

TOWNSEND AIRPORT

Branch: 55A

APRON

A-1

Length: 350 LF Width: 300 LF

Area: 105,000 SF

Last Const: 2002

Family: ACAM

From: ENTIRE APRON

To:

Surface: AAC

Inspections

Samples Surveyed: 5

Total Samples: 21

Last Inspection Date: 8/27/2012

PCI: 76

Sample # 3

Distress Description

ALLIGATOR CRACKING
LONGITUDINAL/TRANSVERSE CRACKING

Severity

L
L

Quantity

44 SF
454 LF

Area: 5,000 SF

Sample # 7

Distress Description

LONGITUDINAL/TRANSVERSE CRACKING
LONGITUDINAL/TRANSVERSE CRACKING

Severity

L
M

Quantity

419 LF
4 LF

Area: 5,000 SF

Sample # 11

Distress Description

LONGITUDINAL/TRANSVERSE CRACKING

Severity

L

Quantity

496 LF

Area: 5,000 SF

Sample # 15

Distress Description

LONGITUDINAL/TRANSVERSE CRACKING

Severity

L

Quantity

454 LF

Area: 5,000 SF

Sample # 19

Distress Description

LONGITUDINAL/TRANSVERSE CRACKING

Severity

L

Quantity

458 LF

Area: 5,000 SF

Extrapolated Distress Quantities*

Distress Description

ALLIGATOR CRACKING
LONGITUDINAL/TRANSVERSE CRACKING
LONGITUDINAL/TRANSVERSE CRACKING

Severity

L
L
M

Quantity

185 SF
9,580 LF
17 LF

Density

0.18%
9.12%
0.02%

Deduct

8.07
22.05
4.00

* 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

24.0 % Load

76.0 % Climate/Durability

0.0 % Other

TOWNSEND AIRPORT

Branch: 55R RUNWAY

R-1

Length: 4,000 LF Width: 60 LF Area: 240,000 SF Last Const: 2002 Family: ACRML
 From: 0+00 R/W 16-34 To: 40+00 R/W 16/34 Surface: AAC

Inspections

Samples Surveyed: 7 Total Samples: 50 Last Inspection Date: 8/27/2012 **PCI: 81**

Sample # 1	Distress Description LONGITUDINAL/TRANSVERSE CRACKING	Severity L	Quantity 294 LF	Area: 4,800 SF
Sample # 8	Distress Description LONGITUDINAL/TRANSVERSE CRACKING LONGITUDINAL/TRANSVERSE CRACKING	Severity L M	Quantity 306 LF 7 LF	Area: 4,800 SF
Sample # 15	Distress Description LONGITUDINAL/TRANSVERSE CRACKING LONGITUDINAL/TRANSVERSE CRACKING	Severity L M	Quantity 288 LF 30 LF	Area: 4,800 SF
Sample # 22	Distress Description LONGITUDINAL/TRANSVERSE CRACKING LONGITUDINAL/TRANSVERSE CRACKING	Severity L M	Quantity 260 LF 4 LF	Area: 4,800 SF
Sample # 29	Distress Description LONGITUDINAL/TRANSVERSE CRACKING LONGITUDINAL/TRANSVERSE CRACKING	Severity L M	Quantity 252 LF 6 LF	Area: 4,800 SF
Sample # 36	Distress Description DEPRESSION LONGITUDINAL/TRANSVERSE CRACKING LONGITUDINAL/TRANSVERSE CRACKING	Severity L L M	Quantity 1 SF 270 LF 8 LF	Area: 4,800 SF
Sample # 43	Distress Description LONGITUDINAL/TRANSVERSE CRACKING	Severity L	Quantity 261 LF	Area: 4,800 SF

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
DEPRESSION	L	7 SF	0.00%	0.30
LONGITUDINAL/TRANSVERSE CRACKING	L	13,793 LF	5.75%	16.31
LONGITUDINAL/TRANSVERSE CRACKING	M	389 LF	0.16%	4.57

* 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 99.0 % Climate/Durability 1.0 % Other

TOWNSEND AIRPORT

Branch: 55T TAXIWAY

T-1

Length: 1,324 LF Width: 26 LF Area: 34,700 SF Last Const: 2002 Family: ACRML
 From: APRON TO R/W 16-34 To: AND R/W TURNAROUNDS Surface: AAC

Inspections

Samples Surveyed: 4 Total Samples: 11 Last Inspection Date: 8/27/2012 **PCI: 70**

Sample # 2 Area: 4,800 SF

Distress Description	Severity	Quantity
BLOCK CRACKING	L	400 SF
LONGITUDINAL/TRANSVERSE CRACKING	L	214 LF
LONGITUDINAL/TRANSVERSE CRACKING	M	80 LF

Sample # 5 Area: 5,000 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	320 LF
LONGITUDINAL/TRANSVERSE CRACKING	M	4 LF
RAVELING	L	2 SF

Sample # 8 Area: 5,000 SF

Distress Description	Severity	Quantity
ALLIGATOR CRACKING	L	782 SF
LONGITUDINAL/TRANSVERSE CRACKING	L	212 LF
LONGITUDINAL/TRANSVERSE CRACKING	M	10 LF
PATCHING	L	425 SF

Sample # 11 Area: 5,000 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	86 LF
PATCHING	L	30 SF

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
ALLIGATOR CRACKING	L	1,370 SF	3.95%	33.81
BLOCK CRACKING	L	701 SF	2.02%	10.03
LONGITUDINAL/TRANSVERSE CRACKING	L	1,458 LF	4.20%	12.99
LONGITUDINAL/TRANSVERSE CRACKING	M	165 LF	0.47%	8.10
PATCHING	L	797 SF	2.30%	6.09
RAVELING	L	4 SF	0.01%	1.00

* 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

47.0 % Load 53.0 % Climate/Durability 0.0 % Other

TOWNSEND AIRPORT

Branch: 55T TAXIWAY

T-2

Length: 310 LF Width: 25 LF Area: 7,750 SF Last Const: 2002 Family: ACRML
 From: T-1 To: HANGARS Surface: AC

Inspections

Samples Surveyed: 2 Total Samples: 2 Last Inspection Date: 8/27/2012 **PCI: 91**

Sample # 1				Area: 3,875 SF
	Distress Description	Severity	Quantity	
	LONGITUDINAL/TRANSVERSE CRACKING	L	57 LF	
	PATCHING	L	77 SF	
	RAVELING	L	36 SF	

Sample # 2				Area: 3,875 SF
	Distress Description	Severity	Quantity	
	LONGITUDINAL/TRANSVERSE CRACKING	L	34 LF	

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
LONGITUDINAL/TRANSVERSE CRACKING	L	91 LF	1.17%	5.33
PATCHING	L	77 SF	0.99%	3.54
RAVELING	L	36 SF	0.46%	1.71

* 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

TOWNSEND AIRPORT

FIRST YEAR LOCAL: 2013 **LOCAL REPAIR COST: \$1,427**

Section	Distress Description	Severity	Quantity	Work Description	Quantity	Cost	Policy
A-1	L & T CR	M	17 LF	Crack Sealing - AC	17 LF	\$42	PREV.
R-1	L & T CR	M	389 LF	Crack Sealing - AC	389 LF	\$973	PREV.
T-1	L & T CR	M	165 LF	Crack Sealing - AC	165 LF	\$412	PREV.

FIFTEEN YEAR PROJECTIONS **ESTIMATED AVERAGE ANNUAL COST: \$48,871**

Plan Year: 2013		Estimated Cost: \$166,521				PCI		
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After
A-1	Global MR + Preventive	\$3,385	\$26,250	\$0	\$0	\$29,635	74	80
R-1	Global MR + Preventive	\$2,936	\$60,001	\$0	\$0	\$62,937	79	85
T-1	Major Above Critical	\$0	\$0	\$0	\$72,002	\$72,002	70	100
T-2	Global MR + Preventive	\$9	\$1,938	\$0	\$0	\$1,947	89	97

Plan Year: 2014		Estimated Cost: \$4,189				PCI		
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After
A-1	Preventive	\$2,276	\$0	\$0	\$0	\$2,276	77	77
R-1	Preventive	\$1,913	\$0	\$0	\$0	\$1,913	82	82

Plan Year: 2015		Estimated Cost: \$6,351				PCI		
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After
A-1	Preventive	\$3,471	\$0	\$0	\$0	\$3,471	75	75
R-1	Preventive	\$2,872	\$0	\$0	\$0	\$2,872	80	80
T-2	Preventive	\$9	\$0	\$0	\$0	\$9	89	89

Plan Year: 2016		Estimated Cost: \$10,123				PCI		
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After
A-1	Preventive	\$4,668	\$0	\$0	\$0	\$4,668	72	72
R-1	Preventive	\$5,338	\$0	\$0	\$0	\$5,338	77	78
T-1	Preventive	\$81	\$0	\$0	\$0	\$81	88	88
T-2	Preventive	\$37	\$0	\$0	\$0	\$37	86	86

Plan Year: 2017		Estimated Cost: \$13,749				PCI		
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After
A-1	Preventive	\$5,862	\$0	\$0	\$0	\$5,862	70	70
R-1	Preventive	\$7,616	\$0	\$0	\$0	\$7,616	75	76
T-1	Preventive	\$207	\$0	\$0	\$0	\$207	85	85
T-2	Preventive	\$64	\$0	\$0	\$0	\$64	83	83

Plan Year: 2018		Estimated Cost: \$120,866				PCI		
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After
A-1	Global MR + Preventive	\$8,509	\$30,431	\$0	\$0	\$38,940	68	73
R-1	Global MR + Preventive	\$9,706	\$69,557	\$0	\$0	\$79,263	74	78
T-1	Preventive	\$329	\$0	\$0	\$0	\$329	82	82
T-2	Global MR + Preventive	\$89	\$2,246	\$0	\$0	\$2,335	80	86

Plan Year: 2019		Estimated Cost: \$14,579				PCI		
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After
A-1	Preventive	\$6,098	\$0	\$0	\$0	\$6,098	70	70
R-1	Preventive	\$7,886	\$0	\$0	\$0	\$7,886	76	76
T-1	Preventive	\$530	\$0	\$0	\$0	\$530	79	79
T-2	Preventive	\$65	\$0	\$0	\$0	\$65	83	83

Plan Year: 2020		Estimated Cost: \$19,903				PCI		
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After
A-1	Preventive	\$8,756	\$0	\$0	\$0	\$8,756	68	68
R-1	Preventive	\$10,130	\$0	\$0	\$0	\$10,130	74	74
T-1	Preventive	\$925	\$0	\$0	\$0	\$925	77	77
T-2	Preventive	\$92	\$0	\$0	\$0	\$92	80	80

Plan Year: 2021		Estimated Cost: \$25,319				PCI		
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After
A-1	Preventive	\$11,679	\$0	\$0	\$0	\$11,679	66	66
R-1	Preventive	\$12,174	\$0	\$0	\$0	\$12,174	72	73
T-1	Preventive	\$1,289	\$0	\$0	\$0	\$1,289	75	75
T-2	Preventive	\$178	\$0	\$0	\$0	\$178	78	78

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Plan Year: 2022		Estimated Cost: \$30,561				PCI		
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After
A-1	Preventive	\$14,632	\$0	\$0	\$0	\$14,632	64	64
R-1	Preventive	\$14,040	\$0	\$0	\$0	\$14,040	71	71
T-1	Preventive	\$1,623	\$0	\$0	\$0	\$1,623	74	74
T-2	Preventive	\$266	\$0	\$0	\$0	\$266	76	76

Plan Year: 2023		Estimated Cost: \$154,200				PCI		
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After
A-1	Global MR + Preventive	\$17,668	\$35,278	\$0	\$0	\$52,946	62	67
R-1	Global MR + Preventive	\$15,741	\$80,636	\$0	\$0	\$96,376	70	73
T-1	Preventive	\$1,927	\$0	\$0	\$0	\$1,927	72	72
T-2	Global MR + Preventive	\$347	\$2,604	\$0	\$0	\$2,950	74	78

Plan Year: 2024		Estimated Cost: \$32,472				PCI		
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After
A-1	Preventive	\$15,231	\$0	\$0	\$0	\$15,231	65	65
R-1	Preventive	\$14,762	\$0	\$0	\$0	\$14,762	71	71
T-1	Preventive	\$2,204	\$0	\$0	\$0	\$2,204	71	71
T-2	Preventive	\$275	\$0	\$0	\$0	\$275	76	76

Plan Year: 2025		Estimated Cost: \$37,838				PCI		
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After
A-1	Preventive	\$18,443	\$0	\$0	\$0	\$18,443	63	63
R-1	Preventive	\$16,575	\$0	\$0	\$0	\$16,575	70	70
T-1	Preventive	\$2,458	\$0	\$0	\$0	\$2,458	70	70
T-2	Preventive	\$361	\$0	\$0	\$0	\$361	74	74

Plan Year: 2026		Estimated Cost: \$44,300				PCI		
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After
A-1	Preventive	\$21,743	\$0	\$0	\$0	\$21,743	61	61
R-1	Preventive	\$19,207	\$0	\$0	\$0	\$19,207	70	70
T-1	Preventive	\$2,910	\$0	\$0	\$0	\$2,910	69	69
T-2	Preventive	\$440	\$0	\$0	\$0	\$440	73	73

Plan Year: 2027		Estimated Cost: \$52,094				PCI		
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After
A-1	Preventive	\$25,826	\$0	\$0	\$0	\$25,826	59	59
R-1	Preventive	\$22,397	\$0	\$0	\$0	\$22,397	69	69
T-1	Preventive	\$3,359	\$0	\$0	\$0	\$3,359	69	69
T-2	Preventive	\$512	\$0	\$0	\$0	\$512	72	72

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8/27/2012



A-1, Surface detail with cracking



A-1, Surface detail with cracking 2



R-1, Overview



R-1, Surface detail with crack

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R-1, Surface detail with crack 2



R-1, Surface detail with raveling



R-1, Surface detail with raveling 2



T-1, Surface detail with crack

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T-1, Surface detail with cracking



T-1, Surface detail with patch

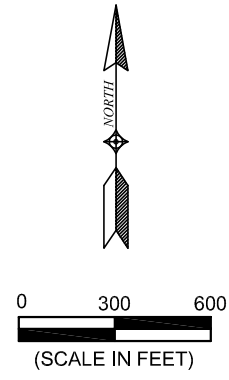
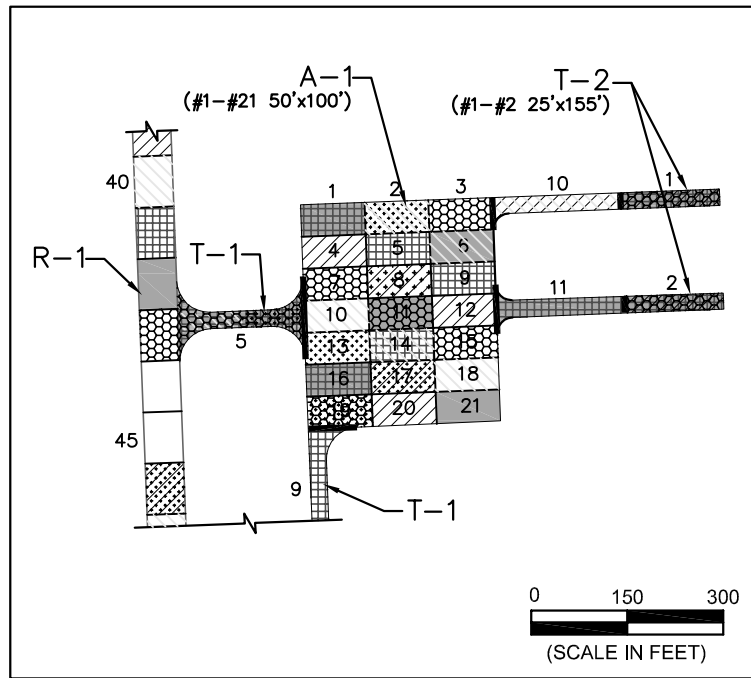
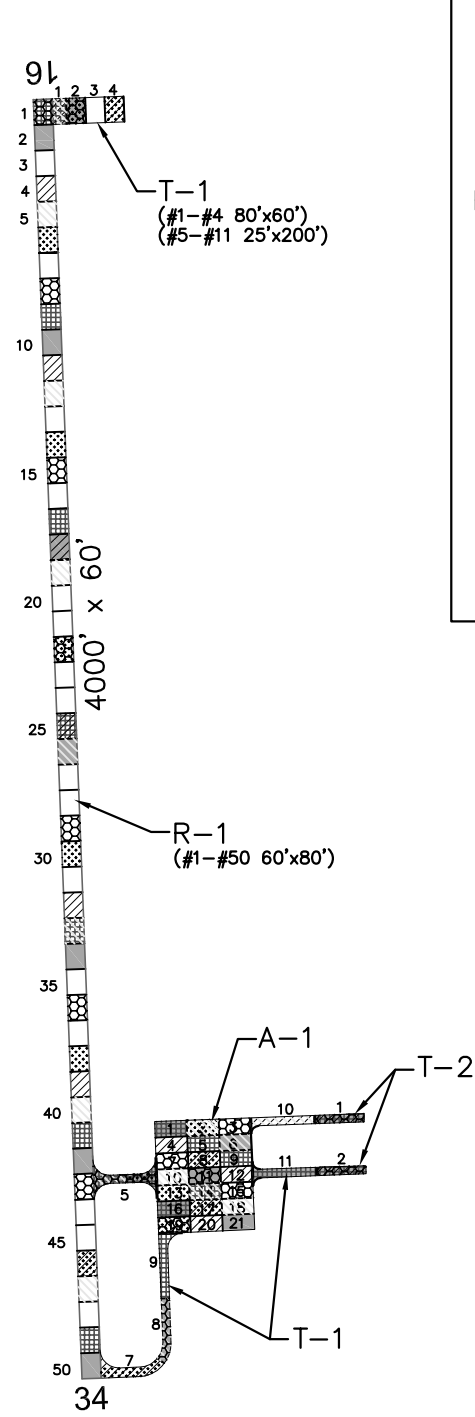


T-2, Overview



T-2, Surface detail with patch

TOWNSEND



PAVEMENT STRENGTH SURVEY/PAVEMENT CONDITION SURVEY

TOWNSEND

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.	
RUNWAYS										
R-1			10" P-152	4" P-208	3" P-401	2"P-401,P-609	12,500			1 2 3 4
TAXIWAYS										
T-1			10" P-152	4" P-208	3" P-401	2"P-401,P-609	12,500			1 2 3 4
T-2			P-152	12" P-208	4" P-401		12,500			3 4
APRONS										
A-1			10" P-152	4" P-208	3" P-401	2"P-401,P-609	12,500			1 2 3 4

REMARKS:

- 1 AIP-003, AUGUST 1992, NEW CONSTRUCTION OF ALL PAVEMENTS, 0.25" P-609 COMPLETED IN SEPT. 1993.
- 2 NON-AIP, 1996, CRACK SEAL, FOG SEAL, AND REMARK ALL PAVEMENTS.
- 3 AIP-004, 2002, CRACK SEAL AND OVERLAY EXISTING RUNWAY, TAXIWAYS (T-1), AND APRON; CONSTRUCT HANGAR ACCESS TAXIWAY EXTENSIONS (T-2).
- 4 AIP-007, 2007, CRACK SEAL, FOG SEAL, AND REMARK ALL PAVEMENTS.

LEGEND

- 1997 SURVEY AREA
- 2000 SURVEY AREA
- 2003 SURVEY AREA
- 2006 SURVEY AREA
- 2009 SURVEY AREA
- 2012 SURVEY AREA

DATE OF PAVEMENT STRENGTH SURVEY:	
EVALUATED BY:	
DATE OF MOST RECENT PAVEMENT CONDITION SURVEY:	AUG. 27, 2012
EVALUATED BY:	S. BROWN

**MONTANA AVIATION SYSTEM PLAN
2012 UPDATE - PAVEMENT CONDITION INDEXES**

TOWNSEND AIRPORT

PREPARED FOR: **TOWNSEND MONTANA**

PREPARED BY: **SE**
Engineering Planning Consulting

DATE: DEC. 2012