HARLEM AIRPORT

Branch: 17A **APRON** **A-11**

Length: 235 LF **Width:** 280 LF **Area:** 65,320 SF **Last Const. :** 2003 **Family:** 9ACAM
From: T-12 **To:** TIEDOWNS **Surface:** AC

Inspections

Samples Surveyed: 5 **Total Samples:** 15 **Last Inspection Date:** 6/16/2009 **PCI: 84**

Sample # 3 **Area:** 4321 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	21 LF
WEATHERING/RAVELING	L	45 SF
OIL SPILLAGE	N	2 SF
WEATHERING/RAVELING	H	1 SF

Sample # 5 **Area:** 4301 SF

Distress Description	Severity	Quantity
WEATHERING/RAVELING	L	45 SF
LONGITUDINAL/TRANSVERSE CRACKING	L	4 LF
PATCHING	L	4 SF
DEPRESSION	M	2 SF
OIL SPILLAGE	N	1 SF

Sample # 8 **Area:** 4301 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	M	31 LF
WEATHERING/RAVELING	L	45 SF
LONGITUDINAL/TRANSVERSE CRACKING	L	5 LF
PATCHING	L	8 SF
DEPRESSION	M	2 SF
OIL SPILLAGE	N	1 SF

Sample # 10 **Area:** 4301 SF

Distress Description	Severity	Quantity
WEATHERING/RAVELING	L	45 SF
LONGITUDINAL/TRANSVERSE CRACKING	L	5 LF
OIL SPILLAGE	N	2 SF
PATCHING	L	1 SF

Sample # 13 **Area:** 4875 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	64 LF
WEATHERING/RAVELING	L	50 SF
LONGITUDINAL/TRANSVERSE CRACKING	M	11 LF
OIL SPILLAGE	N	2 SF
WEATHERING/RAVELING	M	1 SF

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
WEATHERING/RAVELING	H	3 SF	0.00 %	6.00
DEPRESSION	M	12 SF	0.02 %	5.20
LONGITUDINAL/TRANSVERSE CRACKING	M	124 LF	0.19 %	5.00
WEATHERING/RAVELING	M	3 SF	0.00 %	4.00
LONGITUDINAL/TRANSVERSE CRACKING	L	293 LF	0.45 %	3.97
WEATHERING/RAVELING	L	680 SF	1.04 %	2.68
OIL SPILLAGE	N	24 SF	0.04 %	2.00
PATCHING	L	38 SF	0.06 %	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** 77.0 **% Climate/Durability** 23.0 **% Other**

HARLEM AIRPORT

Branch: 17R **RUNWAY** **R-11**

Length: 3,850 LF **Width:** 75 LF **Area:** 288,750 SF **Last Const. :** 2003 **Family:** 9ACRML
From: T-11 **To:** R-12 **Surface:** AC

Inspections

Samples Surveyed: 7 **Total Samples:** 55 **Last Inspection Date:** 6/16/2009 **PCI: 84**

Sample # 1 **Area:** 5250 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	86 LF
WEATHERING/RAVELING	L	106 SF
WEATHERING/RAVELING	H	2 SF

Sample # 9 **Area:** 5250 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	131 LF
WEATHERING/RAVELING	L	106 SF

Sample # 17 **Area:** 5250 SF

Distress Description	Severity	Quantity
WEATHERING/RAVELING	M	624 SF
LONGITUDINAL/TRANSVERSE CRACKING	L	134 LF
WEATHERING/RAVELING	L	106 SF
PATCHING	L	1 SF

Sample # 25 **Area:** 5250 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	70 LF
WEATHERING/RAVELING	L	106 SF

Sample # 33 **Area:** 5250 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	47 LF
WEATHERING/RAVELING	L	106 SF
DEPRESSION	L	23 SF

Sample # 41 **Area:** 5250 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	150 LF
WEATHERING/RAVELING	L	106 SF

Sample # 49 **Area:** 5250 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	138 LF
WEATHERING/RAVELING	L	106 SF
WEATHERING/RAVELING	M	2 SF

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
WEATHERING/RAVELING	M	4919 SF	1.70 %	9.69
LONGITUDINAL/TRANSVERSE CRACKING	L	5942 LF	2.06 %	7.56
WEATHERING/RAVELING	H	16 SF	0.01 %	6.00
WEATHERING/RAVELING	L	5830 SF	2.02 %	4.01
PATCHING	L	8 SF	0.00 %	2.00
DEPRESSION	L	181 SF	0.06 %	0.30

* 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**

HARLEM AIRPORT

Branch: 17R **RUNWAY** **R-12**

Length: 250 LF **Width:** 75 LF **Area:** 18,750 SF **Last Const. :** 2003 **Family:** 9ACRML
From: R-11 **To:** T-3 **Surface:** AC

Inspections

Samples Surveyed: 3 **Total Samples:** 4 **Last Inspection Date:** 6/16/2009 **PCI: 84**

Sample # 1 **Area:** 4688 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	101 LF
WEATHERING/RAVELING	L	94 SF
WEATHERING/RAVELING	M	12 SF

Sample # 2 **Area:** 4688 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	141 LF
WEATHERING/RAVELING	L	94 SF

Sample # 3 **Area:** 4866 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	87 LF
WEATHERING/RAVELING	L	94 SF
WEATHERING/RAVELING	H	4 SF

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
LONGITUDINAL/TRANSVERSE CRACKING	L	433 LF	2.31 %	8.24
WEATHERING/RAVELING	H	5 SF	0.03 %	6.00
WEATHERING/RAVELING	M	16 SF	0.08 %	4.00
WEATHERING/RAVELING	L	371 SF	1.98 %	3.96

* 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**

HARLEM AIRPORT

Branch: 17T **TAXIWAY** **T-11**

Length: 738 LF **Width:** 35 LF **Area:** 28,174 SF **Last Const. :** 2003 **Family:** 9ACRML

From: R-11 **To:** A-11 **Surface:** AC

Inspections

Samples Surveyed: 3 **Total Samples:** 6 **Last Inspection Date:** 6/16/2009 **PCI: 77**

Sample # 2 **Area:** 3720 SF

Distress Description	Severity	Quantity
WEATHERING/RAVELING	L	194 SF
LONGITUDINAL/TRANSVERSE CRACKING	L	28 LF
OIL SPILLAGE	N	3 SF
WEATHERING/RAVELING	H	2 SF
PATCHING	L	1 SF

Sample # 4 **Area:** 4839 SF

Distress Description	Severity	Quantity
WEATHERING/RAVELING	L	714 SF
LONGITUDINAL/TRANSVERSE CRACKING	L	26 LF
DEPRESSION	L	51 SF
WEATHERING/RAVELING	H	3 SF
PATCHING	L	1 SF
OIL SPILLAGE	N	1 SF

Sample # 5 **Area:** 4839 SF

Distress Description	Severity	Quantity
LONGITUDINAL/TRANSVERSE CRACKING	L	163 LF
WEATHERING/RAVELING	L	328 SF
PATCHING	L	3 SF

Extrapolated Distress Quantities*

Distress Description	Severity	Quantity	Density	Deduct
WEATHERING/RAVELING	L	2599 SF	9.23 %	9.43
LONGITUDINAL/TRANSVERSE CRACKING	L	456 LF	1.62 %	6.41
WEATHERING/RAVELING	H	11 SF	0.04 %	6.00
DEPRESSION	L	107 SF	0.38 %	2.32
OIL SPILLAGE	N	8 SF	0.03 %	2.00
PATCHING	L	11 SF	0.04 %	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** 85.0 **% Climate/Durability** 15.0 **% Other**

HARLEM AIRPORT

FIRST YEAR LOCAL:2010 LOCAL REPAIR COST: $2,353

Section	Distress Description	Severity	Quantity	Work Description	Quantity	Cost	Policy
A-11	L & T CR	M	125 LF	Crack Sealing - AC	125 LF	$186	PREV.
A-11	OIL SPILLAGE	N	24 SF	Patching - AC Shallow	48 SF	$708	PREV.
A-11	DEPRESSION	M	12 SF	Patching - AC Deep	30 SF	$1,098	PREV.
T-11	OIL SPILLAGE	N	9 SF	Patching - AC Shallow	25 SF	$361	PREV.

FIFTEEN YEAR PROJECTIONS: ESTIMATED AVERAGE ANNUAL COST: $97,142

PLAN YEAR: 2010 ESTIMATED COST: $2,353

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-11	Basic Prev.	$1,992				$1,992	82	82
T-11	Basic Prev.	$361				$361	76	76

PLAN YEAR: 2011 ESTIMATED COST: $7,793

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-11	Basic Prev.	$1,265				$1,265	79	79
R-11	Basic Prev.	$5,271				$5,271	79	79
R-12	Basic Prev.	$342				$342	79	79
T-11	Basic Prev.	$914				$914	74	74

PLAN YEAR: 2012 ESTIMATED COST: $10,397

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-11	Basic Prev.	$1,765				$1,765	76	76
R-11	Basic Prev.	$7,125				$7,125	77	77
R-12	Basic Prev.	$463				$463	77	77
T-11	Basic Prev.	$1,044				$1,044	72	72

PLAN YEAR: 2013 ESTIMATED COST: $654,309

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-11	Prev. & Thin AC	$2,248	$104,512			$106,760	73	89
R-11	Prev. & Thin AC	$8,745	$462,001			$470,746	74	89
R-12	Prev. & Thin AC	$568	$30,000			$30,568	74	89
T-11	Prev. & Thin AC	$1,157	$45,079			$46,235	70	81

PLAN YEAR: 2014 ESTIMATED COST: $3,355

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-11	Basic Prev.	$478				$478	86	86
R-11	Basic Prev.	$2,143				$2,143	85	85
R-12	Basic Prev.	$139				$139	85	85
T-11	Basic Prev.	$594				$594	78	78

PLAN YEAR: 2015 ESTIMATED COST: $5,558

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-11	Basic Prev.	$850				$850	82	82
R-11	Basic Prev.	$3,702				$3,702	82	82
R-12	Basic Prev.	$240				$240	82	82
T-11	Basic Prev.	$766				$766	76	76

PLAN YEAR: 2016 ESTIMATED COST: $7,783

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-11	Basic Prev.	$1,263				$1,263	79	79
R-11	Basic Prev.	$5,263				$5,263	79	79
R-12	Basic Prev.	$342				$342	79	79
T-11	Basic Prev.	$914				$914	74	74

PLAN YEAR: 2017 ESTIMATED COST: $10,397

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-11	Basic Prev.	$1,765				$1,765	76	76
R-11	Basic Prev.	$7,125				$7,125	77	77
R-12	Basic Prev.	$463				$463	77	77
T-11	Basic Prev.	$1,044				$1,044	72	72

PLAN YEAR: 2018 ESTIMATED COST: $12,716

SectionI	Maintenance	Local	Global	Major<Crit	Major>Crit	Total	PCI before	PCI after
A-11	Basic Prev.	$2,246				$2,246	73	73
R-11	Basic Prev.	$8,745				$8,745	74	74
R-12	Basic Prev.	$568				$568	74	74
T-11	Basic Prev.	$1,157				$1,157	70	70

HARLEM AIRPORT

PLAN YEAR: 2019					ESTIMATED COST:	$14,721	PCI	
SectionI	**Maintenance**	**Local**	**Global**	**Major<Crit**	**Major>Crit**	**Total**	**before**	**after**
A-11	Basic Prev.	$2,702				$2,702	70	70
R-11	Basic Prev.	$10,148				$10,148	72	72
R-12	Basic Prev.	$659				$659	72	72
T-11	Basic Prev.	$1,212				$1,212	69	69

PLAN YEAR: 2020					ESTIMATED COST:	$16,314	PCI	
SectionI	**Maintenance**	**Local**	**Global**	**Major<Crit**	**Major>Crit**	**Total**	**before**	**after**
A-11	Basic Prev.	$2,944				$2,944	67	67
R-11	Basic Prev.	$11,369				$11,369	71	71
R-12	Basic Prev.	$738				$738	71	71
T-11	Basic Prev.	$1,262				$1,262	67	67

PLAN YEAR: 2021					ESTIMATED COST:	$17,484	PCI	
SectionI	**Maintenance**	**Local**	**Global**	**Major<Crit**	**Major>Crit**	**Total**	**before**	**after**
A-11	Basic Prev.	$3,185				$3,185	64	64
R-11	Basic Prev.	$12,195				$12,195	69	69
R-12	Basic Prev.	$792				$792	69	69
T-11	Basic Prev.	$1,312				$1,312	66	66

PLAN YEAR: 2022					ESTIMATED COST:	$18,337	PCI	
SectionI	**Maintenance**	**Local**	**Global**	**Major<Crit**	**Major>Crit**	**Total**	**before**	**after**
A-11	Basic Prev.	$3,424				$3,424	61	61
R-11	Basic Prev.	$12,721				$12,721	68	68
R-12	Basic Prev.	$826				$826	68	68
T-11	Basic Prev.	$1,366				$1,366	64	64

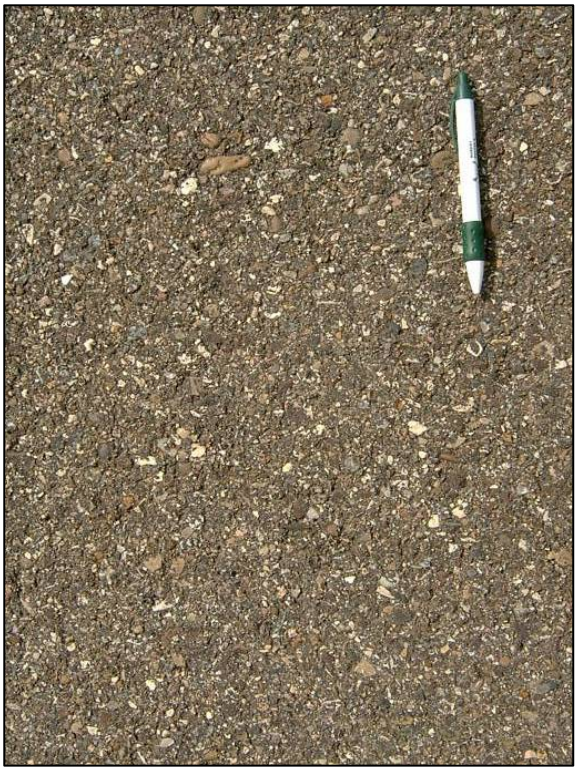
PLAN YEAR: 2023					ESTIMATED COST:	$660,900	PCI	
SectionI	**Maintenance**	**Local**	**Global**	**Major<Crit**	**Major>Crit**	**Total**	**before**	**after**
A-11	Prev. & Thin AC	$3,793	$104,512			$108,306	59	73
R-11	Prev. & Thin AC	$13,228	$462,001			$475,229	67	74
R-12	Prev. & Thin AC	$859	$30,000			$30,859	67	74
T-11	Prev. & Thin AC	$1,428	$45,079			$46,506	63	70

PLAN YEAR: 2024					ESTIMATED COST:	$14,721	PCI	
SectionI	**Maintenance**	**Local**	**Global**	**Major<Crit**	**Major>Crit**	**Total**	**before**	**after**
A-11	Basic Prev.	$2,702				$2,702	70	70
R-11	Basic Prev.	$10,148				$10,148	72	72
R-12	Basic Prev.	$659				$659	72	72
T-11	Basic Prev.	$1,212				$1,212	69	69

HARLEM AIRPORT

6/15/2009

A-11, overview



A-11, surface detail

T-11, surface detail with grinding

T-11, depression at culvert

HARLEM AIRPORT

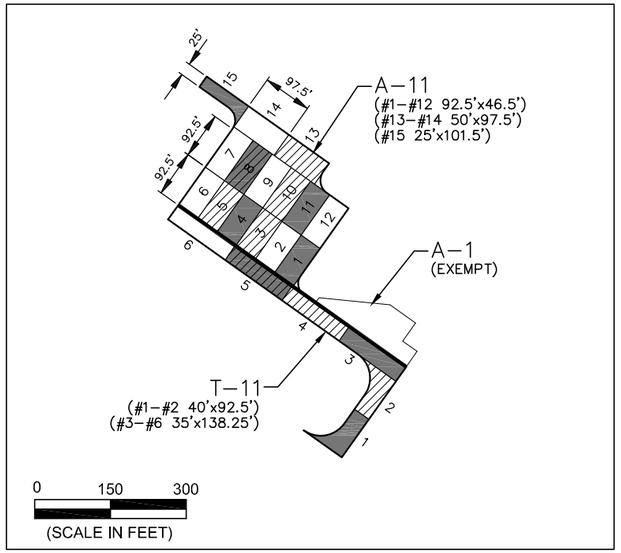
6/15/2009

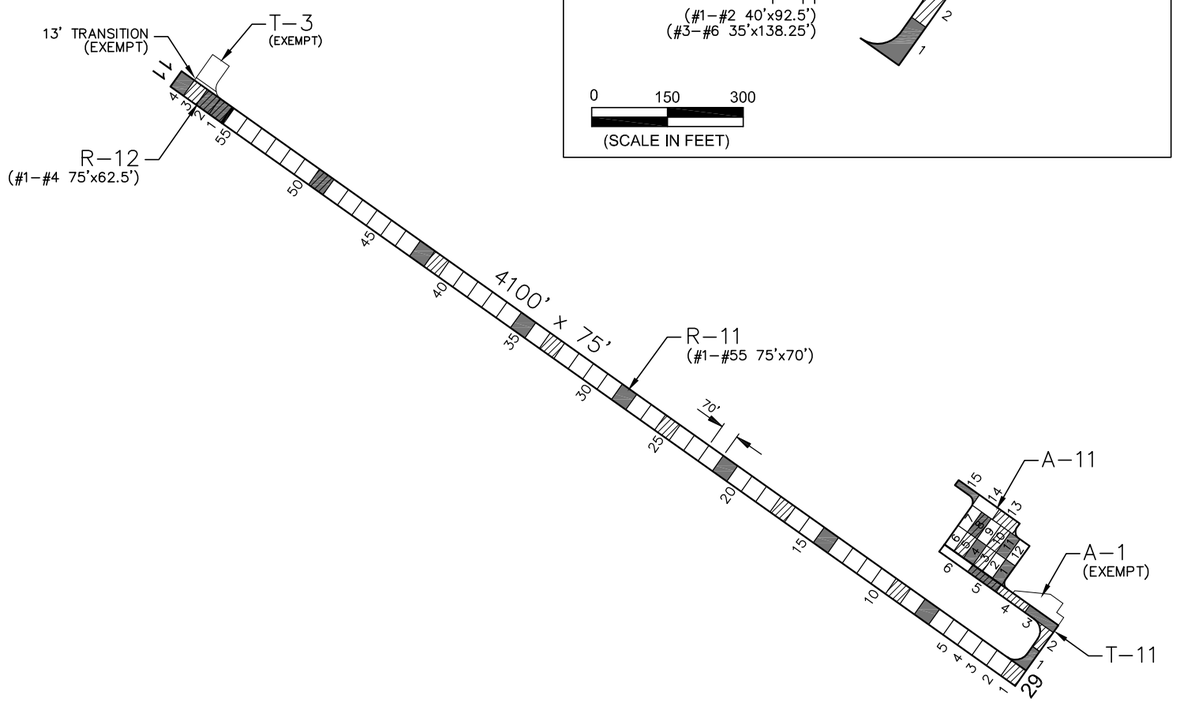
R-11, overview

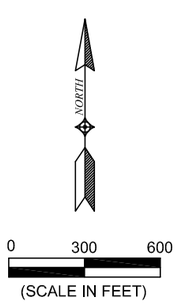
R-11, surface detail with grinding

R-12, overview

HARLEM







PAVEMENT STRENGTH SURVEY/PAVEMENT CONDITION SURVEY

HARLEM

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	10.5"(MIN)P–154	6" P–208	3" P–401		12,500			1 2 3
R–12	E–7	CBR=2	10.5"P–154	6" P–208	3" P–401		12,500			3
TAXIWAYS										
T–11	E–7	CBR=2	10.5"P–154	6" P–208	3" P–401		12,500			1 2 3
T–3	E–7	CBR=2		8.5" P–208	1.5" P–609	1" P–402	8,000			1 2
APRONS										
A–1	E–7	CBR=2		8.5" P–208	1.5" P–609	1" P–402	8,000			1
A–11	E–7	CBR=2	10.5"P–154	6" P–208	3" P–401		12,500			3

REMARKS:

1. AIP–01, 1983, CONSTRUCT RUNWAY, CONNECTING TAXIWAY, AND APRON
2. AIP–02, 1992, P–402 OVERLAY RUNWAY AND TAXIWAY, SEVERAL RUNWAY SECTIONS WERE REMOVED, REGRADED, COMPACTED, AND PAVED WITH 2" P–401 PRIOR TO P–402 OVERLAY.
3. AIP–004–2003, RECONSTRUCT AND WIDEN RUNWAY; CONSTRUCT NEW TAXIWAY (T–11) AND APRON (A–11).

LEGEND

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

DATE OF PAVEMENT STRENGTH SURVEY:	SEPT. 23, 1987
EVALUATED BY:	C. NEW
DATE OF MOST RECENT PAVEMENT CONDITION SURVEY:	JUNE 16, 2009
EVALUATED BY:	B. BURKLAND

MONTANA AVIATION SYSTEM PLAN
2009 UPDATE - PAVEMENT CONDITION INDEXES

HARLEM AIRPORT

PREPARED FOR: MONTANA AERONAUTICS DIVISION ORO Y PLATA

HARLEM
MONTANA

DATE: NOV. 2009

PREPARED BY: RPA