Marshalltown Municipal Airport

PAVEMENT MANAGEMENT REPORT

PREPARED BY

Applied Pavement Technology, Inc.
115 West Main Street, Suite 400
Urbana, Illinois 61801
(217) 398-3977
www.appliedpavement.com

JULY 2022

applied pavement TECHNOLOGY

The preparation of this document was financed in part through an Airport Improvement Program grant from the Federal Aviation Administration (Project Number 3-19-0000-028-2021) as provided under Section 505 of the Airport and Airway Improvement Act of 1982, as amended. The contents do not necessarily reflect the DOT's official views or the policy of the FAA. Acceptance of this report by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate the proposed development is environmentally acceptable in accordance with appropriate public laws.

MARSHALLTOWN MUNICIPAL AIRPORT
PAVEMENT MANAGEMENT REPORT

Prepared For:

Iowa Department of Transportation
Modal Transportation Bureau – Aviation
800 Lincoln Way
Ames, Iowa 50010
515-239-1691
https://iowadot.gov/aviation/

Prepared By:

Applied Pavement Technology, Inc.
115 West Main Street, Suite 400
Urbana, Illinois 61801
217-398-3977
https://www.appliedpavement.com

In Association With:

Robinson Engineering Company
Consulting Engineers
819 Second Street NE
Independence, Iowa 50644
319-334-7211

TABLE OF CONTENTS

INTRODUCTION 1
PAVEMENT INVENTORY 3
PAVEMENT EVALUATION 6
Pavement Evaluation Procedure 6
Pavement Evaluation Results 7
Inspection Comments 12
Runways 12
Taxiways 12
Aprons 13
T-Hangars 13
PAVEMENT MAINTENANCE AND REHABILITATION PROGRAM 14
Analysis Parameters 14
Critical PCIs 14
Localized Preventive Maintenance Policies and Unit Costs 14
Major Rehabilitation Unit Costs 14
Budget and Inflation Rate 14
Analysis Approach 14
Analysis Results 15
General Maintenance Recommendations 16
FAA Requirements (Public Law 103-305) 16
FAA Advisory Circular 150/5830-7B, Appendix A. Pavement Management Program (PMP) 17
SUMMARY 23

LIST OF FIGURES

Figure 1. Pavement condition versus cost of repair. 1
Figure 2. Pavement area by branch use at Marshalltown Municipal Airport. 4
Figure 3. Marshalltown Municipal Airport network definition map. 5
Figure 4. Visual representation of PCI scale on typical pavement surfaces 6
Figure 5. PCI versus repair type. 7
Figure 6. Pavement area by PCI range at Marshalltown Municipal Airport. 8
Figure 7. Area-weighted PCI by branch use at Marshalltown Municipal Airport. 8
Figure 8. Marshalltown Municipal Airport PCI map. 9

LIST OF TABLES

Table 1. 2021 pavement evaluation results. 10
Table 2. 5-year M&R program under an unlimited funding analysis scenario. 15
Table 3. Pavement inspection report. 19

APPENDIXES

Appendix A. Cause of Distress Tables A-1
Appendix B. Inspection Photographs B-1
Appendix C. Inspection Report C-1
Appendix D. Work History Report D-1
Appendix E. Localized Preventive Maintenance Policies and Unit Cost Tables E-1
Appendix F. Year 2022 Localized Preventive Maintenance Details F-1

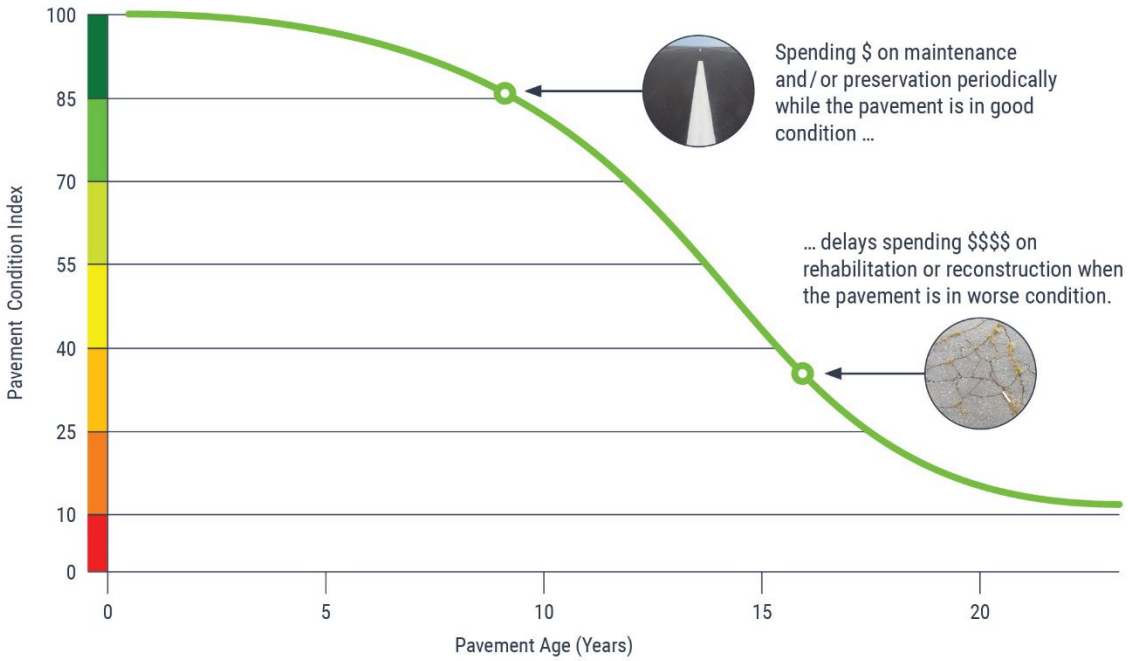
INTRODUCTION

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 Marshalltown 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 Marshalltown Municipal Airport are presented within this report and can be used by Marshalltown 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 Marshalltown 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 Marshalltown 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 1,223,000 square feet of pavement were evaluated at Marshalltown 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 Marshalltown Municipal Airport.

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

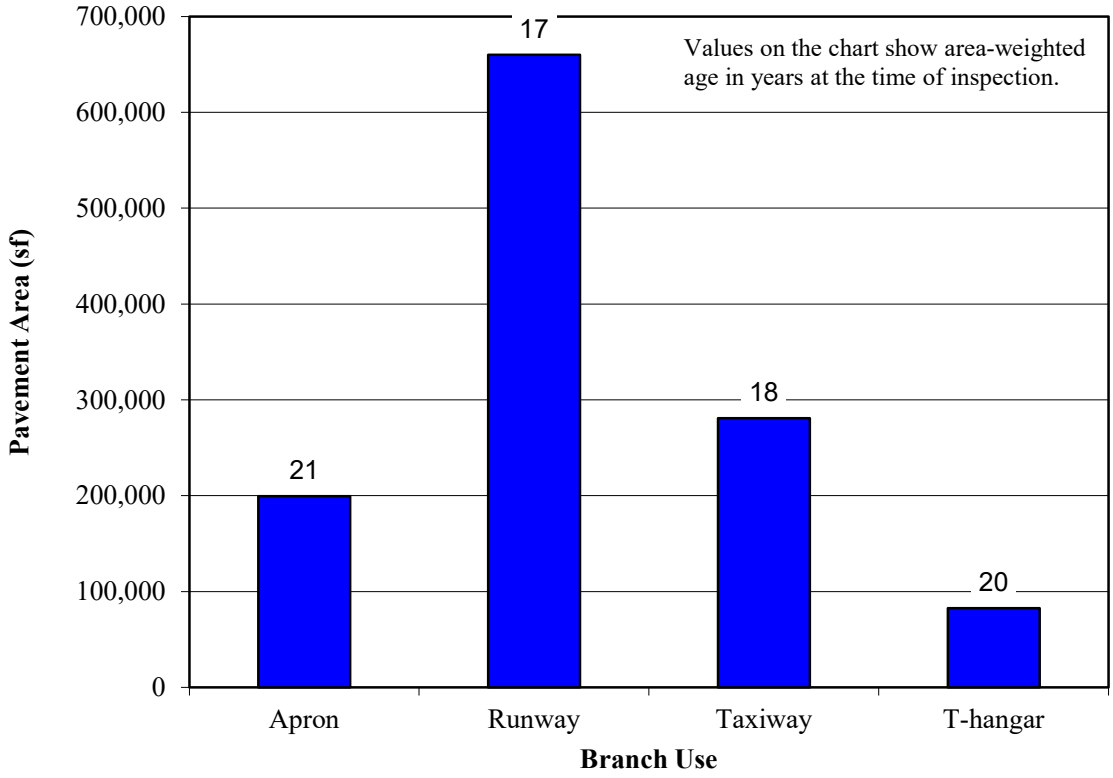
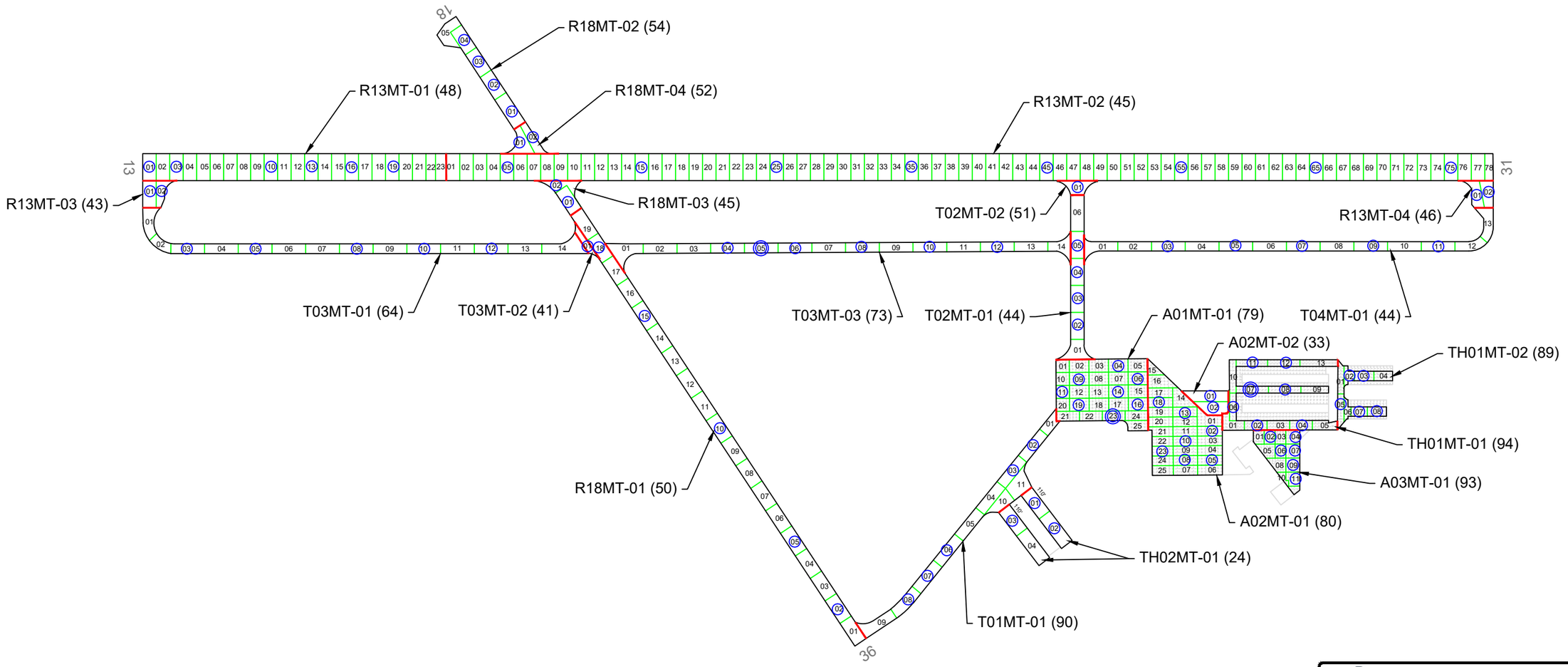


FIGURE 3. NETWORK DEFINITION MAP.



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

applied pavement TECHNOLOGY
115 W. Main Street, Suite 400
Urbana, IL 61801
Tel: (217) 398-3977
Fax: (217) 398-4027

AGENCY: Iowa Department of Transportation, Modal Transportation Bureau - Aviation			
LOCATION: Marshalltown Municipal Airport, Marshalltown, Iowa			
PAGE TITLE: Network Definition Map			
PROJECT DATE: SEP. 2021	CREATION DATE: SEP. 2021	PROJECT MANAGER: LJR	JOB NUMBER: 17-020-AM05
DRAWING SCALE: 1"=400'	LAST MODIFIED DATE: JAN. 2022	REVISED BY: DMS	DRAWN BY: DSP
FILENAME: Marshalltown.dwg		LAYOUT NAME/NUMBER: NET. DEF.	PAGE NUMBER: 5

PAVEMENT EVALUATION

Pavement Evaluation Procedure

APTech inspected the pavements at Marshalltown 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.

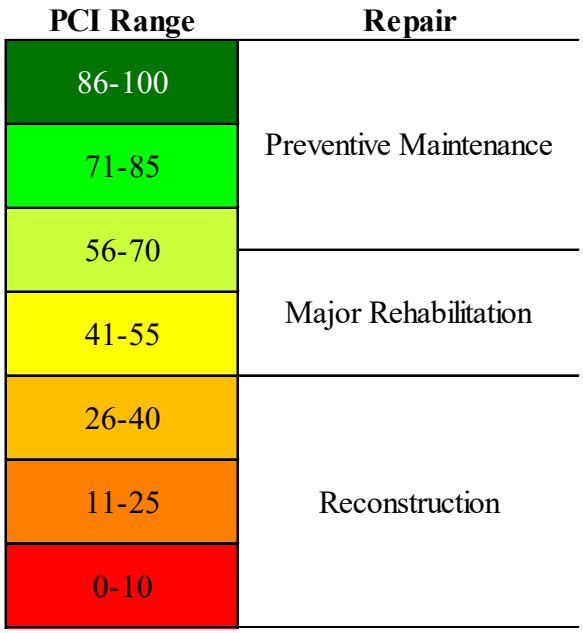
Figure 4. Visual representation of PCI scale on typical pavement surfaces[1].

PCI = 100 PCI = 60 PCI = 35

[1]Photographs shown are not specific to Marshalltown 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 Marshalltown Municipal Airport were inspected in November 2021. The 2021 area-weighted condition of Marshalltown Municipal Airport is 58, with conditions ranging from 24 to 94 (on a scale of 0 [failed] to 100 [excellent]). During the previous pavement inspection in 2018, the area-weighted PCI of the airport was 65.

Figure 6 summarizes the overall condition of the pavements at Marshalltown 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 Marshalltown Municipal Airport.

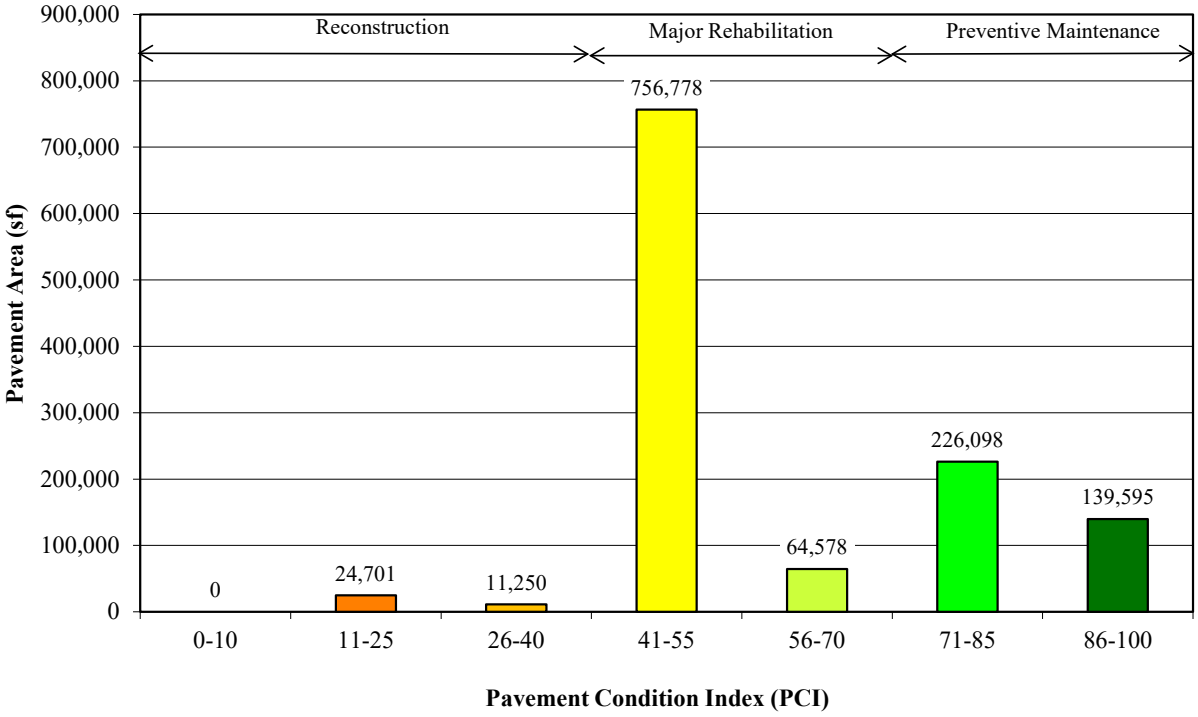


Figure 7. Area-weighted PCI by branch use at Marshalltown Municipal Airport.
(Values on chart are area-weighted)

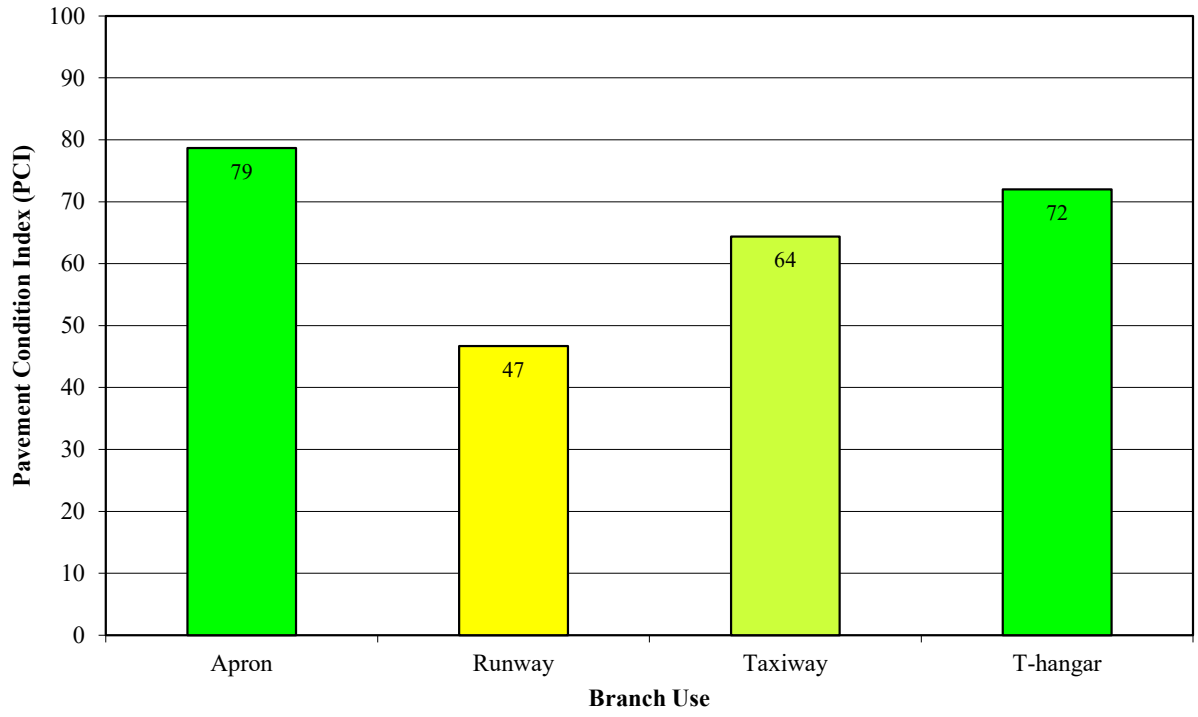
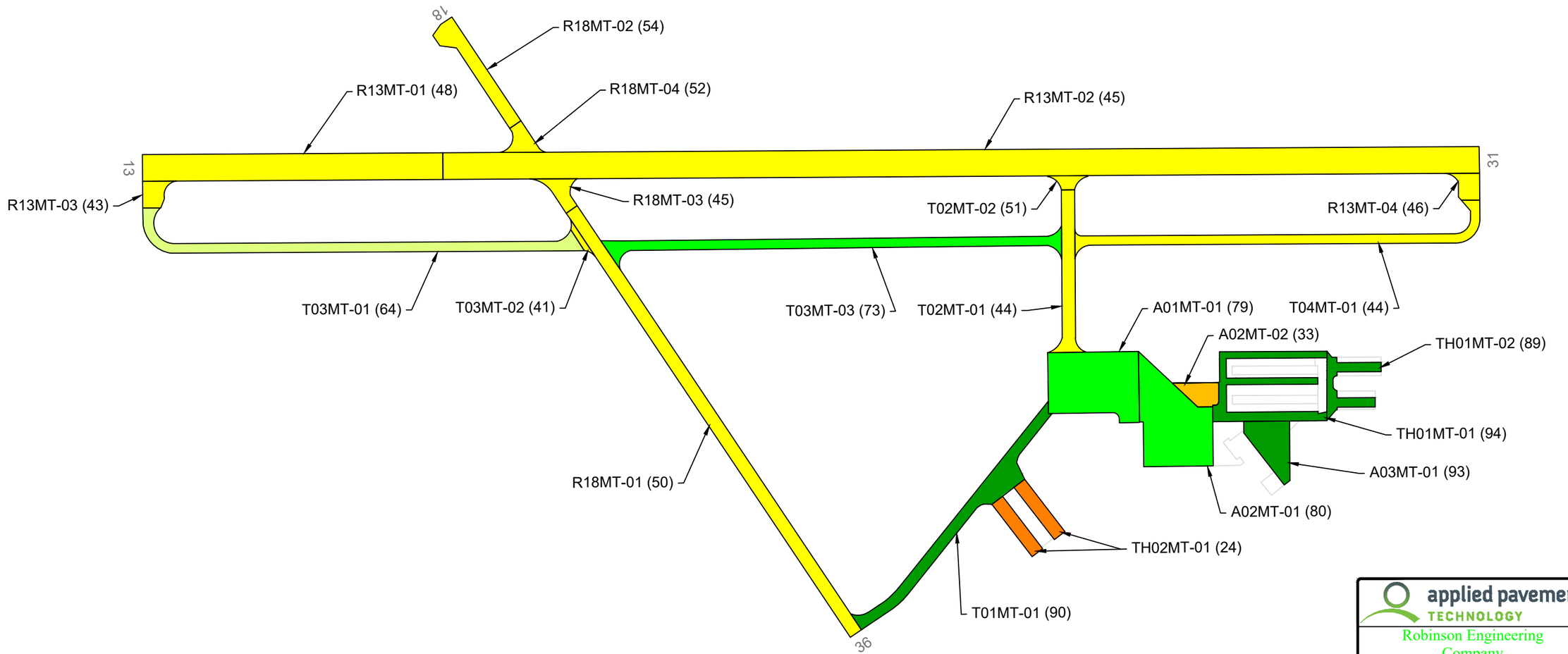


FIGURE 8. PCI MAP.



LEGEND

BRANCH IDENTIFIER
SECTION IDENTIFIER
PCI VALUE
RW927GL-10 (74)
SECTION BREAK LINE

PAVEMENT CONDITION INDEX

PCI

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

applied pavement TECHNOLOGY
115 W. Main Street, Suite 400
Urbana, IL 61801
Tel: (217) 398-3977
Fax: (217) 398-4027

Robinson Engineering Company
Consulting Engineers
322 1st Street East
Independence, IA 50644
Tel: (319) 334-7211

AGENCY:	Iowa Department of Transportation Modal Transportation Bureau - Aviation
LOCATION:	Marshalltown Municipal Airport Marshalltown, Iowa
PAGE TITLE:	2021 Pavement Condition Index 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"=400'	APR. 2022	DMS	DSP
FILENAME:		LAYOUT NAME/NUMBER:	PAGE NUMBER:
Marshalltown.dwg		PCI	9

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
A01MT	01	PCC	80,617	11/1/1994	79	43	28	29	ASR, Corner Spalling, Faulting, Joint Spalling, Joint Seal Damage, LTD Cracking, Shattered Slab
A02MT	01	PCC	81,456	6/1/2002	80	25	42	33	Corner Break, Corner Spalling, Faulting, Joint Seal Damage, LTD Cracking
A02MT	02	AAC	11,250	3/1/1994	33	0	99	1	Block Cracking, Depression, Patching, Raveling, Weathering
A03MT	01	PCC	26,257	7/1/2012	93	0	100	0	Joint Seal Damage
R13MT	01	AAC	112,500	6/2/2005	48	13	87	0	Alligator Cracking, L&T Cracking, Raveling, Weathering
R13MT	02	AAC	390,200	6/2/2005	45	20	80	0	Alligator Cracking, L&T Cracking, Raveling, Weathering
R13MT	03	AAC	8,445	6/1/2005	43	0	100	0	L&T Cracking, Raveling, Weathering
R13MT	04	AAC	8,431	6/1/2005	46	0	100	0	L&T Cracking, Raveling, Weathering
R18MT	01	AAC	95,600	6/1/1997	50	0	100	0	L&T Cracking, Raveling, Weathering
R18MT	02	AAC	26,970	6/1/1997	54	24	76	0	Alligator Cracking, L&T Cracking, Patching, Raveling, Weathering
R18MT	03	AAC	9,073	6/1/2005	45	0	100	0	L&T Cracking, Raveling, Weathering
R18MT	04	AAC	8,713	6/1/2005	52	12	88	0	Alligator Cracking, L&T Cracking, Patching, Raveling, Weathering
T01MT	01	AAC	55,336	10/3/2017	90	0	100	0	L&T Cracking, Weathering
T02MT	01	AAC	31,922	6/1/2005	44	0	100	0	L&T Cracking, Raveling, Weathering
T02MT	02	AAC	4,470	6/1/2005	51	0	100	0	L&T Cracking, Raveling, Weathering
T03MT	01	AC	64,578	11/1/1994	64	12	88	0	Alligator Cracking, L&T Cracking, Patching, Raveling, Weathering
T03MT	02	AC	2,514	11/1/1994	41	0	100	0	L&T Cracking, Patching, Raveling, Weathering

Table 1. 2021 pavement evaluation results (continued).

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
T03MT	03	AC	64,025	6/1/2006	73	29	68	3	Alligator Cracking, Depression, L&T Cracking, Raveling, Rutting, Swelling, Weathering
T04MT	01	AC	57,940	11/1/1994	44	31	69	0	Alligator Cracking, L&T Cracking, Patching, Raveling, Rutting, Weathering
TH01MT	01	PCC	39,535	5/2/2010	94	27	18	55	Corner Spalling, Joint Seal Damage, Large Patch, LTD Cracking, Small Patch
TH01MT	02	PCC	18,467	7/1/2012	89	71	13	16	Faulting, Joint Seal Damage, LTD Cracking, Small Patch
TH02MT	01	AC	24,701	1/1/1979	24	31	69	0	Alligator Cracking, Block Cracking, L&T Cracking, Patching, Raveling, 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.
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

Marshalltown Municipal Airport was inspected on November 15, 2021. There were twenty-two pavement sections defined during the inspection.

Runways

Runway 13/31 was defined by four sections. Section 01 contained low- and medium-severity longitudinal and transverse (L&T) cracking and low-severity raveling, alligator cracking, and weathering. Low- and medium-severity alligator cracking, all severities of L&T cracking and raveling, and low-severity weathering were recorded in Section 02. Areas of all severities of L&T cracking, low-severity raveling, and low- and medium-severity weathering were observed in Section 03. Section 04 contained low- and medium-severity L&T cracking, raveling, and weathering. In all four sections, the low-severity L&T cracking was unsealed and the medium-severity L&T cracking was noted where either the crack sealant was unsatisfactory, unsealed crack widths exceeded ¼ in, or secondary cracking had developed. High-severity L&T cracking was recorded where secondary cracking was greater than 1 ft in width.

Runway 18/36 was divided into four sections. All severities of L&T cracking, low-severity raveling, and low- and medium-severity weathering were identified in Section 01. Section 02 contained low- and medium-severity alligator cracking and L&T cracking, as well as low-severity patching, raveling, and weathering. Low- and medium-severity L&T cracking, low-severity raveling, and all severities of weathering were observed in Section 03. Section 04 contained low- and medium-severity L&T cracking and weathering and low-severity patching, raveling, and alligator cracking. The low-severity L&T cracking on this runway was primarily unsealed, and the medium-severity L&T cracking was due to either unsealed crack widths greater than ¼ in, crack sealant that had failed, or to the development of secondary cracking.

Taxiways

Taxiway 01 connected the Runway 36 approach with the apron area and consisted of one section that had low- and medium-severity L&T cracking and low-severity weathering noted during the inspection. The low-severity L&T cracking in Section 01 was unsealed and the medium-severity L&T cracking was recorded where unsealed crack widths exceeded ¼ in.

Taxiway 02 was defined by two sections that connected Runway 13/31 and with the apron area. Section 01 contained low-severity raveling and low- and medium-severity L&T cracking and weathering. The low-severity L&T cracking was unsealed, and the medium-severity L&T cracking was recorded where either secondary cracking had developed, crack sealant had failed, or unsealed crack widths were greater than ¼ in. Medium-severity L&T cracking, low-severity raveling, and low- and medium-severity weathering were observed in Section 02. The medium-severity L&T cracking was noted where crack sealant was unsatisfactory.

Taxiway 03, the parallel taxiway for Runway 13/31, consisted of three sections. Section 01 contained all severities of L&T cracking; low- and medium-severity raveling; and low-severity alligator cracking, patching, and weathering. Low- and medium-severity L&T cracking, low-severity patching and raveling, and medium-severity weathering were recorded in Section 02. Section 03 contained all severities of L&T cracking; medium-severity raveling; low-severity alligator cracking, depression, rutting, and swelling; and low- and medium-severity weathering. The low-severity L&T cracking on this taxiway was both sealed and unsealed, while the

medium-severity L&T cracking was due to either unsatisfactory crack sealant, unsealed crack widths that exceeded ¼ in, or the development of secondary cracking.

Taxiway 04 contained one section that had areas of low- and medium-severity L&T cracking and weathering, as well as low-severity patching, raveling, alligator cracking, and rutting. The low-severity L&T cracking was unsealed. The medium-severity L&T cracking was recorded where either secondary cracking had developed, unsealed crack widths were greater than ¼ in, or the crack sealant had failed.

Aprons

Apron 01 was defined by one section that contained low-severity faulting; low- and medium-severity corner spalling and joint spalling; high-severity joint seal damage; and medium-severity alkali-silica reaction (ASR) and longitudinal, transverse, and diagonal (LTD) cracking. The suspected ASR was recorded in accordance with ASTM D5340-20. It should be noted that laboratory testing in the form of petrographic analysis is the only definitive way to validate the presence of ASR; however, the formation of a precipitate is evidence of a reaction consistent with this type of materials-related distress. Additionally, an atypical area with medium- and high-severity shattered slab was identified and recorded as an additional sample unit, in accordance with ASTM D5340-20.

Apron 02 contained two sections. Medium-severity corner break and LTD cracking, high-severity corner spalling and joint seal damage, and low-severity faulting were recorded in Section 01. Section 02 was in poor condition with medium-severity block cracking, raveling, and weathering and low-severity depression and patching identified at the time of inspection.

Apron 03 consisted of one section with medium-severity joint seal damage observed throughout.

T-Hangars

T-hangar 01 was divided into two sections. Section 01 contained low-severity joint seal damage and medium-severity corner spalling, LTD cracking, and small patching. An atypical area with low- and high-severity large patching was noted and recorded as an additional sample unit, according to ASTM D5340-20. Low- and medium-severity LTD cracking and low-severity faulting, joint seal damage, and small patching were identified in Section 02.

T-hangar 02, which was located adjacent to Taxiway 01, consisted of one section in poor condition. Medium-severity alligator cracking, block cracking, weathering, and patching; all severities of L&T cracking; and low-severity raveling were recorded in Section 01. All cracking was unsealed.

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 Marshalltown 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 Marshalltown 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 Marshalltown 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 Marshalltown 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	A01MT	01	PCC	Preventive Maintenance	$58,074
2022	A02MT	01	PCC	Preventive Maintenance	$41,290
2022	A02MT	02	AAC	Major Rehabilitation	$117,162
2022	A03MT	01	PCC	Preventive Maintenance	$14,175
2022	R13MT	01	AAC	Major Rehabilitation	$781,288
2022	R13MT	02	AAC	Major Rehabilitation	$3,351,492
2022	R13MT	03	AAC	Major Rehabilitation	$81,793
2022	R13MT	04	AAC	Major Rehabilitation	$67,794
2022	R18MT	01	AAC	Major Rehabilitation	$559,119
2022	R18MT	02	AAC	Major Rehabilitation	$133,047
2022	R18MT	03	AAC	Major Rehabilitation	$77,929
2022	R18MT	04	AAC	Major Rehabilitation	$42,983
2022	T01MT	01	AAC	Preventive Maintenance	$667
2022	T02MT	01	AAC	Major Rehabilitation	$288,356
2022	T02MT	02	AAC	Major Rehabilitation	$23,227
2022	T03MT	01	AC	Preventive Maintenance	$2,507
2022	T03MT	02	AC	Major Rehabilitation	$26,044
2022	T03MT	03	AC	Preventive Maintenance	$2,931
2022	T04MT	01	AC	Major Rehabilitation	$504,961
2022	TH01MT	01	PCC	Preventive Maintenance	$1,334
2022	TH01MT	02	PCC	Preventive Maintenance	$107
2022	TH02MT	01	AC	Major Rehabilitation	$257,247
2025	T03MT	01	AC	Major Rehabilitation	$358,351
				Total Estimated Cost:	**$6,792,000**

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 Marshalltown Municipal Airport.

The recommendations made in this report are based on a broad network-level analysis and meant to provide Marshalltown 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 Marshalltown 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, Marshalltown 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 Marshalltown 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, Marshalltown 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 Marshalltown 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 Marshalltown 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 Marshalltown 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
A01MT	01					
A02MT	01					
A02MT	02					
A03MT	01					
R13MT	01					
R13MT	02					

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
R13MT	03					
R13MT	04					
R18MT	01					
R18MT	02					
R18MT	03					
R18MT	04					

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
T01MT	01					
T02MT	01					
T02MT	02					
T03MT	01					
T03MT	02					
T03MT	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
T04MT	01					
TH01MT	01					
TH01MT	02					
TH02MT	01					

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 Marshalltown Municipal Airport. A visual inspection of the pavements in 2021 found that the overall condition of the pavement network is a PCI of 58. A 5-year pavement repair program, shown in Table 2, was generated for Marshalltown Municipal Airport, which revealed that approximately $6,792,000 needs to be expended on M&R. Marshalltown 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

A01MT-01. Overview.

A01MT-01. ASR (Sample Unit No. 11).

A01MT-01. Faulting (Sample Unit No. 06).

A01MT-01. Joint Seal Damage (Sample Unit No. 11).

A01MT-01. Shattered Slab (Additional Sample Unit No. 23).

A02MT-01. Overview.

A02MT-01. Corner Break (Sample Unit No. 10).

A02MT-01. LTD Cracking (Sample Unit No. 10).

A02MT-02. Overview.

A02MT-02. Block Cracking (Sample Unit No. 02).

A02MT-02. Weathering (Sample Unit No. 02).

A03MT-01. Overview.

A03MT-01. Joint Seal Damage (Sample Unit No. 02).

R13MT-01. Overview.

R13MT-01. Alligator Cracking (Sample Unit No. 03).

R13MT-01. L&T Cracking (Sample Unit No. 16).

R13MT-01. Weathering (Sample Unit No. 16).

R13MT-02. Overview.

R13MT-02. Alligator Cracking (Sample Unit No. 75).

R13MT-02. L&T Cracking (Sample Unit No. 75).

R13MT-02. Weathering (Sample Unit No. 75).

R13MT-03. Overview.

R13MT-03. L&T Cracking (Sample Unit No. 02).

R13MT-03. Weathering (Sample Unit No. 02).

R13MT-04. Overview.

R13MT-04. L&T Cracking (Sample Unit No. 01).

R13MT-04. Weathering (Sample Unit No. 01).

R18MT-01. Overview.

R18MT-01. L&T Cracking (Sample Unit No. 02) (1).

R18MT-01. L&T Cracking (Sample Unit No. 02) (2).

R18MT-01. Weathering (Sample Unit No. 02).

R18MT-02. Overview.

R18MT-02. L&T Cracking (Sample Unit No. 03).

R18MT-02. Patching (Sample Unit No. 03).

R18MT-02. Weathering (Sample Unit No. 03).

R18MT-03. Overview.

R18MT-03. L&T Cracking (Sample Unit No. 01).

R18MT-03. Weathering (Sample Unit No. 01).

R18MT-04. Overview.

R18MT-04. L&T Cracking (Sample Unit No. 01).

R18MT-04. Weathering (Sample Unit No. 01).

T01MT-01. Overview.

T01MT-01. L&T Cracking (Sample Unit No. 02).

T01MT-01. Weathering (Sample Unit No. 02).

T02MT-01. Overview.

T02MT-01. L&T Cracking (Sample Unit No. 05).

T02MT-01. Weathering (Sample Unit No. 05).

T02MT-02. Overview.

T02MT-02. L&T Cracking (Sample Unit No. 01).

T02MT-02. Weathering (Sample Unit No. 01).

T03MT-01. Overview.

T03MT-01. L&T Cracking (Sample Unit No. 03).

T03MT-01. L&T Cracking (Sample Unit No. 08).

T03MT-01. Patching (Sample Unit No. 03).

T03MT-01. Weathering (Sample Unit No. 03).

T03MT-02. Overview.

T03MT-02. L&T Cracking (Sample Unit No. 01).

T03MT-02. Weathering (Sample Unit No. 01).

T03MT-03. Overview.

T03MT-03. L&T Cracking (Sample Unit No. 06).

T03MT-03. Weathering (Sample Unit No. 04).

T04MT-01. Overview.

T04MT-01. Alligator Cracking (Sample Unit No. 03).

T04MT-01. Alligator Cracking (Sample Unit No. 11).

T04MT-01. L&T Cracking (Sample Unit No. 11).

T04MT-01. Weathering (Sample Unit No. 11).

TH01MT-01. Overview.

TH01MT-01. LTD Cracking (Additional Sample Unit No. 07).

TH01MT-01. Large Patching (Additional Sample Unit No. 07).

TH01MT-01. Small Patching (Sample Unit No. 11).

TH01MT-02. Overview.

TH01MT-02. LTD Cracking (Sample Unit No. 05).

TH02MT-01. Overview.

TH02MT-01. Alligator Cracking (Sample Unit No. 03).

TH02MT-01. Block Cracking (Sample Unit No. 03).

APPENDIX C

INSPECTION REPORT

RE-INSPECTION REPORT
MARSHALLTOWN MUNICIPAL AIRPORT

Branch - Section ID: A01MT - 01

Branch Name: APRON 01 Use: APRON

LCD: 11/1/1994
Surface Type: PCC
Rank: P
Section Area (sf): 80,617.00
Length (ft): 340.00
Width (ft): 228.00
From: TAXIWAY 02
To: APRON 02

PCI Family: IowaPCCAPNC_CommEnh

Slabs: 555
Slab Length (ft): 12.00
Slab Width (ft): 12.10
Joint Length (ft): 12,789.95

Section Comments:

Last Insp Date: 11/15/2021
PCI: 79
Total Samples: 25
Surveyed: 8

Inspection Comments:

Sample Number: 004

Sample Type: R
Sample PCI: 80
Sample Area (Slabs): 24

Sample Comments:

65 JT SEAL DMG	H	24 Slabs
74 JOINT SPALL	M	1 Slabs
75 CORNER SPALL	L	1 Slabs
75 CORNER SPALL	M	1 Slabs

Sample Number: 006

Sample Type: R
Sample PCI: 84
Sample Area (Slabs): 24

Sample Comments:

65 JT SEAL DMG	H	24 Slabs
71 FAULTING	L	1 Slabs

Sample Number: 009

Sample Type: R
Sample PCI: 73
Sample Area (Slabs): 24

Sample Comments:

65 JT SEAL DMG	H	24 Slabs
71 FAULTING	L	6 Slabs
75 CORNER SPALL	L	2 Slabs

Sample Number: 011

Sample Type: R
Sample PCI: 72
Sample Area (Slabs): 16

Sample Comments:

65 JT SEAL DMG	H	16 Slabs
71 FAULTING	L	1 Slabs
76 ASR	M	1 Slabs

Sample Number: 014

Sample Type: R
Sample PCI: 88
Sample Area (Slabs): 24

Sample Comments:

65 JT SEAL DMG	H	24 Slabs

RE-INSPECTION REPORT
MARSHALLTOWN MUNICIPAL AIRPORT

Sample Number: 016

Sample Type: R
Sample PCI: 78
Sample Area (Slabs): 24
Sample Comments:

65 JT SEAL DMG	H	24 Slabs
71 FAULTING	L	2 Slabs
74 JOINT SPALL	L	1 Slabs
75 CORNER SPALL	M	1 Slabs

Sample Number: 019

Sample Type: R
Sample PCI: 88
Sample Area (Slabs): 24
Sample Comments:

65 JT SEAL DMG	H	24 Slabs

Sample Number: 023

Sample Type: A
Sample PCI: 27
Sample Area (Slabs): 21
Sample Comments:

63 LINEAR CR	M	3 Slabs
65 JT SEAL DMG	H	21 Slabs
71 FAULTING	L	5 Slabs
72 SHAT. SLAB	H	2 Slabs
72 SHAT. SLAB	M	2 Slabs

RE-INSPECTION REPORT
MARSHALLTOWN MUNICIPAL AIRPORT

Branch - Section ID: A02MT - 01

Branch Name: APRON 02 Use: APRON

LCD: 6/1/2002
Surface Type: PCC
Rank: P
Section Area (sf): 81,456.00
Length (ft): 315.00
Width (ft): 252.00
From:
To:

PCI Family: IowaPCCAPNC_CommEnh

Slabs: 485
Slab Length (ft): 12.00
Slab Width (ft): 14.00
Joint Length (ft): 12,024.46

Section Comments:

Last Insp Date: 11/15/2021
PCI: 80
Total Samples: 25
Surveyed: 7

Inspection Comments:

Sample Number: 02

Sample Type: R
Sample PCI: 83
Sample Area (Slabs): 18

Sample Comments:

65 JT SEAL DMG	H	18	Slabs
71 FAULTING	L	2	Slabs

Sample Number: 05

Sample Type: R
Sample PCI: 80
Sample Area (Slabs): 18

Sample Comments:

65 JT SEAL DMG	H	18	Slabs
71 FAULTING	L	3	Slabs

Sample Number: 08

Sample Type: R
Sample PCI: 88
Sample Area (Slabs): 18

Sample Comments:

65 JT SEAL DMG	H	18	Slabs

Sample Number: 10

Sample Type: R
Sample PCI: 49
Sample Area (Slabs): 18

Sample Comments:

62 CORNER BREAK	M	2	Slabs
63 LINEAR CR	M	2	Slabs
65 JT SEAL DMG	H	18	Slabs
71 FAULTING	L	7	Slabs

Sample Number: 13

Sample Type: R
Sample PCI: 88
Sample Area (Slabs): 18

Sample Comments:

65 JT SEAL DMG	H	18	Slabs

Sample Number: 18

Sample Type: R
Sample PCI: 83
Sample Area (Slabs): 18

Sample Comments:

65 JT SEAL DMG	H	18	Slabs
75 CORNER SPALL	H	1	Slabs

Sample Number: 23

Sample Type: R
Sample PCI: 88
Sample Area (Slabs): 15

Sample Comments:

65 JT SEAL DMG	H	15	Slabs

RE-INSPECTION REPORT
MARSHALLTOWN MUNICIPAL AIRPORT

Branch - Section ID: A02MT - 02

Branch Name: APRON 02 Use: APRON

LCD: 3/1/1994
Surface Type: AAC
Rank: P
Section Area (sf): 11,250.00
Length (ft): 135.00
Width (ft): 85.00
From: SEE MAP
To: SEE MAP

PCI Family: IowaAACAPNorthern

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

Section Comments:

Last Insp Date: 11/15/2021
PCI: 33
Total Samples: 2
Surveyed: 2

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 30
Sample Area (SF): 6,135

Sample Comments:

43 BLOCK CR	M	5,635	SF
45 DEPRESSION	L	30	SF
50 PATCHING	L	500	SF
52 RAVELING	M	200	SF
57 WEATHERING	M	5,435	SF

Sample Number: 02

Sample Type: R
Sample PCI: 37
Sample Area (SF): 5,115

Sample Comments:

43 BLOCK CR	M	3,915	SF
50 PATCHING	L	1,200	SF
52 RAVELING	M	200	SF
57 WEATHERING	M	3,715	SF

Branch - Section ID: A03MT - 01

Branch Name: APRON 03 Use: APRON

LCD: 7/1/2012
Surface Type: PCC
Rank: P
Section Area (sf): 26,257.00
Length (ft): 198.00
Width (ft): 150.00
From: SEE MAP
To: SEE MAP

PCI Family: IowaPCCAPNC_CommEnh

Slabs: 238
Slab Length (ft): 10.50
Slab Width (ft): 10.50
Joint Length (ft): 4,693.68

Section Comments:

Last Insp Date: 11/15/2021
PCI: 93
Total Samples: 11
Surveyed: 6

Inspection Comments:

Sample Number: 02

Sample Type: R
Sample PCI: 93
Sample Area (Slabs): 20

Sample Comments:

65 JT SEAL DMG	M	20 Slabs

Sample Number: 04

Sample Type: R
Sample PCI: 93
Sample Area (Slabs): 25

Sample Comments:

65 JT SEAL DMG	M	25 Slabs

Sample Number: 06

Sample Type: R
Sample PCI: 93
Sample Area (Slabs): 20

Sample Comments:

65 JT SEAL DMG	M	20 Slabs

Sample Number: 07

Sample Type: R
Sample PCI: 93
Sample Area (Slabs): 25

Sample Comments:

65 JT SEAL DMG	M	25 Slabs

Sample Number: 09

Sample Type: R
Sample PCI: 93
Sample Area (Slabs): 25

Sample Comments:

65 JT SEAL DMG	M	25 Slabs

Sample Number: 11

Sample Type: R
Sample PCI: 93
Sample Area (Slabs): 23

Sample Comments:

65 JT SEAL DMG	M	23 Slabs

RE-INSPECTION REPORT
MARSHALLTOWN MUNICIPAL AIRPORT

Branch - Section ID: R13MT - 01

Branch Name: RUNWAY 13/31 Use: RUNWAY

LCD: 6/2/2005
Surface Type: AAC
Rank: P
Section Area (sf): 112,500.00
Length (ft): 1,125.00
Width (ft): 100.00
From: RUNWAY END 13
To: RUNWAY SECT 02

PCI Family: IowaAACRWNC&NCW

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

Section Comments:

Last Insp Date: 11/15/2021
PCI: 48
Total Samples: 23
Surveyed: 6

Inspection Comments:

Sample Number: 001

Sample Type: R
Sample PCI: 47
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	198	Ft	LU
48 L & T CR	M	548	Ft	W FS SEC CRK
52 RAVELING	L	500	SF	
57 WEATHERING	L	4,580	SF	LESS PAINT

Sample Number: 003

Sample Type: R
Sample PCI: 42
Sample Area (SF): 5,000

Sample Comments:

41 ALLIGATOR CR	L	50	SF	WP
48 L & T CR	L	72	Ft	LU
48 L & T CR	M	653	Ft	W FS SEC CRK
52 RAVELING	L	500	SF	
57 WEATHERING	L	4,300	SF	LESS PAINT

Sample Number: 010

Sample Type: R
Sample PCI: 48
Sample Area (SF): 5,000

Sample Comments:

41 ALLIGATOR CR	L	15	SF	WP 1FT
48 L & T CR	L	81	Ft	LU
48 L & T CR	M	446	Ft	W SEC CRK
52 RAVELING	L	500	SF	
57 WEATHERING	L	5,000	SF	

Sample Number: 013

Sample Type: R
Sample PCI: 49
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	162	Ft	LU
48 L & T CR	M	490	Ft	W FS SEC CRK
52 RAVELING	L	500	SF	
57 WEATHERING	L	5,000	SF	

RE-INSPECTION REPORT
MARSHALLTOWN MUNICIPAL AIRPORT

Sample Number: 016

Sample Type: R
Sample PCI: 53
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	78	Ft	LU
48 L & T CR	M	442	Ft	W FS SEC CRK
52 RAVELING	L	500	SF	
57 WEATHERING	L	5,000	SF	

Sample Number: 019

Sample Type: R
Sample PCI: 52
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	188	Ft	LU
48 L & T CR	M	405	Ft	W FS SEC CRK
52 RAVELING	L	500	SF	
57 WEATHERING	L	5,000	SF	

RE-INSPECTION REPORT
MARSHALLTOWN MUNICIPAL AIRPORT

Branch - Section ID: R13MT - 02

Branch Name: RUNWAY 13/31 Use: RUNWAY

LCD: 6/2/2005
Surface Type: AAC
Rank: P
Section Area (sf): 390,200.00
Length (ft): 3,902.00
Width (ft): 100.00
From: RUNWAY SECT 01
To: RUNWAY END 31

PCI Family: IowaAACRWNC&NCW

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

Section Comments:

Last Insp Date: 11/15/2021
PCI: 45
Total Samples: 78
Surveyed: 8

Inspection Comments:

Sample Number: 005

Sample Type: R
Sample PCI: 54
Sample Area (SF): 5,000

Sample Comments:

41 ALLIGATOR CR	L	25	SF	WP 1FT
48 L & T CR	L	26	Ft	LU
48 L & T CR	M	342	Ft	FS W SEC CRK
52 RAVELING	L	500	SF	
57 WEATHERING	L	5,000	SF	

Sample Number: 015

Sample Type: R
Sample PCI: 46
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	188	Ft	
48 L & T CR	M	572	Ft	
52 RAVELING	L	500	SF	
57 WEATHERING	L	5,000	SF	

Sample Number: 025

Sample Type: R
Sample PCI: 49
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	77	Ft	LU
48 L & T CR	M	577	Ft	FS W SEC CRK
52 RAVELING	L	500	SF	
57 WEATHERING	L	5,000	SF	

Sample Number: 035

Sample Type: R
Sample PCI: 41
Sample Area (SF): 5,000

Sample Comments:

41 ALLIGATOR CR	M	9	SF	
48 L & T CR	L	75	Ft	LU
48 L & T CR	M	505	Ft	W FS SEC CRK
52 RAVELING	H	2	SF	
52 RAVELING	L	500	SF	
57 WEATHERING	L	4,998	SF	

Sample Number: 045

Sample Type: R
Sample PCI: 46
Sample Area (SF): 5,000

Sample Comments:

41 ALLIGATOR CR	L	30	SF	1FT WP
48 L & T CR	L	50	Ft	LU
48 L & T CR	M	542	Ft	W SEC CRK FS
52 RAVELING	L	500	SF	
57 WEATHERING	L	5,000	SF	

Sample Number: 055

Sample Type: R
Sample PCI: 35
Sample Area (SF): 5,000

Sample Comments:

41 ALLIGATOR CR	M	5	SF	
48 L & T CR	L	138	Ft	
48 L & T CR	M	662	Ft	W FS SEC CRK
52 RAVELING	L	500	SF	
52 RAVELING	M	25	SF	
57 WEATHERING	L	4,975	SF	

Sample Number: 065

Sample Type: R
Sample PCI: 50
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	H	5	Ft	1FT
48 L & T CR	L	48	Ft	LU
48 L & T CR	M	445	Ft	FS SEC CRK W
52 RAVELING	L	500	SF	
57 WEATHERING	L	5,000	SF	

Sample Number: 075

Sample Type: R
Sample PCI: 37
Sample Area (SF): 5,000

Sample Comments:

41 ALLIGATOR CR	L	50	SF	WP 1FT
41 ALLIGATOR CR	M	2	SF	
48 L & T CR	L	236	Ft	LU
48 L & T CR	M	552	Ft	W FS SEC CRK
52 RAVELING	L	500	SF	
57 WEATHERING	L	4,300	SF	less paint

RE-INSPECTION REPORT
MARSHALLTOWN MUNICIPAL AIRPORT

Branch - Section ID: R13MT - 03

Branch Name: RUNWAY 13/31 Use: RUNWAY

LCD: 6/1/2005
Surface Type: AAC
Rank: P
Section Area (sf): 8,445.00
Length (ft): 100.00
Width (ft): 87.00
From: TURNAROUND 13 END
To:

PCI Family: IowaAACRWNC&NCW

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

Section Comments:

Last Insp Date: 11/15/2021
PCI: 43
Total Samples: 2
Surveyed: 2

Inspection Comments:

Sample Number: 001

Sample Type: R
Sample PCI: 41
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	H	30	Ft	1FT TRANS AT BREAK
48 L & T CR	L	161	Ft	LU
48 L & T CR	M	425	Ft	W FS SEC CRK
52 RAVELING	L	1,500	SF	
57 WEATHERING	L	4,000	SF	
57 WEATHERING	M	1,000	SF	

Sample Number: 002

Sample Type: R
Sample PCI: 46
Sample Area (SF): 3,445

Sample Comments:

48 L & T CR	L	315	Ft	LU
48 L & T CR	M	300	Ft	FS W SEC CRK
52 RAVELING	L	1,000	SF	
57 WEATHERING	L	2,645	SF	
57 WEATHERING	M	800	SF	

Branch - Section ID: R13MT - 04

Branch Name: RUNWAY 13/31 Use: RUNWAY

LCD: 6/1/2005
Surface Type: AAC
Rank: P
Section Area (sf): 8,431.00
Length (ft): 80.00
Width (ft): 87.00
From: TURNAROUND 31 END
To:

PCI Family: IowaAACRWNC&NCW

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

Section Comments:

Last Insp Date: 11/15/2021
PCI: 46
Total Samples: 2
Surveyed: 2

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 44
Sample Area (SF): 4,186

Sample Comments:

48 L & T CR	L	359	Ft	LU
48 L & T CR	M	350	Ft	W FS
52 RAVELING	L	1,500	SF	
52 RAVELING	M	200	SF	
57 WEATHERING	L	1,180	SF	
57 WEATHERING	M	2,806	SF	

Sample Number: 02

Sample Type: R
Sample PCI: 48
Sample Area (SF): 4,245

Sample Comments:

48 L & T CR	L	226	Ft	LU
48 L & T CR	M	300	Ft	FS W
52 RAVELING	L	1,500	SF	
52 RAVELING	M	200	SF	
57 WEATHERING	L	1,242	SF	
57 WEATHERING	M	2,800	SF	

Branch - Section ID: R18MT - 01

Branch Name: RUNWAY 18/36 Use: RUNWAY

LCD: 6/1/1997
Surface Type: AAC
Rank: S
Section Area (sf): 95,600.00
Length (ft): 1,912.00
Width (ft): 50.00
From: RUNWAY END 36
To: SECTION R18MT-03

PCI Family: IowaAACRWNC&NCW

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

Section Comments:

Last Insp Date: 11/15/2021
PCI: 50
Total Samples: 19
Surveyed: 5

Inspection Comments:

Sample Number: 002

Sample Type: R
Sample PCI: 39
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	H	50	Ft	1FT TRANS
48 L & T CR	L	118	Ft	LU
48 L & T CR	M	512	Ft	FS SEC CRK W
52 RAVELING	L	1,000	SF	
57 WEATHERING	L	3,500	SF	
57 WEATHERING	M	1,500	SF	

Sample Number: 005

Sample Type: R
Sample PCI: 35
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	H	25	Ft	1FT TRANS
48 L & T CR	L	186	Ft	LU
48 L & T CR	L	100	Ft	LS
48 L & T CR	M	600	Ft	FS W SEC CRK
52 RAVELING	L	1,000	SF	
57 WEATHERING	L	3,500	SF	
57 WEATHERING	M	1,500	SF	

Sample Number: 010

Sample Type: R
Sample PCI: 60
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	H	50	Ft	1FT TRANS
48 L & T CR	L	132	Ft	LU
48 L & T CR	M	100	Ft	FS SEC CRK W
52 RAVELING	L	500	SF	
57 WEATHERING	L	5,000	SF	

Sample Number: 015

Sample Type: R
Sample PCI: 55
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	H	25	Ft	1FT TRANS
48 L & T CR	L	11	Ft	LU
48 L & T CR	M	342	Ft	
52 RAVELING	L	1,000	SF	
57 WEATHERING	L	5,000	SF	

Sample Number: 018

Sample Type: R
Sample PCI: 58
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	H	100	Ft	1FT TRANS
48 L & T CR	L	28	Ft	LU
48 L & T CR	M	100	Ft	W FS SEC CRK
52 RAVELING	L	1,000	SF	
57 WEATHERING	L	5,000	SF	

RE-INSPECTION REPORT
MARSHALLTOWN MUNICIPAL AIRPORT

Branch - Section ID: R18MT - 02

Branch Name: RUNWAY 18/36 Use: RUNWAY

LCD: 6/1/1997
Surface Type: AAC
Rank: S
Section Area (sf): 26,970.00
Length (ft): 466.00
Width (ft): 50.00
From: R18MT-04
To: RUNWAY END 18

PCI Family: IowaAACRWNC&NCW

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

Section Comments:

Last Insp Date: 11/15/2021
PCI: 54
Total Samples: 5
Surveyed: 4

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 52
Sample Area (SF): 6,500

Sample Comments:

41 ALLIGATOR CR	L	20	SF	EDGE
48 L & T CR	L	68	Ft	
48 L & T CR	M	305	Ft	
50 PATCHING	L	525	SF	
52 RAVELING	L	900	SF	
57 WEATHERING	L	5,975	SF	

Sample Number: 02

Sample Type: R
Sample PCI: 56
Sample Area (SF): 5,000

Sample Comments:

41 ALLIGATOR CR	L	20	SF	EDGE
48 L & T CR	M	225	Ft	FS W
50 PATCHING	L	350	SF	
52 RAVELING	L	800	SF	
57 WEATHERING	L	4,650	SF	

Sample Number: 03

Sample Type: R
Sample PCI: 49
Sample Area (SF): 5,000

Sample Comments:

41 ALLIGATOR CR	M	5	SF	
48 L & T CR	L	18	Ft	LU
48 L & T CR	M	350	Ft	W FS
50 PATCHING	L	300	SF	
52 RAVELING	L	500	SF	
57 WEATHERING	L	4,700	SF	

Sample Number: 04

Sample Type: R

Sample PCI: 62

Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	M	210	Ft	W FS
50 PATCHING	L	325	SF	
52 RAVELING	L	500	SF	
57 WEATHERING	L	4,675	SF	

RE-INSPECTION REPORT
MARSHALLTOWN MUNICIPAL AIRPORT

Branch - Section ID: R18MT - 03

Branch Name: RUNWAY 18/36 Use: RUNWAY

LCD: 6/1/2005
Surface Type: AAC
Rank: S
Section Area (sf): 9,073.00
Length (ft): 140.00
Width (ft): 75.00
From: R18MT-01
To: RUNWAY 13

PCI Family: IowaAACRWNC&NCW

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

Section Comments:

Last Insp Date: 11/15/2021
PCI: 45
Total Samples: 2
Surveyed: 2

Inspection Comments:

Sample Number: 001

Sample Type: R
Sample PCI: 47
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	182	Ft	
48 L & T CR	M	400	Ft	
52 RAVELING	L	500	SF	
57 WEATHERING	L	2,500	SF	
57 WEATHERING	M	2,500	SF	

Sample Number: 002

Sample Type: R
Sample PCI: 41
Sample Area (SF): 4,073

Sample Comments:

48 L & T CR	L	192	Ft	LU
48 L & T CR	M	150	Ft	FS SEC CRK AT BREAK
48 L & T CR	M	200	Ft	FS SEC CRK W
52 RAVELING	L	500	SF	
57 WEATHERING	H	100	SF	
57 WEATHERING	L	1,973	SF	
57 WEATHERING	M	2,000	SF	

RE-INSPECTION REPORT
MARSHALLTOWN MUNICIPAL AIRPORT

Branch - Section ID: R18MT - 04

Branch Name: RUNWAY 18/36 Use: RUNWAY

LCD: 6/1/2005
Surface Type: AAC
Rank: S
Section Area (sf): 8,713.00
Length (ft): 120.00
Width (ft): 60.00
From: RUNWAY 13
To: R18MT-02

PCI Family: IowaAACRWNC&NCW

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

Section Comments:

Last Insp Date: 11/15/2021
PCI: 52
Total Samples: 2
Surveyed: 2

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 51
Sample Area (SF): 4,813

Sample Comments:

48 L & T CR	L	135	Ft	LU
48 L & T CR	M	200	Ft	FS W SEC CRK
48 L & T CR	M	100	Ft	FS AT BREAK
50 PATCHING	L	168	SF	
52 RAVELING	L	800	SF	
57 WEATHERING	L	2,000	SF	
57 WEATHERING	M	2,645	SF	

Sample Number: 02

Sample Type: R
Sample PCI: 52
Sample Area (SF): 3,900

Sample Comments:

41 ALLIGATOR CR	L	25	SF	
48 L & T CR	L	85	Ft	LU
48 L & T CR	M	50	Ft	
48 L & T CR	M	50	Ft	FS AT BREAK
50 PATCHING	L	100	SF	
52 RAVELING	L	800	SF	
57 WEATHERING	L	1,800	SF	
57 WEATHERING	M	2,000	SF	

Branch - Section ID: T01MT - 01

Branch Name: TAXIWAY 01 Use: TAXIWAY

LCD: 10/3/2017
Surface Type: AAC
Rank: P
Section Area (sf): 55,336.00
Length (ft): 1,080.00
Width (ft): 40.00
From: APRON 01 SECT 01
To: RUNWAY 18/36

PCI Family: IowaAACTWNC&NCW

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

Section Comments:

Last Insp Date: 11/15/2021
PCI: 90
Total Samples: 11
Surveyed: 5

Inspection Comments:

Sample Number: 02

Sample Type: R
Sample PCI: 86
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	M	40	Ft	W
57 WEATHERING	L	1,500	SF	

Sample Number: 03

Sample Type: R
Sample PCI: 96
Sample Area (SF): 5,000

Sample Comments:

57 WEATHERING	L	1,500	SF	

Sample Number: 06

Sample Type: R
Sample PCI: 82
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	38	Ft	EDGE LU
48 L & T CR	M	40	Ft	W
57 WEATHERING	L	1,500	SF	

Sample Number: 07

Sample Type: R
Sample PCI: 86
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	M	40	Ft	W
57 WEATHERING	L	1,500	SF	

Sample Number: 08

Sample Type: R
Sample PCI: 96
Sample Area (SF): 5,000

Sample Comments:

57 WEATHERING	L	1,500	SF	

Branch - Section ID: T02MT - 01

Branch Name: TAXIWAY 02 Use: TAXIWAY

LCD: 6/1/2005
Surface Type: AAC
Rank: P
Section Area (sf): 31,922.00
Length (ft): 609.00
Width (ft): 50.00
From: APRON 01
To: T02MT-02

PCI Family: IowaAACTWNC&NCW

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

Section Comments:

Last Insp Date: 11/15/2021
PCI: 44
Total Samples: 6
Surveyed: 4

Inspection Comments:

Sample Number: 002

Sample Type: R
Sample PCI: 45
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	95	Ft	LU
48 L & T CR	M	500	Ft	FS SEC CRK W
52 RAVELING	L	1,000	SF	
57 WEATHERING	L	4,500	SF	
57 WEATHERING	M	500	SF	

Sample Number: 003

Sample Type: R
Sample PCI: 45
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	146	Ft	LU
48 L & T CR	M	462	Ft	W FS SEC CRK
52 RAVELING	L	1,000	SF	
57 WEATHERING	L	4,500	SF	
57 WEATHERING	M	500	SF	

Sample Number: 004

Sample Type: R
Sample PCI: 46
Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	100	Ft	
48 L & T CR	M	485	Ft	W FS SEC CRK
52 RAVELING	L	1,000	SF	
57 WEATHERING	L	4,500	SF	
57 WEATHERING	M	500	SF	

Sample Number: 005

Sample Type: R

Sample PCI: 40

Sample Area (SF): 5,000

Sample Comments:

48 L & T CR	L	145	Ft	LU
48 L & T CR	M	200	Ft	FS SEC CRK T BRK
48 L & T CR	M	440	Ft	FS W SEC CRK
52 RAVELING	L	1,000	SF	
57 WEATHERING	L	4,500	SF	
57 WEATHERING	M	500	SF	

Branch - Section ID: T02MT - 02

Branch Name: TAXIWAY 02 Use: TAXIWAY

LCD: 6/1/2005
Surface Type: AAC
Rank: P
Section Area (sf): 4,470.00
Length (ft): 53.00
Width (ft): 85.00
From: T02MT-01
To: RUNWAY 13

PCI Family: IowaAACTWNC&NCW

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

Section Comments:

Last Insp Date: 11/15/2021
PCI: 51
Total Samples: 1
Surveyed: 1

Inspection Comments:

Sample Number: 001

Sample Type: R
Sample PCI: 51
Sample Area (SF): 4,470

Sample Comments:

48 L & T CR	M	383	Ft	FS, AT BREAK
52 RAVELING	L	1,500	SF	
57 WEATHERING	L	2,470	SF	
57 WEATHERING	M	2,000	SF	

Branch - Section ID: T03MT - 01

Branch Name: TAXIWAY 03 Use: TAXIWAY

LCD: 11/1/1994
Surface Type: AC
Rank: P
Section Area (sf): 64,578.00
Length (ft): 1,753.00
Width (ft): 36.00
From: RUNWAY 18
To: WEST END RUNWAY 13

PCI Family: IowaACTWNC_Enhanced

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

Section Comments:

Last Insp Date: 11/15/2021
PCI: 64
Total Samples: 14
Surveyed: 5

Inspection Comments:

Sample Number: 03

Sample Type: R
Sample PCI: 68
Sample Area (SF): 4,500

Sample Comments:

48 L & T CR	L	32	Ft	LU
48 L & T CR	M	72	Ft	W
50 PATCHING	L	125	SF	
52 RAVELING	L	500	SF	
57 WEATHERING	L	4,375	SF	

Sample Number: 05

Sample Type: R
Sample PCI: 64
Sample Area (SF): 4,500

Sample Comments:

48 L & T CR	L	63	Ft	LU
48 L & T CR	M	20	Ft	W
50 PATCHING	L	290	SF	
52 RAVELING	L	500	SF	
52 RAVELING	M	25	SF	
57 WEATHERING	L	4,185	SF	

Sample Number: 08

Sample Type: R
Sample PCI: 63
Sample Area (SF): 4,500

Sample Comments:

48 L & T CR	H	36	Ft	1FT TRANS
48 L & T CR	L	37	Ft	LS
50 PATCHING	L	125	SF	
52 RAVELING	L	500	SF	
57 WEATHERING	L	4,375	SF	

Sample Number: 10

Sample Type: R
Sample PCI: 59
Sample Area (SF): 4,500

Sample Comments:

41 ALLIGATOR CR	L	15	SF	
48 L & T CR	H	6	Ft	1FT TRANS
48 L & T CR	L	65	Ft	LS
48 L & T CR	M	30	Ft	SEC CRK
50 PATCHING	L	125	SF	
52 RAVELING	L	500	SF	
57 WEATHERING	L	4,375	SF	

Sample Number: 12

Sample Type: R
Sample PCI: 67
Sample Area (SF): 4,500

Sample Comments:

41 ALLIGATOR CR	L	18	SF	EDGE
48 L & T CR	L	2	Ft	LS
48 L & T CR	M	38	Ft	FS SEC CRK
50 PATCHING	L	125	SF	
52 RAVELING	L	500	SF	
57 WEATHERING	L	4,375	SF	

Branch - Section ID: T03MT - 02

Branch Name: TAXIWAY 03 Use: TAXIWAY

LCD: 11/1/1994
Surface Type: AC
Rank: P
Section Area (sf): 2,514.00
Length (ft): 22.00
Width (ft): 129.00
From: EAST END SECTION 01
To: RUNWAY 18

PCI Family: IowaACTWNC_Enhanced

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

Section Comments:

Last Insp Date: 11/15/2021
PCI: 41
Total Samples: 1
Surveyed: 1

Inspection Comments:

Sample Number: 001

Sample Type: R
Sample PCI: 41
Sample Area (SF): 2,514

Sample Comments:

48 L & T CR	L	135	Ft	LU
48 L & T CR	M	288	Ft	FS SEC CRK, AT BREAK
50 PATCHING	L	150	SF	
52 RAVELING	L	500	SF	
57 WEATHERING	M	2,364	SF	

Branch - Section ID: T03MT - 03

Branch Name: TAXIWAY 03 Use: TAXIWAY

LCD: 6/1/2006
Surface Type: AC
Rank: P
Section Area (sf): 64,025.00
Length (ft): 1,700.00
Width (ft): 35.00
From: RUNWAY 18/36
To: TAXIWAY 02

PCI Family: IowaACTWNC_Enhanced

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

Section Comments:

Last Insp Date: 11/15/2021
PCI: 73
Total Samples: 14
Surveyed: 6

Inspection Comments:

Sample Number: 04

Sample Type: R
Sample PCI: 75
Sample Area (SF): 4,375

Sample Comments:

48 L & T CR	M	135	Ft	
57 WEATHERING	L	4,375	SF	

Sample Number: 05

Sample Type: A
Sample PCI: 65
Sample Area (SF): 4,375

Sample Comments:

45 DEPRESSION	L	110	SF	
48 L & T CR	H	5	Ft	3 IN
48 L & T CR	L	23	Ft	U
48 L & T CR	M	65	Ft	FS SEC CRK W
53 RUTTING	L	40	SF	
56 SWELLING	L	70	SF	

Sample Number: 06

Sample Type: R
Sample PCI: 60
Sample Area (SF): 4,375

Sample Comments:

41 ALLIGATOR CR	L	40	SF	EDGE
48 L & T CR	L	85	Ft	LU
48 L & T CR	M	85	Ft	W
57 WEATHERING	L	4,000	SF	
57 WEATHERING	M	375	SF	

Sample Number: 08

Sample Type: R
Sample PCI: 75
Sample Area (SF): 4,375

Sample Comments:

48 L & T CR	L	43	Ft	
48 L & T CR	M	95	Ft	
57 WEATHERING	L	4,375	SF	

Sample Number: 10

Sample Type: R
Sample PCI: 76
Sample Area (SF): 4,375

Sample Comments:

48 L & T CR	L	43	Ft	LU
48 L & T CR	M	35	Ft	W
52 RAVELING	M	3	SF	
57 WEATHERING	L	4,372	SF	

Sample Number: 12

Sample Type: R
Sample PCI: 80
Sample Area (SF): 4,375

Sample Comments:

48 L & T CR	L	46	Ft	LU
48 L & T CR	M	35	Ft	W
57 WEATHERING	L	4,375	SF	

Branch - Section ID: T04MT - 01

Branch Name: TAXIWAY 04 Use: TAXIWAY

LCD: 11/1/1994
Surface Type: AC
Rank: P
Section Area (sf): 57,940.00
Length (ft): 1,640.00
Width (ft): 36.00
From: TAXIWAY 02
To: EAST END RUNWAY 13

PCI Family: IowaACTWNC_Enhanced

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

Section Comments:

Last Insp Date: 11/15/2021
PCI: 44
Total Samples: 13
Surveyed: 5

Inspection Comments:

Sample Number: 003

Sample Type: R
Sample PCI: 47
Sample Area (SF): 4,375

Sample Comments:

41 ALLIGATOR CR	L	100	SF	EDGE
48 L & T CR	M	110	Ft	W FS SEC CRK
50 PATCHING	L	340	SF	
52 RAVELING	L	1,500	SF	
57 WEATHERING	L	2,035	SF	
57 WEATHERING	M	2,000	SF	

Sample Number: 005

Sample Type: R
Sample PCI: 43
Sample Area (SF): 4,375

Sample Comments:

41 ALLIGATOR CR	L	50	SF	EDGE
48 L & T CR	L	12	Ft	lu
48 L & T CR	M	322	Ft	SEC CRK FS W
50 PATCHING	L	285	SF	
52 RAVELING	L	1,500	SF	
57 WEATHERING	L	2,090	SF	
57 WEATHERING	M	2,000	SF	

Sample Number: 007

Sample Type: R
Sample PCI: 47
Sample Area (SF): 4,375

Sample Comments:

41 ALLIGATOR CR	L	100	SF	EDGE
48 L & T CR	M	110	Ft	SEC CRK FS
50 PATCHING	L	185	SF	
52 RAVELING	L	1,500	SF	
57 WEATHERING	L	2,190	SF	
57 WEATHERING	M	2,000	SF	

Sample Number: 009

Sample Type: R
Sample PCI: 47
Sample Area (SF): 4,375

Sample Comments:

41 ALLIGATOR CR	L	100	SF	EDGE
48 L & T CR	M	178	Ft	W FS
50 PATCHING	L	455	SF	
52 RAVELING	L	1,500	SF	
57 WEATHERING	L	2,545	SF	
57 WEATHERING	M	1,375	SF	

Sample Number: 011

Sample Type: R
Sample PCI: 34
Sample Area (SF): 4,375

Sample Comments:

41 ALLIGATOR CR	L	50	SF	EDGE
48 L & T CR	M	413	Ft	FS W SEC CRK
50 PATCHING	L	125	SF	
52 RAVELING	L	1,500	SF	
53 RUTTING	L	20	SF	
57 WEATHERING	L	3,000	SF	
57 WEATHERING	M	1,250	SF	

Branch - Section ID: TH01MT - 01

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

LCD: 5/2/2010
Surface Type: PCC
Rank: P
Section Area (sf): 39,535.00
Length (ft): 1,355.00
Width (ft): 25.00
From: SEE MAP
To: SEE MAP

PCI Family: IowaPCCTHNorthern

Slabs: 253
Slab Length (ft): 12.50
Slab Width (ft): 12.50
Joint Length (ft): 4,715.02

Section Comments:

Last Insp Date: 11/15/2021
PCI: 94
Total Samples: 13
Surveyed: 7

Inspection Comments:

Sample Number: 02

Sample Type: R
Sample PCI: 98
Sample Area (Slabs): 21

Sample Comments:

65 JT SEAL DMG	L	21	Slabs

Sample Number: 04

Sample Type: R
Sample PCI: 98
Sample Area (Slabs): 21

Sample Comments:

65 JT SEAL DMG	L	21	Slabs

Sample Number: 06

Sample Type: R
Sample PCI: 98
Sample Area (Slabs): 16

Sample Comments:

65 JT SEAL DMG	L	16	Slabs

Sample Number: 07

Sample Type: A
Sample PCI: 58
Sample Area (Slabs): 20

Sample Comments:

63 LINEAR CR	M	3	Slabs
65 JT SEAL DMG	L	20	Slabs
67 LARGE PATCH	H	1	Slabs
67 LARGE PATCH	L	1	Slabs
75 CORNER SPALL	M	1	Slabs

Sample Number: 08

Sample Type: R
Sample PCI: 98
Sample Area (Slabs): 20

Sample Comments:

65 JT SEAL DMG	L	20	Slabs

RE-INSPECTION REPORT
MARSHALLTOWN MUNICIPAL AIRPORT

Sample Number: 11

Sample Type: R
Sample PCI: 95
Sample Area (Slabs): 20

Sample Comments:

65 JT SEAL DMG	L	20	Slabs
66 SMALL PATCH	M	1	Slabs

Sample Number: 12

Sample Type: R
Sample PCI: 98
Sample Area (Slabs): 20

Sample Comments:

65 JT SEAL DMG	L	20	Slabs

Branch - Section ID: TH01MT - 02

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

LCD: 7/1/2012
Surface Type: PCC
Rank: P
Section Area (sf): 18,467.00
Length (ft): 550.00
Width (ft): 35.00
From: SEE MAP
To: SEE MAP

PCI Family: IowaPCCTHNorthern

Slabs: 123
Slab Length (ft): 12.00
Slab Width (ft): 12.50
Joint Length (ft): 2,455.07

Section Comments:

Last Insp Date: 11/15/2021
PCI: 89
Total Samples: 8
Surveyed: 5

Inspection Comments:

Sample Number: 02

Sample Type: R
Sample PCI: 82
Sample Area (Slabs): 13

Sample Comments:

63 LINEAR CR	L	1 Slabs
66 SMALL PATCH	L	1 Slabs
71 FAULTING	L	2 Slabs

Sample Number: 03

Sample Type: R
Sample PCI: 98
Sample Area (Slabs): 18

Sample Comments:

65 JT SEAL DMG	L	18 Slabs

Sample Number: 05

Sample Type: R
Sample PCI: 73
Sample Area (Slabs): 21

Sample Comments:

63 LINEAR CR	L	4 Slabs
63 LINEAR CR	M	2 Slabs
65 JT SEAL DMG	L	21 Slabs

Sample Number: 07

Sample Type: R
Sample PCI: 98
Sample Area (Slabs): 15

Sample Comments:

65 JT SEAL DMG	L	15 Slabs

Sample Number: 08

Sample Type: R
Sample PCI: 98
Sample Area (Slabs): 18

Sample Comments:

65 JT SEAL DMG	L	18 Slabs

RE-INSPECTION REPORT
MARSHALLTOWN MUNICIPAL AIRPORT

Branch - Section ID: TH02MT - 01

Branch Name: T-HANGAR 02 Use: T-HANGAR

LCD: 1/1/1979
Surface Type: AC
Rank: P
Section Area (sf): 24,701.00
Length (ft): 247.00
Width (ft): 100.00
From: SEE MAP
To: SEE MAP

PCI Family: IowaASPHALTTHNorthern

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

Section Comments:

Last Insp Date: 11/15/2021
PCI: 24
Total Samples: 4
Surveyed: 3

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 23
Sample Area (SF): 5,500

Sample Comments:

41 ALLIGATOR CR	M	350	SF	
43 BLOCK CR	M	3,000	SF	W
48 L & T CR	L	100	Ft	LU
48 L & T CR	M	150	Ft	W
50 PATCHING	M	50	SF	
52 RAVELING	L	2,500	SF	
57 WEATHERING	M	5,450	SF	

Sample Number: 02

Sample Type: R
Sample PCI: 29
Sample Area (SF): 6,850

Sample Comments:

41 ALLIGATOR CR	M	300	SF	
43 BLOCK CR	M	3,000	SF	W
48 L & T CR	L	50	Ft	LU
48 L & T CR	M	165	Ft	W
52 RAVELING	L	2,000	SF	
57 WEATHERING	M	6,850	SF	

Sample Number: 03

Sample Type: R
Sample PCI: 19
Sample Area (SF): 5,500

Sample Comments:

41 ALLIGATOR CR	M	800	SF	
43 BLOCK CR	M	3,500	SF	W
48 L & T CR	H	30	Ft	3in
48 L & T CR	M	165	Ft	W
50 PATCHING	M	92	SF	
52 RAVELING	L	2,000	SF	
57 WEATHERING	M	5,408	SF	

APPENDIX D

WORK HISTORY REPORT

Work History

Pavement Database: IA 2021

Network: MARSHALLTOWN MUNICIPAL AIRPORT

Branch - Section ID: A01MT - 01

LCD: 11/1/1994
Use: APRON
Rank: P
Surface: PCC

Length (ft): 340.00
Width (ft): 228.00
True Area (sf): 80,617.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
11-01-1994	NC-PC	New Construction - PCC	$0.00	0.00	True	P501, UNKNOWN THICNESS
06-01-1979	OL-AC	Overlay - AC	$0.00	0.00	True	P401 OVERLAY, UNKNOWN THICKNESS
06-04-1963	NC-AC	New Construction - AC	$0.00	2.00	True	2" P401 AC SURFACE
06-03-1963	BA-AG	Base Course - Aggregate	$0.00	6.00	False	6" P209 CABC
06-02-1963	SB-AG	Subbase - Aggregate	$0.00	6.00	False	6" P154 SUBBASE
06-01-1963	SG-CO	Subgrade - Compacted	$0.00	0.00	False	SUBGRADE

Branch - Section ID: A02MT - 01

LCD: 6/1/2002
Use: APRON
Rank: P
Surface: PCC

Length (ft): 315.00
Width (ft): 252.00
True Area (sf): 81,456.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
06-01-2002	CR-PC	Complete Reconstruction - PCC	$0.00	0.00	True	P501, UNKNOWN THICKNESS
03-01-1994	OL-AC	Overlay - AC	$0.00	0.00	True	P401, UNKNOWN THICKNESS
06-04-1963	NC-AC	New Construction - AC	$0.00	2.00	True	2" P401 AC SURFACE
06-03-1963	BA-AG	Base Course - Aggregate	$0.00	6.00	False	6" P209 CABC
06-02-1963	SB-AG	Subbase - Aggregate	$0.00	6.00	False	6" P154 SUBBASE
06-01-1963	SG-CO	Subgrade - Compacted	$0.00	0.00	False	SUBGRADE

Branch - Section ID: A02MT - 02

LCD: 3/1/1994
Use: APRON
Rank: P
Surface: AAC

Length (ft): 135.00
Width (ft): 85.00
True Area (sf): 11,250.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
03-01-1994	OL-AC	Overlay - AC	$0.00	0.00	True	UNKNOWN THICKNESS
06-04-1963	NC-AC	New Construction - AC	$0.00	2.00	True	2" P401 AC SURFACE
06-03-1963	BA-AG	Base Course - Aggregate	$0.00	6.00	False	6" P209 CABC
06-02-1963	SB-AG	Subbase - Aggregate	$0.00	6.00	False	6" P154 SUBBASE
06-01-1963	SG-CO	Subgrade - Compacted	$0.00	0.00	False	SUBGRADE

Branch - Section ID: A03MT - 01

LCD: 7/1/2012
Use: APRON
Rank: P
Surface: PCC

Length (ft): 198.00
Width (ft): 150.00
True Area (sf): 26,257.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
07-01-2012	CR-PC	Complete Reconstruction - PCC	$0.00	0.00	True	CS UNKNOWN

Work History

Pavement Database: IA 2021

Branch - Section ID: R13MT - 01

LCD: 6/2/2005
Use: RUNWAY
Rank: P
Surface: AAC

Length (ft): 1,125.00
Width (ft): 100.00
True Area (sf): 112,500.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
09-10-2011	CS-AC	Crack Sealing - AC	$0.00	0.00	False	.
06-02-2005	OL-AS	Overlay - AC Structural	$171,475.00	3.00	True	INCLUDES/1" LEVELING COURSE; Total Project
06-01-2005	MI-CO	Cold Milling	$0.00	-1.00	False	1" MILLING
06-02-1990	OL-AC	Overlay - AC	$0.00	2.25	True	2.25" AC OVERLAY INCLUDES/1" LEVELING CO
06-01-1990	MI-CO	Cold Milling	$0.00	-1.00	False	1" MILLING
06-03-1979	NC-AC	New Construction - AC	$0.00	2.00	True	2" P401 AC
06-02-1979	BA-BI	Base Course - Bituminous	$0.00	8.00	False	8" P201 BIT. BASE
06-01-1979	SG-CO	Subgrade - Compacted	$0.00	9.00	False	9" P152 COMPACTED SUBGRADE

Branch - Section ID: R13MT - 02

LCD: 6/2/2005
Use: RUNWAY
Rank: P
Surface: AAC

Length (ft): 3,902.00
Width (ft): 100.00
True Area (sf): 390,200.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-01-2011	CS-AC	Crack Sealing - AC	$0.00	0.00	False	-
06-02-2005	OL-AS	Overlay - AC Structural	$604,675.00	2.00	True	INCLUDES/1" LEVELING COURSE; Total Project
06-01-2005	MI-CO	Cold Milling	$0.00	-1.00	False	MILL 1"
06-02-1990	OL-AS	Overlay - AC Structural	$0.00	2.25	True	2.25" AC OVERLAY, INCLUDES 1" LEVELING C
06-01-1990	MI-CO	Cold Milling	$0.00	0.00	False	VARIABLE DEPTH 0"-1"
06-01-1971	OL-AC	Overlay - AC	$0.00	2.00	True	2" P401 AC OVERLAY
06-03-1964	NC-AC	New Construction - AC	$0.00	2.00	True	2" P401 AC
06-02-1964	BA-AG	Base Course - Aggregate	$0.00	6.00	False	6" P209 CABC
06-01-1964	SB-AG	Subbase - Aggregate	$0.00	5.50	False	5"-6" P154 SUBBASE

Branch - Section ID: R13MT - 03

LCD: 6/1/2005
Use: RUNWAY
Rank: P
Surface: AAC

Length (ft): 100.00
Width (ft): 86.71
True Area (sf): 8,445.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-01-2011	CS-AC	Crack Sealing - AC	$0.00	0.00	False	.
06-01-2005	OL-AS	Overlay - AC Structural	$13,537.50	2.25	True	INCLUDES/1" LEVELING COURSE; Total Project
06-30-1979	NC-AC	New Construction - AC	$0.00	0.00	True	-

Branch - Section ID: R13MT - 04

LCD: 6/1/2005
Use: RUNWAY
Rank: P
Surface: AAC

Length (ft): 80.00
Width (ft): 86.71
True Area (sf): 8,431.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-01-2011	CS-AC	Crack Sealing - AC	$0.00	0.00	False	.
06-01-2005	OL-AS	Overlay - AC Structural	$13,537.50	2.25	True	INCLUDES/1" LEVELING COURSE; Total Project
06-30-1979	NC-AC	New Construction - AC	$0.00	0.00	True	-

Work History

Pavement Database: IA 2021

Branch - Section ID: R18MT - 01

LCD: 6/1/1997
Use: RUNWAY
Rank: S
Surface: AAC

Length (ft): 1,912.00
Width (ft): 50.00
True Area (sf): 95,600.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-01-2011	CS-AC	Crack Sealing - AC	$0.00	0.00	False	.
06-01-1997	OL-AC	Overlay - AC	$0.00	3.00	True	2" AC OVERLAY, 1" LEVELING COARSE, NO MI
06-03-1969	NC-AC	New Construction - AC	$0.00	2.00	True	2" P401 AC (ASSUMED MAT. TYPE)
06-02-1969	BA-BI	Base Course - Bituminous	$0.00	4.00	False	4" P201 BIT. BASE
06-01-1969	SB-AG	Subbase - Aggregate	$0.00	4.00	False	4" P213 SUBBASE

Branch - Section ID: R18MT - 02

LCD: 6/1/1997
Use: RUNWAY
Rank: S
Surface: AAC

Length (ft): 466.00
Width (ft): 50.00
True Area (sf): 26,970.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-01-2017	CS-AC	Crack Sealing - AC	$0.00	0.00	False	select/partial; filled with slurry material. Filled with
10-01-2017	PA-AD	Patching - AC Deep	$0.00	0.00	False	Crack repair, 3ft. wide patch
10-01-2011	CS-AC	Crack Sealing - AC	$0.00	0.00	False	.
06-01-1997	OL-AC	Overlay - AC	$0.00	3.00	True	2" AC OVERLAY, 1" LEVELING COARSE, NO MI
06-03-1969	NC-AC	New Construction - AC	$0.00	2.00	True	2" P401 AC
06-02-1969	BA-BI	Base Course - Bituminous	$0.00	4.00	False	4" P201 BIT. BASE
06-01-1969	SB-AG	Subbase - Aggregate	$0.00	4.00	False	4" P213 SUBBASE

Branch - Section ID: R18MT - 03

LCD: 6/1/2005
Use: RUNWAY
Rank: S
Surface: AAC

Length (ft): 140.00
Width (ft): 75.00
True Area (sf): 9,073.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-01-2011	CS-AC	Crack Sealing - AC	$0.00	0.00	False	.
06-01-2005	OL-AS	Overlay - AC Structural	$18,050.00	2.00	True	W/1" LEVELING COURSE; Total Project Cost: $9
06-30-1990	OL-AC	Overlay - AC	$0.00	2.25	True	1.25" AC OVERLAY, 1" LEVELING COARSE, NO
06-01-1971	OL-AC	Overlay - AC	$0.00	2.00	True	2" P401 AC OVERLAY
06-03-1964	NC-AC	New Construction - AC	$0.00	2.00	True	2" P401 AC
06-02-1964	BA-AG	Base Course - Aggregate	$0.00	6.00	False	6" P209 CABC
06-01-1964	SB-AG	Subbase - Aggregate	$0.00	6.00	False	6" P154 SUBBASE

Work History

Pavement Database: IA 2021

Branch - Section ID: R18MT - 04

LCD: 6/1/2005
Use: RUNWAY
Rank: S
Surface: AAC

Length (ft): 120.00
Width (ft): 60.00
True Area (sf): 8,713.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
06-01-2017	PA-AS	Patching - AC Shallow	$0.00	0.00	False	FIELD ESTIMATE
10-01-2011	CS-AC	Crack Sealing - AC	$0.00	0.00	False	.
06-01-2005	OL-AS	Overlay - AC Structural	$18,050.00	2.00	True	W/1" LEVELING COURSE; Total Project Cost: $9
06-30-1990	OL-AC	Overlay - AC	$0.00	2.25	True	1.25" AC OVERLAY, 1" LEVELING COARSE, NO
06-01-1971	OL-AC	Overlay - AC	$0.00	2.00	True	2" P401 AC OVERLAY
06-03-1964	NC-AC	New Construction - AC	$0.00	2.00	True	2" P401 AC
06-02-1964	BA-AG	Base Course - Aggregate	$0.00	6.00	False	6" P209 CABC
06-01-1964	SB-AG	Subbase - Aggregate	$0.00	6.00	False	6" P154 SUBBASE

Branch - Section ID: T01MT - 01

LCD: 10/3/2017
Use: TAXIWAY
Rank: P
Surface: AAC

Length (ft): 1,080.00
Width (ft): 40.00
True Area (sf): 55,336.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-03-2017	OL-AC	Overlay - AC	$0.00	2.50	True	milled butt joints only.
10-02-2017	PA-AD	Patching - AC Deep	$0.00	0.00	False	crack repair 3ft wide patch; pre-overlay crack repai
10-01-2017	CS-AC	Crack Sealing - AC	$0.00	0.00	False	select/partial; filled with P-401 slurry material
10-01-2011	CS-AC	Crack Sealing - AC	$0.00	0.00	False	.
09-10-2011	PA-AD	Patching - AC Deep	$0.00	0.00	False	-
06-01-1979	NC-AC	New Construction - AC	$0.00	0.00	True	-

Branch - Section ID: T02MT - 01

LCD: 6/1/2005
Use: TAXIWAY
Rank: P
Surface: AAC

Length (ft): 609.00
Width (ft): 50.00
True Area (sf): 31,922.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
01-01-2017	CS-AC	Crack Sealing - AC	$0.00	0.00	False	EST
06-01-2005	OL-AS	Overlay - AC Structural	$54,150.00	2.00	True	2" P401 OVERLAY W/1" LEVELING COURSE; To
06-01-1979	OL-AC	Overlay - AC	$0.00	0.00	True	-
06-04-1963	NC-AC	New Construction - AC	$0.00	2.00	True	2" P401 AC SURFACE
06-03-1963	BA-AG	Base Course - Aggregate	$0.00	6.00	False	6" P209 CABC
06-02-1963	SB-AG	Subbase - Aggregate	$0.00	6.00	False	6" P154 SUBBASE
06-01-1963	SG-CO	Subgrade - Compacted	$0.00	0.00	False	SUBGRADE

Work History

Pavement Database: IA 2021

Branch - Section ID: T02MT - 02

LCD: 6/1/2005
Use: TAXIWAY
Rank: P
Surface: AAC

Length (ft): 53.00
Width (ft): 85.00
True Area (sf): 4,470.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
01-01-2017	CS-AC	Crack Sealing - AC	$0.00	0.00	False	EST
06-01-2005	OL-AS	Overlay - AC Structural	$9,025.00	2.00	True	2" P401 OVERLAY W/1" LEVELING COURSE; To
06-30-1987	OL-AC	Overlay - AC	$0.00	0.00	True	-
06-04-1963	NC-AC	New Construction - AC	$0.00	2.00	True	2" P401 AC SURFACE
06-03-1963	BA-AG	Base Course - Aggregate	$0.00	6.00	False	6" P209 CABC
06-02-1963	SB-AG	Subbase - Aggregate	$0.00	6.00	False	6" P154 SUBBASE
06-01-1963	SG-CO	Subgrade - Compacted	$0.00	0.00	False	SUBGRADE

Branch - Section ID: T03MT - 01

LCD: 11/1/1994
Use: TAXIWAY
Rank: P
Surface: AC

Length (ft): 1,753.00
Width (ft): 36.00
True Area (sf): 64,578.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-01-2017	PA-AD	Patching - AC Deep	$0.00	0.00	False	crack repair 3 ft patch
10-01-2017	CS-AC	Crack Sealing - AC	$0.00	0.00	False	select/partial; filled with P-401 slurry material
10-01-2011	CS-AC	Crack Sealing - AC	$0.00	0.00	False	.
09-10-2011	PA-AD	Patching - AC Deep	$0.00	0.00	False	-
11-01-1994	NU-IN	New Construction - Initial	$0.00	0.00	True	-

Branch - Section ID: T03MT - 02

LCD: 11/1/1994
Use: TAXIWAY
Rank: P
Surface: AC

Length (ft): 22.00
Width (ft): 129.00
True Area (sf): 2,514.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
01-01-2017	PA-AS	Patching - AC Shallow	$0.00	0.00	False	EST
10-01-2011	CS-AC	Crack Sealing - AC	$0.00	0.00	False	.
11-01-1994	NU-IN	New Construction - Initial	$0.00	0.00	True	-

Branch - Section ID: T03MT - 03

LCD: 6/1/2006
Use: TAXIWAY
Rank: P
Surface: AC

Length (ft): 1,700.00
Width (ft): 35.00
True Area (sf): 64,025.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
06-01-2006	NU-IN	New Construction - Initial	$0.00	0.00	True	-

Work History

Pavement Database: IA 2021

Branch - Section ID: T04MT - 01

LCD: 11/1/1994
Use: TAXIWAY
Rank: P
Surface: AC

Length (ft): 1,640.00
Width (ft): 36.00
True Area (sf): 57,940.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-01-2017	CS-AC	Crack Sealing - AC	$0.00	0.00	False	select/partial; filled with P-401 slurry material
10-01-2017	PA-AD	Patching - AC Deep	$0.00	0.00	False	crack repair 3ft patch
10-01-2011	CS-AC	Crack Sealing - AC	$0.00	0.00	False	.
09-10-2011	PA-AD	Patching - AC Deep	$0.00	0.00	False	-
11-01-1994	NU-IN	New Construction - Initial	$0.00	0.00	True	-

Branch - Section ID: TH01MT - 01

LCD: 5/2/2010
Use: T-HANGAR
Rank: P
Surface: PCC

Length (ft): 1,355.00
Width (ft): 25.00
True Area (sf): 39,535.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
05-02-2010	CR-PC	Complete Reconstruction - PCC	$0.00	6.00	True	6" P-505 SURFACE
05-01-2010	SB-AG	Subbase - Aggregate	$0.00	4.00	False	4" P-154 SUBBASE

Branch - Section ID: TH01MT - 02

LCD: 7/1/2012
Use: T-HANGAR
Rank: P
Surface: PCC

Length (ft): 550.00
Width (ft): 35.00
True Area (sf): 18,467.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
07-01-2012	CR-PC	Complete Reconstruction - PCC	$0.00	0.00	True	CS UNKNOWN

Branch - Section ID: TH02MT - 01

LCD: 1/1/1979
Use: T-HANGAR
Rank: P
Surface: AC

Length (ft): 247.00
Width (ft): 100.00
True Area (sf): 24,701.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
01-01-1979	NC-AC	New Construction - AC	$0.00	0.00	True	DATE UNKNOWN; CONSTRUCTED PRIOR TO 1

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
A01MT	01	ASR	Medium	3	Slabs	Slab Replacement - PCC	$16.76	$8,122
A01MT	01	Corner Spalling	Medium	7	Slabs	Patching - PCC Partial Depth	$37.54	$674
A01MT	01	Joint Seal Damage	High	555	Slabs	Joint Seal (Localized)	$3.02	$38,626
A01MT	01	Joint Spalling	Medium	3	Slabs	Patching - PCC Partial Depth	$37.54	$809
A01MT	01	LTD Cracking	Medium	3	Slabs	Crack Sealing - PCC	$3.02	$109
A01MT	01	Shattered Slab	Medium	2	Slabs	Slab Replacement - PCC	$16.76	$4,867
A01MT	01	Shattered Slab	High	2	Slabs	Slab Replacement - PCC	$16.76	$4,867
A02MT	01	Corner Break	Medium	8	Slabs	Patching - PCC Full Depth	$16.76	$4,268
A02MT	01	Corner Spalling	High	4	Slabs	Patching - PCC Partial Depth	$37.54	$398
A02MT	01	Joint Seal Damage	High	485	Slabs	Joint Seal (Localized)	$3.02	$36,314
A02MT	01	LTD Cracking	Medium	8	Slabs	Crack Sealing - PCC	$3.02	$310
A03MT	01	Joint Seal Damage	Medium	238	Slabs	Joint Seal (Localized)	$3.02	$14,175
T01MT	01	L&T Cracking	Medium	266	Ft	Crack Sealing - AC	$2.51	$667
T03MT	01	L&T Cracking	Medium	459	Ft	Crack Sealing - AC	$2.51	$1,153
T03MT	01	L&T Cracking	High	121	Ft	Crack Sealing - AC	$2.51	$303
T03MT	01	Raveling	Medium	72	SqFt	Patching - AC Deep	$14.66	$1,052
T03MT	03	L&T Cracking	Medium	1,115	Ft	Crack Sealing - AC	$2.51	$2,798
T03MT	03	L&T Cracking	High	5	Ft	Crack Sealing - AC	$2.51	$13
T03MT	03	Raveling	Medium	8	SqFt	Patching - AC Deep	$14.66	$120
TH01MT	01	Corner Spalling	Medium	1	Slabs	Patching - PCC Partial Depth	$37.54	$101

Table F-1. Year 2022 localized preventive maintenance details (continued).

Branch	Section	Distress Type	Severity	Distress Quantity	Distress Unit	Maintenance Action	Unit Cost	2022 Estimated Cost
TH01MT	01	Large Patch	High	1	Slabs	Patching - PCC Full Depth	$16.76	$1,031
TH01MT	01	LTD Cracking	Medium	3	Slabs	Crack Sealing - PCC	$3.02	$113
TH01MT	01	Small Patch	Medium	2	Slabs	Patching - PCC Full Depth	$16.76	$89
TH01MT	02	LTD Cracking	Medium	3	Slabs	Crack Sealing - PCC	$3.02	$107

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 Marshalltown Municipal Airport.

PREPARED FOR

Iowa Department of Transportation
Modal Transportation Bureau — Aviation
800 Lincoln Way
Ames, Iowa 50010
515-239-1691
iowadot.gov/aviation

JULY 2022