CIRCLE AIRPORT

Branch: 38A **APRON** **A-1**

Length: 180 LF **Width:** 150 LF **Area:** 27,000 SF **Last Const. :** 2007 **Family:** 9ACAM

From: RWY 12-30 STA 10+00 **To:** RWY 12-30 STA 11+80 **Surface:** AC

Inspections

Samples Surveyed: 3 **Total Samples:** 6 **Last Inspection Date:** 6/19/2009 **PCI: 65**

Sample # 1 **Area:** 4500 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	281 LF
WEATHERING/RAVELING	L	180 SF
LONGITUDINAL/TRANSVERSE CRACKING	M	6 LF
OIL SPILLAGE	N	11 SF
DEPRESSION	H	7 SF

Sample # 4 **Area:** 4500 SF

Distress Description	Severity	Quantity
OIL SPILLAGE	N	214 SF
LONGITUDINAL/TRANSVERSE CRACKING	L	62 LF
DEPRESSION	L	135 SF
WEATHERING/RAVELING	L	135 SF
PATCHING	L	64 SF
WEATHERING/RAVELING	M	4 SF

Sample # 5 **Area:** 4500 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	76 LF
WEATHERING/RAVELING	L	200 SF
OIL SPILLAGE	N	46 SF
DEPRESSION	L	16 SF
WEATHERING/RAVELING	M	9 SF
DEPRESSION	H	3 SF

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
DEPRESSION	H	20 SF	0.07 %	12.00
LONGITUDINAL/TRANSVERSE CRACKING	L	838 LF	3.10 %	10.31
DEPRESSION	L	302 SF	1.12 %	7.30
WEATHERING/RAVELING	L	1030 SF	3.81 %	5.84
OIL SPILLAGE	N	542 SF	2.01 %	5.45
WEATHERING/RAVELING	M	26 SF	0.10 %	4.00
LONGITUDINAL/TRANSVERSE CRACKING	M	12 LF	0.04 %	4.00
PATCHING	L	128 SF	0.47 %	2.41

* 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** 52.0 **% Climate/Durability** 48.0 **% Other**

CIRCLE AIRPORT

Branch: 38A **APRON** **A-2**

Length: 280 LF **Width:** 125 LF **Area:** 34,860 SF **Last Const. :** 2007 **Family:** 9ACAM

From: RWY 12-30 STA 9+00 **To:** RWY 12-30 STA 11+80 **Surface:** AC

Inspections

Samples Surveyed: 3 **Total Samples:** 7 **Last Inspection Date:** 6/19/2009 **PCI: 66**

Sample # 1 **Area:** 4240 SF

Distress Description	Severity	Quantity
WEATHERING/RAVELING	L	200 SF
LONGITUDINAL/TRANSVERSE CRACKING	L	27 LF
DEPRESSION	L	15 SF
ALLIGATOR CRACKING	L	8 SF
DEPRESSION	H	3 SF
WEATHERING/RAVELING	M	3 SF
WEATHERING/RAVELING	H	2 SF

Sample # 6 **Area:** 5481 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	136 LF
WEATHERING/RAVELING	L	250 SF
LONGITUDINAL/TRANSVERSE CRACKING	M	3 LF
DEPRESSION	H	8 SF
OIL SPILLAGE	N	5 SF
DEPRESSION	L	4 SF
WEATHERING/RAVELING	M	2 SF

Sample # 7 **Area:** 5481 SF

Distress Description	Severity	Quantity
WEATHERING/RAVELING	L	275 SF
LONGITUDINAL/TRANSVERSE CRACKING	L	74 LF
DEPRESSION	L	51 SF
LONGITUDINAL/TRANSVERSE CRACKING	M	4 LF
WEATHERING/RAVELING	M	11 SF
WEATHERING/RAVELING	H	1 SF

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
DEPRESSION	H	25 SF	0.07 %	12.00
ALLIGATOR CRACKING	L	18 SF	0.05 %	7.00
WEATHERING/RAVELING	L	1662 SF	4.77 %	6.63
LONGITUDINAL/TRANSVERSE CRACKING	L	544 LF	1.56 %	6.26
WEATHERING/RAVELING	H	7 SF	0.02 %	6.00
WEATHERING/RAVELING	M	37 SF	0.11 %	4.04
LONGITUDINAL/TRANSVERSE CRACKING	M	16 LF	0.05 %	4.00
DEPRESSION	L	161 SF	0.46 %	2.98
OIL SPILLAGE	N	11 SF	0.03 %	2.00

* 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

14.0 **% Load** 53.0 **% Climate/Durability** 33.0 **% Other**

CIRCLE AIRPORT

Branch: 38R **RUNWAY** **R-11**

Length: 4,100 LF **Width:** 75 LF **Area:** 307,500 SF **Last Const. :** 2007 **Family:** 9ACRML
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:** 6/19/2009 **PCI: 90**

Sample # 2 **Area:** 5440 SF

Distress Description	Severity	Quantity
WEATHERING/RAVELING	L	27 SF
PATCHING	L	4 SF
WEATHERING/RAVELING	H	2 SF

Sample # 12 **Area:** 4875 SF

Distress Description	Severity	Quantity
WEATHERING/RAVELING	L	49 SF
WEATHERING/RAVELING	M	9 SF

Sample # 22 **Area:** 4875 SF

Distress Description	Severity	Quantity
WEATHERING/RAVELING	L	49 SF
WEATHERING/RAVELING	M	49 SF

Sample # 32 **Area:** 4875 SF

Distress Description	Severity	Quantity
WEATHERING/RAVELING	L	49 SF
WEATHERING/RAVELING	L	25 SF

Sample # 42 **Area:** 4875 SF

Distress Description	Severity	Quantity
WEATHERING/RAVELING	M	60 SF
WEATHERING/RAVELING	L	49 SF

Sample # 52 **Area:** 4875 SF

Distress Description	Severity	Quantity
WEATHERING/RAVELING	M	80 SF
WEATHERING/RAVELING	L	49 SF

Sample # 62 **Area:** 4875 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	17 LF
WEATHERING/RAVELING	L	49 SF
WEATHERING/RAVELING	M	20 SF
PATCHING	L	1 SF

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
WEATHERING/RAVELING	M	1932 SF	0.63 %	6.65
WEATHERING/RAVELING	H	18 SF	0.01 %	6.00
WEATHERING/RAVELING	L	3067 SF	1.00 %	2.61
LONGITUDINAL/TRANSVERSE CRACKING	L	151 LF	0.05 %	2.50
PATCHING	L	44 SF	0.01 %	2.00

* 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** 100.0 **% Climate/Durability** 0.0 **% Other**

CIRCLE AIRPORT

Branch: 38T **TAXIWAY** **T-1**

Length: 145 LF **Width:** 20 LF **Area:** 2,900 SF **Last Const. :** 2007 **Family:** 9ACRML

From: NORTH WEST 20' OF T-WAY **To:** **Surface:** AC

Inspections

Samples Surveyed: 1 **Total Samples:** 1 **Last Inspection Date:** 6/19/2009 **PCI: 84**

Sample # 1 **Area:** 4400 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	21 LF
DEPRESSION	L	56 SF
WEATHERING/RAVELING	L	29 SF
PATCHING	L	1 SF

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
DEPRESSION	L	37 SF	1.27 %	8.10
LONGITUDINAL/TRANSVERSE CRACKING	L	14 LF	0.48 %	4.02
WEATHERING/RAVELING	L	19 SF	0.66 %	2.05
PATCHING	L	1 SF	0.02 %	2.00

* 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** 50.0 **% Climate/Durability** 50.0 **% Other**

CIRCLE AIRPORT

Branch: 38T **TAXIWAY** **T-2**

Length: 145 LF **Width:** 20 LF **Area:** 2,900 SF **Last Const. :** 2007 **Family:** 9ACRML
From: SOUTHEAST 20' OF T-WAY **To:** **Surface:** AC

Inspections

Samples Surveyed: 1 **Total Samples:** 1 **Last Inspection Date:** 6/19/2009 **PCI: 83**

Sample # 1 **Area:** 2800 SF

Distress Description	Severity	Quantity
WEATHERING/RAVELING	M	75 SF
WEATHERING/RAVELING	L	29 SF
LONGITUDINAL/TRANSVERSE CRACKING	L	3 LF

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
WEATHERING/RAVELING	M	78 SF	2.68 %	11.67
WEATHERING/RAVELING	L	30 SF	1.04 %	2.67
LONGITUDINAL/TRANSVERSE CRACKING	L	3 LF	0.11 %	2.49

* 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** 100.0 **% Climate/Durability** 0.0 **% Other**

CIRCLE AIRPORT

FIRST YEAR LOCAL:2010 LOCAL REPAIR COST: $13,457

Section	Distress Description	Severity	Quantity	Work Description	Quantity	Cost	Policy
A-1	L & T CR	M	12 LF	Crack Sealing - AC	12 LF	$18	PREV.
A-1	DEPRESSION	H	20 SF	Patching - AC Deep	42 SF	$1,554	PREV.
A-1	OIL SPILLAGE	N	542 SF	Patching - AC Shallow	640 SF	$9,595	PREV.
A-2	L & T CR	M	17 LF	Crack Sealing - AC	17 LF	$24	PREV.
A-2	OIL SPILLAGE	N	12 SF	Patching - AC Shallow	30 SF	$436	PREV.
A-2	DEPRESSION	H	26 SF	Patching - AC Deep	50 SF	$1,829	PREV.

FIFTEEN YEAR PROJECTIONS: ESTIMATED AVERAGE ANNUAL COST: $54,479

PLAN YEAR: 2010 ESTIMATED COST: $13,457

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-1	Basic Prev.	$11,167				$11,167	63	63
A-2	Basic Prev.	$2,290				$2,290	64	64

PLAN YEAR: 2011 ESTIMATED COST: $6,177

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-1	Basic Prev.	$1,444				$1,444	61	61
A-2	Basic Prev.	$1,818				$1,818	62	62
R-11	Basic Prev.	$2,802				$2,802	84	84
T-1	Basic Prev.	$53				$53	79	79
T-2	Basic Prev.	$59				$59	78	78

PLAN YEAR: 2012 ESTIMATED COST: $8,189

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-1	Basic Prev.	$1,629				$1,629	58	58
A-2	Basic Prev.	$2,004				$2,004	59	59
R-11	Basic Prev.	$4,408				$4,408	81	81
T-1	Basic Prev.	$71				$71	77	77
T-2	Basic Prev.	$77				$77	76	76

PLAN YEAR: 2013 ESTIMATED COST: $10,547

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-1	Basic Prev.	$1,847				$1,847	55	55
A-2	Basic Prev.	$2,283				$2,283	56	56
R-11	Basic Prev.	$6,236				$6,236	78	78
T-1	Basic Prev.	$88				$88	74	74
T-2	Basic Prev.	$92				$92	74	74

PLAN YEAR: 2014 ESTIMATED COST: $12,986

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-1	Basic Prev.	$2,073				$2,073	52	52
A-2	Basic Prev.	$2,570				$2,570	53	53
R-11	Basic Prev.	$8,136				$8,136	76	76
T-1	Basic Prev.	$102				$102	72	72
T-2	Basic Prev.	$106				$106	72	72

PLAN YEAR: 2015 ESTIMATED COST: $69,717

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-1	Reconstruct			$56,835		$56,835	49	100
A-2	Basic Prev.	$2,868				$2,868	50	50
R-11	Basic Prev.	$9,782				$9,782	74	74
T-1	Basic Prev.	$114				$114	71	71
T-2	Basic Prev.	$118				$118	70	70

PLAN YEAR: 2016 ESTIMATED COST: $87,833

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-2	Reconstruct			$76,368		$76,368	47	100
R-11	Basic Prev.	$11,219				$11,219	72	72
T-1	Basic Prev.	$122				$122	69	69
T-2	Basic Prev.	$124				$124	69	69

PLAN YEAR: 2017 ESTIMATED COST: $514,011

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
R-11	Prev. & Thin AC	$12,473	$492,001			$504,474	70	81
T-1	Prev. & Thin AC	$128	$4,640			$4,768	68	77
T-2	Prev. & Thin AC	$129	$4,640			$4,769	67	76

CIRCLE AIRPORT

PLAN YEAR: 2018 ESTIMATED COST: $6,510

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-1	Basic Prev.	$102				$102	88	88
R-11	Basic Prev.	$6,228				$6,228	78	78
T-1	Basic Prev.	$88				$88	74	74
T-2	Basic Prev.	$92				$92	74	74

PLAN YEAR: 2019 ESTIMATED COST: $8,729

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-1	Basic Prev.	$262				$262	84	84
A-2	Basic Prev.	$132				$132	88	88
R-11	Basic Prev.	$8,128				$8,128	76	76
T-1	Basic Prev.	$102				$102	72	72
T-2	Basic Prev.	$106				$106	72	72

PLAN YEAR: 2020 ESTIMATED COST: $16,164

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-1	Prev. & Fog Seal	$412	$5,400			$5,812	81	88
A-2	Basic Prev.	$338				$338	84	84
R-11	Basic Prev.	$9,782				$9,782	74	74
T-1	Basic Prev.	$114				$114	71	71
T-2	Basic Prev.	$118				$118	70	70

PLAN YEAR: 2021 ESTIMATED COST: $19,232

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-1	Basic Prev.	$262				$262	84	84
A-2	Prev. & Fog Seal	$532	$6,972			$7,504	81	88
R-11	Basic Prev.	$11,219				$11,219	72	72
T-1	Basic Prev.	$122				$122	69	69
T-2	Basic Prev.	$124				$124	69	69

PLAN YEAR: 2022 ESTIMATED COST: $13,480

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-1	Basic Prev.	$412				$412	81	81
A-2	Basic Prev.	$338				$338	84	84
R-11	Basic Prev.	$12,473				$12,473	70	70
T-1	Basic Prev.	$128				$128	68	68
T-2	Basic Prev.	$129				$129	67	67

PLAN YEAR: 2023 ESTIMATED COST: $14,564

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-1	Basic Prev.	$610				$610	78	78
A-2	Basic Prev.	$532				$532	81	81
R-11	Basic Prev.	$13,155				$13,155	69	69
T-1	Basic Prev.	$133				$133	67	67
T-2	Basic Prev.	$134				$134	66	66

PLAN YEAR: 2024 ESTIMATED COST: $15,587

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-1	Basic Prev.	$813				$813	74	74
A-2	Basic Prev.	$786				$786	78	78
R-11	Basic Prev.	$13,710				$13,710	67	67
T-1	Basic Prev.	$138				$138	65	65
T-2	Basic Prev.	$140				$140	65	65

CIRCLE AIRPORT

6/19/2009

A-1, overview

A-1, surface detail

A-2, surface detail

A-2, overview

CIRCLE AIRPORT

6/19/2009

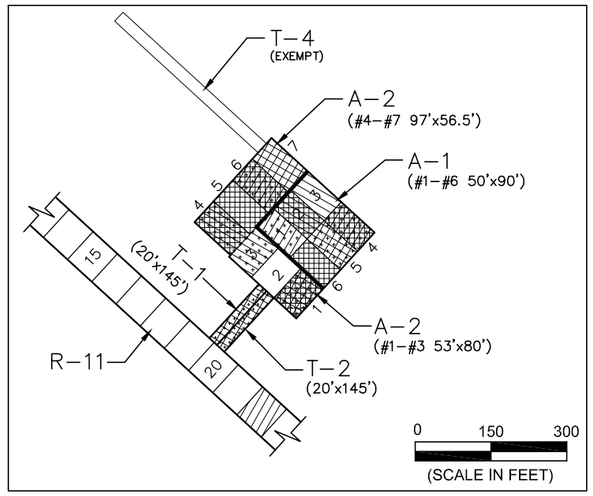
A-2, overview

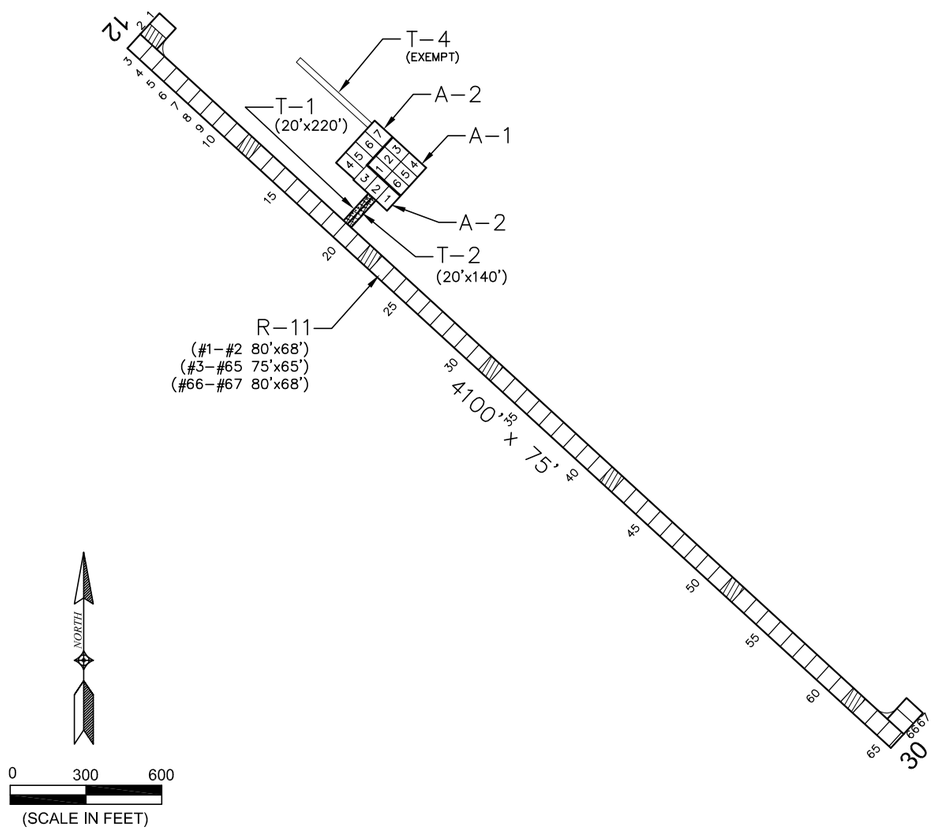
T-1 & T-2, overview

R-11, surface detail with pavement void

R-11, overview with aggregate segregation

CIRCLE





PAVEMENT STRENGTH SURVEY/PAVEMENT CONDITION SURVEY

CIRCLE

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

REMARKS:

1. ADAP–01, 1984, EXTEND, WIDEN AND OVERLAY RUNWAY.
2. AIP–01, 1989, ALL PAVEMENTS OVERLAYED WITH 1" P–402.
3. 2001, NON–FEDERAL ⅜" CHIP SEAL WITH CRS–2P OIL.
4. AIP–004–2007, RECONSTRUCT RUNWAY 12–30 AND TAXIWAYS; 2" MILL AND REPLACE ON APRONS.

LEGEND

- 1997 SURVEY AREA
- 2000 SURVEY AREA
- 2003 SURVEY AREA
- 2006 SURVEY AREA (NOT SURVEYED)
- 2009 SURVEY AREA

DATE OF PAVEMENT STRENGTH SURVEY:	SEPT. 22, 1987
EVALUATED BY:	C. NEW
DATE OF MOST RECENT PAVEMENT CONDITION SURVEY:	JUNE 17, 2009
EVALUATED BY:	B. BURKLAND

MONTANA AVIATION SYSTEM PLAN
2009 UPDATE - PAVEMENT CONDITION INDEXES

CIRCLE TOWN/COUNTY

PREPARED FOR: MONTANA AERONAUTICS DIVISION

CIRCLE
MONTANA

DATE: NOV. 2009

PREPARED BY: RPA