



**national park service**

**The Road Inventory  
of  
Hawaii Volcanoes National Park  
HAVO – 8300  
Cycle 4**



**Prepared By:  
Federal Highway Administration  
Road Inventory Program  
Cycle 4**



# Hawaii Volcanoes National Park in Hawaii

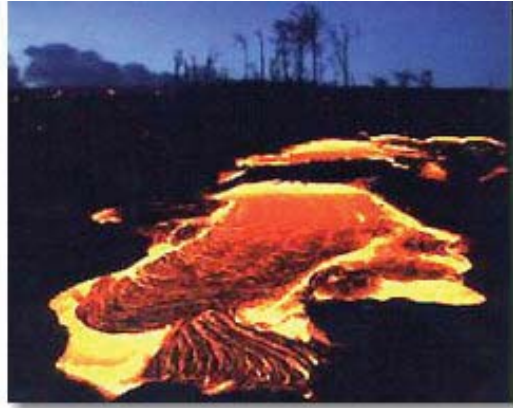




## TABLE OF CONTENTS

	<b><u>SECTION</u></b>	<b><u>PAGE</u></b>
1.	<b>INTRODUCTION</b>	<b>1 - 1</b>
2.	<b>PARK SUMMARY INFORMATION</b>	
	Paved Route Miles and Percentages by Functional Class and PCR	2 - 1
	ARAN Road Condition Summary	2 - 2
	Parkwide Condition Summary	2 - 6
	Cycle 2 vs Cycle 3 vs Cycle 4 Condition Comparisons	2 - 7
3.	<b>PARK ROUTE LOCATION / CONDITION MAPS</b>	
	Route Location Key Map	3 - 1
	Route Location Area Map	3 - 2
	Route Condition Key Map – PCR Mile by Mile	3 - 6
	Route Condition Area Map – PCR Mile by Mile	3 - 7
4.	<b>PARK ROUTE INVENTORY</b>	
	Route Identification Report	4 - 1
5.	<b>PAVED ROUTE CONDITION RATING SHEETS (CRS)</b>	
	CRS Pages	5 - 1
6.	<b>MANUALLY RATED PAVED ROUTE CONDITION RATING SHEETS (MRR)</b>	
	MRR Pages	6 - 1
7.	<b>PARKING AREA CONDITION RATING SHEETS</b>	
	Paved Parking Area Pages	7 - 1
8.	<b>PARKWIDE / ROUTE MAINTENANCE FEATURES SUMMARIES</b>	
	Parkwide Maintenance Features Summary	8 - 1
	Route Maintenance Features Summary	8 - 2
	Structure List	8 - 5
9.	<b>PARK ROUTE MAINTENANCE FEATURES ROAD LOGS</b>	
	Route Maintenance Features Road Logs	9 - 1
10.	<b>APPENDIX</b>	
	A. Glossary of Terms and Abbreviations	10 - 1
	B. Description of Rating System	10 - 2
	C. General Information on RIP Systems	10 - 8
	D. Metadata	10 - 11

# Hawaii Volcanoes National Park



## **Section 1** **Introduction**

## INTRODUCTION

**Background:** In 1976, the National Park Service (NPS) and the Federal Highway Administration (FHWA) entered into a Memorandum of Agreement (MOA), establishing the Road Inventory Program (RIP). In 1980, the NPS and the FHWA terminated the 1976 MOA and entered into a new MOA that provided for the completion of the initial phase of the RIP. The purpose of the RIP, per the 1980 MOA was to maintain and update RIP data in order to develop long-range costs and programs to bring National Park Service (NPS) roads up to, or to maintain, designated standards, and establish a maintenance management program.

The FHWA's Federal Lands Highway (FLH) was assigned the task of identifying condition deficiencies and corrective priorities along with associated corrective costs, inventorying maintenance features (e.g., culverts, signs, guardrail, etc.), summarizing the data and findings in a report and providing a photographic record of the road system.

The FLH completed the initial phase of the RIP in the early 1980's. As a result of this effort, each park received a RIP book, also known as the "Brown Book," that included the information collected during this initial RIP phase.

In an effort to maintain and update the RIP data, a cyclical data collection and reporting process was reestablished in the 1990's. The FLH completed two cycles of RIP data collection between 1994 and 2001. Cycle 1 was collected in 44 large parks from 1994 to 1996. This data was found to be unusable for comparison to future cycles. Cycle 2 data was collected from March 1997 to January 2001 in 79 large parks and 5 small parks containing 4,874 route miles. Each park received a copy of a Cycle 2 RIP Report, also known as the "Blue Book". Cycle 3 was completed from 2001 through 2004, and included data collection in all parks that contain pavement.

Since 1984, the RIP Program has been funded through the Federal Lands Highway Program's Park Roads and Parkways (PRP) Program. Currently, the NPS Washington Headquarters' Park Facility Management Division is responsible for coordinating the RIP program with the FLH. 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) which requires the Federal Highway Administration and the National Park Service, to develop, by rule, a Pavement Management System (PMS) for the park roads and parkways serving the National Park System. As a result of the requirements in TEA-21, the NPS and FHWA are in the process of developing a PMS. The PMS will assist the decision-makers in effectively spending limited PRP Program funds. The PMS

will provide information for planning and programming road maintenance, rehabilitation, and reconstruction activities. RIP data will provide the basic information for this system.

Key information included in the RIP is the mileage inventory and condition assessments accomplished by the RIP Program. The mileage and condition data are used in the current allocation formula of PRP Program funds.

**RIP Cycle 4:** Cycle 4 data collection was initiated in spring 2006, where 86 large parks, consisting of 5,553 route miles and 6,232 paved parking areas, were selected as a representative sample of the entire NPS paved road network. Cycle 4 is scheduled for completion in spring 2009 and will serve the PMS in further development of its pavement preservation techniques.

In the Cycle 4 Reports, a general condition rating of excellent, good, fair and poor is ascribed to each one-mile section of paved roadway, and to each paved parking area. This condition rating system provides a realistic means of assessing the general funding needs for road improvements. Along with these descriptive condition ratings, a numerical rating between 0 and 100 is ascribed to each mile of road and to each parking area. This numerical rating is called a Pavement Condition Rating (PCR). The PCR rating system is described in Section 10 of this report.

All of the fieldwork required for obtaining inventory, condition, and maintenance feature information is coordinated with each park and the regional offices to ensure that the information in the RIP reports is accurate.

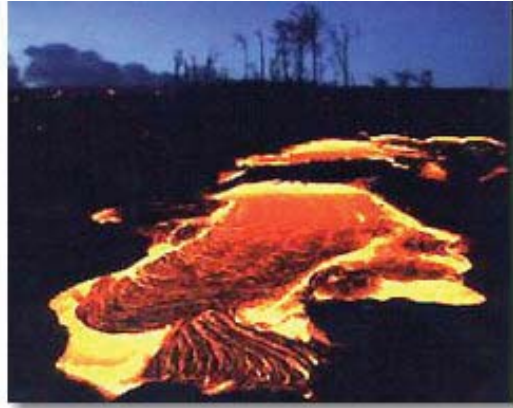
The FLH is responsible for all the data presented in this report. Anyone having questions or comments regarding the contents of this report is encouraged to contact the FHWA RIP Coordinator. It is our aim to provide exceptional customer satisfaction in our delivery of the RIP program.

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# Hawaii Volcanoes National Park



## **Section 2** **Park Summary Information**

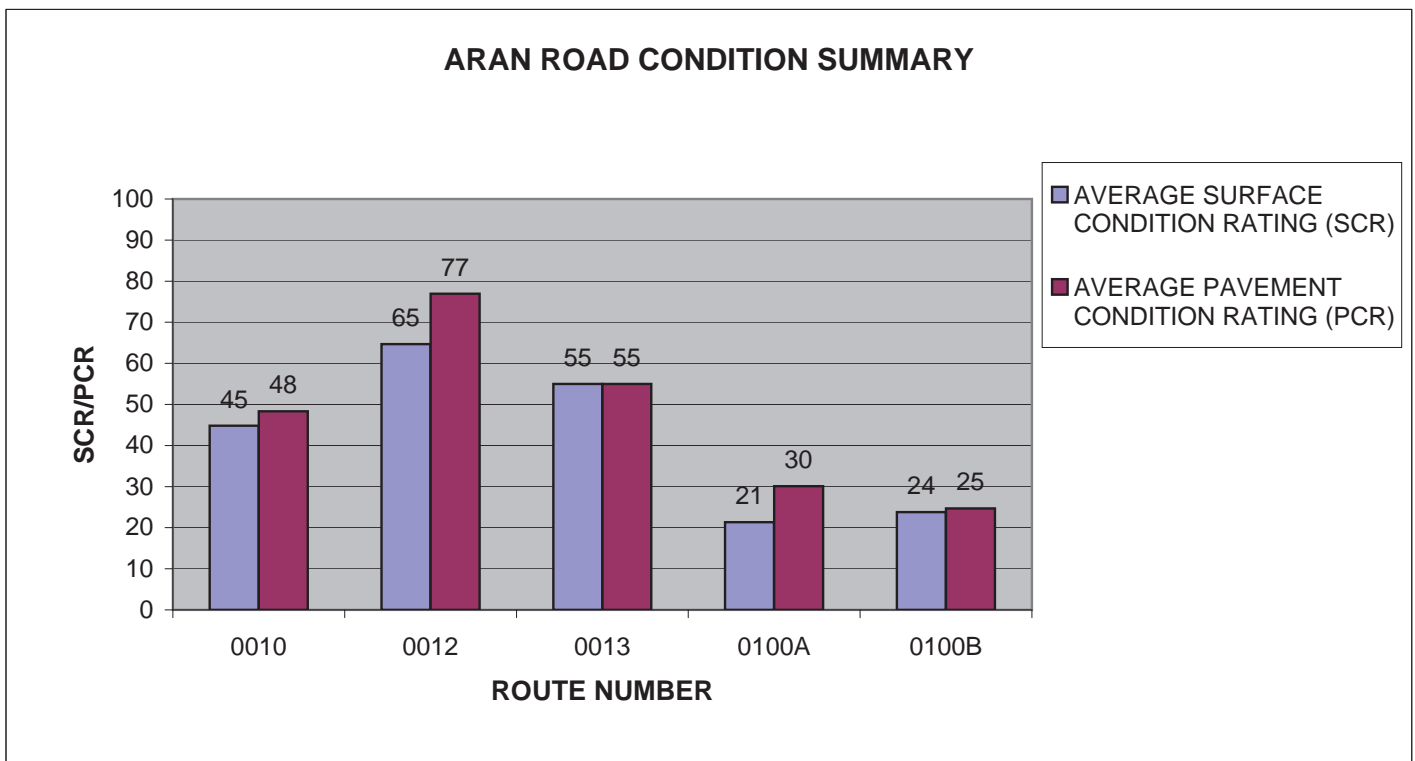
## HAVO: PAVED ROUTE MILES AND PERCENTAGES BY FUNCTIONAL CLASS AND PCR

F.C.	Pavement Condition Rating (PCR)								TOTAL MILES
	Poor (<=60)		Fair (61-84)		Good (85-94)		Excellent (95-100)		
	MILES	%	MILES	%	MILES	%	MILES	%	
1	9.01	18.61%	18.42	38.05%	3.75	7.75%	1.96	4.05%	33.14
2	10.64	21.98%	2.12	4.38%	0.19	0.39%	0.10	0.21%	13.05
3	0.51	1.05%	0.25	0.52%			0.02	0.04%	0.78
4	1.24	2.56%	0.14	0.29%	0.06	0.12%			1.44
5									
6									
7									
8									
<b>Totals</b>	<b>21.40</b>	<b>44.20%</b>	<b>20.93</b>	<b>43.23%</b>	<b>4.00</b>	<b>8.26%</b>	<b>2.08</b>	<b>4.30%</b>	<b>48.41</b>



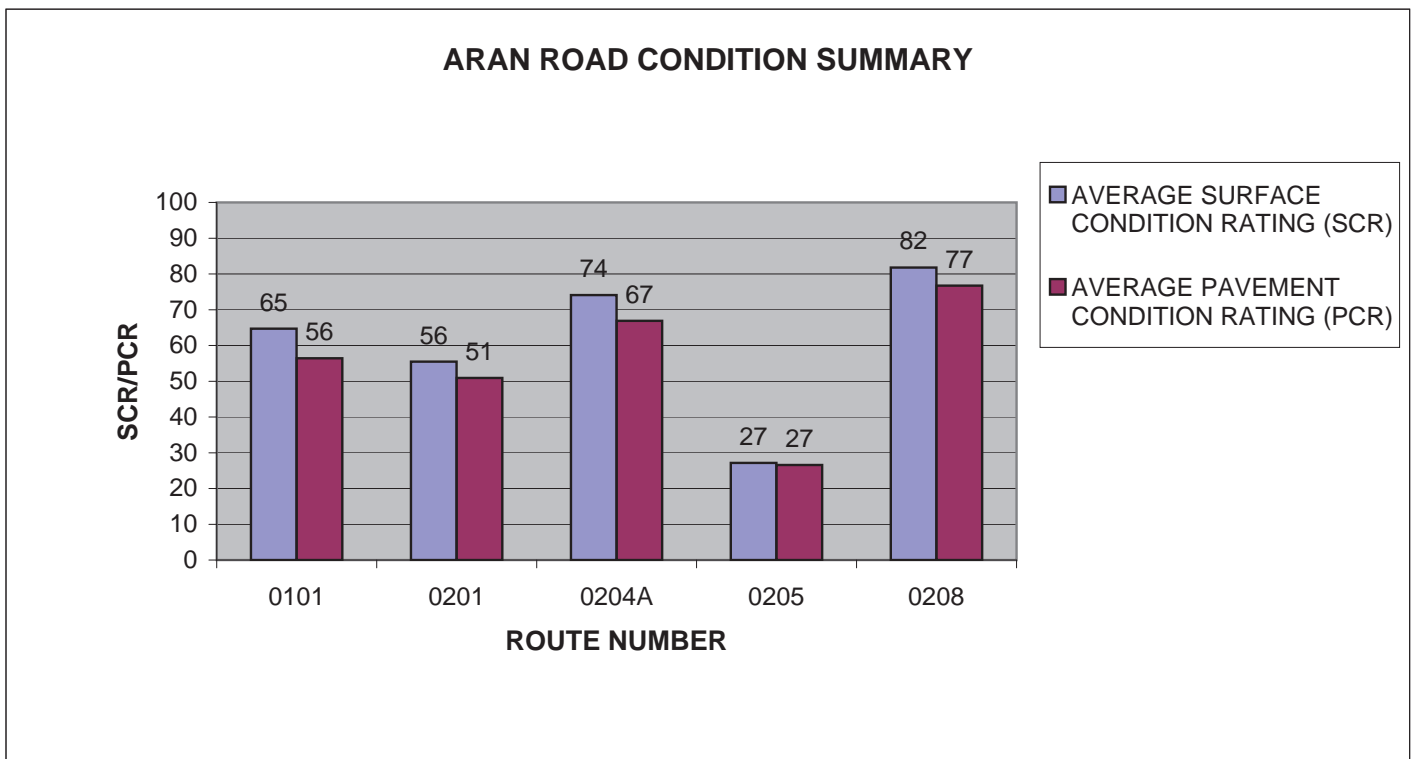
# HAVO: ARAN ROAD CONDITION SUMMARY

ROUTE NUMBER	ROUTE NAME	FUNCT CLASS	ROUTE LENGTH	SURFACE TYPE	AVERAGE SURFACE CONDITION RATING (SCR)	AVERAGE PAVEMENT CONDITION RATING (PCR)
0010	CRATER RIM DRIVE	1	5.90	ASPHALT	45	48
0012	CHAIN OF CRATERS ROAD	1	18.65	ASPHALT	65	77
0013	OFFICE AREA STREET	1	0.05	ASPHALT	55	55
0100A	MAUNA LOA ROAD	2	1.59	ASPHALT	21	30
0100B	MAUNA LOA LOOKOUT ROAD	2	9.83	ASPHALT	24	25



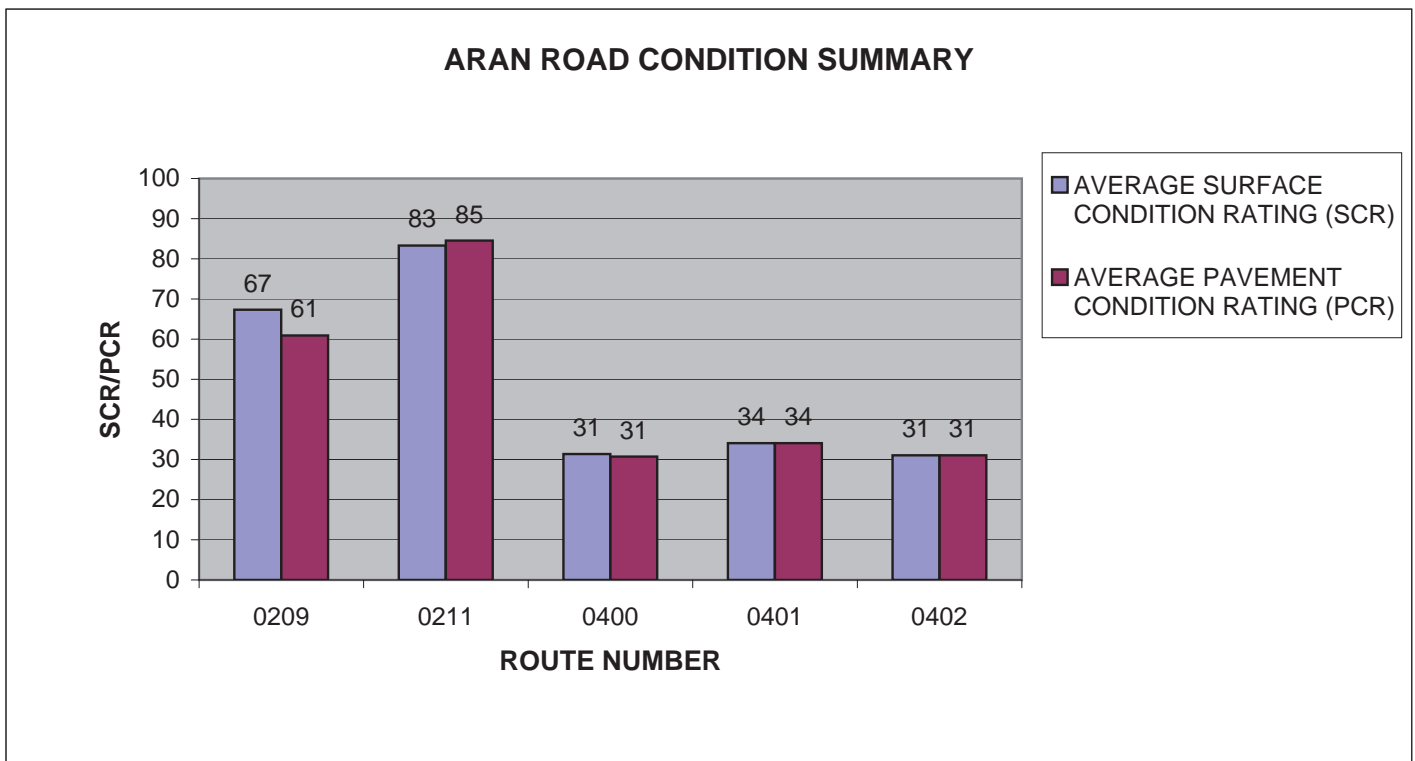
# HAVO: ARAN ROAD CONDITION SUMMARY

ROUTE NUMBER	ROUTE NAME	FUNCT CLASS	ROUTE LENGTH	SURFACE TYPE	AVERAGE SURFACE CONDITION RATING (SCR)	AVERAGE PAVEMENT CONDITION RATING (PCR)
0101	HILINA PALI ROAD	1	8.54	ASPHALT	65	56
0201	KILAUEA OVERLOOK ROAD	2	0.2	ASPHALT	56	51
0204A	NAMAKANI PAIO CAMPGROUND ROAD	3	0.31	ASPHALT	74	67
0205	TREE MOLDS ROAD	2	0.56	ASPHALT	27	27
0208	MAUNA ULU ACCESS ROAD	2	0.54	ASPHALT	82	77



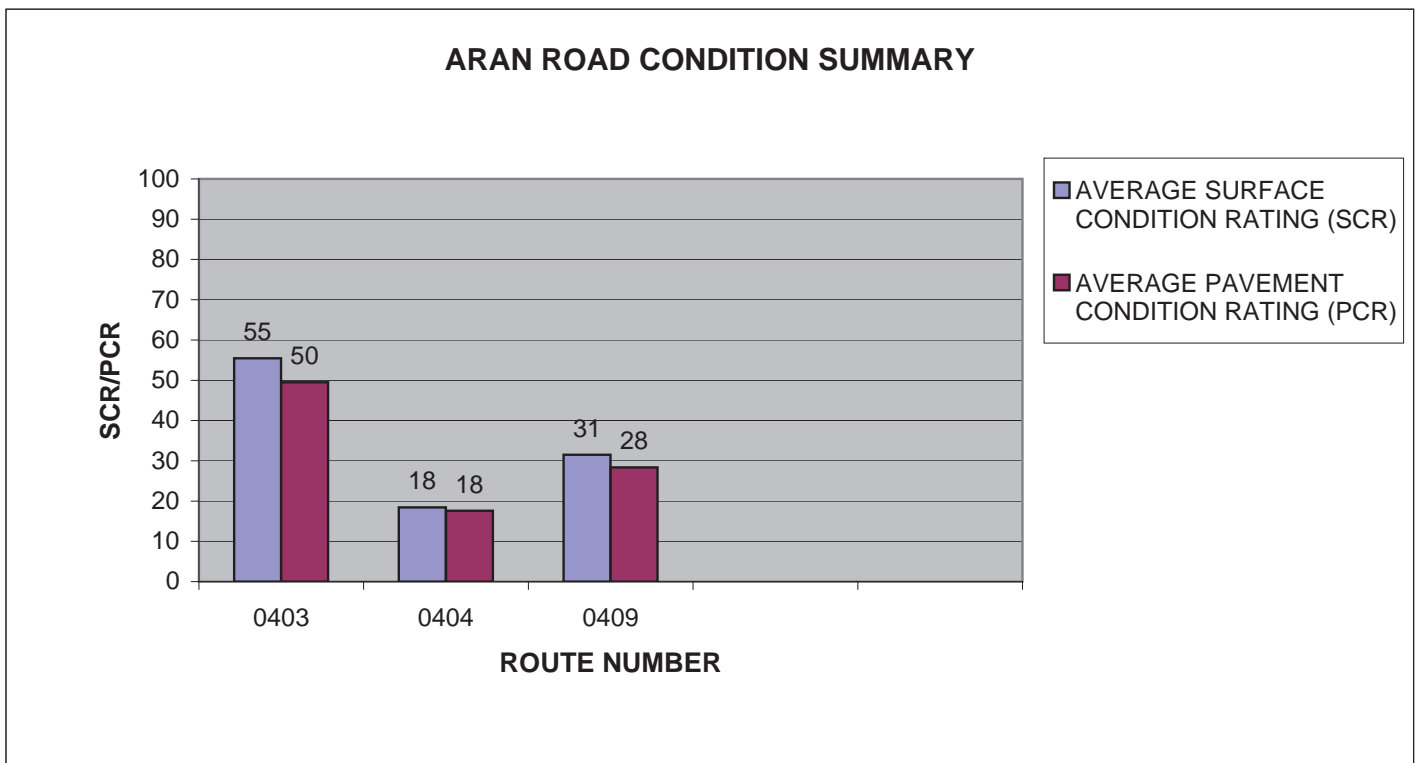
# HAVO: ARAN ROAD CONDITION SUMMARY

ROUTE NUMBER	ROUTE NAME	FUNCT CLASS	ROUTE LENGTH	SURFACE TYPE	AVERAGE SURFACE CONDITION RATING (SCR)	AVERAGE PAVEMENT CONDITION RATING (PCR)
0209	PUU PUI OVERLOOK ROAD	2	0.2	ASPHALT	67	61
0211	STEAM VENTS ROAD	2	0.13	ASPHALT	83	85
0400	WATER TANK ROAD	4	0.34	ASPHALT	31	31
0401	NORTH RESIDENCE ROAD	4	0.26	ASPHALT	34	34
0402	SOUTH RESIDENCE ROAD	4	0.17	ASPHALT	31	31



# HAVO: ARAN ROAD CONDITION SUMMARY

ROUTE NUMBER	ROUTE NAME	FUNCT CLASS	ROUTE LENGTH	SURFACE TYPE	AVERAGE SURFACE CONDITION RATING (SCR)	AVERAGE PAVEMENT CONDITION RATING (PCR)
0403	SOUTH RESIDENCE LOOP	4	0.42	ASPHALT	55	50
0404	TREE MOLDS STABLE ROAD	4	0.25	ASPHALT	18	18
0409	RESEARCH CENTER ROAD	3	0.47	ASPHALT	31	28

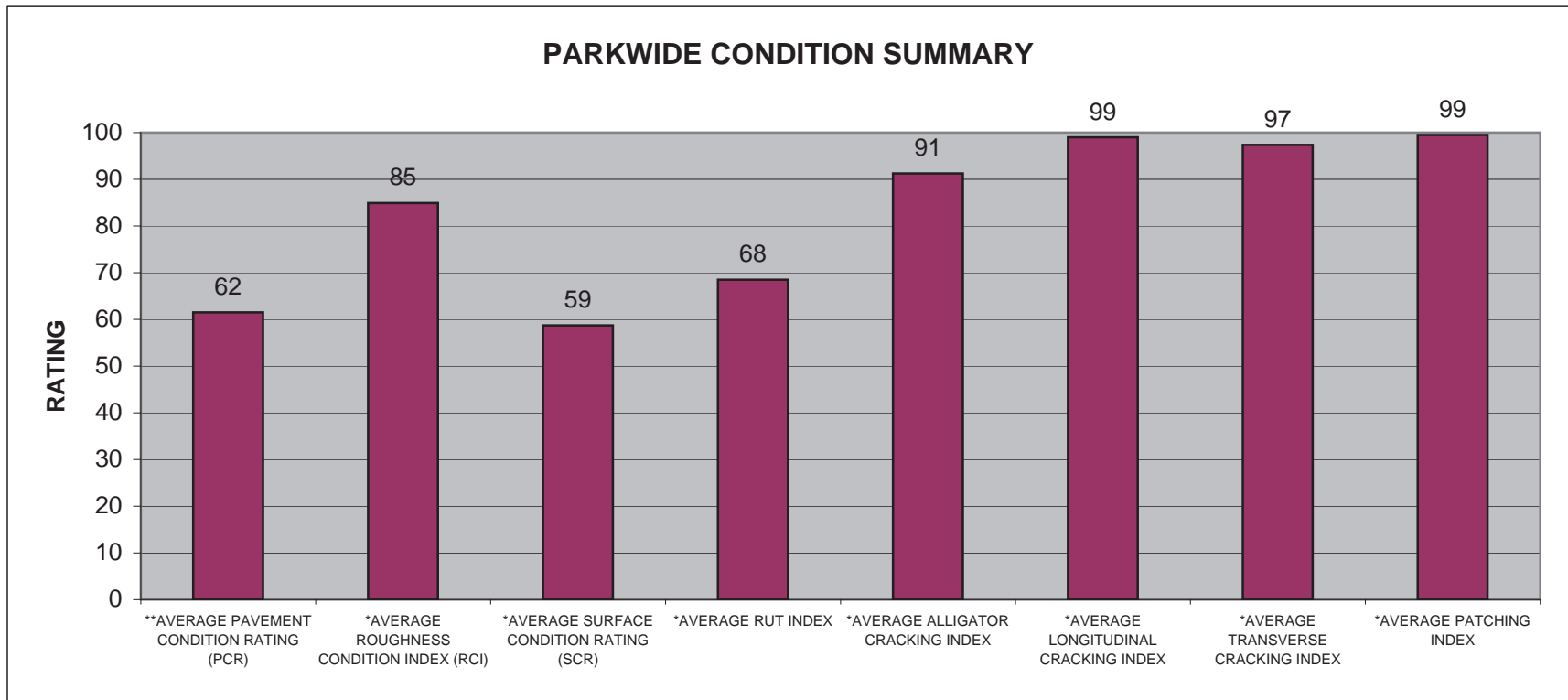


# HAVO: PARKWIDE CONDITION SUMMARY

**AVERAGE PAVEMENT CONDITION RATING (PCR)	*AVERAGE ROUGHNESS CONDITION INDEX (RCI)	*AVERAGE SURFACE CONDITION RATING (SCR)	*AVERAGE RUT INDEX	*AVERAGE ALLIGATOR CRACKING INDEX	*AVERAGE LONGITUDINAL CRACKING INDEX	*AVERAGE TRANSVERSE CRACKING INDEX	*AVERAGE PATCHING INDEX
62	85	59	68	91	99	97	99

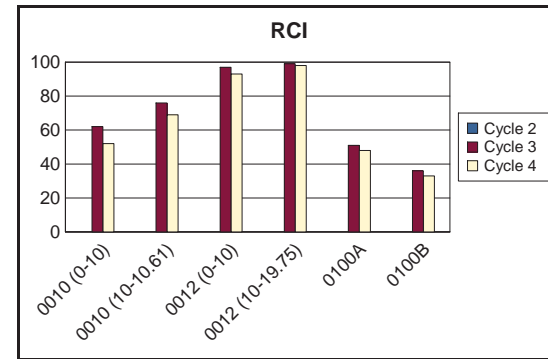
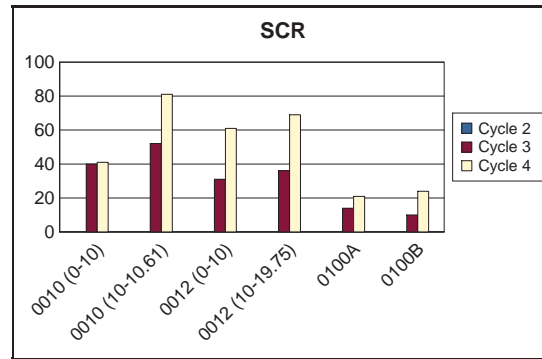
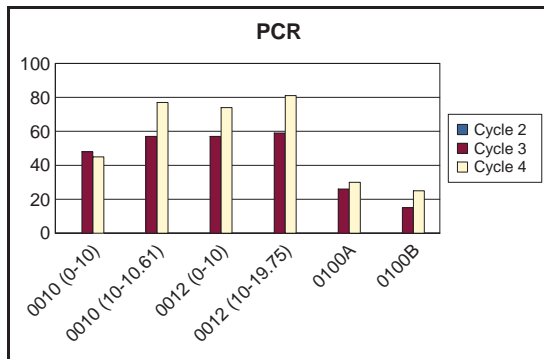
\*\* PCR Index is based on all ARAN-driven roads, parking areas, and manually rated routes.

\* Index values are based on ARAN-driven roads only.



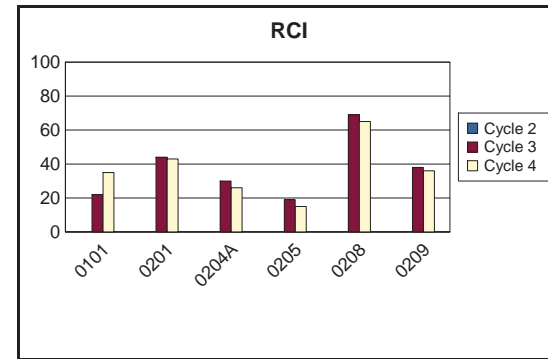
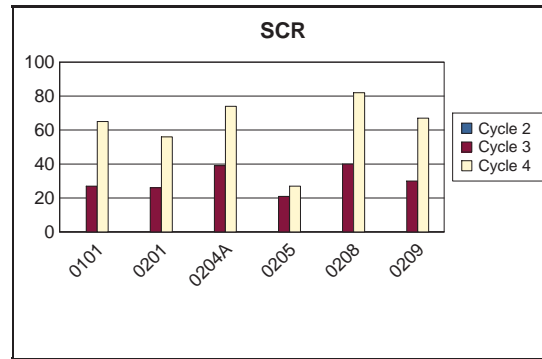
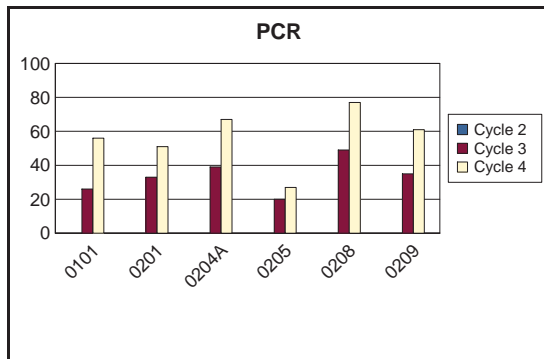
# HAVO CYCLE 2 vs CYCLE 3 vs CYCLE 4 CONDITION COMPARISONS

ROUTE NUMBER	PAVED MILES	FROM MILEPOST	TO MILEPOST	PAVEMENT CONDITION RATING (PCR)			PERCENT CHANGE	SURFACE CONDITION RATING (SCR)			PERCENT CHANGE	ROUGHNESS CONDITION INDEX (RCI)			PERCENT CHANGE	COMMENT
				CYCLE 2	CYCLE 3	CYCLE 4		CYCLE 2	CYCLE 3	CYCLE 4		CYCLE 2	CYCLE 3	CYCLE 4		
0010	10.00	0.00	10.00	N/A	48	45	-6%	N/A	40	41	+2%	N/A	62	52	-16%	
0010	0.61	10.00	10.61	N/A	57	77	+35%	N/A	52	81	+56%	N/A	76	69	-9%	
0012	10.00	0.00	10.00	N/A	57	74	+30%	N/A	31	61	+97%	N/A	97	93	-4%	
0012	9.75	10.00	19.75	N/A	59	81	+37%	N/A	36	69	+92%	N/A	99	98	-1%	
0100A	1.59	0.00	1.59	N/A	26	30	+15%	N/A	14	21	+50%	N/A	51	48	-6%	
0100B	9.83	0.00	9.83	N/A	15	25	+67%	N/A	10	24	+140%	N/A	36	33	-8%	



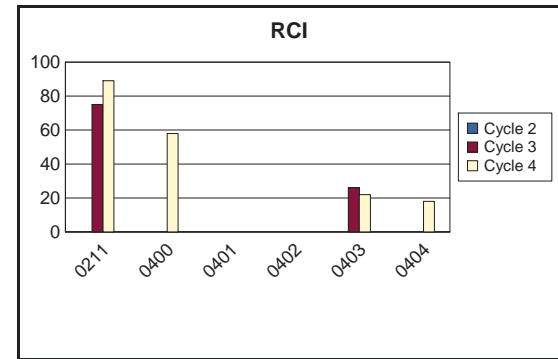
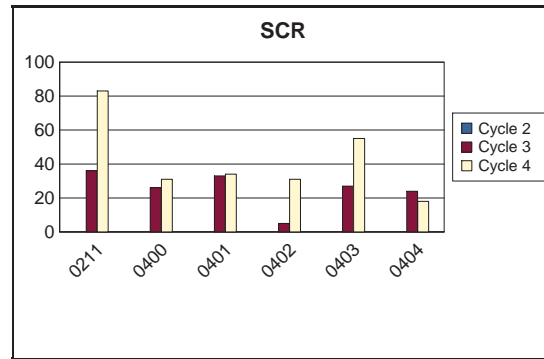
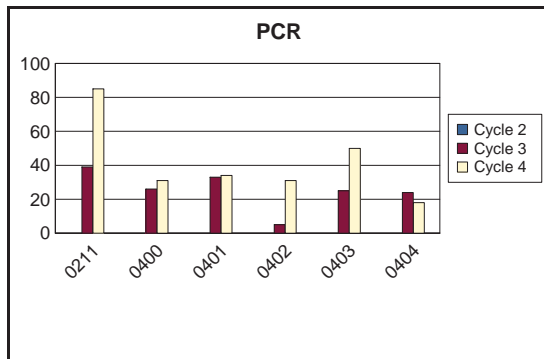
# HAVO CYCLE 2 vs CYCLE 3 vs CYCLE 4 CONDITION COMPARISONS

ROUTE NUMBER	PAVED MILES	FROM MILEPOST	TO MILEPOST	PAVEMENT CONDITION RATING (PCR)			PERCENT CHANGE	SURFACE CONDITION RATING (SCR)			PERCENT CHANGE	ROUGHNESS CONDITION INDEX (RCI)			PERCENT CHANGE	COMMENT
				CYCLE 2	CYCLE 3	CYCLE 4		CYCLE 2	CYCLE 3	CYCLE 4		CYCLE 2	CYCLE 3	CYCLE 4		
0101	8.54	0.00	8.54	N/A	26	56	+115%	N/A	27	65	+141%	N/A	22	35	+59%	
0201	0.20	0.00	0.20	N/A	33	51	+55%	N/A	26	56	+115%	N/A	44	43	-2%	
0204A	0.31	0.00	0.31	N/A	39	67	+72%	N/A	39	74	+90%	N/A	30	26	-13%	
0205	0.56	0.00	0.56	N/A	20	27	+35%	N/A	21	27	+29%	N/A	19	15	-21%	
0208	0.54	0.00	0.54	N/A	49	77	+57%	N/A	40	82	+105%	N/A	69	65	-6%	
0209	0.20	0.00	0.20	N/A	35	61	+74%	N/A	30	67	+123%	N/A	38	36	-5%	



# HAVO CYCLE 2 vs CYCLE 3 vs CYCLE 4 CONDITION COMPARISONS

ROUTE NUMBER	PAVED MILES	FROM MILEPOST	TO MILEPOST	PAVEMENT CONDITION RATING (PCR)			PERCENT CHANGE	SURFACE CONDITION RATING (SCR)			PERCENT CHANGE	ROUGHNESS CONDITION INDEX (RCI)			PERCENT CHANGE	COMMENT
				CYCLE 2	CYCLE 3	CYCLE 4		CYCLE 2	CYCLE 3	CYCLE 4		CYCLE 2	CYCLE 3	CYCLE 4		
0211	0.13	0.00	0.13	N/A	39	85	+118%	N/A	36	83	+131%	N/A	75	89	+19%	
0400	0.35	0.00	0.35	N/A	26	31	+19%	N/A	26	31	+19%	N/A	N/A	58	N/A	No RCI collected in Cycle 3.
0401	0.26	0.00	0.26	N/A	33	34	+3%	N/A	33	34	+3%	N/A	N/A	N/A	N/A	No RCI collected in Cycle 3 or Cycle 4.
0402	0.17	0.00	0.17	N/A	5	31	+520%	N/A	5	31	+520%	N/A	N/A	N/A	N/A	No RCI collected in Cycle 3 or Cycle 4.
0403	0.42	0.00	0.42	N/A	25	50	+100%	N/A	27	55	+104%	N/A	26	22	-15%	
0404	0.25	0.00	0.25	N/A	24	18	-25%	N/A	24	18	-25%	N/A	N/A	18	N/A	No RCI collected in Cycle 3.





# HAVO CYCLE 2 vs CYCLE 3 vs CYCLE 4 CONDITION COMPARISONS

ROUTE NUMBER	PAVED MILES	FROM MILEPOST	TO MILEPOST	PAVEMENT CONDITION RATING (PCR)				SURFACE CONDITION RATING (SCR)				ROUGHNESS CONDITION INDEX (RCI)				COMMENT
				CYCLE 2	CYCLE 3	CYCLE 4	PERCENT CHANGE	CYCLE 2	CYCLE 3	CYCLE 4	PERCENT CHANGE	CYCLE 2	CYCLE 3	CYCLE 4	PERCENT CHANGE	
0409	0.48	0.00	0.48	N/A	28	28	0%	N/A	28	31	+11%	N/A	28	28	0%	

