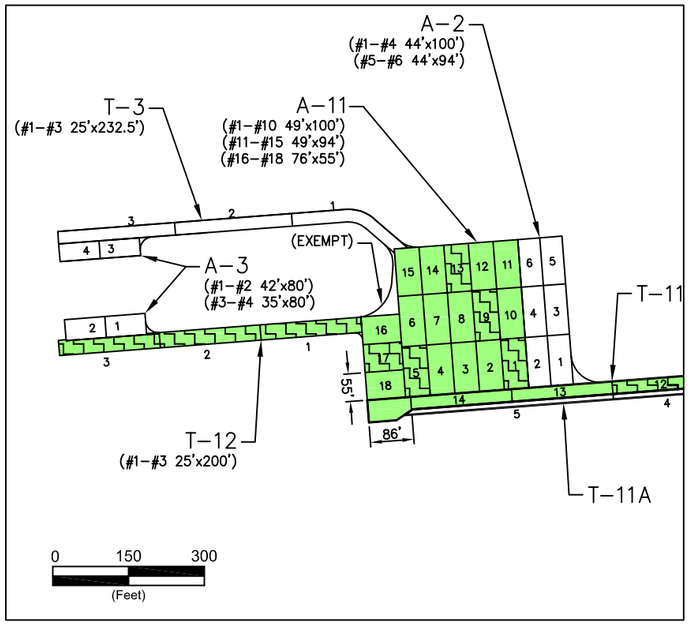
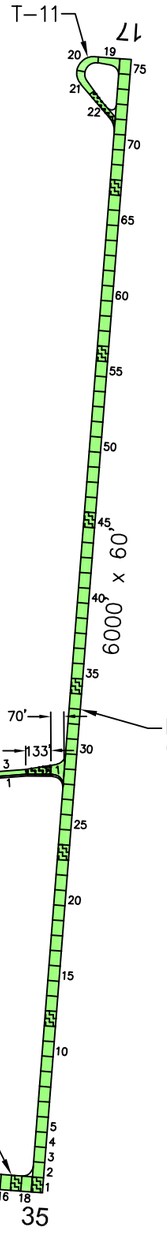
TWIN BRIDGES





PAVEMENT STRENGTH SURVEY/PAVEMENT CONDITION SURVEY

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	CBR=4		11" P–207	6" P–209	4" P–401		60,000	78,000	99,900	3
TAXIWAYS										
T–3	CBR=4		13" P–207	4" P–209	3" P–401		12,500	30,000		4
T–11	CBR=4		11" P–207	6" P–209	4" P–401		60,000	78,000	99,900	3
T–11A	CBR=4		11" P–154	6" P–209	4" P–401		60,000	78,000	99,900	4
T–12	CBR=4		13" P–207	4" P–209	3" P–401		12,500	30,000		3
APRONS										
A–2	CBR=4		11" P–154	6" P–209	4" P–401		60,000	78,000	99,900	4
A–3	CBR=4		11" P–154	6" P–209	4" P–401		60,000	78,000	99,900	4
A–11	CBR=4		11" P–207	6" P–209	4" P–401		60,000	78,000	99,900	3

REMARKS:

1. AIP–003–1988, ALL NEW PAVEMENTS.
2. AIP–004–2000, OVERLAY EXISTING BITUMINOUS RUNWAY, TAXIWAY, APRON, AND TURNAROUNDS.
3. AIP–011–2014, RECONSTRUCT AND LENGTHEN RUNWAY (R–11); CONSTRUCT RUNWAY 17 TURNAROUND (T–11); RECONSTRUCT TAXIWAY (T–11); RECONSTRUCT APRON (A–11); RECONSTRUCT TAXILANE (T–12).
4. AIP–013–2018, WIDEN TAXIWAY (T–11A), EXPAND APRON (A–2), CONSTRUCT TAXIWAY (T–3) AND APRONS (A–3). [UNDER CONSTRUCTION, NOT INSPECTED IN 2018]

LEGEND

- 2006 SURVEY AREA (N/A)
- 2009 SURVEY AREA (N/A)
- 2012 SURVEY AREA (N/A)
- 2015 SURVEY AREA (NOT SURVEYED)
- 2018 SURVEY AREA
- MAINTAIN: PCI > 60
- TRANSITION: PCI 45 TO 60
- RECONSTRUCT: PCI < 45

DATE OF PAVEMENT STRENGTH SURVEY:	
EVALUATED BY:	
DATE OF MOST RECENT PAVEMENT CONDITION SURVEY:	OCT. 9, 2018
EVALUATED BY:	S. BROWN
LOCATION:	TWIN BRIDGES MONTANA

MONTANA AVIATION SYSTEM PLAN
2018 UPDATE - PAVEMENT CONDITION INDEXES

TWIN BRIDGES AIRPORT
(7S1)

Date: DECEMBER 2018

Prepared For: MONTANA DEPARTMENT OF TRANSPORTATION

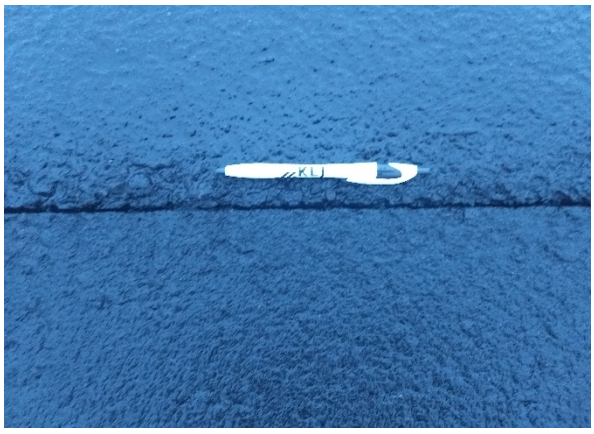
Prepared By: KLJ

TWIN BRIDGES

A-11, Overview

A-11, Crack

R-11, Overview



R-11, Crack

T-11, Overview

T-11, Patch

T-12, Overview

T-12, Crack

TWIN BRIDGES AIRPORT

Branch: 51A **APRON** **A-11**

Length: 571 LF **Width:** 300 LF **Area:** 169,330 SF **Last Const:** 2014 **Family:** ACAH
From: ENTIRE APRON **To:** **Surface:** AC

Inspections

Samples Surveyed: 5 **Total Samples:** 18 **Last Inspection Date:** 10/9/2018 **PCI: 97**

Sample # 1 **Area:** 4,900 SF

Distress Description	Severity	Quantity
NO DISTRESSES		

Sample # 5 **Area:** 4,900 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	20 LF
PATCHING	L	15.71 SF

Sample # 9 **Area:** 4,900 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	20 LF
PATCHING	L	6.28 SF

Sample # 13 **Area:** 4,900 SF

Distress Description	Severity	Quantity
PATCHING	L	12.76 SF

Sample # 17 **Area:** 4,180 SF

Distress Description	Severity	Quantity
NO DISTRESSES		

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
LONGITUDINAL/TRANSVERSE CRACKING	LOW	285 LF	0.17%	2.87
PATCHING	LOW	247 SF	0.15%	2.01

* 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**

TWIN BRIDGES AIRPORT

Branch: 51R **RUNWAY** **R-11**

Length: 6,000 LF **Width:** 60 LF **Area:** 258,000 SF **Last Const:** 2014 **Family:** ACRH
From: RWY 17-35 STA 0+00 **To:** RWY 17-35 STA 60+00 **Surface:** AC

Inspections

Samples Surveyed: 7 **Total Samples:** 75 **Last Inspection Date:** 10/9/2018 **PCI: 97**

Sample # 1 **Area:** 4,800 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	2 LF
PATCHING	L	0.09 SF

Sample # 12 **Area:** 4,800 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	7 LF

Sample # 23 **Area:** 4,800 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	6 LF

Sample # 34 **Area:** 4,800 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	10 LF

Sample # 45 **Area:** 4,800 SF

Distress Description	Severity	Quantity
NO DISTRESSES		

Sample # 56 **Area:** 4,800 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	6 LF

Sample # 67 **Area:** 4,800 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	8 LF

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
LONGITUDINAL/TRANSVERSE CRACKING	LOW	418 LF	0.12%	2.50
PATCHING	LOW	1 SF	0.00%	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**

TWIN BRIDGES AIRPORT

Branch: 51T **TAXIWAY** **T-11**

Length: 2,600 LF **Width:** 25 LF **Area:** 73,320 SF **Last Const:** 2014 **Family:** ACRH
From: RWY 16-34 17+00 **To:** APRON **Surface:** AC

Inspections

Samples Surveyed: 5 **Total Samples:** 22 **Last Inspection Date:** 10/9/2018 **PCI: 94**

Sample # 2 **Area:** 4,845 SF

Distress Description	Severity	Quantity
NO DISTRESSES		

Sample # 7 **Area:** 5,000 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	17 LF

Sample # 12 **Area:** 5,000 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	16 LF

Sample # 17 **Area:** 4,400 SF

Distress Description	Severity	Quantity
NO DISTRESSES		

Sample # 22 **Area:** 4,775 SF

Distress Description	Severity	Quantity
DEPRESSION	L	225 SF
PATCHING	L	0.37 SF

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
DEPRESSION	LOW	964 SF	0.94%	6.27
LONGITUDINAL/TRANSVERSE CRACKING	LOW	141 LF	0.14%	2.63
PATCHING	LOW	2 SF	0.00%	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** 42.0 **% Climate/Durability** 58.0 **% Other**

TWIN BRIDGES AIRPORT

Branch: 51T **TAXIWAY** **T-12**

Length: 200 LF **Width:** 25 LF **Area:** 17,497 SF **Last Const:** 2014 **Family:** ACRML
From: A-11 **To:** HANGARS **Surface:** AC

Inspections

Samples Surveyed: 3 **Total Samples:** 3 **Last Inspection Date:** 10/9/2018 **PCI: 99**

Sample # 1 **Area:** 5,000 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	1 LF

Sample # 2 **Area:** 5,000 SF

Distress Description	Severity	Quantity
PATCHING	L	0.09 SF

Sample # 3 **Area:** 5,000 SF

Distress Description	Severity	Quantity
NO DISTRESSES		

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
LONGITUDINAL/TRANSVERSE CRACKING	LOW	1 LF	0.01%	2.50
PATCHING	LOW	0 SF	0.00%	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**

TWIN BRIDGES AIRPORT (51)

FIFTEEN YEAR PROJECTIONS — ESTIMATED AVERAGE ANNUAL COST: $45,223

Plan Year: 2019 — Estimated Cost: $210,848

Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI Before	PCI After
A-11	Global MR	$0	$57,572	$0	$0	$57,572	97	99
R-11	Global MR	$0	$122,399	$0	$0	$122,399	97	99
T-11	Global MR	$0	$24,929	$0	$0	$24,929	94	98
T-12	Global MR	$0	$5,949	$0	$0	$5,949	99	100

Plan Year: 2020 — Estimated Cost: $0

Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI Before	PCI After
A-11	None	$0	$0	$0	$0	$0	98	98
R-11	None	$0	$0	$0	$0	$0	98	98
T-11	None	$0	$0	$0	$0	$0	97	97
T-12	None	$0	$0	$0	$0	$0	99	99

Plan Year: 2021 — Estimated Cost: $0

Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI Before	PCI After
A-11	None	$0	$0	$0	$0	$0	98	98
R-11	None	$0	$0	$0	$0	$0	98	98
T-11	None	$0	$0	$0	$0	$0	95	95
T-12	None	$0	$0	$0	$0	$0	99	99

Plan Year: 2022 — Estimated Cost: $0

Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI Before	PCI After
A-11	None	$0	$0	$0	$0	$0	97	97
R-11	None	$0	$0	$0	$0	$0	97	97
T-11	None	$0	$0	$0	$0	$0	94	94
T-12	None	$0	$0	$0	$0	$0	99	99

Plan Year: 2023 — Estimated Cost: $0

Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI Before	PCI After
A-11	None	$0	$0	$0	$0	$0	96	96
R-11	None	$0	$0	$0	$0	$0	96	96
T-11	None	$0	$0	$0	$0	$0	92	92
T-12	None	$0	$0	$0	$0	$0	99	99

Plan Year: 2024 — Estimated Cost: $210,848

Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI Before	PCI After
A-11	Global MR	$0	$57,572	$0	$0	$57,572	95	98
R-11	Global MR	$0	$122,399	$0	$0	$122,399	95	98
T-11	Global MR	$0	$24,929	$0	$0	$24,929	91	95
T-12	Global MR	$0	$5,949	$0	$0	$5,949	98	99

Plan Year: 2025 — Estimated Cost: $0

Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI Before	PCI After
A-11	None	$0	$0	$0	$0	$0	97	97
R-11	None	$0	$0	$0	$0	$0	97	97
T-11	None	$0	$0	$0	$0	$0	94	94
T-12	None	$0	$0	$0	$0	$0	99	99

Plan Year: 2026 — Estimated Cost: $0

Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI Before	PCI After
A-11	None	$0	$0	$0	$0	$0	96	96
R-11	None	$0	$0	$0	$0	$0	96	96
T-11	None	$0	$0	$0	$0	$0	92	92
T-12	None	$0	$0	$0	$0	$0	99	99

Plan Year: 2027 — Estimated Cost: $0

Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI Before	PCI After
A-11	None	$0	$0	$0	$0	$0	95	95
R-11	None	$0	$0	$0	$0	$0	95	95
T-11	None	$0	$0	$0	$0	$0	91	91
T-12	None	$0	$0	$0	$0	$0	98	98

Plan Year: 2028 — Estimated Cost: $71

Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI Before	PCI After
A-11	None	$0	$0	$0	$0	$0	95	95
R-11	None	$0	$0	$0	$0	$0	95	95
T-11	Preventive	$71	$0	$0	$0	$71	89	89
T-12	None	$0	$0	$0	$0	$0	98	98

TWIN BRIDGES AIRPORT (51)

FIFTEEN YEAR PROJECTIONS — ESTIMATED AVERAGE ANNUAL COST: $45,223

Plan Year: 2029					Estimated Cost:	$211,025	PCI	
Section	**Maintenance**	**Local**	**Global**	**Major<Crit**	**Major>Crit**	**Total**	**Before**	**After**
A-11	Global MR	$0	$57,572	$0	$0	$57,572	94	96
R-11	Global MR	$0	$122,399	$0	$0	$122,399	94	96
T-11	Preventive + Global MR	$177	$24,929	$0	$0	$25,106	88	92
T-12	Global MR	$0	$5,949	$0	$0	$5,949	98	99

Plan Year: 2030					Estimated Cost:	$0	PCI	
Section	**Maintenance**	**Local**	**Global**	**Major<Crit**	**Major>Crit**	**Total**	**Before**	**After**
A-11	None	$0	$0	$0	$0	$0	95	95
R-11	None	$0	$0	$0	$0	$0	95	95
T-11	None	$0	$0	$0	$0	$0	91	91
T-12	None	$0	$0	$0	$0	$0	98	98

Plan Year: 2031					Estimated Cost:	$59	PCI	
Section	**Maintenance**	**Local**	**Global**	**Major<Crit**	**Major>Crit**	**Total**	**Before**	**After**
A-11	None	$0	$0	$0	$0	$0	95	95
R-11	None	$0	$0	$0	$0	$0	95	95
T-11	Preventive	$59	$0	$0	$0	$59	89	89
T-12	None	$0	$0	$0	$0	$0	98	98

Plan Year: 2032					Estimated Cost:	$166	PCI	
Section	**Maintenance**	**Local**	**Global**	**Major<Crit**	**Major>Crit**	**Total**	**Before**	**After**
A-11	None	$0	$0	$0	$0	$0	94	94
R-11	None	$0	$0	$0	$0	$0	94	94
T-11	Preventive	$166	$0	$0	$0	$166	88	88
T-12	None	$0	$0	$0	$0	$0	98	98

Plan Year: 2033					Estimated Cost:	$272	PCI	
Section	**Maintenance**	**Local**	**Global**	**Major<Crit**	**Major>Crit**	**Total**	**Before**	**After**
A-11	None	$0	$0	$0	$0	$0	93	93
R-11	None	$0	$0	$0	$0	$0	93	93
T-11	Preventive	$272	$0	$0	$0	$272	86	86
T-12	None	$0	$0	$0	$0	$0	98	98