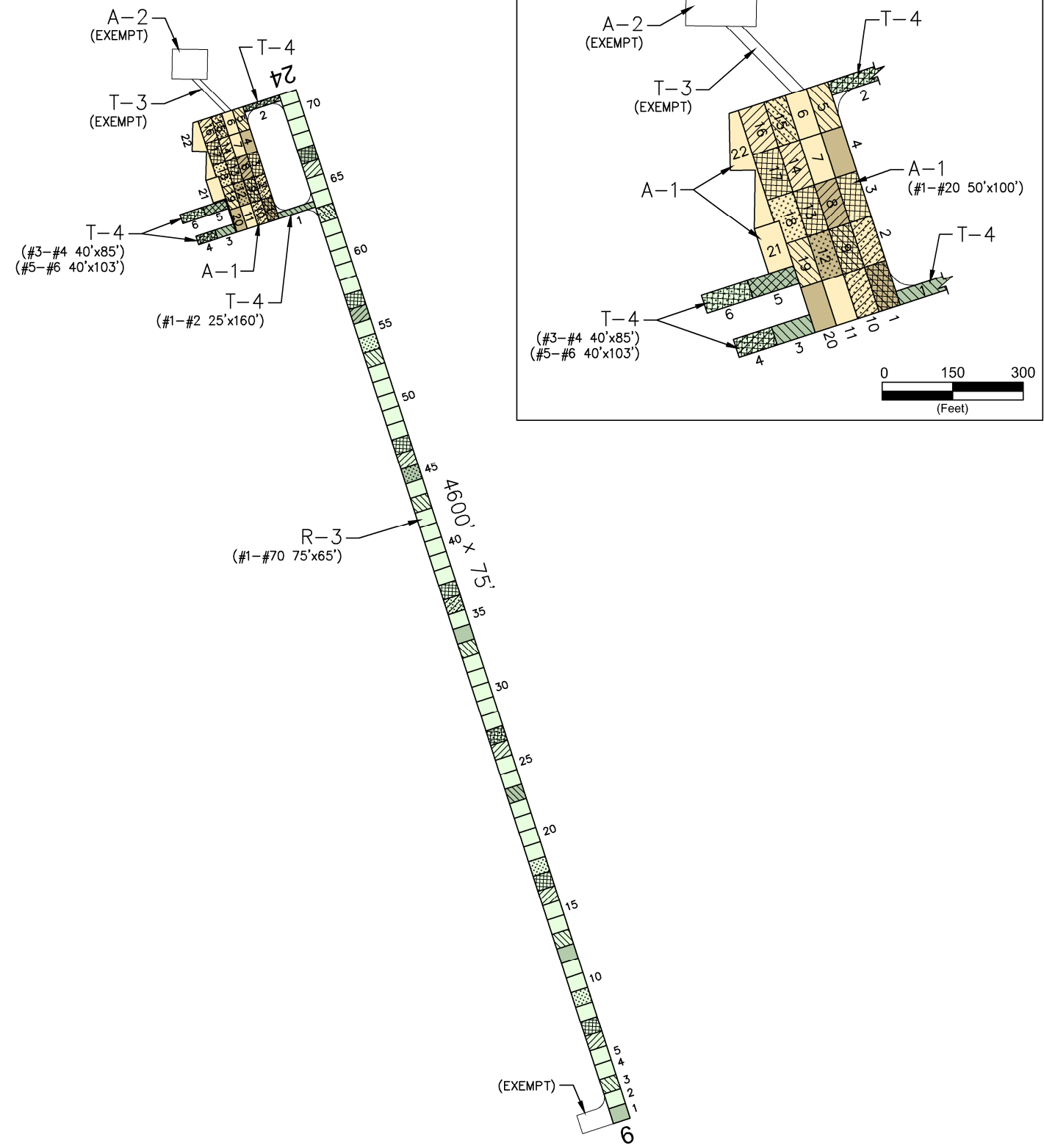


# CONRAD

# PAVEMENT STRENGTH SURVEY/PAVEMENT CONDITION SURVEY

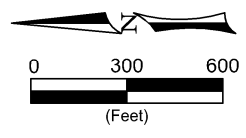
CONRAD



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-3	E-7	F7, CBR=2	8" P-154 WITH FABRIC	3" P-208	3.5" P-401	P-609	12,500			2,3,4
<b>TAXIWAYS</b>										
T-3	E-7	F7, CBR=2	6" P-154	6" P-208	3" AC	P-609	16,000			3,4
T-4	E-7	F7, CBR=2		10" P-208	2" P-401	2.5" P-401, P-609	12,500			2,3,4
<b>APRONS</b>										
A-1	E-7	F7, CBR=2		10" P-208	2" AC	2.5" P-401, P-609	12,500			1,2,3,4
A-2	E-7	F7, CBR=2	6" P-154	6" P-208	3" AC	1" P-402	22,000			1

**REMARKS:**

- AIP-01, 1988, P-402 OVERLAY
- AIP-03, 2002, RECONSTRUCT RUNWAY 6/24 (R-3), OVERLAY TAXIWAYS (T-4), OVERLAY APRON (A-1).
- AIP-004-2008, CRACK SEAL, FOG SEAL, REMARK RUNWAY (R-3), TAXIWAYS (T-3, T-4), AND APRON (A-1).
- AIP-005-2013, CRACK SEAL, FOG SEAL, REMARK RUNWAY (R-3), TAXIWAYS (T-3, T-4), AND APRON (A-1).



<b>LEGEND</b> [Grid] 2003 SURVEY AREA [Solid] 2006 SURVEY AREA [Diagonal] 2009 SURVEY AREA [Cross-hatch] 2012 SURVEY AREA [Dotted] 2015 SURVEY AREA [Green] MAINTAIN: PCI > 60 [Yellow] TRANSITION: PCI 45 TO 60 [Red] RECONSTRUCT: PCI < 45	DATE OF PAVEMENT STRENGTH SURVEY: DEC. 4, 1989	<b>MONTANA AVIATION SYSTEM PLAN</b> <b>2015 UPDATE - PAVEMENT CONDITION INDEXES</b> <b>CONRAD AIRPORT</b> (S01)	
	EVALUATED BY: J. STYBA		
	EVALUATED BY: S. MARKWARDT	Date: DECEMBER 2015 Prepared For: MONTANA DEPARTMENT OF TRANSPORTATION	Prepared By: RPA Robert Peccia & Associates, Inc.
	LOCATION: CONRAD MONTANA		

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# CONRAD AIRPORT

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9/28/2015



**A-1, Overview**



**A-1, Surface detail with tie down**



**R-3, Surface detail**



**R-3, Overview**

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# CONRAD AIRPORT

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9/28/2015



**T-4, Overview**



**T-4, Surface detail with cracking**

# CONRAD AIRPORT

Branch: 46A

APRON

**A-1**

**Length:** 500 LF    **Width:** 190 LF    **Area:** 95,000 SF    **Last Const. :** 2002    **Family:** ACAM15  
**From:** TAXIWAY 1    **To:** TAXIWAY 2    **Surface:** AAC

**Inspections**

**Samples Surveyed:** 5    **Total Samples:** 22    **Last Inspection Date (RPA)** 9/28/2015    **PCI:** 57

**Sample # 2**    **Area:** 5000 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	614 LF
LONGITUDINAL/TRANSVERSE CRACKING	M	148 LF
RAVELING	L	50 SF
WEATHERING	L	50 SF
DEPRESSION	L	10 SF
DEPRESSION	H	9 SF

**Sample # 10**    **Area:** 5000 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	439 LF
LONGITUDINAL/TRANSVERSE CRACKING	M	72 LF
WEATHERING	L	50 SF
RAVELING	L	50 SF
DEPRESSION	L	28 SF
DEPRESSION	H	6 SF
RAVELING	H	3 SF

**Sample # 12**    **Area:** 5000 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	486 LF
LONGITUDINAL/TRANSVERSE CRACKING	M	43 LF
DEPRESSION	L	90 SF
RAVELING	L	50 SF
WEATHERING	L	50 SF
BLEEDING	N	24 SF
DEPRESSION	H	6 SF

**Sample # 15**    **Area:** 5000 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	516 LF
LONGITUDINAL/TRANSVERSE CRACKING	M	102 LF
DEPRESSION	L	53 SF
RAVELING	L	50 SF
WEATHERING	L	50 SF
PATCHING	M	1 SF

**Sample # 18**    **Area:** 5000 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	456 LF
LONGITUDINAL/TRANSVERSE CRACKING	M	72 LF
BLEEDING	N	80 SF
DEPRESSION	L	78 SF
WEATHERING	L	50 SF
RAVELING	L	50 SF
RAVELING	H	5 SF
SWELLING	L	4 SF

**Extrapolated Distress Quantities\***

Distress Description	Severity	Quantity	Density	Deduct
LONGITUDINAL/TRANSVERSE CRACKING	L	9542 LF	10.04 %	23.33
LONGITUDINAL/TRANSVERSE CRACKING	M	1661 LF	1.75 %	14.66
DEPRESSION	H	80 SF	0.08 %	12.00
DEPRESSION	L	984 SF	1.04 %	6.85
PATCHING	M	4 SF	0.00 %	6.20
RAVELING	H	30 SF	0.03 %	6.00
BLEEDING	N	395 SF	0.42 %	2.76
RAVELING	L	950 SF	1.00 %	2.62
SWELLING	L	15 SF	0.02 %	1.00
WEATHERING	L	950 SF	1.00 %	0.49

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

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**CONRAD AIRPORT**

Branch: 46A

**APRON**

**A-1**

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

0.0 % Load

70.0 % Climate/Durability

30.0 % Other

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**CONRAD AIRPORT**

Branch: 46R

**RUNWAY**

**R-3**

**Length:** 4,600 LF    **Width:** 75 LF    **Area:** 345,000 SF    **Last Const. :** 2002    **Family:** ACRML15  
**From:** STA 10+00    **To:** STA 56+00    **Surface:** AC

**Inspections**

**Samples Surveyed:** 7    **Total Samples:** 71    **Last Inspection Date (RPA)** 9/28/2015    **PCI:** 62

**Sample # 9**    **Area:** 4875 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	539 LF
LONGITUDINAL/TRANSVERSE CRACKING	M	80 LF
WEATHERING	L	245 SF
RAVELING	L	49 SF
DEPRESSION	L	34 SF
BLEEDING	N	10 SF
SWELLING	L	4 SF

**Sample # 18**    **Area:** 4875 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	496 LF
WEATHERING	L	245 SF
LONGITUDINAL/TRANSVERSE CRACKING	M	26 LF
RAVELING	L	49 SF
DEPRESSION	L	22 SF
BLEEDING	N	20 SF

**Sample # 27**    **Area:** 4875 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	504 LF
WEATHERING	L	245 SF
LONGITUDINAL/TRANSVERSE CRACKING	M	56 LF
RAVELING	L	49 SF
BLEEDING	N	43 SF
SWELLING	L	2 SF

**Sample # 36**    **Area:** 4875 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	461 LF
WEATHERING	L	245 SF
LONGITUDINAL/TRANSVERSE CRACKING	M	61 LF
RAVELING	L	49 SF
BLEEDING	N	40 SF
DEPRESSION	L	26 SF

**Sample # 45**    **Area:** 4875 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	408 LF
WEATHERING	L	245 SF
LONGITUDINAL/TRANSVERSE CRACKING	M	45 LF
DEPRESSION	L	62 SF
RAVELING	L	49 SF
SWELLING	L	12 SF

**Sample # 54**    **Area:** 4875 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	569 LF
WEATHERING	L	245 SF
RAVELING	L	49 SF
LONGITUDINAL/TRANSVERSE CRACKING	M	5 LF
DEPRESSION	L	11 SF
PATCHING	L	1 SF

**Sample # 63**    **Area:** 4875 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	459 LF
WEATHERING	L	245 SF
LONGITUDINAL/TRANSVERSE CRACKING	M	50 LF
RAVELING	L	49 SF
DEPRESSION	L	31 SF
PATCHING	M	1 SF

**Extrapolated Distress Quantities\***

Distress Description	Severity	Quantity	Density	Deduct
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**CONRAD AIRPORT**

Branch: 46R

**RUNWAY**

**R-3**

**Extrapolated Distress Quantities\***

<b>Distress Description</b>	<b>Severity</b>	<b>Quantity</b>	<b>Density</b>	<b>Deduct</b>
LONGITUDINAL/TRANSVERSE CRACKING	L	34738 LF	10.07 %	23.36
LONGITUDINAL/TRANSVERSE CRACKING	M	3265 LF	0.95 %	10.96
PATCHING	M	10 SF	0.00 %	6.20
DEPRESSION	L	1880 SF	0.55 %	3.64
RAVELING	L	3468 SF	1.01 %	2.63
BLEEDING	N	1142 SF	0.33 %	2.30
PATCHING	L	10 SF	0.00 %	2.00
WEATHERING	L	17338 SF	5.03 %	1.09
SWELLING	L	182 SF	0.05 %	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**

0.0 % **Load**

87.0 % **Climate/Durability**

13.0 % **Other**

# CONRAD AIRPORT

Branch: 46T

TAXIWAY

**T-4**

**Length:** 320 LF    **Width:** 25 LF    **Area:** 23,040 SF    **Last Const. :** 2002    **Family:** ACRML15  
**From:** A-1    **To:** R-3 & HANGARS    **Surface:** AAC

**Inspections**

**Samples Surveyed:** 3    **Total Samples:** 6    **Last Inspection Date (RPA)** 9/28/2015    **PCI:** **62**

**Sample # 2**    **Area:** 4000 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	354 LF
LONGITUDINAL/TRANSVERSE CRACKING	M	41 LF
RAVELING	L	40 SF
WEATHERING	L	40 SF
DEPRESSION	L	25 SF
SWELLING	L	25 SF
BLEEDING	N	12 SF
RAVELING	H	7 SF

**Sample # 4**    **Area:** 3400 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	216 LF
RAVELING	L	34 SF
WEATHERING	L	34 SF
DEPRESSION	L	25 SF
BLEEDING	N	22 SF
RAVELING	H	12 SF
ALLIGATOR CRACKING	L	12 SF
PATCHING	L	1 SF

**Sample # 6**    **Area:** 4120 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	242 LF
WEATHERING	L	41 SF
RAVELING	L	41 SF
DEPRESSION	L	35 SF
RAVELING	H	1 SF

**Extrapolated Distress Quantities\***

Distress Description	Severity	Quantity	Density	Deduct
LONGITUDINAL/TRANSVERSE CRACKING	L	1624 LF	7.05 %	18.74
RAVELING	H	40 SF	0.17 %	7.69
LONGITUDINAL/TRANSVERSE CRACKING	M	82 LF	0.36 %	7.07
ALLIGATOR CRACKING	L	24 SF	0.10 %	7.00
DEPRESSION	L	170 SF	0.74 %	5.02
RAVELING	L	230 SF	1.00 %	2.62
BLEEDING	N	68 SF	0.30 %	2.06
PATCHING	L	2 SF	0.01 %	2.00
SWELLING	L	50 SF	0.22 %	1.51
WEATHERING	L	230 SF	1.00 %	0.49

\* 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**

13.0 % Load                      71.0 % Climate/Durability                      16.0 % Other



# CONRAD AIRPORT

**FIFTEEN YEAR PROJECTIONS: ESTIMATED AVERAGE ANNUAL COST: \$164,561**

PLAN YEAR: 2016			ESTIMATED COST:			\$1,518,391	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
A-1	Prev. & Thin AC	\$21,261	\$185,250			\$206,511	55	67
R-3	Reconstruct			\$1,229,754		\$1,229,754	60	100
T-4	Reconstruct			\$82,126		\$82,126	60	100
PLAN YEAR: 2017			ESTIMATED COST:			\$10,098	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
A-1	Basic Prev.	\$10,098				\$10,098	65	65
PLAN YEAR: 2018			ESTIMATED COST:			\$12,528	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
A-1	Basic Prev.	\$12,528				\$12,528	63	63
PLAN YEAR: 2019			ESTIMATED COST:			\$16,212	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
R-3	Basic Prev.	\$1,019				\$1,019	87	88
A-1	Basic Prev.	\$15,125				\$15,125	60	61
T-4	Basic Prev.	\$68				\$68	87	88
PLAN YEAR: 2020			ESTIMATED COST:			\$21,207	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
T-4	Basic Prev.	\$143				\$143	84	85
A-1	Basic Prev.	\$18,925				\$18,925	58	58
R-3	Basic Prev.	\$2,139				\$2,139	84	85
PLAN YEAR: 2021			ESTIMATED COST:			\$26,692	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
A-1	Basic Prev.	\$23,326				\$23,326	56	56
R-3	Basic Prev.	\$3,155				\$3,155	82	82
T-4	Basic Prev.	\$211				\$211	82	82
PLAN YEAR: 2022			ESTIMATED COST:			\$32,568	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
T-4	Basic Prev.	\$273				\$273	80	80
A-1	Basic Prev.	\$28,211				\$28,211	53	54
R-3	Basic Prev.	\$4,084				\$4,084	80	80
PLAN YEAR: 2023			ESTIMATED COST:			\$41,198	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
T-4	Basic Prev.	\$470				\$470	78	78
A-1	Basic Prev.	\$33,684				\$33,684	51	51
R-3	Basic Prev.	\$7,044				\$7,044	78	78
PLAN YEAR: 2024			ESTIMATED COST:			\$649,837	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
R-3	Basic Prev.	\$9,911				\$9,911	77	77
T-4	Basic Prev.	\$662				\$662	77	77
A-1	Reconstruct			\$639,264		\$639,264	48	100
PLAN YEAR: 2025			ESTIMATED COST:			\$13,500	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
R-3	Basic Prev.	\$12,655				\$12,655	75	76
T-4	Basic Prev.	\$845				\$845	75	76
PLAN YEAR: 2026			ESTIMATED COST:			\$16,423	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
R-3	Basic Prev.	\$15,395				\$15,395	74	74
T-4	Basic Prev.	\$1,028				\$1,028	74	74
PLAN YEAR: 2027			ESTIMATED COST:			\$19,850	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
T-4	Basic Prev.	\$1,220				\$1,220	73	73
R-3	Basic Prev.	\$18,261				\$18,261	73	73
A-1	Basic Prev.	\$369				\$369	87	87
PLAN YEAR: 2028			ESTIMATED COST:			\$23,665	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
T-4	Basic Prev.	\$1,429				\$1,429	72	72
A-1	Basic Prev.	\$831				\$831	84	84
R-3	Basic Prev.	\$21,405				\$21,405	72	72

PLAN YEAR: 2029			ESTIMATED COST:			\$27,889	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
A-1	Basic Prev.	\$1,277				\$1,277	81	81
R-3	Basic Prev.	\$24,946				\$24,946	70	70
T-4	Basic Prev.	\$1,666				\$1,666	70	70
PLAN YEAR: 2030			ESTIMATED COST:			\$38,358	PCI	
SectionID	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	before	after
A-1	Basic Prev.	\$2,563				\$2,563	78	78
T-4	Basic Prev.	\$2,241				\$2,241	69	69
R-3	Basic Prev.	\$33,554				\$33,554	69	69