Appendix C

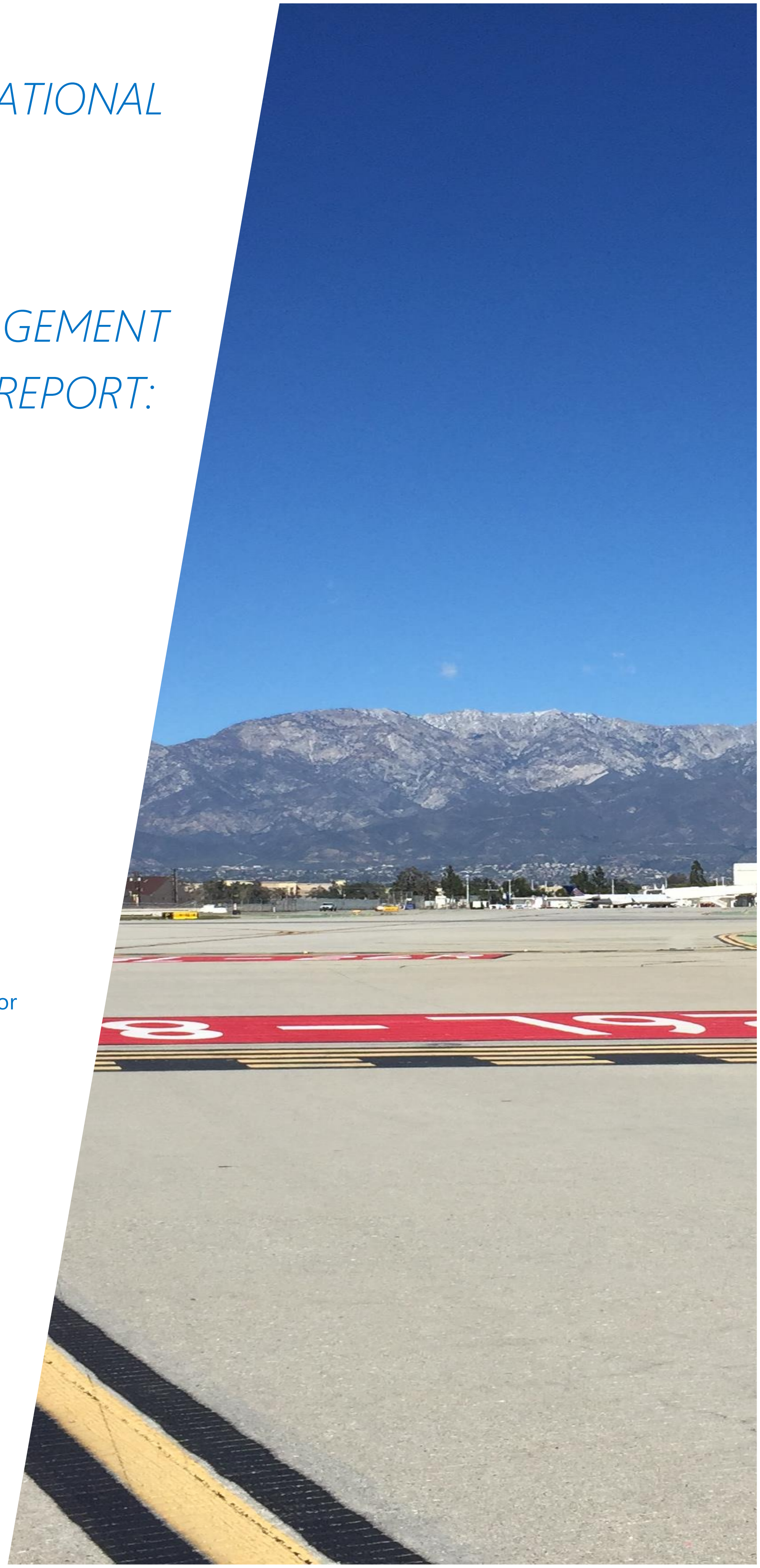
Pavement Management Program (2020)

ONTARIO INTERNATIONAL AIRPORT

ONTARIO, CA

PAVEMENT MANAGEMENT PROGRAM (PMP) REPORT: AIRSIDE

MARCH 2020



This document has been released for the purpose of interim review.

RS&H

ONTARIO INTERNATIONAL AIRPORT

PAVEMENT MANAGEMENT PROGRAM (PMP) REPORT: AIRSIDE

DRAFT
March 2020
Ontario, CA

RS&H No.:
226-0047-000

Prepared by RS&H, Inc. at the direction of Ontario International Airport

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CHAPTER 1

EXECUTIVE SUMMARY

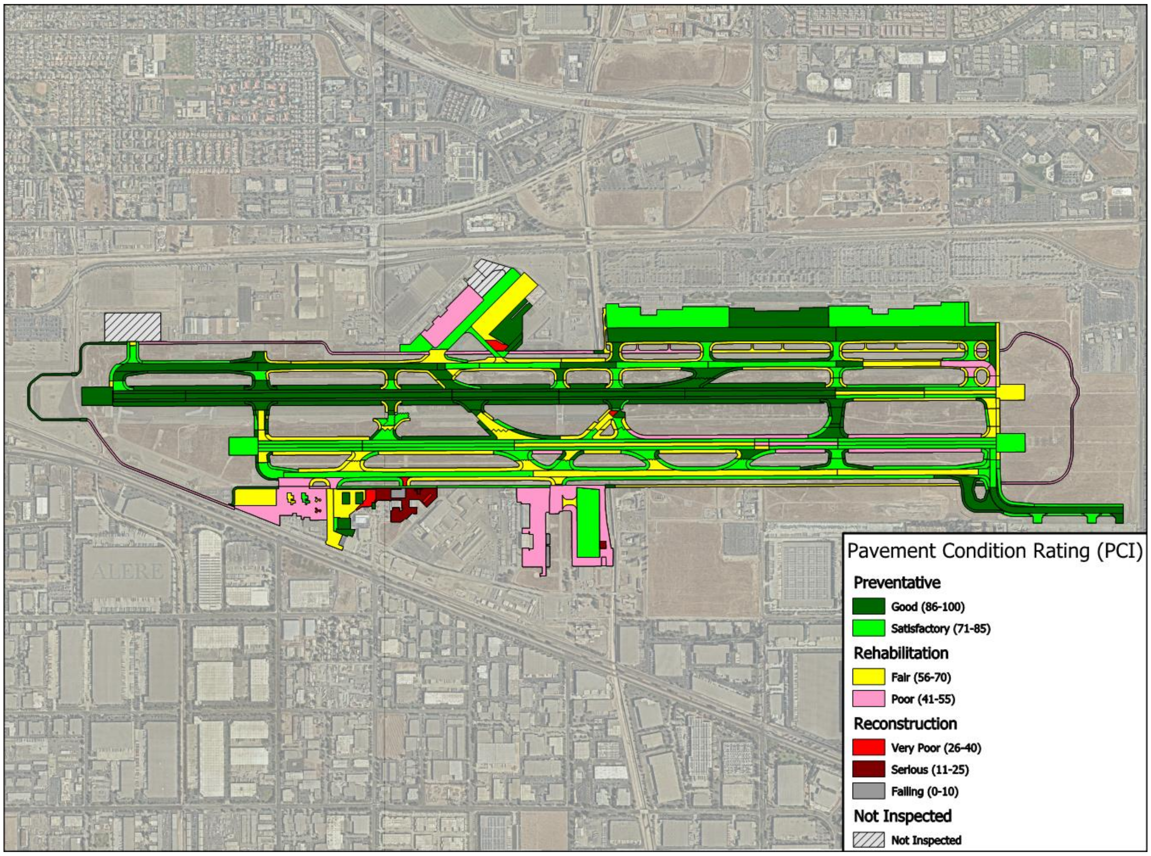
1.1 EXECUTIVE SUMMARY

Ontario International Airport, owned by Ontario International Airport Authority, tasked RS&H, Inc. (RS&H) with assessing all airfield and landside pavements to establish a Pavement Management Plan (PMP) in accordance with current Federal Aviation Administration (FAA) requirements found in FAA Advisory Circular (*AC*) *150/5380-6C - Guidelines and Procedures for Maintenance of Airport Pavements*, and *150/5380-7B - Airport Pavement Management Program (PMP)*. Due to different funding sources, the airside pavement reporting and recommendations will be kept separate from the landside pavement. This report will only include the airside pavements. The results for the landside pavement can be found in a separate document.

There were three major components related to this effort. The first was to perform a visual pavement inspection and establish a Pavement Condition Index (PCI). The second was to determine a technical Pavement Classification Number (PCN) for the airfield pavements based on the current and projected fleet mix at Ontario International Airport. The third was to develop a PMP that identifies and prioritizes future maintenance, rehabilitation, and/or reconstruction projects for the airside pavements based on the PCI and PCN.

The pavement inspection scope was to perform 100% inspection on all airfield pavements except areas that were under construction, in the process of being demolished, closed portions of the airfield, outside of existing shoulders that do not serve any structural use, or that are being maintained by other entities. All pavement distresses were documented and processed, resulting in PCI values assigned to each pavement section as shown on **Figure 1-1.** The maintenance classification (i.e. Preventative, Rehabilitation, Reconstruction) as shown on **Figure 1-1** is a simple way to categorize the maintenance needs of each pavement section based on the PCI value and corresponding pavement condition rating. The figure below is also shown in Chapter 4.

FIGURE 1-1: AIRSIDE PAVEMENT PCI



Each pavement Section was evaluated based on the PCI value of the pavement and the operational importance of the pavement section and the result is the recommended pavement Capital Improvement Plan (CIP) listed in **Table 1-1**. The table below is also shown in Chapter 7.

TABLE 1-1: CIP OVERVIEW

Fiscal Year	Pavement Branch	Main Type of Repairs	Estimated Cost	Fiscal Year Estimated Cost
1	Runway 8R/26L Keel	Full Reconstruction	$ 26,594,000.00	$ 43,421,000.00
	Runway Shoulder 8R, Runway Blast Pads 8R & 26L	Full Reconstruction	$ 16,697,000.00	
	Taxiway F (Sections: 7,8), Taxiway K (7,8), Taxiway P (8,9), Taxiway Q (3,4)	Slab Replacement, Patching	$ 130,000.00	
2	Runway 8L/26R	Patching, Crack Seal	$ 473,000.00	$ 16,576,000.00
	Runway Shoulder 8L	Crack Seal, Seal Coat	$ 536,000.00	
	Taxiway F (Sections: 2,3), Taxiway K (3,4), Taxiway P (3,4)	Slab Replacement, Patching	$ 162,000.00	
	Terminal 1 Apron	Full Reconstruction	$ 15,405,000.00	
3	VSR East	Full Reconstruction	$ 1,443,000.00	$ 6,078,000.00
	VSR South	Mill & Overlay, Full Reconstruction	$ 651,000.00	
	VSR West	Full Reconstruction	$ 2,151,000.00	
	VSR North	Full Reconstruction, Mill & Overlay	$ 1,833,000.00	

Fiscal Year	Pavement Branch	Main Type of Repairs	Estimated Cost	Fiscal Year Estimated Cost
4	Taxiway N (Sections: 12,13), Taxiway V (2,3), Taxiway W (2,3)	Full Reconstruction	$ 10,629,000.00	$ 10,629,000.00
5	Taxiway K, Taxiway P, Taxiway Q, Taxiway F	Slab Replacement, Patching	$ 849,000.00	$ 2,031,000.00
	Taxiway N Shoulder	Crack Seal, Seal Coat	$ 602,000.00	
	Taxiway S Shoulder	Crack Seal, Seal Coat	$ 580,000.00	
6	Cargo South Apron, Atlantic Aviation Apron	Full Reconstruction	$ 29,928,000.00	$ 29,928,000.00
7	Terminal 2 Apron, Terminal 3 Apron, Terminal 4 Apron, Taxilane N1	Slab Replacement, Patching	$ 835,000.00	$ 835,000.00
8	Taxiway S1, Taxiway S2, Taxiway S3	Full Reconstruction	$ 2,559,000.00	$ 2,559,000.00
9	Taxiway S	Full Reconstruction	$ 45,742,000.00	$ 45,742,000.00
10	FedEx Apron (Sections: 2, 5, 6, 10, 13, 17, 18)	Full Reconstruction	$ 13,727,000.00	$ 20,823,000.00
	International Terminal Apron (Sections: 1,3)	Full Reconstruction	$ 7,096,000.00	
			Total	**$178,622,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Source: RS&H, 2020

CHAPTER 2

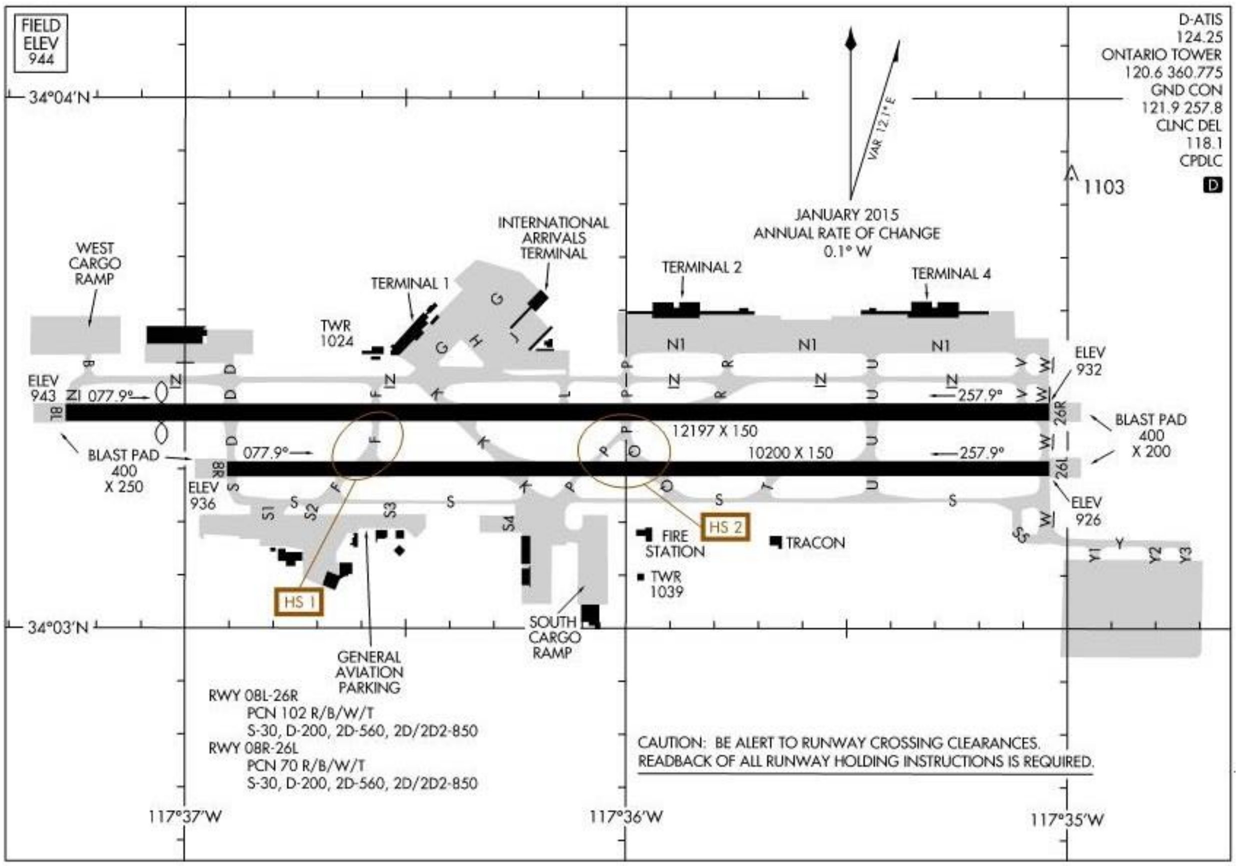
INTRODUCTION

2.1 AIRPORT BACKGROUND

Ontario International Airport is classified by the FAA as a medium hub airport, and is located two miles east of Ontario, California. The airfield consists of two active runways, Runway 8L-26R, and Runway 8R-26L as shown in

Figure 2-1. Runway 8L-26R is 12,197 ft in length and 150 ft in width. Runway 8R-26L is 10,200 ft in length and 150 ft in width. Additionally, there are 27 taxiways/taxilanes on the airfield which make up the taxiway system. There are also two commercial terminal aprons, a general aviation apron and two cargo ramps.

FIGURE 2-1: AIRPORT DIAGRAM



Source: FAA Airport Diagrams, 2018

2.1.1 Pavement Environment

Ontario is in the Western Pacific Region of California. The average summer temperature ranges from 63°F as a low and 95°F as a high. The average winter temperatures range from 44° as low and 68° as a high. The annual precipitation average is 14.77 inches of rainfall. Pavement environment is an important consideration because several pavement distresses such as block cracking, weathering and blowups are directly related to weather and will have a direct impact on the pavement life span.

2.2 PAVEMENT INSPECTED

Figure 2-2 shows areas included in this inspection. The following are areas that were not included due to being under construction, in the process of being demolished, closed portions of the airfield, outside of existing shoulders that do not serve any structural use, or that are being maintained by other entities.

- West Cargo Ramp: Pavement to be demolished in the near future.
- Northern portion of Taxilane G: Currently under construction.
- Northern portion of Terminal 1 Apron: Currently being used by Taxilane G contractor.
- UPS Apron: Pavement maintained by UPS.
- Closed Taxilane A, Taxiway C, Taxiway M and Taxiway E

2.3 AIRFIELD PAVEMENT OVERVIEW

This section contains an overview of the historical records review and the airfield pavement network at Ontario International Airport.

2.3.1 Pavement Sections Records Review

A records review for pavement sections of all airfield pavement areas has been performed to determine the as-built pavement sections. **Appendix A** contains the previous 2010 APMS work history data, data from past and present geotechnical investigations, and work history of jobs completed after the 2010 APMS report was published. **Appendix A** also includes a graphical representation of the pavement sections of the airport. This graphic summarizes the data that was found from records review.

2.4 PROJECT BACKGROUND

The Pavement Condition Index (PCI) report is part of the Ontario International Airport's Pavement Management Program (PMP). As a result of Public Law 103-305, Section 107, which thereby amended Title 49, Section 47105 of the United States Code, Assurance No. 11 has been added to the FAA Sponsor Assurances. This Assurance dictates that airports receiving federal funds for capital improvements projects are required to have an effective airport Pavement Management Program (PMP). As part of the PMP, the airports must inspect their airfield pavement and provide a report detailing the condition to the FAA. In addition to the PCI report, the Airport's PMP also includes a Pavement Condition Number (PCN) report which provides the structural capacity of the Airport's airfield pavement and a Pavement Management Plan which prioritizes pavement maintenance repair needs and plans future rehabilitation projects.

The principle objective of this report is to assess the current airfield pavement conditions and assign PCI values for all runways, taxiways, aprons and vehicle service roads. As part of the assessment of current pavement conditions, a PCI survey has been performed, as set forth in ASTM D5340 *Standard Test Method for Airport Pavement Condition Index Surveys*, thus extending the frequency of the detailed inspection by PCI survey to every three years as dictated by FAA *AC 150/5380-7B Section A-1.2*. This report also serves as a foundation for the Airport's Pavement Management Plan.

The following chapters detail the methodology, technology, field inspection process, resulting PCI, PCN values and analysis.

Ontario International Airport

Airfield Pavement Evaluation

Figure 2-2
Airside Pavements Inspected

Legend

Pavement Inspected

February 2020

N

0 500 1,000 1,500 Ft

ONTARIO INTERNATIONAL AIRPORT

RS&H

CHAPTER 3

EVALUATION METHODOLOGY

3.1 INTRODUCTION

This chapter provides an overview of the PCI survey process, including the purpose and methodology, conducting the PCI survey, as well as the processing of the PCI survey data. The subsequent sections also detail the definition of the pavement network and describe airfield-specific pavement distresses.

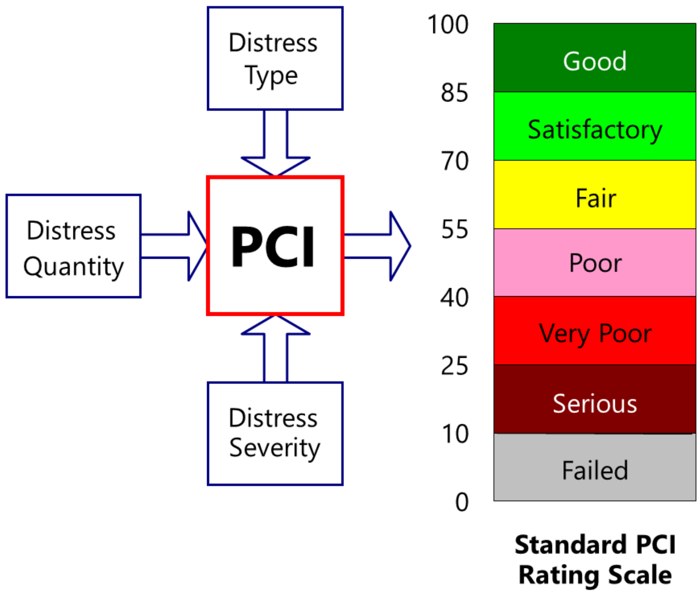
3.1.1 PCI Survey Overview

A PCI survey, as defined in ASTM D5340 *Standard Test Method for Airport Pavement Condition Index Surveys* and approved by the FAA, provides a measure of the current condition of the pavement based on the distresses visually observed on the surface of the pavement. These visual distresses can provide insight to the structural integrity and the surface operational condition. Additionally, a PCI survey provides an objective and rational basis for determining maintenance repair needs and priorities. It is important to note that a PCI survey cannot measure the structural capacity, nor can it provide direct measurement of skid resistance or roughness as it is a visual observation without additional testing required to access the structural capacity or roughness.

The result of a PCI survey is a PCI value for each contiguous pavement area located within a single pavement entity with a distinct function (e.g. runway, taxiway, etc.) and a uniform pavement section based on construction condition and traffic, known as a pavement section. A PCI value is a numerical indicator that rates the surface condition of the pavement and ranges from 0 to 100. The numerical value corresponds to the surface condition of a pavement that is determined through visual inspection of pavement distresses including type, quantity, and severity of each pavement distress, as shown in **Figure 3-1**. A PCI value of 100 represents that the pavement has been recently constructed (or reconstructed) and is in excellent condition with no visible distresses; whereas, a PCI value of 0 represents that the pavement has failed, and complete reconstruction is required.

The PCI value has a corresponding pavement condition rating which is a written description of the pavement condition as a function of the PCI value. For airfield pavements, the standard pavement condition rating, as shown in **Figure 3-1**, is defined in FAA AC 150/5380-7B *Airport Pavement Management Program*.

FIGURE 3-1: PCI LEGEND



Source: ASTM D5340, 2012; FAA AC 150/5380-7B, 2014; RS&H, 2020

Below is a summary of each pavement condition rating:

- Pavement rated as "Good" condition, between 100 to 86 PCI value, has minor or no distresses and will require only routine maintenance.
- Pavement rated as "Satisfactory" condition, between 85 to 71 PCI value, has scattered low-severity distresses and very few, if any, medium-severity distresses that should need only routine maintenance.
- Pavement rated as "Fair" condition, between 70 to 56 PCI value, has a combination of generally low- and medium-severity distresses. Maintenance and repair needs should be routine to major in the near term.
- Pavement rated as "Poor" condition, between 55 and 41 PCI value, has low-, medium-, and high-severity distresses that probably cause some operational problems. Maintenance and repair needs should range from routine to reconstruction in the near term.
- Pavement rated as "Very Poor" condition, between 40 and 26 PCI value, has predominantly medium- and high-severity distresses causing considerable maintenance and operational problems. Near-term maintenance and repair needs will be intensive.
- Pavement rated as "Serious" condition, between 25 and 11 PCI value, has mainly high-severity distresses that cause operational restrictions. Repair needs are immediate and substantial rehabilitation or reconstruction is required.
- Pavement rated as "Failed" condition, between 10 and 0 PCI value, is pavement that deteriorated and progressed to the point that safe aircraft operations are no longer possible. Complete reconstruction is required.

Continuous monitoring of the PCI value and corresponding Pavement Condition Rating is used to establish the rate of pavement deterioration, which permits early identification of pavement rehabilitation needs. The PCI value provides feedback on pavement performance for validation or improvement of current pavement design and maintenance procedures.

3.1.2 PCI Survey Data Preparation

To conduct a PCI survey, the airfield pavement areas are classified using a hierarchical-based pavement network model which contains pavement branches that contain one or more pavement sections. Pavement branches are an identifiable part of the pavement network that are a single entity and have a distinct function. For example, each runway, taxiway, or apron is divided into a separate branch due to their differences in use and designation. A pavement section is a contiguous pavement area within a branch having uniform construction, maintenance, usage history (traffic volume/load intensity), and condition. A branch may contain only one section, or it may be subdivided into multiple sections based on these distinctions.

With the airfield pavement classified, the pavement sections are then further divided into sample units to allow for the determination of a PCI value for each section. For rigid pavement, Portland Cement Concrete (PCC), sample units are 20 slabs +/- 8 slabs and for flexible pavement, Asphalt Concrete (AC), sample units are 5,000 square ft. +/-2,000 square ft as outlined by ASTM D5340.

RS&H reviewed the previously defined airfield pavement network from the most recent PCI survey (2010). The pavement network data, provided in AutoCAD file format, contained pavement sections, sample units, and PCC slabs with labeling for pavement sections and samples. The AutoCAD data was imported into an Esri file geodatabase based on a pavement data model that provides interoperability with PAVER™, a windows-based pavement management software program. The geodatabase includes individual feature classes (e.g. sections, samples, slabs) with one-to-many relationships between the feature classes. Once imported into a geodatabase, required attribute data was added to each feature to allow for the data to be imported into PAVER™. Additionally, unique identifiers were created for each section, sample unit and slab to allow for collected distresses to be associated with either a sample unit or slab.

While importing the previous pavement network data, the information was reviewed for accuracy and compliance with ASTM D5340. During this validation, it was identified that some PCC sample units contained 30 PCC slabs which exceeded the standard number of slabs per sample units as specified in ASTM D5340. However, to provide continuity with previous PCI studies and allow for a comparative analysis of the PCI results, the previously defined sample units, along with branches and sections, were maintained.

3.1.3 Conduct PCI Survey

The PCI survey was completed by visually inspecting each pavement sample unit while recording observed pavement distress as defined in ASTM D5340 and detailed in **Appendix B**. The PCI survey visually inspected every sample unit for a 100% sampling rate. The recorded pavement distresses are external indicators of pavement deterioration caused by loading, environmental (climate) factors, construction deficiencies, or a combination thereof. Distresses can be categorized into three principal categories that are load-related distresses, climate-related distresses, and other distresses. The following briefly describe the three categories of distresses:

- Load-Related – Distresses caused by aircraft or vehicular traffic and may provide an indication of structural deficiency. Examples include linear cracking and shattered slabs.
- Climate-Related – Distresses that often indicate the presence of aged material and/or environmentally-susceptible material, which includes durability-related issues such as D cracking and alkali-silica reactivity (ASR).
- Other – Man-made distresses such as patches and utility cuts. Patches are often required when a pavement deteriorates to the point in which foreign object debris (FOD) is present and creates hazards to aircraft.

The observed distress quantities were documented based on either: each individual distress, PCC slab, linear feet, or square feet and collected as either GIS point or line feature as defined in **Table 3-1**. In addition to the distress quantity, each distress was classified based on severity (i.e. low, medium, high, or not applicable) in accordance with ASTM D5340 and detailed in **Appendix B**. To document each distress, the PCI survey team used GIS field collection software, Esri *Collector for ArcGIS,* running on windows-based tablet PCs connected to a Trimble R2 GPS receiver to record distress type, quantity, and severity as well as the location within 1 foot of accuracy. The collection software also has the ability to take photographs of distresses and flag distresses for follow-up (e.g. distress type or severity verification). As part of the distress collection process, each distress was automatically associated with either a sample unit for AC pavement or a pavement slab for PCC pavement.

TABLE 3-1: PAVEMENT DISTRESS OVERVIEW

Pavement Type	Distress Code	Distress	Collected Quantity Unit	GIS Feature Type
AC	41	Alligator or Fatigue Cracking	Square Feet	Point
	42	Bleeding	Square Feet	Point
	43	Block Cracking	Square Feet	Point
	44	Corrugation	Square Feet	Point
	45	Depressions	Square Feet	Point
	46	Jet Blast Erosion	Square Feet	Point
	47	Joint Reflective Cracking	Linear Feet	Line
	48	Long. and Trans. Cracking	Linear Feet	Line
	49	Oil Spillage	Square Feet	Point
	50	Patching and Utility Cuts	Square Feet	Point
	51	Polished Aggregate	Square Feet	Point
	52	Raveling	Square Feet	Point
	53	Rutting	Square Feet	Point
	54	Shoving	Square Feet	Point
	55	Slippage Cracking	Square Feet	Point
	56	Swell	Square Feet	Point
	57	Weathering	Square Feet	Point
PCC	61	Blow-Up	Slab	Point
	62	Corner Break	Each	Point

Pavement Type	Distress Code	Distress	Collected Quantity Unit	GIS Feature Type
	63	Cracking (L/T/D)	Linear Feet	Line
	64	Durability "D" Cracking	Each	Point
	65	Joint Seal Damage	Linear Feet	Line
	66	Patching (Small)	Each	Point
	67	Patching (Large)	Each	Point
	68	Popouts	Slab	Point
	69	Pumping	Slab	Point
	70	Scaling	Slab	Point
	71	Settlement or Faulting	Slab	Point
	72	Intersecting Cracks/ Shattered Slab	Slab	Point
	73	Shrinkage Cracking	Slab	Point
	74	Spalling (Joint)	Each	Point
	75	Spalling (Corner)	Each	Point
	76	Alkali-Silica Reaction (ASR)	Slab	Point

Source: RS&H, 2020

3.1.4 Process PCI Survey Data

Throughout the PCI survey, the distress data was validated daily to ensure accuracy of the distress type, severity, quantity, and location for each distress and included a review of all flagged distresses. When the PCI survey was completed, all observed distresses were exported from GIS into a tabular format to be imported into PAVER™ based on quantity units defined in ASTM D5340. For rigid pavement distresses, the quantity of each distress is recorded differently in PAVER™ compared to how they were collected. Each different distress type observed on each slab was reviewed and only counted at the highest severity level. For example, if distresses for a slab included two low-severity small patches and one high-severity small patch, when imported into PAVER™, the distress is recorded as a single slab with a high-severity patch within the sample unit. The exception to this process is the Joint Seal Damage distress which is reported for the entire sample unit based on the highest level of distress severity. **Table 3-2** provides a comparison between the collected quantity units and PAVER™ quantity units.

TABLE 3-2: PCC DISTRESS QUANITITY REPORTING COMPARISON

Distress Code	Distress	Collected Quantity Unit	PAVER™ Quantity Unit
61	Blow-Up	Slab	Slab
62	Corner Break	Each	**Slab**
63	Cracking (L/T/D)	Linear Feet	**Slab**
64	Durability "D" Cracking	Each	**Slab**
65	Joint Seal Damage	Linear Feet	**Sample Unit**
66	Patching (Small)	Each	**Slab**
67	Patching (Large)	Each	**Slab**
68	Popouts	Slab	Slab
69	Pumping	Slab	Slab
70	Scaling	Slab	Slab
71	Settlement or Faulting	Slab	Slab
72	Intersecting Cracks/ Shattered Slab	Slab	Slab
73	Shrinkage Cracking	Slab	Slab

Distress Code	Distress	Collected Quantity Unit	PAVER™ Quantity Unit
74	Spalling (Joint)	Each	**Slab**
75	Spalling (Corner)	Each	**Slab**
76	Alkali-Silica Reaction (ASR)	Slab	Slab

Source: RS&H, 2020

Note: PAVER™ quantity units highlighted in bold represent difference to collected quantity units

The prepared distress data was then imported into PAVER™ at the sample unit level and a deduct value based on the severity and density for each distress related to the overall area of the sample unit was automatically calculated based on the pavement deduct curves defined in ASTM D5340. Then, a PCI value was automatically calculated for each sample unit by PAVER™. The section PCI value was determined by calculating each individual sample unit's PCI value combined with the total area per sample unit in relation to the overall section area. For a PCI Survey with a 100% sampling rate, this is the average sample unit PCI value for the Section. Although a PCI value is calculated for each inspected sample unit, this value is only used for the calculation of the section PCI value and is not used for reporting purposes and should not be considered representative of pavement condition. Additionally, PAVER™ also allows for the prediction of future PCI values by extrapolating pavement history and incorporating degradation over time.

3.1.5 PCI Analysis

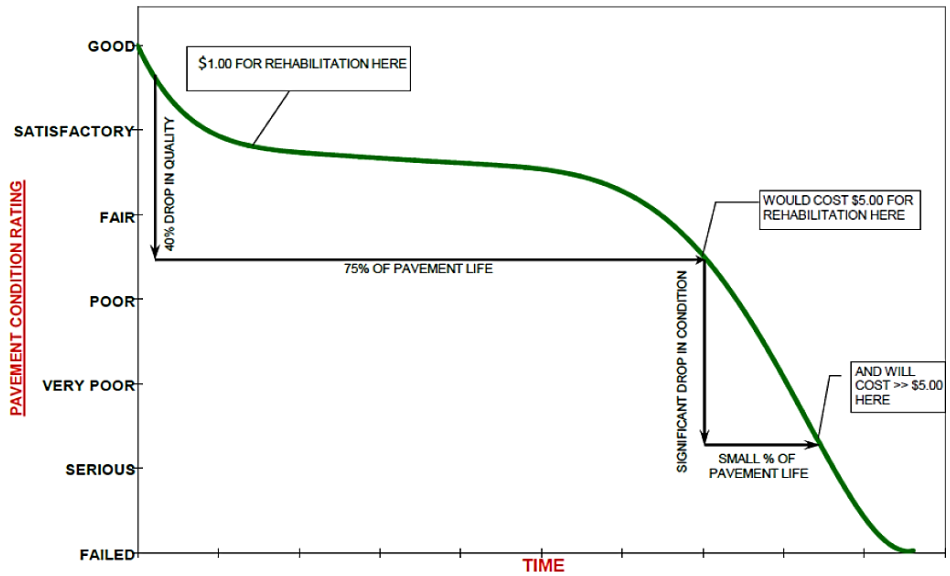
The PCI value and its corresponding pavement condition rating can be directly correlated with typical pavement condition life cycle shown in **Figure 3-2**. When pavement is first constructed or major rehabilitated work is accomplished such as a full-depth reconstruction, the pavement is in "Good" condition. The pavement deteriorates slowly at first and will begin to enter "Satisfactory" condition as distresses begin to occur. During this period, this is the most opportune time to perform preventative maintenance such as spall repairs and crack sealing to preserve pavement life.

If preventative maintenance is not performed, or changes in loading conditions occur, the pavement will continue to deteriorate and more and/or worsening distresses will occur. Once pavement falls into "Fair" condition, maintenance and rehabilitation efforts range from routine to minor in the near term (1-2 years). When the pavement is in "Poor" condition, maintenance and rehabilitation efforts become major in the near term with rehabilitation necessary. During "Fair" and "Poor" conditions, the cost to repair the pavement is roughly five times the cost of preventative maintenance performed when the pavement is in "Good" or "Satisfactory" condition.

Without any maintenance or rehabilitation efforts, the pavement condition will continue to deteriorate and will fall into "Very Poor" condition. In this condition the rehabilitation needs will be extensive and require reconstruction. If rehabilitation or reconstruction is not conducted the pavement will fall into "Serious" condition where operational restrictions typically exist and reconstruction is immediately required. During "Very Poor" and "Serious" conditions, the cost to repair the pavement is greater than five times the cost of preventative maintenance performed when the pavement is in "Good" or "Satisfactory" condition.

Lastly, when the pavement is rated as "Failed", the pavement has deteriorated and progressed to the point that safe aircraft operations are no longer possible and complete reconstruction is required.

FIGURE 3-2: TYPICAL PAVEMENT CONDITION LIFE CYCLE



Source: FAA AC 150/5380-7B, 2014

A maintenance classification category was developed to provide a better understanding of the relationship between the pavement condition rating and the pavement lifecycle previously described. The maintenance classification, detailed in **Table 3-3**, is a simple way to categorize the maintenance needs of each pavement section based on the PCI value and corresponding pavement condition rating. The three classifications categories are: preventative maintenance, rehabilitation, and reconstruction.

TABLE 3-3: PAVEMENT MAINTENANCE CLASSIFICATION

Maintenance Classification	Pavement Condition		PCI Value
Preventative	Good		100-86
	Satisfactory		85-71
Rehabilitation	Fair		70-56
	Poor		55-41
Reconstruction	Very Poor		40-26
	Serious		25-11
	Failed		10-0

Source: RS&H, 2020; FAA AC 150/5380-7B, 2014

3.1.6 SCI Analysis

In addition to the PCI value, a Structural Condition Index (SCI) can be derived from the PCI distresses. SCI is the summation of structural components from PCI. **Table 3-4** shows the SCI categories and the value ranges. An SCI of 80 is the FAA definition of structural failure of a rigid pavement and is consistent with 50 percent of slabs in the traffic area exhibiting a structural crack.

TABLE 3-4: SCI CLASSIFICATION

SCI Category	SCI Value
Acceptable	100-81
Unacceptable	80-0

Source: RS&H, 2020; FAA AC 150/5380-7B, 2014

The SCI is derived from six of the sixteen different rigid distress types that are indicative of the structural condition of the pavement and detailed in **Table 3-5**.

TABLE 3-5: RIGID PAVEMENT DISTRESS TYPES USED TO CALCULATE THE STRUCTURAL CONDITION INDEX

Distress Code	Distress	Severity Level
62	Corner Break	Low, Medium, High
63	Cracking (L/T/D)	Low, Medium, High
72	Intersecting Cracks/ Shattered Slab	Low, Medium, High
73	Shrinkage Cracking (cracking partial width of slab)	N/A
74	Spalling (Joint)	Low, Medium, High
75	Spalling (Corner)	Low, Medium, High

Source: RS&H, 2020; FAA AC 150/5320-6E, 2009

Notes: Used only to describe a load-induced crack that extends only part of the way across a slab. The SCI does not include conventional shrinkage cracks due to curing or other non load-related problems.

3.2 NONDESTRUCTIVE TESTING (NDT)

NDT was performed on select pavement sections to supplement the PCI survey data. This data was used to support the development of a multiyear Capital Improvement Plan (CIP). The purpose of the NDT is to acquire quantitative data for use as a reliable input in the structural evaluation of pavement performance and rehabilitation needs. NDT was performed per FAA Advisory Circular 150/5370-11B *Use of Nondestructive Testing* by Dynatest, Inc. using a heavy weight deflectometer (HWD).

3.2.1 Heavy Weight Deflectometer (HWD) Testing

The HWD test is designed to impart a load pulse to the pavement surface which simulates the load produced by a rolling aircraft wheel. The load is produced by dropping a large weight on a set of rubber buffers on a bracket connected to a circular load plate. A load cell mounted on top of the plate measures the imparted load. Deflection sensors mounted radially from the center of the load plate measure the deformation of the pavement in response to the load. The post processing software is used to back calculate the pavement layer moduli based on the impact load and surface deflection basin. The HWD data can also be used to calculate the degree of load transfer between adjacent concrete slabs, and to detect voids under slabs in rigid pavements. **Figure 3-3** depicts the equipment used.

FIGURE 3-3: HEAVY WEIGHT DEFLECTOMETER

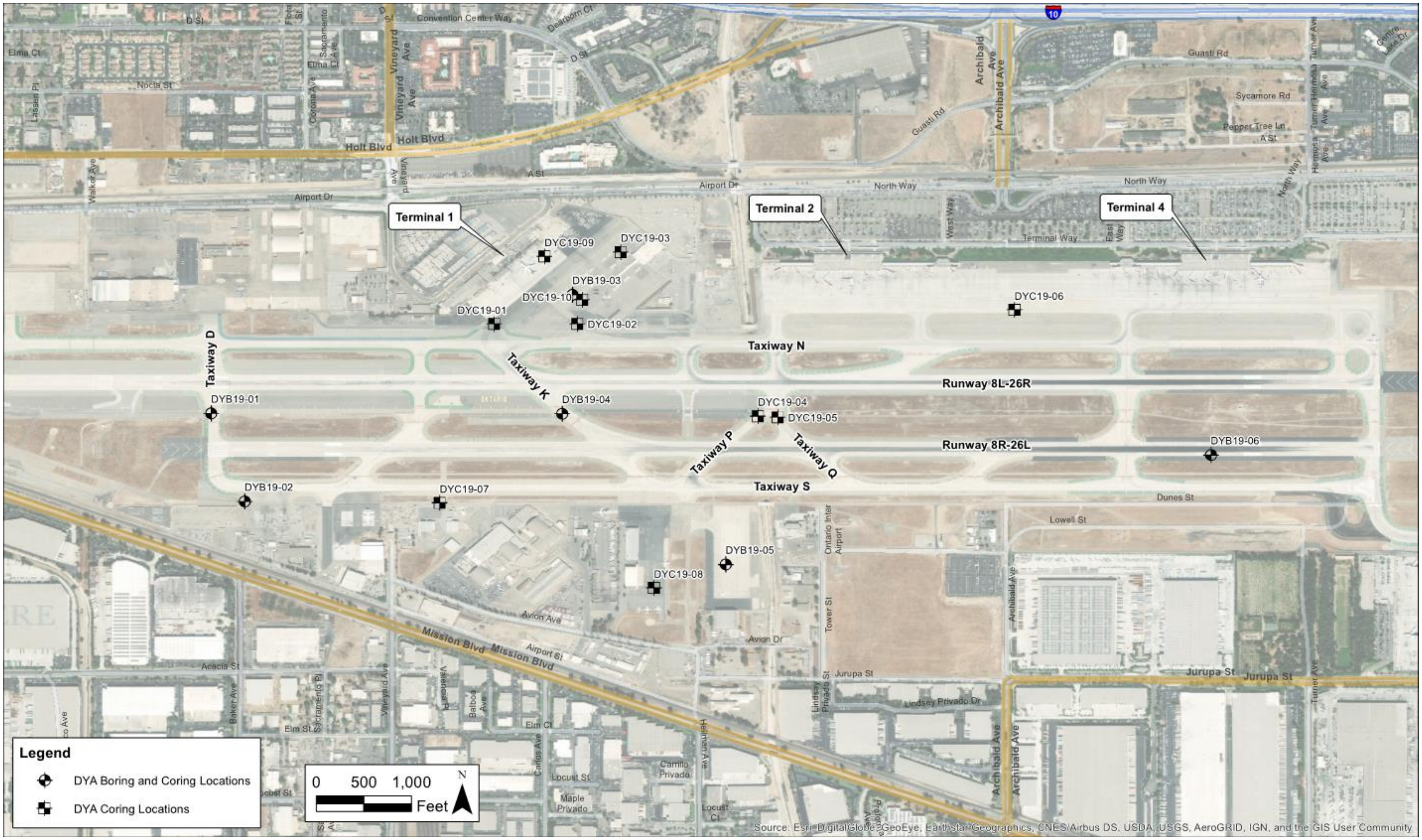
3.3 GEOTECHNICAL INVESTIGATION

A geotechnical investigation comprising of cores and bores was performed in order to determine existing pavement sections and subgrade strength values that were left unknown from previous APMS reports. Cores of the existing pavement section were sampled using a 6" diameter coring and barrel in order to determine the layer type and thickness used to calibrate the non-destructive testing equipment. Bores were used to determine the subgrade strength in the form of a CBR (California Bearing Ratio) or k value. A k value can be derived from the CBR value using the formula described on the FAA Advisory Circular *150/5320-6E*. Drive samples were collected with a standard penetration test (SPT) split-spoon sampler with dimensions in accordance with ASTM D1586. The sampler was driven with a 140-pound automatic trip hammer falling 30 inches. The values found from borings are then compared to non-destructive testing values.

Figure 3-4 depicts the locations of the cores and bores. Each of the cores shown is used to interpret the pavement section for nearby areas based on historical information.

The investigation found that soils at each location were primarily composed of medium-dense to very dense coarse-grained soils with varying amount of silts and clays. The full Geotechnical report with field and laboratory tested values can be found in **Appendix I**.

FIGURE 3-4: GEOTECHNICAL BORING AND CORING LOCATIONS



Source: Diaz Yourman & Associates, 2019

CHAPTER 4

PCI AND SCI RESULTS AND ANALYSIS

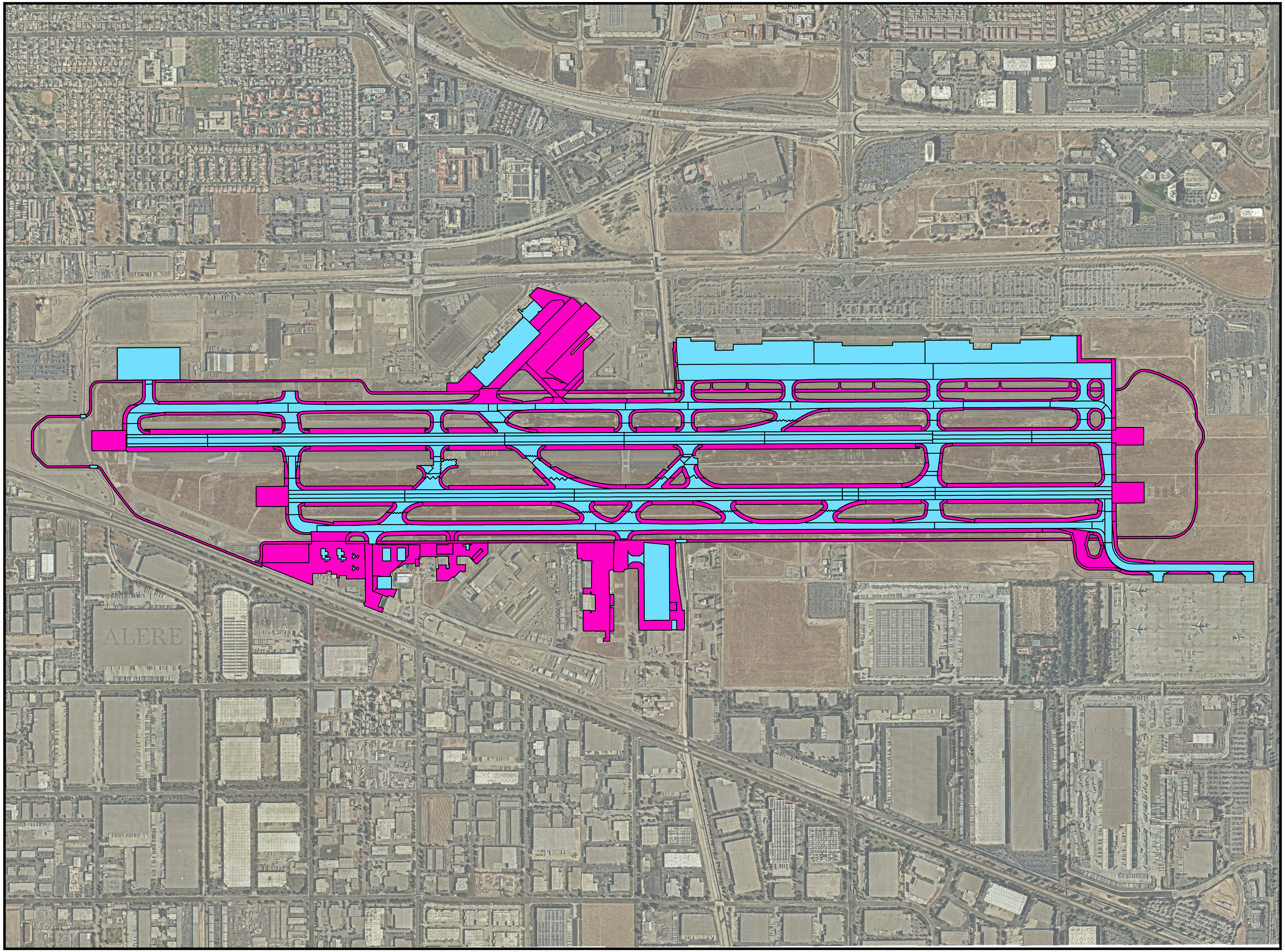
4.1 INTRODUCTION

This Chapter provides a detailed summary of the results and a comprehensive analysis of the Pavement Condition Index (PCI) Survey and Structural Condition Index (SCI) for runways, taxiways, and aprons.

4.2 RESULTS OVERVIEW

Ontario International Airport includes 8,874,569 square feet of AC pavement and 10,736,504 square feet of PCC pavement as shown on **Figure 4-1**.

As described in **Section 3.1.2**, pavements were broken into branches and sections, the pavement distresses were collected and analyzed, and the resulting PCI of each section is shown on **Figure 4-2**. A 200-scale set of exhibits which include the section labels that are used in the following tables found in Chapter 4 are included in **Appendix C**. The pavement sections shown on **Figure 4-2** are broken down into sample units as shown on **Figure 4-3**. Although the method for calculating pavement condition is by section, evaluating the pavement condition by sample unit allows for a more detailed understanding of the condition of the pavement. A 200-scale set of exhibits of the sample unit data is included in **Appendix D**. The Structural Condition Index (SCI) for each sample unit on the airfield is shown in **Figure 4-4**.



Ontario International Airport

Airfield Pavement Evaluation

Figure 4-1
Asphalt/Concrete
Pavement Areas

Legend

Pavement Type

- Asphalt Concrete (AC)
- Portland Concrete Cement (PCC)

March 2020

N

0 500 1,000 1,500 Ft

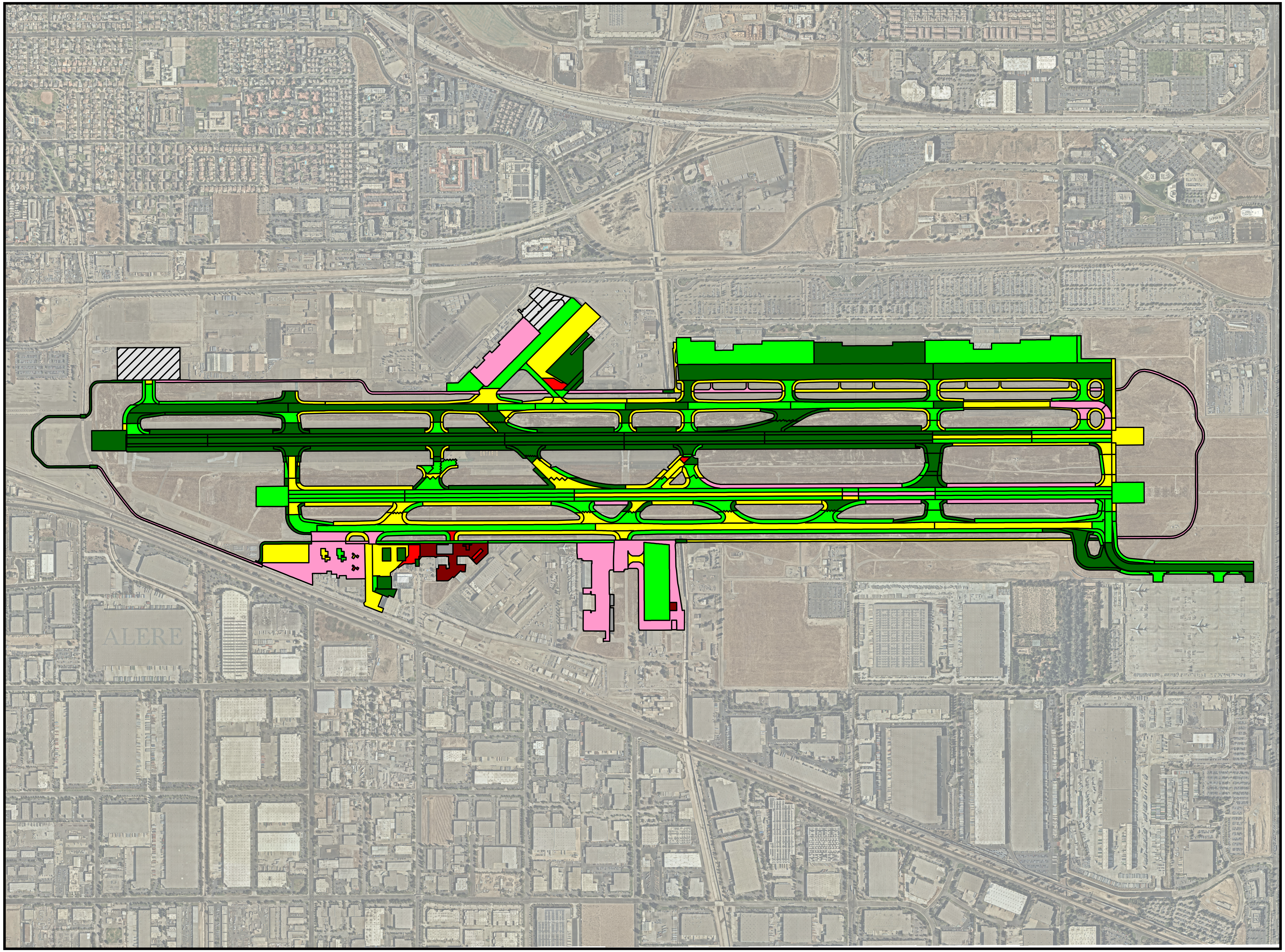
ONTARIO INTERNATIONAL AIRPORT

RS&H

Ontario International Airport

Airfield Pavement Evaluation

Figure 4-2
Pavement Condition Index
By Section



Legend

Pavement Sections

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

March 2020

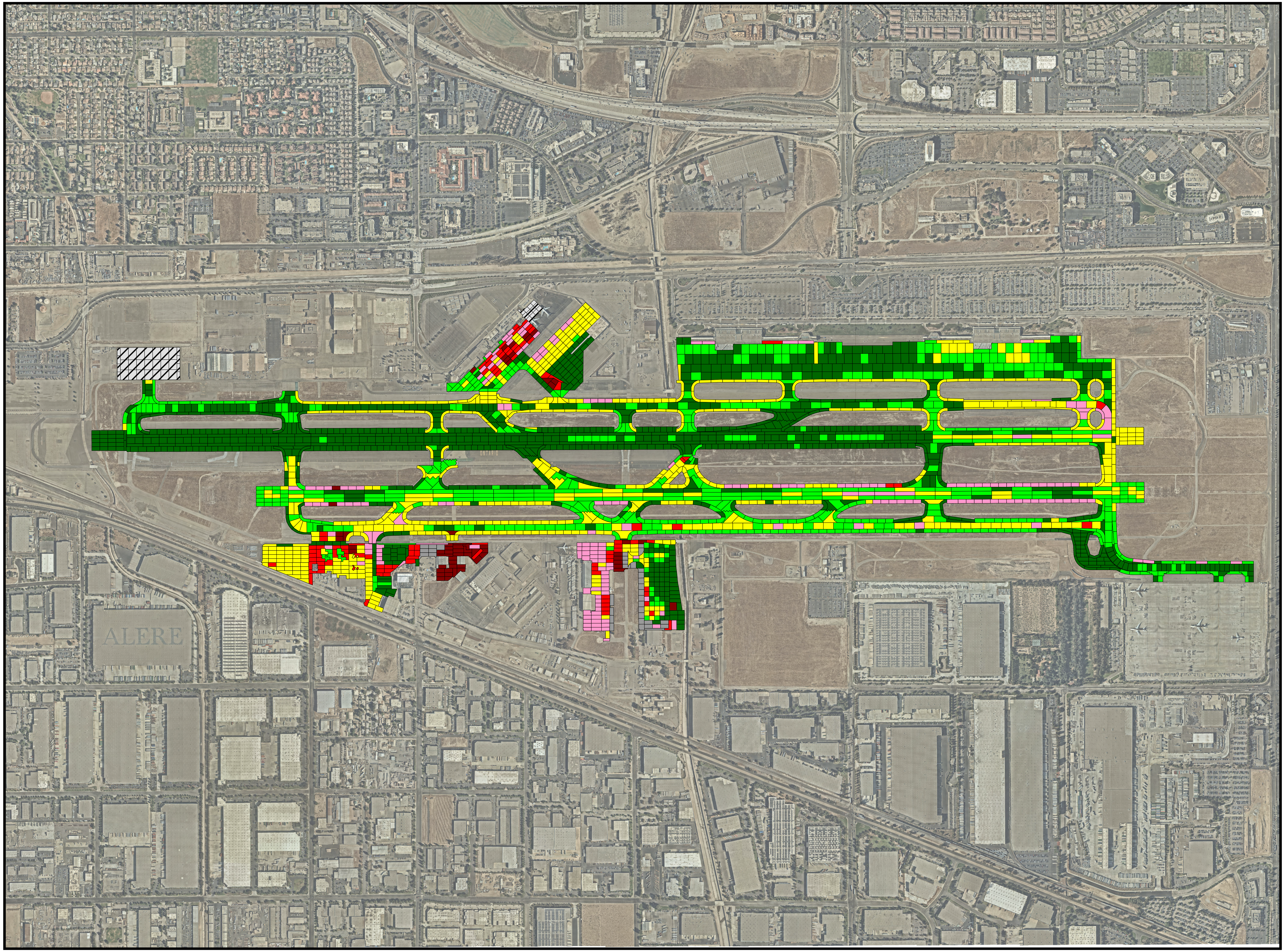
N

0 500 1,000 1,500 Ft

Ontario International Airport

Airfield Pavement Evaluation

Figure 4-3
Pavement Condition Index
By Sample Unit



Legend

Pavement Sample Unit

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

Note:
Only Pavement Sample units in sections with a 100% sampling rate are shown.

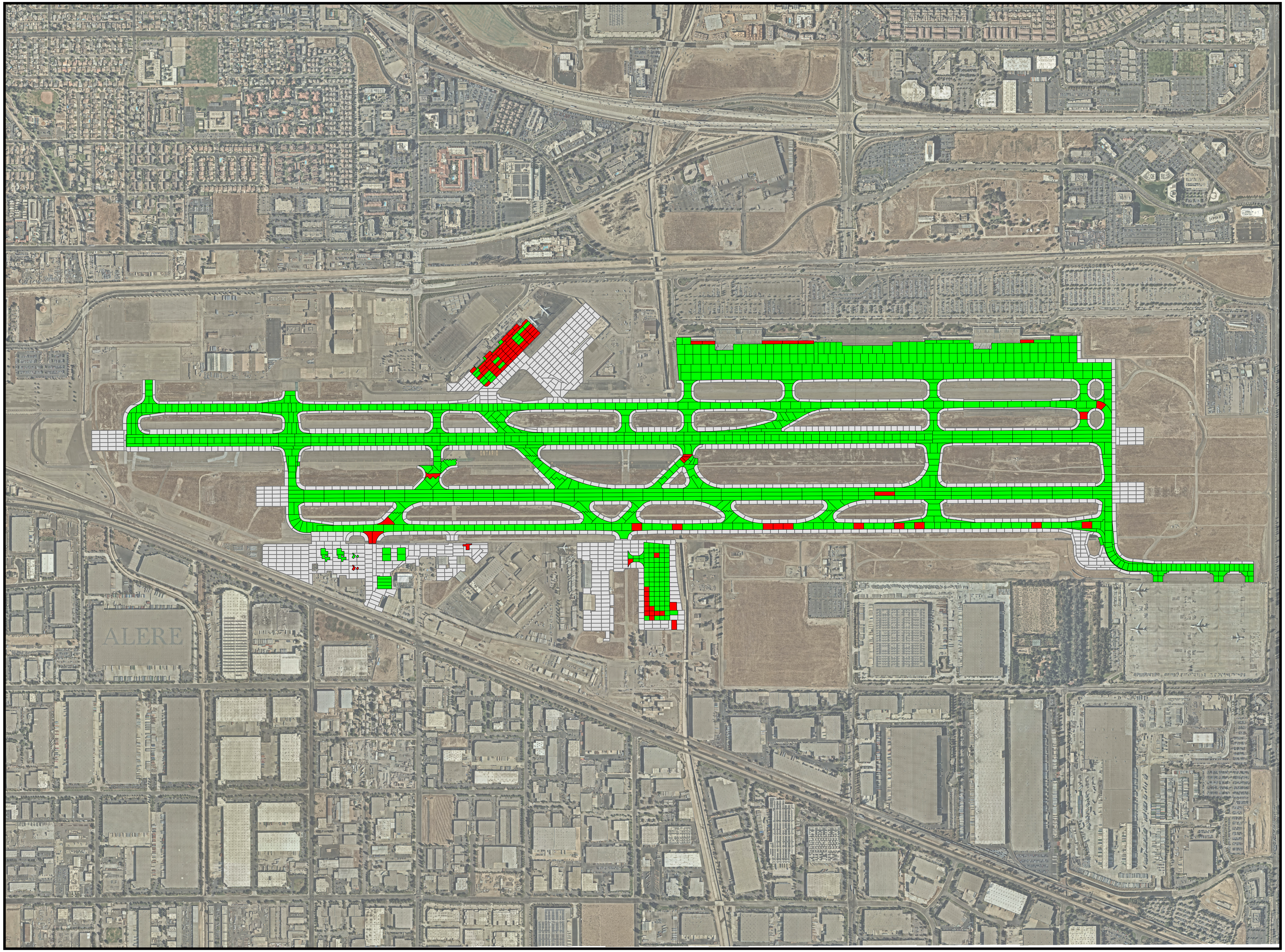
March 2020

N

0 500 1,000 1,500 Ft

ONTARIO INTERNATIONAL AIRPORT

RS&H



Ontario International Airport

Airfield Pavement Evaluation

Figure 4-4
Structural Condition Index
By Sample Unit

Legend

Pavement Sample Unit

Structural Condition Index (SCI)

- Acceptable (81 - 100)
- Unacceptable (0 - 80)
- Not Applicable

Note : SCI is only applicable for PCC

Note:
Only Pavement Sample units in sections with a 100% sampling rate are shown.

March 2020

N

0 500 1,000 1,500 Ft

4.3 RUNWAYS RESULTS AND ANALYSIS

Ontario International Airport consists of two runways (Runway 8L/26R and Runway 8R/26L). Each of the runways were split into three distinct pavement sections which include an outboard northern section (i.e. 01N), a center keel section (i.e. 01C) and an outboard southern section (i.e. 01S).

As part of processing the PCI and SCI survey distress data, a PCI value was calculated for each sample unit prior to being averaged by section. **Appendix D** shows the pavement condition rating for each sample unit. The Runway 8L/26R and Runway 8R/26L PCI and SCI values along with their corresponding pavement condition rating and maintenance classification by section are detailed in **Table 4-1**. The data coincides with what was observed in the field in showing that overall the full strength portion of the runways are in acceptable condition and the majority of distresses found were not structural. This means the runways require preventative and rehabilitation maintenance to be completed but not a complete reconstruction at this time. The rectangular panel shape (25' by 50') used for portions of the runways is potentially the cause for most of the structural distresses. These panels should be closely monitored as the runways age and reach their expected life expectancy. For those sections which are in poor condition, the sample unit level data identifies the group of slabs which are significantly downgrading the PCI value of the section. Significant amount of rehabilitation and preventative work needs to be done to the AC pavement that comprises the runway shoulders and blast pads.

TABLE 4-1: RUNWAY SECTION PCI AND SCI RESULTS

Branch	Section ID	PCI	Pavement Condition Rating	SCI	SCI Category	Maintenance Classification
Blast Pad Runway 26L End	01E	73	Satisfactory	Not Applicable		Preventative
Blast Pad Runway 26R End	01E	69	Fair	Not Applicable		Rehabilitation
Blast Pad Runway 8L End	01W	97	Good	Not Applicable		Preventative
	02W	93	Good	Not Applicable		Preventative
Blast Pad Runway 8R End	01W	74	Satisfactory	Not Applicable		Preventative
Runway 8L/26R	01C	95	Good	100	Acceptable	Preventative
	01N	99	Good	100	Acceptable	Preventative
	01S	99	Good	100	Acceptable	Preventative
	02C	94	Good	100	Acceptable	Preventative
	02N	99	Good	100	Acceptable	Preventative
	02S	100	Good	100	Acceptable	Preventative
	03C	88	Good	99	Acceptable	Preventative
	03N	99	Good	100	Acceptable	Preventative
	03S	100	Good	100	Acceptable	Preventative
	04C	89	Good	100	Acceptable	Preventative
	04N	98	Good	100	Acceptable	Preventative
	04S	99	Good	100	Acceptable	Preventative
	05C	87	Good	100	Acceptable	Preventative
	05N	98	Good	100	Acceptable	Preventative
	05S	98	Good	100	Acceptable	Preventative
	06C	61	Fair	98	Acceptable	Rehabilitation
	06N	87	Good	100	Acceptable	Preventative

Branch	Section ID	PCI	Pavement Condition Rating	SCI	SCI Category	Maintenance Classification
	06S	77	Satisfactory	100	Acceptable	Preventative
	07C	63	Fair	97	Acceptable	Rehabilitation
	07N	84	Satisfactory	100	Acceptable	Preventative
	07S	74	Satisfactory	99	Acceptable	Preventative
Runway 8R/26L	01C	81	Satisfactory	100	Acceptable	Preventative
	01N	85	Satisfactory	100	Acceptable	Preventative
	01S	78	Satisfactory	100	Acceptable	Preventative
	02C	73	Satisfactory	100	Acceptable	Preventative
	02N	77	Satisfactory	99	Acceptable	Preventative
	02S	74	Satisfactory	100	Acceptable	Preventative
	03C	70	Fair	97	Acceptable	Rehabilitation
	03N	85	Satisfactory	98	Acceptable	Preventative
	03S	78	Satisfactory	100	Acceptable	Preventative
	04C	51	Poor	87	Acceptable	Rehabilitation
	04N	80	Satisfactory	100	Acceptable	Preventative
	04S	71	Satisfactory	100	Acceptable	Preventative
	05C	55	Poor	82	Acceptable	Rehabilitation
	05N	74	Satisfactory	100	Acceptable	Preventative
	05S	77	Satisfactory	100	Acceptable	Preventative
	06C	73	Satisfactory	98	Acceptable	Preventative
	06N	83	Satisfactory	100	Acceptable	Preventative
	06S	83	Satisfactory	100	Acceptable	Preventative
Runway 8L/26R Shoulder	01N	66	Fair	Not Applicable		Rehabilitation
	02N	82	Satisfactory	Not Applicable		Preventative
	04N	93	Good	Not Applicable		Preventative
	05S	94	Good	Not Applicable		Preventative
	06N	94	Good	Not Applicable		Preventative
	07N	91	Good	Not Applicable		Preventative
	09N	93	Good	Not Applicable		Preventative
	11N	69	Fair	Not Applicable		Rehabilitation
	11S	94	Good	Not Applicable		Preventative
	12N	69	Fair	Not Applicable		Rehabilitation
	13S	94	Good	Not Applicable		Preventative
	14N	93	Good	Not Applicable		Preventative
	15N	65	Fair	Not Applicable		Rehabilitation
	15S	93	Good	Not Applicable		Preventative
	16N	82	Satisfactory	Not Applicable		Preventative
	17S	69	Fair	Not Applicable		Rehabilitation
	18N	92	Good	Not Applicable		Preventative
	18S	70	Fair	Not Applicable		Rehabilitation
	20N	85	Satisfactory	Not Applicable		Preventative
	20S	93	Good	Not Applicable		Preventative
	21N	66	Fair	Not Applicable		Rehabilitation
	21S	94	Good	Not Applicable		Preventative
	23N	89	Good	Not Applicable		Preventative
	23S	94	Good	Not Applicable		Preventative
	25N	70	Fair	Not Applicable		Rehabilitation
	25S	94	Good	Not Applicable		Preventative
	26N	72	Satisfactory	Not Applicable		Preventative

Branch	Section ID	PCI	Pavement Condition Rating	SCI	SCI Category	Maintenance Classification
	28N	93	Good	Not Applicable		Preventative
	30N	94	Good	Not Applicable		Preventative
	30S	90	Good	Not Applicable		Preventative
	31S	94	Good	Not Applicable		Preventative
	32N	88	Good	Not Applicable		Preventative
	3S	78	Satisfactory	Not Applicable		Preventative
	24N	60	Fair	Not Applicable		Rehabilitation
	35N	65	Fair	Not Applicable		Rehabilitation
	35S	89	Good	Not Applicable		Preventative
	37N	94	Good	Not Applicable		Preventative
	38N	80	Satisfactory	Not Applicable		Preventative
	38S	94	Good	Not Applicable		Preventative
	40N	69	Fair	Not Applicable		Rehabilitation
	40S	68	Fair	Not Applicable		Rehabilitation
	41N	65	Fair	Not Applicable		Rehabilitation
	42N	68	Fair	Not Applicable		Rehabilitation
	43S	87	Good	Not Applicable		Preventative
	44S	67	Fair	Not Applicable		Rehabilitation
Runway 8R/26L Shoulder	01N	86	Good	Not Applicable		Preventative
	02N	94	Good	Not Applicable		Preventative
	02S	91	Good	Not Applicable		Preventative
	03N	59	Fair	Not Applicable		Rehabilitation
	03S	89	Good	Not Applicable		Preventative
	05N	100	Good	Not Applicable		Preventative
	05S	57	Fair	Not Applicable		Rehabilitation
	06N	100	Good	Not Applicable		Preventative
	06S	67	Fair	Not Applicable		Rehabilitation
	07S	73	Satisfactory	Not Applicable		Preventative
	08N	91	Good	Not Applicable		Preventative
	08S	60	Fair	Not Applicable		Rehabilitation
	09N	88	Good	Not Applicable		Preventative
	09S	83	Satisfactory	Not Applicable		Preventative
	10N	61	Fair	Not Applicable		Rehabilitation
	10S	82	Satisfactory	Not Applicable		Preventative
	11N	60	Fair	Not Applicable		Rehabilitation
	11S	42	Poor	Not Applicable		Rehabilitation
	12N	50	Poor	Not Applicable		Rehabilitation
	12S	90	Good	Not Applicable		Preventative
	13N	84	Satisfactory	Not Applicable		Preventative
	13S	90	Good	Not Applicable		Preventative
	14N	90	Good	Not Applicable		Preventative
	14S	68	Fair	Not Applicable		Rehabilitation
	15N	49	Poor	Not Applicable		Rehabilitation
	15S	85	Satisfactory	Not Applicable		Preventative
	16S	87	Good	Not Applicable		Preventative
	17N	64	Fair	Not Applicable		Rehabilitation
	17S	59	Fair	Not Applicable		Rehabilitation
	18N	67	Fair	Not Applicable		Rehabilitation
	18S	66	Fair	Not Applicable		Rehabilitation

Branch	Section ID	PCI	Pavement Condition Rating	SCI	SCI Category	Maintenance Classification
	19S	84	Satisfactory	Not Applicable		Preventative
	20S	50	Poor	Not Applicable		Rehabilitation
	22S	95	Good	Not Applicable		Preventative
	23S	96	Good	Not Applicable		Preventative
	25S	47	Poor	Not Applicable		Rehabilitation
	26S	78	Satisfactory	Not Applicable		Preventative
	27S	64	Fair	Not Applicable		Rehabilitation

Note: See Appendix C for location of Section ID
Source: RS&H, 2020

4.4 TAXIWAYS RESULTS AND ANALYSIS

Ontario International Airport is comprised of 27 taxiways/taxilanes. With a large number of taxiways/taxilanes, the PCI and SCI values greatly vary. Similarly to the runways, a PCI value was calculated for each sample unit prior to being averaged by section. **Appendix D** shows the pavement condition rating for each sample unit. The taxiway/taxilane PCI and SCI values along with their corresponding pavement condition rating and maintenance classification by section are detailed in **Table 4-2**.

TABLE 4-2: TAXIWAY SECTION PCI AND SCI RESULTS

Branch	Section ID	PCI	PCI Condition	SCI	SCI Category	Maintenance Classification
Taxilane N1 Shoulder	01S	69	Fair	Not Applicable		Rehabilitation
	03S	64	Fair	Not Applicable		Rehabilitation
	05S	64	Fair	Not Applicable		Rehabilitation
	07S	63	Fair	Not Applicable		Rehabilitation
	09S	68	Fair	Not Applicable		Rehabilitation
Taxiway B Shoulder	01E	82	Satisfactory	Not Applicable		Preventative
	02W	84	Satisfactory	Not Applicable		Preventative
Taxiway D Shoulder	01E	94	Good	Not Applicable		Preventative
	02W	94	Good	Not Applicable		Preventative
	03E	88	Good	Not Applicable		Preventative
	03W	81	Satisfactory	Not Applicable		Preventative
Taxiway F Shoulder	01E	62	Fair	Not Applicable		Rehabilitation
	02W	57	Fair	Not Applicable		Rehabilitation
Taxiway K Shoulder	01E	71	Satisfactory	Not Applicable		Preventative
	01W	94	Good	Not Applicable		Preventative
	02E	79	Satisfactory	Not Applicable		Preventative
Taxiway N Shoulder	01N	85	Satisfactory	Not Applicable		Preventative
	01S	90	Good	Not Applicable		Preventative
	03N	81	Satisfactory	Not Applicable		Preventative
	03S	94	Good	Not Applicable		Preventative
	05N	86	Good	Not Applicable		Preventative
	05S	70	Fair	Not Applicable		Rehabilitation
	07N	68	Fair	Not Applicable		Rehabilitation
	07S	65	Fair	Not Applicable		Rehabilitation
	09N	66	Fair	Not Applicable		Rehabilitation
	09S	68	Fair	Not Applicable		Rehabilitation
	10N	80	Satisfactory	Not Applicable		Preventative
	11N	64	Fair	Not Applicable		Rehabilitation

Branch	Section ID	PCI	PCI Condition	SCI	SCI Category	Maintenance Classification
	11S	66	Fair	Not Applicable		Rehabilitation
	12N	60	Fair	Not Applicable		Rehabilitation
	13N	66	Fair	Not Applicable		Rehabilitation
	13S	70	Fair	Not Applicable		Rehabilitation
	15N	68	Fair	Not Applicable		Rehabilitation
	15S	70	Fair	Not Applicable		Rehabilitation
	16N	67	Fair	Not Applicable		Rehabilitation
	18N	88	Good	Not Applicable		Preventative
	18S	92	Good	Not Applicable		Preventative
	19S	94	Good	Not Applicable		Preventative
	20N	61	Fair	Not Applicable		Rehabilitation
	21S	63	Fair	Not Applicable		Rehabilitation
	23N	59	Fair	Not Applicable		Rehabilitation
	23S	75	Satisfactory	Not Applicable		Preventative
	25N	77	Satisfactory	Not Applicable		Preventative
	25S	62	Fair	Not Applicable		Rehabilitation
	26N	65	Fair	Not Applicable		Rehabilitation
	27S	66	Fair	Not Applicable		Rehabilitation
	28S	58	Fair	Not Applicable		Rehabilitation
Taxiway P Shoulder	01E	59	Fair	Not Applicable		Rehabilitation
	01W	64	Fair	Not Applicable		Rehabilitation
	02W	59	Fair	Not Applicable		Rehabilitation
Taxiway Q Shoulder	01E	62	Fair	Not Applicable		Rehabilitation
	01W	59	Fair	Not Applicable		Rehabilitation
Taxiway S Shoulder	01N	84	Satisfactory	Not Applicable		Preventative
	02S	89	Good	Not Applicable		Preventative
	03N	62	Fair	Not Applicable		Rehabilitation
	03S	62	Fair	Not Applicable		Rehabilitation
	04N	63	Fair	Not Applicable		Rehabilitation
	04S	76	Satisfactory	Not Applicable		Preventative
	05N	82	Satisfactory	Not Applicable		Preventative
	05S	62	Fair	Not Applicable		Rehabilitation
	06N	83	Satisfactory	Not Applicable		Preventative
	06S	80	Satisfactory	Not Applicable		Preventative
	07N	84	Satisfactory	Not Applicable		Preventative
	07S	100	Good	Not Applicable		Preventative
	08N	82	Satisfactory	Not Applicable		Preventative
	08S	100	Good	Not Applicable		Preventative
	09N	92	Good	Not Applicable		Preventative
Taxiway U Shoulder	01E	94	Good	Not Applicable		Preventative
	02W	94	Good	Not Applicable		Preventative
	03E	94	Good	Not Applicable		Preventative
	03W	81	Satisfactory	Not Applicable		Preventative
Taxiway W Shoulder	01E	67	Fair	Not Applicable		Rehabilitation
	02E	64	Fair	Not Applicable		Rehabilitation
	02W	80	Satisfactory	Not Applicable		Preventative
	03E	83	Satisfactory	Not Applicable		Preventative
	03W	77	Satisfactory	Not Applicable		Preventative
	04E	72	Satisfactory	Not Applicable		Preventative

Branch	Section ID	PCI	PCI Condition	SCI	SCI Category	Maintenance Classification
	04W	75	Satisfactory	Not Applicable		Preventative
	06E	75	Satisfactory	Not Applicable		Preventative
	06W	72	Satisfactory	Not Applicable		Preventative
Taxilane G	01	84	Satisfactory	Not Applicable		Preventative
	02	61	Fair	Not Applicable		Rehabilitation
Taxilane H	01	84	Satisfactory	Not Applicable		Preventative
	02	59	Fair	Not Applicable		Rehabilitation
Taxilane J	01	96	Good	Not Applicable		Preventative
	02	81	Satisfactory	Not Applicable		Preventative
Taxilane N1	01	90	Good	100	Acceptable	Preventative
	02	87	Good	99	Acceptable	Preventative
Taxiway B	01	61	Fair	90	Acceptable	Rehabilitation
	02	84	Satisfactory	99	Acceptable	Preventative
Taxiway D	01	94	Good	100	Acceptable	Preventative
	02	82	Satisfactory	99	Acceptable	Preventative
	03	92	Good	100	Acceptable	Preventative
	04	96	Good	100	Acceptable	Preventative
	05	84	Satisfactory	100	Acceptable	Preventative
	06	64	Fair	92	Acceptable	Rehabilitation
	07	97	Good	100	Acceptable	Preventative
	08	86	Good	100	Acceptable	Preventative
	09	75	Satisfactory	100	Acceptable	Preventative
	10	62	Fair	94	Acceptable	Rehabilitation
Taxiway F	01	93	Good	100	Acceptable	Preventative
	02	83	Satisfactory	100	Acceptable	Preventative
	03	89	Good	100	Acceptable	Preventative
	04	96	Good	100	Acceptable	Preventative
	05	78	Satisfactory	100	Acceptable	Preventative
	06	61	Fair	79	Unacceptable	Rehabilitation
	07	77	Satisfactory	100	Acceptable	Preventative
	08	68	Fair	96	Acceptable	Rehabilitation
	09	56	Fair	82	Acceptable	Rehabilitation
Taxiway K	01	91	Good	99	Acceptable	Preventative
	02	62	Fair	94	Acceptable	Rehabilitation
	03	86	Good	100	Acceptable	Preventative
	04	94	Good	100	Acceptable	Preventative
	05	88	Good	96	Acceptable	Preventative
	06	67	Fair	100	Acceptable	Rehabilitation
	07	68	Fair	96	Acceptable	Rehabilitation
	08	72	Satisfactory	100	Acceptable	Preventative
	09	65	Fair	96	Acceptable	Rehabilitation
Taxiway L	01	88	Good	100	Acceptable	Preventative
	02	76	Satisfactory	98	Acceptable	Preventative
Taxiway M	02	69	Fair	100	Acceptable	Rehabilitation
	04	78	Satisfactory	100	Acceptable	Preventative
	05	79	Satisfactory	100	Acceptable	Preventative
Taxiway N	01	84	Satisfactory	99	Acceptable	Preventative
	02	90	Good	99	Acceptable	Preventative
	03	86	Good	99	Acceptable	Preventative

Branch	Section ID	PCI	PCI Condition	SCI	SCI Category	Maintenance Classification
	04	91	Good	100	Acceptable	Preventative
	05	91	Good	100	Acceptable	Preventative
	06	73	Satisfactory	99	Acceptable	Preventative
	07	85	Satisfactory	98	Acceptable	Preventative
	08	88	Good	100	Acceptable	Preventative
	09	84	Satisfactory	98	Acceptable	Preventative
	10	85	Satisfactory	99	Acceptable	Preventative
	11	90	Good	100	Acceptable	Preventative
	12	62	Fair	97	Acceptable	Rehabilitation
	13	53	Poor	83	Acceptable	Rehabilitation
	14	82	Satisfactory	94	Acceptable	Preventative
Taxiway P	01	89	Good	100	Acceptable	Preventative
	02	78	Satisfactory	98	Acceptable	Preventative
	03	78	Satisfactory	100	Acceptable	Preventative
	04	90	Good	96	Acceptable	Preventative
	05	78	Satisfactory	80	Unacceptable	Preventative
	06	30	Very Poor	47	Unacceptable	Reconstruction
	07	66	Fair	96	Acceptable	Rehabilitation
	08	76	Satisfactory	100	Acceptable	Preventative
	09	68	Fair	100	Acceptable	Rehabilitation
	10	75	Satisfactory	100	Acceptable	Preventative
Taxiway Q	01	86	Good	98	Acceptable	Preventative
	02	74	Satisfactory	100	Acceptable	Preventative
	03	82	Satisfactory	96	Acceptable	Preventative
	04	76	Satisfactory	100	Acceptable	Preventative
	05	68	Fair	95	Acceptable	Rehabilitation
Taxiway R	01	85	Satisfactory	98	Acceptable	Preventative
	02	96	Good	99	Acceptable	Preventative
	03	94	Good	99	Acceptable	Preventative
Taxiway S	01	65	Fair	92	Acceptable	Rehabilitation
	02	73	Satisfactory	100	Acceptable	Preventative
	03	78	Satisfactory	98	Acceptable	Preventative
	04	64	Fair	88	Acceptable	Rehabilitation
	05	63	Fair	88	Acceptable	Rehabilitation
	06	83	Satisfactory	100	Acceptable	Preventative
	07	79	Satisfactory	97	Acceptable	Preventative
	08	74	Satisfactory	92	Acceptable	Preventative
Taxiway S1	01	41	Poor	Not Applicable		Rehabilitation
Taxiway S2	01	50	Poor	66	Unacceptable	Rehabilitation
Taxiway S3	01	36	Very Poor	Not Applicable		Reconstruction
Taxiway S5	01	100	Good	Not Applicable		Preventative
Taxiway T	01	87	Good	100	Acceptable	Preventative
	02	74	Satisfactory	97	Acceptable	Preventative
Taxiway U	01	85	Satisfactory	94	Acceptable	Preventative
	02	78	Satisfactory	100	Acceptable	Preventative
	03	82	Satisfactory	100	Acceptable	Preventative
	04	89	Good	100	Acceptable	Preventative
	05	90	Good	100	Acceptable	Preventative
	06	93	Good	100	Acceptable	Preventative

Branch	Section ID	PCI	PCI Condition	SCI	SCI Category	Maintenance Classification
	07	86	Good	100	Acceptable	Preventative
	08	76	Satisfactory	100	Acceptable	Preventative
	09	82	Satisfactory	100	Acceptable	Preventative
Taxiway V	01	85	Satisfactory	100	Acceptable	Preventative
	02	46	Poor	79	Unacceptable	Rehabilitation
	03	73	Satisfactory	100	Acceptable	Preventative
Taxiway W	01	88	Good	99	Acceptable	Preventative
	02	55	Poor	86	Acceptable	Rehabilitation
	03	55	Poor	92	Acceptable	Rehabilitation
	04	71	Satisfactory	98	Acceptable	Preventative
	05	65	Fair	100	Acceptable	Rehabilitation
	06	63	Fair	100	Acceptable	Rehabilitation
	07	77	Satisfactory	100	Acceptable	Preventative
	08	72	Satisfactory	100	Acceptable	Preventative
	09	75	Satisfactory	100	Acceptable	Preventative
	10	88	Good	100	Acceptable	Preventative
	11	80	Satisfactory	100	Acceptable	Preventative
	12	90	Good	99	Acceptable	Preventative
Taxiway W1	01	83	Satisfactory	99	Acceptable	Preventative
Taxiway W2	01	84	Satisfactory	100	Acceptable	Preventative
Taxiway W3	01	86	Good	100	Acceptable	Preventative

Note: See Appendix C for location of Section ID

Source: RS&H, 2020

4.5 APRONS RESULTS AND ANALYSIS

The aprons at Ontario International Airport have a variety of PCI and SCI values that are generally significantly lower than the taxiways/taxilanes. Special attention needs to be payed to those areas that are serious or failed due to the safety concerns that they pose. Areas that are poor but are more important to the everyday operations of the airport, such as Section 01 of the Terminal 1 Apron, need to also be of concern.

TABLE 4-3: APRON SECTION PCI AND SCI RESULTS

Branch	Section ID	PCI	PCI Condition	SCI	SCI Category	Maintenance Classification
Cargo South Apron	01	48	Poor	Not Applicable		Rehabilitation
	02	61	Fair	87	Acceptable	Rehabilitation
	03	22	Serious	Not Applicable		Reconstruction
	04	81	Satisfactory	92	Acceptable	Preventative
	05	43	Poor	43	Unacceptable	Rehabilitation
Cargo West Apron	Not Inspected					
FedEx Apron	01	64	Fair	Not Applicable		Rehabilitation
	02	54	Poor	Not Applicable		Rehabilitation
	03	71	Satisfactory	94	Acceptable	Preventative
	04	79	Satisfactory	94	Acceptable	Preventative
	05	67	Fair	82	Acceptable	Rehabilitation
	06	38	Very Poor	52	Unacceptable	Reconstruction
	07	60	Fair	Not Applicable		Rehabilitation

Branch	Section ID	PCI	PCI Condition	SCI	SCI Category	Maintenance Classification
	08	69	Fair	Not Applicable		Rehabilitation
	09	80	Satisfactory	Not Applicable		Preventative
	10	18	Serious	Not Applicable		Reconstruction
	11	94	Good	Not Applicable		Preventative
	13	34	Very Poor	Not Applicable		Reconstruction
	15	100	Good	Not Applicable		Preventative
	16	9	Failed	Not Applicable		Reconstruction
	17	17	Serious	17	Unacceptable	Reconstruction
	18	29	Very Poor	Not Applicable		Reconstruction
	19	98	Good	100	Acceptable	Preventative
	20	98	Good	100	Acceptable	Preventative
	21	86	Good	100	Acceptable	Preventative
Int'l Terminal Apron	01	58	Fair	Not Applicable		Rehabilitation
	02	94	Good	Not Applicable		Preventative
	03	37	Very Poor	Not Applicable		Reconstruction
Atlantic Aviation Apron	01	48	Poor	Not Applicable		Rehabilitation
	03	0	Failed	Not Applicable		Reconstruction
Terminal 1 Apron	01	43	Poor	62	Unacceptable	Rehabilitation
	02	75	Satisfactory	Not Applicable		Preventative
Terminal 1A Apron	Not Inspected					
Terminal 2 Apron	01	80	Satisfactory	93	Acceptable	Preventative
Terminal 3 Apron	01	89	Good	100	Acceptable	Preventative
Terminal 4 Apron	01	78	Satisfactory	97	Acceptable	Preventative
Terminal 4 Apron Shoulder	01	43	Poor	Not Applicable		Rehabilitation
Cargo South Apron Taxiway	01	70	Fair	100	Acceptable	Rehabilitation
	02	100	Good	Not Applicable		Preventative

Note: See Appendix C for location of Section ID
Source: RS&H, 2020

4.6 VEHICLE SERVICE ROADS RESULTS AND ANALYSIS

Except for any recently reconstructed vehicle service roads and PCC portions, the data shows that much of the service road system has a poor PCI condition. **Table 4-4** shows that service roads throughout the airport tend to be on two opposite sides of the spectrum. The main distresses found include block cracking and alligator cracking. These distresses make it difficult to recommend rehabilitation to be done as opposed to a full reconstruction of large areas of these roads.

TABLE 4-4: VEHICLE SERVICE ROAD SECTION PCI AND SCI RESULTS

Branch	Section ID	PCI	PCI Condition	SCI	SCI Category	Maintenance Classification
Vehicle Service Road East	01	42	Poor	Not Applicable		Rehabilitation
Vehicle Service Road North	01	46	Poor	Not Applicable		Rehabilitation
	02	46	Poor	Not Applicable		Rehabilitation

	03	54	Poor	Not Applicable		Rehabilitation
	04	100	Good	100	Acceptable	Preventative
	05	67	Fair	Not Applicable		Rehabilitation
	06	44	Poor	Not Applicable		Rehabilitation
	07	64	Fair	Not Applicable		Rehabilitation
	08	56	Fair	Not Applicable		Rehabilitation
	09	55	Poor	Not Applicable		Rehabilitation
Vehicle Service Road South	01	100	Good	100	Acceptable	Preventative
	02	92	Good	Not Applicable		Preventative
	03	43	Poor	Not Applicable		Rehabilitation
	04	78	Satisfactory	Not Applicable		Preventative
	05	79	Satisfactory	Not Applicable		Preventative
	06	100	Good	100	Acceptable	Preventative
	07	56	Fair	Not Applicable		Rehabilitation
	08	100	Good	Not Applicable		Preventative
Vehicle Service Road West	01	86	Good	Not Applicable		Preventative
	02	100	Good	100	Acceptable	Preventative
	03	93	Good	Not Applicable		Preventative
	04	100	Good	100	Acceptable	Preventative
	05	42	Poor	Not Applicable		Rehabilitation

Note: See Appendix C for location of Section ID
Source: RS&H, 2020

Based on the PCI survey results detailed in **Chapter 4**, 65.4% of the airfield pavement fell within the preventative maintenance category with 33.9% “Good” and 31.5% “Satisfactory”. 32.9% of airfield pavements fell within the rehabilitation maintenance category with 20.9% fair and 12.0% poor. The remaining 1.7% falls within the reconstruction category with 0.5% “Very Poor”, 1.0% “Serious” and 0.2% “Failed”. The numbers detailed above are by square area.

CHAPTER 5

PAVEMENT CLASSIFICATION NUMBER (PCN)

5.1 INTRODUCTION

FAA Advisory Circular *150/5335-5C* defines the Pavement Classification Number (PCN) as a number that expresses the load-carrying capacity of a pavement for unrestricted operations. It is represented by a series of one number and four letters that depicts the pavement strength, type of pavement, subgrade strength, allowable tire pressures and method of determination.

Ontario International Airport's runway, taxiway, and apron pavements PCN values are calculated based on historical pavement sections as well as non destructive testing and geotechnical analysis. The PCN is also affected by the fleet mix which has been compiled from operations data provided by the airport. The fleet mix is shown in **Section 5.2.1** of this report.

The Aircraft Classification Number (ACN) is a single unique number that expresses the relative effect of an aircraft on airfield pavements with a specified standard subgrade category. It is an indication of the relative effect of an aircraft on a particular pavement section and is depends on weight, landing gear configuration and tire pressure.

Comparing the ACN with the PCN gives an indication of possible pavement damage implications of operating that aircraft on a particular pavement without restriction. If the ACN of an aircraft is less than the PCN of a pavement section, that pavement section can accommodate that specific aircraft without load restriction.

The ACN-PCN reporting system is the only pavement strength system approved by the International Civil Aviation Organization (ICAO), and is also being adopted by the Federal Aviation Administration (FAA) as the sole reporting mechanism for commercial service airports. However, the ACN-PCN reporting system is not a design or pavement life evaluation method. It is simply a snapshot classification system used to quickly determine an aircraft's potential to increase wear on a pavement section. Since a technically derived PCN is dependent on a specific aircraft mix, significant additions to the mix will require recalculation of the PCN. Impacts of aircraft operations on pavement life and/or total cumulative damage factor should be calculated separately.

5.2 PCN OVERVIEW

The PCN is reported as a 5-part code; for example: 65/F/B/X/T. The first part is a numeric value stating the assessed bearing strength value as explained in AC *150/5335-5C*. This number can either be technically derived or reported as the most damaging aircraft using the pavement on a regular basis.

"F" stands for flexible pavement; the other option is "R" (rigid). In the case of an asphalt overlay section, the section would still be considered rigid pavement until the asphalt thickness is 75% of the rigid pavement thickness.

"B" represents subgrade strength, which ranges from high subgrade strength (A) to very low subgrade strength (D). **Table 5-1** show the ranges for subgrade strength relative to pavement type (R or F). The method of obtaining the subgrade strength is by the non-destructive testing method of HWD (Heavy Weight Deflectometer). Results and information about the test can be found in **Appendix E**.

TABLE 5-1: STANDARD SUBGRADE CONDITION

Subgrade Strength Category	California Bearing Ratio (CBR) for Flexible Pavement	Modulus of Subgrade Reaction (k-value, in pci) for Rigid Pavement	Code Designation
High	CBR ≥13	k ≥442 (≥120)	A
Medium	8<CBR<13	221<k<442 (60<k<120)	B
Low	4<CBR≤8	92<k≤221 (25<k≤60)	C
Ultra Low	CBR≤4	k≤92 (≤25)	D

Source: AC 150/5335-5C,2014; RS&H, 2020

"X" symbolizes the allowable tire pressure ranging from very high (W, no pressure limit) to very low (Z, pressure limited to 73 psi). FAA Advisory Circular 150/5335-5C recommends that well placed asphalt layers that are at least 4 or 5 inches in depth can be classified as W or X (tire pressure limited to 218 psi), while thinner layers can be rated no higher than Y (145 psi). For rigid pavements, the tire pressure is considered a non-issue, due to the high strength of concrete compared to commercial tire pressures, and can be classified as W. **Table 5-2** show the ranges for the pavement class based on the maximum tire pressure.

TABLE 5-2: MAXIMUM TIRE PRESSURE

Pavement Class	Maximum Tire Pressure
W	No Limit
X	217 psi
Y	145 psi
Z	72 psi

Source: AC 150/5335-5C,2014; RS&H, 2020

The "T" conveys that the analysis was completed via the "technical" method compared to the "using" aircraft method (U). The "using" aircraft method is an experience-based procedure and essentially assumes the PCN is equal to the highest ACN of the current aircraft fleet mix, as long as there are no areas of noticeable pavement distress caused by that aircraft. The using aircraft method can only be officially reported to the Airport Master Record, Form 5010, upon an agreement between the airport owner and the FAA and is acceptable on a temporary basis only. The technical method is a more accurate and precise representation of the pavement strength, and is the method used for this analysis. The computer program associated with the technical method is COMFAA and is developed and supplied by the FAA. The version utilized in this analysis is COMFAA 3.0.

5.2.1 Fleet Mix

The fleet mix data for this report was provided by Ontario International Airport staff for 2018. A growth factor of 3.5% is assumed in order to estimate future annual operations. **Table 5-3** lists the aircraft that have significant operations on each of the runways and are heavier than 12,500 lbs. There are additional aircraft in the fleet mix provided by the airport for PCN analysis but are not shown in the table below due to few operations and/or lower gross weight.

TABLE 5-3: FLEET MIX

Aircraft	Gross Weight. (lbs).	Annual Departures
A306 - Airbus A300 B4-600	375,888	2,109
A319 - Airbus A319	166,449	1,034
A320 - Airbus A320 All Series	171,961	1,762
A321 - Airbus A321 All Series	206,132	676
A359 - Airbus 350-900	590,839	67
ASTR - IAI Astra 1125	24,650	11
AT43 - Aérospatiale/Alenia ATR 42-200/300/320	36,817	255
B190 - Beech 1900/C-12J	17,120	41
B350 - Beech Super King Air 350	15,100	106
B38M - Boeing 737 Max 8	174,200	89
B712 - Boeing 717-200	121,000	79
B722 - Boeing 727-200	210,000	93
B733 - Boeing 737-300	138,500	16
B734 - Boeing 737-400	150,000	31
B737 - Boeing 737-700	154,500	10,906
B738 - Boeing 737-800	174,200	3,309
B739 - Boeing 737-900	174,200	1,305
B744 - Boeing 747-400	875,000	304
B748 - Boeing 747-8	987,000	123
B752 - Boeing 757-200	255,000	2,382
B762 - Boeing 767-200	361,000	579
B763 - Boeing 767-300	361,000	5,093
B772 - Boeing 777-200	545,000	25
B77W - Boeing 777-300ER	775,000	206
BE20 - Beech 200 Super King	12,590	62
BE30 - Raytheon 300 Super King Air	14,100	60
BE40 - Raytheon/Beech Beechjet 400/T-1	16,300	35
C25B - Cessna Citation CJ3	13,870	53
C25C - Cessna Citation CJ4	16,950	42
C550 - Cessna Citation II/Bravo	15,100	127
C560 - Cessna Citation V/Ultra/Encore	16,500	40
C56X - Cessna Excel/XLS	20,200	160
C650 - Cessna III/VI/VII	23,200	12
C680 - Cessna Citation Sovereign	30,300	39
C68A - Cessna Citation Latitude	30,800	17
C750 - Cessna Citation X	36,100	123
CL35 - Bombardier Challenger 300	38,850	214
CL60 - Bombardier Challenger 600/601/604	48,200	173
CRJ2 - Bombardier CRJ-200	53,000	1,057
CRJ7 - Bombardier CRJ-700	75,000	264
CRJ9 - Bombardier CRJ-900	84,500	949
DC10 - Boeing (Douglas) DC 10-10/30/40	583,000	162
E120 - Embraer Brasilia EMB 120	26,455	258
E145 - Embraer ERJ-145	48,501	22

Aircraft	Gross Weight. (lbs).	Annual Departures
E190 - Embraer 190	105,359	32
E545 - Embraer EMB-545 Legacy 450	35,759	10
E55P - Embraer Phenom 300	17,968	53
E75L - Embraer 175	82,673	1,549
F2TH - Dassault Falcon 2000	35,000	64
F900 - Dassault Falcon 900	45,500	46
FA20 - Dassault Falcon/Mystère 20	28,660	28
FA50 - Dassault Falcon/Mystère 50	40,780	115
GALX - IAI 1126 Galaxy/Gulfstream G200	35,450	37
GL5T - Bombardier BD-700 Global 5000	99,500	20
GLEX - Bombardier BD-700 Global Express	99,500	19
GLF4 - Gulfstream IV/G400	75,000	98
GLF5 - Gulfstream V/G500	90,900	62
GLF6 - Gulfstream	99,600	31
H25B - BAe HS 125/700-800/Hawker 800	27,520	96
LJ35 - Bombardier Learjet 35/36	18,000	25
LJ45 - Bombardier Learjet 45	21,500	35
LJ60 - Bombardier Learjet 60	23,500	64
LJ75 - Learjet 75	21,500	11
MD11 - Boeing (Douglas) MD 11	630,500	2,858
SW4 - Swearingen Merlin 4/4A Metro2	13,230	682

Source: Ontario International Airport, 2018

5.2.2 Runway Taxiway Configuration

Runway-taxiway configuration influences the PCN. The runway-taxiway configuration determines the "pass per traffic cycle" (P/TC) ratio. The P/TC ratio correlates to the number of passes an aircraft makes on a pavement section per operation. An operation includes a taxi-to-departure, the departure, landing, and taxi-to-parking. The P/TC differs whether a plane receives fuel at the airport between landing and departing. If a plane does not obtain fuel at the airport, the arrival weight will be similar to the departure weight, and therefore it would be considered that two passes on the runway and taxiways would be required per operation. If an aircraft obtains fuel at an airport, the landing weight will be significantly lower than the departure weight. Per FAA *AC 150/5335-5C*, the landing and the taxi-to-parking portions of the operation should be disregarded for this analysis due to the significant decrease in weight relative to the departure weight.

The P/TC also varies whether the runway has a central taxiway or a parallel taxiway. If the airport has a central taxiway, a departing plane may be required to back taxi on the runway and turn around prior to taking off, and also turn around and back taxi down the runway after landing. This situation would result in an additional pass on the runway for every operation. Since ONT has a parallel taxiway to each runway, only one pass on the runway occurs during the taxi to departure and departure portions of the operation.

5.3 PCN RESULTS AND ANALYSIS

5.3.1 PCN Results

Due to variability in pavement design within every section analyzed, when reporting the PCN by branch it must be adjusted to reflect the entire pavement structure, or it must be reported as the weakest PCN within the branch in order to be conservative. If a section that has a particularly low PCN is out of the traffic pattern or clearly would receive less loading than what would be typical for the rest of the branch, it can be disregarded. The same methodology would also apply for an area with a particularly high PCN, for it would give an impression that the pavement should be able to support heavier aircraft and/or more operations than it should be. As part of the PCI analysis, a detailed historical investigation has been undertaken to account for every individual pavement section across the airfield. Because determination of PCN by the technical method is dependent upon the pavement section and subgrade strength, this information must be considered in cases where the data varies within a pavement branch. For this report, PCN numbers are reported at the branch level unless specified.

Please reference the PCI chapter of this report for more detailed information on existing pavement sections. It should be noted that the PCN results given in this report are based on the current operations and aircraft fleet mix. Should the number of operations increase drastically, or heavier aircraft operate on ONT airfield pavements, another PCN analysis should be conducted to determine if aircraft operations or weight restrictions are advisable.

The calculated PCN numerical values range from 5 to 62 from the runways, taxiways and aprons. The range in the PCN values is due to the variation in pavement section design across the airfield. **Table 5-4** displays the results for the PCN of the Runways, **Table 5-5** contains the results of the Taxiway PCN and **Table 5-6** shows the results of the PCN for the Apron.

TABLE 5-4: RUNWAY SECTION PCN RESULTS

Branch ID	Location	PCN Code	ACN Code	ACN/PCN
Runway 8L/26R	First 2,175’ from 8L Start	43/R/B/W/T	57/R/B	1.3
Runway 8L/26R	2,175’ from 8L Start to End	53/R/B/W/T	57/R/B	1.1
Runway 8R/26L	All	43/R/A/W/T	54/R/B	1.3

Source: RS&H, 2020

5.3.1.1 Taxiways

TABLE 5-5: TAXIWAY SECTION PCN RESULTS

Branch ID	Location	PCN Code	ACN Code	ACN/PCN
Taxilane N1	All	43/R/A/W/T	54/R/A	1.3
Taxiway D	All	49/R/B/W/T	57/R/B	1.2
Taxiway F	All	42/R/B/W/T	57/R/B	1.4
Taxiway G	All	9/F/B/X/T	62/F/B	6.9
Taxiway K	All	43/R/B/W/T	57/R/B	1.3
Taxiway L	All	43/R/A/W/T	54/R/A	1.3
Taxiway N	All	46/R/A/W/T	54/R/A	1.2
Taxiway P	All	48/R/A/W/T	54/R/A	1.1
Taxiway Q	All	44/R/B/W/T	57/R/B	1.3
Taxiway R	All	62/R/B/W/T	57/R/B	0.9
Taxiway S	All	44/R/B/W/T	57/R/B	1.3

Branch ID	Location	PCN Code	ACN Code	ACN/PCN
Taxiway S1	All	5/F/B/X/T	53/F/B	10.6
Taxiway S2	All	40/R/B/W/T	57/R/B	1.4
Taxiway S3	All	*	62/F/B	-
Taxiway S5	All	30/F/C/X/T	77/F/C	2.6
Taxiway T	All	46/R/B/W/T	57/R/B	1.2
Taxiway U	All	49/R/B/W/T	57/R/B	1.2
Taxiway V	All	43/R/A/W/T	54/R/A	1.3
Taxiway W	All	53/R/B/W/T	57/R/B	1.1
Taxiway Y	All	60/R/B/W/T	57/R/B	1.0
Taxiway Y1	All	56/R/B/W/T	57/R/B	1.0
Taxiway Y2	All	55/R/B/W/T	57/R/B	1.0
Taxiway Y3	All	56/R/B/W/T	57/R/B	1.0
Taxiway H	All	*	59/F/D	-

*: Pavement does not have the minimum thickness required by the FAA.
Source: RS&H, 2020

5.3.1.2 Apron

TABLE 5-6: APRON SECTION PCN RESULTS

Branch ID	Location	PCN Code	ACN Code	ACN/PCN
Terminal 2-4	All	38/R/B/W/T	57/R/B	1.5
International Terminal Apron	All	*	59/F/D	-

*: Pavement does not have the minimum thickness required by the FAA.
Source: RS&H, 2020

5.3.2 PCN Analysis

5.3.2.1 PCN Overloading

Pavements that encounter operational loads (ACNs) larger than the reported PCN will potentially reduce the design life of the pavement, where smaller loads will use up pavement life at a reduced rate. According to *AC 150/5335-5C*, it is acceptable for minor overloading (frequency and/or magnitude) to occur on the pavement sporadically. For all pavements, the annual number of overload airplane traffic cycles should not be greater than 5% of the total annual airplane traffic cycles. For flexible pavements, occasional traffic operations by aircraft with an ACN not more than 10% of the reported PCN should not significantly affect the pavement. For rigid pavement, occasional traffic operations by aircraft with an ACN not more than 5% of the reported PCN should not significantly affect the pavement.

Where overload operations are performed, extra attention needs to be paid to the pavement by airport personnel to detect any signs of accelerated pavement distress. Overloading should not be permitted in areas of pavement distress, or in any occurrence where the subgrade is weakened by water.

When there is frequent overloading, the airport authority has three options: one option is to leave the PCN as calculated but restrict the weight of aircraft that overload the pavement so their ACNs are lower than the reported PCN. The second option is to increase the PCN of the pavement by adding a structural overlay or reconstructing, so the pavement can accommodate aircraft with higher ACNs. The third option is to raise the PCN to equal the highest ACN of the aircraft mix, but make it known that accelerated pavement life and severe pavement distresses may occur. Of the three options, option two is the only option that does not restrict airport operations or shorten pavement life but does require the necessary funding.

5.3.2.2 Cumulative Damage Factor

When analyzing pavement life and durability, the total Cumulative Damage Factor (CDF) must be considered. The CDF is a ratio of the number of coverages of a given aircraft on a pavement to the estimated number of coverages the same aircraft would need to perform to fail the pavement. The life of the pavement is estimated by dividing the 20-year design life by the total CDF of the aircraft mix (e.g. a mix with a total CDF of 1.25 would be figured to fail the pavement in 20/1.25=16 years).

While the ACN-PCN method is used to help determine if a specific aircraft can operate on a particular pavement, the CDF is used to determine the long-term effects of adding additional aircraft to a mix. When comparing the PCN of a pavement to a new aircraft with a given ACN, even if the ACN is lower than the PCN, it would be a good idea to not only recalculate the PCN under the new loading, but also look at the new CDF to determine if the new aircraft will significantly shorten the life of the pavement.

CHAPTER 6

PAVEMENT MANAGEMENT PROGRAM (PMP)

6.1 INTRODUCTION

This chapter of the report focuses on the development of a management program for the airfield pavements and provides conclusions and recommendations based on the results of the visual pavement inspection and NTD testing data that is conducted for airside pavements.

As dictated in Grant Assurance No. 11, Airports receiving federal funds for capital improvements projects are required to have an effective airport pavement maintenance management program. Airports are required to implement such a program for the useful life of any pavement constructed, reconstructed, or repaired with federal funding.

Historically, many airports based their maintenance program on immediate need rather than long-term planning, leading to a reduced effectiveness of maintenance and rehabilitation dollars. FAA *AC 150/5380-7B* outlines the requirements for an effective PMP. Developing a PMP helps airports determine how to best allocate the funds available, to get the most out of the capital investment. One of the most important components of the PMP is to keep an updated inspection log of how the pavements are performing, in order to get an indication of condition and rate of deterioration. This systematic approach helps provide the Airport and Engineer a basis upon which to execute judgment for repairs. The current evaluated condition of the pavements will provide the basis of the recommendations herein.

The goals of this maintenance and rehabilitation program are to provide a detailed inventory of the existing airfield pavements, recommendations for inspection schedule, and repair procedures to monitor the pavement conditions. This program also identifies areas of airfield pavement that require maintenance and provides repair recommendations. Lastly this report sequences this maintenance based on the priority of the pavements, severity of distresses, and available funding. This PMP includes rough order of magnitude cost estimates for the recommended rehabilitation and repairs. This maintenance program should be incorporated into current maintenance practices and planned pavement improvements at ONT.

Cost estimates for preventative and rehabilitative maintenance recommended at ONT have been developed based on the observed pavement distresses and are included in **Appendix F**. Assuming an unconstrained budget, The total estimated cost of this program is approximately ***$37.2M.*** As also explained in the following sections, it is important to understand that these repairs will not guarantee that the pavement will return the pavement to a PCI value of 100. Also, these repairs do not have the lasting effects that a full depth reconstruction will have. For these reasons, the total estimated cost of preventative and rehabilitative maintenance does not equal the cost of the 10-year Capital Improvement Plan which includes full reconstruction in certain deteriorated areas.

6.2 PMP OVERVIEW

Airfield pavements have been divided into three maintenance categories. The three categories are preventative, rehabilitative, and reconstructive, in increasing order of effort and cost. The category is directly related to a pavement's PCI number calculated from the visual inspection. Most airside pavement at ONT are determined to be within the preventative or rehabilitative maintenance categories. Some pavement sections have been found to be deteriorated so far as to be classified into the reconstruction category. The repair recommendations can be found in **Section 6.3**.

In addition to these rehabilitation projects, smaller preventative maintenance is recommended to prolong the usable life of the existing pavements. It is assumed that preventative maintenance will be performed by Airport maintenance staff, such as crack sealing and patching. It should be noted that there may be some efficiencies and cost savings if these repairs are packaged into a comprehensive repair plan.

A 10-year pavement improvement program has been developed for ONT in **Chapter 7**. The goals of this program are to identify areas of airfield pavement that need rehabilitation and reconstruction work and prioritize construction projects based on the severity of distresses and available funding. This program should be incorporated into the pavement improvements plan at ONT.

6.3 REPAIR COST

6.3.1 Reconstruction Pavement Section

Using the fleet mix shown in **Chapter 5** and the subgrade strength values obtained by the NDT, the reconstruction pavement section was calculated using FAARFIELD. FAARFIELD is the standard thickness design software which accompanies *AC 150/5320-6F Airport Pavement Design and Evaluation*. The following tables show the proposed reconstruction sections for PCC and AC pavements. The following results were used for estimating purposes and should only be used as an overview. FAARFIELD analysis should be verified for each individual project.

TABLE 6-1: PCC RECONSTRUCTION PAVEMENT SECTION

Layer Material	Thickness
P-501 - Surface Course	19 in
P-304 – Stabilized Base	6 in
P-154 - Subbase Course	12 in

Source: RS&H, 2020

TABLE 6-2: AC RECONSTRUCTION PAVEMENT SECTION

Layer Material	Thickness
P-401 - Surface Course	5 in
P-304 - Stabilized Course	6 in
P-209 - Base Course	12 in
P-154 - Subbase Course	12.5 in

Source: RS&H, 2020

TABLE 6-3: AC RECONSTRUCTION SHOULDER/BLAST PAD SECTION

Layer Material	Thickness
P-401 - Surface Course	4 in
P-209 - Base Course	6 in
P-154 - Subbase Course	17 in

Source: RS&H, 2020

6.3.2 AC and PCC Pavement Repair Cost

Table 6-4 lists the cost for airfield AC pavement repair costs by repair type and **Table 6-5** lists the airfield PCC pavement repair costs. The following prices were obtained from data from a variety of recent projects in the state of California. The following should only be used for estimating purposes due to the impact project size has on cost, as well as variance of labor and materials costs. The distress type and severity as well as overall condition of the pavement section or branch has been reviewed to determine the appropriate repair for each pavement branch or section.

TABLE 6-4: AC REPAIR COST

Repair Type	Units	Cost	
Monitor	N/A	N/A	
Clean	N/A	N/A	
Seal Coat	SF	$	0.25
Crack Seal (Linear Cracking)	LF	$	2.00
Crack Seal (Block Cracking)	SF	$	0.80
Crack Seal (Alligator Cracking)	SF	$	4.00
Patch	SF	$	5.00
Mill & Overlay	SF	$	4.00
Full Depth Reconstruction (VSR)	SF	$	14.00
Full Depth Reconstruction (Shoulder/Blast Pad)	SF	$	10.50
Full Depth Reconstruction (Full Strength)	SF	$	17.50

Note: All numbers in the table are in 2020 dollars.
Source: RS&H, 2020

TABLE 6-5: PCC REPAIR COST

Repair Type	Units	Cost	
Monitor	N/A	N/A	
Joint Seal	LF	$	5.00
Crack Seal (Linear Cracking)	LF	$	10.00
Crack Seal (Corner Cracking)	EA	$	25.00
Partial Depth Patch (Joint Spall)	LF	$	500.00
Partial Depth Patch	EA	$	1,000.00
Partial Depth Patch (Large)	EA	$	2,000.00
Full Depth Patch	EA	$	3,000.00
Slab Replacement	EA	$	20,000.00
Slab Replacement (Linear)	LF	$	2,000.00
Full Depth Reconstruction	SF	$	39.50

Note: All numbers in the table are in 2020 dollars.
Source: RS&H, 2020

6.4 ESTIMATED REPAIR COST BY BRANCH

Appendix F lists a cost estimate that was completed for each branch based on the individual pavement distresses and the repair cost for each. These estimates do not include soft costs, such as engineering design, or incidental construction costs such as drainage and electrical objects. Individual worksheets for each of the pavement branches can also be seen in **Appendix F**. Some branches have both AC and PCC pavement and are therefore listed twice on the table in **Appendix F**. It is important to understand that these repairs will not guarantee that the pavement will return to a PCI value of 100. Also, these repairs do not have the lasting effects that a full depth reconstruction will have. For example, if a section of pavement has spalls, spall repairs will create patches which are still distresses that need to be accounted for and therefore that section will not have a perfect 100 PCI. Those same patches will also not have 20-

year design life which is common of a full depth reconstruction. It may be entirely possible that the same patch will need to be repaired several times within a 20-year period. There are many cases in on the table in **Appendix F** where a full depth reconstruction of an entire branch makes more economic sense than repairing all individual distresses, even though the repairs may have a lower initial cost. The Capital Improvement Plan in **Chapter 7** takes this into consideration and combines both full reconstruction and maintenance projects.

6.5 10 YEAR "NO ACTION" ANALYSIS

Long term forecasting is a tool that can be used to identify which pavements will fall below the critical point first; The rate of deterioration is dependent on the current pavement condition and the pavement construction history. As additional inspections are performed, and additional data can be integrated, these projections can be further refined and pavements which are deteriorating at an unusual rate can be identified.

Airfield pavements where analyzed to develop a PCI value of each pavement section ten years into the future assuming no pavement maintenance or repairs are performed. Previous construction history discussed in **Chapter 2** as well as current pavement condition found in **Chapter 4** were used to determine the estimated rate of deterioration. **Appendix G** has tables which show what the estimated PCI values will be for the next 10 years if no action is taken. The appendix also has PCI maps after 5 years and 10 years of deterioration which correspond to the tables. In addition to current pavement conditions, this data will help determine project sequencing.

By performing regular inspections of the airfield pavements, the current conditions of the pavements can be closely monitored and can provide accurate information for yearly PMP updates. Utilizing the PAVER ™ software, ONT can record the existing pavements and keep up-to-date records of maintenance projects. This will allow the software to see the impacts of these project on the proposed PMP and allow ONT to adapt its maintenance strategies accordingly.

CHAPTER 7

CAPITAL IMPROVEMENT PLAN (CIP)

7.1 INTRODUCTION

The goal of the Capital Improvement Plan (CIP) is to focus on areas of concern due to their importance to airport operations and areas which may cause a safety concern due to poor pavement condition, all while managing available funding. This program should be incorporated into current maintenance practices and planned pavement improvements at ONT.

Although most of the airfield pavements fell within the preventative category, there were some immediate, short-term, and long-term needs identified based on the observed pavement condition. Additionally, it should be noted that most of the pavement at ONT have exceeded the FAA design life expectancy of 20 years.

The CIP developed for ONT is meant to assist in decision making for wiser investments in infrastructure. It allows ONT to identify areas of work that require attention immediately and areas that if improved using preventative maintenance measures will allow for a longer life-cycle of the present infrastructure.

Overall, the CIP and the strategies expressed herein, are expected to capitalize on the facilities in place today, ensure future capital expenditures are maximized, and incrementally build future revenue producing facilities that will further enhance Ontario International Airport.

7.2 CIP OVERVIEW

Table 7-1 lists the CIP overview for the next 10 fiscal years. A visual representation of this table can be found on **Figure 7-1**. The projects are grouped by their approximate cost in order to provide an average cost per year. All the prices are in today's dollars. An annual inflation rate was not added to the estimated costs below. Also, soft costs such as engineering design, or incidental construction costs such as drainage and electrical objects are not included in these estimates. It is also important to note that project costs may vary greatly depending on unknown future labor and material costs.

TABLE 7-1: CIP OVERVIEW

Fiscal Year	Pavement Branch	Main Type of Repairs	Estimated Cost	Fiscal Year Estimated Cost
1	Runway 8R/26L Keel	Full Reconstruction	$ 26,594,000.00	$ 43,421,000.00
	Runway Shoulder 8R, Runway Blast Pads 8R & 26L	Full Reconstruction	$ 16,697,000.00	
	Taxiway F (Sections: 7,8), Taxiway K (7,8), Taxiway P (8,9), Taxiway Q (3,4)	Slab Replacement, Patching	$ 130,000.00	
2	Runway 8L/26R	Patching, Crack Seal	$ 473,000.00	$ 16,576,000.00
	Runway Shoulder 8L	Crack Seal, Seal Coat	$ 536,000.00	
	Taxiway F (Sections: 2,3), Taxiway K (3,4), Taxiway P (3,4)	Slab Replacement, Patching	$ 162,000.00	
	Terminal 1 Apron	Full Reconstruction	$ 15,405,000.00	
3	VSR East	Full Reconstruction	$ 1,443,000.00	$ 6,078,000.00
	VSR South	Mill & Overlay, Full Reconstruction	$ 651,000.00	
	VSR West	Full Reconstruction	$ 2,151,000.00	
	VSR North	Full Reconstruction, Mill & Overlay	$ 1,833,000.00	

<table>
<tr><th>Fiscal Year</th><th>Pavement Branch</th><th>Main Type of Repairs</th><th>Estimated Cost</th><th>Fiscal Year Estimated Cost</th></tr>
<tr><td>4</td><td>Taxiway N (Sections: 12,13), Taxiway V (2,3), Taxiway W (2,3)</td><td>Full Reconstruction</td><td>$ 10,629,000.00</td><td>$ 10,629,000.00</td></tr>
<tr><td rowspan="3">5</td><td>Taxiway K, Taxiway P, Taxiway Q, Taxiway F</td><td>Slab Replacement, Patching</td><td>$ 849,000.00</td><td rowspan="3">$ 2,031,000.00</td></tr>
<tr><td>Taxiway N Shoulder</td><td>Crack Seal, Seal Coat</td><td>$ 602,000.00</td></tr>
<tr><td>Taxiway S Shoulder</td><td>Crack Seal, Seal Coat</td><td>$ 580,000.00</td></tr>
<tr><td>6</td><td>Cargo South Apron, Atlantic Aviation Apron</td><td>Full Reconstruction</td><td>$ 29,928,000.00</td><td>$ 29,928,000.00</td></tr>
<tr><td>7</td><td>Terminal 2 Apron, Terminal 3 Apron, Terminal 4 Apron, Taxilane N1</td><td>Slab Replacement, Patching</td><td>$ 835,000.00</td><td>$ 835,000.00</td></tr>
<tr><td>8</td><td>Taxiway S1, Taxiway S2, Taxiway S3</td><td>Full Reconstruction</td><td>$ 2,559,000.00</td><td>$ 2,559,000.00</td></tr>
<tr><td>9</td><td>Taxiway S</td><td>Full Reconstruction</td><td>$ 45,742,000.00</td><td>$ 45,742,000.00</td></tr>
<tr><td rowspan="2">10</td><td>FedEx Apron (Sections: 2, 5, 6, 10, 13, 17, 18)</td><td>Full Reconstruction</td><td>$ 13,727,000.00</td><td rowspan="2">$ 20,823,000.00</td></tr>
<tr><td>International Terminal Apron (Sections: 1,3)</td><td>Full Reconstruction</td><td>$ 7,096,000.00</td></tr>
<tr><td colspan="4">Total</td><td>$178,622,000.00</td></tr>
</table>

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.
Note 2: All numbers in the table are in 2020 dollars.
Source: RS&H, 2020

7.2.1 Fiscal Year 1

Runway 8R/26L was built in 1979 and has now reached 40 years of life. Despite the age, most of the pavement is in satisfactory condition. Due to the age and the type of distresses, full reconstruction of the keel section and maintenance and rehabilitation projects repairing the large amount of joint seal damage and spalling of the outboard sections are necessary at this time. The connecting Taxiways: F, K, P and Q, which connect the runways are deteriorating. The age of these taxiways is now exceeding their 20-year design pavement life and structural issues such as linear cracking and shattered slabs were seen during the pavement inspection. While full reconstruction of these taxiways may not be necessary at this time, rehabilitation repairs need to be made. The portions of these Taxiways which are within the Runway 8R/26L safety area should be repaired at the same time as any work being done to the Runway.

The shoulder and blast pad pavement for Runway 8R/26L has been deteriorating up to a point where large cracks which are over an inch wide are frequently seen. Large cracks will let water in which will potentially wash off the base material creating an unstable foundation. From the visual inspection it is obvious that crack seal and seal coat projects have been done to these shoulders, but the effects of these repairs have worn off. A full reconstruction of the Runway 8R/26L shoulders is recommended. Further engineering evaluation on the condition of the base material should be done prior to a full reconstruction project.

7.2.2 Fiscal Year 2

Runway 8L/26R is in far better condition than Runway 8R/26L with the majority of pavement being in good condition. Due to the importance of this runway, maintenance projects mainly addressing the joint seal damage and spalling are recommended. Noticeable rubber build up was noticed on both runways, it is recommended that any rubber removal projects are completed prior to any joint seal project. The Runway 8L/26R shoulders and Taxiways F, K and P within the runway safety area should also be maintained and rehabilitated during this time. Full reconstruction is not needed at this time for any of those areas.

The Terminal 1 Apron is comprised of both AC and PCC pavement. The current state of the PCC pavement is that it has high FOD potential and will soon be of safety concern. The high number of shattered slabs and other structural distresses give this pavement a poor rating. The AC pavement of this branch is not in nearly as bad of shape, but the age of the pavement may be a reason for replacement. Most distresses are joint reflection cracking and it would be beneficial for geotechnical testing prior to a reconstruction of the AC pavement.

7.2.3 Fiscal Year 3

Of the four VSR branches, VSR East is in the worst condition. Large portions of VSR East should be reconstructed due to the high amount of alligator cracking. VSR East experienced a large amount of ONT Operations department and UPS vehicle traffic therefore making it of high importance for the whole airport.

VSR South is of high importance for FedEx, any vehicles coming in through SAAP South and for emergency vehicles coming out of the ARFF station. A mill and overlay of a large portion of VSR South should be of high priority prior to the road needing a costly full depth reconstruction.

The section of VSR which connects to the FedEx apron is already creating rideability issues with the large amount of medium and high severity alligator cracking. The same can be said about the westerly section of VSR North. These portions of pavement do not experience nearly as much traffic as the rest of the VSR system but will soon be of safety concern. The sections of VSR North which are used to get to the terminals are in better condition, but rehabilitation projects should be done in order to keep them from deteriorating.

Overall the ONT VSR roads are in poor condition and a large amount of rehabilitation and reconstruction needs to be made.

7.2.4 Fiscal Year 4

The westerly portion of Taxiway N, Taxiway V between Taxiway N and Runway 8L/26R, and Taxiway W between Taxiway N and Runway 8L/26R will need to be reconstructed based on the poor condition of the pavement. This portion of pavement has many structural distresses such as linear cracking and shattered slabs.

7.2.5 Fiscal Year 5

Taxiways, such as Taxiways: K, P, Q and F, which connect the runways are deteriorating. The age of these taxiways is now exceeding their 20-year design pavement life and structural issues such as linear cracking and shattered slabs were seen during the pavement inspection. While full reconstruction of these taxiways may not be necessary at this time, rehabilitation repairs need to be made.

Taxiway N and S shoulders currently range from fair to good condition. Looking at the 2023 and 2028 "no action" analysis in **Appendix G**., it becomes apparent that doing preventative maintenance on these large pieces of pavement will help the airport from prematurely having to fully reconstruct. The preventative maintenance will most likely be made up of crack seal and seal coat projects.

7.2.6 Fiscal Year 6

The South Cargo Apron and Atlantic Aviation Apron both have AC pavement which is currently failing and will soon be a FOD hazard. Portions of the PCC found at the South Cargo Apron has recently been rehabbed for spalls and other minor distresses. The easterly side of the South Cargo Apron PCC will also need similar rehab procedures. The full reconstruction of AC pavements and the rehabilitation of the PCC pavement in this area will need to be completed for the safety of this apron. The amount of use and type of aircraft which use these pavements need to be evaluated prior to any major rehabilitation/reconstruction efforts. These estimated costs do not include the newly reconstructed AC pavement in these branches.

7.2.7 Fiscal Year 7

The Terminal 2, 3, 4 and Taxilane N1 are mostly in good and satisfactory conditions but due to their importance to ONT airport commercial operations, maintenance and rehabilitation projects need to be completed to these areas. Small areas near the terminals have structural distresses which warrant select slab replacements while the rest of the apron will need to get the joint seal damage and spalling addressed. Closures to these areas should be coordinated in a way to limit impact to airport operations.

7.2.8 Fiscal Year 8

The three taxiways which connect Taxiway S to the FedEx Apron will need to be reconstructed based on their current conditions. Taxiways S1 and S3 are AC pavement which have a large amount of low severity block cracking. In order to maintain these two taxiways safe, a crack seal and seal coat project may be necessary within the next few years. Taxiway S2 is a PCC taxiway which currently has linear cracking and several shattered slabs.

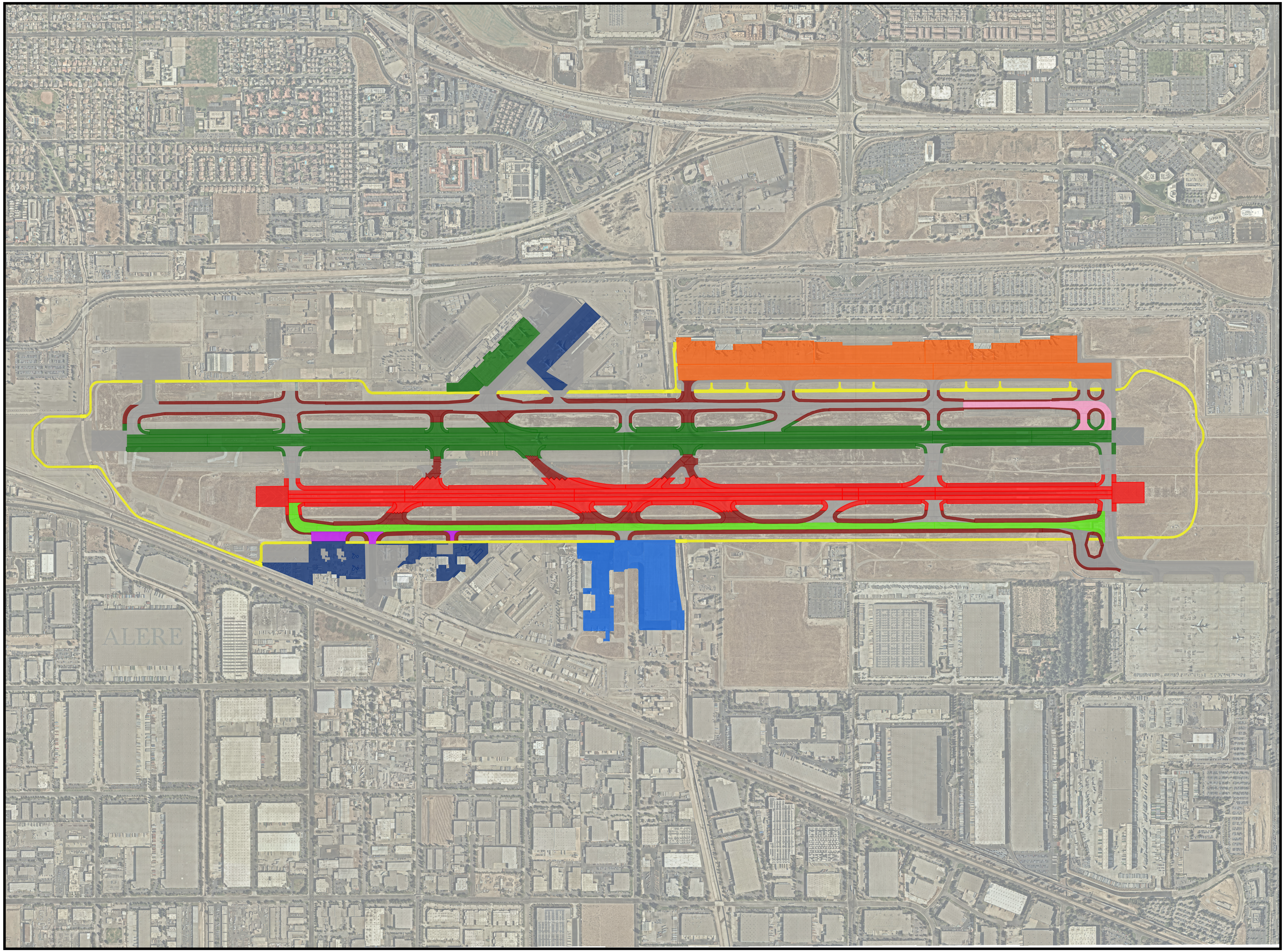
7.2.9 Fiscal Year 9

Taxiway S is currently scheduled to have maintenance done to it by the end of 2019. This maintenance includes select panel replacement, joint seal, crack repair and spall repair. These repairs should increase the life of the pavement, but it will not completely restore the pavement to a good condition. It should be expected that this pavement will need to be replaced towards the end of fiscal year 9. Monitoring Taxiway S will become very important due to the current state and age of the pavement.

7.2.10 Fiscal Year 10

The FedEx apron has some of the worst condition pavement of the whole airfield, but the future use of this pavement is unknown. Depending on the future use, this pavement will need to be reconstructed due to safety issues.

The International Terminal Apron is in poor condition, but the current and future use of this pavement does not merit immediate action. Depending on the future use, this pavement may need to be rehabilitated sooner than Fiscal Year 10.



Ontario International Airport

Airfield Pavement Evaluation

Figure 7-1
CIP Overview

Legend

CIP Fiscal Year

- Not on CIP
- Year 1
- Year 2
- Year 3
- Year 4
- Year 5
- Year 6
- Year 7
- Year 8
- Year 9
- Year 10

March 2020

N

0 500 1,000 1,500 Ft

APPENDIX A

PAVEMENT SECTION HISTORY

Appendix D. Work History Report

Work History Report

Pavement Database:ONT_FINAL-111411

Network: ONT-AS **Branch:** APCARGOS **(**Cargo South Apron**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** S **Length:** 1,117.17 Ft **Width:** 178.23 Ft **True Area:** 199,116.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APCARGOS **(**Cargo South Apron**)** **Section:** 02 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** S **Length:** 201.65 Ft **Width:** 99.16 Ft **True Area:** 19,995.06 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APCARGOS **(**Cargo South Apron**)** **Section:** 03 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** S **Length:** 136.02 Ft **Width:** 59.87 Ft **True Area:** 8,143.79 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APCARGOS **(**Cargo South Apron**)** **Section:** 04 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** S **Length:** 967.35 Ft **Width:** 309.79 Ft **True Area:** 299,676.28 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APCARGOW **(**Cargo West Apron**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** APRON **Rank:** S **Length:** 777.43 Ft **Width:** 399.06 Ft **True Area:** 310,240.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 6/13, Tif 0059799
06/01/1986	BA-AG	Base Course - Aggregate	$0	6.00	False	Sheet 6/13, Tif 0059799

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 574.68 Ft **Width:** 232.10 Ft **True Area:** 133,385.87 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 02 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 1,267.36 Ft **Width:** 266.81 Ft **True Area:** 338,142.05 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 03 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 183.85 Ft **Width:** 63.34 Ft **True Area:** 11,645.75 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 04 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 183.85 Ft **Width:** 63.34 Ft **True Area:** 11,644.85 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Work History Report

Pavement Database:ONT_FINAL-111411

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 05 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 83.89 Ft **Width:** 22.22 Ft **True Area:** 1,863.93 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 06 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 83.89 Ft **Width:** 22.22 Ft **True Area:** 1,863.93 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 07 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 722.87 Ft **Width:** 48.08 Ft **True Area:** 34,751.94 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 08 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 229.36 Ft **Width:** 12.86 Ft **True Area:** 2,948.76 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 09 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 449.00 Ft **Width:** 195.50 Ft **True Area:** 87,779.10 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 10 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 140.77 Ft **Width:** 36.73 Ft **True Area:** 5,171.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 11 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 277.07 Ft **Width:** 63.47 Ft **True Area:** 17,585.96 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 12 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 163.85 Ft **Width:** 45.45 Ft **True Area:** 7,447.82 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 13 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 261.02 Ft **Width:** 75.31 Ft **True Area:** 19,658.16 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Work History Report

Pavement Database:ONT_FINAL-111411

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 14 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 162.25 Ft **Width:** 12.64 Ft **True Area:** 2,051.58 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 15 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 417.91 Ft **Width:** 108.07 Ft **True Area:** 45,161.88 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APFEDEX **(**FedEx Apron**)** **Section:** 16 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 99.74 Ft **Width:** 43.73 Ft **True Area:** 4,362.12 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APGUARJET **(**Guardian Jet Center Apron**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 235.87 Ft **Width:** 106.84 Ft **True Area:** 25,199.77 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APGUARJET **(**Guardian Jet Center Apron**)** **Section:** 02 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 94.91 Ft **Width:** 15.25 Ft **True Area:** 1,447.32 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APGUARJET **(**Guardian Jet Center Apron**)** **Section:** 03 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 308.69 Ft **Width:** 180.27 Ft **True Area:** 55,647.49 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APGUARJET **(**Guardian Jet Center Apron**)** **Section:** 04 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 152.18 Ft **Width:** 65.91 Ft **True Area:** 10,029.76 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APGUARJET **(**Guardian Jet Center Apron**)** **Section:** 05 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 52.01 Ft **Width:** 30.98 Ft **True Area:** 1,611.38 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APGUARJET **(**Guardian Jet Center Apron**)** **Section:** 06 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 162.87 Ft **Width:** 69.80 Ft **True Area:** 11,368.49 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APINTTERM **(**Int'l Terminal Apron**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 1,018.32 Ft **Width:** 278.75 Ft **True Area:** 283,858.39 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APINTTERM **(**Int'l Terminal Apron**)** **Section:** 02 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 806.60 Ft **Width:** 291.71 Ft **True Area:** 235,293.61 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APINTTERM **(**Int'l Terminal Apron**)** **Section:** 03 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 329.34 Ft **Width:** 84.05 Ft **True Area:** 27,680.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APLAONT **(**LA-ONT Apron**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** T **Length:** 1,094.83 Ft **Width:** 165.12 Ft **True Area:** 180,776.77 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APLAONT **(**LA-ONT Apron**)** **Section:** 02 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** T **Length:** 202.91 Ft **Width:** 122.42 Ft **True Area:** 24,841.23 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APLAONT **(**LA-ONT Apron**)** **Section:** 03 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** T **Length:** 109.45 Ft **Width:** 33.72 Ft **True Area:** 3,691.18 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APLAONT **(**LA-ONT Apron**)** **Section:** 04 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** T **Length:** 143.55 Ft **Width:** 45.84 Ft **True Area:** 6,580.06 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APMERCATL **(**Atlantic Aviation Apron**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** S **Length:** 1,228.76 Ft **Width:** 271.33 Ft **True Area:** 333,397.53 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APMERCATL **(**Atlantic Aviation Apron**)** **Section:** 02 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** S **Length:** 200.28 Ft **Width:** 49.93 Ft **True Area:** 10,000.04 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Work History Report

Pavement Database:ONT_FINAL-111411

Network: ONT-AS **Branch:** APTERM1 **(**Terminal 1 Apron**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 86.25 Ft **Width:** 38.99 Ft **True Area:** 3,362.98 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APTERM1 **(**Terminal 1 Apron**)** **Section:** 02 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 95.62 Ft **Width:** 43.94 Ft **True Area:** 4,201.81 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APTERM1 **(**Terminal 1 Apron**)** **Section:** 03 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 877.63 Ft **Width:** 294.76 Ft **True Area:** 258,688.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APTERM1A **(**Terminal 1A Apron**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 574.15 Ft **Width:** 173.10 Ft **True Area:** 99,388.21 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APTERM1A **(**Terminal 1A Apron**)** **Section:** 02 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 431.73 Ft **Width:** 159.67 Ft **True Area:** 68,936.23 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APTERM1A **(**Terminal 1A Apron**)** **Section:** 03 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** APRON **Rank:** P **Length:** 266.84 Ft **Width:** 122.88 Ft **True Area:** 32,789.15 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** APTERM2 **(**Terminal 2 Apron**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** APRON **Rank:** P **Length:** 1,704.01 Ft **Width:** 263.09 Ft **True Area:** 448,304.70 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	14.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	6.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** APTERM3 **(**Terminal 3 Apron**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** APRON **Rank:** P **Length:** 1,376.09 Ft **Width:** 246.69 Ft **True Area:** 339,468.73 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	14.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	6.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** APTERM4 **(**Terminal 4 Apron**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** APRON **Rank:** P **Length:** 1,884.16 Ft **Width:** 272.26 Ft **True Area:** 512,988.69 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	14.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	6.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: BPRW26L **(**Blast Pad Runway 26L End**)** **Section:** 01E **Surface:** AC
L.C.D.: 06/02/1978 **Use:** BLAST PAD **Rank:** T **Length:** 400.69 Ft **Width:** 255.46 Ft **True Area:** 102,360.69 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1978	NC-AC	New Construction - AC	$0	4.00	True	Page 17/73, Design Report, Tif 2009205_25L
06/01/1978	BA-AG	Base Course - Aggregate	$0	6.00	False	Page 17/73, Design Report, Tif 2009205_25L

Network: ONT-AS **Branch**: BPRW26R **(**Blast Pad Runway 26R End**)** **Section:** 01E **Surface:** AC
L.C.D.: 01/01/1901 **Use:** BLAST PAD **Rank:** T **Length:** 397.18 Ft **Width:** 210.27 Ft **True Area:** 83,515.89 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: BPRW8L **(**Blast Pad Runway 8L End**)** **Section:** 01W **Surface:** AC
L.C.D.: 01/01/1901 **Use:** BLAST PAD **Rank:** T **Length:** 435.39 Ft **Width:** 246.06 Ft **True Area:** 107,130.42 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: BPRW8L **(**Blast Pad Runway 8L End**)** **Section:** 02W **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** BLAST PAD **Rank:** T **Length:** 150.04 Ft **Width:** 9.98 Ft **True Area:** 1,497.15 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch**: BPRW8R **(**Blast Pad Runway 8R End**)** **Section:** 01W **Surface:** AC
L.C.D.: 06/02/1978 **Use:** BLAST PAD **Rank:** T **Length:** 401.97 Ft **Width:** 248.10 Ft **True Area:** 99,729.16 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1978	NC-AC	New Construction - AC	$0	4.00	True	Page 17/73, Design Report, Tif 2009205_25L
06/01/1978	BA-AG	Base Course - Aggregate	$0	6.00	False	Page 17/73, Design Report, Tif 2009205_25L

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 01C **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 1,000.32 Ft **Width:** 74.98 Ft **True Area:** 75,000.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 01N **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 1,000.16 Ft **Width:** 37.50 Ft **True Area:** 37,501.25 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 01S **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 1,000.16 Ft **Width:** 37.49 Ft **True Area:** 37,499.97 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 02C **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 3,680.30 Ft **Width:** 74.99 Ft **True Area:**275,998.33 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 02N **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 3,680.13 Ft **Width:** 37.50 Ft **True Area:**138,001.71 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 02S **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 3,680.13 Ft **Width:** 37.50 Ft **True Area:**137,994.67 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 03C **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 1,480.32 Ft **Width:** 74.98 Ft **True Area:**111,000.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 03N **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 1,480.15 Ft **Width:** 37.50 Ft **True Area:** 55,500.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 03S **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 1,480.15 Ft **Width:** 37.50 Ft **True Area:** 55,498.80 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 04C **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 1,740.32 Ft **Width:** 74.99 Ft **True Area:**130,499.99 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 04N **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 1,740.15 Ft **Width:** 37.50 Ft **True Area:** 65,249.99 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Work History Report

Pavement Database:ONT_FINAL-111411

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 04S **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 1,740.15 Ft **Width:** 37.50 Ft **True Area:** 65,250.08 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 05C **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 2,080.31 Ft **Width:** 74.99 Ft **True Area:** 156,000.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 05N **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 2,080.15 Ft **Width:** 37.50 Ft **True Area:** 77,999.99 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 05S **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** RUNWAY **Rank:** P **Length:** 2,080.15 Ft **Width:** 37.50 Ft **True Area:** 78,000.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	P-501, Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 06C **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** RUNWAY **Rank:** P **Length:** 1,229.38 Ft **Width:** 49.99 Ft **True Area:** 61,458.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/350, Tif 0000051
06/01/1986	BA-ST	Base Course - Stablized (non-	$0	6.00	False	Sheet 37/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 06N **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** RUNWAY **Rank:** P **Length:** 1,229.37 Ft **Width:** 49.99 Ft **True Area:** 61,457.94 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/350, Tif 0000051
06/01/1986	BA-ST	Base Course - Stablized (non-	$0	6.00	False	Sheet 37/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 06S **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** RUNWAY **Rank:** P **Length:** 1,229.39 Ft **Width:** 49.99 Ft **True Area:** 61,458.70 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/350, Tif 0000051
06/01/1986	BA-ST	Base Course - Stablized (non-	$0	6.00	False	Sheet 37/350, Tif 0000051

Network: ONT-AS **Branch**: RW8L/26R **(**Runway 8L/26R**)** **Section:** 07C **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** RUNWAY **Rank:** P **Length:** 990.32 Ft **Width:** 50.03 Ft **True Area:** 49,549.35 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/350, Tif 0000051
06/01/1986	BA-ST	Base Course - Stablized (non-	$0	6.00	False	Sheet 37/350, Tif 0000051

Work History Report

Pavement Database:ONT_FINAL-111411

Network: ONT-AS **Branch:** RW8L/26R (Runway 8L/26R) **Section:** 07N **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** RUNWAY **Rank:** P **Length:** 990.34 Ft **Width:** 49.94 Ft **True Area:** 49,458.57 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/350, Tif 0000051
06/01/1986	BA-ST	Base Course - Stablized (non-	$0	6.00	False	Sheet 37/350, Tif 0000051

Network: ONT-AS **Branch:** RW8L/26R (Runway 8L/26R) **Section:** 07S **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** RUNWAY **Rank:** P **Length:** 990.30 Ft **Width:** 49.99 Ft **True Area:** 49,503.52 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/350, Tif 0000051
06/01/1986	BA-ST	Base Course - Stablized (non-	$0	6.00	False	Sheet 37/350, Tif 0000051

Network: ONT-AS **Branch:** RW8R/26L (Runway 8R/26L) **Section:** 01C **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 1,440.21 Ft **Width:** 49.99 Ft **True Area:** 72,000.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch:** RW8R/26L (Runway 8R/26L) **Section:** 01N **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 1,440.21 Ft **Width:** 49.99 Ft **True Area:** 72,001.76 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch:** RW8R/26L (Runway 8R/26L) **Section:** 01S **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 1,440.21 Ft **Width:** 49.99 Ft **True Area:** 72,000.07 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch:** RW8R/26L (Runway 8R/26L) **Section:** 02C **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 2,100.20 Ft **Width:** 50.00 Ft **True Area:** 105,000.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch:** RW8R/26L (Runway 8R/26L) **Section:** 02N **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 2,100.20 Ft **Width:** 50.00 Ft **True Area:** 105,000.03 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch:** RW8R/26L (Runway 8R/26L) **Section:** 02S **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 2,100.20 Ft **Width:** 50.00 Ft **True Area:** 105,000.45 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch:** RW8R/26L (Runway 8R/26L) **Section:** 03C **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 3,320.19 Ft **Width:** 50.00 Ft **True Area:** 165,999.98 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Work History Report

Pavement Database:ONT_FINAL-111411

Network: ONT-AS **Branch:** RW8R/26L (Runway 8R/26L) **Section:** 03N **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 3,320.19 Ft **Width:** 50.00 Ft **True Area:** 166,000.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch:** RW8R/26L (Runway 8R/26L) **Section:** 03S **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 3,320.19 Ft **Width:** 50.00 Ft **True Area:** 166,002.59 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch:** RW8R/26L (Runway 8R/26L) **Section:** 04C **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** RUNWAY **Rank:** P **Length:** 200.22 Ft **Width:** 49.95 Ft **True Area:** 10,000.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	11.00	False	10-12", Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch:** RW8R/26L (Runway 8R/26L) **Section:** 04N **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** RUNWAY **Rank:** P **Length:** 200.22 Ft **Width:** 49.95 Ft **True Area:** 10,000.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	11.00	False	10-12", Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch:** RW8R/26L (Runway 8R/26L) **Section:** 04S **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** RUNWAY **Rank:** P **Length:** 200.22 Ft **Width:** 49.94 Ft **True Area:** 9,999.98 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	11.00	False	10-12", Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch:** RW8R/26L (Runway 8R/26L) **Section:** 05C **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 950.21 Ft **Width:** 49.99 Ft **True Area:** 47,500.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch:** RW8R/26L (Runway 8R/26L) **Section:** 05N **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 950.21 Ft **Width:** 49.99 Ft **True Area:** 47,499.99 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch:** RW8R/26L (Runway 8R/26L) **Section:** 05S **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 950.21 Ft **Width:** 49.99 Ft **True Area:** 47,499.99 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch:** RW8R/26L (Runway 8R/26L) **Section:** 06C **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 2,190.20 Ft **Width:** 50.00 Ft **True Area:** 109,500.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch:** RW8R/26L (Runway 8R/26L) **Section:** 06N **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 2,190.20 Ft **Width:** 50.00 Ft **True Area:** 109,500.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch:** RW8R/26L (Runway 8R/26L) **Section:** 06S **Surface:** PCC
L.C.D.: 06/01/1979 **Use:** RUNWAY **Rank:** P **Length:** 2,190.20 Ft **Width:** 50.00 Ft **True Area:** 109,500.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1979	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 39/107, Tif 0060001-0060005

Network: ONT-AS **Branch:** SHAPTERM4 (Terminal 4 Apron Shoulder) **Section:** 01E **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 428.47 Ft **Width:** 82.91 Ft **True Area:** 35,523.15 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 44/106, Tif 0096287
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 44/106, Tif 0096287

Network: ONT-AS **Branch:** SHRW8L (Runway 8L/26R Shoulder) **Section:** 01N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 84.83 Ft **Width:** 49.85 Ft **True Area:** 4,228.28 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHRW8L (Runway 8L/26R Shoulder) **Section:** 01S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 129.32 Ft **Width:** 73.92 Ft **True Area:** 9,560.08 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8L (Runway 8L/26R Shoulder) **Section:** 02N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 149.59 Ft **Width:** 47.63 Ft **True Area:** 7,124.25 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8L (Runway 8L/26R Shoulder) **Section:** 02S **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 75.14 Ft **Width:** 35.85 Ft **True Area:** 2,693.74 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHRW8L (Runway 8L/26R Shoulder) **Section:** 03N **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 117.55 Ft **Width:** 20.96 Ft **True Area:** 2,463.79 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8L (Runway 8L/26R Shoulder) **Section:** 03S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 122.33 Ft **Width:** 42.72 Ft **True Area:** 5,225.88 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Work History Report

Pavement Database:ONT_FINAL-111411

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 04N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 1,674.42 Ft **Width:** 61.26 Ft **True Area:**102,567.15 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 04S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 123.42 Ft **Width:** 13.34 Ft **True Area:** 1,646.75 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 05N **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 115.24 Ft **Width:** 22.53 Ft **True Area:** 2,596.06 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 05S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 1,082.01 Ft **Width:** 60.53 Ft **True Area:** 65,490.86 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 06N **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 150.99 Ft **Width:** 51.52 Ft **True Area:** 7,778.88 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 06S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 87.85 Ft **Width:** 11.34 Ft **True Area:** 996.62 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 07N **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 139.73 Ft **Width:** 48.36 Ft **True Area:** 6,757.64 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 07S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 122.10 Ft **Width:** 43.70 Ft **True Area:** 5,335.40 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 08N **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 105.96 Ft **Width:** 22.50 Ft **True Area:** 2,383.90 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 08S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 122.41 Ft **Width:** 38.81 Ft **True Area:** 4,751.34 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 09N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 1,534.66 Ft **Width:** 62.43 Ft **True Area:** 95,810.85 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 09S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 61.31 Ft **Width:** 41.84 Ft **True Area:** 2,565.10 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 10N **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 101.45 Ft **Width:** 19.12 Ft **True Area:** 1,939.39 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 10S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 512.73 Ft **Width:** 53.02 Ft **True Area:** 27,185.43 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 11N **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 134.97 Ft **Width:** 44.83 Ft **True Area:** 6,050.04 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 11S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 150.56 Ft **Width:** 44.33 Ft **True Area:** 6,674.75 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 12N **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 134.14 Ft **Width:** 40.68 Ft **True Area:** 5,456.91 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 12S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 60.03 Ft **Width:** 7.47 Ft **True Area:** 448.61 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	20.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 13N **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 100.60 Ft **Width:** 17.97 Ft **True Area:** 1,807.45 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 13S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 149.40 Ft **Width:** 42.80 Ft **True Area:** 6,394.78 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 14N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 613.12 Ft **Width:** 61.52 Ft **True Area:** 37,717.04 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 14S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 61.77 Ft **Width:** 7.86 Ft **True Area:** 485.56 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 15N **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 146.23 Ft **Width:** 38.93 Ft **True Area:** 5,692.61 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 15S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 1,543.82 Ft **Width:** 60.18 Ft **True Area:** 92,905.80 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 16N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 392.52 Ft **Width:** 35.92 Ft **True Area:** 14,100.96 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 16S **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 129.90 Ft **Width:** 17.10 Ft **True Area:** 2,221.80 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 17N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 230.68 Ft **Width:** 12.32 Ft **True Area:** 2,841.49 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 17S **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 161.81 Ft **Width:** 41.01 Ft **True Area:** 6,636.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 18N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 1,137.46 Ft **Width:** 58.78 Ft **True Area:** 66,856.81 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 18S **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 162.44 Ft **Width:** 41.37 Ft **True Area:** 6,720.02 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 19N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 80.42 Ft **Width:** 18.36 Ft **True Area:** 1,476.26 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 19S **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 131.11 Ft **Width:** 18.13 Ft **True Area:** 2,377.40 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 20N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 117.05 Ft **Width:** 42.58 Ft **True Area:** 4,984.12 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 20S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 839.38 Ft **Width:** 56.33 Ft **True Area:** 47,277.99 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 21N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 116.30 Ft **Width:** 41.25 Ft **True Area:** 4,797.18 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 21S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 260.11 Ft **Width:** 38.03 Ft **True Area:** 9,892.88 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 22N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 78.92 Ft **Width:** 18.00 Ft **True Area:** 1,420.80 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 22S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 136.17 Ft **Width:** 11.41 Ft **True Area:** 1,553.13 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 23N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 547.07 Ft **Width:** 60.75 Ft **True Area:** 33,236.17 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 23S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 162.36 Ft **Width:** 41.16 Ft **True Area:** 6,683.41 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 24N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 79.99 Ft **Width:** 19.15 Ft **True Area:** 1,531.60 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 24S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 101.01 Ft **Width:** 11.29 Ft **True Area:** 1,140.00 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 25N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 117.02 Ft **Width:** 43.56 Ft **True Area:** 5,097.63 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 25S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 973.11 Ft **Width:** 60.72 Ft **True Area:** 59,089.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 26N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 110.59 Ft **Width:** 36.63 Ft **True Area:** 4,051.04 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 26S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 90.16 Ft **Width:** 25.13 Ft **True Area:** 2,265.84 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 27N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 72.99 Ft **Width:** 15.17 Ft **True Area:** 1,107.37 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 27S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 151.05 Ft **Width:** 37.32 Ft **True Area:** 5,637.05 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 28N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 962.05 Ft **Width:** 42.51 Ft **True Area:** 40,896.81 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 28S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 151.43 Ft **Width:** 35.89 Ft **True Area:** 5,434.39 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 29N **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 540.59 Ft **Width:** 11.49 Ft **True Area:** 6,213.90 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 29S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 90.51 Ft **Width:** 10.87 Ft **True Area:** 983.74 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 30N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 225.45 Ft **Width:** 34.75 Ft **True Area:** 7,834.10 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 30S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 585.45 Ft **Width:** 56.94 Ft **True Area:** 33,336.46 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 31N **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 141.81 Ft **Width:** 13.69 Ft **True Area:** 1,942.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L (Runway 8L/26R Shoulder) **Section:** 31S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 132.72 Ft **Width:** 48.54 Ft **True Area:** 6,441.87 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 32N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 1,695.30 Ft **Width:** 65.74 Ft **True Area:**111,441.23 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 32S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 71.89 Ft **Width:** 10.90 Ft **True Area:** 783.23 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 33N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 96.40 Ft **Width:** 19.36 Ft **True Area:** 1,866.49 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 33S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 135.59 Ft **Width:** 45.84 Ft **True Area:** 6,215.30 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 34N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 133.18 Ft **Width:** 44.13 Ft **True Area:** 5,876.91 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 34S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 72.95 Ft **Width:** 22.07 Ft **True Area:** 1,609.65 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 35N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 132.46 Ft **Width:** 42.26 Ft **True Area:** 5,597.13 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch**: SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 35S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 2,756.07 Ft **Width:** 62.18 Ft **True Area:**171,367.64 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Work History Report

Pavement Database:ONT_FINAL-111411

Network: ONT-AS **Branch:** SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 36N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 95.87 Ft **Width:** 18.34 Ft **True Area:** 1,757.77 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 36S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 89.16 Ft **Width:** 22.30 Ft **True Area:** 1,988.41 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 37N **Surface:** AC
L.C.D.: 06/01/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,551.59 Ft **Width:** 14.99 Ft **True Area:** 23,264.92 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1986	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/250, Tif 0000051

Network: ONT-AS **Branch:** SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 37S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 125.44 Ft **Width:** 47.81 Ft **True Area:** 5,996.54 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 38N **Surface:** AC
L.C.D.: 06/01/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,552.68 Ft **Width:** 36.41 Ft **True Area:** 56,532.06 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 38S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 150.43 Ft **Width:** 44.44 Ft **True Area:** 6,684.71 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 39N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 99.13 Ft **Width:** 20.35 Ft **True Area:** 2,016.90 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 39S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 116.32 Ft **Width:** 20.75 Ft **True Area:** 2,413.65 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8L **(**Runway 8L/26R Shoulder**)** **Section:** 40N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 135.58 Ft **Width:** 45.71 Ft **True Area:** 6,196.77 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Work History Report

Pavement Database:ONT_FINAL-111411

Network: ONT-AS **Branch:** SHRW8L (Runway 8L/26R Shoulder) **Section:** 40S **Surface:** AC
L.C.D.: 06/01/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,697.68 Ft **Width:** 34.57 Ft **True Area:** 58,696.14 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8L (Runway 8L/26R Shoulder) **Section:** 41N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 212.46 Ft **Width:** 53.75 Ft **True Area:** 11,419.77 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHRW8L (Runway 8L/26R Shoulder) **Section:** 41S **Surface:** AC
L.C.D.: 06/01/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,697.68 Ft **Width:** 15.29 Ft **True Area:** 25,951.18 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/1986	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8L (Runway 8L/26R Shoulder) **Section:** 42N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 152.04 Ft **Width:** 50.85 Ft **True Area:** 7,731.16 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHRW8L (Runway 8L/26R Shoulder) **Section:** 42S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 119.61 Ft **Width:** 22.19 Ft **True Area:** 2,654.34 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8L (Runway 8L/26R Shoulder) **Section:** 43S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 156.12 Ft **Width:** 49.00 Ft **True Area:** 7,649.25 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8L (Runway 8L/26R Shoulder) **Section:** 44S **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 142.60 Ft **Width:** 50.44 Ft **True Area:** 7,192.19 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHRW8R (Runway 8R/26L Shoulder) **Section:** 01N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 99.02 Ft **Width:** 49.94 Ft **True Area:** 4,945.35 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHRW8R (Runway 8R/26L Shoulder) **Section:** 01S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 102.01 Ft **Width:** 15.00 Ft **True Area:** 1,530.22 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 02N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 59.98 Ft **Width:** 46.88 Ft **True Area:** 2,811.60 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 02S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 102.01 Ft **Width:** 35.29 Ft **True Area:** 3,600.14 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 03N **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,401.60 Ft **Width:** 50.06 Ft **True Area:** 70,169.47 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch:** SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 03S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 151.61 Ft **Width:** 39.54 Ft **True Area:** 5,995.04 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, tif 0000051

Network: ONT-AS **Branch:** SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 04N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 154.31 Ft **Width:** 18.21 Ft **True Area:** 2,810.50 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch:** SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 04S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 115.34 Ft **Width:** 17.19 Ft **True Area:** 1,982.57 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 05N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 188.49 Ft **Width:** 41.06 Ft **True Area:** 7,739.19 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch:** SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 05S **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,100.84 Ft **Width:** 49.84 Ft **True Area:** 54,864.10 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Work History Report

Pavement Database:ONT_FINAL-111411

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 06N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 143.50 Ft **Width:** 45.33 Ft **True Area:** 6,504.39 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 06S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 131.46 Ft **Width:** 54.79 Ft **True Area:** 7,202.54 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 07N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 108.93 Ft **Width:** 20.61 Ft **True Area:** 2,245.32 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 07S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 246.06 Ft **Width:** 49.82 Ft **True Area:** 12,257.61 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 08N **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,319.23 Ft **Width:** 54.16 Ft **True Area:** 71,452.31 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 08S **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,595.04 Ft **Width:** 49.97 Ft **True Area:** 79,696.75 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 09N **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 680.72 Ft **Width:** 45.59 Ft **True Area:** 31,032.08 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 09S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 375.59 Ft **Width:** 47.71 Ft **True Area:** 17,919.58 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 10N **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 408.03 Ft **Width:** 48.69 Ft **True Area:** 19,865.45 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 10S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 130.83 Ft **Width:** 56.24 Ft **True Area:** 7,357.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 11N **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 353.97 Ft **Width:** 71.85 Ft **True Area:** 25,432.64 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 11S **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 412.14 Ft **Width:** 49.73 Ft **True Area:** 20,493.98 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 12N **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 2,512.18 Ft **Width:** 49.85 Ft **True Area:** 125,243.20 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 12S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 129.32 Ft **Width:** 55.06 Ft **True Area:** 7,120.96 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 13N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 274.40 Ft **Width:** 50.76 Ft **True Area:** 13,928.64 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 13S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 198.86 Ft **Width:** 50.72 Ft **True Area:** 10,086.32 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Work History Report

Pavement Database:ONT_FINAL-111411

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 14N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 148.34 Ft **Width:** 57.19 Ft **True Area:** 8,483.24 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 14S **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 517.17 Ft **Width:** 49.61 Ft **True Area:** 25,655.64 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 15N **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,845.03 Ft **Width:** 50.29 Ft **True Area:** 92,794.57 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 15S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 366.80 Ft **Width:** 48.14 Ft **True Area:** 17,657.86 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 16N **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 114.98 Ft **Width:** 18.75 Ft **True Area:** 2,156.22 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 16S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 128.52 Ft **Width:** 53.61 Ft **True Area:** 6,890.77 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 17N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 150.51 Ft **Width:** 43.11 Ft **True Area:** 6,488.96 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 17S **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,067.90 Ft **Width:** 50.00 Ft **True Area:** 53,395.78 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch:** SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 18N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 97.40 Ft **Width:** 50.11 Ft **True Area:** 4,881.08 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 18S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 126.50 Ft **Width:** 54.92 Ft **True Area:** 6,947.73 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 19S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 372.51 Ft **Width:** 47.87 Ft **True Area:** 17,833.76 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 20S **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 688.51 Ft **Width:** 50.06 Ft **True Area:** 34,469.05 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch:** SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 21S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 95.36 Ft **Width:** 18.39 Ft **True Area:** 1,753.93 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 22S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 131.02 Ft **Width:** 43.32 Ft **True Area:** 5,676.04 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 23S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 131.53 Ft **Width:** 43.96 Ft **True Area:** 5,781.98 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 24S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 95.57 Ft **Width:** 18.57 Ft **True Area:** 1,775.09 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 25S **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 1,838.67 Ft **Width:** 50.49 Ft **True Area:** 92,827.72 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch:** SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 26S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 151.17 Ft **Width:** 55.55 Ft **True Area:** 8,397.72 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** SHRW8R **(**Runway 8R/26L Shoulder**)** **Section:** 27S **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 104.66 Ft **Width:** 50.16 Ft **True Area:** 5,249.24 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTLN1 **(**Taxilane N1 Shoulder**)** **Section:** 01S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 135.26 Ft **Width:** 46.12 Ft **True Area:** 6,238.91 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTLN1 **(**Taxilane N1 Shoulder**)** **Section:** 02S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 101.55 Ft **Width:** 20.32 Ft **True Area:** 2,063.09 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTLN1 **(**Taxilane N1 Shoulder**)** **Section:** 03S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,160.29 Ft **Width:** 38.94 Ft **True Area:** 45,183.47 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTLN1 **(**Taxilane N1 Shoulder**)** **Section:** 04S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,091.94 Ft **Width:** 16.63 Ft **True Area:** 18,160.15 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTLN1 **(**Taxilane N1 Shoulder**)** **Section:** 05S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,704.97 Ft **Width:** 37.64 Ft **True Area:** 64,169.24 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTLN1 **(**Taxilane N1 Shoulder**)** **Section:** 06S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,636.32 Ft **Width:** 16.09 Ft **True Area:** 26,330.81 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTLN1 **(**Taxilane N1 Shoulder**)** **Section:** 07S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,771.62 Ft **Width:** 37.61 Ft **True Area:** 66,628.60 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTLN1 **(**Taxilane N1 Shoulder**)** **Section:** 08S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,701.03 Ft **Width:** 16.08 Ft **True Area:** 27,350.82 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTLN1 **(**Taxilane N1 Shoulder**)** **Section:** 09S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 208.19 Ft **Width:** 57.20 Ft **True Area:** 11,907.51 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTLN1 **(**Taxilane N1 Shoulder**)** **Section:** 10S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 139.66 Ft **Width:** 28.48 Ft **True Area:** 3,976.87 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWA **(**Taxiway A Shoulder**)** **Section:** 01E **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 182.24 Ft **Width:** 29.92 Ft **True Area:** 5,453.32 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWA **(**Taxiway A Shoulder**)** **Section:** 01W **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 54.59 Ft **Width:** 36.11 Ft **True Area:** 1,971.24 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWA **(**Taxiway A Shoulder**)** **Section:** 02E **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 81.92 Ft **Width:** 7.14 Ft **True Area:** 584.48 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWB **(**Taxiway B Shoulder**)** **Section:** 01E **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 302.96 Ft **Width:** 35.54 Ft **True Area:** 10,765.89 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** SHTWB **(**Taxiway B Shoulder**)** **Section:** 01W **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 309.17 Ft **Width:** 18.02 Ft **True Area:** 5,570.94 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch:** SHTWB **(**Taxiway B Shoulder**)** **Section:** 02E **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 265.25 Ft **Width:** 15.41 Ft **True Area:** 4,086.33 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch:** SHTWB **(**Taxiway B Shoulder**)** **Section:** 02W **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 309.34 Ft **Width:** 42.09 Ft **True Area:** 13,020.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** SHTWC **(**Taxiway C Shoulder**)** **Section:** 01E **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 75.97 Ft **Width:** 34.69 Ft **True Area:** 2,635.18 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWC **(**Taxiway C Shoulder**)** **Section:** 01W **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 168.54 Ft **Width:** 8.91 Ft **True Area:** 1,502.12 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWC **(**Taxiway C Shoulder**)** **Section:** 02E **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 76.20 Ft **Width:** 62.33 Ft **True Area:** 4,749.89 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWC **(**Taxiway C Shoulder**)** **Section:** 02W **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 233.51 Ft **Width:** 33.00 Ft **True Area:** 7,706.40 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWD **(**Taxiway D Shoulder**)** **Section:** 01E **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 73.56 Ft **Width:** 34.93 Ft **True Area:** 2,569.23 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments

06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWD **(**Taxiway D Shoulder**)** **Section:** 01W **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 38.70 Ft **Width:** 7.13 Ft **True Area:** 275.78 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWD **(**Taxiway D Shoulder**)** **Section:** 02E **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 38.56 Ft **Width:** 7.05 Ft **True Area:** 271.99 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWD **(**Taxiway D Shoulder**)** **Section:** 02W **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 72.86 Ft **Width:** 37.09 Ft **True Area:** 2,702.25 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWD **(**Taxiway D Shoulder**)** **Section:** 03E **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 149.88 Ft **Width:** 41.05 Ft **True Area:** 6,152.07 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWD **(**Taxiway D Shoulder**)** **Section:** 03W **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 149.95 Ft **Width:** 46.70 Ft **True Area:** 7,003.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWF **(**Taxiway F Shoulder**)** **Section:** 01E **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 233.61 Ft **Width:** 39.82 Ft **True Area:** 9,302.98 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch:** SHTWF **(**Taxiway F Shoulder**)** **Section:** 01W **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 124.23 Ft **Width:** 18.77 Ft **True Area:** 2,332.36 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch:** SHTWF **(**Taxiway F Shoulder**)** **Section:** 02E **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 197.80 Ft **Width:** 18.40 Ft **True Area:** 3,639.11 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 3/7, Tif Unknown

Work History Report

Pavement Database:ONT_FINAL-111411

Network: ONT-AS **Branch:** SHTWF (Taxiway F Shoulder) **Section:** 02W **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 170.54 Ft **Width:** 42.10 Ft **True Area:** 7,179.85 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch:** SHTWK (Taxiway K Shoulder) **Section:** 01E **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 157.67 Ft **Width:** 35.72 Ft **True Area:** 5,632.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWK (Taxiway K Shoulder) **Section:** 01W **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 172.10 Ft **Width:** 47.35 Ft **True Area:** 8,148.95 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch:** SHTWK (Taxiway K Shoulder) **Section:** 02W **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 359.96 Ft **Width:** 40.90 Ft **True Area:** 14,721.86 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch:** SHTWL (Taxiway L Shoulder) **Section:** 01E **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 260.83 Ft **Width:** 19.97 Ft **True Area:** 5,208.25 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWL (Taxiway L Shoulder) **Section:** 01W **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 260.83 Ft **Width:** 20.05 Ft **True Area:** 5,229.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWL (Taxiway L Shoulder) **Section:** 02E **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 83.72 Ft **Width:** 19.99 Ft **True Area:** 1,673.54 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWL (Taxiway L Shoulder) **Section:** 02W **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 84.04 Ft **Width:** 19.99 Ft **True Area:** 1,680.27 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWM (Taxiway M Shoulder) **Section:** 01N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 728.52 Ft **Width:** 44.85 Ft **True Area:** 32,670.65 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWM **(**Taxiway M Shoulder**)** **Section:** 01S **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 1,263.59 Ft **Width:** 49.61 Ft **True Area:** 62,688.56 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWM **(**Taxiway M Shoulder**)** **Section:** 02N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 1,643.71 Ft **Width:** 49.45 Ft **True Area:** 81,282.22 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWM **(**Taxiway M Shoulder**)** **Section:** 02S **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 1,455.85 Ft **Width:** 48.50 Ft **True Area:** 70,608.31 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWM **(**Taxiway M Shoulder**)** **Section:** 03N **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 330.78 Ft **Width:** 40.54 Ft **True Area:** 13,409.40 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWM **(**Taxiway M Shoulder**)** **Section:** 03S **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 967.41 Ft **Width:** 48.00 Ft **True Area:** 46,434.30 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWM **(**Taxiway M Shoulder**)** **Section:** 04N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 741.56 Ft **Width:** 46.63 Ft **True Area:** 34,575.74 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 01N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 231.00 Ft **Width:** 60.51 Ft **True Area:** 13,979.11 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 01S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 340.21 Ft **Width:** 37.51 Ft **True Area:** 12,759.72 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 02N **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 1,218.39 Ft **Width:** 15.03 Ft **True Area:** 18,316.91 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063737

Work History Report

Pavement Database:ONT_FINAL-111411

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 02S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 307.62 Ft **Width:** 16.94 Ft **True Area:** 5,210.24 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 03N **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 1,220.08 Ft **Width:** 35.72 Ft **True Area:** 43,577.28 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 03S **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 1,487.68 Ft **Width:** 35.11 Ft **True Area:** 52,229.06 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 04N **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 311.39 Ft **Width:** 17.44 Ft **True Area:** 5,431.19 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 04S **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 1,448.32 Ft **Width:** 15.46 Ft **True Area:** 22,386.39 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 05N **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 346.75 Ft **Width:** 40.52 Ft **True Area:** 14,049.41 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 05S **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 1,692.60 Ft **Width:** 36.07 Ft **True Area:** 61,049.87 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 06N **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 394.74 Ft **Width:** 18.09 Ft **True Area:** 7,142.37 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 06S **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 1,618.73 Ft **Width:** 16.60 Ft **True Area:** 26,865.19 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments

Work History Report

Pavement Database:ONT_FINAL-111411

06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 07N **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 372.42 Ft **Width:** 43.80 Ft **True Area:** 16,313.87 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 07S **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 608.73 Ft **Width:** 37.98 Ft **True Area:** 23,118.57 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 08N **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 1,804.05 Ft **Width:** 15.07 Ft **True Area:** 27,193.85 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 08S **Surface:** AC
L.C.D.: 06/01/2002 **Use:** SHOULDER **Rank:** T **Length:** 499.18 Ft **Width:** 17.43 Ft **True Area:** 8,698.84 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2002	NC-AC	New Construction - AC	$0	2.00	True	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 09N **Surface:** AC
L.C.D.: 06/02/2002 **Use:** SHOULDER **Rank:** T **Length:** 1,914.79 Ft **Width:** 36.24 Ft **True Area:** 69,390.35 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-AC	New Construction - AC	$0	3.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 09S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 77.71 Ft **Width:** 37.01 Ft **True Area:** 2,875.70 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 10N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 319.71 Ft **Width:** 37.19 Ft **True Area:** 11,890.56 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 10S **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 45.35 Ft **Width:** 9.47 Ft **True Area:** 429.31 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 11N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 386.91 Ft **Width:** 46.77 Ft **True Area:** 18,094.16 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 11S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,410.92 Ft **Width:** 36.61 Ft **True Area:** 51,652.30 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 12N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 822.67 Ft **Width:** 49.72 Ft **True Area:** 40,903.31 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 12S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,379.58 Ft **Width:** 16.12 Ft **True Area:** 22,241.71 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 13N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 608.28 Ft **Width:** 48.62 Ft **True Area:** 29,572.74 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 13S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 682.64 Ft **Width:** 44.78 Ft **True Area:** 30,569.04 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 14N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 100.82 Ft **Width:** 17.55 Ft **True Area:** 1,769.05 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 14S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 611.51 Ft **Width:** 19.33 Ft **True Area:** 11,818.39 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN (Taxiway N Shoulder) **Section:** 15N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 135.84 Ft **Width:** 40.90 Ft **True Area:** 5,555.24 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN (Taxiway N Shoulder) **Section:** 15S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 855.19 Ft **Width:** 38.59 Ft **True Area:** 33,003.59 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN (Taxiway N Shoulder) **Section:** 16N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,160.43 Ft **Width:** 38.75 Ft **True Area:** 44,964.89 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN (Taxiway N Shoulder) **Section:** 16S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 819.44 Ft **Width:** 16.65 Ft **True Area:** 13,640.21 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN (Taxiway N Shoulder) **Section:** 17N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,091.91 Ft **Width:** 16.56 Ft **True Area:** 18,076.65 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN (Taxiway N Shoulder) **Section:** 17S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 178.31 Ft **Width:** 49.51 Ft **True Area:** 8,827.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWN (Taxiway N Shoulder) **Section:** 18N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,704.92 Ft **Width:** 37.82 Ft **True Area:** 64,474.39 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN (Taxiway N Shoulder) **Section:** 18S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 210.49 Ft **Width:** 52.54 Ft **True Area:** 11,059.17 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWN (Taxiway N Shoulder) **Section:** 19N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,636.14 Ft **Width:** 16.03 Ft **True Area:** 26,221.42 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN (Taxiway N Shoulder) **Section:** 19S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 435.03 Ft **Width:** 33.27 Ft **True Area:** 14,472.80 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWN (Taxiway N Shoulder) **Section:** 20N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 329.91 Ft **Width:** 41.90 Ft **True Area:** 13,821.71 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN (Taxiway N Shoulder) **Section:** 20S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 367.60 Ft **Width:** 15.35 Ft **True Area:** 5,642.41 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWN (Taxiway N Shoulder) **Section:** 21N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 295.17 Ft **Width:** 17.91 Ft **True Area:** 5,287.57 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN (Taxiway N Shoulder) **Section:** 21S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,250.45 Ft **Width:** 36.84 Ft **True Area:** 46,063.99 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN (Taxiway N Shoulder) **Section:** 22N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 1,091.45 Ft **Width:** 30.02 Ft **True Area:** 32,769.72 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWN (Taxiway N Shoulder) **Section:** 22S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 1,214.76 Ft **Width:** 15.88 Ft **True Area:** 19,288.91 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 23N **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 1,091.32 Ft **Width:** 19.96 Ft **True Area:** 21,777.97 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 23S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 329.24 Ft **Width:** 43.78 Ft **True Area:** 14,415.72 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 24N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 314.39 Ft **Width:** 17.57 Ft **True Area:** 5,524.32 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 24S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 294.24 Ft **Width:** 18.66 Ft **True Area:** 5,490.66 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 25N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 350.52 Ft **Width:** 40.07 Ft **True Area:** 14,044.60 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 25S **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 1,342.86 Ft **Width:** 19.57 Ft **True Area:** 26,280.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 26N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 208.02 Ft **Width:** 54.75 Ft **True Area:** 11,389.41 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 26S **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 1,405.63 Ft **Width:** 30.25 Ft **True Area:** 42,517.36 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 27N **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 139.52 Ft **Width:** 26.40 Ft **True Area:** 3,683.27 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	2.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	4.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 27S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 139.25 Ft **Width:** 42.93 Ft **True Area:** 5,978.36 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWN **(**Taxiway N Shoulder**)** **Section:** 28S **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 212.67 Ft **Width:** 57.32 Ft **True Area:** 12,191.45 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** SHTWP **(**Taxiway P Shoulder**)** **Section:** 01E **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 166.71 Ft **Width:** 52.02 Ft **True Area:** 8,672.67 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch:** SHTWP **(**Taxiway P Shoulder**)** **Section:** 01W **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 194.23 Ft **Width:** 41.41 Ft **True Area:** 8,043.43 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWP **(**Taxiway P Shoulder**)** **Section:** 02W **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 159.98 Ft **Width:** 44.15 Ft **True Area:** 7,062.83 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch:** SHTWQ **(**Taxiway Q Shoulder**)** **Section:** 01E **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 169.94 Ft **Width:** 53.16 Ft **True Area:** 9,033.57 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch:** SHTWQ **(**Taxiway Q Shoulder**)** **Section:** 01W **Surface:** AC
L.C.D.: 06/02/1986 **Use:** SHOULDER **Rank:** T **Length:** 141.16 Ft **Width:** 49.78 Ft **True Area:** 7,026.15 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-AC	New Construction - AC	$0	3.00	True	Sheet 8/13, Tif 0059801
06/01/1986	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 8/13, Tif 0059801

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 01N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 427.03 Ft **Width:** 37.00 Ft **True Area:** 15,802.24 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, tif 0000051

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 01S **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 333.38 Ft **Width:** 21.49 Ft **True Area:** 7,163.32 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 02N **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 392.65 Ft **Width:** 15.72 Ft **True Area:** 6,172.72 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 02S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 314.53 Ft **Width:** 41.01 Ft **True Area:** 12,899.19 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 03N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 727.07 Ft **Width:** 50.56 Ft **True Area:** 36,761.71 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 03S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 285.64 Ft **Width:** 60.50 Ft **True Area:** 17,281.02 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 04N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 2,252.35 Ft **Width:** 53.55 Ft **True Area:**120,617.07 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHTWS (Taxiway S Shoulder) **Section:** 04S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 917.41 Ft **Width:** 53.53 Ft **True Area:** 49,107.47 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** SHTWS (Taxiway S Shoulder) **Section:** 05N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 450.96 Ft **Width:** 49.74 Ft **True Area:** 22,431.60 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** SHTWS (Taxiway S Shoulder) **Section:** 05S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 2,057.57 Ft **Width:** 52.05 Ft **True Area:** 107,096.79 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** SHTWS (Taxiway S Shoulder) **Section:** 06N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 1,110.55 Ft **Width:** 57.54 Ft **True Area:** 63,900.13 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** SHTWS (Taxiway S Shoulder) **Section:** 06S **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 5,508.99 Ft **Width:** 48.89 Ft **True Area:** 269,353.43 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** SHTWS (Taxiway S Shoulder) **Section:** 07N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 1,161.62 Ft **Width:** 50.58 Ft **True Area:** 58,759.50 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** SHTWS (Taxiway S Shoulder) **Section:** 07S **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 448.85 Ft **Width:** 44.28 Ft **True Area:** 19,872.85 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWS (Taxiway S Shoulder) **Section:** 08N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 808.46 Ft **Width:** 57.01 Ft **True Area:** 46,092.84 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** SHTWS (Taxiway S Shoulder) **Section:** 09N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 363.85 Ft **Width:** 39.23 Ft **True Area:** 14,275.20 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWS **(**Taxiway S Shoulder**)** **Section:** 10N **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 328.61 Ft **Width:** 16.88 Ft **True Area:** 5,547.50 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWS **(**Taxiway S Shoulder**)** **Section:** 11N **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 379.03 Ft **Width:** 38.43 Ft **True Area:** 14,567.63 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWS **(**Taxiway S Shoulder**)** **Section:** 12N **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 345.63 Ft **Width:** 16.66 Ft **True Area:** 5,759.24 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWS **(**Taxiway S Shoulder**)** **Section:** 13N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 1,200.46 Ft **Width:** 50.68 Ft **True Area:** 60,834.47 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHTWS **(**Taxiway S Shoulder**)** **Section:** 14N **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 421.16 Ft **Width:** 51.68 Ft **True Area:** 21,765.12 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch**: SHTWU **(**Taxiway U Shoulder**)** **Section:** 01E **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 118.51 Ft **Width:** 33.95 Ft **True Area:** 4,023.65 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWU **(**Taxiway U Shoulder**)** **Section:** 01W **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 117.48 Ft **Width:** 15.14 Ft **True Area:** 1,779.19 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWU **(**Taxiway U Shoulder**)** **Section:** 02E **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 118.24 Ft **Width:** 15.12 Ft **True Area:** 1,787.66 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch**: SHTWU **(**Taxiway U Shoulder**)** **Section:** 02W **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 117.80 Ft **Width:** 35.72 Ft **True Area:** 4,207.82 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments

06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWU **(**Taxiway U Shoulder**)** **Section:** 03E **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 156.51 Ft **Width:** 50.15 Ft **True Area:** 7,849.76 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** SHTWU **(**Taxiway U Shoulder**)** **Section:** 03W **Surface:** AC
L.C.D.: 06/02/1991 **Use:** SHOULDER **Rank:** T **Length:** 156.92 Ft **Width:** 55.90 Ft **True Area:** 8,772.37 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-AC	New Construction - AC	$0	3.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** SHTWW **(**Taxiway W Shoulder**)** **Section:** 01E **Surface:** AC
L.C.D.: 06/02/1995 **Use:** SHOULDER **Rank:** T **Length:** 736.49 Ft **Width:** 48.76 Ft **True Area:** 35,914.48 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-AC	New Construction - AC	$0	3.00	True	Sheet 44/106, Tif 0096287
06/01/1995	BA-AG	Base Course - Aggregate	$0	7.00	False	Sheet 44/106, Tif 0096287

Network: ONT-AS **Branch:** SHTWW **(**Taxiway W Shoulder**)** **Section:** 01W **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 248.99 Ft **Width:** 15.13 Ft **True Area:** 3,766.27 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWW **(**Taxiway W Shoulder**)** **Section:** 02E **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 250.15 Ft **Width:** 50.73 Ft **True Area:** 12,691.14 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWW **(**Taxiway W Shoulder**)** **Section:** 02W **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 248.86 Ft **Width:** 36.03 Ft **True Area:** 8,965.38 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWW **(**Taxiway W Shoulder**)** **Section:** 03E **Surface:** AC
L.C.D.: 01/01/1901 **Use:** SHOULDER **Rank:** T **Length:** 115.31 Ft **Width:** 50.66 Ft **True Area:** 5,841.99 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** SHTWW **(**Taxiway W Shoulder**)** **Section:** 03W **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 646.69 Ft **Width:** 49.81 Ft **True Area:** 32,212.71 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Work History Report

Pavement Database:ONT_FINAL-111411

Network: ONT-AS **Branch:** SHTWW (Taxiway W Shoulder) **Section:** 04E **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 533.74 Ft **Width:** 70.10 Ft **True Area:** 37,415.99 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWW (Taxiway W Shoulder) **Section:** 04W **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 600.01 Ft **Width:** 30.50 Ft **True Area:** 18,301.66 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWW (Taxiway W Shoulder) **Section:** 05E **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 1,392.91 Ft **Width:** 17.10 Ft **True Area:** 23,817.19 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWW (Taxiway W Shoulder) **Section:** 05W **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 615.01 Ft **Width:** 14.78 Ft **True Area:** 9,090.10 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWW (Taxiway W Shoulder) **Section:** 06E **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 1,252.44 Ft **Width:** 41.83 Ft **True Area:** 52,394.28 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWW (Taxiway W Shoulder) **Section:** 06W **Surface:** AC
L.C.D.: 06/02/2004 **Use:** SHOULDER **Rank:** T **Length:** 210.01 Ft **Width:** 26.52 Ft **True Area:** 5,568.64 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-AC	New Construction - AC	$0	3.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	11.00	False	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** SHTWW (Taxiway W Shoulder) **Section:** 07W **Surface:** AC
L.C.D.: 06/01/2004 **Use:** SHOULDER **Rank:** T **Length:** 240.01 Ft **Width:** 13.77 Ft **True Area:** 3,305.22 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/01/2004	NC-AC	New Construction - AC	$0	2.00	True	Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TLG (Taxilane G) **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 1,249.85 Ft **Width:** 174.45 Ft **True Area:** 218,034.40 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TLG (Taxilane G) **Section:** 02 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 956.83 Ft **Width:** 64.20 Ft **True Area:** 61,423.47 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments

01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TLH (Taxilane H) **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 531.86 Ft **Width:** 70.97 Ft **True Area:** 37,746.02 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TLH (Taxilane H) **Section:** 02 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 224.35 Ft **Width:** 46.25 Ft **True Area:** 10,376.66 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TLJ (Taxilane J) **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 553.20 Ft **Width:** 75.55 Ft **True Area:** 41,795.27 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TLJ (Taxilane J) **Section:** 02 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 200.71 Ft **Width:** 51.89 Ft **True Area:** 10,414.37 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TLN1 (Taxiway N1) **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 3,165.86 Ft **Width:** 192.63 Ft **True Area:** 609,837.14 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	14.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	6.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TLN1 (Taxiway N1) **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 2,210.79 Ft **Width:** 192.91 Ft **True Area:** 426,476.81 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	14.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	6.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWA (Taxiway A) **Section:** 01 **Surface:** AC
L.C.D.: 06/03/2004 **Use:** TAXIWAY **Rank:** S **Length:** 186.86 Ft **Width:** 69.29 Ft **True Area:** 12,946.52 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/03/2004	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 52/350, Tif 0000052
06/03/2004	NC-AC	New Construction - AC	$0	4.00	True	Sheet 52/350, Tif 0000052
06/01/2004	SB-AG	Subbase - Aggregate	$0	17.00	False	P-154, Sheet 52/350, Tif 0000052

Network: ONT-AS **Branch:** TWA (Taxiway A) **Section:** 02 **Surface:** AC
L.C.D.: 06/03/2004 **Use:** TAXIWAY **Rank:** S **Length:** 275.00 Ft **Width:** 31.92 Ft **True Area:** 8,777.91 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/03/2004	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 52/350, Tif 0000052
06/03/2004	NC-AC	New Construction - AC	$0	4.00	True	Sheet 52/350, Tif 0000052
06/01/2004	SB-AG	Subbase - Aggregate	$0	17.00	False	P-154, Sheet 52/350, Tif 0000052

Network: ONT-AS **Branch:** TWA (Taxiway A) **Section:** 03 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 652.00 Ft **Width:** 75.28 Ft **True Area:** 49,082.93 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWA (Taxiway A) **Section:** 04 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 640.75 Ft **Width:** 49.97 Ft **True Area:** 32,016.85 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWA1 (Taxiway A1) **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 932.42 Ft **Width:** 52.75 Ft **True Area:** 49,181.30 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWB (Taxiway B) **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1986 **Use:** TAXIWAY **Rank:** S **Length:** 89.94 Ft **Width:** 50.92 Ft **True Area:** 4,579.42 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1986	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 6/13, Tif 0059799
06/01/1986	BA-AG	Base Course - Aggregate	$0	6.00	False	Sheet 6/13, Tif 0059799

Network: ONT-AS **Branch:** TWB (Taxiway B) **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** S **Length:** 244.71 Ft **Width:** 102.51 Ft **True Area:** 25,085.30 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063737
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheeet 61/172, Tif 0063737

Network: ONT-AS **Branch:** TWC (Taxiway C) **Section:** 01 **Surface:** AC
L.C.D.: 06/03/2004 **Use:** TAXIWAY **Rank:** T **Length:** 271.16 Ft **Width:** 62.84 Ft **True Area:** 17,039.19 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/03/2004	NC-AC	New Construction - AC	$0	4.00	True	Sheet 52/350, Tif 0000052
06/02/2004	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 52/350, Tif 0000052
06/01/2004	SB-AG	Subbase - Aggregate	$0	17.00	False	P-154, Sheet 52/350, Tif 0000052

Network: ONT-AS **Branch:** TWC (Taxiway C) **Section:** 02 **Surface:** AC
L.C.D.: 06/03/2004 **Use:** TAXIWAY **Rank:** T **Length:** 340.41 Ft **Width:** 41.67 Ft **True Area:** 14,186.20 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/03/2004	NC-AC	New Construction - AC	$0	4.00	True	Sheet 52/350, Tif 0000052
06/02/2004	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 52/350, Tif 0000052
06/01/2004	SB-AG	Subbase - Aggregate	$0	17.00	False	P-154, Sheet 52/350, Tif 0000052

Network: ONT-AS **Branch:** TWCARGOS (Cargo South Apron Taxiway) **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 250.00 Ft **Width:** 55.83 Ft **True Area:** 13,958.17 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWCARGOS **(**Cargo South Apron Taxiway**)** **Section:** 02 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 90.88 Ft **Width:** 15.85 Ft **True Area:** 1,440.73 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWD **(**Taxiway D**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** T **Length:** 471.18 Ft **Width:** 58.95 Ft **True Area:** 27,776.27 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063737
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch:** TWD **(**Taxiway D**)** **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** S **Length:** 477.11 Ft **Width:** 58.14 Ft **True Area:** 27,736.97 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063737
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch:** TWD **(**Taxiway D**)** **Section:** 03 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** S **Length:** 474.60 Ft **Width:** 60.52 Ft **True Area:** 28,721.33 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063737
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch:** TWD **(**Taxiway D**)** **Section:** 04 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** S **Length:** 467.42 Ft **Width:** 58.07 Ft **True Area:** 27,143.45 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWD **(**Taxiway D**)** **Section:** 05 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 73.00 Ft **Width:** 25.91 Ft **True Area:** 1,891.81 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWD **(**Taxiway D**)** **Section:** 06 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 50.79 Ft **Width:** 24.97 Ft **True Area:** 1,268.27 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWD **(**Taxiway D**)** **Section:** 07 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 274.08 Ft **Width:** 89.87 Ft **True Area:** 24,630.92 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWD **(**Taxiway D**)** **Section:** 08 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 73.65 Ft **Width:** 30.59 Ft **True Area:** 2,253.28 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments

01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWD **(**Taxiway D**)** **Section:** 09 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 50.48 Ft **Width:** 22.73 Ft **True Area:** 1,147.27 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWD **(**Taxiway D**)** **Section:** 10 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 208.63 Ft **Width:** 7.48 Ft **True Area:** 1,560.55 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWD **(**Taxiway D**)** **Section:** 11 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 190.66 Ft **Width:** 86.98 Ft **True Area:** 16,584.40 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWD **(**Taxiway D**)** **Section:** 12 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 100.00 Ft **Width:** 4.20 Ft **True Area:** 420.40 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWF **(**Taxiway F**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** S **Length:** 600.03 Ft **Width:** 35.30 Ft **True Area:** 21,180.96 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063737
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch:** TWF **(**Taxiway F**)** **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** S **Length:** 300.01 Ft **Width:** 57.19 Ft **True Area:** 17,157.08 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** TWF **(**Taxiway F**)** **Section:** 03 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** S **Length:** 300.01 Ft **Width:** 58.00 Ft **True Area:** 17,399.42 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** TWF **(**Taxiway F**)** **Section:** 04 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** S **Length:** 90.27 Ft **Width:** 59.83 Ft **True Area:** 5,400.34 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** TWF (Taxiway F) **Section:** 05 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 176.96 Ft **Width:** 102.50 Ft **True Area:** 18,138.11 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch:** TWF (Taxiway F) **Section:** 06 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 192.08 Ft **Width:** 41.54 Ft **True Area:** 7,979.69 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch:** TWF (Taxiway F) **Section:** 07 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 414.86 Ft **Width:** 89.14 Ft **True Area:** 36,981.17 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch:** TWF (Taxiway F) **Section:** 08 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** P **Length:** 358.00 Ft **Width:** 64.15 Ft **True Area:** 22,966.15 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWF (Taxiway F) **Section:** 09 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** P **Length:** 379.18 Ft **Width:** 84.79 Ft **True Area:** 32,151.88 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWFEDEX (FedEx Apron Taxiway) **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 662.07 Ft **Width:** 81.46 Ft **True Area:** 53,934.28 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWK (Taxiway K) **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** P **Length:** 368.72 Ft **Width:** 89.81 Ft **True Area:** 33,116.38 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** TWK (Taxiway K) **Section:** 02 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 340.00 Ft **Width:** 33.59 Ft **True Area:** 11,421.41 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Work History Report

Pavement Database:ONT_FINAL-111411

Network: ONT-AS **Branch:** TWK (Taxiway K) **Section:** 03 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** P **Length:** 654.29 Ft **Width:** 52.17 Ft **True Area:** 34,132.82 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** TWK (Taxiway K) **Section:** 04 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** P **Length:** 520.01 Ft **Width:** 66.88 Ft **True Area:** 34,778.16 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** TWK (Taxiway K) **Section:** 05 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** P **Length:** 201.91 Ft **Width:** 40.65 Ft **True Area:** 8,207.26 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063738
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063738

Network: ONT-AS **Branch:** TWK (Taxiway K) **Section:** 06 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 444.12 Ft **Width:** 96.87 Ft **True Area:** 43,023.79 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWK (Taxiway K) **Section:** 07 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 766.92 Ft **Width:** 70.07 Ft **True Area:** 53,741.20 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWK (Taxiway K) **Section:** 08 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** P **Length:** 490.73 Ft **Width:** 67.19 Ft **True Area:** 32,970.98 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWK (Taxiway K) **Section:** 09 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** P **Length:** 390.74 Ft **Width:** 79.27 Ft **True Area:** 30,973.66 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWL (Taxiway L) **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 250.75 Ft **Width:** 78.13 Ft **True Area:** 19,591.43 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWL (Taxiway L) **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 250.18 Ft **Width:** 61.10 Ft **True Area:** 15,287.07 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWL (Taxiway L) **Section:** 03 **Surface:** AC
L.C.D.: 06/03/2004 **Use:** TAXIWAY **Rank:** S **Length:** 190.83 Ft **Width:** 66.67 Ft **True Area:** 12,722.76 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/03/2004	NC-AC	New Construction - AC	$0	4.00	True	Sheet 52/350, Tif 0000052
06/02/2004	BA-AG	Base Course - Aggregate	$0	12.00	False	Sheet 52/350, Tif 0000052
06/01/2004	BA-AG	Base Course - Aggregate	$0	17.00	False	P-154, Sheet 52/350, Tif 0000052

Network: ONT-AS **Branch:** TWL (Taxiway L) **Section:** 04 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 100.21 Ft **Width:** 49.84 Ft **True Area:** 4,994.39 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWL (Taxiway L) **Section:** 05 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 134.95 Ft **Width:** 50.22 Ft **True Area:** 6,777.08 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWL (Taxiway L) **Section:** 06 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 155.96 Ft **Width:** 50.41 Ft **True Area:** 7,862.25 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWM (Taxiway M) **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** T **Length:** 1,263.88 Ft **Width:** 47.34 Ft **True Area:** 59,836.30 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWM (Taxiway M) **Section:** 02 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** T **Length:** 50.89 Ft **Width:** 23.98 Ft **True Area:** 1,220.66 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWM (Taxiway M) **Section:** 03 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** T **Length:** 50.47 Ft **Width:** 27.08 Ft **True Area:** 1,366.90 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWM (Taxiway M) **Section:** 04 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** T **Length:** 1,658.13 Ft **Width:** 50.18 Ft **True Area:** 83,211.41 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Work History Report

Pavement Database:ONT_FINAL-111411

Network: ONT-AS **Branch:** TWM **(**Taxiway M**)** **Section:** 05 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** T **Length:** 179.91 Ft **Width:** 50.12 Ft **True Area:** 9,017.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch:** TWM **(**Taxiway M**)** **Section:** 06 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** T **Length:** 208.61 Ft **Width:** 86.00 Ft **True Area:** 17,939.11 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 3/7, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 3/7, Tif Unknown

Network: ONT-AS **Branch:** TWM **(**Taxiway M**)** **Section:** 07 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** T **Length:** 996.93 Ft **Width:** 47.66 Ft **True Area:** 47,514.87 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWN **(**Taxiway N**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** P **Length:** 281.19 Ft **Width:** 79.20 Ft **True Area:** 22,270.55 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWN **(**Taxiway N**)** **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** P **Length:** 423.92 Ft **Width:** 56.40 Ft **True Area:** 23,907.13 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWN **(**Taxiway N**)** **Section:** 03 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** P **Length:** 1,974.73 Ft **Width:** 101.31 Ft **True Area:**200,058.16 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063737
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch:** TWN **(**Taxiway N**)** **Section:** 04 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** P **Length:** 2,480.48 Ft **Width:** 81.20 Ft **True Area:**201,418.43 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063737
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063737

Network: ONT-AS **Branch:** TWN **(**Taxiway N**)** **Section:** 05 **Surface:** PCC
L.C.D.: 06/02/2002 **Use:** TAXIWAY **Rank:** P **Length:** 112.00 Ft **Width:** 92.95 Ft **True Area:** 10,409.80 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2002	NC-PC	New Construction - PCC	$0	16.00	True	Sheet 61/172, Tif 0063737
06/01/2002	BA-ST	Base Course - Stablized (non-	$0	13.00	False	Sheet 61/172, Tif 0063737

Work History Report

Pavement Database:ONT_FINAL-111411

Network: ONT-AS **Branch:** TWN (Taxiway N) **Section:** 06 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 469.59 Ft **Width:** 79.91 Ft **True Area:** 37,523.24 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWN (Taxiway N) **Section:** 07 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 1,118.30 Ft **Width:** 78.11 Ft **True Area:** 87,353.90 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWN (Taxiway N) **Section:** 08 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 775.33 Ft **Width:** 86.76 Ft **True Area:** 67,267.42 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWN (Taxiway N) **Section:** 09 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 1,270.25 Ft **Width:** 81.53 Ft **True Area:**103,566.68 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWN (Taxiway N) **Section:** 10 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 1,770.12 Ft **Width:** 79.25 Ft **True Area:**140,275.90 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWN (Taxiway N) **Section:** 11 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 370.30 Ft **Width:** 84.28 Ft **True Area:** 31,209.95 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWN (Taxiway N) **Section:** 12 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 1,100.08 Ft **Width:** 74.94 Ft **True Area:** 82,440.86 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWN (Taxiway N) **Section:** 13 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 668.82 Ft **Width:** 83.91 Ft **True Area:** 56,119.55 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Work History Report

Pavement Database:ONT_FINAL-111411

Network: ONT-AS **Branch:** TWP (Taxiway P) **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 271.73 Ft **Width:** 117.53 Ft **True Area:** 31,935.90 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWP (Taxiway P) **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 250.30 Ft **Width:** 77.81 Ft **True Area:** 19,474.92 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWP (Taxiway P) **Section:** 03 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 249.92 Ft **Width:** 61.01 Ft **True Area:** 15,249.10 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWP (Taxiway P) **Section:** 04 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** S **Length:** 380.01 Ft **Width:** 58.13 Ft **True Area:** 22,088.14 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, TIf 0000051

Network: ONT-AS **Branch:** TWP (Taxiway P) **Section:** 05 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 123.31 Ft **Width:** 33.43 Ft **True Area:** 4,122.81 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWP (Taxiway P) **Section:** 06 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 120.44 Ft **Width:** 41.18 Ft **True Area:** 4,959.92 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWP (Taxiway P) **Section:** 07 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 303.17 Ft **Width:** 77.36 Ft **True Area:** 23,452.81 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWP (Taxiway P) **Section:** 08 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 289.51 Ft **Width:** 54.50 Ft **True Area:** 15,778.81 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWP (Taxiway P) **Section:** 09 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** P **Length:** 278.26 Ft **Width:** 67.03 Ft **True Area:** 18,652.92 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments

06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWP (Taxiway P) **Section:** 10 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** P **Length:** 378.17 Ft **Width:** 79.23 Ft **True Area:** 29,961.72 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWQ (Taxiway Q) **Section:** 01 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 170.32 Ft **Width:** 70.10 Ft **True Area:** 11,939.27 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWQ (Taxiway Q) **Section:** 02 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 193.28 Ft **Width:** 88.51 Ft **True Area:** 17,107.48 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWQ (Taxiway Q) **Section:** 03 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 451.36 Ft **Width:** 68.02 Ft **True Area:** 30,702.73 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWQ (Taxiway Q) **Section:** 04 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 490.83 Ft **Width:** 66.14 Ft **True Area:** 32,461.31 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1992	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/02/1991	Unknown	Unknown Major - construction	$0	0.00	True	
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWQ (Taxiway Q) **Section:** 05 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 387.36 Ft **Width:** 80.21 Ft **True Area:** 31,069.95 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1992	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/02/1991	Unknown	Unknown Major - construction	$0	0.00	True	
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWR (Taxiway R) **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 271.68 Ft **Width:** 122.87 Ft **True Area:** 33,381.38 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWR (Taxiway R) **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** P **Length:** 850.16 Ft **Width:** 65.94 Ft **True Area:** 56,061.28 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWR (Taxiway R) **Section:** 03 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** P **Length:** 1,189.47 Ft **Width:** 51.32 Ft **True Area:** 61,038.01 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWS (Taxiway S) **Section:** 01 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 190.02 Ft **Width:** 103.28 Ft **True Area:** 19,624.37 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWS (Taxiway S) **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 557.83 Ft **Width:** 91.93 Ft **True Area:** 51,280.67 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWS (Taxiway S) **Section:** 03 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 3,450.70 Ft **Width:** 78.12 Ft **True Area:** 269,582.46 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWS (Taxiway S) **Section:** 04 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** P **Length:** 4,199.87 Ft **Width:** 80.26 Ft **True Area:** 337,075.39 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWS (Taxiway S) **Section:** 05 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** P **Length:** 1,950.50 Ft **Width:** 76.80 Ft **True Area:** 149,802.76 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWS (Taxiway S) **Section:** 06 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 470.47 Ft **Width:** 35.95 Ft **True Area:** 16,913.44 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWS (Taxiway S) **Section:** 07 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 193.18 Ft **Width:** 88.78 Ft **True Area:** 17,149.95 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWS **(**Taxiway S**)** **Section:** 08 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** P **Length:** 469.01 Ft **Width:** 34.67 Ft **True Area:** 16,258.88 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWS1 **(**Taxiway S1**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 526.27 Ft **Width:** 101.66 Ft **True Area:** 53,497.88 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWS2 **(**Taxiway S2**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** P **Length:** 250.08 Ft **Width:** 86.65 Ft **True Area:** 21,669.65 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWS3 **(**Taxiway S3**)** **Section:** 01 **Surface:** AC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** T **Length:** 200.13 Ft **Width:** 41.92 Ft **True Area:** 8,389.76 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWT **(**Taxiway T**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 512.47 Ft **Width:** 63.41 Ft **True Area:** 32,496.17 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWT **(**Taxiway T**)** **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 392.39 Ft **Width:** 79.72 Ft **True Area:** 31,281.51 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWU **(**Taxiway U**)** **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 271.78 Ft **Width:** 122.45 Ft **True Area:** 33,278.52 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWU **(**Taxiway U**)** **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** S **Length:** 254.37 Ft **Width:** 70.22 Ft **True Area:** 17,861.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWU (Taxiway U) **Section:** 03 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** S **Length:** 250.18 Ft **Width:** 66.84 Ft **True Area:** 16,721.53 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWU (Taxiway U) **Section:** 04 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** S **Length:** 474.79 Ft **Width:** 56.01 Ft **True Area:** 26,595.49 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWU (Taxiway U) **Section:** 05 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** S **Length:** 225.73 Ft **Width:** 135.74 Ft **True Area:** 30,640.09 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWU (Taxiway U) **Section:** 06 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 167.00 Ft **Width:** 44.86 Ft **True Area:** 7,491.85 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWU (Taxiway U) **Section:** 07 **Surface:** PCC
L.C.D.: 06/02/1991 **Use:** TAXIWAY **Rank:** S **Length:** 548.63 Ft **Width:** 75.88 Ft **True Area:** 41,629.50 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1991	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 33/92, Tif Unknown
06/01/1991	BA-AG	Base Course - Aggregate	$0	9.00	False	Sheet 33/92, Tif Unknown

Network: ONT-AS **Branch:** TWU (Taxiway U) **Section:** 08 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** S **Length:** 239.11 Ft **Width:** 91.81 Ft **True Area:** 21,953.61 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWU (Taxiway U) **Section:** 09 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** S **Length:** 1,024.55 Ft **Width:** 48.44 Ft **True Area:** 49,631.54 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWV (Taxiway V) **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** S **Length:** 445.01 Ft **Width:** 82.74 Ft **True Area:** 36,821.12 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWV (Taxiway V) **Section:** 02 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 250.32 Ft **Width:** 65.69 Ft **True Area:** 16,443.70 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWV (Taxiway V) **Section:** 03 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** S **Length:** 273.72 Ft **Width:** 67.35 Ft **True Area:** 18,435.86 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWW (Taxiway W) **Section:** 01 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 430.70 Ft **Width:** 80.84 Ft **True Area:** 34,817.20 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWW (Taxiway W) **Section:** 02 **Surface:** PCC
L.C.D.: 06/02/1995 **Use:** TAXIWAY **Rank:** P **Length:** 114.91 Ft **Width:** 34.76 Ft **True Area:** 3,994.31 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/1995	NC-PC	New Construction - PCC	$0	15.00	True	Sheet 37/106, Tif 0059719
06/01/1995	BA-ST	Base Course - Stablized (non-	$0	12.00	False	Sheet 37/106, Tif 0059719

Network: ONT-AS **Branch:** TWW (Taxiway W) **Section:** 03 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 165.00 Ft **Width:** 80.23 Ft **True Area:** 13,237.48 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWW (Taxiway W) **Section:** 04 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 190.09 Ft **Width:** 87.99 Ft **True Area:** 16,726.19 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWW (Taxiway W) **Section:** 05 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 275.08 Ft **Width:** 81.33 Ft **True Area:** 22,371.64 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWW (Taxiway W) **Section:** 06 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 250.39 Ft **Width:** 103.34 Ft **True Area:** 25,876.29 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWW (Taxiway W) **Section:** 07 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 190.01 Ft **Width:** 88.24 Ft **True Area:** 16,766.55 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWW (Taxiway W) **Section:** 08 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 151.61 Ft **Width:** 39.58 Ft **True Area:** 6,000.64 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWW (Taxiway W) **Section:** 09 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 159.18 Ft **Width:** 89.70 Ft **True Area:** 14,277.53 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWW (Taxiway W) **Section:** 10 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** P **Length:** 385.40 Ft **Width:** 89.89 Ft **True Area:** 34,644.80 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWW (Taxiway W) **Section:** 11 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** P **Length:** 534.79 Ft **Width:** 29.13 Ft **True Area:** 15,580.21 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWW (Taxiway W) **Section:** 12 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** P **Length:** 545.31 Ft **Width:** 8.16 Ft **True Area:** 4,449.47 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-ST	Base Course - Stablized (non-	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWW (Taxiway W) **Section:** 13 **Surface:** PCC
L.C.D.: 06/02/2004 **Use:** TAXIWAY **Rank:** P **Length:** 1,840.94 Ft **Width:** 96.69 Ft **True Area:** 178,006.27 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
06/02/2004	NC-PC	New Construction - PCC	$0	17.00	True	Sheet 51/350, Tif 0000051
06/01/2004	BA-AG	Base Course - Aggregate	$0	6.00	False	P-304 CTB, Sheet 51/350, Tif 0000051

Network: ONT-AS **Branch:** TWW1 (Taxiway W1) **Section:** 01 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 270.06 Ft **Width:** 82.44 Ft **True Area:** 22,263.39 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWW2 (Taxiway W2) **Section:** 01 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 270.04 Ft **Width:** 83.37 Ft **True Area:** 22,513.49 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments
01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Network: ONT-AS **Branch:** TWW3 (Taxiway W3) **Section:** 01 **Surface:** PCC
L.C.D.: 01/01/1901 **Use:** TAXIWAY **Rank:** P **Length:** 178.35 Ft **Width:** 100.75 Ft **True Area:** 17,969.52 SqF

Work Date	Work Code	Work Description	Cost	Thickness (in)	Major M&R	Comments

01/01/1901	NU-IN	New Construction - Initial (Maj	$0	0.00	True	

Summary:

Work Description	Section Count	Area Total (SqFt)	Thickness Avg (in)	Thickness STD (in)
Base Course - Aggregate	219	7,986,863.87	9.04	2.73
Base Course - Stablized (non-Bi.)	69	4,679,124.06	9.00	3.27
New Construction - AC	246	5,322,648.54	2.77	1.22
New Construction - Initial (Major	139	5,342,911.23	.00	.00
New Construction - PCC	116	9,280,248.85	15.60	.92
Subbase - Aggregate	4	52,949.83	17.00	.00
Unknown Major - construction	2	63,531.26	.00	.00

Network: ONT-AS	Branch: APTERM1A (Terminal 1A Apron)	Section: 01	Surface: AC
Use: Apron	Area: 61109.26 sq. ft		
Work Date	**Pavement Section**	**Thickness (in)**	**Comments**
03/2019	AC Surface - P-403	4	
	Crushed Aggregate Base - P-209	6	
	Subgrade - P-152 @ 100% Compaction	6	
	Subgrade - P-152 @ 95% Compaction	6	Dependant on In-Situ Field Test

Network: ONT-AS	Branch: APTERM1A (Terminal 1A Apron)	Section: 02	Surface: AC
Use: Apron	Area: 68921.98 sq. ft		
Work Date	**Pavement Section**	**Thickness (in)**	**Comments**
03/2019	AC Surface - P-401	4	
	AC Base - P-403	5	
	Crushed Aggregate Base - P-209	7	
	Subgrade - P-152 @ 100% Compaction	29	
	Subgrade - P-152 @ 95% Compaction	56	Dependant on In-Situ Field Test

Network: ONT-AS	Branch: TLG (Taxilane G)	Section: 01	Surface: AC
Use: Taxilane	Area: 218006.25 sq. ft		
Work Date	**Pavement Section**	**Thickness (in)**	**Comments**
03/2019	AC Surface - P-401	4	
	AC Base - P-403	5	
	Crushed Aggregate Base - P-209	7	
	Subgrade - P-152 @ 100% Compaction	29	
	Subgrade - P-152 @ 95% Compaction	56	Dependant on In-Situ Field Test

Network: ONT-AS	Branch: TWS (Taxiway S)	Section: 07	Surface: PCC
Use: Taxiway	Area: 17140.33 sq. ft		
Work Date	**Pavement Section**	**Thickness (in)**	**Comments**
06/2018	PCC Surface - P-501	18	
	Lean Concrete Base Course - P-306	6	
	Subgrade - Scarify and Compact to 95%	6	

Select Panel Replacement

Network: ONT-AS	Branch: TWS (Taxiway S)	Section: 03	Surface: PCC
Use: Taxiway	Area: 14625.00 sq. ft		
Work Date	**Pavement Section**	**Thickness (in)**	**Comments**
Estimated 12/2019	Reinforced PCC Surface - P-501	15	Panels 25' x25' or 25' x 20'
	Base - P-152 @ 100% Compaction	12	
	Existing Base and Subbase	Unknown	

Select Panel Replacement

Network: ONT-AS	Branch: TWS (Taxiway S)	Section: 04	Surface: PCC
Use: Taxiway	Area: 27000.00 sq. ft		
Work Date	**Pavement Section**	**Thickness (in)**	**Comments**
Estimated 12/2019	Reinforced PCC Surface - P-501	15	Panels 25' x25' or 25' x 20'
	Base - P-152 @ 100% Compaction	12	
	Existing Base and Subbase	Unknown	

Reconstruction Over Cucamonga Channel

Network: ONT-AS	Branch: TWS (Taxiway S)	Section: 04	Surface: PCC
Use: Taxiway	Area: 26250.00 sq. ft		
Work Date	**Pavement Section**	**Thickness (in)**	**Comments**
Estimated 12/2019	PCC Surface - P-501	17	Panels 17.5' x17.5' or 20' x 20'
	Lean Concrete Base Course - P-306	12	
	Crushed Aggregate Base - P-208	5	
	CLSM	24	CLSM to Top of Existing Channel Structure

KEY

AC: ASPHALT CONCRETE PAVEMENT
PCC: PORTLAND CEMENT CONCRETE PAVEMENT
CAB: CRUSHED AGGREGATE BASE
CTB: CEMENT TREATED BASE
LSS: LIME-STABILIZED SOIL
%: PERCENT COMPACTION ON SUB-BASE

XXXX/XXXX/XXXX

SURFACE LAYER
BASE LAYER
SUB-BASE LAYER

LEGEND

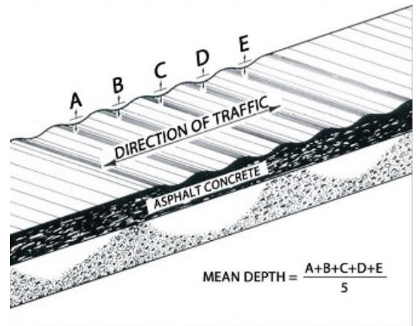
- 3" AC/3" CAB/Unk
- 3.5" AC/5.5" CTB/3" CAB
- 4" AC/4" CAB/9" Unk %
- 4" AC/4" CAB/Unk
- 4" AC/6" CAB/9" Unk %
- 4" AC/6" CAB/6" @ 100% & 6" @ 95%
- 5" AC/2" CAB
- 11" AC/8" CAB/6" @ 95%
- 9" AC/7" CAB/29" @ 100% & 55" @ 95%
- 3" AC/5" PCC
- 5.5" AC/6" PCC
- 7.5" PCC/Unk
- 12" PCC/Unk
- 14" PCC/6" CTB/6" @ 100% & 18" @ 95%
- 16" PCC/3.5" CTB /4.5" LSS
- 15" PCC/6" CTB/Unk
- 15" PCC/13" CTB/Unk
- 15" PCC/9" CAB/11" @ 100%, 11" @ 98%, & 6" @ 98%
- 15" PCC/11" CAB/6" @ 100%
- 15" PCC/12" CTB/6" @ 100% & 18" @ 95%
- 16" PCC/6" CTB/Unk
- 16" PCC/13" CTB/8" @ 100% & 18" @ 95%
- 16" PCC/13" CTB/Unk
- 17" PCC/6" CTB/6" @ 100% & 18" @ 95%
- 18" PCC/6" Lean Conc. Base Course /6" @ 95%
- Unknown

APPENDIX B

AIRFIELD PAVEMENT DISTRESSES

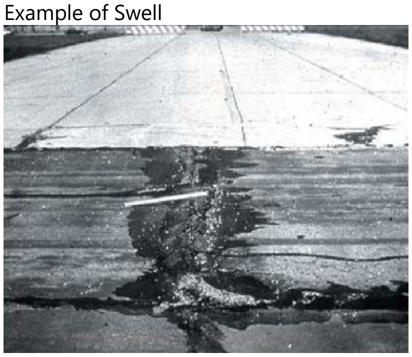
TABLE A-1: FLEXIBLE PAVEMENT DISTRESSES

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
41	Alligator or Fatigue Cracking	Load	Low Fine, longitudinal hairline cracks running parallel to each other with no or only a few interconnecting cracks. The cracks are not spalled. Buckling or shattering causes low-severity ride quality. Medium Further development of light alligator cracking into a pattern or network of cracks that may be lightly spalled. Buckling or shattering causes medium-severity ride quality. High Network or pattern cracking progressed so that pieces are well-defined and spalled at the edges; some of the pieces rock under traffic.	High Severity Alligator Cracking at South Cargo Apron 
42	Bleeding	Other	No degrees of severity are defined. Bleeding should be noted when it is extensive enough to cause a reduction in skid resistance.	Example of Bleeding 
43	Block Cracking	Climate	Low Blocks are defined by cracks that are non-spalled (sides of the crack are vertical) or only lightly spalled, causing no FOD potential. Non-filled cracks have 1/4 inch or less mean width, and filled cracks have filler in satisfactory condition. Medium Blocks are defined by either: (1) filled or non-filled cracks that are moderately spalled (some FOD potential); (2) non-filled cracks that are not spalled or have only minor spalling (some FOD potential), but have a mean width greater than approximately 1/4 inch; or (3) filled cracks that are not spalled or have only minor spalling (some FOD potential), but have filler in unsatisfactory condition. High Blocks are well-defined by cracks that are severely spalled with loose or missing material, causing a definite FOD potential.	Low Severity Block Cracking at FedEx Apron 

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
44	Corrugation	Load	Low Corrugations are minor and do not significantly affect ride quality. Medium Corrugations are noticeable and significantly affect ride quality. High Corrugations are easily noticed and severely affect ride quality.	Example of Corrugation 
45	Depressions	Load	Low Depression can be observed or located by stained areas, only slightly affects pavement riding quality, and may cause hydroplaning potential on runways. Medium The depression can be observed, moderately affects pavement riding quality, and causes hydroplaning potential on runways. High The depression can be readily observed, severely affects pavement riding quality, and causes definite hydroplaning potential.	Medium Severity Depression at Taxiway S3 
46	Jet Blast Erosion	Other	No degrees of severity are defined. It is sufficient to indicate that jet blast erosion exists.	Example of Jet Blast Erosion 
47	Joint Reflection Cracking	Other	Low Cracks have only light spalling (little or no FOD potential) or no spalling and can be filled or non-filled. If non-filled, the cracks have a mean width of 1/4 inch or less. Filled cracks are of any width, but their filler material is in satisfactory condition. Medium One of the following conditions exists: (1) cracks are moderately spalled (some FOD potential) and can be either filled or non-filled of any width; (2) filled cracks are not spalled or are only lightly spalled, but the filler is in unsatisfactory condition; (3) non-filled cracks are not spalled or are only lightly spalled, but the mean	Low Joint Reflection Cracking at Terminal 1 

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
			crack width is greater than 1/4 inch; or (4) light random cracking exists near the crack or at the corner of intersecting cracks. High Cracks are severely spalled (definite FOD potential) and can be either filled or non-filled of any width.	
48	Longitudinal and Transverse Cracking	Climate/ Other	Low Cracks have either minor spalling (little or no FOD potential) or no spalling. The cracks can be filled or non-filled. Non-filled cracks have a mean width of 1/4 inch or less; filled cracks are of any width, but their filler material is in satisfactory condition. Medium One of the following conditions exists: (1) cracks are moderately spalled (some FOD potential) and can be either filled or non-filled of any width; (2) filled cracks are not spalled or are only lightly spalled, but the filler is in unsatisfactory condition; (3) non-filled cracks are not spalled or are only lightly spalled, but mean crack width is greater than 1/4 inch; or (4) lightly random cracking exists near the crack or at the corners of intersecting cracks.. High Cracks are severely spalled, causing definite FOD potential. They can be either filled or non-filled of any width.	Medium Longitudinal and Transverse Cracking at Runway 8R Blast Pad 
49	Oil Spillage	Other	No degrees of severity are defined. It is sufficient to indicate that oil spillage exists.	Example of Oil Spillage 

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
50	Patching and Utility Cut Patch	Other	Low Patch is in good condition and is performing satisfactorily. Little or no FOD potential. Medium Patch is somewhat deteriorated and affects riding quality to some extent. Some FOD potential. High Patch is badly deteriorated and affects riding quality significantly or has high FOD potential. Patch needs replacement.	Low Severity Patching at Atlantic Aviation Apron 
51	Polished Aggregate	Load	No degrees of severity are defined. However, the degree of polishing should be significant before it is included in the condition survey and rated as a defect.	Example of Polished Aggregate 
52	Raveling	Climate	Low Occurs if any one of these conditions exist: (1) In a square yard representative area, the number of coarse aggregate particles missing is between 5 and 20. (2) Missing aggregate clusters is less than 2 percent of the examined square yard area. In low-severity raveling, there is little or no FOD potential. Medium Occurs if any one of these conditions exist: (1) In a square yard representative area, the number of coarse aggregate particles missing is between 21 and 40. (2) Missing aggregate clusters is between 2 and 10 percent of the examined square yard area. In medium-severity raveling, there is some FOD potential. High Occurs if any one of these conditions exist: (1) In a square yard representative area, the number of coarse aggregate particles missing is over 40. (2) Missing aggregate clusters is more than 10 percent of the examined square yard area. In	Example of Raveling 

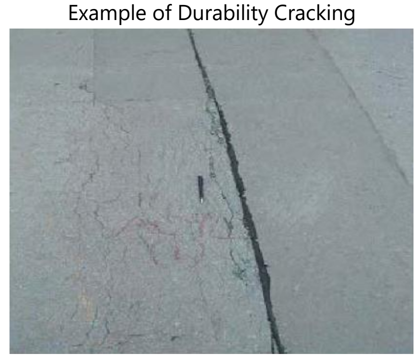
Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
			high-severity raveling, there is significant FOD potential.	
53	Rutting	Load	Low 1/4 to 1/2 inch Medium 1/2 to 1 inch High > 1 inch	Example of Rutting 
54	Shoving	Other	Low A slight amount of shoving has occurred, with little effect on ride quality and no break-up of the asphalt pavement. Medium A significant amount of shoving has occurred, causing moderate roughness or break-up of the asphalt pavement. High A large amount of shoving has occurred, causing severe roughness or break-up of the asphalt pavement.	Example of Shoving 
55	Slippage Cracking	Climate	No degrees of severity are defined. It is sufficient to indicate that a slippage crack exists.	Example of Slippage Cracking 
56	Swell	Climate/Other	Low Swell is barely visible and has a minor effect on the pavement's ride quality as determined at the normal aircraft speed for the pavement section under consideration. (Low-severity swells may not always be observable, but their existence can be confirmed by driving a vehicle over the section at the normal aircraft speed. An upward acceleration will occur if the swell is present). Medium Swell can be observed without difficulty and has a significant effect on the pavement's ride quality as determined at the normal aircraft speed for the pavement section under consideration.	Example of Swell 

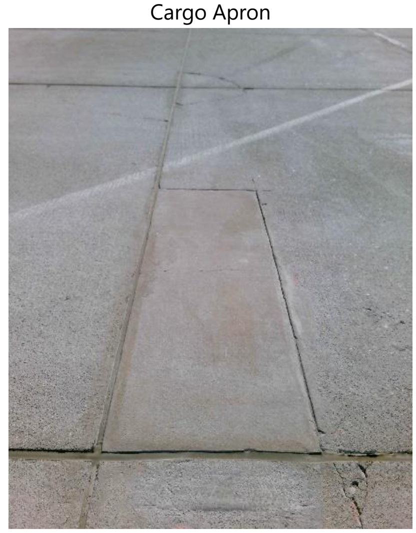
Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
			High Swell can be readily observed and severely affects the pavement's ride quality at the normal aircraft speed for the pavement section under consideration.	
57	Weathering	Load/Climate/ Other	Low Asphalt surface beginning to show signs of aging which may be accelerated by climatic conditions. Loss is the fine aggregate matrix is noticeable and may be accompanied by fading of the asphalt color. Edges of the coarse aggregates are beginning to be exposed. Pavement may be relatively new (as new as 6 months old). Medium Loss of fine aggregate matrix is noticeable and edges of coarse aggregate have been exposed up to 1/4 width (of the longest side) of the coarse aggregate due to the loss of fine aggregate matrix. High Edges of coarse aggregate have been exposed greater than 1/4 width (of the longest side) of the coarse aggregate. There is considerable loss of fine aggregate matrix leading to potential or some loss of coarse aggregate.	Hight Severity Weathering at FedEx Apron 

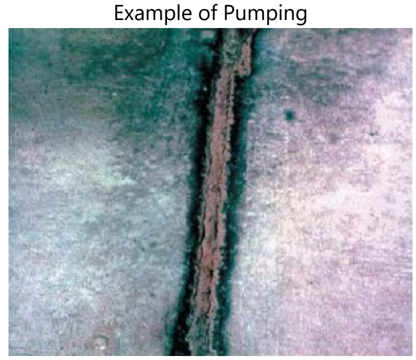
Source: ASTM D5340

TABLE A-2: RIGID PAVEMENT DISTRESSES

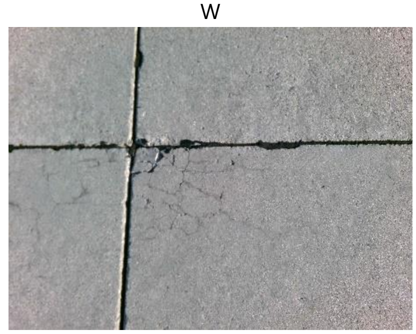
Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
61	Blow-up	Load/ Climate	Low Buckling or shattering has not rendered the pavement inoperative, and only a slight amount of roughness exists. Medium Buckling or shattering has not rendered the pavement inoperative, but a significant amount of roughness exists. High Buckling or shattering has rendered the pavement inoperative.	Example of Blow-up 
62	Corner Break	Load	Low Crack has either no spalling or minor spalling (no foreign object damage (FOD) potential). If non-filled, it has a mean width less than approximately 1/8 inch; a filled crack can be of any width, but the filler material must be in satisfactory condition. The area between the corner break and the joints is not cracked. Medium One of the following conditions exists: (1) filled or non-filled crack is moderately spalled (some FOD potential); (2) a non-filled crack has a mean width between 1/8 inch and 1 inch; (3) a filled crack is not spalled or only lightly spalled, but the filled is in unsatisfactory condition; (4) the area between the corner break and the joints is lightly cracked with loose or missing particles. High One of the following conditions exists: (1) filled or non-filled crack is severely spalled, causing definite FOD potential; (2) a non-filled crack has a mean width greater than approximately 1 inch, creating a tire damage potential; or (3) the area between the corner break and the joints is severely cracked.	Low Severity Corner Break at Runway 8R/26L 

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
63	Long., Trans., or Diagonal Crack	Load	Low Crack has no spalling or minor spalling (no FOD potential). If non-filled, it is less than 1/8-inch-wide; a filled crack can be of any width, but its filler material must be in satisfactory condition. Medium One of the following conditions exists: (1) a filled or non-filled crack is moderately spalled (some FOD potential); (2) a non-filled crack has a mean width between 1/8 inch and 1 inch; (3) a filled crack has no spalling or minor spalling, but the filler is in unsatisfactory condition; or (4) the slab is divided into three pieces by two or more cracks. High One of the following conditions exists: (1) a filled or non-filled crack is severely spalled (definite FOD potential); (2) a non-filled crack has a mean width approximately greater than 1 inch, creating tire damage potential, or (3) the slab is divided into three pieces by two or more cracks, one of which is at least medium-severity.	Medium Severity Crack at Taxiway S 
64	Durability ("D") Crack	Climate	Low "D" cracking is defined by hairline cracks occurring in a limited area of the slab, such as one or two corners or along one joint. Little or no disintegration has occurred. No FOD potential. Medium (1) "D" cracking has developed over a considerable amount of slab area with little or no disintegration or FOD potential; or (2) "D" cracking has occurred in a limited area of the slab, such as in one or two corners or along one joint, but pieces are missing and disintegration has occurred. Some FOD potential. High "D" cracking has developed over a considerable amount of slab area with disintegration of FOD potential.	Example of Durability Cracking 

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
65	Joint Seal Damage	Other	Low Joint sealer is in generally good condition throughout the section. Sealant is performing well, with only a minor amount of any of the above types of damage present. Medium Joint sealer is in generally fair condition over the entire surveyed section, with one or more of the above types of damage occurring to a moderate degree. Sealant needs replacement within 2 years. High Joint sealer is in generally poor condition over the entire surveyed section, with one or more of the above types of damage occurring to a severe degree. Sealant needs immediate replacement.	High Severity Joint Seal Damage at Runway 8L/26R 
66	Patching, Small	Other	Low Patch is functioning well, with little or no deterioration. Medium Patch has deteriorated, and/or moderate spalling can be seen around the edges. Patch material can be dislodged, with considerable effort (minor FOD potential). High Patch has deteriorated, either by spalling around the patch or cracking within the patch, to a state which warrants replacement.	Medium Severity Small Patching at Taxiway W 
67	Patching, Large	Other	Low Patch is functioning well, with little or no deterioration. Medium Patch has deteriorated, and/or moderate spalling can be seen around the edges. Patch material can be dislodged with considerable effort, causing some FOD potential. High Patch has deteriorated to a state which causes considerable roughness and/or high FOD potential. The extent of the deterioration warrants replacement of the patch.	Low Severity Large Patching at South Cargo Apron 

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
68	Popouts	Climate/Other	No degrees of severity are defined for popouts. However, popouts must be extensive before they are counted as a distress; i.e., average popout density must exceed approximately three popouts per square yard over the entire slab area.	Popouts at Taxilane N1 
69	Pumping	Load	No degrees of severity are defined. It is sufficient to indicate that pumping exists.	Example of Pumping 
70	Scaling	Load/ Climate	Low Minimal loss of surface paste that poses no FOD hazard. No FOD potential. Medium The loss of surface paste that poses some FOD potential including isolated fragments of loose mortar, exposure of the sides of coarse aggregate (less than 1/4 of the width of coarse aggregate), or evidence of coarse aggregate coming loose from the surface. High The high severity is associated with low durability concrete that will continue to pose a high FOD hazard; normally the layer of surface mortar is observable at the perimeter of the scaled area and is likely to continue to scale due to environmental or other factors. Indication of high-severity FOD is that routine sweeping is not sufficient to avoid FOD issues.	Example of Scaling 

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
71	Settlement or Faulting	Load	Low < 1/4 inch for runways/taxiways and 1/8 – 1/2 inch for aprons. Medium 1/4 – 1/2 inch for runways/taxiways and 1/2 - 1 inch for aprons. High > 1/2 inch for runways/taxiways and> 1 inch for aprons.	Low Severity Settlement at Taxiway K 
72	Shattered Slab	Load	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 is broken into four or five pieces with over 15 percent of the cracks of medium-severity (no high-severity cracks); or (2) slab is broken into six or more pieces with over 85 percent of the cracks of low-severity. High At this level of severity, the slab is called shattered: (1) slab is broken into four or five pieces with some or all of the cracks of high-severity; (2) slab is broken into six or more pieces with over 15 percent of the cracks of medium- or high-severity.	Low Severity Shattered Slab at Taxiway S 
73	Shrinkage Cracking	Other	No degrees of severity are defined. It is sufficient to indicate that shrinkage cracks exist.	Shrinkage Cracking at Runway 8R/26L 

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
74	Spalling (Joint)	Load/ Other	Low For a spall length of <2 ft.; spall is broken into pieces or fragmented; little FOD or tire damage potential exists. For a spall length of >2 ft.; (a) spall is broken into no more than three pieces defined by low- or medium-severity cracks; little or no FOD potential exists; or (b) joint is lightly frayed; little or no FOD potential exists. Medium For a spall length of <2 ft.; spall is broken into pieces or fragmented, with some of the pieces loose or absent, causing considerable FOD or tire damage potential. For a spall length of >2 ft.; (a) spall is broken into more than three pieces defined by light or medium cracks; (b) spall is broken into no more than three pieces with one or more of the cracks being severe with some FOD potential existing; or (c) joint is moderately frayed, with some FOD potential. High For a spall length of <2 ft.; the joint is lightly frayed, the spall should not be counted. For a spall length of >2 ft.; (1) spall is broken into more than three pieces defined by one or more high-severity cracks with high FOD potential; or (2) joint is severely frayed, with high FOD potential.	Medium Severity Joint Spall at Taxiway R 
75	Spalling (Corner)	Load/ Other	Low One of the following conditions exists: (1) spall is broken into one or two pieces defined by low-severity cracks (little or no FOD potential), (2) spall is defined by one medium-severity crack (little or no FOD potential). Medium One of the following conditions exists: (1) spall is broken into two or more pieces defined by medium- severity crack(s), and a few small fragments may be absent or loose; (2) spall is defined by one severe, fragmented crack that may be accompanied by a few hairline cracks;	Medium Severity Corner Spall at Taxiway W 

Distress Code	Description	Distress Type	Severity Levels	Sample Pictures
			or (3) spall has deteriorated to the point where loose material is causing some FOD potential. High One of the following conditions exists: (1) spall is broken into two or more pieces defined by high- severity fragmented crack(s), with loose or absent fragments; (2) pieces of the spall have been displaced to the extent that a tire damage hazard exists; or (3) spall has deteriorated to the point where loose material is causing high FOD potential.	
76	Alkali Silica Reaction	Other	Low Minimal to no Foreign Object Damage (FOD) potential from cracks, joints or ASR related popouts; cracks at the surface are tight. Little to no evidence of movement in pavement or surrounding structures or elements. Medium 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. 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 (1.0 mm or wider) that may be subdivided by tighter cracks. High 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.	Example of Alkali Silica Reaction 

Source: ASTM D5340

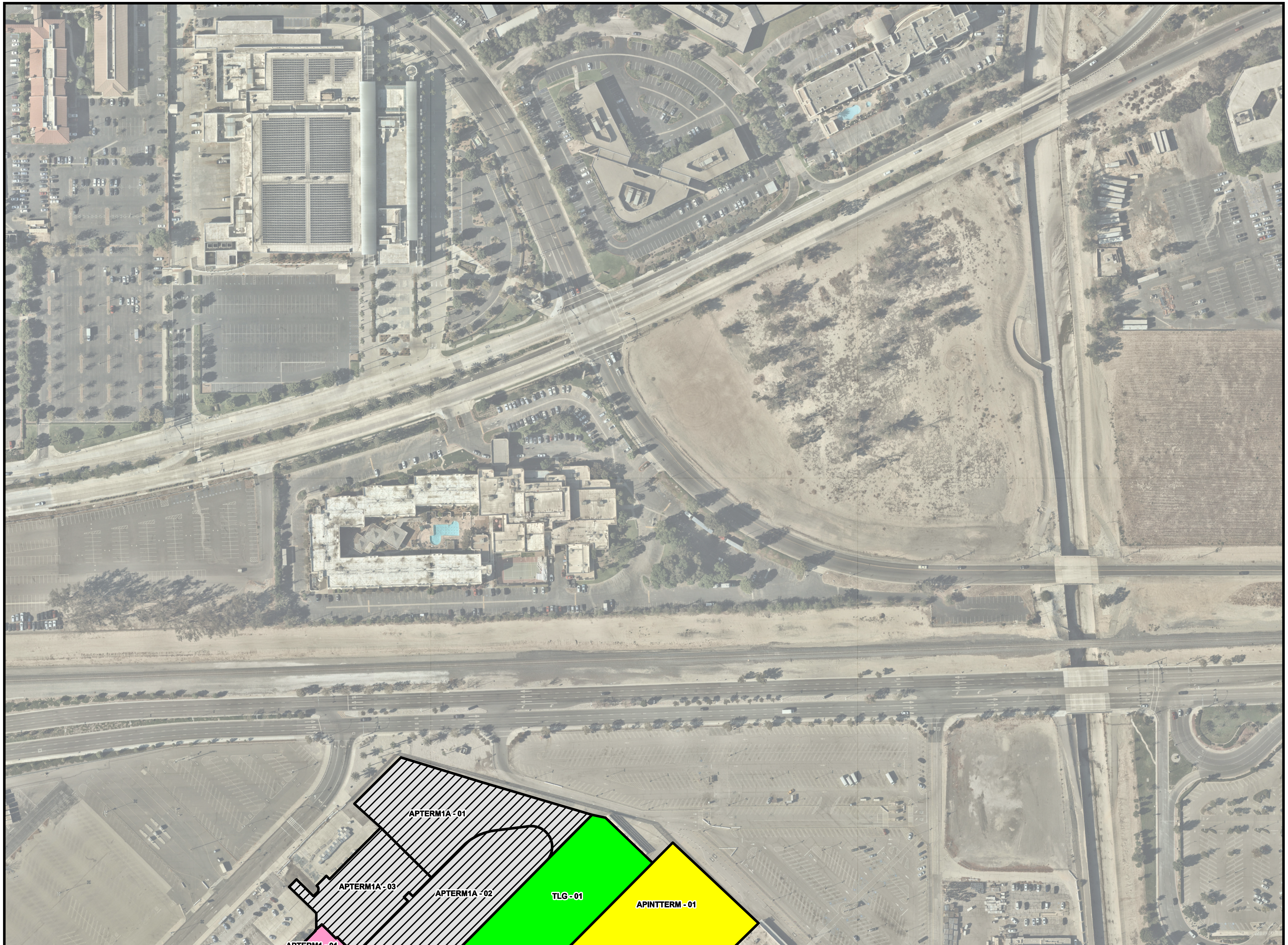
APPENDIX C

PAVEMENT CONDITION INDEX BY SECTION

Ontario International Airport

Airfield Pavement Evaluation
Appendix C

Pavement Condition Index
By Section



Legend

Pavement Section

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

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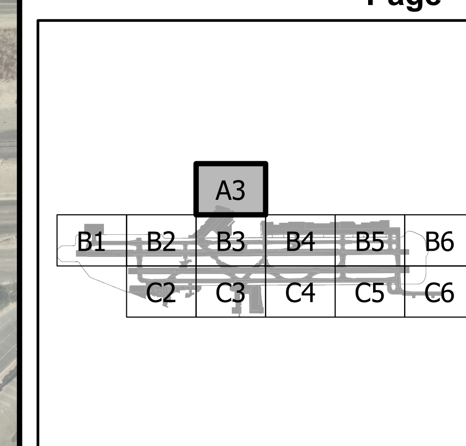


March 2020

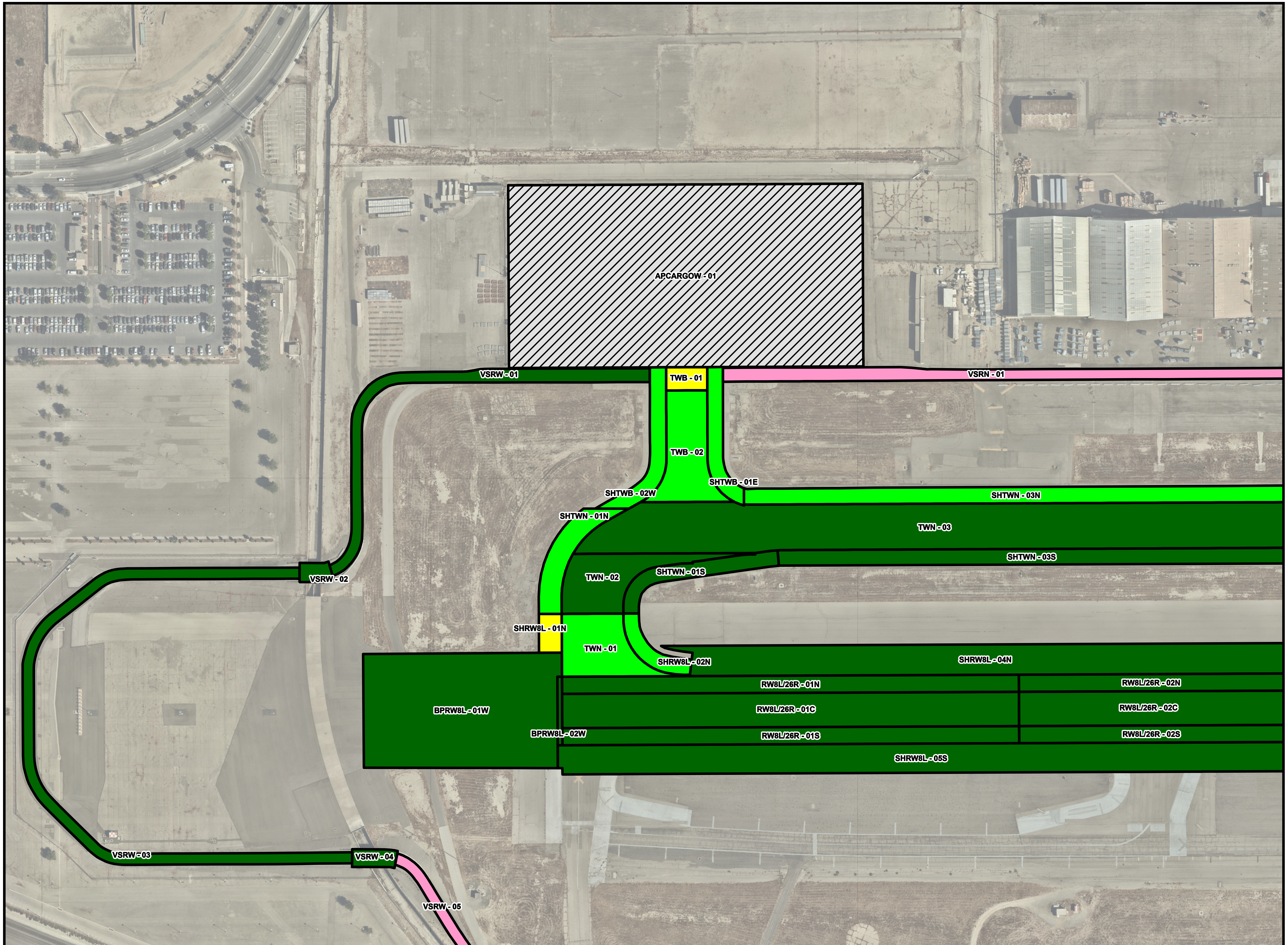
0 100 200 300 400 Ft.

N

Ontario International Airport

Airfield Pavement Evaluation
Appendix C

Pavement Condition Index
By Section



Legend

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Pavment Condition Rating (PCI)

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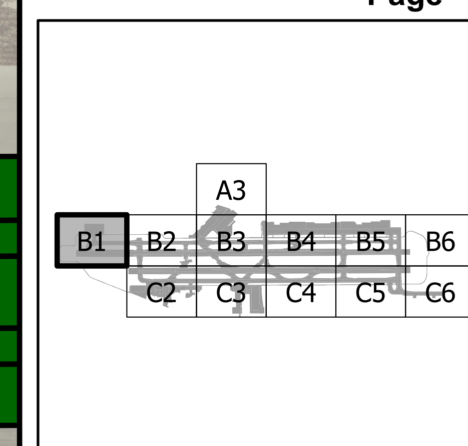
Page 2



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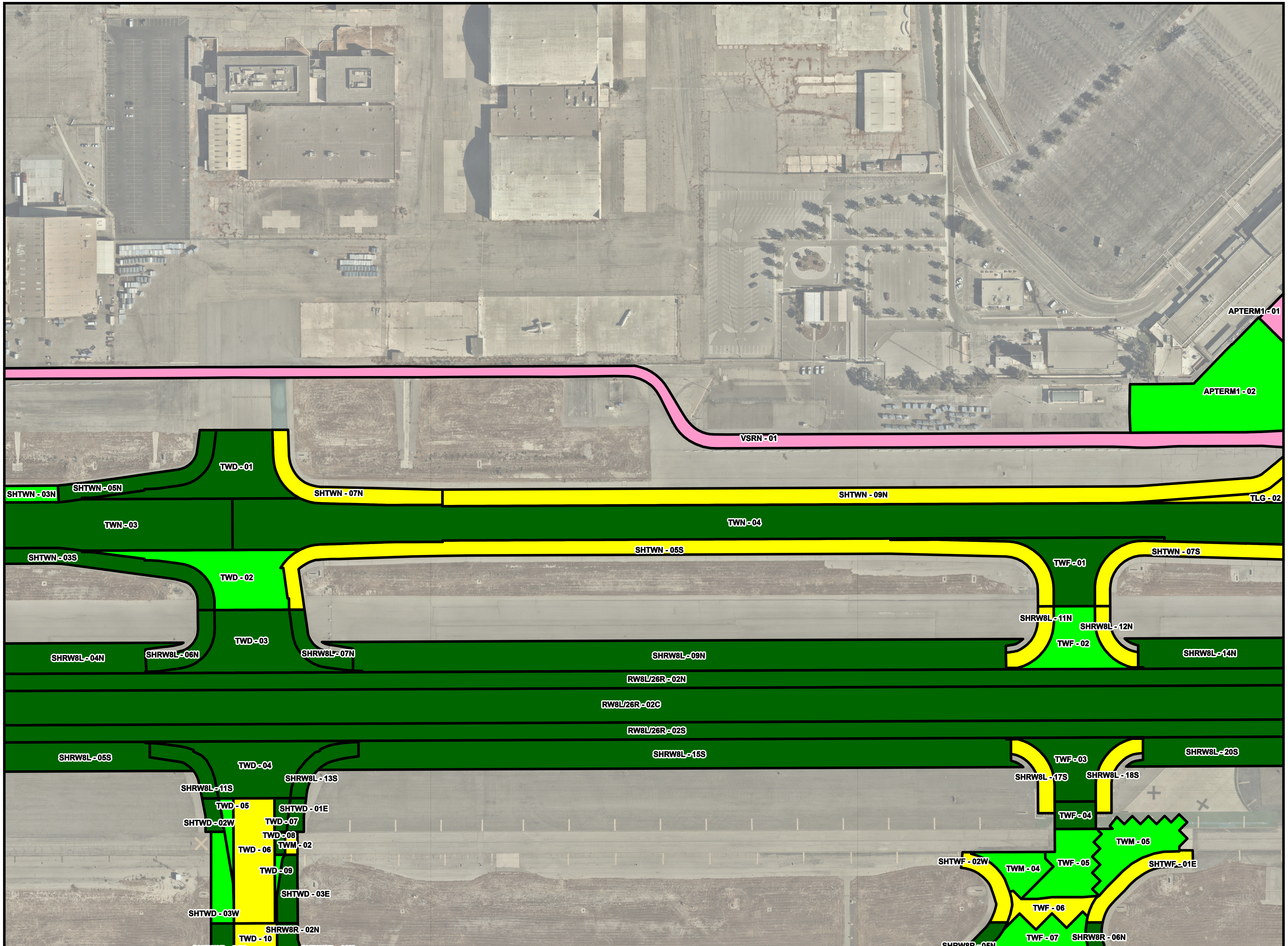

Legend

Pavement Section

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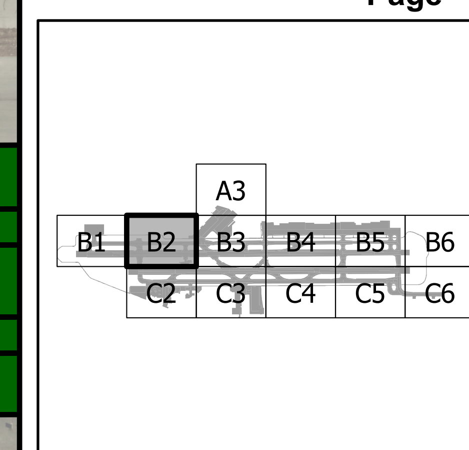

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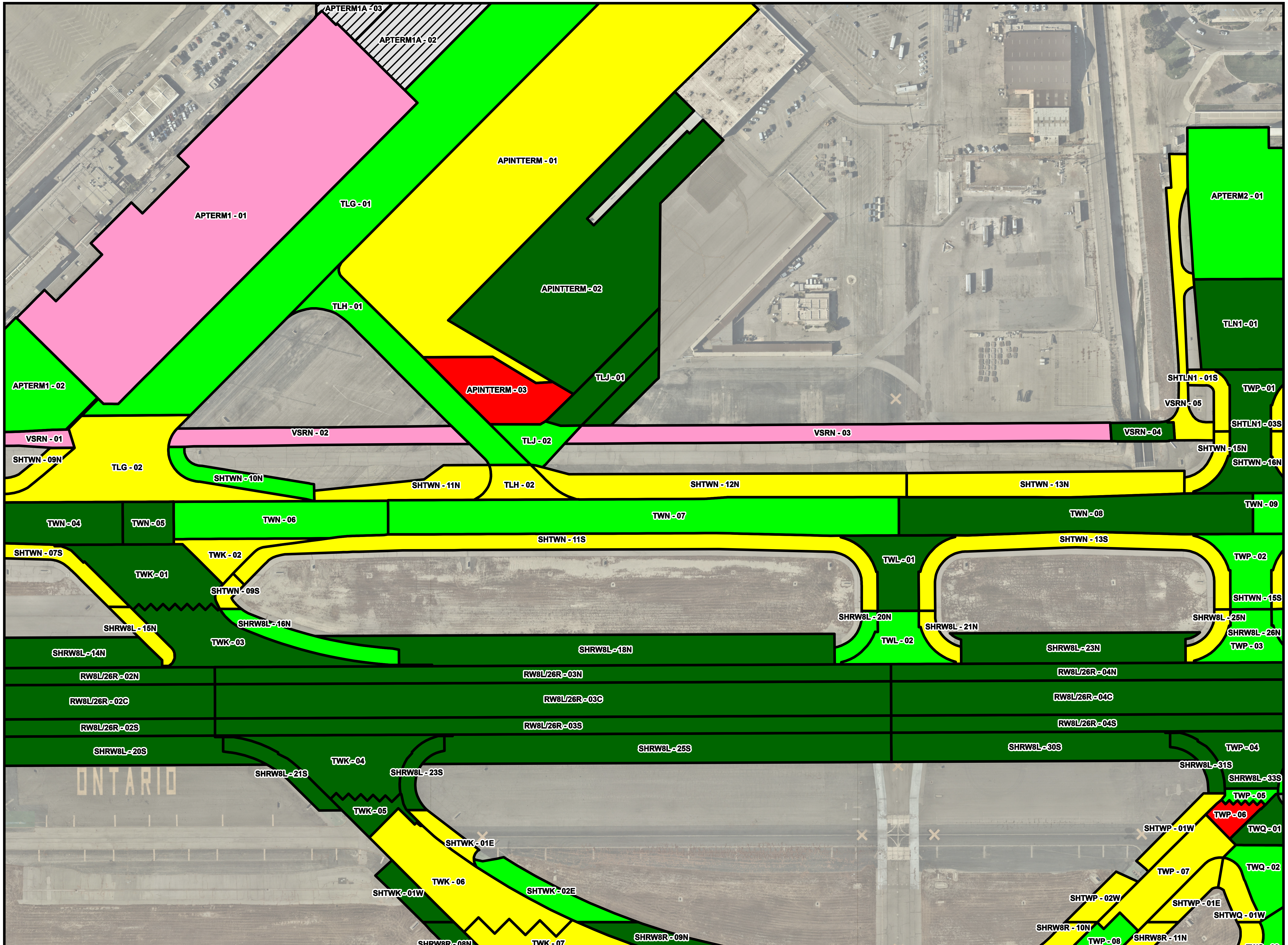

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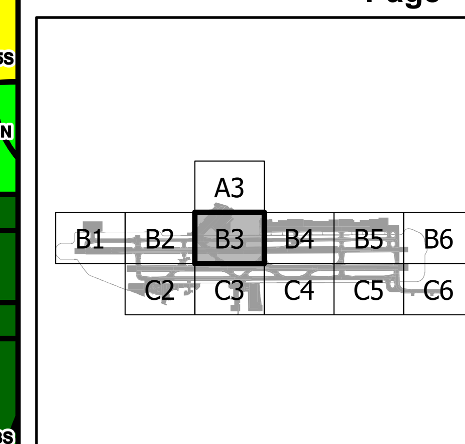

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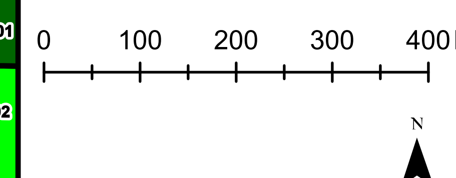

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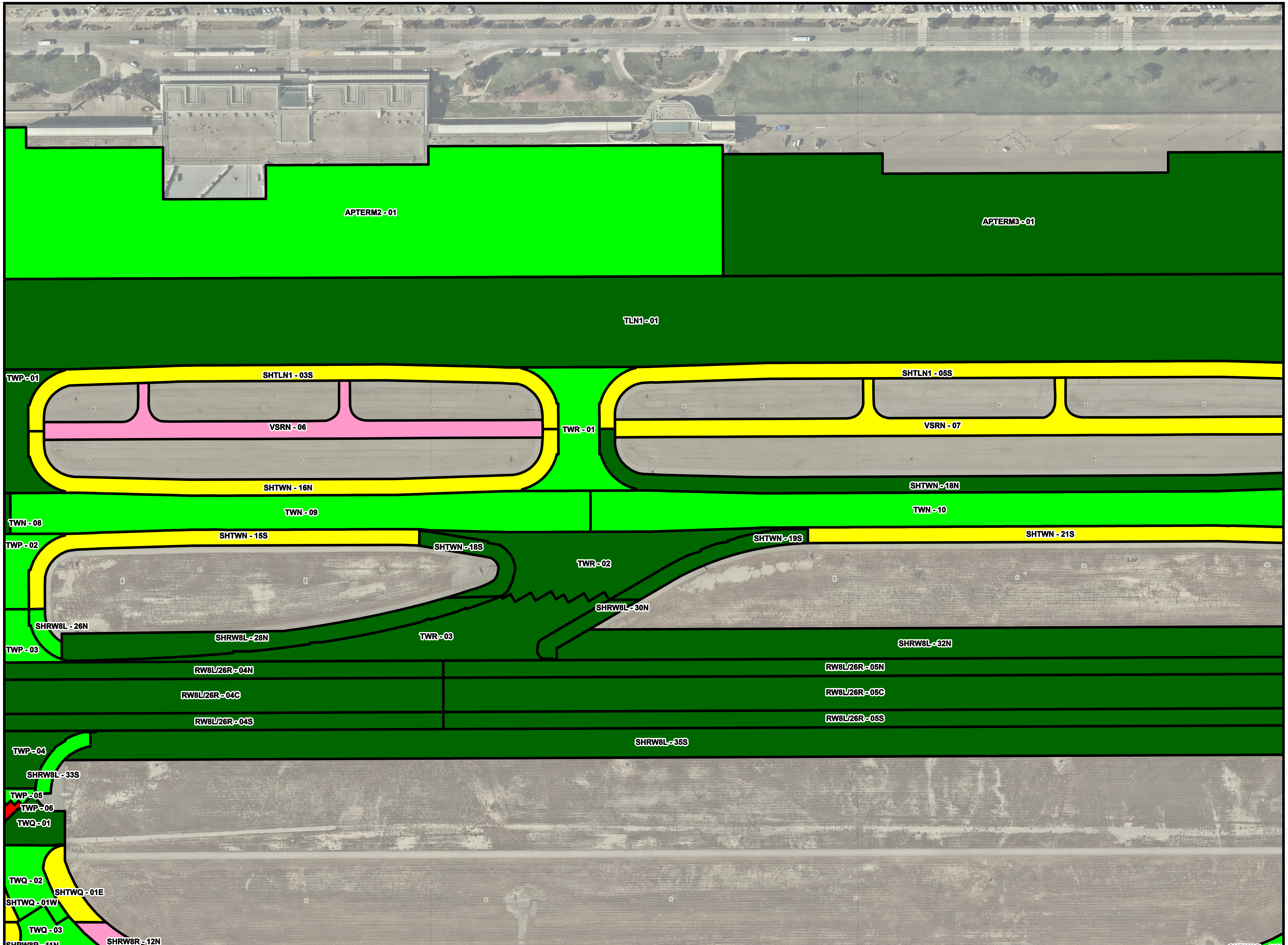

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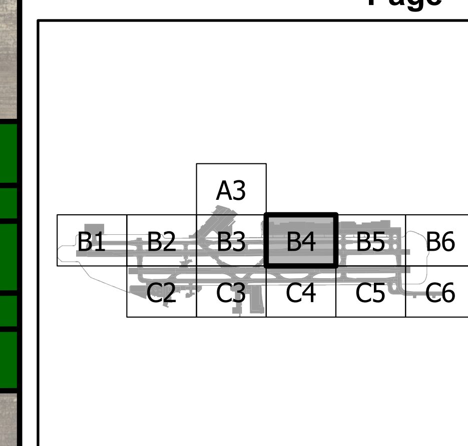

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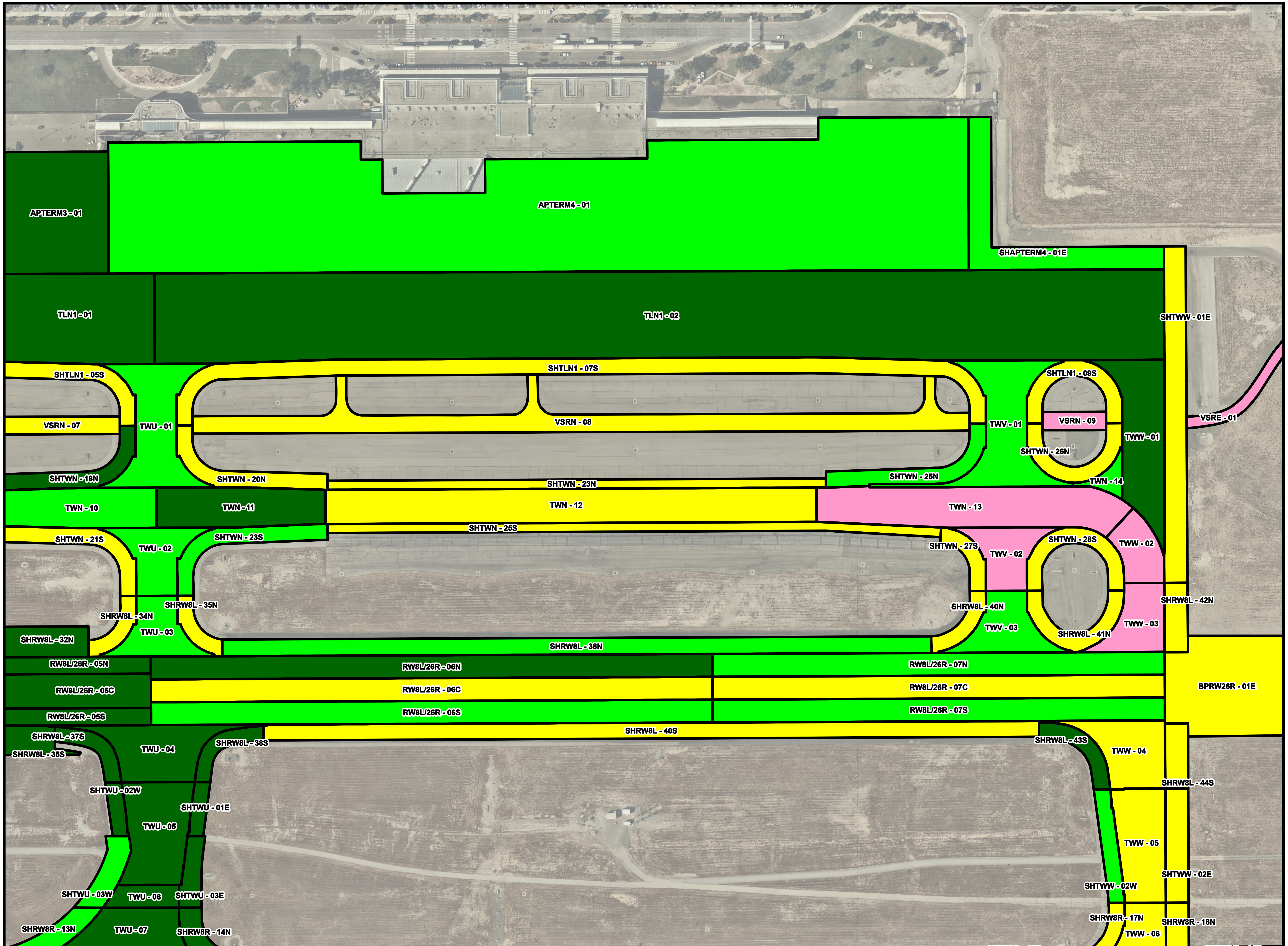

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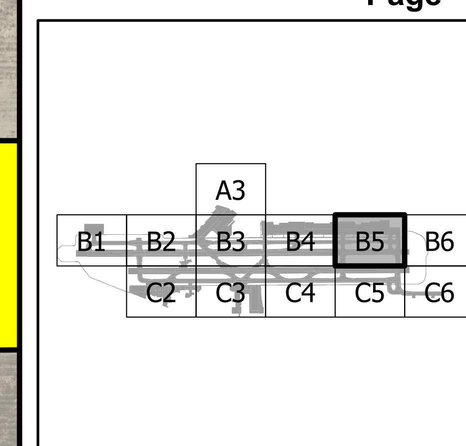

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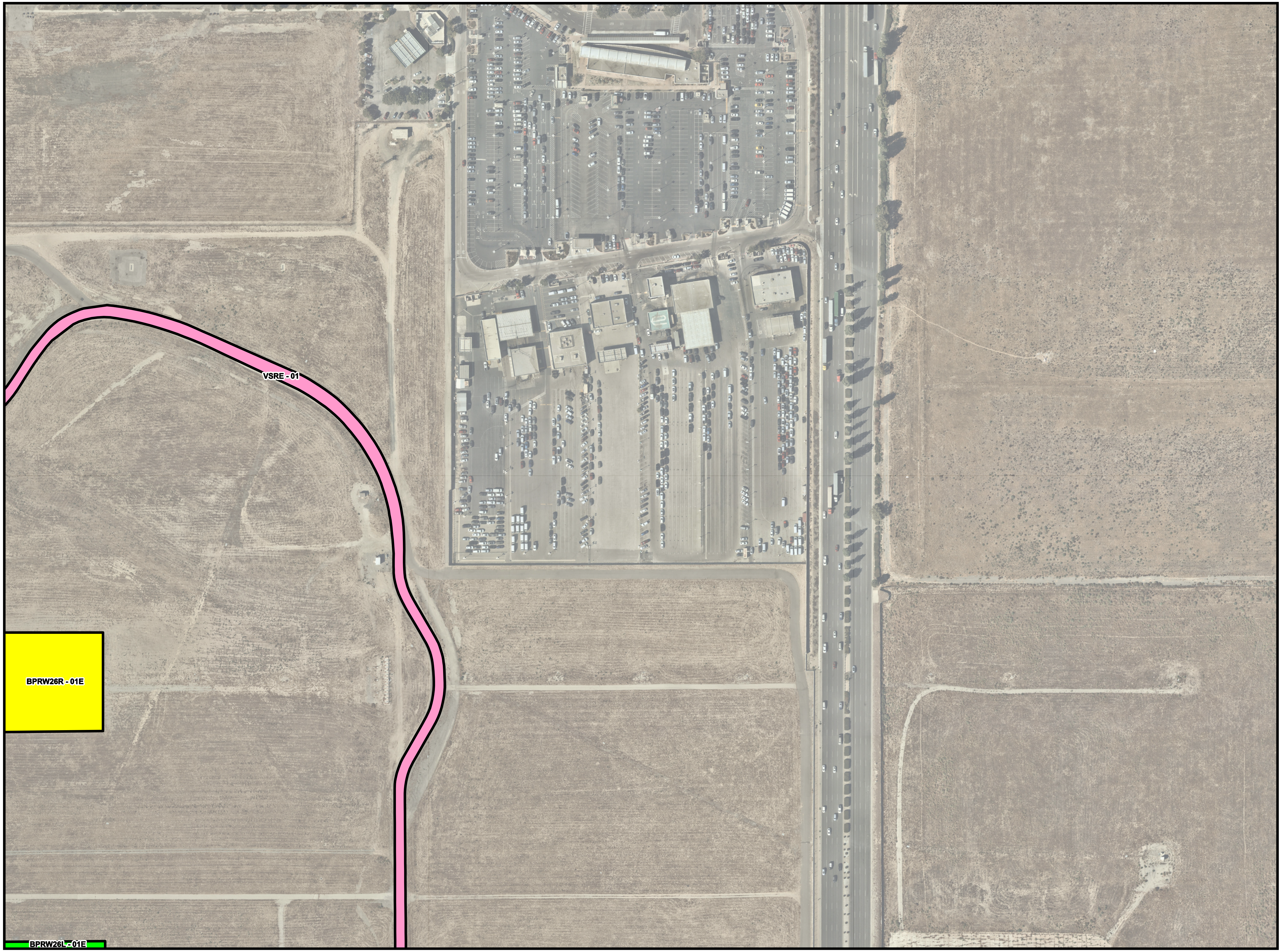

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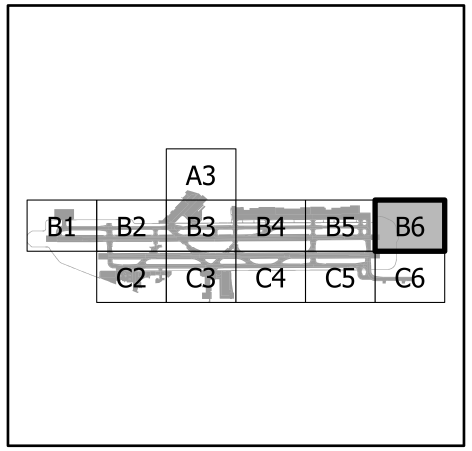

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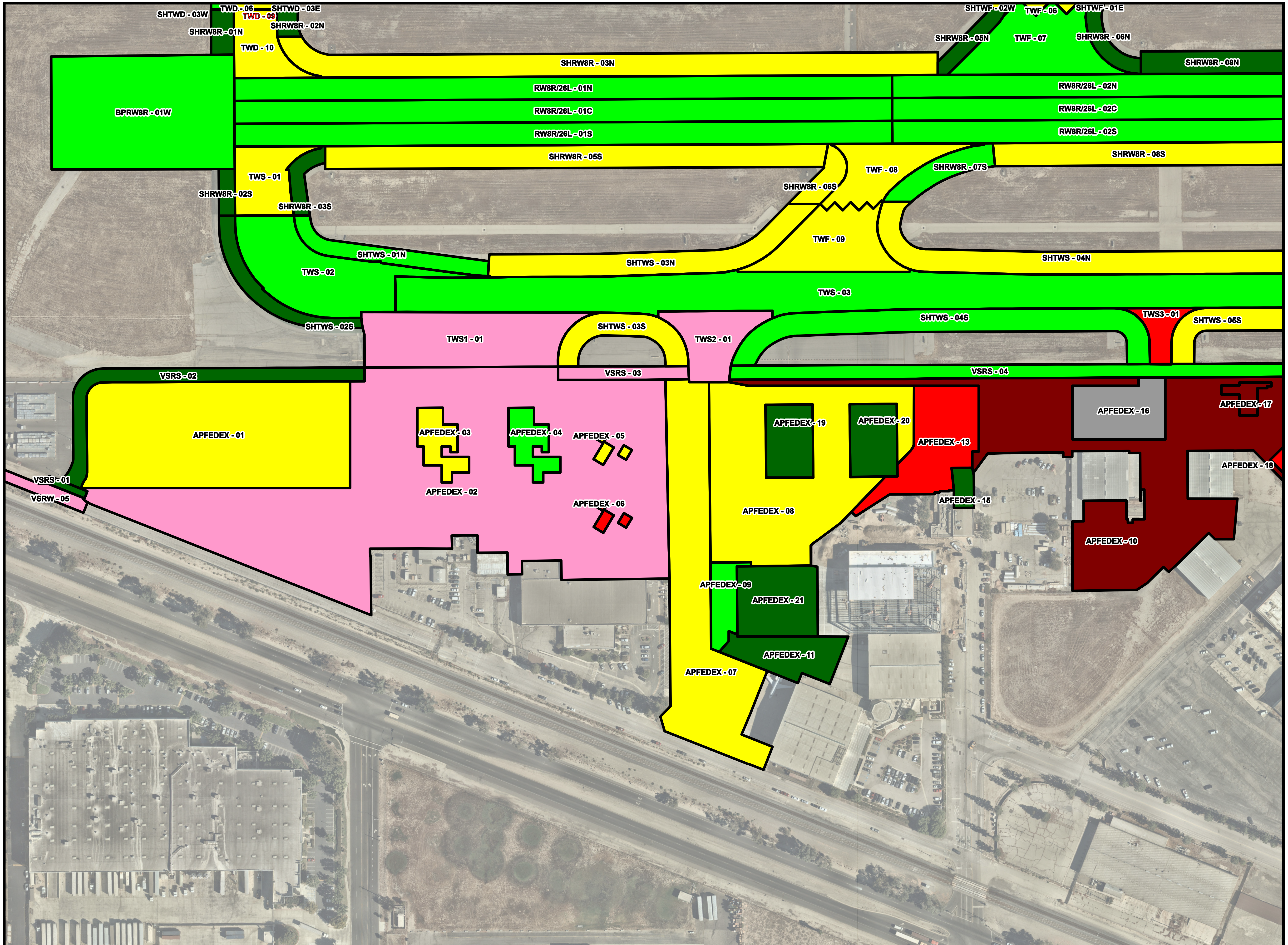

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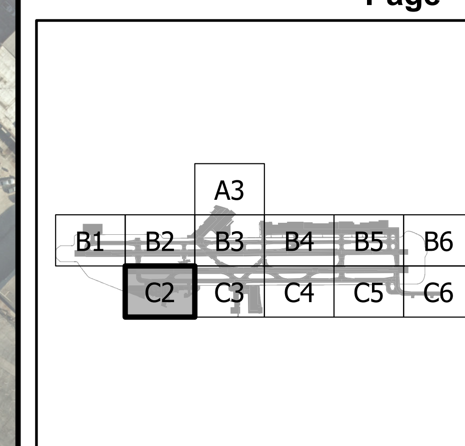

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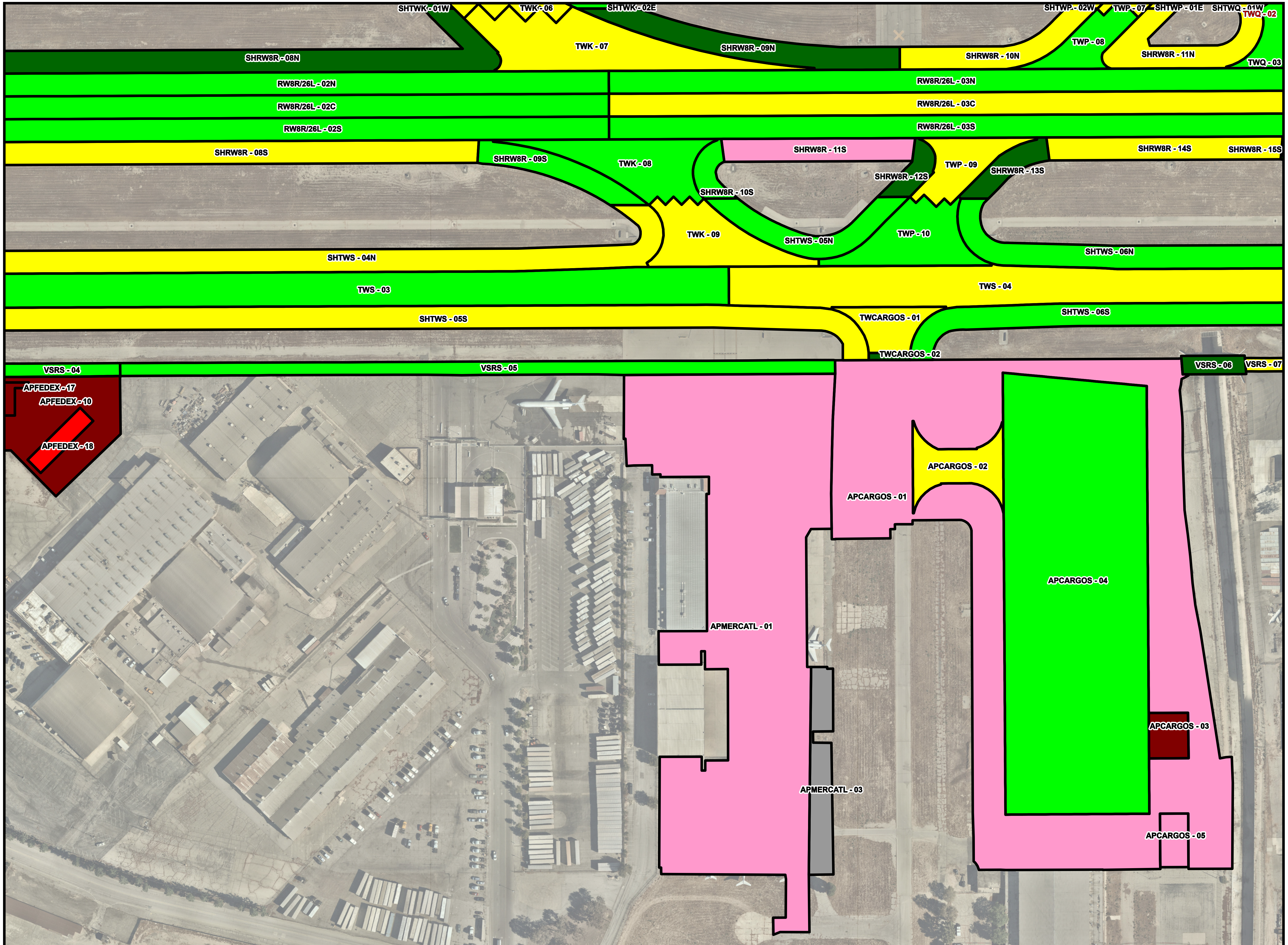

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		A3			
B1	B2	B3	B4	B5	B6
	C2	C3	C4	C5	C6

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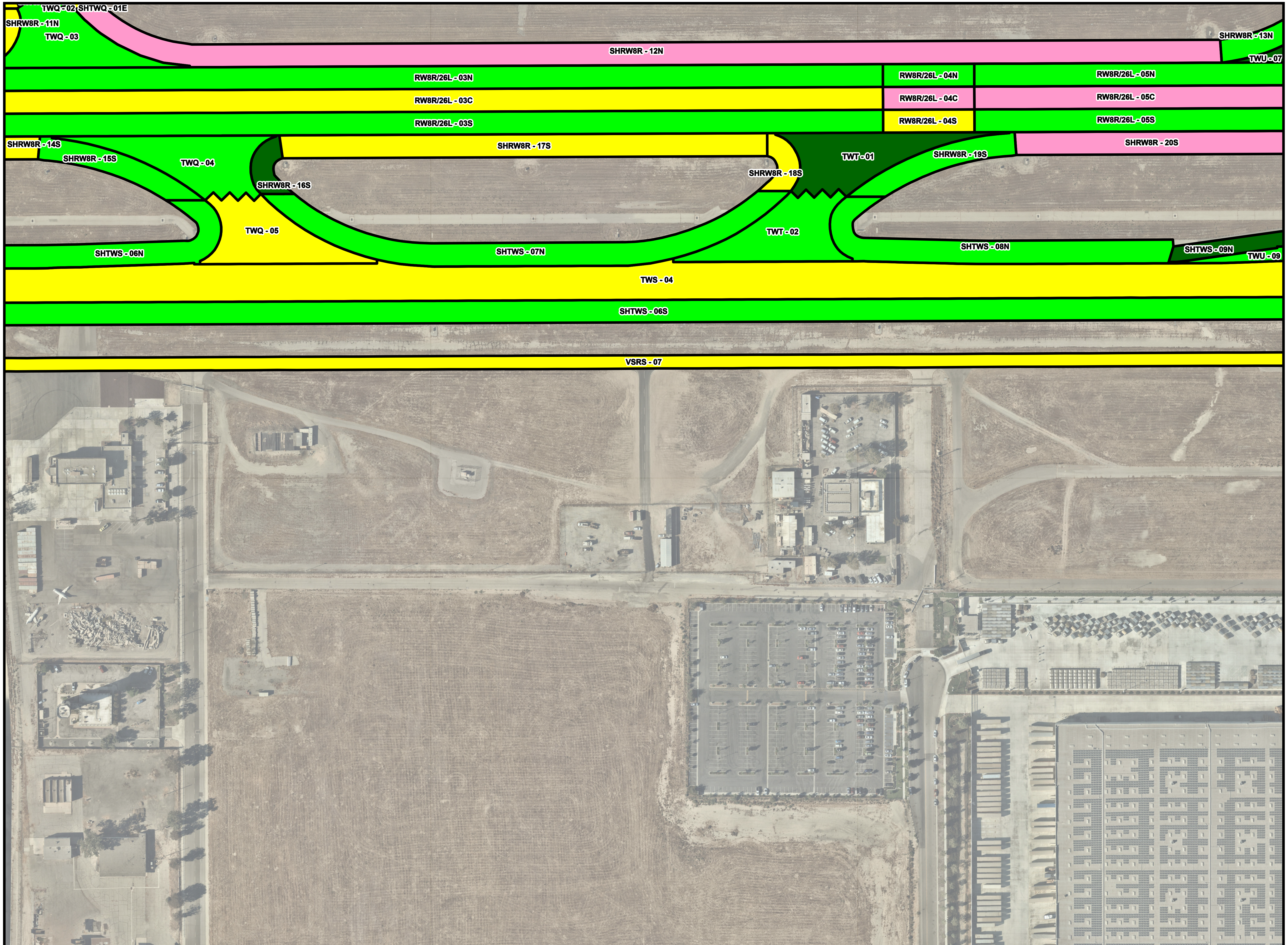

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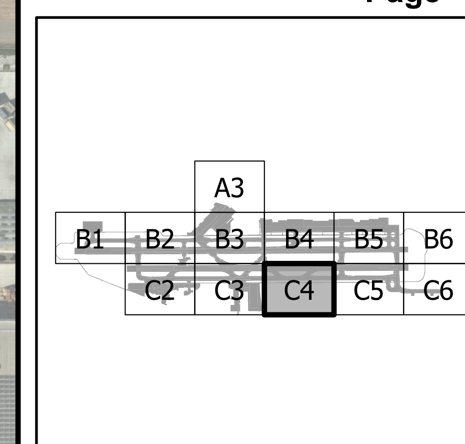

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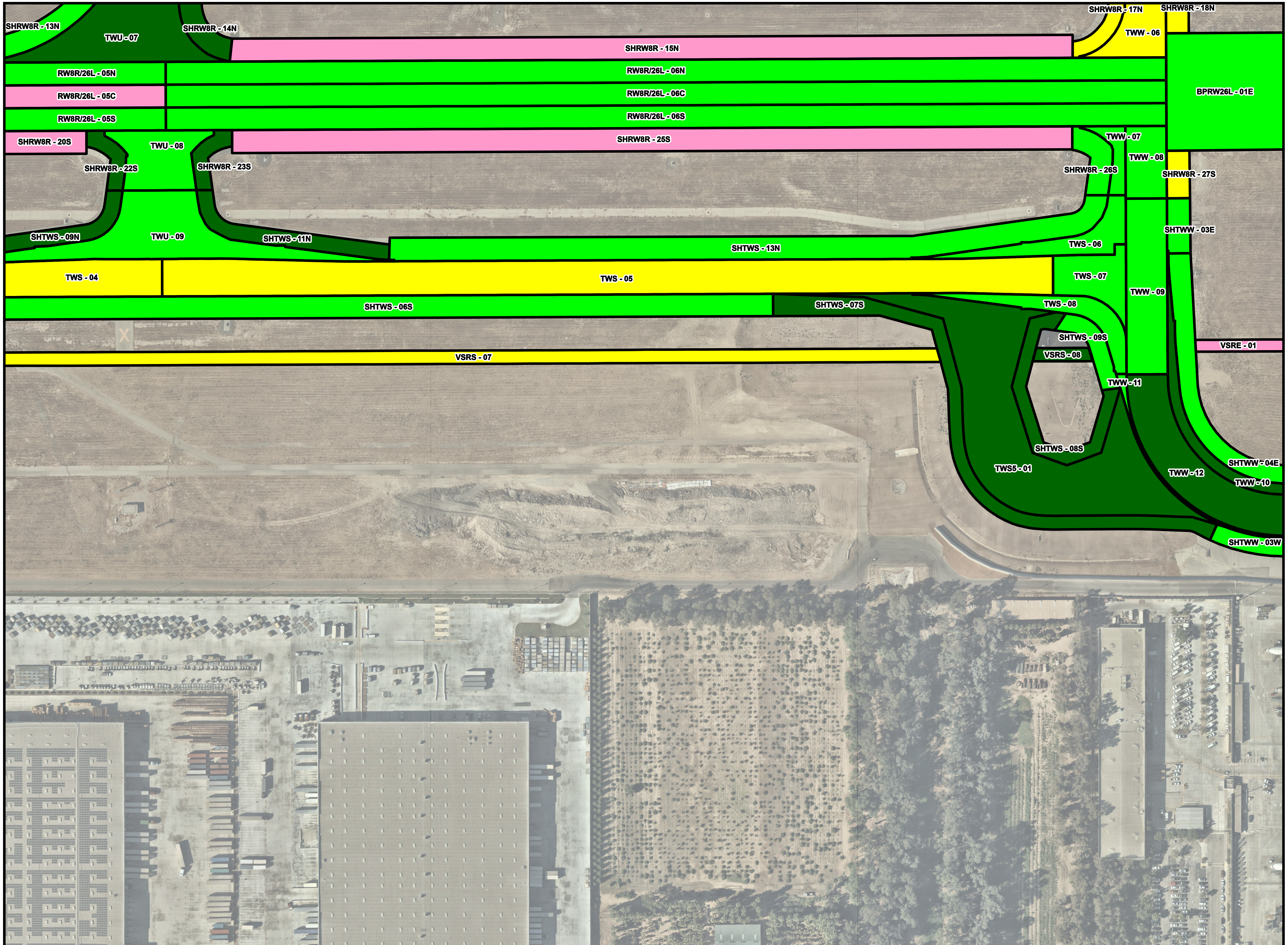

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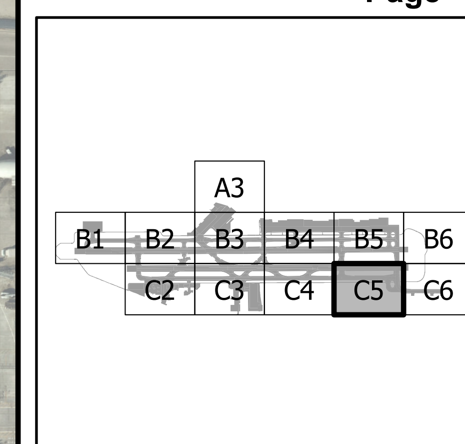

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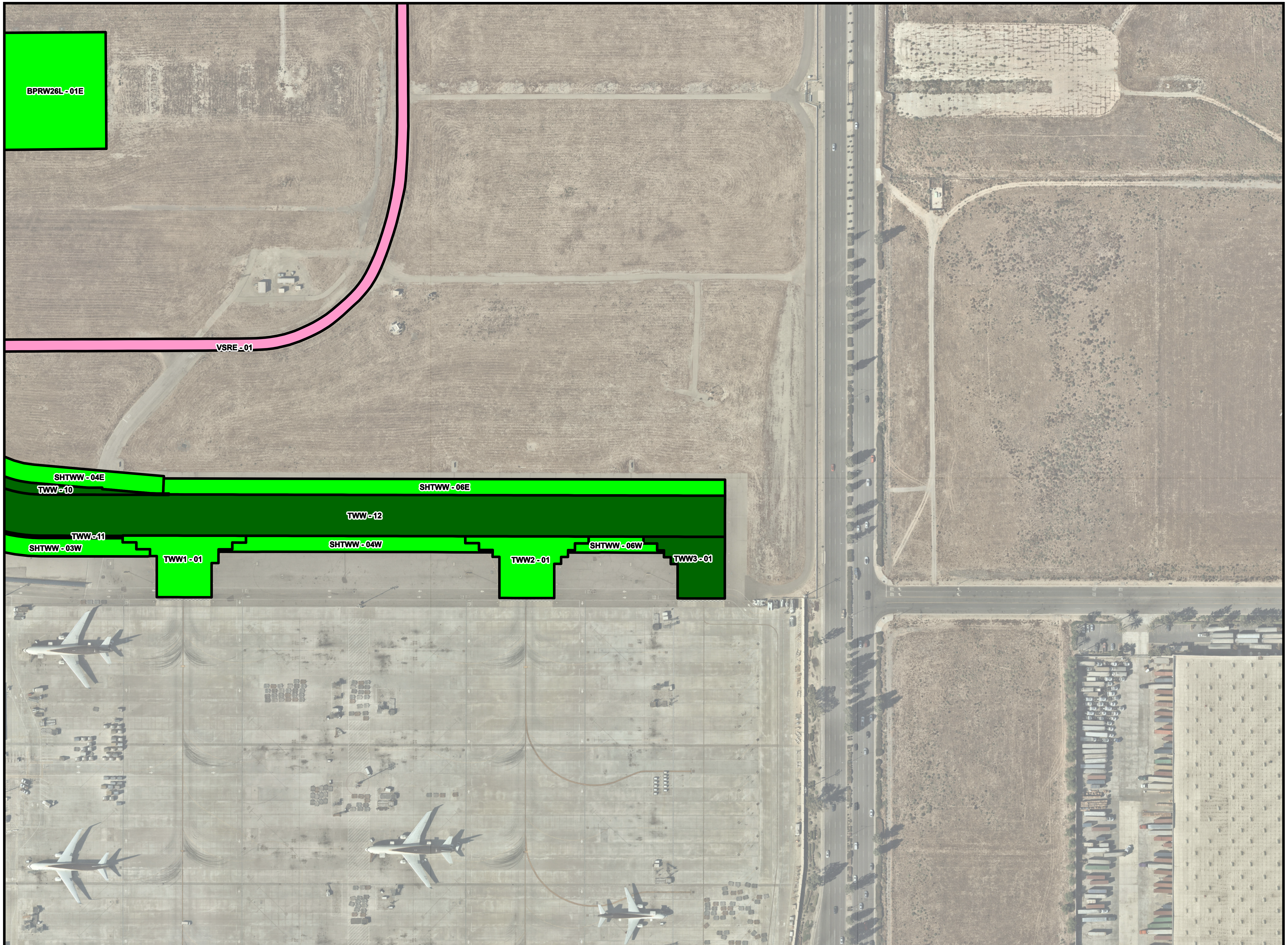

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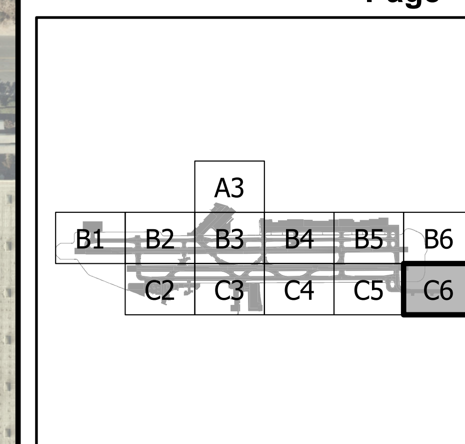

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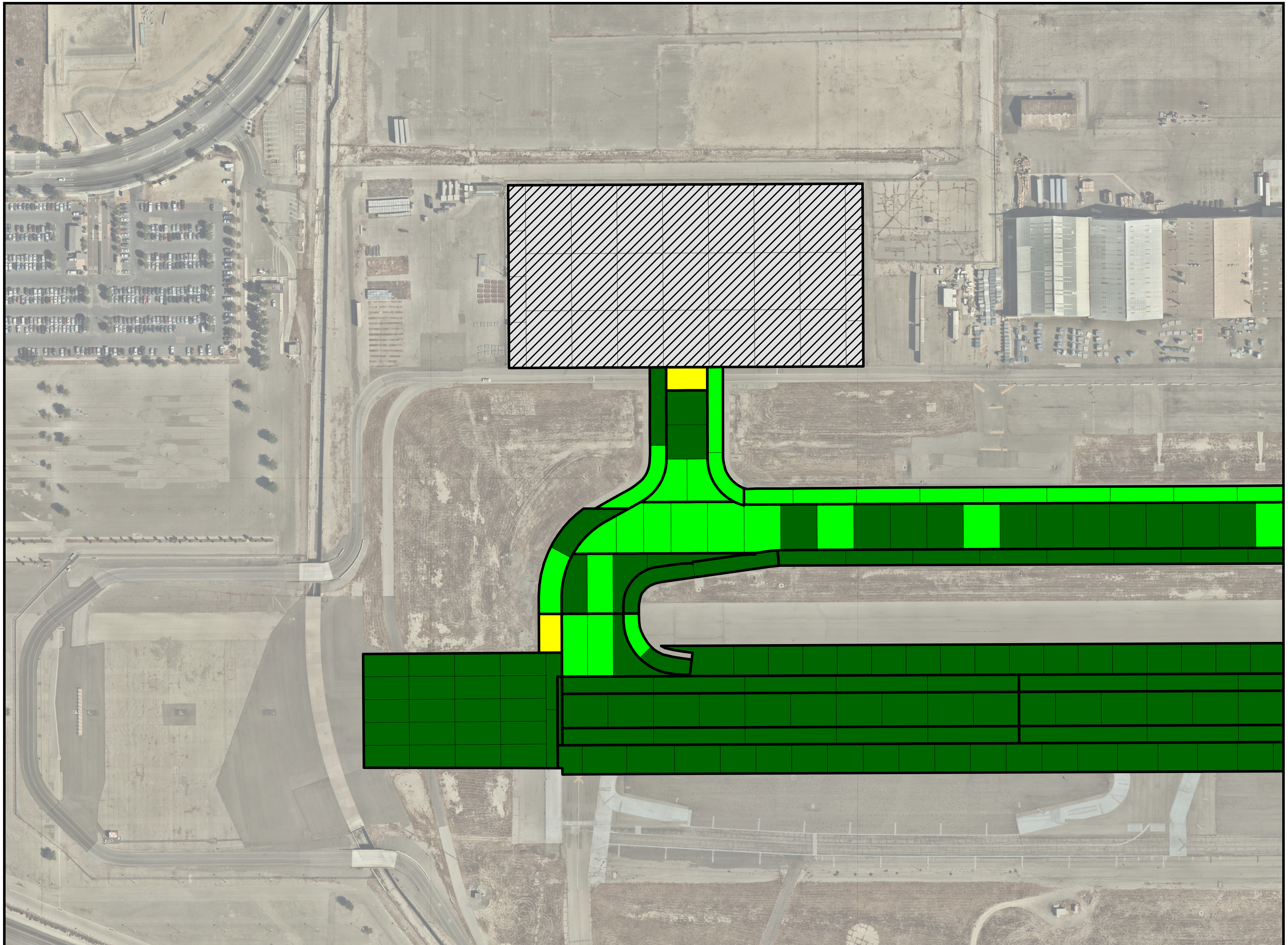
APPENDIX D

PAVEMENT CONDITION INDEX BY SAMPLE UNIT



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Note:
Only Pavement Sample units in sections with a 100% sampling rate are shown.

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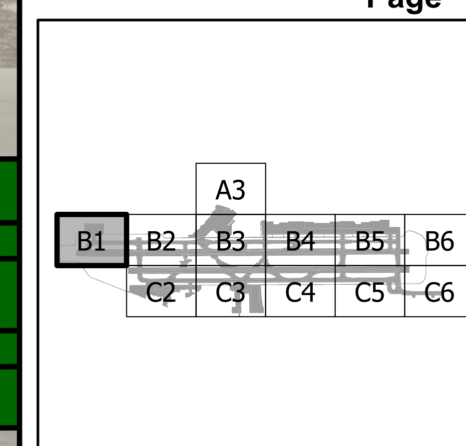

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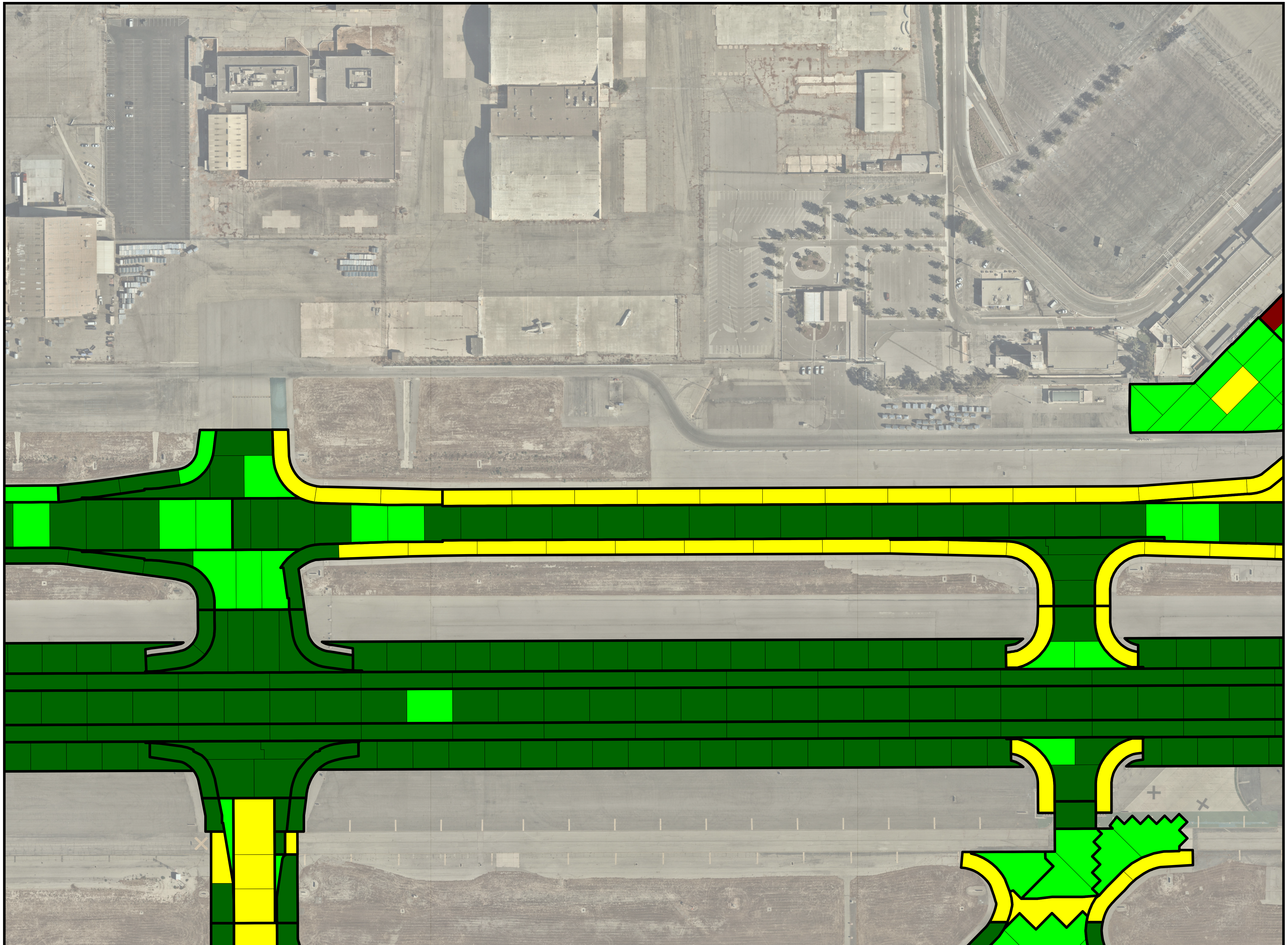

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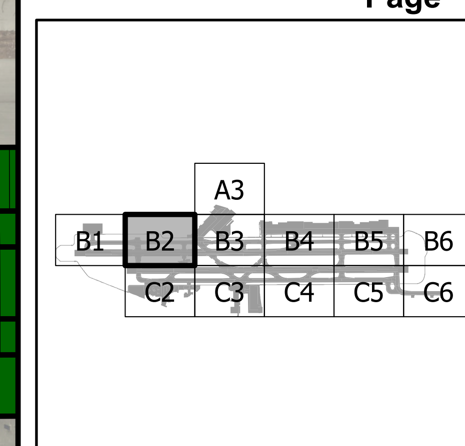

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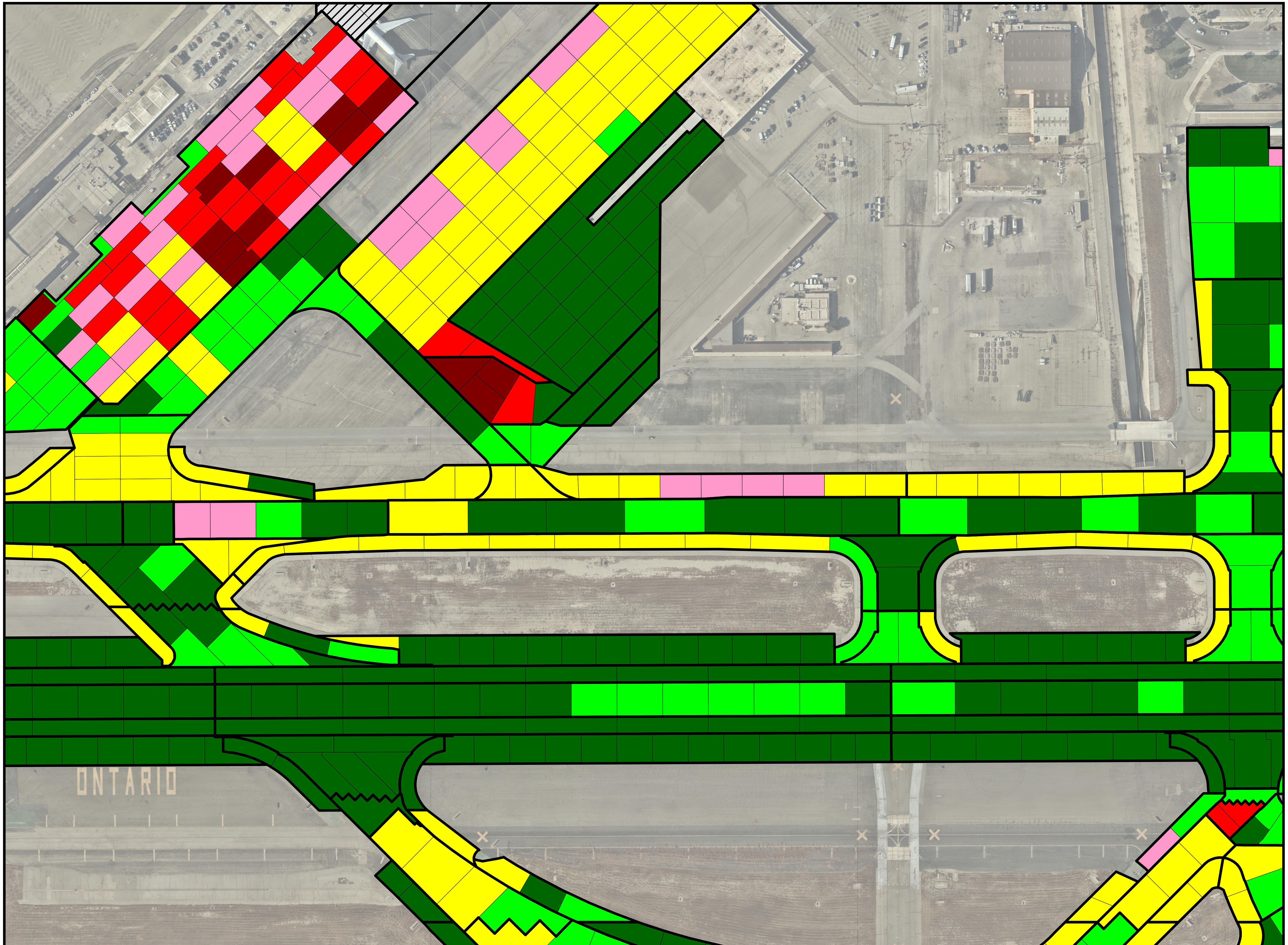

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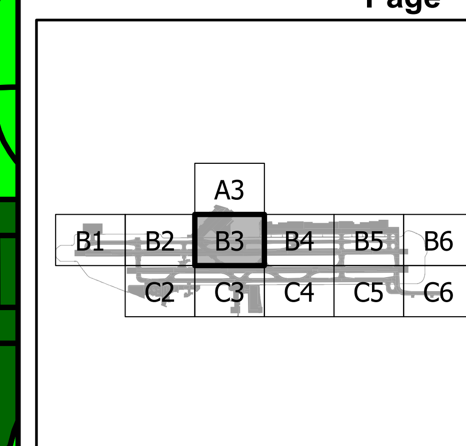

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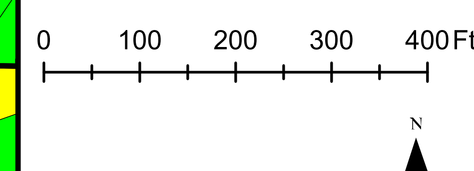

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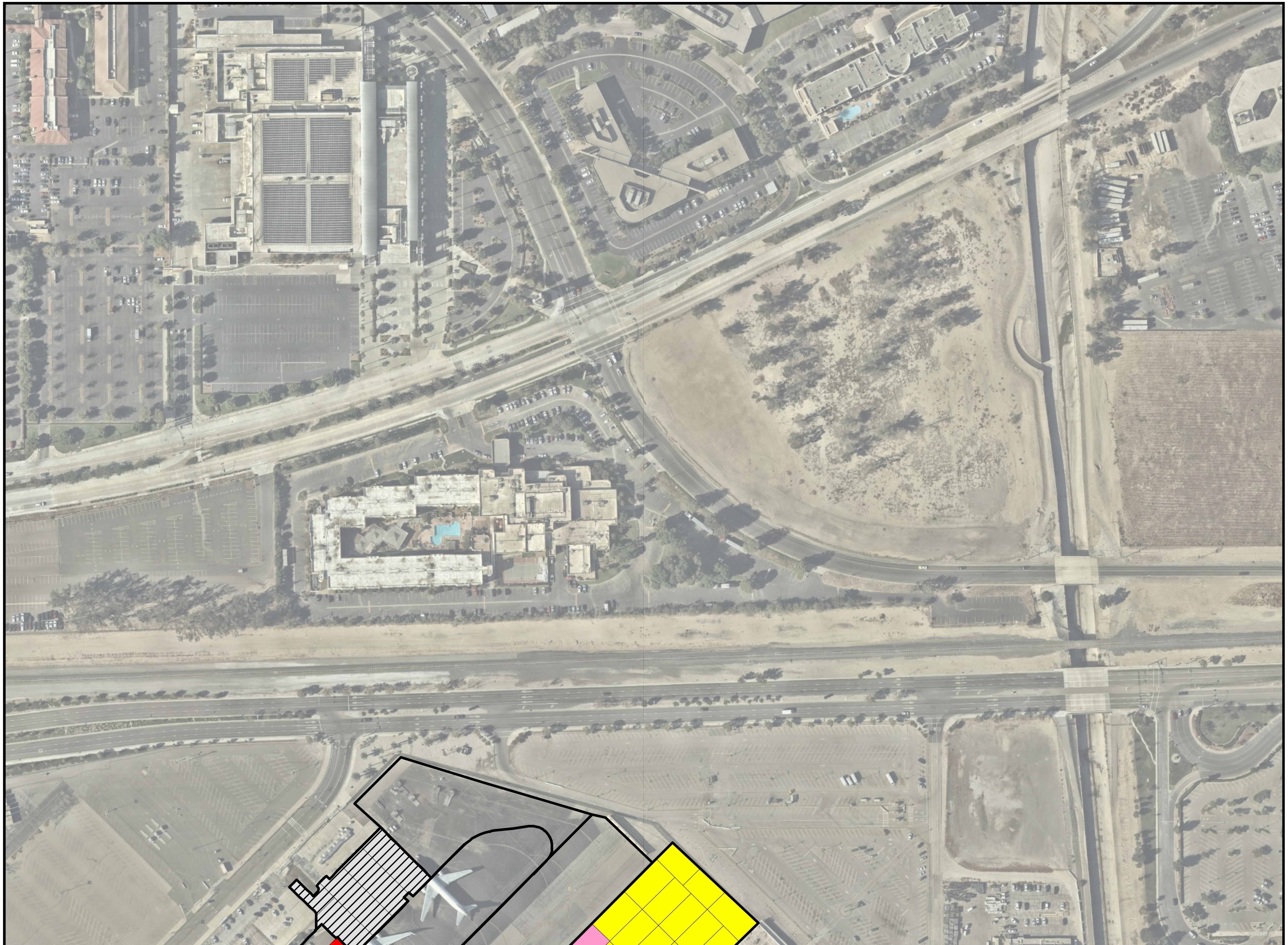

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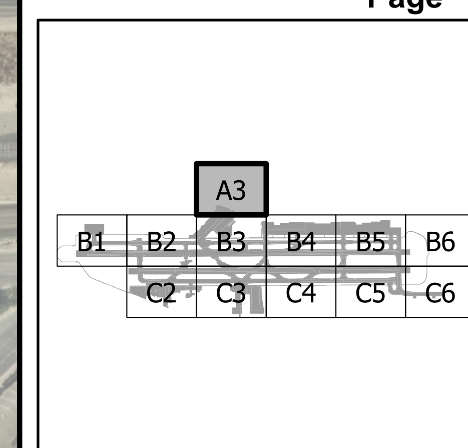

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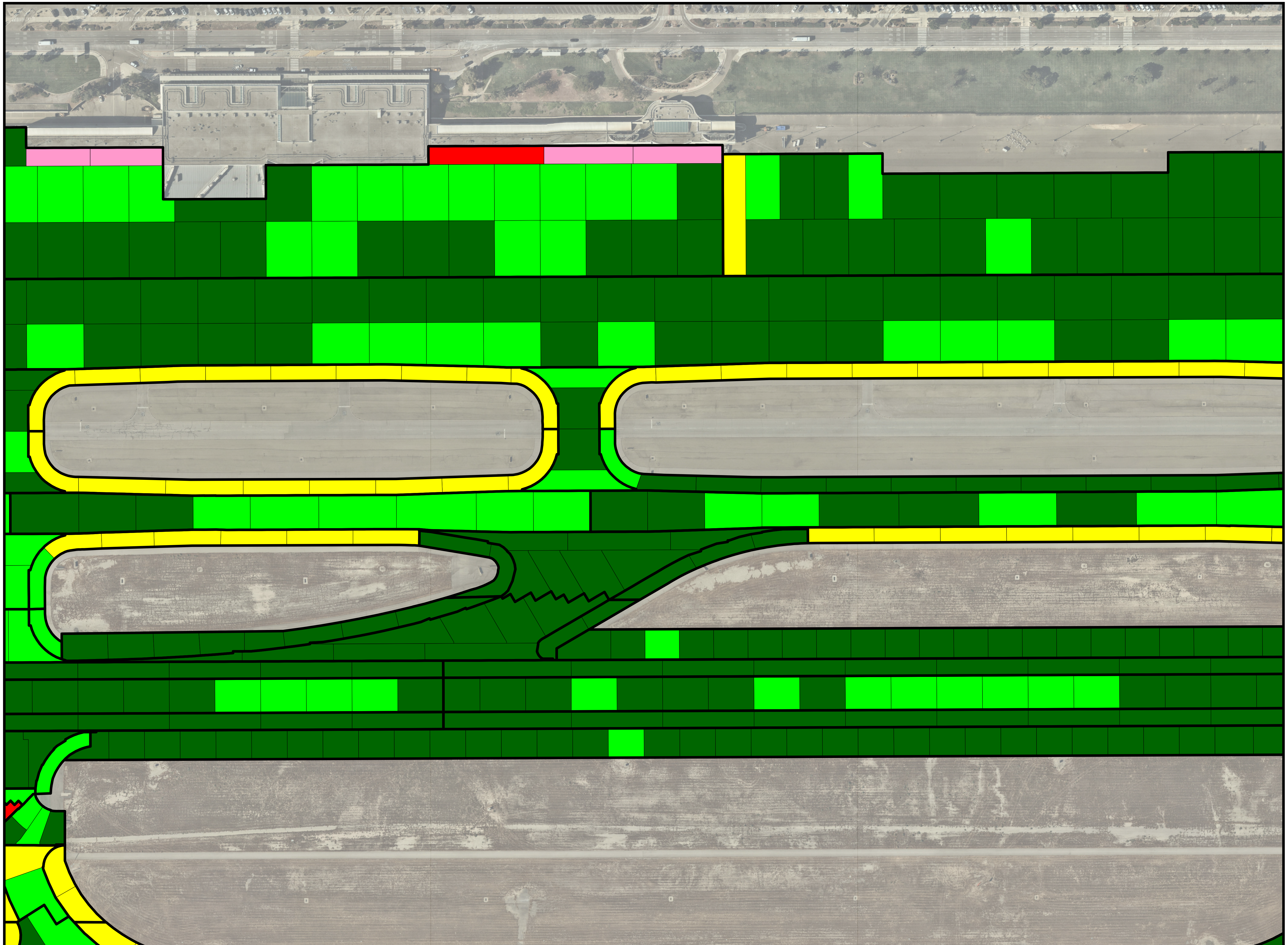

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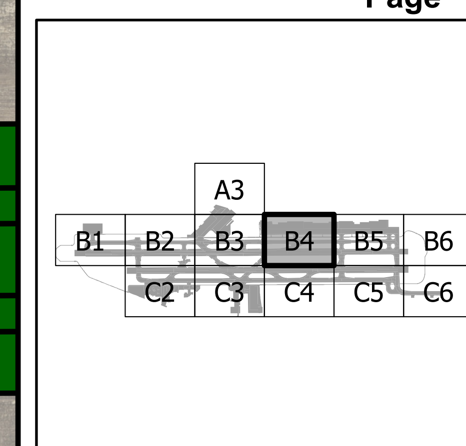

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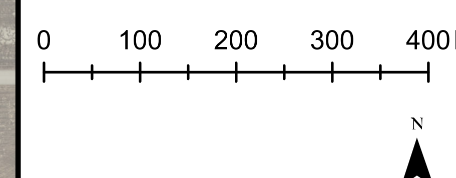

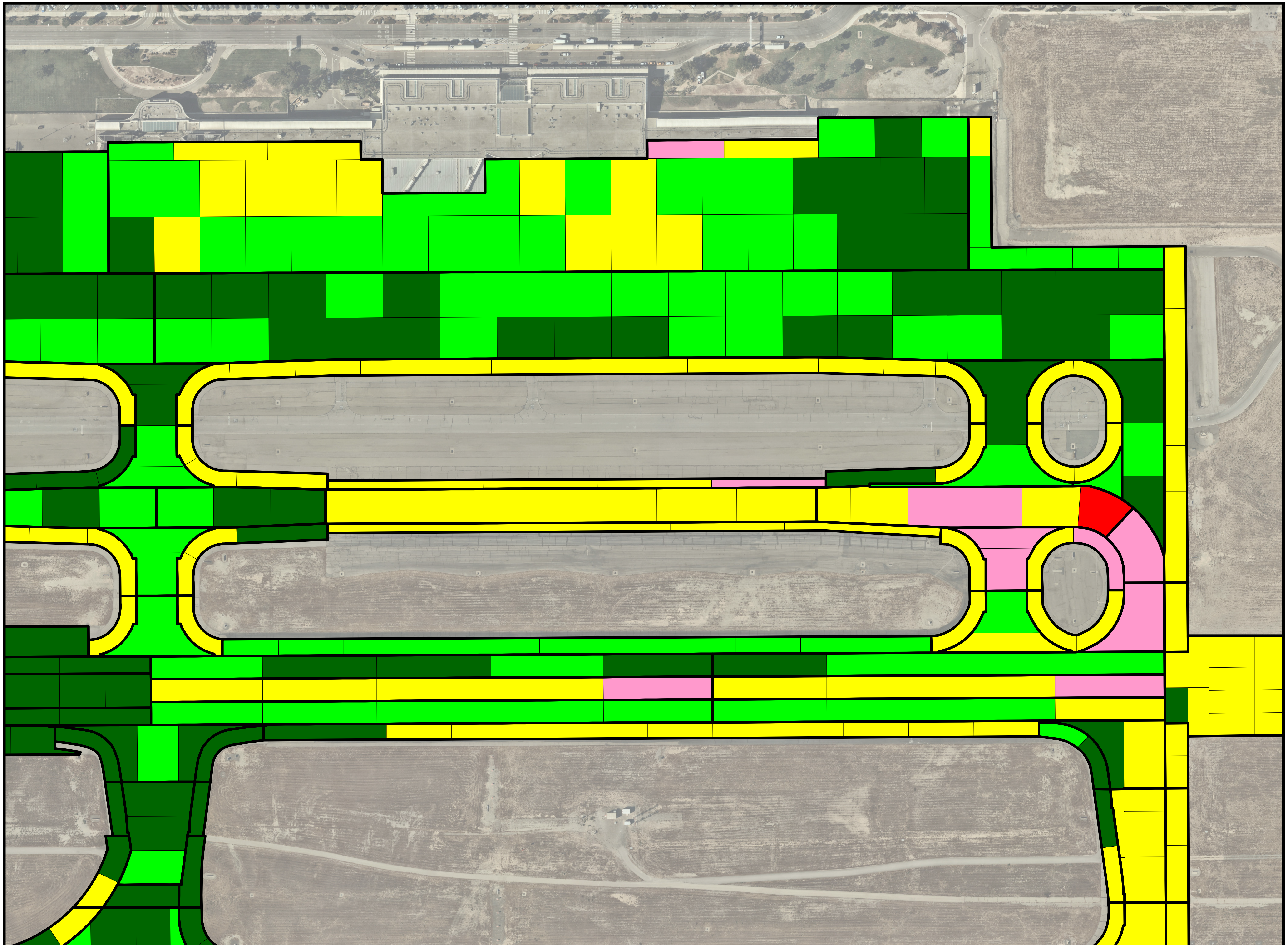

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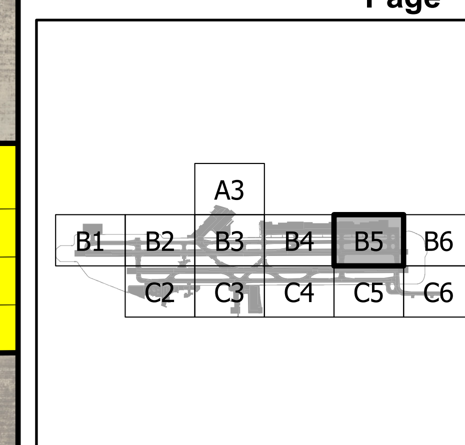

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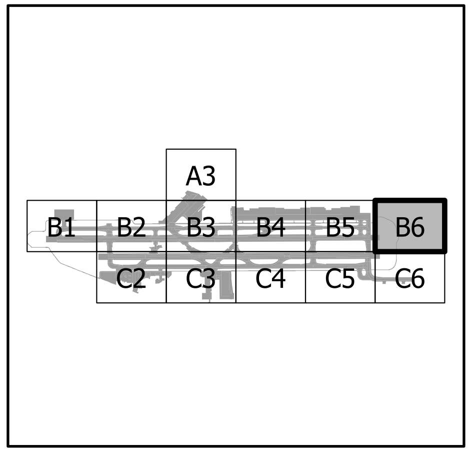

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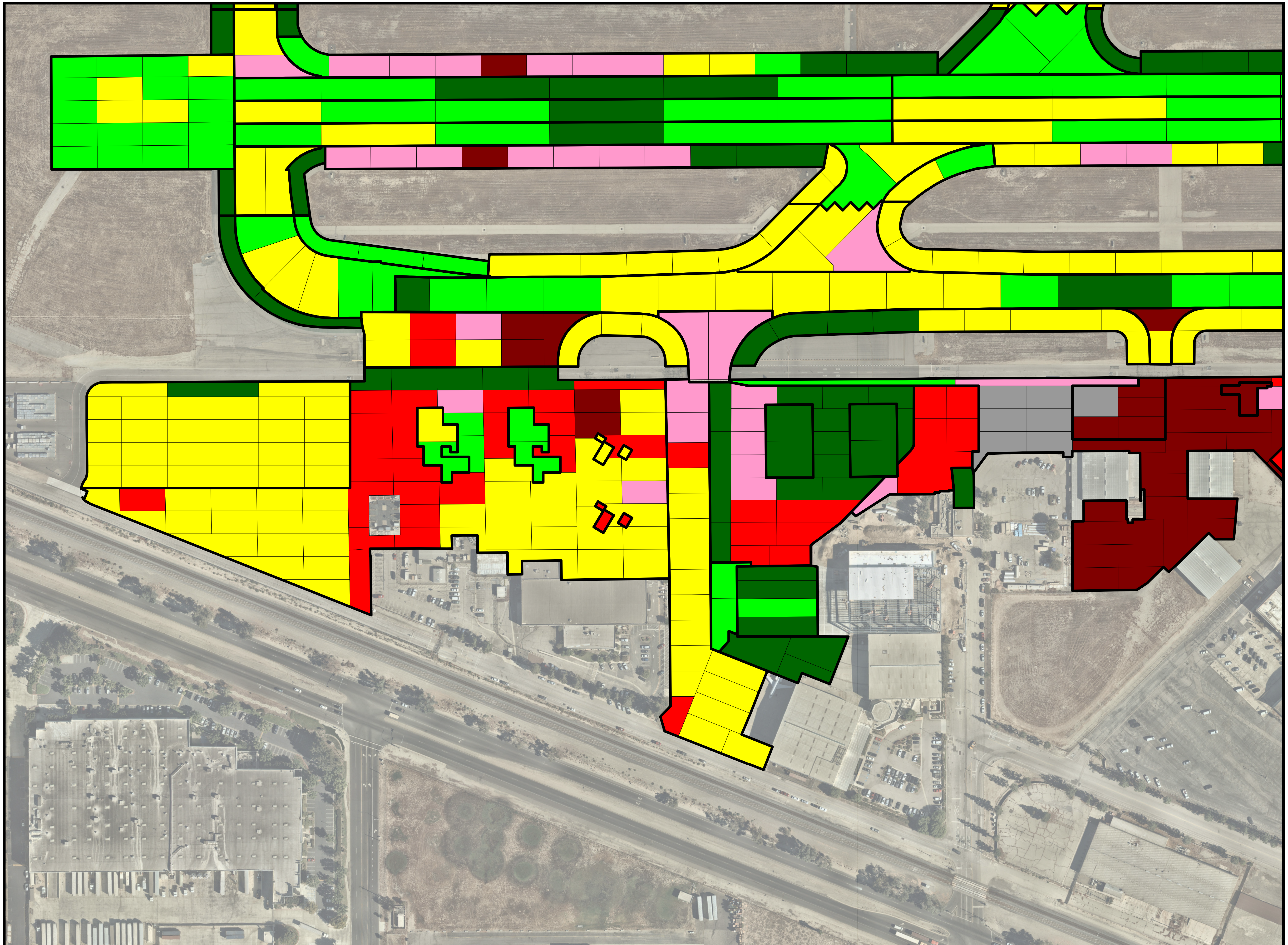

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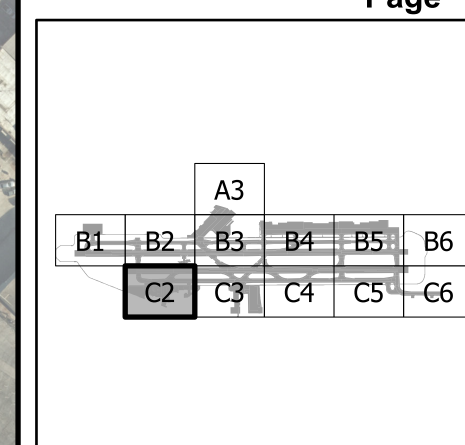

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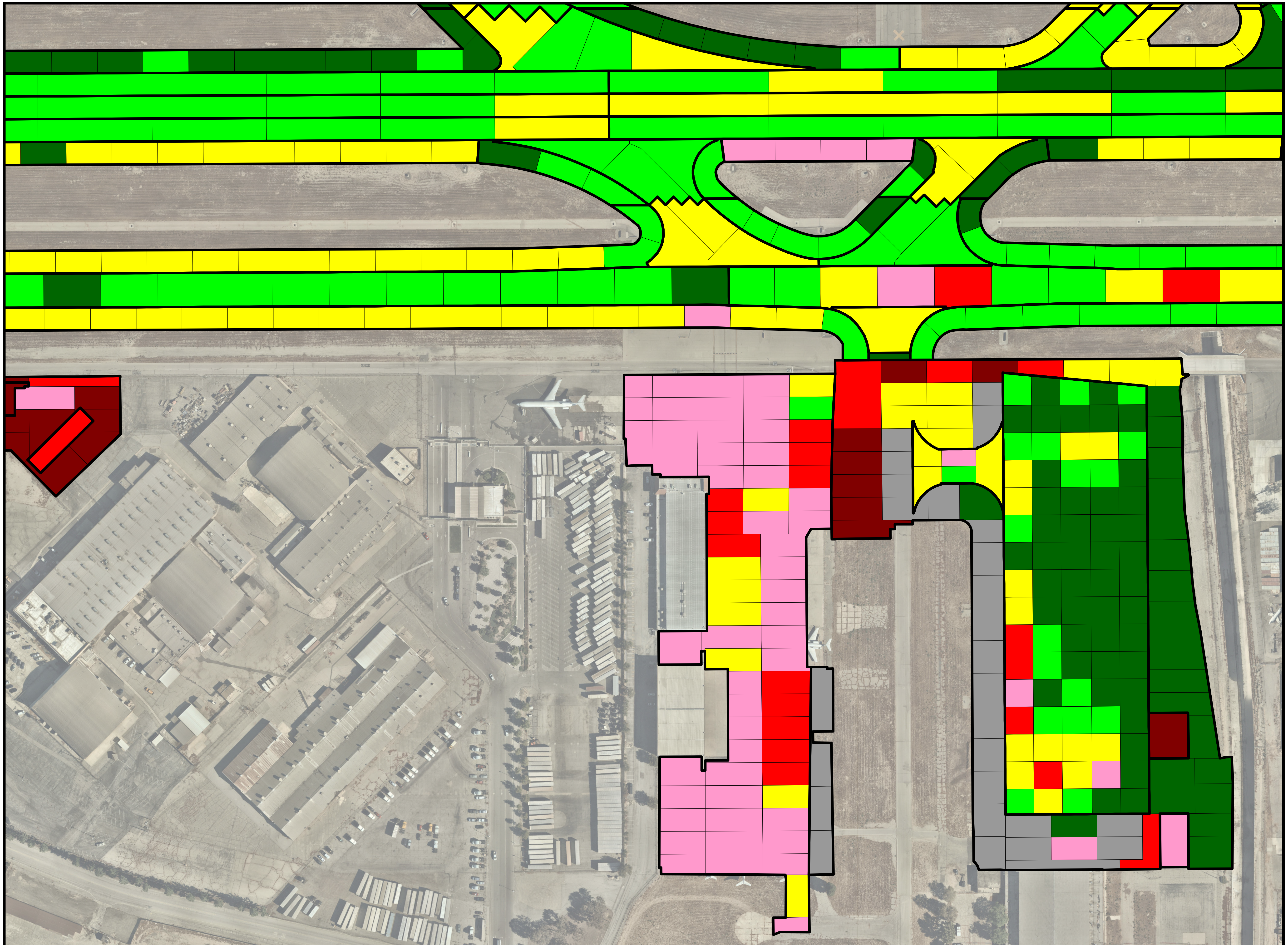

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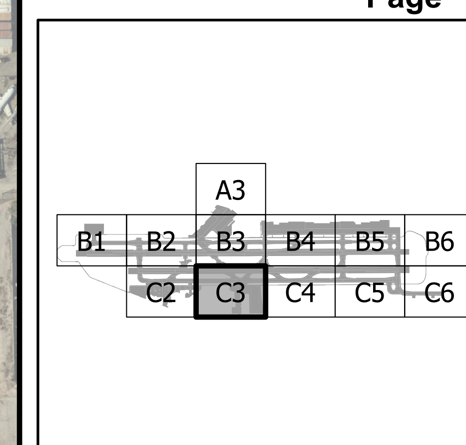

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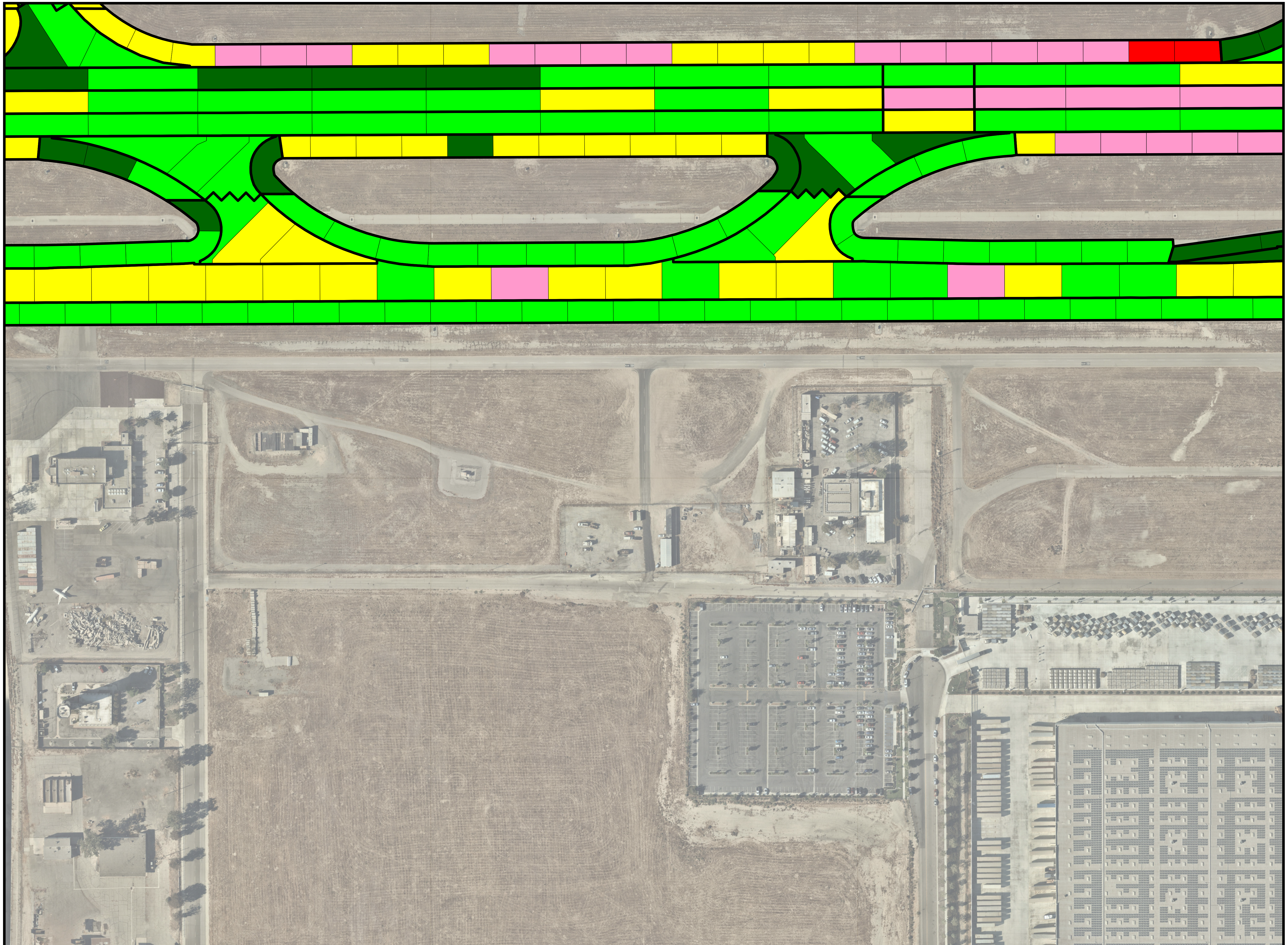

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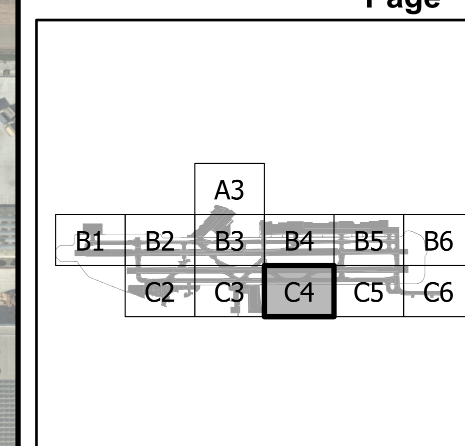

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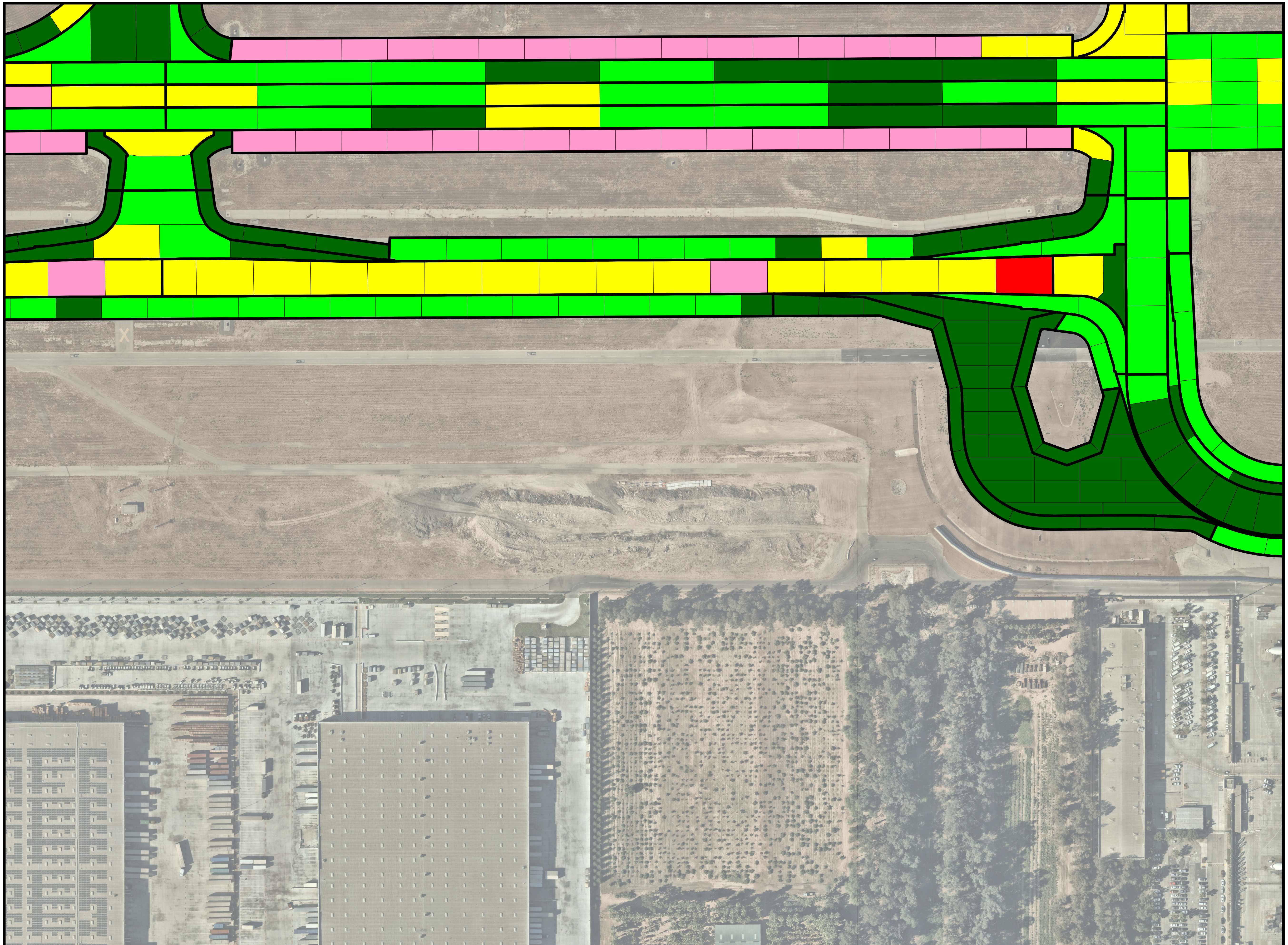

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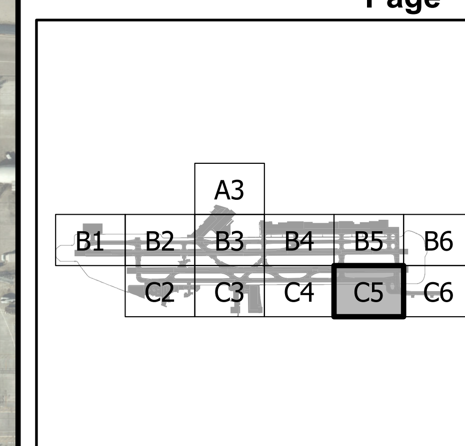

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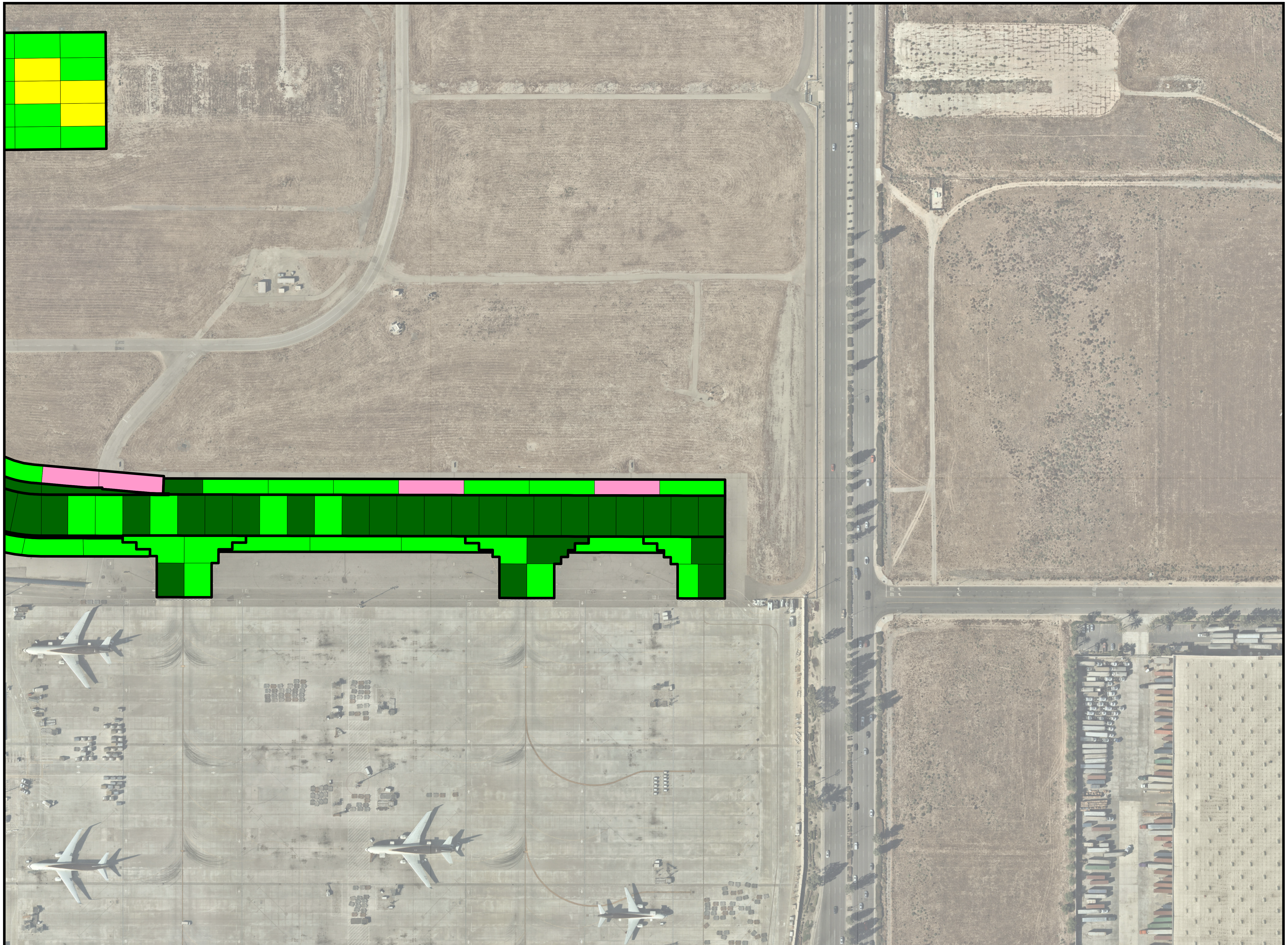

Ontario International Airport

Airfield Pavement Evaluation
Appendix D

Pavement Condition Index
By Sample Unit

Legend

Pavement Sample Unit

Pavment Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

Note:
Only Pavement Sample units in sections with a 100% sampling rate are shown.

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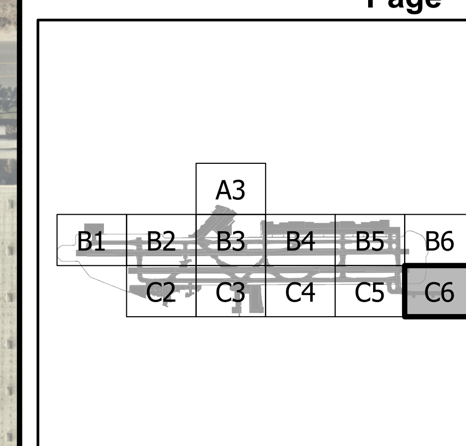

March 2020

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APPENDIX E

NON-DESTRUCTIVE TESTING RESULTS

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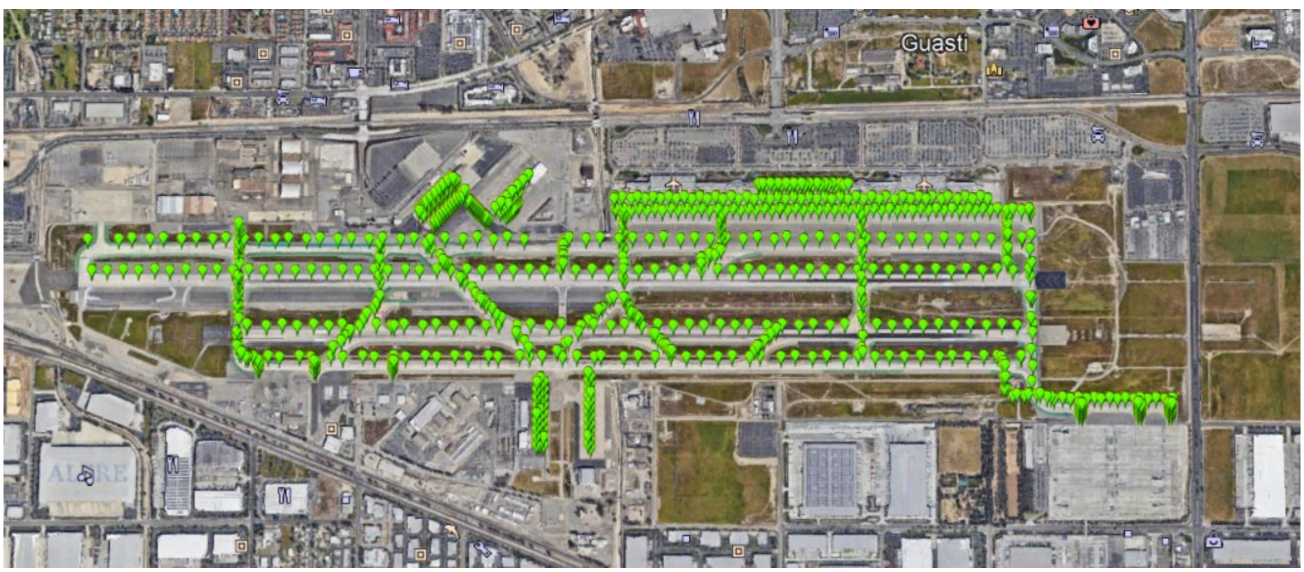
Pavement Engineering Specialists
and Equipment

Reynolds, Smith, & Hills (RS&H)

February 2020

Load/Deflection Analysis of Dynatest Heavy Weight Deflectometer Test Results and ACN/PCN Evaluation for:

Ontario International Airport (ONT)



in

Ontario, California

Table of Contents

1. Executive Summary

The following information, relative to the tested features at Ontario International Airport (ONT), is summarized from SECTIONS 2 through 7 of this report and is for the benefit of those simply interested in a general overview of the analysis without the input data, discussion, and other details associated with and leading to these recommendations. It is imperative that reviewers familiarize themselves with the detailed information included in the following report prior to making any specific decisions based on these recommendations.

The objectives of this project are to determine, using a network level approach, the structural capacity, slab load transfer efficiency (LTE), and Pavement Classification Number (PCN) for all features at ONT Airport for a design period of twenty years subject to the proposed aircraft traffic mix. The structural analysis is based on mechanistic design principles, Heavy Weight Deflectometer (HWD) and Ground Penetration Radar (GPR) measurements collected by Dynatest North America, Inc. (Dynatest), and the design traffic and pavement thickness information provided by RS&H. The pavement structural evaluation was conducted using Dynatest computer program, ELMOD 6.0, and pavement classification number was calculated using Federal Aviation Administration (FAA) computer software, COMFAA.

RS&H reviewed and approved the proposed design aircraft mix for ONT. Each airport feature was assigned a percentage of the total airport operations according to the color-coded traffic distribution map provided by RS&H presented in Appendix G of this report. Table 1 shows the airport features evaluated in this project. A total of 31 airport facilities and 68 pavement sections were tested and evaluated.

Table 2 shows the PCN codes calculated using COMFAA for the existing pavement structures. The PCN values are associated with the traffic used in the evaluation, and any change in traffic during the evaluation period will change the PCN (e.g. an increase in traffic will decrease the PCN and a decrease in traffic will increase the PCN). In addition, Table 2 shows the ACN/PCN ratio for each feature. The results show that the ACN/PCN for the evaluated aircraft is greater than 1.1 for all aprons, the Taxilane N1 and G, the Taxiways D, F, G, K, L, N, Q, S, S1, S2, S3, S5, T, U, and V, and both Runways. Typically, an ACN/PCN ratio greater than 1.1 is considered to be problematic for the proposed aircraft mix.

Table 1 – Airport Features Evaluated

Tested Airport Features		
Atlantic Aviation Apron	Taxiway L	Taxiway U
International Terminal Apron	Taxiway N	Taxiway V
Runway 8L-26R	Taxiway P	Taxiway W
Runway 8R-26L	Taxiway Q	Taxiway Y
Taxilane H	Taxiway R	Taxiway Y1
Taxilane N1	Taxiway S	Taxiway Y2
Taxiway CSA	Taxiway S1	Taxiway Y3
Taxiway D	Taxiway S2	Terminal 1 Apron
Taxiway F	Taxiway S3	Terminal 2-4
Taxiway G	Taxiway S5	-
Taxiway K	Taxiway T	-

Table 2 – ONT PCN Codes

Feature	From Station	To Station	PCN Code	ACN Code	ACN/PCN
Runway 8L-26R (Sec1)	0+00	21+75	43/R/B/W/T	57/R/B	1.3
Runway 8L-26R (Sec2)	21+75	End	53/R/B/W/T	57/R/B	1.1
Runway 8R-26L	0+00	End	43/R/A/W/T	54/R/A	1.3
Taxilane N1	0+00	End	43/R/A/W/T	54/R/A	1.3
Taxiway D	0+00	End	49/R/B/W/T	57/R/B	1.2
Taxiway F	0+00	End	42/R/B/W/T	57/R/B	1.4
Taxiway G	0+00	End	9/F/B/X/T	62/F/B	6.9
Taxiway K	0+00	End	43/R/B/W/T	57/R/B	1.3
Taxiway L	0+00	End	43/R/A/W/T	54/R/A	1.3
Taxiway N	0+00	End	46/R/A/W/T	54/R/A	1.2
Taxiway P	0+00	End	48/R/A/W/T	54/R/A	1.1
Taxiway Q	0+00	End	44/R/B/W/T	57/R/B	1.3
Taxiway R	0+00	End	62/R/B/W/T	57/R/B	0.9
Taxiway S	0+00	End	44/R/B/W/T	57/R/B	1.3
Taxiway S1	0+00	End	5/F/B/X/T	53/F/B	10.6
Taxiway S2	0+00	End	40/R/B/W/T	57/R/B	1.4
Taxiway S3	0+00	End	<Min[1)]	62/F/B	---
Taxiway S5	0+00	End	37/F/B/X/T	77/F/B	2.1
Taxiway T	0+00	End	46/R/B/W/T	57/R/B	1.2
Taxiway U	0+00	End	49/R/B/W/T	57/R/B	1.2
Taxiway V	0+00	End	43/R/A/W/T	54/R/A	1.3
Taxiway W	0+00	End	53/R/B/W/T	57/R/B	1.1
Taxiway Y	0+00	End	60/R/B/W/T	57/R/B	1.0
Taxiway Y1	0+00	End	56/R/B/W/T	57/R/B	1.0
Taxiway Y2	0+00	End	55/R/B/W/T	57/R/B	1.0

Feature	From Station	To Station	PCN Code	ACN Code	ACN/PCN
Taxiway Y3	0+00	End	56/R/B/W/T	57/R/B	1.0
Taxilane H	0+00	End	<Min[1)]	59/F/D	---
Terminal 1 Apron	0+00	End	21/R/C/W/T	68/R/C	3.24
Terminal 2-4	0+00	End	38/R/B/W/T	57/R/B	1.5
International Terminal Apron	0+00	End	<Min[1)]	59/F/D	---

1) Taxilane H, Taxiway S3, and International Terminal Apron do not meet the minimum thickness required by FAA.

The mechanistic analysis using ELMOD indicates that the 20-year design life corresponding to the proposed aircraft mix will not be met for 27 out of 31 evaluated airport features. Therefore, rehabilitation is strongly recommended for those features to ensure that the design life will be met. It is recommended that a project-level evaluation be conducted to determine the most cost-effective pavement rehabilitation/reconstruction alternatives for each feature. Table 3 shows the determined structural adequacy and required structural Hot Mix Asphalt (HMA) overlay or preventive maintenance, for the evaluated features. An airport feature having a remaining life of less than 20 years was considered to be structurally inadequate to withstand the proposed traffic loading.

It is important to state that FAA AC 150/5320-6F Sections 3.1.3.3.2 and 3.1.4.3.1 requires that a stabilized subbase, such as Cement Treated Base (CTB), is present under both new flexible and rigid pavements serving airplanes weighing 100,000 lb. or more.

Table 3 –Structural Overlay for the Proposed Aircraft Mix with Remove and Repair

Feature	Test Line	Station (ft.) [1)]	Structurally Adequate Yes/No	Structural Overlay	Remove and Repair Location[5)]
Atlantic Aviation Apron [4)]	3 Parallel Test Lines	0+00 to End	-	-	-
International Terminal Apron	3 Parallel Test Lines	0+00 to End	No	Reconstruction[3)]	-
Runway 8L-26R	2 Parallel Test Lines	0+00 to 35+00	No	Reconstruction[3)]	-
		35+00 to End	Yes	Preventive Maintenance	-
Runway 8R-26L	2 Parallel Test Lines	0+00 to End	Yes	Preventive Maintenance	Sta 45+00 Sta 65+00
Taxilane H	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3)]	-
Taxilane N1	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3)]	-
Taxiway CSA[4)]	-	-	-	-	-
Taxiway D	2 Parallel Test Lines	0+00 to 9+00	No	Reconstruction[3)]	-
		9+00 to End	Yes	6.0" HMA Overlay[2)]	-

Feature	Test Line	Station (ft.) [1]	Structurally Adequate Yes/No	Structural Overlay	Remove and Repair Location[5]
Taxiway F	2 Parallel Test Lines	0+00 to End	Yes	Preventive Maintenance	Sta 9+50 Sta 11+50
Taxiway G	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway K	2 Parallel Test Lines	0+00 to 5+50	Yes	Preventive Maintenance	-
		5+50 to End	No	Reconstruction[3]	-
Taxiway L	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway N	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway P	2 Parallel Test Lines	0+00 to 6+00	No	2.0" HMA Overlay[2]	-
		6+00 to End	No	Reconstruction[3]	-
Taxiway Q	2 Parallel Test Lines	0+00 to 6+00 8+00 to End	Yes	Preventive Maintenance	-
		6+00 to 8+00	No	Reconstruction[3]	-
Taxiway R	2 Parallel Test Lines	0+00 to 5+00	Yes	Preventive Maintenance	-
		5+00 to End	No	Reconstruction[3]	-
Taxiway S	2 Parallel Test Lines	0+00 to End	Yes	Preventive Maintenance	-
Taxiway S1	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway S2	2 Parallel Test Lines	0+00 to End	Yes	Preventive Maintenance	-
Taxiway S3	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway S5	2 Parallel Test Lines	0+00 to End	No	5.5" HMA Overlay[2]	-
Taxiway T	2 Parallel Test Lines	0+00 to End	Yes	Preventive Maintenance	-
Taxiway U	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	
Taxiway V	10L	0+00 to End	No	Reconstruction[3]	
Taxiway V	10R	1+00 to End	Yes	Preventive Maintenance	-
		0+00 to 1+00	No	Reconstruction[3]	-
Taxiway W	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway Y	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway Y1	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway Y2	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway Y3	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Terminal 1 Apron	4 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Terminal 2-4	4 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-

1) Refer to Appendix B for a schematic showing Station 0+00
2) Indicates thick HMA structural overlay required. A Project level evaluation is recommended to evaluate different major rehabilitation and/or reconstruction alternatives.
3) When the calculated overlay is greater than 10 inches, reconstruction is indicated.
4) No traffic is provided.
5) Remove and Repair or dig out stations are determined based on discrete HWD testing. Actual extend and locations must be determined visually prior to conduct any preventive maintenance activities.

Transverse joints were tested for transverse Load Transfer Efficiency (LTE). Overall, the tested slabs on ONT had good to fair load transfer efficiency. The airport features showing low transverse LTE (<70) values are: Taxiways CSA, and W, and Taxilane N1. Poor LTE leads to corner breaks and a significant reduction in pavement structural capacity. Due to the discrete nature of network level deflection testing, the actual location and extent of dowel bar retrofit or undersealing requirements need to be determined visually.

2. Introduction

From May 28th to June 8th, 2020 nondestructive load-deflection tests (NDT) were performed on Runways 8L/26R and 8R/26L along with several taxiways, taxilanes, taxiway connectors, and aprons at ONT Airport in Ontario, CA. The testing setup was based on the FAA Advisory Circular 150/5370-11B: "Use of Nondestructive Testing in the Evaluation of Airport Pavements" at the network level. Project-level investigations refer to studies that are conducted in support of pavement rehabilitation, reconstruction, and new construction designs. Network-level studies generally support the implementation and updates of pavement management systems. The frequency of the NDT is greater in a project-level study that typically include a limited number of pavement facilities. This is in contrast to a network-level study, which may include all airside pavements, all landside pavements, or both.

The purpose of these tests, and the associated analysis, is to determine the backcalculated layer moduli for each of the pavement layers of the evaluated airport features and to determine the LTE, PCN and pavement structural adequacy for a 20-year design period.

3. The Dynatest FWD/HWD Test System

The Dynatest Model 8082 Heavy Weight Deflectometer (HWD) Test System was used to generate the non-destructive testing (NDT) load-deflection data analyzed in this report. The Dynatest HWD generates a transient, impulse-type load of 20-30 msec duration, at any desired (peak) load level between 6,000 and 72,000-lbs, thereby approximating the effect of a 30-50 mph moving wheel load. For this project, target load levels of 30,000, 45,000, and 60,000-lb were applied. A brief description of the Dynatest FWD/HWD Test System is shown in **Appendix A**.

4. The ELMOD Computer Program

The HWD-generated load-deflection data were analyzed using an "analytical-empirical" methodology through a specially developed software package designed to do the task in the best and most efficient manner available. The system is "analytical" in the sense that actual, in-situ material properties and wheel load responses are derived through a reverse, layered analysis technique, as described below. It is still "empirical", however, because the relationship between the load-related response of these mechanistic or analytical properties and future pavement performance are based upon past experience (observed performance) and associated research. The software package employed was the Dynatest ELMOD computer program.

ELMOD is an acronym for Evaluation of Layer Moduli and Overlay Design, and the program is used to backcalculate the mechanistic material properties of an axi-symmetric, semi-infinite pavement system (i.e. the elastic moduli or "E"-values of each structural layer in the pavement).

When the fundamental structural pavement properties (i.e., E-values) have been determined, the critical stresses and strains in the structure are calculated. Based on the derived E-values and critical stresses and strains for each individual HWD test point, the design life and needed overlay to bring the pavement up to its design life standard are calculated. The program is able to assign various user controlled seasonal adjustments to the derived E-values (e.g., a lower rainy season subgrade modulus and a varying AC modulus as a function of seasonal temperature), and then calculate the expected remaining service life of the pavement section. If the remaining service life is less than required, an overlay design is calculated based on cumulative damage "transfer functions" which are also user controlled. These transfer functions are primarily based on laboratory measured performance tests that have been correlated to field observed performance obtained from various pavements.

As indicated, the prediction of pavement performance (roughness or cracking) from the calculated pavement response (critical stresses and strains) is empirical. The empirical relationships between the derived mechanistic material properties and performance are, however, user controlled, i.e., they are variable inputs to ELMOD. The program, therefore, may be used for any specific local environmental conditions if these relationships are known.

It should be noted that, in general, most of the measured magnitudes of deflection are due to the response of the subgrade. It is therefore very important that the subgrade modulus is accurately determined. A small error in the subgrade modulus will lead to large errors in the overlying layers, including the asphalt or Portland cement concrete modulus. For this reason, it is necessary to consider any non-linearity of the subgrade, which can be done quite easily with the analytical-empirical method using the highly accurate deflection data obtained from the Dynatest HWD Test System.

Due to the large influence of the subgrade on the measured deflections, it is important that the deflections are measured at a load level similar to that resulting from heavy aircraft wheels, and that the deflections, especially those measured at large distances from the loading center (≥ ~3 ft), are measured very accurately. With the Dynatest HWD Test System, deflections are measured to a guaranteed absolute dynamic (under the FWD loading conditions) accuracy of 2% ± 2 microns (0.08 mils) and a typical absolute accuracy of 1% ± 1 micron (0.04 mils).

Many other features of the ELMOD program are also significant and important in relation to the process of using HWD generated data to obtain bearing capacity assessments and rehabilitation designs. Some of the specific applications used for the pavement analyzed in this report are also addressed in the following section, "Analysis Approach".

5. Analysis Approach

5.1. HWD Test Lines

The stationing for this project was carried out in units of feet. Station 0+00 for all the features is shown in **Appendix B**. Testing was performed at 10-ft left and right of the Runway 8R/26L and Runway 8L/26R, Taxiways and Taxiway connectors centerlines. In the case of aprons/terminals, several parallel lines were tested. The test line offset was selected to ensure appropriate coverage of the area.

The HWD test interval was set at approximately 100, 200 and 400-ft intervals for Runways 8R/26L, and 8L/26R, and between 25- to 200-ft for Taxiways, and Taxiway connectors depending on the length of the feature. In the case of aprons/ramps the HWD interval was determined in accordance with FAA Circular "AC 150/5370-11B Table 6" for both rigid and flexible pavements. In addition, HWD test points were staggered between test lines to provide increased coverage over the features.

5.2. Pavement Layer Thicknesses

RS&H provided subsurface exploration data containing the airport features pavement thickness, and type information. The summary of data is presented in Appendix H. It is important to state that pavement thicknesses and types for some of the evaluated airport features were not available at this time. Therefore, RS&H approved the decision to use either the pavement thickness or types of the surrounding areas or to use the most frequently encountered pavement layer thicknesses and types observed at ONT.

In addition, Dynatest collected GPR data using an air and ground coupled antennas. The data obtained from the air and ground coupled antennas provides detailed thickness information for the top bound layers and the bottom unbound layers. The pavement layer thicknesses and types obtained from coring data were used to calibrate the GPR measurements.

GPR is used to determine the pavement thicknesses and types by means of emitting a series of radar waves to the pavement structure while the vehicle is either traveling or collecting HWD data. The resulting correlated dielectric constants are then filtered to determine pavement thicknesses and types. The results must be calibrated through pavement cores at selected locations.

The Dynatest HWD is fully integrated with the GPR system so that each HWD station corresponds to the same reading from the GPR. Furthermore, pavement thicknesses are reported for every HWD tested station which increases the accuracy and quality of the pavement evaluation. In addition, by using the GPR technology, there is a significant reduction in the required number of pavement cores, which translates into savings for the Airport. Dynatest used the thicknesses obtained from subsurface exploration data to calibrate the layer thicknesses obtained from the GPR.

A total of 10 pavement cores and 6 geotechnical borings in addition to the preliminary as-built data were collected and used to perform the GPR data analysis. Figure 1 shows a GPR post-processed plot for a section of Runway 8L/26R 10R showing the interface between the Portland Cement Concrete (PCC) layer, the Cement Treated Base (CTB) layer, and the subgrade layer; and the corresponding core data used for calibration/verification. It is important to note that while pavement cores are at discrete locations, the GPR measurements were done continuously along the same HWD test lines so that each tested location would have a corresponding unique pavement structure. Table 4 shows the pavement layer information used in the analyses.

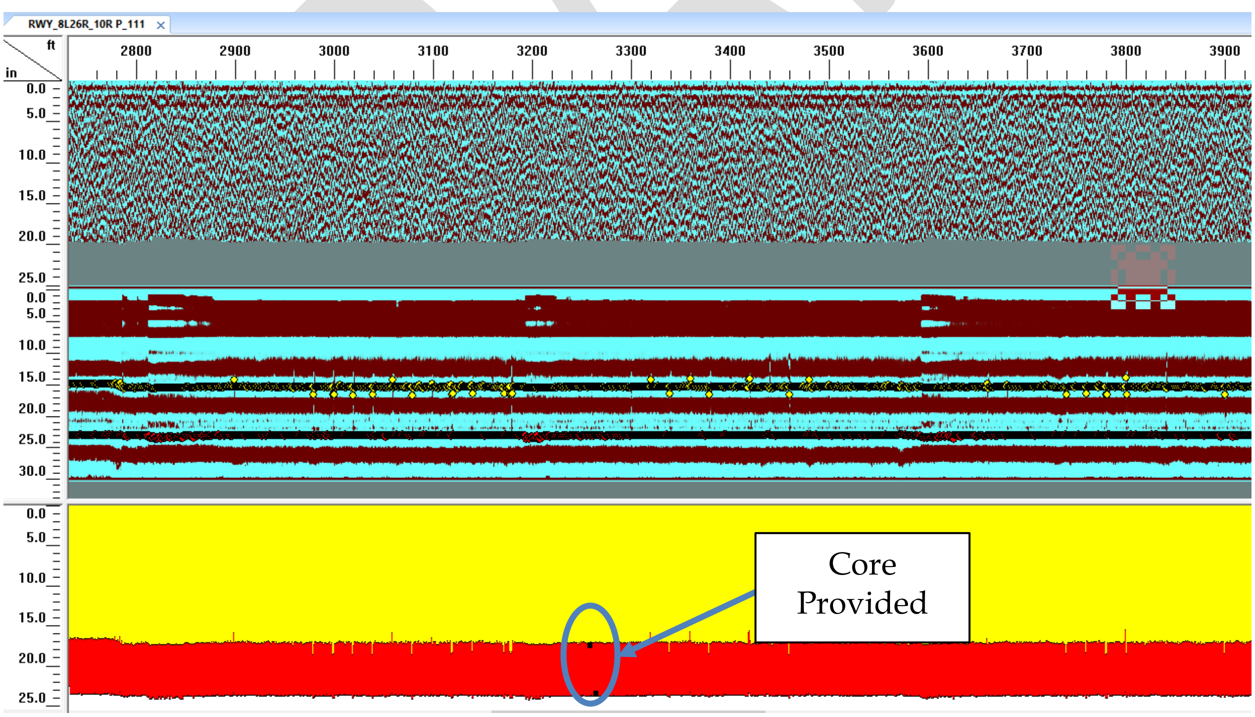


Figure 1. PCC and CTB Layer Thickness for Runway 8L/26R 10R Obtained from GPR

Table 4 – Layer Thicknesses used in the Analyses

Feature	From Station[1)]	To Station	AC (in)	PCC (in)	Base/Type (in)
Atlantic Aviation Apron	0+00	End	3.0	---	6.0/CTB
International Terminal Apron	0+00	End	5.0	---	3.0/AB
Runway 8L-26R	0+00	End	---	16.0	5.5/CTB
Runway 8R-26L	0+00	End	---	15.0	12.0/CTB
Taxilane H	0+00	End	4.0	---	4.0/AB
Taxilane N1	0+00	End	---	15.0	13.0/CTB
Taxiway CSA	0+00	End	---	7.5	---
Taxiway D	0+00	7+50	---	16.0	6.0/CTB
	7+50	End	---	16.0	13.0/CTB
Taxiway F	0+00	9+00	---	15.0	9.0/AB
	9+00	End	---	16.0	14.0/CTB
Taxiway G	0+00	End	5.5	--	6.0/CTB
Taxiway K	0+00	4+50	---	15.0	9.0/AB
	4+50	9+00	---	15.0	6.0/CTB
	9+00	End	---	15.0	9.0/CTB
Taxiway L	0+00	End	---	15.0	13.0/CTB
Taxiway N	0+00	End	---	16.0	14.0/CTB
Taxiway P	0+00	4+00	---	15.0	9.0/AB
	4+00	11+00	---	15.0	6.0/CTB
	11+00	End	---	15.0	12.0/CTB
Taxiway Q	0+00	5+00	---	15.0	9.0/AB
	5+00	End	---	17.0	6.0/AB
Taxiway R	0+00	End	---	17.0	6.0/CTB
Taxiway S	0+00	End	---	15.0	9.0/AB
Taxiway S1	0+00	End	4.0	---	4/AB
Taxiway S2	0+00	End	---	15.0	9.0/AB
Taxiway S3	0+00	End	3.0	---	3.0/AB
Taxiway S5	0+00	End	5.0	---	6.0/AB 8.0/SB
Taxiway T	0+00	End	---	15.0	9.0/AB
Taxiway U	0+00	4+00	---	17.0	6.0/CTB
	4+00	9+50	---	15.0	11.0/AB
	9+50	End	---	15.0	12.0/CTB
Taxiway V	0+00	End	---	17.0	6.0/CTB
Taxiway W	0+00	13+50	---	16.0	6.0/CTB
	13+50	18+50	---	17.0	6.0/CTB
	18+50	End	---	15.0	12.0/CTB
Taxiway Y	0+00	End	---	17.0	6.0/CTB

Feature	From Station[1)]	To Station	AC (in)	PCC (in)	Base/Type (in)
Taxiway Y1	0+00	End	---	17.0	6.0/CTB
Taxiway Y2	0+00	End	---	17.0	6.0/CTB
Taxiway Y3	0+00	End	---	17.0	6.0/CTB
Terminal 1 Apron	0+00	End	---	12.0	---
Terminal 2-4	0+00	End	---	15.5	14.0/CTB

1) Refer to Appendix B for a schematic showing Station 0+00.
2) AC = Asphalt Concrete, PCC = Portland Cement Concrete, AB = Aggregate Base, CTB = Cement Treated Base, and SB = Subbase.

5.3. Design Aircraft Mix

The Airport provided the number of traffic operations in ONT for the month of August 2018. The COMFAA program inputs include the type of aircraft and the annual departures for each type of aircraft. This program also includes a library of standard aircraft; however, it does not include all of the aircraft types provided by the client for this project. In addition, the COMFAA program limits the number of input aircraft to about 40, which requires grouping of the aircraft. For the purpose of PCN analysis and consequent pavement design, aircraft not included in the program library have been clustered into groups by similar weight, size, and wheel configuration, and a similar standard library aircraft used to characterize the grouping. Table 5 summarizes the grouped aircraft and the assumed aircraft used to represent the groupings in design.

Table 5 – ONT Annual Aircraft Departures Used in the Pavement Evaluation

Group No.	Design Aircraft	Design Weight, (lbs.)	2018 Annual Departures	2039 Annual Departures
1	Boeing 747-8	990,000	119	243
2	Boeing 747-400	877,000	294	608
3	Boeing 777-300ER	777,000	199	409
4	Boeing (Douglas) MD 11	658,000	2,833	5,836
5	Boeing 777-200	601,650	25	49
6	Boeing 767-300	458,000	2,464	5,077
7	Boeing 767	396,000	5,244	10,802
8	Boeing 757-300	273,500	2,303	4,743
9	Boeing 737 Max 8	188,200	18,692	38,494
10	Bombardier Global 7500	95,000	2,325	4,786
11	Bombardier CRJ-900	80,000	2,144	4,413
12	Bombardier Challenger 300	50,000	669	1,379
13	Dassault Falcon/Mystère 20	30,000	1,806	3,717
14	Boeing (Douglas) DC 3	25,000	3,960	8,152
Total Aircraft Annual Departures			43,077	88,708

In order, to determine pavement damage due to aircraft loading, the MTOW, landing gear configuration, and tire pressure of each aircraft were utilized to determine the feature's PCN and remaining life. Table 6 shows the aircraft mix gear configuration that was used to conduct the pavement evaluation for ONT Airport features.

Table 6 – Design Aircraft Mix Gear Configuration for ONT Airport

Aircraft	Maximum Takeoff Weight (lbs)	% Gross Weight on Gears	Tire Pressure (psi)	Design Annual Departures	No. of Gears
Boeing 747-8	990,000	94.40	221.0	179	4
Boeing 747-400	877,000	93.60	230.0	446	4
Boeing 777-300ER	777,000	92.44	221.0	301	6
Boeing (Douglas) MD 11	658,000	77.54	206.0	4,292	4
Boeing 777-200	601,650	91.80	205.0	37	6
Boeing 767-300	458,000	92.40	200.0	3,733	4
Boeing 767	396,000	93.94	215.0	7,945	4
Boeing 757-300	273,500	92.62	195.0	3,488	4
Boeing 737 Max 8	188,200	93.56	205.0	28,312	2
Bombardier Global 7500	95,000	95.00	188.0	3,520	2
Bombardier CRJ-900	80,000	95.00	175.0	3,246	2
Bombardier Challenger 300	50,000	95.00	145.0	1,013	2
Dassault Falcon/Mystère 20	30,000	95.00	208.0	2,735	2
Boeing (Douglas) DC 3	25,000	93.60	45.0	5,997	1

The ONT arrival and departures routes for the aircraft ground movements in the color-coded traffic distribution map provided by RS&H presented in Appendix G was utilized to develop the proposed design aircraft mix distribution for each feature at ONT, including runways, aprons, taxiways, and taxilanes. The following assumptions were used in the traffic analysis procedure:

1. The aircraft departures from 2018 fleet mix are accurate for use in the analysis.
2. According to the analysis of the existing fleet mix data, growth rate of 3.5% was considered in the future traffic analysis
3. Summary of traffic distribution for each feature is presented in Table 7.

Table 7 – Design Aircraft Mix Departure Distribution in Airport Structural Evaluation

ONT Proposed Aircraft Departures Distribution			
Tested Airport Feature	**% of Total**	**Tested Airport Feature**	**% of Total**
Atlantic Aviation Apron	Not Provided	Taxiway S	100
International Terminal Apron	80	Taxiway S1	100
Runway 8L-26R	100	Taxiway S2	100
Runway 8R-26L	100	Taxiway S3	100
Taxilane H	80	Taxiway S5	100
Taxilane N1	100	Taxiway T	60
Taxiway CSA	Not Provided	Taxiway U	100
Taxiway D	100	Taxiway V	100
Taxiway F	80	Taxiway W	100
Taxiway G	80	Taxiway Y	100
Taxiway K	80	Taxiway Y1	100
Taxiway L	60	Taxiway Y2	100
Taxiway N	100	Taxiway Y3	100
Taxiway P	60	Terminal 1 Apron	100
Taxiway Q	60	Terminal 2-4	100
Taxiway R	100	---	

6. Discussion of Results

6.1. General

Complete ELMOD analyses were performed using measured HWD test loads and deflections for all of the data. A summary of the relevant results is presented in this section.

Deflection testing was staggered between the lines to increase the coverage on the Runway, Taxiways, Taxiway Connectors, and Aprons. Transverse and longitudinal joint LTE testing was also performed at network-level intervals. LTE results are presented later in this report. Test loads were determined based on the proposed design aircraft mix. Figure 1 shows the airport features tested. In addition, HWD testing was conducted between 9 am and 6 pm, and the air temperature ranged from 66 to 93°F, while the surface temperature ranged from 71 to 111°F.

Table 8 shows the statistics for all normalized center deflections that were evaluated on ONT Airport. Figures 2 and 3 show the load-normalized center deflections for each of the lines evaluated on Runways 8R /26L and 8L/26R. Similar plots for the remaining features are presented in **Appendix C**. Further inspection of Runway 8L/26R shows a variation of the deflection from Station 0+00 to 21+00 which the deflections are considerably higher. This observation is in very good agreement with the ACN/PCN results and pavement structural adequacy evaluation presented in SECTIONS 6.4 and 7.3 of this report. The deflections along Runway 8R/26L are fairly uniform with the average of 10.6 mils.

It is important to state that higher the load-normalized center deflections the higher the chances the pavement will be structurally inadequate and thus, it will be more prone to damage and subsequent failure.

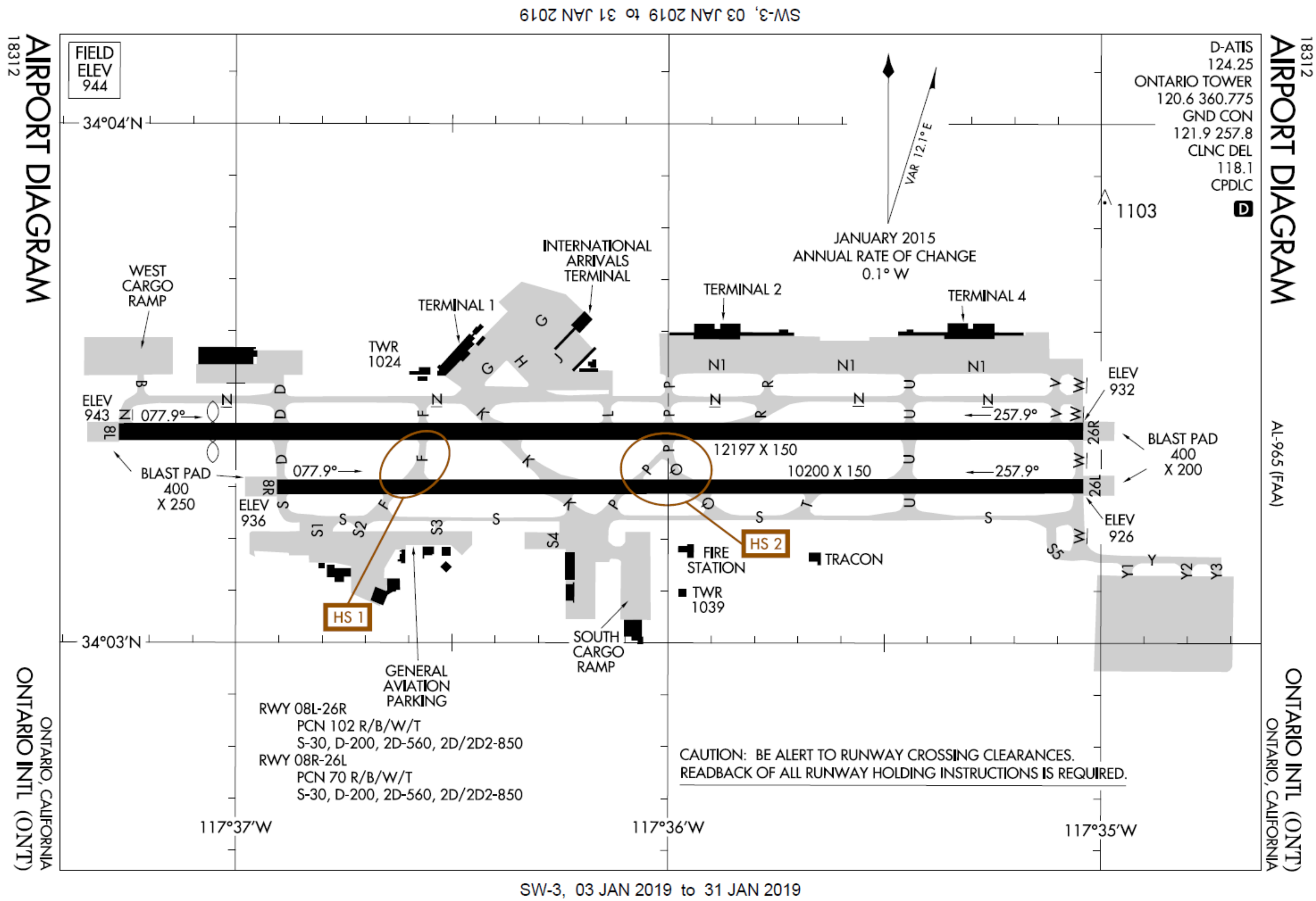


Figure 2 – ONT Airport Features Tested

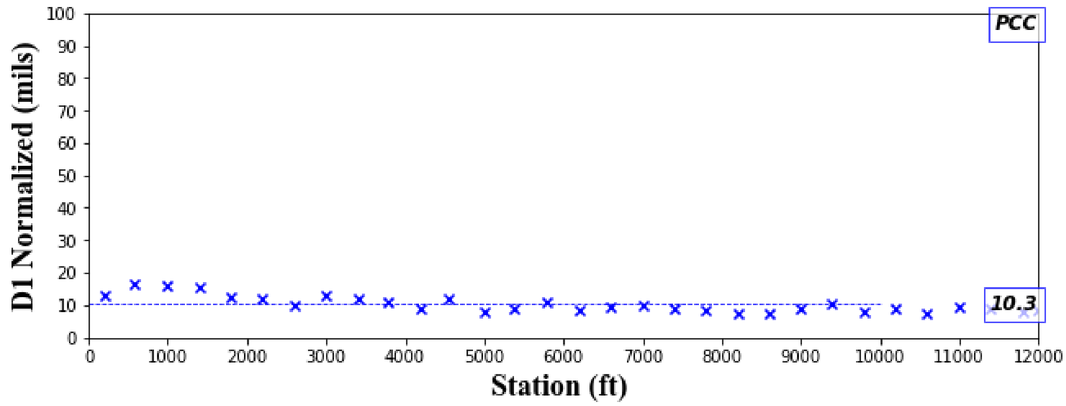


Figure 3 – Normalized Center Deflections for Runway 8L/26R

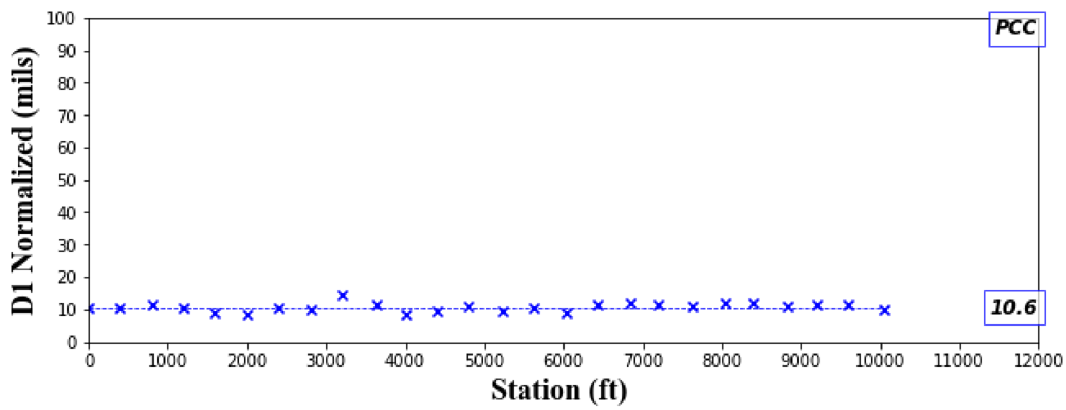


Figure 4 – Normalized Center Deflections for Runway 8R/26L

From the statistical analysis shown in Table 8, it is clear that all of the PCC sections at ONT show the average normalized center deflections less than 20 mils. However, there are some sections that show overall higher average normalized center deflections (>50mils). This is evident specifically for all asphalt pavements including Aprons and Taxilane H.

Table 8 – HWD Load Normalized Center Deflection Statistics

Feature	Station (ft.) 1)	Normalized Center Deflections (mils) 2)		
		Average	Standard Deviation	84th Percentile
Atlantic Aviation Apron_R1	0+00 to End	47.6	14.4	62
Atlantic Aviation Apron_R2	0+00 to End	42.4	14.4	56.8
Atlantic Aviation Apron_R3	0+00 to End	51.9	11.6	63.5
International Terminal Apron_R1	0+00 to End	57.3	7.8	65.1

Feature	Station (ft.) 1)	Normalized Center Deflections (mils) 2)		
		Average	Standard Deviation	84th Percentile
International Terminal Apron_R2	0+00 to End	47.6	4.3	51.9
International Terminal Apron_R3	0+00 to End	46.0	10.5	56.5
Runway 8L/26R_10L	0+00 to 21+00	14.3	1.9	16.2
	21+00 to End	10.3	2.5	12.8
Runway 8L/26R_10R	0+00 to 21+00	13.5	3.3	16.8
	21+00 to End	9.4	2.6	12
Runway 8R/26L_10L	21+00 to End	10.6	1.3	11.9
Runway 8R/26L_10R	0+00 to End	11.6	1.6	13.2
Terminal 1 Apron_R1	0+00 to End	24.6	5.6	30.2
Terminal 1 Apron_R2	0+00 to End	21.2	2.1	23.3
Terminal 1 Apron_R3	0+00 to End	25.6	7.8	33.4
Terminal 1 Apron_R4	0+00 to End	22.0	3.8	25.8
Terminal 2_4_R1	0+00 to End	12.5	3.1	15.6
Terminal 2_4_R2	0+00 to End	13.3	3.2	16.5
Terminal 2_4_R3	0+00 to End	11.9	1.6	13.5
Terminal 2_4_R4	0+00 to End	11.5	1.3	12.8
Taxiway CSA_10L	0+00 to End	39.2	5.9	45.1
Taxiway CSA_10R	0+00 to End	41.1	4.5	45.6
Taxiway D_10L	0+00 to End	11.4	2.2	13.6
Taxiway D_10R	0+00 to End	13.0	3.3	16.3
Taxiway F_10L	0+00 to End	14.8	3.6	18.4
Taxiway F_10R	0+00 to End	13.3	3.5	16.8
Taxiway G_10L	0+00 to End	78.9	14.7	93.6
Taxiway G_10R	0+00 to End	81.9	16	97.9
Taxiway K_10L	0+00 to End	14.2	3.8	18
Taxiway K_10R	0+00 to End	13.1	3.1	16.2
Taxiway L_10L	0+00 to End	13.2	2	15.2
Taxiway L_10R	0+00 to End	11.0	1.9	12.9
Taxiway N_10L	0+00 to End	15.2	4.1	19.3
Taxiway N_10R	0+00 to End	14.0	2.7	16.7
Taxiway P_10L	0+00 to End	12.4	2.5	14.9
Taxiway P_10R	0+00 to End	12.7	2.9	15.6
Taxiway Q_10L	0+00 to End	12.3	0.9	13.2
Taxiway Q_10R	0+00 to End	12.7	2.2	14.9
Taxiway R_10L	0+00 to End	9.9	2.5	12.4
Taxiway R_10R	0+00 to End	13.7	5.5	19.2
Taxiway S_10L	0+00 to End	14.2	1.9	16.1
Taxiway S_10R	0+00 to End	14.0	3.1	17.1

Feature	Station (ft.) 1)	Normalized Center Deflections (mils) 2)		
		Average	Standard Deviation	84th Percentile
Taxiway S1_10L	0+00 to End	91.6	7	98.6
Taxiway S1_10R	0+00 to End	92.1	4.4	96.5
Taxiway S2_10L	0+00 to End	19.1	2.6	21.7
Taxiway S2_10R	0+00 to End	18.8	1.6	20.4
Taxiway S3_10L	0+00 to End	110.8	3.8	114.6
Taxiway S3_10R	0+00 to End	113.1	4.2	117.3
Taxiway S5_10L	0+00 to End	45.1	4.3	49.4
Taxiway S5_10R	0+00 to End	45.2	4.3	49.5
Taxiway T_10L	0+00 to End	13.7	2.1	15.8
Taxiway T_10R	0+00 to End	13.6	3.1	16.7
Taxiway U_10L	0+00 to End	12.9	6.1	19
Taxiway U_10R	0+00 to End	13.9	2.7	16.6
Taxiway V_10L	0+00 to End	18.0	4.1	22.1
Taxiway V_10R	0+00 to End	13.8	6.2	20
Taxiway W_10L	0+00 to End	13.5	4.1	17.6
Taxiway W_10R	0+00 to End	12.2	1.5	13.7
Taxiway Y_10L	0+00 to End	11.6	0.7	12.3
Taxiway Y_10R	0+00 to End	12.0	0.6	12.6
Taxiway Y1_10L	0+00 to End	12.6	1.7	14.3
Taxiway Y1_10R	0+00 to End	11.8	1.7	13.5
Taxiway Y2_10L	0+00 to End	12.4	0.8	13.2
Taxiway Y2_10R	0+00 to End	13.9	1.5	15.4
Taxiway Y3_10L	0+00 to End	12.3	1.7	14
Taxiway Y3_10R	0+00 to End	13.1	0.7	13.8
Taxilane H_10L	0+00 to End	50.7	8.2	58.9
Taxilane H_10R	0+00 to End	46.3	8.9	55.2
Taxilane N1_10L	0+00 to End	14.2	2.8	17
Taxilane N1_10R	0+00 to End	10.7	1.4	12.1

1) Refer to Appendix B for a schematic showing Station 0+00.
2) Center deflections were normalized at 60,000-lb. for PCC and 20,000-lb for asphalt pavements.

6.2. Layer Moduli

All layer moduli were backcalculated for each deflection basin using ELMOD, and are summarized in

Table 9. The backcalculated layer moduli for Runways 8R/26L and 7L/25R are shown graphically in Figure 5 and 6. The backcalculated layer moduli for all the features are presented in **Appendix D**. The modulus of subgrade reaction, $k_{Backcalc}$, and the

subgrade/support layer moduli were obtained through the backcalculation process and the resulting 84th percentile k values for each PCC pavement section and the subgrade/support layer modulus for each asphalt pavement section were used to determine the pavement structural adequacy. In addition, the improved, k_{Imp}, and the correlated California Bearing Ration (CBR) were used to determine the subgrade ACN and PCN codes. It is important to mention that the k_{Imp} was obtained in accordance with the FAA Circular AC 150/5335-5C: "Standardized Method of Reporting Airport Pavement Strength – PCN", on which the modulus of subgrade reaction is computed as the k-value directly beneath the concrete layer.

From the results, the Taxiway CSA, G, P, S1, S2, S3, and S5, Taxilane H, and International Terminal Apron show low 84th percentile subgrade layer moduli (<20 ksi), indicating potential support bearing capacity problems in those sections. This results are in very good agreement with the load-normalized center deflections and the ACN/PCN and pavement structural adequacy results shown in SECTIONS 6.4 and 7.3.

Table 9 – Backcalculated Layer Moduli

Feature	Station 1) (ft.)	Type 2)	Average Subgrade Modulus, psi 3)			CBR	$k_{FAA\ Eq}$ 4)
			Average	St dev factor	84th %		
Runway 8L/26R_10L	0+00 to 21+75	Layer 1: PCC	4,128	1.2	3,352	---	232
		Layer 2: CTB	246	1.2	198		
		Layer 3: Subgrade	28	1.3	22		
Runway 8L/26R_10L	21+75 to End	Layer 1: PCC	4,542	1.4	3,199	---	296
		Layer 2: CTB	242	1.3	193		
		Layer 3: Subgrade	36	1.2	30		
Runway 8L/26R_10R	0+00 to 17+00	Layer 1: PCC	4,014	1.3	3,152	---	232
		Layer 2: CTB	259	1.3	207		
		Layer 3: Subgrade	32	1.5	22		
Runway 8L/26R_10R	17+00 to End	Layer 1: PCC	6,402	1.2	5,267	---	384
		Layer 2: CTB	237	1.2	191		
		Layer 3: Subgrade	47	1.1	42		
Runway 8R /26L_10L	0+00 to End	Layer 1: PCC	6,014	1.3	4,516	---	311
		Layer 2: CTB	74	3.4	22		
		Layer 3: Subgrade	40	1.2	32		
Runway 8R /26L_10R	0+00 to End	Layer 1: PCC	5,699	1.3	4,362	---	296
		Layer 2: CTB	67	1.2	57		
		Layer 3: Subgrade	37	1.2	30		
Taxilane N1_10L	0+00 to End	Layer 1: PCC	2,963	1.3	2,279	---	207
		Layer 2: CTB	181	1.2	151		
		Layer 3: Subgrade	27	1.4	19		

Feature	Station [1)] (ft.)	Type [2)]	Average Subgrade Modulus, psi [3)]			CBR	$k_{FAA\ Eq}$ [4)]
			Average	St dev factor	84th %		
Taxilane N1_10R	0+00 to End	Layer 1: PCC	3,713	1.4	2,652	---	311
		Layer 2: CTB	241	1.2	201		
		Layer 3: Subgrade	38	1.2	32		
Taxiway CSA_10L	0+00 to End	Layer 1: PCC	6,724	1.3	5,172	---	90
		Layer 2: Subgrade	8.5	1.4	6.1		
Taxiway CSA_10R	0+00 to End	Layer 1: PCC	6,139	1.4	4,385	---	75
		Layer 2: Subgrade	6.7	1.35	5.0		
Taxiway D_10L	0+00 to End	Layer 1: PCC	3,847	1.3	2,977	---	335
		Layer 2: CTB	218	1.2	180		
		Layer 3: Subgrade	42	1.2	35		
Taxiway D_10R	0+00 to End	Layer 1: PCC	3,057	1.5	2,054	---	265
		Layer 2: CTB	219	1.2	185		
		Layer 3: Subgrade	35	1.4	26		
Taxiway F_10L	0+00 to End	Layer 1: PCC	3,178	1.1	2,792	---	325
		Layer 2: CTB	208	1	199		
		Layer 3: Subgrade	38	1.1	34		
Taxiway F_10R	0+00 to End	Layer 1: PCC	3,448	1.4	2,402	---	265
		Layer 2: CTB	247	1.2	205		
		Layer 3: Subgrade	36	1.4	26		
Taxiway G	0+00 to End	Layer 1: AC	304	1.9	160	6.5	---
		Layer 2: AB	278	1.9	146		
		Layer 3: Subgrade	13	1.3	10		
Taxiway K_10L	0+00 to End	Layer 1: AC	2,304	1.1	2,033	---	180
		Layer 2: CTB	211	1.3	165		
		Layer 3: Subgrade	19	1.2	16		
Taxiway K_10R	0+00 to End	Layer 1: AC	3,900	1.3	2,921	---	319
		Layer 2: CTB	186	1.1	172		
		Layer 3: Subgrade	39	1.2	33		
Taxiway L_10L	0+00 to End	Layer 1: PCC	3,057	1.3	2,370	---	250
		Layer 2: CTB	217	1.1	190		
		Layer 3: Subgrade	29	1.2	24		
Taxiway L_10R	0+00 to End	Layer 1: PCC	4,806	1.4	3,487	---	288
		Layer 2: CTB	240	1.2	207		
		Layer 3: Subgrade	36	1.2	29		
Taxiway N_10L	0+00 to End	Layer 1: PCC	3,581	1.6	2,308	---	296
		Layer 2: CTB	183	1.2	152		
		Layer 3: Subgrade	34	1.1	30		

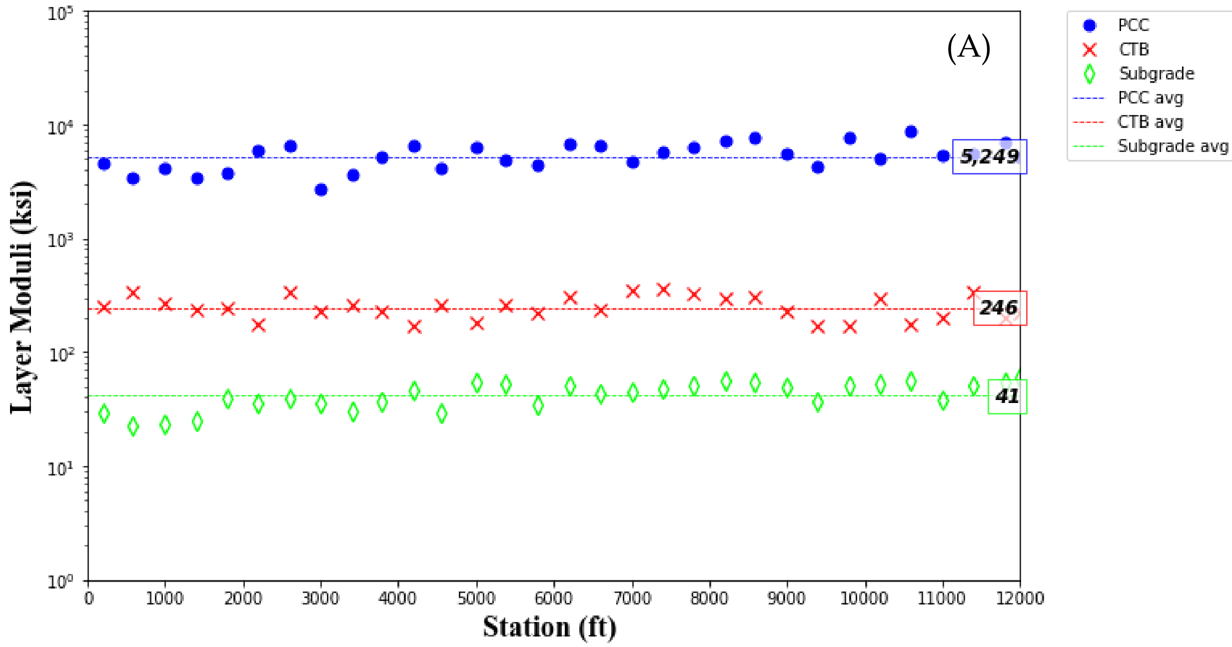
Feature	Station 1) (ft.)	Type 2)	Average Subgrade Modulus, psi 3)			CBR	$k_{FAA\ Eq}$ 4)
			Average	St dev factor	84th %		
Taxiway N_10R	0+00 to End	Layer 1: PCC	2,658	1.5	1,825	---	250
		Layer 2: CTB	210	1.2	174		
		Layer 3: Subgrade	29	1.2	24		
Taxiway P_10L	0+00 to End	Layer 1: PCC	2,540	1.7	1,505	---	240
		Layer 2: CTB	322	1.8	182		
		Layer 3: Subgrade	35	1.5	24		
Taxiway P_10R	0+00 to End	Layer 1: PCC	3,557	1.4	2,600	---	207
		Layer 2: CTB	217	1.4	151		
		Layer 3: Subgrade	31	1.7	19		
Taxiway Q_10L	0+00 to 4+00	Layer 1: PCC	5,028	1.1	4,670	---	265
		Layer 2: AB	59	1.3	47		
		Layer 3: Subgrade	30	1.1	28		
Taxiway Q_10L	4+00 to End	Layer 1: PCC	4,041	1.2	3,409	---	300
		Layer 2: AB	244	1.1	229		
		Layer 3: Subgrade	33	1.1	31		
Taxiway Q_10R	0+00 to 4+00	Layer 1: PCC	4,258	1.3	3,344	---	265
		Layer 2: AB	57	1.2	48		
		Layer 3: Subgrade	28	1.1	26		
Taxiway Q_10R	4+00 to End	Layer 1: PCC	3,883	1.3	2,900	---	319
		Layer 2: AB	245	1.2	209		
		Layer 3: Subgrade	35	1.1	33		
Taxiway R_10L	0+00 to End	Layer 1: PCC	4,907	1.2	4,221	---	447
		Layer 2: CTB	256	1.1	236		
		Layer 3: Subgrade	58	1.1	51		
Taxiway R_10R	0+00 to End	Layer 1: PCC	4,023	1.3	3,086	---	250
		Layer 2: CTB	231	1.1	203		
		Layer 3: Subgrade	29	1.2	24		
Taxiway S_10L	0+00 to End	Layer 1: PCC	4,283	1.4	3,077	---	256
		Layer 2: AB	61	1.2	51		
		Layer 3: Subgrade	29	1.2	25		
Taxiway S_10R	0+00 to End	Layer 1: PCC	5,646	1.1	5,251	---	280
		Layer 2: AB	64	1.2	54		
		Layer 3: Subgrade	32	1.1	28		
Taxiway S1_10L	0+00 to End	Layer 1: AC	625	1.6	402	12.5	---
		Layer 2: AB	55	1.1	50		
		Layer 3: Subgrade	23	1.2	19		

Feature	Station [1] (ft.)	Type [2]	Average Subgrade Modulus, psi [3]			CBR	$k_{FAA\ Eq}$ [4]
			Average	St dev factor	84th %		
Taxiway S1_10R	0+00 to End	Layer 1: AC	1,116	1.6	699	12.5	---
		Layer 2: AB	56	1.1	49		
		Layer 3: Subgrade	21	1.1	19		
Taxiway S2_10L	0+00 to End	Layer 1: PCC	2,760	1.5	1,860	---	207
		Layer 2: AB	66	1.3	50		
		Layer 3: Subgrade	24	1.3	19		
Taxiway S2_10R	0+00 to End	Layer 1: PCC	3,075	1.3	2,285		207
		Layer 2: AB	65	1.2	54		
		Layer 3: Subgrade	22	1.2	19		
Taxiway S3_10L	0+00 to End	Layer 1: AC	934	1.7	566	10.5	---
		Layer 2: AB	43	1.3	35		
		Layer 3: Subgrade	20	1.3	16		
Taxiway S3_10R	0+00 to End	Layer 1: AC	1,065	1.3	850	10.5	---
		Layer 2: AB	44	1.1	38		
		Layer 3: Subgrade	18	1	17		
Taxiway S5_10L	0+00 to End	Layer 1: AC	749	1.4	535	10	---
		Layer 2: AB	161	1.2	134		
		Layer 3: Subgrade	18	1.2	15		
Taxiway S5_10R	0+00 to End	Layer 1: AC	690	1.4	492	10.5	---
		Layer 2: AB	162	1.1	147		
		Layer 3: Subgrade	19	1.2	16		
Taxiway T_10L	0+00 to End	Layer 1: PCC	4294	1.1	4060	---	265
		Layer 2: AB	66	1.2	56		
		Layer 3: Subgrade	34	1.3	26		
Taxiway T_10R	0+00 to End	Layer 1: PCC	4,488	1.6	2,888	---	240
		Layer 2: AB	59	1.2	51		
		Layer 3: Subgrade	30	1.3	23		
Taxiway U_10L	0+00 to End	Layer 1: PCC	3,438	1.2	2,896	---	240
		Layer 2: CTB	228	1.2	190		
		Layer 3: Subgrade	27	1.2	23		
Taxiway U_10R	0+00 to End	Layer 1: PCC	2,558	1.1	2,256	---	216
		Layer 2: CTB	175	1.9	92		
		Layer 3: Subgrade	30	1.5	20		
Taxiway V_10L	0+00 to End	Layer 1: PCC	2,642	1.3	2,098	---	216
		Layer 2: CTB	170	1.5	115		
		Layer 3: Subgrade	22	1.1	20		

Feature	Station 1) (ft.)	Type 2)	Average Subgrade Modulus, psi 3)			CBR	$k_{FAA\ Eq}$ 4)
			Average	St dev factor	84th %		
Taxiway V_10R	0+00 to End	Layer 1: PCC	3,322	1.8	1,797		240
		Layer 2: CTB	220	1.2	189		
		Layer 3: Subgrade	33	1.4	23		
Taxiway W_10L	0+00 to End	Layer 1: PCC	4,628	1.2	3,930	---	310
		Layer 2: CTB	247	1.2	206		
		Layer 3: Subgrade	37	1.2	32		
Taxiway W_10R	0+00 to End	Layer 1: PCC	3,777	1.1	3,370	---	280
		Layer 2: CTB	273	1.3	205		
		Layer 3: Subgrade	35	1.2	28		
Taxiway Y_10L	0+00 to End	Layer 1: PCC	3,131	1.2	2,536	---	310
		Layer 2: AB	256	1.3	199		
		Layer 3: Subgrade	36	1.1	32		
Taxiway Y_10L	0+00 to End	Layer 1: PCC	3,339	1.1	3,001	---	280
		Layer 2: AB	254	1.3	200		
		Layer 3: Subgrade	31	1.1	28		
Taxiway Y1_10L	0+00 to End	Layer 1: PCC	3,149	1.2	2,609	---	270
		Layer 2: CTB	220	1.1	194		
		Layer 3: Subgrade	34	1.3	27		
Taxiway Y1_10R	0+00 to End	Layer 1: PCC	3,673	1.3	2,926	---	265
		Layer 2: CTB	269	1.3	213		
		Layer 3: Subgrade	33	1.3	26		
Taxiway Y2_10L	0+00 to End	Layer 1: PCC	3,422	1.1	2,982	---	290
		Layer 2: CTB	279	1.3	218		
		Layer 3: Subgrade	31	1.1	29		
Taxiway Y2_10R	0+00 to End	Layer 1: PCC	2,891	1.1	2,540	---	240
		Layer 2: CTB	254	1.2	206		
		Layer 3: Subgrade	27	1.1	23		
Taxiway Y3_10L	0+00 to End	Layer 1: PCC	3,362	1.2	2,872	---	250
		Layer 2: CTB	263	1.3	195		
		Layer 3: Subgrade	30	1.2	24		
Taxiway Y3_10R	0+00 to End	Layer 1: PCC	3,175	1.1	2,776	---	265
		Layer 2: CTB	219	1.1	199		
		Layer 3: Subgrade	30	1.1	26		
Taxilane H_10L	0+00 to End	Layer 1: AC	578	1.5	385	3.5	---
		Layer 2: AB	43	1.1	40		
		Layer 3: Subgrade	7	1.3	5		

Feature	Station 1) (ft.)	Type 2)	Average Subgrade Modulus, psi 3)			CBR	$k_{FAA\ Eq}$ 4)
			Average	St dev factor	84th %		
Taxilane H_10R	0+00 to End	Layer 1: AC	470	1.3	361	4.0	---
		Layer 2: AB	41	1.1	37		
		Layer 3: Subgrade	8	1.4	6.0		
Terminal 2-4_R1	0+00 to End	Layer 1: PCC	3,277	1.4	2,340	---	280
		Layer 2: CTB	211	1.5	141.2		
		Layer 3: Subgrade	33	1.2	28		
Terminal 2-4_R2	0+00 to End	Layer 1: PCC	3,247	1.3	2,498	---	240
		Layer 2: CTB	187	1.2	156		
		Layer 3: Subgrade	30	1.3	23		
Terminal 2-4_R3	0+00 to End	Layer 1: PCC	4,614	1.3	3,566	---	362
		Layer 2: CTB	254	1.2	221		
		Layer 3: Subgrade	46	1.2	39		
Terminal 2-4_R4	0+00 to End	Layer 1: PCC	5,197	1.2	4,198	---	362
		Layer 2: CTB	254	1.2	214		
		Layer 3: Subgrade	45	1.2	39		
International Terminal Apron_R1	0+00 to End	Layer 1: AC	494	1.7	290	3.5	---
		Layer 2: AB	43	1.2	35		
		Layer 3: Subgrade	6	1.3	5		
International Terminal Apron_R2	0+00 to End	Layer 1: AC	651	1.4	465	4.5	---
		Layer 2: AB	41	1.1	37		
		Layer 3: Subgrade	8.5	1.3	6.5		
International Terminal Apron_R3	0+00 to End	Layer 1: AC	542	2	285	4.0	---
		Layer 2: AB	42	1	38		
		Layer 3: Subgrade	8	1	6		

1) Refer to Appendix B for a schematic showing Station 0+00.
2) AC = Asphalt Concrete, PCC= Portland Cement Concrete, AB = Aggregate Base, CTB = Cement Treated Base, and Subgrade = Support
3) Based on a log-normal distribution.
4) The equation in AC 150/5320-6F section 2.4.5 was used to convert the subgrade modulus to k-value.



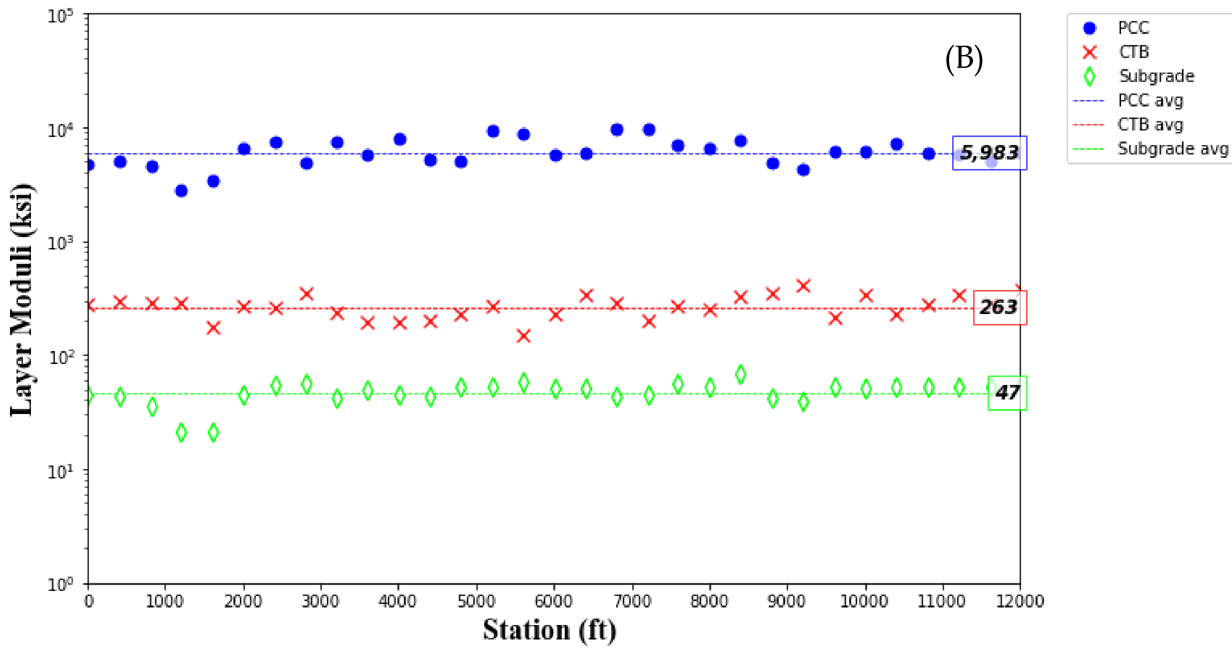
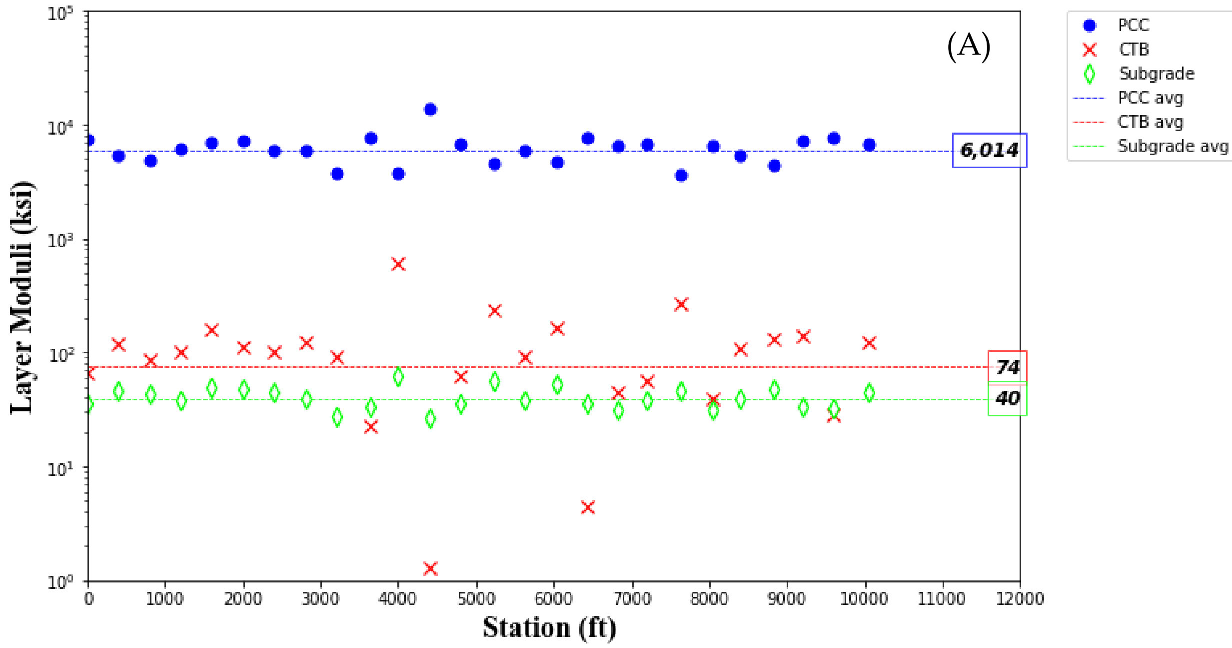


Figure 5 – Runway 8L/26R Layer Moduli (A) 10L, and (B) 10R



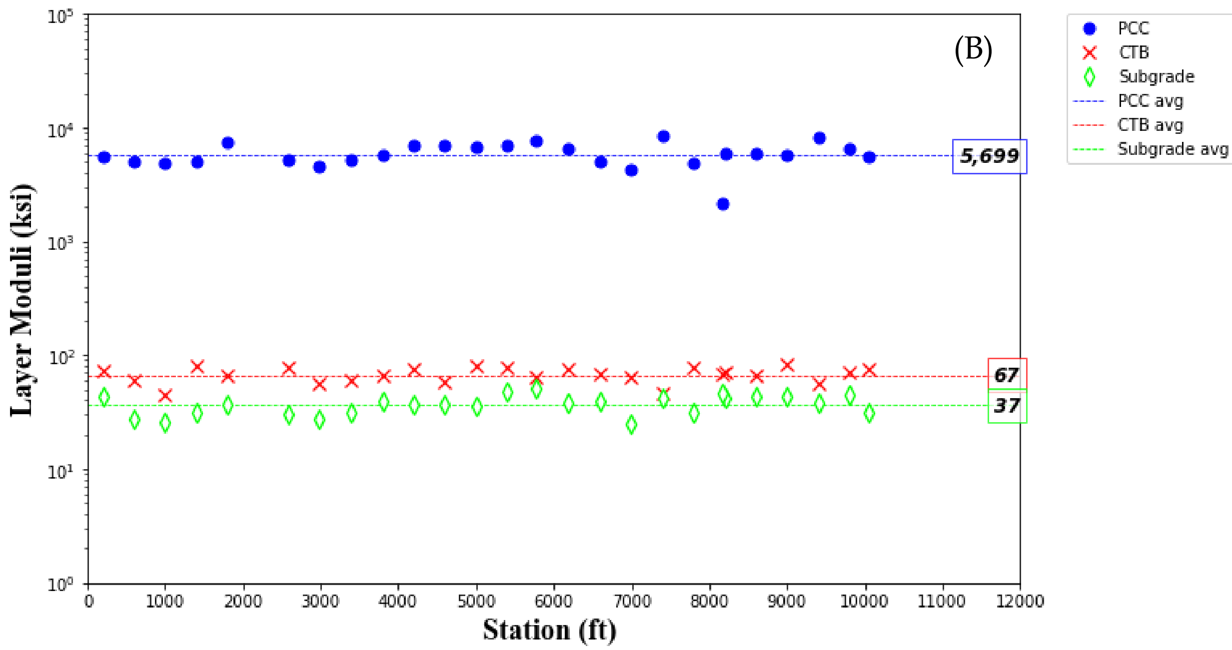


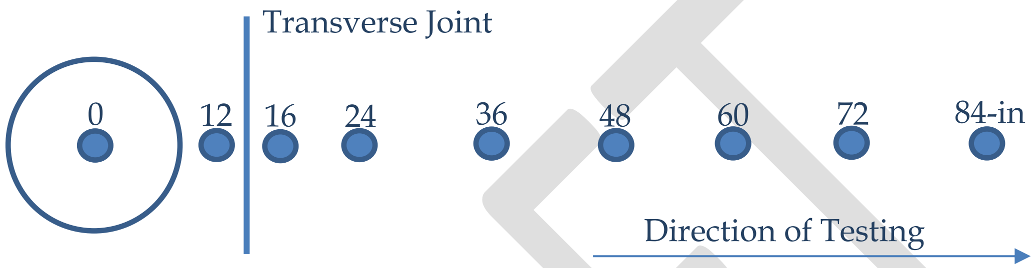
Figure 6 – Runway 8R/26L Layer Moduli (A) 10L, and (B) 10R

6.3. Transverse Load Transfer Efficiency Evaluation

The load transfer efficiency is reported for each tested PCC joint. The LTE was calculated using the Westergaard equation which makes use of the deflections from two geophones positioned at each side of the joint, and a bending factor from the mid-slab test using the deflections from the same geophones.

$$\% \text{ LTE} = \frac{2 \times D_{J2}}{D_{J1} + D_{J2}} \times \frac{D_{M1}}{D_{M2}} \times 100$$

D refers to deflection, J and M to joint and mid-slab, and 1 and 2 to first and second geophone chosen for the joint calculation. The geophones at 12-in and 16-in were used in this case for the transverse joints load transfer efficiency evaluation.



FAA AC 150/5370-11B considers joints with LTE of 70% or greater as acceptable, 50 to 70% as fair, and less than 50% as poor. Low LTE may lead to excessive stress concentrations in the concrete, voids underneath the slab, and ultimately corner breaks. The joints with poor LTE should be inspected and monitored in the field. It should be noted that joint evaluation analysis results are highly dependent on the time of day at which NDT was performed due to temperature and moisture differentials between the top and the bottom of the slab which cause curling and warping of the slab.

Table 10 show the LTE results for the evaluated test lines for each evaluated rigid pavement airport feature. Overall, the tested slabs on ONT had good to fair load transfer efficiency, however, some slabs did show low transverse LTE values. The airport features showing the low transverse LTE (<70) values are: Taxiways CSA, and W, and Taxilane N1. Poor LTE leads to corner breaks and a significant reduction in pavement structural capacity.

Table 10 – Joint Load Transfer Efficiency — Transverse Direction

Feature	Test Line	Station (ft) [1)]	Transverse Joint Load Transfer Efficiency		
			Average	Standard Deviation	84th Percentile
Runway 8L/26R	10-ft Left 10-ft Right	0+00 to End	91.0%	12.5%	78.5%
Runway 8R/26L	10-ft Left 10-ft Right	0+00 to End	93.1%	13.6%	79.5%
Terminal 1 Apron	4 Parallel Test Lines	0+00 to End	97.5%	6.4%	91.1%

Feature	Test Line	Station (ft) 1)	Transverse Joint Load Transfer Efficiency		
			Average	Standard Deviation	84th Percentile
Terminal 2_4	4 Parallel Test Lines	0+00 to End	99.4%	2.3%	97.1%
Taxiway CSA	10-ft Left 10-ft Right	0+00 to End	65.6%	18.1%	47.5%
Taxiway D	10-ft Left 10-ft Right	0+00 to End	96.3%	6.9%	89.4%
Taxiway F	10-ft Left 10-ft Right	0+00 to End	94.8%	5.4%	89.4%
Taxiway K	10-ft Left 10-ft Right	0+00 to End	95.8%	7.9%	87.9%
Taxiway L	10-ft Left 10-ft Right	0+00 to End	92.6%	6.2%	86.4%
Taxiway N	10-ft Left 10-ft Right	0+00 to End	95.5%	11.1%	84.4%
Taxiway P	10-ft Left 10-ft Right	0+00 to End	90.3%	16.0%	74.3%
Taxiway Q	10-ft Left 10-ft Right	0+00 to End	92.3%	11.1%	81.2%
Taxiway R	10-ft Left 10-ft Right	0+00 to End	100.0%	0.0%	100.0%
Taxiway S	10-ft Left 10-ft Right	0+00 to End	99.2%	2.9%	96.3%
Taxiway S2	10-ft Left 10-ft Right	0+00 to End	93.8%	4.2%	89.6%
Taxiway T	10-ft Left 10-ft Right	0+00 to End	94.3%	4.0%	90.3%
Taxiway U	10-ft Left 10-ft Right	0+00 to End	93.5%	11.8%	81.7%
Taxiway V	10-ft Left 10-ft Right	0+00 to End	97.4%	2.5%	94.9%
Taxiway W	10-ft Left 10-ft Right	0+00 to End	79.0%	22.4%	56.6%
Taxiway Y	10-ft Left 10-ft Right	0+00 to End	96.9%	3.8%	93.1%
Taxiway Y1	10-ft Left 10-ft Right	1+10 to End	99.7%	0.5%	99.2%
Taxiway Y2	10-ft Left 10-ft Right	0+00 to End	98.5%	3.4%	95.1%
Taxiway Y3	10-ft Left 10-ft Right	0+00 to End	97.8%	4.4%	93.4%
Taxilane N1	10-ft Left 10-ft Right	0+00 to End	80.5%	20.9%	59.6%

1) Refer to Appendix B for a schematic showing Station 0+00.

6.4. Structural Evaluation

The features were evaluated using the ELMOD computer program. The analysis is based on structural responses and are controlled by the M-E pavement evaluation parameters presented in Section 6.2, as well as the traffic data presented in Section 5.3, and pavement layer thickness information presented in Section 5.2. For rigid pavement design, ELMOD uses the maximum horizontal stress at the bottom edge of the PCC slab as the predictor of pavement structural life. The maximum horizontal stress for design is determined using an edge loading condition. ELMOD provides the required thickness of the rigid pavement slab needed to support a given airplane traffic mix.

A structural overlay is needed when the theoretical remaining life of the pavement is less than the 20-year design period. Structural AC overlay requirements for all of the evaluated features in ONT are shown in Table 11 for the design aircraft traffic. The plots of required overlay thickness are presented in Appendix E. It is important to state that an AC overlay is not necessarily the best rehabilitation alternative, however in this case this approach has been selected to demonstrate that when an AC overlay is required to withstand the combined action of traffic and environment for the 20-year analysis period, then an indication of structural inadequacy is present.

Table 11 –Structural Overlay & Maintenance for the Proposed Aircraft Mix

Feature	Test Line	Station (ft.) [1]	Structurally Adequate Yes/No	Structural Overlay	Remove and Repair Location[5]
Atlantic Aviation Apron [4]	3 Parallel Test Lines	0+00 to End	-	-	-
International Terminal Apron	3 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Runway 8L-26R	2 Parallel Test Lines	0+00 to 35+00	No	Reconstruction[3]	-
		35+00 to End	Yes	Preventive Maintenance	-
Runway 8R-26L	2 Parallel Test Lines	0+00 to End	Yes	Preventive Maintenance	Sta 45+00 Sta 65+00
Taxilane H	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxilane N1	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway CSA[4]	-	-	-	-	-
Taxiway D	2 Parallel Test Lines	0+00 to 9+00	No	Reconstruction[3]	-
		9+00 to End	Yes	6.0" HMA Overlay[2]	-
Taxiway F	2 Parallel Test Lines	0+00 to End	Yes	Preventive Maintenance	Sta 9+50 Sta 11+50
Taxiway G	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway K	2 Parallel Test Lines	0+00 to 5+50	Yes	Preventive Maintenance	-
		5+50 to End	No	Reconstruction[3]	-

Feature	Test Line	Station (ft.) [1]	Structurally Adequate Yes/No	Structural Overlay	Remove and Repair Location[5]
Taxiway L	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway N	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway P	2 Parallel Test Lines	0+00 to 6+00	No	2.0" HMA Overlay[2]	-
		6+00 to End	No	Reconstruction[3]	-
Taxiway Q	2 Parallel Test Lines	0+00 to 6+00 8+00 to End	Yes	Preventive Maintenance	-
		6+00 to 8+00	No	Reconstruction[3]	-
Taxiway R	2 Parallel Test Lines	0+00 to 5+00	Yes	Preventive Maintenance	-
		5+00 to End	No	Reconstruction[3]	-
Taxiway S	2 Parallel Test Lines	0+00 to End	Yes	Preventive Maintenance	-
Taxiway S1	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway S2	2 Parallel Test Lines	0+00 to End	Yes	Preventive Maintenance	-
Taxiway S3	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway S5	2 Parallel Test Lines	0+00 to End	No	5.5" HMA Overlay[2]	-
Taxiway T	2 Parallel Test Lines	0+00 to End	Yes	Preventive Maintenance	-
Taxiway U	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	
Taxiway V	10L	0+00 to End	No	Reconstruction[3]	
Taxiway V	10R	1+00 to End	Yes	Preventive Maintenance	-
		0+00 to 1+00	No	Reconstruction[3]	-
Taxiway W	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway Y	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway Y1	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway Y2	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Taxiway Y3	2 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Terminal 1 Apron	4 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-
Terminal 2-4	4 Parallel Test Lines	0+00 to End	No	Reconstruction[3]	-

1) Refer to Appendix B for a schematic showing Station 0+00
2) Indicates thick HMA structural overlay required. A Project level evaluation is recommended to evaluate different major rehabilitation and/or reconstruction alternatives.
3) When the calculated overlay is greater than 15 inches, reconstruction is indicated.
4) No traffic is provided.
5) Remove and Repair or dig out stations are determined based on discrete HWD testing. Actual extend and locations must be determined visually prior to conduct any preventive maintenance activities.

Preventive maintenance consists of applying a surface treatment that reduces the surface deterioration rate, extends pavement life, and/or prevent pavement distress propagation. In the case of rigid pavements, a void undersealing campaign is recommended to ensure adequate slab support, to prevent corner breaks and to improve LTE. A project-level study with the HWD is recommended to determine the most-cost effective pavement rehabilitation/reconstruction alternatives, to identify all slabs needing undersealing, and to verify the effectiveness of any treatment to improve the overall pavement structural capacity and remaining life.

7. Aircraft Classification Number-Pavement Classification Number (ACN-PCN)

7.1. Background

In 2014, the FAA instituted a requirement that Part 139-certified airports be assigned PCN data. The PCN is required because the United States is a member state of the International Civil Aviation Organization (ICAO), the international regulatory body for air traffic. ICAO adopted the Aircraft Classification Number (ACN)—Pavement Classification Number (ACN-PCN) method to allow any airport a standardized method for reporting the effect of aircraft that use the facility, as well as the load carrying capacity of the pavement (ICAO, 1999).

By definition, the ACN is a number that expresses the relative effect of an aircraft at a given configuration on a pavement structure for a specified standard subgrade strength. Conversely, the PCN is defined as a number that expresses the load carrying capacity of a pavement for unrestricted operations. Hence, the ACN-PCN system is structured so that a pavement with a particular PCN value can support unlimited repetitions of an aircraft that has an ACN equal to or less than the pavement's PCN value.
In the ACN/PCN method, the PCN, pavement type, subgrade strength category, tire pressure category, and evaluation method are all reported together. A code system has been implemented to allow an abbreviated presentation of the necessary information.

The pavement type is abbreviated "R" for rigid (Portland cement concrete [PCC]) and "F" for flexible (asphalt concrete [AC]) pavements. Four subgrade categories, A, B, C, and D, indicate high, medium, low, and ultralow subgrade strengths, respectively. The four tire pressure categories, W, X, Y, and Z, indicate high, medium, low, and very low tire pressures, respectively. The evaluation methods are T for a technical evaluation and U for an evaluation based on the type and weight of the aircraft that commonly use the airfield. For example, the PCN code 90/F/C/W/T indicates that the PCN number is 90, that the pavement is flexible, that there is a low-strength subgrade, that high-pressure tires are allowed, and that a technical evaluation was performed to determine the PCN rating.

According to this worldwide standard, aircraft can safely operate on a pavement if its ACN is less than or equal to the pavement load bearing capacity or PCN. An aircraft having an ACN equal to or less than the PCN can operate without weight restrictions on a pavement.

It should be noted that the ICAO documentation makes it clear that the ACN/PCN method is not a design/evaluation method and that the PCN is simply the ACN of the most damaging aircraft that can use the pavement on a regular basis (regular being defined by the operator). In addition, an ACN over PCN ratio greater than 1.1 is typically considered to be problematic.

ACN/PCN Ratio	Recommendation
< 1.0	Unlimited Passes
1.0-1.1	Continue with Operations but watch for distresses
1.1-1.4	Limited to 10 Passes
> 1.4	Emergencies Only

7.2. ACN

The ACN is defined by ICAO (ICAO Doc 9157, Part 3, 1.1.3.2 d).

The concept of a mathematically derived single wheel load has been employed in the ACN-PCN method as a means to define the landing gear/pavement interaction without specifying pavement thickness as an ACN parameter. This is done by equating the thickness given by the mathematical model for an aircraft landing gear to the thickness for a single wheel at a standard tire pressure of 1.25 MPa (181 psi). The single wheel load so obtained is then used without further reference to thickness; this is so because the essential significance is attached to the fact of having equal thicknesses, implying "same applied stress to the pavement", rather than the magnitude of the thickness. The foregoing is in accord with the objective of the ACN-PCN method to evaluate the relative loading effect of an aircraft on a pavement. Boussinesq's equations are used for flexible pavements and Westergaard's solution for a plate on a Winkler foundation for rigid pavements.

The ACN is two times the derived single wheel load in 1,000 kg. The ACN is calculated by the aircraft manufacturer for 4 subgrade categories for flexible pavements: A: CBR $\geq$ 13, B: 8 < CBR < 13, C: 4 < CBR $\leq$ 8 and D: CBR $\leq$ 4; and also 4 subgrade categories for rigid pavements: A: k $\geq$ 442 pci, B: 221 < k < 442, C: 92 < k $\leq$ 221 and D: k $\leq$ 92. The ACN is specific to a particular aircraft and does not depend on the number of operations or on the pavement structure (apart from the subgrade category). Table 12 and Table 13 show the ACN corresponding to the design aircraft mix for the flexible and rigid pavements, respectively.

Table 12 – Flexible Pavement ACN

Aircraft	MTOW 1)	Flexible Pavement ACN 2)			
		A	B	C	D
Boeing 747-8	990,000	63.2	70.6	88.1	111.2
Boeing 747-400	877,000	56.7	63.4	77.8	99.8
Boeing 777-300ER	777,000	63.8	71.3	89.3	120.3
Boeing (Douglas) MD 11	658,000	64.7	71.5	86.7	115.5
Boeing 777-200	547,000	43.8	48.9	59.3	83.5
Boeing 767-300	458,000	55.7	62.4	77.3	99.1
Boeing 767	396,000	47.7	52.6	64	84.7
Boeing 757-300	273,500	33.2	37.1	45.7	58.8
Boeing 737 Max 8	188,200	46.7	49.8	55.1	60.0
Bombardier Global 7500	95,000	27.3	29.4	30.9	32.1
Bombardier CRJ-900	80,000	24.0	25.4	26.4	27.2
Bombardier Challenger 300	50,000	11.6	12.4	14.1	15.5
Dassault Falcon/Mystère 20	30,000	7.5	8.0	8.8	9.7
Boeing (Douglas) DC 3	25,000	3.9	5.5	7.5	9.2

1) Maximum Takeoff Weight (lbs)
2) A, B, C and D are the subgrade code designations. Maximum ACNs for each subgrade category are shown in red font.

Table 13 – Rigid Pavement ACN

Aircraft	MTOW 1)	Rigid Pavement ACN 2)			
		A	B	C	D
Boeing 747-8	990,000	64.7	76.8	90.2	102.1
Boeing 747-400	877,000	59.1	69.8	81.7	92.5
Boeing 777-300ER	777,000	66.1	85.7	109.7	131.9
Boeing (Douglas) MD 11	658,000	61.8	73.4	87.6	101.1
Boeing 777-200	601,650	43.9	55.3	71.9	88.7
Boeing 767-300	458,000	55.5	66.5	78.7	89.8
Boeing 767	396,000	48.3	57.2	67.5	77.0
Boeing 757-300	273,500	35.2	42.0	49.1	55.4
Boeing 737 Max 8	188,200	53.8	56.5	59.0	61.1
Bombardier Global 7500	95,000	31.6	32.6	33.5	34.3
Bombardier CRJ-900	80,000	27.3	28.1	28.8	29.3
Bombardier Challenger 300	50,000	13.5	14.2	14.9	15.4
Dassault Falcon/Mystère 20	30,000	9.3	9.6	9.9	10.1
Boeing (Douglas) DC 3	25,000	6.0	6.5	6.9	7.2

1) Maximum Takeoff Weight (lbs)
2) A, B, C and D are the subgrade code designations. Maximum ACNs for each subgrade category are shown in red font.

From the results, it is clear that the highest ACN for both the flexible pavement and rigid pavement subgrade categories is the Boeing 777-300ER aircraft.

7.3. PCN Evaluation

The layer moduli of the subgrade (for flexible pavements) and the modulus of subgrade reaction, k-value, (for rigid pavements) was backcalculated using ELMOD. The resulting 84th percentile subgrade layer moduli or the improved modulus of subgrade reaction, k-Imp, were used as part of the COMFAA calculations to determine the airport feature subgrade category. The required COMFAA input was calculated using the FAA support Excel file "COMFAA-30-SUPPORT-AC5335-5C.xlsm". Table 14 summarizes the COMFAA ACN/PCN codes for every feature.

Table 14 – PCN Codes for Different Features in ONT

Feature	From Station	To Station	PCN Code	ACN Code	ACN/PCN
Runway 8L-26R (P1)	0+00	21+75	43/R/B/W/T	57/R/B	1.3
Runway 8L-26R (P2)	21+75	End	53/R/B/W/T	57/R/B	1.1
Runway 8R-26L	0+00	End	43/R/A/W/T	54/R/A	1.3
Taxilane N1	0+00	End	43/R/A/W/T	54/R/A	1.3
Taxiway D	0+00	End	49/R/B/W/T	57/R/B	1.2
Taxiway F	0+00	End	42/R/B/W/T	57/R/B	1.4
Taxiway G	0+00	End	9/F/B/X/T	62/F/B	6.9
Taxiway K	0+00	End	43/R/B/W/T	57/R/B	1.3
Taxiway L	0+00	End	43/R/A/W/T	54/R/A	1.3
Taxiway N	0+00	End	46/R/A/W/T	54/R/A	1.2
Taxiway P	0+00	End	48/R/A/W/T	54/R/A	1.1
Taxiway Q	0+00	End	44/R/B/W/T	57/R/B	1.3
Taxiway R	0+00	End	62/R/B/W/T	57/R/B	0.9
Taxiway S	0+00	End	44/R/B/W/T	57/R/B	1.3
Taxiway S1	0+00	End	5/F/B/X/T	53/F/B	10.6
Taxiway S2	0+00	End	40/R/B/W/T	57/R/B	1.4
Taxiway S3	0+00	End	<Min[1)]	62/F/B	---
Taxiway S5	0+00	End	37/F/B/X/T	77/F/B	2.1
Taxiway T	0+00	End	46/R/B/W/T	57/R/B	1.2
Taxiway U	0+00	End	49/R/B/W/T	57/R/B	1.2
Taxiway V	0+00	End	43/R/A/W/T	54/R/A	1.3
Taxiway W	0+00	End	53/R/B/W/T	57/R/B	1.1
Taxiway Y	0+00	End	60/R/B/W/T	57/R/B	1.0
Taxiway Y1	0+00	End	56/R/B/W/T	57/R/B	1.0
Taxiway Y2	0+00	End	55/R/B/W/T	57/R/B	1.0
Taxiway Y3	0+00	End	56/R/B/W/T	57/R/B	1.0
Taxilane H	0+00	End	<Min[1)]	59/F/D	---
Terminal 2-4	0+00	End	38/R/B/W/T	57/R/B	1.5

Feature	From Station	To Station	PCN Code	ACN Code	ACN/PCN
International Terminal Apron	0+00	End	<Min[1)]	59/F/D	---

1) Taxilane H, Taxiway S3 and International Terminal Apron do not have the minimum thickness required by FAA.

Table 14 shows the PCN codes calculated using COMFAA for the existing pavement structures. The PCN values are associated with the traffic used in the evaluation, and any change in traffic during the evaluation period will change the PCN (e.g. an increase in traffic will decrease the PCN and a decrease in traffic will increase the PCN). In addition, Table 4 shows the ACN/PCN ratio for each feature. The results show that the ACN/PCN for the evaluated aircraft is greater than 1.1 for Runways 8L-26R and 8R-26L, Taxiways D, F, G, K, L, N, Q, S, S1, S2, S3, S5, T, U, and V, Taxilanes N1 and H, Terminal 2 through 4, and International Terminal Apron. Typically, an ACN/PCN ratio greater than 1.1 is considered to be problematic for the proposed aircraft mix.

8. Limited Distress Survey

A limited distress survey was conducted on all tested lanes through digital photographs that were automatically collected at 25-ft intervals while testing. A description of the overall pavement surface condition for all features in ONT is presented Appendix F.

9. General Remarks

The above analyses were based on structural responses and were controlled by the HWD measured deflections, proposed design aircraft traffic data, and pavement layer thickness information. Pavement layer thickness and types were provided by RS&H, while the proposed aircraft traffic mix was developed by Dynatest and it was reviewed and approved by RS&H. It is important to state that due to the amount of airport features evaluated, some of the pavement layer thickness, type information, and traffic data were not available at this time. Thus, Dynatest used engineering judgement to assign the required pavement structural information of either the pavement thickness or types of the surrounding areas or to use the most frequently encountered pavement layer thicknesses and types observed at ONT.

Several assumptions were made to derive the proposed design aircraft mix and airport traffic distribution. The presented results are highly dependent on this information and thus this limitation must be taken into account when deriving conclusions based on this report.

The structural analysis and associated results provided in this report should be used with caution since a network-level evaluation approach was used to derive the results. Due to the discrete nature of deflection testing, actual location and extent of repair requirements need to be determined visually prior to any rehabilitation, where applicable. In addition, a project-level evaluation is recommended to determine the most cost-effective pavement rehabilitation/reconstruction alternatives for the features that are not structurally adequate.

10. Disclaimer

All preceding analyses were based on the HWD test results obtained in the field, the proposed aircraft mix, the provided pavement thicknesses and types, as well as other input and analysis assumptions as outlined herein. Dynatest has made every attempt to base their procedures on sound methodology. However, circumstances beyond the control of Dynatest could result in alterations to the above results, which may be completely justifiable. The type of analysis performed on the deflection data is highly sensitive to layer thicknesses, and design aircraft mix; variations from the values provided could have a significant impact on the results presented in this report.

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Appendix A - Dynatest FWD/HWD Test System

Dynatest FWD/HWD Test Systems

Dynatest, the original commercial developer of the Falling Weight Deflectometer (FWD) technology, is the world's largest supplier of FWD equipment. This highly accurate, well supported, reliable and continuously refined Dynatest product line is a proven load/deflection measurement solution for engineers worldwide.

The Dynatest FWD technology additionally provides a measurement foundation for the proprietary Dynatest "analytical-empirical" pavement engineering methodology, a system of advanced automated pavement measurement, analysis and management engineering services and products available only through Dynatest.

Why a Falling Weight Deflectometer (FWD)?

The **Dynatest Model 8000 FWD** makes it possible to treat pavement structures in the same manner as other civil engineering structures by using mechanistically based design methods.

Selecting the type of rehabilitation to be implemented on a given pavement is of considerable economic significance. To reach that decision without an adequate knowledge of the structural condition of the pavement may have very costly consequences.

The use of a Dynatest FWD enables the engineer to determine a deflection basin caused by a controlled load with accuracy and resolution superior to other existing test methods. The FWD produces a dynamic impulse load that simulates a moving wheel load, rather than a static, semi-static or vibratory load. These developments allow the use of mechanistic approaches to analyse FWD data.

FALLING WEIGHT DEFLECTOMETER

Heavy Weight Deflectometer (HWD)

Dynatest was also the first to introduce a heavier loading FWD, the Dynatest Model 8081 HWD. With an expanded loading range, simulating heavy aircraft such as the Boeing 747 (one wheel), the HWD can properly introduce anticipated load/deflection measurements on even heavy pavements such as airfields and very thick highway pavements. The wider loading range also provides the consultant with a load/deflection instrument appropriate for both roads and airfields as required.

HEAVY WEIGHT DEFLECTOMETER

Dynatest FWD/HWD Test Systems

FWD Data Reduction

FWD/HWD generated data, combined with layer thickness, can be confidently used to obtain the "in-situ" resilient E-moduli of a pavement structure. This information can in turn be used in a structural analysis to determine the bearing capacity, estimate expected life, and calculate an overlay requirement, if applicable (over a desired design life).

Software Products for Structural Analysis and Design

For routine analysis purposes, **Dynatest** has developed a software system, ELMOD 6, for both flexible and rigid pavements.

This software application allows extremely rapid data reduction and analysis of FWD/HWD measurements, calculating the layer E-moduli for a typical drop sequence in one second or less. Seasonally adjusted E-moduli, residual life, and required overlay (if applicable) are also calculated within seconds.

For analysis of airfield pavements, **Dynatest** offers the PCN module, which calculates PCN-values in accordance with the ACN/PCN method, as described in the ICAO design manuals.

FWDWin for Windows™

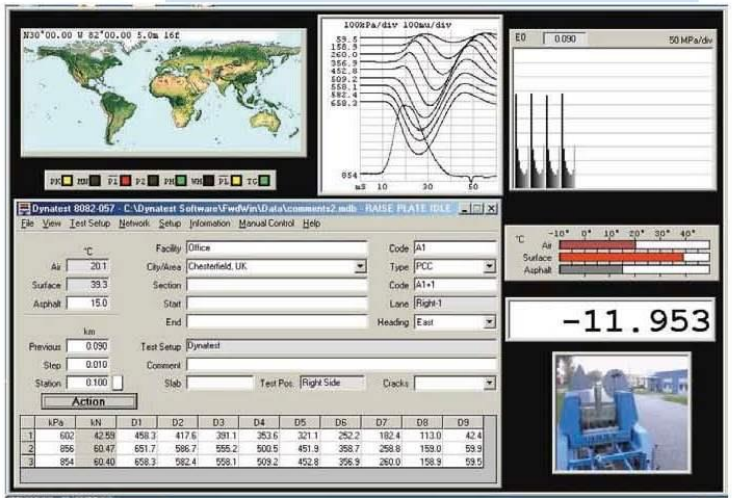
Support for multiple languages.

Data Files:

- Data is stored in Access(tm) (.mdb) databases for ease of processing.

The program can simultaneously generate various formats:

- .fwd, *.f20, *.f25, *.PDDX Pavement Deflection Data eXchange (PDDX by AASHTO) , *.XML eXtensible Markup Language (XML by W3C) .
- 15 Active Sensor Capability (hardware required).
- Surface modulus plots can be graphed real time along road sections under test.
- Real Time Backcalculation.
- Network Database.



Advantages

- A non-destructive test device.
- One man operational.
- Accurate and fast (up to 60 test points/hr).
- Wide loading range.
  FWD: (7-120 kN) or (1,500-27,000 lbf).
  HWD: (30-320 kN) or (6,500-71,800 lbf).
- Designed for multi-purpose pavement applications, ranging from unpaved roads to airfields.
- Excellent repeatability.
- Ideal for mechanistic/analytical design approaches.

Requirements

Windows® XP

Appendix B – Airport Feature Stationing

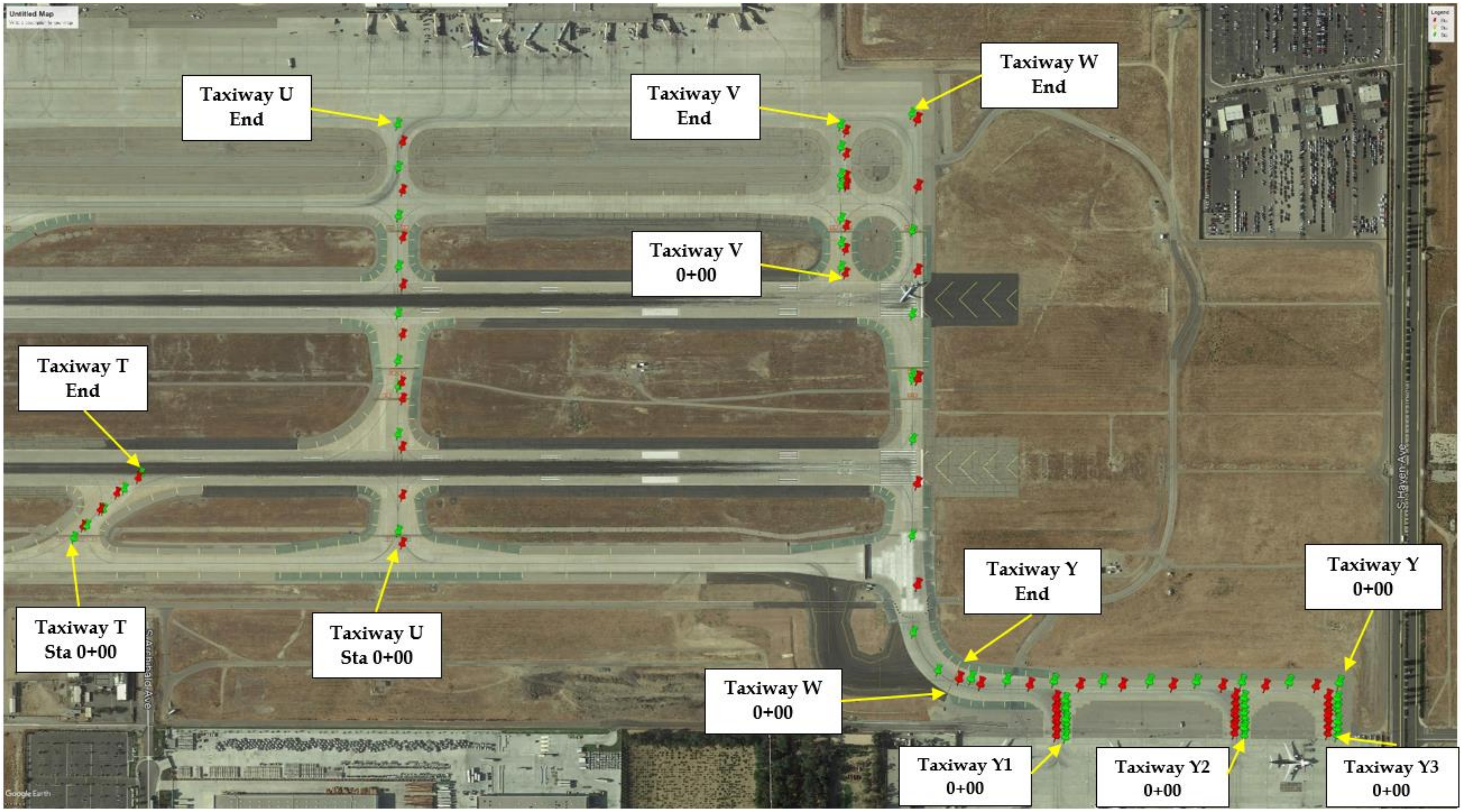


Figure B-1. Reference HWD Stationing for Taxiway T, U, V, Y, Y1, Y2, and Y3.

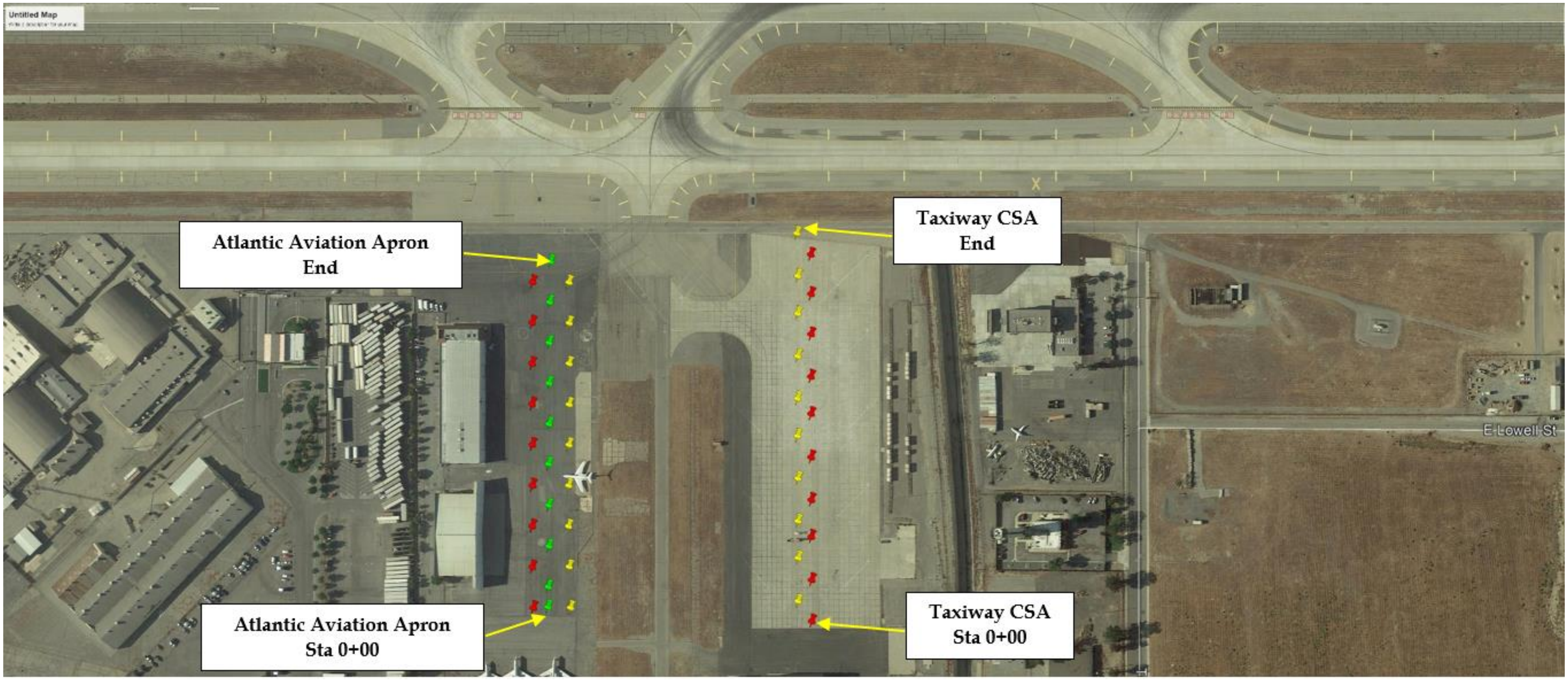


Figure B-2. Reference HWD Stationing for Taxiway CSA and Atlantic Aviation Apron.

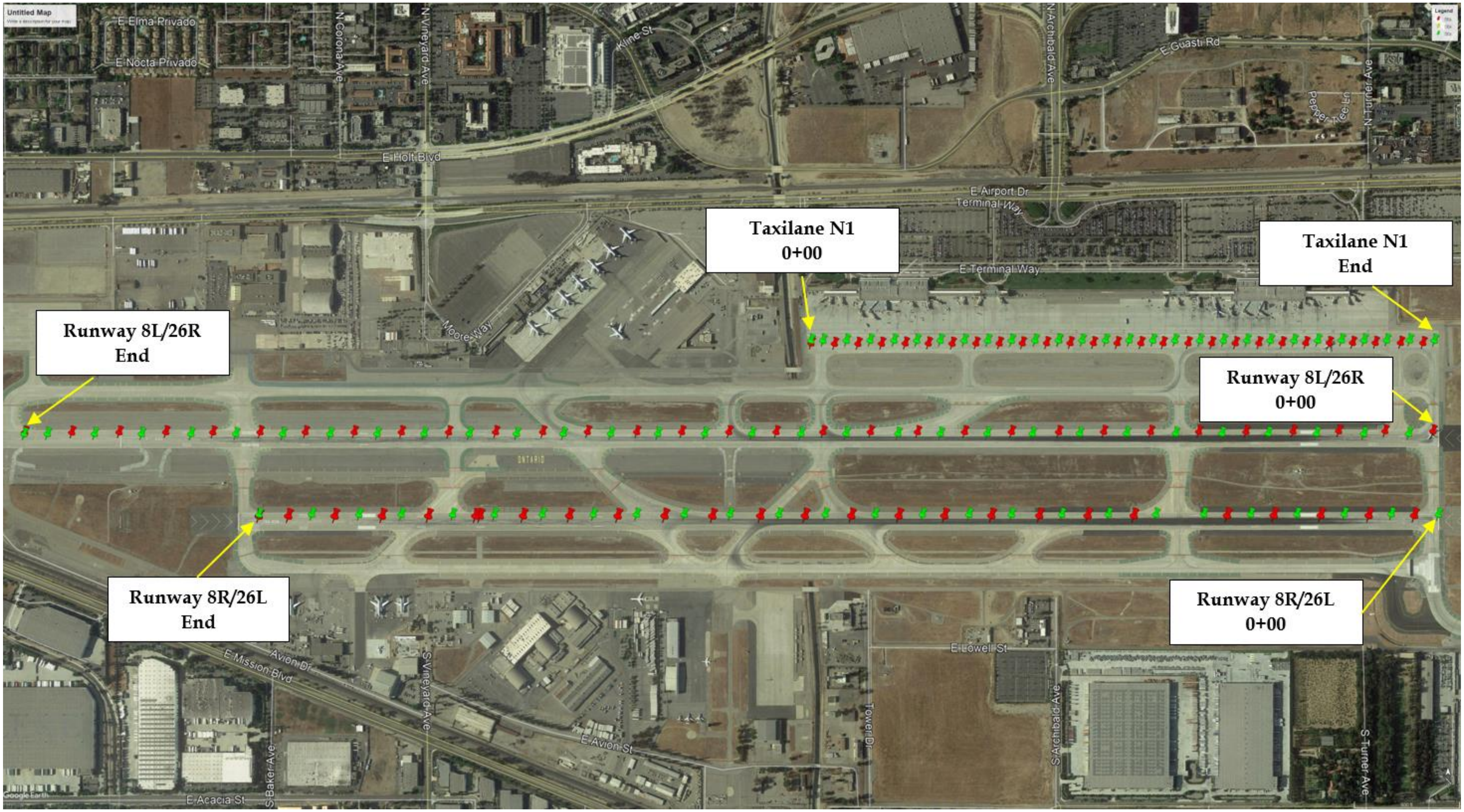


Figure B-3. Reference HWD Stationing for Runways 8L/26R and 8R/26L, and Taxilane N1.

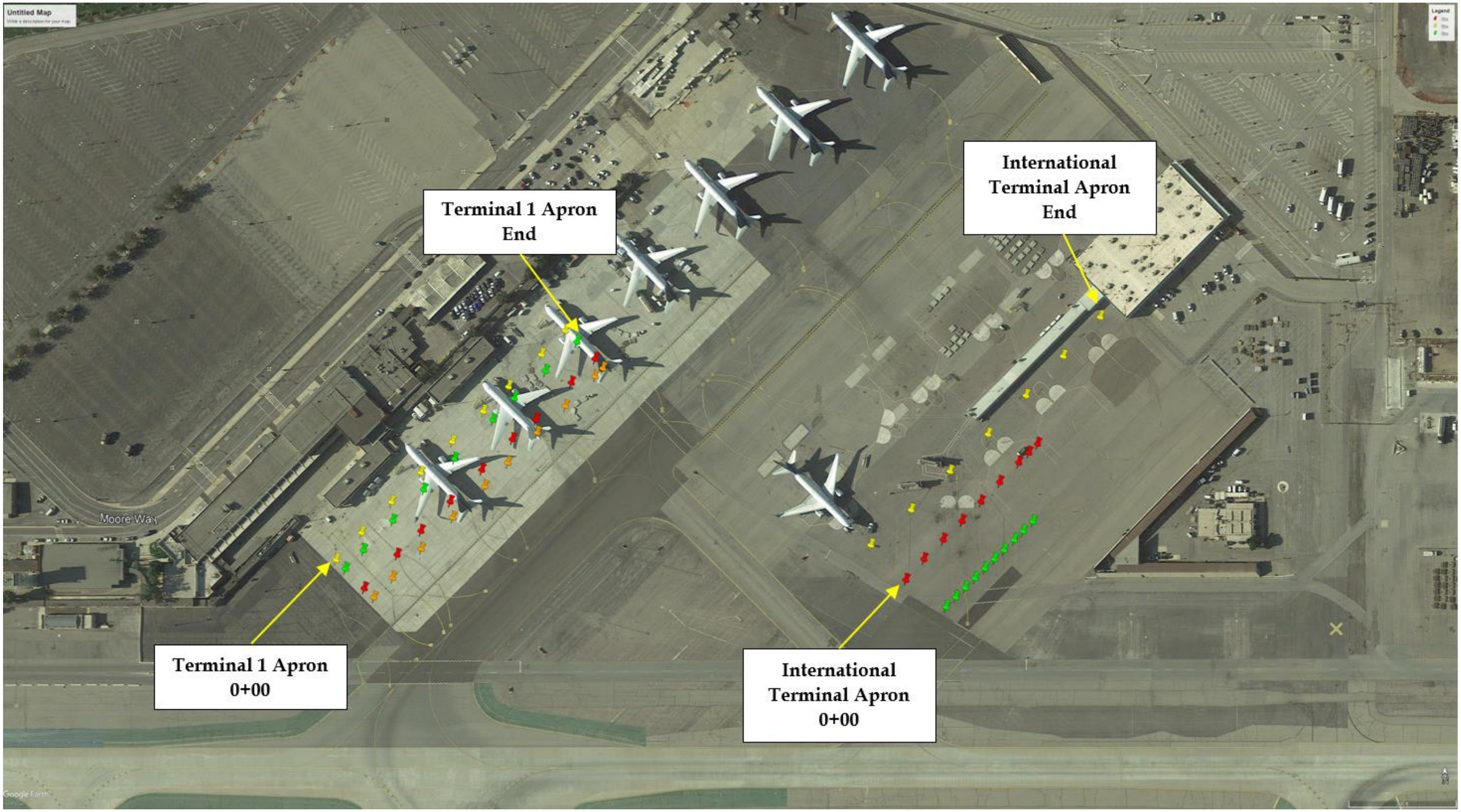


Figure B-4. Reference HWD Stationing for Terminal 1 Apron and International Terminal Apron.

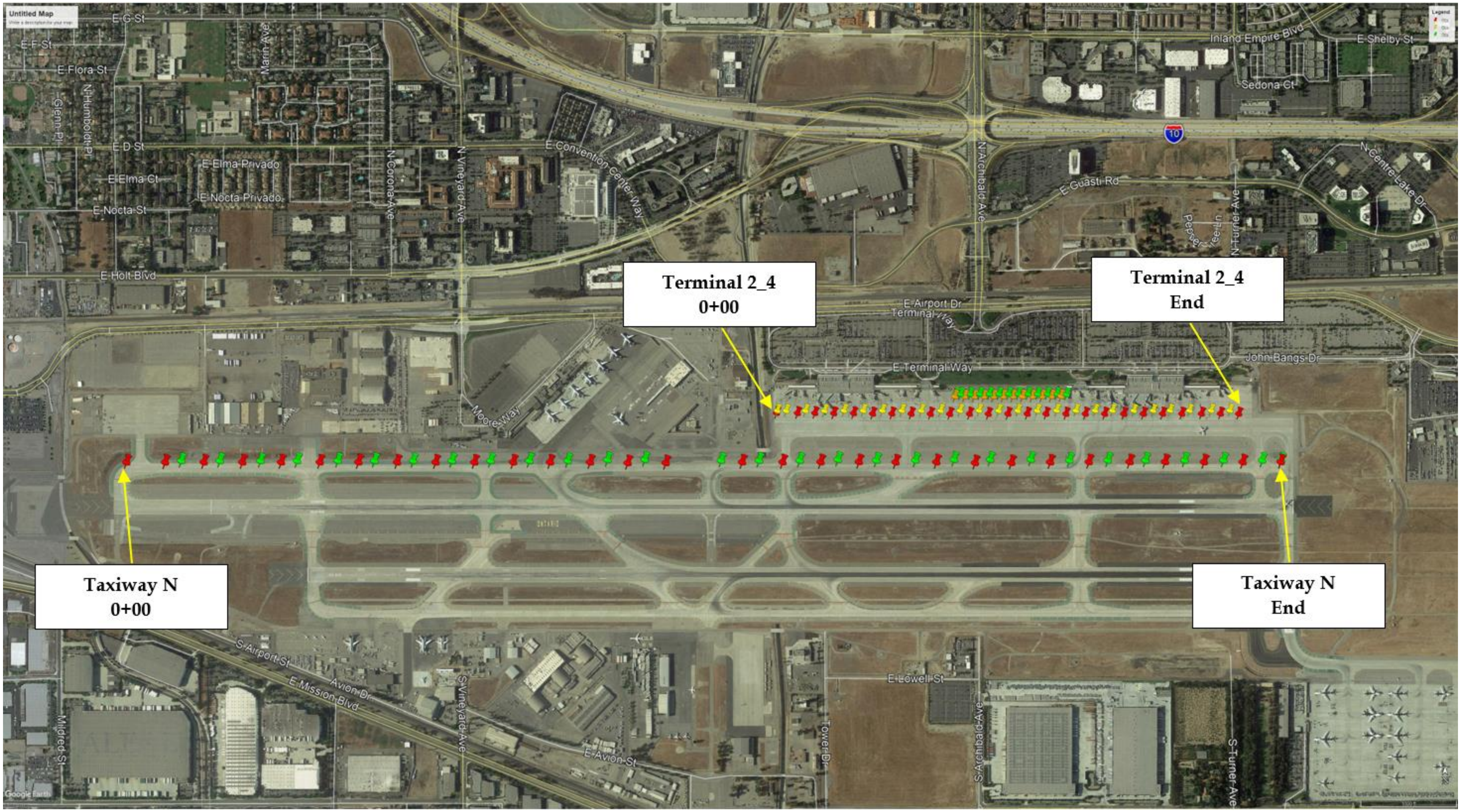


Figure B-5. Reference HWD Stationing for Taxiway N and Terminal 2_4.

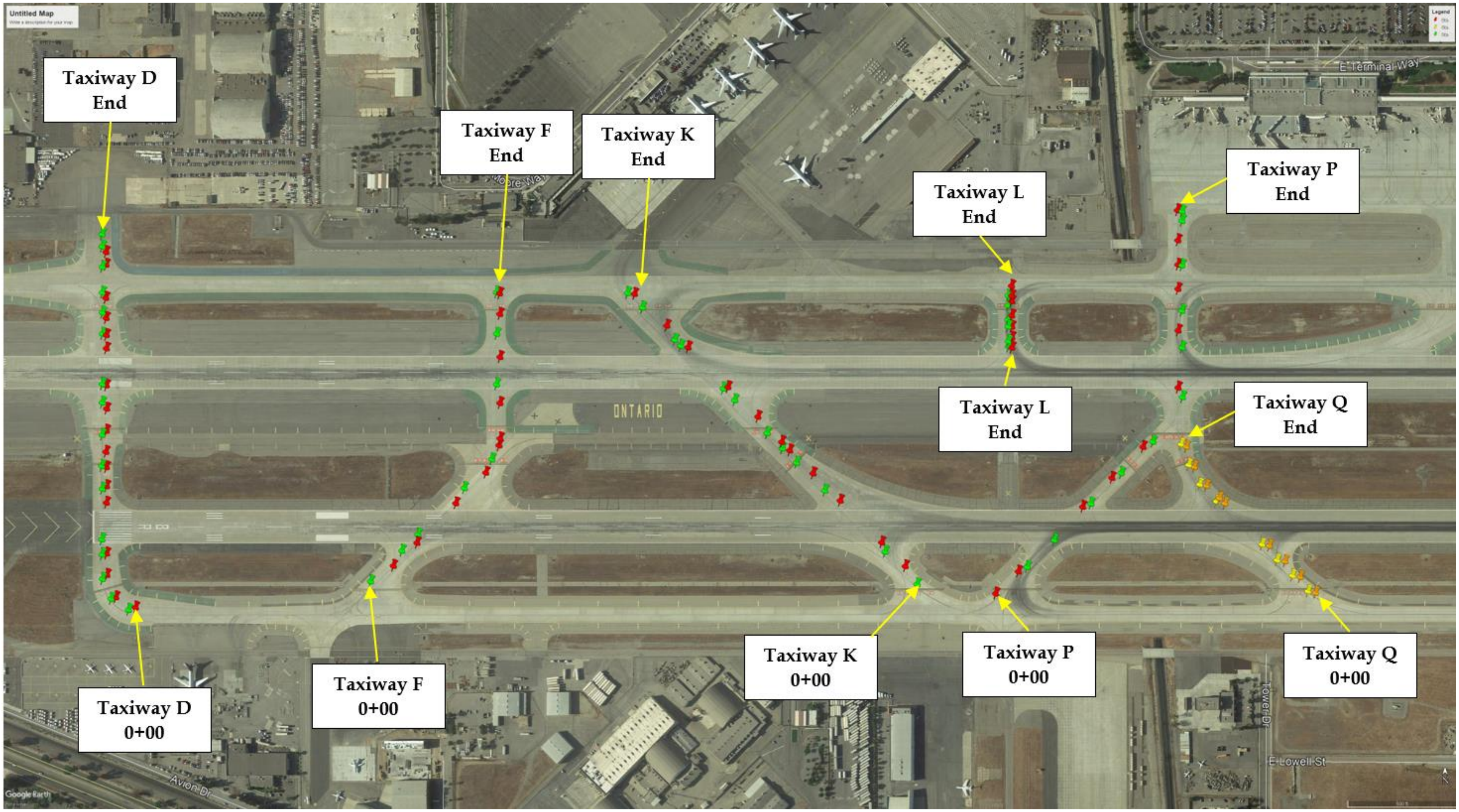


Figure B-6. Reference HWD Stationing for Taxiway D, F, K, L, P, and Q.

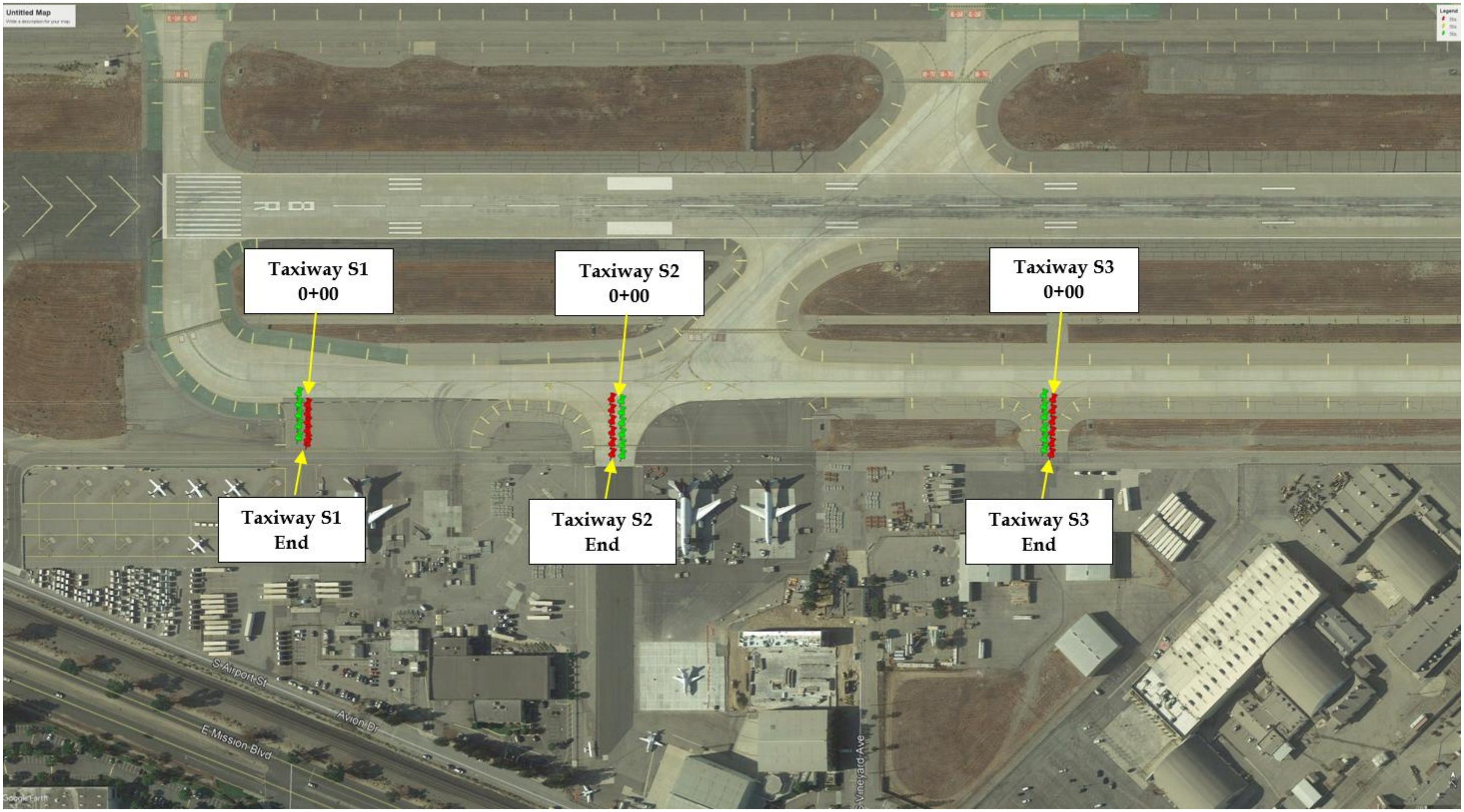


Figure B-7. Reference HWD Stationing for Taxiway S1, S2, and S3.

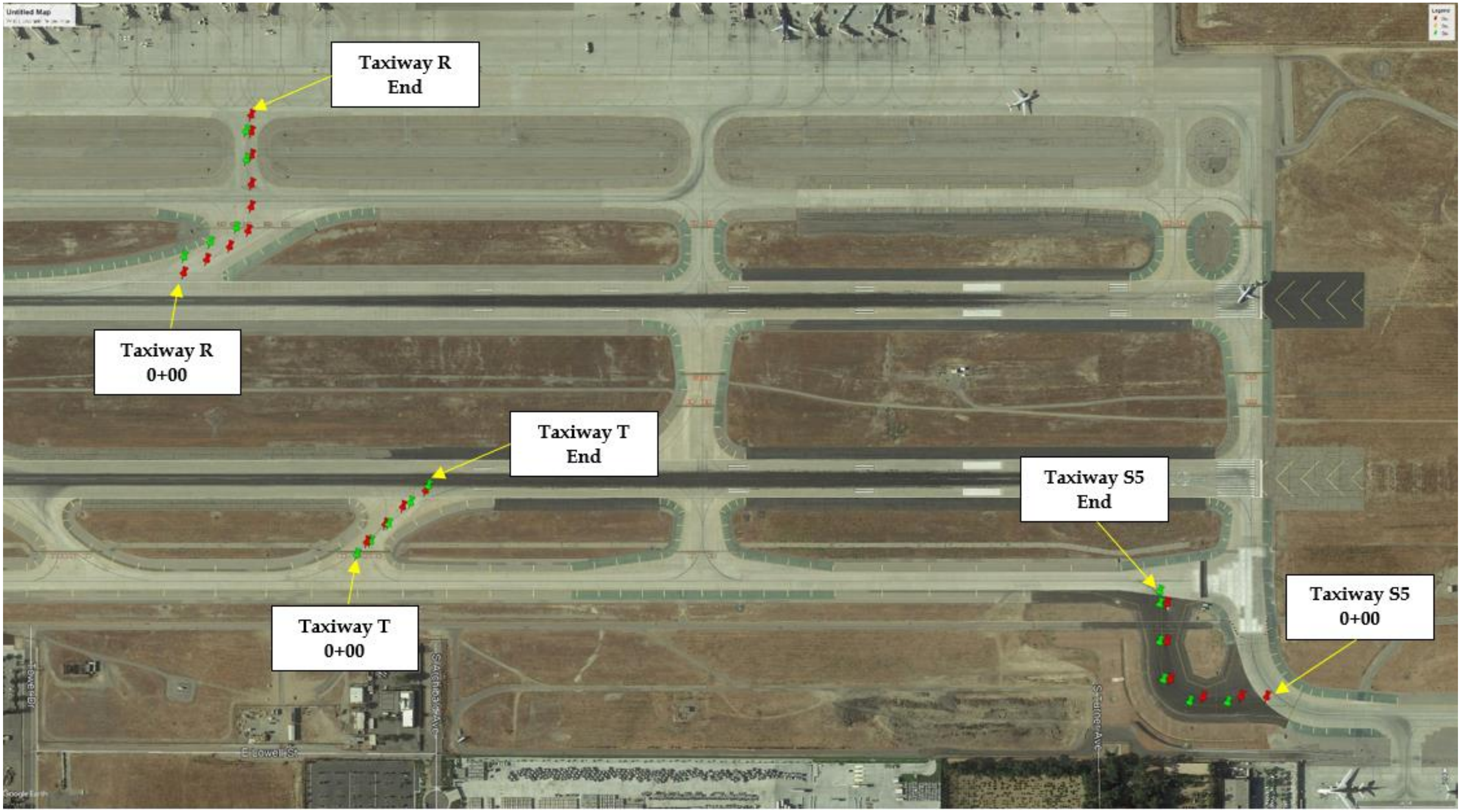


Figure B-8. Reference HWD Stationing for Taxiway R, T, and S5.

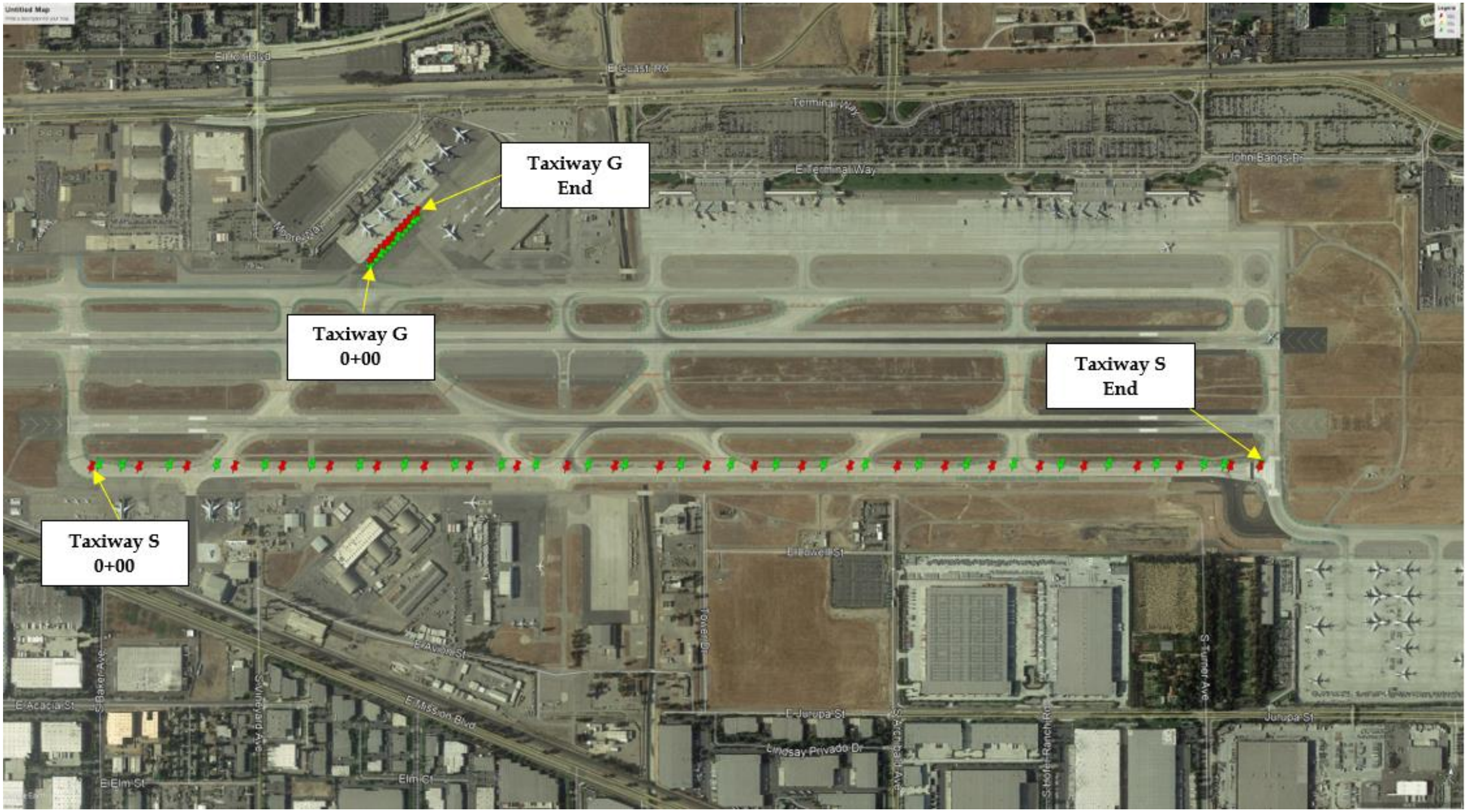


Figure B-9. Reference HWD Stationing for Taxiway S and G.

Appendix C – Normalized Center Deflections

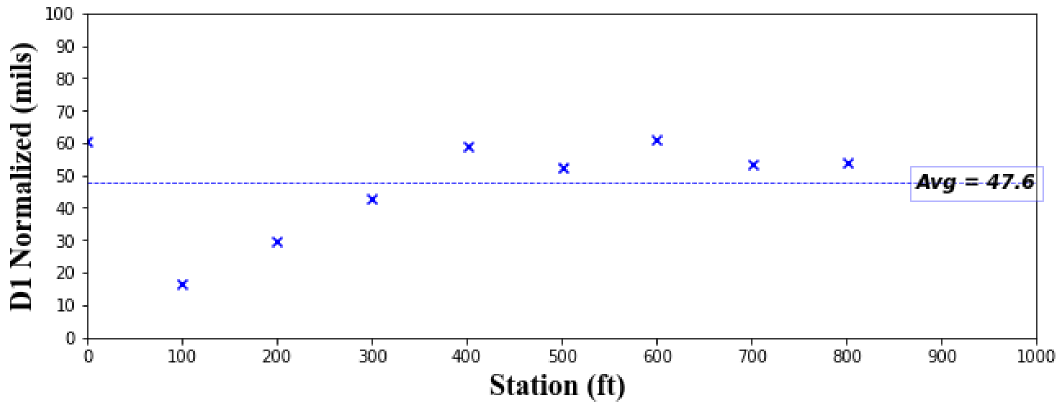


Figure C-1. ATLANTIC AVIATION APRON R1

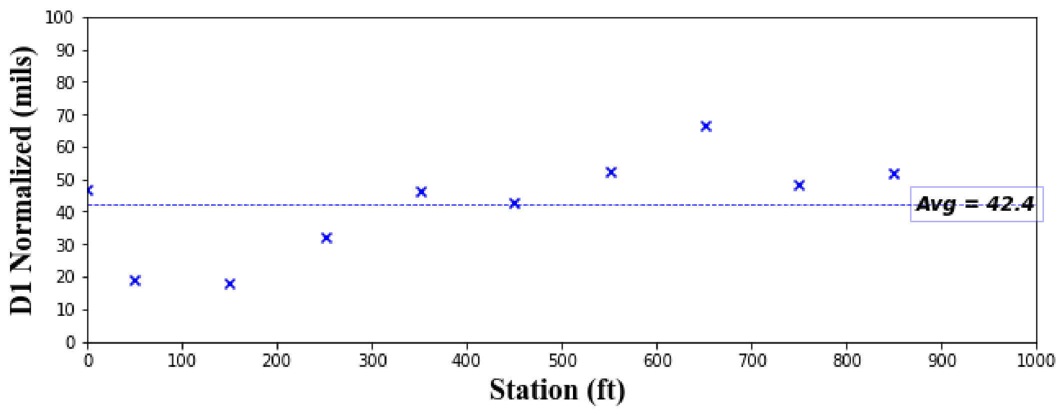


Figure C-2. ATLANTIC AVIATION APRON R2

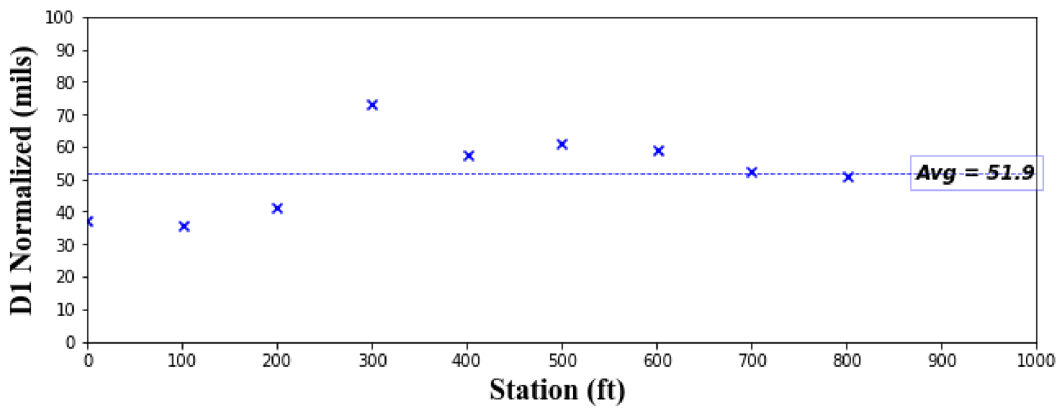


Figure C-3. ATLANTIC AVIATION APRON R3

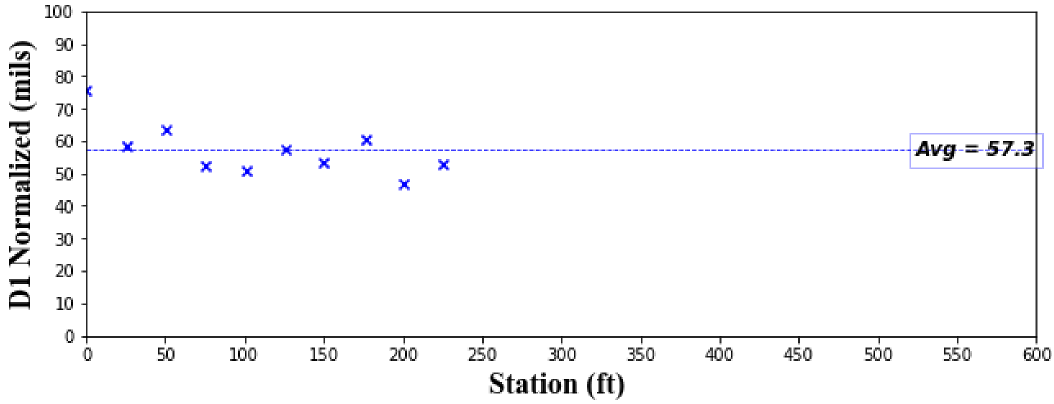


Figure C-4. INT TERMINAL APRON R1

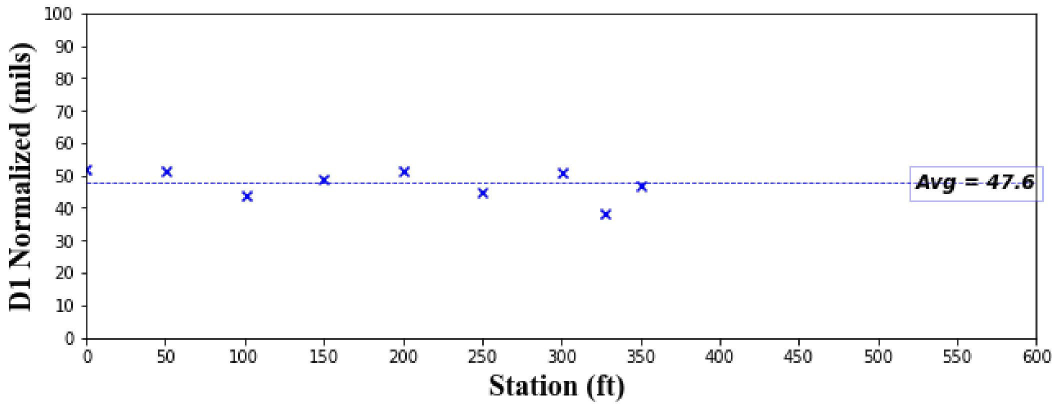


Figure C-5. INT TERMINAL APRON R2

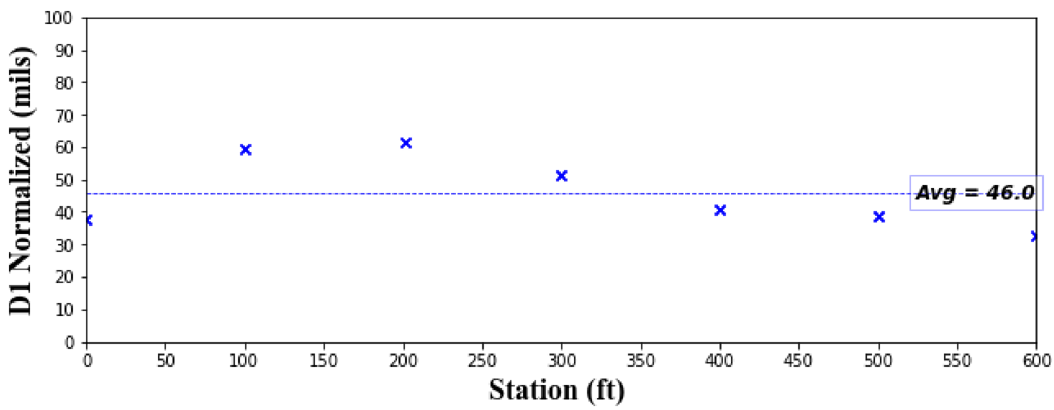


Figure C-6. INT TERMINAL APRON R3

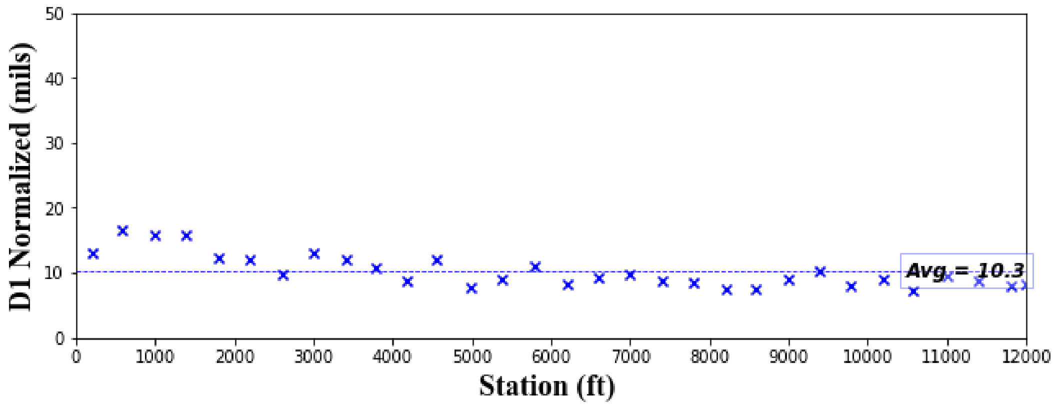


Figure C-7. RWY 8L26R 10L

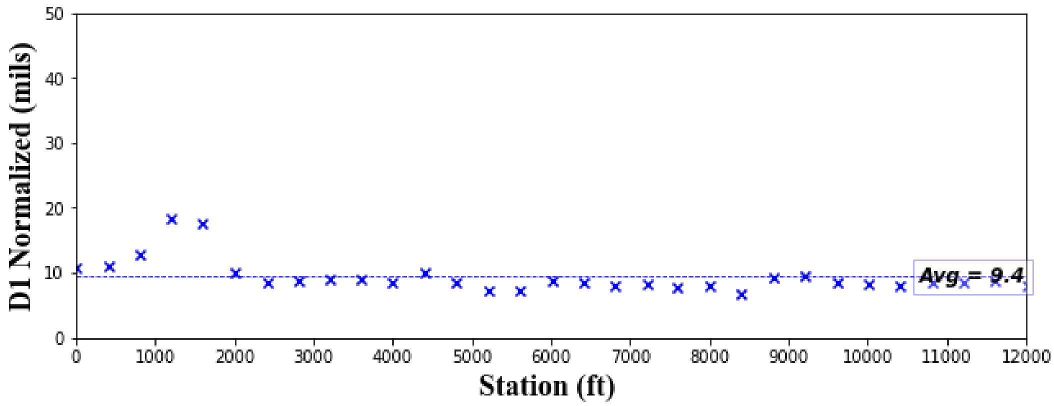


Figure C-8. RWY 8L26R 10R

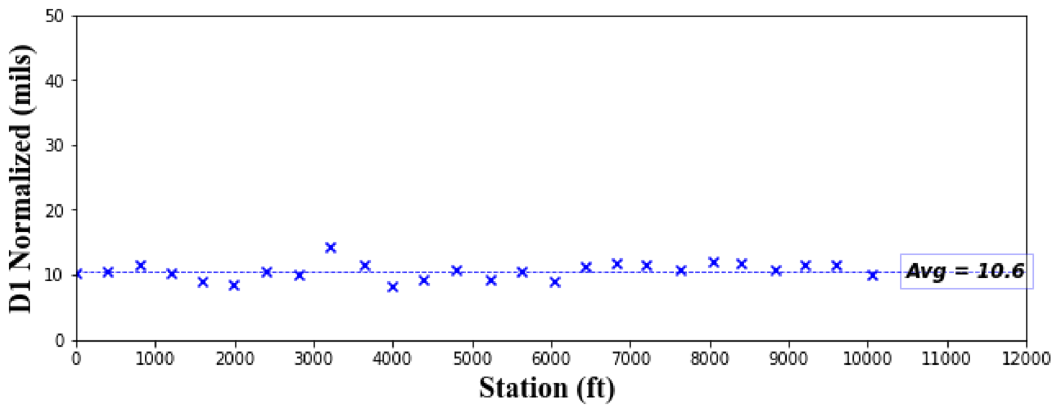


Figure C-9. RWY 8R26L 10L

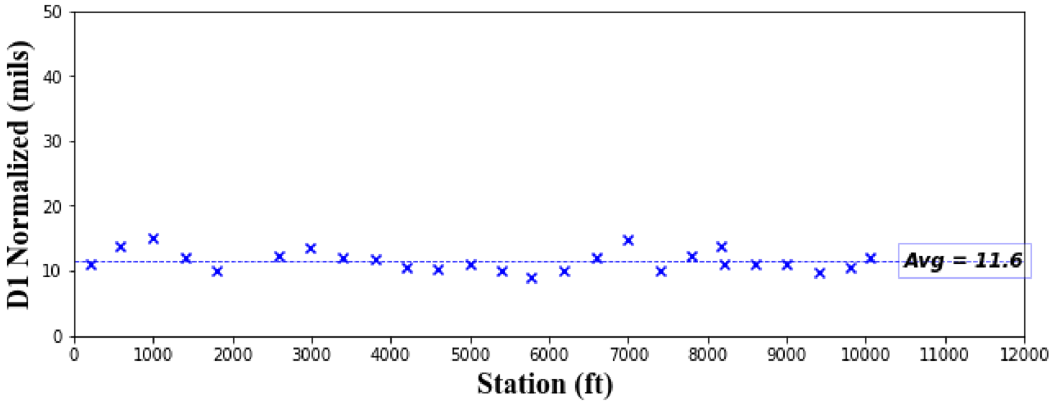


Figure C-10. RWY 8R26L 10R

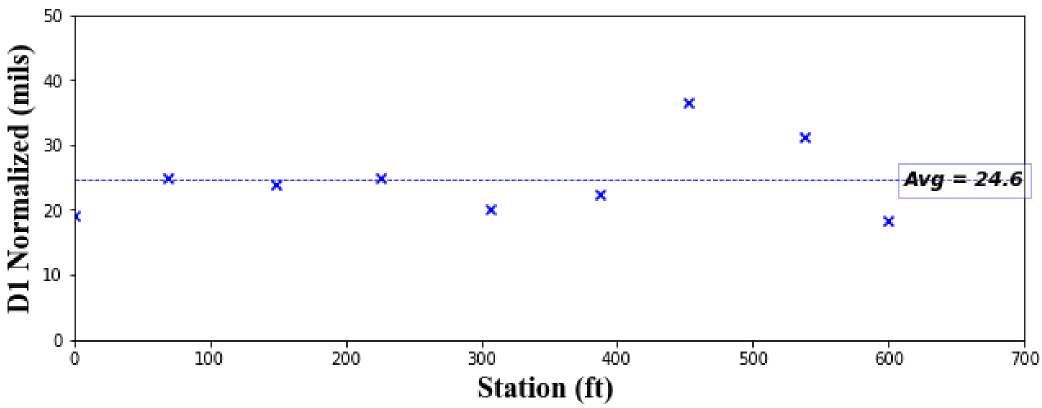


Figure C-11. TERMINAL1 APRON R1

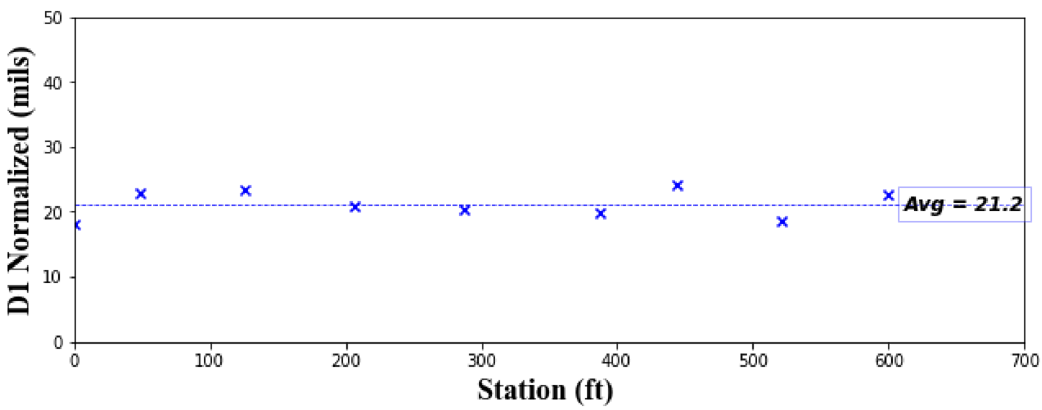


Figure C-12. TERMINAL1 APRON R2

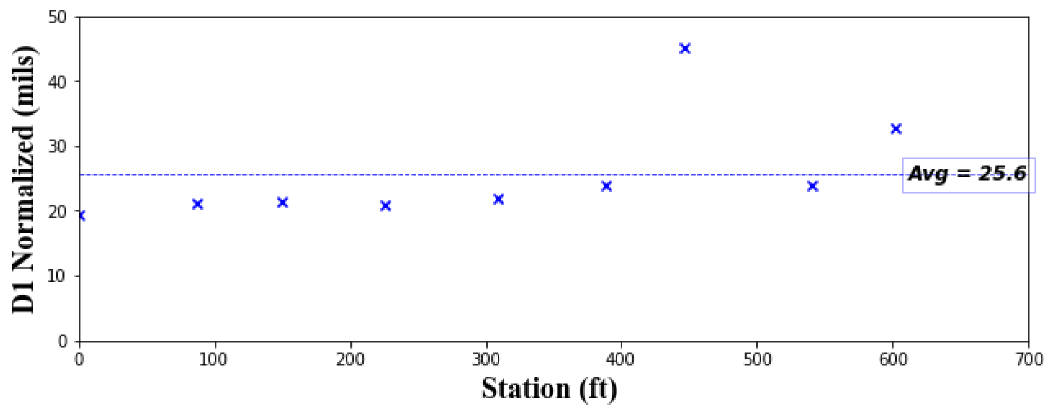


Figure C-13. TERMINAL1 APRON R3

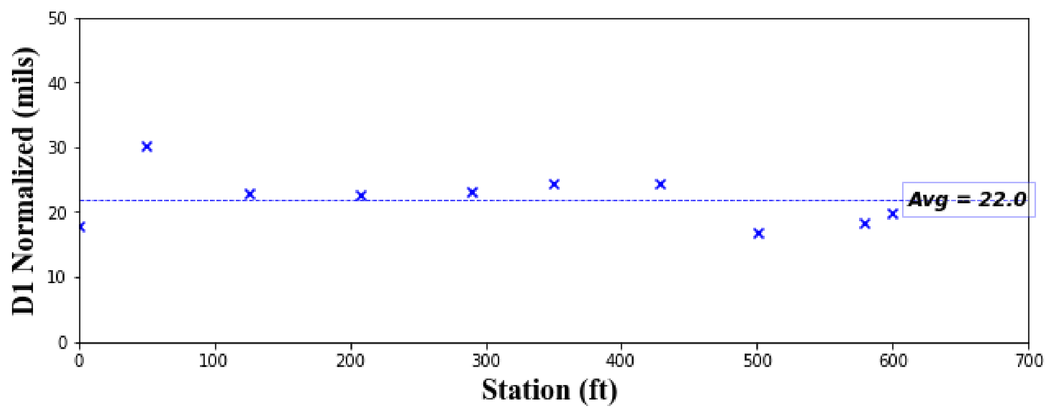


Figure C-14. TERMINAL1 APRON R4

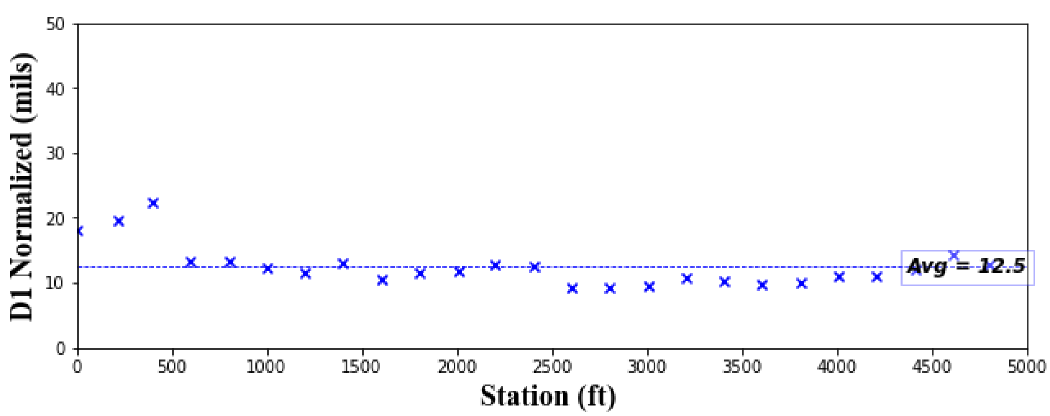


Figure C-15. TERMINAL2 4 R1

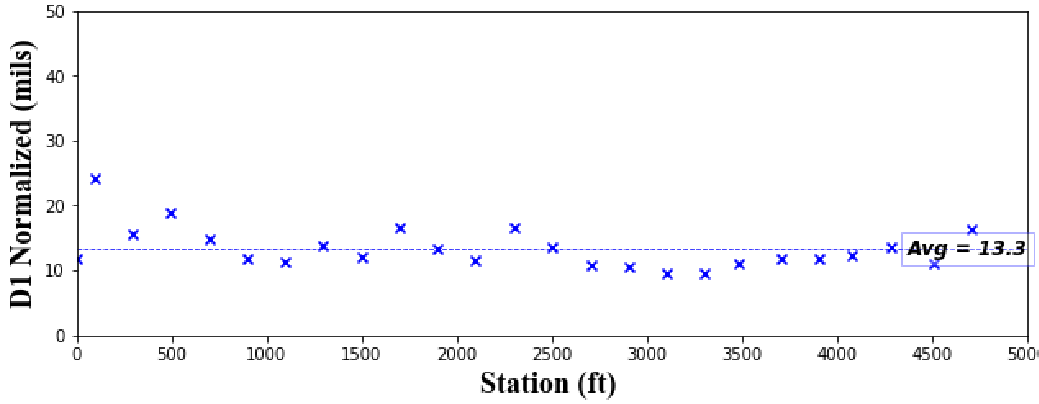


Figure C-16. TERMINAL2 4 R2

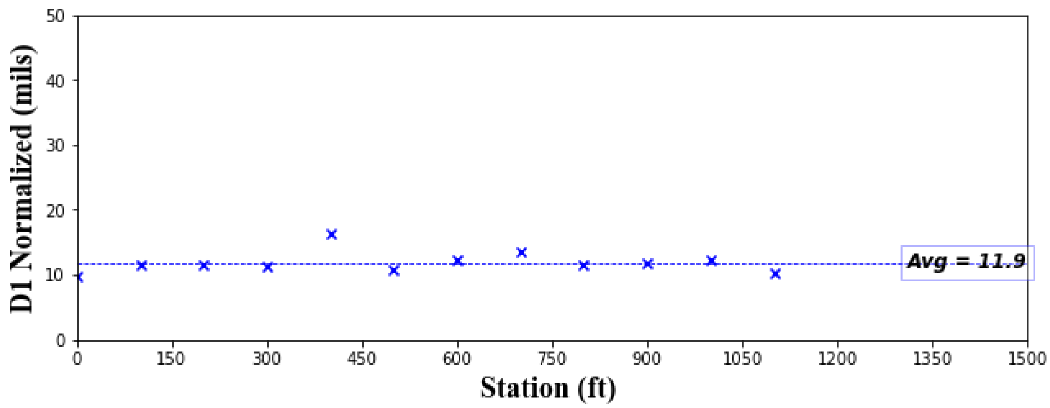


Figure C-17. TERMINAL2 4 R3

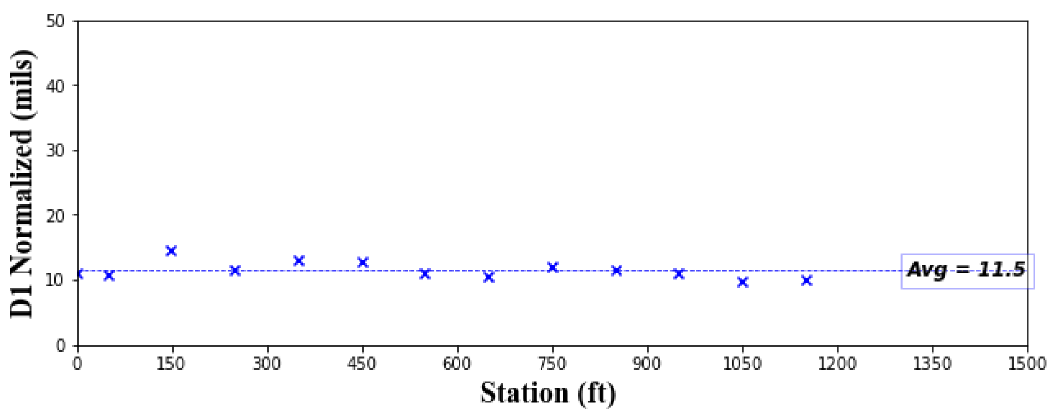


Figure C-18. TERMINAL2 4 R4

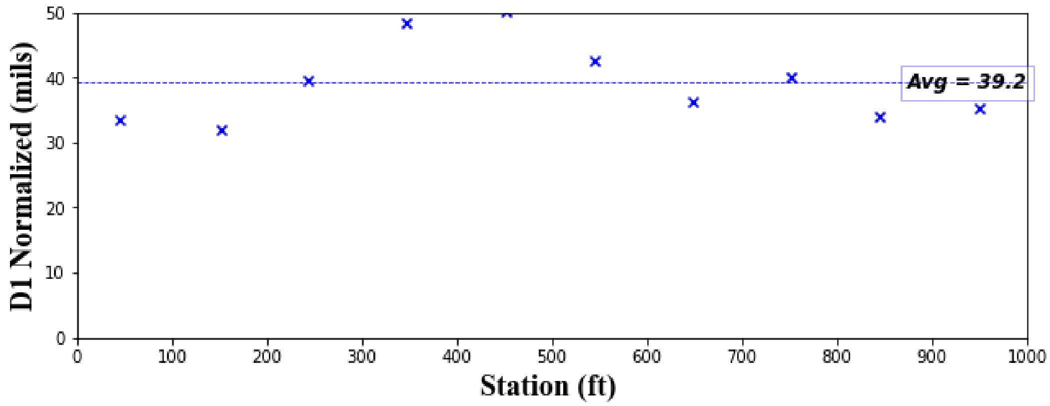


Figure C-19. TWY CSA 10L

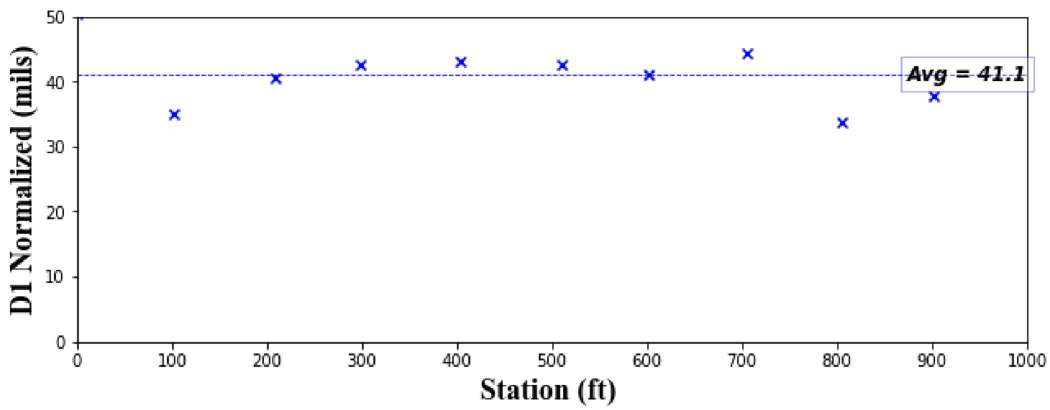


Figure C-20. TWY CSA 10R

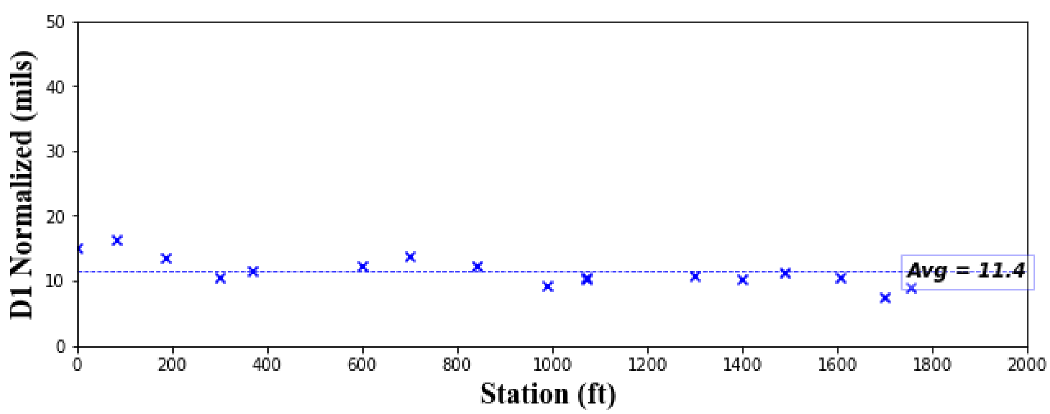


Figure C-21. TWY D 10L

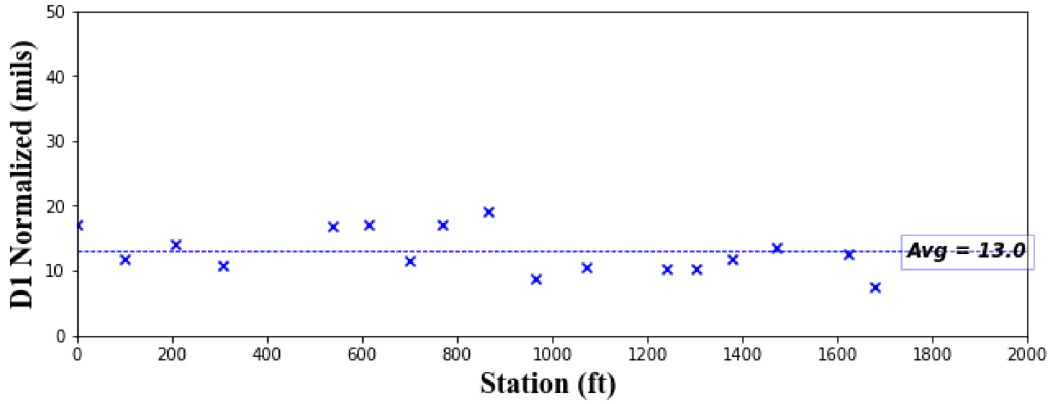


Figure C-22. TWY D 10R

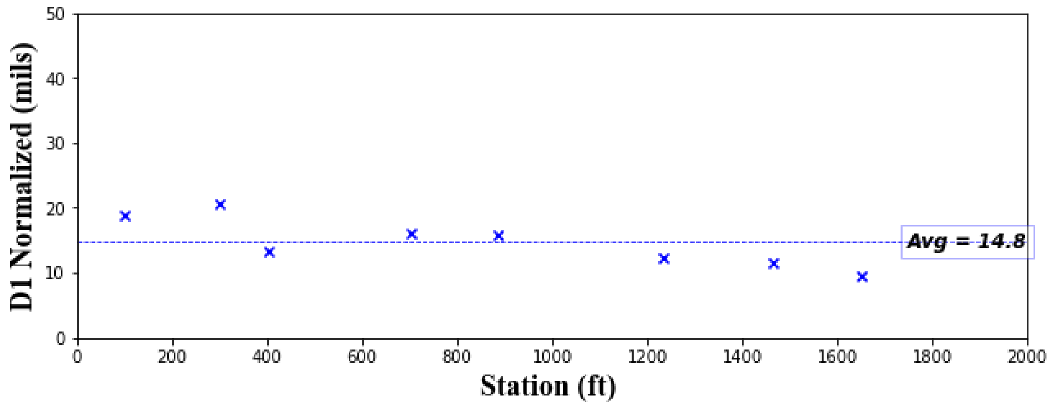


Figure C-23. TWY F 10L

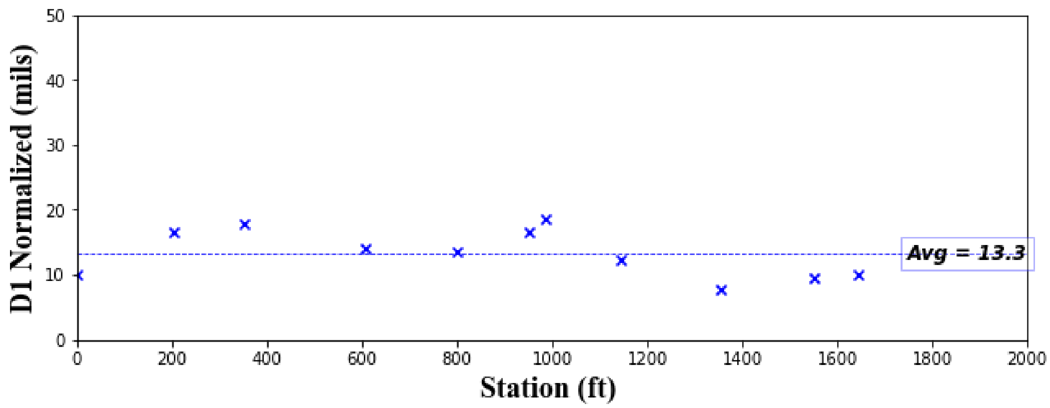


Figure C-24. TWY F 10R

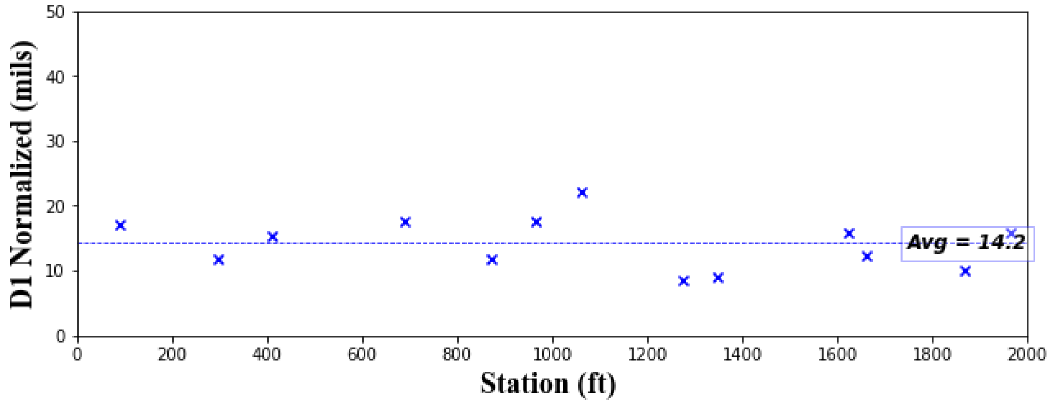


Figure C-25. TWY K 10L

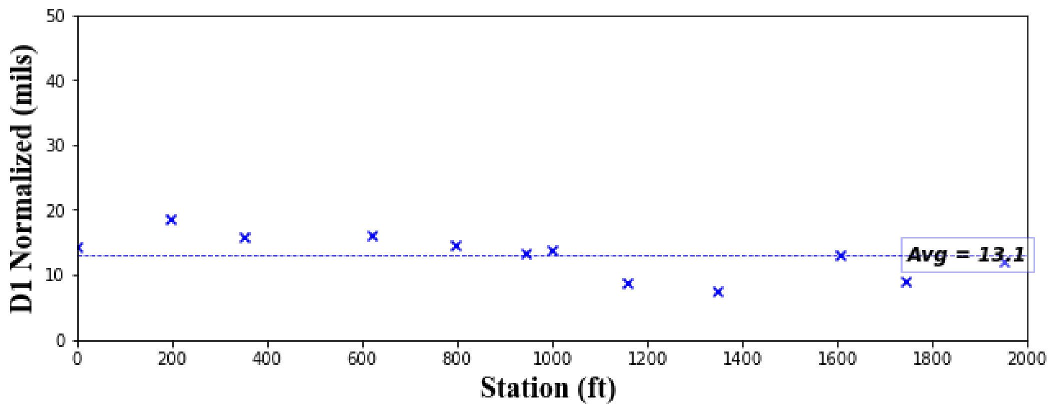


Figure C-26. TWY K 10R

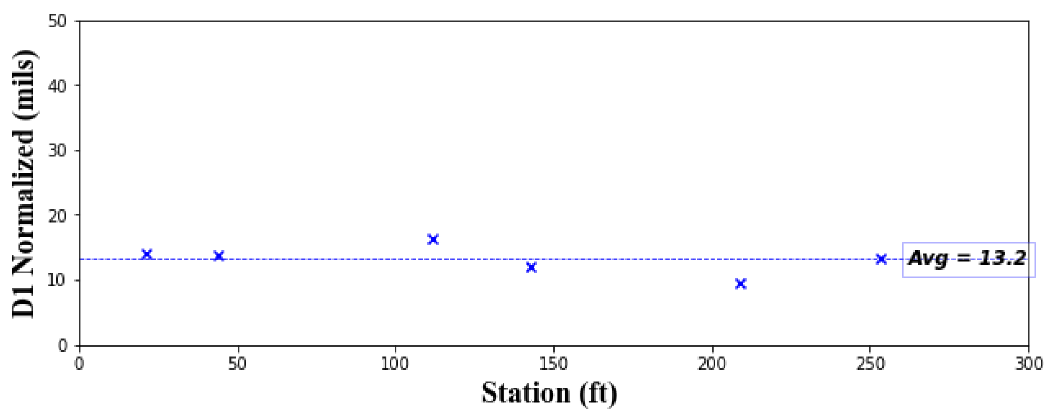


Figure C-27. TWY L 10L

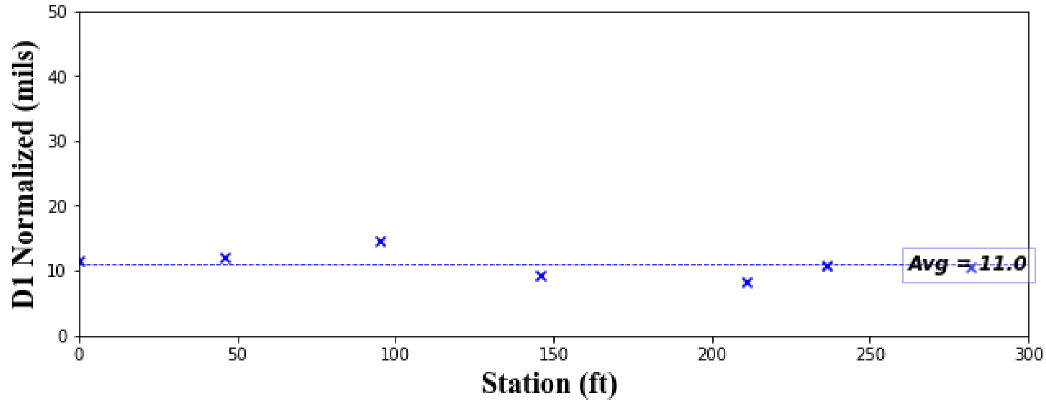


Figure C-28. TWY L 10R

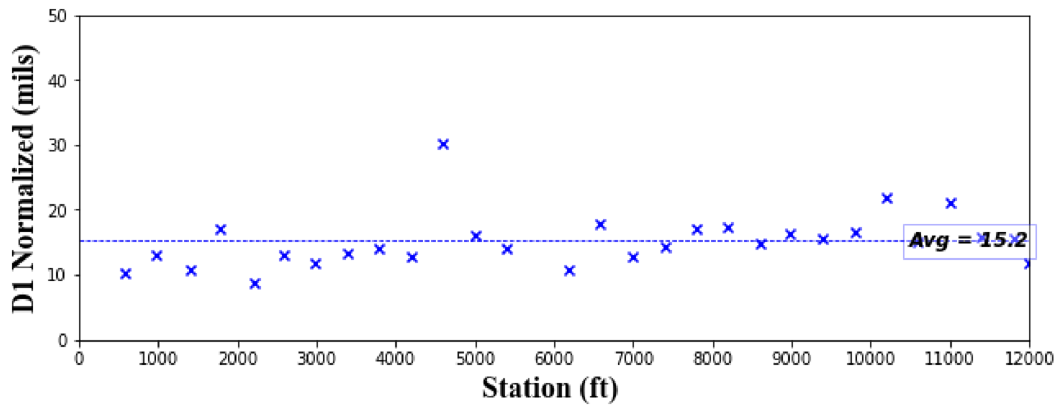


Figure C-29. TWY N 10L

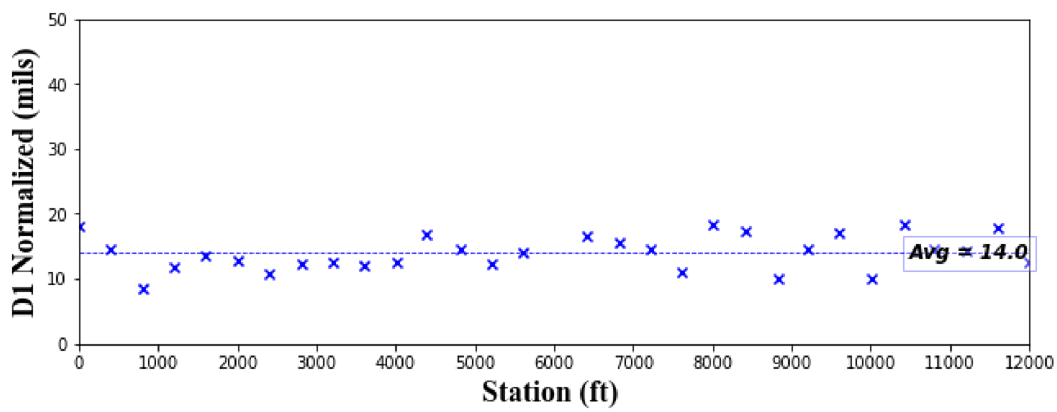


Figure C-30. TWY N 10R

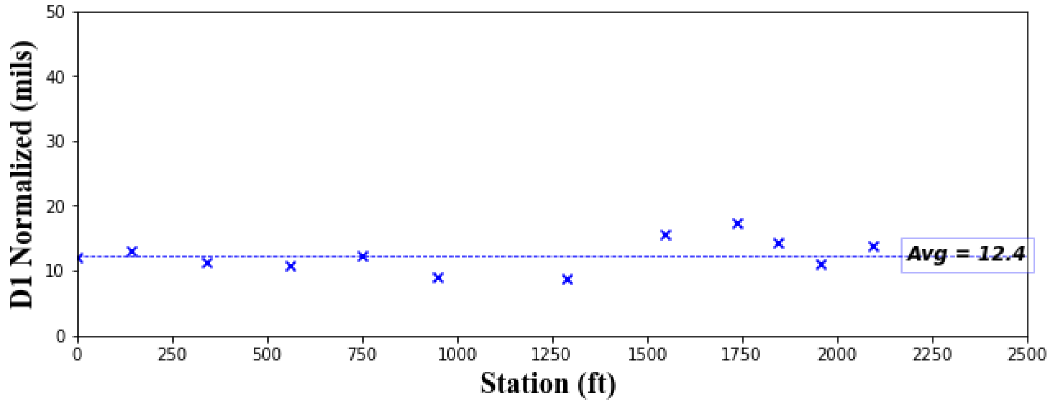


Figure C-31. TWY P 10L

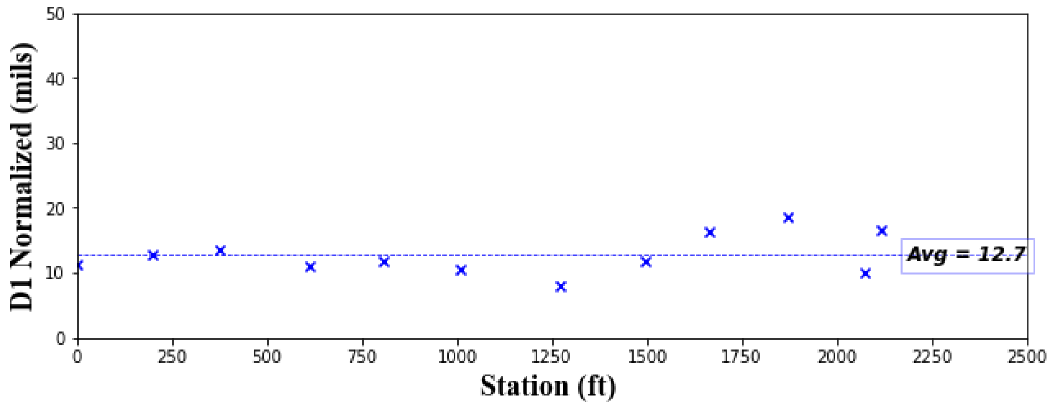


Figure C-32. TWY P 10R

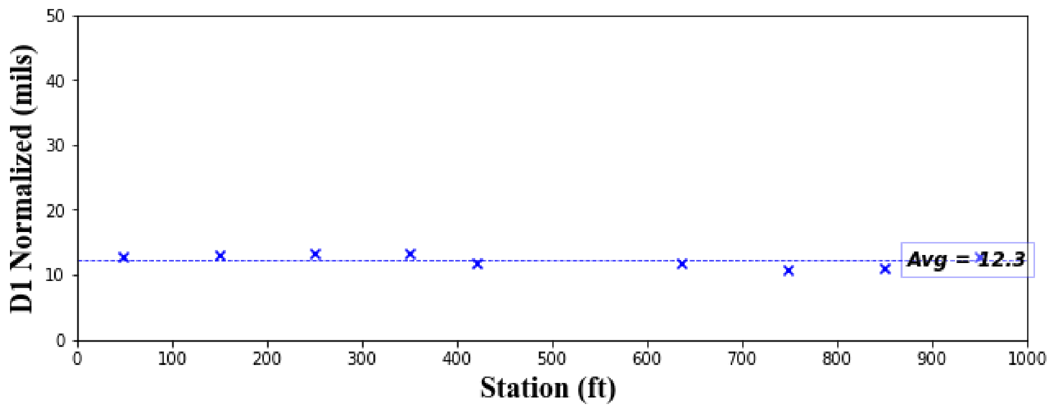


Figure C-33. TWY Q 10L

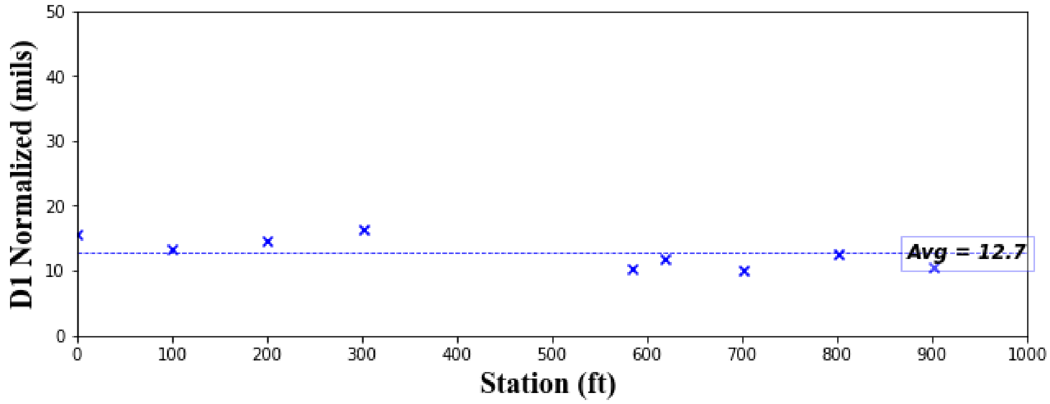


Figure C-34. TWY Q 10R

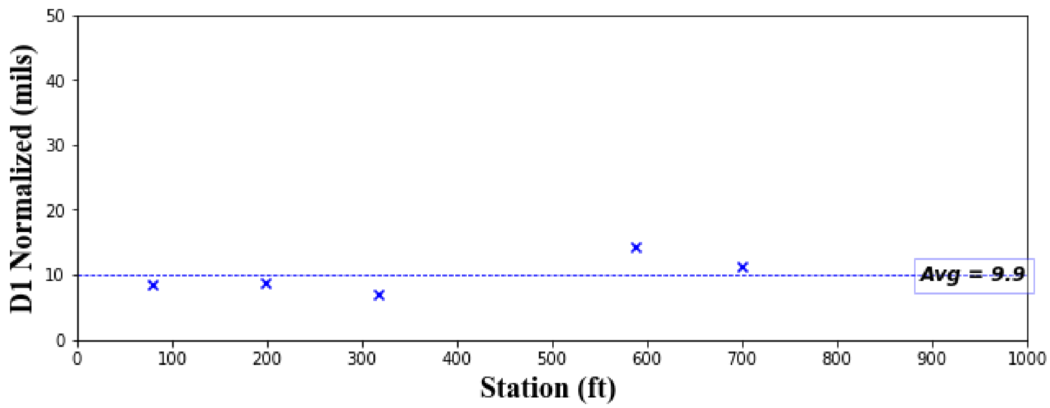


Figure C-35. TWY R 10L

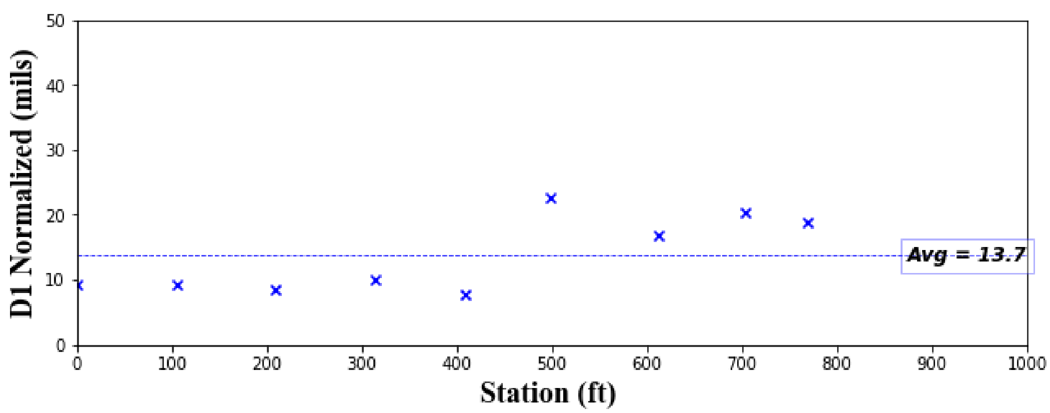


Figure C-36. TWY R 10R

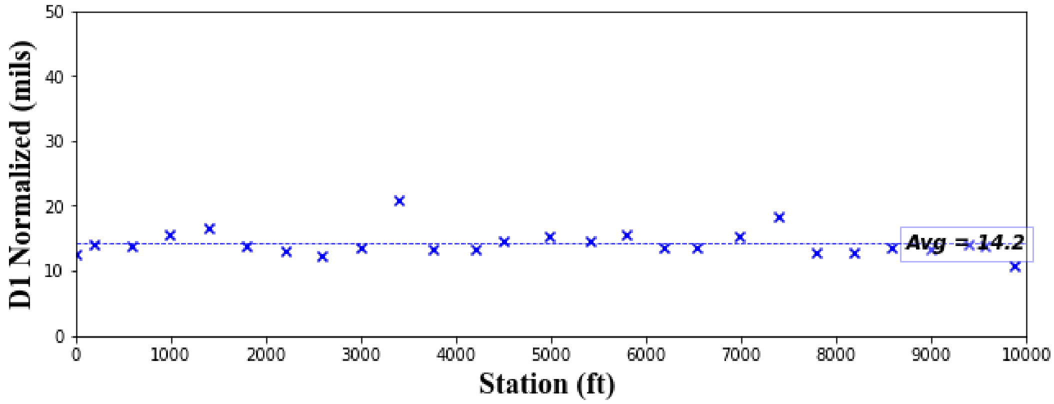


Figure C-37. TWY S 10L

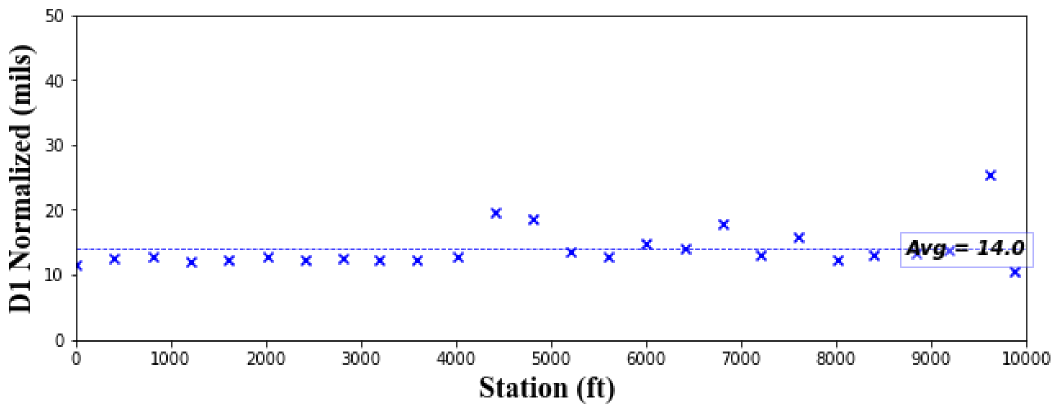


Figure C-38. TWY S 10R

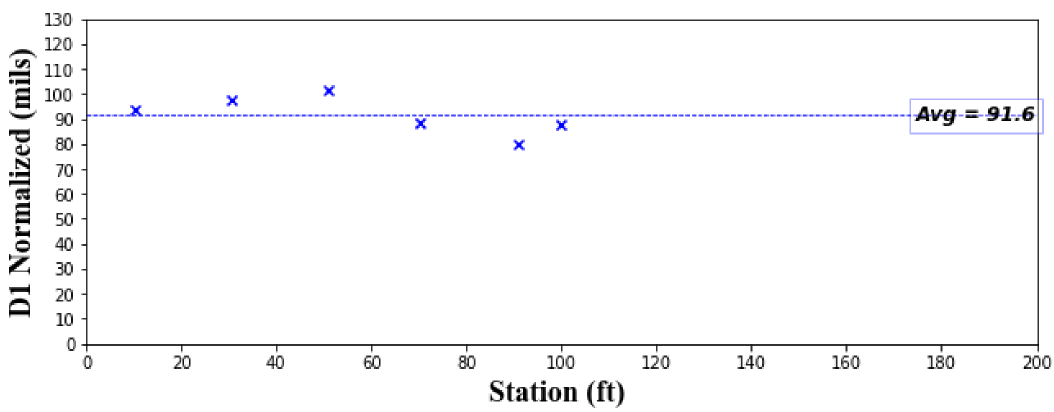


Figure C-39. TWY S1 10L

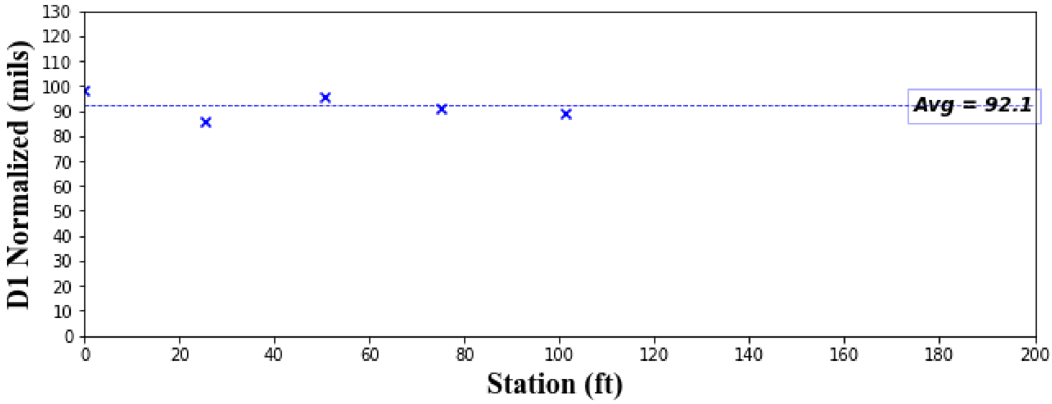


Figure C-40. TWY S1 10R

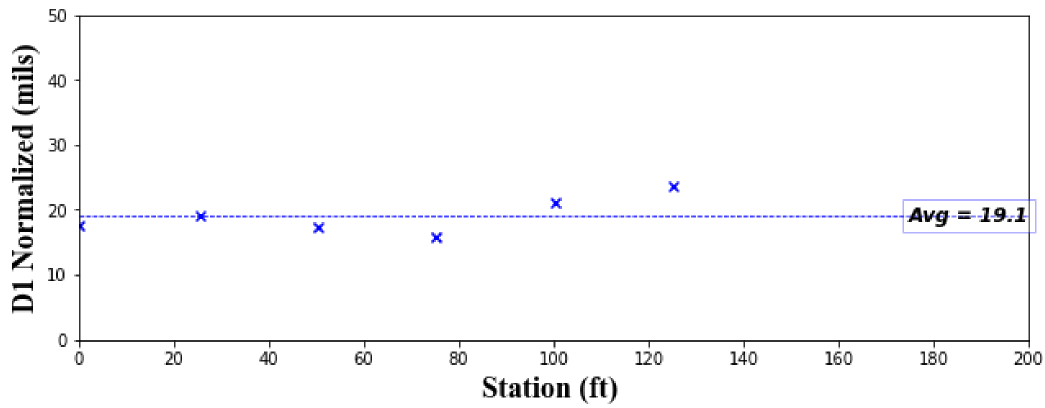


Figure C-41. TWY S2 10L

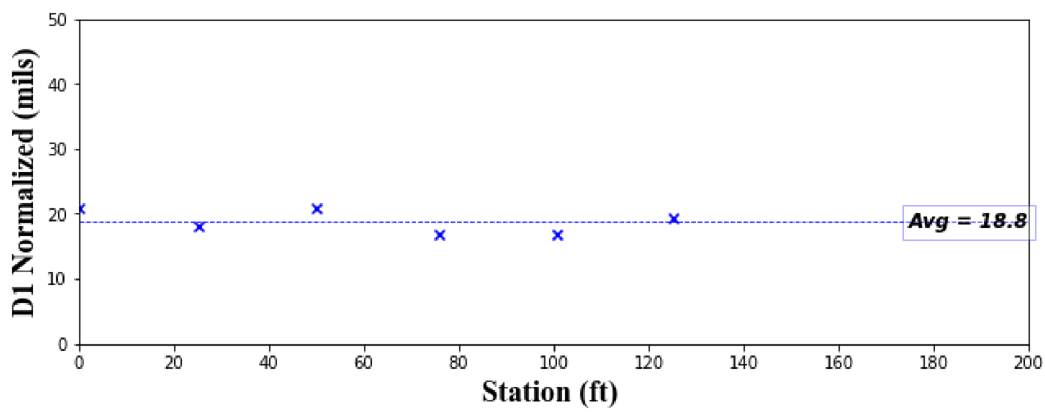


Figure C-42. TWY S2 10R

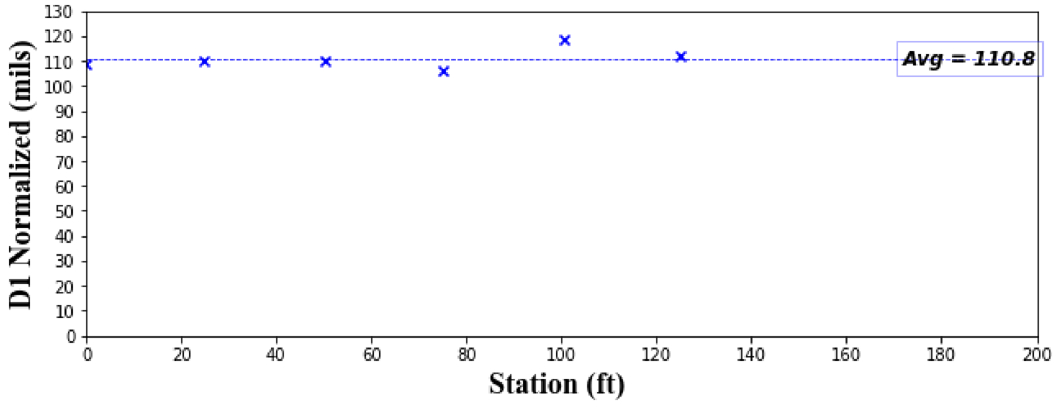


Figure C-43. TWY S3 10L

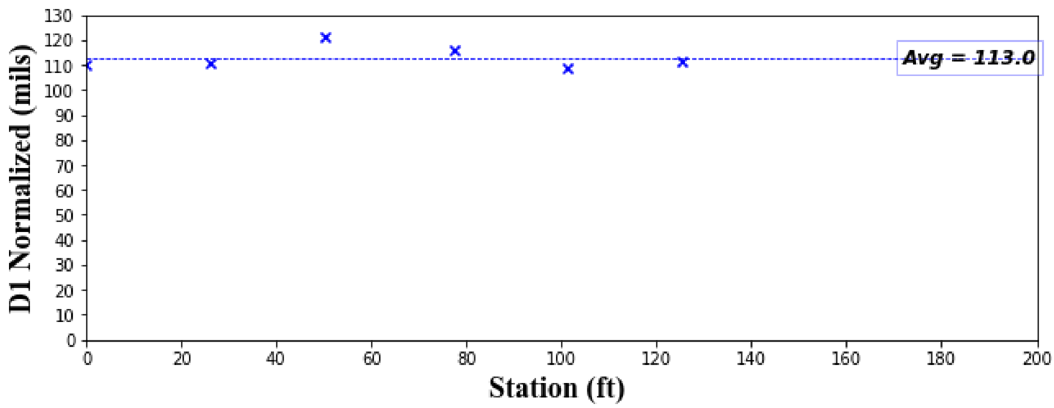


Figure C-44. TWY S3 10R

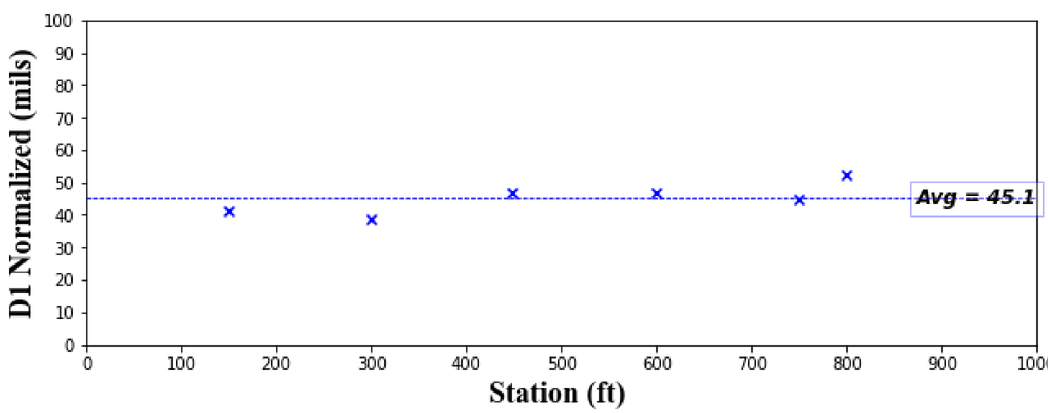


Figure C-45. TWY S5 10L

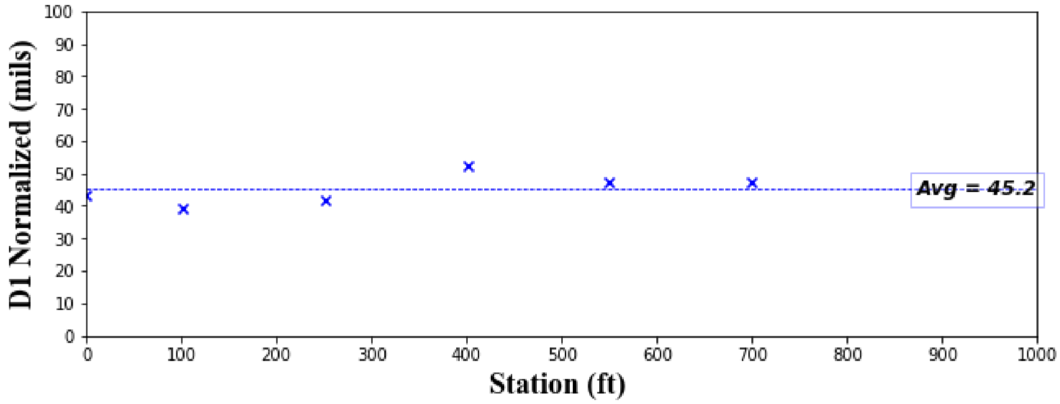


Figure C-46. TWY S5 10R

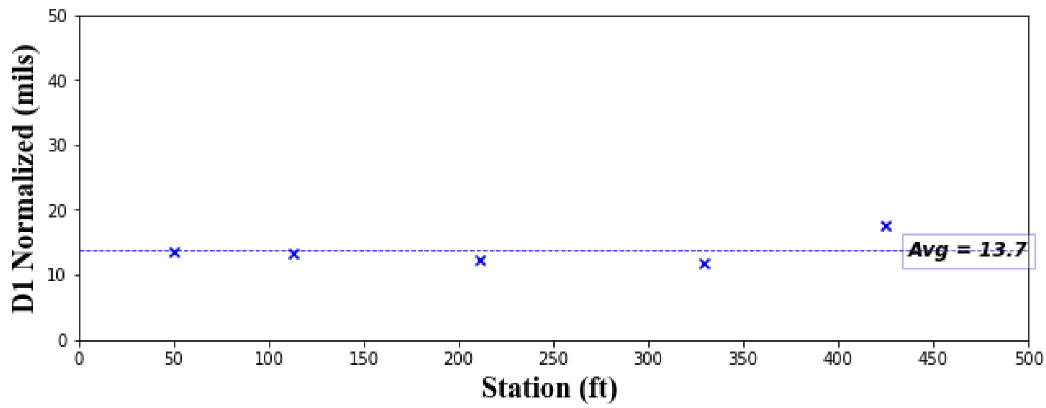


Figure C-47. TWY T 10L

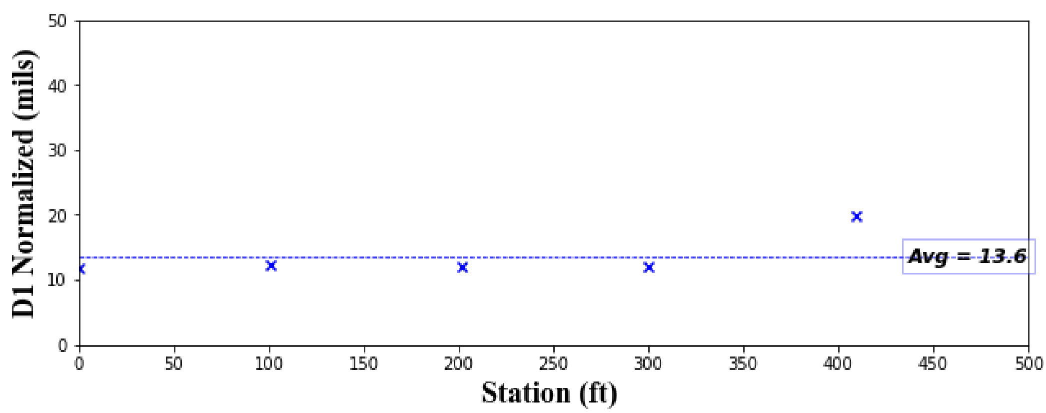


Figure C-48. TWY T 10R

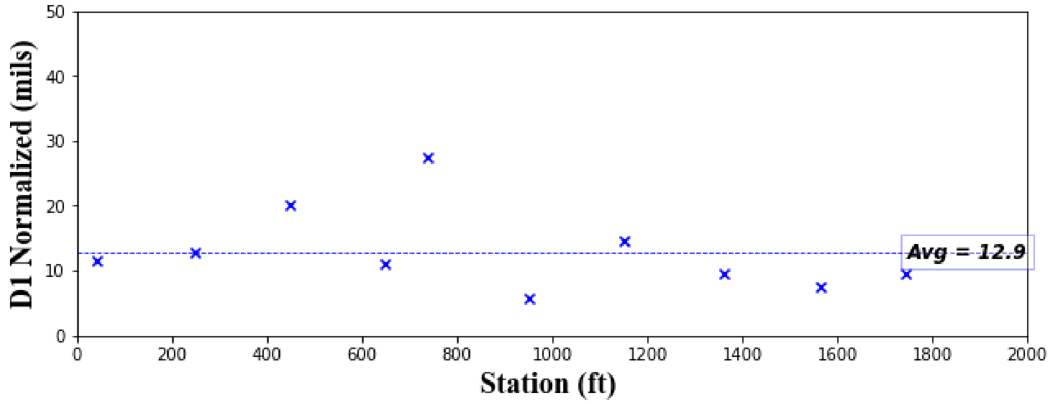


Figure C-49. TWY U 10L

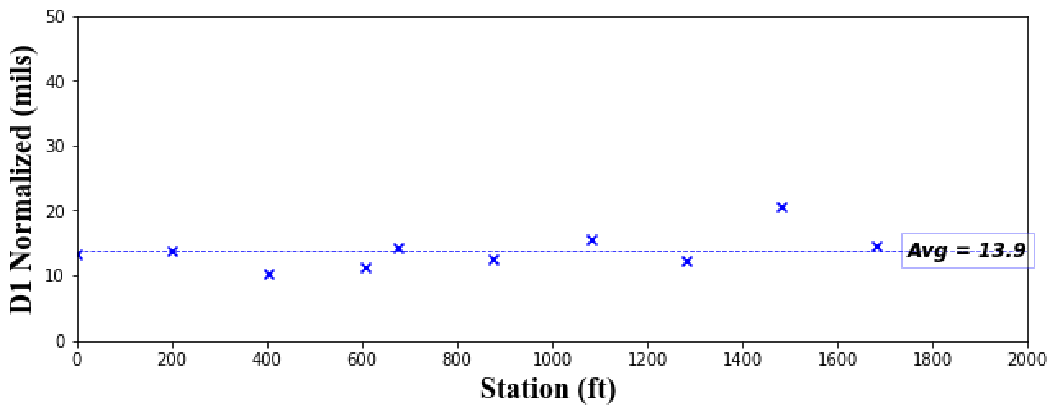


Figure C-50. TWY U 10R

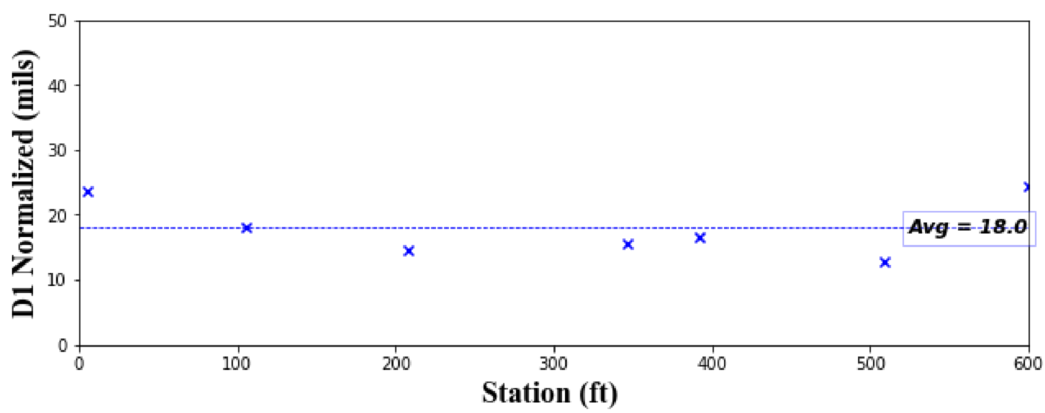


Figure C-51. TWY V 10L

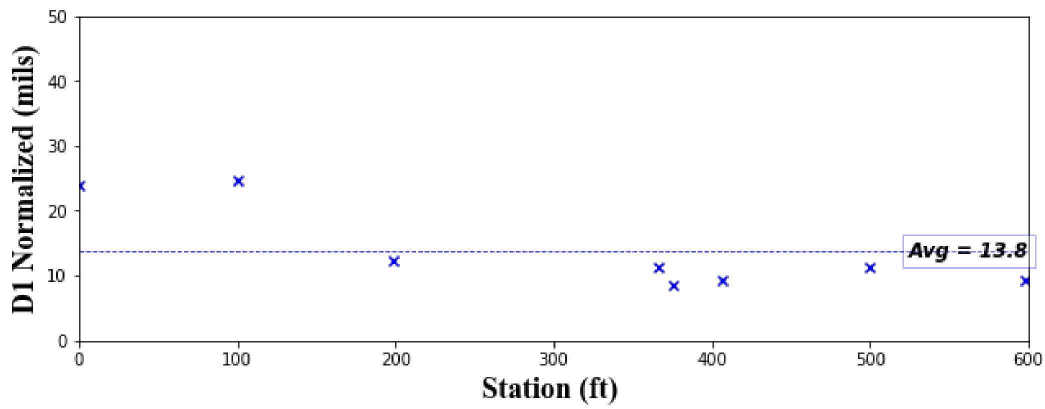


Figure C-52. TWY V 10R

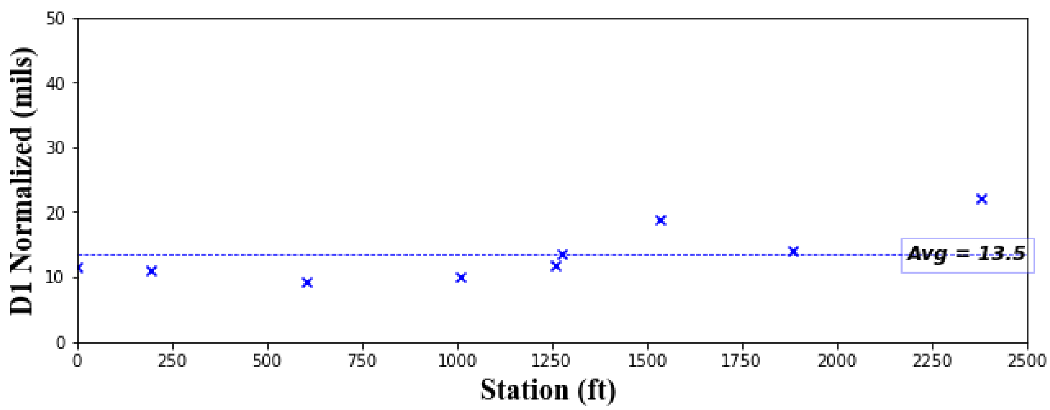


Figure C-53. TWY W 10L

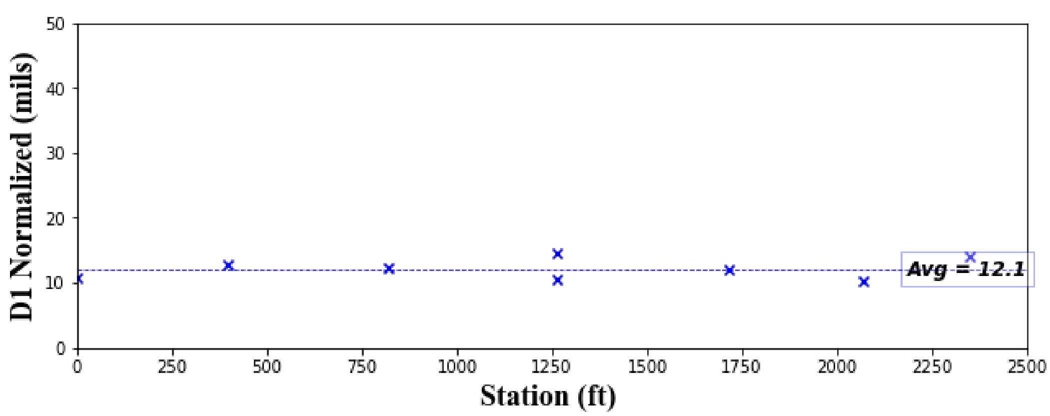


Figure C-54. TWY W 10R

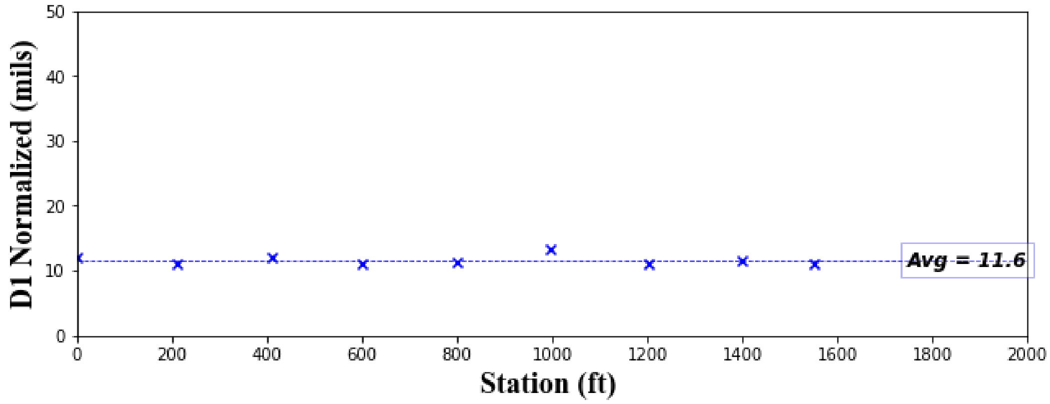


Figure C-55. TWY Y 10L

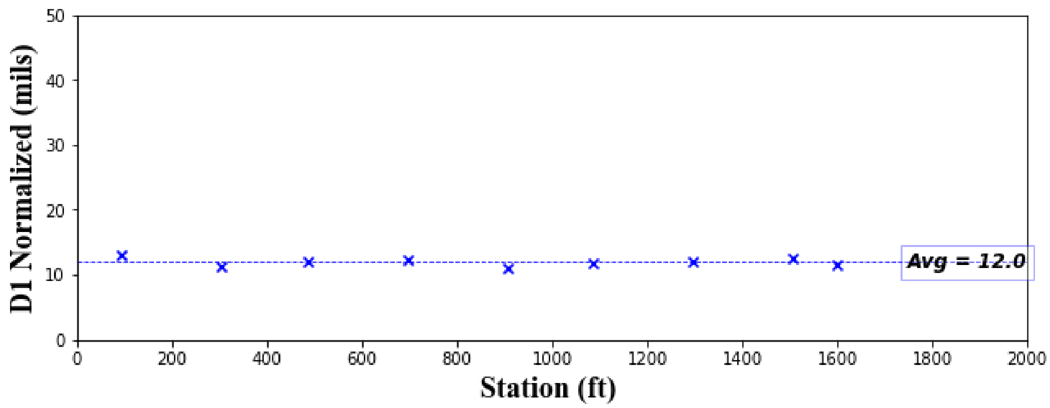


Figure C-56. TWY Y 10R

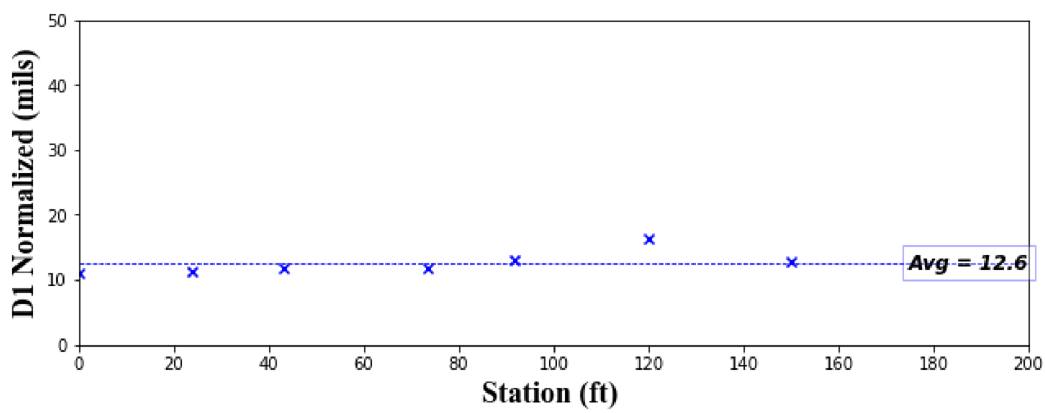


Figure C-57. TWY Y1 10L

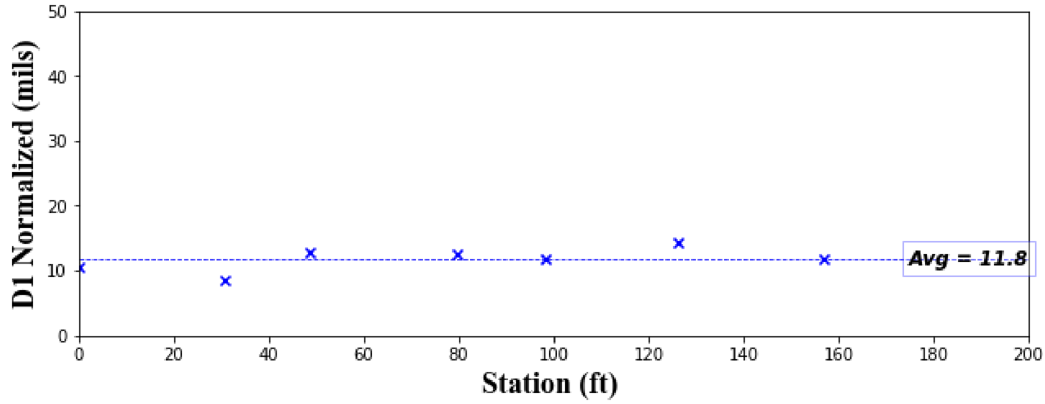


Figure C-58. TWY Y1 10R

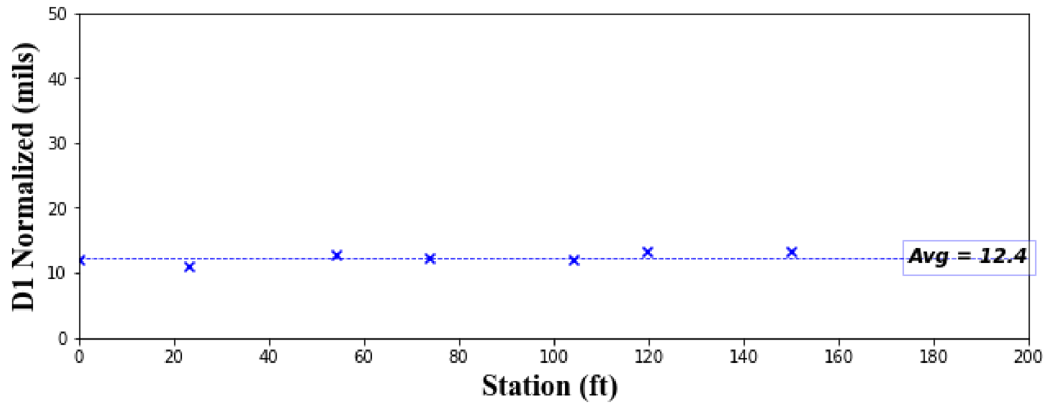


Figure C-59. TWY Y2 10L

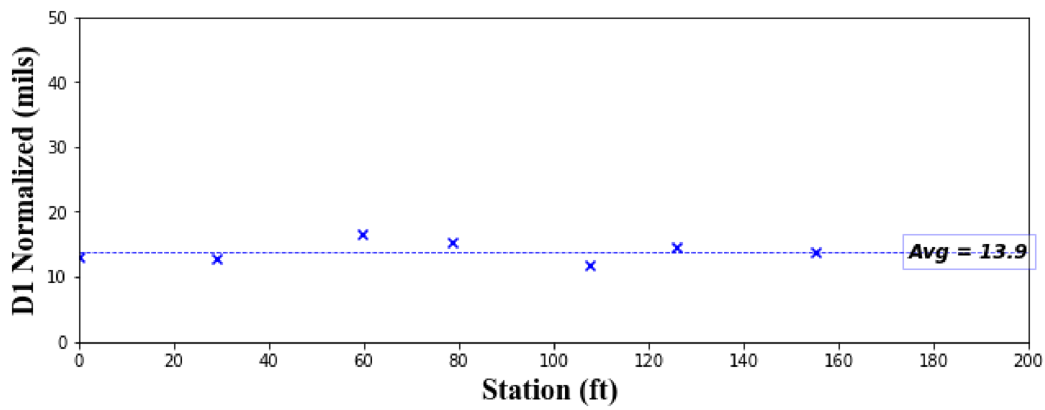


Figure C-60. TWY Y2 10R

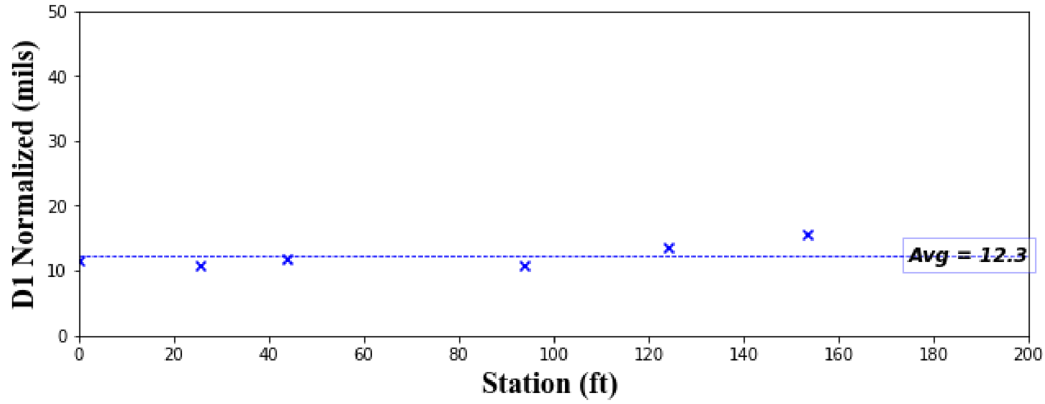


Figure C-61. TWY Y3 10L

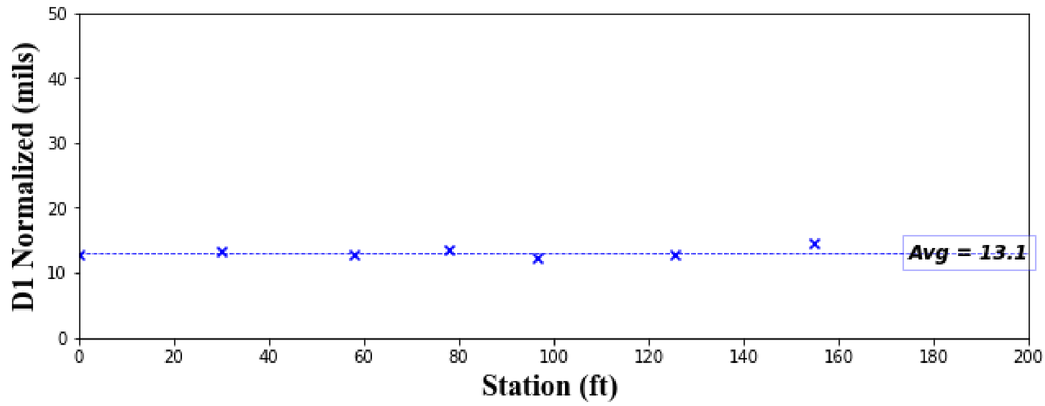


Figure C-62. TWY Y3 10R

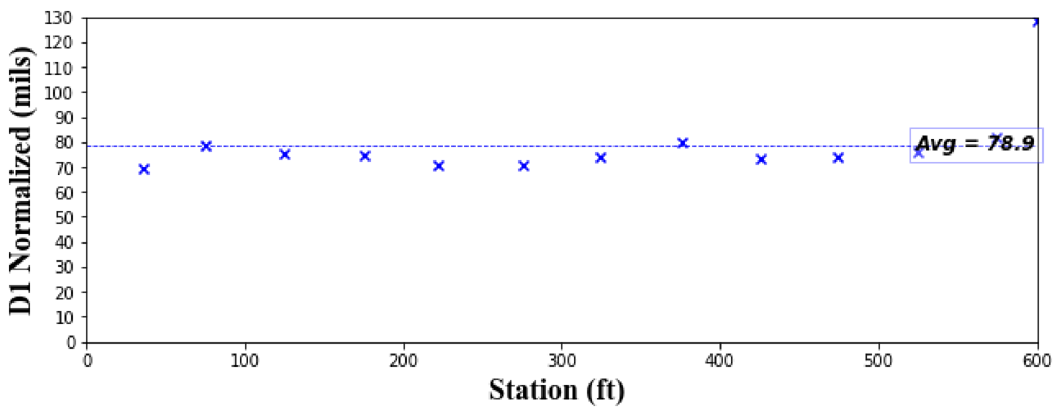


Figure C-63. TXL G 10L

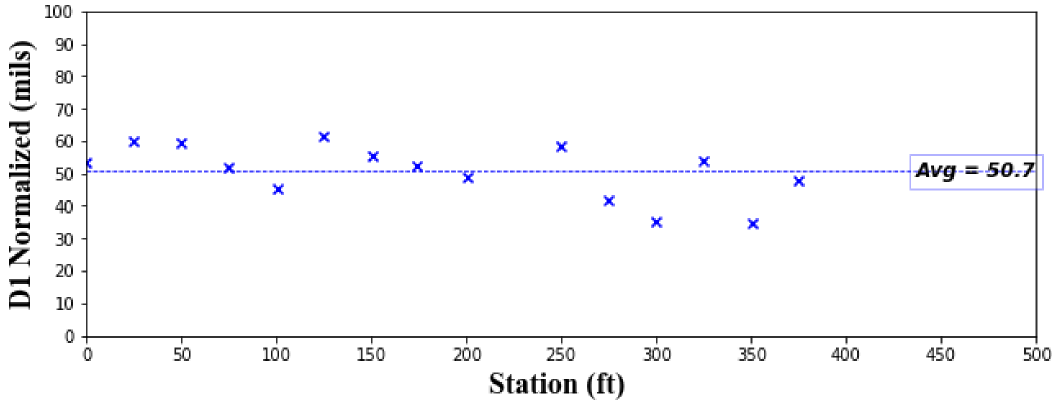


Figure C-64. TXL H 10L

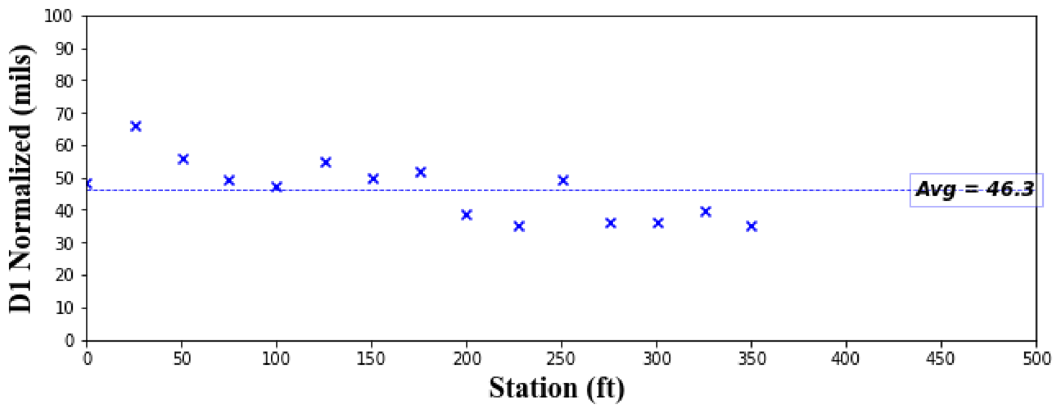


Figure C-65. TXL H 10R

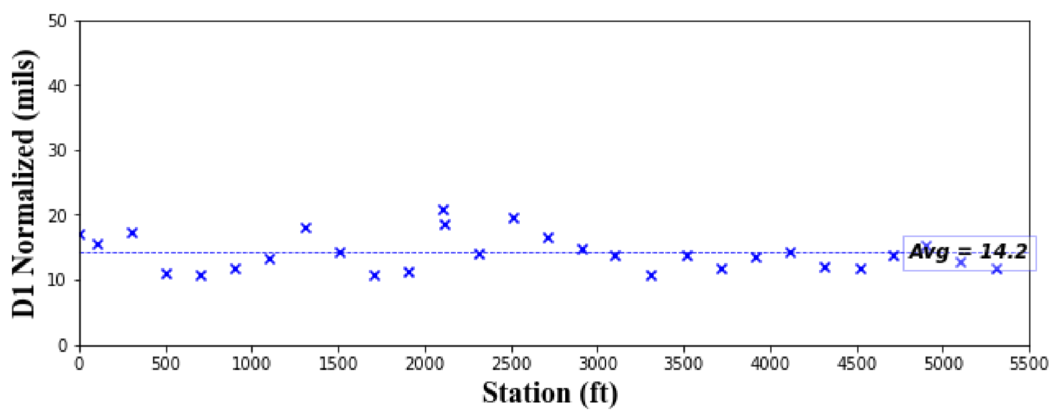


Figure C-66. TXL N1 10L

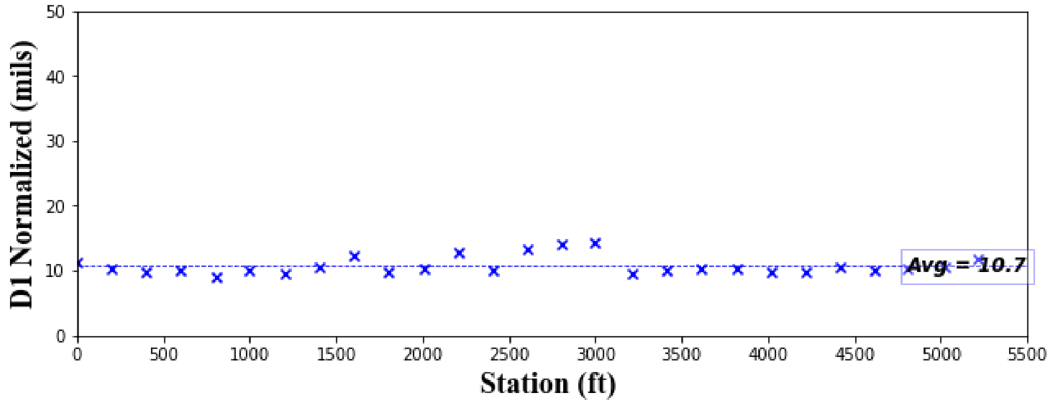


Figure C-67. TXL N1 10R

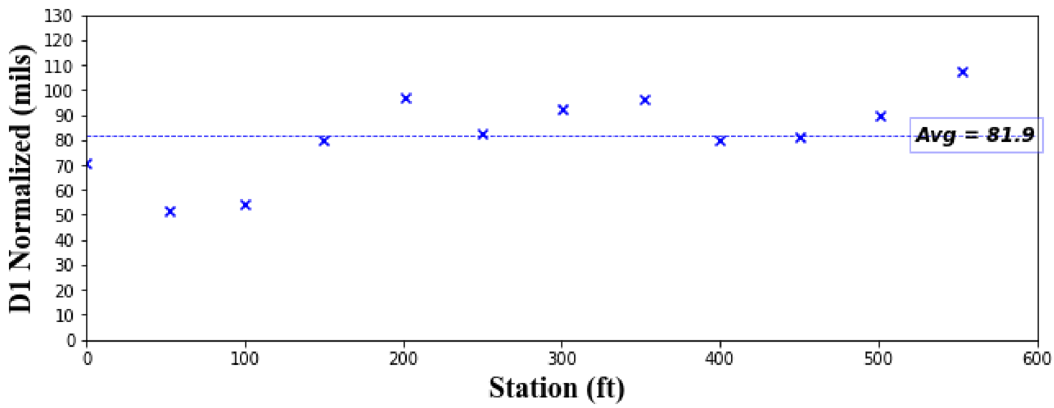


Figure C-68. TXY G 10R

Appendix D – Pavement Layer Moduli Plots

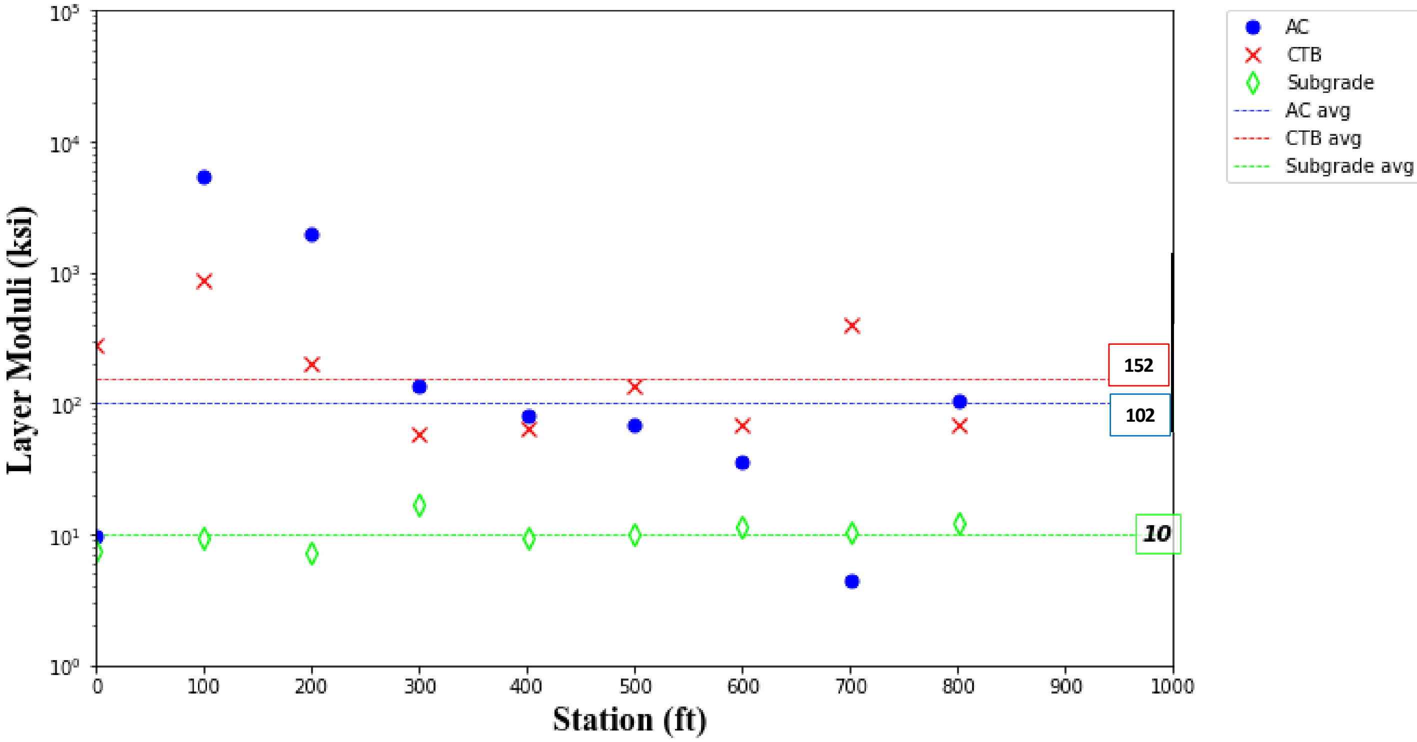


Figure D-1. Backcalculated Layer Moduli for ATLANTIC AVIATION APRON R1

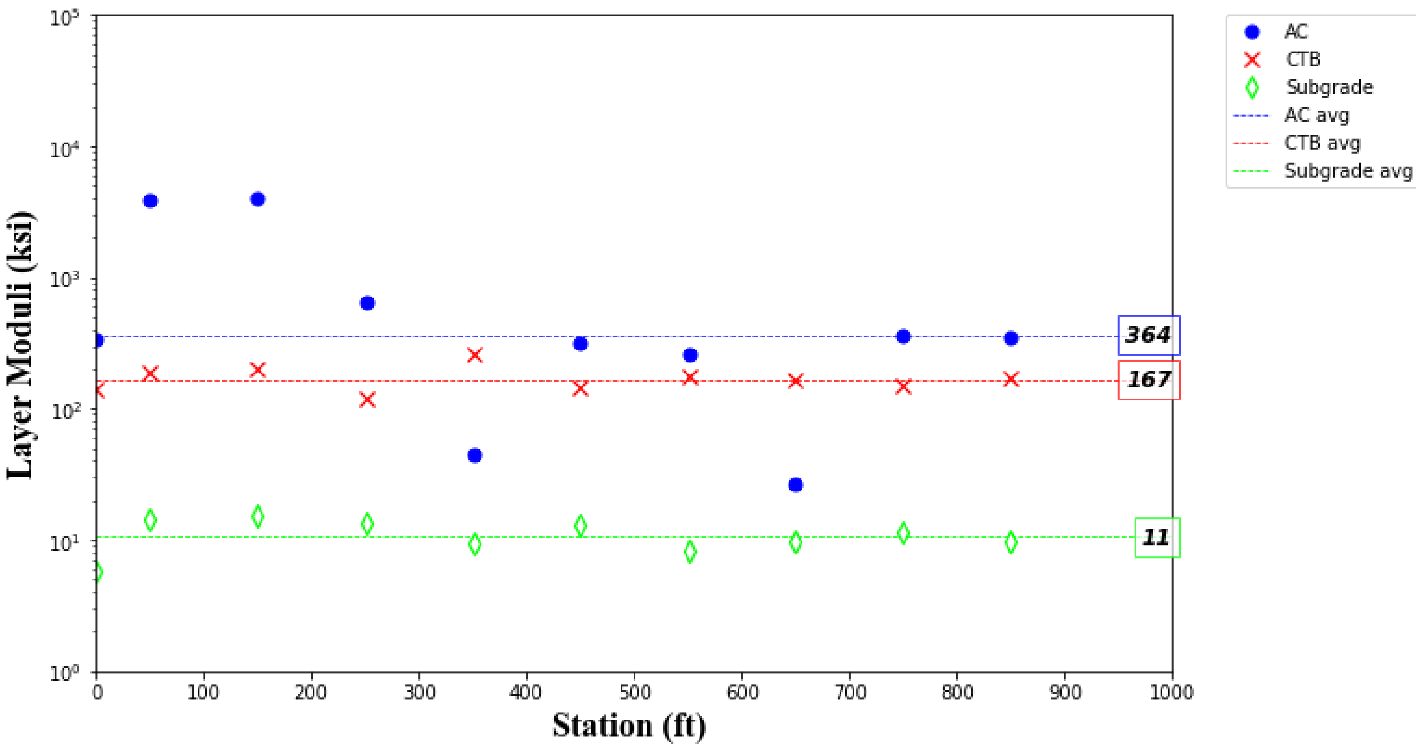


Figure D-2. Backcalculated Layer Moduli for ATLANTIC AVIATION APRON R2

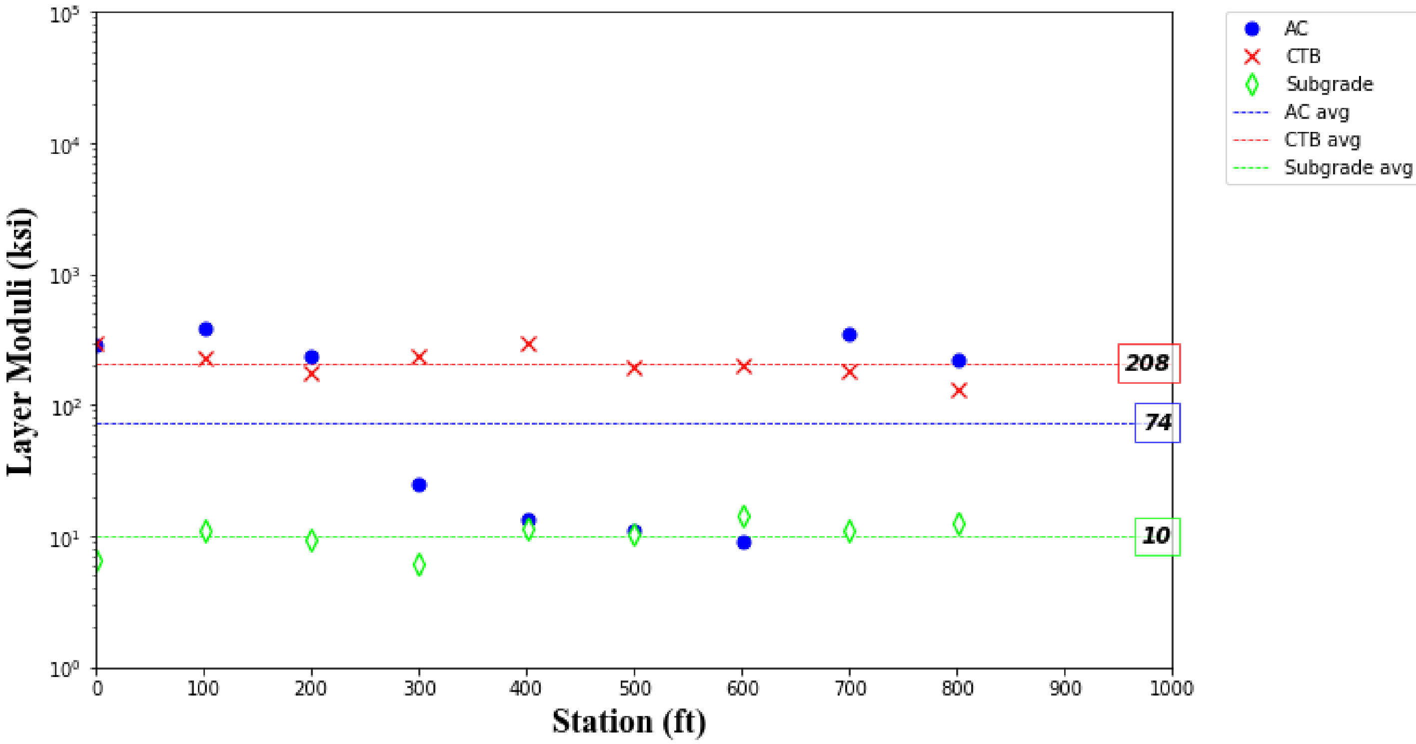


Figure D-3. Backcalculated Layer Moduli for ATLANTIC AVIATION APRON R3

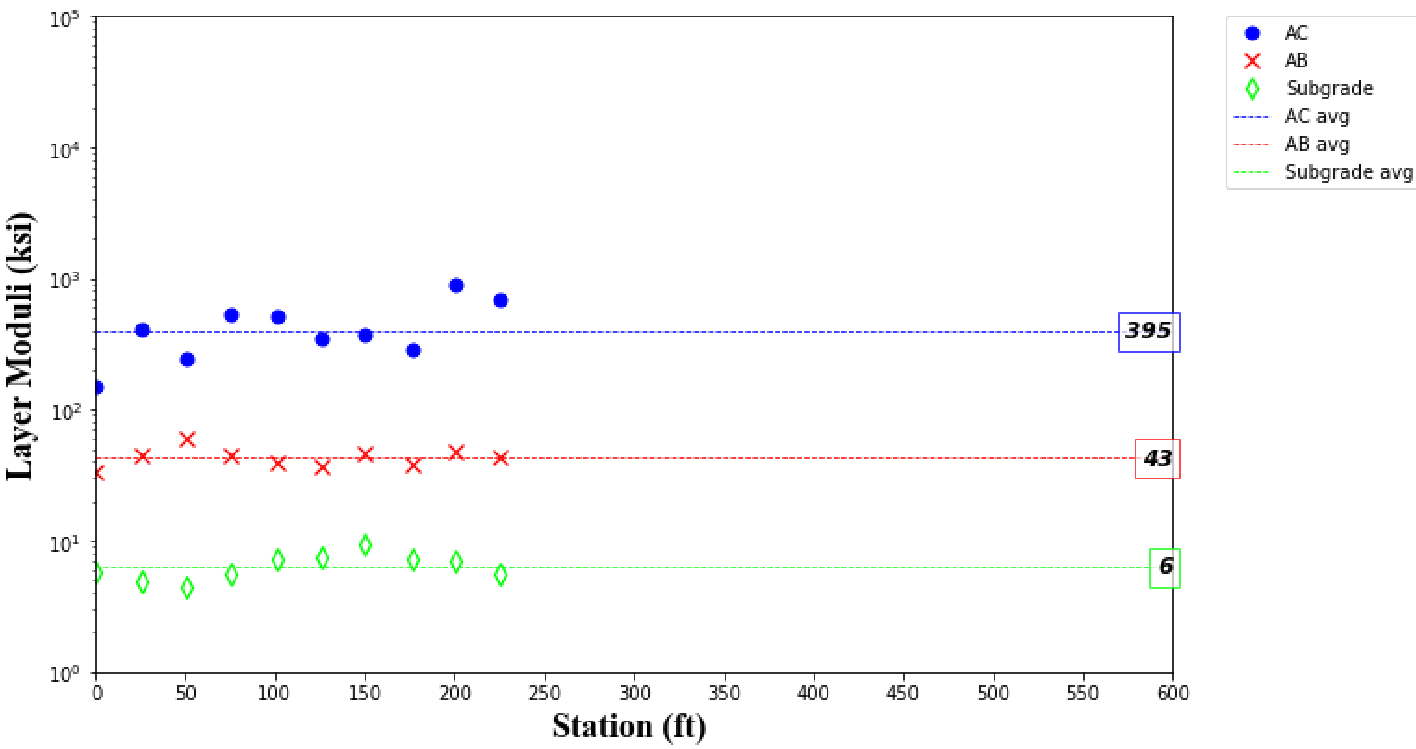


Figure D-4. Backcalculated Layer Moduli for INT TERMINAL APRON R1

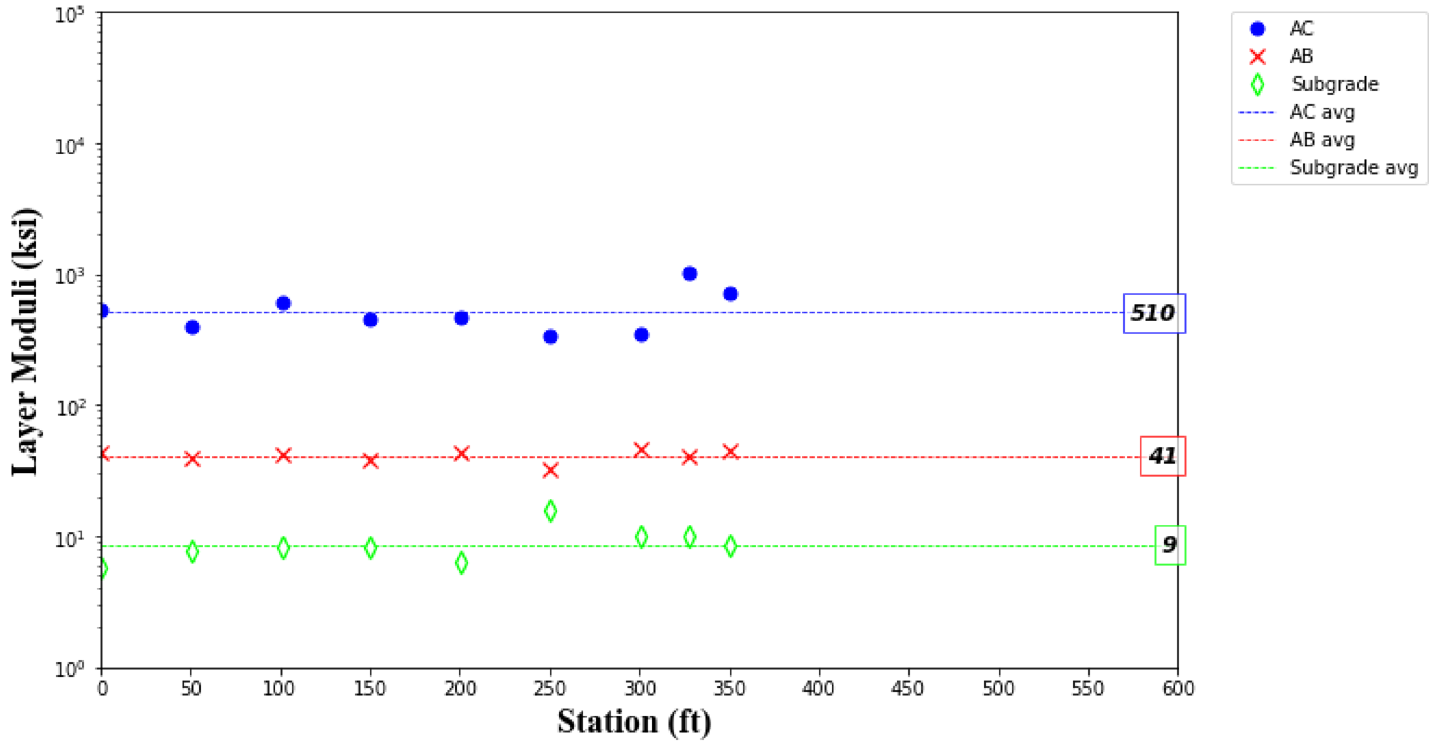


Figure D-5. Backcalculated Layer Moduli for INT TERMINAL APRON R2

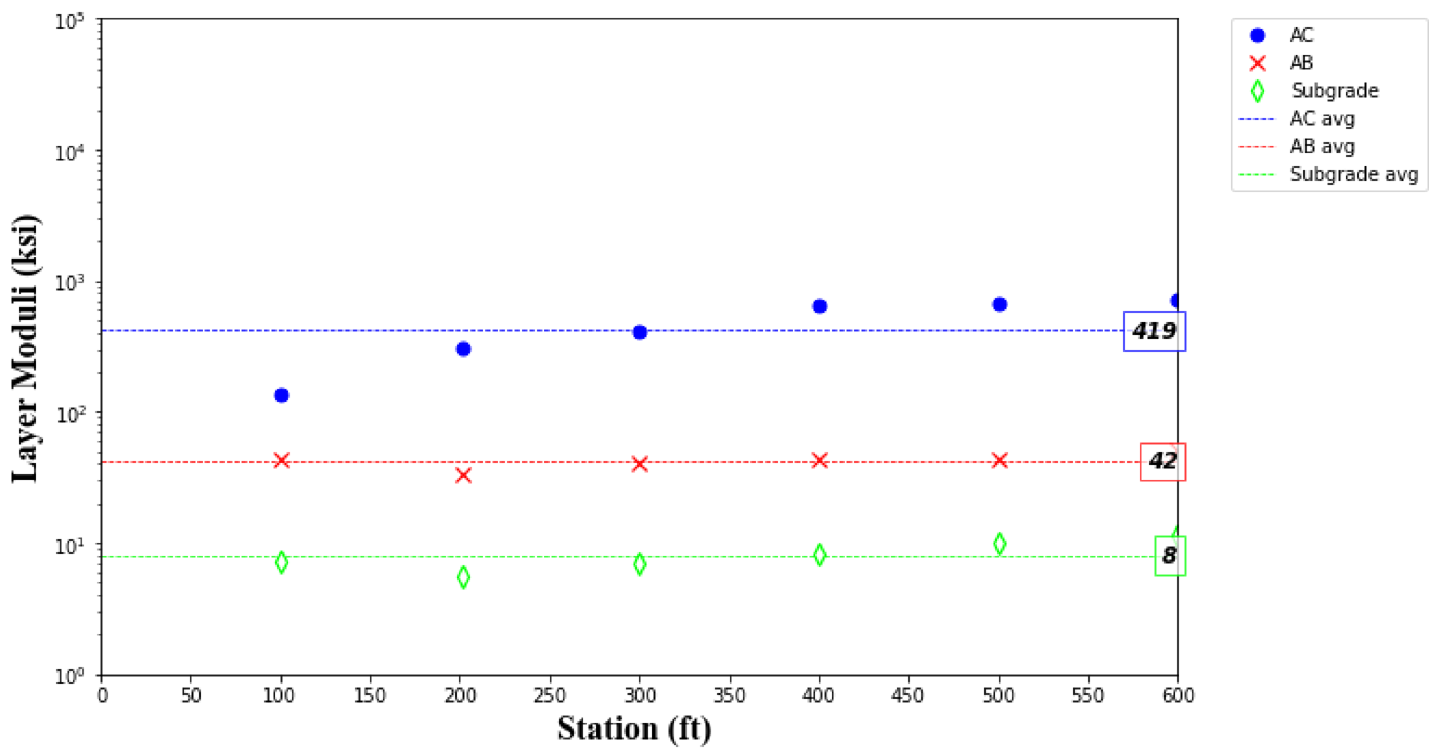


Figure D-6. Backcalculated Layer Moduli for INT TERMINAL APRON R3

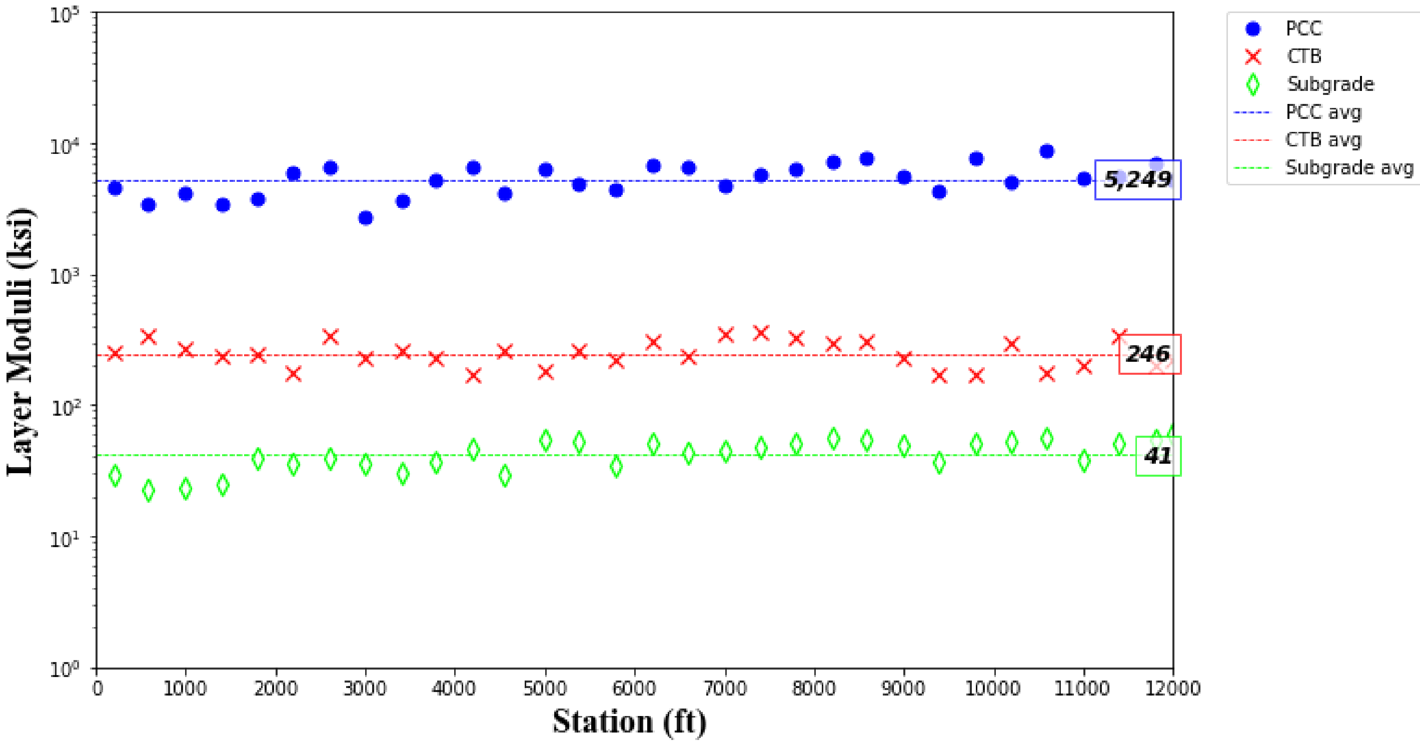


Figure D-7. Backcalculated Layer Moduli for RWY 8L26R 10L

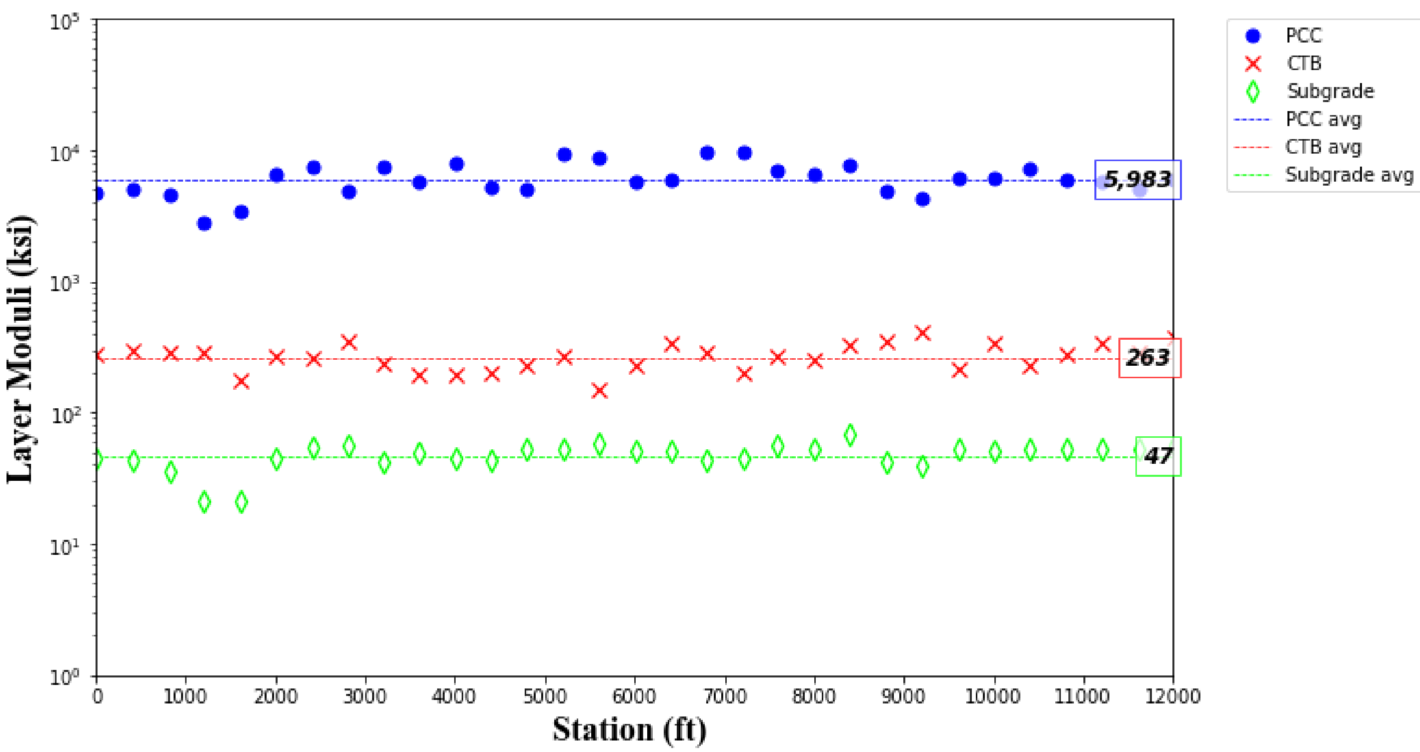


Figure D-8. Backcalculated Layer Moduli for RWY 8L26R 10R

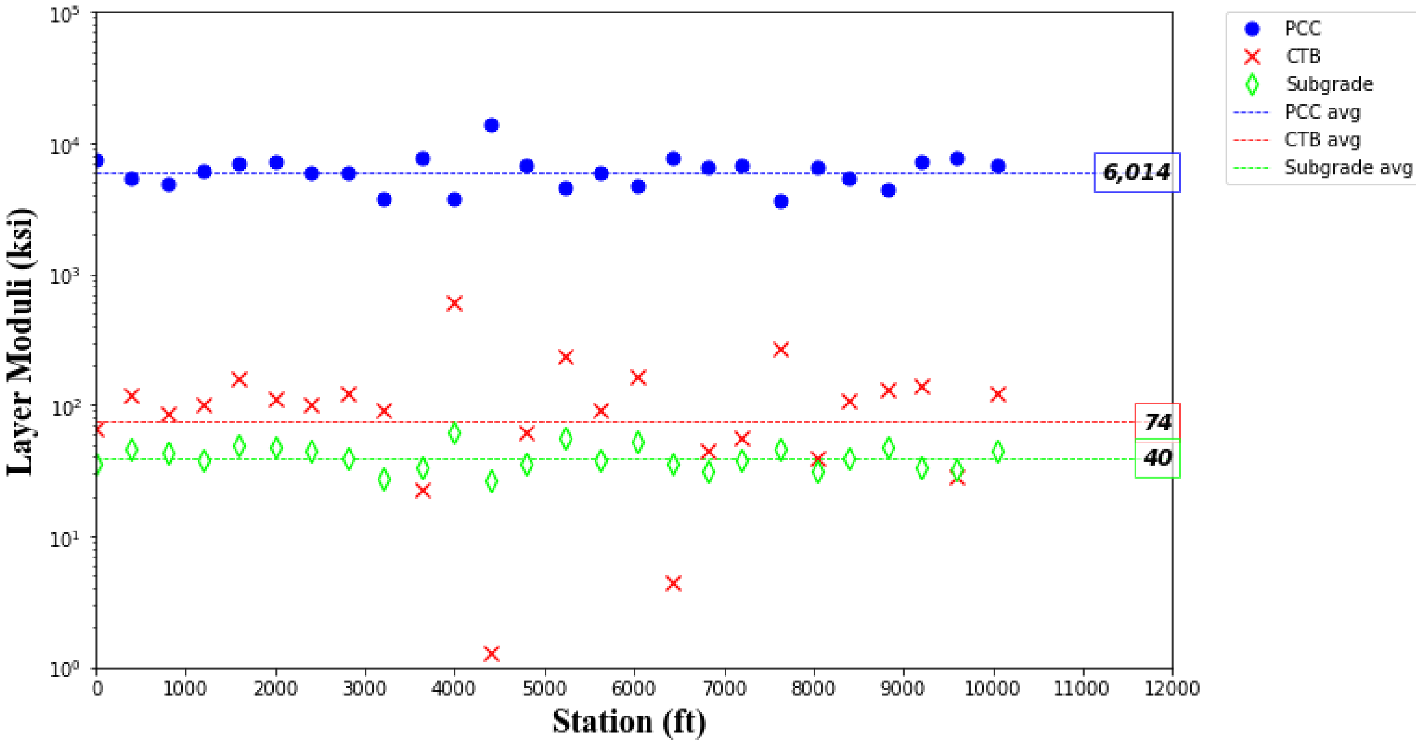


Figure D-9. Backcalculated Layer Moduli for RWY 8R26L 10L

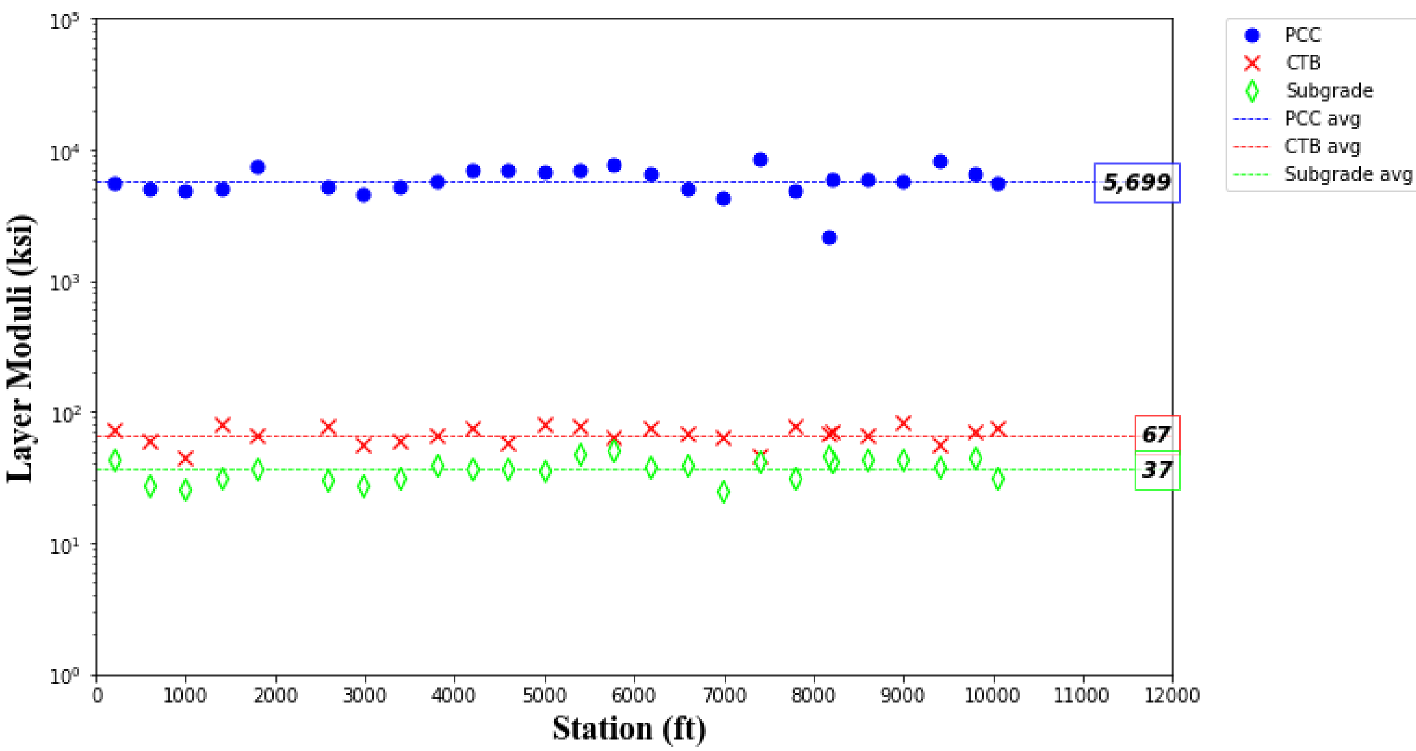


Figure D-10. Backcalculated Layer Moduli for RWY 8R26L 10R

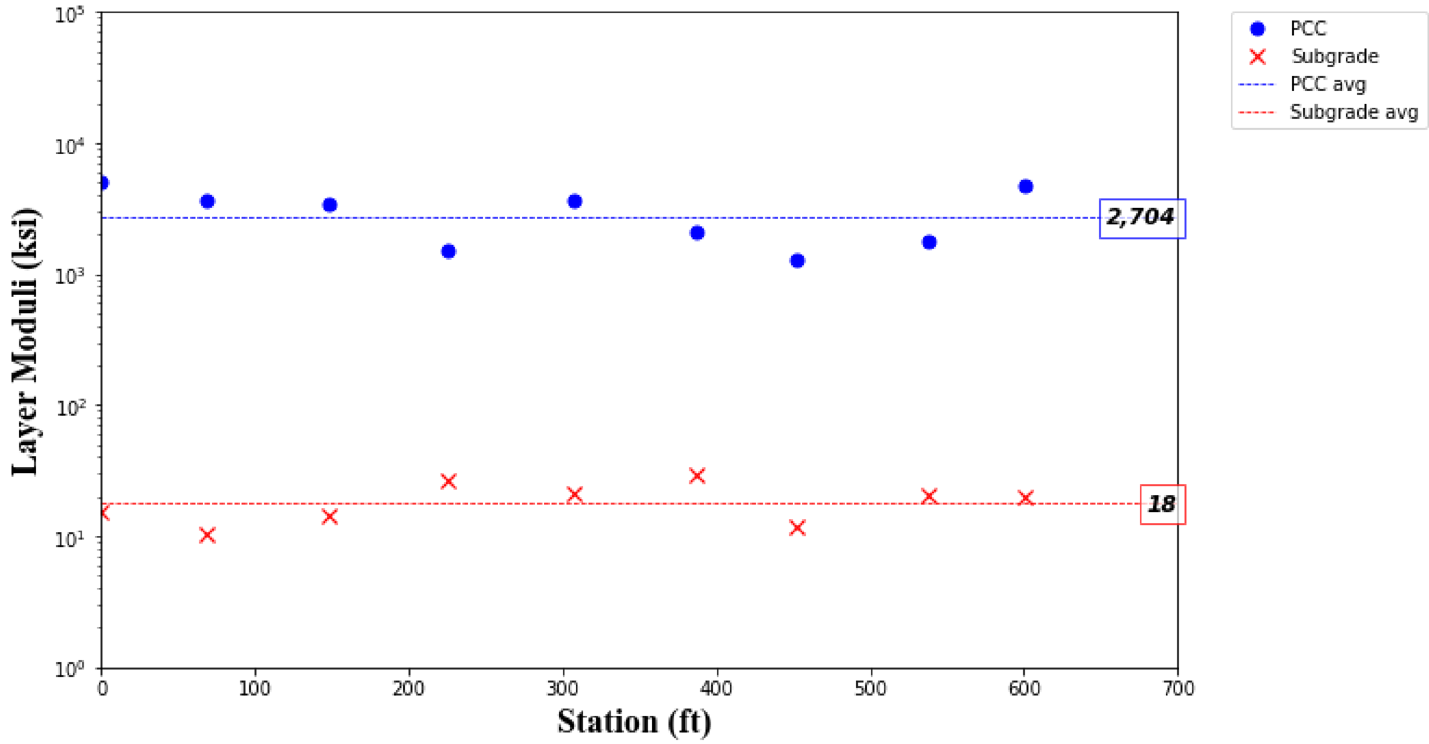


Figure D-11. Backcalculated Layer Moduli for TERMINAL1 APRON R1

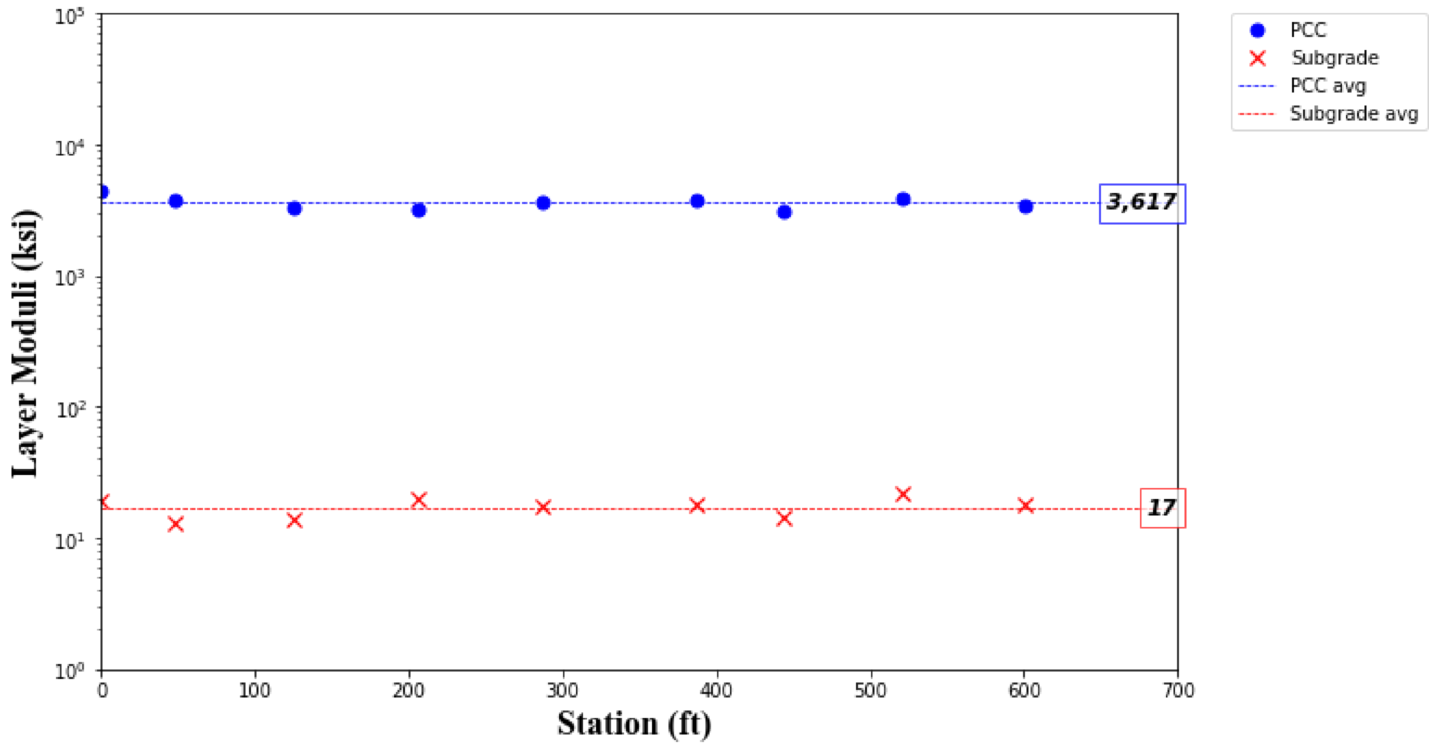


Figure D-12. Backcalculated Layer Moduli for TERMINAL1 APRON R2

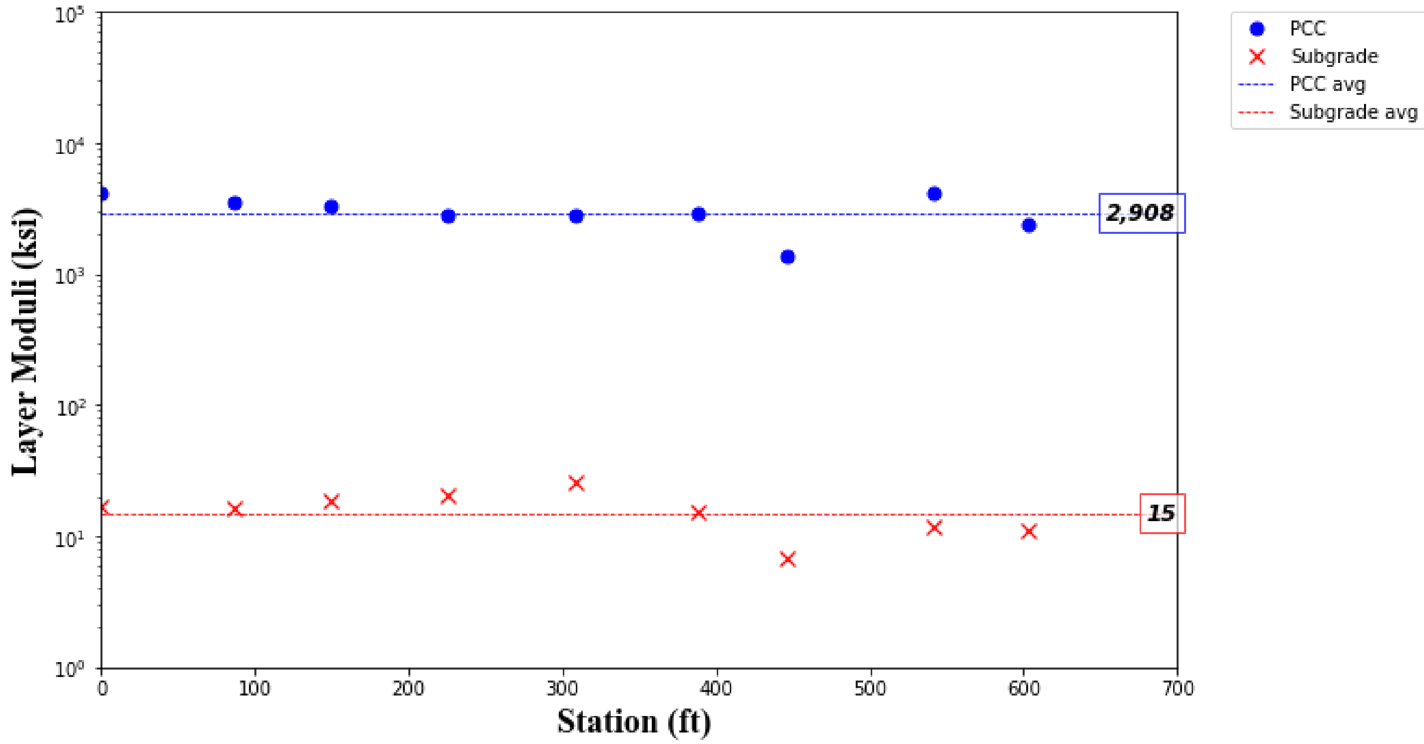


Figure D-13. Backcalculated Layer Moduli for TERMINAL1 APRON R3

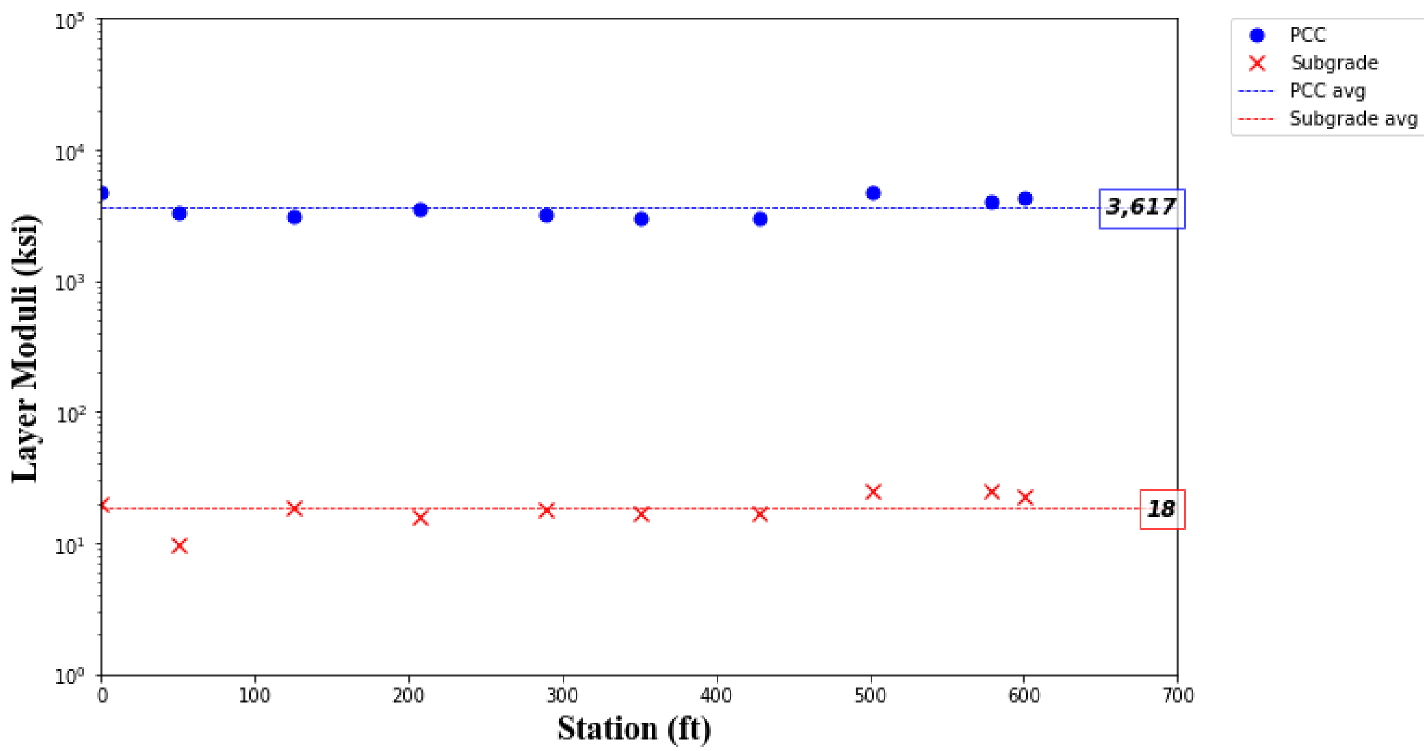


Figure D-14. Backcalculated Layer Moduli for TERMINAL1 APRON R4

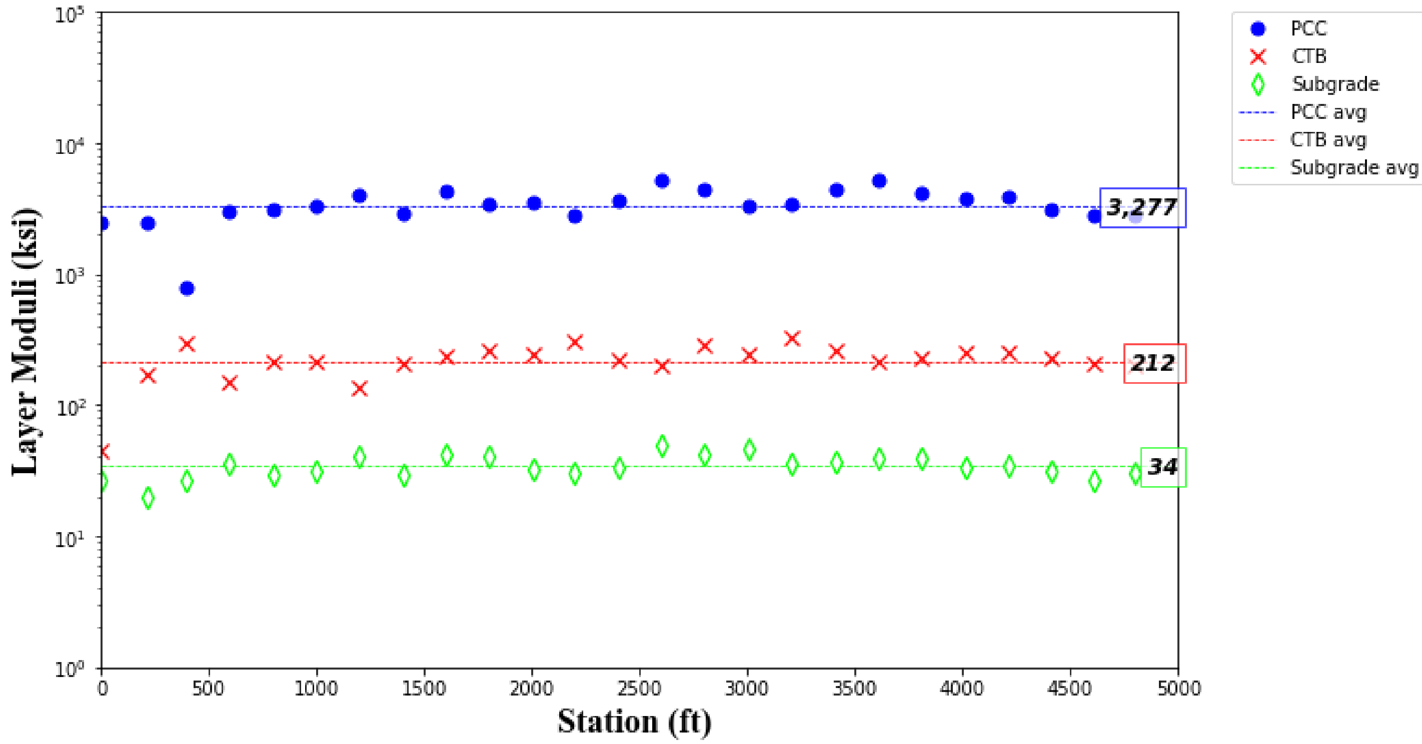


Figure D-15. Backcalculated Layer Moduli for TERMINAL2 4 R1

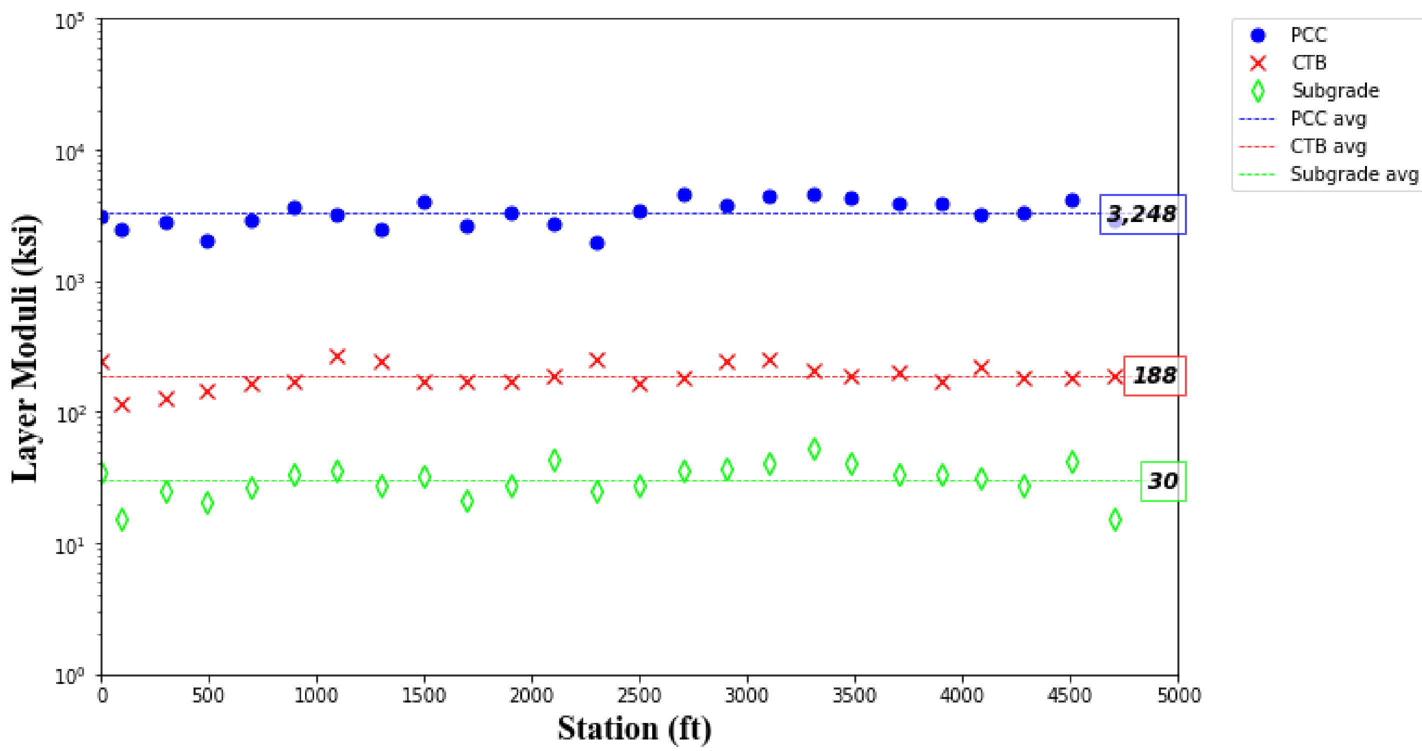


Figure D-16. Backcalculated Layer Moduli for TERMINAL2 4 R2

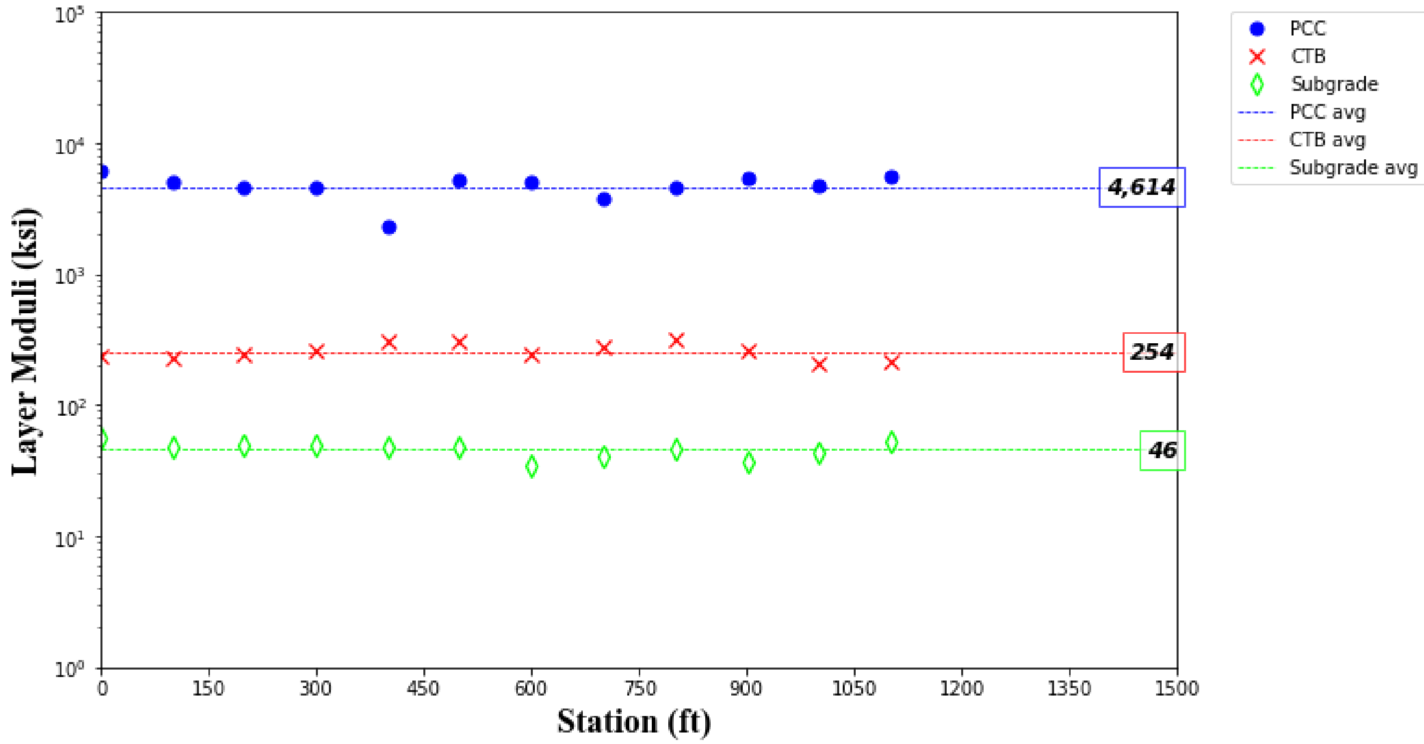


Figure D-17. Backcalculated Layer Moduli for TERMINAL2 4 R3

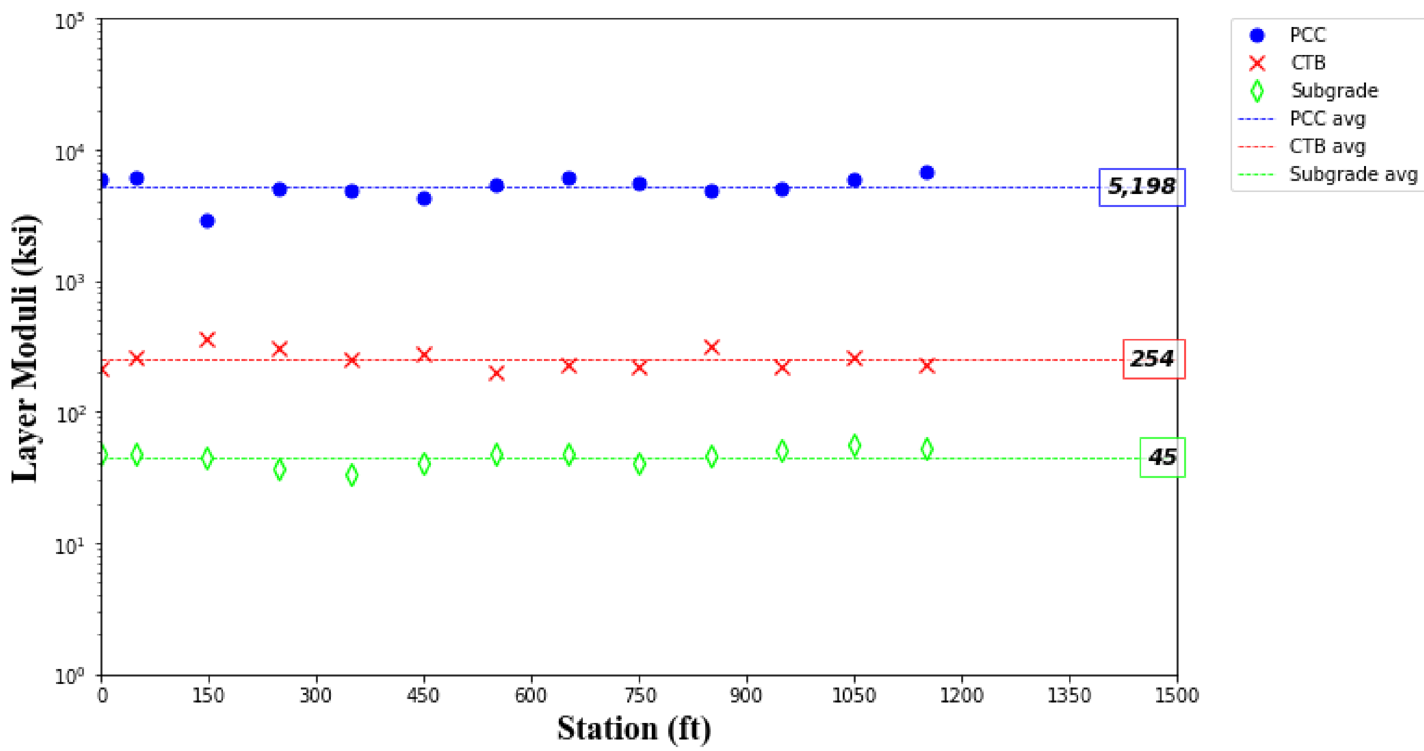


Figure D-18. Backcalculated Layer Moduli for TERMINAL2 4 R4

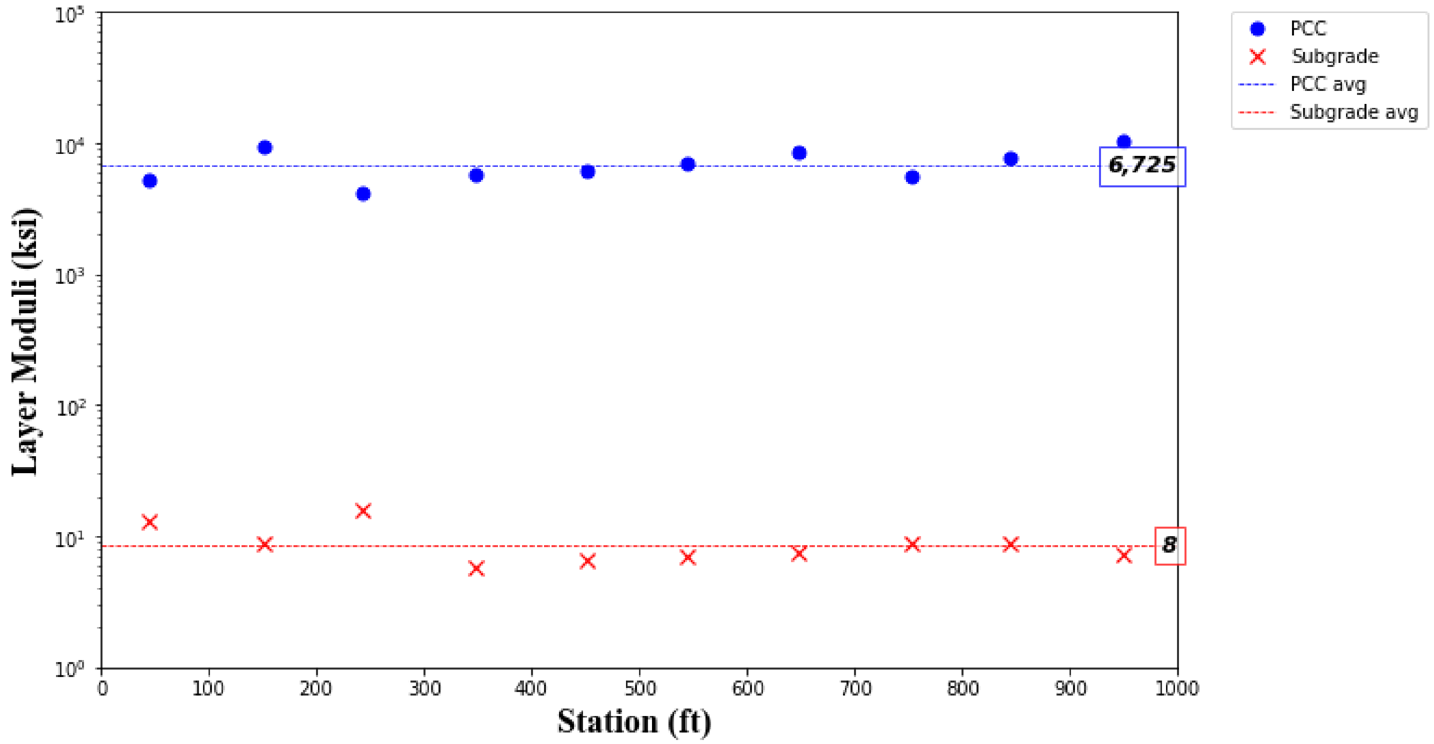


Figure D-19. Backcalculated Layer Moduli for TWY CSA 10L

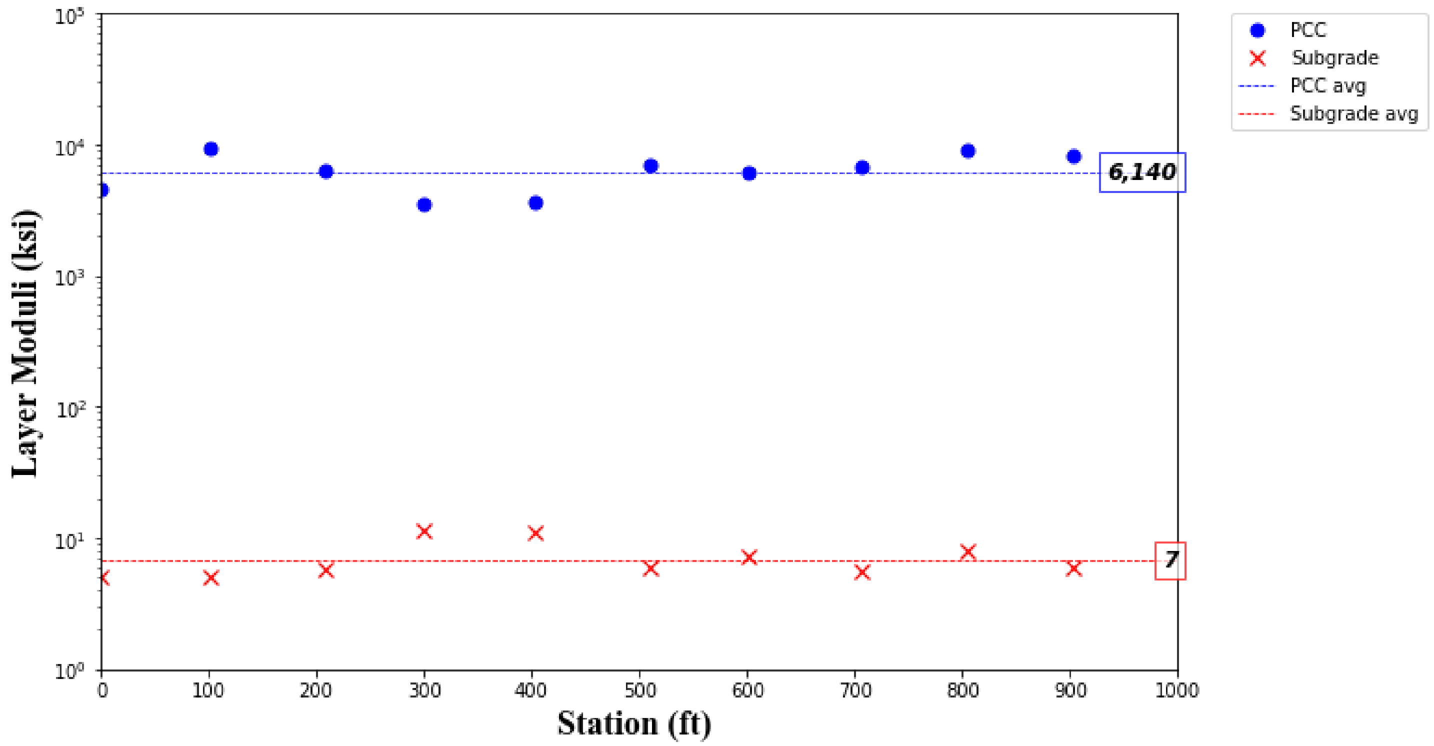


Figure D-20. Backcalculated Layer Moduli for TWY CSA 10R

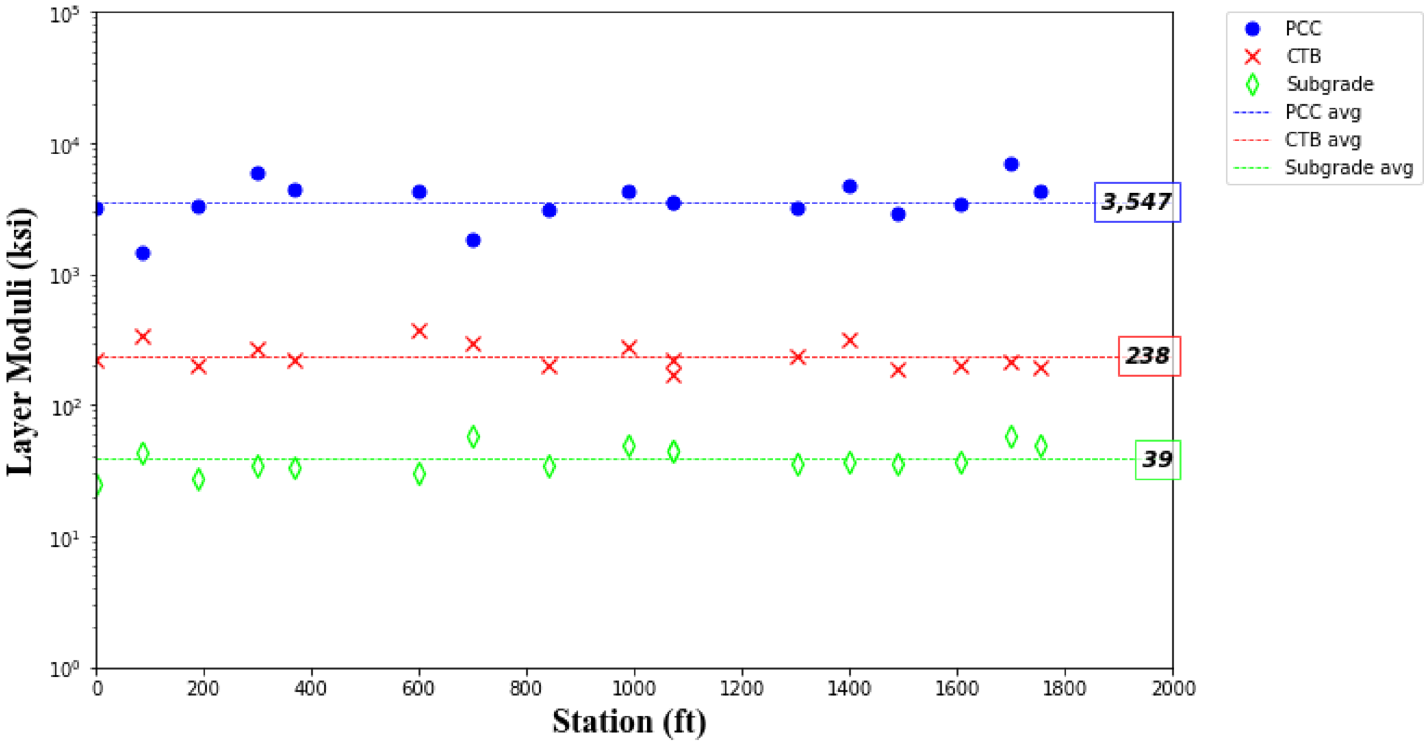


Figure D-21. Backcalculated Layer Moduli for TWY D 10L

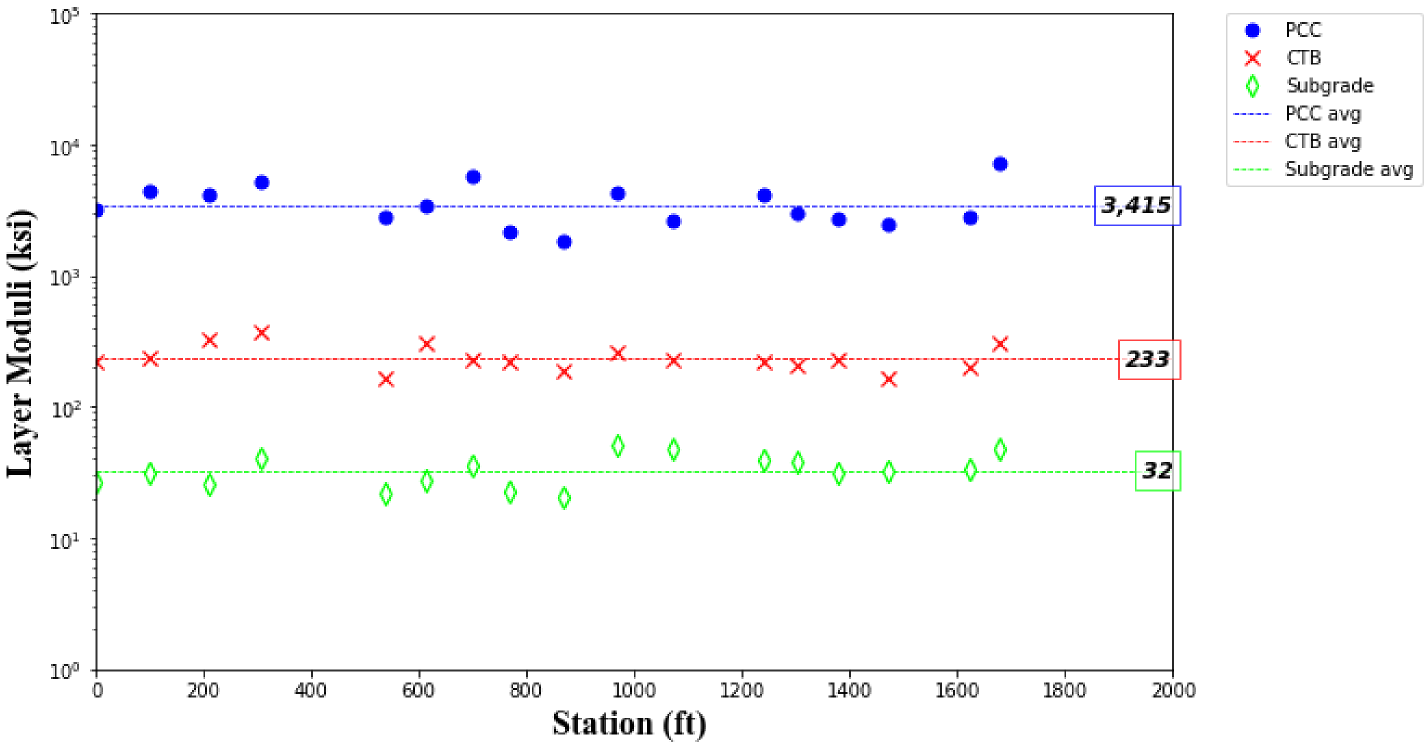


Figure D-22. Backcalculated Layer Moduli for TWY D 10R

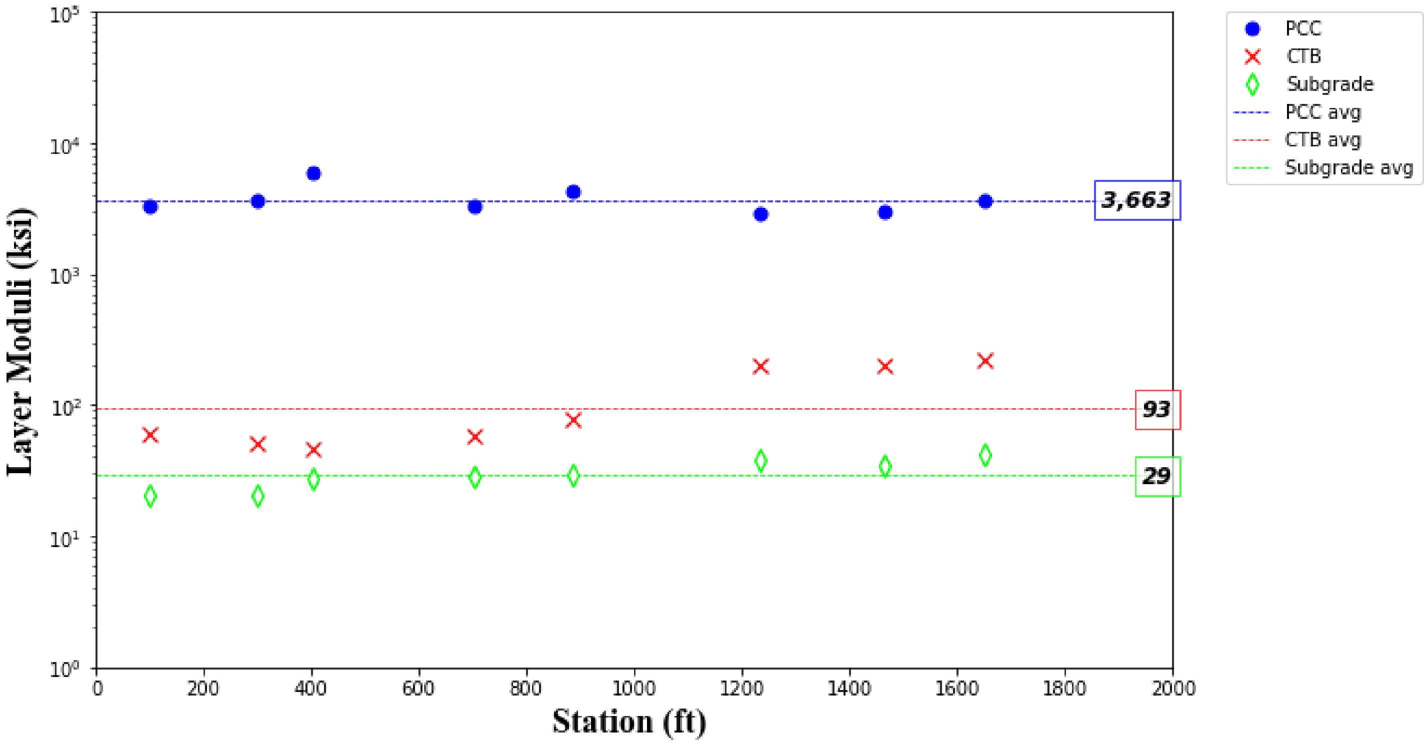


Figure D-23. Backcalculated Layer Moduli for TWY F 10L

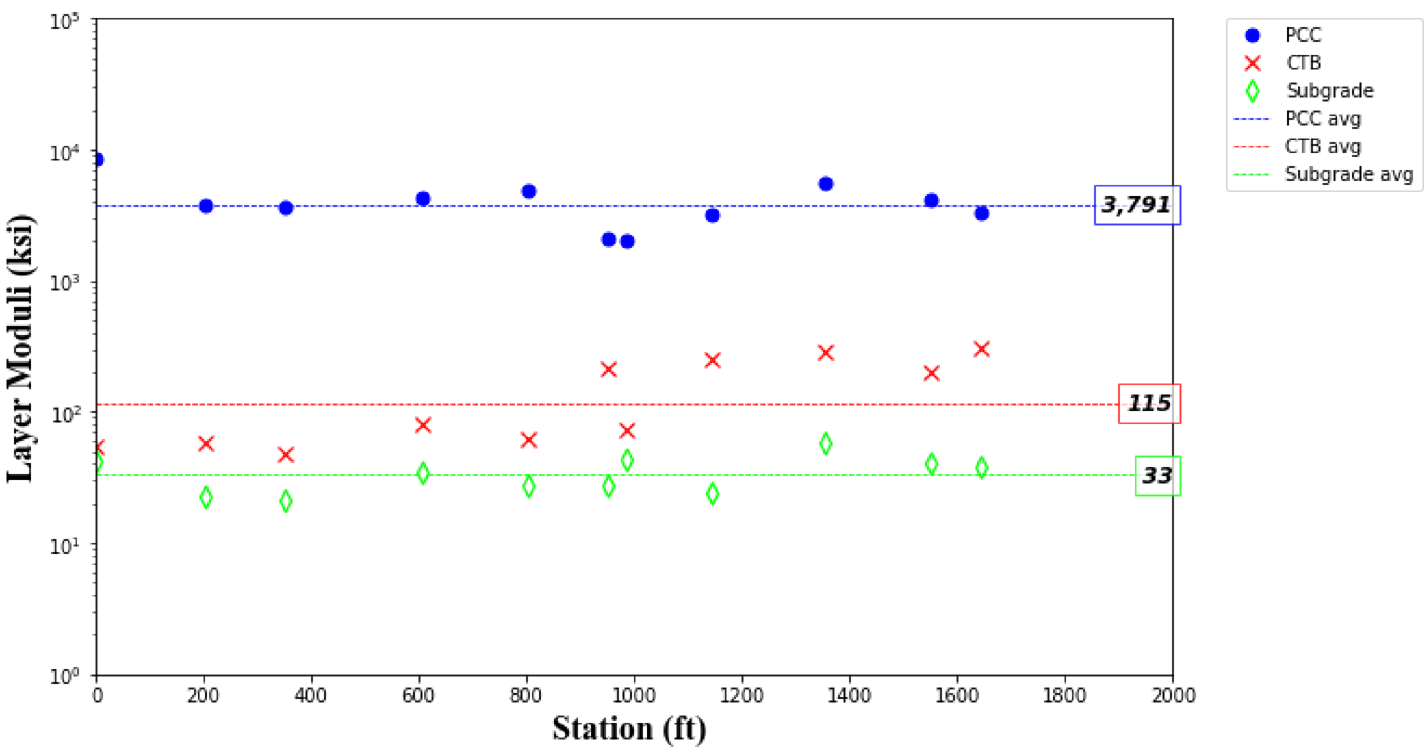


Figure D-24. Backcalculated Layer Moduli for TWY F 10R

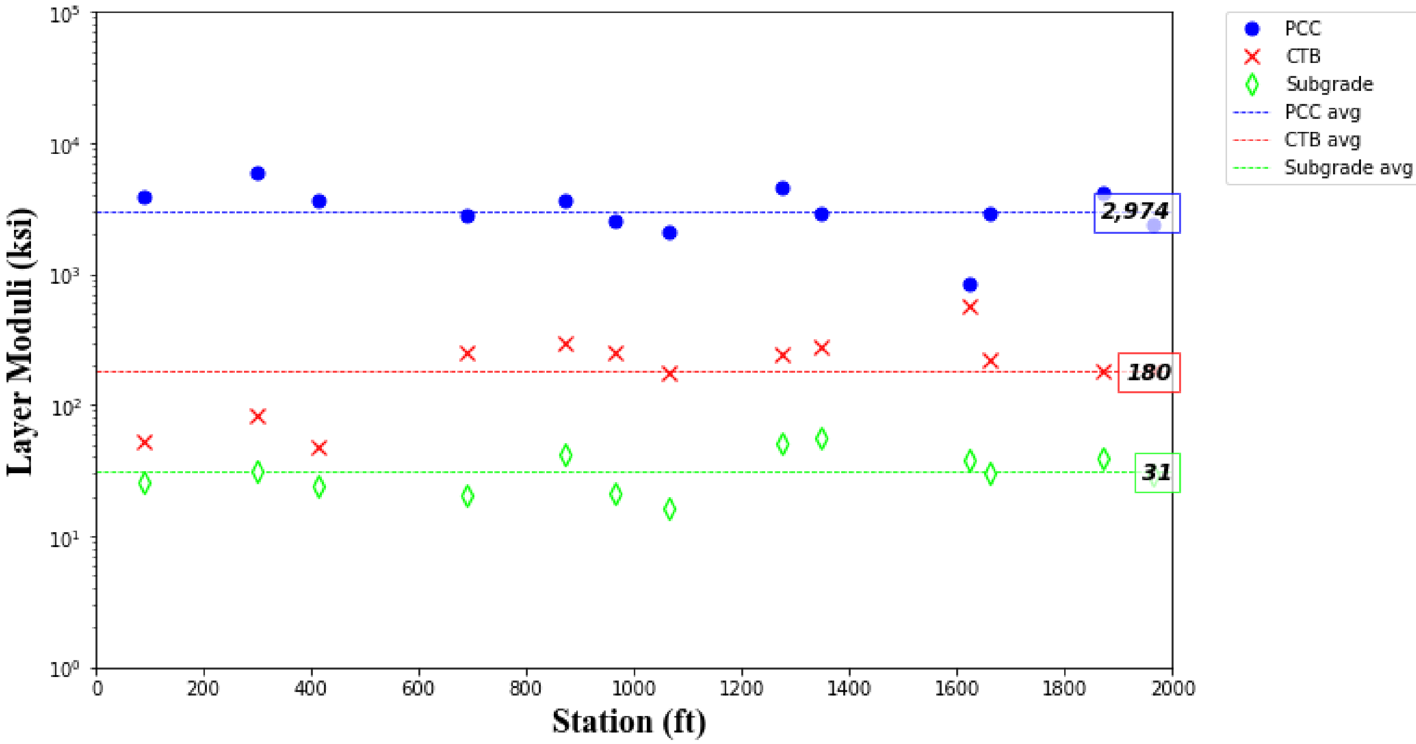


Figure D-25. Backcalculated Layer Moduli for TWY K 10L

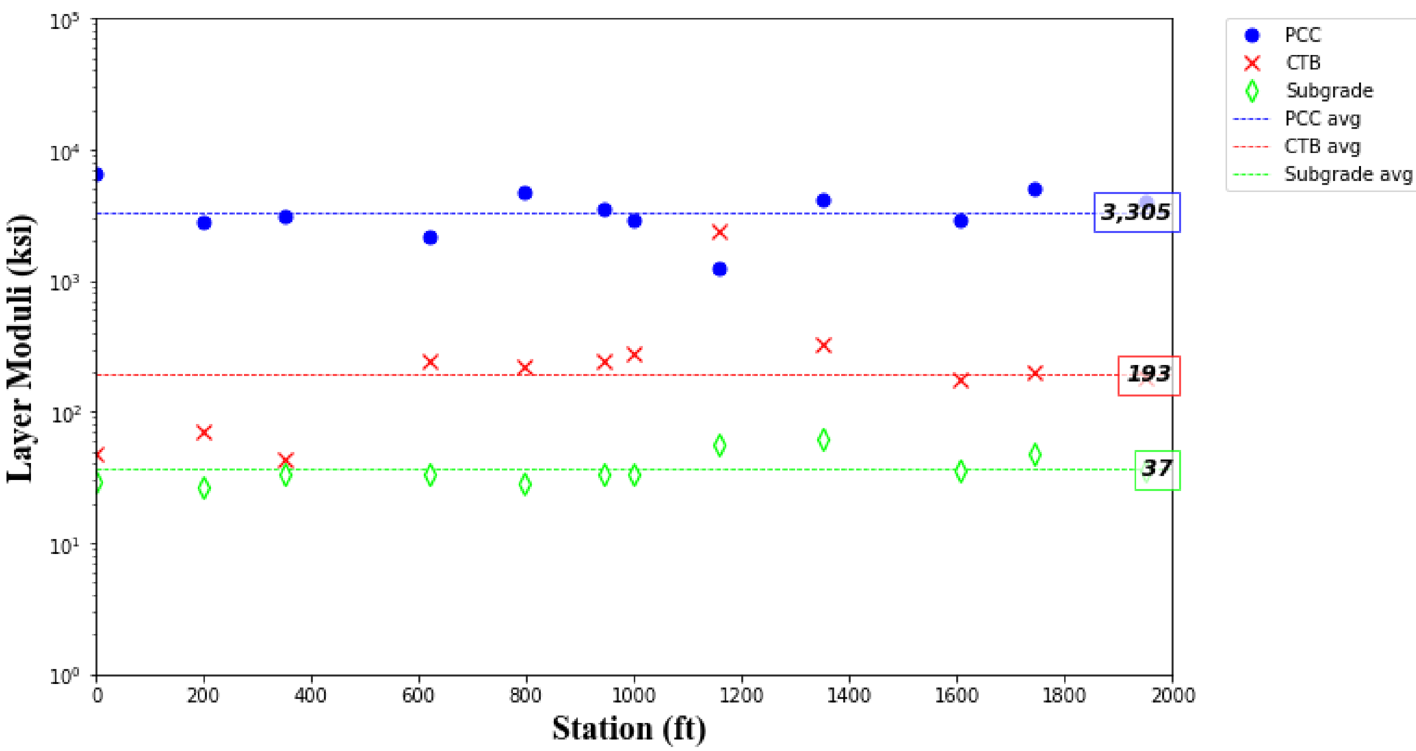


Figure D-26. Backcalculated Layer Moduli for TWY K 10R

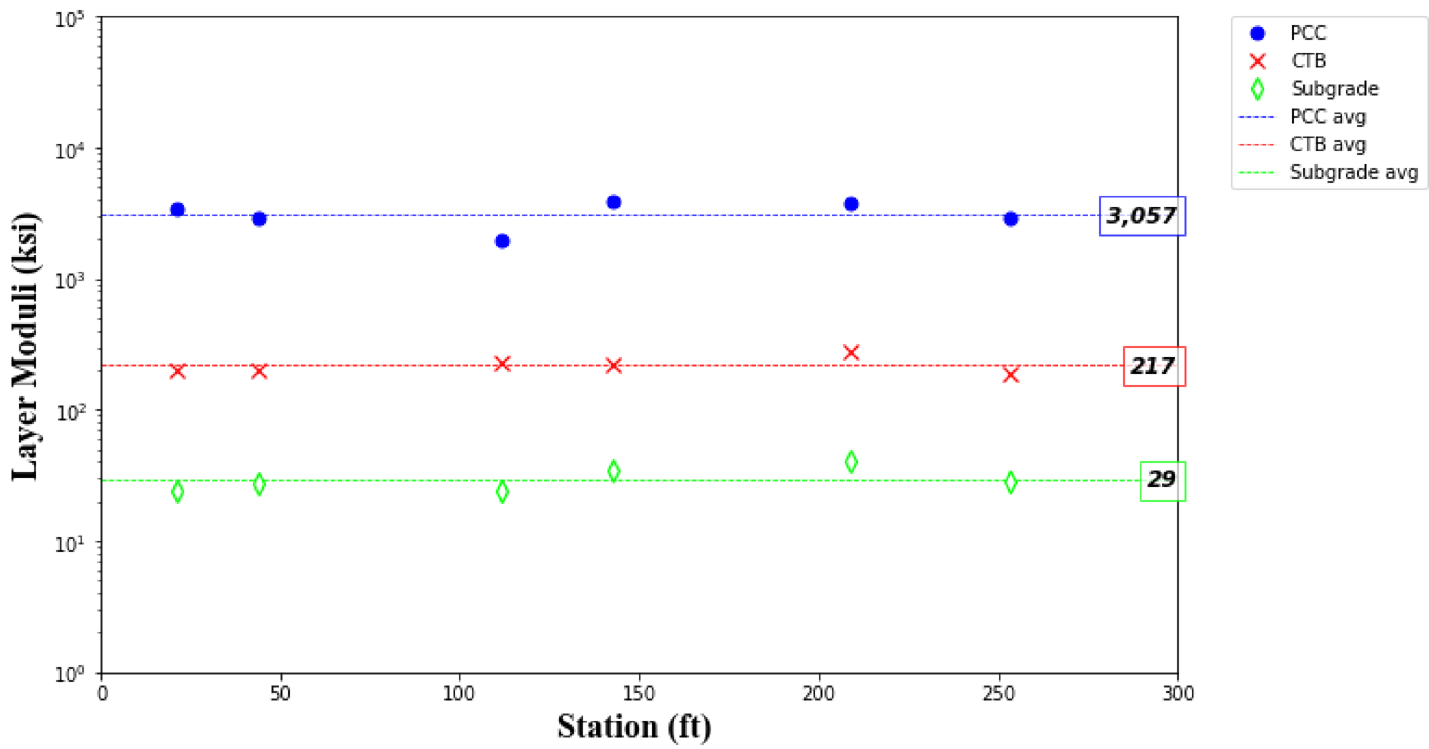


Figure D-27. Backcalculated Layer Moduli for TWY L 10L

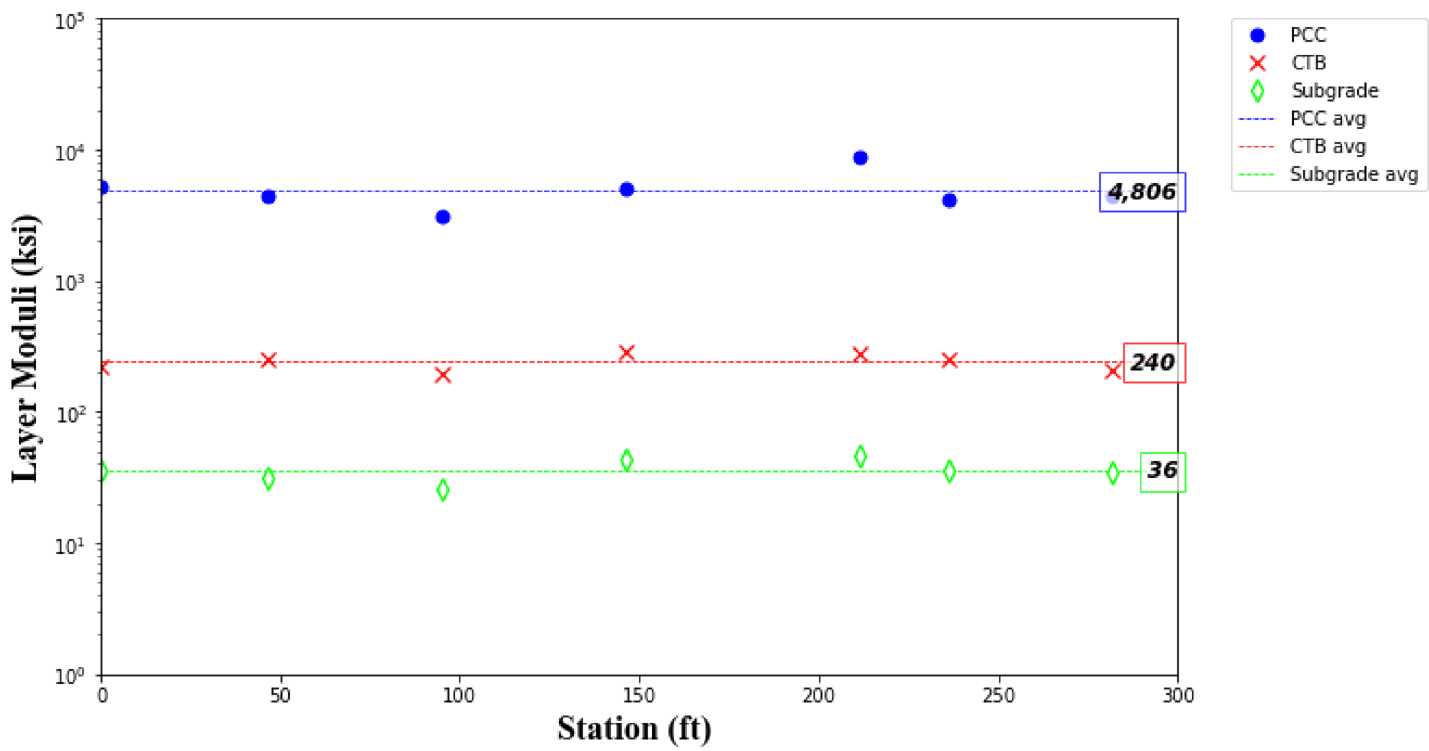


Figure D-28. Backcalculated Layer Moduli for TWY L 10R

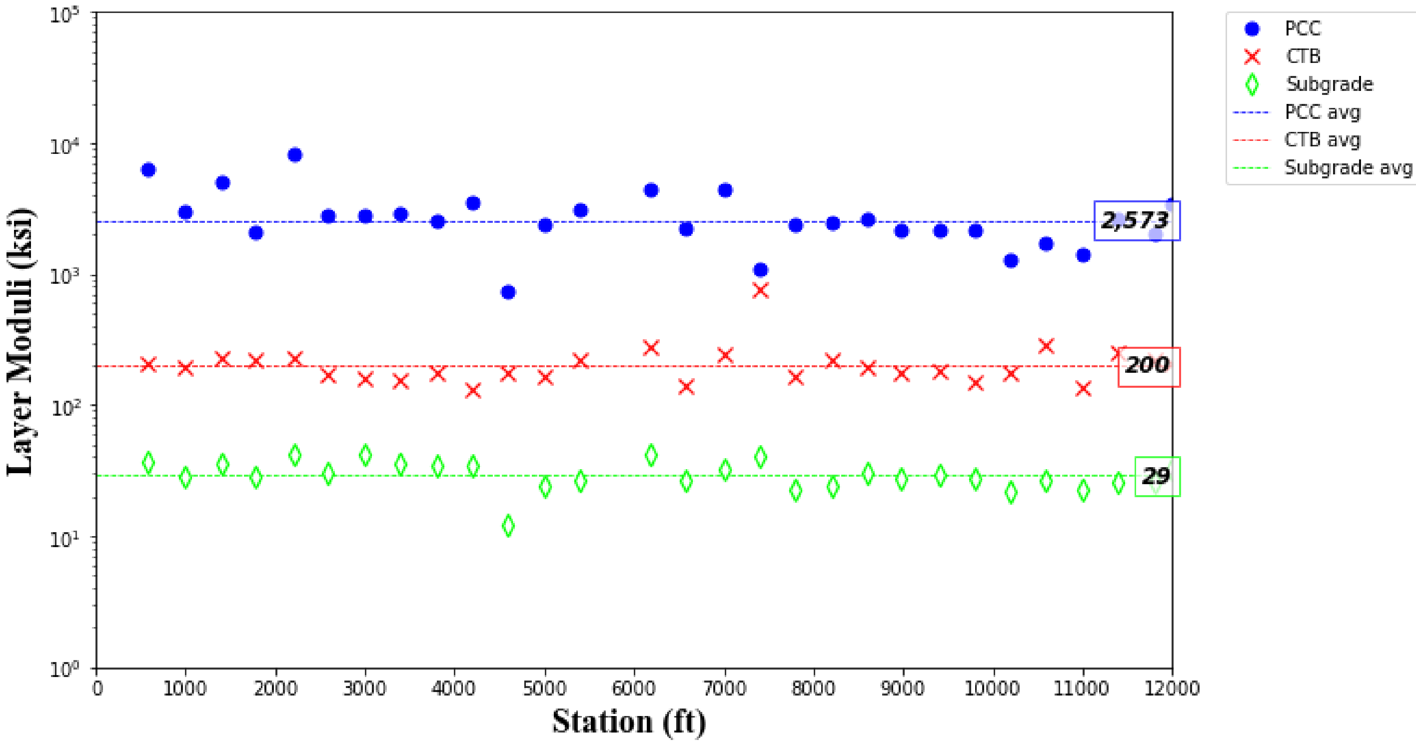


Figure D-29. Backcalculated Layer Moduli for TWY N 10L

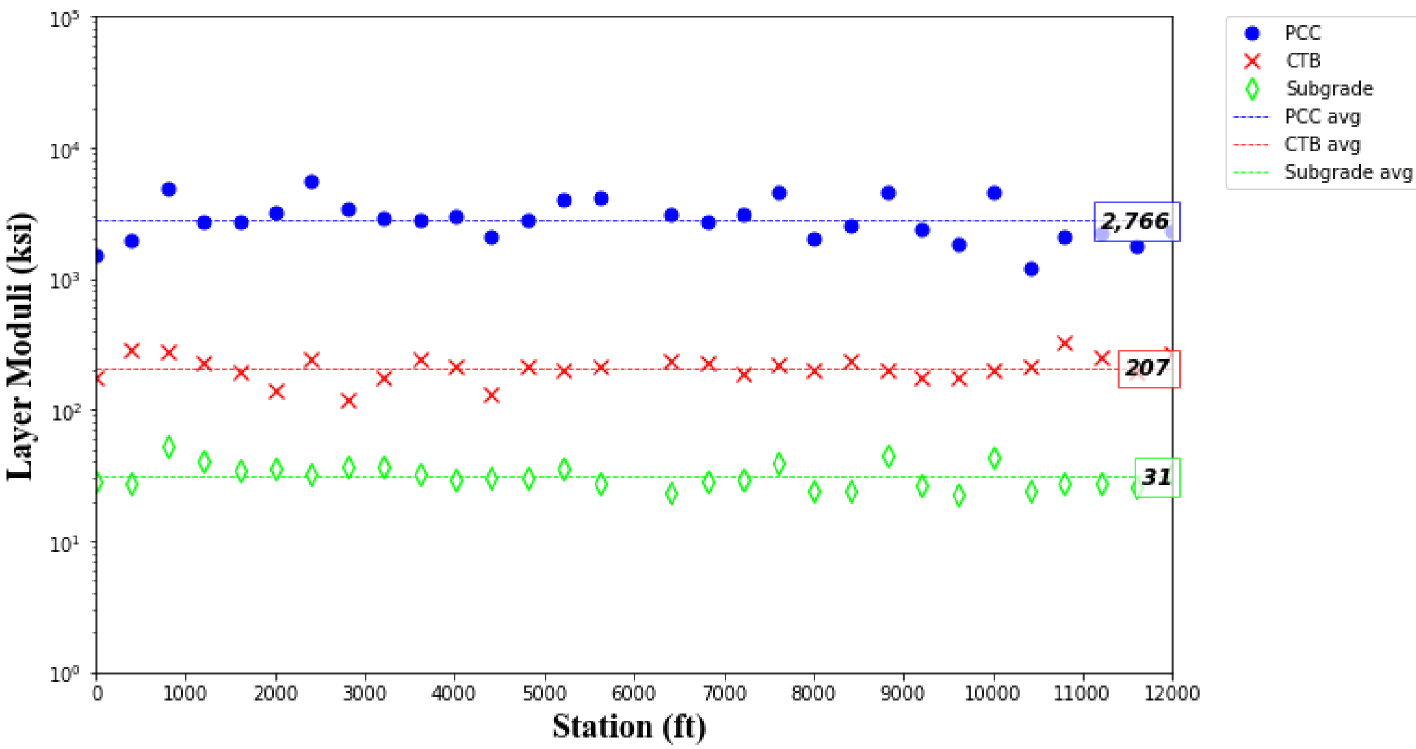


Figure D-30. Backcalculated Layer Moduli for TWY N 10R

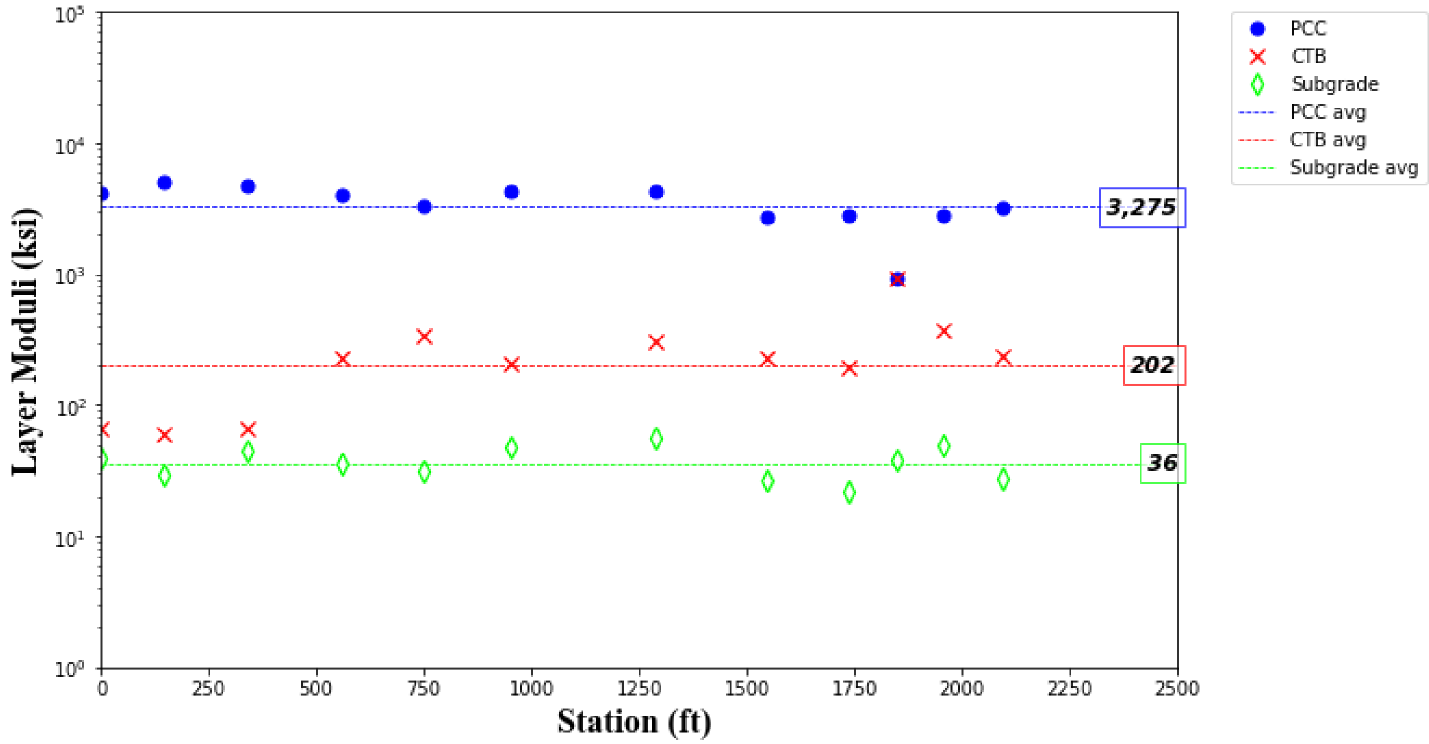


Figure D-31. Backcalculated Layer Moduli for TWY P 10L

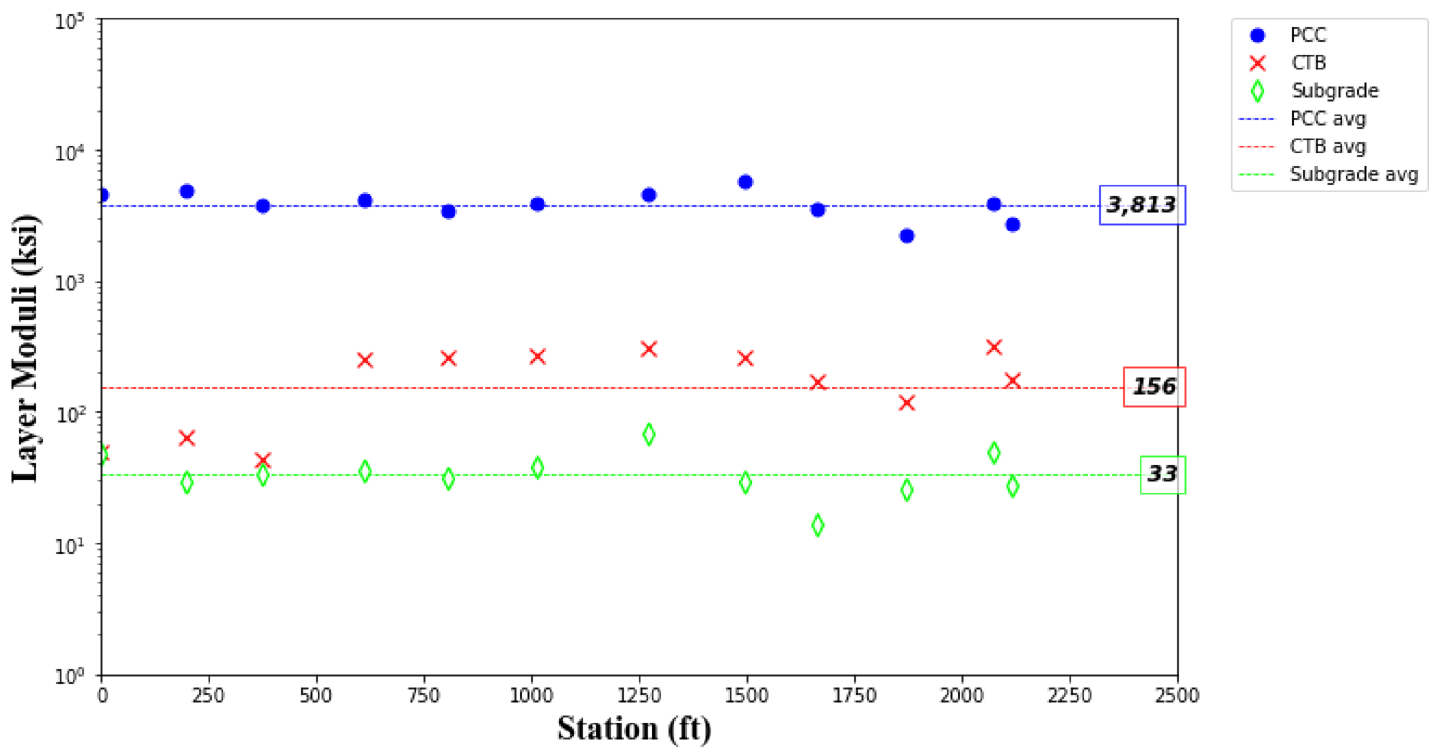


Figure D-32. Backcalculated Layer Moduli for TWY P 10R

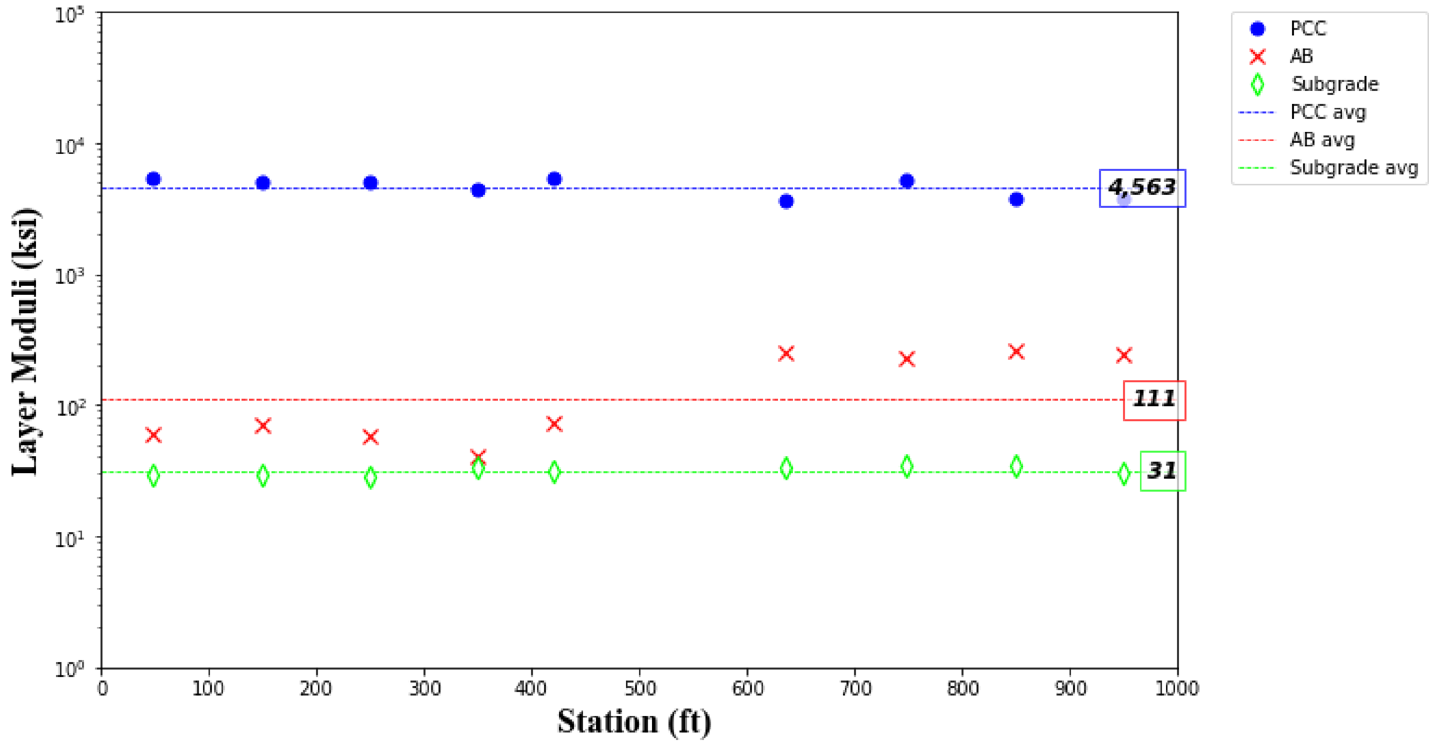


Figure D-33. Backcalculated Layer Moduli for TWY Q 10L

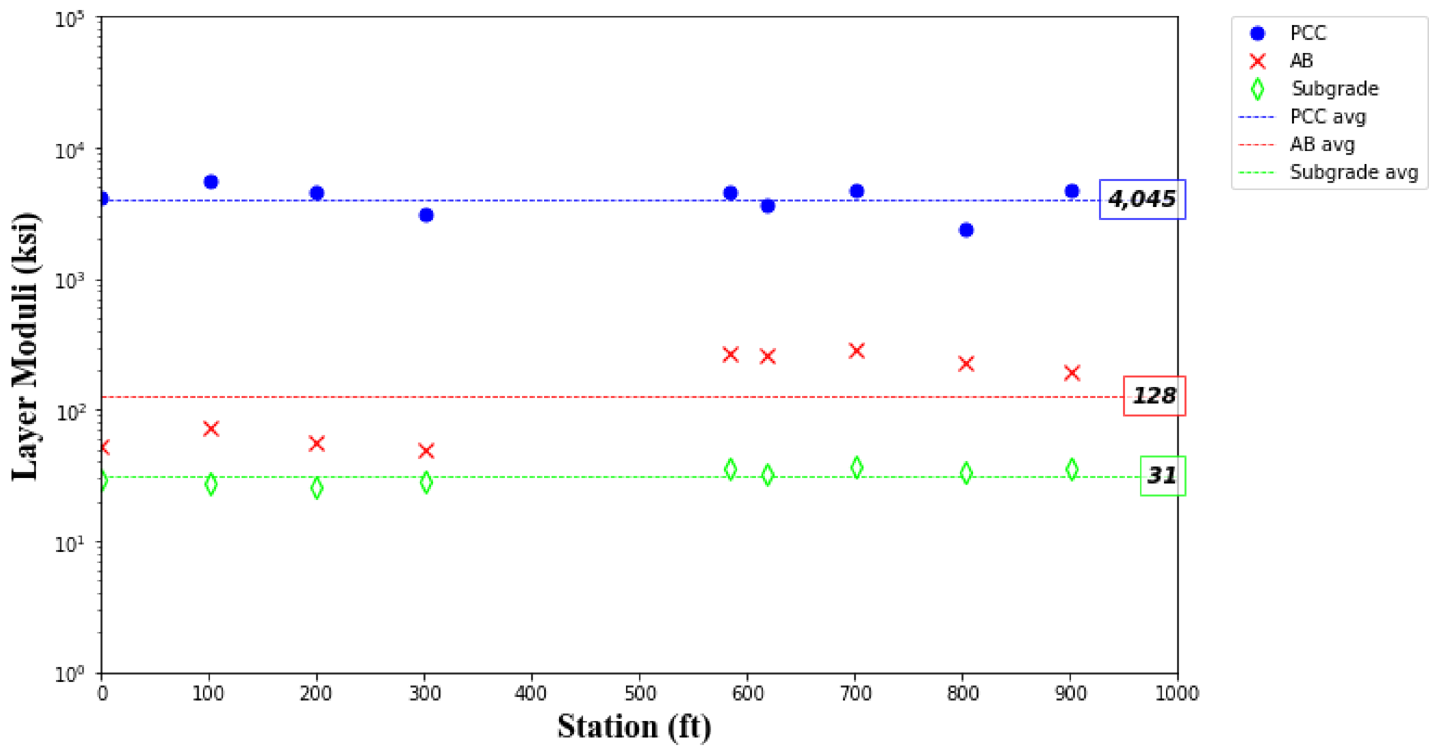


Figure D-34. Backcalculated Layer Moduli for TWY Q 10R

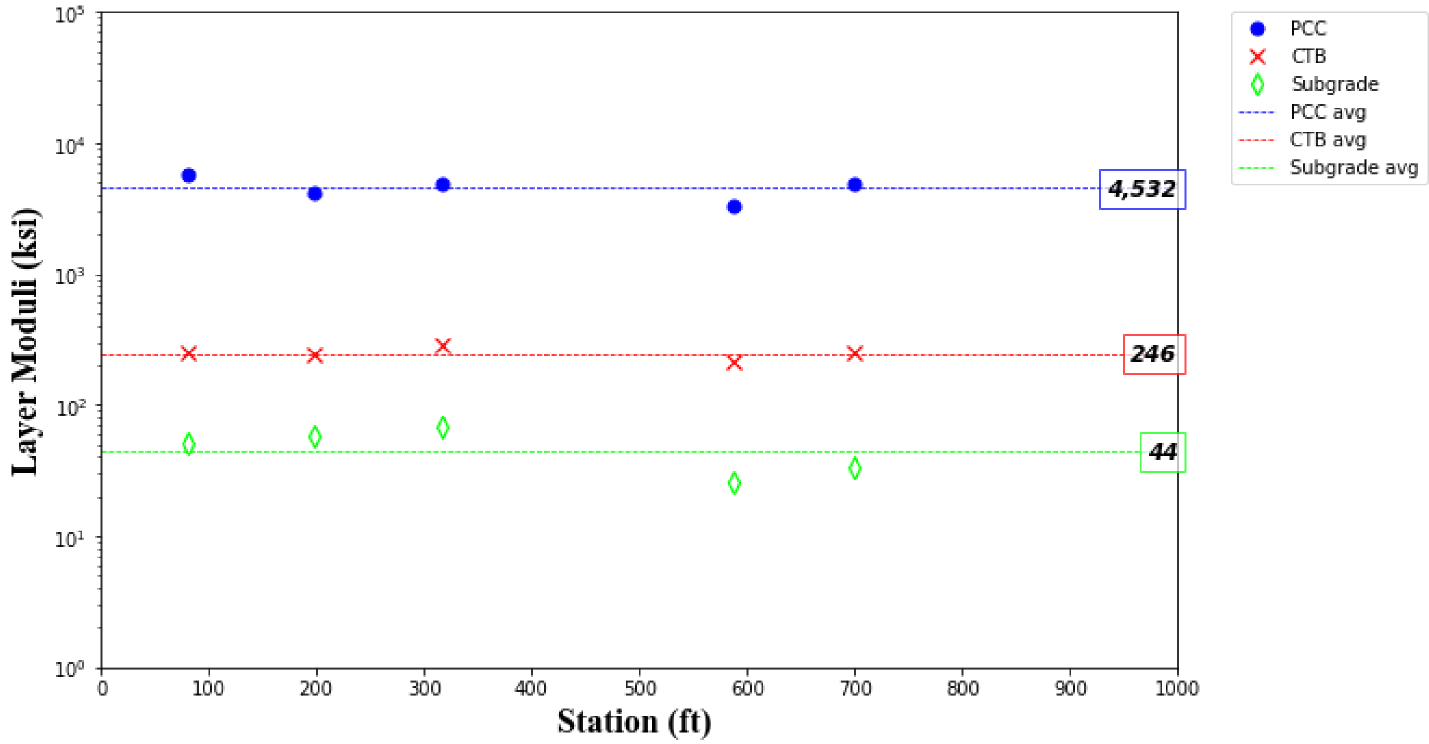


Figure D-35. Backcalculated Layer Moduli for TWY R 10L

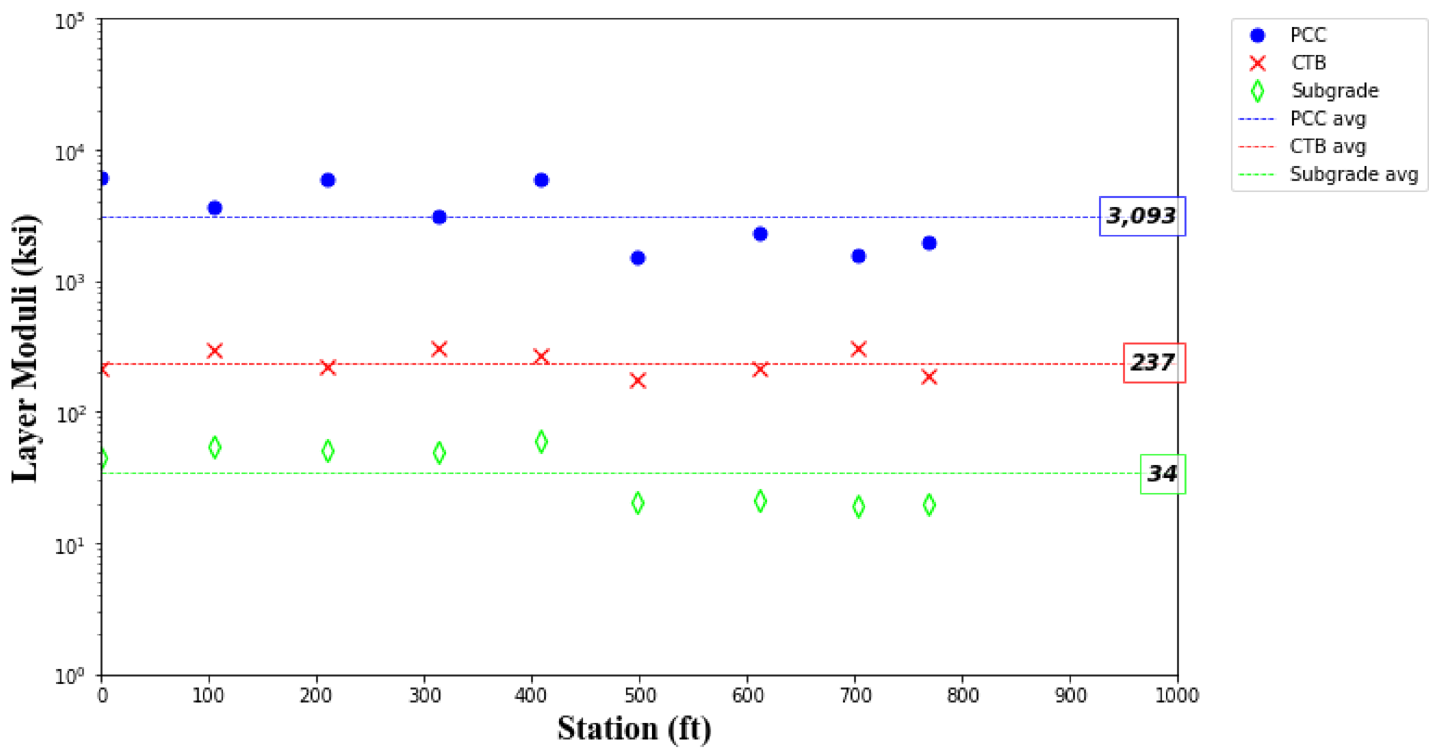


Figure D-36. Backcalculated Layer Moduli for TWY R 10R

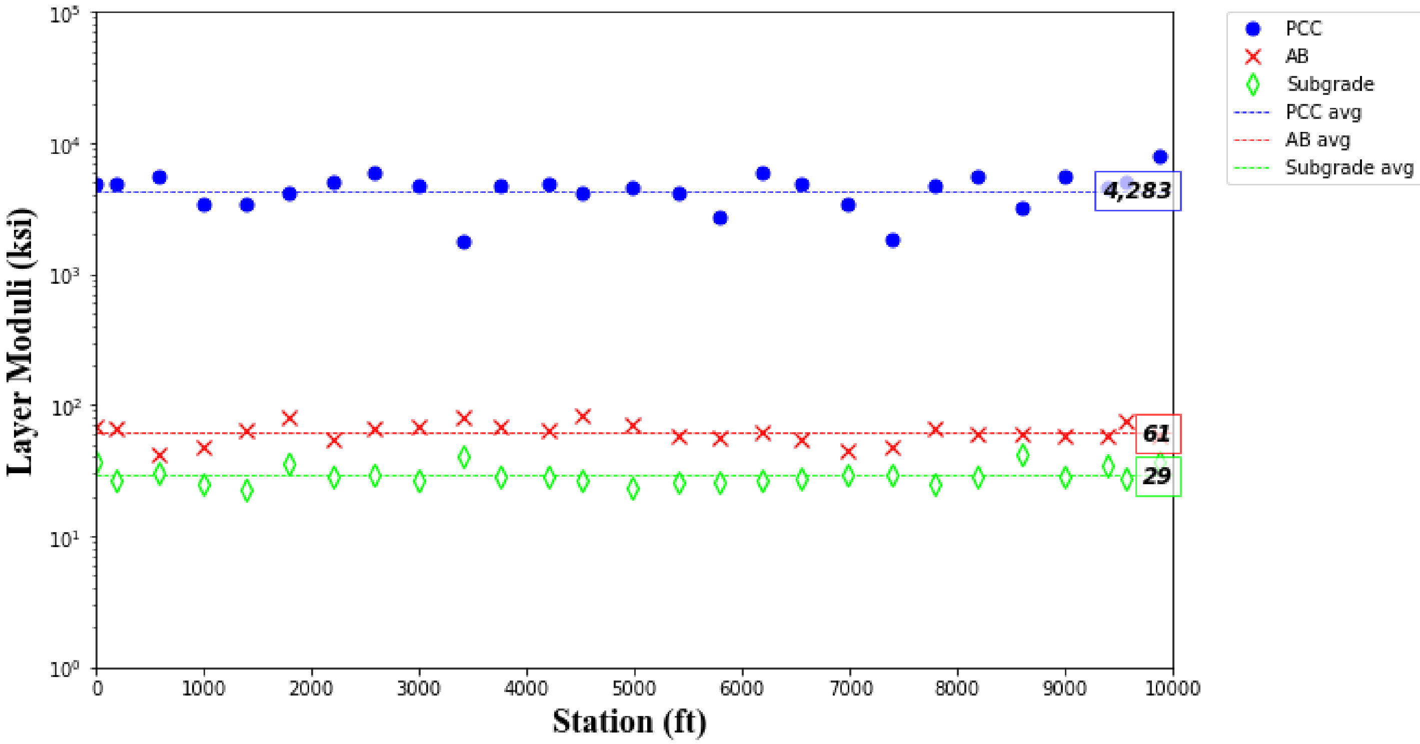


Figure D-37. Backcalculated Layer Moduli for TWY S 10L

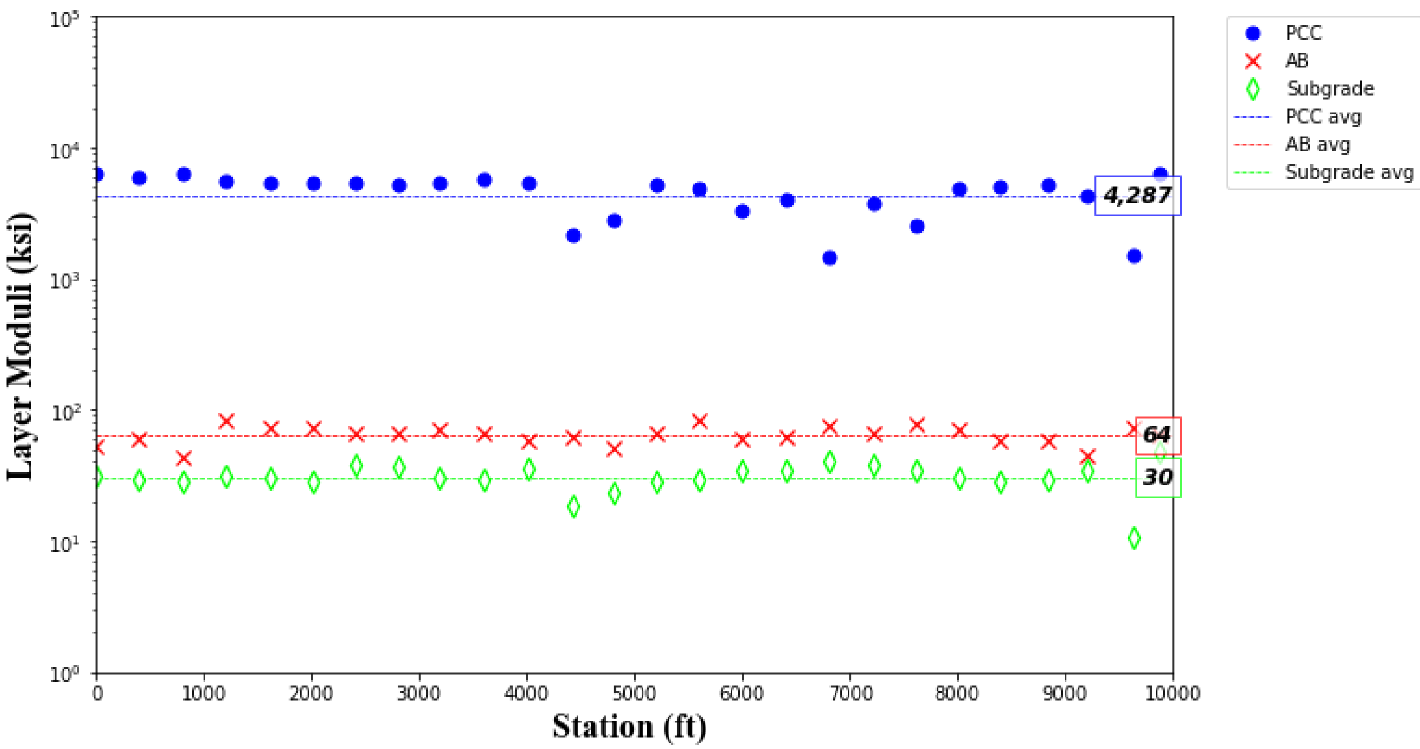


Figure D-38. Backcalculated Layer Moduli for TWY S 10R

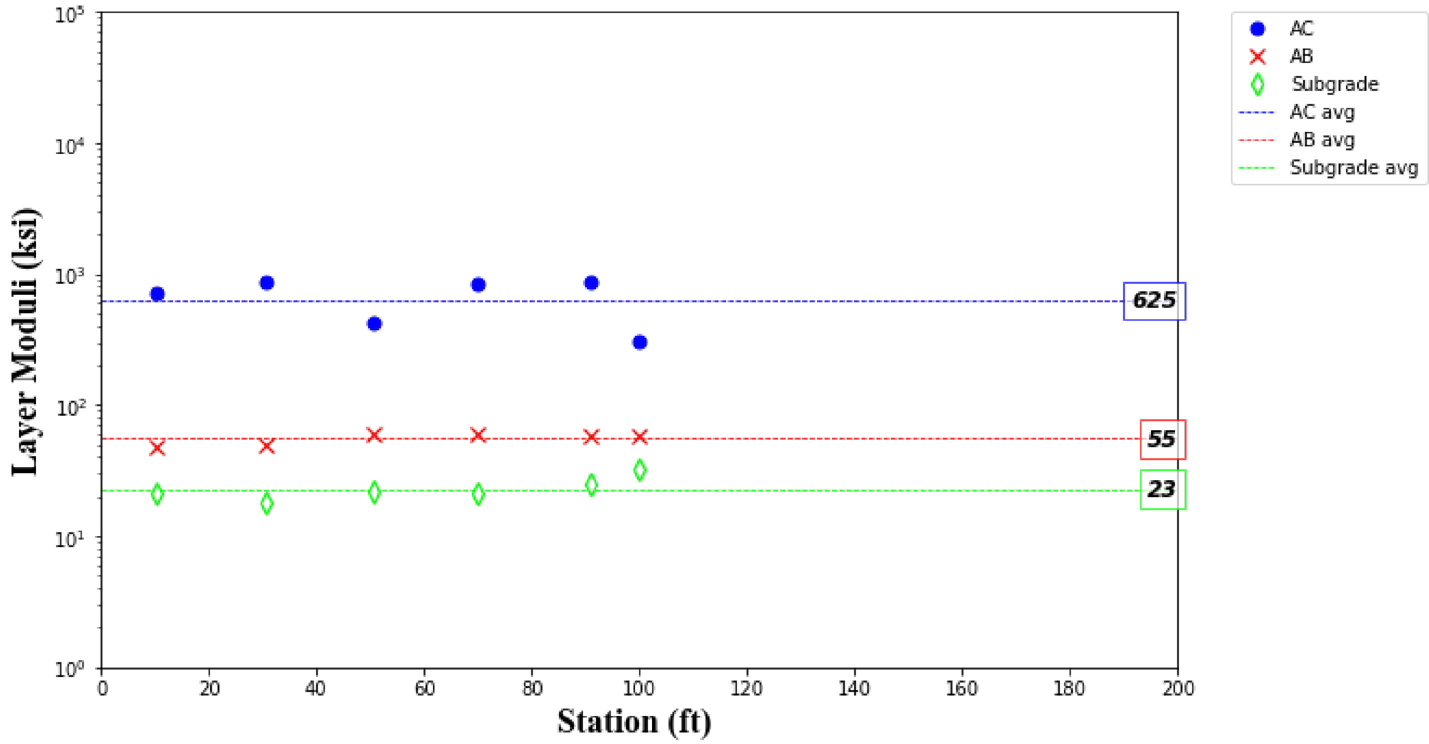


Figure D-39. Backcalculated Layer Moduli for TWY S1 10L

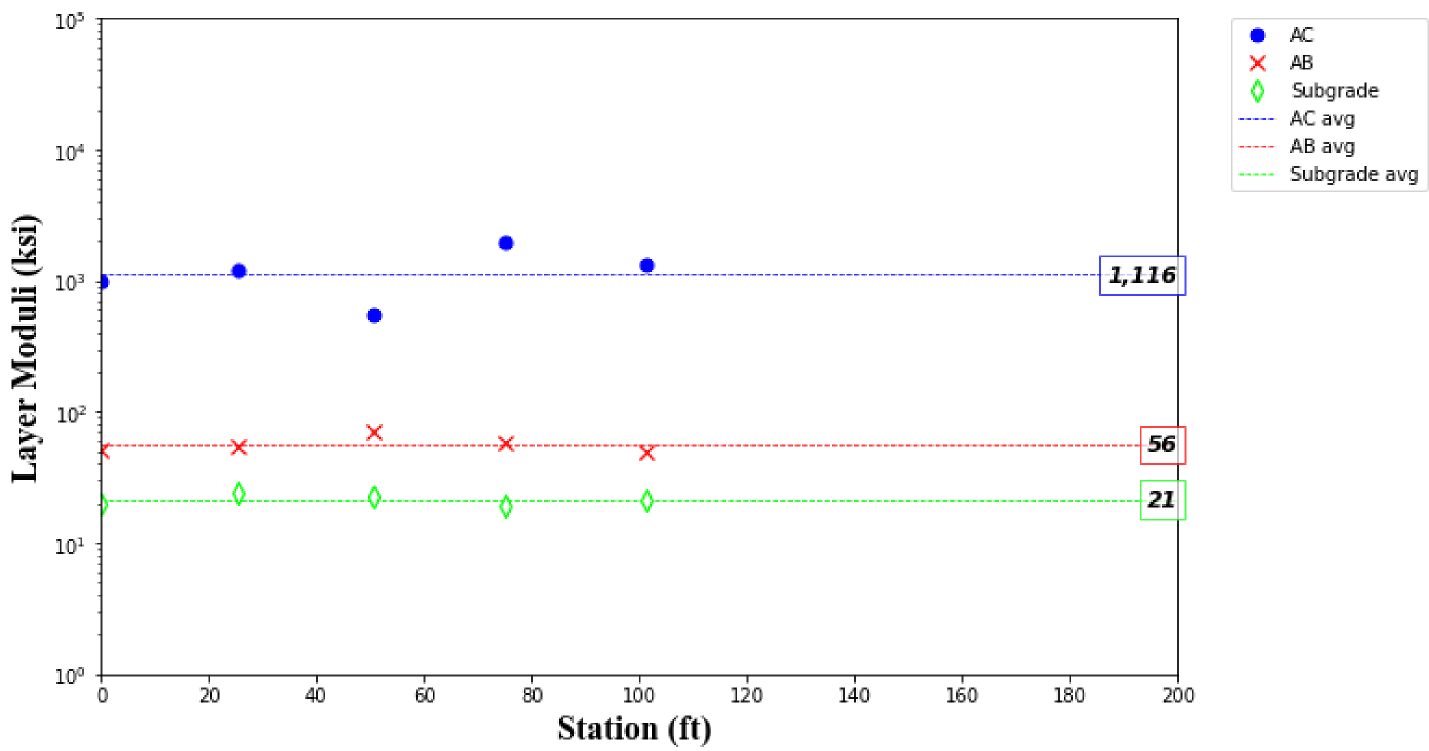


Figure D-40. Backcalculated Layer Moduli for TWY S1 10R

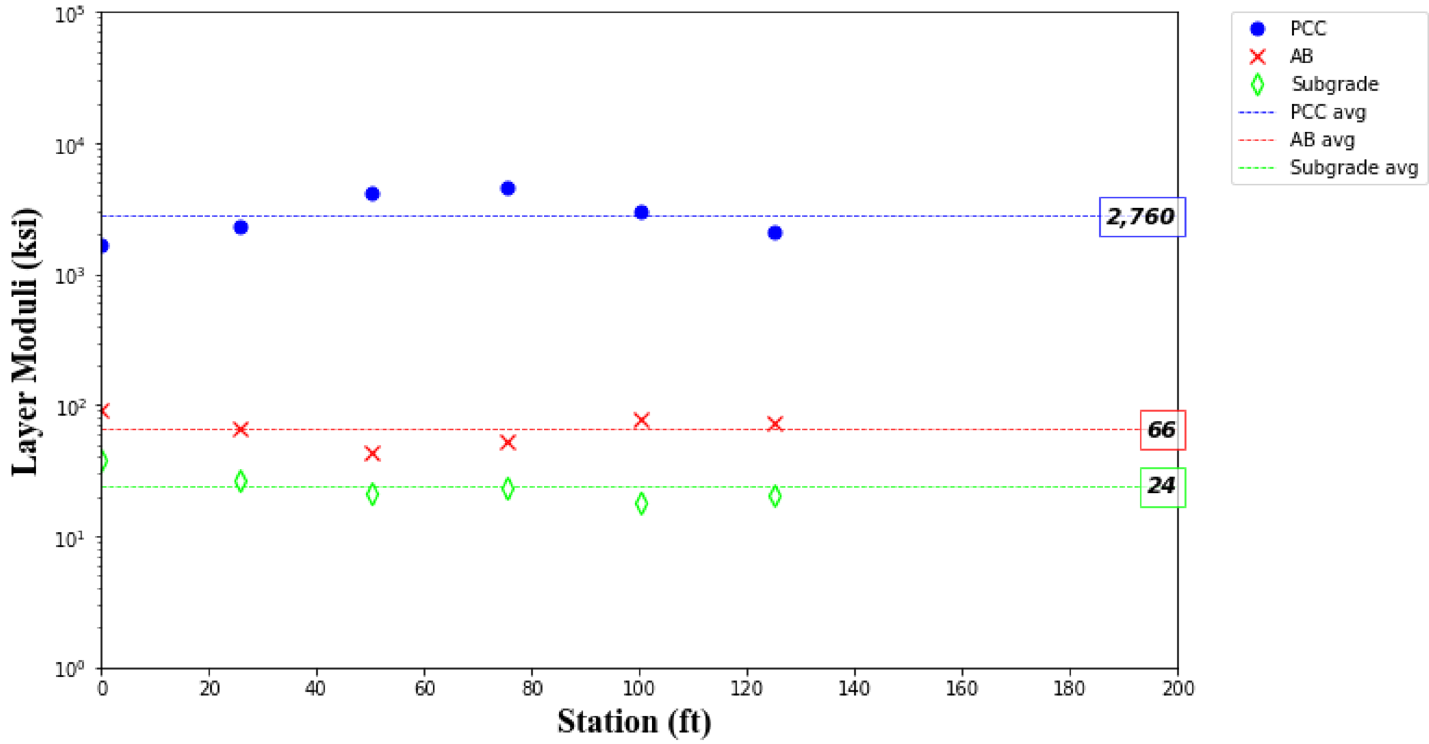


Figure D-41. Backcalculated Layer Moduli for TWY S2 10L

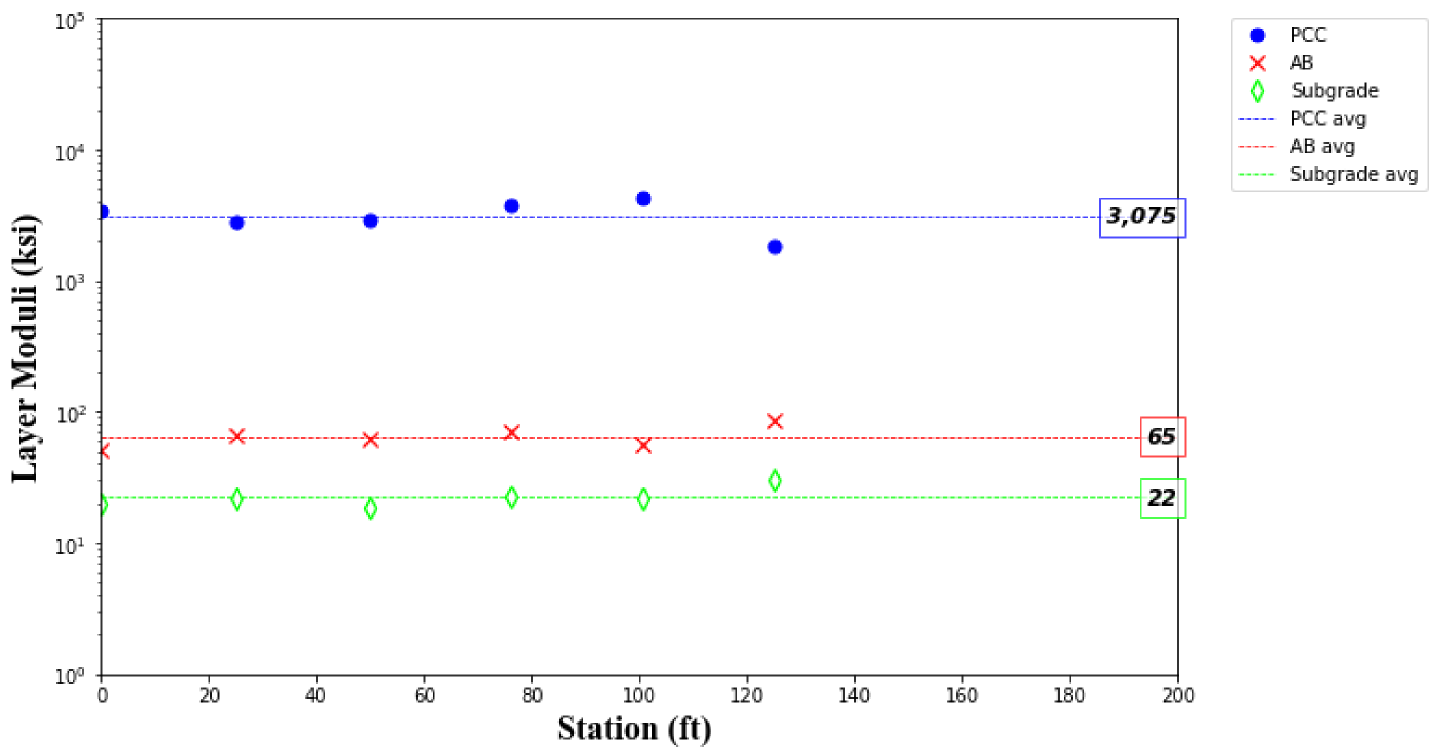


Figure D-42. Backcalculated Layer Moduli for TWY S2 10R

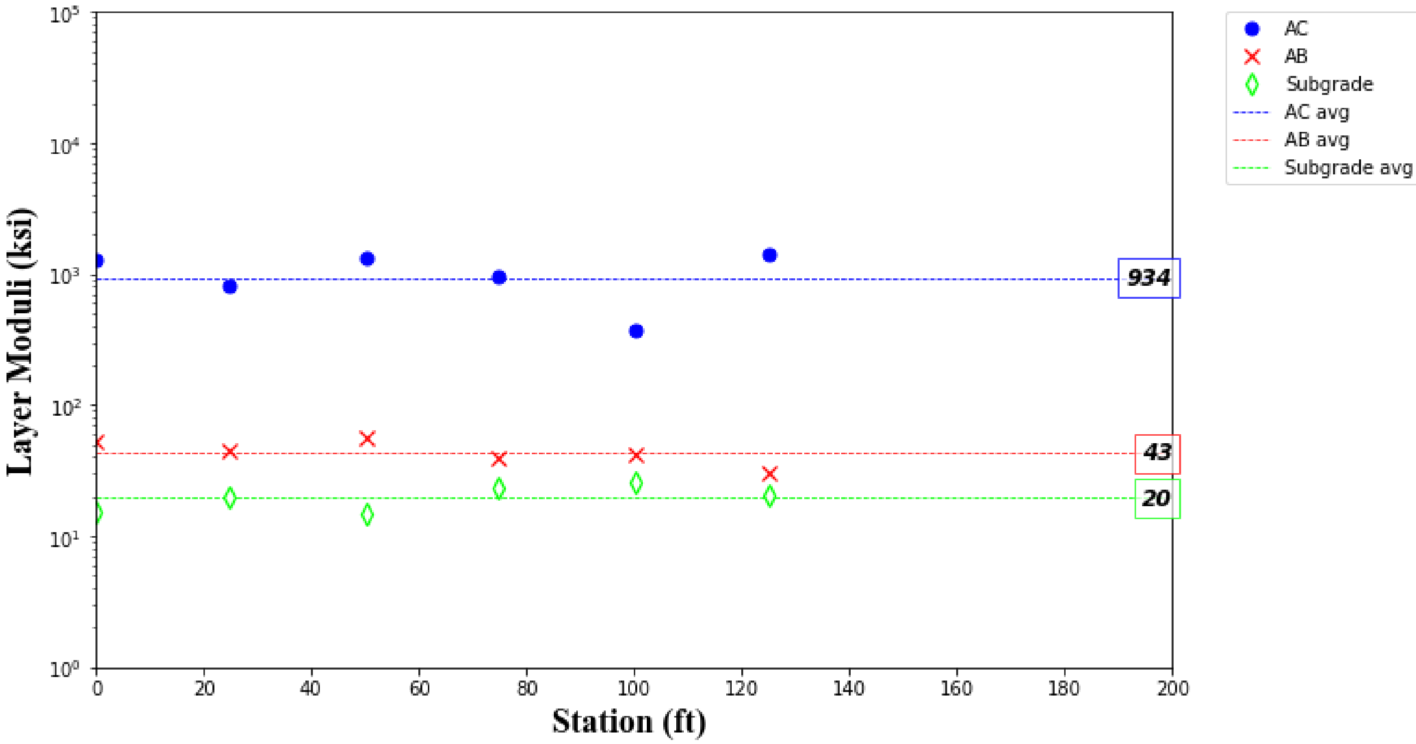


Figure D-43. Backcalculated Layer Moduli for TWY S3 10L

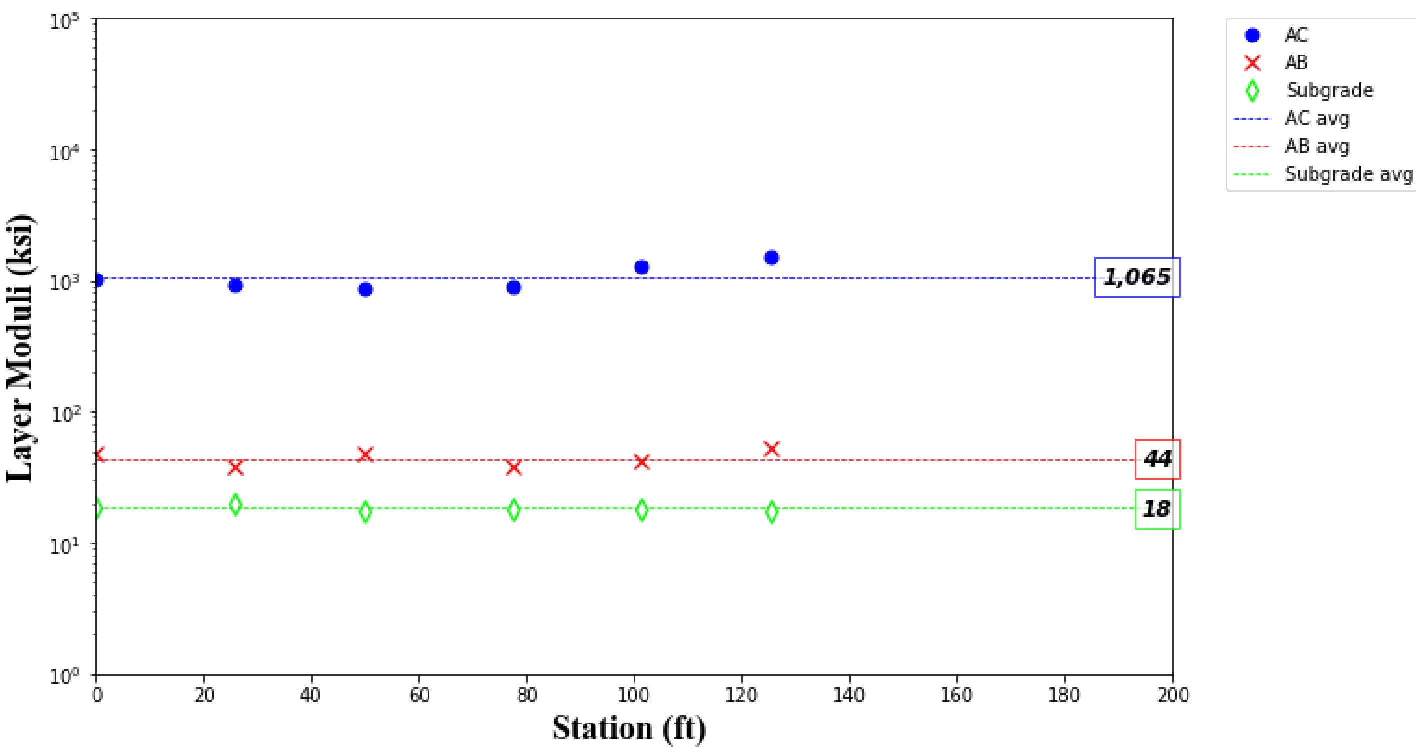


Figure D-44. Backcalculated Layer Moduli for TWY S3 10R

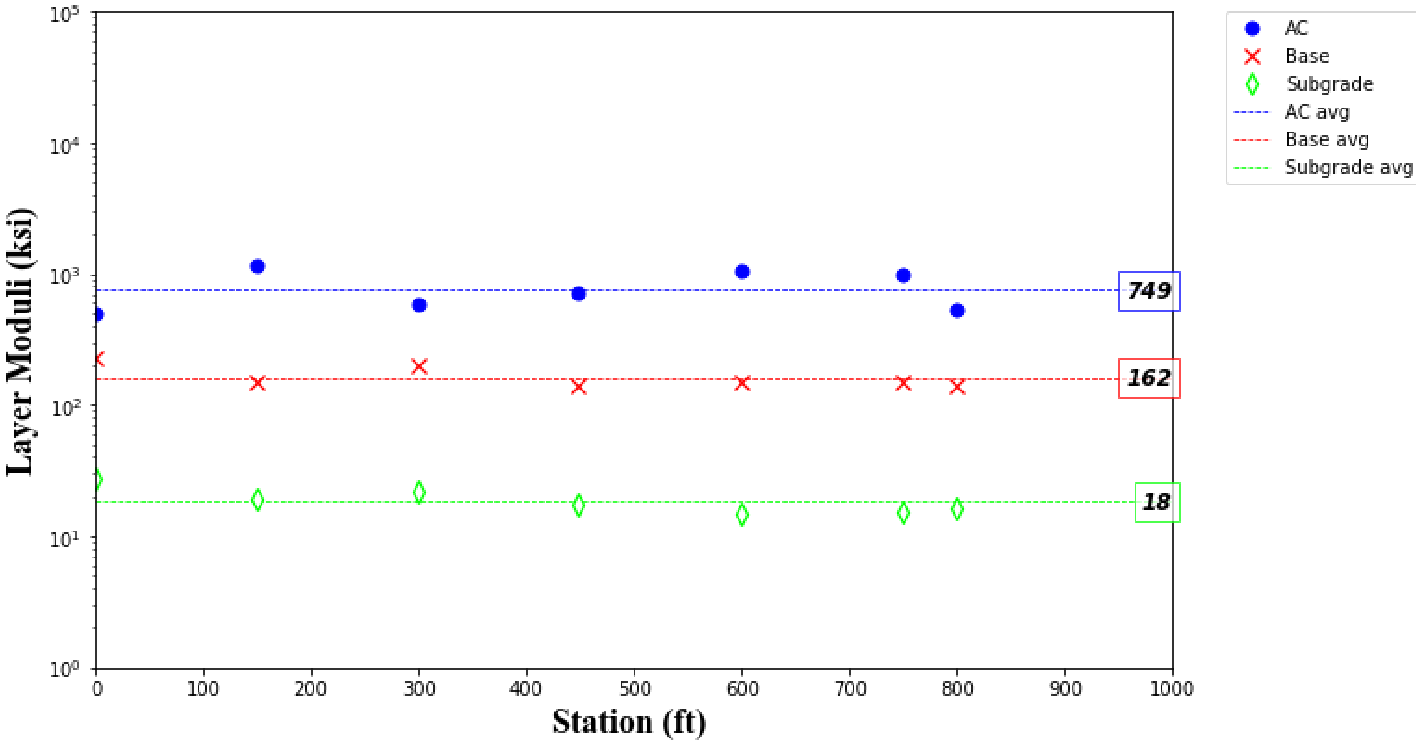


Figure D-45. Backcalculated Layer Moduli for TWY S5 10L

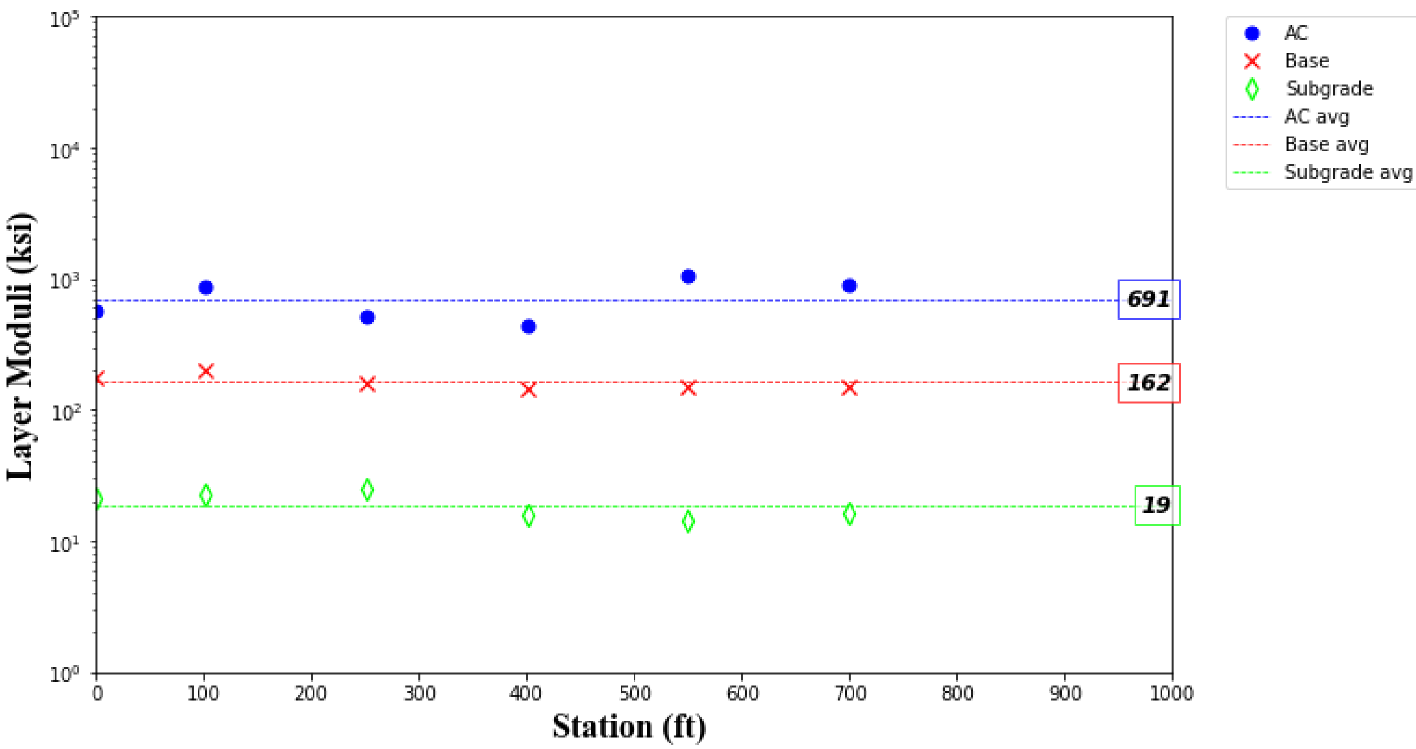


Figure D-46. Backcalculated Layer Moduli for TWY S5 10R

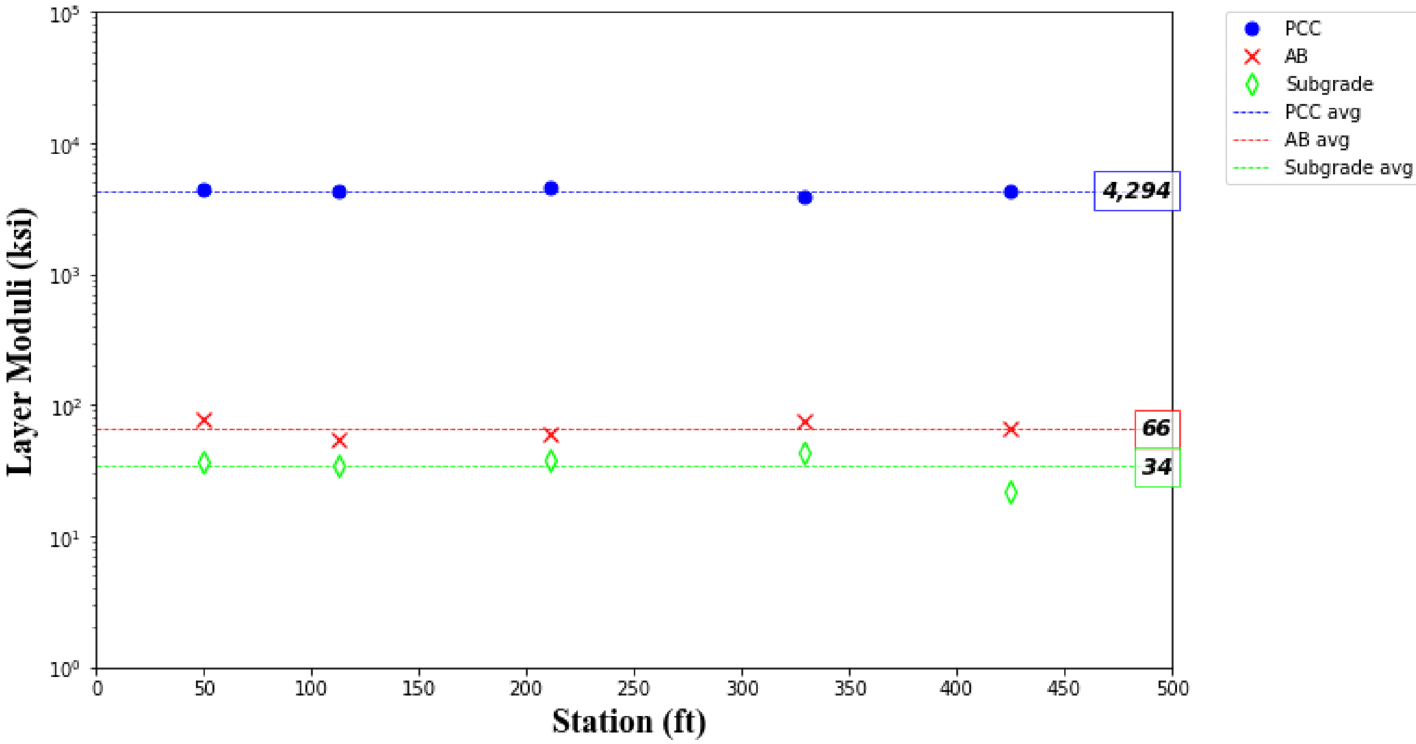


Figure D-47. Backcalculated Layer Moduli for TWY T 10L

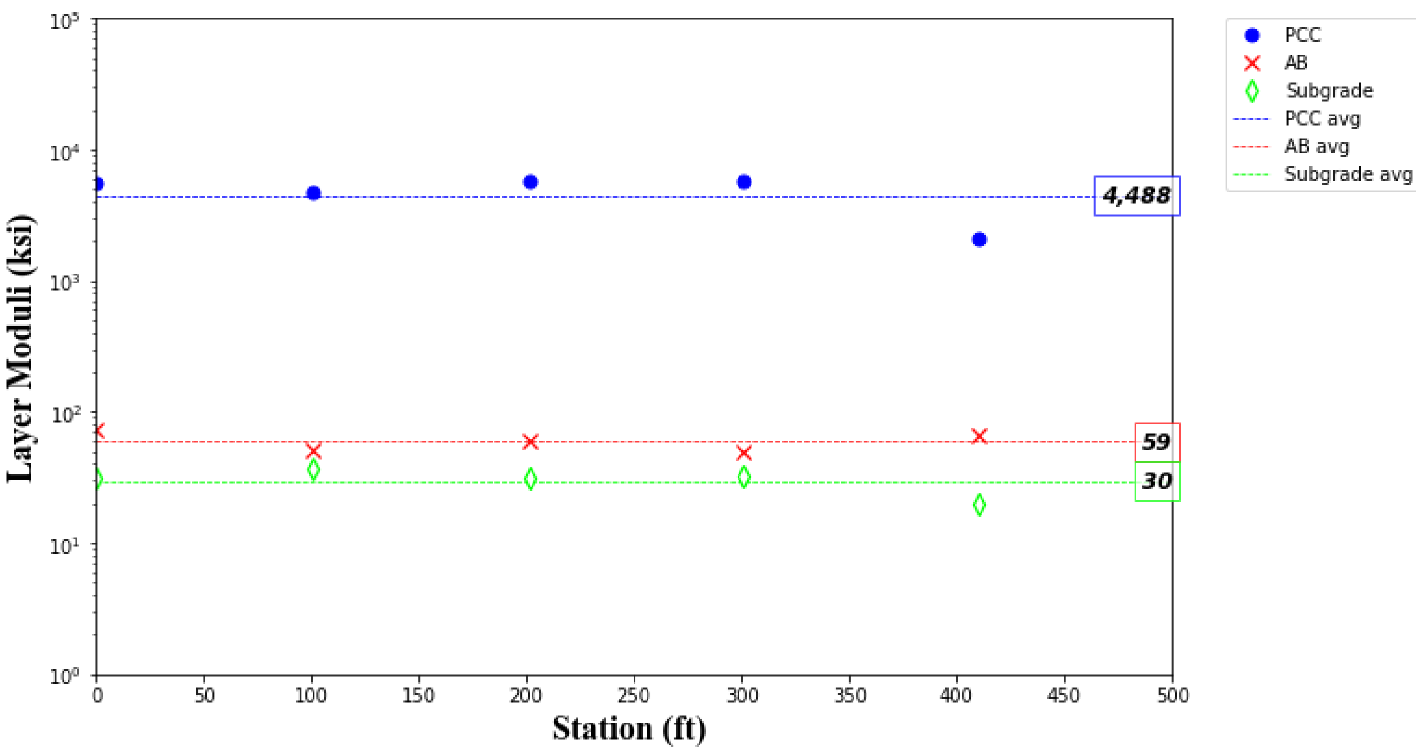


Figure D-48. Backcalculated Layer Moduli for TWY T 10R

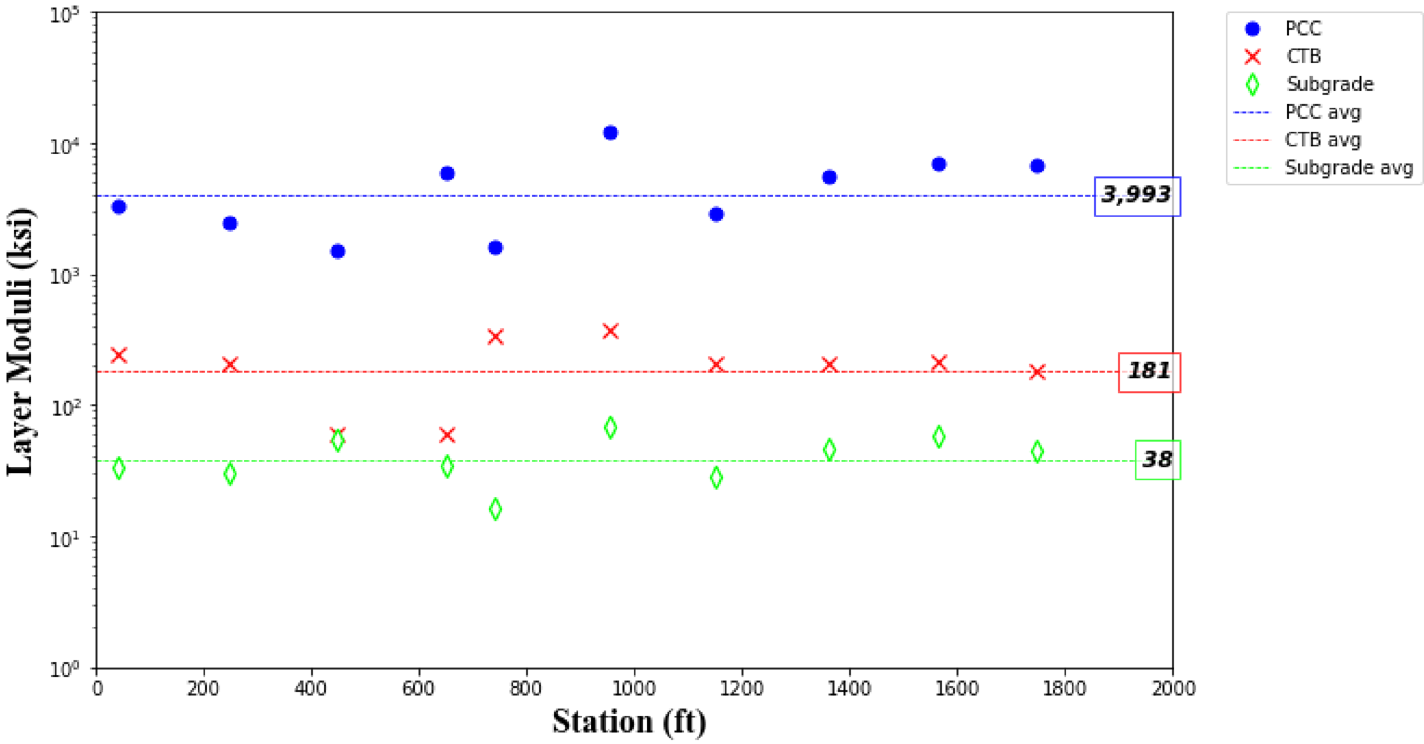


Figure D-49. Backcalculated Layer Moduli for TWY U 10L

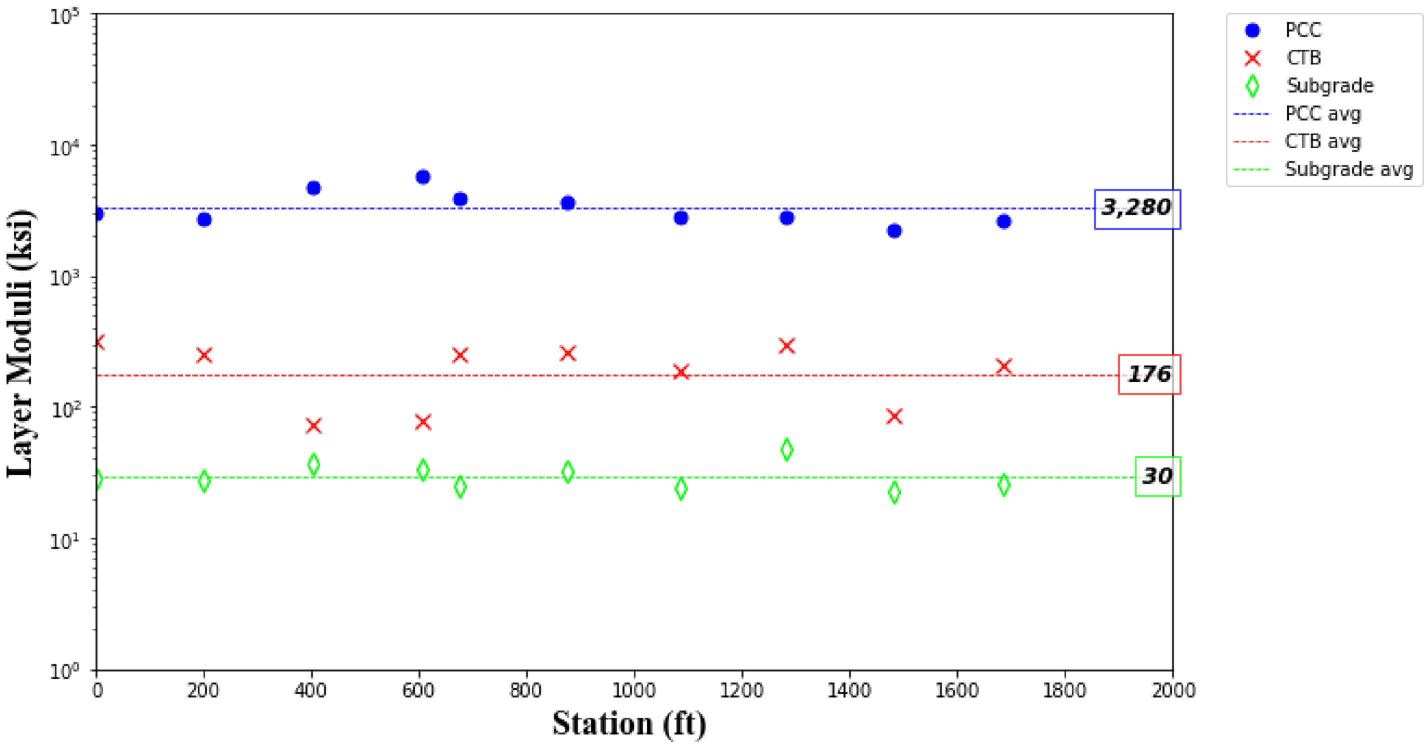


Figure D-50. Backcalculated Layer Moduli for TWY U 10R

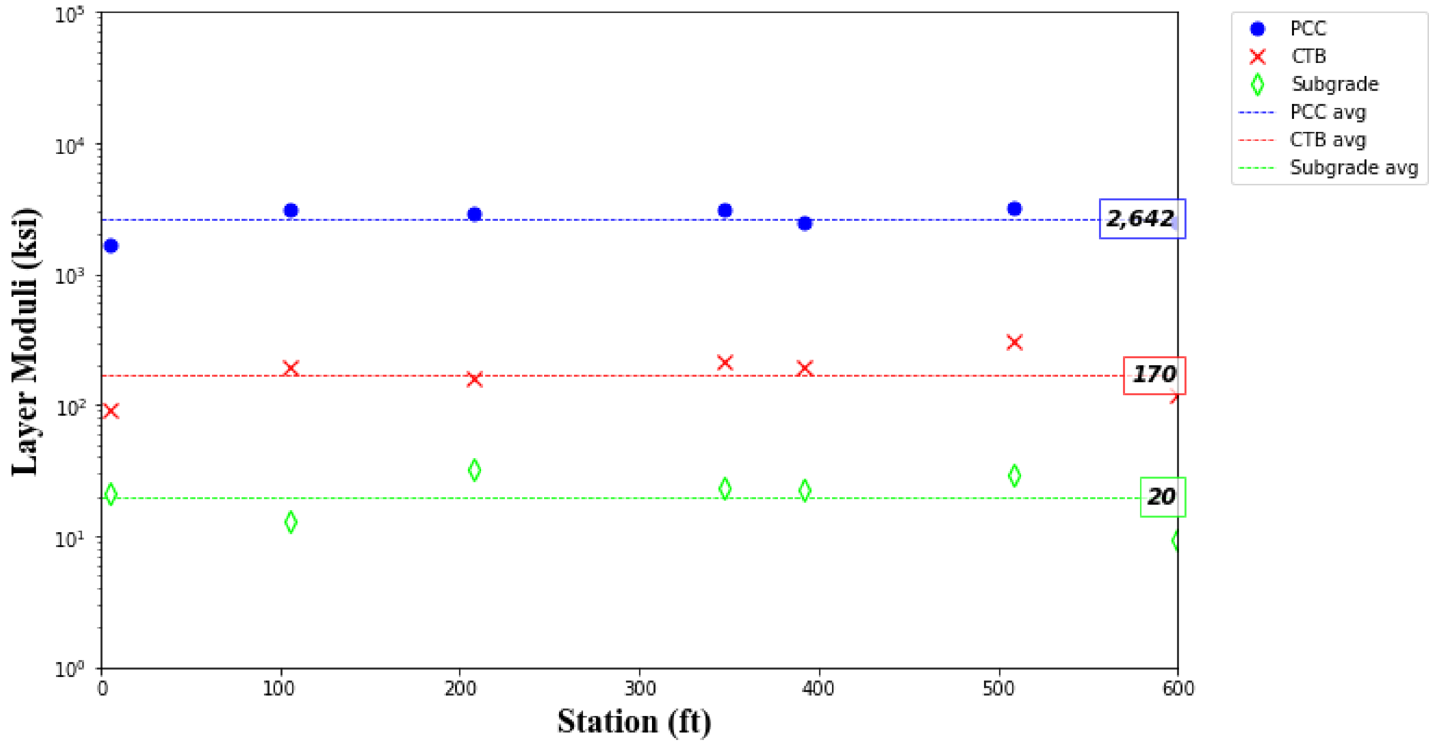


Figure D-51. Backcalculated Layer Moduli for TWY V 10L

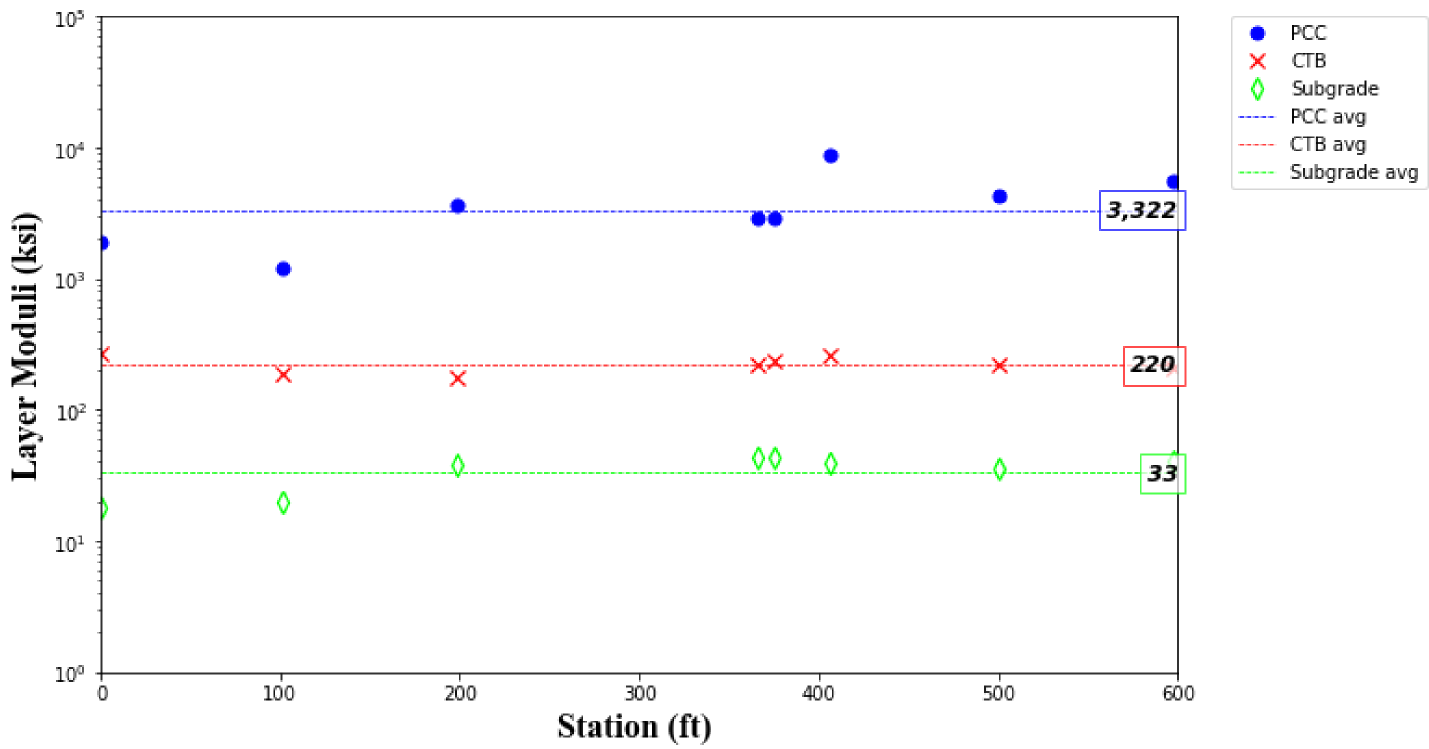


Figure D-52. Backcalculated Layer Moduli for TWY V 10R

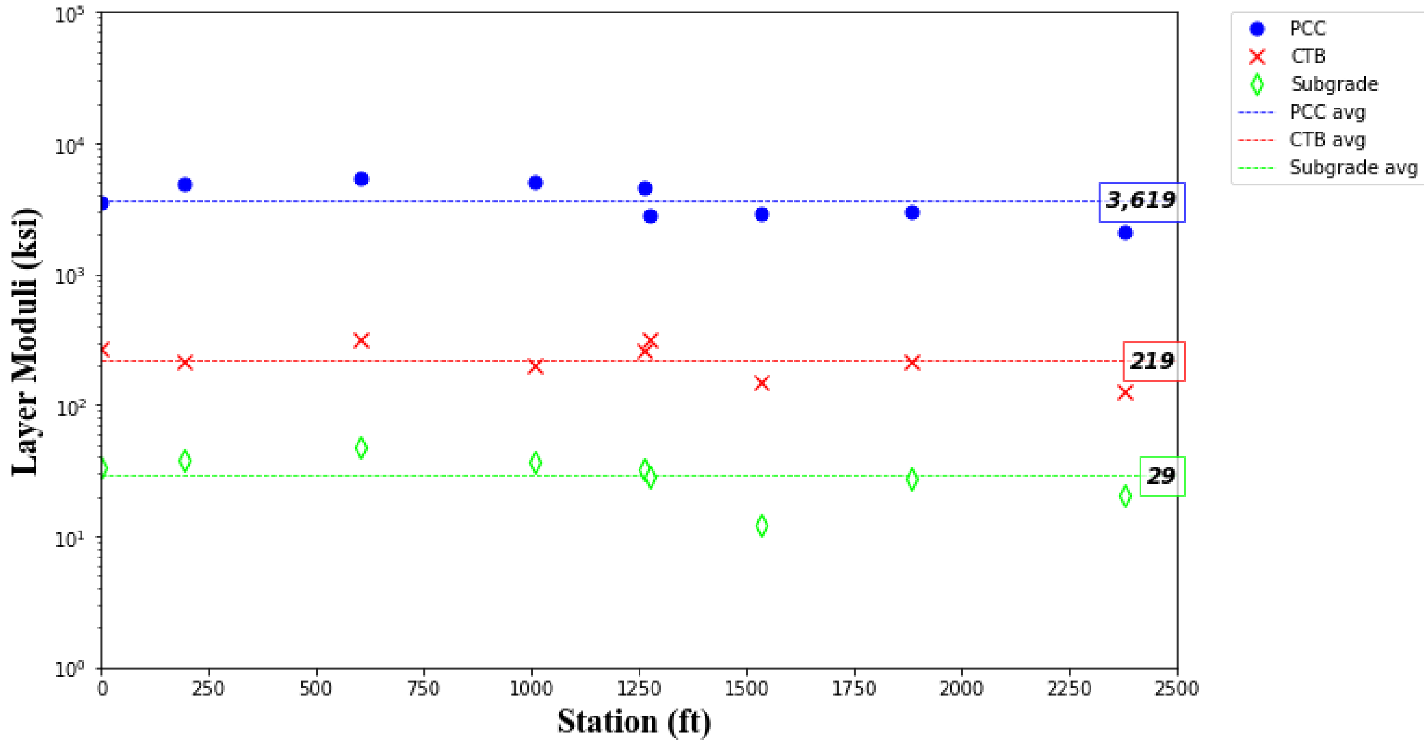


Figure D-53. Backcalculated Layer Moduli for TWY W 10L

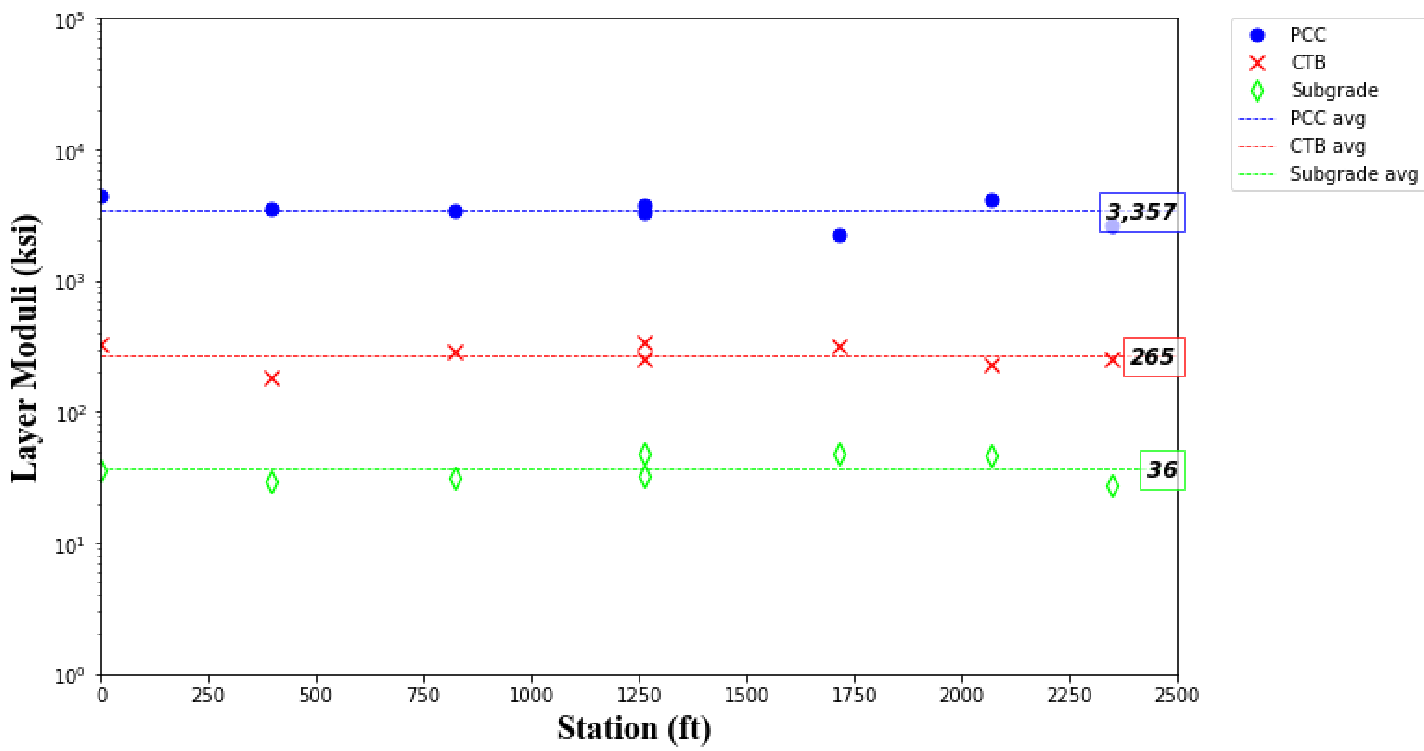


Figure D-54. Backcalculated Layer Moduli for TWY W 10R

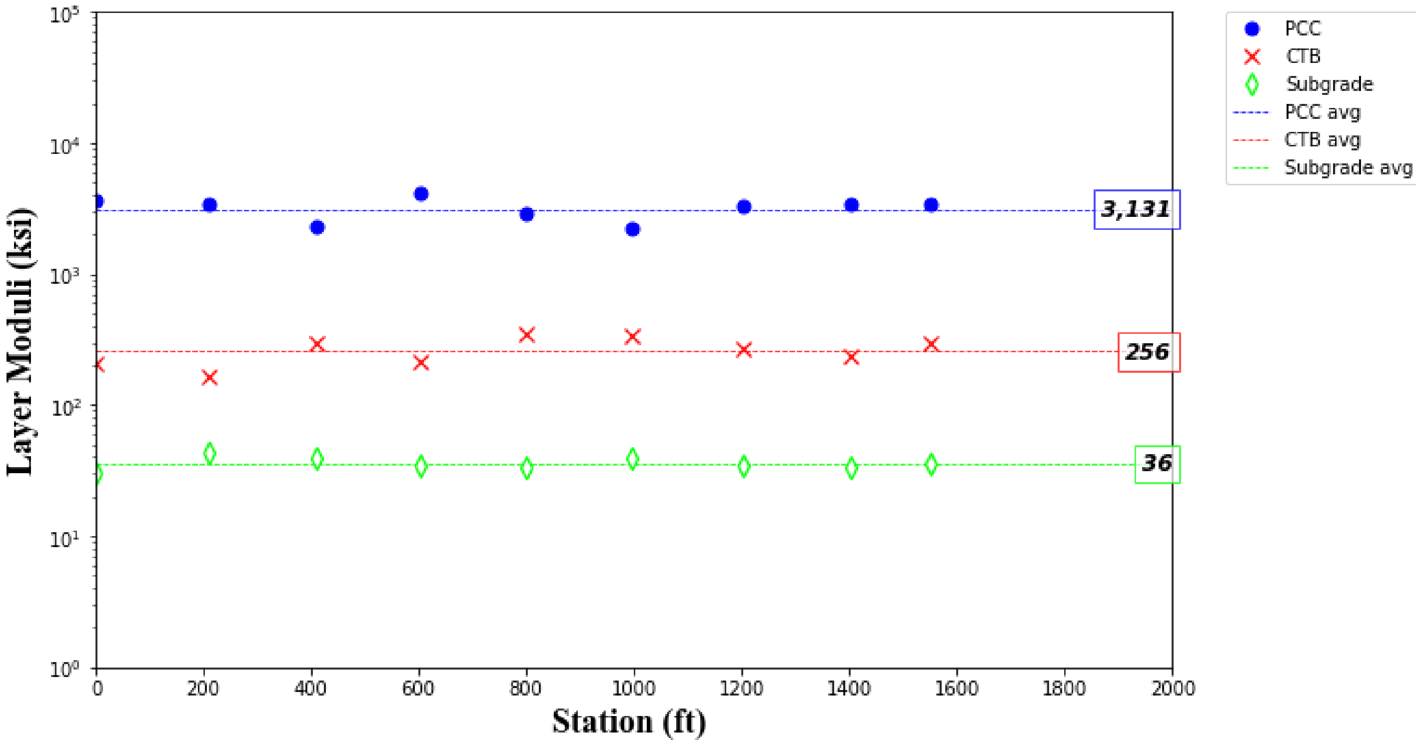


Figure D-55. Backcalculated Layer Moduli for TWY Y 10L

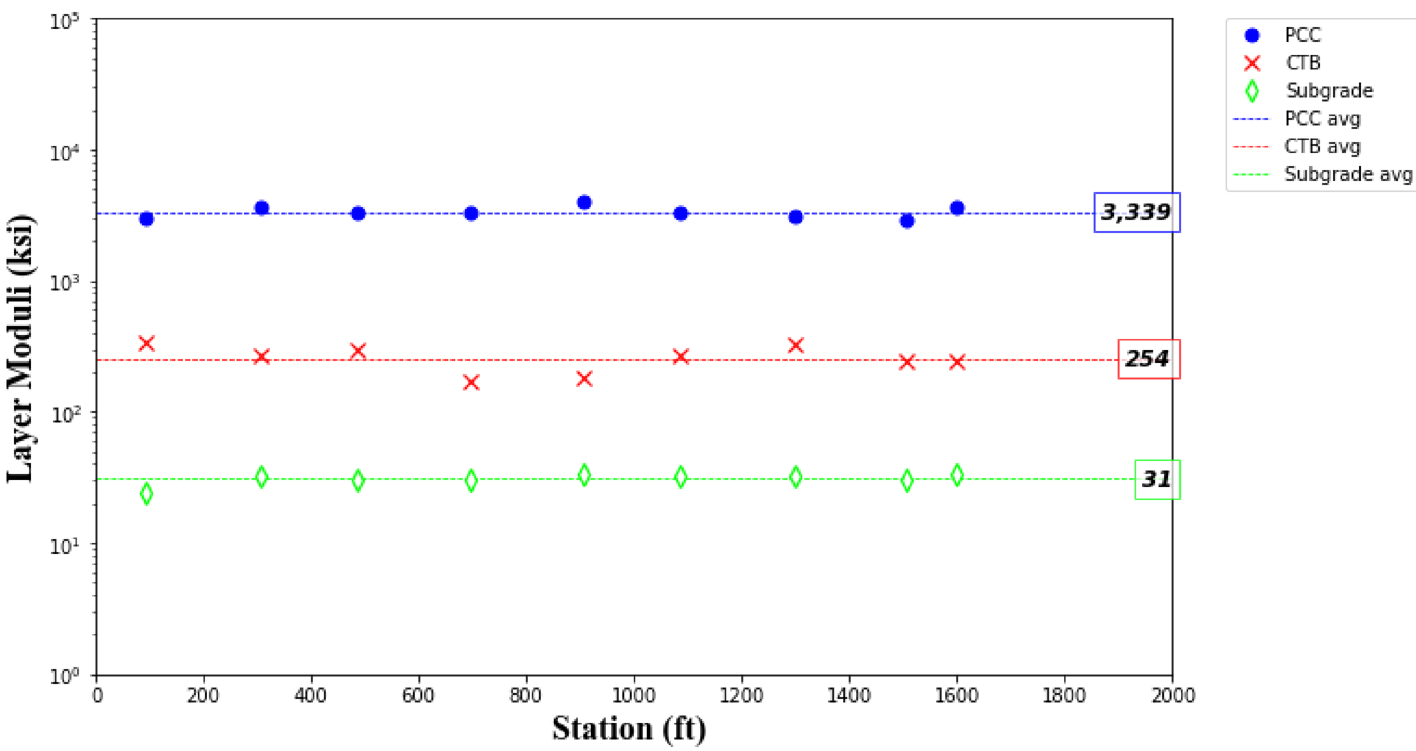


Figure D-56. Backcalculated Layer Moduli for TWY Y 10R

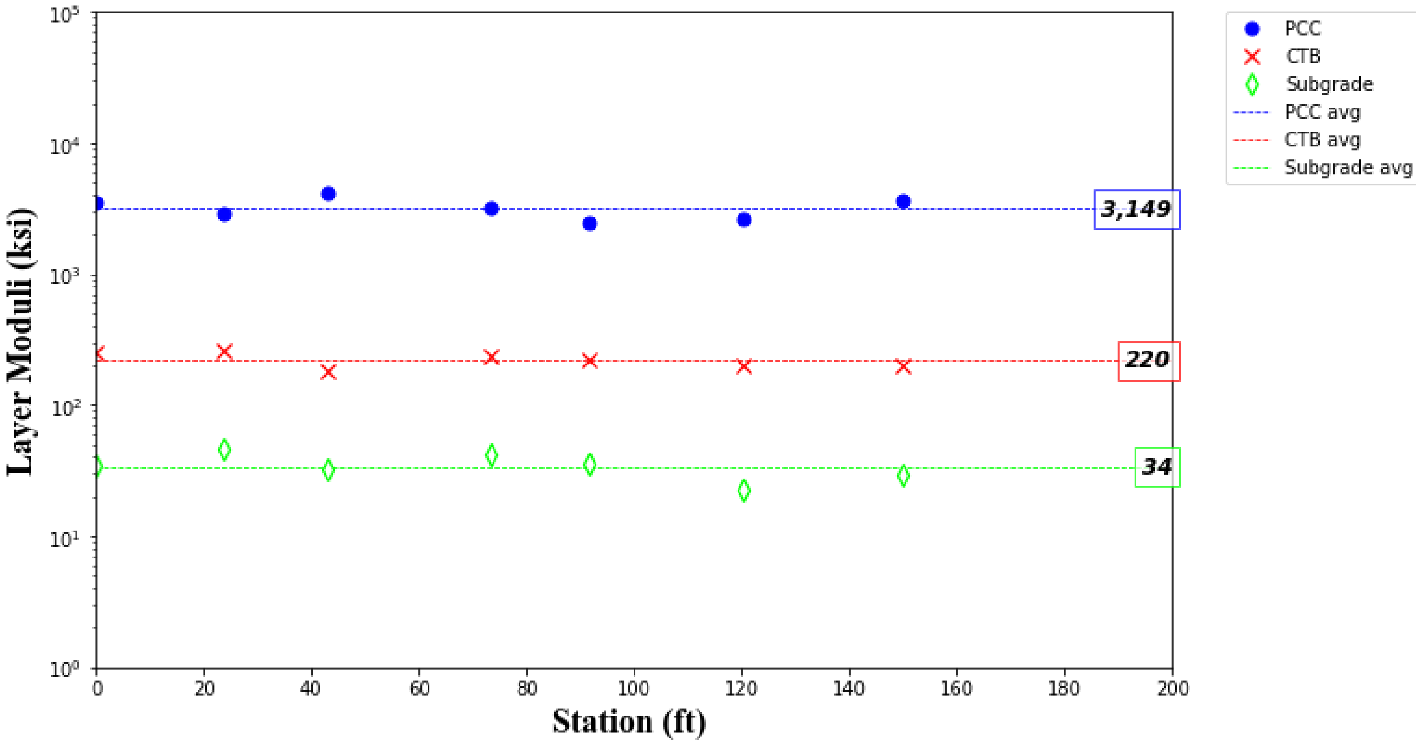


Figure D-57. Backcalculated Layer Moduli for TWY Y1 10L

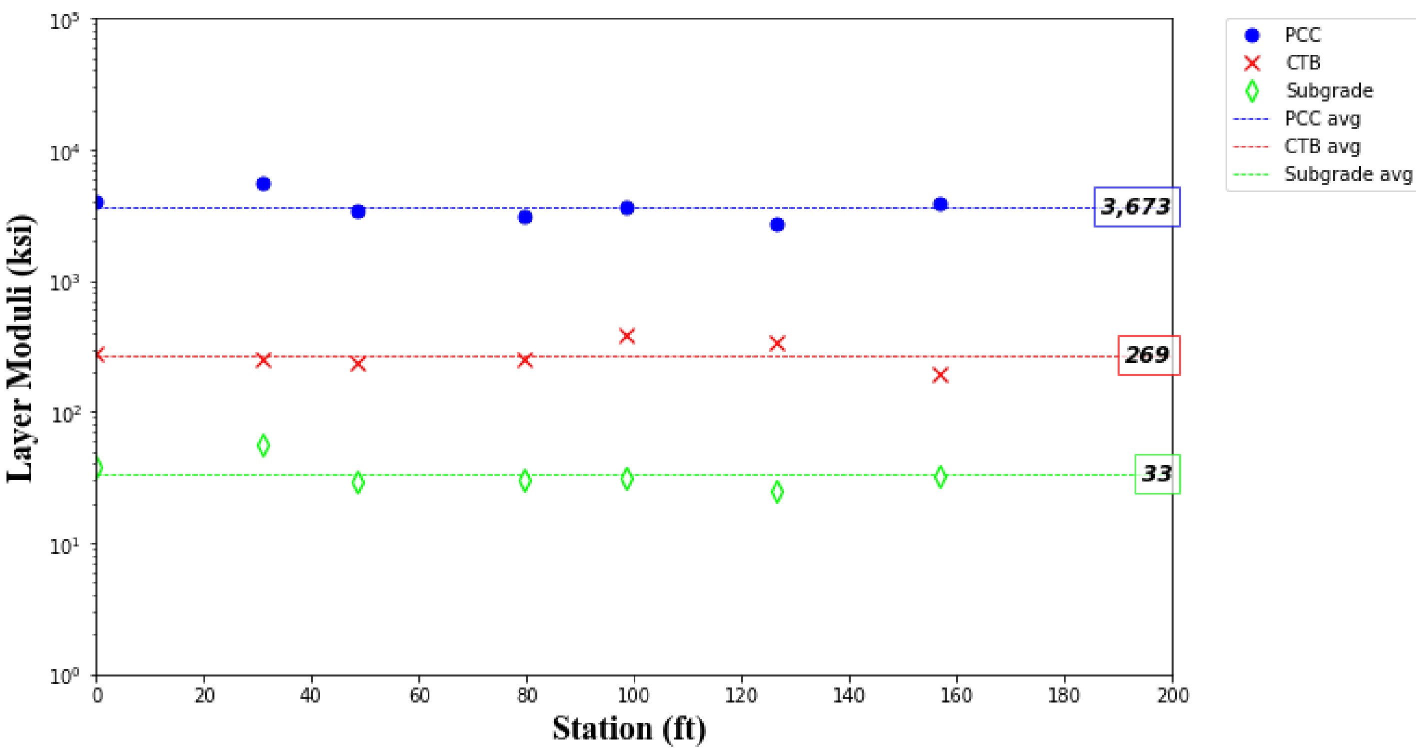


Figure D-58. Backcalculated Layer Moduli for TWY Y1 10R

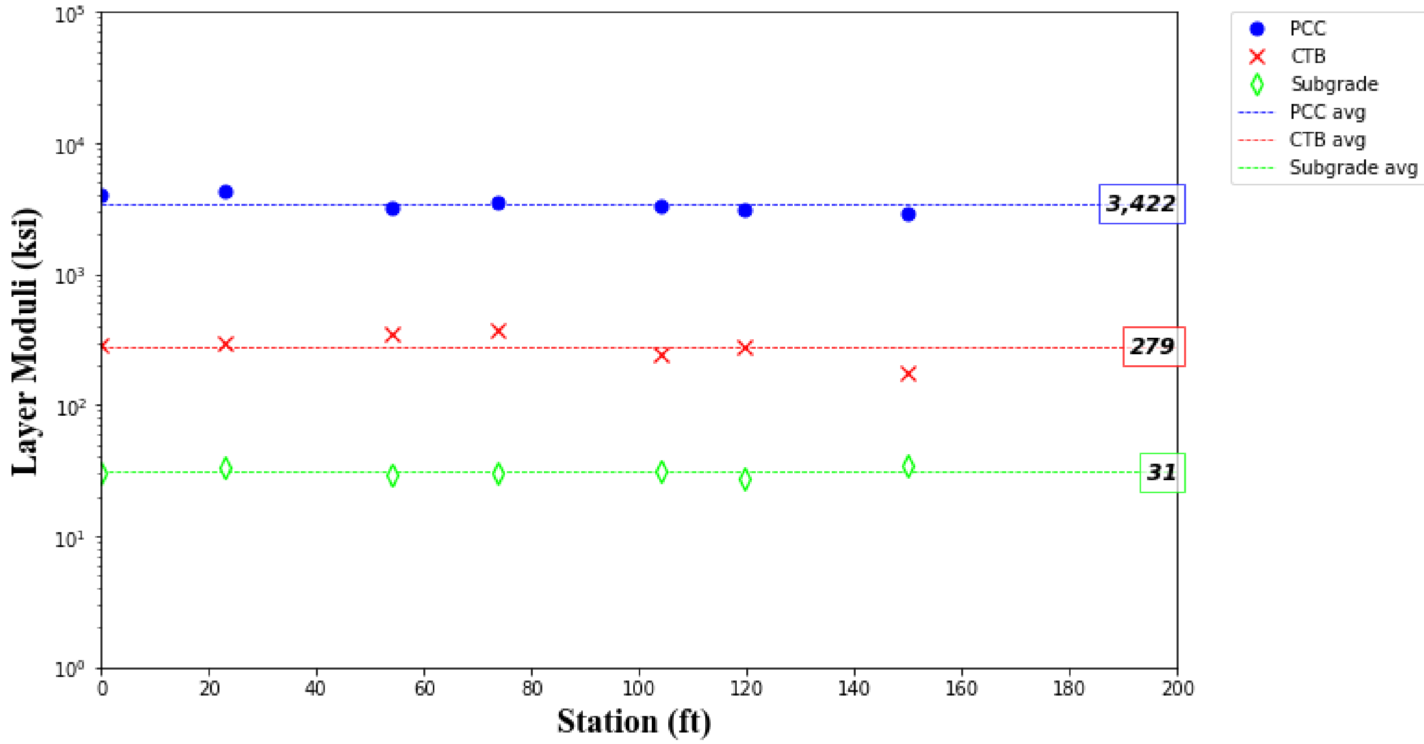


Figure D-59. Backcalculated Layer Moduli for TWY Y2 10L

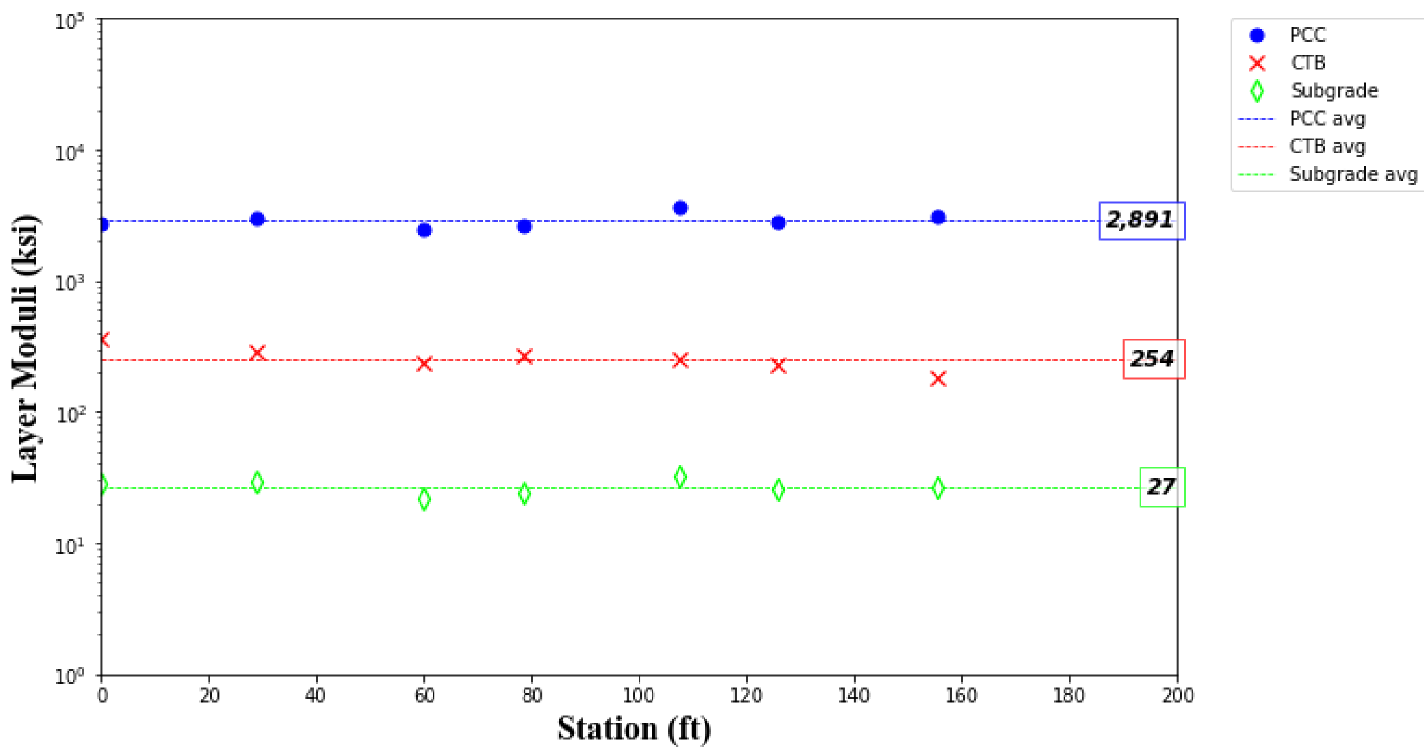


Figure D-60. Backcalculated Layer Moduli for TWY Y2 10R

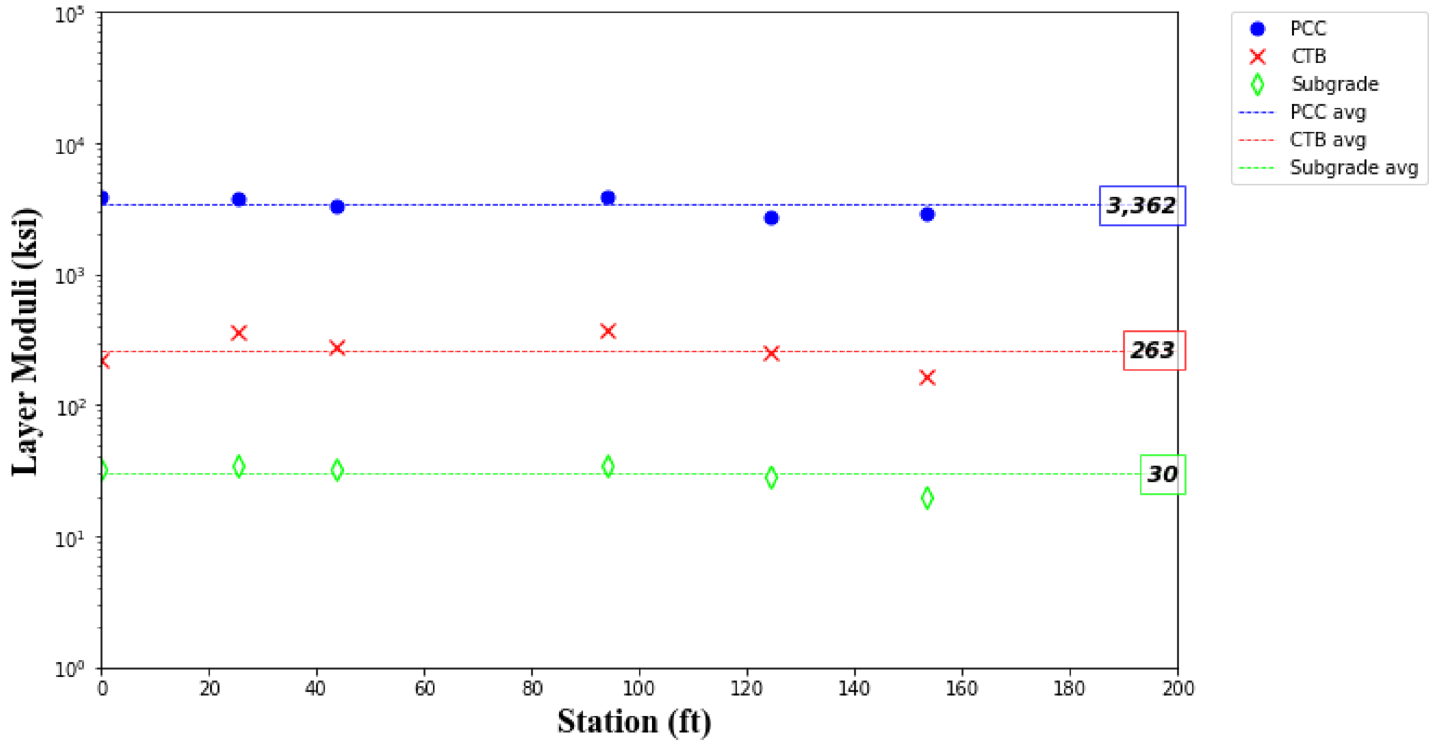


Figure D-61. Backcalculated Layer Moduli for TWY Y3 10L

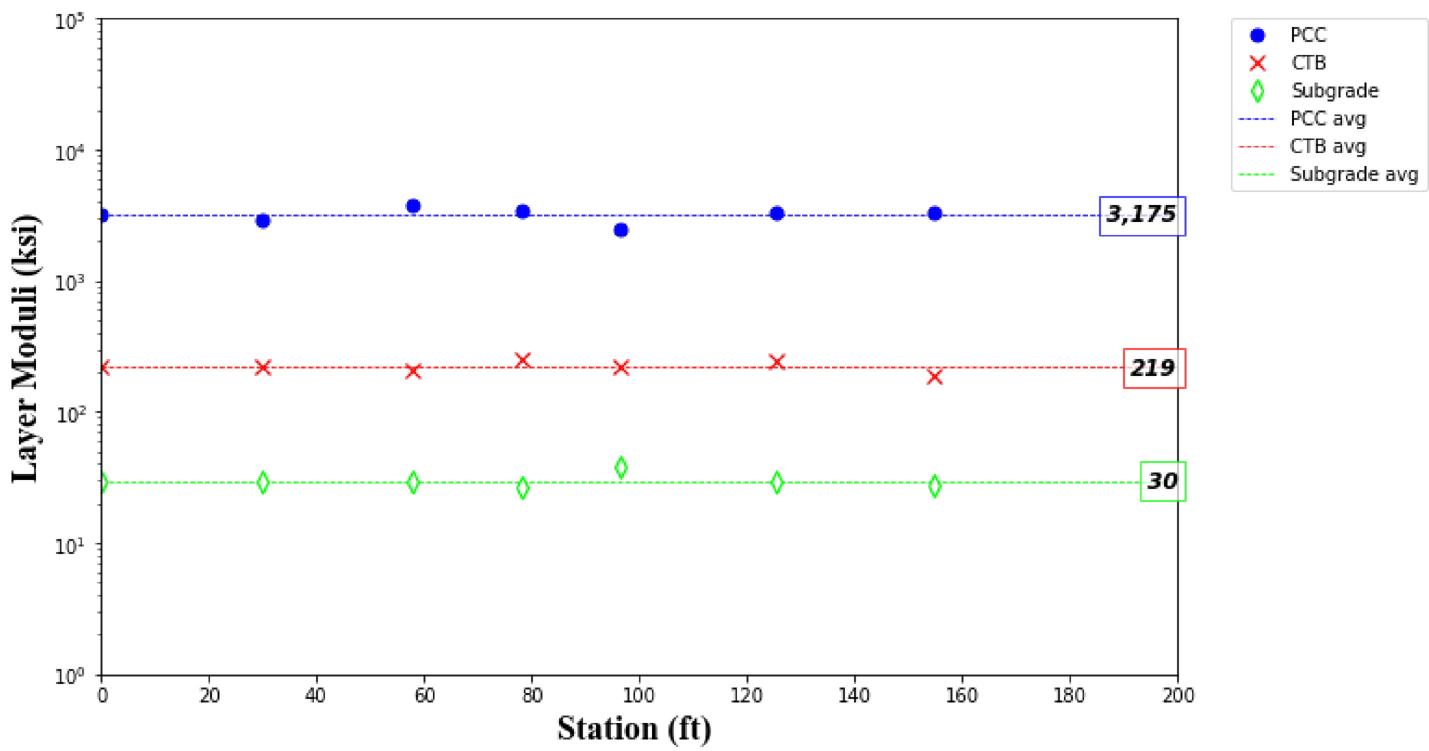


Figure D-62. Backcalculated Layer Moduli for TWY Y3 10R

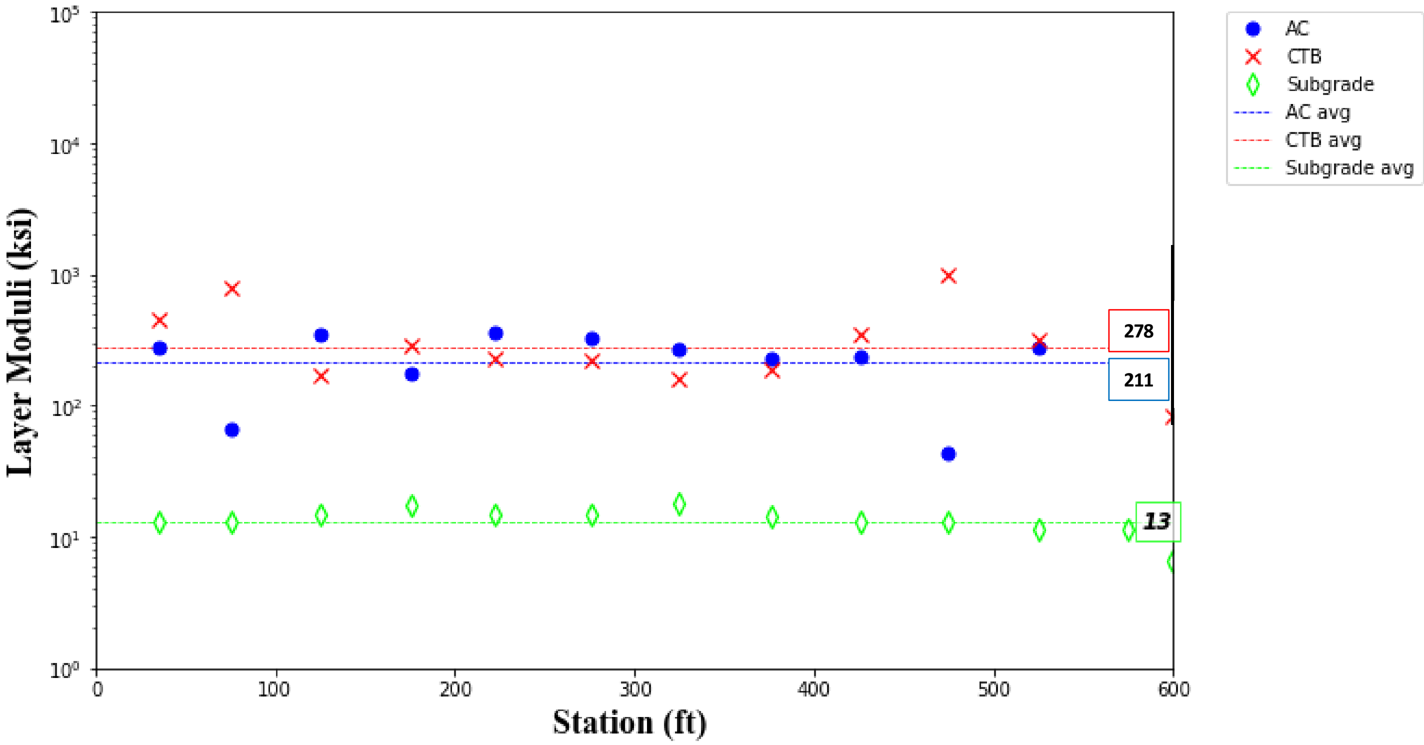


Figure D-63. Backcalculated Layer Moduli for TXL G 10L

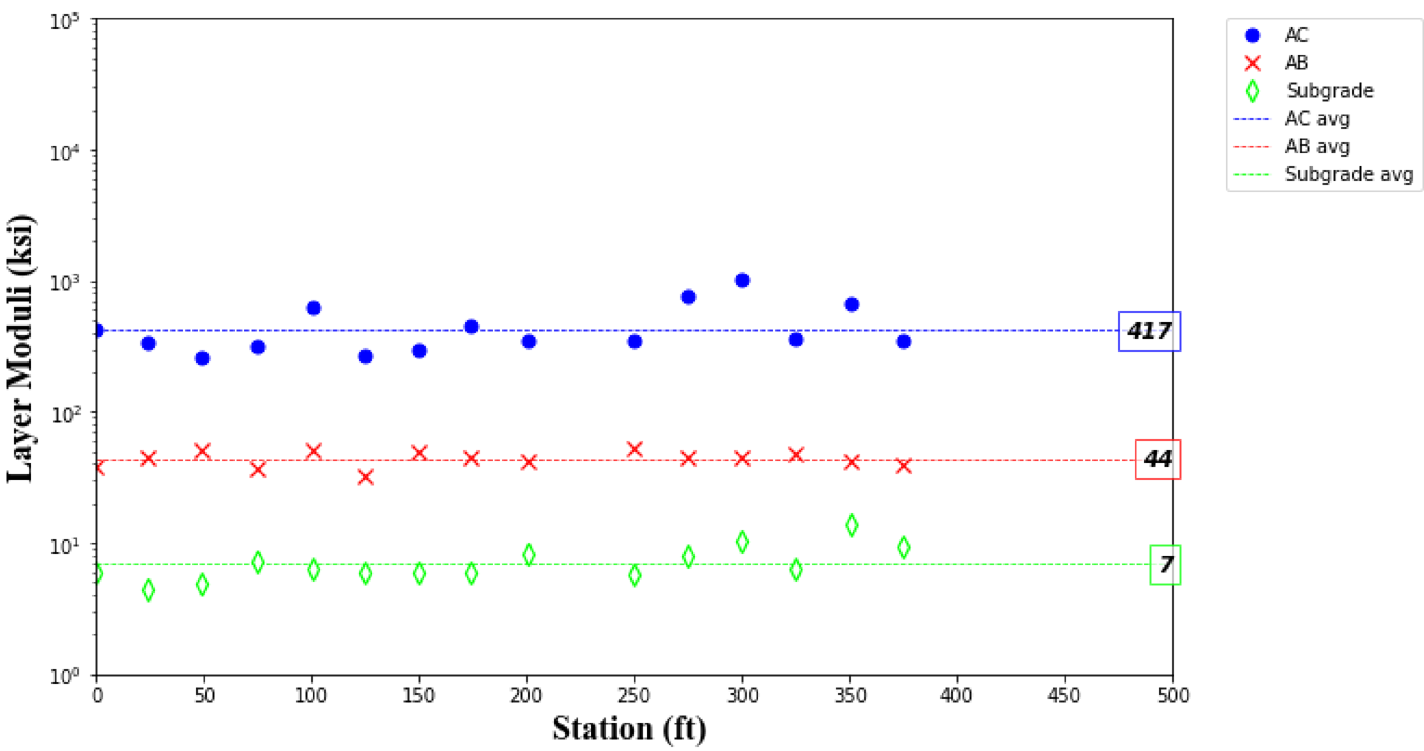


Figure D-64. Backcalculated Layer Moduli for TXL H 10L

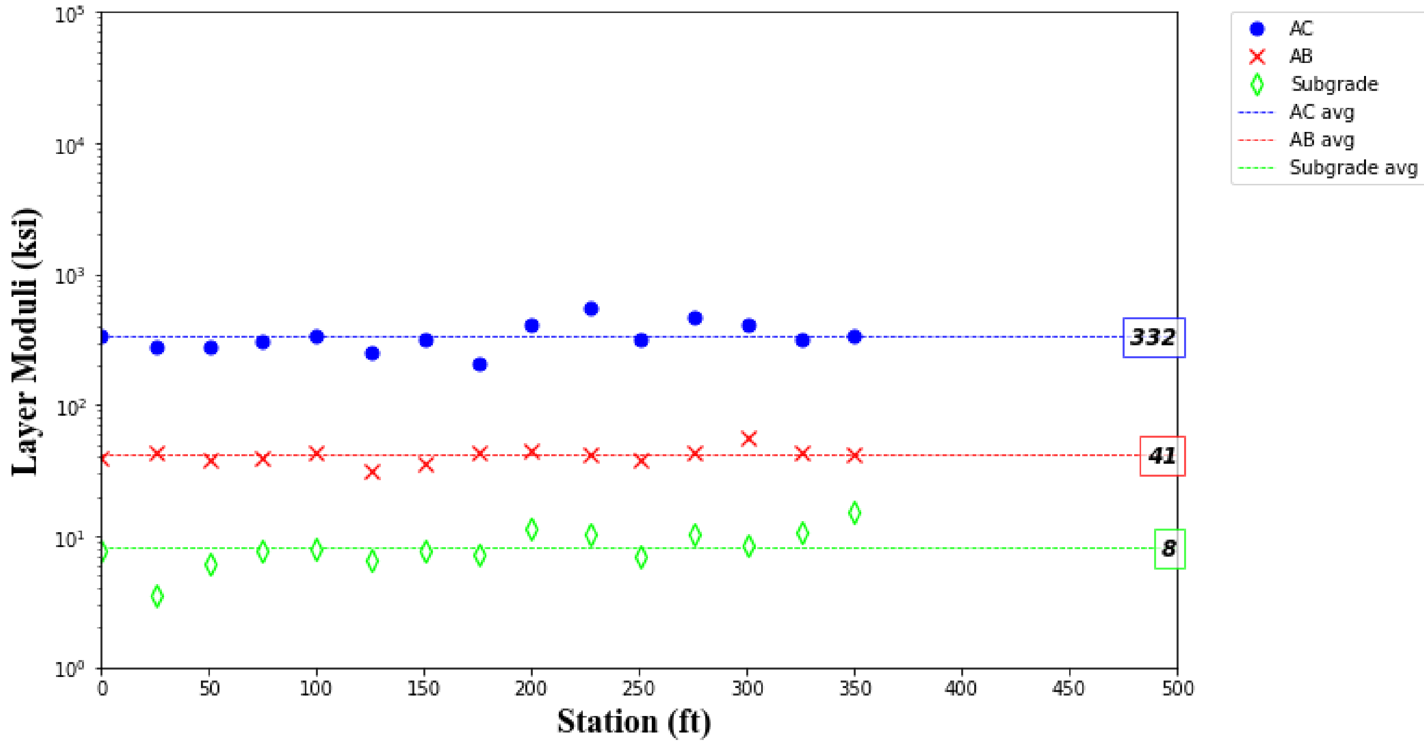


Figure D-65. Backcalculated Layer Moduli for TXL H 10R

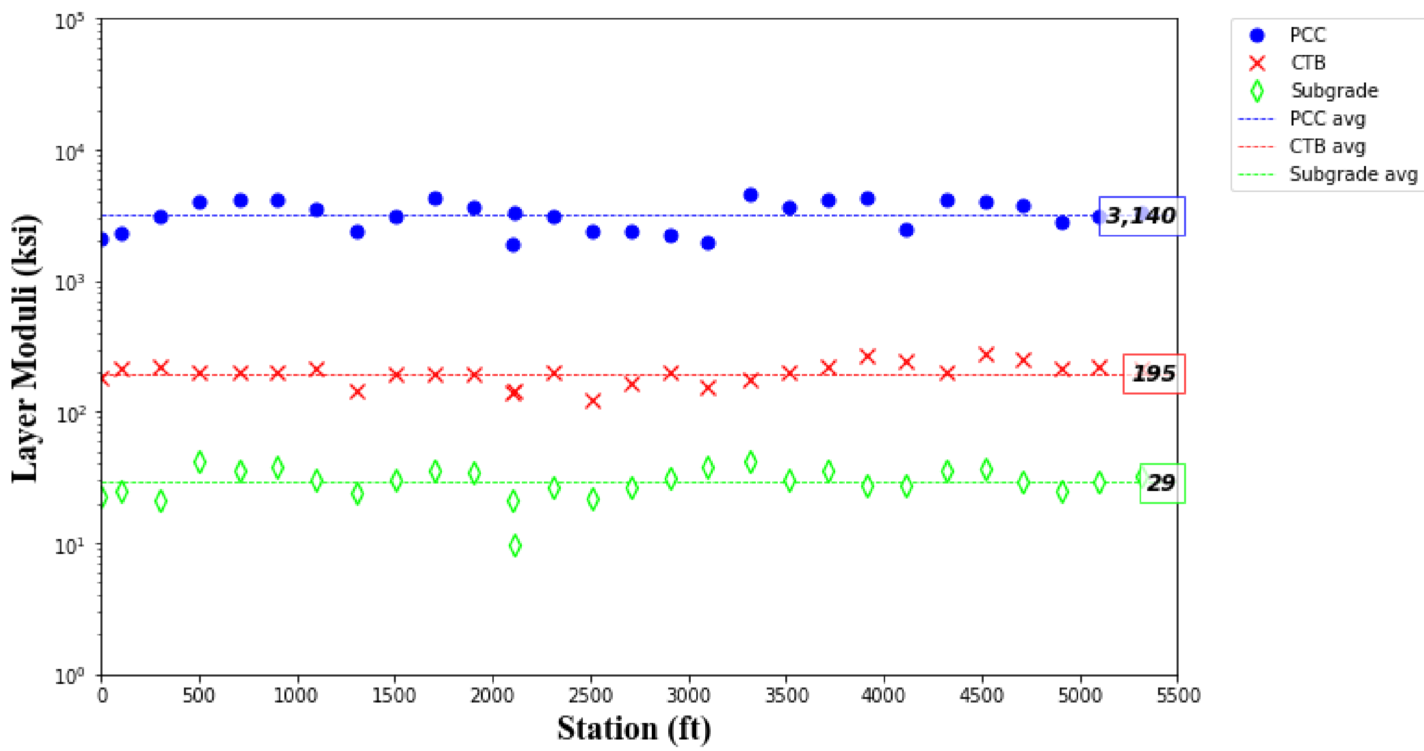


Figure D-66. Backcalculated Layer Moduli for TXL N1 10L

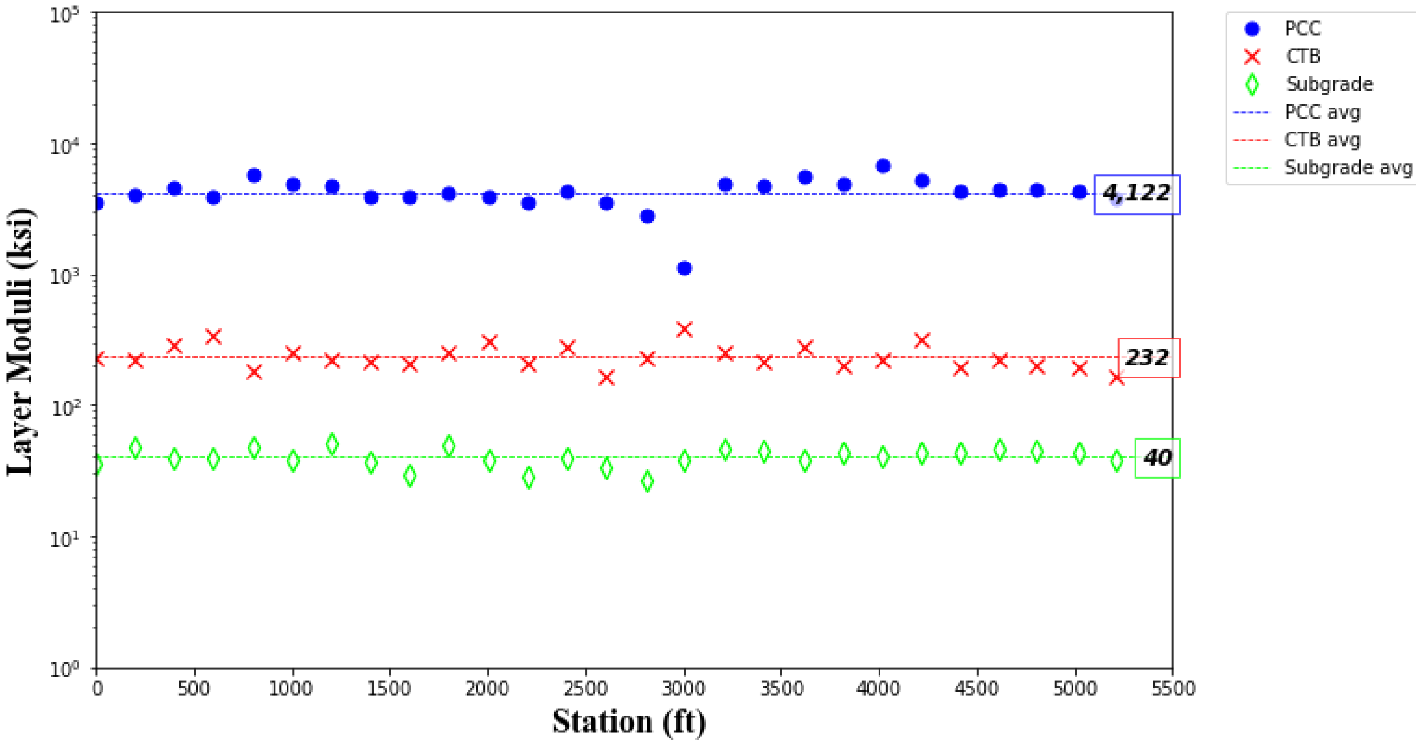


Figure D-67. Backcalculated Layer Moduli for TXL N1 10R

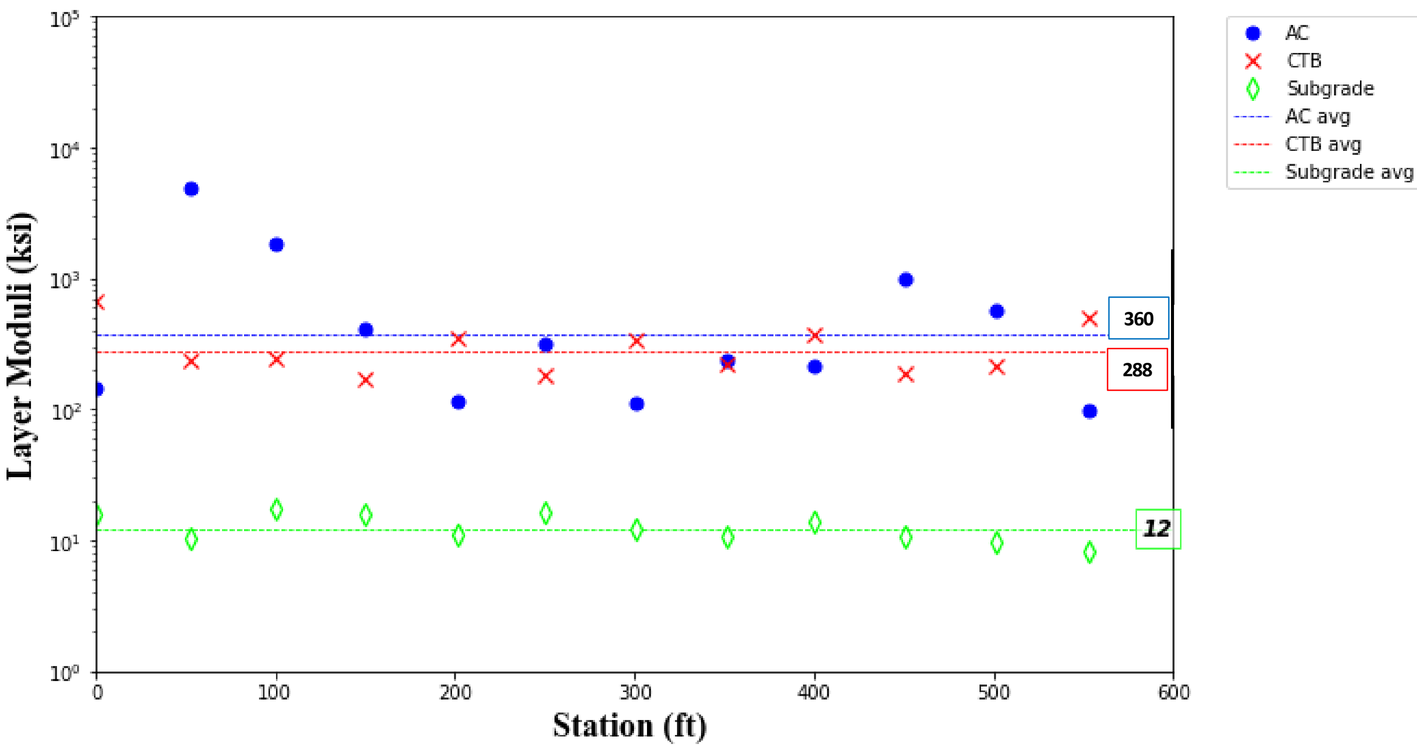


Figure D-68. Backcalculated Layer Moduli for TXY G 10R

Appendix E – ELMOD Structural Adequacy Evaluation

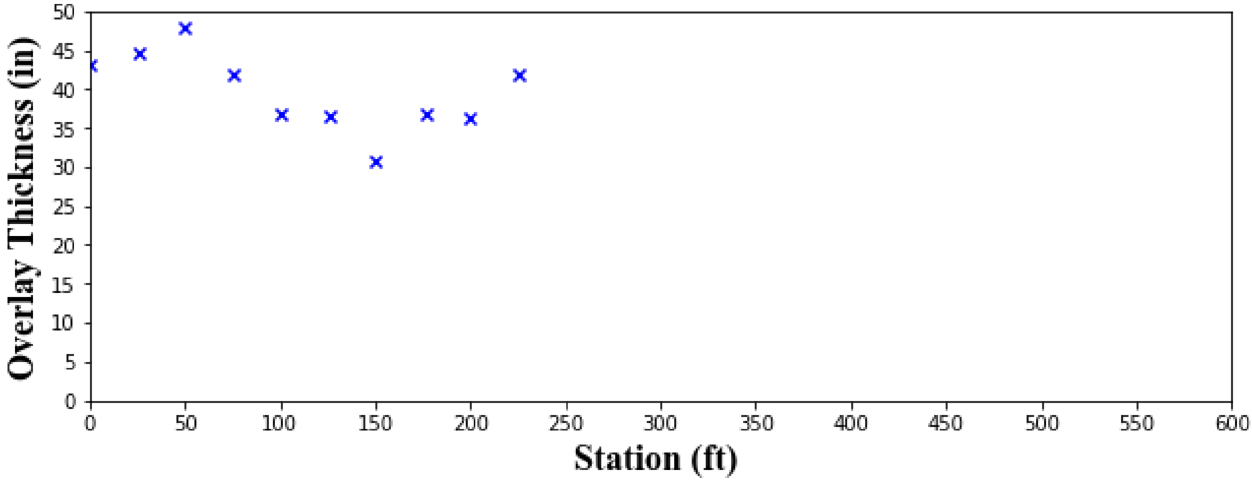


Figure E-1. Estimated Overlay Thickness for INT TERMINAL APRON R1

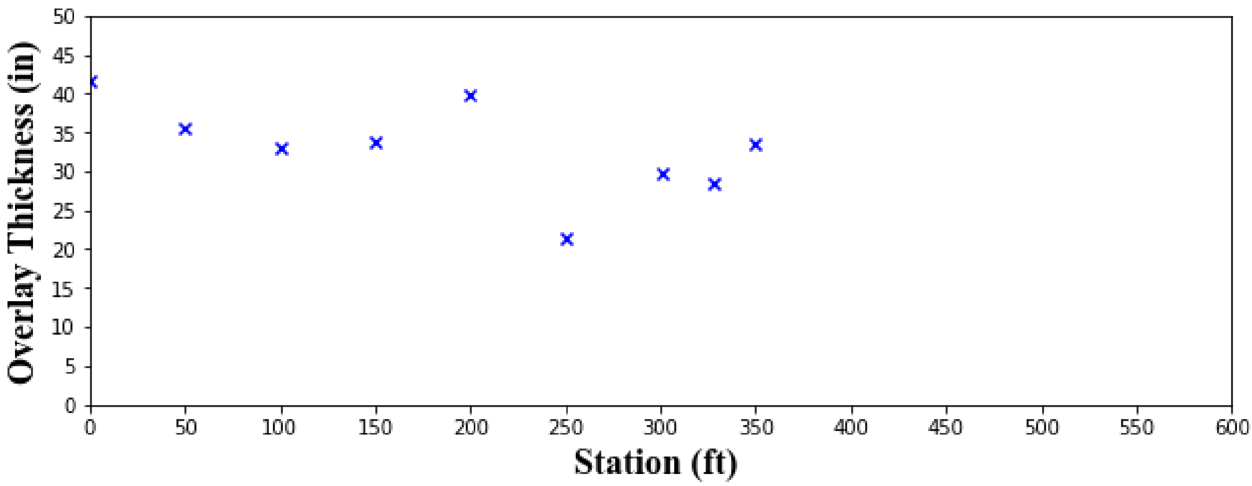


Figure E-2. Estimated Overlay Thickness for INT TERMINAL APRON R2

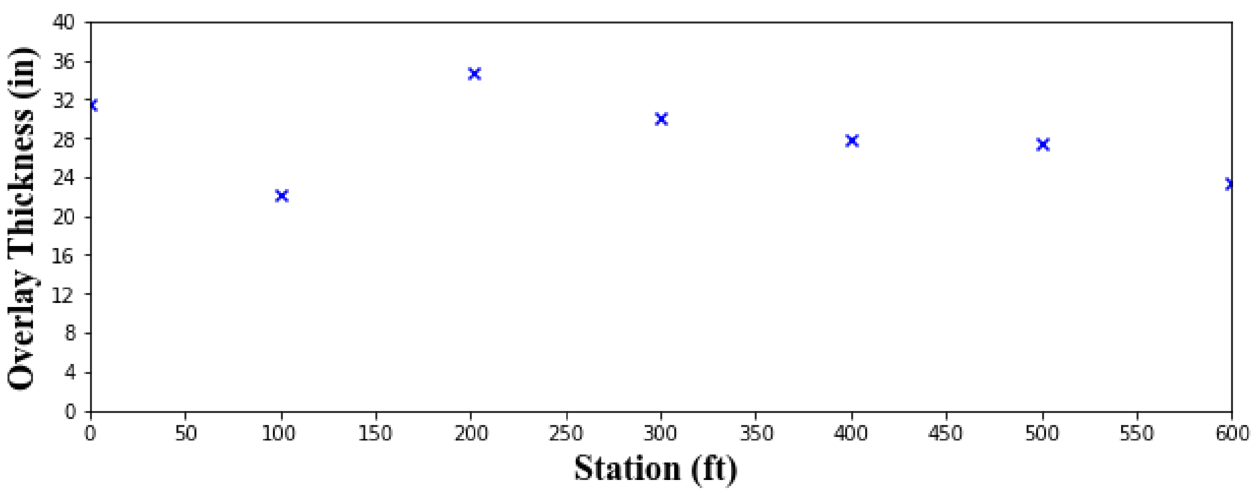


Figure E-3. Estimated Overlay Thickness for INT TERMINAL APRON R3

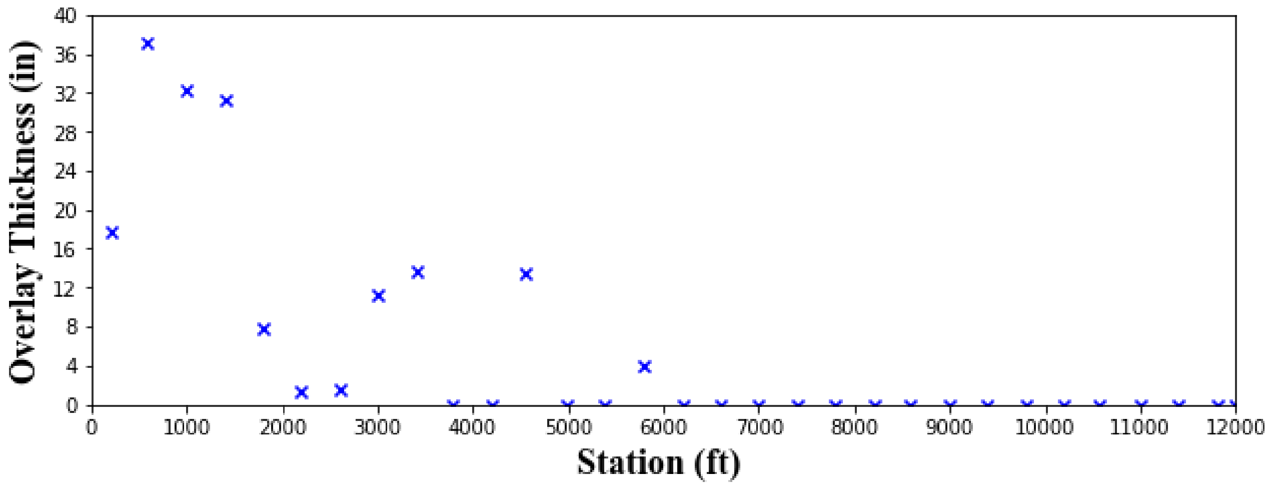


Figure E-4. Estimated Overlay Thickness for RWY 8L26R 10L

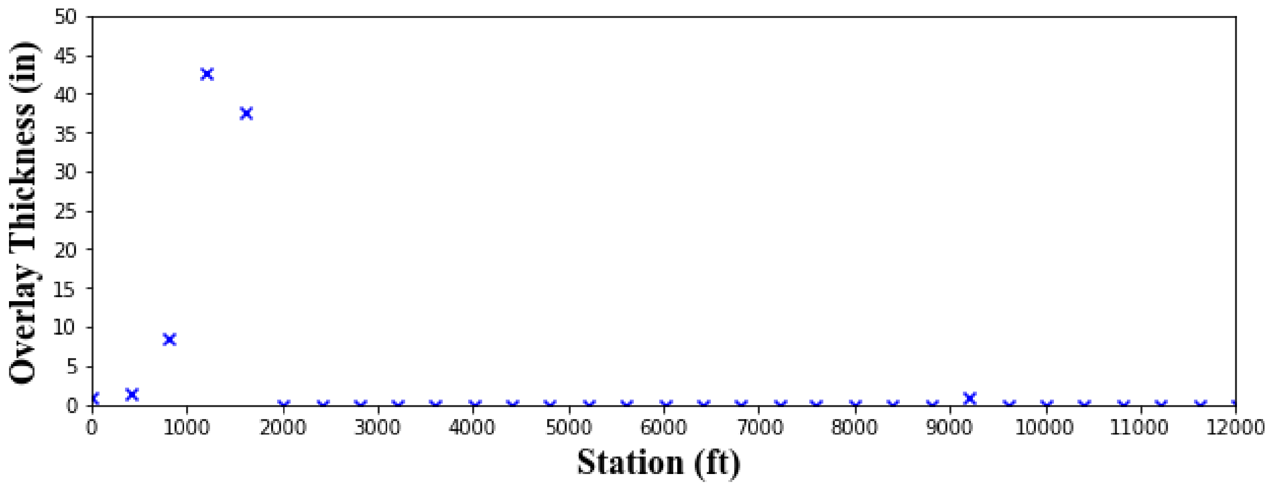


Figure E-5. Estimated Overlay Thickness for RWY 8L26R 10R

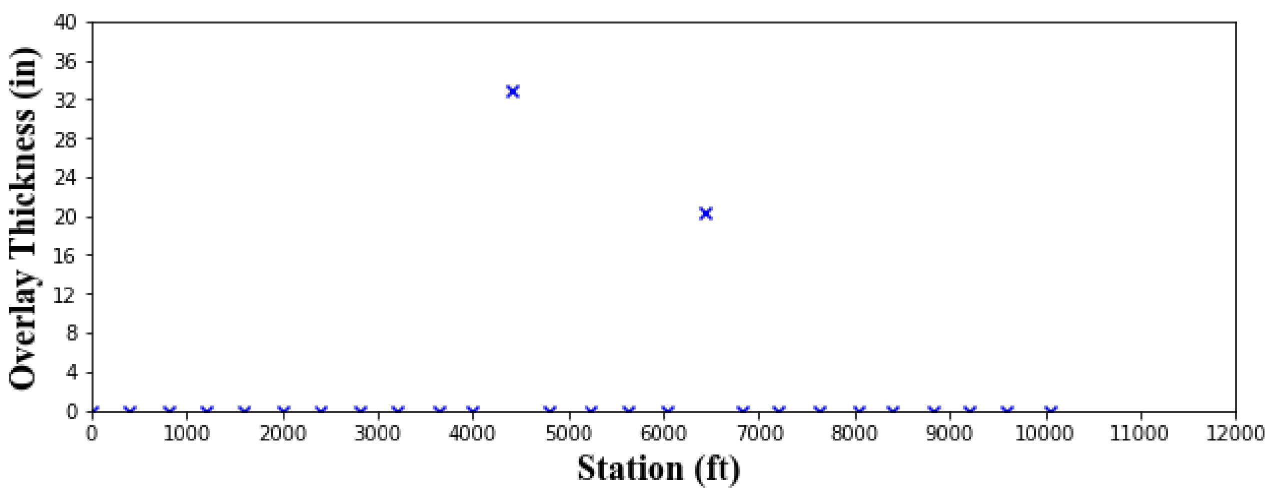


Figure E-6. Estimated Overlay Thickness for RWY 8R26L 10L

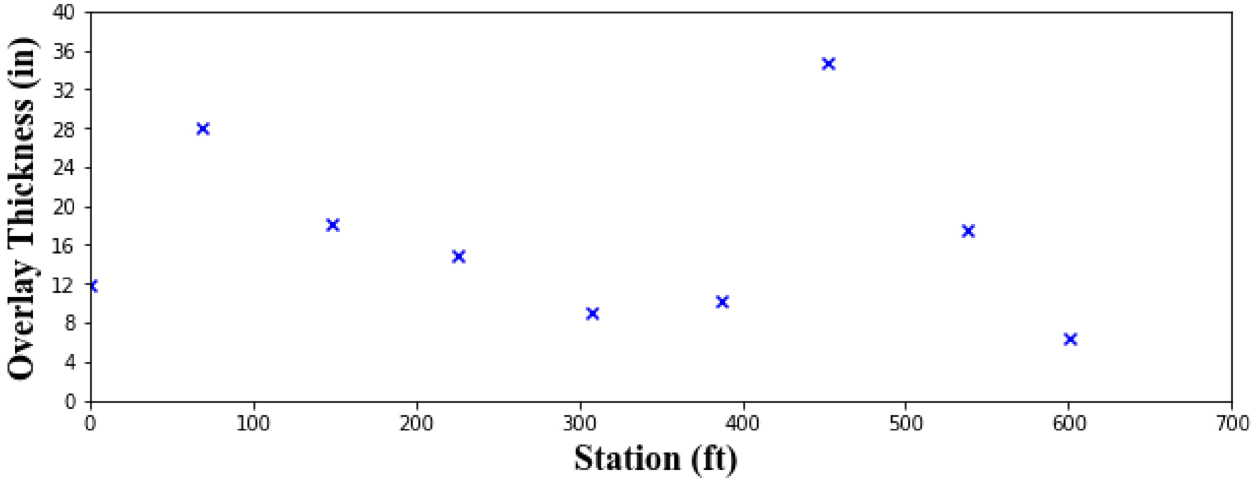


Figure E-7. Estimated Overlay Thickness for TERMINAL1 APRON R1

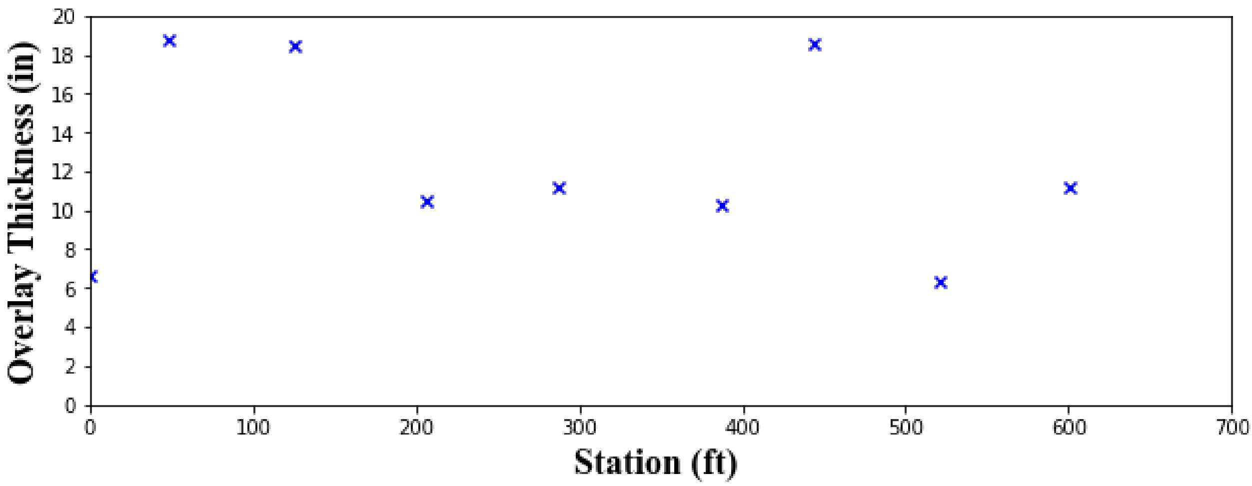


Figure E-8. Estimated Overlay Thickness for TERMINAL1 APRON R2

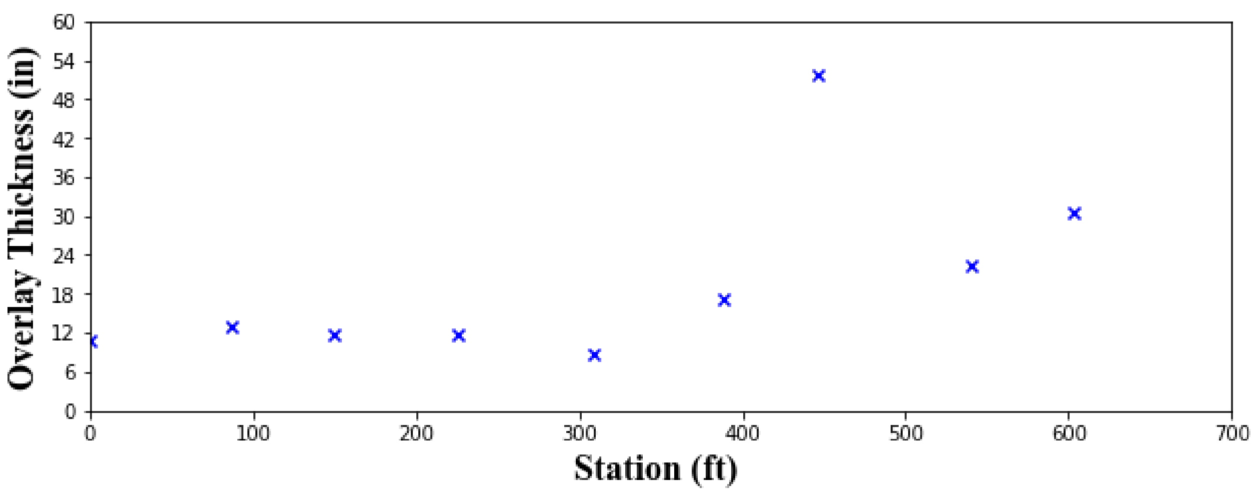


Figure E-9. Estimated Overlay Thickness for TERMINAL1 APRON R3

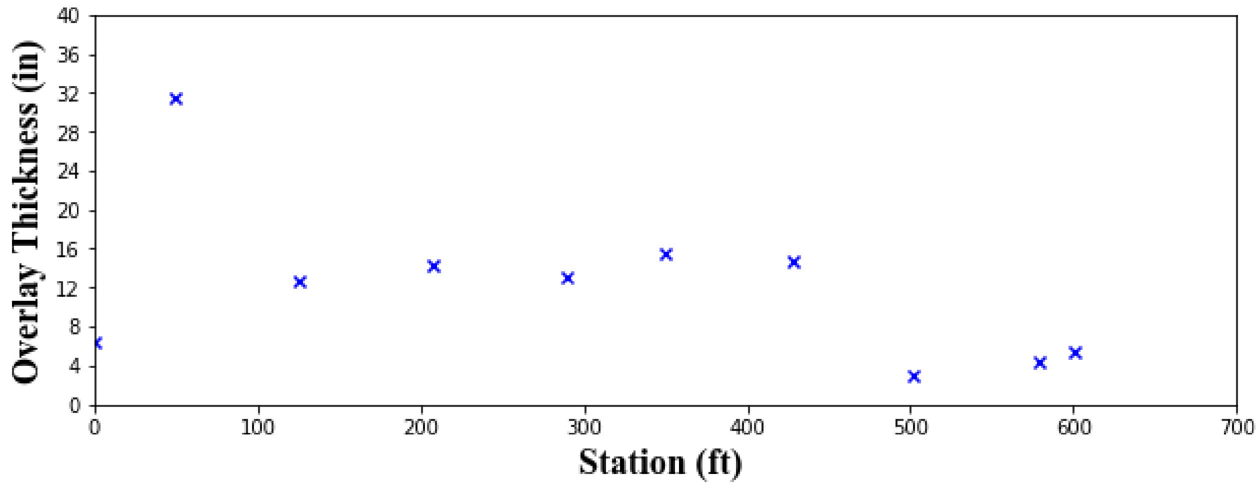


Figure E-10. Estimated Overlay Thickness for TERMINAL1 APRON R4

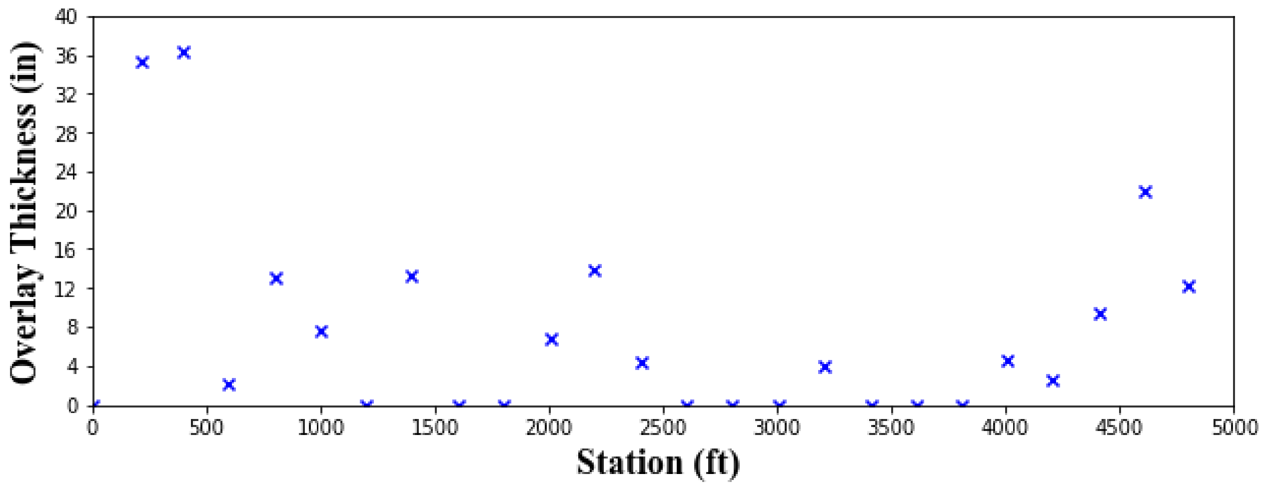


Figure E-11. Estimated Overlay Thickness for TERMINAL2 4 R1

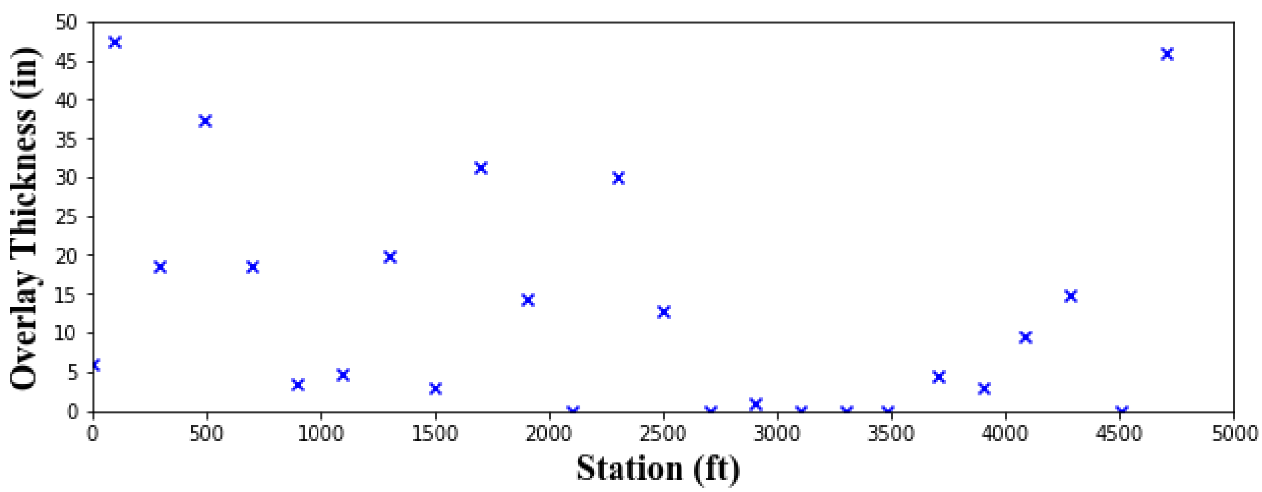


Figure E-12. Estimated Overlay Thickness for TERMINAL2 4 R2

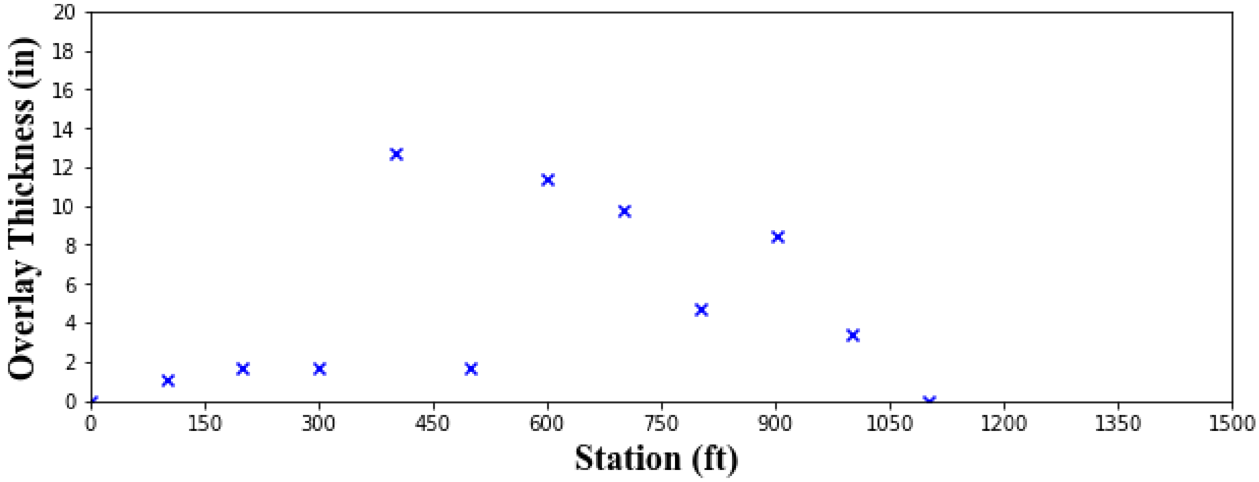


Figure E-13. Estimated Overlay Thickness for TERMINAL2 4 R3

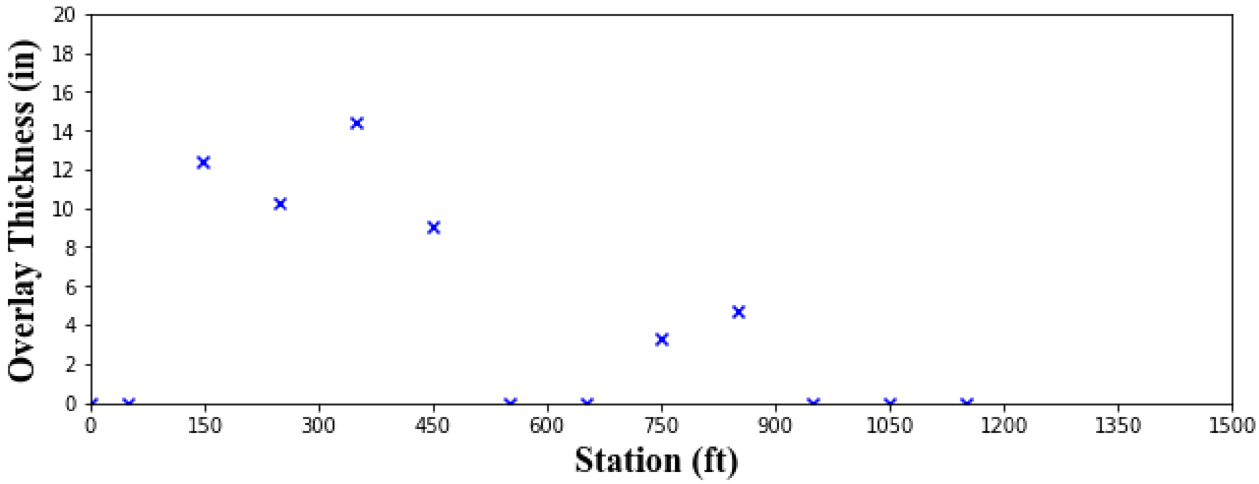


Figure E-14. Estimated Overlay Thickness for TERMINAL2 4 R4

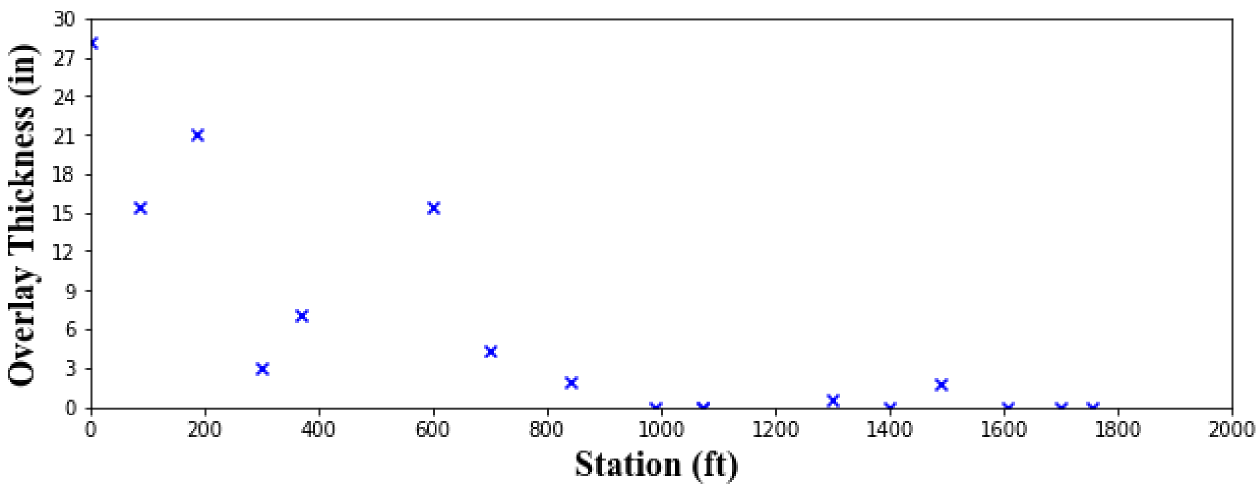


Figure E-15. Estimated Overlay Thickness for TWY D 10L

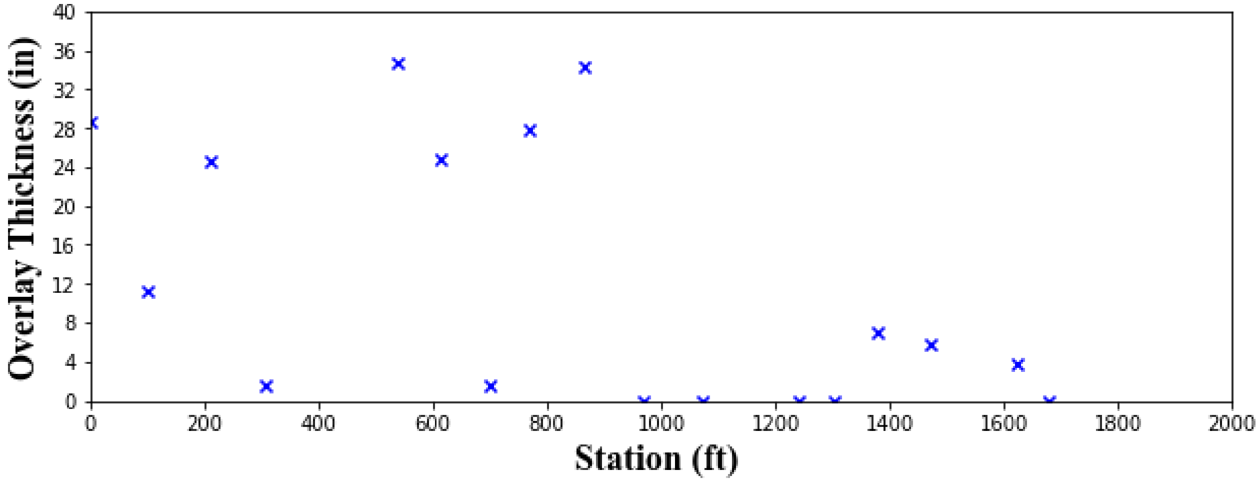


Figure E-16. Estimated Overlay Thickness for TWY D 10R

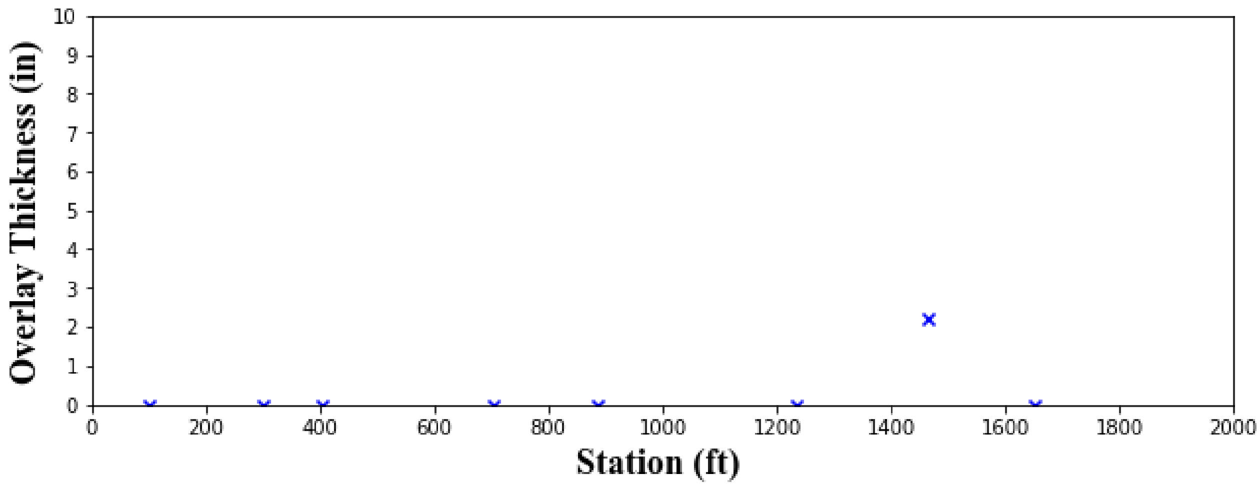


Figure E-17. Estimated Overlay Thickness for TWY F 10L

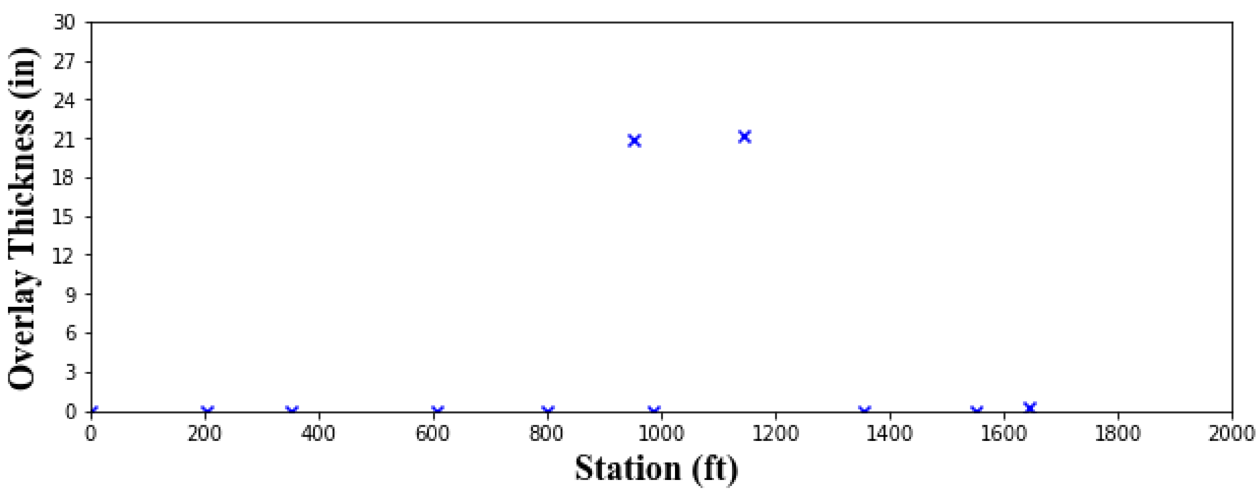


Figure E-18. Estimated Overlay Thickness for TWY F 10R

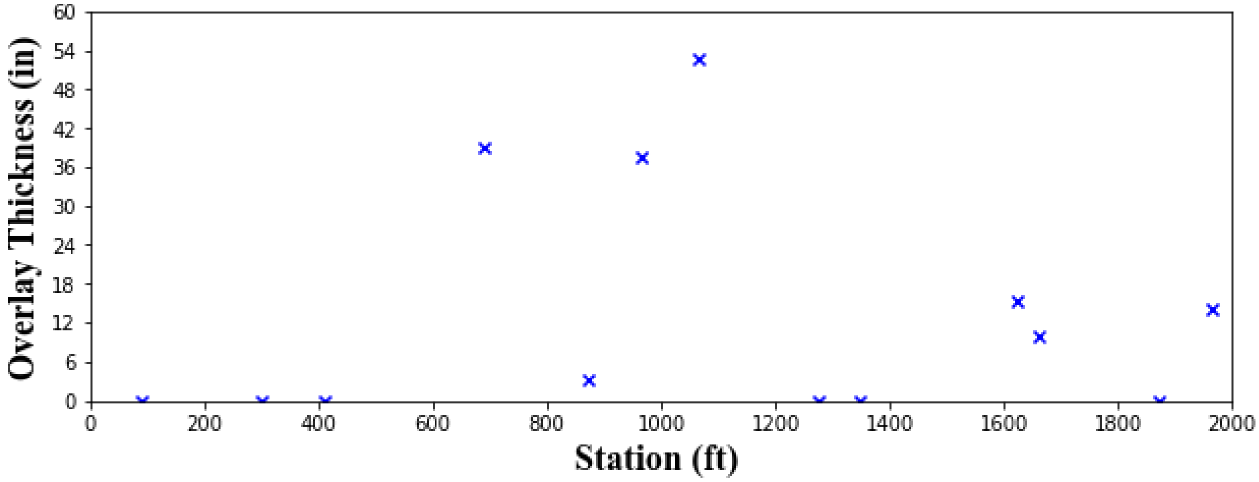


Figure E-19. Estimated Overlay Thickness for TWY K 10L

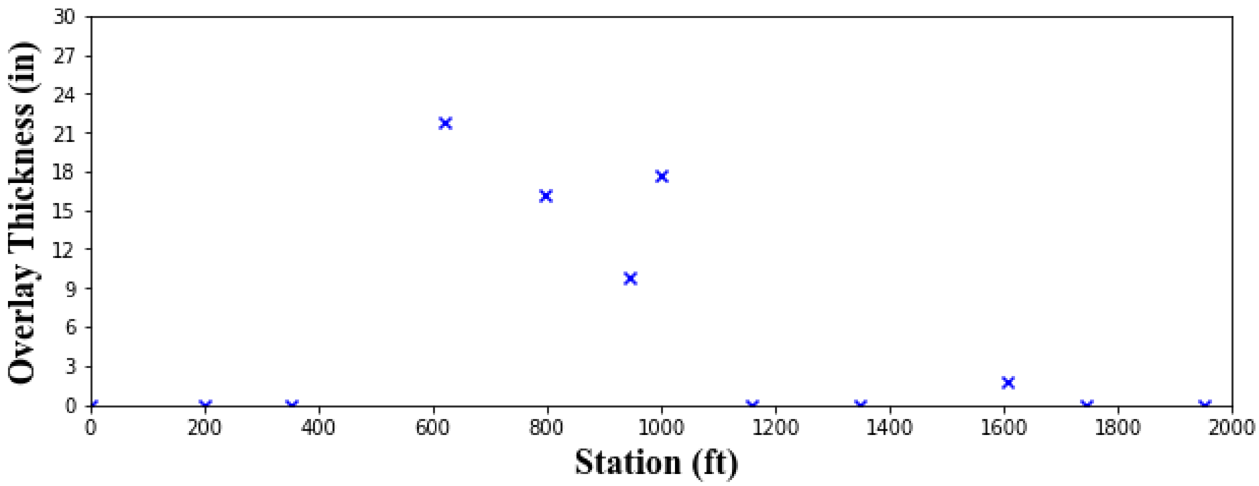


Figure E-20. Estimated Overlay Thickness for TWY K 10R

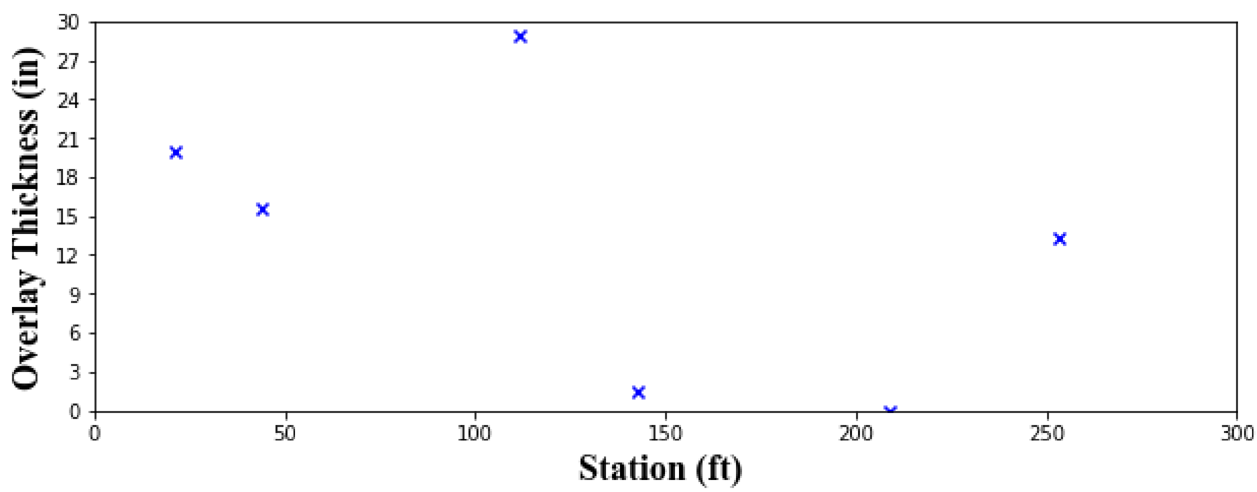


Figure E-21. Estimated Overlay Thickness for TWY L 10L

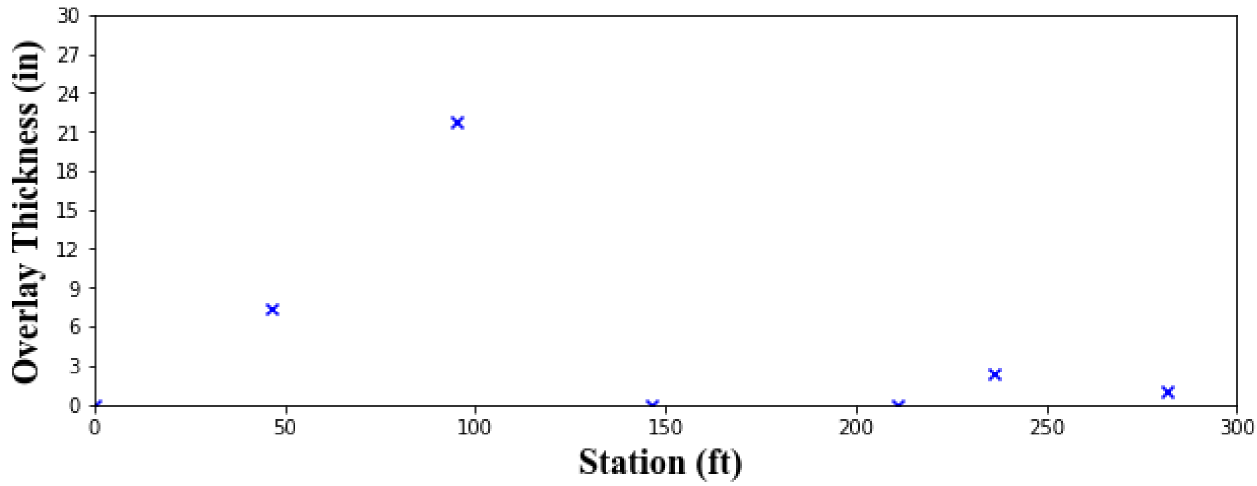


Figure E-22. Estimated Overlay Thickness for TWY L 10R

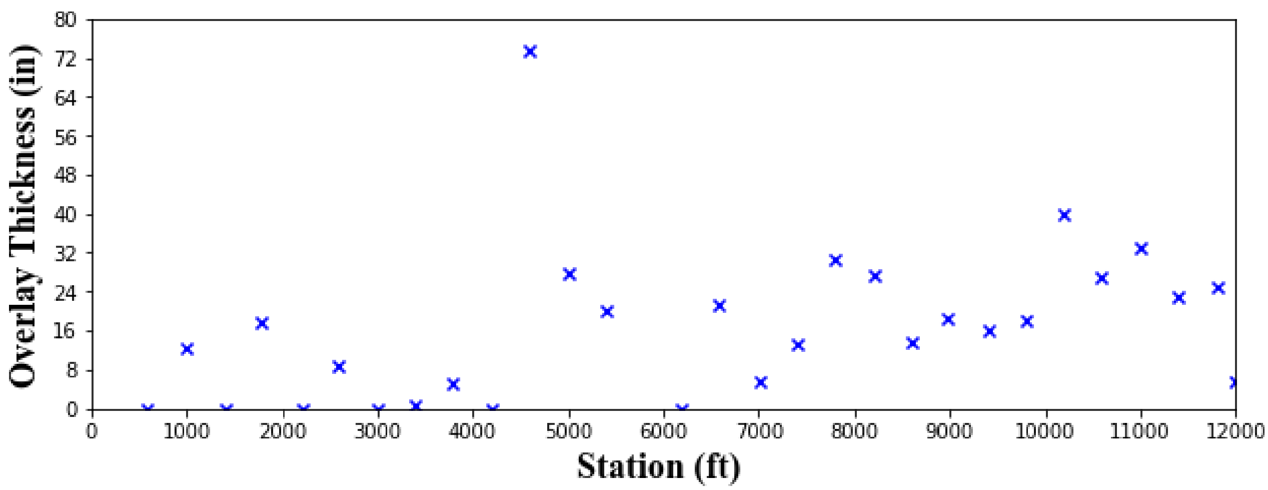


Figure E-23. Estimated Overlay Thickness for TWY N 10L

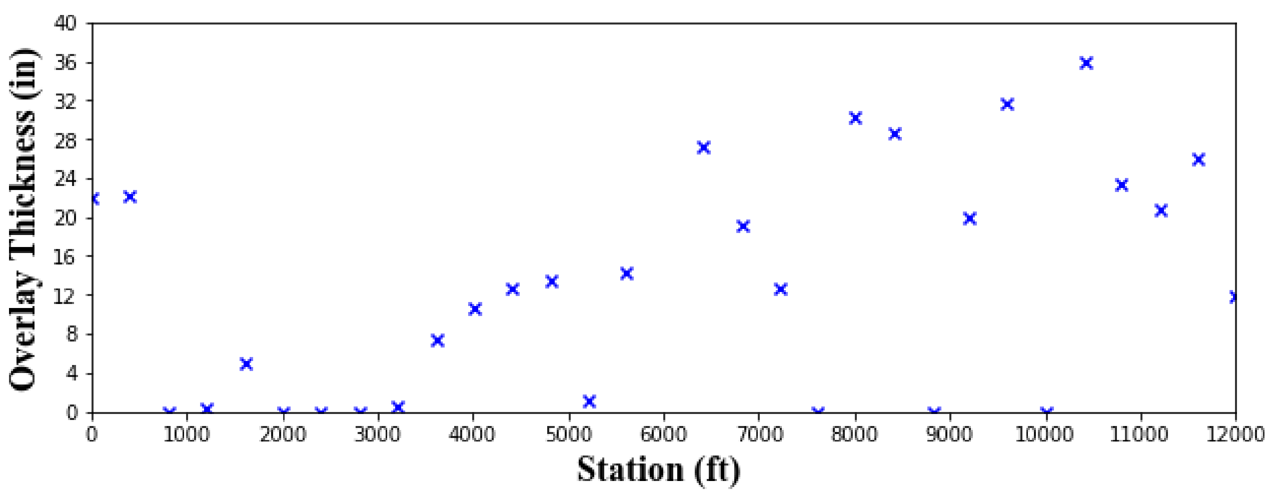


Figure E-24. Estimated Overlay Thickness for TWY N 10R

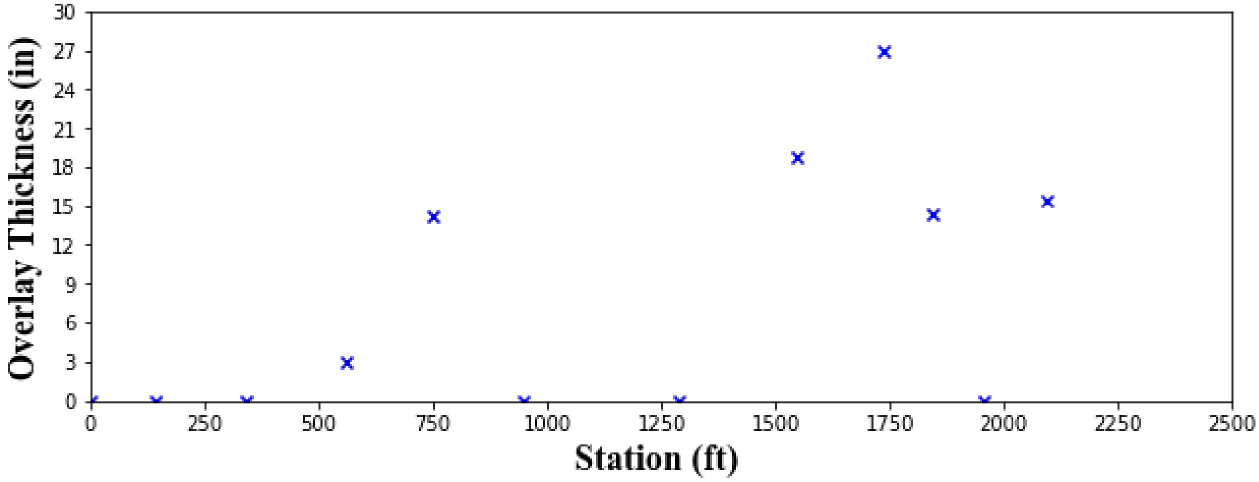


Figure E-25. Estimated Overlay Thickness for TWY P 10L

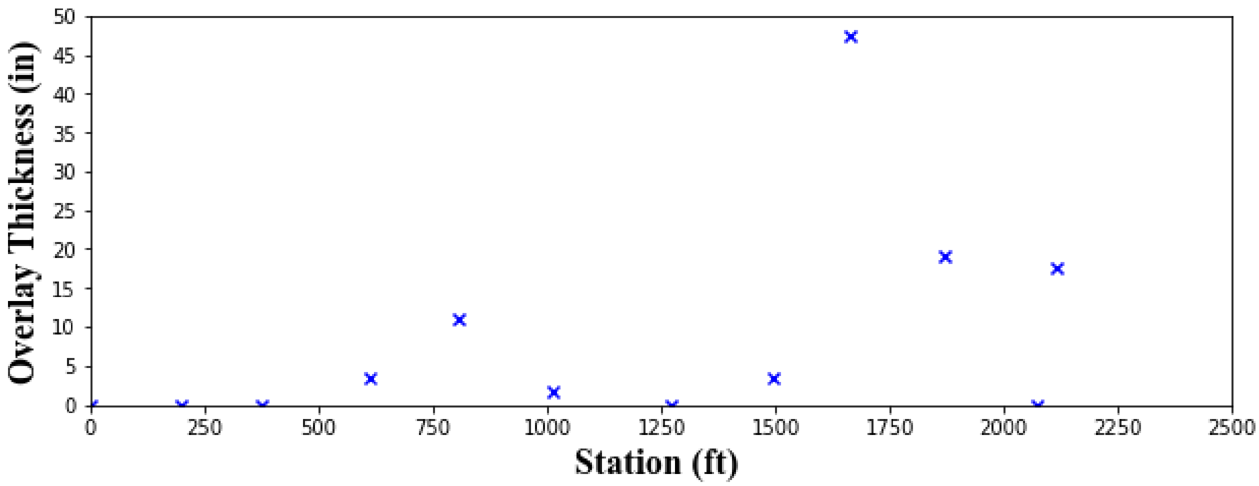


Figure E-26. Estimated Overlay Thickness for TWY P 10R

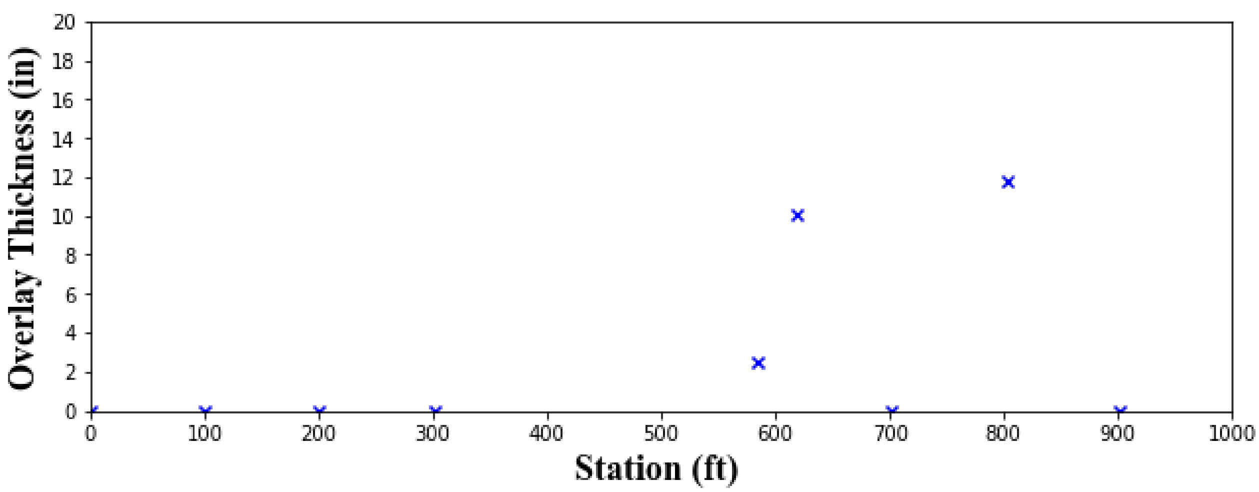


Figure E-27. Estimated Overlay Thickness for TWY Q 10R

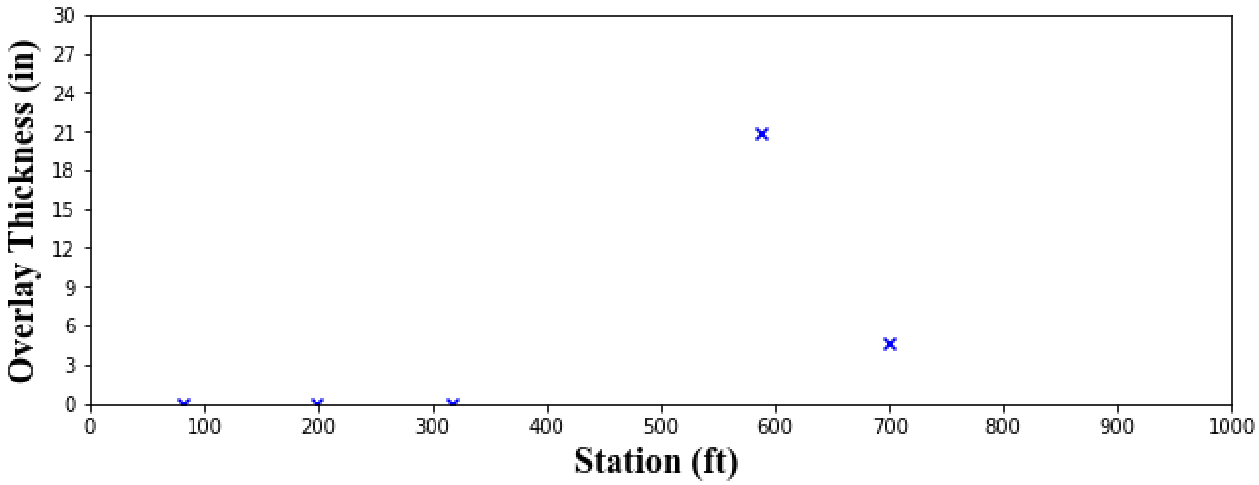


Figure E-28. Estimated Overlay Thickness for TWY R 10L

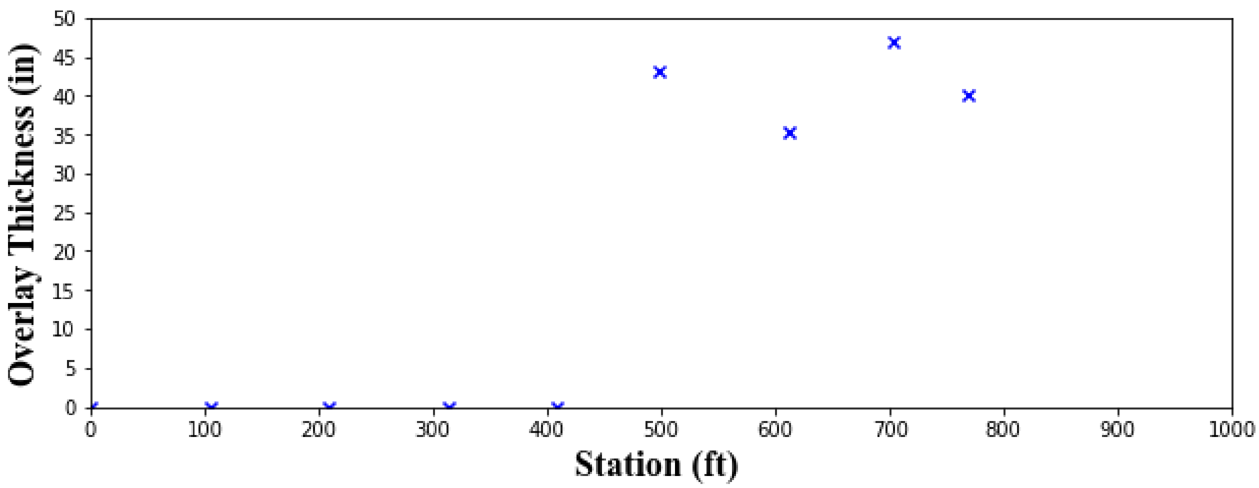


Figure E-29. Estimated Overlay Thickness for TWY R 10R

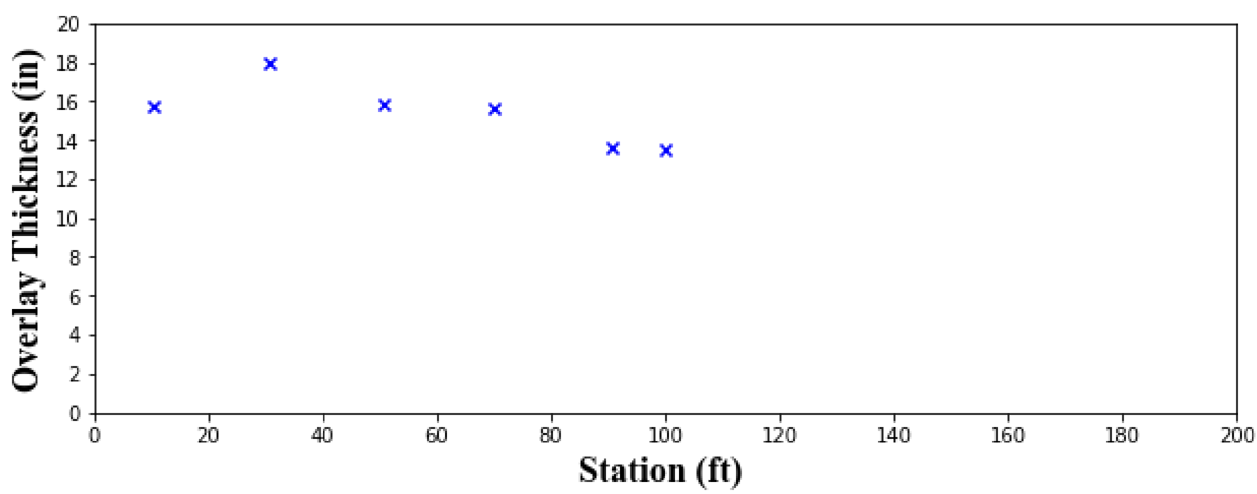


Figure E-30. Estimated Overlay Thickness for TWY S1 10L

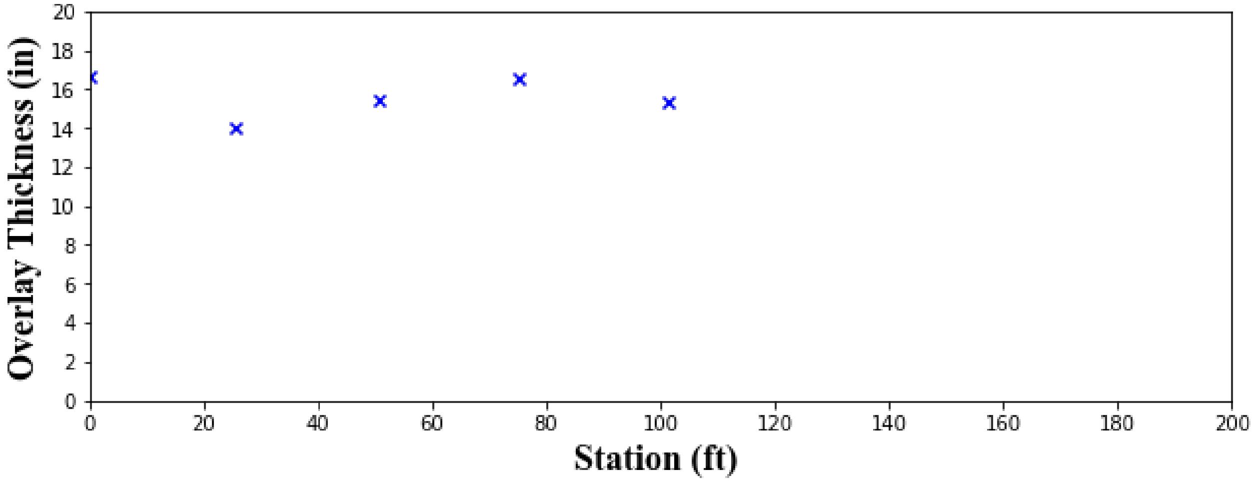


Figure E-31. Estimated Overlay Thickness for TWY S1 10R

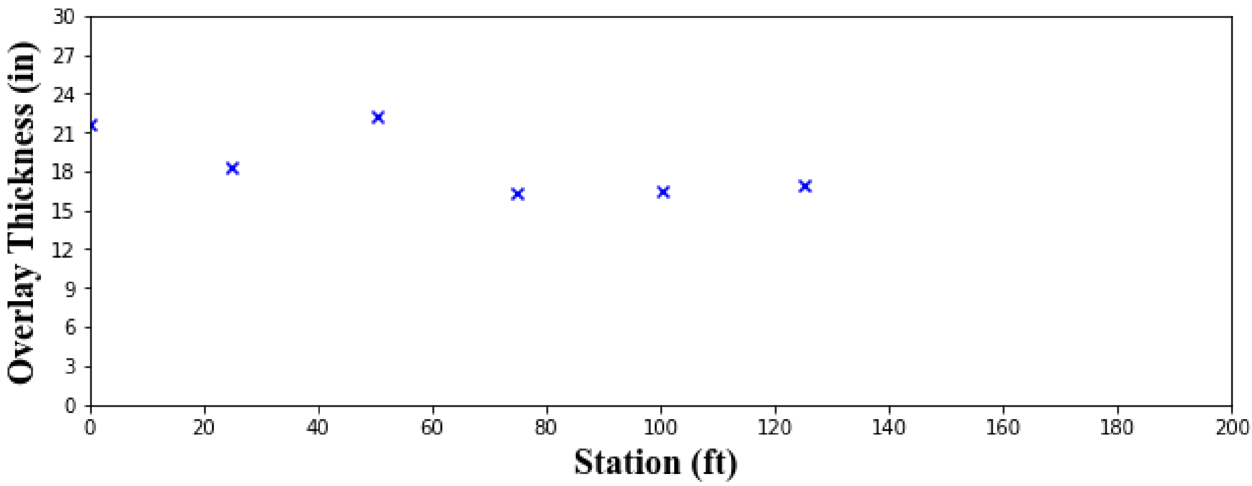


Figure E-32. Estimated Overlay Thickness for TWY S3 10L

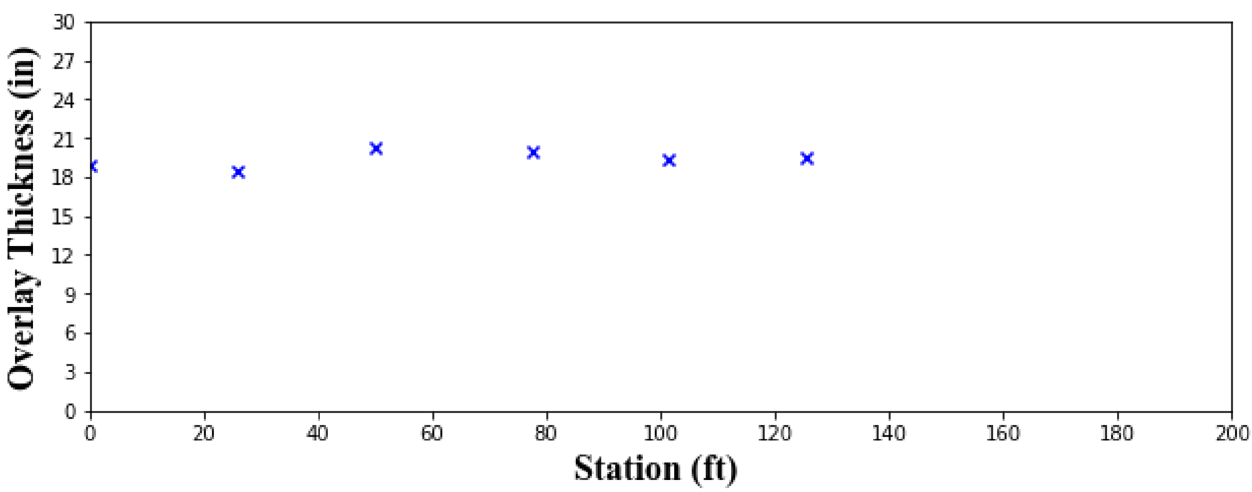


Figure E-33. Estimated Overlay Thickness for TWY S3 10R

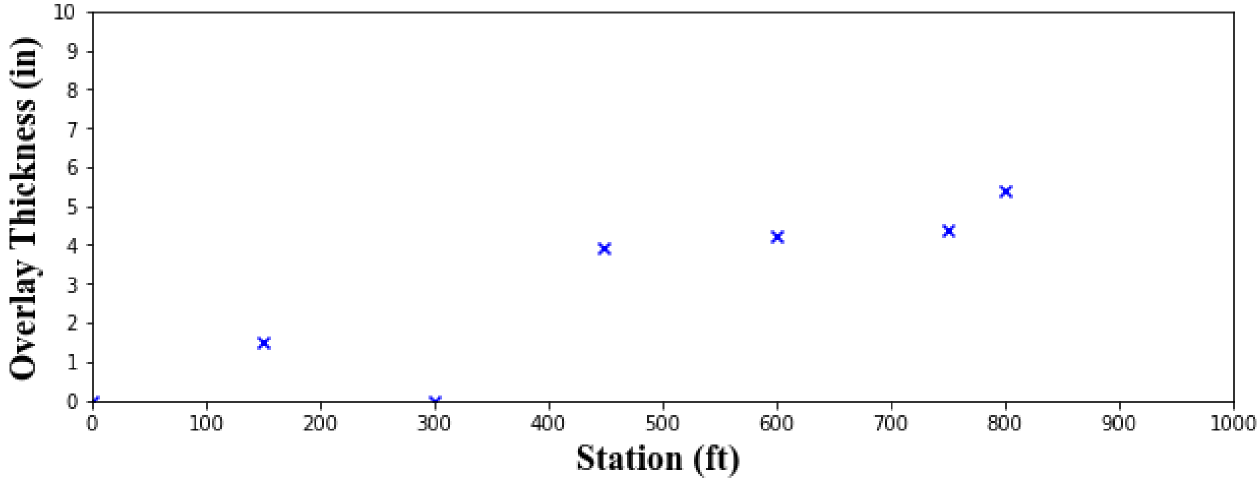


Figure E-34. Estimated Overlay Thickness for TWY S5 10L

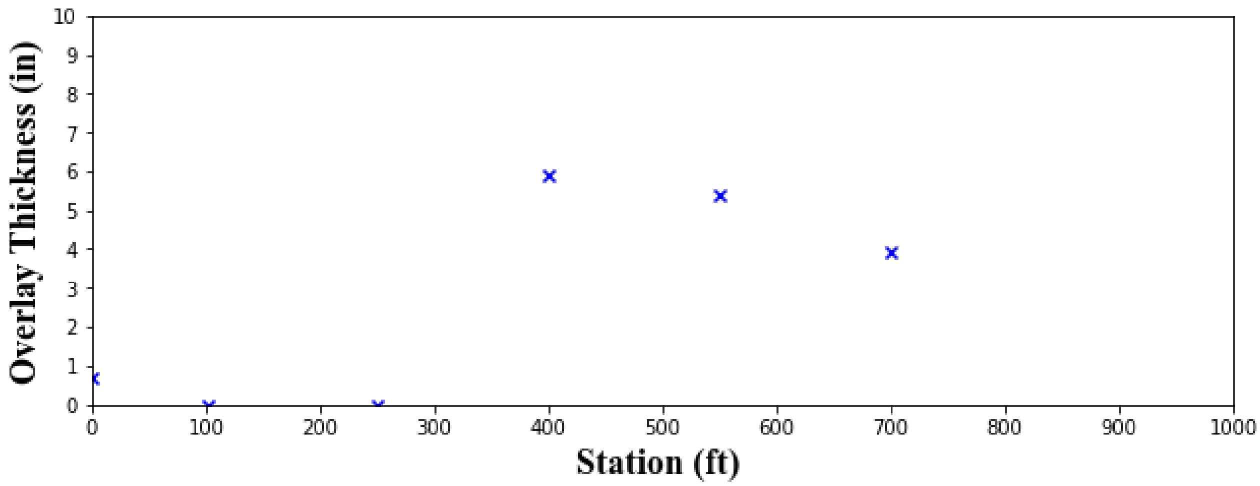


Figure E-35. Estimated Overlay Thickness for TWY S5 10R

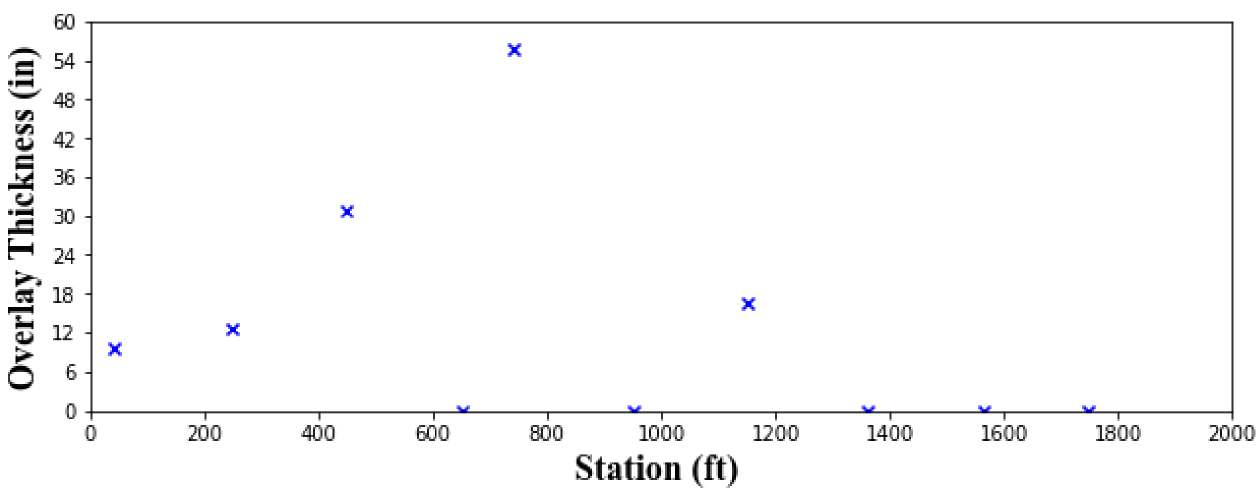


Figure E-36. Estimated Overlay Thickness for TWY U 10L

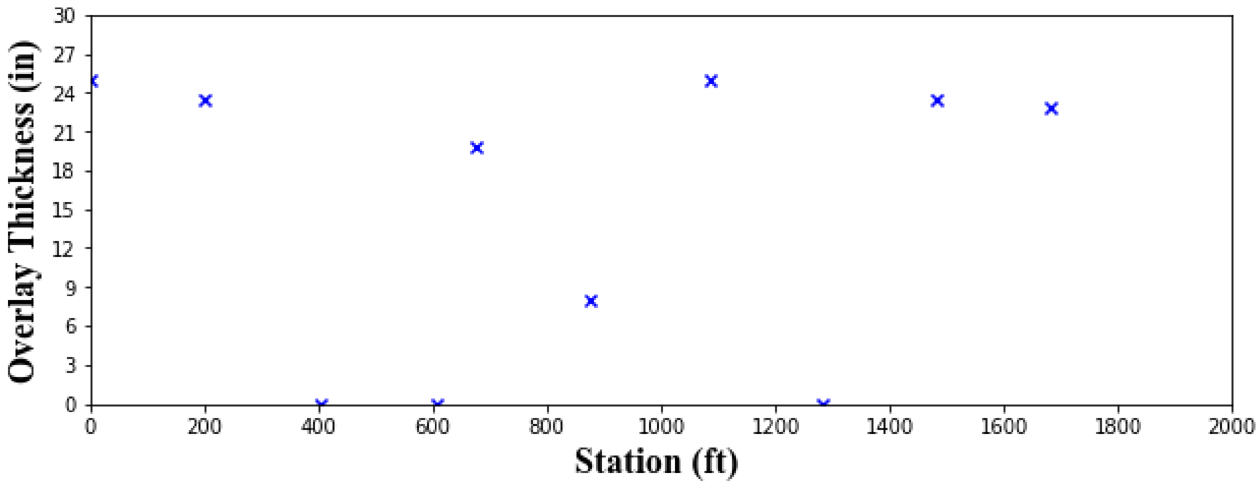


Figure E-37. Estimated Overlay Thickness for TWY U 10R

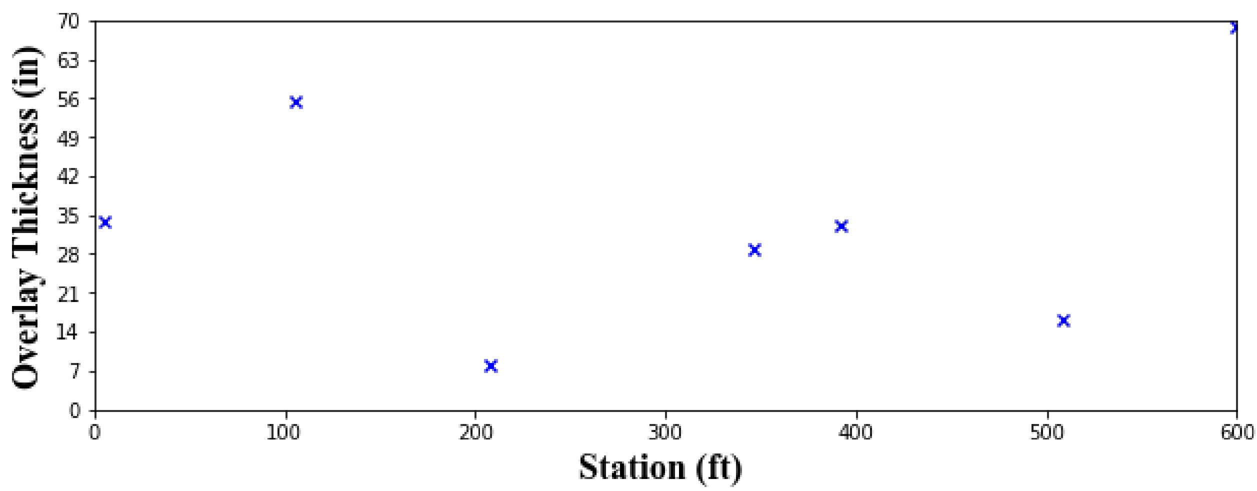


Figure E-38. Estimated Overlay Thickness for TWY V 10L

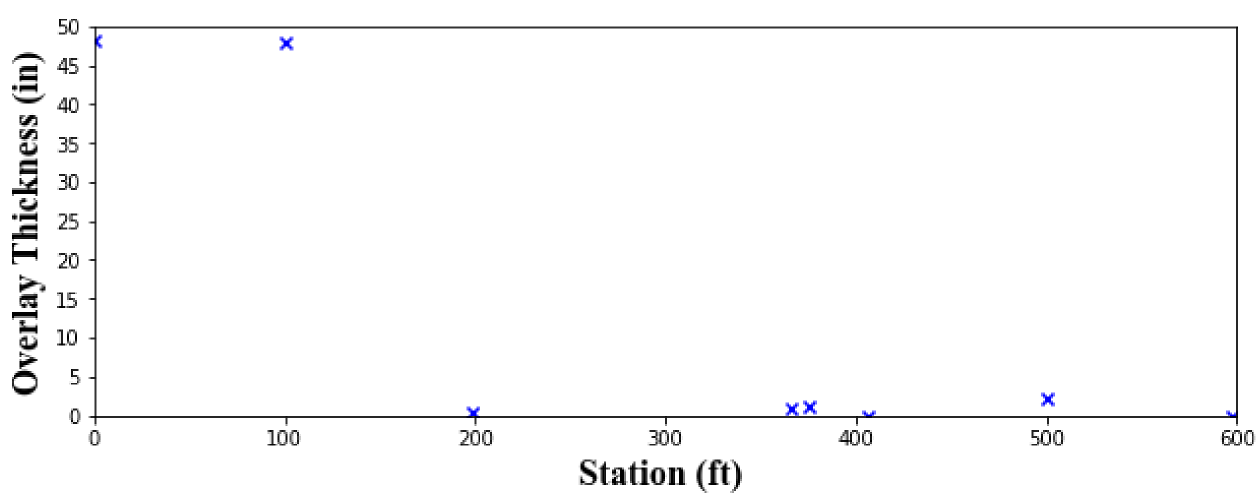


Figure E-39. Estimated Overlay Thickness for TWY V 10R

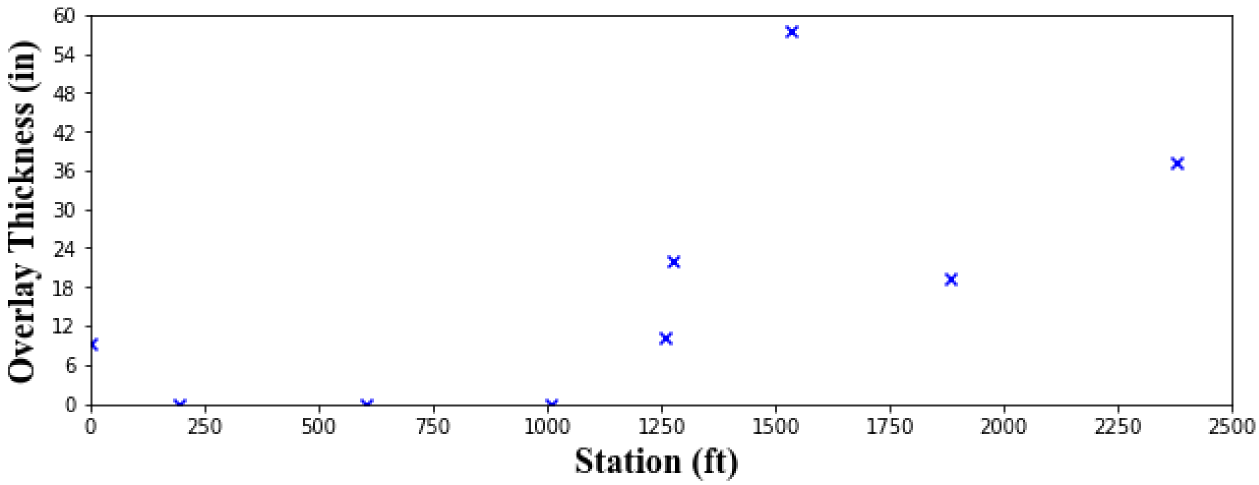


Figure E-40. Estimated Overlay Thickness for TWY W 10L

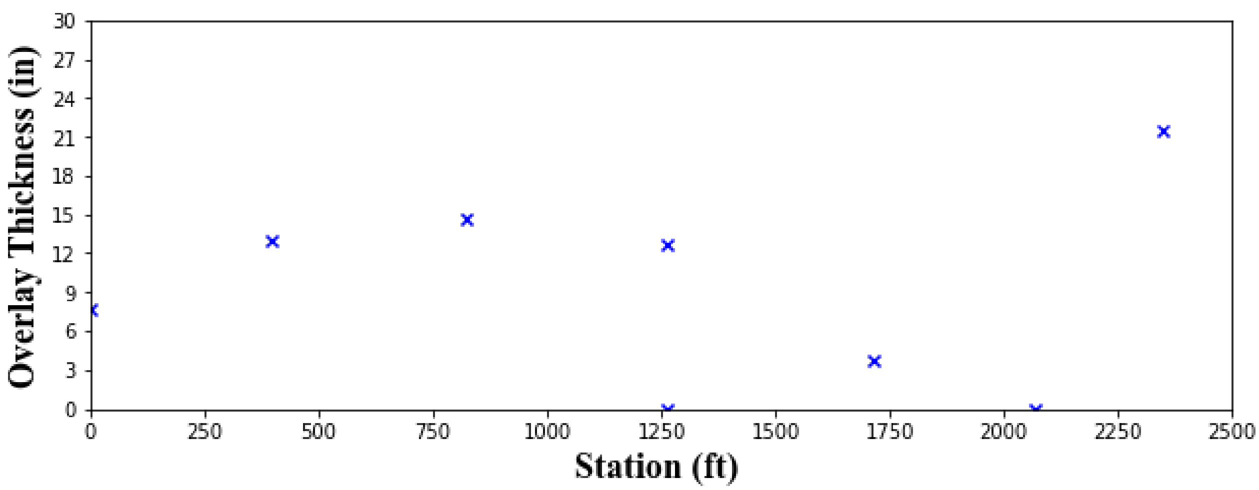


Figure E-41. Estimated Overlay Thickness for TWY W 10R

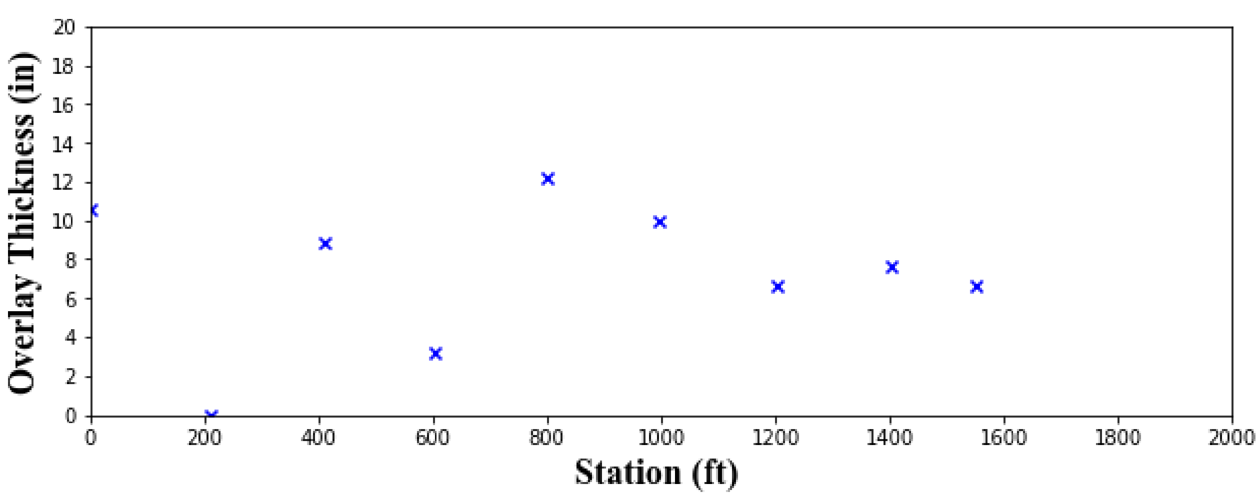


Figure E-42. Estimated Overlay Thickness for TWY Y 10L

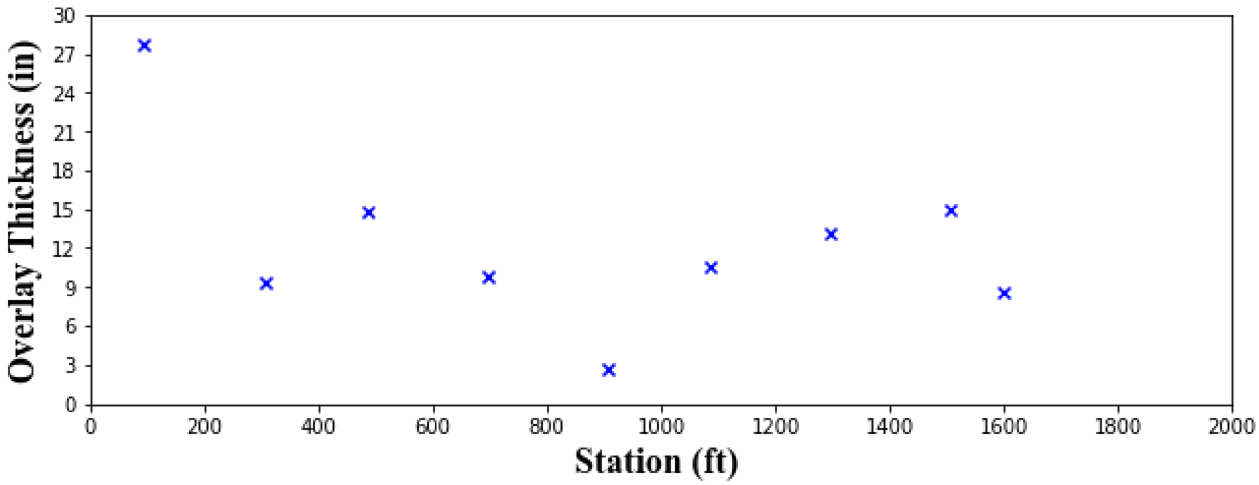


Figure E-43. Estimated Overlay Thickness for TWY Y 10R

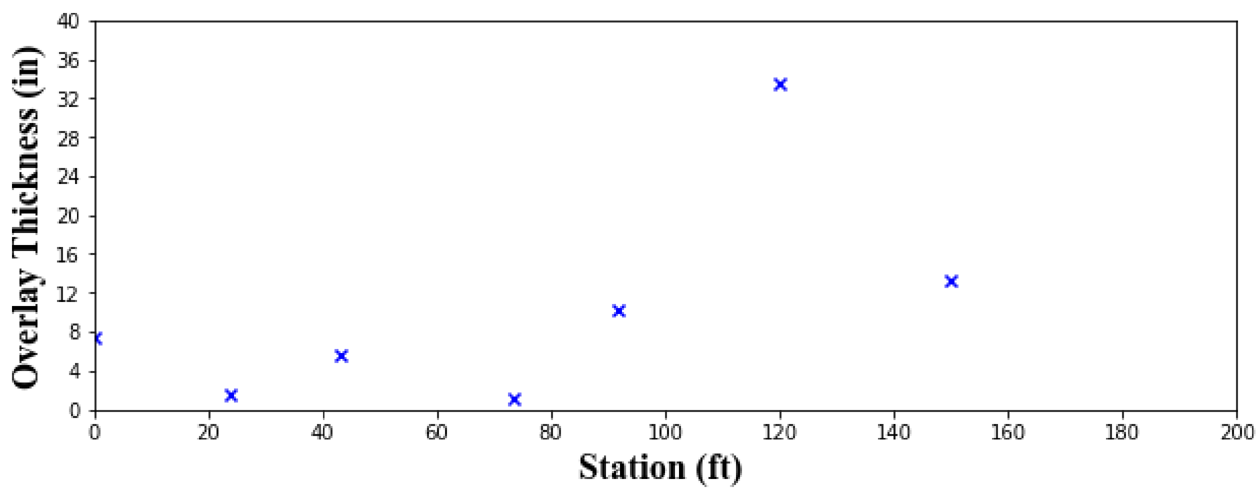


Figure E-44. Estimated Overlay Thickness for TWY Y1 10L

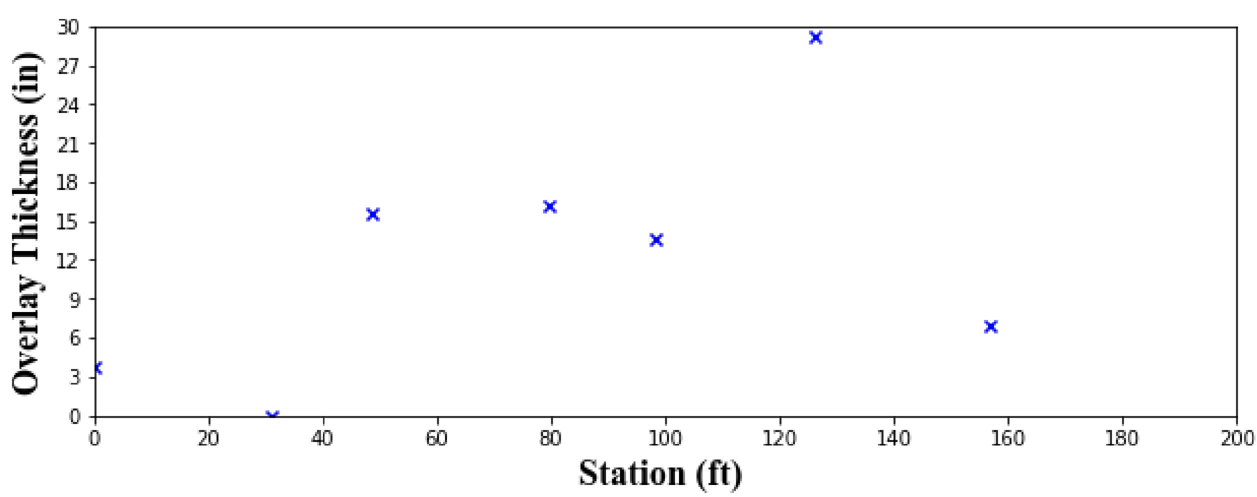


Figure E-45. Estimated Overlay Thickness for TWY Y1 10R

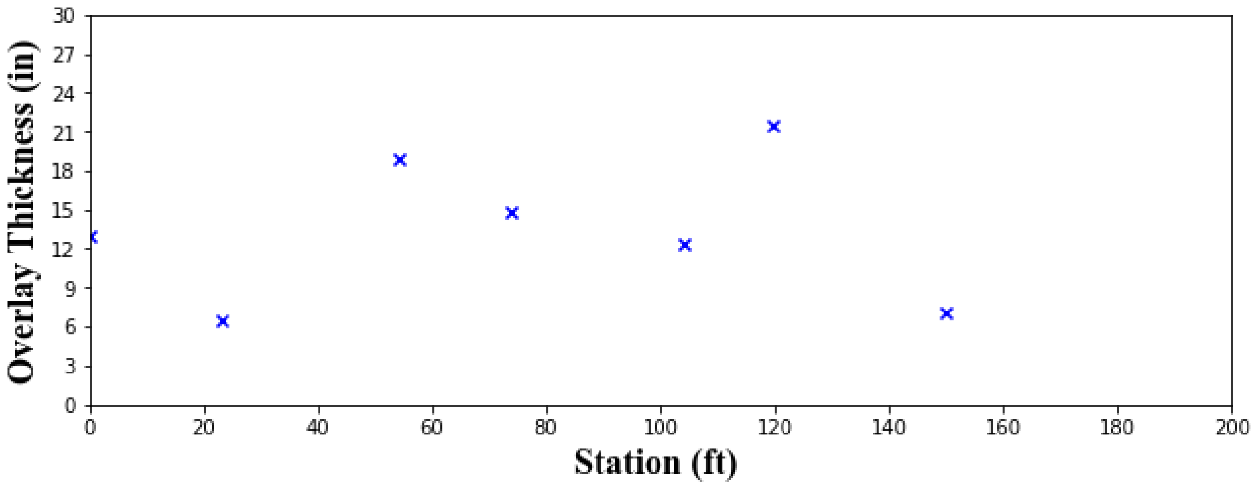


Figure E-46. Estimated Overlay Thickness for TWY Y2 10L

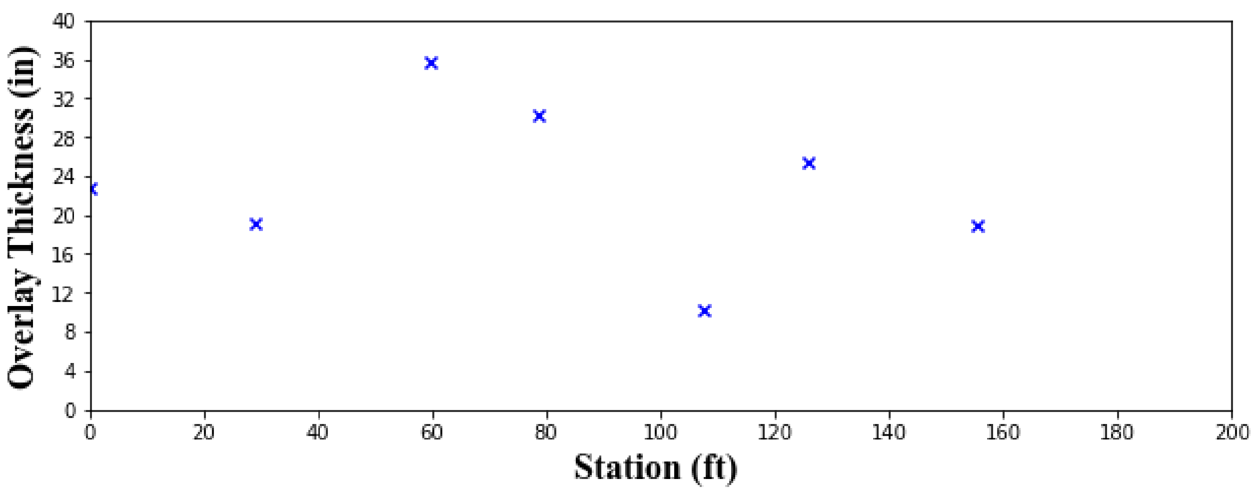


Figure E-47. Estimated Overlay Thickness for TWY Y2 10R

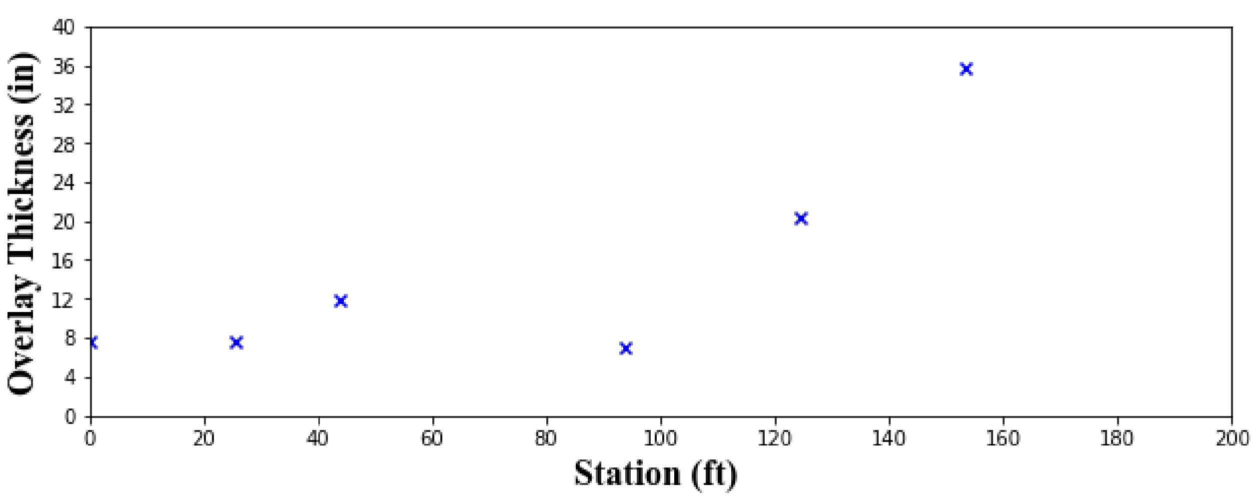


Figure E-48. Estimated Overlay Thickness for TWY Y3 10L

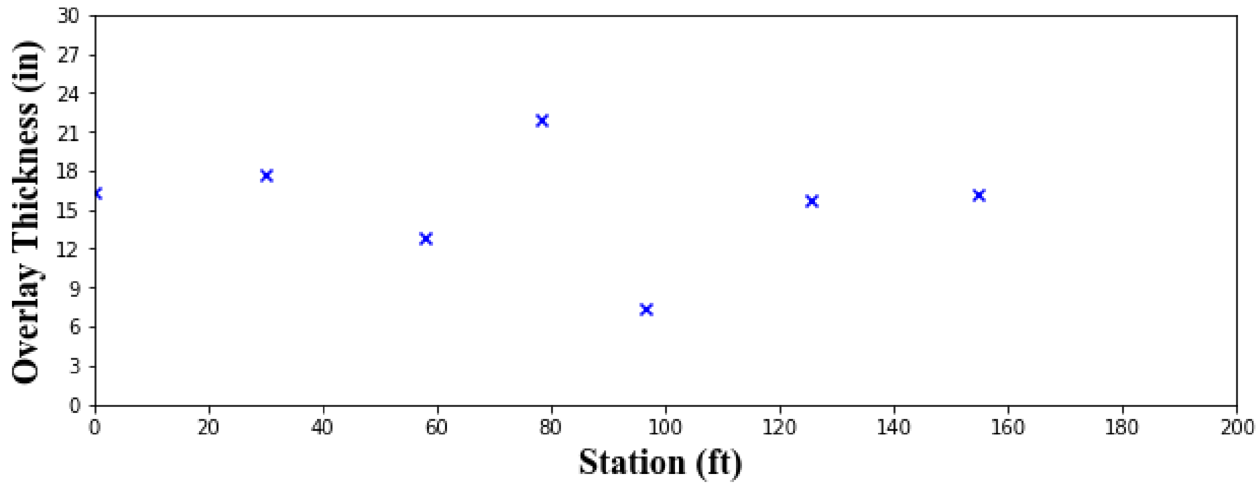


Figure E-49. Estimated Overlay Thickness for TWY Y3 10R

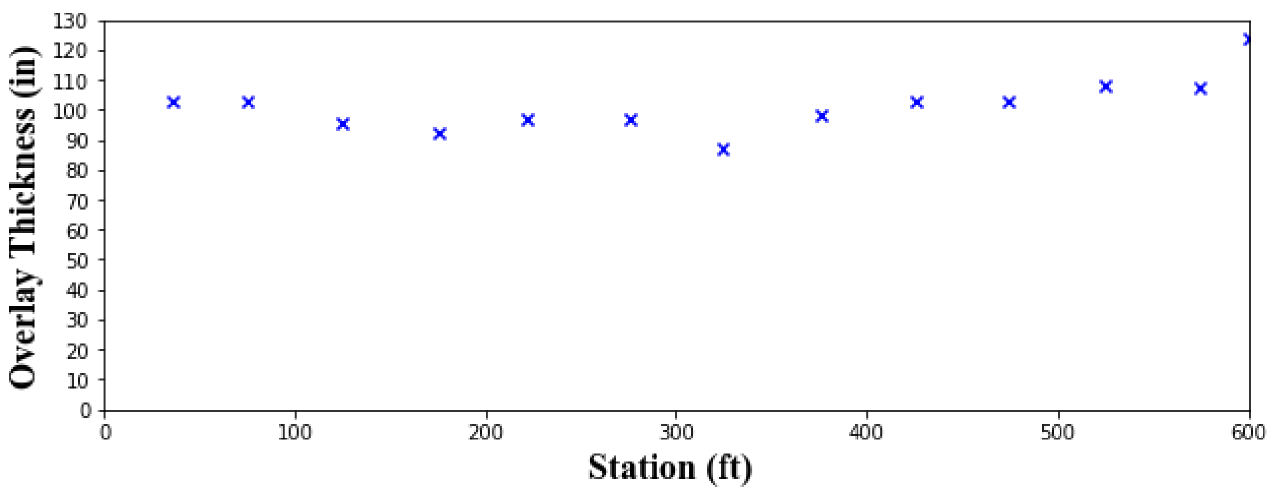


Figure E-50. Estimated Overlay Thickness for TXL G 10L

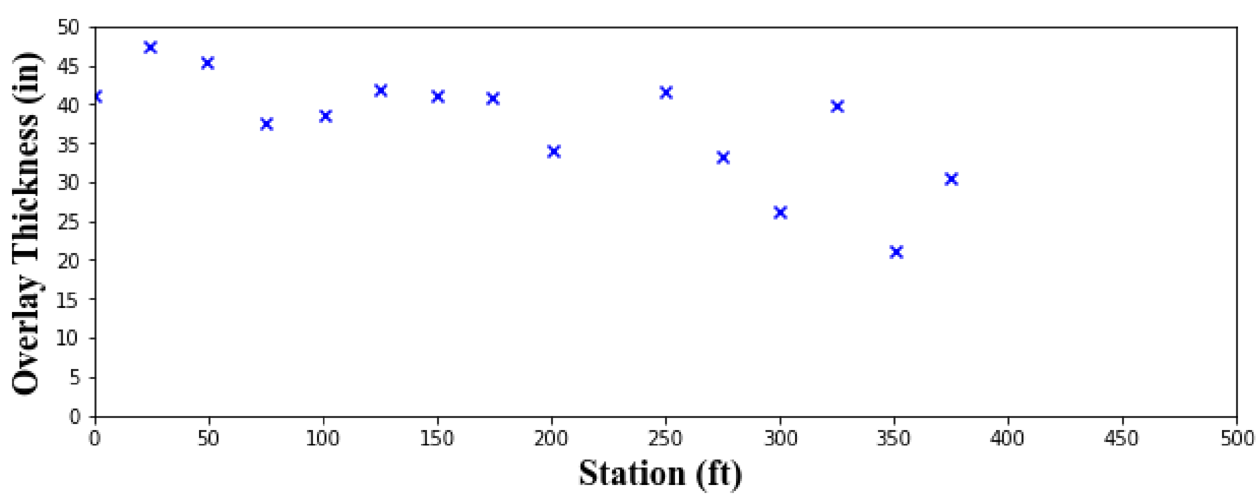


Figure E-51. Estimated Overlay Thickness for TXL H 10L

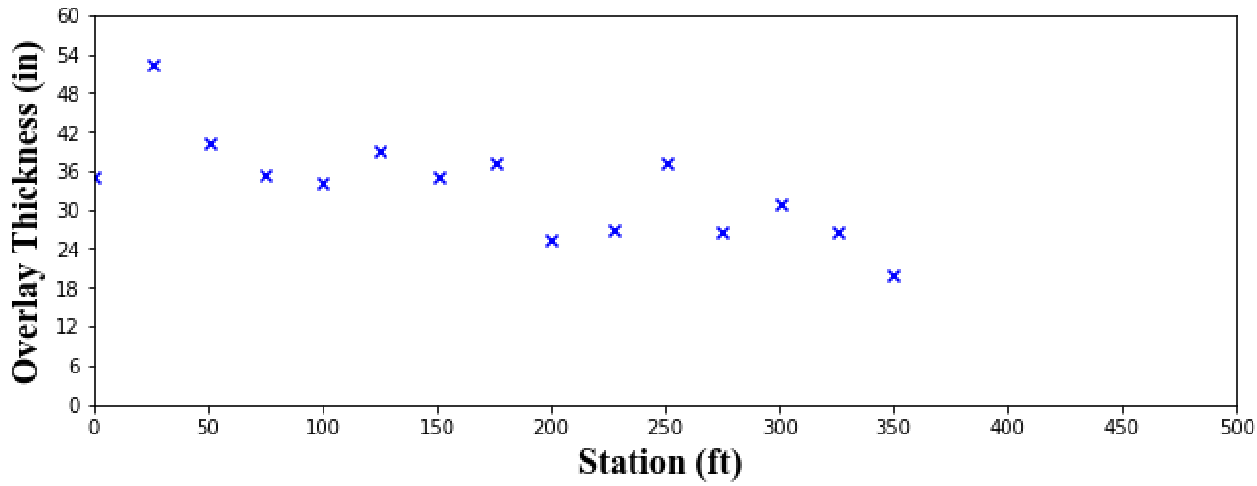


Figure E-52. Estimated Overlay Thickness for TXL H 10R

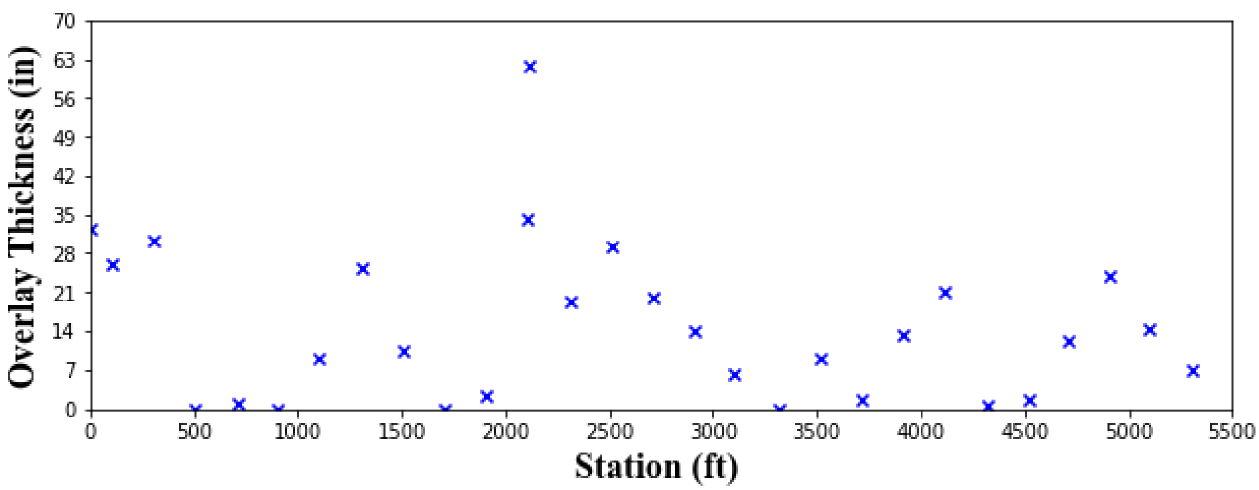


Figure E-53. Estimated Overlay Thickness for TXL N1 10L

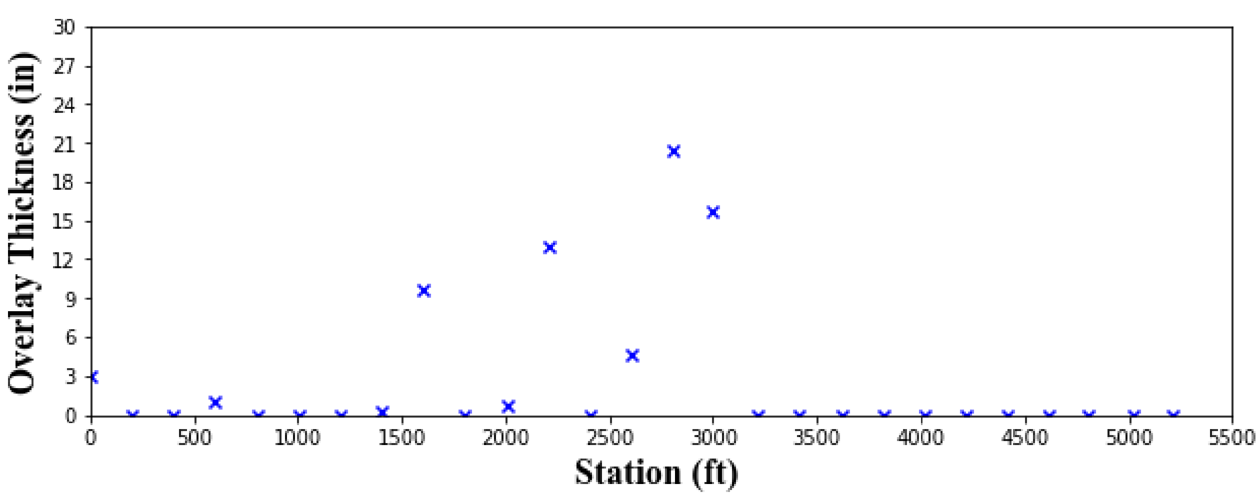


Figure E-54. Estimated Overlay Thickness for TXL N1 10R

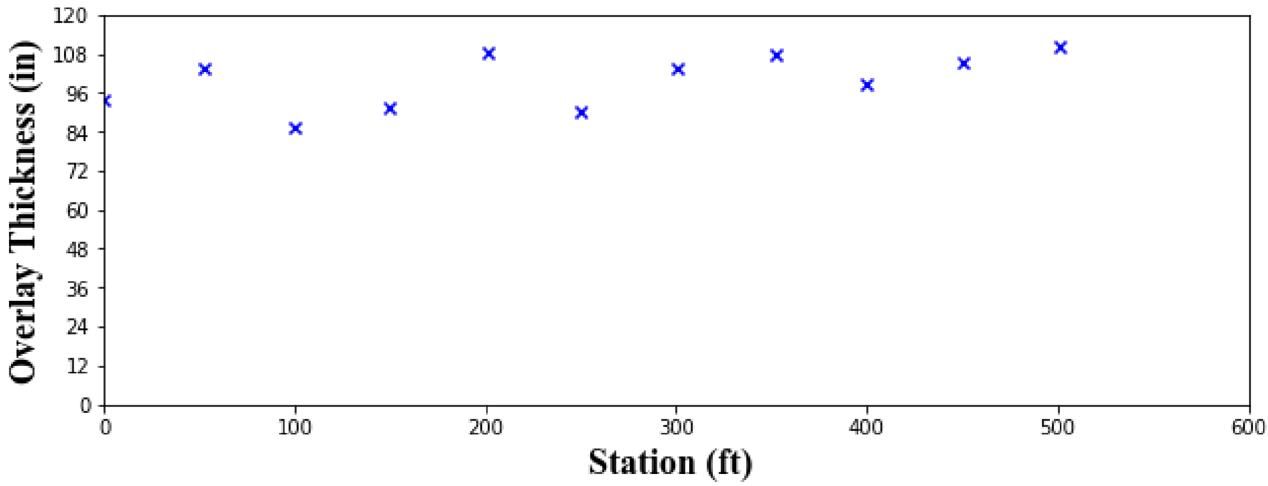


Figure E-55. Estimated Overlay Thickness for TXY G 10R

Appendix F – Pavement Condition Distress Survey

A limited distress survey was conducted on all tested lines through digital photographs that were automatically collected at 25-ft intervals. A brief summary of the limited distress survey is presented below.

Runway 8L-26R

From Sta. 0+00 to Sta. 120+25, the PCC pavement surface appears to be in good condition with no distresses noted. Rubber build-up was noted from approximately Sta. 5+50 to Sta. 43+00 and from approximately Sta. 76+00 to Sta. 104+00, which may be concealing distresses.

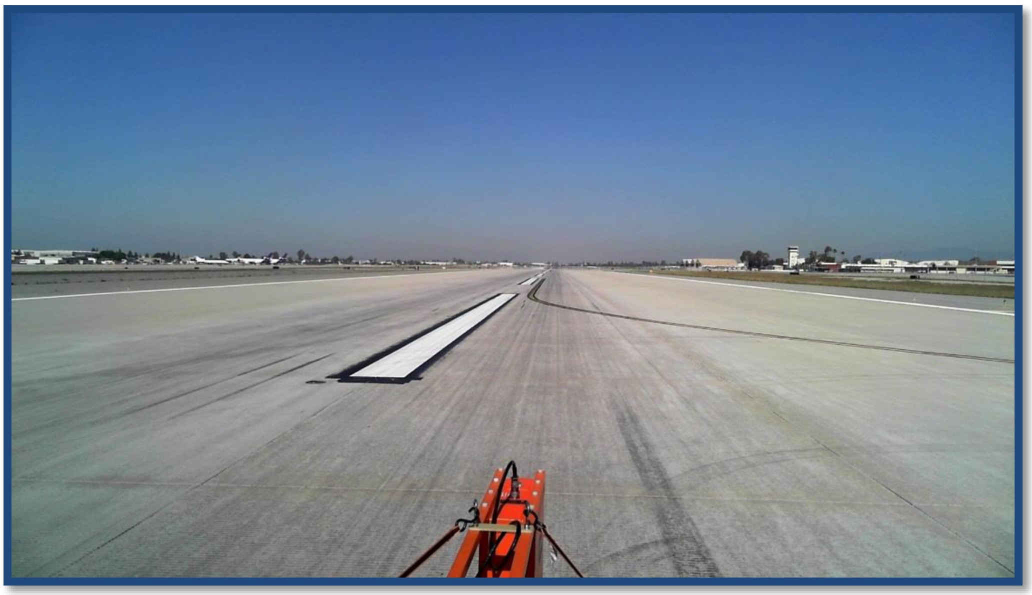


Figure F.1. Runway 8L-26R Representative Pavement Condition (Sta. 59+75)

Runway 8R-26L

From Sta. 0+00 to Sta. 100+50, the PCC pavement surface appears to be in fairly good condition with a localized sealed corner crack noted at Sta. 17+25, 18+75, and 19+75; and sealed transverse crack noted at Sta. 23+00; and sealed longitudinal crack noted at Sta. 91+25. Rubber build-up was noted from approximately Sta. 5+50 to Sta. 58+00, which may be concealing distresses.

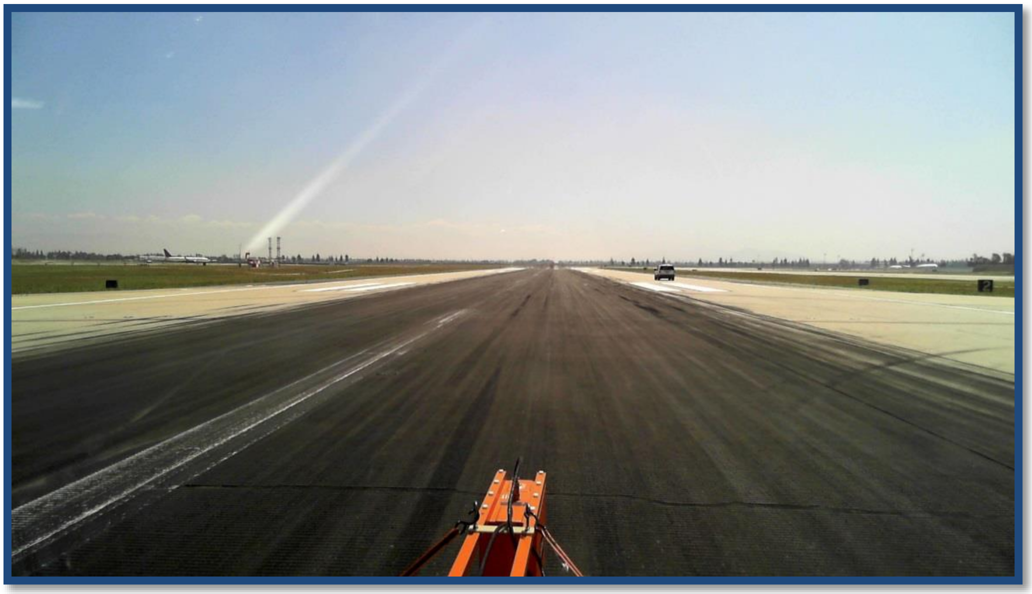


Figure F.2. Runway 8R-26L Representative Pavement Condition (Sta. 23+00)

<u>Taxiway N</u>

From Sta. 0+00 to Sta. 105+50, the PCC pavement surface appears to be in fairly good condition with a localized longitudinal crack noted at approximately Sta. 1+25. A pavement change was noted at approximately Sta. 45+00. From Sta. 105+50 to Sta. 120+00, the PCC pavement surface appears to be in fairly poor condition with localized transverse and longitudinal cracks noted.

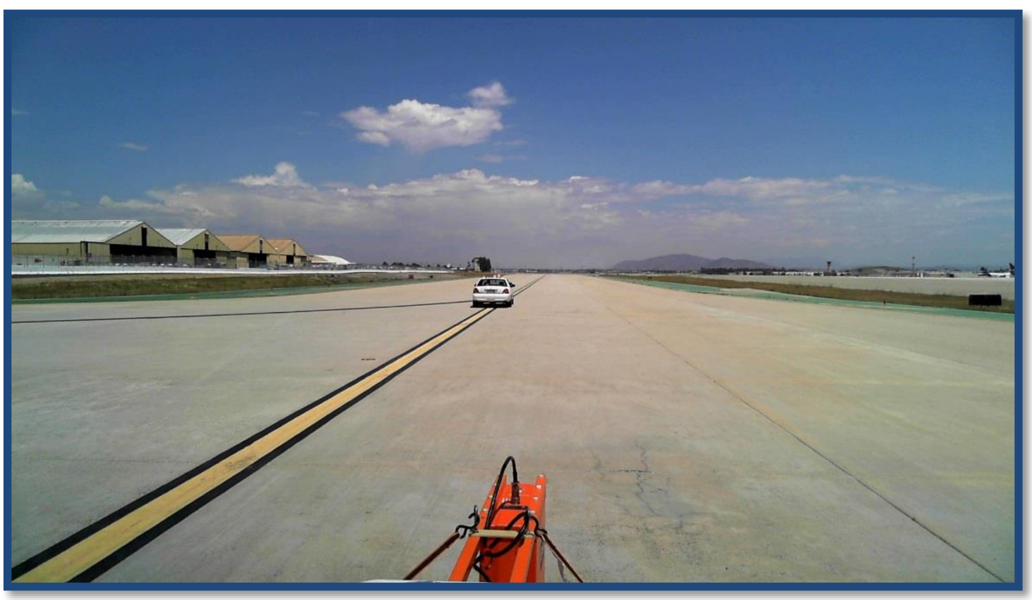


Figure F.3. Taxiway N Representative Pavement Condition (Sta. 1+25)

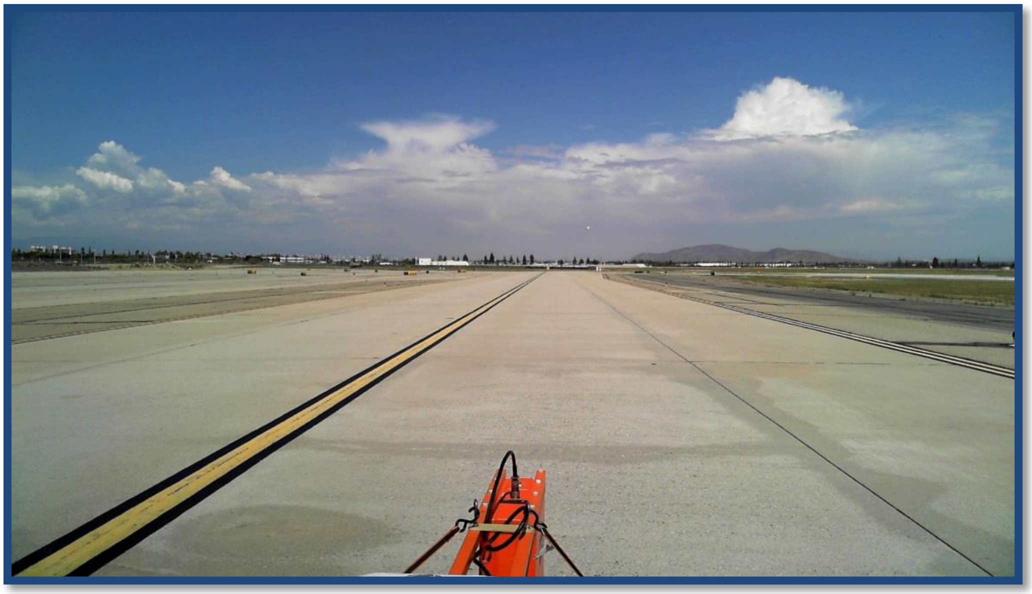


Figure F.4. Taxiway N Representative Pavement Condition (Sta. 110+00)

Taxiway S

From Sta. 0+00 to Sta. 41+00, the PCC pavement surface appears to be in fairly good condition with a localized transverse crack noted at approximately Sta. 6+00. From Sta. 41+00 to Sta. 98+75, the PCC pavement surface to the right of the centerline appears to be in fairly poor condition with longitudinal and transverse cracks noted. The pavement surface to the left of the centerline appears to be in slightly better condition with localized longitudinal and transverse cracks noted.

Figure F.5. Taxiway S Representative Pavement Condition (Sta. 6+00)

Figure F.6. Taxiway S Representative Pavement Condition (Sta. 46+75)

<u>Taxiway W (5/28/2019)</u>

From Sta. 0+00 to Sta. 3+15, the PCC pavement surface appears to be in fairly good condition with a localized sealed transverse crack noted at approximately Sta. 1+25.

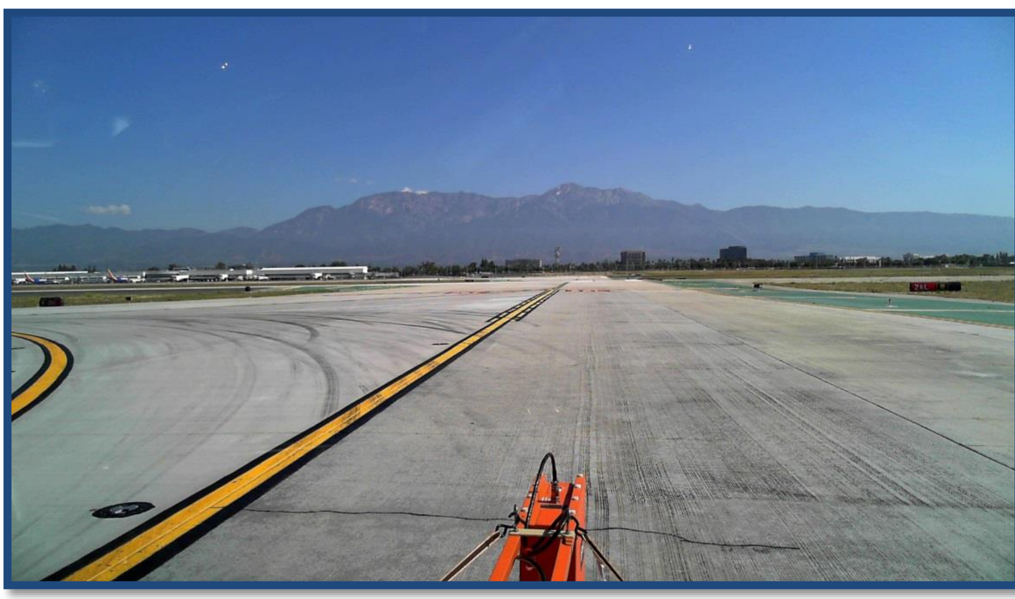


Figure F.7. Taxiway W Representative Pavement Condition (Sta. 1+25)

Taxiway W (6/8/2019)
From Sta. 0+00 to Sta. 11+00, the PCC pavement surface appears to be in fairly good condition with localized transverse cracks noted.

Figure F.8. Taxiway W Representative Pavement Condition (Sta. 1+50)

Taxiway D (6/2/2019)
From Sta. 0+00 to Sta. 7+35, the PCC pavement surface appears to be in fairly good condition with localized transverse and map cracking noted.

Figure F.9. Taxiway D Representative Pavement Condition (Sta. 2+00)

Taxiway D (6/8/2019)
From Sta. 0+00 to Sta. 9+50, the PCC pavement surface appears to be in fairly good condition with no noticeable distresses.

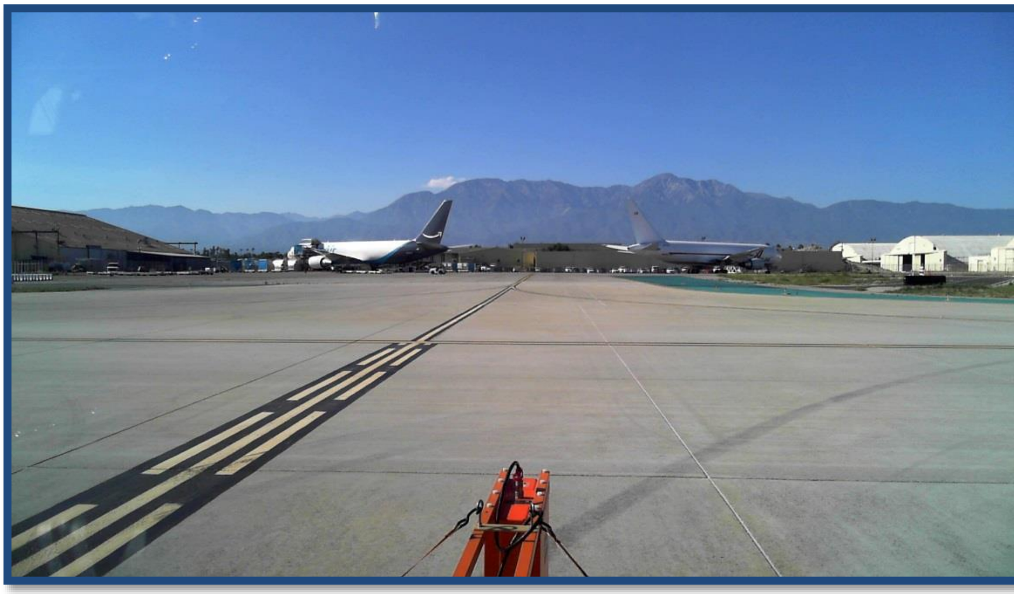


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Figure F.10. Taxiway D Representative Pavement Condition (Sta. 7+01)

Taxiway F (06/02/2019)
From Sta. 0+00 to Sta. 9+90, the PCC pavement surface appears to be in fairly good condition with longitudinal and transverse cracks noted.

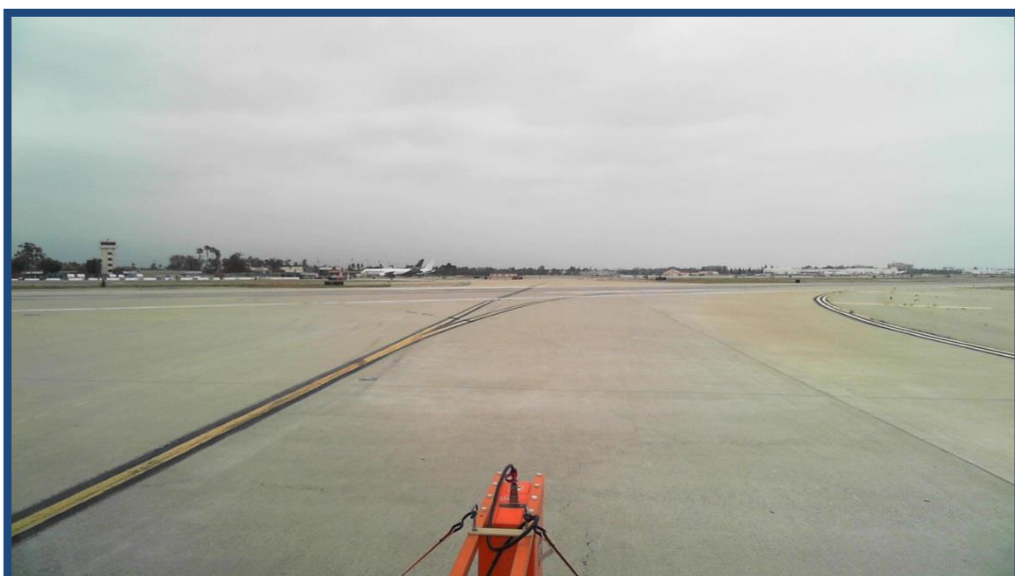


Figure F.11. Taxiway F Representative Pavement Condition (Sta. 2+00)

Taxiway F (06/08/2019)

From Sta. 0+00 to Sta. 7+00, the PCC pavement surface appears to be in fairly good condition with localized transverse cracks noted at approximately Sta. 3+75.

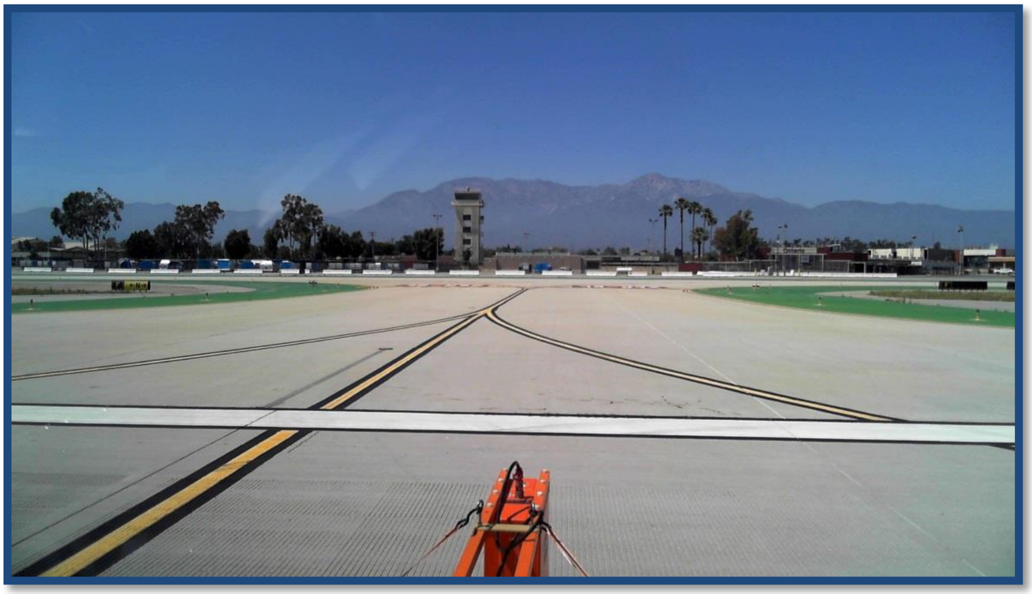


Figure F.12. Taxiway F Representative Pavement Condition (Sta. 3+75)

Taxiway K (06/02/2019)

From Sta. 0+00 to Sta. 10+00, the PCC pavement surface appears to be in fairly good condition with transverse cracks noted.

Figure F.13. Taxiway K Representative Pavement Condition (Sta. 5+75)

Taxiway K (06/08/2019)

From Sta. 0+00 to Sta. 10+20, the PCC pavement surface appears to be in good condition with no noticeable distresses.

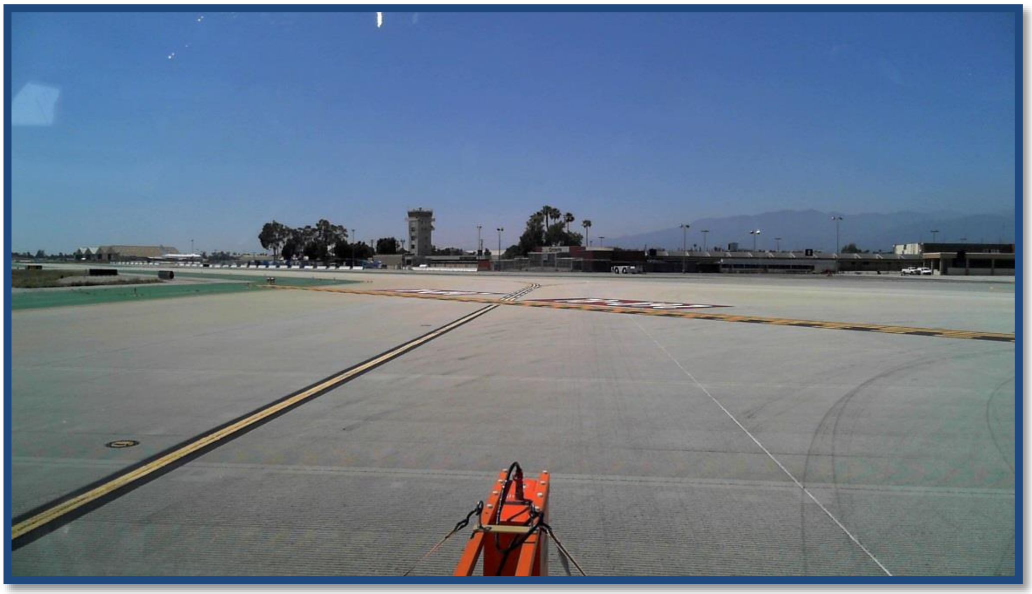


Figure F.14. Taxiway K Representative Pavement Condition (Sta. 7+99)

Taxiway L (06/08/2019)

From Sta. 0+00 to Sta. 3+00, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.

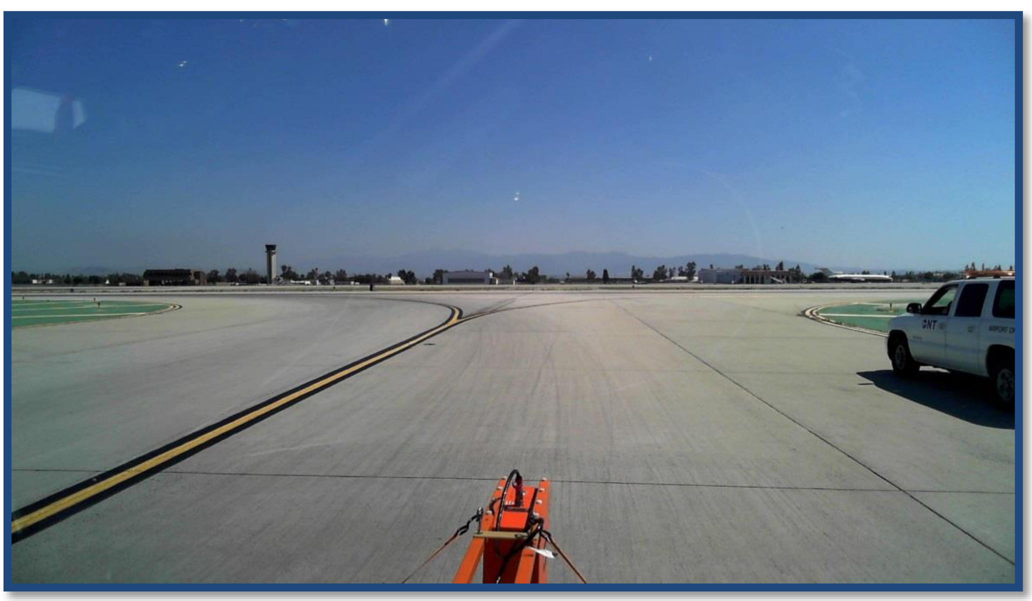


Figure F.15. Taxiway L Representative Pavement Condition (Sta. 2+25)

Taxiway P (06/02/2019)
From Sta. 0+00 to Sta. 10+10, the PCC pavement surface appears to be in good condition with no noticeable distresses.

Figure F.16. Taxiway P Representative Pavement Condition (Sta. 6+50)

Taxiway P (06/08/2019)
From Sta. 0+00 to Sta. 10+45, the PCC pavement surface appears to be in good condition with a localized patch noted at approximately Sta. 1+98.

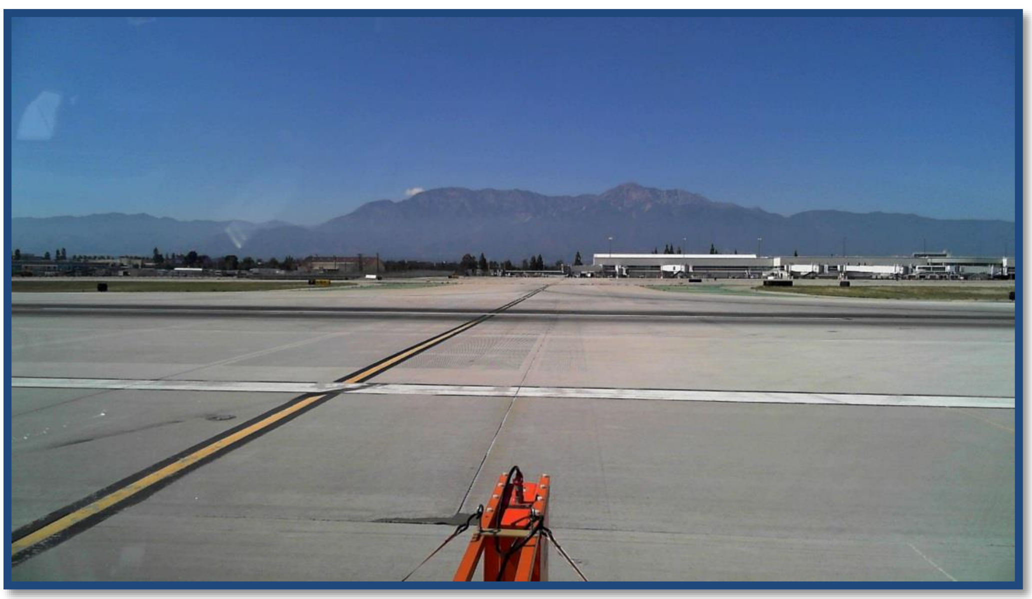


Figure F.17. Taxiway P Representative Pavement Condition (Sta. 1+98)

Taxiway Q
From Sta. 0+00 to Sta. 9+50, the PCC pavement surface appears to be in fairly good condition with a localized transverse crack noted.

Figure F.18. Taxiway Q Representative Pavement Condition (Sta. 6+30)

Taxiway S1
From Sta. 0+00 to Sta. 1+00, the AC pavement surface appears to be in fairly poor condition with longitudinal and transverse cracks noted.

Figure F.19. Taxiway S1 Representative Pavement Condition (Sta. 0+00)

Taxiway S2

From Sta. 0+00 to Sta. 1+45, the PCC pavement surface appears to be in fairly good condition with a localized transverse crack noted at Sta. 1+05.

Figure F.20. Taxiway S2 Representative Pavement Condition (Sta. 1+05)

Taxiway S3

From Sta. 0+00 to Sta. 1+45, the AC pavement surface appears to be in fairly poor condition with block cracks noted.

Figure F.21. Taxiway S3 Representative Pavement Condition (Sta. 1+25)

Taxiway S5
From Sta. 0+00 to Sta. 8+00, the AC pavement surface appears to be in fairly good condition with no noticeable cracks.

Figure F.22. Taxiway S5 Representative Pavement Condition (Sta. 5+00)

Taxiway R
From Sta. 0+00 to Sta. 3+00, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.

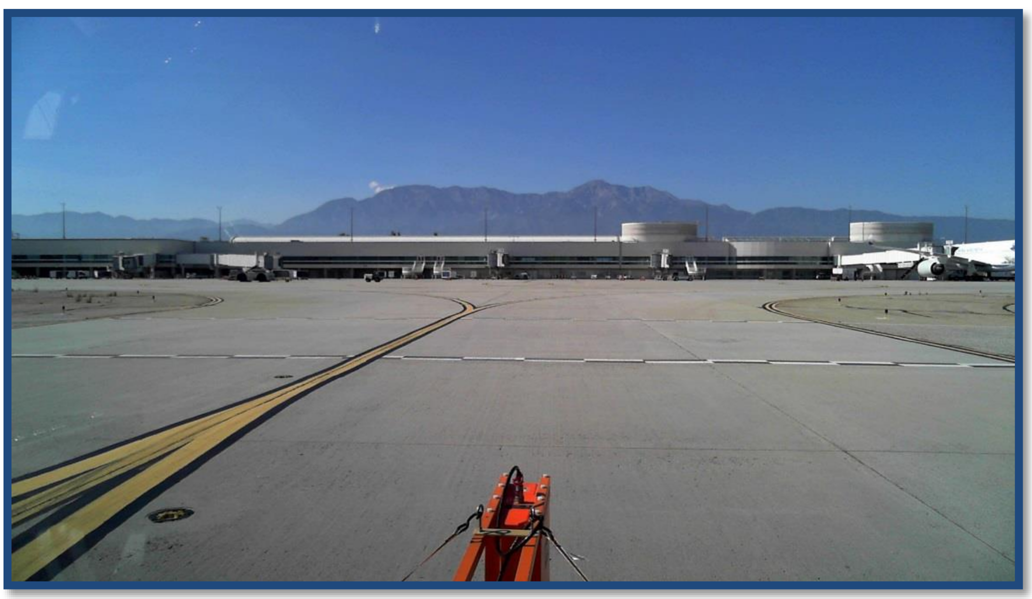


Figure F.23. Taxiway R Representative Pavement Condition (Sta. 5+48)

Taxiway T

From Sta. 0+00 to Sta. 4+40, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.

Figure F.24. Taxiway T Representative Pavement Condition (Sta. 1+50)

Taxiway U (6/2/2109)

From Sta. 0+00 to Sta. 6+50, the PCC pavement surface appears to be in fairly good condition with transverse cracks noted at approximately Sta. 2+75 and 4+75 of the left side of the centerline.

Figure F.25. Taxiway U Representative Pavement Condition (Sta. 2+75)

Taxiway U (6/8/2109)
From Sta. 0+00 to Sta. 10+90, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.

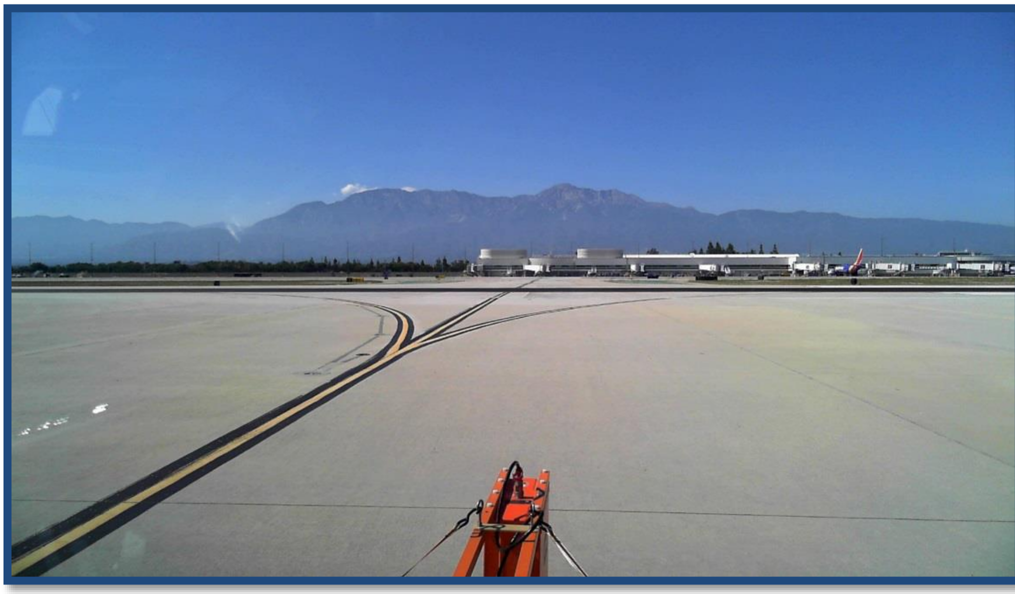


Figure F.26. Taxiway U Representative Pavement Condition (Sta. 1+25)

Taxiway V
From Sta. 0+00 to Sta. 6+40, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.

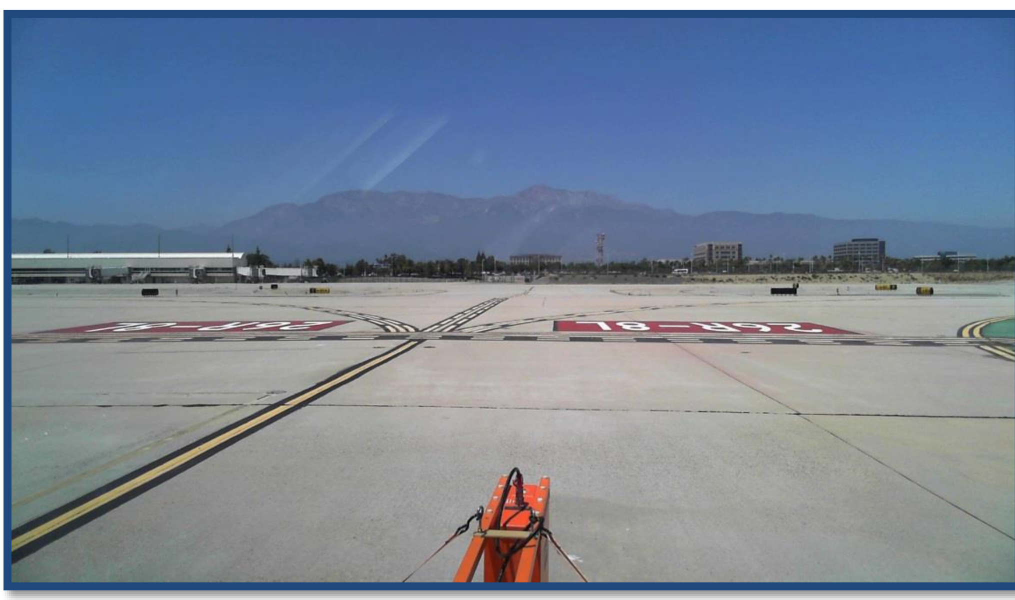


Figure F.27. Taxiway V Representative Pavement Condition (Sta. 1+00)

Taxiway W (06/02/2019)

From Sta. 0+00 to Sta. 3+25, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks. From Sta. 3+25 to Sta. 6+50 the PCC pavement surface appears to be in fairly poor condition with transverse cracks noted. From Sta. 6+50 to Sta. 12+70, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.

Figure F.28. Taxiway W Representative Pavement Condition (Sta. 4+05)

Taxiway W (06/08/2019)

From Sta. 0+00 to Sta. 6+00, the PCC pavement surface appears to be in fairly poor condition with transverse cracks noted. From Sta. 6+00 to Sta. 11+00 the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.

Figure F.29. Taxiway W Representative Pavement Condition (Sta. 4+50)

Taxiway Y

From Sta. 0+00 to Sta. 16+00, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.

Figure F.30. Taxiway Y Representative Pavement Condition (Sta. 6+87)

Taxiway Y1

From Sta. 0+00 to Sta. 1+65, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.

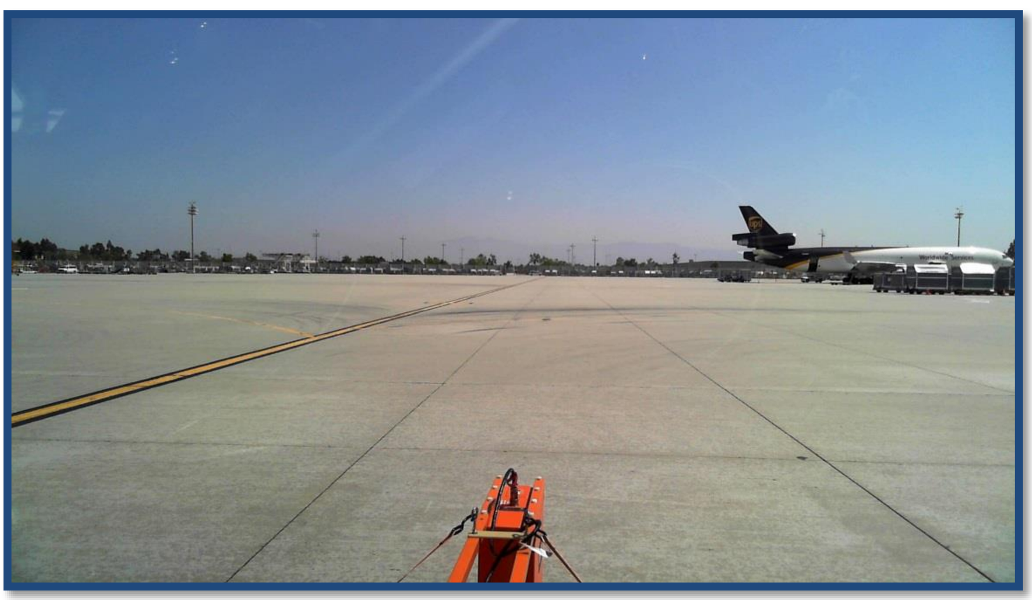


Figure F.31. Taxiway Y1 Representative Pavement Condition (Sta. 0+98)

Taxiway Y2

From Sta. 0+00 to Sta. 1+65, the PCC pavement surface appears to be in fairly good condition with a localized popout noted at approximately Station 1+64.

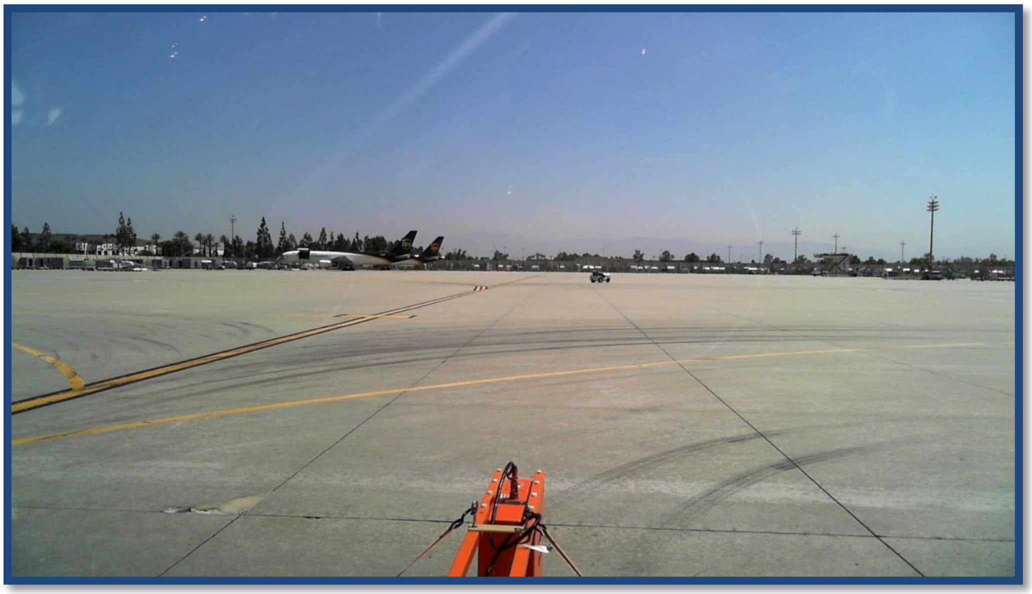


Figure F.32. Taxiway Y2 Representative Pavement Condition (Sta. 1+64)

Taxiway Y3

From Sta. 0+00 to Sta. 1+65, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.

Figure F.33. Taxiway Y3 Representative Pavement Condition (Sta. 1+55)

Terminal 1 Apron (APTERM1-01)
From Sta. 0+00 to Sta. 6+00, the PCC pavement surface appears to be in fairly poor condition with transverse cracks, longitudinal cracks, and corner breaks noted.

Figure F.34. Terminal 1 Apron Representative Pavement Condition (Sta. 2+08)

Terminal 3 Apron (APTERM3-01)
From Sta. 0+00 to Sta. 11+50, the PCC pavement surface appears to be in fairly good condition with no noticeable cracks.

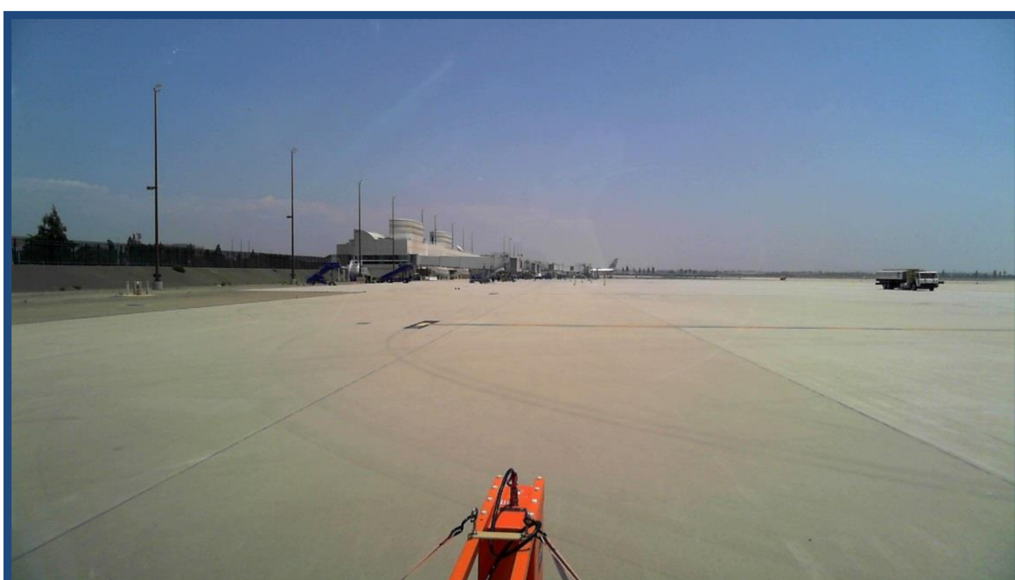


Figure F.35. Terminal 3 Apron Representative Pavement Condition (Sta. 5+50)

<u>Atlantic Aviation Apron</u>

The apron is in a serious condition. From station 0+00 to station 5+00, there are high severity longitudinal and transverse cracks. At station 5+00, there are high severity alligator cracking

Figure F.36. Atlantic Terminal Apron Representative Pavement Condition (Sta. 3+50)

Figure F.37. Atlantic Terminal Apron Representative Pavement Condition (Sta. 5+00)

CSA Terminal

The feature is in a fair condition. From station 0+00 to station to station 1+50, there are shattered slabs and severe joint seal damage and corner breaks. From station 1+50 to station 9+50, the condition is good with few medium severity corner breaks.

Figure F.38. CSA Terminal Representative Pavement Condition (Sta. 1+50)

Figure F.39. CSA Terminal Representative Pavement Condition (Sta. 8+00)

Taxiway G

From Station 0+00 to station 6+00, the taxiway is in good condition with low severity alligator cracking. From station 6+00 to the end of the feature, the pavement is in bad condition with high severity fatigue and block cracks.

Figure F.40. Taxiway G Representative Pavement Condition (Sta. 1+75)

Figure F.41. Taxiway G Representative Pavement Condition (Sta. 9+75)

Taxiway H

The feature is in a bad condition with high severity weathering, medium severity fatigue cracking, and raveling.

Figure F.42. Taxiway H Representative Pavement Condition (Sta. 0+00)

Taxiway N1

This PCC Taxiway is in a very good condition. No distresses can be observed from the ROW images.

Figure F.43. Taxiway N1 Representative Pavement Condition (Sta. 48+00)

Terminal2_4

This PCC Terminal is in a very good condition. No distresses can be observed from the ROW images.

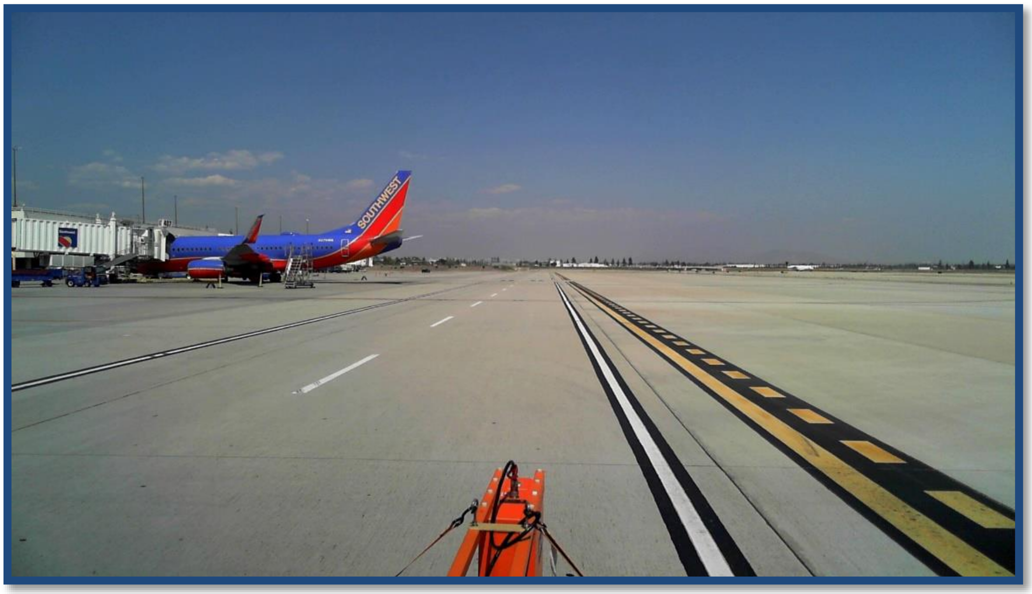


Figure F.44. Terminal2_4 Representative Pavement Condition (Sta. 36+00)

Appendix G – Fleet Mix Distribution Map

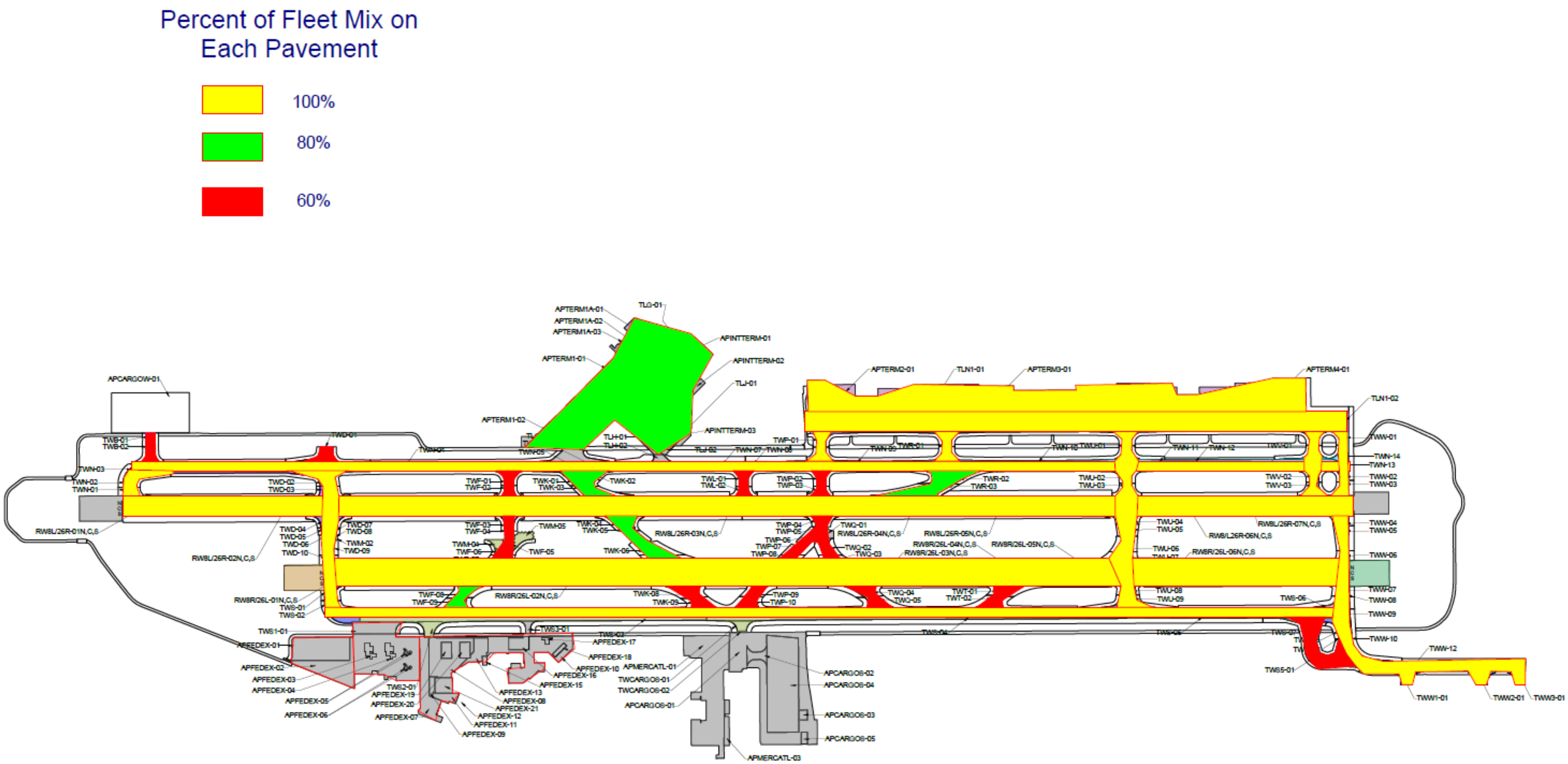


Figure G.1. Fleet Mix Distribution Map

Appendix H – Geotechnical Exploration Data

Table H.1. – Summary of Pavement Section Thickness

FIELD EXPLORATION ID	LOCATION	PAVEMENT		BASE		SUBGRADE	NOTES
		Type	Thickness (inches)	Description Type	Thickness (inches)		
Bore-01	Taxiway D	PCC	16	CSS	5.75	Silty SAND (SM)	
Bore -02	Taxilane S1	AC	3.75[1]	Poorly Graded Gravel (GP)	4	Silty SAND with GRAVEL (SM)	
Bore -03	International Terminal Gate 35	AC over PCC	3 over 5[1]	None	--	Silty SAND (SM)	
Bore -04	Taxiway K	PCC	15.5	CSS	5.5	Clayey SAND (SC)	
Bore -05	South Cargo Ramp	PCC	7.5	None	--	Silty SAND (SM)	
Bore -06	Runway 8R-26L	PCC	16.25	CSS	3.75 over 4.75	Silty SAND (SM)	Fabric observed between PCC and CSS layers
Core-01	Taxilane G	AC over PCC	5.5 over 6[1]	None	--	Silty SAND (SM)	
Core -02	Taxiway H	AC	4	Poorly Graded Gravel (GP)	4	Silty SAND with GRAVEL (SM)	
Core -03	International Terminal Gate 31	AC over PCC[2]	3 over 7.5	None	--	Silty SAND (SM)	Fabric observed between AC and PCC layers
Core -04	Taxiway P	PCC	16.5	CSS	6.75	Silty SAND (SM)	
Core -05	Taxiway Q	PCC	16.25	CSS	6.5	Silty SAND (SM)	
Core -06	Taxilane N1	PCC	15	CSS	2.5 over 10.5[1]	Silty SAND (SM); Brown	Two layers of CSS
Core -07	Taxilane S3	AC	3	Poorly Graded Gravel (GP)	3	Silty SAND with GRAVEL (SM)	
Core -08	Atlantic Aviation Apron	AC	3.5	CTB over Poorly graded GRAVEL with Silt & SAND (GP-GM)	CTB: 1.5 over 4 GP-GM: 3	Silty SAND with GRAVEL (SM)	Two layers of CTB
Core -09	Terminal 1 Gate 4	PCC	12	None	--	Silty SAND with GRAVEL (SM)	
Core -10	International Terminal Gate 35	AC	5	Poorly Graded Gravel (GP)	2	Silty SAND (SM)	

Notes:
1. Average thickness (bottom of core was not level).
2. Pavement fabric layer was observed between AC and PCC layers.
- PCC = Portland cement concrete; AC = asphalt concrete; CSS = cement-stabilized soil; CTB = cement-treated base.

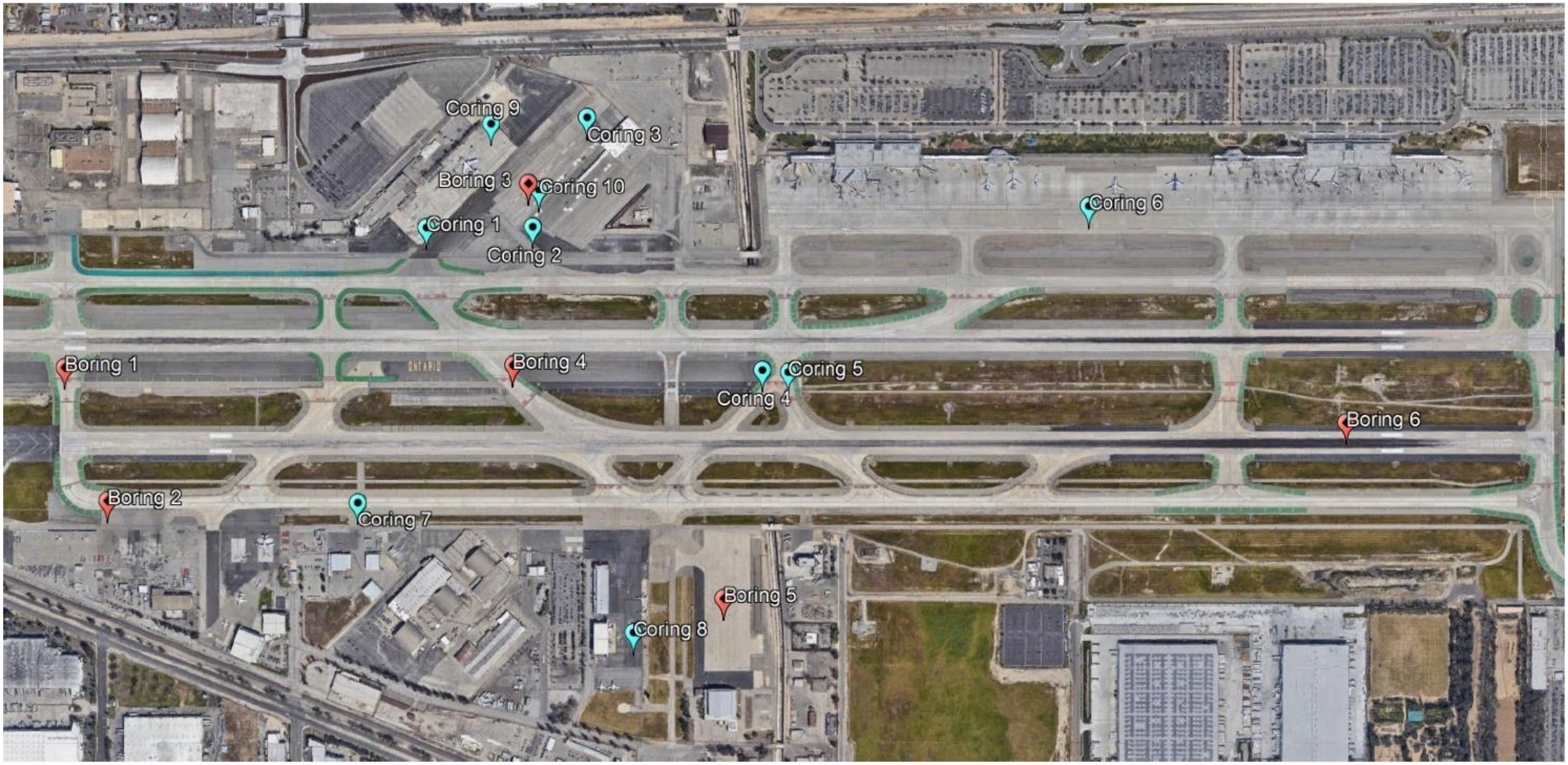


Figure H.1. Core and Boring Location Map

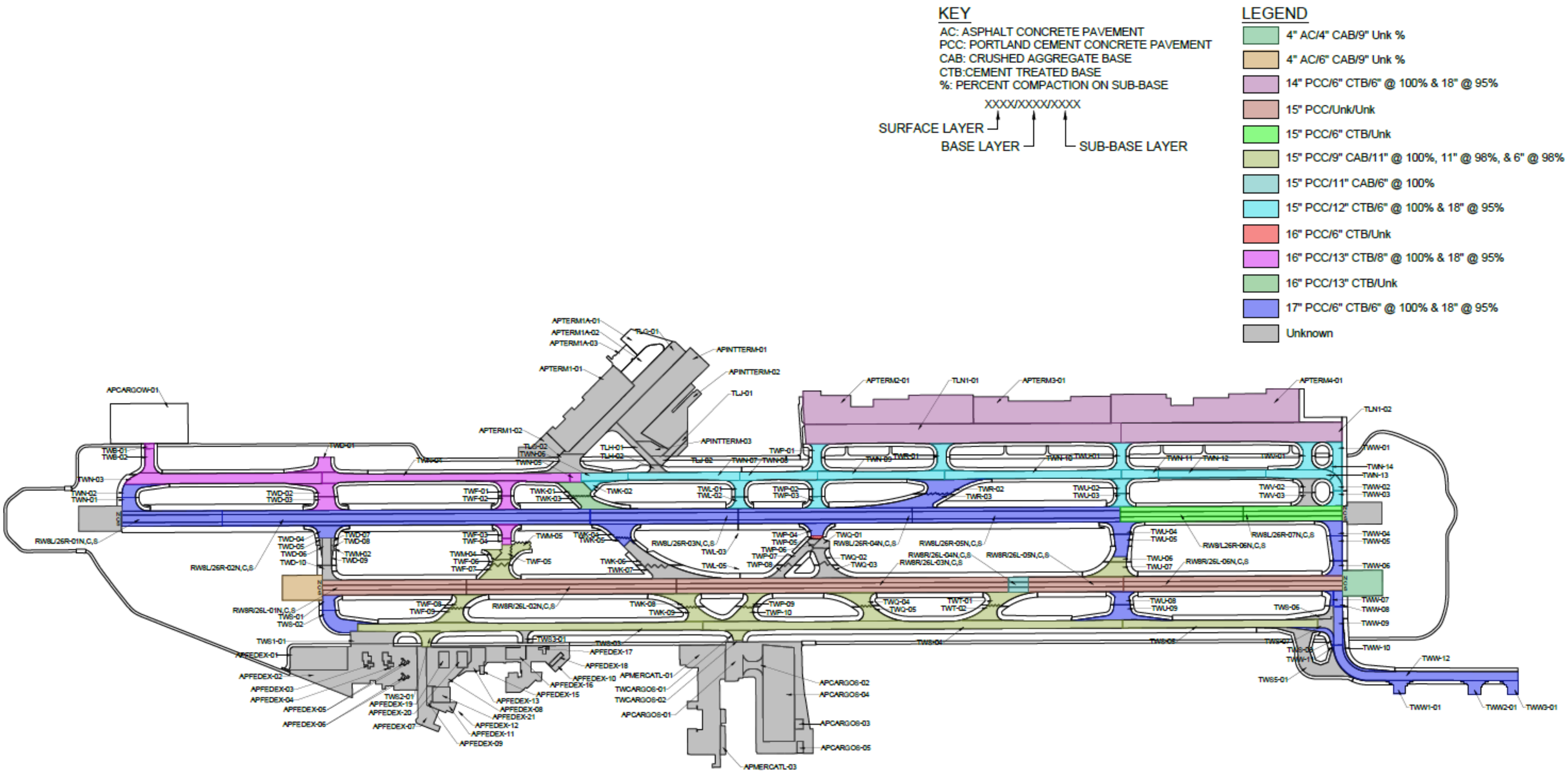


Figure H.2. Color-Coded As-Built Data

APPENDIX F

ENGINEER'S ESTIMATE OF MAINTENANCE COST

Engineer's Estimate of Maintenance Cost

Number	Branch	Pavement Type	Cost
1	APCARGOS	PCC	$ 1,495,713.70
2	APFEDEX	PCC	$ 622,607.76
3	APTERM1	PCC	$ 4,600,528.86
4	APTERM2,APTERM3,APTERM4	PCC	$ 729,970.54
5	BPRW8L	PCC	$ 247.50
6	RW8L/26R Keel	PCC	$ 366,894.29
7	RW8L/26R Outboard	PCC	$ 105,357.77
8	RW8R/26L Keel	PCC	$ 292,514.54
9	RW8R/26L Outboard	PCC	$ 288,055.56
10	TLG	PCC	$ 427.33
11	TLN1,TLN2	PCC	$ 101,987.19
12	TWB	PCC	$ 27,528.88
13	TWCARGOS	PCC	$ 14,463.11
14	TWD	PCC	$ 107,573.63
15	TWF	PCC	$ 333,735.74
16	TWK	PCC	$ 252,088.82
17	TWL	PCC	$ 46,230.03
18	TWM	PCC	$ 17,372.08
19	TWN	PCC	$ 744,104.61
20	TWP	PCC	$ 446,310.56
21	TWQ	PCC	$ 103,029.17
22	TWR	PCC	$ 40,968.78
23	TWS	PCC	$ 1,326,900.18
24	TWS2	PCC	$ 194,416.20
25	TWT	PCC	$ 60,818.46
26	TWU	PCC	$ 181,027.38
27	TWV	PCC	$ 118,936.13
28	TWW	PCC	$ 336,604.79
29	TWW1,TWW2,TWW3	PCC	$ 26,105.67
30	APCARGOS	AC	$ 3,297,904.21
31	APFEDEX	AC	$ 3,054,177.35
32	APINTERM	AC	$ 767,513.36
33	APMERCATL	AC	$ 2,598,142.80
34	APTERM2	AC	$ 21,381.27
35	BPRW26L	AC	$ 73,190.24
36	BPRW26R	AC	$ 59,801.28
37	BPRW8L	AC	$ 2,293.77
38	BPRW8R	AC	$ 136,857.15
39	SHAPTERM4	AC	$ 15,877.51
40	SHRW8L	AC	$ 534,931.71
41	SHRW08R	AC	$ 5,587,820.01
42	SHTLN1,SHTLN2,SHTLN3,SHTLN4,SHTLN5	AC	$ 195,698.58
43	SHTWB	AC	$ 3,713.40
44	SHTWD	AC	$ 7,303.34
45	SHTWF	AC	$ 219.70
46	SHTWK	AC	$ 9,904.68
47	SHTWN	AC	$ 600,905.59
48	SHTWP	AC	$ 73,316.30
49	SHTWQ	AC	$ 20,318.17
50	SHTWS	AC	$ 578,964.72
51	SHTWU	AC	$ 10,666.79
52	SHTWW	AC	$ 82,109.88
53	TLG	AC	$ 71,781.05
54	TLH	AC	$ 26,793.01
55	TLJ	AC	$ 2,447.40
56	TWS1	AC	$ 150,120.30
57	TWS3	AC	$ 150,120.30
58	VSR East	AC	$ 1,441,440.00
59	VSR North	AC	$ 1,832,562.60
60	VSR South	AC	$ 648,945.00
61	VSR West	AC	$ 2,149,620.00
		Total	**$ 37,189,360.74**

Note: Refer to section 6.4 for the explanation of these values

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: APCARGOS

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	113	$ 2,825.00
	M	Crack Seal (Corner)	EA	$25.00	36	$ 900.00
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	1,602	$ 16,017.97
	M	Crack Seal (Linear)	LF	$10.00	154	$ 1,539.51
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	2,005	$ 10,022.86
	M	Joint Seal	LF	$5.00	278	$ 1,390.66
	H	Joint Seal	LF	$5.00	26	$ 127.53
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	620	$ 620,000.00
	M	Partial Depth Patch	EA	$1,000.00	57	$ 57,000.00
	H	Partial Depth Patch	EA	$1,000.00	3	$ 3,000.00
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	51	$ 102,000.00
	M	Partial Depth Patch	EA	$2,000.00	13	$ 26,000.00
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00	1	$ 20,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	10	$ 200,000.00
	M	Slab Replacement	EA	$20,000.00	1	$ 20,000.00
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	84	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	26	$ 13,086.35
	M	Partial Depth Patch (Linear)	LF	$500.00	18	$ 9,206.56
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	18	$ 18,000.00
	M	Partial Depth Patch	EA	$1,000.00	11	$ 11,000.00
	H	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 113,311.64
					Contigency (20%):	$ 249,285.62
					Total Cost:	**$ 1,495,713.70**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: APFEDEX

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	2	$ 50.00
	M	Crack Seal (Corner)	EA	$25.00	1	$ 25.00
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	201	$ 2,014.97
	M	Crack Seal (Linear)	LF	$10.00	63	$ 633.72
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	1,404	$ 7,018.80
	M	Joint Seal	LF	$5.00	93	$ 466.67
	H	Joint Seal	LF	$5.00	1,947	$ 9,733.87
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	3	$ 3,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00		$ -
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	2	$ 40,000.00
	M	Slab Replacement	EA	$20,000.00	20	$ 400,000.00
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	83	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	14	$ 7,229.52
	M	Partial Depth Patch (Linear)	LF	$500.00	1	$ 500.00
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 47,167.25
					Contigency (20%):	$ 103,767.96
					Total Cost:	**$ 622,607.76**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: APTERM1

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	79	$ 1,975.00
	M	Crack Seal (Corner)	EA	$25.00	31	$ 775.00
	H	Full Depth Patch	EA	$3,000.00	8	$ 24,000.00
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	3,490	$ 34,900.00
	M	Crack Seal (Linear)	LF	$10.00	1,395	$ 13,950.00
	H	Slab Replacement (Linear)	LF	$2,000.00	177	$ 354,726.85
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	1,949	$ 9,745.00
	M	Joint Seal	LF	$5.00	1,433	$ 7,165.00
	H	Joint Seal	LF	$5.00	131	$ 653.31
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	3	$ 3,000.00
	M	Partial Depth Patch	EA	$1,000.00	2	$ 2,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00		$ -
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00	1	$ 20,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	52	$ 1,040,000.00
	M	Slab Replacement	EA	$20,000.00	56	$ 1,120,000.00
	H	Slab Replacement	EA	$20,000.00	22	$ 440,000.00
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	880	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	257	$ 128,500.00
	M	Partial Depth Patch (Linear)	LF	$500.00	423	$ 211,500.00
	H	Partial Depth Patch (Linear)	LF	$500.00	37	$ 18,358.98
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	38	$ 38,000.00
	M	Partial Depth Patch	EA	$1,000.00	11	$ 11,000.00
	H	Partial Depth Patch	EA	$1,000.00	5	$ 5,000.00
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 348,524.91
					Contigency (20%):	$ 766,754.81
					Total Cost:	**$ 4,600,528.86**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: APTERM2,APTERM3,APTERM4

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	9	$ 225.00
	M	Crack Seal (Corner)	EA	$25.00	1	$ 25.00
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	6,410	$ 64,097.79
	M	Crack Seal (Linear)	LF	$10.00	1,218	$ 12,182.32
	H	Slab Replacement (Linear)	LF	$2,000.00	24	$ 47,457.98
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	3,300	$ 16,500.42
	M	Joint Seal	LF	$5.00	1,038	$ 5,188.05
	H	Joint Seal	LF	$5.00	187	$ 935.17
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	15	$ 15,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	2	$ 4,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	9	$ 180,000.00
	M	Slab Replacement	EA	$20,000.00	2	$ 40,000.00
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	389	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	233	$ 116,361.86
	M	Partial Depth Patch (Linear)	LF	$500.00	56	$ 28,034.40
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	17	$ 17,000.00
	M	Partial Depth Patch	EA	$1,000.00	6	$ 6,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 55,300.80
					Contigency (20%):	$ 121,661.76
					Total Cost:	**$ 729,970.54**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: BPRW8L

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00		$ -
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00		$ -
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00		$ -
	M	Joint Seal	LF	$5.00	37	$ 187.50
	H	Joint Seal	LF	$5.00		$ -
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00		$ -
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A		$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00		$ -
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 18.75
					Contigency (20%):	$ 41.25
					Total Cost:	**$ 247.50**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: RW8L/26R Keel

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	3	$ 75.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	2,584	$ 25,839.70
	M	Crack Seal (Linear)	LF	$10.00	40	$ 402.06
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	2,491	$ 12,454.80
	M	Joint Seal	LF	$5.00	5,692	$ 28,461.06
	H	Joint Seal	LF	$5.00	795	$ 3,975.46
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	8	$ 8,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	88	$ 176,000.00
	M	Partial Depth Patch	EA	$2,000.00	1	$ 2,000.00
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	1	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	330	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	24	$ 11,812.39
	M	Partial Depth Patch (Linear)	LF	$500.00	12	$ 5,929.76
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	2	$ 2,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 27,795.02
					Contigency (20%):	$ 61,149.05
					Total Cost:	**$ 366,894.29**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: RW8L/26R Outboard

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	2	$ 50.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	3,151	$ 31,505.82
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A	15	$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	656	$ 3,279.29
	M	Joint Seal	LF	$5.00	150	$ 751.62
	H	Joint Seal	LF	$5.00		$ -
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	5	$ 5,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	6	$ 12,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	101	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	47	$ 23,735.19
	M	Partial Depth Patch (Linear)	LF	$500.00	7	$ 3,494.58
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 7,981.65
					Contigency (20%):	$ 17,559.63
					Total Cost:	**$ 105,357.77**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: RW8R/26L Keel

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00		$ -
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	1,585	$ 15,849.35
	M	Crack Seal (Linear)	LF	$10.00	202	$ 2,016.23
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	909	$ 4,546.61
	M	Joint Seal	LF	$5.00	939	$ 4,692.52
	H	Joint Seal	LF	$5.00	360	$ 1,798.75
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	106	$ 106,000.00
	M	Partial Depth Patch	EA	$1,000.00	4	$ 4,000.00
	H	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00		$ -
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	20	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	3	$ 60,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	703	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	19	$ 9,698.47
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	12	$ 12,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 22,160.19
					Contigency (20%):	$ 48,752.42
					Total Cost:	**$ 292,514.54**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: RW8R/26L Outboard

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	2	$ 50.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	4,054	$ 40,542.37
	M	Crack Seal (Linear)	LF	$10.00	41	$ 409.19
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	9,792	$ 48,958.68
	M	Joint Seal	LF	$5.00	2,350	$ 11,749.25
	H	Joint Seal	LF	$5.00	1,281	$ 6,406.41
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	67	$ 67,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	1	$ 2,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	6	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	660	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	68	$ 33,962.41
	M	Partial Depth Patch (Linear)	LF	$500.00	2	$ 1,145.60
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	5	$ 5,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 21,822.39
					Contigency (20%):	$ 48,009.26
					Total Cost:	**$ 288,055.56**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: TLG

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00		$ -
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	32	$ 323.74
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00		$ -
	M	Joint Seal	LF	$5.00		$ -
	H	Joint Seal	LF	$5.00		$ -
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00		$ -
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A		$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00		$ -
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 32.37
					Contigency (20%):	$ 71.22
					Total Cost:	**$ 427.33**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: TLN1,TLN2

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	5	$ 125.00
	M	Crack Seal (Corner)	EA	$25.00	1	$ 25.00
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	1,442	$ 14,415.07
	M	Crack Seal (Linear)	LF	$10.00	55	$ 545.82
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	1,716	$ 8,578.25
	M	Joint Seal	LF	$5.00	952	$ 4,762.49
	H	Joint Seal	LF	$5.00	505	$ 2,524.87
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00		$ -
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	19	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	108	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	55	$ 27,596.75
	M	Partial Depth Patch (Linear)	LF	$500.00	25	$ 12,689.78
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	3	$ 3,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 7,726.30
					Contigency (20%):	$ 16,997.86
					Total Cost:	**$ 101,987.19**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: TWB

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	2	$ 50.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	20	$ 195.65
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	180	$ 900.52
	M	Joint Seal	LF	$5.00	51	$ 253.79
	H	Joint Seal	LF	$5.00	76	$ 379.40
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00		$ -
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	49	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	24	$ 12,225.12
	M	Partial Depth Patch (Linear)	LF	$500.00	12	$ 5,850.73
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 2,085.52
					Contigency (20%):	$ 4,588.15
					Total Cost:	**$ 27,528.88**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: TWCARGOS

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00		$ -
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	101	$ 1,014.27
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	59	$ 294.34
	M	Joint Seal	LF	$5.00	62	$ 310.74
	H	Joint Seal	LF	$5.00	7	$ 33.69
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00		$ -
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	13	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	17	$ 8,303.86
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 1,095.69
					Contigency (20%):	$ 2,410.52
					Total Cost:	**$ 14,463.11**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: TWD

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	1	$ 25.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	516	$ 5,161.60
	M	Crack Seal (Linear)	LF	$10.00	9	$ 91.66
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	610	$ 3,048.89
	M	Joint Seal	LF	$5.00	273	$ 1,367.12
	H	Joint Seal	LF	$5.00	206	$ 1,029.28
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	23	$ 23,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	6	$ 12,000.00
	M	Partial Depth Patch	EA	$2,000.00	2	$ 4,000.00
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	122	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	58	$ 29,148.89
	M	Partial Depth Patch (Linear)	LF	$500.00	3	$ 1,622.74
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 8,149.52
					Contigency (20%):	$ 17,928.94
					Total Cost:	**$ 107,573.63**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: TWF

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00		$ -
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	1,597	$ 15,972.90
	M	Crack Seal (Linear)	LF	$10.00	57	$ 569.07
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	1,167	$ 5,835.70
	M	Joint Seal	LF	$5.00	135	$ 673.56
	H	Joint Seal	LF	$5.00	30	$ 151.29
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	33	$ 33,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	5	$ 10,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	6	$ 120,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	170	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	127	$ 63,408.70
	M	Partial Depth Patch (Linear)	LF	$500.00	2	$ 1,218.89
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	2	$ 2,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 25,283.01
					Contigency (20%):	$ 55,622.62
					Total Cost:	**$ 333,735.74**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: TWK

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	2	$ 50.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	2,419	$ 24,189.12
	M	Crack Seal (Linear)	LF	$10.00	36	$ 363.86
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	1,673	$ 8,367.34
	M	Joint Seal	LF	$5.00	859	$ 4,294.32
	H	Joint Seal	LF	$5.00	320	$ 1,600.99
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	32	$ 32,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	10	$ 20,000.00
	M	Partial Depth Patch	EA	$2,000.00	1	$ 2,000.00
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00	1	$ 20,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	1	$ 20,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	278	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	94	$ 46,997.66
	M	Partial Depth Patch (Linear)	LF	$500.00	12	$ 6,113.09
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	4	$ 4,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 19,097.64
					Contigency (20%):	$ 42,014.80
					Total Cost:	**$ 252,088.82**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: TWL

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	1	$ 25.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00		$ -
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	400	$ 2,000.27
	M	Joint Seal	LF	$5.00	400	$ 1,999.79
	H	Joint Seal	LF	$5.00	11	$ 53.47
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	5	$ 5,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	6	$ 12,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	13	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	26	$ 12,944.21
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 3,502.27
					Contigency (20%):	$ 7,705.00
					Total Cost:	**$ 46,230.03**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: TWM

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00		$ -
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	100	$ 999.05
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	432	$ 2,161.62
	M	Joint Seal	LF	$5.00		$ -
	H	Joint Seal	LF	$5.00		$ -
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	8	$ 8,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00		$ -
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	39	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00		$ -
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	2	$ 2,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 1,316.07
					Contigency (20%):	$ 2,895.35
					Total Cost:	**$ 17,372.08**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: TWN

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	10	$ 250.00
	M	Crack Seal (Corner)	EA	$25.00	1	$ 25.00
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	3,305	$ 33,051.18
	M	Crack Seal (Linear)	LF	$10.00	228	$ 2,283.62
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	5,218	$ 26,088.86
	M	Joint Seal	LF	$5.00	1,378	$ 6,890.52
	H	Joint Seal	LF	$5.00	435	$ 2,173.95
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	67	$ 67,000.00
	M	Partial Depth Patch	EA	$1,000.00	2	$ 2,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	67	$ 134,000.00
	M	Partial Depth Patch	EA	$2,000.00	4	$ 8,000.00
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	14	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	3	$ 60,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	558	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	369	$ 184,633.39
	M	Partial Depth Patch (Linear)	LF	$500.00	17	$ 8,260.73
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	24	$ 24,058.36
	M	Partial Depth Patch	EA	$1,000.00	5	$ 5,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 56,371.56
					Contigency (20%):	$ 124,017.44
					Total Cost:	**$ 744,104.61**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: TWP

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	12	$ 300.00
	M	Crack Seal (Corner)	EA	$25.00	6	$ 150.00
	H	Full Depth Patch	EA	$3,000.00	1	$ 3,000.00
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	746	$ 7,458.23
	M	Crack Seal (Linear)	LF	$10.00	37	$ 370.85
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	1,686	$ 8,430.98
	M	Joint Seal	LF	$5.00	752	$ 3,759.15
	H	Joint Seal	LF	$5.00	48	$ 237.56
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	25	$ 25,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	41	$ 82,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	3	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	9	$ 180,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	157	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	45	$ 22,407.28
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	3	$ 3,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 33,811.41
					Contigency (20%):	$ 74,385.09
					Total Cost:	**$ 446,310.56**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: TWQ

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	2	$ 50.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	868	$ 8,678.39
	M	Crack Seal (Linear)	LF	$10.00	53	$ 526.31
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	593	$ 2,967.14
	M	Joint Seal	LF	$5.00	66	$ 330.88
	H	Joint Seal	LF	$5.00		$ -
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	31	$ 31,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	14	$ 28,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	85	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	11	$ 5,499.68
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 7,805.24
					Contigency (20%):	$ 17,171.53
					Total Cost:	**$ 103,029.17**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: TWR

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	5	$ 125.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	16	$ 155.64
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	743	$ 3,715.64
	M	Joint Seal	LF	$5.00	300	$ 1,499.18
	H	Joint Seal	LF	$5.00		$ -
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	2	$ 2,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	1	$ 2,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	5	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	8	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	23	$ 11,748.92
	M	Partial Depth Patch (Linear)	LF	$500.00	18	$ 8,792.57
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 3,103.70
					Contigency (20%):	$ 6,828.13
					Total Cost:	**$ 40,968.78**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: TWS

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	20	$ 500.00
	M	Crack Seal (Corner)	EA	$25.00	2	$ 50.00
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	10,671	$ 106,713.95
	M	Crack Seal (Linear)	LF	$10.00	673	$ 6,728.46
	H	Slab Replacement (Linear)	LF	$2,000.00	10	$ 20,000.00
Durability Cracking (64)	L	Monitor	N/A	N/A	4	$ -
	M	Monitor	N/A	N/A	2	$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	3,701	$ 18,505.00
	M	Joint Seal	LF	$5.00	1,415	$ 7,075.00
	H	Joint Seal	LF	$5.00	531	$ 2,655.00
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	50	$ 50,000.00
	M	Partial Depth Patch	EA	$1,000.00	7	$ 7,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	15	$ 30,000.00
	M	Partial Depth Patch	EA	$2,000.00	2	$ 4,000.00
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	13	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	31	$ 620,000.00
	M	Slab Replacement	EA	$20,000.00	2	$ 40,000.00
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	1,059	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	111	$ 55,500.00
	M	Partial Depth Patch (Linear)	LF	$500.00	57	$ 28,500.00
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	7	$ 7,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 100,522.74
					Contigency (20%):	$ 221,150.03
					Total Cost:	**$ 1,326,900.18**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: TWS2

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00		$ -
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	495	$ 4,950.00
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00	21	$ 42,000.00
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	67	$ 335.00
	M	Joint Seal	LF	$5.00		$ -
	H	Joint Seal	LF	$5.00		$ -
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00		$ -
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	2	$ 40,000.00
	M	Slab Replacement	EA	$20,000.00	3	$ 60,000.00
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	12	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00		$ -
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 14,728.50
					Contigency (20%):	$ 32,402.70
					Total Cost:	**$ 194,416.20**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: TWT

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00		$ -
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	281	$ 2,808.56
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	239	$ 1,196.53
	M	Joint Seal	LF	$5.00	14	$ 69.50
	H	Joint Seal	LF	$5.00		$ -
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	5	$ 5,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	8	$ 16,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00	1	$ 20,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	31	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00		$ -
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 4,607.46
					Contigency (20%):	$ 10,136.41
					Total Cost:	**$ 60,818.46**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: TWU

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	3	$ 75.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	307	$ 3,068.63
	M	Crack Seal (Linear)	LF	$10.00	11	$ 111.05
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	863	$ 4,314.95
	M	Joint Seal	LF	$5.00	350	$ 1,750.61
	H	Joint Seal	LF	$5.00	157	$ 786.67
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	41	$ 41,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	27	$ 54,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	116	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	53	$ 26,666.04
	M	Partial Depth Patch (Linear)	LF	$500.00	5	$ 2,369.00
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	2	$ 2,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 13,714.20
					Contigency (20%):	$ 30,171.23
					Total Cost:	**$ 181,027.38**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: TWV

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00		$ -
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	575	$ 5,753.41
	M	Crack Seal (Linear)	LF	$10.00	32	$ 319.27
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	310	$ 1,548.27
	M	Joint Seal	LF	$5.00	156	$ 778.88
	H	Joint Seal	LF	$5.00	38	$ 188.48
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	20	$ 20,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	10	$ 20,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	4	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	1	$ 20,000.00
	M	Slab Replacement	EA	$20,000.00	1	$ 20,000.00
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	76	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	1	$ 514.82
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00		$ -
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 9,010.31
					Contigency (20%):	$ 19,822.69
					Total Cost:	**$ 118,936.13**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: TWW

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	5	$ 125.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	1,573	$ 15,727.18
	M	Crack Seal (Linear)	LF	$10.00	21	$ 208.61
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	2,235	$ 11,173.52
	M	Joint Seal	LF	$5.00	1,365	$ 6,824.17
	H	Joint Seal	LF	$5.00	266	$ 1,329.31
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	82	$ 82,000.00
	M	Partial Depth Patch	EA	$1,000.00	6	$ 6,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	29	$ 58,000.00
	M	Partial Depth Patch	EA	$2,000.00	1	$ 2,000.00
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	5	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	2	$ 40,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	508	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	53	$ 26,319.96
	M	Partial Depth Patch (Linear)	LF	$500.00	3	$ 1,727.54
	H	Partial Depth Patch (Linear)	LF	$500.00	1	$ 568.33
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	2	$ 2,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 25,500.36
					Contigency (20%):	$ 56,100.80
					Total Cost:	**$ 336,604.79**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: TWW1,TWW2,TWW3

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	1	$ 25.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00		$ -
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	557	$ 2,783.19
	M	Joint Seal	LF	$5.00	59	$ 294.07
	H	Joint Seal	LF	$5.00		$ -
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	4	$ 4,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	1	$ 2,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	181	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	13	$ 6,674.76
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	4	$ 4,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 1,977.70
					Contigency (20%):	$ 4,350.94
					Total Cost:	**$ 26,105.67**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **APCARGOS**

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00	19,750	$ 79,000.00
	M	Full Depth Reconstruction	SF	$17.50	5,000	$ 87,500.00
	H	Full Depth Reconstruction	SF	$17.50	95,458	$ 1,670,515.00
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	42,068	$ 33,654.40
	M	Full Depth Reconstruction	SF	$17.50	6,274	$ 109,795.00
	H	Full Depth Reconstruction	SF	$17.50	27,779	$ 486,132.50
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	273	$ 545.38
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	36,770	$ 9,192.50
	M	Seal Coat	SF	$0.25	35,202	$ 8,800.50
	H	Seal Coat	SF	$0.25	53,108	$ 13,277.00
					Mobilization (10%):	$ 249,841.23
					Contigency (20%):	$ 549,650.70
					Total Cost:	**$ 3,297,904.21**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **APFEDEX**

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00	192,370	$ 769,480.00
	M	Full Depth Reconstruction	SF	$17.50	19,000	$ 332,500.00
	H	Full Depth Reconstruction	SF	$17.50	28,600	$ 500,500.00
Bleeding (42)	L	Monitor	N/A	N/A	3500.00	$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	300,395	$ 240,316.00
	M	Full Depth Reconstruction	SF	$17.50	14,750	$ 258,125.00
	H	Full Depth Reconstruction	SF	$17.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	1,405	$ 2,810.22
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	1,995	$ 9,975.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A	300	$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	571,628	$ 142,907.00
	M	Seal Coat	SF	$0.25	91,040	$ 22,760.00
	H	Seal Coat	SF	$0.25	137,590	$ 34,397.50
					Mobilization (10%):	$ 231,377.07
					Contigency (20%):	$ 509,029.56
					Total Cost:	**$ 3,054,177.35**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **APINTERM**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00	12,200	$ 48,800.00
	M	Full Depth Reconstruction	SF	$17.50	16,600	$ 290,500.00
	H	Full Depth Reconstruction	SF	$17.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	205,688	$ 164,550.40
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	2,348	$ 4,696.62
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	291,610	$ 72,902.50
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 58,144.95
					Contigency (20%):	$ 127,918.89
					Total Cost:	**$ 767,513.36**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **APMERCATL**

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00	51,830	$ 207,320.00
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50	16,500	$ 288,750.00
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	91,500	$ 73,200.00
	M	Full Depth Reconstruction	SF	$17.50	77,800	$ 1,361,500.00
	H	Full Depth Reconstruction	SF	$17.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	350	$ 1,750.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	72,690	$ 18,172.50
	M	Seal Coat	SF	$0.25	48,900	$ 12,225.00
	H	Seal Coat	SF	$0.25	21,490	$ 5,372.50
					Mobilization (10%):	$ 196,829.00
					Contigency (20%):	$ 433,023.80
					Total Cost:	**$ 2,598,142.80**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **APTERM2**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	12,860	$ 10,288.00
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00	2,873	$ 5,745.26
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	82	$ 164.67
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25		$ -
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 1,619.79
					Contigency (20%):	$ 3,563.55
					Total Cost:	**$ 21,381.27**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **BPRW26L**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	5,373	$ 10,745.99
	M	Crack Seal (Linear)	LF	$2.00	435	$ 870.41
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	3,650	$ 18,250.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	102,323	$ 25,580.75
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 5,544.72
					Contigency (20%):	$ 12,198.37
					Total Cost:	**$ 73,190.24**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **BPRW26R**

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	56,630	$ 45,304.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25		$ -
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 4,530.40
					Contigency (20%):	$ 9,966.88
					Total Cost:	**$ 59,801.28**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **BPRW8L**

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	869	$ 1,737.70
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25		$ -
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 173.77
					Contigency (20%):	$ 382.29
					Total Cost:	**$ 2,293.77**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **BPRW8R**

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00	1,946	$ 3,891.72
	H	Crack Seal (Linear)	LF	$2.00	19	$ 37.94
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	19,950	$ 99,750.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25		$ -
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 10,367.97
					Contigency (20%):	$ 22,809.53
					Total Cost:	**$ 136,857.15**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **SHAPTERM4**

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	2,000	$ 1,600.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	1,401	$ 2,801.17
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	30,509	$ 7,627.25
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 1,202.84
					Contigency (20%):	$ 2,646.25
					Total Cost:	**$ 15,877.51**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **SHRW8L**

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	125,670	$ 100,536.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00	6	$ 12.92
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	10,840	$ 21,680.88
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	1,940	$ 9,700.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	1,093,286	$ 273,321.50
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 40,525.13
					Contigency (20%):	$ 89,155.29
					Total Cost:	**$ 534,931.71**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **SHRW08R**

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	309,885	$ 247,908.00
	M	Full Depth Reconstruction	SF	$10.50	357,062	$ 3,749,151.00
	H	Full Depth Reconstruction	SF	$10.50	9,995	$ 104,947.50
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	7,514	$ 15,028.28
	M	Crack Seal (Linear)	LF	$2.00	217	$ 433.95
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	2	$ 10.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	462,873	$ 115,718.25
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 423,319.70
					Contigency (20%):	$ 931,303.34
					Total Cost:	**$ 5,587,820.01**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **SHTLN1,SHTLN2,SHTLN3,SHTLN4,SHTLN5**

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00	220	$ 880.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	126,180	$ 100,944.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	180,030	$ 45,007.50
	M	Seal Coat	SF	$0.25	5,700	$ 1,425.00
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 14,825.65
					Contigency (20%):	$ 32,616.43
					Total Cost:	**$ 195,698.58**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **SHTWB**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	1,407	$ 2,813.18
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25		$ -
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 281.32
					Contigency (20%):	$ 618.90
					Total Cost:	**$ 3,713.40**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **SHTWD**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	1,500	$ 1,200.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	197	$ 394.08
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	15,755	$ 3,938.75
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 553.28
					Contigency (20%):	$ 1,217.22
					Total Cost:	**$ 7,303.34**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **SHTWF**

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	76	$ 151.44
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	3	$ 15.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25		$ -
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 16.64
					Contigency (20%):	$ 36.62
					Total Cost:	**$ 219.70**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **SHTWK**

Prepared by: FC
RS&H Project No.: 2260047000
Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	7,820	$ 6,256.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	624	$ 1,247.55
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25		$ -
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 750.35
					Contigency (20%):	$ 1,650.78
					Total Cost:	**$ 9,904.68**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **SHTWN**

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	420,585	$ 336,468.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	7,326	$ 14,652.37
	M	Crack Seal (Linear)	LF	$2.00	215	$ 430.14
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	650	$ 3,250.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	401,724	$ 100,431.00
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 45,523.15
					Contigency (20%):	$ 100,150.93
					Total Cost:	**$ 600,905.59**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **SHTWP**

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	15,993	$ 12,794.40
	M	Full Depth Reconstruction	SF	$10.50	3,600	$ 37,800.00
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	200	$ 1,000.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	15,793	$ 3,948.25
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 5,554.27
					Contigency (20%):	$ 12,219.38
					Total Cost:	**$ 73,316.30**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **SHTWQ**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	15,731	$ 12,584.80
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	11,231	$ 2,807.75
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 1,539.26
					Contigency (20%):	$ 3,386.36
					Total Cost:	**$ 20,318.17**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **SHTWS**

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	245,020	$ 196,016.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00	200	$ 1,000.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	25,694	$ 51,388.89
	M	Crack Seal (Linear)	LF	$2.00	456	$ 912.00
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	285	$ 1,425.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	751,471	$ 187,867.75
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 43,860.96
					Contigency (20%):	$ 96,494.12
					Total Cost:	**$ 578,964.72**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **SHTWU**

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	3,923	$ 3,138.40
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	19,770	$ 4,942.50
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 808.09
					Contigency (20%):	$ 1,777.80
					Total Cost:	**$ 10,666.79**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **SHTWW**

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	39,480	$ 31,584.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	2,158	$ 4,315.66
	M	Crack Seal (Linear)	LF	$2.00	1,249	$ 2,498.62
	H	Crack Seal (Linear)	LF	$2.00	38	$ 75.67
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	119	$ 595.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	92,542	$ 23,135.50
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 6,220.45
					Contigency (20%):	$ 13,684.98
					Total Cost:	**$ 82,109.88**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **TLG**

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00	1,950	$ 7,800.00
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	45,290	$ 36,232.00
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	50	$ 100.09
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	40,990	$ 10,247.50
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 5,437.96
					Contigency (20%):	$ 11,963.51
					Total Cost:	**$ 71,781.05**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **TLH**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00	140	$ 560.00
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	7,050	$ 5,640.00
	M	Full Depth Reconstruction	SF	$17.50	200	$ 3,500.00
	H	Full Depth Reconstruction	SF	$17.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	269	$ 537.73
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	40,240	$ 10,060.00
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 2,029.77
					Contigency (20%):	$ 4,465.50
					Total Cost:	**$ 26,793.01**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: **TLJ**

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	700	$ 560.00
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	110	$ 219.09
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	4,300	$ 1,075.00
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 185.41
					Contigency (20%):	$ 407.90
					Total Cost:	**$ 2,447.40**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: TWS1

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00	20,400	$ 81,600.00
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	23,500	$ 18,800.00
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	53,310	$ 13,327.50
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 11,372.75
					Contigency (20%):	$ 25,020.05
					Total Cost:	**$ 150,120.30**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: **TWS3**

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00	20,400	$ 81,600.00
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	23,500	$ 18,800.00
	M	Full Depth Reconstruction	SF	$17.50		$ -
	H	Full Depth Reconstruction	SF	$17.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	53,310	$ 13,327.50
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 11,372.75
					Contigency (20%):	$ 25,020.05
					Total Cost:	**$ 150,120.30**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: VSR East

RS&H

Prepared by: FC
RS&H Project No.: 2260047000
Date Prepared: 2/5/2020

Location	Length (ft)	Recommended Repair Type											
		Crack Seal			Seal Coat			Mill & Overlay			Full Depth Reconstruction		
		Quantity (ft)	Unit Cost ($/ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost
Northern Taxiway W connection to newly constructed area of VSR East behind Runway 26R Blast Pad	1,400	-	$ 2.00	$ -	-	$ 0.25	$ -	-	$ 4.00	$ -	33,600	$ 14.00	$ 470,400.00
Newly constructed area of VSR East East of Runway 26R Blast Pad	540	-	$ 2.00	$ -	-	$ 0.25	$ -	-	$ 4.00	$ -	-	$ 14.00	$ -
Newly constructed area of VSR East behind Runway 26R Blast Pad to southern Taxiway W connection	1,850	-	$ 2.00	$ -	-	$ 0.25	$ -	-	$ 4.00	$ -	44,400	$ 14.00	$ 621,600.00
Sub Total		**$ -**			**$ -**			**$ -**			**$ 1,092,000.00**		
Mobilization (10%):		**$ 109,200.00**											
Contingency (20%):		**$ 240,240.00**											
Total		**$ 1,441,440.00**											

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: VSR North

RS&H

Prepared by: FC
RS&H Project No.: 2260047000
Date Prepared: 2/5/2020

Location	Length (ft)	Recommended Repair Type											
		Crack Seal			Seal Coat			Mill & Overlay			Full Depth Reconstruction		
		Quantity (ft)	Unit Cost ($/ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost
Taxiway B to Taxilane G	4,100	-	$ 2.00	$ -	-	$ 0.25	$ -	49,200	$ 4.00	$ 196,800.00	49,200	$ 14.00	$ 688,800.00
Taxilane G to 150' before Taxilane H	450	-	$ 2.00	$ -	-	$ 0.25	$ -	-	$ 4.00	$ -	10,800	$ 14.00	$ 151,200.00
150' before Taxilane H to Taxilane H	150	-	$ 2.00	$ -	1,800	$ 0.25	$ 450.00	-	$ 4.00	$ -	1,800	$ 14.00	$ 25,200.00
200' after Taxilane H	200	600	$ 2.00	$ 1,200.00	4,800	$ 0.25	$ 1,200.00	-	$ 4.00	$ -	-	$ 14.00	$ -
200' after Taxilane H to Cucamonga Channel Bridge	975	-	$ 2.00	$ -	-	$ 0.25	$ -	23,400	$ 4.00	$ 93,600.00	-	$ 14.00	$ -
Cucamonga Channel Bridge to Terminal Way Gate (North - South)	630	3,150	$ 2.00	$ 6,300.00	15,120	$ 0.25	$ 3,780.00	-	$ 4.00	$ -	-	$ 14.00	$ -
Taxiway P to Taxiway R	1,100	1,100	$ 2.00	$ 2,200.00	22,000	$ 0.25	$ 5,500.00	22,000	$ 4.00	$ 88,000.00	-	$ 14.00	$ -
Taxiway R to Taxiway U	1,600	6,400	$ 2.00	$ 12,800.00	64,000	$ 0.25	$ 16,000.00	-	$ 4.00	$ -	-	$ 14.00	$ -
Taxiway U to Taxiway W	1,850	3,700	$ 2.00	$ 7,400.00	55,500	$ 0.25	$ 13,875.00	18,500	$ 4.00	$ 74,000.00	-	$ 14.00	$ -
Sub Total		**$ 29,900.00**			**$ 40,805.00**			**$ 452,400.00**			**$ 865,200.00**		
Mobilization (10%):		**$ 138,830.50**											
Contingency (20%):		**$ 305,427.10**											
Total		**$ 1,832,562.60**											

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: VSR South

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Location	Length (ft)	Recommended Repair Type											
		Crack Seal			Seal Coat			Mill & Overlay			Full Depth Reconstruction		
		Quantity (ft)	Unit Cost ($/ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost
VSR West to Taxiway S1	550	1,100	$ 2.00	$ 2,200.00	16,500	$ 0.25	$ 4,125.00	-	$ 4.00	$ -	-	$ 14.00	$ -
Taxiway S1 to Taxiway S2	300	-	$ 2.00	$ -	-	$ 0.25	$ -	4,500	$ 4.00	$ 18,000.00	4,500	$ 14.00	$ 63,000.00
Taxiway S2 to End of FedEx Apron	1,350	2,700	$ 2.00	$ 5,400.00	40,500	$ 0.25	$ 10,125.00	-	$ 4.00	$ -	2,700	$ 14.00	$ 37,800.00
End of FedEx Apron to Taxiway Cargo South	1,550	4,650	$ 2.00	$ 9,300.00	46,500	$ 0.25	$ 11,625.00	-	$ 4.00	$ -	-	$ 14.00	$ -
Cucamonga Channel Bridge to Taxiway S5	4,600	18,400	$ 2.00	$ 36,800.00	69,000	$ 0.25	$ 17,250.00	69,000	$ 4.00	$ 276,000.00	-	$ 14.00	$ -
Sub Total		**$ 53,700.00**			**$ 43,125.00**			**$ 294,000.00**			**$ 100,800.00**		
Mobilization (10%):		**$ 49,162.50**											
Contingency (20%):		**$ 108,157.50**											
Total		**$ 648,945.00**											

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Location: Ontario International Airport

Project Description: Airside APMS

Engineer's Estimate of Probable Maintenance Cost Based on Observed Airside Pavement Distresses

Branch: VSR West

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Location	Length (ft)	Crack Seal Quantity (ft)	Crack Seal Unit Cost ($/ft)	Crack Seal Total Cost	Seal Coat Quantity (sq ft)	Seal Coat Unit Cost ($/sq ft)	Seal Coat Total Cost	Mill & Overlay Quantity (sq ft)	Mill & Overlay Unit Cost ($/sq ft)	Mill & Overlay Total Cost	Full Depth Reconstruction Quantity (sq ft)	Full Depth Reconstruction Unit Cost ($/sq ft)	Full Depth Reconstruction Total Cost
Taxiway B to Flood Control Bridge #1	1,000	500	$ 2.00	$ 1,000.00	-	$ 0.25	$ -	-	$ 4.00	$ -	5,000	$ 14.00	$ 70,000.00
#1 Bridge to #2 Bridge. West of Runway 8L Blast Pad	1,700	1,700	$ 2.00	$ 3,400.00	34,000	$ 0.25	$ 8,500.00	-	$ 4.00	$ -	-	$ 14.00	$ -
Flood Control Bridge #2 to VSR South Connection	4,600	-	$ 2.00	$ -	-	$ 0.25	$ -	-	$ 4.00	$ -	110,400	$ 14.00	$ 1,545,600.00
Sub Total		**$ 4,400.00**			**$ 8,500.00**			**$ -**			**$ 1,615,600.00**		
Mobilization (10%):		**$ 162,850.00**											
Contingency (20%):		**$ 358,270.00**											
Total		**$ 2,149,620.00**											

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

APPENDIX G

10 YEAR "NO ACTION" ANALYSIS

TABLE C-1: RUNWAY 10 YEAR "NO ACTION" RESULTS

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
BPRW26L	01E	73.0	72.3	71.7	71.0	70.4	69.7	69.0	68.4	67.7	67.1
BPRW26R	01E	69.0	66.9	64.8	62.7	60.7	58.6	56.5	54.4	52.3	50.2
BPRW8L	01W	97.0	96.8	96.6	96.4	96.2	96.0	95.8	95.6	95.4	95.2
	02W	93.0	92.5	92.1	91.6	91.1	90.6	90.2	89.7	89.2	88.8
BPRW8R	01W	74.0	73.4	72.7	72.1	71.5	70.8	70.2	69.5	68.9	68.3
RW8L/26R	01C	95.0	94.7	94.3	94.0	93.7	93.3	93.0	92.6	92.3	92.0
	01N	99.0	98.9	98.9	98.8	98.7	98.7	98.6	98.5	98.5	98.4
	01S	99.0	98.9	98.9	98.8	98.7	98.7	98.6	98.5	98.5	98.4
	02C	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	02N	99.0	98.9	98.9	98.8	98.7	98.7	98.6	98.5	98.5	98.4
	02S	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	03C	88.0	87.2	86.4	85.6	84.8	84.0	83.2	82.3	81.5	80.7
	03N	99.0	98.9	98.9	98.8	98.7	98.7	98.6	98.5	98.5	98.4
	03S	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	04C	89.0	88.3	87.5	86.8	86.0	85.3	84.6	83.8	83.1	82.3
	04N	98.0	97.9	97.7	97.6	97.5	97.3	97.2	97.1	96.9	96.8
	04S	99.0	98.9	98.9	98.8	98.7	98.7	98.6	98.5	98.5	98.4
	05C	87.0	86.1	85.3	84.4	83.5	82.6	81.8	80.9	80.0	79.1
	05N	98.0	97.9	97.7	97.6	97.5	97.3	97.2	97.1	96.9	96.8
	05S	98.0	97.9	97.7	97.6	97.5	97.3	97.2	97.1	96.9	96.8
	06C	61.0	59.8	58.6	57.4	56.3	55.1	53.9	52.7	51.5	50.3
	06N	87.0	86.6	86.2	85.8	85.4	85.0	84.6	84.2	83.8	83.4
	06S	77.0	76.3	75.6	74.9	74.2	73.5	72.8	72.1	71.4	70.7
	07C	63.0	61.9	60.8	59.6	58.5	57.4	56.2	55.1	54.0	52.9
	07N	84.0	83.5	83.0	82.5	82.1	81.6	81.1	80.6	80.1	79.6
	07S	74.0	73.2	72.4	71.6	70.8	70.0	69.3	68.5	67.7	66.9
RW8R/26L	01C	81.0	80.5	80.1	79.6	79.1	78.6	78.1	77.7	77.2	76.7
	01N	85.0	84.6	84.3	83.9	83.5	83.1	82.7	82.4	82.0	81.6
	01S	78.0	77.5	76.9	76.3	75.8	75.2	74.7	74.1	73.6	73.0
	02C	73.0	72.3	71.6	71.0	70.3	69.6	68.9	68.3	67.6	66.9
	02N	77.0	76.4	75.9	75.3	74.7	74.1	73.5	73.0	72.4	71.8
	02S	74.0	73.4	72.7	72.0	71.4	70.7	70.1	69.4	68.8	68.1
	03C	70.0	69.3	68.5	67.7	67.0	66.2	65.5	64.7	64.0	63.2
	03N	85.0	84.6	84.3	83.9	83.5	83.1	82.7	82.4	82.0	81.6
	03S	78.0	77.5	76.9	76.3	75.8	75.2	74.7	74.1	73.6	73.0
	04C	51.0	49.5	48.0	46.5	45.0	43.5	42.1	40.6	39.1	37.6
	04N	80.0	79.4	78.8	78.2	77.6	77.0	76.4	75.7	75.1	74.5
	04S	71.0	70.1	69.2	68.4	67.5	66.6	65.7	64.8	63.9	63.1
	05C	55.0	53.9	52.7	51.6	50.5	49.4	48.2	47.1	46.0	44.8
	05N	74.0	73.4	72.7	72.0	71.4	70.7	70.1	69.4	68.8	68.1

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	05S	77.0	76.4	75.9	75.3	74.7	74.1	73.5	73.0	72.4	71.8
	06C	73.0	72.3	71.6	71.0	70.3	69.6	68.9	68.3	67.6	66.9
	06N	83.0	82.6	82.2	81.7	81.3	80.9	80.4	80.0	79.6	79.2
	06S	83.0	82.6	82.2	81.7	81.3	80.9	80.4	80.0	79.6	79.2
SHRW8L	01N	66.0	64.6	63.2	61.7	60.3	58.9	57.5	56.0	54.6	53.2
	02N	82.0	80.8	79.6	78.4	77.2	75.9	74.7	73.5	72.3	71.1
	04N	93.0	92.5	92.1	91.6	91.1	90.6	90.2	89.7	89.2	88.8
	05S	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	06N	94.0	93.6	93.3	92.9	92.6	92.2	91.9	91.5	91.2	90.8
	07N	91.0	90.5	89.9	89.4	88.9	88.3	87.8	87.3	86.7	86.2
	09N	93.0	92.5	92.1	91.6	91.1	90.6	90.2	89.7	89.2	88.8
	11N	69.0	67.2	65.3	63.5	61.6	59.8	58.0	56.1	54.3	52.4
	11S	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	12N	69.0	67.2	65.3	63.5	61.6	59.8	58.0	56.1	54.3	52.4
	13S	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	14N	93.0	92.5	92.1	91.6	91.1	90.6	90.2	89.7	89.2	88.8
	15N	65.0	62.9	60.8	58.8	56.7	54.6	52.5	50.5	48.4	46.3
	15S	93.0	92.5	92.1	91.6	91.1	90.6	90.2	89.7	89.2	88.8
	16N	82.0	81.2	80.5	79.7	79.0	78.2	77.5	76.7	76.0	75.2
	17S	69.0	67.2	65.3	63.5	61.6	59.8	58.0	56.1	54.3	52.4
	18N	92.0	91.5	90.9	90.4	89.9	89.3	88.8	88.2	87.7	87.2
	18S	70.0	68.2	66.4	64.7	62.9	61.1	59.3	57.5	55.8	54.0
	20N	85.0	84.4	83.7	83.1	82.5	81.9	81.2	80.6	80.0	79.3
	20S	93.0	92.5	92.1	91.6	91.1	90.6	90.2	89.7	89.2	88.8
	21N	66.0	64.6	63.2	61.7	60.3	58.9	57.5	56.0	54.6	53.2
	21S	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	23N	89.0	88.3	87.5	86.8	86.0	85.3	84.6	83.8	83.1	82.3
	23S	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	25N	70.0	68.7	67.5	66.2	65.0	63.7	62.5	61.2	59.9	58.7
	25S	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	26N	72.0	70.8	69.7	68.5	67.3	66.1	65.0	63.8	62.6	61.4
	28N	93.0	92.5	92.1	91.6	91.1	90.6	90.2	89.7	89.2	88.8
	30N	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	30S	90.0	89.3	88.7	88.0	87.3	86.6	86.0	85.3	84.6	83.9
	31S	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	32N	88.0	87.2	86.4	85.6	84.8	84.0	83.2	82.3	81.5	80.7
	33S	78.0	76.5	75.0	73.6	72.1	70.6	69.1	67.6	66.2	64.7
	34N	60.0	58.3	56.6	55.0	53.3	51.6	49.9	48.3	46.6	44.9
	35N	65.0	63.5	62.1	60.6	59.1	57.7	56.2	54.7	53.3	51.8
	35S	89.0	88.3	87.5	86.8	86.0	85.3	84.6	83.8	83.1	82.3
	37S	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	38N	80.0	79.4	78.8	78.2	77.6	77.0	76.4	75.7	75.1	74.5
	38S	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	40N	69.0	67.7	66.4	65.1	63.8	62.5	61.2	59.9	58.6	57.3
	40S	68.0	67.0	66.1	65.1	64.1	63.1	62.2	61.2	60.2	59.2
	41N	65.0	63.5	62.1	60.6	59.1	57.7	56.2	54.7	53.3	51.8
	42N	68.0	66.7	65.3	64.0	62.6	61.3	60.0	58.6	57.3	55.9
	43S	87.0	86.1	85.3	84.4	83.5	82.6	81.8	80.9	80.0	79.1
	44S	67.0	65.6	64.2	62.9	61.5	60.1	58.7	57.3	55.9	54.6
SHRW8R	01N	86.0	85.6	85.2	84.7	84.3	83.9	83.4	83.0	82.6	82.2
	02N	94.0	93.8	93.6	93.5	93.3	93.1	92.9	92.7	92.5	92.4
	02S	91.0	90.4	89.8	89.2	88.6	88.0	87.4	86.8	86.2	85.6
	03N	59.0	57.8	56.5	55.3	54.0	52.8	51.5	50.3	49.0	47.8
	03S	89.0	88.3	87.5	86.8	86.0	85.3	84.6	83.8	83.1	82.3
	05N	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	05S	57.0	55.7	54.4	53.1	51.8	50.5	49.2	47.8	46.5	45.2
	06N	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	06S	67.0	65.8	64.6	63.5	62.3	61.1	59.9	58.7	57.5	56.3
	07S	73.0	72.0	71.1	70.1	69.1	68.2	67.2	66.2	65.3	64.3
	08N	91.0	90.7	90.5	90.2	89.9	89.6	89.4	89.1	88.8	88.5
	08S	60.0	58.8	57.6	56.4	55.1	53.9	52.7	51.5	50.3	49.0
	09N	88.0	87.6	87.3	86.9	86.5	86.2	85.8	85.4	85.1	84.7
	09S	83.0	82.4	81.8	81.2	80.6	80.0	79.3	78.7	78.1	77.5
	10N	61.0	59.8	58.6	57.4	56.3	55.1	53.9	52.7	51.5	50.3
	10S	82.0	81.4	80.7	80.1	79.4	78.8	78.1	77.5	76.8	76.2
	11N	60.0	58.8	57.6	56.4	55.1	53.9	52.7	51.5	50.3	49.0
	11S	42.0	40.2	38.5	36.7	34.9	33.2	31.4	29.6	27.9	26.1
	12N	50.0	48.5	47.0	45.4	43.9	42.4	40.9	39.4	37.8	36.3
	12S	90.0	89.6	89.3	88.9	88.6	88.2	87.9	87.5	87.1	86.8
	13N	84.0	83.4	82.9	82.3	81.7	81.1	80.6	80.0	79.4	78.8
	13S	90.0	89.6	89.3	88.9	88.6	88.2	87.9	87.5	87.1	86.8
	14N	90.0	89.6	89.3	88.9	88.6	88.2	87.9	87.5	87.1	86.8
	14S	68.0	67.0	66.1	65.1	64.1	63.1	62.2	61.2	60.2	59.2
	15N	49.0	47.4	45.9	44.3	42.8	41.2	39.7	38.1	36.6	35.0
	15S	85.0	84.5	83.9	83.4	82.9	82.3	81.8	81.2	80.7	80.2
	16S	87.0	86.5	86.1	85.6	85.1	84.7	84.2	83.7	83.3	82.8
	17N	64.0	61.6	59.2	56.7	54.3	51.9	49.5	47.0	44.6	42.2
	17S	59.0	57.8	56.5	55.3	54.0	52.8	51.5	50.3	49.0	47.8
	18N	67.0	66.0	65.0	64.0	63.0	62.0	61.0	60.0	59.0	58.0
	18S	66.0	64.8	63.6	62.3	61.1	59.9	58.7	57.5	56.2	55.0
	19S	84.0	83.4	82.9	82.3	81.7	81.1	80.6	80.0	79.4	78.8
	20S	50.0	48.5	47.0	45.4	43.9	42.4	40.9	39.4	37.8	36.3

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	22S	95.0	94.7	94.3	94.0	93.7	93.3	93.0	92.6	92.3	92.0
	23S	96.0	95.7	95.5	95.2	94.9	94.7	94.4	94.1	93.9	93.6
	25S	47.0	45.4	43.8	42.2	40.6	38.9	37.3	35.7	34.1	32.5
	26S	78.0	77.2	76.4	75.6	74.8	74.1	73.3	72.5	71.7	70.9
	27S	64.0	62.9	61.8	60.7	59.6	58.5	57.4	56.3	55.2	54.1

TABLE C-2: TAXIWAY 10 YEAR "NO ACTION" RESULTS

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
SHTLN1	01S	69.0	67.7	66.4	65.1	63.8	62.5	61.2	59.9	58.6	57.3
	03S	64.0	62.5	61.0	59.5	58.0	56.5	54.9	53.4	51.9	50.4
	05S	64.0	62.5	61.0	59.5	58.0	56.5	54.9	53.4	51.9	50.4
	07S	63.0	61.5	59.9	58.4	56.8	55.2	53.7	52.1	50.6	49.0
	09S	68.0	66.7	65.3	64.0	62.6	61.3	60.0	58.6	57.3	55.9
SHTWB	01E	82.0	80.9	79.9	78.8	77.7	76.7	75.6	74.5	73.5	72.4
	02W	84.0	83.1	82.1	81.2	80.2	79.3	78.3	77.4	76.4	75.5
SHTWD	01E	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	02W	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	03E	88.0	87.7	87.4	87.1	86.8	86.5	86.2	85.9	85.6	85.3
	03W	81.0	80.5	80.1	79.6	79.1	78.6	78.2	77.7	77.2	76.7
SHTWF	01E	62.0	60.6	59.3	57.9	56.5	55.2	53.8	52.5	51.1	49.7
	02W	57.0	55.5	53.9	52.4	50.8	49.3	47.7	46.2	44.7	43.1
SHTWK	01E	71.0	70.3	69.6	68.8	68.1	67.4	66.6	65.9	65.2	64.5
	01W	94.0	93.8	93.6	93.5	93.3	93.1	92.9	92.7	92.5	92.4
	02E	79.0	78.4	77.7	77.1	76.4	75.8	75.2	74.5	73.9	73.3
SHTWN	01N	85.0	84.1	83.3	82.4	81.5	80.7	79.8	78.9	78.1	77.2
SHTWN	01S	90.0	89.3	88.7	88.0	87.3	86.6	86.0	85.3	84.6	83.9
	03N	81.0	79.9	78.7	77.6	76.5	75.4	74.2	73.1	72.0	70.9
	03S	94.0	93.6	93.3	92.9	92.6	92.2	91.9	91.5	91.2	90.8
	05N	86.0	85.2	84.3	83.5	82.7	81.9	81.0	80.2	79.4	78.5
	05S	70.0	68.2	66.4	64.7	62.9	61.1	59.3	57.5	55.8	54.0
	07N	68.0	66.1	64.2	62.3	60.4	58.5	56.6	54.7	52.8	50.9
	07S	65.0	62.9	60.8	58.8	56.7	54.6	52.5	50.5	48.4	46.3
	09N	66.0	64.0	62.0	60.0	57.9	55.9	53.9	51.9	49.9	47.8
	09S	68.0	66.7	65.3	64.0	62.6	61.3	60.0	58.6	57.3	55.9
	10N	80.0	78.8	77.7	76.5	75.4	74.2	73.1	71.9	70.7	69.6
	11N	64.0	61.9	59.8	57.8	55.7	53.6	51.5	49.4	47.3	45.2
	11S	66.0	64.6	63.2	61.7	60.3	58.9	57.5	56.0	54.6	53.2
	12N	60.0	57.7	55.4	53.1	50.7	48.4	46.1	43.8	41.5	39.2
	13N	66.0	64.6	63.2	61.7	60.3	58.9	57.5	56.0	54.6	53.2
	13S	70.0	68.7	67.5	66.2	65.0	63.7	62.5	61.2	59.9	58.7
	15N	68.0	66.7	65.3	64.0	62.6	61.3	60.0	58.6	57.3	55.9
	15S	70.0	68.7	67.5	66.2	65.0	63.7	62.5	61.2	59.9	58.7
	16N	67.0	65.6	64.2	62.9	61.5	60.1	58.7	57.3	55.9	54.6
	18N	88.0	87.5	87.0	86.5	86.0	85.5	85.0	84.5	84.0	83.5
	18S	92.0	91.5	90.9	90.4	89.9	89.3	88.8	88.2	87.7	87.2
	19S	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	20N	61.0	59.4	57.7	56.1	54.5	52.8	51.2	49.6	47.9	46.3

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	21S	63.0	61.5	59.9	58.4	56.8	55.2	53.7	52.1	50.6	49.0
	23N	59.0	56.6	54.3	51.9	49.5	47.1	44.8	42.4	40.0	37.6
	23S	75.0	74.0	72.9	71.9	70.8	69.8	68.7	67.7	66.6	65.6
	25N	77.0	76.0	75.1	74.1	73.1	72.2	71.2	70.3	69.3	68.3
	25S	62.0	59.8	57.6	55.4	53.2	51.0	48.8	46.6	44.4	42.2
	26N	65.0	63.5	62.1	60.6	59.1	57.7	56.2	54.7	53.3	51.8
	27S	66.0	64.6	63.2	61.7	60.3	58.9	57.5	56.0	54.6	53.2
	28S	58.0	56.2	54.5	52.7	51.0	49.2	47.4	45.7	43.9	42.2
SHTWP	01E	59.0	57.8	56.5	55.3	54.0	52.8	51.5	50.3	49.0	47.8
	01W	64.0	63.1	62.2	61.3	60.4	59.5	58.6	57.7	56.8	55.9
	02W	59.0	57.8	56.5	55.3	54.0	52.8	51.5	50.3	49.0	47.8
SHTWQ	01E	62.0	60.8	59.7	58.5	57.4	56.2	55.1	53.9	52.8	51.6
	01W	59.0	57.8	56.5	55.3	54.0	52.8	51.5	50.3	49.0	47.8
SHTWS	01N	84.0	82.9	81.8	80.8	79.7	78.6	77.5	76.5	75.4	74.3
	02S	89.0	88.3	87.5	86.8	86.0	85.3	84.6	83.8	83.1	82.3
	03N	62.0	60.6	59.3	57.9	56.5	55.2	53.8	52.5	51.1	49.7
	03S	62.0	60.6	59.3	57.9	56.5	55.2	53.8	52.5	51.1	49.7
	04N	63.0	61.7	60.3	59.0	57.7	56.4	55.0	53.7	52.4	51.0
	04S	76.0	75.1	74.3	73.4	72.6	71.7	70.8	70.0	69.1	68.2
	05N	82.0	81.4	80.7	80.1	79.4	78.8	78.1	77.5	76.8	76.2
	05S	62.0	60.6	59.3	57.9	56.5	55.2	53.8	52.5	51.1	49.7
	06N	83.0	82.4	81.8	81.2	80.6	80.0	79.3	78.7	78.1	77.5
	06S	80.0	79.3	78.6	77.9	77.1	76.4	75.7	75.0	74.3	73.5
	07N	84.0	83.4	82.9	82.3	81.7	81.1	80.6	80.0	79.4	78.8
	07S	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	08N	82.0	81.4	80.7	80.1	79.4	78.8	78.1	77.5	76.8	76.2
	08S	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	09N	92.0	91.5	90.9	90.4	89.9	89.3	88.8	88.2	87.7	87.2
	09S	81.0	80.3	79.6	79.0	78.3	77.6	76.9	76.2	75.5	74.9
	11N	90.0	89.3	88.7	88.0	87.3	86.6	86.0	85.3	84.6	83.9
	13N	83.0	82.4	81.8	81.2	80.6	80.0	79.3	78.7	78.1	77.5
SHTWU	01E	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	02W	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
	03E	94.0	93.8	93.6	93.4	93.1	92.9	92.7	92.5	92.3	92.1
	03W	81.0	80.3	79.6	79.0	78.3	77.6	76.9	76.2	75.5	74.9
SHTWW	01E	67.0	65.6	64.2	62.9	61.5	60.1	58.7	57.3	55.9	54.6
	02E	64.0	62.5	61.0	59.6	58.1	56.6	55.1	53.6	52.1	50.7
	02W	80.0	78.7	77.3	76.0	74.6	73.3	71.9	70.6	69.2	67.9
	03E	83.0	82.3	81.6	80.9	80.2	79.5	78.8	78.1	77.4	76.7
	03W	77.0	75.5	73.9	72.4	70.8	69.3	67.7	66.2	64.6	63.1
	04E	72.0	70.1	68.2	66.3	64.5	62.6	60.7	58.8	56.9	55.0

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	04W	75.0	73.3	71.6	70.0	68.3	66.6	64.9	63.2	61.5	59.9
	06E	75.0	73.3	71.6	70.0	68.3	66.6	64.9	63.2	61.5	59.9
	06W	72.0	70.1	68.2	66.3	64.5	62.6	60.7	58.8	56.9	55.0
TLG	01	84.0	80.8	77.6	74.3	71.1	67.9	64.7	61.4	58.2	55.0
	02	61.0	53.1	45.3	37.4	29.6	21.7	13.9	6.0	0.0	0.0
TLH	01	84.0	83.1	82.2	81.2	80.3	79.4	78.4	77.5	76.6	75.7
	02	59.0	56.6	54.3	51.9	49.5	47.1	44.8	42.4	40.0	37.6
TLJ	01	96.0	95.8	95.5	95.3	95.1	94.8	94.6	94.4	94.2	93.9
	02	81.0	79.9	78.8	77.7	76.6	75.5	74.4	73.3	72.2	71.1
TLN1	01	90.0	89.6	89.2	88.7	88.3	87.9	87.5	87.1	86.7	86.2
	02	87.0	86.5	85.9	85.4	84.8	84.3	83.7	83.2	82.6	82.1
TWB	01	61.0	59.8	58.6	57.4	56.3	55.1	53.9	52.7	51.5	50.3
	02	84.0	83.1	82.1	81.2	80.2	79.3	78.3	77.4	76.4	75.5
TWD	01	94.0	93.6	93.3	92.9	92.6	92.2	91.9	91.5	91.2	90.8
	02	82.0	80.9	79.9	78.8	77.7	76.7	75.6	74.5	73.5	72.4
	03	92.0	91.5	91.1	90.6	90.1	89.6	89.2	88.7	88.2	87.7
	04	96.0	95.7	95.5	95.2	94.9	94.7	94.4	94.1	93.9	93.6
	05	84.0	83.6	83.2	82.8	82.4	82.0	81.6	81.2	80.8	80.4
	06	64.0	63.1	62.2	61.3	60.4	59.5	58.6	57.7	56.8	55.9
	07	97.0	96.9	96.9	96.8	96.7	96.6	96.6	96.5	96.4	96.3
	08	86.0	85.7	85.3	85.0	84.6	84.3	83.9	83.6	83.2	82.8
	09	75.0	74.4	73.8	73.1	72.5	71.9	71.2	70.6	70.0	69.4
	10	62.0	61.1	60.1	59.2	58.2	57.2	56.3	55.3	54.4	53.4
TWF	01	93.0	92.6	92.2	91.8	91.3	90.9	90.5	90.1	89.7	89.3
	02	83.0	82.0	81.0	80.0	79.0	78.0	77.0	75.9	74.9	73.9
	03	89.0	88.4	87.7	87.0	86.4	85.7	85.1	84.4	83.8	83.1
	04	96.0	95.8	95.5	95.3	95.1	94.8	94.6	94.3	94.1	93.9
	05	78.0	77.2	76.4	75.6	74.8	74.1	73.3	72.5	71.7	70.9
	06	61.0	59.6	58.2	56.8	55.4	54.0	52.6	51.2	49.8	48.4
	07	77.0	76.2	75.4	74.5	73.7	72.9	72.0	71.2	70.4	69.6
	08	68.0	66.9	65.7	64.6	63.4	62.3	61.1	60.0	58.8	57.7
	09	56.0	54.4	52.8	51.3	49.7	48.1	46.5	44.9	43.4	41.8
TWK	01	91.0	90.5	89.9	89.4	88.9	88.3	87.8	87.3	86.7	86.2
	02	62.0	60.6	59.3	57.9	56.5	55.2	53.8	52.5	51.1	49.7
	03	86.0	85.2	84.3	83.5	82.7	81.9	81.0	80.2	79.4	78.5
	04	94.0	93.6	93.3	92.9	92.6	92.2	91.9	91.5	91.2	90.8
	05	88.0	87.3	86.6	85.9	85.2	84.4	83.7	83.0	82.3	81.6
	06	67.0	65.8	64.6	63.5	62.3	61.1	59.9	58.7	57.5	56.3
	07	68.0	66.9	65.7	64.6	63.4	62.3	61.1	60.0	58.8	57.7
	08	72.0	71.0	70.0	69.0	68.0	67.0	66.0	65.0	64.0	63.0
	09	65.0	63.7	62.5	61.2	60.0	58.7	57.5	56.2	55.0	53.7

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
TWL	01	88.0	87.5	87.0	86.5	86.0	85.5	85.0	84.5	84.0	83.5
	02	76.0	75.0	74.0	73.0	72.0	71.0	70.0	69.0	68.0	66.9
TWM	02	69.0	67.9	66.8	65.7	64.6	63.4	62.3	61.2	60.1	59.0
	04	78.0	77.2	76.4	75.6	74.8	74.1	73.3	72.5	71.7	70.9
	05	79.0	78.2	77.5	76.7	76.0	75.2	74.5	73.7	73.0	72.2
TWN	01	84.0	82.9	81.8	80.8	79.7	78.6	77.5	76.5	75.4	74.3
	02	90.0	89.3	88.7	88.0	87.3	86.6	86.0	85.3	84.6	83.9
	03	86.0	85.2	84.3	83.5	82.7	81.9	81.0	80.2	79.4	78.5
	04	91.0	90.5	89.9	89.4	88.9	88.3	87.8	87.3	86.7	86.2
	05	91.0	90.5	89.9	89.4	88.9	88.3	87.8	87.3	86.7	86.2
	06	73.0	71.9	70.7	69.6	68.5	67.3	66.2	65.1	64.0	62.8
	07	85.0	84.4	83.7	83.1	82.5	81.9	81.2	80.6	80.0	79.3
	08	88.0	87.5	87.0	86.5	86.0	85.5	85.0	84.5	84.0	83.5
	09	84.0	83.3	82.7	82.0	81.3	80.7	80.0	79.3	78.6	78.0
	10	85.0	84.4	83.7	83.1	82.5	81.9	81.2	80.6	80.0	79.3
	11	90.0	89.6	89.2	88.7	88.3	87.9	87.5	87.1	86.7	86.2
	12	62.0	60.4	58.8	57.2	55.6	54.0	52.4	50.9	49.3	47.7
	13	53.0	51.0	49.1	47.1	45.1	43.1	41.2	39.2	37.2	35.3
	14	82.0	81.2	80.5	79.7	79.0	78.2	77.5	76.7	76.0	75.2
TWP	01	89.0	88.5	88.1	87.6	87.2	86.7	86.2	85.8	85.3	84.9
	02	78.0	77.1	76.2	75.2	74.3	73.4	72.5	71.5	70.6	69.7
	03	78.0	77.1	76.2	75.2	74.3	73.4	72.5	71.5	70.6	69.7
	04	90.0	89.3	88.7	88.0	87.3	86.6	86.0	85.3	84.6	83.9
	05	78.0	77.5	76.9	76.4	75.8	75.2	74.7	74.1	73.6	73.0
	06	30.0	28.2	26.5	24.7	23.0	21.2	19.5	17.7	16.0	14.2
	07	66.0	65.2	64.3	63.5	62.6	61.7	60.9	60.0	59.2	58.3
	08	76.0	75.4	74.8	74.2	73.6	73.0	72.4	71.8	71.2	70.6
	09	68.0	66.9	65.7	64.6	63.4	62.3	61.1	60.0	58.8	57.7
	10	75.0	74.1	73.2	72.3	71.4	70.5	69.6	68.7	67.8	66.9
TWQ	01	86.0	85.7	85.3	85.0	84.6	84.3	83.9	83.6	83.2	82.8
	02	74.0	73.4	72.7	72.1	71.4	70.7	70.1	69.4	68.8	68.1
	03	82.0	81.6	81.1	80.7	80.2	79.8	79.3	78.9	78.4	77.9
	04	76.0	75.1	74.2	73.3	72.4	71.5	70.6	69.7	68.9	68.0
	05	68.0	66.8	65.6	64.4	63.2	62.0	60.9	59.7	58.5	57.3
TWR	01	85.0	84.4	83.7	83.1	82.5	81.9	81.2	80.6	80.0	79.3
	02	96.0	95.7	95.5	95.2	94.9	94.7	94.4	94.1	93.9	93.6
	03	94.0	93.6	93.2	92.8	92.4	92.0	91.6	91.2	90.8	90.4
TWS	01	65.0	63.7	62.5	61.2	60.0	58.7	57.5	56.2	55.0	53.7
	02	73.0	72.0	71.1	70.1	69.1	68.2	67.2	66.2	65.3	64.3
	03	78.0	77.2	76.4	75.6	74.8	74.1	73.3	72.5	71.7	70.9
	04	64.0	62.7	61.4	60.1	58.8	57.5	56.2	55.0	53.7	52.4

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	05	63.0	61.7	60.3	59.0	57.7	56.4	55.0	53.7	52.4	51.0
	06	83.0	82.4	81.8	81.2	80.6	80.0	79.3	78.7	78.1	77.5
	07	79.0	78.2	77.5	76.7	76.0	75.2	74.5	73.7	73.0	72.2
	08	74.0	72.3	70.5	68.8	67.0	65.2	63.5	61.8	60.0	58.2
TWS1	01	41.0	38.9	36.8	34.6	32.5	30.4	28.3	26.2	24.1	21.9
TWS2	01	50.0	48.2	46.4	44.6	42.8	41.0	39.2	37.4	35.6	33.8
TWS3	01	36.0	33.7	31.4	29.1	26.8	24.5	22.2	19.9	17.6	15.3
TWS5	01	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
TWT	01	87.0	86.5	86.1	85.6	85.1	84.7	84.2	83.7	83.3	82.8
	02	74.0	73.1	72.1	71.2	70.3	69.3	68.4	67.5	66.5	65.6
TWU	01	85.0	84.4	83.7	83.1	82.5	81.9	81.2	80.6	80.0	79.3
	02	78.0	77.1	76.2	75.2	74.3	73.4	72.5	71.5	70.6	69.7
	03	82.0	81.2	80.5	79.7	79.0	78.2	77.5	76.7	76.0	75.2
	04	89.0	88.3	87.5	86.8	86.0	85.3	84.6	83.8	83.1	82.3
	05	90.0	89.3	88.7	88.0	87.3	86.6	86.0	85.3	84.6	83.9
	06	93.0	92.8	92.5	92.3	92.0	91.7	91.5	91.2	91.0	90.7
	07	86.0	85.5	85.0	84.5	84.0	83.5	83.0	82.5	82.0	81.5
	08	76.0	74.4	72.8	71.2	69.5	67.9	66.3	64.7	63.1	61.5
	09	82.0	80.8	79.6	78.4	77.2	75.9	74.7	73.5	72.3	71.1
TWV	01	85.0	84.4	83.7	83.1	82.5	81.9	81.2	80.6	80.0	79.3
	02	46.0	44.7	43.3	41.9	40.6	39.2	37.9	36.5	35.2	33.8
	03	73.0	72.3	71.7	71.0	70.3	69.6	68.9	68.3	67.6	66.9
TWW	01	88.0	87.5	87.0	86.5	86.0	85.5	85.0	84.5	84.0	83.5
	02	55.0	53.1	51.2	49.3	47.5	45.6	43.7	41.8	39.9	38.0
	03	55.0	53.9	52.8	51.6	50.5	49.4	48.2	47.1	46.0	44.9
	04	71.0	70.3	69.6	68.8	68.1	67.4	66.6	65.9	65.2	64.5
	05	65.0	64.1	63.3	62.4	61.5	60.6	59.7	58.9	58.0	57.1
	06	63.0	62.1	61.2	60.2	59.3	58.4	57.4	56.5	55.6	54.7
	07	77.0	76.4	75.9	75.3	74.7	74.1	73.5	73.0	72.4	71.8
	08	72.0	71.3	70.6	69.9	69.2	68.5	67.8	67.1	66.4	65.7
	09	75.0	74.4	73.8	73.1	72.5	71.9	71.2	70.6	70.0	69.4
	10	88.0	87.2	86.4	85.6	84.8	84.0	83.2	82.3	81.5	80.7
	11	80.0	78.7	77.3	76.0	74.6	73.3	71.9	70.6	69.2	67.9
	12	90.0	89.3	88.7	88.0	87.3	86.6	86.0	85.3	84.6	83.9
TWW1	01	83.0	81.9	80.7	79.6	78.4	77.3	76.1	75.0	73.8	72.7
TWW2	01	84.0	82.9	81.8	80.8	79.7	78.6	77.5	76.5	75.4	74.3
TWW3	01	86.0	85.1	84.1	83.2	82.2	81.3	80.3	79.4	78.5	77.5

TABLE C-3: APRON 10 YEAR "NO ACTION" RESULTS

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
APCARGOS	01	48.0	47.0	46.1	45.1	44.2	43.2	42.3	41.3	40.3	39.4
	02	61.0	60.3	59.6	58.8	58.1	57.4	56.7	56.0	55.3	54.5
	03	22.0	20.6	19.1	17.7	16.3	14.8	13.4	11.9	10.5	9.1
	04	81.0	80.7	80.3	80.0	79.6	79.3	78.9	78.6	78.2	77.9
	05	43.0	42.0	40.9	39.9	38.8	37.8	36.7	35.7	34.6	33.6
APCARGOW	Not Inspected										
APFEDEX	01	64.0	62.2	60.5	58.7	57.0	55.2	53.5	51.7	49.9	48.2
	02	54.0	52.2	50.4	48.6	46.8	45.0	43.3	41.5	39.7	37.9
	03	71.0	69.6	68.2	66.8	65.3	63.9	62.5	61.1	59.7	58.3
	04	79.0	78.0	77.0	75.9	74.9	73.9	72.9	71.8	70.8	69.8
	05	67.0	65.7	64.4	63.1	61.9	60.6	59.3	58.0	56.7	55.4
	06	38.0	35.6	33.2	30.8	28.3	25.9	23.5	21.1	18.7	16.3
	07	60.0	53.3	46.6	39.9	33.3	26.6	19.9	13.2	6.5	0.0
	08	69.0	62.7	56.5	50.3	44.0	37.8	31.5	25.3	19.0	12.8
	09	80.0	79.2	78.4	77.7	76.9	76.1	75.3	74.6	73.8	73.0
	10	18.0	14.8	11.6	8.4	5.2	2.0	0.0	0.0	0.0	0.0
	11	94.0	93.8	93.5	93.3	93.1	92.8	92.6	92.4	92.1	91.9
	13	34.0	31.4	28.9	26.3	23.7	21.1	18.6	16.0	13.4	10.9
	15	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	16	9.0	5.5	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	17	17.0	13.8	10.5	7.3	4.1	0.8	0.0	0.0	0.0	0.0
	18	29.0	26.2	23.5	20.7	17.9	15.2	12.4	9.6	6.9	4.1
	19	98.0	97.6	97.2	96.7	96.3	95.9	95.5	95.1	94.7	94.2
	20	98.0	97.6	97.2	96.7	96.3	95.9	95.5	95.1	94.7	94.2
	21	86.0	83.0	80.0	77.0	74.0	71.0	68.0	65.0	62.0	59.0
APINTTERM	01	58.0	56.9	55.9	54.8	53.7	52.7	51.6	50.5	49.4	48.4
	02	94.0	93.9	93.7	93.5	93.4	93.2	93.1	92.9	92.8	92.6
	03	37.0	35.4	33.8	32.2	30.6	29.0	27.4	25.8	24.2	22.6
APMERCATL	01	48.0	47.2	46.4	45.6	44.8	44.0	43.1	42.3	41.5	40.7
	03	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
APTERM1	01	43.0	42.0	40.9	39.9	38.8	37.8	36.7	35.7	34.6	33.6
	02	75.0	74.5	74.1	73.6	73.2	72.7	72.2	71.8	71.3	70.9
APTERM1A	Not Inspected										
APTERM2	01	80.0	79.2	78.3	77.5	76.7	75.8	75.0	74.1	73.3	72.5
APTERM3	01	89.0	88.5	88.1	87.6	87.2	86.7	86.2	85.8	85.3	84.9
APTERM4	01	78.0	77.1	76.2	75.2	74.3	73.4	72.5	71.5	70.6	69.7
SHAPTERM4	01E	80.0	79.2	78.3	77.5	76.7	75.8	75.0	74.1	73.3	72.5
TWCARGOS	01	70.0	68.9	67.8	66.8	65.7	64.6	63.5	62.5	61.4	60.3
	02	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0

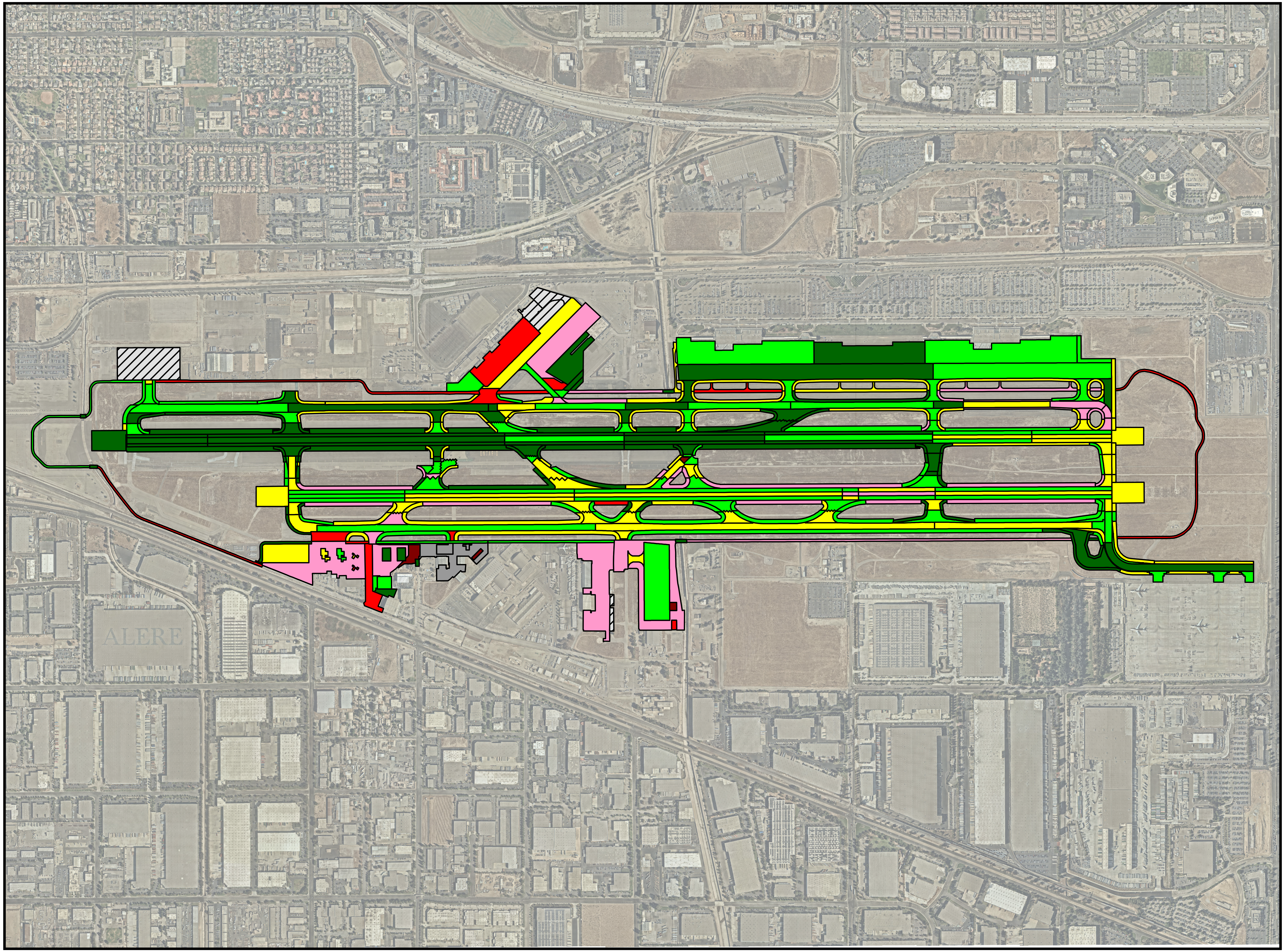
TABLE C-4: VSR 10 YEAR "NO ACTION" RESULTS

Branch ID	Section ID	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
VSRE	01	41.9	38.9	35.8	32.8	29.7	26.7	23.6	20.6	17.6	14.5
VSRN	01	46.0	43.2	40.4	37.6	34.8	32.0	29.2	26.4	23.6	20.7
	02	46.0	43.2	40.4	37.6	34.8	32.0	29.2	26.4	23.6	20.7
	03	54.0	51.6	49.2	46.8	44.4	42.0	39.7	37.3	34.9	32.5
	04	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	05	67.0	65.3	63.6	61.9	60.1	58.4	56.7	55.0	53.3	51.6
	06	44.0	41.1	38.2	35.3	32.4	29.4	26.5	23.6	20.7	17.8
	07	64.0	62.1	60.3	58.4	56.5	54.6	52.8	50.9	49.0	47.2
	08	56.0	53.7	51.4	49.1	46.9	44.6	42.3	40.0	37.7	35.4
	09	55.0	52.7	50.3	48.0	45.6	43.3	41.0	38.6	36.3	34.0
VSRS	01	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	02	92.0	91.6	91.2	90.8	90.4	90.0	89.6	89.2	88.8	88.4
	03	42.9	40.7	38.4	36.2	33.9	31.7	29.5	27.2	25.0	22.7
	04	78.0	76.8	75.7	74.5	73.3	72.2	71.0	69.9	68.7	67.6
	05	79.0	77.9	76.8	75.7	74.6	73.5	72.4	71.3	70.2	69.0
	06	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	07	55.9	53.6	51.3	49.0	46.7	44.4	42.1	39.8	37.5	35.1
	08	99.4	96.4	93.4	90.4	87.4	84.4	81.4	78.4	75.4	72.4
VSRW	01	86.0	83.0	80.1	77.1	74.2	71.2	68.3	65.4	62.4	59.5
	02	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	03	93.0	90.0	87.0	84.0	81.0	78.0	75.0	72.0	69.0	66.0
	04	100.0	97.0	94.0	91.0	88.0	85.0	82.0	79.0	76.0	73.0
	05	41.9	39.6	37.3	35.1	32.8	30.5	28.2	26.0	23.7	21.4

Ontario International Airport

Airfield Pavement Evaluation

Appendix G
Pavement Condition Index
By Section 2023



Legend

Pavement Section

Pavement Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

March 2020

N

0 500 1,000 1,500 Ft

ONTARIO INTERNATIONAL AIRPORT

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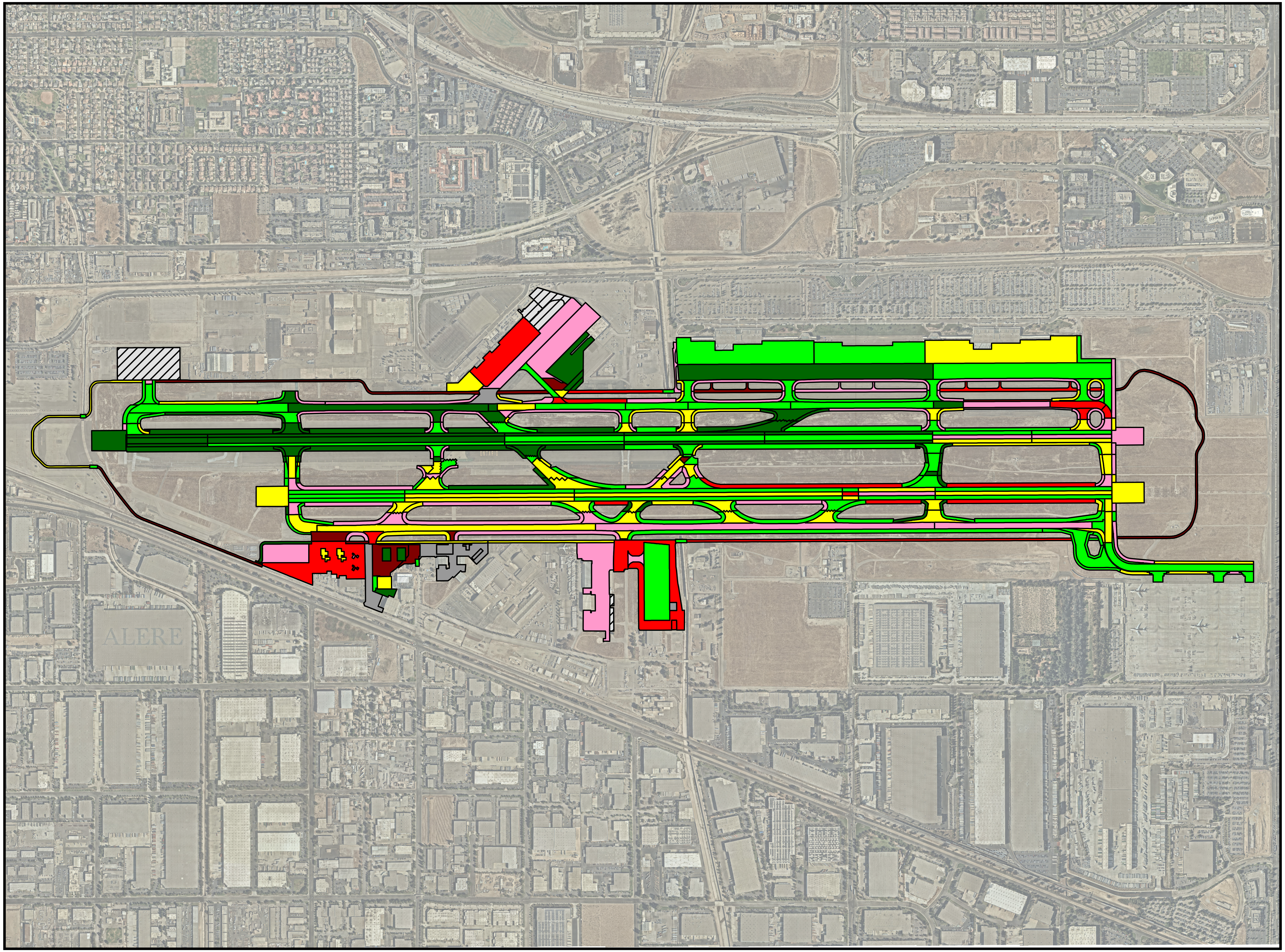

Ontario International Airport

Airfield Pavement Evaluation

Appendix G
Pavement Condition Index
By Section 2028

Legend

Pavement Section

Pavement Condition Rating (PCI)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failing (0-10)
- Not Inspected

March 2020

N

0 500 1,000 1,500 Ft

ONTARIO INTERNATIONAL AIRPORT

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APPENDIX H

CIP COST ANALYSIS

Fiscal Year	Project	Cost	Fiscal Year Cost
1	RW8R/26L Keel	$ 26,594,000.00	$ 43,421,000.00
	SHRW08R, BPRW8R & 26L	$ 16,697,000.00	
	TW F (7,8), TW K (7,8), P (8,9), Q (3,4)	$ 130,000.00	
2	RW8L/26R	$ 473,000.00	$ 16,576,000.00
	SHRW8L	$ 536,000.00	
	TW K (3,4), P (3,4), F (2,3)	$ 162,000.00	
	APTERM1	$ 15,405,000.00	
3	VSR East	$ 1,443,000.00	$ 6,078,000.00
	VSR South	$ 651,000.00	
	VSR West	$ 2,151,000.00	
	VSR North	$ 1,833,000.00	
4	TW N (12,13), V (2,3), W (2,3)	$ 10,629,000.00	$ 10,629,000.00
5	TW K, P, Q, F	$ 849,000.00	$ 2,031,000.00
	SHTWN	$ 602,000.00	
	SHTWS	$ 580,000.00	
6	APCARGOS, APMERCATL	$ 29,928,000.00	$ 29,928,000.00
7	APTERM2,APTERM3,APTERM4, TL N1	$ 835,000.00	$ 835,000.00
8	TWS1, S2, S3	$ 2,559,000.00	$ 2,559,000.00
9	TW S	$ 45,742,000.00	$ 45,742,000.00
10	APFEDEX (2, 5, 6, 10, 13, 17, 18)	$ 13,727,000.00	$ 20,823,000.00
	APINTERM (1,3)	$ 7,096,000.00	
		Total	**$ 178,622,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.
Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Prepared by: FC

RS&H Project No.: 2260047000

Branch: RW8R/26L Keel

Date Prepared: 2/5/2020

Recommended Repair	Units	Repair Unit Price	Area	Estimated Reconstruction Cost
Full Depth Reconstruction PCC	SF	$39.50	510,000	$ 20,146,000.00
			Mobilization (10%):	$ 2,015,000.00
			Contigency (20%):	$ 4,433,000.00
			Total Cost:	**$ 26,594,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **SHRW08R, BPRW8R & 26L** Date Prepared: 2/5/2020

Recommended Repair	Units	Repair Unit Price	Area	Estimated Reconstruction Cost
Full Depth Reconstruction AC	SF	$10.50	1,204,658	$ 12,649,000.00
			Mobilization (10%):	$ 1,265,000.00
			Contigency (20%):	$ 2,783,000.00
			Total Cost:	**$ 16,697,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Branch: TW F (7,8), TW K (7,8), P (8,9), Q (3,4)

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00		$ -
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	2696	$ 26,960.00
	M	Crack Seal (Linear)	LF	$10.00	47	$ 470.00
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	1615	$ 8,075.00
	M	Joint Seal	LF	$5.00	170	$ 850.00
	H	Joint Seal	LF	$5.00	321	$ 1,605.00
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	6	$ 6,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	15	$ 30,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	1	$ 20,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	216	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	2	$ 1,000.00
	M	Partial Depth Patch (Linear)	LF	$500.00		$ -
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	2	$ 2,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 10,000.00
					Contigency (20%):	$ 22,000.00
					Total Cost:	**$ 130,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: RW8L/26R

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	5	$ 125.00
	M	Crack Seal (Corner)	EA	$25.00		$ -
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	5735	$ 57,350.00
	M	Crack Seal (Linear)	LF	$10.00	41	$ 410.00
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A	15	$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	3147	$ 15,735.00
	M	Joint Seal	LF	$5.00	5843	$ 29,215.00
	H	Joint Seal	LF	$5.00	796	$ 3,980.00
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	13	$ 13,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	94	$ 188,000.00
	M	Partial Depth Patch	EA	$2,000.00	1	$ 2,000.00
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	1	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	431	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	72	$ 36,000.00
	M	Partial Depth Patch (Linear)	LF	$500.00	19	$ 9,500.00
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	2	$ 2,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 36,000.00
					Contigency (20%):	$ 79,000.00
					Total Cost:	**$ 473,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **SHRW8L**

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	125,670	$ 100,536.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00	7	$ 14.00
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	10,841	$ 21,682.00
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	1,940	$ 9,700.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	1,093,286	$ 273,321.50
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 41,000.00
					Contigency (20%):	$ 90,000.00
					Total Cost:	**$ 536,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Branch: TW K (3,4), P (3,4), F (2,3)

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	1	$ 25.00
	M	Crack Seal (Corner)	EA	$25.00	1	$ 25.00
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	62	$ 620.00
	M	Crack Seal (Linear)	LF	$10.00		$ -
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	893	$ 4,465.00
	M	Joint Seal	LF	$5.00	416	$ 2,080.00
	H	Joint Seal	LF	$5.00	10	$ 50.00
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	8	$ 8,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	5	$ 10,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A		$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	55	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	178	$ 89,000.00
	M	Partial Depth Patch (Linear)	LF	$500.00	3	$ 1,500.00
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	4	$ 4,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 13,000.00
					Contigency (20%):	$ 27,000.00
					Total Cost:	**$ 162,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Prepared by: FC

RS&H Project No.: 2260047000

Branch: APTERM1

Date Prepared: 2/5/2020

Recommended Repair	Units	Repair Unit Price	Area	Estimated Reconstruction Cost
Full Depth Reconstruction PCC	SF	$39.50	266,095	$ 10,511,000.00
Full Depth Reconstruction AC	SF	$17.50	66,194	$ 1,159,000.00
			Mobilization (10%):	$ 1,167,000.00
			Contigency (20%):	$ 2,568,000.00
			Total Cost:	**$ 15,405,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport
Project Description: Airside APMS

Capital Improvement Plan

Branch: VSR East

RS&H
Prepared by: FC
RS&H Project No.: 2260047000
Date Prepared: 2/5/2020

Location	Length (ft)	Recommended Repair Type											
		Crack Seal			Seal Coat			Mill & Overlay			Full Depth Reconstruction		
		Quantity (ft)	Unit Cost ($/ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost
Northern Taxiway W connection to newly constructed area of VSR East behind Runway 26R Blast Pad	1,400	-	$ 2.00	$ -	-	$ 0.25	$ -	-	$ 4.00	$ -	33,600	$ 14.00	$ 470,400.00
Newly constructed area of VSR East East of Runway 26R Blast Pad	540	-	$ 2.00	$ -	-	$ 0.25	$ -	-	$ 4.00	$ -	-	$ 14.00	$ -
Newly constructed area of VSR East behind Runway 26R Blast Pad to southern Taxiway W connection	1,850	-	$ 2.00	$ -	-	$ 0.25	$ -	-	$ 4.00	$ -	44,400	$ 14.00	$ 621,600.00
Sub Total		**$ -**			**$ -**			**$ -**			**$ 1,092,000.00**		
Mobilization (10%):		**$ 110,000.00**											
Contingency (20%):		**$ 241,000.00**											
Total		**$ 1,443,000.00**											

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.
Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport
Project Description: Airside APMS

Capital Improvement Plan

Branch: VSR South

RS&H
Prepared by: FC
RS&H Project No.: 2260047000
Date Prepared: 2/5/2020

Location	Length (ft)	Recommended Repair Type											
		Crack Seal			Seal Coat			Mill & Overlay			Full Depth Reconstruction		
		Quantity (ft)	Unit Cost ($/ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost
VSR West to Taxiway S1	550	1,100	$ 2.00	$ 2,200.00	16,500	$ 0.25	$ 4,125.00	-	$ 4.00	$ -	-	$ 14.00	$ -
Taxiway S1 to Taxiway S2	300	-	$ 2.00	$ -	-	$ 0.25	$ -	4,500	$ 4.00	$ 18,000.00	4,500	$ 14.00	$ 63,000.00
Taxiway S2 to End of FedEx Apron	1,350	2,700	$ 2.00	$ 5,400.00	40,500	$ 0.25	$ 10,125.00	-	$ 4.00	$ -	2,700	$ 14.00	$ 37,800.00
End of FedEx Apron to Taxiway Cargo South	1,550	4,650	$ 2.00	$ 9,300.00	46,500	$ 0.25	$ 11,625.00	-	$ 4.00	$ -	-	$ 14.00	$ -
Cucamonga Channel Bridge to Taxiway S5	4,600	18,400	$ 2.00	$ 36,800.00	69,000	$ 0.25	$ 17,250.00	69,000	$ 4.00	$ 276,000.00	-	$ 14.00	$ -
Sub Total		**$ 53,700.00**			**$ 43,125.00**			**$ 294,000.00**			**$ 100,800.00**		
Mobilization (10%):		**$ 50,000.00**											
Contingency (20%):		**$ 109,000.00**											
Total		**$ 651,000.00**											

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.
Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport
Project Description: Airside APMS

Capital Improvement Plan

Branch: VSR West

Prepared by: FC
RS&H Project No.: 2260047000
Date Prepared: 2/5/2020

Location	Length (ft)	Recommended Repair Type											
		Crack Seal			Seal Coat			Mill & Overlay			Full Depth Reconstruction		
		Quantity (ft)	Unit Cost ($/ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost
Taxiway B to Flood Control Bridge #1	1,000	500	$ 2.00	$ 1,000.00	-	$ 0.25	$ -	-	$ 4.00	$ -	5,000	$ 14.00	$ 70,000.00
#1 Bridge to #2 Bridge. West of Runway 8L Blast Pad	1,700	1,700	$ 2.00	$ 3,400.00	34,000	$ 0.25	$ 8,500.00	-	$ 4.00	$ -	-	$ 14.00	$ -
Flood Control Bridge #2 to VSR South Connection	4,600	-	$ 2.00	$ -	-	$ 0.25	$ -	-	$ 4.00	$ -	110,400	$ 14.00	$ 1,545,600.00
Sub Total		**$ 4,400.00**			**$ 8,500.00**			**$ -**			**$ 1,615,600.00**		
Mobilization (10%):		**$ 163,000.00**											
Contingency (20%):		**$ 359,000.00**											
Total		**$ 2,151,000.00**											

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.
Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport
Project Description: Airside APMS

Capital Improvement Plan

Branch: VSR North

RS&H
Prepared by: FC
RS&H Project No.: 2260047000
Date Prepared: 2/5/2020

Location	Length (ft)	Recommended Repair Type											
		Crack Seal			Seal Coat			Mill & Overlay			Full Depth Reconstruction		
		Quantity (ft)	Unit Cost ($/ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost	Quantity (sq ft)	Unit Cost ($/sq ft)	Total Cost
Taxiway B to Taxilane G	4,100	-	$ 2.00	$ -	-	$ 0.25	$ -	49,200	$ 4.00	$ 196,800.00	49,200	$ 14.00	$ 688,800.00
Taxilane G to 150' before Taxilane H	450	-	$ 2.00	$ -	-	$ 0.25	$ -	-	$ 4.00	$ -	10,800	$ 14.00	$ 151,200.00
150' before Taxilane H to Taxilane H	150	-	$ 2.00	$ -	1,800	$ 0.25	$ 450.00	-	$ 4.00	$ -	1,800	$ 14.00	$ 25,200.00
200' after Taxilane H	200	600	$ 2.00	$ 1,200.00	4,800	$ 0.25	$ 1,200.00	-	$ 4.00	$ -	-	$ 14.00	$ -
200' after Taxilane H to Cucamonga Channel Bridge	975	-	$ 2.00	$ -	-	$ 0.25	$ -	23,400	$ 4.00	$ 93,600.00	-	$ 14.00	$ -
Cucamonga Channel Bridge to Terminal Way Gate (North - South)	630	3,150	$ 2.00	$ 6,300.00	15,120	$ 0.25	$ 3,780.00	-	$ 4.00	$ -	-	$ 14.00	$ -
Taxiway P to Taxiway R	1,100	1,100	$ 2.00	$ 2,200.00	22,000	$ 0.25	$ 5,500.00	22,000	$ 4.00	$ 88,000.00	-	$ 14.00	$ -
Taxiway R to Taxiway U	1,600	6,400	$ 2.00	$ 12,800.00	64,000	$ 0.25	$ 16,000.00	-	$ 4.00	$ -	-	$ 14.00	$ -
Taxiway U to Taxiway W	1,850	3,700	$ 2.00	$ 7,400.00	55,500	$ 0.25	$ 13,875.00	18,500	$ 4.00	$ 74,000.00	-	$ 14.00	$ -
Sub Total		**$ 29,900.00**			**$ 40,805.00**			**$ 452,400.00**			**$ 865,200.00**		
Mobilization (10%):		**$ 139,000.00**											
Contingency (20%):		**$ 306,000.00**											
Total		**$ 1,833,000.00**											

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.
Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: TW N (12,13), V (2,3), W (2,3)

Date Prepared: 2/5/2020

Recommended Repair	Units	Repair Unit Price	Area	Estimated Reconstruction Cost
Full Depth Reconstruction PCC	SF	$39.50	203,821	$ 8,051,000.00
			Mobilization (10%):	$ 806,000.00
			Contigency (20%):	$ 1,772,000.00
			Total Cost:	**$ 10,629,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport
Project Description: Airside APMS

Capital Improvement Plan

Branch: TW K, P, Q, F

RS&H
Prepared by: FC
RS&H Project No.: 2260047000
Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	15	$ 375.00
	M	Crack Seal (Corner)	EA	$25.00	5	$ 125.00
	H	Full Depth Patch	EA	$3,000.00	1	$ 3,000.00
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	2874	$ 28,740.00
	M	Crack Seal (Linear)	LF	$10.00	137	$ 1,370.00
	H	Slab Replacement (Linear)	LF	$2,000.00		$ -
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	2613	$ 13,065.00
	M	Joint Seal	LF	$5.00	1227	$ 6,135.00
	H	Joint Seal	LF	$5.00	69	$ 345.00
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	107	$ 107,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	50	$ 100,000.00
	M	Partial Depth Patch	EA	$2,000.00	1	$ 2,000.00
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	3	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00	1	$ 20,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	15	$ 300,000.00
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	419	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	98	$ 49,000.00
	M	Partial Depth Patch (Linear)	LF	$500.00	13	$ 6,500.00
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	4	$ 4,000.00
	M	Partial Depth Patch	EA	$1,000.00		$ -
	H	Partial Depth Patch	EA	$1,000.00		$ -
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 65,000.00
					Contigency (20%):	$ 142,000.00
					Total Cost:	**$ 849,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.
Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Branch: **SHTWN**

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	420,585	$ 336,468.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	7,327	$ 14,654.00
	M	Crack Seal (Linear)	LF	$2.00	216	$ 432.00
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	650	$ 3,250.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	401,724	$ 100,431.00
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 46,000.00
					Contigency (20%):	$ 101,000.00
					Total Cost:	**$ 602,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **SHTWS**

Date Prepared: 2/5/2020

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Alligator or Fatigue Cracking (41)	L	Crack Seal (Alligator)	SF	$4.00		$ -
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Bleeding (42)	L	Monitor	N/A	N/A		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Block Cracking (43)	L	Crack Seal (Block)	SF	$0.80	245,020	$ 196,016.00
	M	Full Depth Reconstruction	SF	$10.50		$ -
	H	Full Depth Reconstruction	SF	$10.50		$ -
Corrugation (44)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Depression (45)	L	Patch	SF	$5.00	200	$ 1,000.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Jet Blast Erosion (46)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Seal Coat	SF	$0.25		$ -
Joint-Reflection Cracking from PCC (47)	L	Crack Seal (Linear)	LF	$2.00		$ -
	M	Crack Seal (Linear)	LF	$2.00		$ -
	H	Crack Seal (Linear)	LF	$2.00		$ -
L & T Cracking (48)	L	Crack Seal (Linear)	LF	$2.00	25,695	$ 51,390.00
	M	Crack Seal (Linear)	LF	$2.00	456	$ 912.00
	H	Crack Seal (Linear)	LF	$2.00		$ -
Oil Spillage (49)	N/A	Clean	N/A	N/A		$ -
Patching and Utility Cut Patch (50)	L	Patch	SF	$5.00	285	$ 1,425.00
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Polished Aggregate (51)	N/A	Monitor	N/A	N/A		$ -
Raveling (52)	L	Monitor	N/A	N/A		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Rutting (53)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Shoving (54)	L	M&O	SF	$4.00		$ -
	M	M&O	SF	$4.00		$ -
	H	M&O	SF	$4.00		$ -
Slippage Cracking (55)	N/A	Monitor	N/A	N/A		$ -
Swelling (56)	L	Patch	SF	$5.00		$ -
	M	Patch	SF	$5.00		$ -
	H	Patch	SF	$5.00		$ -
Weathering (57)	L	Seal Coat	SF	$0.25	751,471	$ 187,867.75
	M	Seal Coat	SF	$0.25		$ -
	H	Seal Coat	SF	$0.25		$ -
					Mobilization (10%):	$ 44,000.00
					Contigency (20%):	$ 97,000.00
					Total Cost:	**$ 580,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **APCARGOS, APMERCATL** Date Prepared: 2/5/2020

Recommended Repair	Units	Repair Unit Price	Area	Estimated Reconstruction Cost
Full Depth Reconstruction PCC	SF	$39.50	326,997	$ 12,917,000.00
Full Depth Reconstruction AC	SF	$17.50	557,417	$ 9,755,000.00
			Mobilization (10%):	$ 2,268,000.00
			Contigency (20%):	$ 4,988,000.00
			Total Cost:	**$ 29,928,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Date Prepared: 2/5/2020

Branch: APTERM2,APTERM3,APTERM4, TL N1

Distress (Distress Code)	Severity	Recommended Repair	Units	Repair Unit Price	Quantity	Estimated Repair Cost
Blow-Up (61)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Corner Break (62)	L	Crack Seal (Corner)	EA	$25.00	14	$ 350.00
	M	Crack Seal (Corner)	EA	$25.00	2	$ 50.00
	H	Full Depth Patch	EA	$3,000.00		$ -
Linear Cracking (63)	L	Crack Seal (Linear)	LF	$10.00	7852	$ 78,520.00
	M	Crack Seal (Linear)	LF	$10.00	1273	$ 12,730.00
	H	Slab Replacement (Linear)	LF	$2,000.00	24	$ 48,000.00
Durability Cracking (64)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Joint Seal Damage (65)	L	Joint Seal	LF	$5.00	5016	$ 25,080.00
	M	Joint Seal	LF	$5.00	1991	$ 9,955.00
	H	Joint Seal	LF	$5.00	693	$ 3,465.00
Patching, Small (66)	L	Partial Depth Patch	EA	$1,000.00	16	$ 16,000.00
	M	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
	H	Partial Depth Patch	EA	$1,000.00		$ -
Patching, Large (67)	L	Partial Depth Patch	EA	$2,000.00	2	$ 4,000.00
	M	Partial Depth Patch	EA	$2,000.00		$ -
	H	Partial Depth Patch	EA	$2,000.00		$ -
Popouts (68)	N/A	Monitor	N/A	N/A	19	$ -
Pumping (69)	N/A	Slab Replacement	EA	$20,000.00		$ -
Scaling (70)	L	Monitor	N/A	N/A		$ -
	M	Monitor	N/A	N/A		$ -
	H	Monitor	N/A	N/A		$ -
Settlement or Fauling (71)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
Intersecting Cracks/Shattered Slab (72)	L	Slab Replacement	EA	$20,000.00	9	$ 180,000.00
	M	Slab Replacement	EA	$20,000.00	2	$ 40,000.00
	H	Slab Replacement	EA	$20,000.00		$ -
Shrinkage Cracking (73)	N/A	Monitor	N/A	N/A	497	$ -
Joint Spall (74)	L	Partial Depth Patch (Linear)	LF	$500.00	288	$ 144,000.00
	M	Partial Depth Patch (Linear)	LF	$500.00	82	$ 41,000.00
	H	Partial Depth Patch (Linear)	LF	$500.00		$ -
Corner Spall (75)	L	Partial Depth Patch	EA	$1,000.00	20	$ 20,000.00
	M	Partial Depth Patch	EA	$1,000.00	6	$ 6,000.00
	H	Partial Depth Patch	EA	$1,000.00	1	$ 1,000.00
Alkali Silica Reaction (ASR) (76)	L	Slab Replacement	EA	$20,000.00		$ -
	M	Slab Replacement	EA	$20,000.00		$ -
	H	Slab Replacement	EA	$20,000.00		$ -
					Mobilization (10%):	$ 64,000.00
					Contigency (20%):	$ 140,000.00
					Total Cost:	**$ 835,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **TWS1, S2, S3** Date Prepared: 2/5/2020

Recommended Repair	Units	Repair Unit Price	Area	Estimated Reconstruction Cost
Full Depth Reconstruction PCC	SF	$39.50	21,693	$ 857,000.00
Full Depth Reconstruction AC	SF	$17.50	61,757	$ 1,081,000.00
			Mobilization (10%):	$ 194,000.00
			Contigency (20%):	$ 427,000.00
			Total Cost:	**$ 2,559,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **TW S** Date Prepared: 2/5/2020

Recommended Repair	Units	Repair Unit Price	Area	Estimated Reconstruction Cost
Full Depth Reconstruction PCC	SF	$39.50	877,259	$ 34,652,000.00
			Mobilization (10%):	$ 3,466,000.00
			Contigency (20%):	$ 7,624,000.00
			Total Cost:	**$ 45,742,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

RS&H

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **APFEDEX (2, 5, 6, 10, 13, 17, 18)** Date Prepared: 2/5/2020

Recommended Repair	Units	Repair Unit Price	Area	Estimated Reconstruction Cost
Full Depth Reconstruction PCC	SF	$39.50	7,696	$ 304,000.00
Full Depth Reconstruction AC	SF	$17.50	576,852	$ 10,095,000.00
			Mobilization (10%):	$ 1,040,000.00
			Contigency (20%):	$ 2,288,000.00
			Total Cost:	**$ 13,727,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.

Note 2: All numbers in the table are in 2020 dollars.

Location: Ontario International Airport

Project Description: Airside APMS

Capital Improvement Plan

Prepared by: FC

RS&H Project No.: 2260047000

Branch: **APINTERM (1,3)** Date Prepared: 2/5/2020

Recommended Repair	Units	Repair Unit Price	Area	Estimated Reconstruction Cost
Full Depth Reconstruction AC	SF	$17.50	307,109	$ 5,375,000.00
			Mobilization (10%):	$ 538,000.00
			Contigency (20%):	$ 1,183,000.00
			Total Cost:	**$ 7,096,000.00**

Note 1: The costs include pavement repair line items only and do not include additional construction costs such as grading, drainage, electrical, etc. and also don't include soft costs, such as engineering design and owner administration costs.
Note 2: All numbers in the table are in 2020 dollars.

APPENDIX I

GEOTECHNICAL REPORT

A Report Prepared for:

RS&H
5901 West Century Boulevard
Suite 1030
Los Angeles, California 90045

GEOTECHNICAL REPORT
AIRPORT PAVEMENT MANAGEMENT SYSTEM
ONTARIO INTERNATIONAL AIRPORT
ONTARIO, CALIFORNIA

Project No. 2019-001

by

Beatrice Torres
Staff Engineer

Clint Isa
Civil Engineer 76470

REGISTERED PROFESSIONAL ENGINEER
CLINT I. ISA
No. C 76470
CIVIL
STATE OF CALIFORNIA

Diaz•Yourman & Associates
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(714) 245-2920

January 13, 2020

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LIST OF ABBREVIATIONS AND ACRONYMS

AC	asphalt concrete
AOA	air operations area
APMS	Airport Pavement Management System
ASTM	ASTM International
bgs	below ground surface
bpf	blows per foot
bps	below pavement surface
CBR	California Bearing Ratio
CSS	cement-stabilized soils
CTB	cement-treated base
DYA	Diaz•Yourman & Associates
ER	efficiency rating
GPS	global positioning system
I-	Interstate
LSS	lime-stabilized soil
OIAA	Ontario International Airport Authority
ONT	Ontario International Airport
PCC	Portland cement concrete
pcf	pounds per cubic foot
SPT	standard penetration test
USCS	Unified Soil Classification System

1 INTRODUCTION

This report presents the results of the geotechnical investigation performed by Diaz•Yourman & Associates (DYA) for the Landside and Airside Airport Pavement Management System (APMS; Project) at the Ontario International Airport (ONT) in Ontario, California. RS&H authorized this work on November 26, 2018.

ONT is located approximately 3 miles west and ¾ miles south of the intersection of Interstate- (I-) 10 and I-15, as shown on the Vicinity Map, Figure 1. The Project site generally consists of the landside pavements that service ONT and the aircraft pavement located on the ONT air operations area (AOA). The Project site is currently fully developed, and surfaces are paved with asphalt concrete (AC) and Portland cement concrete (PCC). Daily operations at the Project site consist primarily of vehicular traffic in landside areas and private, corporate, and commercial aircraft traffic and vehicular traffic in the airside areas.

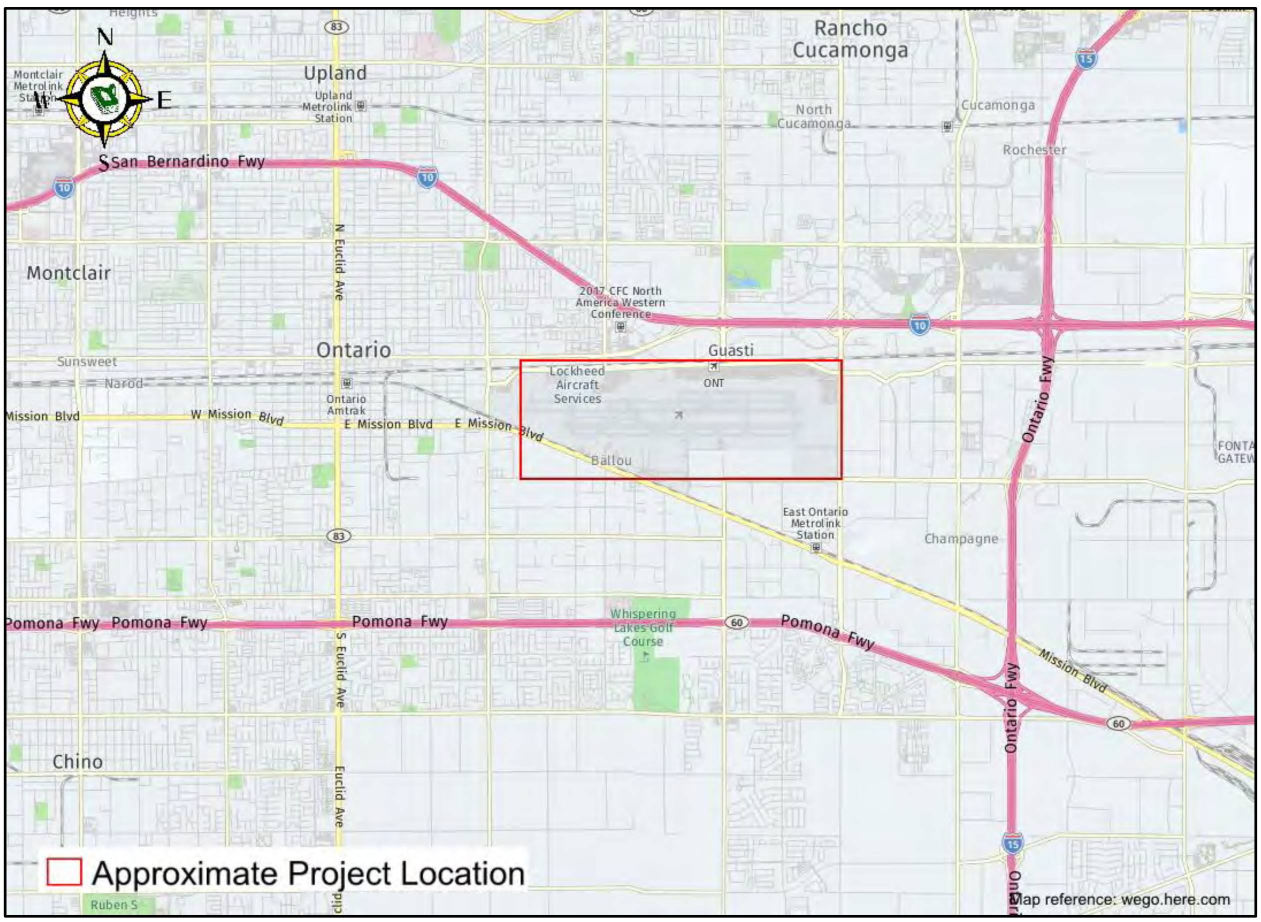

Figure 1 - VICINITY MAP

The purpose of the APMS is to evaluate the condition and capacity of the existing landside and airside pavements to support existing and forecasted pavement loads. The findings of the APMS will aid Ontario International Airport Authority (OIAA) in the planning and coordination of future pavement rehabilitation and reconstruction projects.

The purpose of DYA's services was to provide geotechnical input for the development of the APMS for the existing airfield pavements. The evaluation of the landside pavements for the APMS was outside of DYA's scope of services. The scope of our services consisted of the following tasks:

- Reviewing existing data.
- Coordinating and performing a field exploration.
- Performing laboratory tests on selected soil samples.
- Performing engineering analyses to develop conclusions and recommendations regarding the subsurface conditions.
- Preparing this report.

DYA's scope of services excluded any investigation needed to evaluate the presence of hazardous materials in the soil at the Project site.

2 DATA REVIEW, FIELD EXPLORATION, AND LABORATORY TESTING

2.1 DATA REVIEW

Geotechnical data collected by DYA and others during previous investigations on the ONT AOA were reviewed to supplement site data collected during this exploration. A list of the documents reviewed is presented in the bibliography (Section 6).

2.2 FIELD EXPLORATION

The field exploration, which was conducted between October 8 and October 15, 2019, consisted of drilling six borings and performing ten pavement cores at the locations shown on Figure 2. The boring and coring locations were selected by RS&H. The boring depths, which were approximately 11.5 feet below the pavement surface (bps), were selected to evaluate the pavement-supporting capacity of the on-site subgrade soils. Details of the field exploration, including sampling procedures and boring logs, are presented in Appendix A.

2.3 LABORATORY TESTING

Soil samples collected from the borings were re-examined in the laboratory to substantiate field classifications. Selected soil samples were tested for moisture content, grain-size distribution, Atterberg limits, compaction characteristics, and pavement-supporting capacity (California Bearing Ratio [CBR]). The soil samples tested are identified on the boring logs. Laboratory test data are summarized on the boring logs in Appendix A and presented on individual test reports in Appendix B.

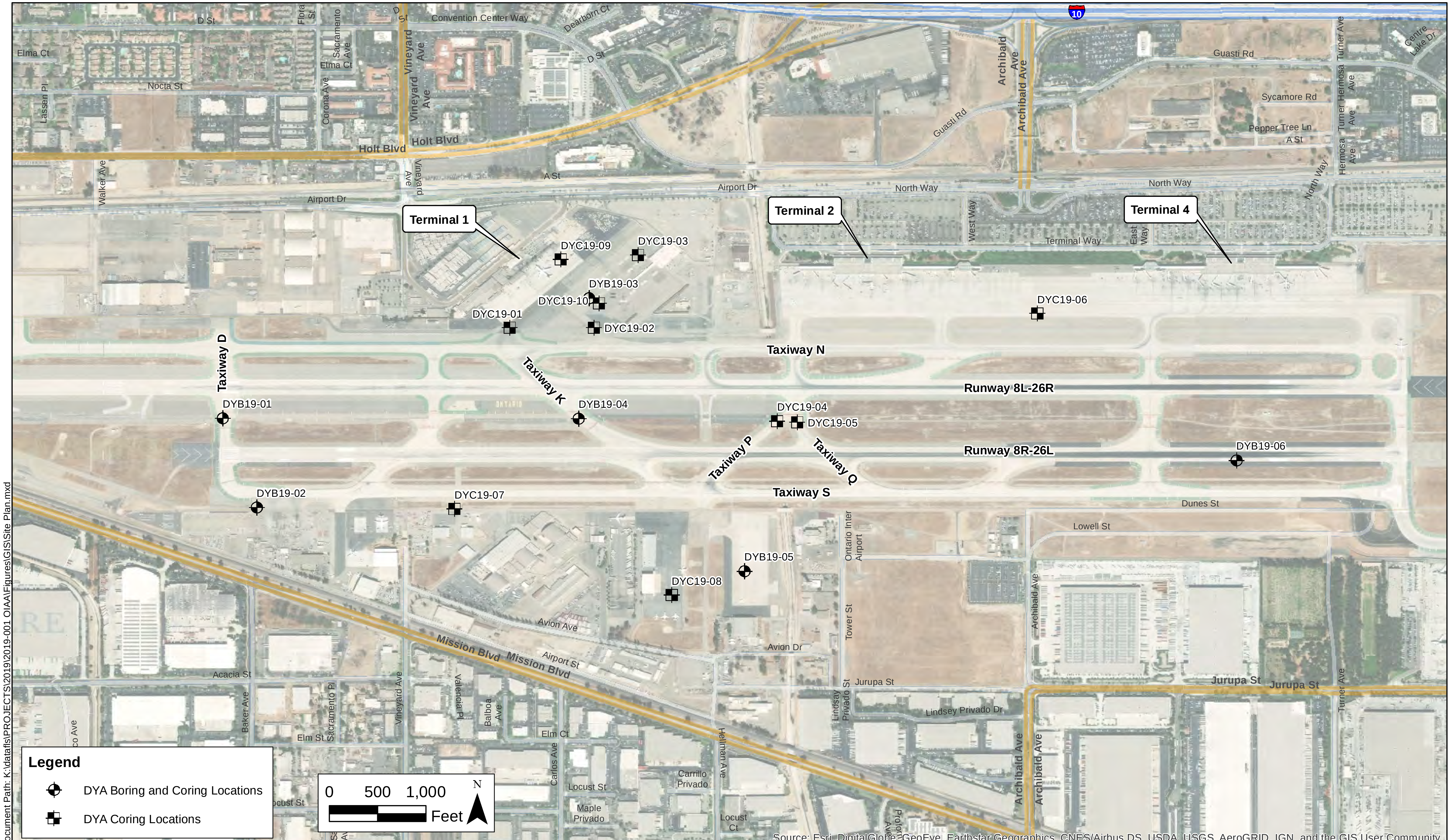

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Figure 2 - SITE PLAN

3 SITE CONDITIONS

3.1 SURFACE CONDITIONS

At the time of our field exploration, the surface conditions consisted primarily of the ONT aircraft pavements (e.g., runways, taxiways, taxilanes, and aircraft aprons). The infield areas between the aircraft pavements were generally unpaved and lightly vegetated.

The surface pavement at DYA's field exploration locations generally consisted of AC or PCC over base, though the surface pavement was observed to have been placed directly on subgrade soil in some areas. Where present, the base layer was observed to have likely been stabilized with cement or lime at several of the field exploration locations. A summary of the pavement sections encountered during DYA's field exploration is presented in Table 1.

Table 1 - EXISTING PAVEMENT SECTIONS

FIELD EXPLORATION ID	LOCATION	PAVEMENT Type	PAVEMENT Thickness (inches)	BASE Description Type	BASE Thickness (inches)	SUBGRADE[1]	NOTES
DYB19-01	Taxiway D	PCC	16	CSS	5.75	Silty SAND (SM)	
DYB19-02	Taxilane S1	AC	3.75[2]	Poorly Graded Gravel (GP)	4	Well-graded SAND with SILT and GRAVEL (SW-SM)	
DYB19-03	International Terminal Gate 35	AC over PCC	3 over 5[2]	None	--	Well-graded SAND with SILT (SW-SM)	
DYB19-04	Taxiway K	PCC	15.5	CSS	5.5	Silty SAND (SM)	
DYB19-05	South Cargo Ramp	PCC	7.5	None	--	Silty SAND (SM)	
DYB19-06	Runway 8R-26L	PCC	16.25	CSS over LSS	CSS: 3.75 LSS: 4.75	Silty SAND (SM)	Fabric observed between PCC and CSS layers
DYC19-01	Taxilane G	AC over PCC	5.5 over 6[2]	None	--	Silty SAND (SM)	
DYC19-02	Taxiway H	AC	4	Poorly Graded Gravel (GP)	4	Silty SAND with GRAVEL (SM)	
DYC19-03	International Terminal Gate 31	AC over PCC	3 over 7.5	None	--	Silty SAND (SM)	Fabric observed between AC and PCC layers
DYC19-04	Taxiway P	PCC	16.5	CSS	6.75	Silty SAND (SM)	
DYC19-05	Taxiway Q	PCC	16.25	CSS	6.5	Silty SAND (SM)	
DYC19-06	Taxilane N1	PCC	15	CSS	2.5 over 10.5[2]	Silty SAND (SM); Brown	Two layers of CSS
DYC19-07	Taxilane S3	AC	3	Poorly Graded Gravel (GP)	3	Silty SAND with GRAVEL (SM)	
DYC19-08	Atlantic Aviation Apron	AC	3.5	CTB over Poorly graded GRAVEL with Silt & SAND (GP-GM)	CTB: 1.5 over 4 GP-GM: 3	Silty SAND with GRAVEL (SM)	Two layers of CTB
DYC19-09	Terminal 1 Gate 4	PCC	12	None	--	Silty SAND with GRAVEL (SM)	
DYC19-10	International Terminal Gate 35	AC	5	Poorly Graded Gravel (GP)	2	Silty SAND (SM)	

Notes:

1. Unified Soil Classification System (USCS).
2. Average thickness (bottom of core was not level).

- PCC = Portland cement concrete; AC = asphalt concrete; CSS = cement-stabilized soil; LSS = lime-stabilized soil; CTB = cement-treated base.

3.2 SUBSURFACE CONDITIONS

3.2.1 Site Soil Conditions

The soils encountered at each of DYA's field exploration locations were generally similar and consisted primarily of medium-dense to very dense coarse-grained soils (i.e., sands) with varying amount of silts and clays. Summaries of the pavement subgrade conditions encountered at the site are presented in Table 2.

Table 2 - PAVEMENT SUBGRADE SOIL CHARACTERISTICS

SOIL LAYER[1,2]	DEPTH TO TOP OF LAYER[3] (feet)	THICKNESS (feet)	SPT N_{60} BLOW COUNT[4,5] (bpf)	MOISTURE CONTENT[5] (%)
Silty SAND (SM); Silty SAND with GRAVEL (SM); Well-graded SAND with SILT (SW-SM); Well-graded SAND with SILT and GRAVEL (SW-SM); Clayey SAND (SC)	0.5 to 2	>11.5	34 (22)	6 (2)

Note(s):

1. Based on borings and laboratory testing performed by DYA for this investigation.
2. See Plate A1 in Appendix A for USCS soil descriptions.
3. Measured from bottom of base layer for borings performed in paved areas.
4. Standard penetration test (SPT) blow count corrected for drill rig hammer efficiency rating (ER).
5. Average value; standard deviation value shown in parentheses.

- bpf = blows per foot.
- pcf = pounds per cubic foot.

Groundwater was not encountered in the borings during the field exploration to the maximum depth explored, approximately 11.5 feet bps. Based on groundwater monitoring data within the Project vicinity, groundwater levels in the vicinity of ONT have generally been deeper than 50 feet below ground surface (bgs; GeoTracker, 2019).

3.2.2 Pavement Subgrade Capacity

DYA evaluated the pavement subgrade supporting capacity (i.e., CBR) of the in situ pavement subgrade soils and recompacted samples of the existing pavement subgrade soils. Laboratory CBR values for recompacted samples of the pavement subgrade soils collected at DYA's boring locations are summarized in Table 3.

Table 3 - AIRCRAFT PAVEMENT SUPPORTING CAPACITY (FOR DESIGN OF NEW PAVEMENT)

BORING ID	DEPTH (feet)	SOIL TYPE	CBR VALUE - 90% RELATIVE COMPACTION[1]	CBR VALUE - 95% RELATIVE COMPACTION[1]	CBR VALUE - 100% RELATIVE COMPACTION[1]
DYB19-01	0 to 5	SM	13[2]	52[3]	96[2]
DYB19-02	0 to 5	SW-SM	--[4]	--[4]	112[2]
DYB19-03	0 to 5	SW-SM	--[4]	32[3]	50[2]
DYB19-04	0 to 5	SM	8[2]	36[2]	94[2]
DYB19-05	0 to 5	SM	0.5[2]	34[3]	58[3]
DYB19-06	2 to 5	SM	16[2]	51[3]	111[3]

Note(s):

1. Relative compaction based on ASTM International (ASTM) D1557.
2. CBR values based on extrapolation of laboratory test data for 0.2 inches penetration.
3. CBR values based on interpolation of laboratory test data for 0.2 inches penetration.
4. Extrapolated CBR value less than 0.

The CBR of the in situ pavement subgrade soils at the field exploration locations was estimated by qualitatively correlating the soil consistency (via SPT N-value) to in-place relative compaction for each sample collected from the upper 6 feet of each of the borings. The laboratory CBR test results in Table 3 were then used to assign an approximate CBR value to each sample based on its corresponding consistency. The in situ CBRs for the subgrade soils at each boring location, which are presented in Table 4, were then calculated using a weighted harmonic mean of the CBR values assigned to each sample.

Table 4 - AIRCRAFT PAVEMENT SUPPORTING CAPACITY (IN SITU CONDITIONS)

BORING ID	SOIL TYPE[1]	IN SITU CBR VALUE[2]
DYB19-01	SM	13
DYB19-02	SW-SM	25
DYB19-03	SW-SM	10
DYB19-04	SM	38
DYB19-05	SM	10
DYB19-06	SM	17

Notes:

1. USCS.
2. Based on weighted harmonic mean of upper 6 feet of existing subgrade soils assuming Boeing 777 as design aircraft.

The CBR values presented in Table 3 and Table 4 can be used to help conceptually evaluate new/rehabilitated aircraft pavement sections and the capacity of existing pavement sections, respectively.

4 LIMITATIONS

This report has been prepared for this project in accordance with generally accepted geotechnical engineering practices common to the local area. No other warranty, expressed or implied, is made.

The data presented in this report are based on the literature review, field exploration, and laboratory testing conducted in the area. The results of the field exploration indicate subsurface conditions only at the specific locations and times and only to the depths penetrated. They do not necessarily reflect strata variations that may exist between such locations. Although subsurface conditions have been explored as part of the exploration, we have not conducted chemical laboratory testing on samples obtained or evaluated the site with respect to the presence or potential presence of contaminated soil or groundwater conditions, mold, or methane gas.

This report is intended for use only for the project described. In the event that any changes in the nature, design, or location of the facilities are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing by DYA. We are not responsible for any claims, damages, or liability associated with the interpretation of subsurface data or reuse of the subsurface data or engineering analyses without our express written authorization.

5 REPORT REVISION LOG

REVISION NO.	DATE	REVISION DESCRIPTION
Rev. 0	December 31, 2019	Draft submittal to client.
Rev. 1	January 13, 2020	Updated draft to include internal QA/QC comments; final submittal to client.

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APPENDIX A -
FIELD EXPLORATION

APPENDIX A - FIELD EXPLORATION

The field exploration consisted of drilling six borings (DYB19-01 through DYB19-06) and performing ten cores (DYC19-01 through DYC19-10) between October 8, 2019, and October 15, 2019, at the locations shown on Figure 2. A summary of the boring and coring locations, elevations, and depths is presented in Table A1. The boring and coring locations were identified in the field by measuring from known locations using a hand-held global positioning system (GPS) unit.

Table A1 – SUMMARY OF FIELD EXPLORATION LOCATIONS

BORING ID	LATITUDE[1]	LONGITUDE[1]	ELEVATION[2] (feet)	TOTAL DEPTH (feet bps)
DYB19-01	34.05601	-117.61613	926	11.5
DYB19-02	34.05348	-117.61516	915	11.5
DYB19-03	34.05942	-117.6057	935	11.5
DYB19-04	34.05600	-117.60603	917	11.5
DYB19-05	34.05167	-117.60132	892	11.5
DYB19-06	34.05481	-117.58736	912	11.5
DYC19-01	34.05857	-117.60797	930	--
DYC19-02	34.05857	-117.60559	931	--
DYC19-03	34.06064	-117.60434	941	--
DYC19-04	34.05593	-117.60039	915	--
DYC19-05	34.05589	-117.59982	912	--
DYC19-06	34.05898	-117.5930	914	--
DYC19-07	34.05343	-117.6095	906	--
DYC19-08	34.05099	-117.6034	898	--
DYC19-09	34.06052	-117.60653	927	--
DYC19-10	34.05927	-117.60545	933	--

Note(s):

1. Latitude and longitude estimated using a hand-held GPS unit with an approximate 10-foot horizontal accuracy.
2. Estimated using Google Earth (Google, 2019).

- bps = below the pavement surface.

Prior to drilling the borings and corings, the field exploration locations were marked in the field and the boring locations were checked for potential underground utility conflict using geophysical techniques. The geophysical survey was performed by Southwest Geophysics, Inc. on October 1, 2019. Underground Service Alert (USA) was subsequently notified, and DYA received confirmation on October 7, 2019, that the boring and coring locations did not conflict with existing utilities.

Coring was performed by Penhall Company on October 8 and 9, 2019. Cores of the surface pavement (i.e., Portland cement concrete [PCC] and asphalt concrete [AC]) and underlying chemically stabilized base layers (i.e., cement-treated base [CTB], cement-stabilized soil [CSS], and lime-stabilized soil [LSS]) were performed using a 6-inch-diameter coring barrel. After coring the surface pavement and chemically stabilized base layers (where present), the composition and thickness of unstabilized base layers and the composition of the underlying subgrade soils were evaluated using a hand auger. A DYA field engineer observed the coring operation and collected the cores of the surface pavement and stabilized base and the grab samples of unstabilized base.

Borings were drilled by 2R Drilling on October 14 and October 15, 2019, with a truck-mounted Simco 2800 HT drill rig using hollow-stem-auger drilling techniques. Prior to performing each boring, the surface pavement and underlying chemically stabilized base layers (where present) were cored by Penhall Company using a 10-inch-diameter coring barrel. A DYA field engineer observed the coring and drilling operations and collected drive samples for visual examination and subsequent laboratory testing. Drive samples were collected with a standard penetration test (SPT) split-spoon sampler with dimensions in accordance with ASTM D1586. The sampler was driven with a 140-pound automatic trip hammer falling 30 inches. The hammer ER provided by 2R Drilling, Inc. for the drill rig was last calculated on June 5, 2018, at 88.1%.

Soils encountered in the borings were classified in general accordance with ASTM International (ASTM) D2487, which is summarized on Plate A1, and D2488. Boring logs presented on Plates A2 through A7 were prepared from visual examination of the samples, cuttings obtained during drilling operations, and results of laboratory tests. The SPT N-values presented on the boring logs were derived from the SPT blow counts recorded in the field, which were modified by multiplying by the ratio of ER/60 to obtain the SPT N_{60}-value for each sample.

Groundwater was not encountered during the field exploration to a depth of 11.5 feet bgs. Corings were backfilled with No. 3 sand to the bottom of the surface pavement layer; borings were backfilled from 11.5 feet to 5 feet bgs with hydrated bentonite chips and from 5 feet bgs to the bottom of the surface pavement layer with soil cuttings. Surface pavement layers were patched with rapid-set concrete.

SOIL CLASSIFICATION SYSTEM-ASTM D2487

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE-GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

"Push" Sampler

Split Barrel "Drive" Sampler With Liner

Standard Penetration Test (SPT) Sampler

Dual-Mass Dynamic Cone Penetration (DCP) Test

Concrete/Rock Core

Groundwater Surface

SPT "N" = 0.65 x modified California blows per foot

NP = Nonplastic
EI = Expansion Index Test
SG = Specific Gravity
SE = Sand Equivalent
UC = Unconfined Comp.
CD = Consol. Drained Triaxial.
CU = Consol. Undrained Triaxial.
UU = Undrained, Unconsol. Triaxial.
RV = R-Value
CA = Chemical Analysis
DS = Direct Shear
CN = Consolidation
CP = Collapse Potential
SA = Grain size; HD = Hydrometer
MD = Compaction Test
HC = Hydraulic Conductivity Test
CBR = California Bearing Ratio
[PID] Reading in ppm above background

PLATE

A1

OIAA Airport Pavement Management Service

Project No. 2019-001

BORING LOCATION: See Figure No. 2		**ELEVATION (feet):** 926	
LATITUDE: 34.05600		**LONGITUDE:** -117.61612	
DRILLING EQUIPMENT: Simco 2800		**DRILLING METHOD:** Hollow Stem Auger	
BORING DIAMETER (inches): 8		**BORING DEPTH (feet):** 11.5	
DATE STARTED: 10-15-19	**COMPLETED:** 10-15-19	**HAMMER TYPE:** Automatic	**EFFICIENCY:** 88.1%
DRILLING CONTRACTOR: 2R Drilling, Inc.		**HAMMER DROP:** 30 inches	**WEIGHT:** 140 lbs
LOGGED BY: AA	**CHECKED BY:** OB	**DRIVE SAMPLER DIAMETER (inches)** **ID:** 2.4 **OD:** 3	

Elevation (feet)	Depth (feet)	Sampler	Symbol	Blows per 6 Inches	SPT N60 Blows per Foot	Field Unc. Comp. Str. (tsf)	DESCRIPTION	Dry Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	Percent Passing #200 Sieve	Other Tests [PID]
925							PORTLAND CEMENT CONCRETE (PCC): 16 inches						
							POORLY GRADED SAND with GRAVEL (SP): BASE - 5.75 inches; cement stabilized soil (CSS)						
				14 15	41		SILTY SAND (SM): dark yellowish brown; moist; dense; coarse to fine SAND; trace fine GRAVEL; micaceous		6	NP	NP	19	CBR MD SA
				13 11	31								
920	5			10 11 7	15		olive brown; medium dense; trace coarse GRAVEL						
				5 5 7	15		CLAYEY SAND (SC): dark olive brown; moist; medium dense; coarse to fine SAND; trace coarse to fine GRAVEL; micaceous						
				4 6									
915	10			4 3 4	10		olive brown; loose; iron oxide stains						
							Bottom of boring at 11.5 feet. Groundwater not encountered during drilling. Boring backfilled from 11.5 feet to 5 feet with hydrated bentonite chips; from 5 feet to surface with cuttings. Surface patched with rapid set concrete.						
910	15												
905	20												
900	25												

LOG OF BORING DYB19-01

OIAA Airport Pavement Management Service
Project No. 2019-001

PLATE
A2

BORING LOCATION: See Figure No. 2		**ELEVATION (feet):** 915	
LATITUDE: 34.05348		**LONGITUDE:** -117.61516	
DRILLING EQUIPMENT: Simco 2800		**DRILLING METHOD:** Hollow Stem Auger	
BORING DIAMETER (inches): 8		**BORING DEPTH (feet):** 11.5	
DATE STARTED: 10-14-19	**COMPLETED:** 10-14-19	**HAMMER TYPE:** Automatic	**EFFICIENCY:** 88.1%
DRILLING CONTRACTOR: 2R Drilling, Inc.		**HAMMER DROP:** 30 inches	**WEIGHT:** 140 lbs
LOGGED BY: AA	**CHECKED BY:** OB	**DRIVE SAMPLER DIAMETER (inches)**	**ID:** 2.4 **OD:** 3

Elevation (feet)	Depth (feet)	Sampler	Symbol	Blows per 6 Inches	SPT N60 Blows per Foot	Field Unc. Comp. Str. (tsf)	DESCRIPTION	Dry Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	Percent Passing #200 Sieve	Other Tests [PID]
							ASPHALT CONCRETE (AC): 3.75 inches						
				30 40 35	100		POORLY GRADED GRAVEL (GP): BASE - 4 inches		3	NP	NP	7	CBR MD SA
							WELL-GRADED SAND with SILT and GRAVEL (SW-SM): olive brown; moist; very dense; coarse to fine SAND; coarse to fine GRAVEL; potentially cemented; micaceous						
				20 25 24	72								
				13 11 9	29		SILTY SAND (SM): olive brown; moist; very dense; coarse to fine SAND; trace coarse to fine GRAVEL; micaceous						
910	5			5 5 5	15		medium dense; medium to fine SAND; trace fine GRAVEL						
							SILTY SAND with GRAVEL (SM): olive brown; moist; dense; coarse to fine SAND; coarse to fine GRAVEL; micaceous						
905	10			12 11 17	41								
							Bottom of boring at 11.5 feet. Groundwater not encountered during drilling. Boring backfilled from 11.5 feet to 5 feet with hydrated bentonite chips; from 5 feet to surface with cuttings. Surface patched with rapid set concrete.						
900	15												
895	20												
890	25												

LOG OF BORING DYB19-02

OIAA Airport Pavement Management Service
Project No. 2019-001

PLATE

A3

BORING LOCATION: See Figure No. 2		**ELEVATION (feet):** 935	
LATITUDE: 34.05942		**LONGITUDE:** -117.60573	
DRILLING EQUIPMENT: Simco 2800		**DRILLING METHOD:** Hollow Stem Auger	
BORING DIAMETER (inches): 8		**BORING DEPTH (feet):** 11.5	
DATE STARTED: 10-15-19	**COMPLETED:** 10-15-19	**HAMMER TYPE:** Automatic	**EFFICIENCY:** 88.1%
DRILLING CONTRACTOR: 2R Drilling, Inc.		**HAMMER DROP:** 30 inches	**WEIGHT:** 140 lbs
LOGGED BY: AA	**CHECKED BY:** OB	**DRIVE SAMPLER DIAMETER (inches)**	**ID:** 2.4 **OD:** 3

Elevation (feet)	Depth (feet)	Sampler	Symbol	Blows per 6 Inches	SPT N60 Blows per Foot	Field Unc. Comp. Str. (tsf)	DESCRIPTION	Dry Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	Percent Passing #200 Sieve	Other Tests [PID]
							ASPHALT CONCRETE (AC): 3 inches						
				8 8 8	23		PORTLAND CEMENT CONCRETE (PCC): 5 inches		4	NP	NP	11	CBR MD SA
				9 12 8	29		WELL-GRADED SAND with SILT (SW-SM): dark olive brown; moist; medium dense; medium to fine SAND; trace fine GRAVEL; micaceous olive brown; trace coarse GRAVEL						
930	5			5 4 4	12								
				5 4 5	13		CLAYEY SAND (SC): dark yellowish brown; moist; medium dense; medium to fine SAND; trace fine GRAVEL; micaceous						
925	10			7 5 7	18								
							Bottom of boring at 11.5 feet. Groundwater not encountered during drilling. Boring backfilled from 11.5 feet to 5 feet with hydrated bentonite chips; from 5 feet to surface with cuttings. Surface patched with rapid set concrete.						
920	15												
915	20												
910	25												

LOG OF BORING DYB19-03

OIAA Airport Pavement Management Service
Project No. 2019-001

PLATE
A4

BORING LOCATION: See Figure No. 2		**ELEVATION (feet):** 917	
LATITUDE: 34.05600		**LONGITUDE:** -117.60602	
DRILLING EQUIPMENT: Simco 2800		**DRILLING METHOD:** Hollow Stem Auger	
BORING DIAMETER (inches): 8		**BORING DEPTH (feet):** 11.5	
DATE STARTED: 10-15-19	**COMPLETED:** 10-15-19	**HAMMER TYPE:** Automatic	**EFFICIENCY:** 88.1%
DRILLING CONTRACTOR: 2R Drilling, Inc.		**HAMMER DROP:** 30 inches	**WEIGHT:** 140 lbs
LOGGED BY: AA	**CHECKED BY:** OB	**DRIVE SAMPLER DIAMETER (inches)** **ID:** 2.4 **OD:** 3	

Elevation (feet)	Depth (feet)	Sampler	Symbol	Blows per 6 Inches	SPT N60 Blows per Foot	Field Unc. Comp. Str. (tsf)	DESCRIPTION	Dry Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	Percent Passing #200 Sieve	Other Tests [PID]
							PORTLAND CEMENT CONCRETE (PCC): 15.5 inches						
915				9 19 18	54		SILTY SAND (SM): olive brown; moist; very dense; coarse to fine SAND; BASE - 5.5 inches; CSS		8	NP	NP	30	CBR MD SA
				16 15 19	50		SILTY SAND (SM): olive brown; moist; dense; coarse to fine SAND; iron oxide stains; micaceous						
	5			22 26 21	69		trace coarse to fine GRAVEL; decreased fines; no iron oxide stains						
910				9 18 16	50		no GRAVEL						
							rig chatter at 8 feet; coarse GRAVEL in cuttings						
	10			21 20 11	46		trace coarse to fine GRAVEL						
905							Bottom of boring at 11.5 feet. Groundwater not encountered during drilling. Boring backfilled from 11.5 feet to 5 feet with hydrated bentonite chips; from 5 feet to surface with cuttings. Surface patched with rapid set concrete.						
	15												
900													
	20												
895													
	25												
890													

LOG OF BORING DYB19-04

OIAA Airport Pavement Management Service
Project No. 2019-001

PLATE
A5

BORING LOCATION: See Figure No. 2		**ELEVATION (feet):** 892	
LATITUDE: 34.05167		**LONGITUDE:** -117.60132	
DRILLING EQUIPMENT: Simco 2800		**DRILLING METHOD:** Hollow Stem Auger	
BORING DIAMETER (inches): 8		**BORING DEPTH (feet):** 11.5	
DATE STARTED: 10-14-19	**COMPLETED:** 10-14-19	**HAMMER TYPE:** Automatic	**EFFICIENCY:** 88.1%
DRILLING CONTRACTOR: 2R Drilling, Inc.		**HAMMER DROP:** 30 inches	**WEIGHT:** 140 lbs
LOGGED BY: AA	**CHECKED BY:** OB	**DRIVE SAMPLER DIAMETER (inches)**	**ID:** 2.4 **OD:** 3

Elevation (feet)	Depth (feet)	Sampler	Symbol	Blows per 6 Inches	SPT N60 Blows per Foot	Field Unc. Comp. Str. (tsf)	DESCRIPTION	Dry Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	Percent Passing #200 Sieve	Other Tests [PID]
							PORTLAND CEMENT CONCRETE (PCC): 7.5 inches						
				7 7 7	21		SILTY SAND (SM): dark olive brown; moist; medium dense; medium to fine SAND; micaceous		6	NP	NP	17	CBR MD SA
890				7 7 15	32		dense						
				9 6 5	16		medium dense; trace coarse GRAVEL						
	5			4 5 8	19		rig chatter at 5 feet; coarse to fine GRAVEL in cuttings						
885													
							hard drilling						
							SILTY SAND with GRAVEL (SM): light olive brown; moist; coarse to fine SAND; coarse to fine GRAVEL; micaceous						
	10												
880							Bottom of boring at 11.5 feet. Groundwater not encountered during drilling. Boring backfilled from 11.5 feet to 5 feet with hydrated bentonite chips; from 5 feet to surface with cuttings. Surface patched with rapid set concrete.						
	15												
875													
	20												
870													
	25												
865													

LOG OF BORING DYB19-05

OIAA Airport Pavement Management Service
Project No. 2019-001

BORING LOCATION: See Figure No. 2		**ELEVATION (feet):** 912	
LATITUDE: 34.05481		**LONGITUDE:** -117.58736	
DRILLING EQUIPMENT: Simco 2800		**DRILLING METHOD:** Hollow Stem Auger	
BORING DIAMETER (inches): 8		**BORING DEPTH (feet):** 11.5	
DATE STARTED: 10-14-19	**COMPLETED:** 10-14-19	**HAMMER TYPE:** Automatic	**EFFICIENCY:** 88.1%
DRILLING CONTRACTOR: 2R Drilling, Inc.		**HAMMER DROP:** 30 inches	**WEIGHT:** 140 lbs
LOGGED BY: AA	**CHECKED BY:** OB	**DRIVE SAMPLER DIAMETER (inches)**	**ID:** 2.4 **OD:** 3

Elevation (feet)	Depth (feet)	Sampler	Symbol	Blows per 6 Inches	SPT N60 Blows per Foot	Field Unc. Comp. Str. (tsf)	DESCRIPTION	Dry Density (pcf)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	Percent Passing #200 Sieve	Other Tests [PID]
							PORTLAND CEMENT CONCRETE (PCC): 16.25 inches						
910				9 12 17	43		SILTY SAND (SM): BASE - 3.75 inches; CSS; fabric layer between PCC and CSS		9	NP	NP	34	CBR MD SA
							SILTY SAND (SM): SUBBASE - 4.75 inches; lime-treated soil (LSS)						
	5			8 22 20	62		SILTY SAND (SM): olive brown; moist; dense; coarse to fine SAND; trace coarse to fine GRAVEL; CLAY nodules; micaceous						
905				8 8 8	23		medium dense; no GRAVEL						
	10			3 3 4	10		loose; fine SAND; decreased CLAY nodules						
900							Bottom of boring at 11.5 feet. Groundwater not encountered during drilling. Boring backfilled from 11.5 feet to 5 feet with hydrated bentonite chips; from 5 feet to surface with cuttings. Surface patched with rapid set concrete.						
	15												
895													
	20												
890													
	25												
885													

LOG OF BORING DYB19-06

Page 1 of 1

OIAA Airport Pavement Management Service
Project No. 2019-001

PLATE

A7

APPENDIX B -
LABORATORY TESTING

APPENDIX B - LABORATORY TESTING

Diaz•Yourman & Associates (DYA) selected soil samples to be tested and the tests to be performed on the selected samples. Laboratory testing was performed by Leighton Consulting, Inc. Laboratory data are summarized on the boring logs in Appendix A and presented on Plates B1 through B20. A summary of the geotechnical laboratory testing is presented in Table B1.

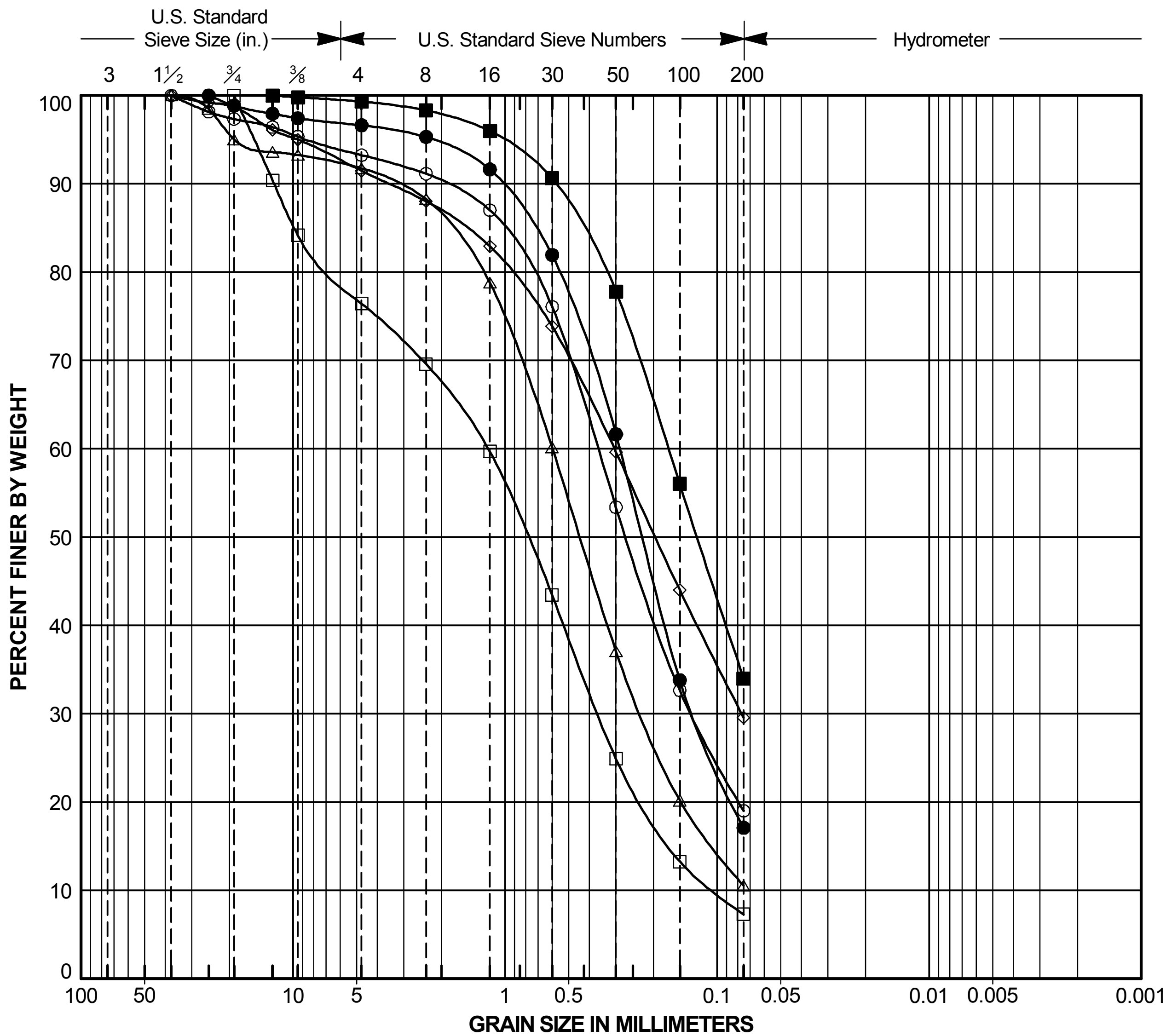
Table B1 - LABORATORY TESTING SUMMARY

TEST NAME	PROCEDURE	PURPOSE	LOCATION
Moisture Content	ASTM D2216	Classification, index properties	Boring Logs
Grain-Size Distribution	ASTM D422	Classification, index properties	Plate B1
Atterberg Limits	ASTM D4318	Expansion potential, classification, index properties	Plate B2
Compaction	ASTM D1557	Earthwork	Plates B3 to B8
California Bearing Ration (CBR)	ASTM D 1883	Earthwork	Plates B9 to B20

Note(s):

- ASTM = ASTM International

Template: DY_SIEVE_WIN



COBBLES	GRAVEL		SAND			SILT or CLAY
	Coarse	Fine	Coarse	Medium	Fine	

Laboratory Testing by: Hushmand Associates, Incorporated

Symbol	Source	Depth (feet)	Classification	Natural M. C. (%)	Liquid Limit (%)	Plasticity Index (%)	% Passing #200 Sieve
⊙	DYB19-01	2.0	SILTY SAND (SM)	6	NP	NP	19
□	DYB19-02	0.7	WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM)	3	NP	NP	7
△	DYB19-03	0.7	WELL-GRADED SAND WITH SILT (SW-SM)	4	NP	NP	11
◇	DYB19-04	2.0	SILTY SAND (SM)	8	NP	NP	30
●	DYB19-05	0.8	SILTY SAND (SM)	6	NP	NP	17
■	DYB19-06	2.0	SILTY SAND (SM)	9	NP	NP	34

PARTICLE SIZE ANALYSIS

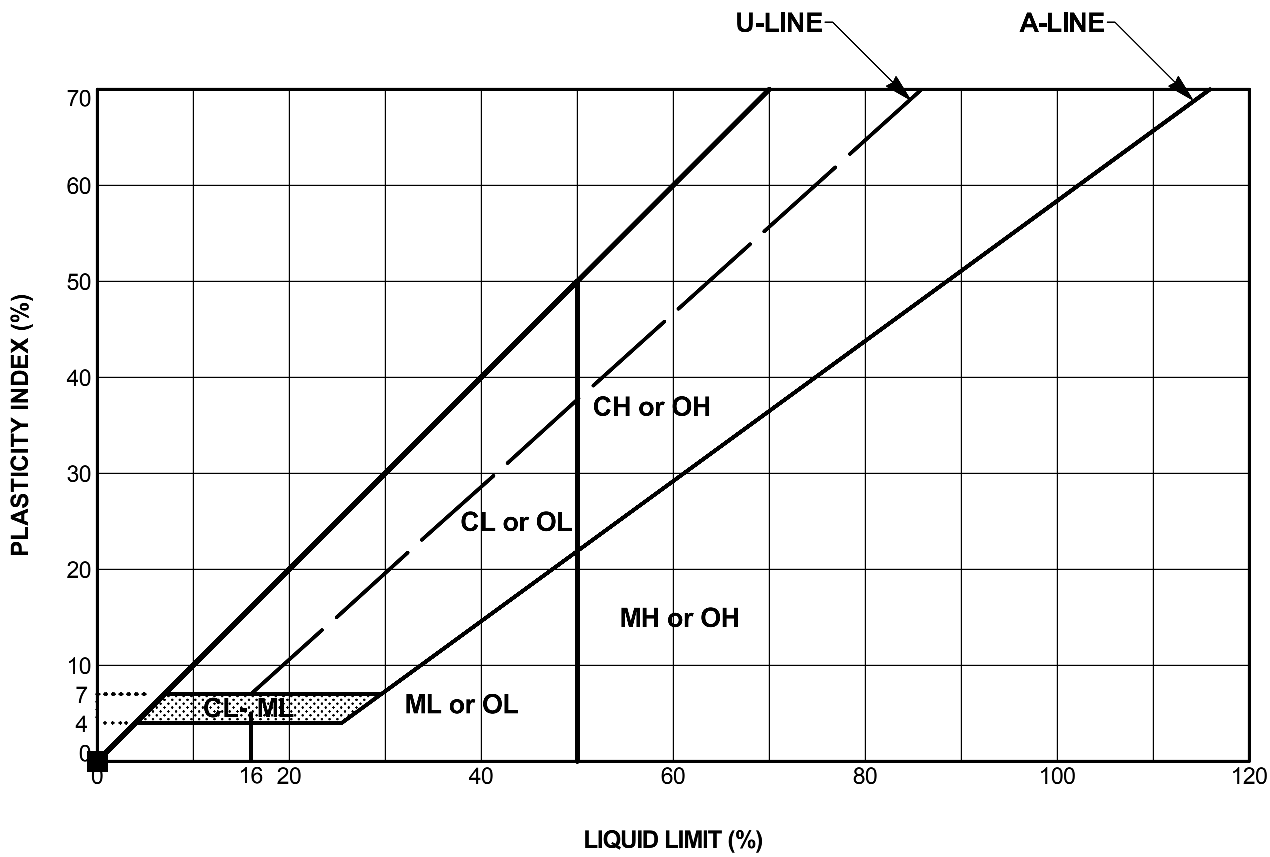
OIAA Airport Pavement Management Service

Project No. 2019-001

PLATE

B1

Template: DY_ATTERBERG_CHART_WIN



Laboratory Testing by: Hushmand Associates, Incorporated

Test Method: ASTM D4318

Symbol	Source	Depth (feet)	Classification	Natural M. C. (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	% Passing #200 Sieve
⊙	DYB19-01	2.0	SILTY SAND (SM)	6	NP	NP	NP	19
□	DYB19-02	0.7	WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM)	3	NP	NP	NP	7
△	DYB19-03	0.7	WELL-GRADED SAND WITH SILT (SW-SM)	4	NP	NP	NP	11
◇	DYB19-04	2.0	SILTY SAND (SM)	8	NP	NP	NP	30
●	DYB19-05	0.8	SILTY SAND (SM)	6	NP	NP	NP	17
■	DYB19-06	2.0	SILTY SAND (SM)	9	NP	NP	NP	34

PLASTICITY CHART

OIAA Airport Pavement Management Service

Project No. 2019-001

PLATE

B2

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	OIAA ONT APMS	Tested By:	O. Figueroa	Date:	10/28/19
Project No.:	2019-001	Input By:	J. Ward	Date:	10/29/19
Boring No.:	DYB19-01	Depth (ft.):	0-5		
Sample No.:	Bulk				
Soil Identification:	Dark Brown Silty Sand (SM)				

Preparation Method:

- [X] Moist
- [ ] Dry

- [X] Mechanical Ram
- [ ] Manual Ram

Mold Volume (ft³) 0.07440

Ram Weight = 10 lb.; Drop = 18 in.

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	7039	7322	7269			
Weight of Mold (g)	2621	2621	2621			
Net Weight of Soil (g)	4418	4701	4648			
Wet Weight of Soil + Cont. (g)	428.7	488.4	492.7			
Dry Weight of Soil + Cont. (g)	407.1	454.4	448.8			
Weight of Container (g)	39.5	39.1	38.3			
Moisture Content (%)	5.88	8.19	10.69			
Wet Density (pcf)	130.9	139.3	137.7			
Dry Density (pcf)	123.6	128.8	124.4			

Maximum Dry Density (pcf) **128.8** **Optimum Moisture Content (%)** **8.4**

PROCEDURE USED

- [ ] **Procedure A**

Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

- [ ] **Procedure B**

Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

- [X] **Procedure C**

Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI

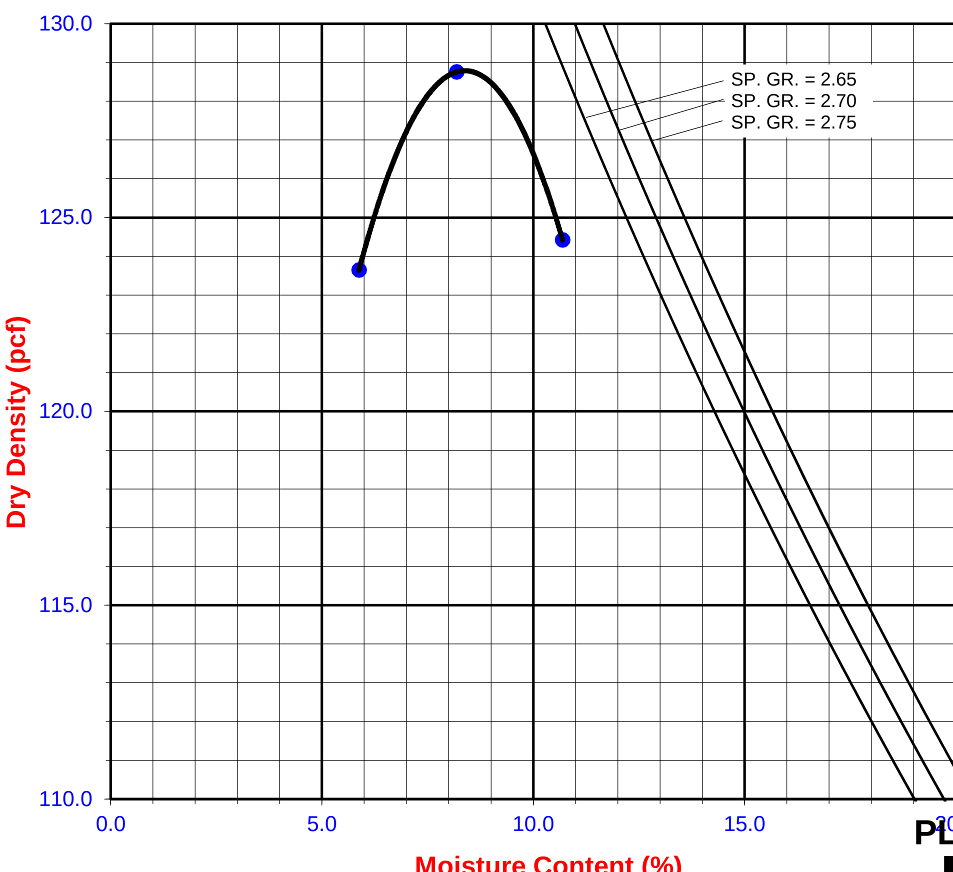


PLATE B3

Leighton

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	OIAA ONT APMS	Tested By:	G. Berdy	Date:	10/21/19
Project No.:	2019-001	Input By:	J. Ward	Date:	10/23/19
Boring No.:	DYB19-02	Depth (ft.):	0-5		
Sample No.:	Bulk				
Soil Identification:	Olive Brown Well-Graded Sand with Silt and Gravel (SW-SM)g				

Preparation Method: [X] Moist [ ] Dry | [X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft³) 0.07440 | *Ram Weight = 10 lb.; Drop = 18 in.*

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	7180	7301	7402	7480		
Weight of Mold (g)	2621	2621	2621	2621		
Net Weight of Soil (g)	4559	4680	4781	4859		
Wet Weight of Soil + Cont. (g)	402.2	600.7	629.5	705.0		
Dry Weight of Soil + Cont. (g)	391.6	571.5	585.8	642.1		
Weight of Container (g)	39.1	39.3	39.5	39.0		
Moisture Content (%)	3.01	5.49	8.00	10.43		
Wet Density (pcf)	135.1	138.7	141.7	144.0		
Dry Density (pcf)	131.1	131.5	131.2	130.4		

Maximum Dry Density (pcf) **131.5** **Optimum Moisture Content (%)** **5.6**

PROCEDURE USED

[ ] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

[X] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI

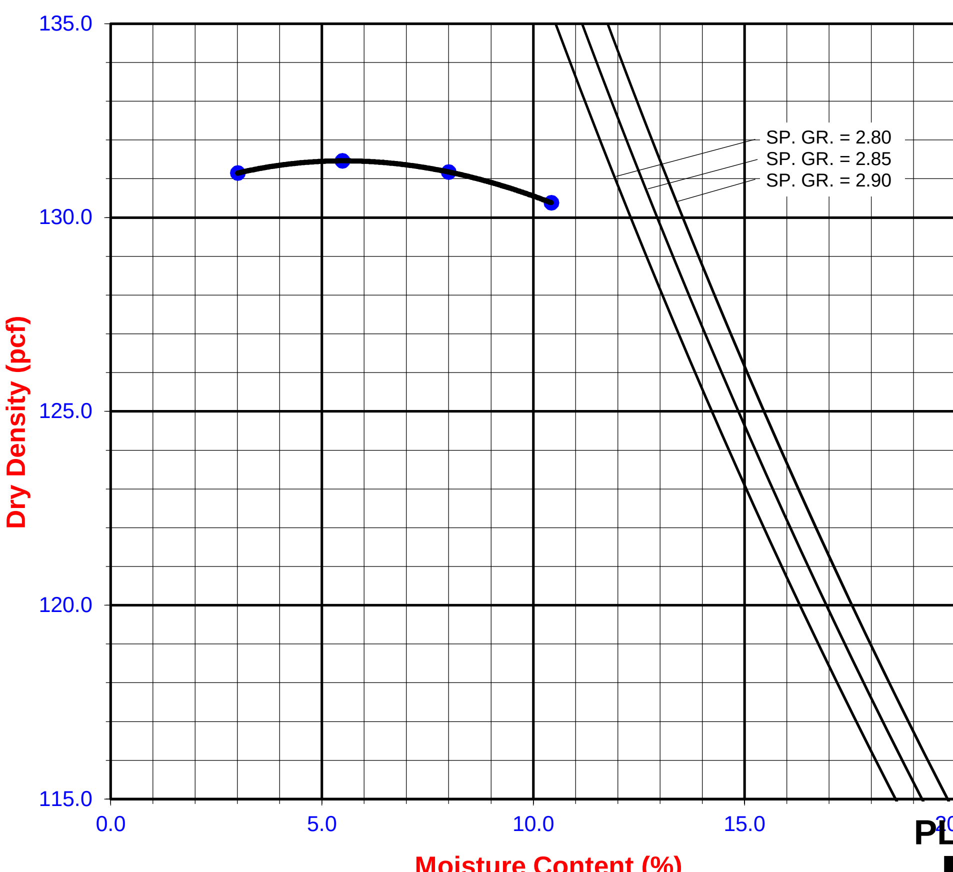


PLATE B4

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Leighton

Project Name:	OIAA ONT APMS	Tested By:	G. Berdy	Date:	10/30/19
Project No.:	2019-001	Input By:	J. Ward	Date:	10/31/19
Boring No.:	DYB19-03	Depth (ft.):	0-5		
Sample No.:	Bulk				
Soil Identification:	Olive Brown Well-Graded Sand with Silt (SW-SM)				

Preparation Method: [X] Moist [ ] Dry — [X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft³) 0.07440

Ram Weight = 10 lb.; Drop = 18 in.

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	6912	7028	7191	7185		
Weight of Mold (g)	2621	2621	2621	2621		
Net Weight of Soil (g)	4291	4407	4570	4564		
Wet Weight of Soil + Cont. (g)	556.8	525.6	587.3	705.7		
Dry Weight of Soil + Cont. (g)	536.9	493.0	538.8	633.2		
Weight of Container (g)	39.6	38.6	37.4	38.2		
Moisture Content (%)	4.00	7.17	9.67	12.18		
Wet Density (pcf)	127.1	130.6	135.4	135.2		
Dry Density (pcf)	122.3	121.8	123.5	120.5		

Maximum Dry Density (pcf) 123.6 **Optimum Moisture Content (%)** 9.9

PROCEDURE USED

[ ] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

[X] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI

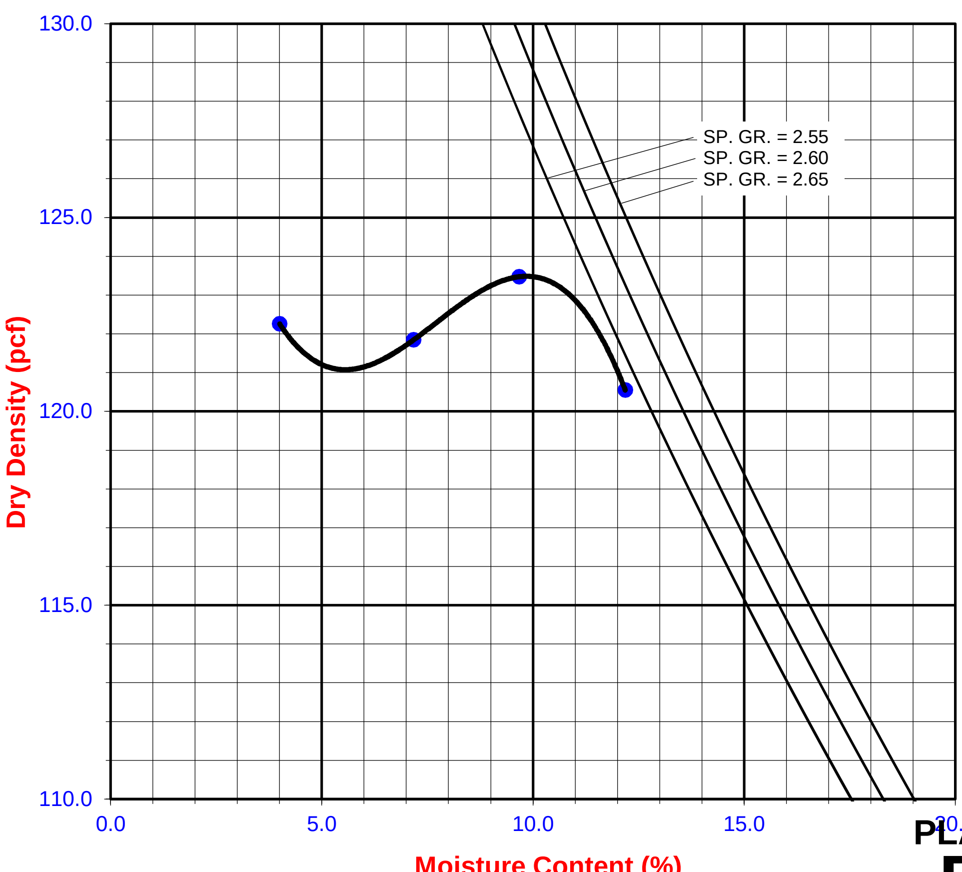


PLATE B5

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Leighton

Project Name:	OIAA ONT APMS	Tested By:	R. Densmore	Date:	10/23/19
Project No.:	2019-001	Input By:	J. Ward	Date:	10/24/19
Boring No.:	DYB19-04	Depth (ft.):	0-5		
Sample No.:	Bulk				
Soil Identification:	Brown Silty Sand (SM)				

Preparation Method: [X] Moist [ ] Dry — [X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft³) 0.07440 — *Ram Weight = 10 lb.; Drop = 18 in.*

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	6749	7504	7454	7271		
Weight of Mold (g)	2621	2621	2621	2621		
Net Weight of Soil (g)	4128	4883	4833	4650		
Wet Weight of Soil + Cont. (g)	607.4	562.3	628.8	595.7		
Dry Weight of Soil + Cont. (g)	582.1	527.6	575.6	534.1		
Weight of Container (g)	39.5	39.0	39.1	39.1		
Moisture Content (%)	4.66	7.10	9.92	12.44		
Wet Density (pcf)	122.3	144.7	143.2	137.8		
Dry Density (pcf)	116.9	135.1	130.3	122.5		

Maximum Dry Density (pcf) 135.6 **Optimum Moisture Content (%)** 7.7

PROCEDURE USED

[ ] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

[X] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI

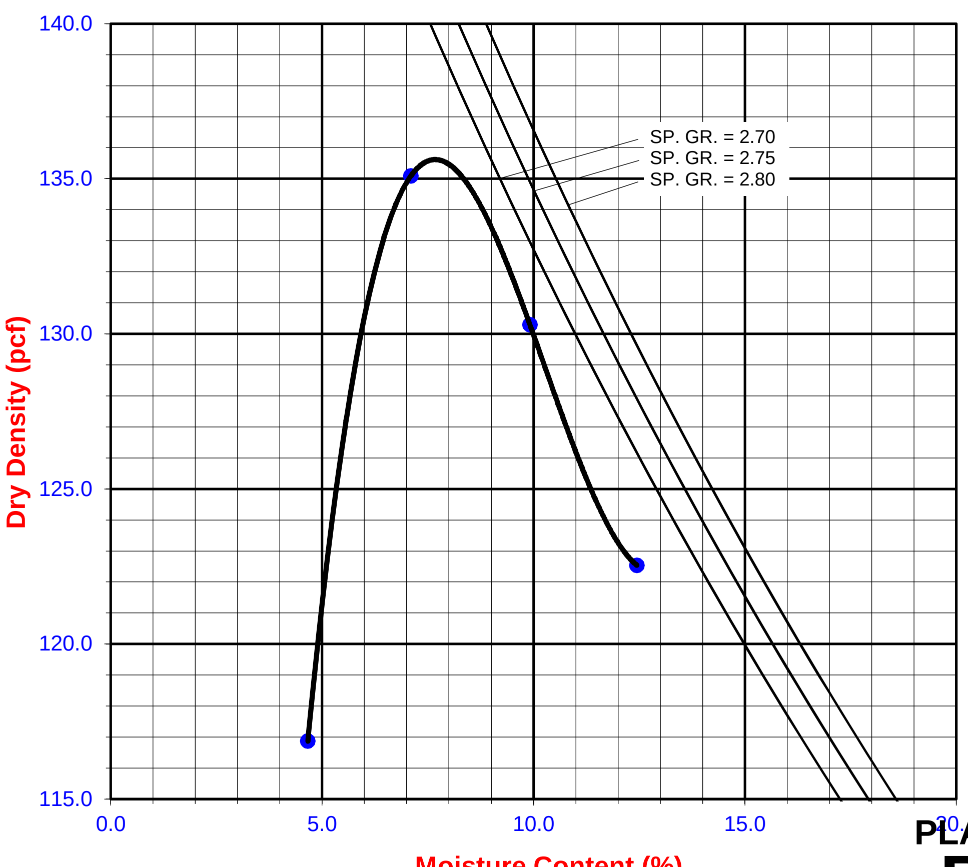


PLATE B6

MX DYB19-04 @ 0-5

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	OIAA ONT APMS	Tested By:	R. Densmore	Date:	10/25/19
Project No.:	2019-001	Input By:	J. Ward	Date:	10/28/19
Boring No.:	DYB19-05	Depth (ft.):	0-5		
Sample No.:	Bulk				
Soil Identification:	Dark Brown Silty Sand (SM)				

Preparation Method: [X] Moist [ ] Dry — [X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft³) 0.07440 — *Ram Weight = 10 lb.; Drop = 18 in.*

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	6851	6984	7068	7101		
Weight of Mold (g)	2621	2621	2621	2621		
Net Weight of Soil (g)	4230	4363	4447	4480		
Wet Weight of Soil + Cont. (g)	473.1	502.6	479.3	561.9		
Dry Weight of Soil + Cont. (g)	446.9	466.9	434.0	498.5		
Weight of Container (g)	39.3	62.8	39.2	39.4		
Moisture Content (%)	6.43	8.83	11.47	13.81		
Wet Density (pcf)	125.3	129.3	131.8	132.7		
Dry Density (pcf)	117.8	118.8	118.2	116.6		

Maximum Dry Density (pcf) 118.8 **Optimum Moisture Content (%)** 9.2

PROCEDURE USED

[ ] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

[X] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI

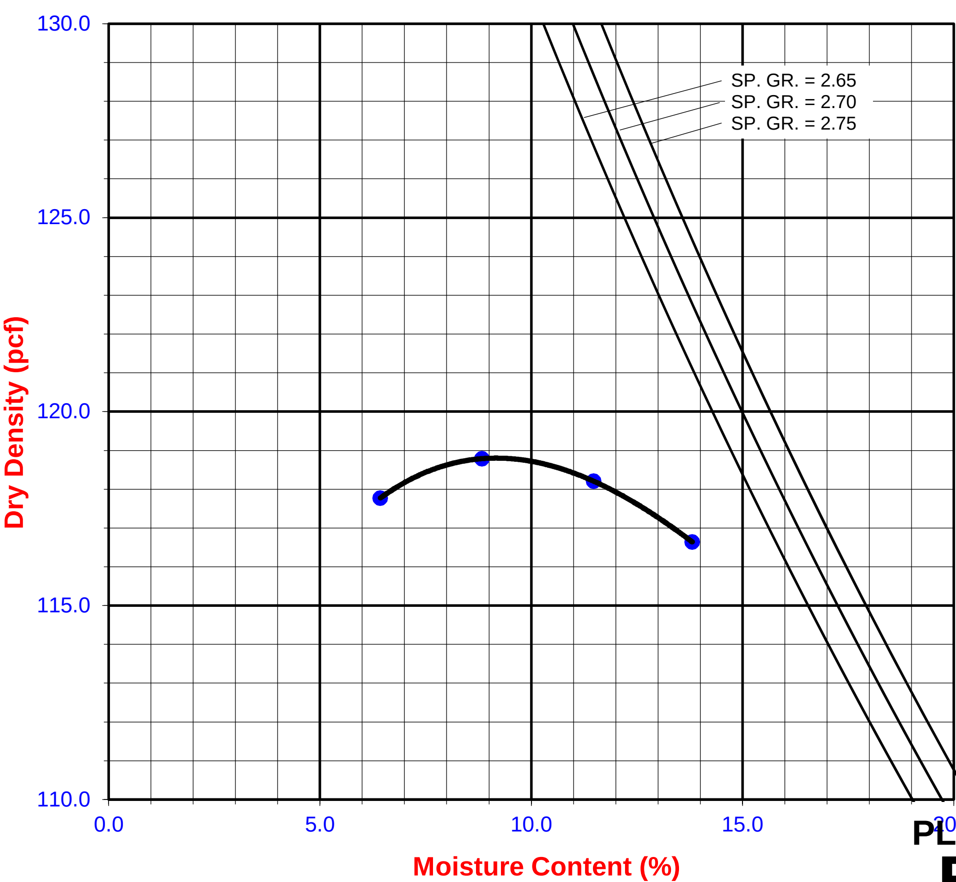


PLATE B7

MX DYB19-05 @ 0-5

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	OIAA ONT APMS	Tested By:	G. Berdy	Date:	10/23/19
Project No.:	2019-001	Input By:	J. Ward	Date:	10/23/19
Boring No.:	DYB19-06	Depth (ft.):	2-5		
Sample No.:	Bulk				
Soil Identification:	Olive Brown Silty Sand (SM)				

Preparation Method: [X] Moist [ ] Dry — [X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft³) 0.07440 — *Ram Weight = 10 lb.; Drop = 18 in.*

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	6921	7454	7370			
Weight of Mold (g)	2621	2621	2621			
Net Weight of Soil (g)	4300	4833	4749			
Wet Weight of Soil + Cont. (g)	756.2	740.4	715.6			
Dry Weight of Soil + Cont. (g)	725.9	700.2	666.2			
Weight of Container (g)	230.3	230.8	224.1			
Moisture Content (%)	6.11	8.56	11.17			
Wet Density (pcf)	127.4	143.2	140.7			
Dry Density (pcf)	120.1	131.9	126.6			

Maximum Dry Density (pcf) 132.3 **Optimum Moisture Content (%)** 9.1

PROCEDURE USED

[ ] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

[X] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI

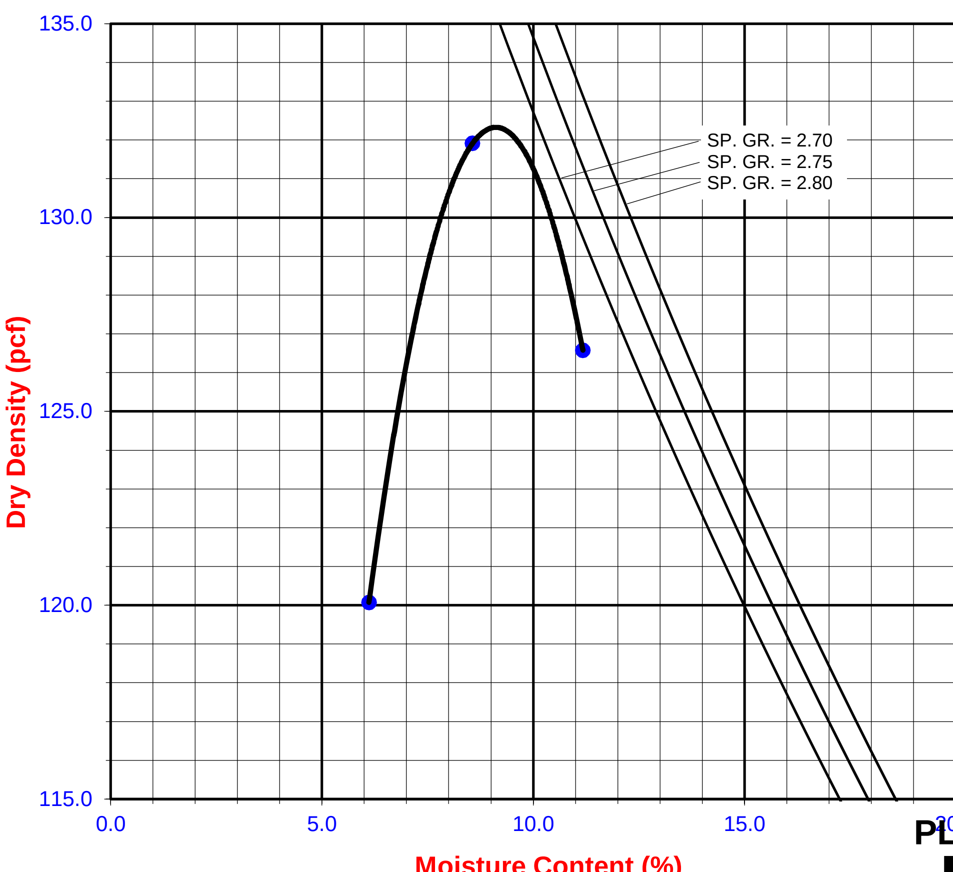


PLATE B8

MX DYB19-06 @ 2-5

CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOIL
ASTM D 1883-99

Leighton

Project Name:	OIAA ONT APMS	Tested By :	GEB/OHF	Date:	10/30/19
Project No. :	2019-001	Height of Drop (in):	18.0		
Boring No.:	DYB19-01	Wt. of Rammer (lbs) :	10.0		
Sample No.:	Bulk	Height of Sample (in) :	4.584		
Depth (ft.) :	0-5	Piston Diameter (in):	1.954		
Soil Description :	Dark Brown Silty Sand (SM)	Load Constant:	5.456932		

SAMPLE PREPARATION

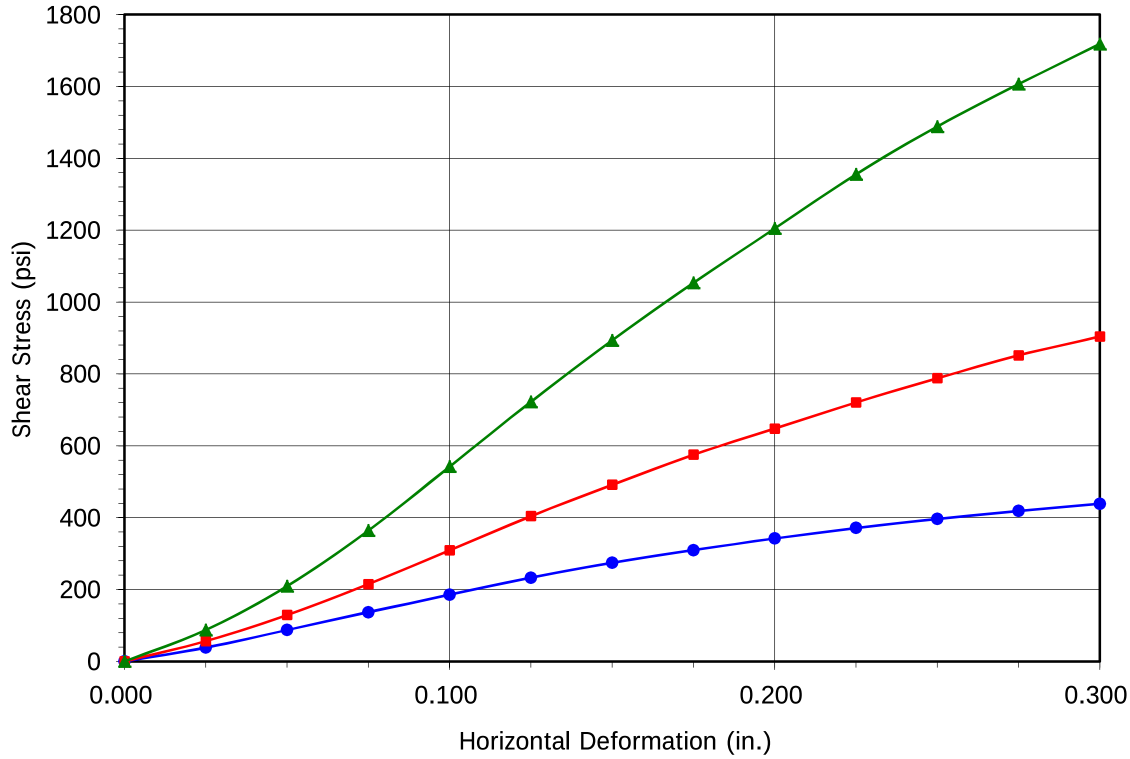
Blows Per Layer	● 10	■ 25	▲ 56
Mold Number	3	5	6
Weight of Wet Soil & Mold (g)	8493	8649	8892
Weight of Mold (g)	4157	4176	4198
Weight of Wet Soil (g)	4336	4473	4694
Mold Factor	0.029418	0.029431	0.029458
Wet Weight Soil + Container (g)	302.9	289.3	220.0
Dry Weight Soil + Container (g)	283.4	270.7	206.5
Weight of Container (g)	39.2	39.4	39.2
Initial Swell / Collapse Reading (in.)	0.1170	0.2550	0.2330

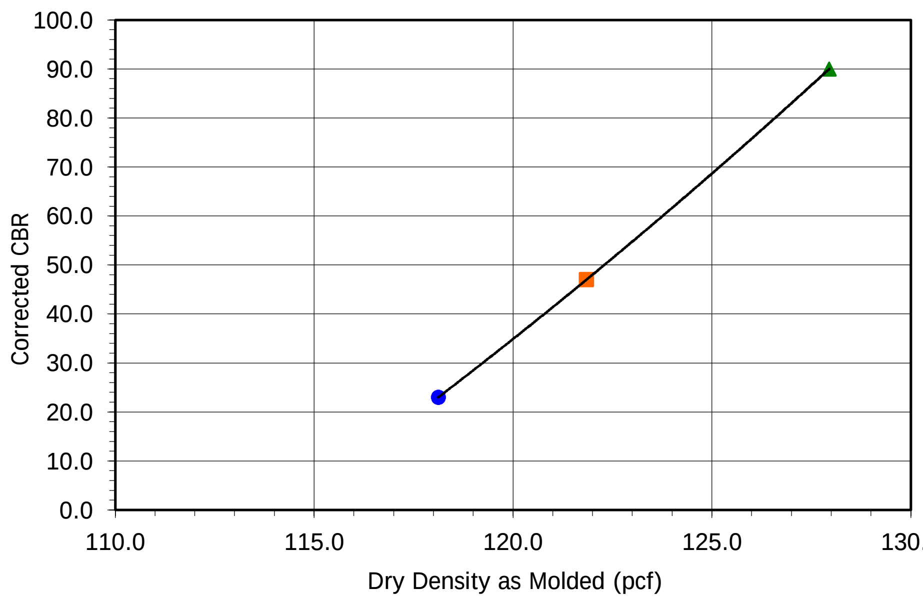
AFTER SOAKING

Final Swell / Collapse Reading (in.)	0.1170	0.2530	0.2280
Wt. Wet Soil + Mold + Base Plate (g)	11736	11817	11981
Weight of Mold+ Base Plate (g)	7207	7208	7215
Weight of Wet Soil (g)	4529	4609	4766
Wet Wt. Soil + Container (g)	415.1	421.5	399.2
Dry Wt. Soil + Container (g)	371.7	378.5	367.2
Weight of Container (g)	39.4	36.3	36.5

LOAD TEST DATA

Penetration (in.)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)
0.000	0.0	0.0	0.0	0.0	0.0	0.0
0.025	21.0	38.2	31.0	56.4	48.0	87.3
0.050	48.0	87.3	71.0	129.2	115.0	209.3
0.075	75.0	136.5	118.0	214.7	200.0	363.9
0.100	102.0	185.6	170.0	309.4	298.0	542.3
0.125	128.0	232.9	222.0	404.0	397.0	722.4
0.150	151.0	274.8	270.0	491.3	491.0	893.5
0.175	170.0	309.4	316.0	575.0	579.0	1053.6
0.200	188.0	342.1	356.0	647.8	662.0	1204.7
0.225	204.0	371.2	396.0	720.6	745.0	1355.7
0.250	218.0	396.7	433.0	787.9	818.0	1488.5
0.275	230.0	418.5	468.0	851.6	883.0	1606.8
0.300	241.0	438.6	497.0	904.4	944.0	1717.8
0.325	252.0	458.6	530.0	964.5	1005.0	1828.8
0.350	262.0	476.8	558.0	1015.4	1057.0	1923.5
0.375	273.0	496.8	580.0	1055.4	1095.0	1992.6
0.400	282.0	513.2	597.0	1086.4	1114.0	2027.2
0.425	290.0	527.7	611.0	1111.9	1121.0	2039.9
0.450	298.0	542.3	622.0	1131.9	1115.0	2029.0
0.475	307.0	558.7	625.0	1137.3	1113.0	2025.4
0.500	315.0	573.2	627.0	1141.0	1120.0	2038.1





Blows per layer	● 10		■ 25		▲ 56	
Condition	Before	After	Before	After	Before	After
Moisture Content (%)	8.0	13.1	8.0	12.6	8.1	9.7
Dry Density (pcf)	118.1	117.8	121.8	120.5	127.9	128.0
Swell(+)/Collapse(-) (%)	0.00		-0.04		-0.11	
Bearing Ratio	23.0		47.0		90.0	

Boring No.: DYB19-01
Sample No.: Bulk
Depth (ft): 0-5
Sample Description:
Dark Brown Silty Sand (SM)

Leighton

CALIFORNIA BEARING RATIO of LABORATORY-COMPACTED SOIL
(ASTM D 1883)

Project No.: 2019-001

OIAA ONT APMS

10-19

PLATE B10

CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOIL

ASTM D 1883-99

Project Name:	OIAA ONT APMS	Tested By :	GEB/OHF	Date:	10/24/19
Project No. :	2019-001	Height of Drop (in):	18.0		
Boring No.:	DYB19-02	Wt. of Rammer (lbs) :	10.0		
Sample No.:	Bulk	Height of Sample (in) :	4.584		
Depth (ft.) :	0-5	Piston Diameter (in):	1.954		
Soil Description :	Olive brown (SW-SM)g	Load Constant:	5.456932		

SAMPLE PREPARATION

Blows Per Layer	● 10	■ 25	▲ 56
Mold Number	4	3A	10
Weight of Wet Soil & Mold (g)	8712	8716	8867
Weight of Mold (g)	4204	4122	4156
Weight of Wet Soil (g)	4508	4594	4711
Mold Factor	0.029465	0.029406	0.029365
Wet Weight Soil + Container (g)	431.2	364.3	305.0
Dry Weight Soil + Container (g)	411.4	346.1	289.8
Weight of Container (g)	39.1	39.4	39.2
Initial Swell / Collapse Reading (in.)	0.2580	0.1730	0.1680

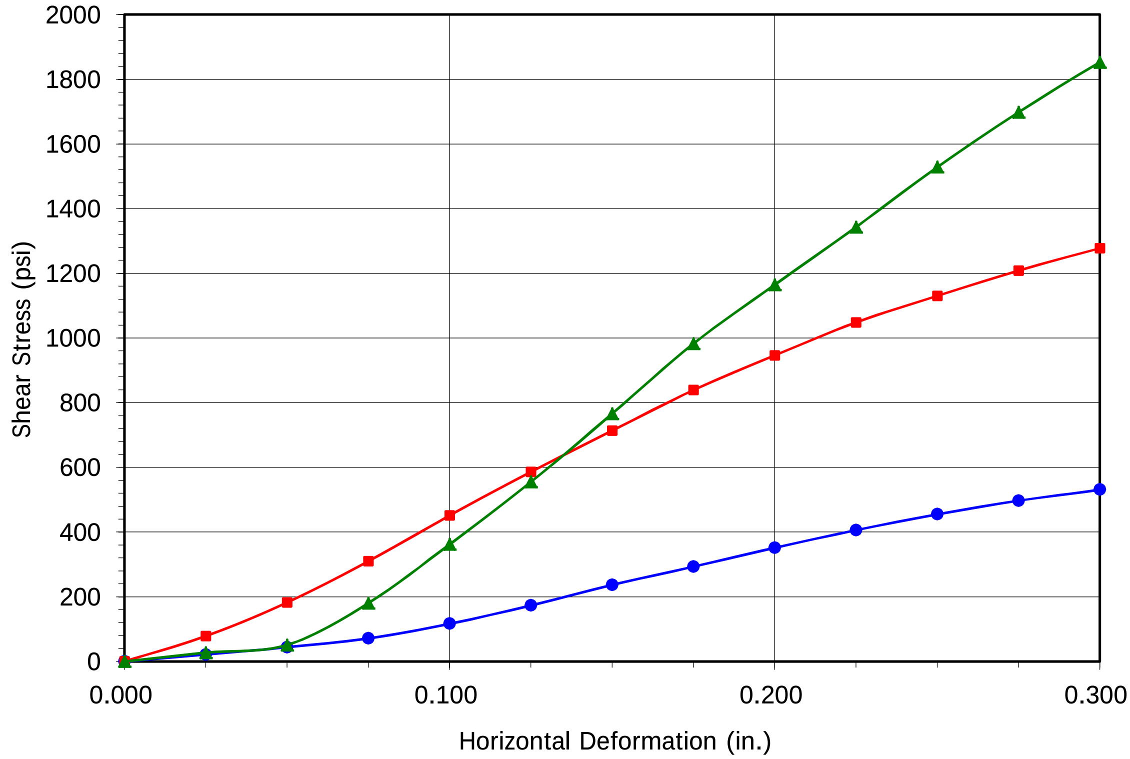
AFTER SOAKING

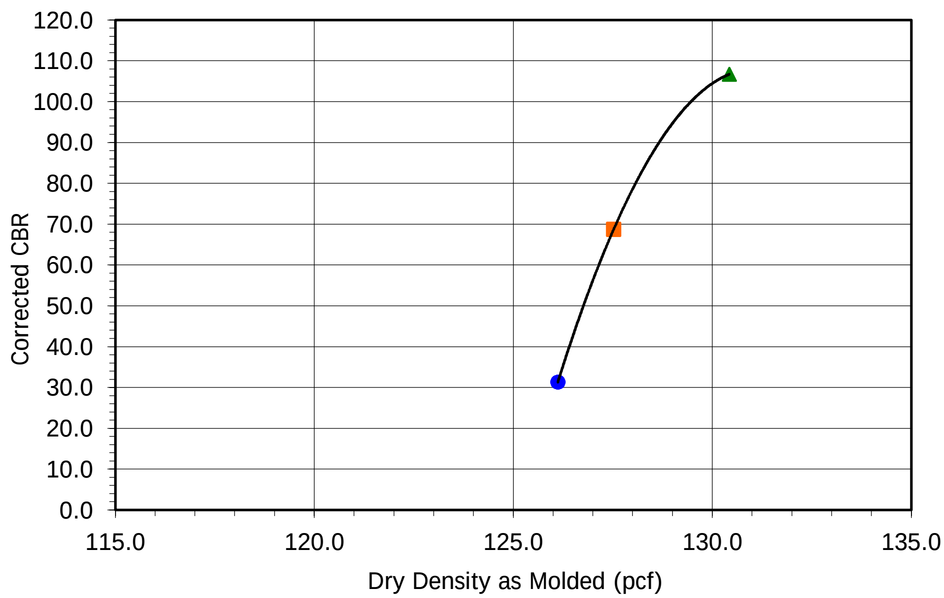
Final Swell / Collapse Reading (in.)	0.2565	0.1730	0.1650
Wt. Wet Soil + Mold + Base Plate (g)	11954	11924	12037
Weight of Mold+ Base Plate (g)	7264	7165	7203
Weight of Wet Soil (g)	4690	4759	4834
Wet Wt. Soil + Container (g)	454.5	415.1	403.6
Dry Wt. Soil + Container (g)	413.3	384.1	375.5
Weight of Container (g)	39.1	39.4	38.5

LOAD TEST DATA

Penetration (in.)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)
0.000	0.0	0.0	0.0	0.0	0.0	0.0
0.025	11.5	20.9	43.0	78.2	15.0	27.3
0.050	24.0	43.7	100.0	182.0	28.0	51.0
0.075	39.0	71.0	170.0	309.4	99.0	180.2
0.100	64.0	116.5	248.0	451.3	199.0	362.1
0.125	95.0	172.9	322.0	586.0	305.0	555.0
0.150	130.0	236.6	392.0	713.3	421.0	766.1
0.175	161.0	293.0	461.0	838.9	540.0	982.7
0.200	193.0	351.2	520.0	946.3	640.0	1164.6
0.225	223.0	405.8	576.0	1048.2	738.0	1343.0
0.250	250.0	454.9	621.0	1130.1	840.0	1528.6
0.275	273.0	496.8	664.0	1208.3	933.0	1697.8
0.300	292.0	531.4	702.0	1277.5	1018.0	1852.5
0.325	315.0	573.2	738.0	1343.0	1093.0	1989.0
0.350	332.0	604.2	775.0	1410.3	1164.0	2118.2
0.375	351.0	638.7	806.0	1466.7	1239.0	2254.7
0.400	366.0	666.0	836.0	1521.3	1285.0	2338.4
0.425	381.0	693.3	861.0	1566.8	1327.0	2414.8
0.450	396.0	720.6	879.0	1599.6	1366.0	2485.8
0.475	411.0	747.9	898.0	1634.1	1400.0	2547.6
0.500	426.0	775.2	910.0	1656.0	1423.0	2589.[illegible]

PLATE B11





Blows per layer	10		25		56	
Condition	Before	After	Before	After	Before	After
Moisture Content (%)	5.3	11.0	5.9	9.0	6.1	8.3
Dry Density (pcf)	126.1	124.5	127.5	128.4	130.4	131.0
Swell(+)/Collapse(-) (%)	-0.03		0.00		-0.07	
Bearing Ratio	31.3		68.7		106.7	

Boring No.: DYB19-02
Sample No.: Bulk
Depth (ft): 0-5
Sample Description:
Olive brown (SW-SM)g

Leighton

CALIFORNIA BEARING RATIO of LABORATORY-COMPACTED SOIL
(ASTM D 1883)

Project No.: 2019-001

OIAA ONT APMS

10-19

PLATE B12

CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOIL

ASTM D 1883-99

Project Name:	OIAA ONT APMS	Tested By :	GEB/OHF	Date:	10/31/19
Project No. :	2019-001	Height of Drop (in):	18.0		
Boring No.:	DYB19-03	Wt. of Rammer (lbs) :	10.0		
Sample No.:	Bulk	Height of Sample (in) :	4.584		
Depth (ft.) :	0-5	Piston Diameter (in):	1.954		
Soil Description :	Olive brown SW-SM	Load Constant:	5.456932		

SAMPLE PREPARATION

Blows Per Layer	● 10	■ 25	▲ 56
Mold Number	6A	3A	4
Weight of Wet Soil & Mold (g)	8413	8560	8774
Weight of Mold (g)	4110	4122	4204
Weight of Wet Soil (g)	4303	4438	4570
Mold Factor	0.029478	0.029406	0.029465
Wet Weight Soil + Container (g)	381.9	314.6	341.0
Dry Weight Soil + Container (g)	349.9	289.7	313.2
Weight of Container (g)	39.3	38.8	40.4
Initial Swell / Collapse Reading (in.)	0.1360	0.1920	0.2510

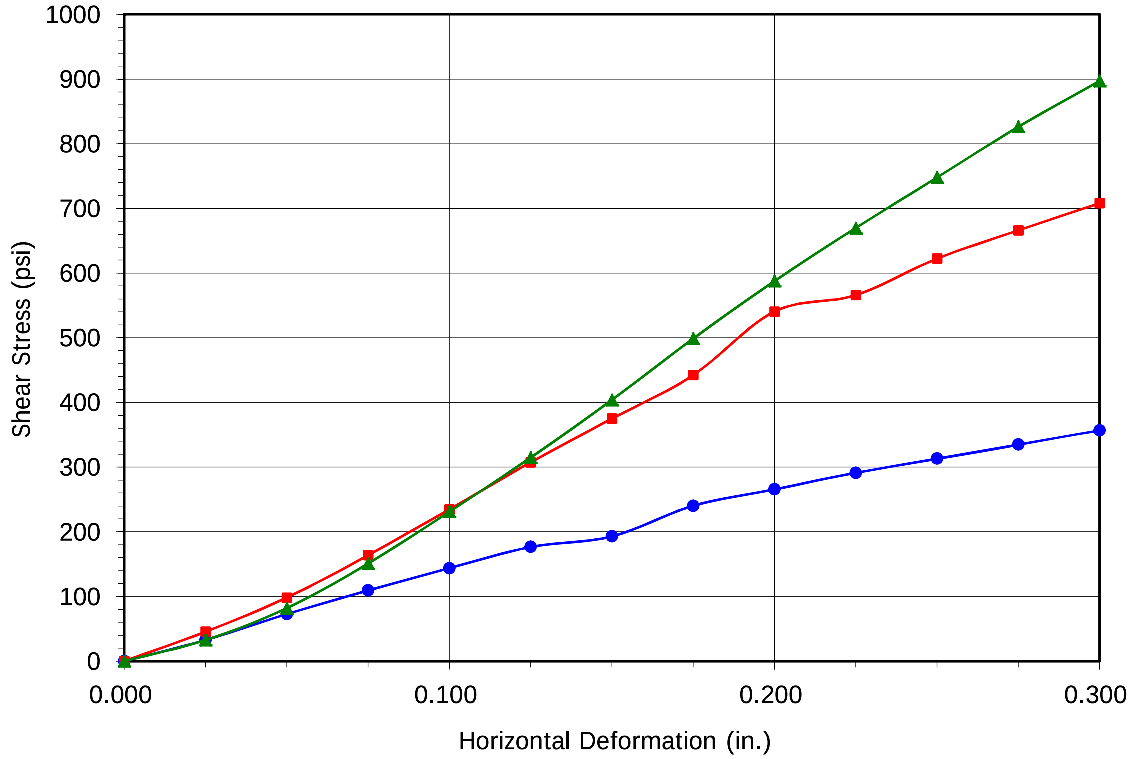
AFTER SOAKING

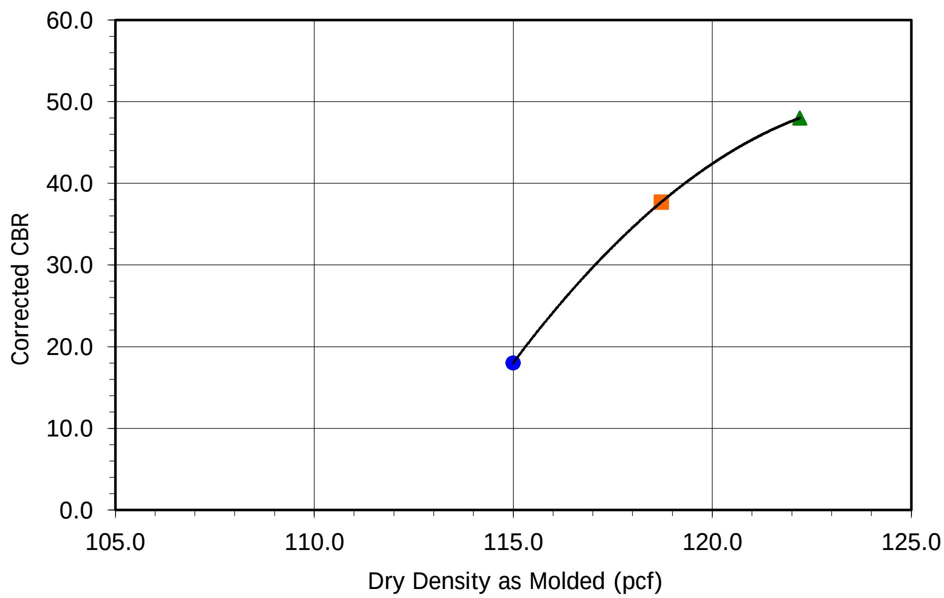
Final Swell / Collapse Reading (in.)	0.1300	0.1850	0.2430
Wt. Wet Soil + Mold + Base Plate (g)	11559	11688	11861
Weight of Mold+ Base Plate (g)	7130	7165	7264
Weight of Wet Soil (g)	4429	4523	4597
Wet Wt. Soil + Container (g)	413.4	426.5	484.8
Dry Wt. Soil + Container (g)	368.0	384.6	439.9
Weight of Container (g)	39.0	38.4	40.4

LOAD TEST DATA

Penetration (in.)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)
0.000	0.0	0.0	0.0	0.0	0.0	0.0
0.025	18.0	32.8	25.0	45.5	18.0	32.8
0.050	40.0	72.8	54.0	98.3	45.0	81.9
0.075	60.0	109.2	90.0	163.8	83.0	151.0
0.100	79.0	143.8	129.0	234.7	127.0	231.1
0.125	97.0	176.5	169.0	307.5	173.0	314.8
0.150	106.0	192.9	206.0	374.9	222.0	404.0
0.175	132.0	240.2	243.0	442.2	274.0	498.6
0.200	146.0	265.7	297.0	540.5	323.0	587.8
0.225	160.0	291.2	311.0	565.9	368.0	669.7
0.250	172.0	313.0	342.0	622.4	411.0	747.9
0.275	184.0	334.8	366.0	666.0	454.0	826.2
0.300	196.0	356.7	389.0	707.9	493.0	897.1
0.325	207.0	376.7	410.0	746.1	533.0	969.9
0.350	216.0	393.1	429.0	780.7	567.0	1031.8
0.375	224.0	407.6	443.0	806.1	600.0	1091.8
0.400	232.0	422.2	456.0	829.8	626.0	1139.2
0.425	239.0	434.9	467.0	849.8	645.0	1173.7
0.450	246.0	447.7	478.0	869.8	659.0	1199.2
0.475	252.5	459.5	488.0	888.0	671.0	1221.0
0.500	259.0	471.3	504.0	917.1	682.0	1241.[illegible]

PLATE
B13





Blows per layer	● 10		■ 25		▲ 56	
Condition	Before	After	Before	After	Before	After
Moisture Content (%)	10.3	13.8	9.9	12.1	10.2	11.2
Dry Density (pcf)	115.0	114.7	118.7	118.6	122.2	121.8
Swell(+)/Collapse(-) (%)	-0.13		-0.15		-0.17	
Bearing Ratio	18.0		37.7		48.0	

Boring No.:	DYB19-03
Sample No.:	Bulk
Depth (ft):	0-5
Sample Description:	
	Olive brown SW-SM

Leighton

CALIFORNIA BEARING RATIO of LABORATORY-COMPACTED SOIL
(ASTM D 1883)

Project No.: 2019-001

OIAA ONT APMS

10-19

PLATE B14

CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOIL

ASTM D 1883-99

Leighton

Project Name:	OIAA ONT APMS	Tested By :	ACS/OHF
		Date:	10/25/19
Project No. :	2019-001	Height of Drop (in):	18.0
Boring No.:	DYB19-04	Wt. of Rammer (lbs) :	10.0
Sample No.:	Bulk	Height of Sample (in) :	4.584
Depth (ft.) :	0-5	Piston Diameter (in):	1.954
Soil Description :	Brown Silty Sand (SM)	Load Constant:	5.456932

SAMPLE PREPARATION

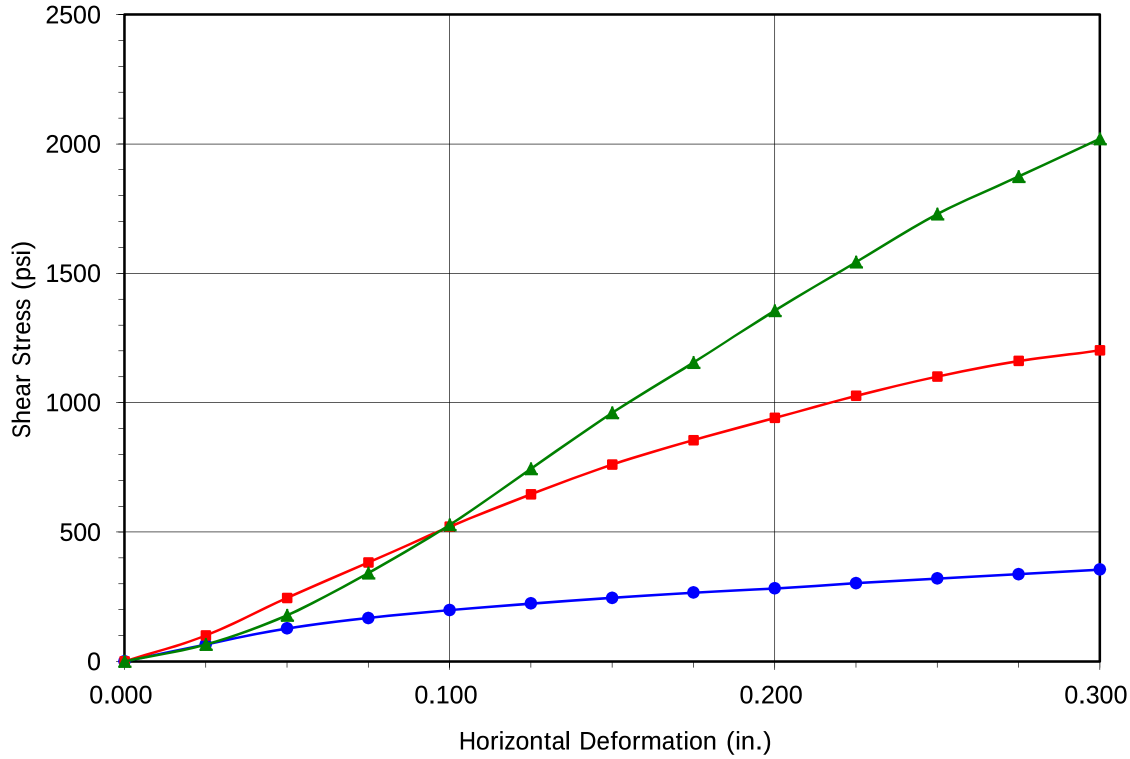
Blows Per Layer	● 10	■ 25	▲ 56
Mold Number	5	6A	4A
Weight of Wet Soil & Mold (g)	8747	8927	9131
Weight of Mold (g)	4176	4110	4122
Weight of Wet Soil (g)	4571	4817	5009
Mold Factor	0.029431	0.029478	0.029391
Wet Weight Soil + Container (g)	354.5	281.1	368.8
Dry Weight Soil + Container (g)	332.5	264.8	346.0
Weight of Container (g)	38.8	39.5	38.2
Initial Swell / Collapse Reading (in.)	0.2530	0.1195	0.1765

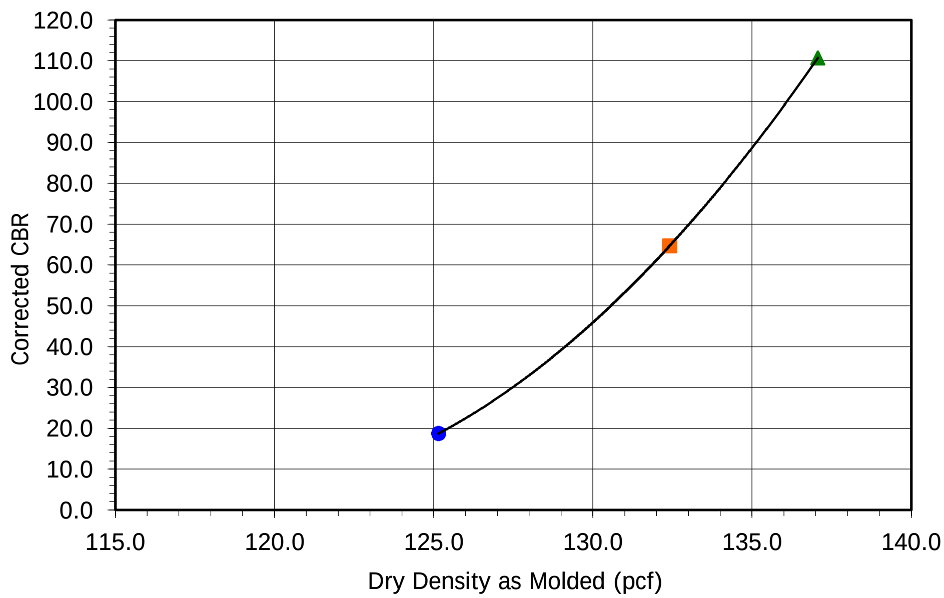
AFTER SOAKING

Final Swell / Collapse Reading (in.)	0.2610	0.1230	0.1920
Wt. Wet Soil + Mold + Base Plate (g)	11940	12034	12212
Weight of Mold+ Base Plate (g)	7208	7130	7168
Weight of Wet Soil (g)	4732	4904	5044
Wet Wt. Soil + Container (g)	482.7	514.0	552.2
Dry Wt. Soil + Container (g)	438.8	473.9	513.3
Weight of Container (g)	38.8	39.3	39.5

LOAD TEST DATA

Penetration (in.)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)
0.000	0.0	0.0	0.0	0.0	0.0	0.0
0.025	36.0	65.5	55.0	100.1	36.0	65.5
0.050	70.0	127.4	135.0	245.7	98.0	178.3
0.075	92.0	167.4	210.0	382.1	188.0	342.1
0.100	109.0	198.4	286.0	520.4	290.0	527.7
0.125	123.0	223.8	355.0	646.0	409.0	744.3
0.150	135.0	245.7	418.0	760.7	528.0	960.8
0.175	146.0	265.7	470.0	855.3	635.0	1155.5
0.200	155.0	282.1	517.0	940.8	745.0	1355.7
0.225	166.0	302.1	564.0	1026.3	848.0	1543.1
0.250	176.0	320.3	605.0	1100.9	950.0	1728.8
0.275	185.0	336.7	638.0	1161.0	1030.0	1874.3
0.300	195.0	354.8	661.0	1202.8	1110.0	2019.9
0.325	204.0	371.2	696.0	1266.5	1190.0	2165.5
0.350	214.0	389.4	725.0	1319.3	1260.0	2292.9
0.375	225.0	409.4	748.0	1361.2	1327.0	2414.8
0.400	233.0	424.0	771.0	1403.0	1384.0	2518.5
0.425	242.0	440.4	794.0	1444.9	1446.0	2631.3
0.450	251.0	456.8	818.0	1488.5	1510.0	2747.8
0.475	261.0	475.0	845.0	1537.7	1573.0	2862.5
0.500	271.0	493.1	868.0	1579.5	1632.0	2969.[illegible]





Blows per layer	● 10		■ 25		▲ 56	
Condition	Before	After	Before	After	Before	After
Moisture Content (%)	7.5	11.0	7.2	9.2	7.4	8.2
Dry Density (pcf)	125.2	125.5	132.4	132.3	137.1	137.0
Swell(+)/Collapse(-) (%)	0.17		0.08		0.34	
Bearing Ratio	18.7		64.7		110.7	

Boring No.: DYB19-04
Sample No.: Bulk
Depth (ft): 0-5
Sample Description:
Brown Silty Sand (SM)

Leighton

CALIFORNIA BEARING RATIO of LABORATORY-COMPACTED SOIL
(ASTM D 1883)

Project No.: 2019-001

OIAA ONT APMS

10-19

PLATE B16

Leighton

CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOIL

ASTM D 1883-99

Project Name:	OIAA ONT APMS	Tested By :	OHF/ACS	Date:	11/01/19
Project No. :	2019-001	Height of Drop (in):	18.0		
Boring No.:	DYB19-05	Wt. of Rammer (lbs) :	10.0		
Sample No.:	Bulk	Height of Sample (in) :	4.584		
Depth (ft.) :	0-5	Piston Diameter (in):	1.954		
Soil Description :	Dark Brown Silty Sand (SM)	Load Constant:	5.456932		

SAMPLE PREPARATION

Blows Per Layer	● 10	■ 25	▲ 56
Mold Number	10	4A	6
Weight of Wet Soil & Mold (g)	8227	8389	8701
Weight of Mold (g)	4156	4122	4198
Weight of Wet Soil (g)	4071	4267	4503
Mold Factor	0.029365	0.029391	0.029458
Wet Weight Soil + Container (g)	277.2	280.8	365.4
Dry Weight Soil + Container (g)	257.0	260.6	338.1
Weight of Container (g)	39.0	40.3	38.8
Initial Swell / Collapse Reading (in.)	0.1608	0.1820	0.2186

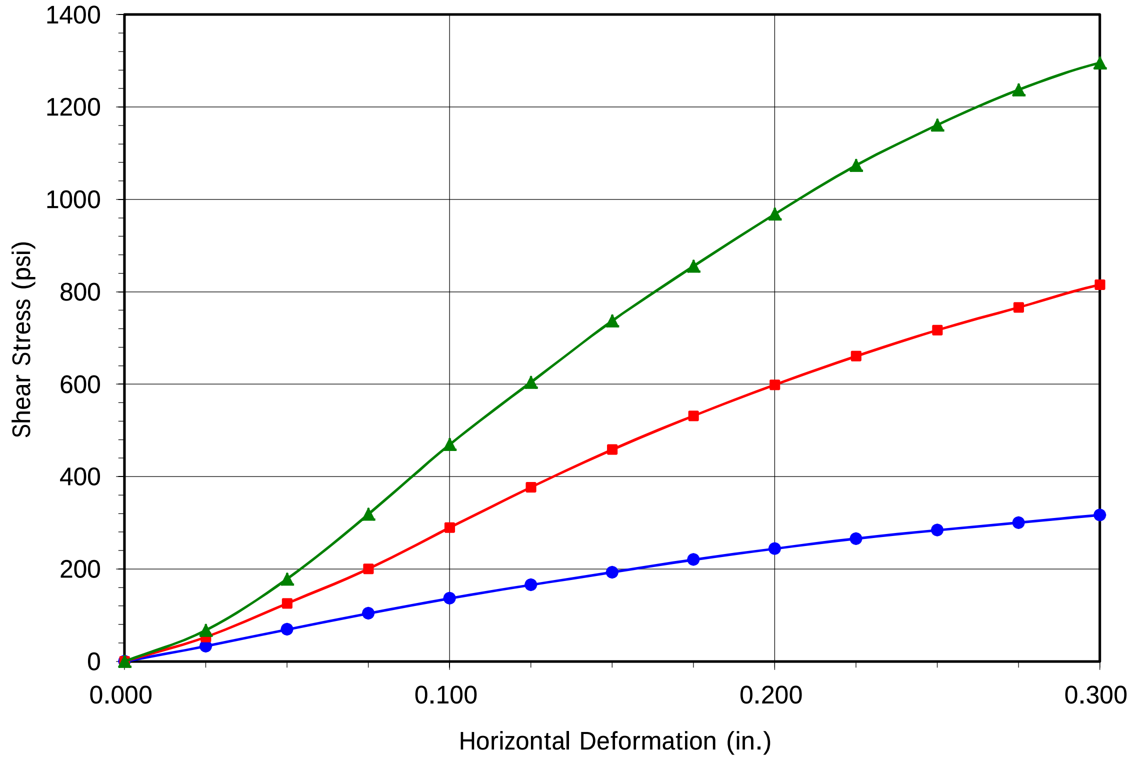
AFTER SOAKING

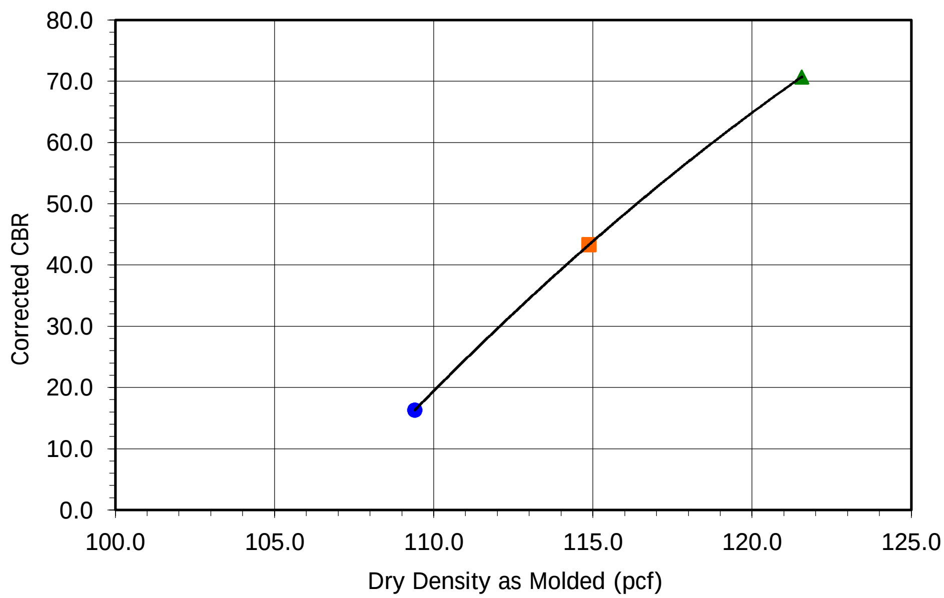
Final Swell / Collapse Reading (in.)	0.1520	0.1720	0.2160
Wt. Wet Soil + Mold + Base Plate (g)	11545	11679	11828
Weight of Mold+ Base Plate (g)	7203	7168	7215
Weight of Wet Soil (g)	4342	4511	4613
Wet Wt. Soil + Container (g)	566.4	450.6	475.0
Dry Wt. Soil + Container (g)	493.7	401.0	432.3
Weight of Container (g)	39.8	39.4	39.6

LOAD TEST DATA

Penetration (in.)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)
0.000	0.0	0.0	0.0	0.0	0.0	0.0
0.025	18.0	32.8	29.0	52.8	37.0	67.3
0.050	38.0	69.2	69.0	125.6	98.0	178.3
0.075	57.0	103.7	110.0	200.2	175.0	318.5
0.100	75.0	136.5	159.0	289.3	258.0	469.5
0.125	91.0	165.6	207.0	376.7	332.0	604.2
0.150	106.0	192.9	252.0	458.6	405.0	737.0
0.175	121.0	220.2	292.0	531.4	470.0	855.3
0.200	134.0	243.8	329.0	598.7	532.0	968.1
0.225	146.0	265.7	363.0	660.6	590.0	1073.6
0.250	156.0	283.9	394.0	717.0	638.0	1161.0
0.275	165.0	300.3	421.0	766.1	680.0	1237.4
0.300	174.0	316.6	448.0	815.2	712.0	1295.7
0.325	180.0	327.6	462.0	840.7	729.0	1326.6
0.350	184.0	334.8	475.0	864.4	732.0	1332.1
0.375	190.0	345.8	479.0	871.7	728.0	1324.8
0.400	193.0	351.2	484.0	880.8	727.0	1323.0
0.425	197.0	358.5	489.0	889.9	728.0	1324.8
0.450	202.0	367.6	496.0	902.6	734.0	1335.7
0.475	206.0	374.9	503.0	915.3	745.0	1355.7
0.500	211.0	384.0	500.0	909.9	756.0	1375.[illegible]

PLATE B17





Blows per layer	● 10		■ 25		▲ 56	
Condition	Before	After	Before	After	Before	After
Moisture Content (%)	9.3	16.0	9.2	13.7	9.1	10.9
Dry Density (pcf)	109.4	109.9	114.9	116.6	121.6	122.6
Swell(+)/Collapse(-) (%)	-0.19		-0.22		-0.06	
Bearing Ratio	16.3		43.3		70.7	

Boring No.:	DYB19-05
Sample No.:	Bulk
Depth (ft):	0-5
Sample Description:	
	Dark Brown Silty Sand (SM)

Leighton

CALIFORNIA BEARING RATIO of LABORATORY-COMPACTED SOIL
(ASTM D 1883)

Project No.: 2019-001

OIAA ONT APMS

11-19

PLATE B18

CALIFORNIA BEARING RATIO (CBR)
OF LABORATORY-COMPACTED SOIL
ASTM D 1883-99

Leighton

Project Name:	OIAA ONT APMS	Tested By :	GEB/OHF
		Date:	10/24/19
Project No. :	2019-001	Height of Drop (in):	18.0
Boring No.:	DYB19-06	Wt. of Rammer (lbs) :	10.0
Sample No.:	Bulk	Height of Sample (in) :	4.584
Depth (ft.) :	2-5	Piston Diameter (in):	1.954
Soil Description :	Olive Brown Silty Sand (SM)	Load Constant:	5.456932

SAMPLE PREPARATION

Blows Per Layer	● 10	■ 25	▲ 56
Mold Number	3	6	5A
Weight of Wet Soil & Mold (g)	8610	8929	9054
Weight of Mold (g)	4157	4198	4150
Weight of Wet Soil (g)	4453	4731	4904
Mold Factor	0.029418	0.029458	0.029355
Wet Weight Soil + Container (g)	295.70	278.30	209.20
Dry Weight Soil + Container (g)	274.20	257.50	196.00
Weight of Container (g)	39.70	39.10	38.90
Initial Swell / Collapse Reading (in.)	0.1280	0.2140	0.2000

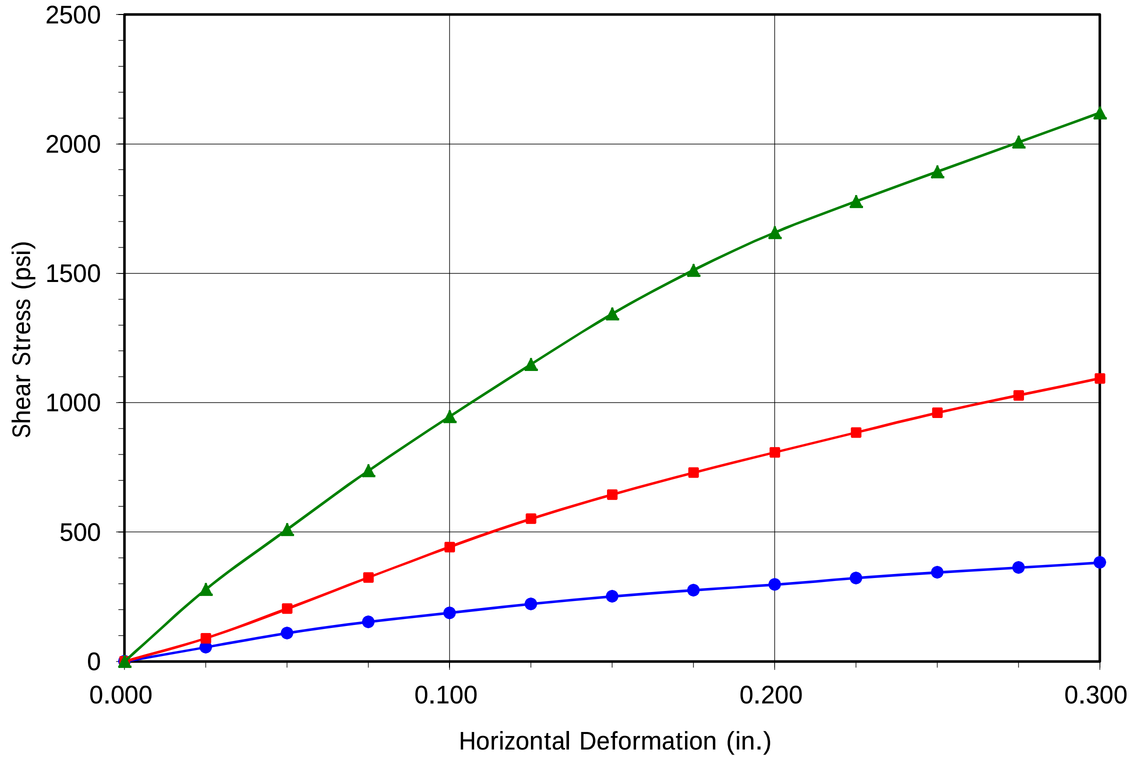
AFTER SOAKING

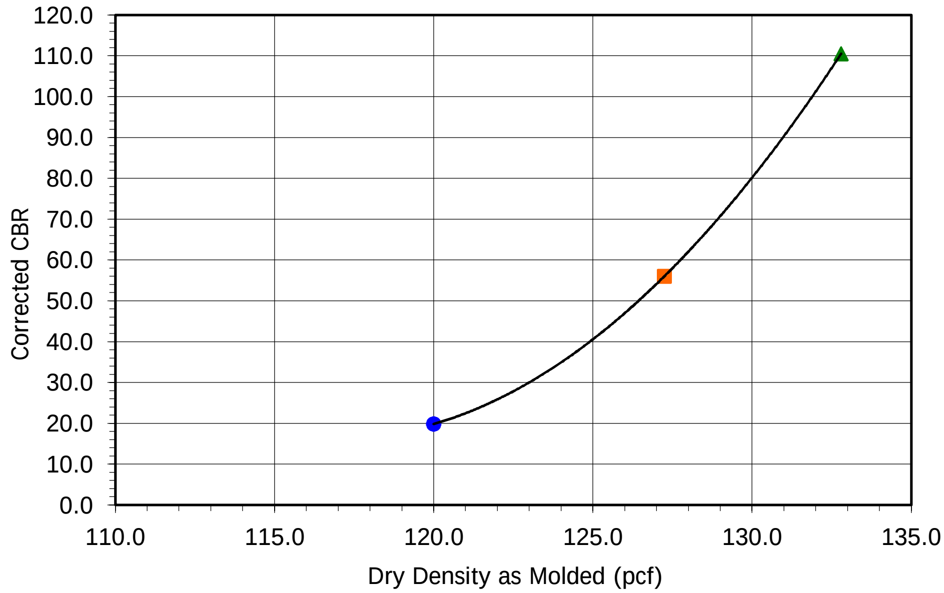
Final Swell / Collapse Reading (in.)	0.1270	0.2120	0.2090
Wt. Wet Soil + Mold + Base Plate (g)	11799	11999	12084
Weight of Mold+ Base Plate (g)	7207	7215	7153
Weight of Wet Soil (g)	4592	4784	4931
Wet Wt. Soil + Container (g)	251.50	353.30	347.80
Dry Wt. Soil + Container (g)	226.80	320.50	318.80
Weight of Container (g)	39.20	39.40	39.80

LOAD TEST DATA

Penetration (in.)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)	Load Rdg	Stress (psi)
0.000	0.0	0.0	0.0	0.0	0.0	0.0
0.025	30.0	54.6	49.0	89.2	153.0	278.4
0.050	60.0	109.2	112.0	203.8	280.0	509.5
0.075	84.0	152.9	178.0	323.9	405.0	737.0
0.100	103.0	187.4	243.0	442.2	520.0	946.3
0.125	122.0	222.0	303.0	551.4	631.0	1148.3
0.150	138.0	251.1	354.0	644.2	738.0	1343.0
0.175	151.0	274.8	401.0	729.7	831.0	1512.2
0.200	163.0	296.6	444.0	808.0	911.0	1657.8
0.225	177.0	322.1	486.0	884.4	977.0	1777.9
0.250	189.0	343.9	528.0	960.8	1040.0	1892.5
0.275	199.0	362.1	565.0	1028.2	1103.0	2007.2
0.300	210.0	382.1	601.0	1093.7	1165.0	2120.0
0.325	221.0	402.2	638.0	1161.0	1230.0	2238.3
0.350	232.0	422.2	674.0	1226.5	1292.0	2351.1
0.375	242.0	440.4	704.0	1281.1	1355.0	2465.7
0.400	252.0	458.6	725.0	1319.3	1418.0	2580.4
0.425	262.0	476.8	733.0	1333.9	1480.0	2693.2
0.450	273.0	496.8	741.0	1348.4	1543.0	2807.9
0.475	285.0	518.6	748.0	1361.2	1603.0	2917.0
0.500	296.0	538.6	754.0	1372.1	1662.0	3024.[illegible]

PLATE
B19





Blows per layer	● 10		■ 25		▲ 56	
Condition	Before	After	Before	After	Before	After
Moisture Content (%)	9.2	13.2	9.5	11.7	8.4	10.4
Dry Density (pcf)	120.0	119.4	127.2	126.2	132.8	131.1
Swell(+)/Collapse(-) (%)	-0.02		-0.04		0.20	
Bearing Ratio	19.8		56.0		110.5	

Boring No.: DYB19-06
Sample No.: Bulk
Depth (ft): 2-5
Sample Description:
Olive Brown Silty Sand (SM)

Leighton

CALIFORNIA BEARING RATIO of LABORATORY-COMPACTED SOIL
(ASTM D 1883)

Project No.: 2019-001

OIAA ONT APMS

10-19

PLATE
B20

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