

Red Oak Municipal Airport

PAVEMENT MANAGEMENT REPORT



PREPARED BY

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RED OAK MUNICIPAL AIRPORT PAVEMENT MANAGEMENT REPORT

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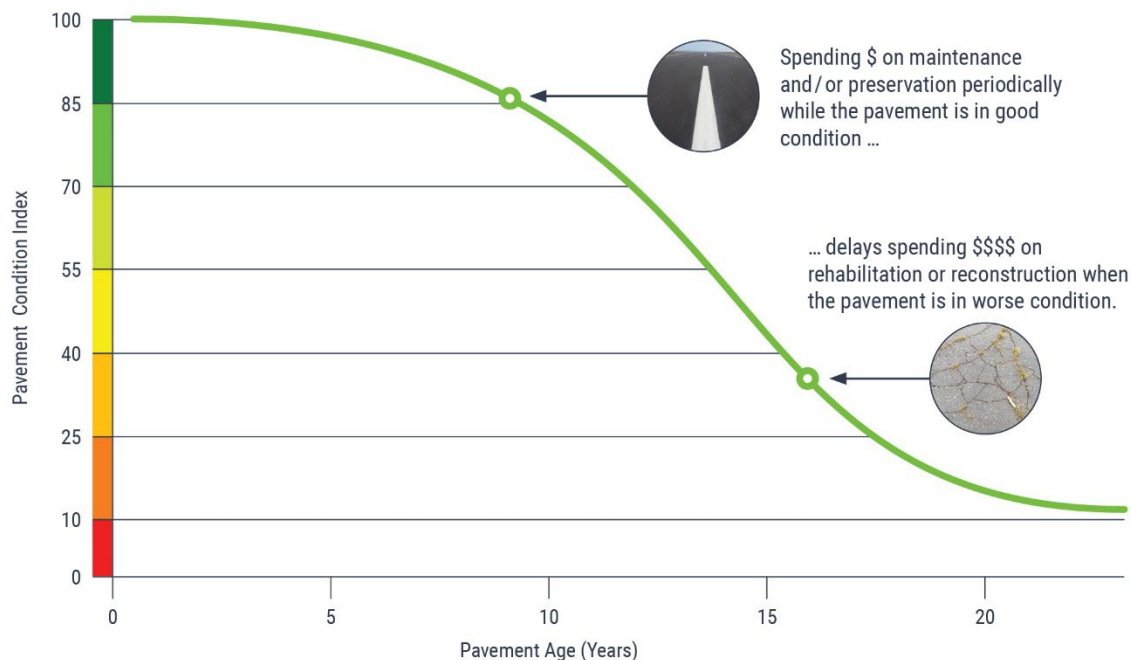
INTRODUCTION

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

As part of this project, pavement conditions at Red Oak 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 Red Oak Municipal Airport are presented within this report and can be used by Red Oak 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 Red Oak 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 Red Oak 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 964,600 square feet of pavement were evaluated at Red Oak 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 Red Oak Municipal Airport.

Figure 2. Pavement area by branch use at Red Oak Municipal Airport.

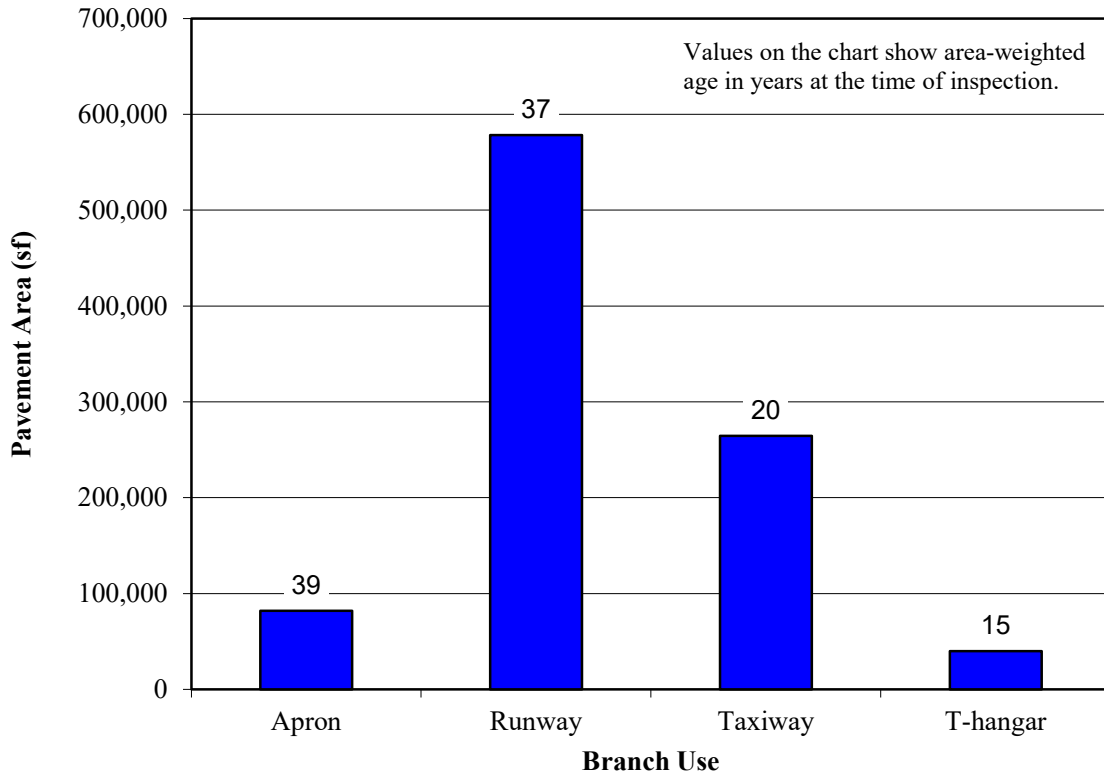
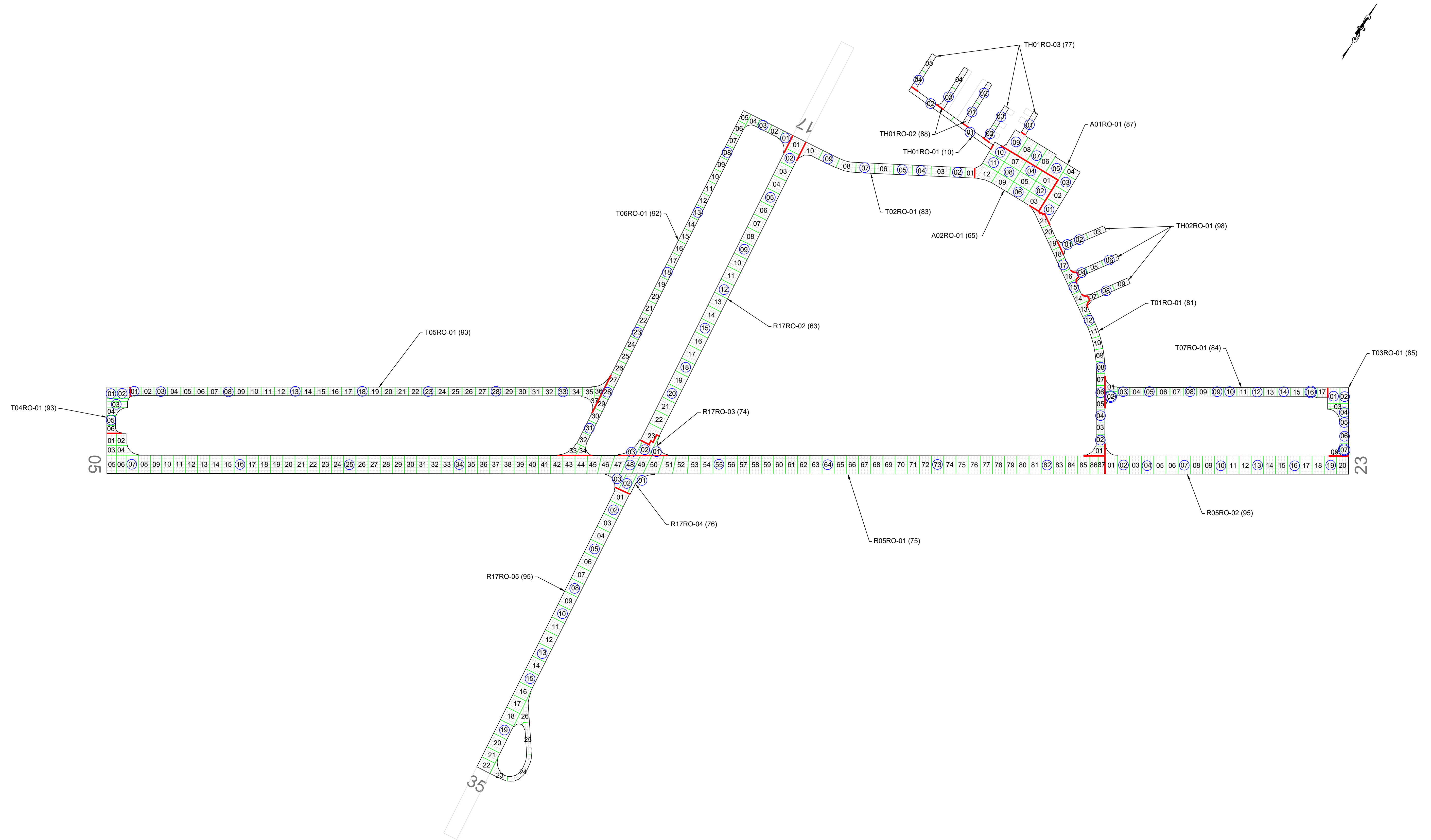


FIGURE 3. NETWORK DEFINITION MAP.



NETWORK DEFINITION LEGEND

- BRANCH IDENTIFIER
SECTION IDENTIFIER
PCI VALUE
- SECTION BREAK LINE
- SAMPLE UNIT BREAK LINE
- SLAB JOINT
- SAMPLE UNIT NUMBER
- SAMPLE UNIT INSPECTED
- ADDITIONAL SAMPLE UNIT

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AGENCY: Iowa Department of Transportation
Modal Transportation Bureau - Aviation

LOCATION: Red Oak Municipal Airport
Red Oak, 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"=200'	LAST MODIFIED DATE: JAN. 2022	REVISED BY: DMS	DRAWN BY: DSP
FILENAME: Red Oak.dwg		LAYOUT NAME/NUMBER: NET. DEF.	PAGE NUMBER: 5

PAVEMENT EVALUATION

Pavement Evaluation Procedure

APTech inspected the pavements at Red Oak 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 surfaces¹.



¹Photographs shown are not specific to Red Oak 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.

PCI Range	Repair
86-100	Preventive Maintenance
71-85	
56-70	
41-55	Major Rehabilitation
26-40	Reconstruction
11-25	
0-10	

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 Red Oak Municipal Airport were inspected in November 2021. The 2021 area-weighted condition of Red Oak Municipal Airport is 81, with conditions ranging from 10 to 98 (on a scale of 0 [failed] to 100 [excellent]). During the previous pavement inspection in 2018, the area-weighted PCI of the airport was 80.

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

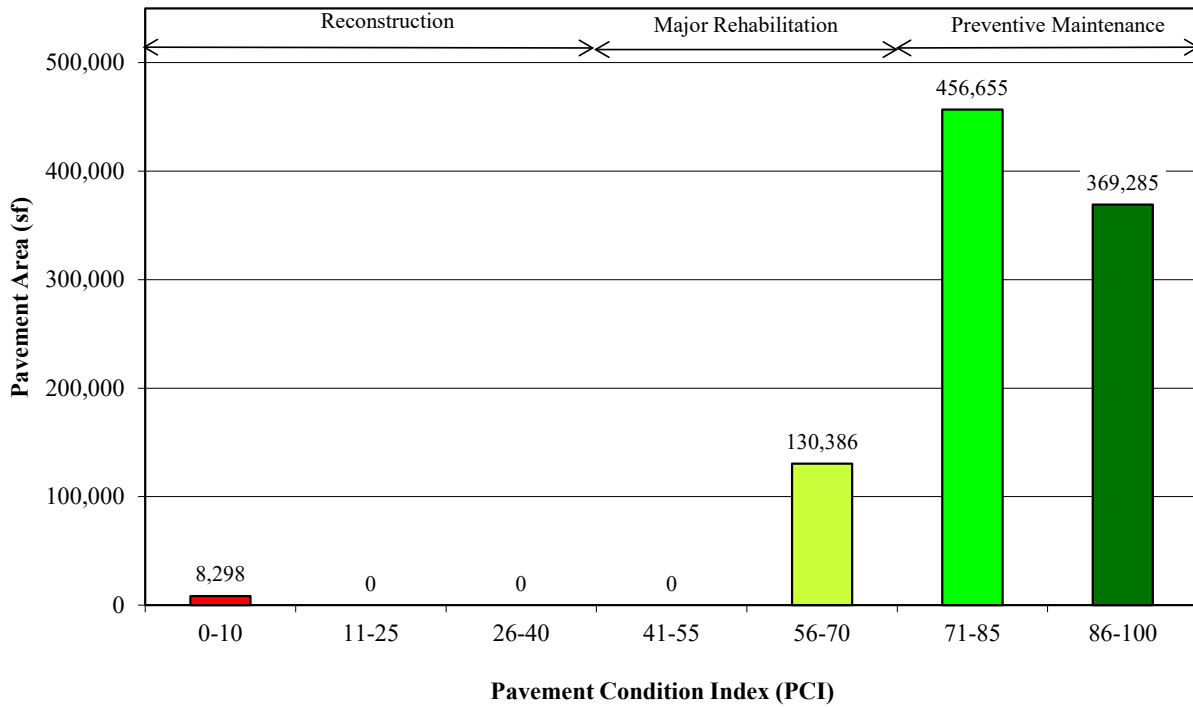


Figure 7. Area-weighted PCI by branch use at Red Oak Municipal Airport.

(Values on chart are area-weighted)

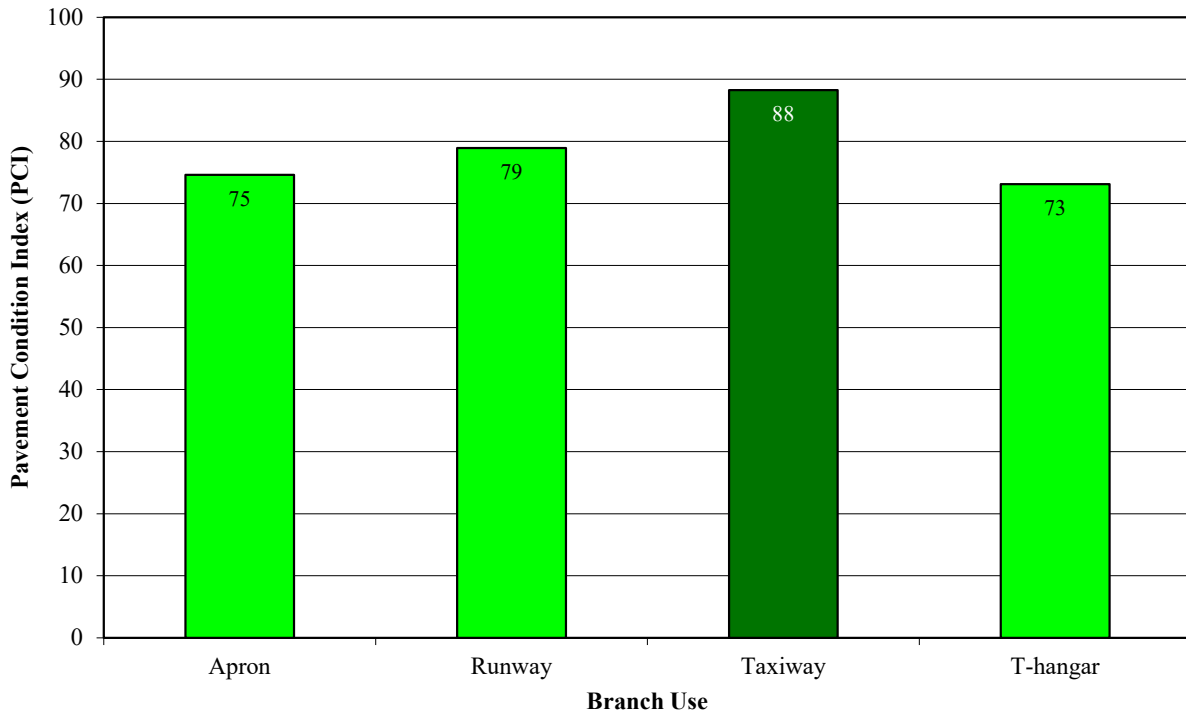
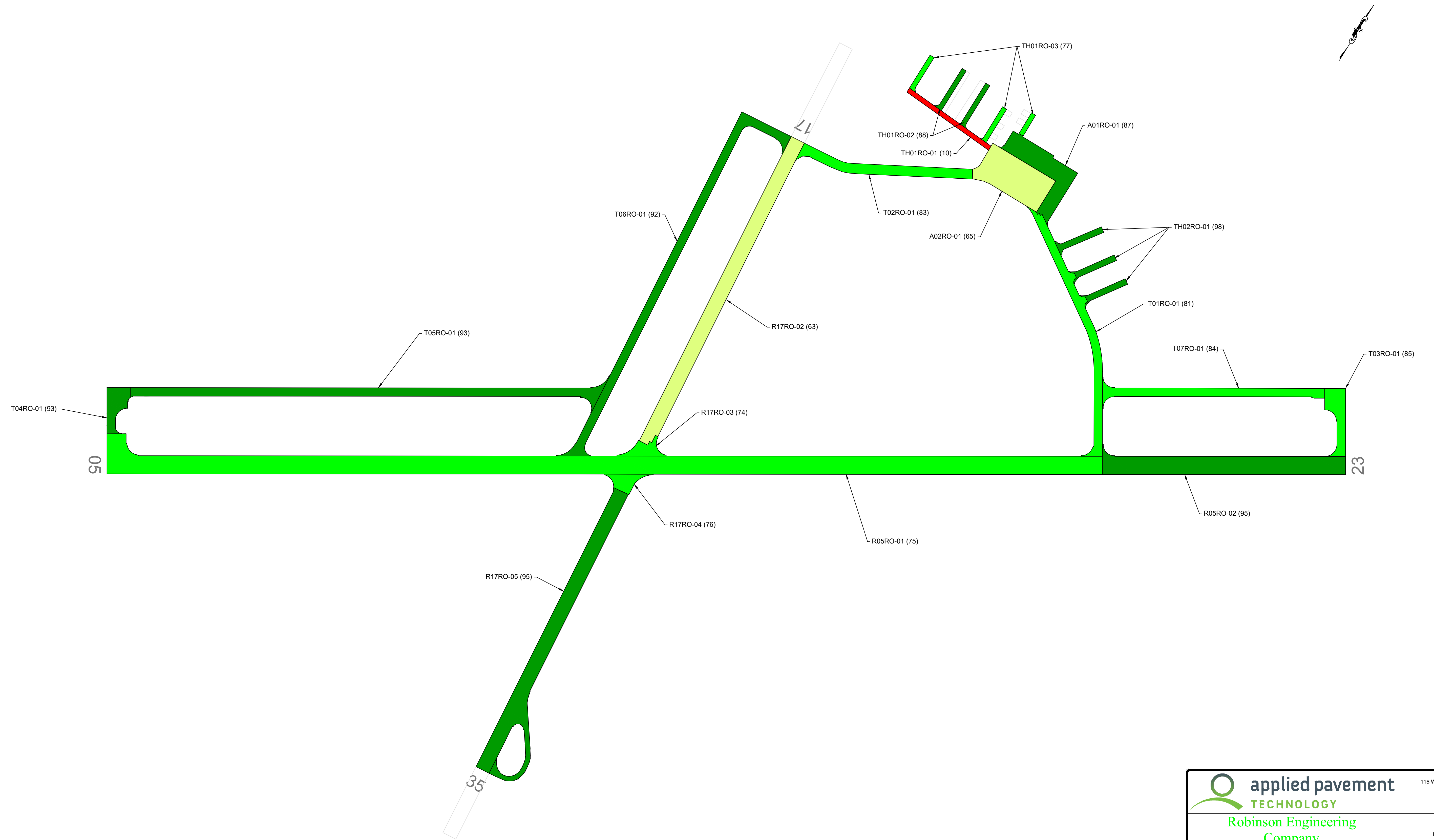


FIGURE 8. PCI MAP.



LEGEND	
	BRANCH IDENTIFIER
	SECTION IDENTIFIER
	PCI VALUE
	SECTION BREAK LINE

PAVEMENT CONDITION INDEX	
PCI	
	86-100
	71-85
	56-70
	41-55
	26-40
	11-25
	0-10

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AGENCY: Iowa Department of Transportation Modal Transportation Bureau - Aviation			
LOCATION: Red Oak Municipal Airport Red Oak, Iowa			
PAGE TITLE: 2021 Pavement Condition Index Map			
PROJECT DATE: SEP. 2021	CREATION DATE: SEP. 2021	PROJECT MANAGER: LJR	JOB NUMBER: 17-020-AM05
DRAWING SCALE: 1"=200'	LAST MODIFIED DATE: APR. 2022	REVISED BY: DSP	DRAWN BY: DSP
FILENAME: Red Oak.dwg		LAYOUT NAME/NUMBER: PCI	PAGE NUMBER: 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
A01RO	01	PCC	35,815	6/3/2000	87	18	14	68	ASR, Corner Spalling, Faulting, Joint Spalling, Joint Seal Damage, Large Patch, LTD Cracking, Shrinkage Cracking, Small Patch
A02RO	01	PCC	46,260	6/3/1968	65	57	4	39	Corner Break, Corner Spalling, Faulting, Joint Spalling, Joint Seal Damage, Large Patch, LTD Cracking, Shattered Slab
R05RO	01	PCC	315,602	6/3/1988	75	18	0	82	ASR, Corner Spalling, Faulting, Joint Spalling, Large Patch, LTD Cracking
R05RO	02	PCC	75,661	8/3/2006	95	0	31	69	Corner Spalling, Faulting, Joint Spalling, Joint Seal Damage, Shrinkage Cracking
R17RO	02	PCC	84,126	6/2/1966	63	25	13	62	ASR, Corner Break, Corner Spalling, Joint Spalling, Joint Seal Damage, Large Patch, LTD Cracking, Scaling, Shattered Slab, Shrinkage Cracking, Small Patch
R17RO	03	PCC	7,080	6/3/1988	74	29	21	50	Corner Break, Corner Spalling, Faulting, Joint Spalling, Joint Seal Damage, Large Patch, LTD Cracking, Shrinkage Cracking
R17RO	04	PCC	7,410	6/3/1988	76	4	23	73	ASR, Corner Break, Faulting, Joint Spalling, Joint Seal Damage, Shrinkage Cracking
R17RO	05	PCC	88,305	6/3/1966	95	0	34	66	Corner Spalling, Joint Spalling, Joint Seal Damage, Shrinkage Cracking, Small Patch

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
T01RO	01	PCC	38,901	6/1/1988	81	0	10	90	ASR, Corner Spalling, Faulting, Joint Seal Damage
T02RO	01	PCC	30,024	6/3/1968	83	72	9	19	Corner Spalling, Joint Spalling, Joint Seal Damage, LTD Cracking, Shrinkage Cracking
T03RO	01	PCC	15,460	8/3/2007	85	25	57	18	ASR, Corner Break, Faulting, Joint Seal Damage, LTD Cracking
T04RO	01	PCC	12,142	8/3/2007	93	12	75	13	ASR, Joint Seal Damage, LTD Cracking
T05RO	01	PCC	69,960	10/1/2008	93	0	64	36	ASR, Corner Spalling, Faulting, Joint Seal Damage, Small Patch
T06RO	01	PCC	64,477	10/1/2008	92	6	55	39	Faulting, Joint Spalling, Joint Seal Damage, LTD Cracking
T07RO	01	PCC	33,622	6/3/2009	84	30	36	34	ASR, Blowup, Corner Break, Corner Spalling, Faulting, Joint Spalling, Joint Seal Damage, LTD Cracking, Scaling, Shrinkage Cracking
TH01RO	01	AC	8,298	1/1/1968	10	52	43	5	Alligator Cracking, L&T Cracking, Patching, Rutting, Shoving, Weathering
TH01RO	02	PCC	8,027	5/2/2014	88	58	15	27	Corner Spalling, Joint Spalling, Joint Seal Damage, LTD Cracking
TH01RO	03	PCC	8,556	10/16/2015	77	53	39	8	Corner Spalling, Joint Spalling, Joint Seal Damage, LTD Cracking
TH02RO	01	PCC	14,898	6/1/2018	98	0	100	0	Joint Seal Damage

Table Notes:

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

Table 1. 2021 pavement evaluation results (continued).

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

Inspection Comments

Red Oak Municipal Airport was inspected on November 18, 2021. There were nineteen pavement sections defined during the inspection. Suspected alkali-silica reaction (ASR) was recorded at this airport 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.

Runways

Runway 05/23 was defined by two sections. Section 01 contained areas of low-severity large patching and low- and medium-severity ASR, corner spalling, faulting, joint spalling, and longitudinal, transverse, and diagonal (LTD) cracking. Low-severity joint seal damage and corner spalling, low- and medium-severity faulting, medium-severity joint spalling, and shrinkage cracking were recorded in Section 02.

Runway 17/35 consisted of four sections. Section 02 contained low- and medium-severity corner spalling, scaling, joint seal damage, large patching, joint spalling, and ASR; medium-severity shattered slab and corner break; all severities LTD cracking; shrinkage cracking; and low- and high-severity small patching. Medium-severity corner break, corner spalling, and joint spalling; low- and medium-severity faulting, LTD cracking, and joint seal damage; low-severity large patching; and shrinkage cracking were observed in Section 03. Section 04 had areas of low-severity ASR and corner break; low- and medium-severity faulting; medium-severity joint seal damage and joint spalling; and shrinkage cracking noted. Section 05 was in excellent condition with areas of medium-severity corner spalling; low-severity joint seal damage, joint spalling, and small patching; and shrinkage cracking identified at the time of inspection.

Taxiways

Taxiway 01 connected Runway 05/23 with the apron area and contained one section. Low- and medium-severity corner spalling and low-severity faulting, ASR, and joint seal damage were recorded in Section 01.

Taxiway 02 connected the Runway 17 approach with the apron area and was defined by one section. Section 01 contained areas of low- and medium-severity corner spalling, joint spalling, and LTD cracking; low-severity joint seal damage; and shrinkage cracking.

Taxiway 03 consisted of one section located at the Runway 23 approach. Low-severity ASR and faulting; high-severity corner break; all severities of joint seal damage; and medium-severity LTD cracking. An atypical area of medium-severity faulting was also identified and recorded as an additional sample unit, according to ASTM D5340-20.

Taxiway 04 contained one section, located at the Runway 05 approach, that had areas of low-severity ASR, low- and medium-severity joint seal damage, and low-severity LTD cracking noted throughout.

Taxiway 05 was defined by one section. Section 01 had areas of low-severity ASR, corner spalling, and faulting; low- and medium-severity joint seal damage; and high-severity small patching.

Taxiway 06 consisted of one section. Low-severity faulting and LTD cracking, low- and medium-severity joint seal damage, and all severities of joint spalling were recorded in Section 01.

Taxiway 07 connected the Runway 23 approach with Taxiway 01 and contained one section with areas of low-severity ASR and faulting; low- and medium-severity corner spalling, LTD cracking, and joint seal damage; medium-severity joint spalling and scaling; and shrinkage cracking. Two atypical areas of low-severity blow-up and high-severity joint spalling, corner spalling, and corner break were identified and recorded as additional sample units, according to ASTM D5340-20.

Aprons

Apron 01 consisted of one section. Section 01 had areas of low-severity ASR, faulting, large patching, joint seal damage, LTD cracking, and small patching; low- and medium-severity corner spalling and joint spalling; and shrinkage cracking.

Apron 02 was defined by one section with areas of low-severity corner break, joint seal damage, large patching, and shattered slab recorded at the time of inspection, as well as low- and medium-severity corner spalling, faulting, joint spalling, and LTD cracking.

T-Hangars

The T-hangar 01 area was divided into three sections. Section 01 was in poor condition with areas of medium- and high-severity alligator cracking and L&T cracking, low-severity patching and rutting, medium-severity shoving, and high-severity weathering noted at the time of inspection. The medium-severity L&T cracking was unsealed with crack widths exceeding $\frac{1}{4}$ in, while the high-severity L&T cracking was noted where crack widths were greater than 3 in. Medium-severity corner spalling and joint spalling, low-severity joint seal damage, and low- and medium-severity LTD cracking were recorded in Section 02. Section 03 contained medium-severity corner spalling and joint spalling, high-severity joint seal damage, and low- and medium-severity LTD cracking.

The T-hangar 02 area consisted of one section in excellent condition with only low severity joint seal damage recorded throughout.

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 Red Oak 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 Red Oak 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 Red Oak 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 Red Oak 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	A01RO	01	PCC	Preventive Maintenance	\$1,275
2022	A02RO	01	PCC	Preventive Maintenance	\$7,340
2022	R05RO	01	PCC	Preventive Maintenance	\$28,997
2022	R05RO	02	PCC	Preventive Maintenance	\$711
2022	R17RO	02	PCC	Major Rehabilitation	\$691,677
2022	R17RO	03	PCC	Preventive Maintenance	\$1,634
2022	R17RO	04	PCC	Preventive Maintenance	\$4,445
2022	R17RO	05	PCC	Preventive Maintenance	\$354
2022	T01RO	01	PCC	Preventive Maintenance	\$305
2022	T02RO	01	PCC	Preventive Maintenance	\$1,457
2022	T03RO	01	PCC	Preventive Maintenance	\$5,107
2022	T04RO	01	PCC	Preventive Maintenance	\$3,623
2022	T05RO	01	PCC	Preventive Maintenance	\$9,689
2022	T06RO	01	PCC	Preventive Maintenance	\$15,259
2022	T07RO	01	PCC	Preventive Maintenance	\$14,781
2022	TH01RO	01	AC	Major Rehabilitation	\$86,419
2022	TH01RO	02	PCC	Preventive Maintenance	\$513
2022	TH01RO	03	PCC	Preventive Maintenance	\$4,385

Total Estimated Cost: \$878,000

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 Red Oak Municipal Airport.

The recommendations made in this report are based on a broad network-level analysis and meant to provide Red Oak 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 Red Oak 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, Red Oak 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 Red Oak 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, Red Oak 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 Red Oak 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 Red Oak 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 Red Oak 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
A01RO	01					
A02RO	01					
R05RO	01					
R05RO	02					
R17RO	02					
R17RO	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
R17RO	04					
R17RO	05					
T01RO	01					
T02RO	01					
T03RO	01					
T04RO	01					

Table 3. Pavement inspection report (continued).

Inspected By: _____

Date Inspected: _____

Branch	Section	Distress Description/Dimensions/Severity/ Recommended Action	Description of Repair	Date Performed	Cost	Funding Source
T05RO	01					
T06RO	01					
T07RO	01					
TH01RO	01					
TH01RO	02					
TH01RO	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
TH02RO	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 Red Oak Municipal Airport. A visual inspection of the pavements in 2021 found that the overall condition of the pavement network is a PCI of 81. A 5-year pavement repair program, shown in Table 2, was generated for Red Oak Municipal Airport, which revealed that approximately \$878,000 needs to be expended on M&R. Red Oak 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

A01RO-01. Overview.



A01RO-01. LTD Cracking (Sample Unit No. 05).



A02RO-01. Overview.



A02RO-01. Shattered Slab (Sample Unit No. 06).



R05RO-01. Overview.



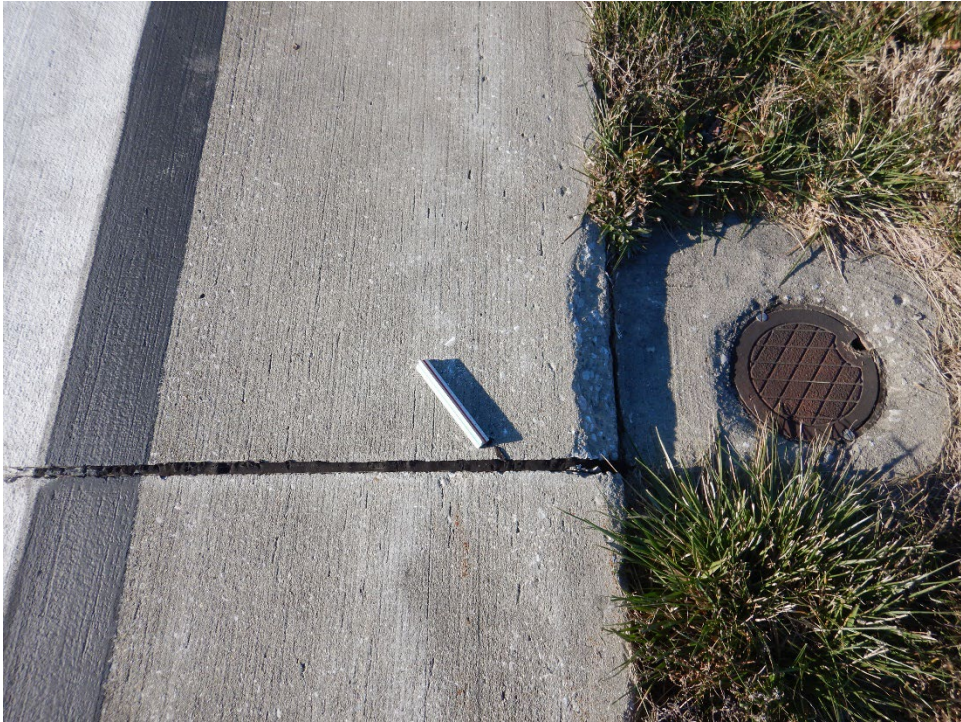
R05RO-01. Faulting (Sample Unit No. 16).



R05RO-02. Overview.



R05RO-02. Joint Spalling (Sample Unit No. 19).



R17RO-02. Overview.



R17RO-02. ASR (Sample Unit No. 02).



R17RO-02. Large Patching (Sample Unit No. 02).



R17RO-03. Overview.



R17RO-03. Joint Spalling (Sample Unit No. 02).



R17RO-04. Overview.



R17RO-04. ASR (Sample Unit No. 02).



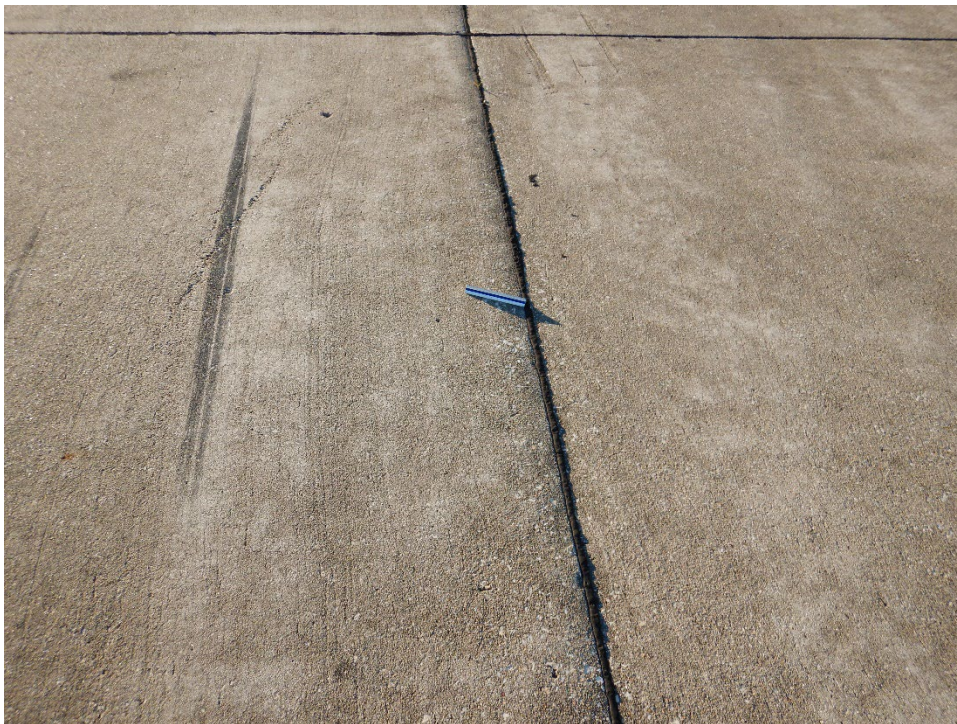
R17RO-04. Joint Spalling (Sample Unit No. 02).



R17RO-05. Overview.



R17RO-05. Joint Seal Damage (Sample Unit No. 08).



T01RO-01. Overview.



T01RO-01. ASR (Sample Unit No. 17).



T01RO-01. Corner Spalling (Sample Unit No. 06).



T02RO-01. Overview.



T02RO-01. LTD Cracking (Sample Unit No. 09).



T03RO-01. Overview.



T03RO-01. Corner Break (Sample Unit No. 02).



T04RO-01. Overview.



T04RO-01. LTD Cracking (Sample Unit No. 03).



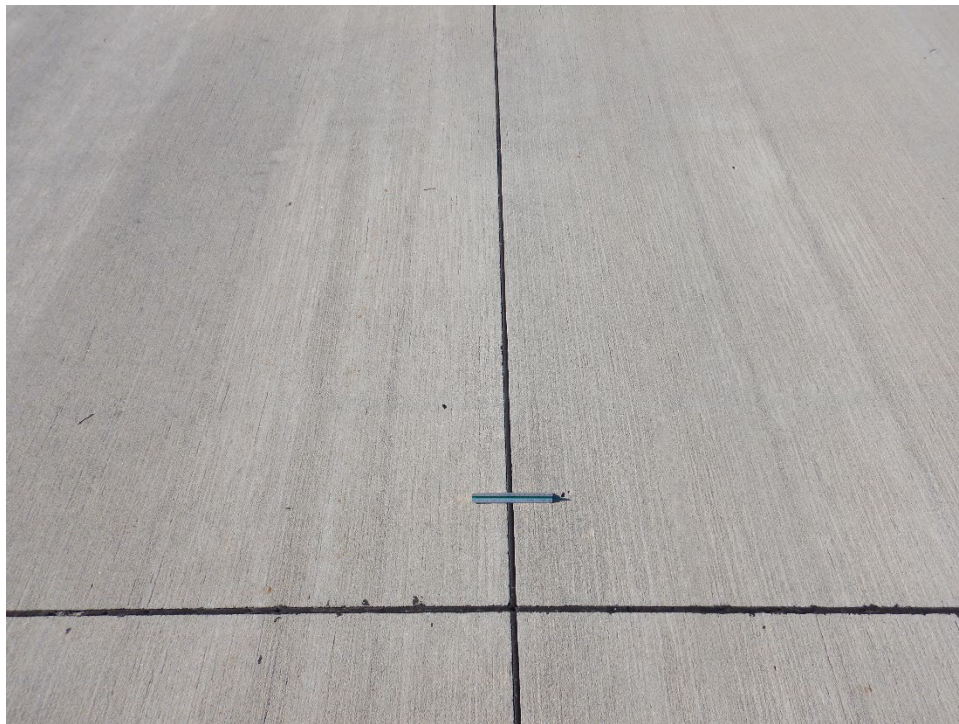
T05RO-01. Overview.



T05RO-01. ASR (Sample Unit No. 28).



T05RO-01. Joint Seal Damage (Sample Unit No. 08).



T06RO-01. Overview.



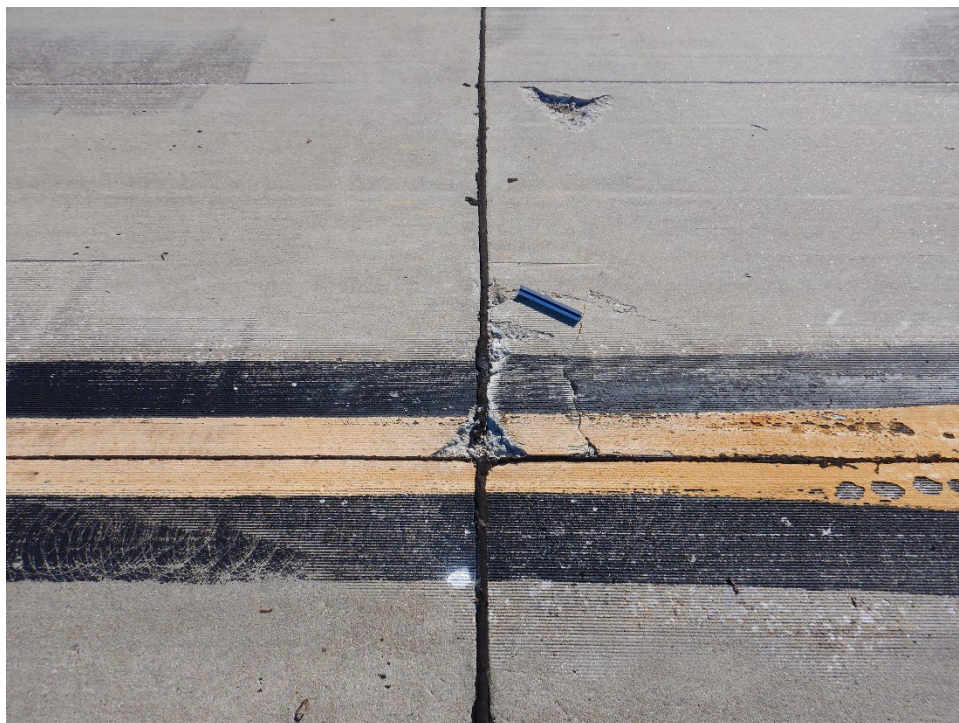
T06RO-01. Joint Seal Damage (Sample Unit No. 13).



T07RO-01. Overview.



T07RO-01. Blow-Up (Additional Sample Unit No. 01).



T07RO-01. Joint Spalling (Additional Sample Unit No. 16).



T07RO-01. LTD Cracking (Sample Unit No. 09).



TH01RO-01. Overview.



TH01RO-01. Alligator Cracking (Sample Unit No. 02).



TH01RO-02. Overview.



TH01RO-02. Joint Spalling (Sample Unit No. 01).



TH01RO-03. Overview.



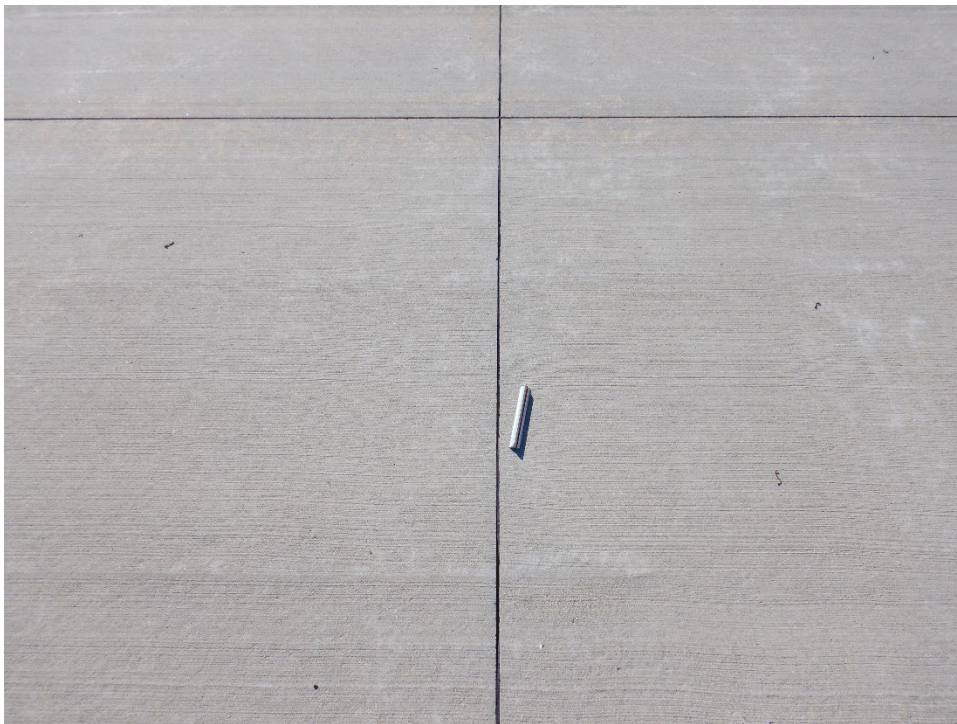
TH01RO-03. Joint Spalling (Sample Unit No. 01).



TH02RO-01. Overview.



TH02RO-01. Joint Seal Damage (Sample Unit No. 08).



APPENDIX C

INSPECTION REPORT

RE-INSPECTION REPORT RED OAK MUNICIPAL AIRPORT

Pavement Database: IA 2021

Generate Date: 4/27/2022

Network ID: RDK

Page 1

Branch - Section ID: A01RO - 01

Branch Name: APRON 01

Use: APRON

LCD: 6/3/2000
 Surface Type: PCC
 Rank: P
 Section Area (sf): 35,815.00
 Length (ft): 500.00
 Width (ft): 75.00
 From:
 To:
 Slabs: 191
 Slab Length (ft): 15.00
 Slab Width (ft): 12.50
 Joint Length (ft): 4,703.70
 Last Insp Date: 11/18/2021
 PCI: 87
 Total Samples: 9
 Surveyed: 5

PCI Family: IowaPCCAPSC

Section Comments:

Inspection Comments:

Sample Number: 01

Sample Type: R
 Sample PCI: 81
 Sample Area (Slabs): 24

Sample Comments:

65 JT SEAL DMG	L	24 Slabs
66 SMALL PATCH	L	1 Slabs
73 SHRINKAGE CR	N	1 Slabs
74 JOINT SPALL	L	1 Slabs
74 JOINT SPALL	M	1 Slabs
75 CORNER SPALL	M	2 Slabs
76 ASR	L	1 Slabs

Sample Number: 03

Sample Type: R
 Sample PCI: 79
 Sample Area (Slabs): 20

Sample Comments:

65 JT SEAL DMG	L	20 Slabs
67 LARGE PATCH	L	1 Slabs
71 FAULTING	L	1 Slabs
73 SHRINKAGE CR	N	2 Slabs
74 JOINT SPALL	L	1 Slabs
74 JOINT SPALL	M	1 Slabs
75 CORNER SPALL	M	1 Slabs

Sample Number: 05

Sample Type: R
 Sample PCI: 87
 Sample Area (Slabs): 24

Sample Comments:

63 LINEAR CR	L	2 Slabs
65 JT SEAL DMG	L	24 Slabs
74 JOINT SPALL	L	1 Slabs
75 CORNER SPALL	L	1 Slabs

RE-INSPECTION REPORT RED OAK MUNICIPAL AIRPORT

Pavement Database: IA 2021

Generate Date: 4/27/2022

Network ID: RDK

Page 2

Sample Number: 07

Sample Type: R

Sample Comments:

Sample PCI: 94

Sample Area (Slabs): 21

65 JT SEAL DMG

L

21 Slabs

71 FAULTING

L

1 Slabs

Sample Number: 09

Sample Type: R

Sample Comments:

Sample PCI: 93

Sample Area (Slabs): 29

63 LINEAR CR

L

1 Slabs

65 JT SEAL DMG

L

29 Slabs

75 CORNER SPALL

L

1 Slabs

RE-INSPECTION REPORT RED OAK MUNICIPAL AIRPORT

Pavement Database: IA 2021

Generate Date: 4/27/2022

Network ID: RDK

Page 3

Branch - Section ID: A02RO - 01

Branch Name: APRON 02

Use: APRON

LCD: 6/3/1968

PCI Family: IowaPCCAPSC

Surface Type: PCC

Rank: P

Section Area (sf): 46,260.00

Length (ft): 302.00

Width (ft): 150.00

From:

To:

Slabs: 247

Section Comments:

Slab Length (ft): 15.00

Slab Width (ft): 12.50

Joint Length (ft): 6,323.22

Last Insp Date: 11/18/2021

Inspection Comments:

PCI: 65

Total Samples: 12

Surveyed: 6

Sample Number: 002

Sample Type: R

Sample Comments:

Sample PCI: 62

Sample Area (Slabs): 20

62 CORNER BREAK	L	1 Slabs
63 LINEAR CR	L	6 Slabs
65 JT SEAL DMG	L	20 Slabs
74 JOINT SPALL	L	2 Slabs
74 JOINT SPALL	M	3 Slabs
75 CORNER SPALL	L	1 Slabs
75 CORNER SPALL	M	2 Slabs

Sample Number: 004

Sample Type: R

Sample Comments:

Sample PCI: 55

Sample Area (Slabs): 20

62 CORNER BREAK	L	1 Slabs
63 LINEAR CR	L	2 Slabs
63 LINEAR CR	M	2 Slabs
65 JT SEAL DMG	L	20 Slabs
67 LARGE PATCH	L	1 Slabs
74 JOINT SPALL	M	3 Slabs
75 CORNER SPALL	L	1 Slabs
75 CORNER SPALL	M	3 Slabs

Sample Number: 006

Sample Type: R

Sample Comments:

Sample PCI: 47

Sample Area (Slabs): 20

62 CORNER BREAK	L	1 Slabs
63 LINEAR CR	L	3 Slabs
63 LINEAR CR	M	5 Slabs
65 JT SEAL DMG	L	20 Slabs
72 SHAT. SLAB	L	1 Slabs
74 JOINT SPALL	M	2 Slabs

RE-INSPECTION REPORT RED OAK MUNICIPAL AIRPORT

Pavement Database: IA 2021

Generate Date: 4/27/2022

Network ID: RDK

Page 4

Sample Number: 008

Sample Type: R

Sample Comments:

Sample PCI: 72

Sample Area (Slabs): 20

63 LINEAR CR	L	2 Slabs
65 JT SEAL DMG	L	20 Slabs
67 LARGE PATCH	L	1 Slabs
74 JOINT SPALL	L	6 Slabs
74 JOINT SPALL	M	2 Slabs
75 CORNER SPALL	M	1 Slabs

Sample Number: 010

Sample Type: R

Sample Comments:

Sample PCI: 57

Sample Area (Slabs): 20

63 LINEAR CR	L	1 Slabs
63 LINEAR CR	M	2 Slabs
65 JT SEAL DMG	L	20 Slabs
67 LARGE PATCH	L	1 Slabs
71 FAULTING	L	2 Slabs
71 FAULTING	M	1 Slabs
75 CORNER SPALL	L	2 Slabs

Sample Number: 011

Sample Type: R

Sample Comments:

Sample PCI: 95

Sample Area (Slabs): 20

65 JT SEAL DMG	L	20 Slabs
74 JOINT SPALL	L	2 Slabs

RE-INSPECTION REPORT RED OAK MUNICIPAL AIRPORT

Pavement Database: IA 2021

Generate Date: 4/27/2022

Network ID: RDK

Page 5

Branch - Section ID: R05RO - 01

Branch Name: RUNWAY 05/23

Use: RUNWAY

LCD: 6/3/1988

PCI Family: IowaPCCRWSC_General

Surface Type: PCC

Rank: P

Section Area (sf): 315,602.00

Length (ft): 4,100.00

Width (ft): 75.00

From: RUNWAY END 05

To: RUNWAY END 23

Slabs: 2,020

Section Comments:

Slab Length (ft): 12.50

Slab Width (ft): 12.50

Joint Length (ft): 46,211.32

Last Insp Date: 11/18/2021

Inspection Comments:

PCI: 75

Total Samples: 84

Surveyed: 9

Sample Number: 007

Sample Type: R

Sample Comments:

Sample PCI: 79

Sample Area (Slabs): 24

71 FAULTING

M

4 Slabs

Sample Number: 016

Sample Type: R

Sample Comments:

Sample PCI: 82

Sample Area (Slabs): 24

71 FAULTING

M

3 Slabs

74 JOINT SPALL

L

1 Slabs

Sample Number: 025

Sample Type: R

Sample Comments:

Sample PCI: 70

Sample Area (Slabs): 24

63 LINEAR CR

L

5 Slabs

63 LINEAR CR

M

1 Slabs

71 FAULTING

M

3 Slabs

Sample Number: 034

Sample Type: R

Sample Comments:

Sample PCI: 84

Sample Area (Slabs): 24

71 FAULTING

L

2 Slabs

71 FAULTING

M

1 Slabs

75 CORNER SPALL

M

1 Slabs

Sample Number: 048

Sample Type: R

Sample Comments:

Sample PCI: 75

Sample Area (Slabs): 24

71 FAULTING

L

6 Slabs

74 JOINT SPALL

M

1 Slabs

76 ASR

L

3 Slabs

RE-INSPECTION REPORT RED OAK MUNICIPAL AIRPORT

Pavement Database: IA 2021

Generate Date: 4/27/2022

Network ID: RDK

Page 6

Sample Number: 055

Sample Type: R
Sample PCI: 90
Sample Area (Slabs): 24
71 FAULTING

Sample Comments:

L 3 Slabs

Sample Number: 064

Sample Type: R
Sample PCI: 56
Sample Area (Slabs): 24
63 LINEAR CR
67 LARGE PATCH
71 FAULTING
71 FAULTING
74 JOINT SPALL
76 ASR
76 ASR

Sample Comments:

L 2 Slabs
L 2 Slabs
L 4 Slabs
M 2 Slabs
L 1 Slabs
L 6 Slabs
M 1 Slabs

Sample Number: 073

Sample Type: R
Sample PCI: 80
Sample Area (Slabs): 24
71 FAULTING
71 FAULTING
75 CORNER SPALL
76 ASR

Sample Comments:

L 1 Slabs
M 1 Slabs
L 1 Slabs
L 3 Slabs

Sample Number: 082

Sample Type: R
Sample PCI: 62
Sample Area (Slabs): 24
63 LINEAR CR
63 LINEAR CR
67 LARGE PATCH
71 FAULTING
74 JOINT SPALL
75 CORNER SPALL

Sample Comments:

L 3 Slabs
M 1 Slabs
L 3 Slabs
L 6 Slabs
L 1 Slabs
L 3 Slabs

RE-INSPECTION REPORT RED OAK MUNICIPAL AIRPORT

Pavement Database: IA 2021

Generate Date: 4/27/2022

Network ID: RDK

Page 7

Branch - Section ID: R05RO - 02

Branch Name: RUNWAY 05/23

Use: RUNWAY

LCD: 8/3/2006

PCI Family: IowaPCCRWSC_General

Surface Type: PCC

Rank: P

Section Area (sf): 75,661.00

Length (ft): 1,000.00

Width (ft): 75.00

From: R05RO-01

To: 23-END

Slabs: 484

Section Comments:

Slab Length (ft): 12.50

Slab Width (ft): 12.50

Joint Length (ft): 11,021.29

Last Insp Date: 11/18/2021

Inspection Comments:

PCI: 95

Total Samples: 20

Surveyed: 7

Sample Number: 002

Sample Type: R

Sample Comments:

Sample PCI: 97

Sample Area (Slabs): 24

65 JT SEAL DMG
73 SHRINKAGE CR

L
N

24 Slabs
1 Slabs

Sample Number: 004

Sample Type: R

Sample Comments:

Sample PCI: 98

Sample Area (Slabs): 24

65 JT SEAL DMG

L

24 Slabs

Sample Number: 007

Sample Type: R

Sample Comments:

Sample PCI: 96

Sample Area (Slabs): 24

65 JT SEAL DMG
75 CORNER SPALL

L
L

24 Slabs
1 Slabs

Sample Number: 010

Sample Type: R

Sample Comments:

Sample PCI: 98

Sample Area (Slabs): 24

65 JT SEAL DMG

L

24 Slabs

Sample Number: 013

Sample Type: R

Sample Comments:

Sample PCI: 98

Sample Area (Slabs): 24

65 JT SEAL DMG

L

24 Slabs

RE-INSPECTION REPORT RED OAK MUNICIPAL AIRPORT

Pavement Database: IA 2021

Generate Date: 4/27/2022

Network ID: RDK

Page 8

Sample Number: 016

Sample Type: R

Sample Comments:

Sample PCI: 86

Sample Area (Slabs): 24

65 JT SEAL DMG

L

24 Slabs

71 FAULTING

L

2 Slabs

71 FAULTING

M

1 Slabs

Sample Number: 019

Sample Type: R

Sample Comments:

Sample PCI: 95

Sample Area (Slabs): 24

65 JT SEAL DMG

L

24 Slabs

74 JOINT SPALL

M

1 Slabs

RE-INSPECTION REPORT RED OAK MUNICIPAL AIRPORT

Pavement Database: IA 2021

Generate Date: 4/27/2022

Network ID: RDK

Page 9

Branch - Section ID: R17RO - 02

Branch Name: RUNWAY 17/35

Use: RUNWAY

LCD: 6/2/1966
 Surface Type: PCC
 Rank: S
 Section Area (sf): 84,126.00
 Length (ft): 1,350.00
 Width (ft): 60.00
 From: RUNWAY SECT 01
 To: RUNWAY SECT 03
 Slabs: 561
 Slab Length (ft): 15.00
 Slab Width (ft): 10.00
 Joint Length (ft): 12,556.58
 Last Insp Date: 11/18/2021
 PCI: 63
 Total Samples: 23
 Surveyed: 7

PCI Family: IowaPCCRWSC_General

Section Comments:

Inspection Comments:

Sample Number: 002

Sample Type: R
 Sample PCI: 34
 Sample Area (Slabs): 24

Sample Comments:

62 CORNER BREAK	M	2 Slabs
63 LINEAR CR	L	1 Slabs
63 LINEAR CR	M	1 Slabs
65 JT SEAL DMG	L	24 Slabs
67 LARGE PATCH	L	12 Slabs
70 SCALING	L	3 Slabs
70 SCALING	M	4 Slabs
72 SHAT. SLAB	M	1 Slabs
73 SHRINKAGE CR	N	3 Slabs
75 CORNER SPALL	L	2 Slabs
76 ASR	L	3 Slabs
76 ASR	M	2 Slabs

Sample Number: 005

Sample Type: R
 Sample PCI: 36
 Sample Area (Slabs): 24

Sample Comments:

63 LINEAR CR	H	1 Slabs
63 LINEAR CR	M	1 Slabs
65 JT SEAL DMG	M	24 Slabs
67 LARGE PATCH	L	7 Slabs
67 LARGE PATCH	M	1 Slabs
72 SHAT. SLAB	M	1 Slabs
73 SHRINKAGE CR	N	1 Slabs
74 JOINT SPALL	L	1 Slabs
75 CORNER SPALL	M	1 Slabs
76 ASR	L	4 Slabs
76 ASR	M	3 Slabs

RE-INSPECTION REPORT

RED OAK MUNICIPAL AIRPORT

Pavement Database: IA 2021

Generate Date: 4/27/2022

Network ID: RDK

Page 10

Sample Number: 009

Sample Type: R

Sample Comments:

Sample PCI: 81

Sample Area (Slabs): 24

65 JT SEAL DMG	M	24 Slabs
67 LARGE PATCH	L	2 Slabs
70 SCALING	L	4 Slabs
70 SCALING	M	1 Slabs
74 JOINT SPALL	L	1 Slabs

Sample Number: 012

Sample Type: R

Sample Comments:

Sample PCI: 51

Sample Area (Slabs): 24

63 LINEAR CR	L	1 Slabs
65 JT SEAL DMG	L	24 Slabs
67 LARGE PATCH	L	7 Slabs
70 SCALING	L	2 Slabs
74 JOINT SPALL	L	1 Slabs
74 JOINT SPALL	M	1 Slabs
76 ASR	L	2 Slabs
76 ASR	M	3 Slabs

Sample Number: 015

Sample Type: R

Sample Comments:

Sample PCI: 62

Sample Area (Slabs): 24

63 LINEAR CR	L	2 Slabs
65 JT SEAL DMG	L	24 Slabs
66 SMALL PATCH	L	1 Slabs
67 LARGE PATCH	L	6 Slabs
70 SCALING	L	2 Slabs
74 JOINT SPALL	L	1 Slabs
74 JOINT SPALL	M	2 Slabs
76 ASR	L	2 Slabs
76 ASR	M	1 Slabs

Sample Number: 018

Sample Type: R

Sample Comments:

Sample PCI: 95

Sample Area (Slabs): 24

65 JT SEAL DMG	L	24 Slabs
66 SMALL PATCH	L	1 Slabs
70 SCALING	L	8 Slabs

Sample Number: 020

Sample Type: R

Sample Comments:

Sample PCI: 86

Sample Area (Slabs): 24

65 JT SEAL DMG	L	24 Slabs
66 SMALL PATCH	H	1 Slabs
66 SMALL PATCH	L	1 Slabs
70 SCALING	L	3 Slabs
75 CORNER SPALL	M	1 Slabs

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Branch - Section ID: R17RO - 03

Branch Name: RUNWAY 17/35

Use: RUNWAY

LCD: 6/3/1988
 Surface Type: PCC
 Rank: S
 Section Area (sf): 7,080.00
 Length (ft): 70.00
 Width (ft): 60.00
 From: RUNWAY SECT 02
 To: RUNWAY 05/33

PCI Family: IowaPCCRWSC_General

Slabs: 52
 Slab Length (ft): 13.50
 Slab Width (ft): 10.00
 Joint Length (ft): 1,013.30
 Last Insp Date: 11/18/2021
 PCI: 74
 Total Samples: 3
 Surveyed: 3

Section Comments: avg slab length

Inspection Comments:

Sample Number: 01

Sample Type: R
 Sample PCI: 86
 Sample Area (Slabs): 16

Sample Comments:

65 JT SEAL DMG	L	16 Slabs
71 FAULTING	L	2 Slabs
73 SHRINKAGE CR	N	1 Slabs

Sample Number: 02

Sample Type: R
 Sample PCI: 79
 Sample Area (Slabs): 24

Sample Comments:

62 CORNER BREAK	M	1 Slabs
65 JT SEAL DMG	L	24 Slabs
67 LARGE PATCH	L	2 Slabs
74 JOINT SPALL	M	1 Slabs
75 CORNER SPALL	M	1 Slabs

Sample Number: 03

Sample Type: R
 Sample PCI: 49
 Sample Area (Slabs): 12

Sample Comments:

63 LINEAR CR	L	2 Slabs
63 LINEAR CR	M	1 Slabs
65 JT SEAL DMG	M	12 Slabs
71 FAULTING	L	3 Slabs
71 FAULTING	M	2 Slabs

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Branch - Section ID: R17RO - 04

Branch Name: RUNWAY 17/35

Use: RUNWAY

LCD: 6/3/1988

PCI Family: IowaPCCRWSC_General

Surface Type: PCC

Rank: S

Section Area (sf): 7,410.00

Length (ft): 93.00

Width (ft): 60.00

From: RUNWAY 05/32

To: RUNWAY SECT 05

Slabs: 60

Section Comments: avg slab length

Slab Length (ft): 12.30

Slab Width (ft): 10.00

Joint Length (ft): 1,140.26

Last Insp Date: 11/18/2021

Inspection Comments:

PCI: 76

Total Samples: 3

Surveyed: 3

Sample Number: 001

Sample Type: R

Sample Comments:

Sample PCI: 73

Sample Area (Slabs): 16

65 JT SEAL DMG	M	16 Slabs
71 FAULTING	L	2 Slabs
71 FAULTING	M	2 Slabs

Sample Number: 002

Sample Type: R

Sample Comments:

Sample PCI: 75

Sample Area (Slabs): 24

65 JT SEAL DMG	M	24 Slabs
71 FAULTING	L	2 Slabs
73 SHRINKAGE CR	N	1 Slabs
74 JOINT SPALL	M	3 Slabs
76 ASR	L	2 Slabs

Sample Number: 003

Sample Type: R

Sample Comments:

Sample PCI: 80

Sample Area (Slabs): 20

62 CORNER BREAK	L	1 Slabs
65 JT SEAL DMG	M	20 Slabs
74 JOINT SPALL	M	1 Slabs
76 ASR	L	1 Slabs

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Branch - Section ID: R17RO - 05

Branch Name: RUNWAY 17/35

Use: RUNWAY

LCD: 6/3/1966
 Surface Type: PCC
 Rank: S
 Section Area (sf): 88,305.00
 Length (ft): 1,290.00
 Width (ft): 60.00
 From: RUNWAY SECT 04
 To: RUNWAY SECT 06
 Slabs: 589
 Slab Length (ft): 15.00
 Slab Width (ft): 10.00
 Joint Length (ft): 13,177.30
 Last Insp Date: 11/18/2021
 PCI: 95
 Total Samples: 26
 Surveyed: 7

PCI Family: IowaPCCRWSC_General

Section Comments:

Inspection Comments:

Sample Number: 002

Sample Type: R
 Sample PCI: 97
 Sample Area (Slabs): 24
 65 JT SEAL DMG
 66 SMALL PATCH

Sample Comments:

	L	24 Slabs
	L	1 Slabs

Sample Number: 005

Sample Type: R
 Sample PCI: 95
 Sample Area (Slabs): 24
 65 JT SEAL DMG
 66 SMALL PATCH
 74 JOINT SPALL

Sample Comments:

	L	24 Slabs
	L	2 Slabs
	L	1 Slabs

Sample Number: 008

Sample Type: R
 Sample PCI: 97
 Sample Area (Slabs): 24
 65 JT SEAL DMG
 74 JOINT SPALL

Sample Comments:

	L	24 Slabs
	L	1 Slabs

Sample Number: 010

Sample Type: R
 Sample PCI: 90
 Sample Area (Slabs): 24
 65 JT SEAL DMG
 66 SMALL PATCH
 74 JOINT SPALL
 75 CORNER SPALL

Sample Comments:

	L	24 Slabs
	L	1 Slabs
	L	3 Slabs
	M	1 Slabs

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Sample Number: 013

Sample Type: R

Sample Comments:

Sample PCI: 94

Sample Area (Slabs): 24

65 JT SEAL DMG	L	24 Slabs
73 SHRINKAGE CR	N	1 Slabs
74 JOINT SPALL	L	2 Slabs

Sample Number: 015

Sample Type: R

Sample Comments:

Sample PCI: 98

Sample Area (Slabs): 24

73 SHRINKAGE CR	N	1 Slabs
74 JOINT SPALL	L	1 Slabs

Sample Number: 019

Sample Type: R

Sample Comments:

Sample PCI: 93

Sample Area (Slabs): 24

65 JT SEAL DMG	L	24 Slabs
66 SMALL PATCH	L	1 Slabs
74 JOINT SPALL	L	3 Slabs

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Branch - Section ID: T01RO - 01

Branch Name: TAXIWAY 01

Use: TAXIWAY

LCD: 6/1/1988
 Surface Type: PCC
 Rank: P
 Section Area (sf): 38,901.00
 Length (ft): 1,059.00
 Width (ft): 36.00
 From: APRON 02
 To: RUNWAY 05/23

PCI Family: IowaPCCTWSC_General

Slabs: 432
 Slab Length (ft): 10.00
 Slab Width (ft): 9.00
 Joint Length (ft): 7,095.12
 Last Insp Date: 11/18/2021
 PCI: 81
 Total Samples: 21
 Surveyed: 7

Section Comments:

Inspection Comments:

Sample Number: 002

Sample Type: R
 Sample PCI: 81
 Sample Area (Slabs): 20

Sample Comments:

71 FAULTING	L	3 Slabs
75 CORNER SPALL	L	1 Slabs
76 ASR	L	1 Slabs

Sample Number: 004

Sample Type: R
 Sample PCI: 85
 Sample Area (Slabs): 20

Sample Comments:

65 JT SEAL DMG	L	20 Slabs
76 ASR	L	5 Slabs

Sample Number: 006

Sample Type: R
 Sample PCI: 80
 Sample Area (Slabs): 20

Sample Comments:

65 JT SEAL DMG	L	20 Slabs
75 CORNER SPALL	L	1 Slabs
75 CORNER SPALL	M	1 Slabs
76 ASR	L	4 Slabs

Sample Number: 008

Sample Type: R
 Sample PCI: 82
 Sample Area (Slabs): 20

Sample Comments:

65 JT SEAL DMG	L	20 Slabs
71 FAULTING	L	1 Slabs
76 ASR	L	4 Slabs

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Sample Number: 012

Sample Type: R

Sample Comments:

Sample PCI: 79

Sample Area (Slabs): 20

65 JT SEAL DMG

L

20 Slabs

76 ASR

L

12 Slabs

Sample Number: 015

Sample Type: R

Sample Comments:

Sample PCI: 85

Sample Area (Slabs): 23

65 JT SEAL DMG

L

23 Slabs

76 ASR

L

6 Slabs

Sample Number: 017

Sample Type: R

Sample Comments:

Sample PCI: 77

Sample Area (Slabs): 20

65 JT SEAL DMG

L

20 Slabs

76 ASR

L

16 Slabs

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Branch - Section ID: T02RO - 01

Branch Name: TAXIWAY 02

Use: TAXIWAY

LCD: 6/3/1968
 Surface Type: PCC
 Rank: P
 Section Area (sf): 30,024.00
 Length (ft): 731.00
 Width (ft): 40.00
 From: APRON 02
 To: RUNWAY 17/35
 Slabs: 200
 Slab Length (ft): 15.00
 Slab Width (ft): 10.00
 Joint Length (ft): 4,212.33
 Last Insp Date: 11/18/2021
 PCI: 83
 Total Samples: 10
 Surveyed: 5

PCI Family: IowaPCCTWSC_General

Section Comments:

Inspection Comments:

Sample Number: 002

Sample Type: R
 Sample PCI: 66
 Sample Area (Slabs): 16

Sample Comments:

63 LINEAR CR	L	1 Slabs
63 LINEAR CR	M	3 Slabs
65 JT SEAL DMG	L	16 Slabs

Sample Number: 004

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

Sample Comments:

65 JT SEAL DMG	L	20 Slabs
74 JOINT SPALL	L	2 Slabs

Sample Number: 005

Sample Type: R
 Sample PCI: 92
 Sample Area (Slabs): 20

Sample Comments:

74 JOINT SPALL	M	1 Slabs
75 CORNER SPALL	M	1 Slabs

Sample Number: 007

Sample Type: R
 Sample PCI: 84
 Sample Area (Slabs): 20

Sample Comments:

63 LINEAR CR	L	4 Slabs
65 JT SEAL DMG	L	20 Slabs

Sample Number: 009

Sample Type: R
 Sample PCI: 74
 Sample Area (Slabs): 20

Sample Comments:

63 LINEAR CR	L	6 Slabs
73 SHRINKAGE CR	N	1 Slabs
74 JOINT SPALL	M	1 Slabs
75 CORNER SPALL	L	2 Slabs

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Branch - Section ID: T03RO - 01

Branch Name: TAXIWAY 03

Use: TAXIWAY

LCD: 8/3/2007
 Surface Type: PCC
 Rank: P
 Section Area (sf): 15,460.00
 Length (ft): 367.00
 Width (ft): 35.00
 From: R05RO-02
 To: SEE MAP

PCI Family: IowaPCCTWSC_General

Slabs: 147
 Slab Length (ft): 10.80
 Slab Width (ft): 9.75
 Joint Length (ft): 2,533.34
 Last Insp Date: 11/18/2021
 PCI: 85
 Total Samples: 8
 Surveyed: 6

Section Comments: Slab size varies (12.5x12.5 & 10x8.5) - size shown is an average

Inspection Comments:

Sample Number: 01

Sample Type: R
 Sample PCI: 78
 Sample Area (Slabs): 20

Sample Comments:

65 JT SEAL DMG	H	20 Slabs
71 FAULTING	L	1 Slabs
76 ASR	L	3 Slabs

Sample Number: 02

Sample Type: R
 Sample PCI: 77
 Sample Area (Slabs): 15

Sample Comments:

62 CORNER BREAK	H	1 Slabs
65 JT SEAL DMG	H	15 Slabs

Sample Number: 04

Sample Type: R
 Sample PCI: 65
 Sample Area (Slabs): 13

Sample Comments:

63 LINEAR CR	M	3 Slabs
65 JT SEAL DMG	H	13 Slabs

Sample Number: 05

Sample Type: R
 Sample PCI: 98
 Sample Area (Slabs): 26

Sample Comments:

65 JT SEAL DMG	L	26 Slabs
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Sample Number: 06

Sample Type: R
 Sample PCI: 98
 Sample Area (Slabs): 24

Sample Comments:

65 JT SEAL DMG	L	24 Slabs
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Sample Number: 07

Sample Type: A

Sample Comments:

Sample PCI: 76

Sample Area (Slabs): 20

65 JT SEAL DMG

M

20 Slabs

71 FAULTING

L

1 Slabs

71 FAULTING

M

2 Slabs

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Branch - Section ID: T04RO - 01

Branch Name: TAXIWAY 04

Use: TAXIWAY

LCD: 8/3/2007
 Surface Type: PCC
 Rank: P
 Section Area (sf): 12,142.00
 Length (ft): 275.00
 Width (ft): 35.00
 From: R05RO-01
 To: SEE MAP

PCI Family: IowaPCCTWSC_General

Slabs: 114
 Slab Length (ft): 12.50
 Slab Width (ft): 8.50
 Joint Length (ft): 2,008.76
 Last Insp Date: 11/18/2021
 PCI: 93
 Total Samples: 6
 Surveyed: 4

Section Comments: Slab Size Varies (12.5x12.5 & 10.5x8.5) - size shown is an average

Inspection Comments:

Sample Number: 01

Sample Type: R
 Sample PCI: 98
 Sample Area (Slabs): 15
 65 JT SEAL DMG

Sample Comments:

L 15 Slabs

Sample Number: 02

Sample Type: R
 Sample PCI: 93
 Sample Area (Slabs): 26
 65 JT SEAL DMG

Sample Comments:

M 26 Slabs

Sample Number: 03

Sample Type: R
 Sample PCI: 86
 Sample Area (Slabs): 14
 63 LINEAR CR
 65 JT SEAL DMG
 76 ASR

Sample Comments:

L 1 Slabs
 L 14 Slabs
 L 1 Slabs

Sample Number: 05

Sample Type: R
 Sample PCI: 93
 Sample Area (Slabs): 17
 65 JT SEAL DMG

Sample Comments:

M 17 Slabs

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Branch - Section ID: T05RO - 01

Branch Name: TAXIWAY 05

Use: TAXIWAY

LCD: 10/1/2008

PCI Family: IowaPCCTWSC_General

Surface Type: PCC

Rank: P

Section Area (sf): 69,960.00

Length (ft): 1,940.00

Width (ft): 35.00

From: TAXIWAY 04

To: TAXIWAY 06

Slabs: 727

Section Comments:

Slab Length (ft): 11.00

Slab Width (ft): 8.75

Joint Length (ft): 12,320.51

Last Insp Date: 11/18/2021

Inspection Comments:

PCI: 93

Total Samples: 37

Surveyed: 8

Sample Number: 01

Sample Type: R

Sample Comments:

Sample PCI: 82

Sample Area (Slabs): 17

65 JT SEAL DMG

L

17 Slabs

71 FAULTING

L

3 Slabs

75 CORNER SPALL

L

1 Slabs

Sample Number: 03

Sample Type: R

Sample Comments:

Sample PCI: 98

Sample Area (Slabs): 20

65 JT SEAL DMG

L

20 Slabs

Sample Number: 08

Sample Type: R

Sample Comments:

Sample PCI: 98

Sample Area (Slabs): 20

65 JT SEAL DMG

L

20 Slabs

Sample Number: 13

Sample Type: R

Sample Comments:

Sample PCI: 98

Sample Area (Slabs): 20

65 JT SEAL DMG

L

20 Slabs

Sample Number: 18

Sample Type: R

Sample Comments:

Sample PCI: 88

Sample Area (Slabs): 20

65 JT SEAL DMG

M

20 Slabs

66 SMALL PATCH

H

1 Slabs

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Sample Number: 23

Sample Type: R

Sample Comments:

Sample PCI: 96

Sample Area (Slabs): 20

65 JT SEAL DMG

L

20 Slabs

75 CORNER SPALL

L

1 Slabs

Sample Number: 28

Sample Type: R

Sample Comments:

Sample PCI: 88

Sample Area (Slabs): 20

65 JT SEAL DMG

M

20 Slabs

76 ASR

L

1 Slabs

Sample Number: 33

Sample Type: R

Sample Comments:

Sample PCI: 98

Sample Area (Slabs): 20

65 JT SEAL DMG

L

20 Slabs

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Branch - Section ID: T06RO - 01

Branch Name: TAXIWAY 06

Use: TAXIWAY

LCD: 10/1/2008

PCI Family: IowaPCCTWSC_General

Surface Type: PCC

Rank: P

Section Area (sf): 64,477.00

Length (ft): 1,780.00

Width (ft): 35.00

From: TAXIWAY 06

To: RUNWAY 17

Slabs: 670

Section Comments:

Slab Length (ft): 11.00

Slab Width (ft): 8.75

Joint Length (ft): 11,351.92

Last Insp Date: 11/18/2021

Inspection Comments:

PCI: 92

Total Samples: 34

Surveyed: 8

Sample Number: 01

Sample Type: R

Sample Comments:

Sample PCI: 69

Sample Area (Slabs): 21

63 LINEAR CR

L

1 Slabs

65 JT SEAL DMG

M

21 Slabs

71 FAULTING

L

2 Slabs

74 JOINT SPALL

H

1 Slabs

74 JOINT SPALL

M

1 Slabs

Sample Number: 03

Sample Type: R

Sample Comments:

Sample PCI: 93

Sample Area (Slabs): 20

65 JT SEAL DMG

M

20 Slabs

Sample Number: 08

Sample Type: R

Sample Comments:

Sample PCI: 98

Sample Area (Slabs): 20

65 JT SEAL DMG

L

20 Slabs

Sample Number: 13

Sample Type: R

Sample Comments:

Sample PCI: 98

Sample Area (Slabs): 20

65 JT SEAL DMG

L

20 Slabs

Sample Number: 18

Sample Type: R

Sample Comments:

Sample PCI: 98

Sample Area (Slabs): 20

65 JT SEAL DMG

L

20 Slabs

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Sample Number: 23

Sample Type: R

Sample Comments:

Sample PCI: 98

Sample Area (Slabs): 20

65 JT SEAL DMG

L

20 Slabs

Sample Number: 28

Sample Type: R

Sample Comments:

Sample PCI: 85

Sample Area (Slabs): 20

65 JT SEAL DMG

M

20 Slabs

71 FAULTING

L

2 Slabs

74 JOINT SPALL

L

1 Slabs

Sample Number: 31

Sample Type: R

Sample Comments:

Sample PCI: 98

Sample Area (Slabs): 20

65 JT SEAL DMG

L

20 Slabs

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Branch - Section ID: T07RO - 01

Branch Name: TAXIWAY 07

Use: TAXIWAY

LCD: 6/3/2009
 Surface Type: PCC
 Rank: P
 Section Area (sf): 33,622.00
 Length (ft): 915.00
 Width (ft): 35.00
 From: .
 To: .

PCI Family: IowaPCCTWSC_General

Slabs: 349
 Slab Length (ft): 11.00
 Slab Width (ft): 8.75
 Joint Length (ft): 5,901.69
 Last Insp Date: 11/18/2021
 PCI: 84
 Total Samples: 17
 Surveyed: 9

Section Comments:

Inspection Comments:

Sample Number: 01

Sample Type: A
 Sample PCI: 55
 Sample Area (Slabs): 18

Sample Comments:

61 BLOW-UP	L	2 Slabs
63 LINEAR CR	L	1 Slabs
65 JT SEAL DMG	L	18 Slabs
70 SCALING	M	1 Slabs
75 CORNER SPALL	M	1 Slabs
76 ASR	L	2 Slabs

Sample Number: 02

Sample Type: R
 Sample PCI: 76
 Sample Area (Slabs): 20

Sample Comments:

65 JT SEAL DMG	M	20 Slabs
74 JOINT SPALL	M	2 Slabs
75 CORNER SPALL	L	1 Slabs
75 CORNER SPALL	M	1 Slabs
76 ASR	L	2 Slabs

Sample Number: 04

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

Sample Comments:

65 JT SEAL DMG	M	20 Slabs
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Sample Number: 07

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

Sample Comments:

65 JT SEAL DMG	L	20 Slabs
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Sample Number: 09

Sample Type: R		Sample Comments:
Sample PCI: 74		
Sample Area (Slabs): 20		
63 LINEAR CR	M	3 Slabs
65 JT SEAL DMG	L	20 Slabs

Sample Number: 10

Sample Type: R		Sample Comments:
Sample PCI: 96		
Sample Area (Slabs): 20		
65 JT SEAL DMG	L	20 Slabs
75 CORNER SPALL	L	1 Slabs

Sample Number: 12

Sample Type: R		Sample Comments:
Sample PCI: 82		
Sample Area (Slabs): 20		
63 LINEAR CR	L	1 Slabs
63 LINEAR CR	M	1 Slabs
65 JT SEAL DMG	L	20 Slabs

Sample Number: 14

Sample Type: R		Sample Comments:
Sample PCI: 93		
Sample Area (Slabs): 20		
65 JT SEAL DMG	M	20 Slabs

Sample Number: 16

Sample Type: A		Sample Comments:
Sample PCI: 58		
Sample Area (Slabs): 20		
62 CORNER BREAK	H	1 Slabs
65 JT SEAL DMG	L	20 Slabs
71 FAULTING	L	2 Slabs
73 SHRINKAGE CR	N	2 Slabs
74 JOINT SPALL	H	1 Slabs
74 JOINT SPALL	M	2 Slabs
75 CORNER SPALL	H	2 Slabs
75 CORNER SPALL	M	2 Slabs

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Branch - Section ID: TH01RO - 01

Branch Name: T-HANGAR 01

Use: T-HANGAR

LCD: 1/1/1968

PCI Family: IowaASPHALTTTHSouthern

Surface Type: AC

Rank: P

Section Area (sf): 8,298.00

Length (ft): 410.00

Width (ft): 20.00

From: SEE MAP

To: SEE MAP

Slabs:

Section Comments:

Slab Length (ft):

Slab Width (ft):

Joint Length (ft):

Last Insp Date: 11/18/2021

Inspection Comments:

PCI: 10

Total Samples: 2

Surveyed: 2

Sample Number: 01

Sample Type: R

Sample Comments:

Sample PCI: 4

Sample Area (SF): 4,270

41 ALLIGATOR CR	H	68 SF	
41 ALLIGATOR CR	M	780 SF	
48 L & T CR	H	10 Ft	3"
48 L & T CR	M	100 Ft	W
53 RUTTING	L	200 SF	
54 SHOIVING	M	40 SF	
57 WEATHERING	H	4,270 SF	

Sample Number: 02

Sample Type: R

Sample Comments:

Sample PCI: 15

Sample Area (SF): 4,028

41 ALLIGATOR CR	M	320 SF	
48 L & T CR	H	10 Ft	3"
48 L & T CR	M	232 Ft	W
50 PATCHING	L	12 SF	PCC
57 WEATHERING	H	4,016 SF	

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Branch - Section ID: TH01RO - 02

Branch Name: T-HANGAR 01

Use: T-HANGAR

LCD: 5/2/2014

PCI Family: IowaPCCTH_SC&SW

Surface Type: PCC

Rank: P

Section Area (sf): 8,027.00

Length (ft): 384.00

Width (ft): 20.00

From: SEE MAP

To: SEE MAP

Slabs: 61

Section Comments:

Slab Length (ft): 13.20

Slab Width (ft): 10.00

Joint Length (ft): 988.55

Last Insp Date: 11/18/2021

Inspection Comments:

PCI: 88

Total Samples: 4

Surveyed: 3

Sample Number: 01

Sample Type: R

Sample Comments:

Sample PCI: 88

Sample Area (Slabs): 16

65 JT SEAL DMG

L

16 Slabs

74 JOINT SPALL

M

1 Slabs

75 CORNER SPALL

M

1 Slabs

Sample Number: 02

Sample Type: R

Sample Comments:

Sample PCI: 83

Sample Area (Slabs): 14

63 LINEAR CR

M

1 Slabs

65 JT SEAL DMG

L

14 Slabs

Sample Number: 03

Sample Type: R

Sample Comments:

Sample PCI: 92

Sample Area (Slabs): 15

63 LINEAR CR

L

1 Slabs

65 JT SEAL DMG

L

15 Slabs

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Branch - Section ID: TH01RO - 03

Branch Name: T-HANGAR 01

Use: T-HANGAR

LCD: 10/16/2015
 Surface Type: PCC
 Rank: P
 Section Area (sf): 8,556.00
 Length (ft): 420.00
 Width (ft): 20.00
 From: SEE MAP
 To: SEE MAP
 Slabs: 86
 Slab Length (ft): 10.00
 Slab Width (ft): 10.00
 Joint Length (ft): 1,263.03
 Last Insp Date: 11/18/2021
 PCI: 77
 Total Samples: 5
 Surveyed: 4

PCI Family: IowaPCCTH_SC&SW

Section Comments:

Inspection Comments:

Sample Number: 01

Sample Type: R
 Sample PCI: 84
 Sample Area (Slabs): 20

65 JT SEAL DMG	H	20 Slabs
74 JOINT SPALL	M	1 Slabs

Sample Comments:

Sample Number: 02

Sample Type: R
 Sample PCI: 58
 Sample Area (Slabs): 16

63 LINEAR CR	L	2 Slabs
63 LINEAR CR	M	3 Slabs
65 JT SEAL DMG	H	16 Slabs
75 CORNER SPALL	M	1 Slabs

Sample Comments:

Sample Number: 03

Sample Type: R
 Sample PCI: 76
 Sample Area (Slabs): 18

63 LINEAR CR	L	1 Slabs
63 LINEAR CR	M	1 Slabs
65 JT SEAL DMG	H	18 Slabs

Sample Comments:

Sample Number: 04

Sample Type: R
 Sample PCI: 88
 Sample Area (Slabs): 16

65 JT SEAL DMG	H	16 Slabs
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Sample Comments:

RE-INSPECTION REPORT RED OAK MUNICIPAL AIRPORT

Pavement Database: IA 2021

Generate Date: 4/27/2022

Network ID: RDK

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Branch - Section ID: TH02RO - 01

Branch Name: T-HANGAR 02

Use: T-HANGAR

LCD: 6/1/2018

PCI Family: IowaPCCTH_SC&SW

Surface Type: PCC

Rank: P

Section Area (sf): 14,898.00

Length (ft): 620.00

Width (ft): 20.00

From: SEE MAP

To: SEE MAP

Slabs: 149

Section Comments:

Slab Length (ft): 10.00

Slab Width (ft): 10.00

Joint Length (ft): 2,210.67

Last Insp Date: 11/18/2021

Inspection Comments:

PCI: 98

Total Samples: 9

Surveyed: 5

Sample Number: 01

Sample Type: R

Sample Comments:

Sample PCI: 98

Sample Area (Slabs): 21

65 JT SEAL DMG

L

21 Slabs

Sample Number: 02

Sample Type: R

Sample Comments:

Sample PCI: 98

Sample Area (Slabs): 21

65 JT SEAL DMG

L

21 Slabs

Sample Number: 04

Sample Type: R

Sample Comments:

Sample PCI: 98

Sample Area (Slabs): 18

65 JT SEAL DMG

L

18 Slabs

Sample Number: 06

Sample Type: R

Sample Comments:

Sample PCI: 98

Sample Area (Slabs): 21

65 JT SEAL DMG

L

21 Slabs

Sample Number: 08

Sample Type: R

Sample Comments:

Sample PCI: 98

Sample Area (Slabs): 21

65 JT SEAL DMG

L

21 Slabs

APPENDIX D

WORK HISTORY REPORT

Work History

Pavement Database: IA 2021

Network: RED OAK MUNICIPAL AIRPORT

Branch - Section ID: A01RO - 01

LCD: 6/3/2000
 Use: APRON
 Rank: P
 Surface: PCC

Length (ft): 500.00
 Width (ft): 75.00
 True Area (sf): 35,815.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
06-01-2020	CS-PC	Crack Sealing - PCC	\$0.00	0.00	False	Route and seal cracks
06-01-2020	PA-PF	Patching - PCC Full Depth	\$0.00	0.00	False	-
06-01-2020	JS-LC	Joint Seal (Localized)	\$0.00	0.00	False	-
06-03-2000	CR-PC	Complete Reconstruction - PCC	\$0.00	6.00	True	6" P501 PCC SURFACE
06-02-2000	BA-AG	Base Course - Aggregate	\$0.00	4.00	False	4" P208 MOD. ABC
06-01-2000	SG-CO	Subgrade - Compacted	\$0.00	6.00	False	6" P152 COMPACTED SUBGRADE
06-01-1968	NC-AC	New Construction - AC	\$0.00	0.00	True	-

Branch - Section ID: A02RO - 01

LCD: 6/3/1968
 Use: APRON
 Rank: P
 Surface: PCC

Length (ft): 302.00
 Width (ft): 150.00
 True Area (sf): 46,260.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
06-01-2020	CS-PC	Crack Sealing - PCC	\$0.00	0.00	False	Route and seal cracks
06-01-2020	JS-LC	Joint Seal (Localized)	\$0.00	0.00	False	-
06-03-1968	NC-PC	New Construction - PCC	\$0.00	6.00	True	6" P501 PCC SURFACE
06-02-1968	SB-AG	Subbase - Aggregate	\$0.00	6.00	False	6" P154 SUBBASE
06-01-1968	SG-CO	Subgrade - Compacted	\$0.00	6.00	False	6" P152 MOD. COMPACTED SUBGRADE

Branch - Section ID: R05RO - 01

LCD: 6/3/1988
 Use: RUNWAY
 Rank: P
 Surface: PCC

Length (ft): 4,100.00
 Width (ft): 75.00
 True Area (sf): 315,602.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
06-01-2019	JS-LC	Joint Seal (Localized)	\$0.00	0.00	False	-
06-01-2019	PA-PF	Patching - PCC Full Depth	\$0.00	0.00	False	-
06-01-2019	CS-PC	Crack Sealing - PCC	\$0.00	0.00	False	Route and seal cracks
06-03-1988	NC-PC	New Construction - PCC	\$0.00	6.00	True	6" P501 PCC
06-02-1988	BA-AG	Base Course - Aggregate	\$0.00	4.00	False	4" P208 (ASSUMED MAT. CODE)
06-01-1988	SG-CO	Subgrade - Compacted	\$0.00	8.00	False	8" SUBGRADE

Work History

Pavement Database: IA 2021

Branch - Section ID: R05RO - 02

LCD: 8/3/2006
 Use: RUNWAY
 Rank: P
 Surface: PCC

Length (ft): 1,000.00
 Width (ft): 75.00
 True Area (sf): 75,661.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
06-01-2019	PA-PF	Patching - PCC Full Depth	\$0.00	0.00	False	-
06-01-2019	JS-LC	Joint Seal (Localized)	\$0.00	0.00	False	-
08-03-2006	NC-PC	New Construction - PCC	\$0.00	6.00	True	6" P501 PCC
08-02-2006	BA-AG	Base Course - Aggregate	\$0.00	4.00	False	4" P208 SUBBASE
08-01-2006	SG-ST	Subgrade - Stabilized	\$0.00	9.00	False	9" P158 SUBGRADE

Branch - Section ID: R17RO - 02

LCD: 6/2/1966
 Use: RUNWAY
 Rank: S
 Surface: PCC

Length (ft): 1,350.00
 Width (ft): 60.00
 True Area (sf): 84,126.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
01-01-2016	PA-PF	Patching - PCC Full Depth	\$0.00	0.00	False	FIELD EST.
10-01-2011	PA-PF	Patching - PCC Full Depth	\$0.00	0.00	False	-
10-01-2011	JS-LC	Joint Seal (Localized)	\$0.00	0.00	False	-
10-01-2011	CS-PC	Crack Sealing - PCC	\$0.00	0.00	False	-
10-01-2011	SL-PC	Slab Replacement - PCC	\$0.00	0.00	False	-
06-01-2010	PA-PP	Patching - PCC Partial Depth	\$0.00	0.00	False	Federal Funding - Total Amount \$50,000
06-02-1966	NC-PC	New Construction - PCC	\$0.00	6.00	True	6" P501 (MODIFIED) PCC
06-01-1966	BA-AG	Base Course - Aggregate	\$0.00	6.00	False	6" P208 SUBBASE

Branch - Section ID: R17RO - 03

LCD: 6/3/1988
 Use: RUNWAY
 Rank: S
 Surface: PCC

Length (ft): 70.00
 Width (ft): 60.00
 True Area (sf): 7,080.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-01-2011	JS-LC	Joint Seal (Localized)	\$0.00	0.00	False	-
06-01-2010	PA-PP	Patching - PCC Partial Depth	\$0.00	0.00	False	Federal Funding - Total Amount \$50,000
06-03-1988	NC-PC	New Construction - PCC	\$0.00	6.00	True	6" P501 PCC
06-02-1988	BA-AG	Base Course - Aggregate	\$0.00	4.00	False	4" P208 SUBBASE (ASSUMED MAT. CODE)
06-01-1988	SG-CO	Subgrade - Compacted	\$0.00	8.00	False	8" SUBGRADE
06-02-1966	NC-PC	New Construction - PCC	\$0.00	6.00	True	6" P501 (MODIFIED) PCC
06-01-1966	BA-AG	Base Course - Aggregate	\$0.00	6.00	False	6" P208 SUBBASE

Work History

Pavement Database: IA 2021

Branch - Section ID: R17RO - 04

LCD: 6/3/1988
 Use: RUNWAY
 Rank: S
 Surface: PCC

Length (ft): 93.00
 Width (ft): 60.00
 True Area (sf): 7,410.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-01-2011	JS-LC	Joint Seal (Localized)	\$0.00	0.00	False	-
06-03-1988	NC-PC	New Construction - PCC	\$0.00	6.00	True	6" P501 PCC
06-02-1988	BA-AG	Base Course - Aggregate	\$0.00	4.00	False	4"P208 (ASSUMED MAT. CODE)
06-01-1988	SG-CO	Subgrade - Compacted	\$0.00	8.00	False	8" SUBGRADE
06-02-1966	NC-PC	New Construction - PCC	\$0.00	6.00	True	6" P501 (MODIFIED) PCC
06-01-1966	BA-AG	Base Course - Aggregate	\$0.00	6.00	False	6" P208 SUBBASE

Branch - Section ID: R17RO - 05

LCD: 6/3/1966
 Use: RUNWAY
 Rank: S
 Surface: PCC

Length (ft): 1,290.00
 Width (ft): 60.00
 True Area (sf): 88,305.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-01-2011	PA-PP	Patching - PCC Partial Depth	\$0.00	0.00	False	-
10-01-2011	JS-LC	Joint Seal (Localized)	\$0.00	0.00	False	-
06-03-1966	NC-PC	New Construction - PCC	\$0.00	6.00	True	6" P501 (MODIFIED) PCC
06-02-1966	BA-AG	Base Course - Aggregate	\$0.00	6.00	False	6" P208 SUBBASE
06-01-1966	SG-CO	Subgrade - Compacted	\$0.00	6.00	False	6" P-152 SUBGRADE

Branch - Section ID: T01RO - 01

LCD: 6/1/1988
 Use: TAXIWAY
 Rank: P
 Surface: PCC

Length (ft): 1,059.00
 Width (ft): 36.00
 True Area (sf): 38,901.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
06-01-2020	CS-PC	Crack Sealing - PCC	\$0.00	0.00	False	Route and seal cracks
06-01-2020	JS-LC	Joint Seal (Localized)	\$0.00	0.00	False	-
06-01-2020	PA-PF	Patching - PCC Full Depth	\$0.00	0.00	False	-
06-01-1988	NC-PC	New Construction - PCC	\$0.00	0.00	True	-

Branch - Section ID: T02RO - 01

LCD: 6/3/1968
 Use: TAXIWAY
 Rank: P
 Surface: PCC

Length (ft): 731.00
 Width (ft): 40.00
 True Area (sf): 30,024.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
06-01-2020	JS-LC	Joint Seal (Localized)	\$0.00	0.00	False	-
06-01-2020	CS-PC	Crack Sealing - PCC	\$0.00	0.00	False	Route and seal cracks
10-01-2011	CS-PC	Crack Sealing - PCC	\$0.00	0.00	False	EST
06-01-2010	JS-LC	Joint Seal (Localized)	\$0.00	0.00	False	Federal Funding - Total Amount \$50,000
06-03-1968	NC-PC	New Construction - PCC	\$0.00	6.00	True	6" P501 PCC SURFACE
06-02-1968	SB-AG	Subbase - Aggregate	\$0.00	6.00	False	6" P154 SUBBASE
06-01-1968	SG-CO	Subgrade - Compacted	\$0.00	6.00	False	6" P152 MOD. COMPACTED SUBGRADE

Work History

Pavement Database: IA 2021

Branch - Section ID: T03RO - 01

LCD: 8/3/2007
 Use: TAXIWAY
 Rank: P
 Surface: PCC

Length (ft): 367.50
 Width (ft): 35.00
 True Area (sf): 15,460.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
08-03-2007	NC-PC	New Construction - PCC	\$0.00	6.00	True	6" P505 PCC SURFACE
08-02-2007	BA-AG	Base Course - Aggregate	\$0.00	4.00	False	4" P208 ABC
08-01-2007	SG-ST	Subgrade - Stabilized	\$0.00	9.00	False	9" P158 SUBGRADE

Branch - Section ID: T04RO - 01

LCD: 8/3/2007
 Use: TAXIWAY
 Rank: P
 Surface: PCC

Length (ft): 275.00
 Width (ft): 35.00
 True Area (sf): 12,142.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
08-03-2007	NC-PC	New Construction - PCC	\$0.00	6.00	True	6" P501 PCC SURFACE
08-02-2007	BA-AG	Base Course - Aggregate	\$0.00	4.00	False	4" P208 ABC
08-01-2007	SG-ST	Subgrade - Stabilized	\$0.00	9.00	False	9" P158 SUBGRADE

Branch - Section ID: T05RO - 01

LCD: 10/1/2008
 Use: TAXIWAY
 Rank: P
 Surface: PCC

Length (ft): 1,940.00
 Width (ft): 35.00
 True Area (sf): 69,960.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-01-2008	NU-IN	New Construction - Initial	\$0.00	0.00	True	-

Branch - Section ID: T06RO - 01

LCD: 10/1/2008
 Use: TAXIWAY
 Rank: P
 Surface: PCC

Length (ft): 1,780.00
 Width (ft): 35.00
 True Area (sf): 64,477.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-01-2008	NU-IN	New Construction - Initial	\$0.00	0.00	True	-

Branch - Section ID: T07RO - 01

LCD: 6/3/2009
 Use: TAXIWAY
 Rank: P
 Surface: PCC

Length (ft): 915.00
 Width (ft): 35.00
 True Area (sf): 33,622.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
06-03-2009	NC-PC	New Construction - PCC	\$0.00	6.00	True	6" P501 PCC SURFACE
06-02-2009	BA-AG	Base Course - Aggregate	\$0.00	4.00	False	4" P208 ABC
06-01-2009	SG-ST	Subgrade - Stabilized	\$0.00	9.00	False	9" P158

Work History

Pavement Database: IA 2021

Branch - Section ID: TH01RO - 01

LCD: 1/1/1968
 Use: T-HANGAR
 Rank: P
 Surface: AC

Length (ft): 410.00
 Width (ft): 20.00
 True Area (sf): 8,298.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
01-01-2014	PA-AD	Patching - AC Deep	\$0.00	0.00	False	FIELD EST.
01-01-1968	NC-AC	New Construction - AC	\$0.00	0.00	True	DATE UNKNOWN; CONSTRUCTED PRIOR TO 1

Branch - Section ID: TH01RO - 02

LCD: 5/2/2014
 Use: T-HANGAR
 Rank: P
 Surface: PCC

Length (ft): 384.00
 Width (ft): 20.00
 True Area (sf): 8,027.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
05-02-2014	NC-PC	New Construction - PCC	\$0.00	6.00	True	6" PCC
05-01-2014	SG-CO	Subgrade - Compacted	\$0.00	6.00	False	6" SUBGRADE PREP

Branch - Section ID: TH01RO - 03

LCD: 10/16/2015
 Use: T-HANGAR
 Rank: P
 Surface: PCC

Length (ft): 420.00
 Width (ft): 20.00
 True Area (sf): 8,556.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-16-2015	NC-PC	New Construction - PCC	\$0.00	6.00	True	6" PCC
10-15-2015	SG-CO	Subgrade - Compacted	\$0.00	6.00	False	6" subgrade

Branch - Section ID: TH02RO - 01

LCD: 6/1/2018
 Use: T-HANGAR
 Rank: P
 Surface: PCC

Length (ft): 620.00
 Width (ft): 20.00
 True Area (sf): 14,898.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
06-01-2018	CR-PC	Complete Reconstruction - PCC	\$0.00	6.00	True	6" P-505 PCC

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
A01RO	01	Corner Spalling	Medium	5	Slabs	Patching - PCC Partial Depth	\$37.54	\$491
A01RO	01	Joint Spalling	Medium	3	Slabs	Patching - PCC Partial Depth	\$37.54	\$785
A02RO	01	Corner Break	Low	6	Slabs	Crack Sealing - PCC	\$3.02	\$153
A02RO	01	Corner Spalling	Medium	12	Slabs	Patching - PCC Partial Depth	\$37.54	\$1,248
A02RO	01	Faulting	Medium	2	Slabs	Grinding (Localized)	\$0.36	\$9
A02RO	01	Joint Spalling	Medium	21	Slabs	Patching - PCC Partial Depth	\$37.54	\$4,990
A02RO	01	LTD Cracking	Medium	19	Slabs	Crack Sealing - PCC	\$3.02	\$769
A02RO	01	Shattered Slab	Low	2	Slabs	Crack Sealing - PCC	\$3.02	\$171
R05RO	01	ASR	Medium	9	Slabs	Slab Replacement - PCC	\$16.76	\$24,490
R05RO	01	Corner Spalling	Medium	9	Slabs	Patching - PCC Partial Depth	\$37.54	\$945
R05RO	01	Faulting	Medium	131	Slabs	Grinding (Localized)	\$0.36	\$589
R05RO	01	Joint Spalling	Medium	9	Slabs	Patching - PCC Partial Depth	\$37.54	\$2,267
R05RO	01	LTD Cracking	Medium	19	Slabs	Crack Sealing - PCC	\$3.02	\$706
R05RO	02	Faulting	Medium	3	Slabs	Grinding (Localized)	\$0.36	\$13
R05RO	02	Joint Spalling	Medium	3	Slabs	Patching - PCC Partial Depth	\$37.54	\$698
R17RO	03	Corner Break	Medium	1	Slabs	Patching - PCC Full Depth	\$16.76	\$541
R17RO	03	Corner Spalling	Medium	1	Slabs	Patching - PCC Partial Depth	\$37.54	\$101
R17RO	03	Faulting	Medium	2	Slabs	Grinding (Localized)	\$0.36	\$7

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
R17RO	03	Joint Seal Damage	Medium	12	Slabs	Joint Seal (Localized)	\$3.02	\$706
R17RO	03	Joint Spalling	Medium	1	Slabs	Patching - PCC Partial Depth	\$37.54	\$242
R17RO	03	LTD Cracking	Medium	1	Slabs	Crack Sealing - PCC	\$3.02	\$35
R17RO	04	Corner Break	Low	1	Slabs	Crack Sealing - PCC	\$3.02	\$25
R17RO	04	Faulting	Medium	2	Slabs	Grinding (Localized)	\$0.36	\$7
R17RO	04	Joint Seal Damage	Medium	60	Slabs	Joint Seal (Localized)	\$3.02	\$3,444
R17RO	04	Joint Spalling	Medium	4	Slabs	Patching - PCC Partial Depth	\$37.54	\$970
R17RO	05	Corner Spalling	Medium	4	Slabs	Patching - PCC Partial Depth	\$37.54	\$354
T01RO	01	Corner Spalling	Medium	3	Slabs	Patching - PCC Partial Depth	\$37.54	\$305
T02RO	01	Corner Spalling	Medium	2	Slabs	Patching - PCC Partial Depth	\$37.54	\$210
T02RO	01	Joint Spalling	Medium	4	Slabs	Patching - PCC Partial Depth	\$37.54	\$1,010
T02RO	01	LTD Cracking	Medium	6	Slabs	Crack Sealing - PCC	\$3.02	\$236
T03RO	01	Corner Break	High	1	Slabs	Patching - PCC Full Depth	\$16.76	\$701
T03RO	01	Faulting	Medium	2	Slabs	Grinding (Localized)	\$0.36	\$7
T03RO	01	Joint Seal Damage	Medium	20	Slabs	Joint Seal (Localized)	\$3.02	\$1,041
T03RO	01	Joint Seal Damage	High	62	Slabs	Joint Seal (Localized)	\$3.02	\$3,237
T03RO	01	LTD Cracking	Medium	4	Slabs	Crack Sealing - PCC	\$3.02	\$121
T04RO	01	Joint Seal Damage	Medium	68	Slabs	Joint Seal (Localized)	\$3.02	\$3,623
T05RO	01	Joint Seal Damage	Medium	185	Slabs	Joint Seal (Localized)	\$3.02	\$9,480

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
T05RO	01	Small Patch	High	5	Slabs	Patching - PCC Full Depth	\$16.76	\$209
T06RO	01	Joint Seal Damage	Medium	254	Slabs	Joint Seal (Localized)	\$3.02	\$12,989
T06RO	01	Joint Spalling	Medium	4	Slabs	Patching - PCC Partial Depth	\$37.54	\$1,009
T06RO	01	Joint Spalling	High	4	Slabs	Patching - PCC Partial Depth	\$37.54	\$1,261
T07RO	01	Blow-up	Low	2	Slabs	Slab Replacement - PCC	\$16.76	\$3,226
T07RO	01	Corner Break	High	1	Slabs	Patching - PCC Full Depth	\$16.76	\$541
T07RO	01	Corner Spalling	Medium	5	Slabs	Patching - PCC Partial Depth	\$37.54	\$527
T07RO	01	Corner Spalling	High	2	Slabs	Patching - PCC Partial Depth	\$37.54	\$202
T07RO	01	Joint Seal Damage	Medium	133	Slabs	Joint Seal (Localized)	\$3.02	\$6,807
T07RO	01	Joint Spalling	Medium	6	Slabs	Patching - PCC Partial Depth	\$37.54	\$1,562
T07RO	01	Joint Spalling	High	1	Slabs	Patching - PCC Partial Depth	\$37.54	\$303
T07RO	01	LTD Cracking	Medium	9	Slabs	Crack Sealing - PCC	\$3.02	\$265
T07RO	01	Scaling	Medium	1	Slabs	Patching - PCC Partial Depth	\$37.54	\$1,347
TH01RO	02	Corner Spalling	Medium	1	Slabs	Patching - PCC Partial Depth	\$37.54	\$137
TH01RO	02	Joint Spalling	Medium	1	Slabs	Patching - PCC Partial Depth	\$37.54	\$329
TH01RO	02	LTD Cracking	Medium	1	Slabs	Crack Sealing - PCC	\$3.02	\$47

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
TH01RO	03	Corner Spalling	Medium	1	Slabs	Patching - PCC Partial Depth	\$37.54	\$124
TH01RO	03	Joint Seal Damage	High	86	Slabs	Joint Seal (Localized)	\$3.02	\$3,814
TH01RO	03	Joint Spalling	Medium	1	Slabs	Patching - PCC Partial Depth	\$37.54	\$298
TH01RO	03	LTD Cracking	Medium	5	Slabs	Crack Sealing - PCC	\$3.02	\$148

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 Red Oak Municipal Airport.



PREPARED FOR

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