Albia Municipal Airport

PAVEMENT MANAGEMENT REPORT

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JULY 2022

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ALBIA MUNICIPAL AIRPORT
PAVEMENT MANAGEMENT REPORT

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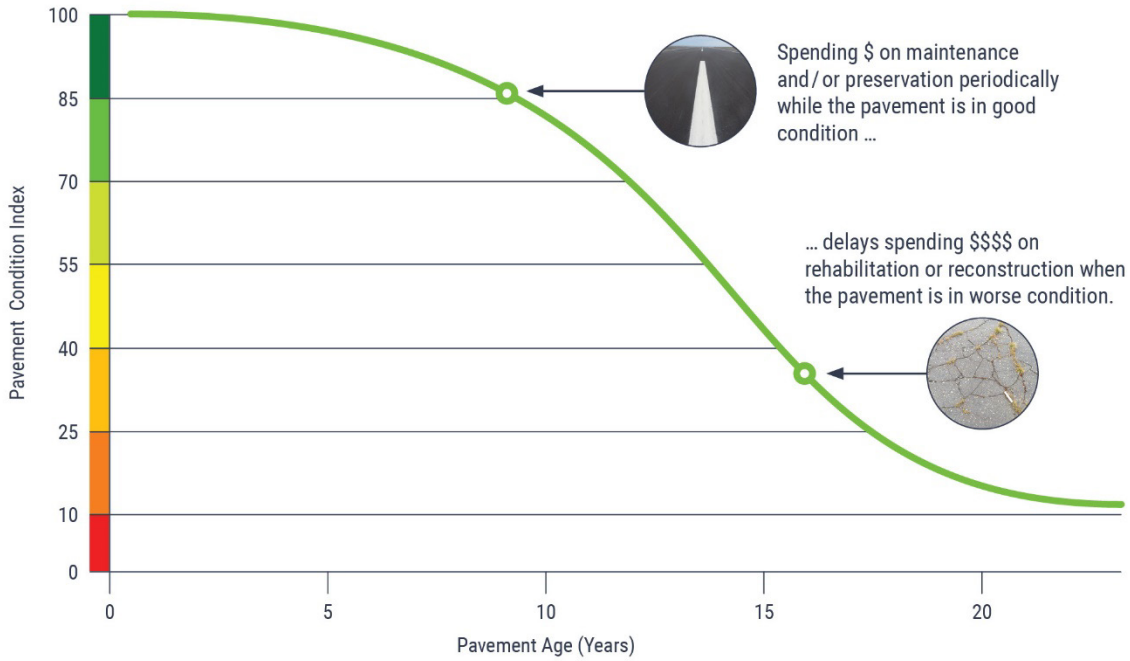
INTRODUCTION

Applied Pavement Technology, Inc. (APTech), with assistance from Robinson Engineering Company, updated the Airport Pavement Management System (APMS) for the Iowa Department of Transportation, Modal Transportation Bureau – Aviation (Iowa DOT). The APMS provides a means to monitor the condition of the pavements within the state of Iowa and to proactively plan for their preservation.

As part of this project, pavement conditions at Albia Municipal Airport were assessed in November 2021 using the Pavement Condition Index (PCI) procedure. During a PCI inspection, the types, severities, and amounts of distress present in a pavement are quantified. This information is then used to develop a composite index that represents the overall condition of the pavement in numerical terms, ranging from 0 (failed) to 100 (excellent). The PCI provides an overall measure of condition and an indication of the level of work that will be required to maintain or repair a pavement. The distress information also provides insight into what is causing the pavement to deteriorate, which is the first step in selecting the appropriate repair action to correct the problem.

Programmed into an APMS, PCI information is used to determine when preventive maintenance actions (such as crack or joint sealing) are advisable and to identify the most cost-effective time to perform major rehabilitation (such as an overlay or whitetopping). Delaying maintenance and rehabilitation (M&R) until a pavement structure has seriously degraded can cost many times more than if M&R was applied earlier in a pavement's life cycle, as shown in Figure 1. From a safety perspective, pavement distresses, such as cracks and loose debris, may pose risks in terms of the potential for aircraft tire damage and the ability of a pilot to safely control aircraft.

Figure 1. Pavement condition versus cost of repair.



The pavement evaluation results for Albia Municipal Airport are presented within this report and can be used by Albia Municipal Airport, the Iowa DOT, and the Federal Aviation Administration (FAA) to identify, prioritize, and schedule pavement M&R actions at the airport. In addition to this report, the interactive pavement management data visualization tool IDEA, containing the pavement management information collected during this project, was updated and may be accessed from the Iowa DOT's website (https://iowadot.gov/aviation).

PAVEMENT INVENTORY

The project began with a review of the existing inventory information pertaining to the pavements at Albia Municipal Airport. The date of original construction, along with the date of any subsequent rehabilitation; the location of completed work; and the type of work undertaken were gathered. The information was used to update the pavement management database and associated maps as necessary to account for pavement-related work that had been undertaken since the last time the airport was evaluated in 2018.

The pavement network at Albia Municipal Airport was then divided into branches, sections, and sample units. A branch is a single entity that serves a distinct function. For example, a runway is considered a branch because it serves a single function (allowing aircraft to take off and land). Taxiways, aprons, and T-hangars are also separate branches.

Each branch was further divided into sections. Traditionally, sections are defined as parts of the branch that share common attributes, such as cross-section, date of last construction, traffic level, and performance. Using this approach, if a runway was built in 1968 and then extended in 1984, it would contain two separate sections.

To estimate the overall condition of a pavement section, each section was subdivided into sample units. Portions of these sample units were evaluated during the pavement inspection, and the collected information was extrapolated to predict the overall section condition and quantities of distress.

Approximately 287,900 square feet of pavement were evaluated at Albia Municipal Airport, as illustrated in Figure 2. This figure also shows the area-weighted age, in years, of the pavements at the time of the inspection. Figure 3 provides a map that details how the pavement network was divided into management units and identifies the sample units that were evaluated during the pavement inspection at Albia Municipal Airport.

Figure 2. Pavement area by branch use at Albia Municipal Airport.

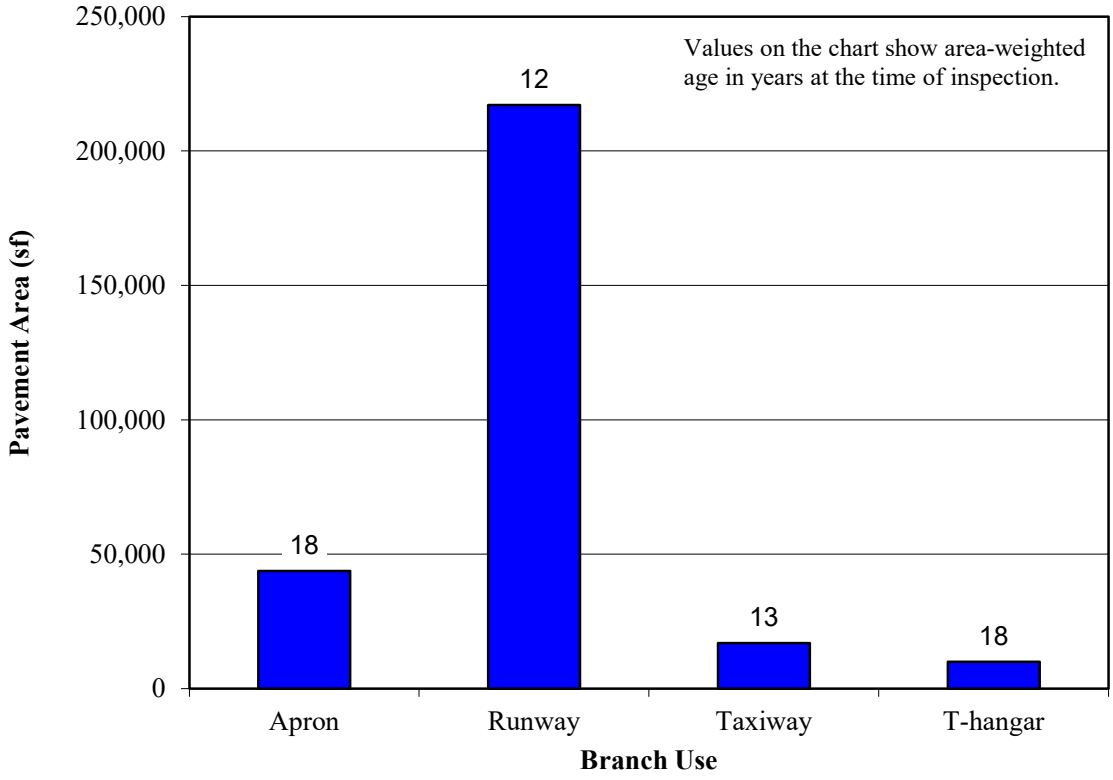
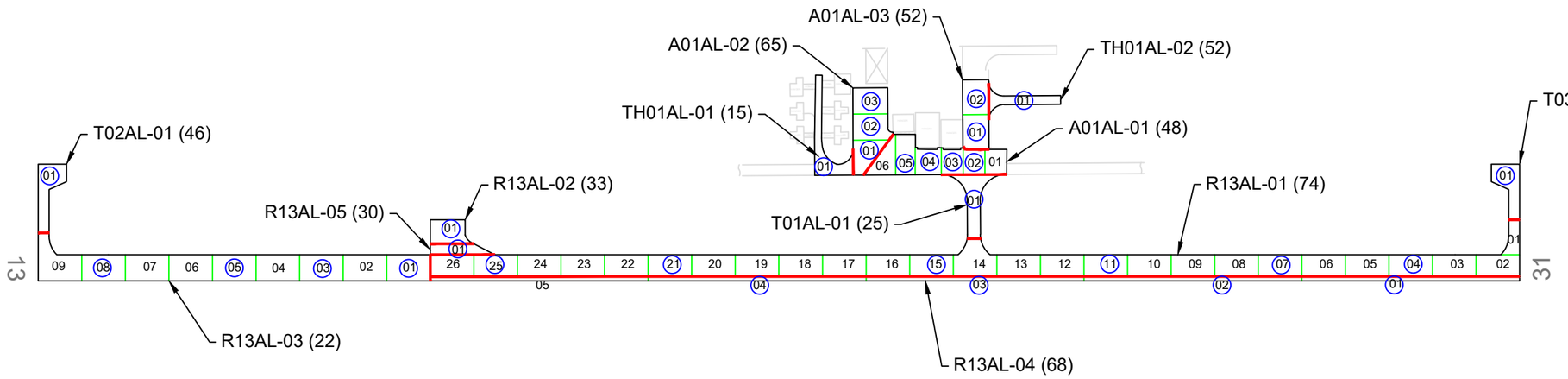


FIGURE 3. NETWORK DEFINITION MAP.



NETWORK DEFINITION LEGEND

R18AL-01 (71)
BRANCH IDENTIFIER
SECTION IDENTIFIER
PCI VALUE

SECTION BREAK LINE
SAMPLE UNIT BREAK LINE
SLAB JOINT
03 SAMPLE UNIT NUMBER
03 SAMPLE UNIT INSPECTED
03 ADDITIONAL SAMPLE UNIT

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AGENCY: Iowa Department of Transportation
Modal Transportation Bureau - Aviation

LOCATION: Albia Municipal Airport
Albia, Iowa

PAGE TITLE: Network Definition Map

PROJECT DATE:	CREATION DATE:	PROJECT MANAGER:	JOB NUMBER:
SEP. 2021	SEP. 2021	LJR	17-020-AM05
DRAWING SCALE:	LAST MODIFIED DATE:	REVISED BY:	DRAWN BY:
1"=300'	JAN. 2022	DMS	DSP
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Albia.dwg		NET. DEF.	5

PAVEMENT EVALUATION

Pavement Evaluation Procedure

APTech inspected the pavements at Albia Municipal Airport using the PCI procedure described in:

- FAA Advisory Circular 150/5380-6C, *Guidelines and Procedures for Maintenance of Airport Pavements* (https://www.faa.gov/documentLibrary/media/Advisory_Circular/150-5380-6C.pdf).
- FAA Advisory Circular 150/5380-7B, *Airport Pavement Management Program (PMP)* (https://www.faa.gov/documentLibrary/media/Advisory_Circular/150-5380-7B.pdf).
- ASTM D5340-20, *Standard Test Method for Airport Pavement Condition Index Surveys*.

The PCI provides a numerical indication of overall pavement condition, as illustrated in Figure 4. The types and amounts of deterioration are used to calculate the PCI of the section. The PCI ranges from a value of 0, which represents a pavement in a failed condition, to a value of 100, which represents a pavement in excellent condition. It is important to note that factors other than overall PCI need to be considered when identifying the appropriate type of repair, including types of distress present and rate of deterioration. Also, since the PCI does not assess the structural integrity or capacity of the pavement structure, further testing may be needed to validate and refine the treatment strategy.

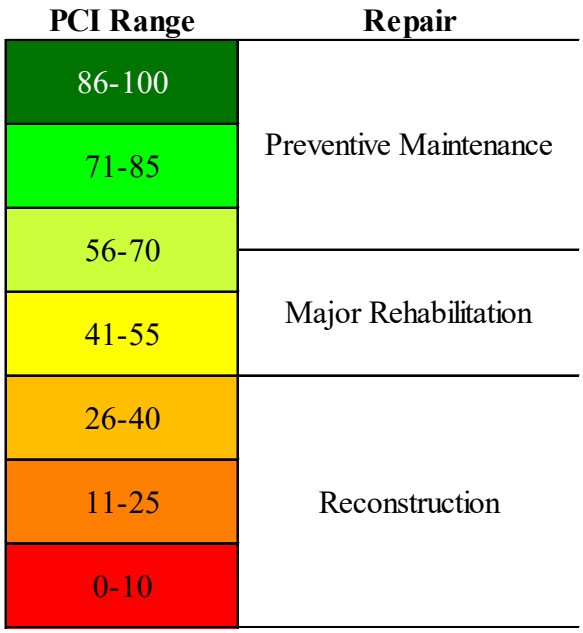
Figure 4. Visual representation of PCI scale on typical pavement surfaces[1].

PCI = 100 PCI = 60 PCI = 35

[1]Photographs shown are not specific to Albia Municipal Airport.

Generally, pavements with relatively high PCIs that are not exhibiting significant load-related distress will benefit from preventive maintenance actions, such as crack sealing or joint resealing. As the PCI drops, the pavements may require major rehabilitation, such as an overlay or whitetopping. In some situations where the PCI has dropped low enough, reconstruction may be the only viable alternative due to the substantial damage to the pavement structure. Figure 5 illustrates how the appropriate repair type varies with the PCI of a pavement section and provides the corresponding colors used for the maps and charts in this report for each range of PCIs.

Figure 5. PCI versus repair type.



The types of distress identified during the PCI inspection provide insight into the cause of pavement deterioration, which in turn helps in selecting a rehabilitation alternative that corrects the cause, thus eliminating or delaying its recurrence. PCI distress types are characterized as load-related (such as alligator cracking on asphalt-surfaced pavements or shattered slabs on portland cement concrete [PCC] pavements), climate/durability-related (such as weathering [a climate-related distress type on asphalt-surfaced pavements] and durability cracking [a durability-related distress type on PCC pavements]), and other (distress types that cannot be attributed solely to load or climate/durability).

Appendix A identifies the distress types considered during a PCI inspection and describes the likely cause of each distress type. It should be noted that a PCI is based on visual signs of pavement deterioration and does not provide a measure of structural capacity.

Pavement Evaluation Results

The pavements at Albia Municipal Airport were inspected in November 2021. The 2021 area-weighted condition of Albia Municipal Airport is 56, with conditions ranging from 15 to 74 (on a scale of 0 [failed] to 100 [excellent]). During the previous pavement inspection in 2018, the area-weighted PCI of the airport was 70.

Figure 6 summarizes the overall condition of the pavements at Albia Municipal Airport, and Figure 7 presents area-weighted condition (average PCI adjusted to account for the relative size of the pavement sections) by branch use. Figure 8 is a map that displays the condition of the evaluated pavements. Table 1 summarizes the results of the pavement evaluation. Appendix B presents photographs taken during the PCI inspection, and Appendix C contains detailed information on the distress types observed during the visual survey. Appendix D includes detailed work history information that was collected during the record review process.

Figure 6. Pavement area by PCI range at Albia Municipal Airport.

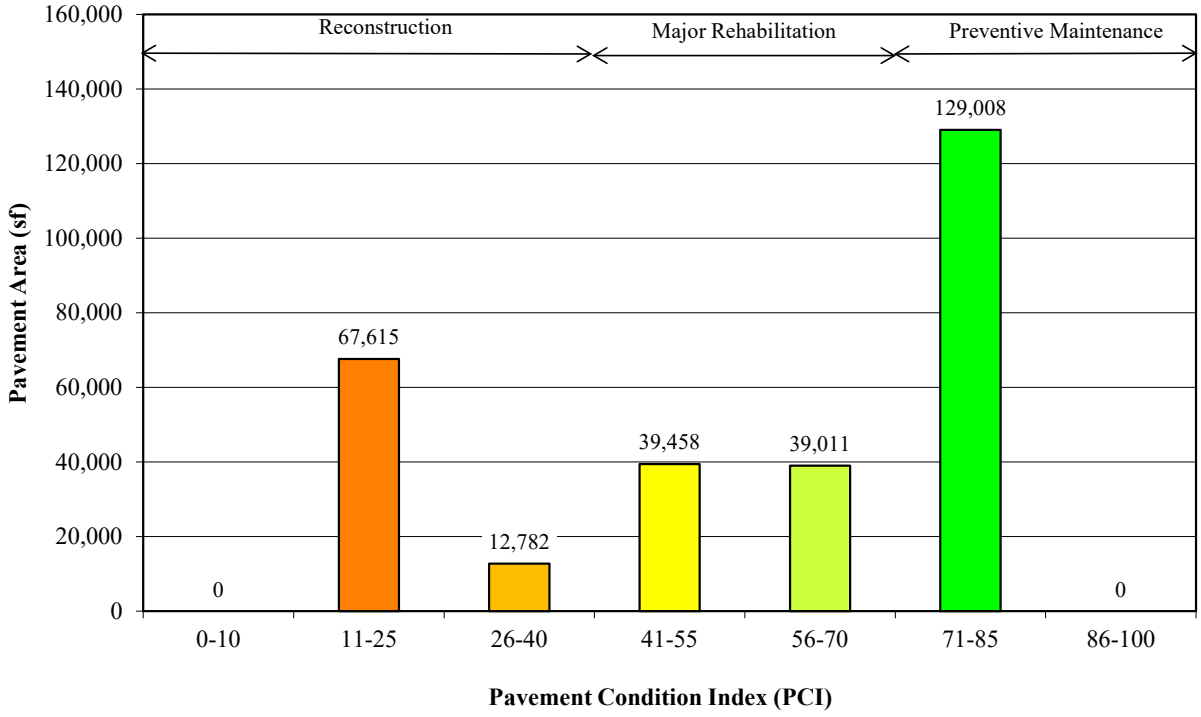


Figure 7. Area-weighted PCI by branch use at Albia Municipal Airport.
(Values on chart are area-weighted)

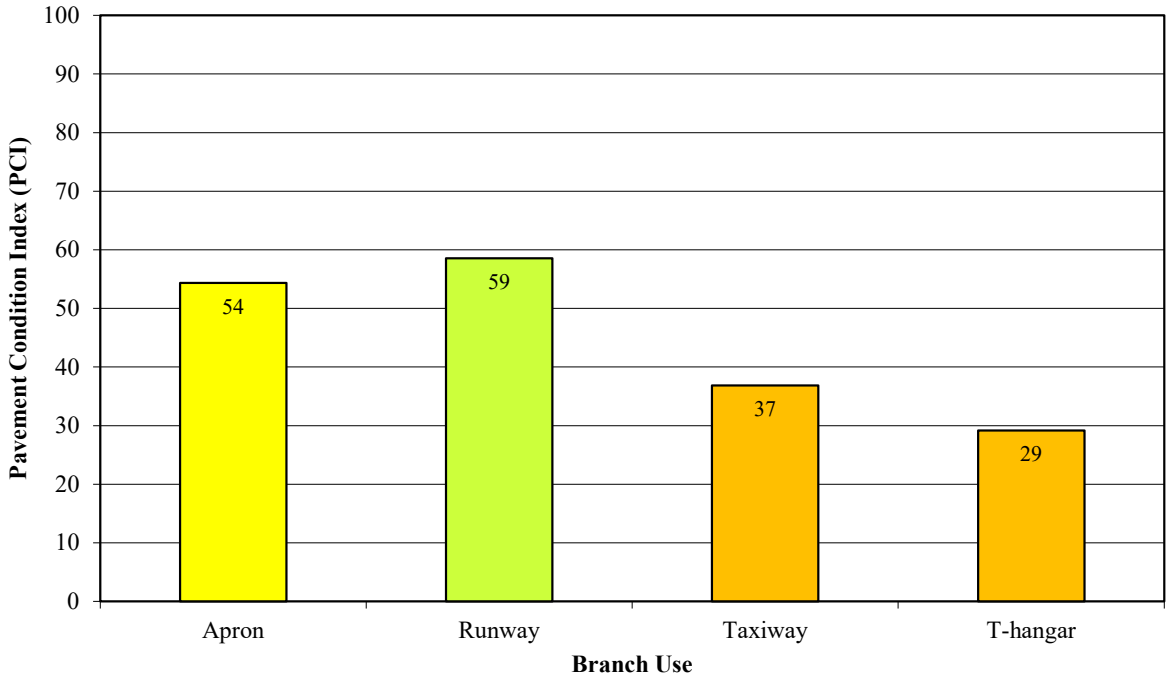
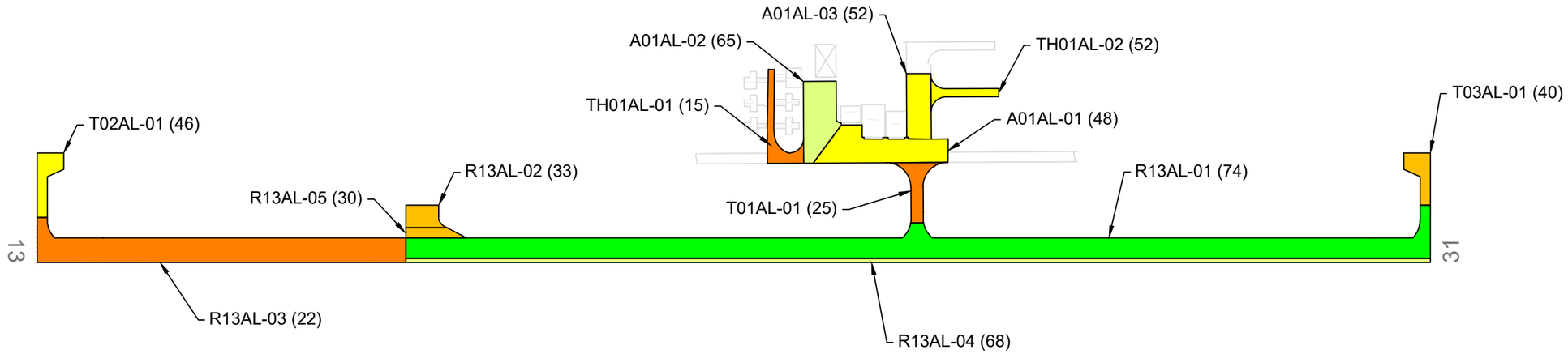


FIGURE 8. PCI MAP.



LEGEND

BRANCH IDENTIFIER
SECTION IDENTIFIER
PCI VALUE
R18AL-01 (71)

SECTION BREAK LINE

PAVEMENT CONDITION INDEX

PCI

86-100
71-85
56-70
41-55
26-40
11-25
0-10

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LOCATION: Albia Municipal Airport
Albia, Iowa

PAGE TITLE: 2021 Pavement Condition Index Map

PROJECT DATE:	CREATION DATE:	PROJECT MANAGER:	JOB NUMBER:
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1"=300'	APR. 2022	DSP	DSP
FILENAME:		LAYOUT NAME/NUMBER:	PAGE NUMBER:
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Table 1. 2021 pavement evaluation results.

Branch	Section	Surface Type	Section Area (sf)	LCD	2021 PCI	% Distress Due to Load	% Distress Due to Climate/ Durability	% Distress Due to Other	Type of Distress
A01AL	01	AAC	20,142	6/1/2003	48	34	63	3	Alligator Cracking, L&T Cracking, Raveling, Rutting, Swelling, Weathering
A01AL	02	AC	14,011	6/4/2003	65	0	74	26	Depression, L&T Cracking, Raveling, Swelling, Weathering
A01AL	03	AC	9,573	6/1/2003	52	48	37	15	Alligator Cracking, Depression, L&T Cracking, Patching, Rutting, Weathering
R13AL	01	AAC	129,008	7/1/2015	74	0	100	0	L&T Cracking, Weathering
R13AL	02	AAC	4,534	5/1/1981	33	0	100	0	L&T Cracking, Raveling
R13AL	03	AC	55,477	1/1/1998	22	21	79	0	Alligator Cracking, L&T Cracking, Raveling, Rutting
R13AL	04	AAC	25,000	7/1/2015	68	0	100	0	L&T Cracking, Weathering
R13AL	05	AAC	3,100	6/1/1981	30	0	100	0	L&T Cracking, Patching, Raveling
T01AL	01	AAC	5,953	6/1/2003	25	59	37	4	Alligator Cracking, Depression, L&T Cracking, Raveling, Rutting, Weathering
T02AL	01	AC	5,898	6/1/2010	46	52	48	0	Alligator Cracking, Raveling, Weathering
T03AL	01	AC	5,148	6/1/2010	40	51	47	2	Alligator Cracking, L&T Cracking, Raveling, Swelling, Weathering
TH01AL	01	AC	6,185	6/4/2003	15	55	45	0	Alligator Cracking, L&T Cracking, Raveling, Rutting, Weathering
TH01AL	02	AC	3,845	1/1/2004	52	25	70	5	Alligator Cracking, L&T Cracking, Raveling, Swelling, Weathering

Table Notes:

1. See Figure 3 for the location of the branch and section.
2. Surface Type: AC = asphalt cement concrete; AAC = asphalt overlay on AC; PCC = portland cement concrete; APC = asphalt overlay on PCC.
3. LCD = last construction date.

Table 1. 2021 pavement evaluation results (continued).

4. Distress due to load includes distress types that are attributed to a structural deficiency in the pavement, such as alligator cracking or rutting on asphalt-surfaced pavements or shattered slabs on PCC pavements.
5. Distress due to climate or durability includes distress types that are attributed to either the aging of the pavement and the effects of the environment (such as weathering, raveling, or block cracking on asphalt-surfaced pavements) or to a materials-related problem (such as durability cracking or alkali-silica reaction [ASR] on PCC pavements). If materials-related distresses were recorded during the inspection, further laboratory testing is required to definitively determine the type present.
6. Distress due to other refers to distress types that are not attributed to one factor but rather may be caused by a combination of factors.
7. Distress types are defined by ASTM D5340-20. L&T Cracking = Longitudinal and Transverse Cracking; LTD Cracking = Longitudinal, Transverse, and Diagonal Cracking; ASR = Alkali-Silica Reaction.

Inspection Comments

Albia Municipal Airport was inspected on November 20, 2021. There were thirteen pavement sections defined during the inspection.

Runway

Runway 13/31 consisted of five sections. Low- and medium-severity longitudinal and transverse (L&T) cracking and weathering were recorded throughout Section 01. Section 02 was in poor condition with areas of low- and medium-severity L&T cracking and medium-severity raveling observed during the inspection. Section 03 was also in poor condition with medium-severity alligator cracking, low- and medium-severity L&T cracking, medium- and high-severity raveling, and low-severity rutting recorded. Low- and medium-severity L&T cracking and low-severity weathering were noted in Section 04. Section 05 was in poor condition with areas of low- and medium-severity L&T cracking and medium-severity patching and raveling observed. The low-severity L&T cracking in all five sections was unsealed. The medium-severity L&T cracking was unsealed with crack widths greater than ¼ in, except for in Section 03 where the medium-severity L&T cracking was due to either unsatisfactory crack sealant, the development of secondary cracking, or unsealed crack widths that exceeded ¼ in.

Taxiways

Taxiway 01 connected the runway to the apron and T-Hangar area and contained one section that was in poor condition. Medium-severity alligator cracking and depression; all severities of L&T cracking; and low-severity raveling, rutting, and weathering were observed in Section 01. The low-severity L&T cracking was unsealed, while the medium-severity L&T cracking was unsealed with crack widths exceeding ¼ in.

Taxiway 02, the turnaround located at the Runway 13 approach, was defined by one section with low-severity alligator cracking and low- and medium-severity raveling and weathering recorded during the inspection.

Taxiway 03, the turnaround at the Runway 31 approach, consisted of one section. Low- and medium-severity alligator cracking and weathering, medium- and high-severity L&T cracking, and low-severity raveling and swelling were noted in Section 01.

Apron

The apron was defined by three sections. Section 01 had areas of low- and medium-severity alligator cracking and L&T cracking, medium- and high-severity raveling and weathering, and low-severity rutting and swelling recorded at the time of the inspection. The low-severity L&T cracking was unsealed and the medium-severity L&T cracking was due to either unsatisfactory crack sealant, the development of secondary cracking, or unsealed crack widths greater than ¼ in. Section 02 had low-severity swelling; medium-severity raveling; and low- and medium-severity weathering, depression, and L&T cracking. The low-severity L&T cracking was unsealed, while the medium-severity L&T cracking was due to either unsatisfactory crack sealant or unsealed crack widths that exceeded ¼ in. Section 03 contained medium-severity alligator cracking and weathering; low-severity patching; and low- and medium-severity depression, L&T cracking, and rutting. The low-severity L&T cracking was unsealed and the medium-severity L&T cracking was due to either unsatisfactory crack sealant or the development of secondary cracking.

T-Hangar

The T-hangar area consisted of two sections. Section 01 was in poor condition with medium- and high-severity alligator cracking and weathering, low- and medium-severity L&T cracking, low- and high-severity raveling, and low-severity rutting. Low-severity alligator cracking, low- and medium-severity L&T cracking, low-severity raveling and swelling, and medium-severity weathering were recorded in Section 02. The low-severity L&T cracking was unsealed in both sections, while the medium-severity L&T cracking was due to either the development of secondary cracking or unsealed crack widths greater than ¼ in. Medium-severity L&T cracking due to unsatisfactory crack sealant was also noted in Section 01.

PAVEMENT MAINTENANCE AND REHABILITATION PROGRAM

Using the information collected during the pavement inspection, the PAVER pavement management software was used to develop a 5-year M&R program for Albia Municipal Airport. In addition, a 1-year plan for localized preventive maintenance (such as crack sealing and patching) was prepared.

Analysis Parameters

Critical PCIs

PAVER uses critical PCIs to determine whether localized preventive maintenance or major rehabilitation is the appropriate repair action. Above the critical PCI, localized preventive maintenance activities are recommended. Below the critical PCI, major rehabilitation actions, such as an overlay or reconstruction, are recommended. The Iowa DOT set the critical PCIs at 65 for runways, 60 for taxiways, and 55 for aprons and T-hangars.

Localized Preventive Maintenance Policies and Unit Costs

Localized preventive maintenance policies were developed for asphalt-surfaced and PCC pavements. These policies, shown in Appendix E, identify the localized preventive maintenance actions that the Iowa DOT considered appropriate to correct for the different distress types and severities. The Iowa DOT provided unit costs for each of the localized preventive maintenance actions included in these policies, and these costs are detailed in Appendix E. Please note that this information is of a general nature for the entire state. The localized preventive maintenance policies and unit costs may require adjustment to reflect specific conditions at Albia Municipal Airport.

Major Rehabilitation Unit Costs

PAVER estimates the cost of major rehabilitation based on the predicted PCI of the pavement section. The Iowa DOT provided the costs for major rehabilitation, and they are presented in Appendix E. If major rehabilitation is recommended in the 5-year program, further engineering investigation will be needed to identify the most appropriate rehabilitation action and to estimate the cost of such work more accurately.

Budget and Inflation Rate

An unlimited budget with a start date of July 1, 2022 and an inflation rate of 4.0 percent was used during the analysis.

Analysis Approach

The 5-year M&R program was prepared with the goal of maintaining the pavements above established critical PCIs. During this analysis, major rehabilitation was recommended for pavements in the year they dropped below their critical PCI. For the first year (2022) of the analysis only, a localized preventive maintenance plan was developed for those pavement sections that were above their critical PCI. If major rehabilitation was triggered for a section in 2023 or 2024, then localized preventive maintenance was not recommended for 2022. While localized preventive maintenance should be an annual undertaking at Albia Municipal Airport, it is not possible to accurately predict the propagation of cracking and other distress types. Therefore, the airport should budget for maintenance every year and can use the 2022 localized

preventive maintenance plan as a baseline for that work. As the pavements age, it can be assumed that the amount of localized preventive maintenance required will increase.

Analysis Results

A summary of the M&R program for Albia Municipal Airport is presented in Table 2. Detailed information on the recommended localized preventive maintenance plan for 2022 is provided in Appendix F.

Table 2. 5-year M&R program under an unlimited funding analysis scenario.

Year	Branch	Section	Surface Type	Type of Repair	Estimated Cost
2022	A01AL	01	AAC	Major Rehabilitation	$142,752
2022	A01AL	02	AC	Preventive Maintenance	$519
2022	A01AL	03	AC	Major Rehabilitation	$47,225
2022	R13AL	01	AAC	Preventive Maintenance	$6,476
2022	R13AL	02	AAC	Major Rehabilitation	$47,219
2022	R13AL	03	AC	Major Rehabilitation	$577,761
2022	R13AL	05	AAC	Major Rehabilitation	$32,285
2022	T01AL	01	AAC	Major Rehabilitation	$61,997
2022	T02AL	01	AC	Major Rehabilitation	$45,745
2022	T03AL	01	AC	Major Rehabilitation	$53,613
2022	TH01AL	01	AC	Major Rehabilitation	$64,413
2022	TH01AL	02	AC	Major Rehabilitation	$18,968
2024	R13AL	04	AAC	Major Rehabilitation	$133,392
				Total Estimated Cost: $1,232,000	

Table Notes:

1. See Figure 3 for the location of the branch and section.
2. Surface Type: AC = asphalt cement concrete; AAC = asphalt overlay on AC; PCC = portland cement concrete; APC = asphalt overlay on PCC.
3. Type of Repair: Major Rehabilitation such as pavement reconstruction or an overlay; Localized Preventive Maintenance such as crack sealing or patching.
4. The estimated costs provided are of a general nature for the entire state and may require adjustment to reflect specific conditions at Albia Municipal Airport.

The recommendations made in this report are based on a broad network-level analysis and meant to provide Albia Municipal Airport with an indication of the type of pavement-related work required during the next 5 years. Further engineering investigation may be necessary to identify which repair action is most appropriate. In addition, the cost estimates provided are based on overall unit costs for the entire state, and Albia Municipal Airport should adjust the plan to reflect local costs.

Because an unlimited budget was used in the analysis, it is possible that the pavement repair program may need to be adjusted to consider economic or operational constraints. The identification of a project need does not necessarily mean that state or federal funding will be

available in the year it is indicated. It is important to remember that regardless of the recommendations presented within this report, Albia Municipal Airport is responsible for repairing pavements where existing conditions pose a hazard to safe operations.

General Maintenance Recommendations

In addition to the specific maintenance actions presented in Appendix F, it is recommended that the following strategies be considered for prolonging pavement life:

1. Regularly inspect all safety areas of the airport and document all inspection activity. A sample form that can be used to perform these inspections is provided in Table 3 of this report.
2. Provide a method of tracking all maintenance activities that occur as a result of inspections. These need to be reported to the FAA and the Iowa DOT. This information is used to update the APMS records and is required to remain in compliance with Public Law 103-305 (see the next section of this report for further information on this law).
3. Conduct an aggressive campaign against weed growth through timely herbicide applications and mowing programs of the safety areas. Vegetation growth in pavement cracks is destructive and significantly increases the rate of pavement deterioration.
4. Implement a periodic crack and joint sealing program. Keeping water and debris out of the pavement system by sealing cracks and joints is a proven and cost-effective method of extending the life of the pavement system.
5. Ensure that dirt does not build up along the edges of the pavements. This can create a "bathtub" effect, reducing the ability of water to drain away from the pavement system.
6. Closely monitor the movement of heavy equipment (particularly farming, construction, and fueling equipment) to make sure it is only operating on pavements that are designed to accommodate heavy loads. Failure to restrict heavy equipment to appropriate areas may result in the premature failure of airport pavements.

FAA Requirements (Public Law 103-305)

Because Albia Municipal Airport is in the National Plan of Integrated Airport Systems (NPIAS), the airport sponsor is required to keep the airport in a viable operating condition. This includes maintaining airport pavements in accordance with Public Law 103-305. Public Law 103-305 states that after January 1, 1995, NPIAS airport sponsors must provide assurances or certifications that an airport has implemented an effective airport pavement maintenance management system (PMMS) before the airport will be considered for federal funding of pavement replacement or reconstruction projects. To be in full compliance with the federal law, the PMMS must include the following components at minimum: pavement inventory, pavement inspections, record keeping, information retrieval, and program funding.

This report serves as a complete pavement inventory and detailed inspection. To remain in compliance with the law, Albia Municipal Airport will also need to undertake monthly drive-by inspections of pavement conditions and track pavement-related maintenance activities.

FAA Advisory Circular 150/5380-7B provides detailed guidance pertaining to the requirements for an acceptable pavement management program (PMP). Appendix A of the FAA Advisory Circular 150/5380-7B outlines what needs to be included in a PMP to remain in compliance with this law and Grant Assurance #11. The following is a copy of this Appendix, along with

instructions for supplementing this report so that all requirements are met. Note that the italicized words are direct quotations from the FAA Advisory Circular.

FAA Advisory Circular 150/5830-7B, Appendix A. Pavement Management Program (PMP)

A-1.0. *An effective PMP specifies the procedures to follow to assure that proper preventative and remedial pavement maintenance is performed. The program should identify funding or anticipated funding and other resources available to provide remedial and preventive maintenance activities. An airport sponsor may use any format deemed appropriate, but the program needs to, as a minimum, include the following:*

A-1.1. Pavement Inventory. *The following must be depicted:*

a. Identification of all runways, taxiways, and aprons with pavement broken down into sections each having similar properties.

The network definition map provided in Figure 3 of this report shows the location of all runways, taxiways, aprons, and T-hangars at Albia Municipal Airport. If any new pavements are constructed or any pavement areas are permanently closed, this map must be updated. Project plans should be submitted to the Iowa DOT after project completion.

b. Dimensions of pavement sections.

The dimensions of all runways, taxiways, aprons, and T-hangars are stored in the PAVER database. Appendix C provides information on length, width, and area. In addition, the network definition map (Figure 3) is drawn to scale. Any changes to pavement dimensions must be recorded.

c. Type of pavement surface.

The type of pavement for each section at Albia Municipal Airport is listed in Table 1 of this report and is also stored in the PAVER database. Any changes to pavement type (through an overlay or reconstruction) must be recorded.

d. Year of construction and/or most recent major rehabilitation.

Dates for pavement construction, rehabilitation, or reconstruction must be recorded. The current pavement history for Albia Municipal Airport is provided in Appendix D of this report.

e. Whether AIP [Airport Improvement Program] or PFC [Passenger Facility Charge] funds were used to construct, reconstruct, or repair the pavement.

Funding sources for all pavement projects should be recorded.

A-1.2. PMP Pavement Inspection Schedule. *Airports must perform a detailed inspection of airfield pavements at least once a year for the PMP. If a pavement condition index (PCI) survey is performed, as set forth in ASTM D5340, Standard Test Method for Airport Pavement Condition Index Surveys, the frequency of the detailed inspection by PCI surveys may be extended to three years. Less comprehensive routine daily, weekly, and monthly maintenance inspections required for operations should be addressed.*

This report consists of a detailed inspection that will extend the inspection period to 3 years. It is the airport sponsor's responsibility to perform monthly drive-by inspections. A sample pavement inspection report form is provided in Table 3 of this report.

A-1.3. Record Keeping. *The airport must record and keep on file complete information about all detailed inspections and maintenance performed until the pavement system is replaced. The types of distress, their locations, and remedial action, scheduled or performed, must be documented. The minimum information recorded includes:*

a. *Inspection date*

b. Location

c. Distress types

d. Maintenance scheduled or performed

Items a through c are satisfied by this inspection report. Item d is the responsibility of the airport, as is record keeping of the monthly drive-by inspections.

A-1.4. Information Retrieval. *An airport sponsor may use any form of record keeping it deems appropriate so long as the information and records from the pavement survey can generate required reports, as necessary.*

Keep this report, monthly drive-by inspection reports, construction updates, and all records of maintenance activities in a readily accessible location so that they can be easily retrieved as requested by the FAA.

Table 3. Pavement inspection report.

Inspected By: _____

Date Inspected: _____

Branch	Section	Distress Description/Dimensions/Severity/ Recommended Action	Description of Repair	Date Performed	Cost	Funding Source
A01AL	01					
A01AL	02					
A01AL	03					
R13AL	01					
R13AL	02					
R13AL	03					

Table 3. Pavement inspection report (continued).

Inspected By: _____

Date Inspected: _____

Branch	Section	Distress Description/Dimensions/Severity/ Recommended Action	Description of Repair	Date Performed	Cost	Funding Source
R13AL	04					
R13AL	05					
T01AL	01					
T02AL	01					
T03AL	01					
TH01AL	01					

Table 3. Pavement inspection report (continued).

Inspected By: _____

Date Inspected: _____

Branch	Section	Distress Description/Dimensions/Severity/ Recommended Action	Description of Repair	Date Performed	Cost	Funding Source
TH01AL	02					

Table Notes:

1. See Figure 3 for the location of the branch and section.

SUMMARY

This report documents the results of the pavement evaluation conducted at Albia Municipal Airport. A visual inspection of the pavements in 2021 found that the overall condition of the pavement network is a PCI of 56. A 5-year pavement repair program, shown in Table 2, was generated for Albia Municipal Airport, which revealed that approximately $1,232,000 needs to be expended on M&R. Albia Municipal Airport should utilize these study results to assist in planning for future maintenance needs as part of the airport CIP planning process.

APPENDIX A

CAUSE OF DISTRESS TABLES

Table A-1. Cause of pavement distress, asphalt-surfaced pavements.

Distress Type	Probable Cause of Distress
Alligator Cracking	Fatigue failure of the asphalt surface under repeated traffic loading.
Bleeding	Excessive amounts of asphalt cement or tars in the mix or low air void content, or both.
Block Cracking	Shrinkage of the asphalt and daily temperature cycling; it is not load associated.
Corrugation	Traffic action combined with an unstable pavement layer.
Depression	Settlement of the foundation soil or can be "built up" during construction.
Jet-Blast Erosion	Bituminous binder has been burned or carbonized.
Joint Reflection Cracking	Movement of the concrete slab beneath the asphalt surface due to thermal and moisture changes.
L&T Cracking	Cracks may be caused by (1) a poorly constructed paving lane joint, (2) shrinkage of the asphalt surface due to low temperatures or hardening of the asphalt, or (3) reflective cracking caused by cracks in an underlying PCC slab.
Oil Spillage	Deterioration or softening of the pavement surface caused by the spilling of oil, fuel, or other solvents.
Patching	N/A
Polished Aggregate	Repeated traffic applications.
Raveling	Asphalt binder may have hardened significantly, causing coarse aggregate pieces to dislodge.
Rutting	Usually caused by consolidation or lateral movement of the materials due to traffic loads.
Shoving	Where PCC pavements adjoin flexible pavements, PCC "growth" may shove the asphalt pavement.
Slippage Cracking	Low strength surface mix or poor bond between the surface and the next layer of the pavement structure.
Swelling	Usually caused by frost action or by swelling soil.
Weathering	Asphalt binder and/or fine aggregate may wear away as the pavement ages and hardens.

Table A-2. Cause of pavement distress, PCC pavements.

Distress Type	Probable Cause of Distress
ASR	Chemical reaction of alkalis in the portland cement with certain reactive silica minerals. ASR may be accelerated by the use of chemical pavement deicers.
Blowup	Incompressible materials in the joints.
Corner Break	Load repetition combined with loss of support and curling stresses.
Durability Cracking	Concrete's inability to withstand environmental factors such as freeze-thaw cycles.
Faulting	Upheaval or consolidation.
Joint Seal Damage	Stripping of joint sealant, extrusion of joint sealant, weed growth, hardening of the filler (oxidation), loss of bond to the slab edges, or absence of sealant in the joint.
LTD Cracking	Combination of load repetition, curling stresses, and shrinkage stresses.
Patching (Small and Large)	N/A
Popouts	Freeze-thaw action in combination with expansive aggregates.
Pumping	Poor drainage, poor joint sealant.
Scaling	Over finishing of concrete, deicing salts, improper construction, freeze-thaw cycles, and poor aggregate.
Shattered Slab	Load repetition.
Shrinkage Cracking	Setting and curing of the concrete.
Spalling (Joint and Corner)	Excessive stresses at the joint caused by infiltration of incompressible materials or traffic loads; weak concrete at the joint combined with traffic loads.

APPENDIX B

INSPECTION PHOTOGRAPHS

A01AL-01. Overview.

A01AL-01. L&T Cracking (Sample Unit No. 02).

A01AL-01. Swelling (Sample Unit No. 04).

A01AL-01. Weathering (Sample Unit No. 02).

A01AL-02. Overview.

A01AL-02. Depression (Sample Unit No. 01).

A01AL-02. L&T Cracking (Sample Unit No. 01).

A01AL-02. Weathering (Sample Unit No. 01).

A01AL-03. Overview.

A01AL-03. Depression (Sample Unit No. 02).

A01AL-03. Weathering (Sample Unit No. 02).

R13AL-01. Overview.

R13AL-01. L&T Cracking (Sample Unit No. 04).

R13AL-01. Weathering (Sample Unit No. 04).

R13AL-02. L&T Cracking (Sample Unit No. 01).

R13AL-02. Raveling (Sample Unit No. 01).

R13AL-03. Overview.

R13AL-03. L&T Cracking (Sample Unit No. 01).

R13AL-03. Raveling (Sample Unit No. 01).

R13AL-03. Raveling (Sample Unit No. 03).

R13AL-03. Rutting (Sample Unit No. 03).

R13AL-04. Overview.

R13AL-04. L&T Cracking (Sample Unit No. 04).

R13AL-04. Weathering (Sample Unit No. 04).

R13AL-05. Overview.

R13AL-05. L&T Cracking (Sample Unit No. 01).

R13AL-05. Patching (Sample Unit No. 01).

R13AL-05. Raveling (Sample Unit No. 01).

T01AL-01. Overview.

T01AL-01. Alligator Cracking (Sample Unit No. 01).

T01AL-01. Weathering (Sample Unit No. 01).

T02AL-01. Overview.

T02AL-01. Alligator Cracking (Sample Unit No. 01).

T02AL-01. Weathering (Sample Unit No. 01).

T03AL-01. Overview.

T03AL-01. L&T Cracking (Sample Unit No. 01).

T03AL-01. Raveling (Sample Unit No. 01).

TH01AL-01. Overview.

TH01AL-01. Alligator Cracking (Sample Unit No. 01).

TH01AL-02. Overview.

TH01AL-02. Swelling (Sample Unit No. 01).

APPENDIX C

INSPECTION REPORT

RE-INSPECTION REPORT
ALBIA MUNICIPAL AIRPORT

Branch - Section ID: A01AL - 01

Branch Name: APRON Use: APRON

LCD: 6/1/2003
Surface Type: AAC
Rank: P
Section Area (sf): 20,142.00
Length (ft): 329.00
Width (ft): 57.00
From: TAXIWAY
To: AIRCRAFT HANGERS

PCI Family: IowaAACAPSouthern

Slabs:
Slab Length (ft):
Slab Width (ft):
Joint Length (ft):

Section Comments:

Last Insp Date: 11/20/2021
PCI: 48
Total Samples: 6
Surveyed: 4

Inspection Comments:

Sample Number: 02

Sample Type: R
Sample PCI: 58
Sample Area (SF): 3,000

Sample Comments:

41 ALLIGATOR CR	M	15	SF	
48 L & T CR	L	160	Ft	lu
48 L & T CR	M	100	Ft	w sec
57 WEATHERING	M	3,000	SF	

Sample Number: 03

Sample Type: R
Sample PCI: 59
Sample Area (SF): 3,000

Sample Comments:

48 L & T CR	L	93	Ft	lu
48 L & T CR	M	160	Ft	w veg sec
56 SWELLING	L	50	SF	
57 WEATHERING	M	3,000	SF	

Sample Number: 04

Sample Type: R
Sample PCI: 54
Sample Area (SF): 3,560

Sample Comments:

41 ALLIGATOR CR	L	65	SF	edge
48 L & T CR	L	120	Ft	lu
48 L & T CR	M	70	Ft	w veg sec fs
56 SWELLING	L	65	SF	
57 WEATHERING	M	3,560	SF	

RE-INSPECTION REPORT
ALBIA MUNICIPAL AIRPORT

Sample Number: 05

Sample Type: R
Sample PCI: 27
Sample Area (SF): 4,225

Sample Comments:

41 ALLIGATOR CR	M	42	SF	
48 L & T CR	M	185	Ft	fs w sec
52 RAVELING	H	140	SF	
52 RAVELING	M	210	SF	
53 RUTTING	L	60	SF	
56 SWELLING	L	120	SF	
57 WEATHERING	H	190	SF	
57 WEATHERING	M	3,685	SF	

RE-INSPECTION REPORT
ALBIA MUNICIPAL AIRPORT

Branch - Section ID: A01AL - 02

Branch Name: APRON Use: APRON

LCD: 6/4/2003
Surface Type: AC
Rank: P
Section Area (sf): 14,011.00
Length (ft): 200.00
Width (ft): 80.00
From: A01AL-01
To: ..

PCI Family: IowaACAPSouthern

Slabs:
Slab Length (ft):
Slab Width (ft):
Joint Length (ft):

Section Comments:

Last Insp Date: 11/20/2021
PCI: 65
Total Samples: 3
Surveyed: 3

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 54
Sample Area (SF): 4,210

Sample Comments:

45 DEPRESSION	L	30	SF	
45 DEPRESSION	M	80	SF	
48 L & T CR	L	187	Ft	lu
48 L & T CR	M	60	Ft	w veg
52 RAVELING	M	20	SF	
56 SWELLING	L	10	SF	
57 WEATHERING	M	4,190	SF	

Sample Number: 02

Sample Type: R
Sample PCI: 69
Sample Area (SF): 5,001

Sample Comments:

45 DEPRESSION	L	10	SF	
48 L & T CR	L	67	Ft	lu
48 L & T CR	M	30	Ft	fs w
57 WEATHERING	L	2,000	SF	
57 WEATHERING	M	3,001	SF	

Sample Number: 03

Sample Type: R
Sample PCI: 72
Sample Area (SF): 4,800

Sample Comments:

45 DEPRESSION	L	10	SF	
48 L & T CR	L	58	Ft	lu
56 SWELLING	L	31	SF	
57 WEATHERING	L	960	SF	
57 WEATHERING	M	3,840	SF	

Branch - Section ID: A01AL - 03

Branch Name: APRON Use: APRON

LCD: 6/1/2003
Surface Type: AC
Rank: P
Section Area (sf): 9,573.00
Length (ft): 156.00
Width (ft): 60.00
From: A01AL-01
To: ..

PCI Family: IowaACAPSouthern

Slabs:
Slab Length (ft):
Slab Width (ft):
Joint Length (ft):

Section Comments:

Last Insp Date: 11/20/2021
PCI: 52
Total Samples: 2
Surveyed: 2

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 63
Sample Area (SF): 4,773

Sample Comments:

45 DEPRESSION	L	30	SF	
48 L & T CR	L	80	Ft	lu
48 L & T CR	M	50	Ft	fs sec veg
50 PATCHING	L	30	SF	
57 WEATHERING	M	4,743	SF	

Sample Number: 02

Sample Type: R
Sample PCI: 42
Sample Area (SF): 4,800

Sample Comments:

41 ALLIGATOR CR	M	60	SF	
45 DEPRESSION	M	75	SF	
48 L & T CR	L	123	Ft	lu
53 RUTTING	L	30	SF	
53 RUTTING	M	20	SF	
57 WEATHERING	M	4,800	SF	

Branch - Section ID: R13AL - 01

Branch Name: RUNWAY 13/31 Use: RUNWAY

LCD: 7/1/2015
Surface Type: AAC
Rank: P
Section Area (sf): 129,008.00
Length (ft): 2,500.00
Width (ft): 50.00
From: 31 END OF RUNWAY
To: 13 END OF RUNWAY

PCI Family: IowaAACRWSE

Slabs:
Slab Length (ft):
Slab Width (ft):
Joint Length (ft):

Section Comments:

Last Insp Date: 11/20/2021
PCI: 74
Total Samples: 26
Surveyed: 6

Inspection Comments:

Sample Number: 004

Sample Type: R
Sample PCI: 73
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	210	Ft	lu
48 L & T CR	M	120	Ft	w
57 WEATHERING	L	5,000	SF	

Sample Number: 007

Sample Type: R
Sample PCI: 73
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	158	Ft	lu
48 L & T CR	M	110	Ft	w
57 WEATHERING	L	5,000	SF	

Sample Number: 011

Sample Type: R
Sample PCI: 73
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	150	Ft	lu
48 L & T CR	M	95	Ft	w
57 WEATHERING	L	4,978	SF	
57 WEATHERING	M	22	SF	

Sample Number: 015

Sample Type: R
Sample PCI: 75
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	203	Ft	lu
48 L & T CR	M	80	Ft	w
57 WEATHERING	L	4,977	SF	
57 WEATHERING	M	23	SF	

Sample Number: 021

Sample Type: R
Sample PCI: 77
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	200	Ft	lu
48 L & T CR	M	70	Ft	w
57 WEATHERING	L	5,000	SF	

Sample Number: 025

Sample Type: R
Sample PCI: 71
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	175	Ft	lu
48 L & T CR	M	125	Ft	w
57 WEATHERING	L	4,957	SF	
57 WEATHERING	M	43	SF	

RE-INSPECTION REPORT
ALBIA MUNICIPAL AIRPORT

Branch - Section ID: R13AL - 02

Branch Name: RUNWAY 13/31 Use: RUNWAY

LCD: 5/1/1981
Surface Type: AAC
Rank: P
Section Area (sf): 4,534.00
Length (ft): 80.00
Width (ft): 56.00
From: RUNWAY END 13
To: END OF TURNAROUND

PCI Family: IowaAACRWSE

Slabs:
Slab Length (ft):
Slab Width (ft):
Joint Length (ft):

Section Comments:

Last Insp Date: 11/20/2021
PCI: 33
Total Samples: 1
Surveyed: 1

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 33
Sample Area (SF): 4,534

Sample Comments:

48 L & T CR	L	220	Ft	lu
48 L & T CR	M	90	Ft	w veg
52 RAVELING	M	4,534	SF	

RE-INSPECTION REPORT
ALBIA MUNICIPAL AIRPORT

Branch - Section ID: R13AL - 03

Branch Name: RUNWAY 13/31 Use: RUNWAY

LCD: 1/1/1998
Surface Type: AC
Rank: P
Section Area (sf): 55,477.00
Length (ft): 900.00
Width (ft): 60.00
From: RUNWAY 13AL-05
To: END OF RUNWAY

PCI Family: IowaACRWSouthern

Slabs:
Slab Length (ft):
Slab Width (ft):
Joint Length (ft):

Section Comments:

Last Insp Date: 11/20/2021
PCI: 22
Total Samples: 9
Surveyed: 4

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 19
Sample Area (SF): 6,000

Sample Comments:

41 ALLIGATOR CR	M	120	SF	
48 L & T CR	L	47	Ft	lu
48 L & T CR	M	600	Ft	
52 RAVELING	M	6,000	SF	
53 RUTTING	L	50	SF	

Sample Number: 03

Sample Type: R
Sample PCI: 20
Sample Area (SF): 6,000

Sample Comments:

48 L & T CR	L	120	Ft	u
48 L & T CR	M	450	Ft	fs, sec crk, w
52 RAVELING	H	6,000	SF	
53 RUTTING	L	100	SF	

Sample Number: 05

Sample Type: R
Sample PCI: 25
Sample Area (SF): 6,000

Sample Comments:

48 L & T CR	L	130	Ft	lu
48 L & T CR	M	460	Ft	fs,sec crk
52 RAVELING	H	6,000	SF	

Sample Number: 08

Sample Type: R
Sample PCI: 25
Sample Area (SF): 6,000

Sample Comments:

48 L & T CR	L	8	Ft	lu
48 L & T CR	M	445	Ft	fs,sec crk
52 RAVELING	H	6,000	SF	

Branch - Section ID: R13AL - 04

Branch Name: RUNWAY 13/31 Use: RUNWAY

LCD: 7/1/2015
Surface Type: AAC
Rank: P
Section Area (sf): 25,000.00
Length (ft): 2,500.00
Width (ft): 10.00
From: END OF RUNWAY
To: R13AL-03

PCI Family: IowaAACRWSE

Slabs:
Slab Length (ft):
Slab Width (ft):
Joint Length (ft):

Section Comments: FOLLOWS SW EDGE OF RUNWAY 13

Last Insp Date: 11/20/2021
PCI: 68
Total Samples: 5
Surveyed: 4

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 68
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	450	Ft	lu
48 L & T CR	M	75	Ft	w
57 WEATHERING	L	5,000	SF	

Sample Number: 02

Sample Type: R
Sample PCI: 67
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	480	Ft	lu
48 L & T CR	M	90	Ft	w veg
57 WEATHERING	L	5,000	SF	

Sample Number: 03

Sample Type: R
Sample PCI: 72
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	505	Ft	lu
57 WEATHERING	L	5,000	SF	

Sample Number: 04

Sample Type: R
Sample PCI: 66
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	510	Ft	lu
48 L & T CR	M	25	Ft	
57 WEATHERING	L	5,000	SF	

RE-INSPECTION REPORT
ALBIA MUNICIPAL AIRPORT

Branch - Section ID: R13AL - 05

Branch Name: RUNWAY 13/31 Use: RUNWAY

LCD: 6/1/1981
Surface Type: AAC
Rank: P
Section Area (sf): 3,100.00
Length (ft): 125.00
Width (ft): 25.00
From: SEE MAP
To: SEE MAP

PCI Family: IowaAACRWSE

Slabs:
Slab Length (ft):
Slab Width (ft):
Joint Length (ft):

Section Comments:

Last Insp Date: 11/20/2021
PCI: 30
Total Samples: 1
Surveyed: 1

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 30
Sample Area (SF): 3,100

Sample Comments:

48 L & T CR	L	70	Ft	lu veg
48 L & T CR	M	320	Ft	w veg
50 PATCHING	M	90	SF	
52 RAVELING	M	3,010	SF	

RE-INSPECTION REPORT
ALBIA MUNICIPAL AIRPORT

Branch - Section ID: T01AL - 01

Branch Name: TAXIWAY 01 Use: TAXIWAY

LCD: 6/1/2003
Surface Type: AAC
Rank: P
Section Area (sf): 5,953.00
Length (ft): 145.00
Width (ft): 30.00
From: RUNWAY 13/31
To: APRON

PCI Family: IowaAACTWSE

Slabs:
Slab Length (ft):
Slab Width (ft):
Joint Length (ft):

Section Comments:

Last Insp Date: 11/20/2021
PCI: 25
Total Samples: 1
Surveyed: 1

Inspection Comments:

Sample Number: 001

Sample Type: R
Sample PCI: 25
Sample Area (SF): 5,953

Sample Comments:

41 ALLIGATOR CR	M	370	SF	
45 DEPRESSION	M	6	SF	
48 L & T CR	H	1	Ft	1ft
48 L & T CR	L	120	Ft	lu
48 L & T CR	M	102	Ft	w veg
52 RAVELING	L	800	SF	
53 RUTTING	L	300	SF	
57 WEATHERING	L	5,953	SF	

RE-INSPECTION REPORT
ALBIA MUNICIPAL AIRPORT

Branch - Section ID: T02AL - 01

Branch Name: TAXIWAY 02 Use: TAXIWAY

LCD: 6/1/2010
Surface Type: AC
Rank: P
Section Area (sf): 5,898.00
Length (ft): 160.00
Width (ft): 35.00
From: RUNWAY END
To: END

PCI Family: IowaACTWSouthern

Slabs:
Slab Length (ft):
Slab Width (ft):
Joint Length (ft):

Section Comments:

Last Insp Date: 11/20/2021
PCI: 46
Total Samples: 1
Surveyed: 1

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 46
Sample Area (SF): 5,898

Sample Comments:

41 ALLIGATOR CR	L	286	SF	edge
52 RAVELING	L	500	SF	
52 RAVELING	M	300	SF	
57 WEATHERING	L	5,398	SF	
57 WEATHERING	M	200	SF	

Branch - Section ID: T03AL - 01

Branch Name: TAXIWAY 03 Use: TAXIWAY

LCD: 6/1/2010
Surface Type: AC
Rank: P
Section Area (sf): 5,148.00
Length (ft): 167.00
Width (ft): 30.00
From: RUNWAY END
To: END

PCI Family: IowaACTWSouthern

Slabs:
Slab Length (ft):
Slab Width (ft):
Joint Length (ft):

Section Comments:

Last Insp Date: 11/20/2021
PCI: 40
Total Samples: 1
Surveyed: 1

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 40
Sample Area (SF): 5,148

Sample Comments:

41 ALLIGATOR CR	L	199	SF	edge
41 ALLIGATOR CR	M	24	SF	
48 L & T CR	H	12	Ft	1ft
48 L & T CR	M	14	Ft	
52 RAVELING	L	5,148	SF	
56 SWELLING	L	24	SF	
57 WEATHERING	L	5,120	SF	
57 WEATHERING	M	28	SF	

RE-INSPECTION REPORT
ALBIA MUNICIPAL AIRPORT

Branch - Section ID: TH01AL - 01

Branch Name: T-HANGAR 01 Use: T-HANGAR

LCD: 6/4/2003
Surface Type: AC
Rank: P
Section Area (sf): 6,185.00
Length (ft): 300.00
Width (ft): 15.00
From: SEE MAP
To: SEE MAP

PCI Family: IowaASPHALTTHSouthern

Slabs:
Slab Length (ft):
Slab Width (ft):
Joint Length (ft):

Section Comments:

Last Insp Date: 11/20/2021
PCI: 15
Total Samples: 1
Surveyed: 1

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 15
Sample Area (SF): 6,185

Sample Comments:

41 ALLIGATOR CR	H	42	SF	
41 ALLIGATOR CR	M	1,170	SF	
48 L & T CR	L	160	Ft	lu
48 L & T CR	M	150	Ft	w fs sec
52 RAVELING	H	80	SF	
52 RAVELING	L	619	SF	
53 RUTTING	L	20	SF	
57 WEATHERING	H	200	SF	
57 WEATHERING	M	5,905	SF	

RE-INSPECTION REPORT
ALBIA MUNICIPAL AIRPORT

Branch - Section ID: TH01AL - 02

Branch Name: T-HANGAR 01 Use: T-HANGAR

LCD: 1/1/2004
Surface Type: AC
Rank: P
Section Area (sf): 3,845.00
Length (ft): 165.00
Width (ft): 20.00
From: SEE MAP
To: SEE MAP

PCI Family: IowaASPHALTTHSouthern

Slabs:
Slab Length (ft):
Slab Width (ft):
Joint Length (ft):

Section Comments:

Last Insp Date: 11/20/2021
PCI: 52
Total Samples: 1
Surveyed: 1

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 52
Sample Area (SF): 3,845

Sample Comments:

41 ALLIGATOR CR	L	40	SF	swelling in same location
48 L & T CR	L	25	Ft	lu
48 L & T CR	M	20	Ft	w veg sec
52 RAVELING	L	3,845	SF	
56 SWELLING	L	60	SF	
57 WEATHERING	M	3,845	SF	

APPENDIX D

WORK HISTORY REPORT

Work History

Pavement Database: IA 2021

Network: ALBIA MUNICIPAL AIRPORT

Branch - Section ID: A01AL - 01

LCD: 6/1/2003
Use: APRON
Rank: P
Surface: AAC

Length (ft): 329.00
Width (ft): 57.00
True Area (sf): 20,142.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
09-18-2008	CS-AC	Crack Sealing - AC	$5,420.00	0.00	False	Total Project Cost: $77,425
06-01-2003	OL-AT	Overlay - AC Thin	$0.00	0.00	True	-
06-01-1981	NC-AC	New Construction - AC	$0.00	0.00	True	-

Branch - Section ID: A01AL - 02

LCD: 6/4/2003
Use: APRON
Rank: P
Surface: AC

Length (ft): 200.00
Width (ft): 80.00
True Area (sf): 14,011.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
09-18-2008	CS-AC	Crack Sealing - AC	$3,871.00	0.00	False	Total Project Cost: $77,425
06-04-2003	NC-AC	New Construction - AC	$0.00	2.00	True	2" P-401 AC SURFACE
06-03-2003	BA-BI	Base Course - Bituminous	$0.00	2.00	False	2" P-401 AC BASE
06-02-2003	BA-AG	Base Course - Aggregate	$0.00	6.00	False	6" P-209 CABC
06-01-2003	SG-ST	Subgrade - Stabilized	$0.00	8.00	False	8" P-155 FLY ASH TREATED SUBGRADE

Branch - Section ID: A01AL - 03

LCD: 6/1/2003
Use: APRON
Rank: P
Surface: AC

Length (ft): 156.00
Width (ft): 60.00
True Area (sf): 9,573.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
06-01-2016	PA-AS	Patching - AC Shallow	$0.00	0.00	False	FIELD ESTIMATE
06-01-2003	NU-IN	New Construction - Initial	$0.00	0.00	True	-

Branch - Section ID: R13AL - 01

LCD: 7/1/2015
Use: RUNWAY
Rank: P
Surface: AAC

Length (ft): 2,500.00
Width (ft): 50.00
True Area (sf): 129,008.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
07-01-2015	OL-AS	Overlay - AC Structural	$0.00	3.00	True	3' P401 OVERLAY
09-18-2008	CS-AC	Crack Sealing - AC	$37,938.00	0.00	False	Total Project Cost: $77,425
06-01-1981	OL-AC	Overlay - AC	$0.00	4.00	True	4" P401 AC OVERLAY
06-04-1966	NC-AC	New Construction - AC	$0.00	2.00	True	2" P401 AC
06-03-1966	BA-AG	Base Course - Aggregate	$0.00	6.00	False	6" P209 CABC
06-02-1966	SB-AG	Subbase - Aggregate	$0.00	4.00	False	4" P154 SUBBASE
06-01-1966	SG-CO	Subgrade - Compacted	$0.00	0.00	False	P152

Work History

Pavement Database: IA 2021

Branch - Section ID: R13AL - 02

LCD: 5/1/1981
Use: RUNWAY
Rank: P
Surface: AAC

Length (ft): 80.00
Width (ft): 56.25
True Area (sf): 4,534.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
09-18-2008	CS-AC	Crack Sealing - AC	$1,549.00	0.00	False	Total Project Cost: $77,425
05-01-1981	OL-AC	Overlay - AC	$0.00	0.00	True	EST
06-04-1966	NC-AC	New Construction - AC	$0.00	2.00	True	2" AC
06-03-1966	BA-AG	Base Course - Aggregate	$0.00	6.00	False	6" P209 CABC
06-02-1966	SB-AG	Subbase - Aggregate	$0.00	4.00	False	4" P154 SUBBASE
06-01-1966	SG-CO	Subgrade - Compacted	$0.00	0.00	False	P152

Branch - Section ID: R13AL - 03

LCD: 1/1/1998
Use: RUNWAY
Rank: P
Surface: AC

Length (ft): 900.00
Width (ft): 60.00
True Area (sf): 55,477.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
09-18-2008	CS-AC	Crack Sealing - AC	$17,808.00	0.00	False	Total Project Cost: $77,425
01-01-1998	NU-IN	New Construction - Initial	$0.00	0.00	True	-

Branch - Section ID: R13AL - 04

LCD: 7/1/2015
Use: RUNWAY
Rank: P
Surface: AAC

Length (ft): 2,500.00
Width (ft): 10.00
True Area (sf): 25,000.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
07-01-2015	OL-AS	Overlay - AC Structural	$0.00	3.00	True	3" P-401 AC OVERLAY (ASSUMED MAT.)
09-18-2008	CS-AC	Crack Sealing - AC	$6,968.00	0.00	False	Total Project Cost: $77,425
01-01-1998	NC-AC	New Construction - AC	$0.00	0.00	True	-

Branch - Section ID: R13AL - 05

LCD: 6/1/1981
Use: RUNWAY
Rank: P
Surface: AAC

Length (ft): 125.00
Width (ft): 25.00
True Area (sf): 3,100.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
09-18-2008	CS-AC	Crack Sealing - AC	$37,938.00	0.00	False	Total Project Cost: $77,425
06-01-1981	OL-AC	Overlay - AC	$0.00	4.00	True	-
06-04-1966	NC-AC	New Construction - AC	$0.00	2.00	True	2" AC
06-03-1966	BA-AG	Base Course - Aggregate	$0.00	6.00	False	6" P209 CABC
06-02-1966	SB-AG	Subbase - Aggregate	$0.00	4.00	False	4" P154 SUBBASE
06-01-1966	SG-CO	Subgrade - Compacted	$0.00	0.00	False	P152

Work History

Pavement Database: IA 2021

Branch - Section ID: T01AL - 01

LCD: 6/1/2003
Use: TAXIWAY
Rank: P
Surface: AAC

Length (ft): 145.00
Width (ft): 30.00
True Area (sf): 5,953.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
09-18-2008	CS-AC	Crack Sealing - AC	$2,323.00	0.00	False	Total Project Cost: $77,425
06-01-2003	OL-AT	Overlay - AC Thin	$0.00	0.00	True	-
06-01-1981	OL-AC	Overlay - AC	$0.00	0.00	True	-
06-04-1966	NC-AC	New Construction - AC	$0.00	2.00	True	2" AC
06-03-1966	BA-AG	Base Course - Aggregate	$0.00	6.00	False	6" P209 CABC
06-02-1966	SB-AG	Subbase - Aggregate	$0.00	4.00	False	4" P154 SUBBASE
06-01-1966	SG-CO	Subgrade - Compacted	$0.00	0.00	False	P152

Branch - Section ID: T02AL - 01

LCD: 6/1/2010
Use: TAXIWAY
Rank: P
Surface: AC

Length (ft): 160.00
Width (ft): 35.00
True Area (sf): 5,898.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
06-01-2010	NU-IN	New Construction - Initial	$0.00	2.00	True	2" P-401
05-31-2010	BA-BI	Base Course - Bituminous	$0.00	4.00	False	4" P-401
05-30-2010	BA-AG	Base Course - Aggregate	$0.00	6.00	False	6" P-209
05-29-2010	SG-CO	Subgrade - Compacted	$0.00	6.00	False	6" P-152

Branch - Section ID: T03AL - 01

LCD: 6/1/2010
Use: TAXIWAY
Rank: P
Surface: AC

Length (ft): 167.00
Width (ft): 30.00
True Area (sf): 5,148.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
06-01-2010	NU-IN	New Construction - Initial	$0.00	2.00	True	2" P-401
05-31-2010	BA-BI	Base Course - Bituminous	$0.00	4.00	False	4" P-401
05-30-2010	SG-CO	Subgrade - Compacted	$0.00	6.00	False	6" P-152
05-29-2010	SG-ST	Subgrade - Stabilized	$0.00	8.00	False	8" P-155

Branch - Section ID: TH01AL - 01

LCD: 6/4/2003
Use: T-HANGAR
Rank: P
Surface: AC

Length (ft): 300.00
Width (ft): 15.00
True Area (sf): 6,185.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
09-18-2008	CS-AC	Crack Sealing - AC	$3,871.00	0.00	False	Total Project Cost: $77,425
06-04-2003	NC-AC	New Construction - AC	$0.00	2.00	True	2" P-401 AC SURFACE
06-03-2003	BA-BI	Base Course - Bituminous	$0.00	2.00	False	2" P-401 AC BASE
06-02-2003	BA-AG	Base Course - Aggregate	$0.00	6.00	False	6" P-209 CABC
06-01-2003	SG-ST	Subgrade - Stabilized	$0.00	8.00	False	8" P-155 FLY ASH TREATED SUBGRADE

Work History

Pavement Database: IA 2021

Branch - Section ID: TH01AL - 02

LCD: 1/1/2004
Use: T-HANGAR
Rank: P
Surface: AC

Length (ft): 165.00
Width (ft): 20.00
True Area (sf): 3,845.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
01-01-2004	NC-AC	New Construction - AC	$0.00	0.00	True	EST. VIA GE

APPENDIX E

LOCALIZED PREVENTIVE MAINTENANCE POLICIES AND UNIT COST TABLES

Table E-1. Localized preventive maintenance policy, asphalt-surfaced pavements.

Distress Type	Severity Level	Maintenance Action
Alligator Cracking	Low	Monitor
Alligator Cracking	Medium	Asphalt Patch
Alligator Cracking	High	Asphalt Patch
Bleeding	N/A	Monitor
Block Cracking	Low	Monitor
Block Cracking	Medium	Crack Seal—Asphalt
Block Cracking	High	Crack Seal—Asphalt
Corrugation	Low	Monitor
Corrugation	Medium	Asphalt Patch
Corrugation	High	Asphalt Patch
Depression	Low	Monitor
Depression	Medium	Monitor
Depression	High	Asphalt Patch
Jet-Blast Erosion	N/A	Asphalt Patch
Joint Reflection Cracking	Low	Monitor
Joint Reflection Cracking	Medium	Crack Seal—Asphalt
Joint Reflection Cracking	High	Crack Seal—Asphalt
L&T Cracking	Low	Monitor
L&T Cracking	Medium	Crack Seal—Asphalt
L&T Cracking	High	Crack Seal—Asphalt
Oil Spillage	N/A	Asphalt Patch
Patching	Low	Monitor
Patching	Medium	Asphalt Patch
Patching	High	Asphalt Patch
Polished Aggregate	N/A	Monitor
Raveling	Low	Monitor
Raveling	Medium	Asphalt Patch
Raveling	High	Asphalt Patch
Rutting	Low	Monitor
Rutting	Medium	Monitor
Rutting	High	Asphalt Patch
Shoving	Low	Monitor
Shoving	Medium	Asphalt Patch
Shoving	High	Asphalt Patch
Slippage Cracking	N/A	Asphalt Patch
Swelling	Low	Monitor
Swelling	Medium	Monitor
Swelling	High	Asphalt Patch
Weathering	Low	Monitor
Weathering	Medium	Monitor
Weathering	High	Asphalt Patch

Table E-2. Localized preventive maintenance policy, PCC pavements.

Distress Type	Severity Level	Maintenance Action
ASR	Low	Monitor
ASR	Medium	Slab Replacement
ASR	High	Slab Replacement
Blowup	Low	Slab Replacement
Blowup	Medium	Slab Replacement
Blowup	High	Slab Replacement
Corner Break	Low	Crack Seal—PCC
Corner Break	Medium	Full Depth PCC Patch
Corner Break	High	Full Depth PCC Patch
Durability Cracking	Low	Monitor
Durability Cracking	Medium	Full Depth Patch
Durability Cracking	High	Slab Replacement
Faulting	Low	Monitor
Faulting	Medium	Grinding
Faulting	High	Slab Replacement
Joint Seal Damage	Low	Monitor
Joint Seal Damage	Medium	Joint Seal
Joint Seal Damage	High	Joint Seal
LTD Cracking	Low	Monitor
LTD Cracking	Medium	Crack Seal—PCC
LTD Cracking	High	Slab Replacement
Patching (Small and Large)	Low	Monitor
Patching (Small and Large)	Medium	Full Depth PCC Patch
Patching (Small and Large)	High	Full Depth PCC Patch
Popouts	N/A	Monitor
Pumping	N/A	Monitor
Scaling	Low	Monitor
Scaling	Medium	Partial Depth PCC Patch
Scaling	High	Slab Replacement
Shattered Slab	Low	Crack Seal—PCC
Shattered Slab	Medium	Slab Replacement
Shattered Slab	High	Slab Replacement
Shrinkage Cracking	N/A	Monitor
Spalling (Joint and Corner)	Low	Monitor
Spalling (Joint and Corner)	Medium	Partial Depth PCC Patch
Spalling (Joint and Corner)	High	Partial Depth PCC Patch

Table E-3. 2022 unit costs for preventive maintenance actions.

Maintenance Action	Unit Cost
Asphalt Patch—Asphalt-Surfaced Pavement	$14.66/sf
Crack Sealing—Asphalt-Surfaced Pavement	$2.51/lf
Partial Depth PCC Patch—PCC Pavement	$37.54/sf
Full Depth PCC Patch—PCC Pavement	$16.76/sf
Crack Sealing—PCC Pavement	$3.02/lf
Joint Sealing—PCC Pavement	$3.02/lf
Grinding—PCC Pavement	$0.36/sf
Slab Replacement—PCC Pavement	$16.76/sf

Table E-4. 2022 unit costs (per square foot) based on pavement type and PCI ranges.

Pavement Type	PCI Range 0–40	PCI Range 40–50	PCI Range 50–60	PCI Range 60–70	PCI Range 70–80	PCI Range 80–90	PCI Range 90–100
AC	$10.41	$4.93	$4.93	$4.93	$0.00	$0.00	$0.00
PCC	$17.38	$8.22	$8.22	$8.22	$0.00	$0.00	$0.00

APPENDIX F

YEAR 2022 LOCALIZED PREVENTIVE MAINTENANCE DETAILS

Table F-1. Year 2022 localized preventive maintenance details.

Branch	Section	Distress Type	Severity	Distress Quantity	Distress Unit	Maintenance Action	Unit Cost	2022 Estimated Cost
A01AL	02	L&T Cracking	Medium	90	Ft	Crack Sealing - AC	$2.51	$226
A01AL	02	Raveling	Medium	20	SqFt	Patching - AC Deep	$14.66	$293
R13AL	01	L&T Cracking	Medium	2,580	Ft	Crack Sealing - AC	$2.51	$6,476

Table Notes:

1. See Figure 3 for the location of the branch and section.
2. Distress types are defined by ASTM D5340-20. L&T Cracking = Longitudinal and Transverse Cracking; LTD Cracking = Longitudinal, Transverse, and Diagonal Cracking; ASR = Alkali-Silica Reaction.
3. The costs provided are of a general nature for the entire state and may require adjustment to reflect specific conditions at Albia Municipal Airport.

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