



# Federal Lands Highway Road Inventory Program

Road Inventory and Condition Assessment

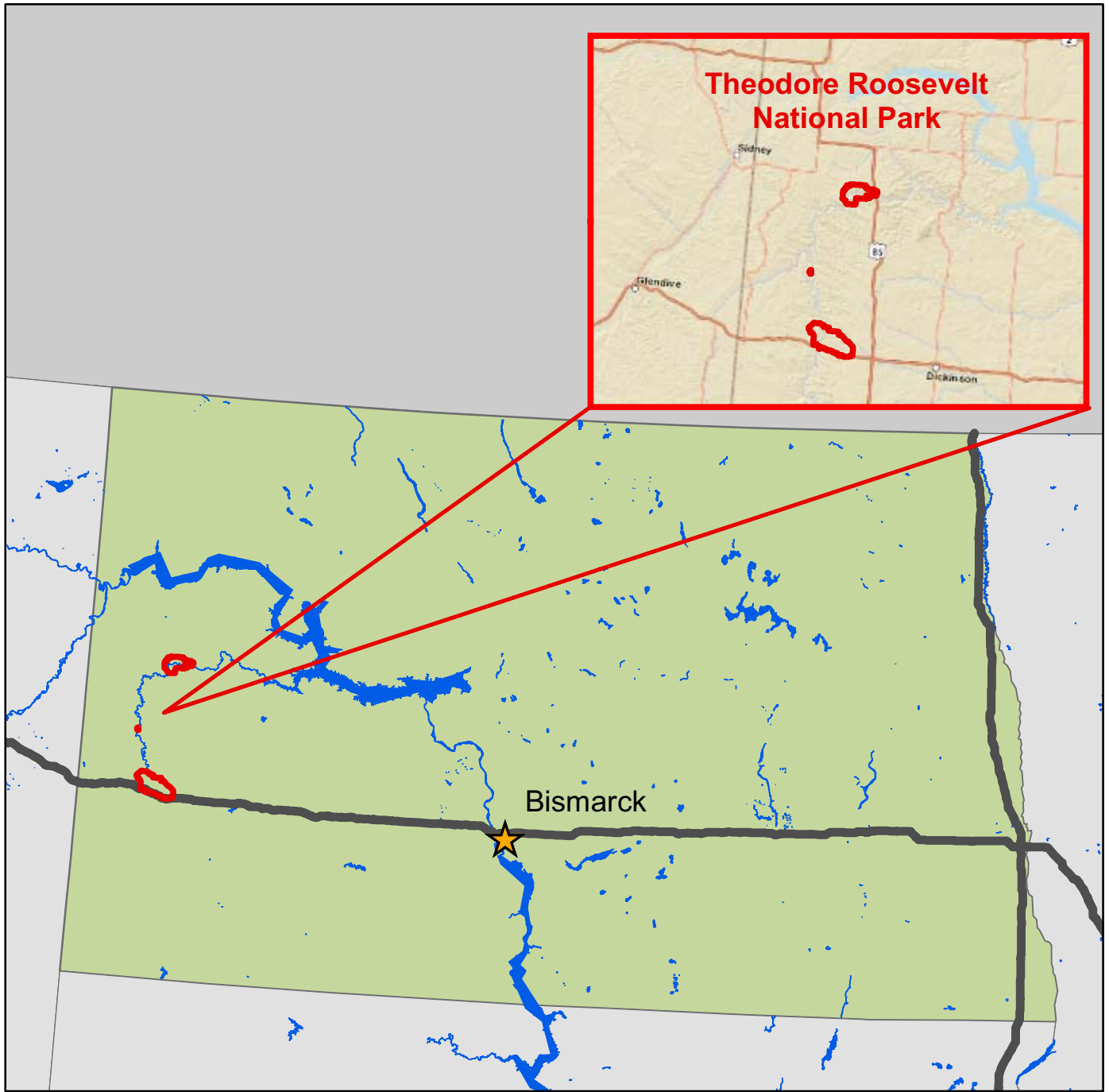


## Theodore Roosevelt National Park THRO - 1540

### Cycle 5 Report

**Prepared By: Federal Highway Administration  
Road Inventory Program (RIP)  
Data Collected: 08/2011  
Report Date: 05/2012**

# Theodore Roosevelt National Park in North Dakota





DCV = Data Collection Vehicle

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# Section 1 Introduction



## Theodore Roosevelt National Park



Federal Lands Highway  
Road Inventory Program

## INTRODUCTION

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

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

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

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

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

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

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

Cycle 5 has launched in the summer of 2010 and will again comprise all parks, large and small, that are served by paved roads and/or parking areas. For Cycle 5, the decision was made to collect condition data in large parks on Functional Class 1, 2, and 7 paved routes only, as well as any new routes that were previously not collected. In small parks, all paved routes and parking areas will be collected. As a result, this will include 81 large parks with 4,459 paved route miles and 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 21<sup>st</sup> Century (TEA-21) amended Title 23 U.S.C., and inserted Section 204(a)(6) requiring the FHWA and NPS, to develop by rule, a Pavement Management System (PMS) applied to park roads and parkways serving the National Park System.

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

Respectfully,

FHWA RIP Team

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# Section 2 Park Route Inventory



Theodore Roosevelt National Park



Federal Lands Highway  
Road Inventory Program

# Cycle 5 NPS/RIP Route ID Report

Road Inventory Program 05/07/2012

(Numerical By Route #)

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

\*\* DCV - Data Collection Vehicle

\*\*\* Only Functional Class 1, 2, & 7 routes, and previously uncollected routes were collected in Cycle 5

## THRO

### THEODORE ROOSEVELT NATIONAL PARK

Rte. No.	Cycle Collected	FMSS No.	Concess Route	Route Name	Route Description		Maint. District	Paved Miles	Un-Paved Miles	Total Route Length	Func. Class	Manual Rated SQ/FT	Surf. Type	Area Maps
					From	To								
0010	5	56765		SCENIC DRIVE	FROM U.S. ROUTE 85/NORTH DAKOTA STATE ROUTE 200	TO ROUTE 0938 (OXBOW OVERLOOK PARKING)	NORTH UNIT	13.88	0.00	13.88	1	0	AS	1
0011	5	49027		SCENIC LOOP	FROM INTERSTATE 94 (PACIFIC AVENUE) BUSINESS	TO END OF LOOP	SOUTH UNIT	28.75	0.00	28.75	1	0	AS	2
0100	NC	49039		NORTH BOUNDARY ROAD	FROM ROUTE 0011 (SCENIC LOOP) AT MP 24.56 (ON RIGHT)	TO PARK BOUNDARY	SOUTH UNIT	0.00	1.31	1.31	1	0	GR	
0200ZZ	5	28457		JUNIPER CAMPGROUND AREA	FROM ROUTE 0010 (SCENIC DRIVE) AT MP 4.80 (ON LEFT)	THROUGH JUNIPER CAMPGROUND	NORTH UNIT	0.99	0.00	0.99	3	0	AS	1
0201ZZ	4	29484		COTTONWOOD CAMPGROUND AREA	FROM ROUTE 0011 (SCENIC LOOP) AT MP 5.60 (ON LEFT)	THROUGH COTTONWOOD CAMPGROUND	SOUTH UNIT	1.42	0.00	1.42	3	0	AS	2
0202	NC	49041		PEACEFUL VALLEY PICNIC AREA	FROM ROUTE 0011 (SCENIC LOOP) AT MP 28.40 (ON LEFT)	TO END	SOUTH UNIT	0.00	0.30	0.30	3	0	GR	
0203	4	30276		PEACEFUL VALLEY RANCH ROAD	FROM ROUTE 0011 (SCENIC LOOP) AT MP 28.48 (ON RIGHT)	TO ROUTE 0939 (PEACEFUL VALLEY RANCH PARKING)	SOUTH UNIT	0.26	0.00	0.26	3	0	AS	2
0204	5	56766		BUCK HILL SPUR	FROM ROUTE 0011 (SCENIC LOOP) AT MP 16.88 (ON RIGHT)	TO ROUTE 0915 (BUCK HILL OVERLOOK PARKING)	SOUTH UNIT	0.73	0.02	0.75	2	0	AS	2
0205	NC	49007		HALLIDAY WELLS ROAD	FROM ROUTE 0011 (SCENIC LOOP) AT MP 28.17 (ON LEFT)	TO END OF LOOP	SOUTH UNIT	0.00	0.54	0.54	3	0	GR	
0206	NC	49043		BURNING COAL VEIN ROAD	FROM ROUTE 0011 (SCENIC LOOP) AT MP 15.43 (ON RIGHT)	TO PARKING AREA	SOUTH UNIT	0.00	0.81	0.81	3	0	GR	
0207	NC	107247		JONES CREEK TRAIL ROAD	FROM ROUTE 0011 (SCENIC LOOP)	TO PARKING	SOUTH UNIT	0.00	0.10	0.10	3	0	GR	
0400	4	29405		THIRD AVENUE	FROM ROUTE 0011 (SCENIC LOOP) AT MP 0.02 (ON RIGHT)	TO MAIN STREET	SOUTH UNIT	0.08	0.00	0.08	8	0	AS	2
0401	NC	48983		MIX PIT ROAD	FROM ROUTE 0011 (SCENIC LOOP) AT MP 6.55 (ON RIGHT)	TO MAINTENANCE BUILDINGS	SOUTH UNIT	0.00	0.60	0.60	6	0	GR	
0402	NC	48996		ROUNDUP HORSE CAMP ROAD	FROM ROUTE 0100 (NORTH BOUNDARY ROAD)	TO CORRALS	SOUTH UNIT	0.00	0.90	0.90	6	0	GR	
0403	NC	28466		CORRAL AREA ACCESS ROAD	FROM ROUTE 0010 (SCENIC DRIVE) AT MP 2.7	TO CORRALS	NORTH UNIT	0.00	0.93	0.93	6	0	GR	



# Cycle 5 NPS/RIP Route ID Report

Road Inventory Program 05/07/2012

(Numerical By Route #)

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### THEODORE ROOSEVELT NATIONAL PARK

Rte. No.	Cycle Collected	FMSS No.	Concess Route	Route Name	Route Description		Maint. District	Paved Miles	Un-Paved Miles	Total Route Length	Func. Class	Manual Rated SQ/FT	Surf. Type	Area Maps
					From	To								
0404	4	28438		NORTH UNIT MAINTENANCE AREA ACCESS ROAD	FROM ROUTE 0010 (SCENIC DRIVE) AT MP 0.31 (ON LEFT)	TO ROUTE 0940 (NORTH UNIT MAINTENANCE YARD)	NORTH UNIT	0.30	0.00	0.30	6	0	AS	1
0405ZZ	4	56776		HEADQUARTERS STREET AND THIRD STREET	FROM MAIN STREET AND THIRD STREET AT PARK BOUNDARY	THROUGH HEADQUARTERS STREET AND THIRD STREET	SOUTH UNIT	0.24	0.00	0.24	8	3,696	AS	2
0406	4	28439		GRAY HOUSE ACCESS ROAD	FROM ROUTE 0404 (NORTH UNIT MAINTENANCE AREA ACCESS ROAD) AT MP 0.16 (ON RIGHT)	TO END OF PAVEMENT	NORTH UNIT	0.16	0.17	0.33	6	0	AS	1
0407	NC	28441		HEADQUARTERS WELLHOUSE ACCESS ROAD	FROM ROUTE 0406 (GRAY HOUSE ACCESS ROAD) AT MP 0.12 (ON LEFT)	TO WELL	NORTH UNIT	0.00	0.15	0.15	5	0	GR	
0408	NC	28414		WEST BOUNDARY ACCESS ROAD	FROM ROUTE 0010 (SCENIC DRIVE) AT MP 13.4	TO PARK BOUNDARY	NORTH UNIT	0.00	0.33	0.33	6	0	GR	
0409	NC	28458		CAMPGROUND WELLHOUSE ACCESS ROAD	FROM ROUTE 0010 (SCENIC DRIVE) AT MP 5.4	TO WELL	NORTH UNIT	0.00	0.09	0.09	5	0	GR	
0410	NC	28459		LAGOON ACCESS ROAD	FROM ROUTE 0010 (SCENIC DRIVE)	TO LAGOONS	NORTH UNIT	0.00	0.36	0.36	5	0	GR	
0411	NC	28443		HEADQUARTERS RESERVOIR ACCESS ROAD	FROM ROUTE 0010 (SCENIC DRIVE)	TO END	NORTH UNIT	0.00	0.18	0.18	6	0	GR	
0412	NC	28444		RADIO EQUIPMENT ACCESS ROAD	FROM U.S. ROUTE 85/NORTH DAKOTA STATE ROUTE 200	TO RADIO TOWER	NORTH UNIT	0.00	0.37	0.37	5	0	GR	
0414	4			FOURTH STREET	FROM FOURTH STREET AT PARK BOUNDARY	TO ROUTE 0011 (SCENIC LOOP)	SOUTH UNIT	0.04	0.00	0.04	6	0	AS	2
0415	NC	107250		PAINTED CANYON LAGOON ROAD	FROM ROUTE 0922 (PAINTED CANYON VISITOR'S CENTER)	TO LAGOONS	SOUTH UNIT	0.00	0.30	0.30	6	0	GR	
0416	NC	107252		WILDLIFE HANDLING FACILITY ROAD	FROM COUNTY ROAD	TO WILDLIFE HANDLING FACILITY	SOUTH UNIT	0.00	0.10	0.10	6	0	GR	
0900	4	56778		MEDORA VISITOR'S CENTER PARKING	FROM ROUTE 0011 (SCENIC LOOP) AT MP 0.14 (ON LEFT)	TO ROUTE 0011 (SCENIC LOOP) AT MP 0.22 (ON LEFT)	SOUTH UNIT	0.00	0.00	0.00		24,172	AS	2
0901	4	56780		MEDORA VISITOR'S CENTER EMPLOYEE PARKING	FROM ROUTE 0011 (SCENIC LOOP) AT MP 0.09 (ON LEFT)	TO PARKING	SOUTH UNIT	0.00	0.00	0.00		5,268	AS	2

# Cycle 5 NPS/RIP Route ID Report

Road Inventory Program 05/07/2012

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### THEODORE ROOSEVELT 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
0902ZZ	4	56785		SOUTH UNIT MAINTENANCE YARD PARKING AREAS	ADJACENT TO ROUTE 0414 (FOURTH STREET) (ON LEFT AND RIGHT)	SOUTH UNIT	0.00	0.00	0.00		25,778	AS	2
0903	4	56786		MEDORA OVERLOOK	FROM ROUTE 0011 (SCENIC LOOP) AT MP 0.46 (ON LEFT) TO ROUTE 0011 (SCENIC LOOP) AT MP 0.48 (ON LEFT)	SOUTH UNIT	0.00	0.00	0.00		4,386	AS	2
0904	4	56790		JOHNSON PLATEAU PARKING AREA	ADJACENT TO ROUTE 0011 (SCENIC LOOP) AT MP 3.34 (ON RIGHT)	SOUTH UNIT	0.00	0.00	0.00		4,838	AS	2
0905	4	56793		SKYLINE VISTA	FROM ROUTE 0011 (SCENIC LOOP) AT MP 4.17 (ON LEFT) TO ROUTE 0011 (SCENIC LOOP) AT MP 4.26 (ON LEFT)	SOUTH UNIT	0.00	0.00	0.00		30,548	AS	2
0906	4	56794		RIVER WOODLAND OVERLOOK	ADJACENT TO ROUTE 0011 (SCENIC LOOP) AT MP 5.31 (ON LEFT)	SOUTH UNIT	0.00	0.00	0.00		8,385	AS	2
0907	4	56795		COTTONWOOD CAMPGROUND FEE STATION PARKING	ADJACENT TO ROUTE 0201ZZ (COTTONWOOD CAMPGROUND AREA) AT MP 0.135(ON RIGHT)	SOUTH UNIT	0.00	0.00	0.00		3,681	AS	2
0909	4	56797		PRAIRIE DOG TOWN PARKING AREA	ADJACENT TO ROUTE 0011 (SCENIC LOOP) AT MP 6.71 (ON RIGHT)	SOUTH UNIT	0.00	0.00	0.00		8,600	AS	2
0910	4	56798		SCORIA POINT OVERLOOK	ADJACENT TO ROUTE 0011 (SCENIC LOOP) AT MP 9.31 (ON LEFT)	SOUTH UNIT	0.00	0.00	0.00		6,079	AS	2
0911	4	56799		RIDGELINE TRAILHEAD	ADJACENT TO ROUTE 0011 (SCENIC LOOP) AT MP 10.70 (ON LEFT)	SOUTH UNIT	0.00	0.00	0.00		2,591	AS	2
0912	4	56800		NORTH DAKOTA BADLANDS OVERLOOK PARKING	FROM ROUTE 0011 (SCENIC LOOP) AT MP 11.28 (ON LEFT) TO ROUTE 0011 (SCENIC LOOP) AT MP 11.30 (ON LEFT)	SOUTH UNIT	0.00	0.00	0.00		6,751	AS	2
0913	4	56801		PADDOCK CREEK / TALKINGTON TRAILHEAD PARKING	ADJACENT TO ROUTE 0011 (SCENIC LOOP) AT MP 14.51 (ON LEFT)	SOUTH UNIT	0.00	0.00	0.00		3,163	AS	2
0915	4	56802		BUCK HILL OVERLOOK PARKING	FROM END OF ROUTE 0204 (BUCK HILL SPUR) TO PARKING	SOUTH UNIT	0.00	0.00	0.00		12,775	AS	2
0916	4	56806		BOICOURT OVERLOOK PARKING	ADJACENT TO ROUTE 0011 (SCENIC LOOP) AT MP 19.39 (ON LEFT)	SOUTH UNIT	0.00	0.00	0.00		4,307	AS	2
0917	NC	104902		UPPER JONES CREEK TRAILHEAD PARKING	ADJACENT TO ROUTE 0011 (SCENIC LOOP) AT MP 20.74 (ON LEFT)	SOUTH UNIT	0.00	0.00	0.00		201,166	GR	

# Cycle 5 NPS/RIP Route ID Report

Road Inventory Program 05/07/2012

(Numerical By Route #)

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### THEODORE ROOSEVELT 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
0918	4	56808		WIND CANYON PARKING AREA	FROM ROUTE 0011 (SCENIC LOOP) AT MP 24.86 (ON RIGHT) TO ROUTE 0011 AT MP 24.93 (SCENIC LOOP)	SOUTH UNIT	0.00	0.00	0.00		23,990	AS	2
0919	4	56809		BEEF CORRAL PULLOUT	ADJACENT TO ROUTE 0011 (SCENIC LOOP) AT MP 26.30 (ON RIGHT)	SOUTH UNIT	0.00	0.00	0.00		3,695	AS	2
0920	4	56810		LOWER JONES CREEK TRAILHEAD	ADJACENT TO ROUTE 0011 (SCENIC LOOP) AT MP 27.25 (ON LEFT)	SOUTH UNIT	0.00	0.00	0.00		10,067	AS	2
0922	4	30291		PAINTED CANYON VISITOR'S CENTER	FROM CATTLE GUARD OFF OF INTERSTATE 94W, EXIT 32 EAST TO PARKING	SOUTH UNIT	0.00	0.00	0.00		119,189	AS	2
0924	4	56970		NORTH UNIT VISITOR'S CENTER PARKING	ADJACENT TO ROUTE 0010 (SCENIC DRIVE) AT MP 0.27 ON RIGHT AT VISITOR CENTER	NORTH UNIT	0.00	0.00	0.00		14,120	AS	1
0925	4	56868		RESIDENCE SPUR AND PARKING	FROM ROUTE 0404 (NORTH UNIT MAINTENANCE AREA ACCESS ROAD) AT MP 0.20 (ON RIGHT) TO PARKING	NORTH UNIT	0.00	0.00	0.00		15,154	AS	1
0926	4	56876		LONGHORN PARKING	ADJACENT TO ROUTE 0010 (SCENIC DRIVE) AT MP 2.3 (ON LEFT)	NORTH UNIT	0.00	0.00	0.00		4,243	AS	1
0927	4	56877		SLUMP BLOCK PARKING	ADJACENT TO ROUTE 0010 (SCENIC DRIVE) AT MP 2.9 (ON RIGHT)	NORTH UNIT	0.00	0.00	0.00		3,550	AS	1
0928	4	56878		CANNONBALL CONCRETIONS PARKING	ADJACENT TO ROUTE 0010 (SCENIC DRIVE) AT MP 4.8 (ON RIGHT)	NORTH UNIT	0.00	0.00	0.00		13,638	AS	1
0932	4	56897		LONG X TRAIL PARKING	FROM ROUTE 0010 (SCENIC DRIVE) AT MP 5.7 (ON RIGHT) TO PARKING	NORTH UNIT	0.00	0.00	0.00		12,879	AS	1
0933	4	56898		CAPROCK COULEE TRAIL	FROM ROUTE 0010 (SCENIC DRIVE) AT MP 6.4 (ON RIGHT) TO ROUTE 0010 (SCENIC DRIVE) AT MP 6.42 (ON RIGHT)	NORTH UNIT	0.00	0.00	0.00		9,125	AS	1
0934	4	56901		RIVER BEND OVERLOOK PARKING	FROM ROUTE 0010 (SCENIC DRIVE) AT MP 8.0 (ON LEFT) TO ROUTE 0010 (SCENIC DRIVE) AT MP 8.10 (ON LEFT)	NORTH UNIT	0.00	0.00	0.00		13,654	AS	1
0935	4	56904		BENTONITE CLAY OVERLOOK PARKING	ADJACENT TO ROUTE 0010 (SCENIC DRIVE) AT MP 9.0 (ON RIGHT)	NORTH UNIT	0.00	0.00	0.00		7,752	AS	1

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Road Inventory Program 05/07/2012

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0936	4	56909		MAN AND GRASS PARKING	FROM ROUTE 0010 (SCENIC DRIVE) AT MP 9.78 (ON RIGHT) TO ROUTE 0010 (SCENIC DRIVE) AT MP 9.816 (ON RIGHT)	NORTH UNIT	0.00	0.00	0.00		8,379	AS	1
0937	4	56923		EDGE OF GLACIER PARKING	FROM ROUTE 0010 (SCENIC DRIVE) AT MP 12.668 (ON RIGHT) TO ROUTE 0010 (SCENIC DRIVE) AT MP 12.705 (ON RIGHT)	NORTH UNIT	0.00	0.00	0.00		7,310	AS	1
0938	4	56930		OXBOW OVERLOOK PARKING	FROM END OF ROUTE 0010 (SCENIC DRIVE) TO PARKING	NORTH UNIT	0.00	0.00	0.00		29,365	AS	1
0939	NC	108356		PEACEFUL VALLEY RANCH PARKING	FROM ROUTE 0203 (PEACEFUL VALLEY RANCH ROAD) TO PARKING	SOUTH UNIT	0.00	0.00	0.00		41,603	GR	
0940	4	56941		NORTH UNIT MAINTENANCE YARD	FROM END OF 0404 (NORTH UNIT MAINTENANCE AREA ACCESS ROAD) TO PARKING	NORTH UNIT	0.00	0.00	0.00		12,469	AS	1
0941	4	104633		OLD EAST ENTRANCE TRAILHEAD PARKING	FROM ROUTE 0011 (SCENIC LOOP) AT MP 12.72 (ON RIGHT) TO ROUTE 0011 (SCENIC LOOP) AT MP 12.76 (ON RIGHT)	SOUTH UNIT	0.00	0.00	0.00		8,016	AS	2
0942	4	238776		NORTH UNIT MAINTENANCE YARD OVERFLOW PARKING	ADJACENT TO ROUTE 0404 (NORTH UNIT MAINTENANCE AREA ACCESS ROAD) AT MP 0.24 (ON RIGHT)	NORTH UNIT	0.00	0.00	0.00		1,542	AS	1
0944	4			HEADQUARTERS PARKING	ADJACENT TO ROUTES 0405ZZ (HEADQUARTERS STREET AND THIRD STREET) AT MP 0.11 (ON LEFT)	SOUTH UNIT	0.00	0.00	0.00		1,373	CO	2
0945ZZ	4	238775		RESIDENCE AREA PARKING	ADJACENT TO ROUTES 0405ZZ (HEADQUARTERS STREET AND THIRD STREET) 0414 (FOURTH STREET)	SOUTH UNIT	0.00	0.00	0.00		2,755	AS	2
0949ZZ	4	56889		JUNIPER CAMPGROUND PARKING AREAS	ADJACENT TO ROUTE 0200ZZ (JUNIPER CAMPGROUND AREA) (ON LEFT AND RIGHT)	NORTH UNIT	0.00	0.00	0.00		56,099	AS	1

# Cycle 5 NPS/RIP Route ID Report

Road Inventory Program 05/07/2012

(Numerical By Route #)

Page 6 of 7

Shading Color Key:  
Red text denotes approx. mileage

White = Paved Routes, DCV Driven
Grey = Paved Routes, DCV not Driven

Yellow = Unpaved Routes, DCV not Driven

Black = State, Local or Private non-NPS Routes

Blue = All Paved Parking Areas

■ = Concession Route Flag ON

Green = All Unpaved Parking Areas

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

\*\* DCV - Data Collection Vehicle

\*\*\* Only Functional Class 1, 2, & 7 routes, and previously uncollected routes were collected in Cycle 5

## CYCLE 5 COLLECTED SUMMARY TOTALS FOR THEODORE ROOSEVELT NATIONAL PARK

### CYCLE 5 COLLECTED ROUTE TOTALS

DCV Driven Route Miles	44.36
Manually Rated Route Miles	0.00
<b>TOTAL PARK ROUTE MILES COLLECTED IN CYCLE 5</b>	<b>44.36</b>
Manually Rated Routes (SQFT)	0

### \* CYCLE 5 COLLECTED PARKING AREA TOTALS

Paved Parking (SQFT)	0
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### CYCLE 5 COLLECTED CONCESSION TOTALS

Concession Paved Route Miles	0.00
Concession Paved Parking Area SQFT	0
Concession Manually Rated Rotes SQFT	0

### CYCLE 5 COLLECTED WEIGHTED AVERAGE PARK VALUES

DCV Driven PCR	82
**Manually Rated Routes PCR	N/A
**Parking PCR	N/A
***Total Equivalent Lane Miles	100.12

## TOTAL PARK SUMMARY FOR THEODORE ROOSEVELT NATIONAL PARK

### ROUTE TOTALS

<b>TOTAL PAVED PARK ROUTE MILES</b>	<b>46.85</b>
<b>TOTAL PAVED PARKING (SQFT)</b>	<b>614,318</b>

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

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

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

# Cycle 5 NPS/RIP Route ID Report

Road Inventory Program 05/07/2012

(Numerical By Route #)

Page 7 of 7

Shading Color Key:

White = Paved Routes, DCV Driven

Yellow = Unpaved Routes, DCV not Driven

Blue = All Paved Parking Areas

Green = All Unpaved Parking Areas

Red text denotes approx. mileage

Grey = Paved Routes, DCV not Driven

Black = State, Local or Private non-NPS Routes

■ = Concession Route Flag ON

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\*\* DCV - Data Collection Vehicle

\*\*\* Only Functional Class 1, 2, & 7 routes, and previously uncollected routes were collected in Cycle 5

## General Park Road Functional Classification Table

- Class 1** Principal Park Road/Rural Parkway (Public Roads) Roads which constitute the main access route, circulatory tour, or thoroughfare for park visitors. Route Numbers 1 - 99. Note: Rural parkways (e.g. Natchez Trace) are numbered 1 - 9. State Routes Inventoried for Park. Route Numbers 5000-5999
- Class 2** Connector Park Road (Public Roads) - Roads which provide access within a park to areas of scenic, scientific, recreational or cultural interest, such as overlooks, campgrounds, etc. Route Numbers 100-199.
- Class 3** Special Purpose Park Road (Public Roads) - Roads which provide circulation within public areas, such as campgrounds, picnic areas, visitor center complexes, concessionaire facilities, etc. These roads generally serve low-speed traffic and are often designed for one-way circulation. Route Numbers 200-299.
- Class 4** Primitive Park Roads (Public Roads) - Roads which provide circulation through remote areas and/or access to primitive campgrounds and undeveloped areas. These roads frequently have no minimum design standards and their use may be limited to specially equipped vehicles. Route Numbers 200-299. Note: Functional Classes 3 and 4 have the same route numbers because, historically, they were numbered similarly.
- Class 5** Administrative Access Road (Administrative Roads) - All public roads intended for access to administrative developments or structures such as park offices, employee quarters, or utility areas. Route Numbers 400-499.
- Class 6** Restricted Road (Administrative Roads) - All roads normally closed to the public, including patrol roads, truck trails, and other similar roads. Route Numbers 400-499. Note: Functional Classes 5 and 6 have the same route numbers because historically they were numbered similarly and often there is little distinction between these routes. For example, because utility areas and employee housing are often closed to the public, this restriction would result in classification of FC 6 rather than FC 5.
- Class 7** Urban Parkway (Urban Parkways and City Streets) - These facilities serve high volumes of park and non-park related traffic and are restricted, limited-access facilities in an urban area. This category of roads primarily encompasses the major parkways which serve as gateways to our nation's capital. Other major park roads or portions thereof, however, may be included in this category. Route Numbers 1-9.
- Class 8** City Streets (Urban Parkways and City Streets) - City streets are usually extensions of the adjoining street system that are owned and maintained by the National Park Service. The construction and/or reconstruction should conform with accepted local engineering practice and local conditions. Route Numbers 600-699.

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

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

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

## Surface Type Abbreviations:

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

# NPS/RIP Subcomponent Details for THRO

Road Inventory Program 05/07/2012

(Numerical By Subcomponent #)

Page 1 of 3

Shading Color Key:

White = Paved Routes, DCV Driven

Yellow = Unpaved Routes, DCV not Driven

Blue = All Paved Parking Areas

Green = All Unpaved Parking Areas

Red text denotes approx. mileage

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).

## THRO

### THEODORE ROOSEVELT NATIONAL PARK

#### Asset Entered in FMSS System

Rte. No.	FMSS No.	Cycle Collected	Route Description		Concess Route	Func. Class	Paved Miles	Un-Paved Miles	Total Route Length	Manual Rated SQ/FT	
			Route Name	From							To
0200ZZ	28457	5	JUNIPER CAMPGROUND AREA	FROM ROUTE 0010 (SCENIC DRIVE) AT MP 4.80 (ON LEFT)	THROUGH JUNIPER CAMPGROUND		3	0.99	0.00	0.99	0
0201ZZ	29484	4	COTTONWOOD CAMPGROUND AREA	FROM ROUTE 0011 (SCENIC LOOP) AT MP 5.60 (ON LEFT)	THROUGH COTTONWOOD CAMPGROUND		3	1.42	0.00	1.42	0
0405ZZ	56776	4	HEADQUARTERS STREET AND THIRD STREET	FROM MAIN STREET AND THIRD STREET AT PARK BOUNDARY	THROUGH HEADQUARTERS STREET AND THIRD STREET		8	0.24	0.00	0.24	3,696
0902ZZ	56785	4	SOUTH UNIT MAINTENANCE YARD PARKING AREAS	ADJACENT TO ROUTE 0414 (FOURTH STREET) (ON LEFT AND RIGHT)				0.00	0.00	0.00	25,778
0945ZZ	238775	4	RESIDENCE AREA PARKING	ADJACENT TO ROUTES 0405ZZ (HEADQUARTERS STREET AND THIRD STREET) 0414 (FOURTH STREET)				0.00	0.00	0.00	2,755
0949ZZ	56889	4	JUNIPER CAMPGROUND PARKING AREAS	ADJACENT TO ROUTE 0200ZZ (JUNIPER CAMPGROUND AREA) (ON LEFT AND RIGHT)				0.00	0.00	0.00	56,099

#### Asset THRO-0200ZZ Subcomponent Breakdown

Rte. No.	FMSS No.	Cycle Collected	Route Description		Concess Route	Func. Class	Paved Miles	Un-Paved Miles	Total Route Length	Manual Rated SQ/FT	
			Route Name	From							To
0200AZ	28457	5	JUNIPER CAMPGROUND LOOP A	FROM ROUTE 0010 (SCENIC DRIVE) AT MP 4.80 (ON LEFT)	TO END OF LOOP		3	0.91	0.00	0.91	0
0200BZ	28457	5	JUNIPER CAMPGROUND CUT THROUGH	FROM ROUTE 0200AZ (JUNIPER CAMPGROUND LOOP A) AT MP 0.576	TO ROUTE 0200AZ (JUNIPER CAMPGROUND LOOP A) AT MP 0.766		3	0.08	0.00	0.08	0

# NPS/RIP Subcomponent Details for THRO

Road Inventory Program 05/07/2012

(Numerical By Subcomponent #)

Page 2 of 3

Shading Color Key:

White = Paved Routes, DCV Driven

Yellow = Unpaved Routes, DCV not Driven

Blue = All Paved Parking Areas

Green = All Unpaved Parking Areas

Red text denotes approx. mileage

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).

## THRO

### THEODORE ROOSEVELT NATIONAL PARK

#### Asset THRO-0201ZZ Subcomponent Breakdown

Rte. No.	FMSS No.	Cycle Collected	Route Name	From	To	Concess Route	Func. Class	Paved Miles	Un-Paved Miles	Total Route Length	Manual Rated SQ/FT
0201AZ	29484	4	COTTONWOOD CAMPGROUND LOOP A	FROM ROUTE 0011 (SCENIC LOOP) AT MP 5.60 (ON LEFT)	TO END OF LOOP		3	0.76	0.00	0.76	0
0201BZ	29484	4	COTTONWOOD CAMPGROUND LOOP B	FROM ROUTE 0201AZ (COTTONWOOD CAMPGROUND LOOP A) AT MP 0.28 (ON LEFT)	TO ROUTE 0201AZ (COTTONWOOD CAMPGROUND LOOP A) AT MP 0.21 (ON LEFT)		3	0.33	0.00	0.33	0
0201CZ	29484	4	COTTONWOOD CAMPGROUND LOOP C	FROM ROUTE 0201AZ (COTTONWOOD CAMPGROUND LOOP A)	TO END OF LOOP		3	0.33	0.00	0.33	0

#### Asset THRO-0405ZZ Subcomponent Breakdown

Rte. No.	FMSS No.	Cycle Collected	Route Name	From	To	Concess Route	Func. Class	Paved Miles	Un-Paved Miles	Total Route Length	Manual Rated SQ/FT
0405Z	56776	4	HEADQUARTERS STREET	FROM MAIN STREET AT PARK BOUNDARY	TO DEAD END		8	0.21	0.00	0.21	0
0413Z	56776	4	THIRD STREET	FROM THIRD STREET AT PARK BOUNDARY	TO ROUTE 0405Z (HEADQUARTERS STREET)		8	0.03	0.00	0.03	3,696

#### Asset THRO-0902ZZ Subcomponent Breakdown

Rte. No.	FMSS No.	Cycle Collected	Route Name	From	To	Concess Route	Func. Class	Paved Miles	Un-Paved Miles	Total Route Length	Manual Rated SQ/FT
0902AZ	56785	4	SOUTH UNIT MAINTENANCE YARD PARKING A	ADJACENT TO ROUTE 0414 (FOURTH STREET) AT MP 0.78 (ON LEFT)				0.00	0.00	0.00	6,302
0902BZ	56785	4	SOUTH UNIT MAINTENANCE YARD PARKING B	ADJACENT TO ROUTE 0414 (FOURTH STREET) AT MP 0.78 (ON RIGHT)				0.00	0.00	0.00	5,399
0902CZ	56785	4	SOUTH UNIT MAINTENANCE YARD PARKING C	FROM ROUTE 0414 (FOURTH STREET) AT MP 0.50 (ON RIGHT)	TO PARKING			0.00	0.00	0.00	14,077



# NPS/RIP Subcomponent Details for THRO

Road Inventory Program 05/07/2012

(Numerical By Subcomponent #)

Page 3 of 3

Shading Color Key:

White = Paved Routes, DCV Driven

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Green = All Unpaved Parking Areas

Red text denotes approx. mileage

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).

## THRO

THEODORE ROOSEVELT NATIONAL PARK

### Asset THRO-0945ZZ Subcomponent Breakdown

Rte. No.	FMSS No.	Cycle Collected	Route Name	From	To	Concess Route	Func. Class	Paved Miles	Un-Paved Miles	Total Route Length	Manual Rated SQ/FT
0945AZ	238775	4	RESIDENCE PARKING A	ADJACENT TO ROUTE 0405Z (HEADQUARTERS STREET) AT MP 0.18 (ON RIGHT)				0.00	0.00	0.00	1,015
0945BZ	238775	4	RESIDENCE PARKING B	ADJACENT TO ROUTE 0414 (FOURTH STREET) AT MP 0.04 (ON LEFT)				0.00	0.00	0.00	521
0945CZ	238775	4	RESIDENCE PARKING C	ADJACENT TO ROUTE 0405Z (HEADQUARTERS STREET) AT MP 0.14 (ON LEFT)				0.00	0.00	0.00	1,219

### Asset THRO-0949ZZ Subcomponent Breakdown

Rte. No.	FMSS No.	Cycle Collected	Route Name	From	To	Concess Route	Func. Class	Paved Miles	Un-Paved Miles	Total Route Length	Manual Rated SQ/FT
0930Z	56889	4	JUNIPER PICNIC AREA PARKING	FROM ROUTE 0200ZZ (JUNIPER CAMPGROUND AREA)	TO PARKING			0.00	0.00	0.00	26,355
0931Z	56889	4	JUNIPER GROUP SITE PARKING	FROM ROUTE 0200ZZ (JUNIPER CAMPGROUND AREA) AT MP 0.178 (ON LEFT)	TO ROUTE 0200ZZ (JUNIPER CAMPGROUND AREA) AT MP 0.193 (ON LEFT)			0.00	0.00	0.00	17,488
0946Z	56889	4	JUNIPER CAMPGROUND REGISTRATION PARKING	FROM ROUTE 0200ZZ (JUNIPER CAMPGROUND AREA) AT MP 0.141 (ON RIGHT)	TO ROUTE 0200ZZ (JUNIPER CAMPGROUND AREA) AT MP 0.164 (ON RIGHT)			0.00	0.00	0.00	7,192
0947Z	56889	4	JUNIPER CAMPGROUND DUMPSTATION	FROM ROUTE 0200ZZ (JUNIPER CAMPGROUND AREA) AT MP 0.235 (ON LEFT)	TO ROUTE 0200ZZ (JUNIPER CAMPGROUND AREA) AT MP 0.270 (ON LEFT)			0.00	0.00	0.00	2,545
0948Z	56889	4	JUNIPER CAMPGROUND LOOP PARKING 1	ADJACENT TO ROUTE 0200ZZ (JUNIPER CAMPGROUND AREA) AT MP 0.648 (ON RIGHT)				0.00	0.00	0.00	1,296
0949Z	56889	4	JUNIPER CAMPGROUND LOOP PARKING 2	ADJACENT TO ROUTE 0200ZZ (JUNIPER CAMPGROUND AREA) AT MP 0.694 (ON RIGHT)				0.00	0.00	0.00	1,223

**ROUTE IDENTIFICATION CHANGES TO PAVED ROUTES FROM PREVIOUS CYCLE - THRO**

<b>ROUTES MODIFIED FROM PREVIOUS INVENTORY:</b>			
<b>Route #</b>	<b>Route Name</b>	<b>Type of Modification</b>	<b>Comments</b>
0400	THIRD AVENUE	FUNCTIONAL CLASS CHANGE	FUNCTIONAL CLASS CHANGED FROM 5 TO 8, PER PARKS REQUEST, BECAUSE ROUTE IS A CITY STREET MAINTAINED BY THE NATIONAL PARK SERVICE.
0404	NORTH UNIT MAINTENANCE AREA ACCESS ROAD	FUNCTIONAL CLASS CHANGE	FUNCTIONAL CLASS CHANGED FROM 5 TO 6, PER PARKS REQUEST, BECAUSE ROUTE IS AN ADMINISTRATIVE ROAD WITH RESTRICTED ACCESS.
0405ZZ	HEADQUARTERS STREET AND THIRD STREET	ROUTES COMBINED	ROUTES 0405 AND 0413 (AS COLLECTED IN CYCLE 4) WERE COMBINED INTO ROUTE 0405ZZ ON 12/6/2011 PER PARKS REQUEST.
0406	GRAY HOUSE ACCESS ROAD	FUNCTIONAL CLASS CHANGE	FUNCTIONAL CLASS CHANGED FROM 5 TO 6, PER PARKS REQUEST, BECAUSE ROUTE IS AN ADMINISTRATIVE ROAD WITH RESTRICTED ACCESS.
0414	FOURTH STREET	OTHER	FUNCTIONAL CLASS CHANGED FROM 2 TO 6 PER PARKS REQUEST BECAUSE ROUTE IS AN ADMINISTRATIVE ROAD WITH RESTRICTED ACCESS. ALSO, ROUTE WAS EXTENDED THROUGH ROUTE 0902 (TO END AT ROUTE 0011) BUT WAS NOT COLLECTED BECAUSE THE CHANGES WERE MADE AFTER THE DATA COLLECTION VEHICLE VISIT TO THE PARK. AS A RESULT THE ROUTE LENGTH INCREASED TO APPROXIMATELY 0.15 MILES IN CYCLE 5; ROUTE WAS 0.04 MILES IN CYCLE 4.
0902ZZ	SOUTH UNIT MAINTENANCE YARD PARKING AREAS	SQ FEET CHANGE	PARK REQUESTED THAT ROUTE 0414 BE EXTENDED THROUGH ROUTE 0902. THEREFORE, ROUTE 0902 WAS MODIFIED TO REMOVE THE PORTION THAT IS NOW ROUTE 0414.
0949ZZ	JUNIPER CAMPGROUND PARKING AREAS	ROUTES COMBINED	ROUTES 0930-0931 AND 0946-0949 (AS COLLECTED IN CYCLE 4) WERE COMBINED INTO ROUTE 0949ZZ ON 12/6/2011 PER PARKS REQUEST.

**ROUTE IDENTIFICATION CHANGES TO PAVED ROUTES FROM PREVIOUS CYCLE - THRO**

OTHER CHANGES FROM PREVIOUS INVENTORY:			
Route #	Route Name	Type of Change	Comments
0010	SCENIC DRIVE	COLLECTION METHOD CHANGE	ROUTE MILEAGE DRIVEN WITH DATA COLLECTION VEHICLE INCREASED BY APPROXIMATELY 12.5 MILES IN CYCLE 5 BECAUSE THE ENTIRE LENGTH OF THE ROUTE COULD NOT BE COLLECTED IN CYCLE 4; ROUTE WAS OBSTRUCTED BY MUD DURING CYCLE 4 DATA COLLECTION VEHICLE VISIT.
0200ZZ	JUNIPER CAMPGROUND AREA	COLLECTION METHOD CHANGE	ROUTE COLLECTED WITH DATA COLLECTION VEHICLE IN CYCLE 5, IT WAS INACCESSIBLE IN CYCLE 4 DUE TO MUD OBSTRUCTING ROUTE 0010.

# Section 3

## Park Summary Information



Theodore Roosevelt National Park



Federal Lands Highway  
Road Inventory Program

## THRO: PAVED ROUTE MILES AND PERCENTAGES BY FUNCTIONAL CLASS AND PCR

F.C.	Pavement Condition Rating (PCR)								TOTAL MILES
	Poor (0-60)		Fair (61-84)		Good (85-94)		Excellent (95-100)		
	MILES	%	MILES	%	MILES	%	MILES	%	
1	4.30	9.70%	15.27	34.43%	8.72	19.66%	14.34	32.33%	42.63
2	0.57	1.29%	0.12	0.27%	0.04	0.09%			0.73
3	0.04	0.09%	0.33	0.74%	0.54	1.22%	0.08	0.18%	0.99
4									
5									
6									
7									
8									
<b>Totals</b>	<b>4.91</b>	<b>11.07%</b>	<b>15.72</b>	<b>35.44%</b>	<b>9.30</b>	<b>20.97%</b>	<b>14.42</b>	<b>32.51%</b>	<b>44.35</b>

**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.

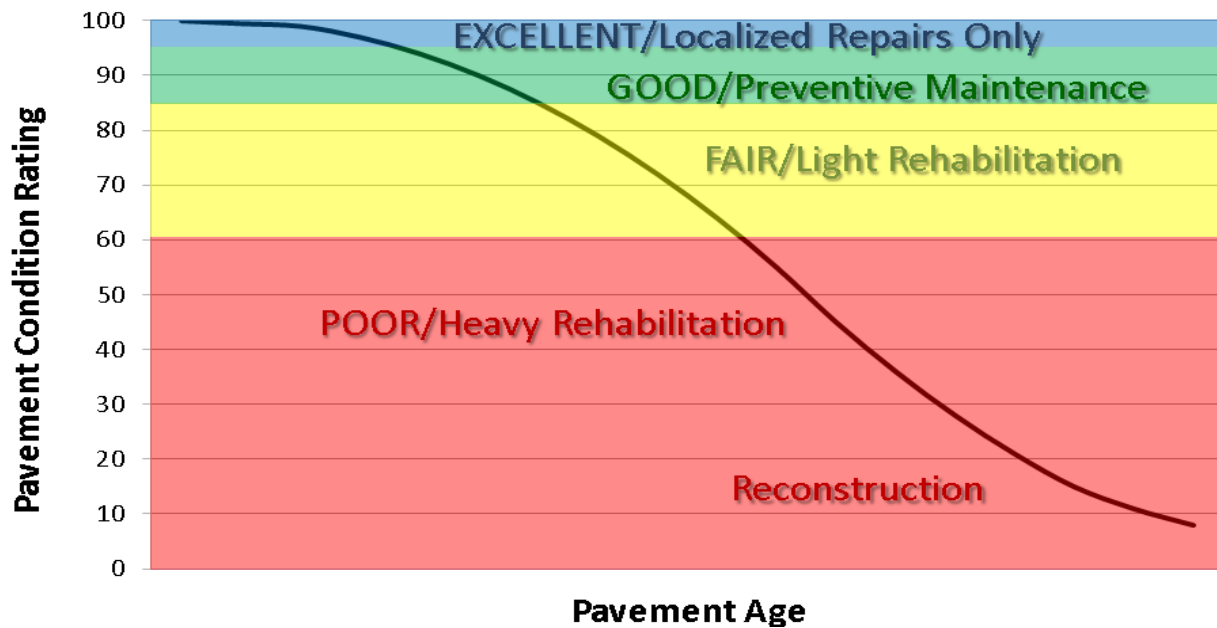
### Explanation of the Excellent, Good, Fair and Poor Condition Descriptions

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.

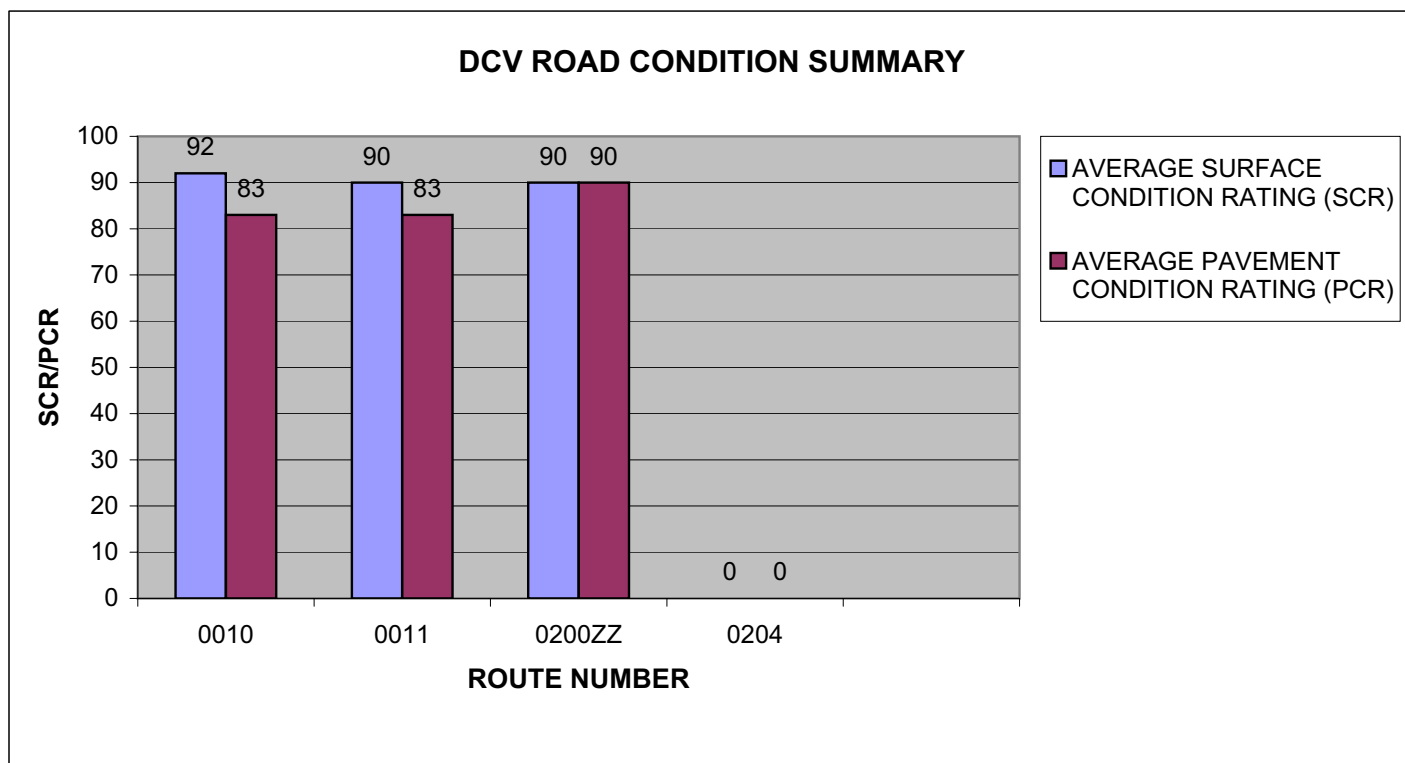
### Condition Categories and Treatments



# THRO: DCV ROAD CONDITION SUMMARY

DCV - Data Collection Vehicle

ROUTE NUMBER	ROUTE NAME	FUNCT CLASS	ROUTE LENGTH	SURFACE TYPE	AVERAGE SURFACE CONDITION RATING (SCR)	AVERAGE PAVEMENT CONDITION RATING (PCR)
0010	SCENIC DRIVE	1	13.88	ASPHALT	92	83
0011	SCENIC LOOP	1	28.75	ASPHALT	90	83
0200ZZ	JUNIPER CAMPGROUND AREA	3	0.99	ASPHALT	90	90
0204	BUCK HILL SPUR	2	0.75	ASPHALT	0	0



# Section 4

## Park Route Location Maps



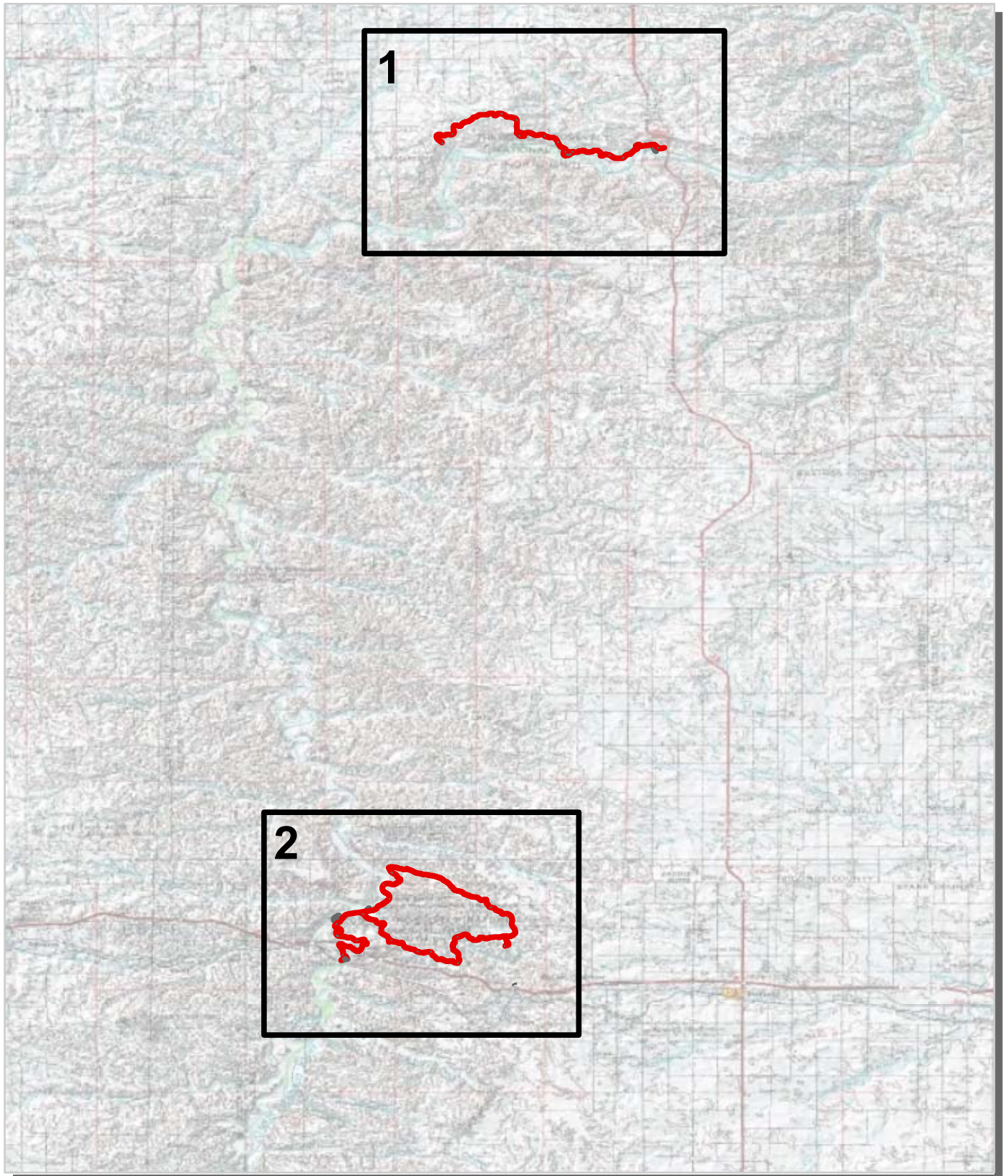
Theodore Roosevelt National Park





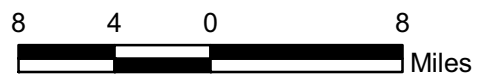
Federal Lands Highway  
Road Inventory Program



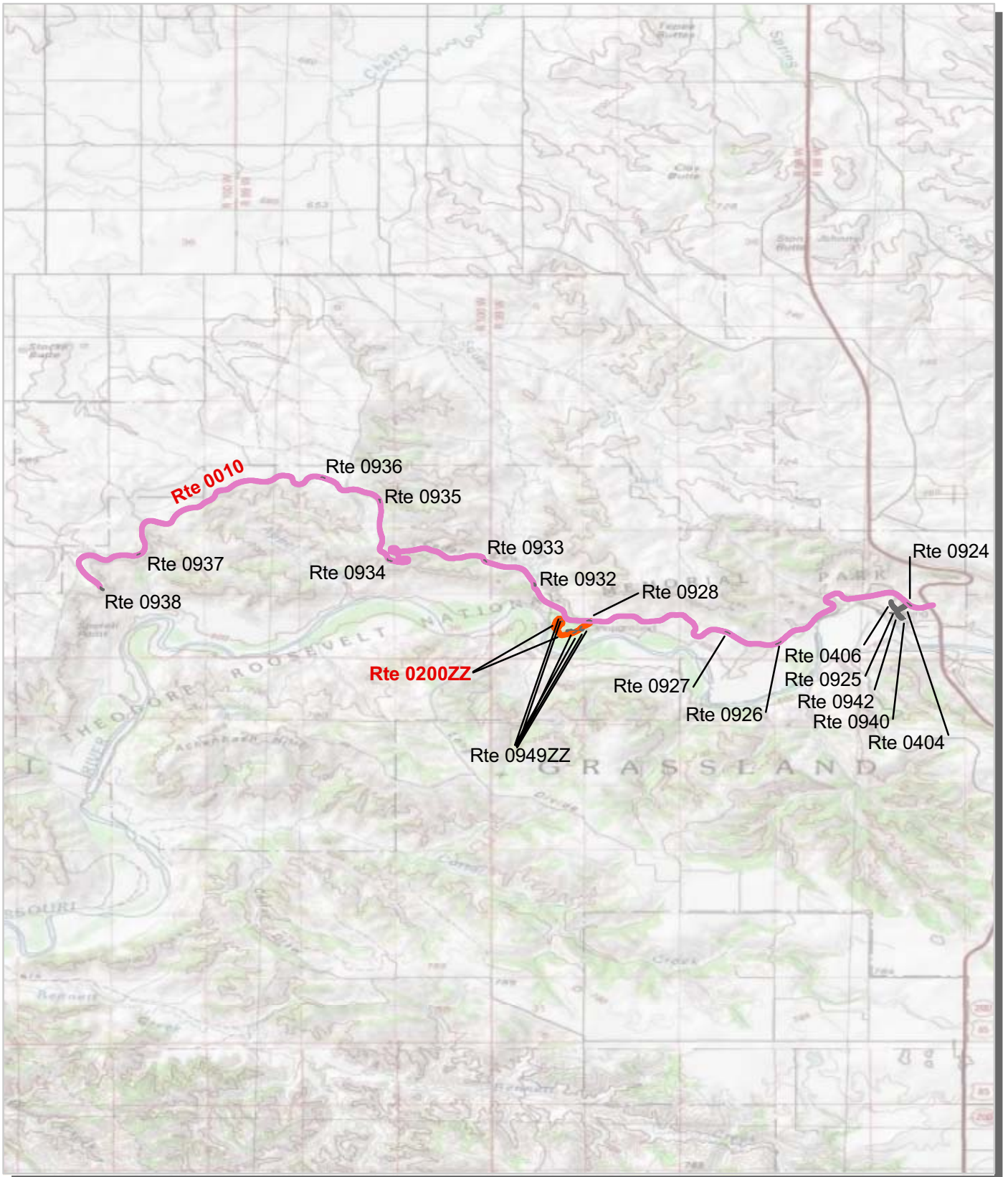
# Theodore Roosevelt National Park Route Location Map Key Map



-  Cycle 5 Collected Routes
-  Routes Collected in Previous Cycle

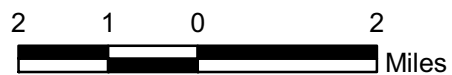


# Theodore Roosevelt National Park Route Location Map Area 1

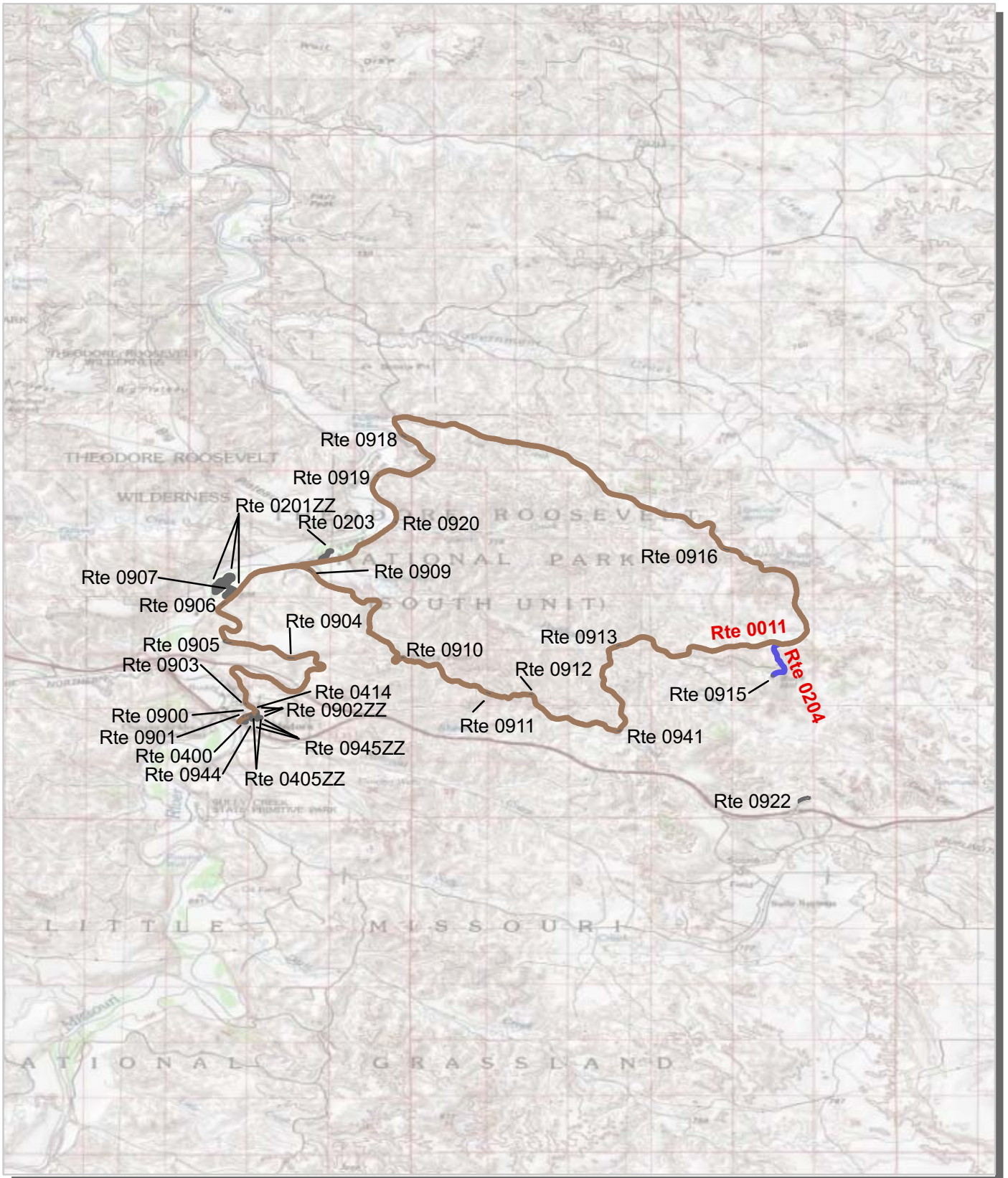


Unique colors used to differentiate routes

— Routes Collected in Previous Cycle

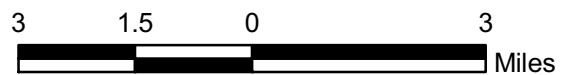


# Theodore Roosevelt National Park Route Location Map Area 2



Unique colors used to differentiate routes

— Routes Collected in Previous Cycle

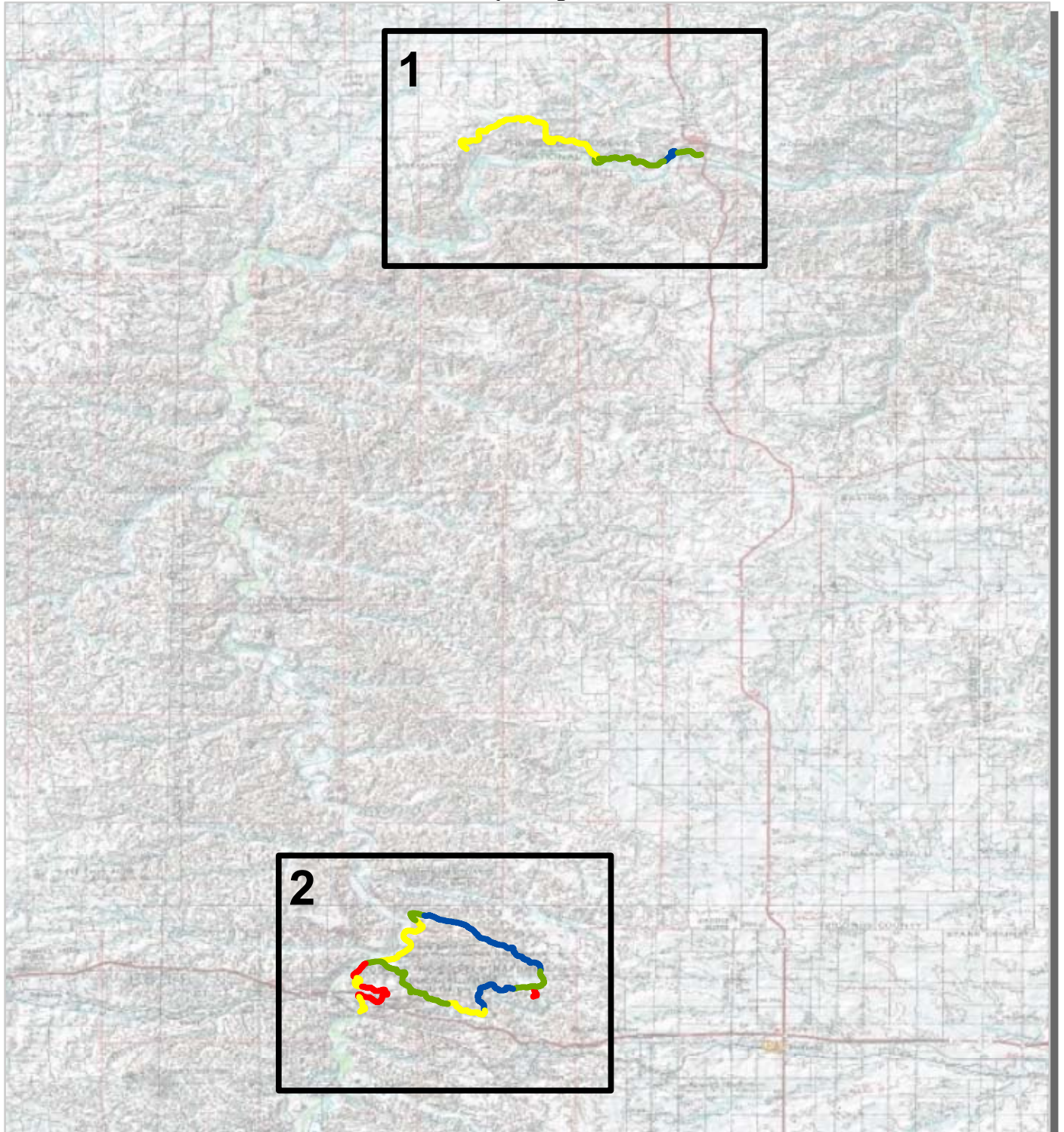







# Theodore Roosevelt National Park

## Route Condition Map

### PCR - Mile by Mile

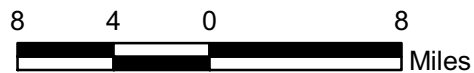
### Key Map



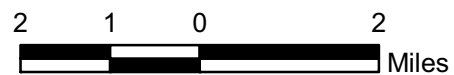
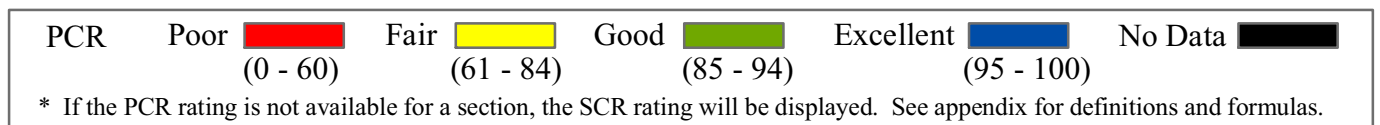
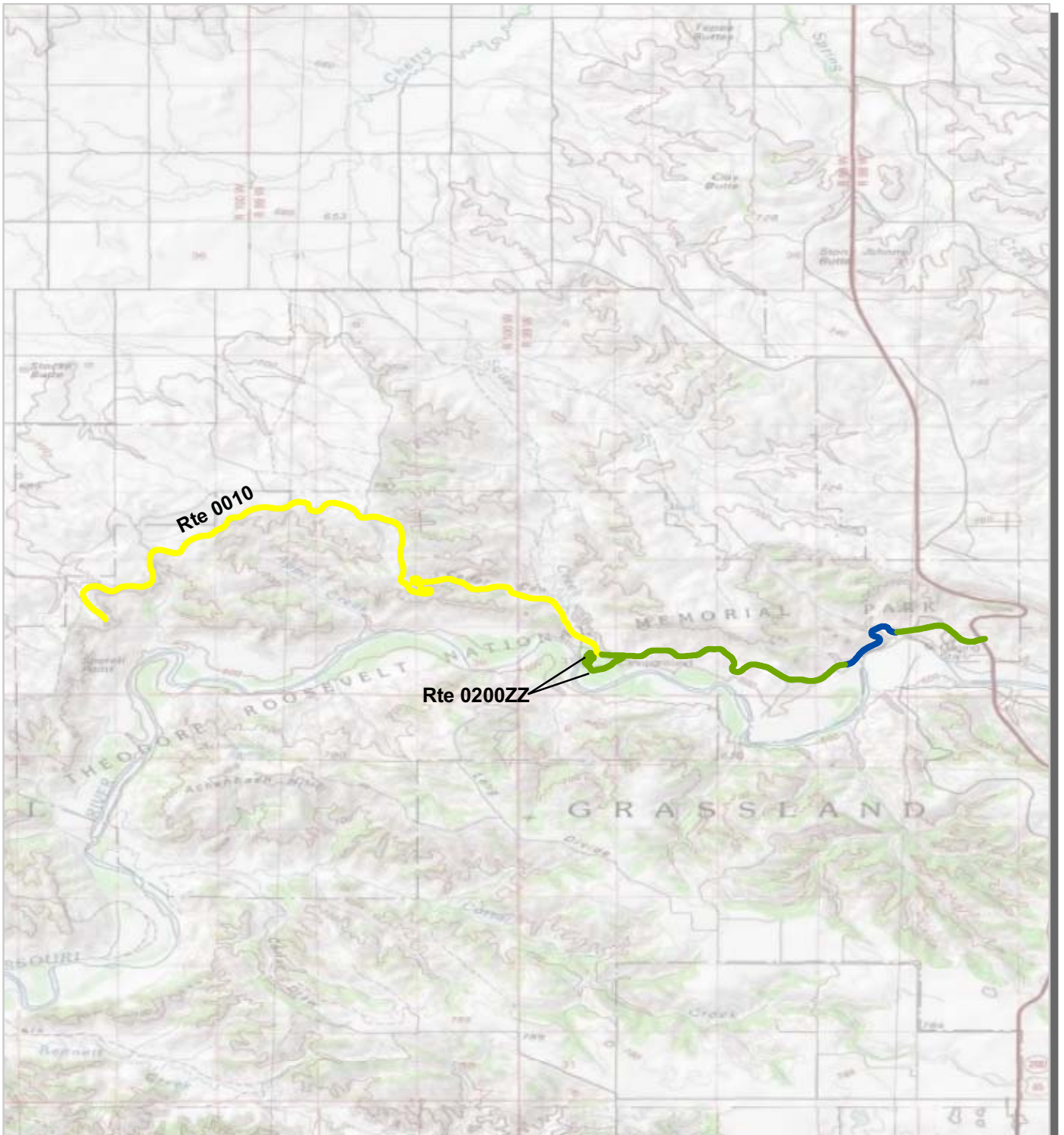
PCR	Poor		Fair		Good		Excellent		No Data	
	(0 - 60)		(61 - 84)	(85 - 94)	(95 - 100)					

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

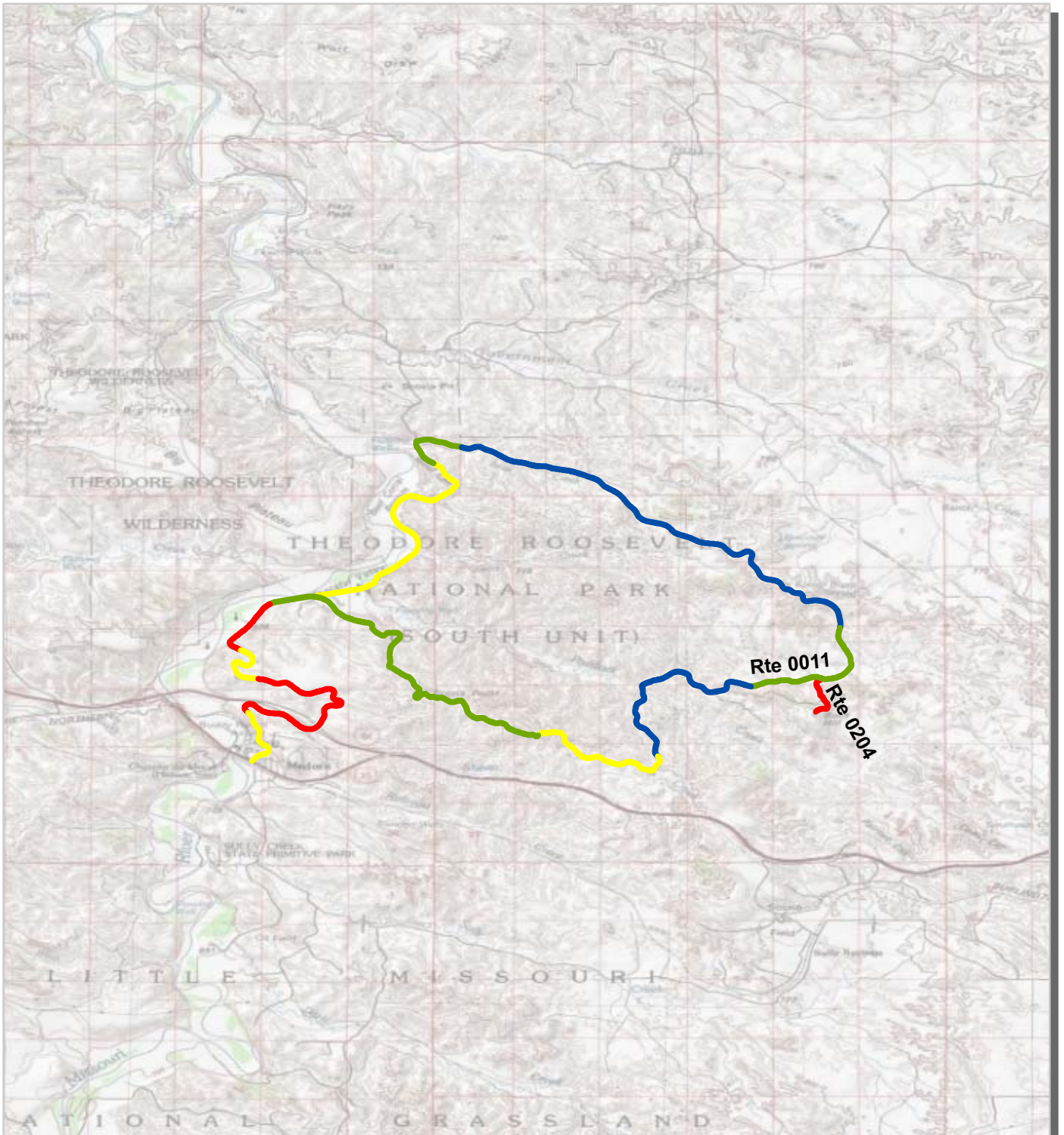
Note: Only routes collected by the DCV in Cycle-5 are displayed.



# Theodore Roosevelt National Park Route Condition Map PCR - Mile by Mile Area 1

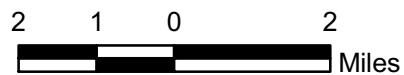


**Theodore Roosevelt National Park  
Route Condition Map  
PCR - Mile by Mile  
Area 2**



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

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



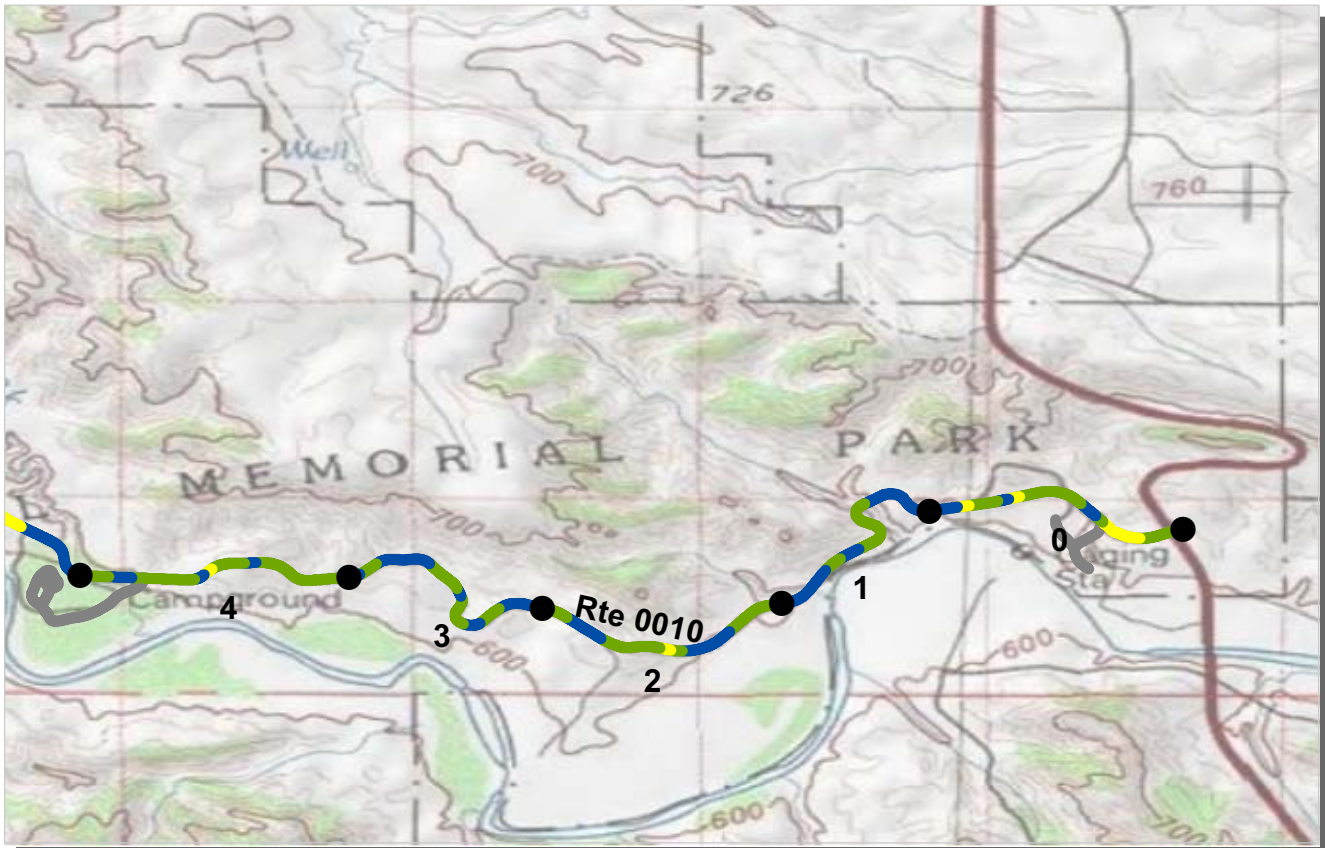
**Section 5**  
**Paved Route**  
**Condition Rating Sheets**



Theodore Roosevelt National Park



Federal Lands Highway  
Road Inventory Program



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

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

**ROUTE: 0010 SCENIC DRIVE**  
**THRO : THEODORE ROOSEVELT NATIONAL PARK**

**COLLECTED: 8/3/2011**  
**TOTAL LENGTH: 13.88 Miles**

**MIDWEST REGION**

<i>Section Number</i>	0	1	2	3	4
<i>Section Length (mi)</i>	1.00	1.00	1.00	1.00	1.00
<i>Cross Section Information</i>					
Number of Lanes	2	2	2	2	2
Paved Width (ft)	29	30	29	28	28
Lane Width (ft)	12	12	12	12	12
<i>Roadway Condition Information</i>					
SCR (Surface Condition Rating)	97	100	97	98	97
PCR (Pavement Condition Rating)	89	95	91	94	91
<i>Distress Index Values</i>					
Structural Crack Index	100	100	100	100	100
Transverse Cracking Index	100	100	100	100	100
Patching Index	100	100	97	98	97
Rutting Index	97	100	100	99	99
Roughness Condition Index (RCI)	77	87	83	87	82

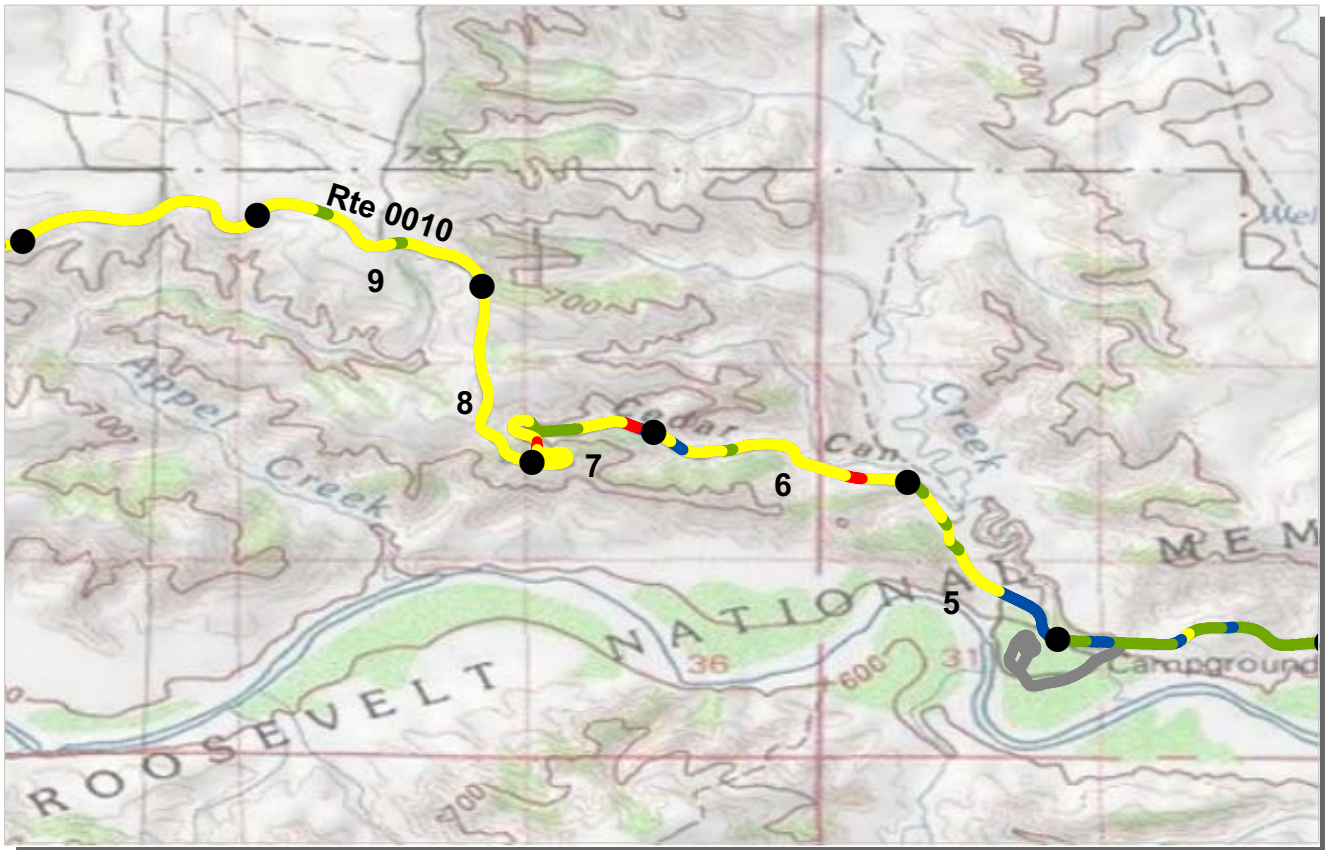
**NOTES:**

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.  
 See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected    N/A - Non Applicable

**ROUTE: 0010 SCENIC DRIVE**





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

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

**ROUTE: 0010 SCENIC DRIVE**  
**THRO : THEODORE ROOSEVELT NATIONAL PARK**

**COLLECTED: 8/3/2011**  
**TOTAL LENGTH: 13.88 Miles**

**MIDWEST REGION**

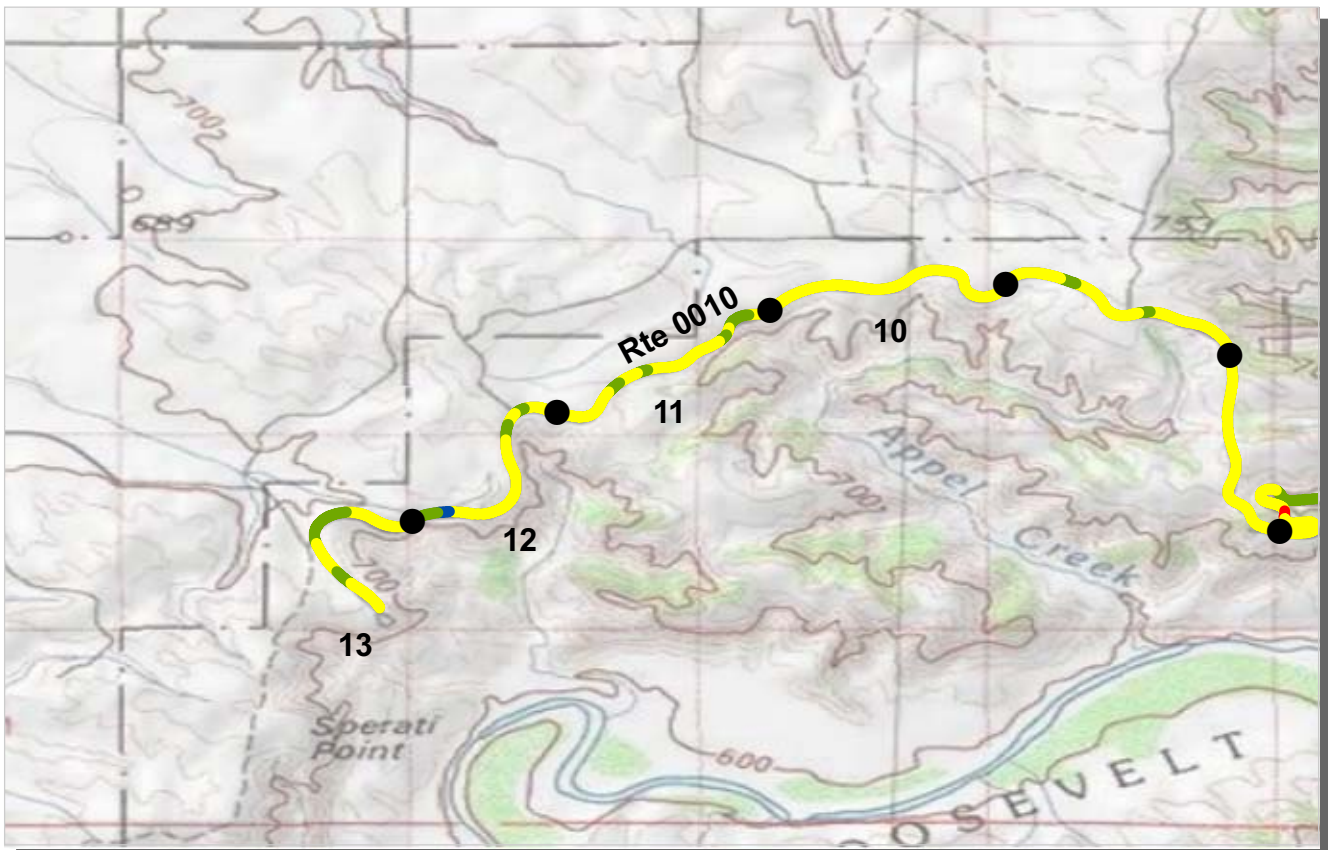
<i>Section Number</i>	5	6	7	8	9
<i>Section Length (mi)</i>	1.00	1.00	1.00	1.00	1.00
<i>Cross Section Information</i>					
Number of Lanes	2	2	2	2	2
Paved Width (ft)	27	27	26	27	26
Lane Width (ft)	12	11	11	11	11
<i>Roadway Condition Information</i>					
SCR (Surface Condition Rating)	94	91	92	85	86
PCR (Pavement Condition Rating)	84	74	72	77	79
<i>Distress Index Values</i>					
Structural Crack Index	100	100	99	98	96
Transverse Cracking Index	98	99	99	94	93
Patching Index	100	100	98	100	100
Rutting Index	94	91	92	85	86
Roughness Condition Index (RCI)	70	49	42	64	68

**NOTES:**

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.  
 See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected    N/A - Non Applicable

**ROUTE: 0010 SCENIC DRIVE**



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

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

**ROUTE: 0010 SCENIC DRIVE**  
**THRO : THEODORE ROOSEVELT NATIONAL PARK**

**COLLECTED: 8/3/2011**  
**TOTAL LENGTH: 13.88 Miles**

**MIDWEST REGION**

<i>Section Number</i>	10	11	12	13	
<i>Section Length (mi)</i>	1.00	1.00	1.00	0.88	
<i>Cross Section Information</i>					
Number of Lanes	2	2	2	2	
Paved Width (ft)	29	28	27	26	
Lane Width (ft)	12	12	12	12	
<i>Roadway Condition Information</i>					
SCR (Surface Condition Rating)	84	87	86	89	
PCR (Pavement Condition Rating)	75	79	76	80	
<i>Distress Index Values</i>					
Structural Crack Index	94	97	99	99	
Transverse Cracking Index	94	93	94	93	
Patching Index	100	100	100	100	
Rutting Index	84	87	86	89	
Roughness Condition Index (RCI)	61	67	61	67	

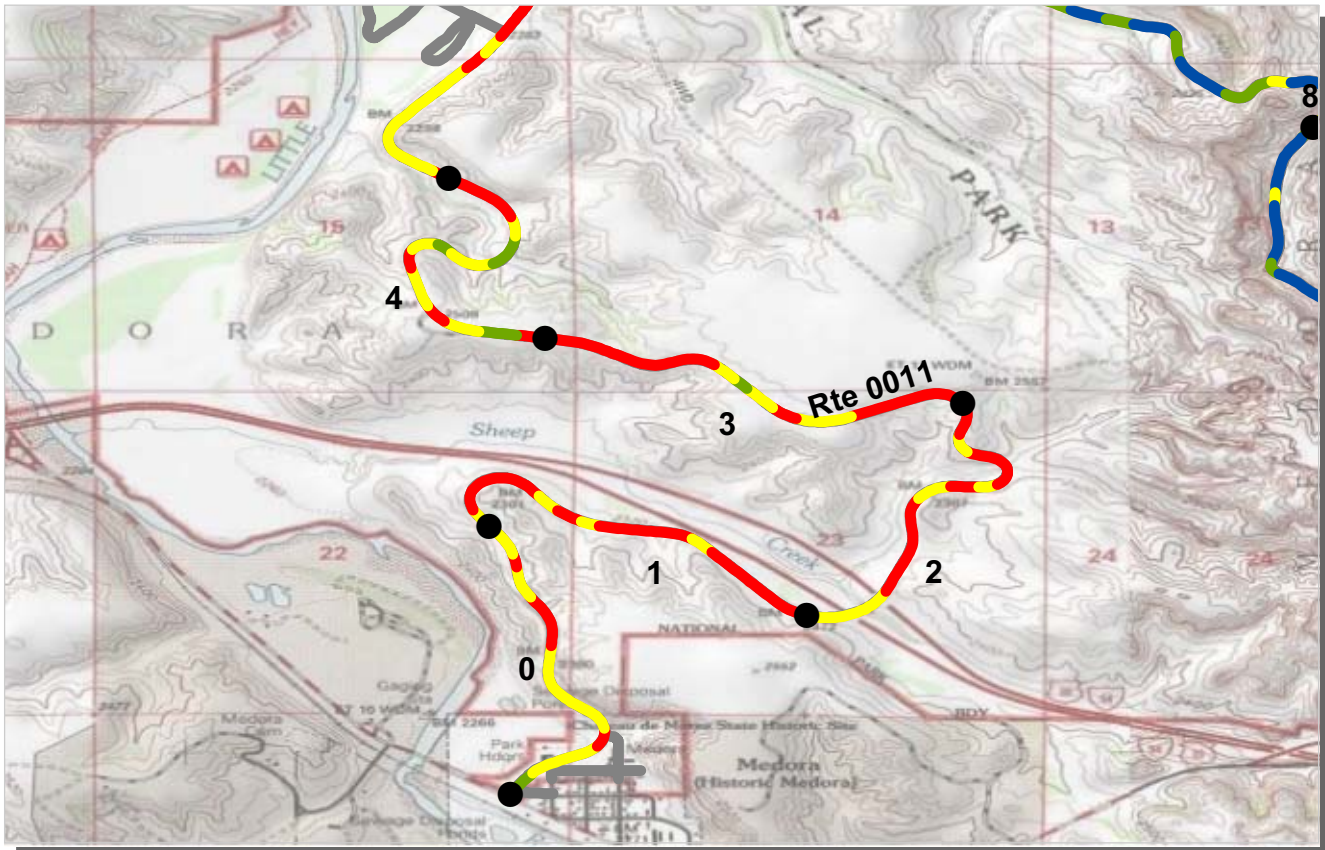
**NOTES:**

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.  
 See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected    N/A - Non Applicable



**ROUTE: 0010 SCENIC DRIVE**



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

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

**ROUTE: 0011 SCENIC LOOP**  
**THRO : THEODORE ROOSEVELT NATIONAL PARK**

**COLLECTED: 8/4/2011**  
**TOTAL LENGTH: 28.75 Miles**

**MIDWEST REGION**

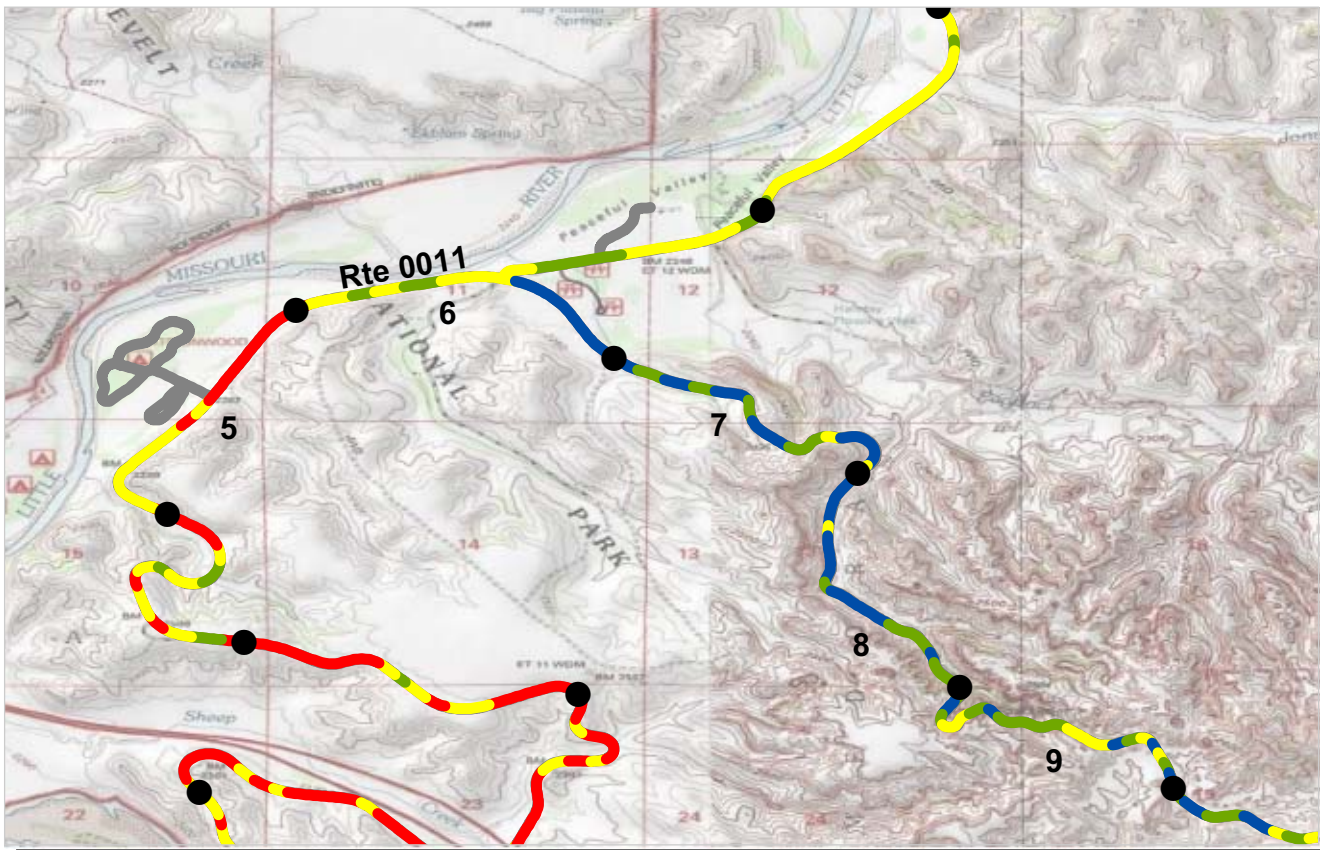
<i>Section Number</i>	0	1	2	3	4
<i>Section Length (mi)</i>	1.00	1.00	1.00	1.00	1.00
<i>Cross Section Information</i>					
Number of Lanes	2	2	2	2	2
Paved Width (ft)	25	25	25	24	23
Lane Width (ft)	11	11	10	10	11
<i>Roadway Condition Information</i>					
SCR (Surface Condition Rating)	79	67	64	39	78
PCR (Pavement Condition Rating)	66	55	55	39	68
<i>Distress Index Values</i>					
Structural Crack Index	79	67	64	39	78
Transverse Cracking Index	89	89	92	90	89
Patching Index	100	98	91	100	100
Rutting Index	86	78	81	84	85
Roughness Condition Index (RCI)	46	37	42	40	53

**NOTES:**

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.  
 See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected    N/A - Non Applicable

**ROUTE: 0011 SCENIC LOOP**



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

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

**ROUTE: 0011 SCENIC LOOP**  
**THRO : THEODORE ROOSEVELT NATIONAL PARK**

**COLLECTED: 8/4/2011**  
**TOTAL LENGTH: 28.75 Miles**

**MIDWEST REGION**

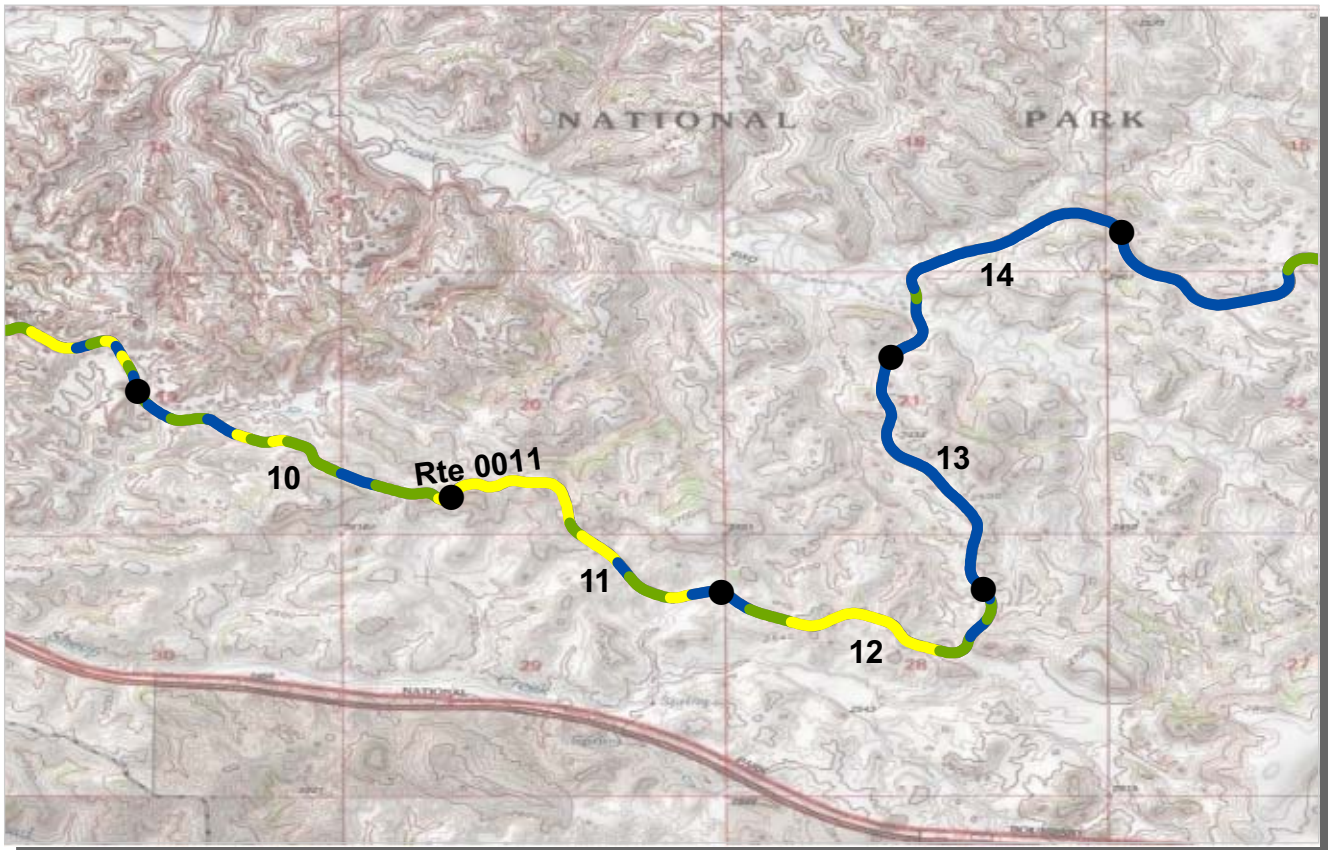
<i>Section Number</i>	5	6	7	8	9
<i>Section Length (mi)</i>	1.00	1.00	1.00	1.00	1.00
<i>Cross Section Information</i>					
Number of Lanes	2	2	2	2	2
Paved Width (ft)	24	22	22	22	22
Lane Width (ft)	10	10	9	9	9
<i>Roadway Condition Information</i>					
SCR (Surface Condition Rating)	70	93	98	98	97
PCR (Pavement Condition Rating)	56	85	92	94	85
<i>Distress Index Values</i>					
Structural Crack Index	70	95	100	100	100
Transverse Cracking Index	90	95	99	99	99
Patching Index	100	99	100	100	100
Rutting Index	86	93	98	98	97
Roughness Condition Index (RCI)	35	73	83	88	66

**NOTES:**

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.  
 See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected    N/A - Non Applicable

**ROUTE: 0011 SCENIC LOOP**



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

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

**ROUTE: 0011 SCENIC LOOP**  
**THRO : THEODORE ROOSEVELT NATIONAL PARK**

**COLLECTED: 8/4/2011**  
**TOTAL LENGTH: 28.75 Miles**

**MIDWEST REGION**

<i>Section Number</i>	10	11	12	13	14
<i>Section Length (mi)</i>	1.00	1.00	1.00	1.00	1.00
<i>Cross Section Information</i>					
Number of Lanes	2	2	2	2	2
Paved Width (ft)	22	23	24	25	25
Lane Width (ft)	9	10	10	11	10
<i>Roadway Condition Information</i>					
SCR (Surface Condition Rating)	98	96	96	100	99
PCR (Pavement Condition Rating)	89	81	81	100	99
<i>Distress Index Values</i>					
Structural Crack Index	100	100	100	100	100
Transverse Cracking Index	99	100	99	100	100
Patching Index	100	99	100	100	100
Rutting Index	98	96	96	100	99
Roughness Condition Index (RCI)	75	59	58	100	100

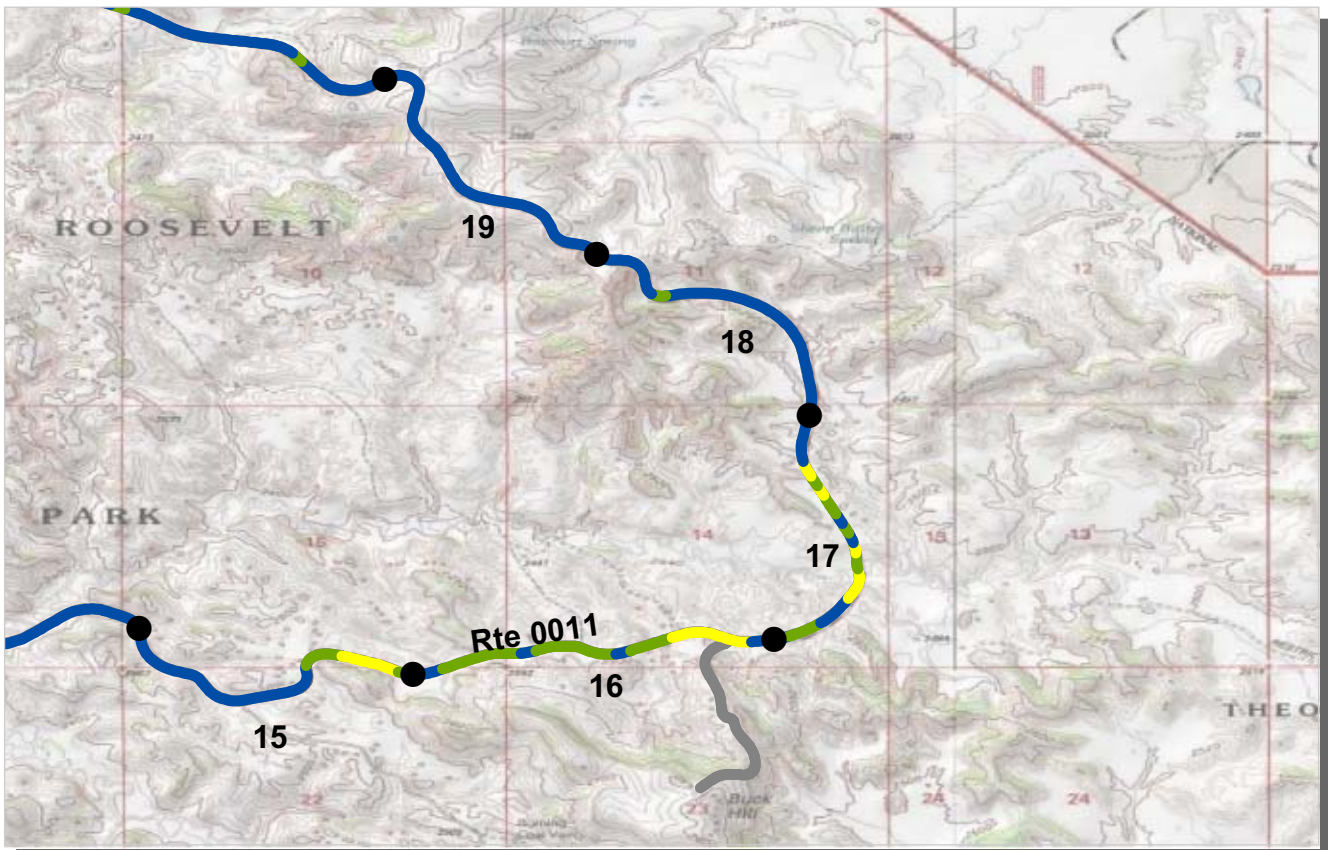
**NOTES:**

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.  
 See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected    N/A - Non Applicable



**ROUTE: 0011 SCENIC LOOP**



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

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

**ROUTE: 0011 SCENIC LOOP**  
**THRO : THEODORE ROOSEVELT NATIONAL PARK**

**COLLECTED: 8/4/2011**  
**TOTAL LENGTH: 28.75 Miles**

**MIDWEST REGION**

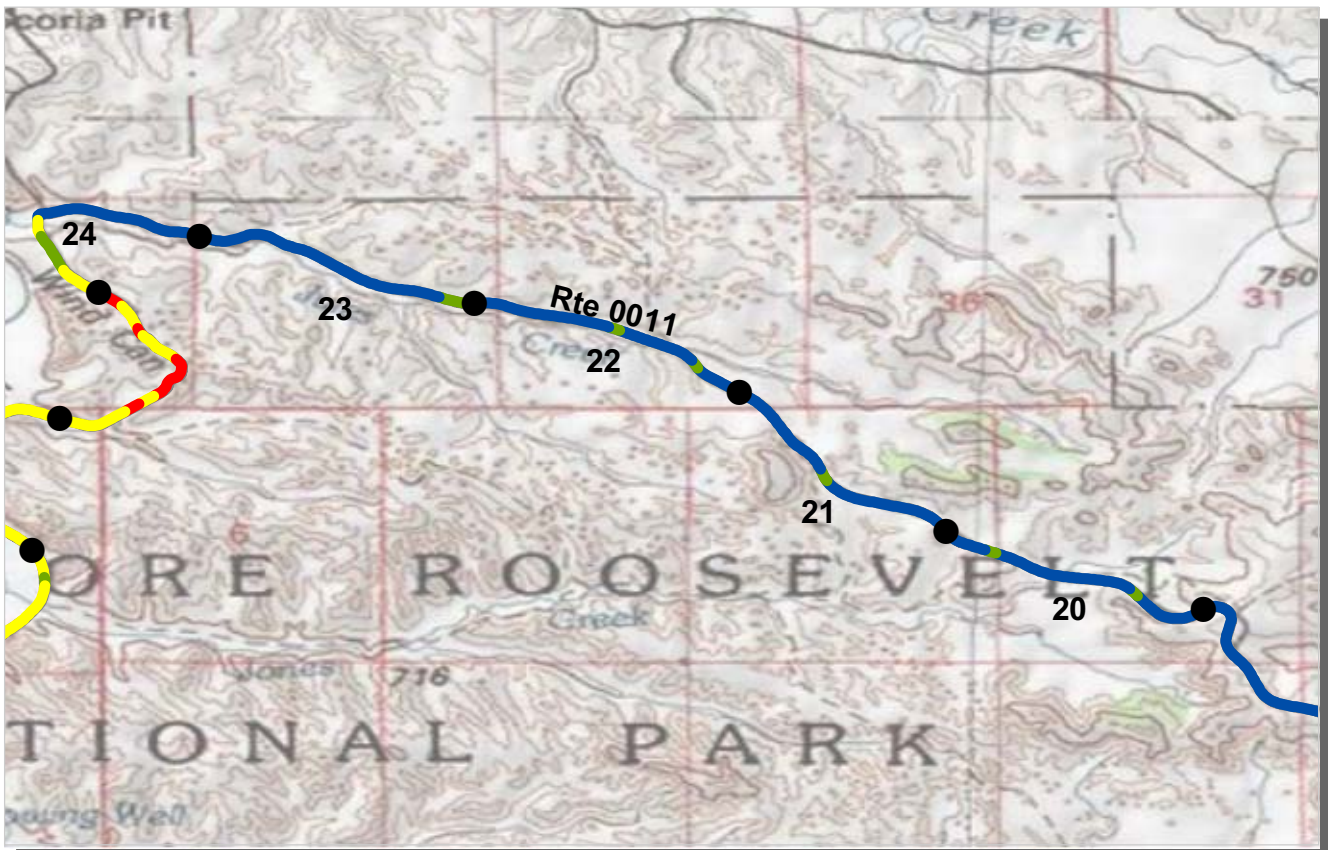
<i>Section Number</i>	15	16	17	18	19
<i>Section Length (mi)</i>	1.00	1.00	1.00	1.00	1.00
<i>Cross Section Information</i>					
Number of Lanes	2	2	2	2	2
Paved Width (ft)	24	26	23	26	26
Lane Width (ft)	10	9	9	10	10
<i>Roadway Condition Information</i>					
SCR (Surface Condition Rating)	96	94	98	99	100
PCR (Pavement Condition Rating)	96	90	92	99	100
<i>Distress Index Values</i>					
Structural Crack Index	100	100	100	100	100
Transverse Cracking Index	100	100	99	100	100
Patching Index	100	100	100	100	100
Rutting Index	96	94	98	99	100
Roughness Condition Index (RCI)	97	85	83	100	100

**NOTES:**

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.  
 See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected    N/A - Non Applicable

**ROUTE: 0011 SCENIC LOOP**



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

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

**ROUTE: 0011 SCENIC LOOP**  
**THRO : THEODORE ROOSEVELT NATIONAL PARK**

**COLLECTED: 8/4/2011**  
**TOTAL LENGTH: 28.75 Miles**

**MIDWEST REGION**

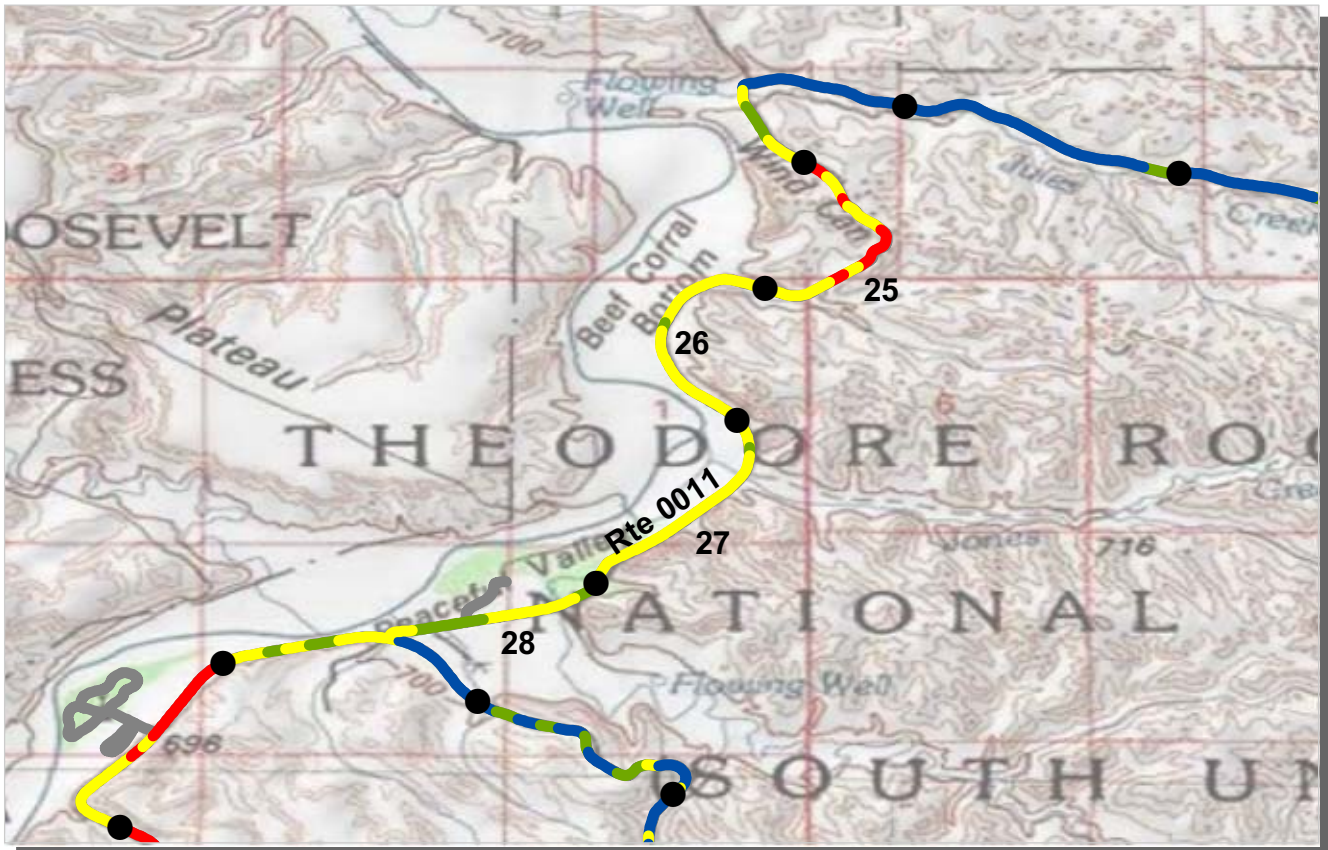
<i>Section Number</i>	20	21	22	23	24
<i>Section Length (mi)</i>	1.00	1.00	1.00	1.00	1.00
<i>Cross Section Information</i>					
Number of Lanes	2	2	2	2	2
Paved Width (ft)	26	25	27	25	25
Lane Width (ft)	10	11	11	10	10
<i>Roadway Condition Information</i>					
SCR (Surface Condition Rating)	99	99	98	97	93
PCR (Pavement Condition Rating)	99	99	99	98	89
<i>Distress Index Values</i>					
Structural Crack Index	99	100	98	97	97
Transverse Cracking Index	100	99	99	100	93
Patching Index	100	99	100	100	100
Rutting Index	100	99	99	99	99
Roughness Condition Index (RCI)	100	100	100	100	82

**NOTES:**

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.  
 See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected    N/A - Non Applicable

**ROUTE: 0011 SCENIC LOOP**



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

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

**ROUTE: 0011 SCENIC LOOP**  
**THRO : THEODORE ROOSEVELT NATIONAL PARK**

**COLLECTED: 8/4/2011**  
**TOTAL LENGTH: 28.75 Miles**

**MIDWEST REGION**

<i>Section Number</i>	25	26	27	28	
<i>Section Length (mi)</i>	1.00	1.00	1.00	0.75	
<i>Cross Section Information</i>					
Number of Lanes	2	2	2	2	
Paved Width (ft)	21	21	21	23	
Lane Width (ft)	9	9	9	9	
<i>Roadway Condition Information</i>					
SCR (Surface Condition Rating)	81	92	93	93	
PCR (Pavement Condition Rating)	65	78	77	83	
<i>Distress Index Values</i>					
Structural Crack Index	84	97	96	97	
Transverse Cracking Index	81	92	93	93	
Patching Index	96	99	100	97	
Rutting Index	96	98	98	96	
Roughness Condition Index (RCI)	40	58	53	68	

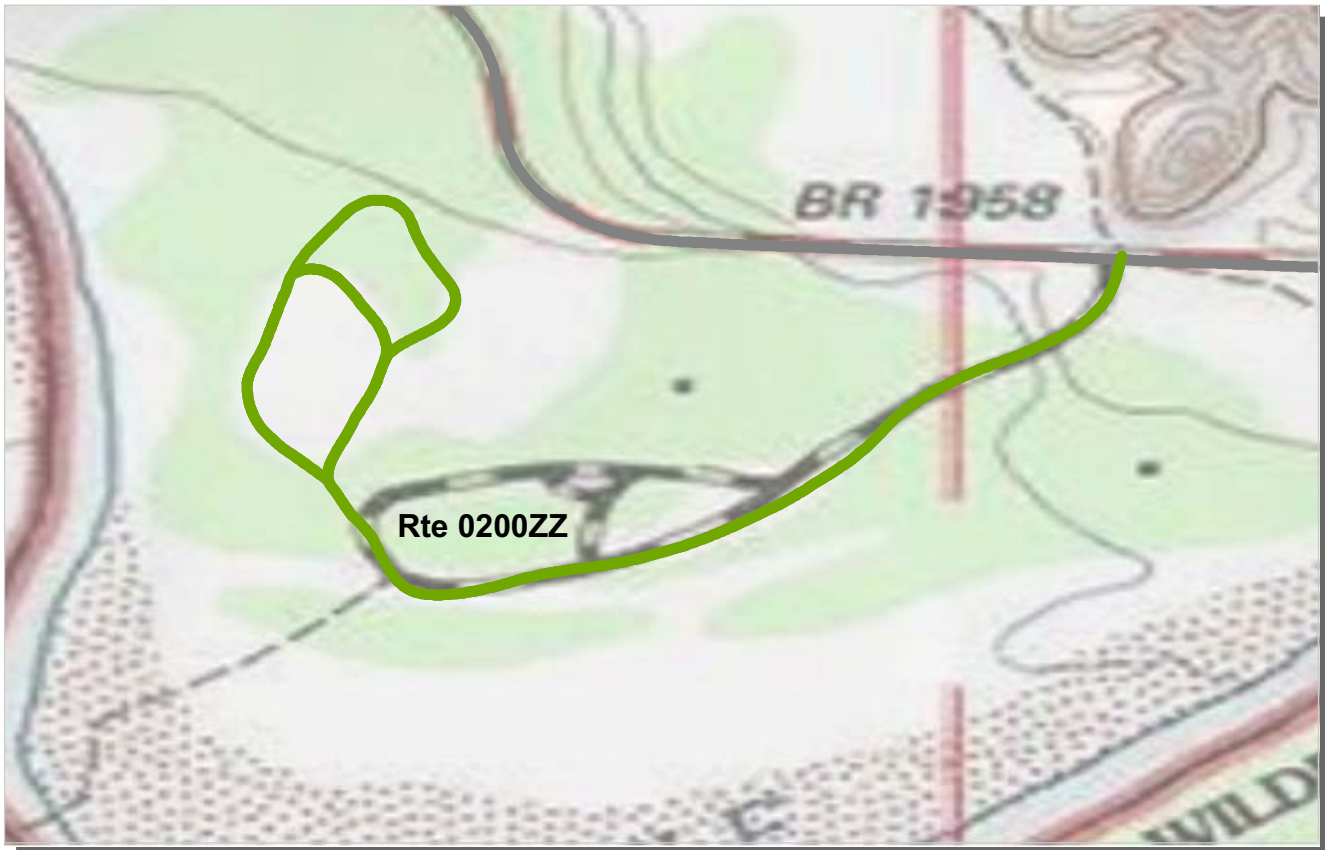
**NOTES:**

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.  
 See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected    N/A - Non Applicable

**ROUTE: 0011 SCENIC LOOP**





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

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

**ROUTE: 0200ZZ JUNIPER CAMPGROUND AREA  
THRO : THEODORE ROOSEVELT NATIONAL PARK**

Summary Record **COLLECTED: 8/3/2011**  
**MIDWEST REGION** **TOTAL LENGTH: 0.99 Miles**

<b>Section Number</b>					
<b>Section Length (mi)</b>					
<b>Cross Section Information</b>					
Number of Lanes	N/A				
Paved Width (ft)	N/A				
Lane Width (ft)	N/A				
<b>Roadway Condition Information</b>					
SCR (Surface Condition Rating)	90				
PCR (Pavement Condition Rating)	90				
<b>Distress Index Values</b>					
Structural Crack Index	N/A				
Transverse Cracking Index	N/A				
Patching Index	N/A				
Rutting Index	N/A				
Roughness Condition Index (RCI)	N/A				

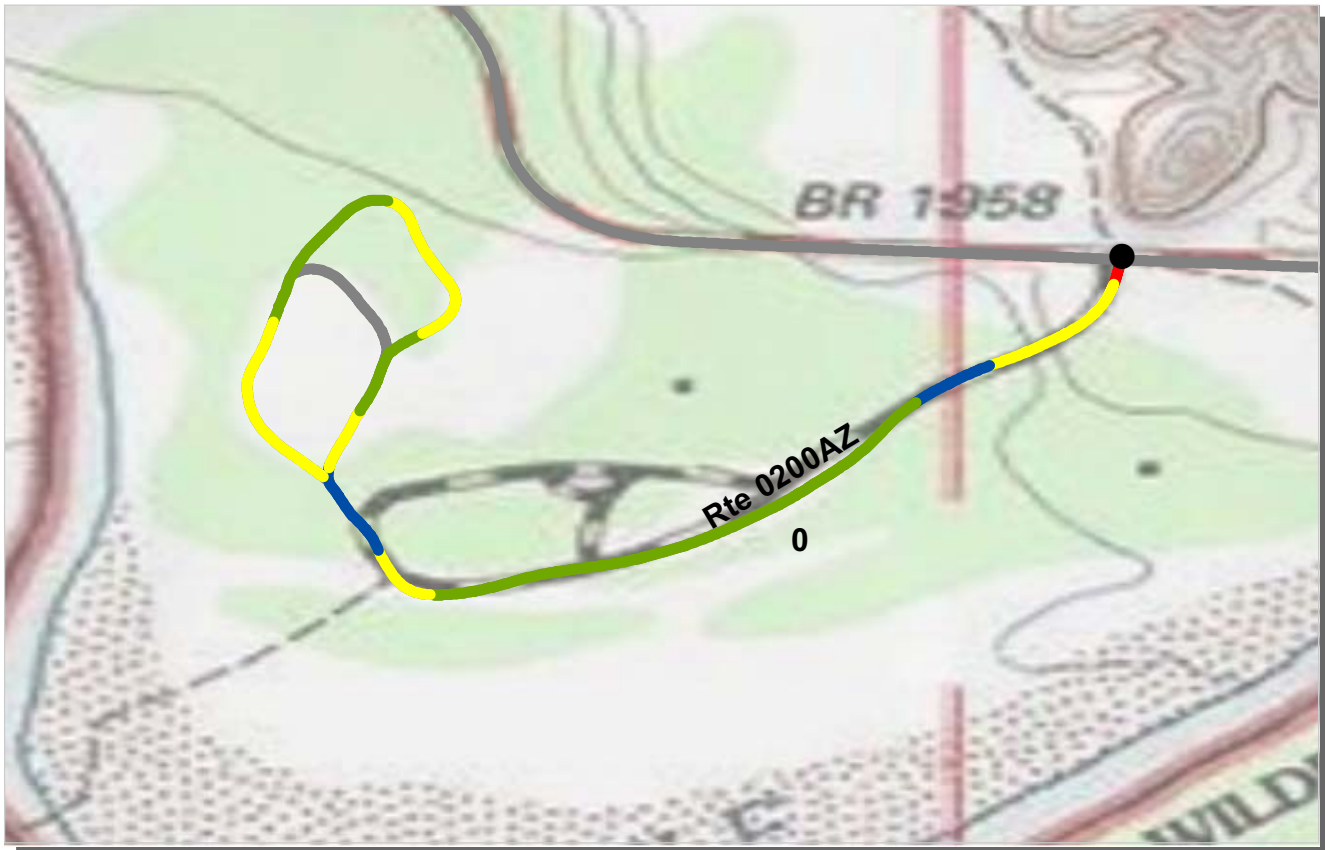
NOTES:

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.  
 See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected    N/A - Non Applicable



**ROUTE: 0200ZZ JUNIPER CAMPGROUND AREA**



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

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

**ROUTE: 0200AZ JUNIPER CAMPGROUND LOOP A  
THRO : THEODORE ROOSEVELT NATIONAL PARK**

Subcomponent Record  
MIDWEST REGION

COLLECTED: 8/3/2011  
TOTAL LENGTH: 0.91 Miles

<b>Section Number</b>	0				
<b>Section Length (mi)</b>	0.91				
<b>Cross Section Information</b>					
Number of Lanes	2				
Paved Width (ft)	18				
Lane Width (ft)	12				
<b>Roadway Condition Information</b>					
SCR (Surface Condition Rating)	90				
PCR (Pavement Condition Rating)	90				
<b>Distress Index Values</b>					
Structural Crack Index	90				
Transverse Cracking Index	94				
Patching Index	97				
Rutting Index	92				
Roughness Condition Index (RCI)	NC				

NOTES:

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.  
See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected    N/A - Non Applicable



ROUTE: 0200AZ JUNIPER CAMPGROUND LOOP A



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

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

**ROUTE: 0200BZ JUNIPER CAMPGROUND CUT THROUGH  
THRO : THEODORE ROOSEVELT NATIONAL PARK**

Subcomponent Record  
MIDWEST REGION

COLLECTED: 8/3/2011  
TOTAL LENGTH: 0.08 Miles

<b>Section Number</b>	0				
<b>Section Length (mi)</b>	0.08				
<b>Cross Section Information</b>					
Number of Lanes	1				
Paved Width (ft)	13				
Lane Width (ft)	13				
<b>Roadway Condition Information</b>					
SCR (Surface Condition Rating)	90				
PCR (Pavement Condition Rating)	90				
<b>Distress Index Values</b>					
Structural Crack Index	96				
Transverse Cracking Index	93				
Patching Index	100				
Rutting Index	90				
Roughness Condition Index (RCI)	NC				

NOTES:

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

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

NC - Not Collected N/A - Non Applicable



ROUTE: 0200BZ JUNIPER CAMPGROUND CUT THROUGH



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

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

**ROUTE: 0204 BUCK HILL SPUR**  
**THRO : THEODORE ROOSEVELT NATIONAL PARK**

**COLLECTED: 8/4/2011**  
**TOTAL LENGTH: 0.73 Miles**

**MIDWEST REGION**

<b>Section Number</b>	0				
<b>Section Length (mi)</b>	0.73				
<b>Cross Section Information</b>					
Number of Lanes	2				
Paved Width (ft)	27				
Lane Width (ft)	12				
<b>Roadway Condition Information</b>					
SCR (Surface Condition Rating)	0				
PCR (Pavement Condition Rating)	0				
<b>Distress Index Values</b>					
Structural Crack Index	0				
Transverse Cracking Index	97				
Patching Index	96				
Rutting Index	65				
Roughness Condition Index (RCI)	NC				

**NOTES:**

Structural Crack Index is a combination of the Longitudinal Cracking Index and Alligator Cracking Index.  
 See Section 10 for explanation of SCR, PCR, & all Distress Index Values.

NC - Not Collected    N/A - Non Applicable

**ROUTE: 0204 BUCK HILL SPUR**

**Section 6**  
**Manually Rated Paved Route**  
**Condition Rating Sheets**



Theodore Roosevelt National Park



Federal Lands Highway  
Road Inventory Program

## **MANUALLY RATED ROUTE CONDITION RATING SHEETS**

This park is classified as a Large Park. Therefore, in Cycle 5, no manually rated routes were collected unless the route was modified or previously uncollected by RIP.

# Section 7 Parking Area Condition Rating Sheets



Theodore Roosevelt National Park



Federal Lands Highway  
Road Inventory Program

## **PARKING AREA CONDITION RATING SHEETS**

This park is classified as a Large Park. Therefore, in Cycle 5, no parking area routes were collected unless the route was modified or previously uncollected by RIP.



# Section 8

## Route Maintenance Features Summaries



Theodore Roosevelt National Park



Federal Lands Highway  
Road Inventory Program

# THRO: DCV ROUTE MAINTENANCE FEATURES SUMMARY

FEATURE	ROUTE 0010 SCENIC DRIVE	ROUTE 0200ZZ JUNIPER CAMPGROUND AREA	UNIT
BRIDGE	1	1	EACH
CATTLE GUARD	1	0	EACH
CULVERT	0	0	EACH
CURB	12,615	190	LINEAR FEET
DROP INLET	0	0	EACH
GATE	1	0	EACH
GUARD/GUIDE RAIL	4,192	84	LINEAR FEET
CABLE	0	0	LINEAR FEET
NON-CABLE	4,192	84	LINEAR FEET
GUARD/GUIDE WALL	0	0	LINEAR FEET
BOLLARD	0	0	LINEAR FEET
TEMPORARY BARRIER	0	0	LINEAR FEET
NON TEMP/BOLLARD	0	0	LINEAR FEET
INTERSECTION	26	20	EACH
LOW WATER CROSSING	0	0	EACH
LOW WATER CROSSING	0	0	LINEAR FEET
MILE MARKER	0	0	EACH
OVERPASS	0	0	EACH
PARK BOUNDARY	0	0	EACH
PAVED DITCH	0	0	LINEAR FEET
PULLOUT	0	0	EACH
PULLOUT	0	0	LINEAR FEET
RAILROAD CROSSING	0	0	EACH
RETAINING WALL	0	0	EACH
RETAINING WALL	0	0	LINEAR FEET
SIGN	94	24	EACH
STATE BOUNDARY	0	0	EACH
TRAFFIC LIGHT	0	0	EACH
TUNNEL	0	0	EACH
TUNNEL	0	0	LINEAR FEET

Notice: Culverts and drop inlets were NOT marked by NPS in Cycle 5 along new or re-aligned DCV driven routes.

## THRO: STRUCTURE LIST

<b>ROUTE NUMBER</b>	<b>FUNCTIONAL CLASS</b>	<b>MILEPOST START</b>	<b>MILEPOST END</b>	<b>FEATURE</b>	<b>STRUCTURE NUMBER</b>
0010	1	4.924	4.938	BRIDGE	1540-005
0200AZ	3	0.071	0.079	BRIDGE	1540-006

**Section 9**  
**Route Maintenance Features**  
**Road Logs**



Theodore Roosevelt National Park



Federal Lands Highway  
Road Inventory Program

# THRO: ROUTE MAINTENANCE FEATURES ROAD LOG

## ROUTE 0010: SCENIC DRIVE

**Notice:** Culverts and drop inlets were NOT marked by NPS nor inventoried by RIP in Cycle 5 on any new or re-aligned DCV driven routes. Therefore no culverts or drop inlets are reported in Section 9, unless a culvert has a BIP structure number attached to it.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.000	0.000	ROUTE BEGIN	N/A	FROM U.S. ROUTE 85/NORTH DAKOTA STATE ROUTE 200
0.000	0.000	INTERSECTION	RIGHT	PAVED ROUTE (U.S. 85 (NON NPS))
0.000	0.000	INTERSECTION	LEFT	PAVED ROUTE (U.S. 85 (NON NPS))
0.005	0.005	SIGN	LEFT	REGULATORY, STOP
0.032	0.032	SIGN	LEFT	GUIDE, JUNCTION US NO 85
0.092	0.092	SIGN	RIGHT	REGULATORY, SPEED LIMIT 15
0.176	0.176	SIGN	RIGHT	GUIDE, ENTRANCE FEES PARK ANNUAL PASS 20.00 VEHICLE 7 DAY PASS 10.00 INDIVIDUAL 7 DAT PASS 5.00
0.176	0.176	SIGN	RIGHT	GUIDE, CAMPGROUND TENTS AVAILABLE RV'S AVAILABLE
0.176	0.176	SIGN	RIGHT	GUIDE, U.S. FEE AREA
0.182	0.182	CATTLE GUARD	N/A	N/A
0.196	0.196	SIGN	RIGHT	WARNING, SLOW
0.230	0.236	CURB	N/A	N/A
0.231	0.231	SIGN	N/A	REGULATORY, STOP
0.231	0.231	SIGN	N/A	GUIDE, SHOW PERMIT
0.235	0.235	SIGN	N/A	REGULATORY, STOP
0.235	0.235	SIGN	N/A	GUIDE, SHOW PERMIT
0.239	0.239	SIGN	RIGHT	GUIDE, WELCOME THEODORE ROOSEVELT NATIONAL PARK
0.258	0.258	SIGN	LEFT	GUIDE, VISITOR CENTER
0.275	0.275	INTERSECTION	RIGHT	ROUTE 0924 (NORTH UNIT VISITOR'S CENTER PARKING)
0.276	0.276	INTERSECTION	LEFT	PAVED SPUR
0.303	0.303	INTERSECTION	LEFT	PAVED SPUR
0.313	0.313	INTERSECTION	LEFT	ROUTE 0404 (NORTH UNIT MAINTENANCE AREA ACCESS ROAD)
0.337	0.337	SIGN	RIGHT	GUIDE, JUNIPER CAMPGROUND 5 MI. ROAD END 14 MI.
0.338	0.338	SIGN	LEFT	WARNING, BE PREPARED TO STOP
0.399	0.399	SIGN	LEFT	REGULATORY, SPEED LIMIT 15
0.408	0.408	SIGN	RIGHT	REGULATORY, SPEED LIMIT 25
0.482	0.482	SIGN	RIGHT	GUIDE, TODAY'S FIRE DANGER PREVENT WILDFIRES
0.501	0.586	CURB	LEFT	N/A
0.508	0.588	CURB	RIGHT	N/A

# THRO: ROUTE MAINTENANCE FEATURES ROAD LOG

## ROUTE 0010: SCENIC DRIVE

**Notice:** Culverts and drop inlets were NOT marked by NPS nor inventoried by RIP in Cycle 5 on any new or re-aligned DCV driven routes. Therefore no culverts or drop inlets are reported in Section 9, unless a culvert has a BIP structure number attached to it.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.624	0.624	INTERSECTION	RIGHT	UNPAVED ROUTE
0.678	0.678	SIGN	RIGHT	GUIDE, BUCKLE UP
0.678	0.678	SIGN	RIGHT	GUIDE, IT'S THE LAW
0.867	0.867	SIGN	RIGHT	GUIDE, BUFFALO ARE DANGEROUS VIEW FROM A DISTANCE
0.958	0.990	CURB	LEFT	N/A
0.959	0.993	CURB	RIGHT	N/A
1.001	1.001	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
1.079	1.079	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
1.146	1.224	CURB	LEFT	N/A
1.146	1.243	CURB	RIGHT	N/A
1.231	1.231	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
1.232	1.282	GUARD/GUIDE RAIL	LEFT	N/A
1.234	1.271	CURB	LEFT	N/A
1.244	1.288	GUARD/GUIDE RAIL	RIGHT	N/A
1.247	1.289	CURB	RIGHT	N/A
1.289	1.289	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
1.291	1.365	CURB	RIGHT	N/A
1.387	1.410	CURB	RIGHT	N/A
1.410	1.410	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
1.411	1.498	GUARD/GUIDE RAIL	RIGHT	N/A
1.414	1.488	CURB	RIGHT	N/A
1.422	1.422	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
1.423	1.512	GUARD/GUIDE RAIL	LEFT	N/A
1.513	1.513	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
1.513	1.566	CURB	LEFT	N/A
1.531	1.685	CURB	RIGHT	N/A
1.550	1.550	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
1.856	1.856	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
1.856	1.856	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
1.857	1.881	GUARD/GUIDE RAIL	LEFT	N/A

# THRO: ROUTE MAINTENANCE FEATURES ROAD LOG

## ROUTE 0010: SCENIC DRIVE

**Notice:** Culverts and drop inlets were NOT marked by NPS nor inventoried by RIP in Cycle 5 on any new or re-aligned DCV driven routes. Therefore no culverts or drop inlets are reported in Section 9, unless a culvert has a BIP structure number attached to it.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
1.857	1.881	GUARD/GUIDE RAIL	RIGHT	N/A
1.882	1.882	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
1.882	1.882	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
2.332	2.332	INTERSECTION	LEFT	ROUTE 0926 (LONGHORN PARKING)
2.453	2.453	SIGN	LEFT	REGULATORY, SPEED LIMIT 25
2.454	2.454	SIGN	RIGHT	WARNING, ROUGH ROAD
2.454	2.454	SIGN	RIGHT	REGULATORY, SPEED LIMIT 15
2.516	2.516	SIGN	LEFT	REGULATORY, SPEED LIMIT 15
2.516	2.516	SIGN	LEFT	WARNING, ROUGH ROAD
2.517	2.517	SIGN	RIGHT	REGULATORY, SPEED LIMIT 25
2.535	2.617	CURB	LEFT	N/A
2.715	2.715	INTERSECTION	LEFT	ROUTE 0403 (CORRAL AREA ACCESS ROAD)
2.935	2.935	INTERSECTION	RIGHT	ROUTE 0927 (SLUMP BLOCK PARKING)
3.312	3.312	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
3.312	3.343	GUARD/GUIDE RAIL	RIGHT	N/A
3.316	3.316	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
3.317	3.343	GUARD/GUIDE RAIL	LEFT	N/A
3.319	3.341	CURB	RIGHT	N/A
3.344	3.344	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
3.344	3.344	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
3.405	3.473	CURB	LEFT	N/A
3.828	3.890	CURB	LEFT	N/A
3.849	3.900	CURB	RIGHT	N/A
4.035	4.081	CURB	RIGHT	N/A
4.079	4.079	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
4.080	4.155	GUARD/GUIDE RAIL	RIGHT	N/A
4.082	4.082	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
4.083	4.206	GUARD/GUIDE RAIL	LEFT	N/A
4.084	4.153	CURB	RIGHT	N/A
4.088	4.137	CURB	LEFT	N/A

# THRO: ROUTE MAINTENANCE FEATURES ROAD LOG

## ROUTE 0010: SCENIC DRIVE

**Notice:** Culverts and drop inlets were NOT marked by NPS nor inventoried by RIP in Cycle 5 on any new or re-aligned DCV driven routes. Therefore no culverts or drop inlets are reported in Section 9, unless a culvert has a BIP structure number attached to it.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
4.156	4.156	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
4.156	4.176	CURB	RIGHT	N/A
4.200	4.265	CURB	RIGHT	N/A
4.206	4.206	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
4.213	4.250	CURB	LEFT	N/A
4.327	4.438	CURB	RIGHT	N/A
4.330	4.445	CURB	LEFT	N/A
4.611	4.684	CURB	RIGHT	N/A
4.676	4.676	SIGN	LEFT	REGULATORY, SPEED LIMIT 25
4.731	4.731	SIGN	RIGHT	GUIDE, JUNIPER CAMPGROUND
4.738	4.738	INTERSECTION	LEFT	UNPAVED ROUTE
4.776	4.776	INTERSECTION	LEFT	ROUTE 0200AZ (JUNIPER CAMPGROUND LOOP A)
4.793	4.793	INTERSECTION	RIGHT	ROUTE 0928 (CANNONBALL CONCRETIONS PARKING)
4.813	4.813	SIGN	LEFT	GUIDE, JUNIPER CAMPGROUND
4.837	4.837	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
4.838	4.859	GUARD/GUIDE RAIL	LEFT	N/A
4.859	4.859	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
4.902	4.902	SIGN	RIGHT	REGULATORY, SPEED LIMIT 25
4.908	4.908	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
4.908	4.908	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
4.908	4.908	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
4.908	4.908	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
4.909	4.942	GUARD/GUIDE RAIL	LEFT	N/A
4.909	4.947	GUARD/GUIDE RAIL	RIGHT	N/A
4.924	4.938	BRIDGE	N/A	1540-005 (SQUAW CREEK BRIDGE)
4.941	4.941	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
4.948	4.948	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
4.949	4.949	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
5.229	5.264	CURB	RIGHT	N/A
5.233	5.257	CURB	LEFT	N/A



# THRO: ROUTE MAINTENANCE FEATURES ROAD LOG

## ROUTE 0010: SCENIC DRIVE

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FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
5.375	5.375	INTERSECTION	LEFT	ROUTE 0409 (CAMPGROUND WELLHOUSE ACCESS ROAD)
5.512	5.521	CURB	RIGHT	N/A
5.672	5.672	SIGN	RIGHT	GUIDE, LONG X TRAIL
5.722	5.722	INTERSECTION	RIGHT	ROUTE 0932 (LONG X TRAIL PARKING)
5.774	5.774	SIGN	LEFT	GUIDE, LONG X TRAIL
6.277	6.277	SIGN	LEFT	REGULATORY, SPEED LIMIT 25
6.324	6.324	SIGN	RIGHT	REGULATORY, SPEED LIMIT 25
6.375	6.375	INTERSECTION	RIGHT	ROUTE 0933 (CAPROCK COULEE TRAIL)
6.414	6.414	INTERSECTION	RIGHT	ROUTE 0933 (CAPROCK COULEE TRAIL)
6.432	6.432	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
6.433	6.433	SIGN	LEFT	GUIDE, UNABLE TO READ FROM VIDEO
6.435	6.435	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
6.435	6.435	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
6.436	6.436	GATE	N/A	N/A
6.437	6.437	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
6.438	6.438	SIGN	RIGHT	REGULATORY, ROAD CLOSED
6.439	6.439	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
6.938	7.077	CURB	LEFT	N/A
7.007	7.007	SIGN	LEFT	REGULATORY, SPEED LIMIT 25
7.008	7.058	CURB	RIGHT	N/A
7.010	7.010	SIGN	RIGHT	WARNING, ROUGH ROAD
7.010	7.010	SIGN	RIGHT	WARNING, 15 M.P.H.
7.101	7.114	CURB	LEFT	N/A
7.109	7.109	SIGN	LEFT	WARNING, 15 M.P.H.
7.254	7.254	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
7.284	7.284	SIGN	RIGHT	REGULATORY, SPEED LIMIT 25
7.374	7.439	CURB	RIGHT	N/A
7.406	7.431	CURB-AND-GUTTER	LEFT	N/A
7.677	7.684	CURB	RIGHT	N/A
7.678	7.699	CURB	LEFT	N/A

# THRO: ROUTE MAINTENANCE FEATURES ROAD LOG

## ROUTE 0010: SCENIC DRIVE

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FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
7.684	7.733	CURB-AND-GUTTER	RIGHT	N/A
7.693	7.693	SIGN	RIGHT	REGULATORY, STOP
7.721	7.804	CURB	LEFT	N/A
7.733	7.733	SIGN	LEFT	REGULATORY, STOP
7.759	7.804	CURB	RIGHT	N/A
7.853	7.904	CURB	RIGHT	N/A
7.869	7.869	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
7.870	7.930	GUARD/GUIDE RAIL	LEFT	N/A
7.930	7.930	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
7.962	7.962	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
7.973	7.973	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
7.973	8.042	GUARD/GUIDE RAIL	LEFT	N/A
8.000	8.000	SIGN	RIGHT	GUIDE, RIVER BEND OVERLOOK
8.003	8.037	CURB	LEFT	N/A
8.042	8.042	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
8.046	8.046	INTERSECTION	LEFT	ROUTE 0934 (RIVER BEND OVERLOOK PARKING)
8.098	8.098	INTERSECTION	LEFT	ROUTE 0934 (RIVER BEND OVERLOOK PARKING)
8.134	8.134	SIGN	LEFT	GUIDE, RIVER BEND OVERLOOK
8.222	8.222	SIGN	RIGHT	REGULATORY, SPEED LIMIT 25
8.355	8.355	SIGN	LEFT	REGULATORY, SPEED LIMIT 25
9.042	9.042	INTERSECTION	RIGHT	ROUTE 0935 (BENTONITE CLAY OVERLOOK PARKING)
9.772	9.772	INTERSECTION	RIGHT	ROUTE 0936 (MAN AND GRASS PARKING)
9.810	9.810	INTERSECTION	RIGHT	ROUTE 0936 (MAN AND GRASS PARKING)
12.660	12.660	INTERSECTION	RIGHT	ROUTE 0937 (EDGE OF GLACIER PARKING)
12.700	12.700	INTERSECTION	RIGHT	ROUTE 0937 (EDGE OF GLACIER PARKING)
13.453	13.453	INTERSECTION	RIGHT	ROUTE 0408 (WEST BOUNDARY ACCESS ROAD)
13.641	13.641	SIGN	LEFT	GUIDE, DO NOT DRIVE OR PARK OFF ROADWAY
13.730	13.730	SIGN	LEFT	GUIDE, BUFFALO ARE DANGEROUS VIEW FROM A DISTANCE
13.785	13.785	SIGN	LEFT	GUIDE, PARK ENTRANCE 14 MI.
13.850	13.850	SIGN	RIGHT	GUIDE, OXBOW OVERLOOK

# THRO: ROUTE MAINTENANCE FEATURES ROAD LOG

## ROUTE 0010: SCENIC DRIVE

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<b>FROM MILEPOST</b>	<b>TO MILEPOST</b>	<b>FEATURE</b>	<b>SIDE</b>	<b>COMMENT</b>
13.859	13.859	SIGN	LEFT	REGULATORY, SPEED LIMIT 25
13.880	13.880	SIGN	RIGHT	REGULATORY, KEEP RIGHT
13.882	13.882	INTERSECTION	N/A	ROUTE 0938 (OXBOW OVERLOOK PARKING)
13.882	13.882	ROUTE END	N/A	TO ROUTE 0938 (OXBOW OVERLOOK PARKING)

# THRO: ROUTE MAINTENANCE FEATURES ROAD LOG

## ROUTE 0200AZ: JUNIPER CAMPGROUND LOOP A

**Notice:** Culverts and drop inlets were NOT marked by NPS nor inventoried by RIP in Cycle 5 on any new or re-aligned DCV driven routes. Therefore no culverts or drop inlets are reported in Section 9, unless a culvert has a BIP structure number attached to it.

FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.000	0.000	ROUTE BEGIN	N/A	FROM ROUTE 0010 (SCENIC DRIVE) AT MP 4.80 (ON LEFT)
0.000	0.000	INTERSECTION	RIGHT	ROUTE 0010 (SCENIC DRIVE)
0.000	0.000	INTERSECTION	LEFT	ROUTE 0010 (SCENIC DRIVE)
0.011	0.011	SIGN	LEFT	REGULATORY, STOP
0.024	0.024	SIGN	LEFT	GUIDE, UNABLE TO READ FROM VIDEO
0.032	0.032	SIGN	RIGHT	REGULATORY, SPEED LIMIT 15
0.061	0.061	SIGN	RIGHT	GUIDE, BUFFALO ARE DANGEROUS VIEW FROM A DISTANCE
0.070	0.070	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
0.070	0.070	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
0.071	0.079	GUARD/GUIDE RAIL	RIGHT	N/A
0.071	0.079	BRIDGE	N/A	1540-006 (SQUAW CREEK BRIDGE (CAMPGROUND))
0.071	0.079	GUARD/GUIDE RAIL	LEFT	N/A
0.080	0.080	SIGN	LEFT	WARNING, GRAPHIC SIGN NO TEXT
0.080	0.080	SIGN	RIGHT	WARNING, GRAPHIC SIGN NO TEXT
0.096	0.096	INTERSECTION	LEFT	ROUTE 0200AZ (JUNIPER CAMPGROUND LOOP A) OPPOSITE LANE
0.097	0.097	SIGN	N/A	REGULATORY, KEEP RIGHT
0.112	0.133	CURB	RIGHT	N/A
0.133	0.133	SIGN	N/A	REGULATORY, KEEP RIGHT
0.137	0.137	SIGN	LEFT	GUIDE, GRAPHIC SIGN NO TEXT
0.137	0.137	SIGN	LEFT	GUIDE, UNABLE TO READ FROM VIDEO
0.147	0.147	INTERSECTION	LEFT	ROUTE 0200AZ (JUNIPER CAMPGROUND LOOP A) OPPOSITE LANE
0.158	0.158	INTERSECTION	RIGHT	ROUTE 0946Z (JUNIPER CAMPGROUND REGISTRATION PARKING)
0.174	0.174	INTERSECTION	LEFT	ROUTE 0931Z (JUNIPER GROUP SITE PARKING)
0.189	0.189	SIGN	LEFT	GUIDE, UNABLE TO READ FROM VIDEO
0.190	0.190	INTERSECTION	LEFT	ROUTE 0931Z (JUNIPER GROUP SITE PARKING)
0.202	0.202	SIGN	RIGHT	GUIDE, CAMPING PICNICKING AMPHITHEATER PARKING
0.212	0.212	INTERSECTION	RIGHT	ROUTE 0930Z (JUNIPER PICNIC AREA PARKING)
0.228	0.228	INTERSECTION	LEFT	ROUTE 0947Z (JUNIPER CAMPGROUND DUMPSTATION)

# THRO: ROUTE MAINTENANCE FEATURES ROAD LOG

## ROUTE 0200AZ: JUNIPER CAMPGROUND LOOP A

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FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.228	0.228	SIGN	RIGHT	GUIDE, GRAPHIC SIGN NO TEXT
0.265	0.265	INTERSECTION	LEFT	ROUTE 0947Z (JUNIPER CAMPGROUND DUMPSTATION)
0.278	0.278	SIGN	LEFT	GUIDE, GRAPHIC SIGN NO TEXT
0.456	0.456	SIGN	RIGHT	GUIDE, FEE COLLECTION STATION AHEAD ALL CAMPERS STOP READ INSTRUCTIONS
0.456	0.456	SIGN	RIGHT	GUIDE, U.S. FEE AREA
0.464	0.464	SIGN	LEFT	REGULATORY, SPEED LIMIT 15
0.486	0.486	INTERSECTION	LEFT	ROUTE 0200AZ (JUNIPER CAMPGROUND LOOP A)
0.486	0.914	ONE-WAY	N/A	N/A
0.497	0.497	SIGN	N/A	REGULATORY, KEEP RIGHT
0.502	0.502	SIGN	N/A	GUIDE, GRAPHIC SING NO TEXT
0.509	0.509	SIGN	LEFT	GUIDE, STOP REGISTER HERE
0.519	0.519	SIGN	N/A	GUIDE, GRAPHIC SIGN NO TEXT
0.536	0.551	CURB	LEFT	N/A
0.576	0.576	INTERSECTION	LEFT	ROUTE 0200BZ (JUNIPER CAMPGROUND CUT THROUGH)
0.648	0.648	INTERSECTION	RIGHT	ROUTE 0948Z (JUNIPER CAMPGROUND LOOP PARKING 1)
0.693	0.693	INTERSECTION	RIGHT	ROUTE 0949Z (JUNIPER CAMPGROUND LOOP PARKING 2)
0.766	0.766	INTERSECTION	LEFT	ROUTE 0200BZ (JUNIPER CAMPGROUND CUT THROUGH)
0.914	0.914	INTERSECTION	N/A	ROUTE 0200BZ (JUNIPER CAMPGROUND CUT THROUGH)
0.914	0.914	ROUTE END	N/A	TO END OF LOOP

# THRO: ROUTE MAINTENANCE FEATURES ROAD LOG

## ROUTE 0200BZ: JUNIPER CAMPGROUND CUT THROUGH

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FROM MILEPOST	TO MILEPOST	FEATURE	SIDE	COMMENT
0.000	0.000	ROUTE BEGIN	N/A	FROM ROUTE 0200AZ (JUNIPER CAMPGROUND LOOP A) AT MP 0.576
0.000	0.000	INTERSECTION	LEFT	ROUTE 0200BZ (JUNIPER CAMPGROUND CUT THROUGH)
0.000	0.000	INTERSECTION	RIGHT	ROUTE 0200BZ (JUNIPER CAMPGROUND CUT THROUGH)
0.076	0.076	SIGN	RIGHT	REGULATORY, NO RIGHT TURN
0.079	0.079	INTERSECTION	LEFT	ROUTE 0200BZ (JUNIPER CAMPGROUND CUT THROUGH)
0.079	0.079	INTERSECTION	RIGHT	ROUTE 0200BZ (JUNIPER CAMPGROUND CUT THROUGH)
0.079	0.079	ROUTE END	N/A	TO ROUTE 0200AZ (JUNIPER CAMPGROUND LOOP A) AT MP 0.766

# Section 10 Appendix



## Theodore Roosevelt National Park



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

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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.



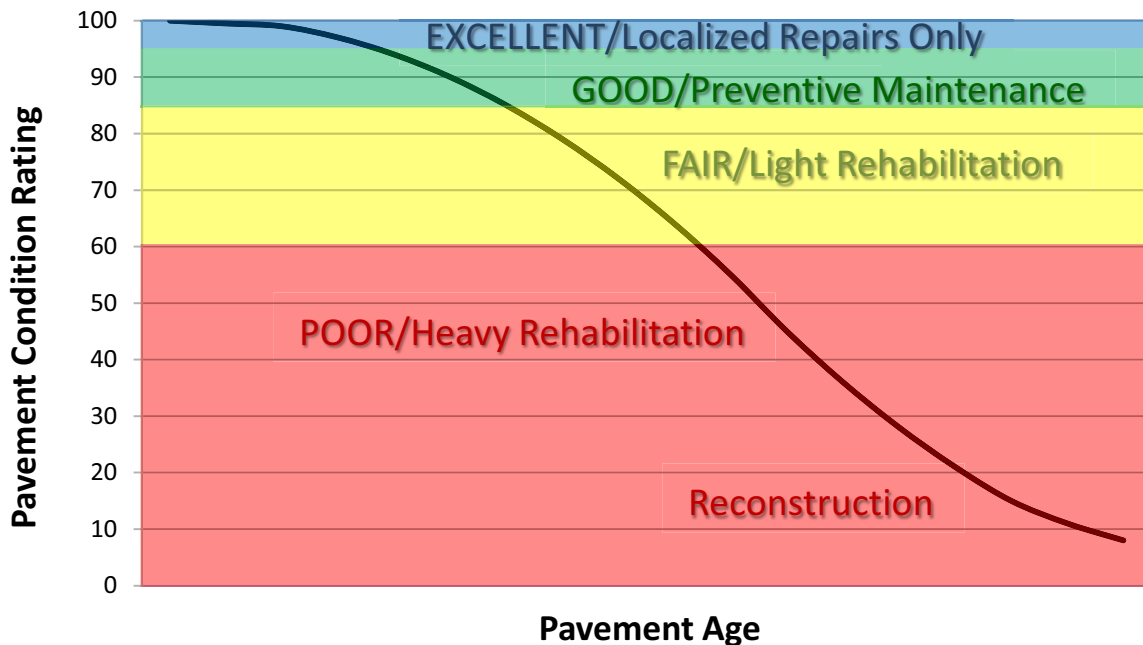
# Explanation of the Excellent, Good, Fair and Poor Condition Descriptions

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

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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**

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## **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:

$$\text{Asphalt PCR} = (0.60 * \text{SCR}) + (0.40 * \text{RCI})$$

$$\text{Concrete PCR} = \text{RCI}$$

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:

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

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

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

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

**TABLE 1: Distress Summary**

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

**\*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  $\leq 0.25$  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  $\leq 0.75$  in. (19 mm) or any crack with a mean width  $\leq 19$  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  $\leq 0.75$  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**

<b>ALLIGATOR CRACKING SEVERITY LEVELS</b>		<b>Crack Pattern</b>		
		<b>LOW</b>	<b>MED</b>	<b>HIGH</b>
<b>Crack Width</b>	<b>LOW</b>	L	M	H
	<b>MED</b>	M	M	H
	<b>HI</b>	H	H	H

## **LONGITUDINAL CRACKING**

### **Description**

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

### **Severity Levels**

#### **LOW**

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

#### **MED**

Cracks with a mean width  $> 0.25$  in. (6 mm) and  $\leq 0.75$  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  $\leq 0.75$  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  $\geq 0.20''$  and  $\leq 0.49''$

#### **MED**

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

#### **HIGH**

Ruts with a measured depth  $\geq 1.00''$

Ruts  $< 0.20''$  are not included in the distress calculations.

## **ROUGHNESS**

### **Description**

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

### **Severity Levels**

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

**TABLE 3: IRI**

<b>IRI Descriptions</b>	
<b>Type of Road</b>	<b>Typical IRI ( in/mile )</b>
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

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

### Alligator Crack Index

$$AC\_INDEX = 100 - 40 * [(\%LOW / 35) + (\%MED / 15) + (\%HI / 5)]$$

Where:

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

*%LOW* = Percent of total area (primary lane, 0.02 in length), low severity

*%MED* = Percent of total area (primary lane, 0.02 in length), medium severity

*%HI* = Percent of total area (primary lane, 0.02 in length), high severity

Percent of total area is computed as:

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

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  $\geq 0$  and can exceed 100.

*%LOW* = Percent of interval length (primary lane, 0.02 in length), low severity

*%MED* = Percent of interval length (primary lane, 0.02 in length), medium severity

*%HI* = Percent of interval length (primary lane, 0.02 in length), high severity

Percent of interval length is computed as:

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

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  $\geq 0$ .

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

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

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

Number of cracks is computed as:

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

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

## Patching Index

$$\text{PATCH\_INDEX} = 100 - 40 * (\% \text{PATCHING} / 80)$$

Where:

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

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

Percent of total area is computed as:

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

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

$$\text{RUT\_INDEX} = 100 - 40 * [(\% \text{LOW} / 535) + (\% \text{MED} / 205) + (\% \text{HI} / 40)]$$

Where:

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

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

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

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

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

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

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

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

### **Roughness Condition Index (Asphalt)**

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

Where:

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

Average IRI is computed as:

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

There is no applicable threshold for failure for this index.

### **Roughness Condition Index (Concrete)**

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

For concrete, PCR = RCI

### **Surface Condition Rating Index**

**SCR** = *Lowest* Index Value Of: [SC\_INDEX, TC\_INDEX, PATCH\_INDEX, RUT\_INDEX]

*Note: The modified SCR equation above combines AC\_INDEX and LC\_INDEX, and considers that a single AC/LC index value of the Structural Crack Index (SC\_INDEX). The lowest of the four computed index values (SC\_INDEX, TC\_INDEX, PATCH\_INDEX, or RUT\_INDEX) becomes the SCR.*

Where:

See above for determinations of SC\_INDEX, TC\_INDEX, PATCH\_INDEX and RUT\_INDEX.

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

## Data Collection Vehicle Subsystems

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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.

<b>CAMERA SPECIFICATIONS</b>	
<b>Two Forward/ One Rear Facing</b>	
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.

<b>CAMERA SPECIFICATIONS</b>	
<b>Pavement Line Scan</b>	
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.

<b>IRI SPECIFICATIONS</b>	
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.

<b>RUTTING SPECIFICATIONS</b>	
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.

<b>GPS SPECIFICATIONS</b>	
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

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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**

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