Federal Lands Highway

Road Inventory Program

Road Inventory and Condition Assessment

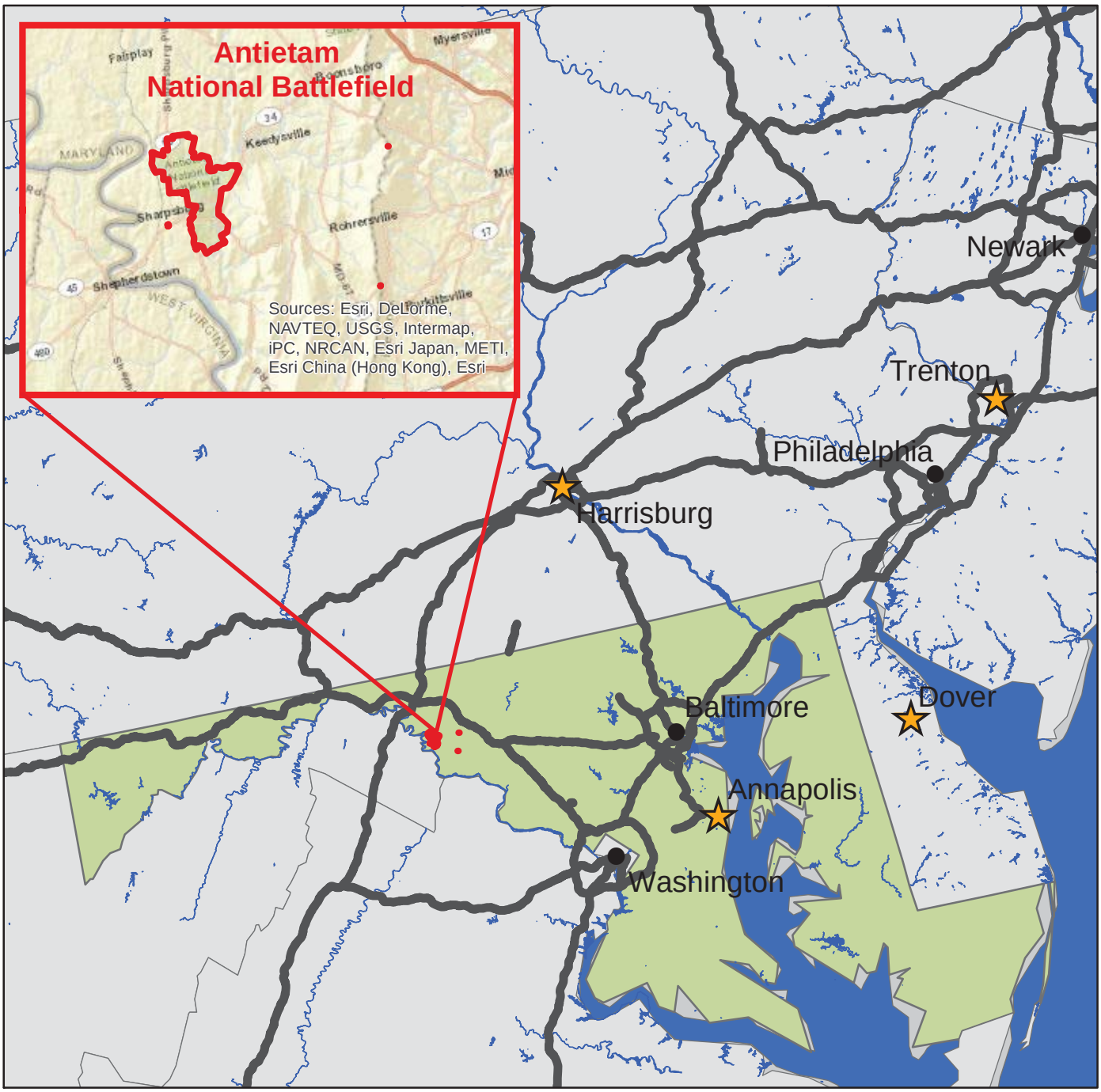
Antietam National Battlefield

ANTI

Cycle 5 Report

Prepared By: Federal Highway Administration
Road Inventory Program (RIP)
Data Collected: 02/2013
Report Date: 09/2013

Antietam National Battlefield
in
Maryland



DCV = Data Collection Vehicle

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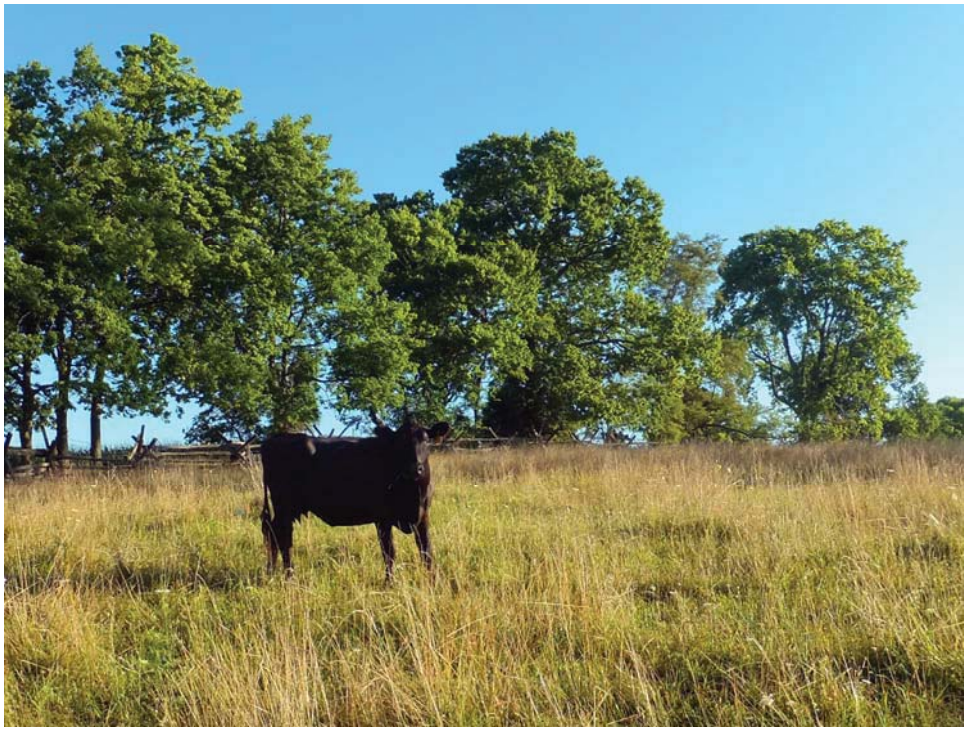
Introduction



Antietam National Battlefield

Federal Lands Highway
Road Inventory Program

INTRODUCTION

The Federal Highway Administration, (FHWA), in the mid 1970s, was charged with the task of identifying surface condition deficiencies and corrective priorities on National Park Service (NPS) roads and parkways. Additionally, FHWA was tasked with establishing an integrated maintenance features inventory, locating features such as culverts, guardrails, and signs, among others, along NPS roads and parkways. As a result, in 1976 the NPS and FHWA entered into an MOA (Memorandum Of Agreement) which established the RIP (Road Inventory Program). This MOA was terminated and revised in 1980 to establish a new MOA aiming to update RIP data and develop a long-range program to improve and maintain NPS roads to designated condition standards and establish a maintenance management program.

The FHWA completed this initial phase of the RIP in the early 1980s. As a result of this effort, each NPS site included in the study received a RIP Report known as the "Brown Book" which included the information collected during this first RIP phase.

In the 1990s, the effort was again renewed to update and maintain the RIP data. By this time the computer age was upon us and a process was employed that relied heavily on electronic data collection and computer technology. A cyclical program was developed and the RIP completed two cycles of data collection from 1994 to 2001. Cycle 1, starting in 1994, was conducted in 44 "large parks" (parks containing 10 or more paved route miles). Cycle 2 began in 1997 and comprised 79 large parks and 5 small parks totaling 4,874 paved route miles. Each of these parks received a RIP Report known as the "Blue Book". Cycle 3, from 2001 to 2004, was conducted in all parks, large and small, that contained any paved routes, including parking areas and, again, each park received a RIP Report and associated electronic files.

Cycle 4 was initiated in the spring of 2006 covering 86 large parks and several associated small parks consisting of 5,553 paved route miles and 6,232 paved parking areas. Data collection has been completed for Cycle 4 and all data has been delivered to the NPS.

In 2005, the FHWA began implementing the use of a Pavement Management System (PMS) to assist the NPS in prioritizing Pavement Maintenance and Rehabilitation activities. The PMS used by FHWA is the Highway Pavement Management Application (HPMA) and this software has the ability to store inventory and condition data from RIP and forecast future performance using prediction models. Outputs include performance and condition reports at the National, Regional, Park, or Route level. A regional prioritized list and optimization have been produced for most regions and the Federal Highway Deferred Maintenance is calculated via the HPMA.

In an effort to improve the accuracy of treatment recommendations and pavement condition descriptions, an extensive study was completed throughout 2010 that has resulted in changes to the RIP condition reporting method, specifically the distresses and indexes that comprise the Pavement Condition Rating (PCR). It was determined that a better representation of PCR could

be achieved by modifying the relative impact certain distresses would have on the overall rating. The changes that were implemented were endorsed by management at both the FHWA and NPS in October 2010. These changes will allow greater use of RIP and HPMA data for not simply condition data reporting, but also as a reliable tool for project identification and selection. Because of these changes, the PCR Condition ratings reported in Cycle 5 do not directly relate to the condition ratings reported in previous cycle RIP Reports. For more detailed information about the changes, see Section 3 and Section 10 in this RIP Report.

Cycle 5 has launched in the summer of 2010 and will again comprise all parks, large and small, that are served by paved roads and/or parking areas. For Cycle 5, the decision was made to collect condition data in large parks on Functional Class 1, 2, and 7 paved routes only, as well as any new routes that were previously not collected. In small parks, all paved routes and parking areas will be collected. As a result, this will include 81 large parks with 4,459 paved route miles and 231 small parks with 529 paved route miles and associated paved parking areas.

Since 1984, the Road Inventory Program has been funded through the Federal Lands Highway Park Roads and Parkways (PRP) Program. Currently, coordination of the RIP with FLH is under the NPS Washington Headquarters Park Facility Management Division. The FLH Washington office coordinates policy and prepares national reports and needs assessment studies for Congress.

In 1998, the Transportation Equity Act for the 21st Century (TEA-21) amended Title 23 U.S.C., and inserted Section 204(a)(6) requiring the FHWA and NPS, to develop by rule, a Pavement Management System (PMS) applied to park roads and parkways serving the National Park System.

FLH is responsible for the accuracy of all data presented in this report. Any questions or comments concerning the contents of this report should be directed to the national RIP Coordinator located in Sterling, Virginia.

Respectfully,

FHWA RIP Team

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Section 2
Park Route Inventory

Antietam National Battlefield

Federal Lands Highway
Road Inventory Program

Cycle 5 NPS/RIP Route ID Report

Shading Color Key:
Red text denotes approx. mileage

White = Paved Routes, DCV Driven
Yellow = Unpaved Routes, DCV not Driven
Blue = All Paved Parking Areas
Green = All Unpaved Parking Areas
Grey = Paved Routes, DCV not Driven
Black = State, Local or Private non-NPS Routes
= Concession Route Flag ON

*Unpaved route data was obtained from NPS and was not inventoried by the Road Inventory Program (RIP).

** DCV - Data Collection Vehicle NC - Not Collected

ANTI

ANTIETAM NATIONAL BATTLEFIELD

Rte. No.	Cycle Collected	FMSS No.	Concess Route	Route Name	Route Description From	Route Description To	Maint. District	Paved Miles	Un-Paved Miles	Total Route Length	Func. Class	Manual Rated SQ/FT	Surf. Type	Area Maps
0300	5	48550		OLD MARYLAND ROUTE 65	FROM ROUTE 5001 (MARYLAND ROUTE 65)	TO ROUTE 5001 (MARYLAND ROUTE 65)	N/A	1.18	0.00	1.18	1		AS	1
0302	5	40418		STARKE AVENUE	FROM ROUTE 0300 (OLD MARYLAND ROUTE 65)	TO ROUTE 5001 (MARYLAND ROUTE 65)	N/A	0.18	0.00	0.18	2		AS	1
0303	5	48535		CORNFIELD AVENUE	FROM ROUTE 5000 (SMOKETOWN ROAD)	TO ROUTE 0300 (OLD MARYLAND ROUTE 65)	N/A	0.36	0.00	0.36	1		AS	1
0304	5	48525		MANSFIELD AVENUE	FROM ROUTE 0300 (OLD MARYLAND ROUTE 65)	TO ROUTE 5000 (SMOKETOWN ROAD)	N/A	0.73	0.00	0.73	1		AS	1
0305	5	44029		MUMMA LANE	FROM ROUTE 5000 (SMOKETOWN ROAD)	TO ROUTE 0307 (RICHARDSON AVENUE)	N/A	0.59	0.00	0.59	1		AS	1
0307	5	48512		RICHARDSON AVENUE	FROM ROUTE 5001 (MARYLAND ROUTE 65)	TO ROUTE 5002 (MARYLAND ROUTE 34)	N/A	1.11	0.00	1.11	1		AS	1,2
0308	5	48556		RODMAN AVENUE	FROM ROUTE 5002 (MARYLAND ROUTE 34)	TO INTERSECTION OF ROUTE 0309 (BRANCH AVENUE) AND ROUTE 0310 (OLD BURNSIDE BRIDGE ROAD)	N/A	0.53	0.00	0.53	1		AS	2
0309	5	40554		BRANCH AVENUE	FROM INTERSECTION OF ROUTE 0308 (RODMAN AVENUE) AND ROUTE 0310 (OLD BURNSIDE BRIDGE ROAD)	TO HARPERS FERRY ROAD	N/A	0.89	0.00	0.89	1		AS	2
0310	5	48566		OLD BURNSIDE BRIDGE ROAD	FROM INTERSECTION OF ROUTE 0308 (RODMAN AVENUE) AND ROUTE 0309 (BRANCH AVENUE)	TO ROUTE 0908 (BURNSIDE BRIDGE PARKING)	N/A	0.49	0.00	0.49	1		AS	2
0400	5	41398		PIPER LANE	FROM ROUTE 5001 (MARYLAND ROUTE 65)	TO END	N/A	0.19	0.00	0.19	3		AS	2
0402ZZ	5	40546		PRY HOUSE ACCESS ROAD	FROM ROUTE 5002 (MARYLAND ROUTE 34)	TO END OF LOOP	N/A	0.26	0.13	0.38	3		AS	3
0403	NC	48577		CONFEDERATE AVENUE	FROM ROUTE 0922 (DUNKER CHURCH HANDICAP PARKING)	TO END	N/A	0.00	0.22	0.22	6		GR	
0404	NC	43570		POFFENBERGER FARM ROAD	FROM ROUTE 0304 (MANSFIELD AVENUE)	TO END	N/A	0.00	0.50	0.50	5		GR	
0405	NC	52125		ROULETTE FARM ROAD	FROM ROUTE 0307 (RICHARDSON AVENUE)	TO END	N/A	0.00	1.25	1.25	6		GR	

Cycle 5 NPS/RIP Route ID Report

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0406	NC	44053		CUNNINGHAM FARM ROAD	FROM ROUTE 5002 (MARYLAND ROUTE 34)	TO END	N/A	0.00	1.25	1.25	6		GR	
0407	NC	44059		OTTO LANE	FROM BURNSIDE BRIDGE ROAD (NON NPS)	TO END	N/A	0.00	0.40	0.40	6		GR	
0408	NC	48514		BLOODY LANE	FROM ROUTE 0405 (ROULETTE FARM ROAD)	TO END AT TOWER	N/A	0.00	0.22	0.22	6		GR	
0900	5	52124		VISITOR CENTER PARKING	FROM ROUTE 0300 (OLD MARYLAND ROUTE 65)	TO ROUTE 0300 (OLD MARYLAND ROUTE 65)	N/A	0.00	0.00	0.00		41,358	AS	1
0901	5	52127		CLARA BARTON PARKING	ADJACENT TO ROUTE 0304 (MANSFIELD AVENUE)		N/A	0.00	0.00	0.00		2,822	AS	1
0902A	5	52128		CORNFIELD PARKING A	ADJACENT TO ROUTE 0303 (CORNFIELD AVENUE)		N/A	0.00	0.00	0.00		1,612	AS	1
0902B	5	52130		CORNFIELD PARKING B	ADJACENT TO ROUTE 0303 (CORNFIELD AVENUE)		N/A	0.00	0.00	0.00		3,122	AS	1
0903	5	52131		PHILADELPHIA BRIGADE PARKING	FROM ROUTE 0300 (OLD MARYLAND ROUTE 65)	TO END OF PARKING LOOP	N/A	0.00	0.00	0.00		19,806	AS	1
0904	5	52132		MUMMA CEMETERY PARKING	ADJACENT TO ROUTE 0305 (MUMMA LANE)		N/A	0.00	0.00	0.00		1,318	AS	1
0905	5	52133		MUMMA PARKING	ADJACENT TO ROUTE 0305 (MUMMA LANE)		N/A	0.00	0.00	0.00		2,388	AS	1
0906A	5	52134		BLOODY LANE PARKING A	ADJACENT TO ROUTE 0307 (RICHARDSON AVENUE) ON LEFT		N/A	0.00	0.00	0.00		3,155	AS	1
0906B	5	52136		BLOODY LANE PARKING B	ADJACENT TO ROUTE 0307 (RICHARDSON AVENUE) ON RIGHT		N/A	0.00	0.00	0.00		1,722	AS	1
0907	5	52137		OBSERVATION TOWER PARKING	FROM ROUTE 0307 (RICHARDSON AVENUE)	TO ROUTE 0307 (RICHARDSON AVENUE)	N/A	0.00	0.00	0.00		15,489	AS	1
0908	5	52138		BURNSIDE BRIDGE PARKING	FROM END OF ROUTE 0310 (OLD BURNSIDE BRIDGE ROAD)	TO PARKING	N/A	0.00	0.00	0.00		15,141	AS	2
0909	5	52139		FINAL ATTACK PARKING	ADJACENT TO ROUTE 0309 (BRANCH AVENUE)		N/A	0.00	0.00	0.00		1,643	AS	2
0910	5	52141		MAINTENANCE AREA	FROM ROUTE 5002 (MARYLAND ROUTE 34)	TO MAINTENANCE AREA	N/A	0.00	0.00	0.00		33,597	AS	2

Cycle 5 NPS/RIP Route ID Report

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Rte. No.	Cycle Collected	FMSS No.	Concess Route	Route Name	Route Description From	Route Description To	Maint. District	Paved Miles	Un-Paved Miles	Total Route Length	Func. Class	Manual Rated SQ/FT	Surf. Type	Area Maps
0913	5	52144		NATIONAL CEMETERY PARKING	FROM ROUTE 5002 (MARYLAND ROUTE 34)	TO PARKING	N/A	0.00	0.00	0.00		14,095	AS	2
0914ZZ	5	52126		SHULL HOUSE PARKING	FROM MONDELL ROAD	TO PARKING	N/A	0.00	0.00	0.00		32,095	AS	1
0915	NC	52147		BOY SCOUT CAMPGROUND PARKING	FROM BURNSIDE BRIDGE ROAD (NON NPS)	TO PARKING	N/A	0.00	0.00	0.00		6,400	GR	
0916	5	40536		D.R. MILLER FARMSTEAD PARKING	FROM ROUTE 0300 (OLD MARYLAND ROUTE 65)	TO PARKING	N/A	0.00	0.00	0.00		4,568	AS	1
0917	5	52148		BURNSIDE BRIDGE HANDICAPPED PARKING	ADJACENT TO ROUTE 0310 (OLD BURNSIDE BRIDGE ROAD)		N/A	0.00	0.00	0.00		1,147	AS	2
0918ZZ	5	82620		WYAND HOUSE PARKING LOT	FROM ROUTE 0402ZZ (PRY HOUSE ACCESS ROAD)	TO PARKING	N/A	0.00	0.00	0.00		3,082	AS	3
0919	5	225242		NEWCOMER HOUSE PARKING LOT	FROM ROUTE 5002 (MARYLAND ROUTE 34)	TO PARKING	N/A	0.00	0.00	0.00		486	AS	3
0920	5			PRY HOUSE PARKING	ADJACENT TO ROUTE 0402ZZ (PRY HOUSE ACCESS ROAD)		N/A	0.00	0.00	0.00		1,673	AS	3
0921	5			SHERRICK FARM TRAIL PARKING	ADJACENT TO ROUTE 0308 (RODMAN AVENUE)		N/A	0.00	0.00	0.00		853	AS	2
0922	5			DUNKER CHURCH HANDICAP PARKING	FROM ROUTE 0300 (OLD MARYLAND ROUTE 65)	TO ROUTE 0403 (CONFEDERATE AVENUE)	N/A	0.00	0.00	0.00		2,539	AS	1
5000	5			SMOKETOWN ROAD	FROM ROUTE 0300 (OLD MARYLAND ROUTE 65)	TO ROUTE 0304 (MANSFIELD AVENUE)	N/A	0.68	0.00	0.68			AS	1
5001	5			MARYLAND ROUTE 65	FROM ROUTE 5002 (MARYLAND ROUTE 34)	TO MONDELL ROAD AND END OF ROUTE 0300 (OLD MARYLAND ROUTE 65)	N/A	2.17	0.00	2.17			AS	1,2
5002	5			MARYLAND ROUTE 34	FROM SITE OF LEE'S HEADQUARTERS	TO ROUTE 0402ZZ (PRY HOUSE ACCESS ROAD)	N/A	3.04	0.00	3.04			AS	2,3

Cycle 5 NPS/RIP Route ID Report

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CYCLE 5 SUMMARY TOTALS FOR ANTIETAM NATIONAL BATTLEFIELD

CYCLE 5 ROUTE TOTALS

DCV Driven Route Miles	6.49
Manually Rated Route Miles	0.00
TOTAL PARK ROUTE MILES COLLECTED IN CYCLE 5	6.49
Manually Rated Routes (SQFT)	0
TOTAL UNPAVED PARK ROUTE MILES	3.97

CYCLE 5 CONCESSION TOTALS

Concession Paved Route Miles	0.00
Concession Unpaved Route Miles	0.00
TOTAL CONCESSION ROUTE MILES	0.00
Concession Paved Parking Area SQFT	0
Concession Unpaved Parking Area SQFT	0
TOTAL CONCESSION PARKING AREA SQFT	0
Concession Manually Rated Routes SQFT	0

* CYCLE 5 PARKING AREA TOTALS

Paved Parking (SQFT)	203,711
Unpaved Parking (SQFT)	6,400
TOTAL PARKING (SQFT)	210,111

CYCLE 5 WEIGHTED AVERAGE PARK VALUES

DCV Driven PCR	93
**Manually Rated Routes PCR	N/A
**Parking PCR	89
***Total Equivalent Lane Miles	14.30

* - The Parking Area Totals SQFT value represents **all** parking areas collected in Cycle 5, both park and concessionaire.

** - Parking and Manually Rated Routes are assigned the following PCR values based on their observed condition: Construction=-1, Excellent=97, Good=90, Fair=73, and Poor=45.

*** - Equivalent Lane Miles are calculated by route using the following equations : DCV and Manually Rated Lines Routes=(PAVE_WIDTHxPAVED_MI)/11 foot lane. Parking Areas=SQ_FEET/5280/11. Manually Rated Polygons=SQ_FEET/5280/11.

Cycle 5 NPS/RIP Route ID Report

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General Park Road Functional Classification Table

Class 1 Principal Park Road/Rural Parkway (Public Roads) Roads which constitute the main access route, circulatory tour, or thoroughfare for park visitors. Route Numbers 1 - 99. Note: Rural parkways (e.g. Natchez Trace) are numbered 1 - 9. State Routes Inventoried for Park. Route Numbers 5000-5999

Class 2 Connector Park Road (Public Roads) - Roads which provide access within a park to areas of scenic, scientific, recreational or cultural interest, such as overlooks, campgrounds, etc. Route Numbers 100-199.

Class 3 Special Purpose Park Road (Public Roads) - Roads which provide circulation within public areas, such as campgrounds, picnic areas, visitor center complexes, concessionaire facilities, etc. These roads generally serve low-speed traffic and are often designed for one-way circulation. Route Numbers 200-299.

Class 4 Primitive Park Roads (Public Roads) - Roads which provide circulation through remote areas and/or access to primitive campgrounds and undeveloped areas. These roads frequently have no minimum design standards and their use may be limited to specially equipped vehicles. Route Numbers 200-299.
Note: Functional Classes 3 and 4 have the same route numbers because, historically, they were numbered similarly.

Class 5 Administrative Access Road (Administrative Roads) - All public roads intended for access to administrative developments or structures such as park offices, employee quarters, or utility areas. Route Numbers 400-499.

Class 6 Restricted Road (Administrative Roads) - All roads normally closed to the public, including patrol roads, truck trails, and other similar roads. Route Numbers 400-499. Note: Functional Classes 5 and 6 have the same route numbers because historically they were numbered similarly and often there is little distinction between these routes. For example, because utility areas and employee housing are often closed to the public, this restriction would result in classification of FC 6 rather than FC 5.

Class 7 Urban Parkway (Urban Parkways and City Streets) - These facilities serve high volumes of park and non-park related traffic and are restricted, limited-access facilities in an urban area. This category of roads primarily encompasses the major parkways which serve as gateways to our nation's capital. Other major park roads or portions thereof, however, may be included in this category. Route Numbers 1-9.

Class 8 City Streets (Urban Parkways and City Streets) - City streets are usually extensions of the adjoining street system that are owned and maintained by the National Park Service. The construction and/or reconstruction should conform with accepted local engineering practice and local conditions. Route Numbers 600-699.

****

A park road system contains those roads within or giving access to a park or other unit of the NPS which are administered by the NPS, or by the Service in cooperation with other agencies. The assignment of a functional classification (FC) to a park road is not based on traffic volumes or design speed, but on the intended use or function of that road or route.

The historic route numbering system also included a 300 number series for interpretive roads, and a 500 series for one-way roads. There are approximately 250 roads nationwide which are designated by the 300 and 500 series. The numbers for these roads will be maintained for reporting consistency. However, since these interpretive and one-way routes are not as clearly tied to a specific functional class, the 300 and 500 series will be discontinued for future use.

5000 route numbers are assigned to Non-NPS Routes that are State, County or City owned which border, traverse, or provide access to Park Facilities or Locations. 5000 Routes are driven for GPS and Video Log only.

Surface Type Abbreviations:

AS - Asphaltic Concrete Pavement
CO - Portland Cement Concrete Pavement
BR - Brick or Pavers Road Bed
CB - Cobble Stone Road Bed
GR - Gravel Road Bed
SA - Sand Road Bed
NV - Native or Dirt Material Road Bed
OT - Other Materials Road Bed

NPS/RIP Subcomponent Details for ANTI

Shading Color Key: White = Paved Routes, DCV Driven | Yellow = Unpaved Routes, DCV not Driven | Blue = All Paved Parking Areas | Green = All Unpaved Parking Areas
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ANTIETAM NATIONAL BATTLEFIELD

Rte. No.	FMSS No.	Cycle Collected	Route Name	Route Description From	Route Description To	Concess Route	Func. Class	Paved Miles	Un-Paved Miles	Total Route Length	Manual Rated SQ/FT
0402ZZ	40546	5	PRY HOUSE ACCESS ROAD	FROM ROUTE 5002 (MARYLAND ROUTE 34)	TO END OF LOOP		3	0.26	0.13	0.38	
0914ZZ	52126	5	SHULL HOUSE PARKING	FROM MONDELL ROAD	TO PARKING			0.00	0.00	0.00	32,095
0918ZZ	82620	5	WYAND HOUSE PARKING LOT	FROM ROUTE 0402ZZ (PRY HOUSE ACCESS ROAD)	TO PARKING			0.00	0.00	0.00	3,082

ANTI-0402ZZ Subcomponent Breakdown

Rte. No.	FMSS No.	Cycle Collected	Route Name	Route Description From	Route Description To	Concess Route	Func. Class	Paved Miles	Un-Paved Miles	Total Route Length	Manual Rated SQ/FT
0402AZ	40546	5	PRY HOUSE ACCESS ROAD A	FROM ROUTE 5002 (MARYLAND ROUTE 34)	TO END OF PAVEMENT AND BEGINNING OF ROUTE 0402BZ (PRY HOUSE ACCESS ROAD B)		3	0.24	0.00	0.24	
0402BZ	40546	NC	PRY HOUSE ACCESS ROAD B	FROM END OF ROUTE 0402AZ (PRY HOUSE ACCESS ROAD A)	TO BEGINNING OF ROUTE 0402CZ (PRY HOUSE ACCESS ROAD C)		3	0.00	0.13	0.13	
0402CZ	40546	5	PRY HOUSE ACCESS ROAD C	FROM END OF ROUTE 0402BZ (PRY HOUSE ACCESS ROAD B)	TO ROUTE 0402AZ (PRY HOUSE ACCESS ROAD A) AT END OF LOOP		3	0.02	0.00	0.02	

ANTI-0914ZZ Subcomponent Breakdown

Rte. No.	FMSS No.	Cycle Collected	Route Name	Route Description From	Route Description To	Concess Route	Func. Class	Paved Miles	Un-Paved Miles	Total Route Length	Manual Rated SQ/FT
0914AZ	52126	5	SHULL HOUSE PARKING A	FROM MONDELL ROAD	TO PARKING			0.00	0.00	0.00	26,760
0914BZ	52126	5	SHULL HOUSE PARKING B	FROM MONDELL ROAD	TO PARKING			0.00	0.00	0.00	5,335

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ANTI

ANTIETAM NATIONAL BATTLEFIELD

ANTI-0918ZZ Subcomponent Breakdown

Rte. No.	FMSS No.	Cycle Collected	Route Name	Route Description From	Route Description To	Concess Route	Func. Class	Paved Miles	Un-Paved Miles	Total Route Length	Manual Rated SQ/FT
0918AZ	82620	5	WYAND HOUSE PARKING LOT A	FROM ROUTE 0402AZ (PRY HOUSE ACCESS ROAD A)	TO PARKING			0.00	0.00	0.00	1,955
0918BZ	82620	5	WYAND HOUSE PARKING LOT B	ADJACENT TO ROUTE 0402AZ (PRY HOUSE ACCESS ROAD A)				0.00	0.00	0.00	1,127

ROUTE IDENTIFICATION CHANGES TO PAVED ROUTES FROM PREVIOUS CYCLE - ANTI

ROUTES ADDED FROM PREVIOUS INVENTORY:			
Route #	**Route Name**	**Reason for Addition**	**Comments**
0918ZZ	WYAND HOUSE PARKING LOT	RECENTLY CONSTRUCTED ROUTE	NEW PARKING AREA ADDED TO INVENTORY IN CYCLE 5.
0919	NEWCOMER HOUSE PARKING LOT	RECENTLY CONSTRUCTED ROUTE	NEWLY PAVED HANDICAPPED PARKING SPACE ADDED TO THE INVENTORY IN CYCLE 5. THE PARK REQUESTED NOT TO ADD THE UNPAVED SECTIONS TO FMSS AND RIP.
0920	PRY HOUSE PARKING	RECENTLY CONSTRUCTED ROUTE	NEW PARKING AREA ADDED TO INVENTORY IN CYCLE 5. FMSS LOCATION NUMBER WAS NOT AVAILABLE AT THE TIME OF THIS REPORT PUBLICATION.
0921	SHERRICK FARM TRAIL PARKING	RECENTLY CONSTRUCTED ROUTE	NEW PARKING AREA ADDED TO INVENTORY IN CYCLE 5. FMSS LOCATION NUMBER WAS NOT AVAILABLE AT THE TIME OF THIS REPORT PUBLICATION.
0922	DUNKER CHURCH HANDICAP PARKING	RECENTLY CONSTRUCTED ROUTE	NEW HANDICAP PARKING AREA FOR THE DUNKER CHURCH WAS ADDED TO THE INVENTORY IN CYCLE 5. FMSS LOCATION NUMBER WAS NOT AVAILABLE AT THE TIME OF THIS REPORT PUBLICATION.
5000	SMOKETOWN ROAD	OTHER	NON-NPS ROAD ADDED TO INVENTORY IN CYCLE 5.
5001	MARYLAND ROUTE 65	OTHER	NON-NPS ROAD ADDED TO INVENTORY IN CYCLE 5.
5002	MARYLAND ROUTE 34	OTHER	NON-NPS ROAD ADDED TO INVENTORY IN CYCLE 5.

ROUTE IDENTIFICATION CHANGES TO PAVED ROUTES FROM PREVIOUS CYCLE - ANTI

ROUTES MODIFIED FROM PREVIOUS INVENTORY:			
Route #	**Route Name**	**Type of Modification**	**Comments**
0300	OLD MARYLAND ROUTE 65	REALIGNED	ROUTE HAD A SLIGHT ALIGNMENT CHANGE AT THE BEGINNING AND END WHERE IT INTERSECTS STATE ROUTE 65.
0304	MANSFIELD AVENUE	REALIGNED	THE ROUTE LENGTH INCREASED SLIGHTLY WHEN A SMALL PORTION OF THE END OF CYCLE 3 ROUTE 0300 WAS TRANSFERRED TO THE BEGINNING OF ROUTE 0304.
0308	RODMAN AVENUE	REALIGNED	ROUTE HAD A SLIGHT ALIGNMENT CHANGE AT THE BEGINNING WHERE IT INTERSECTS STATE ROUTE 34.
0400	PIPER LANE	SURFACE TYPE CHANGE	ROUTE WAS UNPAVED IN CYCLE 3 AND IS PAVED IN CYCLE 5.
0402ZZ	PRY HOUSE ACCESS ROAD	SURFACE TYPE CHANGE	CYCLE 3 ROUTE 0402 WAS UNPAVED, BUT IS NOW PAVED IN CYCLE 5.
0403	CONFEDERATE AVENUE	SURFACE TYPE CHANGE	ROUTE 0403 WAS CHANGED TO UNPAVED IN CYCLE 5 AND THE LENGTH CHANGED SLIGHTLY BECAUSE THE BEGINNING SECTION WAS TURNED INTO PARKING (ROUTE 0922). ROUTE 0403 WAS A PAVED ROUTE IN CYCLE 3.
0910	MAINTENANCE AREA	RECONSTRUCTED	SECTIONS OF THE MAINTENANCE AREA WERE RECONSTRUCTED AND NEW PAVEMENT WAS ADDED ON THE SOUTH END SINCE CYCLE 3.
0913	NATIONAL CEMETERY PARKING	ROUTES COMBINED	THIS PARKING AREA WAS RECONSTRUCTED SINCE CYCLE 3. CYCLE 3 ROUTES 0911, 0912, AND 0913 WERE ALL COMBINED INTO CYCLE 5 ROUTE 0913.
0914ZZ	SHULL HOUSE PARKING	SURFACE TYPE CHANGE	PARKING AREA WAS UNPAVED IN CYCLE 3 AND IS PAVED IN CYCLE 5.
0916	D.R. MILLER FARMSTEAD PARKING	OTHER	THE LOOP ON THE NORTH SIDE OF THE PARKING AREA HAS BEEN REMOVED FROM THE PARKING LOT SHAPE SINCE CYCLE 3.

ROUTE IDENTIFICATION CHANGES TO PAVED ROUTES FROM PREVIOUS CYCLE - ANTI

OTHER CHANGES FROM PREVIOUS INVENTORY:			
Route #	**Route Name**	**Type of Change**	**Comments**
0917	BURNSIDE BRIDGE HANDICAPPED PARKING	SQ FEET CHANGE	GPS WAS RECOLLECTED TO SHOW THE PARKING LOT GEOMETRY ACCURATELY.

Section 3
Park Summary Information

Antietam National Battlefield

Federal Lands Highway
Road Inventory Program

ANTI: PAVED ROUTE MILES AND PERCENTAGES BY FUNCTIONAL CLASS AND PCR

F.C.	Pavement Condition Rating (PCR)								TOTAL MILES
	Poor (0-60)		Fair (61-84)		Good (85-94)		Excellent (95-100)		
	MILES	%	MILES	%	MILES	%	MILES	%	
1	0.04	0.62%	0.92	14.18%	1.20	18.49%	3.71	57.16%	**5.87**
2							0.18	2.77%	**0.18**
3					0.04	0.62%	0.40	6.16%	**0.44**
4									
5									
6									
7									
8									
Totals	**0.04**	**0.62%**	**0.92**	**14.18%**	**1.24**	**19.11%**	**4.29**	**66.10%**	**6.49**

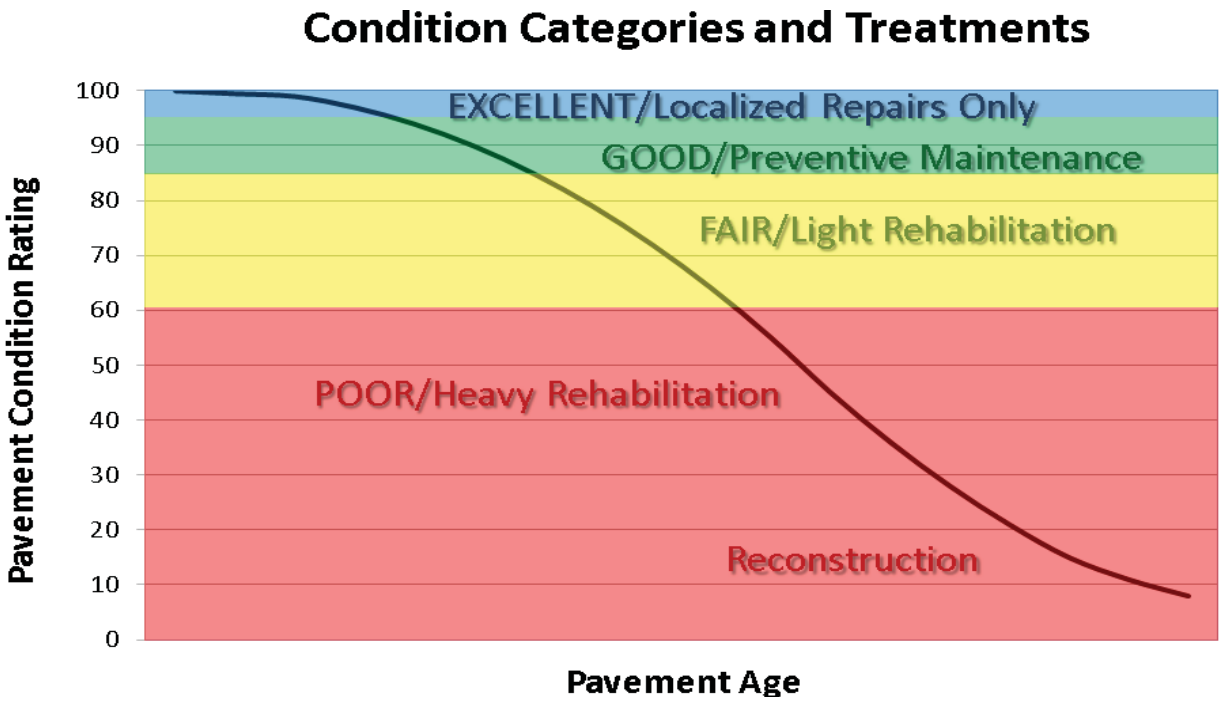
Note: **The information in this table is derived from the PMS_20 table in the Park database, which only contains processed data from routes collected with the Data Collection Vehicle (DCV). Information for Manually Rated Routes (MRR) and Parking Areas is not reported in this table. Only Functional Class 1, 2, & 7 routes, and any new routes not previously collected by RIP, are collected in Large Parks.**

Explanation of the Excellent, Good, Fair and Poor Condition Descriptions

In addition to the RIP Index changes that have been implemented in Cycle 5, we will also aim to provide greater assistance in translating excellent/good/fair/poor categories into pavement needs categories. The PCR can be used to indicate the place in the Pavement Life Cycle and the types of treatments that should be considered now and into the future.

- Excellent/New: PCR of 95-100. Pavements in this range will require only spot repairs
- Good: PCR of 85-94. Pavements in this range will likely be candidates for Preventive Maintenance. Examples include Chip and Slurry Seals, Micro Surfacing and Thin Overlays.
- Fair: PCR of 61-84. Pavements in this range will likely be candidates of Light Rehabilitation (L3R). Examples include single-lift overlays up to 2.5 inches in total thickness, milling and overlays.
- Poor: PCR of 0-60. Pavements in this range will likely be candidates of Heavy Rehabilitation or Reconstruction (H3R or 4R). Examples include Pulverization, Multiple Lift Overlays, and Reconstruction.

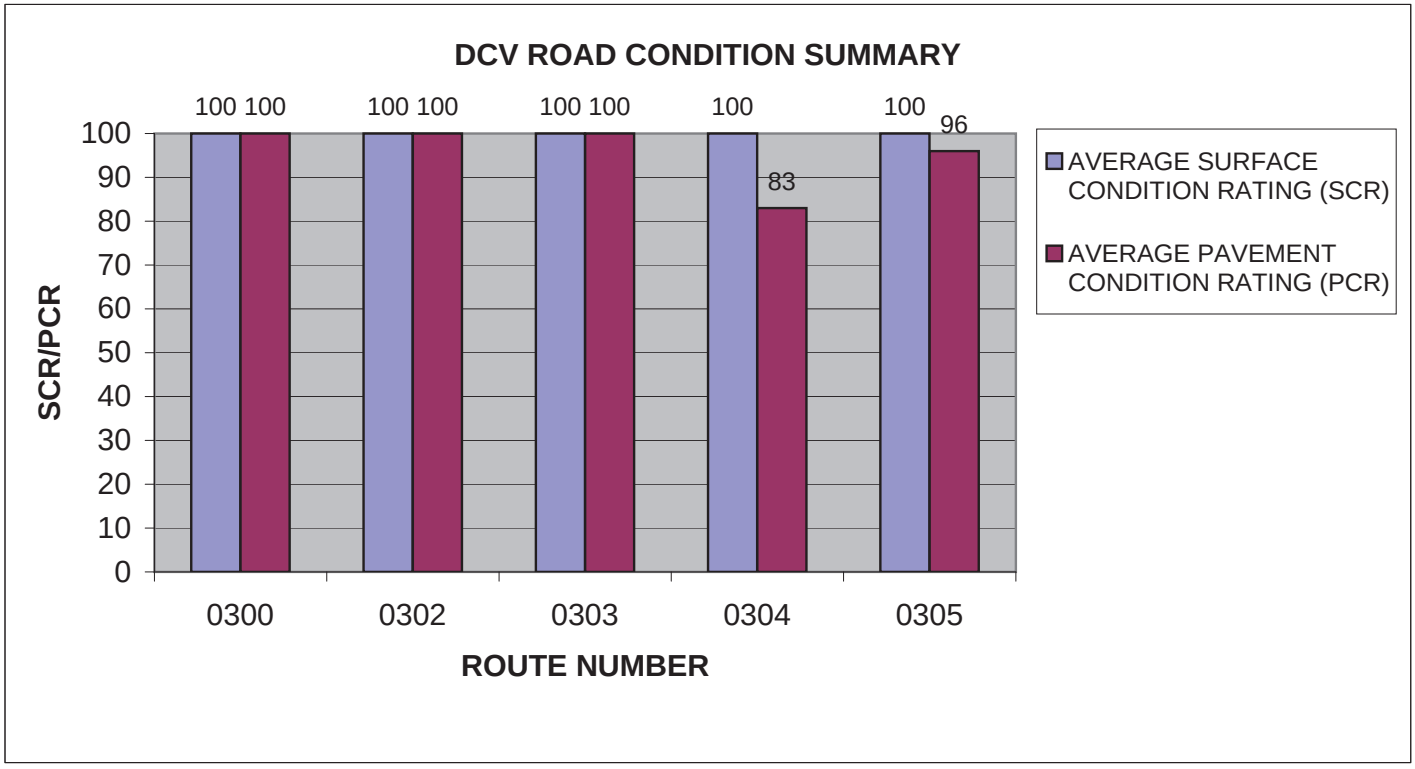
At this time, specific Maintenance and Rehabilitation activities should be evaluated and recommended at the project level. Site-specific conditions that influence treatment type should be determined based on performing a subsurface investigation and/or pavement condition survey, and not be based solely on RIP data. Additionally, RIP produces a snapshot of conditions the year in which the data was collected. For further information or to obtain additional Pavement Management System's data from our Highway Pavement Management Application (HPMA) please contact the Eastern Federal Lands pavement team.



ANTI: DCV ROAD CONDITION SUMMARY

DCV - Data Collection Vehicle

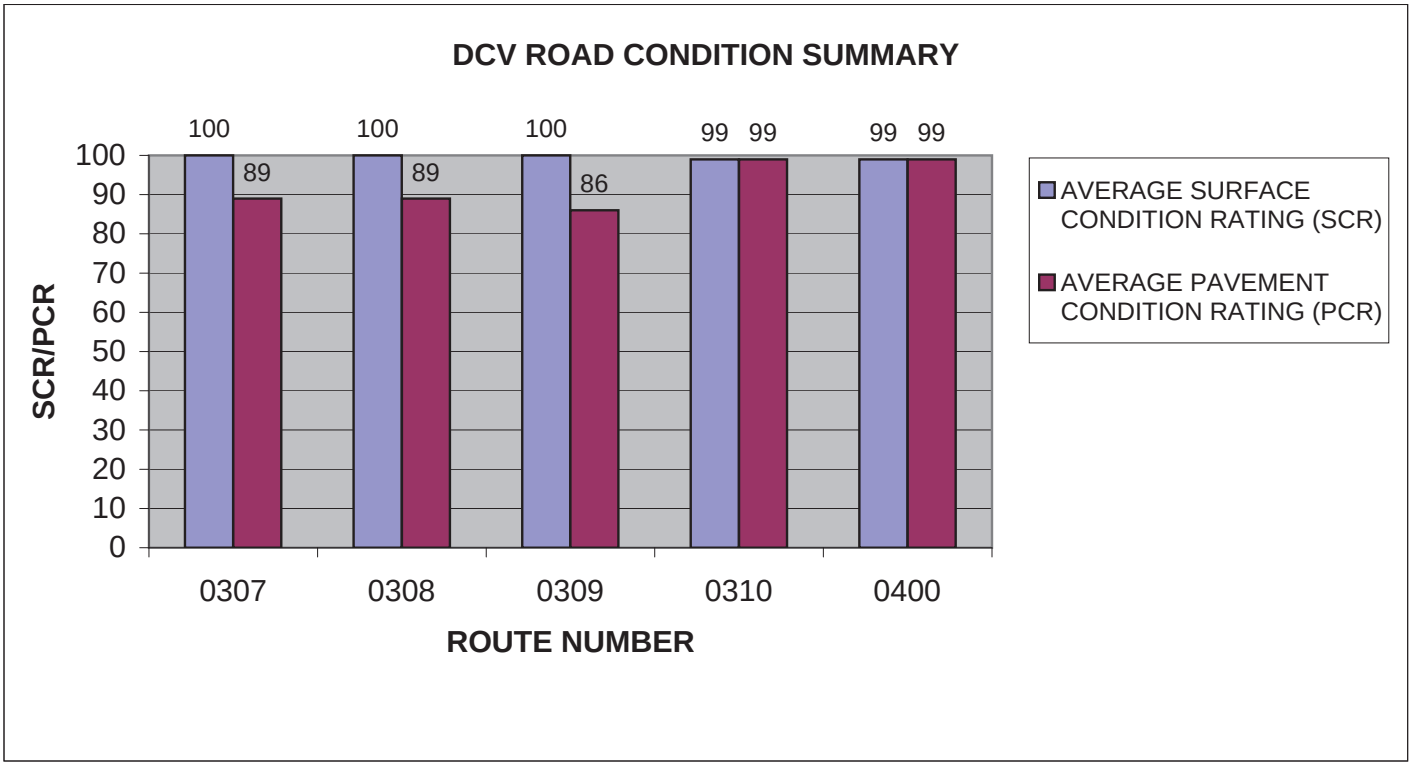
ROUTE NUMBER	ROUTE NAME	FUNCT CLASS	PAVED LENGTH	SURFACE TYPE	AVERAGE SURFACE CONDITION RATING (SCR)	AVERAGE PAVEMENT CONDITION RATING (PCR)
0300	OLD MARYLAND ROUTE 65	1	1.18	ASPHALT	100	100
0302	STARKE AVENUE	2	0.18	ASPHALT	100	100
0303	CORNFIELD AVENUE	1	0.36	ASPHALT	100	100
0304	MANSFIELD AVENUE	1	0.73	ASPHALT	100	83
0305	MUMMA LANE	1	0.59	ASPHALT	100	96



ANTI: DCV ROAD CONDITION SUMMARY

DCV - Data Collection Vehicle

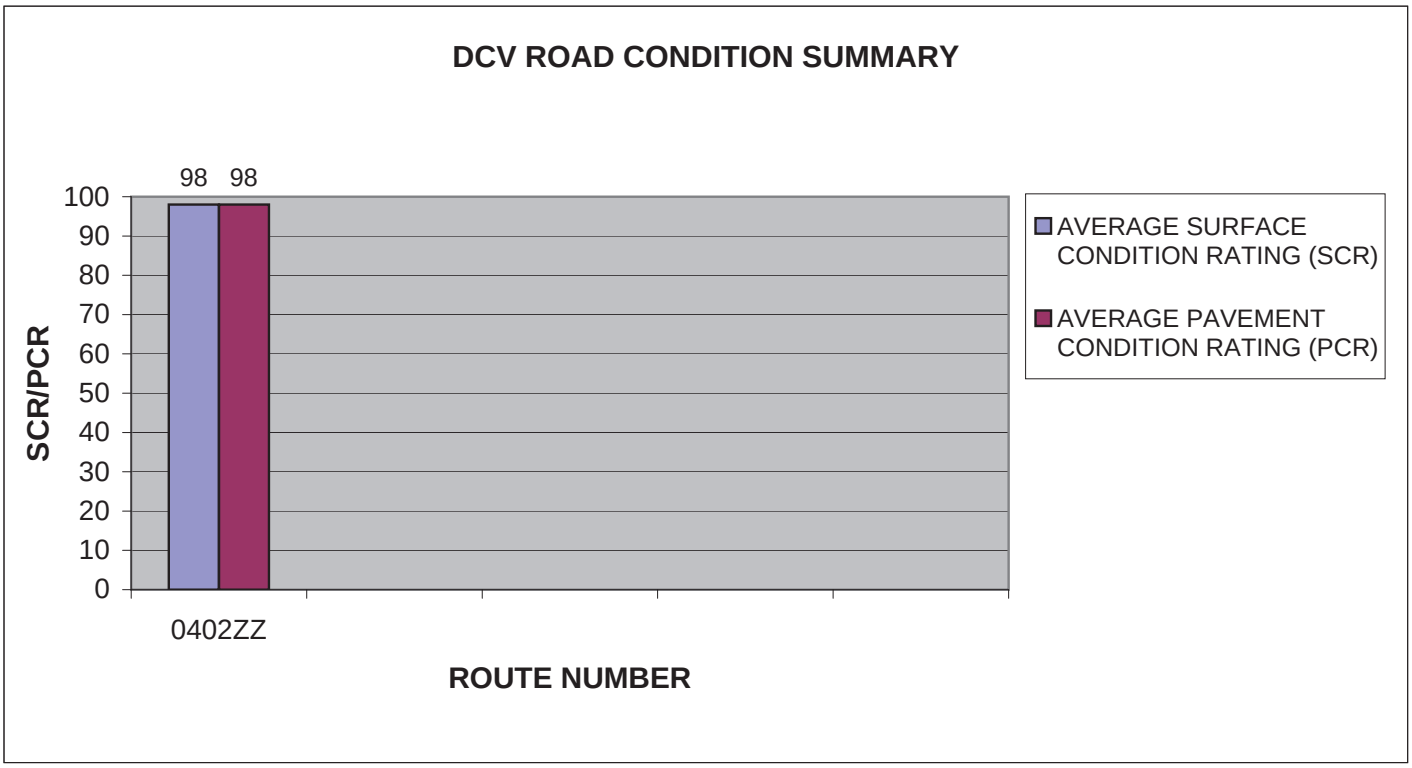
ROUTE NUMBER	ROUTE NAME	FUNCT CLASS	PAVED LENGTH	SURFACE TYPE	AVERAGE SURFACE CONDITION RATING (SCR)	AVERAGE PAVEMENT CONDITION RATING (PCR)
0307	RICHARDSON AVENUE	1	1.11	ASPHALT	100	89
0308	RODMAN AVENUE	1	0.53	ASPHALT	100	89
0309	BRANCH AVENUE	1	0.89	ASPHALT	100	86
0310	OLD BURNSIDE BRIDGE ROAD	1	0.49	ASPHALT	99	99
0400	PIPER LANE	3	0.19	ASPHALT	99	99



ANTI: DCV ROAD CONDITION SUMMARY

DCV - Data Collection Vehicle

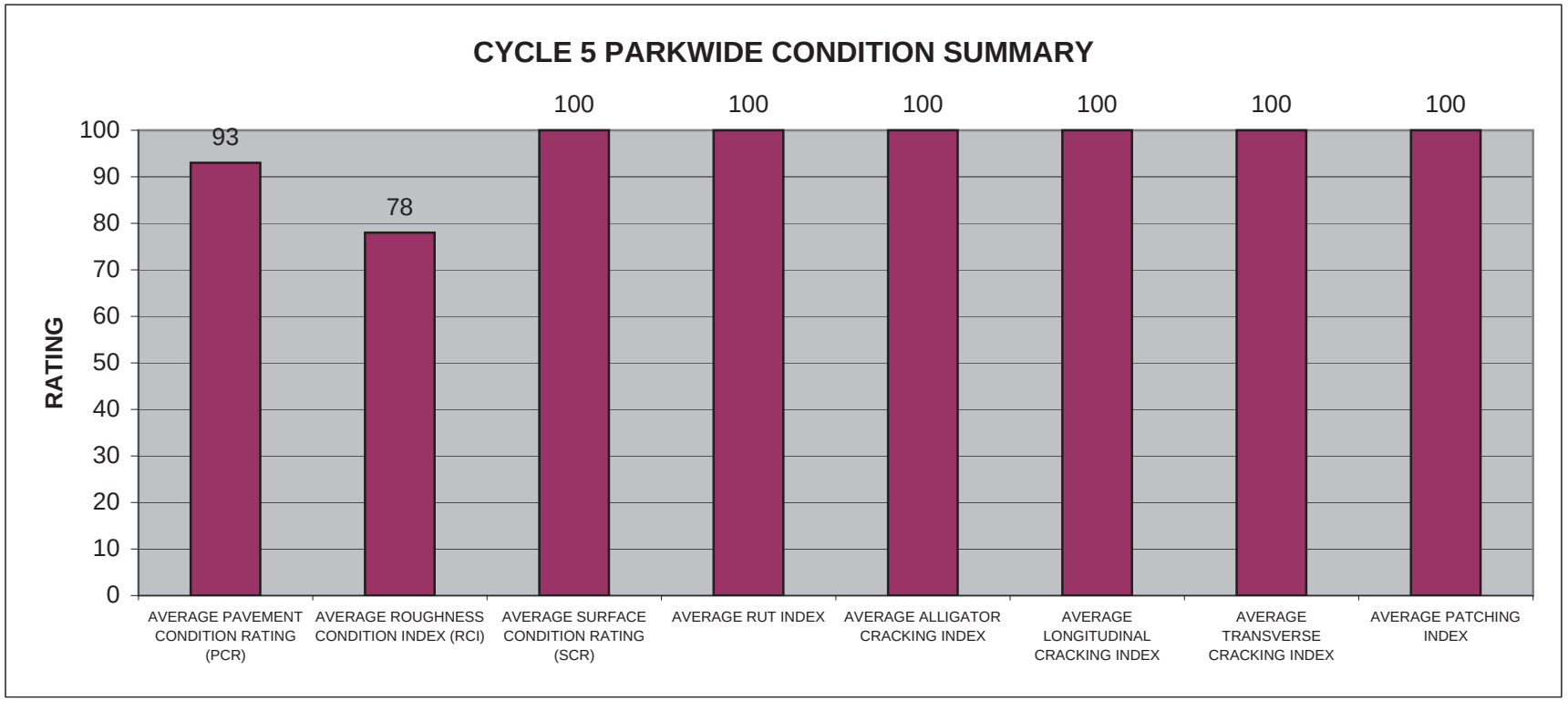
ROUTE NUMBER	ROUTE NAME	FUNCT CLASS	PAVED LENGTH	SURFACE TYPE	AVERAGE SURFACE CONDITION RATING (SCR)	AVERAGE PAVEMENT CONDITION RATING (PCR)
0402ZZ	PRY HOUSE ACCESS ROAD	3	0.26	ASPHALT	98	98



ANTI: PARKWIDE DCV CONDITION SUMMARY

AVERAGE PAVEMENT CONDITION RATING (PCR)	AVERAGE ROUGHNESS CONDITION INDEX (RCI)	AVERAGE SURFACE CONDITION RATING (SCR)	AVERAGE RUT INDEX	AVERAGE ALLIGATOR CRACKING INDEX	AVERAGE LONGITUDINAL CRACKING INDEX	AVERAGE TRANSVERSE CRACKING INDEX	AVERAGE PATCHING INDEX
93	78	100	100	100	100	100	100

All Index values are based on Data Collection Vehicle (DCV) driven roads that were collected in Cycle-5.
Roughness data is only collected on routes with lengths greater than 0.5 miles and a posted speed limit of 25 MPH or greater.

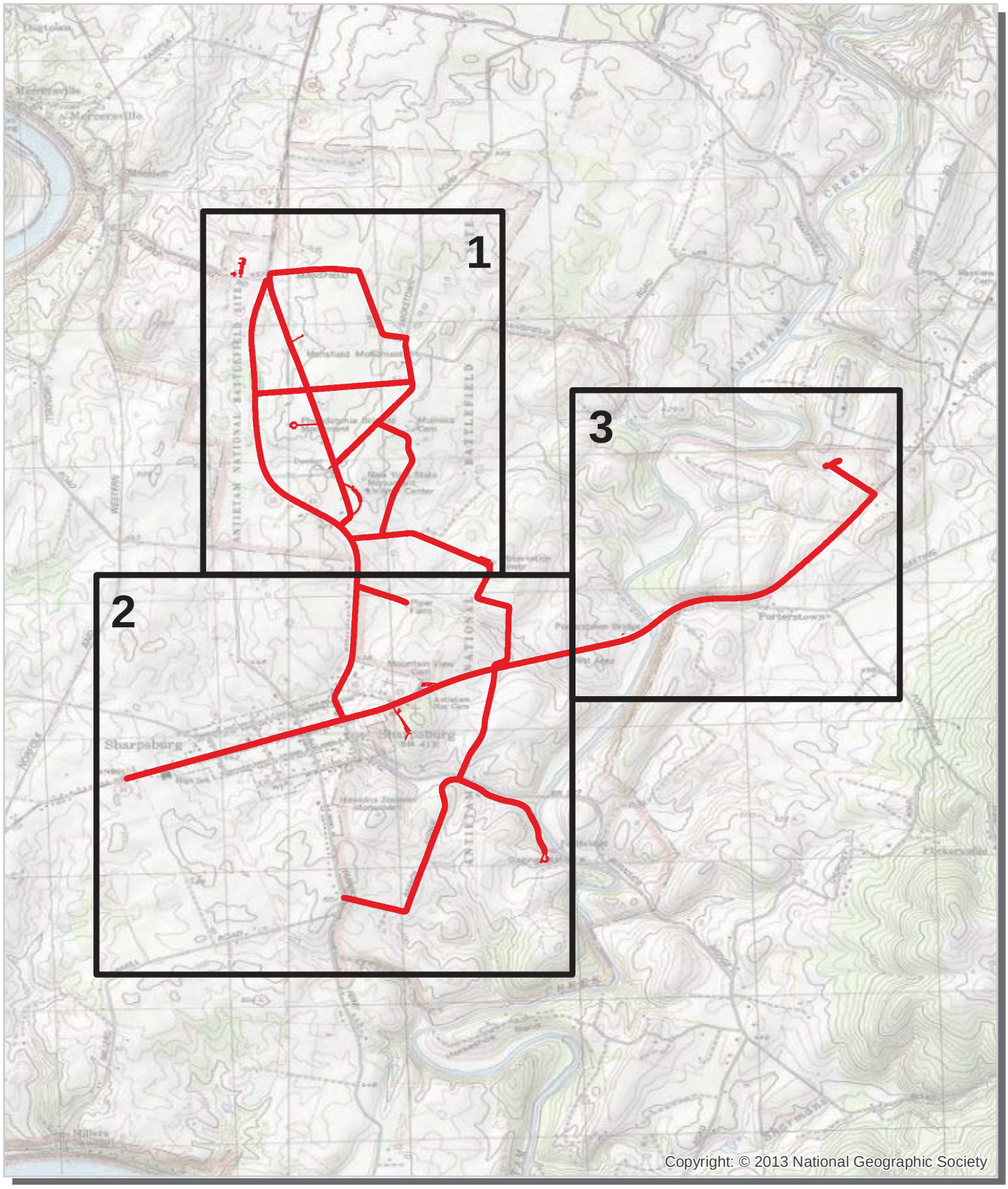


Section 4
Park Route Location Maps

Antietam National Battlefield

Federal Lands Highway
Road Inventory Program

Antietam National Battlefield
Route Location Map
Key Map

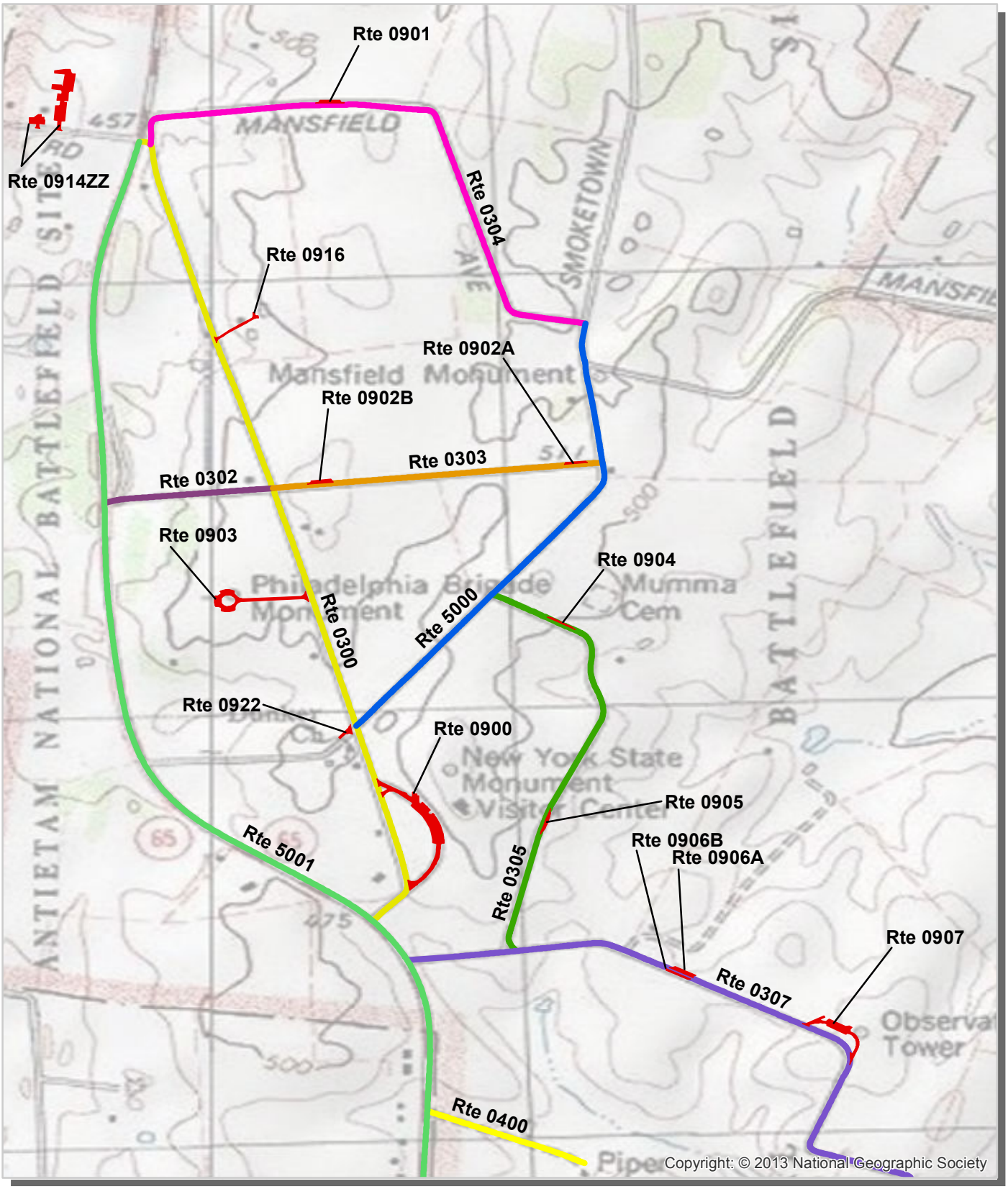


Cycle 5 Collected Routes

1 0.5 0 1 Miles

N

Antietam National Battlefield
Route Location Map
Area 1

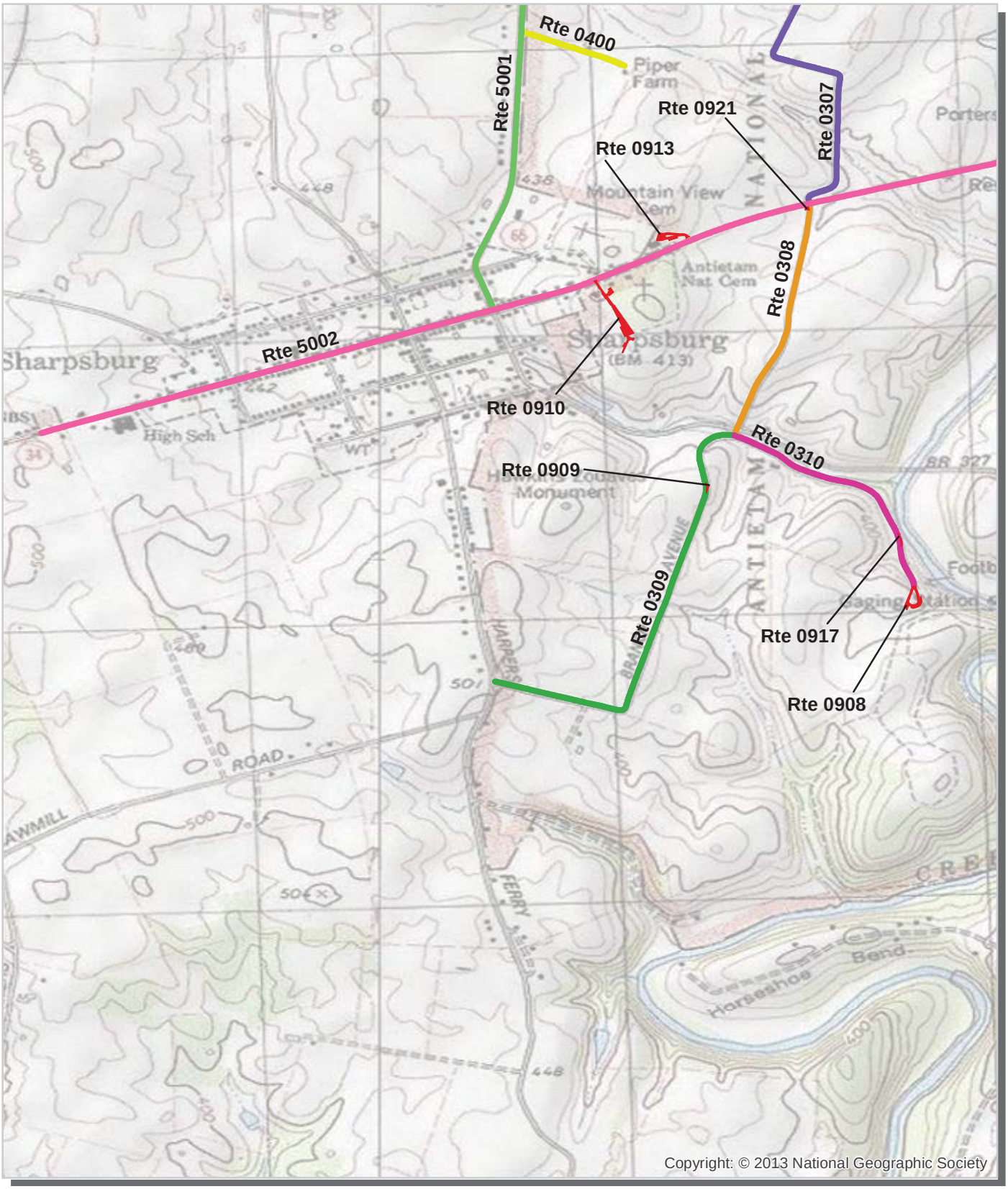


Unique colors used to differentiate routes

0.4 0.2 0 0.4 Miles

N

Antietam National Battlefield
Route Location Map
Area 2

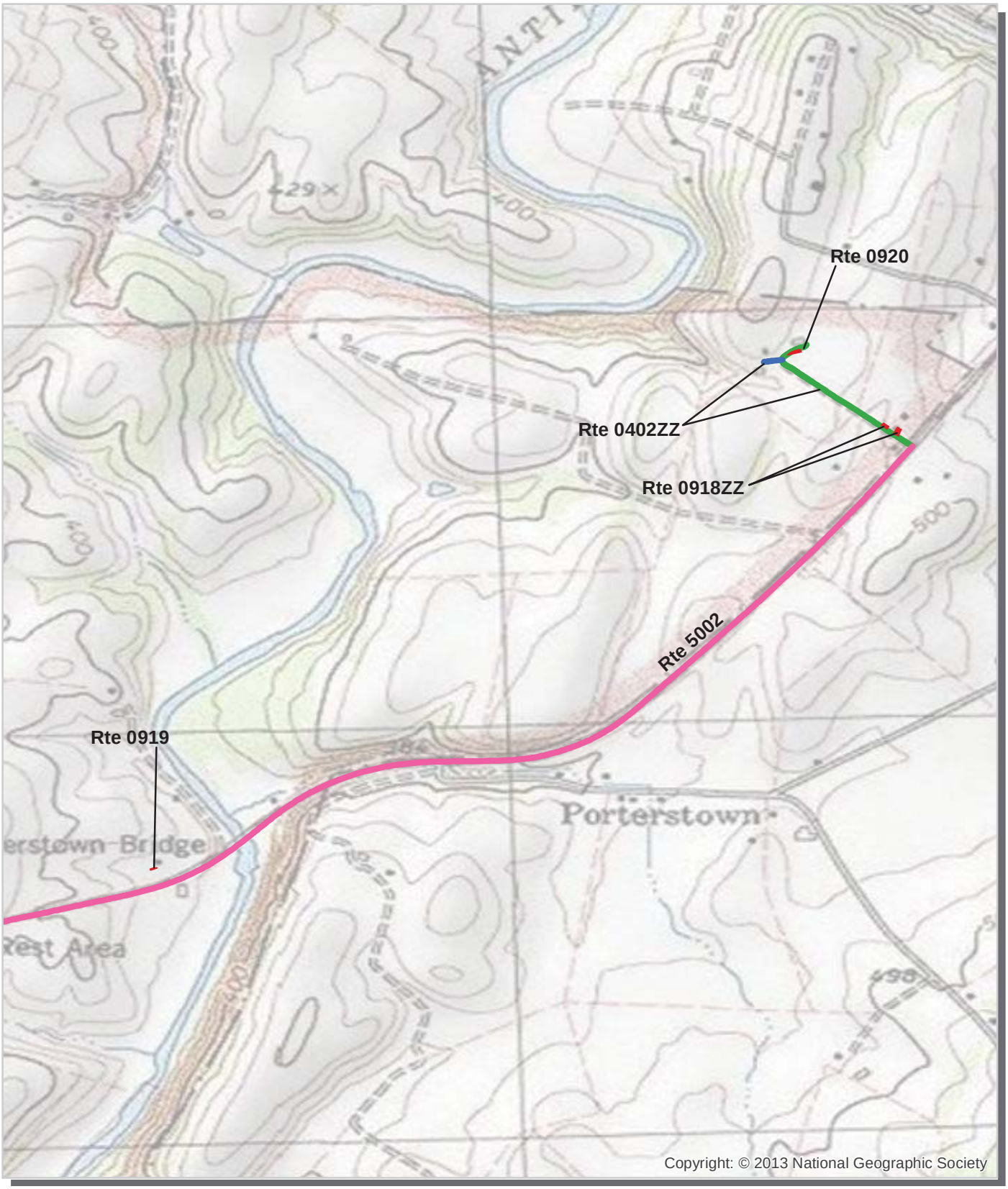


Unique colors used to differentiate routes

0.5 0.25 0 0.5 Miles

N

Antietam National Battlefield
Route Location Map
Area 3

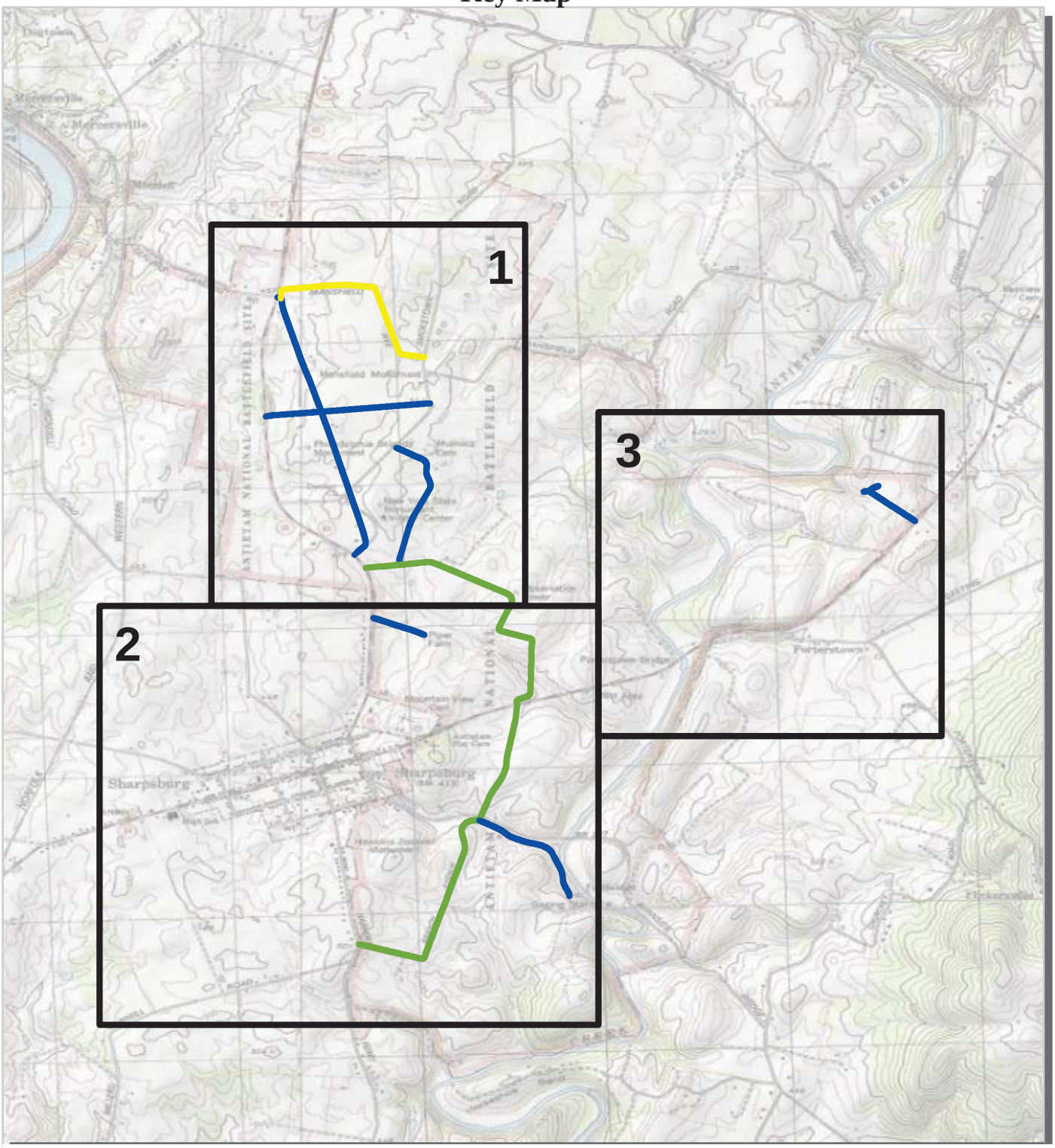


Unique colors used to differentiate routes

0.4 0.2 0 0.4 Miles

N

Antietam National Battlefield
Route Condition Map
PCR - Mile by Mile
Key Map



PCR	Poor	Fair	Good	Excellent	No Data
	(0 - 60)	(61 - 84)	(85 - 94)	(95 - 100)	

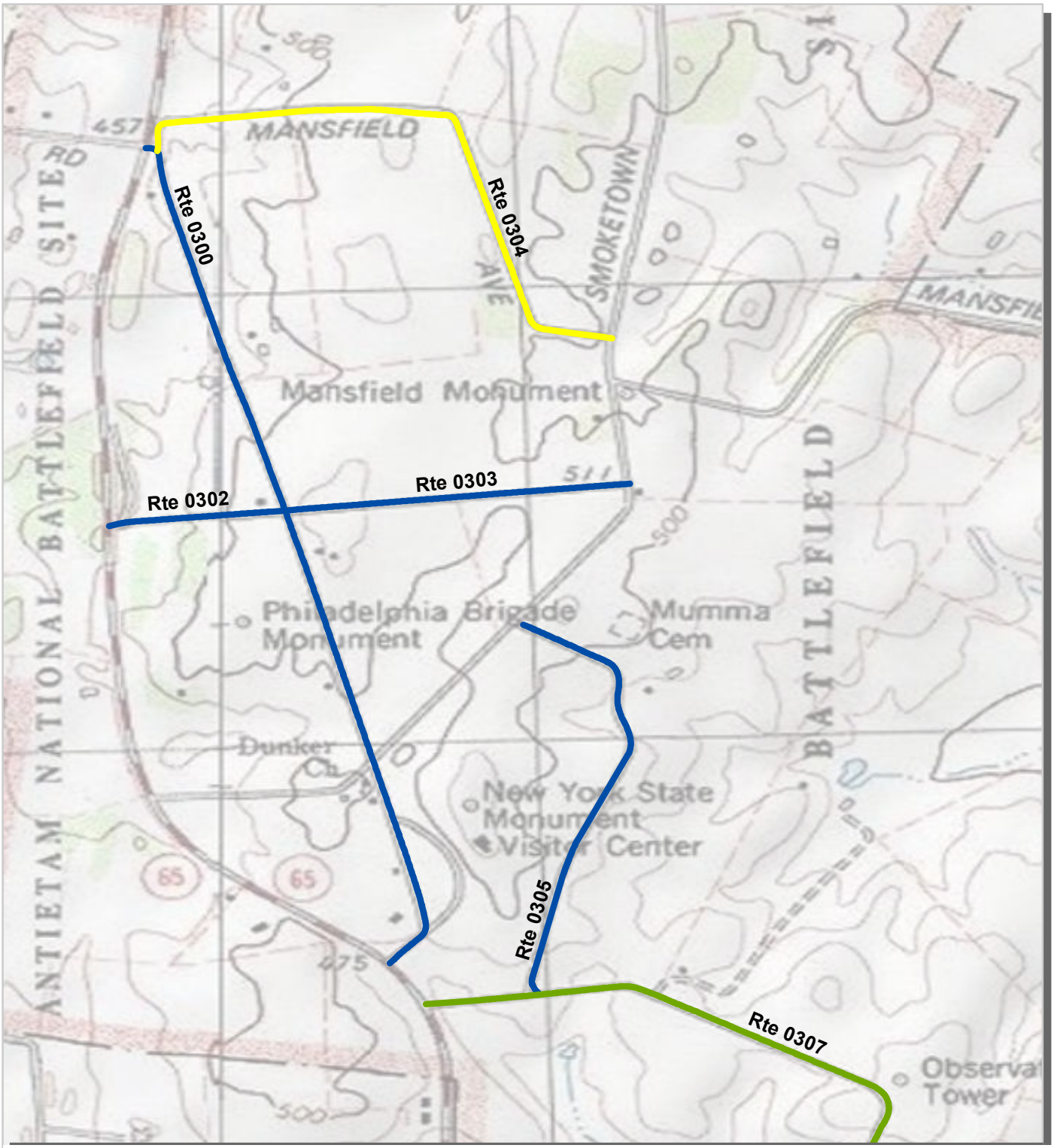
* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

Note: Only routes collected by the DCV in Cycle-5 are displayed.

1 0.5 0 1 Miles

N

Antietam National Battlefield
Route Condition Map
PCR - Mile by Mile
Area 1



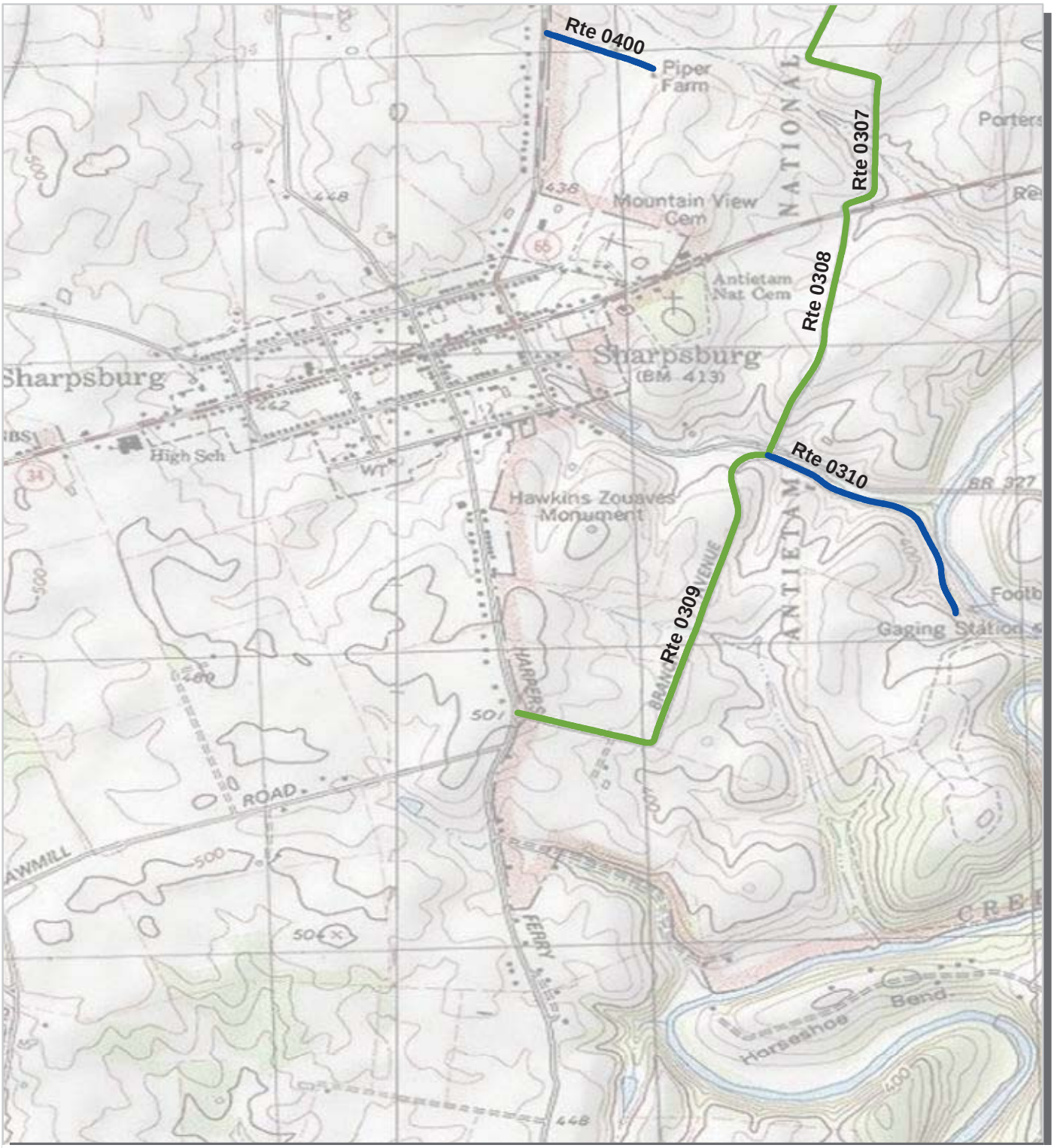
PCR	Poor	Fair	Good	Excellent	No Data
	(0 - 60)	(61 - 84)	(85 - 94)	(95 - 100)	

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

0.4 0.2 0 0.4 Miles

N

Antietam National Battlefield
Route Condition Map
PCR - Mile by Mile
Area 2



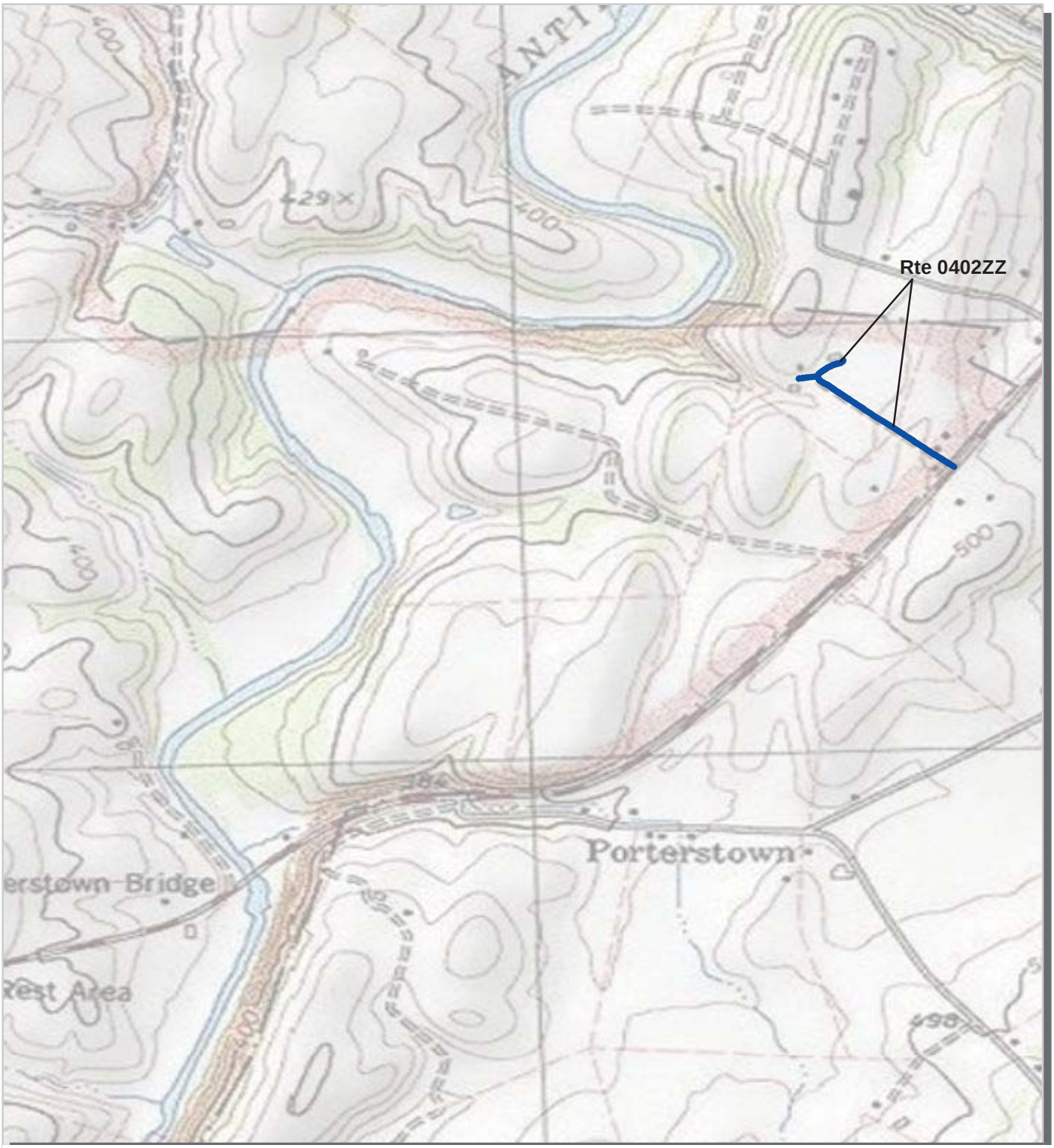
PCR	Poor	Fair	Good	Excellent	No Data
	(0 - 60)	(61 - 84)	(85 - 94)	(95 - 100)	

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

0.5 0.25 0 0.5 Miles

N

Antietam National Battlefield
Route Condition Map
PCR - Mile by Mile
Area 3



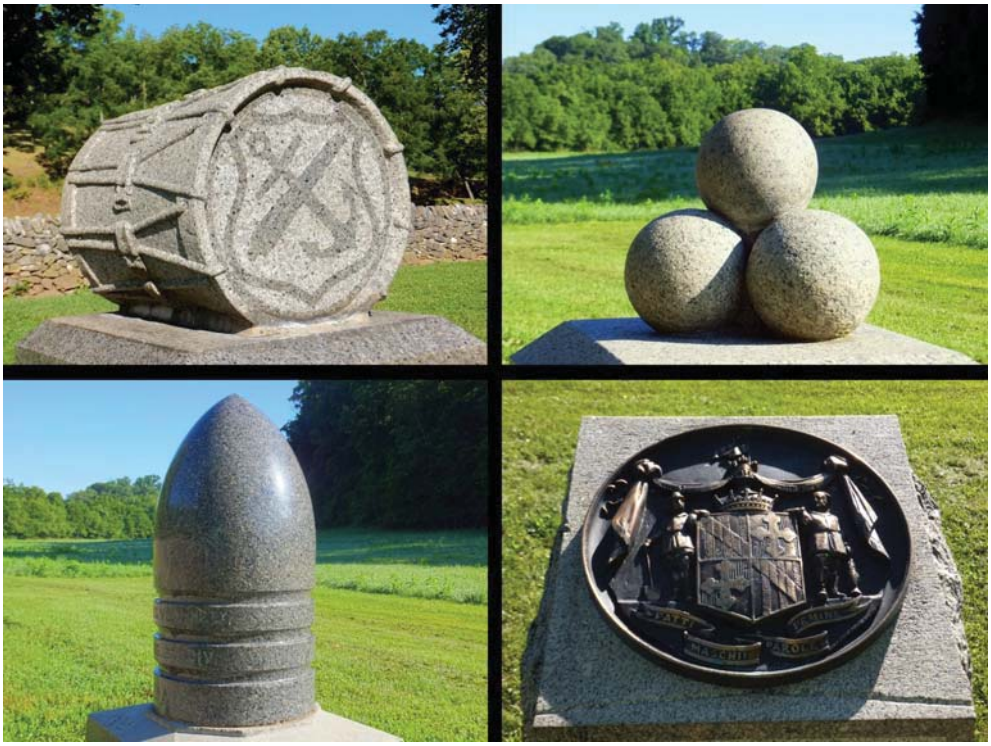
PCR	Poor	Fair	Good	Excellent	No Data
	(0 - 60)	(61 - 84)	(85 - 94)	(95 - 100)	

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

0.4 0.2 0 0.4 Miles

N

Section 5
Paved Route
Condition Rating Sheets



Antietam National Battlefield

Federal Lands Highway
Road Inventory Program

PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0300 OLD MARYLAND ROUTE 65
ANTI : ANTIETAM NATIONAL BATTLEFIELD

COLLECTED: 2/25/2013

NATIONAL CAPITAL REGION **TOTAL LENGTH: 1.18 Miles**

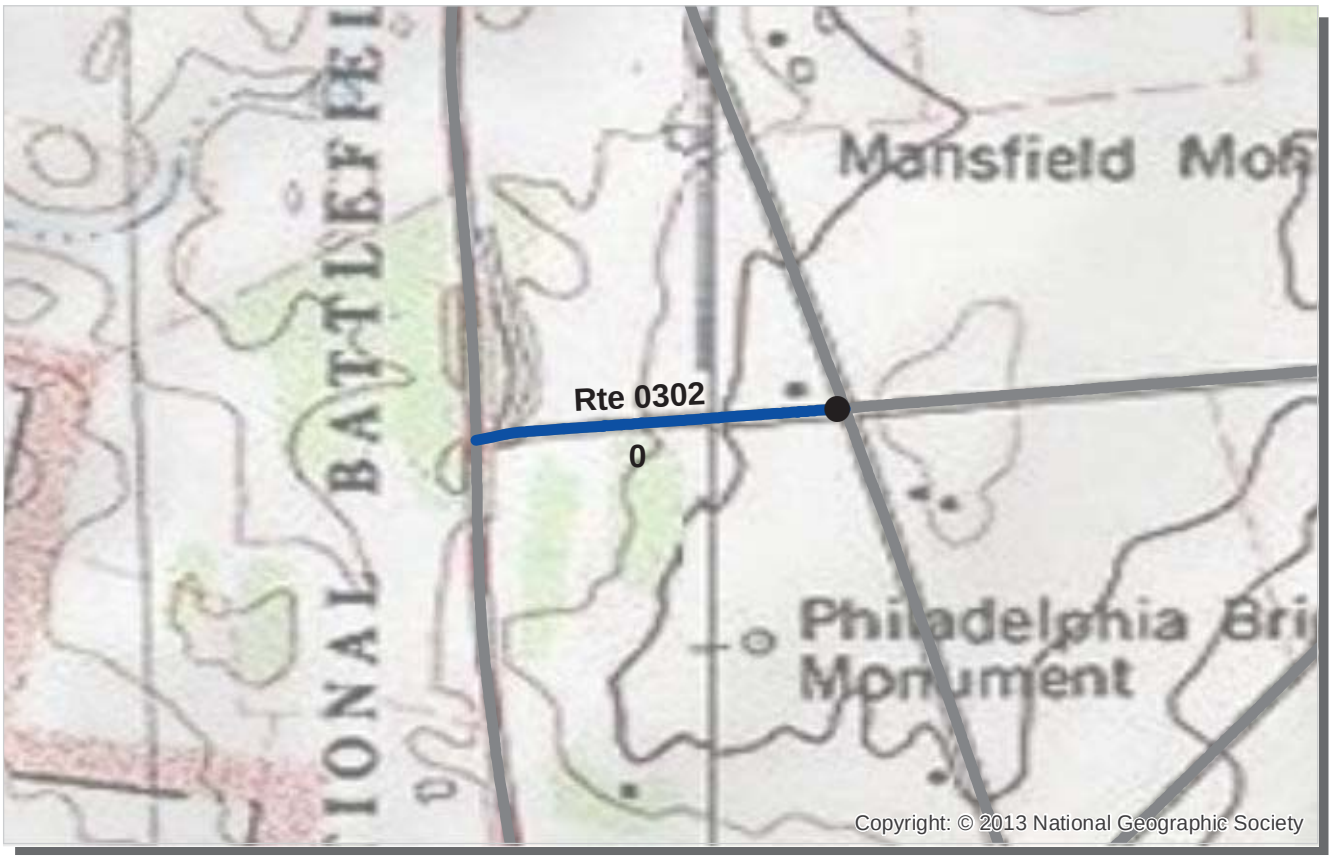
Section Number	0	1			
Section Length (mi)	1.00	0.18			
Cross Section Information					
Number of Lanes	2	2			
Paved Width (ft)	24	24			
Lane Width (ft)	12	12			
Roadway Condition Information					
SCR (Surface Condition Rating)	100	100			
PCR (Pavement Condition Rating)	100	100			
Distress Index Values					
Structural Crack Index	100	100			
Transverse Cracking Index	100	100			
Patching Index	100	100			
Rutting Index	100	100			
Roughness Condition Index (RCI)	100	100			

NOTES:

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.

See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected N/A - Not Applicable



PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0302 STARKE AVENUE
ANTI : ANTIETAM NATIONAL BATTLEFIELD

COLLECTED: 2/25/2013

NATIONAL CAPITAL REGION **TOTAL LENGTH: 0.18 Miles**

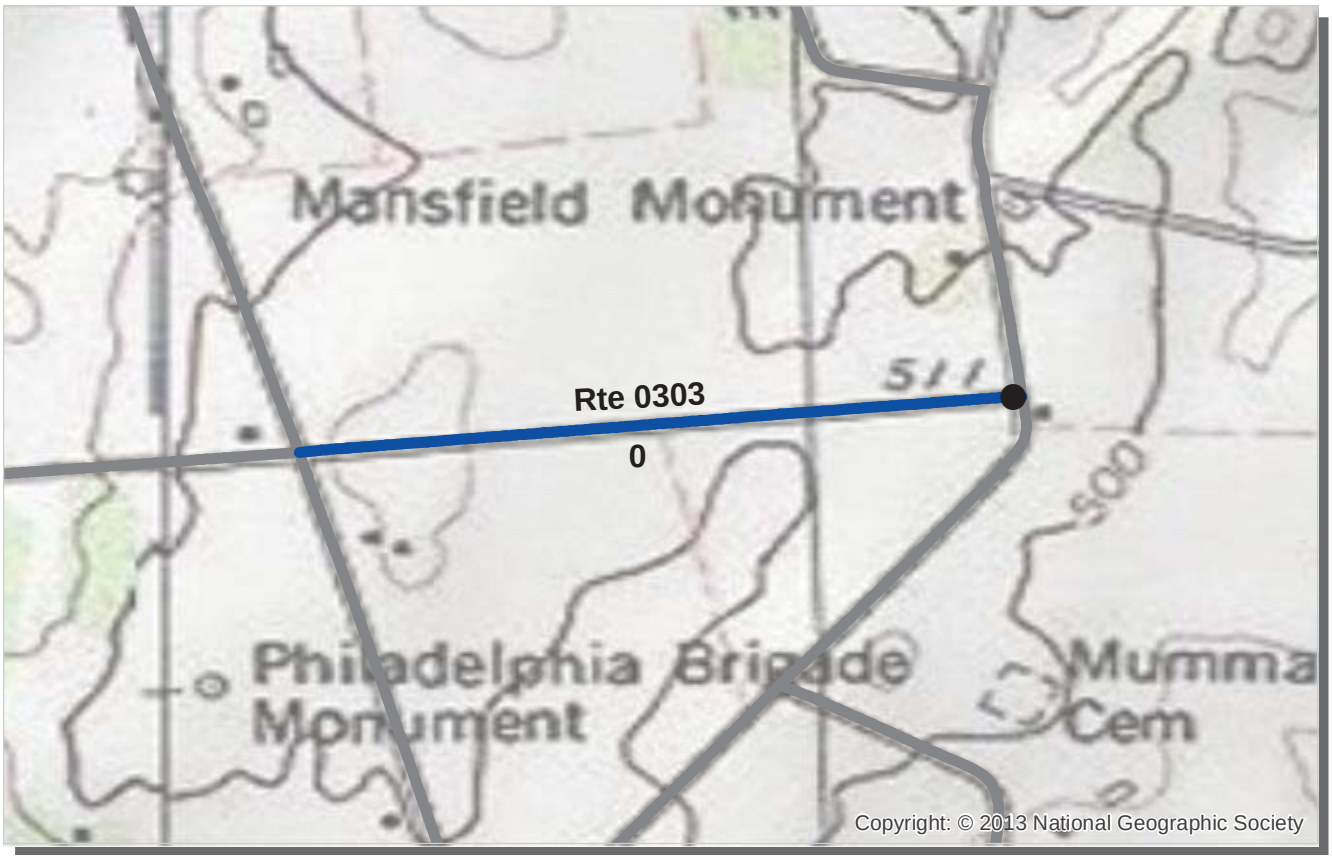
Section Number	0				
Section Length (mi)	0.18				
Cross Section Information					
Number of Lanes	2				
Paved Width (ft)	18				
Lane Width (ft)	8				
Roadway Condition Information					
SCR (Surface Condition Rating)	100				
PCR (Pavement Condition Rating)	100				
Distress Index Values					
Structural Crack Index	100				
Transverse Cracking Index	100				
Patching Index	100				
Rutting Index	100				
Roughness Condition Index (RCI)	NC				

NOTES:

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.

See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected N/A - Not Applicable



PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0303 CORNFIELD AVENUE
ANTI : ANTIETAM NATIONAL BATTLEFIELD

COLLECTED: 2/25/2013

NATIONAL CAPITAL REGION **TOTAL LENGTH: 0.36 Miles**

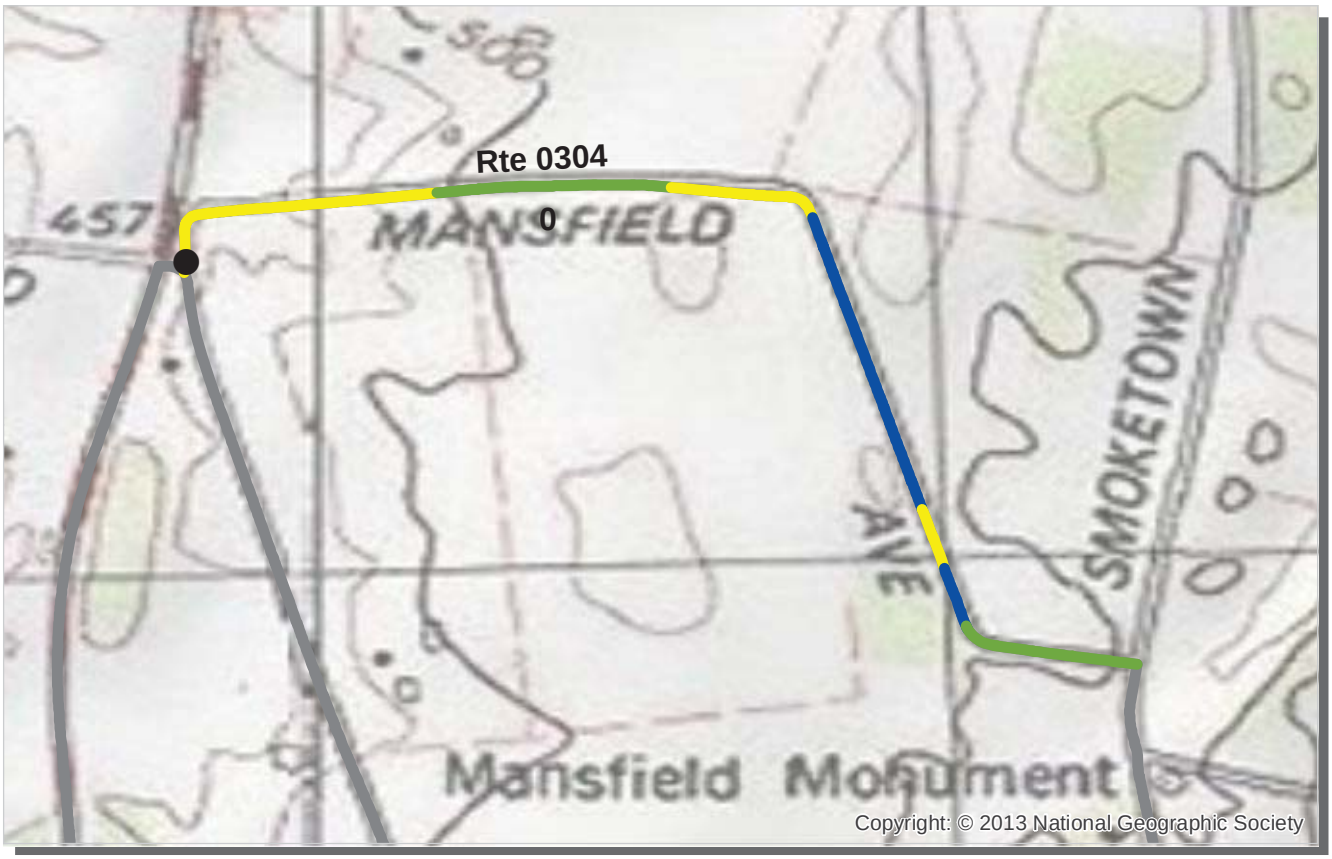
Section Number	0				
Section Length (mi)	0.36				
Cross Section Information					
Number of Lanes	2				
Paved Width (ft)	18				
Lane Width (ft)	9				
Roadway Condition Information					
SCR (Surface Condition Rating)	100				
PCR (Pavement Condition Rating)	100				
Distress Index Values					
Structural Crack Index	100				
Transverse Cracking Index	100				
Patching Index	100				
Rutting Index	100				
Roughness Condition Index (RCI)	NC				

NOTES:

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.

See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected N/A - Not Applicable



PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0304 MANSFIELD AVENUE
ANTI : ANTIETAM NATIONAL BATTLEFIELD

COLLECTED: 2/25/2013

NATIONAL CAPITAL REGION **TOTAL LENGTH: 0.73 Miles**

Section Number	0				
Section Length (mi)	0.73				
Cross Section Information					
Number of Lanes	2				
Paved Width (ft)	20				
Lane Width (ft)	10				
Roadway Condition Information					
SCR (Surface Condition Rating)	100				
PCR (Pavement Condition Rating)	83				
Distress Index Values					
Structural Crack Index	100				
Transverse Cracking Index	100				
Patching Index	100				
Rutting Index	100				
Roughness Condition Index (RCI)	58				

NOTES:

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.

See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected N/A - Not Applicable

PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0305 MUMMA LANE
ANTI : ANTIETAM NATIONAL BATTLEFIELD

COLLECTED: 2/25/2013

NATIONAL CAPITAL REGION **TOTAL LENGTH: 0.59 Miles**

Section Number	0				
Section Length (mi)	0.59				
Cross Section Information					
Number of Lanes	2				
Paved Width (ft)	17				
Lane Width (ft)	11				
Roadway Condition Information					
SCR (Surface Condition Rating)	100				
PCR (Pavement Condition Rating)	96				
Distress Index Values					
Structural Crack Index	100				
Transverse Cracking Index	100				
Patching Index	100				
Rutting Index	100				
Roughness Condition Index (RCI)	91				

NOTES:
Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.
See Section 10 for explanation of SCR, PCR, & all Distress Index Values.
NC - Not Collected N/A - Not Applicable

PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0307 RICHARDSON AVENUE
ANTI : ANTIETAM NATIONAL BATTLEFIELD

COLLECTED: 2/25/2013

NATIONAL CAPITAL REGION **TOTAL LENGTH: 1.11 Miles**

Section Number	0	1			
Section Length (mi)	1.00	0.11			
Cross Section Information					
Number of Lanes	2	1			
Paved Width (ft)	18	16			
Lane Width (ft)	12	16			
Roadway Condition Information					
SCR (Surface Condition Rating)	100	100			
PCR (Pavement Condition Rating)	89	91			
Distress Index Values					
Structural Crack Index	100	100			
Transverse Cracking Index	100	100			
Patching Index	100	100			
Rutting Index	100	100			
Roughness Condition Index (RCI)	73	77			

NOTES:
Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.
See Section 10 for explanation of SCR, PCR, & all Distress Index Values.
NC - Not Collected N/A - Not Applicable

PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0308 RODMAN AVENUE
ANTI : ANTIETAM NATIONAL BATTLEFIELD

COLLECTED: 2/25/2013

NATIONAL CAPITAL REGION **TOTAL LENGTH: 0.53 Miles**

Section Number	0				
Section Length (mi)	0.53				
Cross Section Information					
Number of Lanes	1				
Paved Width (ft)	16				
Lane Width (ft)	16				
Roadway Condition Information					
SCR (Surface Condition Rating)	100				
PCR (Pavement Condition Rating)	89				
Distress Index Values					
Structural Crack Index	100				
Transverse Cracking Index	100				
Patching Index	100				
Rutting Index	100				
Roughness Condition Index (RCI)	73				

NOTES:
Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.
See Section 10 for explanation of SCR, PCR, & all Distress Index Values.
NC - Not Collected N/A - Not Applicable

PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0309 BRANCH AVENUE
ANTI : ANTIETAM NATIONAL BATTLEFIELD

COLLECTED: 2/25/2013

NATIONAL CAPITAL REGION **TOTAL LENGTH: 0.89 Miles**

Section Number	0				
Section Length (mi)	0.89				
Cross Section Information					
Number of Lanes	1				
Paved Width (ft)	15				
Lane Width (ft)	15				
Roadway Condition Information					
SCR (Surface Condition Rating)	100				
PCR (Pavement Condition Rating)	86				
Distress Index Values					
Structural Crack Index	100				
Transverse Cracking Index	100				
Patching Index	100				
Rutting Index	100				
Roughness Condition Index (RCI)	65				

NOTES:

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.

See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected N/A - Not Applicable

PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0310 OLD BURNSIDE BRIDGE ROAD
ANTI : ANTIETAM NATIONAL BATTLEFIELD

COLLECTED: 2/25/2013

NATIONAL CAPITAL REGION **TOTAL LENGTH: 0.49 Miles**

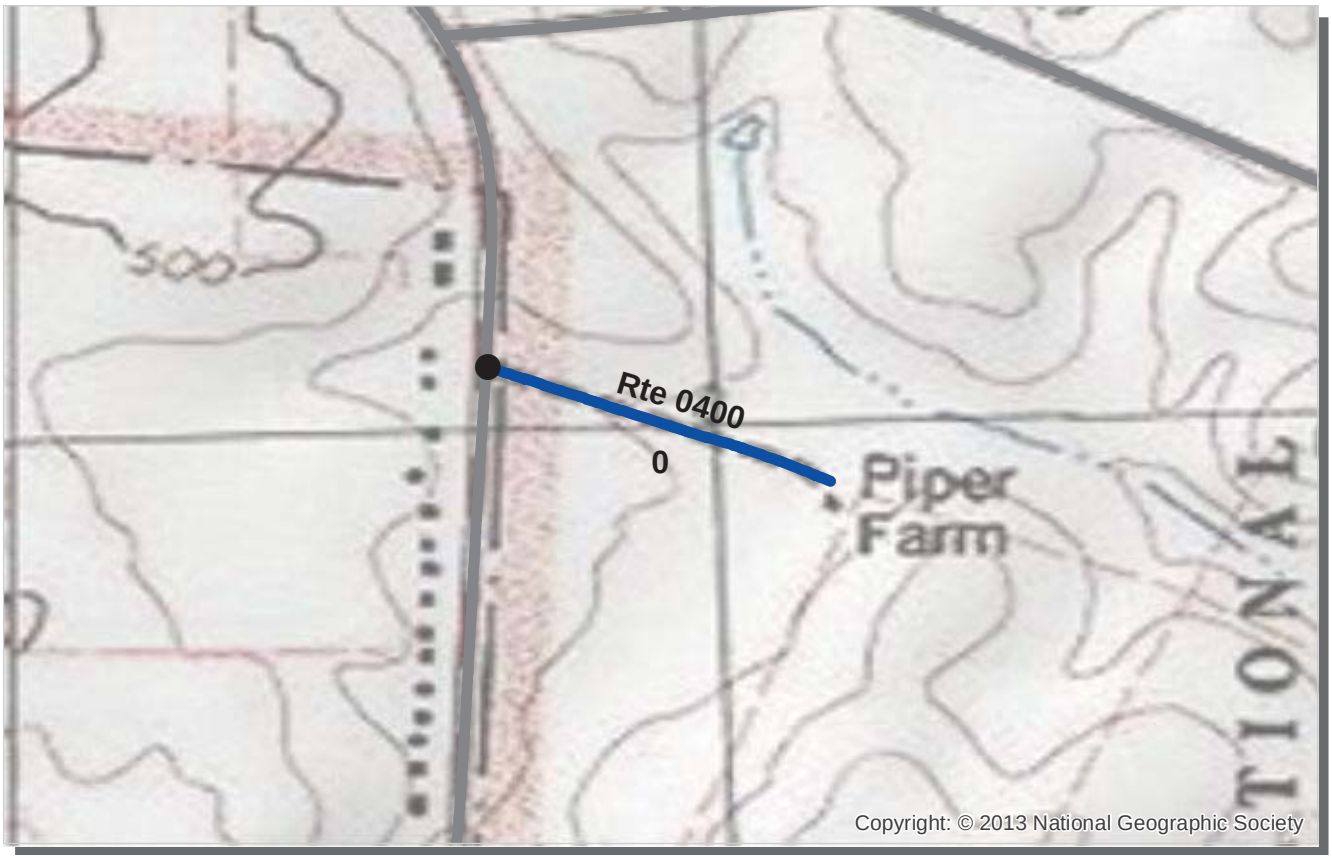
Section Number	0				
Section Length (mi)	0.49				
Cross Section Information					
Number of Lanes	2				
Paved Width (ft)	19				
Lane Width (ft)	9				
Roadway Condition Information					
SCR (Surface Condition Rating)	99				
PCR (Pavement Condition Rating)	99				
Distress Index Values					
Structural Crack Index	100				
Transverse Cracking Index	100				
Patching Index	100				
Rutting Index	99				
Roughness Condition Index (RCI)	NC				

NOTES:

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.

See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected N/A - Not Applicable



PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0400 PIPER LANE
ANTI : ANTIETAM NATIONAL BATTLEFIELD

COLLECTED: 2/25/2013

NATIONAL CAPITAL REGION **TOTAL LENGTH: 0.19 Miles**

Section Number	0				
Section Length (mi)	0.19				
Cross Section Information					
Number of Lanes	1				
Paved Width (ft)	14				
Lane Width (ft)	14				
Roadway Condition Information					
SCR (Surface Condition Rating)	99				
PCR (Pavement Condition Rating)	99				
Distress Index Values					
Structural Crack Index	100				
Transverse Cracking Index	100				
Patching Index	100				
Rutting Index	99				
Roughness Condition Index (RCI)	NC				

NOTES:

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.

See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected N/A - Not Applicable

PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0402ZZ PRY HOUSE ACCESS ROAD
ANTI : ANTIETAM NATIONAL BATTLEFIELD

Summary Record **COLLECTED: 2/25/2013**
NATIONAL CAPITAL REGION **TOTAL LENGTH: 0.26 Miles**

Section Number					
Section Length (mi)					
Cross Section Information					
Number of Lanes	N/A				
Paved Width (ft)	N/A				
Lane Width (ft)	N/A				
Roadway Condition Information					
SCR (Surface Condition Rating)	98				
PCR (Pavement Condition Rating)	98				
Distress Index Values					
Structural Crack Index	N/A				
Transverse Cracking Index	N/A				
Patching Index	N/A				
Rutting Index	N/A				
Roughness Condition Index (RCI)	N/A				

NOTES:
Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.
See Section 10 for explanation of SCR, PCR, & all Distress Index Values.
NC - Not Collected N/A - Not Applicable

PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0402AZ PRY HOUSE ACCESS ROAD A
ANTI : ANTIETAM NATIONAL BATTLEFIELD

Subcomponent Record **COLLECTED: 2/25/2013**

NATIONAL CAPITAL REGION **TOTAL LENGTH: 0.24 Miles**

Section Number	0				
Section Length (mi)	0.24				
Cross Section Information					
Number of Lanes	1				
Paved Width (ft)	14				
Lane Width (ft)	14				
Roadway Condition Information					
SCR (Surface Condition Rating)	98				
PCR (Pavement Condition Rating)	98				
Distress Index Values					
Structural Crack Index	100				
Transverse Cracking Index	100				
Patching Index	100				
Rutting Index	98				
Roughness Condition Index (RCI)	NC				

NOTES:

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.

See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected N/A - Not Applicable

PCR Poor (0 - 60) Fair (61 - 84) Good (85 - 94) Excellent (95 - 100) No Data

* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0402CZ PRY HOUSE ACCESS ROAD C
ANTI : ANTIETAM NATIONAL BATTLEFIELD

Subcomponent Record **COLLECTED: 2/25/2013**
NATIONAL CAPITAL REGION **TOTAL LENGTH: 0.02 Miles**

Section Number	0				
Section Length (mi)	0.02				
Cross Section Information					
Number of Lanes	1				
Paved Width (ft)	14				
Lane Width (ft)	14				
Roadway Condition Information					
SCR (Surface Condition Rating)	95				
PCR (Pavement Condition Rating)	95				
Distress Index Values					
Structural Crack Index	100				
Transverse Cracking Index	100				
Patching Index	100				
Rutting Index	95				
Roughness Condition Index (RCI)	NC				

NOTES:
Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.
See Section 10 for explanation of SCR, PCR, & all Distress Index Values.
NC - Not Collected N/A - Not Applicable

Section 6
Manually Rated Paved Route Condition Rating Sheets

Antietam National Battlefield

Federal Lands Highway
Road Inventory Program

MANUALLY RATED ROUTE CONDITION RATING SHEETS

No data available for this section.

Section 7
Parking Area
Condition Rating Sheets

Antietam National Battlefield

Federal Lands Highway
Road Inventory Program

ANTIETAM NATIONAL BATTLEFIELD
Route 0900
VISITOR CENTER PARKING
FROM ROUTE 0300 (OLD MARYLAND ROUTE 65)
TO ROUTE 0300 (OLD MARYLAND ROUTE 65)

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0900	PUBLIC	7/25/2012	41,358	0.71	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
1	2	0	NO CURB AND GUTTER	CONCRETE CURB	GOOD/90

* Lane miles are based on 11' lane widths

ANTIETAM NATIONAL BATTLEFIELD
Route 0901
CLARA BARTON PARKING
ADJACENT TO ROUTE 0304 (MANSFIELD AVENUE)

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0901	PUBLIC	7/25/2012	2,822	0.05	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	0	0	NO CURB AND GUTTER	NO CURB	GOOD/90

* Lane miles are based on 11' lane widths

100 50 0 100 Feet

ANTIETAM NATIONAL BATTLEFIELD
Route 0902A
CORNFIELD PARKING A
ADJACENT TO ROUTE 0303 (CORNFIELD AVENUE)

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0902A	PUBLIC	7/25/2012	1,612	0.03	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	0	0	NO CURB AND GUTTER	NO CURB	GOOD/90

* Lane miles are based on 11' lane widths

ANTIETAM NATIONAL BATTLEFIELD
Route 0902B
CORNFIELD PARKING B
ADJACENT TO ROUTE 0303 (CORNFIELD AVENUE)

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0902B	PUBLIC	7/25/2012	3,122	0.05	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	0	0	NO CURB AND GUTTER	ASPHALT CURB	GOOD/90

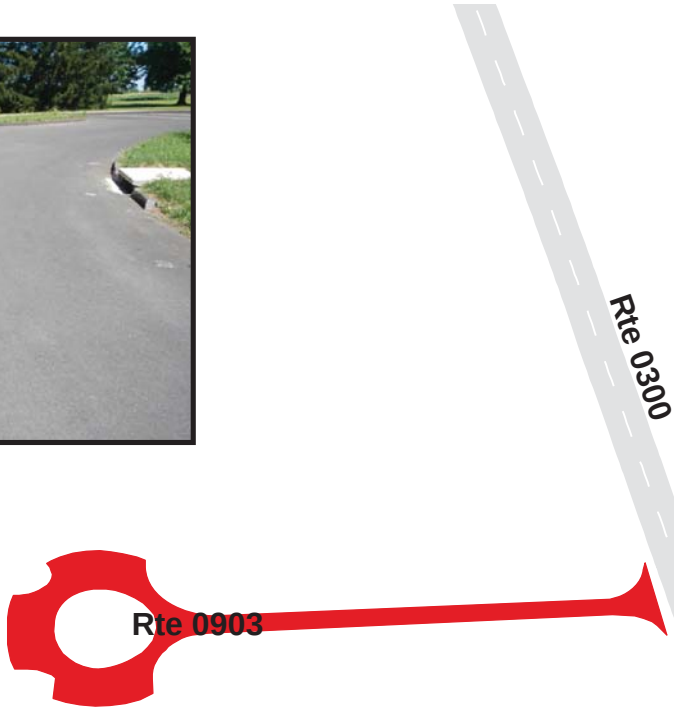
* Lane miles are based on 11' lane widths

100 50 0 100
Feet

ANTIETAM NATIONAL BATTLEFIELD
Route 0903
PHILADELPHIA BRIGADE PARKING
FROM ROUTE 0300 (OLD MARYLAND ROUTE 65)
TO END OF PARKING LOOP

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0903	PUBLIC	7/25/2012	19,806	0.34	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
2	1	0	NO CURB AND GUTTER	ASPHALT CURB	GOOD/90

* Lane miles are based on 11' lane widths



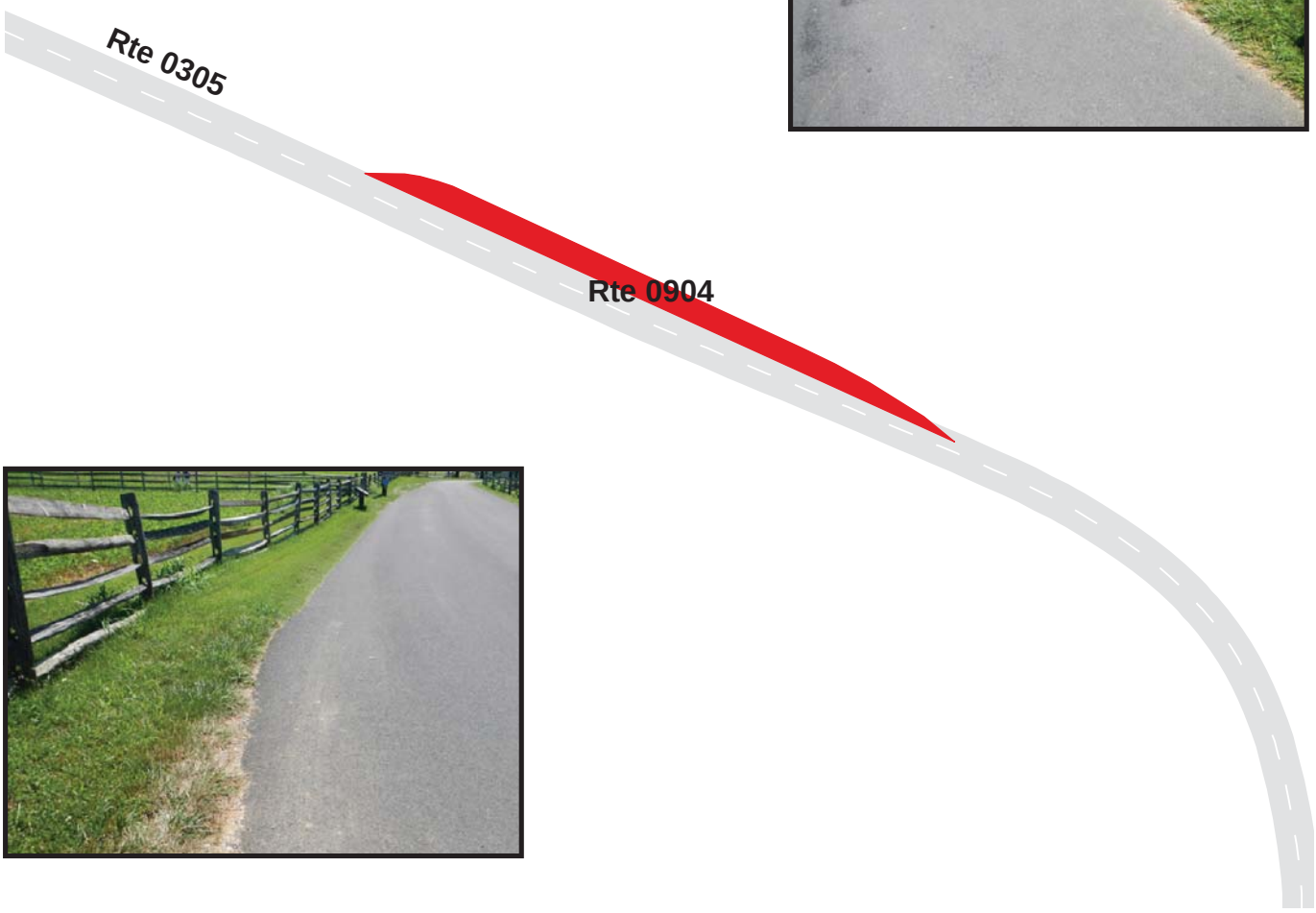
300 150 0 300
Feet

N

ANTIETAM NATIONAL BATTLEFIELD
Route 0904
MUMMA CEMETERY PARKING
ADJACENT TO ROUTE 0305 (MUMMA LANE)

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0904	PUBLIC	7/25/2012	1,318	0.02	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	0	0	NO CURB AND GUTTER	NO CURB	GOOD/90

* Lane miles are based on 11' lane widths



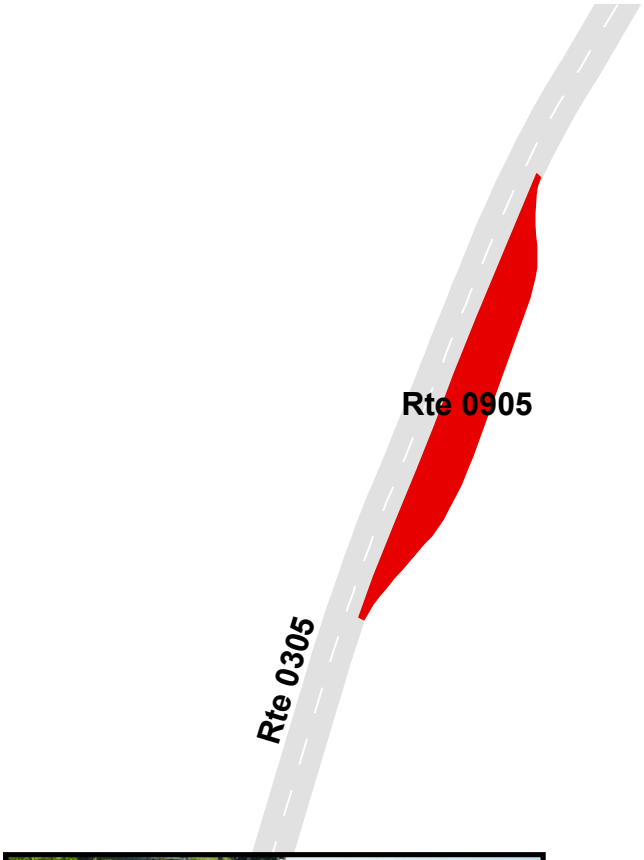
100 50 0 100
Feet

N

ANTIETAM NATIONAL BATTLEFIELD
Route 0905
MUMMA PARKING
ADJACENT TO ROUTE 0305 (MUMMA LANE)

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0905	PUBLIC	7/25/2012	2,388	0.04	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	0	0	CONCRETE CURB AND GUTTER	NO CURB	GOOD/90

* Lane miles are based on 11' lane widths



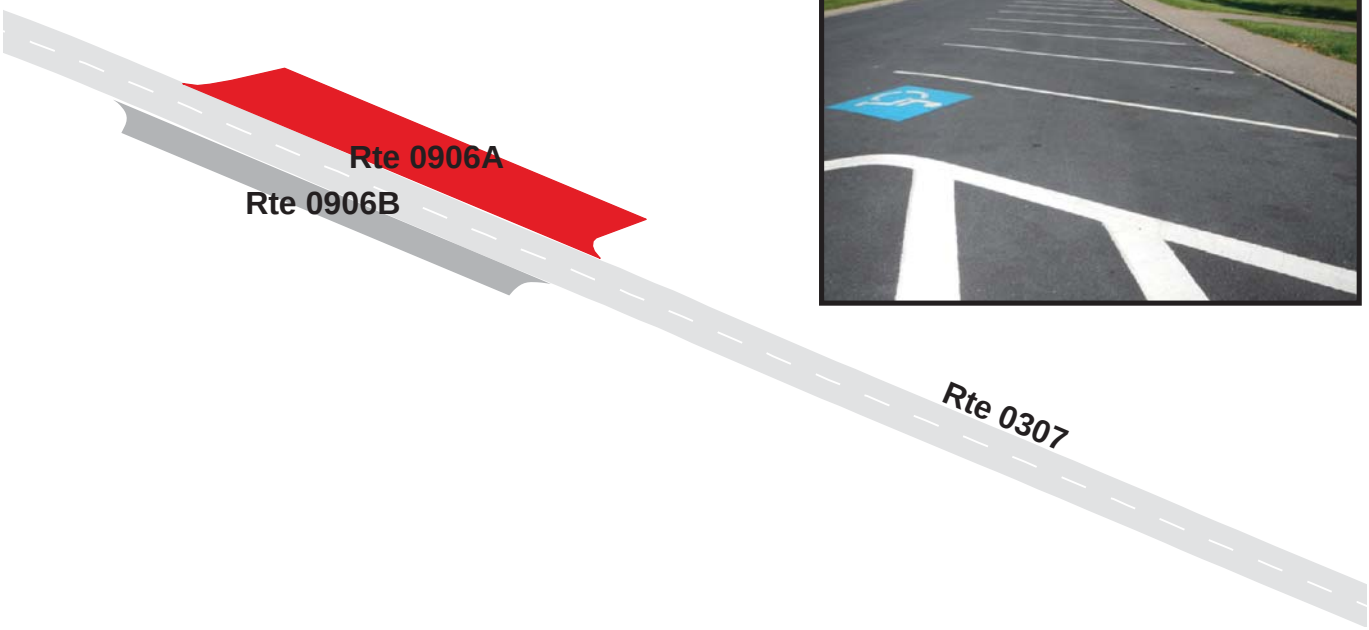
150 75 0 150 Feet

N

ANTIETAM NATIONAL BATTLEFIELD
Route 0906A
BLOODY LANE PARKING A
ADJACENT TO ROUTE 0307 (RICHARDSON AVENUE) ON LEFT

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0906A	PUBLIC	7/25/2012	3,155	0.05	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	1	0	NO CURB AND GUTTER	CONCRETE CURB	GOOD/90

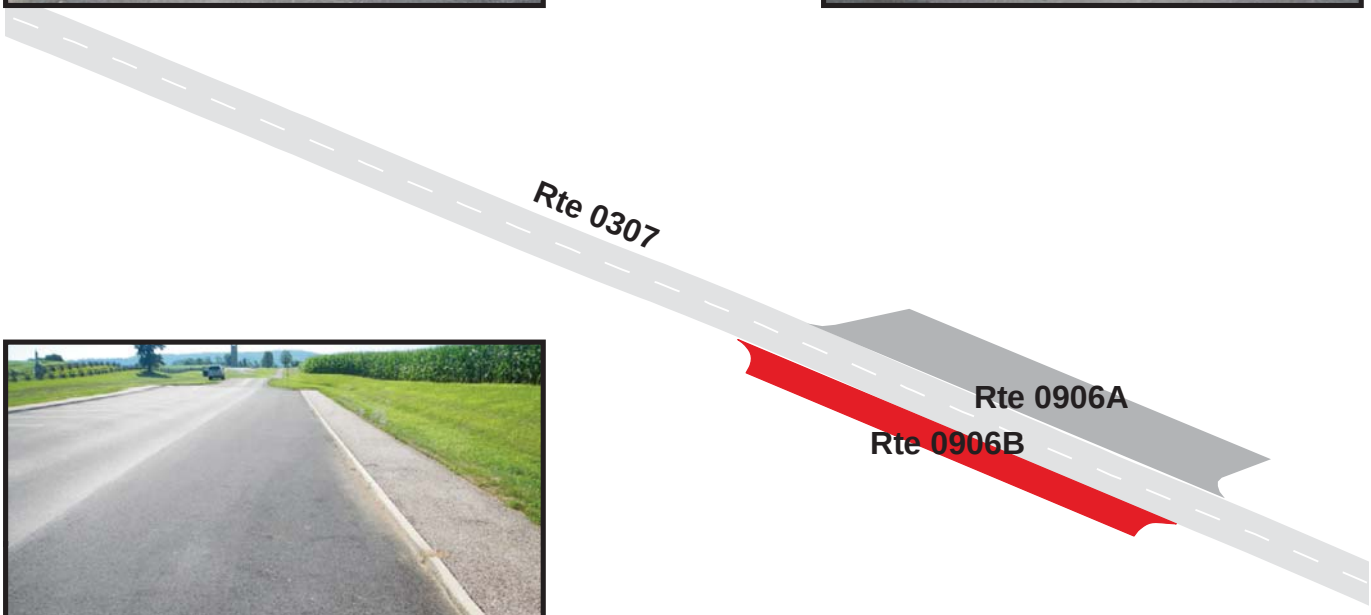
* Lane miles are based on 11' lane widths



ANTIETAM NATIONAL BATTLEFIELD
Route 0906B
BLOODY LANE PARKING B
ADJACENT TO ROUTE 0307 (RICHARDSON AVENUE) ON RIGHT

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0906B	PUBLIC	7/25/2012	1,722	0.03	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	0	0	NO CURB AND GUTTER	CONCRETE CURB	GOOD/90

* Lane miles are based on 11' lane widths



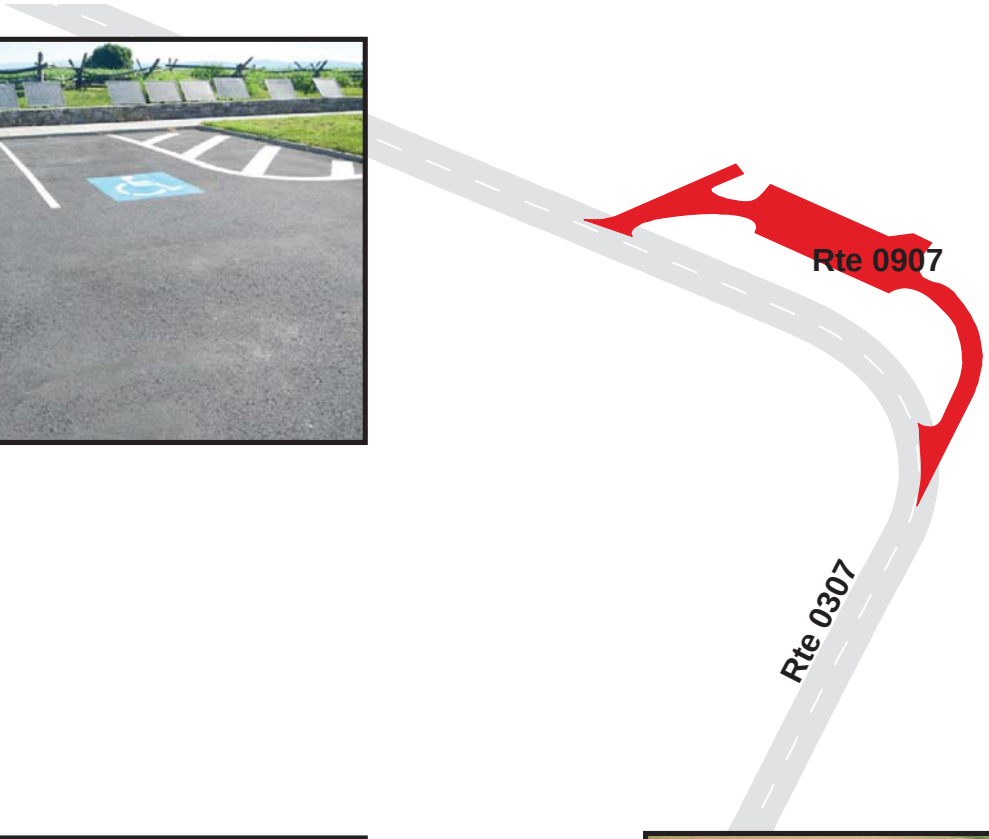
150 75 0 150
Feet

N

ANTIETAM NATIONAL BATTLEFIELD
Route 0907
OBSERVATION TOWER PARKING
FROM ROUTE 0307 (RICHARDSON AVENUE)
TO ROUTE 0307 (RICHARDSON AVENUE)

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0907	PUBLIC	7/25/2012	15,489	0.27	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	3	0	NO CURB AND GUTTER	CONCRETE CURB	GOOD/90

* Lane miles are based on 11' lane widths

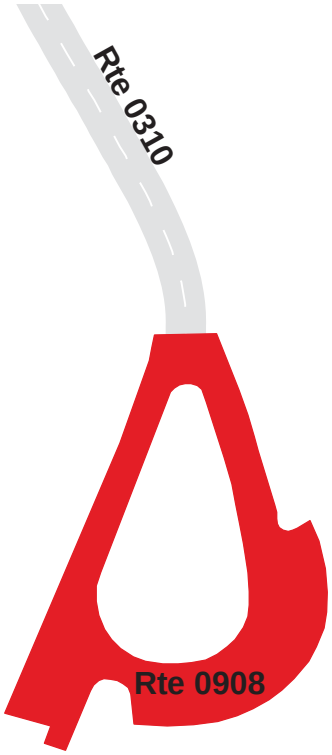


400 200 0 400
Feet

ANTIETAM NATIONAL BATTLEFIELD
Route 0908
BURNSIDE BRIDGE PARKING
FROM END OF ROUTE 0310 (OLD BURNSIDE BRIDGE ROAD)
TO PARKING

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0908	PUBLIC	7/25/2012	15,141	0.26	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	4	1	CONCRETE CURB AND GUTTER	NO CURB	GOOD/90

* Lane miles are based on 11' lane widths



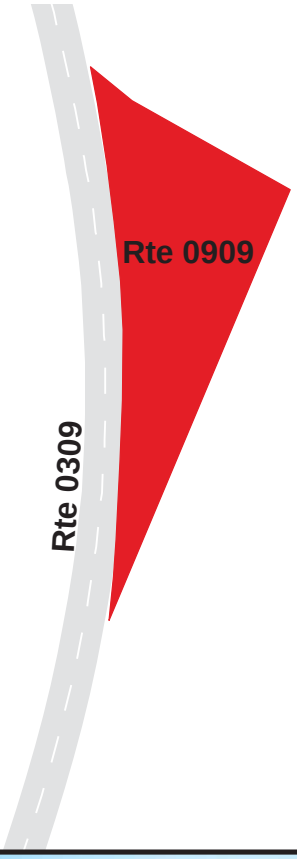
200 100 0 200
Feet

N

ANTIETAM NATIONAL BATTLEFIELD
Route 0909
FINAL ATTACK PARKING
ADJACENT TO ROUTE 0309 (BRANCH AVENUE)

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0909	PUBLIC	7/25/2012	1,643	0.03	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	0	0	NO CURB AND GUTTER	ASPHALT CURB	GOOD/90

* Lane miles are based on 11' lane widths

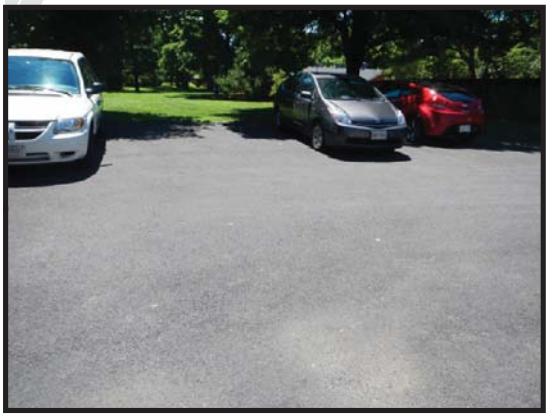


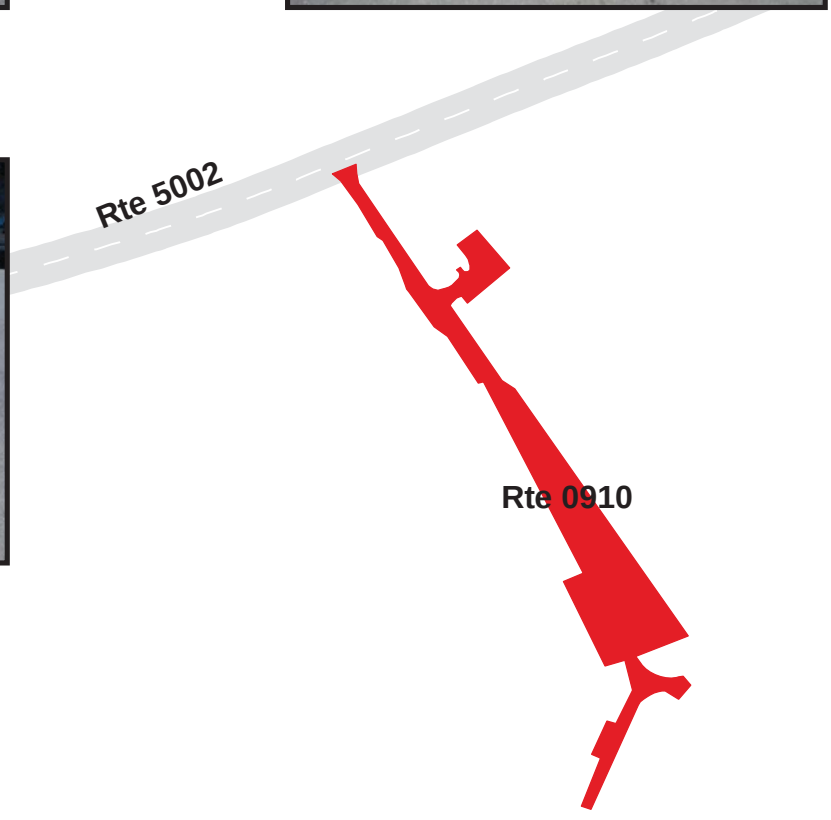
100 50 0 100 Feet

ANTIETAM NATIONAL BATTLEFIELD
Route 0910
MAINTENANCE AREA
FROM ROUTE 5002 (MARYLAND ROUTE 34)
TO MAINTENANCE AREA

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0910	NONPUBLIC	7/25/2012	33,597	0.58	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	0	4	NO CURB AND GUTTER	ASPHALT CURB	GOOD/90

* Lane miles are based on 11' lane widths





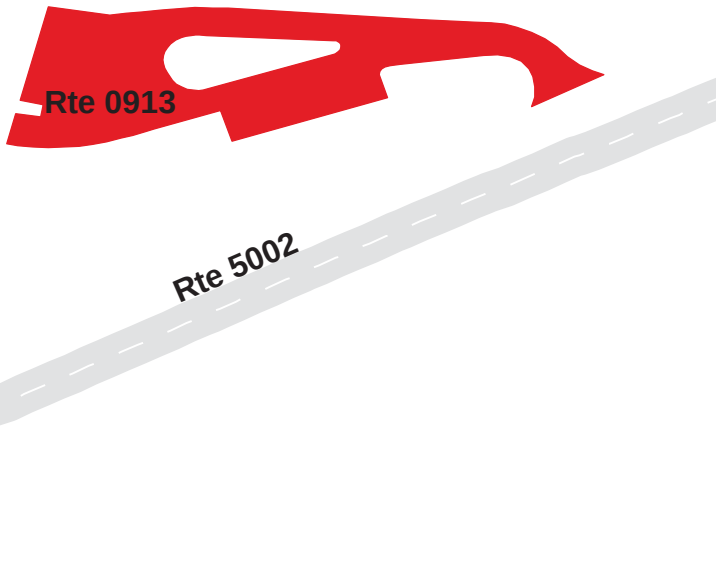
600 300 0 600
Feet

N

ANTIETAM NATIONAL BATTLEFIELD
Route 0913
NATIONAL CEMETERY PARKING
FROM ROUTE 5002 (MARYLAND ROUTE 34)
TO PARKING

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0913	PUBLIC	7/25/2012	14,095	0.24	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
1	0	1	NO CURB AND GUTTER	CONCRETE CURB	GOOD/90

* Lane miles are based on 11' lane widths



300 150 0 300
Feet

N

ANTIETAM NATIONAL BATTLEFIELD

Route 0914ZZ

SHULL HOUSE PARKING

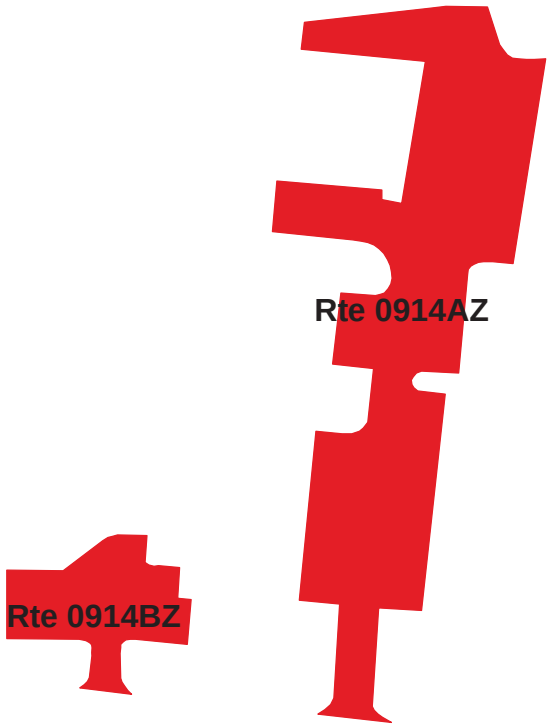
FROM MONDELL ROAD

TO PARKING

Summary Record

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0914ZZ	NONPUBLIC	7/25/2012	32,095	0.55	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	0	0	NO CURB AND GUTTER	NO CURB	SUMMARY/90

* Lane miles are based on 11' lane widths



300 150 0 300

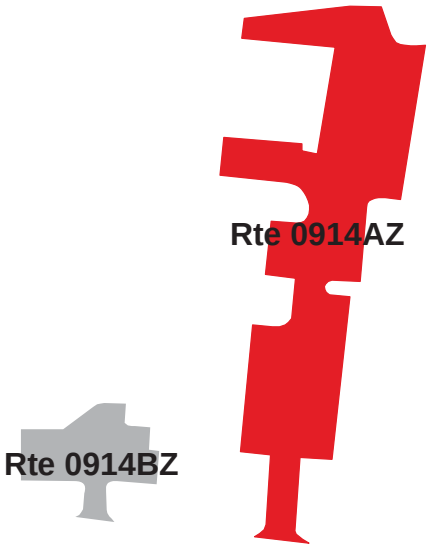
Feet

N

ANTIETAM NATIONAL BATTLEFIELD
Route 0914AZ
SHULL HOUSE PARKING A
FROM MONDELL ROAD
TO PARKING
Subcomponent Record

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0914AZ	NONPUBLIC	7/25/2012	26,760	0.46	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	0	0	NO CURB AND GUTTER	NO CURB	GOOD/90

* Lane miles are based on 11' lane widths



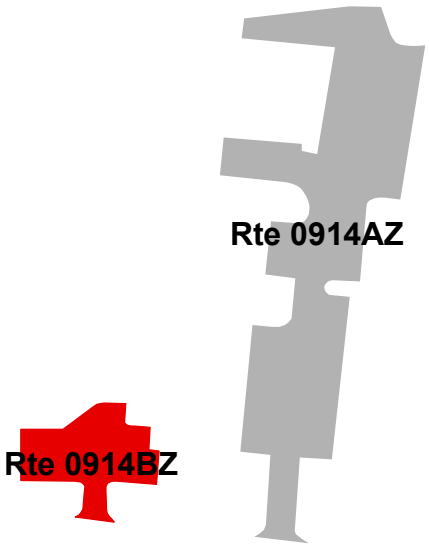
400 200 0 400 Feet

N

ANTIETAM NATIONAL BATTLEFIELD
Route 0914BZ
SHULL HOUSE PARKING B
FROM MONDELL ROAD
TO PARKING
Subcomponent Record

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0914BZ	NONPUBLIC	7/25/2012	5,335	0.09	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	0	0	NO CURB AND GUTTER	NO CURB	GOOD/90

* Lane miles are based on 11' lane widths



400 200 0 400 Feet

N

ANTIETAM NATIONAL BATTLEFIELD
Route 0916
D.R. MILLER FARMSTEAD PARKING
FROM ROUTE 0300 (OLD MARYLAND ROUTE 65)
TO PARKING

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0916	NONPUBLIC	7/25/2012	4,568	0.08	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
1	0	0	NO CURB AND GUTTER	NO CURB	POOR/45

* Lane miles are based on 11' lane widths

300 150 0 300
Feet

N

ANTIETAM NATIONAL BATTLEFIELD
Route 0917
BURNSIDE BRIDGE HANDICAPPED PARKING
ADJACENT TO ROUTE 0310 (OLD BURNSIDE BRIDGE ROAD)

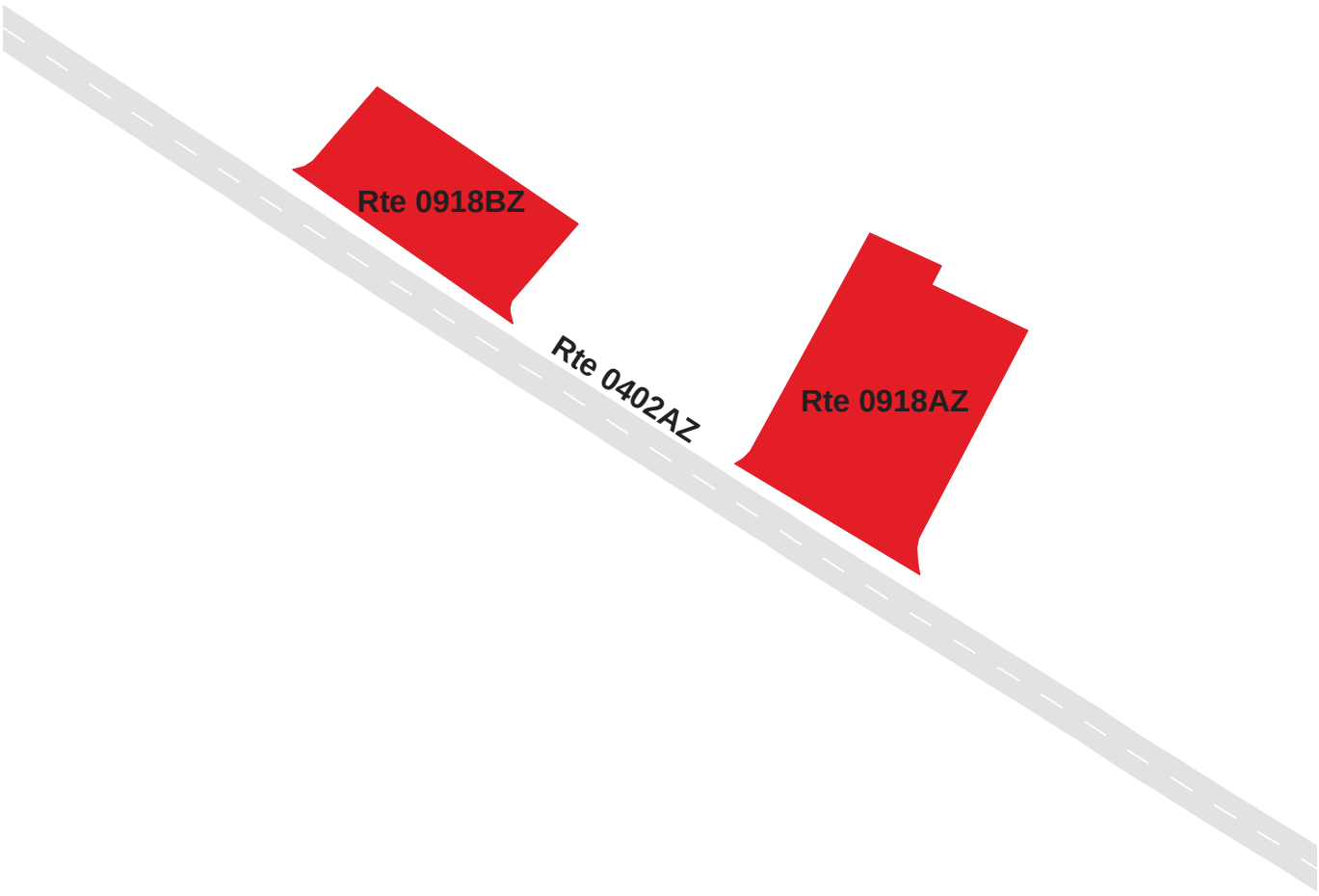
Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0917	PUBLIC	7/25/2012	1,147	0.02	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	0	1	NO CURB AND GUTTER	NO CURB	GOOD/90

* Lane miles are based on 11' lane widths

ANTIETAM NATIONAL BATTLEFIELD
Route 0918ZZ
WYAND HOUSE PARKING LOT
FROM ROUTE 0402ZZ (PRY HOUSE ACCESS ROAD)
TO PARKING
Summary Record

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0918ZZ	NONPUBLIC	7/25/2012	3,082	0.05	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	0	0	NO CURB AND GUTTER	NO CURB	SUMMARY/79

* Lane miles are based on 11' lane widths



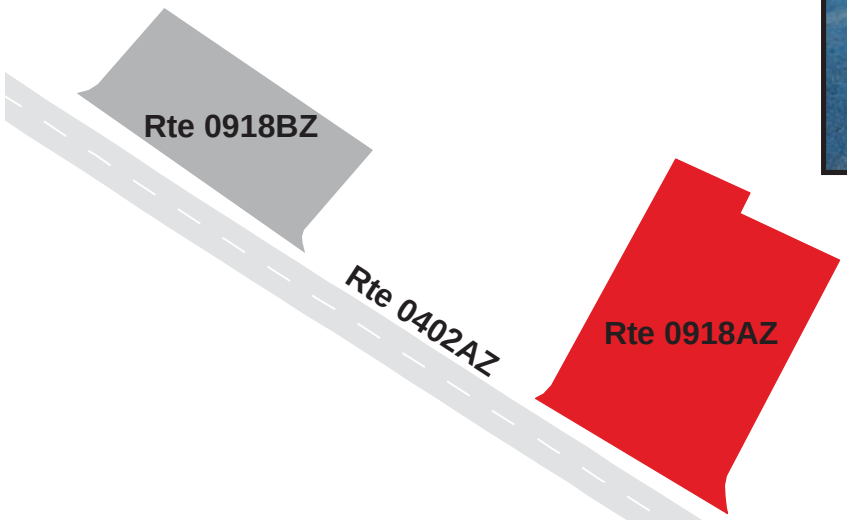
100 50 0 100 Feet

N

ANTIETAM NATIONAL BATTLEFIELD
Route 0918AZ
WYAND HOUSE PARKING LOT A
FROM ROUTE 0402AZ (PRY HOUSE ACCESS ROAD A)
TO PARKING
Subcomponent Record

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0918AZ	NONPUBLIC	7/25/2012	1,955	0.03	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	0	0	NO CURB AND GUTTER	NO CURB	FAIR/73

* Lane miles are based on 11' lane widths



100 50 0 100 Feet

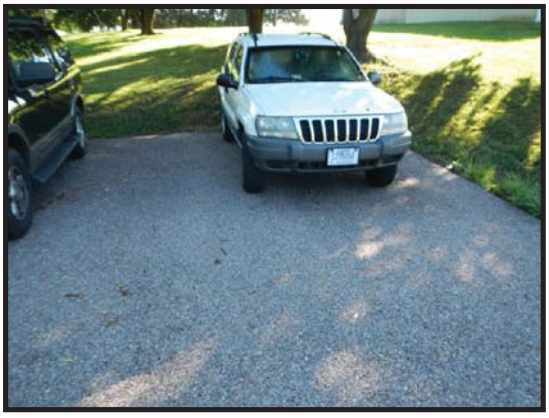
N

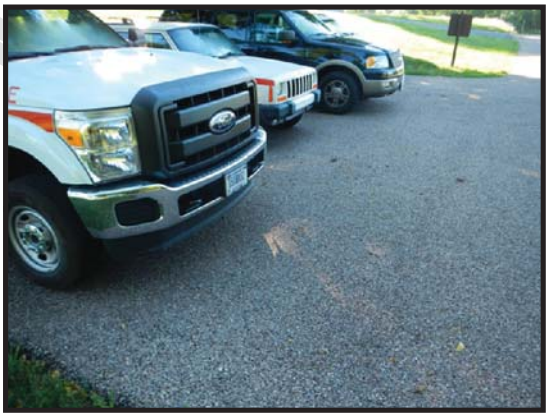
ANTIETAM NATIONAL BATTLEFIELD
Route 0918BZ
WYAND HOUSE PARKING LOT B
ADJACENT TO ROUTE 0402AZ (PRY HOUSE ACCESS ROAD A)

Subcomponent Record

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0918BZ	NONPUBLIC	7/25/2012	1,127	0.02	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	0	0	NO CURB AND GUTTER	NO CURB	GOOD/90

* Lane miles are based on 11' lane widths





100 50 0 100 Feet

N

ANTIETAM NATIONAL BATTLEFIELD
Route 0919
NEWCOMER HOUSE PARKING LOT
FROM ROUTE 5002 (MARYLAND ROUTE 34)
TO PARKING

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0919	PUBLIC	7/25/2012	486	0.01	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	0	0	NO CURB AND GUTTER	NO CURB	FAIR/73

* Lane miles are based on 11' lane widths

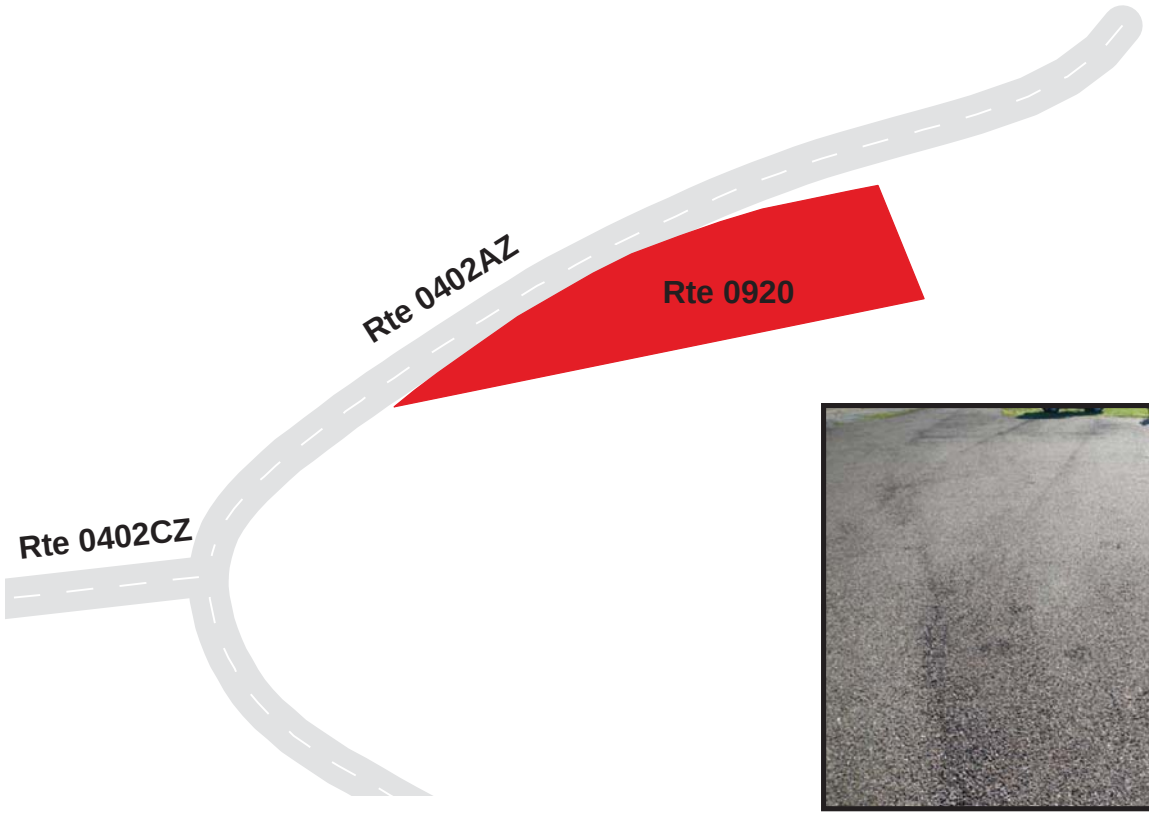
50 25 0 50 Feet

N

ANTIETAM NATIONAL BATTLEFIELD
Route 0920
PRY HOUSE PARKING
ADJACENT TO ROUTE 0402ZZ (PRY HOUSE ACCESS ROAD)

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0920	PUBLIC	7/25/2012	1,673	0.03	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	0	0	NO CURB AND GUTTER	WOOD CURB	GOOD/90

* Lane miles are based on 11' lane widths



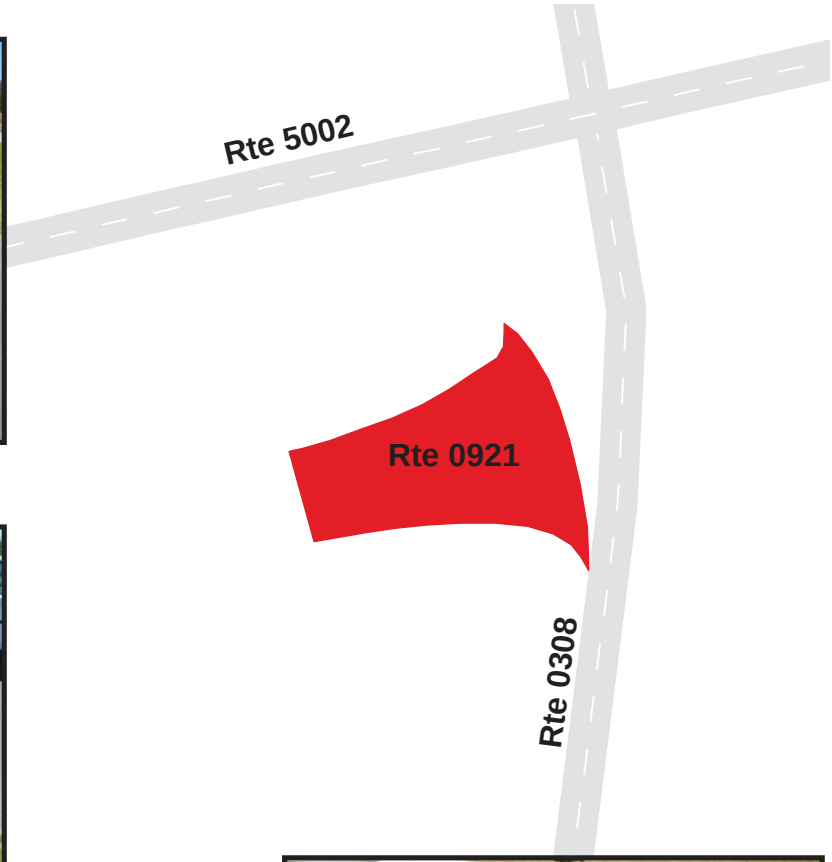
100 50 0 100 Feet

N

ANTIETAM NATIONAL BATTLEFIELD
Route 0921
SHERRICK FARM TRAIL PARKING
ADJACENT TO ROUTE 0308 (RODMAN AVENUE)

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0921	PUBLIC	7/25/2012	853	0.02	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
0	0	0	NO CURB AND GUTTER	NO CURB	GOOD/90

* Lane miles are based on 11' lane widths



80 40 0 80 Feet

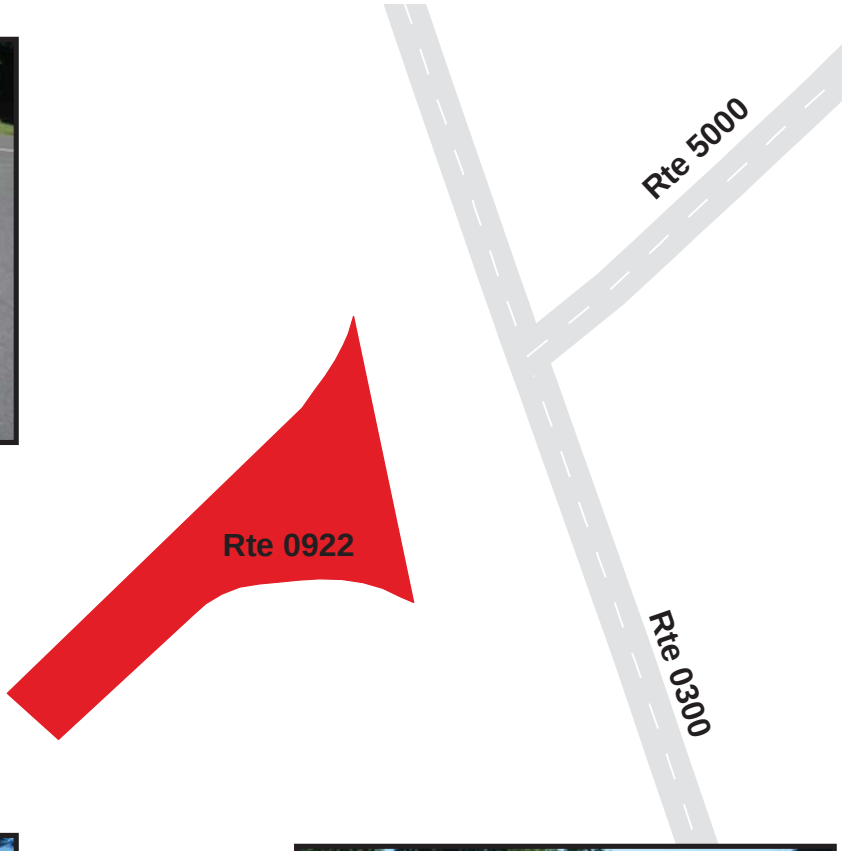
N

7-25

ANTIETAM NATIONAL BATTLEFIELD
Route 0922
DUNKER CHURCH HANDICAP PARKING
FROM ROUTE 0300 (OLD MARYLAND ROUTE 65)
TO ROUTE 0403 (CONFEDERATE AVENUE)

Route Number	Public / NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0922	PUBLIC	7/25/2012	2,539	0.04	AS
Culverts	**Drop Inlets**	**Gates**	**Curb & Gutter**	**Curb**	**PCR**
1	0	0	NO CURB AND GUTTER	NO CURB	GOOD/90

* Lane miles are based on 11' lane widths



100 50 0 100
Feet

N

Section 8
Parkwide/Route
Maintenance Features Summaries

Antietam National Battlefield

Federal Lands Highway
Road Inventory Program

ANTI: PARKWIDE MAINTENANCE FEATURES SUMMARY
Includes DCV, MRL, MRP & PKG routes collected in Cycle-5

Notice: Culverts and drop inlets were marked by NPS and inventoried by RIP in Cycle 5 on all DCV driven routes. Culverts, drop inlets, and gates were also collected on all Manually Rated Routes and Paved Parking areas. Those totals are reflected below.

FEATURE	LINEAR FEET	COUNT
BRIDGE	--	2
CATTLE GUARD	--	0
CULVERT	--	19
CURB	475	--
DROP INLET	--	27
GATE	--	11
GUARD/GUIDE RAIL	3,452	--
CABLE	0	--
NON-CABLE	3,452	--
GUARD/GUIDE WALL	1,661	--
BOLLARD	0	--
TEMPORARY BARRIER	0	--
NON TEMP/BOLLARD	1,661	--
INTERSECTION	--	83
LOW WATER CROSSING	0	0
MILE MARKER	--	0
OVERPASS	--	0
PARK BOUNDARY	--	1
PAVED DITCH	2,250	--
PULLOUT	671	6
RAILROAD CROSSING	--	0
RETAINING WALL	1,034	12
SIGN	--	145
STATE BOUNDARY	--	0
TRAFFIC LIGHT	--	0
TUNNEL	0	0

ANTI: DCV ROUTE MAINTENANCE FEATURES SUMMARY

Notice: Culverts and drop inlets were marked by NPS and inventoried by RIP in Cycle 5.

FEATURE	ROUTE 0300 OLD MARYLAND ROUTE 65	ROUTE 0302 STARKE AVENUE	ROUTE 0303 CORNFIELD AVENUE	ROUTE 0304 MANSFIELD AVENUE	ROUTE 0305 MUMMA LANE	ROUTE 0307 RICHARDSON AVENUE	UNIT
BRIDGE	0	0	0	0	0	1	EACH
CATTLE GUARD	0	0	0	0	0	0	EACH
CULVERT	0	0	0	4	2	3	EACH
CURB	0	0	0	0	0	63	LINEAR FEET
DROP INLET	0	0	0	0	0	1	EACH
GATE	0	0	0	0	0	1	EACH
GUARD/GUIDE RAIL	0	21	0	0	0	369	LINEAR FEET
CABLE	0	0	0	0	0	0	LINEAR FEET
NON-CABLE	0	21	0	0	0	369	LINEAR FEET
GUARD/GUIDE WALL	0	0	0	52	0	655	LINEAR FEET
BOLLARD	0	0	0	0	0	0	LINEAR FEET
TEMPORARY BARRIER	0	0	0	0	0	0	LINEAR FEET
NON TEMP/BOLLARD	0	0	0	52	0	655	LINEAR FEET
INTERSECTION	15	6	7	7	8	11	EACH
LOW WATER CROSSING	0	0	0	0	0	0	EACH
LOW WATER CROSSING	0	0	0	0	0	0	LINEAR FEET
MILE MARKER	0	0	0	0	0	0	EACH
OVERPASS	0	0	0	0	0	0	EACH
PARK BOUNDARY	0	0	0	0	0	0	EACH
PAVED DITCH	0	0	0	0	0	21	LINEAR FEET
PULLOUT	3	0	0	0	0	0	EACH
PULLOUT	444	0	0	0	0	0	LINEAR FEET
RAILROAD CROSSING	0	0	0	0	0	0	EACH
RETAINING WALL	0	0	0	0	0	1	EACH
RETAINING WALL	0	0	0	0	0	84	LINEAR FEET
SIGN	36	8	9	12	10	23	EACH
STATE BOUNDARY	0	0	0	0	0	0	EACH
TRAFFIC LIGHT	0	0	0	0	0	0	EACH
TUNNEL	0	0	0	0	0	0	EACH
TUNNEL	0	0	0	0	0	0	LINEAR FEET

ANTI: DCV ROUTE MAINTENANCE FEATURES SUMMARY

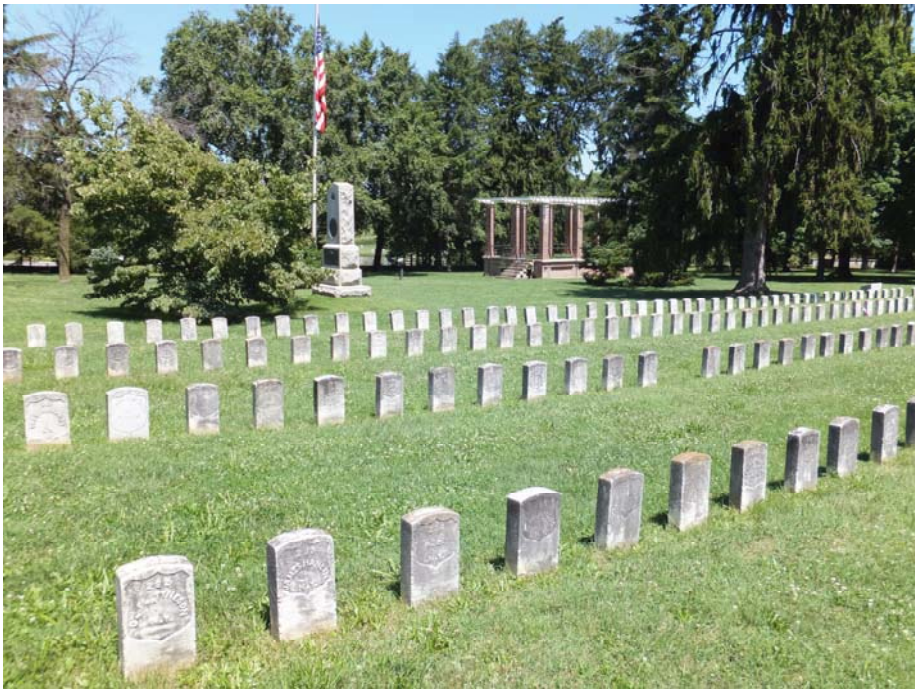
Notice: Culverts and drop inlets were marked by NPS and inventoried by RIP in Cycle 5.

FEATURE	ROUTE 0308 RODMAN AVENUE	ROUTE 0309 BRANCH AVENUE	ROUTE 0310 OLD BURNSIDE BRIDGE ROAD	ROUTE 0400 PIPER LANE	ROUTE 0402ZZ PRY HOUSE ACCESS ROAD		UNIT
BRIDGE	1	0	0	0	0		EACH
CATTLE GUARD	0	0	0	0	0		EACH
CULVERT	1	1	0	1	1		EACH
CURB	412	0	0	0	0		LINEAR FEET
DROP INLET	3	7	5	0	0		EACH
GATE	1	1	0	0	1		EACH
GUARD/GUIDE RAIL	770	238	2,054	0	0		LINEAR FEET
CABLE	0	0	0	0	0		LINEAR FEET
NON-CABLE	770	238	2,054	0	0		LINEAR FEET
GUARD/GUIDE WALL	0	954	0	0	0		LINEAR FEET
BOLLARD	0	0	0	0	0		LINEAR FEET
TEMPORARY BARRIER	0	0	0	0	0		LINEAR FEET
NON TEMP/BOLLARD	0	954	0	0	0		LINEAR FEET
INTERSECTION	6	6	4	3	10		EACH
LOW WATER CROSSING	0	0	0	0	0		EACH
LOW WATER CROSSING	0	0	0	0	0		LINEAR FEET
MILE MARKER	0	0	0	0	0		EACH
OVERPASS	0	0	0	0	0		EACH
PARK BOUNDARY	0	0	0	1	0		EACH
PAVED DITCH	507	771	951	0	0		LINEAR FEET
PULLOUT	0	0	0	1	2		EACH
PULLOUT	0	0	0	74	153		LINEAR FEET
RAILROAD CROSSING	0	0	0	0	0		EACH
RETAINING WALL	2	4	3	0	2		EACH
RETAINING WALL	279	381	95	0	195		LINEAR FEET
SIGN	12	13	10	4	8		EACH
STATE BOUNDARY	0	0	0	0	0		EACH
TRAFFIC LIGHT	0	0	0	0	0		EACH
TUNNEL	0	0	0	0	0		EACH
TUNNEL	0	0	0	0	0		LINEAR FEET

ANTI: STRUCTURE LIST

ROUTE NUMBER	FUNCTIONAL CLASS	MILEPOST START	MILEPOST END	FEATURE	STRUCTURE NUMBER
0308	1	0.487	0.517	BRIDGE	3120-001

Section 9
Route Maintenance Features
Road Logs



Antietam National Battlefield

Federal Lands Highway
Road Inventory Program

ANTI: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0300: OLD MARYLAND ROUTE 65

Notice: Culverts and drop inlets were marked by NPS and inventoried by RIP in Cycle 5 on all paved routes.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.000	0.000	ROUTE BEGIN	N/A	FROM ROUTE 5001 (MARYLAND ROUTE 65)
0.000	0.000	INTERSECTION	RIGHT	ROUTE 5001 (MARYLAND ROUTE 65)
0.000	0.000	SIGN	N/A	REGULATORY, GRAPHIC SIGN NO TEXT
0.000	0.000	SIGN	N/A	REGULATORY, MARYLAND 65
0.000	0.000	INTERSECTION	LEFT	ROUTE 5001 (MARYLAND ROUTE 65)
0.005	0.005	SIGN	LEFT	GUIDE, DUNKER CHURCH RD
0.005	0.005	SIGN	LEFT	REGULATORY, STOP
0.009	0.009	SIGN	N/A	REGULATORY, MARYLAND 65
0.009	0.009	SIGN	N/A	REGULATORY, GRAPHIC SIGN NO TEXT
0.009	0.009	SIGN	N/A	REGULATORY, NORTH
0.009	0.009	SIGN	N/A	REGULATORY, SOUTH
0.015	0.015	SIGN	LEFT	GUIDE, SHARPSBURQ HAGERSTOWN
0.054	0.054	SIGN	RIGHT	GUIDE, U.S. FEE AREA
0.054	0.054	SIGN	RIGHT	GUIDE, PARK CLOSED AT DARK
0.054	0.054	SIGN	RIGHT	GUIDE, UNABLE TO READ FROM VIDEO
0.056	0.056	INTERSECTION	RIGHT	ROUTE 0900 (VISITOR CENTER PARKING)
0.084	0.084	SIGN	RIGHT	REGULATORY, SPEED LIMIT 35
0.189	0.189	SIGN	LEFT	GUIDE, GRAPHIC SIGN NO TEXT
0.189	0.189	SIGN	LEFT	GUIDE, UNABLE TO READ FROM VIDEO
0.193	0.193	INTERSECTION	RIGHT	ROUTE 0900 (VISITOR CENTER PARKING)
0.210	0.210	INTERSECTION	RIGHT	ROUTE 0900 (VISITOR CENTER PARKING)
0.234	0.234	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
0.239	0.239	SIGN	RIGHT	GUIDE, UNABLE TO READ FROM VIDEO
0.242	0.242	SIGN	LEFT	GUIDE, 5848
0.242	0.242	SIGN	LEFT	GUIDE, DUNKER CHURCH
0.244	0.280	PULLOUT	LEFT	N/A
0.245	0.245	SIGN	RIGHT	GUIDE, TOUR 1 STOP
0.267	0.295	PULLOUT	RIGHT	N/A
0.298	0.298	INTERSECTION	LEFT	ROUTE 0922 (DUNKER CHURCH HANDICAP PARKING)
0.298	0.298	INTERSECTION	RIGHT	ROUTE 5000 (SMOKETOWN ROAD)

ANTI: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0300: OLD MARYLAND ROUTE 65

Notice: Culverts and drop inlets were marked by NPS and inventoried by RIP in Cycle 5 on all paved routes.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.305	0.305	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
0.305	0.305	SIGN	LEFT	GUIDE, TOUR
0.340	0.340	SIGN	RIGHT	REGULATORY, SPEED LIMIT 35
0.493	0.493	INTERSECTION	LEFT	ROUTE 0903 (PHILADELPHIA BRIGADE PARKING)
0.652	0.652	INTERSECTION	RIGHT	ROUTE 0303 (CORNFIELD AVENUE)
0.652	0.652	INTERSECTION	LEFT	ROUTE 0302 (STARKE AVENUE)
0.712	0.732	PULLOUT	RIGHT	N/A
0.848	0.848	SIGN	RIGHT	GUIDE, D.R. MILLER FARM
0.849	0.849	SIGN	RIGHT	GUIDE, 6143
0.871	0.871	INTERSECTION	RIGHT	ROUTE 0916 (D.R. MILLER FARMSTEAD PARKING)
1.134	1.134	SIGN	LEFT	REGULATORY, SPEED LIMIT 35
1.134	1.134	SIGN	LEFT	GUIDE, PARK CLOSED AT DARK
1.162	1.162	SIGN	LEFT	GUIDE, DUNKER CHURCH RD
1.172	1.172	INTERSECTION	RIGHT	ROUTE 0304 (MANSFIELD AVENUE)
1.174	1.174	SIGN	RIGHT	REGULATORY, STOP
1.177	1.177	SIGN	N/A	REGULATORY, GRAPHIC SIGN NO TEXT
1.177	1.177	SIGN	N/A	REGULATORY, GRAPHIC SIGN NO TEXT
1.177	1.177	SIGN	N/A	REGULATORY, MARYLAND 65
1.177	1.177	SIGN	N/A	REGULATORY, NORTH
1.177	1.177	SIGN	N/A	GUIDE, MONDELL RD
1.177	1.177	SIGN	N/A	REGULATORY, SOUTH
1.177	1.177	INTERSECTION	RIGHT	PAVED ROUTE (MARYLAND ROUTE 65 / NON NPS)
1.177	1.177	INTERSECTION	N/A	PAVED ROUTE (MONDELL ROAD / NON NPS)
1.177	1.177	INTERSECTION	LEFT	ROUTE 5001 (MARYLAND ROUTE 65)
1.177	1.177	SIGN	N/A	REGULATORY, MARYLAND 65
1.177	1.177	ROUTE END	N/A	TO ROUTE 5001 (MARYLAND ROUTE 65)

ANTI: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0302: STARKE AVENUE

Notice: Culverts and drop inlets were marked by NPS and inventoried by RIP in Cycle 5 on all paved routes.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.000	0.000	ROUTE BEGIN	N/A	FROM ROUTE 0300 (OLD MARYLAND ROUTE 65)
0.000	0.000	INTERSECTION	LEFT	ROUTE 0300 (OLD MARYLAND ROUTE 65)
0.000	0.000	INTERSECTION	N/A	ROUTE 0303 (CORNFIELD AVENUE)
0.000	0.000	INTERSECTION	RIGHT	ROUTE 0300 (OLD MARYLAND ROUTE 65)
0.005	0.005	SIGN	LEFT	GUIDE, TOUR
0.005	0.005	SIGN	LEFT	REGULATORY, STOP
0.076	0.076	SIGN	RIGHT	WARNING, HILL BLOCKS VIEW
0.121	0.121	SIGN	LEFT	WARNING, HILL BLOCKS VIEW
0.140	0.140	SIGN	LEFT	REGULATORY, SPEED LIMIT 25
0.165	0.165	SIGN	LEFT	GUIDE, PARK CLOSED AT DARK
0.168	0.168	INTERSECTION	RIGHT	UNPAVED ROAD (STARK AVENUE)
0.175	0.179	GUARD/GUIDE RAIL	RIGHT	N/A
0.179	0.179	INTERSECTION	LEFT	ROUTE 5001 (MARYLAND ROUTE 65)
0.179	0.179	INTERSECTION	RIGHT	ROUTE 5001 (MARYLAND ROUTE 65)
0.179	0.179	SIGN	RIGHT	GUIDE, STARKE AVE
0.179	0.179	SIGN	RIGHT	REGULATORY, STOP
0.179	0.179	ROUTE END	N/A	TO ROUTE 5001 (MARYLAND ROUTE 65)

ANTI: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0303: CORNFIELD AVENUE

Notice: Culverts and drop inlets were marked by NPS and inventoried by RIP in Cycle 5 on all paved routes.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.000	0.000	ROUTE BEGIN	N/A	FROM ROUTE 5000 (SMOKETOWN ROAD)
0.000	0.000	INTERSECTION	LEFT	ROUTE 5000 (SMOKETOWN ROAD)
0.000	0.000	INTERSECTION	RIGHT	ROUTE 5000 (SMOKETOWN ROAD)
0.004	0.004	SIGN	LEFT	GUIDE, TOUR
0.004	0.004	SIGN	RIGHT	GUIDE, PARK CLOSED AT DARK
0.004	0.004	SIGN	RIGHT	GUIDE, TOUR 3 STOP
0.005	0.005	SIGN	LEFT	REGULATORY, STOP
0.022	0.022	INTERSECTION	RIGHT	ROUTE 0902A (CORNFIELD PARKING A)
0.286	0.286	SIGN	RIGHT	GUIDE, UNABLE TO READ FROM VIDEO
0.286	0.286	SIGN	RIGHT	REGULATORY, UNABLE TO READ FROM VIDEO
0.286	0.286	SIGN	RIGHT	GUIDE, TOUR 4 STOP
0.308	0.308	INTERSECTION	RIGHT	ROUTE 0902B (CORNFIELD PARKING B)
0.335	0.335	SIGN	LEFT	REGULATORY, SPEED LIMIT 25
0.355	0.355	SIGN	RIGHT	REGULATORY, STOP
0.357	0.357	INTERSECTION	LEFT	ROUTE 0300 (OLD MARYLAND ROUTE 65)
0.357	0.357	INTERSECTION	RIGHT	ROUTE 0300 (OLD MARYLAND ROUTE 65)
0.357	0.357	INTERSECTION	N/A	ROUTE 0302 (STARKE AVENUE)
0.357	0.357	ROUTE END	N/A	TO ROUTE 0300 (OLD MARYLAND ROUTE 65)

ANTI: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0304: MANSFIELD AVENUE

Notice: Culverts and drop inlets were marked by NPS and inventoried by RIP in Cycle 5 on all paved routes.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.000	0.000	ROUTE BEGIN	N/A	FROM ROUTE 0300 (OLD MARYLAND ROUTE 65)
0.000	0.000	INTERSECTION	LEFT	ROUTE 0300 (OLD MARYLAND ROUTE 65)
0.000	0.000	INTERSECTION	RIGHT	ROUTE 0300 (OLD MARYLAND ROUTE 65)
0.017	0.017	SIGN	RIGHT	GUIDE, PARK CLOSED AT DARK
0.035	0.035	CULVERT	N/A	N/A
0.043	0.043	SIGN	RIGHT	REGULATORY, SPEED LIMIT 25
0.055	0.060	GUARD/GUIDE WALL	RIGHT	N/A
0.055	0.060	GUARD/GUIDE WALL	LEFT	N/A
0.060	0.060	CULVERT	N/A	N/A
0.129	0.129	INTERSECTION	LEFT	ROUTE 0404 (POFFENBERGER FARM ROAD)
0.130	0.130	SIGN	RIGHT	GUIDE, NORTH WOODS
0.142	0.142	SIGN	LEFT	GUIDE, 17834
0.151	0.151	INTERSECTION	LEFT	UNPAVED ROUTE
0.210	0.210	SIGN	RIGHT	GUIDE, PARK CLOSED AT DARK
0.210	0.210	SIGN	RIGHT	GUIDE, TOUR 2 STOP
0.228	0.228	SIGN	RIGHT	GUIDE, UNABLE TO READ FROM VIDEO
0.233	0.233	INTERSECTION	LEFT	ROUTE 0901 (CLARA BARTON PARKING)
0.335	0.335	CULVERT	N/A	N/A
0.502	0.502	CULVERT	N/A	N/A
0.718	0.718	SIGN	LEFT	GUIDE, UNABLE TO READ FROM VIDEO
0.718	0.718	SIGN	LEFT	GUIDE, UNABLE TO READ FROM VIDEO
0.725	0.725	SIGN	LEFT	REGULATORY, SPEED LIMIT 25
0.727	0.727	INTERSECTION	LEFT	UNPAVED ROUTE (SMOKETOWN ROAD / NON NPS)
0.727	0.727	INTERSECTION	RIGHT	ROUTE 5000 (SMOKETOWN ROAD)
0.727	0.727	SIGN	N/A	GUIDE, TOUR
0.727	0.727	SIGN	RIGHT	REGULATORY, STOP
0.727	0.727	ROUTE END	N/A	TO ROUTE 5000 (SMOKETOWN ROAD)

ANTI: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0305: MUMMA LANE

Notice: Culverts and drop inlets were marked by NPS and inventoried by RIP in Cycle 5 on all paved routes.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.000	0.000	ROUTE BEGIN	N/A	FROM ROUTE 5000 (SMOKETOWN ROAD)
0.000	0.588	ONE-WAY	N/A	N/A
0.000	0.000	INTERSECTION	RIGHT	ROUTE 5000 (SMOKETOWN ROAD)
0.000	0.000	INTERSECTION	LEFT	ROUTE 5000 (SMOKETOWN ROAD)
0.005	0.005	SIGN	LEFT	GUIDE, MUMMA FARM LN
0.008	0.008	SIGN	LEFT	GUIDE, PARK CLOSED AT DARK
0.083	0.083	INTERSECTION	LEFT	ROUTE 0904 (MUMMA CEMETERY PARKING)
0.123	0.123	SIGN	LEFT	GUIDE, 5923
0.124	0.124	SIGN	LEFT	GUIDE, MUMMA FARM
0.128	0.128	SIGN	LEFT	REGULATORY, RESTRICTED ENTRY AUTHORIZED VEHICLES ONLY
0.131	0.131	SIGN	RIGHT	REGULATORY, ONE WAY
0.135	0.135	INTERSECTION	LEFT	UNPAVED ROAD
0.185	0.185	CULVERT	N/A	N/A
0.240	0.240	SIGN	LEFT	GUIDE, UNABLE TO READ FROM VIDEO
0.242	0.242	INTERSECTION	LEFT	UNPAVED ROAD
0.331	0.331	CULVERT	N/A	N/A
0.383	0.383	SIGN	LEFT	GUIDE, TOUR 7 STOP
0.400	0.400	INTERSECTION	LEFT	ROUTE 0905 (MUMMA PARKING)
0.584	0.584	SIGN	RIGHT	GUIDE, TOUR
0.584	0.584	SIGN	RIGHT	REGULATORY, STOP
0.588	0.588	INTERSECTION	LEFT	ROUTE 0307 (RICHARDSON AVENUE)
0.588	0.588	INTERSECTION	RIGHT	ROUTE 0307 (RICHARDSON AVENUE)
0.588	0.588	ROUTE END	N/A	TO ROUTE 0307 (RICHARDSON AVENUE)

ANTI: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0307: RICHARDSON AVENUE

Notice: Culverts and drop inlets were marked by NPS and inventoried by RIP in Cycle 5 on all paved routes.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.000	0.000	ROUTE BEGIN	N/A	FROM ROUTE 5001 (MARYLAND ROUTE 65)
0.000	0.000	INTERSECTION	RIGHT	ROUTE 5001 (MARYLAND ROUTE 65)
0.000	0.000	INTERSECTION	LEFT	ROUTE 5001 (MARYLAND ROUTE 65)
0.004	0.004	SIGN	LEFT	GUIDE, UNABLE TO READ FROM VIDEO
0.005	0.005	SIGN	LEFT	REGULATORY, STOP
0.016	0.016	SIGN	RIGHT	GUIDE, PARK CLOSED AT DARK
0.020	0.062	GUARD/GUIDE WALL	RIGHT	N/A
0.052	0.052	SIGN	RIGHT	REGULATORY, SPEED LIMIT 25
0.107	0.107	SIGN	LEFT	REGULATORY, DO NOT ENTER
0.118	0.118	INTERSECTION	LEFT	ROUTE 0305 (MUMMA LANE)
0.219	0.219	INTERSECTION	LEFT	ROUTE 0405 (ROULETTE FARM ROAD)
0.228	0.228	SIGN	LEFT	REGULATORY, RESTRICTED ENTRY AUTHORIZED VEHICLES ONLY
0.236	0.236	SIGN	RIGHT	GUIDE, GRAPHIC SIGN NO TEXT
0.236	0.236	SIGN	RIGHT	GUIDE, P
0.296	0.299	PAVED DITCH	RIGHT	N/A
0.296	0.304	CURB	LEFT	N/A
0.298	0.298	SIGN	RIGHT	GUIDE, PARK CLOSED AT DARK
0.298	0.298	SIGN	RIGHT	GUIDE, TOUR 8 STOP
0.318	0.318	INTERSECTION	LEFT	ROUTE 0906A (BLOODY LANE PARKING A)
0.318	0.318	INTERSECTION	RIGHT	ROUTE 0906B (BLOODY LANE PARKING B)
0.327	0.331	CURB	RIGHT	N/A
0.331	0.331	SIGN	RIGHT	WARNING, NEW GATE AHEAD
0.415	0.415	CULVERT	N/A	N/A
0.470	0.470	CULVERT	N/A	N/A
0.478	0.478	INTERSECTION	LEFT	ROUTE 0907 (OBSERVATION TOWER PARKING)
0.536	0.536	SIGN	RIGHT	REGULATORY, GRAPHIC SIGN NO TEXT
0.547	0.547	SIGN	LEFT	REGULATORY, ONE WAY
0.548	0.548	INTERSECTION	LEFT	ROUTE 0907 (OBSERVATION TOWER PARKING)
0.552	1.110	ONE-WAY	N/A	N/A

ANTI: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0307: RICHARDSON AVENUE

Notice: Culverts and drop inlets were marked by NPS and inventoried by RIP in Cycle 5 on all paved routes.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.553	0.553	SIGN	RIGHT	REGULATORY, GRAPHIC SIGN NO TEXT
0.554	0.554	GATE	N/A	N/A
0.554	0.554	SIGN	LEFT	REGULATORY, GRAPHIC SIGN NO TEXT
0.555	0.555	SIGN	RIGHT	REGULATORY, GRAPHIC SIGN NO TEXT
0.556	0.556	SIGN	RIGHT	REGULATORY, ROAD CLOSED
0.684	0.684	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
0.707	0.725	GUARD/GUIDE RAIL	RIGHT	N/A
0.717	0.733	RETAINING WALL	LEFT	N/A
0.726	0.726	DROP INLET	LEFT	N/A
0.927	0.957	GUARD/GUIDE RAIL	RIGHT	N/A
0.935	0.957	GUARD/GUIDE RAIL	LEFT	N/A
0.957	0.960	GUARD/GUIDE WALL	RIGHT	N/A
0.957	0.962	GUARD/GUIDE WALL	LEFT	N/A
0.957	0.963	BRIDGE	N/A	A BIP STRUCTURE NUMBER HAS NOT BEEN ASSIGNED TO THIS BRIDGE
0.961	0.962	PAVED DITCH	RIGHT	N/A
0.961	1.035	GUARD/GUIDE WALL	RIGHT	N/A
1.105	1.105	SIGN	LEFT	REGULATORY, DO NOT ENTER
1.105	1.105	SIGN	RIGHT	REGULATORY, DO NOT ENTER
1.108	1.108	SIGN	RIGHT	WARNING, UNABLE TO READ FROM VIDEO
1.108	1.108	SIGN	RIGHT	WARNING, UNABLE TO READ FROM VIDEO
1.108	1.108	SIGN	RIGHT	REGULATORY, STOP
1.108	1.108	CULVERT	N/A	N/A
1.110	1.110	INTERSECTION	LEFT	ROUTE 5002 (MARYLAND ROUTE 34)
1.110	1.110	INTERSECTION	N/A	ROUTE 0308 (RODMAN AVENUE)
1.110	1.110	INTERSECTION	RIGHT	ROUTE 5002 (MARYLAND ROUTE 34)
1.110	1.110	ROUTE END	N/A	TO ROUTE 5002 (MARYLAND ROUTE 34)

ANTI: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0308: RODMAN AVENUE

Notice: Culverts and drop inlets were marked by NPS and inventoried by RIP in Cycle 5 on all paved routes.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.000	0.000	ROUTE BEGIN	N/A	FROM ROUTE 5002 (MARYLAND ROUTE 34)
0.000	0.000	INTERSECTION	RIGHT	ROUTE 5002 (MARYLAND ROUTE 34)
0.000	0.000	INTERSECTION	N/A	ROUTE 0307 (RICHARDSON AVENUE)
0.000	0.000	INTERSECTION	LEFT	ROUTE 5002 (MARYLAND ROUTE 34)
0.005	0.005	SIGN	LEFT	GUIDE, RODMAN AVE
0.005	0.005	INTERSECTION	RIGHT	ROUTE 0921 (SHERRICK FARM TRAIL PARKING)
0.007	0.007	SIGN	LEFT	REGULATORY, GRAPHIC SIGN NO TEXT
0.010	0.010	CULVERT	N/A	N/A
0.010	0.528	ONE-WAY	N/A	N/A
0.013	0.013	SIGN	RIGHT	GUIDE, PARK CLOSED AT DARK
0.013	0.013	SIGN	RIGHT	GUIDE, TOUR
0.013	0.013	SIGN	RIGHT	GUIDE, U.S. FEE AREA
0.020	0.020	GATE	N/A	N/A
0.020	0.020	SIGN	LEFT	REGULATORY, GRAPHIC SIGN NO TEXT
0.020	0.020	SIGN	RIGHT	REGULATORY, ROAD CLOSED
0.024	0.024	SIGN	LEFT	REGULATORY, ONE WAY
0.058	0.058	DROP INLET	RIGHT	N/A
0.063	0.159	PAVED DITCH	LEFT	N/A
0.080	0.110	RETAINING WALL	LEFT	N/A
0.102	0.102	SIGN	RIGHT	REGULATORY, SPEED LIMIT 25
0.128	0.151	RETAINING WALL	LEFT	N/A
0.267	0.293	GUARD/GUIDE RAIL	RIGHT	N/A
0.298	0.298	DROP INLET	LEFT	N/A
0.451	0.451	SIGN	LEFT	GUIDE, SHERRICK FARM
0.461	0.483	GUARD/GUIDE RAIL	RIGHT	N/A
0.463	0.482	GUARD/GUIDE RAIL	LEFT	N/A
0.478	0.478	DROP INLET	LEFT	N/A
0.482	0.522	GUARD/GUIDE RAIL	LEFT	N/A
0.483	0.522	CURB	LEFT	N/A
0.483	0.522	CURB	RIGHT	N/A

ANTI: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0308: RODMAN AVENUE

Notice: Culverts and drop inlets were marked by NPS and inventoried by RIP in Cycle 5 on all paved routes.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.483	0.522	GUARD/GUIDE RAIL	RIGHT	N/A
0.487	0.517	BRIDGE	N/A	3120-001 (SHERRICKS RUN BRIDGE)
0.528	0.528	SIGN	N/A	GUIDE, TOUR
0.528	0.528	SIGN	N/A	GUIDE, BURNSIDE BRIDGE HARPERS FERRY ROAD BATTLEFIELD EXIT
0.528	0.528	INTERSECTION	RIGHT	ROUTE 0309 (BRANCH AVENUE)
0.528	0.528	INTERSECTION	LEFT	ROUTE 0310 (OLD BURNSIDE BRIDGE ROAD)
0.528	0.528	ROUTE END	N/A	TO INTERSECTION OF ROUTE 0309 (BRANCH AVENUE) AND ROUTE 0310 (OLD BURNSIDE BRIDGE ROAD)

ANTI: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0309: BRANCH AVENUE

Notice: Culverts and drop inlets were marked by NPS and inventoried by RIP in Cycle 5 on all paved routes.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.000	0.000	ROUTE BEGIN	N/A	FROM INTERSECTION OF ROUTE 0308 (RODMAN AVENUE) AND ROUTE 0310 (OLD BURNSIDE BRIDGE ROAD)
0.000	0.000	INTERSECTION	RIGHT	ROUTE 0308 (RODMAN AVENUE)
0.000	0.028	GUARD/GUIDE RAIL	RIGHT	N/A
0.000	0.893	ONE-WAY	N/A	N/A
0.000	0.000	INTERSECTION	N/A	ROUTE 0310 (OLD BURNSIDE BRIDGE ROAD)
0.007	0.007	SIGN	LEFT	REGULATORY, ONE WAY
0.007	0.007	SIGN	LEFT	REGULATORY, SPEED LIMIT 25
0.012	0.022	GUARD/GUIDE RAIL	LEFT	N/A
0.014	0.014	SIGN	RIGHT	REGULATORY, ONE WAY
0.016	0.016	DROP INLET	LEFT	N/A
0.018	0.096	PAVED DITCH	LEFT	N/A
0.035	0.035	DROP INLET	RIGHT	N/A
0.041	0.080	PAVED DITCH	RIGHT	N/A
0.134	0.134	SIGN	LEFT	GUIDE, TOUR 10 STOP
0.134	0.134	SIGN	LEFT	REGULATORY, DO NOT ENTER
0.158	0.158	INTERSECTION	LEFT	ROUTE 0909 (FINAL ATTACK PARKING)
0.171	0.197	GUARD/GUIDE WALL	LEFT	N/A
0.195	0.195	DROP INLET	RIGHT	N/A
0.196	0.207	RETAINING WALL	RIGHT	N/A
0.247	0.260	RETAINING WALL	RIGHT	N/A
0.249	0.249	DROP INLET	RIGHT	N/A
0.344	0.365	RETAINING WALL	LEFT	N/A
0.369	0.396	RETAINING WALL	LEFT	N/A
0.407	0.412	GUARD/GUIDE WALL	LEFT	N/A
0.407	0.412	GUARD/GUIDE WALL	RIGHT	N/A
0.411	0.411	CULVERT	N/A	N/A
0.425	0.514	GUARD/GUIDE WALL	LEFT	N/A
0.585	0.597	GUARD/GUIDE WALL	LEFT	N/A
0.654	0.670	PAVED DITCH	RIGHT	N/A

ANTI: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0309: BRANCH AVENUE

Notice: Culverts and drop inlets were marked by NPS and inventoried by RIP in Cycle 5 on all paved routes.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.666	0.666	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
0.673	0.695	GUARD/GUIDE WALL	LEFT	N/A
0.673	0.695	GUARD/GUIDE WALL	RIGHT	N/A
0.682	0.682	DROP INLET	LEFT	N/A
0.682	0.682	DROP INLET	RIGHT	N/A
0.695	0.698	PAVED DITCH	LEFT	N/A
0.695	0.705	PAVED DITCH	RIGHT	N/A
0.730	0.730	GATE	N/A	N/A
0.731	0.731	SIGN	LEFT	REGULATORY, DO NOT ENTER
0.732	0.732	SIGN	RIGHT	GUIDE, UNABLE TO READ FROM VIDEO
0.735	0.735	INTERSECTION	LEFT	UNPAVED ROAD
0.765	0.772	GUARD/GUIDE RAIL	LEFT	N/A
0.767	0.767	DROP INLET	RIGHT	N/A
0.878	0.878	SIGN	RIGHT	REGULATORY, DO NOT ENTER
0.878	0.878	SIGN	RIGHT	REGULATORY, STOP
0.878	0.878	SIGN	LEFT	REGULATORY, DO NOT ENTER
0.880	0.880	SIGN	LEFT	GUIDE, PARK CLOSED AT DARK
0.893	0.893	INTERSECTION	LEFT	HARPERS FERRY ROAD
0.893	0.893	INTERSECTION	RIGHT	HARPERS FERRY ROAD
0.893	0.893	SIGN	N/A	GUIDE, TOUR
0.893	0.893	ROUTE END	N/A	TO HARPERS FERRY ROAD

ANTI: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0310: OLD BURNSIDE BRIDGE ROAD

Notice: Culverts and drop inlets were marked by NPS and inventoried by RIP in Cycle 5 on all paved routes.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.000	0.000	ROUTE BEGIN	N/A	FROM INTERSECTION OF ROUTE 0308 (RODMAN AVENUE) AND ROUTE 0309 (BRANCH AVENUE)
0.000	0.000	INTERSECTION	LEFT	ROUTE 0308 (RODMAN AVENUE)
0.000	0.000	INTERSECTION	N/A	ROUTE 0309 (BRANCH AVENUE)
0.003	0.003	SIGN	LEFT	REGULATORY, DO NOT ENTER
0.004	0.004	SIGN	LEFT	REGULATORY, STOP
0.006	0.103	GUARD/GUIDE RAIL	LEFT	N/A
0.006	0.006	SIGN	RIGHT	REGULATORY, SPEED LIMIT 25
0.011	0.075	GUARD/GUIDE RAIL	RIGHT	N/A
0.076	0.076	SIGN	RIGHT	GUIDE, OTTO FARM
0.076	0.076	SIGN	RIGHT	GUIDE, 18105
0.103	0.112	PAVED DITCH	RIGHT	N/A
0.131	0.131	DROP INLET	RIGHT	N/A
0.131	0.133	RETAINING WALL	RIGHT	N/A
0.167	0.266	GUARD/GUIDE RAIL	LEFT	N/A
0.171	0.176	RETAINING WALL	RIGHT	N/A
0.174	0.174	DROP INLET	RIGHT	N/A
0.191	0.191	DROP INLET	RIGHT	N/A
0.196	0.286	PAVED DITCH	RIGHT	N/A
0.282	0.282	DROP INLET	RIGHT	N/A
0.295	0.363	GUARD/GUIDE RAIL	LEFT	N/A
0.343	0.343	SIGN	LEFT	REGULATORY, SPEED LIMIT 25
0.376	0.376	SIGN	RIGHT	GUIDE, GRAPHIC SIGN NO TEXT
0.376	0.376	SIGN	RIGHT	GUIDE, P
0.384	0.384	INTERSECTION	LEFT	ROUTE 0917 (BURNSIDE BRIDGE HANDICAPPED PARKING)
0.406	0.487	PAVED DITCH	RIGHT	N/A
0.426	0.487	GUARD/GUIDE RAIL	LEFT	N/A
0.444	0.444	DROP INLET	RIGHT	N/A
0.476	0.487	RETAINING WALL	RIGHT	N/A
0.487	0.487	INTERSECTION	N/A	ROUTE 0908 (BURNSIDE BRIDGE PARKING)

ANTI: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0310: OLD BURNSIDE BRIDGE ROAD

Notice: Culverts and drop inlets were marked by NPS and inventoried by RIP in Cycle 5 on all paved routes.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.487	0.487	SIGN	N/A	GUIDE, TOUR 9 STOP
0.487	0.487	SIGN	N/A	REGULATORY, ONE WAY
0.487	0.487	ROUTE END	N/A	TO ROUTE 0908 (BURNSIDE BRIDGE PARKING)

ANTI: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0400: PIPER LANE

Notice: Culverts and drop inlets were marked by NPS and inventoried by RIP in Cycle 5 on all paved routes.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.000	0.000	ROUTE BEGIN	N/A	FROM ROUTE 5001 (MARYLAND ROUTE 65)
0.000	0.000	INTERSECTION	LEFT	ROUTE 5001 (MARYLAND ROUTE 65)
0.000	0.000	INTERSECTION	RIGHT	ROUTE 5001 (MARYLAND ROUTE 65)
0.004	0.004	SIGN	LEFT	REGULATORY, STOP
0.005	0.005	PARK BOUNDARY	N/A	N/A
0.032	0.032	SIGN	RIGHT	GUIDE, 5537
0.032	0.032	SIGN	RIGHT	GUIDE, PIPER FARM
0.068	0.068	CULVERT	N/A	N/A
0.108	0.108	SIGN	RIGHT	REGULATORY, RESTRICTED ENTRY AUTHORIZED VEHICLES ONLY
0.175	0.189	PULLOUT	RIGHT	N/A
0.189	0.189	INTERSECTION	N/A	DEAD END
0.189	0.189	ROUTE END	N/A	TO END

ANTI: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0402AZ: PRY HOUSE ACCESS ROAD A

Notice: Culverts and drop inlets were marked by NPS and inventoried by RIP in Cycle 5 on all paved routes.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.000	0.000	ROUTE BEGIN	N/A	FROM ROUTE 5002 (MARYLAND ROUTE 34)
0.000	0.000	INTERSECTION	LEFT	ROUTE 5002 (MARYLAND ROUTE 34)
0.000	0.000	INTERSECTION	RIGHT	PAVED ROUTE (MARYLAND ROUTE 34 / NON NPS)
0.004	0.004	SIGN	LEFT	GUIDE, PRY HOUSE FIELD HOSPITAL MCCLELLAN'S HEADQUARTERS
0.015	0.015	INTERSECTION	RIGHT	ROUTE 0918AZ (WYAND HOUSE PARKING LOT A)
0.032	0.032	SIGN	RIGHT	GUIDE, PARK CLOSED AT DARK
0.035	0.035	INTERSECTION	RIGHT	ROUTE 0918BZ (WYAND HOUSE PARKING LOT B)
0.068	0.080	PULLOUT	RIGHT	N/A
0.080	0.080	GATE	N/A	N/A
0.082	0.082	SIGN	RIGHT	GUIDE, CLOSED
0.123	0.140	PULLOUT	LEFT	N/A
0.186	0.186	CULVERT	N/A	N/A
0.186	0.186	SIGN	RIGHT	GUIDE, PRY FARM
0.186	0.186	SIGN	RIGHT	GUIDE, 18906
0.196	0.196	INTERSECTION	LEFT	ROUTE 0402CZ (PRY HOUSE ACCESS ROAD C)
0.202	0.220	RETAINING WALL	LEFT	N/A
0.207	0.207	SIGN	N/A	GUIDE, WELCOME TO THE PRY HOUSE FIELD HOSPITAL MUSEUM HOURS SAT-SUN 11-4:00 ENTRANCE
0.207	0.207	SIGN	N/A	GUIDE, PARKING
0.207	0.207	SIGN	N/A	GUIDE, ENTRANCE
0.215	0.215	INTERSECTION	RIGHT	ROUTE 0920 (PRY HOUSE PARKING)
0.237	0.237	INTERSECTION	N/A	ROUTE 0402BZ (PRY HOUSE ACCESS ROAD B)
0.237	0.237	ROUTE END	N/A	TO END OF PAVEMENT AND BEGINNING OF ROUTE 0402BZ (PRY HOUSE ACCESS ROAD B)

ANTI: ROUTE MAINTENANCE FEATURES ROAD LOG

ROUTE 0402CZ: PRY HOUSE ACCESS ROAD C

Notice: Culverts and drop inlets were marked by NPS and inventoried by RIP in Cycle 5 on all paved routes.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.000	0.000	ROUTE BEGIN	N/A	FROM END OF ROUTE 0402BZ (PRY HOUSE ACCESS ROAD B)
0.000	0.000	INTERSECTION	N/A	ROUTE 0402BZ (PRY HOUSE ACCESS ROAD B)
0.000	0.019	RETAINING WALL	LEFT	N/A
0.019	0.019	INTERSECTION	LEFT	ROUTE 0402AZ (PRY HOUSE ACCESS ROAD A)
0.019	0.019	INTERSECTION	RIGHT	ROUTE 0402AZ (PRY HOUSE ACCESS ROAD A)
0.019	0.019	ROUTE END	N/A	TO ROUTE 0402AZ (PRY HOUSE ACCESS ROAD A) AT END OF LOOP

Section 10
Appendix

Antietam National Battlefield

Federal Lands Highway
Road Inventory Program

Explanation of Changes to the RIP Index Equations and Determination of PCR

In 2005, the FHWA began implementing the use of a Pavement Management System to assist the National Park Service in prioritizing Pavement Maintenance and Rehabilitation activities. The PMS used by FHWA is the Highway Pavement Management Application (HPMA) and this software has the ability to store inventory and condition data from RIP and forecast future performance using prediction models. Outputs include performance and condition reports at the National, Region, Park, or Route level. A regional prioritized list and optimization have been produced for most regions and the Federal Highway Deferred Maintenance is calculated via the HPMA as well.

In an effort to improve the accuracy of treatment recommendations and pavement condition descriptions in relation to the distresses and indexes that comprise the Pavement Condition Rating (PCR), an extensive study was completed throughout 2010 that resulted in changes to the Road Inventory Program condition reporting method and specifically, the calculation of PCR. It was determined that a better representation of PCR could be achieved by modifying the relative impact certain distresses would have on the overall rating.

Through the use of HPMA data, it was noted that false failure indicators existed with the existing PCR model, and that it would be necessary to reduce their impact. The distresses affected in this way were Rutting and Roughness. Conversely, experience showed that roadways with extensive cracking present were often shown to have a high PCR. Therefore, the crack index models were adjusted to be more sensitive to changes in crack severity or quantity. It was also determined that these issues were not due to a problem with data acquisition (i.e. the RIP "van"), but with the way the collected data was processed. The final change was to provide guidance on when to use the Roughness Condition Index (RCI) in the PCR calculation. Roughness data is of little value to determining overall condition on routes that, due to their length or geometrics, have lower vehicle operating speeds. Therefore, in Cycle 5, only routes that have lengths of one half mile or greater and posted speed limits of 25 mph or greater will have RCI reported and included in the PCR calculations.

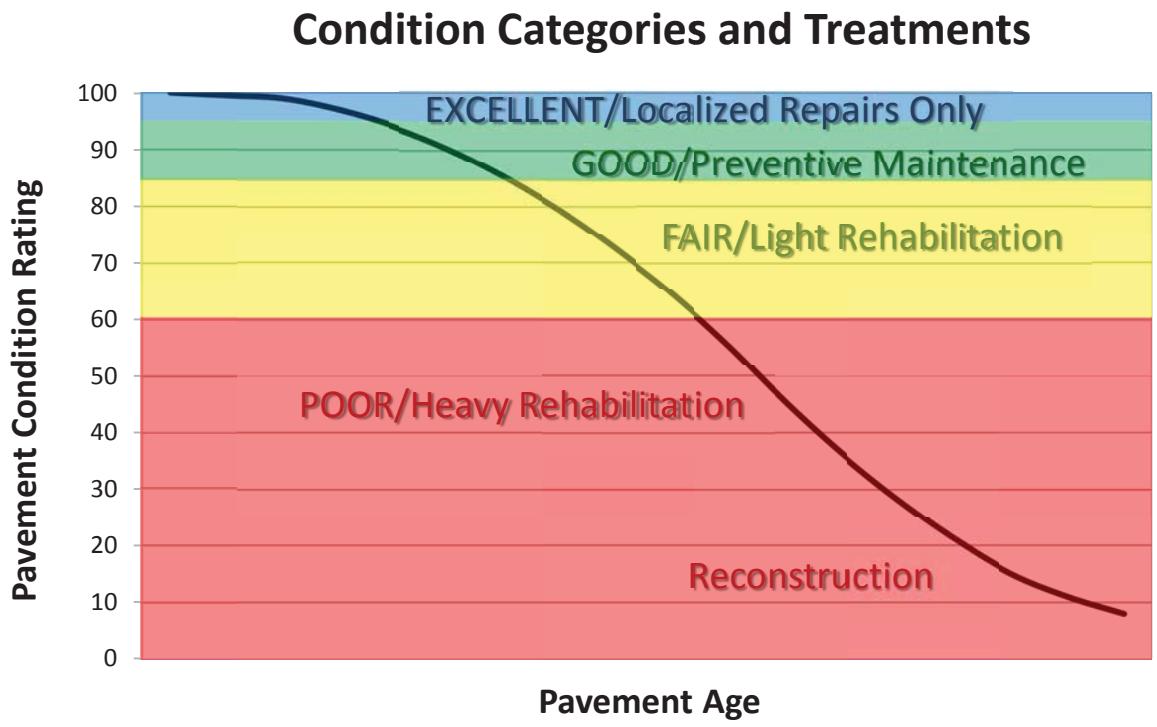
The changes that were implemented were endorsed by management at both the FHWA and NPS. In order to show the effectiveness of these changes, several sites were ground truth tested to ensure that an improvement was achieved between the relationship of PCR and the actual Maintenance and Rehabilitation needs that were represented. These changes will allow greater use of RIP and HPMA data for not simply condition data reporting, but also as a reliable tool for project identification and selection.

Explanation of the Excellent, Good, Fair and Poor Condition Descriptions

In addition to the RIP Index changes that were implemented in Cycle 5, we will provide greater assistance in translating good/fair/poor categories into pavement needs categories. The PCR can be used to indicate the place in the Pavement Life Cycle and the types of treatments that should be considered now and into the future.

- Excellent/New: PCR of 95-100. Pavements in this range will require only spot repairs.
- Good: PCR of 85-94. Pavements in this range will likely be candidates for Preventive Maintenance. Examples include Chip and Slurry Seals, Micro Surfacing and Thin Overlays.
- Fair: PCR of 61-84. Pavements in this range will likely be candidates of Light Rehabilitation (L3R). Examples include single-lift overlays up to 2.5 inches in total thickness, milling and overlays.
- Poor: PCR of 60 or below. Pavements in this range will likely be candidates of Heavy Rehabilitation or Reconstruction (H3R or 4R). Examples include Pulverization, Multiple Lift Overlays, and Reconstruction.

Specific Maintenance and Rehabilitation activities should be evaluated and recommended at the project level. Site-specific conditions that influence treatment type should be determined based on performing a subsurface investigation and/or pavement condition survey, and not be based solely on RIP data. Additionally, RIP produces a snapshot of conditions the year in which the data was collected. For further information or to obtain additional Pavement Management System's data from our Highway Pavement Management Application (HPMA) please contact the Eastern Federal Lands pavement team.



DESCRIPTION OF RATING SYSTEM

The Federal Highway Administration (FHWA), National Park Service Road Inventory Program (NPS-RIP), collects condition data on paved roads, parkways, and parking areas in park units nationwide. Road surface condition data is collected using an automated Data Collection Vehicle (DCV). Roads having brick, cobblestone, or wood surfaces are not normally surveyed with the DCV, but are manually rated for the purpose of assigning a condition rating. Unpaved roads, parkways, and parking areas are not currently being evaluated for condition. Paved campground pads and driveways are also not currently being evaluated for condition.

The FHWA RIP is implemented based on the premise that an accurate pavement surface condition assessment can be accomplished using automated crack detection technology as applied to digital images. Various methods of pavement condition assessment have been developed over the years with varying degrees of accuracy and acceptance. The use of digital photography to record pavement images and subsequent crack detection and classification has undergone continuous improvements over the past decade. Digital cameras with increasingly superior resolution and high definition have become more affordable, and the proprietary programming code and algorithms have been improved in crack detection software.

With the use of high quality digital photography and automated crack detection software, FHWA RIP is tasked with executing a pavement condition assessment on about 5000 miles of National Park Service roads and parkways. Foremost in setting up the basis of pavement distress identification is employing the distress identification protocols used by FHWA. There is no single distress identification system that is universal among entities conducting a program of distress identification. For the purpose of the NPS-RIP, FHWA employs distress identification protocols that are specific to this program.

FHWA has referenced the *"Distress Identification Manual for the Long-Term Pavement Performance Program", Publication No. FHWA-RD 03-031, June 2003,* as the point-of-reference for distress types on NPS pavement. The FHWA RIP distress types are similar to those described in the LTPP manual with some modifications. The document, *"Distress Identification Manual for the NPS Road Inventory Program, Cycle 5, 2010-2013"* was developed using the *"Distress Identification Manual for the Long-Term Pavement Performance Program"* as a guideline. Definitions of severity levels based on crack width contained in this document adhere to the LTPP Distress ID Manual. Modifications have been made to the definition of Alligator and Longitudinal Cracking and determination of Alligator Cracking severity. This manual also addresses Rutting and Roughness and its application to NPS-RIP.

In 2010, FHWA RIP began the fifth cycle of data collection in national parks. For Cycle 5, data will be collected in approximately 81 large parks (10 or more paved route miles) on Functional Class 1, 2, and 7 routes plus any new routes or parking areas previously not collected, totaling an estimated 4,459 paved route miles. Additionally, 231 small parks will be collected comprising approximately 529 paved route miles and associated paved parking areas. The data is used to support the National Park Service road maintenance program and Pavement Management System (PMS) developed and maintained by FHWA.

This ***"Distress Identification Manual for the NPS Road Inventory Program, Cycle 5, 2010-2013"*** will be used as a reference resource in crack detection and classification, determination of distress severity and extent, and in the calculation of distress index values for the FHWA RIP Cycle 5.

SURFACE DISTRESSES

Surface Condition Rating - SCR

Surface distresses are measured in the primary lane only. In the classification and measurement of all paved surface condition data, results will be reported in the database in record intervals of 0.02 miles (105.6 feet) (smallest granularity) along the route.

Surface distresses determined from digital images

- Transverse Cracks
- Longitudinal Cracks
- Alligator Cracks
- Patching/Potholes

Surface distress measured by DCV (Data Collection Vehicle) LRMS (Laser Rut Measuring System)

- Rutting

Each of the five surface distresses is assigned a computed surface distress index

- Transverse Crack Index
- Longitudinal Crack Index
- Alligator Crack Index
- Patching/Pothole Index
- Rutting Index

Surface distress data are classified as listed above, measured for severity, and quantified for extent. Classification, severity, and extent of these five surface distresses comprise the three main elements for calculation of SCR (Surface Condition Rating).

In addition to the five surface distresses, a **Structural Crack Index** is computed, which is a combination of the Longitudinal Crack Index and the Alligator Crack Index. The Structural Crack Index is then used in lieu of the LC and AC indices to compute SCR.

Roughness Condition Index - RCI

Additional condition data measured by DCV (lasers and accelerometers)

- Roughness (IRI)

Roughness is measured by FHWA's DCV and reported as International Roughness Index (IRI) in inches/mile. Using IRI, the Roughness Condition Index (RCI) is computed.

Pavement Condition Rating - PCR

Using the SCR (computed from the five surface distresses) and the RCI, an overall Pavement Condition Rating (PCR) is computed. The formula for PCR is:

Asphalt PCR = (0.60 * SCR) + (0.40 * RCI)
Concrete PCR = RCI

A detailed description of each distress index formula, roughness index formula, SCR and PCR is provided in this document beginning on page 8.

Each classified surface distress will fall into one or more s*everity*…LOW, MEDIUM, or HIGH based on criteria listed. For each severity, an e*xtent* is established based on the measured quantity of the distress within that severity. Within each *severity* individual distresses are assigned a *Maximum Allowable Extent* (MAE). For example, LOW severity transverse cracking may be allowed up to 21.1 cracks within a 0.02 interval before it reaches MAE and fails.

The index formulas are based on a scale of 0-100. A PCR index value of 100 would indicate a "new" road with no measurable distresses or rough ride. A PCR value of 60 is determined to be *terminable serviceability* and the road is considered failed. The range of index values with condition descriptors is:

POOR (<=60), FAIR (61 - 84), GOOD (85 - 94), EXCELLENT (95 - 100)

Index values are generally computed based on cumulative deducts of the measured severities. As shown in the index formulas below, as any single severity reaches or exceeds MAE, the index computes to a value of 60 or less, and the road fails for that 0.02 interval.

> **Note:** As a result of a unique combination of measured surface distresses and IRI, index values occasionally compute to less than 0 or greater than 100. In this instance, an index value < 0 defaults to 0. Index values > 100 default to 100. For all indices, a higher value indicates a better road condition, and a lower value indicates a poorer road condition.

On the following page, Table 1 summarizes the different types of distresses measured.

TABLE 1: Distress Summary

ASPHALT-SURFACED PAVEMENT DISTRESS TYPES with RUTTING and ROUGHNESS				
DISTRESS TYPE	**UNIT OF MEASURE…**	**…CONVERTED TO**	**DEFINED SEVERITY LEVELS?**	**MEASURED BY**
Alligator Cracking	**Square Feet**	**Percent of Lane Per 0.02 Mile**	**Yes**	**Digital Image Crack Detection Software**
Transverse Cracking	**Linear Feet**	**Number of Cracks Per 0.02 Mile**	**Yes**	**Digital Image Crack Detection Software**
Longitudinal Cracking	**Linear feet**	**Percent of Lane Length Per 0.02 Mile**	**Yes**	**Digital Image Crack Detection Software**
Patching/Potholes	**Square Feet**	**Percent of Lane Per 0.02 Mile**	**No**	**Digital Image Crack Detection Software**
Rutting	**Inches**	**Rut Depth Per 0.02 Mile**	**Yes**	**DCV – Laser Rut Measuring System (LRMS)**
Roughness	**IRI**	***RCI Per 0.02 Mile**	**No**	**DCV – Lasers /Accelerometers**

***Note: Roughness is measured on concrete roadways, but surface distresses and rutting are not measured. For concrete, PCR = RCI**

ALLIGATOR CRACKING

Description

Alligator cracking is considered a combination of fatigue and block cracking. It is a series of interconnected cracks in various stages of development. Alligator cracking develops into a many-sided pattern that resembles chicken wire or alligator skin. It can occur anywhere in the road lane. Alligator cracking must have a quantifiable area.

Severity Levels

LOW
An area of cracks with no or very few interconnecting cracks and the cracks are not spalled. Cracks are <= 0.25 in (6mm) in mean width. Cracks in the pattern are no further apart than 1 foot (0.328 m). May be sealed cracks with sealant in good condition and a crack width that cannot be determined.

MEDIUM
An area of interconnected cracks that form a complete pattern. Cracks may be slightly spalled. Cracks are >0.25 in. (6 mm) and <= 0.75 in. (19 mm) or any crack with a mean width <= 19 mm and adjacent low severity cracking. Cracks in the pattern are no further apart than 6 in. (150 mm).

HIGH
An area of interconnected cracks forming a complete pattern. Cracks are moderately or severely spalled. Cracks are >0.75 in (19mm) or any crack with a mean width <= 0.75 in (19mm) and adjacent medium to high severity random cracking.

A combination of observed crack width and crack pattern is used to determine overall severity of alligator cracking. Based on above description of each severity, the highest level of crack width and crack pattern determines overall severity. Table 2 illustrates this.

TABLE 2: Alligator Crack Severity Levels

ALLIGATOR CRACKING SEVERITY LEVELS		Crack Pattern		
		LOW	**MED**	**HIGH**
Crack Width	**LOW**	L	M	H
	MED	M	M	H
	HI	H	H	H

LONGITUDINAL CRACKING

Description

Longitudinal cracking occurs predominantly parallel to the pavement centerline. It can occur anywhere within the lane. Longitudinal cracks occurring in the wheelpath may be noteworthy.

Severity Levels

LOW
Cracks with a mean width of < 0.25 in. (6 mm). Sealed cracks with sealant in good condition and a width that cannot be determined.

MED
Cracks with a mean width > 0.25 in. (6 mm) and <= 0.75 in. (19 mm). Also, any crack with a mean width < 0.75 in. (19 mm) and adjacent random low severity cracking.

HIGH
Cracks with a mean width > 0.75 in. (19 mm). Also, any crack with a mean width < 0.75 in. (19 mm) and adjacent random medium to high severity cracking.

TRANSVERSE CRACKING

Description

Transverse cracking occurs predominantly perpendicular to the pavement centerline. It can occur anywhere within the lane.

Severity Levels

LOW
Cracks with a mean width of < 0.25 in. (6 mm). Sealed cracks with sealant in good condition and a width that cannot be determined.

MED
Cracks with a mean width > 0.25 in. (6 mm) and <= 0.75 in. (19 mm). Also, any crack with a mean width < 0.75 in. (19 mm) and adjacent random low severity cracking.

HIGH
Cracks with a mean width > 0.75 in. (19 mm). Also, any crack with a mean width < 0.75 in. (19 mm) and adjacent random medium to high severity cracking.

PATCHING AND POTHOLES

Description

Patching is an area of pavement surface that has been removed and replaced with patching material or an area of pavement surface that has had additional patching material applied. Patching may encompass partial-lane or full-lane width. On full-lane width patching; the total, contiguous length of a patch may not exceed 0.30 mi. (0.48 km). Any full-lane width patch exceeding 0.30 mi. in length is considered a pavement change, not a patch for the purposes of distress analysis. Patching must have a quantifiable area.

Potholes are bowl-shaped holes of various sizes occurring in the pavement surface.

Severity Levels

There are no stratified severities for Patching/Potholes. They either are present or they are not.

RUTTING

Description

Rutting is a longitudinal surface depression in the wheelpath.

Severity Levels

LOW
Ruts with a measured depth $\geq$ 0.20" and $\leq$ 0.49"

MED
Ruts with a measured depth $\geq$ 0.50" and $\leq$ 0.99"

HIGH
Ruts with a measured depth $\geq$ 1.00"

Ruts < 0.20" are not included in the distress calculations.

ROUGHNESS

Description

Roughness is the measurement of the unevenness of the pavement in the direction of travel. It is measured in units of IRI (International Roughness Index), inches per mile, and is indicative of ride comfort.

Severity Levels

There are no stratified severity levels for roughness. The roughness (or smoothness) of a road surface can be defined by IRI in the following table.

TABLE 3: IRI

IRI Descriptions	
Type of Road	**Typical IRI (in/mile)**
New Road, no noticeable roughness	<90
Small level of roughness	90 – 126
Road of average roughness	126 – 190
Road with above average roughness	190 – 253
Road with severe roughness	253 – 380
Nearly impassable	>380

INDEX FORMULAS

Note**:** All index formulas listed below contain MAE applicable to 0.02 mile (105.6 feet) interval.

Alligator Crack Index

AC_INDEX = 100 – 40 * [(%LOW / 35) + (%MED / 15) + (%HI / 5)]

Where:

The values *%LOW*, *%MED* and *%HI* report the percentage of the observed pavement (0.02 mile, primary lane) that contains alligator cracking within the respective severities. These values range from 0 to 100.

%LOW = Percent of total area (primary lane, 0.02 in length), low severity
%MED = Percent of total area (primary lane, 0.02 in length), medium severity
%HI = Percent of total area (primary lane, 0.02 in length), high severity

Percent of total area is computed as:

$$\frac{\text{square foot area of alligator crack severity}}{\text{0.02 mile * lane width}}$$

In AC_INDEX, the denominators 35, 15, and 5 are the Maximum Allowable Extents (MAE) for each severity. In other words, we will allow up to 35% of low severity alligator cracking for a 0.02 interval before failure, 15% for medium severity, and so on. As you can see, if any single severity reaches MAE the resulting index value is 60, or failure.

Longitudinal Crack Index

LC_INDEX = 100 – 40 * [(%LOW / 175) + (%MED / 75) + (%HI / 25)]

Where:

The values *%LOW*, *%MED*, and *%HI* report the length of longitudinal cracking within each severity as a percent of the section length (0.02 mile, primary lane).
These values are ≥ 0 and can exceed 100.

%LOW = Percent of interval length (primary lane, 0.02 in length), low severity
%MED = Percent of interval length (primary lane, 0.02 in length), medium severity
%HI = Percent of interval length (primary lane, 0.02 in length), high severity

Percent of interval length is computed as:

$$\frac{\text{length of respective longitudinal cracking}}{\text{0.02 mile (105.6 feet)}}$$

In LC_INDEX, the denominators 175, 75, and 25 are the Maximum Allowable Extents (MAE) for each severity. In other words, we will allow up to 175% of low severity alligator cracking for a 0.02 interval before failure, 75% for medium severity, and so on. As you can see, if any single severity reaches MAE the resulting index value is 60, or failure.

Structural Crack Index

SC_INDEX = [100 - ((100 - AC_INDEX) + (100 - LC_INDEX))]

Structural Crack Index is a combination of Alligator Cracking and Longitudinal Cracking, and is used in the SCR formula in lieu of AC and LC separately.

Transverse Crack Index

TC_INDEX = 100 – 40 * [(LOW / 21.1) + (MED / 4.4) + (HI / 2.6)]

Where:

The values *LOW*, *MED* and *HI* report a count of the total number of transverse cracks (reported to three decimals) within each severity level, where one transverse crack is equal to the lane width. These values are ≥ 0.

LOW = Number of cracks in interval (primary lane, 0.02 in length), low severity
MED = Number of cracks in interval (primary lane, 0.02 in length), medium severity
HI = Number of cracks in interval (primary lane, 0.02 in length), high severity

Number of cracks is computed as:

$$\frac{\text{Total length of transverse cracks}}{\text{Lane width}}$$

In TC_INDEX, the denominators 21.1, 4.4, and 2.6 are the Maximum Allowable Extents (MAE) for each severity. In other words, we will allow up to 21.1 low severity transverse cracks for a 0.02 interval before failure, 4.4 cracks for medium severity, and so on. As you can see, if any single severity reaches MAE the resulting index value is 60, or failure.

Patching Index

PATCH_INDEX = 100 – 40 * (%PATCHING / 80)

Where:

The value *%PATCHING* reports the percentage of the observed pavement (0.02 mile, primary lane) that contains patching/potholes. This value ranges from 0 to 100.

%PATCHING = Percent of total area (primary lane, 0.02 in length)

Percent of total area is computed as:

$$\frac{\text{square foot area of patching/potholes}}{\text{0.02 mile * lane width}}$$

There are no severity levels for patching. It either exists or does not.

In PATCH_INDEX, the denominator 80 is the Maximum Allowable Extent (MAE) for each severity. In other words, we will allow up to 80% patching for a 0.02 interval before failure. As you can see, if patching/potholes reaches MAE the resulting index value is 60, or failure.

Rutting Index

RUT_INDEX = 100 – 40 * [(%LOW / 535) + (%MED / 205) + (%HI / 40)]

Where:

20 rut depth measurements are taken per 0.02 interval for each of 2 wheel paths (left and right), resulting in a total of 40 measurements taken for both wheel paths. *Each wheelpath is analyzed independently for rut severities.* The values *%LOW*, *%MED* and *%HI* are a *total percentage* of left wheelpath percentage and right wheelpath percentage added together for the respective severity. These values range from 0 to 200.

%LOW = Percent of LOW ruts in left wheelpath based on 20 ruts, plus percent of LOW ruts in right wheelpath based on 20 ruts.
%MED = Percent of MED ruts in left wheelpath based on 20 ruts, plus percent of MED ruts in right wheelpath based on 20 ruts.
%HI = Percent of HI ruts in left wheelpath based on 20 ruts, plus percent of HI ruts in right wheelpath based on 20 ruts.

Percent of rut measurements within each severity can also be computed as:

$$\frac{\text{total number of ruts within each severity in both wheelpaths}}{20} * 100$$

In RUT_INDEX, the denominators 535, 205, and 40 are the Maximum Allowable Extents for each severity. In other words, the formula allows up to 535% low severity

ruts for a 0.02 interval before. However, since 200 is the highest measurable percentage allowed, 535% is unattainable and therefore, no amount of LOW severity rutting will cause the RUT_INDEX to fail a road. Similarly, since the MAE for MED severity rutting is 205, no amount of MED severity rutting will cause the RUT_INDEX to reach 60 and fail the road. As you can see, LOW severity rutting reaches MAE the resulting index value is 60, or failure. This formula was intentionally designed to minimize the impact of LOW and MED severity rutting on RUT_INDEX.

Roughness Condition Index (Asphalt)

RCI = 32 * [5 * (2.718282 ^ (-0.0041 * AVG IRI))]

Where:

The value *AVG IRI* reports the average value of the Left IRI and Right IRI measurements for the interval (0.02 mile, primary lane). This value can range from approximately 40 to 999.0.

Average IRI is computed as:

$$\frac{\text{Left wheelpath IRI + Right wheelpath IRI}}{2}$$

There is no applicable threshold for failure for this index.

Roughness Condition Index (Concrete)

RCI = $-0.0012(IRI^2) + 0.0499(IRI) + 99.542$

For concrete, PCR = RCI

Surface Condition Rating Index

SCR = *Lowest* Index Value Of: [SC_INDEX, TC_INDEX, PATCH_INDEX, RUT_INDEX]

Note: *The modified SCR equation above combines AC_INDEX and LC_INDEX, and considers that a single AC/LC index value of the Structural Crack Index (SC_INDEX). The lowest of the four computed index values (SC_INDEX, TC_INDEX, PATCH_INDEX, or RUT_INDEX) becomes the SCR.*

Where:

See above for determinations of SC_INDEX, TC_INDEX, PATCH_INDEX and RUT_INDEX.

The threshold for failure for this index is SCR = 60.

Data Collection Vehicle Subsystems

Data on paved roads in Cycle 5 is collected by FHWA using a Pathway Services Inc. Data Collection Vehicle (DCV), called PathRunner. The DCV is driven in the primary-direction lane at posted speed limits and less.

CAMERAS

Forward-facing and rear-facing video is collected as .jpg digital imagery at a frequency of 26.4 feet.

Two forward-facing cameras are mounted above the vehicle cab, one pointed straight ahead and the other to the right shoulder providing seamless 120 degree viewing.

CAMERA SPECIFICATIONS **Two Forward/ One Rear Facing**	
Camera lens/type	FUJINON CCTV LENS H16x10B-Y41
Focal length	10 mm – 160 mm
Image size	8.8 mm x 6.6mm
Image format	*.jpg
Image resolution	HD 2000 X 1200
Image pixel size	depends on distance
Zoom ratio	16x
Max Relative Aperture	1:2.5
Iris range	F25-T800 (Equivalent to F800)

Pavement images are created using a Laser Scan Imaging System. This system is composed of a single high resolution line-scan camera and two lasers configured to image an approximate 11-foot wide lane with 1 mm resolution.

CAMERA SPECIFICATIONS **Pavement Line Scan**	
Image size	4280 pixels/line
Image width	4 meters (3950 mm nominal)
Laser class	3B
Power	250W
Vehicle speed limitations	62 mph
Environment	Dry pavement, day or night
Sensor size (approx)	300 mm(H) x 375 mm(L) x 200 mm(D)
Image frame length	26.4 feet

DMI (Distance Measuring Instrument)

The DMI (Distance Measuring Instrument) obtains road length measurements that are accurate to 0.1% for speeds up to 60 mph. The DMI is connected to the hub of the rear wheel on the driver's side, and is calibrated to the revolutions of the rear vehicle axle on a regular basis.

ROUGHNESS (IRI)

The collection system includes a South Dakota type laser profiler manufactured based on active Class 1 ASTM E950 standards. The dynamic profile of the pavement surface is collected from which the IRI roughness data is computed. The sensors include one accelerometer on each wheelpath, one height sensor (laser) on each wheelpath, and a distance transducer.

IRI SPECIFICATIONS	
Reported IRI units	Inches/mile
Vehicle speed limitations	12-62 mph
IRI equipment certification	Texas Transportation Institute (TTI)
Wavelengths accommodated	6 in. – 300 feet
IRI computed & reported	World Bank Technical Paper Number 46
Environment	Dry pavement, day or night, above 32 degrees F
Adherence to specifications	ASTM E950-98 (2004), ASTM E 1926-08, AASHTO MP 11-08, AASHTO PP 49-08

RUTTING

Rutting depths are measured using an INO Laser Rut Measurement System (LRMS). This system is a transverse profiling device that detects and characterizes pavement rutting. The LRMS can acquire full 4 meter width profiles of a pavement lane at normal traffic speeds and uses two laser profilers that digitize transverse sections of the pavement.

RUTTING SPECIFICATIONS	
Reported rut depth units	Inches
Vehicle speed limitations	Up to 62 mph
Sampling rate	30-150 profiles/second
Transverse resolution	1280 points/profile
Transverse field-of-view	4 m
Depth accuracy (nominal)	+/- 1 mm
Environment	Dry pavement, day or night, above 32 degrees F
Adherence to specifications	ASTM E1703M-95 (reapproved 2005)

GPS & INERTIAL SYSTEMS

GPS is collected by an onboard system employing OmniSTAR real-time correction and a gyroscope (spin-type) to provide accurate positioning data (pitch/roll/heading) in instances of satellite obstruction. All GPS coordinates are tied to image and linear distance measurements.

GPS SPECIFICATIONS	
Static accuracy	Sub-meter
Dynamic accuracy	2-3 meters
Receiver	12 satellite tracking
Coordinate system	Lat Lon WGS 84
Environment	Day or night
Cross-slope	+- 0.5 degrees
Grade	+- 0.5 degrees

GPS on Manually Rated Roads (MRR)

Parking areas, some roads, and other paved areas that are not fully drivable with the DCV are collected manually by field technicians. GPS is collected for these routes using portable Trimble GPS backpack units. Paved campground pads and driveways are not typically included in the inventory or GPS.

Geodatabase – Background and Metadata

In addition to this park report, a ***geodatabase*** containing both tabular and spatial data specific to this park has been provided. All data disseminated in the preceding report has been obtained from the tables and fields within said geodatabase. The geodatabase can be referenced for tabular data via Microsoft Access or for both tabular and spatial data via ESRI's ArcGIS Suite of software which consists of; ArcMap, ArcCatalog and ArcExplorer. Consolidating the RIP data into one database creates a seamless relationship of tabular and geographic data. It will allow RIP to facilitate easier updates and enhancements in the future.

A geodatabase can be thought of as simply a database containing spatial data. Many different tables are contained with the park's geodatabase. A complete and thorough description of the tables and fields contained within this geodatabase can be found in the ***metadata***. The metadata is attached directly within the geodatabase and can be accessed via ESRI's ArcCatalog. The metadata portion of the geodatabase also includes data dictionary report functionality that formats the metadata into an easy to read report.

GLOSSARY OF TERMS AND ABBREVIATIONS

TERM OR ABBREVIATION	DESCRIPTION OR DEFINITION
AC	Alligator Cracking
CRS	Condition Rating Sheets (Section 5)
DCV	Data Collection Vehicle
Excellent	Excellent rating with an index value of 95 to 100
Fair	Fair rating with an index value from 61 to 84
FUNCT_CLASS	Functional Classification (see Route ID, Section 2)
Good	Good rating with an index value from 85 to 94
IRI	International Roughness Index
Lane Width	Width from road centerline to fogline, or from centerline to edge-of-pavement when no fogline exists
LC	Longitudinal Cracking
MRR	Manually Rated Route
MRL	Manually Rated Line
MRP	Manually Rated Polygon
N/A	Not Applicable
NC	Not Collected
PATCH	Patching and Potholes
Paved Width	Width from edge-of-pavement to edge-of-pavement
PCR	Pavement Condition Rating
PKG	Parking Area
Poor	Poor rating with an index value of 0 to 60
RCI	Roughness Condition Index
SC	Structural Cracking
SCR	Surface Condition Rating
TC	Transverse Cracking