Shenandoah Municipal Airport

Pavement Management Report

PREPARED BY

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applied pavement TECHNOLOGY

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SHENANDOAH MUNICIPAL AIRPORT
PAVEMENT MANAGEMENT REPORT

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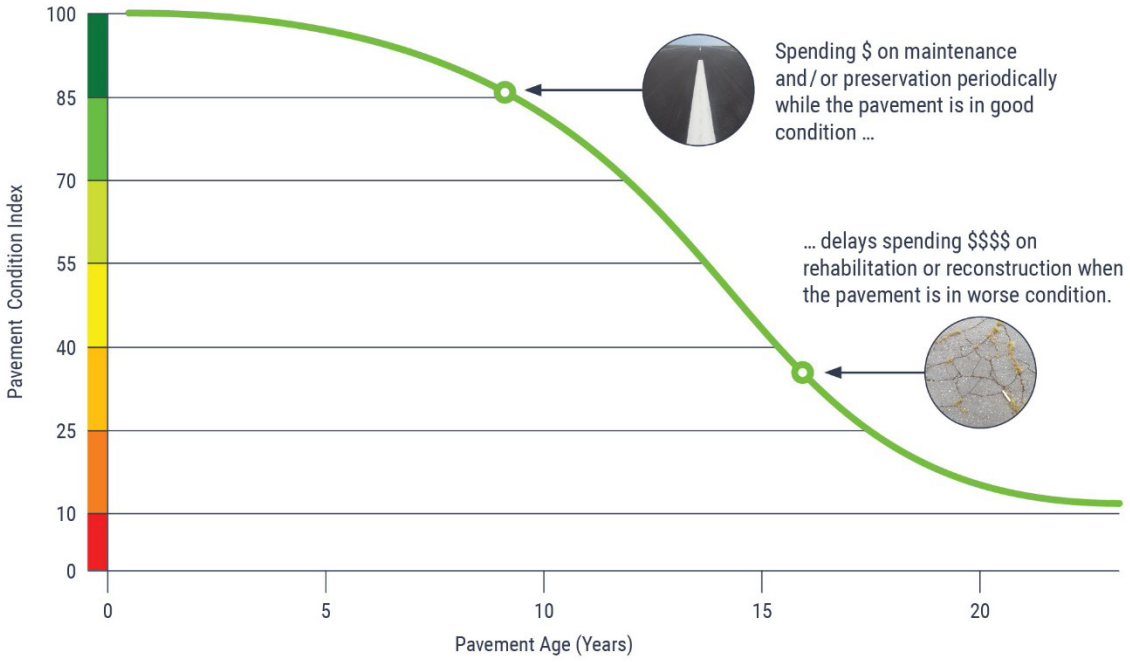
INTRODUCTION

Applied Pavement Technology, Inc. (APTech), with assistance from Robinson Engineering Company Consulting Engineers (Robinson), 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 Shenandoah Municipal Airport were visually assessed in November 2023 using the Pavement Condition Index (PCI) procedure. During a PCI inspection, the types, severities, and amounts of distress present on the pavement surface 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 Shenandoah Municipal Airport are presented within this report and can be used by Shenandoah 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 web-based interactive pavement data visualization tool IDEA, containing the information collected during this project, was updated and may be accessed from the Iowa DOT's website or directly (Iowa APMS IDEA).

PAVEMENT INVENTORY

The project began with a review of the existing inventory information pertaining to the pavements at Shenandoah 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 2020.

The pavement network at Shenandoah 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 882,300 square feet of pavement were evaluated at Shenandoah 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 Shenandoah Municipal Airport.

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

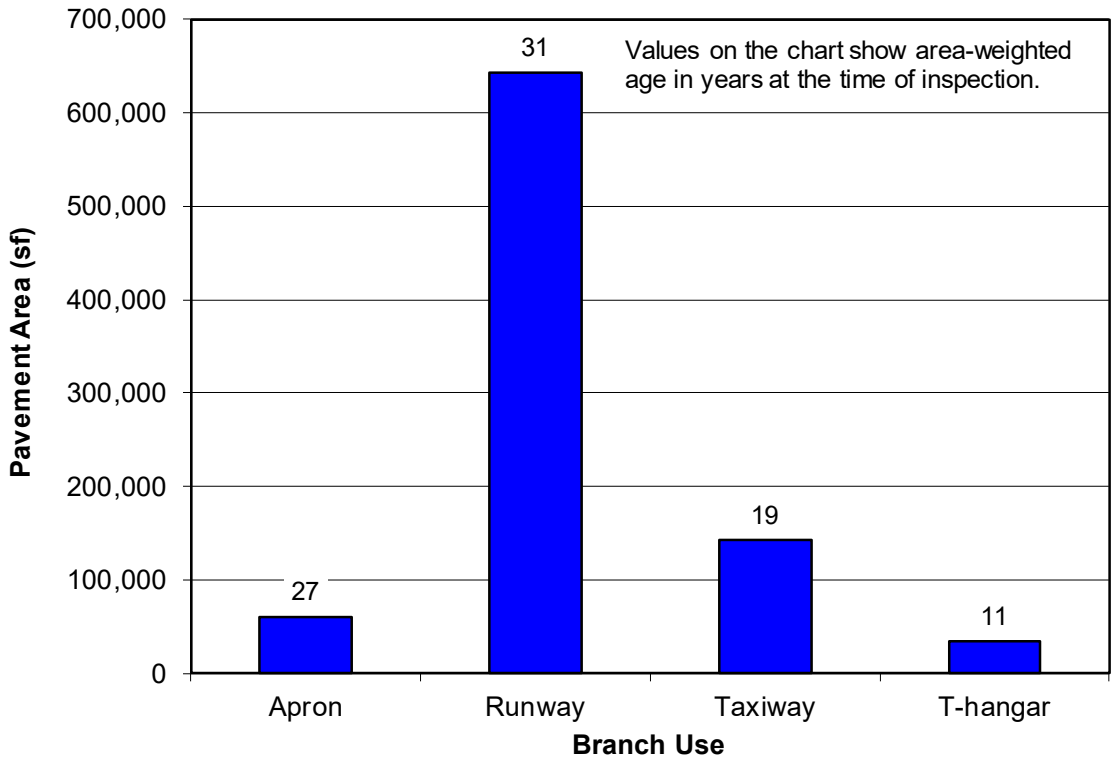
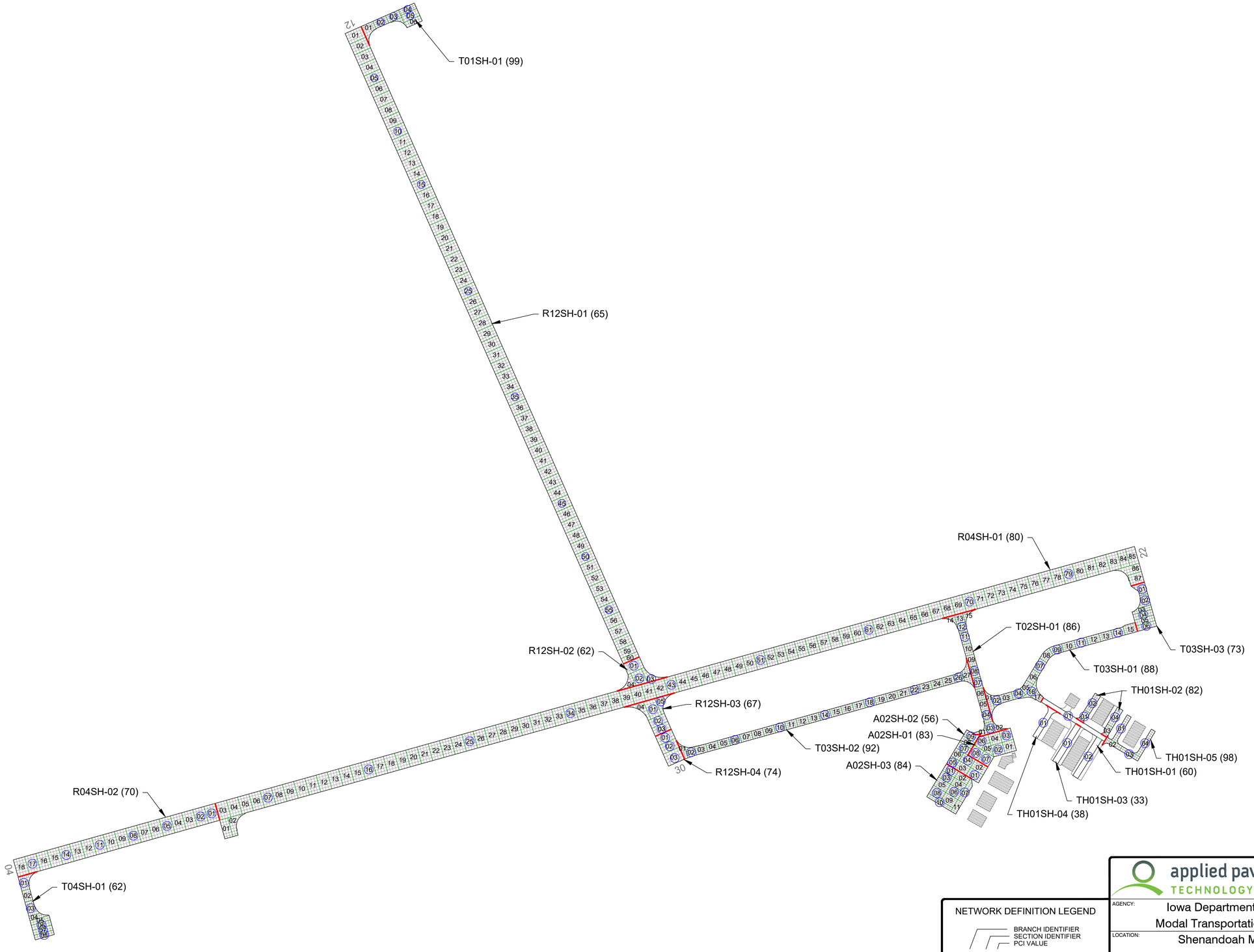


FIGURE 3. NETWORK DEFINITION MAP.



NETWORK DEFINITION LEGEND

- BRANCH IDENTIFIER
- SECTION IDENTIFIER
- PCI VALUE

R04SH-01 (80)

- SECTION BREAK LINE
- SAMPLE UNIT BREAK LINE
- SLAB JOINT
- 03 SAMPLE UNIT NUMBER
- (03) SAMPLE UNIT INSPECTED
- (03) ADDITIONAL SAMPLE UNIT

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AGENCY:	Iowa Department of Transportation Modal Transportation Bureau - Aviation
LOCATION:	Shenandoah Municipal Airport Shenandoah, Iowa
PAGE TITLE:	Network Definition Map

PROJECT DATE:	CREATION DATE:	PROJECT MANAGER:	JOB NUMBER:
OCT. 2023	OCT. 2023	LJR	2021-125-AM02
DRAWING SCALE:	LAST MODIFIED DATE:	REVISED BY:	DRAWN BY:
1"=200'	FEB. 2024	DMS	DSP
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PAVEMENT EVALUATION

Pavement Evaluation Procedure

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

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

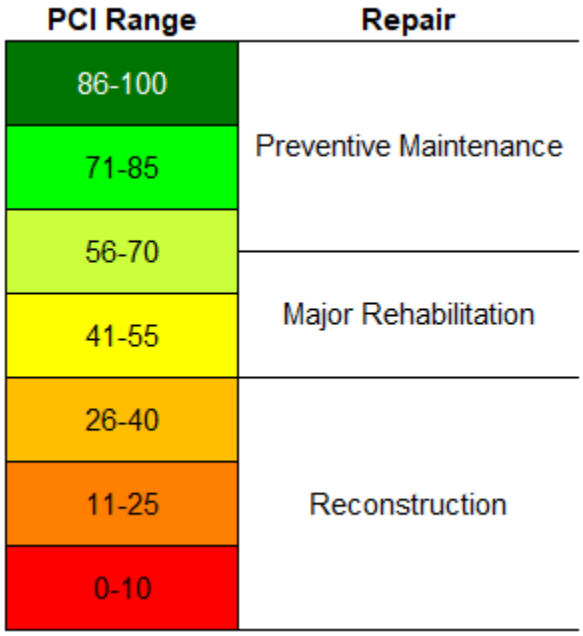
During the PCI inspection, a cursory inspection of the entirety of a pavement section was performed. Sample units identified for more detailed inspection were verified, and adjustments to the selected sample units for inspection were made as needed to ensure an accurate assessment of the pavement's condition. Data pertaining to the types, severities, and quantities of observed pavement distresses were then collected within each sample unit. These data were then used to calculate the composite PCI of each pavement section. The PCI provides a numerical indication of overall pavement condition, as illustrated in Figure 4. 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 with no visible signs of deterioration. 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.

Note: Photographs shown are not specific to Shenandoah 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 is useful when selecting M&R strategies. Understanding the cause of distress helps in selecting a rehabilitation alternative that corrects the cause and thus eliminates or delays its recurrence. PCI distress types are characterized as:

- Load-related—These distress types are defined as being caused by aircraft or vehicular traffic and may indicate a structural deficiency. Examples of load-related distress include alligator cracking on asphalt-surfaced pavements and corner breaks on portland cement concrete (PCC) pavements.
- Climate/durability-related—These distress types often signify the presence of aged or environmentally susceptible (or both) material and include durability-related issues. Examples of climate/durability-related distress include weathering on asphalt-surfaced pavements, which is climate-related, and durability cracking on PCC pavements, which is durability-related.
- Other—Distress types that fall into this category cannot be attributed solely to load or climate/durability. Examples of this type of distress include depressions on asphalt-surfaced pavements and shrinkage cracking on PCC pavements.

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 Shenandoah Municipal Airport were inspected in November 2023. The 2023 area-weighted condition of Shenandoah Municipal Airport is 75, with conditions ranging from 33 to 99 (on a scale of 0 [failed] to 100 [excellent]). During the previous pavement inspection in 2020, the area-weighted PCI of the airport was 81.

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

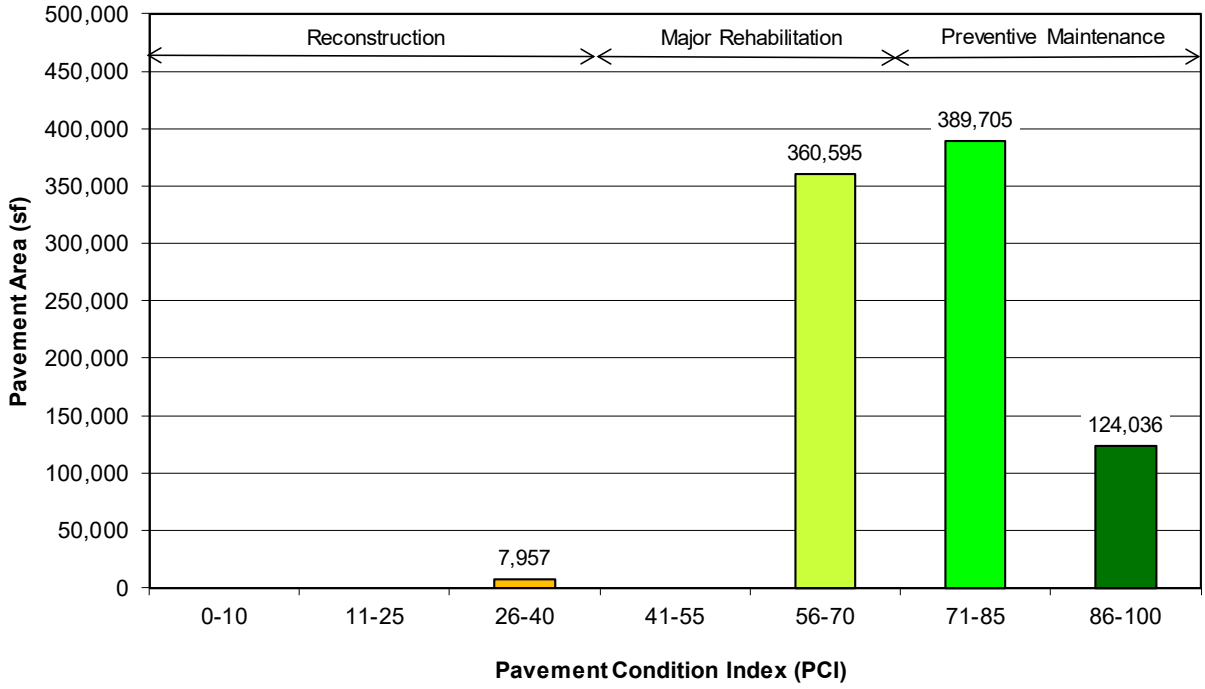


Figure 7. Area-weighted PCI by branch use at Shenandoah Municipal Airport.
(Values on chart are area-weighted)

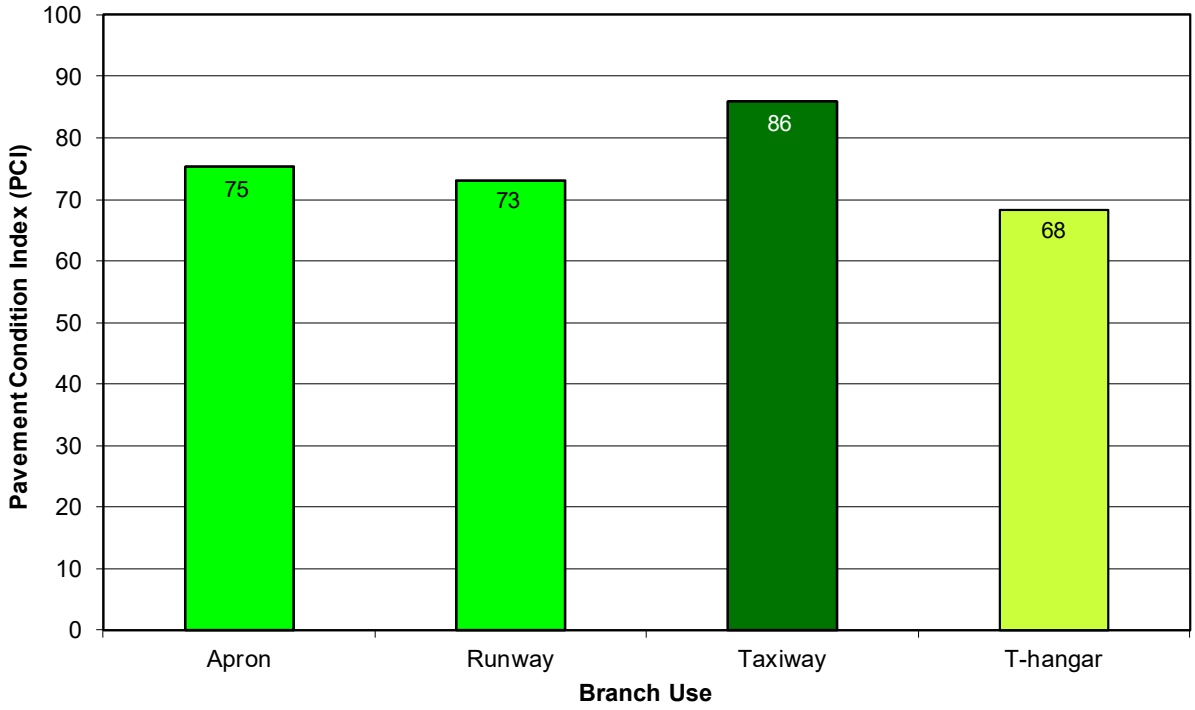
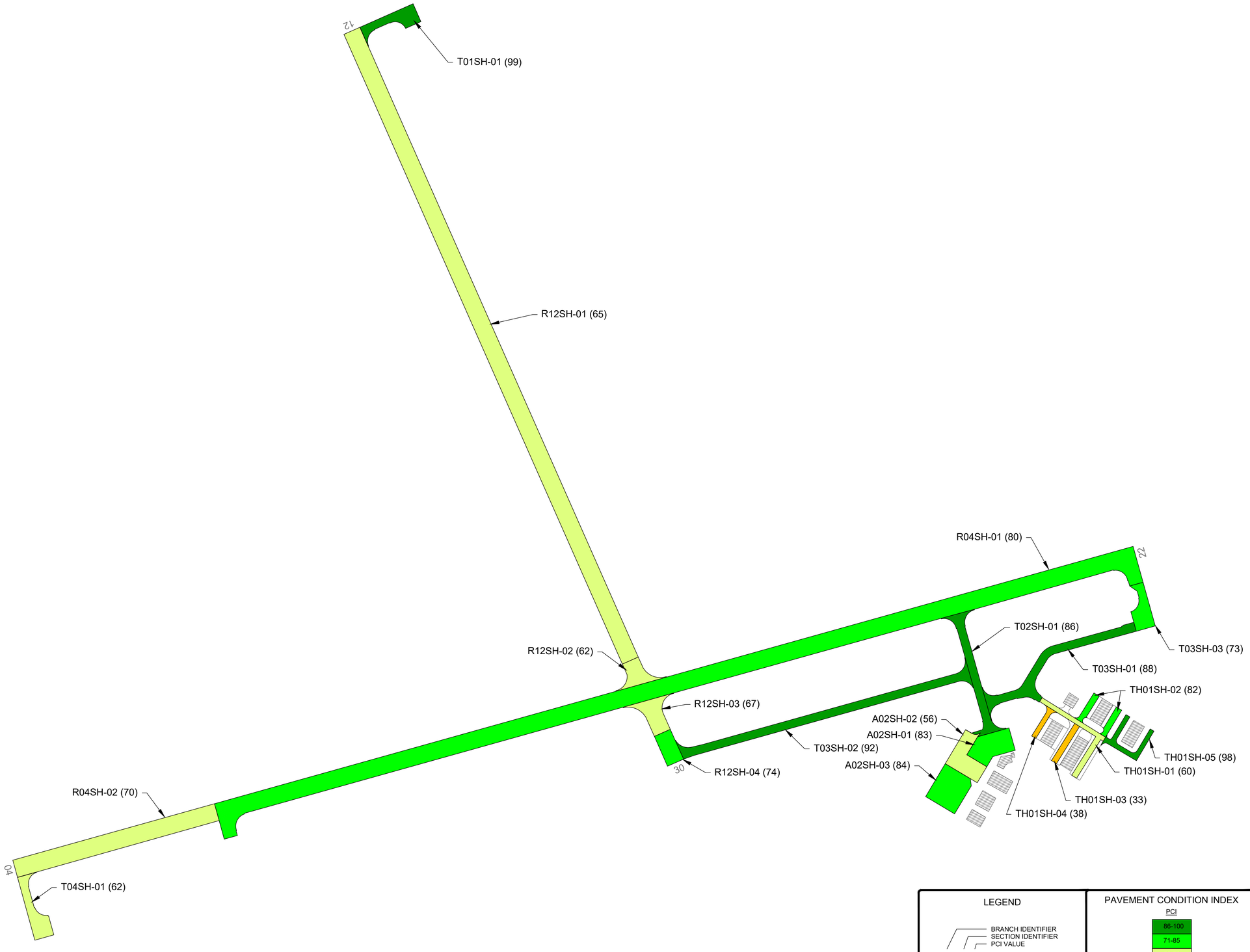


FIGURE 8. PCI MAP.



LEGEND

BRANCH IDENTIFIER
SECTION IDENTIFIER
PCI VALUE
R04SH-01 (80)

SECTION BREAK LINE

PAVEMENT CONDITION INDEX

PCI

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

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LOCATION: Shenandoah Municipal Airport
Shenandoah, Iowa

PAGE TITLE: 2023 Pavement Condition Index Map

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1"=200'	MAR. 2024	DMS	DSP
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Table 1. 2023 pavement evaluation results.

Branch	Section	Surface Type	Section Area (sf)	LCD	2023 PCI	% Distress Due to Load	% Distress Due to Climate/ Durability	% Distress Due to Other	Type of Distress
A02SH	01	PCC	19,086	6/3/1984	83	30	59	11	Corner Break, Corner Spalling, Joint Spalling, Joint Seal Damage, LTD Cracking, Shrinkage Cracking
A02SH	02	PCC	18,362	4/3/1999	56	23	22	55	ASR, Corner Break, Corner Spalling, Faulting, Joint Spalling, Joint Seal Damage, Large Patch, LTD Cracking, Small Patch
A02SH	03	PCC	23,683	6/3/2004	84	55	32	13	Corner Break, Corner Spalling, Joint Spalling, Joint Seal Damage, LTD Cracking, Small Patch
R04SH	01	PCC	317,137	6/3/1984	80	3	46	51	ASR, Corner Spalling, Faulting, Joint Spalling, Joint Seal Damage, Large Patch, LTD Cracking, Small Patch
R04SH	02	PCC	68,338	9/3/1992	70	30	5	65	ASR, Corner Break, Corner Spalling, Faulting, Joint Spalling, Joint Seal Damage, LTD Cracking, Shattered Slab, Shrinkage Cracking
R12SH	01	PCC	222,000	6/2/2002	65	44	0	56	ASR, Corner Break, Corner Spalling, Faulting, Large Patch, LTD Cracking, Shrinkage Cracking, Small Patch
R12SH	02	PCC	10,839	6/3/1984	62	62	15	23	Corner Spalling, Faulting, Joint Seal Damage, LTD Cracking, Shattered Slab
R12SH	03	PCC	14,212	6/3/1984	67	67	16	17	Corner Break, Corner Spalling, Faulting, Joint Spalling, Joint Seal Damage, LTD Cracking
R12SH	04	PCC	10,543	9/3/2014	74	75	6	19	Corner Break, Faulting, Joint Spalling, Joint Seal Damage, LTD Cracking
T01SH	01	PCC	13,547	6/1/2002	99	0	0	100	Joint Spalling, Small Patch
T02SH	01	PCC	22,619	6/3/1984	86	0	9	91	ASR, Corner Spalling, Faulting, Joint Spalling, Joint Seal Damage, Scaling, Small Patch

Table 1. 2023 pavement evaluation results (continued).

Branch	Section	Surface Type	Section Area (sf)	LCD	2023 PCI	% Distress Due to Load	% Distress Due to Climate/ Durability	% Distress Due to Other	Type of Distress
T03SH	01	PCC	31,493	10/3/2010	88	0	98	2	Joint Seal Damage, Shrinkage Cracking
T03SH	02	PCC	47,709	6/3/2014	92	0	86	14	Joint Spalling, Joint Seal Damage
T03SH	03	PCC	12,097	6/1/1996	73	53	18	29	ASR, Corner Break, Corner Spalling, Faulting, Joint Seal Damage, LTD Cracking, Scaling, Shrinkage Cracking
T04SH	01	PCC	15,522	6/1/1996	62	40	4	56	ASR, Corner Break, Corner Spalling, Faulting, Joint Seal Damage, Large Patch, LTD Cracking, Shattered Slab, Shrinkage Cracking, Small Patch
TH01SH	01	AAC	11,322	1/1/2010	60	45	54	1	Alligator Cracking, Depression, L&T Cracking, Weathering
TH01SH	02	PCC	7,159	1/1/2012	82	34	57	9	Joint Spalling, Joint Seal Damage, LTD Cracking, Shrinkage Cracking
TH01SH	03	AC	4,700	1/1/2000	33	52	48	0	Alligator Cracking, L&T Cracking, Weathering
TH01SH	04	AC	3,257	9/1/2007	38	50	50	0	Alligator Cracking, L&T Cracking, Raveling, Weathering
TH01SH	05	PCC	8,668	6/2/2021	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.
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

Shenandoah Municipal Airport was inspected on November 3, 2023. There were twenty pavement sections defined during the inspection. Suspected alkali-silica reaction (ASR) was recorded at this airport in accordance with ASTM D5340. 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 04/22 consisted of two sections. Section 01 comprised the majority of Runway 04/22. Areas of low-severity joint spalling, large patching, and longitudinal, transverse, and diagonal (LTD) cracking; low- and medium-severity ASR; medium-severity corner spalling and faulting; and all severities of joint seal damage and small patching were identified. Section 02 was located at the Runway 04 approach and contained areas of low-severity corner break, faulting, joint seal damage, and shattered slab; low- and medium-severity ASR, corner spalling, and LTD cracking; medium-severity joint spalling; and shrinkage cracking.

Runway 12/30 was defined by four sections. Section 01 comprised most of Runway 12/30. Areas of low-severity corner break, faulting, large patching, and small patching; low- and medium-severity ASR and LTD cracking; medium-severity corner spalling; and shrinkage cracking were observed in the section. Low-severity corner spalling; low- and medium-severity faulting, joint seal damage, and LTD cracking; and medium-severity shattered slab were recorded in Section 02. Areas of low-severity corner spalling, faulting, and joint spalling; low- and medium-severity corner break and LTD cracking; and medium-severity joint seal damage were identified in Section 03. Section 04 was located at the Runway 30 approach and areas of low-severity faulting and joint seal damage, low- and medium-severity joint spalling and LTD cracking, and medium-severity corner break were recorded during the inspection.

Taxiway

Taxiway 01 contained one section in excellent condition. Low-severity small patching and joint spalling were identified in Section 01.

Taxiway 02 consisted of one section that connected the apron area to Runway 04/22. All severities of ASR and low-severity corner spalling, joint spalling, faulting, joint seal damage, scaling, and small patching were recorded in Section 01.

Taxiway 03 was defined by three sections. Section 01 contained areas of high-severity joint seal damage and shrinkage cracking. Medium-severity joint spalling and joint seal damage were identified in Section 02. Low-severity ASR; low- and medium-severity faulting; medium-severity corner spalling, joint seal damage, LTD cracking, and scaling; all severities of corner break; and shrinkage cracking were observed in Section 03.

Taxiway 04 contained one section located at the Runway 04 approach. Areas of low-severity ASR, corner break, faulting, and joint seal damage; low- and medium-severity corner spalling and LTD cracking; low- and high-severity small patching; medium-severity shattered slab; high-severity large patching; and shrinkage cracking were identified in Section 01.

Apron

The apron area consisted of three sections. Section 01 contained areas of low-severity corner break and joint spalling, low- and medium-severity LTD cracking, medium-severity corner spalling, all severities of joint seal damage, and shrinkage cracking. Areas of low-severity faulting, joint spalling, and large patching; low- and medium-severity ASR, corner break, LTD

cracking, and small patching; medium-severity corner spalling; and medium- and high-severity joint seal damage were observed in Section 02. Low-severity corner spalling and small patching, low- and medium-severity joint seal damage and joint spalling, and medium-severity corner break and LTD cracking were recorded in Section 03.

T-Hangar

The T-hangar area was defined by five sections. Low-severity depression, low- and medium-severity alligator cracking, medium-severity weathering, and all severities of longitudinal and transverse (L&T) cracking were observed in Section 01. The low-severity L&T cracking was either sealed or unsealed while the medium-severity L&T cracking was identified where the crack sealant was no longer satisfactory. The high-severity L&T cracking was noted where unsealed crack widths exceeded 3 inches. Areas of low-severity joint spalling, medium-severity LTD cracking, high-severity joint seal damage, and shrinkage cracking were identified in Section 02. Section 03 was in poor condition with areas of low- and medium-severity L&T cracking and medium-severity alligator cracking and weathering. The low-severity L&T cracking was either sealed or unsealed, and the medium-severity L&T cracking was identified where the crack sealant was unsatisfactory. Section 04 was also in poor condition. Low- and medium-severity alligator cracking, medium-severity weathering, high-severity raveling, and all severities of L&T cracking were identified. The low-severity L&T cracking was sealed while the medium-severity L&T cracking was due to either unsatisfactory crack sealant or the development of secondary cracking. Section 05 was in excellent condition with only low-severity joint seal damage recorded.

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 Shenandoah 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 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 Shenandoah 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, 2024, and an inflation rate of 2.0 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 (2024) 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 2025 or 2026, then localized preventive maintenance was not recommended for 2024. While localized preventive maintenance should be an annual undertaking at Shenandoah 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 2024 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 Shenandoah Municipal Airport is presented in Table 2. Detailed information on the recommended localized preventive maintenance plan for 2024 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
2024	A02SH	01	PCC	Preventive Maintenance	$4,683
2024	A02SH	03	PCC	Preventive Maintenance	$12,190
2024	R04SH	01	PCC	Preventive Maintenance	$163,973
2024	R04SH	02	PCC	Preventive Maintenance	$37,564
2024	R12SH	01	PCC	Major Rehabilitation	$1,936,638
2024	R12SH	02	PCC	Major Rehabilitation	$94,555
2024	R12SH	03	PCC	Preventive Maintenance	$7,504
2024	R12SH	04	PCC	Preventive Maintenance	$2,322
2024	T02SH	01	PCC	Preventive Maintenance	$13,483
2024	T03SH	01	PCC	Preventive Maintenance	$17,665
2024	T03SH	02	PCC	Preventive Maintenance	$30,294
2024	T03SH	03	PCC	Preventive Maintenance	$13,550
2024	T04SH	01	PCC	Preventive Maintenance	$5,796
2024	TH01SH	02	PCC	Preventive Maintenance	$3,908
2024	TH01SH	03	AC	Major Rehabilitation	$51,873
2024	TH01SH	04	AC	Major Rehabilitation	$35,947
2025	A02SH	02	PCC	Major Rehabilitation	$163,386
2025	TH01SH	01	AAC	Major Rehabilitation	$60,296
2027	R12SH	03	PCC	Major Rehabilitation	$131,568
2027	T04SH	01	PCC	Major Rehabilitation	$143,696
				Total Estimated Cost:	**$2,931,000**

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 Shenandoah Municipal Airport.

The recommendations made in this report are based on a broad network-level analysis and meant to provide Shenandoah 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 Shenandoah 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, Shenandoah 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 because of these inspections. This documentation needs 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 all edges of pavement maintain the required 1.5-inch lip. This enables the water to drain away from the pavement system.
6. Closely monitor the movement of heavy equipment (particularly farming, construction, mowing, 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 Shenandoah 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, Shenandoah 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 text is a direct quotation 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 Shenandoah 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 provided in 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 Shenandoah Municipal Airport is listed in Table 1 of this report and is also stored in the PAVER database. Any changes to the 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 Shenandoah 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
A02SH	01					
A02SH	02					
A02SH	03					
R04SH	01					
R04SH	02					
R12SH	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
R12SH	02					
R12SH	03					
R12SH	04					
T01SH	01					
T02SH	01					
T03SH	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
T03SH	02					
T03SH	03					
T04SH	01					
TH01SH	01					
TH01SH	02					
TH01SH	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
TH01SH	04					
TH01SH	05					

Table Note: See Figure 3 for the location of the branch and section.

SUMMARY

This report documents the results of the pavement evaluation conducted at Shenandoah Municipal Airport. A visual inspection of the pavements in 2023 found that the overall condition of the pavement network is a PCI of 75. A 5-year pavement repair program, shown in Table 2, was generated for Shenandoah Municipal Airport, which revealed that approximately $2,931,000 needs to be expended on M&R. Shenandoah 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

A02SH-01. Overview.

A02SH-01. LTD Cracking (Sample Unit No. 03).

A02SH-02. Overview.

A02SH-02. ASR (Sample Unit No. 09).

A02SH-03. Overview.

A02SH-03. LTD Cracking (Sample Unit No. 10).

R04SH-01. Overview.

R04SH-01. ASR (Sample Unit No. 34).

R04SH-02. Overview.

R04SH-02. LTD Cracking (Sample Unit No. 11).

R12SH-01. Overview.

R12SH-01. Large Patching (Sample Unit No. 15).

R12SH-02. Overview.

R12SH-02. LTD Cracking (Sample Unit No. 03).

R12SH-03. Overview.

R12SH-03. LTD Cracking (Sample Unit No. 05).

R12SH-04. Overview.

R12SH-04. LTD Cracking (Sample Unit No. 03).

T01SH-01. Overview.

T01SH-01. Small Patching (Sample Unit No. 05).

T02SH-01. Overview.

T02SH-01. ASR (Sample Unit No. 03).

T03SH-01. Overview.

T03SH-01. Joint Seal Damage (Sample Unit No. 16).

T03SH-02. Overview.

T03SH-02. Joint Spalling (Sample Unit No. 26).

T03SH-03. Overview.

T03SH-03. Corner Break (Sample Unit No. 02).

T04SH-01. Overview.

T04SH-01. ASR (Sample Unit No. 03).

TH01SH-01. Overview.

TH01SH-01. L&T Cracking (Sample Unit No. 01).

TH01SH-02. Overview.

TH01SH-02. LTD Cracking (Sample Unit No. 02).

TH01SH-03. Overview.

TH01SH-03. Alligator Cracking (Sample Unit No. 01).

TH01SH-04. Overview.

TH01SH-04. Alligator Cracking (Sample Unit No. 01).

TH01SH-05. Overview.

TH01SH-05. Joint Seal Damage (Sample Unit No. 01).

APPENDIX C

INSPECTION REPORT

RE-INSPECTION REPORT
SHENANDOAH MUNICIPAL AIRPORT

Pavement Database: IA 2023 | Generate Date: 4/16/2024

Network ID: SDA |

Branch - Section ID: A02SH - 001

Branch Name: APRON 02 | Use: APRON

LCD: 6/3/1984
Surface Type: PCC
Rank: P
Section Area (sf): 19,086.00
Length (ft): 189.00
Width (ft): 100.00
From: APRON SECT 02
To: TAXIWAY 02

PCI Family: IowaPCCAP_SC_GeneralEnhanced

Slabs: 153
Slab Length (ft): 10.00
Slab Width (ft): 12.50
Joint Length (ft): 3,143.64

Section Comments:

Last Insp Date: 11/3/2023
PCI: 83
Total Samples: 8
Surveyed: 5

Inspection Comments:

Sample Number: 02

Sample Type: R
Sample PCI: 98
Sample Area (Slabs): 20.00

Sample Comments:

65 JT SEAL DMG	L	20.00	Slabs

Sample Number: 03

Sample Type: R
Sample PCI: 60
Sample Area (Slabs): 20.00

Sample Comments:

62 CORNER BREAK	L	1.00	Slabs
63 LINEAR CR	L	1.00	Slabs
63 LINEAR CR	M	3.00	Slabs
65 JT SEAL DMG	L	20.00	Slabs
74 JOINT SPALL	L	1.00	Slabs
75 CORNER SPALL	M	1.00	Slabs

Sample Number: 06

Sample Type: R
Sample PCI: 87
Sample Area (Slabs): 22.00

Sample Comments:

65 JT SEAL DMG	L	22.00	Slabs
73 SHRINKAGE CR	N	2.00	Slabs
74 JOINT SPALL	L	1.00	Slabs
74 JOINT SPALL	L	1.00	Slabs
75 CORNER SPALL	M	2.00	Slabs

Sample Number: 07

Sample Type: R
Sample PCI: 84
Sample Area (Slabs): 20.00

Sample Comments:

63 LINEAR CR	M	1.00	Slabs
65 JT SEAL DMG	M	20.00	Slabs

RE-INSPECTION REPORT
SHENANDOAH MUNICIPAL AIRPORT

Sample Number: 08

Sample Type: R
Sample PCI: 88
Sample Area (Slabs): 20.00

Sample Comments:

65	JT SEAL DMG	H	20.00 Slabs

RE-INSPECTION REPORT
SHENANDOAH MUNICIPAL AIRPORT

Branch - Section ID: A02SH - 002

Branch Name: APRON 02 Use: APRON

LCD: 4/3/1999
Surface Type: PCC
Rank: P
Section Area (sf): 18,362.00
Length (ft): 113.00
Width (ft): 161.00
From: A02SH-01
To: A02SH-03

PCI Family: IowaPCCAP_SC_GeneralEnhanced

Slabs: 160
Slab Length (ft): 10.00
Slab Width (ft): 11.50
Joint Length (ft): 3,156.35

Section Comments:

Last Insp Date: 11/3/2023
PCI: 56
Total Samples: 9
Surveyed: 5

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 74
Sample Area (Slabs): 20.00

Sample Comments:

65 JT SEAL DMG	H	20.00	Slabs
71 FAULTING	L	6.00	Slabs

Sample Number: 04

Sample Type: R
Sample PCI: 80
Sample Area (Slabs): 20.00

Sample Comments:

63 LINEAR CR	L	1.00	Slabs
65 JT SEAL DMG	H	20.00	Slabs
67 LARGE PATCH	L	1.00	Slabs

Sample Number: 05

Sample Type: R
Sample PCI: 42
Sample Area (Slabs): 16.00

Sample Comments:

62 CORNER BREAK	L	1.00	Slabs
65 JT SEAL DMG	M	16.00	Slabs
66 SMALL PATCH	L	1.00	Slabs
76 ASR	L	10.00	Slabs
76 ASR	M	4.00	Slabs
76 ASR	M	1.00	Slabs

Sample Number: 07

Sample Type: R
Sample PCI: 49
Sample Area (Slabs): 18.00

Sample Comments:

63 LINEAR CR	M	2.00	Slabs
65 JT SEAL DMG	M	18.00	Slabs
66 SMALL PATCH	L	1.00	Slabs
66 SMALL PATCH	M	1.00	Slabs
74 JOINT SPALL	L	1.00	Slabs
75 CORNER SPALL	M	1.00	Slabs
76 ASR	M	2.00	Slabs

Sample Number: 09

Sample Type: R
Sample PCI: 27
Sample Area (Slabs): 18.00

Sample Comments:

62 CORNER BREAK	M	2.00	Slabs
63 LINEAR CR	M	4.00	Slabs
65 JT SEAL DMG	M	18.00	Slabs
67 LARGE PATCH	L	2.00	Slabs
71 FAULTING	L	1.00	Slabs
74 JOINT SPALL	L	1.00	Slabs
76 ASR	L	4.00	Slabs
76 ASR	M	2.00	Slabs
76 ASR	M	1.00	Slabs

Branch - Section ID: A02SH - 003

Branch Name: APRON 02 Use: APRON

LCD: 6/3/2004
Surface Type: PCC
Rank: P
Section Area (sf): 23,683.00
Length (ft): 165.00
Width (ft): 145.00
From: A02SH-02
To: END OF APRON

PCI Family: IowaPCCAP_SC_GeneralEnhanced

Slabs: 197
Slab Length (ft): 10.00
Slab Width (ft): 12.00
Joint Length (ft): 4,035.02

Section Comments: avg

Last Insp Date: 11/3/2023
PCI: 84
Total Samples: 11
Surveyed: 6

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 89
Sample Area (Slabs): 20.00

Sample Comments:

65 JT SEAL DMG	M	20.00	Slabs
74 JOINT SPALL	M	1.00	Slabs

Sample Number: 03

Sample Type: R
Sample PCI: 94
Sample Area (Slabs): 20.00

Sample Comments:

65 JT SEAL DMG	L	20.00	Slabs
74 JOINT SPALL	L	1.00	Slabs
75 CORNER SPALL	L	1.00	Slabs

Sample Number: 06

Sample Type: R
Sample PCI: 98
Sample Area (Slabs): 25.00

Sample Comments:

65 JT SEAL DMG	L	25.00	Slabs

Sample Number: 07

Sample Type: R
Sample PCI: 81
Sample Area (Slabs): 24.00

Sample Comments:

63 LINEAR CR	M	1.00	Slabs
65 JT SEAL DMG	M	24.00	Slabs
74 JOINT SPALL	M	3.00	Slabs

Sample Number: 08

Sample Type: R
Sample PCI: 84
Sample Area (Slabs): 25.00

Sample Comments:

63 LINEAR CR	M	1.00	Slabs
65 JT SEAL DMG	M	25.00	Slabs
75 CORNER SPALL	L	1.00	Slabs

Sample Number: 10

Sample Type: R

Sample PCI: 52

Sample Area (Slabs): 20.00

Sample Comments:

62 CORNER BREAK	M	2.00	Slabs
63 LINEAR CR	M	6.00	Slabs
65 JT SEAL DMG	M	20.00	Slabs
66 SMALL PATCH	L	2.00	Slabs

RE-INSPECTION REPORT
SHENANDOAH MUNICIPAL AIRPORT

Branch - Section ID: R04SH - 001

Branch Name: RUNWAY 04/22 Use: RUNWAY

LCD: 6/3/1984
Surface Type: PCC
Rank: P
Section Area (sf): 317,137.00
Length (ft): 4,110.00
Width (ft): 75.00
From: RW 22 APPROACH
To: SECTION 02

PCI Family: IowaPCCRW_SC_General

Slabs: 2,030
Slab Length (ft): 12.50
Slab Width (ft): 12.50
Joint Length (ft): 46,436.26

Section Comments:

Last Insp Date: 11/3/2023
PCI: 80
Total Samples: 87
Surveyed: 9

Inspection Comments:

Sample Number: 07

Sample Type: R
Sample PCI: 65
Sample Area (Slabs): 24.00

Sample Comments:

63 LINEAR CR	L	3.00	Slabs
65 JT SEAL DMG	L	24.00	Slabs
67 LARGE PATCH	L	2.00	Slabs
71 FAULTING	M	3.00	Slabs
76 ASR	L	6.00	Slabs

Sample Number: 16

Sample Type: R
Sample PCI: 94
Sample Area (Slabs): 24.00

Sample Comments:

65 JT SEAL DMG	L	24.00	Slabs
67 LARGE PATCH	L	1.00	Slabs
74 JOINT SPALL	L	1.00	Slabs

Sample Number: 25

Sample Type: R
Sample PCI: 89
Sample Area (Slabs): 24.00

Sample Comments:

65 JT SEAL DMG	L	24.00	Slabs
76 ASR	L	3.00	Slabs

Sample Number: 34

Sample Type: R
Sample PCI: 84
Sample Area (Slabs): 24.00

Sample Comments:

65 JT SEAL DMG	M	24.00	Slabs
76 ASR	L	4.00	Slabs

RE-INSPECTION REPORT
SHENANDOAH MUNICIPAL AIRPORT

Sample Number: 43

Sample Type: R
Sample PCI: 88
Sample Area (Slabs): 24.00
Sample Comments:

65 JT SEAL DMG	M	24.00	Slabs
76 ASR	L	2.00	Slabs

Sample Number: 51

Sample Type: R
Sample PCI: 76
Sample Area (Slabs): 24.00
Sample Comments:

65 JT SEAL DMG	L	24.00	Slabs
66 SMALL PATCH	L	1.00	Slabs
66 SMALL PATCH	M	1.00	Slabs
71 FAULTING	M	1.00	Slabs
76 ASR	L	7.00	Slabs

Sample Number: 61

Sample Type: R
Sample PCI: 90
Sample Area (Slabs): 24.00
Sample Comments:

65 JT SEAL DMG	M	24.00	Slabs
75 CORNER SPALL	M	1.00	Slabs

Sample Number: 70

Sample Type: R
Sample PCI: 72
Sample Area (Slabs): 24.00
Sample Comments:

65 JT SEAL DMG	M	24.00	Slabs
66 SMALL PATCH	H	1.00	Slabs
75 CORNER SPALL	M	1.00	Slabs
76 ASR	L	8.00	Slabs

Sample Number: 79

Sample Type: R
Sample PCI: 64
Sample Area (Slabs): 24.00
Sample Comments:

65 JT SEAL DMG	H	24.00	Slabs
76 ASR	L	3.00	Slabs
76 ASR	M	3.00	Slabs

Branch - Section ID: R04SH - 002

Branch Name: RUNWAY 04/22 Use: RUNWAY

LCD: 9/3/1992
Surface Type: PCC
Rank: P
Section Area (sf): 68,338.00
Length (ft): 890.00
Width (ft): 75.00
From: RW 04 APPROACH
To: SECTION 01

PCI Family: IowaPCCRW_SC_General

Slabs: 437
Slab Length (ft): 12.50
Slab Width (ft): 12.50
Joint Length (ft): 9,946.12

Section Comments:

Last Insp Date: 11/3/2023
PCI: 70
Total Samples: 18
Surveyed: 7

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 69
Sample Area (Slabs): 24.00

Sample Comments:

65 JT SEAL DMG	L	24.00	Slabs
76 ASR	L	9.00	Slabs
76 ASR	M	2.00	Slabs

Sample Number: 02

Sample Type: R
Sample PCI: 71
Sample Area (Slabs): 24.00

Sample Comments:

63 LINEAR CR	L	4.00	Slabs
65 JT SEAL DMG	L	24.00	Slabs
73 SHRINKAGE CR	N	1.00	Slabs
76 ASR	L	16.00	Slabs

Sample Number: 05

Sample Type: R
Sample PCI: 70
Sample Area (Slabs): 24.00

Sample Comments:

63 LINEAR CR	L	2.00	Slabs
65 JT SEAL DMG	L	24.00	Slabs
71 FAULTING	L	1.00	Slabs
73 SHRINKAGE CR	N	2.00	Slabs
74 JOINT SPALL	M	1.00	Slabs
76 ASR	L	8.00	Slabs

Sample Number: 08

Sample Type: R
Sample PCI: 74
Sample Area (Slabs): 24.00

Sample Comments:

63 LINEAR CR	L	1.00	Slabs
65 JT SEAL DMG	L	24.00	Slabs
73 SHRINKAGE CR	N	1.00	Slabs
76 ASR	L	5.00	Slabs
76 ASR	M	1.00	Slabs

Sample Number: 11

Sample Type: R
Sample PCI: 60
Sample Area (Slabs): 24.00

Sample Comments:

62 CORNER BREAK	L	1.00	Slabs
63 LINEAR CR	L	5.00	Slabs
63 LINEAR CR	M	2.00	Slabs
65 JT SEAL DMG	L	24.00	Slabs
72 SHAT. SLAB	L	1.00	Slabs
76 ASR	L	6.00	Slabs

Sample Number: 14

Sample Type: R
Sample PCI: 72
Sample Area (Slabs): 24.00

Sample Comments:

63 LINEAR CR	L	1.00	Slabs
65 JT SEAL DMG	L	24.00	Slabs
76 ASR	L	10.00	Slabs
76 ASR	M	1.00	Slabs

Sample Number: 17

Sample Type: R
Sample PCI: 74
Sample Area (Slabs): 24.00

Sample Comments:

65 JT SEAL DMG	L	24.00	Slabs
75 CORNER SPALL	L	1.00	Slabs
75 CORNER SPALL	M	1.00	Slabs
76 ASR	L	6.00	Slabs
76 ASR	M	1.00	Slabs

RE-INSPECTION REPORT
SHENANDOAH MUNICIPAL AIRPORT

Branch - Section ID: R12SH - 001

Branch Name: RUNWAY 12/30 Use: RUNWAY

LCD: 6/2/2002
Surface Type: PCC
Rank: S
Section Area (sf): 222,000.00
Length (ft): 2,962.00
Width (ft): 75.00
From: RUNWAY END 12
To: RUNWAY SECT 02

PCI Family: IowaPCCRW_SC_General

Slabs: 1,421
Slab Length (ft): 12.50
Slab Width (ft): 12.50
Joint Length (ft): 32,485.05

Section Comments:

Last Insp Date: 11/3/2023
PCI: 65
Total Samples: 60
Surveyed: 8

Inspection Comments:

Sample Number: 05

Sample Type: R
Sample PCI: 64
Sample Area (Slabs): 24.00

Sample Comments:

62 CORNER BREAK	L	1.00 Slabs
63 LINEAR CR	L	3.00 Slabs
66 SMALL PATCH	L	2.00 Slabs
67 LARGE PATCH	L	5.00 Slabs
71 FAULTING	L	3.00 Slabs
73 SHRINKAGE CR	N	2.00 Slabs
75 CORNER SPALL	M	1.00 Slabs
76 ASR	L	4.00 Slabs

Sample Number: 10

Sample Type: R
Sample PCI: 73
Sample Area (Slabs): 24.00

Sample Comments:

63 LINEAR CR	L	6.00 Slabs
67 LARGE PATCH	L	1.00 Slabs
71 FAULTING	L	5.00 Slabs

Sample Number: 15

Sample Type: R
Sample PCI: 46
Sample Area (Slabs): 24.00

Sample Comments:

63 LINEAR CR	L	1.00 Slabs
63 LINEAR CR	M	3.00 Slabs
66 SMALL PATCH	L	1.00 Slabs
67 LARGE PATCH	L	4.00 Slabs
71 FAULTING	L	4.00 Slabs
76 ASR	L	5.00 Slabs
76 ASR	L	7.00 Slabs
76 ASR	M	1.00 Slabs

Sample Number: 25

Sample Type: R
Sample PCI: 62
Sample Area (Slabs): 24.00
Sample Comments:

63 LINEAR CR	M	4.00	Slabs
71 FAULTING	L	4.00	Slabs
76 ASR	L	6.00	Slabs

Sample Number: 35

Sample Type: R
Sample PCI: 65
Sample Area (Slabs): 24.00
Sample Comments:

63 LINEAR CR	L	16.00	Slabs
76 ASR	L	16.00	Slabs

Sample Number: 45

Sample Type: R
Sample PCI: 64
Sample Area (Slabs): 24.00
Sample Comments:

63 LINEAR CR	L	11.00	Slabs
63 LINEAR CR	M	1.00	Slabs
71 FAULTING	L	3.00	Slabs
76 ASR	L	5.00	Slabs

Sample Number: 50

Sample Type: R
Sample PCI: 71
Sample Area (Slabs): 24.00
Sample Comments:

63 LINEAR CR	L	7.00	Slabs
71 FAULTING	L	1.00	Slabs
76 ASR	L	8.00	Slabs

Sample Number: 55

Sample Type: R
Sample PCI: 74
Sample Area (Slabs): 24.00
Sample Comments:

62 CORNER BREAK	L	1.00	Slabs
63 LINEAR CR	L	2.00	Slabs
66 SMALL PATCH	L	2.00	Slabs
71 FAULTING	L	2.00	Slabs
76 ASR	L	2.00	Slabs
76 ASR	L	2.00	Slabs

RE-INSPECTION REPORT
SHENANDOAH MUNICIPAL AIRPORT

Branch - Section ID: R12SH - 002

Branch Name: RUNWAY 12/30 Use: RUNWAY

LCD: 6/3/1984
Surface Type: PCC
Rank: S
Section Area (sf): 10,839.00
Length (ft): 115.00
Width (ft): 75.00
From: RUNWAY SECT 01
To: RUNWAY 04/22

PCI Family: IowaPCCRW_SC_General

Slabs: 75
Slab Length (ft): 11.50
Slab Width (ft): 12.50
Joint Length (ft): 1,570.87

Section Comments: avg

Last Insp Date: 11/3/2023
PCI: 62
Total Samples: 4
Surveyed: 3

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 48
Sample Area (Slabs): 24.00

Sample Comments:

63 LINEAR CR	M	7.00	Slabs
65 JT SEAL DMG	M	24.00	Slabs
71 FAULTING	L	3.00	Slabs
72 SHAT. SLAB	M	1.00	Slabs

Sample Number: 02

Sample Type: R
Sample PCI: 91
Sample Area (Slabs): 20.00

Sample Comments:

65 JT SEAL DMG	L	20.00	Slabs
71 FAULTING	L	1.00	Slabs
75 CORNER SPALL	L	1.00	Slabs

Sample Number: 03

Sample Type: R
Sample PCI: 47
Sample Area (Slabs): 16.00

Sample Comments:

63 LINEAR CR	L	1.00	Slabs
63 LINEAR CR	M	4.00	Slabs
65 JT SEAL DMG	M	16.00	Slabs
71 FAULTING	L	1.00	Slabs
71 FAULTING	M	2.00	Slabs

Branch - Section ID: R12SH - 003

Branch Name: RUNWAY 12/30 Use: RUNWAY

LCD: 6/3/1984
Surface Type: PCC
Rank: S
Section Area (sf): 14,212.00
Length (ft): 151.00
Width (ft): 75.00
From: RUNWAY 04/22
To: RUNWAY SECT 04

PCI Family: IowaPCCRW_SC_General

Slabs: 91
Slab Length (ft): 12.50
Slab Width (ft): 12.50
Joint Length (ft): 1,990.31

Section Comments:

Last Insp Date: 11/3/2023
PCI: 67
Total Samples: 5
Surveyed: 4

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 90
Sample Area (Slabs): 24.00

Sample Comments:

65 JT SEAL DMG	M	24.00	Slabs
75 CORNER SPALL	L	2.00	Slabs

Sample Number: 02

Sample Type: R
Sample PCI: 48
Sample Area (Slabs): 18.00

Sample Comments:

62 CORNER BREAK	L	1.00	Slabs
62 CORNER BREAK	M	1.00	Slabs
63 LINEAR CR	L	3.00	Slabs
63 LINEAR CR	M	3.00	Slabs
65 JT SEAL DMG	M	18.00	Slabs
71 FAULTING	L	4.00	Slabs

Sample Number: 03

Sample Type: R
Sample PCI: 62
Sample Area (Slabs): 18.00

Sample Comments:

63 LINEAR CR	L	1.00	Slabs
63 LINEAR CR	M	4.00	Slabs
65 JT SEAL DMG	M	18.00	Slabs

Sample Number: 05

Sample Type: R
Sample PCI: 62
Sample Area (Slabs): 17.00

Sample Comments:

63 LINEAR CR	L	1.00	Slabs
63 LINEAR CR	M	2.00	Slabs
65 JT SEAL DMG	M	17.00	Slabs
71 FAULTING	L	1.00	Slabs
74 JOINT SPALL	L	1.00	Slabs

Branch - Section ID: R12SH - 004

Branch Name: RUNWAY 12/30 Use: RUNWAY

LCD: 9/3/2014
Surface Type: PCC
Rank: S
Section Area (sf): 10,543.00
Length (ft): 140.00
Width (ft): 75.00
From: RUNWAY 30 END
To: RUNWAY SECT 03

PCI Family: IowaPCCRW_SC_General

Slabs: 60
Slab Length (ft): 14.00
Slab Width (ft): 12.50
Joint Length (ft): 1,380.63

Section Comments:

Last Insp Date: 11/3/2023
PCI: 74
Total Samples: 3
Surveyed: 3

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 87
Sample Area (Slabs): 18.00

Sample Comments:

65 JT SEAL DMG	L	18.00	Slabs
71 FAULTING	L	2.00	Slabs
74 JOINT SPALL	L	1.00	Slabs

Sample Number: 02

Sample Type: R
Sample PCI: 66
Sample Area (Slabs): 18.00

Sample Comments:

62 CORNER BREAK	M	3.00	Slabs
63 LINEAR CR	L	2.00	Slabs
63 LINEAR CR	L	3.00	Slabs
65 JT SEAL DMG	L	18.00	Slabs
74 JOINT SPALL	L	1.00	Slabs

Sample Number: 03

Sample Type: R
Sample PCI: 72
Sample Area (Slabs): 24.00

Sample Comments:

63 LINEAR CR	L	3.00	Slabs
63 LINEAR CR	M	2.00	Slabs
65 JT SEAL DMG	L	24.00	Slabs
74 JOINT SPALL	M	2.00	Slabs

Branch - Section ID: T01SH - 001

Branch Name: TAXIWAY 01 Use: TAXIWAY

LCD: 6/1/2002
Surface Type: PCC
Rank: P
Section Area (sf): 13,547.00
Length (ft): 288.00
Width (ft): 35.00
From: RUNWAY 12
To: SEE MAP

PCI Family: IowaPCCTW_SC_General

Slabs: 133
Slab Length (ft): 12.00
Slab Width (ft): 8.50
Joint Length (ft): 2,288.59

Section Comments: Abandoned section

Last Insp Date: 11/3/2023
PCI: 99
Total Samples: 6
Surveyed: 4

Inspection Comments:

Sample Number: 02

Sample Type: R
Sample PCI: 100
Sample Area (Slabs): 24.00

Sample Comments:

NO DISTRESS

Sample Number: 03

Sample Type: R
Sample PCI: 97
Sample Area (Slabs): 24.00

Sample Comments:

74 JOINT SPALL	L	2.00	Slabs

Sample Number: 04

Sample Type: R
Sample PCI: 100
Sample Area (Slabs): 21.00

Sample Comments:

NO DISTRESS

Sample Number: 05

Sample Type: R
Sample PCI: 98
Sample Area (Slabs): 21.00

Sample Comments:

66 SMALL PATCH	L	2.00	Slabs

Branch - Section ID: T02SH - 001

Branch Name: TAXIWAY 02 Use: TAXIWAY

LCD: 6/3/1984
Surface Type: PCC
Rank: P
Section Area (sf): 22,619.00
Length (ft): 533.00
Width (ft): 35.00
From: APRON 02
To: RUNWAY 04/22

PCI Family: IowaPCCTW_SC_General

Slabs: 259
Slab Length (ft): 10.00
Slab Width (ft): 8.75
Joint Length (ft): 4,158.23

Section Comments:

Last Insp Date: 11/3/2023
PCI: 86
Total Samples: 15
Surveyed: 6

Inspection Comments:

Sample Number: 03

Sample Type: R
Sample PCI: 41
Sample Area (Slabs): 20.00

Sample Comments:

65 JT SEAL DMG	L	20.00	Slabs
74 JOINT SPALL	L	1.00	Slabs
76 ASR	H	2.00	Slabs
76 ASR	L	2.00	Slabs
76 ASR	M	2.00	Slabs

Sample Number: 04

Sample Type: R
Sample PCI: 91
Sample Area (Slabs): 20.00

Sample Comments:

65 JT SEAL DMG	L	20.00	Slabs
74 JOINT SPALL	L	1.00	Slabs
76 ASR	L	1.00	Slabs

Sample Number: 07

Sample Type: R
Sample PCI: 93
Sample Area (Slabs): 20.00

Sample Comments:

65 JT SEAL DMG	L	20.00	Slabs
71 FAULTING	L	1.00	Slabs

Sample Number: 08

Sample Type: R
Sample PCI: 98
Sample Area (Slabs): 20.00

Sample Comments:

75 CORNER SPALL	L	1.00	Slabs

Sample Number: 11

Sample Type: R
Sample PCI: 98
Sample Area (Slabs): 20.00

Sample Comments:

65 JT SEAL DMG	L	20.00	Slabs

Sample Number: 12

Sample Type: R
Sample PCI: 95
Sample Area (Slabs): 20.00

Sample Comments:

65 JT SEAL DMG	L	20.00	Slabs
66 SMALL PATCH	L	2.00	Slabs
70 SCALING	L	1.00	Slabs

Branch - Section ID: T03SH - 001

Branch Name: TAXIWAY 03 Use: TAXIWAY

LCD: 10/3/2010
Surface Type: PCC
Rank: P
Section Area (sf): 31,493.00
Length (ft): 750.00
Width (ft): 35.00
From: SEE MAP
To: SEE MAP

PCI Family: IowaPCCTW_SC_General

Slabs: 327
Slab Length (ft): 11.00
Slab Width (ft): 8.75
Joint Length (ft): 5,520.41

Section Comments: Average Slab Length Shown

Last Insp Date: 11/3/2023
PCI: 88
Total Samples: 17
Surveyed: 7

Inspection Comments:

Sample Number: 02

Sample Type: R
Sample PCI: 87
Sample Area (Slabs): 18.00

Sample Comments:

65 JT SEAL DMG	H	18.00	Slabs
73 SHRINKAGE CR	N	1.00	Slabs

Sample Number: 04

Sample Type: R
Sample PCI: 88
Sample Area (Slabs): 20.00

Sample Comments:

65 JT SEAL DMG	H	20.00	Slabs

Sample Number: 07

Sample Type: R
Sample PCI: 88
Sample Area (Slabs): 20.00

Sample Comments:

65 JT SEAL DMG	H	20.00	Slabs

Sample Number: 09

Sample Type: R
Sample PCI: 88
Sample Area (Slabs): 20.00

Sample Comments:

65 JT SEAL DMG	H	20.00	Slabs

Sample Number: 11

Sample Type: R
Sample PCI: 88
Sample Area (Slabs): 20.00

Sample Comments:

65 JT SEAL DMG	H	20.00	Slabs

Sample Number: 14

Sample Type: R
Sample PCI: 88
Sample Area (Slabs): 20.00

Sample Comments:

65 JT SEAL DMG	H	20.00	Slabs

Sample Number: 16

Sample Type: R
Sample PCI: 88
Sample Area (Slabs): 19.00

Sample Comments:

65	JT SEAL DMG	H	19.00 Slabs

Branch - Section ID: T03SH - 002

Branch Name: TAXIWAY 03 Use: TAXIWAY

LCD: 6/3/2014
Surface Type: PCC
Rank: P
Section Area (sf): 47,709.00
Length (ft): 1,275.00
Width (ft): 35.00
From: SEE MAP
To: SEE MAP

PCI Family: IowaPCCTW_SC_General

Slabs: 545
Slab Length (ft): 10.00
Slab Width (ft): 8.75
Joint Length (ft): 8,822.82

Section Comments:

Last Insp Date: 11/3/2023
PCI: 92
Total Samples: 27
Surveyed: 7

Inspection Comments:

Sample Number: 02

Sample Type: R
Sample PCI: 93
Sample Area (Slabs): 18.00

Sample Comments:

65 JT SEAL DMG	M	18.00	Slabs

Sample Number: 06

Sample Type: R
Sample PCI: 93
Sample Area (Slabs): 20.00

Sample Comments:

65 JT SEAL DMG	M	20.00	Slabs

Sample Number: 10

Sample Type: R
Sample PCI: 93
Sample Area (Slabs): 20.00

Sample Comments:

65 JT SEAL DMG	M	20.00	Slabs

Sample Number: 14

Sample Type: R
Sample PCI: 93
Sample Area (Slabs): 20.00

Sample Comments:

65 JT SEAL DMG	M	20.00	Slabs

Sample Number: 18

Sample Type: R
Sample PCI: 93
Sample Area (Slabs): 20.00

Sample Comments:

65 JT SEAL DMG	M	20.00	Slabs

Sample Number: 22

Sample Type: R
Sample PCI: 93
Sample Area (Slabs): 20.00

Sample Comments:

65 JT SEAL DMG	M	20.00	Slabs

Sample Number: 26

Sample Type: R
Sample PCI: 87
Sample Area (Slabs): 18.00

Sample Comments:

65 JT SEAL DMG	M	18.00	Slabs
74 JOINT SPALL	M	2.00	Slabs

Branch - Section ID: T03SH - 003

Branch Name: TAXIWAY 03 Use: TAXIWAY

LCD: 6/1/1996
Surface Type: PCC
Rank: P
Section Area (sf): 12,097.00
Length (ft): 230.00
Width (ft): 85.00
From: RW 22 APPROACH
To: SEE MAP

PCI Family: IowaPCCTW_SC_General

Slabs: 138
Slab Length (ft): 10.00
Slab Width (ft): 8.75
Joint Length (ft): 2,397.30

Section Comments:

Last Insp Date: 11/3/2023
PCI: 73
Total Samples: 6
Surveyed: 4

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 67
Sample Area (Slabs): 23.00

Sample Comments:

62 CORNER BREAK	M	2.00	Slabs
63 LINEAR CR	M	1.00	Slabs
65 JT SEAL DMG	M	23.00	Slabs
71 FAULTING	L	3.00	Slabs
71 FAULTING	M	1.00	Slabs

Sample Number: 02

Sample Type: R
Sample PCI: 78
Sample Area (Slabs): 25.00

Sample Comments:

62 CORNER BREAK	H	1.00	Slabs
65 JT SEAL DMG	M	25.00	Slabs
73 SHRINKAGE CR	N	1.00	Slabs
76 ASR	L	2.00	Slabs

Sample Number: 04

Sample Type: R
Sample PCI: 93
Sample Area (Slabs): 16.00

Sample Comments:

65 JT SEAL DMG	M	16.00	Slabs

Sample Number: 06

Sample Type: R
Sample PCI: 53
Sample Area (Slabs): 16.00

Sample Comments:

62 CORNER BREAK	L	1.00	Slabs
63 LINEAR CR	M	3.00	Slabs
65 JT SEAL DMG	M	16.00	Slabs
70 SCALING	M	1.00	Slabs
75 CORNER SPALL	M	1.00	Slabs

Branch - Section ID: T04SH - 001

Branch Name: TAXIWAY 04 Use: TAXIWAY

LCD: 6/1/1996
Surface Type: PCC
Rank: P
Section Area (sf): 15,522.00
Length (ft): 230.00
Width (ft): 85.00
From: RUNWAY 04 APPROACH
To: SEE MAP

PCI Family: IowaPCCTW_SC_General

Slabs: 176
Slab Length (ft): 8.80
Slab Width (ft): 10.00
Joint Length (ft): 3,065.96

Section Comments:

Last Insp Date: 11/3/2023
PCI: 62
Total Samples: 8
Surveyed: 5

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 56
Sample Area (Slabs): 28.00

Sample Comments:

63 LINEAR CR	M	1.00	Slabs
65 JT SEAL DMG	L	28.00	Slabs
66 SMALL PATCH	H	1.00	Slabs
67 LARGE PATCH	H	1.00	Slabs
71 FAULTING	L	1.00	Slabs
72 SHAT. SLAB	M	1.00	Slabs
73 SHRINKAGE CR	N	1.00	Slabs
76 ASR	L	10.00	Slabs

Sample Number: 03

Sample Type: R
Sample PCI: 69
Sample Area (Slabs): 23.00

Sample Comments:

65 JT SEAL DMG	L	23.00	Slabs
73 SHRINKAGE CR	N	1.00	Slabs
75 CORNER SPALL	L	1.00	Slabs
75 CORNER SPALL	M	1.00	Slabs
75 CORNER SPALL	M	1.00	Slabs
76 ASR	L	17.00	Slabs

Sample Number: 06

Sample Type: R
Sample PCI: 70
Sample Area (Slabs): 14.00

Sample Comments:

63 LINEAR CR	L	1.00	Slabs
65 JT SEAL DMG	L	14.00	Slabs
73 SHRINKAGE CR	N	1.00	Slabs
76 ASR	L	13.00	Slabs

RE-INSPECTION REPORT
SHENANDOAH MUNICIPAL AIRPORT

Sample Number: 07

Sample Type: R
Sample PCI: 59
Sample Area (Slabs): 14.00

Sample Comments:

62 CORNER BREAK	L	1.00	Slabs
63 LINEAR CR	M	1.00	Slabs
65 JT SEAL DMG	L	14.00	Slabs
66 SMALL PATCH	L	2.00	Slabs
75 CORNER SPALL	L	1.00	Slabs
75 CORNER SPALL	M	1.00	Slabs
76 ASR	L	7.00	Slabs

Sample Number: 08

Sample Type: R
Sample PCI: 55
Sample Area (Slabs): 14.00

Sample Comments:

63 LINEAR CR	L	4.00	Slabs
63 LINEAR CR	M	2.00	Slabs
65 JT SEAL DMG	L	14.00	Slabs
66 SMALL PATCH	L	1.00	Slabs
75 CORNER SPALL	M	1.00	Slabs
76 ASR	L	2.00	Slabs

RE-INSPECTION REPORT
SHENANDOAH MUNICIPAL AIRPORT

Branch - Section ID: TH01SH - 001

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

LCD: 1/1/2010
Surface Type: AAC
Rank: P
Section Area (sf): 11,322.00
Length (ft): 480.00
Width (ft): 25.00
From: TAXIWAY 03
To: SEE MAP

PCI Family: IowaAsphaltTH_Southern

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

Section Comments:

Last Insp Date: 11/3/2023
PCI: 60
Total Samples: 2
Surveyed: 2

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 58
Sample Area (SF): 6,447.00

Sample Comments:

41 ALLIGATOR CR	L	36.00	SF	EDGE
41 ALLIGATOR CR	M	5.00	SF	
45 DEPRESSION	L	20.00	SF	AT PCC
48 L & T CR	H	10.00	Ft	3 IN @PCC
48 L & T CR	L	26.00	Ft	LS
48 L & T CR	L	10.00	Ft	LU
48 L & T CR	M	20.00	Ft	FS
57 WEATHERING	M	6,447.00	SF	

Sample Number: 02

Sample Type: R
Sample PCI: 63
Sample Area (SF): 4,875.00

Sample Comments:

41 ALLIGATOR CR	L	100.00	SF	EDGE
48 L & T CR	L	58.00	Ft	LU
48 L & T CR	L	90.00	Ft	LS
57 WEATHERING	M	4,875.00	SF	

RE-INSPECTION REPORT
SHENANDOAH MUNICIPAL AIRPORT

Branch - Section ID: TH01SH - 002

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

LCD: 1/1/2012
Surface Type: PCC
Rank: P
Section Area (sf): 7,159.00
Length (ft): 265.00
Width (ft): 25.00
From: SEE MAP
To: SEE MAP

PCI Family: IowaPCCTH_SC&SW

Slabs: 80
Slab Length (ft): 10.00
Slab Width (ft): 9.00
Joint Length (ft): 1,197.97

Section Comments:

Last Insp Date: 11/3/2023
PCI: 82
Total Samples: 4
Surveyed: 3

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 88
Sample Area (Slabs): 17.00

Sample Comments:

65 JT SEAL DMG	H	17.00	Slabs

Sample Number: 02

Sample Type: R
Sample PCI: 75
Sample Area (Slabs): 24.00

Sample Comments:

63 LINEAR CR	M	2.00	Slabs
65 JT SEAL DMG	H	24.00	Slabs
73 SHRINKAGE CR	N	1.00	Slabs
74 JOINT SPALL	L	1.00	Slabs

Sample Number: 04

Sample Type: R
Sample PCI: 86
Sample Area (Slabs): 24.00

Sample Comments:

65 JT SEAL DMG	H	24.00	Slabs
73 SHRINKAGE CR	N	3.00	Slabs

RE-INSPECTION REPORT
SHENANDOAH MUNICIPAL AIRPORT

Branch - Section ID: TH01SH - 003

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

LCD: 1/1/2000
Surface Type: AC
Rank: P
Section Area (sf): 4,700.00
Length (ft): 180.00
Width (ft): 25.00
From: SEE MAP
To: SEE MAP

PCI Family: IowaAsphaltTH_Southern

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

Section Comments:

Last Insp Date: 11/3/2023
PCI: 33
Total Samples: 1
Surveyed: 1

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 33
Sample Area (SF): 4,700.00

Sample Comments:

41 ALLIGATOR CR	M	340.00	SF	
48 L & T CR	L	120.00	Ft	LS
48 L & T CR	L	10.00	Ft	LU
48 L & T CR	M	128.00	Ft	FS
57 WEATHERING	M	4,700.00	SF	

RE-INSPECTION REPORT
SHENANDOAH MUNICIPAL AIRPORT

Branch - Section ID: TH01SH - 004

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

LCD: 9/1/2007
Surface Type: AC
Rank: P
Section Area (sf): 3,257.00
Length (ft): 140.00
Width (ft): 25.00
From: SEE MAP
To: SEE MAP

PCI Family: IowaAsphaltTH_Southern

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

Section Comments:

Last Insp Date: 11/3/2023
PCI: 38
Total Samples: 1
Surveyed: 1

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 38
Sample Area (SF): 3,257.00

Sample Comments:

41 ALLIGATOR CR	L	178.00	SF	EDGE
41 ALLIGATOR CR	M	20.00	SF	EDGE
48 L & T CR	H	20.00	Ft	1 FT
48 L & T CR	L	40.00	Ft	LS
48 L & T CR	M	45.00	Ft	FS, 2NDY
52 RAVELING	H	6.00	SF	
57 WEATHERING	M	3,251.00	SF	

Branch - Section ID: TH01SH - 005

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

LCD: 6/2/2021
Surface Type: PCC
Rank: P
Section Area (sf): 8,668.00
Length (ft): 451.00
Width (ft): 20.00
From: SEE MAP
To: SEE MAP

PCI Family: IowaPCCTH_SC&SW

Slabs: 92
Slab Length (ft): 10.00
Slab Width (ft): 10.00
Joint Length (ft): 1,280.98

Section Comments: typ slab size

Last Insp Date: 11/3/2023
PCI: 98
Total Samples: 4
Surveyed: 3

Inspection Comments:

Sample Number: 01

Sample Type: R
Sample PCI: 98
Sample Area (Slabs): 27.00

Sample Comments:

65 JT SEAL DMG	L	27.00	Slabs

Sample Number: 03

Sample Type: R
Sample PCI: 98
Sample Area (Slabs): 18.00

Sample Comments:

65 JT SEAL DMG	L	18.00	Slabs

Sample Number: 04

Sample Type: R
Sample PCI: 98
Sample Area (Slabs): 27.00

Sample Comments:

65 JT SEAL DMG	L	27.00	Slabs

APPENDIX D

WORK HISTORY REPORT

WORK HISTORY

Pavement Database: IA 2023
Network ID: SDA

Generate Date: 4/30/2024

Network: SHENANDOAH MUNICIPAL AIRPORT

Branch - Section ID: A02SH - 001

LCD: 6/3/1984
Use: APRON
Rank: P
Surface: PCC

Length (ft): 189.00
Width (ft): 100.00
True Area (sf): 19,086.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-07-2019	JS-LC	Joint Seal (Localized)	$0.00	0.00	False	-
06-03-1984	NC-PC	New Construction - PCC	$0.00	6.00	True	6" P-501
06-02-1984	SB-AG	Subbase - Aggregate	$0.00	4.00	False	4" P-154
06-01-1984	SG-CO	Subgrade - Compacted	$0.00	6.00	False	6" P-152

Branch - Section ID: A02SH - 002

LCD: 4/3/1999
Use: APRON
Rank: P
Surface: PCC

Length (ft): 113.00
Width (ft): 161.00
True Area (sf): 18,362.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-07-2019	JS-LC	Joint Seal (Localized)	$0.00	0.00	False	-
10-06-2019	CS-PC	Crack Sealing - PCC	$0.00	0.00	False	-
10-05-2019	PA-PP	Patching - PCC Partial Depth	$0.00	0.00	False	-
10-04-2019	SL-PC	Slab Replacement - PCC	$0.00	0.00	False	-
04-03-1999	NC-PC	New Construction - PCC	$0.00	6.00	True	6" P-501
04-02-1999	SB-AG	Subbase - Aggregate	$0.00	4.00	False	4" P-154
04-01-1999	SG-ST	Subgrade - Stabilized	$0.00	8.00	False	8" P-155

Branch - Section ID: A02SH - 003

LCD: 6/3/2004
Use: APRON
Rank: P
Surface: PCC

Length (ft): 165.00
Width (ft): 145.00
True Area (sf): 23,683.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-07-2019	JS-LC	Joint Seal (Localized)	$0.00	0.00	False	-
10-06-2019	CS-PC	Crack Sealing - PCC	$0.00	0.00	False	-
10-05-2019	PA-PP	Patching - PCC Partial Depth	$0.00	0.00	False	-
06-03-2004	NC-PC	New Construction - PCC	$0.00	6.00	True	IDOT 2301 PCC
06-02-2004	SB-AG	Subbase - Aggregate	$0.00	4.00	False	P-154 Granular subbase
06-01-2004	SG-ST	Subgrade - Stabilized	$0.00	8.00	False	Fly Ash Stabilized Subgrade

WORK HISTORY

Pavement Database: IA 2023
Network ID: SDA

Generate Date: 4/30/2024

Branch - Section ID: R04SH - 001

LCD: 6/3/1984
Use: RUNWAY
Rank: P
Surface: PCC

Length (ft): 4,110.00
Width (ft): 75.00
True Area (sf): 317,137.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
09-01-2022	PA-PF	Patching - PCC Full Depth	$0.00	0.00	False	FULL DEPTH LARGE PATCHES, 6" PCC PLAIN
09-01-2022	SL-PC	Slab Replacement - PCC	$0.00	0.00	False	SLAB REPLACEMENT 6" PCC PLAIN
10-07-2019	JS-LC	Joint Seal (Localized)	$0.00	0.00	False	-
10-06-2019	CS-PC	Crack Sealing - PCC	$0.00	0.00	False	-
10-05-2019	PA-PP	Patching - PCC Partial Depth	$0.00	0.00	False	-
10-04-2019	PA-PF	Patching - PCC Full Depth	$0.00	0.00	False	-
10-03-2019	SL-PC	Slab Replacement - PCC	$0.00	0.00	False	-
06-03-1984	NC-PC	New Construction - PCC	$0.00	6.00	True	6" P-501
06-02-1984	SB-AG	Subbase - Aggregate	$0.00	4.00	False	4" P-154
06-01-1984	SG-CO	Subgrade - Compacted	$0.00	6.00	False	6" P-152

Branch - Section ID: R04SH - 002

LCD: 9/3/1992
Use: RUNWAY
Rank: P
Surface: PCC

Length (ft): 890.00
Width (ft): 75.00
True Area (sf): 68,338.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-07-2019	JS-LC	Joint Seal (Localized)	$0.00	0.00	False	-
10-06-2019	CS-PC	Crack Sealing - PCC	$0.00	0.00	False	-
10-05-2019	PA-PP	Patching - PCC Partial Depth	$0.00	0.00	False	-
10-04-2019	SL-PC	Slab Replacement - PCC	$0.00	0.00	False	-
09-03-1992	NC-IN	New Construction - Initial	$0.00	6.00	True	6" P-501
09-02-1992	SB-AG	Subbase - Aggregate	$0.00	4.00	False	4" P-154
09-01-1992	SG-ST	Subgrade - Stabilized	$0.00	8.00	False	8" P-155

Branch - Section ID: R12SH - 001

LCD: 6/2/2002
Use: RUNWAY
Rank: S
Surface: PCC

Length (ft): 2,962.00
Width (ft): 75.00
True Area (sf): 222,000.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
09-05-2022	PA-PP	Patching - PCC Partial Depth	$0.00	0.00	False	PATCHING (SPALL REPAIR)
09-04-2022	PA-PF	Patching - PCC Full Depth	$0.00	0.00	False	FULL DEPTH LARGE PATCHES, 6" PCC (PLAIN OR REINFORCED)
09-03-2022	JS-LC	Joint Seal (Localized)	$0.00	0.00	False	JOINT SEAL
09-02-2022	CS-PC	Crack Sealing - PCC	$0.00	0.00	False	-
09-01-2022	SL-PC	Slab Replacement - PCC	$0.00	0.00	False	SLAB REPLACEMENT 6" PCC (PLAIN OR REINFORCED)
06-02-2002	CR-PC	Complete Reconstruction - PCC	$0.00	5.50	True	5-6" P-501
06-01-2002	SG-ST	Subgrade - Stabilized	$0.00	12.00	False	EXISTING AGG PULVERIZED AND PLACED WITH P-155
06-01-1959	NC-AC	New Construction - AC	$0.00	0.00	True	-

WORK HISTORY

Pavement Database: IA 2023
Network ID: SDA

Generate Date: 4/30/2024

Branch - Section ID: R12SH - 002

LCD: 6/3/1984
Use: RUNWAY
Rank: S
Surface: PCC

Length (ft): 115.00
Width (ft): 75.00
True Area (sf): 10,839.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-07-2019	JS-LC	Joint Seal (Localized)	$0.00	0.00	False	-
10-06-2019	CS-PC	Crack Sealing - PCC	$0.00	0.00	False	-
10-04-2019	SL-PC	Slab Replacement - PCC	$0.00	0.00	False	-
06-03-1984	NC-PC	New Construction - PCC	$0.00	6.00	True	6" P-501
06-02-1984	SB-AG	Subbase - Aggregate	$0.00	4.00	False	4" P-154
06-01-1984	SG-CO	Subgrade - Compacted	$0.00	6.00	False	6" P-152

Branch - Section ID: R12SH - 003

LCD: 6/3/1984
Use: RUNWAY
Rank: S
Surface: PCC

Length (ft): 151.00
Width (ft): 75.00
True Area (sf): 14,212.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-07-2019	JS-LC	Joint Seal (Localized)	$0.00	0.00	False	-
10-06-2019	CS-PC	Crack Sealing - PCC	$0.00	0.00	False	-
10-04-2019	SL-PC	Slab Replacement - PCC	$0.00	0.00	False	-
06-03-1984	NC-PC	New Construction - PCC	$0.00	6.00	True	6" P-501
06-02-1984	SB-AG	Subbase - Aggregate	$0.00	4.00	False	4" P-154
06-01-1984	SG-CO	Subgrade - Compacted	$0.00	6.00	False	6" P-152

Branch - Section ID: R12SH - 004

LCD: 9/3/2014
Use: RUNWAY
Rank: S
Surface: PCC

Length (ft): 140.00
Width (ft): 75.00
True Area (sf): 10,543.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-07-2019	JS-LC	Joint Seal (Localized)	$0.00	0.00	False	-
10-06-2019	CS-PC	Crack Sealing - PCC	$0.00	0.00	False	-
10-04-2019	SL-PC	Slab Replacement - PCC	$0.00	0.00	False	-
09-03-2014	NC-PC	New Construction - PCC	$0.00	6.00	True	P-505: PCC Pavement
09-02-2014	BA-AG	Base Course - Aggregate	$0.00	4.00	False	P-208: Aggregate subbase
09-01-2014	SG-ST	Subgrade - Stabilized	$0.00	9.00	False	P-158: Fly ash treated subgrade

Branch - Section ID: T01SH - 001

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

Length (ft): 288.00
Width (ft): 35.00
True Area (sf): 13,547.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
09-02-2022	PA-PP	Patching - PCC Partial Depth	$0.00	0.00	False	PATCHING (SPALL REPAIR)
09-01-2022	JS-LC	Joint Seal (Localized)	$0.00	0.00	False	JOINT SEAL
06-01-2002	NC-PC	New Construction - PCC	$0.00	0.00	True	-

WORK HISTORY

Pavement Database: IA 2023
Network ID: SDA

Generate Date: 4/30/2024

Branch - Section ID: T02SH - 001

LCD: 6/3/1984
Use: TAXIWAY
Rank: P
Surface: PCC

Length (ft): 533.00
Width (ft): 35.00
True Area (sf): 22,619.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-01-2019	JS-LC	Joint Seal (Localized)	$0.00	0.00	False	-
06-03-1984	NC-PC	New Construction - PCC	$0.00	6.00	True	6" P-501
06-02-1984	SB-AG	Subbase - Aggregate	$0.00	4.00	False	4" P-154
06-01-1984	SG-CO	Subgrade - Compacted	$0.00	6.00	False	6" P-152

Branch - Section ID: T03SH - 001

LCD: 10/3/2010
Use: TAXIWAY
Rank: P
Surface: PCC

Length (ft): 750.00
Width (ft): 35.00
True Area (sf): 31,493.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-03-2010	NC-IN	New Construction - Initial	$0.00	6.00	True	P-505 PCC
10-02-2010	BA-AG	Base Course - Aggregate	$0.00	4.00	False	P-208 AGG SUBBASE
10-01-2010	SG-ST	Subgrade - Stabilized	$0.00	9.00	False	P-158 FLY-ASH TREATED

Branch - Section ID: T03SH - 002

LCD: 6/3/2014
Use: TAXIWAY
Rank: P
Surface: PCC

Length (ft): 1,275.00
Width (ft): 35.00
True Area (sf): 47,709.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
06-03-2014	NC-PC	New Construction - PCC	$0.00	6.00	True	P-505: PCC Pavement
06-02-2014	BA-AG	Base Course - Aggregate	$0.00	4.00	False	P-208: Aggregate subbase
06-01-2014	SG-ST	Subgrade - Stabilized	$0.00	9.00	False	P-158: Fly ash treated subgrade

Branch - Section ID: T03SH - 003

LCD: 6/1/1996
Use: TAXIWAY
Rank: P
Surface: PCC

Length (ft): 230.00
Width (ft): 85.00
True Area (sf): 12,097.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-07-2019	JS-LC	Joint Seal (Localized)	$0.00	0.00	False	-
10-06-2019	CS-PC	Crack Sealing - PCC	$0.00	0.00	False	-
10-06-2019	PA-PP	Patching - PCC Partial Depth	$0.00	0.00	False	-
06-01-1996	NC-IN	New Construction - Initial	$0.00	0.00	True	-

WORK HISTORY

Branch - Section ID: T04SH - 001

LCD: 6/1/1996
Use: TAXIWAY
Rank: P
Surface: PCC

Length (ft): 230.00
Width (ft): 85.00
True Area (sf): 15,522.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
10-07-2019	JS-LC	Joint Seal (Localized)	$0.00	0.00	False	-
10-06-2019	CS-PC	Crack Sealing - PCC	$0.00	0.00	False	-
10-04-2019	SL-PC	Slab Replacement - PCC	$0.00	0.00	False	-
06-01-1996	NC-IN	New Construction - Initial	$0.00	0.00	True	-

Branch - Section ID: TH01SH - 001

LCD: 1/1/2010
Use: T-HANGAR
Rank: P
Surface: AAC

Length (ft): 480.00
Width (ft): 25.00
True Area (sf): 11,322.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
09-01-2022	CS-AC	Crack Sealing - AC	$0.00	0.00	False	CRACK SEALING
01-01-2010	OL-AC	Overlay - AC	$0.00	0.00	True	EST. VIA GOOGLE EARTH, CONSTRUCTED B/W 9/2009-9/2010
01-01-2000	NC-AC	New Construction - AC	$0.00	0.00	True	EST. VIA GOOGLE EARTH, CONSTRUCTED B/W 10/1994-10/2004

Branch - Section ID: TH01SH - 002

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

Length (ft): 265.00
Width (ft): 25.00
True Area (sf): 7,159.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
01-01-2012	NC-PC	New Construction - PCC	$0.00	0.00	True	LCD VIA GOOGLE EARTH

Branch - Section ID: TH01SH - 003

LCD: 1/1/2000
Use: T-HANGAR
Rank: P
Surface: AC

Length (ft): 180.00
Width (ft): 25.00
True Area (sf): 4,700.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
09-01-2022	CS-AC	Crack Sealing - AC	$0.00	0.00	False	CRACK SEAL
01-01-2000	NC-AC	New Construction - AC	$0.00	0.00	True	EST. VIA GOOGLE EARTH; CONSTRUCTED BETWEEN 10/1994-10/2004

Branch - Section ID: TH01SH - 004

LCD: 9/1/2007
Use: T-HANGAR
Rank: P
Surface: AC

Length (ft): 140.00
Width (ft): 25.00
True Area (sf): 3,257.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
09-01-2022	CS-AC	Crack Sealing - AC	$0.00	0.00	False	CRACK SEAL
09-01-2007	NC-AC	New Construction - AC	$0.00	0.00	True	LCD VIA GOOGLE EARTH, CONSTRUCTED DURING 9/2007 IMAGERY

WORK HISTORY

Branch - Section ID: TH01SH - 005

LCD: 6/2/2021
Use: T-HANGAR
Rank: P
Surface: PCC

Length (ft): 451.00
Width (ft): 20.00
True Area (sf): 8,668.00

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major MR	Comments
06-02-2021	NC-PC	New Construction - PCC	$0.00	5.00	True	5" PCC REINFORCED
06-01-2021	SG-CO	Subgrade - Compacted	$0.00	6.00	False	6" SUBGRADE

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. 2024 unit costs for localized preventive maintenance actions.

Maintenance Action	Unit Cost
Asphalt Patch—Asphalt-Surfaced Pavement	$15.54/sf
Crack Sealing—Asphalt-Surfaced Pavement	$2.66/lf
Partial Depth PCC Patch—PCC Pavement	$39.82/sf
Full Depth PCC Patch—PCC Pavement	$17.78/sf
Crack Sealing—PCC Pavement	$3.20/lf
Joint Sealing—PCC Pavement	$3.20/lf
Grinding—PCC Pavement	$0.38/sf
Slab Replacement—PCC Pavement	$17.78/sf

Table Note: The unit cost estimates are based on broad statewide numbers and should be adjusted to reflect local costs.

Table E-4. 2024 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	$11.04	$5.22	$5.22	$5.22	$0.00	$0.00	$0.00
PCC	$18.44	$8.72	$8.72	$8.72	$0.00	$0.00	$0.00

Table Note: The unit cost estimates are based on broad statewide numbers and should be adjusted to reflect local costs.

APPENDIX F

YEAR 2024 LOCALIZED PREVENTIVE MAINTENANCE DETAILS

Table F-1. Year 2024 localized preventive maintenance details.

Branch	Section	Distress Type	Severity	Distress Quantity	Distress Unit	Maintenance Action	Unit Cost	2024 Estimated Cost
A02SH	01	Joint Seal Damage	High	30	Slabs	Joint Seal (Localized)	$3.20	$1,972
A02SH	01	LTD Cracking	Medium	6	Slabs	Crack Sealing - PCC	$3.20	$216
A02SH	01	Joint Seal Damage	Medium	30	Slabs	Joint Seal (Localized)	$3.20	$1,972
A02SH	01	Corner Spalling	Medium	5	Slabs	Patching - PCC Partial Depth	$39.82	$482
A02SH	01	Corner Break	Low	2	Slabs	Crack Sealing - PCC	$3.20	$39
A02SH	03	Joint Seal Damage	Medium	131	Slabs	Joint Seal (Localized)	$3.20	$8,576
A02SH	03	Joint Spalling	Medium	6	Slabs	Patching - PCC Partial Depth	$39.82	$1,512
A02SH	03	LTD Cracking	Medium	12	Slabs	Crack Sealing - PCC	$3.20	$414
A02SH	03	Corner Break	Medium	3	Slabs	Patching - PCC Full Depth	$17.78	$1,688
R04SH	01	Small Patch	Medium	9	Slabs	Patching - PCC Full Depth	$17.78	$450
R04SH	01	Joint Seal Damage	Medium	902	Slabs	Joint Seal (Localized)	$3.20	$66,043
R04SH	01	Faulting	Medium	38	Slabs	Grinding (Localized)	$0.38	$179
R04SH	01	Small Patch	High	9	Slabs	Patching - PCC Full Depth	$17.78	$450
R04SH	01	ASR	Medium	28	Slabs	Slab Replacement - PCC	$17.78	$78,328
R04SH	01	Joint Seal Damage	High	226	Slabs	Joint Seal (Localized)	$3.20	$16,511
R04SH	01	Corner Spalling	Medium	19	Slabs	Patching - PCC Partial Depth	$39.82	$2,014
R04SH	02	Corner Spalling	Medium	3	Slabs	Patching - PCC Partial Depth	$39.82	$279
R04SH	02	Shattered Slab	Low	3	Slabs	Crack Sealing - PCC	$3.20	$208
R04SH	02	Corner Break	Low	3	Slabs	Crack Sealing - PCC	$3.20	$68
R04SH	02	ASR	Medium	13	Slabs	Slab Replacement - PCC	$17.78	$36,132
R04SH	02	LTD Cracking	Medium	5	Slabs	Crack Sealing - PCC	$3.20	$208
R04SH	02	Joint Spalling	Medium	3	Slabs	Patching - PCC Partial Depth	$39.82	$669

Table F-1. Year 2024 localized preventive maintenance details (continued).

Branch	Section	Distress Type	Severity	Distress Quantity	Distress Unit	Maintenance Action	Unit Cost	2024 Estimated Cost
R12SH	03	LTD Cracking	Medium	11	Slabs	Crack Sealing - PCC	$3.20	$425
R12SH	03	Joint Seal Damage	Medium	91	Slabs	Joint Seal (Localized)	$3.20	$6,369
R12SH	03	Corner Break	Medium	1	Slabs	Patching - PCC Full Depth	$17.78	$679
R12SH	03	Corner Break	Low	1	Slabs	Crack Sealing - PCC	$3.20	$31
R12SH	04	LTD Cracking	Medium	2	Slabs	Crack Sealing - PCC	$3.20	$85
R12SH	04	Joint Spalling	Medium	2	Slabs	Patching - PCC Partial Depth	$39.82	$514
R12SH	04	Corner Break	Medium	3	Slabs	Patching - PCC Full Depth	$17.78	$1,722
T02SH	01	ASR	Medium	4	Slabs	Slab Replacement - PCC	$17.78	$6,742
T02SH	01	ASR	High	4	Slabs	Slab Replacement - PCC	$17.78	$6,742
T03SH	01	Joint Seal Damage	High	327	Slabs	Joint Seal (Localized)	$3.20	$17,665
T03SH	02	Joint Seal Damage	Medium	545	Slabs	Joint Seal (Localized)	$3.20	$28,233
T03SH	02	Joint Spalling	Medium	8	Slabs	Patching - PCC Partial Depth	$39.82	$2,061
T03SH	03	Corner Break	Medium	3	Slabs	Patching - PCC Full Depth	$17.78	$1,981
T03SH	03	Joint Seal Damage	Medium	138	Slabs	Joint Seal (Localized)	$3.20	$7,671
T03SH	03	Faulting	Medium	2	Slabs	Grinding (Localized)	$0.38	$6
T03SH	03	Scaling	Medium	2	Slabs	Patching - PCC Partial Depth	$39.82	$2,465
T03SH	03	LTD Cracking	Medium	7	Slabs	Crack Sealing - PCC	$3.20	$207
T03SH	03	Corner Break	High	2	Slabs	Patching - PCC Full Depth	$17.78	$990
T03SH	03	Corner Break	Low	2	Slabs	Crack Sealing - PCC	$3.20	$45
T03SH	03	Corner Spalling	Medium	2	Slabs	Patching - PCC Partial Depth	$39.82	$185
T04SH	01	Corner Break	Low	2	Slabs	Crack Sealing - PCC	$3.20	$50
T04SH	01	LTD Cracking	Medium	8	Slabs	Crack Sealing - PCC	$3.20	$228

Table F-1. Year 2024 localized preventive maintenance details (continued).

Branch	Section	Distress Type	Severity	Distress Quantity	Distress Unit	Maintenance Action	Unit Cost	2024 Estimated Cost
T04SH	01	Corner Spalling	Medium	8	Slabs	Patching - PCC Partial Depth	$39.82	$811
T04SH	01	Shattered Slab	Medium	2	Slabs	Slab Replacement - PCC	$17.78	$2,961
T04SH	01	Large Patch	High	2	Slabs	Patching - PCC Full Depth	$17.78	$1,656
T04SH	01	Small Patch	High	2	Slabs	Patching - PCC Full Depth	$17.78	$91
TH01SH	02	LTD Cracking	Medium	2	Slabs	Crack Sealing - PCC	$3.20	$75
TH01SH	02	Joint Seal Damage	High	80	Slabs	Joint Seal (Localized)	$3.20	$3,834

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 Shenandoah Municipal Airport.

PREPARED FOR

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