

# Alabama Statewide Airport Pavement Management Program Update



**Isbell Field (4A9)**

**Final Report**

**February 2022**



Submitted to

**Alabama Aeronautics Bureau**

Submitted by



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**Pavement Management – Evaluation – Testing - Design**

**ALABAMA STATEWIDE AIRPORT PAVEMENT MANAGEMENT  
PROGRAM UPDATE**

**Isbell Field (4A9)**

FINAL REPORT

Prepared For:

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## Executive Summary

The Aviation Inc. team, which included All About Pavements, Inc., (API) was awarded a contract by the Alabama Department of Transportation’s Aeronautics Bureau (ALDOT) in 2018 to update the existing Alabama Statewide Airport Pavement Management Program (APMP). The scope of this project includes the airside pavement network at Isbell Field (4A9).

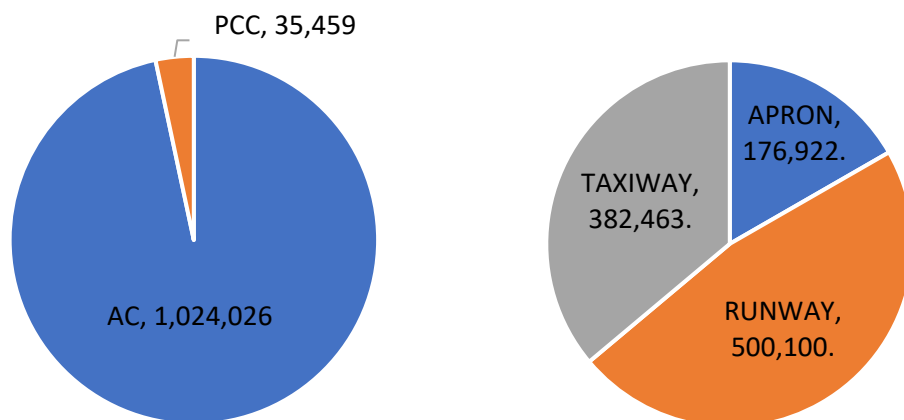
The following APMP tasks were completed to achieve the project objectives at 4A9:

- Update the PAVER work history with records review information provided by ALDOT
- Conduct a visual pavement condition survey of the airfield pavements
- Update the PAVER database with inventory and condition data
- Update Maintenance and Rehabilitation (M&R) policies and unit costs
- Develop a 7-Year Pavement Capital Improvement Program (PCIP) with associated cost estimates

### ES.1 Pavement Inventory

There are 7 branches and 10 sections within 4A9’s pavement network with a total surface area of approximately 1.06 million square feet (sf). Figure ES-1 shows the distribution of the pavement network by surface type and branch use.

**Figure ES-1: Pavement Area (sf) by Surface Type and Branch Use.**



### ES.2 Pavement Condition

Visual pavement inspections were conducted in October 2018 using the Pavement Condition Index (PCI) method as specified in ASTM D5340-12 and FAA AC 150/5380-6C. The PCI is a numerical rating scale from 0 to 100 that provides a measure of the pavement’s functional surface condition. The overall area-

weighted network PCI (AW PCI) for the 4A9 pavement network is 79, representing a “Satisfactory” condition. The network area-weighted pavement age (AW Age) is 13 years.

Table ES-1 is a listing of the section PCI values and ratings.

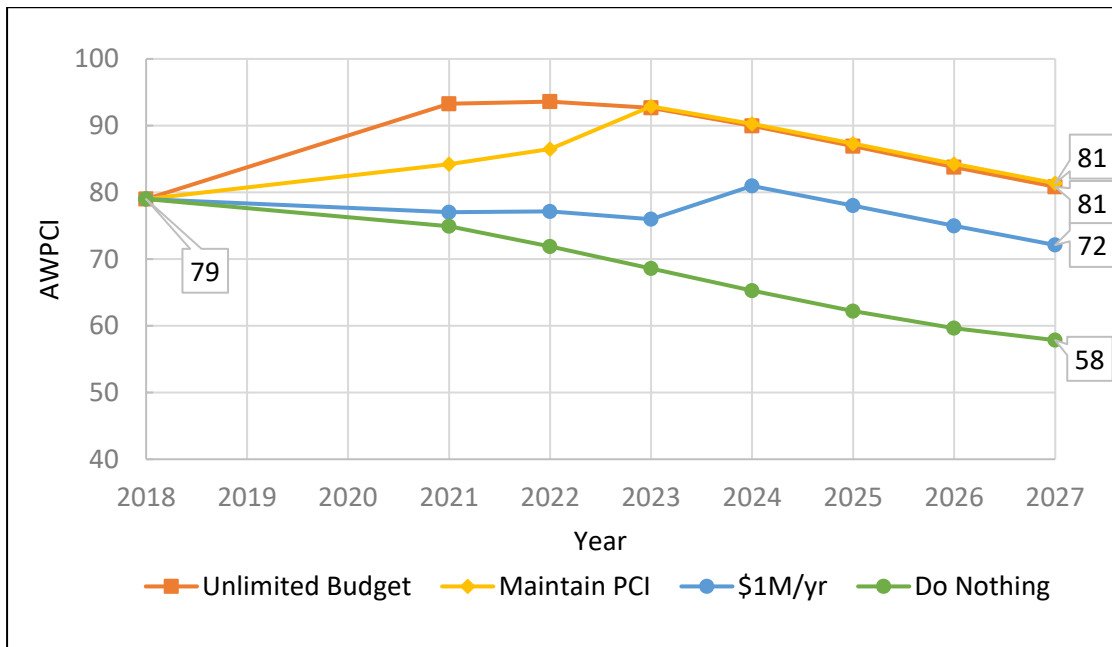
**Table ES-1: 4A9 Section PCI Values and Ratings.**

Branch ID	Name	Section ID	Surface	Area, sf	PCI	PCI Category
A01	Apron 01	01	AC	176,922	51	Poor
R0422	Runway 04-22	01	AC	500,100	94	Good
TA	Taxiway A	01	AC	190,807	98	Good
TA1	Taxiway A1	01	AC	10,702	96	Good
TA2	Taxiway A2	01	AC	11,575	96	Good
THANG01	Taxiway Hangar 01	01	AC	27,451	53	Poor
THANG01	Taxiway Hangar 01	02	AC	18,330	72	Satisfactory
THANG01	Taxiway Hangar 01	03	PCC	6,879	90	Good
THANG02	Taxiway Hangar 02	01	AC	88,139	27	Very Poor
THANG02	Taxiway Hangar 02	02	PCC	28,580	24	Serious

### ES.3 Pavement Maintenance and Repair Funding Levels

The PAVER database was updated with 2018 condition data, maintenance and repair (M&R) policies, and unit costs; which were then used to evaluate the effect of multiple funding levels on the overall future pavement condition. Figure ES-2 presents the forecasted 4A9 network PCI values for each funding level.

**Figure ES-2: M&R Funding Levels.**





### ES.4 Pavement Capital Improvement Program (PCIP)

The analysis output from the unlimited funding budget scenario was used as a starting point in developing the PCIP. For this scenario, sections were grouped into projects to allow for a logical construction sequence. Table ES-2 summarizes the 7-year PCIP, which has an estimated total cost of approximately \$2.7 million. These recommendations are based on a network-level evaluation. Project-level evaluations should be conducted prior to developing design and bid package documents.

**Table ES-2: Summary of Pavement Capital Improvement Program.**

Project Year	CIP Project	Total Project Cost	Total Project Area (sf)	AWPCI Before	AWPCI After
2021	4A9_21-01_Runway 04-22 Preservation	\$291,271	500,100	89	94
	4A9_21-02_Apron Rehabilitation	\$943,974	176,922	46	100
	4A9_21-03_Taxiway Hangar 01 Reconstruction	\$335,678	45,781	53	100
2022	4A9_22-01_Taxiway Hangar 02 Reconstruction	\$850,749	88,139	16	100
2023	4A9_23-01_Taxiway A Preservation	\$198,160	213,084	89	96
2024	4A9_24-01_Apron Surface Treatment	\$112,599	176,922	93	98
<b>Total</b>		<b>\$2,732,431</b>			

In addition to the major rehabilitation needs that are identified in the PCIP, PAVER was used to develop maintenance activities to repair specific PCI distresses in Year 1. The estimated costs for these maintenance activities are \$269,575 as summarized in Table ES-3.

**Table ES-3: Summary of Localized Maintenance Plan.**

Policy	Work Description	Work Quantity	Work Unit	Work Cost
Preventive	Crack Sealing - AC	198	Ft	\$784
	Joint Seal (Localized)	1,239	Ft	\$13,790
	Patching - AC Full-Depth	90	SqFt	\$2,257
Safety	Crack Sealing - PCC	425	Ft	\$3,549
	Patching - AC Full-Depth	3,539	SqFt	\$88,657
	Patching - PCC Full Depth	82	SqFt	\$3,994
	Slab Replacement - PCC	5,625	SqFt	\$156,544
<b>Total</b>				<b>\$269,575</b>

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# 1 Introduction

## 1.1. Overview

The Alabama Department of Transportation's Aeronautics Bureau (ALDOT) is responsible for preserving and enhancing Alabama's air transportation system, which consists of 72 airports throughout the State. ALDOT implemented an Airport Pavement Management Program (APMP) in 2008 using the PAVER system. ALDOT awarded a project in 2018 to Jviation Inc. (Jviation) to update the System Plan and conduct an Economic Analysis for the Alabama airports. The scope of work also included an update of the APMP for 59 airports, which was conducted by All About Pavements, Inc., (API), a Jviation team member.

With this update of the APMP, the Alabama airports continue to be eligible for FAA funding for major pavement rehabilitation work under the Airport Improvement Program (AIP) since an APMP meets the pavement maintenance management requirements described in Appendix A of AC 150/5380-6C.

This report discusses the evaluation of the airside pavements at Isbell Field (4A9), the current and forecasted pavement condition, and the development of the Pavement Capital Improvement Program (PCIP).

## 1.2. Work Scope

The goals of the Alabama Statewide Airport Pavement Management Update program are as follows:

- Conduct a visual pavement inspection of the asphalt surfaced pavements for 59 of the 72 public use airports in Alabama.
- Based on the visual inspection analysis results, develop a 7-year PCIP for each airport.

The scope of work is as shown below:

- Conduct a Records Review
- Update Pavement Network Definition
- Conduct Pavement Condition Surveys
- Update and customize existing APMP PAVER database
- Develop PCIP and associated project cost estimates
- Prepare Draft and Final Reports
- Develop a web-based viewer for reporting APMP data

As required in the Scope of Work, a detailed pavement condition survey was not conducted for any Portland Cement Concrete (PCC) aprons and PCC taxiways longer than 2,000 ft. Instead, a condition rating of "Good", "Fair", or "Poor" was assigned based on the overall pavement condition.

The deliverable products include a PAVER 7.0 database, individual airport evaluation reports, a statewide summary report, and the web viewer. The 4A9 report will be one of the 59 individual airport reports that will be available on ALDOT's website.





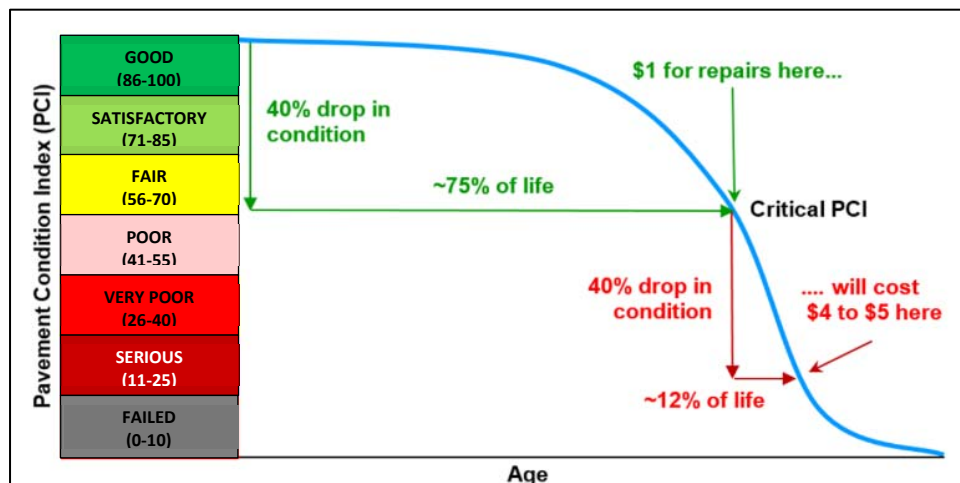
### 1.3. Pavement Management Concept

An APMP provides an integrated framework for comprehensive evaluation and decision making for managing airfield pavements. The essential components of an effective APMP provide for an objective evaluation of the condition of existing pavements, identification of short-term and long-range major rehabilitation work, necessary improvements in the pavement structural capacity, and the recurring maintenance work that should be completed each year. The APMP will also provide a budget for each of these types of pavement construction.

Historically, most organizations have made maintenance decisions based on past experience, without the benefit of documented data or analysis. This practice does not encourage life cycle cost analysis, nor the evaluation of cost effectiveness of alternate scenarios, and can lead to the inefficient use of funds. With limited allocated funding for Maintenance and Repair (M&R) Program projects, a defined procedure for setting priorities and schedules that will maximize the funds available is more important than ever.

In examining the lifespan of a 20-year pavement, a “Good” to “Fair” condition rating may last only 5 to 15 years. After that point, the rate of deterioration of pavements accelerates sharply as the age of the pavement increases, and within five years, the pavement may deteriorate to the point of failure. In order to extend pavement life, maintenance and repairs need to be scheduled and performed before the pavement surface declines to a “fair” condition. The point at which rehabilitation can be done before the steep decline occurs is called the “critical PCI”, and is generally considered to occur when the Pavement Condition Index (PCI) is between 60 and 70 for general aviation airports. If the work is done before deterioration accelerates, the cost of rehabilitation can be reduced as shown in Figure 1.1.

Figure 1.1: Pavement Management Concept.



## 2 Airfield Pavement Inventory

### 2.1. Introduction

4A9 is a General Aviation (GA) airport located approximately 2 miles north of Fort Payne. The airport was activated in January 1959 and is owned and operated by the City of Fort Payne. Figure 2.1 shows an aerial image of the airport.

**Figure 2.1: Isbell Field.**



(Source: Google Earth)

### 2.2. Pavement Inventory

4A9 consists of one runway, a parallel taxiway, two connector taxiways, and an apron. The total pavement area is approximately 1.06 million square feet. The pavements at 4A9 include Asphalt Concrete (AC) and Portland Cement Concrete (PCC). A complete listing of the pavement sections is included in Appendix A. Runway 04-22 is 5,001 ft. long and 100 ft. wide.

A records search was undertaken to identify any preservation or rehabilitation work that has occurred at Isbell Field since the last APMP update in 2009. The following records that were provided by ALDOT were reviewed, and the PAVER database was updated with work history information:

- Runway 04/22 Rehabilitation, 2015
- Rehabilitate Parallel Taxiway and Taxiway Connectors, 2016

### 2.3. Climatic Conditions

Table 3.1 provides a summary of the climatic data for the geographic region that includes 4A9. As the table shows, the pavements at 4A9 are exposed to freeze-thaw cycles from December to February. The mean air temperature for January ranges from an average low of 26 degrees °F to an average high of 48 degrees °F. The average annual rainfall at 4A9 is near 58 inches.



**Table 2.1: Average Annual Temperatures and Rainfall for 4A9.**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
High Temp (°F )	48	53	61	70	77	84	88	87	82	72	61	51
Low Temp (°F )	26	28	35	42	52	60	65	64	57	44	36	29
Precip. ( in )	6.1	5.6	6.6	4.7	4.7	4.3	5.2	3.5	4.3	3.3	5.0	5.1

Source: [www.intellicast.com](http://www.intellicast.com)

#### 2.4. Pavement Network Definition

A key element in developing an APMP system is defining the pavement network, which is the process of dividing an agency’s pavements into a hierarchical order that facilitates inspection and M&R planning. The 4A9 network (e.g. all airside pavements) is then divided into branches, which are a readily identifiable part of the pavement system and have distinct functions. For airports, branches typically consist of individual runways, taxiways and aprons. Figure B1A in Appendix B shows the branches at 4A9.

Once branches have been defined, pavement evaluation and analysis techniques require the airfield pavement system to be broken up into discrete sections. A pavement “section” is the smallest management unit that is used when considering the application and selection of maintenance and rehabilitation (M&R) treatments, and is defined in Section 2.1.8 of ASTM D 5340-12 as *“a contiguous pavement area having uniform construction, maintenance, usage history, and condition. A section should also have the same traffic volume and load intensity.”* A complete list of the pavement inventory and the corresponding section designations are included in Appendix A. Figure B1B presents the section layout.

To facilitate the visual survey of the airside pavement, each section is further subdivided into conveniently defined sub-section areas, or sample units. Similar sizing is critical as studies have found that maintaining the size of the sample units to within 40 percent of the established norm may reduce the standard error of the average PCI values. To meet that criteria, ASTM recommends that sample units for asphalt pavements be 5,000 square feet (± 2,000).

Table 2.2 was used as a guideline in developing sampling rates that reflect typical rates that are used for other large pavement networks. In general, this sampling rate will not provide a 95% confidence level with a standard error of 5 PCI points. A higher level of sampling is recommended before a project-level rehabilitation design is developed for a pavement section or facility.

Sample units that include a one-time occurrence of a distress (i.e. a large patch) or an unusual severity or quantity of a distress seen elsewhere, were designated as “additional” sample units as described in the ASTM D5340 PCI procedure. This allows the PCI to be calculated without extrapolating the aberrant distress throughout the section as a whole. In Appendix B, Figure B1C shows the sample unit layout for 4A9.



**Table 2.2: PCI Sampling Rate for AC Surfaces.**

Total Samples	Samples to Inspect
1	1
2	2
3 – 6	3
7 – 13	4
14 – 39	5
> 39	15 percent, but less than 12

## 2.5. Inventory Summary

There are 7 branches (facilities) at 4A9 that include 10 pavement sections and a total area of approximately 1.06 million square feet of paved surfaces, as shown in Table 2.3.

**Table 2.3: 4A9 Pavement Branches.**

Branch ID	Branch Name	Branch Use	Area, sf	Number of Sections
A01	Apron 01	APRON	176,922	1
R0422	Runway 04-22	RUNWAY	500,100	1
TA	Taxiway A	TAXIWAY	190,807	1
TA1	Taxiway A1	TAXIWAY	10,702	1
TA2	Taxiway A2	TAXIWAY	11,575	1
THANG01	Taxiway Hangar 01	TAXIWAY	52,660	3
THANG02	Taxiway Hangar 02	TAXIWAY	116,719	2
<b>Total</b>			<b>1,059,485</b>	<b>10</b>

Table 2.4 shows the distribution of airfield pavement by age with the area-weighted age being 13 years for all airside pavements at 4A9.

**Table 2.4: 4A9 Pavement Age.**

Age (Years)	Number of Sections	Percent of Area	Area, sf
0 – 5	4	67	713,184
6 – 10	0	0	0
11 – 15	2	2	25,209
16 – 20	1	3	27,451
> 20	3	28	293,641

Figure 2.2 shows the distribution by surface type. Figure 2.3 presents the distribution by pavement use (e.g. runway, taxiway, and apron).



Figure 2.2: 4A9 Pavement Area by Surface Type.

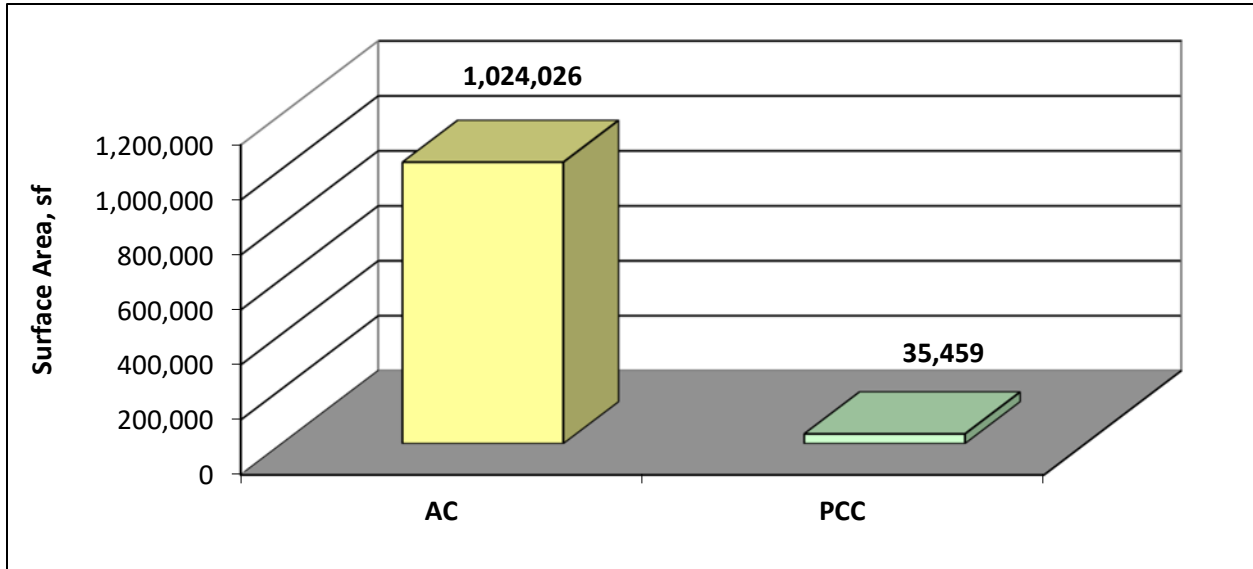
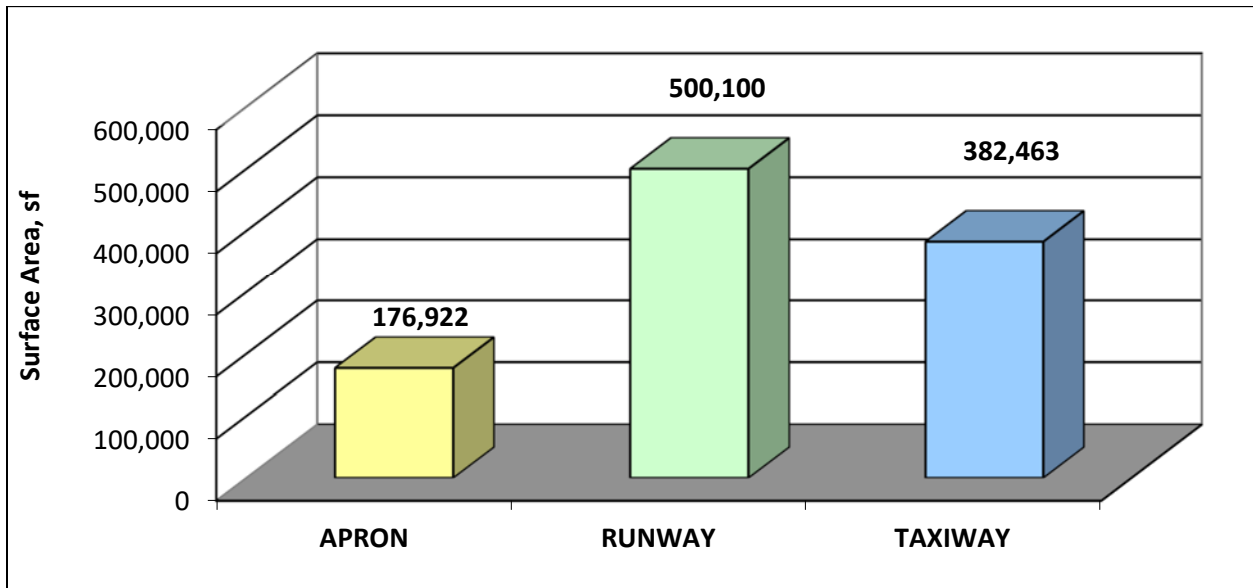


Figure 2.3: 4A9 Pavement Area by Branch Use.



Maps B1D, B1E, and B1F show the pavement type, branch use, and pavement age, respectively.

## 3 Pavement Condition

### 3.1. Introduction

A visual PCI survey of the airside pavements at 4A9 was conducted in order to assist in the development of a realistic PCIP. The PCI survey measures and records pavement distresses that exist within each of the inspected sample units. This survey was conducted at 4A9 in October 2018 by a two 2-person team. The survey was performed in accordance with the methods described in ASTM D 5340-12 and FAA AC 150/5380-7B, using the sampling rates from Chapter 2 of this API report.

During the pavement survey, Quality Control (QC) and data verification were performed on both the individual distresses and the calculated section PCI values. QC included the following activities;

- Review of distress quantities to identify data entry errors (100% review at the sample unit level). General guidance was used from ASTM D5340-12, section 13, which addresses the precision of distress quantities that are recorded during PCI surveys.
- Duplicate surveys were performed to ensure consistency between each of the inspectors in a 2-person PCI survey team.

### 3.2. Pavement Condition Rating Methodology

The PCI is a measure of the pavement's functional surface condition. It provides insight into the causes of each distress, and whether the distress is primarily caused by load, climatic conditions, and other material related deficiencies. The PCI is a numerical rating (on a scale of 0 to 100) that is based on the type, severity and quantity of each distress that is found in an inspected sample unit.

The PCI survey results are displayed using seven categories and ratings in accordance with the ASTM, but can also be presented using a simplified 3-category rating system for use in comparing with other distress related indices, as shown in Table 3.1.





**Table 3.1: Pavement Condition Index Rating Scale.**

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

### 3.3. Distress Types

The ASTM D5340 standard considers 17 distresses, which tend to fall into one of the following four cause categories:

- Load related: AC distresses include alligator cracking, corrugation, depression, polished aggregate, rutting and slippage cracking; PCC distresses include corner breaks, longitudinal cracking, divided slabs, polished aggregate, pumping and joint spalling.
- Climate and durability related: AC distresses include bleeding, block cracking, joint reflection cracking, longitudinal and transverse (L&T) cracking, swelling, raveling, and weathering; PCC distresses include blow-ups, “D” cracking, longitudinal cracking, pop-outs, pumping, scaling, shrinkage cracks, and joint and corner spalling.
- Moisture & Drainage related: AC distresses include alligator cracking, depressions, potholes and swelling; PCC distresses include corner breaks, divided slabs and pumping.
- Other factors: Oil spillage, jet blast erosion, bleeding, patching and concrete slab joint faulting.

As described above, distress may have 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, a 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 causes of the distress.

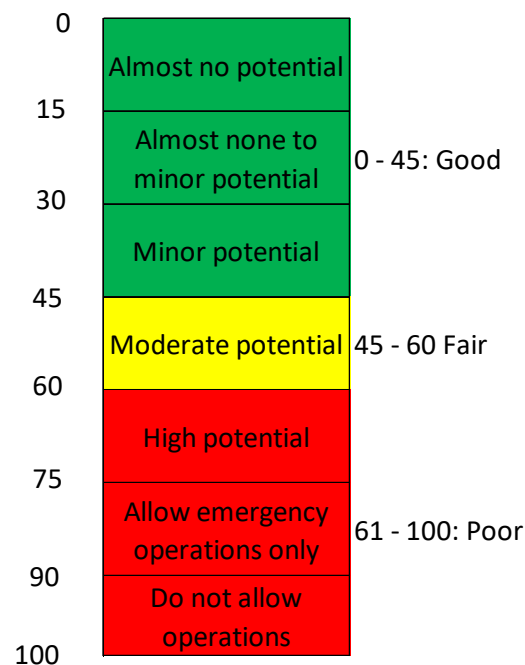
Distress descriptions provided in Appendix C were taken from the “PCI Field Manual,” developed by the U.S. Army Construction Engineering Research Lab (CERL), latest edition. Appendix C provides a detailed explanation of each type of AC and PCC surface distress.

### 3.4. Additional PCI-based Indices

The distress data used to compute PCI can also be used to calculate additional indices that are helpful in understanding the condition of the pavement and developing PCIP recommendations. One additional index that was computed is the Foreign Object Damage (FOD) potential index.

The FOD index was developed by the US Air Force and is described in detail in the US Army Corp of Engineers Engineering Technical Letter (ETL) 04-09, Pavement Engineering Assessment (EA) Standards. Loose objects on an airfield pavement surface resulting from pavement distresses can be detrimental to aircraft engines, specifically engines that are low to the ground. The objects are ingested into the engines causing costly damage and presenting a safety hazard. Not all pavement distresses create a FOD potential. Therefore, an additional index was identified that uses the results of the PCI distress survey. As shown in Figure 3.1, the scale ranges from 0 to 100 with 0 being no FOD potential. Note that the FOD index uses a simplified three color scale.

Figure 3.1: FOD Potential Rating Scale.





### 3.5. PCI Survey Results

The airside pavements at 4A9 include 10 sections with 209 sample units. The sample number of sample units that were surveyed in the field is 54, which is 26 percent of the total samples. Data from the inspected sample units were input into the PAVER database and a resultant PCI for each section was computed.

Figure 3.2 presents the area-weighted PCI by use and the overall airside network.

**Figure 3.2: Pavement Condition by Branch Use.**

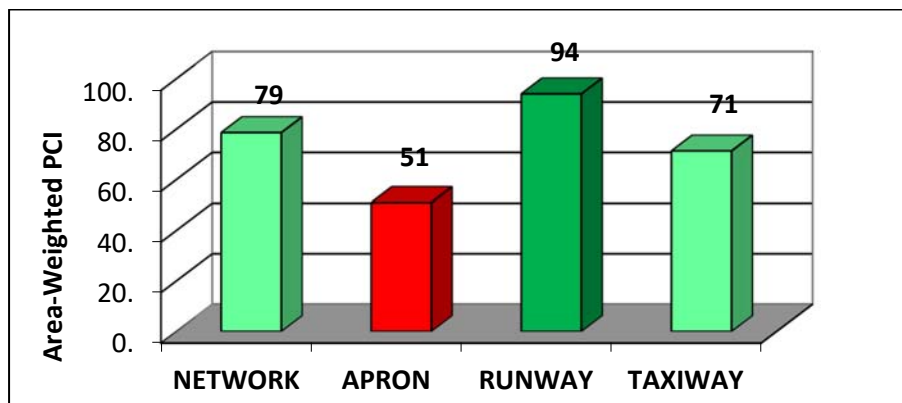


Figure 3.3 shows the distribution of the 4A9 pavement network by condition. Approximately 30 percent of the network is in “Poor” or worse condition.

**Figure 3.3: Pavement Condition by Percent of Area.**

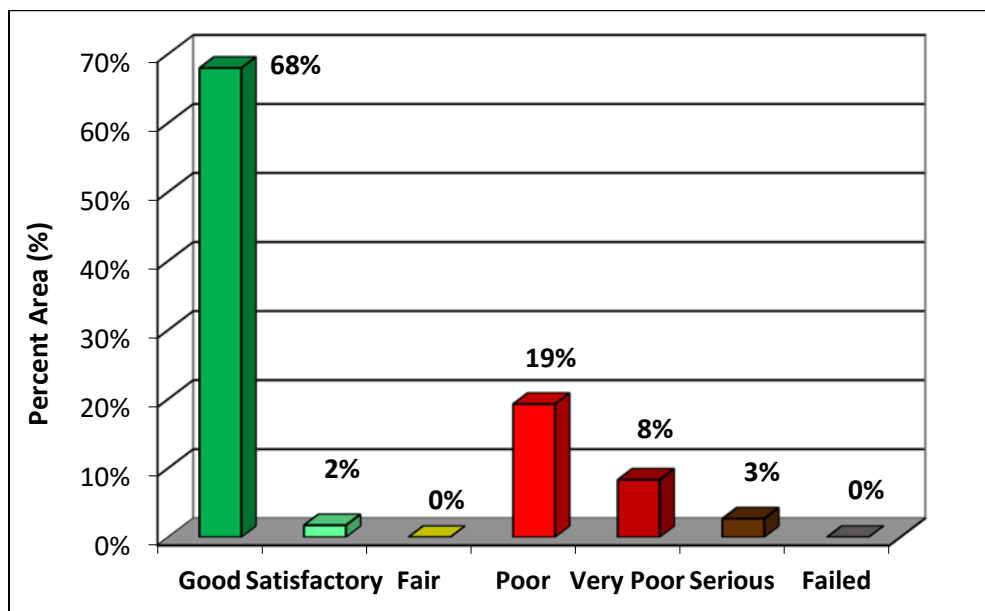


Table 3.2 is a listing of the section PCI.

**Table 3.2: Section PCI.**

Branch ID	Name	Section ID	Surface	Area, sf	PCI	PCI Category	FOD
A01	Apron 01	01	AC	176,922	51	Poor	64
R0422	Runway 04-22	01	AC	500,100	94	Good	15
TA	Taxiway A	01	AC	190,807	98	Good	11
TA1	Taxiway A1	01	AC	10,702	96	Good	13
TA2	Taxiway A2	01	AC	11,575	96	Good	13
THANG01	Taxiway Hangar 01	01	AC	27,451	53	Poor	60
THANG01	Taxiway Hangar 01	02	AC	18,330	72	Satisfactory	38
THANG01	Taxiway Hangar 01	03	PCC	6,879	90	Good	35
THANG02	Taxiway Hangar 02	01	AC	88,139	27	Very Poor	73
THANG02	Taxiway Hangar 02	02	PCC	28,580	24	Serious	85

Figure B2A and B2B in Appendix B are maps of the section PCI in 7- and 3-scale categories, respectively. Figures B2C is a map of the FOD rating. Appendix D contains a detailed report of the PCI values and distress type, quantity, and severity data for each sample unit that was surveyed in a section. Appendix E is a summary report of the extrapolated distress data at the section level.

Appendix F contains current section and branch PCI data and forecasted section PCI values. FOD values by section and branch are also presented. Figure B2D in Appendix B shows the locations of the photos that were taken during the survey. Photos are included in Appendix J.

### 3.6. PCC Pavements

As stated earlier, the project scope did not include a detailed pavement condition survey for any Portland Cement Concrete (PCC) aprons. For these pavements, a rating of “Good”, “Fair”, or “Poor” was assigned based on the overall pavement condition. Figure 3.4 shows the condition rating for the PCC aprons at 4A9.



Figure 3.4: PCC Apron Condition Rating.



## 4 Pavement Capital Improvement Program

### 4.1. Introduction

PCI data were collected and entered into the PAVER database. In addition, the database customization included the following components, which are described in detail in this chapter.

1. Performance Modeling
2. Maintenance & Repair (M&R) Triggers (Critical PCI)
3. M&R Policies
4. Unit Costs

Once the database was customized, it was used to run budget analysis scenarios and develop a 7-year PCIP.

### 4.2. Performance Modeling

To determine long-term M&R needs, a APMP must be able to predict future pavement condition. Future pavement condition is predicted using equation models that are generated from current and historical PCI data. Equation models are developed by grouping pavements based on similar performance characteristics such as region, construction history, surface type, traffic, priority and use. Mathematical techniques such as straight-line extrapolation and regression that include boundary and outlier filters are used to develop models that provide the best fit equation for the pavement condition data. PAVER's Prediction Modeling module was used to develop pavement performance models that are commonly referred to as 'Family Curves'.

Prediction models are used at the section level to compute future conditions based on the typical performance of the pavement sections that are included in each model. Future condition is computed by defining its position relative to the prediction model. The section prediction curve, or equation, is drawn through the current PCI-age point for each specific section. Since the shifted curve will run parallel to the computed prediction model, the predicted condition can be computed for any future age. Figure 4.1 is an illustration of this process.

Prediction models provide an effective way to compute future pavement performance based on past and current conditions, and pavement maintenance and rehabilitation practices. As new PCI inspection surveys are conducted, these models should be updated accordingly. In the case of the Alabama statewide airport pavement network, the best fit family curves were developed for each region by grouping pavements according to branch use (e.g. runway, taxiway) and surface type (e.g. AC, AAC, and APC). The family curves for ALDOT were developed based on branch use and are presented in Figure 4.2.



Figure 4.1: PCI Forecasting.

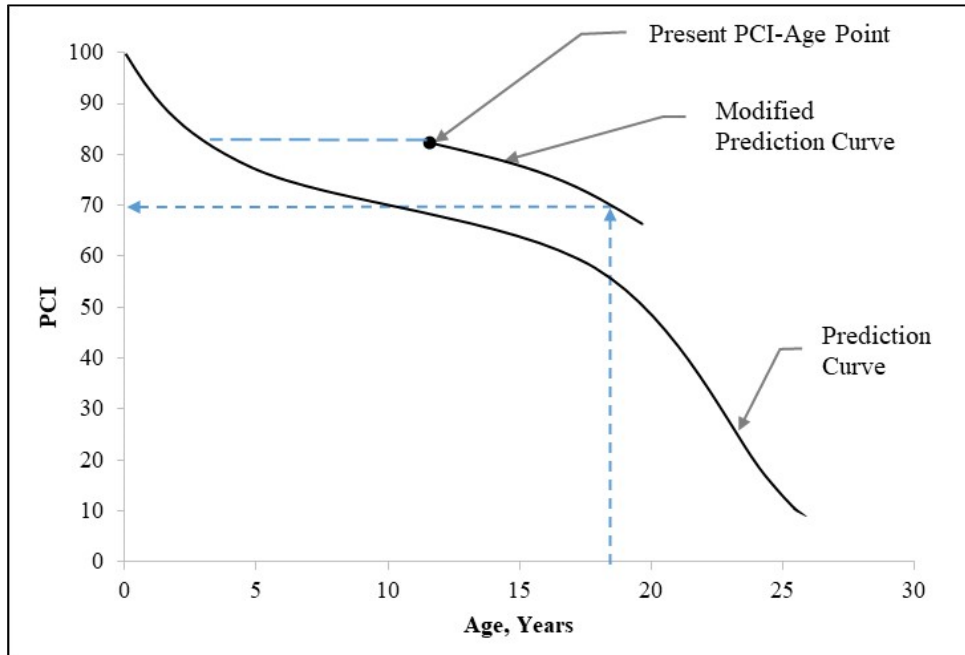
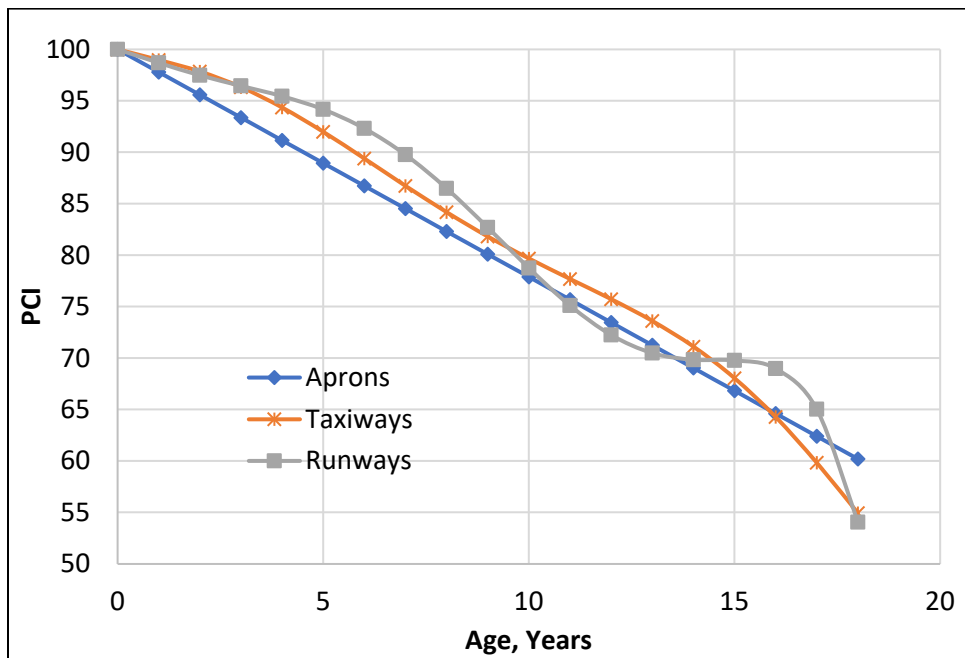


Figure 4.2: Family Curves.



### 4.3. Critical PCI Values

The Critical PCI value is defined as “*the PCI value at which the rate of PCI loss increases with time, or the cost of applying localized preventive maintenance increases significantly.*” This definition is incorporated into PAVER in defining and measuring the critical PCI values. These values, or M&R triggers, are assigned for each prediction model. As such, the critical PCI values are directly related to the branch use.

These critical PCI levels are selected based on several factors including a review of performance models; experience; other airport triggers; and acknowledge that time is required for funding approval and design. Note that preventive maintenance is recommended, and it should generally be performed above the critical PCI (trigger) values and Major M&R is generally performed below them. The critical PCI (CP) values were set at 70 for runways and taxiways, and 65 for other pavements.

### 4.4. M&R Policies and Unit Costs

M&R policies refer to the activities that are applied at different condition levels to maintain and repair a pavement section.

Maintenance activities are localized activities which are typically assigned in the first year of the M&R plan based on the observed distresses. Safety (stopgap) maintenance addresses distresses that would affect operational safety if left unrepaired and is applied to pavements below the critical PCI. Preventive maintenance activities are aimed at slowing the rate of deterioration through consistent maintenance of existing pavements and are generally applied to pavements above the critical PCI. Appendix G presents the policies for preventive and safety maintenance.

Repair activities are conducted for larger areas, typically at the section level and are assigned based on the critical PCI. Repair activities broadly consist of three categories: preservation, rehabilitation, and reconstruction. Pavement preservation involves activities like surface treatments that are used to extend pavement service life and to delay more expensive rehabilitation work. These are applied when the pavement is in relatively good condition and does not exhibit any structural distress. Rehabilitation activities are used to repair pavements below or around the critical PCI and typically include mill and overlay. Reconstruction is recommended when the pavement has deteriorated to a level where rehabilitation is no longer cost effective.

Table 4.1 lists the pavement activity types, the individual activities within each type, and their associated 2020 unit costs. A more detailed description of the M&R activities and the development of the M&R unit costs is presented in Appendix H.

In accordance with ALDOT’s focus on preservation, surface treatment is applied to all resurfaced and reconstructed runways, taxiways, and aprons three years after construction work is complete. Taxilanes and T-Hangar pavements are excluded from this requirement. This policy is applicable for projects in the PCIP between 2021 and 2024. For cost estimating, this surface treatment is assumed to have the same cost as the runway surface treatment.





**Table 4.1: M&R Activities and Unit Costs.**

Activity Type	PCI	Activity	Cost/sf
Maintenance	Note 1	Seal Cracks – AC (\$/lf)	\$3.95
		AC Full-Depth Patching	\$25.05
		AC Partial-Depth Patching	\$16.28
Preservation	75-90	Runway Surface Treatment	\$0.57
		Taxiway and Apron Surface Treatment	\$0.85
Rehabilitation	> CP	2" AC OL <sup>2</sup>	\$3.78
	55 - CP	Mill 2" & 2" AC OL	\$4.15
	45 - 55	Mill 2" & 3" AC OL	\$5.18
Reconstruction	0 - 45	AC Reconstruction	\$9.10

<sup>1</sup> Preventive > CP; Safety (Stopgap) < CP

<sup>2</sup> For sections with structural distress and PCI > CP

#### 4.5. Pavement CIP Development

The PAVER database, updated with condition data and customized with condition performance priorities, policies, and costs; was used to evaluate the effect of multiple funding levels on the overall future pavement condition. This output was further used to develop the PCIP. Figure 4.3 illustrates the process that PAVER uses in the funding analysis.

The following M&R funding levels were used for the 4A9 pavement network to help establish the 7-Year PCIP. Figure 4.4 presents the network area-weighted average PCI for each of the following funding scenarios at the end of the analysis period:

- Unlimited Funding: Unlimited funding is available for all pavement needs. The PCI increases to 81 by 2027.
- Maintain PCI: Maintain existing PCI of 79.
- Constrained Funding: This scenario constrains the funding to \$1 million each year (total of \$7 million). The PCI decreases to 72 in 2027.
- Do Nothing: Performing no M&R would reduce the network PCI from 78 to 58 by 2027.

Figure 4.3: Budget Analysis Process.

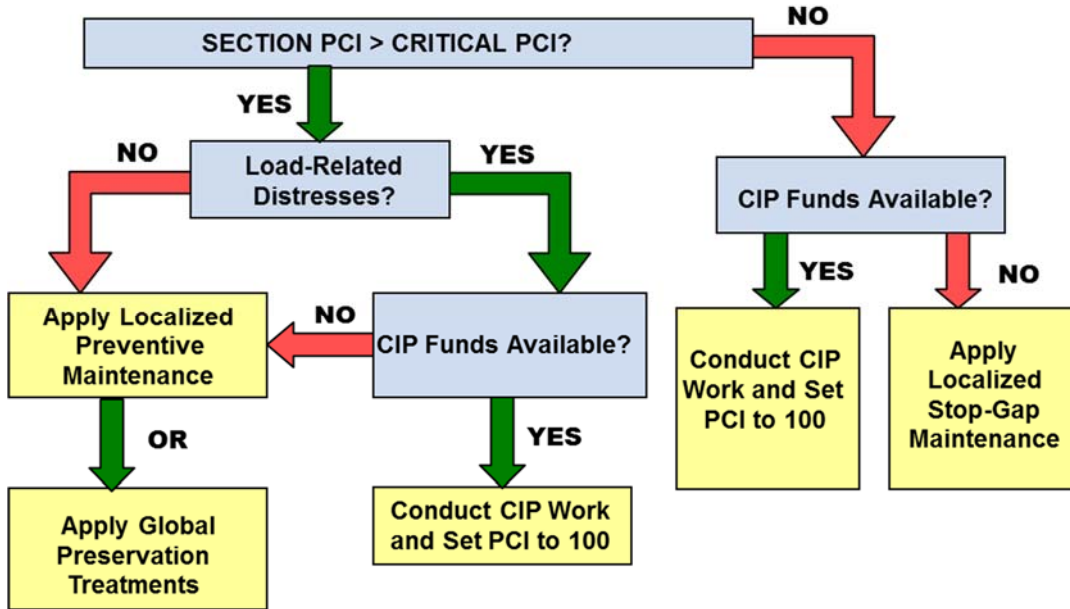


Figure 4.4: M&R Funding Levels.

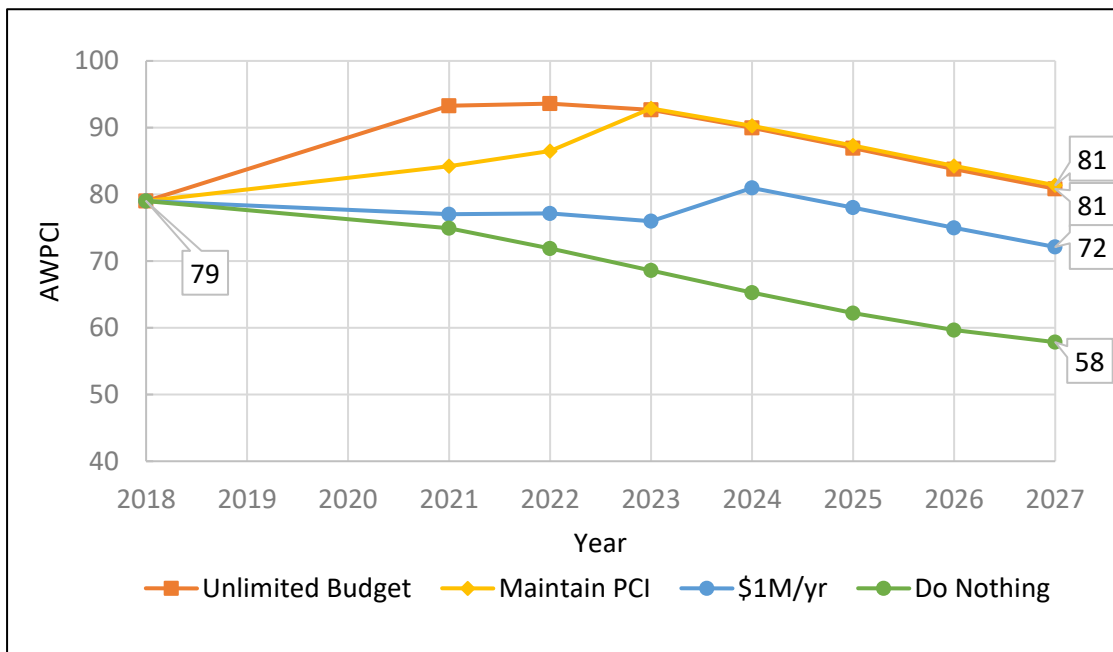


Table 4.2 summarizes the annual funding required for the above analyses. For the unlimited analysis, all pavement needs are funded in the year they are required. Therefore, the unfunded costs are zero. The total funded amount over the 7-year period is approximately \$2.8 million. For the annual funding level of \$1 million per year, funding is prioritized based on the prioritization matrix. When the needs exceed the funding for any year, the remaining sections are transferred to the succeeding year and the amount



for these activities are represented as “unfunded”. The “unfunded” repairs in 2027 for this funding level is approximately \$1.9 million.

**Table 4.2: Summary of M&R Funding Level Analyses.**

Year	Unlimited	Maintain PCI	Constrained \$1M/year	Do Nothing
2021	\$2,263,000	\$1,216,000	\$306,000	\$0
2022	\$304,000	\$644,000	\$342,000	\$0
2023	\$202,000	\$1,053,000	\$248,000	\$0
2024	\$11,000	\$11,000	\$896,000	\$0
2025	\$15,000	\$15,000	\$30,000	\$0
2026	\$20,000	\$19,000	\$42,000	\$0
2027	\$24,000	\$23,000	\$54,000	\$0
<b>Total</b>	<b>\$2,839,000</b>	<b>\$2,981,000</b>	<b>\$1,918,000</b>	<b>\$0</b>
<b>2027 Backlog</b>	<b>-</b>	<b>-</b>	<b>\$1,922,000</b>	<b>\$4,144,000</b>

Map B3A in Appendix B presents the 2027 forecasted PCI by section when the M&R activities recommended in the CIP are not conducted.

#### 4.6. Pavement Capital Improvement Program

The unlimited funding analysis contains rehabilitation activities for sections from the same branch spread out over the seven-year period, which is not always operationally feasible to construct. The analysis output was treated as a starting point in developing the CIP. Sections were often integrated together to account for construction feasibility and other factors, resulting in larger projects which were more realistic. In addition, each project could contain sections whose condition did not trigger rehabilitation but were included to provide a logical plan which would avoid creating “islands” of newer pavement within a particular feature. For example, if the PAVER analysis showed rehabilitation was required for eight out of 10 sections on a runway, the entire runway would be recommended for rehabilitation to provide a continuous new pavement surface.

Table 4.3 shows the projects and the associated costs for the recommended 7-year PCIP. Table 4.4 is a more detailed view of the PCIP. This table lists the individual pavement section, section level M&R work, section repair cost, surface area and the PCI before the M&R is applied. The costs that are presented represent an annual escalation rate of 3% for the unit costs. The total 7-year PCIP cost is approximately \$2.7 million. Map B3B shows the recommended repair types, while Map B3C presents the recommended projects and activities in the PCIP. Appendix I1 presents a summary of the recommended activities and cost by year for each section at 4A9.



Table 4.3: Summary of 7-Year PCIP by Project.

Project Year	CIP Project	Total Project Cost	Total Project Area (sf)	AWPCI Before	AWPCI After
2021	4A9_21-01_Runway 04-22 Preservation	\$291,271	500,100	89	94
	4A9_21-02_Apron Rehabilitation	\$943,974	176,922	46	100
	4A9_21-03_Taxiway Hangar 01 Reconstruction	\$335,678	45,781	53	100
2022	4A9_22-01_Taxiway Hangar 02 Reconstruction	\$850,749	88,139	16	100
2023	4A9_23-01_Taxiway A Preservation	\$198,160	213,084	89	96
2024	4A9_24-01_Apron Surface Treatment	\$112,599	176,922	93	98
<b>Total</b>		<b>\$2,732,431</b>			

Table 4.4: Summary of 7-Year PCIP by Project and Section.

Branch	Section	Area, sf	PCI Before Rehab	Activity	Activity Type	Cost
<b>4A9_21-01_Runway 04-22 Preservation</b>						<b>\$291,271</b>
R0422	01	500,100	89	Runway Surface Treatment	Preservation	\$291,271
<b>4A9_21-02_Apron Rehabilitation</b>						<b>\$943,974</b>
A01	01	176,922	46	Mill 2" & 3" AC OL	Rehabilitation	\$943,974
<b>4A9_21-03_Taxiway Hangar 01 Reconstruction</b>						<b>\$335,678</b>
THANG01	01	27,451	45	AC Reconstruction	Reconstruction	\$257,249
THANG01	02	18,330	65	Mill 2" & 2" AC OL	Rehabilitation	\$78,428
<b>4A9_22-01_Taxiway Hangar 02 Reconstruction</b>						<b>\$850,749</b>
THANG02	01	88,139	16	AC Reconstruction	Reconstruction	\$850,749
<b>4A9_23-01_Taxiway A Preservation</b>						<b>\$198,160</b>
TA	01	190,807	89	Taxiway & Apron Surface Treatment	Preservation	\$177,444
TA1	01	10,702	86	Taxiway & Apron Surface Treatment	Preservation	\$9,952
TA2	01	11,575	86	Taxiway & Apron Surface Treatment	Preservation	\$10,764
<b>4A9_24-01_Apron Surface Treatment</b>						<b>\$112,599</b>
A01	01	176,922	-	Surface Treatment	Preservation	\$112,599
<b>Total</b>						<b>\$2,732,431</b>

The FAA, under the Airport Improvement Program (AIP) provides approximately 90 percent of eligible costs for planning and development of public-use airports included in the NPIAS as grants. The remaining 10 percent of costs are shared between ALDOT and the airport sponsor. The following is the distribution of the 7-yr PCIP cost of \$2.73 million for 4A9:



- FAA (90%): \$2.45 million
- ALDOT (5%): \$0.14 million
- Airport Sponsor (5%): \$0.14 million

The recommendations within the PCIP are based on a network-level study and should be used for planning purposes only. A detailed project-level assessment should be conducted for each project to determine the appropriate repair activities and develop more accurate cost estimates.

Table 4.5 summarizes the maintenance activities that are recommended for Year 1 (2021). The estimated cost is approximately \$269,575. A complete listing of the maintenance activities by section is presented in Appendix I2. This may be used as a basis for establishing an annual maintenance budget for the 4A9 pavements.

**Table 4.5: Summary of Year-1 Maintenance Plan.**

Policy	Work Description	Work Quantity	Work Unit	Work Cost
Preventive	Crack Sealing - AC	198	Ft	\$784
	Joint Seal (Localized)	1,239	Ft	\$13,790
	Patching - AC Full-Depth	90	SqFt	\$2,257
Safety	Crack Sealing - PCC	425	Ft	\$3,549
	Patching - AC Full-Depth	3,539	SqFt	\$88,657
	Patching - PCC Full Depth	82	SqFt	\$3,994
	Slab Replacement - PCC	5,625	SqFt	\$156,544
<b>Total</b>				<b>\$269,575</b>

**APPENDIX A**  
**INVENTORY**



**Appendix A**  
**Pavement Inventory Report**  
 Isbell Field (4A9)

Branch ID	Name	Branch Use	Section ID	Rank <sup>1</sup>	Length (ft)	Width (ft)	Area (sf)	LCD <sup>2</sup>	Surface <sup>3</sup>
A01	Apron 01	APRON	01	S	700	250	176,922	8/26/1996	AC
R0422	Runway 04-22	RUNWAY	01	P	5,001	100	500,100	9/1/2015	AC
TA	Taxiway A	TAXIWAY	01	P	5,420	35	190,807	10/1/2016	AC
TA1	Taxiway A1	TAXIWAY	01	S	230	35	10,702	10/1/2016	AC
TA2	Taxiway A2	TAXIWAY	01	S	230	35	11,575	10/1/2016	AC
THANG01	Taxiway Hangar 01	TAXIWAY	01	T	403	35	27,451	6/1/2000	AC
THANG01	Taxiway Hangar 01	TAXIWAY	03	T	196	35	6,879	6/3/2009	PCC
THANG01	Taxiway Hangar 01	TAXIWAY	02	T	145	70	18,330	2/21/2005	AC
THANG02	Taxiway Hangar 02	TAXIWAY	02	T	458	60	28,580	5/30/1922	PCC
THANG02	Taxiway Hangar 02	TAXIWAY	01	T	875	220	88,139	11/12/1992	AC

<sup>1</sup> P = Primary pavement, S = Secondary pavement, T = Tertiary pavement

<sup>2</sup> LCD = Last construction date. The date of the last major pavement rehabilitation (e.g. AC overlay)

<sup>3</sup> AC = Asphalt Cement Concrete, AAC = Asphalt Overlay AC, PCC = Portland cement Concrete, APC = Asphalt Overlay PCC

## **APPENDIX B**

### **PMP Maps**

#### **B1: Inventory Maps**

B1A: Branch Identification

B1B: Section Identification

B1C: Sample Unit Layout

B1D: Pavement Type

B1E: Branch Use

B1F: Pavement Age

#### **B2: Surface Condition Maps**

B2A: 7-Color PCI

B2B: 3-Color PCI

B2C: FOD Rating

B2D: Survey Photo Locations

#### **B3: Pavement Capital Improvement Plan (PCIP) Maps**



B3A: 2027 Forecasted PCI without PCIP

B3B: M&R Needs








B3C: PCIP Recommendations

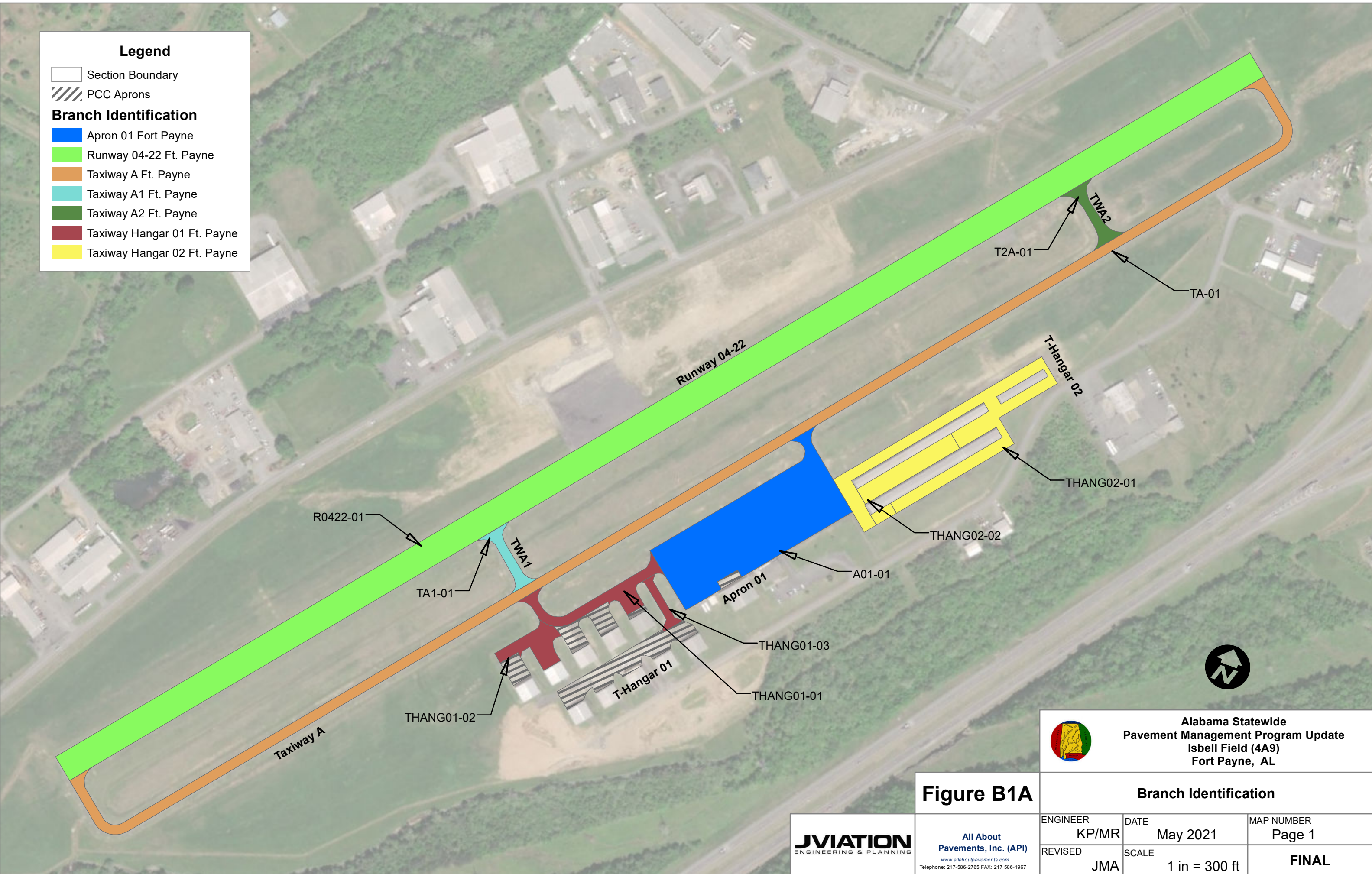


**Legend**

-  Section Boundary
-  PCC Aprons

**Branch Identification**

-  Apron 01 Fort Payne
-  Runway 04-22 Ft. Payne
-  Taxiway A Ft. Payne
-  Taxiway A1 Ft. Payne
-  Taxiway A2 Ft. Payne
-  Taxiway Hangar 01 Ft. Payne
-  Taxiway Hangar 02 Ft. Payne



 **Alabama Statewide  
Pavement Management Program Update  
Isbell Field (4A9)  
Fort Payne, AL**

**Figure B1A**

Branch Identification		
ENGINEER KP/MR	DATE May 2021	MAP NUMBER Page 1
REVISED JMA	SCALE 1 in = 300 ft	<b>FINAL</b>

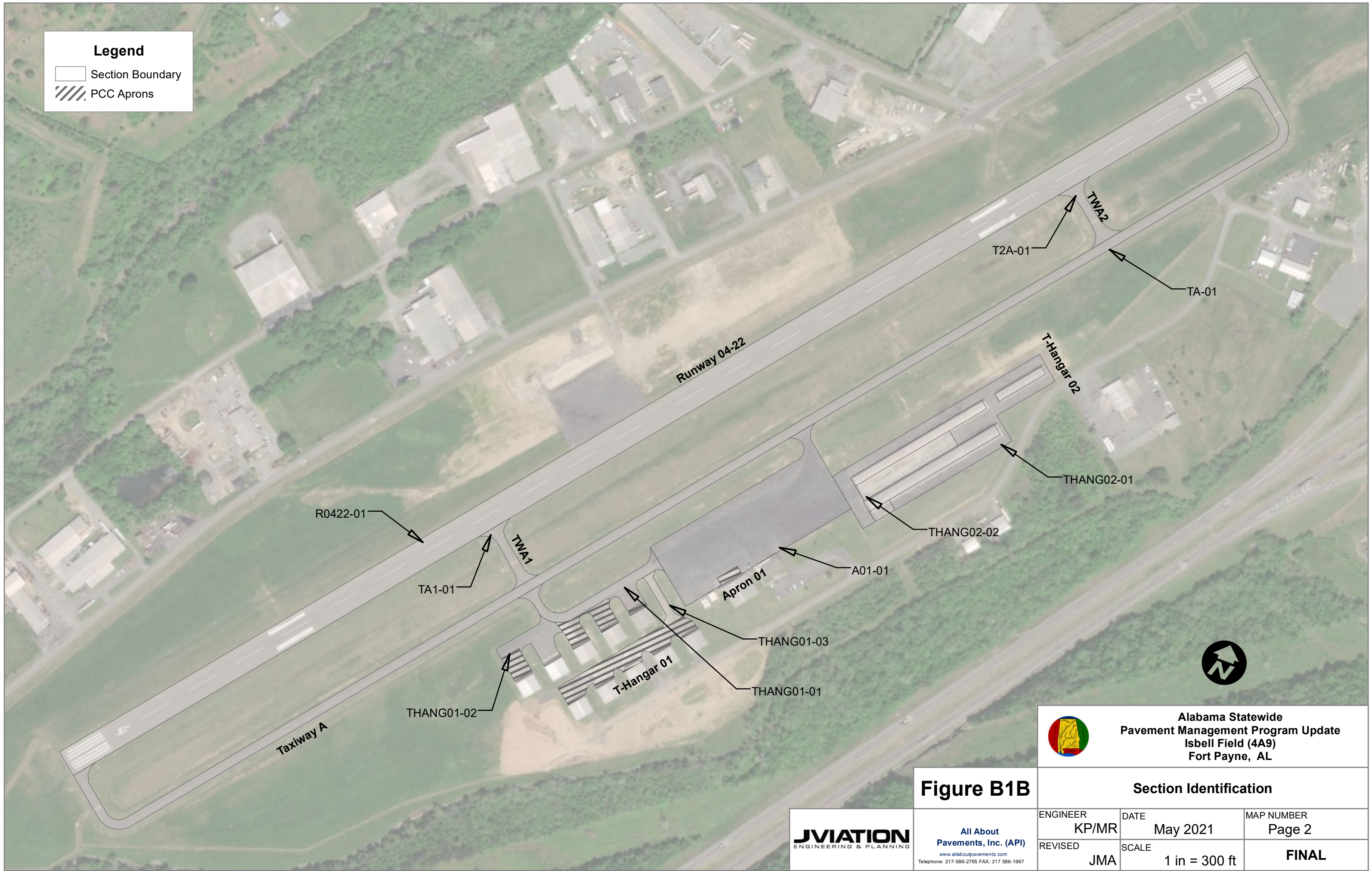
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**Legend**

□ Section Boundary

▨ PCC Aprons





**Figure B1B**


**Alabama Statewide  
Pavement Management Program Update  
Isbell Field (4A9)  
Fort Payne, AL**



Section Identification		
ENGINEER <b>KP/MR</b>	DATE May 2021	MAP NUMBER Page 2
REVISED <b>JMA</b>	SCALE 1 in = 300 ft	<b>FINAL</b>

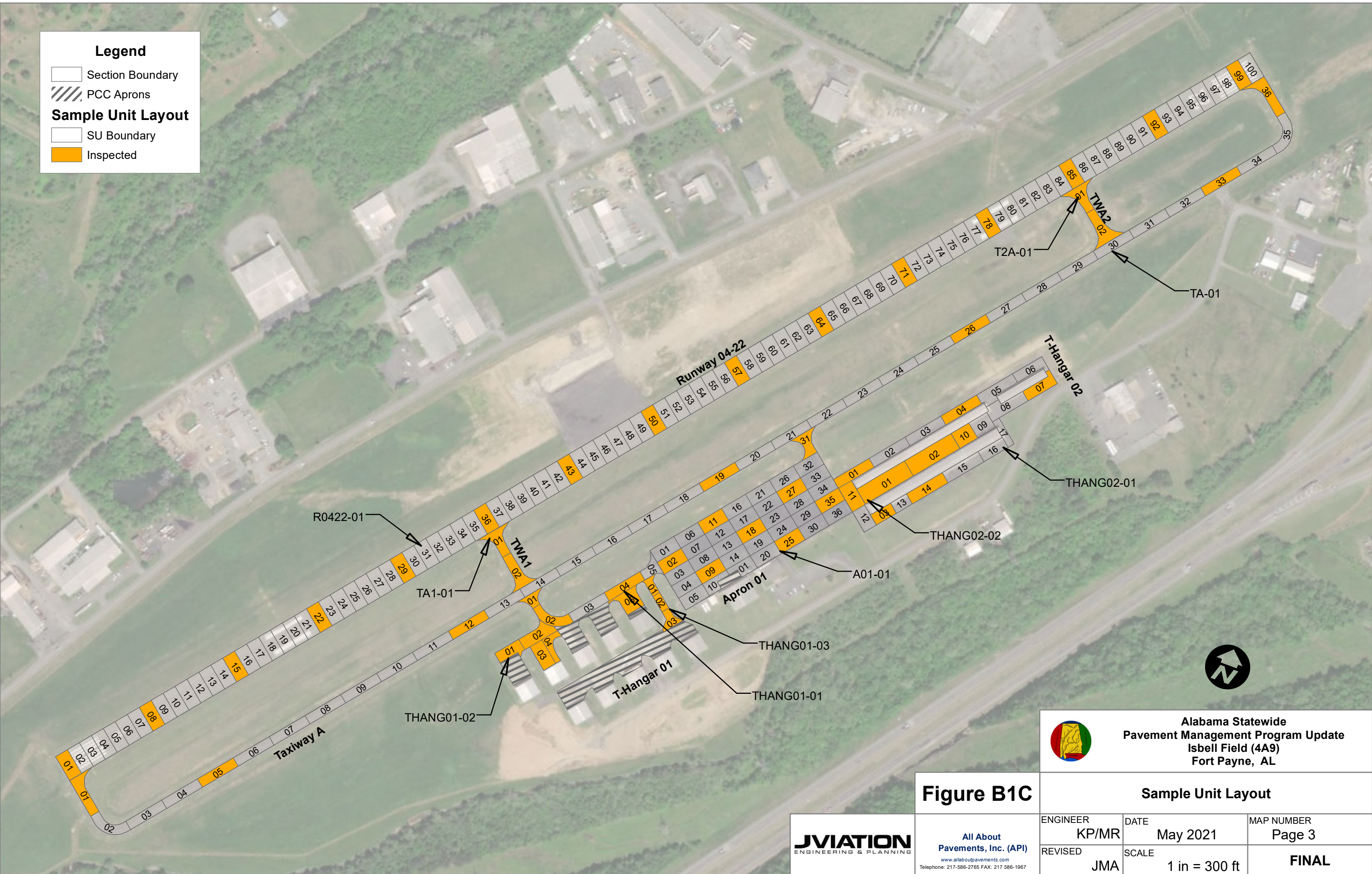
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**Legend**

-  Section Boundary
-  PCC Aprons


**Sample Unit Layout**

-  SU Boundary
-  Inspected







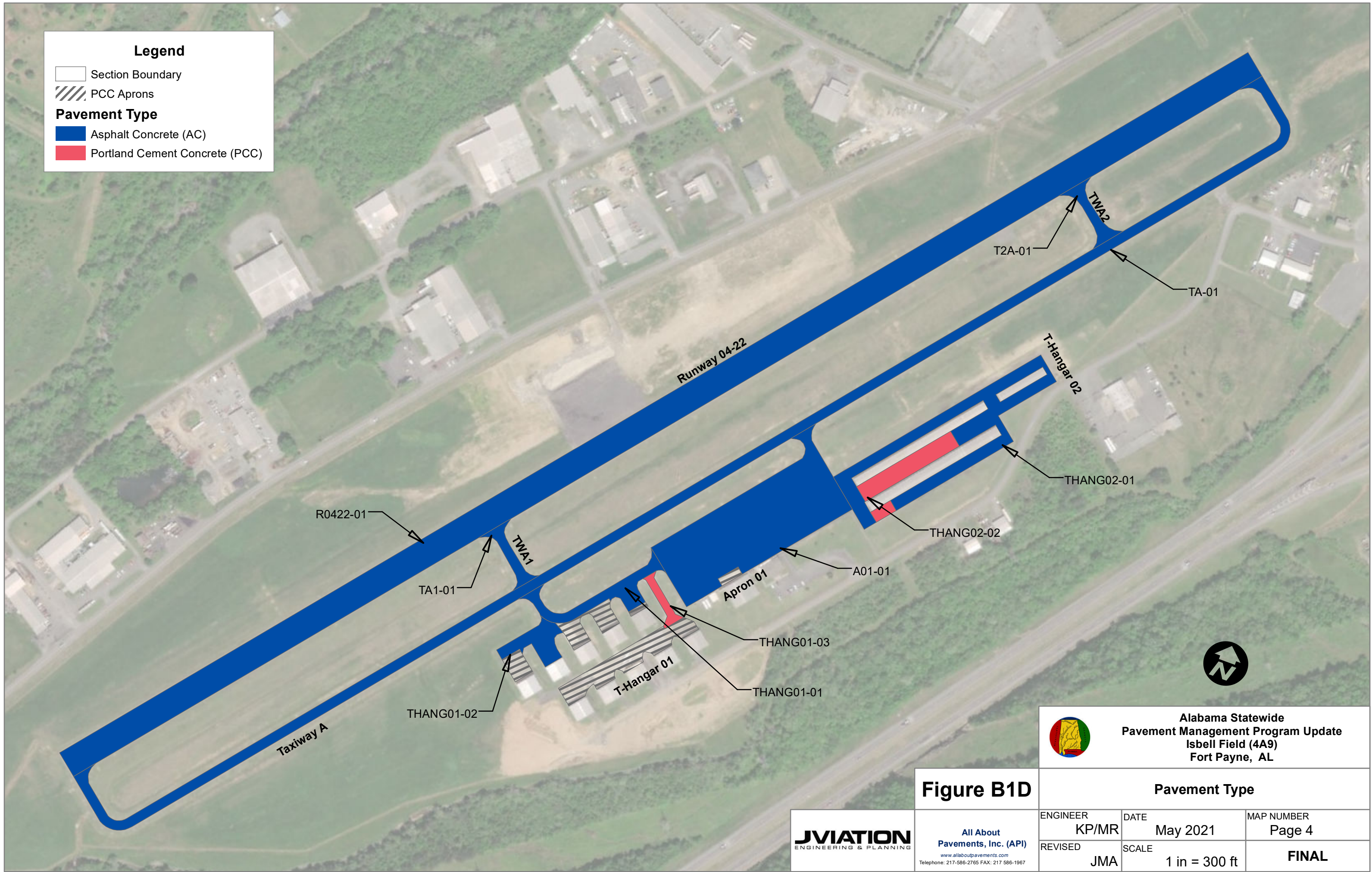

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Isbell Field (4A9)  
Fort Payne, AL**

**Figure B1C**      **Sample Unit Layout**

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	<small>REVISED</small> <b>JMA</b>	<small>SCALE</small> <b>1 in = 300 ft</b>	<b>FINAL</b>		

**Legend**

-  Section Boundary
-  PCC Aprons
- Pavement Type**
-  Asphalt Concrete (AC)
-  Portland Cement Concrete (PCC)









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Isbell Field (4A9)  
Fort Payne, AL**

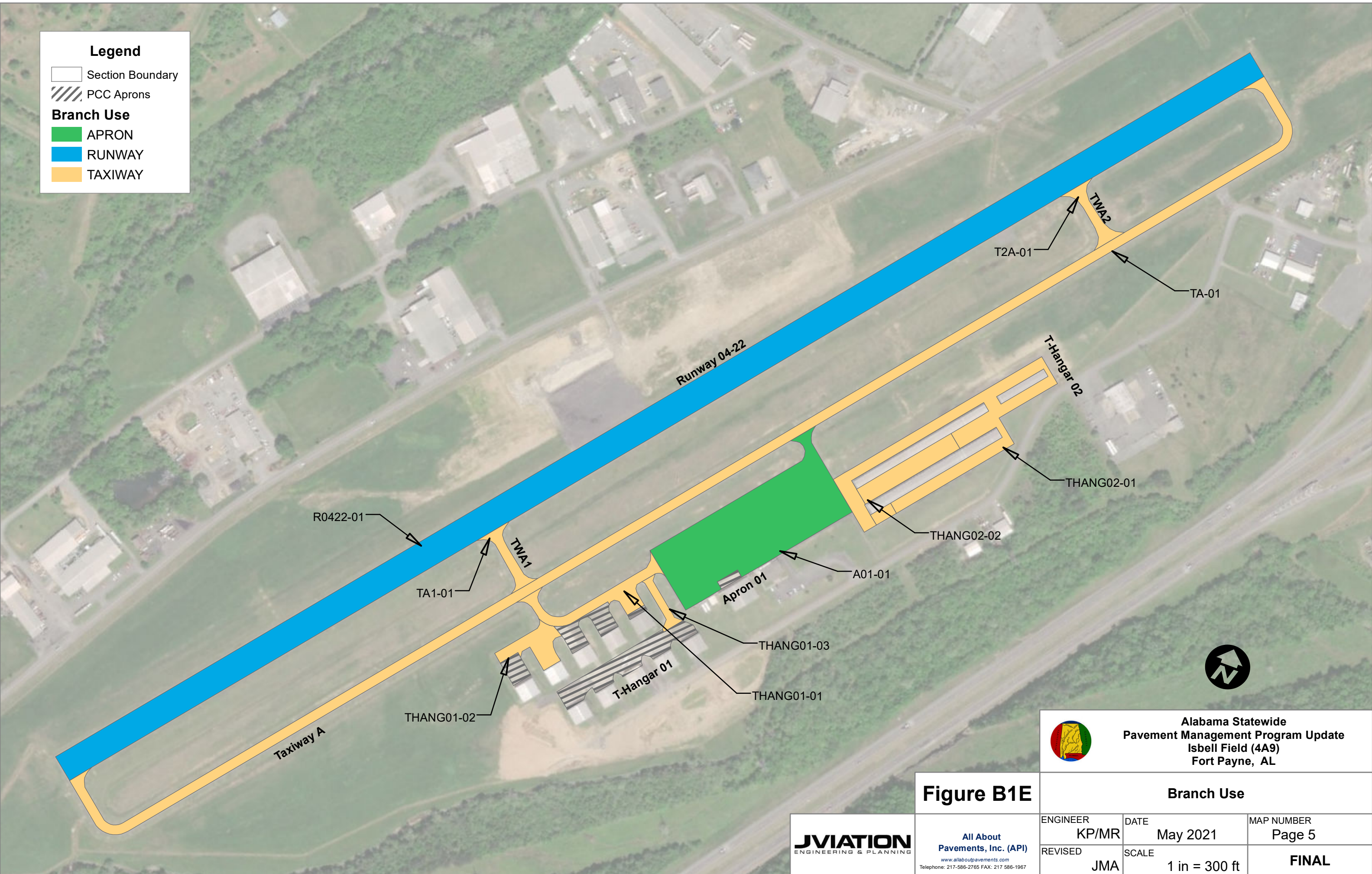
**Figure B1D**

Pavement Type		
ENGINEER <b>KP/MR</b>	DATE May 2021	MAP NUMBER Page 4
REVISED <b>JMA</b>	SCALE 1 in = 300 ft	<b>FINAL</b>

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**Legend**

-  Section Boundary
-  PCC Aprons
- Branch Use**
-  APRON
-  RUNWAY
-  TAXIWAY










**Figure B1E**

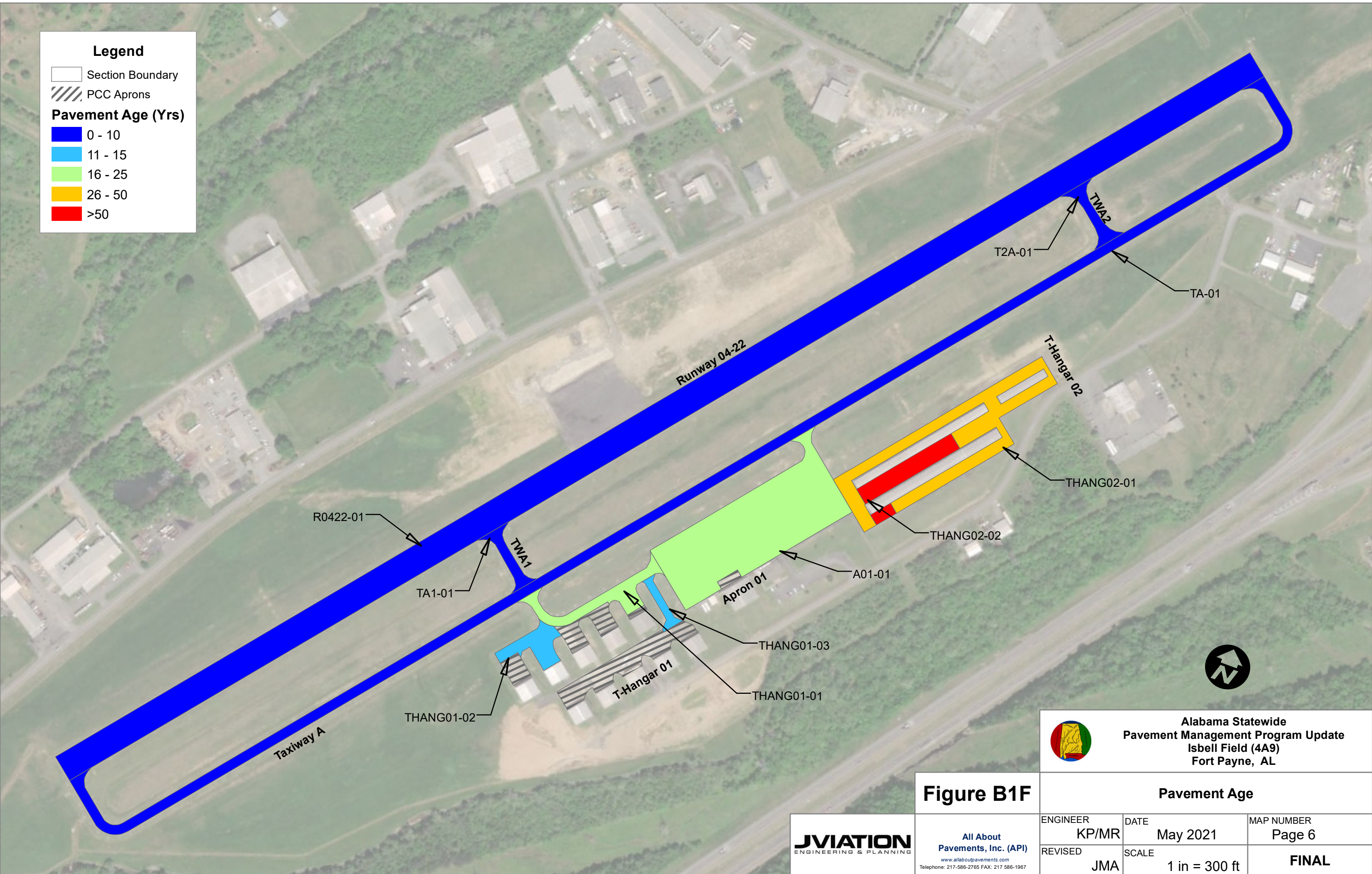

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Pavement Management Program Update  
Isbell Field (4A9)  
Fort Payne, AL**

Branch Use		
ENGINEER <b>KP/MR</b>	DATE May 2021	MAP NUMBER Page 5
REVISED <b>JMA</b>	SCALE 1 in = 300 ft	<b>FINAL</b>

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**Legend**

-  Section Boundary
-  PCC Aprons
- Pavement Age (Yrs)**
-  0 - 10
-  11 - 15
-  16 - 25
-  26 - 50
-  >50



 **Alabama Statewide  
Pavement Management Program Update  
Isbell Field (4A9)  
Fort Payne, AL**










**Figure B1F**

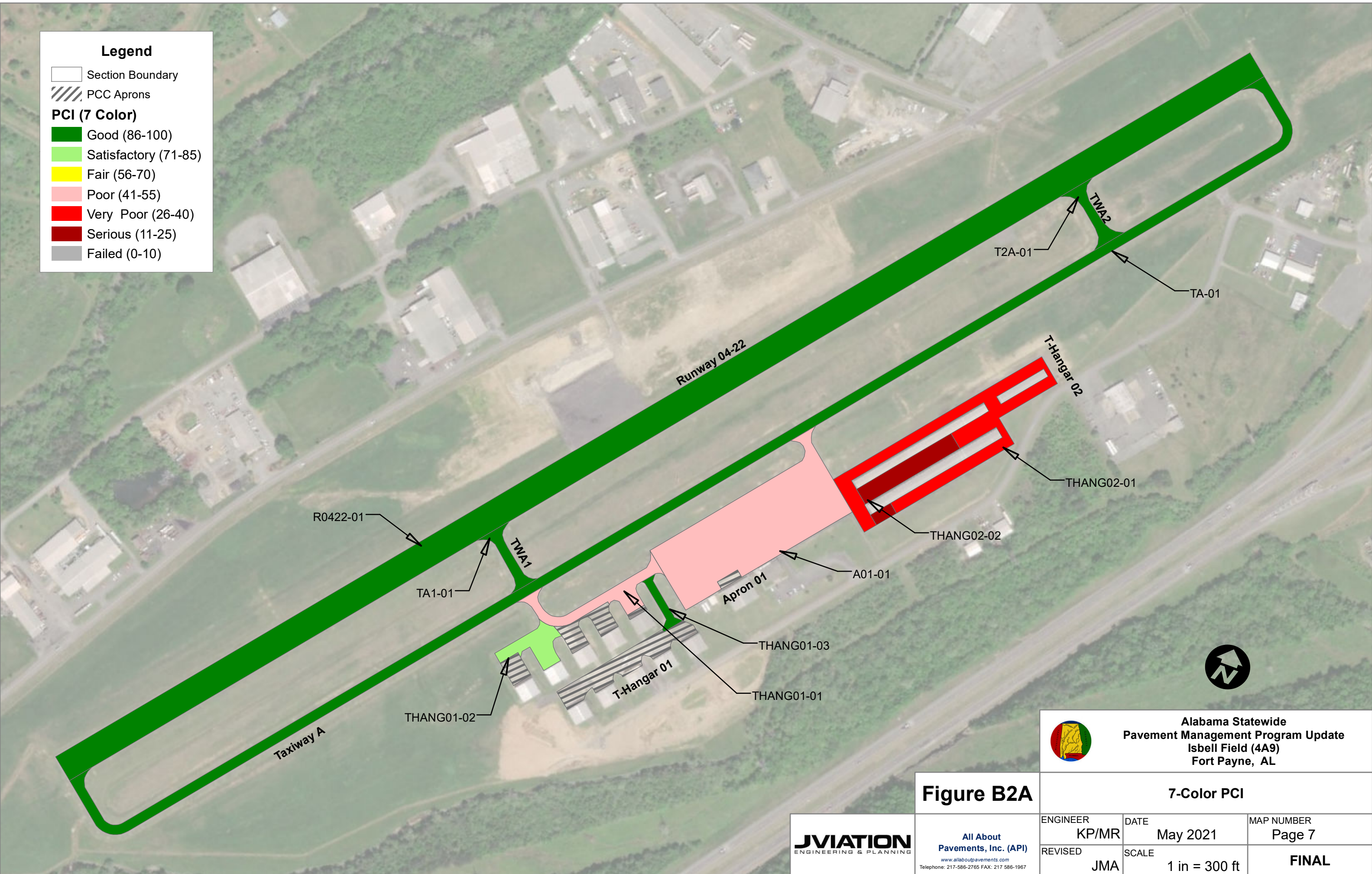
Pavement Age		
ENGINEER KP/MR	DATE May 2021	MAP NUMBER Page 6
REVISED JMA	SCALE 1 in = 300 ft	<b>FINAL</b>

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**Legend**

-  Section Boundary
-  PCC Aprons
- PCI (7 Color)**
-  Good (86-100)
-  Satisfactory (71-85)
-  Fair (56-70)
-  Poor (41-55)
-  Very Poor (26-40)
-  Serious (11-25)
-  Failed (0-10)



**Figure B2A**






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Pavement Management Program Update  
Isbell Field (4A9)  
Fort Payne, AL**

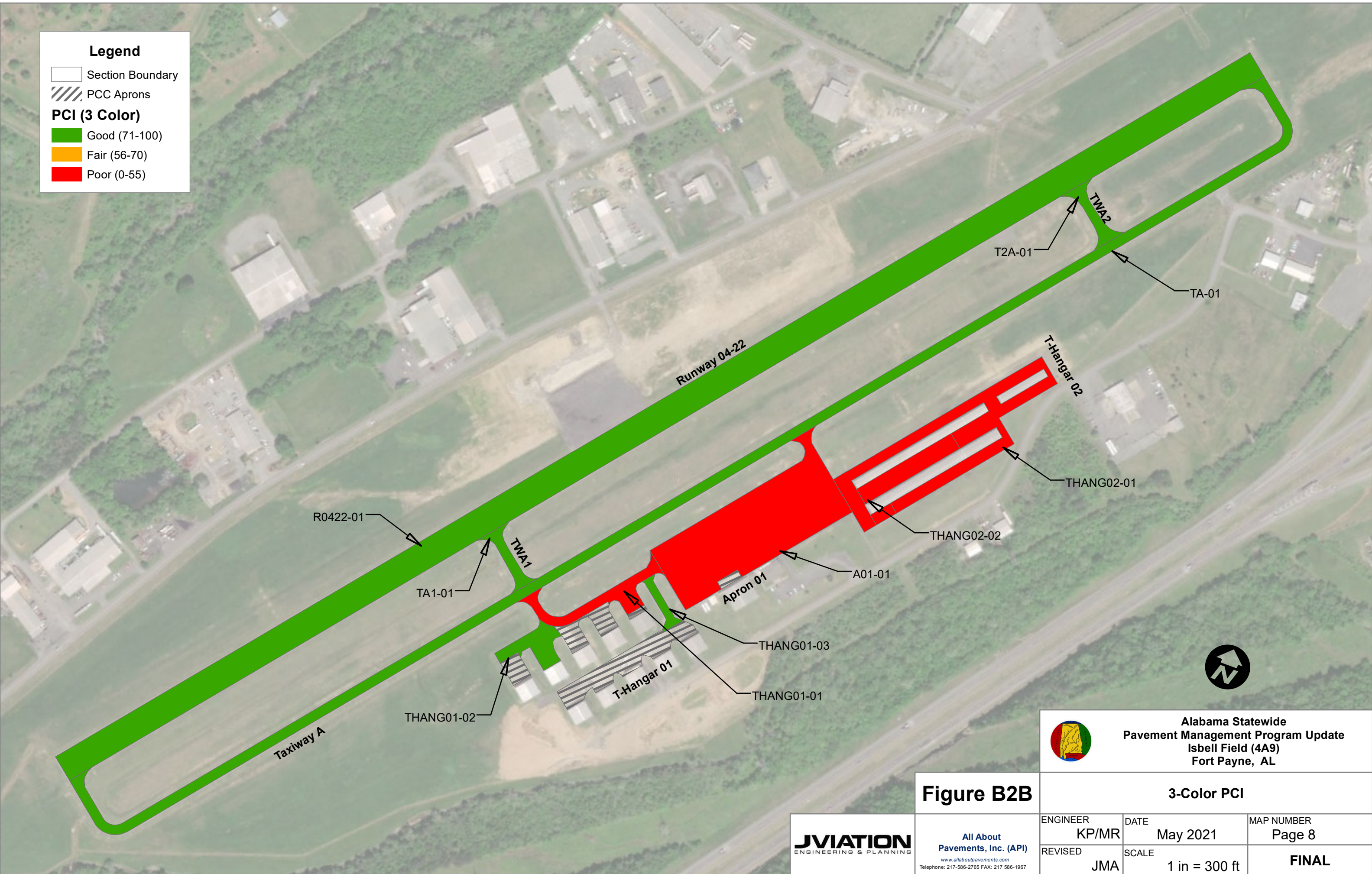
7-Color PCI		
ENGINEER KP/MR	DATE May 2021	MAP NUMBER Page 7
REVISED JMA	SCALE 1 in = 300 ft	<b>FINAL</b>

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**Legend**


-  Section Boundary
-  PCC Aprons
- PCI (3 Color)**
-  Good (71-100)
-  Fair (56-70)
-  Poor (0-55)



Alabama Statewide  
Pavement Management Program Update  
Isbell Field (4A9)  
Fort Payne, AL






**Figure B2B**

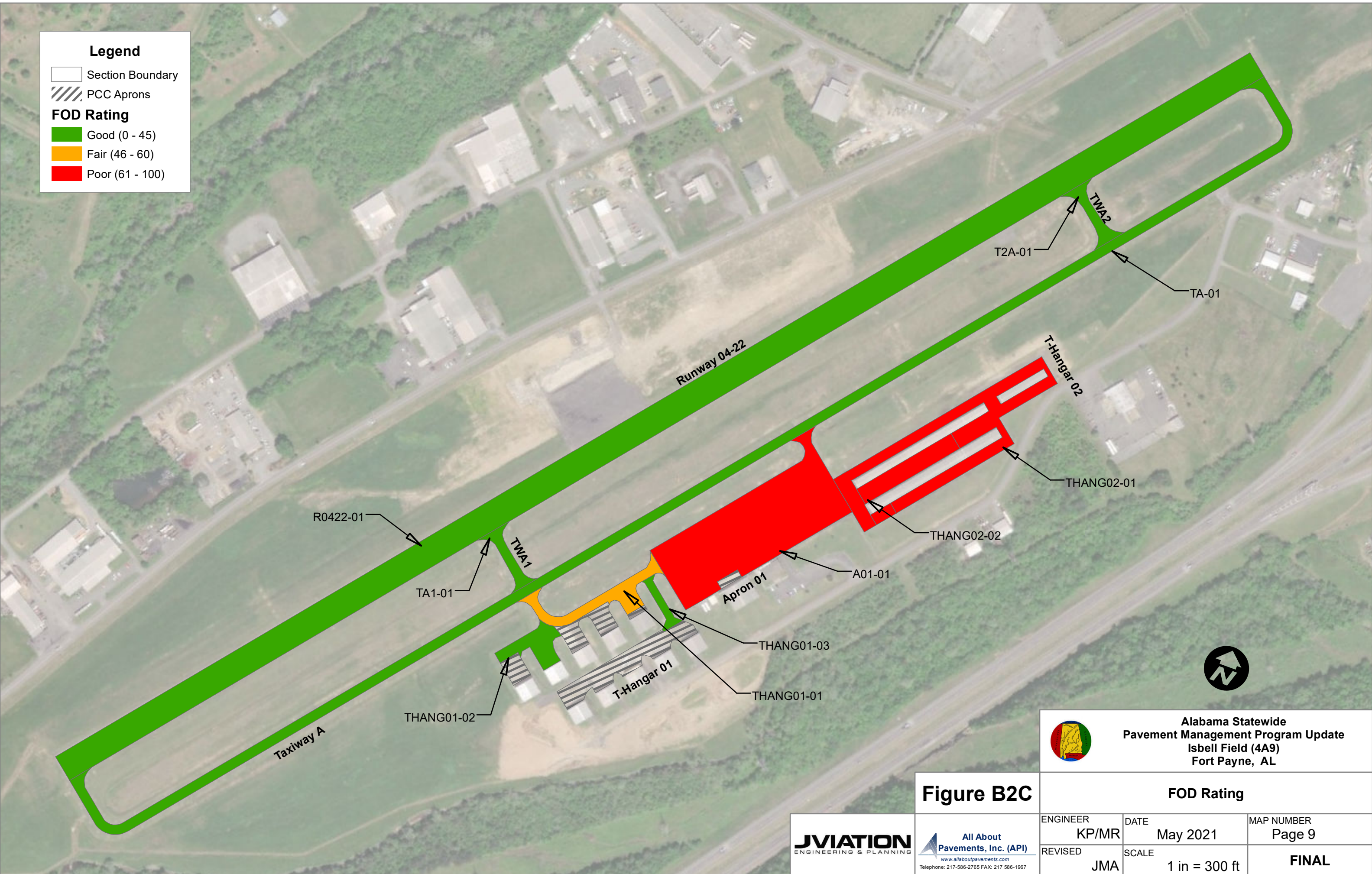
**3-Color PCI**

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	REVISED <b>JMA</b>	SCALE <b>1 in = 300 ft</b>	<b>FINAL</b>		



**Legend**

-  Section Boundary
-  PCC Aprons
- FOD Rating**
-  Good (0 - 45)
-  Fair (46 - 60)
-  Poor (61 - 100)



 **Alabama Statewide  
Pavement Management Program Update  
Isbell Field (4A9)  
Fort Payne, AL**




**Figure B2C**

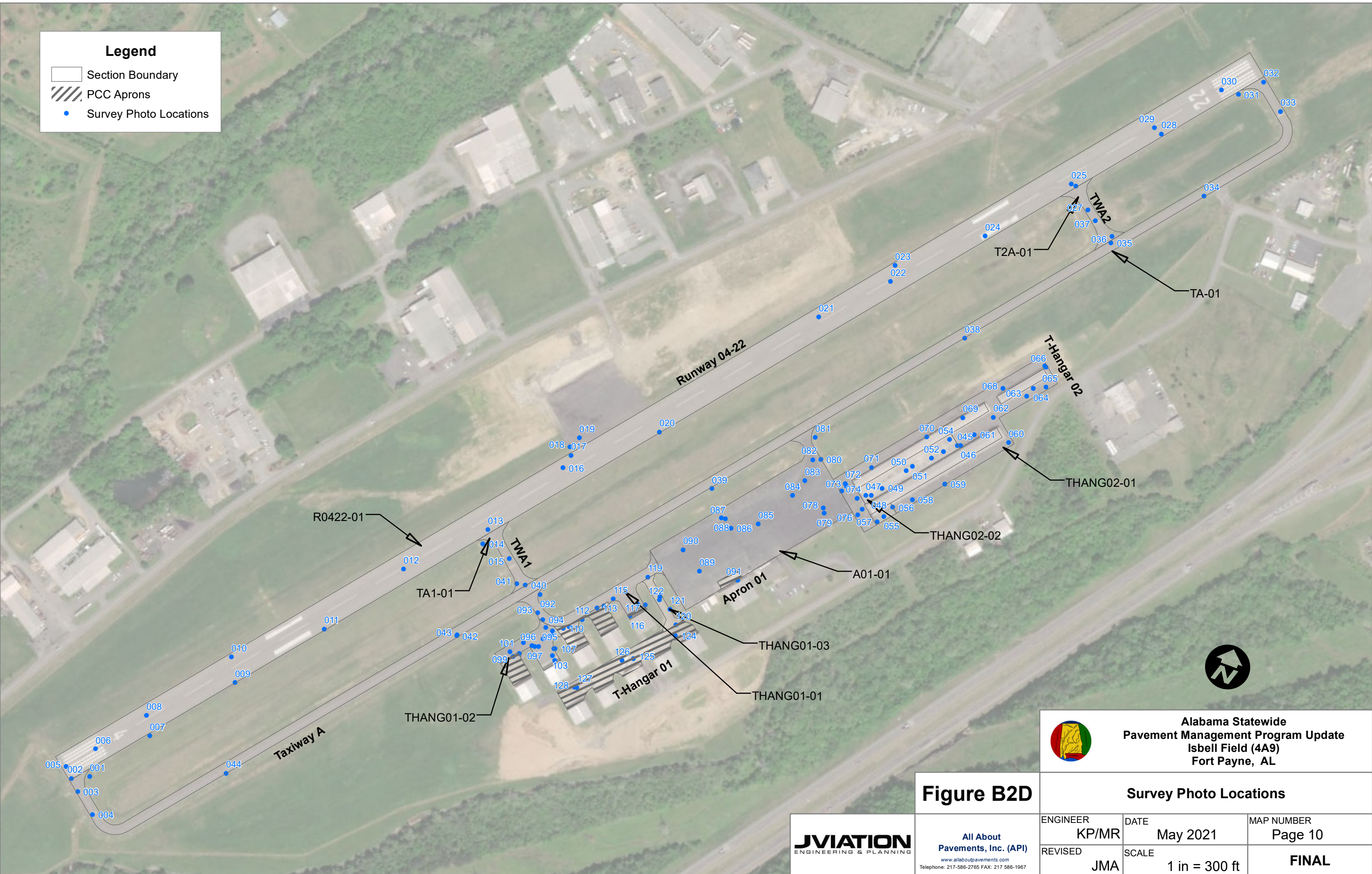
FOD Rating		
ENGINEER KP/MR	DATE May 2021	MAP NUMBER Page 9
REVISED JMA	SCALE 1 in = 300 ft	<b>FINAL</b>

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**Legend**

-  Section Boundary
-  PCC Aprons
-  Survey Photo Locations



**Figure B2D**











**Alabama Statewide  
Pavement Management Program Update  
Isbell Field (4A9)  
Fort Payne, AL**

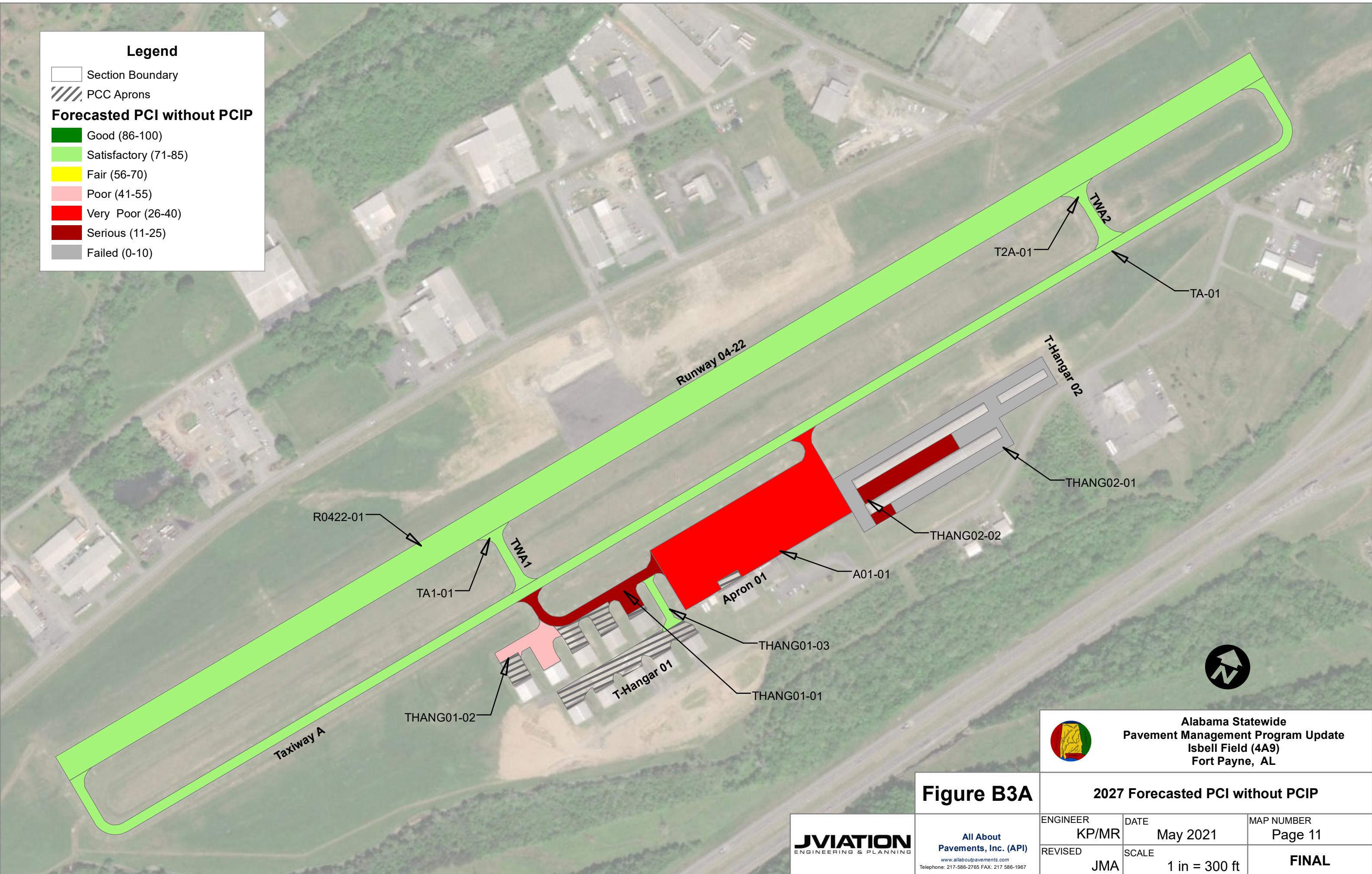
Survey Photo Locations		
ENGINEER <b>KP/MR</b>	DATE May 2021	MAP NUMBER Page 10
REVISED <b>JMA</b>	SCALE 1 in = 300 ft	<b>FINAL</b>

**JVIATION**  
 ENGINEERING & PLANNING

All About  
**Pavements, Inc. (API)**  
www.allaboutpavements.com  
Telephone: 217-586-2765 FAX: 217-586-1967


**Legend**

-  Section Boundary
-  PCC Aprons
- Forecasted PCI without PCIP**
-  Good (86-100)
-  Satisfactory (71-85)
-  Fair (56-70)
-  Poor (41-55)
-  Very Poor (26-40)
-  Serious (11-25)
-  Failed (0-10)










**Alabama Statewide  
Pavement Management Program Update  
Isbell Field (4A9)  
Fort Payne, AL**

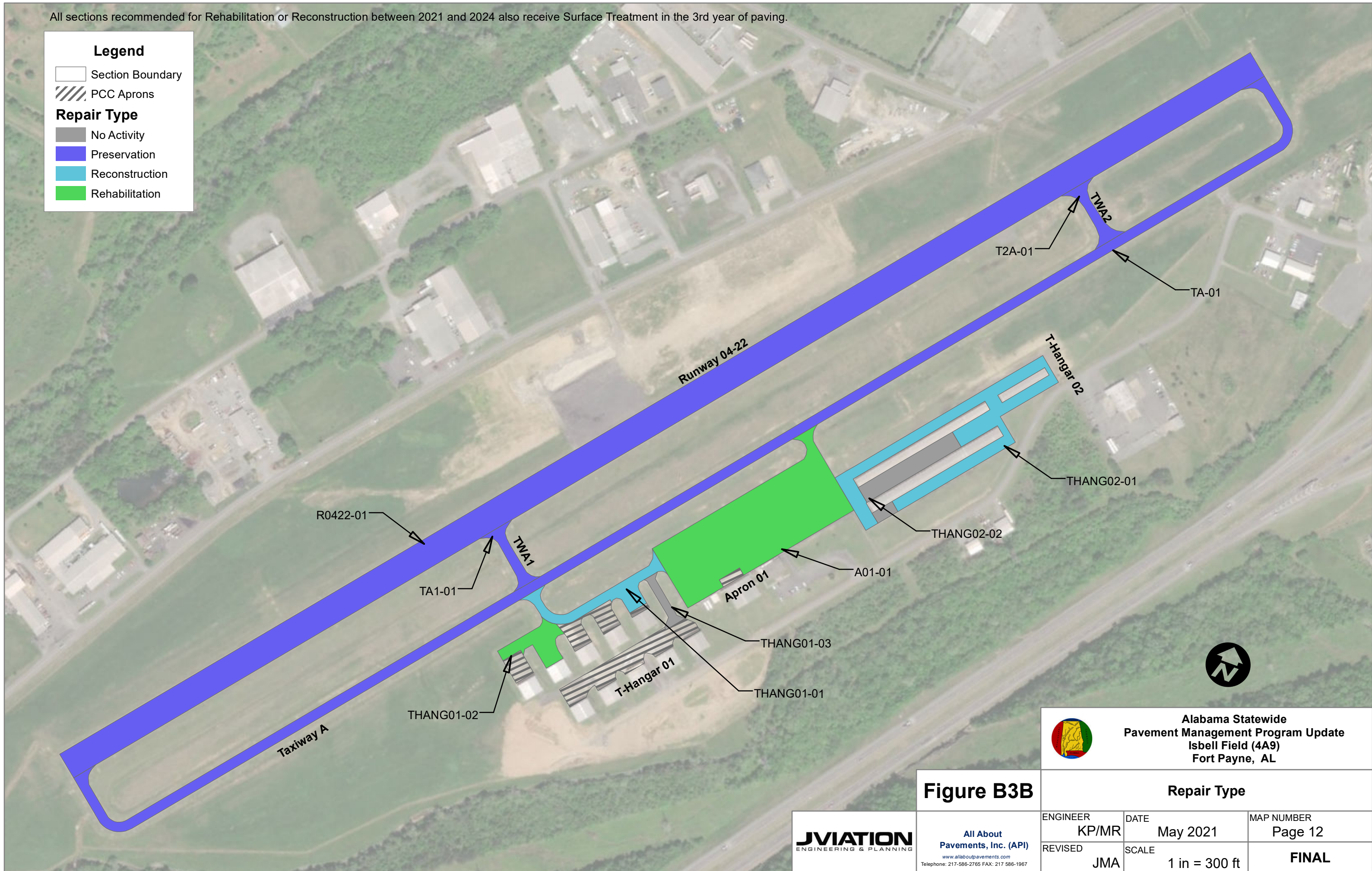
**Figure B3A**      **2027 Forecasted PCI without PCIP**

 <b>JV AVIATION</b> <small>ENGINEERING &amp; PLANNING</small>	<b>All About Pavements, Inc. (API)</b> <small>www.allaboutpavements.com Telephone: 217-586-2765 FAX: 217-586-1967</small>		<small>ENGINEER</small> <b>KP/MR</b>	<small>DATE</small> <b>May 2021</b>	<small>MAP NUMBER</small> <b>Page 11</b>
	<small>REVISED</small> <b>JMA</b>	<small>SCALE</small> <b>1 in = 300 ft</b>	<b>FINAL</b>		

All sections recommended for Rehabilitation or Reconstruction between 2021 and 2024 also receive Surface Treatment in the 3rd year of paving.

**Legend**

-  Section Boundary
-  PCC Aprons
- Repair Type**
-  No Activity
-  Preservation
-  Reconstruction
-  Rehabilitation




**Alabama Statewide  
Pavement Management Program Update  
Isbell Field (4A9)  
Fort Payne, AL**

**Figure B3B**

Repair Type		
ENGINEER <b>KP/MR</b>	DATE May 2021	MAP NUMBER Page 12
REVISED <b>JMA</b>	SCALE 1 in = 300 ft	<b>FINAL</b>

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## **28. Shattered Slab (PCC)**

Intersecting cracks are cracks that break into four or more pieces because of overloading and/or inadequate support. The high-severity level of this distress type, as defined below, is referred to as a shattered slab. If all pieces or cracks are contained within a corner break, the distress is categorized as a severe corner break.

### Severities:

- ◆ Low - Slab is broken into four or five pieces with the vast majority of the cracks (over 85 percent) of low-severity;
- ◆ Medium - (1) Slab †

## 29. Shrinkage Crack (PCC)

Shrinkage cracks are hairline cracks that are usually only a few feet long and do not extend across the entire slab. They are formed during the setting and curing of the concrete and usually do not extend through the depth of the slab.

### Severities:

No degrees of severity are defined. It is sufficient to indicate that shrinkage cracks exist.

### Repair options:

- ◆ Do Nothing



### 30. Joint Spalls (PCC)

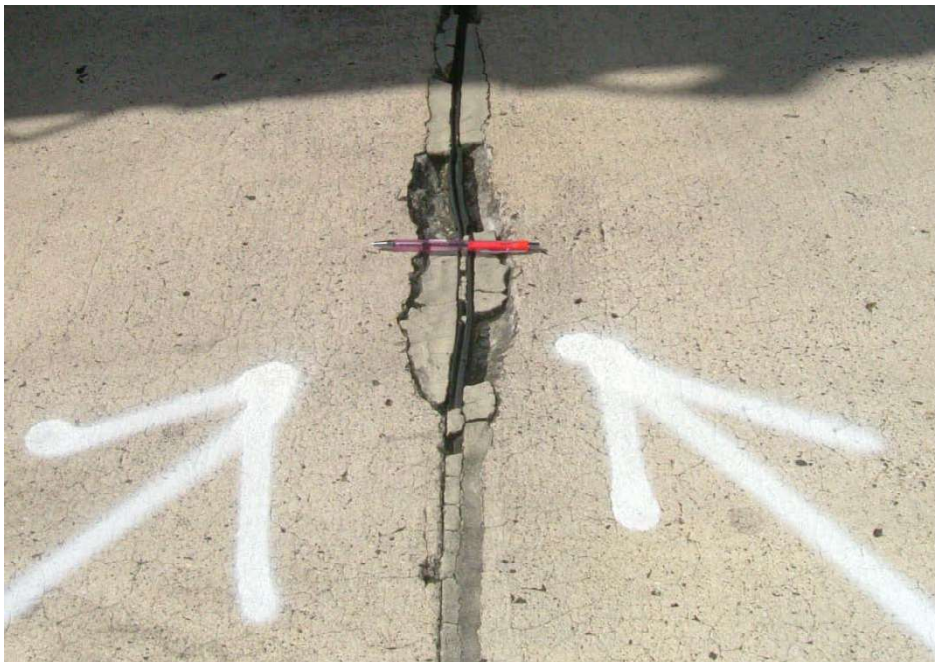
Joint spalling is the disintegration of the slab edges within 2 feet of the side of the joint. A joint spall usually does not extend vertically through the slab, but intersects the joint at an angle. Spalling results from excessive stresses at the joint crack caused by infiltration of incompressible materials or traffic loads. Weak concrete at the joint (caused by overworking) combined with traffic loads is another cause of spalling.

#### Severities:

- ◆ Low - over 2 feet long and is broken into no more than three pieces defined by low or medium severity cracks, with little or no FOD potential, or is 2) less than 2 feet long and is broken into more than three pieces, with little FOD or tire damage potential;
- ◆ Medium - over 2 feet long and is broken into more than 3 pieces defined by light or medium cracks or some FOD potential existing, or is 2) less than 2 feet long and is broken into pieces or fragmented, with some of the pieces loose or absent, causing considerable FOD or tire damage potential;
- ◆ High - over 2 feet long and is broken into more than three pieces defined by one or more high severity cracks with high FOD potential.

#### Repair Options:

- ◆ Low - No action;
- ◆ Medium - perform a partial depth patch;
- ◆ High - perform a partial depth patch.



### 31. Corner Spalls (PCC)

Corner spalling is the raveling or breakdown of the slab within approximately 2 feet of the corner. A corner spall differs from a corner break in that the spall angles downward to intersect the joint while the break extends vertically through the slab.

#### Severities:

- ◆ Low - either 1) the spall is broken into one or two pieces defined by low severity cracks with little or no FOD potential; or 2) the spall is defined by one medium severity crack with little or no FOD potential;
- ◆ Medium – 1) the spall is broken into two or more pieces defined by medium severity cracks, and a few small fragments may be absent or loose; 2) the spall is defined by one severe, fragmented crack that may be accompanied by a few hairline cracks or 3) the spall has deteriorated to the point where loose material is causing FOD potential;
- ◆ High – 1) the spall has broken into two or more pieces defined by high severity fragmented cracks, with loose or absent fragments; 2) pieces of the spall have been displaced to the extent that tire damage hazard exists, or 3) the spall has deteriorated to the point where loose material is causing high FOD potential.

#### Repair Options:

- ◆ Low - No action;
- ◆ Medium - partial depth patch;
- ◆ High - partial depth patch.





### 32. ASR (PCC)

ASR is caused by chemical reaction between alkalis and certain reactive silica minerals which form a gel. The gel absorbs water, causing expansion which may damage the concrete and adjacent structures. Alkalis are most often introduced by the portland cement within the pavement. ASR cracking may be accelerated by chemical pavement deicers.

Visual indicators that ASR may be present include:

1. Cracking of the concrete pavement (often in a map pattern)
2. White, brown, gray or other colored gel or staining may be present at the crack surface
3. Aggregate popouts
4. Increase in concrete volume (expansion) that may result in distortion of adjacent or integral structures or physical elements. Examples of expansion include shoving of asphalt pavements, light can tilting, slab faulting, joint misalignment, and extrusion of joint seals or expansion joint fillers.

Because ASR is material-dependent, ASR is generally present throughout the pavement section. Coring and concrete petrographic analysis is the only definitive method to confirm the presence of ASR. The following should be kept in mind when identifying the presence of ASR through visual inspection:

1. Generally ASR distresses are not observed in the first few years after construction. In contrast, plastic shrinkage cracking can occur the day of construction and is apparent within the first year.
2. ASR is differentiated from D-Cracking by the presence of cracking perpendicular to the joint face. D-Cracking predominantly develops as a series of parallel cracks to joint faces and linear cracking within the slab.
3. ASR is differentiated from Map Cracking/ Scaling by the presence of visual signs of expansion.

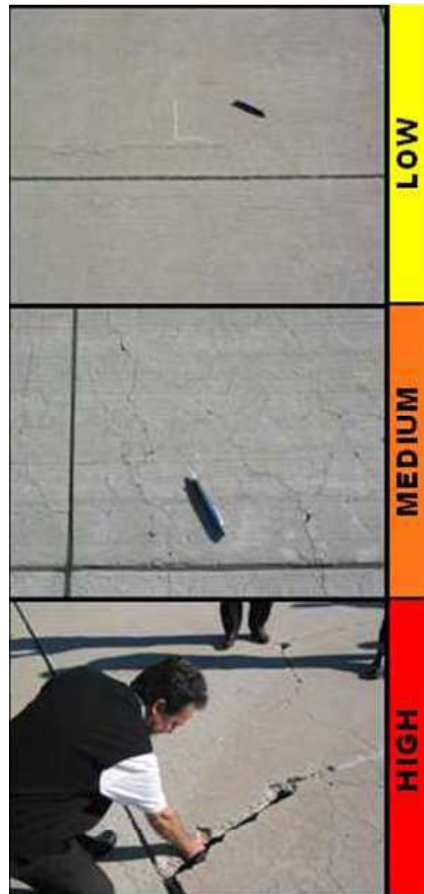
## Severity Levels

**L** Minimal to no Foreign Object Damage (FOD) potential from cracks, joints or ASR related popouts; cracks at the surface are tight (predominantly 1 mm or less). Little to no evidence of movement in pavement or surrounding structures or elements.

Some FOD potential; increased sweeping or other FOD removal methods may be required. May be evidence of slab movement and/ or some damage to adjacent structures or elements.

**M** Medium ASR distress is differentiated from low by having one or more of the following: increased FOD potential, increased cracking of the slab, some fragments along cracks or at crack intersections present, surface popouts of concrete may occur, pattern of wider cracks (predominantly 1 mm or wider) that may be subdivided by tighter cracks.

**H** One or both of the following exist: 1) Loose or missing concrete fragments which pose high FOD potential, 2) Slab surface integrity and function significantly degraded and pavement requires immediate repair; may also require repairs to adjacent structures or elements.



**APPENDIX D**

**DETAILED PAVEMENT CONDITION DATA**



# Re-Inspection Report

ALDOT\_Combined\_201109

Generated Date 11/20/2020

Page 1 of 13

<b>Network:</b>	4A9	<b>Name:</b>	Isbell Field		
<b>Branch:</b>	A01	<b>Name:</b>	Apron 01 Fort Payne	<b>Use:</b>	APRON
		<b>Area:</b>	176,922 SqFt		
<b>Section:</b>	01	of	1	<b>From:</b>	Taxiway Hangar 01
		<b>To:</b>	Taxiway Hangar 02		
		<b>Last Const.:</b>	8/26/1996		
<b>Surface:</b>	AC	<b>Family:</b>	ALDOT_Aprons	<b>Zone:</b>	
		<b>Category:</b>			
<b>Area:</b>	176,922 SqFt	<b>Length:</b>	700 Ft	<b>Width:</b>	250 Ft
<b>Slabs:</b>		<b>Slab Length:</b>	Ft	<b>Slab Width:</b>	Ft
		<b>Joint Length:</b>	Ft		
<b>Shoulder:</b>		<b>Street Type:</b>		<b>Grade:</b>	0
		<b>Lanes:</b>	0		

**Section Comments:**

<b>Work Date:</b>	1/1/1900	<b>Work Type:</b>	New Construction - Initial	<b>Code:</b>	NU-IN
				<b>Is Major M&amp;R:</b>	True
<b>Work Date:</b>	8/26/1996	<b>Work Type:</b>	New Construction - Initial	<b>Code:</b>	NU-IN
				<b>Is Major M&amp;R:</b>	True
<b>Work Date:</b>	10/1/2011	<b>Work Type:</b>	Crack Sealing - AC	<b>Code:</b>	CS-AC
				<b>Is Major M&amp;R:</b>	False

**Last Insp. Date:** 10/22/2018      **TotalSamples:** 36      **Surveyed:** 8

**Conditions:** PCI: 51

**Inspection Comments:**

<b>Sample Number:</b>	02	<b>Type:</b>	R	<b>Area:</b>	5000.00 SqFt	<b>PCI:</b>	43
<b>Sample Comments:</b>							
43	BLOCK CR	L		500.00	SqFt		
43	BLOCK CR	M		500.00	SqFt		
48	L & T CR	L		340.00	Ft		
48	L & T CR	M		320.00	Ft		
52	RAVELING	L		2500.00	SqFt		

<b>Sample Number:</b>	09	<b>Type:</b>	R	<b>Area:</b>	5000.00 SqFt	<b>PCI:</b>	48
<b>Sample Comments:</b>							
43	BLOCK CR	M		800.00	SqFt		
48	L & T CR	L		310.00	Ft		
48	L & T CR	M		410.00	Ft		
57	WEATHERING	L		5000.00	SqFt		

<b>Sample Number:</b>	11	<b>Type:</b>	R	<b>Area:</b>	5000.00 SqFt	<b>PCI:</b>	57
<b>Sample Comments:</b>							
48	L & T CR	L		200.00	Ft		
48	L & T CR	M		400.00	Ft		
52	RAVELING	L		2500.00	SqFt		

<b>Sample Number:</b>	18	<b>Type:</b>	R	<b>Area:</b>	5000.00 SqFt	<b>PCI:</b>	58
<b>Sample Comments:</b>							
48	L & T CR	L		340.00	Ft		
48	L & T CR	M		340.00	Ft		
52	RAVELING	L		2500.00	SqFt		

<b>Sample Number:</b>	25	<b>Type:</b>	R	<b>Area:</b>	5090.00 SqFt	<b>PCI:</b>	50
<b>Sample Comments:</b>							
48	L & T CR	L		368.00	Ft		
48	L & T CR	M		624.00	Ft		
52	RAVELING	L		2500.00	SqFt		

<b>Sample Number:</b>	27	<b>Type:</b>	R	<b>Area:</b>	5000.00 SqFt	<b>PCI:</b>	46
<b>Sample Comments:</b>							
48	L & T CR	L		200.00	Ft		
48	L & T CR	M		800.00	Ft		
52	RAVELING	L		2500.00	SqFt		

<b>Sample Number:</b>	31	<b>Type:</b>	R	<b>Area:</b>	4150.00 SqFt	<b>PCI:</b>	48
<b>Sample Comments:</b>							

43	BLOCK CR	M	120.00	SqFt
48	L & T CR	M	401.00	Ft
50	PATCHING	L	780.00	SqFt
52	RAVELING	L	2500.00	SqFt

---

**Sample Number:** 35      **Type:** R      **Area:** 4915.00 SqFt      **PCI:** 56

**Sample Comments:**

48	L & T CR	L	140.00	Ft
48	L & T CR	M	440.00	Ft
52	RAVELING	L	2500.00	SqFt

<b>Network:</b>	4A9	<b>Name:</b>	Isbell Field						
<b>Branch:</b>	R0422	<b>Name:</b>	Runway 04-22 Ft. Payne	<b>Use:</b>	RUNWAY	<b>Area:</b>	500,100 SqFt		
<b>Section:</b>	01	of	1	<b>From:</b>	Runway 04 End	<b>To:</b>	Runway 22 End	<b>Last Const.:</b>	9/1/2015
<b>Surface:</b>	AC	<b>Family:</b>	ALDOT_RWs	<b>Zone:</b>		<b>Category:</b>		<b>Rank:</b>	P
<b>Area:</b>	500,100 SqFt	<b>Length:</b>	5,001 Ft	<b>Width:</b>	100 Ft				
<b>Slabs:</b>		<b>Slab Length:</b>	Ft	<b>Slab Width:</b>	Ft	<b>Joint Length:</b>	Ft		
<b>Shoulder:</b>		<b>Street Type:</b>		<b>Grade:</b>	0	<b>Lanes:</b>	0		
<b>Section Comments:</b>									
<b>Work Date:</b>	1/1/1900	<b>Work Type:</b>	New Construction - Initial		<b>Code:</b>	NU-IN	<b>Is Major M&amp;R:</b>	True	
<b>Work Date:</b>	10/1/2011	<b>Work Type:</b>	Crack Sealing - AC		<b>Code:</b>	CS-AC	<b>Is Major M&amp;R:</b>	False	
<b>Work Date:</b>	9/1/2015	<b>Work Type:</b>	2" overlay		<b>Code:</b>	OL_2	<b>Is Major M&amp;R:</b>	True	
<b>Last Insp. Date:</b>	10/22/2018	<b>TotalSamples:</b>	100	<b>Surveyed:</b>	15				
<b>Conditions:</b>	PCI: 94								
<b>Inspection Comments:</b>									
<b>Sample Number:</b>	01	<b>Type:</b>	R	<b>Area:</b>	5000.00 SqFt	<b>PCI:</b>	96		
<b>Sample Comments:</b>									
48	L & T CR	L	27.00	Ft					
<b>Sample Number:</b>	08	<b>Type:</b>	R	<b>Area:</b>	5000.00 SqFt	<b>PCI:</b>	91		
<b>Sample Comments:</b>									
48	L & T CR	L	100.00	Ft					
50	PATCHING	L	10.00	SqFt					
<b>Sample Number:</b>	15	<b>Type:</b>	R	<b>Area:</b>	5000.00 SqFt	<b>PCI:</b>	89		
<b>Sample Comments:</b>									
48	L & T CR	L	171.00	Ft					
<b>Sample Number:</b>	22	<b>Type:</b>	R	<b>Area:</b>	5000.00 SqFt	<b>PCI:</b>	93		
<b>Sample Comments:</b>									
48	L & T CR	L	100.00	Ft					
<b>Sample Number:</b>	29	<b>Type:</b>	R	<b>Area:</b>	5000.00 SqFt	<b>PCI:</b>	94		
<b>Sample Comments:</b>									
48	L & T CR	L	74.00	Ft					
<b>Sample Number:</b>	36	<b>Type:</b>	R	<b>Area:</b>	5000.00 SqFt	<b>PCI:</b>	96		
<b>Sample Comments:</b>									
48	L & T CR	L	22.00	Ft					
<b>Sample Number:</b>	43	<b>Type:</b>	R	<b>Area:</b>	5000.00 SqFt	<b>PCI:</b>	95		
<b>Sample Comments:</b>									
48	L & T CR	L	50.00	Ft					
<b>Sample Number:</b>	50	<b>Type:</b>	R	<b>Area:</b>	5000.00 SqFt	<b>PCI:</b>	92		
<b>Sample Comments:</b>									
48	L & T CR	L	50.00	Ft					
50	PATCHING	L	50.00	SqFt					
<b>Sample Number:</b>	57	<b>Type:</b>	R	<b>Area:</b>	5000.00 SqFt	<b>PCI:</b>	96		
<b>Sample Comments:</b>									
48	L & T CR	L	22.00	Ft					
<b>Sample Number:</b>	64	<b>Type:</b>	R	<b>Area:</b>	5000.00 SqFt	<b>PCI:</b>	95		
<b>Sample Comments:</b>									
48	L & T CR	L	50.00	Ft					
<b>Sample Number:</b>	71	<b>Type:</b>	R	<b>Area:</b>	5000.00 SqFt	<b>PCI:</b>	95		
<b>Sample Comments:</b>									

48	L & T CR	L	50.00	Ft		
<b>Sample Number:</b>	78	<b>Type:</b>	R	<b>Area:</b>	5000.00 SqFt	<b>PCI:</b> 95
<b>Sample Comments:</b>						
48	L & T CR	L	50.00	Ft		
<b>Sample Number:</b>	85	<b>Type:</b>	R	<b>Area:</b>	5000.00 SqFt	<b>PCI:</b> 92
<b>Sample Comments:</b>						
48	L & T CR	L	106.00	Ft		
<b>Sample Number:</b>	92	<b>Type:</b>	R	<b>Area:</b>	5000.00 SqFt	<b>PCI:</b> 94
<b>Sample Comments:</b>						
48	L & T CR	L	75.00	Ft		
<b>Sample Number:</b>	99	<b>Type:</b>	R	<b>Area:</b>	5000.00 SqFt	<b>PCI:</b> 95
<b>Sample Comments:</b>						
48	L & T CR	L	50.00	Ft		

<b>Network:</b>	4A9	<b>Name:</b>	Isbell Field						
<b>Branch:</b>	TA	<b>Name:</b>	Taxiway A Ft. Payne	<b>Use:</b>	TAXIWAY	<b>Area:</b>	190,807 SqFt		
<b>Section:</b>	01	of	1	<b>From:</b>	Runway 04 End	<b>To:</b>	Runway 22 End	<b>Last Const.:</b>	10/1/2016
<b>Surface:</b>	AC	<b>Family:</b>	ALDOT_AC Taxiways	<b>Zone:</b>		<b>Category:</b>		<b>Rank:</b>	P
<b>Area:</b>	190,807 SqFt	<b>Length:</b>	5,420 Ft	<b>Width:</b>	35 Ft				
<b>Slabs:</b>		<b>Slab Length:</b>	Ft	<b>Slab Width:</b>	Ft	<b>Joint Length:</b>	Ft		
<b>Shoulder:</b>		<b>Street Type:</b>		<b>Grade:</b>	0	<b>Lanes:</b>	0		
<b>Section Comments:</b>									
<b>Work Date:</b>	1/1/1900	<b>Work Type:</b>	New Construction - Initial		<b>Code:</b>	NU-IN	<b>Is Major M&amp;R:</b>	True	
<b>Work Date:</b>	10/1/2011	<b>Work Type:</b>	Crack Sealing - AC		<b>Code:</b>	CS-AC	<b>Is Major M&amp;R:</b>	False	
<b>Work Date:</b>	10/1/2016	<b>Work Type:</b>	2" overlay		<b>Code:</b>	OL_2	<b>Is Major M&amp;R:</b>	True	
<b>Last Insp. Date:</b>	10/22/2018	<b>TotalSamples:</b>	36	<b>Surveyed:</b>	7				
<b>Conditions:</b>	PCI: 98								
<b>Inspection Comments:</b>									
<b>Sample Number:</b>	01	<b>Type:</b>	R	<b>Area:</b>	6098.00 SqFt	<b>PCI:</b>	94		
<b>Sample Comments:</b>									
48	L & T CR	L	79.00	Ft					
<b>Sample Number:</b>	05	<b>Type:</b>	R	<b>Area:</b>	5250.00 SqFt	<b>PCI:</b>	96		
<b>Sample Comments:</b>									
48	L & T CR	L	26.00	Ft					
<b>Sample Number:</b>	12	<b>Type:</b>	R	<b>Area:</b>	5250.00 SqFt	<b>PCI:</b>	98		
<b>Sample Comments:</b>									
48	L & T CR	L	3.00	Ft					
<b>Sample Number:</b>	19	<b>Type:</b>	R	<b>Area:</b>	5250.00 SqFt	<b>PCI:</b>	100		
<b>Sample Comments:</b>									
<No Distress>									
<b>Sample Number:</b>	26	<b>Type:</b>	R	<b>Area:</b>	5250.00 SqFt	<b>PCI:</b>	100		
<b>Sample Comments:</b>									
<No Distress>									
<b>Sample Number:</b>	33	<b>Type:</b>	R	<b>Area:</b>	5250.00 SqFt	<b>PCI:</b>	100		
<b>Sample Comments:</b>									
<No Distress>									
<b>Sample Number:</b>	36	<b>Type:</b>	R	<b>Area:</b>	6233.00 SqFt	<b>PCI:</b>	96		
<b>Sample Comments:</b>									
48	L & T CR	L	25.00	Ft					



<b>Network:</b>	4A9	<b>Name:</b>	Isbell Field						
<b>Branch:</b>	TA1	<b>Name:</b>	Taxiway A1 Ft. Payne	<b>Use:</b>	TAXIWAY	<b>Area:</b>	10,702 SqFt		
<b>Section:</b>	01	of	1	<b>From:</b>	Runway 04-22	<b>To:</b>	Taxiway A	<b>Last Const.:</b>	10/1/2016
<b>Surface:</b>	AC	<b>Family:</b>	ALDOT_AC Taxiways	<b>Zone:</b>		<b>Category:</b>		<b>Rank:</b>	S
<b>Area:</b>	10,702 SqFt	<b>Length:</b>	230 Ft	<b>Width:</b>	35 Ft				
<b>Slabs:</b>		<b>Slab Length:</b>	Ft	<b>Slab Width:</b>	Ft	<b>Joint Length:</b>	Ft		
<b>Shoulder:</b>		<b>Street Type:</b>		<b>Grade:</b>	0	<b>Lanes:</b>	0		
<b>Section Comments:</b>									
<b>Work Date:</b>	1/1/1900	<b>Work Type:</b>	New Construction - Initial		<b>Code:</b>	NU-IN	<b>Is Major M&amp;R:</b>	True	
<b>Work Date:</b>	10/1/2011	<b>Work Type:</b>	Crack Sealing - AC		<b>Code:</b>	CS-AC	<b>Is Major M&amp;R:</b>	False	
<b>Work Date:</b>	10/1/2016	<b>Work Type:</b>	2" overlay		<b>Code:</b>	OL_2	<b>Is Major M&amp;R:</b>	True	
<b>Last Insp. Date:</b>	10/22/2018	<b>TotalSamples:</b>	2		<b>Surveyed:</b>	2			
<b>Conditions:</b>	PCI:	96							
<b>Inspection Comments:</b>									
<b>Sample Number:</b>	01	<b>Type:</b>	R	<b>Area:</b>	4942.00 SqFt	<b>PCI:</b>	95		
<b>Sample Comments:</b>									
48	L & T CR	L	50.00 Ft						
<b>Sample Number:</b>	02	<b>Type:</b>	R	<b>Area:</b>	5760.00 SqFt	<b>PCI:</b>	97		
<b>Sample Comments:</b>									
48	L & T CR	L	12.00 Ft						

**Network:** 4A9 **Name:** Isbell Field

**Branch:** TA2 **Name:** Taxiway A2 Ft. Payne **Use:** TAXIWAY **Area:** 11,575 SqFt

**Section:** 01 of 1 **From:** Runway 04-22 **To:** Taxiway A **Last Const.:** 10/1/2016

**Surface:** AC **Family:** ALDOT\_AC Taxiways **Zone:** **Category:** **Rank:** S

**Area:** 11,575 SqFt **Length:** 230 Ft **Width:** 35 Ft

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

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

**Section Comments:**

**Work Date:** 1/1/1900 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

**Work Date:** 10/1/2011 **Work Type:** Crack Sealing - AC **Code:** CS-AC **Is Major M&R:** False

**Work Date:** 10/1/2016 **Work Type:** 2" overlay **Code:** OL\_2 **Is Major M&R:** True

**Last Insp. Date:** 10/22/2018 **TotalSamples:** 2 **Surveyed:** 2

**Conditions:** PCI: 96

**Inspection Comments:**

**Sample Number:** 01 **Type:** R **Area:** 5142.00 SqFt **PCI:** 95

**Sample Comments:**

48 L & T CR L 49.00 Ft

**Sample Number:** 02 **Type:** R **Area:** 6433.00 SqFt **PCI:** 97

**Sample Comments:**

48 LONGITUDINAL/TRANSVERSE L 16.00 Ft  
CRACKING

<b>Network:</b>	4A9	<b>Name:</b>	Isbell Field				
<b>Branch:</b>	THANG01	<b>Name:</b>	Taxiway Hangar 01 Ft. Payne	<b>Use:</b>	TAXIWAY	<b>Area:</b>	52,660 SqFt
<b>Section:</b>	01	of 3	<b>From:</b>	Taxiway Parallel 01	<b>To:</b>	Apron 01	<b>Last Const.:</b> 6/1/2000
<b>Surface:</b>	AC	<b>Family:</b>	ALDOT_AC Taxilanes	<b>Zone:</b>		<b>Category:</b>	<b>Rank:</b> T
<b>Area:</b>	27,451 SqFt	<b>Length:</b>	403 Ft	<b>Width:</b>	35 Ft		
<b>Slabs:</b>		<b>Slab Length:</b>	Ft	<b>Slab Width:</b>	Ft	<b>Joint Length:</b>	Ft
<b>Shoulder:</b>		<b>Street Type:</b>		<b>Grade:</b>	0	<b>Lanes:</b>	0
<b>Section Comments:</b>							
<b>Work Date:</b>	1/1/1900	<b>Work Type:</b>	New Construction - Initial	<b>Code:</b>	NU-IN	<b>Is Major M&amp;R:</b>	True
<b>Work Date:</b>	6/1/2000	<b>Work Type:</b>	New Construction - Initial	<b>Code:</b>	NU-IN	<b>Is Major M&amp;R:</b>	True
<b>Work Date:</b>	10/1/2011	<b>Work Type:</b>	Crack Sealing - AC	<b>Code:</b>	CS-AC	<b>Is Major M&amp;R:</b>	False
<b>Last Insp. Date:</b>	10/22/2018	<b>TotalSamples:</b>	5	<b>Surveyed:</b>	4		
<b>Conditions:</b>	PCI: 53						
<b>Inspection Comments:</b>							
<b>Sample Number:</b>	01	<b>Type:</b>	R	<b>Area:</b>	2573.00 SqFt	<b>PCI:</b>	62
<b>Sample Comments:</b>							
50	PATCHING	L		2573.00	SqFt		
<b>Sample Number:</b>	02	<b>Type:</b>	R	<b>Area:</b>	5097.00 SqFt	<b>PCI:</b>	32
<b>Sample Comments:</b>							
41	ALLIGATOR CR	M		64.00	SqFt		
43	BLOCK CR	M		1190.00	SqFt		
48	L & T CR	L		112.00	Ft		
48	L & T CR	M		404.00	Ft		
50	PATCHING	L		510.00	SqFt		
57	WEATHERING	L		4587.00	SqFt		
<b>Sample Number:</b>	04	<b>Type:</b>	R	<b>Area:</b>	5250.00 SqFt	<b>PCI:</b>	74
<b>Sample Comments:</b>							
48	L & T CR	L		145.00	Ft		
48	L & T CR	M		110.00	Ft		
57	WEATHERING	L		5250.00	SqFt		
<b>Sample Number:</b>	06	<b>Type:</b>	R	<b>Area:</b>	5969.00 SqFt	<b>PCI:</b>	48
<b>Sample Comments:</b>							
48	LONGITUDINAL/TRANSVERSE CRACKING	L		36.00	Ft		
48	LONGITUDINAL/TRANSVERSE CRACKING	M		50.00	Ft		
50	PATCHING	L		805.00	SqFt		
50	PATCHING	M		805.00	SqFt		
57	WEATHERING	L		3270.00	SqFt		
57	WEATHERING	M		1089.00	SqFt		

**Network:** 4A9 **Name:** Isbell Field

**Branch:** THANG01 **Name:** Taxiway Hangar 01 Ft. Payne **Use:** TAXIWAY **Area:** 52,660 SqFt

**Section:** 03 of 3 **From:** Section 01 **To:** T-Hangars **Last Const.:** 6/3/2009

**Surface:** PCC **Family:** ALDOT\_PCC Taxiways **Zone:** **Category:** **Rank:** T

**Area:** 6,879 SqFt **Length:** 196 Ft **Width:** 35 Ft

**Slabs:** 68 **Slab Length:** 9 Ft **Slab Width:** 10 Ft **Joint Length:** 1,239 Ft

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

**Section Comments:**

**Work Date:** 6/1/2009 **Work Type:** Subbase - Aggregate **Code:** SB-AG **Is Major M&R:** False

**Work Date:** 6/2/2009 **Work Type:** Base Course - Aggregate **Code:** BA-AG **Is Major M&R:** False

**Work Date:** 6/3/2009 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

**Last Insp. Date:** 10/22/2018 **TotalSamples:** 3 **Surveyed:** 3

**Conditions:** PCI: 90

**Inspection Comments:**

**Sample Number:** 01 **Type:** R **Area:** 20.00 Slabs **PCI:** 93

**Sample Comments:**

65 JOINT SEAL DAMAGE M 20.00 Slabs

**Sample Number:** 02 **Type:** R **Area:** 20.00 Slabs **PCI:** 89

**Sample Comments:**

65 JOINT SEAL DAMAGE M 20.00 Slabs

70 SCALING L 2.00 Slabs

75 CORNER SPALLING L 1.00 Slabs

**Sample Number:** 03 **Type:** R **Area:** 28.00 Slabs **PCI:** 90

**Sample Comments:**

65 JOINT SEAL DAMAGE M 28.00 Slabs

70 SCALING L 4.00 Slabs

74 JOINT SPALLING L 1.00 Slabs

**Network:** 4A9 **Name:** Isbell Field

**Branch:** THANG01 **Name:** Taxiway Hangar 01 Ft. Payne **Use:** TAXIWAY **Area:** 52,660 SqFt

**Section:** 02 of 3 **From:** Section 01 **To:** T-Hangar **Last Const.:** 2/21/2005

**Surface:** AC **Family:** ALDOT\_AC Taxilanes **Zone:** **Category:** **Rank:** T

**Area:** 18,330 SqFt **Length:** 145 Ft **Width:** 70 Ft

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

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

**Section Comments:**

**Work Date:** 1/1/1900 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

**Work Date:** 2/21/2005 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

**Last Insp. Date:** 10/22/2018 **TotalSamples:** 4 **Surveyed:** 4

**Conditions:** PCI: 72

**Inspection Comments:**

**Sample Number:** 01 **Type:** R **Area:** 4000.00 SqFt **PCI:** 85

**Sample Comments:**

48 L & T CR L 10.00 Ft

48 L & T CR M 18.00 Ft

48 L & T CR H 5.00 Ft

**Sample Number:** 02 **Type:** R **Area:** 5395.00 SqFt **PCI:** 56

**Sample Comments:**

41 ALLIGATOR CR M 55.00 SqFt

48 L & T CR L 147.00 Ft

48 L & T CR M 35.00 Ft

48 L & T CR H 10.00 Ft

**Sample Number:** 03 **Type:** R **Area:** 5149.00 SqFt **PCI:** 82

**Sample Comments:**

48 L & T CR L 13.00 Ft

48 L & T CR M 9.00 Ft

48 L & T CR H 4.00 Ft

50 PATCHING L 100.00 SqFt

**Sample Number:** 04 **Type:** R **Area:** 3466.00 SqFt **PCI:** 64

**Sample Comments:**

43 BLOCK CR L 500.00 SqFt

48 L & T CR L 18.00 Ft

48 L & T CR M 92.00 Ft

48 L & T CR H 22.00 Ft

50 PATCHING L 50.00 SqFt

**Network:** 4A9 **Name:** Isbell Field

**Branch:** THANG02 **Name:** Taxiway Hangar 02 Ft. Payne **Use:** TAXIWAY **Area:** 116,719 SqFt

**Section:** 02 of 2 **From:** Section 01 **To:** Section 01 **Last Const.:** 5/30/1922

**Surface:** PCC **Family:** ALDOT\_PCC Taxiways **Zone:** **Category:** **Rank:** T

**Area:** 28,580 SqFt **Length:** 458 Ft **Width:** 60 Ft

**Slabs:** 50 **Slab Length:** 25 Ft **Slab Width:** 25 Ft **Joint Length:** 1,680 Ft

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

**Section Comments:**

**Work Date:** 1/1/1900 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

**Work Date:** 5/30/1922 **Work Type:** New Construction - Initial **Code:** NU-IN **Is Major M&R:** True

**Last Insp. Date:** 10/22/2018 **Total Samples:** 3 **Surveyed:** 3

**Conditions:** PCI: 24

**Inspection Comments:**

**Sample Number:** 01 **Type:** R **Area:** 21.00 Slabs **PCI:** 16

**Sample Comments:**

63 LINEAR CRACKING M 6.00 Slabs

65 JOINT SEAL DAMAGE H 21.00 Slabs

72 SHATTERED SLAB M 1.00 Slabs

72 SHATTERED SLAB H 5.00 Slabs

**Sample Number:** 02 **Type:** R **Area:** 21.00 Slabs **PCI:** 10

**Sample Comments:**

63 LINEAR CRACKING M 11.00 Slabs

63 LINEAR CRACKING H 1.00 Slabs

65 JOINT SEAL DAMAGE H 21.00 Slabs

72 SHATTERED SLAB M 1.00 Slabs

72 SHATTERED SLAB H 4.00 Slabs

**Sample Number:** 03 **Type:** A **Area:** 8.00 Slabs **PCI:** 82

**Sample Comments:**

63 LINEAR CRACKING L 1.00 Slabs

65 JOINT SEAL DAMAGE H 8.00 Slabs

<b>Network:</b>	4A9		<b>Name:</b>	Isbell Field			
<b>Branch:</b>	THANG02	<b>Name:</b>	Taxiway Hangar 02 Ft. Payne	<b>Use:</b>	TAXIWAY	<b>Area:</b>	116,719 SqFt
<b>Section:</b>	01	of 2	<b>From:</b>	Apron 01	<b>To:</b>	T-Hangars	<b>Last Const.:</b> 11/12/1992
<b>Surface:</b>	AC	<b>Family:</b>	ALDOT_AC Taxilanes	<b>Zone:</b>		<b>Category:</b>	<b>Rank:</b> T
<b>Area:</b>	88,139 SqFt	<b>Length:</b>	875 Ft	<b>Width:</b>	220 Ft		
<b>Slabs:</b>		<b>Slab Length:</b>	Ft	<b>Slab Width:</b>	Ft	<b>Joint Length:</b>	Ft
<b>Shoulder:</b>		<b>Street Type:</b>		<b>Grade:</b>	0	<b>Lanes:</b>	0
<b>Section Comments:</b>							
<b>Work Date:</b>	1/1/1900	<b>Work Type:</b>	New Construction - Initial	<b>Code:</b>	NU-IN	<b>Is Major M&amp;R:</b>	True
<b>Work Date:</b>	11/12/1992	<b>Work Type:</b>	New Construction - Initial	<b>Code:</b>	NU-IN	<b>Is Major M&amp;R:</b>	True
<b>Last Insp. Date:</b>	10/22/2018	<b>Total Samples:</b>	18	<b>Surveyed:</b>	6		
<b>Conditions:</b>	PCI: 27						
<b>Inspection Comments:</b>							
<b>Sample Number:</b>	01	<b>Type:</b>	R	<b>Area:</b>	5485.00 SqFt	<b>PCI:</b>	13
<b>Sample Comments:</b>							
41	ALLIGATOR CR	M	440.00	SqFt			
41	ALLIGATOR CR	H	240.00	SqFt			
43	BLOCK CR	L	600.00	SqFt			
48	L & T CR	L	150.00	Ft			
48	L & T CR	M	760.00	Ft			
57	WEATHERING	L	5485.00	SqFt			
<b>Sample Number:</b>	04	<b>Type:</b>	R	<b>Area:</b>	5485.00 SqFt	<b>PCI:</b>	20
<b>Sample Comments:</b>							
41	ALLIGATOR CR	M	120.00	SqFt			
41	ALLIGATOR CR	H	185.00	SqFt			
43	BLOCK CR	L	360.00	SqFt			
48	L & T CR	L	100.00	Ft			
48	L & T CR	M	370.00	Ft			
50	PATCHING	L	600.00	SqFt			
57	WEATHERING	L	4845.00	SqFt			
<b>Sample Number:</b>	07	<b>Type:</b>	R	<b>Area:</b>	5160.00 SqFt	<b>PCI:</b>	54
<b>Sample Comments:</b>							
43	BLOCK CR	L	1050.00	SqFt			
43	BLOCK CR	M	126.00	SqFt			
48	L & T CR	L	200.00	Ft			
48	L & T CR	M	78.00	Ft			
57	WEATHERING	L	2580.00	SqFt			
57	WEATHERING	M	2580.00	SqFt			
<b>Sample Number:</b>	10	<b>Type:</b>	R	<b>Area:</b>	4740.00 SqFt	<b>PCI:</b>	21
<b>Sample Comments:</b>							
41	ALLIGATOR CR	M	600.00	SqFt			
43	BLOCK CR	L	1000.00	SqFt			
48	L & T CR	L	332.00	Ft			
48	L & T CR	M	121.00	Ft			
52	RAVELING	M	64.00	SqFt			
57	WEATHERING	L	2338.00	SqFt			
57	WEATHERING	M	2338.00	SqFt			
<b>Sample Number:</b>	11	<b>Type:</b>	R	<b>Area:</b>	5445.00 SqFt	<b>PCI:</b>	51
<b>Sample Comments:</b>							
48	L & T CR	L	100.00	Ft			
48	L & T CR	M	572.00	Ft			
52	RAVELING	L	2000.00	SqFt			
57	WEATHERING	L	1860.00	SqFt			
<b>Sample Number:</b>	14	<b>Type:</b>	R	<b>Area:</b>	6365.00 SqFt	<b>PCI:</b>	10
<b>Sample Comments:</b>							
41	ALLIGATOR CR	M	300.00	SqFt			

41	ALLIGATOR CR	H	800.00	SqFt
48	L & T CR	M	332.00	Ft
57	WEATHERING	L	6365.00	SqFt



**APPENDIX E**  
**DISTRESS SUMMARY REPORT**



**Appendix E**  
**Distress Summary Report**  
Isbell Field (4A9)

Branch ID	Section ID	Surface <sup>1</sup>	Area (sf)	Distress Number	Description	Distress Mechanism	Severity	Quantity	Quantity Units	Distress Density
A01	01	AC	176,922	43	BLOCK CRACKING	Climate/Durability	Low	2,259	SqFt	1.3%
A01	01	AC	176,922	43	BLOCK CRACKING	Climate/Durability	Medium	6,416	SqFt	3.6%
A01	01	AC	176,922	48	LONGITUDINAL/TRANSVERSE CRACKING	Climate/Durability	Low	8,576	Ft	4.8%
A01	01	AC	176,922	48	LONGITUDINAL/TRANSVERSE CRACKING	Climate/Durability	Medium	16,877	Ft	9.5%
A01	01	AC	176,922	50	PATCHING	Climate/Durability	Low	3,524	SqFt	2.0%
A01	01	AC	176,922	52	RAVELING	Climate/Durability	Low	79,074	SqFt	44.7%
A01	01	AC	176,922	57	WEATHERING	Climate/Durability	Low	22,593	SqFt	12.8%
R0422	01	AC	500,100	48	LONGITUDINAL/TRANSVERSE CRACKING	Climate/Durability	Low	6,648	Ft	1.3%
R0422	01	AC	500,100	50	PATCHING	Climate/Durability	Low	400	SqFt	0.1%
TA	01	AC	190,807	48	LONGITUDINAL/TRANSVERSE CRACKING	Climate/Durability	Low	658	Ft	0.3%
TA1	01	AC	10,702	48	LONGITUDINAL/TRANSVERSE CRACKING	Climate/Durability	Low	62	Ft	0.6%
TA2	01	AC	11,575	48	LONGITUDINAL/TRANSVERSE CRACKING	Climate/Durability	Low	65	Ft	0.6%
THANG01	01	AC	27,451	41	ALLIGATOR CRACKING	Load	Medium	93	SqFt	0.3%
THANG01	01	AC	27,451	43	BLOCK CRACKING	Climate/Durability	Medium	1,729	SqFt	6.3%
THANG01	01	AC	27,451	48	LONGITUDINAL/TRANSVERSE CRACKING	Climate/Durability	Low	426	Ft	1.6%
THANG01	01	AC	27,451	48	LONGITUDINAL/TRANSVERSE CRACKING	Climate/Durability	Medium	820	Ft	3.0%
THANG01	01	AC	27,451	50	PATCHING	Climate/Durability	Low	5,650	SqFt	20.6%
THANG01	01	AC	27,451	50	PATCHING	Climate/Durability	Medium	1,170	SqFt	4.3%
THANG01	01	AC	27,451	57	WEATHERING	Climate/Durability	Low	19,048	SqFt	69.4%

**Appendix E**  
**Distress Summary Report**  
Isbell Field (4A9)

Branch ID	Section ID	Surface <sup>1</sup>	Area (sf)	Distress Number	Description	Distress Mechanism	Severity	Quantity	Quantity Units	Distress Density
THANG01	01	AC	27,451	57	WEATHERING	Climate/Durability	Medium	1,583	SqFt	5.8%
THANG01	02	AC	18,330	41	ALLIGATOR CRACKING	Load	Medium	56	SqFt	0.3%
THANG01	02	AC	18,330	43	BLOCK CRACKING	Climate/Durability	Low	509	SqFt	2.8%
THANG01	02	AC	18,330	48	LONGITUDINAL/TRANSVERSE CRACKING	Climate/Durability	High	42	Ft	0.2%
THANG01	02	AC	18,330	48	LONGITUDINAL/TRANSVERSE CRACKING	Climate/Durability	Low	191	Ft	1.0%
THANG01	02	AC	18,330	48	LONGITUDINAL/TRANSVERSE CRACKING	Climate/Durability	Medium	157	Ft	0.9%
THANG01	02	AC	18,330	50	PATCHING	Climate/Durability	Low	153	SqFt	0.8%
THANG01	03	PCC	6,879	65	JOINT SEAL DAMAGE	Climate/Durability	Medium	68	Slabs	100.0%
THANG01	03	PCC	6,879	70	SCALING	Other	Low	6	Slabs	8.8%
THANG01	03	PCC	6,879	74	JOINT SPALLING	Other	Low	1	Slabs	1.5%
THANG01	03	PCC	6,879	75	CORNER SPALLING	Other	Low	1	Slabs	1.5%
THANG02	01	AC	88,139	41	ALLIGATOR CRACKING	Load	High	3,304	SqFt	3.7%
THANG02	01	AC	88,139	41	ALLIGATOR CRACKING	Load	Medium	3,938	SqFt	4.5%
THANG02	01	AC	88,139	43	BLOCK CRACKING	Climate/Durability	Low	8,118	SqFt	9.2%
THANG02	01	AC	88,139	43	BLOCK CRACKING	Climate/Durability	Medium	340	SqFt	0.4%
THANG02	01	AC	88,139	48	LONGITUDINAL/TRANSVERSE CRACKING	Climate/Durability	Low	2,379	Ft	2.7%
THANG02	01	AC	88,139	48	LONGITUDINAL/TRANSVERSE CRACKING	Climate/Durability	Medium	6,022	Ft	6.8%
THANG02	01	AC	88,139	50	PATCHING	Climate/Durability	Low	1,618	SqFt	1.8%
THANG02	01	AC	88,139	52	RAVELING	Climate/Durability	Low	5,394	SqFt	6.1%
THANG02	01	AC	88,139	52	RAVELING	Climate/Durability	Medium	173	SqFt	0.2%
THANG02	01	AC	88,139	57	WEATHERING	Climate/Durability	Low	63,307	SqFt	71.8%
THANG02	01	AC	88,139	57	WEATHERING	Climate/Durability	Medium	13,264	SqFt	15.0%
THANG02	02	PCC	28,580	63	LINEAR CRACKING	Load	High	1	Slabs	2.0%

**Appendix E**  
**Distress Summary Report**  
 Isbell Field (4A9)

Branch ID	Section ID	Surface <sup>1</sup>	Area (sf)	Distress Number	Description	Distress Mechanism	Severity	Quantity	Quantity Units	Distress Density
THANG02	02	PCC	28,580	63	LINEAR CRACKING	Load	Low	1	Slabs	2.0%
THANG02	02	PCC	28,580	63	LINEAR CRACKING	Load	Medium	17	Slabs	34.0%
THANG02	02	PCC	28,580	65	JOINT SEAL DAMAGE	Climate/Durability	High	50	Slabs	100.0%
THANG02	02	PCC	28,580	72	SHATTERED SLAB	Load	High	9	Slabs	18.0%
THANG02	02	PCC	28,580	72	SHATTERED SLAB	Load	Medium	2	Slabs	4.0%

<sup>1</sup> AC = Asphalt Cement Concrete, AAC = Asphalt Overlay AC, PCC = Portland Cement Concrete, APC = Asphalt Overlay PCC

<sup>2</sup> LCD = Last construction date. The date of the last major pavement rehabilitation (e.g. AC overlay)

## **APPENDIX F**

### **PAVEMENT CONDITION REPORTS**

F1: Section Forecasted Pavement Condition Rating

F2: Branch PCI Rating

F3: Branch FOD Rating



**Appendix F1**  
**Forecasted Section PCI**  
 Isbell Field (4A9)

Branch ID	Section ID	Forecasted PCI						
		2021	2022	2023	2024	2025	2026	2027
A01	01	46	44	42	40	37	35	33
R0422	01	89	85	82	78	74	72	70
TA	01	94	92	89	87	84	82	80
TA1	01	91	88	86	83	81	79	77
TA2	01	91	88	86	83	81	79	77
THANG01	01	45	42	39	35	32	28	25
THANG01	02	65	60	56	51	47	45	41
THANG01	03	88	87	86	86	85	84	83
THANG02	01	19	16	12	9	5	1	0
THANG02	02	22	21	20	20	19	18	17

11/20/2020

**Branch Condition Report**

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*Pavement Database: ALDOT\_Combined\_201109*

Branch ID	Number of Sections	Sum Section Length (Ft)	Avg Section Width (Ft)	True Area (SqFt)	Use	Average PCI	Standard Deviation PCI	Weighted Average PCI
A01	1	700.00	250.00	176,922.00	APRON	51.00	0.00	51.00
R0422	1	5,001.00	100.00	500,100.00	RUNWAY	94.00	0.00	94.00
TA	1	5,420.00	35.00	190,807.00	TAXIWAY	98.00	0.00	98.00
TA1	1	230.00	35.00	10,702.00	TAXIWAY	96.00	0.00	96.00
TA2	1	230.00	35.00	11,575.00	TAXIWAY	96.00	0.00	96.00
THANG01	3	744.00	46.67	52,660.00	TAXIWAY	71.67	15.11	64.45
THANG02	2	1,333.00	140.00	116,719.00	TAXIWAY	25.50	1.50	26.27

*Pavement Database: ALDOT\_Combined\_201109*

<b>Use Category</b>	<b>Number of Sections</b>	<b>Total Area (SqFt)</b>	<b>Arithmetic Average PCI</b>	<b>Average STD PCI</b>	<b>Weighted Average PCI</b>
APRON	1	176,922.00	51.00	0.00	51.00
RUNWAY	1	500,100.00	94.00	0.00	94.00
TAXIWAY	8	382,463.00	69.50	29.14	71.37
ALL	10	1,059,485.00	70.10	27.80	78.65



8/27/2021

**Branch Condition Report**

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*Pavement Database: ALDOT\_210811*

Branch ID	Number of Sections	Sum Section Length (Ft)	Avg Section Width (Ft)	True Area (SqFt)	Use	Average FOD Potential	Standard Deviation FOD Pote	Weighted Average FOD Poten
A01	1	700.00	250.00	176,922.00	APRON	64.00	0.00	64.00
R0422	1	5,001.00	100.00	500,100.00	RUNWAY	15.00	0.00	15.00
TA	1	5,420.00	35.00	190,807.00	TAXIWAY	11.00	0.00	11.00
TA1	1	230.00	35.00	10,702.00	TAXIWAY	13.00	0.00	13.00
TA2	1	230.00	35.00	11,575.00	TAXIWAY	13.00	0.00	13.00
THANG01	3	744.00	46.67	52,660.00	TAXIWAY	44.33	11.15	49.08
THANG02	2	1,333.00	140.00	116,719.00	TAXIWAY	79.00	6.00	75.94

8/27/2021

**Branch Condition Report**

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*Pavement Database: ALDOT\_210811*

<b>Use Category</b>	<b>Number of Sections</b>	<b>Total Area (SqFt)</b>	<b>Arithmetic Average FOD</b>	<b>Average STD FOD Potential</b>	<b>Weighted Average FOD P</b>
APRON	1	176,922.00	64.00	0.00	64.00
RUNWAY	1	500,100.00	15.00	0.00	15.00
TAXIWAY	8	382,463.00	41.00	27.00	36.18
ALL	10	1,059,485.00	40.70	26.53	30.83

**APPENDIX G**

**SAFETY AND PREVENTIVE MAINTENANCE POLICIES**



**Appendix G1**  
**Localized Safety (Stopgap) Repair Policy**

Distress	Distress Severity	Description	Code	Work Type	Work Unit
41	High	ALLIGATOR CR	PA-FD	Patching - AC Full-Depth	SqFt
43	High	BLOCK CR	CS-AC	Crack Sealing - AC	Ft
45	High	DEPRESSION	PA-FD	Patching - AC Full-Depth	SqFt
47	High	JT REF. CR	CS-AC	Crack Sealing - AC	Ft
48	High	L & T CR	CS-AC	Crack Sealing - AC	Ft
50	High	PATCHING	PA-FD	Patching - AC Full-Depth	SqFt
53	High	RUTTING	PA-FD	Patching - AC Full-Depth	SqFt
54	High	SHOVING	PA-PD	Patching - AC Partial-Depth	SqFt
55	NA	SLIPPAGE CR	PA-PD	Patching - AC Partial-Depth	SqFt
56	High	SWELLING	PA-FD	Patching - AC Full-Depth	SqFt
61	High	BLOW-UP	SL-PC	Slab Replacement - PCC	SqFt
61	Medium	BLOW-UP	PA-PF	Patching - PCC Full Depth	SqFt
62	High	CORNER BREAK	PA-PF	Patching - PCC Full Depth	SqFt
63	High	LINEAR CR	PA-PF	Patching - PCC Full Depth	SqFt
63	Medium	LINEAR CR	CS-PC	Crack Sealing - PCC	Ft
64	High	DURABIL. CR	SL-PC	Slab Replacement - PCC	SqFt
64	Medium	DURABIL. CR	PA-PF	Patching - PCC Full Depth	SqFt
66	High	SMALL PATCH	PA-PP	Patching - PCC Partial Depth	SqFt
67	High	LARGE PATCH	PA-PF	Patching - PCC Full Depth	SqFt
70	High	SCALING	SL-PC	Slab Replacement - PCC	SqFt
71	High	FAULTING	GR-PP	Grinding (Localized)	Ft
72	High	SHAT. SLAB	SL-PC	Slab Replacement - PCC	SqFt
74	High	JOINT SPALL	PA-PP	Patching - PCC Partial Depth	SqFt
75	High	CORNER SPALL	PA-PP	Patching - PCC Partial Depth	SqFt
76	High	ASR	SL-PC	Slab Replacement - PCC	SqFt

**Appendix G2**  
**Localized Preventive Repair Policy**

Distress	Distress Severity	Description	Code	Work Type	Work Unit
41	Medium	ALLIGATOR CR	PA-AD	Patching - AC Full-Depth	SqFt
41	High	ALLIGATOR CR	PA-AD	Patching - AC Full-Depth	SqFt
42	N/A	BLEEDING	PA-AS	Patching - AC Partial-Depth	SqFt
43	High	BLOCK CR	PA-AD	Patching - AC Full-Depth	SqFt
43	Medium	BLOCK CR	CS-AC	Crack Sealing - AC	Ft
44	Low	CORRUGATION	PA-AS	Patching - AC Partial-Depth	SqFt
44	High	CORRUGATION	PA-AS	Patching - AC Partial-Depth	SqFt
44	Medium	CORRUGATION	PA-AS	Patching - AC Partial-Depth	SqFt
45	Medium	DEPRESSION	PA-AD	Patching - AC Full-Depth	SqFt
45	Low	DEPRESSION	PA-AD	Patching - AC Full-Depth	SqFt
45	High	DEPRESSION	PA-AD	Patching - AC Full-Depth	SqFt
47	High	JT REF. CR	CS-AC	Crack Sealing - AC	Ft
47	Medium	JT REF. CR	CS-AC	Crack Sealing - AC	Ft
48	High	L & T CR	CS-AC	Crack Sealing - AC	Ft
48	Medium	L & T CR	CS-AC	Crack Sealing - AC	Ft
49	N/A	OIL SPILLAGE	PA-AD	Patching - AC Full-Depth	SqFt
50	High	PATCHING	PA-AD	Patching - AC Full-Depth	SqFt
50	Medium	PATCHING	PA-AD	Patching - AC Full-Depth	SqFt
52	High	RAVELING	PA-AS	Patching - AC Partial-Depth	SqFt
53	High	RUTTING	PA-AD	Patching - AC Full-Depth	SqFt
53	Low	RUTTING	PA-AD	Patching - AC Full-Depth	SqFt
53	Medium	RUTTING	PA-AD	Patching - AC Full-Depth	SqFt
55	N/A	SLIPPAGE CR	PA-AD	Patching - AC Full-Depth	SqFt
56	Low	SWELLING	PA-AD	Patching - AC Full-Depth	SqFt
56	Medium	SWELLING	PA-AD	Patching - AC Full-Depth	SqFt
61	Low	BLOW-UP	PA-PF	Patching - PCC Full Depth	SqFt
61	Medium	BLOW-UP	PA-PF	Patching - PCC Full Depth	SqFt
61	High	BLOW-UP	PA-PF	Patching - PCC Full Depth	SqFt
62	Medium	CORNER BREAK	PA-PF	Patching - PCC Full Depth	SqFt
62	High	CORNER BREAK	PA-PF	Patching - PCC Full Depth	SqFt
62	Low	CORNER BREAK	CS-PC	Crack Sealing - PCC	Ft
63	Medium	LINEAR CR	CS-PC	Crack Sealing - PCC	Ft
63	High	LINEAR CR	PA-PP	Patching - PCC Partial Depth	SqFt
64	Medium	DURABIL. CR	PA-PF	Patching - PCC Full Depth	SqFt
64	High	DURABIL. CR	SL-PC	Slab Replacement - PCC	SqFt
65	High	JT SEAL DMG	JS-LC	Joint Seal (Localized)	Ft
65	Medium	JT SEAL DMG	JS-LC	Joint Seal (Localized)	Ft
66	High	SMALL PATCH	PA-PP	Patching - PCC Partial Depth	SqFt
66	Medium	SMALL PATCH	PA-PP	Patching - PCC Partial Depth	SqFt
67	Medium	LARGE PATCH	PA-PF	Patching - PCC Full Depth	SqFt

**Appendix G2**  
**Localized Preventive Repair Policy**

Distress	Distress Severity	Description	Code	Work Type	Work Unit
67	High	LARGE PATCH	PA-PF	Patching - PCC Full Depth	SqFt
69	N/A	PUMPING	JS-LC	Joint Seal (Localized)	Ft
70	Medium	SCALING	PA-PP	Patching - PCC Partial Depth	SqFt
70	High	SCALING	SL-PC	Slab Replacement - PCC	SqFt
71	High	FAULTING	GR-PP	Grinding (Localized)	Ft
71	Medium	FAULTING	GR-PP	Grinding (Localized)	Ft
72	Medium	SHAT. SLAB	SL-PC	Slab Replacement - PCC	SqFt
72	High	SHAT. SLAB	SL-PC	Slab Replacement - PCC	SqFt
74	High	JOINT SPALL	PA-PP	Patching - PCC Partial Depth	SqFt
74	Medium	JOINT SPALL	PA-PP	Patching - PCC Partial Depth	SqFt
75	Medium	CORNER SPALL	PA-PP	Patching - PCC Partial Depth	SqFt
75	High	CORNER SPALL	PA-PP	Patching - PCC Partial Depth	SqFt
76	Medium	ASR	SL-PC	Slab Replacement - PCC	SqFt
76	High	ASR	SL-PC	Slab Replacement - PCC	SqFt

## **APPENDIX H**

### **M&R UNIT COSTS**

H1: M&R Unit Costs

H2: Component Costs for Repair

H3: Airport Category



## Maintenance and Repair (M&R) Unit Costs

The M&R costs developed for the ALDOT PMP include costs for maintenance, preservation, and repair activities and are described below.

### Unit Costs Source Data

The source for the M&R costs data is RSMMeans, which has data for 14 locations throughout Alabama, as identified by the yellow highlighted boxes in Figure 1. The cost data is presented in terms of individual line items like asphalt wearing course, aggregate base etc., which were consolidated to develop the activity costs described below.

The cost data show a distinct difference in costs between locations north and south of Birmingham, especially for the higher value items like the asphalt layers. Therefore, the unit costs were developed accordingly for the airports north and south of Birmingham, as identified in Figure 1. Appendix H2 presents the component costs used in developing the M&R costs.

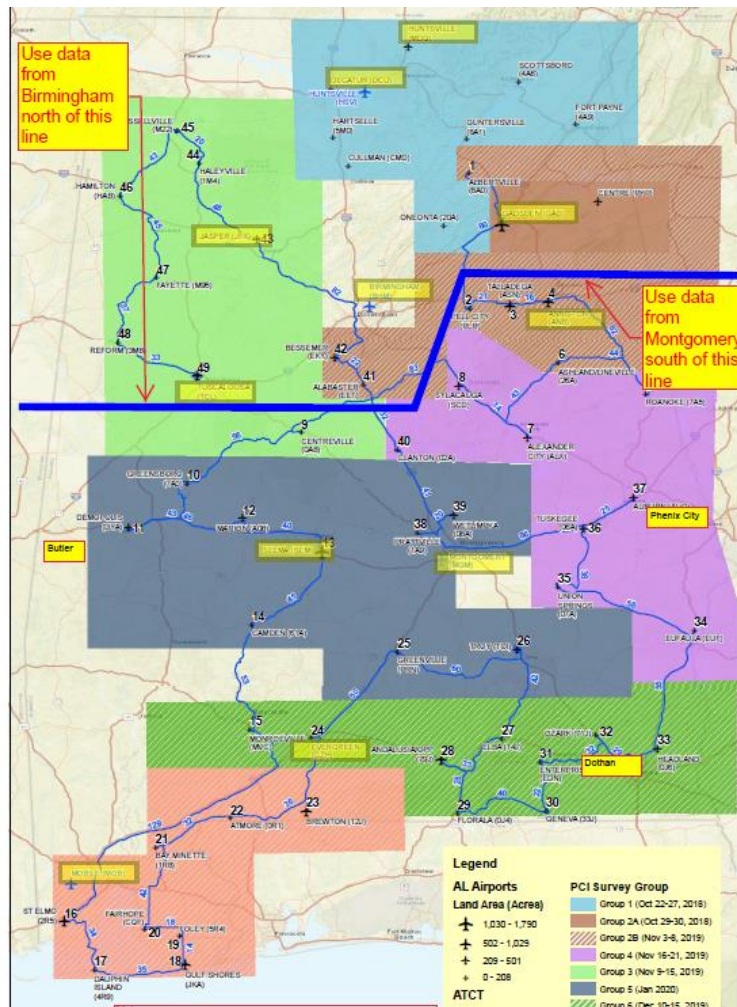


Figure 1: RSMMeans Unit Costs Locations.



**Maintenance & Repair (M&R) Activities**

Maintenance activities are localized activities which are typically assigned in the first year of the M&R plan based on the observed distresses.

Repair activities are further subdivided into preservation, rehabilitation, and reconstruction. Repair activities are conducted for larger areas, typically at the section level and are assigned based on the Critical Pavement Condition Index, denoted as CP in Table 1. The CP is based on the section’s rank or importance within the overall network and typically ranges from 55 to 70. The CP was set at 70 for the ALDOT runway pavements and 65 for the other pavements.

*Table 1: Repair Activities.*

Activity Type	PCI	Activity
Preservation	> CP	Runway Surface Treatment
		Taxiway and Apron Surface Treatment
Rehabilitation	> CP	2" AC OL <sup>1</sup>
	55 - CP	Mill 2" & 2" AC OL
	45 - 55	Mill 2" & 3" AC OL
Reconstruction	0 - 45	Reconstruct with AC

<sup>1</sup>For Sections with Structural Distress and PCI greater than Critical PCI

The depths for the milling and overlay (AC OL) in Table 1 were established by creating a balance between removal of surficial distress and providing additional pavement structural capacity. All overlay options include full-depth patching to repair localized distresses.

From the FAA 5010 records, the Alabama airport network includes a wide range of allowable aircraft loads. The airports were divided into three categories of allowable aircraft loads based on requirements for minimum pavement thickness and the use of a P-401 surface layer. The categories are based on the aircraft maximum gross takeoff weight (MGTOW) and include: less than 12,500 lbs, 12,500 to 30,000 lbs, and 30,000 to 100,000 lbs. Appendix H3 presents the category for each airport.

For any sections requiring reconstruction, the pavement sections were established primarily in accordance with the requirements in Table 3 of the FAA’s Advisory Circular 150/5320-6F. The pavement sections used for developing the cost estimates are:

- ≤ 12,500 lbs                    4" P-403 (State HMA Mix) + 6" P-209 Base
- 12,500 – 30,000 lbs        4" P-403 (State HMA Mix) + 8" P-209 Base
- 30,000 – 100,000 lbs      5" P-401 + 10" P-209 Base

It is important to note that while the FAA requires a stabilized base for those pavements that support aircraft operations with MGTOWs that are greater than 100,000 lbs, the number of such operations is minimal for those airports shown in Appendix H3. As a result, the cost of a stabilized base is excluded in the development of the unit costs for ALDOT’s PMP update. However, based on the Engineer’s future design and aircraft fleet mix development, project-level construction work could include the use of a stabilized base at that time.

**M&R Unit Costs**

Paving projects typically include additional project costs like mobilization, design, construction administration and inspections, and drainage improvements. A summary of non-direct pavement construction line items has been included in the unit costs in Tables 5 and 6 as described below. These non-direct items are expressed as a percentage of the total component costs for each activity.

These non-direct pavement construction items were developed from API’s extensive experience with APMP project cost estimation. These percentages may vary for Alabama airport construction projects; however, since the direct pavement scope of work is estimated in a network-level evaluation, these conservative estimates serve as a good starting point for the development of realistic total project costs and annual APMP budgets for ALDOT. For repair activities such as Mill & Overlay, which typically do not include significant drainage work, the corresponding multiplier was reduced by 50 percent. The non-direct cost factors are presented in Table 2.

*Table 2: Cost Factors.*

Factor	Function of	Estimate		
		Preservation	Rehabilitation	Reconstruction
Mobilization	All costs, less design	10%	10%	10%
Drainage Improvements	Paving costs	-	4%	8%
Contingency	All costs, less mobilization and design	10%	20%	20%
Design & CM	All costs, less mobilization and design	15%	20%	20%

The M&R unit costs for maintenance, preservation, and repair activities were developed from the RSMMeans cost data and are presented in the following section.

***Maintenance***

The maintenance activities include crack seal, and full and partial-depth patching. The unit costs are presented in Table 3.

*Table 3: Unit Costs for Maintenance.*

Activity	Unit Cost	Unit
Seal Cracks - AC	\$3.95	lf
AC Full-Depth Patching	\$25.05	sf
AC Partial-Dept Patching	\$16.28	sf
Seal Cracks – PCC	\$6.00	lf
PCC Full-Depth Patching	\$35.00	sf
PCC Partial-Depth Patching	\$175.00	sf
Jt. Seal	\$8.00	lf
Slab Replacement	\$20.00	sf

**Preservation**

The unit costs for the surface treatments are presented in Table 4. They include sealing of cracks and application of pavement markings.

*Table 4: Unit Costs for Preservation Activities.*

Activity	Unit Cost	Unit
Runway Surface Treatment	\$0.57	sf
Taxiway and Apron Surface Treatment	\$0.88	sf

**Rehabilitation and Reconstruction**

As discussed previously, repair activities are also divided into rehabilitation and reconstruction. The unit costs for airport repair for the Northern Region (Birmingham Area) and Southern Region (Montgomery Area) are shown in Tables 5 and 6, respectively.

*Table 5: Unit Costs for Repair Activities, Northern Region.*

Activity Type	Activity	MGTOW, thousand lbs		
		≤ 12.5	12.5-30	30-100
Rehabilitation	2" AC OL	\$3.78		\$4.19
	Mill 2" & 2" AC OL	\$4.15		\$4.56
	Mill 2" & 3" AC OL	\$5.18		\$5.79
Reconstruction	AC Reconstruction	\$8.40	\$9.10	\$10.91

*Table 6: Unit Costs for Repair Activities, Southern Region.*

Activity Type	Activity	MGTOW, thousand lbs		
		≤ 12.5	12.5-30	30-100
Rehabilitation	2" AC OL	\$3.54		\$3.91
	Mill 2" & 2" AC OL	\$3.90		\$4.27
	Mill 2" & 3" AC OL	\$4.82		\$5.37
Reconstruction	AC Reconstruction	\$7.63	\$8.25	\$9.87

**Appendix H2**  
**Component Costs for Repair**

Activity Type	Unit	Birmingham (Northern)	Montgomery (Southern)	Comments
Milling 1" to 3"	SY	\$2.08	\$2.01	
Pavement Demolition	SY	\$6.34	\$6.12	
Haulage - For Demolition & AC	CY	\$6.08	\$5.87	
Haulage for 12" Thick Demolition	SY	\$2.03	\$1.96	
Haulage for 2" Thick AC Paving	SY	\$0.34	\$0.33	
Haulage for 3" Thick AC Paving	SY	\$0.51	\$0.49	
Haulage for 4" Thick AC Paving	SY	\$0.68	\$0.65	
AC Wearing Course	Ton	\$97.42	\$86.90	
AC Binder Course	Ton	\$87.80	\$78.17	
P401 - For airports with >60 kip aircraft	Ton	\$116.90	\$104.28	Assumed P401 cost to be 20% greater than AC Wearing Course
6" Aggregate Base (P208)	SY	\$10.17	\$9.12	
8" Aggregate Base (P208)	SY	\$13.29	\$11.89	
6" P209 Aggregate Base	SY	\$12.20	\$10.94	Assumed P209 cost to be 20% greater than P208
8" P209 Aggregate Base	SY	\$15.95	\$14.27	Assumed P209 cost to be 20% greater than P208
10" P209 Aggregate Base	SY	\$19.94	\$17.84	Direct multiplier for 10" from 8"
4" P154 Aggregate Base	SY	\$5.42	\$4.86	Assumed P154 cost to be 20% lower than P208
6" P154 Aggregate Base	SY	\$8.14	\$7.30	Assumed P154 cost to be 20% lower than P208
Pavement Markings	sf	\$1.48	\$1.39	

**Appendix H3  
Airport Category**

Region	City	FAA ID	Max Gross Weight (Thousand lbs)			Max GW	Category
			S	D	2D		
Birmingham	Reform	3M8	12.5	-	-	12.5	<= 12,500
	Fayette	M95	15.0	-	-	15.0	12,500-30,000
	Hamilton	HAB	15.0	-	-	15.0	12,500-30,000
	Scottsboro	4A6	15.0	-	-	15.0	12,500-30,000
	Alabaster	EET	16.0	-	-	16.0	12,500-30,000
	Centre-Piedmont	PYP	16.0	-	-	16.0	12,500-30,000
	Fort Payne	4A9	16.0	-	-	16.0	12,500-30,000
	Haleyville	1M4	20.0	-	-	20.0	12,500-30,000
	Hartselle	5M0	20.0	-	-	20.0	12,500-30,000
	Guntersville	8A1	24.0	-	-	24.0	12,500-30,000
	Cullman	CMD	30.0	-	-	30.0	12,500-30,000
	Russellville	M22	30.0	-	-	30.0	12,500-30,000
	Jasper	JFX	50.0	-	-	50.0	> 30,000
	Oneonta	20A	20.0	35.0	55.0	55.0	> 30,000
	Bessemer	EKY	60.0	60.0	-	60.0	> 30,000
	Albertville	8A0	60.0	90.0	130.0	130.0	> 30,000
	Madison	MDQ	60.0	75.0	140.0	140.0	> 30,000
	Decatur	DCU	75.0	125.0	150.0	150.0	> 30,000
	Tuscaloosa	TCL	61.0	87.0	168.0	168.0	> 30,000
	Gadsden	GAD	90.0	115.0	195.0	195.0	> 30,000
Montgomery	Florala	0J4	-	-	-	-	<= 12,500
	Elba	14J	4.0	-	-	4.0	<= 12,500
	Headland	0J6	12.0	-	-	12.0	<= 12,500
	Roanoke	7A5	12.0	-	-	12.0	<= 12,500
	Greenville	PRN	15.0	-	-	15.0	12,500-30,000
	Union Springs	07A	15.0	-	-	15.0	12,500-30,000
	Wetumpka	08A	15.0	-	-	15.0	12,500-30,000
	Atmore	0R1	16.0	-	-	16.0	12,500-30,000
	Clanton	02A	16.0	-	-	16.0	12,500-30,000
	Eufaula	EUF	16.0	-	-	16.0	12,500-30,000
	Geneva	33J	16.0	-	-	16.0	12,500-30,000
	Greensboro	7A0	16.0	-	-	16.0	12,500-30,000
	Centreville	0A8	18.0	-	-	18.0	12,500-30,000
	Ashland-Lineville	26A	20.0	-	-	20.0	12,500-30,000
	Sylacauga	SCD	20.0	-	-	20.0	12,500-30,000
	St. Elmo	2R5	23.0	-	-	23.0	12,500-30,000
	Ozark	71J	-	25.0	-	25.0	12,500-30,000
	Camden	61A	27.0	-	-	27.0	12,500-30,000
	Bay Minette	1R8	28.0	-	-	28.0	12,500-30,000
	Foley	5R4	28.0	-	-	28.0	12,500-30,000
Tuskegee	06A	28.5	-	-	28.5	12,500-30,000	

**Appendix H3  
Airport Category**

Region	City	FAA ID	Max Gross Weight (Thousand lbs)			Max GW	Category
			S	D	2D		
Montgomery	Alexander City	ALX	30.0	-	-	30.0	12,500-30,000
	Dauphin Island	4R9	30.0	-	-	30.0	12,500-30,000
	Pell City	PLR	30.0	-	-	30.0	12,500-30,000
	Prattville	1A9	30.0	-	-	30.0	12,500-30,000
	Enterprise	EDN	-	-	-	-	> 30,000
	Evergreen	GZH	30.0	50.0	-	50.0	> 30,000
	Marion	A08	30.0	50.0	-	50.0	> 30,000
	Selma	SEM	33.0	54.0	-	54.0	> 30,000
	Fairhope	CQF	36.0	58.0	-	58.0	> 30,000
	Brewton	12J	40.0	60.0	-	60.0	> 30,000
	Demopolis	DYA	30.0	38.0	60.0	60.0	> 30,000
	Monroeville	MVC	70.0	-	-	70.0	> 30,000
	Auburn-Opelika	AUO	45.0	75.0	-	75.0	> 30,000
	Talladega	ASN	30.0	65.0	95.0	95.0	> 30,000
	Gulf Shores	JKA	80.0	100.0	-	100.0	> 30,000
	Troy	TOI	24.0	80.0	140.0	140.0	> 30,000
	Anniston	ANB	28.0	43.5	260.0	260.0	> 30,000
Andalusia-OPP	79J	98.0	160.0	275.0	275.0	> 30,000	

## **APPENDIX I**

### **PAVEMENT CAPITAL IMPROVEMENT PROGRAM**

I1: PCIP Summary

I2: Year 1 Maintenance Plan



**Appendix I1**  
**PCIP Summary**  
Isbell Field (4A9)

Branch & Section	2021	2022	2023	2024	2025	2026	2027
A01-01	Required Project Major Below Critical \$944763.48 Before:46.14 After:100	Preventive \$411.39 Before:97.79 After:97.79	Preventive \$847.47 Before:95.58 After:95.58	Preventive + Required Project Global MR \$114539.42 Before:93.37 After:97.79	Preventive \$900.93 Before:95.57 After:95.57	Preventive \$1390.98 Before:93.36 After:93.36	Preventive \$1909.62 Before:91.15 After:91.15
R0422-01	Preventive + Required Project Global MR \$295758.74 Before:88.85 After:93.68	Preventive \$4402.63 Before:91.64 After:91.64	Preventive \$6038.06 Before:88.86 After:88.86	Preventive \$8148.42 Before:85.41 After:85.41	Preventive \$10630.97 Before:81.52 After:81.52	Preventive \$13131.27 Before:77.62 After:77.62	Preventive \$15444.7 Before:74.16 After:74.16
TA-01	Preventive \$1134.5 Before:94.18 After:94.18	Preventive \$1648.73 Before:91.79 After:91.79	Preventive + Required Project Global MR \$179686.55 Before:89.19 After:96.2	Preventive \$1239.7 Before:94.18 After:94.18	Preventive \$1801.61 Before:91.79 After:91.79	Preventive \$2443.39 Before:89.19 After:89.19	Preventive \$3134.75 Before:86.54 After:86.54
TA1-01	Preventive \$98.23 Before:91.02 After:91.02	Preventive \$130.88 Before:88.38 After:88.38	Preventive + Required Project Global MR \$10118.25 Before:85.75 After:93.5	Preventive \$107.23 Before:91.03 After:91.03	Preventive \$142.9 Before:88.39 After:88.39	Preventive \$180.5 Before:85.76 After:85.76	Preventive \$218.44 Before:83.27 After:83.27



**Appendix I1**  
**PCIP Summary**  
Isbell Field (4A9)

Branch & Section	2021	2022	2023	2024	2025	2026	2027
TA2-01	Preventive \$106.24 Before:91.02 After:91.02	Preventive \$141.55 Before:88.38 After:88.38	Preventive + Required Project Global MR \$10943.63 Before:85.75 After:93.5	Preventive \$115.98 Before:91.03 After:91.03	Preventive \$154.56 Before:88.39 After:88.39	Preventive \$195.22 Before:85.76 After:85.76	Preventive \$236.26 Before:83.27 After:83.27
THANG01-01	Required Project Major Below Critical \$257215.87 Before:45.22 After:100	Preventive \$29.42 Before:98.98 After:98.98	Preventive \$64.12 Before:97.85 After:97.85	Preventive \$112.59 Before:96.33 After:96.33	Preventive \$178.54 Before:94.35 After:94.35	Preventive \$260.47 Before:91.99 After:91.99	Preventive \$355.37 Before:89.39 After:89.39
THANG01-02	Required Project Major Below Critical \$78452.4 Before:64.84 After:100	Preventive \$19.64 Before:98.98 After:98.98	Preventive \$42.82 Before:97.85 After:97.85	Preventive \$75.18 Before:96.33 After:96.33	Preventive \$119.22 Before:94.35 After:94.35	Preventive \$173.92 Before:91.99 After:91.99	Preventive \$237.29 Before:89.39 After:89.39
THANG02-01	StopGap \$23630.85 Before:19.21 After:19.21	Required Project Major Below Critical \$850541.35 Before:15.67 After:100	Preventive \$97.29 Before:98.98 After:98.98	Preventive \$212.06 Before:97.85 After:97.85	Preventive \$372.33 Before:96.33 After:96.33	Preventive \$590.44 Before:94.35 After:94.35	Preventive \$861.38 Before:91.99 After:91.99

**Appendix I2**  
**Localized Maintenance Plan**  
Isbell Field (4A9)

Branch ID	Section ID	Policy	Distress Code	Description	Severity	Distress Qty	Distress Unit	Percent Distress	Work Description	Work Qty	Work Unit	Unit Cost	Work Cost
A01	01	Safety	43	BLOCK CR	Low	2,259	SqFt	1.28	No Localized M & R	0		\$0.00	\$0
A01	01	Safety	43	BLOCK CR	Medium	6,416	SqFt	3.63	No Localized M & R	0		\$0.00	\$0
A01	01	Safety	48	L & T CR	Low	8,576	Ft	4.85	No Localized M & R	0		\$0.00	\$0
A01	01	Safety	48	L & T CR	Medium	16,877	Ft	9.54	No Localized M & R	0		\$0.00	\$0
A01	01	Safety	50	PATCHING	Low	3,524	SqFt	1.99	No Localized M & R	0		\$0.00	\$0
A01	01	Safety	52	RAVELING	Low	79,074	SqFt	44.69	No Localized M & R	0		\$0.00	\$0
A01	01	Safety	57	WEATHERING	Low	22,592	SqFt	12.77	No Localized M & R	0		\$0.00	\$0
R0422	01	Preventive	48	L & T CR	Low	6,648	Ft	1.33	No Localized M & R	0		\$0.00	\$0
R0422	01	Preventive	50	PATCHING	Low	400	SqFt	0.08	No Localized M & R	0		\$0.00	\$0
TA	01	Preventive	48	L & T CR	Low	658	Ft	0.34	No Localized M & R	0		\$0.00	\$0
TA1	01	Preventive	48	L & T CR	Low	62	Ft	0.58	No Localized M & R	0		\$0.00	\$0
TA2	01	Preventive	48	L & T CR	Low	65	Ft	0.56	No Localized M & R	0		\$0.00	\$0
THANG01	01	Safety	41	ALLIGATOR CR	Medium	93	SqFt	0.34	No Localized M & R	0		\$0.00	\$0
THANG01	01	Safety	43	BLOCK CR	Medium	1,729	SqFt	6.3	No Localized M & R	0		\$0.00	\$0
THANG01	01	Safety	48	L & T CR	Low	426	Ft	1.55	No Localized M & R	0		\$0.00	\$0
THANG01	01	Safety	48	L & T CR	Medium	820	Ft	2.99	No Localized M & R	0		\$0.00	\$0
THANG01	01	Safety	50	PATCHING	Low	5,650	SqFt	20.58	No Localized M & R	0		\$0.00	\$0
THANG01	01	Safety	50	PATCHING	Medium	1,170	SqFt	4.26	No Localized M & R	0		\$0.00	\$0
THANG01	01	Safety	57	WEATHERING	Low	19,048	SqFt	69.39	No Localized M & R	0		\$0.00	\$0
THANG01	01	Safety	57	WEATHERING	Medium	1,583	SqFt	5.77	No Localized M & R	0		\$0.00	\$0
THANG01	02	Preventive	41	ALLIGATOR CR	Medium	56	SqFt	0.31	Patching - AC Full-Dept	90	SqFt	\$25.05	\$2,257
THANG01	02	Preventive	43	BLOCK CR	Low	509	SqFt	2.78	No Localized M & R	0		\$0.00	\$0
THANG01	02	Preventive	48	L & T CR	High	42	Ft	0.23	Crack Sealing - AC	42	Ft	\$3.95	\$165
THANG01	02	Preventive	48	L & T CR	Low	191	Ft	1.04	No Localized M & R	0		\$0.00	\$0
THANG01	02	Preventive	48	L & T CR	Medium	157	Ft	0.86	Crack Sealing - AC	157	Ft	\$3.95	\$619
THANG01	02	Preventive	50	PATCHING	Low	153	SqFt	0.83	No Localized M & R	0		\$0.00	\$0
THANG01	03	Preventive	65	JT SEAL DMG	Medium	68	Slabs	100	Joint Seal (Localized)	1,239	Ft	\$11.13	\$13,790
THANG01	03	Preventive	70	SCALING	Low	6	Slabs	8.82	No Localized M & R	0		\$0.00	\$0
THANG01	03	Preventive	74	JOINT SPALL	Low	1	Slabs	1.47	No Localized M & R	0		\$0.00	\$0

**Appendix I2**  
**Localized Maintenance Plan**  
Isbell Field (4A9)

Branch ID	Section ID	Policy	Distress Code	Description	Severity	Distress Qty	Distress Unit	Percent Distress	Work Description	Work Qty	Work Unit	Unit Cost	Work Cost
THANG01	03	Preventive	75	CORNER SPALL	Low	1	Slabs	1.47	No Localized M & R	0		\$0.00	\$0
THANG02	01	Safety	41	ALLIGATOR CR	High	3,304	SqFt	3.75	Patching - AC Full-Dept	3,539	SqFt	\$25.05	\$88,657
THANG02	01	Safety	41	ALLIGATOR CR	Medium	3,938	SqFt	4.47	No Localized M & R	0		\$0.00	\$0
THANG02	01	Safety	43	BLOCK CR	Low	8,118	SqFt	9.21	No Localized M & R	0		\$0.00	\$0
THANG02	01	Safety	43	BLOCK CR	Medium	340	SqFt	0.39	No Localized M & R	0		\$0.00	\$0
THANG02	01	Safety	48	L & T CR	Low	2,379	Ft	2.7	No Localized M & R	0		\$0.00	\$0
THANG02	01	Safety	48	L & T CR	Medium	6,022	Ft	6.83	No Localized M & R	0		\$0.00	\$0
THANG02	01	Safety	50	PATCHING	Low	1,618	SqFt	1.84	No Localized M & R	0		\$0.00	\$0
THANG02	01	Safety	52	RAVELING	Low	5,394	SqFt	6.12	No Localized M & R	0		\$0.00	\$0
THANG02	01	Safety	52	RAVELING	Medium	173	SqFt	0.2	No Localized M & R	0		\$0.00	\$0
THANG02	01	Safety	57	WEATHERING	Low	63,307	SqFt	71.83	No Localized M & R	0		\$0.00	\$0
THANG02	01	Safety	57	WEATHERING	Medium	13,264	SqFt	15.05	No Localized M & R	0		\$0.00	\$0
THANG02	02	Safety	63	LINEAR CR	High	1	Slabs	2	Patching - PCC Full Dep	82	SqFt	\$48.70	\$3,994
THANG02	02	Safety	63	LINEAR CR	Low	1	Slabs	2	No Localized M & R	0		\$0.00	\$0
THANG02	02	Safety	63	LINEAR CR	Medium	17	Slabs	34	Crack Sealing - PCC	425	Ft	\$8.35	\$3,549
THANG02	02	Safety	65	JT SEAL DMG	High	50	Slabs	100	No Localized M & R	0		\$0.00	\$0
THANG02	02	Safety	72	SHAT. SLAB	High	9	Slabs	18	Slab Replacement - PCC	5,625	SqFt	\$27.83	\$156,544
THANG02	02	Safety	72	SHAT. SLAB	Medium	2	Slabs	4	No Localized M & R	0		\$0.00	\$0