2023 ODAV Pavement Evaluation Program Chehalem Airpark

Newberg, Oregon

December 29, 2023

Prepared for

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TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

1 OVERVIEW

GRI assisted with updating the Oregon Department of Aviation (ODAV) airport pavement management system and developing a five-year plan comprised of maintenance, surface treatment, rehabilitation, and reconstruction projects for Chehalem Airpark in Newberg, Oregon. This project was implemented as part of the ODAV and Federal Aviation Administration (FAA) *Oregon Continuous Aviation System Plan*. The information provided in this report ensures compliance with FAA Grant Assurance Number 11, which outlines that an airport shall have an effective airport pavement maintenance-management program in place to receive federal financial assistance for the construction, reconstruction, or repair of airport pavements.

GRI conducted surveys of the airside pavement at Chehalem Airpark in 2023 in accordance with the procedures of Advisory Circular 150/5380-7B and ASTM International (ASTM) D5340. We uploaded the survey data into the PAVER database and used the software to provide a rapid calculation of the pavement condition index (PCI) rating. The PCI is a numerical indicator that defines the functional condition of the pavement based on visual inspection. The scale ranges from zero to 100, where zero represents a pavement in the worst possible condition with no remaining functional life and 100 represents a pavement in the best possible condition with no defects.

2 PAVEMENT INVENTORY

Chehalem Airpark is located in Newberg, Oregon, and is owned and operated by Nancy Sturdevant. The airport consists of a single runway, helipads, and multiple connector taxiways and aprons that serve a variety of general aviation aircraft. The general location of the airport is shown below on the Chehalem Airpark Location Map, Figure 2.1.

Figure 2.1: CHEHALEM AIRPARK LOCATION MAP

The airside pavements at the Chehalem Airpark are comprised of asphalt concrete (AC) and portland cement concrete (PCC). The airport pavements, delineated by surface type and branch use, are shown on the Chehalem Airpark Percent of Pavement Area by Surface Type, Figure 2.2, and on the Chehalem Pavement Area by Branch Use, Figure 2.3. The pavement inventory, including work history for each pavement section, is displayed spatially on the Chehalem Airpark Pavement Inventory, Figure 2.4. The pavement facilities summarized by branch and section are listed in Tables 1A and 2A, respectively, in Appendix A. The sample unit layout for each section is shown on Figure 1A in Appendix A. We used the sampling rates outlined in Table 3A of Appendix A in our survey. The pavement inventory, including work history for individual airport pavement sections, is provided in the work history report, Table 1F.

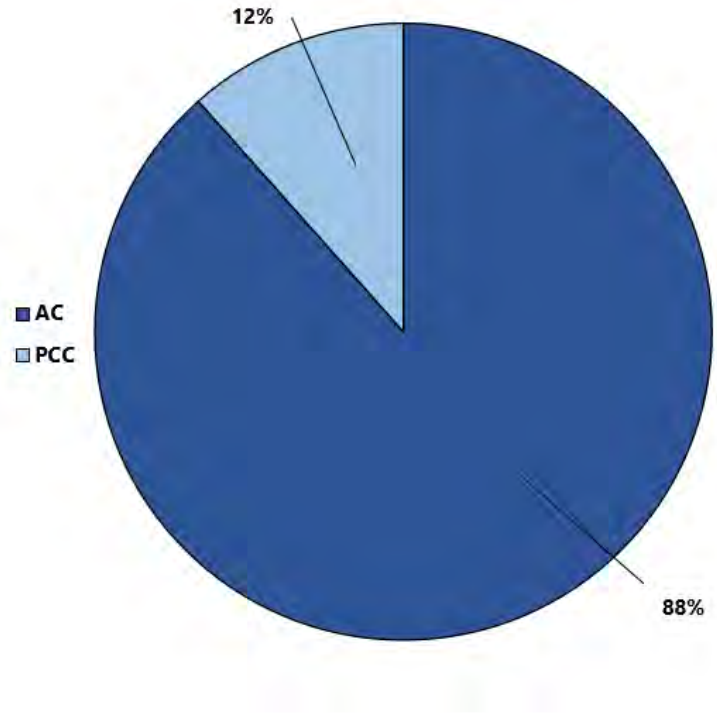


Figure 2.2: CHEHALEM AIRPARK PERCENT OF PAVEMENT AREA BY SURFACE TYPE

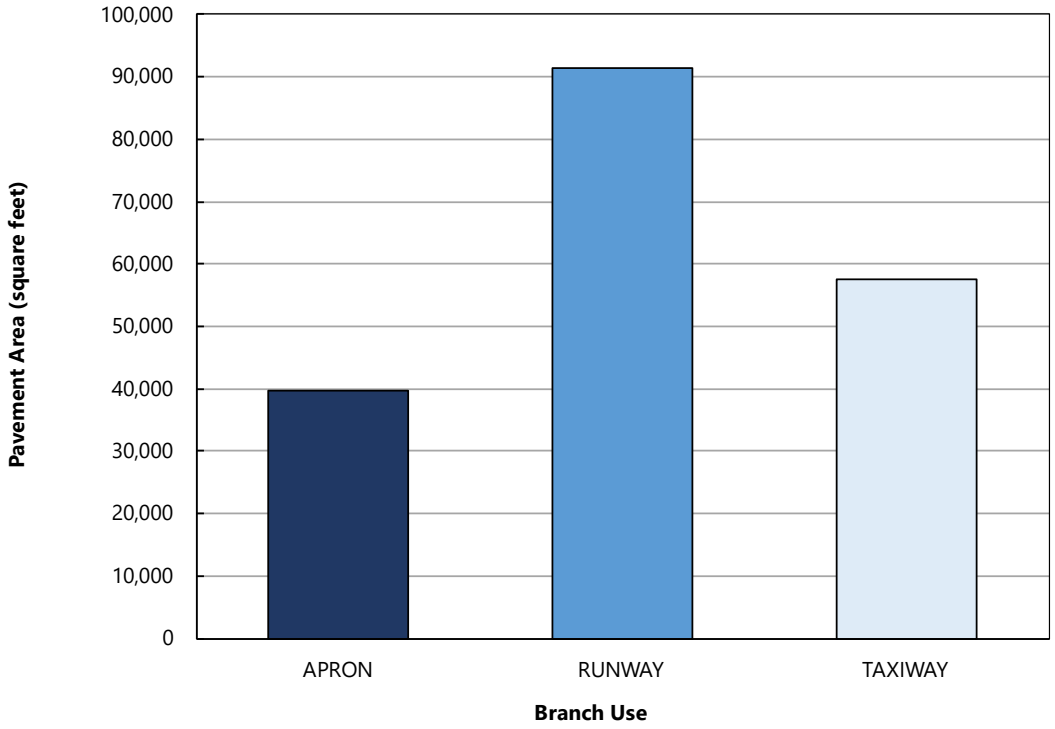
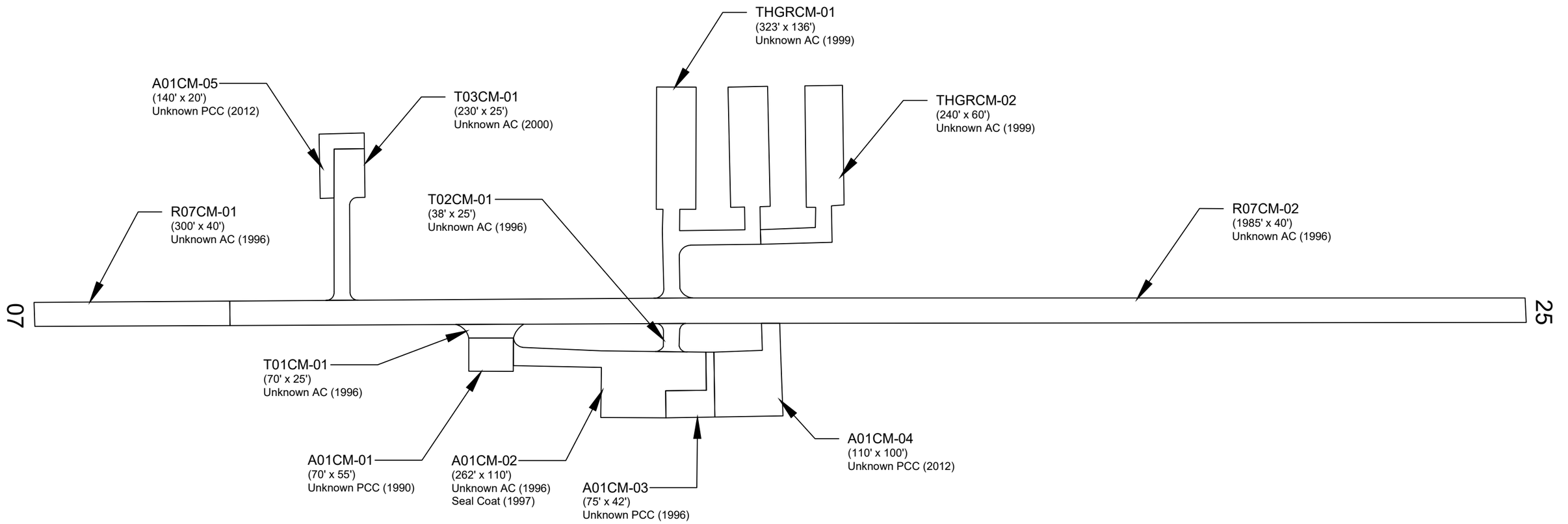


Figure 2.3: CHEHALEM AIRPARK PAVEMENT AREA BY BRANCH USE



ABBREVIATIONS: AC = ASPHALT CONCRETE; PCC = PORTLAND CEMENT CONCRETE

N

0 150 300 FEET

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STATEWIDE PAVEMENT EVALUATION PROGRAM

CHEHALEM AIRPARK PAVEMENT INVENTORY

DEC. 2023 JOB NO. 6593-E FIG. 2.4

3 PAVEMENT CONDITION INSPECTION RESULTS

3.1 Introduction

GRI conducted a visual PCI survey of the airside pavements at Chehalem Airpark in July 2023. The 2023 survey work was performed on sections last inspected in 2001 in order to update the Chehalem Airpark inspection data. GRI performed the 2023 PCI survey in accordance with the methods described in FAA Advisory Circular 150/5380-6C and ASTM D5340 and further discussed in Appendix B of this report.

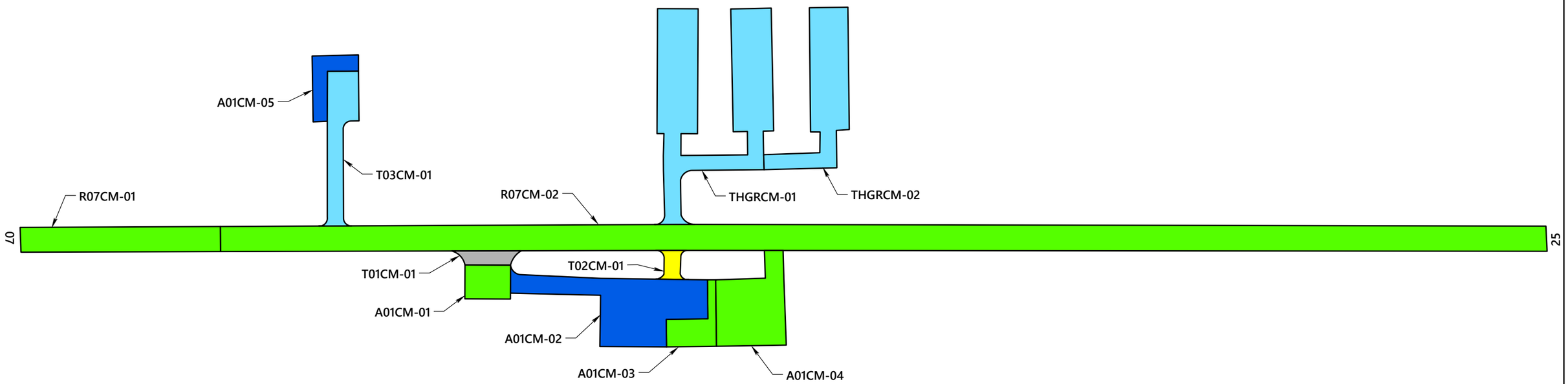
The PCI is based on the type, severity, and quantity of each distress found in an inspected sample unit. Further discussion of distress types for flexible and rigid pavement is provided in Appendix B and summarized in Table 1B in Appendix B. The results of the PCI survey are displayed using a seven-category rating scale in accordance with ASTM D5340. Details of the ASTM PCI rating scale are provided in Table 3-1 below.

Table 3-1: ASTM PCI RATING SCALE

PCI Color Legend	PCI Range	PCI Rating and Definition
	86 – 100	GOOD: Pavement has minor or no distresses and should require only routine maintenance.
	71 – 85	SATISFACTORY: Pavement has scattered low-severity distresses that should require only routine maintenance.
	56 – 70	FAIR: Pavement has a combination of generally low- and medium-severity distresses. Maintenance and repair needs may range from routine to major.
	41 – 55	POOR: Pavement has low-, medium-, and high-severity distresses that probably cause some operational problems. M&R needs will be major.
	26 – 40	VERY POOR: Pavement has predominantly medium- and high-severity distresses that cause considerable maintenance and operational problems. M&R needs will be major.
	11 – 25	SERIOUS: Pavement has mainly high-severity distresses that may affect operational safety; immediate repairs are needed.
	0 – 10	FAILED: Pavement deterioration has progressed to the point that safe aircraft operations are no longer possible; complete reconstruction is required.

3.2 Pavement Condition Index Survey Results

The area-weight average PCI for all airport pavements at Chehalem Airpark is approximately 58. The section PCIs ranged from a low of 20 to a high of 83. The primary distresses observed during the inspection were weathering, longitudinal and transverse cracking, alligator cracking, raveling, and patching on AC-surfaced pavements, and linear cracking, corner and joint spalling, corner breaks, joint seal damage, and shattered slabs on PCC pavements. Section PCIs following our pavement survey are displayed below spatially on the Chehalem Airpark 2023 PCI Survey Results , Figure 3.1.



SECTION PCI

- (86 - 100) GOOD
- (71 - 85) SATISFACTORY
- (56 - 70) FAIR
- (41 - 55) POOR
- (26 - 40) VERY POOR
- (11 - 25) SERIOUS
- (0 - 10) FAILED

N

0 150 300 Feet

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CHEHALEM AIRPARK
2023 PCI SURVEY RESULTS

DEC. 2023 JOB NO. 6593-E FIG. 3.1

The condition distribution of the network by percent of total pavement area is provided on the Chehalem Airpark Pavement Condition Rating by Percent of Area, Figure 3.2. A summary of the pavement condition results by branch and section is included in Tables 2B and 3B of Appendix B, respectively. A comparison between the previous inspection and the 2023 inspection is provided in Table 4B in Appendix B. The re-inspection report that includes inspection details for individual sample units is provided in Table 1E in Appendix E.

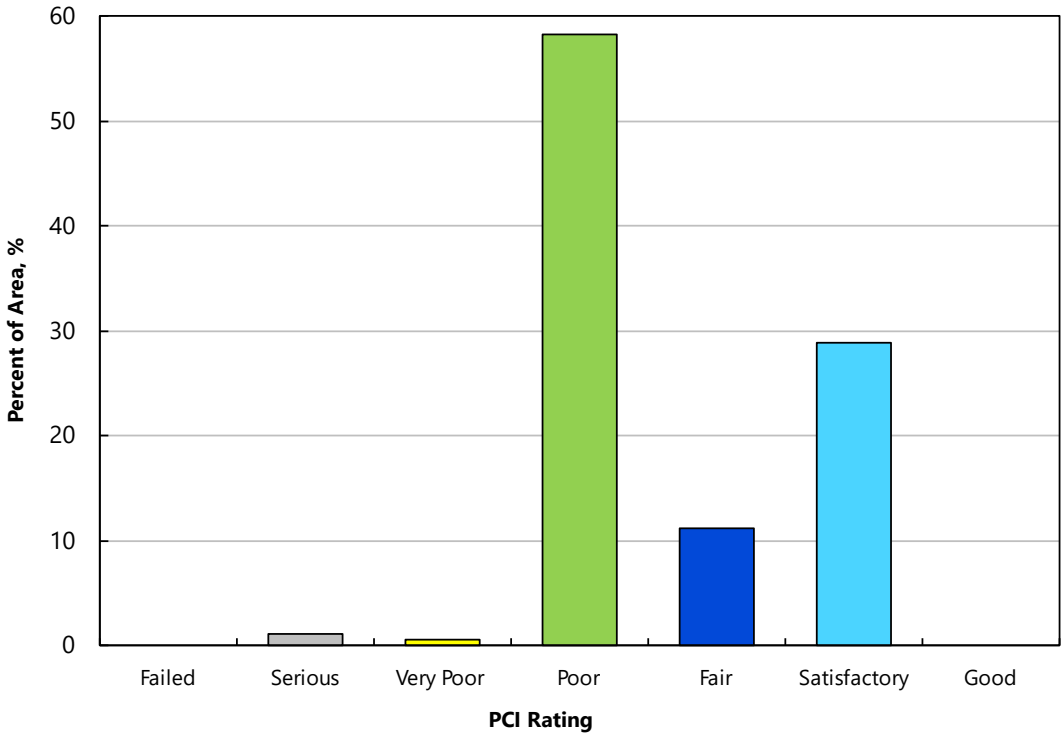


Figure 3.2: CHEHALEM AIRPARK PAVEMENT CONDITION RATING BY PERCENT OF AREA

4 FUTURE PAVEMENT CONDITION ANALYSIS

4.1 Introduction

In addition to assessing the current condition of a pavement, it is very important from a planning standpoint to be able to predict with reasonable accuracy the future condition. Additional details regarding our future pavement condition analysis, including pavement condition prediction models, are provided in Appendix C. PCI performance curves developed for Chehalem Airpark are displayed on Figures 1C through 4C in Appendix C.

4.2 Future Condition Analysis

Using the condition prediction models discussed above, the projected condition of each pavement section was determined for 5- and 10-year periods. Based on this analysis, we project the PCI to decrease from a current value of 58 to a value of 44 in 2028 and 30 in 2033 if no maintenance or rehabilitation work is performed. The projected pavement condition in 5 years and 10 years for each pavement section at Chehalem Airpark is displayed spatially on the Chehalem Airpark Future Pavement Condition , Figure 4.1, and listed in Table 1C in Appendix C, along with the past and present PCI values for the pavement network.

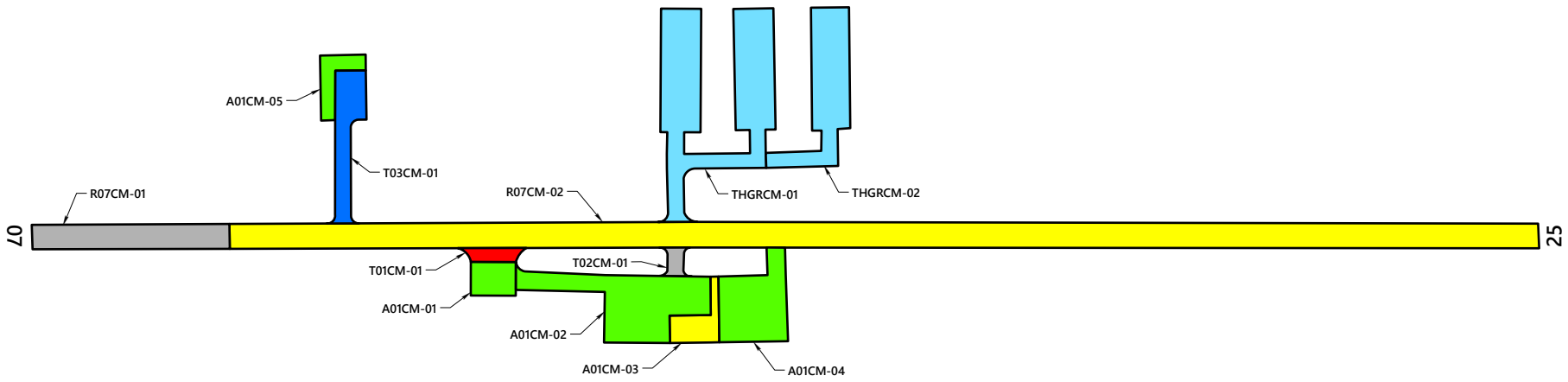
4.3 Functional Remaining Life

Functional remaining life is the practical amount of time a pavement is in service before requiring rehabilitation, as estimated solely based on visual condition. This is not to be confused with structural remaining life, which requires analysis of the structural capacity of a pavement and typically a field exploration and testing program that includes core explorations and falling weight deflectometer (FWD) deflection tests.

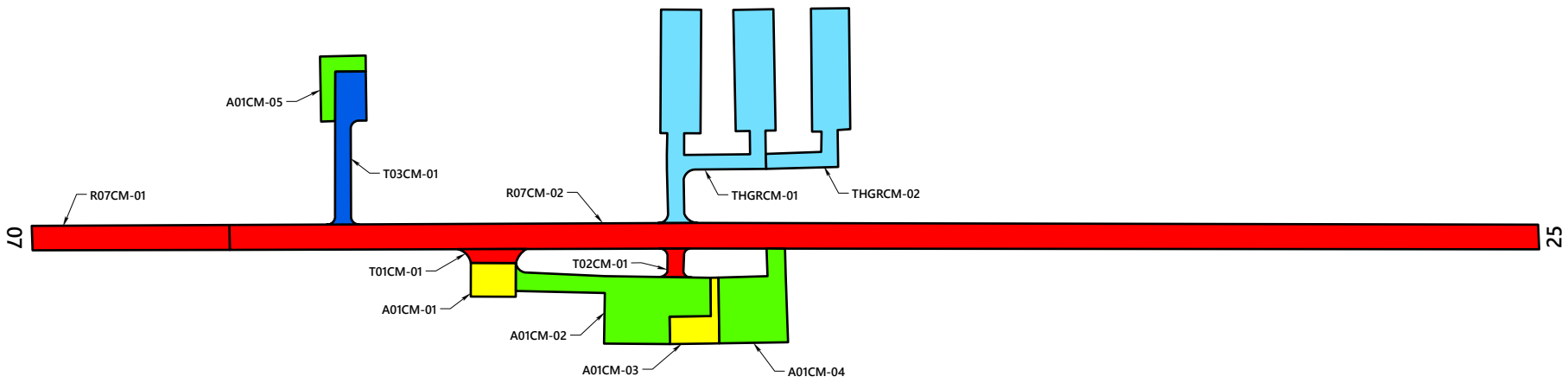
We calculated two forms of functional remaining life based on the current visual condition surveys of the pavement at Chehalem Airpark. The first type of functional remaining life is the time until rehabilitation, such as an overlay, is needed. The critical PCI, further discussed in Section C.3 of Appendix C, is the threshold used for this type of functional remaining-life analysis. The second type of functional remaining life is the time until the pavement is no longer operational due to high foreign object debris (FOD) potential and increased safety concerns for trafficking aircraft. A PCI of 40 was set as the trigger point for the end of the pavement's functional service life with regard to FOD potential.

The two types of functional remaining life for each section at Chehalem Airpark are summarized in Table 2C in Appendix C.

PREDICTED CONDITION IN 2028



PREDICTED CONDITION IN 2033



SECTION PCI

- (86 - 100) GOOD
- (71 - 85) SATISFACTORY
- (56 - 70) FAIR
- (41 - 55) POOR
- (26 - 40) VERY POOR
- (11 - 25) SERIOUS
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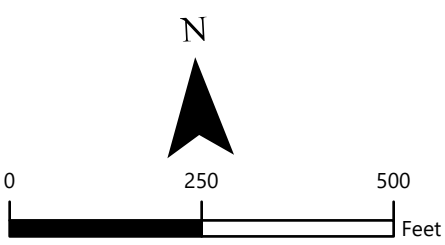

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STATEWIDE PAVEMENT EVALUATION PROGRAM

CHEHALEM AIRPARK
FUTURE PAVEMENT CONDITION

DEC. 2023 JOB NO. 6593-E FIG. 4.1

5 MAINTENANCE AND REHABILITATION PROJECT RECOMMENDATIONS

5.1 Introduction

We evaluated M&R needs, as determined from the PAVER analysis results, in order to develop localized maintenance, surface treatment, rehabilitation, and reconstruction needs. Details of our M&R work priority and unit costs for work activities are provided in Tables 1D and 2D, respectively, in Appendix D.

5.2 Recommended Localized Maintenance

Localized maintenance refers to activities such as crack sealing and patching, which should be performed annually in order to properly maintain aging pavements. Using the PAVER Localized Distress Maintenance Analysis tool, we developed a list of recommended localized maintenance. This list is shown in Table 3D in Appendix D and is independent of the surface treatments, rehabilitation, and reconstruction projects associated with the five-year surface treatment and rehabilitation work plan. A summary of total localized maintenance quantities is provided in Table 5-1 below.

Table 5-1: LOCALIZED MAINTENANCE QUANTITIES

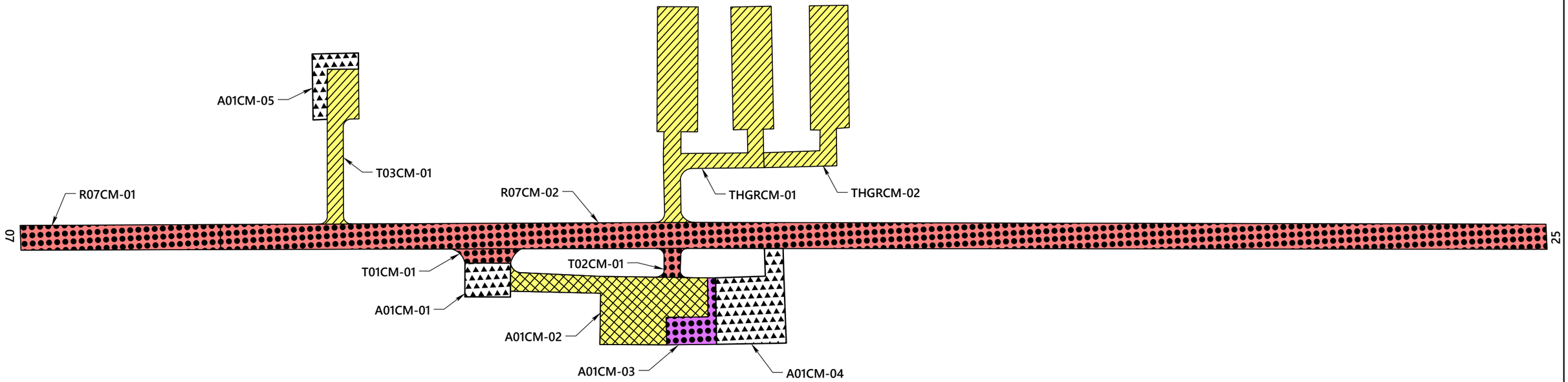
Localized Maintenance Operation	Quantity
Asphalt Concrete Crack Sealing	11,331 linear feet
Asphalt Concrete Wide Crack Sealing	21 linear feet
Portland Cement Concrete Crack Sealing	1,092 linear feet
Asphalt Concrete Full-Depth Patching	365 square feet
Portland Cement Concrete Partial Depth Patching	16 square feet

5.3 Surface Treatment, Rehabilitation, and Reconstruction Plan

To develop the five-year work plan, we first ran the eliminate backlog scenario with the PAVER M&R Work Planning Module in order to generate a list, organized by year, of surface treatment, rehabilitation, and reconstruction projects. We then reviewed the project list and refined it into practical construction projects for each year. A summary of surface treatment, rehabilitation, and reconstruction quantities is provided in Table 5-2 below, and maps of the project locations by year are shown on the Chehalem Airpark 5-Year Pavement Management Plan, Figure 5.1. The complete list of recommended surface treatment, rehabilitation, and reconstruction projects is presented in Table 4D in Appendix D.

Table 5-2: SURFACE TREATMENT, REHABILITATION, AND RECONSTRUCTION QUANTITIES

Treatment Type	Quantity, square feet
Reconstruction	97,817
Overlay	0
Fog Seal	17,922
Slurry Seal	54,365



ACTION TIMING

- 2024
- 2025
- 2026
- 2027
- 2028

ACTION

- FOG SEAL
- SLURRY SEAL
- OVERLAY
- RECONSTRUCTION
- ROUTINE MAINTENANCE

N

0 150 300 Feet

OREGON DEPARTMENT OF AVIATION
STATEWIDE PAVEMENT EVALUATION PROGRAM

CHEHALEM AIRPARK

5-YEAR PAVEMENT MANAGEMENT PLAN

DEC. 2023 JOB NO. 6593-E FIG. 5.1

6 LIMITATIONS

This report has been prepared to assist the Oregon Department of Aviation (ODAV) with pavement-related project planning for the Chehalem Airpark. The scope is limited to the specific pavement areas described within this report. The conclusions and recommendations provided in this report are based on information provided by ODAV, estimated costs, and an understanding of the pavement conditions based solely on visual assessment. The surface treatment, rehabilitation, and reconstruction recommendations and project selections provided in this report, as well as their corresponding cost estimates, are based on a practical grouping of projects and an estimate of the structural requirements. It is possible that recommendations based on a structural evaluation would differ materially from the recommendations given within this report. Therefore, the information included in this report should be used solely for project planning purposes, and it should be understood that rehabilitation costs may vary from the cost estimates given within this report.

Because the condition of the airport pavement network is dynamic, an effective maintenance and rehabilitation program should be reviewed and updated on a regular basis. In addition to regularly surveying and updating the pavement condition, completed construction activities should be tracked in the PAVER database. If Chehalem Airpark would like to know more about the results presented in this report, please contact the undersigned.

Submitted for GRI,

RENEWS: 06/2025

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This document has been submitted electronically.

APPENDIX A

Pavement Inventory Reports and Maps

APPENDIX A

PAVEMENT INVENTORY REPORTS AND MAPS

A.1 PAVEMENT NETWORK

Chehalem Airpark is located in Newberg, Oregon, and is owned and operated by Nancy Sturdevant. The pavement network/facilities at Chehalem Airpark serve a variety of general aviation aircraft and military aircraft. Chehalem Airpark consists of a single runway, helipads, and multiple connector taxiways and aprons. The types of airside pavements include asphalt concrete (AC) and portland cement concrete (PCC).

The current airport pavement management system (APMS) network at Chehalem Airpark has an approximate area of 188,564 square feet of paved airside facilities. The pavement network has previously been divided (by others) into a hierarchical order of branches, sections, and sample units that facilitate inspection and maintenance planning. The pavement facilities summarized by branch and section are listed in Tables 1A and 2A, respectively. Pavement sections and the sample unit layout for each section are shown on Figure 1A in this appendix.

A.2 BRANCHES

A branch, as defined in the PAVER system, is a facility that is a readily identifiable part of the pavement system and has a distinct function. For airports, branches typically consist of individual runways, taxiways, and aprons. The current pavement network for Chehalem Airpark contains 6 branches, tabulated in Table 1A and shown on Figure 1A.

A.3 SECTIONS AND SAMPLE UNITS

A pavement section is the smallest management unit used when considering the application and selection of maintenance and rehabilitation (M&R) repairs and treatments and is defined by Section 2.1.8 of ASTM International (ASTM) D5340 as *"a contiguous pavement area having uniform construction, maintenance, usage history, and condition."* All sections should also have the same traffic volume and load intensity. The current pavement network included in the PAVER database for Chehalem Airpark contains 12 sections that are managed by Nancy Sturdevant, which are tabulated in Table 2A and shown spatially on Figure 1A.

PAVER assigns a rank, which designates that pavement's prioritization in receiving maintenance and repair. The highest use or priority pavements, such as runways, taxiways, and terminal aprons, are ranked *Primary*, while the surrounding aprons and shoulders are ranked *Secondary* and low-use areas are ranked *Tertiary*. The ranks for all sections are shown on Table 2A.

To facilitate the visual survey of the airport pavement, each section is further subdivided into smaller areas called sample units. Similar sizing of these units is critical, and studies have found that maintaining the size of the sample units to within 40% of the established normal distribution reduces the standard error of the average pavement condition index (PCI) values. To meet this criterion, the ASTM method recommends sample units for flexible pavements be 5,000 ± 2,000 square feet and 20 slabs ± 8 slabs for rigid pavements. The delineation of sample units for each section is displayed on Figure 1A.

A.4 SAMPLE UNIT DELINEATION

For an APMS survey, a PCI confidence level of 92% and an allowable error (e) of eight PCI points are used for all airport pavements. To determine the number of sample units that need to be inspected to achieve the required confidence level and allowable error, the following equation is used:

$$n = \frac{N \times s^2}{\left(e^2/_4\right)(N-1)+s^2} \qquad \text{(Equation 1)}$$

where:

n = number of sample units to be inspected
N = total number of samples in the pavement sections
e = allowable error
s = section standard deviation

For the 2023 Chehalem Airpark PCI survey, Table 3A was used as a guideline in developing sampling rates for flexible and rigid pavement that reflect similar rates used for other large airport pavement networks. In general, this sampling rate distribution provides a 92% confidence level with a standard error of eight PCI points.

Sample unit locations at Chehalem Airpark were selected using a systematic random sampling model method. This technique is implemented by first determining the number of sample units needed based on the confidence interval calculated using Equation 1. The first sample unit is randomly placed in the section, and then the remaining sample units are systematically spaced throughout the section at an equal distance apart.

Table 1A: CHEHALEM AIRPARK PAVEMENT BRANCHES

Facility Designation (Branch ID)	Branch Name	Number of Sections	Approximate Area, square feet
A01CM	Apron 01 Chehalem	5	39,736
R07CM	Runway 07/25 Chehalem	2	91,400
T01CM	Taxiway 01 Chehalem	1	2,018
T02CM	Taxiway 02 Chehalem	1	1,045
T03CM	Taxiway 03 Chehalem	1	7,277
THGRCM	Hangar Taxiways Chehalem	2	47,088

Table 2A: CHEHALEM AIRPARK CURRENT PAVEMENT INVENTORY

BranchID	Branch Name	Branch Use	SectionID	From	To	Rank	Length, feet	Width, feet	Approximate Area, square feet	LCD	Surface Type	Approximate Slab Length, feet	Approximate Slab Width, feet	Number of Slabs
A01CM	Apron 01 Chehalem	APRON	01	T01CM	Main Hangar	P	70	55	3,850	8/1/1990	PCC	14	14	20
A01CM	Apron 01 Chehalem	APRON	02	T02CM	Airport Office	P	262	110	17,922	8/1/1996	AC	0	0	0
A01CM	Apron 01 Chehalem	APRON	03	A01CM-02	Fuel Station	P	75	43	3,354	8/1/1996	PCC	13	13	20
A01CM	Apron 01 Chehalem	APRON	04	A01CM-03	R07CM-02	P	100	100	11,370	9/1/2012	PCC	16	20	36
A01CM	Apron 01 Chehalem	APRON	05	T03CM-01	T03CM-01	P	140	20	3,240	9/1/2012	PCC	20	20	8
R07CM	Runway 07/25 Chehalem	RUNWAY	01	Runway 07 End (West)	R07CM-02	P	300	40	12,000	8/1/1996	AC	0	0	0
R07CM	Runway 07/25 Chehalem	RUNWAY	02	R07CM-01	Runway 25 End (East)	P	1,985	40	79,400	8/1/1996	AC	0	0	0
T01CM	Taxiway 01 Chehalem	TAXIWAY	01	Runway 07/25	A01CM-01	P	70	25	2,018	8/1/1996	AC	0	0	0
T02CM	Taxiway 02 Chehalem	TAXIWAY	01	Runway 07/25	A01CM-02	P	38	25	1,045	8/1/1996	AC	0	0	0
T03CM	Taxiway 03	TAXIWAY	01	R07CM-02	A01CM-05	P	230	25	7,277	9/1/2000	AC	0	0	0
THGRCM	Hangar Taxiways Chehalem	TAXIWAY	01	Runway 07/25	Hangars	S	323	136	33,248	8/1/1999	AC	0	0	0
THGRCM	Hangar Taxiways Chehalem	TAXIWAY	02	THGRCM-01	THGRCM-01	P	240	60	13,840	9/1/2004	AC	0	0	0

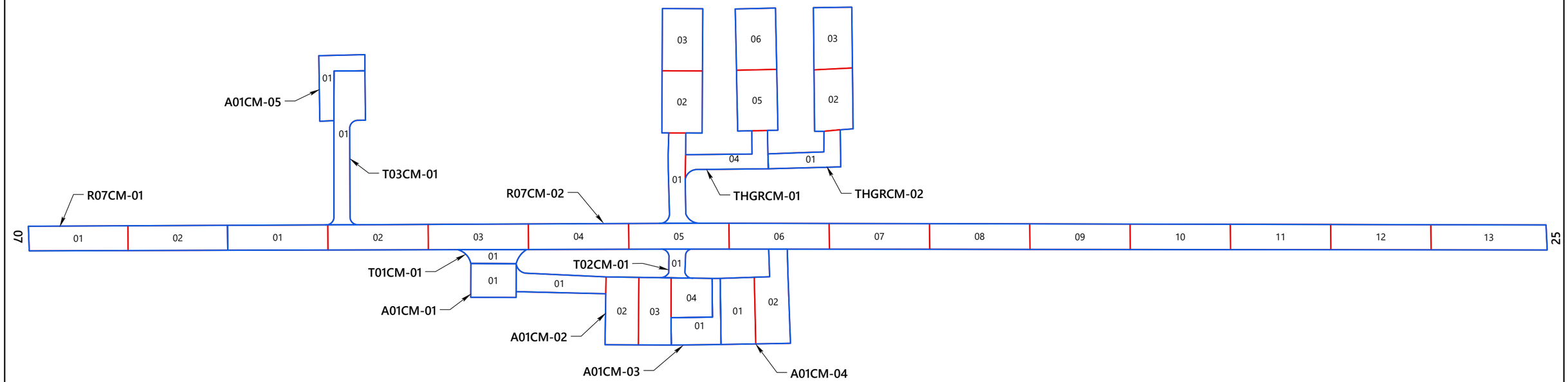
Abbreviations:
P = Primary pavement, S = Secondary pavement
LCD = Last Construction Date. The date of the last major rehabilitation (e.g. overlay)
AC = Asphalt Concrete, PCC = Portland Cement Concrete

Table 3A: EXAMPLE SAMPLE RATES FOR AC AND PCC PAVEMENTS

AC Sampling Rate	
Total Number of Sample Units, N	**Sample Units to Survey, n**
1	1
2-3	2
4-6	3
7-13	4
14-38	5
39+	6

PCC Sampling Rate	
Total Number of Sample Units, N	**Sample Units to Survey, n**
1	1
2	2
3-4	3
5-6	4
7-8	5
9-11	6
12-14	7
15-19	8
20-27	9
28-38	10
39-58	11
59-104	12
105-313	13
314+	14

Note: AC = Asphalt Concrete
PCC = Portland Cement Concrete



LEGEND

SECTION

SAMPLE UNIT

N

0 150 300

Feet

GRI

CHEHALEM AIRPARK
SAMPLE UNIT LAYOUT

DEC. 2023 JOB NO. 6593-E FIG. 1A

APPENDIX B

Pavement Condition Index Survey Results

APPENDIX B

PAVEMENT CONDITION INDEX SURVEY RESULTS

B.1 METHODOLOGY

As previously discussed, the PCI is a measure of the pavement's functional surface condition and provides a methodology for assessing the causes of distress and whether the distress is related to a load or climatic conditions. Although the PCI is not a direct measure of structural capacity, it provides a suggestion of the structural needs of the pavement.

The PCI is based on the type, severity, and quantity of each distress found in an inspected sample unit. The results are displayed using a seven-category rating scale in accordance with ASTM D5340. Flexible pavement (e.g., AC and AAC) and rigid pavement (e.g., PCC) distress types are presented in Table 1B. A summary of the pavement condition results by branch and section is included in Tables 2B and 3B of Appendix B, respectively.

Table 1B: PAVER DISTRESS CODES FOR FLEXIBLE AND RIGID PAVEMENT

Flexible Pavement		
PAVER Code	Pavement Distress	Related Cause
41	Alligator Cracking	Load
42	Bleeding	Other
43	Block Cracking	Climate/ Durability
44	Corrugation	Other
45	Depression	Other
46	Jet Blast	Other
47	Joint Reflection Cracking	Climate/ Durability
48	Longitudinal & Transverse Cracking	Climate/ Durability
49	Oil Spillage	Other
50	Patching	Climate/ Durability
51	Polished Aggregate	Other
52	Raveling	Climate/ Durability

Rigid Pavement		
PAVER Code	Pavement Distress	Related Cause
61	Blow-Up	Load
62	Corner Break	Load
63	Longitudinal, Transverse, & Diagonal Cracks	Climate/ Durability
64	Durability Cracking	Climate/ Durability
65	Joint Seal Damage	Other
66	Small Patch	Other
67	Large Patch	Other
68	Pop Outs	Other
69	Pumping	Other
70	Scaling	Other
71	Faulting	Other
72	Shattered Slab	Load

Flexible Pavement		
PAVER Code	Pavement Distress	Related Cause
53	Rutting	Load
54	Shoving	Other
55	Slippage Cracking	Other
56	Swelling	Other
57	Weathering	Climate/ Durability

Rigid Pavement		
PAVER Code	Pavement Distress	Related Cause
73	Shrinkage Cracking	Other
74	Joint Spalls	Other
75	Corner Spalls	Other
76	Alkali-Silica Reactivity (ASR)	Other

To obtain the section PCI, we extrapolated the PCI of each selected sample unit over the entire section area. Distresses found in sample units classified as "additional"– defined as nonrepresentative instead of random- are not extrapolated over the entire section but merely added to the extrapolated quantity. The PCI rating scale presented previously in Table 3-1 of Section 3.1 is based on ASTM D5340.

Section 4.1 of ASTM D5340, governing PCI surveys, offers this caution:

"The PCI is a numerical indicator that rates the surface condition of the pavement. The PCI provides a measure of the **present condition** of the pavement based on the distress observed on the surface of the pavement, which also indicates the structural integrity and surface operational condition (localized roughness and safety). The PCI **cannot** measure structural capacity, nor does it provide a direct measurement of skid resistance or roughness. It provides an objective and rational basis for determining maintenance and repair needs and priorities. Continuous monitoring of the PCI is used to establish the rate of pavement deterioration, which permits the early identification of major rehabilitation needs. The PCI provides feedback on pavement performance for validation or improvement of current pavement design and maintenance procedures."

Based on the limitations of the PCI method, it is imperative that engineers and planners treat the PCI as a tool that will assist them during the M&R planning process. Any major project should always be preceded by an up-to-date, detailed, 100% project-level inspection of the pavement in order to reevaluate maintenance needs prior to the project design process.

B.2 DISTRESS TYPES

Distress tends to fall into one of the following four cause categories:

- **Load-related:** Flexible pavement distresses include alligator/fatigue cracking, corrugation, depression, polished aggregate, rutting, and slippage cracking. Rigid

pavement distresses include corner breaks, longitudinal cracking, divided slabs, polished aggregate, pumping, and joint spalling.

- **Climate- and durability-related:** Flexible pavement distresses include bleeding, block cracking, joint reflection cracking, longitudinal and transverse (L&T) cracking, swelling, and raveling/weathering. Rigid pavement distresses include blow-ups, durability cracking, longitudinal cracking, pop-outs, pumping, scaling, shrinkage cracks, and joint and corner spalling.

- **Moisture- and drainage-related:** Flexible pavement distresses include alligator/ fatigue cracking, depressions, potholes, and swelling. Rigid pavement distress includes corner breaks, divided slabs, and pumping.

- **Other factors:** Include oil spillage, jet blast erosion, bleeding, patching, and concrete slab joint faulting.

As described above, distress may be the result of more than one cause. For example, depressions may be caused by incorrect compaction during construction or by subgrade softening due to environmental factors. In addition, distress may be initiated by one cause but may progress to a distress of higher severity by another cause. Therefore, engineering judgment is critical in analyzing the actual cause or causes of the distress.

B.3 PAVEMENT CONDITION INDEX SURVEY RESULTS

The evaluated Chehalem Airpark pavement network consists of 6 branches and 12 sections. A total of 25 sample units were visually inspected in the field. Data from the inspected sample units were input into the PAVER database, and a resultant PCI for each section was computed. Additional details regarding the PCI and distress types observed for each surveyed sample unit are provided in the re-inspection report, Table 1E, in Appendix E. Based on the 2023 PCI survey, the area-weighted average PCI for the entire pavement network at Chehalem Airpark is approximately 58, which corresponds to a PCI rating of Fair.

To investigate the rate of deterioration of each pavement section, we compared the PCI results from the 2023 survey to the PCI results from the previous inspection. The variation in PCI between inspections for Chehalem Airpark pavement sections is outlined in Table 4B in this appendix.

Table 2B: CHEHALEM AIRPARK CURRENT BRANCH CONDITION REPORT

Branch ID	Number of Sections	Approximate Area, square feet	Use	Area Weighted Average Branch PCI	PCI Category
A01CM	5	39,736	APRON	55	Poor
R07CM	2	91,400	RUNWAY	50	Poor
T01CM	1	2,018	TAXIWAY	20	Serious
T02CM	1	1,045	TAXIWAY	35	Very Poor
T03CM	1	7,277	TAXIWAY	72	Satisfactory
THGRCM	2	47,088	TAXIWAY	78	Satisfactory

Use Category	Number of Sections	Total Area, square feet	Area Weighted Average PCI
APRON	5	39,736	55
RUNWAY	2	91,400	50
TAXIWAY	5	57,428	74
ALL	**12**	**188,564**	**58**

Abbreviation: PCI = Pavement Condition Index

Table 3B: CHEHALEM AIRPARK 2023 PAVEMENT CONDITION INDEX SURVEY RESULTS

BranchID	SectionID	Last Construction Date	Surface Type	Use	Last Inspection Date	Age at Inspection	PCI	PCI Category	PCI % Climate	PCI % Load	PCI % Other
A01CM	01	8/1/1990	PCC	APRON	7/1/2023	33	51	Poor	10	36	54
A01CM	02	8/1/1996	AC	APRON	7/1/2023	27	59	Fair	82	18	0
A01CM	03	8/1/1996	PCC	APRON	7/1/2023	27	42	Poor	8	92	0
A01CM	04	9/1/2012	PCC	APRON	7/1/2023	11	54	Poor	0	98	2
A01CM	05	9/1/2012	PCC	APRON	7/1/2023	11	58	Fair	0	79	21
R07CM	01	8/1/1996	AC	RUNWAY	7/1/2023	27	41	Poor	100	0	0
R07CM	02	8/1/1996	AC	RUNWAY	7/1/2023	27	51	Poor	76	24	0
T01CM	01	8/1/1996	AC	TAXIWAY	7/1/2023	27	20	Serious	100	0	0
T02CM	01	8/1/1996	AC	TAXIWAY	7/1/2023	27	35	Very Poor	54	46	0
T03CM	01	9/1/2000	AC	TAXIWAY	7/1/2023	23	72	Satisfactory	100	0	0
THGRCM	01	8/1/1999	AC	TAXIWAY	7/1/2023	24	76	Satisfactory	100	0	0
THGRCM	02	9/1/2004	AC	TAXIWAY	7/1/2023	19	83	Satisfactory	100	0	0

Abbreviations:
PCI = Pavement Condition Index, AC = Asphalt Concrete, PCC = Portland Cement Concrete

Table 4B: CHEHALEM AIRPARK COMPARISON OF PREVIOUS INSPECTION AND 2023 RESULTS

Branch ID	Section ID	Surface Type[1]	Approximate Area, square feet	LCD[2]	2001 Survey			2023 Survey		Age[3]	Δ PCI/yr[4]	Rate of Deterioration
					PCI	PCI Category	Insp. Date	PCI	PCI Category			
A01CM	01	PCC	3,850	8/1/1990	68	Fair	8/24/2001	51	Poor	11	-0.78	NORMAL
A01CM	02	AC	17,922	8/1/1996	93	Good	8/24/2001	59	Fair	5	-2	NORMAL
A01CM	03	PCC	3,354	8/1/1996	35	Very Poor	8/24/2001	42	Poor	5	0.32	NONE
A01CM	04	PCC	11,370	9/1/2012	-	Good	-	53.7	Poor	-	-	N/A[5]
A01CM	05	PCC	3,240	9/1/2012	-	Good	-	58	Fair	-	-	N/A
R07CM	01	AC	12,000	8/1/1996	88	Good	8/24/2001	41	Poor	5	-2	NORMAL
R07CM	02	AC	79,400	8/1/1996	89	Good	8/24/2001	51	Poor	5	-1.74	NORMAL
T01CM	01	AC	2,018	8/1/1996	89	Good	8/24/2001	20	Serious	5	-3	NORMAL
T02CM	01	AC	1,045	8/1/1996	78	Satisfactory	8/24/2001	35	Very Poor	5	-1.97	NORMAL
T03CM	01	AC	7,277	9/1/2000	-	Good	-	72	Satisfactory	-	-	N/A
THGRCM	01	AC	33,248	8/1/1999	100	Good	8/24/2001	76	Satisfactory	2	-1.10	NORMAL
THGRCM	02	AC	13,840	9/1/2004	-	Good	-	83	Satisfactory	-	-	N/A

Abbreviations:

[1] AC = Asphalt Concrete, PCC = Portland Cement Concrete, PCI = Pavement Condition Index

[2] LCD = Last construction date. The date of the last major pavement rehabilitation (e.g. AC overlay)

[3] Age = Pavement age in years at the time of the PCI survey in 2001

[4] Δ PCI/yr = Change in PCI points per year between 2001 survey and 2023 survey

[5] N/A = Not applicable due to changes in sectioning

APPENDIX C

Future Pavement Condition Analysis

APPENDIX C

PAVEMENT CONDITION ANALYSIS

C.1 METHODOLOGY

In addition to assessing the current condition of a pavement, it is very important from a planning standpoint to be able to predict with reasonable accuracy its future condition. In a pavement management plan (PMP), this is done with the aid of a prediction model. When an APMS is initially implemented, the default models are typically used to predict the future condition of a pavement. However, after PCI surveys are completed, the historical data are then used to refine the models, so they better represent the deterioration of a particular class of pavement based on local climatic conditions, loading, material sources, construction procedures, etc. The importance of accurate prediction models is part of the reason it is essential to conduct periodic, routine surveys in order to track the rate of deterioration.

In PAVER, the pavement deterioration curves are developed based on the "family" model procedure. A pavement "family" is defined as a group of pavements with similar deterioration characteristics. The procedure for developing the prediction models is:

1) Define the pavement families.
2) Review the data.
3) Conduct a data-outlier analysis.
4) Model the data.

C.2 PREDICTION MODELS

We developed separate condition prediction models for each pavement "family" at Chehalem Airpark. The delineation is based on branch use, surface type, section rank, and structural design life. We use four distinct models for the following "families" of pavements at Chehalem Airpark. For each model, we reviewed the data in order to filter out any inconsistent or inaccurate data or any data that fell outside the boundary values set by PAVER. After outliers are removed and the data are checked for accuracy and reasonableness, the PAVER program calculates a best-fit curve using a polynomial-constrained, least-squares analysis procedure. This best-fit curve for each family is used in the analysis to predict the average behavior of all sections within each "family." Our condition prediction models for each "family" are provided on Figures 1C through 4C below.

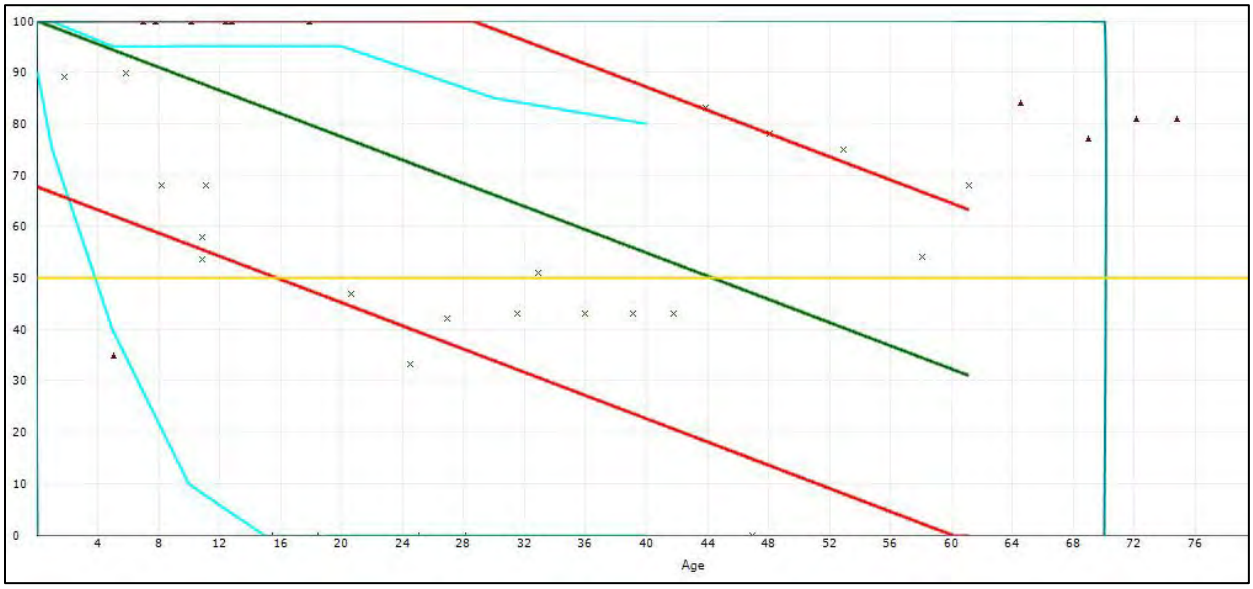


Figure 1C: CONDITION PREDICTION MODEL FOR NORTHWESTERN CATEGORY 4 PCC RUNWAYS, TAXIWAYS, AND APRONS

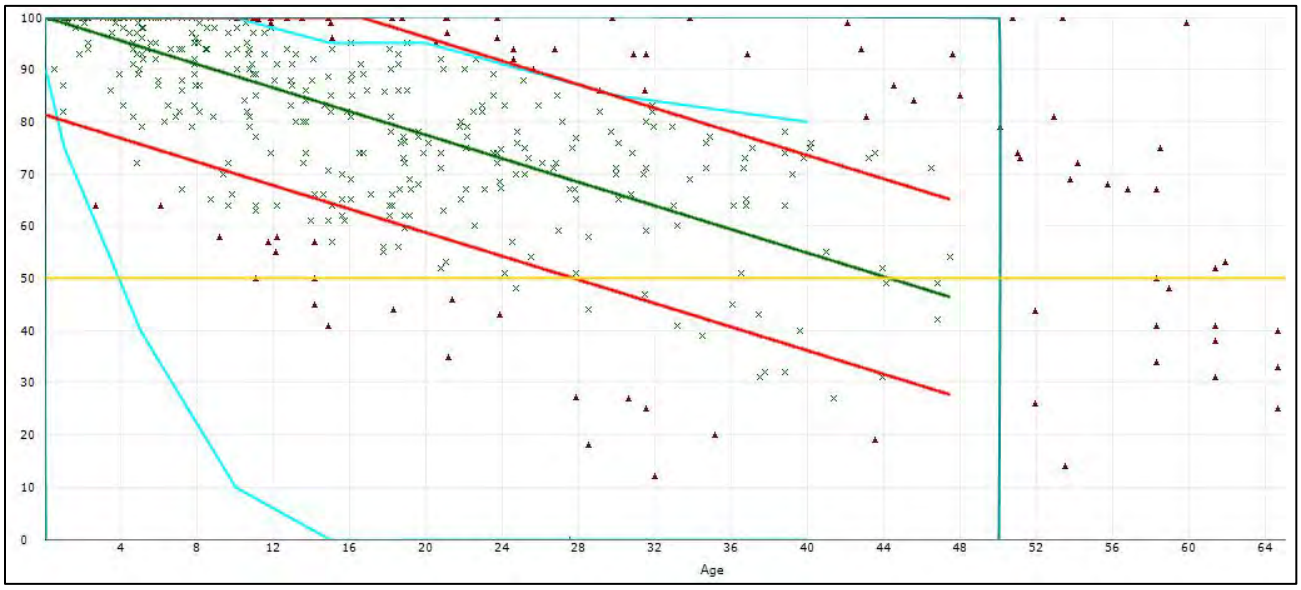


Figure 2C: CONDITION PREDICTION MODEL FOR NORTHWESTERN CATEGORY 4 AC APRONS

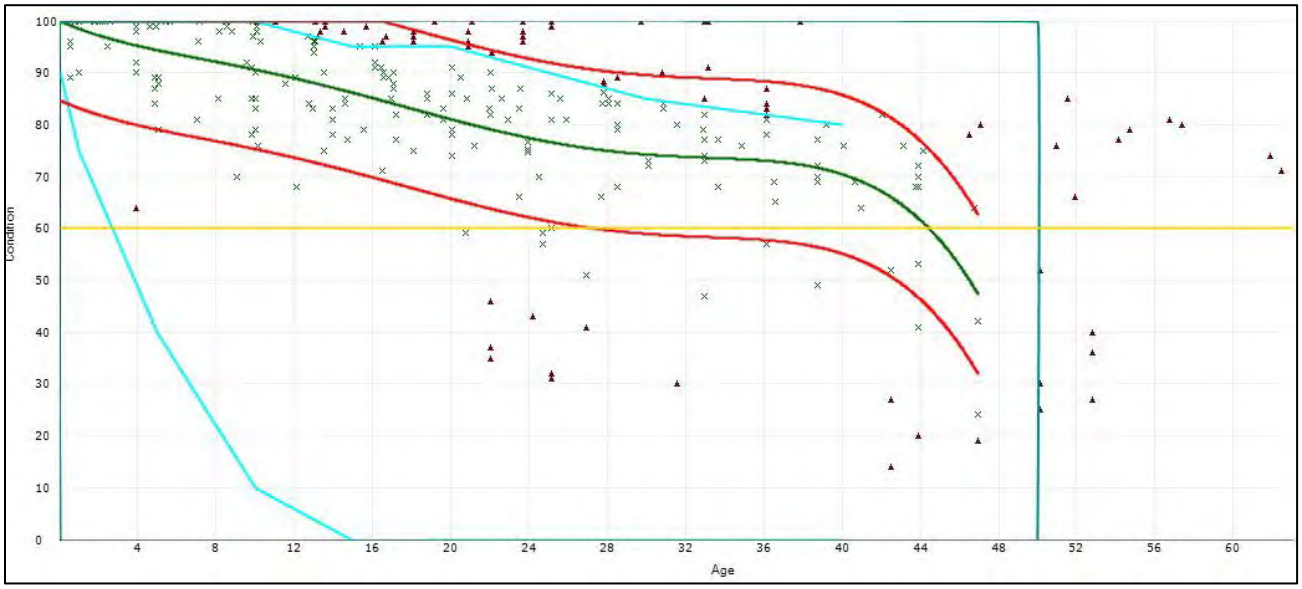


Figure 3C: CONDITION PREDICTION MODEL FOR NORTHWESTERN CATEGORY 4 AC RUNWAYS

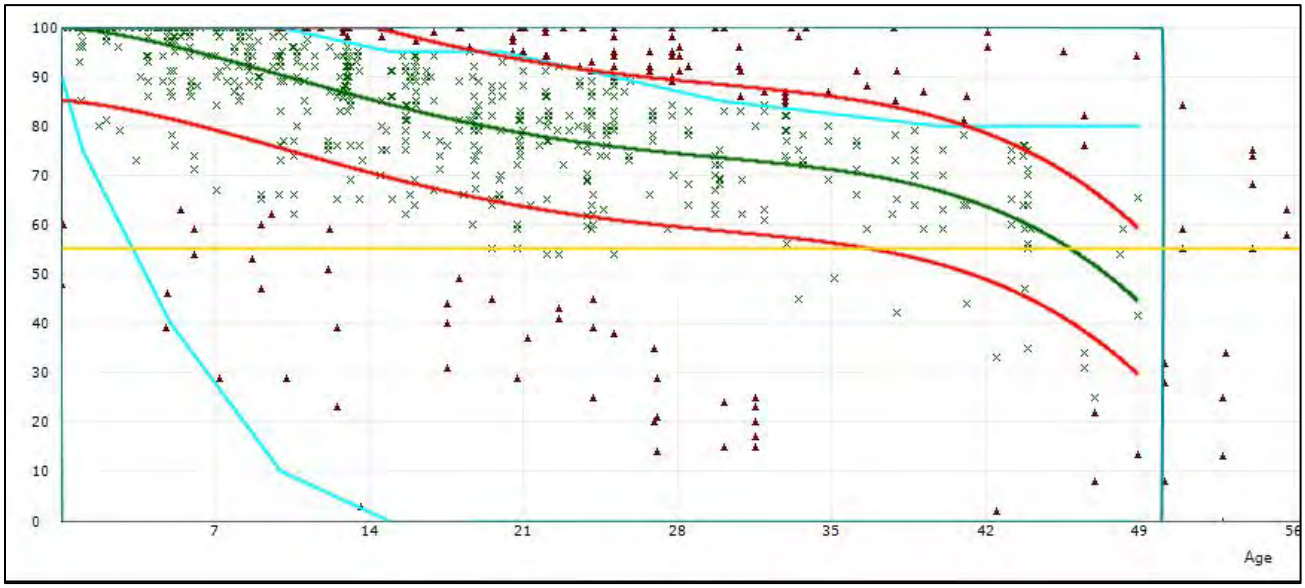


Figure 4C: CONDITION PREDICTION MODEL FOR NORTHWESTERN CATEGORY 4 AC TAXIWAYS

C.3 CRITICAL PCI

Each of the condition-prediction models has an assigned critical PCI. The critical PCI is the point at which the pavement condition begins to deteriorate more quickly over time. As the condition deteriorates to a worse state, major M&R (rehabilitation/reconstruction) is triggered because the cost of applying localized M&R increases significantly. Pavement sections with PCI above the critical value are given a higher priority for funding during

budget analysis in order to prevent them from deteriorating to the point where more costly rehabilitation is necessary. We used the following critical PCI values at Chehalem Airpark:

- Runways – 60
- Taxiways/Taxilanes – 55
- Aprons – 50

C.4 FUTURE CONDITION ANALYSIS

As previously discussed, the projected condition of each pavement section was determined for 5- and 10-year periods. The projected pavement conditions in 5 years and 10 years for each pavement section at Chehalem Airpark, along with the conditions at the previous inspection, are listed in Table 1C.

C.5 FUNCTIONAL REMAINING LIFE

As mentioned above, functional remaining life is the practical amount of time a pavement is in service before requiring rehabilitation, as estimated based solely on visual condition. This is not to be confused with structural remaining life, which requires analysis of the structural capacity of a pavement.

We calculated two forms of functional remaining life based on the current visual condition surveys of the pavement at Chehalem Airpark: the time until rehabilitation and the time until the pavement is no longer operational due to high foreign object debris potential and increased safety concerns for trafficking aircraft (PCI less than 40). The results of the functional life analysis are provided in Table 2C.

Table 1C: PAST, PRESENT AND FUTURE PCI

		Past Inspection PCI	Current PCI	Predicted Future PCI	
BranchID	SectionID	2001	2023	2028	2033
A01CM	01	68	51	45	40
A01CM	02	93	59	53	48
A01CM	03	35	42	36	31
A01CM	04	-	54	48	42
A01CM	05	-	58	52	47
R07CM	01	88	41	17	0
R07CM	02	89	51	26	2
T01CM	01	89	20	3	0
T02CM	01	78	35	18	0
T03CM	01	-	72	68	61
THGRCM	01	100	76	74	71
THGRCM	02	-	83	78	75

Abbreviation: PCI = Pavement Condition Index

Table 2C: CHEHALEM AIRPARK FUNCTIONAL REMAINING LIFE ANALYSIS

Branch ID	Section ID	Surface Type	Current PCI	Years to Major M&R	Major M&R Trigger PCI[1]	Years to End of Functional Service Life
A01CM	01	PCC	51	0 - 5	50	6 - 10
A01CM	02	AC	59	6 - 10	50	16 - 20
A01CM	03	PCC	42	0 - 5	50	0 - 5
A01CM	04	PCC	54	0 - 5	50	11 - 15
A01CM	05	PCC	58	6 - 10	50	11 - 15
R07CM	01	AC	41	0 - 5	60	0 - 5
R07CM	02	AC	51	0 - 5	60	0 - 5
T01CM	01	AC	20	0 - 5	55	0 - 5
T02CM	01	AC	35	0 - 5	55	0 - 5
T03CM	01	AC	72	11 - 15	55	16 - 20
THGRCM	01	AC	76	> 20	55	> 20
THGRCM	02	AC	83	> 20	55	> 20

Abbreviations:
PCI = Pavement Condition Index, AC = Asphalt Concrete, PCC = Portland Cement Concrete
[1] Major M&R (Maintenance and Rehabilitation) Trigger PCI = Critical PCI

APPENDIX D

Unit Cost Data and Maintenance and Rehabilitation Plan

APPENDIX D

UNIT COST DATA AND MAINTENANCE AND REHABILITATION PLAN

D.1 ANALYSIS METHODOLOGY

We evaluated the M&R needs, as determined from the PAVER analysis results, in order to develop project recommendations for the next five years. The purpose of this analysis is to determine the M&R needs of the Chehalem Airpark pavement network condition over time. We used PAVER v7.0.8 software to develop network-level project recommendations for the next five years.

The PAVER M&R Work Planning Module identifies when and where M&R is required and how much it will cost. M&R plans can be developed either by assuming an annual budget or by identifying specific constraints, such as a condition goal, to determine the budget required to meet the goal. The M&R work planning analysis was based on a five-year period beginning on August 1, 2024. A backlog elimination analysis scenario was selected to generate a list of surface treatment, rehabilitation, and reconstruction projects in order to optimize the allocation of capital and establish preservation-based project recommendations. The repair strategies considered for pavement sections in our analysis are as follows:

- Reconstruction – Considered for pavements with a PCI less than 40.
- Rehabilitation (AC Overlay) – Considered for pavements between 40 PCI and the critical PCI, and for pavements exhibiting significant load-related distresses.
- Surface Treatment – Treatments (fog seal, slurry seal, thin AC overlay) applied to an entire pavement section with the intent of slowing the rate of deterioration.
- Localized Maintenance – Maintenance performed on a routine basis such as crack sealing, wide crack repair, and patching.

It should be noted that the five-year list of recommended projects only includes the highest-cost maintenance items and does not include routine localized maintenance (e.g., crack sealing) work that should also be conducted in addition to and concurrently with the five-year work plan.

D.1.1 Pavement Rank and Use Prioritization

Pavement sections are assigned a rank to establish their relative importance in the overall pavement network, which is most commonly defined by their use (e.g., Taxiway, Apron, Runway). The PAVER analysis uses the combination of the section rank and the branch use

to define the priority of each section during the M&R analysis. Table 1D displays the branch use and section rank prioritization schema we used for analysis.

Table 1D: M&R WORK PRIORITY BY BRANCH USE AND SECTION RANK

Branch Use	Section Rank		
	Primary	Secondary	Tertiary
RUNWAY	1	3	6
TAXIWAY	2	5	8
APRON	4	7	9

D.2 MAINTENANCE POLICIES AND UNIT COSTS

Distress-maintenance policies are policies that determine what type of work should be applied to a specific distress type and severity. For example, on an AC pavement, a medium-severity longitudinal/transverse crack would be repaired by crack sealing. Policies for all the distress types and severities are established by ASTM D5340.

Although our work scope does not include budget analysis, we did assign construction costs to the maintenance work so that PAVER would allocate M&R projects that were approximately equal in costs for each year of the five-year period. The anticipated cost of performing M&R is based on cost tables that relate M&R work type costs to PCI. We reviewed the unit costs from the 2001 report and updated them by reviewing the bid tabulations for recent projects within the vicinity of Chehalem Airpark and information provided by the ODAV Pavement Maintenance Program (PMP) project team. The costs for reconstruction are based on the existing pavement sections present within each branch use at Chehalem Airpark. The costs represent the fully-loaded costs and include aspects of the project such as administration, contingencies, mobilization, and striping. The cost tables used in the analysis are presented in Table 2D below.

Table 2D: REGION 1 UNIT COST DATA

Type of M&R	Work Type	Unit Cost	Work Unit
Major M&R	Complete Reconstruction with AC	$17.32	Sq Ft
	Cold Mill and Overlay – 2 Inches Thick	$7.64	Sq Ft
Surface Treatment (Global) M&R	Surface Treatment - Slurry Seal	$0.52	Sq Ft
	Surface Treatment - Fog Seal	$0.31	Sq Ft
Localized Preventive M&R	Crack Sealing - AC	$3.12	Ft
	Crack Sealing - PCC	$23.4	Ft
	Crack Sealing – Wide Cracks	$51.48	Ft
	Joint Sealing – PCC	$7.80	Ft
	AC Patching – Full Depth	$78.00	Sq Ft
	PCC Patching – Full Depth	$156.00	Sq Ft

D.3 RECOMMENDED LOCALIZED MAINTENANCE

In order to properly maintain aging pavements, localized M&R activities such as crack sealing and patching should be performed on a routine basis. A list of recommended localized maintenance activities is provided in Table 3D of this appendix.

D.4 RECOMMENDED SURFACE TREATMENT, REHABILITATION, AND RECONSTRUCTION PROJECTS

Surface treatment, rehabilitation, and reconstruction projects refer to activities such as slurry seal/fog seals, AC overlays, and reconstruction. A list of recommended projects is provided in Table 4D of this appendix.

Table 3D: CHEHALEM AIRPARK NETWORK MAINTENANCE REPORT

Branch ID	Section ID	Distress	Severity	Action	Work Quantity	Unit	Unit Cost	Work Cost	Section Total
A01CM	01	Shatterred Slab	Low	Crack Sealing - PCC	28	Ft	$23.40	$649	$4,791
A01CM	01	Linear Cracking	Low	Crack Sealing - PCC	69	Ft	$23.40	$1,623	
A01CM	01	Joint Spall	High	Patching - PCC Partial Depth	16	SqFt	$156.00	$2,519	
A01CM	02	Long. & Trans. Cracking	Medium	Crack Sealing - AC	1,485	Ft	$3.12	$4,632	$6,790
A01CM	02	Alligator Cracking	Medium	Patching - AC Deep	28	SqFt	$78.00	$2,158	
A01CM	03	Shatterred Slab	Medium	Crack Sealing - PCC	25	Ft	$23.40	$585	$4,963
A01CM	03	Shatterred Slab	Low	Crack Sealing - PCC	125	Ft	$23.40	$2,925	
A01CM	03	Corner Break	Medium	Crack Sealing - PCC	16	Ft	$23.40	$384	
A01CM	03	Corner Break	Low	Crack Sealing - PCC	8	Ft	$23.40	$192	
A01CM	03	Linear Cracking	Low	Crack Sealing - PCC	37	Ft	$23.40	$878	
A01CM	04	Shatterred Slab	Low	Crack Sealing - PCC	612	Ft	$23.40	$14,321	$17,269
A01CM	04	Linear Cracking	Low	Crack Sealing - PCC	126	Ft	$23.40	$2,948	
A01CM	05	Linear Cracking	Low	Crack Sealing - PCC	20	Ft	$23.40	$468	$1,044
A01CM	05	Corner Break	Medium	Crack Sealing - PCC	8	Ft	$23.40	$192	
A01CM	05	Corner Break	Low	Crack Sealing - PCC	16	Ft	$23.40	$384	
R07CM	01	Long. & Trans. Cracking	Low	Crack Sealing - AC	360	Ft	$3.12	$1,123	$3,438
R07CM	01	Long. & Trans. Cracking	Medium	Crack Sealing - AC	742	Ft	$3.12	$2,315	
R07CM	02	Long. & Trans. Cracking	High	Crack Seal - Wide Cracks	21	Ft	$51.48	$1,090	$40,554
R07CM	02	Long. & Trans. Cracking	Medium	Crack Sealing - AC	4,510	Ft	$3.12	$14,071	
R07CM	02	Long. & Trans. Cracking	Low	Crack Sealing - AC	2,260	Ft	$3.12	$7,052	
R07CM	02	Alligator Cracking	Medium	Patching - AC Deep	216	SqFt	$78.00	$16,894	
R07CM	02	Alligator Cracking	High	Patching - AC Deep	18	SqFt	$78.00	$1,447	
T01CM	01	Long. & Trans. Cracking	Medium	Crack Sealing - AC	68	Ft	$3.12	$212	$296
T01CM	01	Long. & Trans. Cracking	Low	Crack Sealing - AC	27	Ft	$3.12	$84	
T02CM	01	Long. & Trans. Cracking	Low	Crack Sealing - AC	101	Ft	$3.12	$315	$8,326
T02CM	01	Alligator Cracking	Medium	Patching - AC Deep	102	SqFt	$78.00	$8,010	
T03CM	01	Long. & Trans. Cracking	Low	Crack Sealing - AC	160	Ft	$3.12	$499	$1,076
T03CM	01	Long. & Trans. Cracking	Medium	Crack Sealing - AC	185	Ft	$3.12	$577	
THGRCM	01	Long. & Trans. Cracking	Low	Crack Sealing - AC	213	Ft	$3.12	$665	$2,966
THGRCM	01	Long. & Trans. Cracking	Medium	Crack Sealing - AC	738	Ft	$3.12	$2,301	
THGRCM	02	Long. & Trans. Cracking	Low	Crack Sealing - AC	472	Ft	$3.12	$1,473	$1,507
THGRCM	02	Long. & Trans. Cracking	Medium	Crack Sealing - AC	11	Ft	$3.12	$34	

Abbreviations:

Long. = Longitudinal; Trans. = Transverse; PCC = Portland Cement Concrete; AC = Asphalt Concrete; Ft = Feet; SqFt = Square Feet

Table 4D: FIVE-YEAR GLOBAL MAINTENANCE AND REHABILITATION PLAN

Action Year	Branch ID	Section ID	Branch Use	Surface Type	Current PCI	Action	Area, square feet	Unit Cost per square foot	Total Cost
2024	R07CM	01	RUNWAY	AC	41	Reconstruction	12,000	$17.32	$207,840
	R07CM	02	RUNWAY	AC	51	Reconstruction	79,400	$17.32	$1,375,208
	T01CM	01	TAXIWAY	AC	20	Reconstruction	2,018	$17.32	$34,952
	T02CM	01	TAXIWAY	AC	35	Reconstruction	1,045	$17.32	$18,099
2025	A01CM	02	APRON	AC	59	Fog Seal	17,922	$0.31	$5,556
	T03CM	01	TAXIWAY	AC	72	Slurry Seal	7,277	$0.52	$3,784
	THGRCM	01	TAXIWAY	AC	76	Slurry Seal	33,248	$0.52	$17,289
	THGRCM	02	TAXIWAY	AC	83	Slurry Seal	13,840	$0.52	$7,197
2028	A01CM	03	APRON	PCC	42	Reconstruction	3,354	$17.32	$58,091

Abbreviations:
PCI = Pavement Condition Index, AC = Asphalt Concrete, PCC = Portland Cement Concrete

Cost Summary	
2024 Total Project Cost	$1,636,099
2025 Total Project Cost	$33,825
2026 Total Project Cost	$0
2027 Total Project Cost	$0
2028 Total Project Cost	$58,091
Total 5-Year Project Cost	**$1,728,016**

APPENDIX E

Reinspection Report

Re-Inspection Report

ODA_2023Survey_11-21-23
Generated Date 12/5/2023

Network: Chehalem **Name:** Chehalem Airpark

Branch: A01CM **Name:** Apron 01 Chehalem **Use:** APRON **Area:** 39,736 SqFt

Section: 01 of 5 **From:** T01CM **To:** Main Hangar **Last Const.:** 8/1/1990

Surface: PCC **Family:** 2023_Region1_Cat3/4/5_AllPCC **Zone:** 17S **Category:** F **Rank:** P

Area: 3,850 SqFt **Length:** 70 Ft **Width:** 55 Ft

Slabs: 20 **Slab Length:** 14 Ft **Slab Width:** 14 Ft **Joint Length:** 430 Ft

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

Section Comments:

Work Date: 8/1/1990 **Work Type:** New Construction - PCC **Code:** NC-PC **Is Major M&R:** True

Last Insp. Date: 7/1/2023 **TotalSamples:** 1 **Surveyed:** 1

Conditions: **PCI:** 51

Inspection Comments:

Sample Number: 01 **Type:** R **Area:** 20.00 Slabs **PCI:** 51

Sample Comments:

63	LINEAR CR	L	3.00	Slabs
63	LINEAR CR	L	2.00	Slabs
65	JT SEAL DMG	M	20.00	Slabs
72	SHAT. SLAB	L	1.00	Slabs
74	JOINT SPALL	L	1.00	Slabs
74	JOINT SPALL	M	1.00	Slabs
74	JOINT SPALL	M	3.00	Slabs
74	JOINT SPALL	H	2.00	Slabs
75	CORNER SPALL	L	1.00	Slabs

Network: Chehalem **Name:** Chehalem Airpark

Branch: A01CM **Name:** Apron 01 Chehalem **Use:** APRON **Area:** 39,736 SqFt

Section: 02 of 5 **From:** T02CM **To:** Airport Office **Last Const.:** 8/1/1996

Surface: AC **Family:** 2023_Region1_Cat4_Apron_AC **Zone:** 17S **Category:** F **Rank:** P

Area: 17,922 SqFt **Length:** 262 Ft **Width:** 110 Ft

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

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

Section Comments:

Work Date: 8/1/1996 **Work Type:** New Construction - AC **Code:** NC-AC **Is Major M&R:** True

Work Date: 8/1/1997 **Work Type:** Surface Treatment - Seal Coat (Global MR) **Code:** ST-SC **Is Major M&R:** False

Last Insp. Date: 7/1/2023 **TotalSamples:** 4 **Surveyed:** 3

Conditions: **PCI:** 59

Inspection Comments:

Sample Number: 01 **Type:** R **Area:** 3644.00 SqFt **PCI:** 51

Sample Comments:

41	ALLIGATOR CR	M	8.00	SqFt
48	L & T CR	M	412.00	Ft
57	WEATHERING	L	3644.00	SqFt

Sample Number: 02 **Type:** R **Area:** 5016.00 SqFt **PCI:** 55

Sample Comments:

48	L & T CR	M	467.00	Ft
52	RAVELING	H	16.00	SqFt
57	WEATHERING	L	5016.00	SqFt

Sample Number: 03 **Type:** R **Area:** 4897.00 SqFt **PCI:** 69

Sample Comments:

48	L & T CR	M	244.00	Ft
57	WEATHERING	L	4897.00	SqFt

Network: Chehalem **Name:** Chehalem Airpark

Branch: A01CM **Name:** Apron 01 Chehalem **Use:** APRON **Area:** 39,736 SqFt

Section: 03 of 5 **From:** A01CM-02 **To:** Fuel Station **Last Const.:** 8/1/1996

Surface: PCC **Family:** 2023_Region1_Cat3/4/5_AllPCC **Zone:** 17S **Category:** F **Rank:** P

Area: 3,354 SqFt **Length:** 75 Ft **Width:** 43 Ft

Slabs: 20 **Slab Length:** 13 Ft **Slab Width:** 13 Ft **Joint Length:** 390 Ft

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

Section Comments:

Work Date: 8/1/1996 **Work Type:** New Construction - PCC **Code:** NC-PC **Is Major M&R:** True

Last Insp. Date: 7/1/2023 **TotalSamples:** 1 **Surveyed:** 1

Conditions: **PCI:** 42

Inspection Comments:

Sample Number: 01 **Type:** R **Area:** 20.00 Slabs **PCI:** 42

Sample Comments:

62	CORNER BREAK	L	1.00	Slabs
62	CORNER BREAK	M	2.00	Slabs
63	LINEAR CR	L	3.00	Slabs
65	JT SEAL DMG	M	20.00	Slabs
72	SHAT. SLAB	L	5.00	Slabs
72	SHAT. SLAB	M	1.00	Slabs

Network: Chehalem **Name:** Chehalem Airpark

Branch: A01CM **Name:** Apron 01 Chehalem **Use:** APRON **Area:** 39,736 SqFt

Section: 05 of 5 **From:** T03CM-01 **To:** T03CM-01 **Last Const.:** 9/1/2012

Surface: PCC **Family:** 2023_Region1_Cat3/4/5_AllPCC **Zone:** **Category:** **Rank:** P

Area: 3,240 SqFt **Length:** 140 Ft **Width:** 20 Ft

Slabs: 8 **Slab Length:** 20 Ft **Slab Width:** 20 Ft **Joint Length:** 320 Ft

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

Section Comments:

Work Date: 9/1/2012 **Work Type:** New Construction - Initial **Code:** NC-IN **Is Major M&R:** True

Last Insp. Date: 7/1/2023 **TotalSamples:** 1 **Surveyed:** 1

Conditions: **PCI:** 58

Inspection Comments:

Sample Number: 01 **Type:** R **Area:** 8.00 Slabs **PCI:** 58

Sample Comments:

62	CORNER BREAK	L	2.00	Slabs
62	CORNER BREAK	M	1.00	Slabs
63	LINEAR CR	L	1.00	Slabs
74	JOINT SPALL	L	1.00	Slabs
75	CORNER SPALL	L	2.00	Slabs

Network: Chehalem **Name:** Chehalem Airpark

Branch: A01CM **Name:** Apron 01 Chehalem **Use:** APRON **Area:** 39,736 SqFt

Section: 04 of 5 **From:** A01CM-03 **To:** R07CM-02 **Last Const.:** 9/1/2012

Surface: PCC **Family:** 2023_Region1_Cat3/4/5_AllPCC **Zone:** **Category:** **Rank:** P

Area: 11,370 SqFt **Length:** 100 Ft **Width:** 100 Ft

Slabs: 36 **Slab Length:** 16 Ft **Slab Width:** 20 Ft **Joint Length:** 1,296 Ft

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

Section Comments:

Work Date: 9/1/2012 **Work Type:** New Construction - Initial **Code:** NC-IN **Is Major M&R:** True

Last Insp. Date: 7/1/2023 **TotalSamples:** 2 **Surveyed:** 2

Conditions: **PCI:** 54

Inspection Comments:

Sample Number: 01 **Type:** R **Area:** 18.00 Slabs **PCI:** 51

Sample Comments:

63	LINEAR CR	L	1.00	Slabs
63	LINEAR CR	L	6.00	Slabs
72	SHAT. SLAB	L	5.00	Slabs
72	SHAT. SLAB	L	3.00	Slabs

Sample Number: 02 **Type:** R **Area:** 18.00 Slabs **PCI:** 57

Sample Comments:

72	SHAT. SLAB	L	9.00	Slabs
74	JOINT SPALL	L	1.00	Slabs

Network: Chehalem **Name:** Chehalem Airpark

Branch: R07CM **Name:** Runway 07/25 Chehalem **Use:** RUNWAY **Area:** 91,400 SqFt

Section: 01 of 2 **From:** Runway 07 End (West) **To:** R07CM-02 **Last Const.:** 8/1/1996

Surface: AC **Family:** 2023_Region1_Cat4_Runway_AC **Zone:** 17S **Category:** F **Rank:** P

Area: 12,000 SqFt **Length:** 300 Ft **Width:** 40 Ft

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

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

Section Comments:

Work Date: 8/1/1996 **Work Type:** New Construction - AC **Code:** NC-AC **Is Major M&R:** True

Last Insp. Date: 7/1/2023 **TotalSamples:** 2 **Surveyed:** 2

Conditions: **PCI:** 41

Inspection Comments:

Sample Number: 01 **Type:** R **Area:** 6000.00 SqFt **PCI:** 39

Sample Comments:

48	L & T CR	L	32.00	Ft
48	L & T CR	M	248.00	Ft
48	L & T CR	M	227.00	Ft
52	RAVELING	L	50.00	SqFt
52	RAVELING	M	80.00	SqFt
57	WEATHERING	M	3000.00	SqFt
57	WEATHERING	H	3000.00	SqFt

Sample Number: 02 **Type:** R **Area:** 6000.00 SqFt **PCI:** 42

Sample Comments:

48	L & T CR	L	228.00	Ft
48	L & T CR	L	100.00	Ft
48	L & T CR	M	200.00	Ft
48	L & T CR	M	67.00	Ft
57	WEATHERING	M	3000.00	SqFt
57	WEATHERING	H	3000.00	SqFt

Network: Chehalem **Name:** Chehalem Airpark

Branch: R07CM **Name:** Runway 07/25 Chehalem **Use:** RUNWAY **Area:** 91,400 SqFt

Section: 02 of 2 **From:** R07CM-01 **To:** Runway 25 End (East) **Last Const.:** 8/1/1996

Surface: AC **Family:** 2023_Region1_Cat4_Runway_AC **Zone:** 17S **Category:** F **Rank:** P

Area: 79,400 SqFt **Length:** 1,985 Ft **Width:** 40 Ft

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

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

Section Comments:

Work Date: 8/1/1996 **Work Type:** New Construction - AC **Code:** NC-AC **Is Major M&R:** True

Last Insp. Date: 7/1/2023 **TotalSamples:** 13 **Surveyed:** 5

Conditions: **PCI:** 51

Inspection Comments:

Sample Number: 02 **Type:** R **Area:** 6000.00 SqFt **PCI:** 52

Sample Comments:

41	ALLIGATOR CR	M	55.00	SqFt
48	L & T CR	L	168.00	Ft
48	L & T CR	L	68.00	Ft
48	L & T CR	M	42.00	Ft
48	L & T CR	M	124.00	Ft
52	RAVELING	H	36.00	SqFt
57	WEATHERING	M	6000.00	SqFt

Sample Number: 04 **Type:** R **Area:** 6000.00 SqFt **PCI:** 53

Sample Comments:

48	L & T CR	L	171.00	Ft
48	L & T CR	M	102.00	Ft
48	L & T CR	M	358.00	Ft
52	RAVELING	M	24.00	SqFt
57	WEATHERING	M	6000.00	SqFt

Sample Number: 06 **Type:** R **Area:** 6000.00 SqFt **PCI:** 55

Sample Comments:

48	L & T CR	L	158.00	Ft
48	L & T CR	M	100.00	Ft
48	L & T CR	M	306.00	Ft
52	RAVELING	M	40.00	SqFt
57	WEATHERING	M	6000.00	SqFt

Sample Number: 08 **Type:** R **Area:** 6000.00 SqFt **PCI:** 37

Sample Comments:

41	ALLIGATOR CR	M	6.00	SqFt
41	ALLIGATOR CR	H	2.00	SqFt
48	L & T CR	L	109.00	Ft
48	L & T CR	M	220.00	Ft
48	L & T CR	M	210.00	Ft
57	WEATHERING	M	3000.00	SqFt
57	WEATHERING	H	3000.00	SqFt

Sample Number: 11 **Type:** R **Area:** 6000.00 SqFt **PCI:** 60

Sample Comments:

48	L & T CR	L	40.00	Ft
48	L & T CR	L	140.00	Ft
48	L & T CR	M	242.00	Ft
48	L & T CR	H	8.00	Ft
50	PATCHING	L	6.00	SqFt
57	WEATHERING	M	6000.00	SqFt

Network: Chehalem **Name:** Chehalem Airpark

Branch: T01CM **Name:** Taxiway 01 Chehalem **Use:** TAXIWAY **Area:** 2,018 SqFt

Section: 01 of 1 **From:** Runway 07/25 **To:** A01CM-01 **Last Const.:** 8/1/1996

Surface: AC **Family:** 2023_Region1_Cat4_Taxiway_AC **Zone:** 17S **Category:** F **Rank:** P

Area: 2,018 SqFt **Length:** 70 Ft **Width:** 25 Ft

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

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

Section Comments:

Work Date: 8/1/1996 **Work Type:** New Construction - AC **Code:** NC-AC **Is Major M&R:** True

Last Insp. Date: 7/1/2023 **TotalSamples:** 1 **Surveyed:** 1

Conditions: **PCI:** 20

Inspection Comments:

Sample Number: 01 **Type:** R **Area:** 2018.00 SqFt **PCI:** 20

Sample Comments:

48	L & T CR	L	27.00	Ft
48	L & T CR	M	68.00	Ft
52	RAVELING	H	1009.00	SqFt
57	WEATHERING	H	1009.00	SqFt

Network: Chehalem **Name:** Chehalem Airpark

Branch: T02CM **Name:** Taxiway 02 Chehalem **Use:** TAXIWAY **Area:** 1,045 SqFt

Section: 01 of 1 **From:** Runway 07/25 **To:** A01CM-02 **Last Const.:** 8/1/1996

Surface: AC **Family:** 2023_Region1_Cat4_Taxiway_AC **Zone:** 17S **Category:** F **Rank:** P

Area: 1,045 SqFt **Length:** 38 Ft **Width:** 25 Ft

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

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

Section Comments:

Work Date: 8/1/1996 **Work Type:** New Construction - AC **Code:** NC-AC **Is Major M&R:** True

Last Insp. Date: 7/1/2023 **TotalSamples:** 1 **Surveyed:** 1

Conditions: **PCI:** 35

Inspection Comments:

Sample Number: 01 **Type:** R **Area:** 1045.00 SqFt **PCI:** 35

Sample Comments:

41	ALLIGATOR CR	M	66.00	SqFt
48	L & T CR	L	101.00	Ft
52	RAVELING	M	66.00	SqFt
57	WEATHERING	M	1045.00	SqFt

Network: Chehalem **Name:** Chehalem Airpark

Branch: T03CM **Name:** Taxiway 03 **Use:** TAXIWAY **Area:** 7,277 SqFt

Section: 01 of 1 **From:** R07CM-02 **To:** A01CM-05 **Last Const.:** 9/1/2000

Surface: AC **Family:** 2023_Region1_Cat4_Taxiway_AC **Zone:** **Category:** **Rank:** P

Area: 7,277 SqFt **Length:** 230 Ft **Width:** 25 Ft

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

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

Section Comments:

Work Date: 9/1/2000 **Work Type:** New Construction - Initial **Code:** NC-IN **Is Major M&R:** True

Last Insp. Date: 7/1/2023 **TotalSamples:** 1 **Surveyed:** 1

Conditions: **PCI:** 72

Inspection Comments:

Sample Number: 01 **Type:** R **Area:** 7277.00 SqFt **PCI:** 72

Sample Comments:

48	L & T CR	L	160.00	Ft
48	L & T CR	M	185.00	Ft
57	WEATHERING	L	7277.00	SqFt

Network: Chehalem **Name:** Chehalem Airpark

Branch: THGRCM **Name:** Hangar Taxiways Chehalem **Use:** TAXIWAY **Area:** 47,088 SqFt

Section: 01 of 2 **From:** Runway 07/25 **To:** Hangars **Last Const.:** 8/1/1999

Surface: AC **Family:** 2023_Region1_Cat4_Taxiway_AC **Zone:** 17S **Category:** F **Rank:** S

Area: 33,248 SqFt **Length:** 323 Ft **Width:** 136 Ft

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

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

Section Comments:

Work Date: 8/1/1999 **Work Type:** New Construction - AC **Code:** NC-AC **Is Major M&R:** True

Last Insp. Date: 7/1/2023 **TotalSamples:** 6 **Surveyed:** 4

Conditions: **PCI:** 76

Inspection Comments:

Sample Number: 01 **Type:** R **Area:** 3518.00 SqFt **PCI:** 78

Sample Comments:

48	L & T CR	L	28.00	Ft
48	L & T CR	M	55.00	Ft
57	WEATHERING	L	3518.00	SqFt

Sample Number: 03 **Type:** R **Area:** 5619.00 SqFt **PCI:** 73

Sample Comments:

48	L & T CR	M	144.00	Ft
48	L & T CR	M	59.00	Ft
57	WEATHERING	L	5619.00	SqFt

Sample Number: 04 **Type:** R **Area:** 3640.00 SqFt **PCI:** 81

Sample Comments:

48	L & T CR	L	20.00	Ft
48	L & T CR	M	40.00	Ft
57	WEATHERING	L	3640.00	SqFt

Sample Number: 05 **Type:** R **Area:** 5479.00 SqFt **PCI:** 75

Sample Comments:

48	L & T CR	L	69.00	Ft
48	L & T CR	M	107.00	Ft
57	WEATHERING	L	5479.00	SqFt

Network: Chehalem **Name:** Chehalem Airpark

Branch: THGRCM **Name:** Hangar Taxiways Chehalem **Use:** TAXIWAY **Area:** 47,088 SqFt

Section: 02 of 2 **From:** THGRCM-01 **To:** THGRCM-01 **Last Const.:** 9/1/2004

Surface: AC **Family:** 2023_Region1_Cat4_Taxiway_AC **Zone:** **Category:** **Rank:** P

Area: 13,840 SqFt **Length:** 240 Ft **Width:** 60 Ft

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

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

Section Comments:

Work Date: 9/1/2004 **Work Type:** New Construction - Initial **Code:** NC-IN **Is Major M&R:** True

Last Insp. Date: 7/1/2023 **TotalSamples:** 3 **Surveyed:** 3

Conditions: **PCI:** 83

Inspection Comments:

Sample Number: 01 **Type:** R **Area:** 3251.00 SqFt **PCI:** 75

Sample Comments:

48	L & T CR	L	171.00	Ft
48	L & T CR	M	11.00	Ft
57	WEATHERING	L	3251.00	SqFt

Sample Number: 02 **Type:** R **Area:** 5296.00 SqFt **PCI:** 86

Sample Comments:

48	L & T CR	L	133.00	Ft
57	WEATHERING	L	5296.00	SqFt

Sample Number: 03 **Type:** R **Area:** 5293.00 SqFt **PCI:** 85

Sample Comments:

48	L & T CR	L	52.00	Ft
48	L & T CR	L	116.00	Ft
57	WEATHERING	L	5293.00	SqFt

APPENDIX F

Work History Report

Pavement Database: ODA_2023Survey_MASTER DB-12-11-2023_4pm

Network: Chehalem Airpark **Branch:** A01CM Apron 01 Chehale **Section:** 01 **Surface:**PCC
L.C.D. 8/1/1990 **Use:** APRON **Rank:** P **Length:** 70.00 (Ft) **Width:** 55.00 (Ft) **True Area:** 3850 (SqFt)

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
8/1/1990	NC-PC	New Construction - PCC	0.00	0.00	☑	Unknown Date & X-Section

Network: Chehalem Airpark **Branch:** A01CM Apron 01 Chehale **Section:** 02 **Surface:**AC
L.C.D. 8/1/1996 **Use:** APRON **Rank:** P **Length:** 262.00 (Ft) **Width:** 110.00 (Ft) **True Area:** 17922 (SqFt)

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
8/1/1997	ST-SC	Surface Treatment - Seal Coat (Global MR)	0.00	0.10	☐	Type Unknown
8/1/1996	NC-AC	New Construction - AC	0.00	0.00	☑	Unknown X-Section

Network: Chehalem Airpark **Branch:** A01CM Apron 01 Chehale **Section:** 03 **Surface:**PCC
L.C.D. 8/1/1996 **Use:** APRON **Rank:** P **Length:** 74.50 (Ft) **Width:** 42.50 (Ft) **True Area:** 3354 (SqFt)

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
8/1/1996	NC-PC	New Construction - PCC	0.00	0.00	☑	Unknown Date & X-Section

Network: Chehalem Airpark **Branch:** A01CM Apron 01 Chehale **Section:** 04 **Surface:**PCC
L.C.D. 9/1/2012 **Use:** APRON **Rank:** P **Length:** 100.00 (Ft) **Width:** 100.00 (Ft) **True Area:** 11370 (SqFt)

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
9/1/2012	NC-IN	New Construction - Initial	0.00	0.00	☑	

Network: Chehalem Airpark **Branch:** A01CM Apron 01 Chehale **Section:** 05 **Surface:**PCC
L.C.D. 9/1/2012 **Use:** APRON **Rank:** P **Length:** 140.00 (Ft) **Width:** 20.00 (Ft) **True Area:** 3240 (SqFt)

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
9/1/2012	NC-IN	New Construction - Initial	0.00	0.00	☑	

Network: Chehalem Airpark **Branch:** R07CM Runway 07/25 Che **Section:** 01 **Surface:**AC
L.C.D. 8/1/1996 **Use:** RUNWAY **Rank:** P **Length:** 300.00 (Ft) **Width:** 40.00 (Ft) **True Area:** 12000 (SqFt)

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
8/1/1996	NC-AC	New Construction - AC	0.00	0.00	☑	Unknown X-Section

Network: Chehalem Airpark **Branch:** R07CM Runway 07/25 Che **Section:** 02 **Surface:**AC
L.C.D. 8/1/1996 **Use:** RUNWAY **Rank:** P **Length:** 1,985.00 (Ft) **Width:** 40.00 (Ft) **True Area:** 79400 (SqFt)

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
8/1/1996	NC-AC	New Construction - AC	0.00	0.00	☑	Unknown X-Section

Network: Chehalem Airpark **Branch:** T01CM Taxiway 01 Chehal **Section:** 01 **Surface:**AC
L.C.D. 8/1/1996 **Use:** TAXIWAY **Rank:** P **Length:** 70.00 (Ft) **Width:** 25.00 (Ft) **True Area:** 2018 (SqFt)

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
8/1/1996	NC-AC	New Construction - AC	0.00	0.00	☑	Unknown X-Section

Network: Chehalem Airpark **Branch:** T02CM Taxiway 02 Chehal **Section:** 01 **Surface:** AC
L.C.D. 8/1/1996 **Use:** TAXIWAY **Rank:** P **Length:** 37.50 (Ft) **Width:** 25.00 (Ft) **True Area:** 1045 (SqFt)

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
8/1/1996	NC-AC	New Construction - AC	0.00	0.00	☑	Unknown X-Section

Network: Chehalem Airpark **Branch:** T03CM Taxiway 03 **Section:** 01 **Surface:** AC
L.C.D. 9/1/2000 **Use:** TAXIWAY **Rank:** P **Length:** 230.00 (Ft) **Width:** 25.00 (Ft) **True Area:** 7277 (SqFt)

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
9/1/2000	NC-IN	New Construction - Initial	0.00	0.00	☑	

Network: Chehalem Airpark **Branch:** THGRCM Hangar Taxiways **Section:** 01 **Surface:** AC
L.C.D. 8/1/1999 **Use:** TAXIWAY **Rank:** S **Length:** 323.00 (Ft) **Width:** 136.00 (Ft) **True Area:** 33248 (SqFt)

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
8/1/1999	NC-AC	New Construction - AC	0.00	0.00	☑	Unknown X-Section

Network: Chehalem Airpark **Branch:** THGRCM Hangar Taxiways **Section:** 02 **Surface:** AC
L.C.D. 9/1/2004 **Use:** TAXIWAY **Rank:** P **Length:** 240.00 (Ft) **Width:** 60.00 (Ft) **True Area:** 13840 (SqFt)

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
9/1/2004	NC-IN	New Construction - Initial	0.00	0.00	☑	

Summary:

Work Description	Section Count	Area Total (SqFt)	Thickness Avg (in)	Thickness STD (in)
New Construction - AC	6	145,633.00	0.00	0.00
New Construction - Initial	4	35,727.00	0.00	0.00
New Construction - PCC	2	7,204.00	0.00	0.00
Surface Treatment - Seal Coat (Global MR)	1	17,922.00	0.10	0.00