 days removal and 5 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_15.033_R_1.jpg

Barrier ID:	**SHEN-0010A-15.041-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	20.00

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	286
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	27.0	**Post Spacing (In.):**	0.0
Height (In.):	18.0	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. The barrier height was 6 in below the 24 in design height for the entire length.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-15.041-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	20.00

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

Condition photos are not available for SHEN-0010A-15.041-R.

Barrier ID:	**SHEN-0010A-15.103-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	38.70

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	117
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	15.0	**Lateral Offset (In.):**	58.0	**Road Grade (%):**	6.30

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Barrier is more than 6in. below the 24 in design height.
	Breaking and Cracking:	No breaks or cracks greater than 1/4 in width observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	Barrier is in like new condition.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-15.103-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	38.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$237958
Brief Workorder:	Raise guardwall 11 inches. Remove and reset 117 feet of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 492 CF = $123000. [(2ft)(2.1ft)(117ft)] = 491.4 cf. Structural Concrete at $1000- per -Cu. Yd. for 83 CY = $83000. [(2.1ft)(0.9ft)(117ft)] /27 = 8.2 cy. Low Speed Traffic Control at $1475- per -Day for 7 Day(s) = $10325. 2 days removal and 5 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_15.103_R_1.jpg

Barrier ID:	**SHEN-0010A-16.213-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	40.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1989
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	23.6	**Lateral Offset (In.):**	66.0	**Road Grade (%):**	4.60

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less observed.
	Missing Elements:	51 stones were missing due to grout deterioration.
	Corrrosion and Weathering:	101 stones were loose due to grout deterioration.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-16.213-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	40.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$13508
Brief Workorder:	Replace 51 missing stones re-point grout around 101 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 12 SY = $1680. 1 sq ft x 101 stones = 101 sq ft / 9 = 11.2 sy. Replace stones at $150- per -each for 51 = $7650. Replace missing stones. Low Speed Traffic Control at $1475- per -Day for 2 Day(s) = $2950.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_16.213_L_1.jpg

Barrier ID:	**SHEN-0010A-16.964-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	40.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	769
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	22.5	**Lateral Offset (In.):**	78.4	**Road Grade (%):**	5.70

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 3-6-in below the 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	2 stones were missing.
	Corrrosion and Weathering:	1 stone was loose due to grout deterioration.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-16.964-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	40.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2107
Brief Workorder:	Replace 2 missing stones repoint grout around 1 loose stone				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 1 (1 ft x 1 ft) stone divided by 9 sq ft per sq yd equals 0.1 sq yd. Replace Stone at $150- per -Each for 2 = $300. Replace 2 stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_16.964_L_1.jpg

Barrier ID:	**SHEN-0010A-17.136-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	593
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	23.8	**Lateral Offset (In.):**	66.4	**Road Grade (%):**	2.80

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 3-4-in below the 27-in design height..
	Breaking and Cracking:	Minor cracking in grout with cracks no greater than 1/4 in width observed.
	Missing Elements:	There were 5 stones observed to be missing.
	Corrrosion and Weathering:	There were 12 stones observed to be loose due to cracked/weathered grout.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-17.136-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2756
Brief Workorder:	Replace 5 missing stones. Repoint grout around 12 loose stones.				
Workorder:	Replace missing stones at $150- per -Stone for 5 = $750. Replace 5 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 2 SY = $280. 12sf / 9sf/sy => 2sy. Repoint grout around 12 loose stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_17.136_L_1.jpg

Barrier ID:	**SHEN-0010A-17.235-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	11.50

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	380
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	22.5	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	Alignment deflection was less than 6 in. The entire barrier is within 2 in of the 24 in design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less observed.
	Missing Elements:	1 stone was missing.
	Corrrosion and Weathering:	1 stone was loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-17.235-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	11.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1942
Brief Workorder:	Replace 1 missing stone and re-point 1 loose stone.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. (1 sf x 1 stone)/9 = 0.11 sy Replace stones at $150- per -EA for 1 = $150. Replace missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_17.235_L_1.jpg

Barrier ID:	**SHEN-0010A-17.307-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	29.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	499
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	23.7	**Lateral Offset (In.):**	71.1	**Road Grade (%):**	5.30

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor breaking/cracking up to 1/4 in in width was observed.
	Missing Elements:	6 stones were missing.
	Corrrosion and Weathering:	33 stones were loose due to grout deterioration.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-17.307-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	29.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$3229
Brief Workorder:	Replace 6 missing stones and repoint grout around 33 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 4 SY = $560. 33 (1 ft x 1 ft) stones divided by 9 sq ft per sq yd equals 4 sq yds. Replace Stone at $150- per -Each for 6 = $900. Replace 6 stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

Condition photos are not available for SHEN-0010A-17.307-L.

Barrier ID:	**SHEN-0010A-18.016-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	29.30

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	477
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	26.2	**Lateral Offset (In.):**	80.0	**Road Grade (%):**	3.10

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking with cracks no greater than 1/4 in width observed.
	Missing Elements:	There were 5 stones observed to be missing.
	Corrrosion and Weathering:	There were 27 stones observed to be loose due to cracked/weathered grout.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-18.016-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	29.30

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2910
Brief Workorder:	Replace 5 missing stones. Repoint grout around 27 loose stones.				
Workorder:	Replace missing stones at $150- per -Stone for 5 = $750. Replace 5 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 3 SY = $420. 27sf / 9sf/sy = 3sy. Repoint grout around 27 loose stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_18.016_R_1.jpg

Barrier ID:	**SHEN-0010A-18.349-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	32.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	525
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	22.7	**Lateral Offset (In.):**	73.1	**Road Grade (%):**	6.40

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 4-5-in below the 27-in design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less observed.
	Missing Elements:	5 stones were missing due to grout deterioration.
	Corrrosion and Weathering:	34 stones were loose due to grout deterioration.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-18.349-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	32.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$3064
Brief Workorder:	Replace 5 missing stones and re-point 34 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 4 SY = $560. 1 sq ft x 34 stones = 34 sq ft / 9 = 3.8 sy. Replace stones at $150- per -each for 5 = $750. Replace missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_18.349_R_1.jpg

Barrier ID:	**SHEN-0010A-18.521-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	47.20

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	140
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	27.7	**Post Spacing (In.):**	0.0
Height (In.):	14.0	**Lateral Offset (In.):**	88.0	**Road Grade (%):**	3.60

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 8-11in. below the 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-18.521-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	47.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$201080
Brief Workorder:	Raise guardwall 10-in. Remove and reset 140-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 644 CF = $161000. [(2ft)(2.3ft)(140ft)] = 644 cf. Structural Concrete at $1000- per -Cu. Yd. for 10 CY = $10000. [(2.3ft)(0.8ft)(140ft)] /27 = 9.5 cy. Low Speed Traffic Control at $1475- per -Day for 8 Day(s) = $11800. 2 days removal and 6 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_18.521_R_1.jpg

Barrier ID:	**SHEN-0010A-18.548-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	26.50

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	403
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	26.2	**Post Spacing (In.):**	0.0
Height (In.):	14.5	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is 9-10in. below the 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	Barrier is in like new condition.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-18.548-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	26.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$545133
Brief Workorder:	Raise guardwall 10-in. Remove and reset 403-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 1774 CF = $443500. [(2ft)(2.2ft)(403ft)] = 1773.2 cf. Structural Concrete at $1000- per -Cu. Yd. for 27 CY = $27000. [(2.2ft)(0.8ft)(403ft)] /27 = 26.3 cy. Low Speed Traffic Control at $1475- per -Day for 17 Day(s) = $25075. 4 days removal and 13 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_18.548_R_1.jpg

Barrier ID:	**SHEN-0010A-18.624-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	49.00

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	53
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	26.2	**Post Spacing (In.):**	0.0
Height (In.):	15.3	**Lateral Offset (In.):**	134.3	**Road Grade (%):**	1.30

Physical Condition

Barrier	**Alignment and Height:**	Alignment deflection less than 6 in. Entire barrier is between 8-10in. below the 24-in design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less observed.
	Missing Elements:	No elements appear to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-18.624-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	49.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$73618
Brief Workorder:	Raise guardwall 10-in. Remove and reset 53-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 234 CF = $58500. [(2ft)(2.2ft)(53ft)] = 233.2 cf. Structural Concrete at $1000- per -Cu. Yd. for 4 CY = $4000. [(2.2ft)(0.75ft)(53ft)] /27 = 3.2 cy. Low Speed Traffic Control at $1475- per -Day for 3 Day(s) = $4425. 1 day removal and 2 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

Condition photos are not available for SHEN-0010A-18.624-R.

Barrier ID:	**SHEN-0010A-18.882-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	29.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	487
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	73.1	**Road Grade (%):**	6.00

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	10 stones were missing.
	Corrrosion and Weathering:	55 stones were loose due to grout deterioration. The barrier should be monitored for further grout deterioration.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-18.882-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	29.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$4197
Brief Workorder:	Replace 10 missing stones and repoint grout around 55 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 6 SY = $840. 55 (1 ft x 1 ft) stones divided by 9 sq ft per sq yd equals 6 sq yds. Replace Stone at $150- per -Each for 10 = $1500. Replace 10 stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_18.882_R_1.jpg

Barrier ID:	**SHEN-0010A-19.116-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	28.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	342
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	113.6	**Road Grade (%):**	5.70

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 0-in below to 6-in above the 27-in design height.
	Breaking and Cracking:	Minor cracking in grout with cracks no greater than 1/4 in width observed.
	Missing Elements:	There were 12 stones observed to be missing.
	Corrrosion and Weathering:	There were 25 stones observed to be loose due to cracked/weathered grout.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-19.116-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	28.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$4065
Brief Workorder:	Replace 12 missing stones. Repoint grout around 25 loose stones.				
Workorder:	Replace missing stones at $150- per -Stone for 12 = $1800. Replace 12 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 3 SY = $420. 25sf / 9sf/sy = 2.8sy. Repoint grout around 25 loose stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_19.116_L_1.jpg

Barrier ID:	**SHEN-0010A-19.177-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	8.60

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	118
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	25.2	**Post Spacing (In.):**	0.0
Height (In.):	22.5	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 24-in design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less observed.
	Missing Elements:	1 stone was missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-19.177-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	8.60

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1788
Brief Workorder:	Replace 1 missing stone				
Workorder:	Replace stone at $150- per -EA for 1 = $150. Replace stone Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_19.177_L_1.jpg

Barrier ID:	**SHEN-0010A-19.199-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	40.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	716
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	104.0	**Road Grade (%):**	4.60

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 1-4-in below the 27-in design height.
	Breaking and Cracking:	Minor breaking/cracking up to 1/4 in in width was observed.
	Missing Elements:	13 stones were missing.
	Corrrosion and Weathering:	76 stones were loose due to deterioration in the grout. The barrier should be monitored for further deterioration in the grout.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-19.199-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	40.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$5154
Brief Workorder:	Replace 13 missing stones and repoint grout around 76 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 9 SY = $1260. 76 (1 ft x 1 ft) stones divided by 9 sq ft per sq yd equals 9 sq yds. Replace Stone at $150- per -Each for 13 = $1950. Replace 13 stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

Condition photos are not available for SHEN-0010A-19.199-L.

Barrier ID:	**SHEN-0010A-19.734-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	33.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	528
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.5	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	84.6	**Road Grade (%):**	5.90

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 0-4-in below the 27-in design height.
	Breaking and Cracking:	Cracking in grout with cracks no greater than 1/4 in width observed in majority of barrier.
	Missing Elements:	There were 5 stones observed to be missing.
	Corrrosion and Weathering:	There were 22 stones observed to be loose due to cracked/weathered grout.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-19.734-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	33.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2910
Brief Workorder:	Replace 5 missing stones. Repoint grout around 22 loose stones.				
Workorder:	Replace missing stones at $150- per -Stone for 5 = $750. Replace 5 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 3 SY = $420. 22sf / 9sf/sy => 3sy. Repoint grout around 22 loose stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_19.734_L_1.jpg

Barrier ID:	**SHEN-0010A-19.934-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	38.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	875
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	24.3	**Lateral Offset (In.):**	66.3	**Road Grade (%):**	2.80

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 6-in below to 1-in above the 27-in design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less observed.
	Missing Elements:	5 stones are missing due to grout deterioration.
	Corrrosion and Weathering:	69 stones were loose due to grout deterioration.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-19.934-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	38.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$3680
Brief Workorder:	Re-point 69 stones that were loose due to grout deterioration. Replace 5 stones that were missing.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 8 SY = $1120. 1 sq ft x 69 stones = 69 sq ft / 9 = 7.7 sy. Replace stones at $150- per -each for 5 = $750. Replace missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_19.934_R_1.jpg

Barrier ID:	**SHEN-0010A-20.177-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	34.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	357
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	86.3	**Road Grade (%):**	7.00

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 4-in below to 1-in above the 27-in design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less observed.
	Missing Elements:	18 stones were missing.
	Corrrosion and Weathering:	28 stones were loose. 23 ft of the barrier has mortar joints deteriorated to the point where more than 3 adjacent stones were loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-20.177-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	34.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$5209
Brief Workorder:	Replace 18 missing stones and re-point grout around 28 stones that were loose.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 4 SY = $560. 28 stones x 1 ft x 1 ft = 28 sq ft / 9 = 3.1 sy. Replace stones at $150- per -each for 18 = $2700. Replace missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_20.177_L_1.jpg

Barrier ID:	**SHEN-0010A-20.245-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	11.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	307
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.5	**Post Spacing (In.):**	0.0
Height (In.):	23.0	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 3-in below to 6-in above the 27-in design height.
	Breaking and Cracking:	Majority of barrier is showing cracks in grout up to 1/4 in width. There were 5 stones observed to be loose due to cracking.
	Missing Elements:	There were 50 stones observed to be missing causing 21 feet of barrier to fall 9 ines or more below 27 inch design height.
	Corrrosion and Weathering:	Weathering of grout is severe in some locations causing 5 loose stones.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-20.245-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	11.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$10027
Brief Workorder:	Replace 50 missing stones. Repoint grout around 5 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 5 sf/ 9 sf/sy = 0.6 sy Replace stones at $150- per -EA for 50 = $7500. Replace 50 missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_20.245_L_1.jpg

Barrier ID:	**SHEN-0010A-20.303-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	33.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	515
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	26.2	**Lateral Offset (In.):**	89.5	**Road Grade (%):**	6.40

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	39 stones were loose due to deterioration in the grout. Another 4 ft by 1 ft section has loose stones. Cracks in the grout up to 1/2 in in width, should be monitored.
	Missing Elements:	31 stones were missing.
	Corrrosion and Weathering:	Moderate weathering causing deterioration in the grout with up to 1/2 in voids should be monitored.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-20.303-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	33.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$7508
Brief Workorder:	Replace 31 missing stones and repoint grout around 39 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 5 SY = $700. [(39ft)(1ft)(1ft) + (4ft)(1ft)] /9 = 4.7 sy. Replace Stone at $150- per -Each for 31 = $4650. Replace 31 stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

Condition photos are not available for SHEN-0010A-20.303-L.

Barrier ID:	**SHEN-0010A-20.721-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	42.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1381
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.1	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	77.0	**Road Grade (%):**	6.80

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Monitor cracking of 1/4 in on face of barrier.
	Missing Elements:	7 stones were missing.
	Corrrosion and Weathering:	23 stones were loose. Monitor erosion at base of the barrier.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-20.721-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	42.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$3240
Brief Workorder:	Replace 7 missing stones and re-point grout around 23 loose stones. Monitor cracking on face.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 3 SY = $420. 1 sq ft x 23 stones = 23 sq ft / 9 = 2.5 sy. Replace stones at $150- per -each for 7 = $1050. Replace missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_20.721_L_1.jpg

Barrier ID:	**SHEN-0010A-21.010-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	39.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	271
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.2	**Post Spacing (In.):**	0.0
Height (In.):	22.7	**Lateral Offset (In.):**	106.0	**Road Grade (%):**	3.40

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in. in alignment. 271ft. of barrier is 6in or less below 27 in design height.
	Breaking and Cracking:	Minor cracking in grout with cracks no greater than 1/4 in width observed. There were 5 stones observed to be loose due to cracked grout.
	Missing Elements:	There were 13 stones observed to be missing. Missing stones have caused 4 feet of barrier to be 6 ines or more below 24 inch design height.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-21.010-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	39.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$3922
Brief Workorder:	Replace 13 missing stones. Repoint grout around 5 loose stones.				
Workorder:	Replace missing stones at $150- per -Stone for 13 = $1950. Replace 13 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 5sf/9 = 0.6 sy. Repoint grout around 5 loose stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_21.010_R_1.jpg

Barrier ID:	**SHEN-0010A-21.061-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	14.30

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	778
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	22.2	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 24-in design height.
	Breaking and Cracking:	16 stones were loose due to deterioration in the grout. The majority of breaking/cracking was at the beginning of the barrier.
	Missing Elements:	32 stones were missing. The vast majority of the missing stones were at the beginning of the barrier.
	Corrrosion and Weathering:	The beginning of the barrier should be monitored for grout deterioration.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-21.061-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	14.30

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$7211
Brief Workorder:	Repoint grout around 16 loose stones and replace 32 missing stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 2 SY = $280. [(16ft)(1ft)(1ft)] / 9 = 1.8 sy. Replace Stone at $150- per -Each for 32 = $4800. Replace 32 stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_21.061_R_1.jpg

Barrier ID:	**SHEN-0010A-21.208-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	42.50

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	92
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	22.7	**Lateral Offset (In.):**	141.0	**Road Grade (%):**	0.60

Physical Condition

Barrier	**Alignment and Height:**	Alignment deflection was less than 6 in. Height within 3-in of 24-in design height.
	Breaking and Cracking:	Minor cracking of less than 1/4 in observed.
	Missing Elements:	No elements appear to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-21.208-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	42.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_21.208_R_1.jpg

Barrier ID:	**SHEN-0010A-21.537-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	36.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1237
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.6	**Post Spacing (In.):**	0.0
Height (In.):	24.8	**Lateral Offset (In.):**	73.9	**Road Grade (%):**	7.10

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 0-5-in below the 27-in design height.
	Breaking and Cracking:	Majority of barrier has cracks in grout up to 1/4 in width. There were 108 stones observed to be loose due to cracked grout.
	Missing Elements:	There were 16 stones observed to be missing.
	Corrrosion and Weathering:	Weathering of grout has caused much of the barrier to become loose or completely dislodged.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-21.537-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	36.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$7733
Brief Workorder:	Replace 16 missing stones. Repoint grout around 108 loose stones.				
Workorder:	Replace missing stones at $150- per -Stone for 16 = $2400. Replace 16 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 12 SY = $1680. 108sf / 9sf/sy = 12sy. Repoint grout around 108 loose stones. Low Speed Traffic Control at $1475- per -Day for 2 Day(s) = $2950.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_21.537_L_1.jpg

Barrier ID:	**SHEN-0010A-21.959-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	26.80

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	525
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	27.2	**Lateral Offset (In.):**	91.5	**Road Grade (%):**	5.90

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	50 stones were loose due to deterioration in the grout. Other breaking/cracking in the grout should be monitored.
	Missing Elements:	21 stones were missing.
	Corrrosion and Weathering:	Weathering causing 50 stones to become loose was observed. Mortar on the rest of barrier should be monitored.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-21.959-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	26.80

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$6012
Brief Workorder:	Replace 21 missing stones and repoint grout around 50 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 6 SY = $840. 50 (1 ft x 1 ft) stones divided by 9 sq ft per sq yd equals 5.6 sq yds. Replace Stone at $150- per -Each for 21 = $3150. Replace 21 stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_21.959_L_1.jpg

Barrier ID:	**SHEN-0010A-22.058-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	4.10

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	171
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	23.5	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 24-in design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less was observed.
	Missing Elements:	47 stones were missing.
	Corrrosion and Weathering:	1 stone was loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-22.058-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	4.10

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$9532
Brief Workorder:	Repoint 1 stone and replace 47 missing stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. Replace stone at $150- per -EA for 47 = $7050. Replace stones Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_22.058_L_1.jpg

Barrier ID:	**SHEN-0010A-22.090-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	26.80

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	354
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	26.0	**Lateral Offset (In.):**	99.1	**Road Grade (%):**	5.20

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking in grout with cracks no greater than 1/4 in width observed. There were 5 stones observed to be loose due to cracked grout.
	Missing Elements:	There were 8 stones observed to be missing.
	Corrrosion and Weathering:	Weathering of grout has caused 5 stones to become loose and 8 stones to become missing.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-22.090-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	26.80

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$3097
Brief Workorder:	Replace 8 missing stones. Repoint grout around 5 loose stones.				
Workorder:	Replace missing stones at $150- per -Stone for 8 = $1200. Replace 8 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 5sf / 9sf/sy => 1 sy. Repoint grout around 5 stones that are loose. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

Condition photos are not available for SHEN-0010A-22.090-L.

Barrier ID:	**SHEN-0010A-22.445-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	38.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	733
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.1	**Post Spacing (In.):**	0.0
Height (In.):	26.5	**Lateral Offset (In.):**	85.4	**Road Grade (%):**	6.10

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracks no greater than 1/4 in were observed.
	Missing Elements:	10 stones were missing.
	Corrrosion and Weathering:	133 stones were loose due to deterioration in the grout. Other deterioration in the grout should be monitored.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-22.445-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	38.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$7205
Brief Workorder:	Replace 10 missing stones and repoint grout around 133 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 15 SY = $2100. 133 (1 ft x 1 ft) stones divided by 9 sq ft per sq yd equals 14.8 sq yds. Replace Stone at $150- per -Each for 10 = $1500. Replace 10 stones. Low Speed Traffic Control at $1475- per -Day for 2 Day(s) = $2950.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_22.445_R_1.jpg

Barrier ID:	**SHEN-0010A-22.817-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	38.40

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1141
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	77.3	**Road Grade (%):**	5.70

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking of less than 1/4 in observed.
	Missing Elements:	3 stones were missing.
	Corrrosion and Weathering:	35 stones were loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-22.817-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	38.40

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2734
Brief Workorder:	Re-point 35 loose stones and replace 3 missing stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 4 SY = $560. 1 sq ft x 35 stones = 35 sq ft / 9 = 3.9 sy. Replace stones at $150- per -each for 3 = $450. Replace missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_22.817_R_1.jpg

Barrier ID:	**SHEN-0010A-23.336-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	33.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	483
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	25.5	**Lateral Offset (In.):**	83.3	**Road Grade (%):**	5.70

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Cracking in grout with cracks no greater than 1/4 in width observed in most areas.
	Missing Elements:	There was 1 stone observed to be missing.
	Corrrosion and Weathering:	There were 34 loose stones due to cracked/weathered grout.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-23.336-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	33.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2404
Brief Workorder:	Replace 1 missing stone. Repoint grout around 34 loose stones.				
Workorder:	Replace missing stones at $150- per -Stone for 1 = $150. Replace 1 missing stone. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 4 SY = $560. 34sf / 9sf/sy => 4sy. Repoint grout around 34 loose stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_23.336_R_1.jpg

Barrier ID:	**SHEN-0010A-23.559-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	41.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1573
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.8	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	78.3	**Road Grade (%):**	3.60

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor breaking/cracking no greater than 1/4 in was observed.
	Missing Elements:	37 stones were missing.
	Corrrosion and Weathering:	141 stones were loose due to deterioration in the grout. The barrier should be monitored for further grout deterioration.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-23.559-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	41.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$11814
Brief Workorder:	Replace 37 missing stones and repoint grout around 141 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 16 SY = $2240. 141 (1 ft x 1 ft) stones divided by 9 sq ft per sq yd equals 15.7 sq yds. Replace Stone at $150- per -Each for 37 = $5550. Replace 37 stones. Low Speed Traffic Control at $1475- per -Day for 2 Day(s) = $2950.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_23.559_R_1.jpg

Barrier ID:	**SHEN-0010A-25.725-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	29.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	652
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	25.3	**Lateral Offset (In.):**	58.0	**Road Grade (%):**	1.50

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	4 stones were loose due to deterioration in the grout.
	Missing Elements:	7 stones were missing.
	Corrrosion and Weathering:	Weathering causing 4 loose stones.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-25.725-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	29.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2932
Brief Workorder:	Replace 7 missing stones and repoint grout around 4 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 4 (1 ft x 1 ft) stones divided by 9 equals 0.4 sq yd. Replace Stone at $150- per -Each for 7 = $1050. Replace 7 stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_25.725_L_1.jpg

Barrier ID:	**SHEN-0010A-26.284-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	34.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	803
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.8	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	69.4	**Road Grade (%):**	2.20

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking in grout with cracks no greater than 1/4 in width observed. There was 1 stone observed to be loose due to cracked grout.
	Missing Elements:	There were 5 stones observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-26.284-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	34.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2602
Brief Workorder:	Replace 5 missing stones. Repoint grout around 1 loose stone.				
Workorder:	Replace missing stones at $150- per -Stone for 5 = $750. Replace 5 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 2sf / 9sf/sy => 1sy. Repoint grout around 1 loose stone. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_26.284_L_1.jpg

Barrier ID:	**SHEN-0010A-26.733-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	692
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	25.5	**Lateral Offset (In.):**	65.5	**Road Grade (%):**	2.90

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking of less than 1/4 in observed.
	Missing Elements:	2 stones were missing.
	Corrrosion and Weathering:	7 stones were loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-26.733-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2107
Brief Workorder:	Replace 2 missing stone and re-point 7 stones that were loose.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 1 sq ft x 7 stones = 7 sq ft / 9 = 0.8 sy. Replace stones at $150- per -each for 2 = $300. Replace missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_26.733_R_1.jpg

Barrier ID:	**SHEN-0010A-27.161-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	32.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1468
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.3	**Post Spacing (In.):**	0.0
Height (In.):	25.8	**Lateral Offset (In.):**	60.5	**Road Grade (%):**	1.40

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	23 stones were loose due to cracking of the grout. Other minor cracking in the grout up to 1/4 in in width, was observed and should be monitored.
	Missing Elements:	12 stones were missing.
	Corrrosion and Weathering:	Weathering causing loose/missing stones was observed.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-27.161-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	32.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$4065
Brief Workorder:	Replace 12 missing stones and repoint grout around 23 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 3 SY = $420. 23 (1 ft x 1 ft) stones divided by 9 equals 2.6 sq yds. Replace Stone at $150- per -Each for 12 = $1800. Replace 12 stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_27.161_L_1.jpg

Barrier ID:	**SHEN-0010A-27.709-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	548
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	24.8	**Lateral Offset (In.):**	81.3	**Road Grade (%):**	0.30

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking in grout with cracks no greater than 3/8 in width observed. There were 2 stones observed to be loose due to cracking.
	Missing Elements:	There were 6 stones observed to be missing.
	Corrrosion and Weathering:	Loose/missing stones caused by weathering.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-27.709-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2767
Brief Workorder:	Replace 6 missing stones. Repoint grout around 2 loose stones.				
Workorder:	Replace missing stones at $150- per -Stone for 6 = $900. Replace 6 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 2sf / 9sf/sy => 1 sy. Repoint grout around 2 loose stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_27.709_L_1.jpg

Barrier ID:	**SHEN-0010A-27.802-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	30.80

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	260
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	19.7	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	Alignment deflection was less than 6 in. 255 ft of barrier was between 3 and 6 in below the 27 in design height and 5 ft was greater than 6 in below. Due to the 35 mph speed limit barrier is functioning as a 22in design height (TL-2) barrier.
	Breaking and Cracking:	Minor cracking of 1/4 in or less observed.
	Missing Elements:	13 stones were missing.
	Corrrosion and Weathering:	A 5 ft section has mortar joints deteriorated to the point where 6 adjacent stones were missing.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-27.802-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	30.80

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$3768
Brief Workorder:	Replace 13 missing stones.				
Workorder:	Replace stone at $150- per -EA for 13 = $1950. Replace 13 missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_27.802_L_1.jpg

Barrier ID:	**SHEN-0010A-27.851-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	18.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	210
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	62.5	**Road Grade (%):**	0.10

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	7 stones were loose due to cracking in the grout.
	Missing Elements:	5 stones were missing.
	Corrrosion and Weathering:	Loose/missing stones caused by weathering observed.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-27.851-L**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	18.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2602
Brief Workorder:	Replace 5 missing stones and repoint grout around 7 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 7 (1 ft x 1 ft) stones divided by 9 equals 0.8 sq yd. Replace Stone at $150- per -Each for 5 = $750. Replace 5 stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

Condition photos are not available for SHEN-0010A-27.851-L.

Barrier ID:	**SHEN-0010A-30.708-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	395
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	26.2	**Lateral Offset (In.):**	74.3	**Road Grade (%):**	3.60

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No cracks greater than 1/4 in width observed in grout.
	Missing Elements:	There was 1 stone observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-30.708-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1788
Brief Workorder:	Replace 1 missing stone.				
Workorder:	Replace missing stones at $150- per -Stone for 1 = $150. Replace 1 missing stone. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_30.708_R_1.jpg

Barrier ID:	**SHEN-0010A-30.828-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	29.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	797
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.1	**Post Spacing (In.):**	0.0
Height (In.):	26.1	**Lateral Offset (In.):**	77.0	**Road Grade (%):**	2.50

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less observed.
	Missing Elements:	No elements appear to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-30.828-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	29.70

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_30.828_R_1.jpg

Barrier ID:	**SHEN-0010A-31.030-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	25.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	662
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	26.3	**Lateral Offset (In.):**	66.4	**Road Grade (%):**	4.10

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	1 stone was loose due to cracking in the grout. Other cracks up to 1/4 in width, were observed and should be monitored.
	Missing Elements:	1 stone was missing.
	Corrrosion and Weathering:	Loose/missing stones caused by weathering were observed.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010A-31.030-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	25.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1942
Brief Workorder:	Replace 1 missing stone and repoint grout around 1 loose stone.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 1(1 ft x 1 ft) stone divided by 9 equals 0.1 sq yd. Replace Stone at $150- per -Each for 1 = $150. Replace 1 stone. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_31.030_R_1.jpg

Barrier ID:	**SHEN-0010A-31.180-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	32.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1124
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	65.8	**Road Grade (%):**	1.30

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking no greater than 1/4 in width observed in grout. There were 7 stones observed to be loose due to cracking grout.
	Missing Elements:	There were 8 stones observed to be missing.
	Corrrosion and Weathering:	Missing/loose stones caused by weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-31.180-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	32.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$3097
Brief Workorder:	Replace 8 missing stones. Repoint grout around 7 loose stones.				
Workorder:	Replace missing stones at $150- per -Stone for 8 = $1200. Replace 8 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. Repoint grout around 7 loose stones. 7sf / 9sf/sy => 1 sq yd. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_31.180_R_1.jpg

Barrier ID:	**SHEN-0010A-31.497-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	41.50

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	53
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	13.1	**Lateral Offset (In.):**	63.7	**Road Grade (%):**	2.20

Physical Condition

Barrier	**Alignment and Height:**	Alignment deflection less than 6 in. Barrier is 9-12in. below the 24 in design height.
	Breaking and Cracking:	Minor cracking of less than 1/4 in observed.
	Missing Elements:	No elements appear to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010A-31.497-R**		
Route Name:	SKYLINE DRIVE (NORTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	41.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$70593
Brief Workorder:	Raise guardwall 11-in. Remove and reset 53-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 223 CF = $55750. [(2ft)(2.1ft)(53ft)] = 222.6 cf. Structural Concrete at $1000- per -Cu. Yd. for 4 CY = $4000. [(2.1ft)(0.9ft)(53ft)] /27 = 3.7 cy. Low Speed Traffic Control at $1475- per -Day for 3 Day(s) = $4425. 1 day removal and 2 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010A: SKYLINE DRIVE (NORTH)

Barrier Condition Photos

SHEN_0010A_31.497_R_1.jpg

Barrier ID:	**SHEN-0010B-31.805-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	45.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	2793
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.8	**Post Spacing (In.):**	0.0
Height (In.):	23.2	**Lateral Offset (In.):**	46.0	**Road Grade (%):**	6.00

Physical Condition

Barrier	**Alignment and Height:**	Alignment deflection less than 6 in. Height was within 3 in of the 27 in design height for 500 ft 3-6 in below for 1893 ft and 6-7 in below for 400 ft. Due to the 35 mph speed limit barrier is functioning as a 22 in design height (TL-2) barrier.
	Breaking and Cracking:	8 ft of barrier had major breaks of 1 in or more in the grout. 9 stones were loose due to grout deterioration. Other cracks in the grout up to 1/4 inch in width, were observed and should be monitored.
	Missing Elements:	7 stones were missing.
	Corrrosion and Weathering:	Missing/loose stones caused by weathering observed.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010B-31.805-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	45.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$3086
Brief Workorder:	Replace 7 missing stones and repoint grout around 9 missing stones and 8 additional feet of barrier.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 2 SY = $280. [8ftx1ft)+(9(1ftx1ft]/9 = 1.9 SY. Replace Stone at $150- per -Each for 7 = $1050. Replace 7 stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_31.805_L_1.jpg

Barrier ID:	**SHEN-0010B-32.601-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	60.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1815
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	22.3	**Lateral Offset (In.):**	42.2	**Road Grade (%):**	6.70

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 1 and 9 in below the 27-in. design height.
	Breaking and Cracking:	Minor cracking in grout with cracks no greater than 1/4 in width observed.
	Missing Elements:	There were 3 stones observed to be missing.
	Corrrosion and Weathering:	Missing stones caused by weathering.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-32.601-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	60.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1118315
Brief Workorder:	Remove 1815 ft of stone masonry barrier with concrete core to 27-in. design height.				
Workorder:	Stone Masonry with Concrete Core at $500- per -Lin. Ft. for 1815 LF = $907500. Remove and replace 1815ft. of stone masonry barrier w/ concrete core to 27-in. design height. Low Speed Traffic Control at $1475- per -Day for 74 Day(s) = $109150. 37 days removal and 37 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_32.601_L_1.jpg

Barrier ID:	**SHEN-0010B-32.964-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	47.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	389
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	21.5	**Lateral Offset (In.):**	51.5	**Road Grade (%):**	6.90

Physical Condition

Barrier	**Alignment and Height:**	Alignment deflection is less than 6 in. 140 ft of the barrier was between 3 and 6 in below design height (24 ines). 165 ft of the barrier is greater than 6 ines below design height (24 ines).
	Breaking and Cracking:	Minor cracking of less than 1/4 in observed.
	Missing Elements:	No elements appear to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-32.964-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	47.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$239910
Brief Workorder:	Remove 389ft. of stone masonry barrier with concrete core to 27-in. design height.				
Workorder:	Stone Masonry with Concrete Core at $500- per -Lin. Ft. for 389 LF = $194500. Remove 389ft. of barrier and install new stone masonry with concrete core barrier to 27-in. design height. Low Speed Traffic Control at $1475- per -Day for 16 Day(s) = $23600. 8 days removal and 8 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_32.964_L_1.jpg

Barrier ID:	**SHEN-0010B-33.021-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	32.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	250
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	22.7	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 4-5-in below the 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010B-33.021-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	32.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

Condition photos are not available for SHEN-0010B-33.021-L.

Barrier ID:	**SHEN-0010B-33.068-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	38.40

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	932
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	58.7	**Road Grade (%):**	5.40

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height. Barrier tapers down to pedestrian barrier at an overlook.
	Breaking and Cracking:	Minor cracking in grout with cracks no greater than 1/4 in width observed.
	Missing Elements:	There was 1 stone observed to be missing.
	Corrrosion and Weathering:	Missing stone caused by weathering.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-33.068-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	38.40

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1788
Brief Workorder:	Replace 1 missing stone.				
Workorder:	Replace missing stones at $150- per -Stone for 1 = $150. Replace 1 missing stone. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

Condition photos are not available for SHEN-0010B-33.068-L.

Barrier ID:	**SHEN-0010B-33.321-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	45.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1114
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.3	**Post Spacing (In.):**	0.0
Height (In.):	22.5	**Lateral Offset (In.):**	42.2	**Road Grade (%):**	2.20

Physical Condition

Barrier	**Alignment and Height:**	Alignment deflection less than 6 in. 200 ft was within 3 in of the 27 in design height 714ft was 3-6 in below and 200 ft was 6-8 in below. Due to the 35 mph speed limit barrier is functioning as a 22 in (TL-2) barrier.
	Breaking and Cracking:	Minor cracking of less than 1/4 in observed.
	Missing Elements:	4 stones were missing.
	Corrrosion and Weathering:	2 stones were loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-33.321-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	45.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2437
Brief Workorder:	Re-point 2 loose stones and replace 4 missing stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 1 ft x 1 ft = 1 sq ft x 2 stones = 2 sq ft / 9 = 0.22 sy. Replace stones at $150- per -each for 4 = $600. Replace missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_33.321_L_1.jpg

Barrier ID:	**SHEN-0010B-33.552-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	41.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	781
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.1	**Post Spacing (In.):**	0.0
Height (In.):	23.3	**Lateral Offset (In.):**	45.5	**Road Grade (%):**	3.90

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 1-5-in below the 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	1 stone was missing.
	Corrrosion and Weathering:	2 stones were loose due to deterioration in grout.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010B-33.552-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	41.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1942
Brief Workorder:	Replace 1 missing stone and repoint grout around 2 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 2 (1 ft x 1 ft) stones divided by 9 sq ft per sq yd equals 0.2 sq yd. Replace Stone at $150- per -Each for 1 = $150. Replace 1 stone Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_33.552_L_1.jpg

Barrier ID:	**SHEN-0010B-33.738-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	50.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	3171
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	23.5	**Lateral Offset (In.):**	41.4	**Road Grade (%):**	6.30

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. 700ft. of barrier was within 3-in. of the 27-in. design height. 2271ft. was 3-6 in below and 200ft. was 6-8 ines below design height.
	Breaking and Cracking:	Buckling was observed in 2 locations (about 10 ft total) causing cracking up to 2 in width; however the stones were not loose.
	Missing Elements:	There were 3 stones observed to be missing.
	Corrrosion and Weathering:	Missing stones caused by weathering.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-33.738-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	50.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1951730
Brief Workorder:	Remove 3171 ft of stone masonry barrier with concrete core to 27-in. design height.				
Workorder:	Stone Masonry with Concrete Core at $500- per -Lin. Ft. for 3171 LF = $1585500. Remove 3171ft. of barrier and replace with stone masonry w/ concrete core barrier to 27-in. design height. Low Speed Traffic Control at $1475- per -Day for 128 Day(s) = $188800. 64 days removal 64 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_33.738_L_1.jpg

Barrier ID:	**SHEN-0010B-34.450-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	54.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	3164
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	22.7	**Lateral Offset (In.):**	39.7	**Road Grade (%):**	6.40

Physical Condition

Barrier	**Alignment and Height:**	Alignment deflection was less than 6 in. 900ft. of barrier was within 3-in. of the 27-in. design height. 2064ft. was 3-6 in below and 200ft. was 7-9 ines below design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less observed.
	Missing Elements:	21 stones were missing.
	Corrrosion and Weathering:	31 stones were loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-34.450-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	54.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1947880
Brief Workorder:	Remove 3164 ft of stone masonry barrier with concrete core to 27-in. design height.				
Workorder:	Stone Masonry with Concrete Core at $500- per -Lin. Ft. for 3164 LF = $1582000. Remove 3164ft. of barrier and replace with stone masonry w/ concrete core barrier to 27-in. design height. Low Speed Traffic Control at $1475- per -Day for 128 Day(s) = $188800. 64 days removal 64 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_34.450_L_1.jpg

Barrier ID:	**SHEN-0010B-35.102-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	38.40

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1330
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	24.3	**Lateral Offset (In.):**	54.7	**Road Grade (%):**	3.60

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 1-4-in below the 27-in design height.
	Breaking and Cracking:	Minor breaking/cracking up to 1/4 in in width was observed in the grout in several locations, and should be monitored. 30 stones were loose, due to deterioration in the grout.
	Missing Elements:	6 stones were missing.
	Corrrosion and Weathering:	Weathering of grout causing 30 loose stones was observed.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010B-35.102-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	38.40

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$3229
Brief Workorder:	Replace 6 missing stones and repoint grout around 30 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 4 SY = $560. 30 (1 ft x 1 ft) stones divided by 9 sq ft per sq yd equals 3.3 sq yd. Replace Stone at $150- per -Each for 6 = $900. Replace 6 stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_35.102_L_1.jpg

Barrier ID:	**SHEN-0010B-35.390-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	26.60

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	224
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	24.5	**Lateral Offset (In.):**	69.5	**Road Grade (%):**	1.00

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height. Barrier tapers down to a pedestrian barrier at beginning end.
	Breaking and Cracking:	No cracks greater than 1/4 in width observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-35.390-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	26.60

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_35.390_L_1.jpg

Barrier ID:	**SHEN-0010B-35.485-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	25.10

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	321
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	26.2	**Lateral Offset (In.):**	59.5	**Road Grade (%):**	5.40

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking of less than 1/4 in observed.
	Missing Elements:	No elements appear to be missing.
	Corrrosion and Weathering:	6 stones were loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-35.485-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	25.10

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1777
Brief Workorder:	Repoint grout around 6 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 1 ft x 1 ft = 1 sq ft x 6 stones = 6 sq ft / 9 = 0.7 sy. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_35.485_R_1.jpg

Barrier ID:	**SHEN-0010B-35.571-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	38.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	371
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	25.5	**Lateral Offset (In.):**	57.5	**Road Grade (%):**	7.00

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010B-35.571-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	38.00

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_35.571_L_1.jpg

Barrier ID:	**SHEN-0010B-35.943-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	29.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	421
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.5	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	53.2	**Road Grade (%):**	2.80

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking in grout with cracks no greater than 1/4 in width observed. There were 2 stones observed to be loose due to cracked grout.
	Missing Elements:	One stone is missing.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-35.943-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	29.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1942
Brief Workorder:	Replace 1 missing stone. Repoint grout around 2 loose stones.				
Workorder:	Replace missing stones at $150- per -Stone for 1 = $150. Replace 1 missing stone. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 2sf / 9sf/sy => 1 sq yd. Repoint grout around 2 stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_35.943_L_1.jpg

Barrier ID:	**SHEN-0010B-36.148-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	34.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	2367
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.1	**Post Spacing (In.):**	0.0
Height (In.):	24.2	**Lateral Offset (In.):**	50.4	**Road Grade (%):**	3.70

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 0-4-in below the 27-in design height.
	Breaking and Cracking:	Minor cracking of less than 1/4 in observed.
	Missing Elements:	24 stones were missing.
	Corrrosion and Weathering:	62 stones were loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-36.148-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	34.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$6661
Brief Workorder:	Re-point grout around 62 loose stones and replace 24 missing stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 7 SY = $980. 1 ft x 1 ft = 1 sq ft x 62 stones = 62 sq ft / 9 = 6.8 sy. Replace stones at $150- per -each for 24 = $3600. Replace stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_36.148_L_1.jpg

Barrier ID:	**SHEN-0010B-36.768-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	33.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	315
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	23.7	**Lateral Offset (In.):**	57.2	**Road Grade (%):**	6.00

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 2-4-in below the 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	4 stones were missing.
	Corrrosion and Weathering:	1 stone was loose due to deterioration in the grout.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010B-36.768-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	33.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2437
Brief Workorder:	Replace 4 missing stones and repoint grout around 1 loose stone.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 1 (1 ft x 1 ft) stone divided by 9 sq ft per sq yd equals 0.1 sq yd. Replace Stone at $150- per -Each for 4 = $600. Replace 4 stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_36.768_L_1.jpg

Barrier ID:	**SHEN-0010B-37.233-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	33.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	321
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	65.5	**Road Grade (%):**	3.30

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracks no greater than 1/4 in width were observed in grout. There were 3 stones observed to be loose due to cracking grout.
	Missing Elements:	There were 2 stones observed to be missing.
	Corrrosion and Weathering:	Missing/loose stones caused by weathering.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-37.233-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	33.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2107
Brief Workorder:	Replace 2 missing stones. Repoint grout around 3 loose stones.				
Workorder:	Replace missing stones at $150- per -Stone for 2 = $300. Replace 2 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 3sf / 9sf/sy => 1 sq yd. Repoint around 3 loose stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_37.233_R_1.jpg

Barrier ID:	**SHEN-0010B-37.565-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	362
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	24.2	**Lateral Offset (In.):**	52.5	**Road Grade (%):**	2.60

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 1-5-in below the 27-in design height.
	Breaking and Cracking:	Minor cracking of less than 1/4 in observed.
	Missing Elements:	1 element appears to be missing.
	Corrrosion and Weathering:	8 stones were loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-37.565-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1942
Brief Workorder:	Replace 1 missing stone and re-point grout around 8 loose stones.				
Workorder:	Replace stones at $150- per -each for 1 = $150. Replace stone Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 1 ft x 1 ft = 1 sq ft x 8 stones = 8 sq ft / 9 = 0.9 sy. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_37.565_L_1.jpg

Barrier ID:	**SHEN-0010B-37.669-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	38.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	2105
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	23.2	**Lateral Offset (In.):**	45.5	**Road Grade (%):**	5.30

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 1-6-in below the 27-in design height.
	Breaking and Cracking:	Minor breaking/cracking less than 1/4 in in width was observed in the grout.
	Missing Elements:	16 stones were missing.
	Corrrosion and Weathering:	15 stones were loose due to deterioration in the grout.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010B-37.669-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	38.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$4571
Brief Workorder:	Replace 16 missing stones and repoint grout around 15 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 2 SY = $280. 15 (1 ft x 1 ft) stones divided by 9 sq ft per sq yd equals 1.7 sq yd. Replace Stone at $150- per -Each for 16 = $2400. Replace 16 stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_37.669_L_1.jpg

Barrier ID:	**SHEN-0010B-38.729-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	426
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	71.5	**Road Grade (%):**	1.70

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No cracks greater than 1/4 in width observed in majority of barrier. There were 2 stones observed to be loose due to cracking of grout.
	Missing Elements:	There were 2 stones observed to be missing.
	Corrrosion and Weathering:	Missing/loose stones caused by weathering.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-38.729-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2107
Brief Workorder:	Replace 2 missing stones. Repoint grout around 2 loose stones.				
Workorder:	Replace missing stones at $150- per -Stone for 2 = $300. Replace 2 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 2sf / 9sf/sy => 1sy. Repoint around 2 loose stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_38.729_R_1.jpg

Barrier ID:	**SHEN-0010B-39.071-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	35.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1051
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	23.5	**Lateral Offset (In.):**	48.9	**Road Grade (%):**	6.00

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 2-5-in below the 27-in design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less was observed.
	Missing Elements:	4 stones were missing.
	Corrrosion and Weathering:	1 stone was loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-39.071-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	35.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2437
Brief Workorder:	Replace 4 missing stones and re-point grout around 1 loose stone.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 1 ft x 1 ft = 1 sq ft / 9 = 0.1 sy. Replace stones at $150- per -each for 4 = $600. Replace missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_39.071_R_1.jpg

Barrier ID:	**SHEN-0010B-39.333-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	47.40

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	2765
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	23.3	**Lateral Offset (In.):**	42.5	**Road Grade (%):**	5.10

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 2-5-in below the 27-in design height.
	Breaking and Cracking:	Minor breaking/cracking up to 1/2 in in width was observed in the grout in various locations and should be monitored.
	Missing Elements:	20 stones were missing.
	Corrrosion and Weathering:	27 stones were loose due to deterioration in the grout.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010B-39.333-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	47.40

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$5385
Brief Workorder:	Replace 20 missing stones and repoint grout around 27 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 3 SY = $420. 27 (1 ft x 1 ft) stones divided by 9 sq ft per sq yd equals 3 sq yds. Replace Stone at $150- per -Each for 20 = $3000. Replace 20 stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_39.333_L_1.jpg

Barrier ID:	**SHEN-0010B-39.891-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	38.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	514
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	24.2	**Lateral Offset (In.):**	43.7	**Road Grade (%):**	4.90

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 0-4-in below the 27-in design height.
	Breaking and Cracking:	Minor cracking in grout with cracks no greater than 1/4 in width observed. There were 3 stones observed to be loose due to cracked grout.
	Missing Elements:	There were 2 stones observed to be missing.
	Corrrosion and Weathering:	Missing/loose stones caused by weathering.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-39.891-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	38.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2107
Brief Workorder:	Replace 2 missing stones. Repoint around 3 loose stones.				
Workorder:	Replace missing stones at $150- per -Stone for 2 = $300. Replace 2 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 3sf / 9sf/sy = 0.4 sy. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_39.891_L_1.jpg

Barrier ID:	**SHEN-0010B-40.032-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	41.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1213
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.1	**Post Spacing (In.):**	0.0
Height (In.):	24.2	**Lateral Offset (In.):**	45.4	**Road Grade (%):**	5.30

Physical Condition

Barrier	**Alignment and Height:**	Alignment deflection was less than 6 in. Entire barrier is between 6-in below to 1-in above the 27-in design height.
	Breaking and Cracking:	Minor cracking of less than 1/4 in observed.
	Missing Elements:	10 stones were missing.
	Corrrosion and Weathering:	33 stones were loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-40.032-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	41.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$3889
Brief Workorder:	Replace 10 missing stones and re-point 33 stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 4 SY = $560. (1 ft x 1 ft) x 33 stones / 9 = 3.7 sy Replace stones at $150- per -each for 10 = $1500. Replace stone. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_40.032_L_1.jpg

Barrier ID:	**SHEN-0010B-40.311-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	43.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	2501
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	23.2	**Lateral Offset (In.):**	42.2	**Road Grade (%):**	4.90

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 1-4-in below the 27-in design height.
	Breaking and Cracking:	Minor breaking/cracking less than 1/4 in in width was observed in a few locations.
	Missing Elements:	14 stones were missing.
	Corrrosion and Weathering:	12 stones were loose.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010B-40.311-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	43.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$4241
Brief Workorder:	Replace 14 missing stones and repoint grout around 12 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 2 SY = $280. 12 (1 ft x 1 ft) stones equals 1.3 sq yds. Replace Stone at $150- per -Each for 14 = $2100. Replace 14 missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_40.311_L_1.jpg

Barrier ID:	**SHEN-0010B-40.836-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	29.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	290
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.5	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	67.5	**Road Grade (%):**	0.70

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking in grout with cracks no greater than 1/4 in width observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-40.836-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	29.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_40.836_L_1.jpg

Barrier ID:	**SHEN-0010B-41.233-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	29.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	406
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	55.7	**Road Grade (%):**	4.40

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking of less than 1/4 in observed.
	Missing Elements:	1 stone was missing.
	Corrrosion and Weathering:	1 stone was loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-41.233-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	29.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1942
Brief Workorder:	Replace 1 missing stone and re-point 1 loose stone.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 1 ft x 1 ft = 1 sq ft / 9 = 0.1sy. Replace stones at $150- per -each for 1 = $150. Replace stone. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_41.233_L_1.jpg

Barrier ID:	**SHEN-0010B-41.326-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	39.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	2467
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	24.8	**Lateral Offset (In.):**	40.5	**Road Grade (%):**	3.50

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking in the grout up to 1/2 in in width was observed in several locations. No breaking or cracking in the stones was observed.
	Missing Elements:	5 stones were missing.
	Corrrosion and Weathering:	15 stones were loose due to deterioration in the grout. Erosion along the front side of the barrier should be monitored.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010B-41.326-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	39.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2756
Brief Workorder:	Replace 5 missing stones and repoint grout around 15 loose stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 2 SY = $280. 15 (1 ft x 1 ft) stones equals 15 sq ft divided by 9 sq ft per sq yd equals 1.7 sq yds. Replace Stone at $150- per -Each for 5 = $750. Replace 5 stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_41.326_L_1.jpg

Barrier ID:	**SHEN-0010B-42.219-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	25.10

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	285
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	27.2	**Lateral Offset (In.):**	63.7	**Road Grade (%):**	3.50

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking in grout with cracks no greater than 1/4 in width observed.
	Missing Elements:	There were 2 stones observed to be missing.
	Corrrosion and Weathering:	Missing stones caused by weathering.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-42.219-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	25.10

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1953
Brief Workorder:	Replace 2 missing stones.				
Workorder:	Replace missing stones at $150- per -Stone for 2 = $300. Replace 2 missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_42.219_L_1.jpg

Barrier ID:	**SHEN-0010B-43.470-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	29.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	437
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	54.2	**Road Grade (%):**	3.60

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less was observed.
	Missing Elements:	2 stones were missing.
	Corrrosion and Weathering:	Missing stones caused by weathering.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-43.470-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	29.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1953
Brief Workorder:	Replace 2 missing stones.				
Workorder:	Replace stone at $150- per -each for 2 = $300. Replace stone. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_43.470_R_1.jpg

Barrier ID:	**SHEN-0010B-43.628-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	20.80

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	275
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	25.0	**Lateral Offset (In.):**	74.5	**Road Grade (%):**	2.40

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	1 stone was observed to be loose. Otherwise no breaking or cracking was observed.
	Missing Elements:	1 stone was observed to be missing.
	Corrrosion and Weathering:	Missing/loose stones caused by weathering.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010B-43.628-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	20.80

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1942
Brief Workorder:	Replace 1 missing stone and repoint grout around 1 loose stone.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. Repoint 1 (1 ft x 1 ft) stone equals 0.1 sq yd. Replace Stone at $150- per -Each for 1 = $150. Replace 1 missing stone. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_43.628_R_1.jpg

Barrier ID:	**SHEN-0010B-44.036-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	38.40

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	2151
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	24.1	**Lateral Offset (In.):**	65.5	**Road Grade (%):**	6.00

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 5-in below to 3-in above the 27-in design height.
	Breaking and Cracking:	Minor cracking in grout with cracks no greater than 1/4 in width observed. There were 7 stones observed to be loose due to cracking.
	Missing Elements:	There were 15 stones observed to be missing.
	Corrrosion and Weathering:	Missing/loose stones caused by weathering. Some erosion is occurring at the ft of the barrier for about 30 ft.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-44.036-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	38.40

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$4252
Brief Workorder:	Replace 15 missing stones and repoint grout around 7 loose stones.				
Workorder:	Replace missing stones at $150- per -stone for 15 = $2250. Replace 15 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 7sf / 9sf/sy = 0.8 sy. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_44.036_L_1.jpg

Barrier ID:	**SHEN-0010B-44.814-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	38.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	431
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	24.5	**Lateral Offset (In.):**	47.7	**Road Grade (%):**	5.50

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking of 1/4 in or less observed.
	Missing Elements:	No elements appear to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-44.814-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	38.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_44.814_R_1.jpg

Barrier ID:	**SHEN-0010B-44.906-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	29.30

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	622
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	26.3	**Lateral Offset (In.):**	69.5	**Road Grade (%):**	3.20

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010B-44.906-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	29.30

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_44.906_R_1.jpg

Barrier ID:	**SHEN-0010B-45.125-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	40.90

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1030
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.1	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	51.7	**Road Grade (%):**	6.20

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 0-4-in below the 27-in design height.
	Breaking and Cracking:	Minor cracking with cracks no greater than 1/4 in width observed in majority of barrier.
	Missing Elements:	47 stones were observed to be missing.
	Corrrosion and Weathering:	Weathering of grout has caused several stones to become dislodged.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-45.125-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	40.90

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$9532
Brief Workorder:	Replace 47 missing stones. Repoint grout around 1 loose stone.				
Workorder:	Replace missing stones at $150- per - for 47 = $7050. Replace 47 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. Repoint grout around 1 loose stone. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_45.125_R_1.jpg

Barrier ID:	**SHEN-0010B-45.323-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	29.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	728
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	59.2	**Road Grade (%):**	5.10

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No cracking larger than 1/4 in observed.
	Missing Elements:	4 stones were missing.
	Corrrosion and Weathering:	1 stone was loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-45.323-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	29.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2437
Brief Workorder:	Replace 4 missing stone and re-point 1 loose stone.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 1 ft x 1 ft = 1 sq ft / 9 = 0.1 sy. Replace stone at $150- per -each for 4 = $600. Replace stone. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_45.323_L_1.jpg

Barrier ID:	**SHEN-0010B-45.487-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	550
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	58.7	**Road Grade (%):**	0.50

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010B-45.487-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_45.487_L_1.jpg

Barrier ID:	**SHEN-0010B-46.050-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	41.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	3142
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.1	**Post Spacing (In.):**	0.0
Height (In.):	24.3	**Lateral Offset (In.):**	41.9	**Road Grade (%):**	4.90

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 0-5-in below the 27-in design height.
	Breaking and Cracking:	Minor cracking in grout with cracks no greater than 1/4 in width observed. 1 stone was loose due to cracking in grout.
	Missing Elements:	There were 10 stones missing.
	Corrrosion and Weathering:	Missing/loose stones caused by weathering.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-46.050-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	41.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$3427
Brief Workorder:	Replace 10 missing stones. Repoint grout around 1 loose stone.				
Workorder:	Replace missing stones at $150- per -Lump Sum for 10 Unit = $1500. Replace 10 missing stones. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_46.050_L_1.jpg

Barrier ID:	**SHEN-0010B-46.764-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	8.50

Barrier Description

Type:	OTHER: LOG RAIL ON LOG POSTS	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	LOG/TIMBER/WOOD	**Post Material:**	WOOD
Blockout Type:	N/A	**Length (ft.):**	247
Speed Limit (MPH):	35	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	OTHER: LOG FLARED	**Is Beg. End Trtmt Crashhworthy?:**	NO	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	OTHER: LOG FLARED	**Ending End Trtmt Crashhworthy?:**	NO		

Average Measurements

Design Height (In.):	24	**Width (In.):**	0.0	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	Alignment deflection is less than 6 in. The entire barrier is above the 24in. design height by 0 to 2 in.
	Breaking and Cracking:	No impact related breaking or cracking observed.
	Missing Elements:	No elements appear to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	Alignment acceptable. Height within 1-in of 24-in design height.
	Breaking and Cracking:	No impact related breaking or cracking observed.
	Missing Elements:	No elements appear to be missing.
	Corrrosion and Weathering:	No corrosion or weathering observed.

Barrier ID:	**SHEN-0010B-46.764-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	8.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_46.764_L_1.jpg

Barrier ID:	**SHEN-0010B-47.669-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	35.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	266
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	22.7	**Lateral Offset (In.):**	42.7	**Road Grade (%):**	2.10

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 3-5-in below the 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010B-47.669-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	35.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_47.669_L_1.jpg

Barrier ID:	**SHEN-0010B-47.753-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	29.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	642
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.8	**Post Spacing (In.):**	0.0
Height (In.):	25.3	**Lateral Offset (In.):**	51.5	**Road Grade (%):**	1.50

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking in grout with cracks less than 1/4 in width were observed.
	Missing Elements:	There were 3 stones missing.
	Corrrosion and Weathering:	Missing stones caused by weathering.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-47.753-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	29.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2118
Brief Workorder:	Replace 3 missing stones.				
Workorder:	Replace missing stones at $150- per - for 3 = $450. Replace 3 missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_47.753_L_1.jpg

Barrier ID:	**SHEN-0010B-47.968-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	25.10

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	535
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	27.0	**Lateral Offset (In.):**	56.0	**Road Grade (%):**	3.20

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Minor cracking of less than 1/4 in observed.
	Missing Elements:	2 stones were missing.
	Corrrosion and Weathering:	1 stone was loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-47.968-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	25.10

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2107
Brief Workorder:	Re-point 1 stone and replace 2 missing stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 1 ft x 1 ft = 1 sq ft / 9 = 0.1 sy. Replace stone at $150- per -each for 2 = $300. Replace stone. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_47.968_L_1.jpg

Barrier ID:	**SHEN-0010B-48.095-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	65.10

Barrier Description

Type:	STEEL-BACKED LOG RAIL	**Barrier Function:**	TRAFFIC
Barrier Material:	STEEL-BACKED TIMBER/LOG	**Post Material:**	WOOD
Blockout Type:	WOOD	**Length (ft.):**	940
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-2	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	**Is Beg. End Trtmt Crashhworthy?:**	NO	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	**Ending End Trtmt Crashhworthy?:**	NO		

Average Measurements

Design Height (In.):	31	**Width (In.):**	0.0	**Post Spacing (In.):**	119.8
Height (In.):	25.1	**Lateral Offset (In.):**	41.0	**Road Grade (%):**	4.50

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. The barrier is 1 in to 3 in below the design height of 31 ines for 50 ft and is 3 to 7 ines below the design height for 820 ft.
	Breaking and Cracking:	No impact related breaking or cracking was observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	Alignment acceptable. Height within 1-in of 31-in design height.
	Breaking and Cracking:	No impact related breaking or cracking was observed.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	No weathering was observed.

Barrier ID:	**SHEN-0010B-48.095-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	65.10

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$16060
Brief Workorder:	Raise 870 feet of guardrail to the design height of 31 inches.				
Workorder:	Adjust Guardrail at $10- per -Lin. Ft. for 870 LF = $8700. Raise 870 feet of guardrail to the design height of 31 inches. Low Speed Traffic Control at $1475- per -Day for 4 Day(s) = $5900.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_48.095_L_1.jpg

Barrier ID:	**SHEN-0010B-48.526-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	83.00

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	918
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	24.3	**Post Spacing (In.):**	0.0
Height (In.):	13.1	**Lateral Offset (In.):**	136.3	**Road Grade (%):**	6.40

Physical Condition

Barrier	**Alignment and Height:**	No deflection in alignment greater than 6 in observed. Height was more than 6in. below the 24 in design height.
	Breaking and Cracking:	Majority of barrier has loose stones and severe grout cracking.
	Missing Elements:	Most of barrier has missing grout and there are several stones missing.
	Corrrosion and Weathering:	Weathering has caused several stones to become loose and dislodged from barrier.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-48.526-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	83.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$711508
Brief Workorder:	Raise guardwall 11-in. Remove and reset 918-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 2054 CF = $513500. 918 ft x (24.4in/12in/ft) x (13.2 in/12in/ft) = 2054 cf. Structural Concrete at $1000- per -Cu. Yd. for 64 CY = $64000. [(918 ft x (24.4in/12in) x (11 in/12in)]/27 = 63.3 cy. Low Speed Traffic Control at $1475- per -Day for 47 Day(s) = $69325. 10 days removal and 37 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

Condition photos are not available for SHEN-0010A-48.526-R.

Barrier ID:	**SHEN-0010B-48.724-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	35.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	770
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.3	**Post Spacing (In.):**	0.0
Height (In.):	23.8	**Lateral Offset (In.):**	47.7	**Road Grade (%):**	3.40

Physical Condition

Barrier	**Alignment and Height:**	Alignment deflection was less than 6 in. Entire barrier was 2-7 in below the 27-in. design height. Due to the 35 mph speed limit barrier is function as a 22 in design height (TL-2) barrier.
	Breaking and Cracking:	Minor cracking of 1/4 in or less was observed.
	Missing Elements:	1 stone is missing.
	Corrrosion and Weathering:	1 stone is loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-48.724-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	35.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1942
Brief Workorder:	Repoint grout around 1 stone and replace 1 missing stone.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 1 SY = $140. 1ft x 1 ft = 1 sq ft Replace stone at $150- per -each for 1 = $150. Replace 1 missing stone. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_48.724_L_1.jpg

Barrier ID:	**SHEN-0010B-48.904-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	260
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.0	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	51.2	**Road Grade (%):**	4.80

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Height within 3-in of 27-in design height.
	Breaking and Cracking:	Very minor cracking in grout. Cracks were less than 1/4 in in width.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	NA
	Breaking and Cracking:	NA
	Missing Elements:	NA
	Corrrosion and Weathering:	NA

Barrier ID:	**SHEN-0010B-48.904-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_48.904_L_1.jpg

Barrier ID:	**SHEN-0010B-49.457-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	35.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	834
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	25.6	**Lateral Offset (In.):**	46.2	**Road Grade (%):**	5.60

Physical Condition

Barrier	**Alignment and Height:**	No deflection greater than 6 in observed in the alignment. Entire barrier is between 0-5-in below the 27-in design height.
	Breaking and Cracking:	Minor cracking in grout with cracks no greater than 1/4 in width were observed.
	Missing Elements:	There were 3 stones missing.
	Corrrosion and Weathering:	Missing stones caused by weathering.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-49.457-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	35.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2118
Brief Workorder:	Replace 3 missing stones.				
Workorder:	Replace missing stones at $150- per - for 3 = $450. Replace missing stones. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_49.457_L_1.jpg

Barrier ID:	**SHEN-0010B-49.833-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	41.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	4158
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	24.5	**Lateral Offset (In.):**	37.0	**Road Grade (%):**	5.40

Physical Condition

Barrier	**Alignment and Height:**	The alignment deflection was less than 6 in. The barrier height ranged from 4 in below to 4 ines above the 27 in design height.
	Breaking and Cracking:	Minor cracks of less than 1/4 in were observed.
	Missing Elements:	25 stones were missing.
	Corrrosion and Weathering:	10 stones were loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-49.833-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	41.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$6056
Brief Workorder:	Repoint grout around 10 stones and replace 25 missing stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 2 SY = $280. ((1 ft x 1 ft) x 10 stones) / 9 sf/sy= 1.11 sy Replace missing stone at $150- per -each for 25 = $3750. $150 per stone. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_49.833_L_1.jpg

Barrier ID:	**SHEN-0010B-54.463-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	23.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	319
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.2	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	47.0	**Road Grade (%):**	2.30

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-54.463-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	23.70

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_54.463_R_1.jpg

Barrier ID:	**SHEN-0010B-54.510-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	24.30

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	283
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	25.7	**Post Spacing (In.):**	0.0
Height (In.):	18.0	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	Barrier height is more than 6in. below the 24 in design height. Barrier is tilting away from edge of pavement by 6 in for approximately 80 ft.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	Multiple sets of adjacent stones are missing from barrier and misplaced along approximately 175 feet of barrier.
	Corrrosion and Weathering:	Barrier is missing mortar/stones along 175 ft due to weathering.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-54.510-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	24.30

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$199953
Brief Workorder:	Raise guardwall 6-in. Remove and reset 175-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 562 CF = $140500. [(175ft) x (25.7in / 12in) x (1.5 FT)] = 562 CF. Structural Concrete at $1000- per -Cu. Yd. for 28 CY = $28000. [(2.1ft)(2ft)(175ft)] /27 = 27.2 CY. Low Speed Traffic Control at $1475- per -Day for 9 Day(s) = $13275. 2 days removal 7 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

Condition photos are not available for SHEN-0010B-54.510-R.

Barrier ID:	**SHEN-0010B-54.588-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	19.70

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	266
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	LOW		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	25.2	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	52.7	**Road Grade (%):**	2.30

Physical Condition

Barrier	**Alignment and Height:**	Height within 3-in of 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-54.588-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	19.70

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_54.588_R_1.jpg

Barrier ID:	**SHEN-0010B-54.879-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	26.60

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1060
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.0	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	40.2	**Road Grade (%):**	0.85

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-54.879-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	26.60

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_54.879_R_1.jpg

Barrier ID:	**SHEN-0010B-55.103-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	35.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	825
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.5	**Post Spacing (In.):**	0.0
Height (In.):	24.5	**Lateral Offset (In.):**	41.5	**Road Grade (%):**	1.20

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-55.103-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	35.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_55.103_R_1.jpg

Barrier ID:	**SHEN-0010B-55.301-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	32.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1845
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.2	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	49.2	**Road Grade (%):**	1.40

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-55.301-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	32.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_55.301_L_1.jpg

Barrier ID:	**SHEN-0010B-55.697-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	29.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	320
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	26.0	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	62.7	**Road Grade (%):**	1.90

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-55.697-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	29.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_55.697_R_1.jpg

Barrier ID:	**SHEN-0010B-55.742-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	11.50

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	270
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	26.0	**Post Spacing (In.):**	0.0
Height (In.):	20.0	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height between 3 and 6-in below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-55.742-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	11.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

Condition photos are not available for SHEN-0010B-55.742-R.

Barrier ID:	**SHEN-0010B-55.823-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	27.80

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	799
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	23.2	**Lateral Offset (In.):**	43.5	**Road Grade (%):**	4.80

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-55.823-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	27.80

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_55.823_R_1.jpg

Barrier ID:	**SHEN-0010B-56.201-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	29.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1395
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.6	**Post Spacing (In.):**	0.0
Height (In.):	26.0	**Lateral Offset (In.):**	48.5	**Road Grade (%):**	2.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Entire barrier is between 6-in below to 2-in above the 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-56.201-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	29.70

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_56.201_R_1.jpg

Barrier ID:	**SHEN-0010B-56.613-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	35.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	885
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.2	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	39.5	**Road Grade (%):**	3.10

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-56.613-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	35.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_56.613_R_1.jpg

Barrier ID:	**SHEN-0010B-57.228-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	36.90

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	991
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.2	**Post Spacing (In.):**	0.0
Height (In.):	26.2	**Lateral Offset (In.):**	48.0	**Road Grade (%):**	4.10

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-57.228-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	36.90

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_57.228_L_1.jpg

Barrier ID:	**SHEN-0010B-58.437-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	43.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1265
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.2	**Post Spacing (In.):**	0.0
Height (In.):	25.5	**Lateral Offset (In.):**	42.9	**Road Grade (%):**	6.90

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Entire barrier is between 4-in below to 2-in above the 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-58.437-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	43.70

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_58.437_R_1.jpg

Barrier ID:	**SHEN-0010B-59.172-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	28.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	651
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	26.5	**Lateral Offset (In.):**	48.0	**Road Grade (%):**	2.50

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-59.172-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	28.00

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_59.172_R_1.jpg

Barrier ID:	**SHEN-0010B-59.277-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	4.10

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	214
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	26.2	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-59.277-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	4.10

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

Condition photos are not available for SHEN-0010B-59.277-R.

Barrier ID:	**SHEN-0010B-59.354-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	25.10

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	510
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.2	**Post Spacing (In.):**	0.0
Height (In.):	26.0	**Lateral Offset (In.):**	65.3	**Road Grade (%):**	0.70

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-59.354-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	25.10

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_59.354_R_1.jpg

Barrier ID:	**SHEN-0010B-60.798-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	35.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	769
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.5	**Post Spacing (In.):**	0.0
Height (In.):	24.1	**Lateral Offset (In.):**	43.0	**Road Grade (%):**	0.80

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Entire barrier is between 5-in below to 1-in above the 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-60.798-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	35.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_60.798_R_1.jpg

Barrier ID:	**SHEN-0010B-61.113-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	43.90

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1164
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	24.1	**Lateral Offset (In.):**	44.2	**Road Grade (%):**	3.30

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. 364ft. was 3-6in. below the 27-in. design height and 200ft. was 6-7 in below. Due to the 35 mph speed limit barrier is functioning as a 22 in design height (TL-2) barrier.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-61.113-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	43.90

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_61.113_R_1.jpg

Barrier ID:	**SHEN-0010B-61.387-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	35.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	337
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.0	**Post Spacing (In.):**	0.0
Height (In.):	22.5	**Lateral Offset (In.):**	48.2	**Road Grade (%):**	3.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Entire barrier is between 4-5-in below the 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-61.387-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	35.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_61.387_R_1.jpg

Barrier ID:	**SHEN-0010B-61.445-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	17.10

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	50
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	26.2	**Post Spacing (In.):**	0.0
Height (In.):	19.7	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was between 1-6in. below the 24 in design height. This wall is in a pullout and transitions down to meet the pedestrian wall.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-61.445-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	17.10

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

Condition photos are not available for SHEN-0010A-61.445-R.

Barrier ID:	**SHEN-0010B-61.506-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	17.10

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	63
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	26.0	**Post Spacing (In.):**	0.0
Height (In.):	19.0	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was between 0-8in. below the 24 in design height. This wall is in a pullout and transitions down to meet the pedestrian wall.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-61.506-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	17.10

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_61.506_R_1.jpg

Barrier ID:	**SHEN-0010B-61.518-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	32.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	775
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	26.7	**Lateral Offset (In.):**	56.2	**Road Grade (%):**	5.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-61.518-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	32.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_61.518_R_1.jpg

Barrier ID:	**SHEN-0010B-62.193-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	29.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	342
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.2	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	54.7	**Road Grade (%):**	6.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-62.193-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	29.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_62.193_L_1.jpg

Barrier ID:	**SHEN-0010B-62.285-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	27.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	423
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	LOW		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.0	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	51.7	**Road Grade (%):**	6.70

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-62.285-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	27.00

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_62.285_L_1.jpg

Barrier ID:	**SHEN-0010B-62.480-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	26.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	463
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	47.7	**Road Grade (%):**	4.90

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Entire barrier is 1-4in. below the 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-62.480-L**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/09/2010	**Barrier Rating:**	26.70

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_62.480_L_1.jpg

Barrier ID:	**SHEN-0010B-63.745-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	37.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	2896
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	24.2	**Lateral Offset (In.):**	44.9	**Road Grade (%):**	2.80

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Entire barrier is 0-5in. below the 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-63.745-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	37.00

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_63.745_R_1.jpg

Barrier ID:	**SHEN-0010B-64.337-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	56.00

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	543
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	27.7	**Post Spacing (In.):**	0.0
Height (In.):	12.1	**Lateral Offset (In.):**	31.7	**Road Grade (%):**	4.30

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 10-13in. below the 24 in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	Stones are loose for approximately 15 ft due to cracked or missing mortar on front back and top faces.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-64.337-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	56.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$784080
Brief Workorder:	Raise guardwall 12-in. Remove and reset 543-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 2498 CF = $624500. [(2ft)(2.3ft)(543ft)] = 2498 cf. Structural Concrete at $1000- per -Cu. Yd. for 47 CY = $47000. [(2.3ft)(1ft)(543ft)] /27 = 46.3 cy. Low Speed Traffic Control at $1475- per -Day for 28 Day(s) = $41300. 6 days removal and 22 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_64.337_R_1.jpg

Barrier ID:	**SHEN-0010B-64.472-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	52.70

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	576
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	LOW		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	25.7	**Post Spacing (In.):**	0.0
Height (In.):	11.6	**Lateral Offset (In.):**	44.0	**Road Grade (%):**	4.70

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 12-13in. below the 24 in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Mortar along 100 ft has crumbled and caused the stones to become loose and unstable.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-64.472-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	52.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$762053
Brief Workorder:	Raise guardwall 12-in. Remove and reset 576-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 2420 CF = $605000. [(2.1ft)(2ft)(576ft)] = 2419.2 cf. Structural Concrete at $1000- per -Cu. Yd. for 45 CY = $45000. [(2.1ft)(1ft)(576ft)] /27 = 44.8 cy. Low Speed Traffic Control at $1475- per -Day for 29 Day(s) = $42775. 6 days removal and 23 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_64.472_R_1.jpg

Barrier ID:	**SHEN-0010B-64.564-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	36.90

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	261
Speed Limit (MPH):	35	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	11.0	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	Alignment is as designed along length of barrier. Height was 6-8in. below the 24 in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-64.564-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	36.90

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$360525
Brief Workorder:	For 400 feet of barrier that is below 10 inches in height remove and reset to match adjacent 10 inch height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 1129 CF = $282250. 400 LF x 16IN x 25.4IN x SF/12IN/12IN = 1129 cf Structural Concrete at $1000- per -Cu. Yd. for 16 CY = $16000. (400 LF x 0.5FT x 25.4IN x FT/12IN) x CY/27CF = 16 cy Low Speed Traffic Control at $1475- per -Day for 20 Day(s) = $29500. 4 days for removal and 16 days for reset.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

Condition photos are not available for SHEN-0010B-64.564-R.

Barrier ID:	**SHEN-0010B-64.654-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	72.30

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	879
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	25.3	**Post Spacing (In.):**	0.0
Height (In.):	11.0	**Lateral Offset (In.):**	49.5	**Road Grade (%):**	5.20

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 6-17in. below the 24 in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	One 5-ft segment as a 1-in mortar crack due to weathering. Otherwise mortar is intact.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-64.654-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	72.30

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_64.654_R_1.jpg

Barrier ID:	**SHEN-0010B-64.831-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	63.90

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	503
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	23.2	**Post Spacing (In.):**	0.0
Height (In.):	11.0	**Lateral Offset (In.):**	44.0	**Road Grade (%):**	4.80

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 12-14in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-64.831-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/11/2010	**Barrier Rating:**	63.90

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$609263
Brief Workorder:	Raise guardwall 13-in. Remove and reset 503-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 1912 CF = $478000. [(1.9ft)(2ft)(503ft)] = 1911.4 cf. Structural Concrete at $1000- per -Cu. Yd. for 39 CY = $39000. [(1.9ft)(1.1ft)(503ft)] /27 = 38.9 cy. Low Speed Traffic Control at $1475- per -Day for 25 Day(s) = $36875. 5 days removal and 20 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_64.831_R_1.jpg

Barrier ID:	**SHEN-0010B-65.172-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	39.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1057
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.1	**Post Spacing (In.):**	0.0
Height (In.):	24.2	**Lateral Offset (In.):**	44.7	**Road Grade (%):**	5.90

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Entire barrier is between 1-5-in below the 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-65.172-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	39.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_65.172_R_1.jpg

Barrier ID:	**SHEN-0010B-65.441-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	38.40

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1197
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	25.5	**Lateral Offset (In.):**	57.2	**Road Grade (%):**	5.50

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010B-65.441-R**		
Route Name:	SKYLINE DRIVE (CENTRAL)		
Inspection Date:	09/10/2010	**Barrier Rating:**	38.40

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010B: SKYLINE DRIVE (CENTRAL)

Barrier Condition Photos

SHEN_0010B_65.441_R_1.jpg

Barrier ID:	**SHEN-0010C-65.775-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	36.50

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	42
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	26.0	**Post Spacing (In.):**	0.0
Height (In.):	17.7	**Lateral Offset (In.):**	76.6	**Road Grade (%):**	0.50

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was within 3 in of assumed 18-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Stones are loose for entire barrier length. Mortar is cracked or missing.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-65.775-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	36.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$5319
Brief Workorder:	Repoint 24 sq. yds of stone barrier.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 24 SY = $3360. [(17.7in/12) (42ft) (2)] + [(26in/12) (42ft)] = [(215sq.ft.) (1sq.yd./9sq.ft.)] = 24sy. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_65.775_L_1.jpg

Barrier ID:	**SHEN-0010C-65.843-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	78.80

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1303
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	25.7	**Post Spacing (In.):**	0.0
Height (In.):	13.6	**Lateral Offset (In.):**	96.6	**Road Grade (%):**	4.60

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 6-14in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Grout between stones along entire length has crumbled and worn away. As a result the stones have become loose and barrier has fallen in on itself.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-65.843-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	78.80

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1733435
Brief Workorder:	Raise guardwall 10-in. Remove and reset 1303-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 5582 CF = $1395500. [(1303ft)(2ft)(2.1ft)] = 5581.1 cf. Structural Concrete at $1000- per -Cu. Yd. for 83 CY = $83000. [(1303) x (.8) x (25.7/12)] /27 = 82.7 cy. Low Speed Traffic Control at $1475- per -Day for 66 Day(s) = $97350. 13 days removal and 53 days reset..				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_65.843_L_1.jpg

Barrier ID:	**SHEN-0010C-66.114-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	58.90

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	658
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	26.0	**Post Spacing (In.):**	0.0
Height (In.):	12.8	**Lateral Offset (In.):**	78.0	**Road Grade (%):**	5.70

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 8-13in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	16 stones are missing from the top face in isolated locations.
	Corrrosion and Weathering:	Almost all mortar is deteriorated but stones are not loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-66.114-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	58.90

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$905465
Brief Workorder:	Raise guardwall 11-in. Remove and reset 658-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 2896 CF = $724000. [(2.2ft)(2ft)(658ft)] = 2895.2 cf. Structural Concrete at $1000- per -Cu. Yd. for 49 CY = $49000. [(2.2ft)(0.9ft)(658ft)] /27 = 48.3 cy. Low Speed Traffic Control at $1475- per -Day for 34 Day(s) = $50150. 7 days removal and 27 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_66.114_L_1.jpg

Barrier ID:	**SHEN-0010C-66.981-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	27.80

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	910
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.2	**Post Spacing (In.):**	0.0
Height (In.):	27.6	**Lateral Offset (In.):**	54.7	**Road Grade (%):**	3.90

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-66.981-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	27.80

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_66.981_R_1.jpg

Barrier ID:	**SHEN-0010C-67.188-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	43.00

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	191
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	27.2	**Post Spacing (In.):**	0.0
Height (In.):	15.6	**Lateral Offset (In.):**	70.0	**Road Grade (%):**	2.10

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 7-9in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Grout between stones is crumbling or completely worn away along the entire length. As a result stones have become loose and fallen out of place.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-67.188-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	43.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$270050
Brief Workorder:	Raise guardwall 10-in. Remove and reset 191-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 879 CF = $219750. [(2ft)(2.3ft)(191ft)] = 878.5 cf. Structural Concrete at $1000- per -Cu. Yd. for 11 CY = $11000. [(2.3ft)(0.67ft)(191ft)] /27 = 10.9 cy. Low Speed Traffic Control at $1475- per -Day for 10 Day(s) = $14750. 2 days removal and 8 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_67.188_R_1.jpg

Barrier ID:	**SHEN-0010C-67.269-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	19.30

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	511
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.0	**Post Spacing (In.):**	0.0
Height (In.):	26.0	**Lateral Offset (In.):**	61.7	**Road Grade (%):**	1.70

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-67.269-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	19.30

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_67.269_R_1.jpg

Barrier ID:	**SHEN-0010C-67.446-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	54.50

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	732
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	26.7	**Post Spacing (In.):**	0.0
Height (In.):	13.3	**Lateral Offset (In.):**	64.8	**Road Grade (%):**	1.50

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 10-12in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	5 stones are missing in isolated locations along barrier.
	Corrrosion and Weathering:	Mortar is missing and deteriorated throughout barrier length but stones are not loose.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-67.446-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	54.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1006830
Brief Workorder:	Raise guardwall 11-in. Remove and reset 732-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 3221 CF = $805250. [(2.2ft)(2ft)(732ft)] = 3220.8 cf. Structural Concrete at $1000- per -Cu. Yd. for 54 CY = $54000. [(2.2ft)(0.9ft)(732ft)] /27 = 53.7 cy. Low Speed Traffic Control at $1475- per -Day for 38 Day(s) = $56050. 8 days removal and 30 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_67.446_R_1.jpg

Barrier ID:	**SHEN-0010C-67.733-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	63.40

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1343
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	26.2	**Post Spacing (In.):**	0.0
Height (In.):	12.8	**Lateral Offset (In.):**	64.9	**Road Grade (%):**	0.40

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 7-13in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	Stones were loose from cracked and missing mortar along 120 ft of barrier. Mortar was missing on 1000 ft of the front top and back face of barrier.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-67.733-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	63.40

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1844480
Brief Workorder:	Raise guardwall 11-in. Remove and reset 1343-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 5910 CF = $1477500. [(2.2ft)(2ft)(1343ft)] = 5909.2 cf. Structural Concrete at $1000- per -Cu. Yd. for 99 CY = $99000. [(2.2ft)(0.9ft)(1343ft)] /27 = 98.5 cy. Low Speed Traffic Control at $1475- per -Day for 68 Day(s) = $100300. 14 days removal and 54 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_67.733_R_1.jpg

Barrier ID:	**SHEN-0010C-68.021-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	496
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	64.6	**Road Grade (%):**	1.50

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-68.021-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_68.021_R_1.jpg

Barrier ID:	**SHEN-0010C-68.179-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	48.40

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	288
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	28.2	**Post Spacing (In.):**	0.0
Height (In.):	18.0	**Lateral Offset (In.):**	57.7	**Road Grade (%):**	1.50

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 3-9in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Mortar between stones has eroded completely away along barrier length causing stones to be come loose and unstable.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-68.179-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	48.40

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$418963
Brief Workorder:	Raise guardwall 6-in. Remove and reset 288-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 1383 CF = $345750. [(2.4ft)(2ft)(288ft)] = 1382.4 cf. Structural Concrete at $1000- per -Cu. Yd. for 13 CY = $13000. [(2.4ft)(0.5ft)(288ft)] /27 = 12.8 cy. Low Speed Traffic Control at $1475- per -Day for 15 Day(s) = $22125. 3 days removal and 12 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_68.179_R_1.jpg

Barrier ID:	**SHEN-0010C-68.297-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	48.70

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	865
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	25.6	**Post Spacing (In.):**	0.0
Height (In.):	16.0	**Lateral Offset (In.):**	62.0	**Road Grade (%):**	2.70

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 7-10in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	5 stones are missing.
	Corrrosion and Weathering:	Barrier has deteriorated mortar along entire length. 125 ft of barrier also has loose/misplaced stones.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-68.297-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	48.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1119965
Brief Workorder:	Raise guardwall 8-in. Remove and reset 85-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 3633 CF = $908250. [(2.1ft)(2ft)(865ft)] = 3633 cf. Structural Concrete at $1000- per -Cu. Yd. for 45 CY = $45000. [(2.1ft)(0.67ft)(865ft)] /27 = 45 cy. Low Speed Traffic Control at $1475- per -Day for 44 Day(s) = $64900. 9 days removal and 35 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_68.297_R_1.jpg

Barrier ID:	**SHEN-0010C-68.677-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	58.70

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	630
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	28.5	**Post Spacing (In.):**	0.0
Height (In.):	13.3	**Lateral Offset (In.):**	67.0	**Road Grade (%):**	0.20

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 7-13in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	Stones are loose along 340 ft of barrier length due to cracked or missing mortar. Mortar is missing or cracked along 315 ft of the front face and back face. Mortar is missing or cracked along 475 ft of the top face.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-68.677-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	58.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$941243
Brief Workorder:	Raise guardwall 11-in. Remove and reset 630-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 3024 CF = $756000. [(2.4ft)(2ft)(630ft)] = 3024 cf. Structural Concrete at $1000- per -Cu. Yd. for 51 CY = $51000. [(2.4ft)(0.9ft)(630ft)] /27 = 50.4 cy. Low Speed Traffic Control at $1475- per -Day for 33 Day(s) = $48675. 7 days removal and 26 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_68.677_R_1.jpg

Barrier ID:	**SHEN-0010C-68.896-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	76.30

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	2016
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	26.5	**Post Spacing (In.):**	0.0
Height (In.):	15.6	**Lateral Offset (In.):**	64.3	**Road Grade (%):**	4.80

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 5-13in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Mortar has eroded completely away from wall structure. As a result the stone wall has become loose and unstable.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-68.896-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	76.30

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2428195
Brief Workorder:	Raise guardwall 3-in. Remove and reset 1816-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 7991 CF = $1997750. [(2.2ft)(2ft)(1816ft)] = 7990.4 cf. Structural Concrete at $1000- per -Cu. Yd. for 74 CY = $74000. [(2.2ft)(0.5ft)(1816ft)] /27 = 73.9 cy. Low Speed Traffic Control at $1475- per -Day for 92 Day(s) = $135700. 19 days removal and 73 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_68.896_L_1.jpg

Barrier ID:	**SHEN-0010C-69.294-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	38.70

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	139
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	25.7	**Post Spacing (In.):**	0.0
Height (In.):	15.6	**Lateral Offset (In.):**	68.3	**Road Grade (%):**	6.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 7-9in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	One stone is displaced.
	Corrrosion and Weathering:	Mortar is deteriorated along one-third of top and all of front and back faces.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-69.294-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	38.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$182380
Brief Workorder:	Raise guardwall 8-in. Remove and reset 139-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 584 CF = $146000. [(2.1ft)(2ft)(139ft)] = 583.8 cf. Structural Concrete at $1000- per -Cu. Yd. for 8 CY = $8000. [(2.1ft)(0.67ft)(139ft)] /27 = 7.2 cy. Low Speed Traffic Control at $1475- per -Day for 8 Day(s) = $11800. 2 days removal and 6 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_69.294_L_1.jpg

Barrier ID:	**SHEN-0010C-69.328-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	42.20

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	134
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	26.7	**Post Spacing (In.):**	0.0
Height (In.):	13.0	**Lateral Offset (In.):**	57.2	**Road Grade (%):**	6.40

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 9-13in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Stones are loose along 40 ft of barrier length due to broken or missing mortar. Mortar is broken or missing along 40 ft of barrier length for front back and top faces.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-69.328-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/10/2010	**Barrier Rating:**	42.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$186230
Brief Workorder:	Raise guardwall 9-in. Remove and reset 134-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 590 CF = $147500. [(2.2ft)(2ft)(134ft)] = 509.6 cf. Structural Concrete at $1000- per -Cu. Yd. for 10 CY = $10000. [(2.2ft)(0.9ft)(134ft)] /27 = 9.8 cy. Low Speed Traffic Control at $1475- per -Day for 8 Day(s) = $11800. 2 days removal and 6 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_69.328_L_1.jpg

Barrier ID:	**SHEN-0010C-69.404-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	46.50

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	140
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	26.0	**Post Spacing (In.):**	0.0
Height (In.):	16.2	**Lateral Offset (In.):**	66.3	**Road Grade (%):**	4.80

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 5-6in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Loose stones were observed along 30 ft of barrier due to cracked or missing mortar. Mortar deficiencies were on front back and top faces.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-69.404-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	46.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$4087
Brief Workorder:	Repoint 16 square yards of barrier.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 16 SY = $2240. Repoint: (30ft)(1.36ft)(2)+(30ft)(2.17ft)=(146.5sq.ft) (1sq.yd/9sq.ft) = 16sq.yd. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_69.404_L_1.jpg

Barrier ID:	**SHEN-0010C-69.496-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	25.60

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	628
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.0	**Post Spacing (In.):**	0.0
Height (In.):	24.2	**Lateral Offset (In.):**	47.0	**Road Grade (%):**	6.60

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Entire barrier is between 1-5in below the 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-69.496-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	25.60

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_69.496_L_1.jpg

Barrier ID:	**SHEN-0010C-69.643-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	50.70

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	463
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	28.2	**Post Spacing (In.):**	0.0
Height (In.):	14.6	**Lateral Offset (In.):**	61.2	**Road Grade (%):**	6.30

Physical Condition

Barrier	**Alignment and Height:**	Alignment has no deviation along length of barrier. Height was 8-12in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Loose stones were observed along 100 ft of barrier. Missing mortar was observed along 200 ft of barrier on front top and back faces.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-69.643-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	50.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$684365
Brief Workorder:	Raise guardwall 9-in. Remove and reset 463-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 2223 CF = $555750. [(2.4ft)(2ft)(463ft)] = 2222.4 cf. Structural Concrete at $1000- per -Cu. Yd. for 31 CY = $31000. [(2.4ft)(0.75ft)(463ft)] /27 = 30.9 cy. Low Speed Traffic Control at $1475- per -Day for 24 Day(s) = $35400. 5 days removal and 19 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_69.643_L_1.jpg

Barrier ID:	**SHEN-0010C-69.756-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	53.00

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	373
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	25.7	**Post Spacing (In.):**	0.0
Height (In.):	16.7	**Lateral Offset (In.):**	52.7	**Road Grade (%):**	6.20

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 7-8in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	Stones are missing/misplaced throughout barrier length.
	Corrrosion and Weathering:	Barrier is missing mortar and has loose stones throughout length.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-69.756-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	53.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$481553
Brief Workorder:	Raise guardwall 7-in. Remove and reset 373-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 1567 CF = $391750. [(2.1ft)(2ft)(373ft)] = 1566.7 cf. Structural Concrete at $1000- per -Cu. Yd. for 18 CY = $18000. [(2.1ft)(.6ft)(373ft)]/27 = 17.4 cy. Low Speed Traffic Control at $1475- per -Day for 19 Day(s) = $28025. 4 days removal and 15 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_69.756_L_1.jpg

Barrier ID:	**SHEN-0010C-69.937-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	52.00

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	419
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	26.7	**Post Spacing (In.):**	0.0
Height (In.):	13.6	**Lateral Offset (In.):**	59.7	**Road Grade (%):**	1.10

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 9-12in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Mortar along 300 ft of barrier has eroded completely and left stones loose and unstable.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-69.937-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	52.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$573595
Brief Workorder:	Raise guardwall 10-in. Remove and reset 419-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 1844 CF = $461000. [(2.2ft)(2ft)(419ft)] = 1843.6 cf. Structural Concrete at $1000- per -Cu. Yd. for 28 CY = $28000. [(2.2ft)(0.8ft)(419ft)] /27 = 27.3 cy. Low Speed Traffic Control at $1475- per -Day for 22 Day(s) = $32450. 5 days removal and 17 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_69.937_L_1.jpg

Barrier ID:	**SHEN-0010C-70.162-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	731
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	32.2	**Post Spacing (In.):**	0.0
Height (In.):	24.2	**Lateral Offset (In.):**	61.7	**Road Grade (%):**	4.80

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-70.162-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_70.162_R_1.jpg

Barrier ID:	**SHEN-0010C-70.355-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	26.60

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	890
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.3	**Post Spacing (In.):**	0.0
Height (In.):	25.0	**Lateral Offset (In.):**	61.4	**Road Grade (%):**	5.30

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-70.355-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	26.60

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_70.355_R_1.jpg

Barrier ID:	**SHEN-0010C-70.717-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	50.20

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	460
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	26.2	**Post Spacing (In.):**	0.0
Height (In.):	13.3	**Lateral Offset (In.):**	58.7	**Road Grade (%):**	4.80

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 7-13in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Mortar has eroded along 375 ft of barrier causing the stones to become loose and unstable.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-70.717-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	50.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$632940
Brief Workorder:	Raise guardwall 11-in. Remove and reset 460-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 2024 CF = $506000. [(2.2ft)(2ft)(460ft)] = 2024 cf. Structural Concrete at $1000- per -Cu. Yd. for 34 CY = $34000. [(2.2ft)(0.9ft)(460ft)] /27 = 33.7 cy. Low Speed Traffic Control at $1475- per -Day for 24 Day(s) = $35400. 5 days removal and 19 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_70.717_R_1.jpg

Barrier ID:	**SHEN-0010C-70.860-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	57.40

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	865
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	27.7	**Post Spacing (In.):**	0.0
Height (In.):	16.0	**Lateral Offset (In.):**	62.7	**Road Grade (%):**	1.80

Physical Condition

Barrier	**Alignment and Height:**	Alignment has no deviation along length of barrier. Height was 5-10in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Loose stones observed along 150 ft of barrier due to cracked or missing mortar. Mortar is missing or cracked along 430 ft of the top face and 215 ft of the front face. Soil covers back face.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-70.860-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	57.40

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1067303
Brief Workorder:	Raise guardwall 3-in. Remove and reset 765-ft. of stone masonry guardwall on concrete footer to adjacent 18in. height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 3519 CF = $879750. [(2.3ft)(2ft)(765ft)] = 3519 cf. Structural Concrete at $1000- per -Cu. Yd. for 33 CY = $33000. [(2.3ft)(0.5ft)(765ft)] /27 = 32.6 cy. Low Speed Traffic Control at $1475- per -Day for 39 Day(s) = $57525. 8 days removal and 31 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_70.860_R_1.jpg

Barrier ID:	**SHEN-0010C-71.065-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	55.90

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	208
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	30.2	**Post Spacing (In.):**	0.0
Height (In.):	16.0	**Lateral Offset (In.):**	78.3	**Road Grade (%):**	1.90

Physical Condition

Barrier	**Alignment and Height:**	40 ft of barrier is tipping backward out of alignment by more than 12 in. Height was 6-10in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	Stones are loose and misplaced throughout barrier length.
	Corrrosion and Weathering:	Mortar is deteriorated throughout barrier length.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-71.065-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	55.90

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$321970
Brief Workorder:	Raise guardwall 8-in. Remove and reset 208-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 1040 CF = $260000. [(2.5ft)(2ft)(208ft)] = 1040 cf. Structural Concrete at $1000- per -Cu. Yd. for 15 CY = $15000. [(2.5ft)(.75ft)(208ft)] /27 = 14.4 cy. Low Speed Traffic Control at $1475- per -Day for 12 Day(s) = $17700. 3 days removal and 9 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_71.065_L_1.jpg

Barrier ID:	**SHEN-0010C-71.242-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	62.50

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	728
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	31.2	**Post Spacing (In.):**	0.0
Height (In.):	19.7	**Lateral Offset (In.):**	62.7	**Road Grade (%):**	1.30

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 2-8in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Mortar between stones is cracked and pulling away from stones. As a result stones have become loose and fallen out of position.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-71.242-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	62.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$313225
Brief Workorder:	Raise guardwall 2-in. Remove and reset 200-ft. of stone masonry guardwall on concrete footer to adjacent 18-in. height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 1040 CF = $260000. [(2.6ft)(2ft)(200ft)] = 1040 cf. Structural Concrete at $1000- per -Cu. Yd. for 10 CY = $10000. [(2.6ft)(0.5ft)(200ft)] /27 = 9.6 cy. Low Speed Traffic Control at $1475- per -Day for 10 Day(s) = $14750. 2 days removal and 8 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_71.242_R_1.jpg

Barrier ID:	**SHEN-0010C-71.451-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	589
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.0	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	61.0	**Road Grade (%):**	1.90

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-71.451-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_71.451_R_1.jpg

Barrier ID:	**SHEN-0010C-71.714-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	65.90

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1308
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	27.8	**Post Spacing (In.):**	0.0
Height (In.):	15.3	**Lateral Offset (In.):**	59.0	**Road Grade (%):**	1.90

Physical Condition

Barrier	**Alignment and Height:**	Approximately 500 ft of barrier is 6 in or more out of alignment. Height was 6-12in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	Stones along 500 feet are missing/misplaced.
	Corrrosion and Weathering:	Mortar is deteriorated along entire length.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-71.714-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	65.90

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1277475
Brief Workorder:	Raise guardwall 3-in. Remove and reset 1008-ft. of stone masonry guardwall on concrete footer to adjacent 18-in. height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 4637 CF = $1159250. [(2.3ft)(2ft)(1008ft)] = 4636.8 cf. Structural Concrete at $1000- per -Cu. Yd. for 43 CY = $43000. [(2.3ft)(0.5ft)(1008ft)] /27 = 42.9 cy. Low Speed Traffic Control at $1475- per -Day for 51 Day(s) = $75225. 10 days removal and 41 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_71.714_R_1.jpg

Barrier ID:	**SHEN-0010C-72.357-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	26.60

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	135
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	48.7	**Road Grade (%):**	0.40

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-72.357-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	26.60

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_72.357_R_1.jpg

Barrier ID:	**SHEN-0010C-72.371-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	28.30

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	119
Speed Limit (MPH):	35	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-72.371-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	28.30

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_72.371_R_1.jpg

Barrier ID:	**SHEN-0010C-72.413-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	34.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	908
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.6	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	57.2	**Road Grade (%):**	1.10

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-72.413-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	34.00

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_72.413_R_1.jpg

Barrier ID:	**SHEN-0010C-72.678-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	35.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1547
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	47.7	**Road Grade (%):**	2.50

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Entire barrier is between 0-in. below to 5-in. above the 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-72.678-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	35.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_72.678_R_1.jpg

Barrier ID:	**SHEN-0010C-73.013-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	68.00

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1261
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	27.2	**Post Spacing (In.):**	0.0
Height (In.):	17.5	**Lateral Offset (In.):**	66.5	**Road Grade (%):**	2.90

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 4-10-in. below 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Mortar along 1000 ft of barrier has eroded causing the stones to become loose and unstable. Most stones have fallen out of place as a result.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-73.013-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	68.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1758515
Brief Workorder:	Raise guardwall 6-in. Remove and reset 1261-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 5801 CF = $1450250. [(2.3ft)(2ft)(1261ft)] = 5800.6 cf. Structural Concrete at $1000- per -Cu. Yd. for 54 CY = $54000. [(2.3ft)(0.5ft)(1261ft)] /27 = 53.7 cy. Low Speed Traffic Control at $1475- per -Day for 64 Day(s) = $94400. 13 days removal and 51 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_73.013_R_1.jpg

Barrier ID:	**SHEN-0010C-73.954-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	29.80

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	274
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	24.2	**Lateral Offset (In.):**	55.0	**Road Grade (%):**	4.10

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-73.954-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	29.80

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_73.954_L_1.jpg

Barrier ID:	**SHEN-0010C-74.041-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	36.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	2815
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	24.6	**Lateral Offset (In.):**	55.5	**Road Grade (%):**	3.60

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Entire barrier is between 0-4in below the 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-74.041-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	36.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_74.041_L_1.jpg

Barrier ID:	**SHEN-0010C-74.643-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	38.40

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	67
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	27.2	**Post Spacing (In.):**	0.0
Height (In.):	17.0	**Lateral Offset (In.):**	116.3	**Road Grade (%):**	2.60

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 5-10in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Mortar is missing between stones along entire length. This has caused the wall to become loose and unstable.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-74.643-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	38.40

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$95865
Brief Workorder:	Remove and reset entire 67 feet of stone barrier to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 309 CF = $77250. [(2.3ft)(2ft)(67ft)] = 308.2 cf. Structural Concrete at $1000- per -Cu. Yd. for 4 CY = $4000. [(2.3ft)(0.6ft)(67ft)] /27 = 3.4 cy. Low Speed Traffic Control at $1475- per -Day for 4 Day(s) = $5900. 1 day removal and 3 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_74.643_L_1.jpg

Barrier ID:	**SHEN-0010C-75.178-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	34.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	800
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	59.5	**Road Grade (%):**	2.40

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-75.178-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	34.00

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_75.178_L_1.jpg

Barrier ID:	**SHEN-0010C-75.857-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	52.00

Barrier Description

Type:	STEEL-BACKED LOG RAIL	**Barrier Function:**	TRAFFIC
Barrier Material:	STEEL-BACKED TIMBER/LOG	**Post Material:**	WOOD
Blockout Type:	WOOD	**Length (ft.):**	323
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-2	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	**Is Beg. End Trtmt Crashhworthy?:**	NO	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	**Ending End Trtmt Crashhworthy?:**	NO		

Average Measurements

Design Height (In.):	31	**Width (In.):**	0.0	**Post Spacing (In.):**	120.0
Height (In.):	21.7	**Lateral Offset (In.):**	44.2	**Road Grade (%):**	6.50

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 8 - 11 in below 31-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	Alignment acceptable. Height within 1-in of 31-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.

Barrier ID:	**SHEN-0010C-75.857-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	52.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$6798
Brief Workorder:	Raise 323 feet of guardrail to 31-inch design height.				
Workorder:	Adjust Guardrail at $10- per -Lin. Ft. for 323 LF = $3230. Raise 323ft. of guardrail to 31-inch design height Low Speed Traffic Control at $1475- per -Day for 2 Day(s) = $2950.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_75.857_R_1.jpg

Barrier ID:	**SHEN-0010C-75.941-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	76.30

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	930
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	26.0	**Post Spacing (In.):**	0.0
Height (In.):	15.8	**Lateral Offset (In.):**	55.7	**Road Grade (%):**	5.60

Physical Condition

Barrier	**Alignment and Height:**	Alignment has no deviation throughout. Height was 8-9in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Mortar between stones along entire length has decayed and left the wall loose and unstable.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-75.941-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/11/2010	**Barrier Rating:**	76.30

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1259280
Brief Workorder:	Raise guardwall 8-in. Remove and reset 930-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 4092 CF = $1023000. [(2.2ft)(2ft)(930ft)] = 4092 cf. Structural Concrete at $1000- per -Cu. Yd. for 51 CY = $51000. [(2.2ft)(0.67ft)(930ft)] /27 = 50.8 cy. Low Speed Traffic Control at $1475- per -Day for 48 Day(s) = $70800. 10 days removal and 38 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_75.941_R_1.jpg

Barrier ID:	**SHEN-0010C-76.176-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	34.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	809
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	24.2	**Lateral Offset (In.):**	54.7	**Road Grade (%):**	5.70

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-76.176-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	34.00

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_76.176_R_1.jpg

Barrier ID:	**SHEN-0010C-76.374-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	29.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	694
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	24.8	**Lateral Offset (In.):**	65.3	**Road Grade (%):**	5.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-76.374-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	29.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_76.374_R_1.jpg

Barrier ID:	**SHEN-0010C-76.499-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	49.00

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	71
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	16.2	**Lateral Offset (In.):**	128.0	**Road Grade (%):**	5.70

Physical Condition

Barrier	**Alignment and Height:**	Alignment has no deviation along barrier length. Height was 0 - 1 in above 16-in design height (field observed).
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-76.499-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	49.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$64515
Brief Workorder:	Raise guardwall 8-in. Remove and reset 71-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 199 CF = $49750. [(1.4ft)(2ft)(71ft)] = 198.8 cf. Structural Concrete at $1000- per -Cu. Yd. for 3 CY = $3000. [(1.4ft)(0.67ft)(71ft)] /27 = 2.5 cy. Low Speed Traffic Control at $1475- per -Day for 4 Day(s) = $5900. 1 day removal and 3 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_76.499_R_1.jpg

Barrier ID:	**SHEN-0010C-76.677-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	29.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	482
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	53.7	**Road Grade (%):**	0.90

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-76.677-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	29.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_76.677_R_1.jpg

Barrier ID:	**SHEN-0010C-76.811-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	23.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	585
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	54.7	**Road Grade (%):**	1.90

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-76.811-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	23.70

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_76.811_R_1.jpg

Barrier ID:	**SHEN-0010C-76.960-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	29.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	881
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	26.2	**Lateral Offset (In.):**	64.4	**Road Grade (%):**	2.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-76.960-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	29.70

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_76.960_R_1.jpg

Barrier ID:	**SHEN-0010C-77.189-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	377
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	64.6	**Road Grade (%):**	0.90

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-77.189-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_77.189_R_1.jpg

Barrier ID:	**SHEN-0010C-77.306-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	21.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	516
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	27.0	**Lateral Offset (In.):**	58.7	**Road Grade (%):**	1.70

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-77.306-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	21.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_77.306_R_1.jpg

Barrier ID:	**SHEN-0010C-77.427-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	24.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	754
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	27.0	**Lateral Offset (In.):**	58.2	**Road Grade (%):**	1.50

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-77.427-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	24.00

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_77.427_R_1.jpg

Barrier ID:	**SHEN-0010C-77.604-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	25.10

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	331
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	27.7	**Lateral Offset (In.):**	68.0	**Road Grade (%):**	1.10

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-77.604-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	25.10

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_77.604_R_1.jpg

Barrier ID:	**SHEN-0010C-77.878-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	38.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	767
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	25.1	**Lateral Offset (In.):**	45.2	**Road Grade (%):**	1.30

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Entire barrier is between 5-in below to 1-in above the 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-77.878-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	38.70

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_77.878_L_1.jpg

Barrier ID:	**SHEN-0010C-78.045-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	402
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	49.0	**Road Grade (%):**	2.80

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-78.045-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_78.045_R_1.jpg

Barrier ID:	**SHEN-0010C-78.134-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	34.40

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	925
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	25.1	**Lateral Offset (In.):**	62.7	**Road Grade (%):**	3.40

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-78.134-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	34.40

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_78.134_R_1.jpg

Barrier ID:	**SHEN-0010C-78.352-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	46.50

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	63
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	28.0	**Post Spacing (In.):**	0.0
Height (In.):	16.0	**Lateral Offset (In.):**	131.3	**Road Grade (%):**	3.50

Physical Condition

Barrier	**Alignment and Height:**	Alignment has no deviation along length of barrier. Height was 7-9in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Loose stones observed along 5 ft of barrier. Mortar is cracked or missing along 15 ft of the top face and along 30 ft of the front and back.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-78.352-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	46.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$90640
Brief Workorder:	Raise guardwall 8-in. Remove and reset 63-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 290 CF = $72500. [(2.3ft)(2ft)(63ft)] = 289.8 cf. Structural Concrete at $1000- per -Cu. Yd. for 4 CY = $4000. [(2.3ft)(0.67ft)(63ft)] /27 = 3.6 cy. Low Speed Traffic Control at $1475- per -Day for 4 Day(s) = $5900. 1 day removal and 3 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_78.352_R_1.jpg

Barrier ID:	**SHEN-0010C-78.435-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	38.40

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1891
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	53.2	**Road Grade (%):**	4.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-78.435-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	38.40

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_78.435_R_1.jpg

Barrier ID:	**SHEN-0010C-78.828-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	32.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	851
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	51.0	**Road Grade (%):**	2.40

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-78.828-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	32.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_78.828_R_1.jpg

Barrier ID:	**SHEN-0010C-78.989-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	29.30

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	402
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	26.2	**Lateral Offset (In.):**	53.2	**Road Grade (%):**	3.40

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-78.989-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	29.30

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_78.989_L_1.jpg

Barrier ID:	**SHEN-0010C-79.106-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	35.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	432
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	60.7	**Road Grade (%):**	3.10

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-79.106-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	35.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_79.106_L_1.jpg

Barrier ID:	**SHEN-0010C-79.300-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	54.50

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	308
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	26.2	**Post Spacing (In.):**	0.0
Height (In.):	15.3	**Lateral Offset (In.):**	74.5	**Road Grade (%):**	3.70

Physical Condition

Barrier	**Alignment and Height:**	Alignment has no deviation along barrier length. Height was 8-9in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Loose stones observed along 30 ft of the barrier. Mortar is breaking or cracking along 308 ft of the front face 155 ft of the top face and 230 ft of the back.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-79.300-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	54.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$421383
Brief Workorder:	Raise guardwall 9-in. Remove and reset 308-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 1356 CF = $339000. [(2.2ft)(2ft)(308ft)] = 1355.2 cf. Structural Concrete at $1000- per -Cu. Yd. for 19 CY = $19000. [(2.2ft)(.75ft)(308ft)]/27 = 18.8 cy. Low Speed Traffic Control at $1475- per -Day for 17 Day(s) = $25075. 4 days removal and 13 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_79.300_R_1.jpg

Barrier ID:	**SHEN-0010C-79.431-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	33.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	441
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	60.7	**Road Grade (%):**	3.50

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-79.431-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	33.70

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_79.431_L_1.jpg

Barrier ID:	**SHEN-0010C-80.839-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	32.40

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	582
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	24.2	**Lateral Offset (In.):**	47.2	**Road Grade (%):**	0.43

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Entire barrier is between 1-4in below the 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-80.839-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	32.40

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_80.839_R_1.jpg

Barrier ID:	**SHEN-0010C-80.968-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	34.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1375
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	52.0	**Road Grade (%):**	2.80

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-80.968-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	34.00

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_80.968_R_1.jpg

Barrier ID:	**SHEN-0010C-81.269-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	27.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	486
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	25.0	**Lateral Offset (In.):**	55.0	**Road Grade (%):**	4.10

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-81.269-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	27.00

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_81.269_R_1.jpg

Barrier ID:	**SHEN-0010C-81.420-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	579
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	24.5	**Lateral Offset (In.):**	51.7	**Road Grade (%):**	1.90

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Entire barrier is between 2-4in below the 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-81.420-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_81.420_R_1.jpg

Barrier ID:	**SHEN-0010C-81.643-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	34.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	903
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.3	**Post Spacing (In.):**	0.0
Height (In.):	24.2	**Lateral Offset (In.):**	60.7	**Road Grade (%):**	0.60

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Entire barrier is between 1-5in below the 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-81.643-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	34.00

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_81.643_L_1.jpg

Barrier ID:	**SHEN-0010C-81.916-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	72.10

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	845
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	25.7	**Post Spacing (In.):**	0.0
Height (In.):	9.8	**Lateral Offset (In.):**	51.0	**Road Grade (%):**	1.30

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 10-17in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Loose stones observed along 150 ft of barrier. Mortar is missing or cracked along entire 845 ft of barrier for front back and top.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-81.916-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/12/2010	**Barrier Rating:**	72.10

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1183518
Brief Workorder:	Raise guardwall 14-in. Remove and reset 845-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 3718 CF = $929500. [(2.2ft)(2ft)(845ft)] = 3718 cf. Structural Concrete at $1000- per -Cu. Yd. for 83 CY = $83000. [(2.2ft)(1.2ft)(845ft)]/27 = 82.6 cy. Low Speed Traffic Control at $1475- per -Day for 43 Day(s) = $63425. 9 days removal and 34 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_81.916_R_1.jpg

Barrier ID:	**SHEN-0010C-82.235-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	68.40

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1215
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	26.5	**Post Spacing (In.):**	0.0
Height (In.):	10.6	**Lateral Offset (In.):**	65.6	**Road Grade (%):**	4.80

Physical Condition

Barrier	**Alignment and Height:**	Alignment is off by 6 in to 12 in for 120 ft of barrier. Height was 11-15in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Loose stones observed along 250 ft of barrier. Mortar is cracked or missing for entire 1215 ft of barrier for front back and top faces.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-82.235-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	68.40

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$1690645
Brief Workorder:	Raise guardwall 13-in. Remove and reset 1215-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 5346 CF = $1336500. [(2.2ft)(2ft)(1215ft)] = 5346 cf. Structural Concrete at $1000- per -Cu. Yd. for 109 CY = $109000. [(2.2ft)(1.1ft)(1215ft)] /27 = 108.9 cy. Low Speed Traffic Control at $1475- per -Day for 62 Day(s) = $91450. 13 days removal and 49 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_82.235_R_1.jpg

Barrier ID:	**SHEN-0010C-82.457-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	25.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1073
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	55.0	**Road Grade (%):**	5.70

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-82.457-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	25.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_82.457_L_1.jpg

Barrier ID:	**SHEN-0010C-82.705-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	29.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1762
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.3	**Post Spacing (In.):**	0.0
Height (In.):	26.2	**Lateral Offset (In.):**	64.5	**Road Grade (%):**	4.80

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-82.705-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	29.70

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_82.705_L_1.jpg

Barrier ID:	**SHEN-0010C-83.296-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	29.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	1508
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.8	**Post Spacing (In.):**	0.0
Height (In.):	26.0	**Lateral Offset (In.):**	66.0	**Road Grade (%):**	2.90

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-83.296-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	29.70

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_83.296_R_1.jpg

Barrier ID:	**SHEN-0010C-83.660-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	16.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	410
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	26.2	**Lateral Offset (In.):**	59.2	**Road Grade (%):**	7.60

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-83.660-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	16.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_83.660_R_1.jpg

Barrier ID:	**SHEN-0010C-83.803-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	25.10

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	481
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	26.0	**Lateral Offset (In.):**	61.7	**Road Grade (%):**	5.80

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-83.803-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	25.10

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_83.803_R_1.jpg

Barrier ID:	**SHEN-0010C-86.055-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	547
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.0	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	55.0	**Road Grade (%):**	2.20

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-86.055-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_86.055_L_1.jpg

Barrier ID:	**SHEN-0010C-86.732-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	26.80

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	749
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	26.0	**Lateral Offset (In.):**	66.8	**Road Grade (%):**	6.80

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-86.732-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	26.80

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_86.732_L_1.jpg

Barrier ID:	**SHEN-0010C-87.061-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	29.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	342
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	70.0	**Road Grade (%):**	6.10

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-87.061-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	29.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_87.061_L_1.jpg

Barrier ID:	**SHEN-0010C-87.331-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	30.80

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	210
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	25.0	**Lateral Offset (In.):**	69.6	**Road Grade (%):**	5.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-87.331-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	30.80

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_87.331_R_1.jpg

Barrier ID:	**SHEN-0010C-87.393-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	33.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	642
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.0	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	59.2	**Road Grade (%):**	5.80

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-87.393-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	33.70

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_87.393_R_1.jpg

Barrier ID:	**SHEN-0010C-87.833-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	650
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	23.7	**Lateral Offset (In.):**	53.2	**Road Grade (%):**	2.70

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 3-4in. below the 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-87.833-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_87.833_R_1.jpg

Barrier ID:	**SHEN-0010C-87.976-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	25.60

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	647
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.0	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	51.2	**Road Grade (%):**	0.90

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-87.976-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	25.60

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_87.976_R_1.jpg

Barrier ID:	**SHEN-0010C-88.133-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	493
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	61.0	**Road Grade (%):**	2.50

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-88.133-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_88.133_R_1.jpg

Barrier ID:	**SHEN-0010C-88.313-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	20.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	397
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	23.7	**Post Spacing (In.):**	0.0
Height (In.):	27.2	**Lateral Offset (In.):**	54.7	**Road Grade (%):**	6.10

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-88.313-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	20.00

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_88.313_R_1.jpg

Barrier ID:	**SHEN-0010C-88.421-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	33.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	395
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	55.7	**Road Grade (%):**	3.60

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-88.421-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	33.00

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_88.421_R_1.jpg

Barrier ID:	**SHEN-0010C-88.555-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	305
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	27.7	**Lateral Offset (In.):**	74.3	**Road Grade (%):**	3.60

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-88.555-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_88.555_L_1.jpg

Barrier ID:	**SHEN-0010C-88.783-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	33.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	423
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	24.7	**Lateral Offset (In.):**	66.6	**Road Grade (%):**	4.50

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-88.783-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	33.00

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_88.783_R_1.jpg

Barrier ID:	**SHEN-0010C-88.929-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	26.80

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	358
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	26.0	**Lateral Offset (In.):**	66.0	**Road Grade (%):**	4.30

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-88.929-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	26.80

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_88.929_R_1.jpg

Barrier ID:	**SHEN-0010C-89.641-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	274
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	63.2	**Road Grade (%):**	2.40

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-89.641-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_89.641_L_1.jpg

Barrier ID:	**SHEN-0010C-89.777-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	695
Speed Limit (MPH):	35	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	25.7	**Lateral Offset (In.):**	55.0	**Road Grade (%):**	2.60

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-89.777-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_89.777_L_1.jpg

Barrier ID:	**SHEN-0010C-89.943-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	23.70

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	676
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	63.0	**Road Grade (%):**	2.30

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-89.943-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	23.70

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_89.943_L_1.jpg

Barrier ID:	**SHEN-0010C-90.565-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	33.70

Barrier Description

Type:	STEEL-BACKED LOG RAIL	**Barrier Function:**	TRAFFIC
Barrier Material:	STEEL-BACKED TIMBER/LOG	**Post Material:**	WOOD
Blockout Type:	WOOD	**Length (ft.):**	671
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-2	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	**Is Beg. End Trtmt Crashhworthy?:**	NO	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	**Ending End Trtmt Crashhworthy?:**	NO		

Average Measurements

Design Height (In.):	31	**Width (In.):**	0.0	**Post Spacing (In.):**	120.0
Height (In.):	27.7	**Lateral Offset (In.):**	53.0	**Road Grade (%):**	1.80

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was more than 3 in below 31 in design height along 200 ft of barrier (25-27.5 in) and an additional 100 ft is between 1 and 3 ines below design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	Alignment is acceptable. Height is within 1-in of 32-in design height.
	Breaking and Cracking:	No breaking or cracking observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.

Barrier ID:	**SHEN-0010C-90.565-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	33.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$6545
Brief Workorder:	Raise 300 feet of barrier to 31 inch design height.				
Workorder:	Adjust Guardrail at $10- per -Lin. Ft. for 300 LF = $3000. Raise 300 feet of barrier to 31 inch design height Low Speed Traffic Control at $1475- per -Day for 2 Day(s) = $2950.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_90.565_R_1.jpg

Barrier ID:	**SHEN-0010C-90.941-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	33.00

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	374
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	EXTREME		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	66.3	**Road Grade (%):**	1.50

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-90.941-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	33.00

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_90.941_L_1.jpg

Barrier ID:	**SHEN-0010C-91.468-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	338
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.0	**Post Spacing (In.):**	0.0
Height (In.):	26.7	**Lateral Offset (In.):**	63.7	**Road Grade (%):**	5.60

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-91.468-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_91.468_L_1.jpg

Barrier ID:	**SHEN-0010C-92.137-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	35.50

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	510
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	25.0	**Lateral Offset (In.):**	52.2	**Road Grade (%):**	3.90

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3 in of 27-in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-92.137-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	35.50

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_92.137_L_1.jpg

Barrier ID:	**SHEN-0010C-93.242-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	36.50

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	128
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	26.2	**Post Spacing (In.):**	0.0
Height (In.):	17.0	**Lateral Offset (In.):**	53.2	**Road Grade (%):**	5.40

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 6-8in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-93.242-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	36.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$121413
Brief Workorder:	Raise guardwall 2-in. Remove and reset 90-ft. of stone masonry guardwall on concrete footer to adjacent 18-in. height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 396 CF = $99000. [(2.2ft)(2ft)(90ft)] =396 cf. Structural Concrete at $1000- per -Cu. Yd. for 4 CY = $4000. [(2.2ft)(0.5ft)(90ft)] /27 = 3.7 cy. Low Speed Traffic Control at $1475- per -Day for 5 Day(s) = $7375. 1 day removal and 4 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_93.242_R_1.jpg

Barrier ID:	**SHEN-0010C-94.034-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	330
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.7	**Post Spacing (In.):**	0.0
Height (In.):	27.7	**Lateral Offset (In.):**	72.0	**Road Grade (%):**	5.10

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-94.034-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_94.034_R_1.jpg

Barrier ID:	**SHEN-0010C-95.999-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	713
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.5	**Post Spacing (In.):**	0.0
Height (In.):	24.3	**Lateral Offset (In.):**	50.0	**Road Grade (%):**	0.80

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-95.999-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	31.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_95.999_R_1.jpg

Barrier ID:	**SHEN-0010C-96.947-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	46.50

Barrier Description

Type:	STEEL-BACKED LOG RAIL	**Barrier Function:**	TRAFFIC
Barrier Material:	STEEL-BACKED TIMBER/LOG	**Post Material:**	WOOD
Blockout Type:	WOOD	**Length (ft.):**	667
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-2	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	**Is Beg. End Trtmt Crashhworthy?:**	NO	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	**Ending End Trtmt Crashhworthy?:**	NO		

Average Measurements

Design Height (In.):	31	**Width (In.):**	0.0	**Post Spacing (In.):**	119.3
Height (In.):	27.5	**Lateral Offset (In.):**	53.2	**Road Grade (%):**	0.90

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. 417ft. was 1-3in. below 31in. design height and 150ft. was more than 3in. below design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	Alignment is acceptable. Height is within 1-in of 31-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.

Barrier ID:	**SHEN-0010C-96.947-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	46.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$12205
Brief Workorder:	Raise 667 feet of guardrail to 31-inch design height.				
Workorder:	Adjust Guardrail at $10- per -Lin. Ft. for 667 LF = $6670. Raise 667ft. of guardrail to 31-inch design height Low Speed Traffic Control at $1475- per -Day for 3 Day(s) = $4425.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_96.947_L_1.jpg

Barrier ID:	**SHEN-0010C-97.693-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	46.20

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	395
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	26.0	**Post Spacing (In.):**	0.0
Height (In.):	14.3	**Lateral Offset (In.):**	69.3	**Road Grade (%):**	2.30

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 8-11in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-97.693-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/13/2010	**Barrier Rating:**	46.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$539000
Brief Workorder:	Raise guardwall 8-in. Remove and reset 395-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 1738 CF = $434500. [(2.2ft)(2ft)(395ft)] = 1738 cf. Structural Concrete at $1000- per -Cu. Yd. for 26 CY = $26000. [(2.2ft)(0.8ft)(395ft)] /27 = 25.7 cy. Low Speed Traffic Control at $1475- per -Day for 20 Day(s) = $29500. 4 days removal and 16 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_97.693_R_1.jpg

Barrier ID:	**SHEN-0010C-97.839-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	19.30

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	280
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.0	**Post Spacing (In.):**	0.0
Height (In.):	29.0	**Lateral Offset (In.):**	62.0	**Road Grade (%):**	1.60

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height within 3-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-97.839-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	19.30

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_97.839_R_1.jpg

Barrier ID:	**SHEN-0010C-97.935-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	52.00

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	288
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	27.7	**Post Spacing (In.):**	0.0
Height (In.):	14.3	**Lateral Offset (In.):**	75.3	**Road Grade (%):**	1.30

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 9-11in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-97.935-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	52.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$410713
Brief Workorder:	Raise guardwall 10-in. Remove and reset 395-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 1325 CF = $331250. [(2.3ft)(2ft)(288ft)] = 1324.8 cf. Structural Concrete at $1000- per -Cu. Yd. for 20 CY = $20000. [(2.3ft)(0.8ft)(288ft)] /27 = 19.6 cy. Low Speed Traffic Control at $1475- per -Day for 15 Day(s) = $22125. 3 days removal and 12 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_97.935_R_1.jpg

Barrier ID:	**SHEN-0010C-98.217-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	51.70

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	188
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	26.2	**Post Spacing (In.):**	0.0
Height (In.):	12.3	**Lateral Offset (In.):**	65.0	**Road Grade (%):**	3.20

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 11-12in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-98.217-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	51.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$261525
Brief Workorder:	Raise guardwall 12-in. Remove and reset 188-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 828 CF = $207000. [(2.2ft)(2ft)(188ft)] = 827.2 cf. Structural Concrete at $1000- per -Cu. Yd. for 16 CY = $16000. [(2.2ft)(1ft)(188ft)] /27 = 15.3 cy. Low Speed Traffic Control at $1475- per -Day for 10 Day(s) = $14750. 2 days removal and 8 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_98.217_R_1.jpg

Barrier ID:	**SHEN-0010C-98.264-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	25.10

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	509
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	25.2	**Post Spacing (In.):**	0.0
Height (In.):	31.0	**Lateral Offset (In.):**	63.7	**Road Grade (%):**	3.50

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 4 in above 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-98.264-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	25.10

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_98.264_R_1.jpg

Barrier ID:	**SHEN-0010C-98.720-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	43.40

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	430
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	16	**Width (In.):**	25.2	**Post Spacing (In.):**	0.0
Height (In.):	12.6	**Lateral Offset (In.):**	49.0	**Road Grade (%):**	3.50

Physical Condition

Barrier	**Alignment and Height:**	Alignment had less than 6 in of deflection. Height was 11-12in. below the 24in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Cracked mortar observed along 50 ft of top face. Front and back face appear acceptable.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-98.720-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	43.40

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$568068
Brief Workorder:	Raise guardwall 11-in. Remove and reset 430-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 1806 CF = $451500. [(2.1ft)(2ft)(430ft)] = 1806 cf. Structural Concrete at $1000- per -Cu. Yd. for 31 CY = $31000. [(2.1ft)(0.9ft)(430ft)] /27 = 30.1 cy. Low Speed Traffic Control at $1475- per -Day for 23 Day(s) = $33925. 5 days removal and 18 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_98.720_R_1.jpg

Barrier ID:	**SHEN-0010C-99.429-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	16.70

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	52
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	LOW		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	22.0	**Post Spacing (In.):**	0.0
Height (In.):	26.2	**Lateral Offset (In.):**	72.3	**Road Grade (%):**	2.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 0 - 4 in above 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-99.429-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	16.70

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_99.429_R_1.jpg

Barrier ID:	**SHEN-0010C-99.430-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	16.70

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	51
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	LOW		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	22.7	**Post Spacing (In.):**	0.0
Height (In.):	30.2	**Lateral Offset (In.):**	73.6	**Road Grade (%):**	1.70

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 6 - 7 in above 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-99.430-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	16.70

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_99.430_L_1.jpg

Barrier ID:	**SHEN-0010C-99.772-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	21.10

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	56
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	21.7	**Post Spacing (In.):**	0.0
Height (In.):	32.0	**Lateral Offset (In.):**	68.6	**Road Grade (%):**	1.70

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 8 in above 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-99.772-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	21.10

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_99.772_R_1.jpg

Barrier ID:	**SHEN-0010C-99.773-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	21.10

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	59
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	22.0	**Post Spacing (In.):**	0.0
Height (In.):	27.2	**Lateral Offset (In.):**	68.6	**Road Grade (%):**	0.90

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 1 - 5 in above 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-99.773-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	21.10

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_99.773_L_1.jpg

Barrier ID:	**SHEN-0010C-100.226-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	22.20

Barrier Description

Type:	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	**Barrier Function:**	TRAFFIC
Barrier Material:	STEEL-BACKED TIMBER/LOG	**Post Material:**	WOOD
Blockout Type:	N/A	**Length (ft.):**	167
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-2	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	**Is Beg. End Trtmt Crashhworthy?:**	NO	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	**Ending End Trtmt Crashhworthy?:**	NO		

Average Measurements

Design Height (In.):	27	**Width (In.):**	0.0	**Post Spacing (In.):**	117.6
Height (In.):	27.7	**Lateral Offset (In.):**	71.3	**Road Grade (%):**	0.90

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height ranges between 1 in below and 2 in above 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	Alignment is acceptable. Height is within 1-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.

Barrier ID:	**SHEN-0010C-100.226-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	22.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_100.226_L_1.jpg

Barrier ID:	**SHEN-0010C-101.356-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	28.00

Barrier Description

Type:	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	**Barrier Function:**	TRAFFIC
Barrier Material:	STEEL-BACKED TIMBER/LOG	**Post Material:**	WOOD
Blockout Type:	N/A	**Length (ft.):**	520
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-2	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	**Is Beg. End Trtmt Crashhworthy?:**	NO	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	**Ending End Trtmt Crashhworthy?:**	NO		

Average Measurements

Design Height (In.):	27	**Width (In.):**	0.0	**Post Spacing (In.):**	118.6
Height (In.):	27.0	**Lateral Offset (In.):**	46.2	**Road Grade (%):**	2.70

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was within 1 in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	Alignment is acceptable. Height is within 1-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.

Barrier ID:	**SHEN-0010C-101.356-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	28.00

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_101.356_L_1.jpg

Barrier ID:	**SHEN-0010C-102.429-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	32.20

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	42
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	22.0	**Post Spacing (In.):**	0.0
Height (In.):	17.0	**Lateral Offset (In.):**	57.2	**Road Grade (%):**	0.70

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 5 - 7 in below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-102.429-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	32.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_102.429_R_1.jpg

Barrier ID:	**SHEN-0010C-102.430-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	32.20

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	45
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	22.2	**Post Spacing (In.):**	0.0
Height (In.):	17.2	**Lateral Offset (In.):**	73.0	**Road Grade (%):**	1.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 6 - 7 in below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-102.430-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	32.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_102.430_L_1.jpg

Barrier ID:	**SHEN-0010C-102.438-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	19.20

Barrier Description

Type:	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	**Barrier Function:**	TRAFFIC
Barrier Material:	STEEL-BACKED TIMBER/LOG	**Post Material:**	WOOD
Blockout Type:	N/A	**Length (ft.):**	984
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-2	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	RIGID SBT WALL - SBT
Ending End Trtmt Type:	SBT/LOG FLARED	**Ending End Trtmt Crashhworthy?:**	NO		

Average Measurements

Design Height (In.):	27	**Width (In.):**	0.0	**Post Spacing (In.):**	118.0
Height (In.):	28.1	**Lateral Offset (In.):**	52.2	**Road Grade (%):**	1.10

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 0 - 2 in above 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	Alignment is acceptable. Height is within 1-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.

Barrier ID:	**SHEN-0010C-102.438-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	19.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_102.438_R_1.jpg

Barrier ID:	**SHEN-0010C-102.736-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	32.20

Barrier Description

Type:	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	**Barrier Function:**	TRAFFIC
Barrier Material:	STEEL-BACKED TIMBER/LOG	**Post Material:**	WOOD
Blockout Type:	N/A	**Length (ft.):**	1382
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-2	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	**Is Beg. End Trtmt Crashhworthy?:**	NO	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	**Ending End Trtmt Crashhworthy?:**	NO		

Average Measurements

Design Height (In.):	27	**Width (In.):**	0.0	**Post Spacing (In.):**	117.6
Height (In.):	27.0	**Lateral Offset (In.):**	53.5	**Road Grade (%):**	2.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. 40-ft was between 1 and 3-in below the 27-in design height and 100-ft was more than 3-in below the design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	Alignment is acceptable. Height is within 1-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.

Barrier ID:	**SHEN-0010C-102.736-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	32.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$3163
Brief Workorder:	Raise 140 feet of barrier to 27 inch design height.				
Workorder:	Adjust Guardrail at $10- per -Lin. Ft. for 140 LF = $1400. Raise 140ft. of barrier up to 27-in. design height. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_102.736_R_1.jpg

Barrier ID:	**SHEN-0010C-103.075-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	38.00

Barrier Description

Type:	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	**Barrier Function:**	TRAFFIC
Barrier Material:	STEEL-BACKED TIMBER/LOG	**Post Material:**	WOOD
Blockout Type:	N/A	**Length (ft.):**	1058
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-2	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	**Is Beg. End Trtmt Crashhworthy?:**	NO	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	**Ending End Trtmt Crashhworthy?:**	NO		

Average Measurements

Design Height (In.):	27	**Width (In.):**	0.0	**Post Spacing (In.):**	118.4
Height (In.):	26.6	**Lateral Offset (In.):**	47.0	**Road Grade (%):**	3.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 3 - 5 in below 27-in design height for 300ft. and 1 - 3 in below for 200 ft.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	Alignment is acceptable. Height is within 1-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.

Barrier ID:	**SHEN-0010C-103.075-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	38.00

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$8745
Brief Workorder:	Raise 500 feet of guardrail to 27-inch design height				
Workorder:	Adjust Guardrail at $10- per -Lin. Ft. for 500 LF = $5000. Raise 500ft. of guardrail to 27-inch design height Low Speed Traffic Control at $1475- per -Day for 2 Day(s) = $2950.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_103.075_R_1.jpg

Barrier ID:	**SHEN-0010C-103.531-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	36.90

Barrier Description

Type:	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	**Barrier Function:**	TRAFFIC
Barrier Material:	STEEL-BACKED TIMBER/LOG	**Post Material:**	WOOD
Blockout Type:	N/A	**Length (ft.):**	847
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-2	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	**Is Beg. End Trtmt Crashhworthy?:**	NO	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	**Ending End Trtmt Crashhworthy?:**	NO		

Average Measurements

Design Height (In.):	27	**Width (In.):**	0.0	**Post Spacing (In.):**	118.0
Height (In.):	26.8	**Lateral Offset (In.):**	50.2	**Road Grade (%):**	4.50

Physical Condition

Barrier	**Alignment and Height:**	Alignment had no deviation along barrier length. Height was 3 in below 27 in design height for a 150 ft section.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	Alignment is acceptable. Height is within 1-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.

Barrier ID:	**SHEN-0010C-103.531-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	36.90

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$3273
Brief Workorder:	Raise 150 feet of barrier to 27 inch design height.				
Workorder:	Adjust Guardrail at $10- per -Lin. Ft. for 150 LF = $1500. Raise 150 ft of barrier to 27 inch design height. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_103.531_R_1.jpg

Barrier ID:	**SHEN-0010C-103.755-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	39.50

Barrier Description

Type:	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	**Barrier Function:**	TRAFFIC
Barrier Material:	STEEL-BACKED TIMBER/LOG	**Post Material:**	WOOD
Blockout Type:	N/A	**Length (ft.):**	565
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-2	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	**Is Beg. End Trtmt Crashhworthy?:**	NO	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	**Ending End Trtmt Crashhworthy?:**	NO		

Average Measurements

Design Height (In.):	27	**Width (In.):**	0.0	**Post Spacing (In.):**	118.0
Height (In.):	24.5	**Lateral Offset (In.):**	43.7	**Road Grade (%):**	4.60

Physical Condition

Barrier	**Alignment and Height:**	Alignment acceptable. 300-ft was between 1 and 3-in below the 27-in design height and 150-ft was more than 3-in below the design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	Alignment is acceptable. Height is within 1-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.

Barrier ID:	**SHEN-0010C-103.755-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	39.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$8195
Brief Workorder:	Raise 450 feet of barrier to 27 inch design height.				
Workorder:	Adjust Guardrail at $10- per -Lin. Ft. for 450 LF = $4500. Raise 450 feet of barrier to 27 inch design height. Low Speed Traffic Control at $1475- per -Day for 2 Day(s) = $2950.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_103.755_R_1.jpg

Barrier ID:	**SHEN-0010C-103.936-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	25.30

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	66
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	22.0	**Post Spacing (In.):**	0.0
Height (In.):	37.7	**Lateral Offset (In.):**	73.0	**Road Grade (%):**	4.40

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height exceeds 24-in design height by 10 to 17 in.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-103.936-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	25.30

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_103.936_R_1.jpg

Barrier ID:	**SHEN-0010C-103.941-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	19.20

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	53
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	21.7	**Post Spacing (In.):**	0.0
Height (In.):	33.2	**Lateral Offset (In.):**	67.3	**Road Grade (%):**	3.60

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height exceeds 24-in design height by 9 to 10 in.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-103.941-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	19.20

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_103.941_L_1.jpg

Barrier ID:	**SHEN-0010C-103.949-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	32.50

Barrier Description

Type:	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	**Barrier Function:**	TRAFFIC
Barrier Material:	STEEL-BACKED TIMBER/LOG	**Post Material:**	WOOD
Blockout Type:	N/A	**Length (ft.):**	675
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-2	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	RIGID SBT WALL - SBT
Ending End Trtmt Type:	SBT/LOG FLARED	**Ending End Trtmt Crashhworthy?:**	NO		

Average Measurements

Design Height (In.):	27	**Width (In.):**	0.0	**Post Spacing (In.):**	117.8
Height (In.):	25.7	**Lateral Offset (In.):**	51.2	**Road Grade (%):**	4.30

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height as low as 3 in below 27 in design height for 250 ft.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed
End Treatments	**Alignment and Height:**	Alignment is acceptable. Height is within 1-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.

Barrier ID:	**SHEN-0010C-103.949-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	32.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$4373
Brief Workorder:	Raise 250 ft of barrier to 27 inch design height.				
Workorder:	Adjust Guardrail at $10- per -Lin. Ft. for 250 LF = $2500. Raise 250 ft of barrier to 27 inch design height. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_103.949_R_1.jpg

Barrier ID:	**SHEN-0010C-104.227-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	29.30

Barrier Description

Type:	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	**Barrier Function:**	TRAFFIC
Barrier Material:	STEEL-BACKED TIMBER/LOG	**Post Material:**	WOOD
Blockout Type:	N/A	**Length (ft.):**	476
Speed Limit (MPH):	35	**Placement with Respect to Road:**	OUTSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-2	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	**Is Beg. End Trtmt Crashhworthy?:**	NO	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	**Ending End Trtmt Crashhworthy?:**	NO		

Average Measurements

Design Height (In.):	27	**Width (In.):**	0.0	**Post Spacing (In.):**	118.3
Height (In.):	29.7	**Lateral Offset (In.):**	51.2	**Road Grade (%):**	5.10

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height ranges from 1 in below to 5 in above 27-in design height.
	Breaking and Cracking:	No breaking or cracking observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	Alignment is acceptable. Height is within 1-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.

Barrier ID:	**SHEN-0010C-104.227-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	29.30

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_104.227_R_1.jpg

Barrier ID:	**SHEN-0010C-104.371-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	25.50

Barrier Description

Type:	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	**Barrier Function:**	TRAFFIC
Barrier Material:	STEEL-BACKED TIMBER/LOG	**Post Material:**	WOOD
Blockout Type:	N/A	**Length (ft.):**	726
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-2	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	**Is Beg. End Trtmt Crashhworthy?:**	NO	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	**Ending End Trtmt Crashhworthy?:**	NO		

Average Measurements

Design Height (In.):	27	**Width (In.):**	0.0	**Post Spacing (In.):**	118.3
Height (In.):	27.2	**Lateral Offset (In.):**	50.2	**Road Grade (%):**	4.80

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height as low as 3 in below 27 in design height for 75 ft.
	Breaking and Cracking:	One 10 ft rail is bent.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	Alignment is acceptable. Height is within 1-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.

Barrier ID:	**SHEN-0010C-104.371-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	25.50

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2723
Brief Workorder:	Raise 75 ft of barrier to 27 inch design height. Replace one 10 ft section of rail that is bent.				
Workorder:	Adjust Guardrail at $10- per -Lin. Ft. for 75 LF = $750. Raise 75 ft of barrier to 27 inch design height. Replace Rail at $25- per -Lin. Ft. for 10 LF = $250. Replace one 10 ft section or rail that is bent. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_104.371_R_1.jpg

Barrier ID:	**SHEN-0010C-104.557-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	26.60

Barrier Description

Type:	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	**Barrier Function:**	TRAFFIC
Barrier Material:	STEEL-BACKED TIMBER/LOG	**Post Material:**	WOOD
Blockout Type:	N/A	**Length (ft.):**	715
Speed Limit (MPH):	35	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	TL-2	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	**Is Beg. End Trtmt Crashhworthy?:**	NO	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	**Ending End Trtmt Crashhworthy?:**	NO		

Average Measurements

Design Height (In.):	27	**Width (In.):**	0.0	**Post Spacing (In.):**	118.0
Height (In.):	28.3	**Lateral Offset (In.):**	47.2	**Road Grade (%):**	3.40

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height ranges from 1 in below to 4 in above 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	Alignment is acceptable. Height is within 1-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.

Barrier ID:	**SHEN-0010C-104.557-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	26.60

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_104.557_R_1.jpg

Barrier ID:	**SHEN-0010C-105.032-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	17.80

Barrier Description

Type:	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	**Barrier Function:**	TRAFFIC
Barrier Material:	STEEL-BACKED TIMBER/LOG	**Post Material:**	WOOD
Blockout Type:	N/A	**Length (ft.):**	918
Speed Limit (MPH):	20	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	TL-2	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	**Is Beg. End Trtmt Crashhworthy?:**	NO	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	0.0	**Post Spacing (In.):**	117.9
Height (In.):	28.0	**Lateral Offset (In.):**	76.4	**Road Grade (%):**	2.80

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height ranges from 1 in below to 5 in above 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	Alignment is acceptable. Height is within 1-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.

Barrier ID:	**SHEN-0010C-105.032-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	17.80

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_105.032_R_1.jpg

Barrier ID:	**SHEN-0010C-105.202-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	4.10

Barrier Description

Type:	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STEEL-BACKED TIMBER/LOG	**Post Material:**	WOOD
Blockout Type:	N/A	**Length (ft.):**	77
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	0.0	**Post Spacing (In.):**	0.0
Height (In.):	26.2	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 0 - 1 in below 27-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-105.202-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	4.10

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_105.202_R_1.jpg

Barrier ID:	**SHEN-0010C-105.226-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	29.70

Barrier Description

Type:	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	**Barrier Function:**	TRAFFIC
Barrier Material:	STEEL-BACKED TIMBER/LOG	**Post Material:**	WOOD
Blockout Type:	N/A	**Length (ft.):**	903
Speed Limit (MPH):	20	**Placement with Respect to Road:**	BOTH INSIDE AND OUTSIDE
Hazard Behind Barrier:	HIGH		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	TL-2	**Is Barrier Crashworthy?:**	YES
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	**Ending End Trtmt Crashhworthy?:**	NO		

Average Measurements

Design Height (In.):	27	**Width (In.):**	0.0	**Post Spacing (In.):**	118.0
Height (In.):	28.0	**Lateral Offset (In.):**	75.5	**Road Grade (%):**	5.60

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height as low as 2 in below 27-in design height for 100 ft.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	Alignment is acceptable. Height is within 1-in of 27-in design height.
	Breaking and Cracking:	No breaking or cracking observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.

Barrier ID:	**SHEN-0010C-105.226-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	29.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2723
Brief Workorder:	Raise 100 ft of barrier to 27 inch design height.				
Workorder:	Adjust Guardrail at $10- per -Lin. Ft. for 100 LF = $1000. Raise 100 ft of barrier to 27 inch design height. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_105.226_R_1.jpg

Barrier ID:	**SHEN-0010C-105.626-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	28.00

Barrier Description

Type:	OTHER: TIMBER RAIL ON CONCRETE POSTS	**Barrier Function:**	TRAFFIC
Barrier Material:	LOG/TIMBER/WOOD	**Post Material:**	OTHER: CONCRETE
Blockout Type:	N/A	**Length (ft.):**	149
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	MEDIUM		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	20	**Width (In.):**	0.0	**Post Spacing (In.):**	120.0
Height (In.):	21.7	**Lateral Offset (In.):**	81.0	**Road Grade (%):**	4.60

Physical Condition

Barrier	**Alignment and Height:**	Barrier is tipping away from roadway causing alignment deflection greater than 12 in along 100 ft. Height was 0-5in. above 20in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-105.626-R**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	28.00

Repair Recommendations

Repair Action:	REPLACE	**FMSS Work Type:**	CAPITAL IMPROVEMENT	**Repair Cost:**	$21758
Brief Workorder:	Remove existing barrier and replace with Steel-Backed Timber tying into bridge.				
Workorder:	Remove Guardrail at $10- per -Lin. Ft. for 149 LF = $1490. Steel-Backed Timber w/o Blockout at $60- per -Lin. Ft. for 89 LF = $5340. SBT / Log Flared at $5000- per -Each for 1 Unit(s) = $5000. SBT to rigid SBT at $5000- per -Each for 1 = $5000. Low Speed Traffic Control at $1475- per -Day for 2 Day(s) = $2950. 1 day removal and 1 day installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_105.626_R_1.jpg

Barrier ID:	**SHEN-0010C-105.646-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	16.70

Barrier Description

Type:	OTHER: TIMBER RAIL ON CONCRETE POSTS	**Barrier Function:**	TRAFFIC
Barrier Material:	LOG/TIMBER/WOOD	**Post Material:**	OTHER: CONCRETE
Blockout Type:	N/A	**Length (ft.):**	51
Speed Limit (MPH):	35	**Placement with Respect to Road:**	TANGENT
Hazard Behind Barrier:	LOW		

Barrier Crashworthiness

Appropriate Test Level:	TL-2	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	20	**Width (In.):**	0.0	**Post Spacing (In.):**	120.0
Height (In.):	16.7	**Lateral Offset (In.):**	116.6	**Road Grade (%):**	4.50

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 2-4in. below 20-in. design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-0010C-105.646-L**		
Route Name:	SKYLINE DRIVE (SOUTH)		
Inspection Date:	09/14/2010	**Barrier Rating:**	16.70

Repair Recommendations

Repair Action:	REPLACE	**FMSS Work Type:**	CAPITAL IMPROVEMENT	**Repair Cost:**	$9070
Brief Workorder:	Remove existing barrier and replace with a Steel-Backed Timber flared end terminal tying into bridge.				
Workorder:	Remove Guardrail at $10- per -Lin. Ft. for 51 LF = $510. SBT / Log Flared at $5000- per -Each for 1 Unit(s) = $5000. Steel-Backed Timber w/o Blockout at $60- per -Lin. Ft. for 21 LF = $1260. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 0010C: SKYLINE DRIVE (SOUTH)

Barrier Condition Photos

SHEN_0010C_105.646_L_1.jpg

Barrier ID:	**SHEN-1002-0.000-P1**		
Route Name:	DICKEY RIDGE VISITOR CENTER PARKING		
Inspection Date:	09/12/2010	**Barrier Rating:**	29.80

Barrier Description

Type:	OTHER: LOG RAIL ON LOG POSTS	**Barrier Function:**	TRAFFIC
Barrier Material:	LOG/TIMBER/WOOD	**Post Material:**	WOOD
Blockout Type:	N/A	**Length (ft.):**	593
Speed Limit (MPH):	25	**Placement with Respect to Road:**	INSIDE OF CURVE
Hazard Behind Barrier:	LOW		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	NCW	**Is Barrier Crashworthy?:**	NO
Beg. End Trtmt Type:	OTHER: LOG FLARED	**Is Beg. End Trtmt Crashhworthy?:**	NO	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	OTHER: LOG FLARED	**Ending End Trtmt Crashhworthy?:**	NO		

Average Measurements

Design Height (In.):	24	**Width (In.):**	0.0	**Post Spacing (In.):**	85.8
Height (In.):	21.0	**Lateral Offset (In.):**	42.7	**Road Grade (%):**	1.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height ranged from 1-4in. below the 24 in design height.
	Breaking and Cracking:	1 rail was damaged from a likely impact .
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	Typical weathering observed including longitudinal splintering of the logs.
End Treatments	**Alignment and Height:**	Typical weathering observed including longitudinal splintering of the logs.
	Breaking and Cracking:	1 rail was damaged from a likely impact.
	Missing Elements:	No elements were observed to be missing.
	Corrrosion and Weathering:	Typical weathering observed including longitudinal splintering of the logs.

Barrier ID:	**SHEN-1002-0.000-P1**		
Route Name:	DICKEY RIDGE VISITOR CENTER PARKING		
Inspection Date:	09/12/2010	**Barrier Rating:**	29.80

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$11666
Brief Workorder:	Replace 1 damaged log rail and raise guardrail to 24 inch design height.				
Workorder:	Replace Rail at $25- per -Lin. Ft. for 10 LF = $250. Replace 10 feet of log rail. Adjust Guardrail at $10- per -Lin. Ft. for 593 LF = $5930. Raise 593ft. of guardrail up to 24in. design height. Low Speed Traffic Control at $1475- per -Day for 3 Day(s) = $4425.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1002: DICKEY RIDGE VISITOR CENTER PARKING

Barrier Condition Photos

SHEN_1002_0.000_P1_1.jpg

Barrier ID:	**SHEN-1044-0.000-P1**		
Route Name:	SWIFT RUN OVERLOOK PARKING		
Inspection Date:	09/10/2010	**Barrier Rating:**	12.80

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	68
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	27.0	**Post Spacing (In.):**	0.0
Height (In.):	19.2	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 3-6-in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Mortar missing on 75 percent of front face 25 percent of top and back face. Stones are intact.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1044-0.000-P1**		
Route Name:	SWIFT RUN OVERLOOK PARKING		
Inspection Date:	09/10/2010	**Barrier Rating:**	12.80

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$4241
Brief Workorder:	Repoint the front face of the barrier for 51 feet and repoint the top and back of the barrier for 17 feet.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 17 SY = $2380. [(1.61 ft x 51 ft)+(1.61 ft x 17 ft)+(2.25 ft x 17 ft)] = 16.4 sy. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1044: SWIFT RUN OVERLOOK PARKING

Barrier Condition Photos

SHEN_1044_0.000_P1_1.jpg

SHEN_1044_0.000_P1_2.jpg

Barrier ID:	**SHEN-1044-0.000-P2**		
Route Name:	SWIFT RUN OVERLOOK PARKING		
Inspection Date:	09/10/2010	**Barrier Rating:**	12.80

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	54
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	27.2	**Post Spacing (In.):**	0.0
Height (In.):	19.2	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 4-6in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Grout on front of stones has crumbled and eroded away.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1044-0.000-P2**		
Route Name:	SWIFT RUN OVERLOOK PARKING		
Inspection Date:	09/10/2010	**Barrier Rating:**	12.80

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$3163
Brief Workorder:	Repoint the front face of the entire barrier.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 10 SY = $1400. 54 ft x (20in/12ft/in) / 9 sy/sf = 10 sy. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1044: SWIFT RUN OVERLOOK PARKING

Barrier Condition Photos

Condition photos are not available for SHEN-1044-0.000-P2.

Barrier ID:	**SHEN-1047-0.000-P1**		
Route Name:	BACON HOLLOW OVERLOOK PARKING		
Inspection Date:	09/11/2010	**Barrier Rating:**	4.40

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	57
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	25.7	**Post Spacing (In.):**	0.0
Height (In.):	18.7	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 2-3in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1047-0.000-P1**		
Route Name:	BACON HOLLOW OVERLOOK PARKING		
Inspection Date:	09/11/2010	**Barrier Rating:**	4.40

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1047: BACON HOLLOW OVERLOOK PARKING

Barrier Condition Photos

SHEN_1047_0.000_P1_1.jpg

SHEN_1047_0.000_P1_2.jpg

Barrier ID:	**SHEN-1047-0.000-P2**		
Route Name:	BACON HOLLOW OVERLOOK PARKING		
Inspection Date:	09/11/2010	**Barrier Rating:**	12.80

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	36
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	25.7	**Post Spacing (In.):**	0.0
Height (In.):	18.7	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 5-6in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1047-0.000-P2**		
Route Name:	BACON HOLLOW OVERLOOK PARKING		
Inspection Date:	09/11/2010	**Barrier Rating:**	12.80

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1047: BACON HOLLOW OVERLOOK PARKING

Barrier Condition Photos

Condition photos are not available for SHEN-1047-0.000-P2.

Barrier ID:	**SHEN-1048-0.000-P1**		
Route Name:	EATON HOLLOW OVERLOOK PARKING		
Inspection Date:	09/11/2010	**Barrier Rating:**	19.30

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	21
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	32.7	**Post Spacing (In.):**	0.0
Height (In.):	14.0	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 8-12in. below 24-in design height.
	Breaking and Cracking:	Mortar is cracked or missing along 5 ft of barrier length.
	Missing Elements:	Mortar is cracked or missing along 5 feet of barrier length.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1048-0.000-P1**		
Route Name:	EATON HOLLOW OVERLOOK PARKING		
Inspection Date:	09/11/2010	**Barrier Rating:**	19.30

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$32120
Brief Workorder:	Raise guardwall 11-in. Remove and reset 21-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 97 CF = $24250. [(2.3ft)(2ft)(21ft)] = 96.6 cf. Structural Concrete at $1000- per -Cu. Yd. for 2 CY = $2000. [(2.3ft)(0.9ft)(21ft)] /27 = 2 cy. Low Speed Traffic Control at $1475- per -Day for 2 Day(s) = $2950. 1 day removal and 1 day installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1048: EATON HOLLOW OVERLOOK PARKING

Barrier Condition Photos

SHEN_1048_0.000_P1_1.jpg

SHEN_1048_0.000_P1_2.jpg

Barrier ID:	**SHEN-1048-0.000-P2**		
Route Name:	EATON HOLLOW OVERLOOK PARKING		
Inspection Date:	09/11/2010	**Barrier Rating:**	19.30

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	23
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	32.7	**Post Spacing (In.):**	0.0
Height (In.):	15.0	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 8-10in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1048-0.000-P2**		
Route Name:	EATON HOLLOW OVERLOOK PARKING		
Inspection Date:	09/11/2010	**Barrier Rating:**	19.30

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$39820
Brief Workorder:	Raise guardwall 9-in. Remove and reset 23-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 125 CF = $31250. [(2.7ft)(2ft)(23ft)] = 124.2 cf. Structural Concrete at $1000- per -Cu. Yd. for 2 CY = $2000. [(2.7ft)(0.75ft)(23ft)] /27 = 1.7 cy. Low Speed Traffic Control at $1475- per -Day for 2 Day(s) = $2950. 1 day removal and 1 day installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1048: EATON HOLLOW OVERLOOK PARKING

Barrier Condition Photos

Condition photos are not available for SHEN-1048-0.000-P2.

Barrier ID:	**SHEN-1049-0.000-P1**		
Route Name:	ROCKY MOUNT OVERLOOK PARKING		
Inspection Date:	09/11/2010	**Barrier Rating:**	12.80

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	39
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	25.2	**Post Spacing (In.):**	0.0
Height (In.):	20.0	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	Alignment had no deviation along barrier length. Height was 5-8in. below 24-in design height.
	Breaking and Cracking:	Stones are loose along 5 ft of barrier length due to cracked or missing mortar.
	Missing Elements:	Mortar is cracked or missing along 39 feet of the front face and 5 feet of top face.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1049-0.000-P1**		
Route Name:	ROCKY MOUNT OVERLOOK PARKING		
Inspection Date:	09/11/2010	**Barrier Rating:**	12.80

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$39061
Brief Workorder:	Repoint 13 feet of the front face of the barrier repoint 5 feet of the top face of the barrier. Raise guardwall 3-in. Remove and reset 26-ft. of stone masonry guardwall on concrete footer to adjacent 18-in height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 120 CF = $30000. [(2.3ft)(2ft)(26ft)] = 119.6 cf. Structural Concrete at $1000- per -Cu. Yd. for 2 CY = $2000. [(2.3ft)(0.5ft)(26ft)] /27 = 1.1 cy. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 4 SY = $560. [(13ft) x (17.3in/12in) + (5ft x 27in/12in)] / 9 = 4 sy. Low Speed Traffic Control at $1475- per -Day for 2 Day(s) = $2950. 1 day removal and 1 day installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1049: ROCKY MOUNT OVERLOOK PARKING

Barrier Condition Photos

SHEN_1049_0.000_P1_1.jpg

SHEN_1049_0.000_P1_2.jpg

Barrier ID:	**SHEN-1049-0.000-P2**		
Route Name:	ROCKY MOUNT OVERLOOK PARKING		
Inspection Date:	09/11/2010	**Barrier Rating:**	4.40

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	22
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	25.2	**Post Spacing (In.):**	0.0
Height (In.):	20.0	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 2-6in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	Mortar is missing along front of barrier.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1049-0.000-P2**		
Route Name:	ROCKY MOUNT OVERLOOK PARKING		
Inspection Date:	09/11/2010	**Barrier Rating:**	4.40

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$2393
Brief Workorder:	Repoint the front face of the entire barrier.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 5 SY = $700. [(22 ft) x (20in/12in/ft)] / 9 = 4.1 sy. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1049: ROCKY MOUNT OVERLOOK PARKING

Barrier Condition Photos

Condition photos are not available for SHEN-1049-0.000-P2.

Barrier ID:	**SHEN-1051-0.000-P1**		
Route Name:	LOFT MOUNTAIN OVERLOOK PARKING		
Inspection Date:	09/11/2010	**Barrier Rating:**	20.20

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	458
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	25.7	**Post Spacing (In.):**	0.0
Height (In.):	17.0	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 6-9in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	Six stretches of 15 feet each have misplaced stones lying around the barrier.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1051-0.000-P1**		
Route Name:	LOFT MOUNTAIN OVERLOOK PARKING		
Inspection Date:	09/11/2010	**Barrier Rating:**	20.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$6705
Brief Workorder:	Repoint 90 feet of stone barrier.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 33 SY = $4620. (90 ft x 18in/12in/ft x 26in/12in/ft)/ 9 sf/sy = 32.5 sy. Low Speed Traffic Control at $1475- per -Day for 1 Day(s) = $1475.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1051: LOFT MOUNTAIN OVERLOOK PARKING

Barrier Condition Photos

SHEN_1051_0.000_P1_1.jpg

Barrier ID:	**SHEN-1052-0.000-P1**		
Route Name:	TWO MILE RUN OVERLOOK PARKING		
Inspection Date:	09/12/2010	**Barrier Rating:**	12.80

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	112
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	24.0	**Post Spacing (In.):**	0.0
Height (In.):	18.2	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	Alignment has no deviation along barrier length. Height was 5-6in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1052-0.000-P1**		
Route Name:	TWO MILE RUN OVERLOOK PARKING		
Inspection Date:	09/12/2010	**Barrier Rating:**	12.80

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1052: TWO MILE RUN OVERLOOK PARKING

Barrier Condition Photos

SHEN_1052_0.000_P1_1.jpg

Barrier ID:	**SHEN-1053-0.000-P1**		
Route Name:	BROWN MOUNTAIN OVERLOOK PARKING		
Inspection Date:	09/12/2010	**Barrier Rating:**	4.40

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	40
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	22.0	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 0-6in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1053-0.000-P1**		
Route Name:	BROWN MOUNTAIN OVERLOOK PARKING		
Inspection Date:	09/12/2010	**Barrier Rating:**	4.40

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1053: BROWN MOUNTAIN OVERLOOK PARKING

Barrier Condition Photos

SHEN_1053_0.000_P1_1.jpg

SHEN_1053_0.000_P1_2.jpg

Barrier ID:	**SHEN-1053-0.000-P2**		
Route Name:	BROWN MOUNTAIN OVERLOOK PARKING		
Inspection Date:	09/12/2010	**Barrier Rating:**	4.40

Barrier Description

Type:	STONE MASONRY WITH CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	CONCRETE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	40
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	TL-3	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	27	**Width (In.):**	24.2	**Post Spacing (In.):**	0.0
Height (In.):	25.2	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 0-5in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1053-0.000-P2**		
Route Name:	BROWN MOUNTAIN OVERLOOK PARKING		
Inspection Date:	09/12/2010	**Barrier Rating:**	4.40

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1053: BROWN MOUNTAIN OVERLOOK PARKING

Barrier Condition Photos

Condition photos are not available for SHEN-1053-0.000-P2.

Barrier ID:	**SHEN-1054-0.000-P1**		
Route Name:	IVY CREEK OVERLOOK PARKING		
Inspection Date:	09/12/2010	**Barrier Rating:**	20.20

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	277
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	27.0	**Post Spacing (In.):**	0.0
Height (In.):	18.7	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 5-6in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	Stones are missing/misplaced along 105 feet of barrier.
	Corrrosion and Weathering:	Mortar is deteriorated throughout entire barrier.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1054-0.000-P1**		
Route Name:	IVY CREEK OVERLOOK PARKING		
Inspection Date:	09/12/2010	**Barrier Rating:**	20.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$113845
Brief Workorder:	Remove and reset 105 feet of stone barrier with missing or misplaced stones. Repoint the remaining length of the barrier.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 315 CF = $78750. 105 ft x 27/12 x 16/12 = 315 cf. Re-Point Masonry Barrier at $140- per -Sq. Yd. for 103 SY = $14420. (172 ft x ((2 x 18.7/12) + (27/12)))/9 = 103 sy. Low Speed Traffic Control at $1475- per -Day for 7 Day(s) = $10325. 1 day removal and 4 days installation 2 days repointing.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1054: IVY CREEK OVERLOOK PARKING

Barrier Condition Photos

SHEN_1054_0.000_P1_1.jpg

Barrier ID:	**SHEN-1055-0.000-P1**		
Route Name:	ROCKY TOP OVERLOOK PARKING		
Inspection Date:	09/12/2010	**Barrier Rating:**	26.70

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	273
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	25.2	**Post Spacing (In.):**	0.0
Height (In.):	16.2	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 5-9in. below 24-in design height.
	Breaking and Cracking:	Loose stones observed along 40 ft of barrier.
	Missing Elements:	Mortar is cracked or missing along 70 feet of the top face and along 200 feet of the front and back.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1055-0.000-P1**		
Route Name:	ROCKY TOP OVERLOOK PARKING		
Inspection Date:	09/12/2010	**Barrier Rating:**	26.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$256025
Brief Workorder:	Raise guardwall 2-in. Remove and reset 200-ft. of stone masonry guardwall on concrete footer to adjacent 18-in height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 840 CF = $210000. [(2.1ft)(2ft)(200ft)] = 840 cf. Structural Concrete at $1000- per -Cu. Yd. for 8 CY = $8000. [(2.1ft)(0.5ft)(200ft)] /27 = 7.7 cy. Low Speed Traffic Control at $1475- per -Day for 10 Day(s) = $14750. 2 days removal and 8 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1055: ROCKY TOP OVERLOOK PARKING

Barrier Condition Photos

SHEN_1055_0.000_P1_1.jpg

Barrier ID:	**SHEN-1056-0.000-P1**		
Route Name:	BIG RUN OVERLOOK PARKING		
Inspection Date:	09/12/2010	**Barrier Rating:**	22.20

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	273
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	27.2	**Post Spacing (In.):**	0.0
Height (In.):	15.3	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 6in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	4 stones are loose/misplaced in one 10 ft area.
	Corrrosion and Weathering:	Mortar has deteriorated along 100 ft of barrier.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1056-0.000-P1**		
Route Name:	BIG RUN OVERLOOK PARKING		
Inspection Date:	09/12/2010	**Barrier Rating:**	22.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$18733
Brief Workorder:	Repoint 100 feet of the barrier with deteriorated mortar and remove and reset 10 feet of barrier with loose/misplaced stones.				
Workorder:	Re-Point Masonry Barrier at $140- per -Sq. Yd. for 47 SY = $6580. (75 x ((2 x 15.7/12) + (26.7/12)) + 25 x (26.7/12))/9 = 46.5 sy Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 30 CF = $7500. 10 ft x 16/12 x 26.7/12 = 30 cf Low Speed Traffic Control at $1475- per -Day for 2 Day(s) = $2950. 1 day repoint 1 day remove/reset.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1056: BIG RUN OVERLOOK PARKING

Barrier Condition Photos

SHEN_1056_0.000_P1_1.jpg

Barrier ID:	**SHEN-1059-0.000-P1**		
Route Name:	TRAYFOOT MOUNTAIN OVERLOOK PARKING		
Inspection Date:	09/13/2010	**Barrier Rating:**	19.30

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	145
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	27.2	**Post Spacing (In.):**	0.0
Height (In.):	15.3	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 6-8in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1059-0.000-P1**		
Route Name:	TRAYFOOT MOUNTAIN OVERLOOK PARKING		
Inspection Date:	09/13/2010	**Barrier Rating:**	19.30

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$55743
Brief Workorder:	Raise guardwall 3-in. Remove and reset 50-ft. of stone masonry guardwall on concrete footer to adjacent 18-in. height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 173 CF = $43250. [(2.3ft)(1.5ft)(50ft)] = 172.5 cf. Structural Concrete at $1000- per -Cu. Yd. for 3 CY = $3000. [(2.3ft)(0.5ft)(50ft)] /23 = 2.1 cy. Low Speed Traffic Control at $1475- per -Day for 3 Day(s) = $4425. 1 day removal and 2 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1059: TRAYFOOT MOUNTAIN OVERLOOK PARKING

Barrier Condition Photos

SHEN_1059_0.000_P1_1.jpg

Barrier ID:	**SHEN-1060-0.000-P1**		
Route Name:	HORSEHEAD OVERLOOK PARKING		
Inspection Date:	09/13/2010	**Barrier Rating:**	19.30

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	179
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	26.0	**Post Spacing (In.):**	0.0
Height (In.):	15.0	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 8-10in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	25 feet of barrier is missing stones along the top and front of wall.
	Corrrosion and Weathering:	No corrosion or weather observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1060-0.000-P1**		
Route Name:	HORSEHEAD OVERLOOK PARKING		
Inspection Date:	09/13/2010	**Barrier Rating:**	19.30

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$245025
Brief Workorder:	Raise guardwall 9-in. Remove and reset 179-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 788 CF = $197000. [(2.2ft)(2ft)(179ft)] = 787.6 cf. Structural Concrete at $1000- per -Cu. Yd. for 11 CY = $11000. [(2.2ft)(0.75ft)(179ft)] /27 = 10.9 cy. Low Speed Traffic Control at $1475- per -Day for 10 Day(s) = $14750. 2 days removal and 8 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1060: HORSEHEAD OVERLOOK PARKING

Barrier Condition Photos

SHEN_1060_0.000_P1_1.jpg

Barrier ID:	**SHEN-1061-0.000-P1**		
Route Name:	RIPRAP OVERLOOK PARKING		
Inspection Date:	09/13/2010	**Barrier Rating:**	19.30

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	247
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	27.2	**Post Spacing (In.):**	0.0
Height (In.):	16.0	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 6in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements observed.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1061-0.000-P1**		
Route Name:	RIPRAP OVERLOOK PARKING		
Inspection Date:	09/13/2010	**Barrier Rating:**	19.30

Repair Recommendations

Repair Action:	NO ACTION	**FMSS Work Type:**	N/A	**Repair Cost:**	$0
Brief Workorder:	N/A				
Workorder:					

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1061: RIPRAP OVERLOOK PARKING

Barrier Condition Photos

SHEN_1061_0.000_P1_1.jpg

Barrier ID:	**SHEN-1062-0.000-P1**		
Route Name:	MOORMANS RIVER OVERLOOK PARKING		
Inspection Date:	09/13/2010	**Barrier Rating:**	22.20

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	253
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	25.2	**Post Spacing (In.):**	0.0
Height (In.):	15.6	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 7-10in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	No missing elements were observed.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1062-0.000-P1**		
Route Name:	MOORMANS RIVER OVERLOOK PARKING		
Inspection Date:	09/13/2010	**Barrier Rating:**	22.20

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$320705
Brief Workorder:	Raise guardwall 8-in. Remove and reset 253-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 1063 CF = $265750. [(2.1ft)(2ft)(253ft)] = 1062.6 cf. Structural Concrete at $1000- per -Cu. Yd. for 14 CY = $14000. [(2.1ft)(0.67ft)(253ft)] /27 = 13.1 cy. Low Speed Traffic Control at $1475- per -Day for 8 Day(s) = $11800. 3 days removal and 5 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1062: MOORMANS RIVER OVERLOOK PARKING

Barrier Condition Photos

SHEN_1062_0.000_P1_1.jpg

Barrier ID:	**SHEN-1063-0.000-P1**		
Route Name:	CRIMORA LAKE OVERLOOK PARKING		
Inspection Date:	09/13/2010	**Barrier Rating:**	23.70

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	247
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	27.2	**Post Spacing (In.):**	0.0
Height (In.):	13.0	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 9-13in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	20 feet of stone blocks are missing from barrier structure.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1063-0.000-P1**		
Route Name:	CRIMORA LAKE OVERLOOK PARKING		
Inspection Date:	09/13/2010	**Barrier Rating:**	23.70

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$354668
Brief Workorder:	Raise guardwall 11-in. Remove and reset 247-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 1137 CF = $284250. [(2.3ft)(2ft)(247ft)] = 1136.2 cf. Structural Concrete at $1000- per -Cu. Yd. for 19 CY = $19000. [(2.3ft)(0.9ft)(247ft)] /27 = 18.9 cy. Low Speed Traffic Control at $1475- per -Day for 13 Day(s) = $19175. 3 days removal and 10 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1063: CRIMORA LAKE OVERLOOK PARKING

Barrier Condition Photos

SHEN_1063_0.000_P1_1.jpg

Barrier ID:	**SHEN-1064-0.000-P1**		
Route Name:	TURK MOUNTAIN OVERLOOK PARKING		
Inspection Date:	09/13/2010	**Barrier Rating:**	15.80

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	365
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	27.0	**Post Spacing (In.):**	0.0
Height (In.):	17.0	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 6-8in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	3 5-ft sections of barrier are missing stones.
	Corrrosion and Weathering:	3 5-ft sections have misplaced stones and deteriorated mortar.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1064-0.000-P1**		
Route Name:	TURK MOUNTAIN OVERLOOK PARKING		
Inspection Date:	09/13/2010	**Barrier Rating:**	15.80

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$371140
Brief Workorder:	Raise guardwall 2-in. Remove and reset 265-ft. of stone masonry guardwall on concrete footer to adjacent 18-inch height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 1219 CF = $304750. [(2.3ft)(2ft)(265ft)] = 1219 cf. Structural Concrete at $1000- per -Cu. Yd. for 12 CY = $12000. [(2.3ft)(0.5ft)(265ft)] /27 = 11.3 cy. Low Speed Traffic Control at $1475- per -Day for 14 Day(s) = $20650. 3 days removal and 11 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1064: TURK MOUNTAIN OVERLOOK PARKING

Barrier Condition Photos

SHEN_1064_0.000_P1_1.jpg

Barrier ID:	**SHEN-1065-0.000-P1**		
Route Name:	SAWMILL RUN OVERLOOK PARKING		
Inspection Date:	09/13/2010	**Barrier Rating:**	19.30

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	233
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	26.0	**Post Spacing (In.):**	0.0
Height (In.):	15.0	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 7in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	Three stones were missing from the barrier.
	Corrrosion and Weathering:	No corrosion or weathering observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1065-0.000-P1**		
Route Name:	SAWMILL RUN OVERLOOK PARKING		
Inspection Date:	09/13/2010	**Barrier Rating:**	19.30

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$316443
Brief Workorder:	Raise guardwall 7-in. Remove and reset 233-ft. of stone masonry guardwall on concrete footer to design height of 24 inches.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 1026 CF = $256500. [(2.2ft)(2ft)(233ft)] = 1025.2 cf. Structural Concrete at $1000- per -Cu. Yd. for 12 CY = $12000. [(2.2ft)(0.6ft)(233ft)] /27 = 11.4 cy. Low Speed Traffic Control at $1475- per -Day for 13 Day(s) = $19175. 3 days removal and 10 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1065: SAWMILL RUN OVERLOOK PARKING

Barrier Condition Photos

SHEN_1065_0.000_P1_1.jpg

Barrier ID:	**SHEN-1066-0.000-P1**		
Route Name:	SAWMILL RIDGE OVERLOOK PARKING		
Inspection Date:	09/13/2010	**Barrier Rating:**	19.30

Barrier Description

Type:	STONE MASONRY WITHOUT CONCRETE CORE WALL	**Barrier Function:**	NON-TRAFFIC
Barrier Material:	STONE	**Post Material:**	N/A
Blockout Type:	N/A	**Length (ft.):**	208
Speed Limit (MPH):	15	**Placement with Respect to Road:**	NON-TRAFFIC BARRIER
Hazard Behind Barrier:	N/A		

Barrier Crashworthiness

Appropriate Test Level:	TL-1	**Barrier Test Level:**	N/A	**Is Barrier Crashworthy?:**	N/A
Beg. End Trtmt Type:	NONE	**Is Beg. End Trtmt Crashhworthy?:**	N/A	**Approach Transition Type:**	NONE
Ending End Trtmt Type:	NONE	**Ending End Trtmt Crashhworthy?:**	N/A		

Average Measurements

Design Height (In.):	24	**Width (In.):**	28.0	**Post Spacing (In.):**	0.0
Height (In.):	15.6	**Lateral Offset (In.):**	0.0	**Road Grade (%):**	0.00

Physical Condition

Barrier	**Alignment and Height:**	No alignment deflection was observed. Height was 8-9in. below 24-in design height.
	Breaking and Cracking:	No breaking or cracking was observed.
	Missing Elements:	One stone is missing approximately one ft long.
	Corrrosion and Weathering:	No corrosion or weathering was observed.
End Treatments	**Alignment and Height:**	
	Breaking and Cracking:	
	Missing Elements:	
	Corrrosion and Weathering:	

Barrier ID:	**SHEN-1066-0.000-P1**		
Route Name:	SAWMILL RIDGE OVERLOOK PARKING		
Inspection Date:	09/13/2010	**Barrier Rating:**	19.30

Repair Recommendations

Repair Action:	REPAIR	**FMSS Work Type:**	DEFERRED MAINTENANCE	**Repair Cost:**	$140113
Brief Workorder:	Raise guardwall 2-in. Remove and reset 100-ft. of stone masonry guardwall on concrete footer to adjacent 18-in height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at $250- per -Cu. Ft. for 460 CF = $115000. [(2.3ft)(2ft)(100ft)] = 460 cf. Structural Concrete at $1000- per -Cu. Yd. for 5 CY = $5000. [(2.3ft)(0.5ft)(100ft)] /27 = 4.3 cy. Low Speed Traffic Control at $1475- per -Day for 5 Day(s) = $7375. 1 day removal and 4 days installation.				

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Shenandoah National Park

ROUTE 1066: SAWMILL RIDGE OVERLOOK PARKING

Barrier Condition Photos

SHEN_1066_0.000_P1_1.jpg

Appendix A
Summary of GIP Definitions and Assessment

Shenandoah National Park

Federal Lands Highway
Road Inventory Program

Appendix A:
Guardwall/Rail Inventory Program (GIP)
EXPLANATION OF REPORT TERMS

The Guardwall/rail Inventory Program (GIP) was commissioned by WASO to identify deferred maintenance related to barriers in National Parks that have more than one mile of guardwall or guardrail. GIP was designed jointly by the NPS and FHWA and the inventory process records both static characteristics of the barrier (e.g., length, height, etc.) as well as dynamic information about the condition of the barrier.

Barriers that traverse bridges are not included in this inventory, these barriers are covered in FHWA's Bridge Inventory Program (BIP); however, barriers that are approaches to bridges were part of this inventory.

The following discussion highlights each of the elements found in the reports.

Static Barrier Characteristics

BARRIER TYPE

Refers to both the design and the construction materials used:

- W-Beam, Strong Post
- W-Beam, Weak Post
- Thrie Beam/Modified Thrie Beam
- Box Beam
- Steel-Backed Timber, w/ Blockout
- Steel-Backed Timber, w/o Blockout
- Steel-Backed Log Rail
- High Tension Cable
- Three-Strand Cable
- Stone Masonry, w/o Concrete Core Wall
- Stone Masonry, w/ Concrete Core Wall
- Random Rubble Cavity Wall
- Concrete Barrier
- Concrete, with Simulated Stone Face
- W-Beam (Double Face), Strong Post
- Steel-Backed Timber (Double Face)
- Other: *Completed by field crew*

BARRIER MATERIAL

The type of material of which the barrier is composed:

- Cable
- Concrete
- Galvanized Steel
- Log/Timber/Wood
- Steel-Backed Timber/Log
- Weathering Steel/Corten
- Stone
- Other: *Completed by field crew*

LENGTH

The longitudinal distance between the beginning and end of the barrier. It should include the length of end treatments in the overall length of the barrier. For roadside barriers, this can be calculated from the start and end locations.

BARRIER FUNCTION: Traffic or Non-Traffic Barrier.
Due to the different GIP assessment criteria of barriers based on their intended use, barriers were classified as being either traffic barriers or non-traffic barriers.

> *Traffic barriers* are physical devices intended to keep vehicles or people from straying into dangerous or off-limits areas. For the purpose of this inventory and assessment, a traffic barrier is categorized as roadside hardware placed longitudinally, excluding pedestrian railing and fencing.
>
> *Non-traffic barriers* provide a physical delineation between public access areas and restricted or protected areas in locations such as a parking lot, viewpoint or turnout. Non-traffic barriers which inhibit access of vehicles are included in this report; non-traffic barriers which only inhibit access of pedestrians or bicyclists are not included. For the purpose of this inventory, non-traffic barriers are guidewalls and guiderails. Note: rocks, stones, boulders, fences or curbs were excluded from this inventory.

There are instances in parks where a single barrier can switch between being classified as a traffic barrier and a non-traffic barrier. Such instances typically occur at pullouts, where a traffic barrier along the road will continue through the pullout without interruption. In such instances, the traffic barrier and non-traffic barrier were assessed using different criteria. Due to the different criteria, the GIP database was designed to record the traffic barrier and non-traffic barrier as two distinct barriers, even though to the eye, they appear as one barrier. Other instances where a single barrier is split into multiple barriers would be when the barrier is placed continuously along two legs of an intersection, so that one portion of the barrier may be on one road and the remaining portion of the barrier is on a different road.

POST MATERIAL
The type or material that the barrier's supporting posts are made of:

- Galvanized Steel
- Wood
- Corten
- Other: *Completed by field crew*
- N/A

BLOCKOUT TYPE

The type of blockout or of what it is comprised:

- Wood
- Plastic
- Steel
- N/A

BARRIER PLACEMENT WITH RESPECT TO ROADWAY
To identify the roadway alignment the barrier is located upon:

- Tangent
- Inside of Curve
- Both Inside and Outside of Curve
- Outside of Curve

POSTED SPEED LIMIT
The posted speed limit of the roadway section.

HAZARD BEHIND BARRIER

A qualitative description of the severity of the hazard behind the barrier:

- Low
- Medium
- High
- Extreme

APPROPRIATE TEST LEVEL (TL) FOR ROAD

Based on the posted speed limit, the NCHRP 350 Crashworthiness test level appropriate for the roadway.

- TL-1, 30 mph and lower
- TL-2, 35-45 mph
- TL-3, 50 mph and higher

BARRIER TEST LEVEL (TL)

A traffic barrier is crashworthy if it was successfully crash tested under *NCHRP Report 350* at speeds along the park road or parkway or if it was accepted through analysis by FHWA, based on similarity to other crashworthy critical design element features. Non-traffic barriers are classified at N/A.

- TL-1
- TL-2
- TL-3
- No
- N/A – Non-Traffic Barrier

IS BARRIER CRASHWORTHY

This compared the appropriate crashworthy test level required for the posted speed limit to the barrier's test level.

- Yes
- No

BEGINNING END TREATMENT TYPE

An end treatment is safety hardware that mitigates impacts to the ends of a barrier. Most common end treatments are for w-beam systems. Note that stonemasonry barriers typically do not have end treatments.

The beginning end treatment is based on the travel lane closest to the barrier. A vehicle traveling in the lane closest to the barrier will encounter the barrier's beginning end treatment first. It is not based on the RIP primary direction. Identifies the barrier's beginning end treatment type:

- W-Beam Flared 350 Compliant
- W-Beam Tangent 350 Complaint
- W-Beam Buried End
- W-Beam Trailing End/CRG
- W-Beam BCT, Flared
- W-Beam, Turn Down
- SBT/Log, Flared
- SBT/Log, Buried
- Median Treatments
- Box Beam
- Cable
- Crash Cushions/Attenuator
- Other: *Completed by field crew*
- None

IS BEGINNING END TREATMENT CRASHWORTHY

Identifies if the barrier's beginning end treatment (based on direction of travel for the travel lane closest to barrier) is crashworthy, based on NCHRP-350.

- Yes
- No
- N/A

APPROACH TRANSITION TYPE

A transition is safety hardware designed to be placed between two different types of barrier. Most common transition types are between bridge rail and w-beam systems.

This identifies the barrier's transition type:

- Bridge Rail, W-Beam
- Bridge Rail, SBT
- Rigid W-Beam, W-Beam
- Rigid SBT (Wall), SBT
- Concrete/Masonry, W-Beam
- Concrete/Masonry, SBT
- Concrete/Masonry, Thrie Beam
- Other: *Completed by field crew*
- None

ENDING END TREATMENT TYPE

The ending end treatment is based on the travel lane closest to the barrier. A vehicle traveling in the lane closest to the barrier will encounter the barrier's ending end treatment last, after passing the rest of the barrier. It is not based on the RIP primary direction. Identifies the barrier's ending end treatment type:

- W-Beam Flared 350 Compliant
- W-Beam Tangent 350 Complaint
- W-Beam Buried End
- W-Beam Trailing End/CRG
- W-Beam BCT, Flared
- W-Beam, Turn Down
- SBT/Log, Flared
- SBT/Log, Buried
- Median Treatments
- Box Beam
- Cable
- Crash Cushions/Attenuator
- Other: *Completed by field crew*
- None

IS ENDING END TREATMENT CRASHWORTHY

Identifies if the barrier's ending end treatment (based on direction of travel for the travel lane closest to barrier) is crashworthy, based on NCHRP-350.

- Yes
- No
- N/A

BARRIER DESIGN HEIGHT

Identifies the barrier's original "as-built" design height:

- 27-in, W-beam, Steel-Backed Timber, Stone Masonry w/ Concrete Core Wall
- 24-in, Stone Masonry w/o Concrete Core Wall, Log on Log
- 20-in, Timber on Wood Posts, Timber on Concrete Posts, Timber on Granite Posts
- 18/24-in, Crenellated Stone Masonry Barrier
- 18/24-in, Dry Stack Stone Wall
- 31-in, Steel-Backed Log
- 32-in, Jersey Barrier

AVERAGE MEASUREMENTS

Minimum of three measurements taken on each barrier.

First measurement approximately 50-ft from the beginning of the barrier, measured from the extreme ends of the barrier's end treatment/transition. Do not take a measurement along the end treatment
Measure and record measurement every 200-ft thereafter for the run of barrier

Last measurement approximately 50-ft from the end of the barrier. Do not take a measurement along the end treatment
If a barrier is less than 300-ft, even say 45-ft, a minimum of three measurements were still taken.

AVERAGE WIDTH

The width of the barrier. Only recorded for guardwalls; not guardrail.

AVERAGE POST SPACING

The spacing of the barrier's (not the end treatments') posts. Only recorded for guardrails; not guardwalls or non-traffic barriers.

AVERAGE BARRIER HEIGHT

The average barrier height. If the barrier has crenellations, the height is measured in the non-crenellated sections of the barrier. If the average lateral offset is less than or equal to 4-ft, average barrier height is measured from the roadway; if the average lateral offset is greater than 4-ft, average barrier height is measured at the barrier face.

AVERAGE LATERAL OFFSET

Determine the average distance between the barrier and the edge of roadway. If a white edgeline is present on the roadway, average lateral offset is measured from the outside edge of the white line to the barrier face. If no white edgeline is present, average lateral offset is measured from the edge of pavement to the barrier face.

AVERAGE ROAD GRADE and UPHILL OR DOWNHILL

Determine an average roadway grade at each barrier location, based on the direction of travel in the lane closest to the barrier.

DYNAMIC BARRIER CHARACTERISTICS – CONDITION ASSESSMENT NARRATIVES

Field crews were directed to write a narrative of the barrier's physical condition. To keep consistency between field crews, all narratives were based on severity and distress criteria, which were developed jointly by the NPS and FHWA. Condition assessments were based on barrier type and can be found directly after this description of report elements.

BARRIER ALIGNMENT/HEIGHT

Narrative completed by field crew describing the barrier's alignment and height. Height comments are based on the barrier's original "as-built" design height.

BARRIER BREAKING/CRACKING

Narrative completed by field crew describing any barrier breaking or cracking found during the inspection.

BARRIER MISSING ELEMENTS

Narrative completed by field crew describing any barrier missing elements encountered during the inspection.

BARRIER CORROSION/WEATHERING

Narrative completed by field crew describing and corrosion or weathering issues associated with the barrier.

END TREATMENTS ALIGNMENT/HEIGHT

Narrative completed by field crew describing the barrier end treatment's alignment and height, when present. Height comments are based on the end treatment's original "as-built" design height.

END TREATMENTS BREAKING/CRACKING

Narrative completed by field crew describing any barrier end treatment's breaking or cracking found during the inspection.

END TREATMENTS MISSING ELEMENTS

Narrative completed by field crew describing any barrier end treatment missing elements encountered during the inspection.

END TREATMENTS CORROSION/WEATHERING

Narrative completed by field crew describing and corrosion or weathering issues associated with the barrier's end treatments.

BARRIER PHOTOGRAPHS

During the inspection, the field crews photographed the beginning end (based on the closest lane's direction of travel) of each barrier. Additional photographs were taken of any unusual deficiencies encountered. Up to two photographs of the barrier are included in this report.

CONDITION AND SEVERITY DISTRESS TABLES

Due to the extreme number of possible conditions of the barrier, transition and end treatment, the following descriptions and matrices are guidelines created to help classify the condition of the element. While the distinction between good and fair is needed, the distinction between fair and poor is much more important since this is the threshold that defines if the element is slightly compromised or is not functional.

In all likelihood, according to these guidelines different portions of an element (most likely a barrier) may be classified differently; however, a single classification will need to be provided for the element. The survey team will use their professional judgment to determine this single classification. The single classification of each element should be considered an index value that provides a general indicator of overall performance, but not necessarily indicate that a specific treatment is warranted. The specific work order that is prepared based on the observed deficiencies will be a much more definitive indicator of the appropriate treatment based on existing distresses. The overall condition will be used as part of the risk assessment tool to evaluate the risk to driver safety associated with the physical condition of the barrier.

GOOD

The barrier performs as intended. The barrier is in fairly straight alignment but may have some small amount that is slightly out of alignment. While the height of the barrier may vary over its run, the height is relatively consistent and is close to its original "as-built" design height. Minor cracks may be visually observed on some the posts, though these cracks are neither long nor deep and the only hardware missing are isolated nuts and bolts. Minor surface corrosion on small portions of the surface is visible but there is no decay associated with connections.

The end treatment performs as intended. The end treatment is in good alignment and tension is acceptable. While the end treatment may exhibit some dents, there are no cracked rails, posts, blocks or any missing elements. Corrosion and erosion, while present, are at a minimum.

In general, all distresses observed, either in isolation or in combination, do not seriously affect the ability of the element to serve the intended functions of protecting drivers from a roadside hazard and/or contributing to the cultural value of the roadway corridor. Keep in mind that "intended function" is a relative term. In many cases, older designs were "intended" to protect drivers but would not be considered fully functional in that regard by today's standards.

FAIR

The barrier is slightly compromised. The barrier is noticeably out of alignment and the height along the run of barrier varies considerably. Cracks and broken elements are visible from the roadside. The barrier may be missing elements, such as nuts, bolts, blockouts or even a post. Surface corrosion is visible on a fair amount of the barrier but connections will still provide element interlock. Decay and minor erosion, while not always visible, may begin to reduce element strength and individual post stability.

The end treatment is slightly compromised. The end treatment may be somewhat out of alignment, have low cable anchor tension or isolated broken or cracked rail, posts or blocks. Corrosion and erosion are evident.

In general, the distresses observed, either in isolation or combination, may generate unpredictable outcomes related to the functions of the element stated above.

POOR

The barrier is not functional. The barrier will not function as intended. Any of the following could mean that the barrier is in poor condition: The barrier has fallen out of alignment or its height varies greatly from the designed height. Cracks and broken elements are visible from the roadside. The barrier is missing several elements, such as nuts, bolts, blockouts or consecutive posts. Corrosion, causing structural compromise is significant and obvious. Erosion around posts will reduce the barrier's strength and capacity.

The end treatment is not functional. The end treatment does not function as intended. There is no tension in the cable anchor. A significant portion of the end treatment has broken, cracked or dented elements. Elements are missing and corrosion or erosion is significant.

In general, the distresses observed clearly illustrate the inability of the element to perform the intended functions.

CONDITION AND SEVERITY DISTRESS TABLES – BARRIERS

Condition and Severity Distress Table for Semi-Rigid Barriers (including barriers with posts, rail elements and blocks).

	GOOD	FAIR	POOR
Alignment/Design Height			
	• Alignment off by less than 6”	• Alignment off by 6”-12”	• Alignment off by more than 12”
	• Within 1” of *design height*	• Less than 3” lower than *design height*	• Greater than 3” lower than *design height*
Breaking/Cracking, an member, post or rail – due to impact loading			
	• Metal – no twisting/bending, tears or cracking	• Metal – no cracking or tearing (but minor twisting/bending is ok)	• Metal – any cracks or tears
	• Wood – no impact related cracking	• Wood – maybe cracked but retains original cross section	• Wood – cracks or tears that deform original section
	• Isolated broken blocks	• Two Consecutive broken blocks	• Consecutive broken blocks (three or more consecutive)
Missing Elements			
	• No bolts and nuts missing	• One or two bolt/nut missing at one rail/rail connection	• Three or more bolts/nuts missing at one rail/rail connection
	• n/a	• Two consecutive missing blocks	• Three or more consecutive missing blocks
	• n/a	• n/a	• One missing rail element or post
Corrosion/Decay/Weathering, all posts, rails and blocks – due to aging			
	• Loss of 5% or less of cross section	• Loss of 5% to 50% of cross section	• Loss of 50% or more of cross section
	• Erosion (less than 8” of post exposed below original groundline)	• Erosion around posts (8” or more of post exposed below original groundline) for one	• Erosion around consecutive posts (more than 8” of post exposed below original groundline)

Condition and Severity Distress Table for Rigid Concrete Barriers (including pre-cast).

	GOOD	FAIR	POOR
Alignment/Design Height			
	• Alignment off by less than 6”	• Alignment off by 6”-12”	• Alignment off by more than 12”
	• Within 1” of *design height*	• Less than 3” lower than *design height*	• Greater than 3” lower than *design height*
Breaking/Cracking– due to impact loading			
	• Minor cracks (less than ¼”) present	• Cracking present ¼” or greater but no displacement or discontinuity in face	• Barrier displaced and/or discontinuous
	• n/a	• Pieces broken from barrier 3” deep or less without exposing rebar	• Cracking exposes rebar
	• n/a	• n/a	• Pieces broken from face greater than 3” deep
Missing Elements			
	• n/a	• n/a	• n/a
Corrosion/Decay/Weathering – due to aging			
	• Surface corrosion on less than 5% of the run	• Surface corrosion on between 5-25% of the run	• Surface corrosion on more than 25% of the run
	• n/a	• Spalling 3” deep or less without exposing rebar	• Spalling greater than 3” deep
	• Erosion (less than 8” below groundline) around base	• Erosion (8” or more below groundline) around base	• Erosion (8” or more below groundline)
	• n/a	• Less than 50% undermined (less than half barrier width)	• 50% or more undermined (less than half barrier width)

Condition and Severity Distress Table for Rigid Stone/Masonry Barriers (including all types of stone or masonry barriers).

	GOOD	FAIR	POOR
Alignment/Design Height			
	• Alignment (off by less than 6”)	• Alignment (off by 6”-12”)	• Alignment (off by more than 12”)
	• Within 3” of *design height*	• Between 3.1 - 6” lower than *design height*	• Greater than 6.1” lower than *design height*
Breaking/Cracking – due to impact loading			
	• Minor cracks (less than ¼”) present	• Cracks, less than ½” present	• Cracks greater than ½” present
		• Stones broken/displaced extending less than 1/3 of width of barrier	• Stones broken/displaced extending 1/3 width or more through the barrier
Missing Elements			
	• n/a	• n/a	• n/a
Corrosion/Decay/Weathering – due to aging			
	• Cracks in mortar joints 1/4” or less and/or single loose or missing stones	• Mortar joints deteriorated resulting in two - three loose or missing adjacent stones (without impact)	• Mortar joints deteriorated resulting in more than three continuous/adjacent loose or missing stones (without impact)
	• Erosion (less than 8” below groundline) around base	• Erosion (8” or more below groundline) around base	• Erosion (8” or more below groundline)
	• n/a	• Less than 50% undermined (less than half barrier width)	• 50% or more undermined (less than half barrier width)

Condition and Severity Distress Table for Flexible Barriers, (including cable barriers and weak-post systems designed without blocks).

	GOOD	FAIR	POOR
Alignment/Tension/Design Height			
	• No bent posts	• Bent posts; one to three consecutive posts	• Bent posts; four or more consecutive posts
	• Cable has tension	• Cable under-tensioned/sagging	• No cable tension
	• Less than 1” too low	• 1-3” too low	• Greater than 3” too low
Breaking/Cracking			
	• No cracked or broken posts	• One to three isolated broken posts	• Four or more consecutive broken posts
	• n/a	• Cable frayed	• Cable broken or severed
Missing Elements			
	• No bolts and nuts missing at anchors	• n/a	• Bolts and nuts missing or loose at anchors
	• n/a	• n/a	• Any missing posts or cable for any length of run
Corrosion/Decay/Weathering – due to aging			
	• Loss of 5% or less of cable cross section	• Loss of 5% to 15% of cable cross section	• Loss of 15% or more of cross section
	• Erosion (less than 8” of post exposed below original groundline)	• Erosion around one post (8” or more of post exposed below original groundline)	• Erosion around consecutive posts (more than 8” of post exposed below original groundline)

CONDITION AND SEVERITY DISTRESS TABLES – END TREATMENTS

Condition and Severity Distress Table for Flexible End Treatments, (including cable end terminals).

	GOOD	FAIR	POOR
Alignment/Tension			
	• Alignment off by less than 4”	• Alignment off by 4”-8”	• Alignment off by more than 8”
	• Adequate cable tension	• Low cable anchor tension	• No cable anchor tension
Breaking/Cracking – due to impact loading			
	• No broken or cracked elements	• Minor cable fraying but still with adequate tension	• Broken or cracked cables or posts
	• No damage to posts, cable or anchor	• Slight damage to posts without cracking or tearing (*but minor twisting/bending on isolated posts is OK)*	• Cable broken or severed on any cable
Missing Elements			
	• No bolts and nuts missing at anchors; No missing cables	• n/a	• Any missing element (post, cable, bolts, nuts, or anchor)
Corrosion/Decay/Weathering – due to aging			
	• Loss of 5% or less of cable cross section	• Loss of 5% to 15% of cable cross section	• Loss of 15% or more of cross section
	• Connections weathered but still provide element interlock on less than 5% of the end treatment	• Connections weathered but still provide element interlock on between 5% to 15% of the end treatment	• Connections weathered but still provide element interlock on more than 15% of the end treatment

Condition and Severity Distress Table for Semi-Rigid End Treatments, including Flared and Tangent

	GOOD	FAIR	POOR
Alignment/Tension			
	• Alignment of flares and offsets off by less than 4”	• Alignment of flares and offsets off by 4”-8”	• Alignment of flares and offsets off by more than 8”
	• Within 1” of *design height*	• Less than 3” lower than *design height*	• Greater than 3” lower than *design height*
For *Aesthetic Barriers* (i.e. – SBT and SBL guardrail) that do not have crashworthy terminals:	• Approach barrier terminals are buried, anchored, and flared away from the travel lane	• Approach barrier terminals are buried, anchored, and flared away from the travel lane	• Approach barrier ends are NOT buried, anchored, nor flared away from the travel lane
Breaking/Cracking – due to impact loading			
	• Metal – no twisting/bending, tears or cracking	• Metal – no cracking or tearing (but minor twisting or bending is ok)	• Metal – any cracks or tears
	• Wood – no impact related cracking	• Wood – maybe cracked but retains original cross section	• Wood – cracks or tears that deform original section
	• No broken blocks	• One broken block	• Two consecutive broken blocks
Missing Elements			
	• No missing elements, including breakaway cables and struts	• Isolated bolts, nuts, or blocks loose on non-consecutive posts	• Any missing element, including blocks, rails, posts cables, or struts
	• No bolts, nuts, or blocks missing or loose	• Breakaway strut present but vertical height off by more than 2”	• Missing nuts / bolts on consecutive posts
Corrosion/Decay/Weathering – due to aging			
	• Surface corrosion / decay / connections weathered with a loss of 5% or less of cross section of interlocking elements	• Surface corrosion / decay / connections weathered with between 5-25% loss of cross section along transition interlocking elements	• Surface corrosion / decay / connections weathered with more than 25% loss of cross section along transition interlocking elements
	• Erosion (less than 8” of post exposed below original groundline)	• Erosion around 1 post (8” or more of post exposed below original groundline)	• Erosion around consecutive posts (8” or more of post exposed below original groundline)

SPECIFIC RISK ELEMENTS

The potential risk to a motorist after a vehicle impacts a traffic barrier depends on the crashworthiness of the traffic barrier as well as traffic exposure factors. Variables relating to the roadside, the traffic barrier's crashworthiness and traffic data include the following:

ADT. The number of vehicles (in both directions) that travel the roadway on which the traffic barrier is located.

Barrier Crashworthy. A traffic barrier is crashworthy if it was successfully crash tested under NCHRP Report 350 at speeds along the park road or parkway or if it was accepted through analysis by FHWA, based on similarity to other crashworthy critical design element features. If crashworthy, the appropriate test level also needs to be recorded. For crashworthy barriers, the barrier test level will be compared to the test level appropriate for the roadway (based solely on posted speed limit). The intent is to record situations in which a crashworthy barrier of a lower test level is installed on a roadway which should have a barrier of a higher test level.

Barrier Height. Determined from barrier height as collected in the physical condition assessment. The database will compare this value to the NCHRP test level height that is appropriate for the posted speed of the road and barrier type.

End Treatment Crashworthy. An end treatment is crashworthy if it has been successfully crash tested. This is for the approach end treatment, which is defined as the end treatment which a vehicle will first pass when traveling on the same side of the road as the barrier.

Existing Roadway Features. The list of roadway features is limited to the following, all of which have a documented history of reducing the number of crashes, and are found later in the GIP as possible countermeasures.

Centerline pavement markings	Grooved pavement surface
Edgeline pavement markings	Delineators on curve and tangent
Wider centerline	Chevrons
Wider edgeline	Warning sign
Centerline rumble strips	Flashing beacon on warning sign
Shoulder rumble strips	Lighting
Barrier reflectors	Speed feedback sign

Factored Crash Rate. The average annual number of crashes (on the overall road and by barrier segment), over the last 5 years. If the road has an ADT of less than 1000, evaluate a minimum of
7 to 10 years of crash data, if available.

Lateral Offset of Barrier from Edge of Traveled Way. The distance from the edge of traveled way to the face of the barrier is useful for determining impact to asset during different types of construction. Two or three measurements will be taken – beginning, middle and end of barrier run (not including the end treatments) – and the average will be used.

Posted Speed Limit. The posted speed limit(s) of the roadway section.

Roadway Grade and Uphill or Downhill. Is refers to the grade of the roadway, in the direction of travel closest to the barrier.

Severity of the Hazard behind Barrier. A rating system based on photos will be used to rate the severity of the hazard behind the barrier. Choices include:

- Low
- Medium
- High
- Extreme

RISK ASSESSMENT AND RISK SCORE

The following table shows the variables relating to the overall roadway safety in the vicinity of barriers. In addition, the table illustrates the range of values considered for each variable and associated levels of risk. For categorization purposes, variables have been placed into one of three categories: segment, site or barrier variables. The "Associated Risk" column identifies the relative risk posed by each variable. This looks at the relative risk of the each variable itself and is only a cursory evaluation.

A Risk Score or Rating ("Barrier Rating" on Tier 3 Barrier page) was created for each barrier based on the table values. The level of risk tolerated is dependent on the category of road, which will be discussed in subsequent pages.

Once the inventory has been conducted, a total risk value can be assigned to each barrier. A comparison of the relative risk to an acceptable risk threshold will be performed in order to analyze the overall risk of a given barrier.

Variable and Associated Levels of Risk

VARIABLE	RANGE	ASSOCIATED RISK
SEGMENT VARIABLES		
ADT	0 – 1000	0.0
	1001 – 4000	2.9
	4001 – 8000	5.7
	8001 – 20,000	7.1
	20,001 and greater	8.6
Crash Factor	0	0.0
	0.1 – 5.0	4.2
	5.1 – 20.0	8.7
	20.1 – 30.0	17.1
	30.1 – 75.0	25.8
	75.1 and greater	34.2
Posted Speed Limit	15 – 25 mph	0.0
	30 – 40 mph	4.3
	45 and higher	8.6
SITE VARIABLES		
Barrier Placement w/ Respect to Roadway Geometry	Tangent	0.0
	Inside of curve	2.9
	Both inside and outside of curve	8.6
	Outside of curve	8.6
Severity of Hazard behind the Barrier	Low severity	2.6
	Medium severity	5.1
	High severity	6.9
	Extreme severity	8.6
Longitudinal Length of Barrier	1 – 250-ft	0.0
	251 – 750-ft	2.9
	751 – ft and greater	5.7
Lateral Offset of Barrier from Edge of Traveled Way	4.1 – ft and greater	0.0
	2 – 4-ft	2.9
	less than 2-ft	5.7
Roadway Grade	Uphill/level/downgrade less than 3%	0.0
	Mild downgrade (3 – 6%)	4.3
	Steep downgrade (greater than 6%)	8.6
BARRIER VARIABLES		
Actual Barrier Height (compared to test level height)	0 – 1-in lower	0.0
	1.1 – 4-in lower	4.4
	4.1 – 7-in lower	12.9
	7.1 – 12-in lower	19.4
	12.1-in and greater lower	21.5
Dynamic Barrier Condition Rating (based on design height)	0 – 25	0.0
	26 – 200	4.4
	201 – 400	8.6
	401 – 600	12.9
	601 – 800	17.1
	801 and above	21.5
Barrier Conformance with Current Crashworthiness Criteria	Yes	0.0
	No	5.7
	Maximum Total Possible Risk Score	**100**

REPLACEMENT/REPAIR STRATEGIES

Information is integrated by combining static data on barrier type, materials, dimensions, etc. with the condition and risk assessments, and the asset management roadway categories (which include cultural and historic resource considerations) to come up with actionable repair strategies for barriers. In addition, repair costs are accounted for so that estimates can be made for repair actions identified. Costed repair estimates, or work orders, then form the basis for estimating deferred maintenance associated with roadside barriers.
Repair recommendations generated by this assessment are intended to provide an estimated cost of deferred maintenance of barriers. As such, the evaluation is not rigorous and may be changed when a more detailed review and assessment at a project level is completed. In addition, any repairs or replacements that are recommended by this inventory and assessment process must be vetted through a project selection, planning and design process, including compliance with the National Historic Preservation Act (NHPA) and the National Environmental Policy Act (NEPA).

Many park barriers are located in harsh environments where freeze-thaw cycles, avalanche impacts, surface erosion, rockfall and vehicle impacts damage them; consequently, they are showing signs of fatigue, at times serious. Whenever possible, historic barriers are repaired or rehabilitated in place so that the historic significance can be preserved; however, removal or reconstruction, which is typically the least preferred alternative, is at times necessary.

Barrier deficiencies can generally be categorized into one of two categories:

- Barriers that pose an unacceptable risk to the traveling public (as determined by the risk assessment methods described in Chapter Seven and including standards found in NCHRP Report 350), or
- Damaged barriers, due to either crash impacts, other loadings (e.g., snow / avalanche, etc) or deteriorated parts (from age / weathering).

Outside of the national park system, barriers that do not meet NCHRP Report 350 crashworthiness standards are typically removed and a barrier of a crashworthy design is constructed in its place. However given the sensitive natural and cultural environments found within the national park system, deficient barriers not meeting national crashworthiness standards may warrant no action, particularly where risk is low.

The type of repair strategy is often dependent on the barrier deficiency and its cultural context. Typically barriers that do not meet current crashworthiness criteria may be replaced while damaged or deteriorated barriers can be repaired. However, under unique situations found in certain national parks and as evaluated using the risk assessment and asset management roadway categories, some barriers that do not meet current crashworthiness criteria may warrant no action being taken for their replacement or repair.

Risk assessment and asset management roadway categories are integrated in the following table, which establishes different risk thresholds within each roadway category. In essence, a higher level of risk will be tolerated in Asset Management Roadway Category A, as demonstrated by the higher risk threshold (90), while less risk will be tolerated in Roadway Category B (70) and even less risk in Roadway Category C (50).

Asset Management Roadway Categories, Risk Thresholds and Treatment Recommendations.

ASSET MANAGEMENT ROADWAY CATEGORY	RISK THRESHOLD	PROGRAM-LEVEL TREATMENT RECOMMENDATION
A	90-100	1. Identify measures other than barrier replacement that could be taken to reduce risk (including engineering countermeasures). 2. Corrective action (including reconstruct/replacement, if necessary) needed to reduce risk below 90.
	Below 90	1. Identify measures that could be taken to reduce risk (including engineered countermeasures). 2. Identify repairs needed to improve physical condition/maintain historic integrity. 3. When condition is good and risk is acceptable, no action is necessary.
B	70-100	1. Identify measures that could be taken to reduce risk (including engineered countermeasures). 2. Corrective action (including reconstruct/replacement, if necessary) needed to reduce risk below 70.
	Below 70	1. Identify measures that could be taken to reduce risk (including engineered countermeasures). 2. Identify repairs needed to improve physical condition/maintain historic integrity. 3. When condition is good and risk is acceptable, no action is necessary.
C	50-100	1. Identify measures that could be taken to reduce risk (including engineered countermeasures). 2. Corrective action (including reconstruct/replacement, if necessary) needed to reduce risk below 50.
	Below 50	1. Identify measures that could be taken to reduce risk (including engineered countermeasures). 2. Identify repairs needed to improve physical condition/maintain historic integrity. 3. When condition is good and risk is acceptable, no action is necessary.

Fourteen engineering countermeasures have been specifically selected for use with the GIP risk assessment tool, and are show in the next table. This is an all-inclusive list of available countermeasures for the risk assessment toll; countermeasures not on the list should not be considered.

The concept of employing countermeasures is evident with barriers that have a risk score just above the risk threshold. For such barriers, installing countermeasures should reduce the future number of crashes by a given amount, based on the countermeasure. Depending on the factored crash rate, reducing the number of crashes will lower the overall risk score. Thus, barriers that were classified as “reconstruct/replace” may be able to be reclassified as “repair”.

The decision to include any of the engineering countermeasures can be done only when the risk score is over the risk threshold by three points or less. When countermeasures are employed to reduce the risk score, they must be based on engineering judgment. The GIP database will allow the user to select up to three countermeasures to reduce the risk score under the threshold, based on crash reduction factors from the FHWA publication “Desktop Reference for Crash Reduction Factors” FHWA-SA-07-015.

Proposed Countermeasures.

COUNTERMEASURE	CRASH REDUCTION FACTOR
Speed Feedback Signs	0.46
Flashing Beacons On Warning Signs	0.30
Centerline Pavement Marking	0.30
Lighting	0.25
Chevrons	0.20
Warning Signs	0.20
Barrier Reflectors	0.16
Grooved Pavement Surface	0.15
Edgeline Pavement Marking	0.12
Shoulder Rumble Strips	0.12
Delineators on Curve and Tangent	0.05
Centerline Rumble Strips	0.04
Wider Edgeline	0.02
Wider Centerline	0.02

Maintaining Barriers As Is

Individual barrier elements and roadside conditions are interrelated. Sometimes, barrier deficiencies will be obvious and the best course of action is apparent; however, in context sensitive environments barrier deficiencies may be marginal and a decision will be based on judgment.

If risk is low (as determined by the assessment of variables such as traffic speeds, volumes), it may be acceptable for an historical or culturally significant barrier that does not meet current crashworthiness standards to remain until changes in risk factors would require an upgrading.

If the maintaining barrier as is alternative is the preferred choice through this approach, low cost mitigation measures may be considered to improve safety, such as improving roadside delineation (e.g., pavement markings / rumble strip(e)s, etc.), improving visibility (e.g., advance warning signs, increased sign size, etc.), upgrading the roadway shoulder, or improving skid resistance of the road surface. Although these measures will not reduce crash severity of an errant vehicle impact, these improvements have been tried or proven to reduce the frequency or probability of a vehicle striking the barrier.

Barrier Repair

If a barrier has been damaged due to a crash or there are parts that have deteriorated due to age or weathering but the majority of the barrier meets current crashworthiness standards and is functionally sound, repairing the system can be considered a viable option. Examples of these improvements include replacing damaged timber rail, removing a corroded, weathered steel post and replacing with new, upgraded guardrail blockouts to meet standards on high speed facilities or repointing, resetting or replacing loose or missing stones on the concrete corewalls of stone masonry guardwalls. Pursuing a repair approach should be the first consideration for Roadway Category A and B road assets.

For barriers that do not meet crashworthiness criteria but are functionally sound and have been determined good candidates to be maintained as-is based on the risk assessment and application of asset management roadway categories, repair could include measures such as repointing deteriorated masonry, re-setting or replacing loose, broken or missing stones, restoring walls to their original height (by adding a concrete footing, for example), restoring or improving drainage through or under walls or restoring wall foundations. Alterations to improve safety may also be considered, such as adding or changing end treatments or other mitigation measures as mentioned above.

For historic, stone masonry barriers that have a risk score below the threshold, it is possible that portions of the barrier need to be removed and reset in order increase the height of the barrier. The following guidelines are provided to assist in determining when this should be done and to what height the barrier should be rebuilt:

1. If all or a portion of stone masonry guardwall has a deficient height based upon the Severity Description Charts, that is, at worst, within the fair category, do not raise it. (Other work besides raising the barrier can be specified.)

2. If a portion of a stone masonry guardwall has a deficiency in height based upon the Severity Description Charts, considered "poor" (assumed typically to be less than 18-in) write a work order to raise the poor segment to the height of the adjacent barrier with a non-poor height.

3. If the entire stone masonry guardwall is in poor condition due to height based upon the Severity Description Charts– write a work order to raise the entire segment to its design height (assumed typically to be 24-in).

For aesthetic barrier systems used on many park roads and parkways, there is not a sufficient bid history database for estimating costs to repair or replace individual elements of the system, such as posts or rail. Usually repair of an aesthetic barrier system, such as steel-backed timber guardrail consists of removing and resetting the post or rail section or raising the guardrail to meet standard height requirements.

Barrier Replacement/Reconstruction

If the risk analysis, including the application of asset management roadway categories, indicates the barrier poses an unacceptable safety risk, the first step should be an analysis to determine if there are mitigating measures that can be applied to reduce the risk to an acceptable level without the need to reconstruct the barrier. A second step is to determine if the barrier is needed. If it is practical to eliminate the shielded hazard (by removal, relocation or redesign) removal of the barrier should be considered. However, if the shielded hazard cannot be eliminated or if it is determined inappropriate to remove the barrier (e.g., it is historically significant and/or contributes to the historical or aesthetic significance of the associated road, district or landscape), reconstruction or replacement of the barrier to meet current criteria for crashworthiness may be the appropriate recommended treatment.

The typical reconstruction option used by the NPS for stone masonry guardwalls is to document then dismantle the existing barrier, construct a concrete core and build a stone masonry veneer around the concrete core using the original wall materials and using stone masonry designs that are compatible with the historic road, district or landscape. A number of concrete core stone masonry barrier types have been designed for use in national parks, including 18-in, 22-in, 24-in and 27-in barriers; however, not all have been crash tested or otherwise determined to meet current criteria for crashworthiness.

WORK ORDERS

Work order preparation is essentially determining and documenting the repair actions needed to correct the deficiencies observed during the condition assessment. Barriers are relatively simple structures so this determination can be made by trained inspectors. Keep in mind that this is not a design environment and that more rigorous analysis (if needed) may change the work that is actually performed. The intent of this effort is to prepare a credible estimate of deferred maintenance that may or may not be directly actionable. Simple repairs and/or those that require no compliance with environmental policies (which may be a large percentage of the work orders) can probably be executed without modification.

Once a repair strategy is determined, a cost must be developed for the proposed action. Work orders will be classified as being either deferred maintenance or capital improvement. This classification is based on the type of work recommended, as defined below.

Definition: *Deferred Maintenance* can be classified as repair or replace in kind. Work done to the barrier does not include any upgrading.

Definition: *Capital Improvement* can be classified as upgrading existing barrier. Typically the upgrade will be from a non-crashworthy to a crashworthy device. Other examples of capital improvements would be the addition of a curb to improve drainage or the inclusion of any countermeasure.

There are four types of work:

- No Action
- Monitor
- Repair
- Replace

"No Action" – if risk is low (based on the GIP risk score), a barrier that does not meet current crashworthy performance standards may be acceptable to remain until changes in risk factors would require upgrading.

"Monitor" – if risk is low (based on the GIP risk score), a barrier that does not meet current crashworthy performance standards may be acceptable to remain until changes in risk factors would require upgrading, however, if conditions exist that the park should monitor (e.g., erosion), then "monitor" can be selected as a recommended action.

"Repair" – considered when a barrier damaged by impact deteriorated due to age/weathering and the barrier is functionally sound in a low risk environment. The goal is to bring the barrier back to its "new" condition.

"Replacement/Reconstruction" – when a barrier poses an unacceptable safety risk:

1. If the risk score is less than 3 points above the risk threshold, determine if countermeasures can reduce risk so the barrier can be repaired.
2. Determine if the barrier is warranted and either shielded hazard or barrier itself can be removed (only when barrier NOT considered historically/culturally significant)

For all barrier repair/replace/reconstruction recommendations, the NPS will vet the recommendations through a project selection, planning and design process, including compliance with:

National Historic Preservation Act (NHPA)
National Environmental Policy Act (NEPA)

Aesthetic barriers are commensurate with an approved crashworthy design for the specific conditions at the barrier site as the basis for selecting a crashworthy structure. Types of barriers are generally selected based on emulating the existing types of barriers in the park.