

GRSM

GIP Report

NPS Guardwall/Rail Inventory Program
Great Smoky Mountains 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

Great Smoky Mountains National Park in North Carolina and Tennessee



Great Smoky Mountains National Park

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
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Introduction



Great Smoky Mountains 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



Great Smoky Mountains National Park

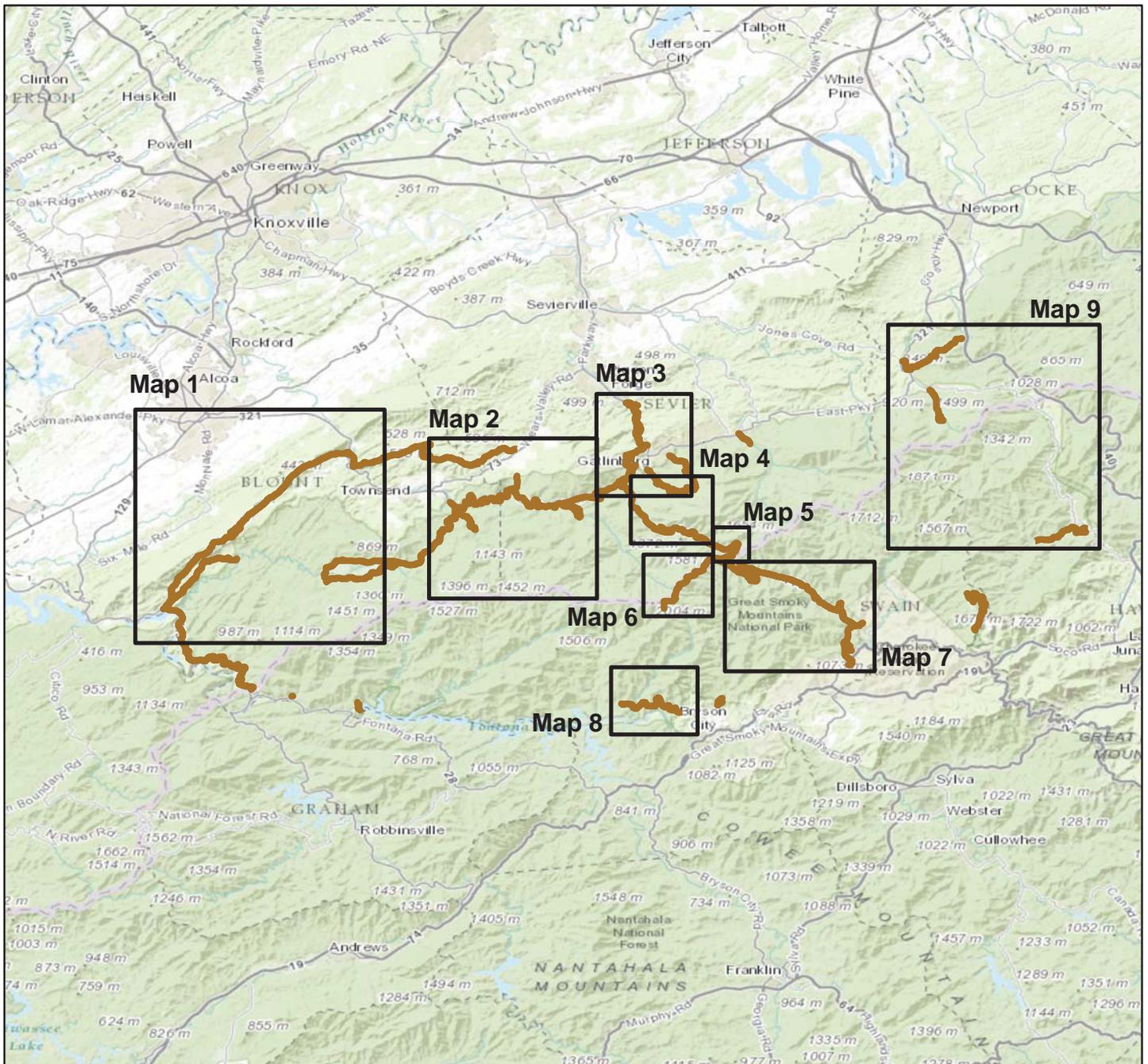


**Federal Lands Highway
Road Inventory Program**

Great Smoky Mountains 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

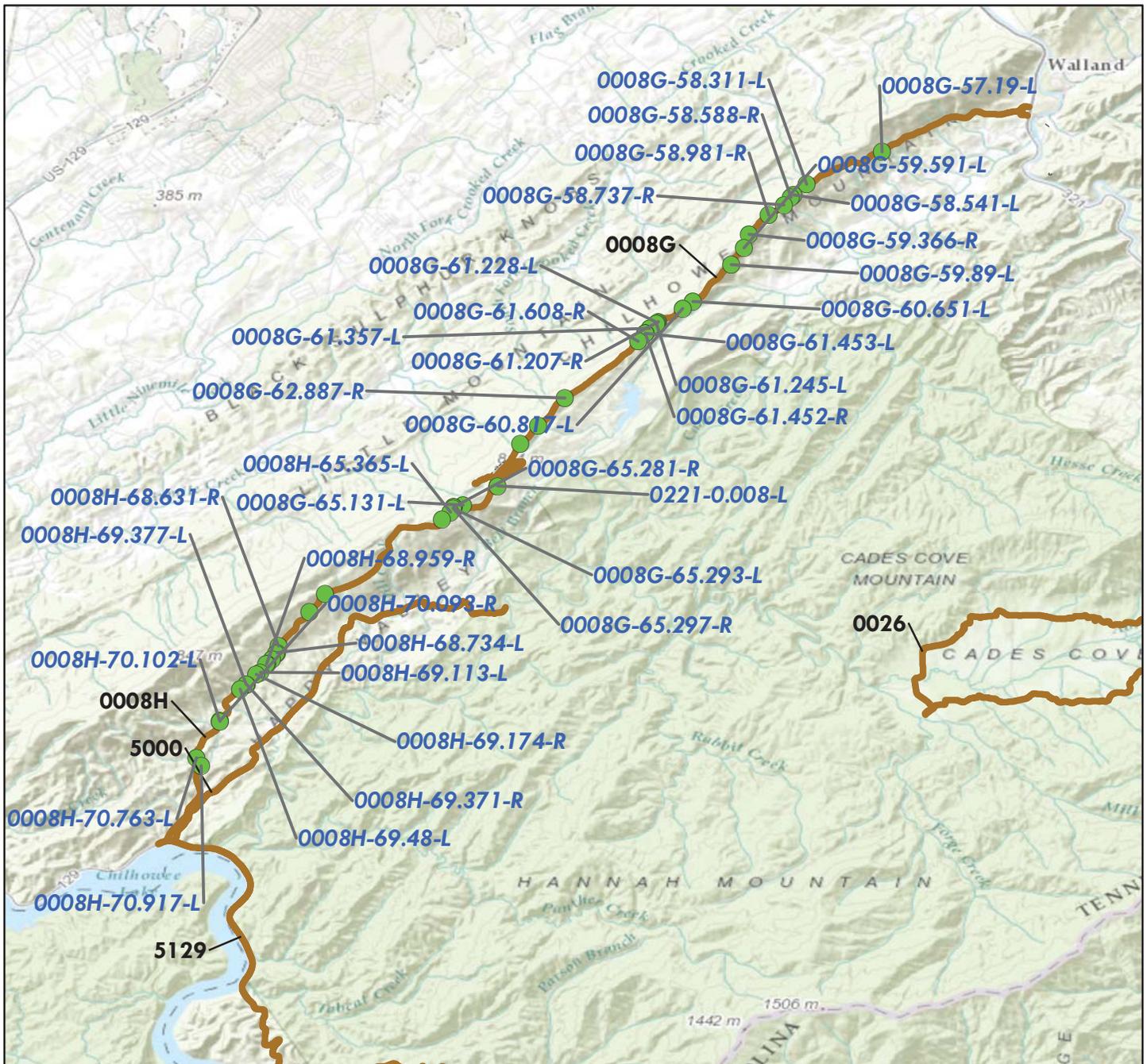
 RIP Collected Routes



Great Smoky Mountains 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)

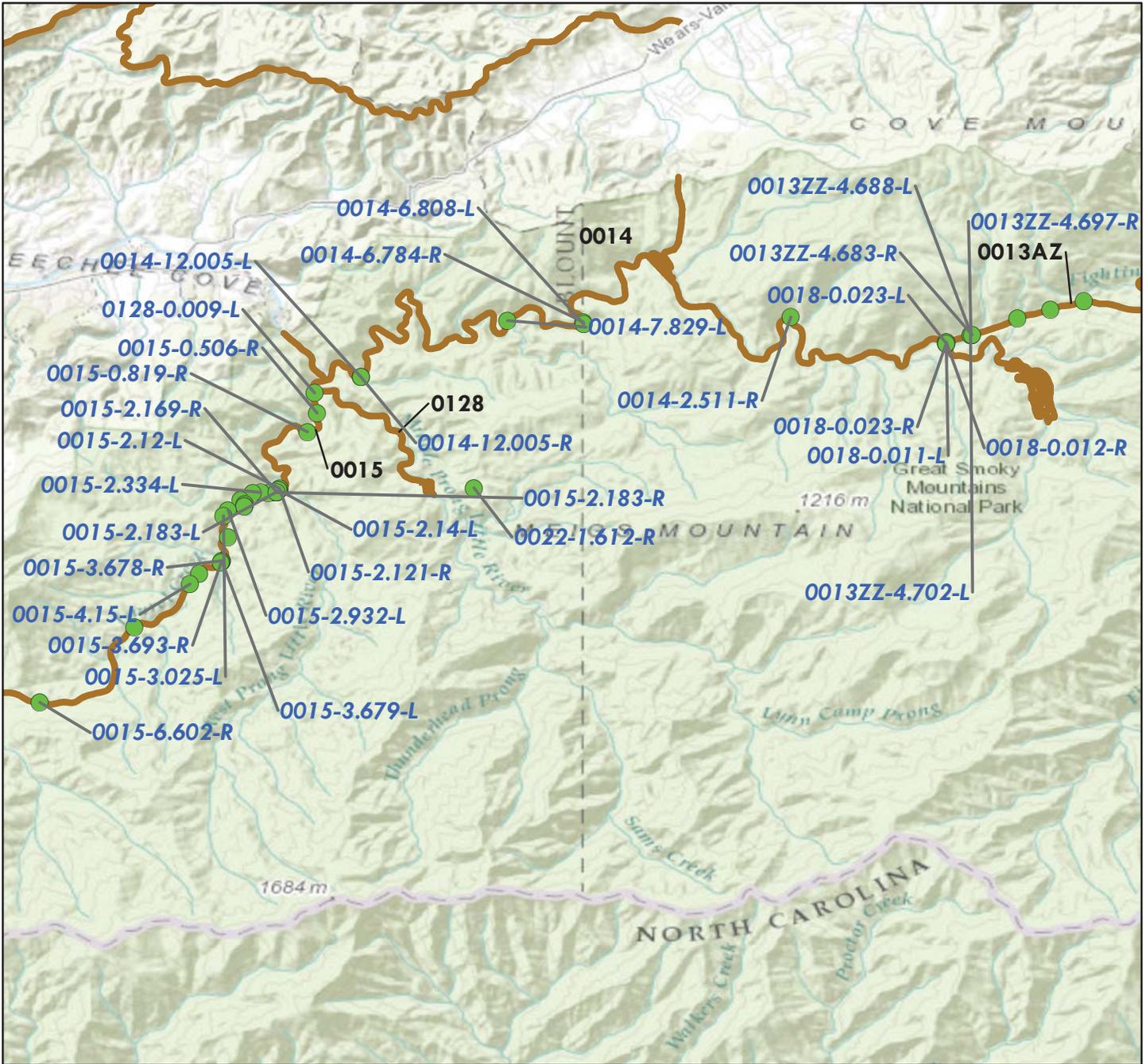
— RIP Collected Routes



Great Smoky Mountains National Park

BARRIER LOCATION MAP

Map 2



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)

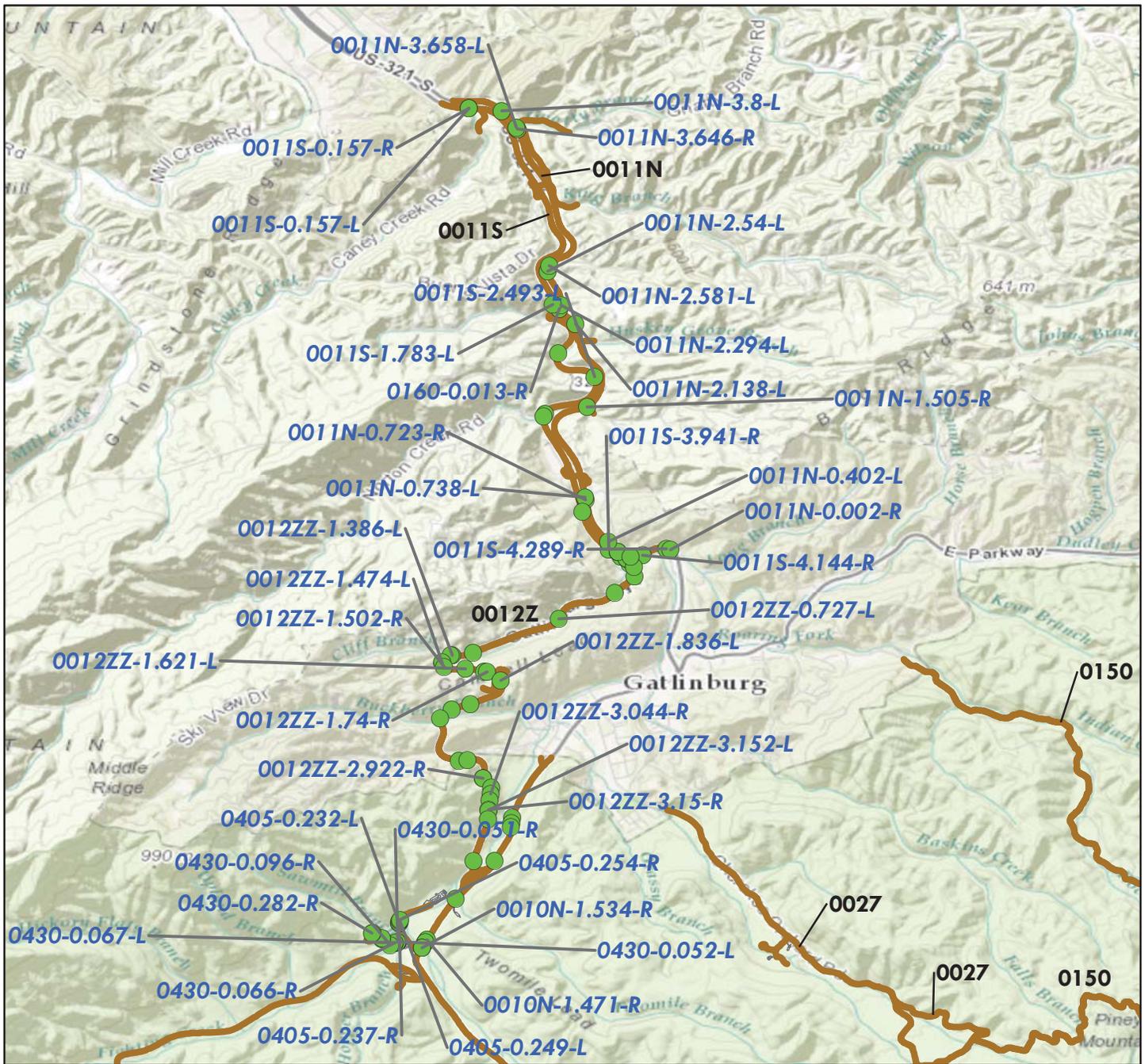
— RIP Collected Routes



Great Smoky Mountains 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 (Not all labeled)

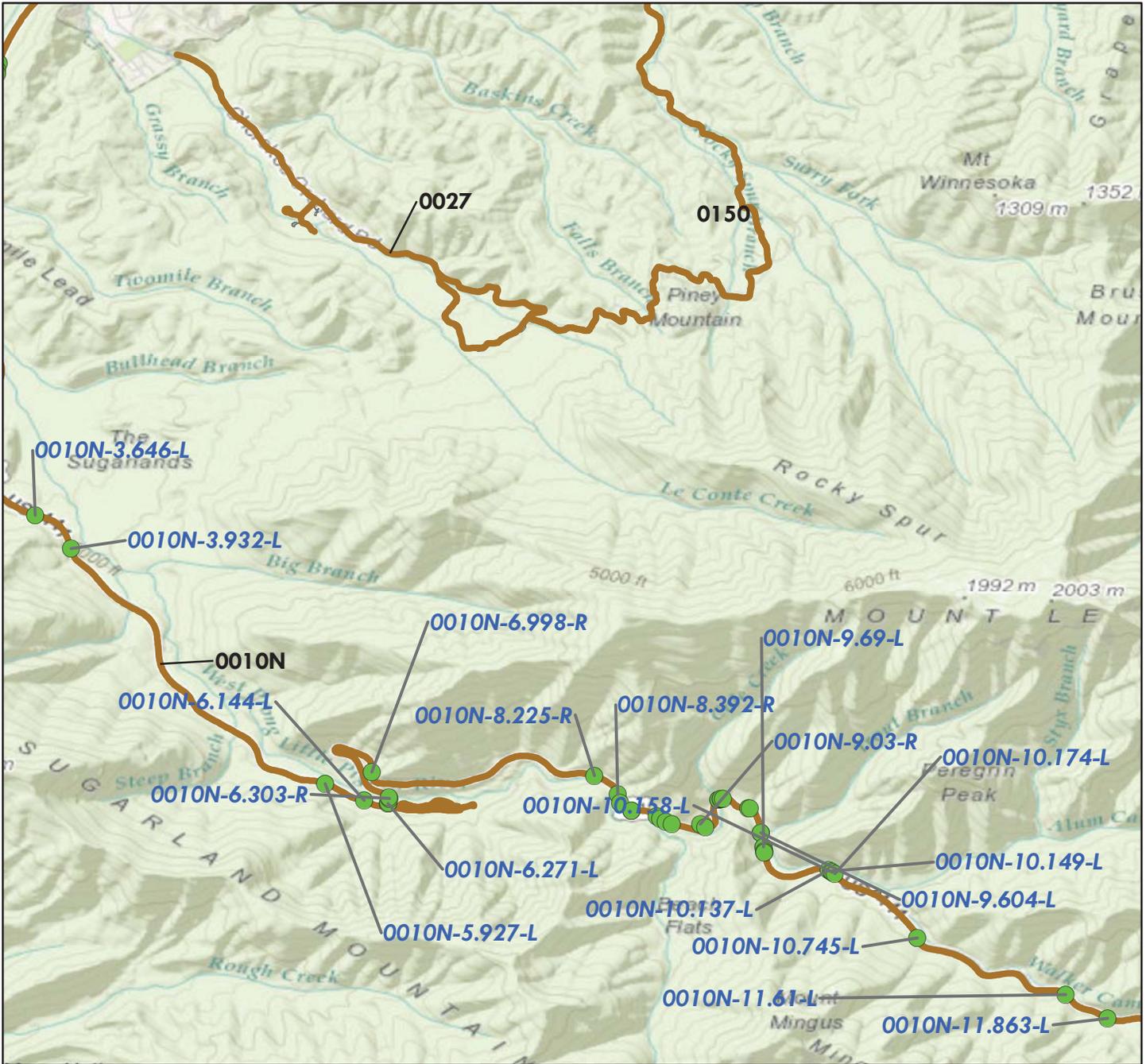
— RIP Collected Routes



Great Smoky Mountains 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 (Not all labeled)

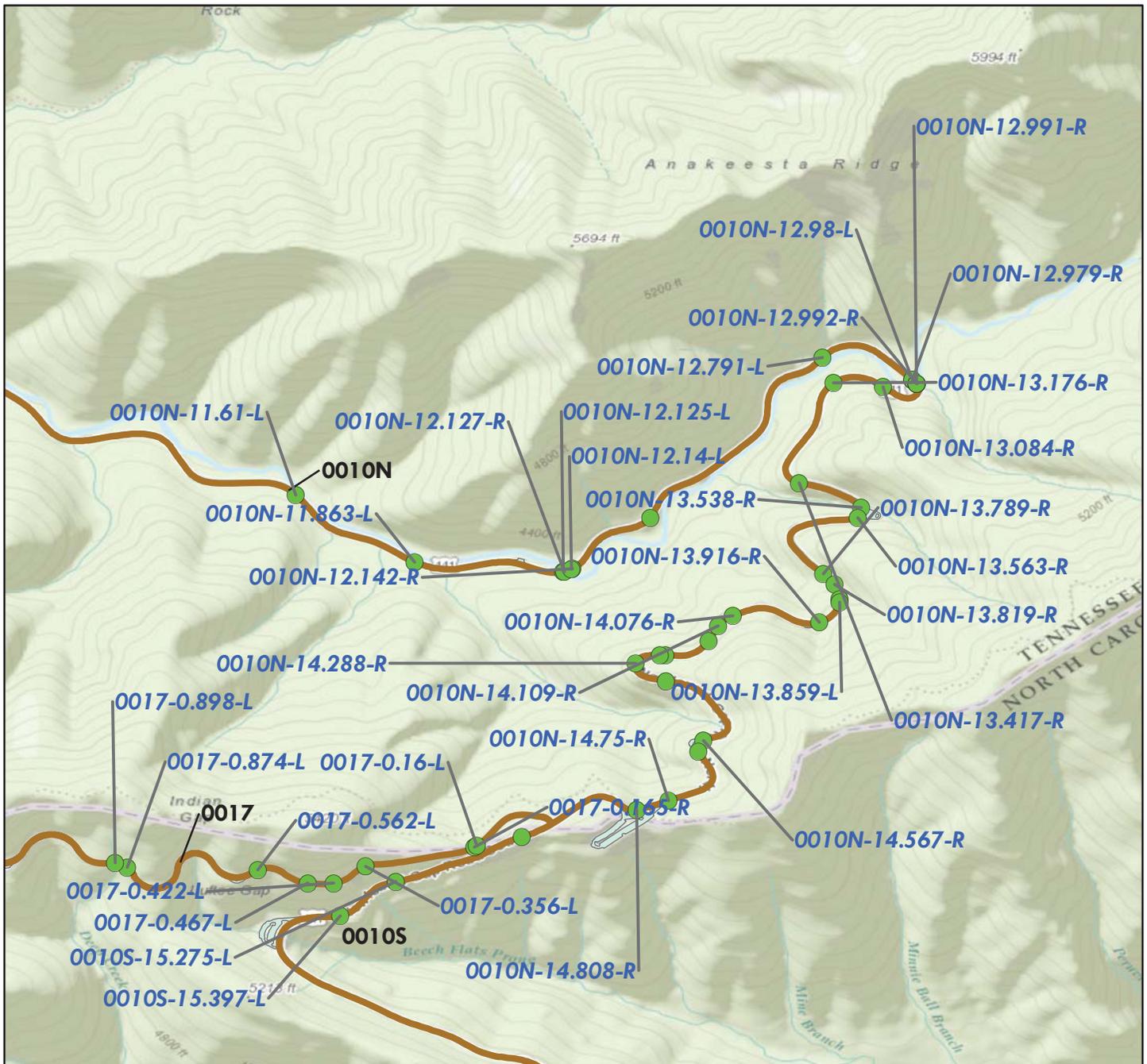
— RIP Collected Routes



Great Smoky Mountains 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 (Not all labeled)

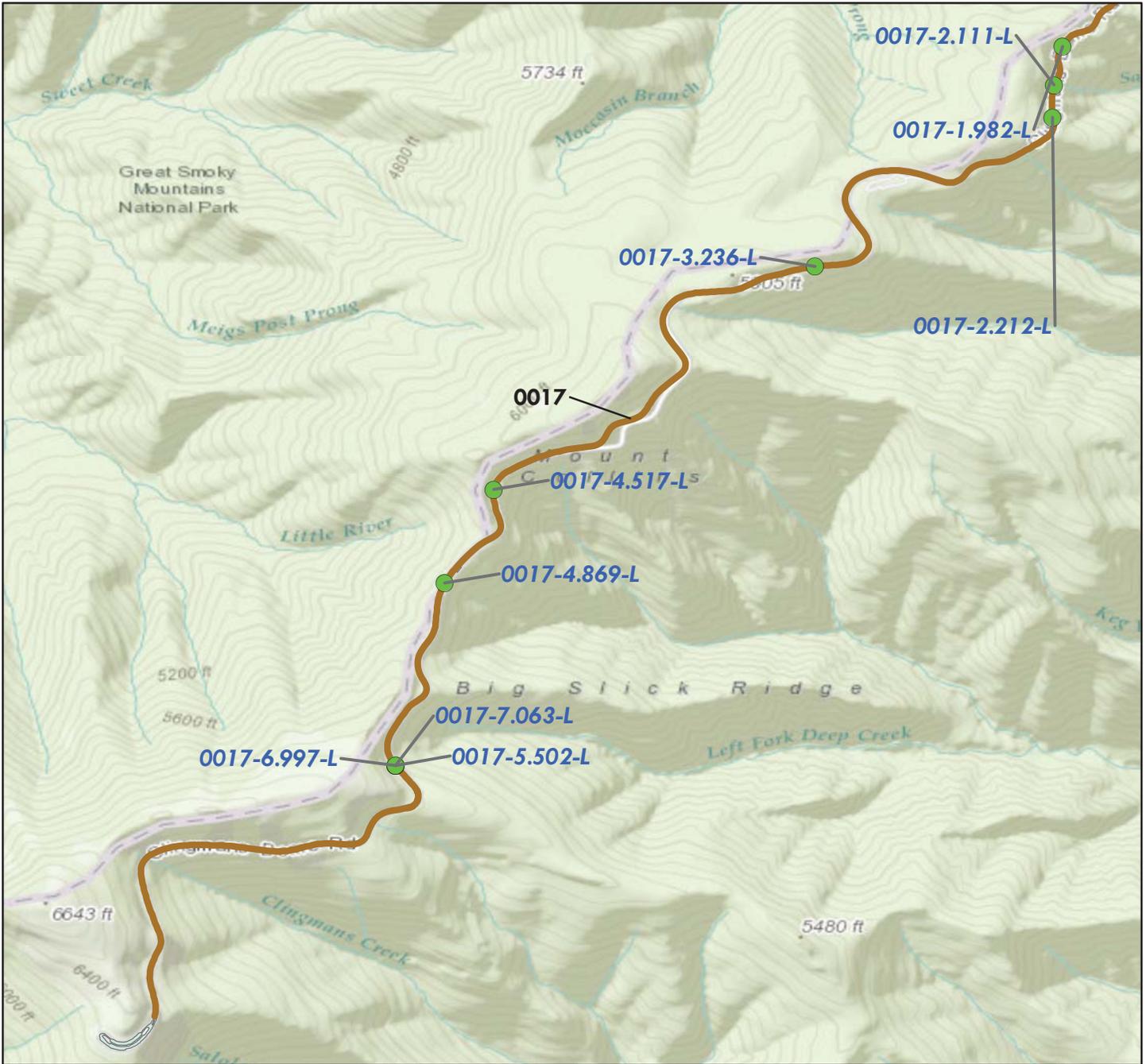
— RIP Collected Routes



Great Smoky Mountains National Park

BARRIER LOCATION MAP

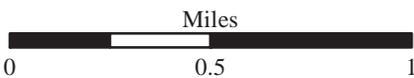
Map 6



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**

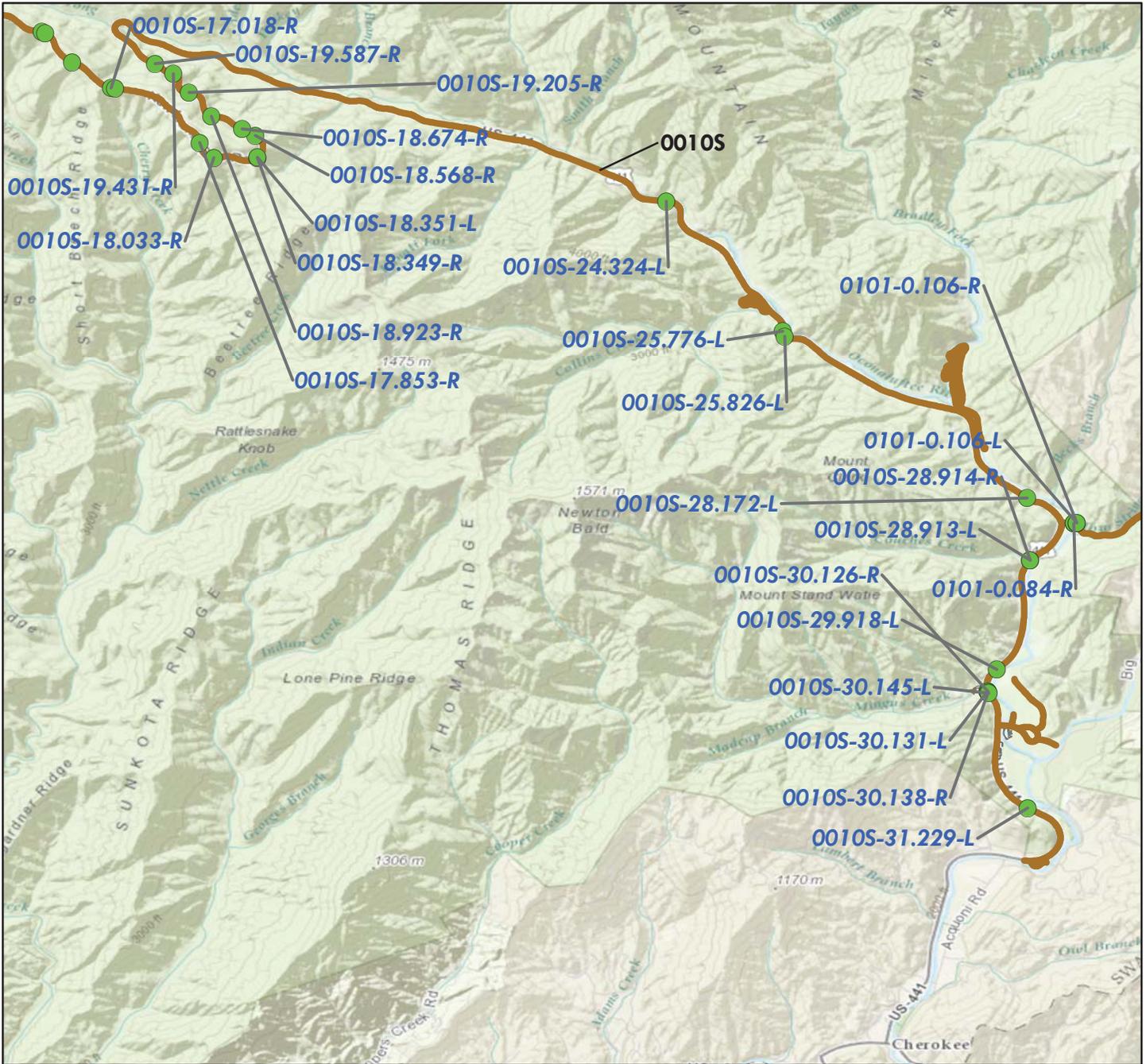
— **RIP Collected Routes**



Great Smoky Mountains 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 (Not all labeled)

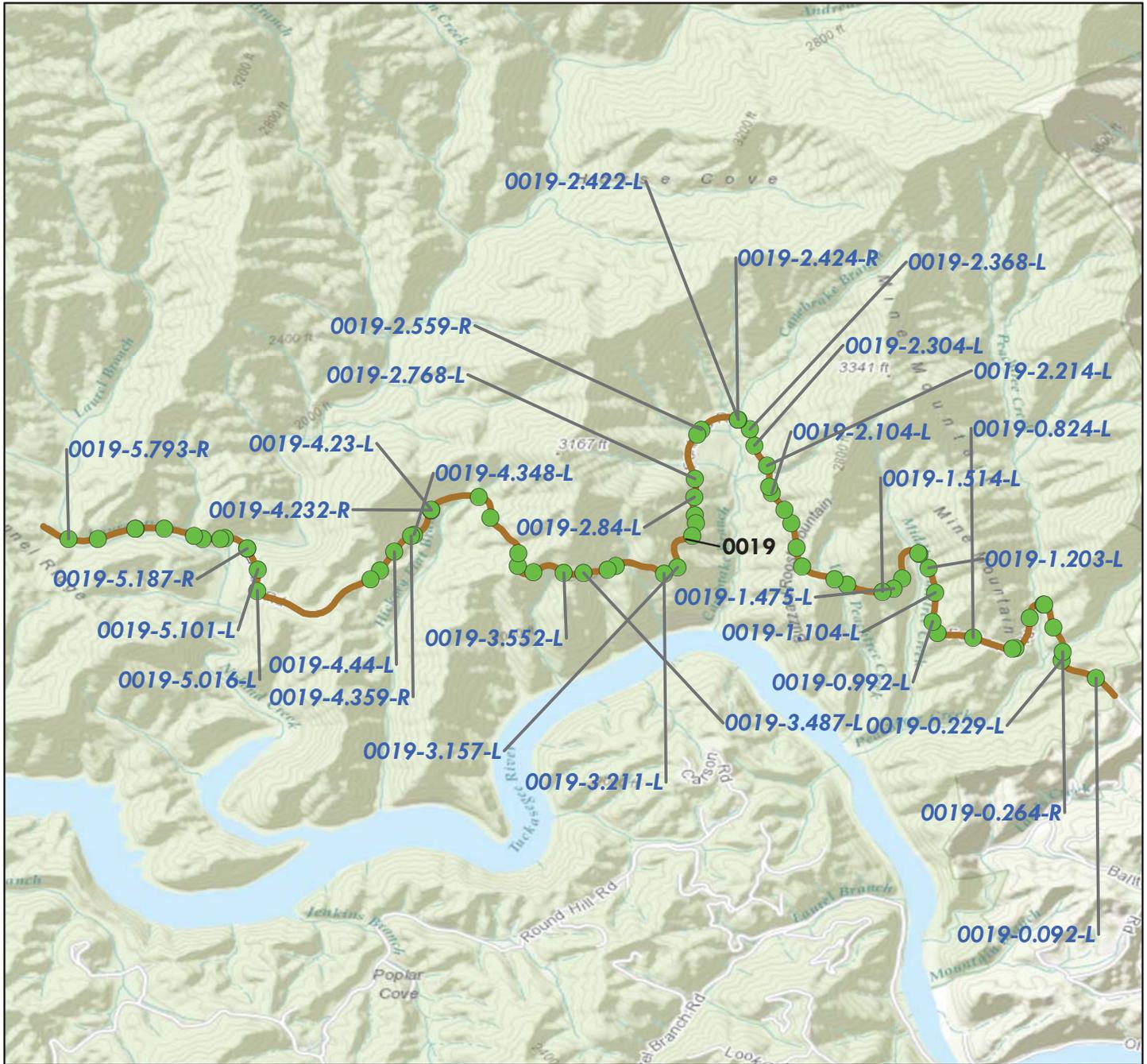
— RIP Collected Routes



Great Smoky Mountains National Park

BARRIER LOCATION MAP

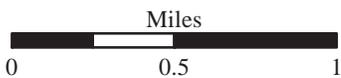
Map 8



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 (Not all labeled)

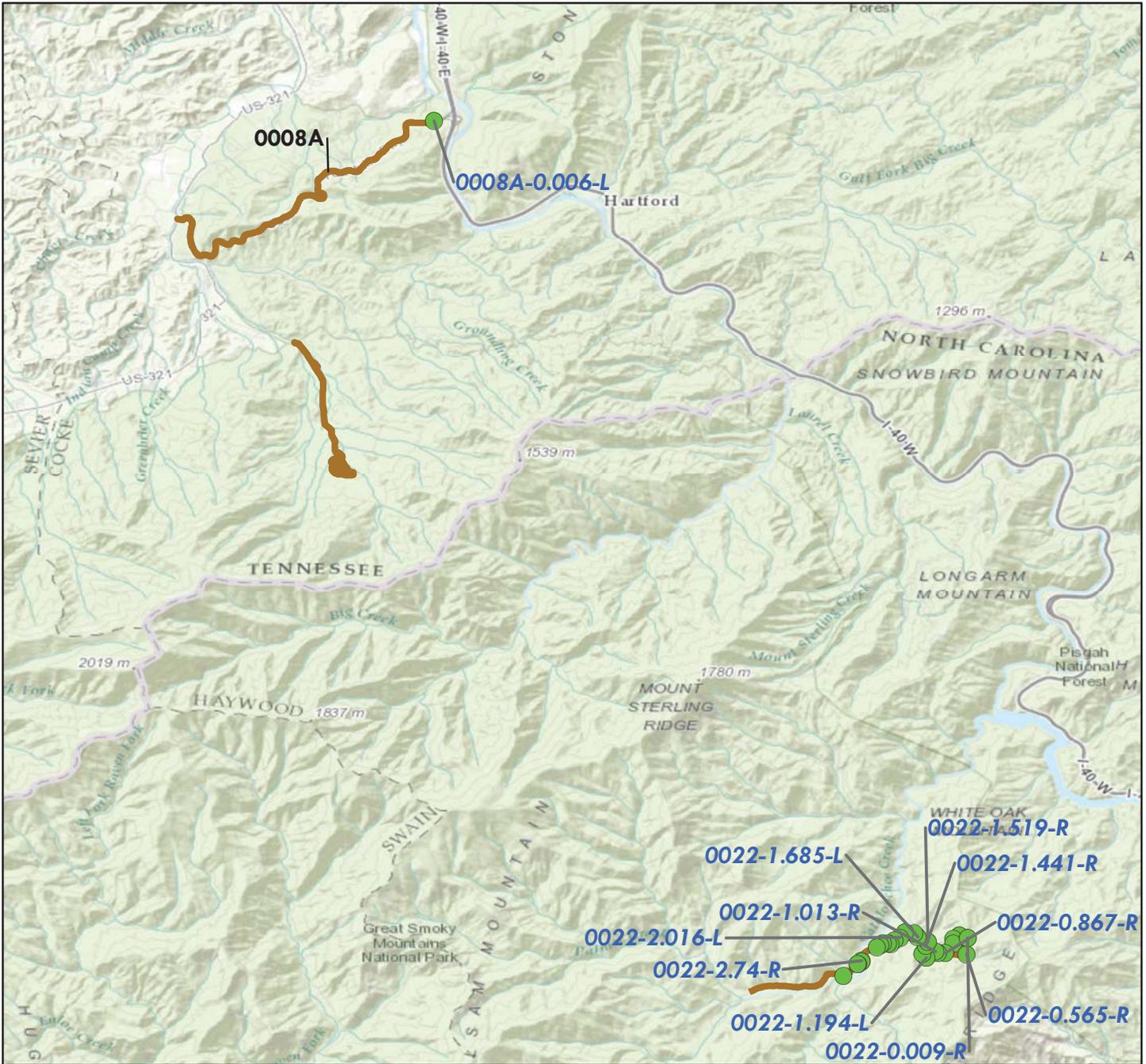
— RIP Collected Routes



Great Smoky Mountains National Park

BARRIER LOCATION MAP

Map 9



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



Tier 1 Park Barrier Overview



Great Smoky Mountains National Park



**Federal Lands Highway
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Parkwide Summary: Great Smoky Mountains National Park

Initial barrier inspections were conducted at Great Smoky Mountains 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 Great Smoky Mountains National Park in 2011 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, 402 barriers were inventoried on the routes listed below.

Table 1: Number of Barriers by Route

Route Number	Route Name	No. of Barriers
0008A	FOOTHILLS PARKWAY SECTION 8A	1
0008G	FOOTHILLS PARKWAY SECTION 8G	27
0008H	FOOTHILLS PARKWAY SECTION 8H	19
0010N	NEWFOUND GAP ROAD NORTH	83
0010S	NEWFOUND GAP ROAD SOUTH	30
0011N	GATLINBURG SPUR ROAD (NORTHBOUND)	13
0011S	GATLINBURG SPUR ROAD (SOUTHBOUND)	12
0012ZZ	GATLINBURG BYPASS ROAD AND RAMPS	34
0013ZZ	FIGHTING CREEK GAP ROAD AND SPUR	7
0014	LITTLE RIVER GORGE ROAD	6
0015	LAUREL CREEK ROAD	29
0017	CLINGMANS DOME ACCESS ROAD	17
0018	ELKMONT ROAD	4
0019	LAKEVIEW DRIVE EAST	70
0022	CATALOOCHEE ENTRANCE ROAD	29
0101	TOW STRING ROAD	4
0128	TREMONT ROAD	1
0160	HUSKEY GROVE ROAD	1
0163AZ	CAMPBELL LEAD ROAD	1
0221	LOOK ROCK MAINTENANCE ACCESS	1
0405	SUGARLANDS HEADQUARTERS ROAD	4
0430	SUGARLANDS RESIDENCE ROAD	9

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	387
NON-TRAFFIC	15

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
Steel-Backed Timber With Blockout	26
W-Beam Strong Post	3
Stone Masonry With Concrete Core Wall	3
Other: Rigid Aluminum Two Beams	2
Stone Masonry Crenellated Without Core Wall	42
Steel-Backed Timber Without Blockout	125
Other: Timber Rail On Timber Posts	92
Stone Masonry Without Concrete Core Wall	107
Other: Aluminum Bridge Rail	2

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	205
Monitor	\$0	0
Repair	\$5,661,725	161
Replace	\$1,513,853	36
Totals	\$7,175,578	402

*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	205
\$1 - \$25,000	149
\$25,001 - \$50,000	21
\$50,001 - \$100,000	13
\$100,001 - \$250,000	8
\$250,001 - \$500,000	3
\$500,001 - \$1,000,000	2
\$1,000,001 - \$2,000,000	1
\$2,000,001 - \$3,000,000	0
\$3,000,001 - \$4,000,000	0
Total Number of Barriers	402

*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 269 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



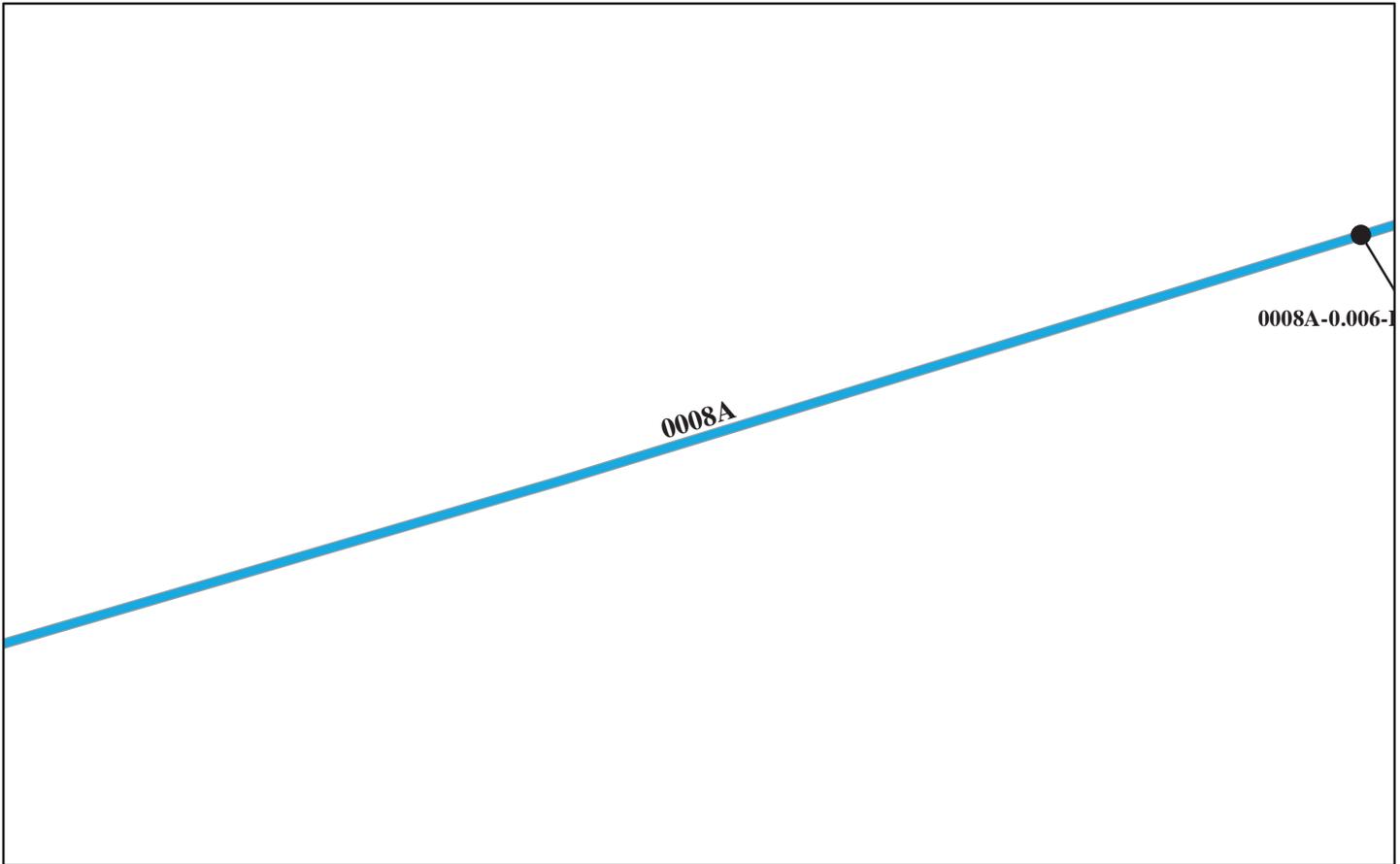
Great Smoky Mountains National Park



**Federal Lands Highway
Road Inventory Program**

Great Smoky Mountains National Park

ROUTE 0008A: FOOTHILLS PARKWAY SECTION 8A



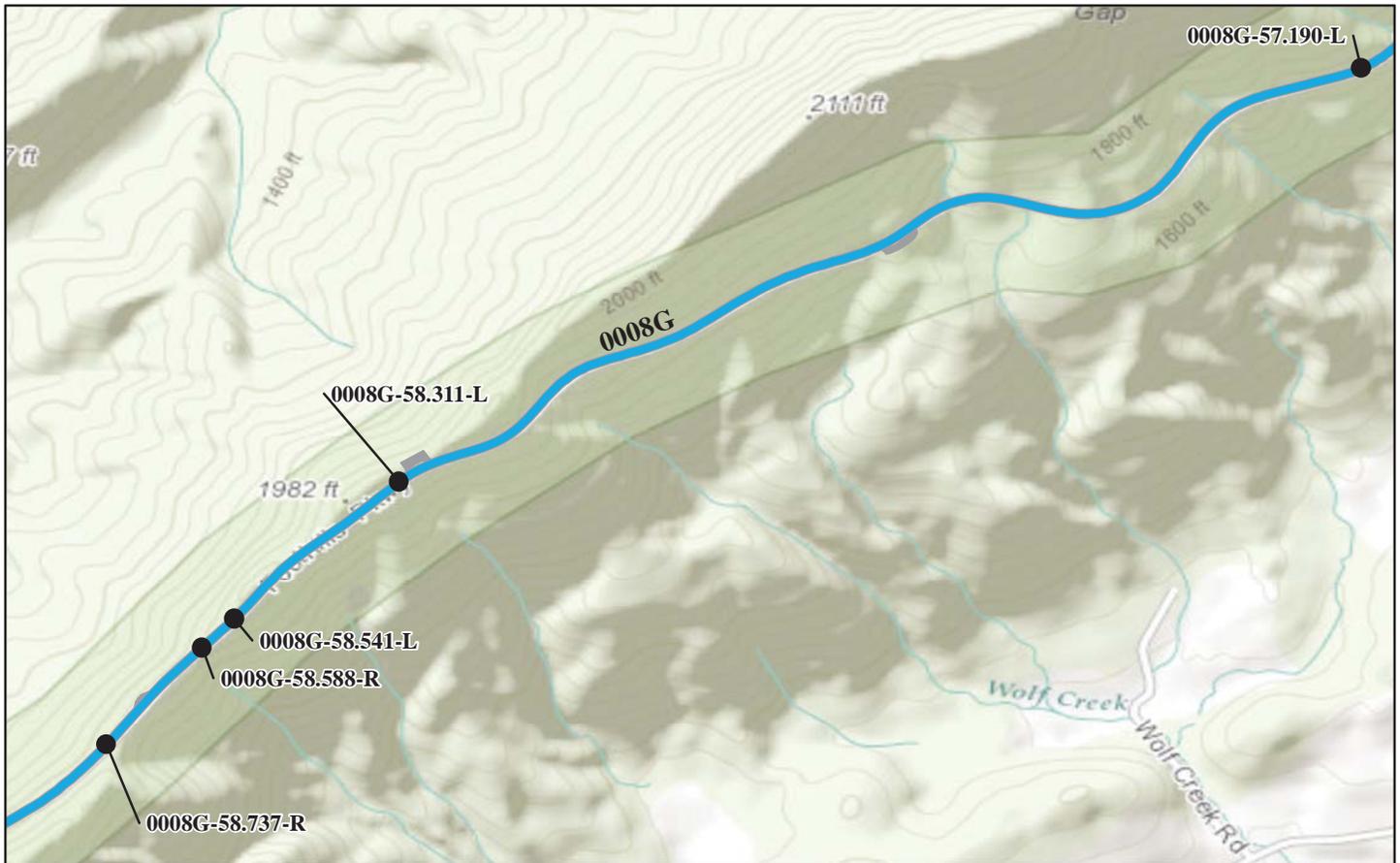
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0008A-0.006-L 9/10/2010	160	W-BEAM STRONG POST	NONE	W-BEAM FLARED 350 COMPLIANT	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G



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	
GRSM-0008G-57.190-L 9/24/2010	595	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$11,413.00
GRSM-0008G-58.311-L 9/24/2010	581	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$2,503.00
GRSM-0008G-58.541-L 9/24/2010	310	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$6,655.00
GRSM-0008G-58.588-R 9/24/2010	344	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$7,029.00
GRSM-0008G-58.737-R 9/24/2010	523	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$10,620.00

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

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G



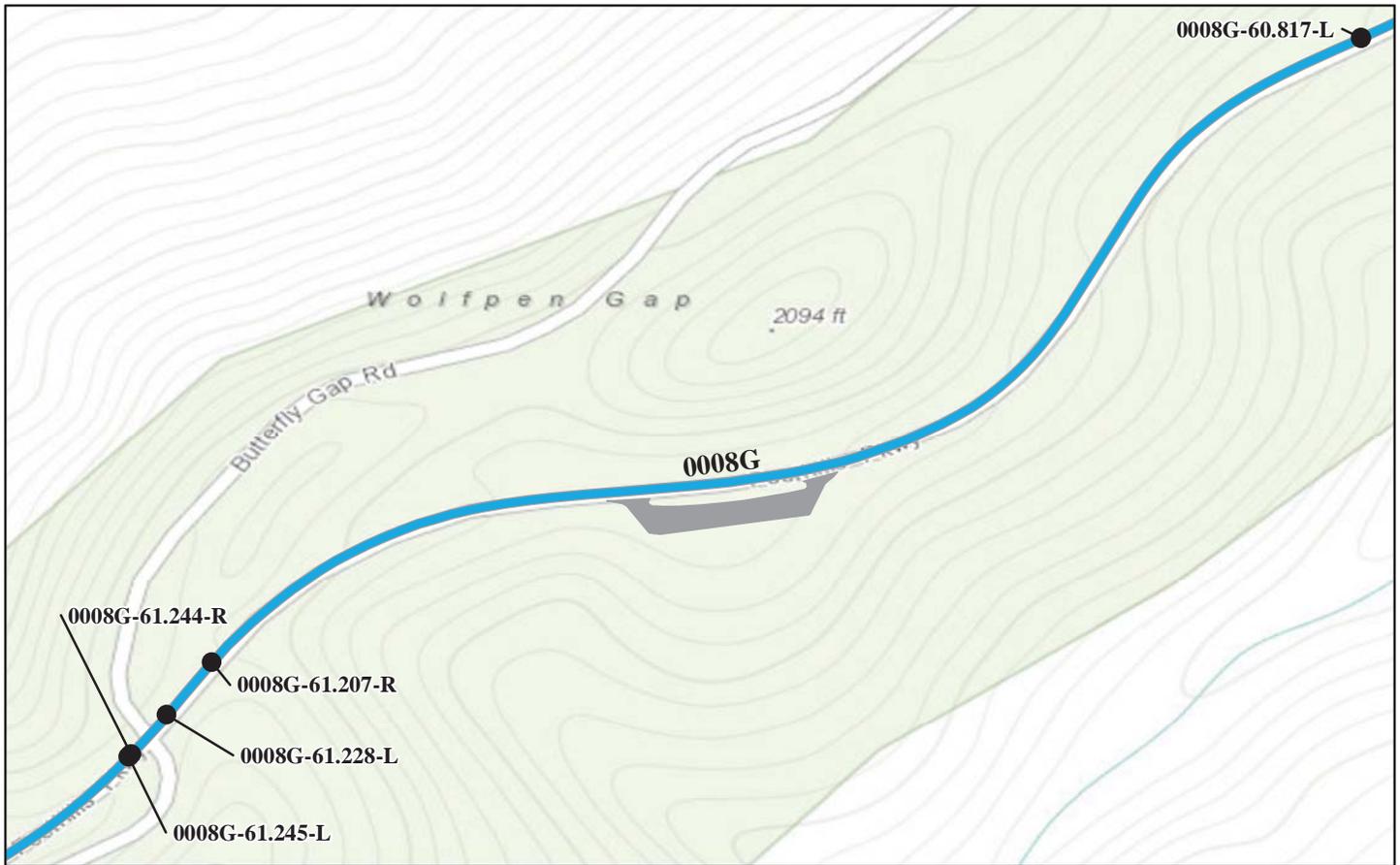
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0008G-58.981-R 9/24/2010	1,223	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$21,566.00
GRSM-0008G-59.366-R 9/24/2010	548	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$9,273.00
GRSM-0008G-59.591-L 9/24/2010	422	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$6,501.00
GRSM-0008G-59.890-L 9/24/2010	278	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0008G-60.651-L 9/24/2010	321	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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G



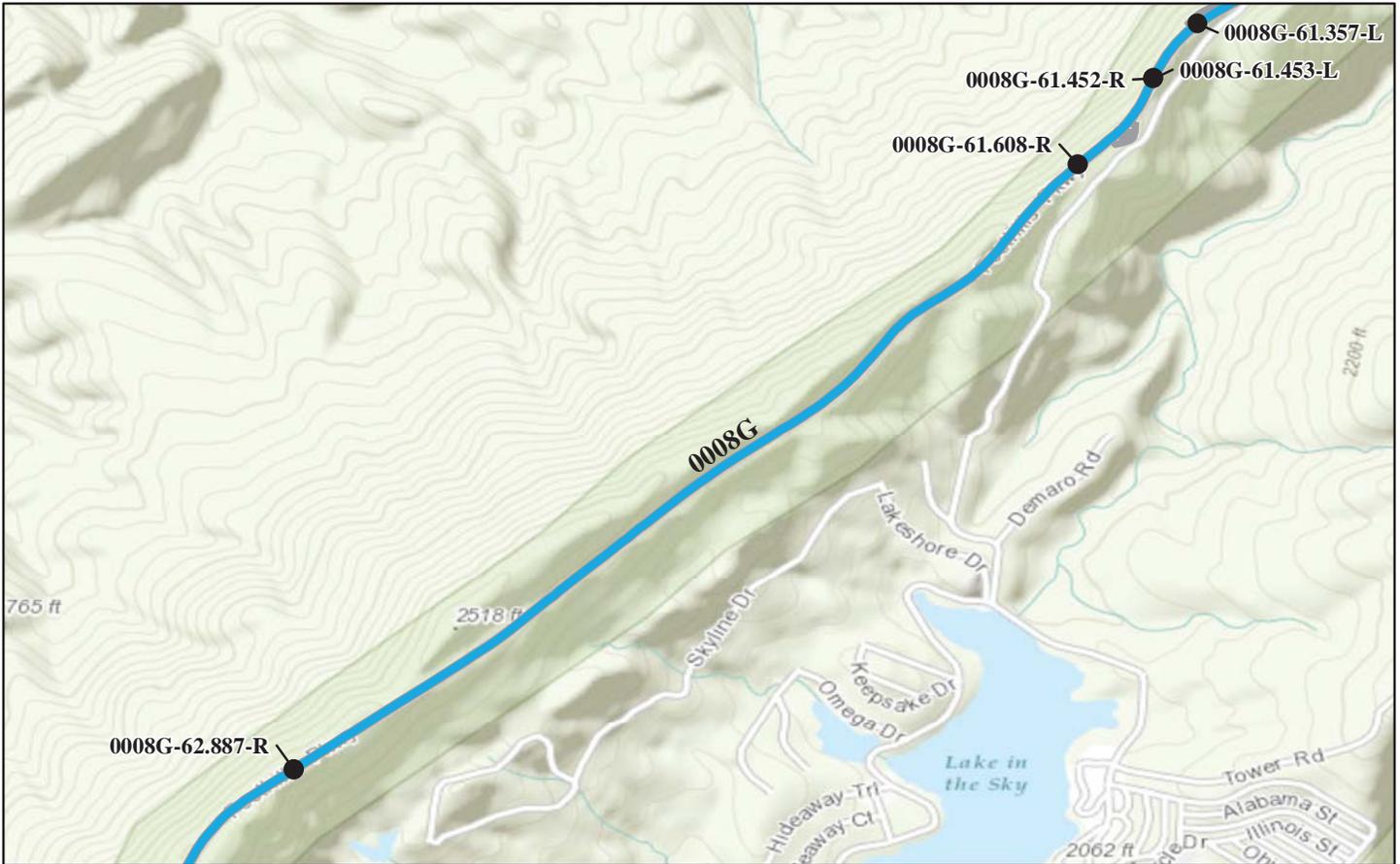
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0008G-60.817-L 9/24/2010	582	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0008G-61.207-R 9/24/2010	166	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	NONE	\$3,449.00
GRSM-0008G-61.228-L 9/24/2010	63	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	NONE	\$2,206.00
GRSM-0008G-61.244-R 9/24/2010	273	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	NONE	SBT/LOG FLARED	\$6,248.00
GRSM-0008G-61.245-L 9/24/2010	177	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	NONE	\$3,570.00

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

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

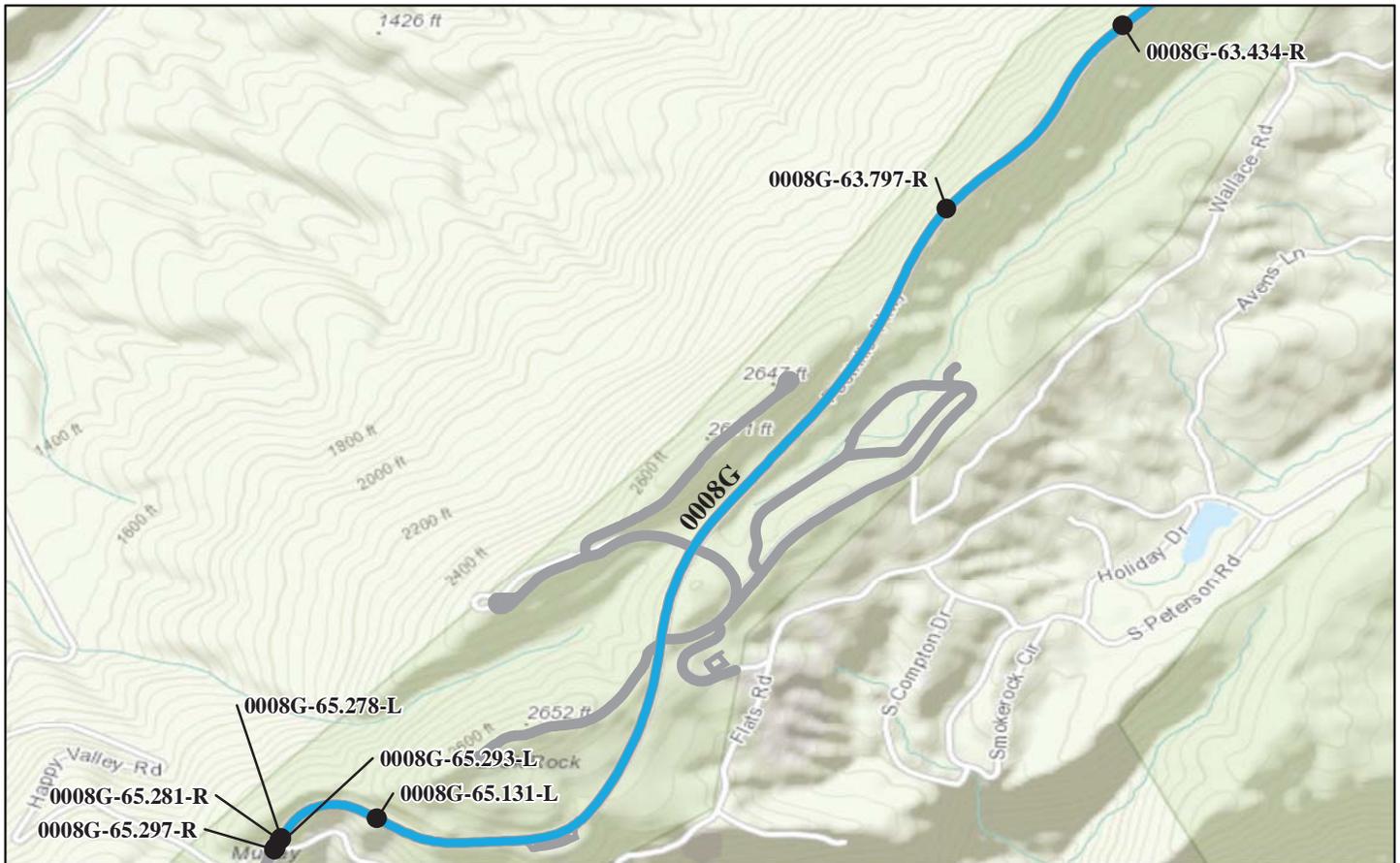


Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0008G-61.357-L 9/24/2010	330	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$3,273.00
GRSM-0008G-61.452-R 9/24/2010	468	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0008G-61.453-L 9/24/2010	270	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$2,833.00
GRSM-0008G-61.608-R 9/24/2010	215	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0008G-62.887-R 9/24/2010	826	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG BURIED	\$15,576.00
*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.					

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G



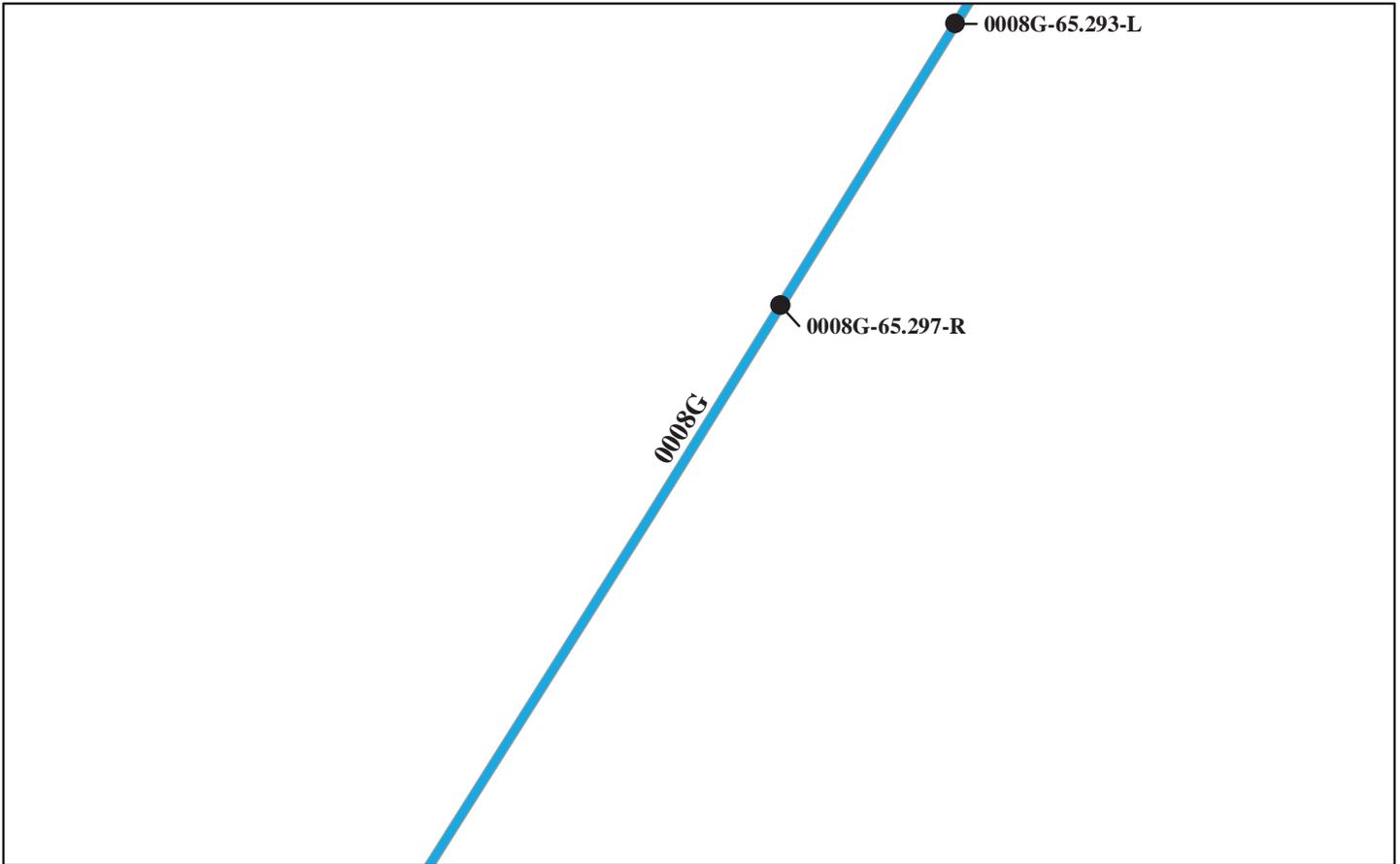
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Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0008G-63.434-R 9/24/2010	310	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0008G-63.797-R 9/24/2010	373	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$7,348.00
GRSM-0008G-65.131-L 9/22/2010	294	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG FLARED	\$3,163.00
GRSM-0008G-65.278-L 9/22/2010	50	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	NONE	\$0.00
GRSM-0008G-65.281-R 9/22/2010	43	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G



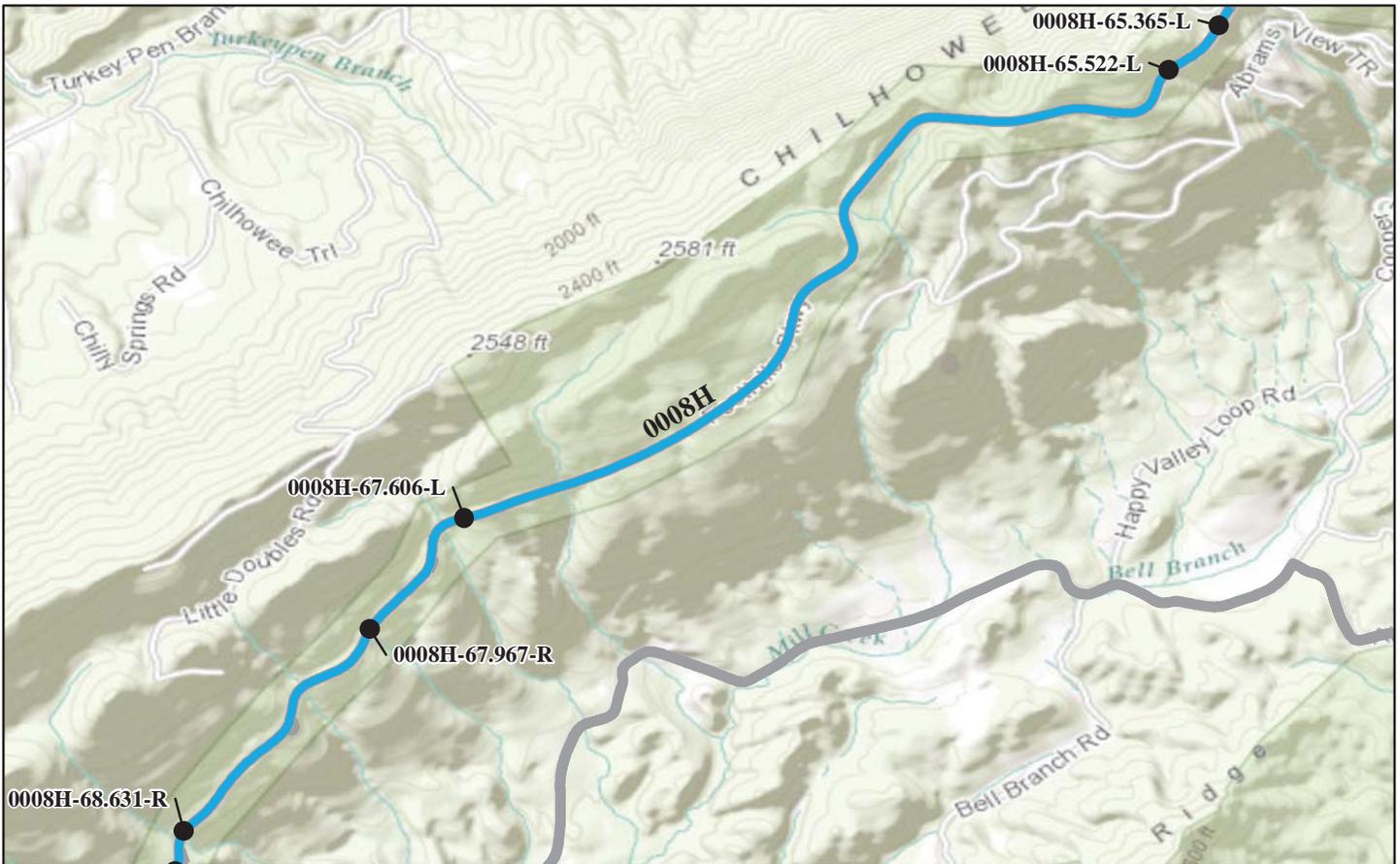
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0008G-65.293-L 9/22/2010	100	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	NONE	SBT/LOG FLARED	\$0.00
GRSM-0008G-65.297-R 9/22/2010	45	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	NONE	SBT/LOG FLARED	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H



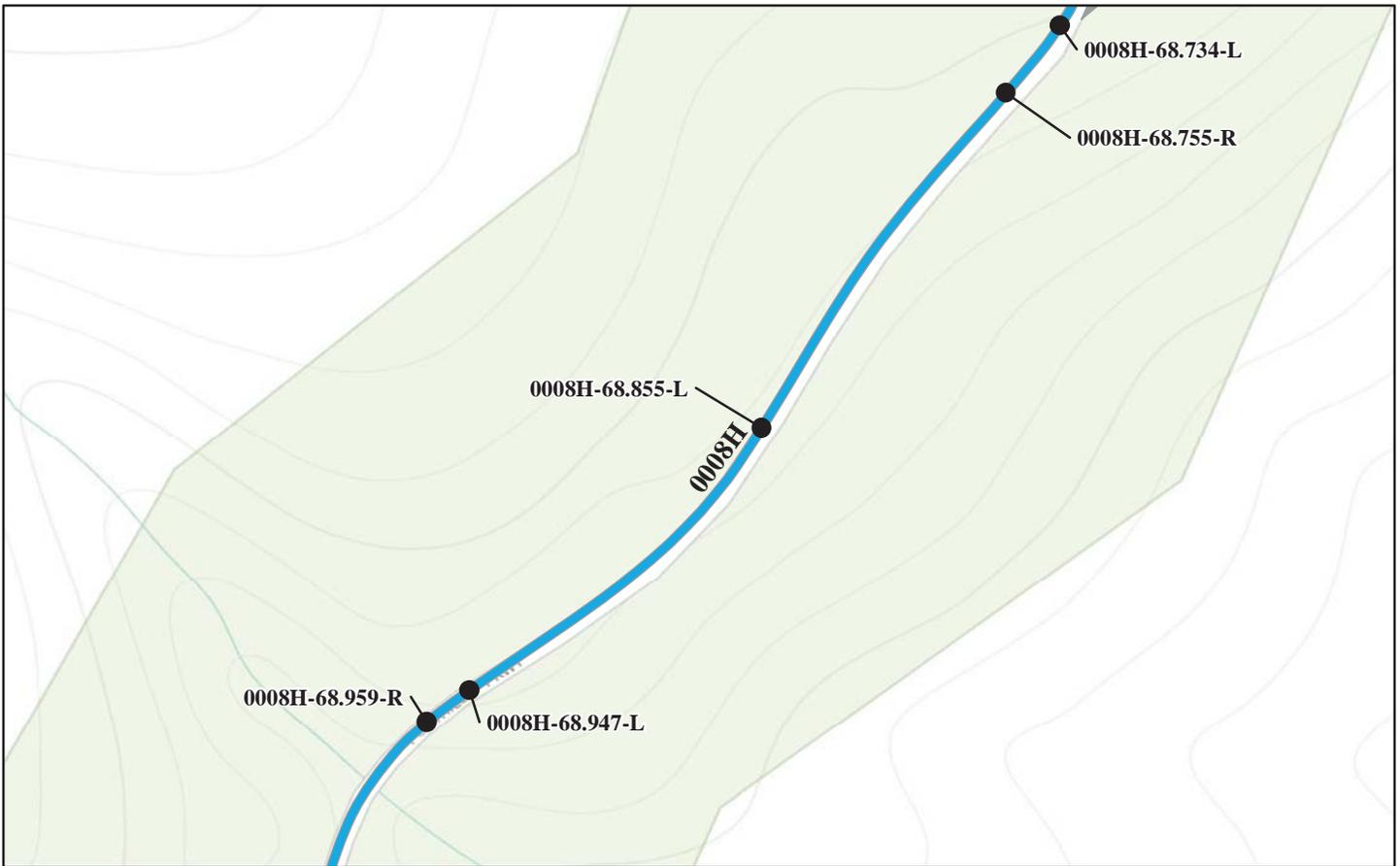
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0008H-65.365-L 9/22/2010	380	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG BURIED	\$7,425.00
GRSM-0008H-65.522-L 9/22/2010	230	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$3,603.00
GRSM-0008H-67.606-L 9/22/2010	608	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0008H-67.967-R 9/22/2010	115	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG FLARED	\$0.00
GRSM-0008H-68.631-R 9/22/2010	210	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG FLARED	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H



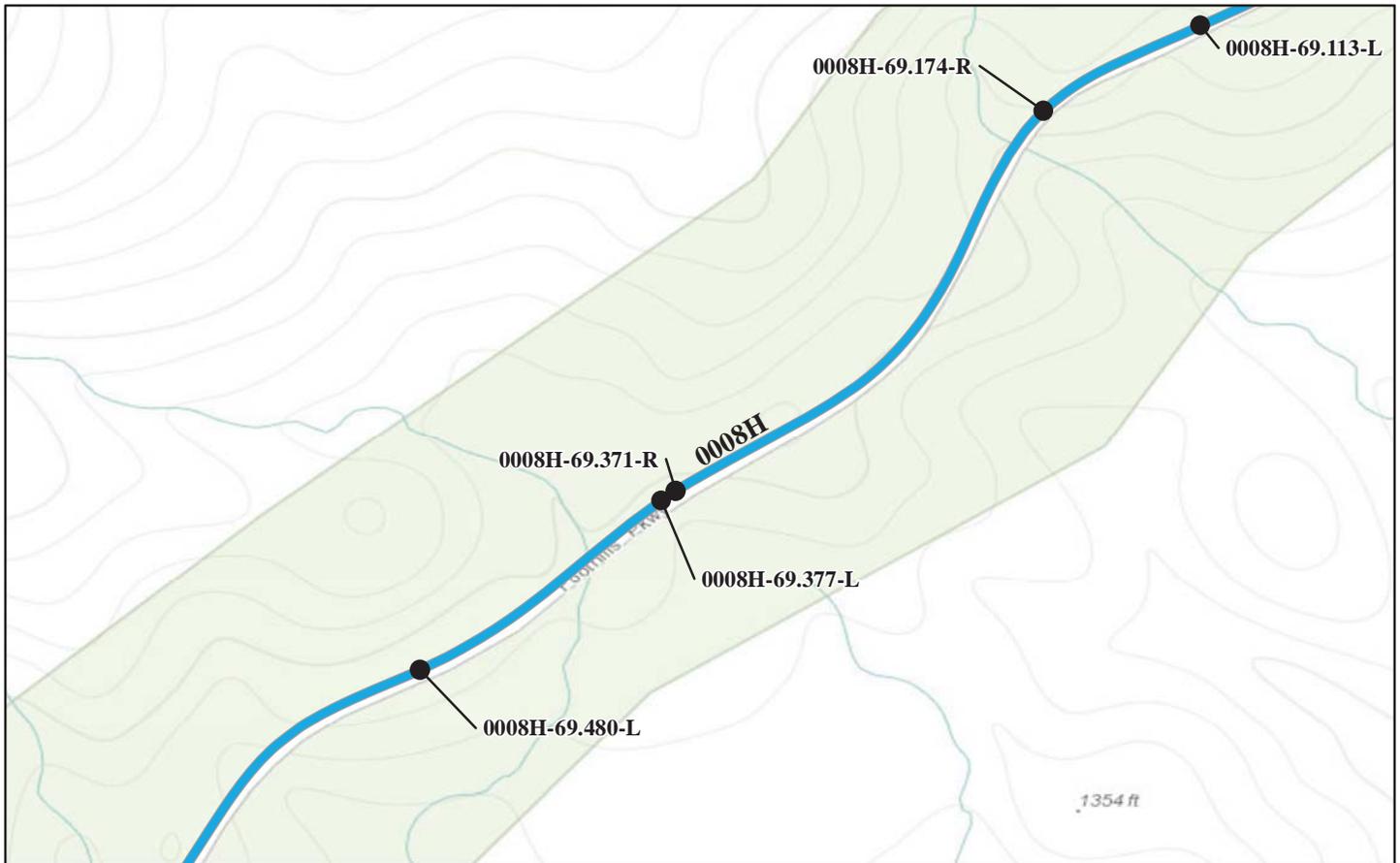
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Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0008H-68.734-L 9/22/2010	472	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0008H-68.755-R 9/22/2010	132	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG FLARED	\$0.00
GRSM-0008H-68.855-L 9/22/2010	379	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG FLARED	\$0.00
GRSM-0008H-68.947-L 9/22/2010	566	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0008H-68.959-R 9/22/2010	202	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG FLARED	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H



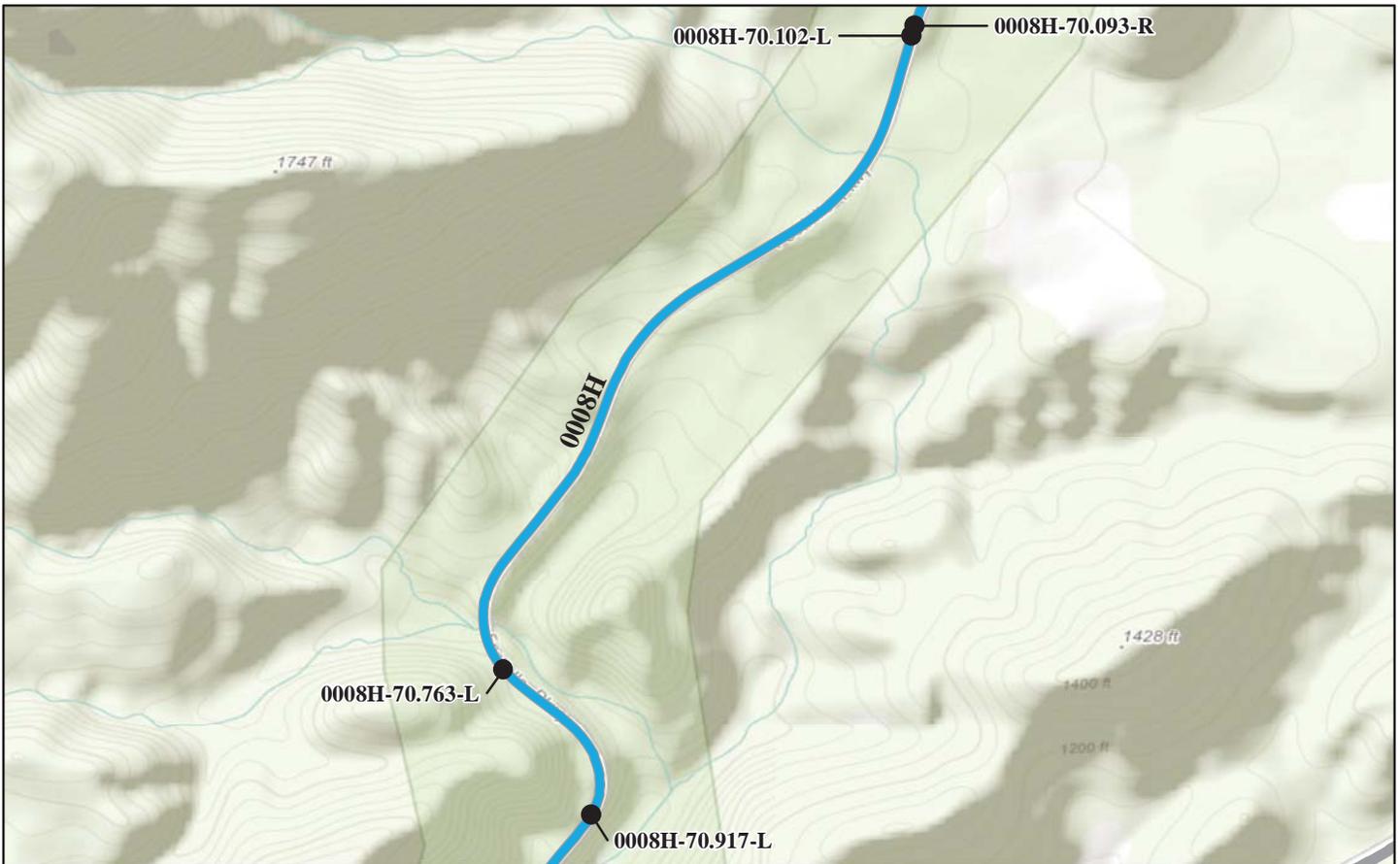
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0008H-69.113-L 9/22/2010	546	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0008H-69.174-R 9/22/2010	147	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$2,503.00
GRSM-0008H-69.371-R 9/22/2010	92	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0008H-69.377-L 9/22/2010	94	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0008H-69.480-L 9/22/2010	539	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG BURIED	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H



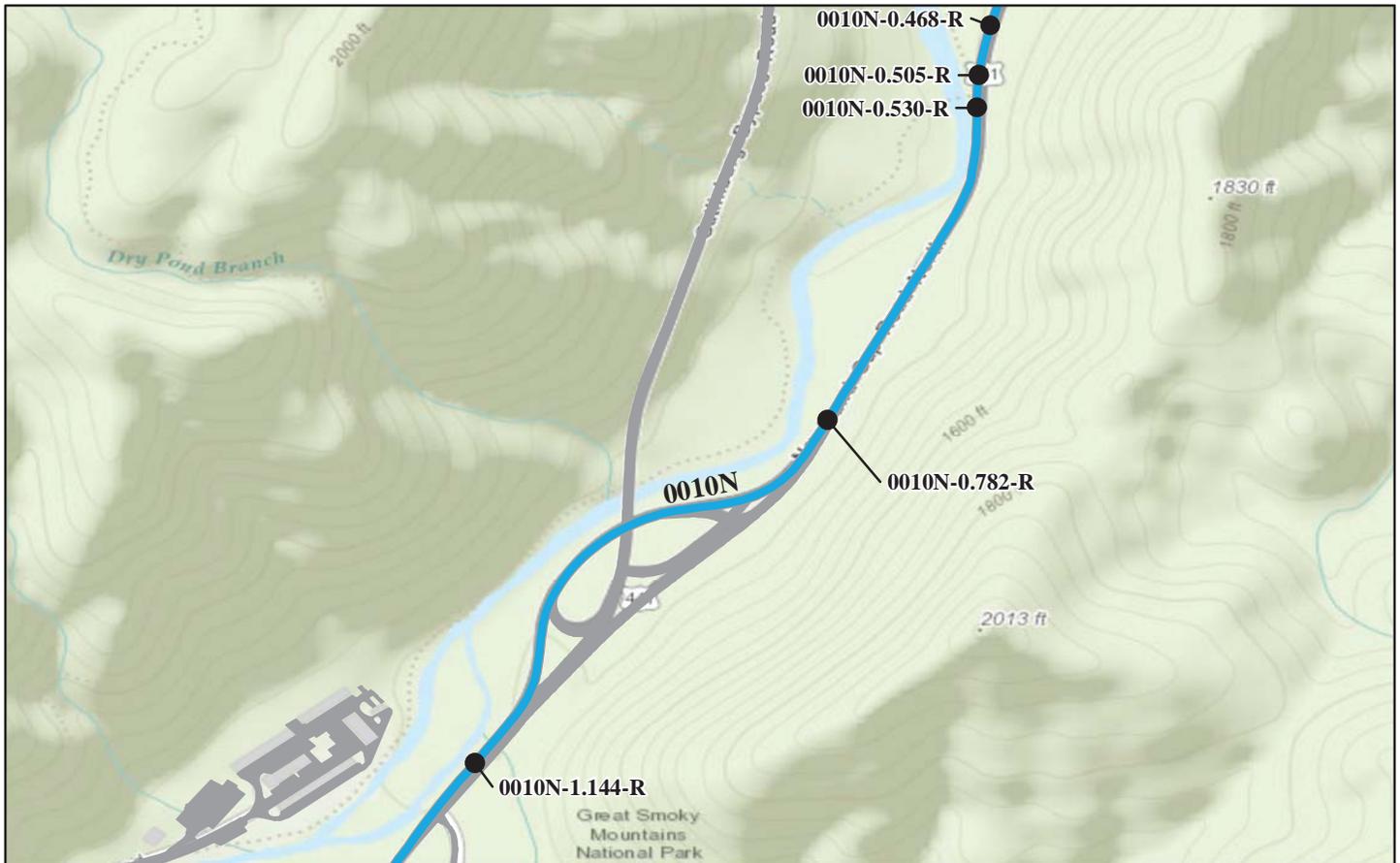
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0008H-70.093-R 9/22/2010	145	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0008H-70.102-L 9/22/2010	145	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0008H-70.763-L 9/22/2010	682	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0008H-70.917-L 9/22/2010	188	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD 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	
GRSM-0010N-0.468-R 9/15/2010	194	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	NONE	\$0.00
GRSM-0010N-0.505-R 9/15/2010	129	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	NONE	NONE	\$0.00
GRSM-0010N-0.530-R 9/14/2010	304	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$2,393.00
GRSM-0010N-0.782-R 9/15/2010	498	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0010N-1.144-R 9/15/2010	392	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD 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	
GRSM-0010N-1.471-R 9/15/2010	104	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0010N-1.490-L 9/15/2010	52	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-1.492-R 9/15/2010	52	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-1.532-L 9/15/2010	52	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-1.534-R 9/15/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD 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	
GRSM-0010N-3.646-L 9/15/2010	860	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$2,448.00
GRSM-0010N-3.932-L 9/15/2010	118	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	NONE	SBT/LOG FLARED	\$0.00
GRSM-0010N-5.927-L 9/15/2010	167	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$77,990.00
GRSM-0010N-6.144-L 9/15/2010	640	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	NONE	NONE	\$12,458.00
GRSM-0010N-6.271-L 9/15/2010	33	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD 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	
GRSM-0010N-6.275-R 9/15/2010	52	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-6.303-R 9/14/2010	54	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-6.308-L 9/15/2010	32	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-6.998-R 9/15/2010	483	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$2,855.00
GRSM-0010N-8.225-R 9/15/2010	136	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD 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	
GRSM-0010N-8.392-R 9/15/2010	436	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-8.446-L 9/15/2010	152	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-8.521-L 9/15/2010	111	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-8.522-R 9/15/2010	110	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-8.654-R 9/15/2010	134	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH



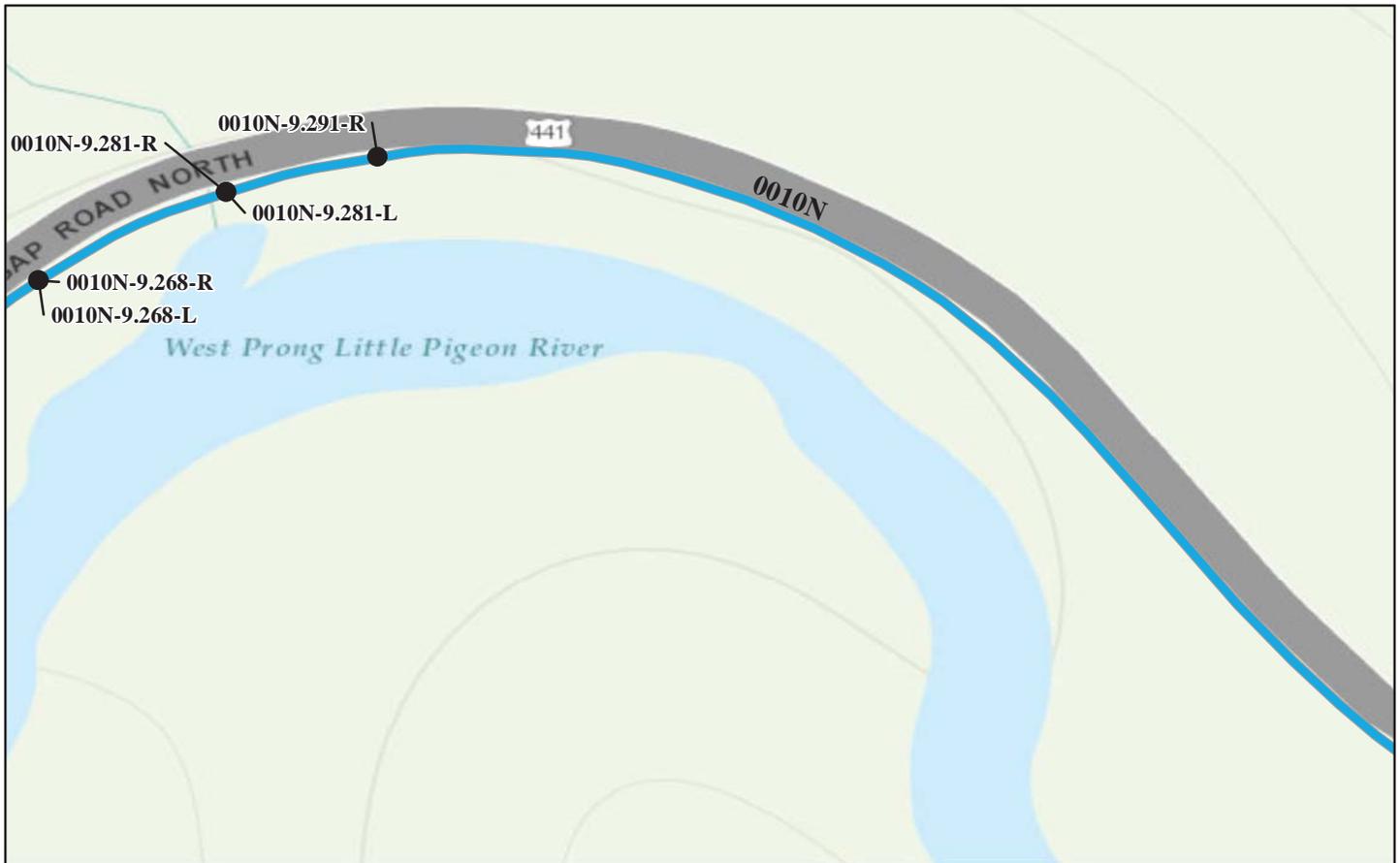
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0010N-8.676-R 9/16/2010	158	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-8.710-R 9/16/2010	154	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-8.740-R 9/15/2010	85	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-9.030-R 9/16/2010	392	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	NONE	SBT/LOG FLARED	\$0.00
GRSM-0010N-9.061-L 9/16/2010	232	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH



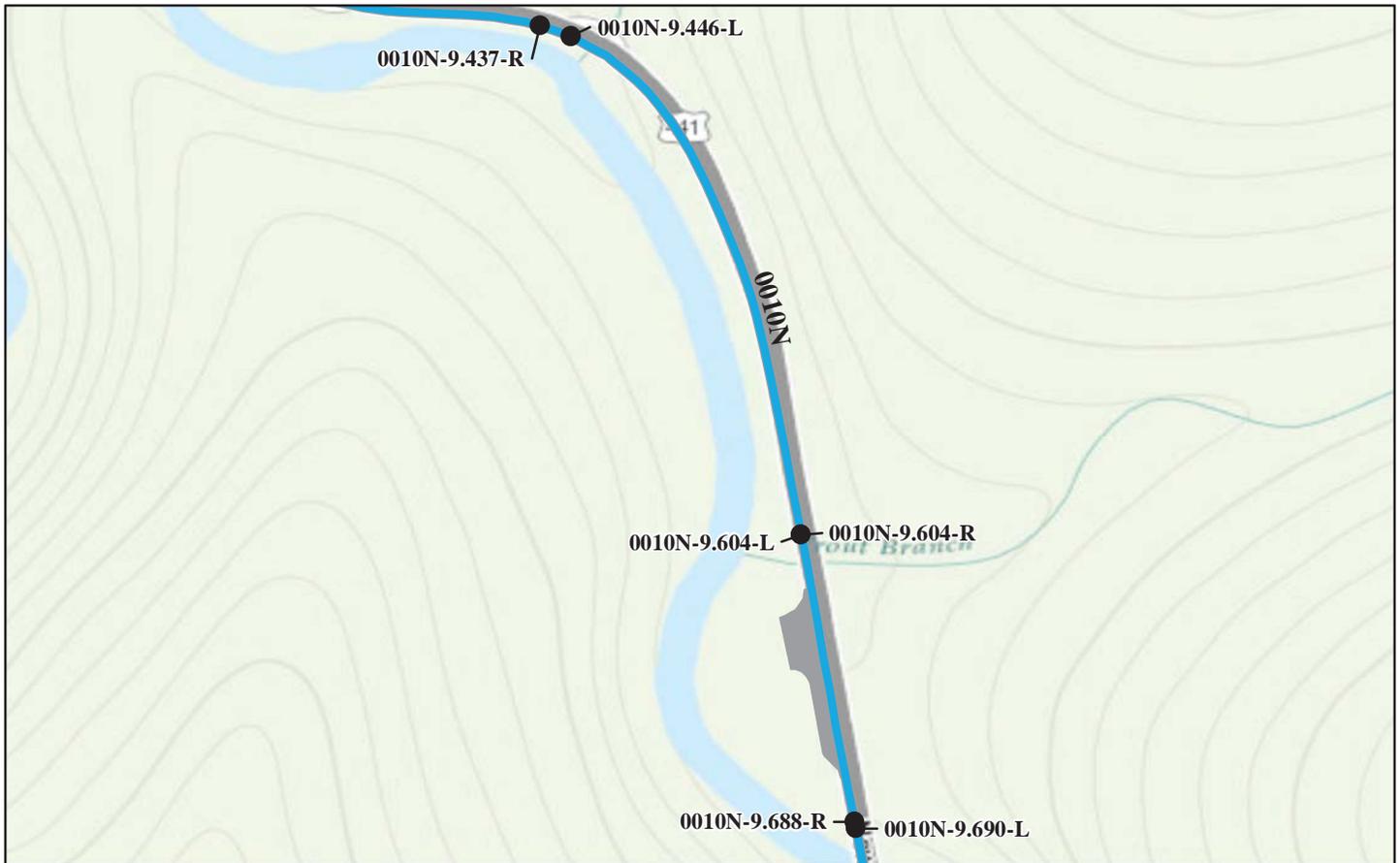
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0010N-9.268-L 9/16/2010	40	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-9.268-R 9/16/2010	44	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-9.281-L 9/16/2010	43	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-9.281-R 9/16/2010	42	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-9.291-R 9/16/2010	412	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	NONE	NONE	\$7,777.00

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH



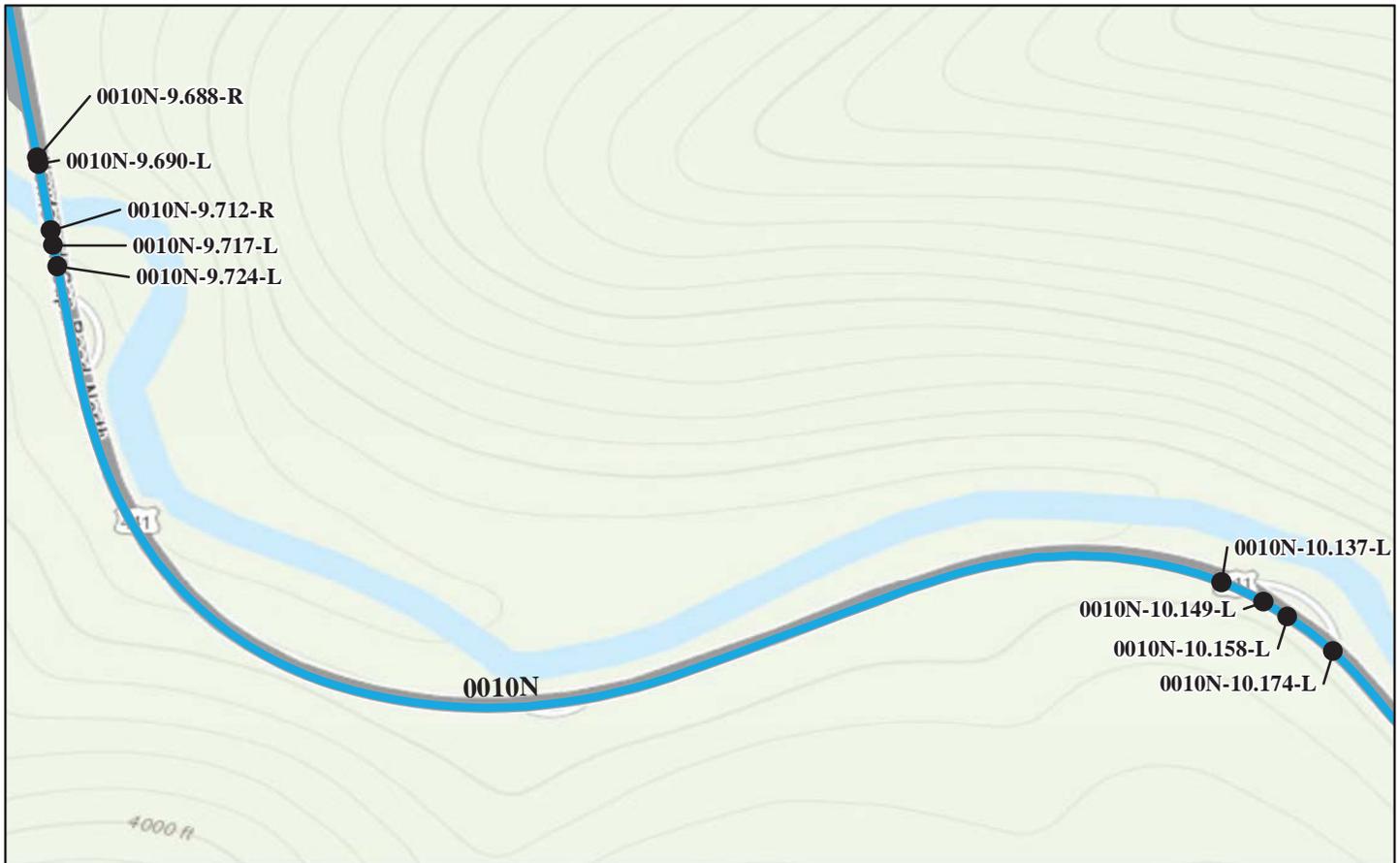
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0010N-9.437-R 9/16/2010	82	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$21,368.00
GRSM-0010N-9.446-L 9/16/2010	40	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$42,268.00
GRSM-0010N-9.604-L 9/16/2010	76	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-9.604-R 9/16/2010	75	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$1,777.00
GRSM-0010N-9.688-R 9/16/2010	40	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH



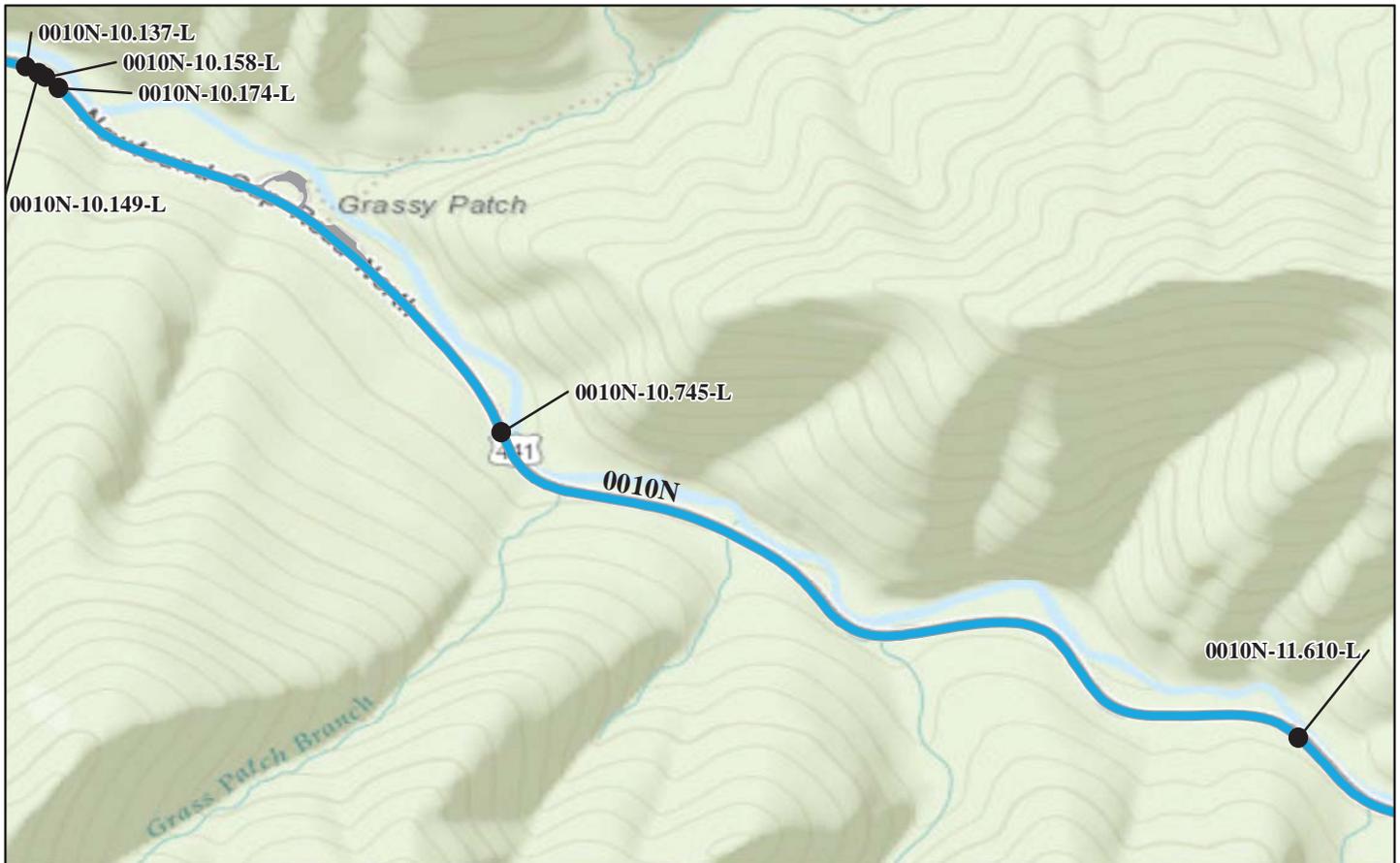
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0010N-9.690-L 9/16/2010	53	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$1,898.00
GRSM-0010N-9.712-R 9/16/2010	52	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$2,085.00
GRSM-0010N-9.717-L 9/16/2010	35	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-9.724-L 9/16/2010	111	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$57,090.00
GRSM-0010N-10.137-L 9/16/2010	63	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD 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	
GRSM-0010N-10.149-L 9/16/2010	65	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-10.158-L 9/16/2010	86	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-10.174-L 9/16/2010	68	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-10.745-L 9/16/2010	101	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-11.610-L 9/16/2010	460	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$103,318.00

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH



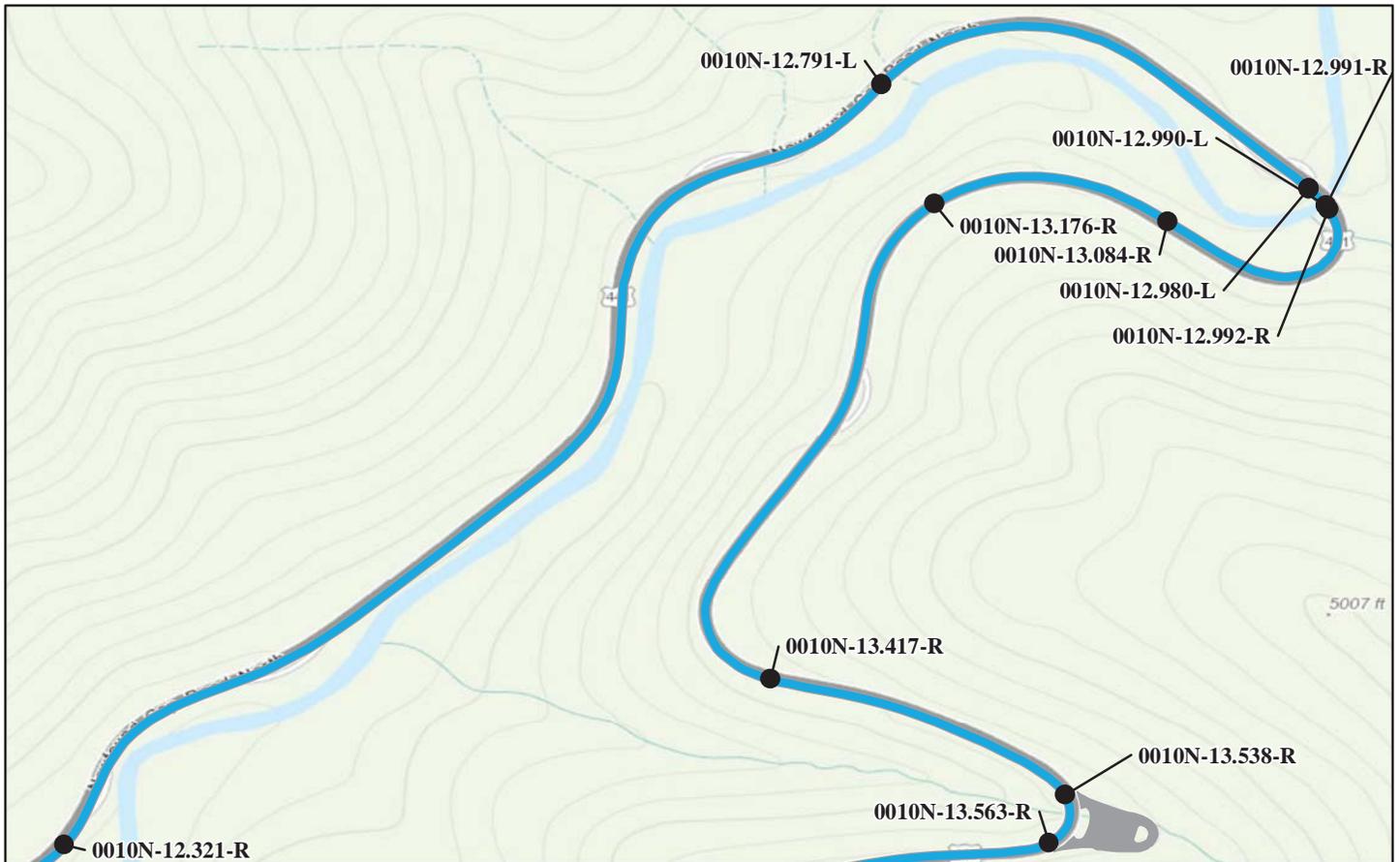
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0010N-11.863-L 9/16/2010	139	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$1,898.00
GRSM-0010N-12.125-L 9/16/2010	28	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-12.127-R 9/16/2010	32	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-12.140-L 9/16/2010	30	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-12.142-R 9/16/2010	26	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD 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	
GRSM-0010N-12.321-R 9/16/2010	260	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$79,371.00
GRSM-0010N-12.791-L 9/16/2010	107	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$1,777.00
GRSM-0010N-12.979-R 9/16/2010	22	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-12.980-L 9/16/2010	29	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-12.990-L 9/16/2010	30	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH



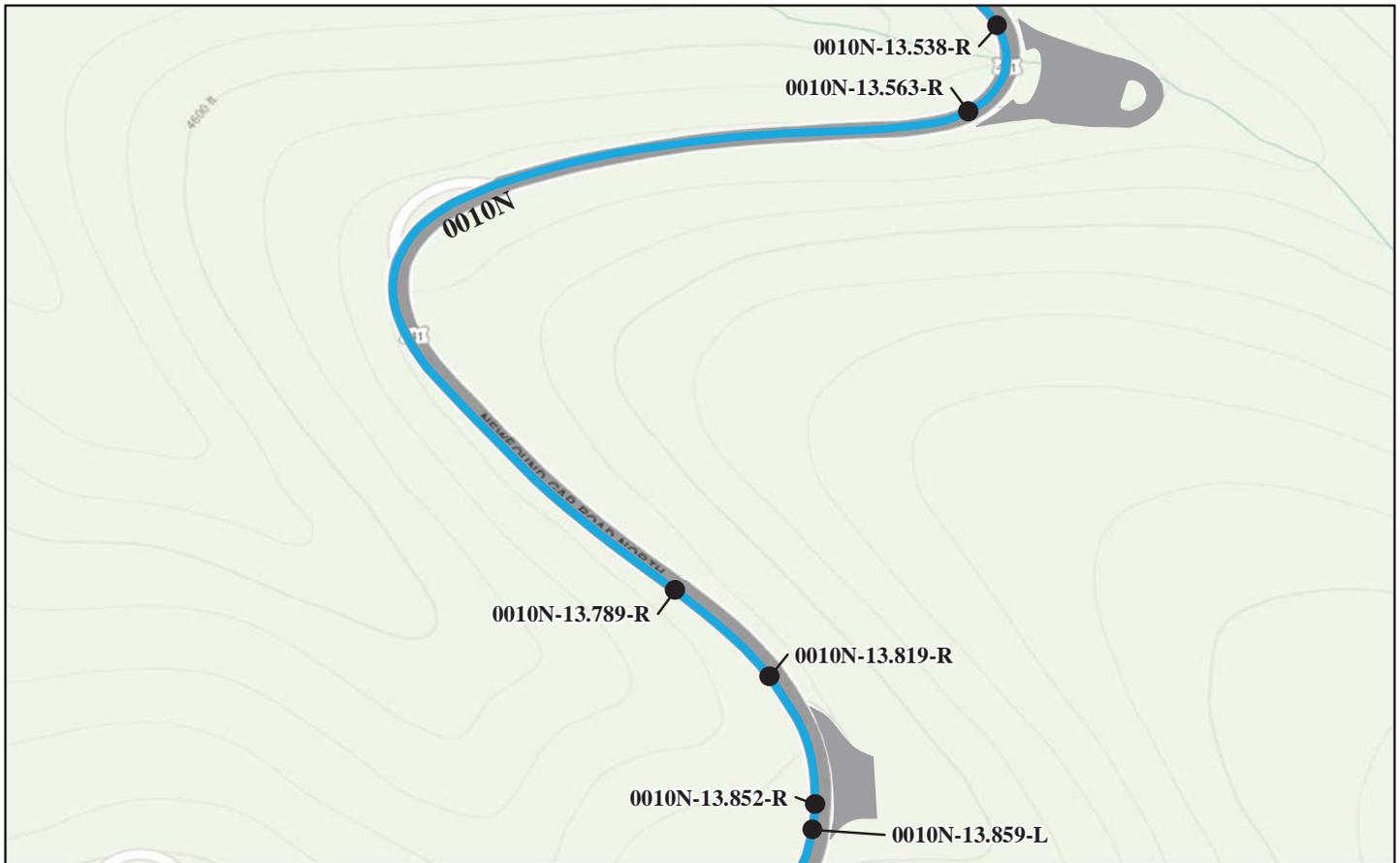
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0010N-12.991-R 9/16/2010	30	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-12.992-R 9/16/2010	464	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	NONE	NONE	\$8,349.00
GRSM-0010N-13.084-R 9/16/2010	500	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$263,065.00
GRSM-0010N-13.176-R 9/16/2010	1275	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$37,263.00
GRSM-0010N-13.417-R 9/16/2010	640	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$686,043.00

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD 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	
GRSM-0010N-13.538-R 9/16/2010	121	W-BEAM STRONG POST	NONE	NONE	\$3,295.00
GRSM-0010N-13.563-R 9/16/2010	522	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$577,033.00
GRSM-0010N-13.789-R 9/16/2010	156	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-13.819-R 9/16/2010	172	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-13.852-R 9/16/2010	765	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH



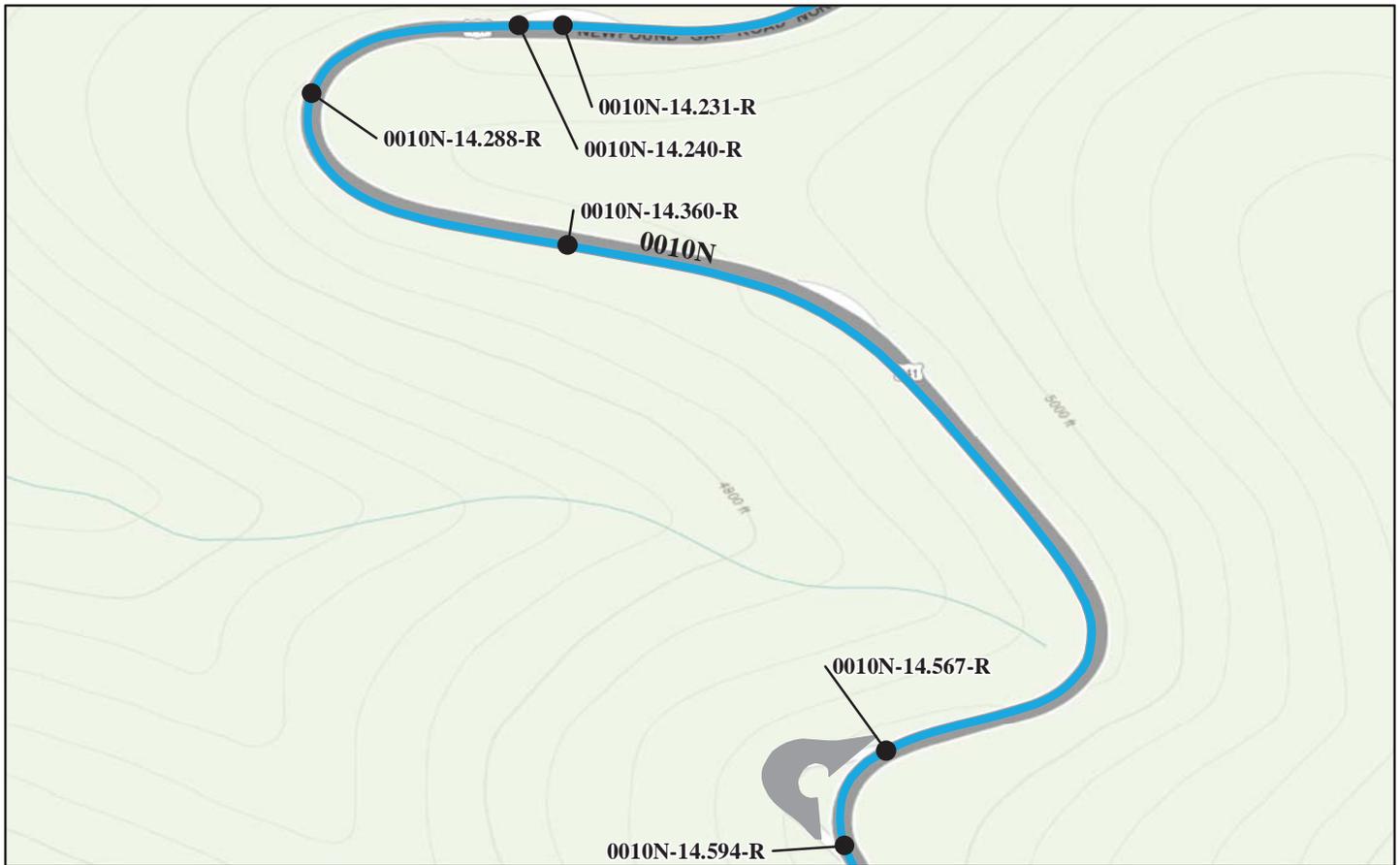
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0010N-13.859-L 9/16/2010	21	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-13.916-R 9/20/2010	530	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$21,423.00
GRSM-0010N-14.076-R 9/20/2010	173	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-14.109-R 9/20/2010	193	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-14.146-R 9/20/2010	450	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$335,528.00

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH



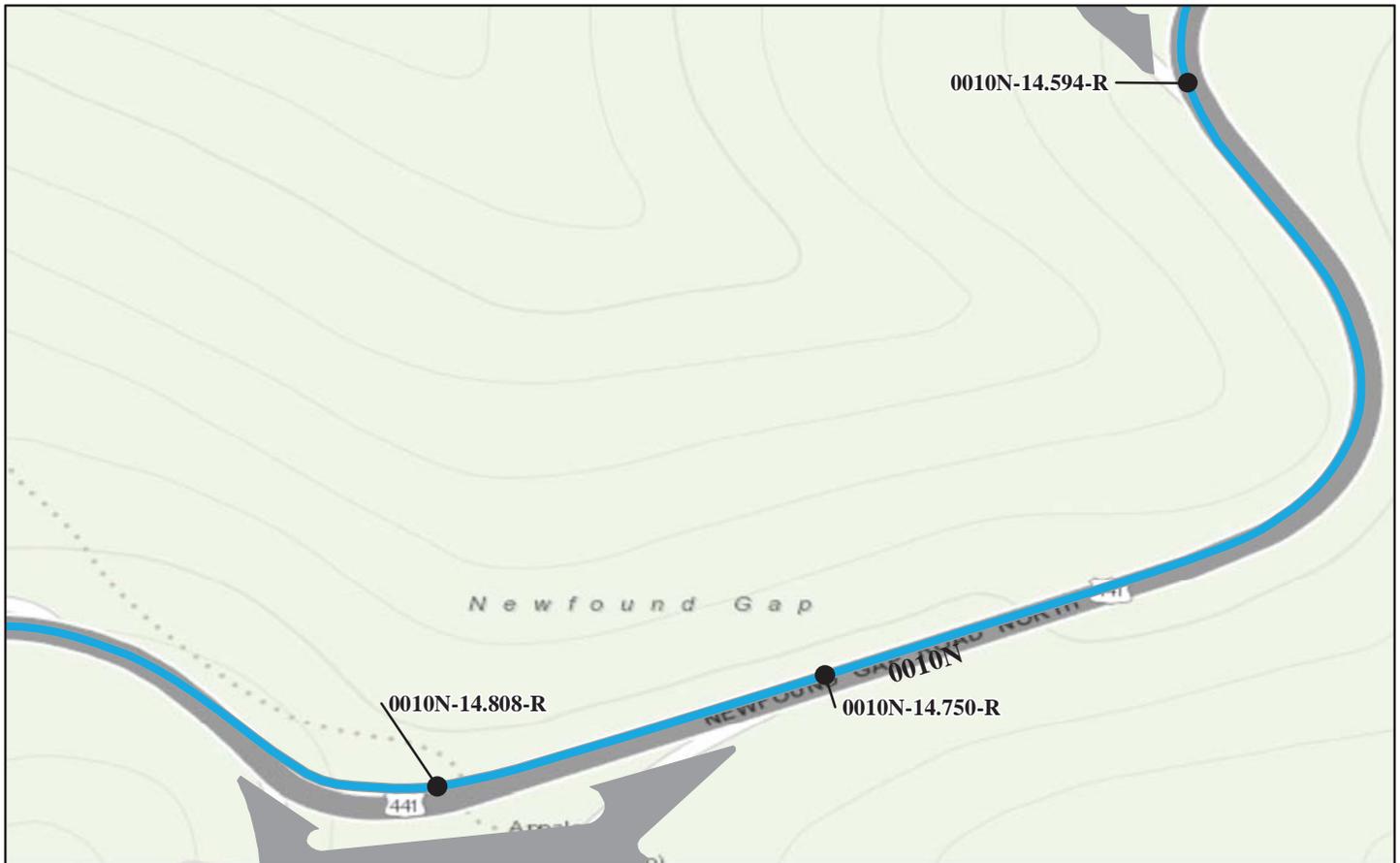
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Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0010N-14.231-R 9/20/2010	50	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-14.240-R 9/20/2010	253	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$240,818.00
GRSM-0010N-14.288-R 9/20/2010	433	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0010N-14.360-R 9/20/2010	1048	STEEL-BACKED TIMBER WITH BLOCKOUT	NONE	NONE	\$0.00
GRSM-0010N-14.567-R 9/20/2010	254	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$9,873.00

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH



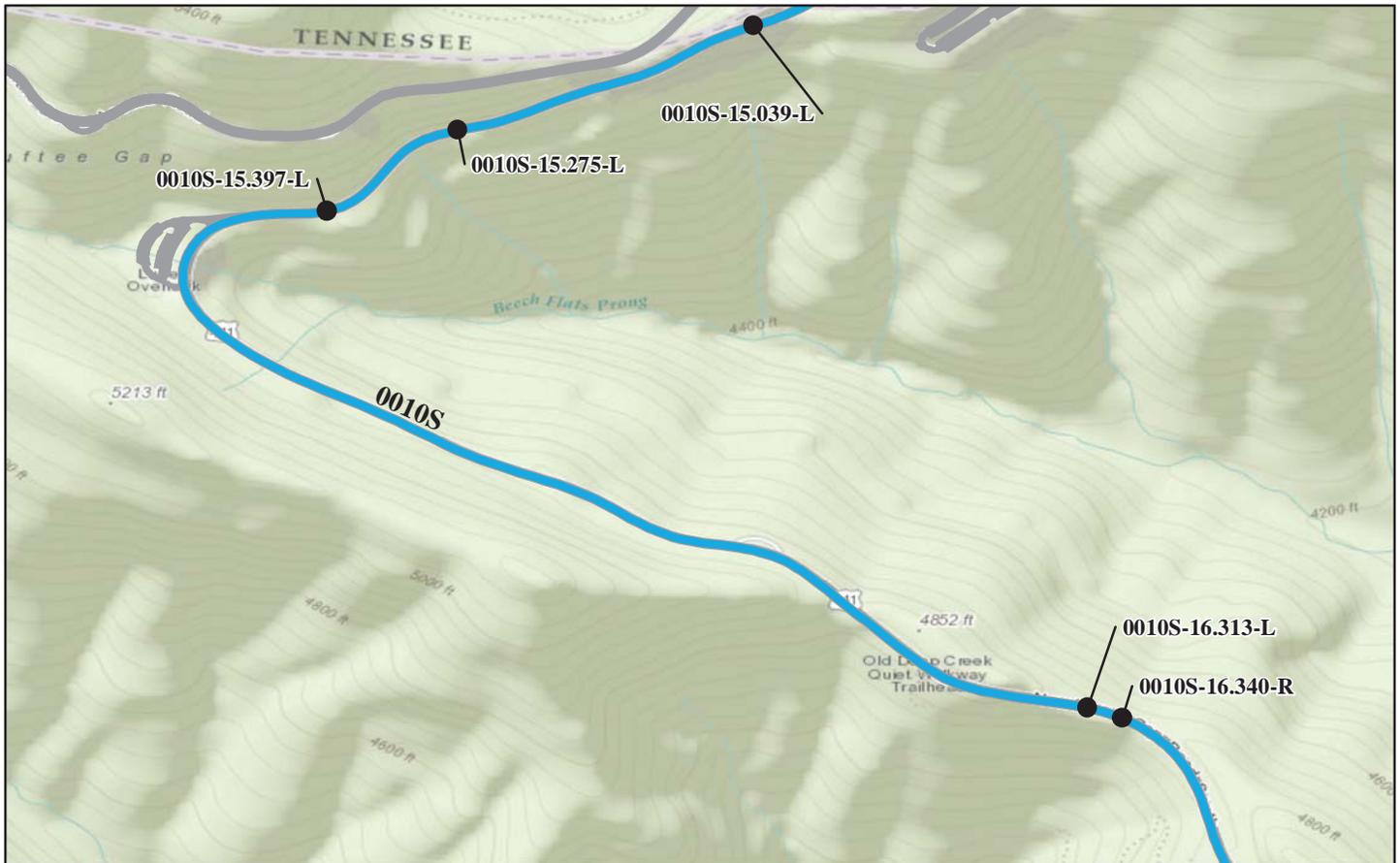
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0010N-14.594-R 9/20/2010	792	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	NONE	NONE	\$7,865.00
GRSM-0010N-14.750-R 9/20/2010	271	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$115,583.00
GRSM-0010N-14.808-R 9/20/2010	340	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$222,420.00

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

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH



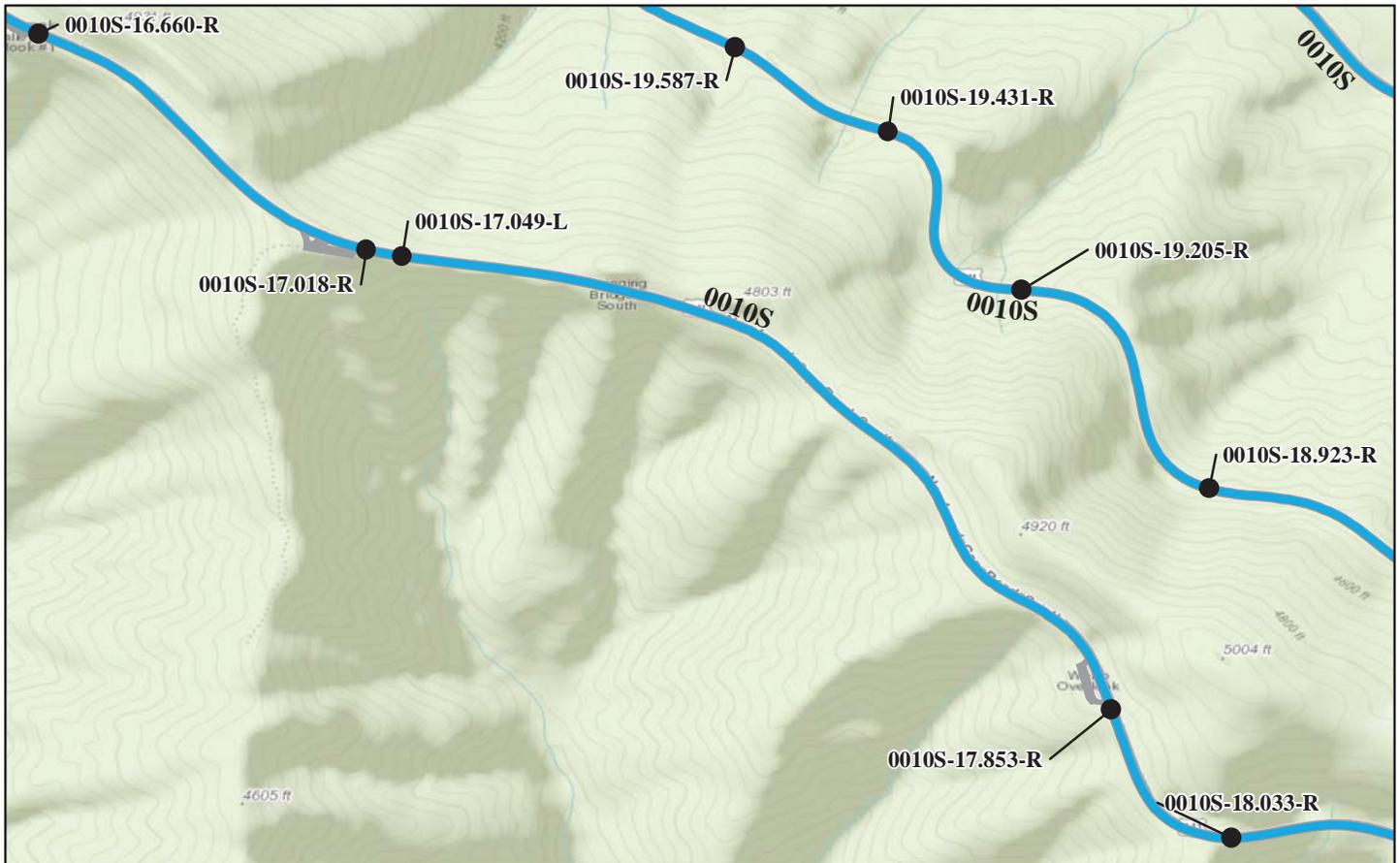
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Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0010S-15.039-L 9/20/2010	896	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$1,113,613.00
GRSM-0010S-15.275-L 9/20/2010	334	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG BURIED	\$0.00
GRSM-0010S-15.397-L 9/20/2010	919	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG FLARED	\$0.00
GRSM-0010S-16.313-L 9/20/2010	398	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG BURIED	\$0.00
GRSM-0010S-16.340-R 9/20/2010	725	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG BURIED	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD 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	
GRSM-0010S-16.660-R 9/20/2010	640	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0010S-17.018-R 9/20/2010	1062	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0010S-17.049-L 9/20/2010	665	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG BURIED	\$2,393.00
GRSM-0010S-17.853-R 9/20/2010	718	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG BURIED	\$0.00
GRSM-0010S-18.033-R 9/20/2010	584	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG FLARED	\$2,448.00

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

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH



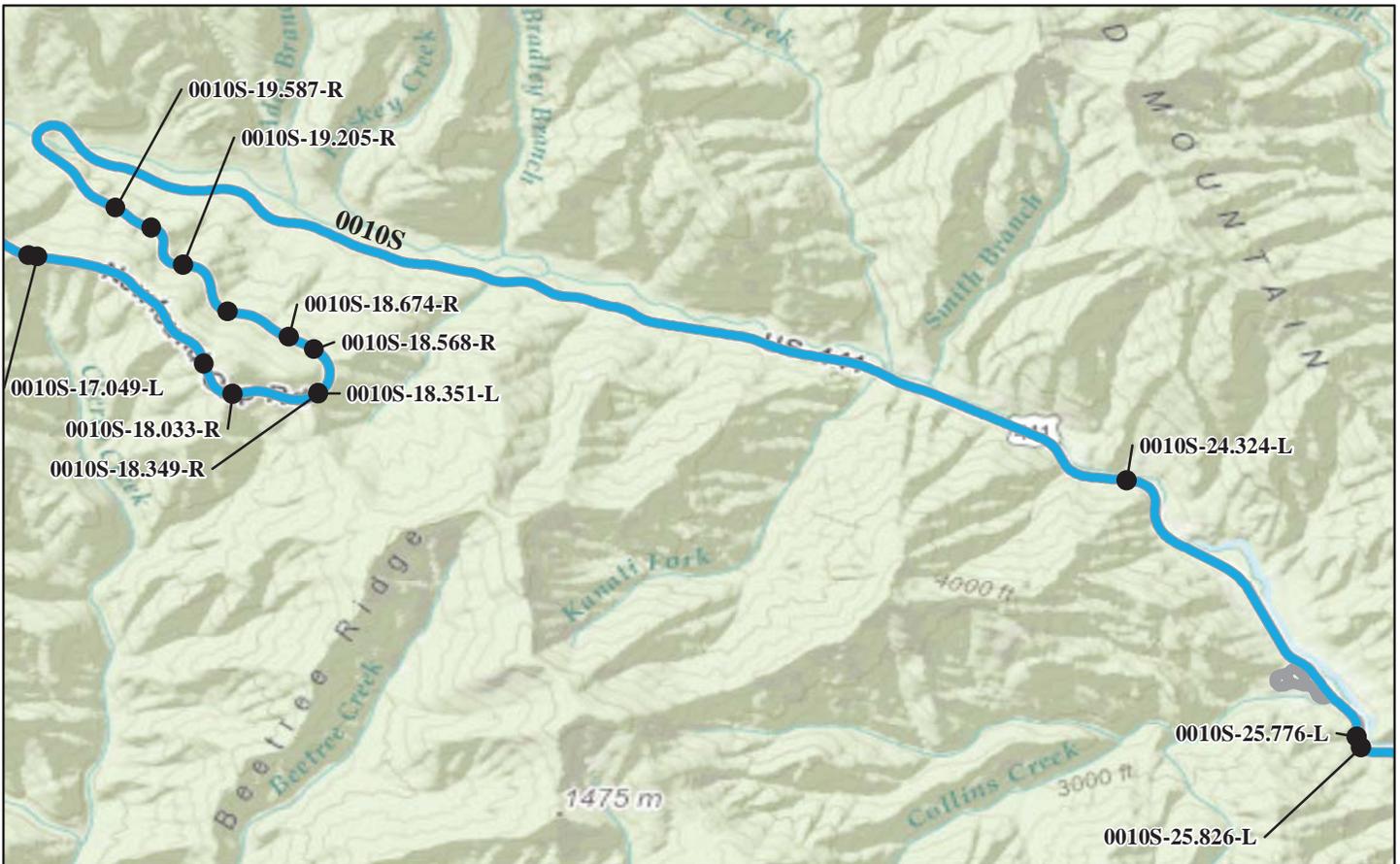
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0010S-18.349-R 9/20/2010	472	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0010S-18.351-L 9/20/2010	414	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0010S-18.568-R 9/20/2010	315	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$2,448.00
GRSM-0010S-18.674-R 9/20/2010	1147	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$2,503.00
GRSM-0010S-18.923-R 9/20/2010	634	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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH



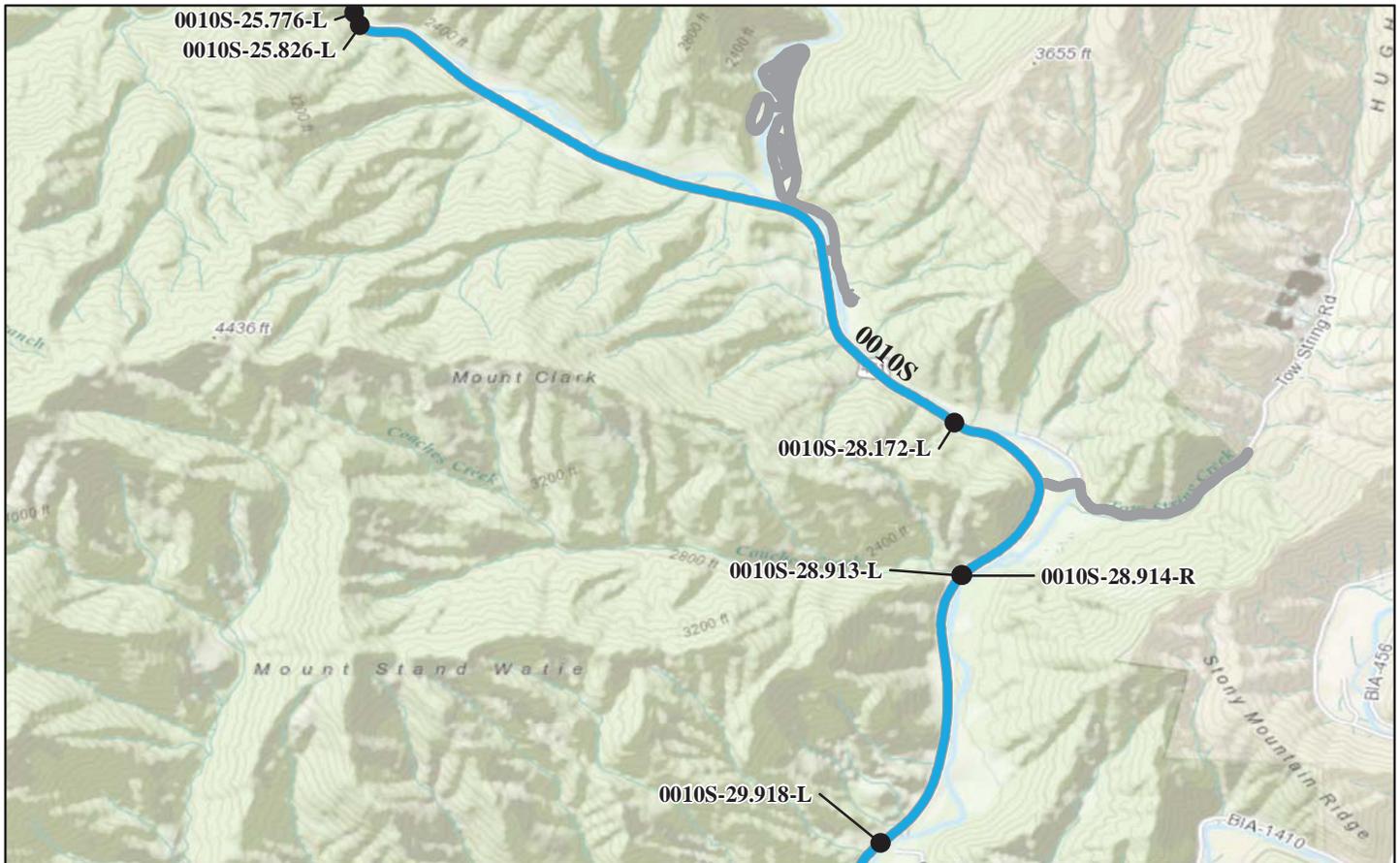
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Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0010S-19.205-R 9/20/2010	792	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0010S-19.431-R 9/20/2010	438	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	NONE	\$2,173.00
GRSM-0010S-19.587-R 9/20/2010	400	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG FLARED	\$0.00
GRSM-0010S-24.324-L 9/23/2010	205	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010S-25.776-L 9/23/2010	220	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$2,855.00

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

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH



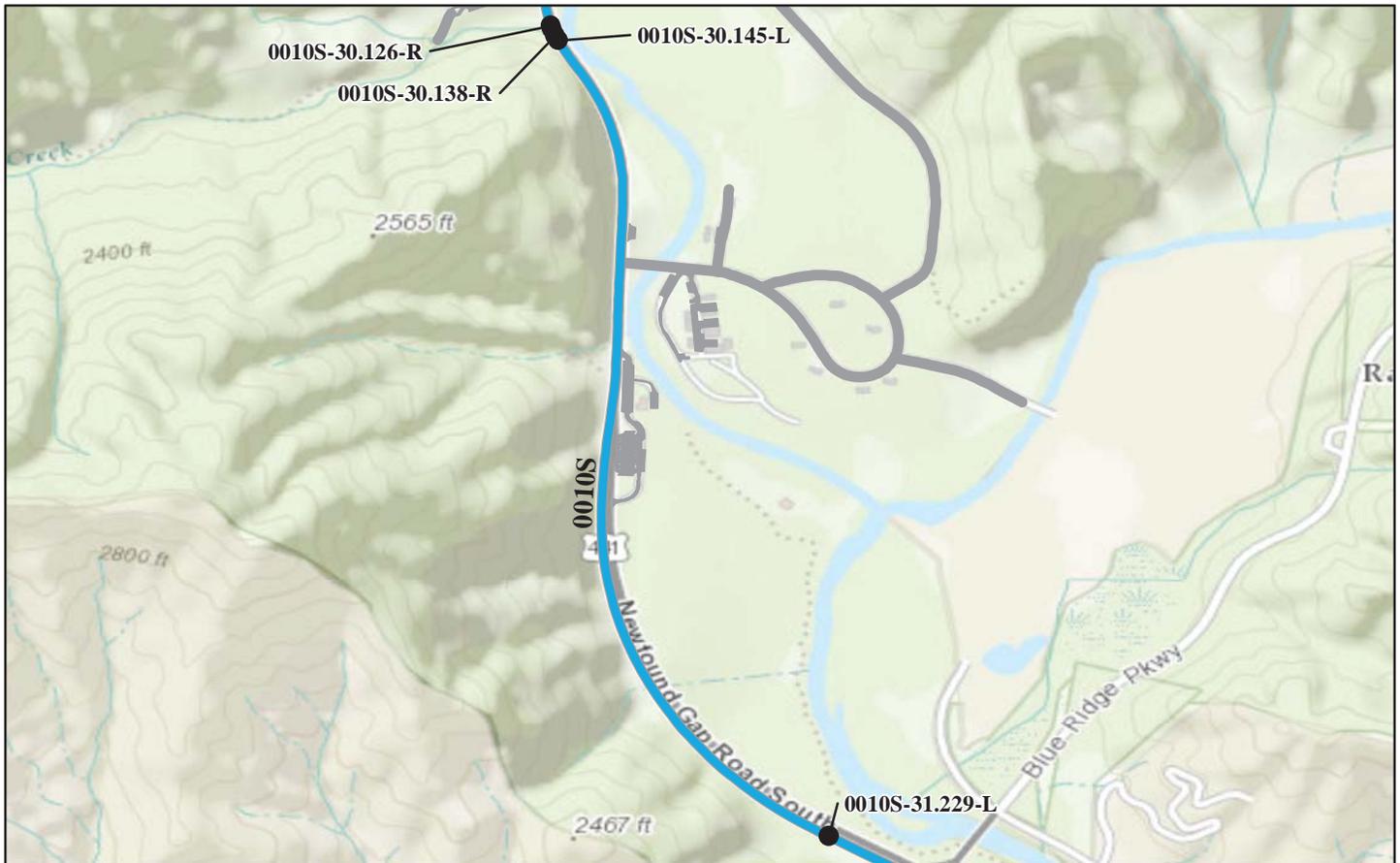
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0010S-25.826-L 9/23/2010	372	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$2,085.00
GRSM-0010S-28.172-L 9/23/2010	319	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$76,313.00
GRSM-0010S-28.913-L 9/23/2010	53	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010S-28.914-R 9/23/2010	53	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010S-29.918-L 9/23/2010	61	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$54,615.00

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

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH



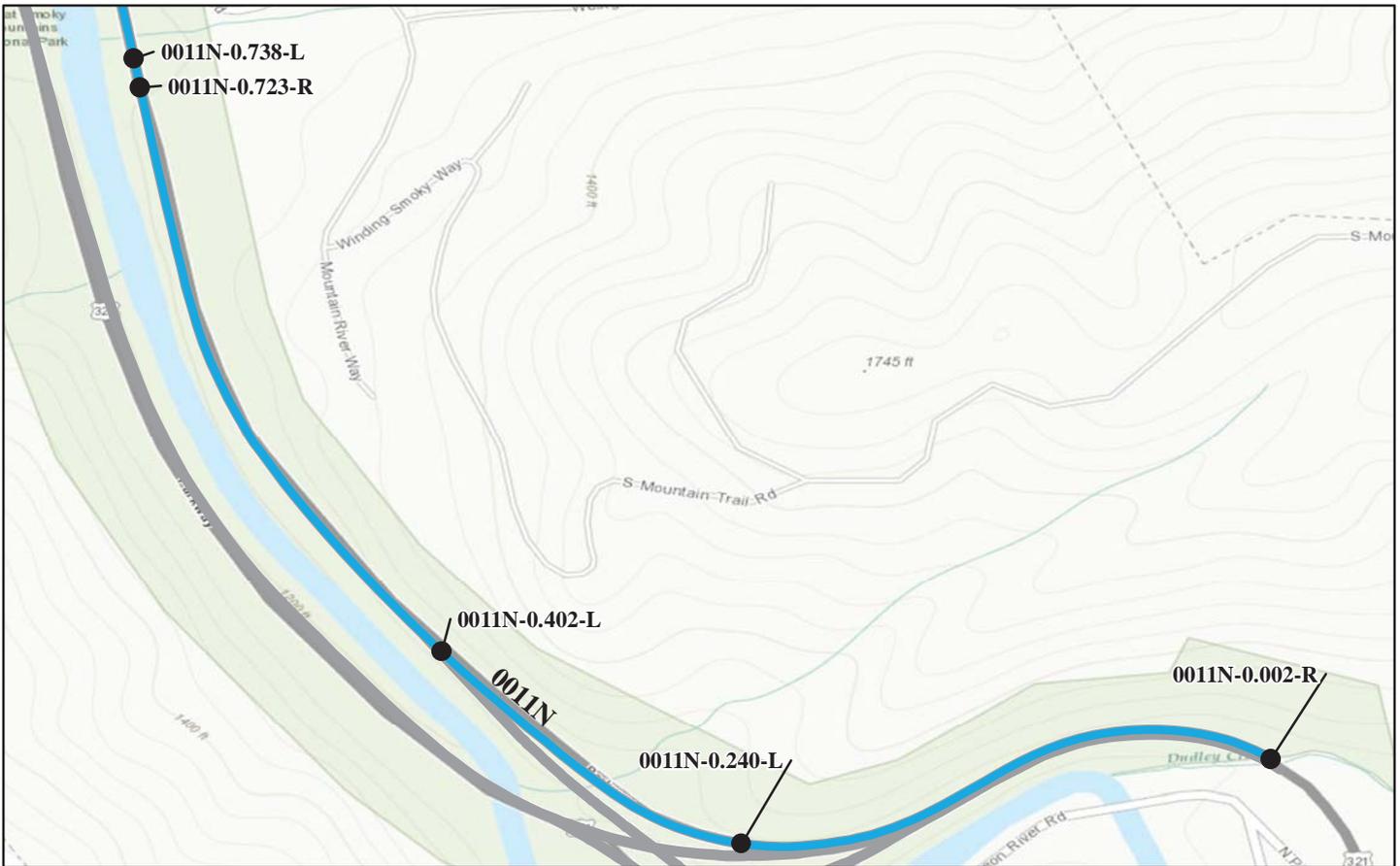
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0010S-30.126-R 9/23/2010	27	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0010S-30.131-L 9/23/2010	22	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$14,245.00
GRSM-0010S-30.138-R 9/23/2010	16	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$1,898.00
GRSM-0010S-30.145-L 9/23/2010	21	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$6,545.00
GRSM-0010S-31.229-L 9/23/2010	132	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$2,173.00

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

Great Smoky Mountains National Park

ROUTE 0011N: GATLINBURG SPUR ROAD (NORTHBOUND)



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	
GRSM-0011N-0.002-R 9/13/2010	43	STEEL-BACKED TIMBER WITH BLOCKOUT	NONE	SBT/LOG FLARED	\$0.00
GRSM-0011N-0.240-L 9/13/2010	524	STEEL-BACKED TIMBER WITH BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$2,503.00
GRSM-0011N-0.402-L 9/13/2010	651	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0011N-0.723-R 9/13/2010	175	STEEL-BACKED TIMBER WITH BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0011N-0.738-L 9/13/2010	98	STEEL-BACKED TIMBER WITH BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$2,701.00

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

Great Smoky Mountains National Park

ROUTE 0011N: GATLINBURG SPUR ROAD (NORTHBOUND)



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	
GRSM-0011N-1.505-R 9/13/2010	68	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG FLARED	\$0.00
GRSM-0011N-2.138-L 9/13/2010	692	STEEL-BACKED TIMBER WITH BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$9,097.00
GRSM-0011N-2.294-L 9/13/2010	284	STEEL-BACKED TIMBER WITH BLOCKOUT	NONE	NONE	\$2,063.00
GRSM-0011N-2.540-L 9/13/2010	98	STEEL-BACKED TIMBER WITH BLOCKOUT	SBT/LOG FLARED	SBT/LOG BURIED	\$0.00
GRSM-0011N-2.581-L 9/13/2010	434	STEEL-BACKED TIMBER WITH BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$5,803.00

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

Great Smoky Mountains National Park

ROUTE 0011N: GATLINBURG SPUR ROAD (NORTHBOUND)



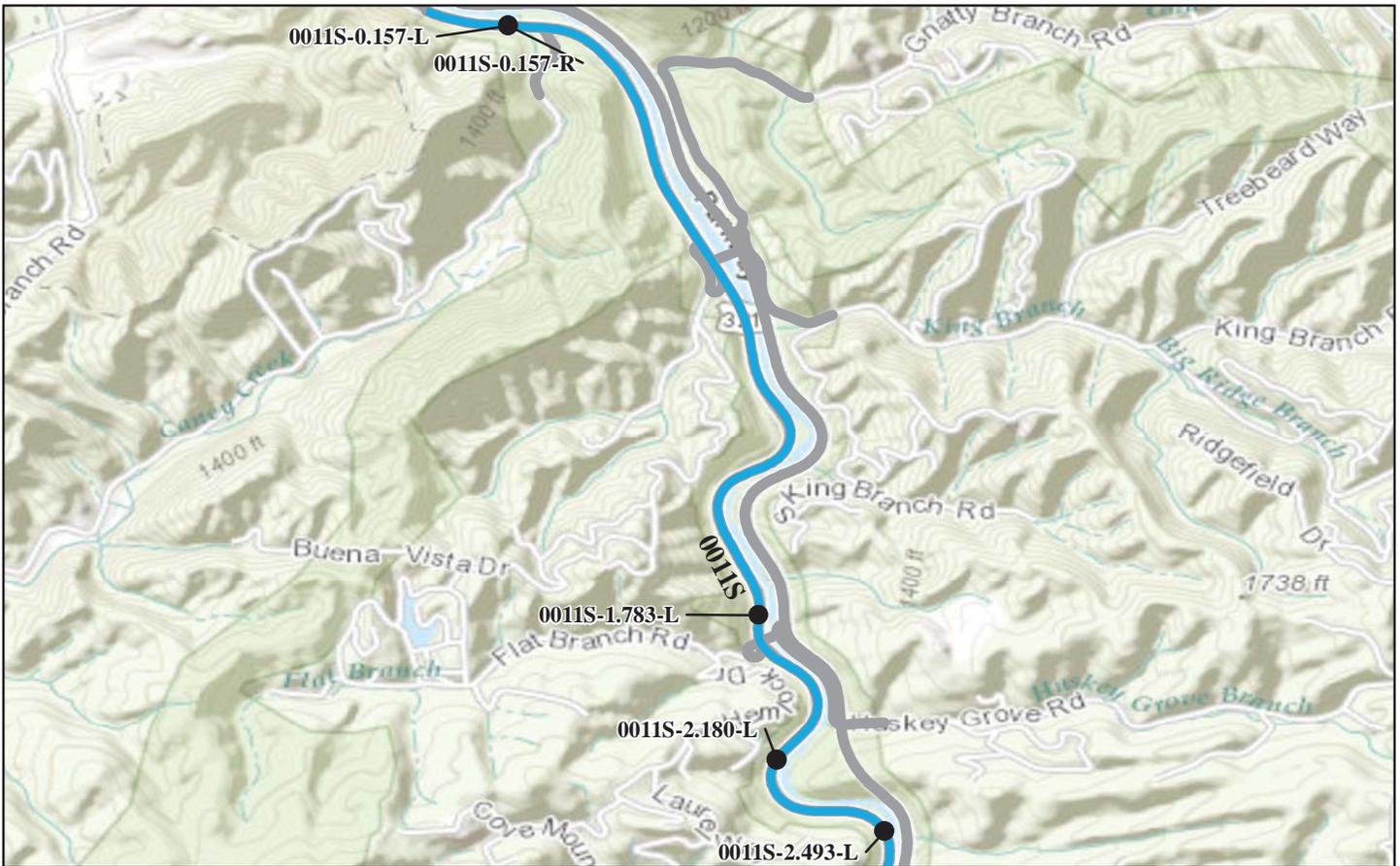
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Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0011N-3.646-R 9/13/2010	154	STEEL-BACKED TIMBER WITH BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0011N-3.658-L 9/13/2010	95	STEEL-BACKED TIMBER WITH BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$2,668.00
GRSM-0011N-3.800-L 9/13/2010	1059	STEEL-BACKED TIMBER WITH BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$15,070.00

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

Great Smoky Mountains National Park

ROUTE 0011S: GATLINBURG SPUR ROAD (SOUTHBOUND)



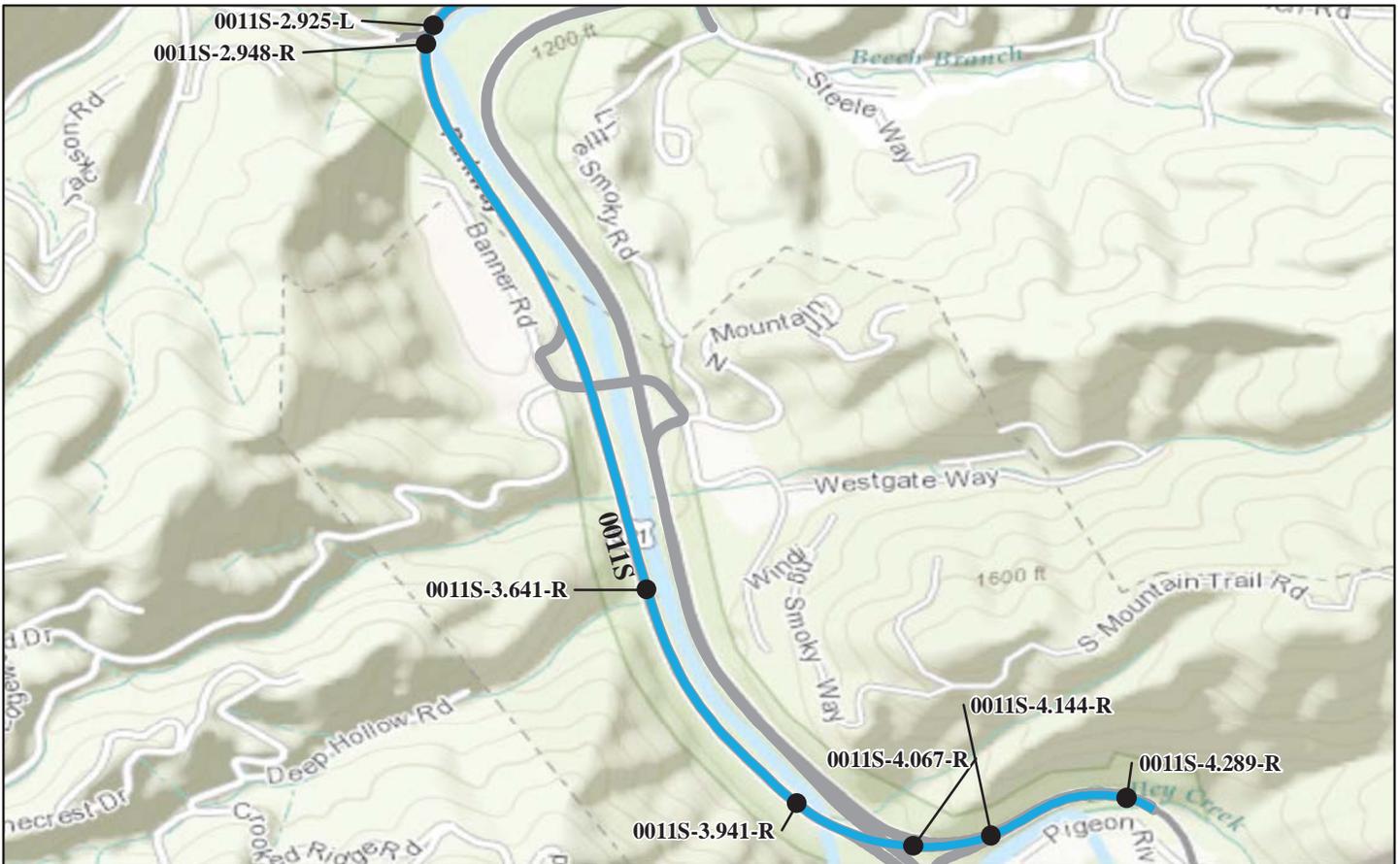
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Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0011S-0.157-L 9/13/2010	216	STEEL-BACKED TIMBER WITH BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0011S-0.157-R 9/13/2010	220	STEEL-BACKED TIMBER WITH BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$2,283.00
GRSM-0011S-1.783-L 9/13/2010	659	STEEL-BACKED TIMBER WITH BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0011S-2.180-L 9/13/2010	267	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0011S-2.493-L 9/13/2010	206	STEEL-BACKED TIMBER WITH BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0011S: GATLINBURG SPUR ROAD (SOUTHBOUND)



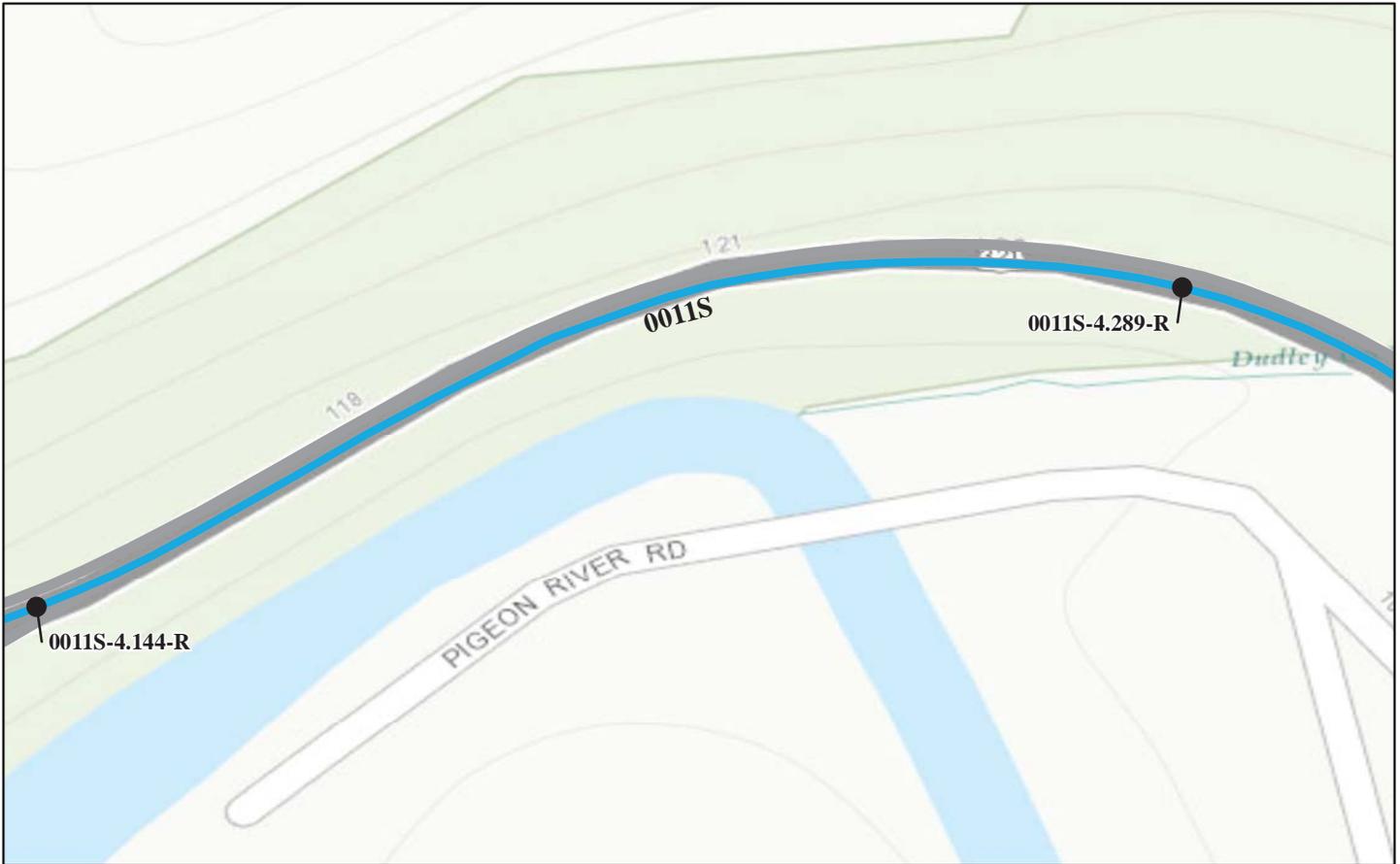
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Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0011S-2.925-L 9/13/2010	380	STEEL-BACKED TIMBER WITH BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$3,328.00
GRSM-0011S-2.948-R 9/14/2010	214	STEEL-BACKED TIMBER WITH BLOCKOUT	SBT/LOG FLARED	SBT/LOG BURIED	\$3,130.00
GRSM-0011S-3.641-R 9/14/2010	122	STEEL-BACKED TIMBER WITH BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$2,965.00
GRSM-0011S-3.941-R 9/14/2010	49	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0011S-4.067-R 9/14/2010	321	STEEL-BACKED TIMBER WITH BLOCKOUT	NONE	SBT/LOG FLARED	\$6,776.00

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

Great Smoky Mountains National Park

ROUTE 0011S: GATLINBURG SPUR ROAD (SOUTHBOUND)



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	
GRSM-0011S-4.144-R 9/14/2010	334	STEEL-BACKED TIMBER WITH BLOCKOUT	NONE	SBT/LOG FLARED	\$3,383.00
GRSM-0011S-4.289-R 9/14/2010	120	STEEL-BACKED TIMBER WITH BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS



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	
GRSM-0012ZZ-0.016-R 9/14/2010	266	STEEL-BACKED TIMBER WITH BLOCKOUT	SBT/LOG FLARED	NONE	\$0.00
GRSM-0012ZZ-0.082-R 9/14/2010	113	STEEL-BACKED TIMBER WITH BLOCKOUT	SBT/LOG BURIED	NONE	\$0.00
GRSM-0012ZZ-0.088-L 9/14/2010	124	STEEL-BACKED TIMBER WITH BLOCKOUT	SBT/LOG BURIED	NONE	\$0.00
GRSM-0012ZZ-0.151-L 9/13/2010	78	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	NONE	\$0.00
GRSM-0012ZZ-0.151-R 9/14/2010	440	STONE MASONRY WITH CONCRETE CORE WALL	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS



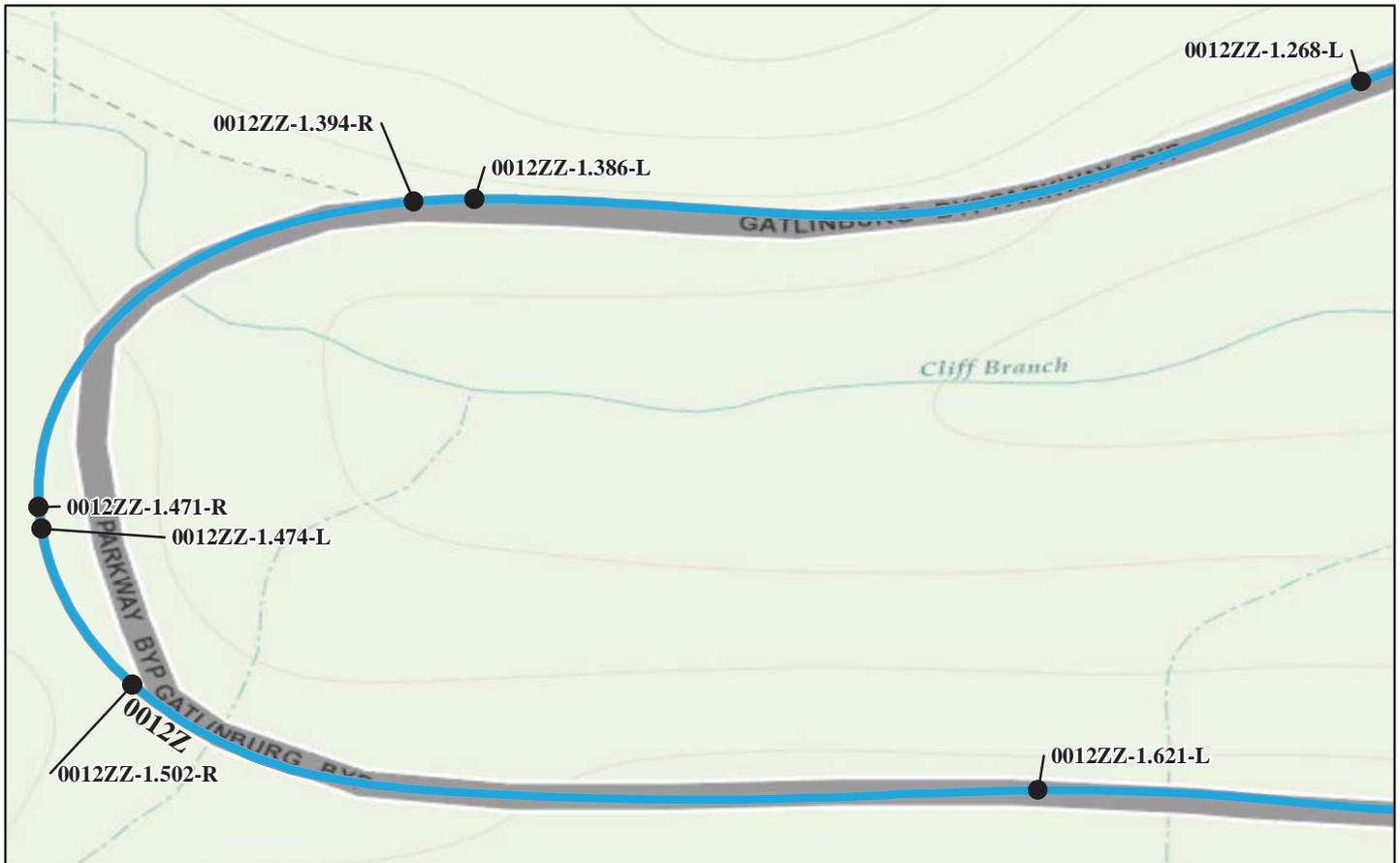
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0012ZZ-0.015-L 9/13/2010	436	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG FLARED	\$0.00
GRSM-0012ZZ-0.080-R 9/13/2010	137	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	NONE	\$0.00
GRSM-0012ZZ-0.181-L 9/13/2010	188	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG BURIED	\$1,898.00
GRSM-0012ZZ-0.338-L 9/13/2010	1030	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$3,713.00
GRSM-0012ZZ-0.727-L 9/13/2010	530	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.

Great Smoky Mountains National Park

ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS



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	
GRSM-0012ZZ-1.268-L 9/13/2010	416	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0012ZZ-1.386-L 9/13/2010	230	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG BURIED	\$0.00
GRSM-0012ZZ-1.394-R 9/13/2010	221	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0012ZZ-1.471-R 9/13/2010	115	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG BURIED	\$1,898.00
GRSM-0012ZZ-1.474-L 9/13/2010	396	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG BURIED	\$3,933.00

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

Great Smoky Mountains National Park

ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS



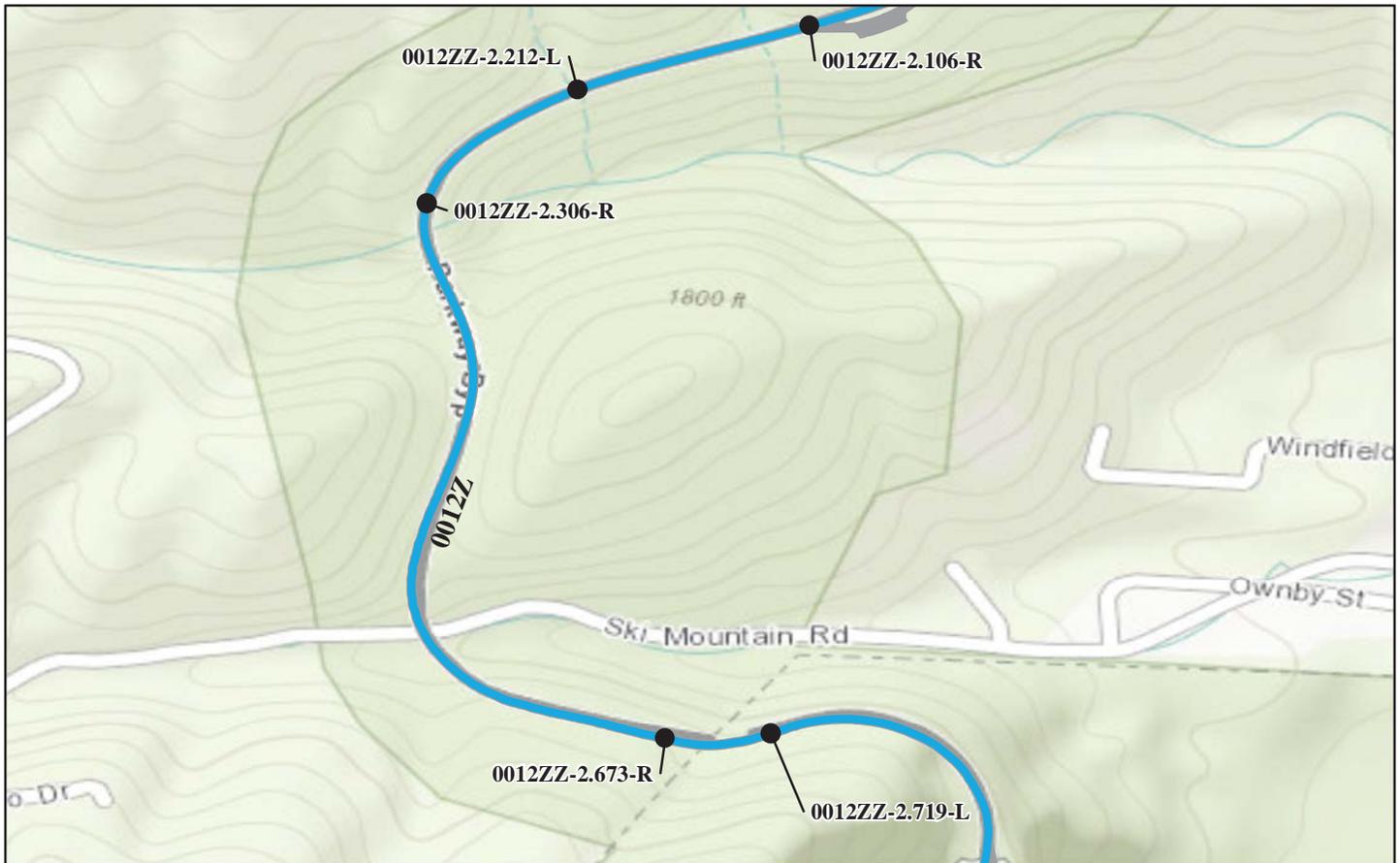
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0012ZZ-1.502-R 9/13/2010	225	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG BURIED	\$0.00
GRSM-0012ZZ-1.621-L 9/14/2010	483	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG FLARED	\$0.00
GRSM-0012ZZ-1.724-L 9/14/2010	359	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0012ZZ-1.740-R 9/14/2010	175	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0012ZZ-1.836-L 9/14/2010	838	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.

Great Smoky Mountains National Park

ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS



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	
GRSM-0012ZZ-2.106-R 9/14/2010	257	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG FLARED	\$0.00
GRSM-0012ZZ-2.212-L 9/14/2010	658	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0012ZZ-2.306-R 9/14/2010	215	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0012ZZ-2.673-R 9/14/2010	224	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$4,086.00
GRSM-0012ZZ-2.719-L 9/14/2010	803	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.

Great Smoky Mountains National Park

ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS



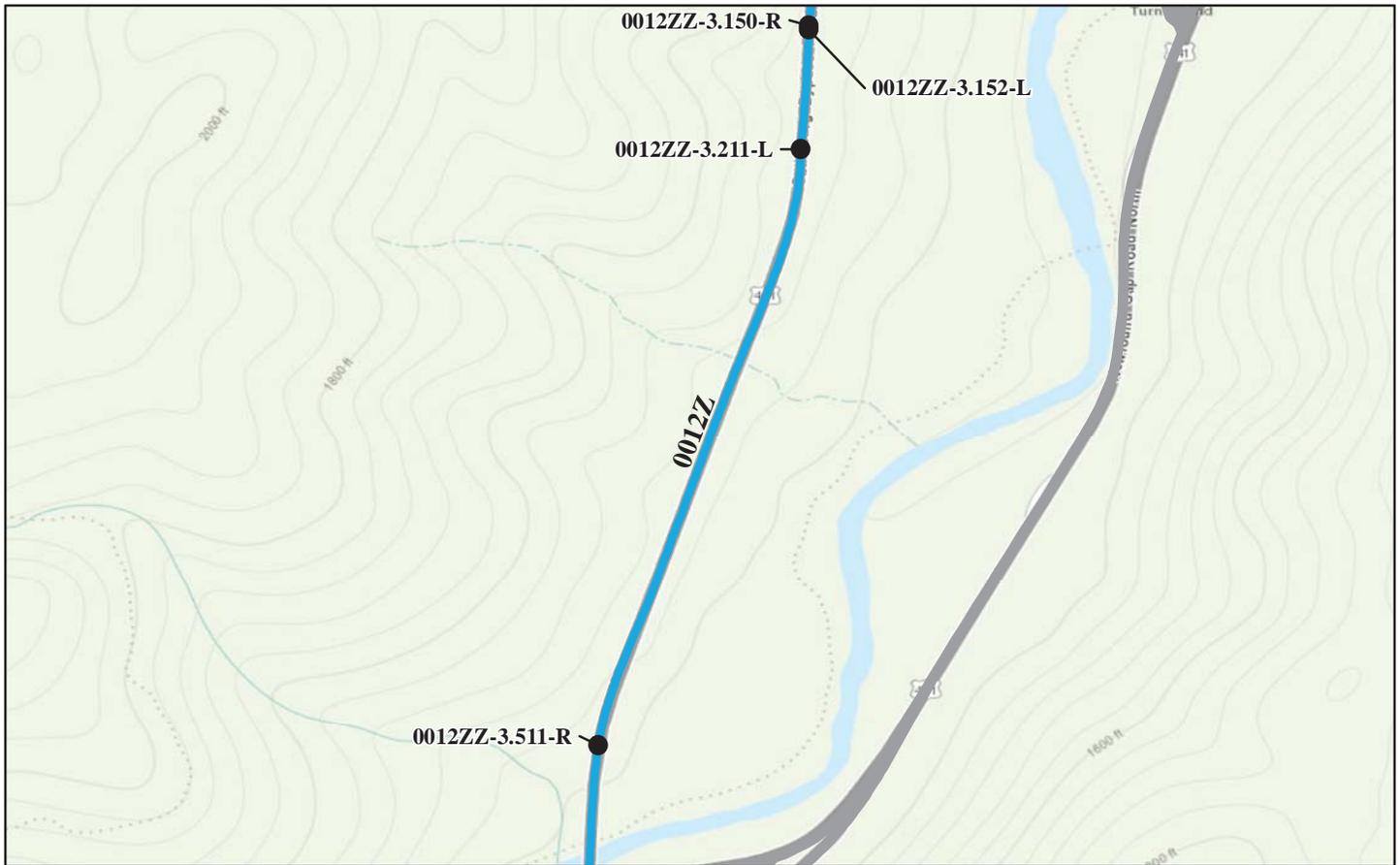
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0012ZZ-2.922-L 9/14/2010	260	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG FLARED	\$0.00
GRSM-0012ZZ-2.922-R 9/14/2010	214	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG FLARED	\$0.00
GRSM-0012ZZ-2.994-L 9/14/2010	325	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0012ZZ-3.044-R 9/14/2010	185	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG FLARED	\$0.00
GRSM-0012ZZ-3.087-L 9/14/2010	161	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.

Great Smoky Mountains National Park

ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS



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	
GRSM-0012ZZ-3.150-R 9/14/2010	179	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0012ZZ-3.152-L 9/14/2010	179	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0012ZZ-3.211-L 9/14/2010	149	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0012ZZ-3.511-R 9/14/2010	264	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0013ZZ: FIGHTING CREEK GAP ROAD AND SPUR



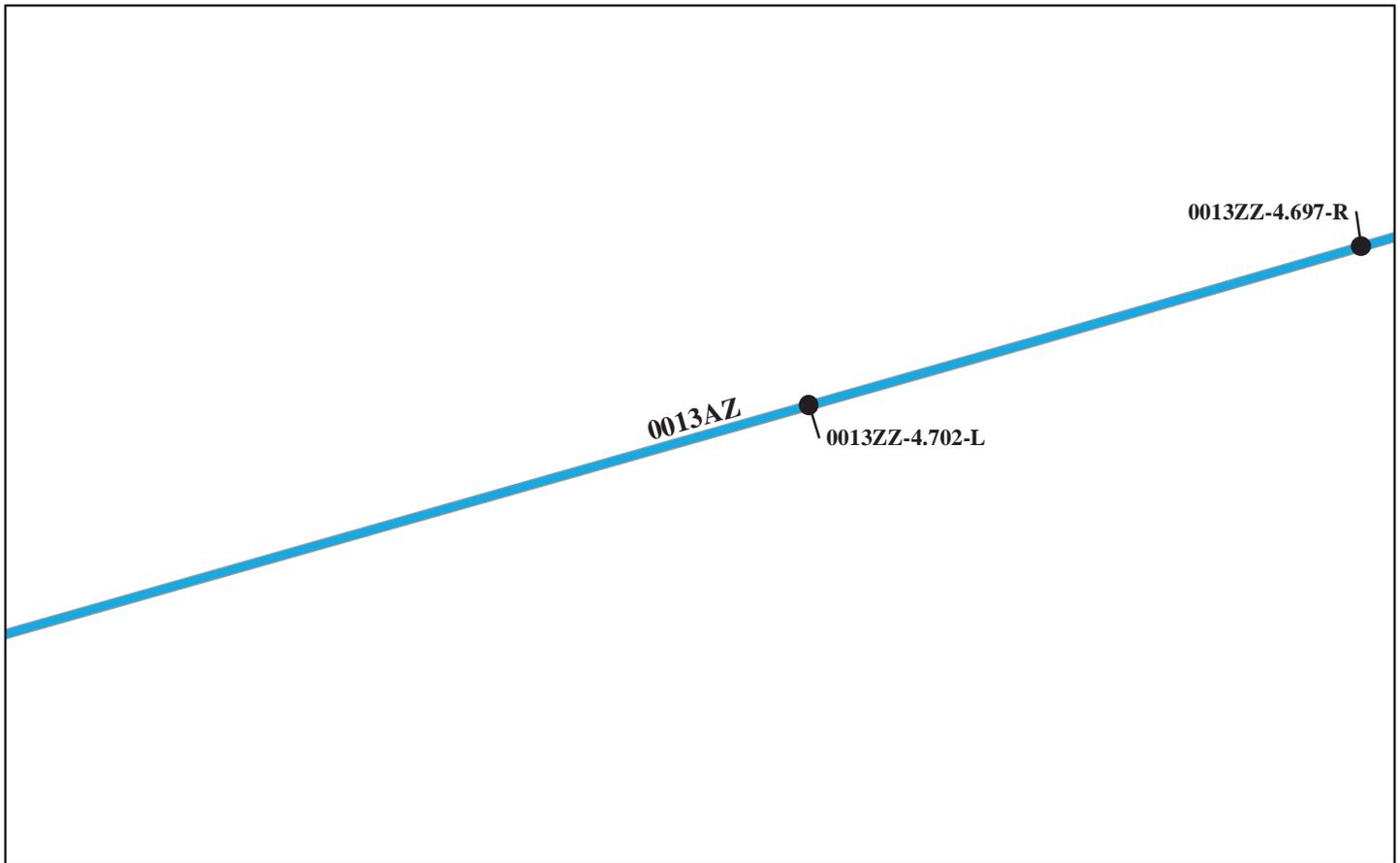
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0013ZZ-3.168-R 9/9/2010	439	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0013ZZ-3.837-R 9/9/2010	901	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0013ZZ-4.184-L 9/9/2010	90	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$14,218.00
GRSM-0013ZZ-4.683-R 9/9/2010	35	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$1,776.00
GRSM-0013ZZ-4.688-L 9/9/2010	35	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$43,643.00

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

Great Smoky Mountains National Park

ROUTE 0013ZZ: FIGHTING CREEK GAP ROAD AND SPUR



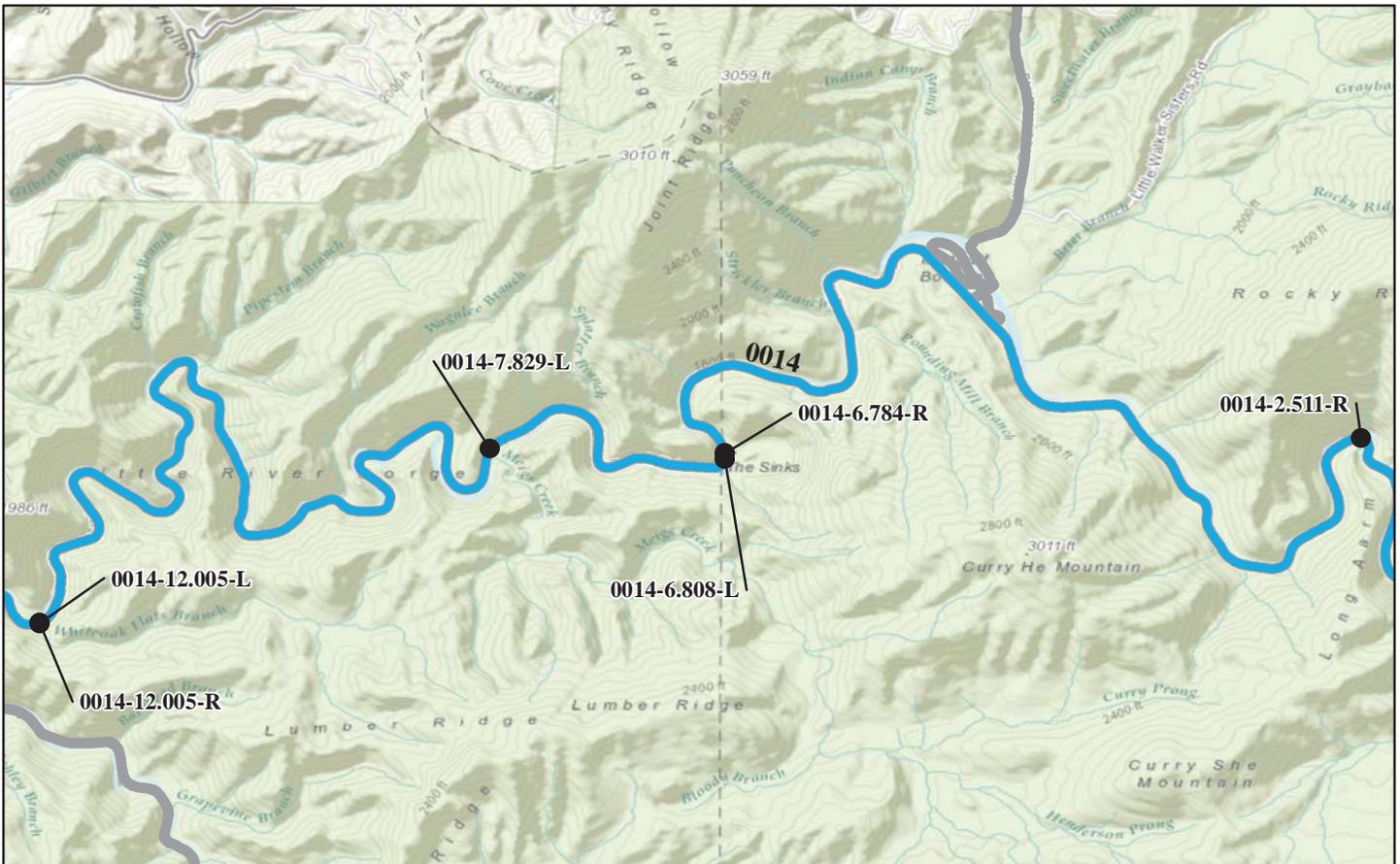
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0013ZZ-4.697-R 9/9/2010	24	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0013ZZ-4.702-L 9/9/2010	35	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$19,168.00

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

Great Smoky Mountains National Park

ROUTE 0014: LITTLE RIVER GORGE ROAD



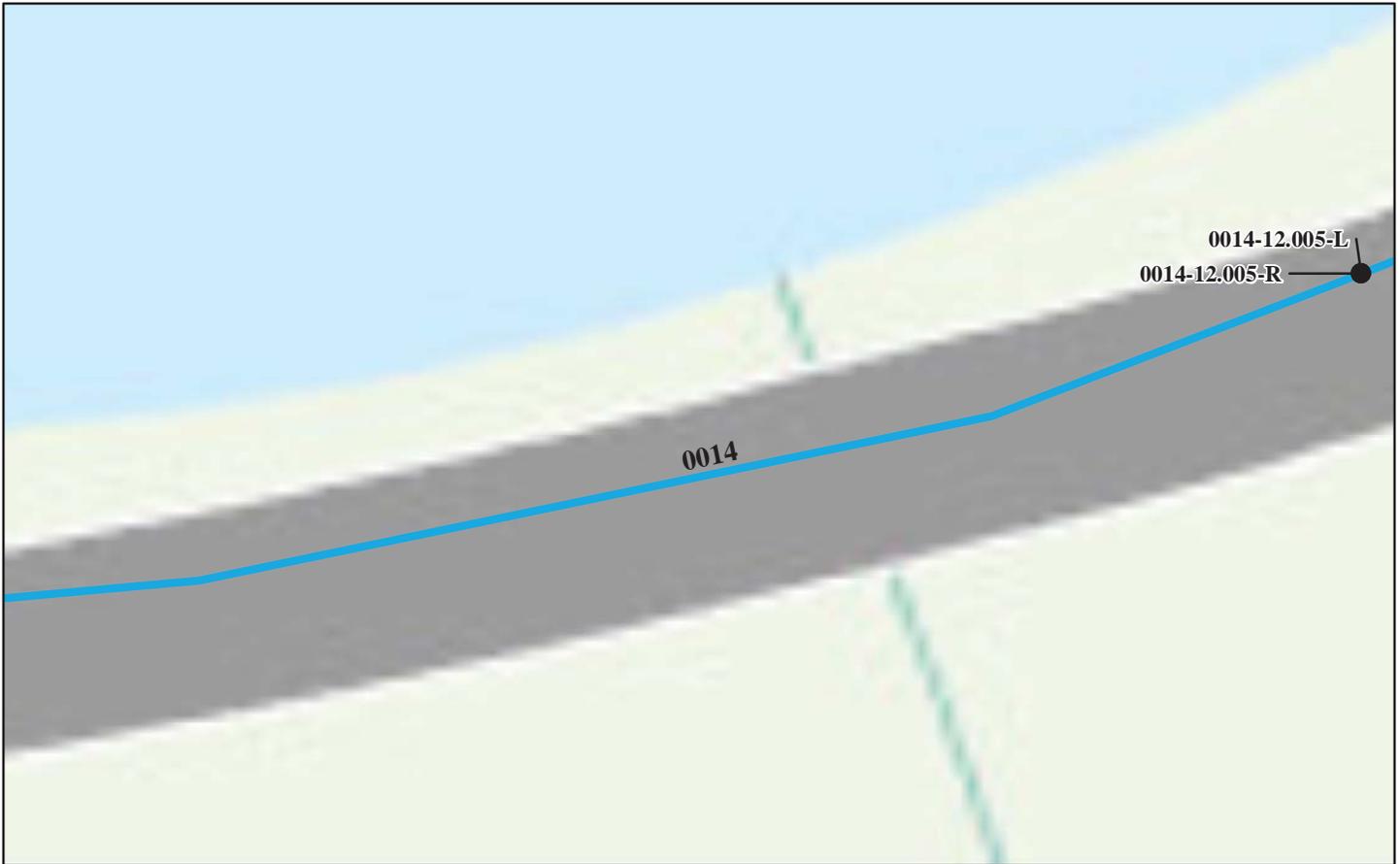
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0014-2.511-R 9/9/2010	364	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG FLARED	\$0.00
GRSM-0014-6.784-R 9/9/2010	47	OTHER: RIGID ALUMINUM TWO BEAMS	OTHER: ALUMINUM FLARED	NONE	\$0.00
GRSM-0014-6.808-L 9/9/2010	101	OTHER: RIGID ALUMINUM TWO BEAMS	NONE	OTHER: ALUMINUM FLARED	\$0.00
GRSM-0014-7.829-L 9/9/2010	282	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0014-12.005-L 9/9/2010	67	OTHER: ALUMINUM BRIDGE RAIL	OTHER: ALUMINUM BURIED	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0014: LITTLE RIVER GORGE ROAD



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	
GRSM-0014-12.005-R 9/9/2010	88	OTHER: ALUMINUM BRIDGE RAIL	OTHER: ALUMINUM FLARED	OTHER: ALUMINUM FLARED	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD



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	
GRSM-0015-0.506-R 9/10/2010	344	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0015-0.819-R 9/9/2010	246	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0015-2.120-L 9/10/2010	42	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0015-2.121-R 9/10/2010	35	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0015-2.136-R 9/10/2010	45	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD



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	
GRSM-0015-2.140-L 9/10/2010	49	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0015-2.169-R 9/9/2010	29	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0015-2.172-L 9/9/2010	15	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0015-2.183-L 9/9/2010	37	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0015-2.183-R 9/9/2010	34	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD



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	
GRSM-0015-2.258-L 9/9/2010	251	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0015-2.334-L 9/9/2010	183	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0015-2.417-L 9/9/2010	204	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0015-2.650-L 9/9/2010	230	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$31,790.00
GRSM-0015-2.718-L 9/9/2010	44	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD



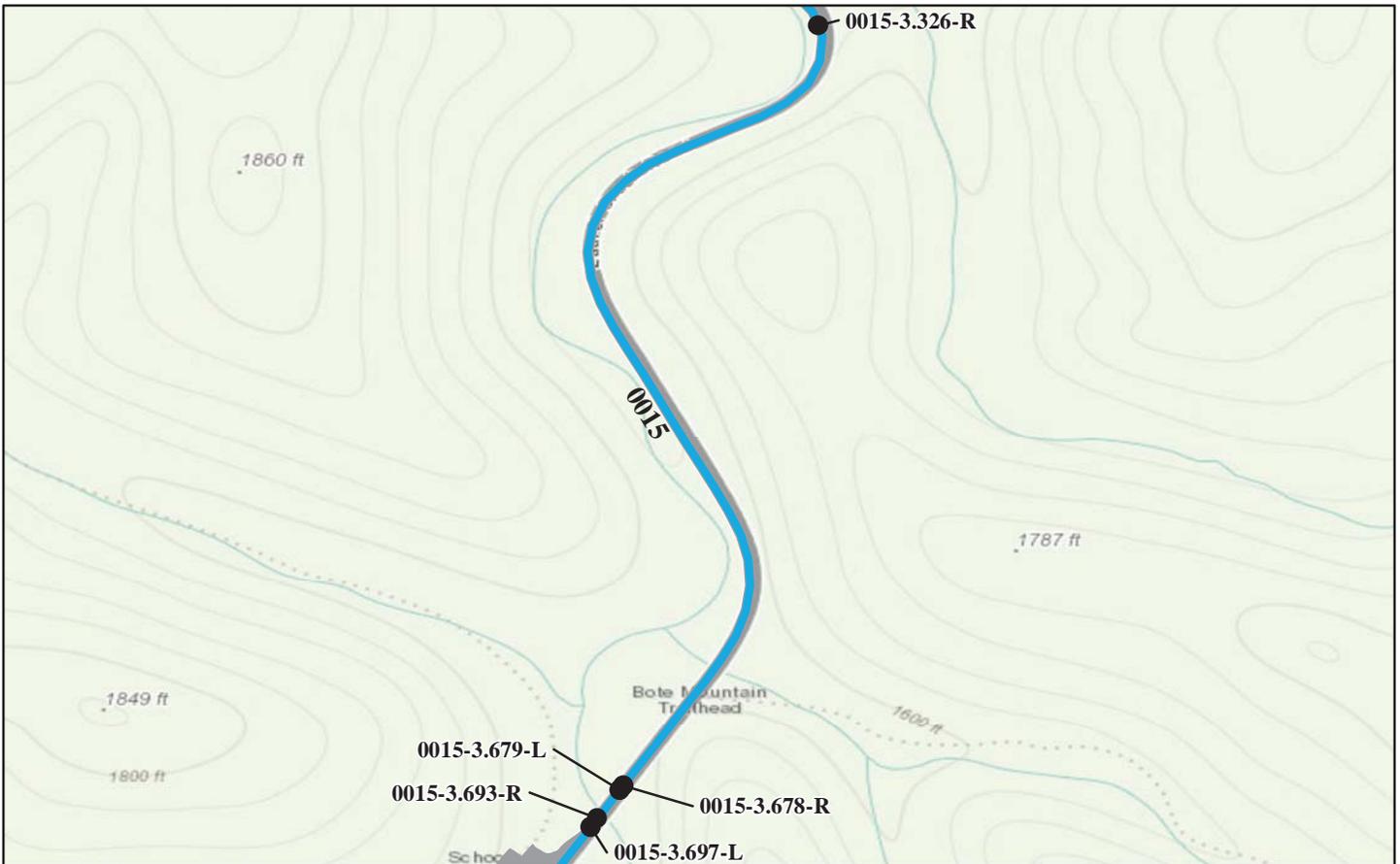
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0015-2.721-R 9/9/2010	45	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$10,395.00
GRSM-0015-2.739-R 9/9/2010	59	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0015-2.742-L 9/9/2010	49	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0015-2.932-L 9/9/2010	200	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$55,908.00
GRSM-0015-3.025-L 9/9/2010	311	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD



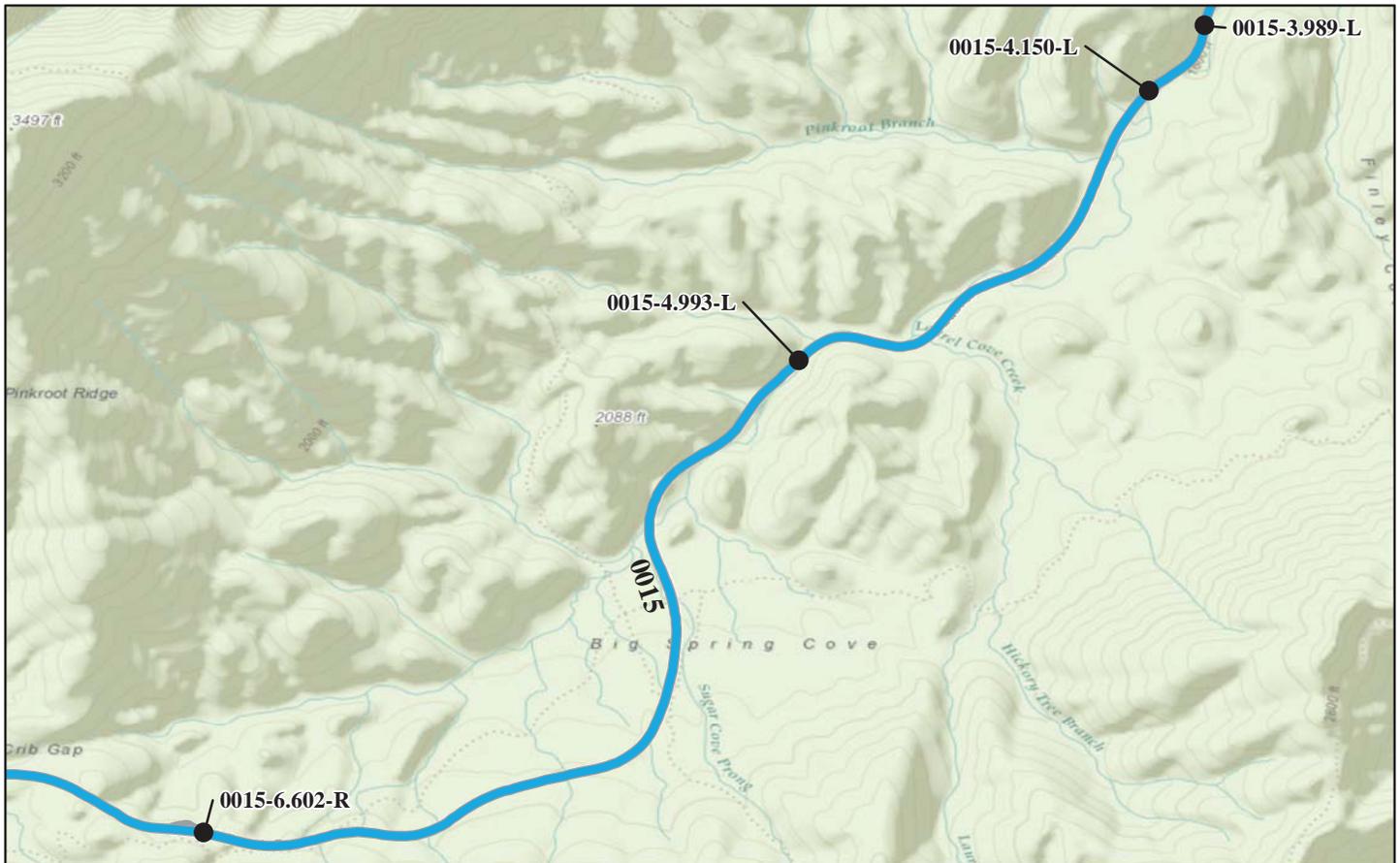
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0015-3.326-R 9/9/2010	532	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0015-3.678-R 9/9/2010	47	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0015-3.679-L 9/9/2010	47	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0015-3.693-R 9/9/2010	50	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0015-3.697-L 9/9/2010	47	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD



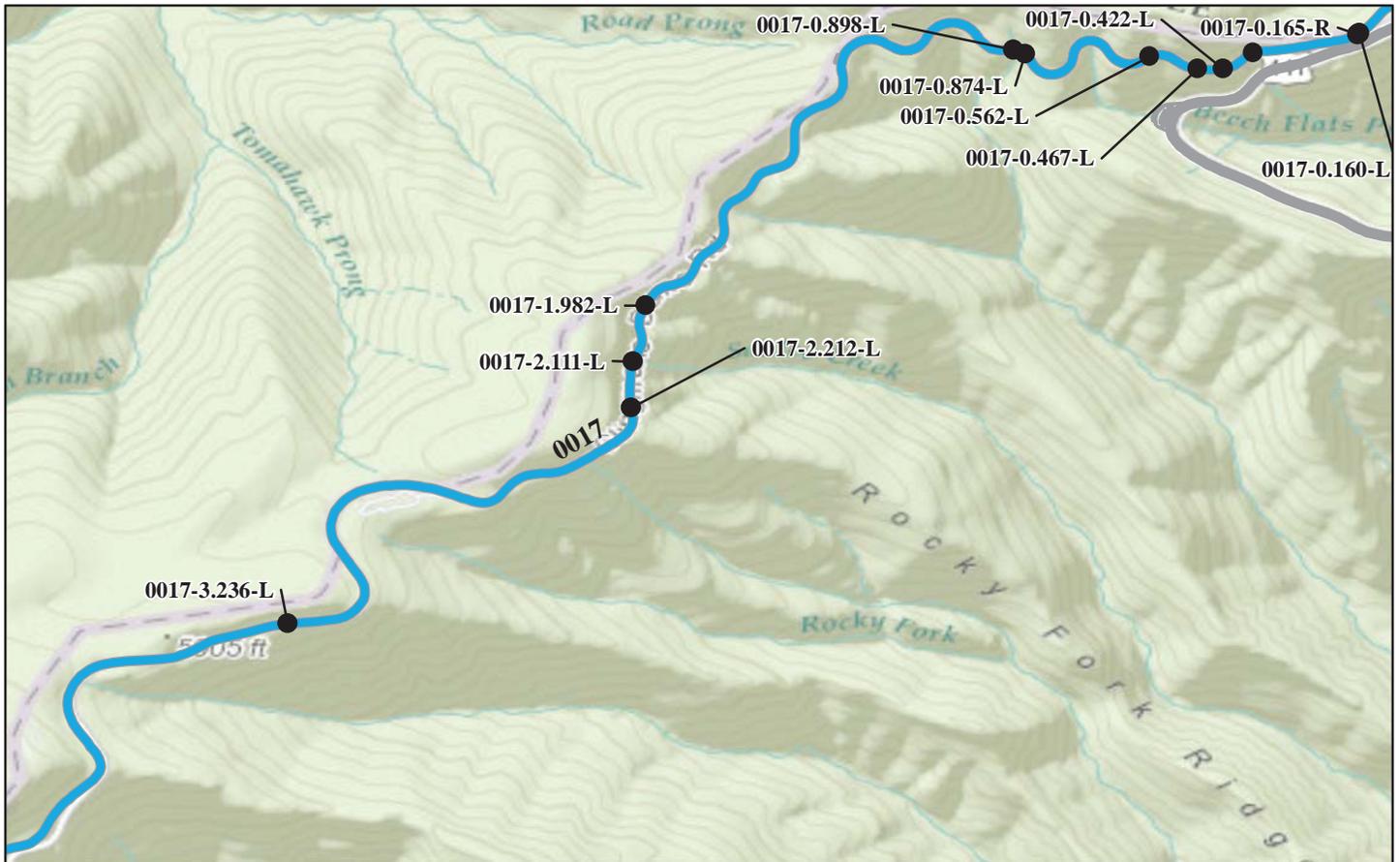
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0015-3.989-L 9/9/2010	145	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0015-4.150-L 9/9/2010	124	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$179,383.00
GRSM-0015-4.993-L 9/9/2010	428	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0015-6.602-R 9/9/2010	75	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD



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	
GRSM-0017-0.160-L 9/10/2010	728	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0017-0.165-R 9/10/2010	54	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0017-0.356-L 9/10/2010	252	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0017-0.422-L 9/10/2010	57	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0017-0.467-L 9/10/2010	195	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD



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	
GRSM-0017-0.562-L 9/10/2010	96	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0017-0.874-L 9/10/2010	58	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0017-0.898-L 9/10/2010	130	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$3,052.00
GRSM-0017-1.982-L 9/10/2010	153	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$160,353.00
GRSM-0017-2.111-L 9/10/2010	204	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$77,413.00

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

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD



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	
GRSM-0017-2.212-L 9/10/2010	178	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0017-3.236-L 9/10/2010	396	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$259,215.00
GRSM-0017-4.517-L 9/10/2010	228	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0017-4.869-L 9/10/2010	200	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0017-5.502-L 9/10/2010	175	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD



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	
GRSM-0017-6.997-L 9/10/2010	342	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00
GRSM-0017-7.063-L 9/10/2010	165	STONE MASONRY CRENELLATED WITHOUT CORE WALL	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0018: ELKMONT ROAD



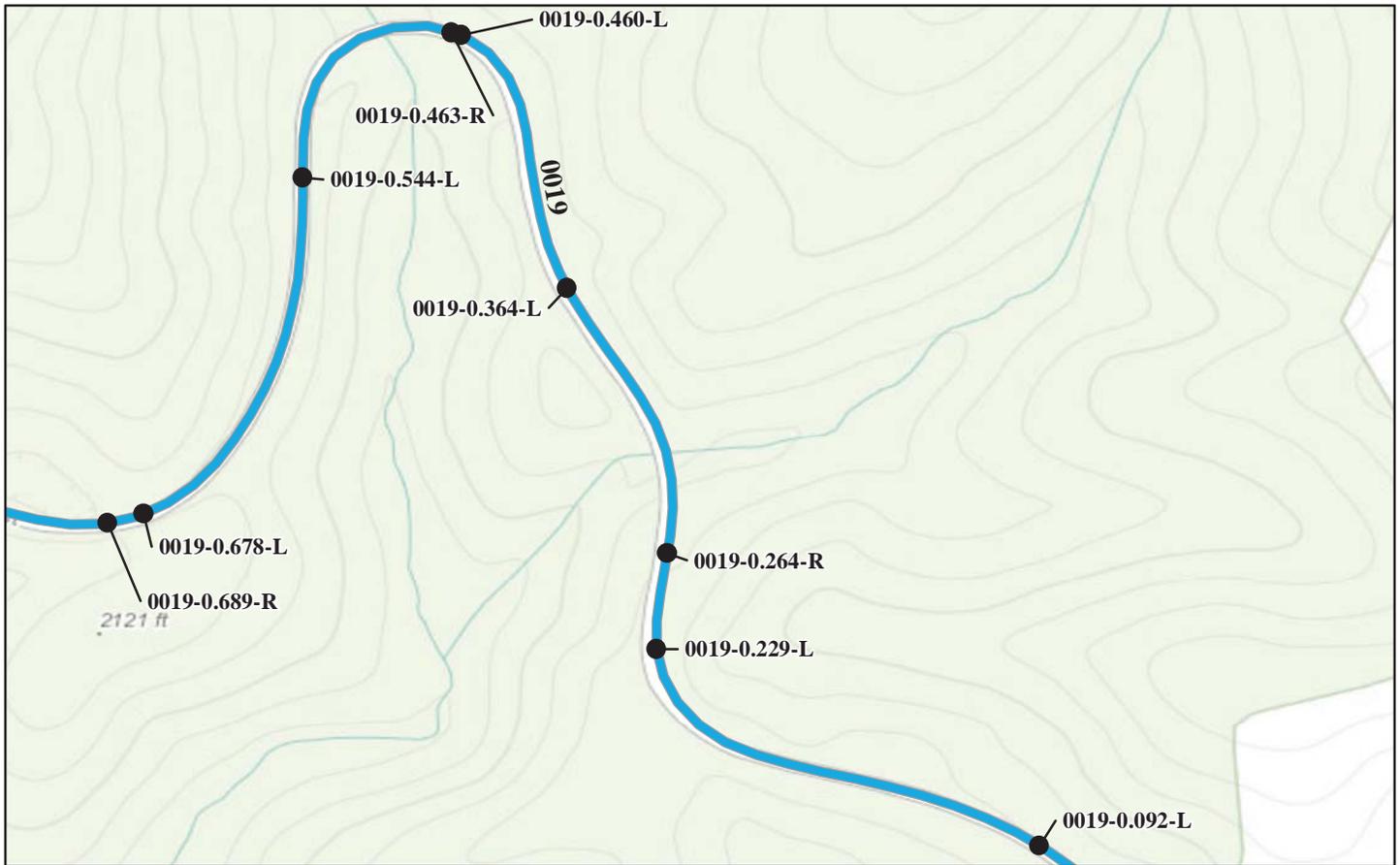
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0018-0.011-L 9/9/2010	33	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0018-0.012-R 9/9/2010	31	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0018-0.023-L 9/9/2010	29	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0018-0.023-R 9/9/2010	28	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST



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	
GRSM-0019-0.092-L 9/21/2010	544	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$11,127.00
GRSM-0019-0.229-L 9/21/2010	430	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$11,028.00
GRSM-0019-0.264-R 9/21/2010	320	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG FLARED	\$0.00
GRSM-0019-0.364-L 9/21/2010	170	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$3,493.00
GRSM-0019-0.460-L 9/21/2010	150	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$5,225.00

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST



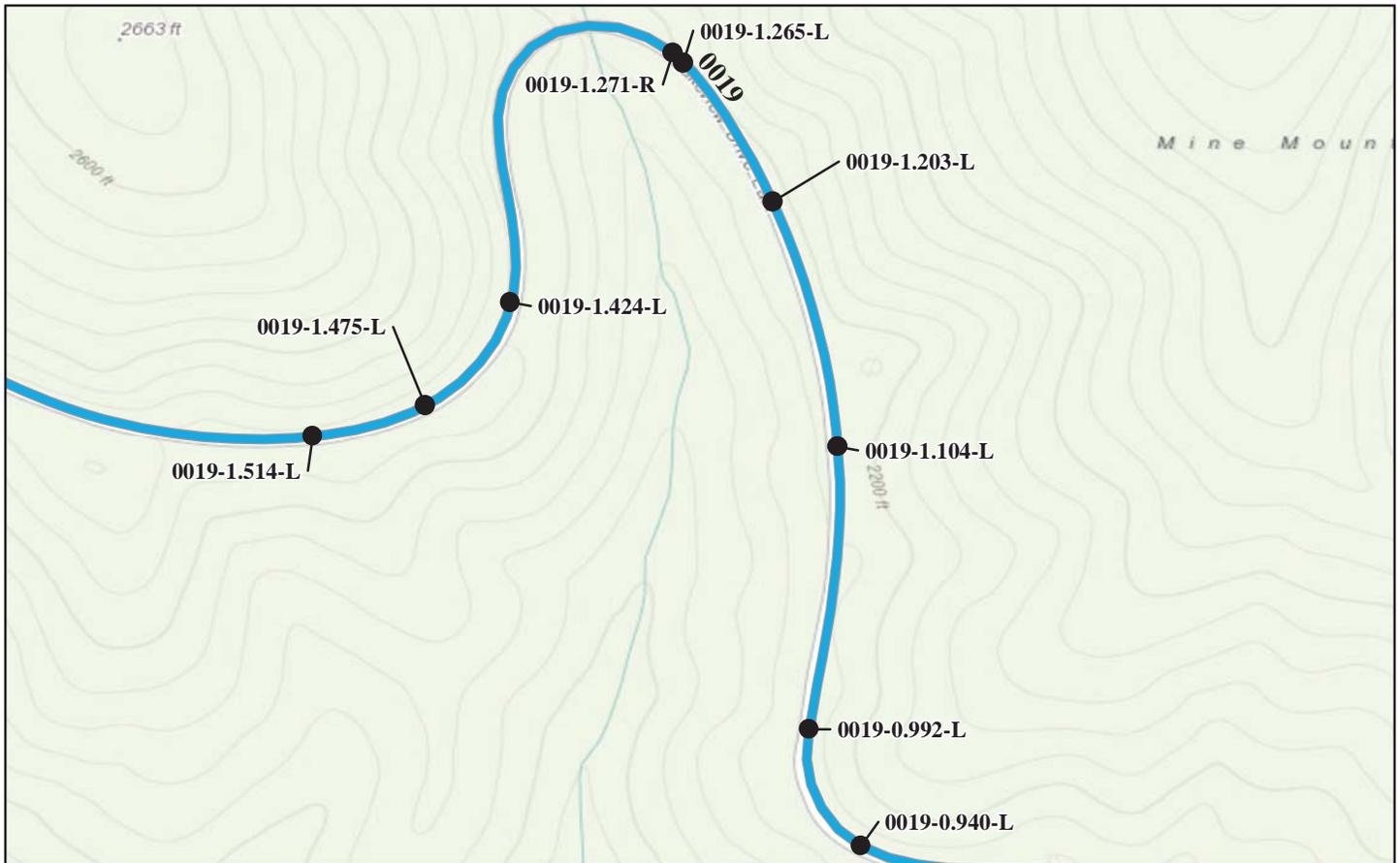
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0019-0.463-R 9/21/2010	196	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG BURIED	\$2,008.00
GRSM-0019-0.544-L 9/21/2010	570	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	SBT/LOG BURIED	\$0.00
GRSM-0019-0.678-L 9/21/2010	403	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG BURIED	\$0.00
GRSM-0019-0.689-R 9/21/2010	309	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$37,323.00
GRSM-0019-0.824-L 9/21/2010	522	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$4,318.00

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST



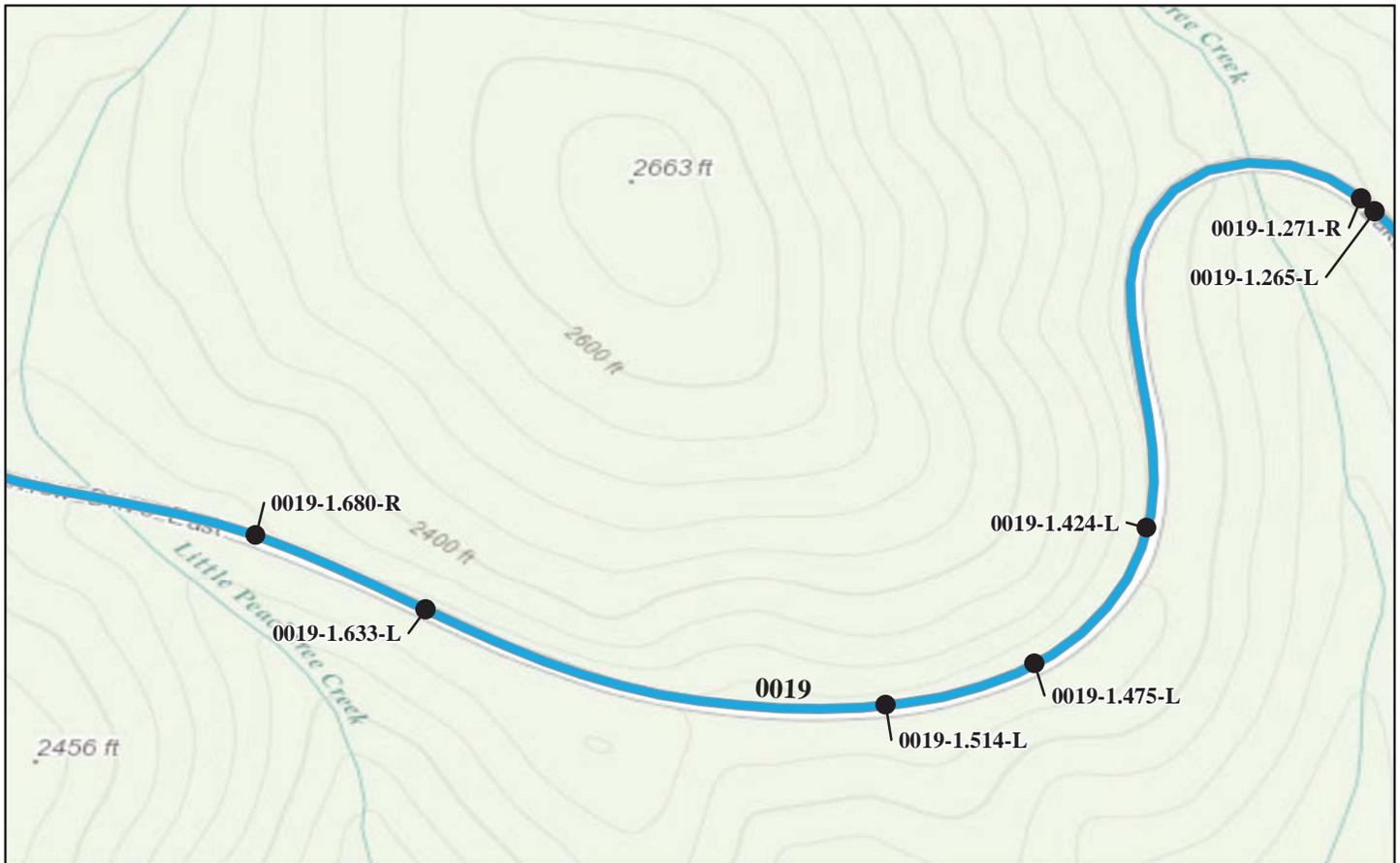
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0019-0.940-L 9/21/2010	115	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$4,483.00
GRSM-0019-0.992-L 9/21/2010	491	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$2,282.00
GRSM-0019-1.104-L 9/21/2010	238	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$2,393.00
GRSM-0019-1.203-L 9/21/2010	61	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$2,294.00
GRSM-0019-1.265-L 9/21/2010	253	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$4,626.00

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST



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	
GRSM-0019-1.271-R 9/21/2010	267	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG FLARED	\$0.00
GRSM-0019-1.424-L 9/21/2010	89	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$1,089.00
GRSM-0019-1.475-L 9/21/2010	89	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$2,602.00
GRSM-0019-1.514-L 9/21/2010	240	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$5,528.00
GRSM-0019-1.633-L 9/21/2010	530	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$10,093.00

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST



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	
GRSM-0019-1.680-R 9/21/2010	288	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$2,723.00
GRSM-0019-1.797-L 9/21/2010	81	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$3,174.00
GRSM-0019-1.873-L 9/21/2010	200	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$4,813.00
GRSM-0019-1.970-L 9/21/2010	210	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$3,410.00
GRSM-0019-2.027-L 9/21/2010	290	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$5,088.00

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST



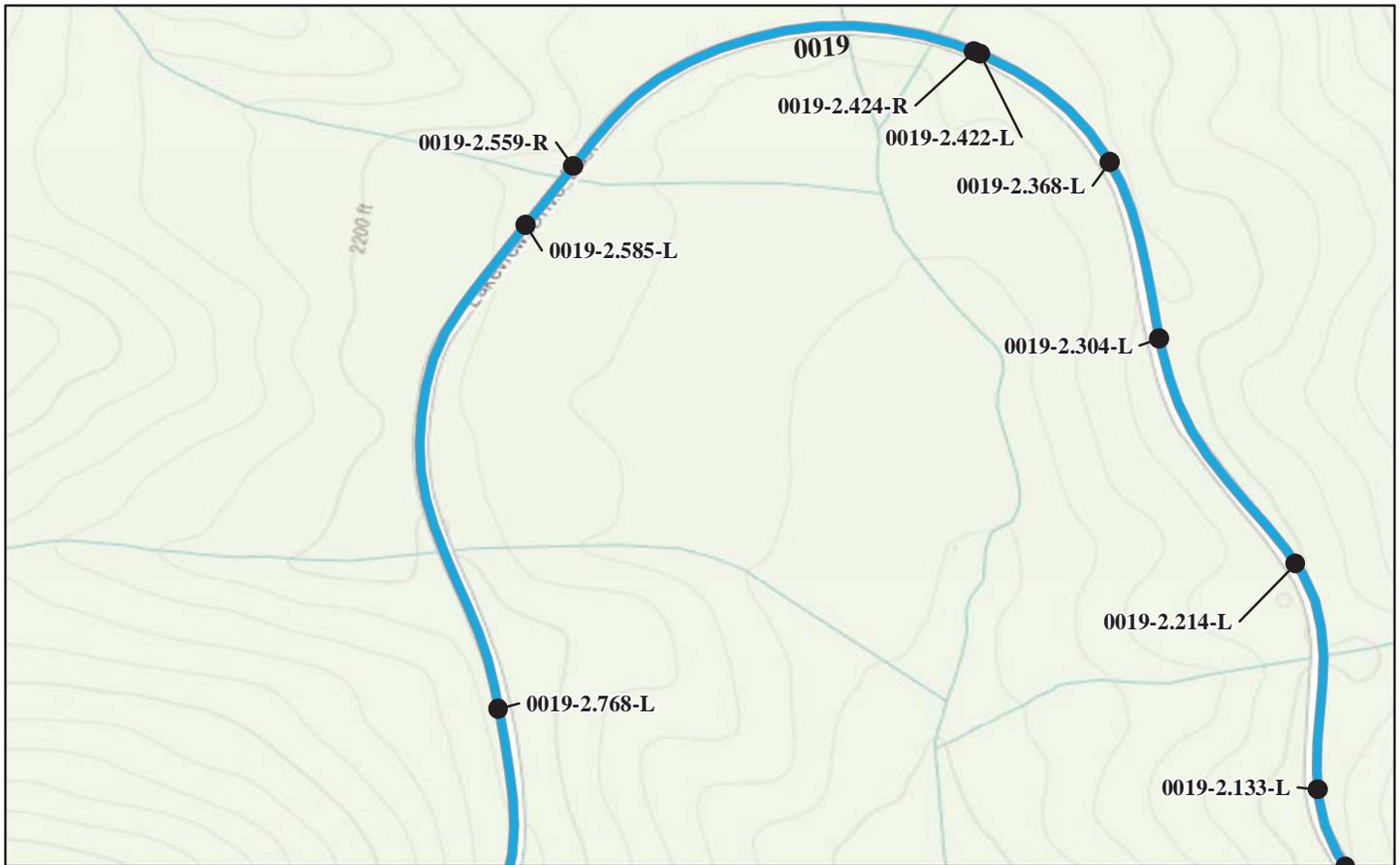
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0019-2.104-L 9/17/2010	121	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$2,833.00
GRSM-0019-2.133-L 9/17/2010	342	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$6,815.00
GRSM-0019-2.214-L 9/17/2010	281	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$2,942.00
GRSM-0019-2.304-L 9/17/2010	230	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$27,995.00
GRSM-0019-2.368-L 9/17/2010	234	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$3,014.00

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST



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	
GRSM-0019-2.422-L 9/17/2010	655	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$9,378.00
GRSM-0019-2.424-R 9/17/2010	278	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG FLARED	\$2,524.00
GRSM-0019-2.559-R 9/17/2010	40	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$2,063.00
GRSM-0019-2.585-L 9/17/2010	821	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$15,521.00
GRSM-0019-2.768-L 9/17/2010	258	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$4,901.00

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST



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	
GRSM-0019-2.840-L 9/17/2010	242	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$4,285.00
GRSM-0019-2.911-L 9/17/2010	144	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$0.00
GRSM-0019-2.943-L 9/17/2010	231	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$3,548.00
GRSM-0019-2.995-L 9/17/2010	748	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG BURIED	SBT/LOG FLARED	\$0.00
GRSM-0019-3.157-L 9/17/2010	148	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$2,448.00

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST



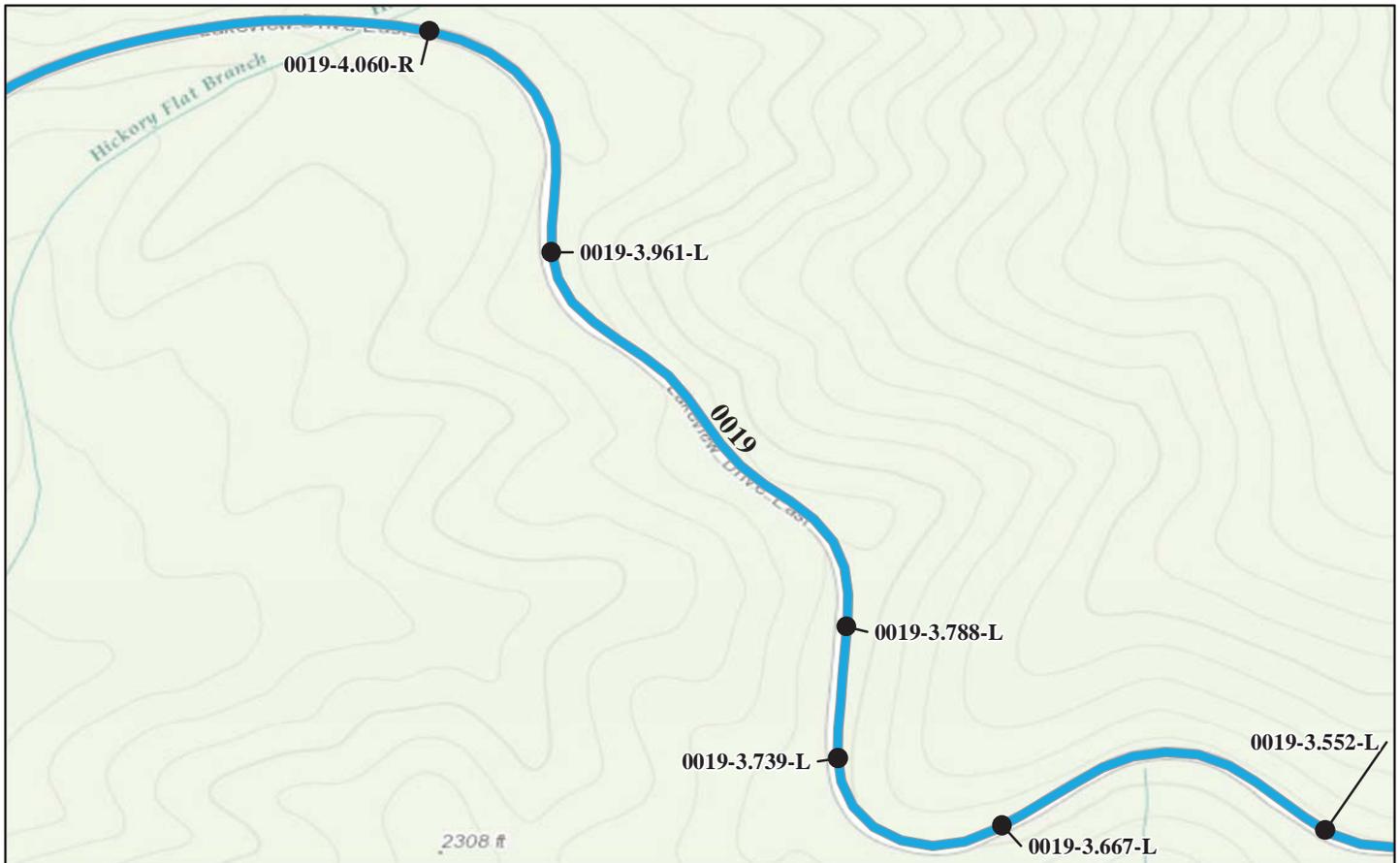
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0019-3.211-L 9/16/2010	529	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$10,687.00
GRSM-0019-3.378-L 9/17/2010	33	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$1,843.00
GRSM-0019-3.408-L 9/17/2010	283	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$3,823.00
GRSM-0019-3.487-L 9/17/2010	160	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$3,383.00
GRSM-0019-3.552-L 9/17/2010	433	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST



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	
GRSM-0019-3.667-L 9/17/2010	265	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$33,935.00
GRSM-0019-3.739-L 9/17/2010	110	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$18,755.00
GRSM-0019-3.788-L 9/17/2010	382	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$6,408.00
GRSM-0019-3.961-L 9/17/2010	1309	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$127,303.00
GRSM-0019-4.060-R 9/17/2010	62	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$2,118.00

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST



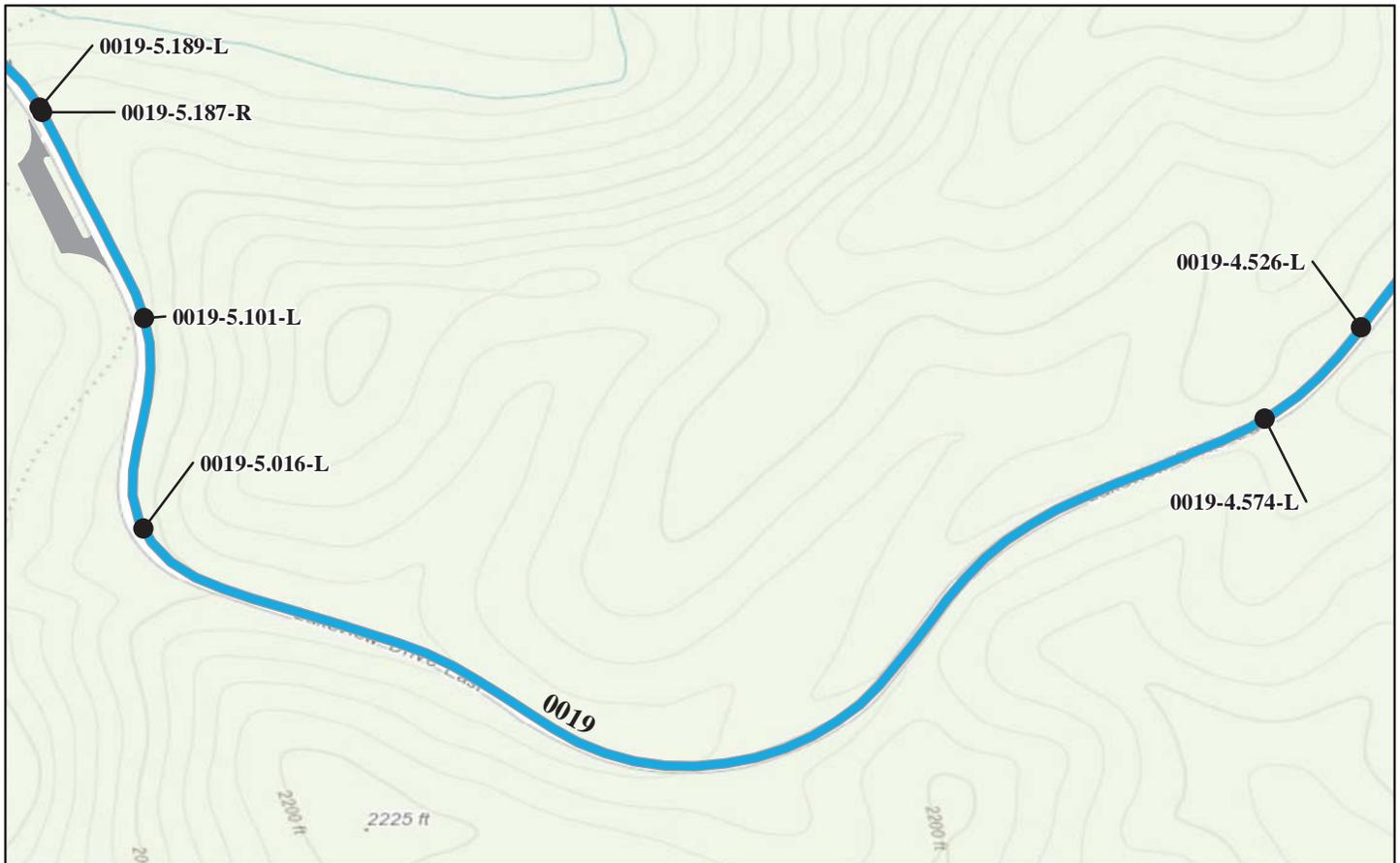
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0019-4.230-L 9/17/2010	453	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$48,411.00
GRSM-0019-4.232-R 9/17/2010	190	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$4,373.00
GRSM-0019-4.348-L 9/17/2010	422	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$46,024.00
GRSM-0019-4.359-R 9/17/2010	299	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$36,553.00
GRSM-0019-4.440-L 9/17/2010	355	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$8,250.00

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST



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	
GRSM-0019-4.526-L 9/17/2010	183	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$4,296.00
GRSM-0019-4.574-L 9/15/2010	745	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$74,140.00
GRSM-0019-5.016-L 9/15/2010	401	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$8,140.00
GRSM-0019-5.101-L 9/15/2010	125	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$3,658.00
GRSM-0019-5.187-R 9/15/2010	26	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$1,821.00

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST



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	
GRSM-0019-5.189-L 9/15/2010	11	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$2,046.00
GRSM-0019-5.275-L 9/15/2010	273	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$34,551.00
GRSM-0019-5.289-R 9/15/2010	153	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$22,066.00
GRSM-0019-5.347-L 9/15/2010	965	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$13,778.00
GRSM-0019-5.377-R 9/15/2010	214	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$2,612.00

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST



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	
GRSM-0019-5.478-R 9/15/2010	150	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$2,062.00
GRSM-0019-5.568-L 9/15/2010	1447	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$22,935.00
GRSM-0019-5.571-R 9/15/2010	190	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	OTHER: TIMBER BURIED	\$1,952.00
GRSM-0019-5.697-R 9/15/2010	134	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$2,833.00
GRSM-0019-5.793-R 9/15/2010	266	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$1,732.00

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOOCHEE ENTRANCE ROAD

Barrier location is unknown.

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	
GRSM-0022-0.009-R 9/27/2010	305	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$5,528.00
GRSM-0022-0.136-R 9/27/2010	120	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$5,885.00
GRSM-0022-0.234-R 9/27/2010	137	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$2,888.00
GRSM-0022-0.303-R 9/27/2010	98	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$5,093.00
GRSM-0022-0.565-R 9/27/2010	730	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$72,985.00

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOOCHEE ENTRANCE ROAD

Barrier location is unknown.

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	
GRSM-0022-0.572-L 9/27/2010	442	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$47,564.00
GRSM-0022-0.867-R 9/27/2010	773	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$79,541.00
GRSM-0022-0.970-L 9/27/2010	166	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$23,067.00
GRSM-0022-1.013-R 9/27/2010	689	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$69,828.00
GRSM-0022-1.194-L 9/27/2010	310	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$37,400.00

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOOCHEE ENTRANCE ROAD

Barrier location is unknown.

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	
GRSM-0022-1.288-L 9/27/2010	157	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$23,694.00
GRSM-0022-1.441-R 9/27/2010	251	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$29,612.00
GRSM-0022-1.519-R 9/27/2010	248	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$29,381.00
GRSM-0022-1.612-R 9/27/2010	649	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$66,748.00
GRSM-0022-1.685-L 9/27/2010	224	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$27,533.00

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOOCHEE ENTRANCE ROAD

Barrier location is unknown.

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	
GRSM-0022-1.763-R 9/27/2010	502	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$52,184.00
GRSM-0022-1.895-R 9/27/2010	237	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$28,534.00
GRSM-0022-2.016-L 9/27/2010	406	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$44,792.00
GRSM-0022-2.106-R 9/27/2010	165	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$22,990.00
GRSM-0022-2.190-L 9/27/2010	79	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$16,368.00

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOOCHEE ENTRANCE ROAD

Barrier location is unknown.

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	
GRSM-0022-2.223-R 9/27/2010	238	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$28,611.00
GRSM-0022-2.303-R 9/27/2010	1327	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$128,689.00
GRSM-0022-2.347-L 9/27/2010	189	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$24,838.00
GRSM-0022-2.409-L 9/27/2010	262	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$33,704.00
GRSM-0022-2.740-R 9/27/2010	153	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$22,066.00

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier location is unknown.

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	
GRSM-0022-2.751-L 9/27/2010	130	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$20,295.00
GRSM-0022-2.812-R 9/27/2010	174	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$23,683.00
GRSM-0022-2.818-L 9/27/2010	100	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$17,985.00
GRSM-0022-3.114-L 9/27/2010	275	OTHER: TIMBER RAIL ON TIMBER POSTS	NONE	NONE	\$34,705.00

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

Great Smoky Mountains National Park

ROUTE 0101: TOW STRING ROAD



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	
GRSM-0101-0.084-R 9/23/2010	40	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	NONE	\$3,724.00
GRSM-0101-0.085-L 9/23/2010	40	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	SBT/LOG FLARED	NONE	\$1,397.00
GRSM-0101-0.106-L 9/23/2010	42	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	NONE	SBT/LOG FLARED	\$0.00
GRSM-0101-0.106-R 9/23/2010	54	STEEL-BACKED TIMBER WITHOUT BLOCKOUT	NONE	SBT/LOG FLARED	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0128: TREMONT ROAD

Barrier location is unknown.

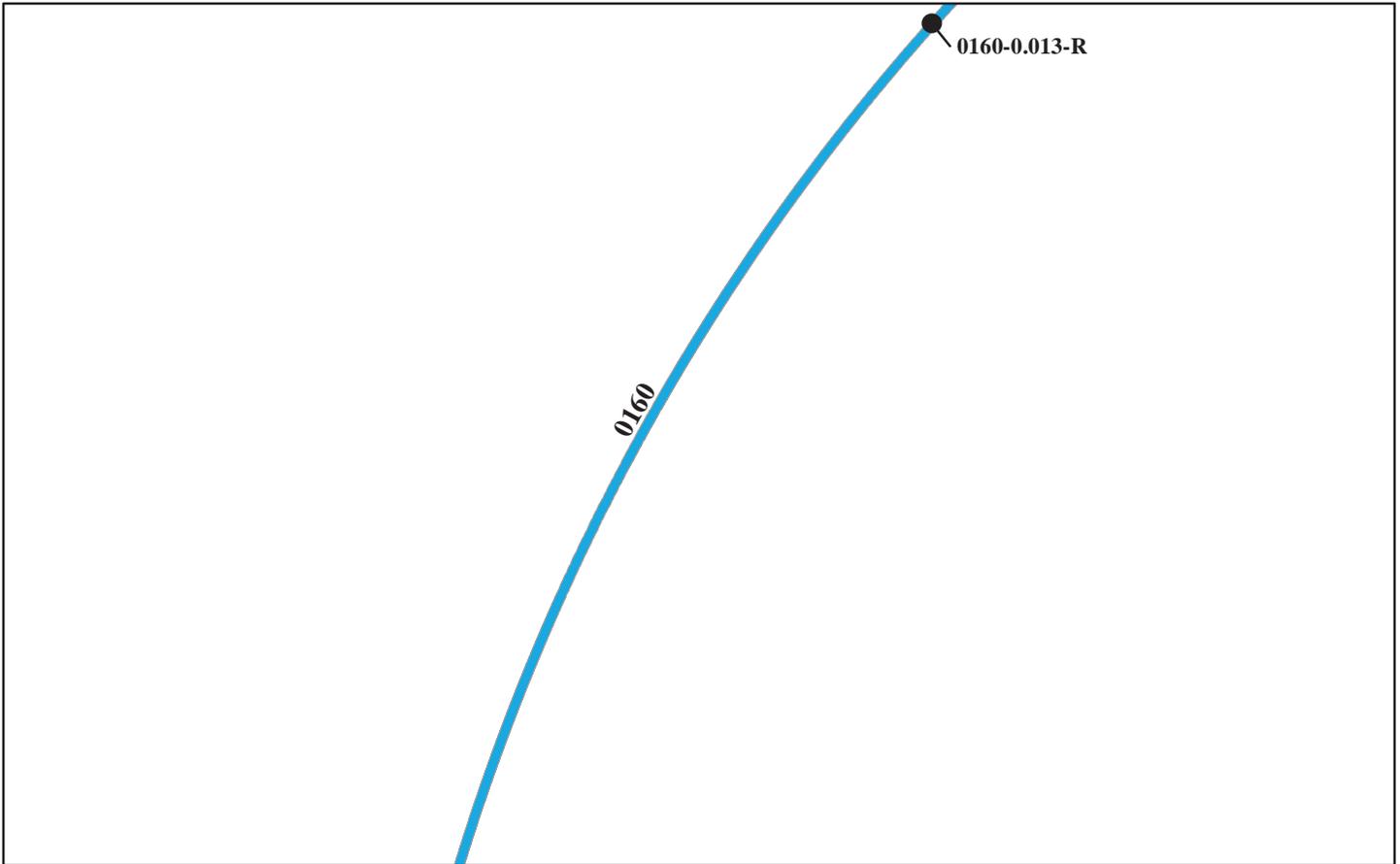
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0128-0.009-L 9/10/2010	8	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0160: HUSKEY GROVE ROAD



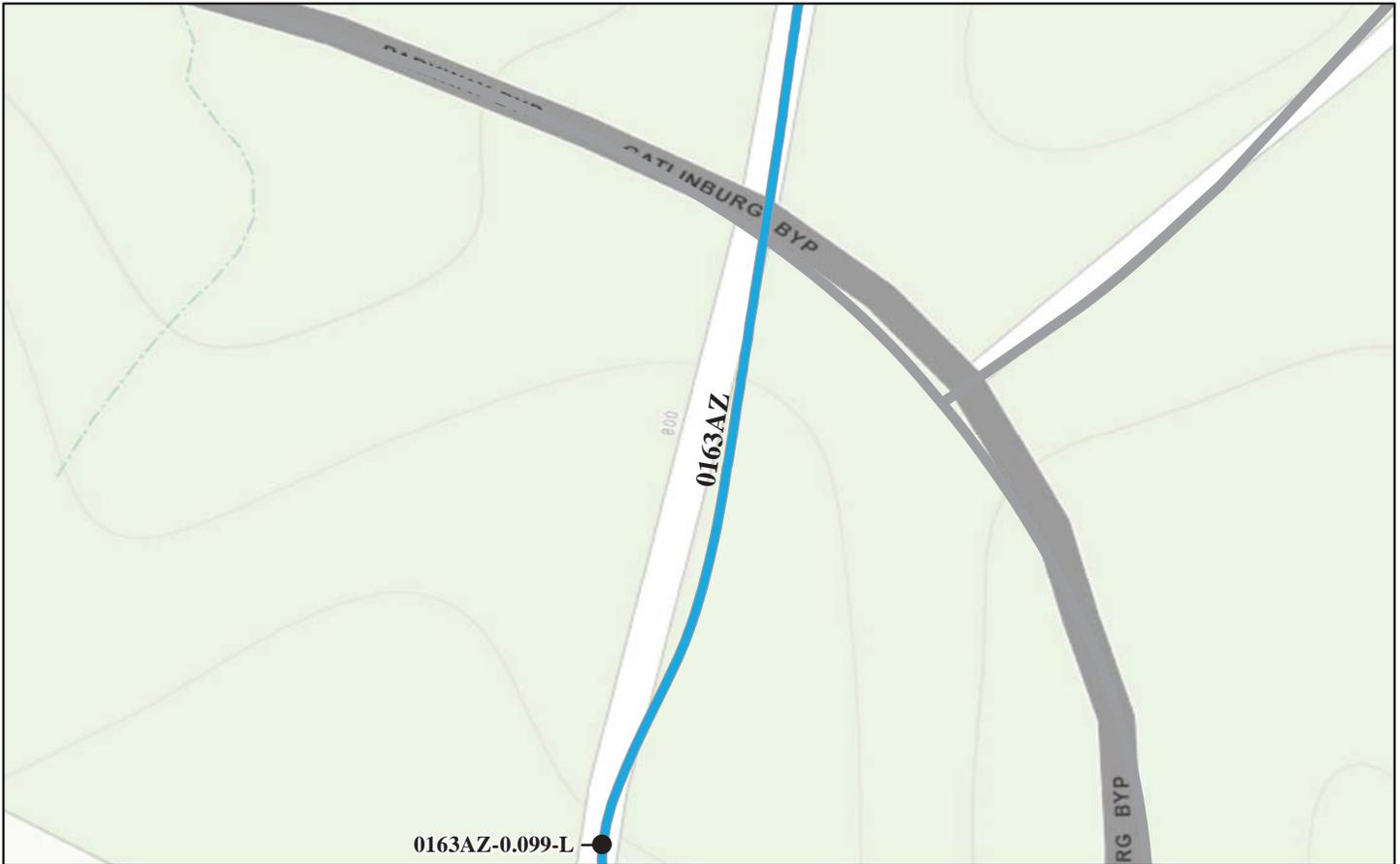
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0160-0.013-R 9/10/2010	102	STEEL-BACKED TIMBER WITH BLOCKOUT	NONE	SBT/LOG FLARED	\$2,392.00

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

Great Smoky Mountains National Park

ROUTE 0163AZ: CAMPBELL LEAD ROAD



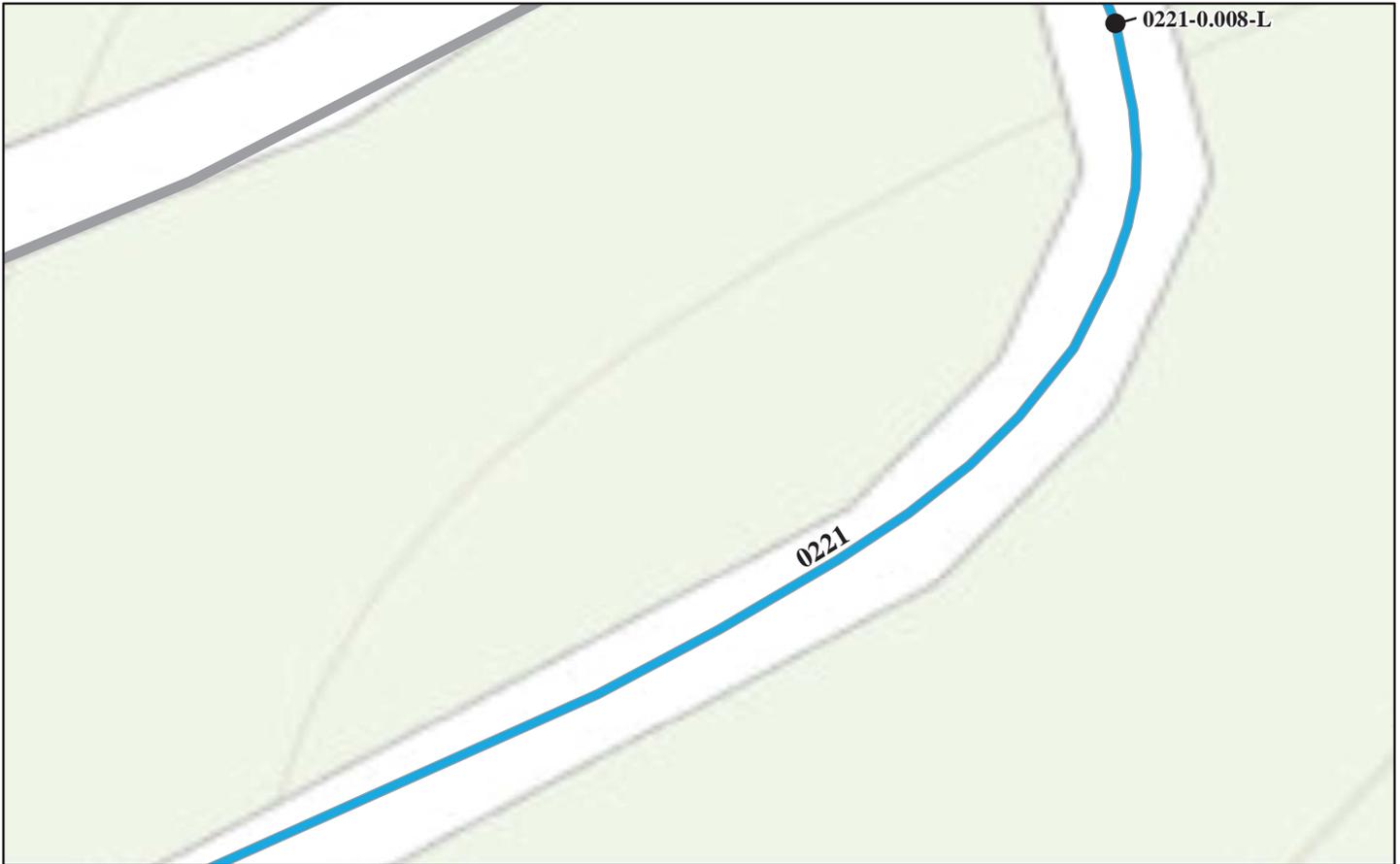
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0163AZ-0.099-L 9/11/2010	430	W-BEAM STRONG POST	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0221: LOOK ROCK MAINTENANCE ACCESS



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	
GRSM-0221-0.008-L 9/24/2010	185	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.

Great Smoky Mountains National Park

ROUTE 0405: SUGARLANDS HEADQUARTERS ROAD



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	
GRSM-0405-0.232-L 9/11/2010	28	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0405-0.237-R 9/11/2010	26	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0405-0.249-L 9/11/2010	32	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00
GRSM-0405-0.254-R 9/11/2010	72	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$0.00

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

Great Smoky Mountains National Park

ROUTE 0430: SUGARLANDS RESIDENCE ROAD



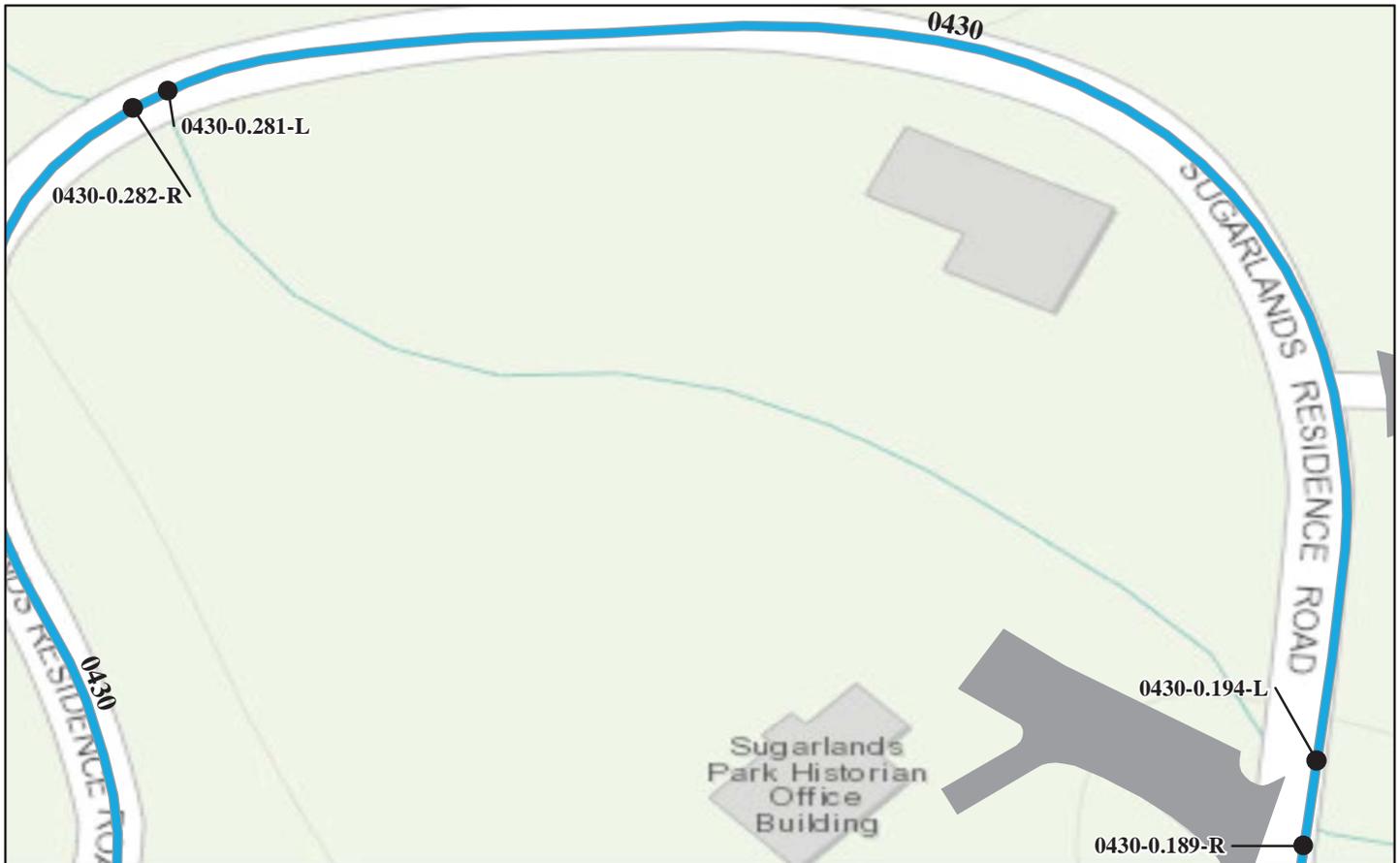
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID Inspection Date	Barrier Length (Ft.)	Barrier Type	Barrier End Treatment		*Repair Cost
			Begin	End	
GRSM-0430-0.051-R 9/11/2010	27	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$4,394.00
GRSM-0430-0.052-L 9/11/2010	27	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$4,394.00
GRSM-0430-0.066-R 9/11/2010	40	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$5,627.00
GRSM-0430-0.067-L 9/11/2010	160	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$18,645.00
GRSM-0430-0.096-R 9/11/2010	46	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$7,865.00

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

Great Smoky Mountains National Park

ROUTE 0430: SUGARLANDS RESIDENCE ROAD



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	
GRSM-0430-0.189-R 9/11/2010	60	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$10,412.00
GRSM-0430-0.194-L 9/11/2010	52	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$8,019.00
GRSM-0430-0.281-L 9/11/2010	30	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$5,165.00
GRSM-0430-0.282-R 9/11/2010	35	STONE MASONRY WITHOUT CONCRETE CORE WALL	NONE	NONE	\$5,473.00

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

Tier 3 Barrier Details



Great Smoky Mountains National Park



Federal Lands Highway
Road Inventory Program

Barrier ID:	GRSM-0008A-0.006-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8A				
Inspection Date:	09/10/2010	Barrier Rating:	15.30		
Barrier Description					
Type:	W-BEAM STRONG POST	Barrier Function:	TRAFFIC		
Barrier Material:	GALVANIZED STEEL	Post Material:	GALVANIZED STEEL		
Blockout Type:	STEEL	Length (ft.):	160		
Speed Limit (MPH):	35	Placement with Respect to Road:	TANGENT		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	W-BEAM FLARED 350 COMPLIANT	Ending End Trtmt Crashworthy?:	YES		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	74.0
Height (In.):	27.2	Lateral Offset (In.):	163.0	Road Grade (%):	4.00
Physical Condition					
Barrier	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008A-0.006-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8A		
Inspection Date:	09/10/2010	Barrier Rating:	15.30

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.

Great Smoky Mountains National Park

ROUTE 0008A: FOOTHILLS PARKWAY SECTION 8A

Barrier Condition Photos



GRSM_0008A_0.006_L_1.JPG

Barrier ID:	GRSM-0008G-57.190-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	Barrier Rating:	46.70		
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.):	595		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	24.6	Lateral Offset (In.):	50.2	Road Grade (%):	6.20
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 3 in below the design height of 27 in for 595 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-57.190-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/24/2010	Barrier Rating:	46.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$11413
Brief Workorder:	Raise 595-ft of barrier up to 27-in design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 595 LF = \$5950. Raise 595 feet of barrier to design height of 27 inches. 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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos

Condition photos are not available for GRSM-0008G-57.190-L.

Barrier ID:	GRSM-0008G-58.311-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	Barrier Rating:	35.50		
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.):	581		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.2	Lateral Offset (In.):	49.2	Road Grade (%):	3.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 2 in below the design height of 27 in for 80 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-58.311-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/24/2010	Barrier Rating:	35.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2503
Brief Workorder:	Raise 80-ft of barrier up to 27-in design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 80 LF = \$800. Raise 80-ft 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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_58.311_L_1.JPG

Barrier ID:	GRSM-0008G-58.541-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010		Barrier Rating:	41.00	
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.):	310	
Speed Limit (MPH):	45		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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	24.2	Lateral Offset (In.):	47.5	Road Grade (%):	5.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 3 in below the design height of 27 in for 310 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-58.541-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/24/2010	Barrier Rating:	41.00

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$6655
Brief Workorder:	Raise 310-ft of barrier up to 27-in design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 310 LF = \$3100. Raise 310-ft of barrier up to 27-in 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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_58.541_L_1.JPG

Barrier ID:	GRSM-0008G-58.588-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	Barrier Rating:	42.50		
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.):	344		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	24.0	Lateral Offset (In.):	55.2	Road Grade (%):	5.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 3 in below the design height of 27 in for 344 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-58.588-R		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/24/2010	Barrier Rating:	42.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$7029
Brief Workorder:	Raise 344 feet of barrier up to 27-in design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 344 LF = \$3440. Raise 344-ft of barrier up to 27-in 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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_58.588_R_1.JPG

Barrier ID:	GRSM-0008G-58.737-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	Barrier Rating:	41.00		
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.):	523		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	23.2	Lateral Offset (In.):	51.2	Road Grade (%):	3.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 3 in below the 27-in design height for 187 ft and 3 to 6 in below for 336 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-58.737-R		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/24/2010	Barrier Rating:	41.00

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$10620
Brief Workorder:	Raise 523 feet of guardrail up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 523 LF = \$5230. Raise 523-ft of barrier up to 27-in 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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_58.737_R_1.JPG

Barrier ID:	GRSM-0008G-58.981-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	Barrier Rating:	49.50		
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.):	1223		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	24.0	Lateral Offset (In.):	49.0	Road Grade (%):	3.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 3 in below the 27-in design height for 1098 ft and 3 to 5 in below for 125 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-58.981-R		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/24/2010	Barrier Rating:	49.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$21566
Brief Workorder:	Raise 1223 feet of guardrail up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 1223 LF = \$12230. Raise 1223 feet of guardrail up to the 27 inch design height. Low Speed Traffic Control at \$1475- per -Day for 5 Day(s) = \$7375.				

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

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_58.981_R_1.JPG

Barrier ID:	GRSM-0008G-59.366-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	Barrier Rating:	42.50		
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.):	548		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	24.6	Lateral Offset (In.):	49.5	Road Grade (%):	3.20
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 3 in below the 27-in design height for 468 ft and 3 to 5 in below for 80 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-59.366-R		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/24/2010	Barrier Rating:	42.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$9273
Brief Workorder:	Raise 548 feet of guardrail up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 548 LF = \$5480. Raise 548 feet of guardrail up to the 27 inch design height. Low Speed Traffic Control at \$1475- per -Day for 3 Day(s) = \$2950.				

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

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_59.366_R_1.JPG

Barrier ID:	GRSM-0008G-59.591-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	Barrier Rating:	41.00		
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.):	422		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.5
Height (In.):	25.6	Lateral Offset (In.):	45.0	Road Grade (%):	1.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 3 in below the design height of 27 in for 272 ft.			
	Breaking and Cracking:	No breaking or cracking observed. One section had a bent mounting bracket.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-59.591-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/24/2010	Barrier Rating:	41.00

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$6501
Brief Workorder:	Raise 272 feet of guardrail up to the 27 inch design height and straighten a bent mounting bracket.				
Workorder:	Labor at \$60- per -Hour for 1 Hrs = \$60. Straighten mounting bracket. Adjust Guardrail at \$10- per -Lin. Ft. for 272 LF = \$2720. Adjust 272 feet of low barrier to design height of 27 inches. 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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_59.591_L_1.JPG

Barrier ID:	GRSM-0008G-59.890-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	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.):	278		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.0	Lateral Offset (In.):	50.2	Road Grade (%):	1.60
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate corrosion and weathering observed. Weathering of Moderate of the rails observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-59.890-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/24/2010	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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_59.890_L_1.JPG

Barrier ID:	GRSM-0008G-60.651-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	Barrier Rating:	30.80		
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.):	321		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.2	Lateral Offset (In.):	43.0	Road Grade (%):	5.20
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is at or within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-60.651-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/24/2010	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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_60.651_L_1.JPG

Barrier ID:	GRSM-0008G-60.817-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	Barrier Rating:	34.00		
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.):	582		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.2	Lateral Offset (In.):	52.7	Road Grade (%):	6.90
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-60.817-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_60.817_L_1.JPG

Barrier ID:	GRSM-0008G-61.207-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	Barrier Rating:	38.20		
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.):	166		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	23.0	Lateral Offset (In.):	48.0	Road Grade (%):	5.90
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2 to 3 in low for 66 ft and 4 to 6 in low for 100 ft from the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-61.207-R		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/24/2010	Barrier Rating:	38.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3449
Brief Workorder:	Raise 166 feet of guardrail up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 166 LF = \$1660. Raise 166 feet of guardrail up to the 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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_61.207_R_1.JPG

Barrier ID:	GRSM-0008G-61.228-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	Barrier Rating:	33.70		
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.):	63		
Speed Limit (MPH):	45	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 BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	24.6	Lateral Offset (In.):	53.2	Road Grade (%):	6.30
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2-3 in below for 53 ft from the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-61.228-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/24/2010	Barrier Rating:	33.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2206
Brief Workorder:	Raise 53 feet of guardrail up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 53 LF = \$530. Raise 53-ft 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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_61.228_L_1.JPG

Barrier ID:	GRSM-0008G-61.244-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	Barrier Rating:	38.20		
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.):	273		
Speed Limit (MPH):	45	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:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	23.2	Lateral Offset (In.):	56.7	Road Grade (%):	6.10
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height and the height is 2 to 3 in low for 223 ft and 4 to 5 in low for 50 ft from the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-61.244-R		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/24/2010	Barrier Rating:	38.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$6248
Brief Workorder:	Raise 273 feet of guardrail up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 273 LF = \$2730. Raise 273-ft of barrier up to 27-in 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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_61.244_R_1.JPG

Barrier ID:	GRSM-0008G-61.245-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	Barrier Rating:	33.90		
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.):	177		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.3
Height (In.):	25.0	Lateral Offset (In.):	48.2	Road Grade (%):	5.90
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2 in below the 27 in design height for 177 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-61.245-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/24/2010	Barrier Rating:	33.90

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3570
Brief Workorder:	Raise 177 feet of guardrail up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 177 LF = \$1770. Raise 177-ft 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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_61.245_L_1.JPG

Barrier ID:	GRSM-0008G-61.357-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	Barrier Rating:	36.70		
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.):	330		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.0	Lateral Offset (In.):	49.0	Road Grade (%):	6.90
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 3 in below the design height of 27 in for 150 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-61.357-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/24/2010	Barrier Rating:	36.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3273
Brief Workorder:	Raise 150 feet of guardrail up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 150 LF = \$1500. Raise 150 feet of barrier to design height of 27 inches. 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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_61.357_L_1.JPG

Barrier ID:	GRSM-0008G-61.452-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	Barrier Rating:	23.70		
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.):	468		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.6	Lateral Offset (In.):	49.0	Road Grade (%):	4.90
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at or up to 2 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-61.452-R		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/24/2010	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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_61.452_R_1.JPG

Barrier ID:	GRSM-0008G-61.453-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	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.):	270		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	25.2	Lateral Offset (In.):	54.0	Road Grade (%):	6.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 3 in below the design height of 27 in for 110 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-61.453-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/24/2010	Barrier Rating:	38.00

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2833
Brief Workorder:	Raise 110 feet of guardrail up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 110 LF = \$1100. Raise 110 feet of guardrail to design height of 27 inches. 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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_61.453_L_1.JPG

Barrier ID:	GRSM-0008G-61.608-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	Barrier Rating:	33.70		
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.):	215		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.6	Lateral Offset (In.):	46.5	Road Grade (%):	5.20
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at or 1 in below the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-61.608-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_61.608_R_1.JPG

Barrier ID:	GRSM-0008G-62.887-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	Barrier Rating:	45.20		
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.):	826		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG BURIED	Ending End Trtmt Crashworthy?:	YES		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	23.7	Lateral Offset (In.):	51.5	Road Grade (%):	0.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 3 in below the 27-in design height for 726 ft and 3 to 5 in below for 100 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	The alignment has no deviation the height on ending end is low by 5 in from the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-62.887-R		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/24/2010	Barrier Rating:	45.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$15576
Brief Workorder:	Raise 826-ft of barrier up to 27-in design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 826 LF = \$8260. Raise 826-ft of barrier up to 27-in design height. 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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_62.887_R_1.JPG

Barrier ID:	GRSM-0008G-63.434-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010	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.):	310		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.7	Lateral Offset (In.):	53.2	Road Grade (%):	5.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at or 1 in below the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-63.434-R		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/24/2010	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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_63.434_R_1.JPG

Barrier ID:	GRSM-0008G-63.797-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/24/2010		Barrier Rating:	45.20	
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.):	373	
Speed Limit (MPH):	45		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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	23.6	Lateral Offset (In.):	47.2	Road Grade (%):	1.90
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 3 in below the 27-in design height for 93 ft and 3 to 4 in below for 280 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No weathering observed.			

Barrier ID:	GRSM-0008G-63.797-R		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/24/2010	Barrier Rating:	45.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$7348
Brief Workorder:	Raise 373-ft of barrier up to 27-in design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 373 LF = \$3730. Raise 373-ft of barrier up to 27-in 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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_63.797_R_1.JPG

Barrier ID:	GRSM-0008G-65.131-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/22/2010	Barrier Rating:	28.10		
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.):	294		
Speed Limit (MPH):	45	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 BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.2	Lateral Offset (In.):	52.0	Road Grade (%):	6.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 3 in below the design height of 27 in for 140 ft.			
	Breaking and Cracking:	No breaking some cracking of rails observed 1/4 to 1/2 in wide.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate weathering of rails observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking some cracking of rails observed 1/4 to 1/2 in wide.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Some weathering of the barrier observed.			

Barrier ID:	GRSM-0008G-65.131-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/22/2010	Barrier Rating:	28.10

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3163
Brief Workorder:	Raise 140 feet of barrier up to 27-in design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 140 LF = \$1400. Raise140-ft 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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_65.131_L_1.JPG

Barrier ID:	GRSM-0008G-65.278-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/22/2010	Barrier Rating:	19.70		
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.):	50		
Speed Limit (MPH):	45	Placement with Respect to Road:	TANGENT		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	28.2	Lateral Offset (In.):	52.0	Road Grade (%):	2.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at or above the design height of 27 in by up to 2 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-65.278-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/22/2010	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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_65.278_L_1.JPG

Barrier ID:	GRSM-0008G-65.281-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/22/2010	Barrier Rating:	24.00		
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.):	43		
Speed Limit (MPH):	45	Placement with Respect to Road:	TANGENT		
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 BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.5
Height (In.):	27.0	Lateral Offset (In.):	61.5	Road Grade (%):	3.60
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-65.281-R		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/22/2010	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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_65.281_R_1.JPG

Barrier ID:	GRSM-0008G-65.293-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/22/2010	Barrier Rating:	19.70		
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.):	100		
Speed Limit (MPH):	45	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	HIGH				
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	28.2	Lateral Offset (In.):	53.5	Road Grade (%):	1.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at or above the design height of 27 in by up to 2 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-65.293-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/22/2010	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.

Great Smoky Mountains National Park

ROUTE 0008G: FOOTHILLS PARKWAY SECTION 8G

Barrier Condition Photos



GRSM_0008G_65.293_L_1.JPG

Barrier ID:	GRSM-0008G-65.297-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8G				
Inspection Date:	09/22/2010	Barrier Rating:	19.70		
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.):	45		
Speed Limit (MPH):	45	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	HIGH				
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.2	Lateral Offset (In.):	57.5	Road Grade (%):	2.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at or above the design height of 27 in by 1 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008G-65.297-R		
Route Name:	FOOTHILLS PARKWAY SECTION 8G		
Inspection Date:	09/22/2010	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.

Great Smoky Mountains National Park

ROUTE 0008G: Foothills Parkway SECTION 8G

Barrier Condition Photos



GRSM_0008G_65.297_R_1.JPG

Barrier ID:	GRSM-0008H-65.365-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8H				
Inspection Date:	09/22/2010	Barrier Rating:	48.50		
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.):	380		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG BURIED	Ending End Trtmt Crashworthy?:	YES		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.5
Height (In.):	23.2	Lateral Offset (In.):	51.5	Road Grade (%):	4.60
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 2 to 3 in below the 27-in design height for 95 ft and 3 to 4 in below for 285 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No weathering observed.			

Barrier ID:	GRSM-0008H-65.365-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8H		
Inspection Date:	09/22/2010	Barrier Rating:	48.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$7425
Brief Workorder:	Raise 380 feet of barrier up to 27-in design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 380 LF = \$3800. Raise 380-ft of barrier up to 27-in 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.

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H

Barrier Condition Photos



GRSM_0008H_65.365_L_1.JPG

Barrier ID:	GRSM-0008H-65.522-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8H				
Inspection Date:	09/22/2010	Barrier Rating:	27.10		
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.):	230		
Speed Limit (MPH):	45	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	LOW				
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	25.2	Lateral Offset (In.):	66.6	Road Grade (%):	2.60
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2 in below the 27-in design height for 180 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008H-65.522-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8H		
Inspection Date:	09/22/2010	Barrier Rating:	27.10

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3603
Brief Workorder:	Raise 180 feet of guardrail up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 180 LF = \$1800. Raise 180-ft 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.

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H

Barrier Condition Photos



GRSM_0008H_65.522_L_1.JPG

Barrier ID:	GRSM-0008H-67.606-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8H				
Inspection Date:	09/22/2010	Barrier Rating:	23.70		
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.):	608		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.7	Lateral Offset (In.):	54.0	Road Grade (%):	6.60
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008H-67.606-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8H		
Inspection Date:	09/22/2010	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.

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H

Barrier Condition Photos



GRSM_0008H_67.606_L_1.JPG

Barrier ID:	GRSM-0008H-67.967-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8H				
Inspection Date:	09/22/2010	Barrier Rating:	28.20		
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.):	115		
Speed Limit (MPH):	45	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	LOW				
Barrier Crashworthiness					
Appropriate Test Level:	TL-2	Barrier Test Level:	TL-2	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	SBT/LOG BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	26.0	Lateral Offset (In.):	51.2	Road Grade (%):	4.80
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008H-67.967-R		
Route Name:	FOOTHILLS PARKWAY SECTION 8H		
Inspection Date:	09/22/2010	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.

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H

Barrier Condition Photos



GRSM_0008H_67.967_R_1.JPG

Barrier ID:	GRSM-0008H-68.631-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8H				
Inspection Date:	09/22/2010	Barrier Rating:	28.20		
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.):	210		
Speed Limit (MPH):	45	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	LOW				
Barrier Crashworthiness					
Appropriate Test Level:	TL-2	Barrier Test Level:	TL-2	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	SBT/LOG BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	26.7	Lateral Offset (In.):	51.7	Road Grade (%):	6.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is at or within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008H-68.631-R		
Route Name:	FOOTHILLS PARKWAY SECTION 8H		
Inspection Date:	09/22/2010	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.

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H

Barrier Condition Photos



GRSM_0008H_68.631_R_1.JPG

Barrier ID:	GRSM-0008H-68.734-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8H				
Inspection Date:	09/22/2010	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.):	472		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.2	Lateral Offset (In.):	54.2	Road Grade (%):	7.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008H-68.734-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8H		
Inspection Date:	09/22/2010	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.

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H

Barrier Condition Photos



GRSM_0008H_68.734_L_1.JPG

Barrier ID:	GRSM-0008H-68.755-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8H				
Inspection Date:	09/22/2010	Barrier Rating:	26.80		
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.):	132		
Speed Limit (MPH):	45	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	LOW				
Barrier Crashworthiness					
Appropriate Test Level:	TL-2	Barrier Test Level:	TL-2	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	SBT/LOG BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.2	Lateral Offset (In.):	47.0	Road Grade (%):	6.40
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is within 1 in from the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008H-68.755-R		
Route Name:	FOOTHILLS PARKWAY SECTION 8H		
Inspection Date:	09/22/2010	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.

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H

Barrier Condition Photos



GRSM_0008H_68.755_R_1.JPG

Barrier ID:	GRSM-0008H-68.855-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8H				
Inspection Date:	09/22/2010	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.):	379		
Speed Limit (MPH):	45	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 BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	28.0	Lateral Offset (In.):	50.2	Road Grade (%):	7.20
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 1 to 3 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008H-68.855-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8H		
Inspection Date:	09/22/2010	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.

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H

Barrier Condition Photos



GRSM_0008H_68.855_L_1.JPG

Barrier ID:	GRSM-0008H-68.947-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8H				
Inspection Date:	09/22/2010	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.):	566		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	28.0	Lateral Offset (In.):	49.2	Road Grade (%):	4.30
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is between 1 in below to 4 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008H-68.947-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8H		
Inspection Date:	09/22/2010	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.

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H

Barrier Condition Photos



GRSM_0008H_68.947_L_1.JPG

Barrier ID:	GRSM-0008H-68.959-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8H				
Inspection Date:	09/22/2010	Barrier Rating:	30.70		
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.):	202		
Speed Limit (MPH):	45	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 BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.0	Lateral Offset (In.):	61.0	Road Grade (%):	5.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008H-68.959-R		
Route Name:	FOOTHILLS PARKWAY SECTION 8H		
Inspection Date:	09/22/2010	Barrier Rating:	30.70

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.

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H

Barrier Condition Photos



GRSM_0008H_68.959_R_1.JPG

Barrier ID:	GRSM-0008H-69.113-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8H				
Inspection Date:	09/22/2010	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.):	546		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	28.0	Lateral Offset (In.):	49.7	Road Grade (%):	6.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 1 to 2 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008H-69.113-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8H		
Inspection Date:	09/22/2010	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.

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H

Barrier Condition Photos



GRSM_0008H_69.113_L_1.JPG

Barrier ID:	GRSM-0008H-69.174-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8H				
Inspection Date:	09/22/2010	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.):	147		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	24.2	Lateral Offset (In.):	46.2	Road Grade (%):	5.30
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2 to 3 in below the 27-in design height for 80 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008H-69.174-R		
Route Name:	FOOTHILLS PARKWAY SECTION 8H		
Inspection Date:	09/22/2010	Barrier Rating:	38.00

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2503
Brief Workorder:	Raise 80 feet of guardrail to 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 80 LF = \$800. Raise 80-ft 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.

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H

Barrier Condition Photos



GRSM_0008H_69.174_R_1.JPG

Barrier ID:	GRSM-0008H-69.371-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8H				
Inspection Date:	09/22/2010	Barrier Rating:	28.20		
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.):	92		
Speed Limit (MPH):	45	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	LOW				
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.0	Lateral Offset (In.):	52.0	Road Grade (%):	5.50
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is at the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008H-69.371-R		
Route Name:	FOOTHILLS PARKWAY SECTION 8H		
Inspection Date:	09/22/2010	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.

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H

Barrier Condition Photos



GRSM_0008H_69.371_R_1.JPG

Barrier ID:	GRSM-0008H-69.377-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8H				
Inspection Date:	09/22/2010	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.):	94		
Speed Limit (MPH):	45	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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	28.7	Lateral Offset (In.):	52.7	Road Grade (%):	4.70
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at or up to 3 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion observed.			

Barrier ID:	GRSM-0008H-69.377-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8H		
Inspection Date:	09/22/2010	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.

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H

Barrier Condition Photos



GRSM_0008H_69.377_L_1.JPG

Barrier ID:	GRSM-0008H-69.480-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8H				
Inspection Date:	09/22/2010	Barrier Rating:	23.70		
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.):	539		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG BURIED	Ending End Trtmt Crashworthy?:	YES		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.5
Height (In.):	27.6	Lateral Offset (In.):	52.0	Road Grade (%):	5.60
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is between 1 in below to 2 in above the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008H-69.480-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8H		
Inspection Date:	09/22/2010	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.

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H

Barrier Condition Photos



GRSM_0008H_69.480_L_1.JPG

Barrier ID:	GRSM-0008H-70.093-R				
Route Name:	FOOTHILLS PARKWAY SECTION 8H				
Inspection Date:	09/22/2010	Barrier Rating:	15.30		
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.):	145		
Speed Limit (MPH):	45	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	LOW				
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	30.6	Lateral Offset (In.):	56.0	Road Grade (%):	2.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at or up to 4 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008H-70.093-R		
Route Name:	FOOTHILLS PARKWAY SECTION 8H		
Inspection Date:	09/22/2010	Barrier Rating:	15.30

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.

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H

Barrier Condition Photos



GRSM_0008H_70.093_R_1.JPG

Barrier ID:	GRSM-0008H-70.102-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8H				
Inspection Date:	09/22/2010	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.):	145		
Speed Limit (MPH):	45	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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.6	Lateral Offset (In.):	48.2	Road Grade (%):	0.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at or up to 1 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008H-70.102-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8H		
Inspection Date:	09/22/2010	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.

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H

Barrier Condition Photos



GRSM_0008H_70.102_L_1.JPG

Barrier ID:	GRSM-0008H-70.763-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8H				
Inspection Date:	09/22/2010	Barrier Rating:	31.20		
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.):	682		
Speed Limit (MPH):	45	Placement with Respect to Road:	BOTH INSIDE AND OUTSIDE		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.8
Height (In.):	28.0	Lateral Offset (In.):	52.2	Road Grade (%):	5.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at or up to 2 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion observed.			

Barrier ID:	GRSM-0008H-70.763-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8H		
Inspection Date:	09/22/2010	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.

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H

Barrier Condition Photos



GRSM_0008H_70.763_L_1.JPG

Barrier ID:	GRSM-0008H-70.917-L				
Route Name:	FOOTHILLS PARKWAY SECTION 8H				
Inspection Date:	09/22/2010	Barrier Rating:	28.20		
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.):	188		
Speed Limit (MPH):	45	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	27.0	Lateral Offset (In.):	48.2	Road Grade (%):	7.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0008H-70.917-L		
Route Name:	FOOTHILLS PARKWAY SECTION 8H		
Inspection Date:	09/22/2010	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.

Great Smoky Mountains National Park

ROUTE 0008H: FOOTHILLS PARKWAY SECTION 8H

Barrier Condition Photos



GRSM_0008H_70.917_L_1.JPG

Barrier ID:	GRSM-0010N-0.468-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	31.20		
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.):	194		
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-2	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.2	Lateral Offset (In.):	141.6	Road Grade (%):	3.20
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is at or within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed. No missing elements observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010N-0.468-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/15/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_0.468_R_1.JPG

Barrier ID:	GRSM-0010N-0.505-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	36.70		
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.):	129		
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:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.6
Height (In.):	27.7	Lateral Offset (In.):	40.0	Road Grade (%):	0.63
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is at or 2 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-0.505-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/15/2010	Barrier Rating:	36.70

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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_0.505_R_1.JPG

Barrier ID:	GRSM-0010N-0.530-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/14/2010	Barrier Rating:	59.70		
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.):	304		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	24.7	Post Spacing (In.):	0.0
Height (In.):	19.2	Lateral Offset (In.):	21.0	Road Grade (%):	0.60
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is low by 3 to 6 in from the 24 in design height for 304 ft.			
	Breaking and Cracking:	22 linear ft of masonry cracking with gaps over half in.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-0.530-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/14/2010	Barrier Rating:	59.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2393
Brief Workorder:	Re-point 5 square yards of masonry cracking over half inch wide.				
Workorder:	Re-Point Stone Masonry Barrier at \$140- per -Sq. Yd. for 5 SY = \$700. [(22ft)(1.7ft)] /9 = 4.2 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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_0.530_R_1.JPG

Barrier ID:	GRSM-0010N-0.782-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	31.00		
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.):	498		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.2	Lateral Offset (In.):	61.2	Road Grade (%):	0.90
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010N-0.782-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/15/2010	Barrier Rating:	31.00

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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_0.782_R_1.JPG

Barrier ID:	GRSM-0010N-1.144-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	34.20		
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.):	392		
Speed Limit (MPH):	35	Placement with Respect to Road:	BOTH INSIDE AND OUTSIDE		
Hazard Behind Barrier:	LOW				
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.7	Lateral Offset (In.):	52.5	Road Grade (%):	4.50
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is within 1 in of design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010N-1.144-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:		34.20	
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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_1.144_R_1.JPG

Barrier ID:	GRSM-0010N-1.471-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	18.30		
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.):	104		
Speed Limit (MPH):	25	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	LOW				
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.7	Lateral Offset (In.):	49.0	Road Grade (%):	0.60
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is within 1 in of the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010N-1.471-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:		18.30	
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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_1.471_R_1.JPG

Barrier ID:	GRSM-0010N-1.490-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	26.60		
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):	25	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	27.6	Post Spacing (In.):	0.0
Height (In.):	35.0	Lateral Offset (In.):	87.3	Road Grade (%):	0.30
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 11 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-1.490-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/15/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_1.490_L_1.JPG

Barrier ID:	GRSM-0010N-1.492-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	28.30		
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.):	52		
Speed Limit (MPH):	25	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	25.2	Post Spacing (In.):	0.0
Height (In.):	35.7	Lateral Offset (In.):	106.6	Road Grade (%):	0.90
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 11 to 12 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-1.492-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_1.492_R_1.JPG

Barrier ID:	GRSM-0010N-1.532-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	19.50		
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.):	52		
Speed Limit (MPH):	25	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	27.6	Post Spacing (In.):	0.0
Height (In.):	31.6	Lateral Offset (In.):	95.3	Road Grade (%):	0.50
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 7 to 8 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-1.532-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:		19.50	
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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_1.532_L_1.JPG

Barrier ID:	GRSM-0010N-1.534-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	21.20		
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.):	51		
Speed Limit (MPH):	25	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	27.2	Post Spacing (In.):	0.0
Height (In.):	31.7	Lateral Offset (In.):	92.0	Road Grade (%):	1.20
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 7 to 9 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-1.534-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_1.534_R_1.JPG

Barrier ID:	GRSM-0010N-3.646-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	47.20		
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.):	860		
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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.5
Height (In.):	28.7	Lateral Offset (In.):	67.3	Road Grade (%):	5.60
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 1 to 6 in above the 27 in design height with 75 ft being 6 in above.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010N-3.646-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/15/2010	Barrier Rating:	47.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2448
Brief Workorder:	Lower 75 feet of barrier down to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 75 LF = \$750. Lower 75 feet of barrier down 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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_3.646_L_1.JPG

Barrier ID:	GRSM-0010N-3.932-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	32.40		
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.):	118		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	28.0	Lateral Offset (In.):	36.5	Road Grade (%):	4.10
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is above by 1 in from the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010N-3.932-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/15/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_3.932_L_1.JPG

Barrier ID:	GRSM-0010N-5.927-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	62.90		
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.):	167		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	25.2	Post Spacing (In.):	0.0
Height (In.):	18.7	Lateral Offset (In.):	87.3	Road Grade (%):	5.40
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 3 to 6 in below the 24-in design height for 92 ft and 6 to 14 in below for 58 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-5.927-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/15/2010	Barrier Rating:	62.90

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$77990
Brief Workorder:	Raise guardwall 10-in. Remove and reset 58-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 244 CF = \$61000. [(58ft)(2ft)(2.1ft)] = 243.6 CF. Structural Concrete at \$1000- per -Cu. Yd. for 4 CY = \$4000. [(2.1ft)(0.8ft)(58ft)] /27 = 3.6 CY. Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 1 day removal 3 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_5.927_L_1.JPG

Barrier ID:	GRSM-0010N-6.144-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	64.30		
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.):	640		
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-2	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	22.7	Lateral Offset (In.):	70.3	Road Grade (%):	2.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2 to 3 in below the 27-in design height for 200 ft and 4 to 7 in below for 440 ft.			
	Breaking and Cracking:	20 ft of rail is severely broken and cracked.			
	Missing Elements:	No missing elements observed. No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-6.144-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/15/2010	Barrier Rating:	64.30

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$12458
Brief Workorder:	Raise 640 feet of guardrail up to the 27 inch design height and replace 20-ft of rail.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 640 LF = \$6400. Raise 640 feet of barrier up to 27-in design height. Replace Rail at \$25- per -Lin. Ft. for 20 LF = \$500. 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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_6.144_L_1.JPG

Barrier ID:	GRSM-0010N-6.271-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	33.70		
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.):	33		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	19.3	Post Spacing (In.):	0.0
Height (In.):	39.2	Lateral Offset (In.):	123.0	Road Grade (%):	1.40
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is above the 24 in design height by 13 to 19 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-6.271-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/15/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_6.271_L_1.JPG

Barrier ID:	GRSM-0010N-6.275-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	41.20		
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.):	52		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	28.0	Post Spacing (In.):	0.0
Height (In.):	25.0	Lateral Offset (In.):	129.3	Road Grade (%):	1.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 0-3 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-6.275-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010		Barrier Rating:	41.20	
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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_6.275_R_1.JPG

Barrier ID:	GRSM-0010N-6.303-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/14/2010	Barrier Rating:	34.20		
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.):	54		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	26.2	Post Spacing (In.):	0.0
Height (In.):	24.0	Lateral Offset (In.):	124.6	Road Grade (%):	0.90
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is at the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-6.303-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/14/2010	Barrier Rating:	34.20

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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_6.303_R_1.JPG

Barrier ID:	GRSM-0010N-6.308-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	26.70		
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.):	32		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	21.6	Post Spacing (In.):	0.0
Height (In.):	42.0	Lateral Offset (In.):	131.0	Road Grade (%):	0.30
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 16 to 21 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion and weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-6.308-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_6.308_L_1.JPG

Barrier ID:	GRSM-0010N-6.998-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	45.90		
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.):	483		
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:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	26.0	Post Spacing (In.):	0.0
Height (In.):	36.0	Lateral Offset (In.):	72.3	Road Grade (%):	4.70
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 10 to 14 in above the 24 in design height.			
	Breaking and Cracking:	18 ft of major breaking and cracking due to land shifting.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-6.998-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/15/2010	Barrier Rating:	45.90

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2855
Brief Workorder:	Re-point 8 square yards of masonry.				
Workorder:	Re-Point Stone Masonry Barrier at \$140- per -Sq. Yd. for 8 SY = \$1120. [(18ft)(2ft)(2 sides)] /9 = 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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_6.998_R_1.JPG

Barrier ID:	GRSM-0010N-8.225-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	32.70		
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.):	136		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.0	Lateral Offset (In.):	38.0	Road Grade (%):	6.60
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is at the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010N-8.225-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/15/2010	Barrier Rating:	32.70

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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_8.225_R_1.JPG

Barrier ID:	GRSM-0010N-8.392-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	44.20		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	436		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	21	Width (In.):	26.0	Post Spacing (In.):	0.0
Height (In.):	27.0	Lateral Offset (In.):	115.0	Road Grade (%):	5.80
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 6 in above the 21/24 in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-8.392-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/15/2010	Barrier Rating:	44.20

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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_8.392_R_1.JPG

Barrier ID:	GRSM-0010N-8.446-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	42.70		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	152		
Speed Limit (MPH):	35	Placement with Respect to Road:	INSIDE OF CURVE		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	21	Width (In.):	24.0	Post Spacing (In.):	0.0
Height (In.):	26.0	Lateral Offset (In.):	26.7	Road Grade (%):	6.30
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 5 in above the 21/24 in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-8.446-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/15/2010	Barrier Rating:	42.70

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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_8.446_L_1.JPG

Barrier ID:	GRSM-0010N-8.521-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	42.70		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	111		
Speed Limit (MPH):	35	Placement with Respect to Road:	INSIDE OF CURVE		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	21	Width (In.):	26.2	Post Spacing (In.):	0.0
Height (In.):	30.0	Lateral Offset (In.):	27.7	Road Grade (%):	6.80
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 9 in above the 21/24 in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-8.521-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/15/2010	Barrier Rating:	42.70

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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_8.521_L_1.JPG

Barrier ID:	GRSM-0010N-8.522-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	37.00		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	110		
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:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	21	Width (In.):	28.0	Post Spacing (In.):	0.0
Height (In.):	32.0	Lateral Offset (In.):	82.0	Road Grade (%):	3.70
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 11 in above the 21/24 in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-8.522-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/15/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_8.522_R_1.JPG

Barrier ID:	GRSM-0010N-8.654-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:	30.80		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	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:	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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	21	Width (In.):	25.0	Post Spacing (In.):	0.0
Height (In.):	30.0	Lateral Offset (In.):	51.0	Road Grade (%):	7.70
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 9 in above the 21-in/24-in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-8.654-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/15/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_8.654_R_1.JPG

Barrier ID:	GRSM-0010N-8.676-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	8.60		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	NON-TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	158		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	21	Width (In.):	25.7	Post Spacing (In.):	0.0
Height (In.):	26.7	Lateral Offset (In.):	0.0	Road Grade (%):	0.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 5 to 7 in above the 21-in/24-in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-8.676-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:		8.60	
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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_8.676_R_1.JPG

Barrier ID:	GRSM-0010N-8.710-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	8.60		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	NON-TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	154		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	21	Width (In.):	24.0	Post Spacing (In.):	0.0
Height (In.):	26.6	Lateral Offset (In.):	0.0	Road Grade (%):	0.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 5 to 6 in above the 21-in/24-in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-8.710-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	8.60

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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_8.710_R_1.JPG

Barrier ID:	GRSM-0010N-8.740-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010		Barrier Rating:	44.20	
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT		Barrier Function:	TRAFFIC	
Barrier Material:	STONE		Post Material:	N/A	
Blockout Type:	N/A		Length (ft.):	85	
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	21	Width (In.):	25.0	Post Spacing (In.):	0.0
Height (In.):	28.0	Lateral Offset (In.):	48.0	Road Grade (%):	7.50
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 7 in above the 21-in/24-in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-8.740-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/15/2010	Barrier Rating:		44.20	
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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_8.740_R_1.JPG

Barrier ID:	GRSM-0010N-9.030-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	38.50		
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.):	392		
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:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.2	Lateral Offset (In.):	72.0	Road Grade (%):	5.30
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010N-9.030-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_9.030_R_1.JPG

Barrier ID:	GRSM-0010N-9.061-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	34.20		
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.):	232		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	28.7	Lateral Offset (In.):	83.6	Road Grade (%):	5.80
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2 to 3 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010N-9.061-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:		34.20	
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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_9.061_L_1.JPG

Barrier ID:	GRSM-0010N-9.268-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	41.20		
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.):	40		
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:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	24.7	Post Spacing (In.):	0.0
Height (In.):	26.2	Lateral Offset (In.):	121.6	Road Grade (%):	3.10
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 1 to 4 in above the 24-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-9.268-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	41.20

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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_9.268_L_1.JPG

Barrier ID:	GRSM-0010N-9.268-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	31.20		
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.):	44		
Speed Limit (MPH):	35	Placement with Respect to Road:	INSIDE OF CURVE		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	24.0	Post Spacing (In.):	0.0
Height (In.):	23.6	Lateral Offset (In.):	70.0	Road Grade (%):	6.70
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is at or within 1 in of the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-9.268-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_9.268_R_1.JPG

Barrier ID:	GRSM-0010N-9.281-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	36.70		
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.):	43		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	25.6	Post Spacing (In.):	0.0
Height (In.):	25.2	Lateral Offset (In.):	117.3	Road Grade (%):	5.10
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 1 to 3 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed. No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-9.281-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010		Barrier Rating:	36.70	
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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_9.281_L_1.JPG

Barrier ID:	GRSM-0010N-9.281-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	26.70		
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.):	42		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	24.0	Post Spacing (In.):	0.0
Height (In.):	24.0	Lateral Offset (In.):	70.0	Road Grade (%):	4.20
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is at the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-9.281-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_9.281_R_1.JPG

Barrier ID:	GRSM-0010N-9.291-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	44.00		
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.):	412		
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:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	24.0	Lateral Offset (In.):	66.3	Road Grade (%):	6.50
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2 to 3 in below the 27-in design height for 202 ft and 4 in below for 210 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-9.291-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	44.00

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$7777
Brief Workorder:	Raise 412 feet of guardrail to 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 412 LF = \$4120. Raise 412-ft of barrier up to 27-in 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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_9.291_R_1.JPG

Barrier ID:	GRSM-0010N-9.437-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	61.50		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	82		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	18.0	Post Spacing (In.):	0.0
Height (In.):	11.3	Lateral Offset (In.):	64.5	Road Grade (%):	6.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 5 to 6 in below the 18-in/24-in crenellated design height for 34 ft and 6 to 9 in below for 48 ft.			
	Breaking and Cracking:	No broken stones minor cracking of the grout observed. 1/4 in or less wide.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate weathering of the barrier observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-9.437-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	61.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$21368
Brief Workorder:	Raise guardwall 3 inches. Remove and reset 48 feet of stone masonry guardwall on 1 row of new stones to raise barrier to the adjacent 12 inch height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 36 CF = \$9000. [(0.5ft)(1.5ft)(48ft)] = 36 CF. Remove top layer of stones in barrier for 48 feet. Replace Stones at \$250- per -Each for 24 Unit(s) = \$6000. [(48ft) / (2ft/stone)] x 1 row = 24 stones. Insert new stone on retaining wall to increase barrier height then reset top layer of barrier. Low Speed Traffic Control at \$1475- per -Day for 3 Day(s) = \$4425. 1 day removal 2 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_9.437_R_1.JPG

Barrier ID:	GRSM-0010N-9.446-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	38.90		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	NON-TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	40		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	18.7	Post Spacing (In.):	0.0
Height (In.):	9.3	Lateral Offset (In.):	0.0	Road Grade (%):	0.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 8 to 10 in below the 18-in/24-in crenellated design height for 40 ft.			
	Breaking and Cracking:	Mortar broken on one stone stone separated from guardwall.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-9.446-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	38.90

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$42268
Brief Workorder:	Raise guardwall 9-in. Remove and reset 40-ft of stone masonry guardwall on concrete footer to crenellated design height of 18in/24in.				
Workorder:	Remove & Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 128 CF = \$32000. [(2ft)(1.6ft)(40ft)] = 128 CF. Structural Concrete at \$1000- per -Cu. Yd. for 2 CY = \$2000. [(1.6ft)(0.75ft)(40ft)] /27 = 1.8 CY. Low Speed Traffic Control at \$1475- per -Day for 3 Day(s) = \$4425. 1 day removal 2 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_9.446_L_1.JPG

Barrier ID:	GRSM-0010N-9.604-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	33.70		
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.):	76		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	18.2	Post Spacing (In.):	0.0
Height (In.):	25.2	Lateral Offset (In.):	33.2	Road Grade (%):	1.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at or up to 2 in above the design height of 24 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate minor corrosion and weathering of the barrier observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-9.604-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010		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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_9.604_L_1.JPG

Barrier ID:	GRSM-0010N-9.604-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	30.80		
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.):	75		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	18.0	Post Spacing (In.):	0.0
Height (In.):	25.0	Lateral Offset (In.):	66.0	Road Grade (%):	2.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at or up to 2 in above the design height of 24 in.			
	Breaking and Cracking:	1 loose rock.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate minor corrosion and weathering of the barrier observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-9.604-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	30.80

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$1777
Brief Workorder:	Repoint 1 loose rock on terminating end of barrier.				
Workorder:	Re-Point Stone Masonry Barrier at \$140- per -Sq. Yd. for 1 SY = \$140. Top (1.5 x 3) + front and back (1 x 3 x 2) = 10.5ft / 9 = 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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_9.604_R_1.JPG

Barrier ID:	GRSM-0010N-9.688-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	30.80		
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.):	40		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	25.0	Post Spacing (In.):	0.0
Height (In.):	23.6	Lateral Offset (In.):	110.5	Road Grade (%):	3.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-1 in below the design height of 24 in.			
	Breaking and Cracking:	Minor breaking and cracking of mortar observed 1/4 to 1/2 in.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-9.688-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_9.688_R_1.JPG

Barrier ID:	GRSM-0010N-9.690-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	35.20		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	25.2	Post Spacing (In.):	0.0
Height (In.):	23.0	Lateral Offset (In.):	84.3	Road Grade (%):	4.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 in below the design height of 24 in.			
	Breaking and Cracking:	Some cracked mortar between 1/4 and 1/2 in wide.			
	Missing Elements:	A large 4 ft missing stone was missing.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-9.690-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	35.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$1898
Brief Workorder:	Replace one missing stone.				
Workorder:	Replace Stone at \$250- per -Each for 1 Unit(s) = \$250. Replace one 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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_9.690_L_1.JPG

Barrier ID:	GRSM-0010N-9.712-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	23.70		
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:	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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	25.2	Post Spacing (In.):	0.0
Height (In.):	25.0	Lateral Offset (In.):	114.0	Road Grade (%):	4.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-2 in above the design height of 24 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	Missing mortar in two 2-ft sections of barrier.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-9.712-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	23.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2085
Brief Workorder:	Repoint two 2 foot sections of guardwall.				
Workorder:	Re-Point Masonry Barrier at \$140- per -Sq. Yd. for 3 = \$420. front (2 x 2) + top (2 x 2) + back (2 x 2) x 2 sections = 24 sf/9 = 2.6 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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_9.712_R_1.JPG

Barrier ID:	GRSM-0010N-9.717-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	32.50		
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.):	35		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	25.6	Post Spacing (In.):	0.0
Height (In.):	22.2	Lateral Offset (In.):	73.0	Road Grade (%):	4.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 2 in below the design height of 24 in.			
	Breaking and Cracking:	No broken stones minor cracking of the grout observed. 1/4 to 1/2 in wide.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate weathering of the barrier observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-9.717-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_9.717_L_1.JPG

Barrier ID:	GRSM-0010N-9.724-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010		Barrier Rating:	36.70	
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT		Barrier Function:	NON-TRAFFIC	
Barrier Material:	STONE		Post Material:	N/A	
Blockout Type:	N/A		Length (ft.):	111	
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	19.6	Post Spacing (In.):	0.0
Height (In.):	14.0	Lateral Offset (In.):	0.0	Road Grade (%):	0.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 3 to 6 in below the 18-in/24-in crenellated design height for 56 ft and 6 to 9 in below for 55 ft.			
	Breaking and Cracking:	No broken stones minor cracking of the grout observed. 1/4 to 1/2 in wide.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate weathering of the barrier observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-9.724-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	36.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$57090
Brief Workorder:	Raise guardwall 3-in. Remove and reset 55-ft of stone masonry guardwall on concrete footer to adjacent 12-in height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 176 CF = \$44000. $[(2ft)(1.6ft)(55ft)] = 176 CF$. Structural Concrete at \$1000- per -Cu. Yd. for 2 CY = \$2000. $[(1.6ft)(0.5ft)(55ft)] / 27 = 1.7 CY$. Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 1 day removal 3 days installation				

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_9.724_L_1.JPG

Barrier ID:	GRSM-0010N-10.137-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	45.70		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	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:	OUTSIDE OF CURVE		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	20.0	Post Spacing (In.):	0.0
Height (In.):	14.6	Lateral Offset (In.):	100.0	Road Grade (%):	3.30
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 3 to 6 in below the 18-in/24-in crenellated design height for 13 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-10.137-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:		45.70	
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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_10.137_L_1.JPG

Barrier ID:	GRSM-0010N-10.149-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	32.40		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	NON-TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	65		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	18.7	Post Spacing (In.):	0.0
Height (In.):	12.0	Lateral Offset (In.):	0.0	Road Grade (%):	0.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 3 to 6 in below the 18-in/24-in crenellated design height for 65 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-10.149-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_10.149_L_1.JPG

Barrier ID:	GRSM-0010N-10.158-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	28.10		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	NON-TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	86		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	19.2	Post Spacing (In.):	0.0
Height (In.):	12.0	Lateral Offset (In.):	0.0	Road Grade (%):	0.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 6 in below the 18-in/24-in crenellated design height for 86 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-10.158-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	28.10

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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_10.158_L_1.JPG

Barrier ID:	GRSM-0010N-10.174-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	42.70		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	68		
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:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	18.7	Post Spacing (In.):	0.0
Height (In.):	12.3	Lateral Offset (In.):	70.3	Road Grade (%):	2.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 5 to 6 in below the 18-in/24-in crenellated design height for 68 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-10.174-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	42.70

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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_10.174_L_1.JPG

Barrier ID:	GRSM-0010N-10.745-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	38.00		
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.):	101		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	22.0	Post Spacing (In.):	0.0
Height (In.):	26.2	Lateral Offset (In.):	50.2	Road Grade (%):	4.30
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2 to 3 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-10.745-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_10.745_L_1.JPG

Barrier ID:	GRSM-0010N-11.610-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	72.90		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	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:	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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	18.6	Post Spacing (In.):	0.0
Height (In.):	14.0	Lateral Offset (In.):	38.2	Road Grade (%):	4.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 3 to 6 in below the 18-in/24-in crenellated design height for 92 ft and 6 to 9 in below for 229 ft.			
	Breaking and Cracking:	No broken stones minor cracking of the grout observed. 1/4 in wide or less.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate weathering of the barrier observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-11.610-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	72.90

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$103318
Brief Workorder:	Raise guardwall 3-in. Remove and reset 229-ft stone of masonry guardwall on 1 row of new stone to raise barrier to the adjacent 12-in height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 184 CF = \$46000. [(0.5ft)(1.6ft)(229ft)] = 183.2 CF. Remove top layer of stones in barrier for 229 feet. New Stone at \$250- per -Each for 115 Unit(s) = \$28750. [(229ft) / (2ft/stone)] x 1 row = 115 stones. Insert new stone on retaining wall to increase barrier height then reset top layer of barrier. Low Speed Traffic Control at \$1475- per -Day for 13 Day(s) = \$19175. 3 days removal 10 days installation				

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_11.610_L_1.JPG

Barrier ID:	GRSM-0010N-11.863-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	42.70		
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:	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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	19.2	Post Spacing (In.):	0.0
Height (In.):	24.2	Lateral Offset (In.):	26.2	Road Grade (%):	4.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at or 1 in above the design height of 24 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	At the beginning of the barrier there is a hole in the side of the asphalt caused by erosion. Dimensions approx. 10-in wide 24-in long 16-in deep. End of barrier has slope paving to carry water down slope.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-11.863-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	42.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$1898
Brief Workorder:	Fill eroded channel with 2 SY. of paving material to protect slope.				
Workorder:	Slope Paving at \$125- per -Sq. Yd. for 2 SY = \$250. Paving on eroded channel. [(1ft)(15ft)] /9 = 1.7 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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_11.863_L_1.JPG

Barrier ID:	GRSM-0010N-12.125-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	42.40		
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.):	28		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	25.6	Post Spacing (In.):	0.0
Height (In.):	25.0	Lateral Offset (In.):	93.3	Road Grade (%):	6.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 in above the design height of 24 in.			
	Breaking and Cracking:	No broken stones minor cracking of the grout observed recently repointed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate weathering of the barrier observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-12.125-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	42.40

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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_12.125_L_1.JPG

Barrier ID:	GRSM-0010N-12.127-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	39.50		
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.):	32		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	25.0	Post Spacing (In.):	0.0
Height (In.):	26.6	Lateral Offset (In.):	128.3	Road Grade (%):	5.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 in below to 3 in above the design height of 24 in.			
	Breaking and Cracking:	No breaking or cracking observed recently regouted.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate minor corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-12.127-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_12.127_R_1.JPG

Barrier ID:	GRSM-0010N-12.140-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	35.20		
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.):	30		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	25.6	Post Spacing (In.):	0.0
Height (In.):	26.2	Lateral Offset (In.):	111.0	Road Grade (%):	6.70
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 in below to 3 in above the design height of 24 in.			
	Breaking and Cracking:	No broken stones minor cracking of the grout observed recently repointed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate weathering of the barrier observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-12.140-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_12.140_L_1.JPG

Barrier ID:	GRSM-0010N-12.142-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	32.40		
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.):	26		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	24.6	Post Spacing (In.):	0.0
Height (In.):	28.2	Lateral Offset (In.):	132.3	Road Grade (%):	6.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at or up to 3 in above the design height of 24 in.			
	Breaking and Cracking:	No breaking or cracking observed recently regouted.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate minor corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-12.142-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_12.142_R_1.JPG

Barrier ID:	GRSM-0010N-12.321-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	46.70		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	NON-TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	260		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	18.2	Post Spacing (In.):	0.0
Height (In.):	13.3	Lateral Offset (In.):	0.0	Road Grade (%):	0.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 3 to 6 in below the 18-in/24-in crenellated design height for 78 ft and 6 to 8 in below for 82 ft.			
	Breaking and Cracking:	No breaking but cracking was observed up to 1 in wide along 3 L.F.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate corrosion and weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-12.321-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	46.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$79371
Brief Workorder:	Raise guardwall 2-in. Remove and reset 82-ft of stone masonry guardwall on concrete footer to adjacent 12-in height.				
Workorder:	Re-Point Stone Masonry Barrier at \$140- per -Sq. Yd. for 2 SY = \$280. $[(1.4ft + 1.5ft + 1.4ft)(3ft)] / 9 = 1.4 SY$. Remove & Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 246 CF = \$61500. $[(2ft)(1.5ft)(82ft)] = 246 CF$. Structural Concrete at \$1000- per -Cu. Yd. for 3 CY = \$3000. $[(1.5ft)(0.5ft)(82ft)] / 27 = 2.3 CY$. Low Speed Traffic Control at \$1475- per -Day for 5 Day(s) = \$7375. 1 day removal 4 days installation				

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_12.321_R_1.JPG

Barrier ID:	GRSM-0010N-12.791-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	48.00		
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.):	107		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	24.0	Post Spacing (In.):	0.0
Height (In.):	28.0	Lateral Offset (In.):	60.0	Road Grade (%):	6.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at or up to 4 in above the design height of 24 in.			
	Breaking and Cracking:	Last stone in barrier is separated along the mortar line. Opening is greater than 1/2 in.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-12.791-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	48.00

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$1777
Brief Workorder:	Repoint one displaced stone at end of guardwall.				
Workorder:	Re-Point Stone Masonry Barrier at \$140- per -Sq. Yd. for 1 SY = \$140. [(1.5ft)(2ft)] /9 = 0.3 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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_12.791_L_1.JPG

Barrier ID:	GRSM-0010N-12.979-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	33.70		
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.):	22		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	20.2	Post Spacing (In.):	0.0
Height (In.):	33.0	Lateral Offset (In.):	103.3	Road Grade (%):	3.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 8-10 in above the design height of 24 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-12.979-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_12.979_R_1.JPG

Barrier ID:	GRSM-0010N-12.980-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	43.70		
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.):	29		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	18.0	Post Spacing (In.):	0.0
Height (In.):	27.6	Lateral Offset (In.):	65.3	Road Grade (%):	5.70
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is between 1 in below to 6 in above the design height of 24 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-12.980-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_12.980_L_1.JPG

Barrier ID:	GRSM-0010N-12.990-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	36.70		
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.):	30		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	18.0	Post Spacing (In.):	0.0
Height (In.):	31.2	Lateral Offset (In.):	89.3	Road Grade (%):	3.60
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 6-9 in above the design height of 24 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-12.990-L		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	36.70

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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_12.990_L_1.JPG

Barrier ID:	GRSM-0010N-12.991-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	31.10		
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.):	30		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	18.2	Post Spacing (In.):	0.0
Height (In.):	22.2	Lateral Offset (In.):	91.0	Road Grade (%):	2.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1-3 in below the 24-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-12.991-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:		31.10	
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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_12.991_R_1.JPG

Barrier ID:	GRSM-0010N-12.992-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	45.70		
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.):	464		
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:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	24.6	Lateral Offset (In.):	66.5	Road Grade (%):	4.10
Physical Condition					
Barrier	Alignment and Height:	The alignment is off by 6 to 12 in for 180 ft. The height is 1-3 in below the 27-in design height for 180 ft and 3-4 in below for 284 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Minor erosion at beginning end of stone barrier/ending end of the SBT.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-12.992-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	45.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$8349
Brief Workorder:	Adjust 180 ft of deflected guardrail back into alignment and raise 284 ft of guardrail up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 464 LF = \$4640. Raise and adjust 464 of low and unaligned guardrail up to the 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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_12.992_R_1.JPG

Barrier ID:	GRSM-0010N-13.084-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	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.):	500		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	19.0	Post Spacing (In.):	0.0
Height (In.):	16.2	Lateral Offset (In.):	86.6	Road Grade (%):	5.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 3 to 6 in below the 24-in design height for 237 ft and 6 to 12 in below for 263 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-13.084-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	72.10

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$263065
Brief Workorder:	Raise guardwall 4-in. Remove and reset 263-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 842 CF = \$210500. [(2ft)(1.6ft)(263ft)] = 841.6 CF. Structural Concrete at \$1000- per -Cu. Yd. for 8 CY = \$8000. [(1.6ft)(0.5ft)(263ft)] /27 = 7.8 CY. Low Speed Traffic Control at \$1475- per -Day for 14 Day(s) = \$20650. 3 days removal 11 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_13.084_R_1.JPG

Barrier ID:	GRSM-0010N-13.176-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	44.40		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	1275		
Speed Limit (MPH):	25	Placement with Respect to Road:	BOTH INSIDE AND OUTSIDE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	19.7	Post Spacing (In.):	0.0
Height (In.):	16.1	Lateral Offset (In.):	52.0	Road Grade (%):	5.10
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 3 to 6 in below the 18-in/24-in crenellated design height for 411 ft and 6 to 9 in below for 81.			
	Breaking and Cracking:	81 linear ft with breaking of mortar and no cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-13.176-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	44.40

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$37263
Brief Workorder:	Raise guardwall 2-in. Remove and reset 81-ft of stone masonry guardwall on 1 row of new stone to raise barrier to the adjacent 12-in height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 65 CF = \$16250. [(0.5ft)(1.6ft)(81ft)] = 64.8 CF. Remove top layer of stones in barrier for 81 feet. New Stone at \$250- per -Each for 41 Unit(s) = \$10250. [(81ft) / (2ft/stone)] x 1 row = 41 stones. Insert new stone on retaining wall to increase barrier height then reset top layer of barrier. Low Speed Traffic Control at \$1475- per -Day for 5 Day(s) = \$7375. 1 day removal 4 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_13.176_R_1.JPG

Barrier ID:	GRSM-0010N-13.417-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	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.):	640		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	20.7	Post Spacing (In.):	0.0
Height (In.):	14.8	Lateral Offset (In.):	30.2	Road Grade (%):	5.80
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 6 to 11 in below the 24 in design height for 640 ft.			
	Breaking and Cracking:	20 linear ft of severe breaking and cracking.			
	Missing Elements:	6 linear feet of missing stone off next to wall.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-13.417-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	72.10

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$686043
Brief Workorder:	Raise guardwall 9-in. Remove and reset 640-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 2176 CF = \$544000. [(2ft)(1.7ft)(640ft)] = 2176 CF. Structural Concrete at \$1000- per -Cu. Yd. for 31 CY = \$31000. [(1.7ft)(0.75ft)(640ft)] /27 = 30.2 CY. Low Speed Traffic Control at \$1475- per -Day for 33 Day(s) = \$48675. 7 days removal 26 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_13.417_R_1.JPG

Barrier ID:	GRSM-0010N-13.538-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	30.00		
Barrier Description					
Type:	W-BEAM STRONG POST	Barrier Function:	TRAFFIC		
Barrier Material:	GALVANIZED STEEL	Post Material:	GALVANIZED STEEL		
Blockout Type:	WOOD	Length (ft.):	121		
Speed Limit (MPH):	25	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	TL-3	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	74.3
Height (In.):	31.7	Lateral Offset (In.):	58.2	Road Grade (%):	4.50
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2 to 7 in above the 27 in design height with 35 ft being more than 5 in above.			
	Breaking and Cracking:	26 ft of barrier is damaged from impact.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-13.538-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	30.00

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3295
Brief Workorder:	Replace 26 linear feet of guardrail and lower 35 feet of barrier down to the 27-in design height.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 26 LF = \$260. W-Beam Strong Post at \$35- per -Lin. Ft. for 26 LF = \$910. Adjust Guardrail at \$10- per -Lin. Ft. for 35 LF = \$350. Lower 35 feet of barrier down to the 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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_13.538_R_1.JPG

Barrier ID:	GRSM-0010N-13.563-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	73.30		
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.):	522		
Speed Limit (MPH):	25	Placement with Respect to Road:	BOTH INSIDE AND OUTSIDE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	21.0	Post Spacing (In.):	0.0
Height (In.):	14.0	Lateral Offset (In.):	37.0	Road Grade (%):	6.20
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 10 in below the 24 in design height for 522 ft.			
	Breaking and Cracking:	Severe breaking and cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Severe corrosion and weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-13.563-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/16/2010	Barrier Rating:	73.30

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$577033
Brief Workorder:	Raise guardwall 10-in. Remove and reset 522-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 1827 CF = \$456750. [(2ft)(1.75ft)(522ft)] = 1827 CF. Structural Concrete at \$1000- per -Cu. Yd. for 28 CY = \$28000. [(1.75ft)(0.8ft)(522ft)] /27 = 27.1 CY. Low Speed Traffic Control at \$1475- per -Day for 27 Day(s) = \$39825. 6 days removal 21 days installation				

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_13.563_R_1.JPG

Barrier ID:	GRSM-0010N-13.789-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	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.):	156		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	20.2	Post Spacing (In.):	0.0
Height (In.):	24.0	Lateral Offset (In.):	0.0	Road Grade (%):	0.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 0-2 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-13.789-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:		8.60	
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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_13.789_R_1.JPG

Barrier ID:	GRSM-0010N-13.819-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	32.50		
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.):	172		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	19.7	Post Spacing (In.):	0.0
Height (In.):	22.2	Lateral Offset (In.):	56.2	Road Grade (%):	4.40
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height ranges from 3 in below to 2 in above the 24 in design height for 117 ft and 3-4 ins below for 55 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-13.819-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_13.819_R_1.JPG

Barrier ID:	GRSM-0010N-13.852-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	38.50		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	765		
Speed Limit (MPH):	25	Placement with Respect to Road:	BOTH INSIDE AND OUTSIDE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	21	Width (In.):	26.0	Post Spacing (In.):	0.0
Height (In.):	29.5	Lateral Offset (In.):	45.7	Road Grade (%):	6.30
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 10 to 13 in above the 21-in/24-in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-13.852-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_13.852_R_1.JPG

Barrier ID:	GRSM-0010N-13.859-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	Barrier Rating:	39.50		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	21		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	21	Width (In.):	24.7	Post Spacing (In.):	0.0
Height (In.):	31.2	Lateral Offset (In.):	100.6	Road Grade (%):	5.60
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 13 to 14 in above the 21-in/24-in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-13.859-L				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/16/2010	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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_13.859_L_1.JPG

Barrier ID:	GRSM-0010N-13.916-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/20/2010	Barrier Rating:	44.20		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	530		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	21	Width (In.):	24.2	Post Spacing (In.):	0.0
Height (In.):	28.7	Lateral Offset (In.):	61.2	Road Grade (%):	7.40
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 10 to 12 in above the 21-in/24-in crenellated design height.			
	Breaking and Cracking:	15 ft of barrier is damaged due to impact. Rocks are intact but separated from mortar.			
	Missing Elements:	Missing mortar in impact area.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-13.916-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/20/2010	Barrier Rating:	44.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$21423
Brief Workorder:	Remove and reset 15 feet of damaged stone masonry barrier.				
Workorder:	Remove & Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 72 CF = \$18000. [(2.4ft)(2ft)(15ft)] = 72 CF. 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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_13.916_R_1.JPG

Barrier ID:	GRSM-0010N-14.076-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/20/2010	Barrier Rating:	20.10		
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.):	173		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	23.0	Post Spacing (In.):	0.0
Height (In.):	25.0	Lateral Offset (In.):	0.0	Road Grade (%):	0.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 1 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-14.076-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/20/2010	Barrier Rating:		20.10	
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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_14.076_R_1.JPG

Barrier ID:	GRSM-0010N-14.109-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/20/2010	Barrier Rating:	50.00		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	193		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	19.2	Post Spacing (In.):	0.0
Height (In.):	14.0	Lateral Offset (In.):	38.7	Road Grade (%):	4.20
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 3 to 6 in below the 18-in/24-in crenellated design height for 93 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-14.109-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/20/2010	Barrier Rating:	50.00

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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_14.109_R_1.JPG

Barrier ID:	GRSM-0010N-14.146-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/20/2010	Barrier Rating:	59.40		
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.):	450		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	18.2	Post Spacing (In.):	0.0
Height (In.):	14.3	Lateral Offset (In.):	49.7	Road Grade (%):	5.40
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 6 in below the 24 in design height for 94 ft and 6 to 13 in below for 356 ft.			
	Breaking and Cracking:	Some cracking of mortar up to one in wide.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-14.146-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/20/2010	Barrier Rating:	59.40

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$335528
Brief Workorder:	Raise guardwall 5-in. Remove and reset 356-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 1068 CF = \$267000. [(2ft)(1.5ft)(356ft)] = 1068 CF. Structural Concrete at \$1000- per -Cu. Yd. for 10 CY = \$10000. [(1.5ft)(0.5ft)(356ft)] /27 = 9.9 CY. Low Speed Traffic Control at \$1475- per -Day for 19 Day(s) = \$28025. 4 days removal 15 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_14.146_R_1.JPG

Barrier ID:	GRSM-0010N-14.231-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/20/2010	Barrier Rating:	17.30		
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.):	50		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	19.0	Post Spacing (In.):	0.0
Height (In.):	20.2	Lateral Offset (In.):	0.0	Road Grade (%):	0.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2 to 5 in below the 24 in design height for 50 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-14.231-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/20/2010	Barrier Rating:	17.30

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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_14.231_R_1.JPG

Barrier ID:	GRSM-0010N-14.240-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/20/2010	Barrier Rating:	67.10		
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.):	253		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	19.2	Post Spacing (In.):	0.0
Height (In.):	9.7	Lateral Offset (In.):	69.3	Road Grade (%):	3.40
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 3 to 6 in below the 24 in design height for 12 ft and 6 to 17 in below for 232.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-14.240-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/20/2010	Barrier Rating:	67.10

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$240818
Brief Workorder:	Raise guardwall 12-in. Remove and reset 232-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 743 CF = \$185750. (1.6ft)(2ft)(232ft) = 742.4 CF. Structural Concrete at \$1000- per -Cu. Yd. for 14 CY = \$14000. [(1.6ft)(1ft)(232ft)] /27 = 13.7 CY. Low Speed Traffic Control at \$1475- per -Day for 13 Day(s) = \$19175. 3 days removal 10 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_14.240_R_1.JPG

Barrier ID:	GRSM-0010N-14.288-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/20/2010	Barrier Rating:	45.90		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	433		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	20.0	Post Spacing (In.):	0.0
Height (In.):	16.0	Lateral Offset (In.):	57.7	Road Grade (%):	5.50
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 3 to 6 in below the 18-in/24-in crenellated design height for 162 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-14.288-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/20/2010	Barrier Rating:	45.90

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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_14.288_R_1.JPG

Barrier ID:	GRSM-0010N-14.360-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/20/2010	Barrier Rating:	47.20		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	1048		
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 Crashworthy?:	N/A	Approach Transition Type:	CONC/MASON SBT
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.5
Height (In.):	28.7	Lateral Offset (In.):	61.0	Road Grade (%):	6.40
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 1 in below to 4 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-14.360-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/20/2010	Barrier Rating:	47.20

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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_14.360_R_1.JPG

Barrier ID:	GRSM-0010N-14.567-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/20/2010	Barrier Rating:	16.00		
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.):	254		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	21.2	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 has no deviation and the height is 4 in below the 24 in design height.			
	Breaking and Cracking:	One stone is severely cracked. Four 2-ft sections of barrier show distress.			
	Missing Elements:	Missing a 1-ft long stone.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-14.567-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/20/2010	Barrier Rating:	16.00

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$9873
Brief Workorder:	Remove and reset two 4-foot sections of barrier and replace two stones.				
Workorder:	Remove & Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 28 CF = \$7000. (1.7ft)(2ft)(8ft) = 27.2 CF. Replace Stones at \$250- per -Each for 2 Unit(s) = \$500. Replace one missing stone and replace one cracked 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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_14.567_R_1.JPG

Barrier ID:	GRSM-0010N-14.594-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/20/2010	Barrier Rating:	50.00		
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.):	792		
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-2	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	CONC/MASON SBT
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.5
Height (In.):	25.5	Lateral Offset (In.):	62.0	Road Grade (%):	5.70
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 1 to 3 in below the 27 in design height for 380 ft and 3 to 5 in below for 40 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-14.594-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/20/2010	Barrier Rating:	50.00

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$7865
Brief Workorder:	Raise 420 feet of guardrail up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 420 LF = \$4200. Raise 420 feet of guardrail up to the 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.

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_14.594_R_1.JPG

Barrier ID:	GRSM-0010N-14.750-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/20/2010	Barrier Rating:	63.20		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	271		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	18.0	Post Spacing (In.):	0.0
Height (In.):	9.3	Lateral Offset (In.):	56.2	Road Grade (%):	6.40
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and he height is 5 in below the 18-in/24-in crenellated design height for 150 ft and 6 to 13 in below for 121 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-14.750-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/20/2010	Barrier Rating:	63.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$115583
Brief Workorder:	Raise guardwall 6-in. Remove and reset 121-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 363 CF = \$90750. [(2ft)(1.5ft)(121ft)] = 363 CF. Structural Concrete at \$1000- per -Cu. Yd. for 4 CY = \$4000. [(1.5ft)(0.5ft)(121ft)] /27 = 3.4 CY. Low Speed Traffic Control at \$1475- per -Day for 7 Day(s) = \$10325. 2 days removal 5 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_14.750_R_1.JPG

Barrier ID:	GRSM-0010N-14.808-R				
Route Name:	NEWFOUND GAP ROAD NORTH				
Inspection Date:	09/20/2010	Barrier Rating:	69.50		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	340		
Speed Limit (MPH):	25	Placement with Respect to Road:	BOTH INSIDE AND OUTSIDE		
Hazard Behind Barrier:	EXTREME				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	21	Width (In.):	19.2	Post Spacing (In.):	0.0
Height (In.):	14.0	Lateral Offset (In.):	50.2	Road Grade (%):	0.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 3 to 6 in below the 21-in/24-in crenellated design height for 48 ft and 6 to 13 in below for 196 ft.			
	Breaking and Cracking:	7 broken loose stones on 4 crenellations minor cracking of grout 1/4 to 1/2 in wide observed.			
	Missing Elements:	2 missing stones(found behind barrier) observed.			
	Corrosion and Weathering:	Moderate weathering of the grout and stones observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010N-14.808-R		
Route Name:	NEWFOUND GAP ROAD NORTH		
Inspection Date:	09/20/2010	Barrier Rating:	69.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$222420
Brief Workorder:	Raise guardwall 4-in. Remove and reset 196-ft of stone masonry guardwall on concrete footer to adjacent 12-in height. Remove and reset 27 additional feet of loose and missing stones.				
Workorder:	Remove & Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 714 CF = \$178500. [(2ft)(1.6ft)(223ft)] = 713.6 CF. Structural Concrete at \$1000- per -Cu. Yd. for 6 CY = \$6000. [(1.6ft)(0.5ft)(196ft)] /27 = 5.8 CY. Low Speed Traffic Control at \$1475- per -Day for 12 Day(s) = \$17700. 3 days removal 9 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0010N: NEWFOUND GAP ROAD NORTH

Barrier Condition Photos



GRSM_0010N_14.808_R_1.JPG

Barrier ID:	GRSM-0010S-15.039-L				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	Barrier Rating:	86.00		
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.):	896		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	24.0	Post Spacing (In.):	0.0
Height (In.):	15.0	Lateral Offset (In.):	77.5	Road Grade (%):	6.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 8 to 12 in below the 24 in design height for 896 ft.			
	Breaking and Cracking:	Some breaking and cracking of a quarter in to half inch.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Major corrosion and weathering. Large amounts of moss and grass growing on barrier.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010S-15.039-L		
Route Name:	NEWFOUND GAP ROAD SOUTH		
Inspection Date:	09/20/2010	Barrier Rating:	86.00

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$1113613
Brief Workorder:	Raise guardwall 9-in. Remove and reset 896-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 3584 CF = \$896000. [(2ft)(2ft)(896ft)] = 3584 CF. Structural Concrete at \$1000- per -Cu. Yd. for 50 CY = \$50000. [(2ft)(0.75ft)(896ft)] /27 = 49.8 CY. Low Speed Traffic Control at \$1475- per -Day for 45 Day(s) = \$66375. 9 days removal 36 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_15.039_L_1.JPG

Barrier ID:	GRSM-0010S-15.275-L				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	Barrier Rating:	35.20		
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.):	334		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG BURIED	Ending End Trtmt Crashworthy?:	YES		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.0	Lateral Offset (In.):	86.5	Road Grade (%):	5.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 in below to 1 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010S-15.275-L				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_15.275_L_1.JPG

Barrier ID:	GRSM-0010S-15.397-L				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	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.):	919		
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 BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.8
Height (In.):	28.0	Lateral Offset (In.):	80.5	Road Grade (%):	3.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 in below to 4 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010S-15.397-L				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_15.397_L_1.JPG

Barrier ID:	GRSM-0010S-16.313-L				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	Barrier Rating:	36.70		
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.):	398		
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 BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG BURIED	Ending End Trtmt Crashworthy?:	YES		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.6	Lateral Offset (In.):	98.5	Road Grade (%):	4.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 in below to 2 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010S-16.313-L		
Route Name:	NEWFOUND GAP ROAD SOUTH		
Inspection Date:	09/20/2010	Barrier Rating:	36.70

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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_16.313_L_1.JPG

Barrier ID:	GRSM-0010S-16.340-R				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	Barrier Rating:	31.00		
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.):	725		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG BURIED	Ending End Trtmt Crashworthy?:	YES		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.5
Height (In.):	28.0	Lateral Offset (In.):	117.0	Road Grade (%):	0.70
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0 to 2 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010S-16.340-R		
Route Name:	NEWFOUND GAP ROAD SOUTH		
Inspection Date:	09/20/2010	Barrier Rating:	31.00

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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_16.340_R_1.JPG

Barrier ID:	GRSM-0010S-16.660-R				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	Barrier Rating:	37.00		
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.):	640		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.6	Lateral Offset (In.):	86.0	Road Grade (%):	4.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at or 1 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010S-16.660-R				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_16.660_R_1.JPG

Barrier ID:	GRSM-0010S-17.018-R				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	Barrier Rating:	48.50		
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.):	1062		
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-2	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.2	Lateral Offset (In.):	46.7	Road Grade (%):	4.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 in below to 2 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010S-17.018-R				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	Barrier Rating:		48.50	
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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_17.018_R_1.JPG

Barrier ID:	GRSM-0010S-17.049-L				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	Barrier Rating:	36.70		
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.):	665		
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 BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG BURIED	Ending End Trtmt Crashworthy?:	YES		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	28.0	Lateral Offset (In.):	70.5	Road Grade (%):	4.90
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height ranges from 3 in below to 2 in above the 27 in design height with 70 ft being 1 to 3 ins below.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010S-17.049-L		
Route Name:	NEWFOUND GAP ROAD SOUTH		
Inspection Date:	09/20/2010	Barrier Rating:	36.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2393
Brief Workorder:	Raise 70 feet of barrier up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 70 LF = \$700. Raise 70 feet of barrier to the 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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_17.049_L_1.JPG

Barrier ID:	GRSM-0010S-17.853-R				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	Barrier Rating:	42.70		
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.):	718		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG BURIED	Ending End Trtmt Crashworthy?:	YES		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	28.2	Lateral Offset (In.):	61.2	Road Grade (%):	4.60
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at or up to 2 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010S-17.853-R		
Route Name:	NEWFOUND GAP ROAD SOUTH		
Inspection Date:	09/20/2010	Barrier Rating:	42.70

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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_17.853_R_1.JPG

Barrier ID:	GRSM-0010S-18.033-R				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	Barrier Rating:	47.20		
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.):	584		
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 BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	28.0	Lateral Offset (In.):	67.6	Road Grade (%):	4.70
Physical Condition					
Barrier	Alignment and Height:	The barrier alignment is deflected more than 12 in off alignment for 30 ft due to impact. The height is at or above the design height of 27 in by up to 3 ins.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010S-18.033-R		
Route Name:	NEWFOUND GAP ROAD SOUTH		
Inspection Date:	09/20/2010	Barrier Rating:	47.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2448
Brief Workorder:	Remove and reset 30 feet of guardrail that was pushed off of alignment due to impact.				
Workorder:	Remove & Reset Guardrail at \$25- per -Lin. Ft. for 30 LF = \$750. Remove and reset 30 feet of guardrail impacted off alignment. 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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_18.033_R_1.JPG

Barrier ID:	GRSM-0010S-18.349-R				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	Barrier Rating:	45.20		
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.):	472		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.0	Lateral Offset (In.):	73.5	Road Grade (%):	7.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010S-18.349-R		
Route Name:	NEWFOUND GAP ROAD SOUTH		
Inspection Date:	09/20/2010	Barrier Rating:	45.20

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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_18.349_R_1.JPG

Barrier ID:	GRSM-0010S-18.351-L				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	Barrier Rating:	31.00		
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.):	414		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.2	Lateral Offset (In.):	59.5	Road Grade (%):	6.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at or up to 1 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010S-18.351-L				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	Barrier Rating:		31.00	
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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_18.351_L_1.JPG

Barrier ID:	GRSM-0010S-18.568-R				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	Barrier Rating:	49.70		
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.):	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-2	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	28.6	Lateral Offset (In.):	73.0	Road Grade (%):	7.30
Physical Condition					
Barrier	Alignment and Height:	The alignment is deflected more than 12 in off alignment for 30 ft due to impact. The height is 1 in below to 3 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010S-18.568-R		
Route Name:	NEWFOUND GAP ROAD SOUTH		
Inspection Date:	09/20/2010	Barrier Rating:	49.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2448
Brief Workorder:	Remove and reset 30 feet of guardrail that was pushed off of alignment due to impact.				
Workorder:	Remove & Reset Guardrail at \$25- per -Lin. Ft. for 30 LF = \$750. Remove and reset 30 feet of guardrail that was pushed off of alignment. 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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_18.568_R_1.JPG

Barrier ID:	GRSM-0010S-18.674-R				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	Barrier Rating:	51.50		
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.):	1147		
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-2	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.5
Height (In.):	28.2	Lateral Offset (In.):	74.8	Road Grade (%):	6.60
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height and the height ranges from 3 in below to 6 in above the 27 in design height with 30 ft being 2-3 in below and 50 ft being more than 5 in above.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010S-18.674-R		
Route Name:	NEWFOUND GAP ROAD SOUTH		
Inspection Date:	09/20/2010	Barrier Rating:	51.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2503
Brief Workorder:	Raise 30-ft of low guardrail and lower 50-ft of high guardrail to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 80 LF = \$800. Raise 30-ft of low guardrail and lower 50-ft of high guardrail to the 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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_18.674_R_1.JPG

Barrier ID:	GRSM-0010S-18.923-R				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	Barrier Rating:	37.00		
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.):	634		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	29.2	Lateral Offset (In.):	65.6	Road Grade (%):	5.90
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2 to 3 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010S-18.923-R				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_18.923_R_1.JPG

Barrier ID:	GRSM-0010S-19.205-R				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	Barrier Rating:	39.90		
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.):	792		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.8
Height (In.):	29.7	Lateral Offset (In.):	52.2	Road Grade (%):	5.80
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 0 to 5 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010S-19.205-R		
Route Name:	NEWFOUND GAP ROAD SOUTH		
Inspection Date:	09/20/2010	Barrier Rating:	39.90

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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_19.205_R_1.JPG

Barrier ID:	GRSM-0010S-19.431-R				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	Barrier Rating:	53.20		
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.):	438		
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:	SBT/LOG BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	25.6	Lateral Offset (In.):	68.0	Road Grade (%):	6.70
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height ranges from 0-3 in below the 27 in design height with 50 ft being 1-3 in below.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010S-19.431-R		
Route Name:	NEWFOUND GAP ROAD SOUTH		
Inspection Date:	09/20/2010	Barrier Rating:	53.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2173
Brief Workorder:	Raise 50 feet of guardrail up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 50 LF = \$500. Raise 50-ft 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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_19.431_R_1.JPG

Barrier ID:	GRSM-0010S-19.587-R				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	Barrier Rating:	47.00		
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.):	400		
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-2	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	SBT/LOG BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	27.7	Lateral Offset (In.):	83.3	Road Grade (%):	6.90
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is between 1 in below to 2 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010S-19.587-R				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/20/2010	Barrier Rating:		47.00	
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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_19.587_R_1.JPG

Barrier ID:	GRSM-0010S-24.324-L				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/23/2010	Barrier Rating:	48.20		
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.):	205		
Speed Limit (MPH):	45	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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	24.6	Post Spacing (In.):	0.0
Height (In.):	22.2	Lateral Offset (In.):	122.0	Road Grade (%):	4.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 3 in below the design height of 24 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010S-24.324-L				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/23/2010	Barrier Rating:		48.20	
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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_24.324_L_1.JPG

Barrier ID:	GRSM-0010S-25.776-L				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/23/2010	Barrier Rating:	20.10		
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.):	220		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	25.6	Post Spacing (In.):	0.0
Height (In.):	23.0	Lateral Offset (In.):	0.0	Road Grade (%):	0.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-3 in below the design height of 24 in.			
	Breaking and Cracking:	No broken stones minor cracking of the grout observed. 1/4 to 1/2 in wide.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate weathering of the barrier grout observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010S-25.776-L		
Route Name:	NEWFOUND GAP ROAD SOUTH		
Inspection Date:	09/23/2010	Barrier Rating:	20.10

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2855
Brief Workorder:	Repoint 8 sy of stone masonry guardwall.				
Workorder:	Re-Point Masonry Barrier at \$140- per -Sq. Yd. for 8 = \$1120. (1.9ft + 2.1ft + 1.9ft)(12ft) = 7.8 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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_25.776_L_1.JPG

Barrier ID:	GRSM-0010S-25.826-L				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/23/2010	Barrier Rating:	38.20		
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.):	372		
Speed Limit (MPH):	45	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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	27.0	Post Spacing (In.):	0.0
Height (In.):	22.0	Lateral Offset (In.):	132.3	Road Grade (%):	2.60
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-3 in below the design height of 24 in.			
	Breaking and Cracking:	One stone on end shows some cracking.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010S-25.826-L		
Route Name:	NEWFOUND GAP ROAD SOUTH		
Inspection Date:	09/23/2010	Barrier Rating:	38.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2085
Brief Workorder:	Repoint 3 SY of barrier.				
Workorder:	Re-Point Masonry Barrier at \$140- per -Sq. Yd. for 3 = \$420. (1.8ft + 2.2ft + 1.8ft)(4ft) = 2.6 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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_25.826_L_1.JPG

Barrier ID:	GRSM-0010S-28.172-L				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/23/2010	Barrier Rating:	58.20		
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.):	319		
Speed Limit (MPH):	45	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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	24.0	Post Spacing (In.):	0.0
Height (In.):	17.2	Lateral Offset (In.):	107.0	Road Grade (%):	0.60
Physical Condition					
Barrier	Alignment and Height:	The barrier alignment has no deviation and the height ranges from 1-10 in below the 24 in design height with 165 ft being 6-10 in below.			
	Breaking and Cracking:	No broken stones minor cracking of the grout observed. 1/4 to 1/2 in wide on ending end for 6 linear ft.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010S-28.172-L		
Route Name:	NEWFOUND GAP ROAD SOUTH		
Inspection Date:	09/23/2010	Barrier Rating:	58.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$76313
Brief Workorder:	Raise guardwall 3-in. Remove and reset 165-ft of stone masonry guardwall on 1 row of new stone to raise barrier to the adjacent 18-in height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 165 CF = \$41250. [(0.5ft)(2ft)(165ft)] = 165 CF. Remove top layer of stones in barrier for 165 feet. Low Speed Traffic Control at \$1475- per -Day for 5 Day(s) = \$7375. 1 day removal 4 days installation. New Stone at \$250- per -Each for 83 Unit(s) = \$20750. [(165ft) / (2ft/stone)] x 1 row = 83 stones. Insert new stone on retaining wall to increase barrier height then reset top layer of barrier.				

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

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_28.172_L_1.JPG

Barrier ID:	GRSM-0010S-28.913-L				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/23/2010	Barrier Rating:	41.00		
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):	45	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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	18.2	Post Spacing (In.):	0.0
Height (In.):	23.2	Lateral Offset (In.):	45.2	Road Grade (%):	0.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is low by 2 in or less from the design height of 24 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010S-28.913-L				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/23/2010		Barrier Rating:	41.00	
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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_28.913_L_1.JPG

Barrier ID:	GRSM-0010S-28.914-R				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/23/2010	Barrier Rating:	43.70		
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.):	53		
Speed Limit (MPH):	45	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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	20.2	Post Spacing (In.):	0.0
Height (In.):	27.2	Lateral Offset (In.):	70.0	Road Grade (%):	0.90
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at or up to 6 in above the design height of 24 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate weathering of the barrier observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010S-28.914-R		
Route Name:	NEWFOUND GAP ROAD SOUTH		
Inspection Date:	09/23/2010	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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_28.914_R_1.JPG

Barrier ID:	GRSM-0010S-29.918-L				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/23/2010	Barrier Rating:	56.70		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	61		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	16.0	Post Spacing (In.):	0.0
Height (In.):	3.0	Lateral Offset (In.):	54.2	Road Grade (%):	0.33
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 15 in below the 18-in/24-in crenellated design height for 61 ft.			
	Breaking and Cracking:	All crenellated severely broken and cracked.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010S-29.918-L		
Route Name:	NEWFOUND GAP ROAD SOUTH		
Inspection Date:	09/23/2010	Barrier Rating:	56.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$54615
Brief Workorder:	Raise guardwall 15-in. Remove and reset 61-ft of stone masonry guardwall on concrete footer to crenellated design height of 18-in/24-in.				
Workorder:	Remove & Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 159 CF = \$39750. $[(2\text{ft})(1.3\text{ft})(61\text{ft})] = 158.6 \text{ CF}$. Structural Concrete at \$1000- per -Cu. Yd. for 4 CY = \$4000. $[(1.3\text{ft})(1.25\text{ft})(61\text{ft})] / 27 = 3.7 \text{ CY}$. Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 1 day removal 3 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_29.918_L_1.JPG

Barrier ID:	GRSM-0010S-30.126-R				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/23/2010	Barrier Rating:	37.00		
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.):	27		
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:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	22.0	Post Spacing (In.):	0.0
Height (In.):	28.6	Lateral Offset (In.):	92.3	Road Grade (%):	1.70
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 4 to 5 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate corrosion and weathering observed. Heavy moss build-up observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010S-30.126-R				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/23/2010	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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_30.126_R_1.JPG

Barrier ID:	GRSM-0010S-30.131-L				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/23/2010	Barrier Rating:	49.50		
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.):	22		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	22.0	Post Spacing (In.):	0.0
Height (In.):	19.2	Lateral Offset (In.):	36.2	Road Grade (%):	1.60
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height ranges from 3-8 in below the 24 in design height with 10 ft being 6-8 in below.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010S-30.131-L		
Route Name:	NEWFOUND GAP ROAD SOUTH		
Inspection Date:	09/23/2010	Barrier Rating:	49.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$14245
Brief Workorder:	Raise guardwall 2-in. Remove and reset 10-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 36 CF = \$9000. [(2ft)(1.8ft)(10ft)] = 36 CF. Structural Concrete at \$1000- per -Cu. Yd. for 1 CY = \$1000. [(1.8ft)(0.5ft)(10ft)] /27 = 1 CY. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.				

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

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_30.131_L_1.JPG

Barrier ID:	GRSM-0010S-30.138-R				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/23/2010	Barrier Rating:	29.80		
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.):	16		
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:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	22.2	Post Spacing (In.):	0.0
Height (In.):	26.2	Lateral Offset (In.):	83.0	Road Grade (%):	1.70
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 0-4 in above the 24 in design height.			
	Breaking and Cracking:	No breaking observed. Some cracking of less than a quarter of an in observed.			
	Missing Elements:	1 missing stone at the end observed. Missing stone is 48 in long.			
	Corrosion and Weathering:	Moderate corrosion and weathering observed. Heavy moss build-up observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010S-30.138-R		
Route Name:	NEWFOUND GAP ROAD SOUTH		
Inspection Date:	09/23/2010	Barrier Rating:	29.80

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$1898
Brief Workorder:	Replace a 48 inch stone at the beginning end of bridge.				
Workorder:	New Stone at \$250- per -Each for 1 Unit(s) = \$250. Replace a 48 inch stone at the beginning end of the bridge. 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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_30.138_R_1.JPG

Barrier ID:	GRSM-0010S-30.145-L				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/23/2010	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.):	21		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	22.0	Post Spacing (In.):	0.0
Height (In.):	19.2	Lateral Offset (In.):	25.7	Road Grade (%):	2.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 3 to 6 in below the 24 in design height for 5 ft and 6 to 8 in below for 8 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0010S-30.145-L		
Route Name:	NEWFOUND GAP ROAD SOUTH		
Inspection Date:	09/23/2010	Barrier Rating:	42.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$6545
Brief Workorder:	Raise guardwall 2-in. Remove and reset 8-ft of stone masonry guardwall on 1 row of new stone to raise barrier to the adjacent 18-in height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 8 CF = \$2000. $[(0.5ft)(1.8ft)(8ft)] = 7.2 CF$. Remove top layer of stones in barrier for 8 feet. New Stone at \$250- per -Each for 4 Unit(s) = \$1000. $[(8ft) / (2ft/stone)] \times 1 \text{ row} = 4 \text{ stones}$. Insert new stone on retaining wall to increase barrier height then reset top layer of barrier. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.				

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

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_30.145_L_1.JPG

Barrier ID:	GRSM-0010S-31.229-L				
Route Name:	NEWFOUND GAP ROAD SOUTH				
Inspection Date:	09/23/2010	Barrier Rating:	27.10		
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.):	132		
Speed Limit (MPH):	35	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	LOW				
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	24.7	Lateral Offset (In.):	56.2	Road Grade (%):	0.90
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2 to 3 in below the 27 in design height for 50 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0010S-31.229-L		
Route Name:	NEWFOUND GAP ROAD SOUTH		
Inspection Date:	09/23/2010	Barrier Rating:	27.10

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2173
Brief Workorder:	Raise 50 feet of guardrail up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 50 LF = \$500. Raise 50-ft 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.

Great Smoky Mountains National Park

ROUTE 0010S: NEWFOUND GAP ROAD SOUTH

Barrier Condition Photos



GRSM_0010S_31.229_L_1.JPG

Barrier ID:	GRSM-0011N-0.002-R				
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)				
Inspection Date:	09/13/2010	Barrier Rating:	45.00		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	43		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	TL-3	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	27.0	Lateral Offset (In.):	41.5	Road Grade (%):	4.20
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at the 27 in design height.			
	Breaking and Cracking:	No breaking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0011N-0.002-R				
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)				
Inspection Date:	09/13/2010	Barrier Rating:		45.00	
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.

Great Smoky Mountains National Park
ROUTE 0011N: GATLINBURG SPUR ROAD (NORTHBOUND)

Barrier Condition Photos



GRSM_0011N_0.002_R_1.JPG

Barrier ID:	GRSM-0011N-0.240-L				
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)				
Inspection Date:	09/13/2010	Barrier Rating:	42.50		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	524		
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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.2	Lateral Offset (In.):	53.2	Road Grade (%):	1.20
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1-3 in below the design height of 27 in for 80 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			

Barrier ID:	GRSM-0011N-0.240-L		
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)		
Inspection Date:	09/13/2010	Barrier Rating:	42.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2503
Brief Workorder:	Raise 80 feet of guardrail up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 80 LF = \$800. Raise 80-ft 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.

Great Smoky Mountains National Park
ROUTE 0011N: GATLINBURG SPUR ROAD (NORTHBOUND)

Barrier Condition Photos



GRSM_0011N_0.240_L_1.JPG

Barrier ID:	GRSM-0011N-0.402-L				
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)				
Inspection Date:	09/13/2010	Barrier Rating:	52.20		
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.):	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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	24.2	Post Spacing (In.):	0.0
Height (In.):	29.7	Lateral Offset (In.):	38.2	Road Grade (%):	3.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-4 in from the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0011N-0.402-L		
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)		
Inspection Date:	09/13/2010	Barrier Rating:	52.20

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.

Great Smoky Mountains National Park
ROUTE 0011N: GATLINBURG SPUR ROAD (NORTHBOUND)

Barrier Condition Photos



GRSM_0011N_0.402_L_1.JPG

Barrier ID:	GRSM-0011N-0.723-R				
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)				
Inspection Date:	09/13/2010	Barrier Rating:	40.70		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	175		
Speed Limit (MPH):	45	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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	28.2	Lateral Offset (In.):	43.0	Road Grade (%):	1.10
Physical Condition					
Barrier	Alignment and Height:	The barrier alignment has no deviation and the height is at or above the design height of 27 in by up to 3 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0011N-0.723-R		
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)		
Inspection Date:	09/13/2010	Barrier Rating:	40.70

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.

Great Smoky Mountains National Park
ROUTE 0011N: GATLINBURG SPUR ROAD (NORTHBOUND)

Barrier Condition Photos



GRSM_0011N_0.723_R_1.JPG

Barrier ID:	GRSM-0011N-0.738-L				
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)				
Inspection Date:	09/13/2010	Barrier Rating:	55.20		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	98		
Speed Limit (MPH):	45	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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	21.0	Lateral Offset (In.):	53.2	Road Grade (%):	0.70
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 3 to 6 in below the 27 in design height for 98 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0011N-0.738-L		
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)		
Inspection Date:	09/13/2010	Barrier Rating:	55.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2701
Brief Workorder:	Raise 98 feet of barrier to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 98 LF = \$980. Raise 98-ft 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.

Great Smoky Mountains National Park
ROUTE 0011N: GATLINBURG SPUR ROAD (NORTHBOUND)

Barrier Condition Photos



GRSM_0011N_0.738_L_1.JPG

Barrier ID:	GRSM-0011N-1.505-R				
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)				
Inspection Date:	09/13/2010	Barrier Rating:	39.70		
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.):	68		
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-2	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	SBT/LOG BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.0	Lateral Offset (In.):	115.0	Road Grade (%):	0.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 in below the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			

Barrier ID:	GRSM-0011N-1.505-R		
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)		
Inspection Date:	09/13/2010	Barrier Rating:	39.70

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.

Great Smoky Mountains National Park
ROUTE 0011N: GATLINBURG SPUR ROAD (NORTHBOUND)

Barrier Condition Photos



GRSM_0011N_1.505_R_1.JPG

Barrier ID:	GRSM-0011N-2.138-L				
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)				
Inspection Date:	09/13/2010	Barrier Rating:	64.10		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	692		
Speed Limit (MPH):	45	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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	24.2	Lateral Offset (In.):	52.0	Road Grade (%):	0.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 3 in below the 27 in design height for 200 ft and 3 to 7 in below for 282 ft.			
	Breaking and Cracking:	One cracked timber rail observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	One cracked timber rail and blockout on beginning end treatment observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No weathering observed.			

Barrier ID:	GRSM-0011N-2.138-L		
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)		
Inspection Date:	09/13/2010	Barrier Rating:	64.10

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$9097
Brief Workorder:	Raise 482 feet of guardrail up to the 27 inch design height and replace 20 feet of rail.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 482 LF = \$4820. Raise 482-ft of barrier up to 27-in design height. Replace Rail at \$25- per -Lin. Ft. for 20 LF = \$500. Replace 2 timbers. 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.

Great Smoky Mountains National Park
ROUTE 0011N: GATLINBURG SPUR ROAD (NORTHBOUND)

Barrier Condition Photos



GRSM_0011N_2.138_L_1.JPG

Barrier ID:	GRSM-0011N-2.294-L				
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)				
Inspection Date:	09/13/2010	Barrier Rating:	46.90		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	284		
Speed Limit (MPH):	45	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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.6
Height (In.):	28.2	Lateral Offset (In.):	51.5	Road Grade (%):	1.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1-3 in below the 27 in design height for 30 ft and 0-3 in above for 254 ft.			
	Breaking and Cracking:	One barrier reflector damaged.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			

Barrier ID:	GRSM-0011N-2.294-L		
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)		
Inspection Date:	09/13/2010	Barrier Rating:	46.90

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2063
Brief Workorder:	Raise 30 feet of guardrail up to the 27 inch design height and replace one damaged reflector.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 30 LF = \$300. Raise 30-ft of barrier up to 27-in design height. Barrier Reflectors at \$100- per -Each for 1 Unit(s) = \$100. Replace damaged reflectors. 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.

Great Smoky Mountains National Park
ROUTE 0011N: GATLINBURG SPUR ROAD (NORTHBOUND)

Barrier Condition Photos



GRSM_0011N_2.294_L_1.JPG

Barrier ID:	GRSM-0011N-2.540-L				
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)				
Inspection Date:	09/13/2010	Barrier Rating:	46.50		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	98		
Speed Limit (MPH):	45	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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG BURIED	Ending End Trtmt Crashworthy?:	YES		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.0
Height (In.):	26.2	Lateral Offset (In.):	89.3	Road Grade (%):	0.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is low by 1 in or less from the design height of 27 in for 58 LF.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0011N-2.540-L		
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)		
Inspection Date:	09/13/2010	Barrier Rating:	46.50

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.

Great Smoky Mountains National Park
ROUTE 0011N: GATLINBURG SPUR ROAD (NORTHBOUND)

Barrier Condition Photos



GRSM_0011N_2.540_L_1.JPG

Barrier ID:	GRSM-0011N-2.581-L				
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)				
Inspection Date:	09/13/2010	Barrier Rating:	58.20		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	434		
Speed Limit (MPH):	45	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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	25.2	Lateral Offset (In.):	71.3	Road Grade (%):	2.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1-3 in below the 27 in design height for 90 ft.			
	Breaking and Cracking:	Breaking and cracking of 8 rails for a total of 80 LF.			
	Missing Elements:	9 missing barrier reflectors.			
	Corrosion and Weathering:	No corrosion or weathering observed			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			

Barrier ID:	GRSM-0011N-2.581-L		
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)		
Inspection Date:	09/13/2010	Barrier Rating:	58.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$5803
Brief Workorder:	Raise 90 feet of guardrail up to the 27 inch design height replace 80 feet of rail and 9 barrier reflectors.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 90 LF = \$900. Raise 90-ft of barrier up to 27-in design height. Replace Rail at \$25- per -Lin. Ft. for 80 LF = \$2000. Replace 80 feet of rail. Barrier Reflectors at \$100- per -Each for 9 Unit(s) = \$900. Replace 9 missing barrier reflectors. 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.

Great Smoky Mountains National Park
ROUTE 0011N: GATLINBURG SPUR ROAD (NORTHBOUND)

Barrier Condition Photos



GRSM_0011N_2.581_L_1.JPG

Barrier ID:	GRSM-0011N-3.646-R				
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)				
Inspection Date:	09/13/2010	Barrier Rating:	46.50		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	154		
Speed Limit (MPH):	45	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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.3
Height (In.):	27.6	Lateral Offset (In.):	53.5	Road Grade (%):	0.60
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-2 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0011N-3.646-R		
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)		
Inspection Date:	09/13/2010	Barrier Rating:	46.50

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.

Great Smoky Mountains National Park
ROUTE 0011N: GATLINBURG SPUR ROAD (NORTHBOUND)

Barrier Condition Photos



GRSM_0011N_3.646_R_1.JPG

Barrier ID:	GRSM-0011N-3.658-L				
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)				
Inspection Date:	09/13/2010	Barrier Rating:	59.90		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	95		
Speed Limit (MPH):	45	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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	21.2	Lateral Offset (In.):	49.0	Road Grade (%):	0.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 3 to 7 in below the 27 in design height for 95 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0011N-3.658-L		
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)		
Inspection Date:	09/13/2010	Barrier Rating:	59.90

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2668
Brief Workorder:	Raise 95 feet of barrier to 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 95 LF = \$950. Raise 95 feet 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.

Great Smoky Mountains National Park
ROUTE 0011N: GATLINBURG SPUR ROAD (NORTHBOUND)

Barrier Condition Photos



GRSM_0011N_3.658_L_1.JPG

Barrier ID:	GRSM-0011N-3.800-L				
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)				
Inspection Date:	09/13/2010	Barrier Rating:	65.50		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	1059		
Speed Limit (MPH):	45	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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	23.0	Lateral Offset (In.):	61.4	Road Grade (%):	1.20
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is 1-3 in below the 27 in design height for 230 ft and 550 ft and 3 to 7 in below for 550 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0011N-3.800-L		
Route Name:	GATLINBURG SPUR ROAD (NORTHBOUND)		
Inspection Date:	09/13/2010	Barrier Rating:	65.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$15070
Brief Workorder:	Raise 780 feet of guardrail up to 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 780 LF = \$7800. Raise 780-ft of barrier up to 27-in design height. 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.

Great Smoky Mountains National Park
ROUTE 0011N: GATLINBURG SPUR ROAD (NORTHBOUND)

Barrier Condition Photos



GRSM_0011N_3.800_L_1.JPG

Barrier ID:	GRSM-0011S-0.157-L				
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)				
Inspection Date:	09/13/2010	Barrier Rating:	29.50		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	216		
Speed Limit (MPH):	45	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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.2	Lateral Offset (In.):	61.0	Road Grade (%):	0.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			

Barrier ID:	GRSM-0011S-0.157-L		
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)		
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.

Great Smoky Mountains National Park
ROUTE 0011S: GATLINBURG SPUR ROAD (SOUTHBOUND)

Barrier Condition Photos



GRSM_0011S_0.157_L_1.JPG

Barrier ID:	GRSM-0011S-0.157-R				
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)				
Inspection Date:	09/13/2010	Barrier Rating:	29.50		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	220		
Speed Limit (MPH):	45	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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	26.0	Lateral Offset (In.):	49.7	Road Grade (%):	0.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 3 in below for 60 ft of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion observed.			

Barrier ID:	GRSM-0011S-0.157-R		
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)		
Inspection Date:	09/13/2010	Barrier Rating:	29.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2283
Brief Workorder:	Raise 60 feet of guardrail up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 60 LF = \$600. Raise 60 feet of guardrail up to the 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.

Great Smoky Mountains National Park
ROUTE 0011S: GATLINBURG SPUR ROAD (SOUTHBOUND)

Barrier Condition Photos



GRSM_0011S_0.157_R_1.JPG

Barrier ID:	GRSM-0011S-1.783-L				
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)				
Inspection Date:	09/13/2010	Barrier Rating:	41.00		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	659		
Speed Limit (MPH):	45	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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	28.2	Lateral Offset (In.):	50.0	Road Grade (%):	0.90
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-2 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0011S-1.783-L		
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)		
Inspection Date:	09/13/2010	Barrier Rating:	41.00

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.

Great Smoky Mountains National Park
ROUTE 0011S: GATLINBURG SPUR ROAD (SOUTHBOUND)

Barrier Condition Photos



GRSM_0011S_1.783_L_1.JPG

Barrier ID:	GRSM-0011S-2.180-L				
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)				
Inspection Date:	09/13/2010	Barrier Rating:	42.70		
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.):	267		
Speed Limit (MPH):	45	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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	25.2	Post Spacing (In.):	0.0
Height (In.):	28.0	Lateral Offset (In.):	65.0	Road Grade (%):	0.40
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is 4 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0011S-2.180-L		
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)		
Inspection Date:	09/13/2010	Barrier Rating:	42.70

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.

Great Smoky Mountains National Park
ROUTE 0011S: GATLINBURG SPUR ROAD (SOUTHBOUND)

Barrier Condition Photos



GRSM_0011S_2.180_L_1.JPG

Barrier ID:	GRSM-0011S-2.493-L				
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)				
Inspection Date:	09/13/2010	Barrier Rating:	32.40		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	206		
Speed Limit (MPH):	45	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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.5
Height (In.):	26.2	Lateral Offset (In.):	55.0	Road Grade (%):	1.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			

Barrier ID:	GRSM-0011S-2.493-L		
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)		
Inspection Date:	09/13/2010	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.

Great Smoky Mountains National Park
ROUTE 0011S: GATLINBURG SPUR ROAD (SOUTHBOUND)

Barrier Condition Photos



GRSM_0011S_2.493_L_1.JPG

Barrier ID:	GRSM-0011S-2.925-L				
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)				
Inspection Date:	09/13/2010	Barrier Rating:	39.70		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	380		
Speed Limit (MPH):	45	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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.5
Height (In.):	26.2	Lateral Offset (In.):	72.0	Road Grade (%):	1.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 3 to 4 in below the 27 in design height for 145 ft.			
	Breaking and Cracking:	Minor cracking observed.			
	Missing Elements:	One broken barrier reflector observed.			
	Corrosion and Weathering:	Minor weathering 1/4 in to 1/2 in observed on 3 consecutive rails.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0011S-2.925-L		
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)		
Inspection Date:	09/13/2010	Barrier Rating:	39.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3328
Brief Workorder:	Raise 145 feet of barrier to the 27 inch design height and replace one reflector.				
Workorder:	Barrier Reflectors at \$100- per -Each for 1 Unit(s) = \$100. Replace 1 broken reflector. Adjust Guardrail at \$10- per -Lin. Ft. for 145 LF = \$1450. Raise 145-ft 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.

Great Smoky Mountains National Park
ROUTE 0011S: GATLINBURG SPUR ROAD (SOUTHBOUND)

Barrier Condition Photos



GRSM_0011S_2.925_L_1.JPG

Barrier ID:	GRSM-0011S-2.948-R				
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)				
Inspection Date:	09/14/2010	Barrier Rating:	51.50		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	214		
Speed Limit (MPH):	45	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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG BURIED	Ending End Trtmt Crashworthy?:	YES		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.0
Height (In.):	25.2	Lateral Offset (In.):	38.2	Road Grade (%):	0.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 3 in below the 27 in design height for 20 ft and 3 to 4 in below for 94 ft.			
	Breaking and Cracking:	1 broken blockout with 1/2 in or greater crack 2 broken barrier reflectors and 1 possible impact zone on barrier.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Minor corrosion and weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Minor corrosion or weathering observed.			

Barrier ID:	GRSM-0011S-2.948-R		
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)		
Inspection Date:	09/14/2010	Barrier Rating:	51.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3130
Brief Workorder:	Raise 114 feet of guardrail up to the 27 inch design height replace one block and 2 reflectors.				
Workorder:	Replace Block at \$30- per -Each for 1 Block(s) = \$30. Replace 1 blockout. Adjust Guardrail at \$10- per -Lin. Ft. for 114 LF = \$1140. Raise 114 feet of guardrail up to the 27 inch design height. Barrier Reflectors at \$100- per -Each for 2 Unit(s) = \$200. Replace 2 broken reflectors. 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.

Great Smoky Mountains National Park
ROUTE 0011S: GATLINBURG SPUR ROAD (SOUTHBOUND)

Barrier Condition Photos



GRSM_0011S_2.948_R_1.JPG

Barrier ID:	GRSM-0011S-3.641-R				
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)				
Inspection Date:	09/14/2010	Barrier Rating:	55.40		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	122		
Speed Limit (MPH):	45	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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	22.2	Lateral Offset (In.):	55.2	Road Grade (%):	0.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 3 to 5 in below the 27 in design height for 122 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0011S-3.641-R		
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)		
Inspection Date:	09/14/2010	Barrier Rating:	55.40

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2965
Brief Workorder:	Raise 122 feet of barrier up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 122 LF = \$1220. Raise 122-ft 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.

Great Smoky Mountains National Park
ROUTE 0011S: GATLINBURG SPUR ROAD (SOUTHBOUND)

Barrier Condition Photos



GRSM_0011S_3.641_R_1.JPG

Barrier ID:	GRSM-0011S-3.941-R				
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)				
Inspection Date:	09/14/2010	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.):	49		
Speed Limit (MPH):	45	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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	20.0	Post Spacing (In.):	0.0
Height (In.):	35.0	Lateral Offset (In.):	71.3	Road Grade (%):	2.20
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 6 to 10 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0011S-3.941-R		
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)		
Inspection Date:	09/14/2010	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.

Great Smoky Mountains National Park
ROUTE 0011S: GATLINBURG SPUR ROAD (SOUTHBOUND)

Barrier Condition Photos



GRSM_0011S_3.941_R_1.JPG

Barrier ID:	GRSM-0011S-4.067-R				
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)				
Inspection Date:	09/14/2010	Barrier Rating:	44.00		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	321		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	TL-3	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	RIGID SBT WALL - SBT
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	23.0	Lateral Offset (In.):	44.0	Road Grade (%):	0.60
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 1-3 in below the 27 in design height for 206 ft and 4-6 in below for 115 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0011S-4.067-R		
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)		
Inspection Date:	09/14/2010	Barrier Rating:	44.00

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$6776
Brief Workorder:	Raise 321 feet of barrier up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 321 LF = \$3210. Raise 321 feet of barrier up to the 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.

Great Smoky Mountains National Park
ROUTE 0011S: GATLINBURG SPUR ROAD (SOUTHBOUND)

Barrier Condition Photos



GRSM_0011S_4.067_R_1.JPG

Barrier ID:	GRSM-0011S-4.144-R				
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)				
Inspection Date:	09/14/2010	Barrier Rating:	41.50		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	334		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	TL-3	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.7	Lateral Offset (In.):	42.2	Road Grade (%):	0.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is ranges from 1-3 in below the 27 in design height for 160 ft. Rest of barrier was between 1 in below to 5 in above.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0011S-4.144-R		
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)		
Inspection Date:	09/14/2010	Barrier Rating:	41.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3383
Brief Workorder:	Raise 160 feet of guardrail up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 160 LF = \$1600. Raise 160 feet of barrier up to the 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.

Great Smoky Mountains National Park
ROUTE 0011S: GATLINBURG SPUR ROAD (SOUTHBOUND)

Barrier Condition Photos



GRSM_0011S_4.144_R_1.JPG

Barrier ID:	GRSM-0011S-4.289-R				
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)				
Inspection Date:	09/14/2010	Barrier Rating:	25.60		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	120		
Speed Limit (MPH):	25	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	TL-3	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.0	Lateral Offset (In.):	67.0	Road Grade (%):	3.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is within 1 in of the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No weathering observed.			

Barrier ID:	GRSM-0011S-4.289-R		
Route Name:	GATLINBURG SPUR ROAD (SOUTHBOUND)		
Inspection Date:	09/14/2010	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.

Great Smoky Mountains National Park
ROUTE 0011S: GATLINBURG SPUR ROAD (SOUTHBOUND)

Barrier Condition Photos



GRSM_0011S_4.289_R_1.JPG

Barrier ID:	GRSM-0012ZZ-0.016-R				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/14/2010	Barrier Rating:	22.70		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	266		
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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.2	Lateral Offset (In.):	54.7	Road Grade (%):	7.10
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-0.016-R		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/14/2010	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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_0.016_R_1.JPG

Barrier ID:	GRSM-0012ZZ-0.082-R				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/14/2010	Barrier Rating:	14.10		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	GALVANIZED STEEL		
Blockout Type:	STEEL	Length (ft.):	113		
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:	SBT/LOG BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	74.5
Height (In.):	26.6	Lateral Offset (In.):	36.0	Road Grade (%):	1.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-1 in below the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-0.082-R		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/14/2010	Barrier Rating:	14.10

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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_0.082_R_1.JPG

Barrier ID:	GRSM-0012ZZ-0.088-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/14/2010	Barrier Rating:	14.10		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	GALVANIZED STEEL		
Blockout Type:	STEEL	Length (ft.):	124		
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:	SBT/LOG BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	72.3
Height (In.):	26.2	Lateral Offset (In.):	36.0	Road Grade (%):	0.90
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is within 1 in of the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-0.088-L		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/14/2010	Barrier Rating:	14.10

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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_0.088_L_1.JPG

Barrier ID:	GRSM-0012ZZ-0.151-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/13/2010	Barrier Rating:	25.10		
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.):	78		
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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	RIGID SBT WALL - SBT
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	121.0
Height (In.):	27.2	Lateral Offset (In.):	69.3	Road Grade (%):	7.00
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is at or 1 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			

Barrier ID:	GRSM-0012ZZ-0.151-L		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos

Condition photos are not available for GRSM-0012ZZ-0.151-L.

Barrier ID:	GRSM-0012ZZ-0.151-R				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/14/2010	Barrier Rating:	17.00		
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.):	440		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	24.2	Post Spacing (In.):	0.0
Height (In.):	29.6	Lateral Offset (In.):	39.5	Road Grade (%):	4.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 4-9 in above the design height of 24 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0012ZZ-0.151-R		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/14/2010	Barrier Rating:	17.00

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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos

Condition photos are not available for GRSM-0012ZZ-0.151-R.

Barrier ID:	GRSM-0012ZZ-0.015-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/13/2010	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.):	436		
Speed Limit (MPH):	45	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 BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.0	Lateral Offset (In.):	38.0	Road Grade (%):	0.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at or 1 in below the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion observed.			

Barrier ID:	GRSM-0012ZZ-0.015-L		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/13/2010	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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_0.015_L_1.JPG

Barrier ID:	GRSM-0012ZZ-0.080-R				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/13/2010	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.):	137		
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:	SBT/LOG BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	RIGID SBT WALL - SBT
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.0	Lateral Offset (In.):	43.7	Road Grade (%):	1.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is within 1 in of the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height..			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			

Barrier ID:	GRSM-0012ZZ-0.080-R		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/13/2010	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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_0.080_R_1.JPG

Barrier ID:	GRSM-0012ZZ-0.181-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/13/2010	Barrier Rating:	40.70		
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.):	188		
Speed Limit (MPH):	45	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 BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG BURIED	Ending End Trtmt Crashworthy?:	YES		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	28.0	Lateral Offset (In.):	49.5	Road Grade (%):	7.20
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-2 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed. 1 bent rail section.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-0.181-L		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/13/2010	Barrier Rating:	40.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$1898
Brief Workorder:	Replace 10-ft of rail.				
Workorder:	Replace Rail at \$25- per -Lin. Ft. for 10 LF = \$250. Replace one 10-foot bent rail section. 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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_0.181_L_1.JPG

Barrier ID:	GRSM-0012ZZ-0.338-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/13/2010	Barrier Rating:	53.90		
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.):	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-2	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.8
Height (In.):	25.3	Lateral Offset (In.):	45.0	Road Grade (%):	7.20
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1-3 in below the 27 in design height for 130 ft and 3-5 in below for 60 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			

Barrier ID:	GRSM-0012ZZ-0.338-L		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/13/2010	Barrier Rating:	53.90

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3713
Brief Workorder:	Raise 190 feet of guardrail up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 190 LF = \$1900. Raise 190 feet of barrier up to the 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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_0.338_L_1.JPG

Barrier ID:	GRSM-0012ZZ-0.727-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/13/2010	Barrier Rating:	41.20		
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.):	530		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.5
Height (In.):	28.2	Lateral Offset (In.):	50.0	Road Grade (%):	7.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-3 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-0.727-L		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/13/2010	Barrier Rating:	41.20

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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_0.727_L_1.JPG

Barrier ID:	GRSM-0012ZZ-1.268-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/13/2010	Barrier Rating:	41.20		
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.):	416		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	28.0	Lateral Offset (In.):	53.2	Road Grade (%):	8.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-1 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion observed.			

Barrier ID:	GRSM-0012ZZ-1.268-L		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/13/2010	Barrier Rating:	41.20

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.

Great Smoky Mountains National Park

ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_1.268_L_1.JPG

Barrier ID:	GRSM-0012ZZ-1.386-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/13/2010	Barrier Rating:	28.20		
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.):	230		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG BURIED	Ending End Trtmt Crashworthy?:	YES		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.0	Lateral Offset (In.):	62.7	Road Grade (%):	5.40
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is within 1 in of the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			

Barrier ID:	GRSM-0012ZZ-1.386-L		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/13/2010	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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_1.386_L_1.JPG

Barrier ID:	GRSM-0012ZZ-1.394-R				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/13/2010	Barrier Rating:	27.80		
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.):	221		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.3
Height (In.):	28.2	Lateral Offset (In.):	56.2	Road Grade (%):	7.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-3 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			

Barrier ID:	GRSM-0012ZZ-1.394-R		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/13/2010	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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_1.394_R_1.JPG

Barrier ID:	GRSM-0012ZZ-1.471-R				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/13/2010	Barrier Rating:	27.80		
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.):	115		
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 BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG BURIED	Ending End Trtmt Crashworthy?:	YES		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.5
Height (In.):	27.6	Lateral Offset (In.):	56.5	Road Grade (%):	5.70
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-1 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed. 10 LF of rail is bent.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-1.471-R		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/13/2010	Barrier Rating:	27.80

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$1898
Brief Workorder:	Replace 10 feet of rail.				
Workorder:	Replace Rail at \$25- per -Lin. Ft. for 10 LF = \$250. Replace a 10 foot section of bent rail. 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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_1.471_R_1.JPG

Barrier ID:	GRSM-0012ZZ-1.474-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/13/2010	Barrier Rating:	42.50		
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.):	396		
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 BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG BURIED	Ending End Trtmt Crashworthy?:	YES		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.5
Height (In.):	25.6	Lateral Offset (In.):	60.0	Road Grade (%):	6.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 3 in below the 27 in design height for 60 ft and 3 to 4 in below for 120 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed. 3 broken barrier reflectors observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	The alignment has no deviation the beginning end is low by 4 in from the design height of 27 in for 30 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-1.474-L		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/13/2010	Barrier Rating:	42.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3933
Brief Workorder:	Raise 180 feet of guardrail up to 27 inch design height and replace 3 reflectors.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 180 LF = \$1800. Raise 180 feet of barrier up to the 27 inch design height. Barrier Reflectors at \$100- per -Each for 3 Unit(s) = \$300. Replace 3 broken reflectors. 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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos

Condition photos are not available for GRSM-0012ZZ-1.474-L.

Barrier ID:	GRSM-0012ZZ-1.502-R				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/13/2010	Barrier Rating:	27.80		
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.):	225		
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 BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG BURIED	Ending End Trtmt Crashworthy?:	YES		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.6	Lateral Offset (In.):	50.0	Road Grade (%):	6.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-1 in below the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-1.502-R		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/13/2010	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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos

Condition photos are not available for GRSM-0012ZZ-1.502-R.

Barrier ID:	GRSM-0012ZZ-1.621-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/14/2010	Barrier Rating:	35.00		
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.):	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-2	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	SBT/LOG BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	29.6	Lateral Offset (In.):	52.2	Road Grade (%):	3.10
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 1 to 5 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-1.621-L		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/14/2010	Barrier Rating:	35.00

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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_1.621_L_1.JPG

Barrier ID:	GRSM-0012ZZ-1.724-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/14/2010	Barrier Rating:	35.50		
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.):	359		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	27.7	Lateral Offset (In.):	38.2	Road Grade (%):	2.30
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-1.724-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/14/2010	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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_1.724_L_1.JPG

Barrier ID:	GRSM-0012ZZ-1.740-R				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
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.):	175		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.6
Height (In.):	27.2	Lateral Offset (In.):	50.0	Road Grade (%):	2.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-1.740-R		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_1.740_R_1.JPG

Barrier ID:	GRSM-0012ZZ-1.836-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/14/2010	Barrier Rating:	35.40		
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.):	838		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.8
Height (In.):	29.0	Lateral Offset (In.):	53.2	Road Grade (%):	3.20
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-3 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion observed.			

Barrier ID:	GRSM-0012ZZ-1.836-L		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/14/2010	Barrier Rating:	35.40

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.

Great Smoky Mountains National Park

ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_1.836_L_1.JPG

Barrier ID:	GRSM-0012ZZ-2.106-R				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
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.):	257		
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:	SBT/LOG BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	28.0	Lateral Offset (In.):	44.5	Road Grade (%):	4.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-3 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-2.106-R		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_2.106_R_1.JPG

Barrier ID:	GRSM-0012ZZ-2.212-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/14/2010	Barrier Rating:	28.60		
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.):	658		
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-2	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.7	Lateral Offset (In.):	51.0	Road Grade (%):	0.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is within 1 in of the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-2.212-L		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/14/2010	Barrier Rating:	28.60

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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_2.212_L_1.JPG

Barrier ID:	GRSM-0012ZZ-2.306-R				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
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.):	215		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	28.7	Lateral Offset (In.):	52.2	Road Grade (%):	1.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-3 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion observed.			

Barrier ID:	GRSM-0012ZZ-2.306-R		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/14/2010	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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_2.306_R_1.JPG

Barrier ID:	GRSM-0012ZZ-2.673-R				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/14/2010	Barrier Rating:	58.40		
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.):	224		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	22.2	Lateral Offset (In.):	41.5	Road Grade (%):	4.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 4 to 6 in below the 27 in design height for 224 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-2.673-R		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/14/2010	Barrier Rating:	58.40

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$4086
Brief Workorder:	Raise 224 feet of barrier to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 224 LF = \$2240. Raise 224 feet of barrier to the 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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_2.673_R_1.JPG

Barrier ID:	GRSM-0012ZZ-2.719-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/14/2010	Barrier Rating:	40.00		
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.):	803		
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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.6
Height (In.):	27.0	Lateral Offset (In.):	43.7	Road Grade (%):	3.20
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height within 1 in of the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-2.719-L		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/14/2010	Barrier Rating:	40.00

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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_2.719_L_1.JPG

Barrier ID:	GRSM-0012ZZ-2.922-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/14/2010	Barrier Rating:	26.80		
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.):	260		
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 BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.0
Height (In.):	28.2	Lateral Offset (In.):	63.2	Road Grade (%):	6.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-2 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion observed.			

Barrier ID:	GRSM-0012ZZ-2.922-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/14/2010	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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_2.922_L_1.JPG

Barrier ID:	GRSM-0012ZZ-2.922-R				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/14/2010	Barrier Rating:	38.20		
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.):	214		
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 BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	29.0	Lateral Offset (In.):	51.2	Road Grade (%):	7.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-5 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No weathering observed.			

Barrier ID:	GRSM-0012ZZ-2.922-R		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/14/2010	Barrier Rating:	38.20

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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_2.922_R_1.JPG

Barrier ID:	GRSM-0012ZZ-2.994-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
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.):	325		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	29.6	Lateral Offset (In.):	50.0	Road Grade (%):	7.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 2 to 3 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-2.994-L		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/14/2010	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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_2.994_L_1.JPG

Barrier ID:	GRSM-0012ZZ-3.044-R				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/14/2010	Barrier Rating:	31.20		
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.):	185		
Speed Limit (MPH):	35	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	LOW				
Barrier Crashworthiness					
Appropriate Test Level:	TL-2	Barrier Test Level:	TL-2	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	SBT/LOG BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.0
Height (In.):	26.0	Lateral Offset (In.):	42.2	Road Grade (%):	6.70
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-3.044-R		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/14/2010	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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos

Condition photos are not available for GRSM-0012ZZ-3.044-R.

Barrier ID:	GRSM-0012ZZ-3.087-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
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.):	161		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.6
Height (In.):	26.0	Lateral Offset (In.):	30.2	Road Grade (%):	5.60
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is within 1 in of the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-3.087-L		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_3.087_L_1.JPG

Barrier ID:	GRSM-0012ZZ-3.150-R				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/14/2010	Barrier Rating:	30.70		
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.):	179		
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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.6
Height (In.):	26.7	Lateral Offset (In.):	34.2	Road Grade (%):	6.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is within 1 in of the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-3.150-R		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/14/2010	Barrier Rating:	30.70

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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_3.150_R_1.JPG

Barrier ID:	GRSM-0012ZZ-3.152-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
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.):	179		
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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	121.0
Height (In.):	26.2	Lateral Offset (In.):	41.7	Road Grade (%):	6.90
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-3.152-L		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_3.152_L_1.JPG

Barrier ID:	GRSM-0012ZZ-3.211-L				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/14/2010	Barrier Rating:	27.80		
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.):	149		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	29.0	Lateral Offset (In.):	51.2	Road Grade (%):	6.70
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-3 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-3.211-L		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/14/2010	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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos



GRSM_0012ZZ_3.211_L_1.JPG

Barrier ID:	GRSM-0012ZZ-3.511-R				
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS				
Inspection Date:	09/14/2010	Barrier Rating:	24.00		
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.):	264		
Speed Limit (MPH):	35	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	LOW				
Barrier Crashworthiness					
Appropriate Test Level:	TL-2	Barrier Test Level:	TL-2	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	SBT/LOG BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	RIGID W-BEAM - W-BEAM
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.3
Height (In.):	29.7	Lateral Offset (In.):	53.2	Road Grade (%):	4.60
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 0-3 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0012ZZ-3.511-R		
Route Name:	GATLINBURG BYPASS ROAD AND RAMPS		
Inspection Date:	09/14/2010	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.

Great Smoky Mountains National Park
ROUTE 0012ZZ: GATLINBURG BYPASS ROAD AND RAMPS

Barrier Condition Photos

Condition photos are not available for GRSM-0012ZZ-3.511-R.

Barrier ID:	GRSM-0013ZZ-3.168-R				
Route Name:	FIGHTING CREEK GAP ROAD AND SPUR				
Inspection Date:	09/09/2010	Barrier Rating:	34.20		
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.):	439		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.5
Height (In.):	26.6	Lateral Offset (In.):	38.2	Road Grade (%):	6.70
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-1 in below the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0013ZZ-3.168-R				
Route Name:	FIGHTING CREEK GAP ROAD AND SPUR				
Inspection Date:	09/09/2010	Barrier Rating:		34.20	
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.

Great Smoky Mountains National Park

ROUTE 0013ZZ: FIGHTING CREEK GAP ROAD AND SPUR

Barrier Condition Photos



GRSM_0013ZZ_3.168_R_1.JPG

Barrier ID:	GRSM-0013ZZ-3.837-R				
Route Name:	FIGHTING CREEK GAP ROAD AND SPUR				
Inspection Date:	09/09/2010	Barrier Rating:	35.20		
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.):	901		
Speed Limit (MPH):	25	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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.3	Lateral Offset (In.):	39.7	Road Grade (%):	4.20
Physical Condition					
Barrier	Alignment and Height:	Two sections slightly twisted possible impact zones deflections less than 6 in. The height is 0-1 in below the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0013ZZ-3.837-R		
Route Name:	FIGHTING CREEK GAP ROAD AND SPUR		
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.

Great Smoky Mountains National Park

ROUTE 0013ZZ: FIGHTING CREEK GAP ROAD AND SPUR

Barrier Condition Photos



GRSM_0013ZZ_3.837_R_1.JPG

Barrier ID:	GRSM-0013ZZ-4.184-L				
Route Name:	FIGHTING CREEK GAP ROAD AND SPUR				
Inspection Date:	09/09/2010	Barrier Rating:	45.70		
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.):	90		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	24.0	Post Spacing (In.):	0.0
Height (In.):	18.6	Lateral Offset (In.):	30.0	Road Grade (%):	3.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 3 to 6 in below the 24 in design height for 48 ft and 6 to 8 in below for 32 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	1 missing stone on beginning end.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0013ZZ-4.184-L		
Route Name:	FIGHTING CREEK GAP ROAD AND SPUR		
Inspection Date:	09/09/2010	Barrier Rating:	45.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$14218
Brief Workorder:	Raise guardwall 2-in. Remove and reset 32-ft of stone masonry guardwall on 1 row of new stone to raise barrier to adjacent 18-in height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 32 CF = \$8000. [(0.5ft)(2ft)(32ft)] = 32 CF. Remove top layer of stones in barrier for 32 feet. New Stones at \$250- per -Each for 2 Unit(s) = \$500. [(32ft) / (2 ft/stone)] x 1 row = 16 stones. Insert new stone on retaining wall to increase barrier height then reset top layer of barrier. Low Speed Traffic Control at \$1475- per -Day for 3 Day(s) = \$4425. 1 day removal 2 days installation.				

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

Great Smoky Mountains National Park
ROUTE 0013ZZ: FIGHTING CREEK GAP ROAD AND SPUR

Barrier Condition Photos



GRSM_0013ZZ_4.184_L_1.JPG

Barrier ID:	GRSM-0013ZZ-4.683-R				
Route Name:	FIGHTING CREEK GAP ROAD AND SPUR				
Inspection Date:	09/09/2010	Barrier Rating:	46.70		
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.):	35		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	23.7	Post Spacing (In.):	0.0
Height (In.):	19.2	Lateral Offset (In.):	71.3	Road Grade (%):	5.60
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 4 to 5 in below the design height of 24 in.			
	Breaking and Cracking:	One stone observed to have missing and broken mortar.			
	Missing Elements:	No missing elements observed			
	Corrosion and Weathering:	No corrosion or weathering observed			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0013ZZ-4.683-R		
Route Name:	FIGHTING CREEK GAP ROAD AND SPUR		
Inspection Date:	09/09/2010	Barrier Rating:	46.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$1776
Brief Workorder:	Repoint 1 sq yd of stone masonry guardwall.				
Workorder:	Re-Point Stone Masonry Barrier at \$140- per -Sq. Yd. for 1 SY = \$140. Repoint at impact site. 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.

Great Smoky Mountains National Park
ROUTE 0013ZZ: FIGHTING CREEK GAP ROAD AND SPUR

Barrier Condition Photos



GRSM_0013ZZ_4.683_R_1.JPG

Barrier ID:	GRSM-0013ZZ-4.688-L				
Route Name:	FIGHTING CREEK GAP ROAD AND SPUR				
Inspection Date:	09/09/2010	Barrier Rating:	50.50		
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.):	35		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	23.2	Post Spacing (In.):	0.0
Height (In.):	15.6	Lateral Offset (In.):	46.0	Road Grade (%):	5.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 8 to 9 in below the design height of 24 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0013ZZ-4.688-L		
Route Name:	FIGHTING CREEK GAP ROAD AND SPUR		
Inspection Date:	09/09/2010	Barrier Rating:	50.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$43643
Brief Workorder:	Raise guardwall 3-in. Remove and reset 35-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 133 CF = \$33250. $[(2ft)(1.9ft)(35ft)] = 133 CF$. Structural Concrete at \$1000- per -Cu. Yd. for 2 CY = \$2000. $[(1.9ft)(0.5ft)(35ft)] / 27 = 1.2 CY$. Low Speed Traffic Control at \$1475- per -Day for 3 Day(s) = \$4425. 1 day removal 2 days installation.				

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

Great Smoky Mountains National Park
ROUTE 0013ZZ: FIGHTING CREEK GAP ROAD AND SPUR

Barrier Condition Photos



GRSM_0013ZZ_4.688_L_1.JPG

Barrier ID:	GRSM-0013ZZ-4.697-R				
Route Name:	FIGHTING CREEK GAP ROAD AND SPUR				
Inspection Date:	09/09/2010	Barrier Rating:	45.20		
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.):	24		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	23.7	Post Spacing (In.):	0.0
Height (In.):	18.7	Lateral Offset (In.):	72.3	Road Grade (%):	6.70
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 5 to 6 in below the design height of 24 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0013ZZ-4.697-R		
Route Name:	FIGHTING CREEK GAP ROAD AND SPUR		
Inspection Date:	09/09/2010	Barrier Rating:	45.20

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.

Great Smoky Mountains National Park
ROUTE 0013ZZ: FIGHTING CREEK GAP ROAD AND SPUR

Barrier Condition Photos



GRSM_0013ZZ_4.697_R_1.JPG

Barrier ID:	GRSM-0013ZZ-4.702-L				
Route Name:	FIGHTING CREEK GAP ROAD AND SPUR				
Inspection Date:	09/09/2010	Barrier Rating:	50.50		
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.):	35		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	23.2	Post Spacing (In.):	0.0
Height (In.):	16.0	Lateral Offset (In.):	44.7	Road Grade (%):	6.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 8 in below the design height of 24 in.			
	Breaking and Cracking:	No cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0013ZZ-4.702-L		
Route Name:	FIGHTING CREEK GAP ROAD AND SPUR		
Inspection Date:	09/09/2010	Barrier Rating:	50.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$19168
Brief Workorder:	Raise guardwall 2-in. Remove and reset 35-ft of stone masonry guardwall 1 row of new stones to raise barrier to adjacent 18-in height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 34 CF = \$8500. [(0.5ft)(1.9ft)(35ft)] = 34 CF. Remove top layer of stones in barrier for 35 feet. New Stones at \$250- per -Each for 18 Unit(s) = \$4500. [(35ft) / (2 ft/stone)] x 1 row = 18 stones. Insert new stone on retaining wall to increase barrier height then reset top layer of barrier. Low Speed Traffic Control at \$1475- per -Day for 3 Day(s) = \$4425. 1 day removal 2 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0013ZZ: FIGHTING CREEK GAP ROAD AND SPUR

Barrier Condition Photos



GRSM_0013ZZ_4.702_L_1.JPG

Barrier ID:	GRSM-0014-2.511-R				
Route Name:	LITTLE RIVER GORGE ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	31.20		
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.):	364		
Speed Limit (MPH):	30	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	TL-2	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	SBT/LOG BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.6	Lateral Offset (In.):	62.5	Road Grade (%):	3.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-1 in below the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0014-2.511-R		
Route Name:	LITTLE RIVER GORGE ROAD		
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.

Great Smoky Mountains National Park

ROUTE 0014: LITTLE RIVER GORGE ROAD

Barrier Condition Photos



GRSM_0014_2.511_R_1.JPG

Barrier ID:	GRSM-0014-6.784-R				
Route Name:	LITTLE RIVER GORGE ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	29.70		
Barrier Description					
Type:	OTHER: RIGID ALUMINUM TWO BEAMS	Barrier Function:	TRAFFIC		
Barrier Material:	OTHER: ALUMINUM	Post Material:	OTHER: ALUMINUM		
Blockout Type:	N/A	Length (ft.):	47		
Speed Limit (MPH):	30	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	OTHER: ALUMINUM	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	OTHER: BRIDGE RAIL ALUMINUM
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	72.0
Height (In.):	28.0	Lateral Offset (In.):	14.0	Road Grade (%):	2.20
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-2 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0014-6.784-R		
Route Name:	LITTLE RIVER GORGE ROAD		
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.

Great Smoky Mountains National Park

ROUTE 0014: LITTLE RIVER GORGE ROAD

Barrier Condition Photos



GRSM_0014_6.784_R_1.JPG

Barrier ID:	GRSM-0014-6.808-L				
Route Name:	LITTLE RIVER GORGE ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	35.40		
Barrier Description					
Type:	OTHER: RIGID ALUMINUM TWO BEAMS	Barrier Function:	TRAFFIC		
Barrier Material:	OTHER: ALUMINUM	Post Material:	OTHER: ALUMINUM		
Blockout Type:	N/A	Length (ft.):	101		
Speed Limit (MPH):	30	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	OTHER: BRIDGE RAIL ALUMINUM
Ending End Trtmt Type:	OTHER: ALUMINUM	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	72.0
Height (In.):	31.2	Lateral Offset (In.):	23.0	Road Grade (%):	1.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 4 to 5 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0014-6.808-L		
Route Name:	LITTLE RIVER GORGE ROAD		
Inspection Date:	09/09/2010	Barrier Rating:	35.40

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.

Great Smoky Mountains National Park

ROUTE 0014: LITTLE RIVER GORGE ROAD

Barrier Condition Photos



GRSM_0014_6.808_L_1.JPG

Barrier ID:	GRSM-0014-7.829-L				
Route Name:	LITTLE RIVER GORGE ROAD				
Inspection Date:	09/09/2010	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.):	282		
Speed Limit (MPH):	30	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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	20.0	Post Spacing (In.):	0.0
Height (In.):	21.0	Lateral Offset (In.):	0.0	Road Grade (%):	0.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 4 in below the design height of 24 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0014-7.829-L				
Route Name:	LITTLE RIVER GORGE ROAD				
Inspection Date:	09/09/2010	Barrier Rating:		15.80	
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.

Great Smoky Mountains National Park

ROUTE 0014: LITTLE RIVER GORGE ROAD

Barrier Condition Photos



GRSM_0014_7.829_L_1.JPG

Barrier ID:	GRSM-0014-12.005-L				
Route Name:	LITTLE RIVER GORGE ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	27.80		
Barrier Description					
Type:	OTHER: ALUMINUM BRIDGE RAIL	Barrier Function:	TRAFFIC		
Barrier Material:	OTHER: ALUMINUM	Post Material:	OTHER: ALUMINUM		
Blockout Type:	N/A	Length (ft.):	67		
Speed Limit (MPH):	30	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	OTHER: ALUMINUM	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	72.0
Height (In.):	31.0	Lateral Offset (In.):	77.3	Road Grade (%):	0.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 4 in above the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0014-12.005-L		
Route Name:	LITTLE RIVER GORGE ROAD		
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.

Great Smoky Mountains National Park

ROUTE 0014: LITTLE RIVER GORGE ROAD

Barrier Condition Photos



GRSM_0014_12.005_L_1.JPG

Barrier ID:	GRSM-0014-12.005-R				
Route Name:	LITTLE RIVER GORGE ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	25.10		
Barrier Description					
Type:	OTHER: ALUMINUM BRIDGE RAIL	Barrier Function:	TRAFFIC		
Barrier Material:	OTHER: ALUMINUM	Post Material:	OTHER: ALUMINUM		
Blockout Type:	N/A	Length (ft.):	88		
Speed Limit (MPH):	30	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	OTHER: ALUMINUM	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	OTHER: ALUMINUM	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	72.0
Height (In.):	26.2	Lateral Offset (In.):	47.0	Road Grade (%):	1.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-1 in below the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0014-12.005-R		
Route Name:	LITTLE RIVER GORGE ROAD		
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.

Great Smoky Mountains National Park

ROUTE 0014: LITTLE RIVER GORGE ROAD

Barrier Condition Photos



GRSM_0014_12.005_R_1.JPG

Barrier ID:	GRSM-0015-0.506-R				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/10/2010	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.):	344		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	25.0	Post Spacing (In.):	0.0
Height (In.):	22.6	Lateral Offset (In.):	78.5	Road Grade (%):	4.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 6 in below the 24 in design height for 150 ft.			
	Breaking and Cracking:	Less than 1/4 in cracking in grout. No breaking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-0.506-R		
Route Name:	LAUREL CREEK ROAD		
Inspection Date:	09/10/2010	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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_0.506_R_1.JPG

Barrier ID:	GRSM-0015-0.819-R				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	43.70		
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.):	246		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	24.6	Post Spacing (In.):	0.0
Height (In.):	19.6	Lateral Offset (In.):	63.2	Road Grade (%):	2.10
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 4 to 6 in below the 24 in design height for 91 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-0.819-R				
Route Name:	LAUREL CREEK ROAD				
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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_0.819_R_1.JPG

Barrier ID:	GRSM-0015-2.120-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	39.90		
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.):	42		
Speed Limit (MPH):	30	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	24.7	Post Spacing (In.):	0.0
Height (In.):	21.2	Lateral Offset (In.):	59.2	Road Grade (%):	6.60
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is 1-5 in below the 24 in design height for 19 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-2.120-L		
Route Name:	LAUREL CREEK ROAD		
Inspection Date:	09/10/2010	Barrier Rating:	39.90

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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_2.120_L_1.JPG

Barrier ID:	GRSM-0015-2.121-R				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	32.50		
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.):	35		
Speed Limit (MPH):	30	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	27.2	Post Spacing (In.):	0.0
Height (In.):	26.7	Lateral Offset (In.):	81.0	Road Grade (%):	6.20
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is 2 to 4 in above the design height of 24 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-2.121-R				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/10/2010	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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_2.121_R_1.JPG

Barrier ID:	GRSM-0015-2.136-R				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	29.70		
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.):	45		
Speed Limit (MPH):	30	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	27.0	Post Spacing (In.):	0.0
Height (In.):	26.7	Lateral Offset (In.):	67.0	Road Grade (%):	5.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 2 to 3 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-2.136-R				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/10/2010	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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_2.136_R_1.JPG

Barrier ID:	GRSM-0015-2.140-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	28.20		
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.):	49		
Speed Limit (MPH):	30	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	25.0	Post Spacing (In.):	0.0
Height (In.):	29.2	Lateral Offset (In.):	67.5	Road Grade (%):	5.70
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 4 to 7 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-2.140-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/10/2010	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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_2.140_L_1.JPG

Barrier ID:	GRSM-0015-2.169-R				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	30.70		
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.):	29		
Speed Limit (MPH):	30	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	24.2	Post Spacing (In.):	0.0
Height (In.):	25.0	Lateral Offset (In.):	63.2	Road Grade (%):	4.30
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is 1 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-2.169-R		
Route Name:	LAUREL CREEK ROAD		
Inspection Date:	09/09/2010	Barrier Rating:	30.70

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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_2.169_R_1.JPG

Barrier ID:	GRSM-0015-2.172-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	41.20		
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.):	15		
Speed Limit (MPH):	30	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	27.0	Post Spacing (In.):	0.0
Height (In.):	22.2	Lateral Offset (In.):	86.0	Road Grade (%):	5.40
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is 1 to 3 in below the 24 in design height for 15 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-2.172-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	Barrier Rating:		41.20	
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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_2.172_L_1.JPG

Barrier ID:	GRSM-0015-2.183-L				
Route Name:	LAUREL CREEK ROAD				
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.):	37		
Speed Limit (MPH):	30	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	28.7	Post Spacing (In.):	0.0
Height (In.):	26.2	Lateral Offset (In.):	81.0	Road Grade (%):	5.30
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is 0 to 5 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-2.183-L		
Route Name:	LAUREL CREEK ROAD		
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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_2.183_L_1.JPG

Barrier ID:	GRSM-0015-2.183-R				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	40.70		
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.):	34		
Speed Limit (MPH):	30	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	24.0	Post Spacing (In.):	0.0
Height (In.):	19.0	Lateral Offset (In.):	53.0	Road Grade (%):	3.70
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is 3 to 6 in below the 24 in design height for 34 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-2.183-R		
Route Name:	LAUREL CREEK ROAD		
Inspection Date:	09/09/2010	Barrier Rating:	40.70

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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_2.183_R_1.JPG

Barrier ID:	GRSM-0015-2.258-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	28.00		
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.):	251		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	26.0	Post Spacing (In.):	0.0
Height (In.):	24.0	Lateral Offset (In.):	54.0	Road Grade (%):	2.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-2.258-L		
Route Name:	LAUREL CREEK ROAD		
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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_2.258_L_1.JPG

Barrier ID:	GRSM-0015-2.334-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	22.20		
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.):	183		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	26.2	Post Spacing (In.):	0.0
Height (In.):	24.2	Lateral Offset (In.):	51.0	Road Grade (%):	1.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 in below to 2 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-2.334-L		
Route Name:	LAUREL CREEK ROAD		
Inspection Date:	09/09/2010	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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_2.334_L_1.JPG

Barrier ID:	GRSM-0015-2.417-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	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.):	204		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	26.0	Post Spacing (In.):	0.0
Height (In.):	23.6	Lateral Offset (In.):	1.2	Road Grade (%):	3.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is within 1 in of the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-2.417-L		
Route Name:	LAUREL CREEK ROAD		
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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_2.417_L_1.JPG

Barrier ID:	GRSM-0015-2.650-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	45.70		
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.):	230		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	24.0	Post Spacing (In.):	0.0
Height (In.):	22.6	Lateral Offset (In.):	56.2	Road Grade (%):	3.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 4 to 6 in below the 24 in design height for 16 ft and more than 6 in below for 61 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-2.650-L		
Route Name:	LAUREL CREEK ROAD		
Inspection Date:	09/09/2010	Barrier Rating:	45.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$31790
Brief Workorder:	Raise guardwall 3-in. Remove and reset 61-ft of stone masonry guardwall on 1 row of stones to raise barrier to adjacent 18-in height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 61 CF = \$15250. $[(0.5\text{ft})(2\text{ft})(61\text{ft})] = 61 \text{ CF}$. Remove top layer of stones in barrier for 61 feet. New Stones at \$250- per -Each for 31 Unit(s) = \$7750. $[(61\text{ft}) / (2 \text{ ft/stone})] \times 1 \text{ row} = 31 \text{ stones}$. Insert new stone on retaining wall to increase barrier height then reset top layer of barrier. Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 1 day removal 3 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_2.650_L_1.JPG

Barrier ID:	GRSM-0015-2.718-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	36.90		
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.):	44		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	26.7	Post Spacing (In.):	0.0
Height (In.):	26.0	Lateral Offset (In.):	91.6	Road Grade (%):	4.40
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is 0-3 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-2.718-L				
Route Name:	LAUREL CREEK ROAD				
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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_2.718_L_1.JPG

Barrier ID:	GRSM-0015-2.721-R				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	38.00		
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.):	45		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	28.0	Post Spacing (In.):	0.0
Height (In.):	17.2	Lateral Offset (In.):	52.2	Road Grade (%):	4.20
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 3-6 in below the 24 in design height for 30 ft and 6 to 9 in below for 15 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-2.721-R		
Route Name:	LAUREL CREEK ROAD		
Inspection Date:	09/09/2010	Barrier Rating:	38.00

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$10395
Brief Workorder:	Raise guardwall 3-in. Remove and reset 15-ft of stone masonry guardwall on 1 row of new stone to raise barrier to the adjacent 18-in height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 18 CF = \$4500. $[(0.5ft)(23ft)(15ft)] = 17.3$ CF. Remove top layer of stones in barrier for 15 feet. New Stones at \$250- per -Each for 8 Unit(s) = \$2000. $[(15ft) / (2 ft/stone)] \times 1$ row = 8 stones. Insert new stone on retaining wall to increase barrier height then reset top layer of barrier. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.				

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

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_2.721_R_1.JPG

Barrier ID:	GRSM-0015-2.739-R				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	22.20		
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.):	59		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	26.2	Post Spacing (In.):	0.0
Height (In.):	25.6	Lateral Offset (In.):	79.0	Road Grade (%):	5.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-3 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-2.739-R		
Route Name:	LAUREL CREEK ROAD		
Inspection Date:	09/09/2010	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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_2.739_R_1.JPG

Barrier ID:	GRSM-0015-2.742-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	34.00		
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.):	49		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	27.2	Post Spacing (In.):	0.0
Height (In.):	30.0	Lateral Offset (In.):	98.6	Road Grade (%):	3.40
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is 5 to 7 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-2.742-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_2.742_L_1.JPG

Barrier ID:	GRSM-0015-2.932-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	48.90		
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.):	200		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	24.0	Post Spacing (In.):	0.0
Height (In.):	16.2	Lateral Offset (In.):	65.3	Road Grade (%):	0.90
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is 3 to 6 in below the 24 in design height for 92 ft and 6 to 12 in below for 108 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-2.932-L		
Route Name:	LAUREL CREEK ROAD		
Inspection Date:	09/09/2010	Barrier Rating:	48.90

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$55908
Brief Workorder:	Raise guardwall 5-in. Remove and reset 108-ft of stone masonry guardwall on 1 row of new stone to raise barrier to the adjacent 18-in height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 108 CF = \$27000. [(0.5ft)(2ft)(108ft)] = 108 CF. Remove top layer of stones in barrier for 108 feet. New Stones at \$250- per -Each for 54 Unit(s) = \$13500. [(108ft) / (2 ft/stone)] x 1 row = 54 stones. Insert new stone on retaining wall to increase barrier height then reset top layer of barrier. Low Speed Traffic Control at \$1475- per -Day for 7 Day(s) = \$10325. 2 days removal 5 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_2.932_L_1.JPG

Barrier ID:	GRSM-0015-3.025-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	29.70		
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.):	311		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	26.7	Post Spacing (In.):	0.0
Height (In.):	23.0	Lateral Offset (In.):	67.6	Road Grade (%):	1.50
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is 0-3 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-3.025-L		
Route Name:	LAUREL CREEK ROAD		
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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_3.025_L_1.JPG

Barrier ID:	GRSM-0015-3.326-R				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	38.00		
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.):	532		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	26.6	Post Spacing (In.):	0.0
Height (In.):	22.2	Lateral Offset (In.):	63.5	Road Grade (%):	3.90
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 2 to 5 in below the 24 in design height for 75 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-3.326-R		
Route Name:	LAUREL CREEK ROAD		
Inspection Date:	09/09/2010	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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_3.326_R_1.JPG

Barrier ID:	GRSM-0015-3.678-R				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	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.):	47		
Speed Limit (MPH):	30	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	27.2	Post Spacing (In.):	0.0
Height (In.):	26.2	Lateral Offset (In.):	69.5	Road Grade (%):	0.70
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-4 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-3.678-R		
Route Name:	LAUREL CREEK ROAD		
Inspection Date:	09/09/2010	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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_3.678_R_1.JPG

Barrier ID:	GRSM-0015-3.679-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010		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.):	47	
Speed Limit (MPH):	30		Placement with Respect to Road:	TANGENT	
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	25.0	Post Spacing (In.):	0.0
Height (In.):	26.0	Lateral Offset (In.):	60.2	Road Grade (%):	0.20
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 2 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-3.679-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_3.679_L_1.JPG

Barrier ID:	GRSM-0015-3.693-R				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	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.):	50		
Speed Limit (MPH):	30	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	27.0	Post Spacing (In.):	0.0
Height (In.):	24.0	Lateral Offset (In.):	71.3	Road Grade (%):	0.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-3.693-R				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_3.693_R_1.JPG

Barrier ID:	GRSM-0015-3.697-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	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.):	47		
Speed Limit (MPH):	30	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	27.0	Post Spacing (In.):	0.0
Height (In.):	28.0	Lateral Offset (In.):	59.2	Road Grade (%):	0.40
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment. Height is 3 to 5 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-3.697-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_3.697_L_1.JPG

Barrier ID:	GRSM-0015-3.989-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	22.20		
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.):	145		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	24.7	Post Spacing (In.):	0.0
Height (In.):	24.7	Lateral Offset (In.):	55.7	Road Grade (%):	1.30
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is within 1 in of the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-3.989-L		
Route Name:	LAUREL CREEK ROAD		
Inspection Date:	09/09/2010	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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_3.989_L_1.JPG

Barrier ID:	GRSM-0015-4.150-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	48.90		
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.):	124		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	27.0	Post Spacing (In.):	0.0
Height (In.):	12.6	Lateral Offset (In.):	59.7	Road Grade (%):	0.70
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is 8 to 14 in below design height of 24 in for 124 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-4.150-L		
Route Name:	LAUREL CREEK ROAD		
Inspection Date:	09/09/2010	Barrier Rating:	48.90

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$179383
Brief Workorder:	Raise guardwall 11-in. Remove and reset 124-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 571 CF = \$142750. [(2ft)(2.3ft)(124ft)] = 570.4 CF. Structural Concrete at \$1000- per -Cu. Yd. for 10 CY = \$10000. [(2.3ft)(0.9ft)(124ft)] /27 = 9.5 CY. Low Speed Traffic Control at \$1475- per -Day for 7 Day(s) = \$10325. 2 days removal 5 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_4.150_L_1.JPG

Barrier ID:	GRSM-0015-4.993-L				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	25.10		
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.):	428		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	27.6	Post Spacing (In.):	0.0
Height (In.):	25.0	Lateral Offset (In.):	69.3	Road Grade (%):	0.70
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-3 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-4.993-L		
Route Name:	LAUREL CREEK ROAD		
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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_4.993_L_1.JPG

Barrier ID:	GRSM-0015-6.602-R				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	24.00		
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.):	75		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	25.2	Post Spacing (In.):	0.0
Height (In.):	24.0	Lateral Offset (In.):	79.3	Road Grade (%):	3.80
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height ranges from 2 in above to 2 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0015-6.602-R				
Route Name:	LAUREL CREEK ROAD				
Inspection Date:	09/09/2010	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.

Great Smoky Mountains National Park

ROUTE 0015: LAUREL CREEK ROAD

Barrier Condition Photos



GRSM_0015_6.602_R_1.JPG

Barrier ID:	GRSM-0017-0.160-L				
Route Name:	CLINGMANS DOME ACCESS ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	49.90		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	728		
Speed Limit (MPH):	30	Placement with Respect to Road:	BOTH INSIDE AND OUTSIDE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	18.0	Post Spacing (In.):	0.0
Height (In.):	18.2	Lateral Offset (In.):	59.2	Road Grade (%):	2.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 3 to 5 in below the 18-in/24-in crenellated design height for 535 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0017-0.160-L		
Route Name:	CLINGMANS DOME ACCESS ROAD		
Inspection Date:	09/10/2010	Barrier Rating:	49.90

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.

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD

Barrier Condition Photos



GRSM_0017_0.160_L_1.JPG

Barrier ID:	GRSM-0017-0.165-R				
Route Name:	CLINGMANS DOME ACCESS ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	28.30		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	54		
Speed Limit (MPH):	30	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	18.7	Post Spacing (In.):	0.0
Height (In.):	14.6	Lateral Offset (In.):	66.0	Road Grade (%):	2.90
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 2 to 5 in below the 18-in/24-in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0017-0.165-R				
Route Name:	CLINGMANS DOME ACCESS ROAD				
Inspection Date:	09/10/2010	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.

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD

Barrier Condition Photos



GRSM_0017_0.165_R_1.JPG

Barrier ID:	GRSM-0017-0.356-L				
Route Name:	CLINGMANS DOME ACCESS ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	39.70		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	252		
Speed Limit (MPH):	30	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	19.2	Post Spacing (In.):	0.0
Height (In.):	20.6	Lateral Offset (In.):	62.5	Road Grade (%):	5.60
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 2-5 in below the 18-in/24-in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0017-0.356-L		
Route Name:	CLINGMANS DOME ACCESS ROAD		
Inspection Date:	09/10/2010	Barrier Rating:	39.70

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.

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD

Barrier Condition Photos



GRSM_0017_0.356_L_1.JPG

Barrier ID:	GRSM-0017-0.422-L				
Route Name:	CLINGMANS DOME ACCESS ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	36.90		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	57		
Speed Limit (MPH):	30	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	21	Width (In.):	18.0	Post Spacing (In.):	0.0
Height (In.):	20.6	Lateral Offset (In.):	62.5	Road Grade (%):	3.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-1 in below the 21-in/24-in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0017-0.422-L		
Route Name:	CLINGMANS DOME ACCESS ROAD		
Inspection Date:	09/10/2010	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.

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD

Barrier Condition Photos



GRSM_0017_0.422_L_1.JPG

Barrier ID:	GRSM-0017-0.467-L				
Route Name:	CLINGMANS DOME ACCESS ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	49.70		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	195		
Speed Limit (MPH):	30	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	18.0	Post Spacing (In.):	0.0
Height (In.):	18.2	Lateral Offset (In.):	66.3	Road Grade (%):	5.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height ranges from 1 in below to 2 in above the 18-in/24-in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0017-0.467-L		
Route Name:	CLINGMANS DOME ACCESS ROAD		
Inspection Date:	09/10/2010	Barrier Rating:	49.70

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.

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD

Barrier Condition Photos



GRSM_0017_0.467_L_1.JPG

Barrier ID:	GRSM-0017-0.562-L				
Route Name:	CLINGMANS DOME ACCESS ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	31.20		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	96		
Speed Limit (MPH):	30	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	18.0	Post Spacing (In.):	0.0
Height (In.):	20.7	Lateral Offset (In.):	58.7	Road Grade (%):	5.60
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-5 in above the 18-in/24-in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0017-0.562-L				
Route Name:	CLINGMANS DOME ACCESS ROAD				
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.

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD

Barrier Condition Photos



GRSM_0017_0.562_L_1.JPG

Barrier ID:	GRSM-0017-0.874-L				
Route Name:	CLINGMANS DOME ACCESS ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	44.00		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	58		
Speed Limit (MPH):	30	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	18.0	Post Spacing (In.):	0.0
Height (In.):	13.6	Lateral Offset (In.):	62.2	Road Grade (%):	3.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 2-6 in below the 18-in/24-in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0017-0.874-L				
Route Name:	CLINGMANS DOME ACCESS ROAD				
Inspection Date:	09/10/2010	Barrier Rating:		44.00	
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.

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD

Barrier Condition Photos



GRSM_0017_0.874_L_1.JPG

Barrier ID:	GRSM-0017-0.898-L				
Route Name:	CLINGMANS DOME ACCESS ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	40.00		
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.):	130		
Speed Limit (MPH):	30	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:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	24.6	Lateral Offset (In.):	48.2	Road Grade (%):	5.20
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 2-3 in below the design height of 27 in for 130 LF.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0017-0.898-L		
Route Name:	CLINGMANS DOME ACCESS ROAD		
Inspection Date:	09/10/2010	Barrier Rating:	40.00

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3052
Brief Workorder:	Raise 130 feet of barrier up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 130 LF = \$1300. Raise 130 feet of barrier up to the 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.

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD

Barrier Condition Photos



GRSM_0017_0.898_L_1.JPG

Barrier ID:	GRSM-0017-1.982-L				
Route Name:	CLINGMANS DOME ACCESS ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	57.00		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	153		
Speed Limit (MPH):	30	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	19.2	Post Spacing (In.):	0.0
Height (In.):	11.0	Lateral Offset (In.):	49.0	Road Grade (%):	5.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 6-8 in below the 18-in/24-in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0017-1.982-L		
Route Name:	CLINGMANS DOME ACCESS ROAD		
Inspection Date:	09/10/2010	Barrier Rating:	57.00

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$160353
Brief Workorder:	Raise guardwall 13-in. Remove and reset 153-ft of stone masonry guardwall on concrete footer to crenellated design height of 18-in/24-in.				
Workorder:	Remove & Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 490 CF = \$122500. [(2ft)(1.6ft)(153ft)] = 489.6 CF. Structural Concrete at \$1000- per -Cu. Yd. for 10 CY = \$10000. [(1.6ft)(1.1ft)(153ft)] /27 = 9.9 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.

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD

Barrier Condition Photos



GRSM_0017_1.982_L_1.JPG

Barrier ID:	GRSM-0017-2.111-L				
Route Name:	CLINGMANS DOME ACCESS ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	40.00		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	204		
Speed Limit (MPH):	30	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	18.6	Post Spacing (In.):	0.0
Height (In.):	15.6	Lateral Offset (In.):	49.5	Road Grade (%):	5.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation. 84-ft was within 3-in of the 18-in/24-in crenellated design height 40-ft was 3 to 6-in below and 80-ft was 6 to 7-in below.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0017-2.111-L		
Route Name:	CLINGMANS DOME ACCESS ROAD		
Inspection Date:	09/10/2010	Barrier Rating:	40.00

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$77413
Brief Workorder:	Raise guardwall 2-in. Remove and reset 80-ft of stone masonry guardwall on concrete footer to adjacent 12-in height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 240 CF = \$60000. [(2ft)(1.5ft)(80ft)] = 240 CF. Structural Concrete at \$1000- per -Cu. Yd. for 3 CY = \$3000. [(1.5ft)(0.5ft)(80ft)] /27 = 2.2 CY. Low Speed Traffic Control at \$1475- per -Day for 5 Day(s) = \$7375. 1 day removal 4 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD

Barrier Condition Photos



GRSM_0017_2.111_L_1.JPG

Barrier ID:	GRSM-0017-2.212-L				
Route Name:	CLINGMANS DOME ACCESS ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	36.90		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	178		
Speed Limit (MPH):	30	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	18.6	Post Spacing (In.):	0.0
Height (In.):	20.0	Lateral Offset (In.):	64.3	Road Grade (%):	6.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-3 in above the 18-in/24-in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0017-2.212-L		
Route Name:	CLINGMANS DOME ACCESS ROAD		
Inspection Date:	09/10/2010	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.

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD

Barrier Condition Photos



GRSM_0017_2.212_L_1.JPG

Barrier ID:	GRSM-0017-3.236-L				
Route Name:	CLINGMANS DOME ACCESS ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	58.50		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	396		
Speed Limit (MPH):	30	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	18.6	Post Spacing (In.):	0.0
Height (In.):	12.0	Lateral Offset (In.):	43.0	Road Grade (%):	5.90
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 4-6 in below the 18-in/24-in crenellated design height for 120 ft and 7 in below for 276.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0017-3.236-L		
Route Name:	CLINGMANS DOME ACCESS ROAD		
Inspection Date:	09/10/2010	Barrier Rating:	58.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$259215
Brief Workorder:	Raise guardwall 2-in. Remove and reset 276-ft of stone masonry guardwall on concrete footer to adjacent 12-in height.				
Workorder:	Remove & Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 828 CF = \$207000. (2FT)(1.5ft)(276) = 828 CF. Structural Concrete at \$1000- per -Cu. Yd. for 8 CY = \$8000. [(1.5ft)(.5)(276)] / 27 = 7.7 CY. Low Speed Traffic Control at \$1475- per -Day for 14 Day(s) = \$20650. 3 days removal 11 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD

Barrier Condition Photos



GRSM_0017_3.236_L_1.JPG

Barrier ID:	GRSM-0017-4.517-L				
Route Name:	CLINGMANS DOME ACCESS ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	31.20		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	228		
Speed Limit (MPH):	30	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	18.2	Post Spacing (In.):	0.0
Height (In.):	15.3	Lateral Offset (In.):	61.0	Road Grade (%):	4.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 2 to 4 in below the 18-in/24-in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0017-4.517-L		
Route Name:	CLINGMANS DOME ACCESS ROAD		
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.

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD

Barrier Condition Photos



GRSM_0017_4.517_L_1.JPG

Barrier ID:	GRSM-0017-4.869-L				
Route Name:	CLINGMANS DOME ACCESS ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	47.00		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	200		
Speed Limit (MPH):	30	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	18.6	Post Spacing (In.):	0.0
Height (In.):	12.3	Lateral Offset (In.):	29.0	Road Grade (%):	1.70
Physical Condition					
Barrier	Alignment and Height:	The barrier alignment shows no delineation the height is 5-6 in below the 18-in/24-in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0017-4.869-L		
Route Name:	CLINGMANS DOME ACCESS ROAD		
Inspection Date:	09/10/2010	Barrier Rating:	47.00

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.

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD

Barrier Condition Photos



GRSM_0017_4.869_L_1.JPG

Barrier ID:	GRSM-0017-5.502-L				
Route Name:	CLINGMANS DOME ACCESS ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	39.90		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	175		
Speed Limit (MPH):	30	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	18.0	Post Spacing (In.):	0.0
Height (In.):	15.6	Lateral Offset (In.):	52.0	Road Grade (%):	6.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 2 to 3 in below the 18-in/24-in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0017-5.502-L		
Route Name:	CLINGMANS DOME ACCESS ROAD		
Inspection Date:	09/10/2010	Barrier Rating:	39.90

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.

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD

Barrier Condition Photos



GRSM_0017_5.502_L_1.JPG

Barrier ID:	GRSM-0017-6.997-L				
Route Name:	CLINGMANS DOME ACCESS ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	35.20		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	NON-TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	342		
Speed Limit (MPH):	30	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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	18.2	Post Spacing (In.):	0.0
Height (In.):	13.6	Lateral Offset (In.):	0.0	Road Grade (%):	0.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and height is between 3 to 5 in the 18-in/24-in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0017-6.997-L		
Route Name:	CLINGMANS DOME ACCESS ROAD		
Inspection Date:	09/10/2010	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.

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD

Barrier Condition Photos



GRSM_0017_6.997_L_1.JPG

Barrier ID:	GRSM-0017-7.063-L				
Route Name:	CLINGMANS DOME ACCESS ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	32.20		
Barrier Description					
Type:	STONE MASONRY CRENELLATED WITHOUT	Barrier Function:	NON-TRAFFIC		
Barrier Material:	STONE	Post Material:	N/A		
Blockout Type:	N/A	Length (ft.):	165		
Speed Limit (MPH):	30	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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	18	Width (In.):	18.2	Post Spacing (In.):	0.0
Height (In.):	12.6	Lateral Offset (In.):	0.0	Road Grade (%):	0.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 4 to 6 in below the 18-in/24-in crenellated design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0017-7.063-L		
Route Name:	CLINGMANS DOME ACCESS ROAD		
Inspection Date:	09/10/2010	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.

Great Smoky Mountains National Park

ROUTE 0017: CLINGMANS DOME ACCESS ROAD

Barrier Condition Photos



GRSM_0017_7.063_L_1.JPG

Barrier ID:	GRSM-0018-0.011-L				
Route Name:	ELKMONT ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	17.80		
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.):	33		
Speed Limit (MPH):	25	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	23.6	Post Spacing (In.):	0.0
Height (In.):	24.0	Lateral Offset (In.):	51.5	Road Grade (%):	5.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at the design height of 24 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0018-0.011-L		
Route Name:	ELKMONT ROAD		
Inspection Date:	09/09/2010	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.

Great Smoky Mountains National Park

ROUTE 0018: ELKMONT ROAD

Barrier Condition Photos



GRSM_0018_0.011_L_1.JPG

Barrier ID:	GRSM-0018-0.012-R				
Route Name:	ELKMONT ROAD				
Inspection Date:	09/09/2010	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.):	31		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	22.0	Post Spacing (In.):	0.0
Height (In.):	20.0	Lateral Offset (In.):	51.5	Road Grade (%):	4.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 3 to 5 in below the 24 in design height for 31 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0018-0.012-R				
Route Name:	ELKMONT ROAD				
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.

Great Smoky Mountains National Park

ROUTE 0018: ELKMONT ROAD

Barrier Condition Photos



GRSM_0018_0.012_R_1.JPG

Barrier ID:	GRSM-0018-0.023-L				
Route Name:	ELKMONT ROAD				
Inspection Date:	09/09/2010	Barrier Rating:	17.80		
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.):	29		
Speed Limit (MPH):	25	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	23.6	Post Spacing (In.):	0.0
Height (In.):	27.2	Lateral Offset (In.):	53.5	Road Grade (%):	4.70
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-1 in above the design height of 24 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0018-0.023-L		
Route Name:	ELKMONT ROAD		
Inspection Date:	09/09/2010	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.

Great Smoky Mountains National Park

ROUTE 0018: ELKMONT ROAD

Barrier Condition Photos



GRSM_0018_0.023_L_1.JPG

Barrier ID:	GRSM-0018-0.023-R				
Route Name:	ELKMONT ROAD				
Inspection Date:	09/09/2010	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.):	28		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	24.2	Post Spacing (In.):	0.0
Height (In.):	21.6	Lateral Offset (In.):	51.5	Road Grade (%):	4.60
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 3 in below the design height of 24 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0018-0.023-R				
Route Name:	ELKMONT ROAD				
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.

Great Smoky Mountains National Park

ROUTE 0018: ELKMONT ROAD

Barrier Condition Photos



GRSM_0018_0.023_R_1.JPG

Barrier ID:	GRSM-0019-0.092-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	33.70		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	544		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	22.0	Lateral Offset (In.):	83.0	Road Grade (%):	2.60
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation. 125 ft was 0-1 in below the 24 in design height and 419 ft was 1-3 in below.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	15 posts observed as rotted and hollow.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-0.092-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	33.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$11127
Brief Workorder:	Raise 419-ft of barrier up to 24-in design height.				
Workorder:	Replace Post at \$100- per -Each for 15 Post(s) = \$1500. Replace 15 posts rotted and hollow. Adjust Guardrail at \$10- per -Lin. Ft. for 419 LF = \$4190. Raise 419-ft of barrier up to 24-in 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_0.092_L_1.JPG

Barrier ID:	GRSM-0019-0.229-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	35.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	430		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.3
Height (In.):	21.2	Lateral Offset (In.):	92.0	Road Grade (%):	4.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 2-3 in below the 24 in design height			
	Breaking and Cracking:	Minor cracking of rails observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	13 posts observed as rotted and hollow.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-0.229-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	35.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$11028
Brief Workorder:	Raise 430-ft of barrier up to 24-in design height.				
Workorder:	Replace Post at \$100- per -Each for 13 Post(s) = \$1300. Replace 13 posts rotted and hollow. Adjust Guardrail at \$10- per -Lin. Ft. for 430 LF = \$4300. Raise 430-ft of barrier up to 24-in 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_0.229_L_1.JPG

Barrier ID:	GRSM-0019-0.264-R				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	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.):	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-2	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	SBT/LOG FLARED	Is Beg. End Trtmt Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.0
Height (In.):	27.6	Lateral Offset (In.):	94.3	Road Grade (%):	4.20
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-1 in above the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0019-0.264-R		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_0.264_R_1.JPG

Barrier ID:	GRSM-0019-0.364-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	32.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	170		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.0
Height (In.):	22.0	Lateral Offset (In.):	101.3	Road Grade (%):	4.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 2 in below the 24 in design height.			
	Breaking and Cracking:	Minor breaking and cracking of less than a quarter in observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate corrosion and weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-0.364-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	32.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3493
Brief Workorder:	Raise 170 feet of barrier up to the 24 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 170 LF = \$1700. Raise 170 feet of barrier up to the 24 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_0.364_L_1.JPG

Barrier ID:	GRSM-0019-0.460-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	39.50		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	150		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	21.6	Lateral Offset (In.):	99.3	Road Grade (%):	0.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1-3 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	There are 3 posts that rotten and hollowed out.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-0.460-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	39.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$5225
Brief Workorder:	Raise 150-ft of barrier up to 24-in design height and replace 3 posts.				
Workorder:	Replace Post at \$100- per -Each for 3 Post(s) = \$300. Replace rotten posts. Adjust Guardrail at \$10- per -Lin. Ft. for 150 LF = \$1500. Raise 150-ft of barrier up to 24-in 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_0.460_L_1.JPG

Barrier ID:	GRSM-0019-0.463-R				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	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.):	196		
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 BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG BURIED	Ending End Trtmt Crashworthy?:	YES		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	27.2	Lateral Offset (In.):	95.0	Road Grade (%):	0.60
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is within 1 in of the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	20-ft of broken rail and one bent post.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0019-0.463-R		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	26.60

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2008
Brief Workorder:	Replace 10 feet of rail and one post.				
Workorder:	Replace Rail at \$25- per -Lin. Ft. for 10 LF = \$250. Replace broken rail in impact zone. Replace Post at \$100- per -Each for 1 Post(s) = \$100. Replace 1 bent post. 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_0.463_R_1.JPG

Barrier ID:	GRSM-0019-0.544-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	31.20		
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.):	570		
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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG BURIED	Ending End Trtmt Crashworthy?:	YES		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.0
Height (In.):	26.6	Lateral Offset (In.):	105.5	Road Grade (%):	5.20
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is within 1 in of the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0019-0.544-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_0.544_L_1.JPG

Barrier ID:	GRSM-0019-0.678-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	25.10		
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.):	403		
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 BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG BURIED	Ending End Trtmt Crashworthy?:	YES		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.6	Lateral Offset (In.):	79.0	Road Grade (%):	2.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-1 in below the design height of 27 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0019-0.678-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_0.678_L_1.JPG

Barrier ID:	GRSM-0019-0.689-R				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	29.50		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	309		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	121.0
Height (In.):	22.2	Lateral Offset (In.):	95.0	Road Grade (%):	4.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1-2 in below the 24 in design height.			
	Breaking and Cracking:	Major cracking over half an in. Breaking of post observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Major corrosion and weathering of 16 posts.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-0.689-R		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	29.50

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$37323
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts guardrail and 2 Steel-backed timber flared end terminals.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 309 LF = \$3090. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 249 LF = \$14940. SBT / Log Flared at \$5000- per -Each for 2 Unit(s) = \$10000. Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 2 days removal 2 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_0.689_R_1.JPG

Barrier ID:	GRSM-0019-0.824-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	39.50		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	522		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.5
Height (In.):	21.2	Lateral Offset (In.):	98.5	Road Grade (%):	4.40
Physical Condition					
Barrier	Alignment and Height:	The alignment is deflected more than 12 in for 30 ft due to an impact. The height is 2-4 in below the 24 in design height.			
	Breaking and Cracking:	Ending end severely broken due to impact with two broken rails and broken posts. There were a total of 17 broken/cracked posts.			
	Missing Elements:	1 missing rail observed.			
	Corrosion and Weathering:	Moderate corrosion and weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-0.824-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	39.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$4318
Brief Workorder:	Replace 30 feet of rail and 17 posts.				
Workorder:	Replace Rail at \$25- per -Lin. Ft. for 30 LF = \$750. Replace 30 feet of broken/missing rails. Replace Post at \$100- per -Each for 17 Post(s) = \$1700. 17 severely weathered with holes in the tops. 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_0.824_L_1.JPG

Barrier ID:	GRSM-0019-0.940-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	36.50		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	115		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	121.0
Height (In.):	22.2	Lateral Offset (In.):	110.3	Road Grade (%):	5.40
Physical Condition					
Barrier	Alignment and Height:	The barrier alignment is off by 6 - 12 in in 2 different places for a total of 20 ft. The height is 1-2 inches below the 24 in design height.			
	Breaking and Cracking:	1 broken rail observed.			
	Missing Elements:	1 missing post and rail section on ending end of barrier observed.			
	Corrosion and Weathering:	Moderate corrosion and weathering observed on all posts and rails. 6 posts rotten and hollow on top observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-0.940-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	36.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$4483
Brief Workorder:	Raise 115-ft of barrier up to 24-in design height replace 10 feet of rail 7 posts and adjust 20 feet of mis-aligned guardrail.				
Workorder:	Remove & Reset Guardrail at \$25- per -Lin. Ft. for 20 LF = \$500. Reset 20 feet of mis-aligned guardrail. Adjust Guardrail at \$10- per -Lin. Ft. for 115 LF = \$1150. Raise 115-ft of barrier up to 24-in design height. Replace Rail at \$25- per -Lin. Ft. for 10 LF = \$250. Replace 10 feet of rail. Replace Post at \$100- per -Each for 7 Post(s) = \$700. Replace 7 posts. 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_0.940_L_1.JPG

Barrier ID:	GRSM-0019-0.992-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	33.70		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	491		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	21.6	Lateral Offset (In.):	101.0	Road Grade (%):	3.40
Physical Condition					
Barrier	Alignment and Height:	The alignment showed no deviation the height is 2-3 in below the design height of 24 in.			
	Breaking and Cracking:	No breaking minor cracking observed 1/4 to 1/2 in wide.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate corrosion and weathering observed on all posts and rails. 6 posts on top are rotten and hollow.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-0.992-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	33.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2282
Brief Workorder:	Replace 6 posts.				
Workorder:	Replace Post at \$100- per -Each for 6 Post(s) = \$600. Replace rotten and hollow posts. 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_0.992_L_1.JPG

Barrier ID:	GRSM-0019-1.104-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	28.30		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	238		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	22.2	Lateral Offset (In.):	98.6	Road Grade (%):	2.80
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and 135 ft was 1-3 in below the 24 in design height.			
	Breaking and Cracking:	1/4 to 1/2 in cracks observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Weathering observed on all rails and posts. 7 posts observed as rotten and weathered.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-1.104-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	28.30

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2393
Brief Workorder:	Replace 7 posts.				
Workorder:	Replace Post at \$100- per -Each for 7 Post(s) = \$700. Replace 7 rotten posts. 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_1.104_L_1.JPG

Barrier ID:	GRSM-0019-1.203-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	25.30		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	61		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.6
Height (In.):	21.7	Lateral Offset (In.):	88.0	Road Grade (%):	3.30
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2-3 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-1.203-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	25.30

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2294
Brief Workorder:	Raise 61-ft of barrier up to 24-in design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 61 LF = \$610. Raise 61-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_1.203_L_1.JPG

Barrier ID:	GRSM-0019-1.265-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	33.70		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	253		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.3
Height (In.):	20.6	Lateral Offset (In.):	95.0	Road Grade (%):	3.40
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2-4 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed except for 2 rotten posts.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-1.265-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	33.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$4626
Brief Workorder:	Raise 253-ft of barrier up to 24-in design height and replace 2 posts.				
Workorder:	Replace Post at \$100- per -Each for 2 Post(s) = \$200. Replace 2 rotten posts. Adjust Guardrail at \$10- per -Lin. Ft. for 253 LF = \$2530. Raise 253-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_1.265_L_1.JPG

Barrier ID:	GRSM-0019-1.271-R				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	25.10		
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.):	267		
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 BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	27.6	Lateral Offset (In.):	91.6	Road Grade (%):	4.20
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0019-1.271-R				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_1.271_R_1.JPG

Barrier ID:	GRSM-0019-1.424-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	32.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	89		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.6
Height (In.):	20.7	Lateral Offset (In.):	170.6	Road Grade (%):	5.80
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2-4 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	1 post is rotten and hollow due to corrosion.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-1.424-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	32.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$1089
Brief Workorder:	Raise 89-ft of barrier up to 24-in design height and replace 1 post.				
Workorder:	Replace Post at \$100- per -Each for 1 Post(s) = \$100. Adjust Guardrail at \$10- per -Lin. Ft. for 89 LF = \$890. Raise 89-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_1.424_L_1.JPG

Barrier ID:	GRSM-0019-1.475-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	36.50		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	89		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	22.6	Lateral Offset (In.):	132.0	Road Grade (%):	6.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and 60 ft is 1-2 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-1.475-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	36.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2602
Brief Workorder:	Raise 89-ft of barrier up to 24-in design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 89 LF = \$890. Raise 89-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_1.475_L_1.JPG

Barrier ID:	GRSM-0019-1.514-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	38.40		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	240		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	21.0	Lateral Offset (In.):	98.3	Road Grade (%):	3.10
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2-4 in below the 24 in design height.			
	Breaking and Cracking:	Some 1/4 to 1/2 in cracks observed on rails.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Weathering observed on all rails and posts. 9 posts observed as rotten and hollow. 1 rail excessively weathered.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-1.514-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	38.40

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$5528
Brief Workorder:	Raise 240-ft of barrier up to 24-in design height and replace 9 posts and 10 feet of rail.				
Workorder:	Replace Post at \$100- per -Each for 9 Post(s) = \$900. Replace 9 posts. Replace Rail at \$25- per -Lin. Ft. for 10 LF = \$250. Replace 10 feet of rail. Adjust Guardrail at \$10- per -Lin. Ft. for 240 LF = \$2400. Raise 240-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_1.514_L_1.JPG

Barrier ID:	GRSM-0019-1.633-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	31.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	530		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.3
Height (In.):	22.2	Lateral Offset (In.):	92.0	Road Grade (%):	2.10
Physical Condition					
Barrier	Alignment and Height:	Alignment shows no deviation and the height is 1-3 in below the 24 in design height.			
	Breaking and Cracking:	160 linear ft of cracking up to 1/4 in wide. Monitor.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	24 wood notched posts have significant rotting observed due to corrosion.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-1.633-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	31.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$10093
Brief Workorder:	Raise 530-ft of barrier up to 24-in design height. Replace 24 posts and monitor 160 linear feet of rail.				
Workorder:	Replace Post at \$100- per -Each for 24 Post(s) = \$2400. Replace 24 rotten posts. Adjust Guardrail at \$10- per -Lin. Ft. for 530 LF = \$5300. Raise 530-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_1.633_L_1.JPG

Barrier ID:	GRSM-0019-1.680-R				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	28.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	288		
Speed Limit (MPH):	35	Placement with Respect to Road:	BOTH INSIDE AND OUTSIDE		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	23.0	Lateral Offset (In.):	114.3	Road Grade (%):	1.90
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and 100 ft is 1-2 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-1.680-R		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	28.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2723
Brief Workorder:	Raise 100-ft of barrier up to 24-in design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 100 LF = \$1000. Raise 100-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_1.680_R_1.JPG

Barrier ID:	GRSM-0019-1.797-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	34.00		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	81		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	121.0
Height (In.):	21.2	Lateral Offset (In.):	118.6	Road Grade (%):	3.70
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 1-4 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Weathering observed on all rails and posts. 6 posts observed as rotten and hollow.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-1.797-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	34.00

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3174
Brief Workorder:	Raise 81-ft of barrier up to 24-in design height and replace 6 posts.				
Workorder:	Replace Post at \$100- per -Each for 6 Post(s) = \$600. Replace 6 rotten posts. Adjust Guardrail at \$10- per -Lin. Ft. for 81 LF = \$810. Raise 81-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_1.797_L_1.JPG

Barrier ID:	GRSM-0019-1.873-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	19.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	200		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.6
Height (In.):	22.0	Lateral Offset (In.):	123.6	Road Grade (%):	6.20
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the 67 ft is 1-4 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Weathering observed on all rail and posts. 9 posts observed as rotten and hollow due to corrosion.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-1.873-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	19.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$4813
Brief Workorder:	Raise 200-ft of barrier up to 24-in design height and replace 9 posts.				
Workorder:	Replace Post at \$100- per -Each for 9 Post(s) = \$900. Adjust Guardrail at \$10- per -Lin. Ft. for 200 LF = \$2000. Raise 200-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_1.873_L_1.JPG

Barrier ID:	GRSM-0019-1.970-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	26.60		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	210		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	21.7	Lateral Offset (In.):	87.3	Road Grade (%):	6.20
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 1-4 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed			
	Missing Elements:	No missing elements observed			
	Corrosion and Weathering:	No corrosion or weathering observed except for 10 rotten posts.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-1.970-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	26.60

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3410
Brief Workorder:	Raise 210-ft of barrier up to 24-in design height and replace 10 posts.				
Workorder:	Replace Post at \$100- per -Each for 10 Post(s) = \$1000. Adjust Guardrail at \$10- per -Lin. Ft. for 210 LF = \$2100. Raise 210-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_1.970_L_1.JPG

Barrier ID:	GRSM-0019-2.027-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/21/2010	Barrier Rating:	31.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	290		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.6
Height (In.):	22.0	Lateral Offset (In.):	93.6	Road Grade (%):	6.10
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 1-4 in below the 24 in design height.			
	Breaking and Cracking:	10 ft of rail broken in half due to tree that fell.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-2.027-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/21/2010	Barrier Rating:	31.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$5088
Brief Workorder:	Raise 290-ft of barrier up to 24-in design height and replace 10 feet of rail.				
Workorder:	Replace Rail at \$25- per -Lin. Ft. for 10 LF = \$250. Replace 10 feet of broken rail. Adjust Guardrail at \$10- per -Lin. Ft. for 290 LF = \$2900. Raise 290-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_2.027_L_1.JPG

Barrier ID:	GRSM-0019-2.104-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	29.70		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	121		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.3
Height (In.):	22.6	Lateral Offset (In.):	110.0	Road Grade (%):	5.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and 50 ft is 1-2 in below the 24 in design height.			
	Breaking and Cracking:	6 posts rotted.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate corrosion and weathering observed on all posts and rails.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-2.104-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	29.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2833
Brief Workorder:	Raise 50-ft of barrier up to 24-in design height and replace 6 posts.				
Workorder:	Replace Post at \$100- per -Each for 6 Post(s) = \$600. Replace 6 rotted posts. Adjust Guardrail at \$10- per -Lin. Ft. for 50 LF = \$500. Raise 50-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_2.104_L_1.JPG

Barrier ID:	GRSM-0019-2.133-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	35.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	342		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	117.5
Height (In.):	21.2	Lateral Offset (In.):	100.3	Road Grade (%):	6.60
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 2-4 in below the 24 in design height.			
	Breaking and Cracking:	13 broken/rotted posts.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate corrosion and weathering observed on all posts and rails.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-2.133-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	35.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$6815
Brief Workorder:	Raise 342-ft of barrier up to 24-in design height and replace 13 posts.				
Workorder:	Replace Post at \$100- per -Each for 13 Post(s) = \$1300. Replace 13 posts. Adjust Guardrail at \$10- per -Lin. Ft. for 342 LF = \$3420. Raise 342-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_2.133_L_1.JPG

Barrier ID:	GRSM-0019-2.214-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	37.00		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	281		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.5
Height (In.):	23.2	Lateral Offset (In.):	79.0	Road Grade (%):	5.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is within 1 in of the 24 in design height.			
	Breaking and Cracking:	No breaking of barrier minor cracking of 1/4 to 1/2 in wide observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate corrosion and weathering observed on all posts and rails. 12 posts rotten and hollowed out on top.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-2.214-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	37.00

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2942
Brief Workorder:	Replace 12 posts.				
Workorder:	Replace Post at \$100- per -Each for 12 Post(s) = \$1200. Posts rotten and hollowed out. 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_2.214_L_1.JPG

Barrier ID:	GRSM-0019-2.304-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	25.50		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	230		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	118.5
Height (In.):	22.2	Lateral Offset (In.):	89.0	Road Grade (%):	6.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1-2 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Weathering observed on all posts and rails. 15 posts observed as rotten and hollow.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-2.304-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	25.50

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$27995
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts guardrail and 2 Steel-backed timber flared end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 230 LF = \$2300. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 170 LF = \$10200. Steel-backed timber / Log Flared at \$5000- per -Each for 2 Unit(s) = \$10000. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation				

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_2.304_L_1.JPG

Barrier ID:	GRSM-0019-2.368-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	30.80		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	234		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	128.0
Height (In.):	21.2	Lateral Offset (In.):	75.0	Road Grade (%):	4.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1-4 in below the 24 in design height.			
	Breaking and Cracking:	No breaking of barrier minor cracking of 1/4 to 1/2 in wide observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate corrosion and weathering observed on all posts and rails. 4 posts rotten and hollowed out on top.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-2.368-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	30.80

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3014
Brief Workorder:	Raise 234-ft of barrier up to 24-in design height and replace 4 posts.				
Workorder:	Replace Post at \$100- per -Each for 4 Post(s) = \$400. Rotten and hollowed out on top. Adjust Guardrail at \$10- per -Lin. Ft. for 234 LF = \$2340. Raise 234-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_2.368_L_1.JPG

Barrier ID:	GRSM-0019-2.422-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	39.40		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	655		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	21.7	Lateral Offset (In.):	73.1	Road Grade (%):	0.80
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and 555 ft is 1-4 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-2.422-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	39.40

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$9378
Brief Workorder:	Raise 555-ft of barrier up to 24-in design height and replace 15 posts.				
Workorder:	Replace Post at \$100- per -Each for 15 Post(s) = \$1500. Adjust Guardrail at \$10- per -Lin. Ft. for 555 LF = \$5550. Raise 555-ft of barrier up to 24-in 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_2.422_L_1.JPG

Barrier ID:	GRSM-0019-2.424-R				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	25.10		
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.):	278		
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 BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.5
Height (In.):	26.6	Lateral Offset (In.):	71.3	Road Grade (%):	1.10
Physical Condition					
Barrier	Alignment and Height:	The barrier alignment has no deviation and the height is low by 2 in or less from the design height of 27 in for 82 LF.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0019-2.424-R		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	25.10

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2524
Brief Workorder:	Raise 82 feet of barrier to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 82 LF = \$820. Raise 82 feet of barrier to the 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_2.424_R_1.JPG

Barrier ID:	GRSM-0019-2.559-R				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	16.70		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	40		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	123.0
Height (In.):	20.0	Lateral Offset (In.):	60.0	Road Grade (%):	2.80
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2-4 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-2.559-R		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	16.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2063
Brief Workorder:	Raise 40-ft of barrier up to 24-in design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 40 LF = \$400. Raise 40-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_2.559_R_1.JPG

Barrier ID:	GRSM-0019-2.585-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	55.00		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	821		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	121.3
Height (In.):	19.5	Lateral Offset (In.):	84.8	Road Grade (%):	10.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 4-5 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	80 ft of rail has moss growing on it. Monitor.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-2.585-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	55.00

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$15521
Brief Workorder:	Raise 821-ft of barrier up to 24-in design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 821 LF = \$8210. Raise 821-ft of barrier up to 24-in design height. 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_2.585_L_1.JPG

Barrier ID:	GRSM-0019-2.768-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	39.50		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	258		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.3
Height (In.):	21.0	Lateral Offset (In.):	78.6	Road Grade (%):	5.70
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2-4 in below the 24 in design height.			
	Breaking and Cracking:	Minor cracking less than 1/4 in			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	4 posts were rotten and corroded.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-2.768-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	39.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$4901
Brief Workorder:	Raise 258-ft of barrier up to 24-in design height and replace 4 posts.				
Workorder:	Replace Post at \$100- per -Each for 4 Post(s) = \$400. Adjust Guardrail at \$10- per -Lin. Ft. for 258 LF = \$2580. Raise 258-ft of barrier up to 24-in 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_2.768_L_1.JPG

Barrier ID:	GRSM-0019-2.840-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	39.40		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	242		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	19.6	Lateral Offset (In.):	81.0	Road Grade (%):	6.80
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 4-5 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-2.840-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	39.40

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$4285
Brief Workorder:	Raise 242 feet of barrier up to the 24 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 242 LF = \$2420. Raise 242 feet of barrier up to the 24 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_2.840_L_1.JPG

Barrier ID:	GRSM-0019-2.911-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	36.50		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	144		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.5
Height (In.):	25.6	Lateral Offset (In.):	83.5	Road Grade (%):	7.90
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height ranges from 1 in below to 4 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion observed. Some weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-2.911-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_2.911_L_1.JPG

Barrier ID:	GRSM-0019-2.943-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	36.50		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	231		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	116.6
Height (In.):	22.2	Lateral Offset (In.):	117.3	Road Grade (%):	6.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and 175 ft is 1-2 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No breaking or cracking observed.			
	Corrosion and Weathering:	No corrosion observed and some weathering observed			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-2.943-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	36.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3548
Brief Workorder:	Raise 175 feet of barrier up to the 24 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 175 LF = \$1750. Raise 175 feet of barrier up to the 24 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_2.943_L_1.JPG

Barrier ID:	GRSM-0019-2.995-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	26.80		
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.):	748		
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-2	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	SBT/LOG BURIED	Is Beg. End Trtmt Crashworthy?:	YES	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	119.5
Height (In.):	27.0	Lateral Offset (In.):	69.5	Road Grade (%):	1.60
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0019-2.995-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_2.995_L_1.JPG

Barrier ID:	GRSM-0019-3.157-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	32.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	148		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	25.0	Lateral Offset (In.):	103.0	Road Grade (%):	5.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and 75 ft is 1-3 in below the 24 in design height while the rest of the barrier is 0-4 in above.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-3.157-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	32.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2448
Brief Workorder:	Raise 75 feet of barrier up to the 24 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 75 LF = \$750. Raise 75 feet of barrier up to the 24 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_3.157_L_1.JPG

Barrier ID:	GRSM-0019-3.211-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/16/2010	Barrier Rating:	35.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	529		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	212.0
Height (In.):	21.6	Lateral Offset (In.):	84.0	Road Grade (%):	1.70
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 1-4 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-3.211-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/16/2010	Barrier Rating:	35.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$10687
Brief Workorder:	Raise 529 feet of barrier up to the 24 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 529 LF = \$5290. Raise 529 feet of barrier up to the 24 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_3.211_L_1.JPG

Barrier ID:	GRSM-0019-3.378-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	22.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	33		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	22.0	Lateral Offset (In.):	274.7	Road Grade (%):	2.70
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height ranges from 4 in below to 1 in above the 24 in design height with 20 ft being 1-4 in below.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-3.378-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	22.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$1843
Brief Workorder:	Raise 20 feet of barrier up to the 24 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 20 LF = \$200. Raise 20 feet of barrier up to the 24 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_3.378_L_1.JPG

Barrier ID:	GRSM-0019-3.408-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	26.60		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	283		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	23.0	Lateral Offset (In.):	66.6	Road Grade (%):	2.80
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and 200 ft is 1-2 in below the 24 in design height.			
	Breaking and Cracking:	No breaking observed. Minor cracking less than a quarter of an in observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-3.408-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	26.60

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3823
Brief Workorder:	Raise 200 feet of barrier up to the 24 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 200 LF = \$2000. Raise 200 feet of barrier up to the 24 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_3.408_L_1.JPG

Barrier ID:	GRSM-0019-3.487-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	36.50		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	160		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	115.5
Height (In.):	21.2	Lateral Offset (In.):	70.0	Road Grade (%):	3.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2-3 in below the 24 in design height.			
	Breaking and Cracking:	No breaking and less than a quarter in of cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-3.487-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	36.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3383
Brief Workorder:	Raise 160 feet of barrier up to the 24 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 160 LF = \$1600. Raise 160 feet of barrier up to the 24 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_3.487_L_1.JPG

Barrier ID:	GRSM-0019-3.552-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	35.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	433		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	24.6	Lateral Offset (In.):	113.3	Road Grade (%):	4.20
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 0-2 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-3.552-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_3.552_L_1.JPG

Barrier ID:	GRSM-0019-3.667-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	37.00		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	265		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	121.6
Height (In.):	21.7	Lateral Offset (In.):	97.0	Road Grade (%):	2.10
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 1-3 in below the 24 in design height.			
	Breaking and Cracking:	110 ft of rail has cracks half in or larger.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	13 rotted posts due to weathering.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-3.667-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	37.00

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$33935
Brief Workorder:	Remove existing timber guardrail and replace with Steel-backed timber without blockout guardrail and two Steel-backed timber flared end terminals.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 265 LF = \$2650. Remove existing guardrail. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 205 LF = \$12300. Install Steel-backed timber guardrail without blockout. Steel-backed timber / Log Flared at \$5000- per -Each for 2 Unit(s) = \$10000. Install 2 Steel-backed timber flared end terminals. Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 2 days removal 2 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_3.667_L_1.JPG

Barrier ID:	GRSM-0019-3.739-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	29.70		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	110		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	118.0
Height (In.):	22.0	Lateral Offset (In.):	75.6	Road Grade (%):	5.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1-3 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Corrosion observed on all posts and rails. 10 posts observed as rotten and hollow.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-3.739-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	29.70

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$18755
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber flared end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 110 LF = \$1100. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 50 LF = \$3000. Steel-backed timber / Log Flared at \$5000- per -Each for 2 Unit(s) = \$10000. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.				

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_3.739_L_1.JPG

Barrier ID:	GRSM-0019-3.788-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	37.00		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	382		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	120.6
Height (In.):	23.2	Lateral Offset (In.):	82.3	Road Grade (%):	9.90
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and 275 ft is 1-2 in below the 24 in design height. Remainder of barrier is 0-1 in above the design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	All posts and rail observed as weathered. 16 posts rotten and hollowed out on top.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-3.788-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	37.00

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$6408
Brief Workorder:	Raise 275-ft of barrier up to 24-in design height and replace 16 posts.				
Workorder:	Replace Post at \$100- per -Each for 16 Post(s) = \$1600. Replace 16 posts. Adjust Guardrail at \$10- per -Lin. Ft. for 275 LF = \$2750. Raise 275-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_3.788_L_1.JPG

Barrier ID:	GRSM-0019-3.961-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	51.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	1309		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	22.1	Lateral Offset (In.):	66.8	Road Grade (%):	7.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and 1100 ft is 1-3 in below the 24 in design height.			
	Breaking and Cracking:	No breaking of barrier minor cracking of 1/4 to 1/2 in wide observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	75 rotten and hollowed out posts. 50 LF of rotten rail. Some weathering on all posts and rail observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-3.961-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	51.20

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$127303
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber flared end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 1309 LF = \$13090. Remove old timber guardrail. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 1249 LF = \$74940. Install Steel-backed timber without blockouts. Steel-backed timber / Log Flared at \$5000- per -Each for 2 Unit(s) = \$10000. Install 2 Steel-backed timber flared end treatments. Low Speed Traffic Control at \$1475- per -Day for 12 Day(s) = \$17700. 6 days removal 6 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_3.961_L_1.JPG

Barrier ID:	GRSM-0019-4.060-R				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	36.50		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	62		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	118.5
Height (In.):	25.2	Lateral Offset (In.):	58.2	Road Grade (%):	8.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1-2 in above the 24 in design height.			
	Breaking and Cracking:	No breaking of barrier minor cracking of 1/4 to 1/2 in wide observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate corrosion and weathering observed on all posts and rail. 2 posts rotten and hollowed out on top and 10 LF rotten rail.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-4.060-R		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	36.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2118
Brief Workorder:	Replace 2 posts and 10 feet of rail.				
Workorder:	Replace Post at \$100- per -Each for 2 Post(s) = \$200. Replace 2 posts. Replace Rail at \$25- per -Lin. Ft. for 10 LF = \$250. Replace 10 feet of rail. 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_4.060_R_1.JPG

Barrier ID:	GRSM-0019-4.230-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	30.70		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	453		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	120.5
Height (In.):	21.6	Lateral Offset (In.):	77.5	Road Grade (%):	5.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and 350 ft is 1-5 in below the 24 in design height.			
	Breaking and Cracking:	More than half the posts are rotted. 28 total posts.			
	Missing Elements:	1 missing bolt.			
	Corrosion and Weathering:	Moderate corrosion and weathering observed on all posts and rail.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-4.230-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	30.70

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$48411
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts guardrail and 2 Steel-backed timber end treatments.				
Workorder:	<p>Remove Guardrail at \$10- per -Lin. Ft. for 453 LF = \$4530. Remove entire 453 feet of barrier.</p> <p>Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 393 LF = \$23580. Replace old barrier with Steel backed timber guardrail.</p> <p>Steel-backed timber / Log Flared at \$5000- per -Each for 1 Unit(s) = \$5000. Install a Steel backed timber flared end treatment on ending end.</p> <p>Steel-backed timber / Log Buried at \$5000- per -Each for 1 Unit(s) = \$5000. Install a steel backed timber buried end treatment on beginning end.</p> <p>Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 2 days removal 2 days installation.</p>				

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_4.230_L_1.JPG

Barrier ID:	GRSM-0019-4.232-R				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	36.50		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	190		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	120.3
Height (In.):	22.0	Lateral Offset (In.):	74.0	Road Grade (%):	5.20
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1-3 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	6 posts observed as rotted and hollow.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-4.232-R		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	36.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$4373
Brief Workorder:	Raise 190-ft of barrier up to 24-in design height and replace 6 posts.				
Workorder:	Replace Post at \$100- per -Each for 6 Post(s) = \$600. Replace 6 rotted and hollow posts. Adjust Guardrail at \$10- per -Lin. Ft. for 190 LF = \$1900. Raise 190-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_4.232_R_1.JPG

Barrier ID:	GRSM-0019-4.348-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	39.70		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	422		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.3
Height (In.):	23.0	Lateral Offset (In.):	72.3	Road Grade (%):	1.20
Physical Condition					
Barrier	Alignment and Height:	The alignment was deflected more than 12 in for 40 ft. 350 ft is 1-2 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Weathering observed on all posts and rail. 31 posts observed as rotten and hollow.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-4.348-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	39.70

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$46024
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts guardrail and 2 Steel-backed timber flared end treatments.				
Workorder:	<p>Remove Guardrail at \$10- per -Lin. Ft. for 422 LF = \$4220.</p> <p>Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 362 LF = \$21720. Install 362 feet of Steel-Backed Timber w/o Blockout guardrail.</p> <p>Steel-backed timber / Log Flared at \$5000- per -Each for 2 Unit(s) = \$10000. Install 2 Steel backed timber flared end treatments.</p> <p>Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 2 days removal 2 days installation.</p>				

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_4.348_L_1.JPG

Barrier ID:	GRSM-0019-4.359-R				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	39.40		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	299		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	118.6
Height (In.):	21.7	Lateral Offset (In.):	71.0	Road Grade (%):	2.90
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 1-3 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	All posts and rail observed as weathered. 29 posts observed as rotten and hollow.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-4.359-R		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	39.40

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$36553
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber flared end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 299 LF = \$2990. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 239 LF = \$14340. Steel-backed timber / Log Flared at \$5000- per -Each for 2 Unit(s) = \$10000. Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 2 days removal 2 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_4.359_R_1.JPG

Barrier ID:	GRSM-0019-4.440-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	39.50		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	355		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.3
Height (In.):	22.2	Lateral Offset (In.):	67.0	Road Grade (%):	4.40
Physical Condition					
Barrier	Alignment and Height:	The barrier alignment has no deviation. 275 ft is 1-3 in below the 24 in design height.			
	Breaking and Cracking:	No breaking of barrier minor cracking of 1/4 to 1/2 in wide observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate corrosion and weathering observed on all posts and rail. 18 posts rotten and hollowed out on top.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-4.440-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	39.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$8250
Brief Workorder:	Raise 275-ft of barrier up to 24-in design height and replace 18 posts.				
Workorder:	Replace Post at \$100- per -Each for 18 Post(s) = \$1800. Replace rotten posts. Adjust Guardrail at \$10- per -Lin. Ft. for 275 LF = \$2750. Raise 275-ft of barrier up to 24-in 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_4.440_L_1.JPG

Barrier ID:	GRSM-0019-4.526-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/17/2010	Barrier Rating:	32.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	183		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.0
Height (In.):	19.2	Lateral Offset (In.):	75.5	Road Grade (%):	2.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 4-5 in below the 24 in design height.			
	Breaking and Cracking:	6 posts show breaking and cracking.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate corrosion and weathering observed on all posts and rails.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-4.526-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/17/2010	Barrier Rating:	32.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$4296
Brief Workorder:	Raise 183-ft of barrier up to 24-in design height and replace 6 posts.				
Workorder:	Replace Post at \$100- per -Each for 6 Post(s) = \$600. 6 rotten posts need replaced. Adjust Guardrail at \$10- per -Lin. Ft. for 183 LF = \$1830. Raise 183-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_4.526_L_1.JPG

Barrier ID:	GRSM-0019-4.574-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/15/2010	Barrier Rating:	47.90		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	745		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.5
Height (In.):	18.0	Lateral Offset (In.):	89.1	Road Grade (%):	6.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 4-8 in below the 24 in design height.			
	Breaking and Cracking:	5 broken cracked or rotten rails and 26 rotten and hollow posts observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Corrosion and weathering observed on all posts and rail.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-4.574-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/15/2010	Barrier Rating:	47.90

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$74140
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber flared end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 745 LF = \$7450. Remove existing timber guardrail. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 685 LF = \$41100. 685 feet (745 ft - 60 ft) SBT / Log Flared at \$5000- per -Each for 2 Unit(s) = \$10000. Install 2 SBT flared end treatments. Low Speed Traffic Control at \$1475- per -Day for 6 Day(s) = \$8850. 3 days removal and 3 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_4.574_L_1.JPG

Barrier ID:	GRSM-0019-5.016-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/15/2010	Barrier Rating:	41.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	401		
Speed Limit (MPH):	35	Placement with Respect to Road:	BOTH INSIDE AND OUTSIDE		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	121.0
Height (In.):	22.0	Lateral Offset (In.):	71.0	Road Grade (%):	10.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and 300 ft is 1-3 in below the 24 in design height.			
	Breaking and Cracking:	1 broken rail and 12 rotten and hollowed out posts observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Corrosion and weathering observed on all posts and rail.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-5.016-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/15/2010	Barrier Rating:	41.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$8140
Brief Workorder:	Raise 300-ft of barrier up to 24-in design height replace 12 posts and 10 feet of rail.				
Workorder:	Replace Rail at \$25- per -Lin. Ft. for 10 LF = \$250. Replace Post at \$100- per -Each for 12 Post(s) = \$1200. Adjust Guardrail at \$10- per -Lin. Ft. for 300 LF = \$3000. Raise 300-ft of barrier up to 24-in 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_5.016_L_1.JPG

Barrier ID:	GRSM-0019-5.101-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/15/2010	Barrier Rating:	22.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	125		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.3
Height (In.):	21.0	Lateral Offset (In.):	92.0	Road Grade (%):	8.70
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 3 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	6 posts observed as rotted and hollow.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-5.101-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/15/2010	Barrier Rating:	22.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3658
Brief Workorder:	Raise 125-ft of barrier up to 24-in design height and replace 6 posts.				
Workorder:	Replace Post at \$100- per -Each for 6 Post(s) = \$600. Replace 6 rotted posts. Adjust Guardrail at \$10- per -Lin. Ft. for 125 LF = \$1250. Raise 125-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_5.101_L_1.JPG

Barrier ID:	GRSM-0019-5.187-R				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/15/2010	Barrier Rating:	30.80		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	26		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	91.3
Height (In.):	17.0	Lateral Offset (In.):	163.3	Road Grade (%):	5.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 6-8 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-5.187-R		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/15/2010	Barrier Rating:	30.80

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$1821
Brief Workorder:	Raise 26-ft of barrier up to 24-in design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 26 LF = \$260. Raise 26-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_5.187_R_1.JPG

Barrier ID:	GRSM-0019-5.189-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/15/2010	Barrier Rating:	22.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	11		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	112.0
Height (In.):	16.2	Lateral Offset (In.):	74.0	Road Grade (%):	9.80
Physical Condition					
Barrier	Alignment and Height:	Alignment allows for opening in barrier due to trailhead. Height is 4-11 in below the 24 in design height.			
	Breaking and Cracking:	One end of rail is observed to be cracked.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-5.189-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/15/2010	Barrier Rating:	22.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2046
Brief Workorder:	Replace 10 feet of rail and raise 11-ft of barrier up to 24-in design height.				
Workorder:	Replace Rail at \$25- per -Lin. Ft. for 11 LF = \$275. Replace one rail Adjust Guardrail at \$10- per -Lin. Ft. for 11 LF = \$110. Raise 11-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_5.189_L_1.JPG

Barrier ID:	GRSM-0019-5.275-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/15/2010	Barrier Rating:	48.00		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	273		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	121.0
Height (In.):	19.0	Lateral Offset (In.):	98.5	Road Grade (%):	10.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 2-8 in below the 24 in design height.			
	Breaking and Cracking:	14 posts observed as rotten and hollow.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	14 posts have a minimum of 1/2 in wide holes due to weathering.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-5.275-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/15/2010	Barrier Rating:	48.00

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$34551
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 1 Steel-backed timber flared end treatment and 1 Steel-backed timber transition.				
Workorder:	<p>Remove Guardrail at \$10- per -Lin. Ft. for 273 LF = \$2730. Remove 273 linear feet of barrier.</p> <p>Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 213 LF = \$12780. Install 213 linear feet of Steel-backed Timber with Blockout.</p> <p>Steel-backed timber / Log Flared at \$5000- per -Each for 1 Unit(s) = \$5000. Install Steel-backed timber/Log flared at ending end.</p> <p>Concrete - Steel-Backed Timber at \$5000- per -Each for 1 Unit(s) = \$5000. Rigid Steel-backed timber to Steel-backed timber - transitions to a bridge at beginning end.</p> <p>Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 2 days removal 2 days installation.</p>				

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_5.275_L_1.JPG

Barrier ID:	GRSM-0019-5.289-R				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/15/2010	Barrier Rating:	23.70		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	153		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	118.3
Height (In.):	15.0	Lateral Offset (In.):	76.0	Road Grade (%):	8.60
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 8-10 in below the 24 in design height.			
	Breaking and Cracking:	No breaking minor cracking observed 1/4 to 1/2 in wide			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Corrosion and weathering observed on all posts and rails 7 posts observed as rotten and hollow.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-5.289-R		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/15/2010	Barrier Rating:	23.70

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$22066
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber buried end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 153 LF = \$1530. Remove existing barrier. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 93 LF = \$5580. Steel-backed timber / Log Buried at \$5000- per -Each for 2 Unit(s) = \$10000. Install 2 Steel-backed timber end treatments. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.				

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_5.289_R_1.JPG

Barrier ID:	GRSM-0019-5.347-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/15/2010	Barrier Rating:	42.50		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	965		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	121.0
Height (In.):	21.7	Lateral Offset (In.):	70.1	Road Grade (%):	4.90
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1-3 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	14 posts observed as rotten and hollow. Some corrosion and weathering observed on all posts and rails.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-5.347-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/15/2010	Barrier Rating:	42.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$13778
Brief Workorder:	Raise 965-ft of barrier up to 24-in design height and replace 14 posts.				
Workorder:	Replace Post at \$100- per -Each for 14 Post(s) = \$1400. Replace 14 posts Low Speed Traffic Control at \$1475- per -Day for 5 Day(s) = \$7375. Adjust Guardrail at \$10- per -Lin. Ft. for 965 LF = \$9650. Raise 965-ft of barrier up to 24-in design height.				

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_5.347_L_1.JPG

Barrier ID:	GRSM-0019-5.377-R				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/15/2010	Barrier Rating:	21.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	214		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	25.0	Lateral Offset (In.):	86.5	Road Grade (%):	9.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height ranges from 1 in below to 4 in above the 24 in design height.			
	Breaking and Cracking:	No breaking minor cracking observed 1/4 to 1/2 in wide.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Corrosion and weathering observed on all posts and rails 9 posts observed as rotten and hollow.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-5.377-R		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/15/2010	Barrier Rating:	21.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2612
Brief Workorder:	Replace 9 posts.				
Workorder:	Replace Post at \$100- per -Each for 9 Post(s) = \$900. Replace 9 posts observed as rotten and hollow. 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_5.377_R_1.JPG

Barrier ID:	GRSM-0019-5.478-R				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/15/2010	Barrier Rating:	27.80		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	150		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	118.3
Height (In.):	26.0	Lateral Offset (In.):	78.6	Road Grade (%):	6.50
Physical Condition					
Barrier	Alignment and Height:	Barrier observed as 6 in or less off alignment for 20 ft. Height is 0-4 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	4 posts observed as rotten and hollow. Some corrosion and weathering observed on all posts and rails.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-5.478-R		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/15/2010	Barrier Rating:	27.80

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2062
Brief Workorder:	Replace 4 posts				
Workorder:	Replace Post at \$100- per -Each for 4 Post(s) = \$400. 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_5.478_R_1.JPG

Barrier ID:	GRSM-0019-5.568-L				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/15/2010	Barrier Rating:	46.90		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	1447		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.4
Height (In.):	23.3	Lateral Offset (In.):	97.0	Road Grade (%):	5.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height ranges from 6 in below to 1 in above the 24 in design height with 800 ft being 1-6 in below.			
	Breaking and Cracking:	2 rails observed as cracked and broken			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	35 posts observed as rotten and hollow. Some corrosion and weathered on all posts and rails.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-5.568-L		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/15/2010	Barrier Rating:	46.90

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$22935
Brief Workorder:	Raise 800-ft of barrier up to 24-in design height and replace 35 posts and 20 feet of rail.				
Workorder:	Replace Post at \$100- per -Each for 35 Post(s) = \$3500. Replace Rail at \$25- per -Lin. Ft. for 20 LF = \$500. Adjust Guardrail at \$10- per -Lin. Ft. for 800 LF = \$8000. Raise 800-ft of barrier up to 24-in design height. Low Speed Traffic Control at \$1475- per -Day for 6 Day(s) = \$8850.				

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

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_5.568_L_1.JPG

Barrier ID:	GRSM-0019-5.571-R				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/15/2010	Barrier Rating:	25.30		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	190		
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:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	OTHER: TIMBER BURIED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	118.0
Height (In.):	24.0	Lateral Offset (In.):	78.0	Road Grade (%):	6.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height ranges from 1 in below to 2 in above the 24 in design height.			
	Breaking and Cracking:	No breaking but minor cracking observed with 1/4 to 1/2 in wide cracks.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Corrosion and weathering observed on all posts and rail 3 posts observed as rotten and hollow.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-5.571-R		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/15/2010	Barrier Rating:	25.30

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$1952
Brief Workorder:	Replace 3 posts.				
Workorder:	Replace Post at \$100- per -Each for 3 Post(s) = \$300. Replace 3 rotten and hollow posts. 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_5.571_R_1.JPG

Barrier ID:	GRSM-0019-5.697-R				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/15/2010	Barrier Rating:	22.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	134		
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 Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.5
Height (In.):	24.2	Lateral Offset (In.):	72.3	Road Grade (%):	2.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-2 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	5 posts observed as rotted and hollow.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-5.697-R		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/15/2010	Barrier Rating:	22.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2833
Brief Workorder:	Raise 60-ft of barrier up to 24-in design height and replace 5 posts.				
Workorder:	Replace Post at \$100- per -Each for 5 Post(s) = \$500. Replace 5 rotted posts. Adjust Guardrail at \$10- per -Lin. Ft. for 60 LF = \$600. Raise 60-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_5.697_R_1.JPG

Barrier ID:	GRSM-0019-5.793-R				
Route Name:	LAKEVIEW DRIVE EAST				
Inspection Date:	09/15/2010	Barrier Rating:	25.10		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
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:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.3
Height (In.):	25.0	Lateral Offset (In.):	86.3	Road Grade (%):	6.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 in above the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	All posts and rail observed as weathered. 1 post is rotten.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0019-5.793-R		
Route Name:	LAKEVIEW DRIVE EAST		
Inspection Date:	09/15/2010	Barrier Rating:	25.10

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$1732
Brief Workorder:	Replace 1 post.				
Workorder:	Replace Post at \$100- per -Each for 1 Post(s) = \$100. Replace 1 rotted post. 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.

Great Smoky Mountains National Park

ROUTE 0019: LAKEVIEW DRIVE EAST

Barrier Condition Photos



GRSM_0019_5.793_R_1.JPG

Barrier ID:	GRSM-0022-0.009-R				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	29.50		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	305		
Speed Limit (MPH):	25	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	124.6
Height (In.):	19.7	Lateral Offset (In.):	95.0	Road Grade (%):	4.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 4-5 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	5 posts have rotting due to corrosion.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-0.009-R		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	29.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$5528
Brief Workorder:	Raise 305-ft of barrier up to 24-in design height and replace 5 posts.				
Workorder:	Replace Post at \$100- per -Each for 5 Post(s) = \$500. Adjust Guardrail at \$10- per -Lin. Ft. for 305 LF = \$3050. Raise 305-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_0.009_R_1.JPG

Barrier ID:	GRSM-0022-0.136-R				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	21.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	120		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE 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:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	123.0
Height (In.):	20.0	Lateral Offset (In.):	63.2	Road Grade (%):	2.90
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 3-5 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	12 posts have corrosion and weathering.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-0.136-R		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	21.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$5885
Brief Workorder:	Raise 120-ft of barrier up to 24-in design height and replace 12 posts.				
Workorder:	Replace Post at \$100- per -Each for 12 Post(s) = \$1200. Replace 12 rotten posts. Adjust Guardrail at \$10- per -Lin. Ft. for 120 LF = \$1200. Raise 120-ft of barrier up to 24-in 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.

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_0.136_R_1.JPG

Barrier ID:	GRSM-0022-0.234-R				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	25.60		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	137		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE 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:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	117.5
Height (In.):	23.2	Lateral Offset (In.):	91.3	Road Grade (%):	4.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height ranges from 3 in below to 2 in above the 24 in design height with 75 ft being 1-3 ins below.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Corrosion and weathering observed on 4 wooden posts.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-0.234-R		
Route Name:	CATALOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	25.60

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2888
Brief Workorder:	Raise 75-ft of barrier up to 24-in design height and replace 4 posts.				
Workorder:	Replace Post at \$100- per -Each for 4 Post(s) = \$400. Adjust Guardrail at \$10- per -Lin. Ft. for 75 LF = \$750. Raise 75-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_0.234_R_1.JPG

Barrier ID:	GRSM-0022-0.303-R				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	28.10		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	98		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	117.0
Height (In.):	22.0	Lateral Offset (In.):	120.6	Road Grade (%):	3.90
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height ranges from 4 in below to 1 in above the 24 in design height with 75 ft being 1-4 in below.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	7 out of 11 posts are rotten due to corrosion.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-0.303-R		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	28.10

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$5093
Brief Workorder:	Raise 98-ft of barrier up to 24-in design height and replace 7 posts.				
Workorder:	Replace Post at \$100- per -Each for 7 Post(s) = \$700. Replace 7 rotten posts. Adjust Guardrail at \$10- per -Lin. Ft. for 98 LF = \$980. Raise 98-ft of barrier up to 24-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.

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_0.303_R_1.JPG

Barrier ID:	GRSM-0022-0.565-R				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	42.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	730		
Speed Limit (MPH):	25	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	115.3
Height (In.):	21.2	Lateral Offset (In.):	60.0	Road Grade (%):	6.50
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 2-4 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	59 posts have corrosion. Rails are weathered throughout.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-0.565-R		
Route Name:	CATALOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	42.20

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$72985
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber buried end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 730 LF = \$7300. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 670 LF = \$40200. Steel-backed timber / Log Buried at \$5000- per -Each for 2 Unit(s) = \$10000. Low Speed Traffic Control at \$1475- per -Day for 6 Day(s) = \$8850. 3 days removal 3 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_0.565_R_1.JPG

Barrier ID:	GRSM-0022-0.572-L				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	35.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	442		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.0
Height (In.):	19.7	Lateral Offset (In.):	83.6	Road Grade (%):	6.60
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 4-5 in below the 24 in design height.			
	Breaking and Cracking:	10 ft of rail is broken due to fallen tree.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	39 posts are rotten due to corrosion.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-0.572-L		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	35.20

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$47564
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 442 LF = \$4420. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 382 LF = \$22920. Steel-backed timber / Log Flared at \$5000- per -Each for 1 Unit(s) = \$5000. Steel-backed timber / Log Buried at \$5000- per -Each for 1 Unit(s) = \$5000. Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 2 days removal 2 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_0.572_L_1.JPG

Barrier ID:	GRSM-0022-0.867-R				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	40.70		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	773		
Speed Limit (MPH):	25	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	118.3
Height (In.):	17.2	Lateral Offset (In.):	59.5	Road Grade (%):	5.70
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 4 to 8 in below the 24 in design height.			
	Breaking and Cracking:	No breaking some cracking observed with ¼ to ½ in wide cracks.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	54 posts have extreme weathering and corrosion.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-0.867-R		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	40.70

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$79541
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber flared end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 773 LF = \$7730. Remove old timber rail. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 713 LF = \$42780. Install new barrier. Steel-backed timber / Log Flared at \$5000- per -Each for 2 Unit(s) = \$10000. Install new end treatments. Low Speed Traffic Control at \$1475- per -Day for 8 Day(s) = \$11800. 4 days removal 4 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_0.867_R_1.JPG

Barrier ID:	GRSM-0022-0.970-L				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	21.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	166		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE 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:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	118.3
Height (In.):	17.0	Lateral Offset (In.):	50.2	Road Grade (%):	6.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and height is 7 in below the design height of 24 in.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	19 posts observed as rotten and hollow weathering on all rails and post.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-0.970-L		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	21.20

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$23067
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts along with 2 Steel-backed timber buried end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 166 LF = \$1660. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 106 LF = \$6360. Steel-backed timber / Log Buried at \$5000- per -Each for 2 Unit(s) = \$10000. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_0.970_L_1.JPG

Barrier ID:	GRSM-0022-1.013-R				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	39.50		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	689		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	117.8
Height (In.):	19.2	Lateral Offset (In.):	56.5	Road Grade (%):	5.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 2-5 in below the 24 in design height.			
	Breaking and Cracking:	No breaking minor cracking observed. ¼ to ½ in wide.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate corrosion and weathering observed on all posts and rails. 56 posts are rotten and hollow.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-1.013-R		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	39.50

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$69828
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber flared end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 689 LF = \$6890. Remove old timber rail. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 629 LF = \$37740. Install new barrier. Steel-backed timber / Log Flared at \$5000- per -Each for 2 Unit(s) = \$10000. Install new end treatments. Low Speed Traffic Control at \$1475- per -Day for 6 Day(s) = \$8850. 3 days removal 3 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_1.013_R_1.JPG

Barrier ID:	GRSM-0022-1.194-L				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	36.50		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	310		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.0
Height (In.):	20.7	Lateral Offset (In.):	5.8	Road Grade (%):	7.20
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 2-4 in below the 24 in design height.			
	Breaking and Cracking:	No breaking some cracking observed. ¼ to ½ in wide.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	22 posts have extreme weathering and corrosion.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-1.194-L		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	36.50

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$37400
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber buried end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 310 LF = \$3100. Remove old timber rail. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 250 LF = \$15000. Install new barrier. Steel-backed timber / Log Buried at \$5000- per -Each for 2 Unit(s) = \$10000. Install new end treatments. Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 2 days removal 2 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_1.194_L_1.JPG

Barrier ID:	GRSM-0022-1.288-L				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	23.70		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	157		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	117.3
Height (In.):	19.0	Lateral Offset (In.):	55.0	Road Grade (%):	6.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 3-6 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	13 posts observed as rotten and hollow some corrosion and weathering on all posts and rails observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-1.288-L		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	23.70

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$23694
Brief Workorder:	Remove and replace the existing timber guardrail with Steel-backed timber without blockout and two buried Steel-backed timber end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 157 LF = \$1570. Remove existing guardrail. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 117 LF = \$7020. Add 20 feet to end in order to bury end treatment. Steel-backed timber / Log Buried at \$5000- per -Each for 2 Unit(s) = \$10000. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_1.288_L_1.JPG

Barrier ID:	GRSM-0022-1.441-R				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	39.50		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	251		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	118.0
Height (In.):	15.3	Lateral Offset (In.):	54.5	Road Grade (%):	6.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 8-10 in below the 24 in design height.			
	Breaking and Cracking:	No breaking some cracking observed. ¼ to ½ in wide.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate corrosion and weathering observed on all posts and rails. 23 posts are rotten and hollow on top.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-1.441-R		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	39.50

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$29612
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber flared end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 251 LF = \$2510. Remove old timber rail. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 191 LF = \$11460. Install new barrier. Steel-backed timber / Log Flared at \$5000- per -Each for 2 Unit(s) = \$10000. Install new end treatments. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_1.441_R_1.JPG

Barrier ID:	GRSM-0022-1.519-R				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	32.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	248		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	117.0
Height (In.):	17.2	Lateral Offset (In.):	66.6	Road Grade (%):	5.80
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 3-10 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	23 posts are rotten due to corrosion.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-1.519-R		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	32.20

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$29381
Brief Workorder:	Remove and replace the existing timber guardrail with Steel-backed timber without blockout and 2 Steel-backed timber end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 248 LF = \$2480. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 188 LF = \$11280. Steel-backed timber / Log Flared at \$5000- per -Each for 1 Unit(s) = \$5000. Steel-backed timber / Log Buried at \$5000- per -Each for 1 Unit(s) = \$5000. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_1.519_R_1.JPG

Barrier ID:	GRSM-0022-1.612-R				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	44.00		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	649		
Speed Limit (MPH):	25	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	118.5
Height (In.):	15.6	Lateral Offset (In.):	64.0	Road Grade (%):	7.00
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 8-9 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	1 rail corroded with over 1 in gaps. 47 posts are rotten due to corrosion			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-1.612-R		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	44.00

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$66748
Brief Workorder:	Remove and replace the existing timber guardrail with Steel-backed timber without blockout and 2 Steel-backed timber end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 649 LF = \$6490. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 589 LF = \$35340. Steel-backed timber / Log Flared at \$5000- per -Each for 2 Unit(s) = \$10000. Low Speed Traffic Control at \$1475- per -Day for 6 Day(s) = \$8850. 3 days removal 3 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_1.612_R_1.JPG

Barrier ID:	GRSM-0022-1.685-L				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	21.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	224		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE 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:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	118.6
Height (In.):	17.0	Lateral Offset (In.):	64.3	Road Grade (%):	7.40
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 5-10 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Approach end heavily weathered and 22 posts are rotten due to corrosion.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-1.685-L		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	21.20

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$27533
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 224 LF = \$2240. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 164 LF = \$9840. Steel-backed timber / Log Flared at \$5000- per -Each for 1 Unit(s) = \$5000. Steel-backed timber / Log Buried at \$5000- per -Each for 1 Unit(s) = \$5000. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_1.685_L_1.JPG

Barrier ID:	GRSM-0022-1.763-R				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	41.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	502		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	117.0
Height (In.):	15.0	Lateral Offset (In.):	63.7	Road Grade (%):	5.50
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 8-10 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	35 posts and rails are rotten due to corrosion.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-1.763-R		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	41.20

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$52184
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 502 LF = \$5020. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 442 LF = \$26520. Steel-backed timber / Log Flared at \$5000- per -Each for 2 Unit(s) = \$10000. Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 2 days removal 2 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_1.763_R_1.JPG

Barrier ID:	GRSM-0022-1.895-R				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	40.00		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	237		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	EXTREME				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	118.3
Height (In.):	16.0	Lateral Offset (In.):	80.3	Road Grade (%):	6.50
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 6-8 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	35 posts and rails are severely corroded and weathered.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-1.895-R		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	40.00

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$28534
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber flared end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 237 LF = \$2370. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 177 LF = \$10620. Steel-backed timber / Log Flared at \$5000- per -Each for 2 Unit(s) = \$10000. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_1.895_R_1.JPG

Barrier ID:	GRSM-0022-2.016-L				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	33.70		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	406		
Speed Limit (MPH):	25	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	116.3
Height (In.):	19.7	Lateral Offset (In.):	53.2	Road Grade (%):	5.90
Physical Condition					
Barrier	Alignment and Height:	Alignment has no deviation and the height is 4-6 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	36 posts and rails have corrosion and weathering.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-2.016-L		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	33.70

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$44792
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber buried end terminals.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 406 LF = \$4060. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 346 LF = \$20760. Steel-backed timber / Log Buried at \$5000- per -Each for 2 Unit(s) = \$10000. Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 2 days removal 2 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_2.016_L_1.JPG

Barrier ID:	GRSM-0022-2.106-R				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	32.40		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	165		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	118.6
Height (In.):	20.0	Lateral Offset (In.):	65.0	Road Grade (%):	8.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 3-5 in below the 24 in design height.			
	Breaking and Cracking:	No breaking and minor cracking observed with ¼ to ½ in wide cracks.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	16 rotten posts and rails have severe corrosion and weathering.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-2.106-R		
Route Name:	CATALOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	32.40

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$22990
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber flared end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 165 LF = \$1650. Remove old timber rail. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 105 LF = \$6300. Install new barrier. Steel-backed timber / Log Flared at \$5000- per -Each for 2 Unit(s) = \$10000. Install new end treatments. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_2.106_R_1.JPG

Barrier ID:	GRSM-0022-2.190-L				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	23.70		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	79		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	117.5
Height (In.):	17.2	Lateral Offset (In.):	59.5	Road Grade (%):	6.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 6-8 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	All 8 posts are rotted and hollow some corrosion and weathering on all rails.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-2.190-L		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	23.70

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$16368
Brief Workorder:	Remove and replace entire timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber end treatments.				
Workorder:	Steel-backed timber / Log Buried at \$5000- per -Each for 1 Unit(s) = \$5000. Steel-backed timber / Log Flared at \$5000- per -Each for 1 Unit(s) = \$5000. Remove Guardrail at \$10- per -Lin. Ft. for 79 LF = \$790. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 19 LF = \$1140. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_2.190_L_1.JPG

Barrier ID:	GRSM-0022-2.223-R				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	32.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	238		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	118.5
Height (In.):	18.2	Lateral Offset (In.):	58.0	Road Grade (%):	5.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 5-7 in below the 24 in design height.			
	Breaking and Cracking:	No breaking minor cracking observed. ¼ to ½ in wide.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate corrosion and weathering of all posts and rails observed. 19 posts are rotten and hollow on top.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-2.223-R		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	32.20

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$28611
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber flared end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 238 LF = \$2380. Remove old timber rail. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 178 LF = \$10680. Install new barrier. Steel-backed timber / Log Flared at \$5000- per -Each for 2 Unit(s) = \$10000. Install new end treatments. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_2.223_R_1.JPG

Barrier ID:	GRSM-0022-2.303-R				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	49.50		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	1327		
Speed Limit (MPH):	25	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	118.0
Height (In.):	19.7	Lateral Offset (In.):	52.4	Road Grade (%):	6.60
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 2-5 in below the 24 in design height.			
	Breaking and Cracking:	10 ft of broken rail some cracking observed with ¼ to ½ in wide cracks.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	111 timber posts have severe weathering and corrosion.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-2.303-R		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	49.50

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$128689
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 1327 LF = \$13270. Remove old timber rail. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 1267 LF = \$76020. Install new barrier. Steel-backed timber / Log Buried at \$5000- per -Each for 1 Unit(s) = \$5000. Install new end treatment. Steel-backed timber / Log Flared at \$5000- per -Each for 1 Unit(s) = \$5000. Install new end treatment. Low Speed Traffic Control at \$1475- per -Day for 12 Day(s) = \$17700. 6 days removal 6 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_2.303_R_1.JPG

Barrier ID:	GRSM-0022-2.347-L				
Route Name:	CATALOOCHIE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	23.70		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	189		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.0
Height (In.):	16.0	Lateral Offset (In.):	58.0	Road Grade (%):	5.00
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 8 in below the 24 in design height.			
	Breaking and Cracking:	No breaking some cracking observed with ¼ to ½ in wide cracks.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate corrosion and weathering observed on all posts and rails. 17 posts rotten and hollow on top.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-2.347-L		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	23.70

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$24838
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber flared end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 189 LF = \$1890. Remove old timber rail. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 129 LF = \$7740. Install new barrier. Steel-backed timber / Log Flared at \$5000- per -Each for 2 Unit(s) = \$10000. Install new end treatments. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_2.347_L_1.JPG

Barrier ID:	GRSM-0022-2.409-L				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	35.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	262		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	117.6
Height (In.):	17.0	Lateral Offset (In.):	54.2	Road Grade (%):	6.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 5-9 in below the 24 in design height.			
	Breaking and Cracking:	No breaking some cracking observed with ¼ to ½ in wide cracks.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate corrosion and weathering on all posts and rails observed. 26 posts rotten and hollow on top.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-2.409-L		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	35.20

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$33704
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber flared end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 262 LF = \$2620. Remove old timber rail. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 202 LF = \$12120. Install new barrier. Steel-backed timber / Log Flared at \$5000- per -Each for 2 Unit(s) = \$10000. Install new end treatments. Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 2 days removal 2 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_2.409_L_1.JPG

Barrier ID:	GRSM-0022-2.740-R				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	22.30		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	153		
Speed Limit (MPH):	25	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	118.5
Height (In.):	19.0	Lateral Offset (In.):	65.0	Road Grade (%):	3.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 5 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	15 posts observed as rotten and hollow weathering on all rails.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-2.740-R		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	22.30

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$22066
Brief Workorder:	Remove and replace the existing timber guardrail with Steel-backed timber without blockout and 1 Steel-backed timber flared end terminal and 1 Steel-backed timber transition.				
Workorder:	Steel-backed timber / Log Flared at \$5000- per -Each for 1 Unit(s) = \$5000. Concrete - Steel-Backed Timber at \$5000- per -Each for 1 Unit(s) = \$5000. Remove Guardrail at \$10- per -Lin. Ft. for 153 LF = \$1530. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 93 LF = \$5580. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_2.740_R_1.JPG

Barrier ID:	GRSM-0022-2.751-L				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	25.60		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	130		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE 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:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	118.0
Height (In.):	18.2	Lateral Offset (In.):	63.0	Road Grade (%):	4.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 5-7 in below the 24 in design height.			
	Breaking and Cracking:	No breaking was observed. Slight cracking from ¼ to ½ in wide cracks observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	13 posts have severe corrosion and weathering.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-2.751-L		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	25.60

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$20295
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 1 Steel-backed timber end treatment and 1 Steel-backed timber transition.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 130 LF = \$1300. Remove old timber rail. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 70 LF = \$4200. Install new barrier. Steel-backed timber / Log Buried at \$5000- per -Each for 1 Unit(s) = \$5000. Install new end treatment. Concrete - Steel-Backed Timber at \$5000- per -Each for 1 Unit(s) = \$5000. Install new transition treatment. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_2.751_L_1.JPG

Barrier ID:	GRSM-0022-2.812-R				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	12.60		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	174		
Speed Limit (MPH):	25	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	LOW				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	111.6
Height (In.):	18.7	Lateral Offset (In.):	82.3	Road Grade (%):	2.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 4-6 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	14 posts are rotten due to corrosion.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-2.812-R		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	12.60

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$23683
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 1 Steel-backed timber flared end treatment and 1 Steel-backed timber transition.				
Workorder:	Concrete - Steel-Backed Timber at \$5000- per -Each for 1 Unit(s) = \$5000. Steel-backed timber / Log Flared at \$5000- per -Each for 1 Unit(s) = \$5000. Remove Guardrail at \$10- per -Lin. Ft. for 174 LF = \$1740. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 114 LF = \$6840. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_2.812_R_1.JPG

Barrier ID:	GRSM-0022-2.818-L				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	12.60		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	100		
Speed Limit (MPH):	25	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	LOW				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	118.3
Height (In.):	18.7	Lateral Offset (In.):	71.6	Road Grade (%):	1.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 4-6 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	11 posts are rotten due to corrosion.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-2.818-L		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	12.60

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$17985
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 1 Steel-backed timber flared end treatment and 1 Steel-backed timber transition.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 100 LF = \$1000. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 40 LF = \$2400. Concrete - Steel-Backed Timber at \$5000- per -Each for 1 Unit(s) = \$5000. Steel-backed timber / Log Flared at \$5000- per -Each for 1 Unit(s) = \$5000. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_2.818_L_1.JPG

Barrier ID:	GRSM-0022-3.114-L				
Route Name:	CATALOOCHEE ENTRANCE ROAD				
Inspection Date:	09/27/2010	Barrier Rating:	31.20		
Barrier Description					
Type:	OTHER: TIMBER RAIL ON TIMBER POSTS	Barrier Function:	TRAFFIC		
Barrier Material:	LOG/TIMBER/WOOD	Post Material:	WOOD		
Blockout Type:	N/A	Length (ft.):	275		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE 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:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	0.0	Post Spacing (In.):	119.0
Height (In.):	19.0	Lateral Offset (In.):	34.2	Road Grade (%):	0.70
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 5 in below the 24 in design height.			
	Breaking and Cracking:	No breaking some cracking observed with ¼ to ½ in wide cracks.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate corrosion and weathering observed on all posts and rails. 23 posts rotten and hollow on top.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0022-3.114-L		
Route Name:	CATALOOCHEE ENTRANCE ROAD		
Inspection Date:	09/27/2010	Barrier Rating:	31.20

Repair Recommendations

Repair Action:	REPLACE	FMSS Work Type:	CAPITAL IMPROVEMENT	Repair Cost:	\$34705
Brief Workorder:	Remove and replace existing timber guardrail with Steel-backed timber without blockouts and 2 Steel-backed timber flared end treatments.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 275 LF = \$2750. Remove old timber rail. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 215 LF = \$12900. Install new barrier. Steel-backed timber / Log Flared at \$5000- per -Each for 2 Unit(s) = \$10000. Install new end treatments. Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 2 days removal 2 days installation.				

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

Great Smoky Mountains National Park

ROUTE 0022: CATALOCHEE ENTRANCE ROAD

Barrier Condition Photos



GRSM_0022_3.114_L_1.JPG

Barrier ID:	GRSM-0101-0.084-R				
Route Name:	TOW STRING ROAD				
Inspection Date:	09/23/2010	Barrier Rating:	19.50		
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.):	40		
Speed Limit (MPH):	25	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 Crashworthy?:	NO	Approach Transition Type:	RIGID SBT WALL - SBT
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	80.5
Height (In.):	23.2	Lateral Offset (In.):	33.5	Road Grade (%):	1.50
Physical Condition					
Barrier	Alignment and Height:	While the Steel-backed timber on the bridge is part of the Bridge Inventory Program (BIP) it was noted that the barrier's height was more than 1 in below the 27 in design height.			
	Breaking and Cracking:	Transition and end treatment only.			
	Missing Elements:	Transition and end treatment only.			
	Corrosion and Weathering:	Transition and end treatment only.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is 1-5 in below the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0101-0.084-R		
Route Name:	TOW STRING ROAD		
Inspection Date:	09/23/2010	Barrier Rating:	19.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$3724
Brief Workorder:	Raise 191 feet of barrier up to the 24 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 191 LF = \$1910. Raise 191 feet of barrier up to the 24 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.

Great Smoky Mountains National Park

ROUTE 0101: TOW STRING ROAD

Barrier Condition Photos



GRSM_0101_0.084_R_1.JPG

Barrier ID:	GRSM-0101-0.085-L				
Route Name:	TOW STRING ROAD				
Inspection Date:	09/23/2010	Barrier Rating:	25.20		
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.):	40		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE 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 Crashworthy?:	NO	Approach Transition Type:	RIGID SBT WALL - SBT
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	80.6
Height (In.):	23.7	Lateral Offset (In.):	33.7	Road Grade (%):	2.50
Physical Condition					
Barrier	Alignment and Height:	While the Steel-backed timber on the bridge is part of the Bridge Inventory Program (BIP) it was noted that the barrier's height was more than 1 in below the 27 in design height.			
	Breaking and Cracking:	Transition and end treatment only.			
	Missing Elements:	Transition and end treatment only.			
	Corrosion and Weathering:	Transition and end treatment only.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is 1-6 in below the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0101-0.085-L		
Route Name:	TOW STRING ROAD		
Inspection Date:	09/23/2010	Barrier Rating:	25.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$1397
Brief Workorder:	Raise 127 feet of barrier up to the 24 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 127 LF = \$1270. Raise 127 feet of barrier up to the 24 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.

Great Smoky Mountains National Park

ROUTE 0101: TOW STRING ROAD

Barrier Condition Photos



GRSM_0101_0.085_L_1.JPG

Barrier ID:	GRSM-0101-0.106-L				
Route Name:	TOW STRING ROAD				
Inspection Date:	09/23/2010	Barrier Rating:	30.70		
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.):	42		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE 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:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	RIGID SBT WALL - SBT
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	80.0
Height (In.):	22.7	Lateral Offset (In.):	111.3	Road Grade (%):	1.00
Physical Condition					
Barrier	Alignment and Height:	Transition and end treatment only.			
	Breaking and Cracking:	Transition and end treatment only.			
	Missing Elements:	Transition and end treatment only.			
	Corrosion and Weathering:	Transition and end treatment only.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is 1 to 8 in below the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0101-0.106-L				
Route Name:	TOW STRING ROAD				
Inspection Date:	09/23/2010	Barrier Rating:		30.70	
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.

Great Smoky Mountains National Park

ROUTE 0101: TOW STRING ROAD

Barrier Condition Photos



GRSM_0101_0.106_L_1.JPG

Barrier ID:	GRSM-0101-0.106-R				
Route Name:	TOW STRING ROAD				
Inspection Date:	09/23/2010	Barrier Rating:	32.40		
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.):	54		
Speed Limit (MPH):	25	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:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	RIGID SBT WALL - SBT
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	54.7
Height (In.):	22.2	Lateral Offset (In.):	29.2	Road Grade (%):	3.00
Physical Condition					
Barrier	Alignment and Height:	Transition and end treatment only.			
	Breaking and Cracking:	Transition and end treatment only.			
	Missing Elements:	Transition and end treatment only.			
	Corrosion and Weathering:	Transition and end treatment only.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is 2-8 in below the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0101-0.106-R		
Route Name:	TOW STRING ROAD		
Inspection Date:	09/23/2010	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.

Great Smoky Mountains National Park

ROUTE 0101: TOW STRING ROAD

Barrier Condition Photos



GRSM_0101_0.106_R_1.JPG

Barrier ID:	GRSM-0128-0.009-L				
Route Name:	TREMONT ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	24.10		
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.):	8		
Speed Limit (MPH):	25	Placement with Respect to Road:	INSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	28.0	Post Spacing (In.):	0.0
Height (In.):	22.2	Lateral Offset (In.):	69.6	Road Grade (%):	0.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 3-6 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0128-0.009-L				
Route Name:	TREMONT ROAD				
Inspection Date:	09/10/2010	Barrier Rating:		24.10	
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.

Great Smoky Mountains National Park

ROUTE 0128: TREMONT ROAD

Barrier Condition Photos



GRSM_0128_0.009_L_1.JPG

Barrier ID:	GRSM-0160-0.013-R				
Route Name:	HUSKEY GROVE ROAD				
Inspection Date:	09/10/2010	Barrier Rating:	31.20		
Barrier Description					
Type:	STEEL-BACKED TIMBER WITH BLOCKOUT	Barrier Function:	TRAFFIC		
Barrier Material:	STEEL-BACKED TIMBER/LOG	Post Material:	WOOD		
Blockout Type:	WOOD	Length (ft.):	102		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	HIGH				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	TL-3	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	24.2	Lateral Offset (In.):	40.0	Road Grade (%):	3.40
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment & height is 1 to 3 in below the 27 in design height for 70 ft.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0160-0.013-R		
Route Name:	HUSKEY GROVE ROAD		
Inspection Date:	09/10/2010	Barrier Rating:	31.20

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$2392
Brief Workorder:	Raise 70 feet of guardrail up to the 27 inch design height.				
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 70 LF = \$700. Raise 70 feet of guardrail up to the 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.

Great Smoky Mountains National Park

ROUTE 0160: HUSKEY GROVE ROAD

Barrier Condition Photos



GRSM_0160_0.013_R_1.JPG

Barrier ID:	GRSM-0163AZ-0.099-L				
Route Name:	CAMPBELL LEAD ROAD				
Inspection Date:	09/11/2010	Barrier Rating:	32.20		
Barrier Description					
Type:	W-BEAM STRONG POST	Barrier Function:	TRAFFIC		
Barrier Material:	GALVANIZED STEEL	Post Material:	GALVANIZED STEEL		
Blockout Type:	PLASTIC	Length (ft.):	430		
Speed Limit (MPH):	25	Placement with Respect to Road:	BOTH INSIDE AND OUTSIDE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	TL-3	Is Barrier Crashworthy?:	YES
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	74.6
Height (In.):	27.0	Lateral Offset (In.):	38.0	Road Grade (%):	14.70
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is within 1 in of the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0163AZ-0.099-L		
Route Name:	CAMPBELL LEAD ROAD		
Inspection Date:	09/11/2010	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.

Great Smoky Mountains National Park

ROUTE 0163AZ: CAMPBELL LEAD ROAD

Barrier Condition Photos

Condition photos are not available for GRSM-0163AZ-0.099-L.

Barrier ID:	GRSM-0221-0.008-L				
Route Name:	LOOK ROCK MAINTENANCE ACCESS				
Inspection Date:	09/24/2010	Barrier Rating:	20.70		
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.):	185		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE 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 Crashworthy?:	NO	Approach Transition Type:	NONE
Ending End Trtmt Type:	SBT/LOG FLARED	Ending End Trtmt Crashworthy?:	NO		
Average Measurements					
Design Height (In.):	27	Width (In.):	0.0	Post Spacing (In.):	120.0
Height (In.):	26.7	Lateral Offset (In.):	46.0	Road Grade (%):	5.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-1 in below the 27 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:	Alignment acceptable. Height is within 1 in of the 27-in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			

Barrier ID:	GRSM-0221-0.008-L		
Route Name:	LOOK ROCK MAINTENANCE ACCESS		
Inspection Date:	09/24/2010	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.

Great Smoky Mountains National Park

ROUTE 0221: LOOK ROCK MAINTENANCE ACCESS

Barrier Condition Photos



GRSM_0221_0.008_L_1.JPG

Barrier ID:	GRSM-0405-0.232-L				
Route Name:	SUGARLANDS HEADQUARTERS ROAD				
Inspection Date:	09/11/2010	Barrier Rating:	25.10		
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.):	28		
Speed Limit (MPH):	25	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	21.2	Post Spacing (In.):	0.0
Height (In.):	21.6	Lateral Offset (In.):	8.0	Road Grade (%):	1.60
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 3 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate weathering of the grout.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0405-0.232-L		
Route Name:	SUGARLANDS HEADQUARTERS ROAD		
Inspection Date:	09/11/2010	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.

Great Smoky Mountains National Park

ROUTE 0405: SUGARLANDS HEADQUARTERS ROAD

Barrier Condition Photos



GRSM_0405_0.232_L_1.JPG

Barrier ID:	GRSM-0405-0.237-R				
Route Name:	SUGARLANDS HEADQUARTERS ROAD				
Inspection Date:	09/11/2010	Barrier Rating:	20.70		
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.):	26		
Speed Limit (MPH):	25	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	22.0	Post Spacing (In.):	0.0
Height (In.):	24.0	Lateral Offset (In.):	8.0	Road Grade (%):	1.70
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate weathering of the grout observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0405-0.237-R		
Route Name:	SUGARLANDS HEADQUARTERS ROAD		
Inspection Date:	09/11/2010	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.

Great Smoky Mountains National Park

ROUTE 0405: SUGARLANDS HEADQUARTERS ROAD

Barrier Condition Photos



GRSM_0405_0.237_R_1.JPG

Barrier ID:	GRSM-0405-0.249-L				
Route Name:	SUGARLANDS HEADQUARTERS ROAD				
Inspection Date:	09/11/2010	Barrier Rating:	25.10		
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.):	32		
Speed Limit (MPH):	25	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	21.2	Post Spacing (In.):	0.0
Height (In.):	21.0	Lateral Offset (In.):	6.0	Road Grade (%):	1.20
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 4 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0405-0.249-L		
Route Name:	SUGARLANDS HEADQUARTERS ROAD		
Inspection Date:	09/11/2010	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.

Great Smoky Mountains National Park

ROUTE 0405: SUGARLANDS HEADQUARTERS ROAD

Barrier Condition Photos



GRSM_0405_0.249_L_1.JPG

Barrier ID:	GRSM-0405-0.254-R				
Route Name:	SUGARLANDS HEADQUARTERS ROAD				
Inspection Date:	09/11/2010	Barrier Rating:	33.70		
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.):	72		
Speed Limit (MPH):	25	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	20.6	Post Spacing (In.):	0.0
Height (In.):	21.2	Lateral Offset (In.):	6.0	Road Grade (%):	2.40
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 3 in below the 24 in design height.			
	Breaking and Cracking:	No breaking or cracking observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Moderate weathering of the barrier and grout observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0405-0.254-R		
Route Name:	SUGARLANDS HEADQUARTERS ROAD		
Inspection Date:	09/11/2010	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.

Great Smoky Mountains National Park

ROUTE 0405: SUGARLANDS HEADQUARTERS ROAD

Barrier Condition Photos



GRSM_0405_0.254_R_1.JPG

Barrier ID:	GRSM-0430-0.051-R				
Route Name:	SUGARLANDS RESIDENCE ROAD				
Inspection Date:	09/11/2010	Barrier Rating:	10.80		
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.):	27		
Speed Limit (MPH):	20	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	23.6	Post Spacing (In.):	0.0
Height (In.):	23.0	Lateral Offset (In.):	51.0	Road Grade (%):	3.40
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is within 1 in of the 24 in design height.			
	Breaking and Cracking:	27 ft of severe breaking and cracking of 1/2 in to 2 in in the grout observed.			
	Missing Elements:	No missing elements observed			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0430-0.051-R		
Route Name:	SUGARLANDS RESIDENCE ROAD		
Inspection Date:	09/11/2010	Barrier Rating:	10.80

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$4394
Brief Workorder:	Repoint 18 sy of stone masonry guardwall.				
Workorder:	Re-Point Stone Masonry Barrier at \$140- per -Sq. Yd. for 18 SY = \$2520. [(1.9ft + 1.9ft + 1.9ft)(27ft) /9 = 17.1 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.

Great Smoky Mountains National Park

ROUTE 0430: SUGARLANDS RESIDENCE ROAD

Barrier Condition Photos



GRSM_0430_0.051_R_1.JPG

Barrier ID:	GRSM-0430-0.052-L				
Route Name:	SUGARLANDS RESIDENCE ROAD				
Inspection Date:	09/11/2010	Barrier Rating:	13.60		
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.):	27		
Speed Limit (MPH):	20	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	23.2	Post Spacing (In.):	0.0
Height (In.):	24.0	Lateral Offset (In.):	30.6	Road Grade (%):	2.80
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is at the 24 in design height.			
	Breaking and Cracking:	27 ft of severe breaking and cracking of 1/2 in to 2 in in the grout observed.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0430-0.052-L		
Route Name:	SUGARLANDS RESIDENCE ROAD		
Inspection Date:	09/11/2010	Barrier Rating:	13.60

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$4394
Brief Workorder:	Repoint 18 sy of stone masonry guardwall.				
Workorder:	Re-Point Stone Masonry Barrier at \$140- per -Sq. Yd. for 18 SY = \$2520. [(2ft + 1.9ft + 2ft)(27ft) /9 = 17.7 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.

Great Smoky Mountains National Park

ROUTE 0430: SUGARLANDS RESIDENCE ROAD

Barrier Condition Photos



GRSM_0430_0.052_L_1.JPG

Barrier ID:	GRSM-0430-0.066-R				
Route Name:	SUGARLANDS RESIDENCE ROAD				
Inspection Date:	09/11/2010	Barrier Rating:	16.80		
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.):	40		
Speed Limit (MPH):	20	Placement with Respect to Road:	OUTSIDE 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:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	20.7	Post Spacing (In.):	0.0
Height (In.):	24.0	Lateral Offset (In.):	77.0	Road Grade (%):	3.30
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is at the 24 in design height.			
	Breaking and Cracking:	Severe breaking and cracking of the grout over 1/2 in observed for entire length of barrier.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	No corrosion or weathering observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0430-0.066-R		
Route Name:	SUGARLANDS RESIDENCE ROAD		
Inspection Date:	09/11/2010	Barrier Rating:	16.80

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$5627
Brief Workorder:	Repoint 26 SY of stone masonry barrier.				
Workorder:	Re-Point Masonry Barrier at \$140- per -Sq. Yd. for 26 = \$3640. [(2ft + 1.7ft + 2ft)(40ft)] /9 = 25.3 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.

Great Smoky Mountains National Park

ROUTE 0430: SUGARLANDS RESIDENCE ROAD

Barrier Condition Photos



GRSM_0430_0.066_R_1.JPG

Barrier ID:	GRSM-0430-0.067-L				
Route Name:	SUGARLANDS RESIDENCE ROAD				
Inspection Date:	09/11/2010	Barrier Rating:	23.70		
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.):	160		
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:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	22.2	Post Spacing (In.):	0.0
Height (In.):	23.2	Lateral Offset (In.):	18.0	Road Grade (%):	4.60
Physical Condition					
Barrier	Alignment and Height:	No deviation in alignment and height is within 3 in of the 24 in design height.			
	Breaking and Cracking:	No broken stones cracks in grout 1/4 to 1/2 in wide observed throughout the entire guardwall.			
	Missing Elements:	No missing stones some missing grout observed.			
	Corrosion and Weathering:	Moderate weathering of the barrier and grout observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0430-0.067-L		
Route Name:	SUGARLANDS RESIDENCE ROAD		
Inspection Date:	09/11/2010	Barrier Rating:	23.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$18645
Brief Workorder:	Repoint 100 SY of stone masonry guardwall.				
Workorder:	Re-Point Masonry Barrier at \$140- per -Sq. Yd. for 100 = \$14000. front/back (1.9 ft x 160 ft x 2 sides) = 608 sf + top (1.8 ft x 160 ft) = 288 sf = 896 sf/9 sf/sy = 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.

Great Smoky Mountains National Park

ROUTE 0430: SUGARLANDS RESIDENCE ROAD

Barrier Condition Photos



GRSM_0430_0.067_L_1.JPG

Barrier ID:	GRSM-0430-0.096-R				
Route Name:	SUGARLANDS RESIDENCE ROAD				
Inspection Date:	09/11/2010	Barrier Rating:	25.10		
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.):	46		
Speed Limit (MPH):	20	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	20.6	Post Spacing (In.):	0.0
Height (In.):	24.2	Lateral Offset (In.):	18.0	Road Grade (%):	6.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-1 in above the 24 in design height.			
	Breaking and Cracking:	No broken stones some cracking of the grout 1/4 to 1/2 in wide observed throughout the entire guardwall.			
	Missing Elements:	No missing stones some missing grout observed.			
	Corrosion and Weathering:	Moderate weathering of the barrier and grout observed.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0430-0.096-R		
Route Name:	SUGARLANDS RESIDENCE ROAD		
Inspection Date:	09/11/2010	Barrier Rating:	25.10

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$7865
Brief Workorder:	Repoint 46 feet of stone masonry guardwall.				
Workorder:	Re-Point Masonry Barrier at \$140- per -Sq. Yd. for 30 = \$4200. [(2ft + 1.7ft + 2ft)(46ft)] /9 = 29.1 SY. 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.

Great Smoky Mountains National Park

ROUTE 0430: SUGARLANDS RESIDENCE ROAD

Barrier Condition Photos



GRSM_0430_0.096_R_1.JPG

Barrier ID:	GRSM-0430-0.189-R				
Route Name:	SUGARLANDS RESIDENCE ROAD				
Inspection Date:	09/11/2010	Barrier Rating:	16.50		
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.):	60		
Speed Limit (MPH):	20	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	18.2	Post Spacing (In.):	0.0
Height (In.):	23.2	Lateral Offset (In.):	12.0	Road Grade (%):	7.60
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-2 in below the 24 in design height.			
	Breaking and Cracking:	No broken stones but there was cracking in the grout between 1/4 and 1/2 in observed throughout the entire length of the guardwall.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Major weathering of grout.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0430-0.189-R		
Route Name:	SUGARLANDS RESIDENCE ROAD		
Inspection Date:	09/11/2010	Barrier Rating:	16.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$10412
Brief Workorder:	Repoint 60 feet of stone masonry guardwall.				
Workorder:	Re-Point Masonry Barrier at \$140- per -Sq. Yd. for 36 = \$5040. $[(1.9ft) + 1.5ft + 1.9ft](60ft) / 9 = 35.3 SY$. 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.

Great Smoky Mountains National Park

ROUTE 0430: SUGARLANDS RESIDENCE ROAD

Barrier Condition Photos



GRSM_0430_0.189_R_1.JPG

Barrier ID:	GRSM-0430-0.194-L				
Route Name:	SUGARLANDS RESIDENCE ROAD				
Inspection Date:	09/11/2010	Barrier Rating:	29.50		
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.):	52		
Speed Limit (MPH):	20	Placement with Respect to Road:	TANGENT		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	18.0	Post Spacing (In.):	0.0
Height (In.):	22.2	Lateral Offset (In.):	12.0	Road Grade (%):	8.50
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 0-3 in below the 24 in design height.			
	Breaking and Cracking:	No broken stones but there was cracking in the grout between 1/4 and 1/2 in observed throughout the entire length of the guardwall.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Major weathering of grout.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0430-0.194-L		
Route Name:	SUGARLANDS RESIDENCE ROAD		
Inspection Date:	09/11/2010	Barrier Rating:	29.50

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$8019
Brief Workorder:	Repoint 52 feet of stone masonry guardwall.				
Workorder:	Re-Point Masonry Barrier at \$140- per -Sq. Yd. for 31 = \$4340. [(1.9ft+1.5ft+1.9ft)(52ft)] /9 = 30.6 SY. 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.

Great Smoky Mountains National Park

ROUTE 0430: SUGARLANDS RESIDENCE ROAD

Barrier Condition Photos



GRSM_0430_0.194_L_1.JPG

Barrier ID:	GRSM-0430-0.281-L				
Route Name:	SUGARLANDS RESIDENCE ROAD				
Inspection Date:	09/11/2010	Barrier Rating:	23.70		
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.):	30		
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:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	20.0	Post Spacing (In.):	0.0
Height (In.):	30.0	Lateral Offset (In.):	6.7	Road Grade (%):	5.10
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 8 in above the 24 in design height.			
	Breaking and Cracking:	No broken stones but there was cracking in the grout between 1/4 and 1/2 in observed throughout the entire length of the guardwall.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Stones show major weathering.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0430-0.281-L		
Route Name:	SUGARLANDS RESIDENCE ROAD		
Inspection Date:	09/11/2010	Barrier Rating:	23.70

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$5165
Brief Workorder:	Repoint 30 feet of stone masonry guardwall.				
Workorder:	Re-Point Masonry Barrier at \$140- per -Sq. Yd. for 23 = \$3220. $[(2.5ft+1.7ft+2.5ft)(30ft)] / 9 = 22.3 SY$. 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.

Great Smoky Mountains National Park

ROUTE 0430: SUGARLANDS RESIDENCE ROAD

Barrier Condition Photos



GRSM_0430_0.281_L_1.JPG

Barrier ID:	GRSM-0430-0.282-R				
Route Name:	SUGARLANDS RESIDENCE ROAD				
Inspection Date:	09/11/2010	Barrier Rating:	25.10		
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.):	35		
Speed Limit (MPH):	20	Placement with Respect to Road:	OUTSIDE OF CURVE		
Hazard Behind Barrier:	MEDIUM				
Barrier Crashworthiness					
Appropriate Test Level:	TL-1	Barrier Test Level:	NCW	Is Barrier Crashworthy?:	NO
Beg. End Trtmt Type:	NONE	Is Beg. End Trtmt Crashworthy?:	N/A	Approach Transition Type:	NONE
Ending End Trtmt Type:	NONE	Ending End Trtmt Crashworthy?:	N/A		
Average Measurements					
Design Height (In.):	24	Width (In.):	20.0	Post Spacing (In.):	0.0
Height (In.):	28.0	Lateral Offset (In.):	8.3	Road Grade (%):	3.80
Physical Condition					
Barrier	Alignment and Height:	The alignment has no deviation and the height is 1 to 7 in above the 24 in design height.			
	Breaking and Cracking:	No broken stones but there was cracking in the grout between 1/4 and 1/2 in observed throughout the entire length of the guardwall.			
	Missing Elements:	No missing elements observed.			
	Corrosion and Weathering:	Top row of stones show major weathering.			
End Treatments	Alignment and Height:				
	Breaking and Cracking:				
	Missing Elements:				
	Corrosion and Weathering:				

Barrier ID:	GRSM-0430-0.282-R		
Route Name:	SUGARLANDS RESIDENCE ROAD		
Inspection Date:	09/11/2010	Barrier Rating:	25.10

Repair Recommendations

Repair Action:	REPAIR	FMSS Work Type:	DEFERRED MAINTENANCE	Repair Cost:	\$5473
Brief Workorder:	Repoint 35 feet of stone masonry guardwall.				
Workorder:	Re-Point Masonry Barrier at \$140- per -Sq. Yd. for 25 = \$3500. [(2.3ft + 1.7ft + 2.3ft)(35ft)] /9 = 24.5 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.

Great Smoky Mountains National Park

ROUTE 0430: SUGARLANDS RESIDENCE ROAD

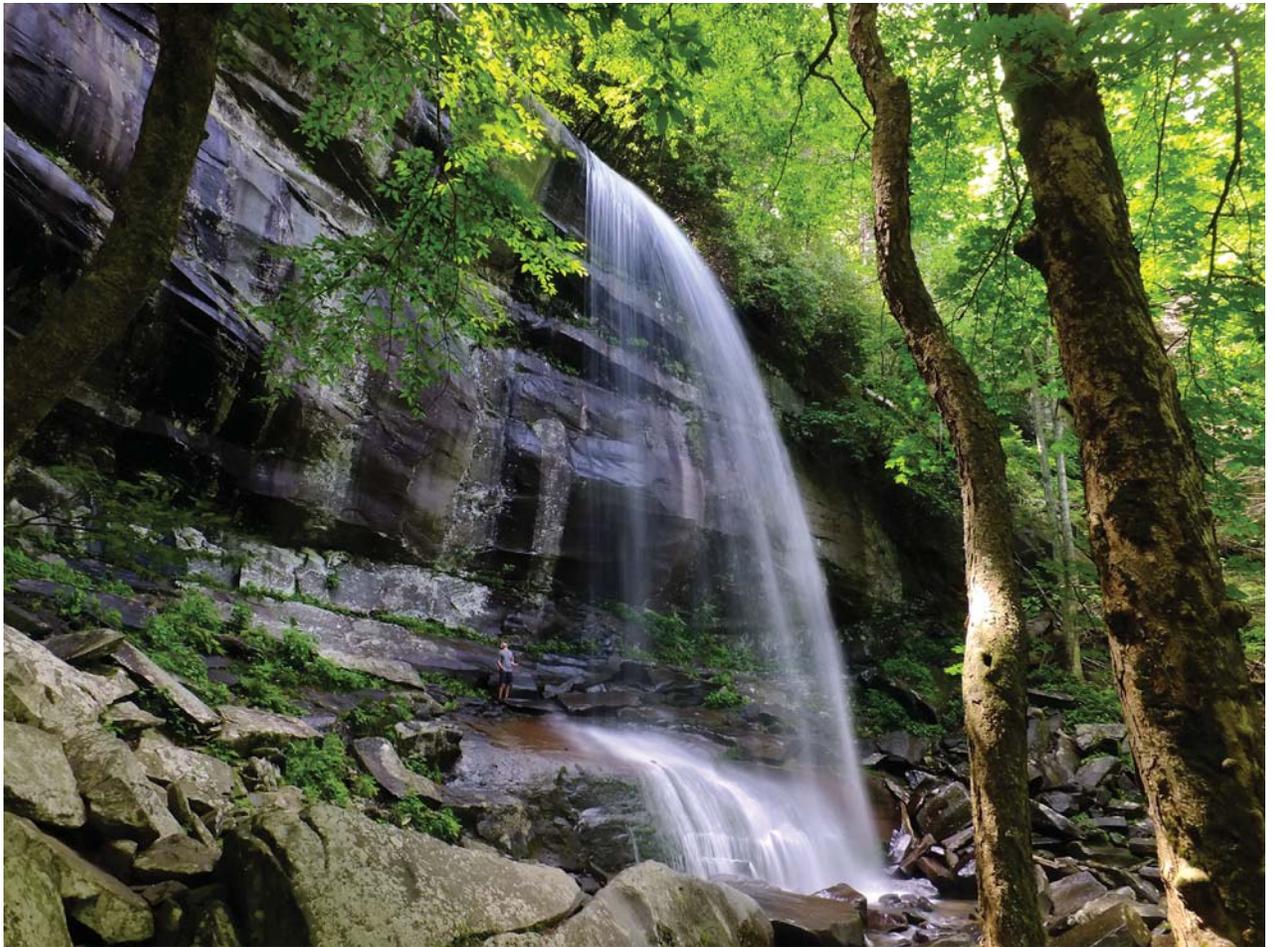
Barrier Condition Photos



GRSM_0430_0.282_R_1.JPG

Appendix A

Summary of GIP Definitions and Assessment



Great Smoky Mountains 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			
	<ul style="list-style-type: none"> Alignment off by less than 6" 	<ul style="list-style-type: none"> Alignment off by 6"-12" 	<ul style="list-style-type: none"> Alignment off by more than 12"
	<ul style="list-style-type: none"> Within 1" of <i>design height</i> 	<ul style="list-style-type: none"> Less than 3" lower than <i>design height</i> 	<ul style="list-style-type: none"> Greater than 3" lower than <i>design height</i>
Breaking/Cracking, an member, post or rail – due to impact loading			
	<ul style="list-style-type: none"> Metal – no twisting/bending, tears or cracking 	<ul style="list-style-type: none"> Metal – no cracking or tearing (but minor twisting/bending is ok) 	<ul style="list-style-type: none"> Metal – any cracks or tears
	<ul style="list-style-type: none"> Wood – no impact related cracking 	<ul style="list-style-type: none"> Wood – maybe cracked but retains original cross section 	<ul style="list-style-type: none"> Wood – cracks or tears that deform original section
	<ul style="list-style-type: none"> Isolated broken blocks 	<ul style="list-style-type: none"> Two Consecutive broken blocks 	<ul style="list-style-type: none"> Consecutive broken blocks (three or more consecutive)
Missing Elements			
	<ul style="list-style-type: none"> No bolts and nuts missing 	<ul style="list-style-type: none"> One or two bolt/nut missing at one rail/rail connection 	<ul style="list-style-type: none"> Three or more bolts/nuts missing at one rail/rail connection
	<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> Two consecutive missing blocks 	<ul style="list-style-type: none"> Three or more consecutive missing blocks
	<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> One missing rail element or post
Corrosion/Decay/Weathering, all posts, rails and blocks – due to aging			
	<ul style="list-style-type: none"> Loss of 5% or less of cross section 	<ul style="list-style-type: none"> Loss of 5% to 50% of cross section 	<ul style="list-style-type: none"> Loss of 50% or more of cross section
	<ul style="list-style-type: none"> Erosion (less than 8" of post exposed below original groundline) 	<ul style="list-style-type: none"> Erosion around posts (8" or more of post exposed below original groundline) for one 	<ul style="list-style-type: none"> 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															
				<ul style="list-style-type: none"> Alignment off by less than 6" 				<ul style="list-style-type: none"> Alignment off by 6"-12" 				<ul style="list-style-type: none"> Alignment off by more than 12" 			
				<ul style="list-style-type: none"> Within 1" of <i>design height</i> 				<ul style="list-style-type: none"> Less than 3" lower than <i>design height</i> 				<ul style="list-style-type: none"> Greater than 3" lower than <i>design height</i> 			
Breaking/Cracking– due to impact loading															
				<ul style="list-style-type: none"> Minor cracks (less than ¼") present 				<ul style="list-style-type: none"> Cracking present ¼" or greater but no displacement or discontinuity in face 				<ul style="list-style-type: none"> Barrier displaced and/or discontinuous 			
				<ul style="list-style-type: none"> n/a 				<ul style="list-style-type: none"> Pieces broken from barrier 3" deep or less without exposing rebar 				<ul style="list-style-type: none"> Cracking exposes rebar 			
				<ul style="list-style-type: none"> n/a 				<ul style="list-style-type: none"> n/a 				<ul style="list-style-type: none"> Pieces broken from face greater than 3" deep 			
Missing Elements															
				<ul style="list-style-type: none"> n/a 				<ul style="list-style-type: none"> n/a 				<ul style="list-style-type: none"> n/a 			
Corrosion/Decay/Weathering – due to aging															
				<ul style="list-style-type: none"> Surface corrosion on less than 5% of the run 				<ul style="list-style-type: none"> Surface corrosion on between 5-25% of the run 				<ul style="list-style-type: none"> Surface corrosion on more than 25% of the run 			
				<ul style="list-style-type: none"> n/a 				<ul style="list-style-type: none"> Spalling 3" deep or less without exposing rebar 				<ul style="list-style-type: none"> Spalling greater than 3" deep 			
				<ul style="list-style-type: none"> Erosion (less than 8" below groundline) around base 				<ul style="list-style-type: none"> Erosion (8" or more below groundline) around base 				<ul style="list-style-type: none"> Erosion (8" or more below groundline) 			
				<ul style="list-style-type: none"> n/a 				<ul style="list-style-type: none"> Less than 50% undermined (less than half barrier width) 				<ul style="list-style-type: none"> 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			
	<ul style="list-style-type: none"> Alignment (off by less than 6") 	<ul style="list-style-type: none"> Alignment (off by 6"-12") 	<ul style="list-style-type: none"> Alignment (off by more than 12")
	<ul style="list-style-type: none"> Within 3" of <i>design height</i> 	<ul style="list-style-type: none"> Between 3.1 - 6" lower than <i>design height</i> 	<ul style="list-style-type: none"> Greater than 6.1" lower than <i>design height</i>
Breaking/Cracking – due to impact loading			
	<ul style="list-style-type: none"> Minor cracks (less than ¼") present 	<ul style="list-style-type: none"> Cracks, less than ½" present 	<ul style="list-style-type: none"> Cracks greater than ½" present
		<ul style="list-style-type: none"> Stones broken/displaced extending less than 1/3 of width of barrier 	<ul style="list-style-type: none"> Stones broken/displaced extending 1/3 width or more through the barrier
Missing Elements			
	<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> n/a
Corrosion/Decay/Weathering – due to aging			
	<ul style="list-style-type: none"> Cracks in mortar joints 1/4" or less and/or single loose or missing stones 	<ul style="list-style-type: none"> Mortar joints deteriorated resulting in two - three loose or missing adjacent stones (without impact) 	<ul style="list-style-type: none"> Mortar joints deteriorated resulting in more than three continuous/adjacent loose or missing stones (without impact)
	<ul style="list-style-type: none"> Erosion (less than 8" below groundline) around base 	<ul style="list-style-type: none"> Erosion (8" or more below groundline) around base 	<ul style="list-style-type: none"> Erosion (8" or more below groundline)
	<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> Less than 50% undermined (less than half barrier width) 	<ul style="list-style-type: none"> 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			
	<ul style="list-style-type: none"> No bent posts 	<ul style="list-style-type: none"> Bent posts; one to three consecutive posts 	<ul style="list-style-type: none"> Bent posts; four or more consecutive posts
	<ul style="list-style-type: none"> Cable has tension 	<ul style="list-style-type: none"> Cable under-tensioned/sagging 	<ul style="list-style-type: none"> No cable tension
	<ul style="list-style-type: none"> Less than 1" too low 	<ul style="list-style-type: none"> 1-3" too low 	<ul style="list-style-type: none"> Greater than 3" too low
Breaking/Cracking			
	<ul style="list-style-type: none"> No cracked or broken posts 	<ul style="list-style-type: none"> One to three isolated broken posts 	<ul style="list-style-type: none"> Four or more consecutive broken posts
	<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> Cable frayed 	<ul style="list-style-type: none"> Cable broken or severed
Missing Elements			
	<ul style="list-style-type: none"> No bolts and nuts missing at anchors 	<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> Bolts and nuts missing or loose at anchors
	<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> Any missing posts or cable for any length of run
Corrosion/Decay/Weathering – due to aging			
	<ul style="list-style-type: none"> Loss of 5% or less of cable cross section 	<ul style="list-style-type: none"> Loss of 5% to 15% of cable cross section 	<ul style="list-style-type: none"> Loss of 15% or more of cross section
	<ul style="list-style-type: none"> Erosion (less than 8" of post exposed below original groundline) 	<ul style="list-style-type: none"> Erosion around one post (8" or more of post exposed below original groundline) 	<ul style="list-style-type: none"> 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			
	<ul style="list-style-type: none"> Alignment off by less than 4" 	<ul style="list-style-type: none"> Alignment off by 4"-8" 	<ul style="list-style-type: none"> Alignment off by more than 8"
	<ul style="list-style-type: none"> Adequate cable tension 	<ul style="list-style-type: none"> Low cable anchor tension 	<ul style="list-style-type: none"> No cable anchor tension
Breaking/Cracking – due to impact loading			
	<ul style="list-style-type: none"> No broken or cracked elements 	<ul style="list-style-type: none"> Minor cable fraying but still with adequate tension 	<ul style="list-style-type: none"> Broken or cracked cables or posts
	<ul style="list-style-type: none"> No damage to posts, cable or anchor 	<ul style="list-style-type: none"> Slight damage to posts without cracking or tearing (<i>but minor twisting/bending on isolated posts is OK</i>) 	<ul style="list-style-type: none"> Cable broken or severed on any cable
Missing Elements			
	<ul style="list-style-type: none"> No bolts and nuts missing at anchors; No missing cables 	<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> Any missing element (post, cable, bolts, nuts, or anchor)
Corrosion/Decay/Weathering – due to aging			
	<ul style="list-style-type: none"> Loss of 5% or less of cable cross section 	<ul style="list-style-type: none"> Loss of 5% to 15% of cable cross section 	<ul style="list-style-type: none"> Loss of 15% or more of cross section
	<ul style="list-style-type: none"> Connections weathered but still provide element interlock on less than 5% of the end treatment 	<ul style="list-style-type: none"> Connections weathered but still provide element interlock on between 5% to 15% of the end treatment 	<ul style="list-style-type: none"> 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						
	<ul style="list-style-type: none"> Alignment of flares and offsets off by less than 4" 	<ul style="list-style-type: none"> Alignment of flares and offsets off by 4"-8" 	<ul style="list-style-type: none"> Alignment of flares and offsets off by more than 8" 			
	<ul style="list-style-type: none"> Within 1" of <i>design height</i> 	<ul style="list-style-type: none"> Less than 3" lower than <i>design height</i> 	<ul style="list-style-type: none"> Greater than 3" lower than <i>design height</i> 			
For <i>Aesthetic Barriers</i> (i.e. – SBT and SBL guardrail) that do not have crashworthy terminals:	<ul style="list-style-type: none"> Approach barrier terminals are buried, anchored, and flared away from the travel lane 	<ul style="list-style-type: none"> Approach barrier terminals are buried, anchored, and flared away from the travel lane 	<ul style="list-style-type: none"> Approach barrier ends are NOT buried, anchored, nor flared away from the travel lane 			
Breaking/Cracking – due to impact loading						
	<ul style="list-style-type: none"> Metal – no twisting/bending, tears or cracking 	<ul style="list-style-type: none"> Metal – no cracking or tearing (but minor twisting or bending is ok) 	<ul style="list-style-type: none"> Metal – any cracks or tears 			
	<ul style="list-style-type: none"> Wood – no impact related cracking 	<ul style="list-style-type: none"> Wood – maybe cracked but retains original cross section 	<ul style="list-style-type: none"> Wood – cracks or tears that deform original section 			
	<ul style="list-style-type: none"> No broken blocks 	<ul style="list-style-type: none"> One broken block 	<ul style="list-style-type: none"> Two consecutive broken blocks 			
Missing Elements						
	<ul style="list-style-type: none"> No missing elements, including breakaway cables and struts 	<ul style="list-style-type: none"> Isolated bolts, nuts, or blocks loose on non-consecutive posts 	<ul style="list-style-type: none"> Any missing element, including blocks, rails, posts cables, or struts 			
	<ul style="list-style-type: none"> No bolts, nuts, or blocks missing or loose 	<ul style="list-style-type: none"> Breakaway strut present but vertical height off by more than 2" 	<ul style="list-style-type: none"> Missing nuts / bolts on consecutive posts 			
Corrosion/Decay/Weathering – due to aging						
	<ul style="list-style-type: none"> Surface corrosion / decay / connections weathered with a loss of 5% or less of cross section of interlocking elements 	<ul style="list-style-type: none"> Surface corrosion / decay / connections weathered with between 5-25% loss of cross section along transition interlocking elements 	<ul style="list-style-type: none"> Surface corrosion / decay / connections weathered with more than 25% loss of cross section along transition interlocking elements 			
	<ul style="list-style-type: none"> Erosion (less than 8" of post exposed below original groundline) 	<ul style="list-style-type: none"> Erosion around 1 post (8" or more of post exposed below original groundline) 	<ul style="list-style-type: none"> 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
Severity of Hazard behind the Barrier	Outside of curve	8.6
	Low severity	2.6
	Medium severity	5.1
	High severity	6.9
Longitudinal Length of Barrier	Extreme severity	8.6
	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.