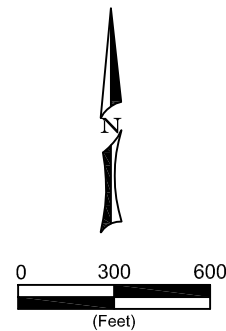
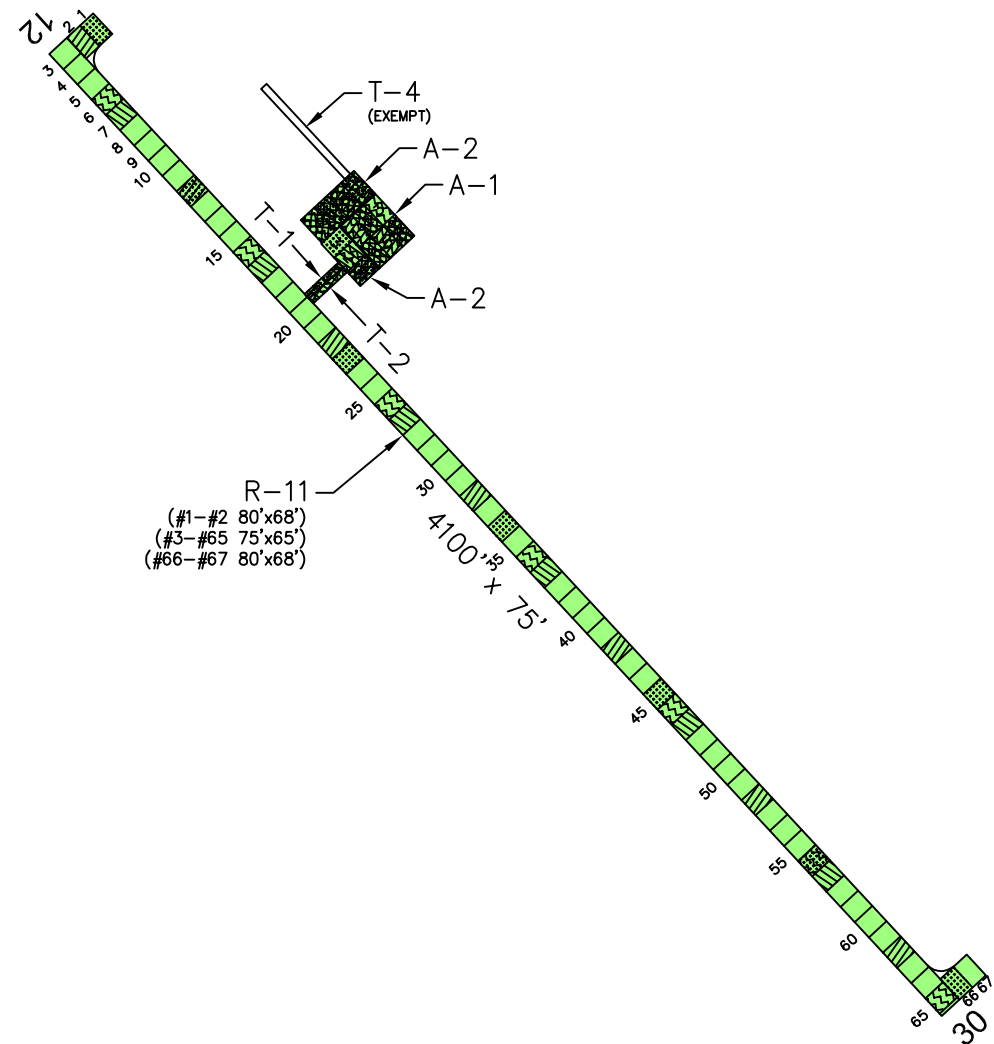
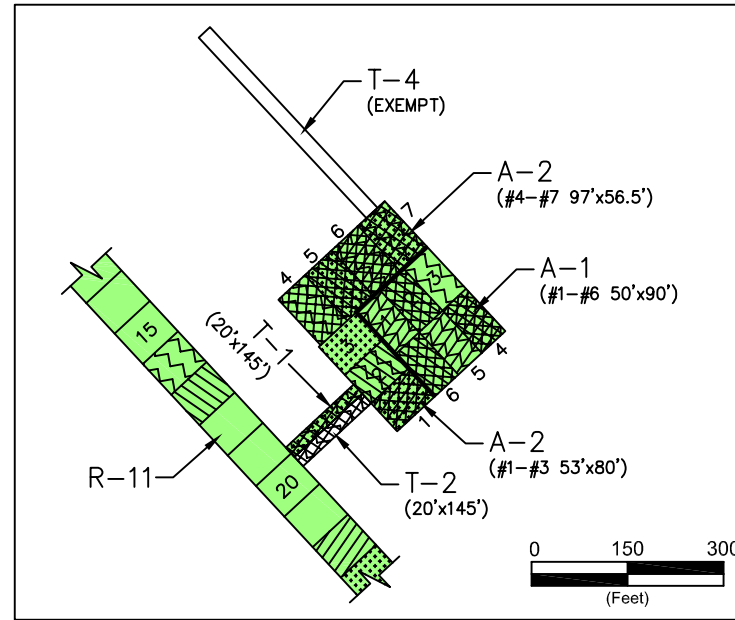


CIRCLE



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.	
RUNWAYS										
R-11	E-7	CBR=2.5	8" P-208	5"P-207,3"P-208	3" P-403		12,500			3,4
TAXIWAYS										
T-1	E-7	CBR=2.5	6" P-208	10"P-207,3"P-208	3" P-403		12,500			1,2,3,4
T-2	E-7	CBR=2.5	10" AGG, 2"P-208	10"P-207,3"P-208	3" P-403		12,500			1,2,3,4
APRONS										
A-1	E-7	CBR=2.5		8" P-208	1"P-216,2"P-403		12,500			1,2,3,4
A-2	E-7	CBR=2.5	10"	4" P-208	2" P-403		12,500			1,2,3,4

REMARKS:

ADAP-01, 1984, EXTEND, WIDEN, AND OVERLAY RUNWAY.

1. AIP-001-1989, 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.
4. AIP-008-2018, CRACK SEAL, SURFACE SEAL AND REMARK ALL PAVEMENTS.

LEGEND

- 2006 SURVEY AREA (NOT SURVEYED)
- 2009 SURVEY AREA
- 2012 SURVEY AREA
- 2015 SURVEY AREA
- 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. 6, 2018
EVALUATED BY:	N. SCHROHT
LOCATION:	CIRCLE MONTANA

**MONTANA AVIATION SYSTEM PLAN
2018 UPDATE - PAVEMENT CONDITION INDEXES**

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

Date: Prepared For: Prepared By:

DECEMBER 2018



CIRCLE



A-1, Overview



A-1, Dense Grade - Raveling



A-2, Overview



A-2, Surface



R-1, Overview



R-1, Swell



T-1 & T-2, Overview



T-1 & T-2, Depression

CIRCLE AIRPORT

Branch: 38-A **APRON**

A-1

Length: 180 LF **Width:** 150 LF **Area:** 27,000 SF **Last Const:** 2007 **Family:** ACAM
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:** 10/6/2018 **PCI:** 65

Sample # 1 **Area:** 4,500 SF

Distress Description	Severity	Quantity
WEATHERING	L	4500 SF
DEPRESSION	H	4 SF
LONGITUDINAL/TRANSVERSE CRACKING	L	362 LF
DEPRESSION	L	3 SF
LONGITUDINAL/TRANSVERSE CRACKING	M	5 LF
RAVELING	L	640 SF

Sample # 3 **Area:** 4,500 SF

Distress Description	Severity	Quantity
WEATHERING	L	4500 SF
PATCHING	H	16 SF
DEPRESSION	L	1 SF
LONGITUDINAL/TRANSVERSE CRACKING	L	235 LF
PATCHING	M	60 SF
RAVELING	L	289 SF
PATCHING	L	212 SF

Sample # 5 **Area:** 4,500 SF

Distress Description	Severity	Quantity
DEPRESSION	M	20 SF
RAVELING	L	700 SF
DEPRESSION	H	0.6 SF

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
DEPRESSION	HIGH	9 SF	0.03%	12.00
DEPRESSION	LOW	8 SF	0.03%	0.30
DEPRESSION	MEDIUM	40 SF	0.15%	5.47
LONGITUDINAL/TRANSVERSE CRACKING	LOW	1,194 LF	4.42%	13.50
LONGITUDINAL/TRANSVERSE CRACKING	MEDIUM	10 LF	0.04%	4.00
PATCHING	HIGH	32 SF	0.12%	15.63
PATCHING	LOW	424 SF	1.57%	4.74
PATCHING	MEDIUM	120 SF	0.44%	7.86
RAVELING	LOW	3,258 SF	12.07%	10.79
WEATHERING	LOW	18,000 SF	66.67%	5.40

* 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 78.0 % Climate/Durability 22.0 % Other

CIRCLE AIRPORT

Branch: 38-A

APRON

A-2

Length: 280 LF **Width:** 125 LF **Area:** 34,860 SF **Last Const:** 2007 **Family:** ACAM
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:** 10/6/2018 **PCI:** 72

Sample # 2	Distress Description LONGITUDINAL/TRANSVERSE CRACKING WEATHERING	Severity L L	Quantity 206 LF 4240 SF	Area: 4,240 SF
Sample # 4	Distress Description LONGITUDINAL/TRANSVERSE CRACKING LONGITUDINAL/TRANSVERSE CRACKING	Severity L L	Quantity 5529 LF 72 LF	Area: 5,529 SF
Sample # 6	Distress Description DEPRESSION RAVELING DEPRESSION WEATHERING	Severity L L H L	Quantity 7 SF 760 SF 4 SF 4769 SF	Area: 5,529 SF
Sample # 7	Distress Description WEATHERING LONGITUDINAL/TRANSVERSE CRACKING	Severity L L	Quantity 5529 SF 229 LF	Area: 5,529 SF

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
DEPRESSION	HIGH	7 SF	0.02%	12.00
DEPRESSION	LOW	12 SF	0.03%	0.30
LONGITUDINAL/TRANSVERSE CRACKING	LOW	10,103 LF	28.98%	37.74
RAVELING	LOW	1,272 SF	3.65%	5.69
WEATHERING	LOW	24,334 SF	69.80%	5.49

* 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 80.0 % Climate/Durability 20.0 % Other

CIRCLE AIRPORT

Branch: 38R

RUNWAY

R-11

Length: 4,100 LF

Width: 75 LF

Area: 307,500 SF

Last Const: 2007

Family: ACRML

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:** 10/6/2018 **PCI:** 81

Sample # 6	Distress Description WEATHERING LONGITUDINAL/TRANSVERSE CRACKING	Severity L L	Quantity 4875 SF 85 LF	Area: 4,875 SF
Sample # 16	Distress Description LONGITUDINAL/TRANSVERSE CRACKING WEATHERING SWELL	Severity L L L	Quantity 188 LF 4875 SF 12 SF	Area: 4,875 SF
Sample # 26	Distress Description PATCHING LONGITUDINAL/TRANSVERSE CRACKING WEATHERING	Severity L L L	Quantity 0.2 SF 229 LF 4875 SF	Area: 4,875 SF
Sample # 36	Distress Description LONGITUDINAL/TRANSVERSE CRACKING	Severity L	Quantity 140 LF	Area: 4,875 SF
Sample # 46	Distress Description LONGITUDINAL/TRANSVERSE CRACKING WEATHERING	Severity L L	Quantity 153 LF 4875 SF	Area: 4,875 SF
Sample # 56	Distress Description LONGITUDINAL/TRANSVERSE CRACKING WEATHERING LONGITUDINAL/TRANSVERSE CRACKING SWELL	Severity L L M H	Quantity 135 LF 4875 SF 2 LF 38 SF	Area: 4,875 SF
Sample # 65	Distress Description WEATHERING LONGITUDINAL/TRANSVERSE CRACKING	Severity L L	Quantity 4875 SF 45 LF	Area: 4,875 SF

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
LONGITUDINAL/TRANSVERSE CRACKING	LOW	8,786 LF	2.86%	9.68
LONGITUDINAL/TRANSVERSE CRACKING	MEDIUM	18 LF	0.01%	4.00
PATCHING	LOW	2 SF	0.00%	2.00
SWELL	HIGH	342 SF	0.11%	28.29
SWELL	LOW	108 SF	0.04%	1.00
WEATHERING	LOW	263,571 SF	85.71%	5.80

* 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

CIRCLE AIRPORT

Branch: 38T TAXIWAY

T-1

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

Inspections

Samples Surveyed: 1 **Total Samples:** 1 **Last Inspection Date:** 10/6/2018 **PCI:** 74

Sample # 1 **Area:** 2,900 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	160 LF
RAVELING	M	8 SF
WEATHERING	L	2900 SF

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
LONGITUDINAL/TRANSVERSE CRACKING	LOW	160 LF	5.52%	15.85
RAVELING	MEDIUM	8 SF	0.28%	5.09
WEATHERING	LOW	2,900 SF	100.00%	5.96

* 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-2

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

Inspections

Samples Surveyed: 1 **Total Samples:** 1 **Last Inspection Date:** 10/6/2018 **PCI:** **80**

Sample # 1 **Area:** 2,900 SF

Distress Description	Severity	Quantity
WEATHERING	L	2900 SF
LONGITUDINAL/TRANSVERSE CRACKING	L	65 LF
DEPRESSION	L	4 SF
RAVELING	H	10 SF

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
DEPRESSION	LOW	4 SF	0.14%	0.37
LONGITUDINAL/TRANSVERSE CRACKING	LOW	65 LF	2.24%	8.05
RAVELING	HIGH	10 SF	0.34%	9.22
WEATHERING	LOW	2,900 SF	100.00%	5.96

* 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 98.0 % Climate/Durability 2.0 % Other

CIRCLE AIRPORT (38)

FIFTEEN YEAR PROJECTIONS							ESTIMATED AVERAGE ANNUAL COST:		\$40,112		
Plan Year: 2019							Estimated Cost:	\$134,285		PCI	
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After			
A-1	Preventive + Global MR	\$2,134	\$9,180	\$0	\$0	\$11,314	64	74			
A-2	Preventive + Global MR	\$1,555	\$11,852	\$0	\$0	\$13,407	71	79			
R-11	Preventive + Global MR	\$2,902	\$104,549	\$0	\$0	\$107,452	81	86			
T-1	Preventive + Global MR	\$106	\$986	\$0	\$0	\$1,092	73	81			
T-2	Preventive + Global MR	\$34	\$986	\$0	\$0	\$1,020	80	85			
Plan Year: 2020							Estimated Cost:	\$3,999		PCI	
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After			
A-1	Preventive	\$1,269	\$0	\$0	\$0	\$1,269	71	71			
A-2	Preventive	\$830	\$0	\$0	\$0	\$830	77	77			
R-11	Preventive	\$1,831	\$0	\$0	\$0	\$1,831	84	84			
T-1	Preventive	\$50	\$0	\$0	\$0	\$50	78	78			
T-2	Preventive	\$20	\$0	\$0	\$0	\$20	83	83			
Plan Year: 2021							Estimated Cost:	\$5,204		PCI	
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After			
A-1	Preventive	\$1,629	\$0	\$0	\$0	\$1,629	68	68			
A-2	Preventive	\$1,153	\$0	\$0	\$0	\$1,153	74	74			
R-11	Preventive	\$2,323	\$0	\$0	\$0	\$2,323	82	83			
T-1	Preventive	\$75	\$0	\$0	\$0	\$75	76	76			
T-2	Preventive	\$25	\$0	\$0	\$0	\$25	82	82			
Plan Year: 2022							Estimated Cost:	\$6,429		PCI	
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After			
A-1	Preventive	\$2,010	\$0	\$0	\$0	\$2,010	65	65			
A-2	Preventive	\$1,475	\$0	\$0	\$0	\$1,475	72	72			
R-11	Preventive	\$2,814	\$0	\$0	\$0	\$2,814	81	81			
T-1	Preventive	\$99	\$0	\$0	\$0	\$99	74	74			
T-2	Preventive	\$31	\$0	\$0	\$0	\$31	80	80			
Plan Year: 2023							Estimated Cost:	\$8,399		PCI	
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After			
A-1	Preventive	\$2,391	\$0	\$0	\$0	\$2,391	62	63			
A-2	Preventive	\$1,811	\$0	\$0	\$0	\$1,811	70	70			
R-11	Preventive	\$4,022	\$0	\$0	\$0	\$4,022	79	79			
T-1	Preventive	\$124	\$0	\$0	\$0	\$124	72	72			
T-2	Preventive	\$50	\$0	\$0	\$0	\$50	78	78			
Plan Year: 2024							Estimated Cost:	\$209,941		PCI	
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After			
A-1	Major Below Critical	\$0	\$0	\$83,146	\$0	\$83,146	59	100			
A-2	Preventive + Global MR	\$2,214	\$11,852	\$0	\$0	\$14,066	67	75			
R-11	Preventive + Global MR	\$5,988	\$104,549	\$0	\$0	\$110,537	78	83			
T-1	Preventive + Global MR	\$150	\$986	\$0	\$0	\$1,136	70	77			
T-2	Preventive + Global MR	\$70	\$986	\$0	\$0	\$1,056	76	82			
Plan Year: 2025							Estimated Cost:	\$4,252		PCI	
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After			
A-1	None	\$0	\$0	\$0	\$0	\$0	97	97			
A-2	Preventive	\$1,396	\$0	\$0	\$0	\$1,396	72	73			
R-11	Preventive	\$2,734	\$0	\$0	\$0	\$2,734	81	81			
T-1	Preventive	\$93	\$0	\$0	\$0	\$93	74	75			
T-2	Preventive	\$29	\$0	\$0	\$0	\$29	80	80			
Plan Year: 2026							Estimated Cost:	\$5,571		PCI	
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After			
A-1	None	\$0	\$0	\$0	\$0	\$0	94	94			
A-2	Preventive	\$1,718	\$0	\$0	\$0	\$1,718	70	70			
R-11	Preventive	\$3,688	\$0	\$0	\$0	\$3,688	80	80			
T-1	Preventive	\$118	\$0	\$0	\$0	\$118	72	72			
T-2	Preventive	\$47	\$0	\$0	\$0	\$47	78	79			
Plan Year: 2027							Estimated Cost:	\$7,991		PCI	
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After			
A-1	None	\$0	\$0	\$0	\$0	\$0	91	91			
A-2	Preventive	\$2,114	\$0	\$0	\$0	\$2,114	68	68			
R-11	Preventive	\$5,668	\$0	\$0	\$0	\$5,668	78	78			
T-1	Preventive	\$143	\$0	\$0	\$0	\$143	70	70			
T-2	Preventive	\$66	\$0	\$0	\$0	\$66	77	77			

CIRCLE AIRPORT (38)

FIFTEEN YEAR PROJECTIONS							ESTIMATED AVERAGE ANNUAL COST:		\$40,112		
Plan Year: 2028							Estimated Cost:	\$10,467		PCI	
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After			
A-1	Preventive	\$54	\$0	\$0	\$0	\$54	88	88			
A-2	Preventive	\$2,517	\$0	\$0	\$0	\$2,517	66	66			
R-11	Preventive	\$7,636	\$0	\$0	\$0	\$7,636	76	76			
T-1	Preventive	\$174	\$0	\$0	\$0	\$174	68	68			
T-2	Preventive	\$86	\$0	\$0	\$0	\$86	75	75			
Plan Year: 2029							Estimated Cost:	\$131,349		PCI	
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After			
A-1	Preventive	\$127	\$0	\$0	\$0	\$127	85	86			
A-2	Preventive + Global MR	\$2,919	\$11,852	\$0	\$0	\$14,772	63	71			
R-11	Preventive + Global MR	\$9,619	\$104,549	\$0	\$0	\$114,168	75	80			
T-1	Preventive + Global MR	\$205	\$986	\$0	\$0	\$1,191	66	73			
T-2	Preventive + Global MR	\$105	\$986	\$0	\$0	\$1,091	73	79			
Plan Year: 2030							Estimated Cost:	\$7,738		PCI	
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After			
A-1	Preventive	\$200	\$0	\$0	\$0	\$200	83	83			
A-2	Preventive	\$2,013	\$0	\$0	\$0	\$2,013	68	69			
R-11	Preventive	\$5,325	\$0	\$0	\$0	\$5,325	78	78			
T-1	Preventive	\$137	\$0	\$0	\$0	\$137	71	71			
T-2	Preventive	\$63	\$0	\$0	\$0	\$63	77	77			
Plan Year: 2031							Estimated Cost:	\$10,241		PCI	
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After			
A-1	Preventive	\$282	\$0	\$0	\$0	\$282	80	80			
A-2	Preventive	\$2,418	\$0	\$0	\$0	\$2,418	66	66			
R-11	Preventive	\$7,293	\$0	\$0	\$0	\$7,293	77	77			
T-1	Preventive	\$166	\$0	\$0	\$0	\$166	69	69			
T-2	Preventive	\$82	\$0	\$0	\$0	\$82	75	76			
Plan Year: 2032							Estimated Cost:	\$12,967		PCI	
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After			
A-1	Preventive	\$574	\$0	\$0	\$0	\$574	77	77			
A-2	Preventive	\$2,820	\$0	\$0	\$0	\$2,820	64	64			
R-11	Preventive	\$9,273	\$0	\$0	\$0	\$9,273	75	75			
T-1	Preventive	\$197	\$0	\$0	\$0	\$197	66	67			
T-2	Preventive	\$102	\$0	\$0	\$0	\$102	74	74			
Plan Year: 2033							Estimated Cost:	\$15,696		PCI	
Section	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	Before	After			
A-1	Preventive	\$867	\$0	\$0	\$0	\$867	74	75			
A-2	Preventive	\$3,223	\$0	\$0	\$0	\$3,223	62	62			
R-11	Preventive	\$11,256	\$0	\$0	\$0	\$11,256	73	73			
T-1	Preventive	\$228	\$0	\$0	\$0	\$228	64	64			
T-2	Preventive	\$121	\$0	\$0	\$0	\$121	72	72			