FLORIDA DEPARTMENT OF TRANSPORTATION
AVIATION AND SPACEPORTS OFFICE

Statewide Airfield Pavement Management Program

Airport Pavement Evaluation Report

November 2019

Williston Municipal Airport (X60)
General Aviation Airport
District 2

OFFICE OF FREIGHT, LOGISTICS & PASSENGER OPERATIONS

Florida Department of Transportation

Statewide Airfield Pavement Management Program

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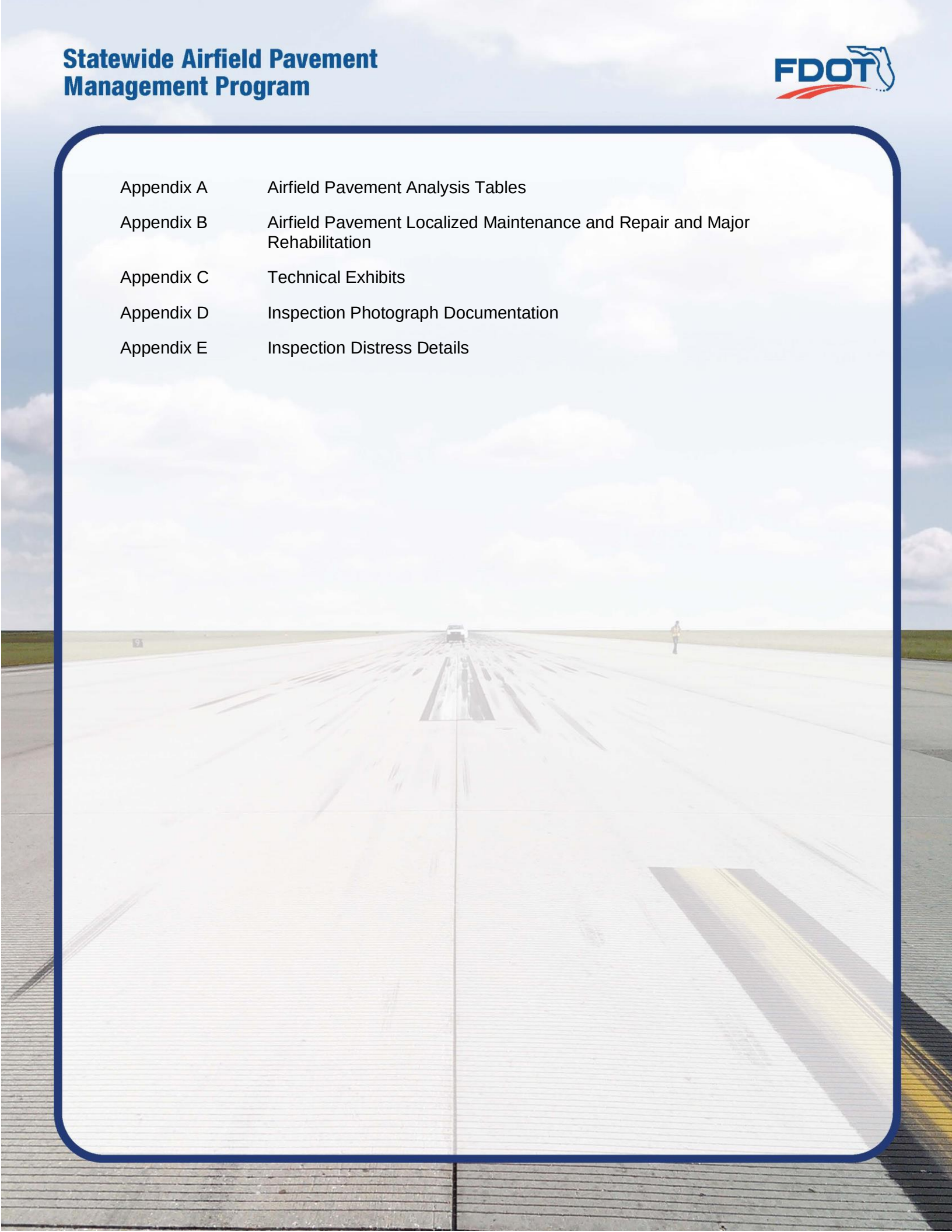

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Executive Summary

Program Background

Airport airfield pavement infrastructure facilities represent a large capital investment in the Florida Airport System. Timely and appropriate maintenance and strategic rehabilitation are essential as repair costs increase significantly in proportion to deterioration. Airport pavement distresses can also contribute to the development of loose debris and decreased ride quality, which can be a safety concern for aircraft operations.

In 2016, the Florida Department of Transportation (FDOT) Aviation and Spaceports Office (ASO) selected Kimley-Horn and Associates, Inc. with subconsultants Airfield Pavement Management Systems, LLC and AVCON, Inc. to provide professional services in support of FDOT in the continued efforts of performing a system update to the Statewide Airfield Pavement Management Program (SAPMP). This work is to be completed from fiscal year 2016 through fiscal year 2019. The SAPMP has 95 public use airport facilities throughout the seven FDOT Districts that participate in the system update. The results of this system update for this specific airport are presented in this report and can be utilized by FDOT and the Federal Aviation Administration (FAA) to identify, prioritize, and schedule pavement maintenance, repair, and major rehabilitation projects.

Pavement condition was assessed utilizing the pavement condition index (PCI) methodology as defined in the FAA Advisory Circular ***150/5380-7B "Airport Pavement Management Program (PMP)"*** using the documented procedures set forth by ASTM ***D5340-12*** "***Standard Test Method for Airport Pavement Condition Index Surveys."***

Pavement deterioration, in accordance with the ASTM D5340-12, was characterized in terms of distinct distress types, severity level of distress, and quantity of distress. This information is utilized to calculate a PCI numeric that represents the overall condition of the pavement in a numeric index that ranges from 0 (a condition category of FAILED) to 100 (GOOD). The PCI methodology analyzes an overall measure of the pavement condition and provides an indication of the degree of maintenance, repair, or rehabilitation efforts that will be required to sustain functional pavement.

The tasks required for the system update at each participating airport consist of the following:

- Obtain recent and anticipated airfield pavement construction work data.
- Update airport airfield pavement system inventory records (construction history, identification, geometry, and facility classification).
- Perform PCI Survey Inspections at each participating airport.
- Update the FDOT SAPMP PAVER™ database system.
- Update the FDOT SAPMP GIS Airfield Navigation GPS enabled Maps.
- Update airfield pavement performance models and pavement condition forecasting.
- Identification of planning-level maintenance, repair, and major rehabilitation to address pavement needs based on functional PCI analysis.
- Development of planning-level opinion of probable construction costs for pavement rehabilitation.

Summary of Results

Pavement Condition Index (Latest Inspection)

Table E-1 Pavement Condition Index Summary (Last Inspection) – Section Level

Network ID	Branch Name	Branch Use	Section ID	Area (SF)	PCI	Condition Rating
X60	RUNWAY 5-23	RUNWAY	6110	7,500	67	Fair
X60	RUNWAY 5-23	RUNWAY	6112	15,000	47	Poor
X60	RUNWAY 14-32	RUNWAY	6205	24,688	72	Satisfactory
X60	RUNWAY 14-32	RUNWAY	6215	254,982	89	Good
X60	RUNWAY 14-32	RUNWAY	6235	22,894	79	Satisfactory
X60	RUNWAY 14-32	RUNWAY	6250	15,631	92	Good
X60	TAXIWAY A	TAXIWAY	205	159,607	89	Good
X60	TAXIWAY A	TAXIWAY	220	287,885	93	Good
X60	TAXIWAY A1	TAXIWAY	255	34,316	91	Good
X60	TAXIWAY B	TAXIWAY	305	101,269	83	Satisfactory
X60	TAXIWAY C	TAXIWAY	105	65,023	64	Fair
X60	TAXIWAY C	TAXIWAY	115	35,409	85	Satisfactory
X60	TAXIWAY D	TAXIWAY	505	61,793	83	Satisfactory
X60	TAXIWAY D	TAXIWAY	510	8,500	90	Good
X60	TAXIWAY D1	TAXIWAY	405	57,110	85	Satisfactory
X60	TAXIWAY E	TAXIWAY	705	55,768	83	Satisfactory
X60	TAXIWAY F	TAXIWAY	550	128,837	8	Failed
X60	TAXIWAY F	TAXIWAY	555	11,250	35	Very Poor
X60	TAXIWAY F	TAXIWAY	565	33,640	92	Good
X60	TAXIWAY G	TAXIWAY	450	94,473	7	Failed
X60	APRON	APRON	4105	86,922	60	Fair
X60	APRON	APRON	4110	101,074	79	Satisfactory
X60	HANGAR APRON	APRON	4205	10,495	78	Satisfactory
X60	HANGAR APRON	APRON	4210	6,628	100	Good
X60	APRON AT T-HANGARS	APRON	4315	3,900	52	Poor
X60	APRON AT T-HANGARS	APRON	4316	2,867	28	Very Poor
X60	APRON AT T-HANGARS	APRON	4320	18,657	79	Satisfactory
X60	APRON AT T-HANGARS	APRON	4325	21,796	64	Fair
X60	RUN-UP APRON	APRON	5105	28,165	94	Good
WHITETOPPING PAVEMENT SECTIONS						
X60	RUNWAY 5-23	RUNWAY	6115	500,000	81	Satisfactory
X60	RUNWAY 5-23	RUNWAY	6125	130,000	83	Satisfactory
X60	RUNWAY 5-23	RUNWAY	6127	40,650	80	Satisfactory

Forecasted Pavement Condition Index 2020-2029

Table E-2 Pavement Condition Index Forecast 2020-2029

Network ID	Branch ID	Section ID	Last PCI	Forecasted PCI									
				2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
X60	AP	4105	60	58	56	55	53	53	52	52	52	52	52
X60	AP	4110	79	77	76	74	73	71	69	68	66	65	63
X60	AP HANG	4205	78	76	74	72	69	67	64	61	59	57	55
X60	AP HANG	4210	100	98	96	95	93	92	90	88	87	85	84
X60	AP RU	5105	94	92	91	89	88	86	84	83	81	80	78
X60	AP T-HANG	4315	52	50	49	47	46	44	42	41	39	38	36
X60	AP T-HANG	4316	28	26	23	20	18	15	12	10	7	4	2
X60	AP T-HANG	4320	79	77	76	74	73	71	69	68	66	65	63
X60	AP T-HANG	4325	64	62	61	59	58	56	54	53	51	50	48
X60	RW 14-32	6205	72	71	70	69	68	68	67	66	65	64	63
X60	RW 14-32	6215	89	87	84	82	79	77	75	72	70	68	66
X60	RW 14-32	6235	79	78	77	76	75	75	74	73	72	71	70
X60	RW 14-32	6250	92	90	89	87	85	84	82	81	79	77	76
X60	RW 5-23	6110	67	66	65	64	63	63	62	61	60	59	58
X60	RW 5-23	6112	47	44	41	38	35	32	30	27	24	21	18
X60	TW A	205	89	87	84	82	80	78	76	75	74	73	72
X60	TW A	220	93	91	88	86	83	81	79	77	75	73	72
X60	TW A1	255	91	89	86	84	81	79	77	75	74	72	71
X60	TW B	305	83	81	79	77	76	74	73	72	71	71	70
X60	TW C	105	64	62	61	59	58	56	54	53	51	49	48
X60	TW C	115	85	83	81	79	77	75	74	73	72	71	70
X60	TW D	505	83	81	79	77	76	74	73	72	71	71	70
X60	TW D	510	90	87	85	82	80	78	77	75	74	73	72
X60	TW D1	405	85	83	81	79	77	75	74	73	72	71	70
X60	TW E	705	83	81	79	77	76	74	73	72	71	71	70
X60	TW F	550	8	6	3	0	0	0	0	0	0	0	0
X60	TW F	555	35	34	33	32	31	31	30	29	28	27	26
X60	TW F	565	92	90	87	85	82	80	78	76	74	73	71
X60	TW G	450	7	5	2	0	0	0	0	0	0	0	0

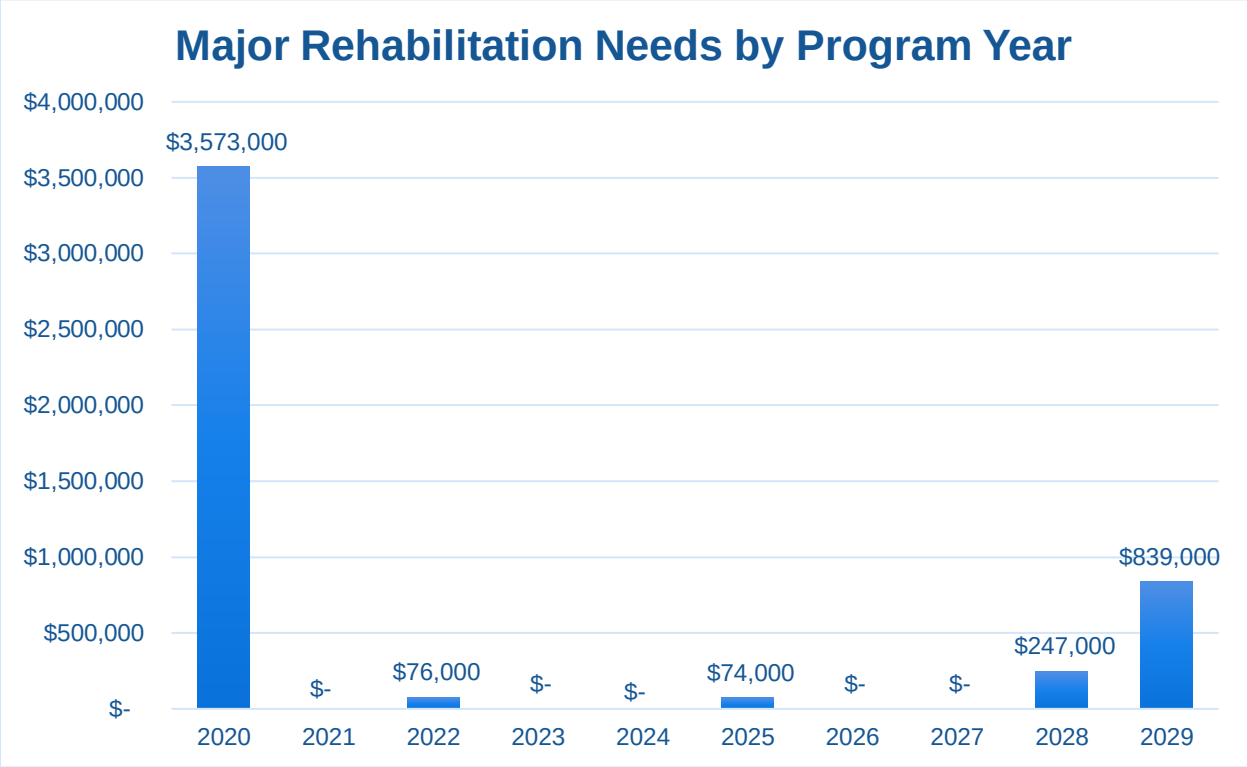
Major Rehabilitation Planning 2020-2029

Table E-3 Major Rehabilitation Planning 2020-2029

Program Year	Network ID	Branch ID	Section ID	Surface	Area (SF)	PCI Before	Rehabilitation Type	Planning Cost
2020	**X60**	AP	4105	AAC	86,922	58	AC Restoration	$ 609,000.00
2020	**X60**	AP T-HANG	4315	AC	3,900	50	AC Restoration	$ 28,000.00
2020	**X60**	AP T-HANG	4316	APC	2,867	26	AC Reconstruction	$ 26,000.00
2020	**X60**	AP T-HANG	4325	AC	21,796	62	AC Restoration	$ 153,000.00
2020	**X60**	RW 5-23	6112	APC	15,000	44	AC Restoration	$ 121,000.00
2020	**X60**	TW C	105	AAC	65,023	62	AC Restoration	$ 456,000.00
2020	**X60**	TW F	550	AC	128,837	6	AC Reconstruction	$ 1,160,000.00
2020	**X60**	TW F	555	PCC	11,250	34	PCC Reconstruction	$ 169,000.00
2020	**X60**	TW G	450	AC	94,473	5	AC Reconstruction	$ 851,000.00
2022	**X60**	RW 5-23	6110	PCC	7,500	64	PCC Restoration	$ 76,000.00
2025	**X60**	AP HANG	4205	AAC	10,495	64	AC Restoration	$ 74,000.00
2028	**X60**	RW 14-32	6205	PCC	24,688	64	PCC Restoration	$ 247,000.00
2029	**X60**	AP	4110	AC	101,074	63	AC Restoration	$ 708,000.00
2029	**X60**	AP T-HANG	4320	AC	18,657	63	AC Restoration	$ 131,000.00

**All planning cost values have been rounded to the nearest thousand-dollar.*

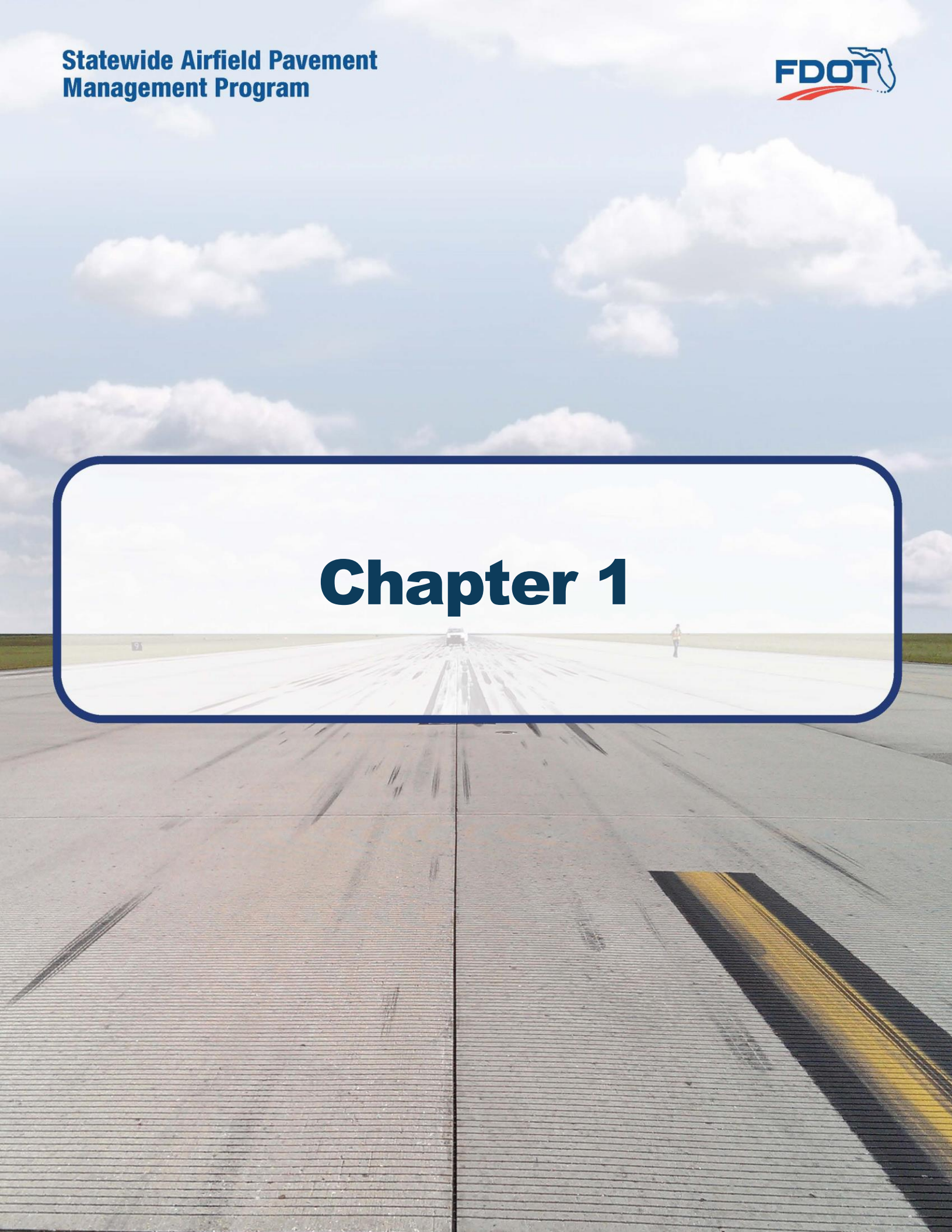
Figure E-4 Major Rehabilitation Planning Annual Budget 2020-2029



Summary of Williston Municipal Airport

Williston Municipal Airport was inspected in April 2019 – the overall weighted PCI value was 73, a condition rating of Satisfactory. The results of the maintenance, repair, and major rehabilitation analysis identified $1,049,760 in localized M&R needs based on current conditions and a 10-Year major rehabilitation need of $9,506,000 based on forecasted conditions. The current major rehabilitation needs based on the latest inspection consist of $3,573,000 for pavements below critical condition.

Localized maintenance and repair identified within this report are categorized as preventive or stopgap; the FDOT SAPMP has defined maintenance policies based on FAA recommendations. Major rehabilitation is identified within the FDOT SAPMP as major construction activity that would result in an improvement or resetting of the pavement section's PCI to a value of 100. Such activities could include: mill and hot-mix asphalt overlay, rigid pavement repair and slab replacement, and full-depth reconstruction. It is recommended that the airport use this as a planning tool for future project development and prioritization – all localized maintenance and repair and major rehabilitation recommendations should be considered as planning-level only. All final localized maintenance, repair, and major rehabilitation is subject to change based on airport prioritization and further design-level evaluation.



Chapter 1

Chapter 1 – Introduction

1.1 Background

The State of Florida has 128 public airports of which 100 public-use airports are recognized as part of the Federal Aviation Administration's (FAA) National Plan of Integrated Airport Systems (NPIAS) that are vital to the Florida economy as well as the economy of the United States. The Florida Aviation System (FAS) provides opportunities for the State to capitalize on an increasingly global marketplace. Florida's system of commercial service and general aviation (GA) airports are important to businesses throughout the entire State. Air travel is essential to tourism, Florida's number one industry.

There are millions of square feet of pavement infrastructure that consists of runways, taxiways, aprons, ramps, and other areas of airports that are vital to the support and safety of aircraft operations. Timely pavement maintenance, repair and major rehabilitation of these pavements will support the airport in operating safely, efficiently, economically and without excessive down time.

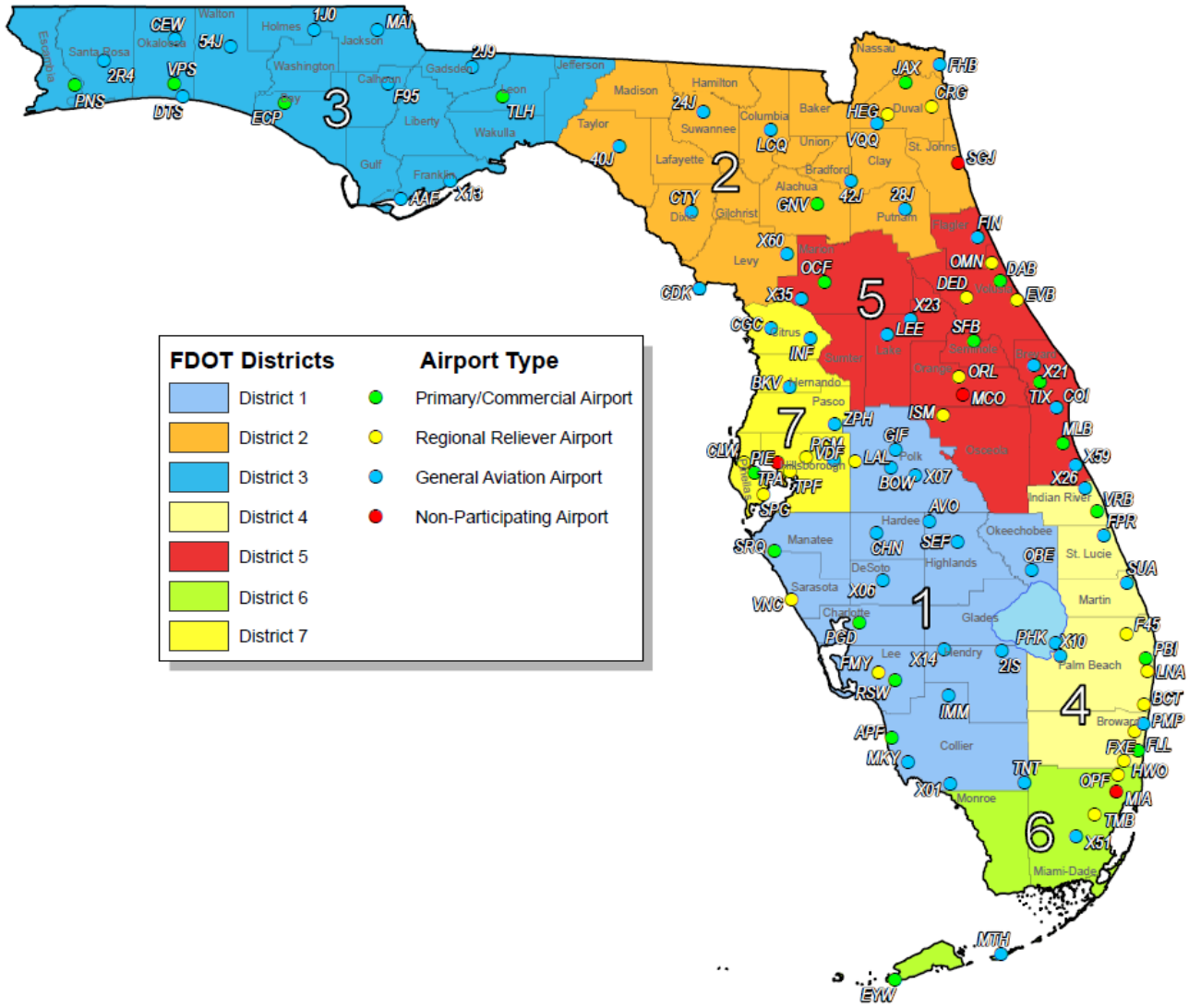
In general, adherence to the FAA Advisory Circulars are mandatory for all projects funded with federal grant monies through the Airport Improvement Program (AIP) and with revenue from the Passenger Facilities Charges (PFC) Program. Further information is detailed in FAA Grant Assurance No. 11 "Pavement Maintenance," No. 34 "Policies, Standards, and Specifications," and PFC Assurance No. 9 "Standards and Specifications." The Florida Department of Transportation (FDOT) performs the Statewide Airfield Pavement Management Program (SAPMP) System Updates for the benefit of participating public-use and publicly owned airports through the Aviation and Spaceports Office (ASO).

The SAPMP addresses the requirements of maintaining an effective pavement management program for the participating airports at the network level. Network-level management of pavement assets provides insight for short-term and long-term budget needs, understanding of the overall condition of the network (current and future), and pavement facilities that are subject for project consideration. A network-level evaluation can be supportive in the identification of maintenance, repair, and major rehabilitation needs and budgetary planning-level opinions of probable construction costs.

1.2 Statewide Airfield Pavement Management Program (SAPMP) Update 2018-2019

In 1992, the FDOT established the Statewide Airfield Pavement Management Program (SAPMP) to provide program managers, District Aviation and Spaceport Offices, and airport operators a system to proactively manage airport airfield pavement infrastructure within the Florida Aviation System. The SAPMP performs network-level Pavement Condition Index (PCI) survey inspections for airport facilities that are categorized as General Aviation (GA), Reliever (RL), and Commercial (PR). Currently, the program consists of 95 actively participating public-use airports with pavement facilities and provides users with comprehensive data to better manage pavement assets.

Figure 1.2 Florida Aviation System (Facilities with Pavement) and FDOT Districts



In 2016, the Florida Department of Transportation Aviation and Spaceports Office contracted Kimley-Horn and Associates, Inc. along with subconsultants Airfield Pavement Management Systems, LLC and AVCON, Inc. to provide professional services in support of FDOT in the continued efforts of performing a system update to the SAPMP. This work is to be completed from fiscal year 2016 through fiscal year 2019.

1.3 Organization

1.3.1 Florida Department of Transportation Aviation and Spaceports Office Program Manager

The FDOT Aviation and Spaceports Office (ASO) Aviation Engineering Manager serves as the Program Manager (ASO-PM) for the SAPMP. The ASO-PM monitors the work performed by the

designated Consultant for the program. The ASO-PM has review and approval authority for each program task and manages the program's day-to-day details and pertinent updates.

The ASO-PM reports updates and milestones to the FDOT State Aviation and Spaceports Manager and Development Administrator.

1.3.2 Participating Florida Public-Use and Publicly Owned Airports

The airports are the end-user and beneficiary of the SAPMP. The SAPMP provides a specific Airport Pavement Evaluation Report that meets the requirements of the FAA Advisory Circular ***150/5380-7B "Airport Pavement Management Program (PMP)."*** Individual participating airports will be provided a final Airport Pavement Evaluation Report by the designated Consultant that is specific to each airport's airfield pavement condition index survey. The ASO-PM has full authority and final approval of each report prior to finalization. In advance of each PCI survey and prior to completion of each Airport Pavement Evaluation Report, participating airports are asked to provide the necessary record documentation for the proper analysis efforts. Relevant record documentation artifacts may consist of but are not limited to: Airport Layout Plans (ALP), Construction Bid Tabulations, As-Built Construction Drawings, Engineer's Reports, and/or field pavement inspection reports.

1.3.3 Florida Department of Transportation District Offices

The seven (7) FDOT District Offices, specifically the Aviation representatives (currently the Freight and Logistics personnel), provide essential support to the SAPMP update and the ASO-PM. Each District supports the SAPMP's on-going efforts by providing local construction cost information throughout the State. The construction cost information, typically consisting of plans and bid tabulations, are used as the basis of the development maintenance, repair, and major rehabilitation opinions of probable construction costs for planning purposes. Each District Office receives copies of individual Airport Pavement Evaluation Reports for the participating airport facilities located within their respective Districts.

1.3.4 Consultant

The Consultant, Kimley-Horn and Associates, Inc., provides technical and administrative support to the ASO-PM for the SAPMP update. The support consists of airfield pavement system inventory updates, performance of PCI Surveys in accordance with ASTM ***D5340-12*** "***Standard Test Method for Airport Pavement Condition Index Surveys,"*** evaluation and reporting of the pavement condition in accordance with the FAA Advisory Circular ***150/5380-7B "Airport Pavement Management Program (PMP)."***

The Consultant Team consists of Kimley-Horn, Airfield Pavement Management Systems, LLC., and AVCON, Inc.

A brief description of the general scope of work undertaken to update the SAPMP includes but is not limited to:

- **Research and evaluation of existing record documentation** was performed to identify construction projects that have taken place since the most recent major update of the SAPMP. This data is used to update the pavement inventory and network definition.

- **An update to the existing Network Definition Map** was made to reflect geometric changes, pavement composition updates, and section characterization. Furthermore, an update to the PCI Survey sample units were made to reflect the field investigation efforts.
- **A functional pavement evaluation with PCI Survey inspections** was completed on all airfield pavements maintained by the Airport. The PCI Survey procedure, as defined by ASTM D5340-12, was used as the basis of the functional pavement evaluation. For this specific evaluation, the sample units defined by prior studies were inspected as to better develop performance models for prediction curves. Pavement subject to construction or anticipated construction during scheduled PCI Survey inspection or within 2 years were omitted from inspection based on confirmation of airport personnel.
- **Condition Analysis** was performed based on the distress data observed, rated, measured, and recorded in accordance with the ASTM D5340-12 for the calculation of PCI values and ratings. The results of the current condition analysis were used in concert with the historic PCI Survey data and construction work history to develop performance models to forecast future PCI values for each section for a 10-year study duration.
- **Maintenance, Repair, and Rehabilitation Planning** was performed predicated on the results of the condition analysis with updated policies and planning-level unit costs. The policies, or M&R policies, have been updated to reflect standard practices for maintenance, repair, and major rehabilitation as defined by the FAA **AC *150/5380-6C “Guidelines and Procedures for Maintenance of Airport Pavements.”*** Planning-level unit costs were developed based on representative construction bid tabulations provided by participating airports. The bid tabulations consisted of limited airfield pavement construction projects that took place between 2009 and 2015 at participating airports.

1.4 Purpose of Airport Pavement Evaluation Report

The individual airport airfield pavement evaluation report discusses the work performed, a summary of findings, condition analysis results, and recommendations for maintenance, repair, and major rehabilitation (M&R) planning associated with the SAPMP system update. It also briefly describes the procedures used to ensure that the appropriate engineering and scientific standards of care, quality, budget, schedules, and safety requirements were implemented during the performance of this work.

The purpose of this Airfield Pavement Evaluation Report is to achieve the following:

- Describe the goals, procedures, and purpose of the SAPMP
- Provide a brief technical explanation of the pavement management methodology, standard practices, and objectives
- Analyze pavement distresses data for the determination of pavement conditions and for identification of airfield pavement maintenance, repair, and major rehabilitation needs based on functional PCI trends

The identification of rehabilitation needs has been determined at the planning level. Design-level investigation is recommended prior to developing construction-level design documents and budgets.

In compliance with FAA Grant Assurances 11 and 19; the FDOT SAPMP provides airports with airfield pavement evaluation reports in accordance with FAA **AC 150/5380-7B Airport Pavement Management Program (PMP)** and **AC 150/5380-6C Guidelines and Procedures for Maintenance of Airport Pavements**. The application of the results of a PCI survey are for planning purposes and are limited to the visual observation of deteriorated pavements in limited sampling; design-level investigation is recommended in accordance with the FAA procedures defined in **AC 5320-6F Airport Pavement Design and Evaluation** and **AC 150/5370-11B Use of Nondestructive Testing in the Evaluation of Airport Pavements**. The aforementioned ACs provide the design-level material properties of in-situ pavement and subgrade layers for the determination of appropriate rehabilitation actions. The FDOT Statewide Airfield Pavement Management Program is organized to provide airports with planning-level data and does not intend to preclude the responsible engineer in performing the appropriate level of investigation and analysis in determining the appropriate design details of a pavement rehabilitation. It would not be advisable to solely base design-level rehabilitation without the appropriate level of investigation and determination of pavement deterioration beyond that of a visual functional condition assessment.

1.5 History of the Program

In 1992, the FDOT implemented the SAPMP to understand the pavement conditions at public airports in the FAS, systematically update pavement infrastructure information, and assist airport operators with recommendations of pavement maintenance, repair, and major rehabilitation needs. The 1992 SAPMP implementation provided the FDOT and the participating airports valuable information for establishing and performing timely and appropriate pavement rehabilitation.

During the 1992-1993 implementation and again during the 1998-1999 updates; the SAPMP performed the development with proprietary software for pavement management system analysis. This development allowed for the creation of pavement management database file system populated with airport attributes and condition data. The pavement management database was used to establish maintenance, repair, and rehabilitation policies; consider planning-level unit costs; and develop recommendations for performing pavement maintenance. This system, known as AIRPAV, was initially developed during the 1992-1993 SAPMP implementation for the analysis of distress data. The AIRPAV system was used again in the 1998-1999 SAPMP update.

In 2004, the SAPMP system update included the review of the AIRPAV software compared to other industry available non-proprietary software packages. As a result of this review, MicroPAVER™ (currently known as PAVER™) was selected for implementation of the system update. MicroPAVER™ was developed by the U.S. Army Corps of Engineers Construction Engineering Research Laboratory for pavement management. Data from the 1998-1999 FDOT SAPMP update, which was built upon the initial 1992-1993 implementation of AIRPAV, was reviewed and converted to be compatible with the MicroPAVER™ system. This data conversion included all documented pavement facilities, classifications, types, histories, geometries, PCI condition data and pertinent attributes gathered from airport feedback at the time. This information was used to develop the inventory of each participating airport's pavement facilities in a consistent format. This was the development of Airfield Pavement Network Definition Exhibits. These inventory exhibits visually depicted the branch, section, and sample units that were based upon the pavement construction history and composition information provided by each airport.

In the 2006-2008 system update, the SAPMP was updated again with continued use of the MicroPAVER™ system. Based on the distress data collected, a maintenance repair and major rehabilitation planning program was developed for each airport. As part of this SAPMP update, the procedures for the inspection and the collection of the pavement distress data were documented, and an interactive website (http://www.dot.state.fl.us/aviation/pavement.shtm) was established for input of data.

In the 2010-2012 system update, the SAPMP was updated using new global positioning system (GPS) integrated technology to digitally collect pavement distress data. Interactive geographic information system (GIS) map files were developed from updated Airfield Pavement Network Definition Exhibits to aid pavement condition inspectors in the collection of sample distress data. The data collected was utilized to develop pavement performance models to predict future pavement PCI values and make recommendations for major rehabilitation.

In the 2013-2015 system update, the SAPMP integrated PAVER™ and FieldInspector™ with the use of GPS and GIS capable field tablets. Furthermore, the update included continued adherence to the ASTM ***D5340-12*** "***Standard Test Method for Airport Pavement Condition Index Surveys."*** The ASTM update consisted of refinement of distress definition types and deduction values for select asphalt concrete and Portland Cement Concrete distresses.

1.6 Federal Aviation Administration (FAA)

Currently, airports participating in the Airport Improvement Program (AIP) Grant Program are required by the FAA to develop and implement a pavement maintenance program to be eligible for funding (FAA Advisory Circular ***150/5380-6C "Guidelines and Procedures for Maintenance of Airport Pavements"*** and ***150/5380-7B "Airport Pavement Management Program (PMP)"***). This program requires detailed inspection of airfield pavement conditions by trained personnel. The inspections are required to be performed at least once a year using the PASER method or every three years if the pavement is inspected as defined by the PCI survey procedure in accordance with the ASTM ***D5340-12*** "***Standard Test Method for Airport Pavement Condition Index Surveys."***

In general, adherence to the Advisory Circulars are mandatory for all projects funded with federal grant monies through the AIP program and with revenue from the Passenger Facilities Charges (PFC) Program. Further information is detailed in FAA Grant Assurance No. 11 "Pavement Maintenance," No. 34 "Policies, Standards, and Specifications," and PFC Assurance No. 9 "Standards and Specifications."

1.7 FDOT SAPMP Objectives and Components

The FDOT SAPMP is a program that provides the FAS support in implementing and/or maintaining a network-level Pavement Management Program in a consistent and regularly scheduled manner.

In accordance with FAA AC***150/5380-7B "Airport Pavement Management Program (PMP)"*** an effective Pavement Management Program consists of a system that achieves specific objectives. The FDOT SAPMP objectives are as follows:

1.7.1 Program Objectives

1 A systematic means for collecting and storing information regarding existing pavement structure and condition.
2 An objective and repeatable system for evaluating pavement condition.
3 Procedures for predicting future pavement condition.
4 Procedures for modeling both past and future pavement performance conditions.
5 Procedures to determine the budget requirements to meet management objectives, such as the maintenance, repair, and major rehabilitation budget required to keep a pavement at a specified PCI level or the budget required to improve to target PCI level.
6 Procedures for formulating and prioritizing maintenance, repair, and major rehabilitation projects.

The objectives are accomplished by the following components:

1.7.2 Program Components

A. Database
B. Pavement Inventory
C. Pavement Structure
D. Pavement Work History
E. Pavement Condition Data

F. Pavement Performance Modeling for the Prediction/Forecast of PCI
G. Maintenance, Repair, and Major Rehabilitation Policies and Budget Simulation

A well-maintained network-level pavement management program may provide airport staff a better understanding of the airfield pavement performance for developing and planning for specific maintenance, repair, and major rehabilitation projects. The understanding of specific distress types and severities will assist the airport in addressing pavement maintenance and repair with the appropriate treatments as defined by the FAA Advisory Circular ***150/5380-6C "Guidelines and Procedures for Maintenance of Airport Pavements."*** The development of projects with an understanding of system inventory, deterioration details, and pavement condition forecasts may assist airport staff in developing practical rehabilitation actions and budgets. Furthermore, the understanding of pavements' past performance and forecasted condition may assist airport staff in addressing pavement rehabilitation in a timely and cost-effective manner. **Figure 1.7.2 (a) Typical Pavement Condition Life Cycle**, which is based on the FAA Advisory Circular ***150/5380-7B "Airport Pavement Management Program (PMP)."*** **Figure 1.7.2 (a) Typical Pavement Condition Life Cycle**, depicts a general duration of a pavement section and identifies the ideal condition to perform rehabilitative treatments at an optimal cost rather than allowing significant increase in rate of deterioration that would result in increased costs.

Figure 1.7.2 (a) Typical Pavement Condition Life Cycle

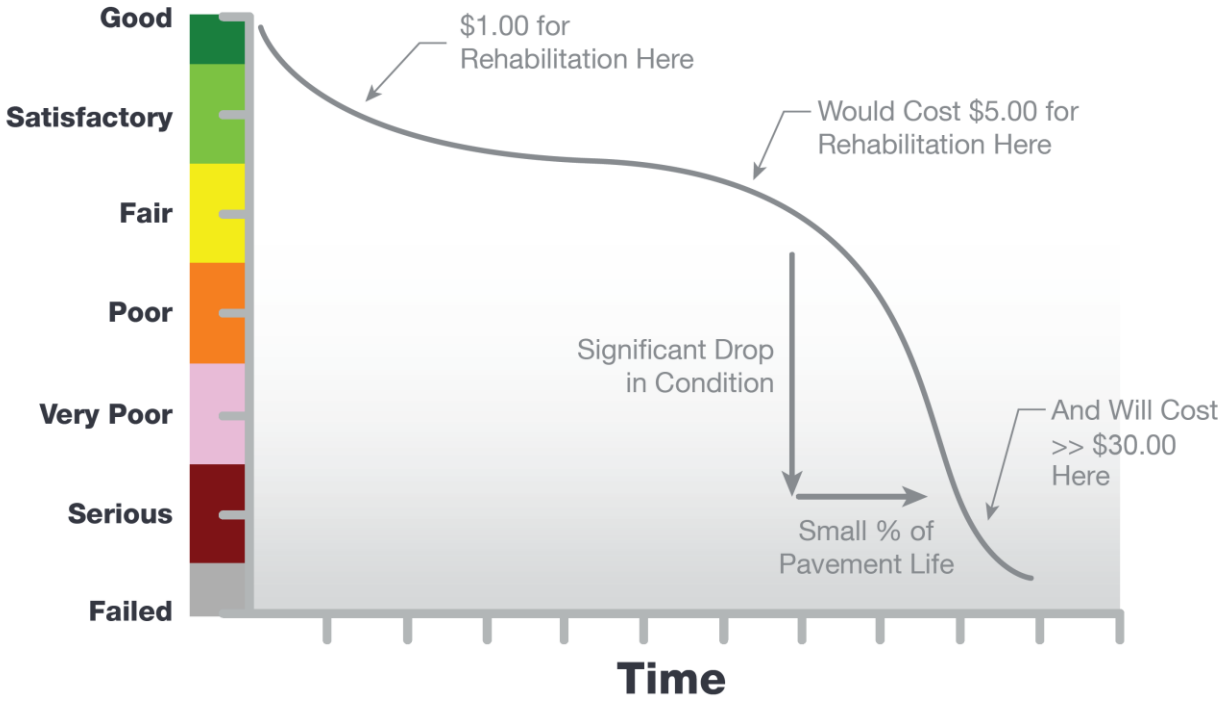
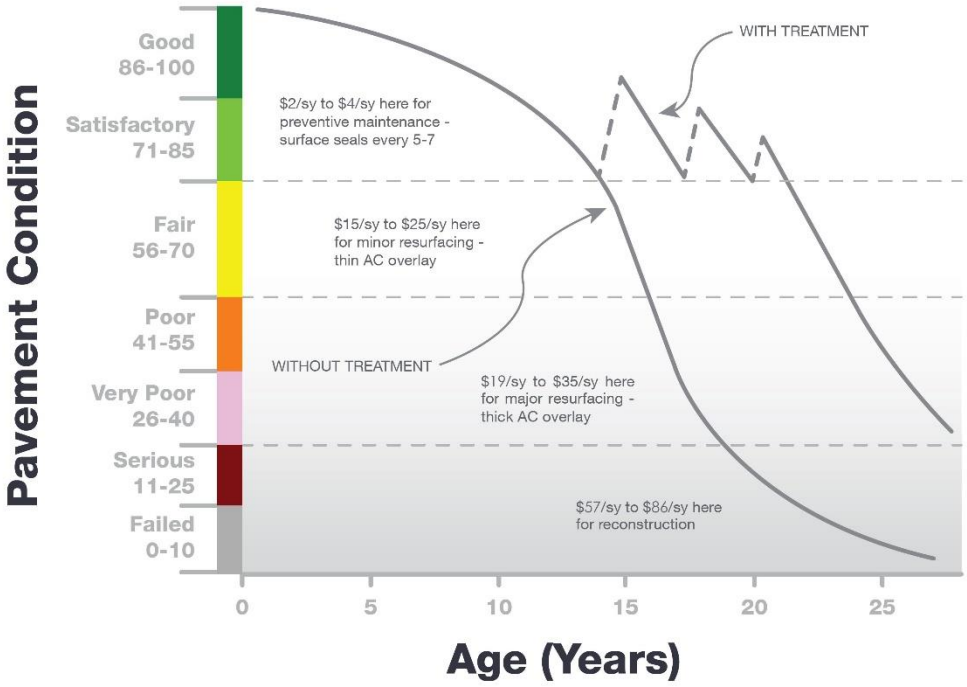


**Figure is for conceptual purposes only – unit costs are not specific to airfield pavements (AC vs PCC).*

Figure 1.7.2 (b) General Pavement Treatments by Condition Range depicts generic flexible asphalt concrete (AC) pavement treatments that are effective at specific condition ranges. This graphic is a general concept and will vary based on pavement surface type and overall

composition. The intent is to convey various treatment types that would be effective based on the condition of the pavement along the deterioration model.

Figure 1.7.2 (b) General Pavement Treatments by Condition Range



Pavement maintenance, repair, and major rehabilitation would be quite anticipatory if all pavements behaved as depicted in **Figures 1.7.2 (a) and 1.7.2 (b)**, however pavement condition performance vary significantly based on several factors. Factors that contribute to a pavement section's condition and deterioration performance may include: functional design life, material type, material construction quality, climatic conditions, aircraft loading type and frequency, non-aircraft loading type and frequency, maintenance history, subgrade conditions, and other infrastructure in the vicinity. The list of factors is not all-inclusive of all factors that may contribute to a pavement's life cycle, it is intended to clarify that unique conditions certainly will affect a pavement's deterioration.

Figures 1.7.2 (c) and Figure 1.7.2 (d) depict visual conditions of pavement facilities, for both AC and PCC respectively, with approximated PCI ranges and corresponding repair and rehabilitation measures.

Figure 1.7.2 (c) Flexible Asphalt Concrete

	PCI Range	Representative PCI	Representative Pavement Surface	Rehabilitation Activities
Routine Maintenance	86-100	90		Pavements with PCI values above 85, or 'Good', may require periodic joint/crack sealing and local patching.
Pavement Preservation	65-85	70		Pavements with PCI conditions ranging from 'Fair' to 'Satisfactory' may require surface treatments (seal coat), thin overlays, and/or joint/crack sealing.
Major Rehabiliation	40-64	50		Pavements that have deteriorated below a PCI 65 (but above 39), or within the range of 'Very Poor' to 'Fair' conditions, may require major rehabilitation such as pavement mill and overlay or partial full-depth reconstruction.
Major Reconstruction	0-39	15		Pavements that have deteriorated below a PCI 40, or within the range of 'Failed' to 'Very Poor' conditions, may require major reconstruction.

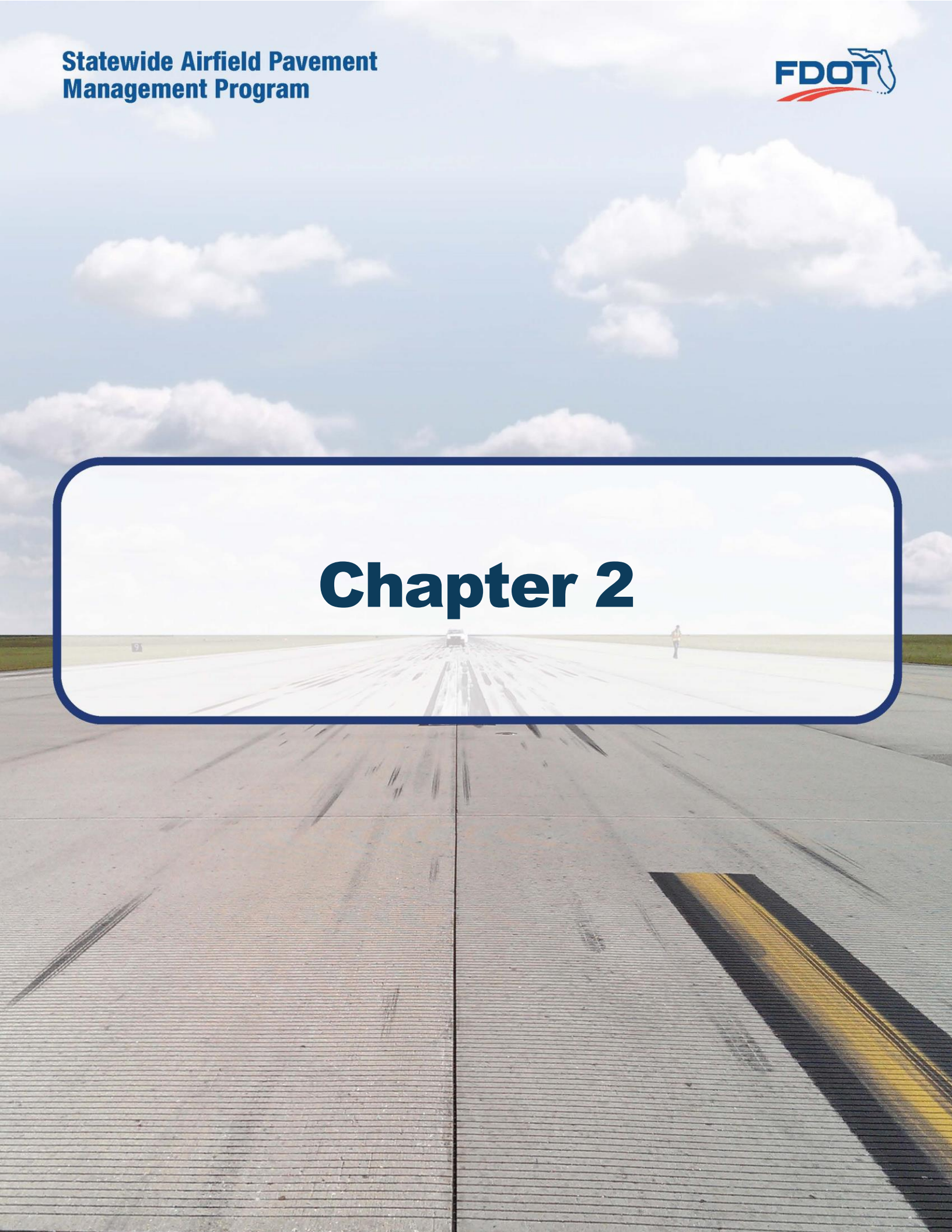
Figure 1.7.2 (d) Rigid Portland Cement Concrete

	PCI Range	Representative PCI	Representative Pavement Surface	Rehabilitation Activities
Routine Maintenance	86-100	90		Pavements with PCI values above 85, or 'Good', may require periodic joint/crack sealing and local patching.
Pavement Preservation	65-85	70		Pavements with PCI conditions ranging from 'Fair' to 'Satisfactory' may require patches and/or joint/crack sealing.
Major Rehabiliation	40-64	50		Pavements that have deteriorated below a PCI 65 (but above 39), or within the range of 'Very Poor' to 'Fair' conditions may require major rehabilitation such as slab replacement and PCC restoration activity.
Major Reconstruction	0-39	15		Pavements that have deteriorated below a PCI 40, or within the range of 'Failed' to 'Very Poor' conditions, may require major reconstruction.

1.8 References

The following reference documents were referenced as specific guidelines and procedures for maintaining airport pavements; establishing an effective pavement maintenance program; and identifying specific pavement distresses, probable causes of distresses, inspection guidelines, and recommended methods of repair:

- ASTM D5340-12 “Standard Test Method for Airport Pavement Condition Index Surveys.”
- FAA Advisory Circular 150/5380-7B “Airport Pavement Management Program.”
- FAA Advisory Circular 150/5380-6C “Guidelines and Procedures for Maintenance of Airport Pavements.”
- FAA Advisory Circular 150/5320-6F “Airport Pavement Design and Evaluation.”
- Department of the Air Force, Air Force Civil Engineer Center “Engineering Technical Letter (ETL) 14-3: Preventive Maintenance Plan (PMP) for Airfield Pavements.”
- Unified Facilities Criteria (UFC) 3-260-16FA 16 “Airfield Pavement Condition Survey Procedures Pavements.”
- Unified Facilities Criteria (UFC) 3-260-03 “Airfield Pavement Evaluation.”
- Pavement Management for Airports, Roads, and Parking Lots 2nd Edition, M.Y. Shahin.



Chapter 2

Chapter 2 – Methodology

An effective pavement management program incorporates the regular collection of pavement condition information and communication of information to appropriate sponsors. This chapter of the report defines the specific methods utilized as part of the SAPMP System Update to meet the requirements of an effective pavement management system as defined by the FAA Advisory Circular ***150/5380-7B "Airport Pavement Management Program (PMP)."***

2.1 Airfield Pavement Database

The SAPMP program has historically utilized PAVER™ (formerly MicroPAVER™); the current update has maintained the use of the PAVER™ 7.0 version of the software. The PAVER™ software application was developed by the U.S. Army Construction Engineering Research Laboratory sponsored by the FAA, Federal Highway Administration, U.S. Army, U.S. Air Force, and the U.S. Navy to meet the objectives of an effective pavement management system. The SAPMP consists of a network-level database of the airport's airfield pavement facilities that are part of the program. PAVER™ can achieve the following pavement management objectives: a manageable inventory system, the analysis of the current condition of pavements in accordance with the ASTM D5340, the development of pavement performance models to forecast conditions, and the development of maintenance, repair, and major rehabilitation recommendations based on budgetary scenarios.

PAVER™ inventory management is based on a tiered organizational structure that consists of networks, branches, and sections, with the section being the smallest unit of management. Critical elements of an effective pavement management program are maintained within the network-level PAVER™ database. These elements typically consist of pavement inventory characteristics, pavement structure, work history, historic condition records, and analytical customization.

The SAPMP System Update consisted of the conversion of the previous database from a PAVER™ version 6.5 to a version 7.0.

2.2 Airfield Pavement System Inventory

An airfield pavement system inventory typically maintains the location of all runways, taxiways, and aprons; geometric characteristics; type of pavement structure, year of construction and/or last major rehabilitation; and general composition details of the pavement.

The pavement inventory for an airport's airfield is an assembly of pavement infrastructure information that builds an inventory of branches and sections that codifies the airport's airfield pavement network. General geometry characteristics, estimated length, width, functional classification, pavement surface type, and operational function are among the characteristics identified at this initial phase in the pavement management process. The development of a pavement inventory that reasonably reflects the airport's airfield pavement facilities that are maintained by the airport provides a defined scope of the inspection and analysis efforts. As in the past, the SAPMP scope of work is specific to the airport-maintained airfield pavements as defined in the field network definition exhibits presented to current airport personnel.

A critical input to the pavement system inventory and network definition in the development of the SAPMP update is the date of last major rehabilitation/construction performed on the pavement assets that would set the asset at a PCI of 100 and a condition rating of Good. The airport provided a limited combination of record drawings, reports, and staff input that was pertinent information in developing the construction history of the airport's pavements from inception. Major rehabilitation/construction activities performed in the last 24-months or anticipated in the next 24-months are assumed to restore the PCI to 100. These activities include; pavement overlay, mill and replace, mill and overlay, new construction, and/or complete reconstruction.

Aerial imagery was obtained through the FDOT Surveying & Mapping Office's *Aerial Photo Look Up System (APLUS)*. This spatially projected imagery was utilized with computer-aided drafting software (AutoCAD) in concert with geographical information system software (ArcGIS) to develop a planning-level representative model that reasonably reflects the pavement assets at the airport.

2.2.1 Pavement Management Program Network Definition Terminology

There are several terms that are common in the communication of the results of the SAPMP System Update, these terms are defined as follows:

Pavement Network

A pavement network is a logical unit for organizing pavements into a structure for pavement management. A network will typically consist of one or more pavement *branches*, which are typically comprised of one or many pavement *sections*. The network is the starting point of the hierarchy of pavement management organization. For example, a network can be all the pavements within an airport's airfield or all the pavements in a statewide program. For the FDOT SAPMP, a network represents an individual airport's airfield pavement facilities maintained by the airport.

The SAPMP System Update consists of research and evaluation of existing record documentation for the participating airports' airfield facilities. The pavement network is typically limited to the pavement facilities subject to aircraft use that is also maintained by the airport owner and eligible for public funding.

Pavement Branch

A pavement branch, also known as a facility, is a logical unit of generally identifiable pavement of a network with distinct functional classification. For example, within an airfield each runway, taxiway, or apron is considered a branch. A branch must consist of at least one section.

Pavement Section

A pavement section, also known as a feature, is the most specific management unit when considering the application and selection of maintenance, repair, and/or major rehabilitation treatments on an area of pavement within a branch. Each branch consists of at least one section, but may consist of more if pavement feature characteristics are distinct throughout the branch. Characteristics considered when subdividing branches into sections include, but are not limited to: pavement structure, type, age, condition, and function; traffic composition and frequency (current and future); geometric location; construction history; and other related

infrastructure features (e.g. drainage). A pavement section is defined as a subordinate of a pavement branch, which is a subordinate of a "parent" pavement network.

Pavement Sample Unit

A pavement sample unit is a subdivision of a pavement section that has a standard size range: twenty (20) continuous slabs (±8 slabs) for Portland Cement Concrete (PCC) pavement and 5,000 contiguous square feet (±2,000 ft^2) for flexible asphalt concrete (AC) or porous friction course pavements.

Table 2.2.1 Airfield Pavement Database Network Definition Terminology

PMS Network Level	Common Definition	Airport Example
Network	Overall pavement assets maintained by the Airport	"Tallahassee International Airport – Airfield Pavements"
Branch Name	Commonly defined asset name as established by Airport and by use	"Runway 18-36"
Branch ID	Codified shorthand name for commonly defined asset established for database identification	"RW 18-36" RW, Branch Use, "Runway" 18-36, Runway Facility
Section ID	Codified identification for pavement asset that is distinct by the following: • Pavement Composition • Construction Work History • Aircraft Traffic • Condition Records	"6105"
Sample Unit	A numeric identification of an area of pavement (5,000±2,000 SF of AC or 20±8 slabs of PCC) that has been inspected in accordance with ASTM D5340-12.	"300"

2.3 Airfield Pavement Structure

2.3.1 Pavement Structure Types

Airport airfield pavements are constructed to provide adequate support for the loads imposed by aircraft and produce a firm, stable, smooth, all-year, all-weather surface free of debris or other particles that may be blown or dislocated by propeller wash or jet blast. Typical pavement planning and design requires coordination of factors that include but are not limited to; subgrade conditions, material layer types, aircraft fleet mix (type, frequency, and traffic growth), and functional use. A pavement structure is composed of constructed layers that consist of subgrade, subbase, base course, structural courses, and surfaces courses. For the FDOT SAPMP, two major pavement structure types are classified for evaluation and analysis: Flexible Asphalt Concrete Surface and Rigid Portland Cement Concrete Surface. Additionally, Composite Structures known as Whitetopping Pavements are also present at limited airports within the Florida Airports System; these unique pavement structures are evaluated separately.

Flexible Asphalt Concrete Surface

A pavement comprised of aggregate mixture with an asphalt cement binder. The FDOT SAPMP consists of three (3) asphalt concrete surface types: Asphalt Concrete (AC), Asphalt Concrete Overlaid on Asphalt Concrete (AAC), and Asphalt Concrete Overlaid on Portland Cement Concrete (APC).

Asphalt Concrete (AC)

A flexible pavement section consisting of aggregate mixture with asphalt cement binder layered on engineered base course material that is layered on subbase and subgrade soil material.

Asphalt Concrete Overlaid on Asphalt Concrete (AAC)

A flexible pavement section consisting of aggregate mixture with asphalt cement binder layered on an existing flexible AC pavement section. Flexible airfield pavement sections are AAC when a pavement rehabilitation consists of a pavement milling operation and a resurfacing of asphalt layers; or a direct overlay of asphalt concrete without surface preparation.

Asphalt Concrete Overlaid on Portland Cement Concrete (APC)

A flexible pavement section consisting of aggregate mixture with asphalt cement binder layered on an existing Rigid PCC pavement section. This unique pavement composition may result in distinct pavement distress manifestations known as reflective joint cracking.

Rigid Portland Cement Concrete Surface

A pavement comprised of aggregate mixture with a Portland Cement binder. The FDOT SAPMP recognizes Portland Cement Concrete (PCC) as the primary rigid pavement section.

Portland Cement Concrete (PCC)

A rigid pavement section composed of Portland cement concrete placed on a granular or treated base course that is supported on a compacted subgrade. The concrete surface must provide a texture of nonskid qualities, prevent the infiltration of surface water into the subgrade, and provide structural support to the airplanes. Rigid pavement construction requires the layout of appropriately designed joint spacing.

Composite Structure – Whitetopping Pavement

A composite pavement comprised of relatively thin Portland Cement Concrete overlaid on an existing flexible asphalt concrete pavement structure. There are three (3) types of Whitetopping Pavements; Conventional (WHT), Thin (TWT), and Ultra-Thin (UTW).

Conventional Whitetopping (WHT)

A composite pavement structure consisting of a modified PCC overlaid on an existing flexible AC pavement section area. The modified PCC layer is typically greater than 8 inches in thickness.

Thin Whitetopping (TWT)

A composite pavement structure consisting of a modified PCC overlaid on an existing flexible asphalt concrete pavement section. The modified PCC layer is typically between 4 and 8 inches in thickness.

Ultra-Thin Whitetopping (UTW)

A composite pavement structure consisting of a modified PCC overlaid on an existing flexible asphalt concrete pavement section. The Portland Cement Concrete layer is typically between 2 and 4 inches in thickness.

2.4 Airfield Pavement Work History

2.4.1 Airfield Pavement Record Keeping

It is strongly recommended that airports maintain records of all airfield construction and maintenance related to the pavement facilities. A history of all maintenance and repair performed and its associated costs (construction and soft costs) can provide valuable information on the effectiveness of various treatments on pavements. An airport should maintain detailed records of maintenance (routine, emergency, and proactive) activities. The records should consist of the following:

1. Location and Limits of Work.
2. Types and Severity of Distresses Repaired.
3. Type of Work.
4. Cost of Work.
5. Supporting Documents (contract documents, construction drawings, specifications, bid tabulations, repair product, photograph records, etc.).

2.5 Airfield Pavement Traffic

A pavement section is typically designed to meet the needs of the user (airlines, air cargo, general aviation, and/or military) in providing a safe, smooth, operational surface. Pavement deterioration generally occurs gradually through increased roughness and/or fatigue cracking caused by successive and heavy aircraft traffic.

This study does not consist of a study or analysis of each individual airport's airfield aircraft fleet mix or traffic operations. However, it is strongly recommended that airports incorporate the requirements of FAA Advisory Circular ***150/5320-6F Airport Pavement Design and Evaluation*** when developing design-level rehabilitation activities. The AC provides guidance on incorporation of aircraft traffic fleet mix data.

2.6 Airfield Pavement Condition Index (PCI) Survey

2.6.1 PCI Survey Methodology

In adherence to the FAA Advisory Circular ***150/5380-7B "Airport Pavement Management Program (PMP),"*** the FDOT SAPMP utilizes the PCI Survey Method of inspection to collect pavement distress data and analyze the condition. The PCI Survey Inspection procedure is a visual statistical sampling of pavements for recording primary distress types (e.g. cracking and deformation), associated severities, and quantities as defined by the ASTM D5340-12. This effort is the primary means of obtaining and recording pavement distress data. The survey inspection consists primarily of visual inspection of pavement surfaces for signs of distress and deterioration resulting from loading (aircraft) and environmental influences.

A visual pavement condition survey provides an indication of the cause and rate of deterioration of a pavement section from a functional point of view and can be an indicator of structural distress. The functional condition analysis assesses the rating of the operational surface. A visual PCI Survey Inspection does not predict the remaining structural life of a pavement section, or its ability to support loads. The functional condition determined by the PCI method

can provide a cost-effective means to plan for pavement rehabilitation projects. The timely application of pavement rehabilitation may lead to the extension of functional life of individual pavement sections. This method varies from structural evaluation; functional condition is limited to visually observed distresses and indicative modes of pavement deterioration. A formal structural evaluation analyzes subsurface conditions, material characteristics, and qualitative pavement structure attributes. A structural evaluation may consist of; subsurface geotechnical exploration, falling weight deflectometer testing, petrographic testing, material coring, and/or flexural testing.

2.6.2 Pavement Distress Types

For each section, the severity and quantity of defined distresses are recorded and then analyzed in accordance with the ASTM D5340-12 standard. The standard identifies 17 distinct flexible asphalt concrete distress types and 16 distinct rigid Portland Cement Concrete distress types.

Table 2.6.2 (a) Pavement Distress Types – Flexible Asphalt Concrete-Surfaced Airfields

Distress	Common Distress Mechanisms
Alligator Cracking	Load / Fatigue
Bleeding	Construction Quality/ Mix Design
Block Cracking	Climate / Age
Corrugation	Load / Construction Quality
Depression	Load / Subsurface
Jet Blast	Aircraft
Joint Reflection - Cracking	Climate / Subsurface Pavement / Traffic Load
Longitudinal/Transverse Cracking	Climate / Construction Quality
Oil Spillage	Aircraft / Vehicle
Patching	Utility / Pavement Repair / Age
Polished Aggregate	Repeated Traffic Loading
Raveling	Climate / Age
Rutting	Load / Fatigue
Shoving	PCC Pavement Growth / Movement
Slippage Cracking	Load / Pavement Bond / Mix Design
Swelling	Climate / Subsurface
Weathering	Climate / Age

Table 2.6.2 (b) Pavement Distresses Possible Causes – Flexible Asphalt Concrete-Surfaced Airfields

Classification by Possible Causes			
Load	Climate / Durability	Moisture / Drainage	Others
• Alligator Cracking • Corrugation • Depression • Patching of Load-based distress • Polished Aggregate • Rutting • Slippage Cracking	• Bleeding • Block Cracking • Joint Reflection Cracking • L/T Cracking • Patching of climate / durability-caused distresses • Shoving from PCC • Raveling • Weathering • Swelling	• Alligator Cracking • Depression • Patching of moisture / drainage caused distress • Swelling • Raveling • Weathering	• Oil Spillage • Jet Blast Erosion • Polished Aggregate

Table 2.6.2 (c) Pavement Distresses Possible Effects – Flexible Asphalt Concrete-Surfaced Airfields

Classification by Possible Effects			
Roughness	Skid / Hydroplaning Potential	FOD Potential	Rate of Deterioration and Maintenance Requirements
• Corrugation • Depression • Rutting • Shoving of asphalt pavement • Swelling • Raveling • Weathering	• Bleeding • Depression • Polished Aggregate • Rutting	• Block Cracking • Joint Reflection Cracking • L/T Cracking • Slippage Cracking	• All Distresses

Table 2.6.2 (d) Pavement Distresses – Rigid Portland Cement Concrete-Surfaced Airfields

Distress	Common Distress Mechanisms
Blowup	Climate / ASR
Corner Break	Load Repetition / Curling Stresses
Linear Cracking	Load Repetition / Curling Stresses / Shrinkage Stresses
Durability Cracking	Freeze-Thaw Cycling
Joint Seal Damage	Material Deterioration / Construction Quality / Age
Small Patch	Pavement Repair
Large Patch/Utility Cut	Utility / Pavement Repair
Popout	Freeze-Thaw Cycling / ASR / Material Quality
Pumping	Load Repetition / Poor Joint Sealant
Scaling	Construction Quality / Freeze-Thaw Cycling
Faulting	Subgrade Quality / ASR / Inadequate Load Transfer
Shattered Slab	Overloading
Shrinkage Cracking	Construction Quality / Climate
Joint Spalling	Load Repetition / Infiltration of Incompressible Material / Deterioration of Dowel (Load Transfer) Bars
Corner Spalling	Load Repetition / Infiltration of Incompressible Material / Deterioration of Dowel (Load Transfer) Bars
Alkali-Silica Reaction (ASR)	Construction Quality / Climate / Chemical Reaction

Table 2.6.2 (e) Pavement Distresses Possible Causes – Rigid Portland Cement Concrete-Surfaced Airfields

Classification by Possible Causes			
Load	Climate / Durability	Moisture / Drainage	Others
• Corner Break • Shattered Slab • L/T/D Cracking • Pumping • Patching of Load-associated distress • Spalling	• Blowup • "D" Cracking • Joint Seal Damage • Popouts • Scaling • Patch of Climate/Durability-associated distress • Shrinkage Cracking • Spalling • L/T/D Cracking	• Corner Break • Shattered Slab • Pumping • Patching of Moisture/Drainage-associated distress	• Settlement / Faulting

Table 2.6.2 (f) Pavement Distresses Possible Effects – Rigid Portland Cement Concrete-Surfaced Airfields

Classification by Possible Effects			
Roughness	Skid / Hydroplaning Potential	FOD Potential	Rate of Deterioration and Maintenance Requirements
• Blowup • Corner Break • L/T/D Cracking • Shattered Slab • Settlement / Faulting • Spalling	• Settlement / Faulting • Spalling	• Corner Break • L/T/D Cracking • "D" Cracking • Joint Seal Damage • Shattered Slab • Popouts • Scaling	• All distresses

2.6.3 PCI Survey Inspection Procedures

Inspection Sampling Rate

The FDOT SAPMP performs PCI Survey Inspections on sample units defined in the previous update. The sample units are subject to change at the discretion of the inspection personnel and/or to major pavement rehabilitation treatments. Furthermore, access to the sample units based on accessibility or impacts to operations may affect the overall sampling rate effort at each airport. The following **Tables 2.6.3 (a) and (b)** define the sampling criteria used by the FDOT SAPMP. A higher sampling rate may be utilized to achieve a greater statistical confidence should the airport have the available resources to perform PCI Survey Inspections independent of the FDOT SAPMP.

Table 2.6.3 (a) Recommended Sample Rate Schedule for Flexible Asphalt Concrete

Number of Total Sample Units in Section	Sample Units to Inspect	
	Runways	Taxiways, Aprons, and Others
1 - 4	1	1
5 - 10	2	1
11 - 15	3	2
16 - 30	5	3
31 - 40	7	4
41 - 50	8	5
51 or more	20% but ≤20	10% but ≤10

Table 2.6.3 (b) Recommended Sample Rate Schedule for Rigid Portland Cement Concrete

Number of Total Sample Units in Section	Sample Units to Inspect	
	Runways	Taxiways, Aprons, and Others
1 - 3	1	1
4 - 6	2	1
7 - 10	3	2
11 - 15	4	2
16 - 20	5	3
21 - 30	7	3
31 - 40	8	4
41 - 50	10	5
51 or more	20% but ≤20	10% but ≤10

2.6.4 Updates to the ASTM D5340-12

Airfield pavement distresses and conditions were surveyed in accordance with the methods outlined in FAA Advisory Circular 150/5380-6C and ASTM D5340-12. These procedures define distress type, severity, and quantity for sampling areas within each defined pavement section area to analyze and determine the PCI value and condition rating. During the 2013-2015 System Update, the incorporation of the significant changes to the ASTM D5340 (version D5340-12) resulted in adjusted pavement condition indices on pavement sections subject to the distress types updated. Furthermore, the revision of the PCI deduction curves and the separation of distress types from the original, such as Weathering and Raveling, have in select cases increased the PCI value of the section without any rehabilitation performed.

Flexible Asphalt Concrete Pavement Distress Updates

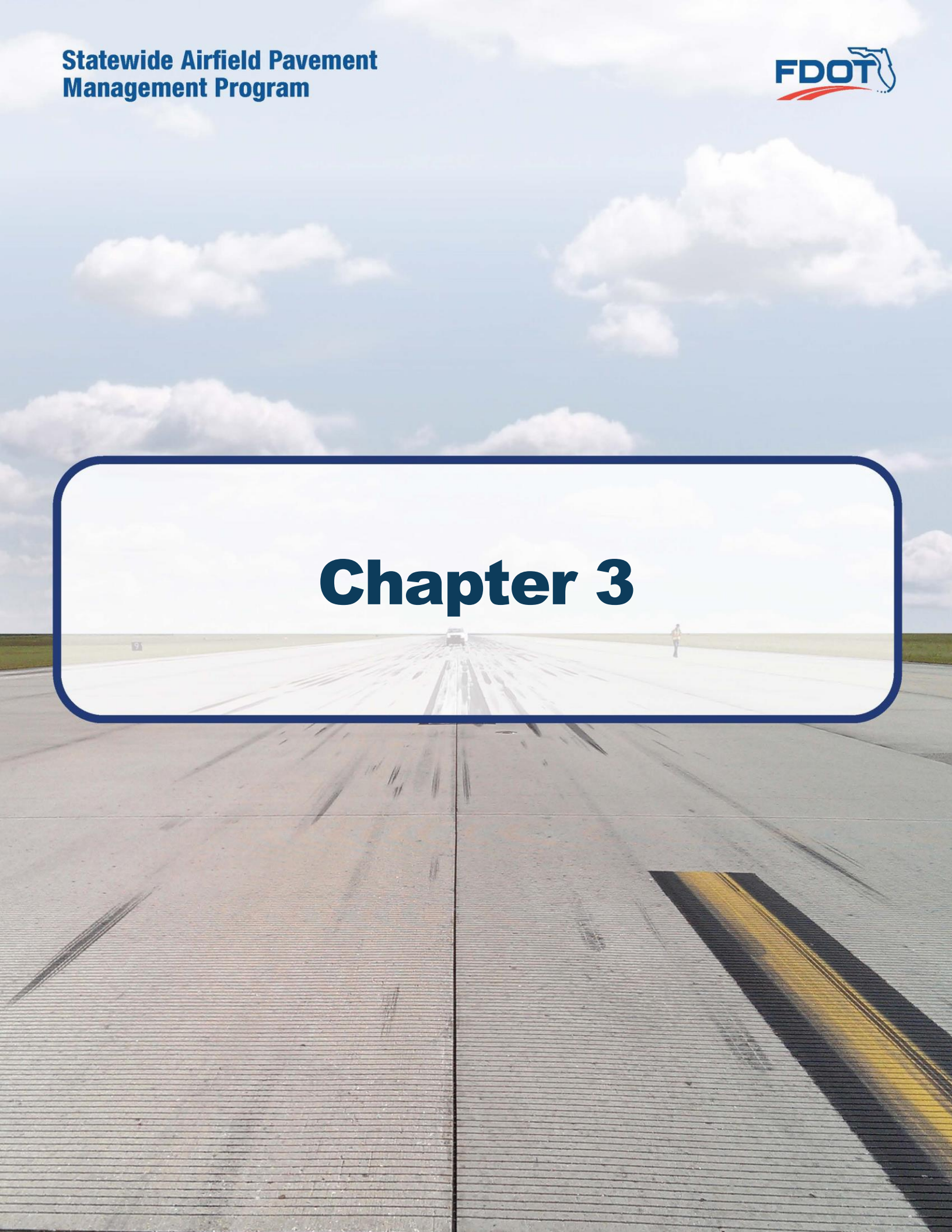
The previous methodology which featured "(52) Weathering and Raveling" distress has been separated into two distresses "(52) Raveling" and "(57) Weathering." Previously, areas that were recorded as "Weathering and Raveling" were considered as one distress with a high deduction. Based on the updated methodology, in certain situations where "Weathering" only exists and does not meet the definition of "Raveling," the PCI deduction is not as high as the former "Weathering and Raveling." Therefore, areas identified only as "(57) Weathering" based on current ASTM standards, which were previously identified as "(52) Weathering and Raveling," may be subject to an improvement in PCI. In instances where pavement PCI has increased due to this update, it is not due to an improvement in actual condition, however indicative of the adjusted distress deterioration effects.

Rigid Portland Cement Concrete Pavement Distress Updates

The previous methodology defined "(70) Scaling" as a distress that consisted of surface deterioration caused by construction defects, material defects, and environmental factors. The distress included *Alkali-Silica Reaction*, also known as ASR. The current methodology has separated Alkali-Silica Reaction as a distress identified as "(76) Alkali-Silica Reaction / ASR." As a result, the previous "(70) Scaling" numerical deduction contribution to the PCI has been reduced. Previous inspections that recorded "(70) Scaling," and currently do not exhibit "(76) Alkali-Silica Reactivity / ASR" may potentially see an increase in PCI. Additionally, "(73) Shrinkage Cracks" has been redefined as "(73) Shrinkage Cracking". Shrinkage Cracking is characterized in two forms; drying shrinkage and plastic shrinkage. Drying shrinkage occurs over time as moisture leaves the pavement, it develops when hardened pavement continues to shrink as excess water not needed for cement hydration evaporates. It forms when subsurface resistance to the shrinkage is present and may extend through the entire depth of the slab. Plastic shrinkage can be caused by both atmospheric conditions and construction. Plastic shrinkage caused by atmospheric conditions develops when there is rapid loss of water in the surface of recently placed pavement. High winds or low humidity are contributing factors to evaporation. These shrinkage cracks can appear as a series of parallel cracks, usually 1 to 3 feet apart and do not extend very deep into the pavement's surface. Plastic shrinkage caused by construction can form from over finishing/overworking of the pavement during construction. These shrinkage cracks appear as a series of inter-connected hairline cracks, or pattern cracking, and are often observed throughout the majority of the slab surface. This condition is also referred to as map cracking or crazing.

Table 2.6.4 Summary of Updates to ASTM D5340-12

Distress Updates to Reflect ASTM 5340-12				
Use and Surface Type	**Updated Distress**	**Former Distress in Prior to 5340-10**	**Deduction Curve**	**Potential Effect**
AC/AAC/ APC Airfield	(52) Raveling - Low	(52) Weathering and Raveling - Low	No Change	N/A
	(52) Raveling - Medium	(52) Weathering and Raveling - Medium	No Change	N/A
	(52) Raveling - High	(52) Weathering and Raveling - High	No Change	N/A
	(57) Weathering - Low	N/A – was part of 'Weathering and Raveling'	New	Increase in PCI with no maintenance
	(57) Weathering - Medium	N/A – was part of 'Weathering and Raveling'	New	Increase in PCI with no maintenance
	(57) Weathering - High	N/A – was part of 'Weathering and Raveling'	New	Increase in PCI with no maintenance
PCC Airfield	(70) Scaling - Low	(70) Scaling, Map Cracking, and Crazing - Low	New	Increase in PCI with no maintenance
	(70) Scaling - Medium	(70) Scaling, Map Cracking, and Crazing - Medium	New	Increase in PCI with no maintenance
	(70) Scaling - High	(70) Scaling, Map Cracking, and Crazing - High	New	Increase in PCI with no maintenance
	(76) Alkali Silica Reaction – Low	N/A – was part of 'Scaling, Map Cracking, and Crazing'	New	Increase in PCI with no maintenance
	(76) Alkali Silica Reaction – Medium	N/A – was part of 'Scaling, Map Cracking, and Crazing'	New	Increase in PCI with no maintenance
	(76) Alkali Silica Reaction – High	N/A – was part of 'Scaling, Map Cracking, and Crazing'	New	Increase in PCI with no maintenance
	(73) Shrinkage Cracking	(73) Shrinkage Cracking	No Change	Prior distress types identified as 'Scaling, Map Cracking, and Crazing' may now be identified as 'Shrinkage Cracking'



Chapter 3

Chapter 3 – Airfield Pavement System Inventory

A significant element of an effective airfield pavement management system is the appropriate record keeping of changes due to construction or operational use of the pavement facilities. This chapter discusses the inventory data collected from the airport and summarizes network-level characteristics of the airport's airfield pavements. At the start of each FDOT SAPMP System Update, all airports are asked to review the existing Airfield Pavement Network Definition exhibit for accuracy. Furthermore, participating airports are asked to provide documentation for any recent or anticipated construction related to their airfield pavements.

3.1 Airfield Pavement Network Information

3.1.1 Previous and/or Anticipated Airfield Pavement Construction

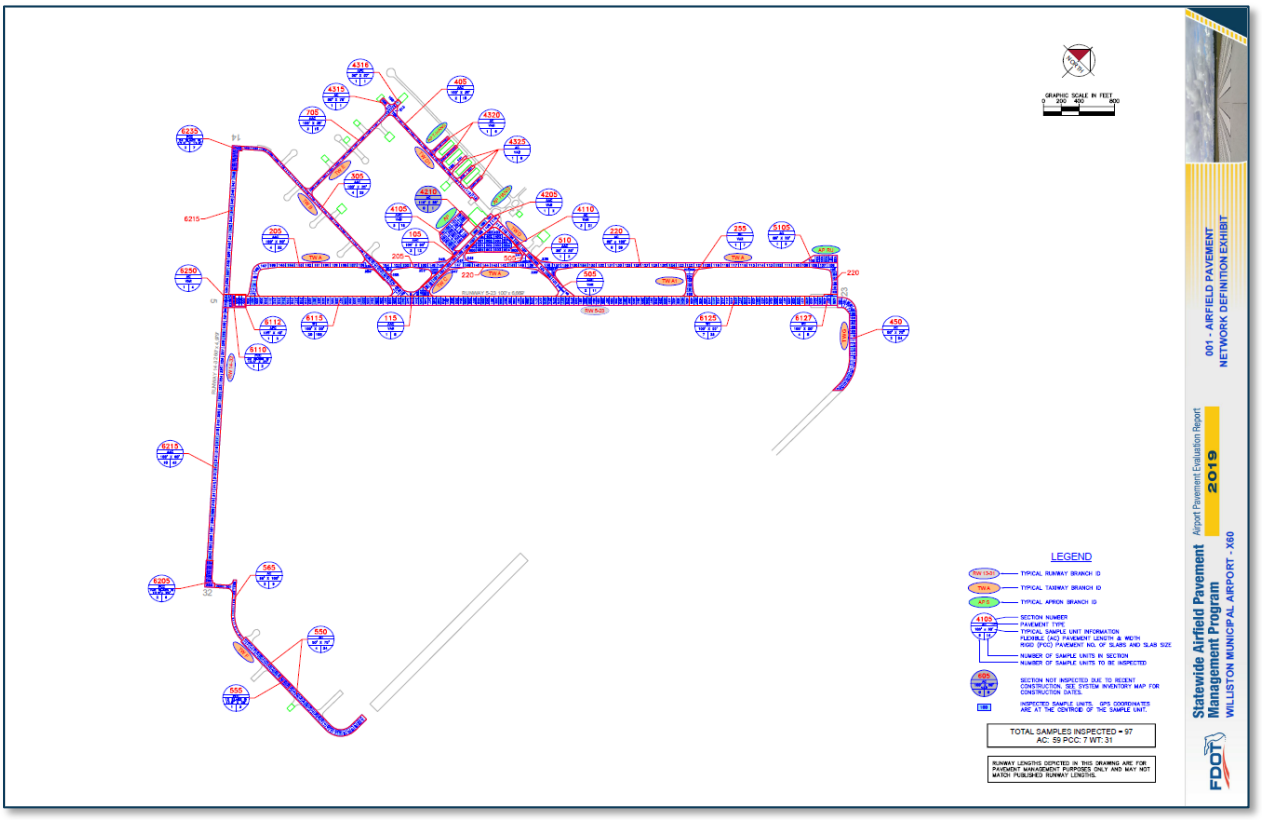
Based on information provided by the airport, the following **Table 3.1.1** summarizes the airfield pavement construction projects that have been incorporated into the SAPMP database system since the 2013-2015 System Update. **Figure 3.1.1 (a)** and **Figure 3.1.1 (b)** provides an inset view of the 2019 Airfield Pavement Network Definition Exhibit and the 2019 Airfield Pavement System Inventory Exhibits that depict the updated network details for the airport reflected in the PAVER Database. Large format exhibits are referenced in **Appendix C Technical Exhibits**.

Table 3.1.1 Previous and/or Anticipated Airfield Pavement Construction

Year	General Work Description
2013	**TW A** - Mill and Overlay: 1.5" Mill, 1.5" P-401 Overlay, TW Widening to 50'
	TW A, TW A1, AP RU - New Construction: 4" P-401, 6" P-211, 12" P-160
2015	**AP** - New Construction: 4" P-601, 6" P-211, 12" P-160
	TW F - New Construction: 2" FDOT SP-12.5, 8" P-211, 12" Subgrade
	RW 14-32 - Mill and Overlay: 0.5" Mill, 2.5" P-401 Overlay
	RW 14-32 - Reconstruction: 2.5" P-401, 6" P-211, 12" P-160
2019	**AP HANG** - New Construction

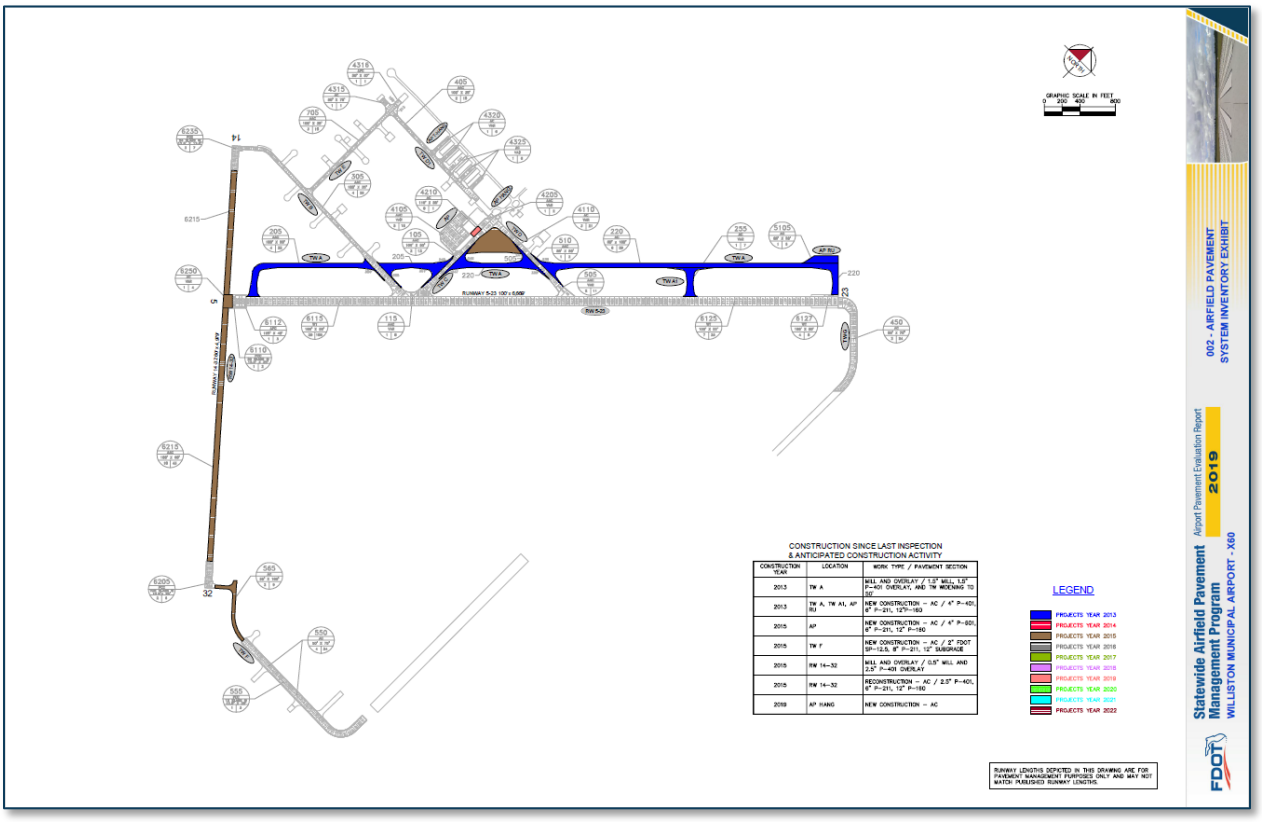
The airport provided a limited combination of record drawings, reports, and staff input that was pertinent information in developing the construction history of the airport's pavements from inception. Major rehabilitation/construction activities performed in the last 24-months or anticipated in the next 24-months are assumed to restore the PCI to 100. These activities include: pavement overlay, mill and replace, mill and overlay, new construction, and/or complete reconstruction. These pavements were not formally subject to a PCI Survey and actual conditions may vary. Furthermore, any localized maintenance or repair performed that would improve the PCI will be considered in the condition analysis, if performed within inspection areas.

Figure 3.1.1 (a) 2019 Airfield Pavement Network Definition Exhibit



The Airfield Pavement Network Definition Exhibit provides details to the PCI Survey inspection efforts. The exhibit identifies the pavement facilities, surface type, section definition, and sample unit delineation.

Figure 3.1.1 (b) 2019 Airfield Pavement System Inventory Exhibit

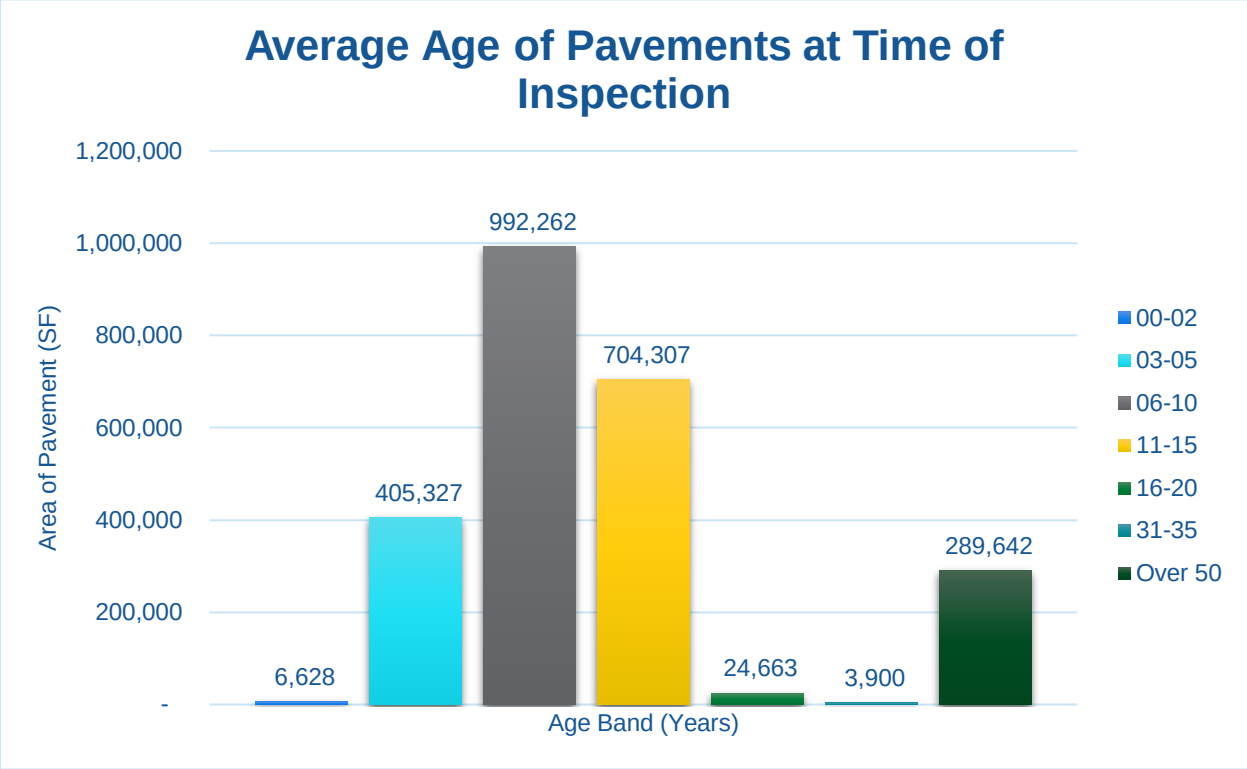


The Airfield Pavement System Inventory Exhibit provides details to the work history updates communicated by the Airport. The Exhibit provides the approximate limits of recent and/or anticipated construction on the airfield pavement facilities. The limits are based on documentation provided by the Airport and, if constructed, observed in the field.

3.1.2 Estimated Pavement Age

Standard pavement design practice considers a design life of a 20-year period. Design inputs typically require subgrade soil conditions, pavement section layer material characteristics, and anticipated loading (aircraft fleet mix) for the design-life period. Based on the review of the historic airfield pavement construction, **Figure 3.1.2** summarizes the average age of the pavement sections at the time of the PCI survey inspection. Age is determined to be the number of years since any major construction activity has occurred. This is intended to be a rough estimate based on interpretation of the limited data available at the time of report.

Figure 3.1.2 Average Age of Pavements at Inspection

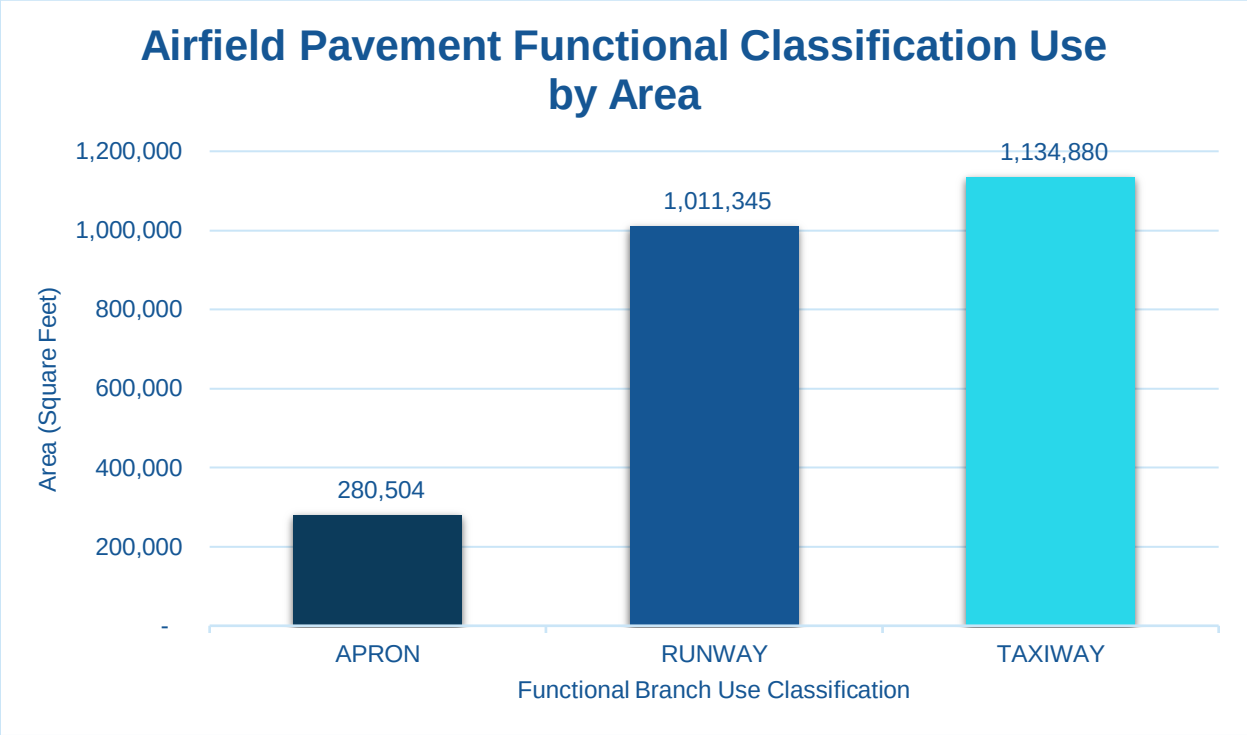


The estimation of the pavement age is based on information requested and provided by participating airports. Additionally, data collected in the prior system updates since 1992 have been relied upon.

3.1.3 Functional Use Classification

Pavements are subject to varying aircraft loading patterns based on utilization and overall operations. For this SAPMP Update, the following categories of airfield functional use have been identified and associated with the following possible pavement branch facilities: Apron, Runway, Taxiway, and Taxilane. **Figure 3.1.3** summarizes the identified pavements' functional use by area in square feet. The pavement areas reviewed exclude shoulder pavement facilities.

Figure 3.1.3 Airfield Pavement Functional Classification Use by Area



3.1.4 Pavement Surface Type

The airfield pavement facility surface types within the SAPMP include four common types of pavement: Portland cement concrete (PCC), asphalt concrete (AC), asphalt concrete overlaid on asphalt concrete (AAC), and asphalt concrete overlaid on Portland cement concrete (APC).

Based on the record documentation incorporated within the SAPMP database throughout the years, the pavement surface types have been assigned to the various pavement sections in accordance to its work history composition. The following **Figures 3.1.4 (a) and (b)** summarize the applicable pavement types observed at this specific airport's airfield.

Figure 3.1.4 (a) Pavement Surface Type by Area (SF)

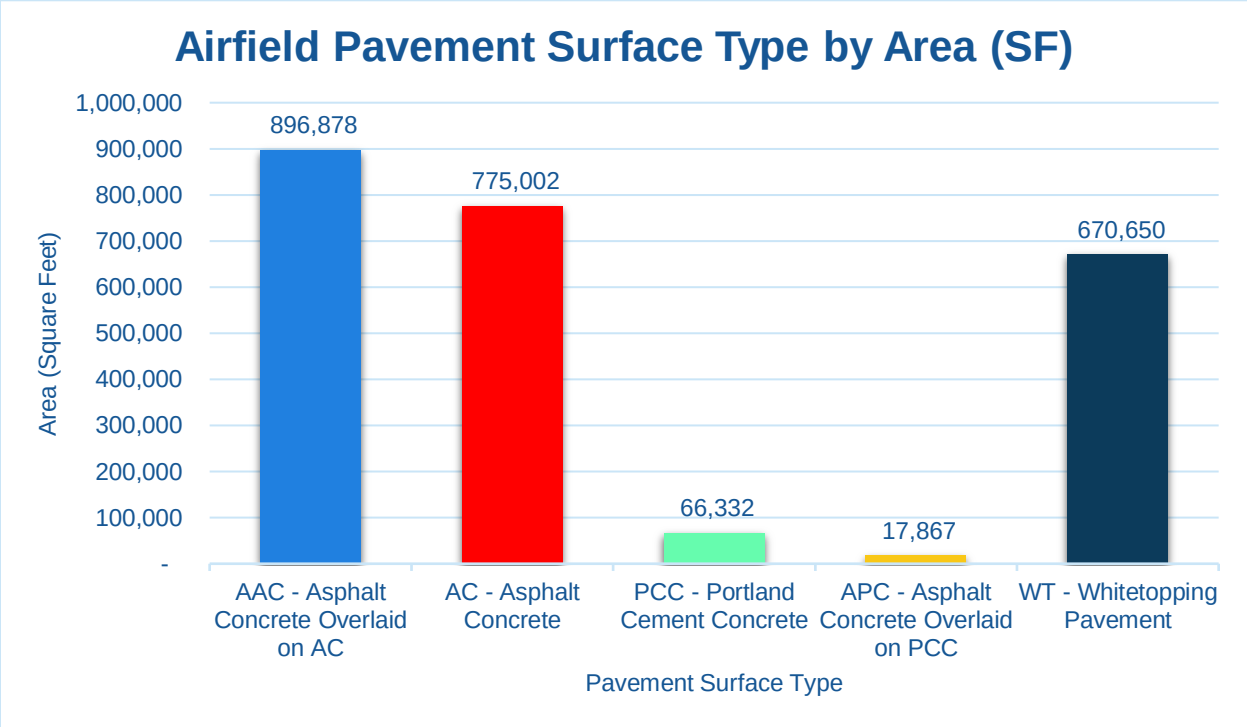
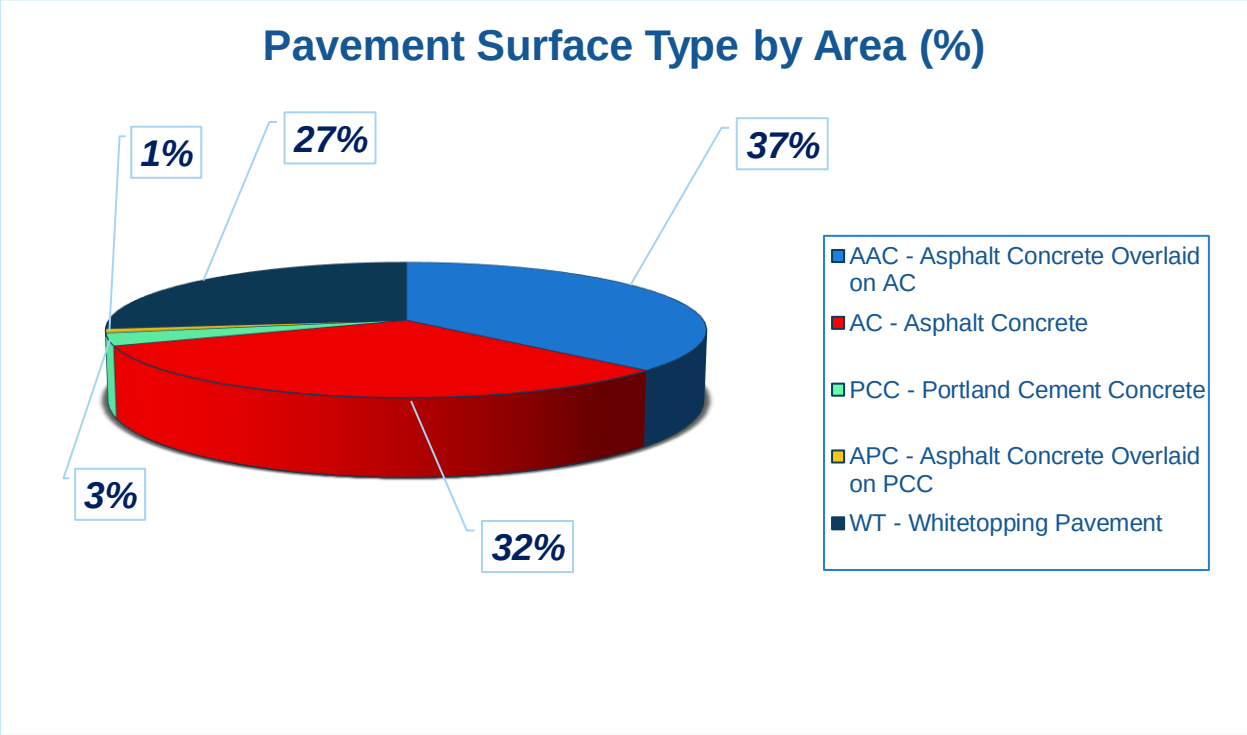


Figure 3.1.4 (b) Pavement Surface Type by Area (%)



3.1.5 Pavement System Inventory Details

The following **Table 3.1.5** displays the section-level details assembled as part of this update. The section-level details are based on the record documentation provided by the airports to FDOT and from SAPMP System Updates. The details assembled rely on the accuracy and the adequacy of data provided; however, it should be noted that characteristics such as pavement areas may be based on aerial interpretation of spatially projected imagery. The accuracy of data is presented with the intention of a network planning-level document; should the airport elect to perform rehabilitation work, it is recommended that further investigation be performed at the project level for construction purposes.

In summary, the scope of the pavement inventory update resulted in the updating of select existing pavement geometry and the development of an AutoCAD model with spatial projection for use within GIS. **Appendix A** includes the Airfield Pavement Network Definition Exhibit and the Airfield Pavement System Inventory Exhibit which visually summarize the results of the Airfield Pavement System Inventory analysis and reporting.

Table 3.1.5 Pavement System Inventory Details

Network ID	Branch Name	Branch ID	Branch Use	Section ID	Length (FT)	Width (FT)	Area (SF)	Surface Type	Est. Last Construction Date
X60	APRON	AP	APRON	4105	400	250	86,922	AAC	1/1/2009
X60	APRON	AP	APRON	4110	1,000	100	101,074	AC	2/1/2015
X60	HANGAR APRON	AP HANG	APRON	4205	200	56	10,495	AAC	1/1/2009
X60	HANGAR APRON	AP HANG	APRON	4210	119	56	6,628	AC	1/1/2019
X60	RUN-UP APRON	AP RU	APRON	5105	400	50	28,165	AC	1/1/2013
X60	APRON AT T-HANGARS	AP T-HANG	APRON	4315	80	50	3,900	AC	1/1/1986
X60	APRON AT T-HANGARS	AP T-HANG	APRON	4316	65	50	2,867	APC	1/1/2003
X60	APRON AT T-HANGARS	AP T-HANG	APRON	4320	507	35	18,657	AC	1/1/2005
X60	APRON AT T-HANGARS	AP T-HANG	APRON	4325	709	35	21,796	AC	1/1/2003
X60	RUNWAY 14-32	RW 14-32	RUNWAY	6205	300	75	24,688	PCC	1/1/1942
X60	RUNWAY 14-32	RW 14-32	RUNWAY	6215	4,300	100	254,982	AAC	2/1/2015
X60	RUNWAY 14-32	RW 14-32	RUNWAY	6235	275	75	22,894	PCC	1/1/1942
X60	RUNWAY 14-32	RW 14-32	RUNWAY	6250	303	100	15,631	AC	2/1/2015
X60	RUNWAY 5-23	RW 5-23	RUNWAY	6110	600	25	7,500	PCC	1/1/1942
X60	RUNWAY 5-23	RW 5-23	RUNWAY	6112	150	100	15,000	APC	1/1/2006
X60	TAXIWAY A	TW A	TAXIWAY	205	1,990	35	159,607	AAC	1/1/2013
X60	TAXIWAY A	TW A	TAXIWAY	220	3,000	50	287,885	AC	1/1/2013
X60	TAXIWAY A1	TW A1	TAXIWAY	255	600	50	34,316	AC	1/1/2013
X60	TAXIWAY B	TW B	TAXIWAY	305	2,900	35	101,269	AAC	1/1/2009
X60	TAXIWAY C	TW C	TAXIWAY	105	1,165	50	65,023	AAC	1/1/2009
X60	TAXIWAY C	TW C	TAXIWAY	115	416	70	35,409	AAC	1/1/2009
X60	TAXIWAY D	TW D	TAXIWAY	505	1,100	50	61,793	AAC	1/1/2009
X60	TAXIWAY D	TW D	TAXIWAY	510	170	50	8,500	AAC	1/1/2013
X60	TAXIWAY D1	TW D1	TAXIWAY	405	1,384	35	57,110	AAC	1/1/2009
X60	TAXIWAY E	TW E	TAXIWAY	705	1,384	35	55,768	AAC	1/1/2009

Network ID	Branch Name	Branch ID	Branch Use	Section ID	Length (FT)	Width (FT)	Area (SF)	Surface Type	Est. Last Construction Date
X60	TAXIWAY F	TW F	TAXIWAY	550	2,450	75	128,837	AC	1/1/1942
X60	TAXIWAY F	TW F	TAXIWAY	555	150	75	11,250	PCC	1/1/1942
X60	TAXIWAY F	TW F	TAXIWAY	565	1,000	35	33,640	AC	2/1/2015
X60	TAXIWAY G	TW G	TAXIWAY	450	1,173	75	94,473	AC	1/1/1942
WHITETOPPING PAVEMENT SECTIONS									
X60	RUNWAY 5-23	RW 5-23	RUNWAY	6115	5,000	50	500,000	WT	1/1/2005
X60	RUNWAY 5-23	RW 5-23	RUNWAY	6125	2,600	50	130,000	WT	1/1/2005
X60	RUNWAY 5-23	RW 5-23	RUNWAY	6127	400	50	40,650	WT	1/1/2005

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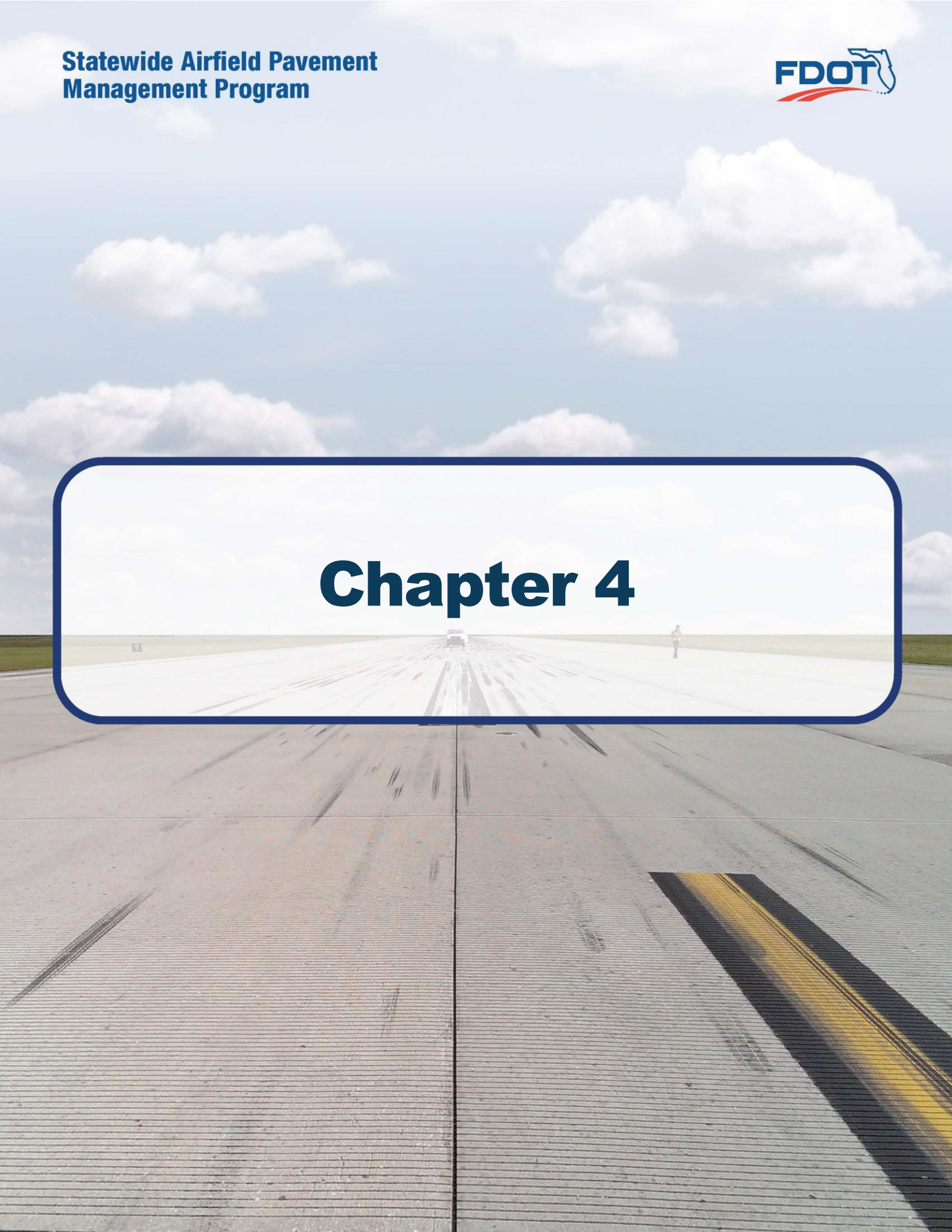


Chapter 4

Chapter 4 – Airfield Pavement Condition

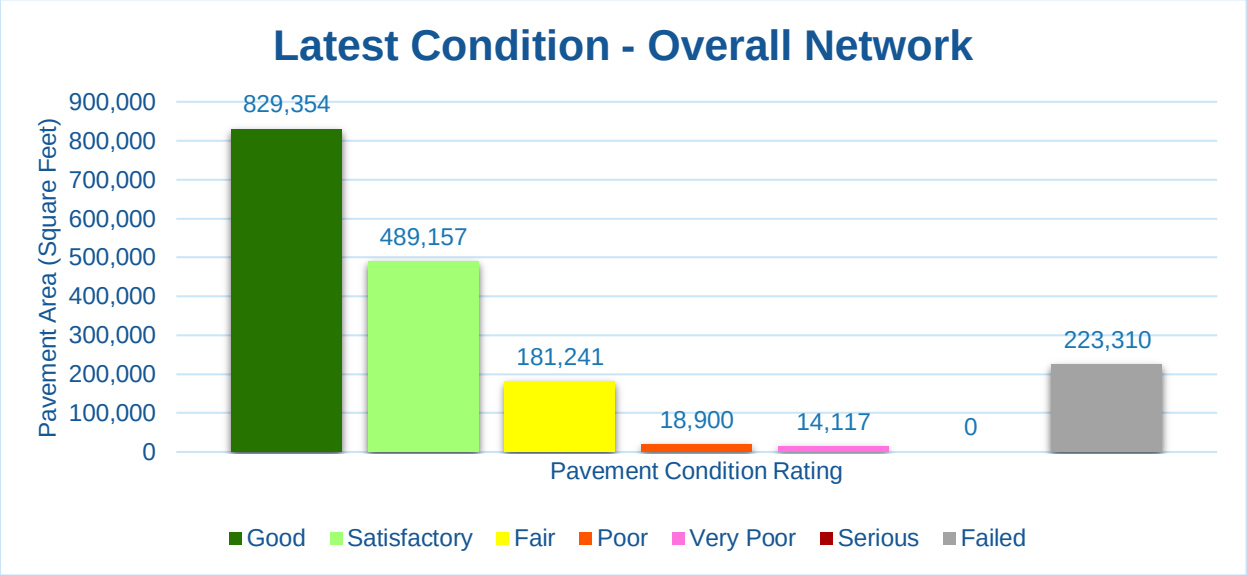
The examination of specific distress types (with causes attributed to load, climate, or other defined distress mechanism), determination of the severity of distress, and determination of the quantity of distress manifestation are required in the computation of a PCI value. The PCI provides valuable information that can be used to determine the existing condition of the pavement, possible cause of the pavement deterioration, and eventually aid in the planning of the rehabilitation of pavements. It should be noted that the PCI method of pavement condition evaluation is strictly a visual and functional evaluation. Further evaluation of the pavement condition may be necessary for design and/or project-level determination of pavement rehabilitation.

4.1 Airfield Pavement Condition Index (Latest Inspection)

4.1.1 Network-Level Analysis

The following **Figure 4.1.1** summarizes the network-level pavement condition analysis based on the most recent PCI Survey inspection results.

Figure 4.1.1 Latest Condition – Overall Network



4.1.2 Branch-Level Analysis

The following **Figures 4.1.2 (a) through (c)** summarize the branch-level pavement condition analysis based on the most recent PCI Survey inspection results; the following Figures provide overall branch-level conditions by branch use.

Figure 4.1.2 (a) Latest Condition – Runway Pavements

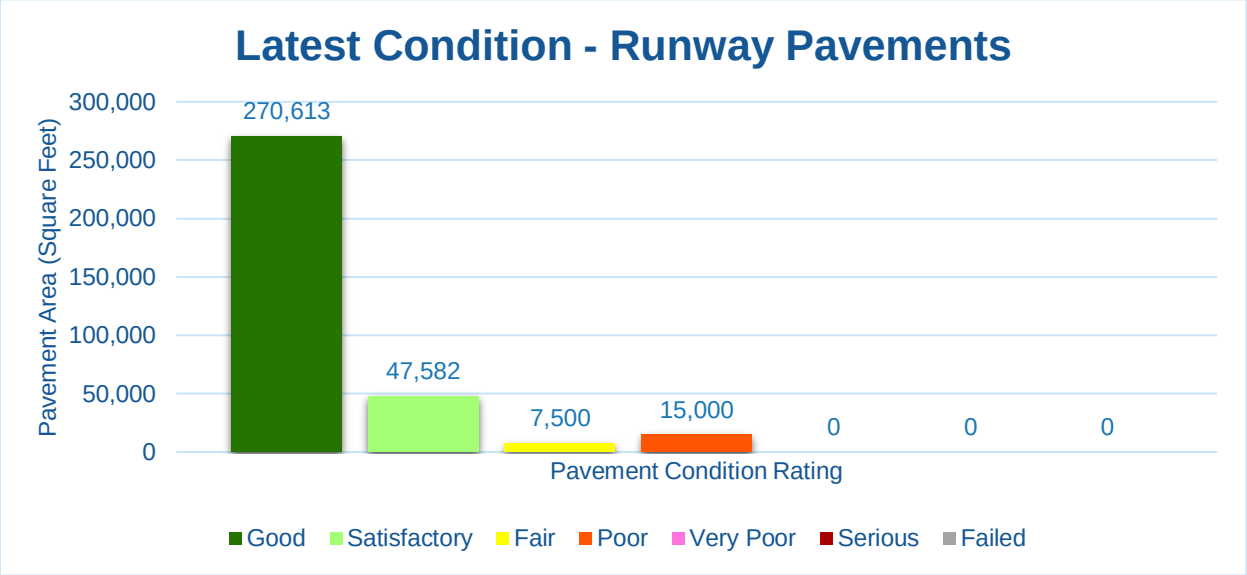


Figure 4.1.2 (b) Latest Condition – Taxiway Pavements

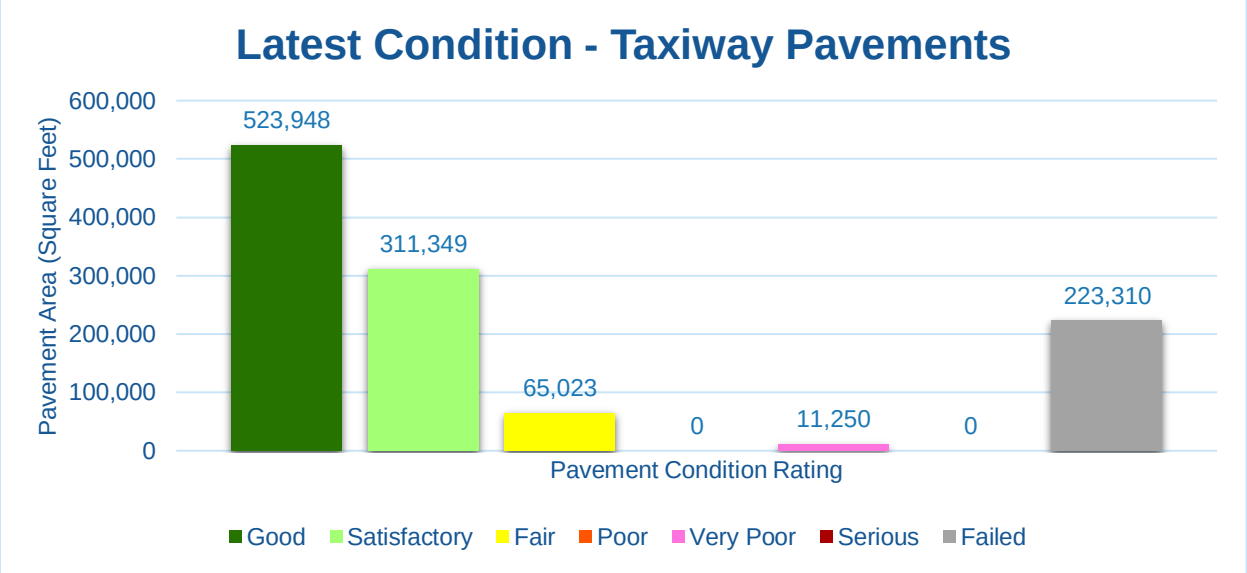
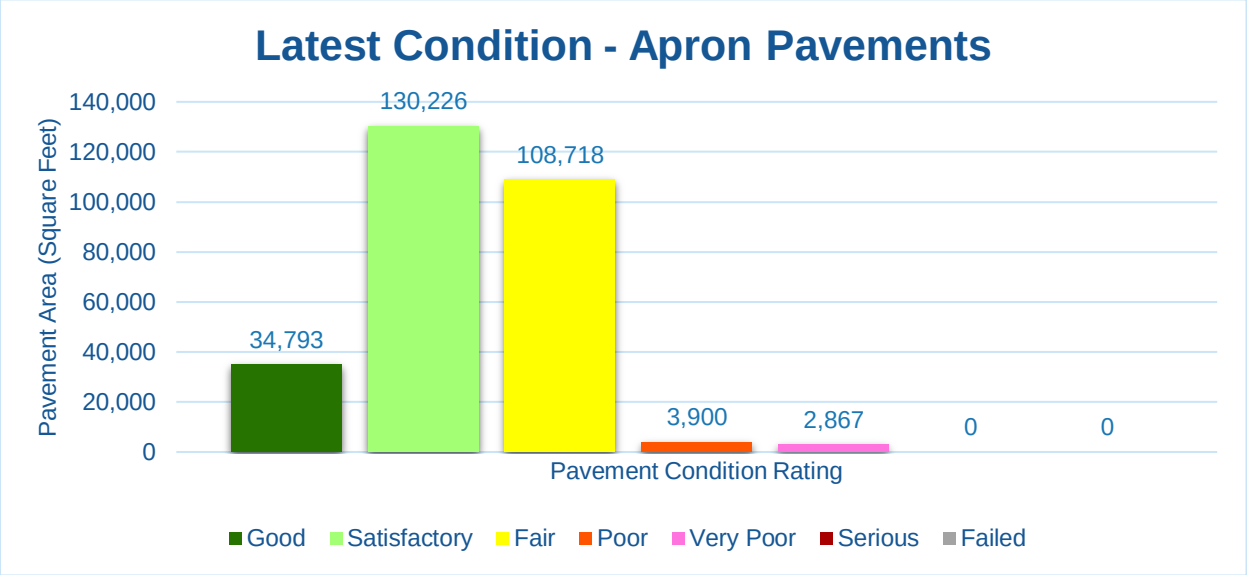


Figure 4.1.2 (c) Latest Condition – Apron Pavements



4.1.3 Section-Level Analysis

The following **Table 4.1.3** provides details for each pavement section of its area-weighted average PCI and the percent of distress which is related to load, climate, or other factors. The amount of distress attributed to the various causes provides insight into maintenance, repair, and rehabilitation needs. Load-related distress indicates that pavements are reaching the end of their structural design life, and for those pavements exhibiting a significant amount of these distress types, rehabilitation should be planned to strengthen or reconstruct the pavement. **Appendix C Technical Exhibits** provides a technical exhibit that graphically depicts the PCI values and ratings determined from this SAPMP System Update.

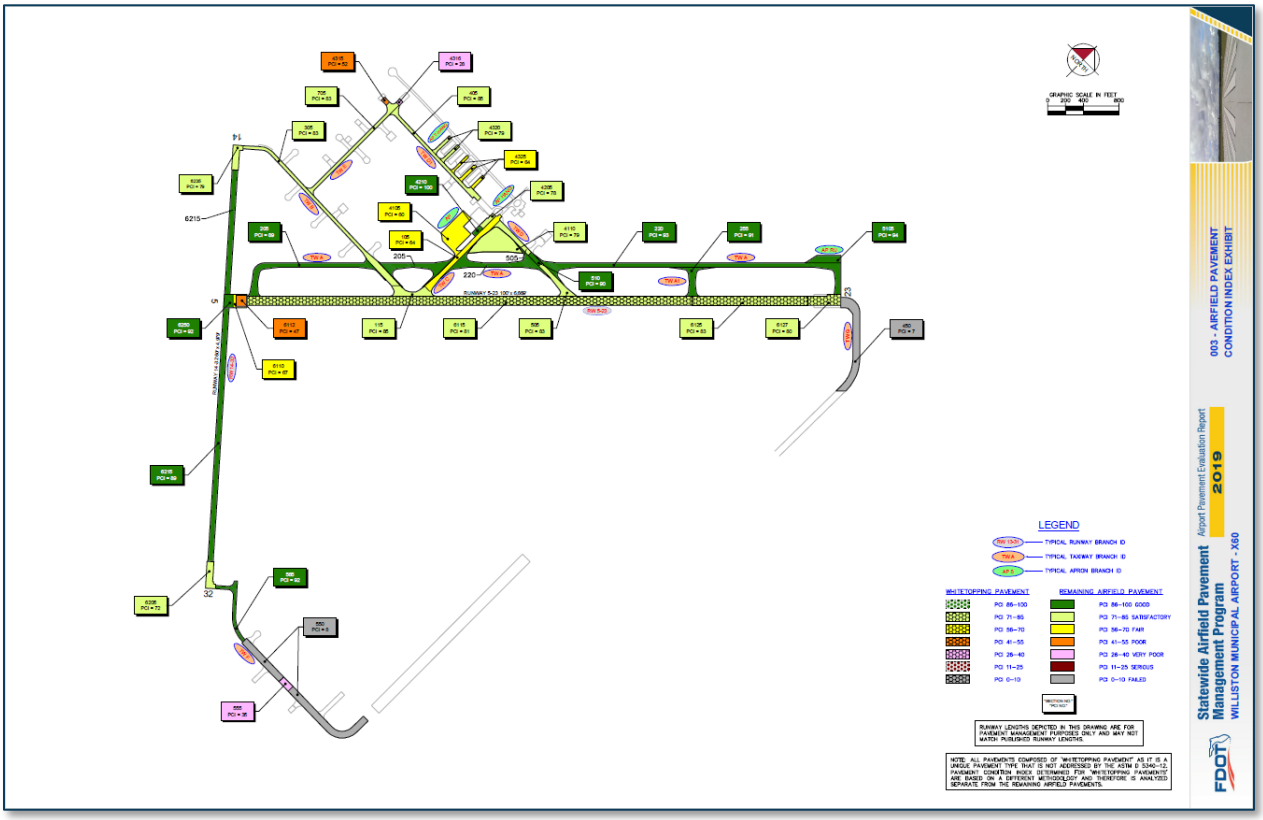
Any pavement facilities subject to pavement construction within the past 2 years or anticipated for construction within the next year may have been omitted from inspection. Pavement subject to major rehabilitation will be set to a PCI of 100.

Table 4.1.3 Latest Pavement Condition Index Summary

Network ID	Branch ID	Branch Name	Branch Use	Section ID	Area (SF)	Surface	PCI	PCI Rating	PCI % Climate	PCI % Load	PCI % Other	Sample Units Inspected	Total Sample Units in Section
X60	AP	APRON	APRON	4105	86,922	AAC	60	Fair	50%	0%	50%	3	18
X60	AP	APRON	APRON	4110	101,074	AC	79	Satisfactory	100%	0%	0%	3	21
X60	AP HANG	HANGAR APRON	APRON	4205	10,495	AAC	78	Satisfactory	63%	0%	37%	1	2
X60	AP HANG	HANGAR APRON	APRON	4210	6,628	AC	100	Good	0%	0%	0%	0	1
X60	AP RU	RUN-UP APRON	APRON	5105	28,165	AC	94	Good	100%	0%	0%	1	6
X60	AP T-HANG	APRON AT T-HANGARS	APRON	4315	3,900	AC	52	Poor	97%	0%	3%	1	1
X60	AP T-HANG	APRON AT T-HANGARS	APRON	4316	2,867	APC	28	Very Poor	94%	0%	6%	1	1
X60	AP T-HANG	APRON AT T-HANGARS	APRON	4320	18,657	AC	79	Satisfactory	100%	0%	0%	1	6
X60	AP T-HANG	APRON AT T-HANGARS	APRON	4325	21,796	AC	64	Fair	100%	0%	0%	1	6
X60	RW 14-32	RUNWAY 14-32	RUNWAY	6205	24,688	PCC	72	Satisfactory	5%	53%	42%	2	6
X60	RW 14-32	RUNWAY 14-32	RUNWAY	6215	254,982	AAC	89	Good	100%	0%	0%	10	43
X60	RW 14-32	RUNWAY 14-32	RUNWAY	6235	22,894	PCC	79	Satisfactory	10%	0%	90%	3	7
X60	RW 14-32	RUNWAY 14-32	RUNWAY	6250	15,631	AC	92	Good	100%	0%	0%	1	4
X60	RW 5-23	RUNWAY 5-23	RUNWAY	6110	7,500	PCC	67	Fair	30%	38%	32%	1	2
X60	RW 5-23	RUNWAY 5-23	RUNWAY	6112	15,000	APC	47	Poor	100%	0%	0%	1	3
X60	TW A	TAXIWAY A	TAXIWAY	205	159,607	AAC	89	Good	100%	0%	0%	4	32
X60	TW A	TAXIWAY A	TAXIWAY	220	287,885	AC	93	Good	100%	0%	0%	6	59
X60	TW A1	TAXIWAY A1	TAXIWAY	255	34,316	AC	91	Good	100%	0%	0%	1	7
X60	TW B	TAXIWAY B	TAXIWAY	305	101,269	AAC	83	Satisfactory	100%	0%	0%	4	29
X60	TW C	TAXIWAY C	TAXIWAY	105	65,023	AAC	64	Fair	81%	0%	19%	2	12
X60	TW C	TAXIWAY C	TAXIWAY	115	35,409	AAC	85	Satisfactory	100%	0%	0%	1	8
X60	TW D	TAXIWAY D	TAXIWAY	505	61,793	AAC	83	Satisfactory	100%	0%	0%	2	11
X60	TW D	TAXIWAY D	TAXIWAY	510	8,500	AAC	90	Good	100%	0%	0%	1	2
X60	TW D1	TAXIWAY D1	TAXIWAY	405	57,110	AAC	85	Satisfactory	100%	0%	0%	2	15
X60	TW E	TAXIWAY E	TAXIWAY	705	55,768	AAC	83	Satisfactory	100%	0%	0%	3	15
X60	TW F	TAXIWAY F	TAXIWAY	550	128,837	AC	8	Failed	86%	6%	8%	4	34
X60	TW F	TAXIWAY F	TAXIWAY	555	11,250	PCC	35	Very Poor	12%	75%	13%	1	3
X60	TW F	TAXIWAY F	TAXIWAY	565	33,640	AC	92	Good	100%	0%	0%	2	9
X60	TW G	TAXIWAY G	TAXIWAY	450	94,473	AC	7	Failed	100%	0%	0%	3	24
WHITETOPPING PAVEMENT SECTIONS													
X60	RW 5-23	RUNWAY 5-23	RUNWAY	6115	500,000	WT	81	Satisfactory	N/A	N/A	N/A	20	100
X60	RW 5-23	RUNWAY 5-23	RUNWAY	6125	130,000	WT	83	Satisfactory	N/A	N/A	N/A	7	26
X60	RW 5-23	RUNWAY 5-23	RUNWAY	6127	15,000	WT	80	Satisfactory	N/A	N/A	N/A	4	8

Figure 4.1.3 is an inset view of the 2019 Airfield Pavement Condition Index Exhibit that visually represents the results of the latest PCI Survey inspection. A large format exhibit is located in **Appendix C Technical Exhibits.**

Figure 4.1.3 2019 Airfield Pavement Condition Index Exhibit



4.2 Summary of Pavement Condition Evaluation Results

4.2.1 Network-Level Observations

The field PCI Survey performed at Williston Municipal Airport (X60) was completed in April of 2019. The resulting overall area-weighted average PCI value was 73 representing a condition rating of Satisfactory. Williston Municipal Airport is serviced by two runways; Runway 5-23 is 100-ft wide and 6,669-ft long and Runway 14-32 is 60-ft wide and 4,979-ft long. Runway 5-23 is about 92% Thin Whitetopping with slabs approximately 5-ft by 5-ft ranging from 4-in to 5-in in thickness.

The airport has pavement facilities that are composed of Whitetopping pavement sections. Whitetopping is a composite pavement of Portland Cement Concrete constructed over existing asphalt concrete pavement. Whitetopping consists of three categories; Conventional (greater than 8-inches), thin (4 to 8-inches), and ultra-thin (2 to 4-inches). The ASTM D 5340-12 method does not address the distress types that manifest in Whitetopping pavement. FDOT has developed a method that quantifies typical distresses and provides an index. Since the Whitetopping pavements are unique and not addressed by either the ASTM D 5340-12 or the FAA Advisory Circulars, for this SAPMP Program Update no predicted pavement performance or maintenance and major rehabilitation analysis has been performed for these sections.

Based on the FAA 5010 Report as of 09/12/2019 the Airport has reported 16,250 operations for 12 months ending 09/21/2018.

4.2.2 Branch-Level Observations

The following branch-level observations are intended to be an overall summary of select pavement facilities identified during the PCI Survey; further detail at the section and sample-level may be referenced for all pavements assessed as part of this System Update. The branch-level observations discussed are limited to select branches based on use and condition.

Runway 14-32

Runway 14-32 consists of 4 section(s) constructed of AC, AAC, and PCC. The last construction years range from 1942 to 2015. The area-weighted average PCI for Runway 14-32 is 87 representing a Good condition rating. The pavement distresses observed were related to Climate, Load, and Other distress classifications. Distresses observed on Runway 14-32 consist of Longitudinal & Transverse Cracking, Weathering, Linear Cracking, Joint Seal Damage, Shrinkage Cracking, Joint Spall, and Corner Spall.

Taxiway B

Taxiway B consists of 1 section constructed of AAC. The last construction year for Taxiway B was 2009. The area-weighted average PCI for Taxiway B is 83 representing a Satisfactory condition rating. The pavement distresses observed were related to Climate distress classification. Distresses observed on Taxiway B consist of Longitudinal & Transverse Cracking, Raveling, and Weathering.

Taxiway C

Taxiway C consists of 2 section(s) constructed of AAC. The last construction year for Taxiway C was 2009. The area-weighted average PCI for Taxiway C is 71 representing a Satisfactory

condition rating. The pavement distresses observed were related to Climate and Other distress classifications. Distresses observed on Taxiway C consist of Depression, Longitudinal & Transverse Cracking, Raveling, Swelling, and Weathering.

Taxiway F

Taxiway F consists of 3 section(s) constructed of AC and PCC. The last construction years range from 1942 to 2015. The area-weighted average PCI for Taxiway F is 26 representing a Very Poor condition rating. The pavement distresses observed were related to Climate, Load, and Other distress classifications. Distresses observed on Taxiway F consist of Block Cracking, Depression, Longitudinal & Transverse Cracking, Raveling, Rutting, Weathering, Linear Cracking, Joint Seal Damage, and Shrinkage Cracking.

Apron

Apron consists of 2 section(s) constructed of AC and AAC. The last construction years range from 2009 to 2015. The area-weighted average PCI for Apron is 70 representing a Fair condition rating. The pavement distresses observed were related to Climate and Other distress classifications. Distresses observed on Apron consist of Bleeding, Longitudinal & Transverse Cracking, Oil Spillage, Raveling, Swelling, and Weathering.

Section 4110 displayed a significant amount of Longitudinal & Transverse Cracking during the 2019 inspection considering being newly constructed in 2015.

Figure 4.2.2 Pavement Condition Summary by Facility Use

Facility Use	Area-Weighted Average PCI	Condition Rating
Runway	94	Good
Taxiway	70	Fair
Apron	73	Satisfactory

4.3 Forecasted Pavement Conditions

4.3.1 Performance Models and Prediction Curves

Pavement Performance Models are developed from the distress data and historic construction records collected for the SAPMP. This data is consolidated in a database and organized by inspection/construction date, pavement type, age, and pavement use. The pavement Performance Models are used to develop broad Prediction Curves, alternatively known as deterioration curves or family curves. These Prediction Curves are utilized to developed forecasted PCI values based on historic trends and statistical models.

4.3.2 Branch-Level Pavement Condition Forecast

The following **Figures 4.3.2 (a) through (c)** depict the branch-level pavement condition forecast by Branch Use (Runway, Taxiway, and/or Apron). The forecasted conditions are for a 10-year duration starting in January 2020 through January 2029.

Figure 4.3.2 (a) Forecasted Runway Pavement Performance

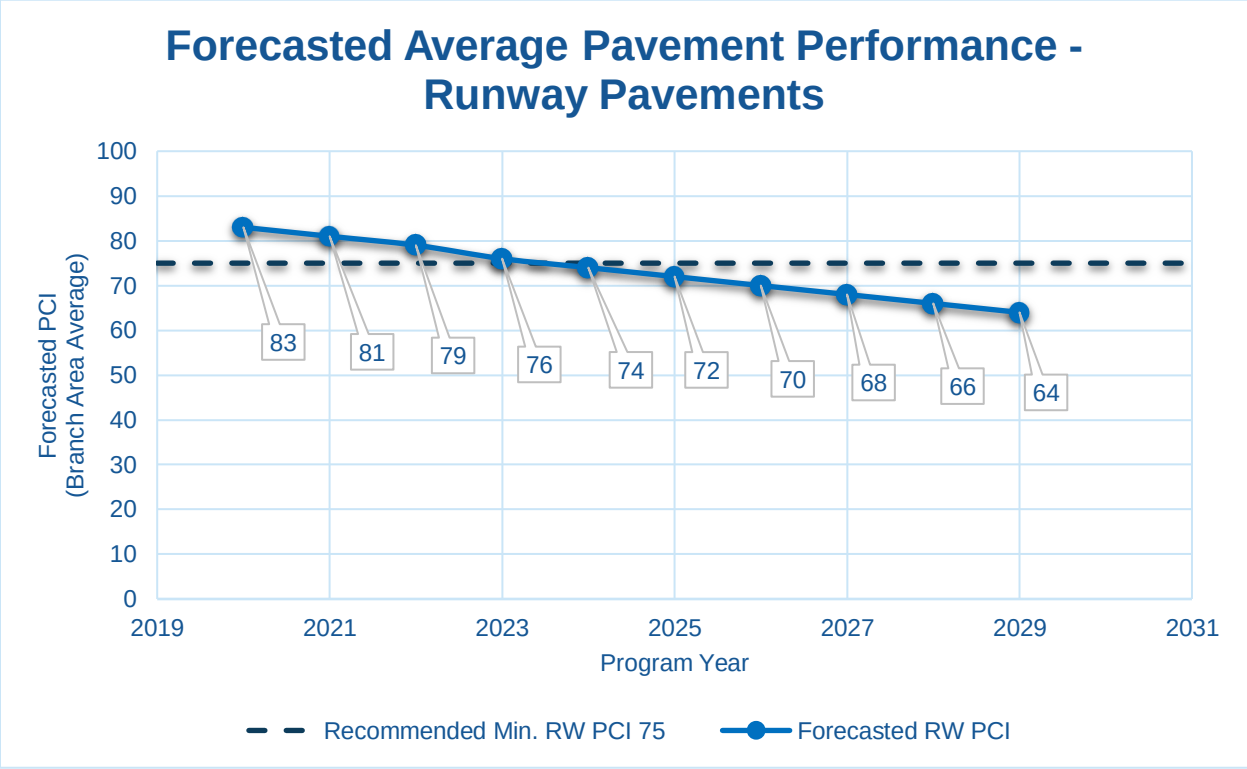


Figure 4.3.2 (b) Forecasted Taxiway Pavement Performance

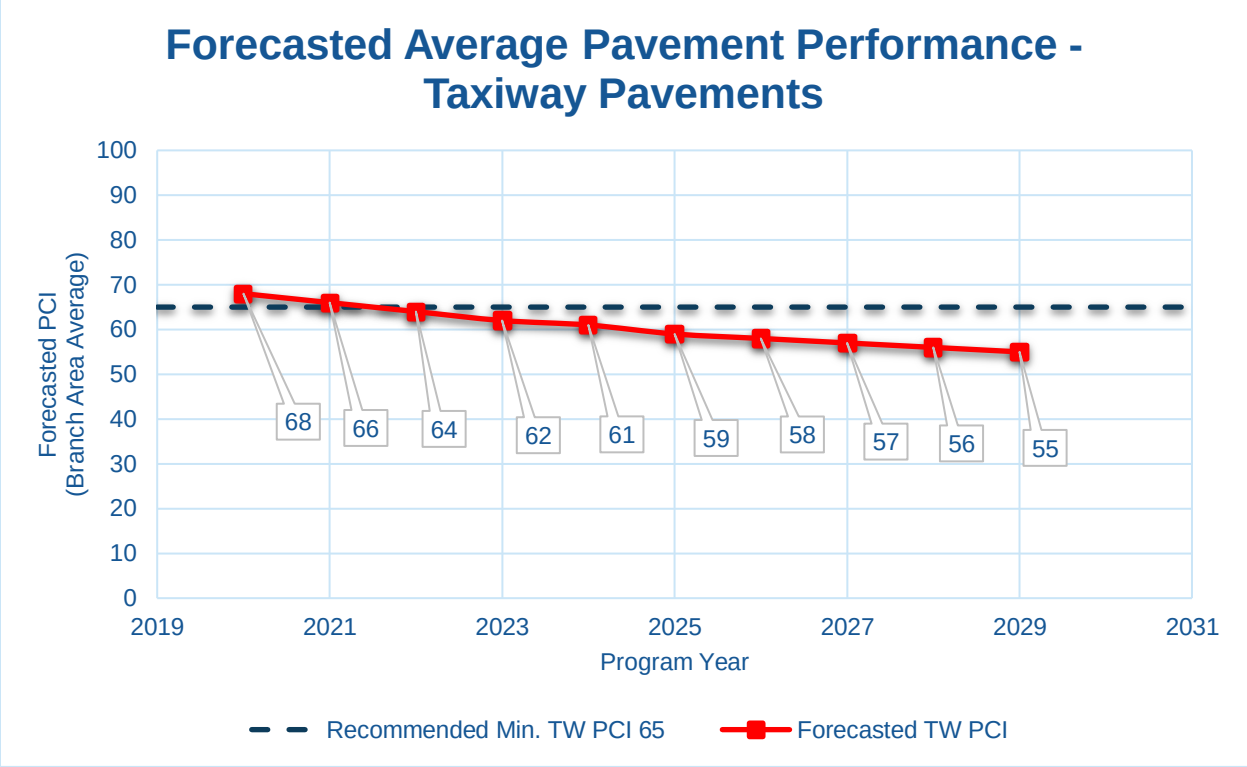
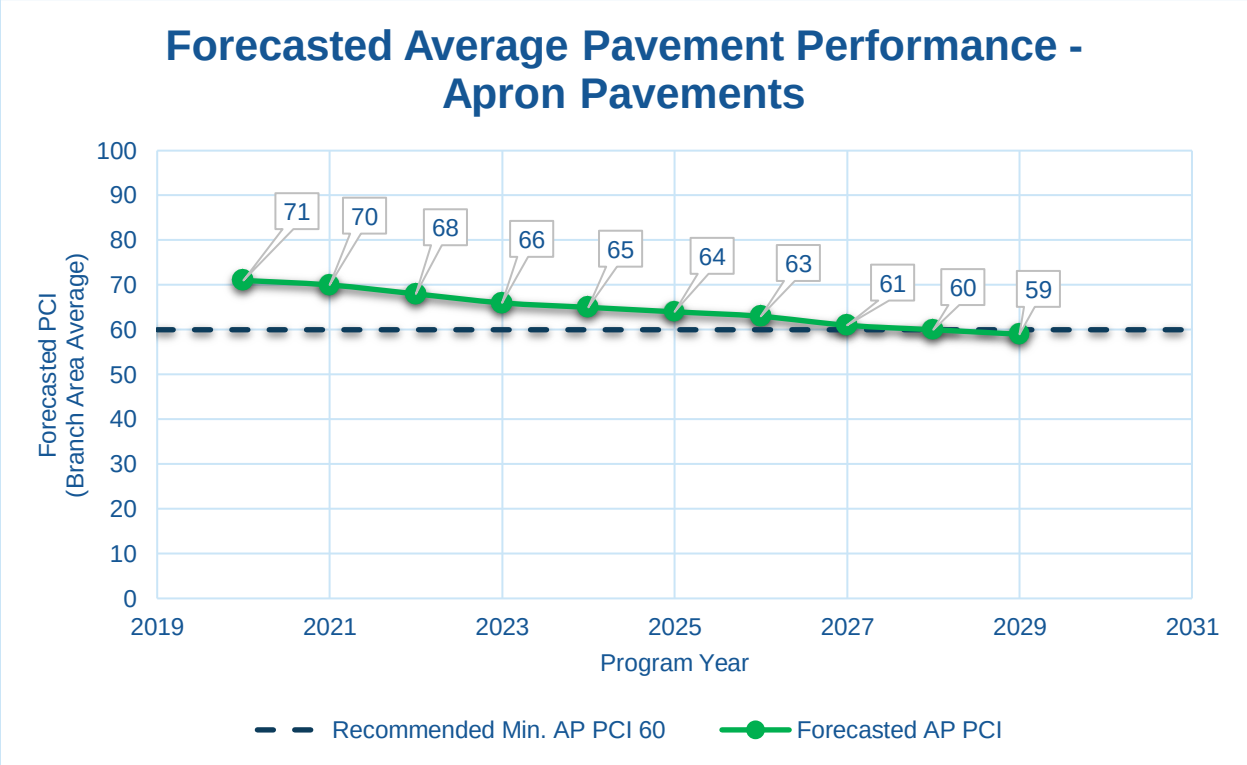


Figure 4.3.2 (c) Forecasted Apron Pavement Performance



4.3.3 Section-Level Pavement Condition Forecast

The following **Table 4.3.3** provides detail to the forecasted PCI values for each section inspected. Please note the forecasted Branch- and Section-Level PCI's are for planning purposes and are subject to the sensitivities in changes in traffic and maintenance frequency. Airport staff should perform annual visual condition assessments to maintain recent understanding of pavement conditions.

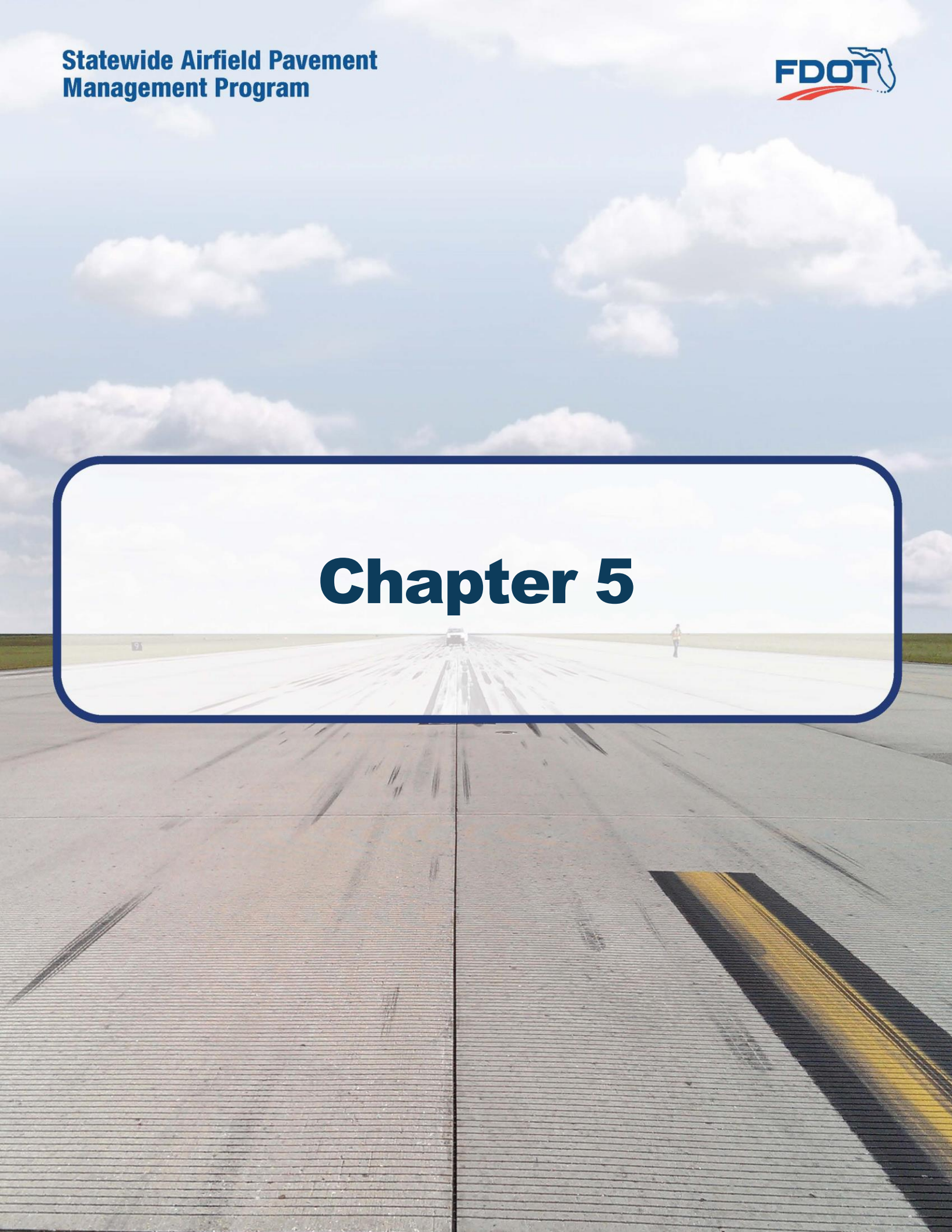
Table 4.3.3 Forecasted PCI 2020-2029

Network ID	Branch ID	Section ID	Last PCI	Forecasted PCI									
				2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
X60	AP	4105	60	58	56	55	53	53	52	52	52	52	52
X60	AP	4110	79	77	76	74	73	71	69	68	66	65	63
X60	AP HANG	4205	78	76	74	72	69	67	64	61	59	57	55
X60	AP HANG	4210	100	98	96	95	93	92	90	88	87	85	84
X60	AP RU	5105	94	92	91	89	88	86	84	83	81	80	78
X60	AP T-HANG	4315	52	50	49	47	46	44	42	41	39	38	36
X60	AP T-HANG	4316	28	26	23	20	18	15	12	10	7	4	2
X60	AP T-HANG	4320	79	77	76	74	73	71	69	68	66	65	63
X60	AP T-HANG	4325	64	62	61	59	58	56	54	53	51	50	48
X60	RW 14-32	6205	72	71	70	69	68	68	67	66	65	64	63
X60	RW 14-32	6215	89	87	84	82	79	77	75	72	70	68	66
X60	RW 14-32	6235	79	78	77	76	75	75	74	73	72	71	70
X60	RW 14-32	6250	92	90	89	87	85	84	82	81	79	77	76
X60	RW 5-23	6110	67	66	65	64	63	63	62	61	60	59	58
X60	RW 5-23	6112	47	44	41	38	35	32	30	27	24	21	18
X60	TW A	205	89	87	84	82	80	78	76	75	74	73	72
X60	TW A	220	93	91	88	86	83	81	79	77	75	73	72
X60	TW A1	255	91	89	86	84	81	79	77	75	74	72	71
X60	TW B	305	83	81	79	77	76	74	73	72	71	71	70
X60	TW C	105	64	62	61	59	58	56	54	53	51	49	48
X60	TW C	115	85	83	81	79	77	75	74	73	72	71	70
X60	TW D	505	83	81	79	77	76	74	73	72	71	71	70
X60	TW D	510	90	87	85	82	80	78	77	75	74	73	72
X60	TW D1	405	85	83	81	79	77	75	74	73	72	71	70
X60	TW E	705	83	81	79	77	76	74	73	72	71	71	70

Network ID	Branch ID	Section ID	Last PCI	Forecasted PCI									
				2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
X60	TW F	550	8	6	3	0	0	0	0	0	0	0	0
X60	TW F	555	35	34	33	32	31	31	30	29	28	27	26
X60	TW F	565	92	90	87	85	82	80	78	76	74	73	71
X60	TW G	450	7	5	2	0	0	0	0	0	0	0	0

4.3.4 Forecasted PCI Considerations

As FDOT continues to update the SAPMP with future PCI Survey inspections and assembly of airfield pavement construction work history, the performance models will be further refined. With the refinement of additional PCI and work history data points, the forecasting of pavement conditions will continue to better reflect the performance trends of airfield pavements in the Florida Airports System. Forecasted or predicted pavement conditions for the airport are intended for planning purposes only. Design-level recommendations for pavement rehabilitation and/or reconstruction will require the appropriate application of the procedures defined in FAA ***AC 150/5320-6F Airport Pavement Design and Evaluation*** and ***AC 150/5370-11B Use of Nondestructive Testing in the Evaluation of Airport Pavements*** to determine structural and/or functional conditions at the time of project.



Chapter 5

Chapter 5 – Localized Maintenance and Repair Planning

General Maintenance and Rehabilitation (M&R) methods are characterized under three broad categories: localized maintenance and repair, global treatments, and major rehabilitation.

- **Localized Maintenance and Repair** includes patching and crack sealing.
- **Global Treatments** include surface seals and rejuvenators for flexible pavements.
- **Major Rehabilitation** includes overlays, significant slab replacement, and reconstruction.

This chapter discusses the FDOT SAPMP Localized Maintenance and Repair Planning approach. Proactive localized maintenance and repair, specifically preservation, is highly recommended to the airports. However, it is certainly recognized that once pavements have deteriorated below a certain condition, the facility would benefit from a more substantial rehabilitation in lieu of localized efforts. Chapter 6 Major Rehabilitation Planning discusses the addressing of pavements through timely rehabilitation once it has deteriorated below a critical PCI where localized repairs may not be as cost effective.

5.1 Localized Maintenance and Repair

Localized maintenance and repair is best applied as a conservation measure and is oftentimes applied to slow the rate of deterioration of distressed pavements; however, may be applied as a temporary corrective measure in isolated areas. Localized maintenance and repair can be applied either as a safety (“stopgap”) measure or preventive measure. Example distress types subject to localized preventive maintenance and repair may consist of low-severity longitudinal and transverse cracking and low-severity weathering. In many cases however, localized stopgap repair is applied as a safety measure to address high-severity distress manifestations when major rehabilitation is not funded for a given section with a PCI value below critical PCI. Some agencies may elect to define both types; preventative and stopgap, as localized maintenance.

Localized Stopgap/Safety Maintenance and Repair

Localized Stopgap or Safety Maintenance and Repair is defined as the localized distress repair needed to keep pavements operational in a safe condition. These activities are typically applied to high-severity distresses or distresses affecting operational activities. Typical pavement section PCIs will range from 0 to 65.

Localized Preventive Maintenance and Repair

Localized Preventive Maintenance and Repair is defined as distress maintenance activities performed with the primary objective of slowing the rate of deterioration. These activities typically include crack sealing and patching. Typical pavement section PCIs will be above 65.

5.2 Localized Maintenance and Repair Policy

The resulting Localized Maintenance and Repair recommendations are identified based on the policy defined in **Table 5.2 (a)** and **Table 5.2 (b)**, for flexible asphalt concrete and rigid Portland cement concrete pavements, respectively. The activities identified were based on the research of practical pavement treatments in consideration of the FAA ***AC 150/5380-6C "Guidelines and Procedures for Maintenance of Airport Pavements"*** and the ***FDOT Airfield Pavement Distress Repair Manual.*** Additionally, the ***Engineering Technical Letter (ETL) 14-3: Preventive Maintenance Plan (PMP) for Airfield Pavements*** was referenced for conservative application of pavement treatments. The Localized Maintenance and Repair Policy and associated planning-level unit costs were developed in consideration of a network-level analysis – it is strictly intended to provide a glimpse of the condition of the airport pavements with a limited PCI survey effort.

The developed Localized Maintenance and Repair Policy and associated planning-level unit costs were based on a statewide consideration of pavement treatments and review of state construction costs for both Airfield Pavements and from the FDOT Historical Cost Information archives. Furthermore, a consideration of limited repair quantities was factored in the determination of conservative planning-level unit costs. The identified Localized maintenance activities for both preventive and stopgap activities are based on a statewide network approach; project-specific evaluation and maintenance quantities should be developed prior to any construction.

Table 5.2 (a) Localized Maintenance and Repair – Flexible Asphalt Concrete

Distress	Severity	Description	Code	Work Type	Work Unit
41	Low	ALLIGATOR CR	FDOT-PA-AF	FDOT - PATCHING - AC FULL DEPTH	SqFt
41	Medium	ALLIGATOR CR	FDOT-PA-AF	FDOT - PATCHING - AC FULL DEPTH	SqFt
41	High	ALLIGATOR CR	FDOT-PA-AF	FDOT - PATCHING - AC FULL DEPTH	SqFt
42	N/A	BLEEDING	FDOT-MO-PV	FDOT - MONITOR	N/A
43	Low	BLOCK CR	FDOT-MO-PV	FDOT - MONITOR	N/A
43	Medium	BLOCK CR	FDOT-CS-AC	FDOT - CRACK SEALING - AC	Ft
43	High	BLOCK CR	FDOT-PA-AP	FDOT - PATCHING - AC PARTIAL DEPTH	SqFt
44	Low	CORRUGATION	FDOT-ML-AC	FDOT - MILLING - AC	SqFt
44	Medium	CORRUGATION	FDOT-ML-AC	FDOT - MILLING - AC	SqFt
44	High	CORRUGATION	FDOT-PA-AF	FDOT - PATCHING - AC FULL DEPTH	SqFt
45	Low	DEPRESSION	FDOT-PA-AF	FDOT - PATCHING - AC FULL DEPTH	SqFt
45	Medium	DEPRESSION	FDOT-PA-AF	FDOT - PATCHING - AC FULL DEPTH	SqFt
45	High	DEPRESSION	FDOT-PA-AF	FDOT - PATCHING - AC FULL DEPTH	SqFt
46	N/A	JET BLAST	FDOT-PA-AP	FDOT - PATCHING - AC PARTIAL DEPTH	SqFt
47	Low	JT REF. CR	FDOT-MO-PV	FDOT - MONITOR	N/A
47	Medium	JT REF. CR	FDOT-CS-AC	FDOT - CRACK SEALING - AC	Ft
47	High	JT REF. CR	FDOT-CS-AC	FDOT - CRACK SEALING - AC	Ft

Distress	Severity	Description	Code	Work Type	Work Unit
48	Low	L & T CR	FDOT-MO-PV	FDOT - MONITOR	N/A
48	Medium	L & T CR	FDOT-CS-AC	FDOT - CRACK SEALING - AC	Ft
48	High	L & T CR	FDOT-CS-AC	FDOT - CRACK SEALING - AC	Ft
49	N/A	OIL SPILLAGE	FDOT-PA-AP	FDOT - PATCHING - AC PARTIAL DEPTH	SqFt
50	Low	PATCHING	FDOT-MO-PV	FDOT - MONITOR	N/A
50	Medium	PATCHING	FDOT-PA-AF	FDOT - PATCHING - AC FULL DEPTH	SqFt
50	High	PATCHING	FDOT-PA-AF	FDOT - PATCHING - AC FULL DEPTH	SqFt
51	N/A	POLISHED AG	FDOT-SS-LO	FDOT - SURFACE SEAL	SqFt
52	Low	RAVELING	FDOT-SS-LO	FDOT - SURFACE SEAL	SqFt
52	Medium	RAVELING	FDOT-PA-AP	FDOT - PATCHING - AC PARTIAL DEPTH	SqFt
52	High	RAVELING	FDOT-PA-AP	FDOT - PATCHING - AC PARTIAL DEPTH	SqFt
53	Low	RUTTING	FDOT-MO-PV	FDOT - MONITOR	N/A
53	Medium	RUTTING	FDOT-PA-AF	FDOT - PATCHING - AC FULL DEPTH	SqFt
53	High	RUTTING	FDOT-PA-AF	FDOT - PATCHING - AC FULL DEPTH	SqFt
54	Low	SHOVING	FDOT-MO-PV	FDOT - MONITOR	N/A
54	Medium	SHOVING	FDOT-ML-AC	FDOT - MILLING - AC	SqFt
54	High	SHOVING	FDOT-PA-AF	FDOT - PATCHING - AC FULL DEPTH	SqFt
55	N/A	SLIPPAGE CR	FDOT-PA-AP	FDOT - PATCHING - AC PARTIAL DEPTH	SqFt
56	Low	SWELLING	FDOT-MO-PV	FDOT - MONITOR	N/A
56	Medium	SWELLING	FDOT-PA-AF	FDOT - PATCHING - AC FULL DEPTH	SqFt
56	High	SWELLING	FDOT-PA-AF	FDOT - PATCHING - AC FULL DEPTH	SqFt
57	Low	WEATHERING	FDOT-MO-PV	FDOT - MONITOR	N/A
57	Medium	WEATHERING	FDOT-SS-LO	FDOT - SURFACE SEAL	SqFt
57	High	WEATHERING	FDOT-PA-AP	FDOT - PATCHING - AC PARTIAL DEPTH	SqFt

Table 5.2 (b) Localized Maintenance and Repair – Rigid Portland Cement Concrete

Distress	Severity	Description	Code	Work Type	Work Unit
61	Low	BLOW-UP	FDOT-PA-PP	FDOT - PATCHING - PCC PARTIAL DEPTH	SqFt
61	Medium	BLOW-UP	FDOT-PA-PF	FDOT - PATCHING - PCC FULL DEPTH	SqFt
61	High	BLOW-UP	FDOT-SL-PC	FDOT - SLAB REPLACEMENT - PCC	SqFt
62	Low	CORNER BREAK	FDOT-CS-PC	FDOT - CRACK SEALING - PCC	Ft
62	Medium	CORNER BREAK	FDOT-PA-PF	FDOT - PATCHING - PCC FULL DEPTH	SqFt
62	High	CORNER BREAK	FDOT-PA-PF	FDOT - PATCHING - PCC FULL DEPTH	SqFt
63	Low	LINEAR CR	FDOT-MO-PV	FDOT - MONITOR	N/A
63	Medium	LINEAR CR	FDOT-CS-PC	FDOT - CRACK SEALING - PCC	Ft
63	High	LINEAR CR	FDOT-PA-PP	FDOT - PATCHING - PCC PARTIAL DEPTH	SqFt

Distress	Severity	Description	Code	Work Type	Work Unit
64	Low	DURABIL. CR	FDOT-MO-PV	FDOT - MONITOR	N/A
64	Medium	DURABIL. CR	FDOT-PA-PF	FDOT - PATCHING - PCC FULL DEPTH	SqFt
64	High	DURABIL. CR	FDOT-SL-PC	FDOT - SLAB REPLACEMENT - PCC	SqFt
65	Low	JT SEAL DMG	FDOT-JS-PC	FDOT - JOINT SEAL - PCC	Ft
65	Medium	JT SEAL DMG	FDOT-JS-PC	FDOT - JOINT SEAL - PCC	Ft
65	High	JT SEAL DMG	FDOT-JS-PC	FDOT - JOINT SEAL - PCC	Ft
66	Low	SMALL PATCH	FDOT-MO-PV	FDOT - MONITOR	N/A
66	Medium	SMALL PATCH	FDOT-PA-PP	FDOT - PATCHING - PCC PARTIAL DEPTH	SqFt
66	High	SMALL PATCH	FDOT-PA-PP	FDOT - PATCHING - PCC PARTIAL DEPTH	SqFt
67	Low	LARGE PATCH	FDOT-MO-PV	FDOT - MONITOR	N/A
67	Medium	LARGE PATCH	FDOT-PA-PF	FDOT - PATCHING - PCC FULL DEPTH	SqFt
67	High	LARGE PATCH	FDOT-PA-PF	FDOT - PATCHING - PCC FULL DEPTH	SqFt
68	N/A	POPOUTS	FDOT-PO-FL	FDOT - POPOUT FILLER	SqFt
69	N/A	PUMPING	FDOT-SB-PC	FDOT – SLAB STABILIZATION - PCC	SqFt
70	Low	SCALING	FDOT-MO-PV	FDOT - MONITOR	N/A
70	Medium	SCALING	FDOT-PA-PP	FDOT - PATCHING - PCC PARTIAL DEPTH	SqFt
70	High	SCALING	FDOT-SL-PC	FDOT - SLAB REPLACEMENT - PCC	SqFt
71	Low	FAULTING	FDOT-MO-PV	FDOT - MONITOR	N/A
71	Medium	FAULTING	FDOT-GR-PP	FDOT - GRINDING (LOCALIZED)	Ft
71	High	FAULTING	FDOT-GR-PP	FDOT - GRINDING (LOCALIZED)	Ft
72	Low	SHAT. SLAB	FDOT-CS-PC	FDOT - CRACK SEALING - PCC	Ft
72	Medium	SHAT. SLAB	FDOT-SL-PC	FDOT - SLAB REPLACEMENT - PCC	SqFt
72	High	SHAT. SLAB	FDOT-SL-PC	FDOT - SLAB REPLACEMENT - PCC	SqFt
73	N/A	SHRINKAGE CR	FDOT-MO-PV	FDOT - MONITOR	N/A
74	Low	JOINT SPALL	FDOT-CS-PC	FDOT - CRACK SEALING - PCC	Ft
74	Medium	JOINT SPALL	FDOT-PA-PP	FDOT - PATCHING - PCC PARTIAL DEPTH	SqFt
74	High	JOINT SPALL	FDOT-PA-PP	FDOT - PATCHING - PCC PARTIAL DEPTH	SqFt
75	Low	CORNER SPALL	FDOT-CS-PC	FDOT - CRACK SEALING - PCC	Ft
75	Medium	CORNER SPALL	FDOT-PA-PP	FDOT - PATCHING - PCC PARTIAL DEPTH	SqFt
75	High	CORNER SPALL	FDOT-PA-PP	FDOT - PATCHING - PCC PARTIAL DEPTH	SqFt
76	Low	ASR	FDOT-MO-PV	FDOT - MONITOR	N/A
76	Medium	ASR	FDOT-PA-PF	FDOT - PATCHING - PCC FULL DEPTH	SqFt
76	High	ASR	FDOT-SL-PC	FDOT - SLAB REPLACEMENT - PCC	SqFt

Table 5.2 (c) Localized Repair Planning-Level Unit Costs – Flexible Asphalt Concrete

Code	Name	Cost	Units
FDOT-SS-LO	FDOT - SURFACE SEAL	$0.55	SqFt
FDOT-ML-AC	FDOT - MILLING - AC	$2.00	SqFt
FDOT-GR-PP	FDOT - GRINDING (LOCALIZED)	$2.00	Ft
FDOT-CS-AC	FDOT - CRACK SEALING - AC	$3.00	Ft
FDOT-MO-PV	FDOT - MONITOR	$0.00	SqFt
FDOT-PA-AF	FDOT - PATCHING - AC FULL DEPTH	$6.00	SqFt
FDOT-PA-AP	FDOT - PATCHING - AC PARTIAL DEPTH	$3.00	SqFt

Table 5.2 (d) Localized M&R Planning-Level Unit Costs – Rigid Portland Cement Concrete

Code	Name	Cost	Units
FDOT-PA-PF	FDOT - PATCHING - PCC FULL DEPTH	$100.00	SqFt
FDOT-SL-PC	FDOT - SLAB REPLACEMENT - PCC	$30.00	SqFt
FDOT-SB-PC	FDOT - SLAB STABILIZATION - PCC	$30.00	SqFt
FDOT-PA-PP	FDOT - PATCHING - PCC PARTIAL DEPTH	$72.00	SqFt
FDOT-PO-FL	FDOT - POPOUT FILLER	$0.05	SqFt
FDOT-GR-PP	FDOT - GRINDING (LOCALIZED)	$2.00	Ft
FDOT-CS-PC	FDOT - CRACK SEALING - PCC	$4.25	Ft
FDOT-MO-PV	FDOT - MONITOR	$0.00	N/A
FDOT-JS-PC	FDOT - JOINT SEAL - PCC	$2.75	Ft

**PCC Patching (Full Depth and Partial Depth) consider high-early-strength and high-performing repair material.*

5.3 Localized Maintenance and Repair Analysis and Recommendations

The SAPMP provides a planning-level estimation of Localized Maintenance and Repair based on the results of the latest PCI Survey Inspection performed at the airport. Based on the limited sample units inspected, a statistical extrapolation of distresses at the section level is used to estimate the quantities of recommended repair activities based on the policies defined in **5.2 Localized M&R Policy**. The PCI Survey Inspections did not consist of 100% inspection of all sample units; therefore, the section-level distress quantities used to estimate the Localized Maintenance and Repair needs are for conceptual planning purposes. The accuracy of the extrapolated distresses, and therefore work quantities, is subject to the amount of sample units inspected and the concentration of distress types observed in sample units. **Appendix B** provides the estimated Localized Maintenance and Repair based on this SAPMP's PCI Survey Inspection efforts. Localized Preventive Maintenance and Repair is typically applied to pavements that are in a condition at or above the Critical PCI of 65. Localized Stopgap Maintenance and Repair is typically applied to pavements that are below the Critical PCI of 65. It is recommended that airport staff evaluate the application of Localized Maintenance and Repair in concert with the planning of Major Rehabilitation efforts identified in Chapter 6 Major Rehabilitation Planning. Pavements with Stopgap recommendations that are subject to near-term Major Rehabilitation efforts may remove the need to perform localized maintenance efforts.

The following **Table 5.3 (a)** summarizes the anticipated Localized Maintenance and Repair efforts based on the PCI Survey Inspection efforts performed at this airport as part of this SAPMP System Update. The following table depicts planning-level costs rounded to the nearest ten dollars.

Table 5.3 (a) Summary of Airport Localized M&R Planning Cost and Quantity at Network Level

Work Description	Work Category	Rough Estimate of Work Quantity	Work Units	Planning Material Cost
FDOT - SURFACE SEAL	PREVENTIVE	12,895	SqFt	$ 7,100.00
FDOT - PATCHING - AC PARTIAL DEPTH	PREVENTIVE	15	SqFt	$ 40.00
FDOT - CRACK SEALING - PCC	PREVENTIVE	35	Ft	$ 140.00
FDOT - PATCHING - PCC PARTIAL DEPTH	PREVENTIVE	25	SqFt	$ 1,720.00
FDOT - JOINT SEAL - PCC	PREVENTIVE	7,690	Ft	$ 21,150.00
FDOT - JOINT SEAL - PCC	STOPGAP	1,165	Ft	$ 3,200.00
FDOT - PATCHING - PCC PARTIAL DEPTH	STOPGAP	190	SqFt	$ 13,480.00
FDOT - CRACK SEALING - AC	STOPGAP	58,575	Ft	$ 175,730.00
FDOT - PATCHING - AC FULL DEPTH	STOPGAP	2,180	SqFt	$ 13,070.00
FDOT - PATCHING - AC PARTIAL DEPTH	STOPGAP	265,400	SqFt	$ 796,190.00
FDOT - SURFACE SEAL	STOPGAP	30,845	SqFt	$ 16,970.00
FDOT - CRACK SEALING - PCC	STOPGAP	230	Ft	$ 970.00

The following **Table 5.3 (b)** provides further breakdown of the anticipated planning-level cost at the section level for the pavements exhibiting distresses that would benefit from Localized M&R. The table shows the approximate improved "End Condition" of the section after the application of Localized M&R. The following table depicts planning-level costs rounded to the nearest ten dollars.

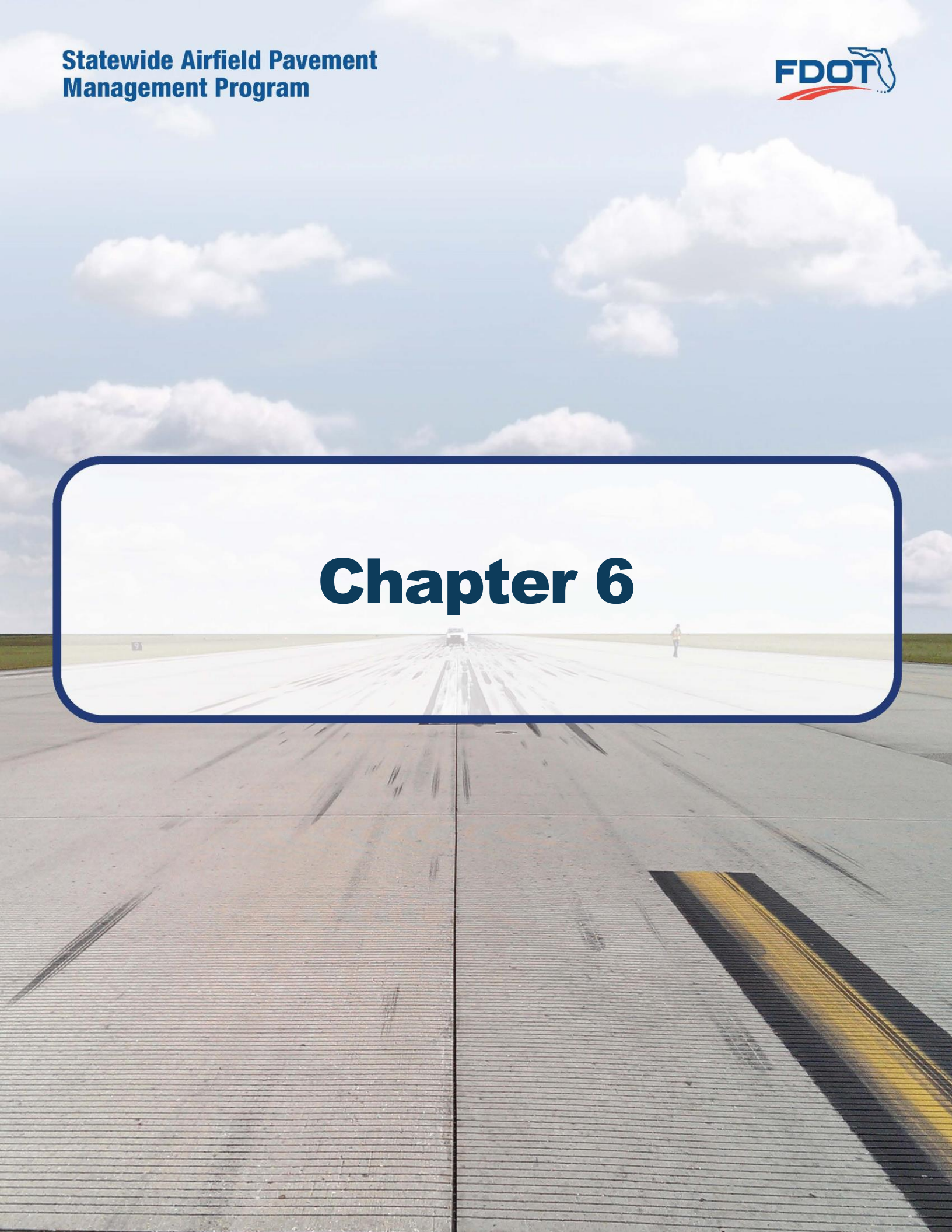
Table 5.3 (b) Summary of Airport Localized M&R Planning Cost and Quantity at Section Level

Network ID	Branch ID	Section ID	Area (SF)	Start Condition	End Condition	Cost
X60	AP	4105	86,922	60	64	$ 2,220.00
X60	AP	4110	101,074	79	79	$ -
X60	AP HANG	4205	10,495	78	82	$ 160.00
X60	AP HANG	4210	6,628	100	100	$ -
X60	AP RU	5105	28,165	94	94	$ -
X60	AP T-HANG	4315	3,900	52	70	$ 3,640.00
X60	AP T-HANG	4316	2,867	28	51	$ 3,420.00
X60	AP T-HANG	4320	18,657	79	84	$ 430.00
X60	AP T-HANG	4325	21,796	64	78	$ 20,320.00
X60	RW 14-32	6205	24,688	72	73	$ 9,340.00
X60	RW 14-32	6215	254,982	89	89	$ -
X60	RW 14-32	6235	22,894	79	83	$ 9,590.00
X60	RW 14-32	6250	15,631	92	92	$ -
X60	RW 5-23	6110	7,500	67	75	$ 4,140.00
X60	RW 5-23	6112	15,000	47	74	$ 4,870.00
X60	TW A	205	159,607	89	89	$ -
X60	TW A	220	287,885	93	93	$ -
X60	TW A1	255	34,316	91	91	$ -
X60	TW B	305	101,269	83	88	$ 2,440.00
X60	TW C	105	65,023	64	69	$ 2,800.00
X60	TW C	115	35,409	85	94	$ 1,950.00
X60	TW D	505	61,793	83	88	$ 1,700.00
X60	TW D	510	8,500	90	90	$ -
X60	TW D1	405	57,110	85	85	$ -
X60	TW E	705	55,768	83	86	$ 470.00
X60	TW F	550	128,837	8	50	$ 565,250.00
X60	TW F	555	11,250	35	68	$ 17,650.00
X60	TW F	565	33,640	92	92	$ -
X60	TW G	450	94,473	7	51	$ 399,560.00

The following **Table 5.3 (c)** provides a summary of the anticipated planning-level costs for Localized Preventive Maintenance and Repair and Localized Stopgap Maintenance and Repair. The following table depicts planning-level costs rounded to the nearest ten dollars.

Table 5.3 (c) Summary of Localized Maintenance

Work Category	Cost
Preventive	$ 30,150.00
Stopgap	$ 1,019,610.00
Planning-Level Localized M&R Needs =	***$ 1,049,760.00***



Chapter 6

Chapter 6 – Major Rehabilitation Planning

6.1 Major Rehabilitation

Major rehabilitation is recommended to correct or improve structural deficiencies and/or functional deterioration for pavement sections within a network. Often, when pavements are subject to significant changes in the aircraft fleet mix (frequency and type), major rehabilitation is required to provide a pavement section to meet the traffic demand. Major rehabilitation is recommended when a pavement section falls below the Critical PCI value that is defined during the system customization or if a pavement section has a significant observation of load-related distress. Observation of any load-related distress potentially indicates that the section may be structurally deficient or that the aircraft loads being applied to the pavement section are different than what the section was designed for. **Figures 6.1 (a) and 6.1 (b)** depict the decision process for major rehabilitation project identification with the assumption of available funds. Should funding be unavailable for pavement sections in need of major rehabilitation, the airport may elect to apply the appropriate localized stopgap repair.

Figure 6.1 (a) Major Rehabilitation Planning Decision Diagram, PCI ≤ Critical PCI

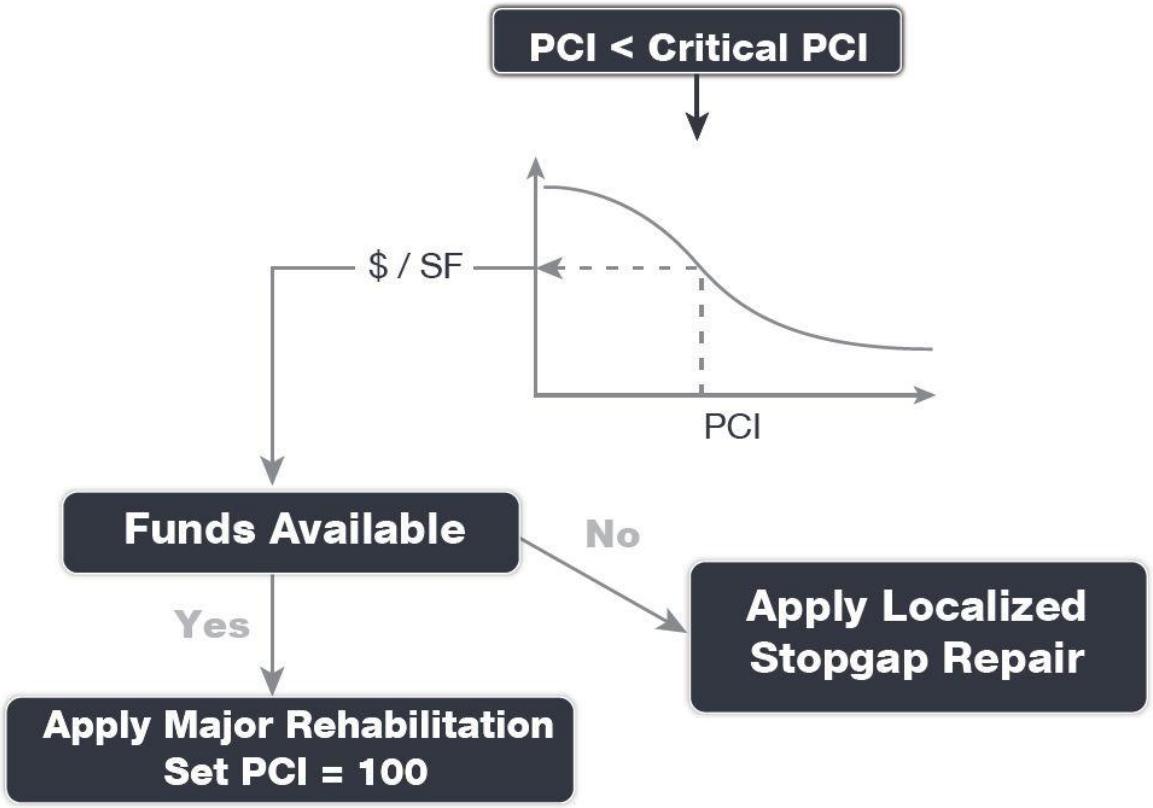
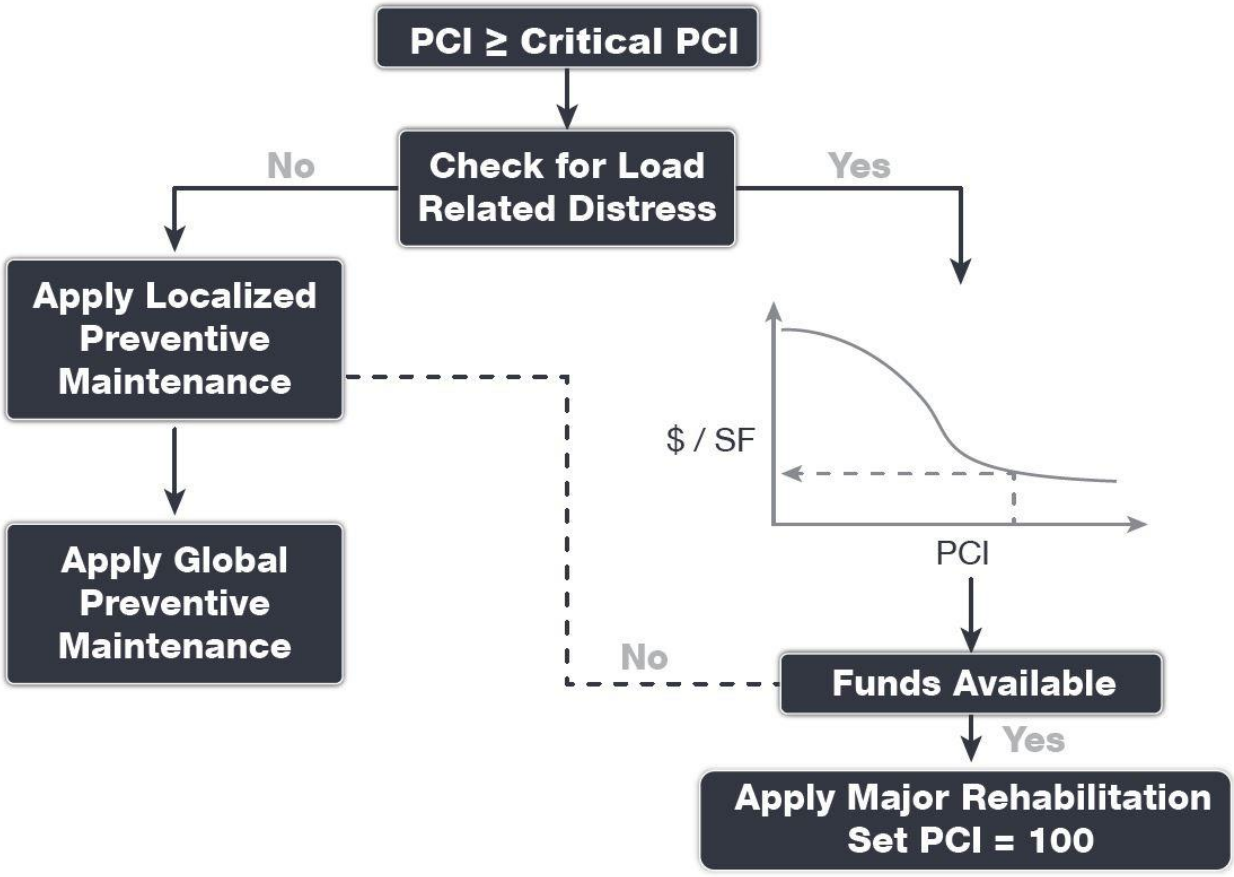


Figure 6.1 (b) Major Rehabilitation Planning Decision Diagram, PCI > Critical PCI



6.1.1 Critical PCI

For the FDOT SAPMP the development of a major rehabilitation program is based on the Critical PCI concept. The ***Critical PCI*** concept assumes that it is more cost-effective to maintain pavements above, rather than below their critical PCI. It is assumed that once a pavement section deteriorates to the Critical PCI value that it is more cost-effective to complete a major rehabilitation project rather than continuing to apply preventive maintenance. This method includes defining the Critical PCI and introducing major rehabilitation work types.

Identification of annual and long-range Major Rehabilitation work plans are typically based on the Critical PCI concept. The Critical PCI is defined as the PCI value at which the rate of loss (deterioration) increases with time, or the cost of applying localized maintenance and repair increases or is not effective. A Critical PCI is usually within a range of 55 and 70; the following procedure is standard approach in developing a specific Critical PCI:

1. Develop a pavement performance model and refine a prediction model for the pavements considered.
2. Select a localized maintenance and repair policy to be used in developing a work plan.
3. Apply the selected localized policy to the pavement sections for a range of PCI.
4. Compute the unit cost per area for each PCI range.
5. Plot the cost versus the PCI.
6. Determine the Critical PCI based on the point where the cost is insignificant.

The FDOT SAPMP defines the Critical PCI at 65 – this is based on the historic trends in pavement performance and Statewide planning efforts.

6.1.2 FDOT Recommended Minimum Service-Level PCI

The FDOT has recommended ***Minimum Service-Level PCI*** for airports' airfield pavements based on the following characteristics; airport type within FDOT SAPMP, branch use, and expected aircraft operations. For the purposes of Major Rehabilitation, the Critical PCI is typically the threshold condition that triggers major construction, however it is recommended that the airports maintain the Minimum Service-Level PCI with a combination of Localized Maintenance and Repair and timely Major Rehabilitation. **Table 6.1.2** summarizes the FDOT Recommended Minimum Service-Level PCI.

Table 6.1.2 FDOT Recommended Minimum Service-Level PCI

Branch Use	FDOT Recommended PCI	Additional Consideration
Runway	75	Aircraft Fleet Mix Changes Primary Runway
Taxiway / Taxilane	65	Aircraft Fleet Mix Changes Expected Operations
Aprons / Run-Ups / Ramps	60	Ground Service Equipment Non-Aircraft Operations (e.g. fueling)

6.2 Major Rehabilitation Policy

6.2.1 Major Rehabilitation Pavement Section Development

The review of the existing as-built record documentation within the participating airports' archives was used as the basis of the conceptual pavement design sections. Refinement of the pavement section layers was performed in consideration of the FAA ***AC 150/ 5320-6F "Airport Pavement Design and Evaluation."*** It should be noted that no subsurface geotechnical investigation, ALTA/ACSM Survey, topographic survey, utilities survey, environmental, or site specific air traffic study(s) have been utilized in the development of the design criteria. No warranty or assurance is implied in this document for final design nor construction for any airfield pavements discussed within this report. The following **Tables 6.2.1 (a) and (b)** provide details on the conceptual pavement sections developed for this study.

Major rehabilitation is divided into two policy categories as part of this program: Full-Depth Reconstruction (Reconstruction) and Intermediate-Level Major Rehabilitation (Restoration). Based on the pavement type, the general categories are defined as AC Reconstruction and AC Restoration for AC, AAC, and APC flexible pavement types and PCC Reconstruction and PCC Restoration for PCC rigid pavement types. The pavement sections have been based on the average GA Airport Type requirements; no pavement design has been performed in accordance with AC 150/5320-6F for the determined conceptual sections.

Table 6.2.1 (a) Conceptual Pavement Section for Major Rehabilitation – Flexible Asphalt Concrete

Rehabilitation Type	General Aviation (GA) Airport
AC Restoration *Combination of asphalt pavement milling and overlay with 25% of the areas subject to full-depth reconstruction.* **PCI = 41 to 65**	**75% Mill and Overlay** P-101 AC Milling (2") P-603 Bituminous Tack P-401 (HMA) (2") **25% AC Reconstruction** P-101 Pavement Removal P-152 Subgrade (12") P-211 Base (6") P-602 Bituminous Prime P-603 Bituminous Tack P-401 HMA (2") *Excludes any paved shoulder features.*
AC Reconstruction *Full-depth asphalt pavement section reconstruction.* **PCI = 40 or less**	P-101 Pavement Removal P-152 Subgrade (12") P-211 Base (6") P-602 Bituminous Prime P-603 Bituminous Tack P-401 HMA (2") *Excludes any paved shoulder features.*

Table 6.2.1 (b) Conceptual Pavement Section for Major Rehabilitation – Rigid Portland Cement Concrete

Rehabilitation Type	General Aviation (GA) Airport
PCC Restoration *Restoration of PCC pavement with a combination of crack sealing, joint seal replacement, and replacement of 25% of slab panels.* **PCI = 41 to 65**	P-101 Pavement Removal P-605 Joint Seal Repair P-152 Subgrade (6") P-211 Base (if needed, typical) (6") P-501 Rigid PCC (10") *Select Slabs (25%) **Crack Seal and Limited Patching
PCC Reconstruction *Full-depth rigid pavement section reconstruction.* **PCI = 40 or less**	P-101 Pavement Removal P-605 Joint Seal Repair P-152 Subgrade (6") P-211 Base (6") P-501 Rigid PCC (10")

The identification of rehabilitation needs and conceptual pavement sections have been determined at the planning level. Design-level investigation is recommended prior to developing construction-level design documents and budgets.

In compliance with FAA Grant Assurances 11 and 19, the FDOT SAPMP provides airports with airfield pavement evaluation reports in accordance with **FAA AC 150/5380-7B Airport Pavement Management Program (PMP)** and **AC 150/5380-6C Guidelines and Procedures for Maintenance of Airport Pavements**. The application of the results of a PCI survey are for planning purposes and are limited to the visual observation of deteriorated pavements in limited sampling; design-level investigation is recommended in accordance with the FAA procedures defined in **AC 5320-6F Airport Pavement Design and Evaluation** and **AC 150/5370-11B Use of Nondestructive Testing in the Evaluation of Airport Pavements**. The aforementioned ACs provide the design-level material properties of in-situ pavement and subgrade layers for the determination of appropriate rehabilitation actions. The FDOT SAPMP is organized to provide airports with planning-level data and does not intend to preclude the responsible engineer in performing the appropriate level of investigation and analysis in determining the appropriate design details of a pavement rehabilitation. It would not be advisable to solely base design-level rehabilitation without the appropriate level of investigation and determination of pavement deterioration beyond that of a visual functional condition assessment.

The recommendations identified in the Major Rehabilitation Needs consider the **FAA AC 150/5370-10H Standard Specifications for Construction of Airports** when determining the appropriate materials and methods implemented for construction projects, such as pavement rehabilitation, on airports. It should be noted that the AC **150/5370-10H Standard Specifications for Construction of Airports** was updated in December of 2018. Design-level determination of project specific specifications based on the AC should be developed by the Airport when performing applicable construction projects.

6.2.2 Major Rehabilitation Planning-Level Unit Costs

Planning-level opinion of probable construction unit costs developed for this System Update was based on archived bid tabulations and records from airfield pavement projects provided by participating airports. A review of cost trends and cost factors have been incorporated to assist airports in planning for project budgets. Neither FDOT nor the Consultant Team has control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable construction costs provided herein are based on the information known to FDOT at this time and represent only the Consultant Team's judgment as a design professional familiar with the construction industry. This report cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable construction costs.

Table 6.2.2 General Aviation Major Rehabilitation Planning-Level Unit Cost by Pavement Type

Rehabilitation Type	PCI Range	Flexible Asphalt Concrete Cost Per SF		Rigid Portland Cement Concrete Cost per SF	
Restoration	41 to 65	$	7.00	$	10.00
Reconstruction	0 to 40	$	9.00	$	15.00

Planning-level opinion of probable construction unit costs consider factors for non-pavement improvements, QA/QC testing, and administrative costs.

6.3 Major Rehabilitation Needs

The objective of the major pavement rehabilitation needs analysis is to provide planning-level projects within an airport's airfield pavement network. Major rehabilitation activities are recommended when a pavement section has deteriorated below the Critical PCI value, a point at which localized maintenance and repair activities may not be the most cost-effective solution. In addition, major rehabilitation is also recommended when the Section PCI is at or above the Critical PCI but the section has significant load-related PCI distresses. Identification of rehabilitation needs is done at the Airfield Pavement Network Definition's section level. This however does not limit the airport from further refining limits of project planning areas.

Major rehabilitation is identified within the FDOT SAPMP as major construction activity that would result in an improvement or resetting of the pavement section's PCI to a value of 100. Major rehabilitation recommendations (AC Restoration, AC Reconstruction, PCC Restoration, and PCC Reconstruction) should be considered as planning-level only. Additional design-level investigation in accordance to the FAA Advisory Circulars will be required. Recommendations identified within this planning document do not imply final design.

6.3.1 10-Year Unconstrained Budget Major Rehabilitation Needs

An unconstrained budget (unlimited budget) is performed for a 10-year duration to identify pavement rehabilitation needs based on current or forecasted PCI values deteriorating below the Critical PCI. FDOT recognizes airports are constrained by budgets and does not intend to convey an unrealistic approach of addressing pavement rehabilitation. The intent of the 10-Year Major Rehabilitation Needs analysis is to identify pavements that will warrant rehabilitation. It is highly recommended that airport staff utilize this information in support of the development of a practical Capital Improvement Program based on priorities, further design/project-level

investigation, and budgetary constraints. The following **Table 6.3.1** summarizes all identified section-level major rehabilitation needs forecasted for the next 10-year period. It should be noted that the following table depicts planning-level costs and have been rounded for planning purposes.

Table 6.3.1 10-Year Major Rehabilitation Needs

Program Year	Network ID	Branch ID	Section ID	Surface	Area (SF)	PCI Before	Rehabilitation Type	Planning Cost
2020	**X60**	AP	4105	AAC	86,922	58	AC Restoration	$ 609,000.00
2020	**X60**	AP T-HANG	4315	AC	3,900	50	AC Restoration	$ 28,000.00
2020	**X60**	AP T-HANG	4316	APC	2,867	26	AC Reconstruction	$ 26,000.00
2020	**X60**	AP T-HANG	4325	AC	21,796	62	AC Restoration	$ 153,000.00
2020	**X60**	RW 5-23	6112	APC	15,000	44	AC Restoration	$ 121,000.00
2020	**X60**	TW C	105	AAC	65,023	62	AC Restoration	$ 456,000.00
2020	**X60**	TW F	550	AC	128,837	6	AC Reconstruction	$ 1,160,000.00
2020	**X60**	TW F	555	PCC	11,250	34	PCC Reconstruction	$ 169,000.00
2020	**X60**	TW G	450	AC	94,473	5	AC Reconstruction	$ 851,000.00
2022	**X60**	RW 5-23	6110	PCC	7,500	64	PCC Restoration	$ 76,000.00
2025	**X60**	AP HANG	4205	AAC	10,495	64	AC Restoration	$ 74,000.00
2028	**X60**	RW 14-32	6205	PCC	24,688	64	PCC Restoration	$ 247,000.00
2029	**X60**	AP	4110	AC	101,074	63	AC Restoration	$ 708,000.00
2029	**X60**	AP T-HANG	4320	AC	18,657	63	AC Restoration	$ 131,000.00

**All values have been rounded to the nearest thousand-dollar.*

The following **Figure 6.3.1 (a)** summarizes the section-level major rehabilitation needs for a 10-year period between 2020 and 202*. **Figure 6.3.1 (b)** provides an inset view of Airfield Pavement Major Rehabilitation Exhibit, a large format exhibit is located in **Appendix C Technical Exhibits**. The exhibit graphically depicts the Major Rehabilitation Needs with rounded costs.

Figure 6.3.1 (a) 10-Year Major Rehabilitation Needs by Program Year

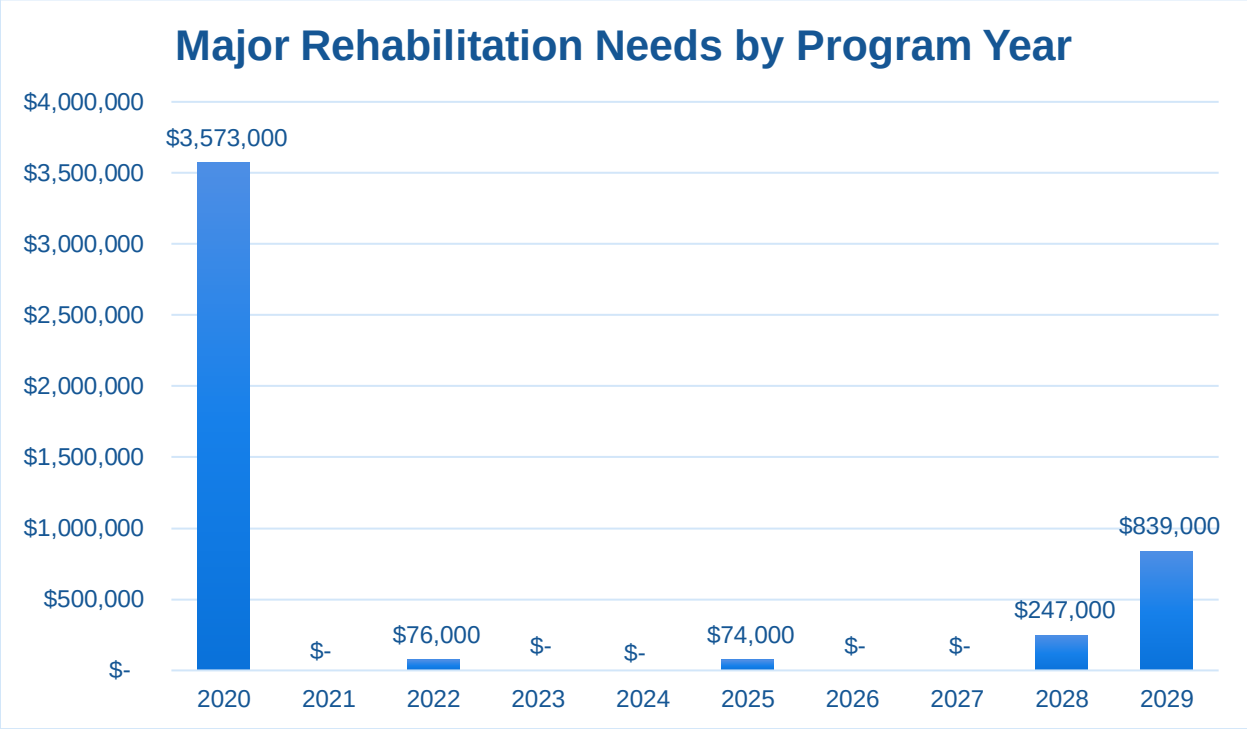
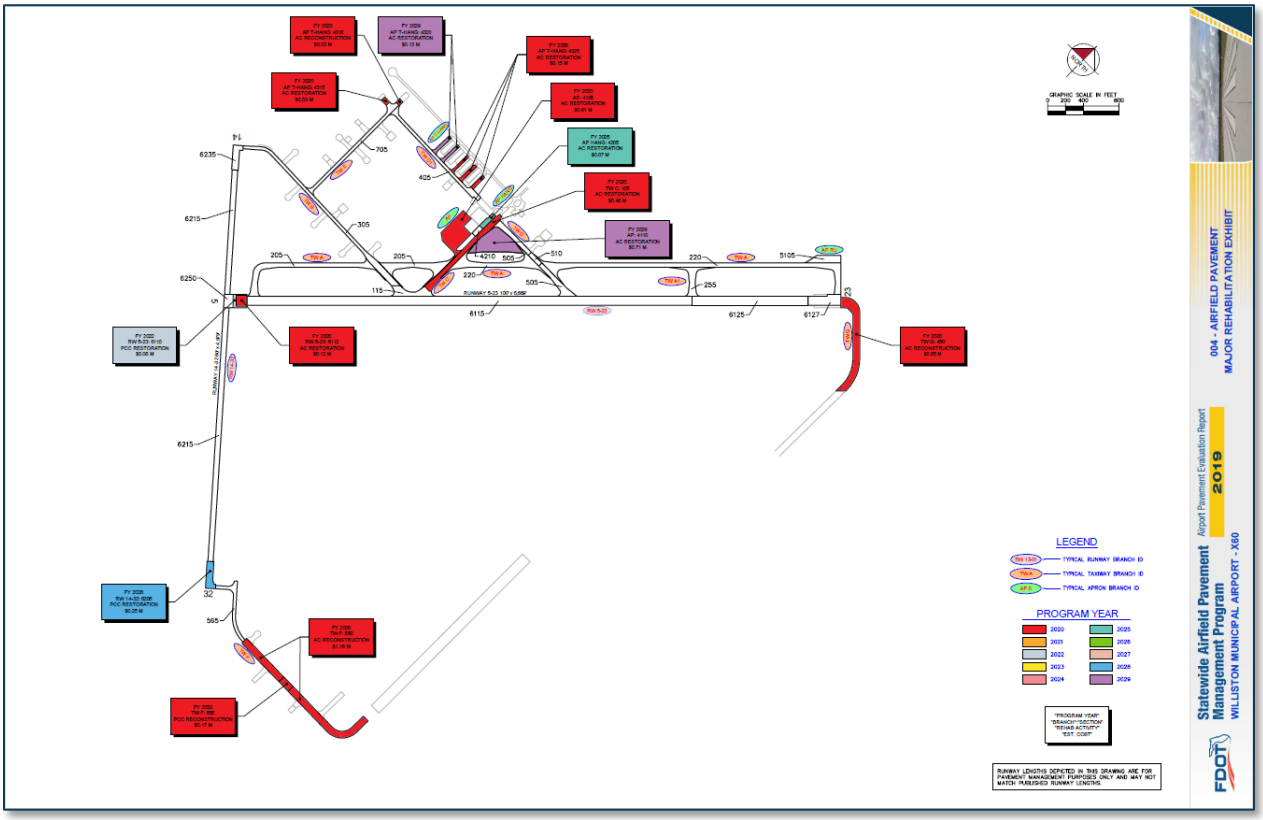
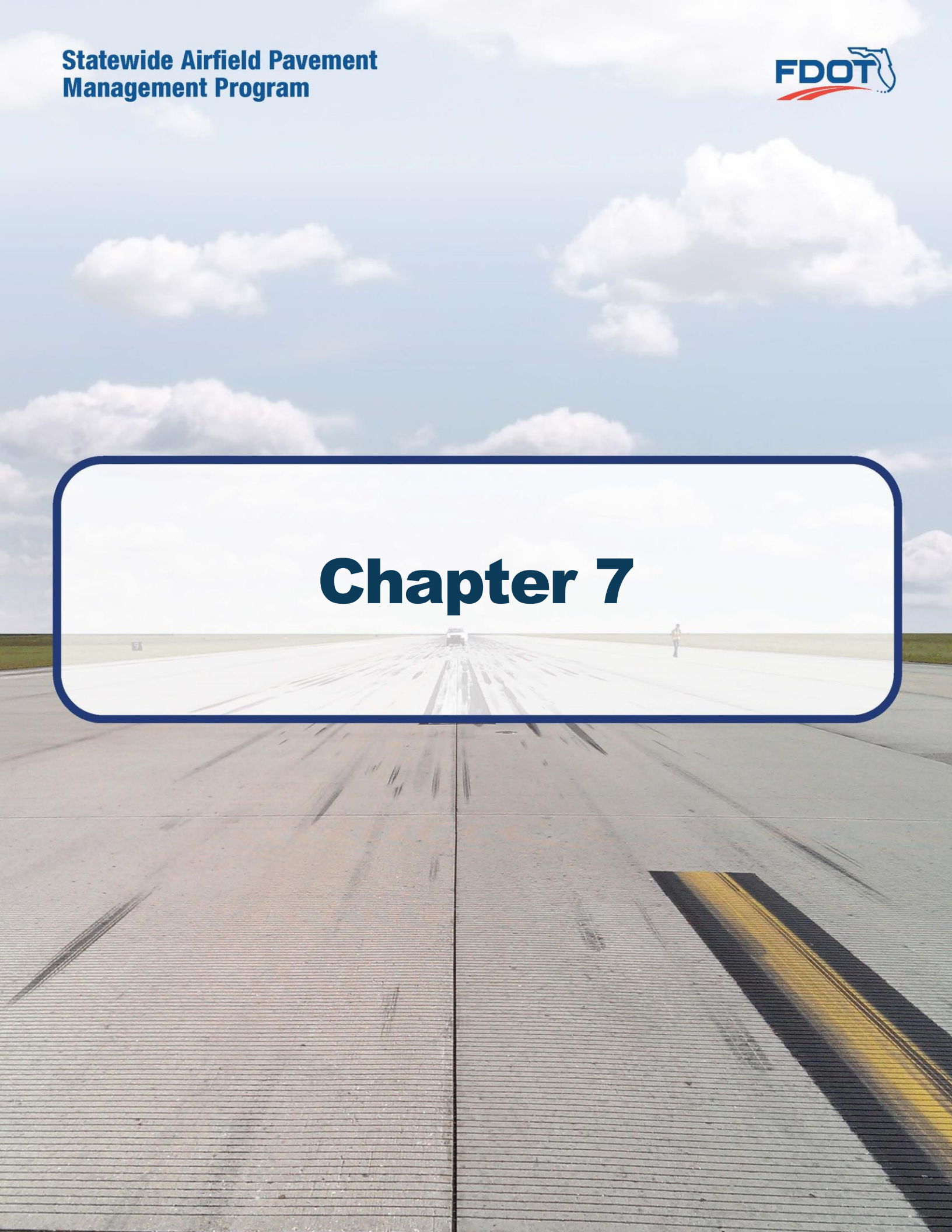


Figure 6.3.1 (b) 10-Year Major Rehabilitation Needs by Program Year Exhibit





Chapter 7

Chapter 7 – Conclusion

7.1 Recommendations

7.1.1 Continued PCI Survey Inspections

It is recommended that the airport continue to perform regularly scheduled PCI Survey inspections in accordance with the ASTM D5340-12 (or latest edition) to monitor the condition of the airfield pavement facilities.

A high priority should be considered for continuous maintenance record keeping and re-inspection of all the airport's maintained pavement facilities to ensure continued safe aircraft operations. A series of scheduled periodic inspections must be carried out for an effective maintenance program. Re-inspection of pavements should be scheduled in a timely manner to ensure that all areas, particularly those that may not come under day-to-day observation, are thoroughly evaluated and reported.

7.1.2 Localized Maintenance and Repair

While deterioration of the pavements due to usage and exposure to the environment cannot be completely prevented, applying timely and effective maintenance efforts can slow the anticipated rate of deterioration. Lack of adequate and timely maintenance is the significant factor in pavement deterioration.

It is recommended that airport sponsors coordinate with their respective Airport Maintenance staff and Airport Engineer when developing project-level maintenance and repair efforts.

7.1.3 Major Rehabilitation

Chapter 6 – Major Rehabilitation Planning identified major pavement rehabilitation project needs from 2020-2029. The identification of the rehabilitation needs was performed at the section level for manageable project areas with the assumption of an unconstrained budget scenario. Given the uncertainty in the airport-specific budget information and prioritization goals, the unconstrained budget scenario was performed to evaluate the worst-case scenario and identify all the inspected pavements' needs in a 10-year period. Certainly, it is understood that most airports are faced with constrained budgets; further evaluation of projects based on prioritization, operational criticality, funding availability, and practicality is recommended.

7.1.4 Pavement Management System

The following recommendations are made to fully implement an effective pavement management program for the airport:

- Develop a detailed preventive maintenance program for the airport.
- Further refine and implement the identified 10-year major rehabilitation needs.
- Maintain detailed records on pavement maintenance, construction, and inspection.
- Maintain records on major pavement construction projects (year, scope, cost, and construction documents).

7.2 Supporting Documents

001 – Airfield Pavement Network Definition Exhibit

The Airfield Pavement Network Definition Exhibit is located in **Appendix C Technical Exhibits**. The exhibit depicts the airfield layout in a manner that defines the airfield pavement infrastructure as branches, sections, and sample units in accordance with the ASTM D5340-12. The exhibit is intended for planning purposes only – further detail on facilities can be found on the Airport's adopted Airport Layout Plan. Detailed characteristics are tabulated in **Appendix A Pavement Analysis Tables.**

002 – Airfield Pavement System Inventory Exhibit

The Airfield Pavement System Inventory Exhibit in is located in **Appendix C Technical Exhibits**. The exhibit depicts any recent and/or anticipated construction activity within the airfield pavement facilities reported by airport staff. The exhibit is intended to schematically identify the pavement limits of works and general work description. The information reported on the ***Airport Response Form*** provided by each participating airport was used as the basis of the changes; furthermore, changes are confirmed at the airport with airport staff during the in-brief and debrief meeting.

003 – Airfield Pavement Condition Index Exhibit

The Airfield Pavement Condition Index Exhibit is located in **Appendix C Technical Exhibits**. The exhibit is a visual summary of the latest conditions calculated from the results of the PCI Survey performed at the airport. The analysis of the distresses surveyed in accordance with the ASTM D5340-12 (referenced in **Appendix E Inspection Distress Details**) were analyzed using PAVER™ software to determine PCI values. The PCI values are identified in the exhibit and graphically represented using the standard ASTM D5340-12 colors for condition rating categories.

004 – Airfield Pavement Major Rehabilitation Exhibit

The Airfield Pavement Major Rehabilitation Exhibit is located in **Appendix C Technical Exhibits**. The exhibit has been prepared based on the section condition analysis, pavement condition forecasts, and major rehabilitation needs analysis. The exhibit graphically depicts the inventory with the associated rehabilitation type activity, program year, and the planning-level costs. The area limits, rehabilitation type, and planning-level costs should not be considered a design-level recommendation. A tabulation of the 10-Year Major Rehabilitation is located in **Appendix B Airfield Pavement Localized Maintenance and Repair and Major Rehabilitation.**

Inspection Photograph Documentation

Representative field conditions from the PCI Survey are documented with digital photographs located in **Appendix D Inspection Photograph Documentation.** Select photographs are provided with limited caption on the distresses observed – the Appendix does not contain photographs for every sample unit.

7.3 Conclusion

The FDOT SAPMP Update Phase 2 2018-2019 was completed for the airport on behalf of the FDOT ASO in accordance with the Advisory Circulars ***150/5380-7B "Airport Pavement Management Program (PMP)"*** and ***150/5380-6C "Guidelines and Procedures for Maintenance of Airport Pavements."*** FDOT's implementation of the SAPMP has assisted public airports with this requirement in performing PCI survey inspections and analysis in accordance with the ASTM ***D5340-12*** "***Standard Test Method for Airport Pavement Condition Index Surveys."***

Appendix A

Airfield Pavement Analysis Tables

Table A-1 Pavement System Inventory Details

Network ID	Branch Name	Branch ID	Branch Use	Section ID	Length (FT)	Width (FT)	Area (SF)	Surface Type	Est. Last Construction Date
X60	APRON	AP	APRON	4105	400	250	86,922	AAC	1/1/2009
X60	APRON	AP	APRON	4110	1,000	100	101,074	AC	2/1/2015
X60	HANGAR APRON	AP HANG	APRON	4205	200	56	10,495	AAC	1/1/2009
X60	HANGAR APRON	AP HANG	APRON	4210	119	56	6,628	AC	1/1/2019
X60	RUN-UP APRON	AP RU	APRON	5105	400	50	28,165	AC	1/1/2013
X60	APRON AT T-HANGARS	AP T-HANG	APRON	4315	80	50	3,900	AC	1/1/1986
X60	APRON AT T-HANGARS	AP T-HANG	APRON	4316	65	50	2,867	APC	1/1/2003
X60	APRON AT T-HANGARS	AP T-HANG	APRON	4320	507	35	18,657	AC	1/1/2005
X60	APRON AT T-HANGARS	AP T-HANG	APRON	4325	709	35	21,796	AC	1/1/2003
X60	RUNWAY 14-32	RW 14-32	RUNWAY	6205	300	75	24,688	PCC	1/1/1942
X60	RUNWAY 14-32	RW 14-32	RUNWAY	6215	4,300	100	254,982	AAC	2/1/2015
X60	RUNWAY 14-32	RW 14-32	RUNWAY	6235	275	75	22,894	PCC	1/1/1942
X60	RUNWAY 14-32	RW 14-32	RUNWAY	6250	303	100	15,631	AC	2/1/2015
X60	RUNWAY 5-23	RW 5-23	RUNWAY	6110	600	25	7,500	PCC	1/1/1942
X60	RUNWAY 5-23	RW 5-23	RUNWAY	6112	150	100	15,000	APC	1/1/2006
X60	TAXIWAY A	TW A	TAXIWAY	205	1,990	35	159,607	AAC	1/1/2013
X60	TAXIWAY A	TW A	TAXIWAY	220	3,000	50	287,885	AC	1/1/2013
X60	TAXIWAY A1	TW A1	TAXIWAY	255	600	50	34,316	AC	1/1/2013
X60	TAXIWAY B	TW B	TAXIWAY	305	2,900	35	101,269	AAC	1/1/2009
X60	TAXIWAY C	TW C	TAXIWAY	105	1,165	50	65,023	AAC	1/1/2009
X60	TAXIWAY C	TW C	TAXIWAY	115	416	70	35,409	AAC	1/1/2009
X60	TAXIWAY D	TW D	TAXIWAY	505	1,100	50	61,793	AAC	1/1/2009
X60	TAXIWAY D	TW D	TAXIWAY	510	170	50	8,500	AAC	1/1/2013
X60	TAXIWAY D1	TW D1	TAXIWAY	405	1,384	35	57,110	AAC	1/1/2009
X60	TAXIWAY E	TW E	TAXIWAY	705	1,384	35	55,768	AAC	1/1/2009
X60	TAXIWAY F	TW F	TAXIWAY	550	2,450	75	128,837	AC	1/1/1942
X60	TAXIWAY F	TW F	TAXIWAY	555	150	75	11,250	PCC	1/1/1942
X60	TAXIWAY F	TW F	TAXIWAY	565	1,000	35	33,640	AC	2/1/2015
X60	TAXIWAY G	TW G	TAXIWAY	450	1,173	75	94,473	AC	1/1/1942
WHITETOPPING PAVEMENT SECTIONS									
X60	RUNWAY 5-23	RW 5-23	RUNWAY	6115	5,000	50	500,000	WT	1/1/2005
X60	RUNWAY 5-23	RW 5-23	RUNWAY	6125	2,600	50	130,000	WT	1/1/2005
X60	RUNWAY 5-23	RW 5-23	RUNWAY	6127	400	50	40,650	WT	1/1/2005

Table A-2 Pavement Condition Index Summary (Last Inspection) – Section Level

Network ID	Branch Name	Branch Use	Section ID	Area (SF)	PCI	Condition Rating
X60	RUNWAY 5-23	RUNWAY	6110	7,500	67	Fair
X60	RUNWAY 5-23	RUNWAY	6112	15,000	47	Poor
X60	RUNWAY 14-32	RUNWAY	6205	24,688	72	Satisfactory
X60	RUNWAY 14-32	RUNWAY	6215	254,982	89	Good
X60	RUNWAY 14-32	RUNWAY	6235	22,894	79	Satisfactory
X60	RUNWAY 14-32	RUNWAY	6250	15,631	92	Good
X60	TAXIWAY A	TAXIWAY	205	159,607	89	Good
X60	TAXIWAY A	TAXIWAY	220	287,885	93	Good
X60	TAXIWAY A1	TAXIWAY	255	34,316	91	Good
X60	TAXIWAY B	TAXIWAY	305	101,269	83	Satisfactory
X60	TAXIWAY C	TAXIWAY	105	65,023	64	Fair
X60	TAXIWAY C	TAXIWAY	115	35,409	85	Satisfactory
X60	TAXIWAY D	TAXIWAY	505	61,793	83	Satisfactory
X60	TAXIWAY D	TAXIWAY	510	8,500	90	Good
X60	TAXIWAY D1	TAXIWAY	405	57,110	85	Satisfactory
X60	TAXIWAY E	TAXIWAY	705	55,768	83	Satisfactory
X60	TAXIWAY F	TAXIWAY	550	128,837	8	Failed
X60	TAXIWAY F	TAXIWAY	555	11,250	35	Very Poor
X60	TAXIWAY F	TAXIWAY	565	33,640	92	Good
X60	TAXIWAY G	TAXIWAY	450	94,473	7	Failed
X60	APRON	APRON	4105	86,922	60	Fair
X60	APRON	APRON	4110	101,074	79	Satisfactory
X60	HANGAR APRON	APRON	4205	10,495	78	Satisfactory
X60	HANGAR APRON	APRON	4210	6,628	100	Good
X60	APRON AT T-HANGARS	APRON	4315	3,900	52	Poor
X60	APRON AT T-HANGARS	APRON	4316	2,867	28	Very Poor
X60	APRON AT T-HANGARS	APRON	4320	18,657	79	Satisfactory
X60	APRON AT T-HANGARS	APRON	4325	21,796	64	Fair
X60	RUN-UP APRON	APRON	5105	28,165	94	Good

Table A-3 Forecasted PCI 2020-2029

Network ID	Branch ID	Section ID	Last PCI	Forecasted PCI									
				2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
X60	AP	4105	60	58	56	55	53	53	52	52	52	52	52
X60	AP	4110	79	77	76	74	73	71	69	68	66	65	63
X60	AP HANG	4205	78	76	74	72	69	67	64	61	59	57	55
X60	AP HANG	4210	100	98	96	95	93	92	90	88	87	85	84
X60	AP RU	5105	94	92	91	89	88	86	84	83	81	80	78
X60	AP T-HANG	4315	52	50	49	47	46	44	42	41	39	38	36
X60	AP T-HANG	4316	28	26	23	20	18	15	12	10	7	4	2
X60	AP T-HANG	4320	79	77	76	74	73	71	69	68	66	65	63
X60	AP T-HANG	4325	64	62	61	59	58	56	54	53	51	50	48
X60	RW 14-32	6205	72	71	70	69	68	68	67	66	65	64	63
X60	RW 14-32	6215	89	87	84	82	79	77	75	72	70	68	66
X60	RW 14-32	6235	79	78	77	76	75	75	74	73	72	71	70
X60	RW 14-32	6250	92	90	89	87	85	84	82	81	79	77	76
X60	RW 5-23	6110	67	66	65	64	63	63	62	61	60	59	58
X60	RW 5-23	6112	47	44	41	38	35	32	30	27	24	21	18
X60	TW A	205	89	87	84	82	80	78	76	75	74	73	72
X60	TW A	220	93	91	88	86	83	81	79	77	75	73	72
X60	TW A1	255	91	89	86	84	81	79	77	75	74	72	71
X60	TW B	305	83	81	79	77	76	74	73	72	71	71	70
X60	TW C	105	64	62	61	59	58	56	54	53	51	49	48
X60	TW C	115	85	83	81	79	77	75	74	73	72	71	70
X60	TW D	505	83	81	79	77	76	74	73	72	71	71	70
X60	TW D	510	90	87	85	82	80	78	77	75	74	73	72
X60	TW D1	405	85	83	81	79	77	75	74	73	72	71	70
X60	TW E	705	83	81	79	77	76	74	73	72	71	71	70
X60	TW F	550	8	6	3	0	0	0	0	0	0	0	0
X60	TW F	555	35	34	33	32	31	31	30	29	28	27	26
X60	TW F	565	92	90	87	85	82	80	78	76	74	73	71
X60	TW G	450	7	5	2	0	0	0	0	0	0	0	0

Pavement Database: FDOT

Network: WILLISTON MUNIC **Branch:** AP HANG HANGAR APRO **Section:** 4205 **Surface:**AAC
L.C.D. 1/1/2009 **Use:** APRON **Rank:** P **Length:** 200.00 (Ft) **Width:** 56.00 (Ft) **True Area:** 10495.00000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2009	ML-OV	MILL and OVERLAY	0.00	0.00	☑	
1/1/1985	IMPORTED	OVERLAY	0.00	0.00	☑	ESTIMATE 1985 AC OVERLAY
1/1/1942	IMPORTED	BUILT	0.00	2.00	☑	ASSUME: 1942 2" AC ON 6" LIME ROCK BASE

Network: WILLISTON MUNIC **Branch:** AP HANG HANGAR APRO **Section:** 4210 **Surface:**AC
L.C.D. 1/1/2019 **Use:** APRON **Rank:** P **Length:** 119.00 (Ft) **Width:** 56.00 (Ft) **True Area:** 6628.000002 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2019	NC-AC	New Construction - AC			☑	

Network: WILLISTON MUNIC **Branch:** AP RU RUN-UP APRON **Section:** 5105 **Surface:**AC
L.C.D. 1/1/2013 **Use:** APRON **Rank:** P **Length:** 400.00 (Ft) **Width:** 50.00 (Ft) **True Area:** 28165.00000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2013	NU-IN	New Construction - Initial	0.00	4.00	☑	4" P-401 ON 6" P-211 ON 12" P-160

Network: WILLISTON MUNIC **Branch:** AP T-HANG APRON AT T-HA **Section:** 4315 **Surface:**AC
L.C.D. 1/1/1986 **Use:** APRON **Rank:** P **Length:** 80.00 (Ft) **Width:** 50.00 (Ft) **True Area:** 3900.000001 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/1986	NU-IN	New Construction - Initial	0.00	0.00	☑	

Network: WILLISTON MUNIC **Branch:** AP T-HANG APRON AT T-HA **Section:** 4316 **Surface:**APC
L.C.D. 1/1/2003 **Use:** APRON **Rank:** P **Length:** 65.00 (Ft) **Width:** 50.00 (Ft) **True Area:** 2867.000000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2003	OL-AS	Overlay - AC Structural	0.00	0.00	☑	EST 2003 AC OVERLAY. UNKNO
1/1/1986	NC-PC	New Construction - PCC	0.00	0.00	☑	EST 1986 PCC PAVEMENT

Network: WILLISTON MUNIC **Branch:** AP T-HANG APRON AT T-HA **Section:** 4320 **Surface:**AC
L.C.D. 1/1/2005 **Use:** APRON **Rank:** P **Length:** 507.00 (Ft) **Width:** 35.00 (Ft) **True Area:** 18657.00000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2005	NU-IN	New Construction - Initial	0.00	0.00	☑	

Network: WILLISTON MUNIC **Branch:** AP T-HANG APRON AT T-HA **Section:** 4325 **Surface:**AC
L.C.D. 1/1/2003 **Use:** APRON **Rank:** P **Length:** 709.00 (Ft) **Width:** 35.00 (Ft) **True Area:** 21796.00000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2003	NU-IN	New Construction - Initial	0.00	0.00	☑	

Network: WILLISTON MUNIC **Branch:** AP APRON **Section:** 4105 **Surface:**AAC

L.C.D. 1/1/2009 **Use:** APRON **Rank:** P **Length:** 400.00 (Ft) **Width:** 250.00 (Ft) **True Area:** 86922.00002 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2009	ML-OV	MILL and OVERLAY	0.00	0.00	☑	
1/1/1990	IMPORTED	BUILT	0.00	0.00	☑	ESTIMATE 1990 AC PAVEMENT WITH EMULSION SEAL

Network: WILLISTON MUNIC **Branch:** AP APRON **Section:** 4110 **Surface:**AC

L.C.D. 2/1/2015 **Use:** APRON **Rank:** P **Length:** 1,000.00 (Ft) **Width:** 100.00 (Ft) **True Area:** 101074.0000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
2/1/2015	NU-IN	New Construction - Initial	0.00	0.00	☑	4" P-601 SUPERPAVE, 6" LIMERO

Network: WILLISTON MUNIC **Branch:** RW 14-32 RUNWAY 14-32 **Section:** 6205 **Surface:**PCC

L.C.D. 1/1/1942 **Use:** RUNWAY **Rank:** P **Length:** 300.00 (Ft) **Width:** 75.00 (Ft) **True Area:** 24688.00000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
2/1/2015	JS-GL	Joint Seal	0.00	0.00	☐	JOINT SEAL AND CRACK SEAL. N
1/1/1942	IMPORTED	BUILT	0.00	8.00	☑	1942: 8" PCC PAVEMENT

Network: WILLISTON MUNIC **Branch:** RW 14-32 RUNWAY 14-32 **Section:** 6215 **Surface:**AAC

L.C.D. 2/1/2015 **Use:** RUNWAY **Rank:** P **Length:** 4,300.00 (Ft) **Width:** 100.00 (Ft) **True Area:** 254982.0000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
2/1/2015	ML-OV	MILL and OVERLAY	0.00	0.00	☑	0.5" MILL & 2.5" P-401 OVERLAY
1/1/1942	IMPORTED	BUILT	0.00	2.00	☑	1942: 2" AC ON 6" LIME ROCK BASE

Network: WILLISTON MUNIC **Branch:** RW 14-32 RUNWAY 14-32 **Section:** 6235 **Surface:**PCC

L.C.D. 1/1/1942 **Use:** RUNWAY **Rank:** P **Length:** 275.00 (Ft) **Width:** 75.00 (Ft) **True Area:** 22894.00000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
2/1/2015	JS-GL	Joint Seal	0.00	0.00	☐	JOINT SEAL AND CRACK SEAL. N
1/1/1942	IMPORTED	BUILT	0.00	8.00	☑	1942: 8" PCC PAVEMENT

Network: WILLISTON MUNIC **Branch:** RW 14-32 RUNWAY 14-32 **Section:** 6250 **Surface:**AC

L.C.D. 2/1/2015 **Use:** RUNWAY **Rank:** P **Length:** 303.00 (Ft) **Width:** 100.00 (Ft) **True Area:** 15631.00000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
2/1/2015	CR-AC	Complete Reconstruction - AC	0.00	0.00	☑	FULL RECON. 2.5" P-401, 6" P-211,
1/1/1942	NU-IN	New Construction - Initial	0.00	0.00	☑	

Network: WILLISTON MUNIC **Branch:** RW 5-23 RUNWAY 5-23 **Section:** 6110 **Surface:**PCC

L.C.D. 1/1/1942 **Use:** RUNWAY **Rank:** P **Length:** 600.00 (Ft) **Width:** 25.00 (Ft) **True Area:** 7500.000002 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/1942	IMPORTED	BUILT	0.00	8.00	☑	1942: 8" PCC PAVEMENT

Network: WILLISTON MUNIC **Branch:** RW 5-23 RUNWAY 5-23 **Section:** 6112 **Surface:**APC

L.C.D. 1/1/2006 **Use:** RUNWAY **Rank:** P **Length:** 150.00 (Ft) **Width:** 100.00 (Ft) **True Area:** 15000.00000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2006	OL-AS	Overlay - AC Structural	0.00	0.00	☑	
1/1/1942	NU-IN	New Construction - Initial	0.00	0.00	☑	

Network: WILLISTON MUNIC **Branch:** RW 5-23 RUNWAY 5-23 **Section:** 6115 **Surface:**AAC

L.C.D. 1/1/2005 **Use:** RUNWAY **Rank:** P **Length:** 5,000.00 (Ft) **Width:** 100.00 (Ft) **True Area:** 500000.0001 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2005	OL-PCC	Overlay-PCC	0.00	4.00	☑	Whitetopping
1/1/1987	IMPORTED	OVERLAY	0.00	0.00	☑	ESTIMATE 1987 AC OVERLAY
1/1/1942	IMPORTED	BUILT	0.00	2.00	☑	1942: 2" AC ON 6" LIME ROCK BASE

Network: WILLISTON MUNIC **Branch:** RW 5-23 RUNWAY 5-23 **Section:** 6125 **Surface:**AC

L.C.D. 1/1/2005 **Use:** RUNWAY **Rank:** P **Length:** 1,300.00 (Ft) **Width:** 100.00 (Ft) **True Area:** 130000.0000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2005	OL-PCC	Overlay-PCC	0.00	0.00	☑	
1/1/1942	IMPORTED	BUILT	0.00	2.00	☑	1942: 2" AC ON 6" LIME ROCK BASE

Network: WILLISTON MUNIC **Branch:** RW 5-23 RUNWAY 5-23 **Section:** 6127 **Surface:**AC

L.C.D. 1/1/2005 **Use:** RUNWAY **Rank:** P **Length:** 350.00 (Ft) **Width:** 100.00 (Ft) **True Area:** 40650.00001 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2005	OL-PCC	Overlay-PCC	0.00	0.00	☑	
1/1/1942	IMPORTED	BUILT	0.00	2.00	☑	1942: 2" AC ON 6" LIME ROCK BASE
1/1/1942	IMPORTED	OVERLAY	0.00	0.00	☑	SLURRY SEAL/SAND SEAL ON

Network: WILLISTON MUNIC **Branch:** TW A1 TAXIWAY A1 **Section:** 255 **Surface:**AC

L.C.D. 1/1/2013 **Use:** TAXIWAY **Rank:** P **Length:** 600.00 (Ft) **Width:** 50.00 (Ft) **True Area:** 34316.00001 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2013	NU-IN	New Construction - Initial	0.00	4.00	☑	4" P-401 ON 6" P-211 ON 12" P-160

Network: WILLISTON MUNIC **Branch:** TW A TAXIWAY A **Section:** 205 **Surface:**AAC

L.C.D. 1/1/2013 **Use:** TAXIWAY **Rank:** P **Length:** 1,990.00 (Ft) **Width:** 35.00 (Ft) **True Area:** 159607.0000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2013	ML-OV	MILL and OVERLAY	0.00	0.00	☑	1.5" MILL WITH 1.5" OVERLAY A
1/1/1986	IMPORTED	BUILT	0.00	0.00	☑	ESTIMATE 1986 AC PAVEMENTT

Network: WILLISTON MUNIC **Branch:** TW A TAXIWAY A **Section:** 220 **Surface:**AC

L.C.D. 1/1/2013 **Use:** TAXIWAY **Rank:** P **Length:** 3,000.00 (Ft) **Width:** 50.00 (Ft) **True Area:** 287885.0000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2013	NU-IN	New Construction - Initial	0.00	4.00	☑	4" P-401 ON 6" P-211 ON 12" P-160

Network: WILLISTON MUNIC **Branch:** TW B TAXIWAY B **Section:** 305 **Surface:**AAC

L.C.D. 1/1/2009 **Use:** TAXIWAY **Rank:** P **Length:** 2,900.00 (Ft) **Width:** 35.00 (Ft) **True Area:** 101269.0000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2009	ML-OV	MILL and OVERLAY	0.00	0.00	☑	
1/1/1942	IMPORTED	BUILT	0.00	2.00	☑	1942: 2" AC ON 6" LIME ROCK BASE

Network: WILLISTON MUNIC **Branch:** TW C TAXIWAY C **Section:** 105 **Surface:**AAC

L.C.D. 1/1/2009 **Use:** TAXIWAY **Rank:** P **Length:** 1,165.00 (Ft) **Width:** 50.00 (Ft) **True Area:** 65023.00001 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2009	ML-OV	MILL and OVERLAY	0.00	0.00	☑	
1/1/1982	IMPORTED	OVERLAY	0.00	0.00	☑	ESTIMATE 1982 AC OVERLAY
1/1/1942	IMPORTED	BUILT	0.00	2.00	☑	1942: 2" AC ON 6" LIME ROCK BASE

Network: WILLISTON MUNIC **Branch:** TW C TAXIWAY C **Section:** 115 **Surface:**AAC

L.C.D. 1/1/2009 **Use:** TAXIWAY **Rank:** P **Length:** 416.00 (Ft) **Width:** 70.00 (Ft) **True Area:** 35409.00001 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2009	ML-OV	MILL and OVERLAY	0.00	0.00	☑	
1/1/1982	NU-IN	New Construction - Initial	0.00	0.00	☑	

Network: WILLISTON MUNIC **Branch:** TW D1 TAXIWAY D1 **Section:** 405 **Surface:**AAC

L.C.D. 1/1/2009 **Use:** TAXIWAY **Rank:** P **Length:** 1,384.00 (Ft) **Width:** 35.00 (Ft) **True Area:** 57110.00001 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2009	ML-OV	MILL and OVERLAY	0.00	0.00	☑	
1/1/1942	NU-IN	New Construction - Initial	0.00	0.00	☑	

Network: WILLISTON MUNIC **Branch:** TW D TAXIWAY D **Section:** 505 **Surface:**AAC

L.C.D. 1/1/2009 **Use:** TAXIWAY **Rank:** P **Length:** 1,100.00 (Ft) **Width:** 50.00 (Ft) **True Area:** 61793.00001 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2009	ML-OV	MILL and OVERLAY	0.00	0.00	☑	
12/25/1999	NU-IN	New Construction - Initial	0.00	0.00	☑	

Network: WILLISTON MUNIC **Branch:** TW D TAXIWAY D **Section:** 510 **Surface:**AAC

L.C.D. 1/1/2013 **Use:** TAXIWAY **Rank:** P **Length:** 170.00 (Ft) **Width:** 50.00 (Ft) **True Area:** 8500.000002 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2013	ML-OV	MILL and OVERLAY	0.00	0.00	☑	
1/1/2009	ML-OV	MILL and OVERLAY	0.00	0.00	☑	
12/25/1999	NU-IN	New Construction - Initial	0.00	0.00	☑	

Network: WILLISTON MUNIC **Branch:** TW E TAXIWAY E **Section:** 705 **Surface:**AAC

L.C.D. 1/1/2009 **Use:** TAXIWAY **Rank:** P **Length:** 1,384.00 (Ft) **Width:** 35.00 (Ft) **True Area:** 55768.00001 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/2009	ML-OV	MILL and OVERLAY	0.00	0.00	☑	
1/1/1942	NU-IN	New Construction - Initial	0.00	0.00	☑	

Network: WILLISTON MUNIC **Branch:** TW F TAXIWAY F **Section:** 550 **Surface:**AC

L.C.D. 1/1/1942 **Use:** TAXIWAY **Rank:** P **Length:** 2,450.00 (Ft) **Width:** 75.00 (Ft) **True Area:** 128837.0000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/1942	NU-IN	New Construction - Initial	0.00	0.00	☑	

Network: WILLISTON MUNIC **Branch:** TW F TAXIWAY F **Section:** 555 **Surface:**PCC

L.C.D. 1/1/1942 **Use:** TAXIWAY **Rank:** P **Length:** 150.00 (Ft) **Width:** 75.00 (Ft) **True Area:** 11250.00000 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/1942	NU-IN	New Construction - Initial	0.00	0.00	☑	

Network: WILLISTON MUNIC **Branch:** TW F TAXIWAY F **Section:** 565 **Surface:**AC

L.C.D. 2/1/2015 **Use:** TAXIWAY **Rank:** P **Length:** 1,000.00 (Ft) **Width:** 35.00 (Ft) **True Area:** 33640.00001 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
2/1/2015	NU-IN	New Construction - Initial	0.00	0.00	☑	2" FDOT SP-12.5, 8" LIMEROCK, 12

Network: WILLISTON MUNIC **Branch:** TW G TAXIWAY G **Section:** 450 **Surface:**AC

L.C.D. 1/1/1942 **Use:** TAXIWAY **Rank:** P **Length:** 1,173.00 (Ft) **Width:** 75.00 (Ft) **True Area:** 94473.00002 (SqFt

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
1/1/1942	NU-IN	New Construction - Initial	0.00	0.00	☑	

Summary:

Work Description	Section Count	Area Total (SqFt)	Thickness Avg (in)	Thickness STD (in)
BUILT	12	1,404,030.00	3.17	2.88
Complete Reconstruction - AC	1	15,631.00	0.00	0.00
Joint Seal	2	47,582.00	0.00	0.00
MILL and OVERLAY	12	905,378.00	0.00	0.00
New Construction - AC	1	6,628.00	0.00	0.00
New Construction - Initial	18	1,013,204.00	0.67	1.49
New Construction - PCC	1	2,867.00	0.00	0.00
OVERLAY	4	616,168.00	0.00	0.00
Overlay - AC Structural	2	17,867.00	0.00	0.00
Overlay-PCC	3	670,650.00	1.33	1.89

Branch Condition Report

Pavement Database: FDOT

Branch ID	Number of Sections	Sum Section Length (Ft)	Avg Section Width (Ft)	True Area (SqFt)	Use	Average PCI	Standard Deviation PCI	Weighted Average PCI
AP	2	1,400.00	175.00	187,996.00	APRON	69.50	9.50	70.22
AP HANG	2	319.00	56.00	17,123.00	APRON	89.00	11.00	86.52
AP RU	1	400.00	50.00	28,165.00	APRON	94.00	0.00	94.00
AP T-HANG	4	1,361.00	42.50	47,220.00	APRON	55.75	18.66	66.75
RW 14-32	4	5,178.00	87.50	318,195.00	RUNWAY	83.00	7.97	87.11
RW 5-23	2	750.00	62.50	22,500.00	RUNWAY	57.00	10.00	53.67
TW A	2	4,990.00	42.50	447,492.00	TAXIWAY	91.00	2.00	91.57
TW A1	1	600.00	50.00	34,316.00	TAXIWAY	91.00	0.00	91.00
TW B	1	2,900.00	35.00	101,269.00	TAXIWAY	83.00	0.00	83.00
TW C	2	1,581.00	60.00	100,432.00	TAXIWAY	74.50	10.50	71.40
TW D	2	1,270.00	50.00	70,293.00	TAXIWAY	86.50	3.50	83.85
TW D1	1	1,384.00	35.00	57,110.00	TAXIWAY	85.00	0.00	85.00
TW E	1	1,384.00	35.00	55,768.00	TAXIWAY	83.00	0.00	83.00
TW F	3	3,600.00	61.67	173,727.00	TAXIWAY	45.00	35.01	26.01
TW G	1	1,173.00	75.00	94,473.00	TAXIWAY	7.00	0.00	7.00

Pavement Database: FDOT

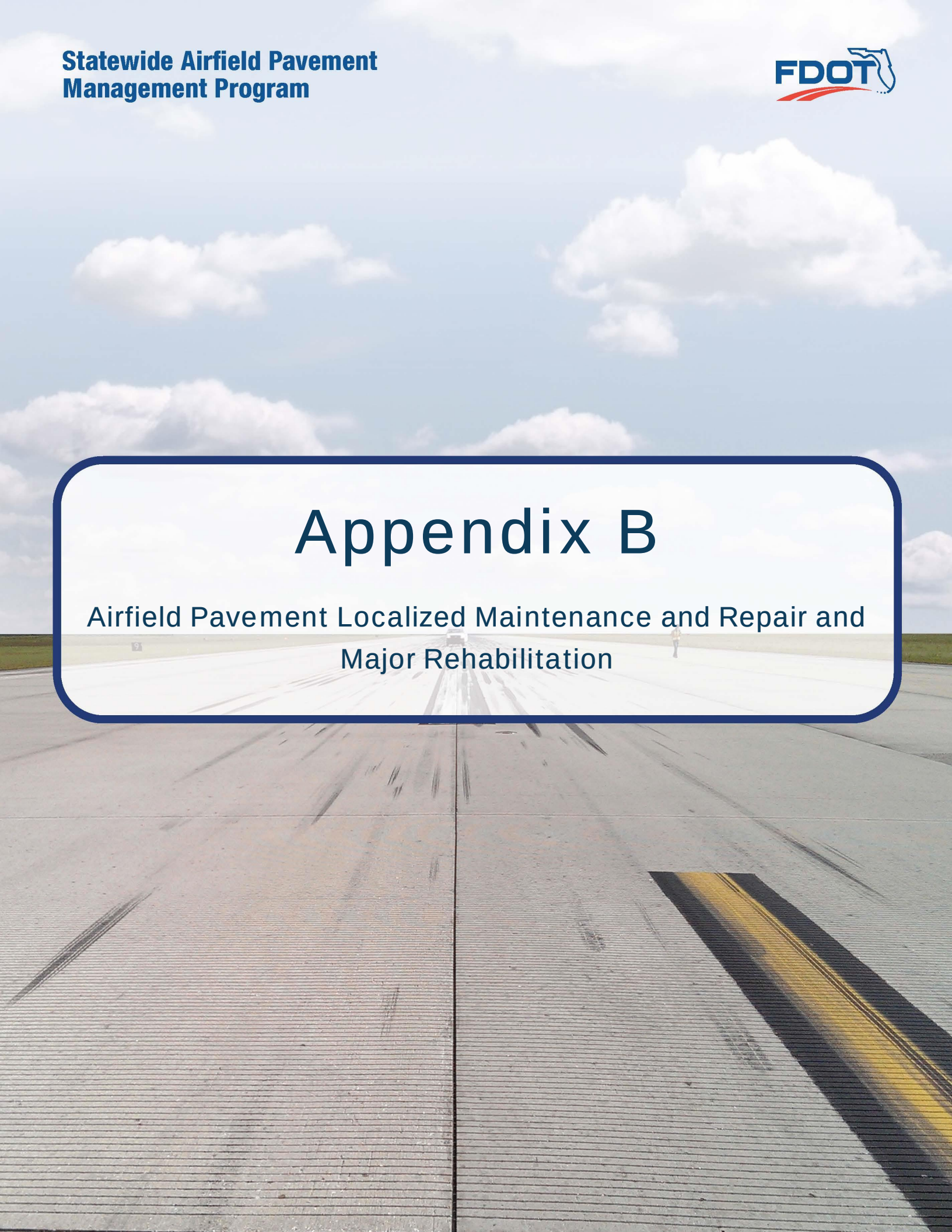
Use Category	Number of Sections	Total Area (SqFt)	Arithmetic Average PCI	Average STD PCI	Weighted Average PCI
APRON	9	280,504.00	70.44	20.88	73.02
RUNWAY	6	340,695.00	74.33	15.03	84.90
TAXIWAY	14	1,134,880.00	70.57	29.57	70.70
ALL	29	1,756,079.00	71.31	24.63	73.82

Pavement Database: FDOT *NetworkId: X60*

Branch ID	Section ID	Last Const. Date	Surface	Use	Rank	Lanes	True Area (SqFt)	Last Inspection Date	Age At Inspection	PCI
AP	4105	1/1/2009	AAC	APRON	P	0	86,922.00	4/11/2019	10	60
AP	4110	2/1/2015	AC	APRON	P	0	101,074.00	4/11/2019	4	79
AP HANG	4205	1/1/2009	AAC	APRON	P	0	10,495.00	4/11/2019	10	78
AP HANG	4210	1/1/2019	AC	APRON	P	0	6,628.00	1/1/2019	0	100
AP RU	5105	1/1/2013	AC	APRON	P	0	28,165.00	4/11/2019	6	94
AP T-HANG	4315	1/1/1986	AC	APRON	P	0	3,900.00	4/11/2019	33	52
AP T-HANG	4316	1/1/2003	APC	APRON	P	0	2,867.00	4/11/2019	16	28
AP T-HANG	4320	1/1/2005	AC	APRON	P	0	18,657.00	4/11/2019	14	79
AP T-HANG	4325	1/1/2003	AC	APRON	P	0	21,796.00	4/11/2019	16	64
RW 14-32	6205	1/1/1942	PCC	RUNWAY	P	0	24,688.00	4/11/2019	77	72
RW 14-32	6215	2/1/2015	AAC	RUNWAY	P	0	254,982.00	4/11/2019	4	89
RW 14-32	6235	1/1/1942	PCC	RUNWAY	P	0	22,894.00	4/11/2019	77	79
RW 14-32	6250	2/1/2015	AC	RUNWAY	P	0	15,631.00	4/11/2019	4	92
RW 5-23	6110	1/1/1942	PCC	RUNWAY	P	0	7,500.00	4/11/2019	77	67
RW 5-23	6112	1/1/2006	APC	RUNWAY	P	0	15,000.00	4/11/2019	13	47
TW A	205	1/1/2013	AAC	TAXIWAY	P	0	159,607.00	4/11/2019	6	89
TW A	220	1/1/2013	AC	TAXIWAY	P	0	287,885.00	4/11/2019	6	93
TW A1	255	1/1/2013	AC	TAXIWAY	P	0	34,316.00	4/11/2019	6	91
TW B	305	1/1/2009	AAC	TAXIWAY	P	0	101,269.00	4/11/2019	10	83
TW C	105	1/1/2009	AAC	TAXIWAY	P	0	65,023.00	4/11/2019	10	64
TW C	115	1/1/2009	AAC	TAXIWAY	P	0	35,409.00	4/11/2019	10	85
TW D	505	1/1/2009	AAC	TAXIWAY	P	0	61,793.00	4/11/2019	10	83
TW D	510	1/1/2013	AAC	TAXIWAY	P	0	8,500.00	4/11/2019	6	90
TW D1	405	1/1/2009	AAC	TAXIWAY	P	0	57,110.00	4/11/2019	10	85
TW E	705	1/1/2009	AAC	TAXIWAY	P	0	55,768.00	4/11/2019	10	83
TW F	550	1/1/1942	AC	TAXIWAY	P	0	128,837.00	4/11/2019	77	8
TW F	555	1/1/1942	PCC	TAXIWAY	P	0	11,250.00	4/11/2019	77	35
TW F	565	2/1/2015	AC	TAXIWAY	P	0	33,640.00	4/11/2019	4	92
TW G	450	1/1/1942	AC	TAXIWAY	P	0	94,473.00	4/11/2019	77	7

Pavement Database: FDOT

Age Category	Average Age at Inspection	Total Area (SqFt)	Number of Sections	Arithmetic Average PCI	Standard Deviation PCI	Weighted Average PCI
00-02		6,628.00	1	100.00	0.00	100.00
03-05	4	405,327.00	4	88.00	5.34	86.87
06-10	8	992,262.00	13	82.92	9.97	84.39
11-15	14	33,657.00	2	63.00	16.00	64.74
16-20	16	24,663.00	2	46.00	18.00	59.82
31-35	33	3,900.00	1	52.00	0.00	52.00
50+	77	289,642.00	6	44.67	29.67	21.32
ALL	23	1,756,079.00	29	71.31	24.63	73.82



Appendix B

Airfield Pavement Localized Maintenance and Repair and Major Rehabilitation

Table B-1 Localized Maintenance and Repair Needs based on Current Condition

Network ID	Branch ID	Section ID	Distress Code	Description	Severity	Distress Qty	Distress Unit	Percent Distress	Work Description	Work Qty	Work Unit	Unit Cost	Work Cost
X60	AP	4105	49	OIL SPILLAGE	N/A	91.17	SqFt	0.1%	FDOT - PATCHING - AC PARTIAL DEPTH	133.5	SqFt	$ 3.00	$ 410.00
X60	AP	4105	52	RAVELING	Low	3288.81	SqFt	3.8%	FDOT - SURFACE SEAL	3288.4	SqFt	$ 0.55	$ 1,810.00
X60	AP HANG	4205	49	OIL SPILLAGE	N/A	1.94	SqFt	0.0%	FDOT - PATCHING - AC PARTIAL DEPTH	11.8	SqFt	$ 3.00	$ 40.00
X60	AP HANG	4205	52	RAVELING	Low	210	SqFt	2.0%	FDOT - SURFACE SEAL	209.9	SqFt	$ 0.55	$ 120.00
X60	AP T-HANG	4315	49	OIL SPILLAGE	N/A	3.01	SqFt	0.1%	FDOT - PATCHING - AC PARTIAL DEPTH	14	SqFt	$ 3.00	$ 50.00
X60	AP T-HANG	4315	52	RAVELING	Low	3314.96	SqFt	85.0%	FDOT - SURFACE SEAL	3315.3	SqFt	$ 0.55	$ 1,830.00
X60	AP T-HANG	4315	52	RAVELING	Medium	585.02	SqFt	15.0%	FDOT - PATCHING - AC PARTIAL DEPTH	584.5	SqFt	$ 3.00	$ 1,760.00
X60	AP T-HANG	4316	43	BLOCK CR	Medium	1750	SqFt	61.0%	FDOT - CRACK SEALING - AC	533.5	Ft	$ 3.00	$ 1,610.00
X60	AP T-HANG	4316	45	DEPRESSION	Low	35.95	SqFt	1.3%	FDOT - PATCHING - AC FULL DEPTH	64.6	SqFt	$ 6.00	$ 390.00
X60	AP T-HANG	4316	47	JT REF. CR	Medium	227.99	Ft	8.0%	FDOT - CRACK SEALING - AC	228	Ft	$ 3.00	$ 690.00
X60	AP T-HANG	4316	48	L & T CR	Medium	116.01	Ft	4.1%	FDOT - CRACK SEALING - AC	116.1	Ft	$ 3.00	$ 350.00
X60	AP T-HANG	4316	52	RAVELING	Low	424.96	SqFt	14.8%	FDOT - SURFACE SEAL	425.2	SqFt	$ 0.55	$ 240.00
X60	AP T-HANG	4316	57	WEATHERING	Medium	244.02	SqFt	8.5%	FDOT - SURFACE SEAL	244.3	SqFt	$ 0.55	$ 140.00
X60	AP T-HANG	4320	52	RAVELING	Low	774.79	SqFt	4.2%	FDOT - SURFACE SEAL	775	SqFt	$ 0.55	$ 430.00
X60	AP T-HANG	4325	52	RAVELING	Low	18397.78	SqFt	84.4%	FDOT - SURFACE SEAL	18397.7	SqFt	$ 0.55	$ 10,120.00
X60	AP T-HANG	4325	52	RAVELING	Medium	3398.17	SqFt	15.6%	FDOT - PATCHING - AC PARTIAL DEPTH	3398.2	SqFt	$ 3.00	$ 10,200.00
X60	RW 14-32	6205	65	JT SEAL DMG	Low	117	Slabs	100.0%	FDOT - JOINT SEAL - PCC	3375	Ft	$ 2.75	$ 9,290.00
X60	RW 14-32	6205	74	JOINT SPALL	Low	7.09	Slabs	6.1%	FDOT - CRACK SEALING - PCC	11.5	Ft	$ 4.25	$ 50.00
X60	RW 14-32	6235	65	JT SEAL DMG	Low	107	Slabs	100.0%	FDOT - JOINT SEAL - PCC	3087.6	Ft	$ 2.75	$ 8,500.00
X60	RW 14-32	6235	74	JOINT SPALL	Low	3.01	Slabs	2.8%	FDOT - CRACK SEALING - PCC	4.9	Ft	$ 4.25	$ 30.00
X60	RW 14-32	6235	74	JOINT SPALL	Medium	1.51	Slabs	1.4%	FDOT - PATCHING - PCC PARTIAL DEPTH	9.7	SqFt	$ 72.00	$ 710.00
X60	RW 14-32	6235	75	CORNER SPALL	Low	6.03	Slabs	5.6%	FDOT - CRACK SEALING - PCC	9.8	Ft	$ 4.25	$ 50.00
X60	RW 14-32	6235	75	CORNER SPALL	Medium	1.51	Slabs	1.4%	FDOT - PATCHING - PCC PARTIAL DEPTH	4.3	SqFt	$ 72.00	$ 300.00
X60	RW 5-23	6110	65	JT SEAL DMG	High	25	Slabs	100.0%	FDOT - JOINT SEAL - PCC	1225.1	Ft	$ 2.75	$ 3,370.00
X60	RW 5-23	6110	74	JOINT SPALL	Low	1.56	Slabs	6.3%	FDOT - CRACK SEALING - PCC	2.6	Ft	$ 4.25	$ 20.00
X60	RW 5-23	6110	74	JOINT SPALL	Medium	1.56	Slabs	6.3%	FDOT - PATCHING - PCC PARTIAL DEPTH	9.7	SqFt	$ 72.00	$ 730.00
X60	RW 5-23	6110	75	CORNER SPALL	Low	1.56	Slabs	6.3%	FDOT - CRACK SEALING - PCC	2.6	Ft	$ 4.25	$ 20.00
X60	RW 5-23	6112	47	JT REF. CR	Medium	1289.99	Ft	8.6%	FDOT - CRACK SEALING - AC	1290	Ft	$ 3.00	$ 3,870.00
X60	RW 5-23	6112	52	RAVELING	Low	1800.05	SqFt	12.0%	FDOT - SURFACE SEAL	1799.7	SqFt	$ 0.55	$ 1,000.00
X60	TW B	305	52	RAVELING	Low	4426.44	SqFt	4.4%	FDOT - SURFACE SEAL	4426.1	SqFt	$ 0.55	$ 2,440.00
X60	TW C	105	45	DEPRESSION	Low	36.6	SqFt	0.1%	FDOT - PATCHING - AC FULL DEPTH	64.6	SqFt	$ 6.00	$ 390.00
X60	TW C	105	48	L & T CR	Medium	183.14	Ft	0.3%	FDOT - CRACK SEALING - AC	183.1	Ft	$ 3.00	$ 550.00
X60	TW C	105	52	RAVELING	Low	3369.86	SqFt	5.2%	FDOT - SURFACE SEAL	3370.2	SqFt	$ 0.55	$ 1,860.00
X60	TW C	115	52	RAVELING	Low	3543.8	SqFt	10.0%	FDOT - SURFACE SEAL	3543.5	SqFt	$ 0.55	$ 1,950.00
X60	TW D	505	52	RAVELING	Low	3089.67	SqFt	5.0%	FDOT - SURFACE SEAL	3089.2	SqFt	$ 0.55	$ 1,700.00
X60	TW E	705	52	RAVELING	Low	849.81	SqFt	1.5%	FDOT - SURFACE SEAL	849.3	SqFt	$ 0.55	$ 470.00
X60	TW F	550	43	BLOCK CR	Medium	104374.3	SqFt	81.0%	FDOT - CRACK SEALING - AC	31813.3	Ft	$ 3.00	$ 95,440.00

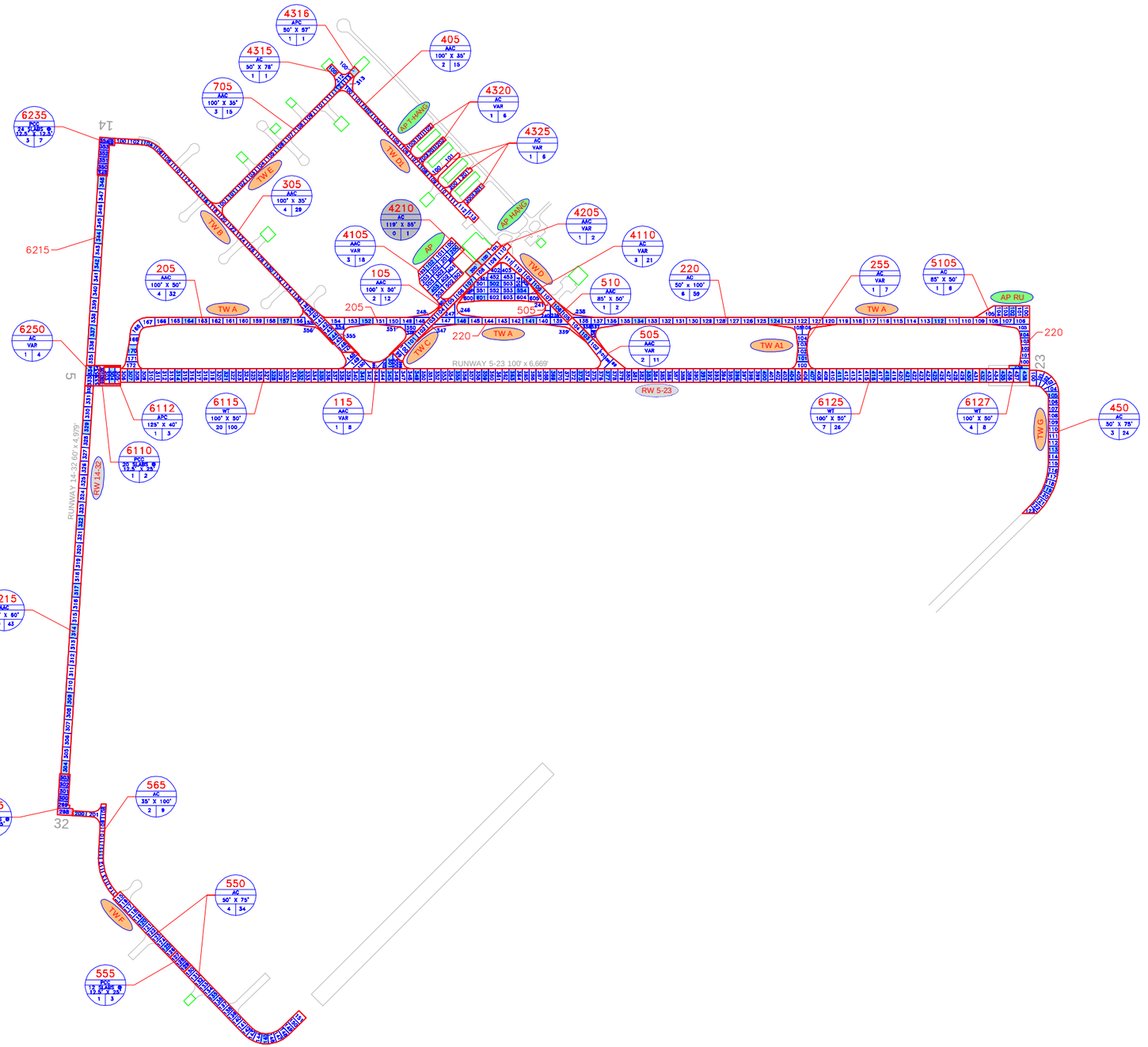
Network ID	Branch ID	Section ID	Distress Code	Description	Severity	Distress Qty	Distress Unit	Percent Distress	Work Description	Work Qty	Work Unit	Unit Cost	Work Cost
X60	TW F	550	43	BLOCK CR	High	24462.71	SqFt	19.0%	FDOT - PATCHING - AC PARTIAL DEPTH	24463.1	SqFt	$ 3.00	$ 73,390.00
X60	TW F	550	45	DEPRESSION	Low	617.96	SqFt	0.5%	FDOT - PATCHING - AC FULL DEPTH	722.3	SqFt	$ 6.00	$ 4,340.00
X60	TW F	550	45	DEPRESSION	Medium	806.86	SqFt	0.6%	FDOT - PATCHING - AC FULL DEPTH	925.7	SqFt	$ 6.00	$ 5,560.00
X60	TW F	550	52	RAVELING	High	128837.01	SqFt	100.0%	FDOT - PATCHING - AC PARTIAL DEPTH	128836.5	SqFt	$ 3.00	$ 386,520.00
X60	TW F	555	63	LINEAR CR	Medium	12.33	Slabs	33.3%	FDOT - CRACK SEALING - PCC	228	Ft	$ 4.25	$ 970.00
X60	TW F	555	63	LINEAR CR	High	3.08	Slabs	8.3%	FDOT - PATCHING - PCC PARTIAL DEPTH	187.3	SqFt	$ 72.00	$ 13,480.00
X60	TW F	555	65	JT SEAL DMG	High	37	Slabs	100.0%	FDOT - JOINT SEAL - PCC	1162.4	Ft	$ 2.75	$ 3,200.00
X60	TW G	450	43	BLOCK CR	Medium	80087.48	SqFt	84.8%	FDOT - CRACK SEALING - AC	24410.8	Ft	$ 3.00	$ 73,240.00
X60	TW G	450	43	BLOCK CR	High	13816.56	SqFt	14.6%	FDOT - PATCHING - AC PARTIAL DEPTH	13816.6	SqFt	$ 3.00	$ 41,450.00
X60	TW G	450	50	PATCHING	High	325.07	SqFt	0.3%	FDOT - PATCHING - AC FULL DEPTH	401.5	SqFt	$ 6.00	$ 2,420.00
X60	TW G	450	52	RAVELING	High	94147.94	SqFt	99.7%	FDOT - PATCHING - AC PARTIAL DEPTH	94147.6	SqFt	$ 3.00	$ 282,450.00

Table B-2 10-Year Major Rehabilitation Planning Needs at Section Level

Program Year	Network ID	Branch ID	Section ID	Surface	Area (SF)	PCI Before	Rehabilitation Type	Planning Cost
2020	**X60**	AP	4105	AAC	86,922	58	AC Restoration	$ 609,000.00
2020	**X60**	AP T-HANG	4315	AC	3,900	50	AC Restoration	$ 28,000.00
2020	**X60**	AP T-HANG	4316	APC	2,867	26	AC Reconstruction	$ 26,000.00
2020	**X60**	AP T-HANG	4325	AC	21,796	62	AC Restoration	$ 153,000.00
2020	**X60**	RW 5-23	6112	APC	15,000	44	AC Restoration	$ 121,000.00
2020	**X60**	TW C	105	AAC	65,023	62	AC Restoration	$ 456,000.00
2020	**X60**	TW F	550	AC	128,837	6	AC Reconstruction	$ 1,160,000.00
2020	**X60**	TW F	555	PCC	11,250	34	PCC Reconstruction	$ 169,000.00
2020	**X60**	TW G	450	AC	94,473	5	AC Reconstruction	$ 851,000.00
2022	**X60**	RW 5-23	6110	PCC	7,500	64	PCC Restoration	$ 76,000.00
2025	**X60**	AP HANG	4205	AAC	10,495	64	AC Restoration	$ 74,000.00
2028	**X60**	RW 14-32	6205	PCC	24,688	64	PCC Restoration	$ 247,000.00
2029	**X60**	AP	4110	AC	101,074	63	AC Restoration	$ 708,000.00
2029	**X60**	AP T-HANG	4320	AC	18,657	63	AC Restoration	$ 131,000.00

Appendix C

Technical Exhibits



LEGEND

- RW 13-31 — TYPICAL RUNWAY BRANCH ID
- TW A — TYPICAL TAXIWAY BRANCH ID
- AP S — TYPICAL APRON BRANCH ID
- 4105 / AC / 100' x 50' / 5 / 14 — TYPICAL SAMPLE UNIT INFORMATION
  - SECTION NUMBER
  - PAVEMENT TYPE
  - FLEXIBLE (AC) PAVEMENT LENGTH & WIDTH
    RIGID (PCC) PAVEMENT NO. OF SLABS AND SLAB SIZE
  - NUMBER OF SAMPLE UNITS IN SECTION
  - NUMBER OF SAMPLE UNITS TO BE INSPECTED
- 605 / AC / 100' x 50' / VAR / 0 / 8 — SECTION NOT INSPECTED DUE TO RECENT CONSTRUCTION. SEE SYSTEM INVENTORY MAP FOR CONSTRUCTION DATES.
- 100 — INSPECTED SAMPLE UNITS. GPS COORDINATES ARE AT THE CENTROID OF THE SAMPLE UNIT.

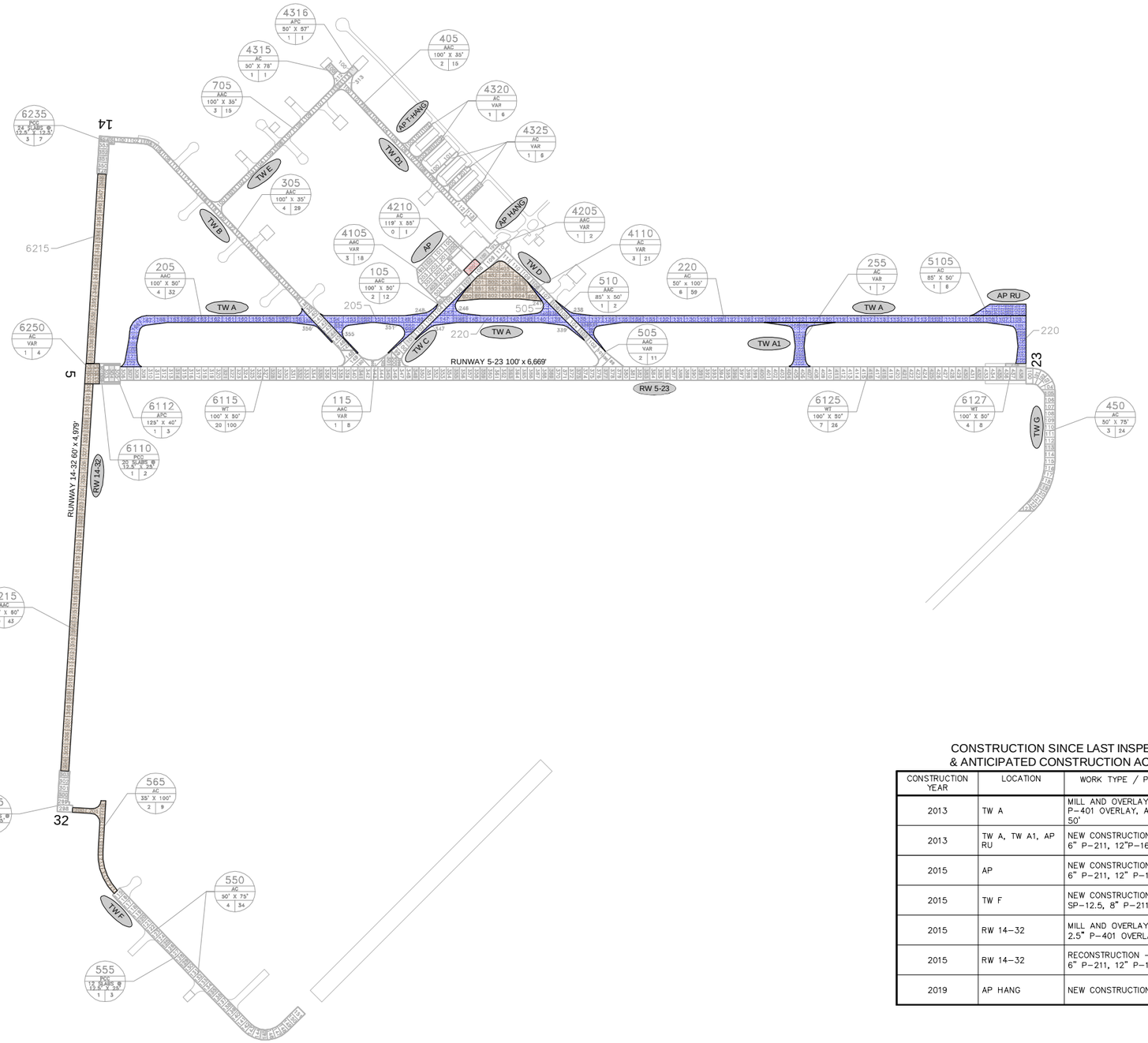
TOTAL SAMPLES INSPECTED = 97
AC: 59 PCC: 7 WT: 31

RUNWAY LENGTHS DEPICTED IN THIS DRAWING ARE FOR PAVEMENT MANAGEMENT PURPOSES ONLY AND MAY NOT MATCH PUBLISHED RUNWAY LENGTHS.

001 - AIRFIELD PAVEMENT
NETWORK DEFINITION EXHIBIT

Statewide Airfield Pavement Management Program
Airport Pavement Evaluation Report
2019
WILLISTON MUNICIPAL AIRPORT - X60

FDOT



GRAPHIC SCALE IN FEET
0 200 400 800

CONSTRUCTION SINCE LAST INSPECTION
& ANTICIPATED CONSTRUCTION ACTIVITY

CONSTRUCTION YEAR	LOCATION	WORK TYPE / PAVEMENT SECTION
2013	TW A	MILL AND OVERLAY / 1.5" MILL, 1.5" P-401 OVERLAY, AND TW WIDENING TO 50'
2013	TW A, TW A1, AP RU	NEW CONSTRUCTION – AC / 4" P-401, 6" P-211, 12"P-160
2015	AP	NEW CONSTRUCTION – AC / 4" P-601, 6" P-211, 12" P-160
2015	TW F	NEW CONSTRUCTION – AC / 2" FDOT SP-12.5, 8" P-211, 12" SUBGRADE
2015	RW 14-32	MILL AND OVERLAY / 0.5" MILL AND 2.5" P-401 OVERLAY
2015	RW 14-32	RECONSTRUCTION – AC / 2.5" P-401, 6" P-211, 12" P-160
2019	AP HANG	NEW CONSTRUCTION – AC

LEGEND

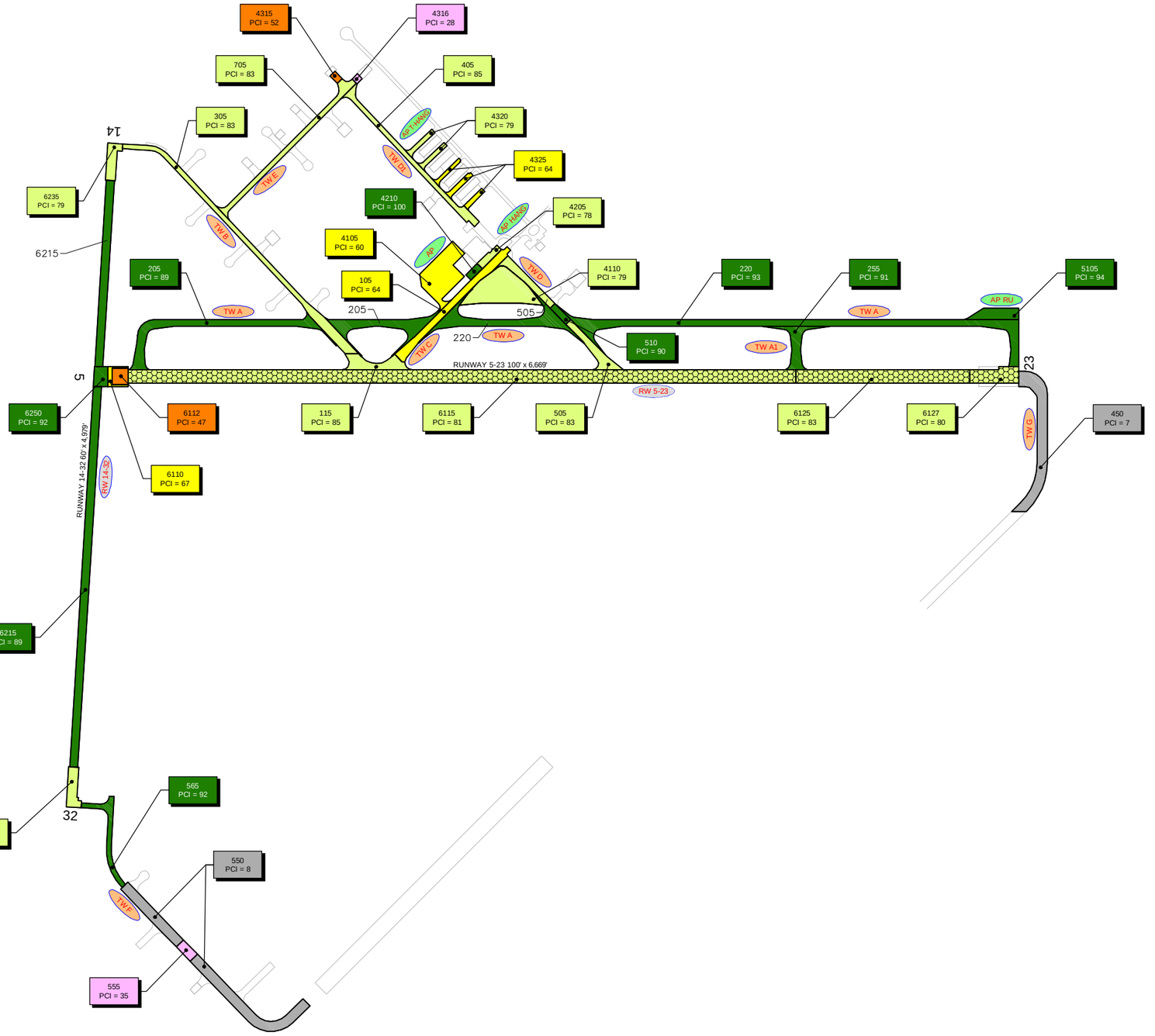
- PROJECTS YEAR 2013
- PROJECTS YEAR 2014
- PROJECTS YEAR 2015
- PROJECTS YEAR 2016
- PROJECTS YEAR 2017
- PROJECTS YEAR 2018
- PROJECTS YEAR 2019
- PROJECTS YEAR 2020
- PROJECTS YEAR 2021
- PROJECTS YEAR 2022

RUNWAY LENGTHS DEPICTED IN THIS DRAWING ARE FOR PAVEMENT MANAGEMENT PURPOSES ONLY AND MAY NOT MATCH PUBLISHED RUNWAY LENGTHS.

002 - AIRFIELD PAVEMENT
SYSTEM INVENTORY EXHIBIT

Statewide Airfield Pavement Management Program
Airport Pavement Evaluation Report
2019
WILLISTON MUNICIPAL AIRPORT - X60

FDOT



GRAPHIC SCALE IN FEET
0 200 400 800

LEGEND

RW 13-31 — TYPICAL RUNWAY BRANCH ID
TW A — TYPICAL TAXIWAY BRANCH ID
AP S — TYPICAL APRON BRANCH ID

WHITETOPPING PAVEMENT	REMAINING AIRFIELD PAVEMENT
PCI 86–100	PCI 86–100 GOOD
PCI 71–85	PCI 71–85 SATISFACTORY
PCI 56–70	PCI 56–70 FAIR
PCI 41–55	PCI 41–55 POOR
PCI 26–40	PCI 26–40 VERY POOR
PCI 11–25	PCI 11–25 SERIOUS
PCI 0–10	PCI 0–10 FAILED

"SECTION NO."
"PCI NO."

RUNWAY LENGTHS DEPICTED IN THIS DRAWING ARE FOR PAVEMENT MANAGEMENT PURPOSES ONLY AND MAY NOT MATCH PUBLISHED RUNWAY LENGTHS.

NOTE: ALL PAVEMENTS COMPOSED OF 'WHITETOPPING PAVEMENT' AS IT IS A UNIQUE PAVEMENT TYPE THAT IS NOT ADDRESSED BY THE ASTM D 5340–12. PAVEMENT CONDITION INDEX DETERMINED FOR 'WHITETOPPING PAVEMENTS' ARE BASED ON A DIFFERENT METHODOLOGY AND THEREFORE IS ANALYZED SEPARATE FROM THE REMAINING AIRFIELD PAVEMENTS.

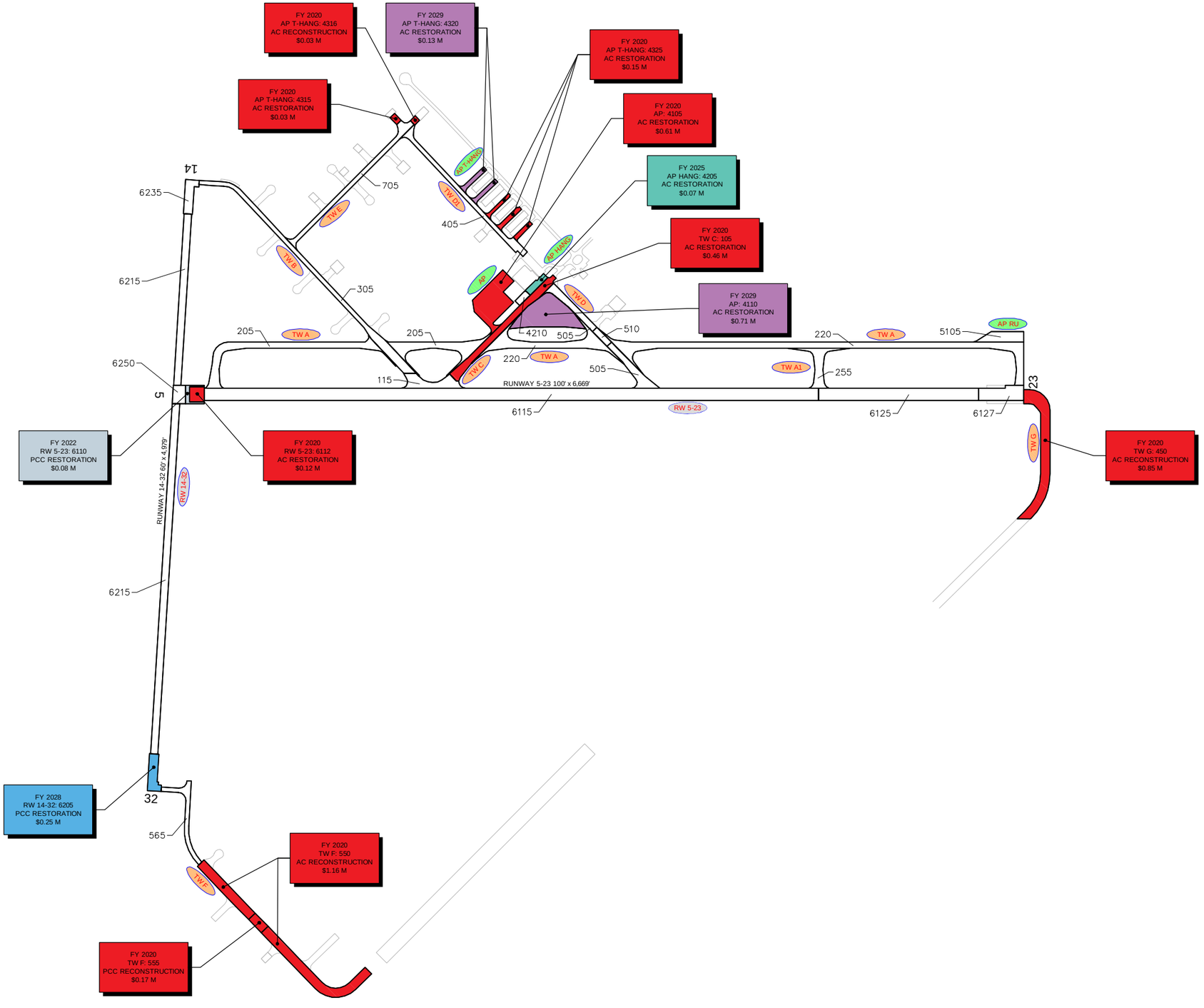
003 - AIRFIELD PAVEMENT
CONDITION INDEX EXHIBIT

Airport Pavement Evaluation Report
2019

Statewide Airfield Pavement
Management Program

WILLISTON MUNICIPAL AIRPORT - X60

FDOT



LEGEND

- RW 13-31 — TYPICAL RUNWAY BRANCH ID
- TW A — TYPICAL TAXIWAY BRANCH ID
- AP S — TYPICAL APRON BRANCH ID

PROGRAM YEAR

2020	2025
2021	2026
2022	2027
2023	2028
2024	2029

"PROGRAM YEAR"
"BRANCH":"SECTION"
"REHAB ACTIVITY"
"EST. COST"

RUNWAY LENGTHS DEPICTED IN THIS DRAWING ARE FOR PAVEMENT MANAGEMENT PURPOSES ONLY AND MAY NOT MATCH PUBLISHED RUNWAY LENGTHS.

004 - AIRFIELD PAVEMENT
MAJOR REHABILITATION EXHIBIT

Airport Pavement Evaluation Report
2019

Statewide Airfield Pavement Management Program

WILLISTON MUNICIPAL AIRPORT - X60

FDOT

Appendix D

Inspection Photograph Documentation

RW 5-23, Section 6112, Sample Unit 304 - Low Severity (47) Joint Reflection Cracking, Medium Severity (47) Joint Reflection Cracking, Low Severity (48) Longitudinal & Transverse Cracking, Low Severity (52) Raveling, and Low Severity (57) Weathering

RW 14-32, Section 6205, Sample Unit 303 - Low Severity (63) Linear Cracking, Low Severity (65) Joint Seal Damage, and (73) Shrinkage Cracking

RW 14-32, Section 6215, Sample Unit 322 - Low Severity (48) Longitudinal & Transverse Cracking and Low Severity (57) Weathering

TW A, Section 205, Sample Unit 164 - Low Severity (48) Longitudinal & Transverse Cracking and Low Severity (57) Weathering

TW C, Section 105, Sample Unit 101 - Low Severity (48) Longitudinal & Transverse Cracking, Low Severity (52) Raveling, Low Severity (56) Swelling, and Low Severity (57) Weathering

TW C, Section 105, Sample Unit 107 - Low Severity (45) Depression, Low Severity (48) Longitudinal & Transverse Cracking, Medium Severity (48) Longitudinal & Transverse Cracking, Low Severity (52) Raveling, Low Severity (56) Swelling, and Low Severity (57) Weathering

AP, Section 4105, Sample Unit 200 - Low Severity (48) Longitudinal & Transverse Cracking, Low Severity (52) Raveling, Low Severity (56) Swelling, and Low Severity (57) Weathering

AP, Section 4110, Sample Unit 502 - Low Severity (48) Longitudinal & Transverse Cracking and Low Severity (57) Weathering

Appendix E

Inspection Distress Details

Re-Inspection Report

FDOT

Generated Date 9/17/2019

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: AP **Name:** APRON **Use:** APRON **Area:** 187,996 SqFt

Section: 4105 of 2 **From:** - **To:** - **Last Const.:** 1/1/2009

Surface: AAC **Family:** C9N59-GA-AP-AAC-APC **Zone:** **Category:** **Rank:** P

Area: 86,922 SqFt **Length:** 400 Ft **Width:** 250 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/1990 **Work Type:** BUILT **Code:** IMPORTED **Is Major M&R:** True

Work Date: 1/1/2009 **Work Type:** MILL and OVERLAY **Code:** ML-OV **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 18 **Surveyed:** 3

Conditions: **PCI:** 60

Inspection Comments:

Sample Number: 102 **Type:** R **Area:** 5000.00 SqFt **PCI:** 60

Sample Comments:

57	WEATHERING	L	4935.00	SqFt
49	OIL SPILLAGE	N	16.00	SqFt
52	RAVELING	L	65.00	SqFt
48	L & T CR	L	125.00	Ft
42	BLEEDING	N	3.00	SqFt
56	SWELLING	L	1000.00	SqFt

Sample Number: 200 **Type:** R **Area:** 5000.00 SqFt **PCI:** 58

Sample Comments:

56	SWELLING	L	1250.00	SqFt
57	WEATHERING	L	4750.00	SqFt
48	L & T CR	L	251.00	Ft
42	BLEEDING	N	2.00	SqFt
52	RAVELING	L	250.00	SqFt

Sample Number: 403 **Type:** R **Area:** 5250.00 SqFt **PCI:** 61

Sample Comments:

57	WEATHERING	L	4988.00	SqFt
42	BLEEDING	N	1.00	SqFt
56	SWELLING	L	1050.00	SqFt
52	RAVELING	L	262.00	SqFt
48	L & T CR	L	441.00	Ft

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: AP **Name:** APRON **Use:** APRON **Area:** 187,996 SqFt

Section: 4110 of 2 **From:** - **To:** - **Last Const.:** 2/1/2015

Surface: AC **Family:** C9N59-GA-AP-AC **Zone:** **Category:** **Rank:** P

Area: 101,074 SqFt **Length:** 1,000 Ft **Width:** 100 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 2/1/2015 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 21 **Surveyed:** 3

Conditions: **PCI:** 79

Inspection Comments:

Sample Number: 502 **Type:** R **Area:** 5000.00 SqFt **PCI:** 78

Sample Comments:

48	L & T CR	L	296.00	Ft
57	WEATHERING	L	5000.00	SqFt

Sample Number: 554 **Type:** R **Area:** 5000.00 SqFt **PCI:** 78

Sample Comments:

48	L & T CR	L	293.00	Ft
57	WEATHERING	L	5000.00	SqFt

Sample Number: 601 **Type:** R **Area:** 5123.00 SqFt **PCI:** 79

Sample Comments:

57	WEATHERING	L	5123.00	SqFt
48	L & T CR	L	276.00	Ft

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: AP HANG **Name:** HANGAR APRON **Use:** APRON **Area:** 17,123 SqFt

Section: 4205 of 2 **From:** - **To:** - **Last Const.:** 1/1/2009

Surface: AAC **Family:** C9N59-GA-AP-AAC-APC **Zone:** **Category:** **Rank:** P

Area: 10,495 SqFt **Length:** 200 Ft **Width:** 56 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/1942	**Work Type:** BUILT	**Code:** IMPORTED	**Is Major M&R:** True
Work Date: 1/1/1985	**Work Type:** OVERLAY	**Code:** IMPORTED	**Is Major M&R:** True
Work Date: 1/1/2009	**Work Type:** MILL and OVERLAY	**Code:** ML-OV	**Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 2 **Surveyed:** 1

Conditions: **PCI:** 78

Inspection Comments:

Sample Number: 100 **Type:** R **Area:** 5546.00 SqFt **PCI:** 78

Sample Comments:

42	BLEEDING	N	2.00	SqFt
52	RAVELING	L	111.00	SqFt
57	WEATHERING	L	5435.00	SqFt
56	SWELLING	L	150.00	SqFt
49	OIL SPILLAGE	N	1.00	SqFt
48	L & T CR	L	49.00	Ft

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: AP RU **Name:** RUN-UP APRON **Use:** APRON **Area:** 28,165 SqFt

Section: 5105 of 1 **From:** - **To:** - **Last Const.:** 1/1/2013

Surface: AC **Family:** C9N59-GA-AP-AC **Zone:** **Category:** **Rank:** P

Area: 28,165 SqFt **Length:** 400 Ft **Width:** 50 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/2013 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 6 **Surveyed:** 1

Conditions: **PCI:** 94

Inspection Comments:

Sample Number: 102 **Type:** R **Area:** 4250.00 SqFt **PCI:** 94

Sample Comments:

57	WEATHERING	L	4250.00	SqFt

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: AP T-HANG **Name:** APRON AT T-HANGARS **Use:** APRON **Area:** 47,220 SqFt

Section: 4315 of 4 **From:** - **To:** - **Last Const.:** 1/1/1986

Surface: AC **Family:** C9N59-GA-AP-AC **Zone:** **Category:** **Rank:** P

Area: 3,900 SqFt **Length:** 80 Ft **Width:** 50 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/1986 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 1 **Surveyed:** 1

Conditions: **PCI:** 52

Inspection Comments:

Sample Number: 100 **Type:** R **Area:** 3900.00 SqFt **PCI:** 52

Sample Comments:

52	RAVELING	L	3315.00	SqFt
49	OIL SPILLAGE	N	3.00	SqFt
52	RAVELING	M	585.00	SqFt
48	L & T CR	L	446.00	Ft

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: AP T-HANG **Name:** APRON AT T-HANGARS **Use:** APRON **Area:** 47,220 SqFt

Section: 4316 of 4 **From:** - **To:** - **Last Const.:** 1/1/2003

Surface: APC **Family:** C9N59-GA-AP-AAC-APC **Zone:** **Category:** **Rank:** P

Area: 2,867 SqFt **Length:** 65 Ft **Width:** 50 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/1986 **Work Type:** New Construction - PCC **Code:** NC-PC **Is Major M&R:** True

Work Date: 1/1/2003 **Work Type:** Overlay - AC Structural **Code:** OL-AS **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 1 **Surveyed:** 1

Conditions: **PCI:** 28

Inspection Comments:

Sample Number: 100 **Type:** R **Area:** 2867.00 SqFt **PCI:** 28

Sample Comments:

57	WEATHERING	M	244.00	SqFt
43	BLOCK CR	M	1750.00	SqFt
48	L & T CR	L	54.00	Ft
57	WEATHERING	L	2198.00	SqFt
52	RAVELING	L	425.00	SqFt
45	DEPRESSION	L	36.00	SqFt
48	L & T CR	M	116.00	Ft
47	JT REF. CR	M	228.00	Ft

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: AP T-HANG **Name:** APRON AT T-HANGARS **Use:** APRON **Area:** 47,220 SqFt

Section: 4320 of 4 **From:** - **To:** - **Last Const.:** 1/1/2005

Surface: AC **Family:** C9N59-GA-AP-AC **Zone:** **Category:** **Rank:** P

Area: 18,657 SqFt **Length:** 507 Ft **Width:** 35 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/2005 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 6 **Surveyed:** 1

Conditions: **PCI:** 79

Inspection Comments:

Sample Number: 201 **Type:** R **Area:** 3010.00 SqFt **PCI:** 79

Sample Comments:

52	RAVELING	L	125.00	SqFt
48	L & T CR	L	98.00	Ft
57	WEATHERING	L	2885.00	SqFt

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: AP T-HANG **Name:** APRON AT T-HANGARS **Use:** APRON **Area:** 47,220 SqFt

Section: 4325 of 4 **From:** - **To:** - **Last Const.:** 1/1/2003

Surface: AC **Family:** C9N59-GA-AP-AC **Zone:** **Category:** **Rank:** P

Area: 21,796 SqFt **Length:** 709 Ft **Width:** 35 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/2003 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 6 **Surveyed:** 1

Conditions: **PCI:** 64

Inspection Comments:

Sample Number: 301 **Type:** R **Area:** 3207.00 SqFt **PCI:** 64

Sample Comments:

52	RAVELING	M	500.00	SqFt
48	L & T CR	L	12.00	Ft
52	RAVELING	L	2707.00	SqFt

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: RW 14-32 **Name:** RUNWAY 14-32 **Use:** RUNWAY **Area:** 318,195 SqFt

Section: 6205 of 4 **From:** - **To:** - **Last Const.:** 1/1/1942

Surface: PCC **Family:** C9N59-GA-RW-TW-PCC **Zone:** **Category:** **Rank:** P

Area: 24,688 SqFt **Length:** 300 Ft **Width:** 75 Ft

Slabs: 117 **Slab Length:** 12 Ft **Slab Width:** 12 Ft **Joint Length:** 3,375 Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/1942 **Work Type:** BUILT **Code:** IMPORTED **Is Major M&R:** True

Work Date: 2/1/2015 **Work Type:** Joint Seal **Code:** JS-GL **Is Major M&R:** False

Last Insp. Date: 4/11/2019 **TotalSamples:** 6 **Surveyed:** 2

Conditions: **PCI:** 72

Inspection Comments:

Sample Number: 300 **Type:** R **Area:** 20.00 Slabs **PCI:** 73

Sample Comments:

65	JT SEAL DMG	L	20.00	Slabs
74	JOINT SPALL	L	2.00	Slabs
73	SHRINKAGE CR	N	20.00	Slabs
63	LINEAR CR	L	4.00	Slabs

Sample Number: 303 **Type:** R **Area:** 13.00 Slabs **PCI:** 69

Sample Comments:

65	JT SEAL DMG	L	13.00	Slabs
73	SHRINKAGE CR	N	13.00	Slabs
63	LINEAR CR	L	11.00	Slabs

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: RW 14-32 **Name:** RUNWAY 14-32 **Use:** RUNWAY **Area:** 318,195 SqFt

Section: 6215 of 4 **From:** - **To:** - **Last Const.:** 2/1/2015

Surface: AAC **Family:** C9N59-GA-RW-AAC-APC **Zone:** **Category:** **Rank:** P

Area: 254,982 SqFt **Length:** 4,300 Ft **Width:** 100 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/1942 **Work Type:** BUILT **Code:** IMPORTED **Is Major M&R:** True

Work Date: 2/1/2015 **Work Type:** MILL and OVERLAY **Code:** ML-OV **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 43 **Surveyed:** 10

Conditions: **PCI:** 89

Inspection Comments:

Sample Number: 304 **Type:** R **Area:** 6000.00 SqFt **PCI:** 89

Sample Comments:

57	WEATHERING	L	6000.00	SqFt
48	L & T CR	L	96.00	Ft

Sample Number: 309 **Type:** R **Area:** 6000.00 SqFt **PCI:** 94

Sample Comments:

57	WEATHERING	L	6000.00	SqFt

Sample Number: 314 **Type:** R **Area:** 6000.00 SqFt **PCI:** 85

Sample Comments:

57	WEATHERING	L	6000.00	SqFt
48	L & T CR	L	173.00	Ft

Sample Number: 317 **Type:** R **Area:** 6000.00 SqFt **PCI:** 86

Sample Comments:

57	WEATHERING	L	6000.00	SqFt
48	L & T CR	L	146.00	Ft

Sample Number: 322 **Type:** R **Area:** 6000.00 SqFt **PCI:** 88

Sample Comments:

57	WEATHERING	L	6000.00	SqFt
48	L & T CR	L	122.00	Ft

Sample Number: 329 **Type:** R **Area:** 6000.00 SqFt **PCI:** 86

Sample Comments:

48	L & T CR	L	155.00	Ft
57	WEATHERING	L	6000.00	SqFt

Sample Number: 337 **Type:** R **Area:** 6000.00 SqFt **PCI:** 92

Sample Comments:

57	WEATHERING	L	6000.00	SqFt
48	L & T CR	L	7.00	Ft

Sample Number: 342 **Type:** R **Area:** 6000.00 SqFt **PCI:** 90

Sample Comments:

48	L & T CR	L	20.00	Ft
57	WEATHERING	L	6000.00	SqFt

Sample Number: 344 **Type:** R **Area:** 6000.00 SqFt **PCI:** 90

Sample Comments:

57	WEATHERING	L	6000.00	SqFt
48	L & T CR	L	18.00	Ft

Sample Number: 348 **Type:** R **Area:** 6000.00 SqFt **PCI:** 90

Sample Comments:

57	WEATHERING	L	6000.00	SqFt
48	L & T CR	L	26.00	Ft

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: RW 14-32 **Name:** RUNWAY 14-32 **Use:** RUNWAY **Area:** 318,195 SqFt

Section: 6235 of 4 **From:** - **To:** - **Last Const.:** 1/1/1942

Surface: PCC **Family:** C9N59-GA-RW-TW-PCC **Zone:** **Category:** **Rank:** P

Area: 22,894 SqFt **Length:** 275 Ft **Width:** 75 Ft

Slabs: 107 **Slab Length:** 12 Ft **Slab Width:** 12 Ft **Joint Length:** 3,087 Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/1942 **Work Type:** BUILT **Code:** IMPORTED **Is Major M&R:** True

Work Date: 2/1/2015 **Work Type:** Joint Seal **Code:** JS-GL **Is Major M&R:** False

Last Insp. Date: 4/11/2019 **TotalSamples:** 7 **Surveyed:** 3

Conditions: **PCI:** 79

Inspection Comments:

Sample Number: 351 **Type:** R **Area:** 24.00 Slabs **PCI:** 74

Sample Comments:

74	JOINT SPALL	M	1.00	Slabs
73	SHRINKAGE CR	N	24.00	Slabs
74	JOINT SPALL	L	1.00	Slabs
75	CORNER SPALL	M	1.00	Slabs
65	JT SEAL DMG	L	24.00	Slabs
75	CORNER SPALL	L	1.00	Slabs

Sample Number: 352 **Type:** R **Area:** 23.00 Slabs **PCI:** 79

Sample Comments:

65	JT SEAL DMG	L	23.00	Slabs
75	CORNER SPALL	L	3.00	Slabs
73	SHRINKAGE CR	N	23.00	Slabs

Sample Number: 354 **Type:** R **Area:** 24.00 Slabs **PCI:** 85

Sample Comments:

73	SHRINKAGE CR	N	18.00	Slabs
74	JOINT SPALL	L	1.00	Slabs
65	JT SEAL DMG	L	24.00	Slabs

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: RW 14-32 **Name:** RUNWAY 14-32 **Use:** RUNWAY **Area:** 318,195 SqFt

Section: 6250 of 4 **From:** - **To:** - **Last Const.:** 2/1/2015

Surface: AC **Family:** C9N59-GA-RW-AC **Zone:** **Category:** **Rank:** P

Area: 15,631 SqFt **Length:** 303 Ft **Width:** 100 Ft

Slabs: 97 **Slab Length:** 13 Ft **Slab Width:** 25 Ft **Joint Length:** 3,233 Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/1942 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

Work Date: 2/1/2015 **Work Type:** Complete Reconstruction - AC **Code:** CR-AC **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 4 **Surveyed:** 1

Conditions: **PCI:** 92

Inspection Comments:

Sample Number: 334 **Type:** R **Area:** 4523.00 SqFt **PCI:** 92

Sample Comments:

48	L & T CR	L	5.00	Ft
57	WEATHERING	L	4523.00	SqFt

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: RW 5-23 **Name:** RUNWAY 5-23 **Use:** RUNWAY **Area:** 693,150 SqFt

Section: 6110 of 5 **From:** - **To:** - **Last Const.:** 1/1/1942

Surface: PCC **Family:** C9N59-GA-RW-TW-PCC **Zone:** **Category:** **Rank:** P

Area: 7,500 SqFt **Length:** 600 Ft **Width:** 25 Ft

Slabs: 25 **Slab Length:** 25 Ft **Slab Width:** 12 Ft **Joint Length:** 1,225 Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/1942 **Work Type:** BUILT **Code:** IMPORTED **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 2 **Surveyed:** 1

Conditions: **PCI:** 67

Inspection Comments:

Sample Number: 302 **Type:** R **Area:** 16.00 Slabs **PCI:** 67

Sample Comments:

63	LINEAR CR	L	4.00	Slabs
75	CORNER SPALL	L	1.00	Slabs
74	JOINT SPALL	M	1.00	Slabs
74	JOINT SPALL	L	1.00	Slabs
73	SHRINKAGE CR	N	4.00	Slabs
65	JT SEAL DMG	H	16.00	Slabs

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: RW 5-23 **Name:** RUNWAY 5-23 **Use:** RUNWAY **Area:** 693,150 SqFt

Section: 6112 of 5 **From:** - **To:** - **Last Const.:** 1/1/2006

Surface: APC **Family:** C9N59-GA-RW-AAC-APC **Zone:** **Category:** **Rank:** P

Area: 15,000 SqFt **Length:** 150 Ft **Width:** 100 Ft

Slabs: 48 **Slab Length:** 13 Ft **Slab Width:** 25 Ft **Joint Length:** 1,550 Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/1942 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

Work Date: 1/1/2006 **Work Type:** Overlay - AC Structural **Code:** OL-AS **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 3 **Surveyed:** 1

Conditions: **PCI:** 47

Inspection Comments:

Sample Number: 304 **Type:** R **Area:** 5000.00 SqFt **PCI:** 47

Sample Comments:

47	JT REF. CR	L	82.00	Ft
48	L & T CR	L	84.00	Ft
52	RAVELING	L	600.00	SqFt
47	JT REF. CR	M	430.00	Ft
57	WEATHERING	L	4400.00	SqFt

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: TW A **Name:** TAXIWAY A **Use:** TAXIWAY **Area:** 447,492 SqFt

Section: 205 of 2 **From:** - **To:** - **Last Const.:** 1/1/2013

Surface: AAC **Family:** C9N59-GA-TW-AAC-APC **Zone:** **Category:** **Rank:** P

Area: 159,607 SqFt **Length:** 1,990 Ft **Width:** 35 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/1986 **Work Type:** BUILT **Code:** IMPORTED **Is Major M&R:** True

Work Date: 1/1/2013 **Work Type:** MILL and OVERLAY **Code:** ML-OV **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 32 **Surveyed:** 4

Conditions: **PCI:** 89

Inspection Comments:

Sample Number: 152 **Type:** R **Area:** 5000.00 SqFt **PCI:** 90

Sample Comments:

48	L & T CR	L	32.00	Ft
57	WEATHERING	L	5000.00	SqFt

Sample Number: 157 **Type:** R **Area:** 5000.00 SqFt **PCI:** 90

Sample Comments:

57	WEATHERING	L	5000.00	SqFt
48	L & T CR	L	37.00	Ft

Sample Number: 164 **Type:** R **Area:** 5000.00 SqFt **PCI:** 89

Sample Comments:

57	WEATHERING	L	5000.00	SqFt
48	L & T CR	L	77.00	Ft

Sample Number: 170 **Type:** R **Area:** 5064.00 SqFt **PCI:** 89

Sample Comments:

48	L & T CR	L	54.00	Ft
57	WEATHERING	L	5064.00	SqFt

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: TW A **Name:** TAXIWAY A **Use:** TAXIWAY **Area:** 447,492 SqFt

Section: 220 of 2 **From:** - **To:** - **Last Const.:** 1/1/2013

Surface: AC **Family:** C9N59-GA-TW-AC **Zone:** **Category:** **Rank:** P

Area: 287,885 SqFt **Length:** 3,000 Ft **Width:** 50 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/2013 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 59 **Surveyed:** 6

Conditions: **PCI:** 93

Inspection Comments:

Sample Number: 104 **Type:** R **Area:** 3545.00 SqFt **PCI:** 90

Sample Comments:

57	WEATHERING	L	3545.00	SqFt
48	L & T CR	L	13.00	Ft

Sample Number: 112 **Type:** R **Area:** 5000.00 SqFt **PCI:** 94

Sample Comments:

57	WEATHERING	L	5000.00	SqFt

Sample Number: 124 **Type:** R **Area:** 5000.00 SqFt **PCI:** 91

Sample Comments:

48	L & T CR	L	9.00	Ft
57	WEATHERING	L	5000.00	SqFt

Sample Number: 134 **Type:** R **Area:** 5000.00 SqFt **PCI:** 94

Sample Comments:

57	WEATHERING	L	5000.00	SqFt

Sample Number: 141 **Type:** R **Area:** 5000.00 SqFt **PCI:** 94

Sample Comments:

57	WEATHERING	L	5000.00	SqFt

Sample Number: 146 **Type:** R **Area:** 5000.00 SqFt **PCI:** 92

Sample Comments:

57	WEATHERING	L	5000.00	SqFt
48	L & T CR	L	5.00	Ft

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: TW A1 **Name:** TAXIWAY A1 **Use:** TAXIWAY **Area:** 34,316 SqFt

Section: 255 of 1 **From:** - **To:** - **Last Const.:** 1/1/2013

Surface: AC **Family:** C9N59-GA-TW-AC **Zone:** **Category:** **Rank:** P

Area: 34,316 SqFt **Length:** 600 Ft **Width:** 50 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/2013 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 7 **Surveyed:** 1

Conditions: **PCI:** 91

Inspection Comments:

Sample Number: 101 **Type:** R **Area:** 4105.00 SqFt **PCI:** 91

Sample Comments:

57	WEATHERING	L	4105.00	SqFt
48	L & T CR	L	9.00	Ft

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: TW B **Name:** TAXIWAY B **Use:** TAXIWAY **Area:** 101,269 SqFt

Section: 305 of 1 **From:** - **To:** - **Last Const.:** 1/1/2009

Surface: AAC **Family:** C9N59-GA-TW-AAC-APC **Zone:** **Category:** **Rank:** P

Area: 101,269 SqFt **Length:** 2,900 Ft **Width:** 35 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/1942 **Work Type:** BUILT **Code:** IMPORTED **Is Major M&R:** True

Work Date: 1/1/2009 **Work Type:** MILL and OVERLAY **Code:** ML-OV **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 29 **Surveyed:** 4

Conditions: **PCI:** 83

Inspection Comments:

Sample Number: 104 **Type:** R **Area:** 3549.00 SqFt **PCI:** 79

Sample Comments:

52	RAVELING	L	200.00	SqFt
48	L & T CR	L	114.00	Ft
57	WEATHERING	L	3349.00	SqFt

Sample Number: 116 **Type:** R **Area:** 3500.00 SqFt **PCI:** 83

Sample Comments:

48	L & T CR	L	71.00	Ft
52	RAVELING	L	200.00	SqFt
57	WEATHERING	L	3300.00	SqFt

Sample Number: 130 **Type:** R **Area:** 3500.00 SqFt **PCI:** 89

Sample Comments:

48	L & T CR	L	46.00	Ft
57	WEATHERING	L	3500.00	SqFt

Sample Number: 144 **Type:** R **Area:** 3750.00 SqFt **PCI:** 83

Sample Comments:

52	RAVELING	L	225.00	SqFt
48	L & T CR	L	27.00	Ft
57	WEATHERING	L	3275.00	SqFt

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: TW C **Name:** TAXIWAY C **Use:** TAXIWAY **Area:** 100,432 SqFt

Section: 105 of 2 **From:** - **To:** - **Last Const.:** 1/1/2009

Surface: AAC **Family:** C9N59-GA-TW-AAC-APC **Zone:** **Category:** **Rank:** P

Area: 65,023 SqFt **Length:** 1,165 Ft **Width:** 50 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/1942	**Work Type:** BUILT	**Code:** IMPORTED	**Is Major M&R:** True
Work Date: 1/1/1982	**Work Type:** OVERLAY	**Code:** IMPORTED	**Is Major M&R:** True
Work Date: 1/1/2009	**Work Type:** MILL and OVERLAY	**Code:** ML-OV	**Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 12 **Surveyed:** 2

Conditions: **PCI:** 64

Inspection Comments:

Sample Number: 101 **Type:** R **Area:** 5651.00 SqFt **PCI:** 64

Sample Comments:

56	SWELLING	L	375.00	SqFt
52	RAVELING	L	452.00	SqFt
48	L & T CR	L	476.00	Ft
57	WEATHERING	L	5199.00	SqFt

Sample Number: 107 **Type:** R **Area:** 5000.00 SqFt **PCI:** 63

Sample Comments:

56	SWELLING	L	35.00	SqFt
48	L & T CR	L	400.00	Ft
57	WEATHERING	L	4900.00	SqFt
48	L & T CR	M	30.00	Ft
45	DEPRESSION	L	6.00	SqFt
52	RAVELING	L	100.00	SqFt

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: TW C **Name:** TAXIWAY C **Use:** TAXIWAY **Area:** 100,432 SqFt

Section: 115 of 2 **From:** - **To:** - **Last Const.:** 1/1/2009

Surface: AAC **Family:** C9N59-GA-TW-AAC-APC **Zone:** **Category:** **Rank:** P

Area: 35,409 SqFt **Length:** 416 Ft **Width:** 70 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/1982 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

Work Date: 1/1/2009 **Work Type:** MILL and OVERLAY **Code:** ML-OV **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 8 **Surveyed:** 1

Conditions: **PCI:** 85

Inspection Comments:

Sample Number: 301 **Type:** R **Area:** 4866.00 SqFt **PCI:** 85

Sample Comments:

52	RAVELING	L	487.00	SqFt
57	WEATHERING	L	4379.00	SqFt

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: TW D **Name:** TAXIWAY D **Use:** TAXIWAY **Area:** 70,293 SqFt

Section: 505 of 2 **From:** - **To:** - **Last Const.:** 1/1/2009

Surface: AAC **Family:** C9N59-GA-TW-AAC-APC **Zone:** **Category:** **Rank:** P

Area: 61,793 SqFt **Length:** 1,100 Ft **Width:** 50 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 12/25/1999 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

Work Date: 1/1/2009 **Work Type:** MILL and OVERLAY **Code:** ML-OV **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 11 **Surveyed:** 2

Conditions: **PCI:** 83

Inspection Comments:

Sample Number: 103 **Type:** R **Area:** 5080.00 SqFt **PCI:** 82

Sample Comments:

48	L & T CR	L	108.00	Ft
52	RAVELING	L	254.00	SqFt
57	WEATHERING	L	4826.00	SqFt

Sample Number: 108 **Type:** R **Area:** 5000.00 SqFt **PCI:** 84

Sample Comments:

48	L & T CR	L	40.00	Ft
57	WEATHERING	L	4750.00	SqFt
52	RAVELING	L	250.00	SqFt

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: TW D **Name:** TAXIWAY D **Use:** TAXIWAY **Area:** 70,293 SqFt

Section: 510 of 2 **From:** - **To:** - **Last Const.:** 1/1/2013

Surface: AAC **Family:** C9N59-GA-TW-AAC-APC **Zone:** **Category:** **Rank:** P

Area: 8,500 SqFt **Length:** 170 Ft **Width:** 50 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 12/25/1999 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

Work Date: 1/1/2009 **Work Type:** MILL and OVERLAY **Code:** ML-OV **Is Major M&R:** True

Work Date: 1/1/2013 **Work Type:** MILL and OVERLAY **Code:** ML-OV **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 2 **Surveyed:** 1

Conditions: **PCI:** 90

Inspection Comments:

Sample Number: 106 **Type:** R **Area:** 4400.00 SqFt **PCI:** 90

Sample Comments:

48	L & T CR	L	24.00	Ft
57	WEATHERING	L	4400.00	SqFt

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: TW D1 **Name:** TAXIWAY D1 **Use:** TAXIWAY **Area:** 57,110 SqFt

Section: 405 of 1 **From:** - **To:** - **Last Const.:** 1/1/2009

Surface: AAC **Family:** C9N59-GA-TW-AAC-APC **Zone:** **Category:** **Rank:** P

Area: 57,110 SqFt **Length:** 1,384 Ft **Width:** 35 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/1942 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

Work Date: 1/1/2009 **Work Type:** MILL and OVERLAY **Code:** ML-OV **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 15 **Surveyed:** 2

Conditions: **PCI:** 85

Inspection Comments:

Sample Number: 102 **Type:** R **Area:** 3500.00 SqFt **PCI:** 87

Sample Comments:

48	L & T CR	L	80.00	Ft
57	WEATHERING	L	3500.00	SqFt

Sample Number: 108 **Type:** R **Area:** 3500.00 SqFt **PCI:** 83

Sample Comments:

48	L & T CR	L	137.00	Ft
57	WEATHERING	L	3500.00	SqFt

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: TW E **Name:** TAXIWAY E **Use:** TAXIWAY **Area:** 55,768 SqFt

Section: 705 of 1 **From:** - **To:** - **Last Const.:** 1/1/2009

Surface: AAC **Family:** C9N59-GA-TW-AAC-APC **Zone:** **Category:** **Rank:** P

Area: 55,768 SqFt **Length:** 1,384 Ft **Width:** 35 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/1942 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

Work Date: 1/1/2009 **Work Type:** MILL and OVERLAY **Code:** ML-OV **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 15 **Surveyed:** 3

Conditions: **PCI:** 83

Inspection Comments:

Sample Number: 101 **Type:** R **Area:** 3500.00 SqFt **PCI:** 86

Sample Comments:

57	WEATHERING	L	3440.00	SqFt
52	RAVELING	L	60.00	SqFt
48	L & T CR	L	25.00	Ft

Sample Number: 106 **Type:** R **Area:** 3500.00 SqFt **PCI:** 81

Sample Comments:

57	WEATHERING	L	3500.00	SqFt
48	L & T CR	L	164.00	Ft

Sample Number: 112 **Type:** R **Area:** 3500.00 SqFt **PCI:** 82

Sample Comments:

48	L & T CR	L	78.00	Ft
52	RAVELING	L	100.00	SqFt
57	WEATHERING	L	3400.00	SqFt

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: TW F **Name:** TAXIWAY F **Use:** TAXIWAY **Area:** 173,727 SqFt

Section: 550 of 3 **From:** - **To:** - **Last Const.:** 1/1/1942

Surface: AC **Family:** C9N59-GA-TW-AC **Zone:** **Category:** **Rank:** P

Area: 128,837 SqFt **Length:** 2,450 Ft **Width:** 75 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/1942 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 34 **Surveyed:** 4

Conditions: **PCI:** 8

Inspection Comments:

Sample Number: 120 **Type:** R **Area:** 3750.00 SqFt **PCI:** 10

Sample Comments:

45	DEPRESSION	M	94.00	SqFt
53	RUTTING	L	46.00	SqFt
45	DEPRESSION	L	39.00	SqFt
43	BLOCK CR	M	3625.00	SqFt
52	RAVELING	H	3750.00	SqFt
43	BLOCK CR	H	125.00	SqFt

Sample Number: 125 **Type:** R **Area:** 3750.00 SqFt **PCI:** 12

Sample Comments:

52	RAVELING	H	3750.00	SqFt
45	DEPRESSION	L	21.00	SqFt
43	BLOCK CR	M	3625.00	SqFt
43	BLOCK CR	H	125.00	SqFt

Sample Number: 135 **Type:** R **Area:** 3750.00 SqFt **PCI:** 6

Sample Comments:

45	DEPRESSION	L	12.00	SqFt
52	RAVELING	H	3750.00	SqFt
43	BLOCK CR	H	600.00	SqFt
43	BLOCK CR	M	3150.00	SqFt

Sample Number: 145 **Type:** R **Area:** 3760.00 SqFt **PCI:** 3

Sample Comments:

52	RAVELING	H	3760.00	SqFt
43	BLOCK CR	H	2000.00	SqFt
43	BLOCK CR	M	1760.00	SqFt

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: TW F **Name:** TAXIWAY F **Use:** TAXIWAY **Area:** 173,727 SqFt

Section: 555 of 3 **From:** - **To:** - **Last Const.:** 1/1/1942

Surface: PCC **Family:** C9N59-GA-RW-TW-PCC **Zone:** **Category:** **Rank:** P

Area: 11,250 SqFt **Length:** 150 Ft **Width:** 75 Ft

Slabs: 37 **Slab Length:** 25 Ft **Slab Width:** 12 Ft **Joint Length:** 1,162 Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/1942 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 3 **Surveyed:** 1

Conditions: **PCI:** 35

Inspection Comments:

Sample Number: 129 **Type:** R **Area:** 12.00 Slabs **PCI:** 35

Sample Comments:

63	LINEAR CR	M	4.00	Slabs
65	JT SEAL DMG	H	12.00	Slabs
63	LINEAR CR	H	1.00	Slabs
73	SHRINKAGE CR	N	10.00	Slabs
63	LINEAR CR	L	3.00	Slabs

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: TW F **Name:** TAXIWAY F **Use:** TAXIWAY **Area:** 173,727 SqFt

Section: 565 of 3 **From:** - **To:** - **Last Const.:** 2/1/2015

Surface: AC **Family:** C9N59-GA-TW-AC **Zone:** **Category:** **Rank:** P

Area: 33,640 SqFt **Length:** 1,000 Ft **Width:** 35 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 2/1/2015 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 9 **Surveyed:** 2

Conditions: **PCI:** 92

Inspection Comments:

Sample Number: 111 **Type:** R **Area:** 3501.00 SqFt **PCI:** 90

Sample Comments:

48	L & T CR	L	15.00	Ft
57	WEATHERING	L	3501.00	SqFt

Sample Number: 200 **Type:** R **Area:** 3500.00 SqFt **PCI:** 94

Sample Comments:

57	WEATHERING	L	3500.00	SqFt

Network: X60 **Name:** WILLISTON MUNICIPAL AIRPORT

Branch: TW G **Name:** TAXIWAY G **Use:** TAXIWAY **Area:** 94,473 SqFt

Section: 450 of 1 **From:** - **To:** - **Last Const.:** 1/1/1942

Surface: AC **Family:** C9N59-GA-TW-AC **Zone:** **Category:** **Rank:** P

Area: 94,473 SqFt **Length:** 1,173 Ft **Width:** 75 Ft

Slabs: **Slab Length:** Ft **Slab Width:** Ft **Joint Length:** Ft

Shoulder: **Street Type:** **Grade:** 0 **Lanes:** 0

Section Comments:

Work Date: 1/1/1942 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

Last Insp. Date: 4/11/2019 **TotalSamples:** 24 **Surveyed:** 3

Conditions: **PCI:** 7

Inspection Comments:

Sample Number: 105 **Type:** R **Area:** 4108.00 SqFt **PCI:** 12

Sample Comments:

52	RAVELING	H	4108.00	SqFt
43	BLOCK CR	H	150.00	SqFt
43	BLOCK CR	M	3958.00	SqFt

Sample Number: 113 **Type:** R **Area:** 3750.00 SqFt **PCI:** 4

Sample Comments:

43	BLOCK CR	H	750.00	SqFt
43	BLOCK CR	M	2930.00	SqFt
50	PATCHING	H	40.00	SqFt
52	RAVELING	H	3710.00	SqFt

Sample Number: 119 **Type:** R **Area:** 3766.00 SqFt **PCI:** 5

Sample Comments:

43	BLOCK CR	M	2966.00	SqFt
52	RAVELING	H	3766.00	SqFt
43	BLOCK CR	H	800.00	SqFt