

Road Inventory and Condition Assessment



Hot Springs National Park HOSP - 7300

Cycle 5 Report

Prepared By: Federal Highway Administration

Road Inventory Program (RIP)

Data Collected: 12/2011 Report Date: 08/2012

Hot Springs National Park in Arkansas

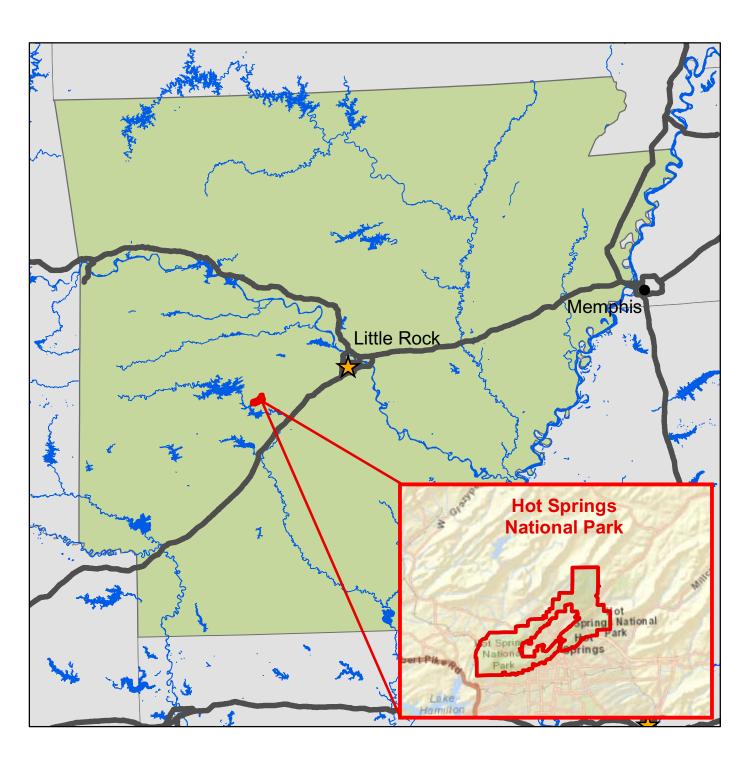




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Section 1 Introduction



Hot Springs National Park



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 168 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

FHWA/Eastern Federal Lands 21400 Ridgetop Circle Sterling, VA 20166 (703) 404-6371 FHWA/Central Federal Lands 12300 West Dakota Ave Lakewood, CO 80228 (720) 963-3560

Section 2 Park Route Inventory



Hot Springs National Park



Road Inventory Program 08/02/2012

(Numerical By Route #)

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

HOSP

HOT SPRINGS NATIONAL PARK

Rte. No.	Cycle Collected	FMSS No.	Concess Route	Route Name	Route De From	scription To	Maint. District	Paved Miles	Un- Paved Miles	Total Route Length	Func. Class	Manual Rated SQ/FT	Surf. Type	Area Maps
0010	5	61371		HOT SPRINGS MOUNTAIN DRIVE	FROM FOUNTAIN STREET	TO END OF FOUNTAIN STREET	N/A	2.74	0.00	2.74	1		AS	2
0011	5	61398		WEST MOUNTAIN DRIVE	FROM WHITTINGTON AVENUE	TO PROSPECT AVENUE	N/A	2.21	0.00	2.21	1		AS	1
0100	5	81539		NORTH MOUNTAIN LOOP ROAD	FROM ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE)	TO END OF ONE-WAY LOOP	N/A	0.76	0.00	0.76	2		AS	2
0101	5	61397		SUMMIT ROAD	FROM ROUTE 0011 (WEST MOUNTAIN DRIVE)	TO END OF LOOP AT SUMMIT	N/A	1.34	0.00	1.34	2		AS	1
0200	5	61334		GULPHA GORGE CAMPGROUND ROAD	FROM ROUTE 5000 (GORGE ROAD / STATE ROUTE 7S)	TO ROUTE 0203 (GULPHA GORGE CAMPGROUND UPPER LOOP)	N/A	0.38	0.00	0.38	3		AS	3
0201	5	61370		TOWER RETURN ROAD	FROM ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) AT MP 1.82	TO ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) AT MP 1.26	N/A	0.53	0.00	0.53	3		AS	2
0202ZZ	5	61369		TOWER PARKING ROADS	FROM ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) AT MP 1.40	TO ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) AT MP 1.66	N/A	0.22	0.00	0.22	3		AS	2
0203	5	82291		GULPHA GORGE CAMPGROUND UPPER LOOP	FROM ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) AT MP 0.12	TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) AT MP 0.29	N/A	0.17	0.00	0.17	3		AS	3
0204	5	82292		GULPHA GORGE CAMPGROUND LOWER LOOP	FROM ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) AT MP 0.27	TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) AT MP 0.16	N/A	0.13	0.00	0.13	3		AS	3
0205	5	102970		GULPHA GORGE DUMP STATION ROAD	FROM ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD)	TO ROUTE 0203 (GULPHA GORGE CAMPGROUND UPPER LOOP)	N/A	0.04	0.00	0.04	3		AS	3
0400	NC	236537		BLACK SNAKE FIRE ROAD	FROM ROUTE 5001 (BLACK SNAKE ROAD)	TO CANTERBURY ROAD	N/A	0.00	0.70	0.70	6		GR	
0401	NC	236538		STONE BRIDGE FIRE ROAD	FROM STONE BRIDGE ROAD	TO FOX PASS CUTOFF	N/A	0.00	1.60	1.60	6		GR	
0900	5	82245		HEADQUARTERS PARKING	FROM RESERVE STREET	TO PARKING	N/A	0.00	0.00	0.00		2,348	СО	2

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Road Inventory Program 08/02/2012

(Numerical By Route #)

Blue = All Paved Parking Areas

Shading Color Key: Red text denotes approx. mileage

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Green = All Unpaved Parking Areas

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Grey = Paved Routes, DCV not Driven

Black = State, Local or Private non-NPS Routes

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HOSP

HOT SPRINGS NATIONAL PARK

Rte. No.	Cycle Collected	FMSS No.	Concess Route	Route Name	Route Des From	cription To	Maint. District	Paved Miles	Un- Paved Miles	Total Route Length	Func. Class	Manual Rated SQ/FT	Surf. Type	Area Maps
0901A	5	82246		HOT SPRINGS MOUNTAIN PICNIC AREA PARKING A	ADJACENT TO ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) ON RIGHT		N/A	0.00	0.00	0.00		1,131	со	2
0901B	5	82247		HOT SPRINGS MOUNTAIN PICNIC AREA PARKING B	ADJACENT TO ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) ON RIGHT		N/A	0.00	0.00	0.00		692	со	2
0901C	5	82248		HOT SPRINGS MOUNTAIN PICNIC AREA PARKING C	ADJACENT TO ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) ON RIGHT		N/A	0.00	0.00	0.00		1,641	СО	2
0902	5	82249		PAGODA PARKING AREA	ADJACENT TO ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) ON RIGHT		N/A	0.00	0.00	0.00		953	AS	2
0903	5	82250		SHELTER HOUSE PARKING AREA	ADJACENT TO ROUTE 0100 (NORTH MOUNTAIN LOOP ROAD) ON LEFT		N/A	0.00	0.00	0.00		820	AS	2
0904	5	82251		NORTH MOUNTAIN PARKING AREA	ADJACENT TO ROUTE 0100 (NORTH MOUNTAIN LOOP ROAD) ON RIGHT		N/A	0.00	0.00	0.00		1,294	AS	2
0905	5	82252		WEST MOUNTAIN PICNIC AREA PARKING	ADJACENT TO ROUTE 0101 (SUMMIT ROAD) ON LEFT		N/A	0.00	0.00	0.00		3,205	AS	1
0906	5	82253		WEST MOUNTAIN SUMMIT PARKING AREA	FROM ROUTE 0101 (SUMMIT ROAD)	TO ROUTE 0101 (SUMMIT ROAD)	N/A	0.00	0.00	0.00		3,393	AS	1
0907	5	82254		MAINTENANCE AREA PARKING	FROM WHITTINGTON AVENUE	TO QUARTZ STREET	N/A	0.00	0.00	0.00		24,540	AS	1
0908	5	82255		HAPPY HOLLOW SPRING PARKING AREA	ADJACENT TO ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) ON RIGHT		N/A	0.00	0.00	0.00		1,046	СО	2
0909	5	82256		RANGER STATION PARKING	FROM 527 SPRING STREET	TO RESERVE STREET	N/A	0.00	0.00	0.00		14,030	СО	2
0910	5	82257		MAINTENANCE AREA EMPLOYEE PARKING	ADJACENT TO QUARTZ STREET ON LEFT		N/A	0.00	0.00	0.00		2,496	AS	1
]			

Road Inventory Program 08/02/2012

(Numerical By Route #)

Shading Color Key:

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Yellow = Unpaved Routes, DCV not Driven

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= Concession Route Flag ON

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HOSP

approx. mileage

HOT SPRINGS NATIONAL PARK

Rte. No.	Cycle Collected	FMSS No.	Concess Route	Route Name	Route Description From To	Maint. District	Paved Miles	Un- Paved Miles	Total Route Length	Func. Class	Manual Rated SQ/FT	Surf. Type	Area Maps
0911A	5	82258		GULPHA GORGE CAMPGROUND PARKING AREA A	ADJACENT TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) ON LEFT	N/A	0.00	0.00	0.00		1,991	AS	3
0911B	5	82259		GULPHA GORGE CAMPGROUND PARKING AREA B	ADJACENT TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) ON LEFT	N/A	0.00	0.00	0.00		920	AS	3
0911C	5	82239		GULPHA GORGE CAMPGROUND PARKING AREA C	ADJACENT TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) ON RIGHT	N/A	0.00	0.00	0.00		1,238	AS	3
0911D	5	82240		GULPHA GORGE CAMPGROUND PARKING AREA D	ADJACENT TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) ON LEFT	N/A	0.00	0.00	0.00		1,251	AS	3
0911E	5	82241		GULPHA GORGE CAMPGROUND PARKING AREA E	ADJACENT TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) ON LEFT	N/A	0.00	0.00	0.00		646	AS	3
0911F	5	82243		GULPHA GORGE CAMPGROUND PARKING AREA F	ADJACENT TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) ON LEFT	N/A	0.00	0.00	0.00		509	AS	3
0911G	5	82244		GULPHA GORGE CAMPGROUND PARKING AREA G	ADJACENT TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) ON LEFT	N/A	0.00	0.00	0.00		2,040	AS	3
0911H	5	82234		GULPHA GORGE CAMPGROUND PARKING AREA H	ADJACENT TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) ON LEFT	N/A	0.00	0.00	0.00		1,021	AS	3
09111	5	82235		GULPHA GORGE CAMPGROUND PARKING AREA I	ADJACENT TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) ON LEFT	N/A	0.00	0.00	0.00		1,047	AS	3
0911J	5	82237		GULPHA GORGE CAMPGROUND PARKING AREA J	ADJACENT TO ROUTE 0203 (GULPHA GORGE CAMPGROUND UPPER LOOP) ON RIGHT	N/A	0.00	0.00	0.00		747	AS	3

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(Numerical By Route #)

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Flag ON

Green = All Unpaved Parking Areas

Green = All Unpaved Parking Areas

Flag ON

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** DCV - Data Collection Vehicle NC - Not Collected

HOSP

HOT SPRINGS NATIONAL PARK

Rte. No.	Cycle Collected	FMSS No.	Concess Route	Route Name	Route De	scription To	Maint. District	Paved Miles	Un- Paved Miles	Total Route Length	Func. Class	Manual Rated SQ/FT	Surf. Type	Area Maps
0911K	5	82238		GULPHA GORGE CAMPGROUND PARKING AREA K	ADJACENT TO ROUTE 0203 (GULPHA GORGE CAMPGROUND UPPER LOOP) ON RIGHT		N/A	0.00	0.00	0.00		803	AS	3
0912	5	236379		TOWER PARKING LOT	FROM ROUTE 0202ZZ (TOWER PARKING ROADS)	TO ROUTE 0202ZZ (TOWER PARKING ROADS)	N/A	0.00	0.00	0.00		16,211	AS	2
0913	NC	236380		BLACK SNAKE SUMMIT PARKING AREA	FROM ROUTE 5001 (BLACK SNAKE ROAD)	TO PARKING	N/A	0.00	0.00	0.00		2,600	GR	
0914	NC	236381		CEDAR GLADES SUMMIT PARKING	FROM CEDAR GLADES ROAD	TO PARKING	N/A	0.00	0.00	0.00		1,100	GR	
5000	5			GORGE ROAD / STATE ROUTE 7S	FROM STATE ROUTE 7	TO GRAND AVENUE / U.S. HIGHWAY 70	N/A	1.53	0.00	1.53			AS	3
5001	5			BLACK SNAKE ROAD	FROM WHITTINGTON AVENUE	TO PARK BOUNDARY AT BULL BAYOU BRIDGE	N/A	2.04	0.00	2.04			AS	4

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(Numerical By Route #)

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Blue = All Paved Parking Areas

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= C

= Concession Route Flag ON

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** DCV - Data Collection Vehicle

NC - Not Collected

0.00
0.00
0.00
16,211
0
16,211
0
JES
76
N/A
80
15.96

^{* -} 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.

Road Inventory Program 08/02/2012

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Red text denotes

approx. mileage

(Numerical By Route #)

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Blue = All Paved Parking Areas

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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, camparounds, etc. Route Numbers 100-199.
- <u>Class 3</u> 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.
- <u>Class 5</u> 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.
- 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.

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 Assets. 5000 Routes are driven for GPS and Video Log only.

Surface Type Abbreviations:

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AS - Asphaltic Concrete Pavement

CO - Portland Cement Concrete Pavement

BR - Brick or Pavers Road Bed

CB - Cobble Stone Road Bed

Green = All Unpaved Parking Areas

GR - Gravel Road Bed

SA - Sand Road Bed

NV - Native or Dirt Material Road Bed

OT - Other Materials Road Bed

^{**} DCV - Data Collection Vehicle NC - Not Collected

NPS/RIP Subcomponent Details for HOSP

Road Inventory Program 08/19/2012

(Numerical By Subcomponent #)

Page 1 of 1

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= Concession Route Flag ON

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HOSP

HOT SPRINGS NATIONAL PARK

Asset	Asset Entered in FMSS System													
Rte.	FMSS	rcle ollected		Route De	escription	oncess	nc. ass	Paved	Un- Paved	Total Route	Manual Rated			
No.	No.	ςς Ω	Route Name	From	То	Con	<u> </u>	Miles	Miles	Length	SQ/FT			
0202ZZ	61369	5	TOWER PARKING ROADS	FROM ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) AT MP 1.40	TO ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) AT MP 1.66		3	0.222	0.000	0.222				

Asset	Asset HOSP-0202ZZ Subcomponent Breakdown												
Rte. FMSS = 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					escription To	Concess Route	Func. Class	Paved Miles	Un- Paved Miles	Total Route Length	Manual Rated SQ/FT		
0202AZ	61369	5	TOWER PARKING ENTRANCE ROAD	FROM ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) AT MP 1.40	TO ROUTE 0912 (TOWER PARKING LOT)		3	0.060	0.000	0.060			
0202BZ	61369	5	TOWER PARKING EXIT ROAD	FROM ROUTE 0912 (TOWER PARKING LOT)	TO ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) AT MP 1.66		3	0.162	0.000	0.162			

ROUTE IDENTIFICATION CHANGES TO PAVED ROUTES FROM PREVIOUS CYCLE - HOSP

ROUTES ADDED FROM PREVIOUS INVENTORY:												
Route #	Route Name	Reason for Addition	Comments									
0912	TOWER PARKING LOT	ROUTE SPLIT	NEW PARKING AREA ADDED TO INVENTORY IN CYCLE 5 BY SEPARATING IT OUT OF ROUTE 0202.									
5000	GORGE ROAD / STATE ROUTE 7S	OTHER	ROUTE ADDED TO INVENTORY IN CYCLE 5.									
5001	BLACK SNAKE ROAD	OTHER	ROUTE ADDED TO INVENTORY IN CYCLE 5.									
	OTHER (CHANGES FROM PREVIOUS IN	IVENTORY:									
Route #	Route Name	Type of Change	Comments									
0202ZZ	TOWER PARKING ROADS	ROUTE SPLIT	ROUTE 0202 (TOWER LOOP ROAD) WAS SPLIT INTO SUBCOMPONENTS (0202AZ AND 0202BZ) ON EITHER SIDE OF PARKING LOT 0912 (TOWER PARKING LOT) WHEN THE PARKING AREA WAS ADDED IN CYCLE 5. ROUTE 0202ZZ BECAME SHORTER AFTER THE ADDITION OF PARKING AREA 0912.									
0202ZZ 0907	TOWER PARKING ROADS MAINTENANCE AREA PARKING	ROUTE SPLIT SQ FEET CHANGE	SPLIT INTO SUBCOMPONENTS (0202AZ AND 0202BZ) ON EITHER SIDE OF PARKING LOT 0912 (TOWER PARKING LOT) WHEN THE PARKING AREA WAS ADDED IN CYCLE 5. ROUTE 0202ZZ BECAME SHORTER AFTER THE ADDITION OF									

Section 3 Park Summary Information



Hot Springs National Park



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

	Pavement Condition Rating (PCR)									
	Poor (0-60)	Fair (61-84)		Good	(85-94)	Excellent	(95-100)	TOTAL	
F.C.	MILES	%	MILES	%	MILES	%	MILES	%	MILES	
1	1.42	16.67%	1.00	11.74%	1.59	18.66%	0.94	11.03%	4.95	
2	0.02	0.23%	0.78	9.15%	0.76	8.92%	0.54	6.34%	2.10	
3			0.06	0.70%	0.39	4.58%	1.02	11.97%	1.47	
4										
5										
6										
7										
8										
Totals	1.44	16.90%	1.84	21.60%	2.74	32.16%	2.50	29.34%	8.52	

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.

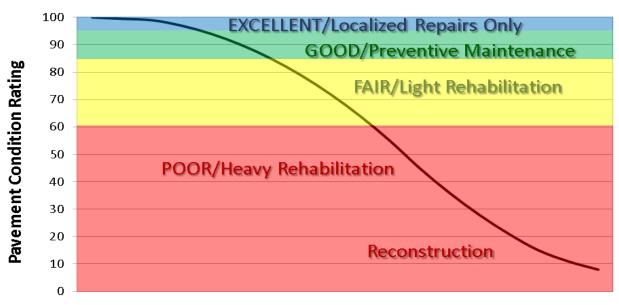
Explanation of the Excellent, Good, Fair and Poor Condition Descriptions

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.

Condition Categories and Treatments

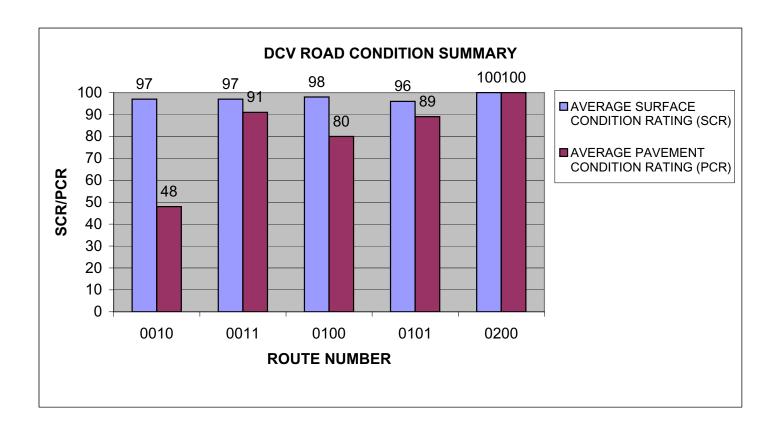


Pavement Age

HOSP: DCV ROAD CONDITION SUMMARY

DCV - Data Collection Vehicle

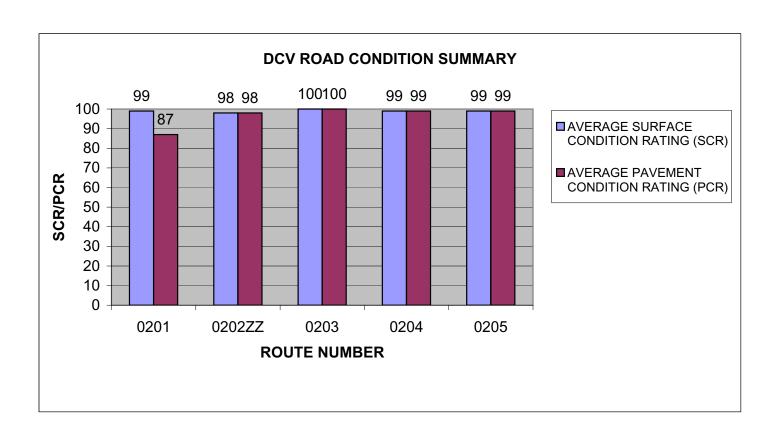
ROUTE NUMBER	ROUTE NAME	101.01	PAVED LENGTH		AVERAGE SURFACE CONDITION RATING (SCR)	AVERAGE PAVEMENT CONDITION RATING (PCR)
0010	HOT SPRINGS MOUNTAIN DRIVE	1	2.74	ASPHALT	97	48
0011	WEST MOUNTAIN DRIVE	1	2.21	ASPHALT	97	91
0100	NORTH MOUNTAIN LOOP ROAD	2	0.76	ASPHALT	98	80
0101	SUMMIT ROAD	2	1.34	ASPHALT	96	89
0200	GULPHA GORGE CAMPGROUND ROAD	3	0.38	ASPHALT	100	100



HOSP: DCV ROAD CONDITION SUMMARY

DCV - Data Collection Vehicle

ROUTE		FUNCT	PAVED	SURFACE	AVERAGE SURFACE CONDITION	AVERAGE PAVEMENT CONDITION
NUMBER	ROUTE NAME	CLASS	LENGTH	TYPE	RATING (SCR)	RATING (PCR)
0201	TOWER RETURN ROAD	3	0.53	ASPHALT	99	87
0202ZZ	TOWER PARKING ROADS	3	0.22	ASPHALT	98	98
0203	GULPHA GORGE CAMPGROUND UPPER LOOP	3	0.17	ASPHALT	100	100
0204	GULPHA GORGE CAMPGROUND LOWER LOOP	3	0.13	ASPHALT	99	99
0205	GULPHA GORGE DUMP STATION ROAD	3	0.04	ASPHALT	99	99

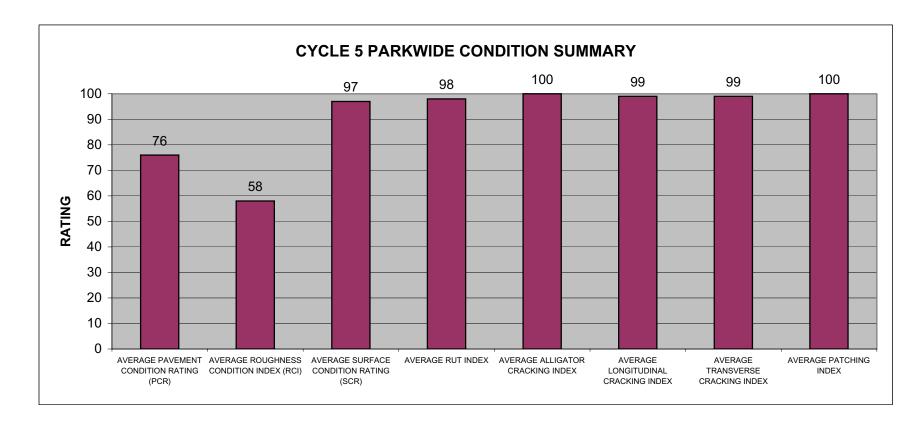


HOSP: PARKWIDE DCV CONDITION SUMMARY

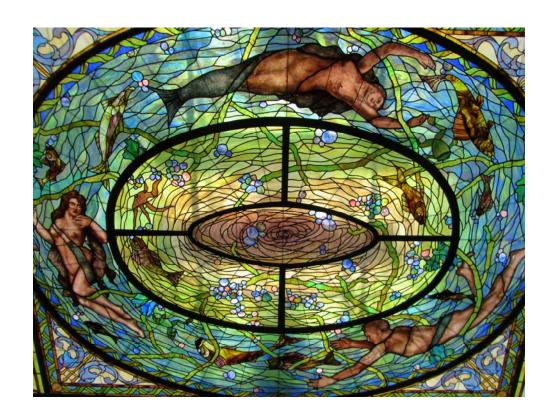
AVERAGE	AVERAGE	AVERAGE		AVERAGE	AVERAGE	AVERAGE	
PAVEMENT	ROUGHNESS	SURFACE		ALLIGATOR	LONGITUDINAL	TRANSVERSE	AVERAGE
CONDITION	CONDITION	CONDITION	AVERAGE	CRACKING	CRACKING	CRACKING	PATCHING
RATING (PCR)	INDEX (RCI)	RATING (SCR)	RUT INDEX	INDEX	INDEX	INDEX	INDEX
76	58	97	98	100	99	99	100

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.

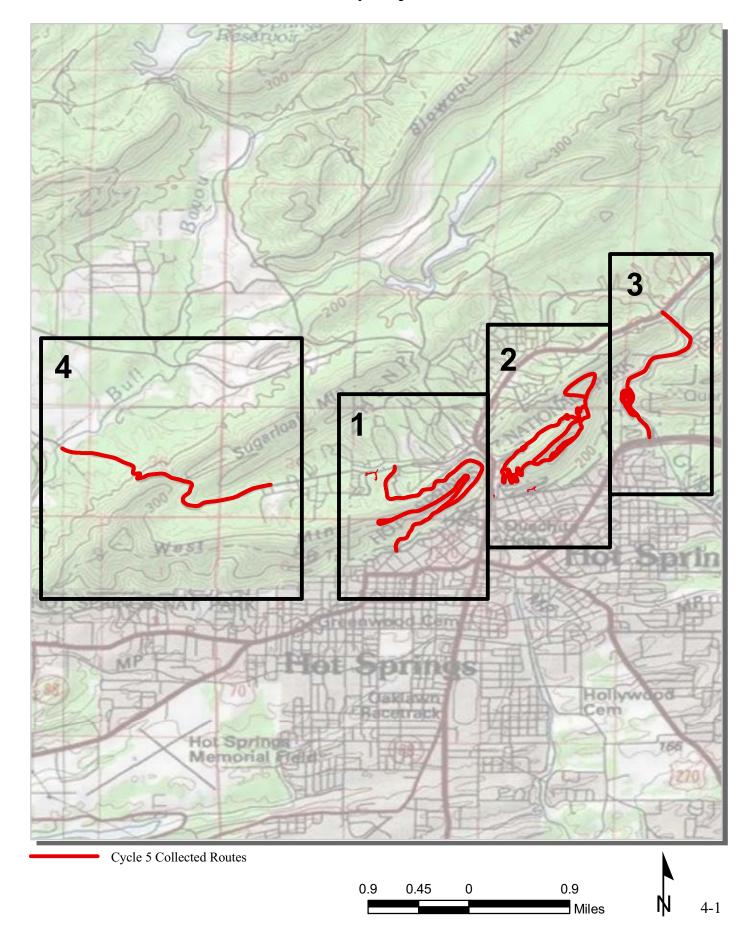


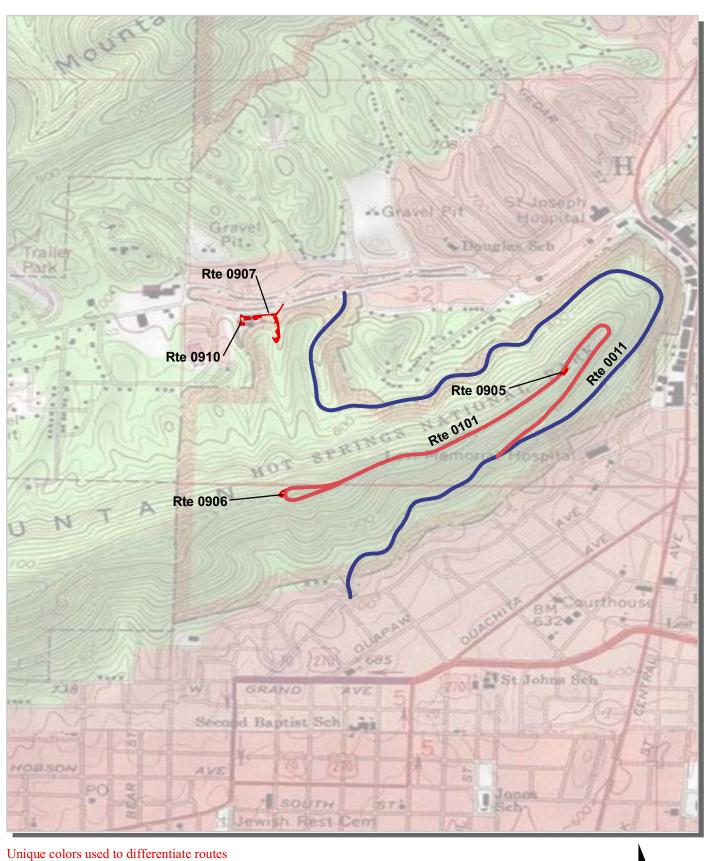
Section 4 Park Route Location Maps



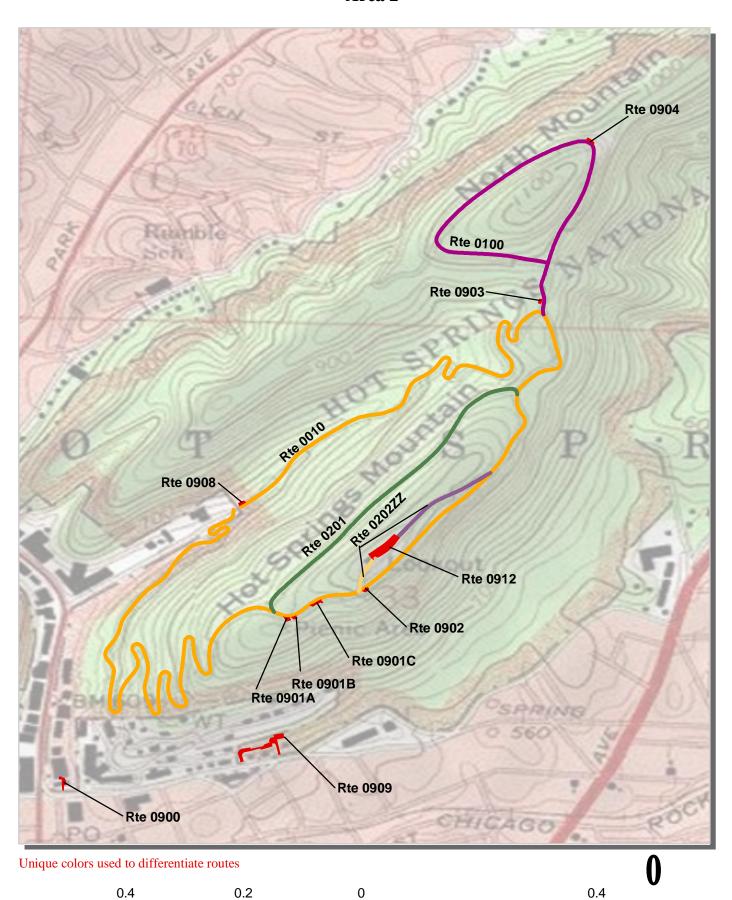
Hot Springs National Park





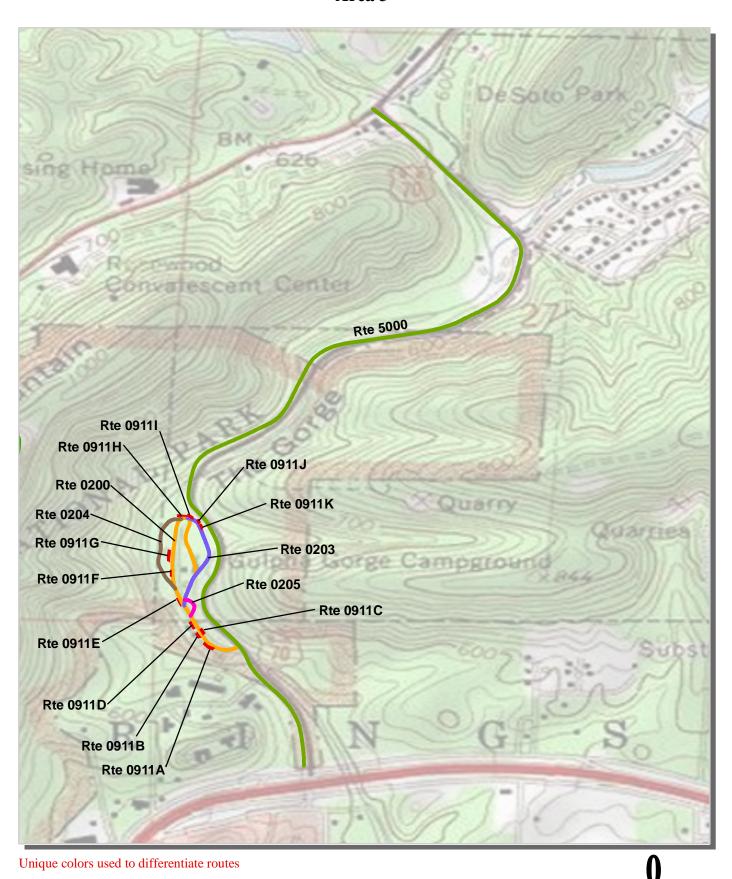


4-2



4-3

Miles



0

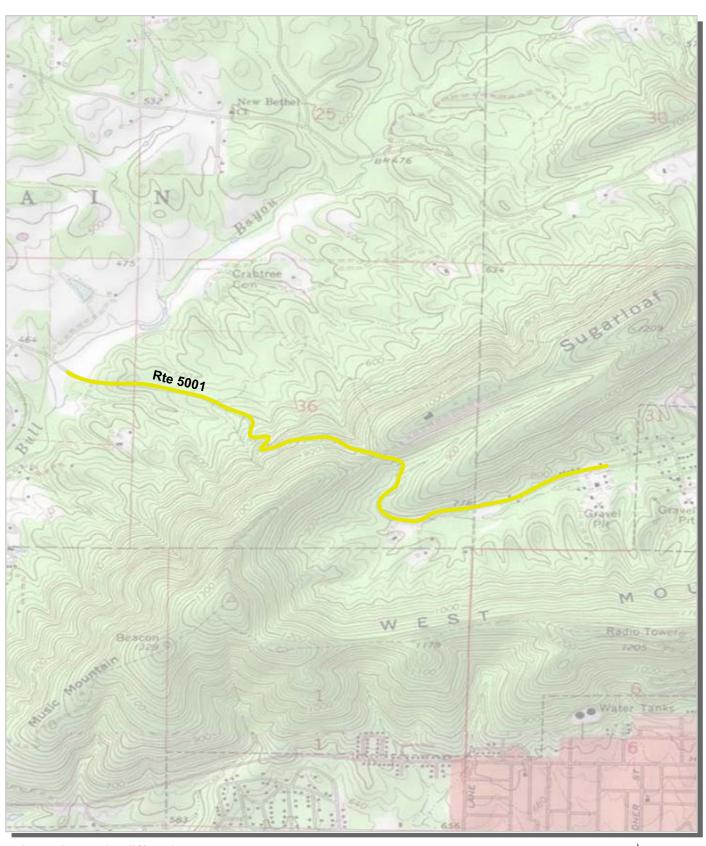
0.4

Miles

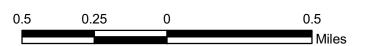
4-4

0.4

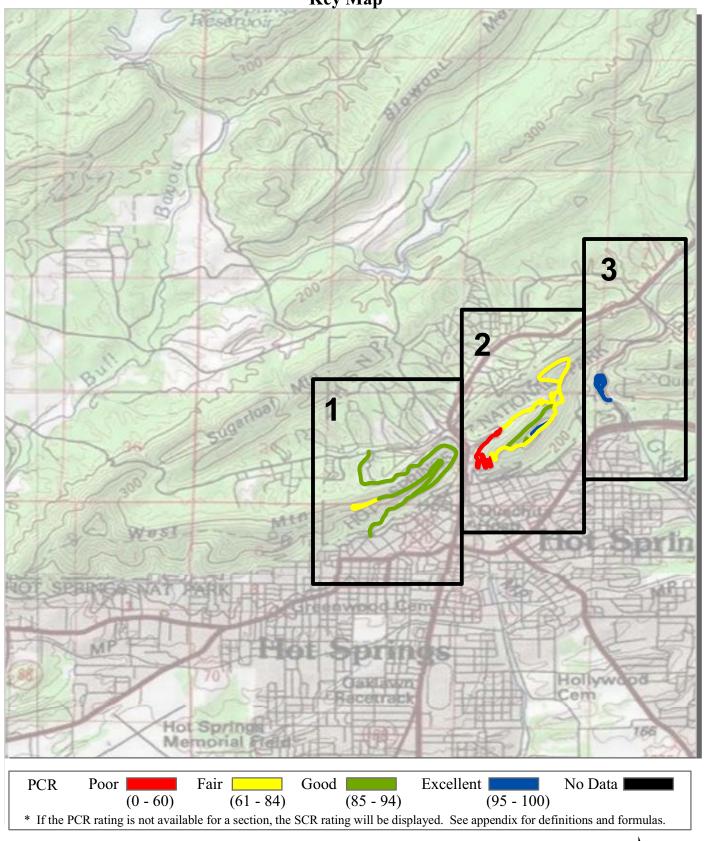
0.2



Unique colors used to differentiate routes

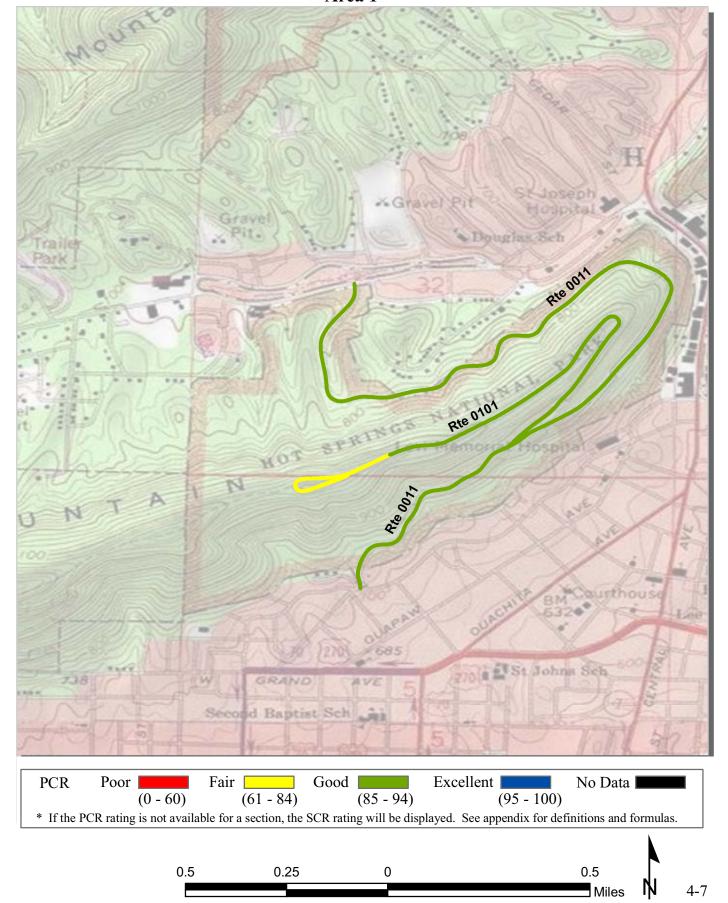


Hot Springs National Park Route Condition Map PCR - Mile by Mile Key Map

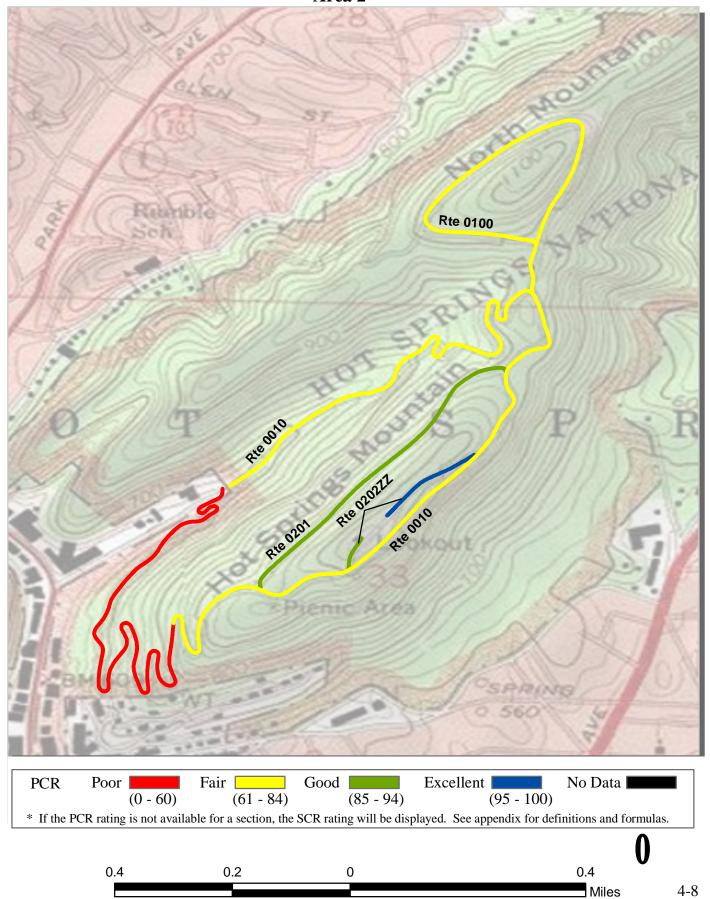


Note: Only routes collected by the DCV in Cycle-5 are displayed.

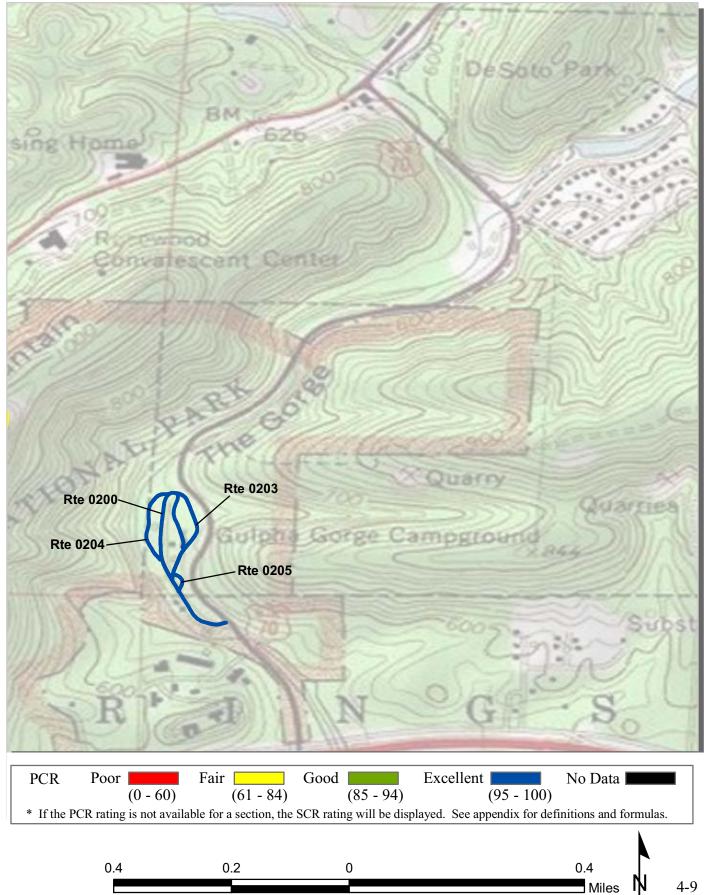
Hot Springs National Park Route Condition Map PCR - Mile by Mile Area 1



Hot Springs National Park Route Condition Map PCR - Mile by Mile Area 2



Hot Springs National Park Route Condition Map PCR - Mile by Mile Area 3

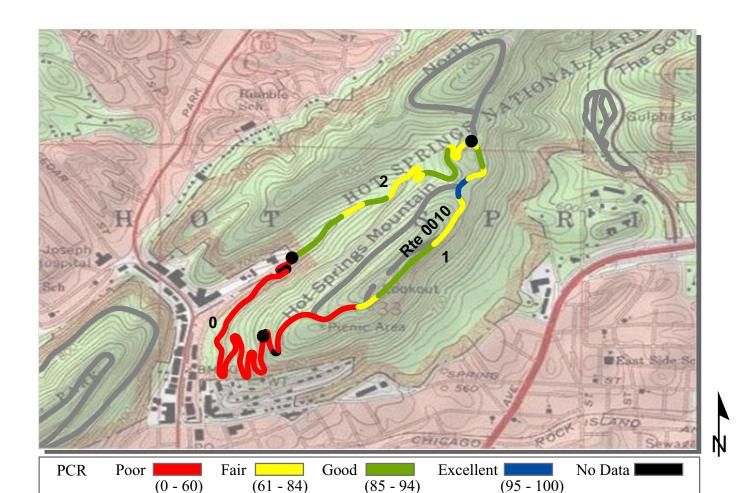


Section 5 Paved Route Condition Rating Sheets



Hot Springs National Park





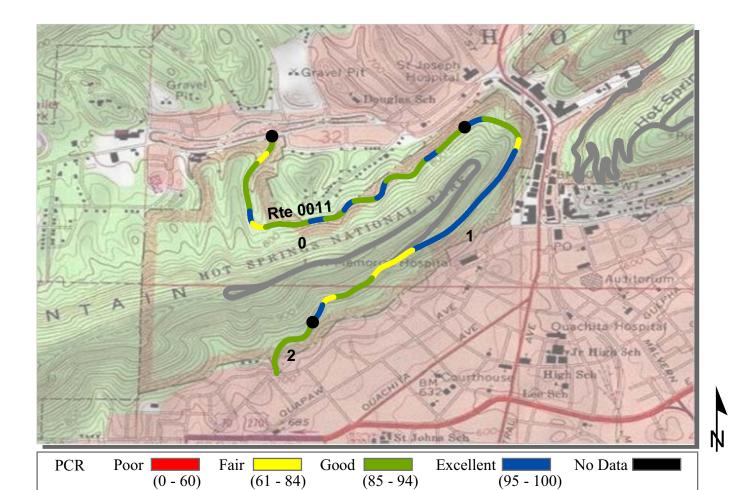
* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

COLLECTED:

12/12/2011

ROUTE: 0010 HOT SPRINGS MOUNTAIN DRIVE HOSP: HOT SPRINGS NATIONAL PARK

MIDWEST REGION TOTAL LENGTH: **2.74 Miles** Section Number 1.00 1.00 0.74 Section Length (mi) **Cross Section Information** Number of Lanes 17 19 Paved Width (ft) 16 Lane Width (ft) 17 15 17 Roadway Condition Information NC 97 98 SCR (Surface Condition Rating) PCR (Pavement Condition Rating) 0 80 72 Distress Index Values Structural Crack Index NC 100 100 NC 100 100 Transverse Cracking Index NC 100 100 Patching Index NC 97 98 **Rutting Index** 35 52 Roughness Condition Index (RCI)



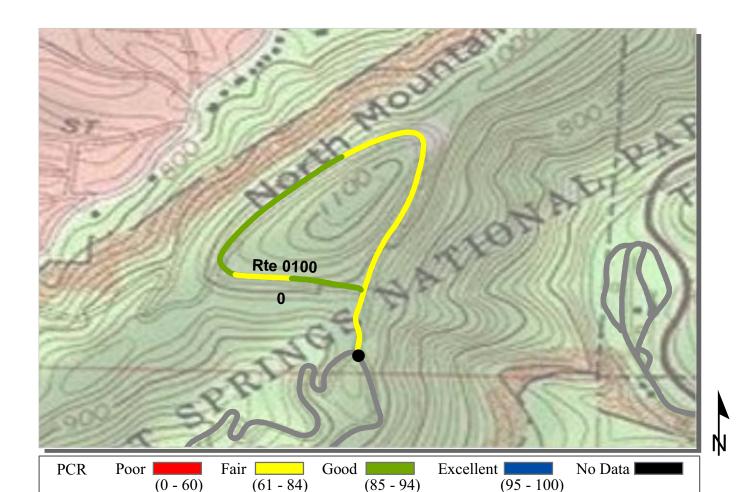
* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

COLLECTED: 12/12/2011

ROUTE: 0011 WEST MOUNTAIN DRIVE HOSP: HOT SPRINGS NATIONAL PARK

MIDWEST REGION

MIDWEST REGION			TOTAL	LENGTH:	2.21 Miles
Section Number	0	1	2		
Section Length (mi)	1.00	1.00	0.21		
Cross Section Information					
Number of Lanes	2	2	2		
Paved Width (ft)	21	22	23		
Lane Width (ft)	10	10	11		
Roadway Condition Information					
SCR (Surface Condition Rating)	96	97	97		
PCR (Pavement Condition Rating)	90	91	91		
Distress Index Values					
Structural Crack Index	97	97	99		
Transverse Cracking Index	99	99	99		
Patching Index	100	100	100		
Rutting Index	96	97	97		
Roughness Condition Index (RCI)	81	83	83		

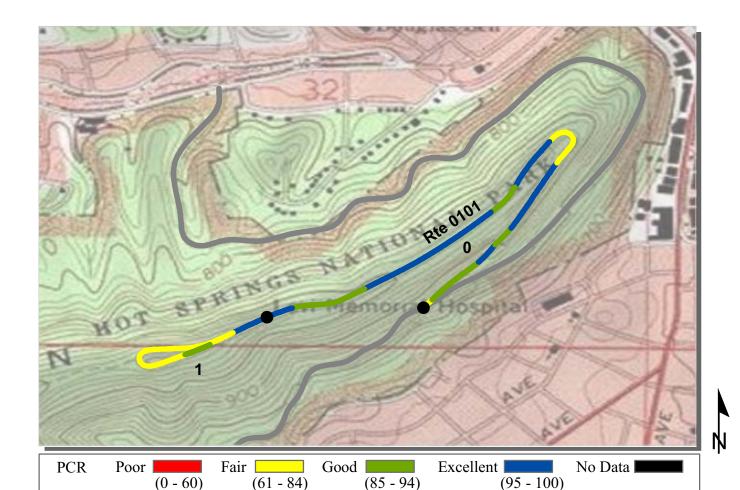


ROUTE: 0100 NORTH MOUNTAIN LOOP ROAD HOSP: HOT SPRINGS NATIONAL PARK

MIDWEST REGION COLLECTED: 12/12/2011 TOTAL LENGTH: 0.76 Miles

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

Section Number	0		
Section Length (mi)	0.76		
Cross Section Information			
Number of Lanes	1		
Paved Width (ft)	16		
Lane Width (ft)	13		
Roadway Condition Information			
SCR (Surface Condition Rating)	98		
PCR (Pavement Condition Rating)	80		
Distress Index Values			
Structural Crack Index	100		
Transverse Cracking Index	100		
Patching Index	100		
Rutting Index	98		
Roughness Condition Index (RCI)	53		



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

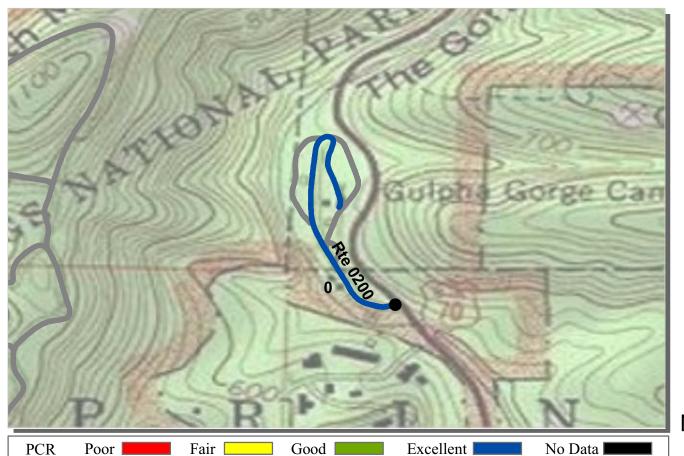
COLLECTED: 12/12/2011

ROUTE: 0101 SUMMIT ROAD

HOSP: HOT SPRINGS NATIONAL PARK

MIDWEST REGION

MIDWEST REGION			TOTAL LENGTH:	1.34 Miles
Section Number	0	1		
Section Length (mi)	1.00	0.34		
Cross Section Information				
Number of Lanes	2	1		
Paved Width (ft)	21	17		
Lane Width (ft)	10	12		
Roadway Condition Information				
SCR (Surface Condition Rating)	98	92		
PCR (Pavement Condition Rating)	92	81		
Distress Index Values				
Structural Crack Index	98	97		
Transverse Cracking Index	99	92		
Patching Index	100	100		
Rutting Index	98	96		
Roughness Condition Index (RCI)	84	64		



(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.

ROUTE: 0200 GULPHA GORGE CAMPGROUND ROAD

HOSP: HOT SPRINGS NATIONAL PARK

MIDWEST REGION COLLECTED: 12/12/2011 TOTAL LENGTH: 0.38 Miles

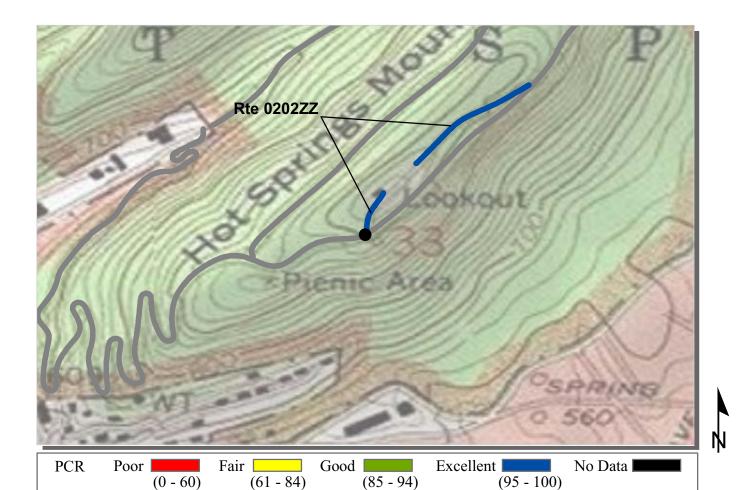
MIDWEST REGION		IOIAL	LENGIH:	0.30 Milles
Section Number	0			
Section Length (mi)	0.38			
Cross Section Information				
Number of Lanes	2			
Paved Width (ft)	21			
Lane Width (ft)	11			
Roadway Condition Information				
SCR (Surface Condition Rating)	100			
PCR (Pavement Condition Rating)	100			
Distress Index Values				
Structural Crack Index	100			
Transverse Cracking Index	100			
Patching Index	100			
Rutting Index	100			
Roughness Condition Index (RCI)	NC			



ROUTE: 0201 TOWER RETURN ROAD HOSP: HOT SPRINGS NATIONAL PARK

COLLECTED: 12/12/2011 MIDWEST REGION TOTAL LENGTH: 0.53 Miles

TOTAL ELITOTIC					
Section Number	0				
Section Length (mi)	0.53				
Cross Section Information					
Number of Lanes	1				
Paved Width (ft)	15				
Lane Width (ft)	13				
Roadway Condition Information					
SCR (Surface Condition Rating)	99				
PCR (Pavement Condition Rating)	87				
Distress Index Values					
Structural Crack Index	100				
Transverse Cracking Index	100				
Patching Index	100				
Rutting Index	99				
Roughness Condition Index (RCI)	69				

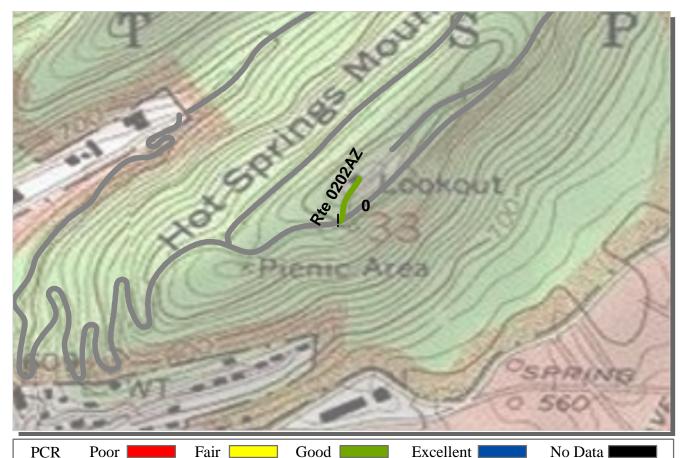


ROUTE: 0202ZZ TOWER PARKING ROADS HOSP: HOT SPRINGS NATIONAL PARK

Summary Record COLLECTED: 12/12/2011
MIDWEST REGION TOTAL LENGTH: 0.22 Miles

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

WID WEST REGION		101112	- BB: (O I III	0122 1:22200
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			



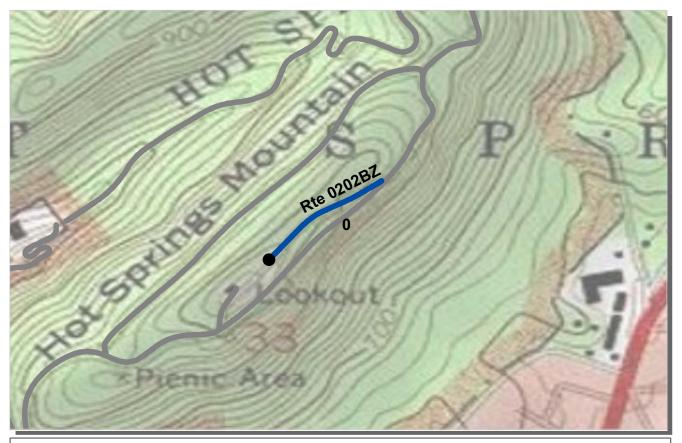
Excellent | **PCR** (85 - 94)(0 - 60)(61 - 84)(95 - 100)* If the PCR rating is not available for a section, the SCR rating will be displayed. See appendix for definitions and formulas.

ROUTE: 0202AZ TOWER PARKING ENTRANCE ROAD

HOSP: HOT SPRINGS NATIONAL PARK

COLLECTED: 12/12/2011 Subcomponent Record MIDWEST REGION TOTAL LENGTH: **0.06** Miles

MID WEST REGION		TOTAL	LENGIII.	0.00 Miles
Section Number	0			
Section Length (mi)	0.06			
Cross Section Information				
Number of Lanes	1			
Paved Width (ft)	14			
Lane Width (ft)	12			
Roadway Condition Information				
SCR (Surface Condition Rating)	93			
PCR (Pavement Condition Rating)	93			
Distress Index Values				
Structural Crack Index	97			
Transverse Cracking Index	100			
Patching Index	100			
Rutting Index	93			
Roughness Condition Index (RCI)	NC			





ROUTE: 0202BZ TOWER PARKING EXIT ROAD

HOSP: HOT SPRINGS NATIONAL PARK

Subcomponent Record COLLECTED: 12/12/2011
MIDWEST REGION TOTAL LENGTH: 0.16 Miles

MIDWEST REGION		IOIAL	LENGIH:	0.10 Milles
Section Number	0			
Section Length (mi)	0.16			
Cross Section Information				
Number of Lanes	1			
Paved Width (ft)	15			
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			



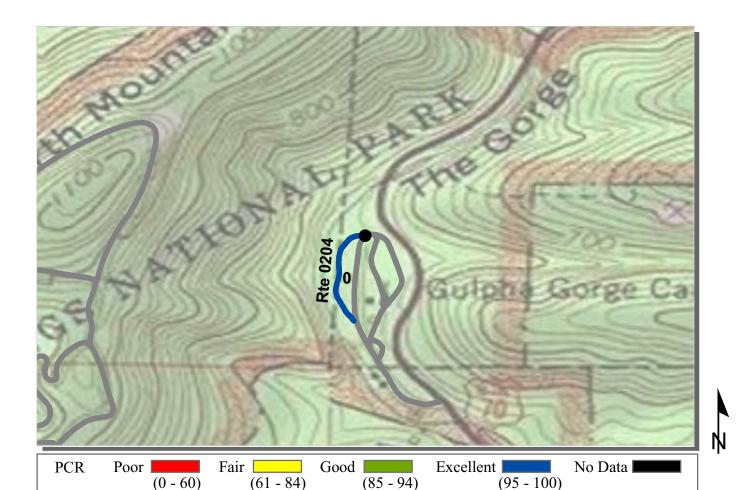


ROUTE: 0203 GULPHA GORGE CAMPGROUND UPPER LOOP

HOSP: HOT SPRINGS NATIONAL PARK

MIDWEST REGION COLLECTED: 12/12/2011
TOTAL LENGTH: 0.17 Miles

MID WEST REGION					
Section Number	0				
Section Length (mi)	0.17				
Cross Section Information					
Number of Lanes	2				
Paved Width (ft)	22				
Lane Width (ft)	11				
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				

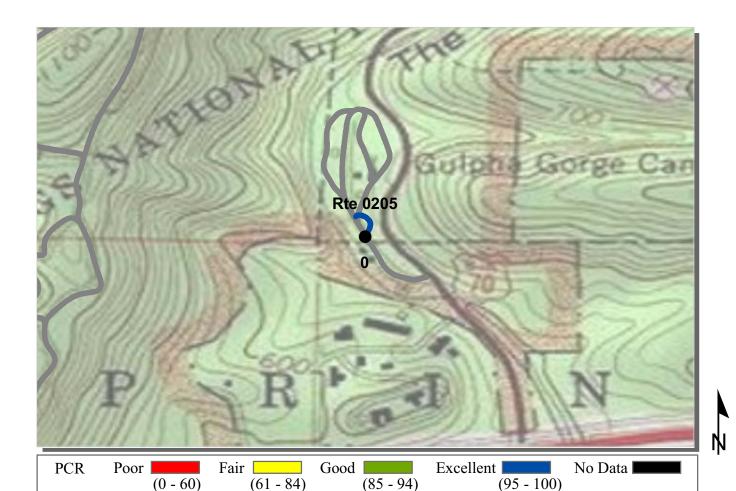


ROUTE: 0204 GULPHA GORGE CAMPGROUND LOWER LOOP HOSP: HOT SPRINGS NATIONAL PARK

MIDWEST REGION COLLECTED: 12/12/2011 TOTAL LENGTH: 0.13 Miles

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

MIDWEST REGION	TOTAL LENGTH: 0.				U.13 Milles
Section Number	0				
Section Length (mi)	0.13				
Cross Section Information					
Number of Lanes	1				
Paved Width (ft)	15				
Lane Width (ft)	15				
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				



ROUTE: 0205 GULPHA GORGE DUMP STATION ROAD

HOSP: HOT SPRINGS NATIONAL PARK

COLLECTED: 12/12/2011 MIDWEST REGION TOTAL LENGTH: 0.04 Miles

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

MIDWEST REGION	IOTAL LENGTH: 0.0				0.04 Milles
Section Number	0				
Section Length (mi)	0.04				
Cross Section Information					
Number of Lanes	1				
Paved Width (ft)	17				
Lane Width (ft)	17				
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				

Section 6 Manually Rated Paved Route Condition Rating Sheets



Hot Springs National Park



MANUALLY RATED ROUTE CONDITION RATING SHEETS

No data available for this section.

Section 7 Parking Area Condition Rating Sheets



Hot Springs National Park



Route 0900

HEADQUARTERS PARKING FROM RESERVE STREET TO PARKING

Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0900	NONPUBLIC	4/14/2011	2,348	0.04	СО
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND	CONCRETE	
0	1	0	GUTTER	CURB	GOOD/90

^{*} Lane miles are based on 11' lane widths







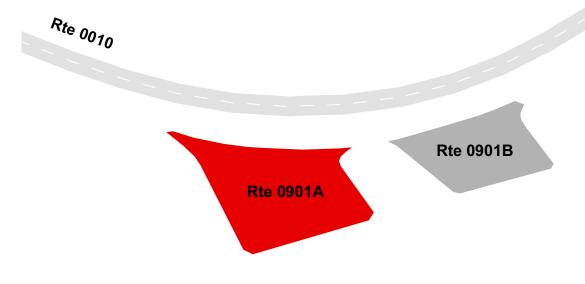
HOT SPRINGS MOUNTAIN PICNIC AREA PARKING A ADJACENT TO ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) ON RIGHT

Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0901A	PUBLIC	4/14/2011	1,131	0.02	СО
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
1	0	0	GUTTER	STONE CURB	GOOD/90

^{*} Lane miles are based on 11' lane widths







25

50

HOT SPRINGS MOUNTAIN PICNIC AREA PARKING B ADJACENT TO ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) ON RIGHT

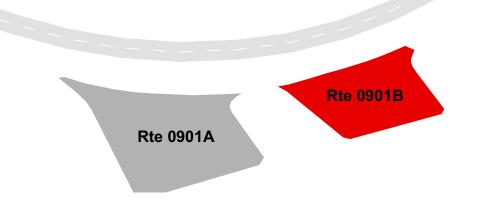
Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0901B	PUBLIC	4/14/2011	692	0.01	СО
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
0	0	0	GUTTER	STONE CURB	GOOD/90

^{*} Lane miles are based on 11' lane widths





Rte 0010



50

25

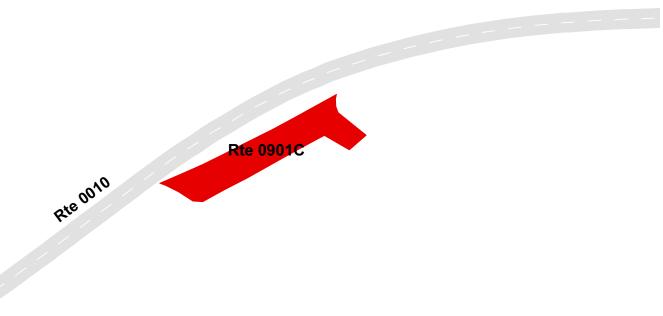
HOT SPRINGS MOUNTAIN PICNIC AREA PARKING C ADJACENT TO ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) ON RIGHT

Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0901C	PUBLIC	4/14/2011	1,641	0.03	СО
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
0	0	0	GUTTER	STONE CURB	GOOD/90

^{*} Lane miles are based on 11' lane widths







40

PAGODA PARKING AREA

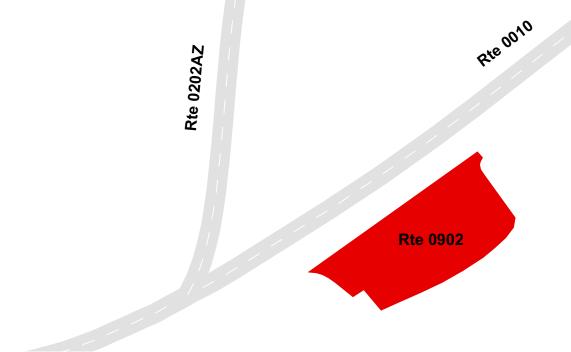
ADJACENT TO ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) ON RIGHT

Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0902	PUBLIC	4/14/2011	953	0.02	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
0	0	0	GUTTER	STONE CURB	FAIR/73

^{*} Lane miles are based on 11' lane widths







25

50

50

SHELTER HOUSE PARKING AREA ADJACENT TO ROUTE 0100 (NORTH MOUNTAIN LOOP ROAD) ON LEFT

Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0903	PUBLIC	4/14/2011	820	0.01	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
0	0	0	GUTTER	STONE CURB	FAIR/73

^{*} Lane miles are based on 11' lane widths



50





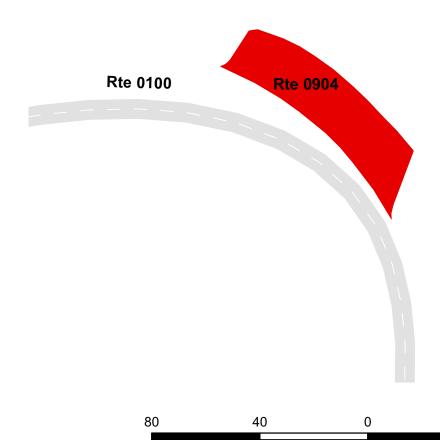
NORTH MOUNTAIN PARKING AREA ADJACENT TO ROUTE 0100 (NORTH MOUNTAIN LOOP ROAD) ON RIGHT

Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0904	PUBLIC	4/14/2011	1,294	0.02	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
0	0	0	GUTTER	STONE CURB	FAIR/73

^{*} Lane miles are based on 11' lane widths







WEST MOUNTAIN PICNIC AREA PARKING ADJACENT TO ROUTE 0101 (SUMMIT ROAD) ON LEFT

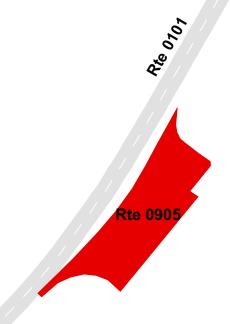
Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0905	PUBLIC	4/14/2011	3,205	0.06	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
0	0	0	GUTTER	STONE CURB	GOOD/90

^{*} Lane miles are based on 11' lane widths









WEST MOUNTAIN SUMMIT PARKING AREA FROM ROUTE 0101 (SUMMIT ROAD) TO ROUTE 0101 (SUMMIT ROAD)

Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0906	PUBLIC	4/14/2011	3,393	0.06	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND	CONCRETE &	
0	0	0	GUTTER	STONE CURB	GOOD/90

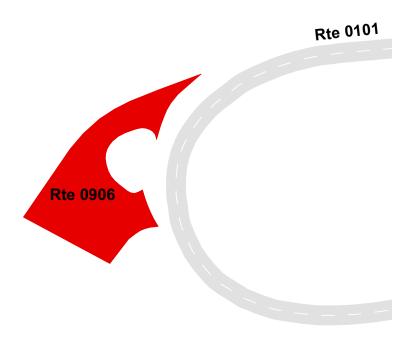
^{*} Lane miles are based on 11' lane widths







100



Route 0907

MAINTENANCE AREA PARKING FROM WHITTINGTON AVENUE TO QUARTZ STREET

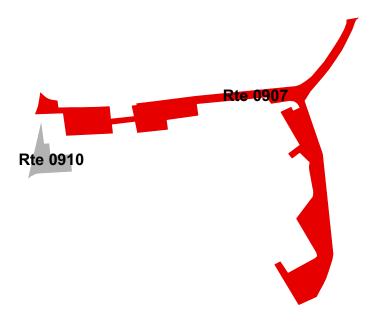
Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0907	NONPUBLIC	4/14/2011	24,540	0.42	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
0	6	2	GUTTER	NO CURB	FAIR/73

^{*} Lane miles are based on 11' lane widths









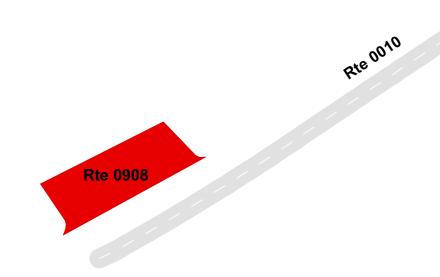
HAPPY HOLLOW SPRING PARKING AREA ADJACENT TO ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) ON RIGHT

Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0908	PUBLIC	4/14/2011	1,046	0.02	СО
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			CONCRETE CURB		
0	1	0	AND GUTTER	NO CURB	GOOD/90

^{*} Lane miles are based on 11' lane widths







Route 0909

RANGER STATION PARKING FROM 527 SPRING STREET

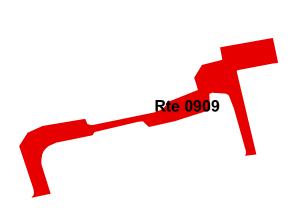
TO RESERVE STREET

Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0909	NONPUBLIC	4/14/2011	14,030	0.24	CO
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND	CONCRETE	
0	4	0	GUTTER	CURB	FAIR/73

^{*} Lane miles are based on 11' lane widths





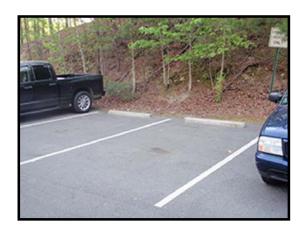




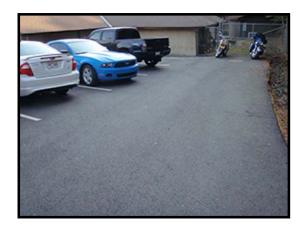
MAINTENANCE AREA EMPLOYEE PARKING ADJACENT TO QUARTZ STREET ON LEFT

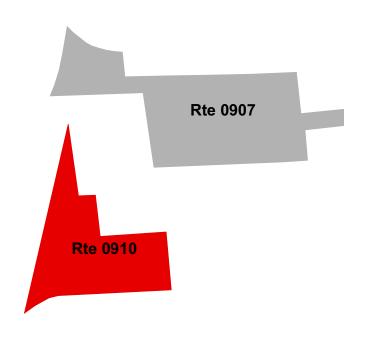
Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0910	NONPUBLIC	4/14/2011	2,496	0.04	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
0	2	0	GUTTER	NO CURB	GOOD/90

^{*} Lane miles are based on 11' lane widths









GULPHA GORGE CAMPGROUND PARKING AREA A ADJACENT TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) ON LEFT

Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0911A	PUBLIC	4/14/2011	1,991	0.03	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
0	0	0	GUTTER	NO CURB	EXCELLENT/97

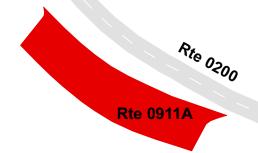
^{*} Lane miles are based on 11' lane widths



Te 5000



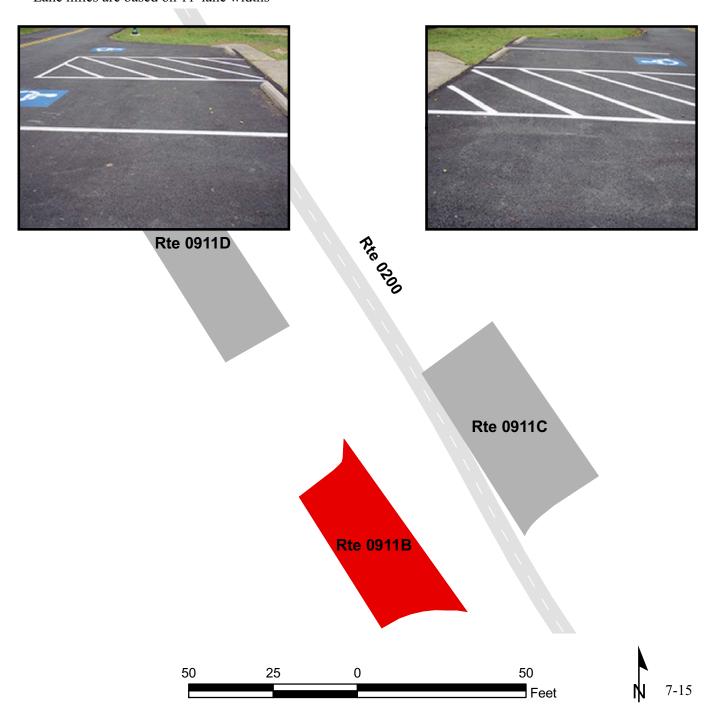
Rte 0911C



GULPHA GORGE CAMPGROUND PARKING AREA B ADJACENT TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) ON LEFT

Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0911B	PUBLIC	4/14/2011	920	0.02	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
0	0	0	GUTTER	NO CURB	EXCELLENT/97

^{*} Lane miles are based on 11' lane widths



GULPHA GORGE CAMPGROUND PARKING AREA C ADJACENT TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) ON RIGHT

Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0911C	PUBLIC	4/14/2011	1,238	0.02	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
0	0	0	GUTTER	NO CURB	EXCELLENT/97

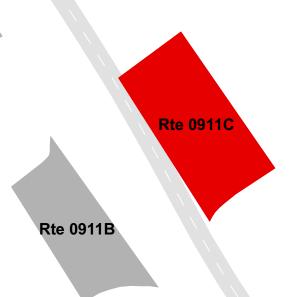
^{*} Lane miles are based on 11' lane widths





Rte 0911D



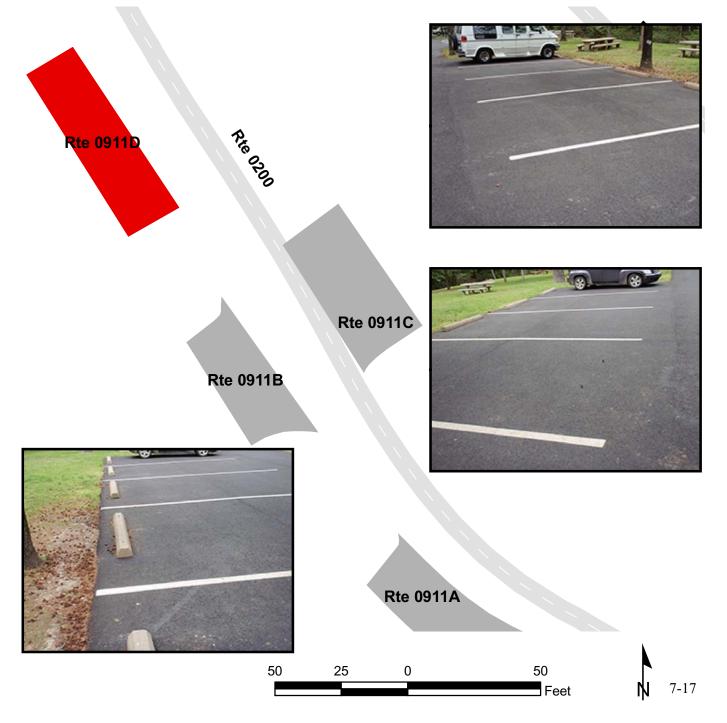




GULPHA GORGE CAMPGROUND PARKING AREA D
ADJACENT TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) ON LEFT

Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0911D	PUBLIC	4/14/2011	1,251	0.02	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
0	0	0	GUTTER	NO CURB	EXCELLENT/97

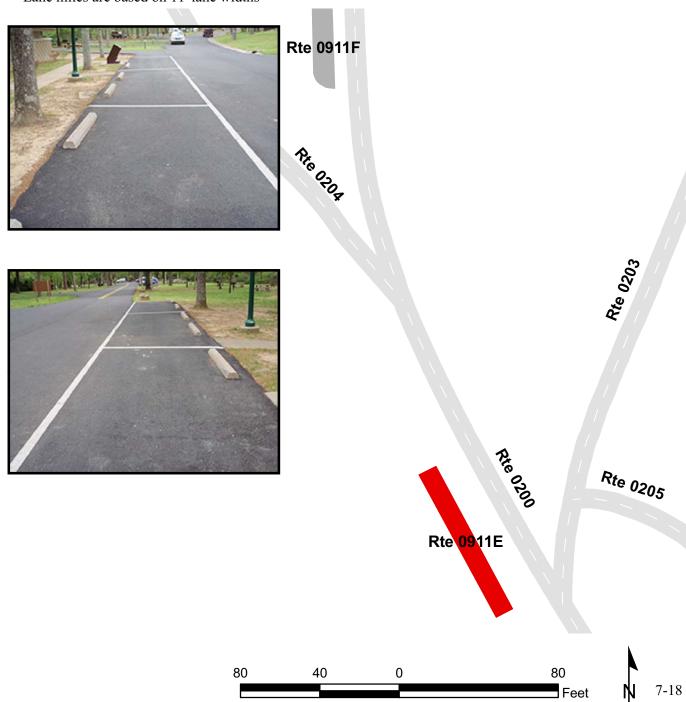
^{*} Lane miles are based on 11' lane widths



GULPHA GORGE CAMPGROUND PARKING AREA E ADJACENT TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) ON LEFT

Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0911E	PUBLIC	4/14/2011	646	0.01	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
0	0	0	GUTTER	NO CURB	EXCELLENT/97

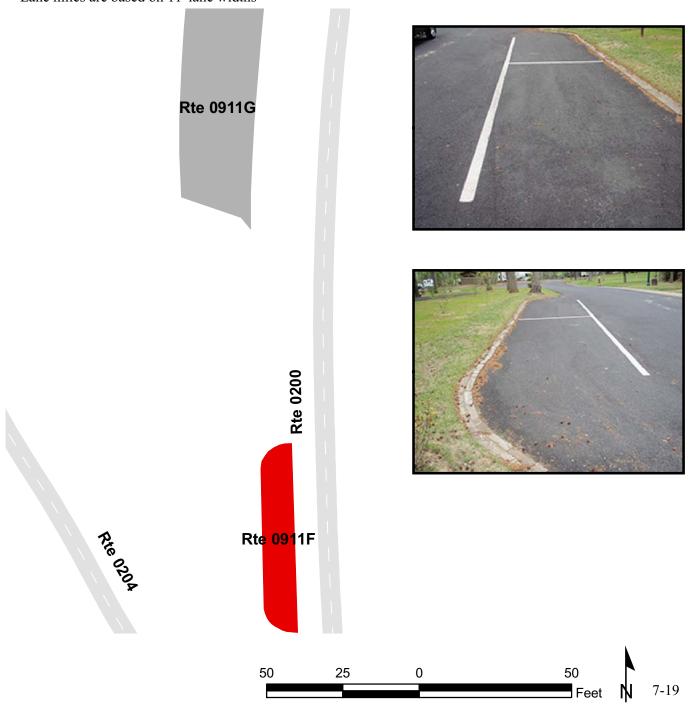
^{*} Lane miles are based on 11' lane widths



GULPHA GORGE CAMPGROUND PARKING AREA F ADJACENT TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) ON LEFT

Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0911F	PUBLIC	4/14/2011	509	0.01	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
0	0	0	GUTTER	STONE CURB	EXCELLENT/97

^{*} Lane miles are based on 11' lane widths



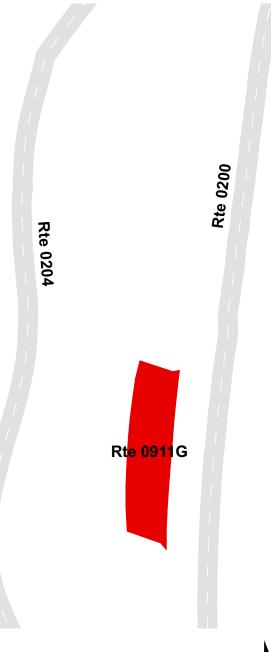
GULPHA GORGE CAMPGROUND PARKING AREA G ADJACENT TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) ON LEFT

Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0911G	PUBLIC	4/14/2011	2,040	0.04	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
0	0	0	GUTTER	STONE CURB	EXCELLENT/97

^{*} Lane miles are based on 11' lane widths







GULPHA GORGE CAMPGROUND PARKING AREA H ADJACENT TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) ON LEFT

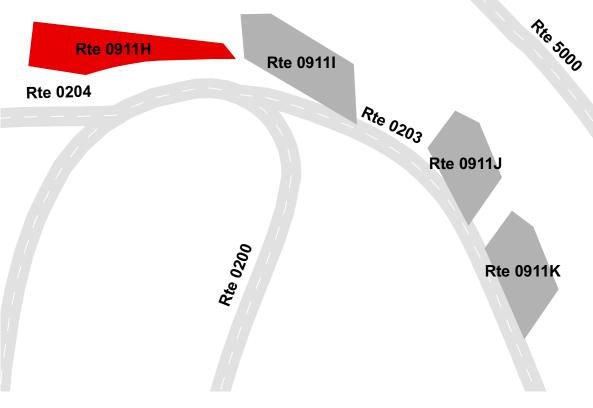
Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0911H	PUBLIC	4/14/2011	1,021	0.02	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
0	0	0	GUTTER	STONE CURB	EXCELLENT/97

^{*} Lane miles are based on 11' lane widths



80





40

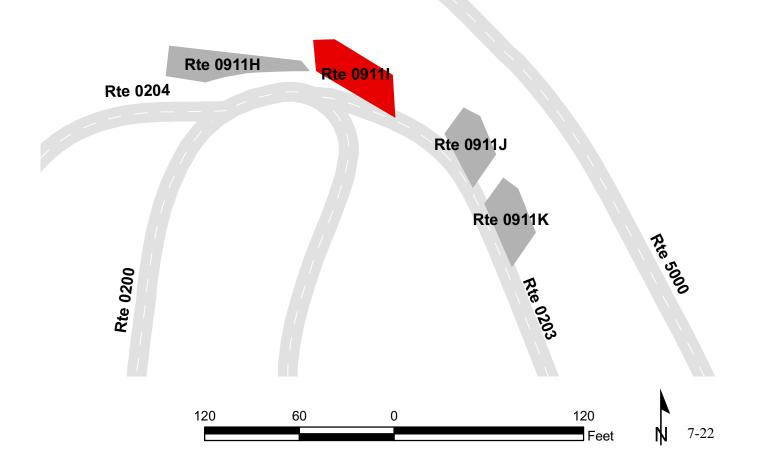
GULPHA GORGE CAMPGROUND PARKING AREA I ADJACENT TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) ON LEFT

Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0911I	PUBLIC	4/14/2011	1,047	0.02	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
0	0	0	GUTTER	STONE CURB	EXCELLENT/97

^{*} Lane miles are based on 11' lane widths







GULPHA GORGE CAMPGROUND PARKING AREA J
ADJACENT TO ROUTE 0203 (GULPHA GORGE CAMPGROUND UPPER LOOP) ON RIGHT

Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0911J	PUBLIC	4/14/2011	747	0.01	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
0	0	0	GUTTER	STONE CURB	EXCELLENT/97

^{*} Lane miles are based on 11' lane widths





Rte 0911K

Rte 0911J

Rte 0203



GULPHA GORGE CAMPGROUND PARKING AREA K ADJACENT TO ROUTE 0203 (GULPHA GORGE CAMPGROUND UPPER LOOP) ON RIGHT

Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0911K	PUBLIC	4/14/2011	803	0.01	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
0	0	0	GUTTER	STONE CURB	EXCELLENT/97

^{*} Lane miles are based on 11' lane widths





Rte 0911J



Ate 5000

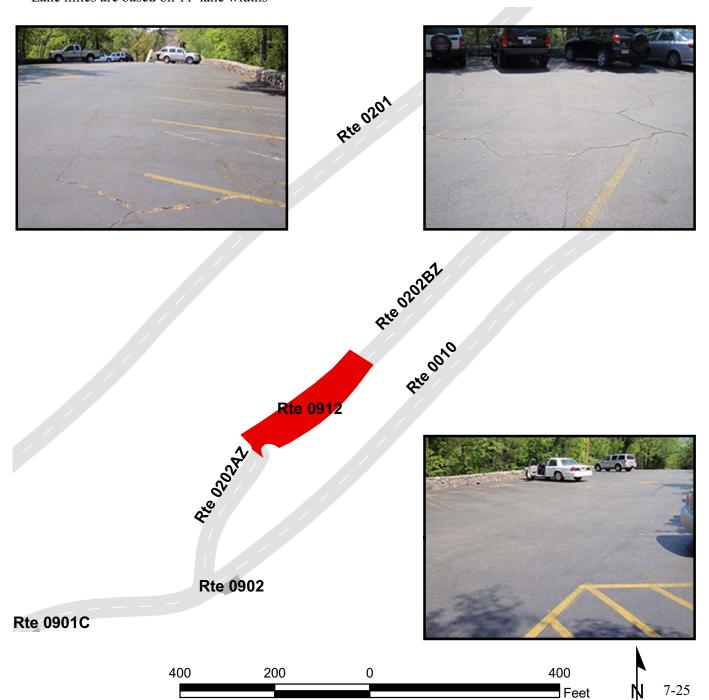


TOWER PARKING LOT

FROM ROUTE 0202ZZ (TOWER PARKING ROADS) TO ROUTE 0202ZZ (TOWER PARKING ROADS)

Route	Public /				
Number	NonPublic	Date Visited	Area (sq ft)	Lane Miles *	Surface Type
0912	PUBLIC	4/14/2011	16,211	0.28	AS
Culverts	Drop Inlets	Gates	Curb & Gutter	Curb	PCR
			NO CURB AND		
0	0	0	GUTTER	STONE CURB	FAIR/73

^{*} Lane miles are based on 11' lane widths



Section 8 Parkwide/Route Maintenance Features Summaries



Hot Springs National Park



HOSP: 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		0
CATTLE GUARD		0
CULVERT		40
CURB	2,217	
DROP INLET		62
GATE		8
GUARD/GUIDE RAIL	771	
CABLE	0	
NON-CABLE	771	
GUARD/GUIDE WALL	866	
BOLLARD	0	
TEMPORARY BARRIER	0	
NON TEMP/BOLLARD	866	
INTERSECTION		87
LOW WATER CROSSING	0	0
MILE MARKER		0
OVERPASS		0
PARK BOUNDARY		3
PAVED DITCH	34,032	
PULLOUT	756	6
RAILROAD CROSSING		0
RETAINING WALL	8,190	23
SIGN		132
STATE BOUNDARY		0
TRAFFIC LIGHT		0
TUNNEL	0	0

HOSP: DCV ROUTE MAINTENANCE FEATURES SUMMARY

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

FEATURE	ROUTE 0010 HOT SPRINGS MOUNTAIN DRIVE	ROUTE 0011 WEST MOUNTAIN DRIVE	ROUTE 0100 NORTH MOUNTAIN LOOP ROAD	ROUTE 0101 SUMMIT ROAD	ROUTE 0200 GULPHA GORGE CAMPGROUND ROAD	ROUTE 0201 TOWER RETURN ROAD	UNIT
BRIDGE	0	0	0	0	0	0	EACH
CATTLE GUARD	0	0	0	0	0	0	EACH
CULVERT	12	17	0	2	1	4	EACH
CURB	1,257	42	105	501	37	0	LINEAR FEET
DROP INLET	8	18	5	7	6	0	EACH
GATE	2	2	1	1	0	0	EACH
GUARD/GUIDE RAIL	0	771	0	0	0	0	LINEAR FEET
CABLE	0	0	0	0	0	0	LINEAR FEET
NON-CABLE	0	771	0	0	0	0	LINEAR FEET
GUARD/GUIDE WALL	79	0	0	486	0	0	LINEAR FEET
BOLLARD	0	0	0	0	0	0	LINEAR FEET
TEMPORARY BARRIER	0	0	0	0	0	0	LINEAR FEET
NON TEMP/BOLLARD	79	0	0	486	0	0	LINEAR FEET
INTERSECTION	15	8	8	11	19	4	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	2	1	0	0	0	0	EACH
PAVED DITCH	14,701	7,456	3,992	3,606	528	2,656	LINEAR FEET
PULLOUT	3	0	0	2	0	0	EACH
PULLOUT	333	0	0	370	0	0	LINEAR FEET
RAILROAD CROSSING	0	0	0	0	0	0	EACH
RETAINING WALL	14	4	0	2	0	0	EACH
RETAINING WALL	5,201	2,134	0	359	0	0	LINEAR FEET
SIGN	36	39	14	20	11	5	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

HOSP: DCV ROUTE MAINTENANCE FEATURES SUMMARY

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

FEATURE	ROUTE 0202ZZ TOWER PARKING ROADS	ROUTE 0203 GULPHA GORGE CAMPGROUND UPPER LOOP	ROUTE 0204 GULPHA GORGE CAMPGROUND LOWER LOOP	ROUTE 0205 GULPHA GORGE DUMP STATION ROAD	UNIT
BRIDGE	0	0	0	0	EACH
CATTLE GUARD	0	0	0	0	EACH
CULVERT	0	1	2	0	EACH
CURB	201	74	0	0	LINEAR FEET
DROP INLET	0	3	1	0	EACH
GATE	0	0	0	0	EACH
GUARD/GUIDE RAIL	0	0	0	0	LINEAR FEET
CABLE	0	0	0	0	LINEAR FEET
NON-CABLE	0	0	0	0	LINEAR FEET
GUARD/GUIDE WALL	301	0	0	0	LINEAR FEET
BOLLARD	0	0	0	0	LINEAR FEET
TEMPORARY BARRIER	0	0	0	0	LINEAR FEET
NON TEMP/BOLLARD	301	0	0	0	LINEAR FEET
INTERSECTION	6	8	4	4	EACH
LOW WATER CROSSING	0	0	0	0	EACH
LOW WATER CROSSING	0	0	0	0	LINEAR FEET
MILE MARKER	0	0	0	0	EACH
OVERPASS	0	0	0	0	EACH
PARK BOUNDARY	0	0	0	0	EACH
PAVED DITCH	528	565	0	0	LINEAR FEET
PULLOUT	1	0	0	0	EACH
PULLOUT CROSSING	53	0	0	0	LINEAR FEET
RAILROAD CROSSING	0	0	0	0	EACH
RETAINING WALL	3	0	0	0	EACH
RETAINING WALL	496	0	0	0	LINEAR FEET
SIGN STATE POLINDARY	2	5	0	0	EACH
STATE BOUNDARY TRAFFIC LIGHT	0	0	0	0	EACH
TRAFFIC LIGHT	0	0	0	0	EACH
TUNNEL	0	0	0	0	EACH
TUNNEL	0	0	0	0	LINEAR FEET

STRUCTURE LIST

No data available for this section.

Section 9 Route Maintenance Features Road Logs



Hot Springs National Park



ROUTE 0010: HOT SPRINGS MOUNTAIN DRIVE

<u>Notice:</u> 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 FOUNTAIN STREET
0.000	0.000	INTERSECTION	RIGHT	PAVED ROUTE (FOUNTAIN STREET / NON NPS)
0.000	0.000	PARK BOUNDARY	N/A	N/A
0.000	2.722	ONE-WAY	N/A	N/A
0.000	0.000	INTERSECTION	LEFT	PAVED ROUTE (FOUNTAIN STREET / NON NPS)
0.005	0.011	CURB	LEFT	N/A
0.005	0.016	CURB	RIGHT	N/A
0.007	0.007	SIGN	LEFT	GUIDE, NO VEHICLES OVER 30 FEET
0.011	0.054	PAVED DITCH	LEFT	N/A
0.020	0.020	GATE	N/A	N/A
0.020	0.020	SIGN	RIGHT	GUIDE, ROAD CLOSED 10:00PM - 7:00AM
0.023	0.023	SIGN	LEFT	REGULATORY, ROAD CLOSED
0.025	0.025	SIGN	RIGHT	REGULATORY, SPEED LIMIT 25
0.031	0.031	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
0.069	0.094	PAVED DITCH	RIGHT	N/A
0.072	0.072	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
0.094	0.104	RETAINING WALL	LEFT	N/A
0.094	0.120	PAVED DITCH	LEFT	N/A
0.121	0.121	CULVERT	N/A	N/A
0.124	0.206	RETAINING WALL	LEFT	N/A
0.129	0.334	PAVED DITCH	LEFT	N/A
0.214	0.214	CULVERT	N/A	N/A
0.227	0.315	RETAINING WALL	LEFT	N/A
0.233	0.334	PAVED DITCH	LEFT	N/A
0.278	0.278	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
0.353	0.394	PAVED DITCH	LEFT	N/A
0.365	0.365	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
0.374	0.374	INTERSECTION	RIGHT	UNPAVED ROUTE
0.375	0.375	SIGN	RIGHT	REGULATORY, DO NOT ENTER
0.378	0.378	CULVERT	N/A	N/A

ROUTE 0010: HOT SPRINGS MOUNTAIN DRIVE

<u>Notice:</u> 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
0.392	0.397	GUARD/GUIDE WALL	RIGHT	N/A
0.394	0.394	CULVERT	N/A	N/A
0.398	0.466	PAVED DITCH	LEFT	N/A
0.421	0.421	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
0.467	0.467	SIGN	RIGHT	REGULATORY, ONE WAY
0.481	0.481	CULVERT	N/A	N/A
0.482	0.506	RETAINING WALL	RIGHT	N/A
0.494	0.634	PAVED DITCH	RIGHT	N/A
0.574	0.574	CULVERT	N/A	N/A
0.620	0.632	PAVED DITCH	LEFT	N/A
0.640	0.640	CULVERT	N/A	N/A
0.644	0.654	RETAINING WALL	LEFT	N/A
0.670	0.742	PAVED DITCH	LEFT	N/A
0.745	0.745	CULVERT	N/A	N/A
0.746	0.820	PAVED DITCH	RIGHT	N/A
0.746	0.800	RETAINING WALL	RIGHT	N/A
0.820	0.856	RETAINING WALL	LEFT	N/A
0.830	0.896	PAVED DITCH	LEFT	N/A
0.895	0.895	CULVERT	N/A	N/A
0.900	1.030	PAVED DITCH	RIGHT	N/A
0.950	1.002	RETAINING WALL	RIGHT	N/A
1.020	1.046	RETAINING WALL	LEFT	N/A
1.025	1.087	PAVED DITCH	LEFT	N/A
1.088	1.088	CULVERT	N/A	N/A
1.100	1.276	PAVED DITCH	RIGHT	N/A
1.218	1.218	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
1.221	1.221	DROP INLET	RIGHT	N/A
1.244	1.244	SIGN	RIGHT	REGULATORY, DO NOT ENTER
1.244	1.244	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
1.258	1.258	SIGN	LEFT	REGULATORY, DO NOT ENTER

ROUTE 0010: HOT SPRINGS MOUNTAIN DRIVE

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
1.260	1.260	INTERSECTION	LEFT	ROUTE 0201 (TOWER RETURN ROAD)
1.264	1.394	PAVED DITCH	LEFT	N/A
1.270	1.270	SIGN	LEFT	REGULATORY, WRONG WAY
1.283	1.283	INTERSECTION	RIGHT	ROUTE 0901A (HOT SPRINGS MOUNTAIN PICNIC AREA PARKING A)
1.291	1.291	INTERSECTION	RIGHT	ROUTE 0901B (HOT SPRINGS MOUNTAIN PICNIC AREA PARKING B)
1.294	1.319	CURB	RIGHT	N/A
1.327	1.327	INTERSECTION	RIGHT	ROUTE 0901C (HOT SPRINGS MOUNTAIN PICNIC AREA PARKING C)
1.337	1.398	CURB	RIGHT	N/A
1.382	1.382	SIGN	RIGHT	GUIDE, HOT SPRINGS MOUNTAIN TOWER
1.387	1.387	SIGN	LEFT	REGULATORY, DO NOT ENTER
1.394	1.394	CULVERT	N/A	N/A
1.399	1.399	INTERSECTION	LEFT	ROUTE 0202AZ (TOWER PARKING ENTRANCE ROAD)
1.402	1.402	INTERSECTION	RIGHT	ROUTE 0902 (PAGODA PARKING AREA)
1.403	1.652	RETAINING WALL	LEFT	N/A
1.403	1.652	PAVED DITCH	LEFT	N/A
1.409	1.427	PULLOUT	RIGHT	N/A
1.410	1.427	CURB	RIGHT	N/A
1.440	1.440	DROP INLET	LEFT	N/A
1.593	1.593	DROP INLET	LEFT	N/A
1.650	1.650	SIGN	LEFT	REGULATORY, DO NOT ENTER
1.650	1.650	SIGN	RIGHT	REGULATORY, YIELD
1.661	1.661	INTERSECTION	LEFT	ROUTE 0202BZ (TOWER PARKING EXIT ROAD)
1.661	1.726	RETAINING WALL	LEFT	N/A
1.661	1.820	PAVED DITCH	LEFT	N/A
1.683	1.683	SIGN	RIGHT	REGULATORY, SPEED LIMIT 25
1.762	1.762	DROP INLET	LEFT	N/A
1.766	1.786	CURB	RIGHT	N/A
1.766	1.786	PULLOUT	RIGHT	N/A

ROUTE 0010: HOT SPRINGS MOUNTAIN DRIVE

<u>Notice:</u> 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
1.816	1.816	DROP INLET	LEFT	N/A
1.821	1.821	INTERSECTION	LEFT	ROUTE 0201 (TOWER RETURN ROAD)
1.823	1.831	CURB	LEFT	N/A
1.826	1.826	SIGN	N/A	GUIDE, DOWNTOWN MOUNTAIN TOWER
1.889	1.889	DROP INLET	LEFT	N/A
1.889	1.914	PULLOUT	RIGHT	N/A
1.890	1.926	CURB	RIGHT	N/A
1.890	2.060	PAVED DITCH	LEFT	N/A
1.900	1.910	GUARD/GUIDE WALL	RIGHT	N/A
1.969	1.969	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
1.981	1.981	SIGN	RIGHT	GUIDE, NORTH MOUNTAIN LOOP DOWNTOWN
1.989	1.989	SIGN	RIGHT	REGULATORY, DO NOT ENTER
1.992	1.992	INTERSECTION	RIGHT	ROUTE 0100 (NORTH MOUNTAIN LOOP ROAD)
2.002	2.002	INTERSECTION	RIGHT	PAVED SPUR
2.010	2.010	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
2.045	2.100	PAVED DITCH	RIGHT	N/A
2.090	2.220	PAVED DITCH	LEFT	N/A
2.126	2.152	RETAINING WALL	LEFT	N/A
2.180	2.220	RETAINING WALL	LEFT	N/A
2.218	2.218	CULVERT	N/A	N/A
2.224	2.290	PAVED DITCH	LEFT	N/A
2.268	2.268	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
2.287	2.345	PAVED DITCH	RIGHT	N/A
2.329	2.737	PAVED DITCH	LEFT	N/A
2.366	2.366	DROP INLET	LEFT	N/A
2.445	2.445	DROP INLET	LEFT	N/A
2.447	2.478	PAVED DITCH	RIGHT	N/A
2.514	2.737	RETAINING WALL	LEFT	N/A
2.628	2.716	PAVED DITCH	RIGHT	N/A
2.630	2.630	SIGN	RIGHT	REGULATORY, SPEED LIMIT 15

ROUTE 0010: HOT SPRINGS MOUNTAIN DRIVE

<u>Notice:</u> 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
2.643	2.643	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
2.658	2.658	SIGN	LEFT	GUIDE, UNABLE TO READ FROM VIDEO
2.670	2.670	SIGN	LEFT	REGULATORY, WRONG WAY
2.700	2.700	SIGN	RIGHT	WARNING, TWO WAY TRAFFIC
2.702	2.737	CURB	LEFT	N/A
2.703	2.722	CURB	RIGHT	N/A
2.716	2.716	SIGN	RIGHT	REGULATORY, ROAD CLOSED
2.718	2.718	GATE	N/A	N/A
2.718	2.718	SIGN	LEFT	REGULATORY, DO NOT ENTER
2.718	2.718	SIGN	RIGHT	REGULATORY, DO NOT ENTER
2.719	2.719	SIGN	RIGHT	REGULATORY, YIELD
2.722	2.722	INTERSECTION	RIGHT	ROUTE 0908 (HAPPY HOLLOW SPRING PARKING AREA)
2.737	2.737	INTERSECTION	N/A	PAVED ROUTE (FOUNTAIN STREET / NON NPS)
2.737	2.737	PARK BOUNDARY	N/A	N/A
2.737	2.737	ROUTE END	N/A	TO END OF FOUNTAIN STREET

ROUTE 0011: WEST MOUNTAIN DRIVE

<u>Notice:</u> 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 WHITTINGTON AVENUE
0.000	0.000	INTERSECTION	LEFT	PAVED ROUTE (WHITTINGTON AVENUE / NON NPS)
0.000	0.000	INTERSECTION	RIGHT	PAVED ROUTE (WHITTINGTON AVENUE / NON NPS)
0.003	0.003	SIGN	LEFT	GUIDE, HOT SPRINGS NATIONAL PARK WEST MOUNTAIN
0.005	0.010	CURB	LEFT	N/A
0.006	0.006	SIGN	LEFT	GUIDE, WHITTINGTON AVE
0.006	0.006	SIGN	LEFT	REGULATORY, STOP
0.006	0.006	SIGN	LEFT	GUIDE, UNABLE TO READ FROM VIDEO
0.010	0.010	DROP INLET	LEFT	N/A
0.010	0.010	DROP INLET	RIGHT	N/A
0.010	0.054	PAVED DITCH	RIGHT	N/A
0.011	0.035	PAVED DITCH	LEFT	N/A
0.020	0.020	SIGN	RIGHT	REGULATORY, COMMERCIAL VEHICLES EXCLUDED
0.024	0.024	GATE	N/A	N/A
0.027	0.027	SIGN	RIGHT	REGULATORY, ROAD CLOSED
0.054	0.054	CULVERT	N/A	N/A
0.058	0.069	PAVED DITCH	RIGHT	N/A
0.060	0.060	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
0.096	0.096	SIGN	RIGHT	REGULATORY, SPEED LIMIT 25
0.098	0.098	SIGN	LEFT	WARNING, STOP AHEAD
0.131	0.131	CULVERT	N/A	N/A
0.174	0.284	PAVED DITCH	RIGHT	N/A
0.235	0.235	DROP INLET	RIGHT	N/A
0.242	0.242	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
0.242	0.242	SIGN	RIGHT	WARNING, 20 M.P.H.
0.268	0.268	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
0.298	0.330	GUARD/GUIDE RAIL	RIGHT	N/A
0.308	0.308	CULVERT	N/A	N/A
0.315	0.315	CULVERT	N/A	N/A
0.328	0.328	CULVERT	N/A	N/A

ROUTE 0011: WEST MOUNTAIN DRIVE

<u>Notice:</u> 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
0.328	0.383	PAVED DITCH	RIGHT	N/A
0.364	0.364	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
0.364	0.364	SIGN	LEFT	WARNING, 20 M.P.H.
0.387	0.387	CULVERT	N/A	N/A
0.413	0.413	CULVERT	N/A	N/A
0.441	0.532	PAVED DITCH	RIGHT	N/A
0.442	0.442	DROP INLET	RIGHT	N/A
0.463	0.463	DROP INLET	RIGHT	N/A
0.497	0.497	DROP INLET	RIGHT	N/A
0.537	0.537	CULVERT	N/A	N/A
0.550	0.610	PAVED DITCH	RIGHT	N/A
0.598	0.598	DROP INLET	RIGHT	N/A
0.626	0.626	CULVERT	N/A	N/A
0.638	0.667	PAVED DITCH	RIGHT	N/A
0.671	0.671	CULVERT	N/A	N/A
0.792	0.792	CULVERT	N/A	N/A
0.800	0.800	CULVERT	N/A	N/A
0.928	0.928	DROP INLET	RIGHT	N/A
0.990	0.990	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
1.004	1.004	DROP INLET	RIGHT	N/A
1.006	1.006	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
1.017	1.060	GUARD/GUIDE RAIL	LEFT	N/A
1.021	1.021	SIGN	LEFT	GUIDE, UNABLE TO READ FROM VIDEO
1.035	1.035	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
1.094	1.094	CULVERT	N/A	N/A
1.106	1.106	SIGN	RIGHT	WARNING, 20 M.P.H.
1.106	1.106	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
1.134	1.205	GUARD/GUIDE RAIL	LEFT	N/A
1.174	1.662	PAVED DITCH	RIGHT	N/A
1.226	1.226	DROP INLET	RIGHT	N/A

ROUTE 0011: WEST MOUNTAIN DRIVE

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
1.239	1.239	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
1.239	1.239	SIGN	LEFT	WARNING, 20 M.P.H.
1.245	1.245	SIGN	RIGHT	REGULATORY, SPEED LIMIT 25
1.285	1.584	RETAINING WALL	RIGHT	N/A
1.294	1.294	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
1.395	1.395	DROP INLET	RIGHT	N/A
1.491	1.491	DROP INLET	RIGHT	N/A
1.542	1.542	SIGN	LEFT	REGULATORY, SPEED LIMIT 25
1.571	1.571	DROP INLET	RIGHT	N/A
1.646	1.646	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
1.677	1.677	SIGN	RIGHT	GUIDE, WEST MOUNTAIN SUMMIT
1.683	1.683	SIGN	RIGHT	REGULATORY, YIELD
1.683	1.683	INTERSECTION	RIGHT	PAVED SPUR
1.710	1.710	INTERSECTION	RIGHT	ROUTE 0101 (SUMMIT ROAD)
1.710	1.823	PAVED DITCH	RIGHT	N/A
1.718	1.742	RETAINING WALL	RIGHT	N/A
1.722	1.722	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
1.762	1.762	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
1.764	1.764	DROP INLET	RIGHT	N/A
1.774	1.805	RETAINING WALL	RIGHT	N/A
1.790	1.790	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
1.823	1.823	DROP INLET	RIGHT	N/A
1.835	1.919	PAVED DITCH	RIGHT	N/A
1.852	1.902	RETAINING WALL	RIGHT	N/A
1.880	1.880	DROP INLET	RIGHT	N/A
1.930	1.930	CULVERT	N/A	N/A
1.940	2.084	PAVED DITCH	RIGHT	N/A
2.059	2.059	CULVERT	N/A	N/A
2.085	2.110	PAVED DITCH	LEFT	N/A
2.095	2.095	CULVERT	N/A	N/A

ROUTE 0011: WEST MOUNTAIN DRIVE

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
2.112	2.112	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
2.121	2.121	CULVERT	N/A	N/A
2.130	2.130	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
2.130	2.197	PAVED DITCH	LEFT	N/A
2.130	2.197	PAVED DITCH	RIGHT	N/A
2.172	2.172	SIGN	LEFT	REGULATORY, SPEED LIMIT 25
2.190	2.190	SIGN	LEFT	REGULATORY, ROAD CLOSED
2.191	2.191	GATE	N/A	N/A
2.195	2.195	SIGN	LEFT	REGULATORY, COMMERCIAL VEHICLES EXCLUDED
2.196	2.196	DROP INLET	LEFT	N/A
2.196	2.196	DROP INLET	RIGHT	N/A
2.197	2.200	CURB-AND-GUTTER	RIGHT	N/A
2.199	2.199	INTERSECTION	LEFT	PAVED SPUR
2.202	2.202	INTERSECTION	RIGHT	PAVED SPUR
2.206	2.206	SIGN	RIGHT	GUIDE, UNABLE TO READ FROM VIDEO
2.206	2.206	SIGN	RIGHT	REGULATORY, STOP
2.208	2.208	SIGN	N/A	REGULATORY, STOP
2.213	2.213	INTERSECTION	LEFT	PAVED ROUTE (PROSPECT AVENUE / NON NPS)
2.213	2.213	INTERSECTION	RIGHT	PAVED ROUTE (PROSPECT AVENUE / NON NPS)
2.213	2.213	PARK BOUNDARY	N/A	N/A
2.213	2.213	ROUTE END	N/A	TO PROSPECT AVENUE

ROUTE 0100: NORTH MOUNTAIN LOOP ROAD

<u>Notice:</u> 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 0010 (HOT SPRINGS MOUNTAIN DRIVE)
0.000	0.000	INTERSECTION	LEFT	ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE)
0.000	0.000	INTERSECTION	RIGHT	ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE)
0.010	0.010	SIGN	LEFT	REGULATORY, YIELD
0.015	0.015	INTERSECTION	LEFT	PAVED SPUR
0.017	0.017	INTERSECTION	LEFT	ROUTE 0903 (SHELTER HOUSE PARKING AREA)
0.034	0.078	PAVED DITCH	RIGHT	N/A
0.038	0.038	GATE	N/A	N/A
0.042	0.042	SIGN	RIGHT	REGULATORY, ROAD CLOSED
0.043	0.043	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
0.045	0.076	PAVED DITCH	LEFT	N/A
0.052	0.052	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
0.082	0.082	INTERSECTION	LEFT	ROUTE 0100 (NORTH MOUNTAIN LOOP ROAD)
0.082	0.758	ONE-WAY	N/A	N/A
0.087	0.754	PAVED DITCH	LEFT	N/A
0.089	0.089	DROP INLET	LEFT	N/A
0.172	0.172	DROP INLET	LEFT	N/A
0.216	0.216	DROP INLET	LEFT	N/A
0.244	0.244	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
0.282	0.282	SIGN	RIGHT	GUIDE, GRAPHIC SIGN NO TEXT
0.282	0.282	SIGN	RIGHT	GUIDE, GOAT ROCK TRAIL
0.285	0.300	CURB	RIGHT	N/A
).294	0.294	SIGN	LEFT	REGULATORY, DO NOT ENTER
0.307	0.307	INTERSECTION	RIGHT	ROUTE 0904 (NORTH MOUNTAIN PARKING AREA)
0.311	0.316	CURB	RIGHT	N/A
).436	0.436	DROP INLET	LEFT	N/A
).553	0.553	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
0.553	0.553	SIGN	RIGHT	WARNING, 20 M.P.H.
).593	0.593	DROP INLET	LEFT	N/A
0.742	0.756	PAVED DITCH	RIGHT	N/A

ROUTE 0100: NORTH MOUNTAIN LOOP ROAD

<u>Notice:</u> 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
0.749	0.749	SIGN	RIGHT	REGULATORY, YIELD
0.749	0.749	SIGN	RIGHT	REGULATORY, DO NOT ENTER
0.750	0.750	SIGN	LEFT	REGULATORY, DO NOT ENTER
0.758	0.758	SIGN	N/A	GUIDE, DOWNTOWN
0.758	0.758	INTERSECTION	LEFT	ROUTE 0100 (NORTH MOUNTAIN LOOP ROAD)
0.758	0.758	INTERSECTION	RIGHT	ROUTE 0100 (NORTH MOUNTAIN LOOP ROAD)
0.758	0.758	ROUTE END	N/A	TO END OF ONE-WAY LOOP

ROUTE 0101: SUMMIT 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 ROUTE 0011 (WEST MOUNTAIN DRIVE)
0.000	0.000	INTERSECTION	N/A	ROUTE 0011 (WEST MOUNTAIN DRIVE)
0.000	0.000	INTERSECTION	RIGHT	ROUTE 0011 (WEST MOUNTAIN DRIVE)
0.000	0.045	RETAINING WALL	LEFT	N/A
0.000	0.295	PAVED DITCH	LEFT	N/A
0.004	0.004	SIGN	LEFT	REGULATORY, STOP
0.010	0.010	DROP INLET	LEFT	N/A
0.018	0.018	SIGN	N/A	REGULATORY, STOP
0.021	0.021	INTERSECTION	RIGHT	PAVED SPUR
0.031	0.031	SIGN	RIGHT	GUIDE, WEST MOUNTAIN SUMMIT
0.046	0.095	PAVED DITCH	RIGHT	N/A
0.050	0.050	GATE	N/A	N/A
0.052	0.052	SIGN	RIGHT	REGULATORY, ROAD CLOSED
0.053	0.053	SIGN	LEFT	GUIDE, WHITTINGTON AVE. PROSPECT AVE.
0.062	0.085	RETAINING WALL	LEFT	N/A
0.088	0.088	SIGN	LEFT	WARNING, STOP AHEAD
0.089	0.089	SIGN	RIGHT	REGULATORY, SPEED LIMIT 25
0.129	0.129	DROP INLET	LEFT	N/A
0.216	0.216	DROP INLET	LEFT	N/A
0.295	0.295	DROP INLET	LEFT	N/A
0.350	0.420	GUARD/GUIDE WALL	RIGHT	N/A
).351	0.393	PULLOUT	RIGHT	N/A
0.352	0.358	CURB	RIGHT	N/A
0.353	0.533	PAVED DITCH	LEFT	N/A
).359	0.392	CURB-AND-GUTTER	RIGHT	N/A
0.370	0.370	SIGN	RIGHT	REGULATORY, UNABLE TO READ FROM VIDEO
).392	0.410	CURB	RIGHT	N/A
0.410	0.410	DROP INLET	LEFT	N/A
).465	0.465	SIGN	LEFT	WARNING, 15 M.P.H.
0.465	0.465	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT

ROUTE 0101: SUMMIT 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
0.470	0.470	DROP INLET	LEFT	N/A
0.518	0.518	SIGN	RIGHT	REGULATORY, SPEED LIMIT 25
0.518	0.518	SIGN	RIGHT	GUIDE, GRAPHIC SIGN NO TEXT
0.553	0.553	INTERSECTION	LEFT	ROUTE 0905 (WEST MOUNTAIN PICNIC AREA PARKING)
0.568	0.568	SIGN	LEFT	REGULATORY, UNABLE TO READ FROM VIDEO
0.579	0.579	SIGN	LEFT	REGULATORY, SPEED LIMIT 25
0.579	0.579	SIGN	LEFT	GUIDE, GRAPHIC SIGN NO TEXT
0.864	0.930	PAVED DITCH	LEFT	N/A
0.864	0.932	PAVED DITCH	RIGHT	N/A
1.082	1.107	PAVED DITCH	RIGHT	N/A
1.097	1.341	ONE-WAY	N/A	N/A
1.097	1.097	INTERSECTION	LEFT	ROUTE 0101 (SUMMIT ROAD)
1.110	1.110	SIGN	LEFT	REGULATORY, DO NOT ENTER
1.120	1.120	CULVERT	N/A	N/A
1.121	1.121	SIGN	N/A	REGULATORY, KEEP RIGHT
1.138	1.138	INTERSECTION	LEFT	PAVED SPUR
1.208	1.208	INTERSECTION	RIGHT	ROUTE 0906 (WEST MOUNTAIN SUMMIT PARKING AREA)
1.209	1.217	CURB	RIGHT	N/A
1.219	1.219	INTERSECTION	RIGHT	ROUTE 0906 (WEST MOUNTAIN SUMMIT PARKING AREA)
1.220	1.220	DROP INLET	LEFT	N/A
1.224	1.252	PULLOUT	RIGHT	N/A
1.225	1.255	CURB	RIGHT	N/A
1.228	1.250	GUARD/GUIDE WALL	RIGHT	N/A
1.236	1.236	SIGN	RIGHT	REGULATORY, UNABLE TO READ FROM VIDEO
1.296	1.296	CULVERT	N/A	N/A
1.301	1.301	INTERSECTION	LEFT	PAVED SPUR
1.304	1.304	SIGN	LEFT	REGULATORY, STOP
1.323	1.323	SIGN	RIGHT	REGULATORY, SPEED LIMIT 25
1.341	1.341	INTERSECTION	LEFT	ROUTE 0101 (SUMMIT ROAD)
1.341	1.341	INTERSECTION	N/A	ROUTE 0101 (SUMMIT ROAD)

ROUTE 0101: SUMMIT ROAD

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

FROM	TO			
MILEPOST	MILEPOST	FEATURE	SIDE	COMMENT
1.341	1.341	ROUTE END	N/A	TO END OF LOOP AT SUMMIT

ROUTE 0200: GULPHA GORGE CAMPGROUND 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 ROUTE 5000 (GORGE ROAD / STATE ROUTE 7S)
0.000	0.000	INTERSECTION	LEFT	ROUTE 5000 (GORGE ROAD / STATE ROUTE 7S)
0.000	0.000	INTERSECTION	RIGHT	ROUTE 5000 (GORGE ROAD / STATE ROUTE 7S)
0.005	0.005	INTERSECTION	LEFT	PAVED SPUR
0.005	0.005	SIGN	N/A	REGULATORY, STOP
0.007	0.007	CULVERT	N/A	N/A
0.010	0.010	SIGN	LEFT	REGULATORY, STOP
0.022	0.022	SIGN	RIGHT	GUIDE, HOT SPRINGS NATIONAL PARK GULPHA GORGE CAMPGROUND & PICNIC AREA NO SHOWER FACILITIES CAMP ONLY IN D
0.022	0.022	SIGN	RIGHT	GUIDE, U.S. FEE AREA
0.028	0.028	SIGN	RIGHT	REGULATORY, SPEED LIMIT 15
0.037	0.037	INTERSECTION	LEFT	ROUTE 0911A (GULPHA GORGE CAMPGROUND PARKING AREA A)
0.061	0.061	INTERSECTION	LEFT	ROUTE 0911B (GULPHA GORGE CAMPGROUND PARKING AREA B)
0.063	0.063	INTERSECTION	RIGHT	ROUTE 0911C (GULPHA GORGE CAMPGROUND PARKING AREA C)
0.080	0.080	INTERSECTION	LEFT	ROUTE 0911D (GULPHA GORGE CAMPGROUND PARKING AREA D)
0.097	0.097	INTERSECTION	RIGHT	ROUTE 0205 (GULPHA GORGE DUMP STATION ROAD)
0.112	0.112	SIGN	RIGHT	GUIDE, GRAPHIC SIGN NO TEXT
0.112	0.112	SIGN	RIGHT	GUIDE, GULPHA GORGE CAMPGROUND REGISTRATION STATION AHEAD OPEN 24 HOURS UTILITY SITES \$24 PER NIGHT; NON-U
0.117	0.117	INTERSECTION	RIGHT	ROUTE 0203 (GULPHA GORGE CAMPGROUND UPPER LOOP)
0.123	0.123	INTERSECTION	LEFT	ROUTE 0911E (GULPHA GORGE CAMPGROUND PARKING AREA E)
0.131	0.211	PAVED DITCH	RIGHT	N/A
0.133	0.133	DROP INLET	RIGHT	N/A
0.156	0.379	ONE-WAY	N/A	N/A
0.156	0.156	INTERSECTION	LEFT	ROUTE 0204 (GULPHA GORGE CAMPGROUND LOWER LOOP)
0.169	0.169	SIGN	LEFT	REGULATORY, DO NOT ENTER

ROUTE 0200: GULPHA GORGE CAMPGROUND ROAD

<u>Notice:</u> 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
0.173	0.173	INTERSECTION	LEFT	ROUTE 0911F (GULPHA GORGE CAMPGROUND PARKING AREA F)
0.189	0.189	DROP INLET	RIGHT	N/A
0.201	0.201	INTERSECTION	LEFT	ROUTE 0911G (GULPHA GORGE CAMPGROUND PARKING AREA G)
0.203	0.203	DROP INLET	LEFT	N/A
0.203	0.203	DROP INLET	RIGHT	N/A
0.211	0.214	CURB	LEFT	N/A
0.266	0.266	INTERSECTION	LEFT	ROUTE 0204 (GULPHA GORGE CAMPGROUND LOWER LOOP)
0.270	0.270	INTERSECTION	LEFT	ROUTE 0911H (GULPHA GORGE CAMPGROUND PARKING AREA H)
0.274	0.274	SIGN	LEFT	GUIDE, UNABLE TO READ FROM VIDEO
0.274	0.278	CURB	LEFT	N/A
0.284	0.284	INTERSECTION	LEFT	ROUTE 0911I (GULPHA GORGE CAMPGROUND PARKING AREA I)
0.286	0.286	INTERSECTION	LEFT	ROUTE 0203 (GULPHA GORGE CAMPGROUND UPPER LOOP)
0.288	0.288	SIGN	RIGHT	REGULATORY, DO NOT ENTER
0.314	0.314	DROP INLET	RIGHT	N/A
0.314	0.314	DROP INLET	LEFT	N/A
0.317	0.326	PAVED DITCH	LEFT	N/A
0.331	0.342	PAVED DITCH	LEFT	N/A
0.349	0.349	SIGN	RIGHT	GUIDE, UNABLE TO READ FROM VIDEO
0.379	0.379	INTERSECTION	LEFT	ROUTE 0203 (GULPHA GORGE CAMPGROUND UPPER LOOP)
0.379	0.379	INTERSECTION	RIGHT	ROUTE 0203 (GULPHA GORGE CAMPGROUND UPPER LOOP)
0.379	0.379	ROUTE END	N/A	TO ROUTE 0203 (GULPHA GORGE CAMPGROUND UPPER LOOP)

ROUTE 0201: TOWER RETURN ROAD

<u>Notice:</u> 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 0010 (HOT SPRINGS MOUNTAIN DRIVE) AT MP 1.82
0.000	0.000	INTERSECTION	LEFT	ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE)
0.000	0.000	INTERSECTION	RIGHT	ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE)
0.000	0.527	ONE-WAY	N/A	N/A
0.024	0.367	PAVED DITCH	LEFT	N/A
0.026	0.026	CULVERT	N/A	N/A
0.264	0.264	CULVERT	N/A	N/A
0.335	0.335	CULVERT	N/A	N/A
0.367	0.527	PAVED DITCH	LEFT	N/A
0.455	0.455	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
0.498	0.498	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
0.502	0.502	SIGN	RIGHT	GUIDE, UNABLE TO READ FROM VIDEO
0.515	0.515	CULVERT	N/A	N/A
0.526	0.526	SIGN	RIGHT	REGULATORY, YIELD
0.527	0.527	INTERSECTION	LEFT	ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE)
0.527	0.527	INTERSECTION	RIGHT	ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE)
0.527	0.527	SIGN	N/A	REGULATORY, ONE WAY
0.527	0.527	ROUTE END	N/A	TO ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) AT MP 1.26

ROUTE 0202AZ: TOWER PARKING ENTRANCE 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 ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) AT MP 1.40
0.000	0.060	ONE-WAY	N/A	N/A
0.000	0.023	PAVED DITCH	LEFT	N/A
0.000	0.000	INTERSECTION	LEFT	ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE)
0.000	0.000	INTERSECTION	RIGHT	ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE)
0.003	0.060	GUARD/GUIDE WALL	RIGHT	N/A
0.006	0.006	SIGN	RIGHT	GUIDE, OBSERVATION TOWER PARKING
0.022	0.032	CURB	LEFT	N/A
0.022	0.032	PULLOUT	LEFT	N/A
0.027	0.032	RETAINING WALL	LEFT	N/A
0.032	0.060	CURB	LEFT	N/A
0.033	0.060	RETAINING WALL	LEFT	N/A
0.060	0.060	INTERSECTION	N/A	ROUTE 0912 (TOWER PARKING LOT)
0.060	0.060	ROUTE END	N/A	TO ROUTE 0912 (TOWER PARKING LOT)

ROUTE 0202BZ: TOWER PARKING EXIT ROAD

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

FROM	TO			
MILEPOST	MILEPOST	FEATURE	SIDE	COMMENT
0.000	0.000	ROUTE BEGIN	N/A	FROM ROUTE 0912 (TOWER PARKING LOT)
0.000	0.000	INTERSECTION	N/A	ROUTE 0912 (TOWER PARKING LOT)
0.000	0.162	ONE-WAY	N/A	N/A
0.075	0.152	PAVED DITCH	LEFT	N/A
0.090	0.152	RETAINING WALL	LEFT	N/A
0.146	0.146	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
0.162	0.162	INTERSECTION	N/A	ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE)
0.162	0.162	INTERSECTION	RIGHT	ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE)
0.162	0.162	ROUTE END	N/A	TO ROUTE 0010 (HOT SPRINGS MOUNTAIN DRIVE) AT MP 1.66

ROUTE 0203: GULPHA GORGE CAMPGROUND UPPER LOOP

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 0200 (GULPHA GORGE CAMPGROUND ROAD) AT MP 0.12
0.000	0.000	INTERSECTION	N/A	ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD)
0.000	0.000	INTERSECTION	RIGHT	ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD)
0.012	0.012	INTERSECTION	RIGHT	ROUTE 0205 (GULPHA GORGE DUMP STATION ROAD)
0.014	0.014	SIGN	LEFT	GUIDE, AMPHITHEATER PARKING
0.015	0.015	SIGN	RIGHT	GUIDE, POTABLE WATER AND DUMPING STATION FOR USE BY REGISTERED CAMPERS ONLY
0.017	0.022	CURB	LEFT	N/A
0.019	0.019	DROP INLET	RIGHT	N/A
0.019	0.126	PAVED DITCH	RIGHT	N/A
0.025	0.031	CURB	LEFT	N/A
0.026	0.026	SIGN	LEFT	GUIDE, RESERVED FOR PARK VOLUNTEER
0.031	0.031	SIGN	LEFT	GUIDE, RESERVED FOR PARK VOLUNTEER
0.057	0.057	INTERSECTION	LEFT	ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD)
0.057	0.168	ONE-WAY	N/A	N/A
0.061	0.061	SIGN	LEFT	REGULATORY, DO NOT ENTER
0.077	0.077	CULVERT	N/A	N/A
0.126	0.126	DROP INLET	RIGHT	N/A
0.126	0.126	DROP INLET	LEFT	N/A
0.141	0.141	INTERSECTION	RIGHT	ROUTE 0911K (GULPHA GORGE CAMPGROUND PARKING AREA K)
0.152	0.155	CURB	RIGHT	N/A
0.162	0.162	INTERSECTION	RIGHT	ROUTE 0911J (GULPHA GORGE CAMPGROUND PARKING AREA J)
0.168	0.168	INTERSECTION	LEFT	ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD)
0.168	0.168	INTERSECTION	N/A	ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD)
0.168	0.168	ROUTE END	N/A	TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) AT MP 0.29

ROUTE 0204: GULPHA GORGE CAMPGROUND LOWER LOOP

<u>Notice:</u> 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 0200 (GULPHA GORGE CAMPGROUND ROAD) AT MP 0.27
0.000	0.130	ONE-WAY	N/A	N/A
0.000	0.000	INTERSECTION	LEFT	ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD)
0.000	0.000	INTERSECTION	N/A	ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD)
0.042	0.042	CULVERT	N/A	N/A
0.056	0.056	DROP INLET	LEFT	N/A
0.092	0.092	CULVERT	N/A	N/A
0.130	0.130	INTERSECTION	LEFT	ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD)
0.130	0.130	INTERSECTION	RIGHT	ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD)
0.130	0.130	ROUTE END	N/A	TO ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD) AT MP 0.16

ROUTE 0205: GULPHA GORGE DUMP STATION ROAD

<u>Notice:</u> 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 0200 (GULPHA GORGE CAMPGROUND ROAD)
0.000	0.000	INTERSECTION	LEFT	ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD)
0.000	0.000	INTERSECTION	RIGHT	ROUTE 0200 (GULPHA GORGE CAMPGROUND ROAD)
0.040	0.040	INTERSECTION	LEFT	ROUTE 0203 (GULPHA GORGE CAMPGROUND UPPER LOOP)
0.040	0.040	INTERSECTION	RIGHT	ROUTE 0203 (GULPHA GORGE CAMPGROUND UPPER LOOP)
0.040	0.040	ROUTE END	N/A	TO ROUTE 0203 (GULPHA GORGE CAMPGROUND UPPER LOOP)

Section 10 Appendix



Hot Springs National Park



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 vis a vis the distresses and indexes that comprise the Pavement Condition Rating (PCR), an extensive study was completed throughout 2010 that has 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. The 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.

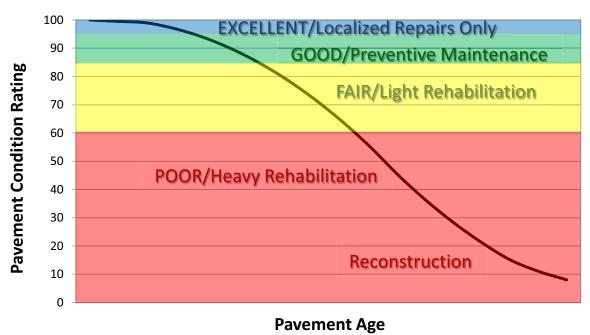
Explanation of the Excellent, Good, Fair and Poor Condition Descriptions

In addition to the RIP Index changes that will be implemented in Cycle 5, we will also aim to 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.

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.

Condition Categories and Treatments



DESCRIPTION OF RATING SYSTEM

The Federal Highway Administration (FHWA), Road Inventory Program (RIP) for the National Park Service (NPS), collects roadway condition data on paved surfaces (asphalt, concrete, brick, and cobblestone) on roads, parkways, and parking areas in national parks nationwide. The road surface condition data is collected using an automated Data Collection Vehicle (DCV). Roads having brick or cobblestone surfacing are not normally surveyed with the DCV, but are manually rated for condition rating.

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 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. In truth, the FHWA RIP distress types are similar to those described in the LTPP manual with some modifications. This 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 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, 168 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 23.

Each classified surface distress will fall into one or more severity...LOW, MEDIUM, or HIGH based on criteria listed. For each severity, an extent 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:

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
	LOW	L	M	Н
ack	MED	M	M	Н
C _r	HI	Н	Н	Н

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 patch may not exceed 0.30 mi. (0.48 km). (Any full-lane patch exceeding 0.30 mi. in length is considered a pavement change). 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 ≥ 0.20 " and ≤ 0.49 "

MED

Ruts with a measured depth ≥ 0.50 " and ≤ 0.99 "

HIGH

Ruts with a measured depth ≥ 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:

square foot area of alligator crack severity
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:

length of respective longitudinal cracking 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:

Total length of transverse cracks
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:

square foot area of patching/potholes
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:

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)

$$RCI = 32 * [5 * (2.718282 \land (-0.0041 * AVG IRI))]$$

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:

There is no applicable threshold for failure for this index.

Roughness Condition Index (Concrete)

$$\mathbf{RCI} = -0.0012(\mathbf{IRI}^2) + 0.0499(\mathbf{IRI}) + 99.542$$

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 Inertial Measuring Unit (IMU) to provide accurate positioning data 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	+- 0.1 degrees
Grade	+- 0.1 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.

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 tables 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.

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 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