

GIP Report

NPS Guardwall/Rail Inventory Program Bighorn Canyon National Recreation Area

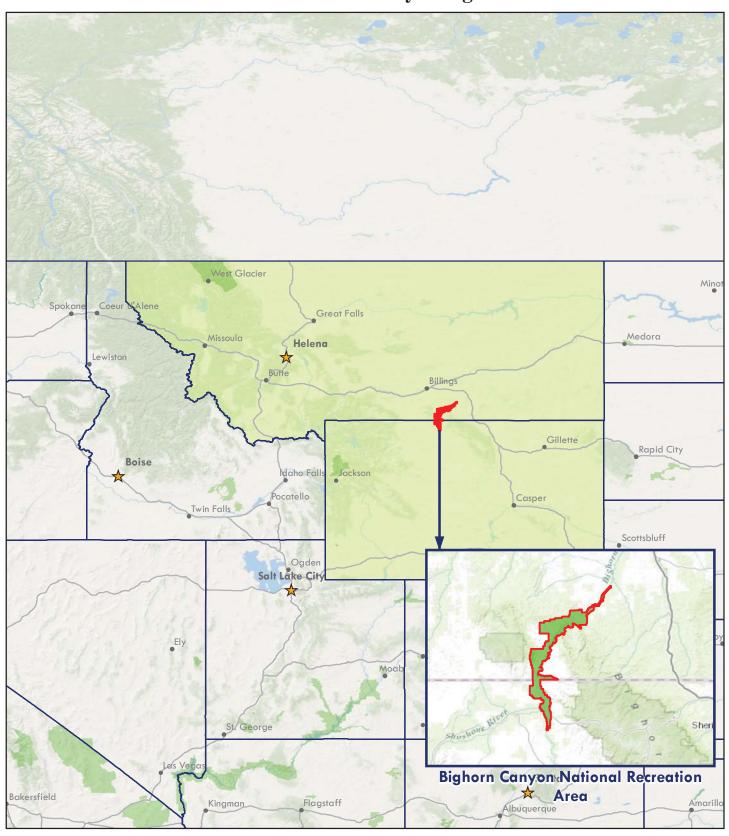




Federal Lands Highway Road Inventory Program Prepared By: Federal Highway Administration Eastern Federal Lands Highway Division Road Inventory Program (RIP)

Data Collection Date: August 2010 Report Date: December 2015

Bighorn Canyon National Recreation Area in Montana and Wyoming



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 Esri, DeLorme, GEBCO, NOAA NGDC, and other contributors

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Introduction



Bighorn Canyon National Recreation Area



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

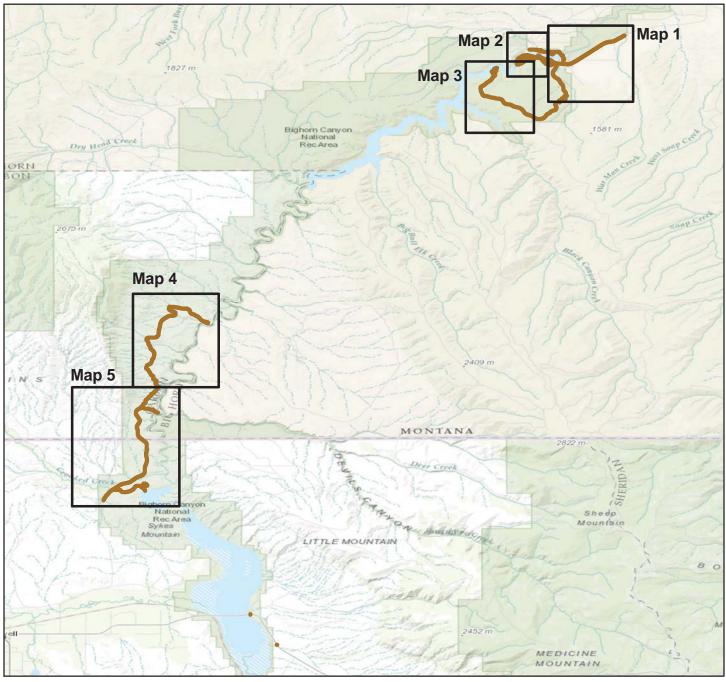


Bighorn Canyon National Recreation Area



BARRIER LOCATION MAP

Key Map

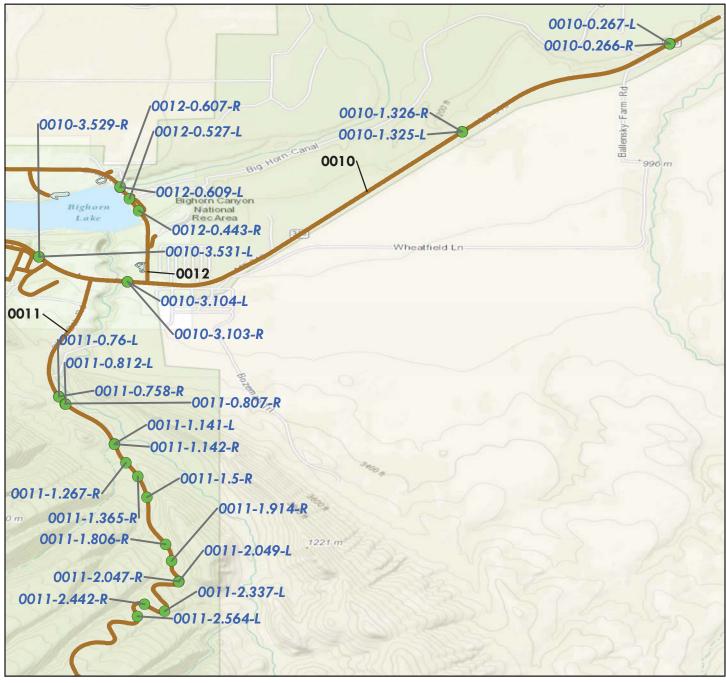


Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

RIP Collected Routes

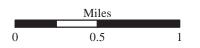


BARRIER LOCATION MAP

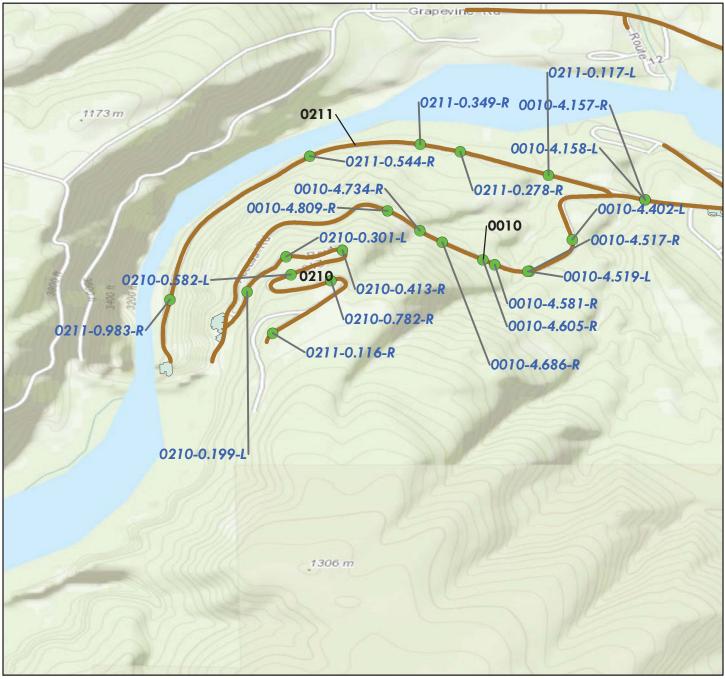


Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community





BARRIER LOCATION 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





BARRIER LOCATION 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





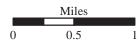
BARRIER LOCATION MAP

Map 4



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

Barrier Locations
 RIP Collected Routes

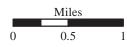


BARRIER LOCATION MAP

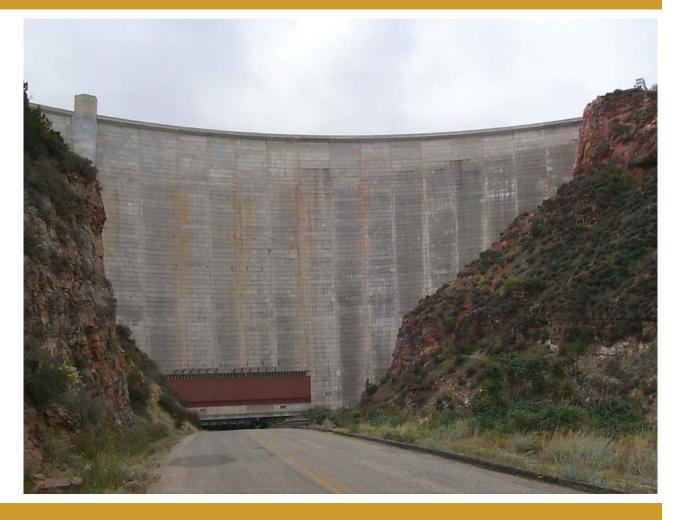


Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community





Tier 1 Park Barrier Overview



Bighorn Canyon National Recreation Area



Parkwide Summary: Bighorn Canyon National Recreation Area

Initial barrier inspections were conducted at Bighorn Canyon National Recreation Area in 2010, and encompassed all known barriers associated with Park roadways. In general, walls are not included in this assessment, but were inspected under a separate effort as part of the Retaining Wall Inventory Program (WIP).

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, 81 barriers were inventoried on the routes listed below.

Route Number	Route Name	No. of Barriers
0010	FORT SMITH ACCESS ROAD	21
0011	OK-A-BEH ROAD	26
0012	AFTERBAY ROAD	4
0013	BAD PASS ROAD	15
0204	DEVIL'S CANYON OVERLOOK ROAD	1
0210	WAPPA UPPER SWITCHYARD ROAD	6
0211	YELLOWTAIL POWER PLANT ROAD	6
0219	BARRY'S LANDING BOAT RAMP ROAD	2

Table 1: Number of Barriers by Route

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.

Barrier Function	No. of Barriers
TRAFFIC	76
NON-TRAFFIC	5

Table 2: Number of Barriers by Function

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

Primary Barrier Type	No. of Barriers
Other: Cmu/Split Face Cinder Block	1
W-Beam Weak Post	59
W-Beam Strong Post	21

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.

Recommended Action	Repair Costs*	No. of Barriers
No Action	\$0	7
Monitor	\$0	2
Repair	\$134,572	36
Replace	\$1,130,600	36
Totals	\$1,265,172	81

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

*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.

Cost Range*	No. of Barriers
\$0	9
\$1 - \$25,000	55
\$25,001 - \$50,000	13
\$50,001 - \$100,000	3
\$100,001 - \$250,000	1
\$250,001 - \$500,000	0
\$500,001 - \$1,000,000	0
\$1,000,001 - \$2,000,000	0
\$2,000,001 - \$3,000,000	0
\$3,000,001 - \$4,000,000	0
Total Number of Barriers	81

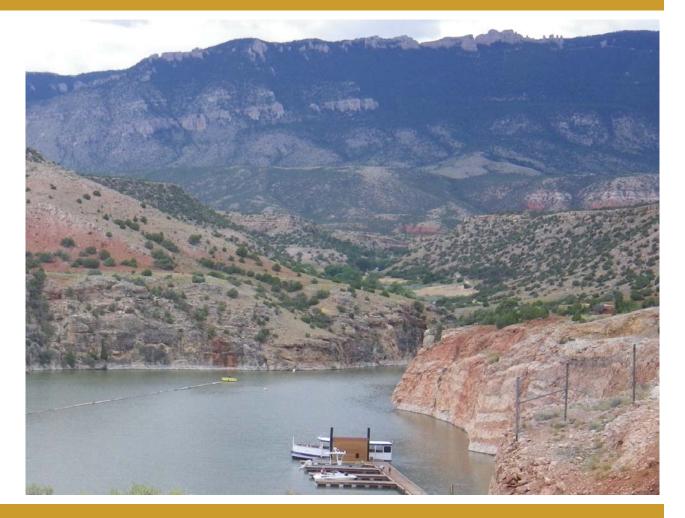
Table 5: Number of Barriers Grouped by Associated 2008 Cost

*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 32 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



Bighorn Canyon National Recreation Area



Bighorn Canyon National Recreation Area ROUTE 0010: FORT SMITH 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	Barrier Length	Barrier	Barrier End	l Treatment	*Repair
Inspection Date	(Ft.)	Туре	Begin	End	Cost
BICA-0010-0.266-R	830	W-BEAM WEAK POST	NONE	NONE	\$67,155.00
8/2/2010					
BICA-0010-0.267-L	617	W-BEAM WEAK POST	NONE	NONE	\$45,667.00
8/2/2010					
BICA-0010-1.325-L	255	W-BEAM WEAK POST	NONE	NONE	\$23,183.00
8/2/2010					
BICA-0010-1.326-R	255	W-BEAM WEAK POST	NONE	NONE	\$23,183.00
8/2/2010					
BICA-0010-3.103-R	430	W-BEAM WEAK POST	NONE	NONE	\$33,165.00
8/2/2010					
*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.					



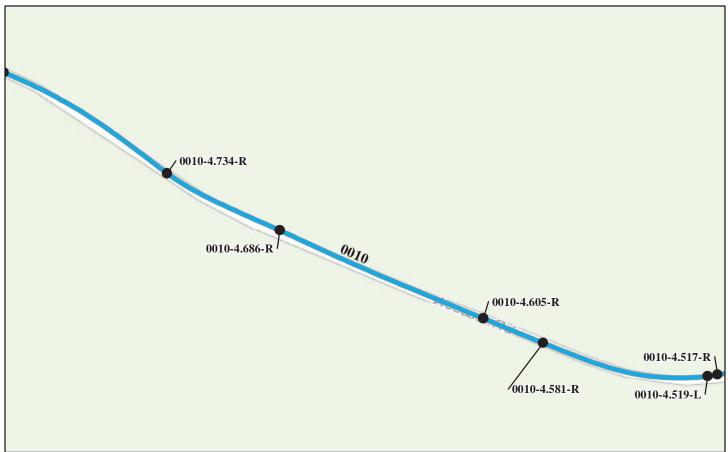
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID	Barrier Length	Barrier	Barrier End	Barrier End Treatment	
Inspection Date	(Ft.)	Туре	Begin	End	Cost
BICA-0010-3.104-L	431	W-BEAM WEAK POST	NONE	NONE	\$33,215.00
8/2/2010					
BICA-0010-3.529-R	504	W-BEAM WEAK POST	NONE	NONE	\$38,825.00
8/2/2010					
BICA-0010-3.531-L	130	W-BEAM WEAK POST	NONE	NONE	\$15,070.00
8/2/2010					
BICA-0010-3.881-R	174	W-BEAM WEAK POST	NONE	NONE	\$14,553.00
8/2/2010					
BICA-0010-3.882-L	242	W-BEAM WEAK POST	NONE	NONE	\$22,721.00
8/2/2010					
*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.					



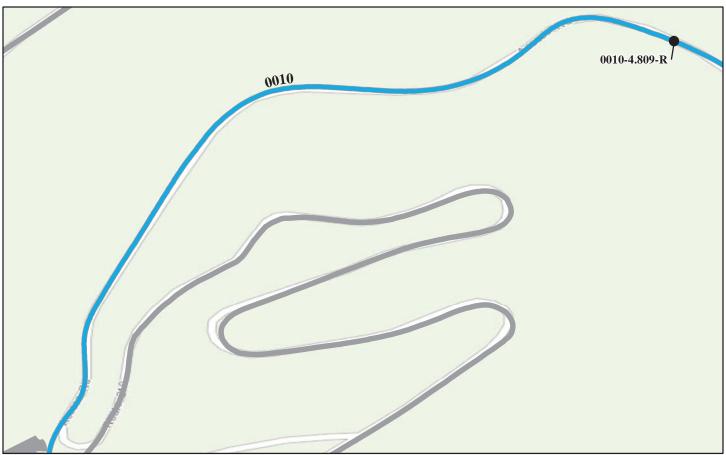
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID	Barrier Length	Barrier	Barrier End Treatment		*Repair
Inspection Date	(Ft.)	Туре	Begin	End	Cost
BICA-0010-3.909-R	346	W-BEAM WEAK POST	NONE	NONE	\$26,312.00
8/2/2010					
BICA-0010-4.157-R	306	W-BEAM WEAK POST	NONE	NONE	\$27,027.00
8/2/2010					
BICA-0010-4.158-L	256	W-BEAM WEAK POST	NONE	NONE	\$21,307.00
8/2/2010					
BICA-0010-4.402-L	315	W-BEAM WEAK POST	NONE	NONE	\$27,473.00
8/2/2010					
BICA-0010-4.517-R	209	W-BEAM WEAK POST	NONE	NONE	\$18,981.00
8/2/2010					
*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.					



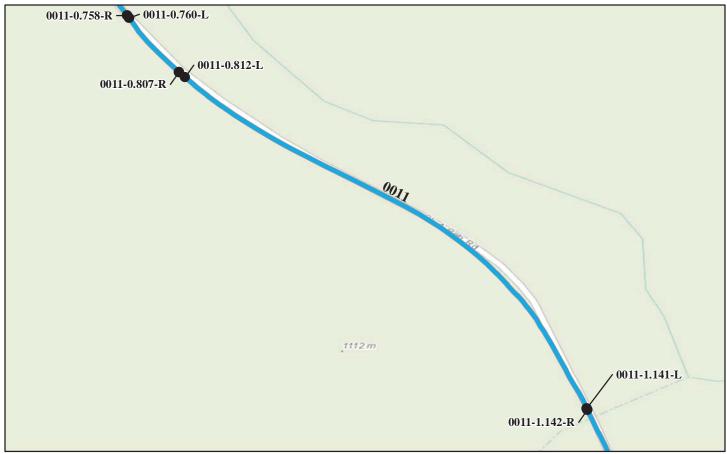
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID	Barrier Length	Barrier	Barrier End	Barrier End Treatment	
Inspection Date	(Ft.)	Туре	Begin	End	Cost
BICA-0010-4.519-L	228	W-BEAM WEAK POST	NONE	NONE	\$19,921.00
8/2/2010					
BICA-0010-4.581-R	159	W-BEAM WEAK POST	NONE	NONE	\$13,811.00
8/3/2010					
BICA-0010-4.605-R	461	W-BEAM WEAK POST	NONE	NONE	\$29,310.00
8/3/2010					
BICA-0010-4.686-R	316	W-BEAM WEAK POST	NONE	NONE	\$22,132.00
8/3/2010					
BICA-0010-4.734-R	357	W-BEAM WEAK POST	NONE	NONE	\$24,162.00
8/3/2010					
*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.					



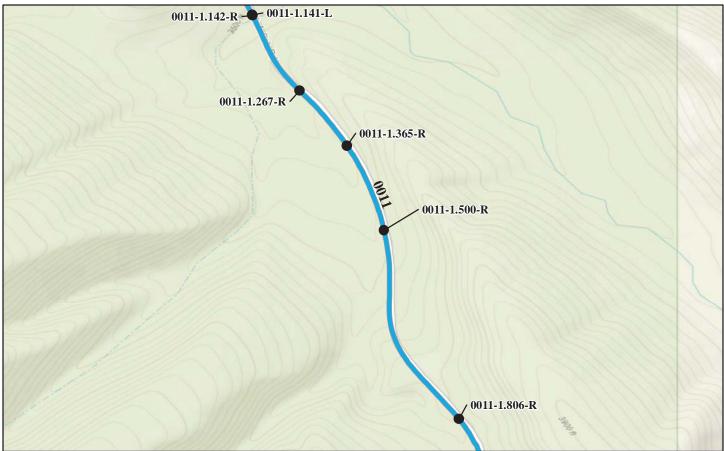
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID	Barrier Length	Barrier	Barrier End Treatment		*Repair
Inspection Date	(Ft.)	Туре	Begin	End	Cost
BICA-0010-4.809-R	2,420	W-BEAM WEAK POST	NONE	NONE	\$154,935.00
8/3/2010					
*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.					



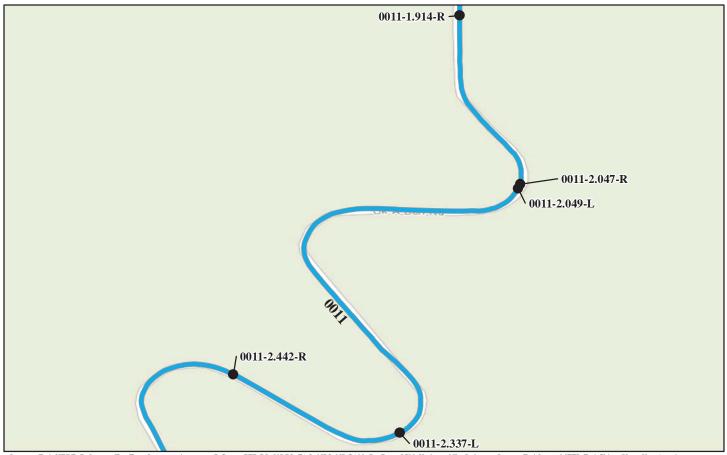
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID	Barrier Length	Barrier	Barrier End	l Treatment	*Repair
Inspection Date	(Ft.)	Туре	Begin	End	Cost
BICA-0011-0.758-R	106	W-BEAM WEAK POST	NONE	NONE	\$2,789.00
8/4/2010					
BICA-0011-0.760-L	53	W-BEAM WEAK POST	NONE	NONE	\$1,898.00
8/4/2010					
BICA-0011-0.807-R	54	W-BEAM WEAK POST	NONE	NONE	\$2,217.00
8/4/2010					
BICA-0011-0.812-L	105	W-BEAM WEAK POST	NONE	NONE	\$2,888.00
8/4/2010					
BICA-0011-1.141-L	130	W-BEAM WEAK POST	NONE	NONE	\$3,339.00
8/4/2010					
	*2008 cost estimate (A	STM Class D), preliminary for co	mparison to other repair cos	sts only.	- ·



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	Barrier Length Barrier Barrier End Treatment		*Repair					
Inspection Date	(Ft.)	Туре	Begin	End	Cost			
BICA-0011-1.142-R	183	W-BEAM WEAK POST	NONE	NONE	\$3,306.00			
8/4/2010								
BICA-0011-1.267-R	157	W-BEAM WEAK POST	NONE	NONE	\$3,416.00			
8/4/2010								
BICA-0011-1.365-R	257	W-BEAM WEAK POST	NONE	NONE	\$6,512.00			
8/4/2010								
BICA-0011-1.500-R	130	W-BEAM WEAK POST	NONE	NONE	\$3,053.00			
8/4/2010								
BICA-0011-1.806-R	196	W-BEAM WEAK POST	NONE	NONE	\$4,175.00			
8/4/2010								
	*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.							



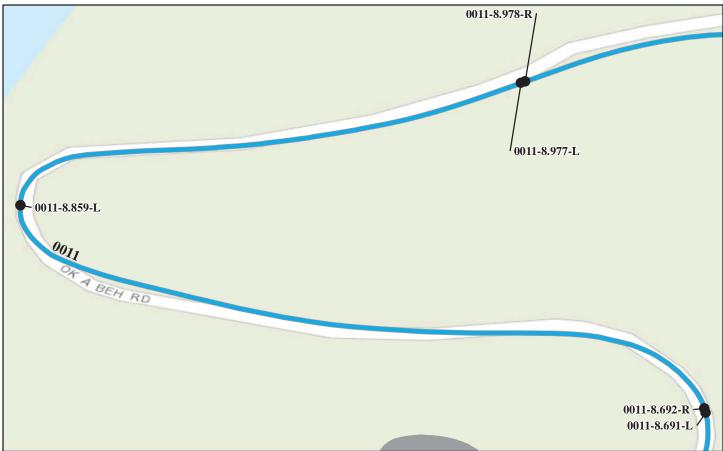
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Barrier ID	Barrier Length	Barrier	Barrier End	Treatment	*Repair			
Inspection Date	(Ft.)	Туре	Begin	End	Cost			
BICA-0011-1.914-R	231	W-BEAM WEAK POST	NONE	NONE	\$4,560.00			
8/4/2010								
BICA-0011-2.047-R	362	W-BEAM WEAK POST	NONE	NONE	\$6,985.00			
8/4/2010								
BICA-0011-2.049-L	177	W-BEAM WEAK POST	NONE	NONE	\$4,285.00			
8/4/2010								
BICA-0011-2.337-L	115	W-BEAM WEAK POST	NONE	NONE	\$2,558.00			
8/4/2010								
BICA-0011-2.442-R	77	W-BEAM WEAK POST	NONE	NONE	\$1,898.00			
8/4/2010								
	*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.							



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	Barrier Length	Barrier	Barrier End	l Treatment	*Repair			
Inspection Date	(Ft.)	Туре	Begin	End	Cost			
BICA-0011-2.564-L	116	W-BEAM WEAK POST	NONE	NONE	\$14,377.00			
8/4/2010								
BICA-0011-4.796-L	179	W-BEAM WEAK POST	NONE	NONE	\$17,496.00			
8/4/2010								
BICA-0011-4.798-R	193	W-BEAM WEAK POST	NONE	NONE	\$18,189.00			
8/4/2010								
BICA-0011-8.277-R	936	W-BEAM WEAK POST	NONE	NONE	\$16,027.00			
8/3/2010								
BICA-0011-8.389-L	182	W-BEAM WEAK POST	NONE	NONE	\$0.00			
8/3/2010								
	*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.							



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	Barrier Length			l Treatment	*Repair
Inspection Date	(Ft.)	Туре	Begin	End	Cost
BICA-0011-8.691-L	263	W-BEAM WEAK POST	NONE	NONE	\$6,138.00
8/3/2010					
BICA-0011-8.692-R	455	W-BEAM WEAK POST	NONE	NONE	\$8,228.00
8/3/2010					
BICA-0011-8.859-L	137	W-BEAM WEAK POST	NONE	NONE	\$3,394.00
8/3/2010					
BICA-0011-8.977-L	153	W-BEAM WEAK POST	NONE	NONE	\$3,306.00
8/3/2010					
BICA-0011-8.978-R	158	W-BEAM WEAK POST	NONE	NONE	\$3,361.00
8/3/2010					
	*2008 cost estimate (AS	STM Class D), preliminary for cor	nparison to other repair cos	sts only.	

ROUTE 0011: OK-A-BEH 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	Barrier Length	Barrier	Barrier End	l Treatment	*Repair
Inspection Date	(Ft.)	Туре	Begin	End	Cost
BICA-0011-9.069-R	150	W-BEAM WEAK POST	NONE	NONE	\$3,449.00
8/3/2010					
*	*2008 cost estimate (AS	STM Class D), preliminary for co	omparison to other repair co	sts only.	

ROUTE 0012: AFTERBAY ROAD



Barrier ID	Barrier Length	Barrier	Barrier En	d Treatment	*Repair
Inspection Date	(Ft.)	Туре	Begin	End	Cost
BICA-0012-0.443-R	503	W-BEAM STRONG POST	W-BEAM BCT	NONE	\$1,689.00
8/2/2010	70	NUDEAN STRONG DOST	NONE	WDEANDOT	#2 401 00
BICA-0012-0.527-L 8/2/2010	78	W-BEAM STRONG POST	NONE	W-BEAM BCT	\$2,481.00
BICA-0012-0.607-R 8/2/2010	228	W-BEAM STRONG POST	NONE	W-BEAM BURIED END	\$1,953.00
BICA-0012-0.609-L 8/2/2010	27	W-BEAM STRONG POST	W-BEAM BCT	NONE	\$1,997.00
	*2008 cost estimate (A	STM Class D), preliminary for co	omparison to other repair co	sts only.	

ROUTE 0013: BAD PASS ROAD



Sources: Esri, HERE, DeLorme, TomTom, Internap, 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	Barrier Length	Barrier	Barrier End	d Treatment	*Repair		
Inspection Date	(Ft.)	Туре	Begin	End	Cost		
BICA-0013-0.786-R 8/6/2010	66	W-BEAM STRONG POST	W-BEAM TURN DOWN	NONE	\$2,217.00		
BICA-0013-0.791-L 8/6/2010	53	W-BEAM STRONG POST	NONE	W-BEAM TURN DOWN	\$1,876.00		
BICA-0013-0.802-R 8/6/2010	54	W-BEAM STRONG POST	NONE	W-BEAM TURN DOWN	\$1,887.00		
BICA-0013-0.808-L 8/6/2010	67	W-BEAM STRONG POST	W-BEAM TURN DOWN	NONE	\$2,030.00		
BICA-0013-6.411-L 8/6/2010	961	W-BEAM STRONG POST	W-BEAM FLARED 350 COMPLIANT	W-BEAM FLARED 350 COMPLIANT	\$1,722.00		
;	*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.						

ROUTE 0013: BAD PASS 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	Barrier Length	Barrier	Barrier End	l Treatment	*Repair			
Inspection Date	(Ft.)	Туре	Begin	End	Cost			
BICA-0013-6.524-R 8/6/2010	500	W-BEAM STRONG POST	W-BEAM FLARED 350 COMPLIANT	W-BEAM FLARED 350 COMPLIANT	\$0.00			
BICA-0013-7.234-R 8/6/2010	285	W-BEAM STRONG POST	W-BEAM FLARED 350 COMPLIANT	W-BEAM FLARED 350 COMPLIANT	\$1,733.00			
BICA-0013-7.351-R 8/6/2010	430	W-BEAM STRONG POST	W-BEAM FLARED 350 COMPLIANT	W-BEAM FLARED 350 COMPLIANT	\$0.00			
BICA-0013-7.460-R 8/6/2010	668	W-BEAM STRONG POST	W-BEAM FLARED 350 COMPLIANT	W-BEAM FLARED 350 COMPLIANT	\$0.00			
BICA-0013-7.640-R 8/6/2010	570	W-BEAM STRONG POST	W-BEAM FLARED 350 COMPLIANT	W-BEAM FLARED 350 COMPLIANT	\$4,983.00			
	*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.							

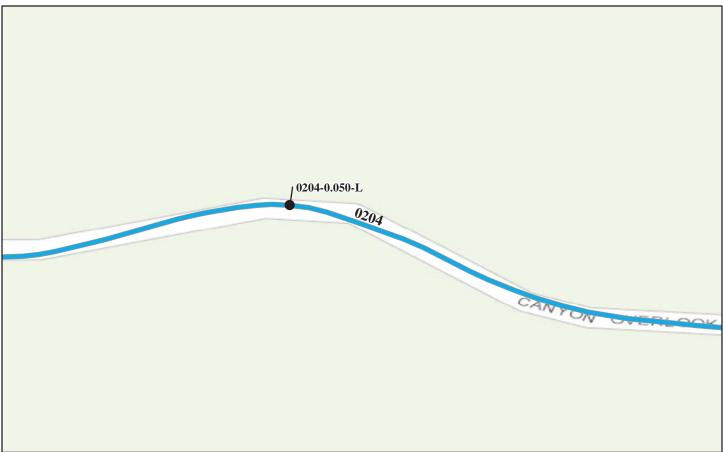
ROUTE 0013: BAD PASS ROAD



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	Barrier Length	Barrier	Barrier End	l Treatment	*Repair		
Inspection Date	(Ft.)	Туре	Begin	End	Cost		
BICA-0013-7.807-R 8/6/2010	321	W-BEAM STRONG POST	W-BEAM FLARED 350 COMPLIANT	W-BEAM FLARED 350 COMPLIANT	\$0.00		
BICA-0013-7.925-R 8/6/2010	950	W-BEAM STRONG POST	W-BEAM FLARED 350 COMPLIANT	W-BEAM FLARED 350 COMPLIANT	\$0.00		
BICA-0013-8.035-L 8/6/2010	316	W-BEAM STRONG POST	W-BEAM FLARED 350 COMPLIANT	W-BEAM FLARED 350 COMPLIANT	\$0.00		
BICA-0013-10.409-R 8/5/2010	715	W-BEAM STRONG POST	W-BEAM FLARED 350 COMPLIANT	W-BEAM FLARED 350 COMPLIANT	\$0.00		
BICA-0013-12.829-R 8/5/2010	358	W-BEAM STRONG POST	W-BEAM FLARED 350 COMPLIANT	W-BEAM FLARED 350 COMPLIANT	\$1,887.00		
	*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.						

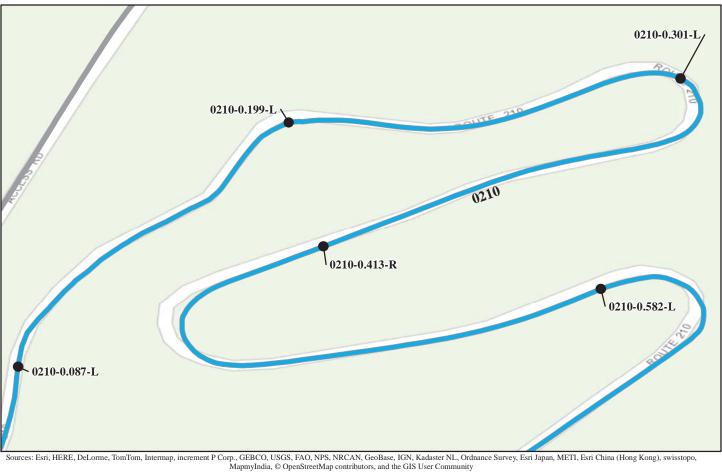
ROUTE 0204: DEVIL'S CANYON OVERLOOK ROAD



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

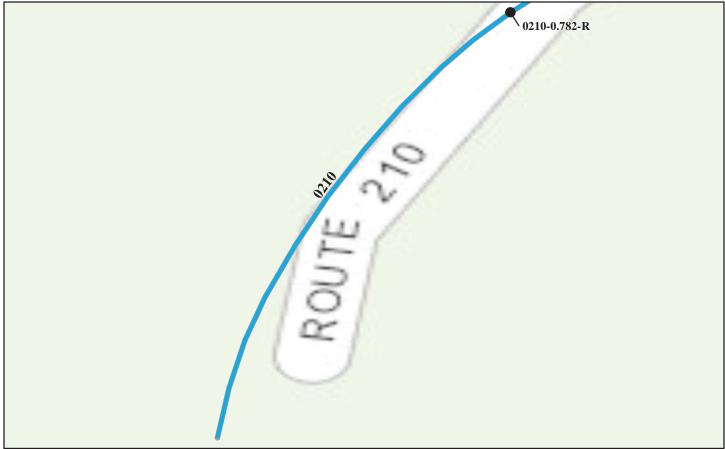
Barrier ID	Barrier Length	Barrier			
Inspection Date	(Ft.)	Туре	Begin	End	Cost
BICA-0204-0.050-L	135	OTHER: CMU/SPLIT	NONE	NONE	\$0.00
8/5/2010		FACE CINDER BLOCK			
0/5/2010					
*	*2008 cost estimate (AS	STM Class D), preliminary for co	omparison to other repair co	sts only.	

ROUTE 0210: WAPPA UPPER SWITCHYARD ROAD



Barrier ID	Barrier Length	Barrier	Barrier End	d Treatment	*Repair
Inspection Date	(Ft.)	Туре	Begin	End	Cost
BICA-0210-0.087-L	440	W-BEAM WEAK POST	NONE	NONE	\$33,660.00
8/3/2010					
BICA-0210-0.199-L	536	W-BEAM STRONG POST	NONE	NONE	\$38,962.00
8/3/2010					
BICA-0210-0.301-L	370	W-BEAM WEAK POST	NONE	NONE	\$24,805.00
8/3/2010					
BICA-0210-0.413-R	325	W-BEAM WEAK POST	NONE	NONE	\$27,968.00
8/3/2010					
BICA-0210-0.582-L	337	W-BEAM WEAK POST	NONE	NONE	\$28,562.00
8/3/2010					
	*2008 cost estimate (A	STM Class D), preliminary for cor	nparison to other repair co	sts only.	

ROUTE 0210: WAPPA UPPER SWITCHYARD 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	Barrier Length		Barrier End Treatment		*Repair		
Inspection Date	(Ft.)	Туре	Begin	End	Cost		
BICA-0210-0.782-R	213	W-BEAM WEAK POST	NONE	NONE	\$19,179.00		
8/3/2010							
*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.							

ROUTE 0211: YELLOWTAIL POWER PLANT 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	Barrier Length	Barrier	Barrier End Treatment		*Repair		
Inspection Date	(Ft.)	Туре	Begin	End	Cost		
BICA-0211-0.116-R	156	W-BEAM WEAK POST	NONE	NONE	\$16,357.00		
8/2/2010							
BICA-0211-0.117-L	154	W-BEAM WEAK POST	NONE	NONE	\$16,258.00		
8/2/2010							
BICA-0211-0.278-R	204	W-BEAM WEAK POST	NONE	NONE	\$18,733.00		
8/2/2010							
BICA-0211-0.349-R	791	W-BEAM WEAK POST	NONE	NONE	\$57,525.00		
8/3/2010							
BICA-0211-0.544-R	418	W-BEAM WEAK POST	NONE	NONE	\$32,571.00		
8/3/2010							
*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.							

ROUTE 0211: YELLOWTAIL POWER PLANT 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	Barrier Length	Barrier	Barrier En	d Treatment	*Repair
Inspection Date	(Ft.)	Туре	Begin	End	Cost
BICA-0211-0.983-R	833	W-BEAM WEAK POST	NONE	NONE	\$63,850.00
8/3/2010					
;	*2008 cost estimate (AS	STM Class D), preliminary for co	omparison to other repair co	sts only.	

ROUTE 0219: BARRY'S LANDING BOAT RAMP 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	Barrier Length	Barrier	Barrier End	l Treatment	*Repair
Inspection Date	(Ft.)	Туре	Begin	End	Cost
BICA-0219-1.216-R	1,350	W-BEAM STRONG POST	W-BEAM FLARED	W-BEAM FLARED	\$1,887.00
8/5/2010			350 COMPLIANT	350 COMPLIANT	
BICA-0219-2.011-L	438	W-BEAM WEAK POST	NONE	NONE	\$8,448.00
8/5/2010					
k -	*2008 cost estimate (AS	STM Class D), preliminary for co	omparison to other repair cos	sts only.	

Tier 3 Barrier Details



Bighorn Canyon National Recreation Area



Ba	arrier ID:	BICA-0010)-0.266-R				
	ite Name:	FORT SM	IITH ACCESS ROAD				
Inspect	tion Date:	02/08/201	0		Barrier Rating:	71.10	
Barrier Descripti			~		g.		
	Туре:	W-BEAM	WEAK POST		Barrier Function:	TRAFFIC	
Barrier	Material:	GALVANI	ZED STEEL		Post Material:	OTHER: C	ONCRETE
Blockout N/A Type:				Length (ft.):	830		
Speed Limi	it (MPH):	55			Placement with Respect to Road:	TANGENI	
Hazard Behind	Barrier:	HIGH					
Barrier Crashwo	rthiness						
Appropriate Test Level:	TL-3		Barrier Test Level:	TL-2		Is Barrier worthy?:	NO
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A			
Average Measure	ements						
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.0
Height (In.):	21.2		Lateral Offset (In.):	22.2	Road G	rade (%):	2.30
Physical Condition	on						
	Align	ment and Height:	The barrier alignment is of 27-in design height.	f by more than 6	in for 48 ft. Entire barrier	is between 4-	8in. below the
Barrier		aking and Cracking:	No breaking or cracking of	`barrier.			
	Missing	Elements:	No missing barrier items.				
		osion and eathering:	No major weathering of ba	rrier.			
	Align	ment and Height:					
End Treatments		aking and Cracking:					
	Missing 1	Elements:					
		osion and eathering:					

B	arrier ID:	BICA-0010	0-0.266-R							
Rou	ite Name:	FORT SM	ITH ACCESS ROAD							
Inspec	Inspection Date: 02/08/2010 Barrier Rating: 71.10									
Repair Recomme	endations	5								
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$67155			
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	two W-beam tangent end tr	reatments.					
Workorder:Remove Guardrail at \$10- per -Lin. Ft. for 830-ft = \$8300. Remove 830-ft guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 770-ft = \$26950. Install 770-ft of W-beam strong post. W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install 2 W-beam tangent end treatments. High Speed Traffic Control at \$2350- per -Day for 8 Day(s) = \$18800. 4 days removal 4 days installation.										
	2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.									

Bighorn Canyon National Recreation Area ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos



BICA_0010_0.266_R_1.JPG

Ba	arrier ID:	BICA-0010)-0.267-L				
	te Name:	FORT SM	ITH ACCESS ROAD				
Inspect	ion Date:	02/08/201	0	Ra	rrier Rating:	59.40	
Barrier Descripti		52,00,201	• 		and a mathing.	02.10	
	Туре:	W-BEAM	WEAK POST	Barr	ier Function:	TRAFFIC	
Barrier	Material:	GALVANI	ZED STEEL	Р	ost Material:	OTHER: C	ONCRETE
	Blockout N/A Type:				Length (ft.):	617	
Speed Limi	t (MPH):	55			acement with pect to Road:	TANGENI	,
Hazard Behind	Barrier:	MEDIUM					
Barrier Crashwo	rthiness						
Appropriate Test Level:	TL-3		Barrier Test Level:	TL-2		Is Barrier worthy?:	NO
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A			
Average Measure	ements						
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.0
Height (In.):	20.0		Lateral Offset (In.):	28.7	Road G	rade (%):	2.60
Physical Condition	n						
	Align	ment and Height:					
Barrier		aking and Cracking:	Bent spoon on approach er bolt.	d and trailing end of ba	rrier. 3 broken pos	sts. 41 ft of be	ent rail. One loose
	Missing 1	Elements:	5 missing bolts on trailing	end of barrier.			
		osion and eathering:	Concrete posts are spalling erosion of soil around post	-	-		r. Moderate
	Align	ment and Height:					
End Treatments		aking and Cracking:					
	Missing	Elements:					
		osion and eathering:					

B	arrier ID:	BICA-0010)-0.267-L						
Rou	ite Name:	FORT SM	ORT SMITH ACCESS ROAD						
Inspec	tion Date:	02/08/201	0	Barrie	r Rating:	59.40			
Repair Recomme	endations	;							
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$45667		
Brief Workorder:	Replace barr	ier with W-bea	am Strong Post guardrail and	1 2 W-beam Tangent/non-fla	red end treatn	nents.			
Workorder:	Workorder: Remove Guardrail at \$10- per -Lin. Ft. for 617 LF = \$6170. Remove 617 feet of W-beam guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 557 LF = \$19495. Install 557 feet of W-beam strong post guardrail. W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install 2 W-beam tangent 350 compliant end treatments. Low Speed Traffic Control at \$1475- per -Day for 6 Day(s) = \$8850. 3 days removal 3 days installation.								
	-			ary for comparison to oth					

ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos



BICA_0010_0.267_L_1.JPG

Ba	arrier ID:	BICA-0010)-1.325-L					
	ite Name:	FORT SM	ITH ACCESS ROAD					
Increase	ion Data:	02/08/201	0		Barrier Rating:	52.70		
		02/08/201	0		Barrier Kating:	32.70		
Barrier Descripti								
	Туре:	W-BEAM	WEAK POST	ŀ	Barrier Function:	TRAFFIC		
Barrier	Material:	GALVANI	ZED STEEL		Post Material:	OTHER: C	ONCRETE	
	Blockout N/A Type:				Length (ft.):	255		
Speed Limi	t (MPH):	55			Placement with Respect to Road:	TANGENT		
Hazard Behind	Barrier:	HIGH						
Barrier Crashwo	rthiness							
Appropriate Test Level:	TL-3		Barrier Test Level:	TL-2		Is Barrier worthy?:	NO	
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE	
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.6	
Height (In.):	21.7		Lateral Offset (In.):	30.0	Road G	rade (%):	0.80	
Physical Condition	n							
	Align	ment and Height:						
Barrier		aking and Cracking:	Minor spalling of concrete	posts. No cracked	l or broken barrier eleme	ents.		
	Missing 3	Elements:	No missing barrier elemen	ts.				
		osion and eathering:	No corrosion of rails. Moc barrier posts.	lerate weathering of	of barrier posts (spalling). Erosion do	es not compromise	
	Align	ment and Height:						
End Treatments		aking and Cracking:						
	Missing	Elements:						
		osion and eathering:						

B	arrier ID:	BICA-0010)-1.325-L							
Rou	ite Name:	FORT SM	ITH ACCESS ROAD							
Inspec	tion Date:	02/08/201	0	Barrier Rating: 52.70						
Repair Recomme	endations	;								
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$23183			
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	two W-beam tangent end tr	eatments.					
Workorder:Remove Guardrail at \$10- per -Lin. Ft. for 255-ft = \$2550. Remove 255-ft guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 195-ft = \$6825. Install 195-ft of W-beam strong post. W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install 2 W-beam tangent end treatments. High Speed Traffic Control at \$2350- per -Day for 2 Day(s) = \$4700. 1 day removal 1 day installation.										
	2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.									

ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos

Condition photos are not available for BICA-0010-1.325-L.

Ba	arrier ID:	BICA-0010)-1.326-R					
	te Name:	FORT SM	IITH ACCESS ROAD					
Inspect	ion Date:	02/08/201	0	Bar	rier Rating:	55.50		
Barrier Descripti					8			
	Туре:	W-BEAM	WEAK POST	Barri	er Function:	TRAFFIC		
Barrier	Material:	GALVANI	ZED STEEL	Рс	ost Material:	OTHER: C	ONCRETE	
Blockout Type:				Length (ft.):	255			
Speed Limi	t (MPH):	55			cement with ect to Road:	TANGENT		
Hazard Behind	Barrier:	HIGH						
Barrier Crashwo	rthiness							
Appropriate Test Level:	TL-3		Barrier Test Level:	TL-2		Is Barrier worthy?:	NO	
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach tion Type:	NONE	
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.0	
Height (In.):	21.6		Lateral Offset (In.):	17.2	Road G	rade (%):	0.40	
Physical Conditio	n							
	Align	ment and Height:						
Barrier		aking and Cracking:	There was 28 ft of rail that	was bent in from impact				
	Missing	Elements:	No missing barrier elemen	ïS.				
		osion and eathering:	No major weathering of ba	rrier.				
	Align	ment and Height:						
End Treatments		aking and Cracking:						
	Missing 1	Elements:						
		osion and eathering:						

B	arrier ID:	BICA-0010)-1.326-R							
Rou	ite Name:	FORT SM	ITH ACCESS ROAD							
Inspec	tion Date:	02/08/201	0	Barrier Rating: 55.50						
Repair Recomme	endations	5								
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$23183			
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	two W-beam non-flared/tan	gent end treat	ments.				
Workorder:	Workorder:Remove Guardrail at \$10- per -Lin. Ft. for 255-ft = \$2550. Remove 255-ft of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 195-ft = \$6825. Install 195-ft of W-beam strong post. W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install two non-flared end treatments. High Speed Traffic Control at \$2350- per -Day for 2 Day(s) = \$4700. 1 day removal 1 day installation.									
	2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.									

ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos

Condition photos are not available for BICA-0010-1.326-R.

Ba	arrier ID:	BICA-0010)-3.103-R					
	te Name:	FORT SM	IITH ACCESS ROAD					
Inspect	ion Date:	02/08/201	0	I	Barrier Rating:	53.50		
Barrier Descripti					8			
	Туре:	W-BEAM	WEAK POST	Ba	rrier Function:	TRAFFIC		
Barrier	Material:	GALVANI	ZED STEEL		Post Material:	OTHER: C	ONCRETE	
	Blockout N/A Type:				Length (ft.):	430		
Speed Limi	t (MPH):	35			Placement with espect to Road:	TANGENT	,	
Hazard Behind	Barrier:	HIGH						
Barrier Crashwo	rthiness							
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES	
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE	
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	151.0	
Height (In.):	19.6		Lateral Offset (In.):	34.5	Road G	rade (%):	1.90	
Physical Conditio	n							
	Align	ment and Height:						
Barrier		aking and Cracking:						
	Missing 3	Elements:	No missing barrier element	S.				
		osion and eathering:	No major corrosion or wea	thering of the barrier	r.			
	Align	ment and Height:						
End Treatments		aking and Cracking:						
	Missing]	Elements:						
		osion and eathering:						

B	arrier ID:	BICA-0010)-3.103-R							
Rou	ite Name:	FORT SM	ITH ACCESS ROAD							
Inspection Date: 02/08/2010			0	Barrie	r Rating:	53.50				
Repair Recomme	endations	5								
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$33165			
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	two W-beam non-flared/tan	gent end treat	ments.				
Workorder:	Workorder:Remove Guardrail at \$10- per -Lin. Ft. for 430-ft = \$4300. Remove 430-ft of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 370-ft = \$12950. Install 370-ft of W-beam strong post guardrail. W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install two W-beam tangent 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.									

ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos

Condition photos are not available for BICA-0010-3.103-R.

Ba	arrier ID:	BICA-0010)-3.104-L							
	ite Name:	FORT SM	RT SMITH ACCESS ROAD							
Increat	ion Dotos	02/08/201	0		Downion Doting	53.50				
		02/08/201	0		Barrier Rating:	55.50				
Barrier Descripti										
	Туре:	W-BEAM	WEAK POST	ŀ	Barrier Function:	TRAFFIC				
Barrier	Material:	GALVANI	GALVANIZED STEEL		Post Material:	OTHER: C	ONCRETE			
	Blockout Type:	N/A			Length (ft.):	431				
Speed Limi	t (MPH):	35			Placement with Respect to Road:	TANGENT				
Hazard Behind	Barrier:	HIGH								
Barrier Crashwo	rthiness									
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES			
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE			
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A						
Average Measure	ements									
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.3			
Height (In.):	19.0		Lateral Offset (In.):	32.0	Road G	rade (%):	1.90			
Physical Condition	n									
	Align	ment and Height:	The alignment had no defle Height was 5 to 10 in below	-		nore than 12 in	n from impact.			
Barrier		aking and Cracking:	Concrete barrier posts are	spalling on top. 3	rails and the spoon end j	piece were ber	nt due to impact.			
	Missing 3	Elements:	No missing barrier elemen	ts.						
		osion and eathering:	No corrosion of barrier rail compromise posts.	s. Moderate weat	hering of barrier posts (s	spalling). No	erosion to			
	Align	ment and Height:								
End Treatments		aking and Cracking:								
	Missing 1	Elements:								
		osion and eathering:								

B	arrier ID:	BICA-0010)-3.104-L						
Rou	ite Name:	FORT SM	ITH ACCESS ROAD						
Inspection Date:02/08/2010Barrier Rating:53.50									
Repair Recomme	endations	;							
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$33215		
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	l two W-beam non-flared/tang	gent end treat	ments.			
Workorder:	W-Beam Stre W-beam tang	Remove Guardrail at \$10- per -Lin. Ft. for 431-ft = \$4310. Remove 431-ft of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 371-ft = \$12985. Install 371-ft of W-beam strong post guardrail. W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install two W-beam tangent end terminals. Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 2 days removal 2 days installation.							
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	er repair co	osts only.			

ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos

Condition photos are not available for BICA-0010-3.104-L.

Ba	arrier ID:	BICA-0010)-3.529-R				
	te Name:	FORT SM	IITH ACCESS ROAD				
Inspect	ion Date:	02/08/201	0	Barrie	er Rating:	58.40	
Barrier Description					8		
	Туре:	W-BEAM	WEAK POST	Barrier	Function:	TRAFFIC	
Barrier	Material:	GALVANI	ZED STEEL	Post	Material:	OTHER: C	ONCRETE
	Blockout Type:	N/A		L	ength (ft.):	504	
Speed Limi	Speed Limit (MPH): 35				ement with et to Road:	OUTSIDE	OF CURVE
Hazard Behind	Barrier:	HIGH					
Barrier Crashwo	rthiness						
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach tion Type:	NONE
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A			
Average Measure	ements						
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.3
Height (In.):	22.6		Lateral Offset (In.):	21.0	Road G	rade (%):	0.50
Physical Conditio							
	Align	ment and Height:	The barrier alignment had	no deflection and the height	was 4 to 6 in 1	below the 27 in	n design height.
Barrier		aking and Cracking:	No major breaking or cracl	king of the barrier.			
	Missing 1	Elements:	2 missing rail connection b	olts in barrier.			
		osion and eathering:	Minor erosion around barri	er posts less than 6 in.			
	Align	ment and Height:					
End Treatments		aking and Cracking:					
	Elements:						
		osion and eathering:					

B	arrier ID:	BICA-0010)-3.529-R						
Rou	ite Name:	FORT SM	ITH ACCESS ROAD						
Inspec	tion Date:	02/08/201	0	Barrie	r Rating:	58.40			
Repair Recomme	endations								
Repair	REPLACE		FMSS	CAPITAL		Repair	\$38825		
Action:			Work Type:	IMPROVEMENT		Cost:			
Brief	Replace barr	place barrier with W-beam strong post guardrail and two W-beam non-flared/tangent end treatments.							
Workorder:									
Workorder:	Remove Gua	urdrail at \$10-	per -Lin. Ft. for 504-ft = \$50	040. Remove 504-ft of guard	rail.				
	W-Beam Stre	ong Post at \$3	5- per -Lin. Ft. for 444-ft = 5	\$15540. Install 444-ft of W-l	beam strong p	ost guardrail.			
	W-beam tang	gent 350 comp	liant at \$3500- per -Each for	2 Unit(s) = \$7000. Install tv	wo W-beam ta	ingent end terr	ninals.		
	Labor at \$60	abor at \$60- per -Hour for 4 Hrs = \$240. Repair erosion.							
	Structural Ba	actural Backfill at \$50- per -Cu. Yd. for 2 CY = \$100. Repair erosion.							
Low Speed Traffic Control at \$1475- per -Day for 5 Day(s) = \$7375. 1 day to repair erosion 2 days removal 2days installation.									
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to otl	her repair co	osts only.			

ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos

Condition photos are not available for BICA-0010-3.529-R.

Ba	arrier ID:	BICA-0010)-3.531-L					
	te Name:	FORT SM	ITH ACCESS ROAD					
Inspect	ion Date:	02/08/201	0	Barr	ier Rating:	33.70		
Barrier Descripti		02/00/201		Duil	ier nutling.			
	Туре:	W-BEAM WEAK POST		Barrier Function:		TRAFFIC		
Barrier	Material:	GALVANI	ZED STEEL	Po	st Material:	OTHER: C	ONCRETE	
	Blockout Type:	N/A]	Length (ft.):	130		
Speed Limi	t (MPH):	35			cement with ect to Road:	TANGENT		
Hazard Behind	Barrier:	MEDIUM						
Barrier Crashwo	rthiness							
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES	
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach tion Type:	NONE	
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.3	
Height (In.):	21.0		Lateral Offset (In.):	35.7	Road G	rade (%):	0.40	
Physical Conditio	n							
	Align	ment and Height:	Minor impact to one rail but overall the alignment had no deflection. The barrier height was 5 to 7 in below the 27 in design height throughout.					
Barrier		aking and Cracking:	There was one rail that was	bent due to impact.				
	Missing 3	Elements:	No missing barrier elemen	is.				
		osion and eathering:	No corrosion of barrier rail	s. Minimal weathering o	f barrier posts.			
	Align	ment and Height:						
End Treatments		aking and Cracking:						
	Missing 1	Elements:						
Corrrosion and Weathering:								

B	arrier ID:	BICA-0010	SICA-0010-3.531-L							
Rou	ite Name:	FORT SM	RT SMITH ACCESS ROAD							
Inspec	Inspection Date: 02/08/2010 Barrier Rating: 33.70									
Repair Recomme	endations	5								
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$15070			
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	l two W-beam non-flared/tan	ngent end treat	ments.				
Workorder:	W-Beam Stre W-beam tang	Remove Guardrail at \$10- per -Lin. Ft. for 130-ft = \$1300. Remove 130-ft of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 70-ft = \$2450. Install 70-ft of W-beam strong post guardrail. W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install two W-beam tangent end terminals. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.								
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	her repair co	osts only.				

ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos

Condition photos are not available for BICA-0010-3.531-L.

Ba	arrier ID:	BICA-0010)-3.881-R				
	ite Name:	FORT SM	IITH ACCESS ROAD				
Inspect	tion Date:	02/08/201	0	E	Barrier Rating:	34.00	
Barrier Descripti			~				
	Туре:	W-BEAM WEAK POST		Barrier Function:		TRAFFIC	
Barrier	Material:	GALVANI	ZED STEEL		Post Material:	OTHER: C	ONCRETE
	Blockout Type:	N/A			Length (ft.):	174	
Speed Limi	it (MPH):	25			Placement with espect to Road:	TANGENI	
Hazard Behind	Barrier:	HIGH					
Barrier Crashwo	rthiness						
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES
Beg. End Trtmt Type:			Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A			
Average Measure	ements						
Design Height (In.):	27		Width (In.):	0.0		cing (In.):	150.0
Height (In.):	21.2		Lateral Offset (In.):	20.2	Road G	rade (%):	0.60
Physical Condition	n						
	Align	ment and Height:	Minor impact to two rails below the 27 in design heig		nent had no deflection	. The height w	was 4 to 7 in
Barrier		aking and Cracking:	There were two rails that w	vere bent due to impa	ict.		
	Missing	Elements:	No missing barrier elemen	ts.			
		osion and eathering:	No corrosion of galvanized	l rails. Moderate wea	athering of concrete b	arrier posts.	
	Align	ment and Height:					
End Treatments		aking and Cracking:					
	Missing 1	Elements:					
		osion and eathering:					

B	arrier ID:	BICA-0010)-3.881-R						
Rou	ite Name:	FORT SM	ITH ACCESS ROAD	H ACCESS ROAD					
Inspec	tion Date:	02/08/201	0	Barrier Rating: 34.00					
Repair Recomme	endations	;							
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$14553		
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	one W-beam non-flared/tan	gent end treat	ment.			
Workorder:	 Remove Guardrail at \$10- per -Lin. Ft. for 174-ft = \$1740. Remove 174-ft of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 144-ft = \$5040. Install 144-ft of W-beam strong post guardrail. W-beam tangent 350 compliant at \$3500- per -Each for 1 Unit(s) = \$3500. Install one W-beam tangent end terminal. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation. 								
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	her repair co	osts only.			

ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos

Condition photos are not available for BICA-0010-3.881-R.

Ba	arrier ID:	BICA-0010)-3.882-L					
	ite Name:	FORT SM	ITH ACCESS ROAD					
Inspect	tion Date.	02/08/201	0		Barrier Rating:	35.50		
Barrier Descripti		02/00/201			Durrier Runnig			
	Туре:	W-BEAM WEAK POST		Barrier Function:		TRAFFIC		
Barrier	Material:	GALVANI	ZED STEEL		Post Material:	OTHER: C	ONCRETE	
	Blockout Type:	N/A			Length (ft.):	242		
Speed Limi	it (MPH):	25			Placement with Respect to Road:	TANGENT		
Hazard Behind	Barrier:	HIGH						
Barrier Crashwo	rthiness							
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES	
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE	
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.3	
Height (In.):	21.2		Lateral Offset (In.):	31.0	Road G	rade (%):	1.00	
Physical Condition	on							
	Align	ment and Height:	The barrier alignment leaned out between 6 and 12 in for a 62 ft section. The height was between 4 and 7 in below the 27 in design height throughout.					
Barrier		aking and Cracking:	No major breaking or cracl	king of the barrier.				
	Missing	Elements:	No missing barrier elemen	S.				
		osion and eathering:	No major weathering of the	e barrier. Severe e	erosion around 7 posts an	nd slope.		
	Align	ment and Height:						
End Treatments		aking and Cracking:						
	Missing]	Elements:						
Corrrosion and Weathering:								

B	arrier ID:	BICA-0010	ICA-0010-3.882-L							
Rou	ite Name:	FORT SM	ITH ACCESS ROAD							
Inspec	tion Date:	02/08/201)	Barrie	r Rating:	35.50				
Repair Recomme	endations	5								
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$22721			
Brief Workorder:	Replace barr	ce barrier with W-beam strong post guardrail and two W-beam non-flared/tangent end treatments and repair erosion.								
Workorder:	W-Beam Stro W-beam tang Structural Ba Labor at \$60	emove Guardrail at \$10- per -Lin. Ft. for 242-ft = \$2420. Remove 242-ft of guardrail. 7-Beam Strong Post at \$35- per -Lin. Ft. for 182-ft = \$6370. Install 182-ft of W-beam strong post guardrail. 7-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install two W-beam tangent end terminals. ructural Backfill at \$50- per -Cu. Yd. for 4 CY = \$200. Repair erosion. abor at \$60- per -Hour for 4 Hrs = \$240. Repair erosion. ow Speed Traffic Control at \$1475- per -Day for 3 Day(s) = \$4425. 1 day erosion control 1 day barrier removal 1 day stallation.								
	2008 co	st estimate (A	STM Class D), prelimin	ary for comparison to oth	her repair co	osts only.				

ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos

Condition photos are not available for BICA-0010-3.882-L.

Ba	arrier ID:	BICA-0010)-3.909-R					
	te Name:	FORT SM	IITH ACCESS ROAD					
Inspect	ion Date:	02/08/201	0	Barrie	r Rating:	20.00		
Barrier Descripti			~					
	Туре:	W-BEAM WEAK POST		Barrier Function:		NON-TRAFFIC		
Barrier	Material:	GALVANI	ZED STEEL	Post	Material:	OTHER: C	ONCRETE	
	Blockout Type:	N/A		Le	ength (ft.):	346		
Speed Limi	Speed Limit (MPH): 25				ment with t to Road:	NON-TRA	FFIC BARRIER	
Hazard Behind	Barrier:	N/A						
Barrier Crashwo	rthiness							
Appropriate Test Level:	TL-1		Barrier Test Level:	N/A		Is Barrier worthy?:	N/A	
Beg. End Trtmt Type:		Is Beg. End Trtmt N/A Crashhworthy?:				Approach ion Type:	NONE	
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0		cing (In.):	150.3	
Height (In.):	20.0		Lateral Offset (In.):	0.0	Road G	rade (%):	0.00	
Physical Conditio								
	Align	ment and Height:	The barrier alignment had	no deflection and the height	was 6 to 8 in l	below the 27 in	n design height.	
Barrier		aking and Cracking:						
	Missing 1	Elements:	No missing barrier element	S.				
		osion and eathering:	No corrosion of galvanized	rails. Moderate weathering	g of concrete p	osts.		
	Align	ment and Height:						
End Treatments		aking and Cracking:						
	Missing 1	Elements:						
	Corrosion and Weathering:							

B	arrier ID:	BICA-0010)-3.909-R					
Rou	ite Name:	FORT SM	ITH ACCESS ROAD					
Inspec	Inspection Date: 02/08/2010 Barrier Rating: 20.00							
Repair Recomme	endations	;						
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$26312	
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	one W-beam non-flared/tan	gent end treat	ment.		
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 346-ft = \$3460. Remove 346 feet of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 316-ft = \$11060. Install 316 feet of W-beam strong post. W-beam tangent 350 compliant at \$3500- per -Each for 1 Unit(s) = \$3500. Install one W-beam tangent end terminal. Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 2 days removal 2 days installation.							
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	her repair co	osts only.		

ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos

Condition photos are not available for BICA-0010-3.909-R.

Ba	arrier ID:	BICA-0010)-4.157-R				
	te Name:	FORT SM	IITH ACCESS ROAD				
Inspect	ion Date:	02/08/201	0	Bar	rier Rating:	47.00	
Barrier Descripti			~		g.		
	Туре:	W-BEAM	WEAK POST	Barrier Function:		TRAFFIC	
Barrier	Material:	GALVANI	ZED STEEL	Ро	ost Material:	OTHER: C	ONCRETE
	Blockout Type:	N/A			Length (ft.):	306	
Speed Limi	t (MPH):	25			cement with ect to Road:	OUTSIDE	OF CURVE
Hazard Behind	Barrier:	HIGH					
Barrier Crashwo	rthiness						
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach tion Type:	NONE
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A			
Average Measure	ements						
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	151.0
Height (In.):	22.0		Lateral Offset (In.):	30.6	Road G	rade (%):	0.40
Physical Condition							
	Align	ment and Height:	The barrier alignment had	no deflection and the height	ght was 4 to 6 in 1	below the 27 in	n design height.
Barrier		aking and Cracking:	No major breaking or cracl	king of the barrier.			
	Missing]	Elements:	No missing barrier element	is.			
		osion and eathering:	No major weathering of ba	rrier.			
	Align	ment and Height:					
End Treatments		aking and Cracking:					
Missing Elements:							
		osion and eathering:					

B	arrier ID:	BICA-0010)-4.157-R					
Rou	ite Name:	FORT SM	ITH ACCESS ROAD					
Inspec	tion Date:	02/08/201	0	Barrie	r Rating:	47.00		
Repair Recomme	endations	;						
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$27027	
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	two W-beam non-flared/tan	ngent end treat	ments.		
Workorder:	der:Remove Guardrail at \$10- per -Lin. Ft. for 306-ft = \$3060. Remove 306-ft of guardrail.W-Beam Strong Post at \$35- per -Lin. Ft. for 246-ft = \$8610. Install 246-ft of W-beam strong post guardrail.W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install two W-beam tangent end terminals.Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 2 days removal 2 days installation.							
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to otl	her repair co	osts only.		

ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos

Condition photos are not available for BICA-0010-4.157-R.

Bar	rier ID:	BICA-0010	-4.158-L					
Route	e Name:	FORT SM	ITH ACCESS ROAD					
Inspectio	on Date:	02/08/2010	0	Barrie	er Rating:	41.20		
Barrier Description								
	Туре:	W-BEAM WEAK POST		Barrier Function:		TRAFFIC		
Barrier M	laterial:	GALVANI	ZED STEEL	Post	Material:	OTHER: C	ONCRETE	
В	Blockout Type:	N/A		Le	ength (ft.):	256		
Speed Limit (Speed Limit (MPH): 25				ment with t to Road:	INSIDE OF	FCURVE	
Hazard Behind E	Barrier:	HIGH						
Barrier Crashwort	thiness							
Appropriate Test Level:	Ľ-1		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES	
Beg. End Trtmt N Type:			Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE	
Ending End Trtmt N Type:	IONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measuren	nents							
8 8 ()	27		Width (In.):	0.0	Post Spa	cing (In.):	149.6	
Height (In.): 2	21.2		Lateral Offset (In.):	37.7	Road G	rade (%):	0.40	
Physical Condition	1							
	Align	ment and Height:	Besides a minor impact to one rail the alignment had no deflection. The height was 5 to 6 in below the 27 in design height throughout.					
Barrier		aking and Cracking:	There was a minor impact	to one rail and one bolt was loose.				
I	Missing I	Elements:	No missing barrier element	S.				
		osion and athering:	No corrosion of galvanized	rails. Minimal weathering	of concrete po	sts.		
	Align	ment and Height:						
End Treatments		aking and Cracking:						
1	Missing Elements:							
		osion and athering:						

B	arrier ID:	BICA-0010	BICA-0010-4.158-L							
Rou	ite Name:	FORT SM	ITH ACCESS ROAD							
Inspection Date: 02/08/2010 Barrier Rating						41.20				
Repair Recomme	endations	5								
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$21307			
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	two W-beam non-flared/tan	agent end treat	ments.				
Workorder:	Order:Remove Guardrail at \$10- per -Lin. Ft. for 256-ft = \$2560. Remove 256-ft of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 196-ft = \$6860. Install 196-ft of W-beam strong post guardrail. W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install two W-beam tangent end terminals. 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.									

ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos

Condition photos are not available for BICA-0010-4.158-L.

Ba	arrier ID:	BICA-0010)-4.402-L					
	ite Name:	FORT SM	ITH ACCESS ROAD					
Inspect	tion Date:	02/08/201	0	Barı	ier Rating:	53.70		
Barrier Descripti			~					
	Туре:	W-BEAM	WEAK POST	Barrier Function:		TRAFFIC		
Barrier	Material:	GALVANI	ZED STEEL	Po	st Material:	OTHER: C	ONCRETE	
	Blockout Type:	N/A]	Length (ft.):	315		
Speed Limi	it (MPH):	25			cement with ect to Road:	OUTSIDE	OF CURVE	
Hazard Behind	Barrier:	MEDIUM						
Barrier Crashwo	rthiness							
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES	
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A	NONE			
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	149.3	
Height (In.):	21.7		Lateral Offset (In.):	41.2	Road G	rade (%):	6.70	
Physical Condition	on							
	Align	ment and Height:	3 rails and 2 posts were impacted out of alignment while the remaining alignment had no deflection. The height was 5 to 6 in below the 27 in design height.					
Barrier		aking and Cracking:	There were 3 impacted rails 2 tilted posts and 2 loose bolts.					
	Missing]	Elements:	No missing barrier elemen	is.				
		osion and eathering:	No corrosion of galvanized	l rails. Moderate weather	ing (spalling) of	concrete posts		
	Align	ment and Height:						
End Treatments		aking and Cracking:						
	Missing	Elements:						
Corrosion and Weathering:								

B	arrier ID:	BICA-0010)-4.402-L					
Rou	ite Name:	FORT SM	FORT SMITH ACCESS ROAD					
Inspec	tion Date:	02/08/201	0	Barrie	r Rating:	53.70		
Repair Recomme	endations	5						
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$27473	
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	two W-beam non-flared/tan	ngent end treat	tments.		
Workorder:	der:Remove Guardrail at \$10- per -Lin. Ft. for 315-ft = \$3150. Remove 315-ft of guardrail.W-Beam Strong Post at \$35- per -Lin. Ft. for 255-ft = \$8925. Install 255-ft of W-beam strong post guardrail.W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install two W-beam tangent end terminals.Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 2 days removal 2 days installation.							
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	her repair co	osts only.		

ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos

Condition photos are not available for BICA-0010-4.402-L.

Ba	arrier ID:	BICA-0010)-4.517-R					
	te Name:	FORT SM	ITH ACCESS ROAD					
Inspect	ion Date:	02/08/201	0	Barr	ier Rating:	34.20		
Barrier Descripti								
	Туре:	W-BEAM WEAK POST		Barrier Function:		TRAFFIC		
Barrier	Material:	GALVANI	ZED STEEL	Pos	st Material:	OTHER: C	ONCRETE	
	Blockout Type:	N/A		I	length (ft.):	209		
Speed Limi	t (MPH):	25			ement with ct to Road:	INSIDE OF	FCURVE	
Hazard Behind	Barrier:	HIGH						
Barrier Crashwo	rthiness							
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-2		Is Barrier hworthy?:	YES	
Beg. End Trtmt Type:			Is Beg. End Trtmt Crashhworthy?:	N/A		Approach NONE Transition Type:		
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0		cing (In.):	149.6	
Height (In.):	22.7		Lateral Offset (In.):	44.7	Road G	rade (%):	6.70	
Physical Conditio	n							
	Align	ment and Height:						
Barrier		aking and Cracking:	No cracked or broken barri	er elements.				
	Missing	Elements:	No missing barrier elemen	ts.				
		osion and eathering:	No corrosion of galvanized erosion.	l rails. Moderate weatheri	ng of concrete p	oosts (spalling a	at ends). No	
	Align	ment and Height:						
End Treatments		aking and Cracking:						
	Missing 1	Elements:						
		osion and eathering:						

B	arrier ID:	BICA-0010-4.517-R								
Rou	ite Name:	FORT SM	ITH ACCESS ROAD							
Inspec	tion Date:	02/08/201	0	Barrie	r Rating:	34.20				
Repair Recomme	endations	5								
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$18981			
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	two W-beam non-flared/tan	agent end treat	ments.				
Workorder:	corder:Remove Guardrail at \$10- per -Lin. Ft. for 209-ft = \$2090. Remove 209-ft of guardrail.W-Beam Strong Post at \$35- per -Lin. Ft. for 149-ft = \$5215. Install 149-ft of W-beam strong post guardrail.W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install two W-beam tangent end terminals.Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.									
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	her repair co	osts only.				

ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos

Condition photos are not available for BICA-0010-4.517-R.

Ba	arrier ID:	BICA-0010)-4.519-L					
	te Name:	FORT SM	ITH ACCESS ROAD					
Inspect	ion Date:	02/08/201	0	B	arrier Rating:	50.90		
Barrier Descripti		02/00/201			arrier Ruting,			
	Туре:	W-BEAM WEAK POST		Barrier Function:		TRAFFIC		
Barrier	Material:	GALVANI	ZED STEEL	 	Post Material:	OTHER: C	ONCRETE	
	Blockout Type:	N/A			Length (ft.):	228		
Speed Limi	t (MPH):	25			lacement with spect to Road:	OUTSIDE	OF CURVE	
Hazard Behind	Barrier:	MEDIUM						
Barrier Crashwo	rthiness							
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES	
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A				
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.0	
Height (In.):	22.0		Lateral Offset (In.):	32.7	Road G	rade (%):	7.00	
Physical Conditio	n							
	Align	ment and Height:						
Barrier		aking and Cracking:	There were 2 loose bolts.	No cracked or broken	barrier elements.			
	Missing	Elements:	No missing barrier elemen	ts.				
		osion and eathering:	No corrosion of galvanized	rails. Moderate weat	hering of concrete p	osts (some spa	illing of ends).	
	Align	ment and Height:						
End Treatments		aking and Cracking:						
	Missing 1	Elements:						
	Corrosion and Weathering:							

B	arrier ID:	BICA-0010	BICA-0010-4.519-L							
Rou	ite Name:	FORT SM	ITH ACCESS ROAD							
Inspec	tion Date:	02/08/201	0	Barrie	r Rating:	50.90				
Repair Recomme	endations	;								
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$19921			
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	two W-beam non-flared/tan	gent end treat	ments.				
Workorder:	korder:Remove Guardrail at \$10- per -Lin. Ft. for 228-ft = \$2280. Remove 228-ft guardrail.W-Beam Strong Post at \$35- per -Lin. Ft. for 168-ft = \$5880. Install 168-ft of W-beam strong post guardrail.W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install two W-beam tangent end terminals.Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950. 1 day removal 1 day installation.									
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	her repair co	osts only.				

ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos

Condition photos are not available for BICA-0010-4.519-L.

Ba	arrier ID:	BICA-0010)-4.581-R				
	ite Name:	FORT SM	IITH ACCESS ROAD				
Inspect	tion Date:	03/08/201	0	Barri	er Rating:	31.20	
Barrier Descripti					8		
	Туре:	W-BEAM	WEAK POST	Barrier	r Function:	TRAFFIC	
Barrier	Material:	GALVANI	ZED STEEL	Pos	t Material:	OTHER: C	ONCRETE
	Blockout Type:	N/A	Length		ength (ft.):	159	
Speed Limi	Speed Limit (MPH): 25				ement with ct to Road:	TANGENT	
Hazard Behind	Barrier:	HIGH					
Barrier Crashwo	rthiness						
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A	Approach NONE Transition Type:		
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A			
Average Measure	ements						
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.0
Height (In.):	22.7		Lateral Offset (In.):	44.2	Road G	rade (%):	7.50
Physical Condition							
	Align	ment and Height:	The alignment had no defle	ection and the height was 3	to 6 in below the	he 27 in design	n height.
Barrier		aking and Cracking:	No cracked or broken barri	er elements.			
·	Missing 3	Elements:	No missing barrier elemen	is.			
		osion and eathering:	No corrosion of galvanized	l rails. Moderate weatherin	ng of concrete p	osts (some spa	alling of ends).
	Align	ment and Height:					
End Treatments		aking and Cracking:					
	Missing Elements:						
		osion and eathering:					

B	arrier ID:	ID: BICA-0010-4.581-R								
Rou	ite Name:	FORT SM	ITH ACCESS ROAD							
Inspec	tion Date:	03/08/201	0	Barrier	r Rating:	31.20				
Repair Recomme	endations	;								
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$13811			
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	one W-beam non-flared/tang	gent end term	inal.				
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 159-ft = \$1590. Remove 159-ft of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 129-ft = \$4515. Install 129-ft of W-beam strong post guardrail. W-beam tangent 350 compliant at \$3500- per -Each for 1 Unit(s) = \$3500. Install one W-beam tangent end terminal. 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.									

ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos

Condition photos are not available for BICA-0010-4.581-R.

Ba	arrier ID:	BICA-0010	-4.605-R				
	te Name:	FORT SM	ITH ACCESS ROAD				
Inspect	ion Date:	03/08/201	0	Barrie	er Rating:	32.90	
Barrier Descripti		00,00,201	~ 	Durre			
	Туре:	W-BEAM	WEAK POST	Barrier	Function:	NON-TRAFFIC	
Barrier	Material:	GALVANI	ZED STEEL	Post	Material:	OTHER: C	ONCRETE
	Blockout Type:	N/A		Le	ength (ft.):	461	
Speed Limi	Speed Limit (MPH): 25				ment with t to Road:	NON-TRA	FFIC BARRIER
Hazard Behind	Barrier:	N/A					
Barrier Crashwo	rthiness						
Appropriate Test Level:	TL-1		Barrier Test Level:	N/A		Is Barrier worthy?:	N/A
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach tion Type:	NONE
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A			
Average Measure	ements						
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.0
Height (In.):	21.2		Lateral Offset (In.):	0.0	Road G	rade (%):	0.00
Physical Condition							
	Align	ment and Height:	The barrier alignment had	no deflection and the height	was 4 to 7 in l	below the 27 in	n design height.
Barrier		aking and Cracking:	No cracked or broken barri	er elements.			
	Missing]	Elements:	No missing barrier element	is.			
		osion and eathering:	No corrosion of galvanized	l rails. Moderate weathering	of concrete po	osts (some spa	lling of ends).
	Align	ment and Height:					
End Treatments		aking and Cracking:					
	Missing	Elements:					
		osion and eathering:					

B	arrier ID:	BICA-0010)-4.605-R					
Rou	ite Name:	FORT SM	ITH ACCESS ROAD					
Inspec	tion Date:	03/08/201	0	Barrie	r Rating:	32.90		
Repair Recomme	endations	;						
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$29310	
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail.					
Workorder:	 Remove Guardrail at \$10- per -Lin. Ft. for 461-ft = \$4610. Remove 461 feet of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 461-ft = \$16135. Install 461 feet of W-beam strong post guardrail. Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 1 day removal 1 day installation. 							
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	her repair co	osts only.		

ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos

Condition photos are not available for BICA-0010-4.605-R.

Ba	arrier ID:	BICA-0010)-4.686-R				
	ite Name:	FORT SM	IITH ACCESS ROAD				
Inspect	tion Date:	03/08/201	0	I	Barrier Rating:	47.00	
Barrier Descripti					8		
	Туре:	W-BEAM	WEAK POST	Ba	rrier Function:	TRAFFIC	
Barrier	Material:	GALVANI	ZED STEEL		Post Material:	OTHER: C	ONCRETE
	Blockout Type:	N/A			Length (ft.):	316	
Speed Limi	it (MPH):	25			Placement with espect to Road:	OUTSIDE	OF CURVE
Hazard Behind	l Barrier:	HIGH					
Barrier Crashwo	rthiness						
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach tion Type:	NONE
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A			
Average Measure	ements						
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.0
Height (In.):	20.6		Lateral Offset (In.):	38.2	Road G	rade (%):	7.60
Physical Condition							
	Align	ment and Height:	The barrier alignment had	no deflection and the	e height was 6 to 7 in l	below the 27 in	n design height.
Barrier		aking and Cracking:	No major breaking or cracl	king of the barrier.			
	Missing 3	Elements:	No missing barrier element	S.			
		osion and eathering:	No major weathering of the	e barrier.			
	Align	ment and Height:					
End Treatments		aking and Cracking:					
	Missing	Elements:					
		osion and eathering:					

B	arrier ID:	BICA-0010)-4.686-R					
Rou	ite Name:	FORT SM	ITH ACCESS ROAD					
Inspect	tion Date:	03/08/201	0	Barrie	r Rating:	47.00		
Repair Recomme	endations	;						
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$22132	
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail.					
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 316 LF = \$3160. Remove 316 feet of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 316 LF = \$11060. Install 316 feet of W-beam strong post guardrail. Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 2 days removal 2 days installation.							
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	her repair co	osts only.		

ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos

Condition photos are not available for BICA-0010-4.686-R.

Ba	arrier ID:	BICA-0010)-4.734-R				
	ite Name:	FORT SM	IITH ACCESS ROAD				
Inspect	tion Date:	03/08/201	0	Barr	ier Rating:	28.60	
Barrier Descripti					8		
	Туре:	W-BEAM	WEAK POST	Barrie	er Function:	NON-TRA	FFIC
Barrier	Material:	GALVANI	ZED STEEL	Po	st Material:	OTHER: C	ONCRETE
	Blockout Type:	N/A]	Length (ft.):	357	
Speed Limi	it (MPH):	25			cement with ect to Road:	NON-TRA	FFIC BARRIER
Hazard Behind	Barrier:	N/A					
Barrier Crashwo	rthiness						
Appropriate Test Level:	TL-1		Barrier Test Level:	N/A		Is Barrier worthy?:	N/A
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach tion Type:	NONE
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A			
Average Measure	ements						
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	0.0
Height (In.):	21.6		Lateral Offset (In.):	0.0	Road G	rade (%):	0.00
Physical Condition							
	Align	ment and Height:	The barrier alignment had	no deflection and the heig	ht was 5 to 6 in l	below the 27 in	n design height.
Barrier		aking and Cracking:	No major breaking or cracl	king of the barrier.			
	Missing 3	Elements:	No missing barrier elemen	is.			
		osion and eathering:	No major weathering of the	e barrier.			
	Align	ment and Height:					
End Treatments		aking and Cracking:					
	Missing	Elements:					
		osion and eathering:					

B	arrier ID:	BICA-0010)-4.734-R					
Rou	ite Name:	FORT SM	ITH ACCESS ROAD					
Inspec	tion Date:	03/08/201	0	Barrie	r Rating:	28.60		
Repair Recomme	endations	;						
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$24162	
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail.					
Workorder:	order: Remove Guardrail at \$10- per -Lin. Ft. for 357-ft = \$3570. Remove 357 feet of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 357-ft = \$12495. Install 357 feet of W-beam strong post guardrail. Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 2 days removal 2 days installation.							
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	osts only.		

ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos

Condition photos are not available for BICA-0010-4.734-R.

Ba	arrier ID:	BICA-0010)-4.809-R					
	ite Name:	FORT SM	ITH ACCESS ROAD					
Inspect	tion Date.	03/08/201	0	Barri	er Rating:	61.50		
Barrier Descripti		05/00/201		Dain	er Rating.	01.00		
	Туре:	W-BEAM	WEAK POST	Barrier	Function:	TRAFFIC		
Barrier	Material:	GALVANI	ZED STEEL	Pos	t Material:	OTHER: C	ONCRETE	
	Blockout Type:	N/A		L	ength (ft.):	2420		
Speed Limi	it (MPH):	25			ement with ct to Road:			
Hazard Behind	l Barrier:	EXTREME						
Barrier Crashwo	rthiness							
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES	
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach tion Type:	NONE	
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.3	
Height (In.):	21.1		Lateral Offset (In.):	52.5	Road G	rade (%):	6.20	
Physical Condition	on							
	Align	ment and Height:	180 ft of guardrail leaning design height for 72 ft betw ft.			-		
Barrier			There were 5 rails and 3 pc loose bolts.	osts that had minor impacts	and have plow	damage. The	re were also 19	
	Missing	Elements:	10 missing bolts. No other	missing barrier elements.				
		osion and eathering:	No corrosion of galvanized	l rails. Moderate weatherin	ng of concrete p	osts (some spa	alling of concrete).	
	Align	ment and Height:						
End Treatments		aking and Cracking:						
	Missing	Elements:						
		osion and eathering:						

B	arrier ID:	BICA-0010)-4.809-R					
Rou	ite Name:	FORT SMITH ACCESS ROAD						
Inspec	Inspection Date:03/08/2010Barrier Rating:61.50							
Repair Recomme	endations	;						
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$154935	
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	one W-beam non-flared/tan	gent end treat	ments.		
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 2420-ft = \$24200. Remove 2420 feet of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 2390-ft = \$83650. Install 2390 feet of W-beam strong post guardrail. W-beam tangent 350 compliant at \$3500- per -Each for 1 Unit(s) = \$3500. Install 1 W-beam tangent 350 compliant guardrail. Low Speed Traffic Control at \$1475- per -Day for 20 Day(s) = \$29500. 10 days removal 10 days installation.							
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to otl	her repair co	sts only.		

ROUTE 0010: FORT SMITH ACCESS ROAD

Barrier Condition Photos

Condition photos are not available for BICA-0010-4.809-R.

Ba	arrier ID:	BICA-0011	1-0.758-R				
	ite Name:	OK-A-BE					
Incore	ion Datas	04/08/201	0	D.a	ier Rating:	29.60	
		04/08/201	0	Darr	ier Kating:	29.00	
Barrier Descripti							
	Туре:	W-BEAM	WEAK POST	Barrie	r Function:	TRAFFIC	
Barrier	Material:	WEATHER		Pos	st Material:	WOOD	
		STEEL/CO	RTEN				
	Blockout Type:	N/A		I	Length (ft.):	106	
Speed Limi	it (MPH):	45			ement with ect to Road:	TANGENT	,
Hazard Behind	Barrier:	MEDIUM				1	
Barrier Crashwo	rth <u>iness</u>						
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A			
Average Measure	ements						
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.3
Height (In.):	24.0		Lateral Offset (In.):	35.5		rade (%):	2.20
Physical Condition	on						
	Align	ment and Height:	The barrier alignment had no deflection and the height ranged between 1 and 3 in below the 27 in design height for 77 ft and from 3 to 5 in below for 29 ft.				
Barrier		aking and Cracking:					
	Missing	Elements:	No missing barrier elemen	ts.			
		osion and eathering:	There is major weathering	of the barrier posts possib	le dry rot or bug	s at base.	
	Align	ment and Height:					
End Treatments		aking and Cracking:					
	Missing	Elements:					
		osion and eathering:					

B	arrier ID:	· ID: BICA-0011-0.758-R							
Rou	ite Name:	OK-A-BE	OK-A-BEH ROAD						
Inspec	tion Date:	04/08/201	0	Barrie	r Rating:	29.60			
Repair Recomme	endations								
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$2789		
Brief Workorder:	Raise 106-ft	of barrier up to	o 27-in design height.						
Workorder:	orkorder: Adjust Guardrail at \$10- per -Lin. Ft. for 106-ft = \$1060. Raise 106-ft of barrier up to 27-in design height. Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475.								
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	sts only.			

ROUTE 0011: OK-A-BEH ROAD

Barrier Condition Photos

Condition photos are not available for BICA-0011-0.758-R.

Ba	arrier ID:	BICA-0011	1-0.760-L				
	ite Name:	OK-A-BE					
	· · · · D · · · ·	04/09/201	0		Dente Detter	25.20	
		04/08/201	0		Barrier Rating:	25.20	
Barrier Descripti	on	1				1	
	Туре:	W-BEAM	WEAK POST]	Barrier Function:	TRAFFIC	
Barrier	Material:	WEATHER STEEL/CO			Post Material:	WOOD	
	Blockout Type:	N/A			Length (ft.):	53	
Speed Limi	it (MPH):	45			Placement with Respect to Road:	TANGENT	,
Hazard Behind	Barrier:	MEDIUM		1		1	
Barrier Crashwo	rthiness						
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A			
Average Measure	ements						
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.0
Height (In.):	25.2		Lateral Offset (In.):	33.5		rade (%):	2.00
Physical Condition	on						
		ment and Height:	The barrier alignment had 38 ft and was between 1 ar		-	n of the 27 in	design height for
Barrier		aking and Cracking:	There is some cracking of	the barrier posts.	1 post is broken with pos	ssible dry rot o	or bugs at base.
	Missing]	Elements:	No missing barrier elemen	ts.			
		osion and eathering:	There is major weathering	of the barrier post	s possible dry rot or bug	s at base.	
	Align	ment and Height:					
End Treatments		aking and Cracking:					
	Missing 1	Elements:					
		osion and eathering:					

B	arrier ID:	BICA-0011	BICA-0011-0.760-L							
Rou	ite Name:	OK-A-BE	OK-A-BEH ROAD							
Inspec	Inspection Date: 04/08/2010 Barrier Rating: 25.20									
Repair Recomme	endations	;								
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$1898			
Brief Workorder:	Raise 15-ft o	f barrier up to	the 27-in design height and	replace 1 post.						
Workorder:	der: Replace Post at \$100- per -Each for 1 Post(s) = \$100. Broken with dry rot or bugs at base. Adjust Guardrail at \$10- per -Lin. Ft. for 15-ft = \$150. Raise 15-ft of guardrail up to the 27-in design height. Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475.									
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ner repair co	sts only.				

ROUTE 0011: OK-A-BEH ROAD

Barrier Condition Photos



BICA_0011_0.760_L_1.JPG

Ba	arrier ID:	BICA-0011	l-0.807-R					
	ite Name:	OK-A-BE						
	• D. (04/09/201	0			22.00		
		04/08/201	0		Barrier Rating:	33.90		
Barrier Descripti	on					1		
	Туре:	W-BEAM V	WEAK POST	В	arrier Function:	TRAFFIC		
Barrier	Material:	WEATHER STEEL/CO			Post Material:	WOOD		
	Blockout Type:	N/A			Length (ft.):	54		
Speed Limi	Speed Limit (MPH): 45			ŀ	Placement with Respect to Road:	TANGENT		
Hazard Behind	Barrier:	MEDIUM		1		1		
Barrier Crashwo	rthiness							
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES	
Beg. End Trtmt Type:	NONE			N/A		Approach ion Type:	NONE	
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0	Post Sna	cing (In.):	150.3	
Height (In.):	23.0		Lateral Offset (In.):	33.5		rade (%):	3.00	
Physical Condition	n							
		ment and Height:						
Barrier		aking and Cracking:						
	Missing 1	Elements:	No missing barrier elemen	ts.				
		osion and eathering:	There is major weathering	of the barrier posts	possible dry rot or bug	s at base.		
	Align	ment and Height:						
End Treatments		aking and Cracking:						
	Missing 1	Elements:						
		osion and eathering:						

B	arrier ID:	ier ID: BICA-0011-0.807-R								
Rou	ite Name:	OK-A-BE	OK-A-BEH ROAD							
Inspec	tion Date:	04/08/201	0	Barrier	r Rating:	33.90				
Repair Recomme	endations									
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$2217			
Brief Workorder:	Raise 54-ft o	f barrier up to	27-in design height.							
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 54-ft = \$540. Raise 54-ft of barrier up to 27-in design height. Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475.									
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	sts only.				

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_0.807_R_1.JPG

Ba	arrier ID:	BICA-0011	I-0.812-L				
	ite Name:	OK-A-BE					
Inspect	tion Date:	04/08/201	0	г	Barrier Rating:	29.60	
		04/08/201	0		barrier Kating:	29.00	
Barrier Descripti							
	Туре:	W-BEAM	WEAK POST	Ba	rrier Function:	TRAFFIC	
Barrier	Material:	WEATHEF	RING		Post Material:	WOOD	
		STEEL/CO	RTEN				
	Blockout Type:	N/A			Length (ft.):	105	
Speed Limi		45			Placement with	TANGENT	·
Speed Lini	u (1911 11).	15			espect to Road:	17 HOLIN	
Hazard Behind	l Barrier:	MEDIUM					
Barrier Crashwo	rthiness						
Appropriate Test	TL-2		Barrier	TL-2		Is Barrier	YES
Level:			Test Level:		Crast	worthy?:	
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE
Ending End Trtmt	NONE		Ending End Trtmt	N/A	1141151	ion Type.	
Туре:	THOM I		Crashhworthy?:	1011			
Average Measure	ements						
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	149.6
Height (In.):	23.0		Lateral Offset (In.):	25.6		rade (%):	2.70
Physical Condition	on						
	Align	ment and Height:	The alignment had no deflection and the height was 4 in below the 27 in design height throughout.				
Barrier		aking and Cracking:					
	Missing 3	Elements:	No missing barrier elemen	ts.			
		osion and eathering:	There is major weathering	of the barrier posts p	ossible dry rot or bug	s at base.	
	Align	ment and Height:					
End Treatments		aking and Cracking:					
	Missing	Elements:					
		osion and eathering:					

B	arrier ID:	BICA-0011	BICA-0011-0.812-L							
Rou	ite Name:	OK-A-BE	DK-A-BEH ROAD							
Inspec	tion Date:	04/08/201	0	Barrie	r Rating:	29.60				
Repair Recomme	endations	;								
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$2888			
Brief Workorder:	Replace brok	en post. Raise	105-ft of barrier up to 27-ir	n design height.						
Workorder:	Adjust Guard	eplace Post at \$100- per -Each for 1 Post(s) = \$100. Broken with dry rot or bugs at base. djust Guardrail at \$10- per -Lin. Ft. for 105-ft = \$1050. Raise 105-ft of barrier up to 27-in design height. w Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475.								
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	osts only.				

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_0.812_L_1.JPG

Ba	arrier ID:	BICA-0011	I-1.141-L					
	ite Name:	OK-A-BE						
	• D. (04/08/201	0			22.00		
		04/08/201	0		Barrier Rating:	33.90		
Barrier Descripti	on							
	Туре:	W-BEAM V	WEAK POST	Ba	arrier Function:	TRAFFIC		
Barrier	Material:	WEATHER STEEL/CO			Post Material:	WOOD		
	Blockout Type:	N/A			Length (ft.):	130		
Speed Limi	it (MPH):	45			Placement with Respect to Road:	TANGENT	- -	
Hazard Behind	Barrier:	MEDIUM		1		1		
Barrier Crashwo	rthiness							
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES	
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE	
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0	Post Sna	cing (In.):	150.3	
Height (In.):	24.7		Lateral Offset (In.):	30.0		rade (%):	5.50	
Physical Condition	n							
		ment and Height:						
Barrier		aking and Cracking:	No cracked or broken barri	er elements. There	were a few loose bolts			
	Missing	Elements:	No missing barrier elemen	is.				
		osion and eathering:	Minimal corrosion of barri rot or bug infestation of wo			osts. 2 rotten	posts. Possible dry	
	Align	ment and Height:						
End Treatments		aking and Cracking:						
	Missing 1	Elements:						
		osion and eathering:						

B	arrier ID:	BICA-0011	-1.141-L							
Rou	ite Name:	OK-A-BE	K-A-BEH ROAD							
Inspection Date: 04/08/2010 Barrier Rating: 33.90										
Repair Recomme	endations	5								
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$3339			
Brief Workorder:	Raise 130-ft	of barrier up t	o 27-in design height replace	e 2 posts and tighten loose bo	olts.					
Workorder:	Replace Post at \$100- per -Each for 2 Post(s) = \$200. Replace 2 posts. Adjust Guardrail at \$10- per -Lin. Ft. for 130-ft = \$1300. Raise 130-ft of guardrail to 27 inch design height. Labor at \$60- per -Hour for 1 Hrs = \$60. 1 hour to tighten bolts. 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.									

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_1.141_L_1.JPG

Ba	rrier ID:	BICA-0011	I-1.142-R					
	te Name:	OK-A-BE						
Turnert	ion Datas	04/08/201	0	т	Barrier Rating:	29.60		
		04/08/201	0		barrier Katilig:	29.00		
Barrier Description								
	Туре:	W-BEAM	WEAK POST	Ba	rrier Function:	TRAFFIC		
Barrier	Material:	WEATHER	RING		Post Material:	WOOD		
		STEEL/CO	RTEN					
	Blockout Type:	N/A			Length (ft.):	183		
Speed Limi		45			Placement with	TANGENT	,	
Speed Linn	t (IVII II).	15			espect to Road:	17 HOLIN		
Hazard Behind	Barrier:	MEDIUM						
Barrier Crashwo	rthiness							
Appropriate Test	TL-2		Barrier	TL-2		Is Barrier	YES	
Level:			Test Level:		Crast	worthy?:		
	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE	
Type: Ending End Trtmt	NONE		Ending End Trtmt	N/A	1141151	ion Type.		
Туре:			Crashhworthy?:	1011				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.0	
Height (In.):	24.7		Lateral Offset (In.):	31.0		rade (%):	5.90	
Physical Conditio	n							
	Align	ment and Height:	The alignment had no deflection and the height was within 1 in of the 27 in design height for 56 ft 1 to 3 in below for 104 ft and more than 3 in below for 23 ft.					
		aking and						
Barrier	(Cracking:						
	Missing	Elements:	No missing barrier element	ts.				
-	Corrr	osion and	Minimal corrosion of barri	er rails Moderate w	eathering of wood po	sts 2 rotten n	osts Possible dry	
		eathering:	rot/bug infestation of wood		cathering of wood po.	5.5. 2 Totten p	535. 1 055101C dry	
	Align	ment and						
		Height:						
-	Brea	aking and						
End Treatments		Cracking:						
	Missing	Elements:						
		osion and eathering:						

B	arrier ID:	BICA-0011	-1.142-R							
Rou	ite Name:	OK-A-BE	OK-A-BEH ROAD							
Inspect	04/08/201	Barrier	r Rating:	29.60						
Repair Recomme	endations	5								
Repair Action:	REPAIR	EPAIR FMSS DEFERRED Repair Work Type: MAINTENANCE Cost:								
Brief Workorder:	Replace 2 po	osts. Raise 127	ft of barrier up to 27-in des	ign height and tighten loose b	polts.					
Workorder:	 Replace Post at \$100- per -Each for 2 Post(s) = \$200. Replace 2 rotten posts. Adjust Guardrail at \$10- per -Lin. Ft. for 127-ft = \$1270. Raise 127-ft of guard rail to 27 inch design height. Labor at \$60- per -Hour for 1 Hrs = \$60. 1 hr to tighten bolts. 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.									

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_1.142_R_1.JPG

Ba	arrier ID:	BICA-0011	-1.267-R					
	ite Name:	OK-A-BE						
Trans of	ion Dotos	04/08/2014	0	Dam	rian Datin ar	41.00		
		04/08/201	0	Bari	rier Rating:	41.00		
Barrier Descripti								
	Туре:	W-BEAM V	WEAK POST	Barrie	er Function:	TRAFFIC		
Barrier	Material:	WEATHER STEEL/CO		Po	st Material:	WOOD		
	Blockout Type:	N/A]	Length (ft.):	157		
Speed Limi	t (MPH):	45			cement with ect to Road:	INSIDE OF	FCURVE	
Hazard Behind	Barrier:	MEDIUM				•		
Barrier Crashwo	rthiness							
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES	
Beg. End Trtmt Type:	NONE			N/A		Approach ion Type:	NONE	
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements				-			
Design Height (In.):	27		Width (In.):	0.0	Post Sna	cing (In.):	150.0	
Height (In.):	22.7		Lateral Offset (In.):	40.0		rade (%):	4.70	
Physical Condition	n							
		ment and Height:						
Barrier		aking and Cracking:						
	Missing	Elements:	No missing barrier element	s.				
		osion and eathering:	Minimal corrosion of barri	er rails. Moderate weathe	ering of wood pos	sts.		
	Align	ment and Height:						
End Treatments		aking and Cracking:						
	Missing	Elements:						
		osion and eathering:						

B	arrier ID:	: BICA-0011-1.267-R							
Rou	ite Name:	OK-A-BE	OK-A-BEH ROAD						
Inspection Date: 04/08/2010 Barrier Rating: 41.00									
Repair Recomme	endations	5							
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$3416		
Brief Workorder:	Raise 157-ft	of barrier up t	o 27-in design height and tig	hten loose bolts.					
Workorder:	korder:Adjust Guardrail at \$10- per -Lin. Ft. for 157-ft = \$1570. Raise 157-ft of guardrail to 27 inch design height. Labor at \$60- per -Hour for 1 Hrs = \$60. 1 hour of labor to tighten bolts. Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475.								
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	osts only.			

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_1.267_R_1.JPG

Ba	arrier ID:	BICA-0011	l-1.365-R				
	ite Name:	OK-A-BE					
	• D. (04/09/201	0	т	D	20.50	
		04/08/201	0	l I	Barrier Rating:	39.50	
Barrier Descripti	on					1	
	Туре:	W-BEAM	WEAK POST	Ba	rrier Function:	TRAFFIC	
Barrier	Material:	WEATHER STEEL/CO			Post Material:	WOOD	
	Blockout Type:	N/A			Length (ft.):	257	
Speed Limi	t (MPH):	45			Placement with espect to Road:	INSIDE OF	F CURVE
Hazard Behind	Barrier:	MEDIUM					
Barrier Crashwo	rthiness						
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES
Beg. End Trtmt Type:	NONE			N/A		Approach ion Type:	NONE
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A			
Average Measure	ements						
Design Height (In.):	27		Width (In.):	0.0	Post Sna	cing (In.):	150.3
Height (In.):	23.2		Lateral Offset (In.):	42.2		rade (%):	4.00
Physical Condition	n						
		ment and Height:	The barrier alignment had height.	no deflection and the	height ranged from 4	to 6 in below	the 27 in design
Barrier		aking and Cracking:	Some cracking of posts 4 p	osts broken or rotted	l at base.		
	Missing]	Elements:	No missing barrier elemen	ts.			
		osion and eathering:	The barrier posts are badly	weathered with dry	rot or bugs at base.		
	Align	ment and Height:					
End Treatments		aking and Cracking:					
	Missing 1	Elements:					
		osion and eathering:					

B	arrier ID:	D: BICA-0011-1.365-R								
Rou	ite Name:	OK-A-BE	OK-A-BEH ROAD							
Inspec	Inspection Date:04/08/2010Barrier Rating:39.50									
Repair Recomme	endations	;								
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$6512			
Brief Workorder:	Raise 257-ft	of barrier up to	o 27-in design height and re	place 4 posts.						
Workorder:	Adjust Guard	Replace Post at \$100- per -Each for 4 Post(s) = \$400. Broken or rotted off at base. Adjust Guardrail at \$10- per -Lin. Ft. for 257-ft = \$2570. Raise 257-ft of barrier up to 27-in design height. Low Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950.								
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ner repair co	sts only.				

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_1.365_R_1.JPG

B	arrier ID:	BICA-0011	I-1.500-R					
	ite Name:	OK-A-BE						
Incoast	tion Data:	04/08/201	0	D	arrier Rating:	29.60		
		04/08/201	0	D	arrier Kating:	29.00		
Barrier Descripti								
	Туре:	W-BEAM	WEAK POST	Bai	rrier Function:	TRAFFIC		
Barrier	Material:	WEATHER	RING		Post Material:	WOOD		
		STEEL/CO	RTEN					
	Blockout Type:	N/A			Length (ft.):	130		
Speed Lim		45		Т	Placement with	TANGENT	·	
Speed Lini	n (1911 11 <i>)</i> .	15			espect to Road:	mutuliti		
Hazard Behind	d Barrier:	MEDIUM						
Barrier Crashwo	rthiness							
Appropriate Test	TL-2		Barrier	TL-2		Is Barrier	YES	
Level:			Test Level:		Crast	worthy?:		
Beg. End Trtmt	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE	
Type: Ending End Trtmt	NONE		Ending End Trtmt	N/A		ion Type.		
Type:	110112		Crashhworthy?:	1.011				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.0	
Height (In.):	23.0		Lateral Offset (In.):	34.0		rade (%):	4.10	
Physical Condition	on							
	Align	ment and Height:	The alignment had no deflection and the height was 4 in below the 27 in design height throughout.					
		aking and						
Barrier		Cracking:						
	Missing	Elements:	No missing barrier element	ts.				
	Corr	osion and	All of the barrier posts are	badly weathered with	dry rot or bugs at ba	se.		
		eathering:	1	5	, ,			
	Align	ment and						
	Aligi	Height:						
End Treatments		aking and Cracking:						
		S						
Missing Elements:								
		osion and eathering:						

B	arrier ID:	D: BICA-0011-1.500-R							
Rou	ite Name:	OK-A-BE	H ROAD						
Inspec	tion Date:	04/08/201	0	Barrie	r Rating:	29.60			
Repair Recomme	endations								
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$3053		
Brief Workorder:	Raise 130-ft	of barrier up to	o 27-in design height.						
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 130-ft = \$1300. Raise 130-ft of barrier up to 27-in design height. Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475.								
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	sts only.			

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_1.500_R_1.JPG

Ba	arrier ID:	BICA-0011	I-1.806-R								
	ite Name:		-A-BEH ROAD								
Inspect	ion Doto:	04/08/201	0		Barrier Rating:	41.00					
		04/08/201	0		barrier Kaung:	41.00					
Barrier Descripti											
	Туре:	W-BEAM	WEAK POST	L R	Barrier Function:	TRAFFIC					
Barrier	Material:	WEATHERING			Post Material:	WOOD					
		STEEL/CO									
	Blockout	N/A			Length (ft.):	196					
Speed Limi	Type:	45			Placement with	INSIDE OF	E CLIDVE				
Speed Linn	и (МРП):	45]	Respect to Road:		CORVE				
Hazard Behind	Barrier:	MEDIUM	1								
Barrier Crashwo	rthiness										
Appropriate Test	TL-2		Barrier	TL-2		Is Barrier	YES				
Level:			Test Level:			worthy?:					
. .	NONE			N/A		Approach	NONE				
Type: Ending End Trtmt	NONE		Crashhworthy?: Ending End Trtmt	N/A		ion Type:					
Туре:	NONE		Crashhworthy?:	11/21							
Average Measure	ements				·						
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.0				
Height (In.):	22.0		Lateral Offset (In.):	38.5		rade (%):	2.00				
Physical Conditio	n										
	Align	ment and Height:	The alignment had no deflection and the height was between 4 to 6 in below the 27 in design height.								
Barrier		aking and Cracking:									
			X · · 1 · 1								
	Missing I	Elements:	No missing barrier element	ts.							
		osion and eathering:	Minimal corrosion of barri Possible dry rot/bug infesta		weathering of wood pos	sts. There we	re 3 rotten posts.				
	Align	ment and									
		Height:									
	Bre	aking and									
End Treatments		Cracking:									
Missing Elements:											
		osion and eathering:									

B	arrier ID:	BICA-0011	BICA-0011-1.806-R							
Rou	ite Name:	OK-A-BE	K-A-BEH ROAD							
Inspec	tion Date:	Date: 04/08/2010 Barrier Rating: 41.00								
Repair Recomme	endations	;								
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$4175			
Brief Workorder:	Raise 196-ft	of barrier up to	o 27-in design height replace	e 3 posts and tighten loose bo	olts.					
Workorder:	Adjust Guard Labor at \$60	ace Post at \$100- per -Each for 3 Post(s) = \$300. Replace 3 posts. st Guardrail at \$10- per -Lin. Ft. for 196-ft = \$1960. Raise 196-ft of guardrail to 27 inch design height. or at \$60- per -Hour for 1 Hrs = \$60. 1 hour to tighten bolts. Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475.								
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	osts only.				

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_1.806_R_1.JPG

B	arrier ID:	BICA-0011	I-1.914-R				
	ite Name:	OK-A-BE					
Instract	tion Deter	04/08/201	0	n	Barrier Rating:	33.70	
		04/08/201	0		barrier Katilig:	33.70	
Barrier Descripti							
	Туре:	W-BEAM WEAK POST		Ba	rrier Function:	TRAFFIC	
Barrier	Material:	WEATHERING			Post Material:	WOOD	
		STEEL/CO	RTEN				
	Blockout Type:	N/A			Length (ft.):	231	
Speed Lim		45			Placement with	TANGENT	
	n (1911 11).	15			espect to Road:	millen	
Hazard Behind	d Barrier:	MEDIUM					
Barrier Crashwo	rthiness						
Appropriate Test	TL-2		Barrier	TL-2		Is Barrier	YES
Level:			Test Level:		Crast	worthy?:	
Beg. End Trtmt	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE
Type: Ending End Trtmt	NONE		Ending End Trtmt	N/A		ion Type.	
Type:			Crashhworthy?:	1011			
Average Measur	ements						
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.0
Height (In.):	23.0		Lateral Offset (In.):	46.0		rade (%):	7.30
Physical Condition	on						
	Align	ment and Height:	The alignment had no defle	ection and the height	was 4 in below the 27	7 in design hei	ght throughout.
		aking and	No cracked or broken barri	er elements. There w	vere a few loose bolts		
Barrier		Cracking:					
	Missing	Elements:	No missing barrier element	ts.			
	Corrr	osion and	Minimal corrosion of barri	er rails. Moderate we	eathering of wood pos	sts. 3 rotten p	osts. Possible drv
		eathering:	rot or bug infestation.		0 1	1	5
	Align	ment and					
	Aligh	Height:					
End Treatments		aking and Cracking:					
	Missing Elements:						
		osion and					
		eathering:					

B	arrier ID:	BICA-0011	BICA-0011-1.914-R							
Rou	ite Name:	OK-A-BE	K-A-BEH ROAD							
Inspect	tion Date:	Den Date: 04/08/2010 Barrier Rating: 33.70								
Repair Recomme	endations	5								
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$4560			
Brief Workorder:	Raise 231-ft	of barrier to 2	7 inch design height replace	3 posts and tighten loose bo	lts.					
Workorder:	Adjust Guard Labor at \$60	 deplace Post at \$100- per -Each for 3 Post(s) = \$300. Replace 3 rotten posts. djust Guardrail at \$10- per -Lin. Ft. for 231-ft = \$2310. Raise 231-ft of guardrail to 27 inch design height. abor at \$60- per -Hour for 1 Hrs = \$60. 1 hour to tighten bolts. ow Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. 								
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	osts only.				

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_1.914_R_1.JPG

Ba	arrier ID:	BICA-0011	-2.047-R								
	ite Name:		-A-BEH ROAD								
	• D. (04/08/201	08/2010 Barrier Rating: 39.50								
		04/08/201	0	В	arrier Rating:	39.50					
Barrier Descripti	on			-		1					
	Туре:	W-BEAM V	WEAK POST	Ba	rrier Function:	TRAFFIC					
Barrier	Material:	WEATHER STEEL/CO			Post Material:	WOOD					
	Blockout Type:	N/A			Length (ft.):	362					
Speed Limi	it (MPH):	45			Placement with espect to Road:	INSIDE OF	F CURVE				
Hazard Behind	Barrier:	MEDIUM				1					
Barrier Crashwo	rthiness										
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES				
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE				
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A							
Average Measure	ements										
Design Height (In.):	27		Width (In.):	0.0	Post Sna	cing (In.):	150.0				
Height (In.):	23.6		Lateral Offset (In.):	38.2		rade (%):	6.30				
Physical Condition	n										
		ment and Height:									
Barrier		aking and Cracking:	The barrier posts show crac	cking 4 posts are bro	ken or cracked.						
	Missing]	Elements:	No missing barrier elemen	ïS.							
		osion and eathering:	All of the posts are badly v	veathered some crack	ed or broken with dry	/ rot or bugs a	t base.				
	Align	ment and Height:									
End Treatments		aking and Cracking:									
	Missing 1	Elements:									
		osion and eathering:									

B	arrier ID:	BICA-0011	BICA-0011-2.047-R							
Rou	ite Name:	OK-A-BE	H ROAD							
Inspec	tion Date:	04/08/201	0	Barrie	r Rating:	39.50				
Repair Recomme	endations	;								
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$6985			
Brief Workorder:	Raise 300-ft	of barrier up to	o 27-in design height and rep	place 4 broken posts.						
Workorder:	Adjust Guard	ace Post at \$100- per -Each for 4 Post(s) = \$400. Dry rot or bugs broken or cracked at base. Ist Guardrail at \$10- per -Lin. Ft. for 300-ft = \$3000. Raise 300-ft of barrier up to 27-in design height. Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950.								
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	osts only.				

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_2.047_R_1.JPG

Ba	arrier ID:	BICA-0011	1-2.049-L								
	ite Name:		-A-BEH ROAD								
	• D. (04/09/201	0	n	D	51.00					
		04/08/201	0	B	Barrier Rating:	51.00					
Barrier Descripti	on					1					
	Туре:	W-BEAM V	WEAK POST	Ba	rrier Function:	TRAFFIC					
Barrier	Material:	WEATHER STEEL/CO			Post Material:	WOOD					
	Blockout Type:	N/A			Length (ft.):	177					
Speed Limi	t (MPH):	45			Placement with espect to Road:	OUTSIDE	OF CURVE				
Hazard Behind	Barrier:	MEDIUM									
Barrier Crashwo	rthiness										
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES				
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE				
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A							
Average Measure	ements										
Design Height (In.):	27		Width (In.):	0.0	Post Sna	cing (In.):	150.0				
Height (In.):	22.2		Lateral Offset (In.):	31.6		rade (%):	6.00				
Physical Condition	n										
		ment and Height:	The alignment had no deflection except for 2 impacted rails that were pushed off alignment by 6 to 12 in. The height was 4 to 5 in below the 27 in design height throughout.								
Barrier		aking and Cracking:									
	Missing	Elements:	No missing barrier elemen	ts.							
		osion and eathering:	Some of the barrier posts a	re badly weathered w	vith dry rot or bugs at	base.					
	Align	ment and Height:									
End Treatments		aking and Cracking:									
	Missing]	Elements:									
		osion and eathering:									

B	arrier ID:	BICA-001	BICA-0011-2.049-L							
Rou	ite Name:	OK-A-BE	K-A-BEH ROAD							
Inspec	tion Date:	Date: 04/08/2010 Barrier Rating: 51.00								
Repair Recomme	endations	5								
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$4285			
Brief Workorder:	Raise 177-ft	of barrier up t	o 27-in design height and rep	place 26-ft of rail.						
Workorder:	Adjust Guard	eplace Rail at \$25- per -Lin. Ft. for 26-ft = \$650. Replace rail in impact zones. djust Guardrail at \$10- per -Lin. Ft. for 177-ft = \$1770. Raise 177-ft of barrier up to 27-in design height. ow Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475.								
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ner repair co	osts only.				

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_2.049_L_1.JPG

B	arrier ID:	BICA-0011	I-2.337-L					
	ite Name:	OK-A-BE						
T	Hon Date	04/09/201	0		Dounior Doff	41.20		
		04/08/201	U		Barrier Rating:	41.20		
Barrier Descripti								
	Type:	W-BEAM	WEAK POST	Ba	rrier Function:	TRAFFIC		
Barrier	Material:	WEATHERING			Post Material:	WOOD		
Darrier	iviateriai.	STEEL/CO			i ost material.			
	Blockout	N/A			Length (ft.):	115		
	Type:							
Speed Lim	it (MPH):	45			Placement with espect to Road:	OUTSIDE	OF CURVE	
Hazard Behind	Barrier:	HIGH						
Barrier Crashwo								
Appropriate Test			Barrier	TL-2		ls Barrier	YES	
Appropriate Test Level:	11/-2		Test Level:	11-2		worthy?:	120	
Beg. End Trtmt	NONE		0	N/A		Approach	NONE	
Туре:			Crashhworthy?:		Transit	ion Type:		
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0	Post Sna	cing (In.):	150.0	
Height (In.):	25.7		Lateral Offset (In.):	83.5		rade (%):	8.40	
Physical Condition)n							
		ment and Height:						
		aking and	No cracked or broken barri	er elements.				
Barrier		Cracking:						
	Missing	Elements:	No missing barrier elemen	ts.				
	0							
	Com	osion and	Minimal corrosion of barri	er rail Moderate wee	athering of wood read	in One post -	otten near baso	
		eathering:	Possible dry rot or bug infe		amering of wood pos	is. One post to	Such near base.	
	Align	ment and						
	0	Height:						
	Bre	aking and						
End Treatments		Cracking:						
	Missing	Elements:						
	Corrr	osion and						
		eathering:						

B	arrier ID:	BICA-0011	BICA-0011-2.337-L							
Rou	ite Name:	OK-A-BE	K-A-BEH ROAD							
Inspec	tion Date:	04/08/201	0	Barrie	r Rating:	41.20				
Repair Recomme	endations									
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$2558			
Brief Workorder:	Raise 75-ft o	f barrier up to	27-in design height and rep	lace 1 post.						
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 75-ft = \$750. Raise 75-ft of guardrail to 27 in design height. Replace Post at \$100- per -Each for 1 Post(s) = \$100. Replace 1 post. Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475.									
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ner repair co	sts only.				

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_2.337_L_1.JPG

Ba	arrier ID:	BICA-0011	1-2.442-R				
	ite Name:	OK-A-BE					
		04/08/201	0		Barrier Rating:	30.80	
Barrier Descripti	on						
	Туре:	W-BEAM	WEAK POST	Barrier Function:		TRAFFIC	
Barrier	Material:	WEATHER STEEL/CO			Post Material:	WOOD	
	Blockout Type:	N/A			Length (ft.):	77	
Speed Limi	it (MPH):	45]	Placement with Respect to Road:	OUTSIDE	OF CURVE
Hazard Behind	Barrier:	MEDIUM					
Barrier Crashwo	rthiness						
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach tion Type:	NONE
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A			
Average Measure	ements						
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.3
Height (In.):	25.7		Lateral Offset (In.):	100.0		rade (%):	9.50
Physical Condition	n						
	Align	ment and Height:	The barrier alignment had 62 ft and was 1 to 3 in belo		he height was within 1 i	in of the 27 in	design height for
Barrier		aking and Cracking:	No cracked or broken barri	er elements.			
	Missing]	Elements:	No missing barrier elemen	ts.			
		osion and eathering:	Minimal corrosion of barri Possible dry rot or bug infe		weathering of wood pos	sts. One post	rotten near base.
	Align	ment and Height:					
End Treatments		aking and Cracking:					
	Missing 1	Elements:					
		osion and eathering:					

B	arrier ID:	BICA-001	BICA-0011-2.442-R							
Rou	ite Name:	OK-A-BE	K-A-BEH ROAD							
Inspec	Inspection Date:04/08/2010Barrier Rating:30.80									
Repair Recomme	endations									
Repair Action:	REPAIR		FMSSDEFERREDRepair\$1898Work Type:MAINTENANCECost:							
Brief Workorder:										
Workorder:	Workorder: Adjust Guardrail at \$10- per -Lin. Ft. for 15-ft = \$150. Raise 15-ft of guardrail to 27 in design height. Replace Post at \$100- per -Each for 1 Post(s) = \$100. Replace one broken 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.									

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_2.442_R_1.JPG

Route Name: OK-A-BEH ROAD Inspection Date: 04/08/2010 Barrier Rating: 37.00 Barrier Description Type: W-BEAM WEAK POST Barrier Function: TRAFFIC Barrier Material: WEATHERING Post Material: WOOD Biockout N/A Length (ft.): 116 Type: V/A Length (ft.): 116 Speed Limit (MPH): 45 Placement with Respect to Road: OUTSIDE OF CURV Barrier Crashworthiness Appropriate Test Level: TL-2 Is Barrier TL-2 Is Barrier YES Beg. End Trtmt Type: NONE Is Beg. End Trtmt Crashhworthy?: N/A Approach Approach NONE Ending End Trtmt Type: NONE Ending End Trtmt Crashhworthy?: N/A Ending End Trtmt Transition Type: 150.6 Posign Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 150.6 Barrier Alignment and Height: The alignment had no deflection and the height ranged from 1 in below the 27 in design height Height (In.): 26.2 Lateral Offset (In.): 82.6					1-2.564-L	BICA-001	arrier ID:	B	
Barrier Description Type: W-BEAM WEAK POST Barrier Function: TRAFFIC Barrier Material: WEATHERING Post Material: WOOD Blockout N/A Length (ft.): 116 Type: Post Material: WOOD STEEL/CORTEN Length (ft.): 116 Blockout Length (ft.): 116 STEEL/CORTEN Length (ft.): 116 STEEL/CORTEN Length (ft.): 116 MONDE Length (ft.): 116 Marrier Crashworthiness Appropriate Test TL-2 Is Barrier Test Level: Crashworthy?: The 2 Test Level: Crashworthy?: The 3 Barrier The 2 Is Barrier Transition Type: Crashhorthy?: Crashhorthy?: Ending End Trtmt N/A									
Barrier Description Type: W-BEAM WEAK POST Barrier Function: TRAFFIC Barrier Material: WODD Blockout N/A Length (ft.): 116 STEEL/CORTEN Post Material: WODD Blockout ILE/CORTEN Length (ft.): 116 STEEL/CORTEN Length (ft.): 116 STEEL/CORTEN Length (ft.): 116 Blockout Length (ft.): 116 STEEL/CORTEN Length (ft.): 116 Blockout NUTION Length (ft.): 116 STEEL/CORTEN Placement with OUTSIDE OF CURV Barrier Crashworthiness Appropriate Test Level: TL-2 Is Barrier Test Level: Crashworthy?: The 2 Barrier The 2 Is Barling Time I NoNE		37.00	or Rating.	Barni	0	04/08/201	tion Data:	Inspect	
Type: W-BEAM WEAK POST Barrier Function: TRAFFIC Barrier Material: WEATHERING STEEL/CORTEN Post Material: WOOD Blockout Type: STEEL/CORTEN Length (ft.): 116 Speed Limit (MPH): 45 Placement with Respect to Road: OUTSIDE OF CURV Respect to Road: Barrier Crashworthiness IL-2 Barrier Test Level: OUTSIDE OF CURV Respect to Road: Appropriate Test Level: TL-2 Barrier Test Level: Is Barrier Crashworthy?: Beg. End Trutt NONE Is Beg. End Trutt N/A Type: Crashhworth?: Transition Type: NONE Ending End Trutt NONE Ending End Trutt N/A Type: Crashhworth?: NONE Is 0.0 Post Spacing (In.): 27 Width (In.): 0.0 Post Spacing (In.): 150.6 Height (In.): 26.2 Lateral Offset (In.): 82.6 Road Grade (%): 8.80 Physical Condition Height: in above for 46 ft and from 1 to 2 in below for 116 ft. is above for 46 ft and from 1 to 2 in below for 116 ft. Barrier Missing Elements: No missing barrier elements. Cracking: Is above for 46 ft and from 1 to 2 in below for 116 ft.		57.00	ter Katilig:	Darrie	0	04/08/201			
Image: Second Street Correction Street Street Correction Street Correction Street S								barrier Descripti	
STEEL/CORTEN STEEL/CORTEN Blockout Type: Speed Limit (MPH): 45 Placement with Respect to Road: OUTSIDE OF CURV Respect to Road: Hazard Behind Barrier: LOW Barrier Crashworthiness Appropriate Test Level: TL-2 Is Barrier Test Level: YES Beg. End Trimt Type: NONE Is Beg. End Trimt NONE Test Level: Variable of Crashworthy?: Peg. End Trimt Type: NONE Test Level: Variable of Crashworthy?: Prype: Crashworth?: Transition Type: NONE Pariage Measurements Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 15.6 Physical Condition The alignment had no deflection and the height ranged from 1 in below the 27 in design height in above for 46 ft and ffrom 1 to 2 in below for 116 ft. Barrier Alignment and Cracking: No cracked or broken barrier elements. Missing Elements: <th col<="" th=""><th></th><th>TRAFFIC</th><th>r Function:</th><th>Barrier</th><th>WEAK POST</th><th>W-BEAM</th><th>Туре:</th><th></th></th>	<th></th> <th>TRAFFIC</th> <th>r Function:</th> <th>Barrier</th> <th>WEAK POST</th> <th>W-BEAM</th> <th>Туре:</th> <th></th>		TRAFFIC	r Function:	Barrier	WEAK POST	W-BEAM	Туре:	
STEEL/CORTEN STEEL/CORTEN Blockout Type: N/A Length (ft.): 116 Speed Limit (MPH): 45 Placement with Respect to Road: Marrier Crashworthiness Appropriate Test Level: TL-2 Barrier Test Level: TL-2 Is Barrier Crashworthy?: YES Beg, End Trimt NONE Is Beg, End Trimt NONE N/A Approach Approach NONE Ending End Trimt Type: NONE Crashworthy?: Transition Type: Ending End Trimt Type: NONE Crashworthy?: NONE Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 15.6 Barrier Alignment and Height: The alignment had no deflection and the height ranged from 1 in below the 27 in design height in above for 46 ft and from 1 to 2 in below for 116 ft. Barrier Alignment and Cracking: No cracked or broken barrier elements. Missing Elements: No miss		WOOD	t Material:	Post	RING	WEATHER	Material:	Barrier	
Type: Discrete Speed Limit (MPH): 45 Placement with Respect to Road: OUTSIDE OF CURV Respect to Road: Hazard Behind Barrier: LOW Barrier Crashworthiness TL-2 Is Barrier Test Level: TL-2 Is Barrier Test Level: YES Appropriate Test Level: TL-2 Is Beg. End Trtmt NoNE NoNE Transition Type: NONE Ending End Trtmt Type: NONE Ending End Trtmt Crashhworthy?: N/A Approach Transition Type: NONE Average Measurements Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 150.6 Height (In.): 26.2 Lateral Offset (In.): 82.6 Road Grade (%): 8.80 Physical Condition In above for 46 ft and from 1 to 2 in below for 116 ft. in above for 46 ft and from 1 to 2 in below for 116 ft. stage.test in the sign height in above for 46 ft and from 1 to 2 in below for 116 ft. Barrier Breaking and Cracking: No missing barrier elements. Minimal corrosion of barrier rails. Almost all barrier posts are rotten/bug infested near base.									
Speed Limit (MPH): 45 Placement with Respect to Road: OUTSIDE OF CURV Respect to Road: Hazard Behind Barrier: LOW Barrier Crashworthiness TL-2 Barrier Test Level: TL-2 Is Barrier Crashworthy?: Appropriate Test Level: TL-2 Barrier Test Level: 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 Approach Transition Type: NONE Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 150.6 Height (In.): 26.2 Lateral Offset (In.): 82.6 Road Grade (%): 8.80 Physical Condition The alignment had no deflection and the height ranged from 1 in below the 27 in design height in above for 46 ft and from 1 to 2 in below for 116 ft. Is below for 116 ft. Barrier Missing Elements: No missing barrier elements. Missing barrier elements. Corrosion and Minimal corrosion of barrier rails. Almost all barrier posts are rotten/bug infested near base.		116	length (ft.):	L		N/A			
Respect to Road: Respect to Road: Hazard Behind Barrier: LOW Barrier Crashworthiness Appropriate Test Level: TL-2 Is Barrier Test Level: YES Appropriate Test Level: TL-2 Is 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 Approach NONE Average Measurements Ending End Trtmt (In.): 26.2 Lateral Offset (In.): 82.6 Road Grade (%): 8.80 Physical Condition Alignment and Height: The alignment had no deflection and the height ranged from 1 in below the 27 in design height in above for 46 ft and from 1 to 2 in below for 116 ft. Barrier Missing Elements: No missing barrier elements. Missing barrier elements. Missing Elements: No missing barrier elements. Almost all barrier posts are rotten/bug infested near base.	2VF	OUTSIDE OF C	omont with	Place		15		Snood Limi	
Barrier Crashworthiness Appropriate Test Level: TL-2 Barrier Test Level: TL-2 Is Barrier Crashworthy?: YES Beg. End Trtmt Type: NONE Is Beg. End Trtmt Crashhworthy?: N/A Approach Approach NONE Ending End Trtmt Type: NONE Ending End Trtmt Crashhworthy?: N/A Approach NONE Average Measurements Crashhworthy?: N/A Issee	(VE	OUTSIDE OF C				43	ш (МРП) :	Speed Linn	
Appropriate Test Level: TL-2 Barrier Test Level: TL-2 Is Barrier Crashworthy?: YES Beg. End Trtmt Type: NONE Is Beg. End Trtmt Crashhworthy?: N/A Approach Transition Type: NONE Ending End Trtmt Type: NONE Ending End Trtmt Crashhworthy?: N/A Approach Transition Type: NONE Average Measurements Ending End Trtmt Crashhworthy?: N/A Is Beg. End Trtmt Transition Type: Is Beg. End Trtmt Transition Type: Is Beg. End Trtmt Transition Type: N/A Is Beg. End Trtmt Transition Type: NONE Average Measurements Ending End Trtmt Crashhworthy?: N/A Post Spacing (In.): 150.6 Beight (In.): 26.2 Lateral Offset (In.): 82.6 Road Grade (%): 8.80 Physical Condition In above for 46 ft and from 1 to 2 in below for 116 ft. In above for 46 ft and from 1 to 2 in below for 116 ft. In above for 46 ft and from 1 to 2 in below for 116 ft. In above for 46 ft and from 1 to 2 in below for 116 ft. In above for 46 ft and from 1 to 2 in below for 116 ft. In above for 46 ft and from 1 to 2 in below for 116 ft. In above for 46 ft and from 1 to 2 in below for 116 ft. In above for 46 ft and from 1 to 2 in below for 116 ft. In above for 46 ft and from 1 to 2 in below for 116 ft. In above for 46 ft and from 1						LOW	d Barrier:	Hazard Behind	
Level: Test Level: Crashworthy?: Beg. End Trtmt Type: NONE Is Beg. End Trtmt Crashhworthy?: N/A Approach Approach Transition Type: NONE Ending End Trtmt Type: NONE Ending End Trtmt Crashhworthy?: N/A Image: Construction Type: NONE Average Measurements Ending End Trtmt Crashhworthy?: N/A Image: Construction Type: Image:							orthiness	Barrier Crashwo	
Level: Test Level: Crashworthy?: Beg. End Trtmt Type: NONE Is Beg. End Trtmt Crashhworthy?: N/A Approach Approach Transition Type: NONE Ending End Trtmt Type: NONE Ending End Trtmt Crashhworthy?: N/A Image: Construction Type: NONE Average Measurements Ending End Trtmt Crashhworthy?: N/A Image: Construction Type: Image:		s Barrier YES	1	TL-2	Barrier		TL-2	Appropriate Test	
Type: Crashhworthy?: Transition Type: Ending End Trtmt Type: NONE Ending End Trtmt Crashhworthy?: N/A Average Measurements Crashhworthy?: N/A Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 150.6 Height (In.): 26.2 Lateral Offset (In.): 82.6 Physical Condition The alignment had no deflection and the height ranged from 1 in below the 27 in design height in above for 46 ft and from 1 to 2 in below for 116 ft. Barrier Breaking and Cracking: No cracked or broken barrier elements. Missing Elements: No missing barrier elements. Corrrosion and Minimal corrosion of barrier rails. Almost all barrier posts are rotten/bug infested near base.			Crash		Test Level:				
Ending End Trtmt Type: NONE Ending End Trtmt Crashhworthy?: N/A Average Measurements Image: Construct of the second		-PP		N/A			NONE	-	
Type: Crashhworthy?: Image: Crashworthy?: Image: Crashhworthy?: Imag		ion rype.		N/A			NONE		
Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 150.6 Height (In.): 26.2 Lateral Offset (In.): 82.6 Road Grade (%): 8.80 Physical Condition Image: Condition and the height ranged from 1 in below the 27 in design height in above for 46 ft and from 1 to 2 in below for 116 ft. Image: Condition and the height ranged from 1 in below the 27 in design height in above for 46 ft and from 1 to 2 in below for 116 ft. Barrier Breaking and Cracking: No cracked or broken barrier elements. Image: Corresion and Minimal corrosion of barrier rails. Almost all barrier posts are rotten/bug infested near base.				1 01 2			110112		
Height (In.): 26.2 Lateral Offset (In.): 82.6 Road Grade (%): 8.80 Physical Condition Alignment and Height: The alignment had no deflection and the height ranged from 1 in below the 27 in design height in above for 46 ft and from 1 to 2 in below for 116 ft. Barrier Breaking and Cracking: No cracked or broken barrier elements. Missing Elements: No missing barrier elements. Corrrosion and Minimal corrosion of barrier rails. Almost all barrier posts are rotten/bug infested near base.							ements	Average Measure	
Physical Condition Alignment and Height: The alignment had no deflection and the height ranged from 1 in below the 27 in design height in above for 46 ft and from 1 to 2 in below for 116 ft. Barrier Breaking and Cracking: No cracked or broken barrier elements. Missing Elements: No missing barrier elements. Corrrosion and Minimal corrosion of barrier rails. Almost all barrier posts are rotten/bug infested near base.		cing (In.): 150	Post Space	0.0	Width (In.):		27	Design Height (In.):	
Alignment and Height: The alignment had no deflection and the height ranged from 1 in below the 27 in design height in above for 46 ft and from 1 to 2 in below for 116 ft. Barrier Breaking and Cracking: No cracked or broken barrier elements. Missing Elements: No missing barrier elements. Corrrosion and Minimal corrosion of barrier rails. Almost all barrier posts are rotten/bug infested near base.				82.6	Lateral Offset (In.):		26.2	Height (In.):	
Height: in above for 46 ft and from 1 to 2 in below for 116 ft. Barrier Breaking and Cracking: No cracked or broken barrier elements. Missing Elements: No missing barrier elements. Corrrosion and Minimal corrosion of barrier rails. Almost all barrier posts are rotten/bug infested near base.							Dn	Physical Condition	
Barrier Cracking: Missing Elements: No missing barrier elements. Corrrosion and Minimal corrosion of barrier rails. Almost all barrier posts are rotten/bug infested near base.	ght to 2	w the 27 in design h			_		Align		
Missing Elements: No missing barrier elements. Corrrosion and Minimal corrosion of barrier rails. Almost all barrier posts are rotten/bug infested near base.				ier elements.	No cracked or broken barr				
Corrrosion and Minimal corrosion of barrier rails. Almost all barrier posts are rotten/bug infested near base.						Cracking:		Barrier	
				ts.	No missing barrier elemen	Elements:	Missing		
		bug infested near b	posts are rotten	er rails. Almost all barrier	Minimal corrosion of barri	osion and	Corre		
i contra mg.		C	1			eathering:			
Alignment and						montand	Align		
Alignment and Height:							Align		
Breaking and End Treatments Cracking:								End Treatments	
						g.			
Missing Elements:						Elements:	Missing		
Corrrosion and Weathering:									

B	arrier ID:	D: BICA-0011-2.564-L							
Rou	ite Name:	OK-A-BE	K-A-BEH ROAD						
Inspec	tion Date:	04/08/201	0	Barrie	r Rating:	37.00			
Repair Recomme	endations	;							
Repair Action:	REPLACE		FMSSCAPITALRepair\$14377Work Type:IMPROVEMENTCost:						
Brief Workorder:	Remove and	replace entire	barrier with W-beam strong	post guardrail and 2 W-bear	m tangent 350	compliant end	treatments.		
Workorder:	Workorder: Remove Guardrail at \$10- per -Lin. Ft. for 116-ft = \$1160. Remove 116 feet of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 56-ft = \$1960. Install 56 feet of w-beam strong post guardrail with galvanized steel posts. W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install 2 w-beam tangent 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.								

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_2.564_L_1.JPG

B	arrier ID:	BICA-0011	-4.796-L							
	ite Name:	OK-A-BE								
Increase	tion Data:	04/08/201	0		Barrier Rating:	22.20				
		04/08/201	0		barrier Kating:	22.20				
Barrier Descripti				_						
	Type:	W-BEAM	WEAK POST Barrier Function:		TRAFFIC					
Barrier	Material:	WEATHEF	RING		Post Material:	WOOD				
		STEEL/CO								
	Blockout	N/A			Length (ft.):	179				
Su and Linu	Type:	45			Placement with	TANGENT				
Speed Lim	It (MPH):	43			Respect to Road:	TANGENT				
Hazard Behind	d Barrier:	MEDIUM		1		1				
Barrier Crashwo	rthiness									
Appropriate Test	TL-2		Barrier	TL-2]	Is Barrier	YES			
Level:			Test Level:		Crasł	worthy?:				
Beg. End Trtmt	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE			
Type: Ending End Trtmt	NONE		Ending End Trtmt	N/A		ion Type:				
Type:	HONE		Crashhworthy?:	1011						
Average Measure	ements									
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	149.3			
Height (In.):	27.6		Lateral Offset (In.):	50.0		rade (%):	1.90			
Physical Condition	on									
	Align	ment and Height:	The alignment had no defle	ection and the heig	ht was 0-3in. above the	27 in design h	eight.			
		aking and	All barrier posts are broker	n or cracked.						
Barrier		Cracking:								
	Missing	Elements:	No missing barrier element	ts.						
	Corre	osion and	All barrier posts are badly	weathered with dry	rot or bugs at base.					
		eathering:	1 5	5	U					
	Alian	montand								
		ment and Height:								
End Treatments		aking and Cracking:								
		S								
	Missing	Elements:								
		osion and eathering:								

B	arrier ID:	D: BICA-0011-4.796-L								
Rou	ite Name:	OK-A-BE	K-A-BEH ROAD							
Inspec	tion Date:	04/08/201	0	Barrie	r Rating:	22.20				
Repair Recomme	endations	5								
Repair Action:	REPLACE		FMSSCAPITALRepair\$17496Work Type:IMPROVEMENTCost:							
Brief Workorder:	Remove and	temove and replace entire guardrail with W-beam strong post and 2 W-beam tangent 350 compliant end treatments.								
Workorder:	Workorder: Remove Guardrail at \$10- per -Lin. Ft. for 179-ft = \$1790. Remove 179 feet of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 119-ft = \$4165. Install 119 feet of w-beam strong post guardrail with galvanized steel posts. W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install 2 w-beam tangent end terminals. 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.										

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_4.796_L_1.JPG

	ID: BICA-001	1-4.798-R					
Route Na							
T., (* 15	of a 04/00/001	0	P		20.60		
	ate: 04/08/201	U	Ba	rrier Rating:	29.60		
Barrier Description					1		
Ту	wpe: W-BEAM	WEAK POST	Barı	rier Function:	TRAFFIC		
Barrier Mater	ial: WEATHER		I	Post Material:	WOOD		
Block	xout N/A			Length (ft.):	193		
Speed Limit (MP	PH): 45			lacement with spect to Road:	TANGENT	,	
Hazard Behind Barr	ier: MEDIUM		1		1		
Barrier Crashworthin	ess						
Appropriate Test TL-2 Level:		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES	
Beg. End Trtmt NONE Type:	7	Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE	
Ending End Trtmt NONE Type:	Ē	Ending End Trtmt Crashhworthy?:	N/A				
Average Measuremen	ts						
Design Height (In.): 27		Width (In.):	0.0	Post Spa	cing (In.):	150.0	
Height (In.): 23.2		Lateral Offset (In.):	29.2		rade (%):	2.00	
Physical Condition							
	Alignment and Height:	The alignment had no defle	ection and the height is	3 to 4 in below the	27 in design h	eight throughout.	
Barrier	Breaking and Cracking:	All barrier posts are broken	n or cracked.				
Miss	sing Elements:	No missing barrier elemen	ts.				
C	Corrrosion and Weathering:	All barrier posts are badly	weathered with dry rot	or bugs at base.			
	Alignment and Height:						
End Treatments	Breaking and Cracking:						
Miss	sing Elements:	ng Elements:					
C	Corrrosion and Weathering:						

B	arrier ID:	BICA-0011	BICA-0011-4.798-R							
Rou	ite Name:	OK-A-BE	K-A-BEH ROAD							
Inspec	tion Date:	04/08/201	0	Barrie	r Rating:	29.60				
Repair Recomme	endations	5								
Repair Action:	REPLACE		FMSSCAPITALRepair\$18189Work Type:IMPROVEMENTCost:							
Brief Workorder:	Remove and	replace entire	guardrail with W-beam stro	ng post and 2 W-beam tange	nt 350 compli	iant end treatm	ients.			
Workorder:	Workorder:Remove Guardrail at \$10- per -Lin. Ft. for 193-ft = \$1930. Remove 193 feet of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 133-ft = \$4655. Install 133 feet of w-beam strong post guardrail with galvanized steel posts. W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install 2 w-beam tangent end terminals. 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.									

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_4.798_R_1.JPG

Ba	arrier ID:	BICA-0011	1-8.277-R					
	ite Name:	OK-A-BE						
Terrare	ion Data	02/09/201	0	n	nion Dati-	64 50		
		03/08/201	U	Bar	rier Rating:	64.50		
Barrier Descripti								
	Type:	W-BEAM	WEAK POST	Barri	er Function:	TRAFFIC		
Barrier	Material:	WEATHEF	RING	Po	ost Material:	WOOD		
		STEEL/CO						
	Blockout	N/A			Length (ft.):	936		
	Type:	45		DI		DOTUNI		
Speed Limi	it (MPH):	45			cement with ect to Road:	BOTHINS	IDE AND OUTSIDE	
Hazard Behind	Barrier:	EXTREME]			1		
Barrier Crashwo	rthiness							
Appropriate Test			Barrier	TL-2	-	Is Barrier	YES	
Level:			Test Level:			worthy?:		
	NONE		0	N/A		Approach	NONE	
Туре:	NONE		Crashhworthy?:	27/4	Transit	ion Type:		
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements		v					
Design Height (In.):	27		Width (In.):	0.0	Post Sna	cing (In.):	150.1	
Height (In.):	23.3		Lateral Offset (In.):	47.7		rade (%):	9.00	
Physical Conditio	n							
		ment and Height:	The alignment had no defle between 1 and 3 in below t	-		-	ight for 75 ft	
Barrier			8 loose bolts. Five posts a No cracked or broken barr		oss-section at the	base from sno	ow plows (minor).	
	Missing	Elements:	No missing barrier elemen	ts.				
		osion and eathering:	Minimal corrosion of rails.	Moderate weathering of	f wood posts.			
	Align	ment and Height:						
End Treatments		Breaking and Cracking:						
	Missing 1	Elements:						
		osion and eathering:						

B	arrier ID:	BICA-001	BICA-0011-8.277-R							
Rou	ite Name:	OK-A-BE	K-A-BEH ROAD							
Inspec	tion Date:	03/08/201	0	Barrie	r Rating:	64.50				
Repair Recomme	endations									
Repair Action:	REPAIR		FMSSDEFERREDRepair\$16027Work Type:MAINTENANCECost:							
Brief Workorder:										
Workorder:	Workorder: Adjust Guardrail at \$10- per -Lin. Ft. for 861-ft = \$8610. Raise 861-ft of guardrail to 27 inch design height. Labor at \$60- per -Hour for 1 Hrs = \$60. 1 hour to tighten bolts. 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.									

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_8.277_R_1.JPG

Route Name OK-A-BEH ROAD Inspection Date: 03/08/2010 Barrier Rating: 20.70 Barrier Description Type: W-BEAM WEAK POST Barrier Function: TRAFFIC Barrier Material: WOD Barrier Material: WOD Blockout NA Length (fb.): 182 Speed Limi (MPTI): 45 Placement with INSUE OF CURVE Barrier Trans VES Type: The Length (fb.): 182 MEDIUM Barrier Transition Type: Type: Transition Type: Type: Crashworthy?: Transition Type: Fending End Trint NONE Transition Type: Fending End Trint NONE Fending End Trint NA Alignment and Transition Type: Fending End Trint No Ba	B	arrier ID:	BICA-0011	I-8.389-L				
Barrier Description Type: W-BEAM WEAK POST Barrier Function: TRAFFIC Barrier Material: WCATHERING STEELCORTEN Post Material: WOOD Blockout N/A Length (ft.): 182 Speed Limit (MPH): 45 Placement with Respect to Road: INSIDE OF CURVE Barrier Crashworthiness Test Level: Test Level: Crashworthy?: Appropriate Test Level: IL-2 Test Level: Crashworthy?: Transition Type: Fending End Trunt NONE Is Beg. End Trunt N/A Approach NONE Sover 2000 Type: Crashbworthy?: Crashbworthy?: Transition Type: VES Average Measurements Crashbworthy?: Crashbworthy?: 150.0 Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 150.0 Physical Condition The alignment and or deflection and the height was between 1 in above the 27 in design height to 1 in blow throughout. 160.0 Road Grade (%): 9.50 Physical Condition The alignment and or deflection and the height was between 1 in above the 27 in design height to 1								
Barrier Description Type: W-BEAM WEAK POST Barrier Function: TRAFFIC Barrier Material: WCATHERING STEELCORTEN Post Material: WOOD Blockout N/A Length (ft.): 182 Speed Limit (MPH): 45 Placement with Respect to Road: INSIDE OF CURVE Barrier Crashworthiness Test Level: Test Level: Crashworthy?: Appropriate Test Level: IL-2 Test Level: Crashworthy?: Transition Type: Fending End Trunt NONE Is Beg. End Trunt N/A Approach NONE Sover 2000 Type: Crashbworthy?: Crashbworthy?: Transition Type: VES Average Measurements Crashbworthy?: Crashbworthy?: 150.0 Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 150.0 Physical Condition The alignment and or deflection and the height was between 1 in above the 27 in design height to 1 in blow throughout. 160.0 Road Grade (%): 9.50 Physical Condition The alignment and or deflection and the height was between 1 in above the 27 in design height to 1	T	·	02/00/201	0		· ·	20.70	
Type: W-BEAM WEAK POST Barrier Function: TRAFFIC Barrier Material: WEATTEENIG STEEL-CORTEN Post Material: WOOD Blockout NA Length (ft.): 182 Speed Limit (MPH): 45 Placement with Respect to Road: INSIDE OF CURVE Barrier Crashworthiness MEDIUM Barrier Tors: VES Appropriate Test IT-2 Barrier Test Level: Crashworthy?: Ibeg. End Trunt NONE Is Beg. End Trunt N/A Type: Crashbworth?: Transition Type: Crashbworth?: Ending End Trunt NONE Ending End Trunt N/A Appropriate Test Design Height (In.): 20:6 Lateral Offset (In.): 66:0 Road Grade (%): 9:50 Physical Condition Missing Elements: No multicreatements. Verage Measurements Verage Measurements Barrier Alignment and Cracking: The dignment had no deflection and the height was between 1 in above the 27 in disign height to 1 Height: In below throughout. In above throughout. In above throughout. <t< th=""><th></th><th></th><th>03/08/201</th><th>0</th><th>Ľ</th><th>Sarrier Rating:</th><th>20.70</th><th></th></t<>			03/08/201	0	Ľ	Sarrier Rating:	20.70	
Barrier Material: WEATHERING STEFL/CORTEN Post Material: WOOD Blockout Tyne: N/A Length (ft.): 182 Speed Limit (MPH): 45 Placement with Respect to Road: INSIDE OF CURVE Barrier Crashworthiness MEDIUM Barrier T1-2 Is Barrier Appropriate Test Level: II-2 Barrier T1-2 Is Barrier Beg. End Trimt Type: NONE Is Beg. End Trimt NONE NONE Transition Type: Ending End Trimt Type: NONE Is Beg. End Trimt Crashiworthy?: NONE Transition Type: Design Height (In.): 20.6 Lateral Offset (In.): 66.0 Road Grade (%): 9.50 Physical Condition Alignment and Height: The alignment had no deflection and the height was between 1 in above the 27 in design height to 1 Barrier Alignment and Weathering: No major breaking or cracking of the barrier. Missing Elements: No missing barrier elements. Alignment and Height: No major weathering of the barrier. Missing Elements: No missing barrier of the barrier. Missing Elements: No missing barrier of the barrier. Missing Elements: No missing barrier of the barrier.	Barrier Descripti							
STEEL/CORTEN Length (fb.): 182 Blockout N/A Length (fb.): 182 Speed Limit (MPI): 45 Placement with Respect to Road: INSIDE OF CURVE Barrier Crashworthiness MEDIUM Speed Limit (MPI): 45 Placement with Respect to Road: INSIDE OF CURVE Barrier Crashworthiness MEDIUM Speed Limit (MPI): 45 Instance VES Appropriate Test Level: TI-2 Barrier Crashworthy?: Instance VES Beg. End Trint Type: NONE Is Beg. End Trint Crashworthy?: NONE Transition Type: Ending End Trint Type: NONE Ending End Trint Crashworthy?: NONE 150.0 Average Measurements Ending End Trint Crashworthy?: No 150.0 Road Grade (%): 9.50 Physical Condition The algoment and Height: The algoment and on deflection and the height was between 1 in above the 27 in design height to 1 in below throughout. Barrier Alignment and Cracking: No major breaking or cracking of the barrier. Veraking and Cracking: No major weathering of the barrier. End Treatments Breaking and Cracking: No major weathering of the barrier. Veraking and Cracking: Veraking and Cracking: End Treatments Breaking and Cracking: No major weathering of the ba		Type:	W-BEAM	WEAK POST	ST Barrier Function:		TRAFFIC	
STEEL/CORTEN Length (fb.): 182 Blockout N/A Length (fb.): 182 Speed Limit (MPI): 45 Placement with Respect to Road: INSIDE OF CURVE Barrier Crashworthiness MEDIUM Speed Limit (MPI): 45 Placement with Respect to Road: INSIDE OF CURVE Barrier Crashworthiness MEDIUM Speed Limit (MPI): 45 Instance VES Appropriate Test Level: TI-2 Barrier Crashworthy?: Instance VES Beg. End Trint Type: NONE Is Beg. End Trint Crashworthy?: NONE Transition Type: Ending End Trint Type: NONE Ending End Trint Crashworthy?: NONE 150.0 Average Measurements Ending End Trint Crashworthy?: No 150.0 Road Grade (%): 9.50 Physical Condition The algoment and Height: The algoment and on deflection and the height was between 1 in above the 27 in design height to 1 in below throughout. Barrier Alignment and Cracking: No major breaking or cracking of the barrier. Veraking and Cracking: No major weathering of the barrier. End Treatments Breaking and Cracking: No major weathering of the barrier. Veraking and Cracking: Veraking and Cracking: End Treatments Breaking and Cracking: No major weathering of the ba	Barrier	Material	WFATHER	RING		Post Material·	WOOD	
Type: Type: Speed Limit (MPH): 45 Placement with Respect to Road: Barrier Crashworthiness MEDUM Barrier Crashworthiness MEDUM Barrier Crashworthiness Test Level: T.2 Reg. End Trimt NONE Is Beg. End Trimt N/A Appropriate Test Level: TL2 Barrier Test Level: TL2 Is Barrier Crashworthy?: YES Beg. End Trimt NONE Is Beg. End Trimt N/A Approach NONE Type: Crashhworthy?: Transition Type: Average Measurements Ending End Trimt N/A Approach Design Height (In.): 26.6 Lateral Offset (In.): 66.0 Road Grade (%): 9.50 Physical Condition Alignment and Height: Ine alignment and no deflection and the height was between 1 in above the 27 in design height to 1 in below throughout. Barrier Alignment and Cracking: No major breaking or cracking of the barrier. Missing Elements: No major weathering of the barrier. Missing Elements: No major weathering of the barrier. Missing Elements: Mo major weathering of the barrier. Missing Elements: Corrrosion and Cracking:	Darrici	iviateriai.				i ost material.		
Speed Limit (MPH): 45 Placement with Respect to Road: INSIDE OF CURVE Hazard Behind Barrier: MEDIUM Barrier Crashworthiness Intervent in the second of the second o			N/A			Length (ft.):	182	
Respect to Road: Hazard Behind Barrier: MEDUM Barrier Crashworthiness Appropriate Test II-2 Barrier Test Level: Is Barrier Crashworthy? YES Beg. End Trint NONE Is Beg. End Trint N/A Approach NONE Type: Crashbworth?: Transition Type: NONE Transition Type: NONE Average Measurements Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 150.0 Height (In.): 26.6 Lateral Offset (In.): 66.0 Road Grade (%): 9.50 Physical Condition Missing Elements: Barrier Alignment and Height: The alignment bad no deflection and the height was between 1 in above the 27 in design height to 1 Barrier Alignment and Height: No major breaking or cracking of the barrier. Image: State Stat			4.5				DIGIDE OI	
Hazard Behind Barrier: MEDIUM Barrier Trashworthiness Appropriate Test Level: TI-2 Is Barrier Test Level: TI-2 Barrier Test Level: TI-2 Is Barrier Crashworthy?: YES Beg. End Trint Type: NONE Is Beg. End Trint Type: NONE Ending End Trint Type: NONE Ending End Trint Type: NONE Average Measurements Design Height (In.): 26.6 Lateral Offset (In.): 66.0 Road Grade (%a): 9.50 Physical Condition Missing Elements: No missing barrier clements. Barrier Alignment and Height: In eaking or eracking of the barrier. Corrrosion and Weathering: No missing barrier clements. Missing Elements: No missing barrier clements. In design medit No missing barrier clements. Corrrosion and Weathering: No missing barrier clements. </th <th>Speed Limi</th> <th>it (MPH):</th> <th>45</th> <th></th> <th></th> <th></th> <th>INSIDE OF</th> <th>CURVE</th>	Speed Limi	it (MPH):	45				INSIDE OF	CURVE
Appropriate Test Level: TL-2 Barrier Test Level: TL-2 Is Barrier Crashworthy:: YES Beg. End Trtmt Type: NONE Is Beg. End Trtmt Crashhworthy?: N/A Approach Approach NONE Ending End Trtmt Type: NONE Ending End Trtmt Crashhworthy?: N/A Approach NONE Average Measurements Ending End Trtmt Type: N/A 0.0 Post Spacing (In.): 150.0 Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 150.0 Height (In.): 26.6 Lateral Offset (In.): 66.0 Road Grade (%): 9.50 Physical Condition Mignment and Height The alignment had no deflection and the height was between 1 in above the 27 in design height to 1 Barrier Alignment and Cracking: No major breaking or cracking of the barrier. Image: Second S	Hazard Behind	l Barrier:	MEDIUM					
Appropriate Test Level: TL-2 Barrier Test Level: TL-2 Is Barrier Crashworthy:: YES Beg. End Trtmt Type: NONE Is Beg. End Trtmt Crashhworthy?: N/A Approach Approach NONE Ending End Trtmt Type: NONE Ending End Trtmt Crashhworthy?: N/A Approach NONE Average Measurements Ending End Trtmt Type: N/A 0.0 Post Spacing (In.): 150.0 Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 150.0 Height (In.): 26.6 Lateral Offset (In.): 66.0 Road Grade (%): 9.50 Physical Condition Mignment and Height The alignment had no deflection and the height was between 1 in above the 27 in design height to 1 Barrier Alignment and Cracking: No major breaking or cracking of the barrier. Image: Second S	Barrier Crashwo	rthiness						
Level: Test Level: Crashworthy?: Beg. End Trtmt Type: NONE Is Beg. End Trtmt Crashhworthy?: N/A Approach Transition Type: Ending End Trtmt Type: NONE Ending End Trtmt Crashhworthy?: N/A Image: Crashhworthy?: Average Measurements Ending End Trtmt Crashhworthy?: N/A Image: Crashhworthy?: Image: Crashhworthy?: Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 150.0 Height (In.): 26.6 Lateral Offset (In.): 66.0 Road Grade (%): 9.50 Physical Condition The alignment had no deflection and the height was between 1 in above the 27 in design height to 1 in below throughout. Image: Cracking: Image: Cracking: Image: Cracking: Cracking: Image: Cracking: Cracking: Image: Cracking: Cracking: Cracking: Cracking: Image: Cracking: Cr				Barrier	TL-2		ls Barrier	YES
Type: Crashhworth?: Transition Type: Ending End Tritmt Type: NONE Ending End Tritmt Crashhworth?: N/A Average Measurements Crashhworth?: N/A Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 150.0 Height (In.): 26.6 Lateral Offset (In.): 66.0 Road Grade (%): 9.50 Physical Condition Alignment and Height: The alignment had no deflection and the height was between 1 in above the 27 in design height to 1 in below throughout. In above the 27 in design height to 1 Barrier Alignment and Cracking: No major breaking or cracking of the barrier. Missing Elements: No missing barrier elements. Corrrosion and Weathering: No major weathering of the barrier. Alignment and Height: Alignment and Cracking: Missing Elements: Missing Elements: Missing Elements: Missing Elements: Missing Elements: In the provide the barrier. Oracking: In the provide the barrier.								
Ending End Trtmt Type: NONE Ending End Trtmt Crashhworthy?: N/A Average Measurements Image: Construction of the second of the sec	°	NONE		8	N/A			NONE
Type: Crashhworthy?: Percent State Average Measurements Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 150.0 Height (In.): 26.6 Lateral Offset (In.): 66.0 Road Grade (%): 9.50 Physical Condition The alignment had no deflection and the height was between 1 in above the 27 in design height to 1 in below throughout. The alignment and Cracking: No major breaking or cracking of the barrier. Barrier Breaking and Cracking: No major weathering of the barrier. No major weathering of the barrier. Corrrosion and Height: No major weathering of the barrier. No major weathering of the barrier. End Treatments Breaking and Cracking: Image: Corrrosion and Cracking: Image: Corrrosion and Cracking: Missing Elements: Missing Elements: Image: Cracking: Image: Cracking: Cracking: Image: Cracking: Cracki		NONE		-	N/A	1141151	ion Type.	
Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 150.0 Height (In.): 26.6 Lateral Offset (In.): 66.0 Road Grade (%): 9.50 Physical Condition Alignment and Height: The alignment had no deflection and the height was between 1 in above the 27 in design height to 1 in below throughout. In below throughout. Barrier Alignment and Cracking: No major breaking or cracking of the barrier. Image: Corrrosion and Weathering: No missing barrier elements. Corrrosion and Height: No major weathering of the barrier. Mo major weathering of the barrier. Image: Corrrosion and Cracking: Mo major weathering of the barrier. End Treatments Breaking and Cracking: Mossing Elements: Image: Corrrosion and Cracking: Image: Corrosion and Cracking: Image: Corrosion and Cracking: Missing Elements: Corrosion and Cracking: Missing Elements: Image: Corrosion and Cracking: Image: Corrosion and Cracking: Image: Corrosion and Cracking: Missing Elements: Corrosion and Corrosion and Cracking: Image: Corrosion and Cracking: Image: Corrosion and Cracking: Image: Corrosion and Cracking:		HOILE			1 1/ / 1			
B Height (In.): 26.6 Lateral Offset (In.): 66.0 Road Grade (%): 9.50 Physical Condition Alignment and Height: The alignment had no deflection and the height was between 1 in above the 27 in design height to 1 9.50 Barrier Breaking and Cracking: No major breaking or cracking of the barrier. No major breaking of the barrier. Missing Elements: No major weathering of the barrier. No major weathering of the barrier. Corrrosion and Height: Breaking and Cracking: No major weathering of the barrier. Missing Elements: No major weathering of the barrier. Missing Elements: No major weathering of the barrier. Missing Elements: Missing Elements: Missing Elements: Oracking: Missing Elements: Oracking: Missing Elements: Oracking: Missing Elements: Oracking: Oracking: Oracking: Missing Elements: Oracking: Oracking: Oracking: Oracking: Oracking:	Average Measure	ements						
Height (In.): 26.6 Lateral Offset (In.): 66.0 Road Grade (%): 9.50 Physical Condition Alignment and Height: The alignment had no deflection and the height was between 1 in above the 27 in design height to 1 in below throughout. Image: Constant of the barrier. Image: Constant of the barrier. <th>Design Height (In.):</th> <th>27</th> <th></th> <th>Width (In.):</th> <th>0.0</th> <th>Post Spa</th> <th>cing (In.):</th> <th>150.0</th>	Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.0
Alignment and Height: The alignment had no deflection and the height was between 1 in above the 27 in design height to 1 in below throughout. Barrier Breaking and Cracking: Missing Elements: No major breaking or cracking of the barrier. Missing Elements: No missing barrier elements. Corrrosion and Weathering: No major weathering of the barrier. Breaking and Cracking: No major weathering of the barrier. Breaking and Cracking: Missing Elements: Missing Elements: No major weathering of the barrier. Missing Elements: No major weathering of the barrier. Missing Elements: Orrrosion and Missing Elements: Cracking:	Height (In.):	26.6		Lateral Offset (In.):	66.0			9.50
Height: in below throughout. Breaking and Cracking: No major breaking or cracking of the barrier. Missing Elements: No missing barrier elements. Corrrosion and Weathering: No major weathering of the barrier. Alignment and Height: No major weathering of the barrier. Breaking and Cracking: Missing Elements: Missing Elements: Orrrosion and Corrrosion and Cracking: No major weathering of the barrier. Missing Elements: Orrecking: Corrosion and Cracking:	Physical Condition	on						
Barrier Cracking: Missing Elements: No missing barrier elements. Corrrosion and Weathering: No major weathering of the barrier. Alignment and Height: No major weathering of the barrier. Breaking and Cracking: Missing Elements: Missing Elements: Missing Elements: Corrrosion and Corrrosion and		Align			ection and the height	was between 1 in abo	we the 27 in d	esign height to 1
Missing Elements: No missing barrier elements. Corrrosion and Weathering: No major weathering of the barrier. Alignment and Height: No major weathering of the barrier. Breaking and Cracking: Breaking and Cracking: Missing Elements: Orrrosion and				No major breaking or cracl	king of the barrier.			
Corrosion and Weathering: No major weathering of the barrier. Alignment and Height: Alignment and Cracking: Breaking and Cracking: Breaking and Cracking: Missing Elements: Corrrosion and	Barrier		Cracking:					
Corrosion and Weathering: No major weathering of the barrier. Alignment and Height: Alignment and Cracking: Breaking and Cracking: Missing Elements: Missing Elements: Corrrosion and		Missing	Elements:	No missing barrier element	ts.			
Weathering: Weathering: Alignment and Height: Breaking and Cracking: Missing Elements: Corrrosion and		0						
Weathering: Weathering: Alignment and Height: Breaking and Cracking: Missing Elements: Corrrosion and		Comm	osion and	No major weathering of the	- harrier			
Height: Breaking and Cracking: Missing Elements: Corrrosion and				i to major weathering of the				
Height: Breaking and Cracking: Missing Elements: Corrrosion and		Align	ment and					
End Treatments Cracking: Missing Elements: Corrrosion and		Aligh						
End Treatments Cracking: Missing Elements: Corrrosion and								
Missing Elements: Corrrosion and	End Treatments							
Corrrosion and								
		Missing]	Elements:					

Barr	ier ID:	BICA-0011	-8.389-L							
Route	Name:	OK-A-BE	K-A-BEH ROAD							
Inspection	Section Date: 03/08/2010 Barrier Rating: 20.70									
Repair Recommendations										
RepairNOAction:	O ACTIO	N	FMSS Work Type:	N/A		Repair Cost:	\$0			
Brief N/2 Workorder:	A									
Workorder:										
	2008 cos	st estimate (A	ASTM Class D), prelimin	ary for comparise	on to other repair co	osts only.				

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_8.389_L_1.JPG

Ba	arrier ID:	BICA-0011	-8.691-L					
	te Name:	OK-A-BE						
Trans of	· Datas	02/08/201	0	D	autor Dating	45.90		
		03/08/201	0	В	arrier Rating:	43.90		
Barrier Descripti								
	Туре:	W-BEAM	WEAK POST	Bai	rrier Function:	TRAFFIC		
Barrier	Material:	WEATHEF STEEL/CO			Post Material:	WOOD		
	Blockout Type:	N/A			Length (ft.):	263		
Speed Limi	t (MPH):	45			Placement with espect to Road:	OUTSIDE	OF CURVE	
Hazard Behind	Barrier:	EXTREME	,					
Barrier Crashwo	rthiness							
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier	YES	
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach tion Type:	NONE	
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.0	
Height (In.):	23.2		Lateral Offset (In.):	57.2		rade (%):	8.20	
Physical Condition	n							
	Align	ment and Height:	The alignment had no defle for 20 ft and from 3 to 5 in	-	ranged from 2 to 3 in	below the 27	in design height	
Barrier		aking and Cracking:						
	Missing]	Elements:	No missing barrier elemen	ts.				
		osion and eathering:	Minimal corrosion of rails.	Moderate weathering	g of posts (monitor).			
	Align	ment and Height:						
End Treatments		aking and Cracking:						
	Missing 1	Elements:						
		osion and eathering:						

B	arrier ID:	D: BICA-0011-8.691-L									
Rou	ite Name:	OK-A-BE	K-A-BEH ROAD								
Inspect	tion Date:	03/08/201	0	Barrie	r Rating:	45.90					
Repair Recomme	endations										
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$6138				
Brief Workorder:	Raise 263-ft	of barrier up t	o 27-in design height. Moni	tor condition of the barrier p	osts.						
Workorder:	5	1	er -Lin. Ft. for 263-ft = \$263 at \$1475- per -Day for 2 Da	0. Raise 263-ft of guardrail t ay(s) = \$2950.	o 27 inch des	ign height.					
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	osts only.					

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_8.691_L_1.JPG

Ba	arrier ID:	BICA-0011	1-8.692-R					
	ite Name:	OK-A-BE						
Transie	ion Data	02/09/201	0	n	annian Datin at	61.20		
		03/08/201	U	<u> </u>	arrier Rating:	01.20		
Barrier Descripti								
	Туре:	W-BEAM	WEAK POST	Bar	rier Function:	TRAFFIC		
Barrier	Material:	GALVANI	ZED STEEL	Post Material:		WOOD		
Darrer	viatei iai.				i ost material.			
	Blockout	N/A			Length (ft.):	455		
	Type:							
Speed Limi	it (MPH):	45			Placement with spect to Road:	OUTSIDE	OF CURVE	
Hazard Behind	Barrier:	HIGH						
Barrier Crashwo	rthiness							
Appropriate Test			Barrier	TL-2		Is Barrier	YES	
Level:	122		Test Level:	12 2		worthy?:		
	NONE		0	N/A		Approach	NONE	
Туре:			Crashhworthy?:		Transit	ion Type:		
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ments							
Design Height (In.):	27		Width (In.):	0.0	Doct Sno	aing (In).	150.0	
Height (In.):	20.5		Lateral Offset (In.):	59.0		cing (In.): rade (%):	8.90	
Physical Conditio	n							
		ment and Height:	The barrier alignment had ft between 1 to 3 in below		-	of the 27 in de	sign height for 42	
Barrier		aking and Cracking:	The posts show cracking from age 4 exhibit large cracks.					
	Missing	Elements:	No missing barrier elemen	is.				
		osion and eathering:	These barrier posts look ve	ry weathered possible	dry rotting.			
	Align	ment and Height:						
End Treatments		aking and Cracking:						
	Missing Elements:							
		osion and eathering:						

B	arrier ID:	BICA-0011	-8.692-R							
Rou	ite Name:	OK-A-BE	K-A-BEH ROAD							
Inspect	tion Date:	03/08/201	0	Barrie	r Rating:	61.20				
Repair Recomme	endations	;								
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$8228			
Brief Workorder:	Raise 413-ft	of barrier up to	o 27-in design height and re	place 4 posts.						
Workorder:	Adjust Guard	eplace Post at \$100- per -Each for 4 Post(s) = \$400. Serverly cracked and weathered posts. djust Guardrail at \$10- per -Lin. Ft. for 413 LF = \$4130. Raise 413-ft of barrier up to 27-in design height. ow Speed Traffic Control at \$1475- per -Day for 2 Day(s) = \$2950.								
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	osts only.				

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_8.692_R_1.JPG

B	arrier ID:	BICA-001	1-8.859-L						
	ite Name:	OK-A-BE	H ROAD						
Inconcert	tion Date:	03/08/201	0		Barrier Rating:	47.20			
		03/08/201	0		barrier Kating:	47.20			
Barrier Descripti									
	Туре:	W-BEAM	WEAK POST		Barrier Function:	TRAFFIC			
Barrier	Material:	WEATHER	RING		Post Material:	WOOD			
Darrier	iviateriai.		TEEL/CORTEN		i ost material.				
	Blockout	N/A		Length (ft.): 137					
	Type:								
Speed Lim	it (MPH):	45			Placement with Respect to Road:	OUTSIDE	OF CURVE		
Hazard Behind	Barrier:	EXTREME							
Barrier Crashwo									
				TI 2			VEG		
Appropriate Test Level:	1L-2		Barrier Test Level:	TL-2		Is Barrier	YES		
Beg. End Trtmt	NONE			N/A		Approach	NONE		
Туре:			Crashhworthy?:			ion Type:			
Ending End Trtmt	NONE		Ending End Trtmt	N/A					
Туре:			Crashhworthy?:						
Average Measure									
Design Height (In.):	27		Width (In.):	0.0		cing (In.):	149.6		
Height (In.):	22.7		Lateral Offset (In.):	72.3	Road G	rade (%):	7.10		
Physical Condition				c 1411		27 1 1	1 1 1		
	Align	ment and Height:							
			3 posts missing part of sect	tion at base due to	o grazing from snow plow	v. Moderate c	racking of posts (<		
Barrier		Cracking:	1/4 m).						
	Missing	Elements:	No missing barrier elemen	ts.					
	Comm	osion and	Minimal corrosion of barri	or raila Madarat	to waath aring of posts (m	amitar) Crows	l niled up in front		
		eathering:	of barrier.	er fans. Wioderat	te weathering of posts (inc	Sintor). Grave	n phou up in none		
	Align	ment and Height:							
		8							
		aking and							
End Treatments		Cracking:							
	Missing	Elements:							
	Corre	osion and							
		eathering:							

B	arrier ID:	BICA-0011	BICA-0011-8.859-L								
Rou	ite Name:	OK-A-BE	K-A-BEH ROAD								
Inspec	tion Date:	03/08/201	0	Barrie	r Rating:	47.20					
Repair Recomme	endations	;									
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$3394				
Brief Workorder:	Raise 137-ft	of barrier up to	o 27-in design height and rea	move the gravel in front of the	he barrier.						
Workorder:	Adjust Guard	abor at \$60- per -Hour for 4 Hrs = \$240. Remove gravel from in front of barrier. djust Guardrail at \$10- per -Lin. Ft. for 137 LF = \$1370. Raise 137 lf of guardrail to 27 inch design height. ow Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475.									
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	her repair co	osts only.					

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_8.859_L_1.JPG

B	arrier ID:	BICA-0011	I-8.977-L					
	ite Name:	OK-A-BE						
Inspec	tion Dotor	03/08/201	0		Barrier Rating:	35.20		
		03/08/201	0		barrier Kaung:	33.20		
Barrier Descripti								
	Туре:	W-BEAM	WEAK POST	B	Sarrier Function:	TRAFFIC		
Barrier	Material:	WEATHER	RING		Post Material:	WOOD		
		STEEL/CO	RTEN					
	Blockout Type:	N/A			Length (ft.):	153		
Speed Lim		45			Placement with	TANGENT	-	
	. (]	Respect to Road:			
Hazard Behind	d Barrier:	MEDIUM						
Barrier Crashwo	rthiness							
Appropriate Test	TL-2		Barrier	TL-2		Is Barrier	YES	
Level:			Test Level:			worthy?:		
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE	
Ending End Trtmt	NONE		Ending End Trtmt	N/A				
Туре:			Crashhworthy?:					
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0		cing (In.):	150.0	
Height (In.):	21.0		Lateral Offset (In.):	48.5	Road G	rade (%):	5.50	
Physical Condition								
	Align	ment and Height:	The alignment had no defle	ection and the heigh	nt was 6 in below the 27	7 in design hei	ght throughout.	
		aking and	No major breaking or cracking of the barrier.					
Barrier		Cracking:						
	Missing	Elements:	No missing barrier element	ts.				
	Corre	osion and	There is some weathering	of the posts in this h	parrier.			
		eathering:		1				
	Align	montand						
		ment and Height:						
End Treatments		aking and Cracking:						
		S						
	Missing	Elements:						
		osion and						
	We	eathering:						

B	arrier ID:	D: BICA-0011-8.977-L								
Rou	ite Name:	OK-A-BE	OK-A-BEH ROAD							
Inspect	tion Date:	03/08/201	0	Barrie	r Rating:	35.20				
Repair Recomme	endations	5								
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$3306			
Brief Workorder:	Raise 153-ft	of barrier up t	o 27-in design height.							
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 153 LF = \$1530. Adjust barrier to design height of 27 inches. Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475.									
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	osts only.				

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_8.977_L_1.JPG

Ba	arrier ID:	BICA-0011	I-8.978-R					
	ite Name:	OK-A-BE	H ROAD					
Inspect	ion Doto.	03/08/201	0	Ra	rrier Rating:	44.20		
Barrier Descripti		05/00/201	·					
Darrier Descripti	Туре:	W-BEAM	WEAK POST	Barr	ier Function:	TRAFFIC		
Barrier	Material:	WEATHER STEEL/CO		P	ost Material:	WOOD		
	Blockout Type:	N/A			Length (ft.):	158		
Speed Limi	t (MPH):	45			acement with pect to Road:			
Hazard Behind	Barrier:	LOW						
Barrier Crashwo	rthiness							
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier	YES	
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach	NONE	
Ending End Trtmt	NONE		Ending End Trtmt Crashhworthy?:	N/A	1141150	ion Type.		
Туре:			Crashnworthy::					
Average Measure				0.0			150.0	
Design Height (In.): Height (In.):	27 20.0		Width (In.): Lateral Offset (In.):	0.0 42.5		<u>cing (In.):</u> rade (%):	150.3 6.70	
Physical Conditio			Later al Oliset (III.).	42.5	Roau G	Taue (70).	0.70	
		ment and Height:	The alignment has no defle entire length.	ection and the height wa	as 5 to 9 in below th	ne 27 in desigr	h height for the	
Barrier		aking and Cracking:						
	Missing	Elements:	No missing barrier elemen	is.				
		osion and eathering:	Some weathering of barrie	r posts.				
	Align	ment and Height:						
End Treatments		aking and Cracking:						
Missing Elements:								
		osion and eathering:						

B	arrier ID:	ID: BICA-0011-8.978-R									
Rou	ite Name:	OK-A-BE	K-A-BEH ROAD								
Inspec	tion Date:	03/08/201	0	Barrie	r Rating:	44.20					
Repair Recomme	endations										
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$3361				
Brief Workorder:	Raise 158-ft	of barrier up t	o 27-in design height.								
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 158 LF = \$1580. Adjust barrier to design height of 27 inches. Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475.										
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	her repair co	osts only.					

ROUTE 0011: OK-A-BEH ROAD



BICA_0011_8.978_R_1.JPG

rrier ID:	BICA-0011	-9.069-R				
on Datas	02/09/201	0	n	annian Datina	55.00	
	03/08/201	0	B	arrier Rating:	55.90	
Туре:	W-BEAM	WEAK POST	Bar	rier Function:	TRAFFIC	
laterial:	WEATHER	RING	Dost Matarial		WOOD	
140011410				i ost material.		
	N/A			Length (ft.):	150	
	15				OUTGIDE	
(MPH):	45				OUTSIDE	OF CURVE
Barrier:	EXTREME	;				
thiness						
		Rarrier	TL-2		ls Barrier	YES
		Test Level:				120
NONE		0	N/A			NONE
LONIE				Transit	ion Type:	
NONE		Ending End Trtmt Crashhworthy?:	N/A			
ments						
		Width (In.):	0.0	Post Spa	cing (In.):	150.3
22.7		Lateral Offset (In.):	65.3			6.10
n						
Align	ment and Height:			-	nent had no de	flection. The
	0	1 cracked post. Moderate	cracking of barrier pos	sts (< 1/4 to 1/2 in).		
(Cracking:					
Missing l	Elements:	1 missing bolt. No other n	issing barrier items.			
Corrr	osion and	Minimal corrosion of rails.	Moderate weathering	g of barrier posts. M	onitor erosion	along middle of
We	athering:	barrier.				
Align	ment and					
8	Height:					
Dwo	king and					
Missing I	Elements:					
	osion and athering:					
	on Type: Aaterial: Blockout Type: (MPH): Barrier: thinesss fL-2 NONE NONE NONE NONE 27 22.7 A Align Brea O Missing I Corrr We Align	e Name:OK-A-BEon Date:03/08/2010on Date:03/08/2010Type:W-BEAM Vfaterial:WEATHERSTEEL/COBlockoutN/AType:N/Afunes:EXTREMEfunes:EXTREMEfunes:FURErone:FURErone:Sarrier:NONESarrier:nents:Sarrier:rone:Sarrier:nents:Sarrier:rone:Sarrier:nents:Sarrier:statistic:Sarrier:nents:Sarrier:statistic:Sarrier:nents:Sarrier:statistic:Sarrier:statistic:Sarrier:function: <td< th=""><th>e Name: OK-A-BEH ROAD on Date: 03/08/2010 Type: V-BEAM WEAK POST Atterial: WEATHERING STEEL/CORTEN Blockout N/A Type: V/A (MPH): 45 Barrier: EXTREME EXTREME thiness FL-2 Barrier Test Level: NONE EXTREME thiness FL-2 Barrier Test Level: NONE Is Beg. End Trtmt Crashhworthy?: NONE I Is Beg. End Trtmt Crashhworthy?: I Is Beg. End Trtmt Crashhworthy?: NONE I I Is Beg. End Trtmt Cracking: I Cracked post. Moderate of I Cracked post. Moderate of</th><th>NAME:OK-A-BEH ROADon Date:03/08/2010BType:V-BEAM WEAK POSTBarIterial:WEATHERING STEEL/CORTENSTEEL/CORTENBlockoutN/AImage: SteEL/CORTENBlockoutN/AImage: SteEL/CORTENBlockoutN/AImage: SteEL/CORTENBlockoutN/AImage: SteEL/CORTENBlockoutN/AImage: SteEL/CORTENBlockoutN/AImage: SteEL/CORTENBlockoutN/AImage: SteEL/CORTENBlockoutN/AImage: SteEL/CORTENBarrier:EXTREMEImage: SteEL/CORTENBarrier:EXTREMEImage: SteEL/CORTENBarrier:EXTREMEImage: SteEL/CORTENMINEEXTREMEImage: SteEL/CORTENCONEExtremeBarrierImage: SteEL/CORTENNONEEnding End Trimt Crashhworthy?:N/ACorrosion and Weathering:Post at trailing end Icaning outward by at least 1: height was 4 to 5 in below the 27 in design heightBreaking and Cracking:I missing bolt. No other missing barrier items.Corrosion and Weathering:Imimal corrosion of rails. Moderate weathering barrier.Breaking and Cracking:I missing bolt. No other missing barrier items.Missing Elements:I missing bolt. No other missing barrier items.Breaking and<b< th=""><th>e Name: OK-A-BEH ROAD on Date: 03/08/2010 Barrier Rating: n Type: W-BEAM WEAK POST Barrier Function: flaterial: STEEL/CORTEN Barrier Function: flaterial: WEATHERING STEEL/CORTEN Blockout N/A Length (ft.): STEEL/CORTEN Blockout N/A Length (ft.): Type: Also Placement with Respect to Road: Barrier: EXTREME TL-2 Barrier: TL-2 Crass FL-2 Barrier: TL-2 Crass NONE Is Beg. End Trtmt N/A Crasshworthy?: Crass NONE Ending End Trtmt N/A Transit NONE Ending End Trtmt N/A Transit NONE Is Beg. End Trtmt N/A Crasshworthy?: N/A Transit NONE Is Beg. End Trtmt N/A Crasshworthy?: N/A Transit NONE Is Beg. End Trtmt N/A Crasshworthy?: N/A Transit NONE Is Beg. End Trtmt N/A Crasshworthy?: N/A I Crasshworthy?: N/A I Crasshworthy?: N/A I Crasshworthy?: N/A I I Crasshworthy?: N/A I I I I I I I I I I I I I I I I I I I</th><th>e Name: OK-A-BEH ROAD on Date: 03/08/2010 Barrier Rating: 55.90 Type: W-BEAM WEAK POST Barrier Function: TRAFFIC Iaterial: WEATHERING STEEL/CORTEN Bockout N/A Length (ft.): 150 Type: (MPH): 45 Placement with OUTSIDE ABarrier: EXTREME TL-2 Test Level: TL-2 Test Level: TL-2 Test Level: TL-2 Test Level: TL-2 Test Moverthy?: NONE Is Beg.End Trtmt Crashhworthy?: NONE Ending End Trtmt Crashhworthy?: NONE Crashhworthy?: NONE Post Spacing (In.): 0.0 Post Spacing (In.): 22.7 Lateral Offset (In.): 65.3 Road Grade (%): Cracking: I ended post. Moderate eracking of barrier posts. (< 1/4 to 1/2 in). Cracking: None: I missing bolt. No other missing barrier items. Corrrosion and Minimal corrosion of nalls. Moderate weathering of barrier posts. Monitor erosion Weathering: Missing Elements:</th></b<></th></td<>	e Name: OK-A-BEH ROAD on Date: 03/08/2010 Type: V-BEAM WEAK POST Atterial: WEATHERING STEEL/CORTEN Blockout N/A Type: V/A (MPH): 45 Barrier: EXTREME EXTREME thiness FL-2 Barrier Test Level: NONE EXTREME thiness FL-2 Barrier Test Level: NONE Is Beg. End Trtmt Crashhworthy?: NONE I Is Beg. End Trtmt Crashhworthy?: I Is Beg. End Trtmt Crashhworthy?: NONE I I Is Beg. End Trtmt Cracking: I Cracked post. Moderate of	NAME:OK-A-BEH ROADon Date:03/08/2010BType:V-BEAM WEAK POSTBarIterial:WEATHERING STEEL/CORTENSTEEL/CORTENBlockoutN/AImage: SteEL/CORTENBlockoutN/AImage: SteEL/CORTENBlockoutN/AImage: SteEL/CORTENBlockoutN/AImage: SteEL/CORTENBlockoutN/AImage: SteEL/CORTENBlockoutN/AImage: SteEL/CORTENBlockoutN/AImage: SteEL/CORTENBlockoutN/AImage: SteEL/CORTENBarrier:EXTREMEImage: SteEL/CORTENBarrier:EXTREMEImage: SteEL/CORTENBarrier:EXTREMEImage: SteEL/CORTENMINEEXTREMEImage: SteEL/CORTENCONEExtremeBarrierImage: SteEL/CORTENNONEEnding End Trimt Crashhworthy?:N/ACorrosion and Weathering:Post at trailing end Icaning outward by at least 1: height was 4 to 5 in below the 27 in design heightBreaking and Cracking:I missing bolt. No other missing barrier items.Corrosion and Weathering:Imimal corrosion of rails. Moderate weathering barrier.Breaking and Cracking:I missing bolt. No other missing barrier items.Missing Elements:I missing bolt. No other missing barrier items.Breaking and <b< th=""><th>e Name: OK-A-BEH ROAD on Date: 03/08/2010 Barrier Rating: n Type: W-BEAM WEAK POST Barrier Function: flaterial: STEEL/CORTEN Barrier Function: flaterial: WEATHERING STEEL/CORTEN Blockout N/A Length (ft.): STEEL/CORTEN Blockout N/A Length (ft.): Type: Also Placement with Respect to Road: Barrier: EXTREME TL-2 Barrier: TL-2 Crass FL-2 Barrier: TL-2 Crass NONE Is Beg. End Trtmt N/A Crasshworthy?: Crass NONE Ending End Trtmt N/A Transit NONE Ending End Trtmt N/A Transit NONE Is Beg. End Trtmt N/A Crasshworthy?: N/A Transit NONE Is Beg. End Trtmt N/A Crasshworthy?: N/A Transit NONE Is Beg. End Trtmt N/A Crasshworthy?: N/A Transit NONE Is Beg. End Trtmt N/A Crasshworthy?: N/A I Crasshworthy?: N/A I Crasshworthy?: N/A I Crasshworthy?: N/A I I Crasshworthy?: N/A I I I I I I I I I I I I I I I I I I I</th><th>e Name: OK-A-BEH ROAD on Date: 03/08/2010 Barrier Rating: 55.90 Type: W-BEAM WEAK POST Barrier Function: TRAFFIC Iaterial: WEATHERING STEEL/CORTEN Bockout N/A Length (ft.): 150 Type: (MPH): 45 Placement with OUTSIDE ABarrier: EXTREME TL-2 Test Level: TL-2 Test Level: TL-2 Test Level: TL-2 Test Level: TL-2 Test Moverthy?: NONE Is Beg.End Trtmt Crashhworthy?: NONE Ending End Trtmt Crashhworthy?: NONE Crashhworthy?: NONE Post Spacing (In.): 0.0 Post Spacing (In.): 22.7 Lateral Offset (In.): 65.3 Road Grade (%): Cracking: I ended post. Moderate eracking of barrier posts. (< 1/4 to 1/2 in). Cracking: None: I missing bolt. No other missing barrier items. Corrrosion and Minimal corrosion of nalls. Moderate weathering of barrier posts. Monitor erosion Weathering: Missing Elements:</th></b<>	e Name: OK-A-BEH ROAD on Date: 03/08/2010 Barrier Rating: n Type: W-BEAM WEAK POST Barrier Function: flaterial: STEEL/CORTEN Barrier Function: flaterial: WEATHERING STEEL/CORTEN Blockout N/A Length (ft.): STEEL/CORTEN Blockout N/A Length (ft.): Type: Also Placement with Respect to Road: Barrier: EXTREME TL-2 Barrier: TL-2 Crass FL-2 Barrier: TL-2 Crass NONE Is Beg. End Trtmt N/A Crasshworthy?: Crass NONE Ending End Trtmt N/A Transit NONE Ending End Trtmt N/A Transit NONE Is Beg. End Trtmt N/A Crasshworthy?: N/A Transit NONE Is Beg. End Trtmt N/A Crasshworthy?: N/A Transit NONE Is Beg. End Trtmt N/A Crasshworthy?: N/A Transit NONE Is Beg. End Trtmt N/A Crasshworthy?: N/A I Crasshworthy?: N/A I Crasshworthy?: N/A I Crasshworthy?: N/A I I Crasshworthy?: N/A I I I I I I I I I I I I I I I I I I I	e Name: OK-A-BEH ROAD on Date: 03/08/2010 Barrier Rating: 55.90 Type: W-BEAM WEAK POST Barrier Function: TRAFFIC Iaterial: WEATHERING STEEL/CORTEN Bockout N/A Length (ft.): 150 Type: (MPH): 45 Placement with OUTSIDE ABarrier: EXTREME TL-2 Test Level: TL-2 Test Level: TL-2 Test Level: TL-2 Test Level: TL-2 Test Moverthy?: NONE Is Beg.End Trtmt Crashhworthy?: NONE Ending End Trtmt Crashhworthy?: NONE Crashhworthy?: NONE Post Spacing (In.): 0.0 Post Spacing (In.): 22.7 Lateral Offset (In.): 65.3 Road Grade (%): Cracking: I ended post. Moderate eracking of barrier posts. (< 1/4 to 1/2 in). Cracking: None: I missing bolt. No other missing barrier items. Corrrosion and Minimal corrosion of nalls. Moderate weathering of barrier posts. Monitor erosion Weathering: Missing Elements:

B	arrier ID:	BICA-0011	BICA-0011-9.069-R								
Rou	ite Name:	OK-A-BE	OK-A-BEH ROAD								
Inspec	tion Date:	03/08/201	0	Barrie	r Rating:	55.90					
Repair Recomme	endations	5									
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$3449				
Brief Workorder:	Raise 150-ft	of barrier up to	o 27-in design height and rep	place 1 post.							
Workorder:	Adjust Guard Labor at \$60	olace Post at \$100- per -Each for 1 Post(s) = \$100. Replace one cracked post. ust Guardrail at \$10- per -Lin. Ft. for 150-ft = \$1500. Raise 150-ft of guardrail to 27 inch design height. or at \$60- per -Hour for 1 Hrs = \$60. 1 hour to replace bolts. v Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475.									
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	osts only.					

Bighorn Canyon National Recreation Area ROUTE 0011: OK-A-BEH ROAD



BICA_0011_9.069_R_1.JPG

B	arrier ID:	BICA-0012	2-0.443-R					
	ite Name:	AFTERBA	AY ROAD					
Inspec	tion Data:	02/08/201	0		Barrier Rating:	14.10		
		02/08/201	0		Darrier Kating.	14.10		
Barrier Descripti		W DE ANG	TRONG ROOT					
	Туре:	W-BEAM S	STRONG POST	B	arrier Function:	TRAFFIC		
Barrier	Material:	WEATHEF	RING	Post Material:		WOOD		
		STEEL/CO	RTEN					
	Blockout Type:	WOOD			Length (ft.):	503		
Speed Lim		35			Placement with	TANGEN	۰ ۲	
Speed Lini	II (IVII II).	55		ŀ	Respect to Road:	IntoLiti		
Hazard Behind	d Barrier:	HIGH						
Barrier Crashwo	rthiness							
Appropriate Test	TL-2		Barrier	TL-3		Is Barrier	YES	
Level:			Test Level:		Crasł	worthy?:		
Beg. End Trtmt	W-BEAM	ВСТ	Is Beg. End Trtmt Crashhworthy?:					
Type: Ending End Trtmt	NONE		Ending End Trtmt	N/A		ion Type.	W-BEAM	
Type:	110112		Crashhworthy?:	1011				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	75.0	
Height (In.):	26.7		Lateral Offset (In.):	74.6		rade (%):	1.40	
Physical Condition	on							
	Align	ment and Height:	The alignment had no defle alignment by 6 in or less.	-	-		npacted off	
	Bre	aking and	2 cracked blocks. No othe	r broken barrier elei	ments.			
Barrier		Cracking:						
	Missing	Elements:	No missing barrier element	ts.				
		osion and	Minimal corrosion and wea	athering of barrier a	lements			
		eathering:	initial corresponding we					
	A 30		Alignment accortable U-	ight is within 1 in -	f 27 in design beight			
	Align	ment and Height:	Alignment acceptable. He	ight is within 1-in 0	n ∠7-m uesign neignt.			
End Treatments		aking and Cracking:	Minor impact to beginning	end treatment. No	cracked or broken end	treatment ele	ments.	
	'	CI aCKIIIS:						
	Missing	Elements:	No missing end treatment of	elements.				
	Corrr	osion and	Minimal corrosion and we	athering of end treat	tment elements.			
	We	eathering:						

B	arrier ID:	D: BICA-0012-0.443-R								
Rou	ite Name:	AFTERBA	FTERBAY ROAD							
Inspec	tion Date:	02/08/201	0	Barrie	r Rating:	14.10				
Repair Recomme	endations	5								
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$1689			
Brief Workorder:	Replace two	Replace two blocks.								
Workorder:	1	Replace Block at \$30- per -Each for 2 Block(s) = \$60. Replace 2 cracked blocks. .ow Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475.								
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	osts only.				

Bighorn Canyon National Recreation Area ROUTE 0012: AFTERBAY ROAD



BICA_0012_0.443_R_1.JPG

B	arrier ID:	BICA-0012	2-0.527-L					
	ite Name:	AFTERBA	AY ROAD					
T	tion Data	02/09/201	0	D *	n Detter	15.60		
		02/08/201	U	Barrie	er Rating:	13.00		
Barrier Descripti								
	Туре:	W-BEAM	STRONG POST	Barrier	Function:	TRAFFIC		
Barrier	Material:	WEATHER	ERING Post Material:		WOOD			
Durrier	iviater fait.	STEEL/CO						
	Blockout	WOOD		Le	ength (ft.):	78		
	Type:	25				TANGENI	~	
Speed Lim	it (MPH):	35			ment with t to Road:	TANGENT		
Hazard Behind	l Barrier:	LOW		<u> </u>				
Barrier Crashwo	rthiness	8						
Appropriate Test			Barrier	TL-3		ls Barrier	YES	
Level:			Test Level:			worthy?:		
Beg. End Trtmt	NONE							
Type:	WDEAM	DOT	Crashhworthy?:	W-BEAM				
Ending End Trtmt Type:	W-BEAM	BCI	Ending End Trtmt Crashhworthy?:	NO				
Average Measure	ements				<u>.</u>		1	
Design Height (In.):	27		Width (In.):	0.0	Post Sna	cing (In.):	76.0	
Height (In.):	24.0		Lateral Offset (In.):	78.3		rade (%):	3.50	
Physical Condition	on							
	Align	ment and Height:	Transition and end treatme	nt only.				
		aking and	Transition and end treatme	nt only.				
Barrier		Cracking:						
	Missing	Elements:	Transition and end treatme	nt only.				
	Corr	osion and	Transition and end treatme	nt only.				
		eathering:		-				
	A 1:	montand	Alignment has no deflection	on and height was 3 in below	27 in design 1	neight		
	Align	ment and Height:		m and norght was 5 in below	, ∠, in design i	1015111.		
End Treatments Breaking and Cracking: No cracked or broken end treatment elements.								
		CI avrillg.						
	Missing	Elements:	No missing end treatment	elements.				
		osion and eathering:	Minimal corrosion and we	athering of end treatment ele	ements.			

B	arrier ID:	BICA-0012	BICA-0012-0.527-L							
Rou	ite Name:	AFTERBA	FTERBAY ROAD							
Inspec	tion Date:	02/08/201	0	Barrie	r Rating:	15.60				
Repair Recomme	endations									
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$2481			
Brief Workorder:	Raise 78-ft o	f barrier to 27	inch design height.							
Workorder:		Adjust Guardrail at \$10- per -Lin. Ft. for 78-ft = \$780. Raise 78-ft of barrier up to 27-in design height. .ow Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475.								
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	sts only.				

ROUTE 0012: AFTERBAY ROAD



BICA_0012_0.527_L_1.JPG

Ba	arrier ID:	BICA-0012	2-0.607-R					
	ite Name:	AFTERBA	AY ROAD					
	·	02/00/201	0	D	·	10.90		
		02/08/201	0	Ba	arrier Rating:	19.80		
Barrier Descripti	on							
	Type:	W-BEAM S	STRONG POST	Bar	rier Function:	TRAFFIC		
Barrier	Material:	WEATHER	RING		Post Material:	WOOD		
Durrier		STEEL/CO			1 050 1/1000 1010			
	Blockout	WOOD			Length (ft.):	228		
	Type:	25				TANCENT	,	
Speed Lim	it (MPH):	35			Placement with spect to Road:	TANGENT		
Hazard Behind	Barrier:	HIGH						
Barrier Crashwo	rthiness							
Appropriate Test			Barrier	TL-3		Is Barrier	YES	
Level:			Test Level:			worthy?:		
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt N/A Approach Crashhworthy?: N/A Transition Type:				CONC/MASON W-BEAM	
Ending End Trtmt Type:		BURIED	Ending End Trtmt Crashhworthy?:	YES				
Average Measure								
Design Height (In.):	27		Width (In.):	0.0	Post Sna	cing (In.):	75.0	
Height (In.):	26.2		Lateral Offset (In.):	88.3		rade (%):	3.70	
Physical Condition	on							
	Align	ment and Height:	The alignment had no deflection and the height was at or 1 in below the 27 in design height except for 30 ft leading into the ending end treatment which was 3 to 6 in below.					
Barrier		aking and Cracking:						
	Missing	Elements:	No missing barrier element	ts.				
		osion and eathering:	No major weathering of ba	rrier.				
	Align	ment and Height:	Alignment had no deflectio	on and height flared in	to ground as designe	ed.		
End Treatments		aking and Cracking:	No major breaking or cracking of the end treatment.					
Missing Elements: No missing end treatment elements.								
		osion and eathering:	No major weathering of the end treatment.					

B	arrier ID:	BICA-0012	BICA-0012-0.607-R							
Rou	ite Name:	AFTERBA	AY ROAD							
Inspec	tion Date:	02/08/201	0	Barrie	r Rating:	19.80				
Repair Recomme	endations									
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$1953			
Brief Workorder:	Raise 30-ft o	f barrier up to	27-in design height.							
Workorder:	Adjust Guardrail at \$10- per -Lin. Ft. for 30-ft = \$300. Raise 30-ft of barrier up to 27-in design height. Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475.									
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	osts only.				

ROUTE 0012: AFTERBAY ROAD



BICA_0012_0.607_R_1.JPG

B	arrier ID:	BICA-0012	2-0.609-L					
	ite Name:	AFTERBA	AY ROAD					
Inspect	tion Data:	02/08/201	0	Down	er Rating:	15.60		
		02/08/201	0	Darrie	er Kating:	15.00		
Barrier Descripti								
	Type:	W-BEAM S	STRONG POST	Barrier	Function:	TRAFFIC		
Barrier	Material:	WEATHEF	RING	Pos	t Material:	WOOD		
		STEEL/CO						
	Blockout	WOOD		L	ength (ft.):	27		
Su o d L inc	Type:	35		Diase	ement with	TANGENT	-	
Speed Lim	II (MPH):	55			ement with et to Road:	TANGENT		
Hazard Behind	l Barrier:	HIGH		I		1		
Barrier Crashwo	rthiness							
Appropriate Test			Barrier	TL-3		Is Barrier	YES	
Level:			Test Level:	evel: Crashworthy?:				
Beg. End Trtmt	W-BEAM	BCT		Beg. End Trtmt NO Approach CC Crashhworthy?: Transition Type: W				
Type:	NONE		Crashhworthy?:	N/A	I ransit	ion Type:	W-BEAM	
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	IN/A				
Average Measure	ements		· · · · · ·	: 	·		: 	
Design Height (In.):	27		Width (In.):	0.0	Post Sna	cing (In.):	38.0	
Height (In.):	25.0		Lateral Offset (In.):	75.0		rade (%):	2.60	
Physical Condition	on							
		ment and Height:	End treatment and transition	on only.				
		aking and	End treatment and transition	on only.				
Barrier		Cracking:						
	Missing	Elements:	End treatment and transition	on only.				
	Com	osion and	End treatment and transition	on only				
		eathering:		in only.				
		. 7			0.0.1		1 07.	
	Align	ment and Height:	The end treatment alignme design height.	nt has no deflection and 10	tt of end treatn	nent was 5 in	below 27 in	
Breaking and No major breaking or cracking of the end treatment.								
End Treatments		Cracking:						
	Missing	Elements:	No missing end treatment	elements.				
	Corr	osion and	No major weathering of the	e end treatment.				
		eathering:	,					

B	arrier ID:	BICA-0012	ICA-0012-0.609-L							
Rou	ite Name:	AFTERBA	FTERBAY ROAD							
Inspec	tion Date:	02/08/201	0	Barrie	r Rating:	15.60				
Repair Recomme	endations	5								
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$1997			
Brief Workorder:	Raise 10 feet	t of barrier up	to 27 inch design height.							
Workorder:	rder: Adjust Guardrail at \$10- per -Lin. Ft. for 10 LF = \$100. Raise 10-ft of guardrail up to the 27 inch design height. Labor at \$60- per -Hour for 4 Hrs = \$240. 4 hours of labor to remove gravel build-up. Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475.									
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	osts only.				

ROUTE 0012: AFTERBAY ROAD



BICA_0012_0.609_L_1.JPG

B	arrier ID:	BICA-0013	3-0.786-R							
	ite Name:	BAD PAS								
T	tion Data:	06/09/201	0	D	n Dotter at	25.20				
		06/08/201	U	Barrie	er Rating:	35.20				
Barrier Descripti										
	Туре:	W-BEAM S	STRONG POST Barrier Function:		TRAFFIC					
Barrier	Material:	WEATHER	RING	Post	Material:	WOOD				
Durrier		STEEL/CO		1050						
	Blockout	WOOD		Length (ft.): 66						
	Type:	45		DI	. •	TANCENT				
Speed Lim	it (MPH):	45			ment with t to Road:	TANGENT				
Hazard Behind	l Barrier:	MEDIUM								
Barrier Crashwo	rthiness									
Appropriate Test			Barrier	TL-3		Is Barrier	YES			
Level:			Test Level:			worthy?:				
Beg. End Trtmt		ΓURN	Is Beg. End Trtmt							
Type:	DOWN		Crashhworthy?:	NI/A	I ransit	ion Type:	W-BEAM			
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	IN/A						
Average Measure	ements									
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	37.0			
Height (In.):	22.0		Lateral Offset (In.):	84.3		rade (%):	1.10			
Physical Condition)n									
	Align	ment and Height:	Transition and end treatme	nt only.						
	Bre	aking and	Transition and end treatme	nt only.						
Barrier		Cracking:								
	Missing	Elements:	Transition and end treatme	nt only.						
	1.1.55116			-						
	Carr	osion and	Transition and end treatme	nt only						
		eathering:		nt only.						
					1 . 1.	1 . 1				
	Align	ment and Height:	Augnment had no deflection	on and inturn down" end tre	arment neight a	is designed.				
End Transformer		aking and	No cracked or broken end	treatment elements.						
End Treatments		Cracking:								
	Missing	Elements:	No missing end treatment of	g end treatment elements.						
		osion and eathering:	Minimal corrosion/weather	ring of end treatment. Grav	el is piled in fro	ont of end trea	itment.			

B	arrier ID:	BICA-0013	BICA-0013-0.786-R						
Rou	ite Name:	BAD PAS	AD PASS ROAD						
Inspect	Inspection Date: 06/08/2010 Barrier Rating: 35.20								
Repair Recomme	endations	5							
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$2217		
Brief Workorder:	Raise 30-ft o	f barrier up to	the 27-in design height and	remove gravel build-up in fr	ont of the bar	rier.			
Workorder:	Labor at \$60	Adjust Guardrail at \$10- per -Lin. Ft. for 30 LF = \$300. Raise 30 lf of guardrail to 27 inch design height. abor at \$60- per -Hour for 4 Hrs = \$240. Remove gravel from face of barrier. ow Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475.							
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	osts only.			

ROUTE 0013: BAD PASS ROAD



BICA_0013_0.786_R_1.JPG

B	arrier ID:	BICA-0013	3-0.791-L					
	ite Name:	BAD PAS						
T	tion Data	06/09/201	0	D *	u Dati	32.70		
		06/08/201	0	Barrie	r Rating:	32.70		
Barrier Descripti								
	Туре:	W-BEAM S	STRONG POST	Barrier	Function:	TRAFFIC		
Barrier	Material:	WEATHER STEEL/CO		Post	Material:	WOOD		
	Blockout Type:	WOOD		Le	ngth (ft.):	53		
Speed Limi	it (MPH):	45			ment with t to Road:	TANGENT		
Hazard Behind	l Barrier:	LOW						
Barrier Crashwo	rthiness							
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-3		Is Barrier worthy?:	YES	
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	Approach ion Type:	RIGID W-BEAM - W-BEAM			
Ending End Trtmt Type:	W-BEAM ⁷ DOWN	ΓURN	Ending End Trtmt Crashhworthy?:	NO				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0	Post Sna	cing (In.):	47.0	
Height (In.):	21.2		Lateral Offset (In.):	125.5		rade (%):	1.10	
Physical Condition	on							
	Align	ment and Height:	End treatment and transition	n only.				
Barrier		aking and Cracking:	End treatment and transition	n only.				
	Missing	Elements:	End treatment and transition	n only.				
		osion and eathering:	End treatment and transition	n only.				
	Align	ment and Height:	End treatment alignment as	s designed and height 4 in be	elow 27 in desi	ign height.		
End Treatments		aking and Cracking:						
Missing Elements: No missing end treatment elements.								
		osion and eathering:	No major weathering of the	No major weathering of the end treatment.				
<u>.</u>								

B	arrier ID:	BICA-0013	BICA-0013-0.791-L							
Rou	ite Name:	BAD PAS	AD PASS ROAD							
Inspect	tion Date:	06/08/201	0	Barrie	r Rating:	32.70				
Repair Recomme	endations	5								
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$1876			
Brief Workorder:	Raise 23-ft o	f barrier up to	the 27-in design height							
Workorder:		djust Guardrail at \$10- per -Lin. Ft. for 23-ft = \$230. Raise 23-ft of barrier up to the 27-in design height ow Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. Low speed shoulder work.								
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	sts only.				

ROUTE 0013: BAD PASS ROAD



BICA_0013_0.791_L_1.JPG

B	arrier ID:	BICA-0013	3-0.802-R								
	ite Name:		D PASS ROAD								
T	tion Data	06/09/201	0	D	Detter	30.70					
		06/08/201	0	Barri	er Rating:	30.70					
Barrier Descripti	on	1									
	Туре:	W-BEAM S	STRONG POST	Barrier Function: TRAFFIC							
Barrier	Material:	WEATHER STEEL/CO		Post	t Material:	WOOD					
	Blockout Type:	WOOD		L	ength (ft.):	54					
Speed Lim	it (MPH):	45			ement with et to Road:	TANGENT	- -				
Hazard Behind	l Barrier:	MEDIUM		l							
Barrier Crashwo	rthiness										
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-3		Is Barrier worthy?:	YES				
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	RIGID W-BEAM - W-BEAM				
Ending End Trtmt	W-BEAM ⁷ DOWN	ΓURN	Ending End Trtmt Crashhworthy?:	NO							
Average Measure											
Design Height (In.):	27		Width (In.):	0.0	Post Sna	cing (In.):	37.5				
Height (In.):	22.2		Lateral Offset (In.):	99.3		rade (%):	1.20				
Physical Condition	on										
		ment and Height:	Transition and end treatme	nt only.							
Barrier		aking and Cracking:	Transition and end treatme	nt only.							
	Missing	Elements:	Transition and end treatme	nt only.							
		osion and eathering:	Transition and end treatme	nt only.							
	Align	ment and Height:	Alignment has no deflection turned down end which is a	on and height is 3 to 7 in be as designed.	low the 27 in de	esign height e	xcept for the				
End Treatments		aking and Cracking:	No cracked or broken end	treatment elements.							
	Missing	Elements:	No missing end treatment	it elements.							
		osion and eathering:	Minimal corrosion/weather	ring of end treatment eleme	nts. Gravel pile	ed in front of	end treatment.				
			1								

B	arrier ID:	BICA-0013	3-0.802-R							
Rou	ite Name:	BAD PAS	AD PASS ROAD							
Inspect	tion Date:	06/08/201	0	Barriei	r Rating:	30.70				
Repair Recomme	endations	5								
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$1887			
Brief Workorder:	Raise 24 feet	t of barrier up	to the 27 inch design height.							
Workorder:	Workorder: Adjust Guardrail at \$10- per -Lin. Ft. for 24 LF = \$240. Raise 24 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.									

ROUTE 0013: BAD PASS ROAD



BICA_0013_0.802_R_1.JPG

Route	ier ID: Name:								
		BAD PAS	S ROAD						
Inspection	1 Data:	06/08/2010)	Rownio	r Rating:	32.70			
Barrier Description		00/08/2010	, 	Dai fle	i Katilig:	52.70			
barrier Description		WDEANA	TRONG BOOT	.					
	Туре:	W-BEAM S	STRONG POST	Barrier	Function:	TRAFFIC			
Barrier Ma		WEATHER STEEL/CO		Post	Material:	WOOD			
Blo		WOOD		Le	ngth (ft.):	67			
Speed Limit (N		45			nent with to Road:	TANGENI			
Hazard Behind Ba	arrier:	LOW							
Barrier Crashworth	niness								
Appropriate Test TL Level:	2		Barrier Test Level:	TL-3		Is Barrier worthy?:	YES		
Beg. End Trtmt W- Type: DC	-BEAM 1 OWN	TURN	Is Beg. End Trtmt Crashhworthy?:	NO		Approach ion Type:	BRIDGE RAIL W-BEAM		
Ending End Trtmt NC Type:	ONE		Ending End Trtmt Crashhworthy?:	N/A					
Average Measurem	ents								
Design Height (In.): 27	7		Width (In.):	0.0	Post Space	cing (In.):	47.0		
Height (In.): 22	2.6		Lateral Offset (In.):	125.3		rade (%):	0.60		
Physical Condition									
	Align	ment and Height:	End treatment and transitio	n only.					
Barrier		aking and Cracking:	End treatment and transitio	n only.					
N	Aissing H	Elements:	End treatment and transitio	n only.					
		osion and athering:	End treatment and transitio	n only.					
	Align	ment and Height:	End treatment alignment as	designed and height for turn	n down end tre	eatment is as c	lesigned.		
End Treatments		aking and Cracking:	No breaking minor crackin	cracking of end treatment.					
	Aissing H	Elements:	No missing end treatment e	elements.					
		osion and athering:	No major weathering of the	e end treatment.					

B	arrier ID:	BICA-0013	6-0.808-L							
Rou	ite Name:	BAD PAS	AD PASS ROAD							
Inspec	tion Date:	06/08/201	0	Barrie	r Rating:	32.70				
Repair Recomme	endations									
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$2030			
Brief Workorder:	Raise 37 feet	t of barrier up	to the 27-in design height.							
Workorder:	Workorder: Adjust Guardrail at \$10- per -Lin. Ft. for 37 LF = \$370. Raise 37 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.										

ROUTE 0013: BAD PASS ROAD



BICA_0013_0.808_L_1.JPG

Ba	arrier ID:	BICA-0013	8-6.411-L						
Rou	te Name:	BAD PAS	S ROAD						
Inspect	ion Doto.	06/08/201	0	Т	Barrier Rating:	29.70			
Barrier Descripti		00/00/2010			Sarrier Katilig;	27.70			
barrier Descripti	Туре:	W-BEAM S	STRONG POST	Ba	nrrier Function:	TRAFFIC			
Barrier	Material:	WEATHER STEEL/CO			Post Material:	WOOD			
	Blockout Type:	WOOD			Length (ft.):	961			
Speed Limi	t (MPH):	30			Placement with espect to Road:	BOTH INS	IDE AND OUTSIDE		
Hazard Behind	Barrier:	HIGH							
Barrier Crashwo	rthiness								
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-3		Is Barrier worthy?:	YES		
Beg. End Trtmt Type:	W-BEAM I 350 COMP		Is Beg. End Trtmt Crashhworthy?:	YES		Approach ion Type:	NONE		
Ending End Trtmt Type:	W-BEAM I 350 COMP		Ending End Trtmt Crashhworthy?:	YES					
Average Measure	ements								
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	75.1		
Height (In.):	29.5		Lateral Offset (In.):	70.6	Road G	rade (%):	8.30		
Physical Condition									
	Align	ment and Height:	The alignment had no defle height.	ection and the height	ranged between 1 to 4	4 in above the	27 in design		
Barrier		aking and Cracking:	1 cracked block. No other	cracked or broken ba	arrier elements. There	e were 2 tilted	blocks.		
	Missing	Elements:	No missing barrier element	ts.					
		osion and eathering:	Minimal corrosion of barri newer posts. Older posts e from trailing end. Monitor	xhibit dry rot and/or		-			
	Align	ment and Height:	Alignment acceptable. He	ight is within 1-in of	27-in design height.				
End Treatments		aking and Cracking:	No cracked or broken end	treatment elements.					
	Missing]	Elements:	No missing end treatment of	ent elements.					
		osion and eathering:	Minimal corrosion and wea	athering of end treatr	nent elements.				

B	arrier ID:	BICA-0013	8-6.411-L							
Rou	ite Name:	BAD PAS	AD PASS ROAD							
Inspec	tion Date:	06/08/201	0	Barrie	r Rating:	29.70				
Repair Recomme	endations	5								
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$1722			
Brief Workorder:	Replace 1 bl	ock and adjust	2 tilted blocks.							
Workorder:	Workorder:Replace Block at \$30- per -Each for 1 Block(s) = \$30. Replace cracked block. Labor at \$60- per -Hour for 1 Hrs = \$60. Right tilted blocks. 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.									

ROUTE 0013: BAD PASS ROAD



BICA_0013_6.411_L_1.JPG

Route Name: BAD PASS ROAD Inspection Date: 06/08/2010 Barrier Rating: 29/0 Barrier Description Type: W-BEAM STRONG POST Barrier Function: TRAFFIC Barrier Material: WOD Centro Internet Strept Control Barrier Material: WOD Length (ft,): 500 Barrier Material: WOD Length (ft,): 500 Barrier Material: WOD Length (ft,): 500 Barrier Crashworthines Placement with INSIDE OF CURVE Barrier Test Limit (MPH) 30 Is Beg. End Trimit YES Approach NONE Type: 350 COMPLIANT Crashworthy?: YES Adign Cont Trimit W-BEAM FLARED Ending End Trimit YES Approach NONE Type: 350 COMPLIANT Crashworthy?:	B	arrier ID:	BICA-0013	3-6.524-R								
Barrier Description Type: W-BEAM STRONG POST Barrier Function: TRAFFIC Barrier Material: WCOD Length (fi, j): Stop Biockout WOOD Length (fi, j): Stop Speed Limit (MPH): 30 Placement with Resence to Road: NSIDE OF CURVE Barrier Crashworthiness Barrier IL:3 Placement with Resence to Road: NSIDE OF CURVE Barrier Crashworthiness Test Level: Transition Type: YES Appropriate Test Level: Transition Type: Sto COMPLIANT Seg. End Trunt Crashworthy?: YES Beg. End Trunt W-BEAM FLARED Type: Is Beg. End Trunt WeBEAM FLARED Is Beg. End Trunt Crashworthy?: YES ONE Average Measurements Eateral Offset (In.): 0.0 Post Spacing (In.): 75.3 Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 75.3 Physical CondItion The algoment had on deflection and the height was 3 to 5 in above the 27 in design height. Barrier Alignment and Height (In.): Sone weathering of the barrier possib. Corresion and Weathering: No missing harier elements. Breaking and Weathering: Alignment acceptable. Height as within 1-in of 27-in design height. Missing Elements: No missing			BAD PAS	D PASS ROAD								
Barrier Description Type: W-BEAM STRONG POST Barrier Function: TRAFFIC Barrier Material: WCOD Length (fi, j): Stop Biockout WOOD Length (fi, j): Stop Speed Limit (MPH): 30 Placement with Resence to Road: NSIDE OF CURVE Barrier Crashworthiness Barrier IL:3 Placement with Resence to Road: NSIDE OF CURVE Barrier Crashworthiness Test Level: Transition Type: YES Appropriate Test Level: Transition Type: Sto COMPLIANT Seg. End Trunt Crashworthy?: YES Beg. End Trunt W-BEAM FLARED Type: Is Beg. End Trunt WeBEAM FLARED Is Beg. End Trunt Crashworthy?: YES ONE Average Measurements Eateral Offset (In.): 0.0 Post Spacing (In.): 75.3 Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 75.3 Physical CondItion The algoment had on deflection and the height was 3 to 5 in above the 27 in design height. Barrier Alignment and Height (In.): Sone weathering of the barrier possib. Corresion and Weathering: No missing harier elements. Breaking and Weathering: Alignment acceptable. Height as within 1-in of 27-in design height. Missing Elements: No missing	Transie	tion Datas	06/09/201	0	D	nion Dati	20.70					
Image: state in the state			00/08/201	0	Dari	rier Kating:	29.70					
Image: State in the strate interval interval in the strate interval inte	Barrier Descripti											
STEEL/CORTEN Image: Steel/Correction in the second of t		Туре:	W-BEAM S	STRONG POST Barrier Function:		TRAFFIC						
Blockott Type: WOOD Type: Sood Speed Limit (MPH): 30 Placement with Respect to Road: INSIDE OF CURVE Hazard Behind Barrier: IHGI Respect to Road: INSIDE OF CURVE Barrier Crashworthiness IHGI TL-3 Is Barrier Crashworth?: YES Beg. End Trutt W-BEAM FLARED Type: Is Beg. End Trutt YES Approach Crashworth?: NONE Ending End Trutt Type: W-BEAM FLARED S0 COMPLIANT Is Beg. End Trutt Crashhworth?: YES Image: Comptending to the comptending to th	Barrier	Material:			Po	st Material:	WOOD					
Speed Limit (MPH) 30 Placement with Respect to Road: INSIDE OF CURVE Hazard Behind Barrier: IIIGH IIIGH Barrier Crashworth/iness IIIGH IIIGH Barrier Crashworth/iness TL-3 Is Barrier Crashworth?: VES Appropriate Test Level: TL-1 Barrier Test Level: TL-3 Is Barrier Crashworth?: VES Beg, End Trutt Type: W-BEAM FLARED 300 COMPLIANT Is Beg, End Trutt Crashhworth?: VES Approach NONE Ending End Trutt Type: W-BEAM FLARED 300 COMPLIANT Ending End Trutt Crashhworth?: VES Approach NONE Average Measurements Ending End Trutt Type: 30.0 Post Spacing (In.): 75.3 Beight (In.): 30.6 Lateral Offset (In.): 115.3 Road Grade (%): 8.60 Physical Condition Alignment and Height: The alignment had no deflection and the height was 3 to 5 in above the 27 in design height. Barrier Alignment and Keathering: Some minor cracking of the barrier posts. Image: Some minor cracking of the barrier posts. Corrosion and Weathering: Alignment acceptable. Height is writin 1-in of 27-in design height. Image in tracking an in tracking of the end treatmen						Length (ft.):	500					
HIGH Barrier Crashworthiness Appropriate Test Level: TL-3 Is Barrier Crashworthy?: Beg. End Tritut VES Appropriate Test Level: TL-3 Is Barrier Crashworthy?: Beg. End Tritut W-BEAM FLARED Type: 350 COMPLIANT Transition Type: Complexity of the second to the transition Type: NONE Average Measurements Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 75.3 Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 75.3 Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 75.3 Beign Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 75.3 Beight (In.): 27 Width (In.): 0.0 Post Sp	Speed Lim		30				INSIDE OF	F CURVE				
Appropriate Test Level:TL-1Barrier Test Level:TL-3Is Barrier Crashworthy:YES Approach Transition Type:Beg. End Trinti 350 COMPLIANTIs Beg. End Trinti Crashworthy:YESMONEEnding End Trinti Type:W-BEAM FLARED 350 COMPLIANTEnding End Trinti Crashworthy:YESMONEEnding End Trinti Syso COMPLIANTW-BEAM FLARED Crashworthy:Beng End Trinti YESYESMONEAverage Measure27Width (In.):0.0Post Spacing (In.):75.3Height (In.):30.6Lateral Offset (In.):115.3Road Grade (%):8.60Physical ConditionalBreaking and Cracking:Some minor cracking of the barrier posts.Some weathering posts.Some weathering posts.BarrierAlignment and HeightSome weathering of the barrier posts.Some weathering of the barrier posts.Some weathering of the barrier posts.Breaking and Weathering:Some weathering of the barrier posts.Some site of post.Some site of post.Fund Treaking and Weathering:Some weathering of the end treatments.Some site of post.Some site of post.Fund Treaking and Weathering:No breaking or cracking of the end treatments.Some site of post.Some site of post.Fund Treaking and Weathering:No breaking or cracking of the end treatments.Some site of post.Some site of post.Fund Treaking and Cracking:No breaking or cracking of the end treatments.Some site of post.Some site of post.Fund Treaking and 	Hazard Behind	Barrier:	HIGH		ittop	cer to Road.						
Appropriate Test Level:TL-1Barrier Test Level:TL-3Is Barrier Crashworthy:YES Approach Transition Type:Beg. End Trinti 350 COMPLIANTIs Beg. End Trinti Crashworthy:YESMONEEnding End Trinti Type:W-BEAM FLARED 350 COMPLIANTEnding End Trinti Crashworthy:YESMONEEnding End Trinti Syso COMPLIANTW-BEAM FLARED Crashworthy:Beng End Trinti YESYESMONEAverage Measure27Width (In.):0.0Post Spacing (In.):75.3Height (In.):30.6Lateral Offset (In.):115.3Road Grade (%):8.60Physical ConditionalBreaking and Cracking:Some minor cracking of the barrier posts.Some weathering posts.Some weathering posts.BarrierAlignment and HeightSome weathering of the barrier posts.Some weathering of the barrier posts.Some weathering of the barrier posts.Breaking and Weathering:Some weathering of the barrier posts.Some site of post.Some site of post.Fund Treaking and Weathering:Some weathering of the end treatments.Some site of post.Some site of post.Fund Treaking and Weathering:No breaking or cracking of the end treatments.Some site of post.Some site of post.Fund Treaking and Weathering:No breaking or cracking of the end treatments.Some site of post.Some site of post.Fund Treaking and Cracking:No breaking or cracking of the end treatments.Some site of post.Some site of post.Fund Treaking and 			، 									
Beg. End Trimt Type: W-BEAM FLARED 350 COMPLIANT Is Beg. End Trimt Crashhworthy?: YES Approach Transition Type: NONE Ending End Trimt Type: W-BEAM FLARED 350 COMPLIANT Ending End Trimt Crashhworthy?: YES Image: Compliant of the transition Type: Image: Compliant of the transition Type: Image: Compliant of the transition Type: Image: Compliant of transition Type: Image: Compliant o	Appropriate Test				TL-3			YES				
Ending End Trtmt Type: W-BEAM FLARED 30 COMPLIANT Ending End Trtmt Crashhworthy?: YES Image: Construct of the state of the	Beg. End Trtmt			Is Beg. End Trtmt	YES		Approach	NONE				
Average Measurements Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 75.3 Height (In.): 30.6 Lateral Offset (In.): 115.3 Road Grade (%): 8.60 Physical Condition Interal Offset (In.): 115.3 Road Grade (%): 8.60 Physical Condition Interal offset (In.): 115.3 Road Grade (%): 8.60 Barrier Alignment and Cracking: Interalignment had no deflection and the height was 3 to 5 in above the 27 in design height. Interalignment had no deflection and the height was 3 to 5 in above the 27 in design height. Breaking and Cracking: Some minor cracking of the barrier posts. Interalignment acceptable. Interalignment acceptable. Corrrosion and Weathering: Some weathering of the barrier possible dry rot or bugs at base of post. Interalignment acceptable. Height is within 1-in of 27-in design height. End Treatments Alignment acceptable. Height is within 1-in of 27-in design height. Interalign height. Missing Elements: No breaking or cracking of the end treatments. Interalign height. Missing Elements: No missing end treatment elements. Interalign height. Missing Elements: No missing end treatments. Interalign heig	Ending End Trtmt	End Trtmt W-BEAM FLARED Ending End Trtmt YES										
Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 75.3 Height (In.): 30.6 Lateral Offset (In.): 115.3 Road Grade (%): 8.60 Physical Condition Physical Condition Alignment and Height: Breaking and Cracking: Some minor cracking of the barrier posts. Image: Some minor cracking of the barrier posts. Missing Elements: No missing barrier elements. Some weathering of the barrier possible dry rot or bugs at base of post. Keathering: Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. Find Treatments Breaking and Cracking: No breaking or cracking of the end treatments. Image: Some Some weathering of the end treatments. Image: Some weathering of the end treatments. Image: Some Some Some Some Some Some Some Some												
Height (In.): 30.6 Lateral Offset (In.): 115.3 Road Grade (%): 8.60 Physical Condition Alignment and Height: The alignment had no deflection and the height was 3 to 5 in above the 27 in design height. 8.60 Barrier Alignment and Cracking: Some minor cracking of the barrier posts. in above the 27 in design height. Missing Elements: No missing barrier elements. Some weathering of the barrier possible dry rot or bugs at base of post. Corrrosion and Weathering: Alignment acceptable. Height is within 1-in of 27-in design height. Breaking and Cracking: No breaking or cracking of the end treatments. Image: Corrosion and Cracking: No breaking or cracking of the end treatments. Image: Corrosion and Cracking: No breaking or cracking of the end treatments. Image: Corrosion and Cracking: No breaking or cracking of the end treatments. Image: Corrosion and Cracking: No breaking or cracking of the end treatments. Image: Corrosion and Cracking: No missing end treatment elements. Image: Corrosion and Cracking: No missing end treatment elements.				Width (In.):	0.0	Post Spa	oing (In):	75.3				
Physical Condition Alignment and Height: The alignment had no deflection and the height was 3 to 5 in above the 27 in design height. Barrier Breaking and Cracking: Some minor cracking of the barrier posts. Missing Elements: No missing barrier elements. Corrrosion and Weathering: Some weathering of the barrier possible dry rot or bugs at base of post. Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. End Treatments No breaking or cracking of the end treatments. Missing Elements: No breaking or cracking of the end treatments. Orrorsion and Cracking: No breaking or cracking of the end treatments. Missing Elements: No weathering of the end treatments.												
Alignment and Height: The alignment had no deflection and the height was 3 to 5 in above the 27 in design height. Barrier Breaking and Cracking: Some minor cracking of the barrier posts. Missing Elements: No missing barrier elements. Corrosion and Weathering: Some weathering of the barrier possible dry rot or bugs at base of post. End Treatments Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. End Treatments Breaking and Cracking No breaking or cracking of the end treatments. Missing Elements: No missing end treatment elements. Own missing end treatment elements. Missing elements: No missing of the end treatments.)n										
Barrier Cracking: Missing Elements: No missing barrier elements. Corrrosion and Weathering: Some weathering of the barrier possible dry rot or bugs at base of post. Rend Treatments Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. Breaking and Cracking: No breaking or cracking of the end treatments. Missing Elements: No missing end treatment elements. Corrrosion and No weathering of the end treatments.				The alignment had no defle	ection and the height was	3 to 5 in above the	he 27 in design	1 height.				
Image: Solution of the barrier possible dry rot or bugs at base of post. Corrrosion and Weathering: Alignment and Height: Alignment and Cracking: Missing Elements: No breaking or cracking of the end treatments. Orrrosion and No weathering of the end treatments.	Barrier		0	Some minor cracking of th	e barrier posts.							
Weathering: Weathering: Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. Breaking and Cracking: No breaking or cracking of the end treatments. Missing Elements: No missing end treatment elements. Corrrosion and No weathering of the end treatments.		Missing]	Elements:	No missing barrier element	is.							
End Treatments Breaking and Cracking: No breaking or cracking of the end treatments. Missing Elements: No missing end treatment elements. Corrrosion and No weathering of the end treatments.				Some weathering of the ba	rrier possible dry rot or b	ugs at base of pos	st.					
End Treatments Cracking: Missing Elements: No missing end treatment elements. Corrrosion and No weathering of the end treatments.		Align		Alignment acceptable. He	ight is within 1-in of 27-i	n design height.						
Corrrosion and No weathering of the end treatments.	End Treatments		0	No breaking or cracking of	the end treatments.							
		Missing	Elements:	No missing end treatment of	ent elements.							
				No weathering of the end t	reatments.							

B	arrier ID:	BICA-0013	3-6.524-R				
Rou	ite Name:	BAD PAS	S ROAD				
Inspect	tion Date:	06/08/201	0		Barrier Rating:	29.70	
Repair Recomme	endations	5					
Repair Action:	NO ACTIC	DN	FMSS Work Type:	N/A		Repair Cost:	\$0
Brief Workorder:	N/A						
Workorder:							
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for compari	ison to other repair co	osts only.	

ROUTE 0013: BAD PASS ROAD



BICA_0013_6.524_R_1.JPG

B	arrier ID:	BICA-0013	3-7.234-R							
	ute Name:	BAD PAS	S ROAD							
T	tion Dete	06/09/201	0		Douris De Cons	25.50				
· · · ·		06/08/201	0		Barrier Rating:	25.50				
Barrier Descripti	ion					1				
	Type:	W-BEAM S	STRONG POST		Barrier Function:	TRAFFIC				
Barrier	Material:	WEATHER STEEL/CO			Post Material:	WOOD				
	Blockout Type:	WOOD			Length (ft.):	285				
Speed Lim	it (MPH):	30			Placement with Respect to Road:	INSIDE OF	FCURVE			
Hazard Behind	d Barrier:	HIGH								
Barrier Crashwo	orthiness									
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-3		Is Barrier hworthy?:	YES			
Beg. End Trtmt Type:	W-BEAM 350 COMP		Is Beg. End Trtmt Crashhworthy?:	YES		Approach tion Type:	NONE			
Ending End Trtmt Type:	W-BEAM 350 COMP		Ending End Trtmt Crashhworthy?:	YES						
Average Measur	ements									
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	75.6			
Height (In.):	29.2		Lateral Offset (In.):	97.3		rade (%):	5.30			
Physical Condition	on									
	Align	ment and Height:	The alignment had no defle	ection and the he	ight was 2 to 3 in above t	he 27 in desigi	1 height.			
Barrier		aking and Cracking:	Minor cracking of barrier b	blocks and posts	(< 1/4 to 1/2 in). No brok	ten barrier eler	nents.			
	Missing	Elements:	No missing barrier element	ts.						
		osion and eathering:								
	Align	ment and Height:	Alignment acceptable. He	ight is within 1-i	n of 27-in design height.					
End Treatments		aking and Cracking:	No cracked or broken end	treatment elemen	ts.					
	Missing	Elements:	No missing end treatment of	ient elements.						
		osion and eathering:	Minimal corrosion/weather	ring of end treatn	nent elements.					

B	arrier ID:	BICA-0013	3-7.234-R							
Rou	ite Name:	BAD PAS	AD PASS ROAD							
Inspect	tion Date:	06/08/201	0	Barrie	r Rating:	25.50				
Repair Recomme	endations	;								
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$1733			
Brief Workorder:	Replace one	post. Monitor	condition of barrier posts for	or dry rot/bugs.						
Workorder:	Workorder: Replace Post at \$100- per -Each for 1 Post(s) = \$100. Replace one 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.										

ROUTE 0013: BAD PASS ROAD



BICA_0013_7.234_R_1.JPG



BICA_0013_7.234_R_2.JPG

BAD PASS ROAD Inspection Date: 06/08/2010 Barrier Rating: 28.60 Barrier Description Type: W-BEAM STRONG POST Barrier Function: TRAFFIC Barrier Material: WOD Image: Colspan="2">Colspan="2" Colspan="2" Colspan="2" Colspan="2" Colspan="2" Colspan="2" Colspan="2" Colspan="2" Colspan="2" Colspan="2" Colspan="2" <th cols<="" th=""><th>R</th><th>arrier ID:</th><th>BICA-0013</th><th>3-7.351-R</th><th></th><th></th><th></th><th></th></th>	<th>R</th> <th>arrier ID:</th> <th>BICA-0013</th> <th>3-7.351-R</th> <th></th> <th></th> <th></th> <th></th>	R	arrier ID:	BICA-0013	3-7.351-R						
Barrier Description Type: W-BEAM STRONG POST Barrier Function: TRAFFIC Barrier Material: WCOD Length (ft.): 430 Blockout WOOD Length (ft.): 430 Speed Limit (MPH): 30 Placement with Respect Limit (MPH): 30 Placement with Respect to Road: OUTSIDE OF CURVE Barrier Crashworthiness Test Level: Test Level: Test Level: Test Level: Speed Limit (MPH): 30 NONE Beg. End Trint W-BEAM FLARED S0 COMPLIANT Is Beg. End Trintint YES Approach NONE Beg. End Trint W-BEAM FLARED Type: Is Beg. End Trintint VFS Approach NONE Type: 300 COMPLIANT Crashworthy?: VFS Transition Type: NONE SoccomPLIANT Crashworthy?: VFS Transition Type: SoccomPLIANT Average Measurements Eading and trintint VFS Pasterion Type: Soc OMPLIANT Beight (fn.): 302 Lateral Offset (In.): 109 6 Road Grade (%): 2:00 Physical CondItion Missing Elements: </th <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>											
Barrier Description Type: W-BEAM STRONG POST Barrier Function: TRAFFIC Barrier Material: WCOD Length (ft.): 430 Blockout WOOD Length (ft.): 430 Speed Limit (MPH): 30 Placement with Respect Limit (MPH): 30 Placement with Respect to Road: OUTSIDE OF CURVE Barrier Crashworthiness Test Level: Test Level: Test Level: Test Level: Speed Limit (MPH): 30 NONE Beg. End Trint W-BEAM FLARED S0 COMPLIANT Is Beg. End Trintint YES Approach NONE Beg. End Trint W-BEAM FLARED Type: Is Beg. End Trintint VFS Approach NONE Type: 300 COMPLIANT Crashworthy?: VFS Transition Type: NONE SoccomPLIANT Crashworthy?: VFS Transition Type: SoccomPLIANT Average Measurements Eading and trintint VFS Pasterion Type: Soc OMPLIANT Beight (fn.): 302 Lateral Offset (In.): 109 6 Road Grade (%): 2:00 Physical CondItion Missing Elements: </th <th></th> <th></th> <th></th> <th></th> <th></th> <th>D (1</th> <th>20.50</th> <th></th>						D (1	20.50				
Image: Second Second Post Barrier Function: TAFFIC: Barrier is: WEATHERING STEELCORTEN WOOD Barrier: WEATHERING STEELCORTEN OUTSIDE OF CURVE Speed Limit (MPH) 30 Placement with OUTSIDE OF CURVE Barrier Trassition OUTSIDE OF CURVE Barrier Crashwerthy: STEELCORTEN OUTSIDE OF CURVE Barrier Crashwerthy: STEELCORTEN OUTSIDE OF CURVE Barrier Crashwerthy: STEELCORTEN STEELCORTEN Barrier Crashwerthy: STEELCORTEN STEELCORTEN Barrier Trassition MEARED Is Beg. End Trunt YES Approach NONE Crashwerthy: SOCOMPLIANT SOCOMPLIANT SOCOMPLIANT SOCOMPLIANT SOCOMPLIANT YES Approach NONE Posign Height (In): 30 Post Hater II NONE Posign Height (In): 30 Minot conspan="4">Minot conspan="4" Posign Height (In): <th>· · · ·</th> <th></th> <th>06/08/201</th> <th>0</th> <th>Barrie</th> <th>r Kating:</th> <th>28.60</th> <th></th>	· · · ·		06/08/201	0	Barrie	r Kating:	28.60				
Image: Streep in the stree	Barrier Descripti	ion									
STEEL/CORTEN Image: Steel/Corten in the second state in the second state. State is in the second state in the second state. State is in the second state is in the second state. State is in the second state second state. State is in the		Type:	W-BEAM S	STRONG POST	Barrier	Function:	TRAFFIC				
Type: Type: <	Barrier	Material:			Post	Material:	WOOD				
Image: service			WOOD		Le	ength (ft.):	430				
Barrier Crashworthines Appropriate Test Level: TL-1 Barrier Test Level: TL-3 Is Barrier Crashworthy?: YES Beg. End Trimt Type: W-BEAM FLARED 350 COMPLIANT Is Beg. End Trimt Crashhworthy?: YES Approach Transition Type: NONE Ending End Trimt Type: W-BEAM FLARED 350 COMPLIANT Ending End Trimt Crashhworthy?: YES NONE Average Measurements Ending End Trimt Crashhworthy?: VES 2.50 Physical Condition: 27 Width (In.): 0.0 Post Spacing (In.): 73.6 Physical Condition: 30.2 Lateral Offset (In.): 109.6 Road Grade (%): 2.50 Physical Condition: The alignment and Height: The alignment had no deflection and the height was 3 to 4 in above the 27 in design height. Barrier Missing Elements: No missing barrier elements. Immediate weathering of barrier posts. Older posts mixed with new posts: Old posts exhibit dry rot/bug infestation. Monitor condition of barrier posts. Older posts mixed with new Missing Elements: Alignment acceptable: Height is within 1-in of 27-in design height. Immediate weathering of barrier posts. Immediate weathering of barrier posts. Immediate weathering of barrier posts. End Treatment <th>Speed Lim</th> <th>it (MPH):</th> <th>30</th> <th></th> <th></th> <th></th> <th>OUTSIDE</th> <th>OF CURVE</th>	Speed Lim	it (MPH):	30				OUTSIDE	OF CURVE			
Appropriate Test Level:TI-1Barrier Test Level:TI-3Is Barrier Crashworthy?:YESBeg. End Trinti Type:W-BEAM FLARED 350 COMPLIANTIs Beg. End Trinti Crashworthy?:YESApproach Transition Type:NONEEnding End Trinti Type:W-BEAM FLARED 350 COMPLIANTEnding End Trinti Crashworthy?:YESIoneNONEAverage Measurement Seign Height (In.):27Width (In.):0.0Post Spacing (In.):73.6Oracing Measurement Height (In.):30.2Lateral Offset (In.):109.6Road Grade (%):2.50Physical Conditional BarrierAlignment and no deffect (In.):109.6Road Grade (%):2.50Breaking and Cracking:More cracking of barrier leven and the height was 3 blocks. No broken barrier elements.Statistical condition of the seight was 3 blocks. No broken barrier elements.Breaking and Cracking:No missing barrier elements.Ione condition of barrier posts. Old posts exhibit dry rockug infestation. Monitor condition of barrier posts. Old posts exhibit dry rockug infestation. Monitor condition of barrier posts.Statistical with newEnd TreakingAlignment and Height isNo cracked or broken end treatment elements.Statistical with newEnd Treaking and Cracking:No cracked or broken end treatment elements.Statistical with newEnd Treaking and Cracking:No cracked or broken end treatment elements.Statistical with newEnd Treaking and Cracking:No cracked or broken end treatment elements.Statistical with newEnd Treaking<	Hazard Behind	l Barrier:	EXTREME								
Levei:MesTest Levei:Crashworthy?:NoNEBeg. End Trimi 350 COMPLIANTIs Beg. End Trimi Crashworthy?:YESApproach Transition Type:NONEEnding End Trimi Syso COMPLIANTBeding End Trimi Crashworthy?:YESImage: Crashworthy?:NoNEAverage Measurement300 COMPLIANTEnding End Trimi Crashworthy?:YESImage: Crashworthy?:NoNEDesign Height (In:)27Width (In:)0.0Post Spacing (In:)7.3.6Height (In:)30.2Lateral Offset (In:)109.6Road Grade (%):2.50Physical Condition30.2Lateral Offset (In:)109.6Road Grade (%):2.50Physical ConditionSone cracking of barrier posts and blocks. No broken barrier clements.Sone cracking of barrier posts and blocks. No broken barrier clements.Breaking and 	Barrier Crashwo	rthiness									
Type350 COMPLIANTCrashhworthy?:Transition Type:Ending End Trtm< Type:W-BEAM FLARED 350 COMPLIANTEnding End Trtm Crashhworthy?:YESImage: Compliant of the text of the text of the text of text of the text of text		TL-1			TL-3			YES			
Type: 350 COMPLIANT Crashhworthy?: Image: Complicit of the second	-				YES			NONE			
Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 73.6 Height (In.): 30.2 Lateral Offset (In.): 109.6 Road Grade (%): 2.50 Physical Condition Alignment and Height: The alignment had no deflection and the height was 3 to 4 in above the 27 in design height. Statistical of the alignment had no deflection and the height was 3 to 4 in above the 27 in design height. Breaking and Cracking: Minor cracking of barrier posts and blocks. No broken barrier elements. Missing Elements: No missing barrier elements. Corrrosion and Weathering: No missing barrier elements. Moderate weathering of barrier posts. Older posts mixed with new posts. Old posts exhibit dry rot/bug infestation. Monitor condition of barrier posts. Mine with new posts. Breaking and Height: Alignment acceptable. Height is within 1-in of 27-in design height. Statistical height. End Treatments Missing Elements: No missing end treatment elements. Statistical height is within 1-in of 27-in design height. Missing Elements: No missing end treatment elements. Statistical height is within 1-in of 27-in design height. Statistical height is within 1-in of 27-in design height. Missing Elements: No missing end treatment elements. Statistical height is within 1-in of 27-in design height. Statistical height is height is he	0										
Bit No. District No. District No. Height (In.): 30.2 Lateral Offset (In.): 109.6 Road Grade (%): 2.50 Physical Condition Alignment and Height: The alignment had no deflection and the height was 3 to 4 in above the 27 in design height. Barrier Alignment and Cracking: Minor cracking of barrier posts and blocks. No broken barrier elements. Missing Elements: No missing barrier elements. No missing barrier elements. Corrrosion and Weathering: Minimal corrosion of barrier rails. Moderate weathering of barrier posts. Older posts mixed with new posts. Old posts exhibit dry rot/bug infestation. Monitor condition of barrier posts. Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. Breaking and Cracking: No cracked or broken end treatment elements. Missing Elements: No missing end treatment elements. Missing Elements: No missing end treatment elements. Corrrosion and Minimal corrosion/weathering of end treatment elements.	Average Measur	ements									
Height (in.): 30.2 Lateral Offset (in.): 109.6 Road Grade (%): 2.50 Physical Conditional Condi	Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	73.6			
Alignment and Height: The alignment had no deflection and the height was 3 to 4 in above the 27 in design height. Barrier Breaking and Cracking: Minor cracking of barrier posts and blocks. No broken barrier elements. Missing Elements: Minimal corrosion of barrier rails. Moderate weathering of barrier posts. Older posts mixed with new posts. Old posts exhibit dry rot/bug infestation. Monitor condition of barrier posts. End Treatments Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. End Treatments Or cracking and Cracking: No cracked or broken end treatment elements. Missing Elements: No missing end treatment elements. Or cracking and Cracking No missing end treatment elements.	Height (In.):	30.2		Lateral Offset (In.):	109.6			2.50			
Alignment and Height: The alignment had no deflection and the height was 3 to 4 in above the 27 in design height. Barrier Breaking and Cracking: Minor cracking of barrier posts and blocks. No broken barrier elements. Missing Elements: Minimal corrosion of barrier rails. Moderate weathering of barrier posts. Older posts mixed with new posts. Old posts exhibit dry rot/bug infestation. Monitor condition of barrier posts. End Treatments Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. End Treatments Or cracking and Cracking: No cracked or broken end treatment elements. Missing Elements: No missing end treatment elements. Or cracking and Cracking No missing end treatment elements.	Physical Condition)n									
Barrier Cracking: Missing Elements: No missing barrier elements. Corrrosion and Weathering: Minimal corrosion of barrier rails. Moderate weathering of barrier posts. Older posts mixed with new posts. Old posts exhibit dry rot/bug infestation. Monitor condition of barrier posts. Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. Breaking and Cracking: No cracked or broken end treatment elements. Missing Elements: No missing end treatment elements. Corrrosion and Minimal corrosion/weathering of end treatment elements. No missing end treatment elements.				The alignment had no defle	ection and the height was 3 t	o 4 in above tl	ne 27 in design	1 height.			
Image: Solution of the second of the seco	Barrier		0	Minor cracking of barrier p	posts and blocks. No broken	barrier eleme	nts.				
Weathering:posts. Old posts exhibit dry rot/bug infestation. Monitor condition of barrier posts.Alignment and Height:Alignment acceptable. Height is within 1-in of 27-in design height.End TreatmentsBreaking and Cracking:No cracked or broken end treatment elements.Missing Elements:No missing end treatment elements.Corrrosion andMinimal corrosion/weathering of end treatment elements.		Missing	Elements:	No missing barrier element	ts.						
End Treatments Breaking and Cracking: No cracked or broken end treatment elements. Missing Elements: No missing end treatment elements. Corrrosion and Minimal corrosion/weathering of end treatment elements.											
End Treatments Cracking: Missing Elements: No missing end treatment elements. Corrrosion and Minimal corrosion/weathering of end treatment elements.		Align		Alignment acceptable. He	ight is within 1-in of 27-in d	esign height.					
Corrosion and Minimal corrosion/weathering of end treatment elements.	End Treatments		0	No cracked or broken end	treatment elements.						
		Missing]	Elements:	No missing end treatment of	ent elements.						
				Minimal corrosion/weather	ing of end treatment elemer	ıts.					

B	arrier ID:	BICA-0013	3-7.351-R							
Rou	ute Name:	BAD PAS	BAD PASS ROAD							
Inspec	tion Date:	06/08/201	0	Barrie	er Rating:	28.60				
Repair Recomme	endations	5								
Repair Action:	MONITOR		FMSS Work Type:	N/A		Repair Cost:	\$0			
Brief Workorder:	Monitor con-	dition of wood	posts for dry rot/bug infesta	ition.						
Workorder:										
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to ot	ther repair co	osts only.				

ROUTE 0013: BAD PASS ROAD



BICA_0013_7.351_R_1.JPG

Ba	arrier ID:	BICA-0013	8-7.460-R						
	ite Name:	BAD PAS	S ROAD						
Inspect	ion Data.	06/08/201	0	Rorri	er Rating:	28.60			
Barrier Descripti		00/00/201			i ixatilig.	20.00			
barrier Descripti	Туре:	W-BEAM S	STRONG POST	Barrier Function:		TRAFFIC			
Barrier	Material:	WEATHEF STEEL/CO		Post	t Material:	WOOD			
	Blockout Type:	WOOD		L	ength (ft.):	668			
Speed Limi		30			ement with et to Road:	BOTH INS	IDE AND OUTSIDE		
Hazard Behind	Barrier:	EXTREME	· · · · · · · · · · · · · · · · · · ·						
Barrier Crashwo	rthiness								
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-3		Is Barrier worthy?:	YES		
Beg. End Trtmt Type:	W-BEAM I 350 COMP		Is Beg. End Trtmt Crashhworthy?:	YES		Approach ion Type:	NONE		
Ending End Trtmt Type:	W-BEAM I 350 COMP		Ending End Trtmt Crashhworthy?:	YES					
Average Measure	ements								
Design Height (In.):	27		Width (In.):	0.0		cing (In.):	75.0		
Height (In.):	30.5		Lateral Offset (In.):	102.0	Road G	rade (%):	1.20		
Physical Condition									
	Align	ment and Height:	The alignment had no defle	ection and the height was 3	to 4 in above th	ne 27 in desigi	1 height.		
Barrier		aking and Cracking:	Some minor cracking of th	e barrier posts.					
	Missing 1	Elements:	No missing barrier elemen	is.					
		osion and eathering:	Some minor weathering of	the barrier posts possible d	ry rot or bugs a	t base of post.			
	Align	ment and Height:	Alignment acceptable. He	ight is within 1-in of 27-in o	design height.				
End Treatments		aking and Cracking:	No breaking or cracking of	the end treatments.					
	Missing	Elements:	No missing end treatment of	treatment elements.					
		osion and eathering:	No weathering of the end t	reatments.					

Bar	rier ID:	BICA-0013	8-7.460-R							
Route	e Name:	BAD PAS	BAD PASS ROAD							
Inspectio	on Date:	06/08/201	0	В	arrier Rating:	28.60				
Repair Recommen	idations									
Repair M Action:	NO ACTIO	νN	FMSS Work Type:	N/A		Repair Cost:	\$0			
Brief Workorder:	√A									
Workorder:										
	2008 cos	st estimate (A	ASTM Class D), prelimin	ary for comparison	n to other repair co	osts only.				

ROUTE 0013: BAD PASS ROAD



BICA_0013_7.460_R_1.JPG



BICA_0013_7.460_R_2.JPG

Ba	arrier ID:	BICA-0013	3-7.640-R							
	te Name:	BAD PAS	S ROAD							
Transis	ion Data:	06/08/201	0	D	" Dotter er	32.90				
*		06/08/201	0	Barrie	r Rating:	32.90				
Barrier Descripti										
	Туре:	W-BEAM S	STRONG POST	Barrier	Function:	TRAFFIC				
Barrier	Material:	WEATHER STEEL/CO		Post	Material:	WOOD				
	Blockout Type:	WOOD		Le	ength (ft.):	570				
Speed Limi	t (MPH):	30			ment with t to Road:	BOTH INS	IDE AND OUTSIDE			
Hazard Behind	Barrier:	EXTREME								
Barrier Crashwo	rthiness									
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-3		Is Barrier worthy?:	YES			
Beg. End Trtmt Type:	W-BEAM I 350 COMP		Is Beg. End Trtmt Crashhworthy?:	YES		Approach ion Type:	NONE			
Ending End Trtmt	W-BEAM I 350 COMP		Ending End Trtmt Crashhworthy?:	YES						
Average Measure	ements									
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	75.3			
Height (In.):	29.7		Lateral Offset (In.):	103.0		rade (%):	3.40			
Physical Condition	n									
		ment and Height:	The alignment had no defle throughout.	ection and the height was 2 t	to 3 in below the	he 27 in design	1 height			
Barrier		aking and Cracking:	Minor cracking of barrier p	bosts and blocks (< $1/4$ to $1/2$	2 in). No brok	en barrier eler	nents.			
	Missing 3	Elements:	No missing barrier element	S.						
		osion and eathering:	mixed together. Some old end moderate erosion aroun	-	estation. Fron	*				
	Align	ment and Height:	Alignment acceptable. He	ight is within 1-in of 27-in d	esign height.					
End Treatments		aking and Cracking:	No cracked or broken end	reatment elements.						
	Missing	Elements:	No missing end treatment e	atment elements.						
		osion and eathering:	Minimal corrosion/weather (minor).	ing of end treatment elemer	nts. Erosion at	approach end	treatment			

Ba	arrier ID:	BICA-0013	3-7.640-R							
Rou	ite Name:	BAD PAS	BAD PASS ROAD							
Inspect	tion Date:	06/08/201	0	Barrie	r Rating:	32.90				
Repair Recomme	endations	;								
Repair Action:	REPAIR		FMSSDEFERREDRepair\$4983Work Type:MAINTENANCECost:							
Brief Workorder:	Install 50 foo	ot asphalt curb	and paved ditch. Monitor e	rosion at approach end treati	nent and mon	itor condition	of wood posts.			
Workorder:Asphalt Curb at \$12- per -Lin. Ft. for 50-ft = \$600. Install 50-ft of asphalt curb. Labor at \$60- per -Hour for 8 Hrs = \$480. 8 hours labor to groom slope for ditch. Slope Paving at \$125- per -Sq. Yd. for 4 SY = \$500. Install 4 sy slope paving for ditch. 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.									

ROUTE 0013: BAD PASS ROAD



BICA_0013_7.640_R_1.JPG

Ba	arrier ID:	BICA-0013	3-7.807-R						
	ite Name:	BAD PAS	S ROAD						
Inspect	ion Data.	06/08/201	0	Rarria	r Rating:	27.20			
Barrier Descripti		00/00/201	<u> </u>		i Natilig.	27.20			
barrier Descripti	Туре:	W-BEAM S	STRONG POST	Barrier Function:		TRAFFIC			
Barrier	Material:	WEATHEF STEEL/CO		Post	Material:	WOOD			
	Blockout Type:	WOOD			ength (ft.):	321			
Speed Limi		30			ment with t to Road:	INSIDE OF	F CURVE		
Hazard Behind	Barrier:	EXTREME							
Barrier Crashwo	rthiness								
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-3		Is Barrier worthy?:	YES		
Beg. End Trtmt Type:	W-BEAM I 350 COMP		Is Beg. End Trtmt Crashhworthy?:	YES		Approach ion Type:	NONE		
Ending End Trtmt Type:	W-BEAM I 350 COMP		Ending End Trtmt Crashhworthy?:	YES					
Average Measure	ements								
Design Height (In.):	27		Width (In.):	0.0		cing (In.):	75.0		
Height (In.):	29.0		Lateral Offset (In.):	95.0	Road G	rade (%):	5.50		
Physical Condition	n								
	Align	ment and Height:	The alignment had no defle	ection and the height was 2 i	n above the 27	7 in design hei	ght throughout.		
Barrier		aking and Cracking:	Some minor cracking of th	e barrier posts. 4 new posts	installed with o	end treatments	5.		
	Missing	Elements:	No missing barrier elemen	ts.					
		osion and eathering:	Some weathering of the ba	rrier possible dry rot or bugs	s at base of pos	st.			
	Align	ment and Height:	Alignment acceptable. He	ight is within 1-in of 27-in d	esign height.				
End Treatments		aking and Cracking:	No breaking or cracking of	the end treatments.					
	Missing 1	Elements:	No missing end treatment of	tment elements.					
		osion and eathering:	No weathering of the end t	reatments.					

B	arrier ID:	BICA-0013	3-7.807-R						
Rou	ite Name:	BAD PAS	BAD PASS ROAD						
Inspec	tion Date:	06/08/201	0	E	Barrier Rating:	27.20			
Repair Recomme	endations	5							
Repair Action:	NO ACTIC	DN	FMSS Work Type:	N/A		Repair Cost:	\$0		
Brief Workorder:	N/A								
Workorder:									
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for compariso	n to other repair co	osts only.			

ROUTE 0013: BAD PASS ROAD



BICA_0013_7.807_R_1.JPG

Route Name: BAD PASS ROAD Inspection Date: 06/08/2010 Barrier Rating: 30.0 Barrier Description Type: W-BEAM STRONG POST Barrier Function: TRAFFIC Barrier Material: W-BEAM STRONG POST Barrier Function: TRAFFIC Barrier Material: WOD Length (ft.): STEEL/CORTEN Blockout WOOD Length (ft.): STEEL/CORTEN Barrier Tate Material: WOOD Speed Limit (MPH): 10 Placement with INSUB-OF CURVE. Barrier Tate Crashworthy: IS REPLICEORTEN Barrier Tate Tate Tate Tate Tate Tate Tate Tate	В	arrier ID:	BICA-0013	3-7.925-R							
Barrier Description Type: W-BEAM STRONG POST Barrier Function: TRAFFIC Barrier Material: WEATHERING STEEL/CORTEN Post Material: WOOD Blockout WOOD Length (ft.); 950 Speed Limit (MPH): 30 Placement with Respect to Road: INSIDE OF CURVE Barrier Transition Barrier: EXTREME Barrier Crashworthiness Intel Test Level: Intel Test Crashworthy?: Appropriate Test Level: 11-1 Begr. End Trunt YES Speed Limit (MPH): 30 SCOMPLIANT Is Berrier Test Level: Transition Type: SocoMPLIANT Crashworthy?: YES ONNE Finding End Trunt W-BEAM FLARED Type: SocoMPLIANT Crashworthy?: YES Average Measurements Cashworthy?: Post Spacing (In.): 75.1 Design Height (In.): 27 Width (In.): 9.8 Road Grade (%): 3.70 Physical Condition The alignment and Cracking: Some mainer cracking of the older barrier posts. 34 new posts installed with the end treatments. Barrier Alignment and Cracking: More aligned and the beight was 2 to 3 in abuve de 27 in design height. Beraking and Cracking: Some washering of the older barrier posts. 34 new posts installed with the end treatments.											
Barrier Description Type: W-BEAM STRONG POST Barrier Function: TRAFFIC Barrier Material: WEATHERING STEEL/CORTEN Post Material: WOOD Blockout WOOD Length (ft.); 950 Speed Limit (MPH): 30 Placement with Respect to Road: INSIDE OF CURVE Barrier Transition Barrier: EXTREME Barrier Crashworthiness Intel Test Level: Intel Test Crashworthy?: Appropriate Test Level: 11-1 Begr. End Trunt YES Speed Limit (MPH): 30 SCOMPLIANT Is Berrier Test Level: Transition Type: SocoMPLIANT Crashworthy?: YES ONNE Finding End Trunt W-BEAM FLARED Type: SocoMPLIANT Crashworthy?: YES Average Measurements Cashworthy?: Post Spacing (In.): 75.1 Design Height (In.): 27 Width (In.): 9.8 Road Grade (%): 3.70 Physical Condition The alignment and Cracking: Some mainer cracking of the older barrier posts. 34 new posts installed with the end treatments. Barrier Alignment and Cracking: More aligned and the beight was 2 to 3 in abuve de 27 in design height. Beraking and Cracking: Some washering of the older barrier posts. 34 new posts installed with the end treatments.	T	tion Dete	06/09/201	0		Douvier Deffer	20.00				
Image: state in the state			06/08/201	U	 	Barrier Kating:	30.00				
Image: Stree / CORTEN WeatHERIG STREE / CORTEN Word Bickout WOOD Length (ft.): 950 Speed Limit (MPH): 30 Image: Content of the stree of the st	Barrier Descript										
STEEL/CORTEN Image: Steel/Correspondence of the section of the sectin of the section of the section of the section of the sect		Туре:	W-BEAM S	STRONG POST E		Barrier Function:	TRAFFIC				
STEEL/CORTEN Image: Steel/Correspondence of the section of the sectin of the section of the section of the section of the sect	Barrier	Material	WFATHER	RING		Post Material	WOOD				
Type: Image: constraint of the second of the	Durrier	iviateriai.				i ost muterian.					
Speed Limit (MPH): 30 Placement with Respect to Road: INSIDE OF CURVE Hazard Behind Barrier: EXTREME EXTREME Barrier Crashworthiness Is Barrier TL-3 Is Barrier YES Appropriate Test Level: TL-1 Barrier TL-3 Is Barrier YES Beg, End Trutt Type: W-BEAM FLARED 300 COMPLIANT Is Beg, End Trutt Crashhworthy?: YES NONE NONE Ending End Trutt Type: W-BEAM FLARED 300 COMPLIANT Ending End Trutt Crashhworthy?: YES NONE NONE Average Measurements Ending End Trutt Type: 0.0 Post Spacing (In.): 75.1 Meight (In.): 29.6 Lateral Offset (In.): 79.8 Road Grade (%): 3.70 Physical Condition Alignment and Height: The alignment was as designed and the height was 2 to 3 in above the 27 in design height. Idesign height. Barrier Alignment and Cracking: Some minor cracking of the older barrier posts. 34 new posts installed with the end treatments. Corrrosion and Weathering: Some weathering of the barrier possible dry rot or bugs at base of post. Idesign height. Height: Alignment and Height: Alignment acceptable. Height is with			WOOD			Length (ft.):	950				
Image: speed to the speed to Respect to Road: Image: speed to Respect to Road: Hazard Behind Barrier: EXTREME Barrier Crashworthiness Image: speed to Respect to Road: Image: speed to Respect to Road: Appropriate Test TL: Barrier Test Level: Image: speed to Respect to	~		20				DIGIDE OF				
Itazard Behind Barrier: EXTREME Barrier Crashworthiness Appropriate Test Level: TL-1 Barrier TL-3 Is Barrier Crashworthy?: Beg. End Trintt W-BEAM FLARED Type: 350 COMPLIANT Is Beg. End Trintt VES Approach Transition Type: NONE Ending End Trintt W-BEAM FLARED Type: 350 COMPLIANT Ending End Trintt W-BEAM FLARED Type: 350 COMPLIANT Crashhworthy?: Average Measurements Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 75.1 Height (In.): 29.6 Lateral Offset (In.): 79.8 Road Grade (%a): 3.70 Physical Condition Missing Elements: Missing Elements: No missing barrier elements. Corrosion and Weathering: Alignment acceptable: Height is within 1-in of 27-in design height. Height (Treatiments Missing Elements: No missing on treaking of the end treatments. Corrosion and Weathering: <th>Speed Lim</th> <th>it (MPH):</th> <th>30</th> <th></th> <th></th> <th></th> <th>INSIDE OF</th> <th>CURVE</th>	Speed Lim	it (MPH):	30				INSIDE OF	CURVE			
Appropriate Test Level:TL-1Barrier Test Level:TL-3Is Barrier Crashworthy?:YESBeg. End Trimt Type:W-BEAM FLARED 350 COMPLIANTIs Beg. End Trimt Crashworthy?:YESApproach Transition Type:NONEEnding End Trimt Type:W-BEAM FLARED 350 COMPLIANTEnding End Trimt Crashworthy?:YESIoneAverage MeasurementsEnding End Trimt Crashworthy?:YESIoneIoneAverage Measurements27Width (In.):0.0Post Spacing (In.):75.1Beigin Height (In.):27Width (In.):79.8Road Grade (%):3.70Physical Condition:29.6Lateral Offset (In.):79.8Road Grade (%):3.70Physical Condition:IntelgightThe alignment was as designed and the height was 2 to 3 in above the 27 in design height.BarrierAlignment and Cracking:Some minor cracking of the older barrier posts: 34 new posts installed with the end treatments.Breaking and Crarcking:Some weathering of the barrier possible dry rot or bugs at base of post.Missing Elements:No missing barrier elements.End Treaking and Cracking:No breaking or cracking of the end treatments.Breaking and Crarcking:No breaking or cracking of the end treatments.Image: Some Measurement and Height:No breaking or cracking of the end treatments.Image: Some Measurement and Height:No breaking or cracking of the end treatments.Image: Some Measurement and Cracking:No breaking or cracking of the end treatments. <td< th=""><th>Hazard Behine</th><th>d Barrier:</th><th>EXTREME</th><th>2</th><th>I</th><th></th><th></th><th></th></td<>	Hazard Behine	d Barrier:	EXTREME	2	I						
Appropriate Test Level:TL-1Barrier Test Level:TL-3Is Barrier Crashworthy?:YESBeg. End Trimt Type:W-BEAM FLARED 350 COMPLIANTIs Beg. End Trimt Crashworthy?:YESApproach Transition Type:NONEEnding End Trimt Type:W-BEAM FLARED 350 COMPLIANTEnding End Trimt Crashworthy?:YESIoneAverage MeasurementsEnding End Trimt Crashworthy?:YESIoneIoneAverage Measurements27Width (In.):0.0Post Spacing (In.):75.1Beigin Height (In.):27Width (In.):79.8Road Grade (%):3.70Physical Condition:29.6Lateral Offset (In.):79.8Road Grade (%):3.70Physical Condition:IntelgightThe alignment was as designed and the height was 2 to 3 in above the 27 in design height.BarrierAlignment and Cracking:Some minor cracking of the older barrier posts: 34 new posts installed with the end treatments.Breaking and Crarcking:Some weathering of the barrier possible dry rot or bugs at base of post.Missing Elements:No missing barrier elements.End Treaking and Cracking:No breaking or cracking of the end treatments.Breaking and Crarcking:No breaking or cracking of the end treatments.Image: Some Measurement and Height:No breaking or cracking of the end treatments.Image: Some Measurement and Height:No breaking or cracking of the end treatments.Image: Some Measurement and Cracking:No breaking or cracking of the end treatments. <td< th=""><th>Barrier Crashwo</th><th>rthiness</th><th>1</th><th></th><th></th><th></th><th></th><th></th></td<>	Barrier Crashwo	rthiness	1								
Levei: Crashworth?: Crashworth?: Beg. End Trimi W-BEAM FLARED 350 COMPLIANT Is Beg. End Trimi Crashworth?: YES Approach Transition Type: NONE Ending End Trimi Type: W-BEAM FLARED 350 COMPLIANT Ending End Trimi Crashworth?: YES Image: Crashworth?: Image: Crashwor				Barrier	TL-3		Is Barrier	YES			
Type 350 COMPLIANT Crashhworthy?: Transition Type: Ending End Trtmt Type: W-BEAM FLARED 350 COMPLIANT Ending End Trtmt Crashhworthy?: YES Image: Crashhworthy?: Image: Crashhworthy?: <td< th=""><th></th><th></th><th></th><th></th><th>12.0</th><th></th><th></th><th></th></td<>					12.0						
Ending End Trtmt Type: W-BEAM FLARED 350 COMPLIANT Ending End Trtmt Crashhworthy?: YES Average Measurements Image: State of the	0				YES			NONE			
Type: 350 COMPLIANT Crashhworthy?: Image: Compliant of the state of the						Transit	tion Type:				
Average Measurements Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 75.1 Height (In.): 29.6 Lateral Offset (In.): 79.8 Road Grade (%): 3.70 Physical Condition Alignment and Height: The alignment was as designed and the height was 2 to 3 in above the 27 in design height. Some minor cracking of the older barrier posts. 34 new posts installed with the end treatments. Breaking and Cracking: Some weathering of the barrier possible dry rot or bugs at base of post. Momissing barrier elements. Missing Elements: No missing barrier elements. Alignment acceptable. Height is within 1-in of 27-in design height. End Treatments Breaking and Cracking: No breaking or cracking of the end treatments. No missing end treatment elements. Missing Elements: No missing end treatment elements. No missing end treatment elements.	0				YES						
Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 75.1 Height (In.): 29.6 Lateral Offset (In.): 79.8 Road Grade (%): 3.70 Physical Condition Ite alignment and Height: The alignment was as designed and the height was 2 to 3 in above the 27 in design height. Ite alignment was as designed and the height was 2 to 3 in above the 27 in design height. Barrier Alignment and Cracking: Some minor cracking of the older barrier posts. 34 new posts installed with the end treatments. Missing Elements: No missing barrier elements. Ite alignment and Height: No missing barrier elements. Corrrosion and Weathering: Some weathering of the barrier possible dry rot or bugs at base of post. Ite alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. End Treatments Missing Elements: No breaking or cracking of the end treatments. Ite align height. Missing Elements: No missing end treatment elements. Ite align height. Ite align height.				v							
Height (In.): 29.6 Lateral Offset (In.): 79.8 Road Grade (%): 3.70 Physical Condition Alignment and Height: The alignment was as designed and the height was 2 to 3 in above the 27 in design height. Some minor cracking of the older barrier posts. 34 new posts installed with the end treatments. Barrier Breaking and Cracking: Some minor cracking of the older barrier posts. 34 new posts installed with the end treatments. Missing Elements: No missing barrier elements. Some weathering of the barrier possible dry rot or bugs at base of post. Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. End Treatments Mo breaking or cracking of the end treatments. Missing Elements: No breaking or cracking of the end treatments. Orrrosion and Cracking: No missing end treatment elements. Breaking and Cracking: No missing end treatment elements. Missing Elements: No missing end treatment elements.				Width (In.):	0.0	Post Sna	cing (In):	75.1			
Physical Condition Alignment and Height: The alignment was as designed and the height was 2 to 3 in above the 27 in design height. Barrier Breaking and Cracking: Some minor cracking of the older barrier posts. 34 new posts installed with the end treatments. Missing Elements: No missing barrier elements. Corrrosion and Weathering: Some weathering of the barrier possible dry rot or bugs at base of post. Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. End Treatments Breaking and Cracking: No breaking or cracking of the end treatments. Missing Elements: No breaking or cracking of the end treatments. Moreaking or cracking of the end treatments. No missing end treatment elements.		29.6			79.8						
Barrier Height: Breaking and Cracking: Some minor cracking of the older barrier posts. 34 new posts installed with the end treatments. Missing Elements: No missing barrier elements. Corrrosion and Weathering: Some weathering of the barrier possible dry rot or bugs at base of post. Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. Breaking and Cracking: No breaking or cracking of the end treatments. Missing Elements: No breaking or cracking of the end treatments. Missing Elements: No breaking or cracking of the end treatments. Orrrosion and No weathering of the end treatments.	Physical Condition	on									
Barrier Cracking: Missing Elements: No missing barrier elements. Corrrosion and Weathering: Some weathering of the barrier possible dry rot or bugs at base of post. Reading and End Treatments Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. Breaking and Cracking: No breaking or cracking of the end treatments. No breaking or cracking of the end treatments. Missing Elements: No missing end treatment elements. No missing end treatment st.		Align		The alignment was as desig	gned and the heig	ght was 2 to 3 in above th	e 27 in design	height.			
Image: Defendence Image: Defendence Corrrosion and Weathering: Some weathering of the barrier possible dry rot or bugs at base of post. Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. Breaking and Cracking: No breaking or cracking of the end treatments. Missing Elements: No missing end treatment elements. Corrrosion and No weathering of the end treatments.	Barrier		0	Some minor cracking of th	e older barrier po	osts. 34 new posts installe	d with the end	treatments.			
Weathering: Weathering: Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. Breaking and Cracking: No breaking or cracking of the end treatments. Missing Elements: No missing end treatment elements. Corrrosion and No weathering of the end treatments.		Missing	Elements:	No missing barrier elemen	ts.						
End Treatments Breaking and Cracking: No breaking or cracking of the end treatments. Missing Elements: No missing end treatment elements. Corrrosion and No weathering of the end treatments.				Some weathering of the ba	rrier possible dry	y rot or bugs at base of po	st.				
End Treatments Cracking: Missing Elements: No missing end treatment elements. Corrrosion and No weathering of the end treatments.		Align		Alignment acceptable. He	ight is within 1-i	n of 27-in design height.					
Corrrosion and No weathering of the end treatments.	End Treatments		0	No breaking or cracking of	f the end treatme	nts.					
		Missing	Elements:	No missing end treatment of	tment elements.						
				No weathering of the end t	reatments.						

Barrie	er ID:	BICA-0013	-7.925-R							
Route N	ame:	BAD PAS	BAD PASS ROAD							
Inspection I	Date:	06/08/2010)		Barrier Rating:	30.00				
Repair Recommenda	tions									
Repair NO A Action:	ACTIO	N	FMSS Work Type:	N/A		Repair Cost:	\$0			
Brief N/A Workorder:										
Workorder:										
2	2008 cos	t estimate (A	ASTM Class D), prelimin	ary for comparis	son to other repair co	osts only.				

ROUTE 0013: BAD PASS ROAD



BICA_0013_7.925_R_1.JPG

B	arrier ID:	BICA-0013	3-8.035-L							
	ite Name:	BAD PAS	S ROAD							
	(*	06/09/201	0			32.90				
· · · · ·	tion Date:	06/08/201	0		Barrier Rating:	52.90				
Barrier Descripti	ion									
	Туре:	W-BEAM S	STRONG POST	Ba	rrier Function:	TRAFFIC				
Barrier	Material:	WEATHER STEEL/CO			Post Material:	WOOD				
	Blockout Type:	WOOD			Length (ft.):	316				
Speed Lim	it (MPH):	30			Placement with espect to Road:	OUTSIDE	OF CURVE			
Hazard Behind	d Barrier:	EXTREME]							
Barrier Crashwo	rthiness									
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-3		Is Barrier worthy?:	YES			
Beg. End Trtmt Type:	W-BEAM I 350 COMP		Is Beg. End Trtmt Crashhworthy?:	YES		Approach tion Type:	NONE			
Ending End Trtmt Type:	W-BEAM I 350 COMP		Ending End Trtmt Crashhworthy?:	YES						
Average Measur	ements									
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	75.6			
Height (In.):	30.7		Lateral Offset (In.):	81.3		rade (%):	4.40			
Physical Condition	on									
	Align	ment and Height:	The alignment had no defle	ection and the height	was 2 to 5 in above th	he 27 in desigi	n height.			
Barrier		aking and Cracking:	Minor cracking of posts an	d blocks (<1/4 to 1/2	2 in). No broken barri	er elements.				
	Missing 3	Elements:	No missing barrier elemen	is.						
		osion and eathering:	Minimal corrosion of barri Old posts exhibit dry rot/bi				-			
	Align	ment and Height:	Alignment acceptable. He	ight is within 1-in of	27-in design height.					
End Treatments		aking and Cracking:	No cracked or broken end	No cracked or broken end treatment elements.						
	Missing]	Elements:	No missing end treatment of	atment elements.						
		osion and eathering:	Minimal corrosion/weather	ring of end treatment	elements.					
			1							

B	arrier ID:	BICA-0013	3-8.035-L								
Rou	ute Name:	BAD PAS	BAD PASS ROAD								
Inspection Date: 06/08/2010 Barrier Rating: 32.90						32.90					
Repair Recomme	endations	5									
Repair Action:	MONITOR		FMSS Work Type:	N/A		Repair Cost:	\$0				
Brief Workorder:	Monitor con	dition of wood	posts for dry rot/bug infesta	ition.							
Workorder:											
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparis	on to other repair co	osts only.					

ROUTE 0013: BAD PASS ROAD



BICA_0013_8.035_L_1.JPG

В	arrier ID:	BICA-0013	3-10.409-R							
	ite Name:	BAD PAS	S ROAD							
Inspec	tion Date:	05/08/201	0		Barrier Rating:	35.50				
Barrier Descript		00/201	<u> </u>		Darrier Katting;	55.50				
Darrier Descript	Туре:	W-BEAM S	STRONG POST	F	Barrier Function:	TRAFFIC				
Barrier	Material:	WEATHEF STEEL/CO			Post Material:	WOOD				
	Blockout Type:	WOOD			Length (ft.):	715				
Speed Lim	it (MPH):	40			Placement with Respect to Road:	OUTSIDE	OF CURVE			
Hazard Behine	d Barrier:	HIGH								
Barrier Crashwo	rthiness									
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-3		Is Barrier worthy?:	YES			
Beg. End Trtmt Type:	W-BEAM		Is Beg. End Trtmt Crashhworthy?:	YES		Approach ion Type:	NONE			
Ending End Trtmt Type:	W-BEAM I 350 COMP		Ending End Trtmt Crashhworthy?:	YES						
Average Measur	ements									
Design Height (In.):	27		Width (In.):	0.0		cing (In.):	76.0			
Height (In.):	29.0		Lateral Offset (In.):	73.0	Road G	rade (%):	7.80			
Physical Condition		ment and Height:	The alignment had no defle	ection and the heig	ht was 1 to 3 in above th	he 27 in design	1 height.			
Barrier		aking and Cracking:	No major breaking or cracl	king of the barrier.						
	Missing	Elements:	No missing barrier elemen	ts.						
		osion and eathering:	There is some weathering of	of the barrier posts						
	Align	ment and Height:	Alignment acceptable. He	ight is within 1-in o	of 27-in design height.					
End Treatments		aking and Cracking:	No major breaking or cracl	king of end treatme	ents.					
	Missing]	Elements:	No missing End treatment	itment elements.						
		osion and eathering:	No major weathering of the	e end treatments.						
1										

B	arrier ID:	BICA-0013	3-10.409-R							
Rou	ite Name:	BAD PAS	AD PASS ROAD							
Inspect	tion Date:	05/08/201	0	В	arrier Rating:	35.50				
Repair Recomme	endations	5								
Repair Action:	NO ACTIC	DN	FMSS Work Type:	N/A		Repair Cost:	\$0			
Brief Workorder:	N/A									
Workorder:										
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison	ı to other repair co	osts only.				

ROUTE 0013: BAD PASS ROAD



BICA_0013_10.409_R_1.JPG

Ba	arrier ID:	BICA-0013	3-12.829-R					
	ite Name:	BAD PAS	S ROAD					
Transie	ion Data	05/09/201	0	D*	on Datin -	28.60		
		05/08/201	U	Barri	er Rating:	28.00		
Barrier Descripti								
	Type:	W-BEAM S	STRONG POST	Barrier	Function:	TRAFFIC		
Barrier	Material:	WEATHER	RING	Pos	t Material:	WOOD		
Durriti	iviater fait.	STEEL/CO		105	t mater full.			
	Blockout	WOOD		L	ength (ft.):	358		
~	Type:					OUTGIDE		
Speed Limi	it (MPH):	40			ement with et to Road:	OUTSIDE	OF CURVE	
Hazard Behind	Barrier:	EXTREME	2					
Barrier Crashwo	rthiness							
Appropriate Test			Barrier	TL-3		Is Barrier	YES	
Level:			Test Level:			worthy?:		
Beg. End Trtmt			Is Beg. End Trtmt					
Туре:	350 COMP		Crashhworthy?:					
Ending End Trtmt Type:	W-BEAM I 350 COMP		Ending End Trtmt Crashhworthy?:	YES				
Average Measure								
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	74.6	
Height (In.):	29.7		Lateral Offset (In.):	95.0		rade (%):	1.30	
Physical Condition	on							
		ment and Height:	The alignment had no defle	ection and the height was 2	to 3 in above the	ne 27 in design	1 height.	
Barrier		aking and Cracking:	No cracked or broken barri	er elements. There were 1	1 blocks that we	ere tilted.		
	Missing	Elements:	No missing barrier element	*s				
	wiissing	Elements.						
		osion and eathering:	Minimal corrosion of barri new posts. Older posts sho			sts. Some olde	er posts mixed with	
	Align	ment and	Alignment acceptable. He	ight is within 1-in of 27-in	design height.			
		Height:						
Breaking and Cracking: No cracked or broken end treatment elements.								
	Missing	Elements:	No missing end treatment of	elements.				
		osion and eathering:	Minimal corrosion/weather	ring of end treatment eleme	nts.			

B	arrier ID:	BICA-0013	ICA-0013-12.829-R							
Rou	ite Name:	BAD PAS	AD PASS ROAD							
Inspect	Inspection Date:05/08/2010Barrier Rating:28.60									
Repair Recomme	endations	5								
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$1887			
Brief Workorder:	Adjust 11 tilt	ted blocks and	nail to posts. Monitor cond	ition of wood posts.						
Workorder:	torder: Labor at \$60- per -Hour for 4 Hrs = \$240. Labor to right and nail 11 tilted blocks. Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475.									
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	osts only.				

ROUTE 0013: BAD PASS ROAD



BICA_0013_12.829_R_1.JPG

Ba	rrier ID:	BICA-0204	4-0.050-L					
	te Name:		CANYON OVERLOC	K ROAD				
Incode	ion Dotor	05/08/201	0		Barrier Rating:	4.30		
Barrier Descripti		03/08/201	0		Darrier Katilig.	4.50		
barrier Descripti								
	Type:	OTHER: C. CINDER B			arrier Function:	NON-TRA	FFIC	
Barrier	Material:	CONCRET	Έ		Post Material:	N/A		
	Blockout Type:	N/A			Length (ft.):	135		
Speed Limi	t (MPH):	35		ŀ	Placement with Respect to Road:			
Hazard Behind	Barrier:	N/A						
Barrier Crashwo	rth <u>iness</u>							
Appropriate Test Level:	TL-2		Barrier Test Level:	N/A		Is Barrier worthy?:	N/A	
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE	
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements							
Design Height (In.):	24		Width (In.):	12.0	Post Spa	cing (In.):	0.0	
Height (In.):	29.0		Lateral Offset (In.):	0.0		rade (%):	0.00	
Physical Conditio	n							
	Align	ment and Height:	The alignment had no defle the 24 in design height.	ection; barrier is ste	pped in design. The hei	ight ranged fro	om 1 to 7 in above	
Barrier		aking and Cracking:						
	Missing	Elements:	No missing barrier elemen	S.				
		osion and eathering:	No weathering of barrier.					
	Align	ment and Height:						
End Treatments		aking and Cracking:						
	Missing	Elements:						
		osion and eathering:						

B	arrier ID:	BICA-0204-0.050-L							
Rou	ite Name:	DEVIL'S (DEVIL'S CANYON OVERLOOK ROAD						
Inspec	tion Date:	05/08/2010)		Barrier Rating:	4.30			
Repair Recomme	endations	5							
Repair Action:	NO ACTIC	DN	FMSS Work Type:	N/A		Repair Cost:	\$0		
Brief Workorder:	N/A								
Workorder:	no work need	ded.							
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for compar	ison to other repair co	osts only.			

ROUTE 0204: DEVIL'S CANYON OVERLOOK ROAD



BICA_0204_0.050_L_1.JPG

Ba	arrier ID:	BICA-0210)-0.087-L							
	te Name:	WAPPA U	JPPER SWITCHYAR	D ROAD						
Inspect	tion Date:	03/08/201	0		Barrier Rating:	62.40				
Barrier Descripti			~							
	Туре:	W-BEAM	W-BEAM WEAK POST		Barrier Function:	TRAFFIC				
Barrier	Material:	GALVANI	ZED STEEL		Post Material:	OTHER: C	ONCRETE			
	Blockout Type:	N/A			Length (ft.):	440				
Speed Limi	it (MPH):	25			Placement with Respect to Road:	BOTH INS	IDE AND OUTSIDE			
Hazard Behind	Barrier:	EXTREME								
Barrier Crashwo	rthiness									
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES			
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach tion Type:	NONE			
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A						
Average Measure	ements									
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.6			
Height (In.):	17.2		Lateral Offset (In.):	23.2	Road G	rade (%):	3.40			
Physical Condition	on									
	Align	ment and Height:	The alignment had no defle	ection and the heig	ght was 9 to 11 in below	the 27 in desig	gn height.			
Barrier		aking and Cracking:	No major breaking or cracl	king of the barrier						
	Missing]	Elements:	No missing barrier element	s.						
		osion and eathering:	No major weathering of the	e barrier.						
	Align	ment and Height:								
End Treatments		aking and Cracking:								
	Missing	Elements:								
		osion and eathering:								

B	arrier ID:	BICA-0210	BICA-0210-0.087-L							
Rou	ite Name:	WAPPA U	WAPPA UPPER SWITCHYARD ROAD							
Inspection Date:03/08/2010Barrier Rating:62.40										
Repair Recomme	endations	;								
Repair Action:	REPLACE			FMSSCAPITALRepair\$3rk Type:IMPROVEMENTCost:						
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	two W-beam non-flared/tan	ngent end treat	ments.				
Workorder:	Workorder:Remove Guardrail at \$10- per -Lin. Ft. for 440-ft = \$4400. Remove 440-ft of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 380-ft = \$13300. Install 380-ft of W-beam strong post guardrail. W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install two W-beam tangent 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.									



BICA_0210_0.087_L_1.JPG

Ba	arrier ID:	BICA-0210)-0.199-L							
	ite Name:	WAPPA U	JPPER SWITCHYAR	D ROAD						
Inspect	tion Date:	03/08/201	0	Ba	rrier Rating:	55.90				
Barrier Descripti			~							
	Туре:	W-BEAM S	STRONG POST	Barı	Barrier Function: TRAFFIC					
Barrier	Material:	GALVANI	LVANIZED STEEL Post Material: OTHER: CONCRETE							
	Blockout Type:	WOOD			Length (ft.):	536				
Speed Lim	it (MPH):	25			acement with pect to Road:	BOTH INSIDE AND OUTSIE				
Hazard Behind	l Barrier:	EXTREME								
Barrier Crashwo	rthiness									
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES			
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE			
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A						
Average Measure	ements									
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.6			
Height (In.):	22.2		Lateral Offset (In.):	23.2	Road G	rade (%):	3.40			
Physical Condition	on									
	Align	ment and Height:	The alignment had no defle height was 3 in below 27 in		*					
Barrier		aking and Cracking:	Wood blocks end (and barr remaining wood blocks (<							
	Missing	Elements:	One missing block. No oth	ner missing barrier elem	nents.					
		osion and eathering:	No corrosion of galvanized weathering of wood blocks		ng of concrete posts	5. Moderate to	severe			
	Align	ment and Height:								
End Treatments	nts Breaking and Cracking:									
	Missing	Elements:								
		osion and eathering:								

B	arrier ID:	BICA-0210	BICA-0210-0.199-L							
Rou	ite Name:	WAPPA U	WAPPA UPPER SWITCHYARD ROAD							
Inspection Date: 03/08/2010 Ba						55.90				
Repair Recomme	endations	5								
Repair Action:	REPLACE	FMSSCAPITALRepairWork Type:IMPROVEMENTCost:								
Brief Workorder:		replace the en d into a non-tra	e	strong post installing one W	-beam tangen	t end terminal on th	e end that's			
Workorder:	Remove Guardrail at \$10- per -Lin. Ft. for 536-ft = \$5360. Remove 536 feet of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 506-ft = \$17710. Install 506 feet of W-beam strong post guardrail. W-beam tangent 350 compliant at \$3500- per -Each for 1 Unit(s) = \$3500. Install 1 W-beam tangent end terminal. 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.									



BICA_0210_0.199_L_1.JPG

Ba	arrier ID:	BICA-0210)-0.301-L					
Rou	ite Name:	WAPPA U	JPPER SWITCHYAR	D ROAD				
Inspect	tion Date:	03/08/201	0	Ba	rrier Rating:	24.30		
Barrier Descripti					0			
	Type:	W-BEAM	WEAK POST	Barrier Function:		NON-TRAFFIC		
Barrier	Material:	GALVANI	ZED STEEL	I	Post Material:	OTHER: C	ONCRETE	
	Blockout Type:	N/A			Length (ft.):	370		
Speed Limi		25			acement with pect to Road:			
Hazard Behind	Barrier:	N/A						
Barrier Crashwo	rthiness							
Appropriate Test Level:	TL-1		Barrier Test Level:	N/A		Is Barrier worthy?:	N/A	
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE	
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	0.0	
Height (In.):	20.5		Lateral Offset (In.):	0.0	Road G	rade (%):	0.00	
Physical Condition	on							
	Align	ment and Height:						
Barrier		aking and Cracking:	No major breaking or cracl	king of the barrier.				
	Missing	Elements:	No missing barrier elemen	is.				
		osion and eathering:	No major weathering of the	e barrier.				
	Align	ment and Height:						
End Treatments		aking and Cracking:						
	Missing]	Elements:						
		osion and eathering:						

B	arrier ID:	BICA-0210	BICA-0210-0.301-L							
Rou	ite Name:	WAPPA U	VAPPA UPPER SWITCHYARD ROAD							
Inspec	03/08/201	Barrie	r Rating:	24.30						
Repair Recomme	endations	;								
Repair Action:	REPLACE		FMSSCAPITALRepairWork Type:IMPROVEMENTCost:							
Brief Workorder:	Remove and	replace entire	barrier with W-beam strong	post guardrail.						
Workorder:	Workorder: Remove Guardrail at \$10- per -Lin. Ft. for 370 LF = \$3700. Remove 370 feet of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 370 LF = \$12950. Install 370 feet of w-beam strongpost guardrail. Low Speed Traffic Control at \$1475- per -Day for 4 Day(s) = \$5900. 2 days removal and 2 days installation.									
	2008 co	st estimate (A	ASTM Class D), prelimin	ary for comparison to oth	ier repair co	osts only.				



BICA_0210_0.301_L_1.JPG

Ba	arrier ID:	BICA-0210)-0.413-R					
	ite Name:	WAPPA U	JPPER SWITCHYAR	D ROAD				
Inspect	tion Date:	03/08/201	0	Ba	rrier Rating:	47.20		
Barrier Descripti					8			
	Туре:	W-BEAM	WEAK POST	Barr	ier Function:	TRAFFIC		
Barrier	Material:	GALVANI	ZED STEEL	Р	ost Material:	OTHER: C	ONCRETE	
	Blockout Type:	N/A			Length (ft.):	325		
Speed Limi	it (MPH):	25			acement with pect to Road:			
Hazard Behind	l Barrier:	EXTREME						
Barrier Crashwo	rthiness							
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES	
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach tion Type:	NONE	
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.0	
Height (In.):	21.0		Lateral Offset (In.):	13.6	Road G	rade (%):	3.20	
Physical Condition	on							
	Align	ment and Height:	Minor impact to w-beam (sheight was 6 in below the 2	* /	-) significant de	flection and the	
Barrier		aking and Cracking:	No major breaking or cracl	king of the barrier.				
	Missing]	Elements:	No missing barrier elemen	S.				
		osion and eathering:	No major weathering of the	e barrier.				
	Align	ment and Height:						
End Treatments		aking and Cracking:						
	Missing 1	Elements:						
		osion and eathering:						

B	arrier ID:	BICA-0210-0.413-R								
Rou	ite Name:	WAPPA U	WAPPA UPPER SWITCHYARD ROAD							
Inspection Date:03/08/2010Barrier Rating:47.20										
Repair Recomme	endations	;								
Repair Action:	REPLACE			FMSSCAPITALRepair\$2rk Type:IMPROVEMENTCost:						
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	two W-beam non-flared/tan	gent end treat	ments.				
Workorder:	Workorder:Remove Guardrail at \$10- per -Lin. Ft. for 325-ft = \$3250. Remove 325-ft of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 265-ft = \$9275. Install 265-ft of W-beam strong post guardrail. W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install 2 W-beam tangent 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.									



BICA_0210_0.413_R_1.JPG

Ba	arrier ID:	BICA-0210)-0.582-L				
	ite Name:	WAPPA U	JPPER SWITCHYAR	D ROAD			
Inspect	tion Date:	03/08/201	0	Barr	ier Rating:	51.50	
Barrier Descripti					8		
	Туре:	W-BEAM	WEAK POST	Barrie	r Function:	TRAFFIC	
Barrier	Material:	GALVANI	ZED STEEL	Pos	st Material:	OTHER: C	ONCRETE
	Blockout Type:	N/A		I	Length (ft.):	337	
Speed Limi	it (MPH):	25			Placement with OUTSIDE OF CURVE Respect to Road:		
Hazard Behind	l Barrier:	EXTREME					
Barrier Crashwo	rthiness						
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach tion Type:	NONE
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A			
Average Measure	ements						
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.0
Height (In.):	21.0		Lateral Offset (In.):	13.6	Road G	rade (%):	3.20
Physical Condition	on						
	Align	ment and Height:	There were minor impacts alignment had no deflectio	-	-		-
Barrier		aking and Cracking:	No cracked or broken barri	er elements.			
	Missing	Elements:	No missing barrier elemen	ts.			
		osion and eathering:	No corrosion of galvanized	rails. Minor weathering	of concrete posts	s (some spallir	ng).
	Align	ment and Height:					
End Treatments		aking and Cracking:					
	Missing 1	Elements:					
		osion and eathering:					

B	arrier ID:	BICA-0210	BICA-0210-0.582-L								
Rou	ite Name:	WAPPA U	VAPPA UPPER SWITCHYARD ROAD								
Inspection Date:03/08/2010Barrier Rating:51.50											
Repair Recomme	endations	;									
Repair Action:	REPLACE		FMSSCAPITALRepair\$2Work Type:IMPROVEMENTCost:								
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	two W-beam non-flared/tan	gent end treat	tments.					
Workorder:Remove Guardrail at \$10- per -Lin. Ft. for 337-ft = \$3370. Remove 337-ft of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 277-ft = \$9695. Install 277-ft of W-beam strong post guardrail. W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install 2 W-beam tangent 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.										

Bighorn Canyon National Recreation Area ROUTE 0210: WAPPA UPPER SWITCHYARD ROAD



BICA_0210_0.582_L_1.JPG

Ba	arrier ID:	BICA-0210)-0.782-R				
	ite Name:	WAPPA U	JPPER SWITCHYAR	D ROAD			
Inspect	tion Date:	03/08/201	0		Barrier Rating:	40.20	
Barrier Descripti					8		
	Туре:	W-BEAM	W-BEAM WEAK POST		arrier Function:	TRAFFIC	
Barrier	Material:	GALVANI	ZED STEEL		Post Material:	OTHER: C	ONCRETE
	Blockout Type:	N/A			Length (ft.):	213	
Speed Limi	it (MPH):	25		l	Placement with Respect to Road:	OUTSIDE	OF CURVE
Hazard Behind	l Barrier:	EXTREME					
Barrier Crashwo	rthiness						
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach tion Type:	NONE
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A			
Average Measure	ements						
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.6
Height (In.):	22.6		Lateral Offset (In.):	20.0	Road G	rade (%):	2.00
Physical Condition	on						
	Align	ment and Height:	The alignment had no defle barrier.	ection and the heigh	nt is 3-5 in below the 27	7 in design hei	ght throughout the
Barrier		aking and Cracking:	No major breaking or cracl	king of the barrier.			
	Missing]	Elements:	No missing barrier element	s.			
		osion and eathering:	No major weathering of the	e barrier.			
	Align	ment and Height:					
End Treatments		aking and Cracking:					
	Missing	Elements:					
		osion and eathering:					

B	arrier ID:	BICA-0210	BICA-0210-0.782-R								
Rou	ite Name:	WAPPA U	VAPPA UPPER SWITCHYARD ROAD								
Inspection Date: 03/08/2010 Barrier Rating: 40.20											
Repair Recomme	endations	5									
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$19179				
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	two W-beam non-flared/tan	gent end treat	ments.					
Workorder:	Workorder:Remove Guardrail at \$10- per -Lin. Ft. for 213-ft = \$2130. Remove 213-ft of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 153-ft = \$5355. Install 153-ft of W-beam strong post guardrail. W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install two W-beam tangent end terminals. 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.										

Bighorn Canyon National Recreation Area ROUTE 0210: WAPPA UPPER SWITCHYARD ROAD



BICA_0210_0.782_R_1.JPG

Ba	arrier ID:	BICA-0211	-0.116-R				
	ite Name:	YELLOW	TAIL POWER PLAN	T ROAD			
Inspect	tion Date:	02/08/201	0	Barr	ier Rating:	29.60	
Barrier Descripti					8		
-	Туре:	W-BEAM	WEAK POST	Barrie	r Function:	TRAFFIC	
Barrier	Material:	GALVANI	ZED STEEL	Pos	st Material:	OTHER: C	ONCRETE
	Blockout Type:	N/A		I	Length (ft.):	156	
Speed Limi	it (MPH):	35			cement with ect to Road:	TANGENT	,
Hazard Behind	l Barrier:	MEDIUM					
Barrier Crashwo	rthiness						
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier hworthy?:	YES
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach tion Type:	NONE
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A			
Average Measure	ements						
Design Height (In.):	27		Width (In.):	0.0		cing (In.):	150.0
Height (In.):	21.0		Lateral Offset (In.):	24.0	Road G	rade (%):	2.80
Physical Condition							
	Align	ment and Height:	The alignment had no defle	ection and the height was a	5 to 7 in below t	he 27 in design	n height.
Barrier		aking and Cracking:	No major breaking or cracl	ting of the barrier.			
	Missing 3	Elements:	No missing barrier element	S.			
		osion and eathering:	No major weathering of the	e barrier.			
	Align	ment and Height:					
End Treatments		aking and Cracking:					
	Missing]	Elements:					
		osion and eathering:	<u> </u>				

B	arrier ID:	BICA-0211	BICA-0211-0.116-R							
Rou	ite Name:	YELLOW	ELLOWTAIL POWER PLANT ROAD							
Inspection Date:02/08/2010Barrier Rating:29.60										
Repair Recomme	endations	5								
Repair Action:	REPLACE			CAPITAL IMPROVEMENT		Repair Cost:	\$16357			
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	two W-beam non-flared/tan	gent end treat	ments.				
Workorder:	Workorder:Remove Guardrail at \$10- per -Lin. Ft. for 156-ft = \$1560. Remove 156-ft of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 96-ft = \$3360. Install 96-ft of W-beam strong post guardrail. W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install two W-beam tangent end terminals. 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.									



BICA_0211_0.116_R_1.JPG

Ba	arrier ID:	BICA-0211	I-0.117-L				
	ite Name:	YELLOW	TAIL POWER PLAN	T ROAD			
Inspect	tion Date:	02/08/201	0	В	Barrier Rating:	32.40	
Barrier Descripti					8		
	Туре:	W-BEAM WEAK POST		Ba	rrier Function:	TRAFFIC	
Barrier	Material:	GALVANI	ZED STEEL		Post Material:	OTHER: C	ONCRETE
	Blockout N/A Type:				Length (ft.):	154	
Speed Limi	it (MPH):	35			Placement with espect to Road:	TANGENT	,
Hazard Behind	Barrier:	MEDIUM					
Barrier Crashwo	rthiness						
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach tion Type:	NONE
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A			
Average Measure	ements						
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.6
Height (In.):	22.6		Lateral Offset (In.):	16.0	Road G	rade (%):	2.40
Physical Condition							
	Align	ment and Height:	The alignment had no defle	ection and the height	was 4 to 5 in below th	he 27 in design	n height.
Barrier		aking and Cracking:	No major breaking or cracl	king of the barrier.			
·	Missing 3	Elements:	No missing barrier element	İS			
		osion and eathering:	No major weathering of the	e barrier			
	Align	ment and Height:					
End Treatments		aking and Cracking:					
	Missing]	Elements:					
		osion and eathering:					

B	arrier ID:	BICA-0211	ICA-0211-0.117-L							
Rou	ite Name:	YELLOW	TELLOWTAIL POWER PLANT ROAD							
Inspection Date: 02/08/2010 Barrier Rating: 32.40										
Repair Recomme	endations	;								
Repair Action:	REPLACE		FMSSCAPITALRepair\$Work Type:IMPROVEMENTCost:							
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	two W-beam non-flared/tan	agent end treat	ments.				
Workorder:	Workorder:Remove Guardrail at \$10- per -Lin. Ft. for 154-ft = \$1540. Remove 154-ft of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 94-ft = \$3290. Install 94-ft of W-beam strong post guardrail. W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install two W-beam tangent end terminals. 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.									



BICA_0211_0.117_L_1.JPG

Ba	arrier ID:	BICA-0211	-0.278-R					
	te Name:	YELLOW	TAIL POWER PLAN	T ROAD				
Inspect	ion Date:	02/08/201	0	B	arrier Rating:	34.20		
Barrier Descripti								
	Туре:	W-BEAM WEAK POST		Barrier Function:		TRAFFIC		
Barrier	Material:	GALVANI	ZED STEEL		Post Material:	OTHER: C	ONCRETE	
	Blockout Type:	N/A		Length (ft.): 204				
Speed Limi	t (MPH):	35			lacement with spect to Road:			
Hazard Behind	Barrier:	HIGH						
Barrier Crashwo	rthiness							
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES	
Beg. End Trtmt Type:			Is Beg. End Trtmt Crashhworthy?:	N/A		Approach tion Type:	NONE	
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.0	
Height (In.):	25.0		Lateral Offset (In.):	13.6	Road G	rade (%):	1.50	
Physical Condition								
	Align	ment and Height:	The alignment had no defle ft between 1 and 3 in below	-			sign height for 77	
Barrier		aking and Cracking:	Torn trailing end spoon. N	o cracked barrier elem	nents. One impacted	l rail (minor).		
	Missing 1	Elements:	No missing barrier elemen	S.				
		osion and eathering:	No corrosion of galvanized on posts).	rails. Moderate weat	hering of concrete p	osts (minor sp	alling of concrete	
	Align	ment and Height:						
End Treatments		aking and Cracking:						
	Missing 1	Elements:						
		osion and eathering:						

B	arrier ID:	BICA-0211	BICA-0211-0.278-R							
Rou	ite Name:	YELLOW	ZELLOWTAIL POWER PLANT ROAD							
Inspec	tion Date:	e: 02/08/2010 Barrier Rating: 34.20								
Repair Recomme	endations	5								
Repair Action:	REPLACE		FMSSCAPITALRepair\$18Work Type:IMPROVEMENTCost:							
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	two W-beam non-flared/tan	gent end treat	ments.				
Workorder:	Workorder:Remove Guardrail at \$10- per -Lin. Ft. for 204-ft = \$2040. Remove 204-ft of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 144-ft = \$5040. Install 144-ft of W-beam strong post guardrail. W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install two W-beam tangent end terminals. 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.									



BICA_0211_0.278_R_1.JPG

Ba	arrier ID:	BICA-0211	-0.349-R					
	te Name:	YELLOW	TAIL POWER PLAN	T ROAD				
Inspect	ion Date:	03/08/201	0	Ba	arrier Rating:	61.20		
Barrier Descripti					8			
	Туре:	W-BEAM	WEAK POST	Bar	rier Function:	TRAFFIC		
Barrier	Material:	GALVANI	ZED STEEL	1	Post Material:	OTHER: C	ONCRETE	
	Blockout Type:	N/A			Length (ft.):	791		
Speed Limi	t (MPH):	35			lacement with spect to Road:	OUTSIDE	OF CURVE	
Hazard Behind	Barrier:	HIGH						
Barrier Crashwo	rthiness							
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES	
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach tion Type:	NONE	
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A				
Average Measure	ements							
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.6	
Height (In.):	21.6		Lateral Offset (In.):	17.0	Road G	rade (%):	1.20	
Physical Conditio	n							
	Align	ment and Height:	The alignment had no defle and was between 3 to 9 in 1	-	vas 2 to 3 in below t	he 27 in desigi	1 height for 150 ft	
Barrier		aking and Cracking:	No major breaking or cracl	king of the barrier.				
	Missing 1	Elements:	No missing barrier element	S.				
		osion and eathering:	No major weathering of the	e barrier.				
	Align	ment and Height:						
End Treatments		aking and Cracking:						
	Missing 1	Elements:						
		osion and eathering:	<u> </u>					

B	arrier ID:	BICA-0211	BICA-0211-0.349-R								
Rou	ite Name:	YELLOW	ELLOWTAIL POWER PLANT ROAD								
Inspection Date: 03/08/2010 Barrier Rating: 61.20											
Repair Recomme	endations	5									
Repair Action:	REPLACE		FMSSCAPITALRepair\$57Work Type:IMPROVEMENTCost:								
Brief Workorder:	Replace barr	ier with W-bea	am strong post guardrail and	two W-beam non-flared/tan	gent end treat	ments.					
Workorder:	Workorder:Remove Guardrail at \$10- per -Lin. Ft. for 791-ft = \$7910. Remove 791-ft of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 731-ft = \$25585. Install 731-ft of W-beam strong post guardrail. W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install W-beam tangent end terminals. 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.										



BICA_0211_0.349_R_1.JPG

Ba	arrier ID:	BICA-0211	1-0.544-R								
	ite Name:	YELLOW	YELLOWTAIL POWER PLANT ROAD								
Inspect	tion Date:	03/08/201	0 Barrier Rating:		60.20						
Barrier Descripti											
	Туре:	W-BEAM	WEAK POST]	Barrier Function:	TRAFFIC					
Barrier	Material:	GALVANI	ZED STEEL		Post Material:	OTHER: C	ONCRETE				
	Blockout Type:	N/A			Length (ft.):	418					
Speed Limi	it (MPH):	35			Placement with Respect to Road:	OUTSIDE	OF CURVE				
Hazard Behind	l Barrier:	EXTREME									
Barrier Crashwo	rthiness										
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES				
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE				
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A							
Average Measure	ements										
Design Height (In.):	27		Width (In.):	0.0 Post Spa		cing (In.):	150.0				
Height (In.): 20.6			Lateral Offset (In.):	16.6	Road G	rade (%):	4.30				
Physical Condition	on										
	Align	ment and Height:	The alignment had no defle throughout.	ection and the heig	ght was 5 to 8 in below th	he 27 in design	n height				
Barrier		aking and Cracking:	No major breaking or cracl	king of the barrier							
	Missing	Elements:	No missing barrier elements.								
		osion and eathering:	No major weathering of the	e barrier.							
	Align	ment and Height:									
End Treatments		aking and Cracking:									
	Missing 1	Elements:									
		osion and eathering:									

Barrier ID: BICA-0211-0.544-R									
Rou	ite Name:	YELLOW	TAIL POWER PLAN	T ROAD					
Inspec	tion Date:	03/08/201	0	Barrie	r Rating:	60.20			
Repair Recomme	endations	5							
Repair Action:	REPLACE			CAPITAL IMPROVEMENT	Repair \$3257 Cost:				
Brief Workorder:	Replace barr	Replace barrier with W-beam strong post guardrail and two W-beam non-flared/tangent end treatments.							
Workorder:	 Remove Guardrail at \$10- per -Lin. Ft. for 418-ft = \$4180. Remove 418-ft of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 358-ft = \$12530. Install 358-ft of W-beam strong post guardrail. W-beam tangent 350 compliant at \$3500- per -Each for 2 Unit(s) = \$7000. Install two W-beam tangent 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.								



BICA_0211_0.544_R_1.JPG

Ba	arrier ID:	BICA-0211	1-0.983-R				
Rou	ite Name:	YELLOW	TAIL POWER PLAN	T ROAD			
Inspect	tion Date:	03/08/201	0		Barrier Rating:	69.90	
Barrier Descripti			~				
	Туре:	W-BEAM	WEAK POST	В	arrier Function:	TRAFFIC	
Barrier	Material:	GALVANI	ZED STEEL		Post Material:	OTHER: C	ONCRETE
	Blockout Type:	N/A			Length (ft.):	833	
Speed Limi	it (MPH):	35]	Placement with Respect to Road:	BOTH INS	IDE AND OUTSIDE
Hazard Behind	l Barrier:	HIGH					
Barrier Crashwo	rthiness						
Appropriate Test Level:	TL-2		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach ion Type:	NONE
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A			
Average Measure	ements						
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	150.1
Height (In.):	Height (In.): 21.2			16.7	Road G	rade (%):	3.80
Physical Condition	on						
	Align	ment and Height:	Alignment of barrier was d for 5 impacted rail sections	-	-		
Barrier		aking and Cracking:	There were 8 impacted rail bolts.	s; 5 were minor im	pacts and 3 were major	impacts. The	re were 4 loose
	Missing	Elements:	3 missing bolts. No other missing barrier elements.				
		osion and eathering:	Break in asphalt curb is can galvanized rails. Moderate	-	-	uardrail. No c	forrosion of
	Align	ment and Height:					
End Treatments		aking and Cracking:					
	Missing]	Elements:					
		osion and eathering:					

Route Name			Barrier ID: BICA-0211-0.983-R						
Route Name: YELLOWTAIL POWER PLANT ROAD									
Inspection Date	03/08/201	0	Barrie	r Rating:	69.90				
Repair Recommendation	S								
RepairREPLACEAction:			CAPITAL IMPROVEMENT		Repair Cost:	\$63850			
-	Repair erosion with structural fill install asphalt pavement replace missing asphalt curb replace barrier with W-beam strong post guardrail and two W-beam non-flared/tangent end treatments.								
Workorder:Remove Guardrail at \$10- per -Lin. Ft. for 833 LF = \$8330. Remove 833 feet of guardrail. W-Beam Strong Post at \$35- per -Lin. Ft. for 773 LF = \$27055. Install 773 feet of W-beam strong post guardrail. W-beam tangent 350 compliant at \$350- per -Each for 2 Unit(s) = \$7000. Install two W-beam tangent end terminals. Asphalt Curb at \$12- per -Lin. Ft. for 50 LF = \$600. Install 50 feet of asphalt curb for erosion repair. Structural Backfill at \$50- per -Cu. Yd. for 4 CY = \$200. Install 4-CY of structural fill for erosion repair. Minor Asphalt at \$110- per -Ton for 1 Ton(s) = \$110. Install 1 ton asphalt pavement for erosion repair. Low Speed Traffic Control at \$1475- per -Day for 10 Day(s) = \$14750. 4 days removal 4 days installation 2 days for backfill 									



BICA_0211_0.983_R_1.JPG

BARRY'S LANDING BOAT RAMP ROAD Inspection Date: 05/08/2010 Barrier Rating: 26.60 Barrier Description W-BEAM STRONG POST Barrier Function: TRAFFIC Barrier Material: W-BEAM STRONG POST Barrier Post Material: WOOD Barrier Material: WEATHERING STEEL/CORTEN Post Material: WOOD WOOD Bockout Type: WOOD Length (ft.): 1350 Image: Comparison of the temption of	R	arrier ID:	BICA-0219	0-1.216-R							
Inspection Date: 0.508/2010 Barrier Rating: 26.60 Barrier Description Type: W-BEAM STRONG POST Barrier Function: TRAFFIC Barrier Material: WATHBRING STEEL/CORTEN Post Material: WOOD Borrier To've: WOOD Length (ft.): 13:0 Speed Limit (MPH): 30 Placement with Respect to Road: BOTH INSIDE AND OUTSIDE Respect to Road: Barrier Crashworthize: MEDUM Barrier Crashworthize: MEDUM Beg. End Trent W-BEAM FLARED 1s Beg. End Trent Transition Type: VFS Beg. End Trent W-BEAM FLARED 250 COMPLIANT Is Sec. Information Type: NONE Type: 350 COMPLIANT Crashbworthy?: VFS Is Barrier Transition Type: Peight (fn.): 27 Width (fn.): 0.0 Post Spacing (fn.): 75.0 Height (fn.): 28 Lateral Offset (fn.): 32.5 Read Grade (%): 210 Physical Condition Transition of the during of the bairier. Vision Sing Elements: Vision Sing Barrier elements. Vision Sing Barrier elements. Barrier Alignment and Height: No major breaking or cracking of the bairier. Vision Barrier elements. Vision Barrier elements. Breaking and Weathering: No major breaking or crack											
Barrier Description Type: W-BEAM STRONG POST Barrier Function: TRAFFIC Barrier Material: WEATHERING STEL/CORTEN Post Material: WOOD Bockout WOOD Length (fL): 1350 Speed Limit (MPH): 30 Placement with Respect to Road: BOTH INSIDE AND OUTSIDE Hazard Behind Barrier: MEDRUM Barrier TL-3 S Barrier Appropriate Test Level: TL-1 Test Level: Crashworthy?: YES Speed Limit (MPH): WBEAM FLARED Is Berrier TL-3 S Barrier Type: 250 COMPLIANT Test Level: Crashworthy?: VES Beg. End Trint W-BEAM FLARED Ending End Trint YES Approach NONE Type: 30 COMPLIANT Crashworthy?: Transition Type: VES Average Measurements Crashworthy?: VES Approach NONE Design fleight (fn.): 27 Width (fn.): 0.0 Post Spacing (fn.): 75.0 Physical Condition The alignment and Height: The alignment and on deflection and the height is 1 to 3 in above the 27 in design height throughout. Barrier Alignment and Height: No major breaking or eracking of the barrier. Veratking and Veratking in				D Damia Dation 2000			26.60				
Type: W-BEAM STRONG POST Barrier Function TRAFFIC Barrier Vaterial: WEATHERING STEEL/CORTEN Post Material: WOOD Barrier Type: STEEL/CORTEN Length (ft.): 1250 Speed Limit (MPH) 30 Placement with Respect to Road: BOTH INSIDE AND OUTSIDE Respect to Road: Barrier Crashworthy: MEDIUM Barrier Test Kevel: IL-3 Starrier Crashworthy: Barrier Crashworthy: MEDIUATION Test Level: To Starrier Crashworthy: VES Beg. End Trinti W-BEAM FLARED B Beg. End Trinti YES Approach NONE Type: 30 COMPLIANT Test Level: YES Approach NONE Type: 30 COMPLIANT Fading End Trinti YES Approach NONE Type: 30 COMPLIANT Crashworthy? YES Approach NONE Correshower Hue Zashworthy? YES Approach NONE Type: 30 COMPLIANT Ending End Trinti YES Approach NONE Type: 30 COMPLIANT Ending End Trinti YES Approach NONE Type: 30 COMPLIANT Ending End Trinti YES Approach Yes Merage Messurer Endig Endi				0	Barı	ier Kating:	26.60				
Barrier Material: WEATHENG STIFEL/CORTEN Post Material: WOOD Blockut Type: WOOD Length (ft.): 13:50 Speed Limit (MPH): 30 Image: Content of the state of	Barrier Descript	ion									
STEELCORTEN Item in the interval STEELCORTEN Item interval STEELCORTEN STEELCORTEN STEELCORTEN Item interval <		Туре:	W-BEAM S	STRONG POST	Barrie	er Function:	TRAFFIC				
Type: Image: Constraint of the service is speed Limit (MPH): 30 Placement with Respect to Road: BOTH INSIDE AND OUTSIDE Hazard Behind Barrier: MEDUM Respect to Road: BOTH INSIDE AND OUTSIDE Barrier Crashworthy: Second Trunt Pression (MPH) Second Pression (MPH) Second Pression (MPH) Second Pression (MPH) YES Appropriate Test Is Barrier Crashworthy: YES Appropriate Test Is Barrier Crashworthy: YES Appropriate Test Is Barrier Crashworthy: YES Approach Route NONE Beg. End Trunt Type: 300 COMPLIANT Crashworthy: YES Approach Route NONE Ending End Trunt Type: 300 COMPLIANT Crashworthy: YES Improach Route Improach Route Soc COMPLIANT Crashworthy: YES Approach Route Improach Route Improach Route Improach Route Soc COMPLIANT Crashworthy: VES Approach Route Improach Route Improach Route Improach Route Soc COMPLIANT Crashworthy: VES Approach Route Improach Route Improach Route Improach Route Beight Chu): 28.3 Lateral Offset (In.): 32.5 Road Grade (%): 2.10 Physical Condition Alignment and Cracking: No major breaking or cracking of the barrier. Improach Route<	Barrier	Material:			Po	st Material:	WOOD				
Image: service in the service interval of the			WOOD]	Length (ft.):	1350				
Barrier Crashworthines Appropriate Test Level: TL-1 Barrier Test Level: TL-3 Is Barrier Crashworth?: YES Beg, End Trimt Type: W-BEAM FLARED 300 COMPLIANT Is Beg, End Trimt Crashhworth?: YES Approach Transition Type: NONE Ending End Trimt Type: W-BEAM FLARED 300 COMPLIANT Ending End Trimt Crashhworth?: YES Approach Transition Type: NONE Average Measurements Ending End Trimt Type: 30 COMPLIANT 0.0 Post Spacing (In.): 75.0 Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 2.10 Physical Condition 28.3 Lateral Offset (In.): 32.5 Road Grade (%): 2.10 Physical Condition Ite alignment and Height: The alignment had no deflection and the height is 1 to 3 in above the 27 in design height throughout. Barrier Alignment and Cracking: No major breaking or cracking of the barrier. Ite alignment for the barrier. Missing Elements: No major weathering of the barrier. Ite alignment and Height: No major breaking or cracking of the end treatment. End Treatments Breaking and Cracking: No major breaking or cracking of the end treatment. Ite alignment t	Speed Lim	it (MPH):	30				BOTH INS	IDE AND OUTSIDE			
Appropriate Test LevelTL-1Barrier Test LevelTL-3Is Barrier Crashworth?:YESBeg. End Trint Type:W-BEAM FLARED 300 COMPLIANTIs Beg. End Trint Crashworth?:YESApproach Transition Type:Ending End Trint 300 COMPLIANTIs Beg. End Trint Crashworth?:YESApproach Transition Type:Beg. End Trint 300 COMPLIANTEnding End Trint Crashworth?:YESImage: Complication Type:Design Height (In.): Height (In.):27Width (In.):0.0Post Spacing (In.):75.0Height (In.): Height (In.):23.3Lateral Offset (In.):32.5Road Grade (%):2.10Physical ConditionationThe alignment had no deflection and the height is 1 to 3 in above the 27 in design height.Sinder Spacing (In.):75.0BarrierAlignment and Height:No major breaking or cracking of the barrier.Sinder Spacing (In.):Sinder Spacing (In.):Missing Elements:No major breaking or cracking of the barrier.Sinder Spacing (In.):Sinder Spacing (In.):Missing Elements:No major weathering of the barrier.Sinder Spacing (In.):Sinder Spacing (In.):End TreatmentsAlignment acceptable: Height is within 1-in of 27-in design height.Sinder Spacing (In.):Image: Spacing Control	Hazard Behind	d Barrier:	MEDIUM								
Level: Test Level: Crashworthy?: Beg. End Trtmt Type: W-BEAM FLARED 300 COMPLIANT Is Beg. End Trtmt Crashhworthy?: YES Approach Transition Type: NONE Ending End Trtmt Type: W-BEAM FLARED Type: Ending End Trtmt Crashhworthy?: YES Image: Compliance of the type: Type: NONE Average Measurements Ending End Trtmt Crashhworthy?: VES Image: Compliance of type: T	Barrier Crashwo	rthiness									
Type: 350 COMPLIANT Crashhworth?: Transition Type: Ending End Trimt Type: W-BEAM FLARED 30 COMPLIANT Ending End Trimt Crashhworth?: YES Image: Crashworth?: Average Measurements Image: Crashworth?: 0.0 Post Spacing (In.): 75.0 Average Measurements 27 Width (In.): 0.0 Post Spacing (In.): 75.0 Height (In.): 28.3 Lateral Offset (In.): 32.5 Road Grade (%): 2.10 Physical Condition Image: Crasking and Height: The alignment and Height: The alignment had no deflection and the height is to 3 in above the 27 in design height. Image: Crasking and Height: Breaking and Crasking: No major breaking or cracking of the barrier. Image: Crasking and Height: No major weathering of the barrier. Missing Elements: No major weathering of the barrier. Image: Crasking and Height: Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. Image: Crasking and Height: End Treatments Missing Elements: No major breaking or cracking of the end treatment. Image: Crasking and Cracking of the end treatment. Image: Crasking and Cracking of the end treatment. End Treatments Missing Elements: No major breaking or c		TL-1			TL-3			YES			
Type: 350 COMPLIANT Crashhworthy?: Image: Compliant of the strength of the strengt	-				YES			NONE			
Design Height (In.): 27 Width (In.): 0.0 Post Spacing (In.): 75.0 Height (In.): 28.3 Lateral Offset (In.): 32.5 Road Grade (%): 2.10 Physical Condition Barrier Alignment and Height: The alignment had no deflection and the height is 1 to 3 in above the 27 in design height throughout. Breaking and Cracking: No major breaking or cracking of the barrier. Image: Corrrosion and Weathering: No major weathering of the barrier. Corrrosion and Height: No major weathering of the barrier. Image: Corrosion and Height: Alignment acceptable. Height is within 1-in of 27-in design height. End Treatments Breaking and Cracking: No major breaking or cracking of the end treatment. Image: Corrosion and Height: Missing Elements: No major breaking or cracking of the end treatment. Image: Corrosion and Height: No major breaking or cracking of the end treatment.					YES						
Height (In.): 28.3 Lateral Offset (In.): 32.5 Road Grade (%): 2.10 Physical Condition Alignment and Height: The alignment had no deflection and the height is 1 to 3 in above the 27 in design height throughout. Breaking and Cracking: The alignment had no deflection and the height is 1 to 3 in above the 27 in design height throughout. Barrier Breaking and Cracking: No major breaking or cracking of the barrier. Image: Corrrosion and Weathering: No major weathering of the barrier. Missing Elements: No major weathering of the barrier. Image: Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. End Treatments Breaking and Cracking: No major breaking or cracking of the end treatment. Image: No missing end treatment elements. Missing Elements: No major breaking or cracking of the end treatment. Image: No missing end treatment elements. Image: Corrrosion and Cracking: No major breaking or cracking of the end treatment. Image: No missing end treatment elements. Image: Corrosion and Cracking: No major weathering of the end treatment. Image: No missing end treatment elements.	Average Measur	ements									
Height (In.): 28.3 Lateral Offset (In.): 32.5 Road Grade (%): 2.10 Physical Condition Alignment and Height: Alignment and Height: The alignment had no deflection and the height is 1 to 3 in above the 27 in design height throughout. Image: Constant of the design height throughout. Barrier Breaking and Cracking: No major breaking or cracking of the barrier. Image: Constant of the design height throughout. Image: Constant of the design height throughout. Missing Elements: No major weathering of the barrier. Image: Constant of the design height. Image: Constant of the design height. End Treatments Alignment and Cracking: No major breaking or cracking of the end treatment. Image: Constant of the design height. Missing Elements: No major breaking or cracking of the end treatment. Image: Constant of the design height. Image: Constant of the design height. Missing Elements: No major breaking or cracking of the end treatment. Image: Constant of the design height. Image: Constant of the design height. Missing Elements: No missing end treatment elements. Image: Constant of the design height design height. Image: Constant of the design height design heigh	Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	75.0			
Alignment and Height: The alignment had no deflection and the height is 1 to 3 in above the 27 in design height throughout. Barrier Breaking and Cracking: No major breaking or cracking of the barrier. Missing Elements: No missing barrier elements. Corrrosion and Weathering: No major weathering of the barrier. Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. End Treatments Breaking and Cracking: No major breaking or cracking of the end treatment. End Treatments No missing Elements: No major breaking or cracking of the end treatment. Corrrosion and Cracking: No major breaking or cracking of the end treatment. Output No major weathering of the end treatment.				Lateral Offset (In.):	32.5			2.10			
Alignment and Height: The alignment had no deflection and the height is 1 to 3 in above the 27 in design height throughout. Barrier Breaking and Cracking: No major breaking or cracking of the barrier. Missing Elements: No missing barrier elements. Corrrosion and Weathering: No major weathering of the barrier. Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. End Treatments Breaking and Cracking: No major breaking or cracking of the end treatment. Corrrosion and Height: No major breaking or cracking of the end treatment. Breaking and Cracking: No major breaking or cracking of the end treatment. Missing Elements: No major weathering of the end treatment.	Physical Condition	on									
Barrier Cracking: Missing Elements: No missing barrier elements. Corrrosion and Weathering: No major weathering of the barrier. Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. Breaking and Cracking: No major breaking or cracking of the end treatment. Missing Elements: No major weathering of the end treatment. Orrrosion and Cracking: No major weathering of the end treatment.		Align		The alignment had no defle	ection and the height is 1	to 3 in above the	27 in design h	eight throughout.			
Image: Differentiation Image: Differentiation Corrrosion and Weathering: No major weathering of the barrier. Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. Breaking and Cracking: No major breaking or cracking of the end treatment. Missing Elements: No missing end treatment elements. Corrrosion and No major weathering of the end treatment.	Barrier		0	No major breaking or cracl	king of the barrier.						
Weathering: Weathering: Alignment and Height: Alignment acceptable. Height is within 1-in of 27-in design height. Breaking and Cracking: No major breaking or cracking of the end treatment. Missing Elements: No missing end treatment elements. Corrrosion and No major weathering of the end treatment.		Missing	Elements:	No missing barrier element	S.						
End Treatments Breaking and Cracking: No major breaking or cracking of the end treatment. Missing Elements: No missing end treatment elements. Corrrosion and No major weathering of the end treatment.				No major weathering of the	e barrier.						
End Treatments Cracking: Missing Elements: No missing end treatment elements. Corrrosion and No major weathering of the end treatment.		Align									
Corrrosion and No major weathering of the end treatment.	End Treatments										
	Missing Elements: No missing end treatment elements.										
				No major weathering of the	e end treatment.						

B	Barrier ID: BICA-0219-1.216-R								
Route Name: BARRY'S LANDING BOAT RAMP ROAD									
Inspect	tion Date:	05/08/201	0	Barrie	r Rating:	26.60			
Repair Recomme	endations	5							
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$1887		
Brief Workorder:	Adjust the tw	Adjust the twisted blocks.							
Workorder:	Labor at \$60- per -Hour for 4 Hrs = \$240. Adjust twisted blocks and nail to retain them. Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. Low speed shoulder work.								
	2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.								

Bighorn Canyon National Recreation Area ROUTE 0219: BARRY'S LANDING BOAT RAMP ROAD



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Ba	arrier ID:	BICA-0219	9-2.011-L								
	te Name:	BARRY'S	BARRY'S LANDING BOAT RAMP ROAD								
Inspect	tion Date:	05/08/201	0	Barri	er Rating:	40.20					
Barrier Descripti			~								
	Туре:	W-BEAM	WEAK POST	Barrier	Function:	TRAFFIC					
Barrier	Material:	GALVANI	ZED STEEL	Pos	t Material:	WOOD					
	Blockout Type:	N/A		L	ength (ft.):	438					
Speed Limi	it (MPH):	30			ement with ct to Road:	BOTH INS	IDE AND OUTSIDE				
Hazard Behind	Barrier:	EXTREME									
Barrier Crashwo	rthiness										
Appropriate Test Level:	TL-1		Barrier Test Level:	TL-2		Is Barrier worthy?:	YES				
Beg. End Trtmt Type:	NONE		Is Beg. End Trtmt Crashhworthy?:	N/A		Approach tion Type:	NONE				
Ending End Trtmt Type:	NONE		Ending End Trtmt Crashhworthy?:	N/A							
Average Measure	ements										
Design Height (In.):	27		Width (In.):	0.0	Post Spa	cing (In.):	75.3				
Height (In.):	25.7		Lateral Offset (In.):	41.2	Road G	rade (%):	11.90				
Physical Condition	on										
	Align	ment and Height:	The alignment had no defle barrier was behind the con- was for 247 ft.	ection and the height was al crete curb for 191 ft and wa			-				
Barrier		aking and Cracking:	There were 5 damaged rails from impact 4 being more minor. There was 1 cracked post and a couple of loose bolts.								
	Missing	Elements:	2 missing bolts. No other missing barrier elements.								
		osion and eathering:	No corrosion of galvanized by water's edge.	l rails. Moderate weatherin	g of wood barr	ier posts. 4 ro	tten posts down				
	Align	ment and Height:									
End Treatments	Breaking and Cracking:										
	Missing	Elements:									
		osion and eathering:									

B	Barrier ID: BICA-0219-2.011-L							
Route Name: BARRY'S LANDING BOAT RAMP ROAD								
Inspec	tion Date:	05/08/201	0	Barrier	r Rating:	40.20		
Repair Recomme	endations	5						
Repair Action:	REPAIR			DEFERRED MAINTENANCE		Repair Cost:	\$8448	
Brief Workorder:	Raise 247-ft	Raise 247-ft of barrier up to the 27-in design height replace 68 feet of rail 5 posts and tighten loose hardware.						
Workorder: Replace Rail at \$25- per -Lin. Ft. for 68-ft = \$1700. Replace 5 impacted rails. Replace Post at \$100- per -Each for 5 Post(s) = \$500. Replace 5 wooden posts. Adjust Guardrail at \$10- per -Lin. Ft. for 247-ft = \$2470. Raise 247-ft of guardrail to 27 inch design height. Labor at \$60- per -Hour for 1 Hrs = \$60. 1 hour of labor to tighten/replace bolts. 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.							

Bighorn Canyon National Recreation Area

ROUTE 0219: BARRY'S LANDING BOAT RAMP ROAD



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Appendix A Summary of GIP Definitions and Assessment



Bighorn Canyon National Recreation Area



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

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

• Stone Masonry, w/o Concrete Core Wall

• Stone Masonry, w/ Concrete Core Wall

• Concrete, with Simulated Stone Face

• W-Beam (Double Face), Strong Post

• Steel-Backed Timber (Double Face)

• Other: *Completed by field crew*

Random Rubble Cavity Wall

• Concrete Barrier

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.

A-1

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

BLOCKOUT TYPE

The type of blockout or of what it is comprised:

- Wood
- Plastic

Steel

N/A

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

Other: *Completed by field crew*

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

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 •

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 •

IS BARRIER CRASHWORTHY

This compared the appropriate crashworthy test level required for the posted speed limit to the barrier's test level.

• Yes

No

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

TL-3, 50 mph and higher •

N/A – Non-Traffic Barrier

High

Extreme

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

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

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

N/A

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

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

- Concrete/Masonry, Thrie Beam

Concrete/Masonry, SBT

- Other: *Completed by field crew*
- None

•

N/A

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

<u>The barrier performs as intended.</u> 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.

<u>The end treatment performs as intended.</u> 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

<u>The barrier is slightly compromised.</u> 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. <u>The end treatment is slightly compromised.</u> 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

<u>The barrier is not functional.</u> 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.

<u>The end treatment is not functional.</u> 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).

and blocks).	GOOD	FAIR	POOR
Alignment/Design H	eight		
	• Alignment off by less than 6"	• Alignment off by 6"-12"	• Alignment off by more than 12"
	Within 1" of <u>design</u> <u>height</u>	• Less than 3" lower than <u>design height</u>	• Greater than 3" lower than <u>design height</u>
Breaking/Cracking,	an member, post or rail –	due to impact loading	
	• Metal – no twisting/bending, tears or cracking	Metal – no cracking or tearing (but minor twisting/bending is ok)	Metal – any cracks or tears
	• Wood – no impact related cracking	Wood – maybe cracked but retains original cross section	• Wood – cracks or tears that deform original section
	Isolated broken blocks	Two Consecutive broken blocks	Consecutive broken blocks (three or more consecutive)
Missing Elements			
	No bolts and nuts missing	One or two bolt/nut missing at one rail/rail connection	• Three or more bolts/nuts missing at one rail/rail connection
	• n/a	Two consecutive missing blocks	Three or more consecutive missing blocks
	• n/a	• n/a	One missing rail element or post
Corrosion/Decay/We	eathering, all posts, rails ar	nd blocks – due to aging	Â
	• Loss of 5% or less of cross section	• Loss of 5% to 50% of cross section	• Loss of 50% or more of cross section
	• Erosion (less than 8" of post exposed below original groundline)	• Erosion around posts (8" or more of post exposed below original groundline) for one	• Erosion around consecutive posts (more than 8" of post exposed below original groundline)

Condition and Severity Distress Table for Rigid Concrete Barriers (including pre-cast).

Condition and Severity		crete Barriers (including pre-o	
	GOOD	FAIR	POOR
Alignment/Design H	leight		
	• Alignment off by less than 6"	• Alignment off by 6"-12"	• Alignment off by more than 12"
	Within 1" of <i>design</i> <u>height</u>	• Less than 3" lower than <u>design height</u>	• Greater than 3" lower than <u>design height</u>
Breaking/Cracking-	- due to impact loading		
	• Minor cracks (less than 1/4") present	Cracking present ¼" or greater but no displacement or discontinuity in face	Barrier displaced and/or discontinuous
	• n/a	• Pieces broken from barrier 3" deep or less without exposing rebar	Cracking exposes rebar
	• n/a	• n/a	• Pieces broken from face greater than 3" deep
Missing Elements			
	• n/a	• n/a	• n/a
Corrosion/Decay/W	eathering – due to aging		
	• Surface corrosion on less than 5% of the run	• Surface corrosion on between 5-25% of the run	• Surface corrosion on more than 25% of the run
	• n/a	• Spalling 3" deep or less without exposing rebar	• Spalling greater than 3" deep
	• Erosion (less than 8" below groundline) around base	Erosion (8" or more below groundline) around base	Erosion (8" or more below groundline)
	• n/a	• Less than 50% undermined (less than half barrier width)	• 50% or more undermined (less than half barrier width)

Condition and Severity Distress Table for Rigid Stone/Masonry Barriers (including all types of stone or masonry barriers).

masonry barriers).	GOOD	FAIR	POOR
Alignment/Design H	leight		
	• Alignment (off by less than 6")	• Alignment (off by 6"- 12")	• Alignment (off by more than 12")
	• Within 3" of <u>design</u> <u>height</u>	• Between 3.1 - 6" lower than <i>design height</i>	• Greater than 6.1" lower than <u>design height</u>
Breaking/Cracking -	– due to impact loading		
	• Minor cracks (less than ¹ / ₄ ") present	• Cracks, less than ¹ / ₂ " present	• Cracks greater than ¹ /2" present
		• Stones broken/displaced extending less than 1/3 of width of barrier	• Stones broken/displaced extending 1/3 width or more through the barrier
Missing Elements			
	• n/a	• n/a	• n/a
Corrosion/Decay/We	eathering – due to aging		
	Cracks in mortar joints 1/4" or less and/or single loose or missing stones	Mortar joints deteriorated resulting in two - three loose or missing adjacent stones (without impact)	Mortar joints deteriorated resulting in more than three continuous/adjacent loose or missing stones (without impact)
	• Erosion (less than 8" below groundline) around base	• Erosion (8" or more below groundline) around base	• Erosion (8" or more below groundline)
	• n/a	• Less than 50% undermined (less than half barrier width)	• 50% or more undermined (less than half barrier width)

Condition and Severity Distress Table for Flexible Barriers, (including cable barriers and weak-post systems designed without blocks).

designed without blocks	GOOD	FAIR	POOR
Alignment/Tension/	Design Height		
	No bent posts	• Bent posts; one to three consecutive posts	Bent posts; four or more consecutive posts
	• Cable has tension	Cable under- tensioned/sagging	No cable tension
	• Less than 1" too low	• 1-3" too low	• Greater than 3" too low
Breaking/Cracking			
	 No cracked or broken posts 	One to three isolated broken posts	• Four or more consecutive broken posts
	• n/a	• Cable frayed	• Cable broken or severed
Missing Elements			
	No bolts and nuts missing at anchors	• n/a	Bolts and nuts missing or loose at anchors
	• n/a	• n/a	• Any missing posts or cable for any length of run
Corrosion/Decay/We	eathering – due to aging		
	• Loss of 5% or less of cable cross section	• Loss of 5% to 15% of cable cross section	• Loss of 15% or more of cross section
	• Erosion (less than 8" of post exposed below original groundline)	• Erosion around one post (8" or more of post exposed below original groundline)	Erosion around consecutive posts (more than 8" of post exposed below original groundline)

CONDITION AND SEVERITY DISTRESS TABLES – END TREATMENTS

, i i i i i i i i i i i i i i i i i i i	ess Table for Flexible End Ti GOOD	FAIR	POOR
Alignment/Tension			
	• Alignment off by less than 4"	• Alignment off by 4"-8"	• Alignment off by more than 8"
	• Adequate cable tension	• Low cable anchor tension	• No cable anchor tension
Breaking/Cracking – due	e to impact loading		
	No broken or cracked elements	• Minor cable fraying but still with adequate tension	Broken or cracked cables or posts
	No damage to posts, cable or anchor	Slight damage to posts without cracking or tearing (but minor twisting/bending on isolated posts is OK)	Cable broken or severed on any cable
Missing Elements			
	No bolts and nuts missing at anchors; No missing cables	• n/a	• Any missing element (post, cable, bolts, nuts, or anchor)
Corrosion/Decay/Weathe	ering – due to aging		
	• Loss of 5% or less of cable cross section	• Loss of 5% to 15% of cable cross section	• Loss of 15% or more of cross section
	Connections weathered but still provide element interlock on less than 5% of the end treatment	• Connections weathered but still provide element interlock on between 5% to 15% of the end treatment	• Connections weathered but still provide element interlock on more than 15% of the end treatment

Condition and Severity Distress Table for Flexible End Treatments, (including cable end terminals).

Condition and Severity Distress Table for Semi-Rigid End Treatments, including Flared and Tangent

Condition and Severity	Distress Table for Semi-Rigid		
	GOOD	FAIR	POOR
Alignment/Tension			
	• Alignment of flares and offsets off by less than 4"	• Alignment of flares and offsets off by 4"-8"	• Alignment of flares and offsets off by more than 8"
	Within 1" of <u>design</u> height	• Less than 3" lower than <u>design height</u>	• 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:	Approach barrier terminals are buried, anchored, and flared away from the travel lane	Approach barrier terminals are buried, anchored, and flared away from the travel lane	 Approach barrier ends are NOT buried, anchored, nor flared away from the travel lane
Breaking/Cracking -	- due to impact loading		
	Metal – no twisting/bending, tears or cracking	• Metal – no cracking or tearing (but minor twisting or bending is ok)	• Metal – any cracks or tears
	Wood – no impact related cracking	• Wood – maybe cracked but retains original cross section	• Wood – cracks or tears that deform original section
	No broken blocks	One broken block	Two consecutive broken blocks
Missing Elements			
	No missing elements, including breakaway cables and struts	Isolated bolts, nuts, or blocks loose on non- consecutive posts	• Any missing element, including blocks, rails, posts cables, or struts
	No bolts, nuts, or blocks missing or loose	• Breakaway strut present but vertical height off by more than 2"	Missing nuts / bolts on consecutive posts
Corrosion/Decay/We	eathering – due to aging		
	Surface corrosion / decay / connections weathered with a loss of 5% or less of cross section of interlocking elements	• Surface corrosion / decay / connections weathered with between 5-25% loss of cross section along transition interlocking elements	• Surface corrosion / decay / connections weathered with more than 25% loss of cross section along transition interlocking elements
	• Erosion (less than 8" of post exposed below original groundline)	• Erosion around 1 post (8" or more of post exposed below original groundline)	• Erosion around consecutive posts (8" or more of post exposed below original groundline)

SPECIFIC RISK ELEMENTS

The potential risk to a motorist after a vehicle impacts a traffic barrier depends on the crashworthiness of the traffic barrier as well as traffic exposure factors. Variables relating to the roadside, the traffic barrier's crashworthiness and traffic data include the following:

ADT. The number of vehicles (in both directions) that travel the roadway on which the traffic barrier is located.

Barrier Crashworthy. A traffic barrier is crashworthy if it was successfully crash tested under NCHRP Report 350 at speeds along the park road or parkway or if it was accepted through analysis by FHWA, based on similarity to other crashworthy critical design element features. If crashworthy, the appropriate test level also needs to be recorded. For crashworthy barriers, the barrier test level will be compared to the test level appropriate for the roadway (based solely on posted speed limit). The intent is to record situations in which a crashworthy barrier of a lower test level is installed on a roadway which should have a barrier of a higher test level.

Barrier Height. Determined from barrier height as collected in the physical condition assessment. The database will compare this value to the NCHRP test level height that is appropriate for the posted speed of the road and barrier type.

End Treatment Crashworthy. An end treatment is crashworthy if it has been successfully crash tested. This is for the approach end treatment, which is defined as the end treatment which a vehicle will first pass when traveling on the same side of the road as the barrier.

Existing Roadway Features. The list of roadway features is limited to the following, all of which have a documented history of reducing the number of crashes, and are found later in the GIP as possible countermeasures.

Centerline pavement markings	Grooved pavement surface
Edgeline pavement markings	Delineators on curve and tangent
Wider centerline	Chevrons
Wider edgeline	Warning sign
Centerline rumble strips	Flashing beacon on warning sign
Shoulder rumble strips	Lighting
Barrier reflectors	Speed feedback sign

Factored Crash Rate. The average annual number of crashes (on the overall road and by barrier segment), over the last 5 years. If the road has an ADT of less than 1000, evaluate a minimum of

7 to 10 years of crash data, if available.

Lateral Offset of Barrier from Edge of Traveled Way. The distance from the edge of traveled way to the face of the barrier is useful for determining impact to asset during different types of construction. Two or three measurements will be taken – beginning, middle and end of barrier run (not including the end treatments) – and the average will be used.

Posted Speed Limit. The posted speed limit(s) of the roadway section.

Roadway Grade and Uphill or Downhill. Is refers to the grade of the roadway, in the direction of travel closest to the barrier.

Severity of the Hazard behind Barrier. A rating system based on photos will be used to rate the severity of the hazard behind the barrier. Choices include:

- Low
- Medium
- High
- Extreme

RISK ASSESSMENT AND RISK SCORE

The following table shows the variables relating to the overall roadway safety in the vicinity of barriers. In addition, the table illustrates the range of values considered for each variable and associated levels of risk. For categorization purposes, variables have been placed into one of three categories: segment, site or barrier variables. The "Associated Risk" column identifies the relative risk posed by each variable. This looks at the relative risk of the each variable itself and is only a cursory evaluation.

A Risk Score or Rating ("Barrier Rating" on Tier 3 Barrier page) was created for each barrier based on the table values. The level of risk tolerated is dependent on the category of road, which will be discussed in subsequent pages.

Once the inventory has been conducted, a total risk value can be assigned to each barrier. A comparison of the relative risk to an acceptable risk threshold will be performed in order to analyze the overall risk of a given barrier.

VARIABLE	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	Tangent	0.0
Roadway Geometry	Inside of curve	2.9
	Both inside and outside of curve	8.6
	Outside of curve	8.6
Severity of Hazard behind the Barrier	Low severity	2.6
-	Medium severity	5.1
	High severity	6.9
	Extreme severity	8.6
Longitudinal Length of Barrier	1 – 250-ft	0.0
	251 - 750-ft	2.9
	751 – ft and greater	5.7
Lateral Offset of Barrier from Edge of	4.1 – ft and greater	0.0
Traveled Way	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	0 – 1-in lower	0.0
test level height)	1.1 - 4-in lower	4.4
test level height)	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	0-25	0.0
(based on design height)	26 - 200	4.4
(oused on design height)	201 - 400	8.6
	401 - 600	12.9
	601 - 800	17.1
	801 and above	21.5
Barrier Conformance with Current		0.0
Barrier Conformance with Current Crashworthiness Criteria	Yes No	0.0 5.7

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
А	90-100	 Identify measures other than barrier replacement that could be taken to reduce risk (including engineering countermeasures). Corrective action (including reconstruct/replacement, if necessary) needed to reduce risk below 90.
	Below 90	 Identify measures that could be taken to reduce risk (including engineered countermeasures). Identify repairs needed to improve physical condition/maintain historic integrity. When condition is good and risk is acceptable, no action is necessary.
В	70-100	 Identify measures that could be taken to reduce risk (including engineered countermeasures). Corrective action (including reconstruct/replacement, if necessary) needed to reduce risk below 70.
	Below 70	 Identify measures that could be taken to reduce risk (including engineered countermeasures). Identify repairs needed to improve physical condition/maintain historic integrity. When condition is good and risk is acceptable, no action is necessary.
С	50-100	 Identify measures that could be taken to reduce risk (including engineered countermeasures). Corrective action (including reconstruct/replacement, if necessary) needed to reduce risk below 50.
	Below 50	 Identify measures that could be taken to reduce risk (including engineered countermeasures). Identify repairs needed to improve physical condition/maintain historic integrity. 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.