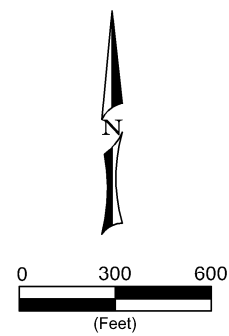
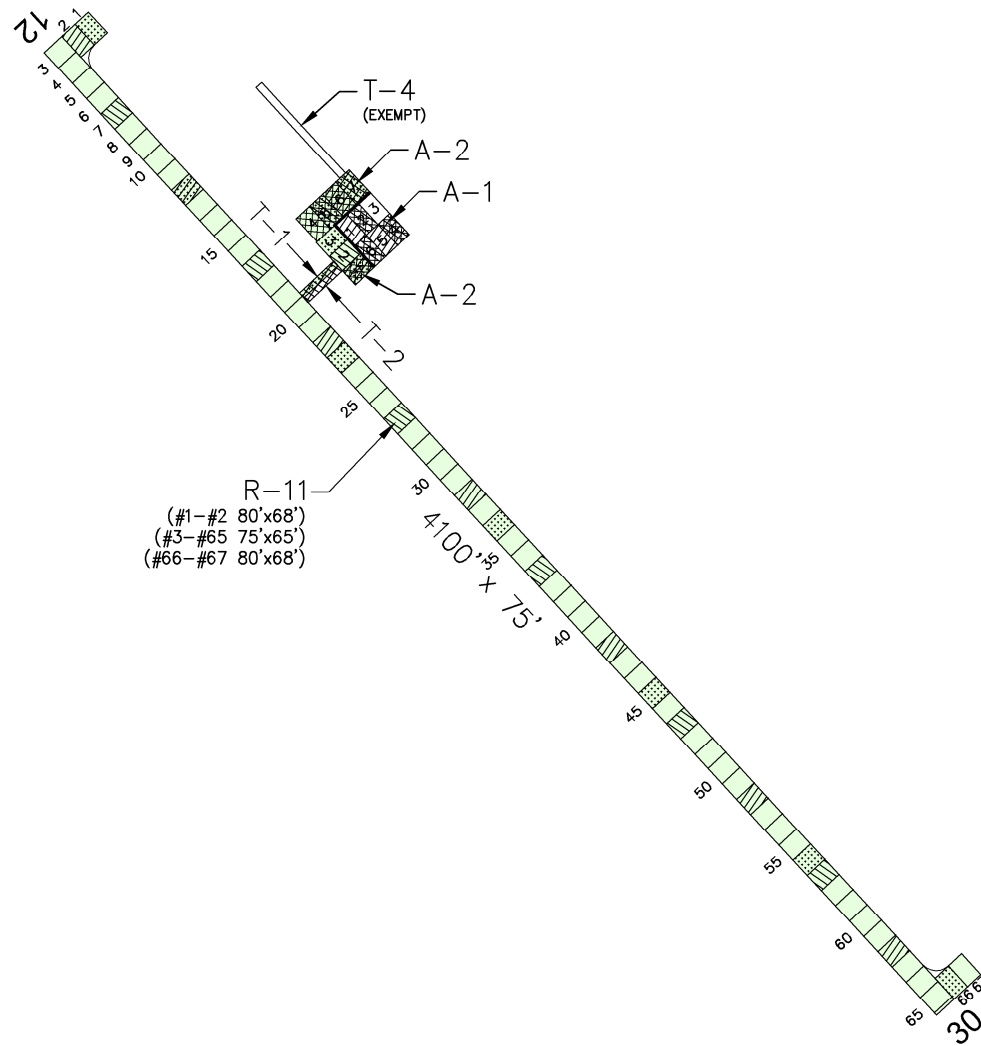
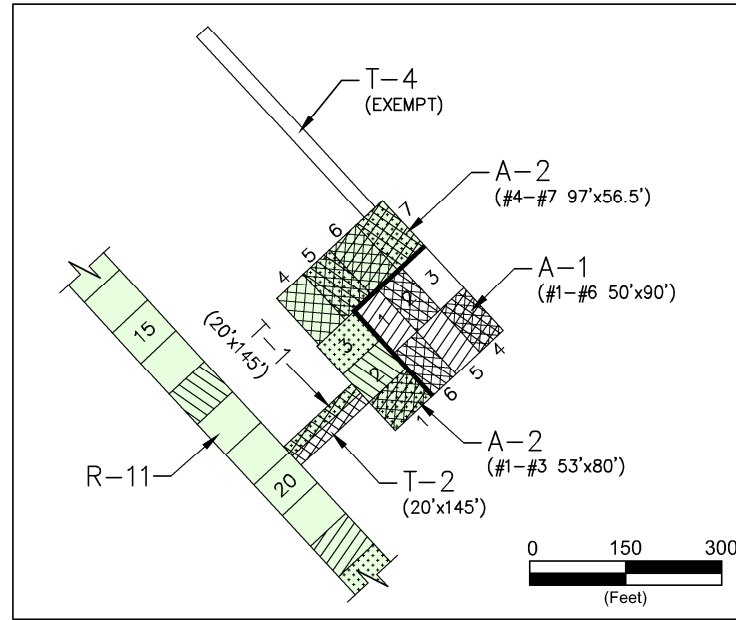


# CIRCLE



## PAVEMENT STRENGTH SURVEY/PAVEMENT CONDITION SURVEY

PAVE. IDENT.	SOIL CLASS	SUB GRADE CLASS	SUBBASE COURSE	BASE COURSE	SURFACE COURSE	OVERLAY	PAVEMENT STRENGTH			REMARKS
							MAX. GROSS LOAD (LBS)			
							SINGLE	DUAL	DUAL TAN.	
<b>RUNWAYS</b>										
R-11	E-7	CBR=2.5	8" P-208	5"P-207,3"P-208	3" P-403		12,500			3
<b>TAXIWAYS</b>										
T-1	E-7	CBR=2.5	6" P-208	10"P-207,3"P-208	3" P-403		12,500			1,2,3
T-2	E-7	CBR=2.5	10" AGG, 2"P-208	10"P-207,3"P-208	3" P-403		12,500			1,2,3
<b>APRONS</b>										
A-1	E-7	CBR=2.5		8" P-208	1"P-216,2"P-403		12,500			1,2,3
A-2	E-7	CBR=2.5	10"	4" P-208	2" P-403		12,500			1,2,3

**REMARKS:**

- ADAP-01, 1984, EXTEND, WIDEN, AND OVERLAY RUNWAY.
- 1. AIP-01, 1989, 1" P-402 OVERLAY ALL PAVEMENTS.
- 2. 2001, NON-FEDERAL 3/8" CHIP SEAL WITH CRS-2P OIL.
- 3. AIP-004-2007, RECONSTRUCT RUNWAY (R-11) AND TAXIWAYS; 2" MILL AND PAVE ON APRONS.

**LEGEND**

- 2003 SURVEY AREA
- 2006 SURVEY AREA (NOT SURVEYED)
- 2009 SURVEY AREA
- 2012 SURVEY AREA
- 2015 SURVEY AREA
- MAINTAIN: PCI > 60
- TRANSITION: PCI 45 TO 60
- RECONSTRUCT: PCI < 45

DATE OF PAVEMENT STRENGTH SURVEY:	SEPT. 22, 1987
EVALUATED BY:	C. NEW
DATE OF MOST RECENT PAVEMENT CONDITION SURVEY:	SEPT. 1, 2015
EVALUATED BY:	B. BURKLAND
LOCATION:	CIRCLE MONTANA

**MONTANA AVIATION SYSTEM PLAN  
2015 UPDATE - PAVEMENT CONDITION INDEXES**

**CIRCLE TOWN/COUNTY  
(4U6)**

Date: DECEMBER 2015 Prepared For: MONTANA DEPARTMENT OF TRANSPORTATION Prepared By: RPA Robert Peccia & Associates, Inc.

CIRCLE

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# CIRCLE AIRPORT

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9/1/2015



A-2, Surface detail with tie down



A-2, Overview



T-1, Overview



T-1, Surface detail with cracking

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# CIRCLE AIRPORT

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9/1/2015



**R-11**, Overview with cracking



**R-11**, Surface detail with cracking

**CIRCLE AIRPORT**

Branch: 38A

APRON

**A-2**

**Length:** 280 LF **Width:** 125 LF **Area:** 34,860 SF **Last Const. :** 2007 **Family:** ACAM15  
**From:** RWY 12-30 STA 9+00 **To:** RWY 12-30 STA 11+80 **Surface:** AC

**Inspections**

**Samples Surveyed:** 4 **Total Samples:** 7 **Last Inspection Date (RPA)** 9/1/2015 **PCI:** 68

**Sample # 1** **Area:** 4240 SF

Distress Description	Severity	Quantity
WEATHERING	L	1060 SF
LONGITUDINAL/TRANSVERSE CRACKING	L	40 LF
RAVELING	L	114 SF
LONGITUDINAL/TRANSVERSE CRACKING	M	4 LF
DEPRESSION	H	3 SF
RAVELING	M	1 SF

**Sample # 3** **Area:** 4240 SF

Distress Description	Severity	Quantity
WEATHERING	L	1060 SF
LONGITUDINAL/TRANSVERSE CRACKING	L	195 LF
LONGITUDINAL/TRANSVERSE CRACKING	M	50 LF
RAVELING	L	114 SF
LONGITUDINAL/TRANSVERSE CRACKING	H	10 LF
DEPRESSION	L	15 SF

**Sample # 5** **Area:** 5529 SF

Distress Description	Severity	Quantity
WEATHERING	L	1382 SF
LONGITUDINAL/TRANSVERSE CRACKING	L	290 LF
RAVELING	L	140 SF
LONGITUDINAL/TRANSVERSE CRACKING	M	25 LF
LONGITUDINAL/TRANSVERSE CRACKING	H	7 LF
DEPRESSION	L	10 SF
DEPRESSION	H	5 SF

**Sample # 7** **Area:** 5529 SF

Distress Description	Severity	Quantity
WEATHERING	L	1382 SF
LONGITUDINAL/TRANSVERSE CRACKING	L	146 LF
RAVELING	L	140 SF
LONGITUDINAL/TRANSVERSE CRACKING	M	22 LF
DEPRESSION	L	3 SF

**Extrapolated Distress Quantities\***

Distress Description	Severity	Quantity	Density	Deduct
DEPRESSION	H	14 SF	0.04 %	12.00
LONGITUDINAL/TRANSVERSE CRACKING	L	1197 LF	3.43 %	11.15
LONGITUDINAL/TRANSVERSE CRACKING	M	180 LF	0.52 %	8.42
LONGITUDINAL/TRANSVERSE CRACKING	H	30 LF	0.09 %	7.50
RAVELING	L	906 SF	2.60 %	4.67
RAVELING	M	2 SF	0.01 %	4.00
WEATHERING	L	8714 SF	25.00 %	3.26
DEPRESSION	L	50 SF	0.14 %	0.40

\* Multiple deduct values are scaled down from their algebraic sum to keep the model consistent with experimental data.

**Percent of Deduct Values Based on Distress Mechanism**

0.0 % Load 76.0 % Climate/Durability 24.0 % Other

**CIRCLE AIRPORT**

Branch: 38R

**RUNWAY**

**R-11**

**Length:** 4,100 LF    **Width:** 75 LF    **Area:** 307,500 SF    **Last Const. :** 2007    **Family:** ACRML15  
**From:** RWY 12-30 STA 0+00    **To:** RWY 12-30 STA 41+00    **Surface:** AC

**Inspections**

**Samples Surveyed:** 7    **Total Samples:** 67    **Last Inspection Date (RPA)** 9/1/2015    **PCI:** 83

**Sample # 1**    **Distress Description**    **Severity**    **Quantity**    **Area:** 5440 SF

WEATHERING    L    1385 SF  
 LONGITUDINAL/TRANSVERSE CRACKING    L    57 LF  
 RAVELING    L    54 SF

**Sample # 12**    **Distress Description**    **Severity**    **Quantity**    **Area:** 4875 SF

WEATHERING    L    1385 SF  
 LONGITUDINAL/TRANSVERSE CRACKING    L    77 LF  
 LONGITUDINAL/TRANSVERSE CRACKING    M    22 LF  
 RAVELING    L    49 SF

**Sample # 23**    **Distress Description**    **Severity**    **Quantity**    **Area:** 4875 SF

WEATHERING    L    1385 SF  
 LONGITUDINAL/TRANSVERSE CRACKING    L    18 LF  
 RAVELING    L    49 SF

**Sample # 34**    **Distress Description**    **Severity**    **Quantity**    **Area:** 4875 SF

WEATHERING    L    1385 SF  
 LONGITUDINAL/TRANSVERSE CRACKING    L    68 LF  
 RAVELING    L    49 SF

**Sample # 45**    **Distress Description**    **Severity**    **Quantity**    **Area:** 4875 SF

WEATHERING    L    1385 SF  
 LONGITUDINAL/TRANSVERSE CRACKING    L    79 LF  
 RAVELING    L    49 SF  
 DEPRESSION    L    5 SF

**Sample # 56**    **Distress Description**    **Severity**    **Quantity**    **Area:** 4875 SF

WEATHERING    L    1385 SF  
 LONGITUDINAL/TRANSVERSE CRACKING    L    118 LF  
 LONGITUDINAL/TRANSVERSE CRACKING    M    30 LF  
 RAVELING    L    49 SF  
 SWELLING    M    15 SF  
 WEATHERING    L    4 SF  
 PATCHING    M    1 SF

**Sample # 66**    **Distress Description**    **Severity**    **Quantity**    **Area:** 4875 SF

WEATHERING    L    1385 SF  
 LONGITUDINAL/TRANSVERSE CRACKING    L    57 LF  
 LONGITUDINAL/TRANSVERSE CRACKING    M    26 LF  
 RAVELING    L    54 SF  
 PATCHING    L    1 SF

**Extrapolated Distress Quantities\***

Distress Description	Severity	Quantity	Density	Deduct
SWELLING	M	133 SF	0.04 %	10.00
PATCHING	M	9 SF	0.00 %	6.20
LONGITUDINAL/TRANSVERSE CRACKING	L	4202 LF	1.37 %	5.78
LONGITUDINAL/TRANSVERSE CRACKING	M	691 LF	0.22 %	5.51
WEATHERING	L	85974 SF	27.96 %	3.50
RAVELING	L	3129 SF	1.02 %	2.65
PATCHING	L	9 SF	0.00 %	2.00
DEPRESSION	L	44 SF	0.01 %	0.30

\* Multiple deduct values are scaled down from their algebraic sum to keep the model consistent with experimental data.

**Percent of Deduct Values Based on Distress Mechanism**

0.0 % Load    71.0 % Climate/Durability    29.0 % Other



**CIRCLE AIRPORT****FIFTEEN YEAR PROJECTIONS: ESTIMATED AVERAGE ANNUAL COST: \$58,710**

PLAN YEAR: 2016			ESTIMATED COST:			\$102,595	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
R-11	Prev. & Seal Coat	\$2,748	\$86,100			\$88,848	81	86
T-1	Prev. & Seal Coat	\$78	\$812			\$890	76	79
A-2	Prev. & Seal Coat	\$3,096	\$9,761			\$12,857	66	71
PLAN YEAR: 2017			ESTIMATED COST:			\$4,431	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
A-2	Basic Prev.	\$2,327				\$2,327	69	69
T-1	Basic Prev.	\$62				\$62	77	77
R-11	Basic Prev.	\$2,042				\$2,042	84	84
PLAN YEAR: 2018			ESTIMATED COST:			\$6,103	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
A-2	Basic Prev.	\$3,188				\$3,188	66	67
R-11	Basic Prev.	\$2,834				\$2,834	81	81
T-1	Basic Prev.	\$81				\$81	76	76
PLAN YEAR: 2019			ESTIMATED COST:			\$8,336	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
T-1	Basic Prev.	\$100				\$100	75	75
R-11	Basic Prev.	\$4,152				\$4,152	79	80
A-2	Basic Prev.	\$4,084				\$4,084	64	64
PLAN YEAR: 2020			ESTIMATED COST:			\$11,716	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
T-1	Basic Prev.	\$119				\$119	73	73
R-11	Basic Prev.	\$6,559				\$6,559	78	78
A-2	Basic Prev.	\$5,038				\$5,038	62	62
PLAN YEAR: 2021			ESTIMATED COST:			\$127,098	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
T-1	Prev. & Seal Coat	\$140	\$941			\$1,081	72	75
A-2	Prev. & Seal Coat	\$6,062	\$11,315			\$17,377	60	65
R-11	Prev. & Seal Coat	\$8,826	\$99,814			\$108,640	76	80
PLAN YEAR: 2022			ESTIMATED COST:			\$12,034	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
A-2	Basic Prev.	\$5,228				\$5,228	62	63
R-11	Basic Prev.	\$6,682				\$6,682	78	78
T-1	Basic Prev.	\$124				\$124	74	74
PLAN YEAR: 2023			ESTIMATED COST:			\$15,537	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
R-11	Basic Prev.	\$9,089				\$9,089	76	77
T-1	Basic Prev.	\$146				\$146	72	72
A-2	Basic Prev.	\$6,302				\$6,302	60	60
PLAN YEAR: 2024			ESTIMATED COST:			\$19,522	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
R-11	Basic Prev.	\$11,450				\$11,450	75	75
T-1	Basic Prev.	\$170				\$170	71	71
A-2	Basic Prev.	\$7,902				\$7,902	58	58
PLAN YEAR: 2025			ESTIMATED COST:			\$23,777	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
R-11	Basic Prev.	\$13,836				\$13,836	74	74
A-2	Basic Prev.	\$9,729				\$9,729	56	56
T-1	Basic Prev.	\$212				\$212	69	70
PLAN YEAR: 2026			ESTIMATED COST:			\$158,296	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
R-11	Prev. & Seal Coat	\$16,332	\$115,711			\$132,044	73	75
T-1	Prev. & Seal Coat	\$286	\$1,091			\$1,378	68	71
A-2	Prev. & Seal Coat	\$11,757	\$13,118			\$24,874	53	59
PLAN YEAR: 2027			ESTIMATED COST:			\$24,674	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
A-2	Basic Prev.	\$10,090				\$10,090	56	56
T-1	Basic Prev.	\$214				\$214	70	70
R-11	Basic Prev.	\$14,370				\$14,370	74	74

PLAN YEAR: 2028		ESTIMATED COST:				\$29,548	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
T-1	Basic Prev.	\$291				\$291	68	68
R-11	Basic Prev.	\$17,030				\$17,030	73	73
A-2	Basic Prev.	\$12,227				\$12,227	54	54
PLAN YEAR: 2029		ESTIMATED COST:				\$34,912	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
T-1	Basic Prev.	\$384				\$384	66	66
R-11	Basic Prev.	\$19,923				\$19,923	71	72
A-2	Basic Prev.	\$14,605				\$14,605	51	51
PLAN YEAR: 2030		ESTIMATED COST:				\$302,071	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
R-11	Basic Prev.	\$23,217				\$23,217	70	70
A-2	Reconstruct				\$278,356	\$278,356	48	100
T-1	Basic Prev.	\$498				\$498	64	64