CONTENTS

2 Inventory of Existing Facilities and Conditions 2-1
2.1 Airfield 2-4
2.1.1 Runway System 2-4
2.1.2 Taxiway System 2-6
2.1.3 Apron Areas 2-8
2.1.4 Airside Pavement Condition 2-10
2.1.5 Pavement Markings 2-12
2.1.6 Navigational and Lighting Aids 2-12
2.1.7 Airfield Signage 2-15
2.1.8 Aircraft Storage 2-15
2.2 Passenger Terminal Building 2-17
2.2.1 Airline Ticketing Lobby 2-17
2.2.2 Baggage Claim 2-18
2.2.3 Passenger Security 2-18
2.2.4 Air Carrier Hold Rooms 2-19
2.2.5 Concessions and Amenities 2-20
2.2.6 Rental Car Counters 2-21
2.2.7 Airport Administrative Offices 2-21
2.2.8 Air Traffic Control Tower 2-22
2.2.9 Terminal Building Functional Areas 2-22
2.3 Parking and Access 2-27
2.3.1 Terminal Access Road and Curbside 2-27
2.3.2 Parking 2-30
2.3.3 Landside Pavement Condition 2-34
2.4 Support Facilities 2-36
2.4.1 Aircraft Fueling 2-36
2.4.2 Aircraft Rescue and Fire Fighting (ARFF) 2-36
2.4.3 Snow and Ice Control 2-37

2.4.4 Aircraft Maintenance 2-38
2.4.5 Additional Airport Facilities 2-38
2.5 Airport Fencing 2-38
2.6 Utility Infrastructure 2-38
2.7 Military Facilities 2-39
2.8 Airspace Environment 2-39
2.8.1 Airspace Classification 2-39
2.8.2 Aeronautical Charts 2-41
2.8.3 Instrument Approach Capabilities 2-43
2.9 Meteorological Conditions 2-44
2.9.1 Local Climate 2-44
2.9.2 Wind Coverage 2-44
2.10 Environmental Considerations 2-50
2.11 Financial Structure 2-51

FIGURES

Figure 2-1 – Existing Facilities 2-2
Figure 2-2 – Building Diagram 2-3
Figure 2-3 – Existing Taxiway Configuration 2-6
Figure 2-4 – Apron Areas 2-8
Figure 2-5 – Gate Layout 2-9
Figure 2-6 – Airside Pavement Conditions 2-11
Figure 2-7 – Terminal – Level One Floor Plan 2-25
Figure 2-8 – Terminal – Level Two Floor Plan 2-26
Figure 2-9 – Terminal Access Road and Curbside 2-29
Figure 2-10 – On-Airport Public Parking 2-31
Figure 2-11 – Rental Car Facilities 2-33
Figure 2-12 – Landside Pavement Conditions 2-35
Figure 2-13 – U.S. Airspace Classification 2-40
Figure 2-14 – Aeronautical Chart 2-42
Figure 2-15 – All-Weather Wind Rose 2-47
Figure 2-16 – VFR Wind Rose 2-48
Figure 2-17 – IFR Wind Rose 2-49

TABLES

Table 2-1 – Existing Runway Specifications 2-5
Table 2-2 – Existing Taxiway Specifications 2-7
Table 2-3 – Navigational Aids and Airfield Lighting 2-12
Table 2-4 – Aircraft Hangar Facilities 2-16
Table 2-5 – Bag Claim Device Assignments 2-18
Table 2-6 – Air Carrier Gate Assignments 2-20
Table 2-7 – Terminal Concessions and Amenities 2-21
Table 2-8 – Terminal Functional Areas 2-23
Table 2-9 – Existing Terminal Curbside Length 2-27
Table 2-10 – Existing Curbside Vehicle Classification and Dwell Times 2-28
Table 2-11 – On-Airport Parking Inventory 2-30
Table 2-12 – ARFF Index Requirements 2-37
Table 2-13 – Instrument Approach Procedures 2-43
Table 2-14 – Standard Crosswind Components 2-45
Table 2-15 – Weather Classification Criteria 2-45
Table 2-16 – CAK Wind Coverage 2-46

2 INVENTORY OF EXISTING FACILITIES AND CONDITIONS

The initial step in the master planning process was to develop an inventory of the existing physical conditions and operational characteristics of the Airport and its surroundings. Existing facilities are presented in **Figure 2-1** and **Figure 2-2**. The information presented in this chapter is the basis for evaluating the Airport's existing and future facility requirements. The following elements are detailed in this chapter:

- Airfield (Runways, Taxiways, Aprons, Pavements)
- Navigational and Lighting Aids
- Aircraft Storage
- Passenger Terminal Building
- Automobile Parking and Access
- Aircraft Fueling
- Aircraft Rescue and Fire Fighting (ARFF)
- Snow and Ice Control
- Aircraft Maintenance
- Airport Fencing
- Utility Infrastructure
- Military Facilities
- Airport Operations
- Airspace Environment
- Meteorological Conditions
- Environmental Considerations
- Financial Structure

AKRON-CANTON AIRPORT

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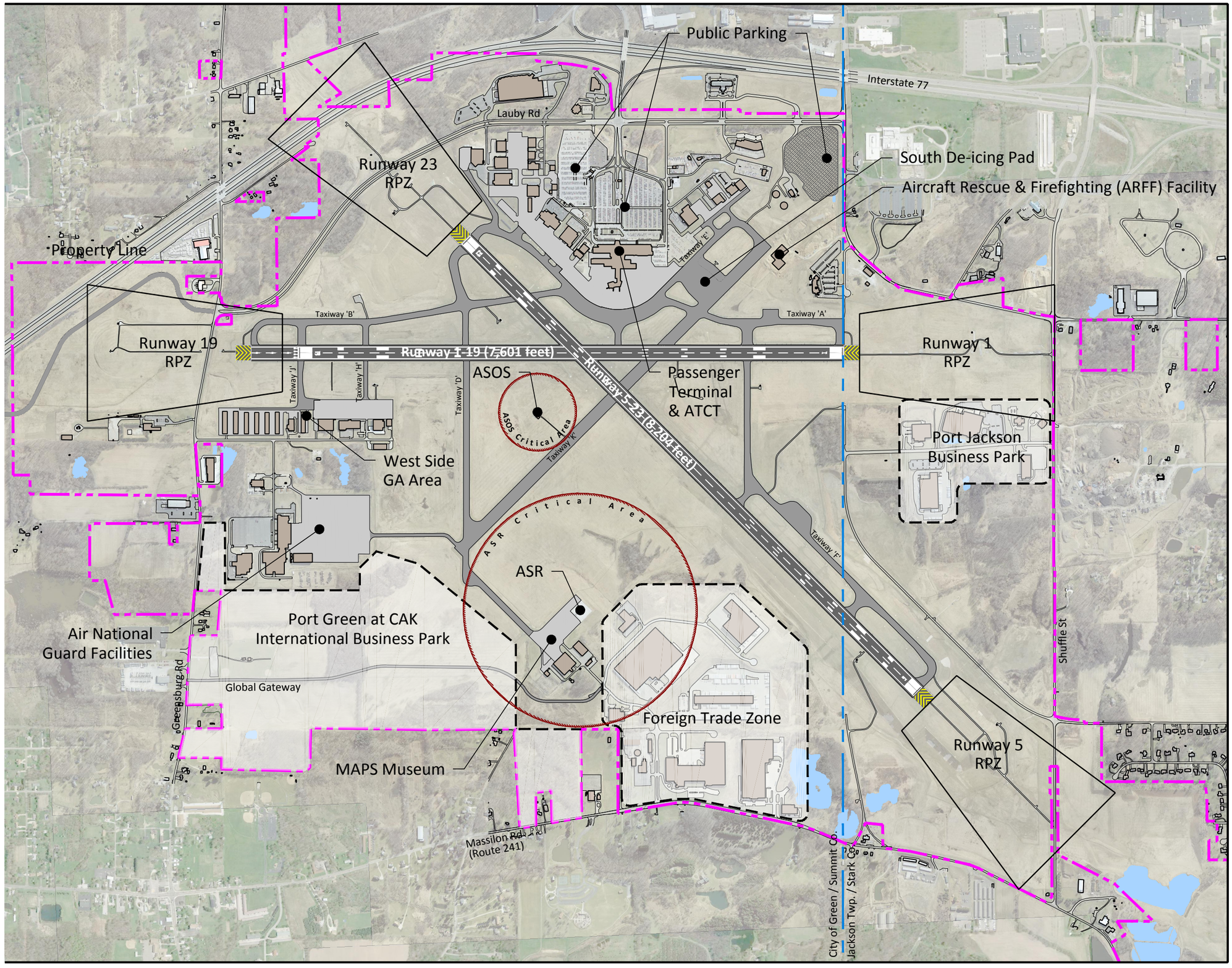

GRAPHIC SCALE (FEET)

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Figure 2-1
Existing Facilities

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)
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1	Terminal / Air Traffic Control Tower / Rotating Beacon
2	U.S. Customs and Border Control / CAK Maintenance Building
3	PSA Airlines
4	McKinley South Hangar
5	McKinley North Hangar
6	McKinley Maintenance Building
7	Timken Hangar
8	Crosco / Smucker's Flight Ops
9	McKinley (Air Camis)
10	First Energy Properties Inc.
11	McKinley (Long Aviation)
12	Verble Properties (Castle Aviation)
13	McKinley (Rocky Mountain)
14	Pump House (CAK)
15	T-Hangars (JAK Aviation)
16	Goodyear Flight Operations
17	McKinley (G-Force Aviation)
18	Zellair Properties (Northstar Aviation)
19	McKinley Storage
20	FAA Facilty / ATR Site
21	Budget Car Wash
22	Hertz Service Building
23	T-Hangars (Morgan Cook Aviation)
24	UTC Aerospace Systems
25	Brothers Aviation
26	T-Hangars (JAK Aviation)
27	McKinley (Air Camis)
28	Kempthron Inc. Hangar
29	Military Aviation Preservation Society (MAPS)
30	City of Green South Annex
31	T-Hangars (JAK Aviation)
32	CAK Aero Kourt Inc.
33	356th Fight Group Restaurant (Closed)
34	Ultimate Air Center
35	T-Hangars (JAK Aviation)
36	T-Hangars (Hangars Two)
37	Taraco / Karcher Group
38	Ohio Air National Guard Aviation Support Facility
39	CAK Building 39 (Castle Aviation)
40	National Guard Armory
41	Ultimate Air Center
42	Aviation Insurance Managers
43	McKinley Fuel Farm Complex
44	Brausch Hangar
45	CAK Equipment Storage
46	PPE
47	ARFF / Snow Removal Equipment Building
48	National Guard Storage Hangar
49	Military Aviation Preservation Society (MAPS)
50	MAPS Building
51	Ohio Air National Guard OMS 1
52	Avis Service Facility
53	Parking Toll Booth
54	Enterprise Service Center
55	Naval Reserve
58	Glycol Treatment Plant
A-H	Foreign Trade Zone (FTZ) SR-241
I-N	Port Jackson Avenue Business Park
O-S	Non-Aviation Related Buildings

* Parking facilities not included in this list

Figure 2-2
Building Diagram

2.1 AIRFIELD

The airfield facilities are infrastructure elements that are most closely associated with the movement of aircraft (takeoff, landing, taxiing, parking, etc.). The airside components at CAK include:

- Runway System
- Taxiway System
- Apron Areas
- Airside Pavement Condition
- Pavement Markings
- Navigational and Lighting Aids
- Airfield Signage
- Aircraft Storage

2.1.1 Runway System

The existing airfield configuration at CAK consists of two active runways: Runway 5/23 and Runway 1/19. Runway 5/23 serves as the primary air carrier runway and is constructed of grooved, bituminous pavement (asphalt). A runway extension project completed in November 2010 made the total runway length 8,204 feet. Runway 1/19 serves as the secondary air carrier runway, is constructed of grooved, bituminous pavement (asphalt) and is 7,601 feet long after a 2003 runway extension. There is a 594-foot displaced threshold on the Runway 19 end. A third runway, Runway 14/32, was primarily used for general aviation (GA) traffic, but was decommissioned in 2005 and converted to Taxiway K. **Table 2-1** presents the specifications of each active runway.

Table 2-1 – Existing Runway Specifications

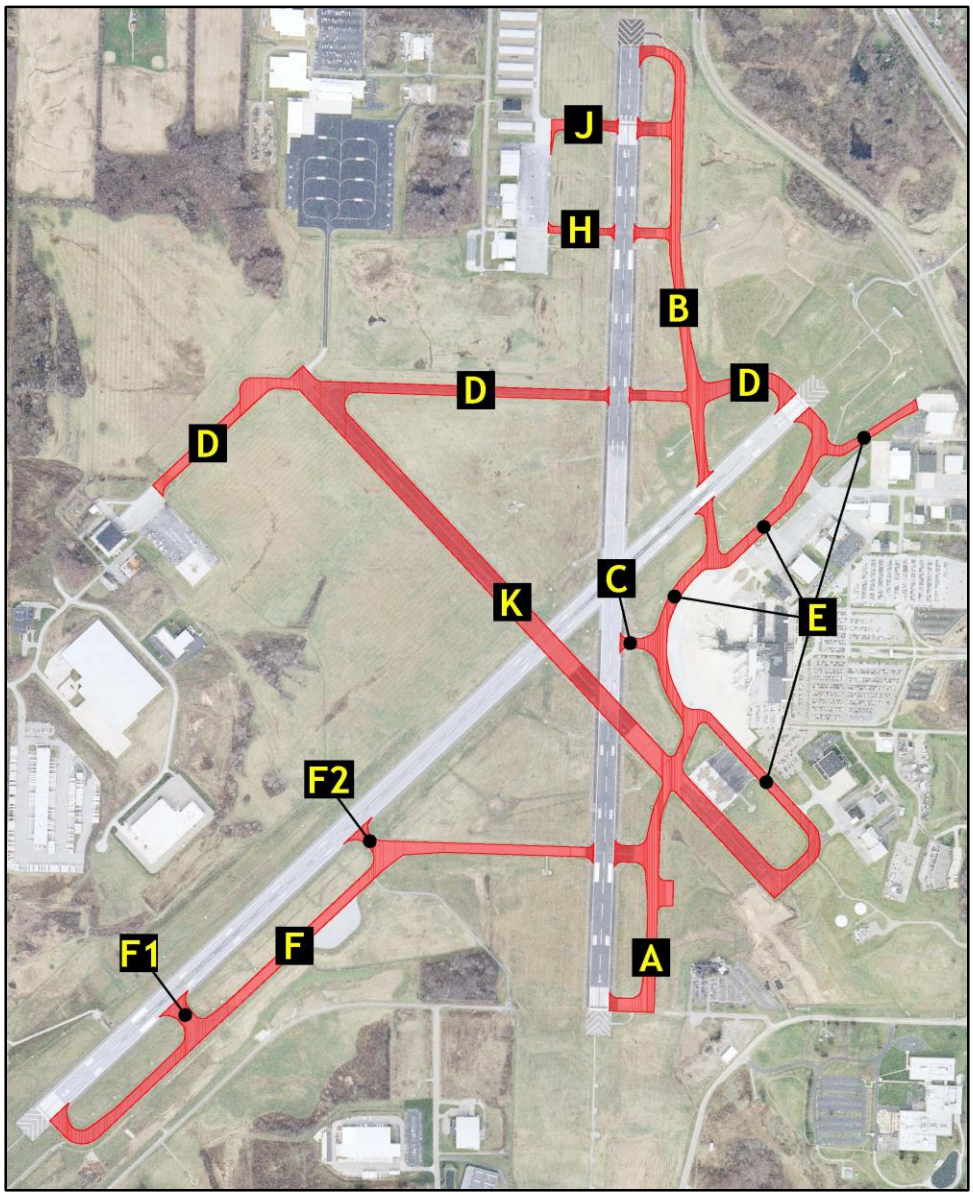
	5/23	1/19	
Length (feet)	8,204	7,601	
Width (feet)	150	150	
Declared Distances (feet)	N/A	**Runway 1:**	**Runway 19:**
TORA:		7,601	7,601
TODA:		7,601	7,601
ASDA:		7,007	7,601
LDA:		7,007	7,007
Runway End Elevation (feet above MSL)	**Runway 5:** 1,179.63 **Runway 23:** 1,225.46	**Runway 1:** 1,208.63 **Runway 19:** 1,213.97	
Pavement Type	Bituminous Concrete (Asphalt)	Bituminous Concrete (Asphalt)	
Pavement Load Bearing	230,000 lbs. (Dual Tandem)	250,000 lbs. (Dual Tandem)	
Effective Runway Gradient	0.56%	0.07%	
Aircraft Approach Category	C	C	
Airplane Design Group	III	III	
Runway Markings	Precision	Precision	
Runway Lighting	HIRL, MALSR, PAPI-4 (Both Ends)	HIRL, MALSR (Both Ends) PAPI-4 (Runway 19 Only)	
Navigational Aids	ILS, GPS, VOR	ILS, GPS	

Sources: FAA Airport Master Record (CAK) (Form 5010) and Aeronautical Survey Data, September 2014

2.1.2 Taxiway System

An airport's taxiway system connects the runways to aircraft parking aprons, storage hangars and other facilities. **Figure 2-3** displays the existing taxiway system at CAK. The Airport's taxiway characteristics are in **Table 2-2.** They vary depending on the types of aircraft served.

Figure 2-3 – Existing Taxiway Configuration



Source: FAA Airport Diagram, accessed September 2014

Table 2-2 – Existing Taxiway Specifications

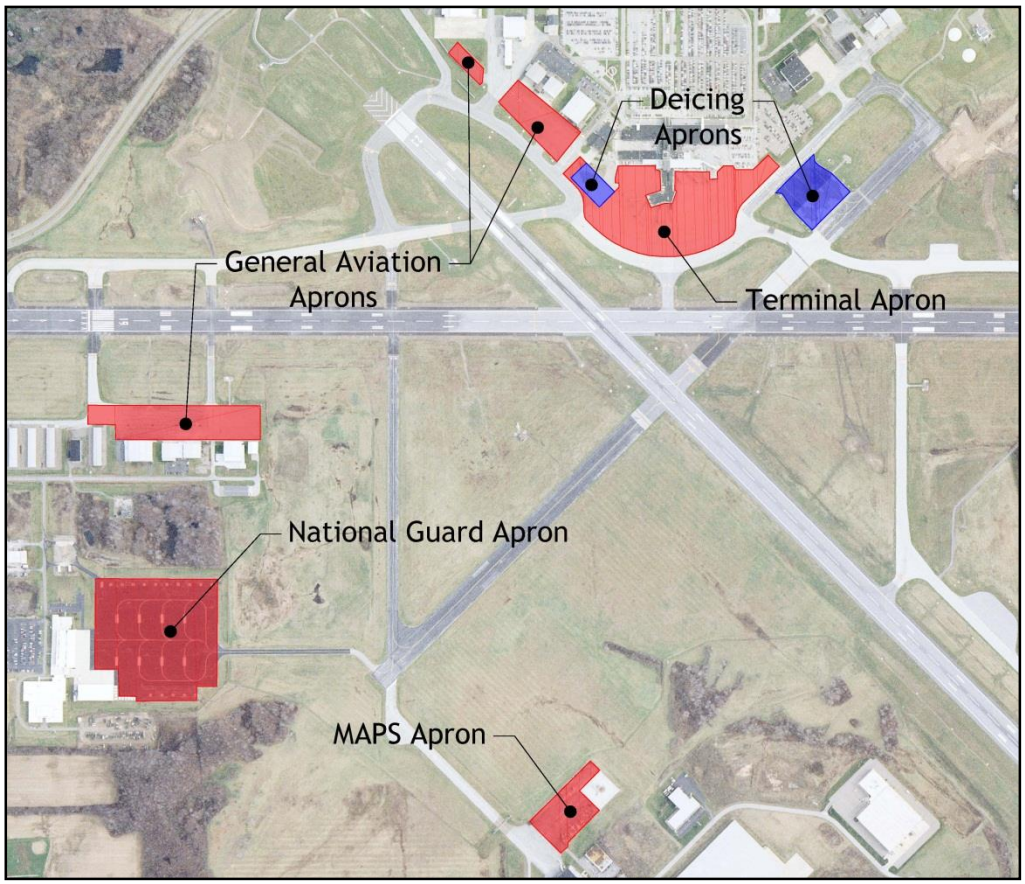
Taxiway	Description	Width (feet)	Construction Type
A	Connects Runway 1 to terminal area.	75	Bituminous (Asphalt)
B	Connects Runway 19 to terminal area.	75	Bituminous (Asphalt)
C	Connects midpoint of Runway 1/19 to the terminal area.	75	Bituminous (Asphalt)
D	Connects Taxiway K to Terminal Area. Also provides access to Air National Guard area and MAPS Air Museum.	75	Bituminous (Asphalt)
E	Provides access to Terminal and GA areas and facilities from Runway 23 and Taxiways A, B, C and K.	75	Bituminous (Asphalt)
F / F1 / F2	Connects Runway 5 to Taxiway A.	75	Bituminous (Asphalt)
H	Connects Taxiway B to GA Apron. Also provides access to Terminal Area / GA Area from Runway 19.	75	Bituminous (Asphalt)
J	Connects Runway 19 and GA Area to Taxiway B.	75	Bituminous (Asphalt)
K	Decommissioned Runway 14/32. Provides access to terminal area from MAPS Air Museum, Army National Guard area and Taxiway D.	150	Bituminous (Asphalt)

Source: FAA Airport Diagram, CHA, 2014

2.1.3 Apron Areas

Aprons, also referred to as ramps, provide space for short- and long-term aircraft parking and loading and unloading passengers and goods. As depicted in **Figure 2-4**, and described below, there are five apron areas at Akron-Canton Airport.

Figure 2-4 – Apron Areas

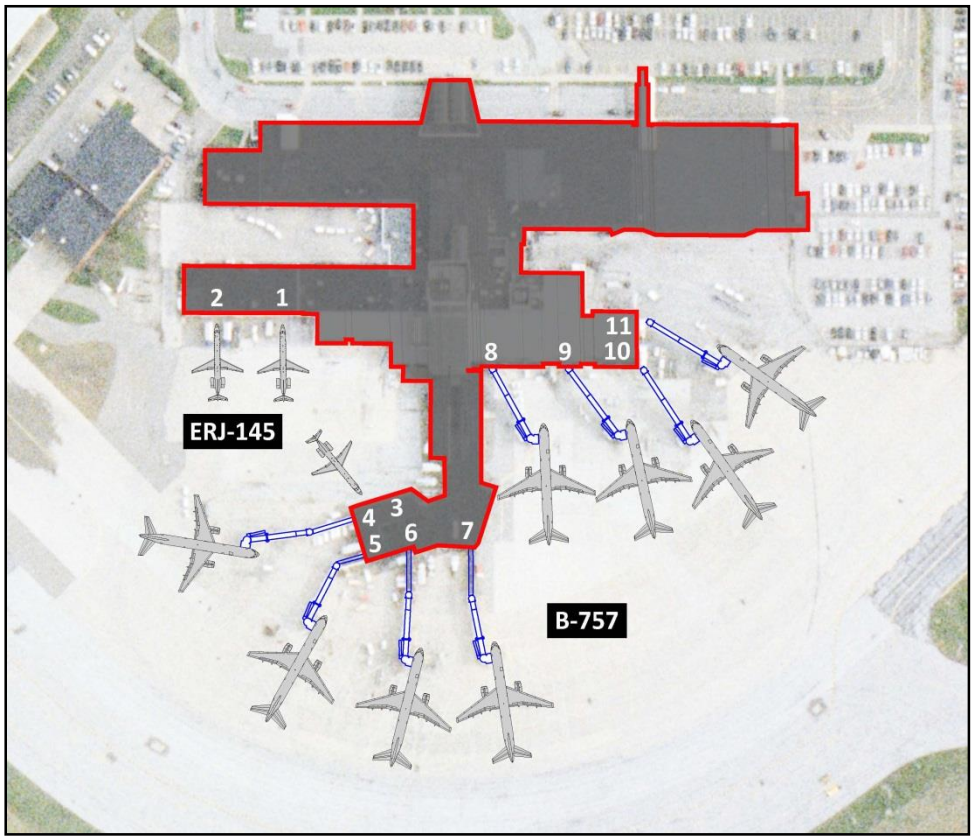


Source: CHA, 2014

Terminal Apron

The Terminal Apron is 58,000 square yards (SY) of Portland cement concrete (PCC) pavement. It offers 11 gate positions, with eight having boarding bridges. A schematic of the gate layout, with the largest aircraft the gate can accommodate is presented in **Figure 2-5**. Gates 1-3 can accommodate regional jets and gates 4-11 can handle aircraft as large as the B757.

Figure 2-5 – Gate Layout



Source: CHA, 2014

General Aviation (GA) Aprons

There are two separate GA apron areas at the Airport, both made of bituminous concrete (asphalt). GA Apron East is attached to the north of the Terminal Apron. GA Apron North is on the north side of airfield, west of Runway 19. These aprons provide parking for transient aircraft and provide access to GA facilities and fixed-base operator (FBO) offices.

Ohio Army National Guard Apron

Occupied by the 237th Support Battalion, the Ohio Army National Guard Apron is located on the northwest quadrant of the airport property, west of West Airport Road. It is out of the movement area controlled by the Air Traffic Control Tower (ATCT). The apron is approximately 77,800 SY of bituminous concrete (asphalt) and provides parking for the Guard's based helicopter fleet, as well as transient military fixed-wing and rotor aircraft.

Military Aviation Preservation Society (MAPS) Museum Apron

The MAPS Apron is approximately 16,700 SY of bituminous concrete (asphalt). It is located on the far west side of airport property. This apron is exclusively used by the MAPS Museum for aircraft storage and maintenance.

De-icing Aprons

The Airport has two concrete de-icing pads that were built concurrently with the construction of the glycol processing plant, between 2005 and 2007. One of the de-icing pads is located on the north side of the Terminal Apron and the other is located on the south side, between Taxiway E and Taxiway K. The north de-icing pad can accommodate one commercial aircraft or two-three business aircraft. The south pad was widened in 2013 to hold up to three B-737 aircraft at a time. Both have in-ground drainage systems that flow to the glycol processing plant.

2.1.4 Airside Pavement Condition

The Authority has established a management program for the various airside pavements. The type and timing of needed pavement maintenance and repair is based on a structural integrity evaluation metric called the Pavement Condition Index (PCI). Pavements are evaluated in logical inspection units (small sections of pavement inspected in detail) then given a rating number of 0 – 100. A 100 rating means the pavement is in excellent condition. This pavement distress condition rating procedure is the process developed by the U.S. Army Corps of Engineers and adopted as the standard pavement evaluation procedure by the Federal Aviation Administration.

CAK conducted a PCI study for the airside pavements in February 2012. The data collected met the requirements of the MicroPAVER 6.1 software program. The findings of this study indicate that both runways are in "good" condition, and that the taxiways range from "fair" to "good" condition, with the exception of the section of Taxiway J on the west side of Runway 1/19, which was given a "poor" rating. Portions of the airfield's pavement have been rehabbed since the study and are considered to be in "good" condition. The results of this evaluation, including the recent rehabilitations, are presented in **Figure 2-6**. The data collected from the inventory of pavement conditions is provided in **Appendix D.**

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)

0 450 900

PCI*	COLOR
0-10 (Failed)	
10-25 (Serious)	
25-40 (Very Poor)	
40-55 (Poor)	
55-70 (Fair)	
70-85 (Satisfactory)	
85-100 (Good)	

* Pavement Condition Index

Note: Airfield pavement information provided by Baker / CAK February, 2012

NAVAID access road inspection completed by CHA Consulting, Inc. - February, 2012

Figure 2-6
Airside Pavement Conditions

2.1.5 Pavement Markings

FAA AC 150/5340-1L, *Standards for Airport Markings,* identifies the pavement marking requirements for commercial service airports, also known as Federal Aviation Regulation Part 139 certificated airports. Consistent with these requirements, all runways at CAK include precision instrument runway markings. The latest version of this guidance was published in November 2010 and includes new standards for enhanced taxiway centerline markings, surface-painted hold sign markings and the extension of the runway holding position markings onto the paved shoulders. Upon visual inspection, CAK is compliant with the latest standards.

2.1.6 Navigational and Lighting Aids

Airport navigational aids (NAVAIDs) assist pilots in safely and efficiently locating airports, landing aircraft and taxiing and taking off in all meteorological conditions. NAVAIDs are any visual or electronic device, airborne or on the surface, that provide point-to-point guidance information or position data to aircraft in flight. **Table 2-3** summarizes the Airport's existing navigational and lighting aids.

Table 2-3 – Navigational Aids and Airfield Lighting

Runway	Runway Markings	Lighting	Minimum Ceiling (AGL) /Visibility	Approach Types	Navigational Aids
1	Precision	HIRL, MALSR, Threshold Lights	200 ft. / ¾ mile	ILS CAT I, RNAV (GPS)	ILS/LOC, GPS
19	Precision	HIRL, MALSR, Threshold Lights	200 ft. / ¾ mile	ILS CAT I, RNAV (GPS)	ILS/LOC, GPS, PAPI-4
5	Precision	HIRL, MALSR, Threshold Lights	200 ft. / ½ mile	ILS CAT I (DME), RNAV (GPS), VOR	ILS/LOC, GPS, PAPI-4, VOR
23	Precision	HIRL, MALSR, Threshold Lights	200 ft. / ¾ mile	ILS CAT I (DME), RNAV (GPS), VOR	ILS/LOC, GPS, PAPI-4, VOR

Source: FAA Airport Master Record (Form 5010), Accessed 2014

HIRL – High-Intensity Runway End Lights
MALSR – Medium-Intensity Approach Lighting System with Runway Alignment Indicator
ILS – Instrument Landing System
DME – Distance Measuring Equipment
RNAV – Area Navigation
GPS – Global Positioning System
VOR – VHF Omni-directional Range
PAPI-4 – Four-Box Precision Approach Path Indicator

En-Route Navigational Aids

En-Route NAVAIDs assist pilots during navigation between airports. These facilities are usually ground-based and electronically emit signals that are received by aircraft on a specific radio frequency. They are almost always used in some manner by pilots operating on Instrument Flight Rule (IFR) flight plans but can also be used during Visual Flight Rule (VFR) flights for position information.

The only ground-based en-route NAVAID providing wayfinding guidance to and from CAK is a Very High Frequency Omni-Directional Range (VOR) facility located approximately 16 nautical miles northeast of the Airport with an ACO three letter identifier. VOR is a system that transmits a 24-hour, all-weather, static-free radio signal that pilots use to triangulate their position relative to the VOR and establish directions to or from an airport. Although not a ground-based NAVAID, satellite navigation (GPS) is also a widely-used form of en-route navigation.

Instrument Approach NAVAIDs

NAVAIDs for an airport vary in sophistication. Typically, the degree of sophistication relates to the information provided to an approaching aircraft. Generally speaking, the more sophisticated the NAVAID, the lower the landing minimums that can be established at an airport. For that reason, instrument approaches and the NAVAIDs that make up the ground-based equipment required to perform the approach procedure are divided into two categories: precision and non-precision. Typically, a precision approach provides horizontal and vertical guidance to pilots as their aircraft descends to land, while a non-precision approach provides only horizontal guidance to the runway end. However, new advances in Global Positioning System (GPS) based technology have allowed "vertically-guided instrument approach procedures" and precision approach capability without the need for traditional ground-based equipment. CAK has published GPS approaches with vertical guidance in addition to their precision instrument approaches.

The Akron-Canton Airport maintains Category I (CAT I) Instrument Landing Systems (ILS) for approaches to all runway ends. An ILS consists of a localizer antenna (LOC), a glide slope antenna (GS) and an approach lighting system (ALS). The LOC and GS antennas, located near the runway, transmit vertical and horizontal information to ensure the aircraft is on the correct approach path during an Instrument Flight Rules (IFR) approach. The category of an ILS refers to the accuracy of the system. Higher categories are more accurate and provide lower approach minima (i.e., ceiling and visibility). The ILS systems are owned and maintained by the FAA. The ILS on Runway 5 and 23 make use of Distance Measuring Equipment (DME), which properly equipped aircraft can use to determine their distance from the land-based transponder.

All of the runways are equipped with a Medium-Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR). This system assists pilots transitioning from the cockpit instrument landing segment to the runway environment. Approach lighting systems provide a lighted approach path along the extended centerline of the runway. Runway alignment indicator lights flash in sequence as a series of white lights moving toward the runway threshold. These lights brilliantly emphasize runway centerline alignment. Roll

indication is emphasized by a single row of white lights located on either side of and symmetrically along the column of approach lights.

A Runway Visual Range (RVR) transmissometer is located for use on Runway 1 and measures the light intensity of the runway edge lighting (discussed in the subsequent section) to determine visibility. These measurements allow air traffic controllers and pilots to evaluate visibility while on the ground at multiple areas on the airfield.

Visual Approach NAVAIDs and Lighting

In addition to the visual aids previously described, lighting on the airfield includes the rotating beacon, Precision Approach Path Indicator (PAPI) lights, runway threshold lighting, runway edge lighting, taxiway edge lighting and apron lighting. All are described below.

Rotating Beacon: The rotating beacon functions as the universal indicator for locating an airport at night. For a civilian airport it has one clear and one green lens, 180 degrees apart, and is generally visible 10 miles from the airport. The rotating beacon at CAK is located on top of the Air Traffic Control Tower (ATCT).

Precision Approach Path Indicator (PAPI) Lights: A PAPI is a system of lights located near a runway end. It provides pilots with visual descent guidance information during an approach to the runway. PAPIs typically have a visual range of approximately four miles, weather permitting, and inform pilots if they are high, low or on the correct approach descent path the threshold. Runways 5, 19 and 23 are equipped with PAPI-4 (four-light unit) systems.

Runway Threshold Lighting: Threshold identification lights have a two-color lens, red and green. The green half of the lens faces the approaching aircraft and indicates the beginning of the usable runway. The red half faces the airplane on the rollout or takeoff, indicating the end of the usable runway. Threshold lights are in place on all of the runway ends at CAK.

Runway Edge Lighting: Runway edge lighting is used to outline the edges of a runway during periods of darkness or restricted visibility. These systems are classified according to their intensity or brightness. All of the Airport's runways are equipped with High-Intensity Runway Light (HIRL) systems. HIRLs are white, visible through 360 degrees of the azimuth and can be seen several miles from an airport during good visibility conditions.

Taxiway Edge Lighting: Taxiway lighting delineates the taxiway's edge and provides guidance to pilots during periods of low visibility and at night. The most commonly used type of taxiway lighting is a series of blue fixtures set at 200-foot intervals along the taxiway edges. All of the Airport's taxiways are equipped with Medium-Intensity Taxiway Lighting (MITL) systems.

Apron Lighting: Apron floodlight systems illuminate the Terminal Apron, the General Aviation Aprons, the Ohio Army National Guard Apron and the MAPS Apron.

2.1.7 Airfield Signage

Upon visual inspection, lighted airfield signage currently found on the CAK airfield consists of all required signage for a Part 139 certificated airport including airfield location signage, mandatory instruction signage and runway hold position signage.

2.1.8 Aircraft Storage

A mix of public and private buildings serves the various aircraft storage and maintenance needs at CAK. More than 30 buildings, many with hangar and office space, currently exist on airport property. Hangar facilities include 24 group or conventional hangars ranging in size from ±4,500 SF to ±42,000 SF and seven t-hangar banks, consisting of 10 units each. The t-hangar unit doors are approximately 40-42 feet wide. **Table 2-4** presents the existing aircraft hangar facilities currently in use at the Airport.

Table 2-4 – Aircraft Hangar Facilities

No.	Tenant	Location	Type	Approx. Sq. Footage
3	PSA Airlines	Terminal Area (Lauby Rd.)	Group	±34,517
4	McKinley South Hangar	Terminal Area (Lauby Rd.)	Group	±19,660
5	McKinley North Hangar	Terminal Area (Lauby Rd.)	Group	±13,627
7	Timken Hangar	Terminal Area (Lauby Rd.)	Group	±19,455
8	Crosco / Smuckers Flight Ops	Terminal Area (Lauby Rd.)	Group	±32,770
9	McKinley (Air Camis)	Terminal Area (Lauby Rd.)	Group	±23,424
10	First Energy Properties, Inc.	Terminal Area (Lauby Rd.)	Group	±27,996
11	McKinley (Long Aviation)	Terminal Area (Lauby Rd.)	Group	±12,724
12	Verble Properties (Castle Aviation)	Terminal Area (Lauby Rd.)	Group	±9,112
13	McKinley (Rocky Mountain)	Terminal Area (Lauby Rd.)	Group	±11,731
15	T-Hangars (JAK Aviation)	GA Area (W. Airport Dr.)	T-Hangars	±16,887
16	Goodyear Flight Operations	Terminal Area (Lauby Rd.)	Group	±33,031
17	McKinley (G-Force Aviation)	Terminal Area (Lauby Rd.)	Group	±12,301
18	Zellair Prop. (North Star Aviation)	Terminal Area (Lauby Rd.)	Group	±25,556
19	McKinley Storage	Terminal Area (Lauby Rd.)	Group	±4,635
23	T-Hangars (Morgan Cook Aviation)	GA Area (W. Airport Dr.)	T-Hangars	±16,819
24	UTC Aerospace Systems	GA Area (W. Airport Dr.)	Group	±27,954
25	Brothers Aviation	Terminal Area (Lauby Rd.)	Group	±4,445
26	T-Hangars (JAK Aviation)	GA Area (W. Airport Dr.)	T-Hangars	±14,403
27	McKinley (Air Camis)	Terminal Area (Lauby Rd.)	Group	±16,459
28	Kempthorn Inc. Hangar	Terminal Area (Lauby Rd.)	Group	±6,880
29	Military Aviation Preservation Society	FTZ Area (Massillon Rd.)	Group	±42,463
31	T-Hangars (JAK Aviation)	GA Area (W. Airport Dr.)	T-Hangars	±14,366
32	CAK Aero Kourt Inc.	GA Area (W. Airport Dr.)	T-Hangars	±12,942
34	Ultimate Air Center	GA Area (W. Airport Dr.)	Group	±14,405
35	T-Hangars (JAK Aviation)	GA Area (W. Airport Dr.)	T-Hangars	±14,404
36	T-Hangars (Hangars Two)	GA Area (W. Airport Dr.)	T-Hangars	±16,819
38	Ohio Air National Guard	GA Area (W. Airport Dr.)	Group	±132,945
39	CAK Building 39 (Castle Aviation)	Terminal Area (Lauby Rd.)	Group	±25,556
41	Ultimate Air Center	GA Area (W. Airport Dr.)	Group	±12,286
42	Aviation Insurance Managers	GA Area (W. Airport Dr.)	Group	±11,501
44	Brausch Hangar	GA Area (W. Airport Dr.)	Group	±5,484
46	PPE	GA Area (W. Airport Dr.)	Group	±22,031

Source: CAK Building Tennant List and CAK Staff, revised September 2014
Note: Approximate square footage accounts for total building size including office and administration space (obtained from latest aerial survey).

2.2 PASSENGER TERMINAL BUILDING

The Airport's original permanent terminal facility was constructed in 1956. Today, the Airport provides 11 gates, of which 10 of these gates are currently used for service, while Gate 2 is currently inactive. Originally a ground boarding operation, the Airport constructed an elevated concourse with four gates in 2006, with passenger boarding bridges at Gates 8-11, to accommodate narrow body aircraft, as well as current and projected passenger growth. Gates 1-3 are open ground board gates; with Gates 4-7 being ground board gates using passenger boarding bridges.

The passenger terminal facility at Akron-Canton Airport is based on a linear layout, with ticketing and baggage claim functions located on the ground level. Once inside the terminal, enplaning passenger circulation moves north toward ticketing, west through the passenger security screening checkpoint and then either west toward Gates 1-7, or south toward Gates 8-11 in the upper concourse. For deplaning passengers, the circulation flow is reversed, with passengers moving east through the secured exit lane adjacent to the security screening checkpoint, and then flowing south toward baggage claim, rental car counters and ground transportation.

2.2.1 Airline Ticketing Lobby

The ticketing lobby is located on the north side of the terminal facility. The lobby's primary purpose is processing passengers to check-in for flights, obtain boarding passes and drop off baggage to be checked and screened prior to being loaded onto outbound aircraft. The primary entrance on the terminal curbside for enplaning passengers, as well as meeters and greeters, is the main entry vestibule, Vestibule 3. Vestibules 1 and 2, located in front of the lobby airline ticket counters, provide alternate access points to the lobby.

Within the ticketing lobby, there are currently six commercial air carrier counters, and four of those are occupied by Southwest/AirTran, United, US Airways/American, and Delta. There is a total of approximately 150 linear feet of existing ticket counters in the lobby. Each airline has a dedicated ticket counter, passenger queue space and associated Airline Ticketing Office (ATO), which share space with baggage make-up areas for outbound baggage.

After checked baggage has been screened, it is transferred to the airline baggage make-up rooms, where it is picked up and delivered to outbound aircraft. The outbound conveyors deliver checked baggage to each airline's baggage make-up room. Here the bags are loaded onto outbound tug/cart trains. As there is not sufficient space to circulate the cart trains within the make-up rooms, this function occurs outside of the make-up room.

West of the ticketing lobby and baggage make-up rooms, there is an existing loading dock and cargo storage area that has been re-purposed. Except for the FAA Air Traffic Control Tower emergency generator located in this area, the other spaces have been largely used for airport storage, miscellaneous offices and some cargo storage.

2.2.2 Baggage Claim

The baggage claim area functions not only as a space for deplaned passengers to collect their checked inbound baggage, but also for meeters and greeters, rental car transactions, airline baggage service offices and access to ground transportation. There are currently four inbound baggage claim devices used by the four air carriers, as shown in **Table 2-5** below:

Table 2-5 – Bag Claim Device Assignments

Baggage Claim Hall (Ground Level)			
Claim	Airline	Total Length	Presentation Length
1	US Airways	131.42 lf	82.13 lf
2	United	127.42 lf	84.07 lf
3	Delta	127.42 lf	86.71 lf
4	AirTran / Southwest	171.50 lf	107.10 lf

Source: CAK 2014

All inbound baggage is delivered to one of these four baggage claim units or non-conveyable items display, from the west side of the claim units. Each claim unit circulates outside of the building into an enclosed, conditioned tug/cart circulation corridor. Tugs pulling carts with these bags circulate from the apron through overhead doors and then park adjacent to a specific claim unit to unload inbound baggage. Once this operation is complete, the tug and carts exit the enclosure and proceed to the baggage make-up areas to be staged for future departing flights. Airline personnel have indicated that maneuvering space in the tug/cart circulation corridor is somewhat limited and can impede the efficient flow of baggage.

2.2.3 Passenger Security

The passenger security areas of the terminal include the Passenger Security Screening Checkpoint (SSCP) and the space behind the ticket counters used for checked baggage screening.

Passenger Security Screening Checkpoint

The SSCP is the area of the terminal where all outbound passengers and employees must pass through for security screening. There is a pre-screening queue where passengers gather prior to the screening process. Once passing through the SSCP process in a westerly direction, passengers can then circulate to their respective boarding gates and hold rooms. In December 2011, the original SSCP was expanded and renovated to accommodate the latest screening technologies for passenger and carry-on item screening. To provide the necessary space for the new SSCP, the existing SSCP was doubled in size by acquiring existing concessions space and the widening the existing terminal facility.

The SSCP currently provides two 2-to-1 screening lane configurations, with sufficient space to expand to three). Each lane configuration consists of two Advanced Technology (AT) x-rays for screening of carry-on items and one millimeter-wave passenger scanning device. This provides a current capacity of four AT x-ray devices (expandable to six) and two passenger millimeter

wave scanning devices. The queue area for pre-screened passengers is isolated from the deplaning passenger exit circulation. This relieves circulation congestion and provides additional space for meeters and greeters.

Checked Baggage Screening

To accommodate federally-mandated requirements for screening all checked baggage, CAK uses space behind the ticket counters for Electronic Trace Detection (ETD) equipment to perform these functions. The ticket counters were pushed eastward to accommodate this equipment, as well as to ensure sufficient space for airline staff and TSA to co-exist. The relocation of the ticket counters into the passenger queue area reduced queue capacity and impacted free circulation space between the back of the queues and exterior face of the terminal.

In order to reclaim the lost queue and circulation space due to ticket counter relocation, new Explosive Detection System (EDS) devices were installed in simple in-line configurations and the ticket counters relocated to their original locations. Two of the four Reveal CT-80 EDS devices have been placed behind the ticket counter back wall adjacent to the Delta and AirTran/Southwest baggage make-up rooms. Checked baggage for these airlines are placed on the ticket counter conveyors and delivered to the EDS screening room for Level 1 screening. Cleared baggage proceeds to the respective baggage make-up room for outbound aircraft delivery, while alarmed baggage is re-screened for Level 2 screening using ETD equipment. This configuration takes on a more traditional ticket counter line function, where the checked bag is placed on the conveyor and is delivered behind the back wall to screening equipment that is out of view of the public.

The third EDS device is located behind the US Airways ticket counter and used by US Airways. Checked baggage is screened for Level 1 screening at this location, with cleared baggage proceeding to the baggage make-up room, while alarmed baggage is re-screened for Level 2 screening using ETD equipment adjacent to the EDS equipment. Similar in configuration and function, United uses an EDS device that is located between their ticket counter and the unleased counter space formerly occupied by Frontier. Passengers drop off their checked baggage at this location. Baggage is screened and delivered to a shared baggage make-up room.

2.2.4 Air Carrier Hold Rooms

There are two main concourses that contain nine gates and associated hold rooms; and two gates with hold rooms are located northwest of the SSCP. Gates 1-7 are ground level boarding gates and Gates 8-11 are second level concourse gates. Gates 1-3 are open ground board gates used by United and US Airways. Gates 4-7 are ground board gates with passenger boarding bridges used by US Airways and Delta Air Lines. Gates 8-11 are upper level gates with passenger boarding bridges used by AirTran and Southwest Airlines. Each airline hold room contains group seating quantities based on airline aircraft fleet mix and passenger loads. There are also individual gate counters and back walls at each gate. **Table 2-6** represents the current air carrier gate assignments based on current lease agreements, including current hold room seating allocations at each gate.

Table 2-6 – Air Carrier Gate Assignments

Concourse Level One (Ground Level)			
Gate	**Airline**	**Boarding Bridge**	**Hold Room Seats**
1	United	No	40
2	Unassigned	No	35
3	US Airways	No	46
4	US Airways	Yes	42
5	Delta	Yes	36
6	Delta	Yes	36
7	Delta	Yes	24
Concourse Level Two (Second Level)			
Gate	**Airline**	**Boarding Bridge**	**Hold Room Seats**
8	Southwest / AirTran	Yes	80
9	Southwest / AirTran	Yes	80
10	Southwest / AirTran	Yes	90
11	Southwest / AirTran	Yes	69

Source: CAK 2014

2.2.5 Concessions and Amenities

Existing concessions throughout the terminal facility provide a varied selection of goods and services for passengers, employees and meeters and greeters. MSE International, LLC, currently operates not only the food and beverage concessions, but also the magazine and book concessions. The Airport also provides many other amenities for its passengers, such as the Ohio Desk Business Center, children's play area, massage chairs and vending areas. **Table 2-7** represents the current concessions and amenities within the Airport terminal facility, including location. In terms of square footage, 42 percent of concessions and amenities are located pre-security and 58 are located post-security.

Table 2-7 – Terminal Concessions and Amenities

Concourse Level One (Ground Level)		
Concession/Amenity	**Type**	**Location**
Ground Transportation Counter	Transportation	Baggage Claim
Massage Chairs	Amenity	Main Entrance
Vending	Amenity	Main Entrance
Information Center	Amenity	Main Entrance
Bar/Grill/Subway	Food & Beverage	Baggage Claim/SSCP
Gifts	News/Gift/Sundry	Baggage Claim/SSCP
Cinnabon	Food & Beverage	Gate 1
CAK Marketplace	News/Gift/Sundry	Gate 1
Stop and Play Port	Amenity	Lower Concourse
Ohio Desk Business Center	Amenity	Lower Concourse
Breastfeeding Station	Amenity	Lower Concourse
Laptop Work Stations	Amenity	Lower Concourse
Grab and Go Sandwiches	Food & Beverage	Gate 7
Massage Chairs	Amenity	Gate 6/7
Concourse Level Two (Second Level)		
Concession/Amenity	**Type**	**Location**
Arby's	Food & Beverage	Gate 8
Great Lakes Brewing Company	Food & Beverage	Gate 8
Massage Chairs	Amenity	Gate 10/11

Source: CAK 2012

2.2.6 Rental Car Counters

There are currently six rental car companies that operate in the Airport within the general baggage claim area – Alamo, Avis, Budget, Enterprise, Hertz and National, with a total of approximately 212 linear feet of transaction counters. Budget and Enterprise share an office/counter grouping and have a combined transaction counter length of 60 feet. Avis and Hertz also share an office/counter grouping with 60 linear feet of transaction counters. Alamo and National each have separate office/counter space with 46 linear feet of transaction counters.

At the south end of the baggage claim area, there are three offices, each with individual counters that are intended to be used by independent ground transportation service providers. The western most office position is currently operated by Shuttle One Services, providing limousine and airport shuttle services. The remaining two positions are not currently in use.

2.2.7 Airport Administrative Offices

The Airport administrative offices - areas used by Airport management and support staff – are located in two primary areas of the terminal. There is a suite of offices located on the ground level of the terminal adjacent to the Gates 1 and 2 hold rooms. The remaining administrative offices are located on the third and fourth levels of the Air Traffic Control Tower. On the upper concourse level on the non-secure side of the facility, there are two administrative meeting

rooms, a fitness center and administration storage. These spaces are accessed from the ground level using one of two elevators or stairways. CAK also has administrative space on the south side of the SSCP, adjacent to the food court concessions, under the elevated concourse at apron level; and administrative space at the north apron, adjacent to the FAA emergency generator room.

2.2.8 Air Traffic Control Tower

The existing Air Traffic Control Tower (ATCT) is a central element to the terminal facility, rising six stories above the ground level of the terminal. The tower provides office space for CAK administration on levels 3-4, FAA Administration on level 5, FAA equipment associated with the tower radar is located on level 6 and level 7 serves as a transitional floor providing access to the tower cab on level 8. There is elevator access to tower levels 3-6 from the ground level of the terminal, and stair access to all levels of the tower. Minimal restroom facilities are located on levels 3-6 as well.

2.2.9 Terminal Building Functional Areas

The passenger terminal is comprised of several areas, each accommodating multiple stakeholder functions including concessions, airline gates, TSA offices and administrative support spaces. **Table 2-8** provides an inventory of the terminal facility, listed by location, primary function and area. **Figure 2-7** and **Figure 2-8** illustrate the existing terminal facility (Level 1 and Level 2).

Table 2-8 – Terminal Functional Areas

Location and Use	Element Length (LF)	Area (SF)
Level One – Ticketing and Baggage Claim		
Airline Ticketing Functions		**14,969**
Airline Ticket Counters – Square Footage		*4,418*
Airline Ticket Counters – Linear Footage	*149*	
Airline Ticket Counters – Queue Space		*2,369*
Airline Ticket Offices		*5,355*
Airline Baggage Make-up		*2,827*
Baggage Screening		**2,128**
Airline Baggage Claim		**10,941**
Claim Device 1	*131*	*2,091*
Claim Device 2	*127*	*2,580*
Claim Device 3	*127*	*2,641*
Claim Device 4	*171*	*3,629*
Airline Baggage Back of House		**7,607**
Airline Gates/Hold Rooms		**8,673**
Gate 1		*1,082*
Gate 2		*970*
Gate 3		*1,346*
Gate 4		*1,300*
Gate 5		*1,288*
Gate 6		*1,450*
Gate 7		*1,237*
Passenger Security Screening Checkpoint		**10,116**
TSA Offices		**412**
Concessions		**7,448**
Concessions Storage		**503**
Airport Amenities		**4,670**
Rental Car		**1890**
Rental Car Office		*734*
Rental Car Circulation		*1,155*
Rental Car Counter – Linear Footage	*214*	
Ground Transportation		**503**
Administrative Offices		**8,593**
Airside Operations		**1,265**
Airline Storage		**2,839**
FAA Emergency Generator		**1,368**
Restrooms		**4,443**
Common Use/General Circulation		**47,585**
Mechanical/Electrical/Building Systems/Utilities		**18,825**
Total – Level One		**154,793**

Continued on Next Page

Table 2-9 – Terminal Functional Areas (Continued)

Location and Use	Element Length (LF)	Area (SF)
Level Two – Concourse and CAK Offices		
Airline Gates/Hold Rooms		
Gate 8		*1,362*
Gate 9		*1,362*
Gate 10		*2,391*
Gate 11		*690*
Concessions		**1,747**
Administrative Offices/Meeting Rooms		**2,963**
Fitness Room		**626**
Airport Storage		**1,261**
Restrooms		**2,113**
Common Use/General Circulation		**13,226**
Mechanical/Electrical/Building Systems		**1,565**
Open Floor Space		**6,841**
Total – Level Two		**36,153**
Level Three – Tower Level		
CAK Administration		3,700
Total – Level Three		**3,700**
Level Four – Tower Level		
CAK Administration		3,700
Total – Level Four		**3,700**
Level Five – Tower Level		
FAA Administration		3,700
Total – Level Five		**3,700**
Level Six – Tower Level		
FAA Radar Equipment		3,700
Total – Level Six		**3,700**
Level Seven – Tower Level		
FAA Tower Cab Access		3,700
Total – Level Seven		**3,700**
Level Eight – Tower Cab		
FAA		665
Total – Level Eight		**665**
Grand Total		**210,111**

Source: CAK 2012

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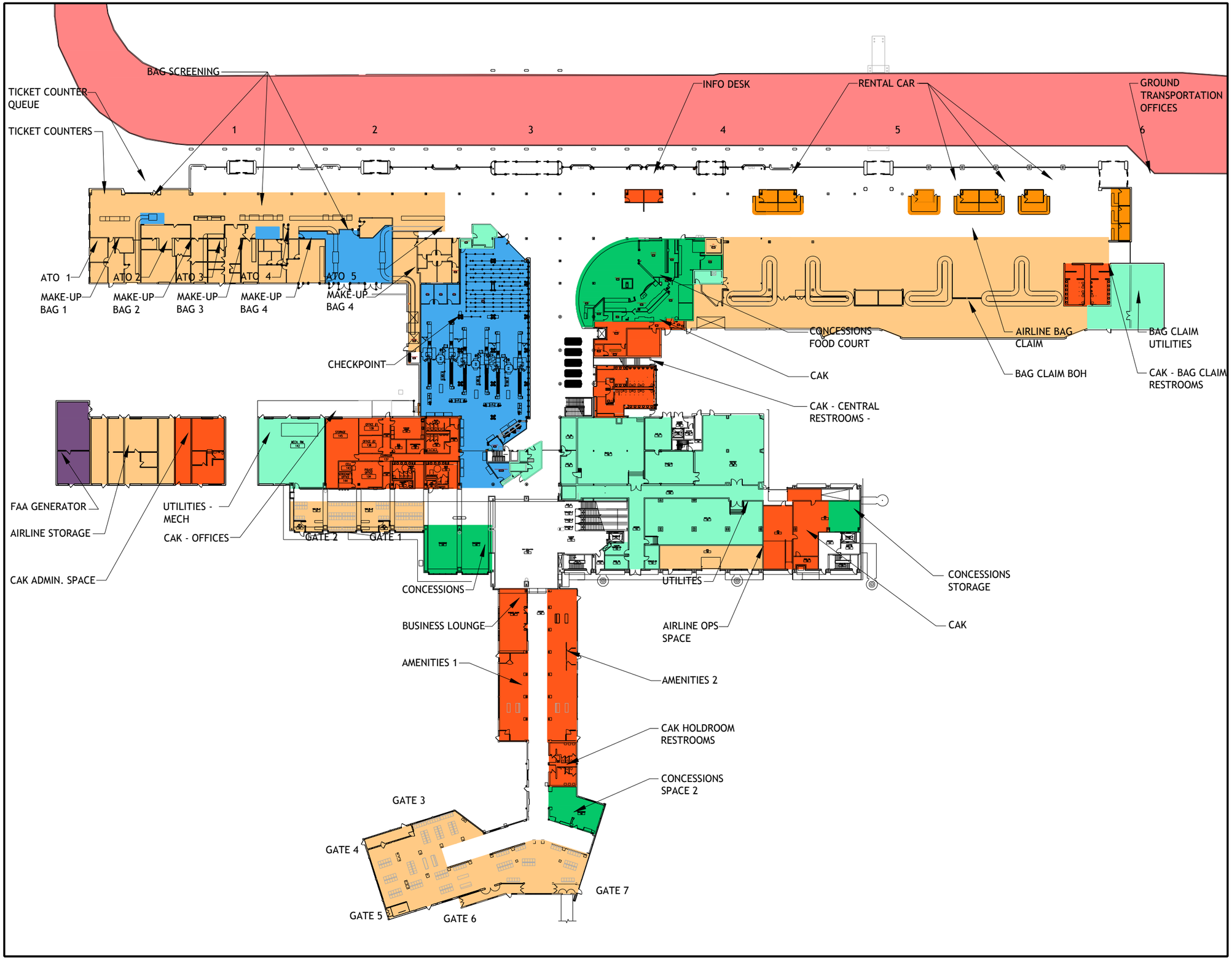

GRAPHIC SCALE (FEET)

0 400 800

LEGEND

- AIRLINE
- CONCESSIONS
- RENTAL CAR/GROUND TRANSPORTATION
- ADMINISTRATION/ AMENITIES
- UTILITIES
- SECURITY/REGULATORY
- FAA
- CIRCULATION/ COMMON USE

Figure 2-7
Terminal - Level One Floorplan

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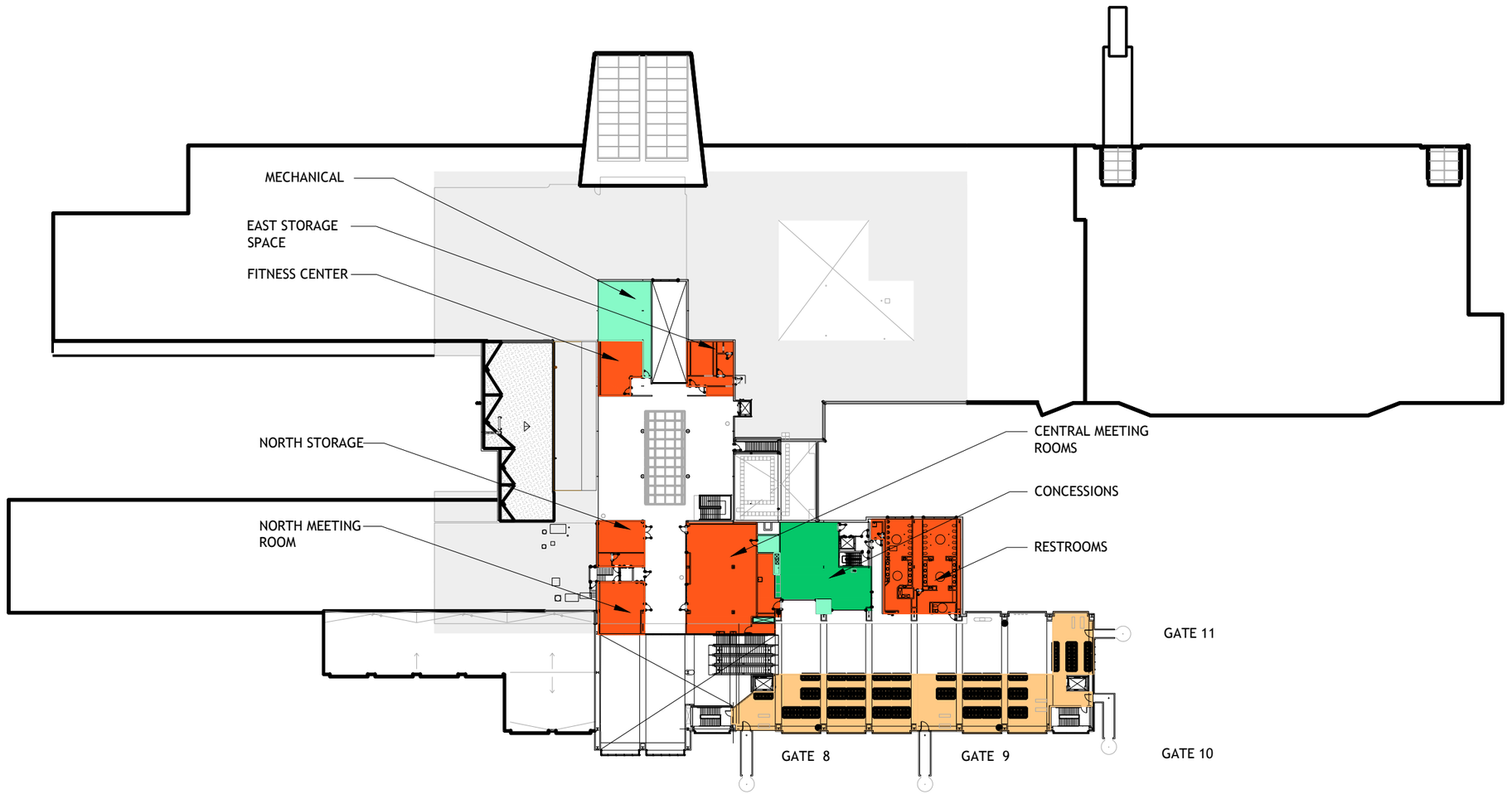

GRAPHIC SCALE (FEET)

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LEGEND

- AIRLINE
- CONCESSIONS
- RENTAL CAR/GROUND TRANSPORTATION
- ADMINISTRATION/ AMENITIES
- UTILITIES
- SECURITY/REGULATORY
- FAA
- CIRCULATION/ COMMON USE

Figure 2-8
Terminal - Level Two Floorplan

2.3 PARKING AND ACCESS

Automobile facilities in the terminal area of the Airport include Terminal Access Road, terminal curbside and automobile parking. These are described in the subsequent sections.

2.3.1 Terminal Access Road and Curbside

The main passenger terminal level is served by its curbside roadway known as Terminal Access Road, which is accessed via Interstate 77, located approximately ¼ mile to the east. Upon exiting I- 77, the first intersection along Terminal Access Road is at Lauby Road. Lauby Road provides access to the Airport's aircraft rescue and firefighting (ARFF) facilities, airfreight buildings and the majority of the general aviation facilities. Before reaching the terminal curbside, Terminal Access Road also provides access to the short-term, long-term, and economy parking lots as well as the cell phone waiting lot.

Terminal Access Road runs in a north and south direction, and has four lanes. The western most lane (Lane 1) immediately adjacent to the terminal is used for either dropping off departing passengers at the north end of the terminal or picking up arriving passengers at the south end of the terminal. Typically vehicles dropping off passengers use the first half of available curb, while vehicles picking up passengers use the remaining half of curbside frontage. The southernmost end of the arrivals curbside is used by shuttles in front of Vestibule 6.

The northern end of the outermost lane (Lane 4) is used by local law enforcement for parking department vehicles. The southern half of Lane 4 is used for commercial vehicles, including taxi cabs, limousines and parking lot shuttles. The inner two lanes (Lanes 2 and 3) are used primarily for vehicle circulation and through traffic. In peak times, some vehicles will use Lane 2 for dropping off or picking up passengers, resulting in short periods of congestion. **Table 2-9** identifies the respective terminal curbside lengths by function:

Table 2-9 – Existing Terminal Curbside Length

Location	Linear Feet
Level 1 – Terminal Curbside	
Departures Curb	340
Arrivals Curb	340
Total Length	**680**

Source: CAK, 2012

The existing curbside length was derived from determining the distance along the curbside frontage at the terminal, assumed to begin at the outer canopy located north of the Ticketing Lobby and terminating just south of Vestibule 6 shuttle parking.

The curbside vehicle classifications criteria for Average Vehicle Length and Average Vehicle Dwell Time are based on industry standards defined in the *Transportation Research Board "Airport Passenger Terminal Planning and Design – 2010."* For determining the curbside distribution percentage of vehicle types, past studies provided by the Airport were used, as well as historical comparisons of past curbside activity levels and assumptions. The Peak Hour Make-up, which defines the quantity of each type of vehicle using the curbside, is based on the most recently documented curbside observations and adjusted to accommodate Airport growth in passenger activity through 2011. The assumed vehicle make-up that uses the curbside is shown in **Table 2-10**.

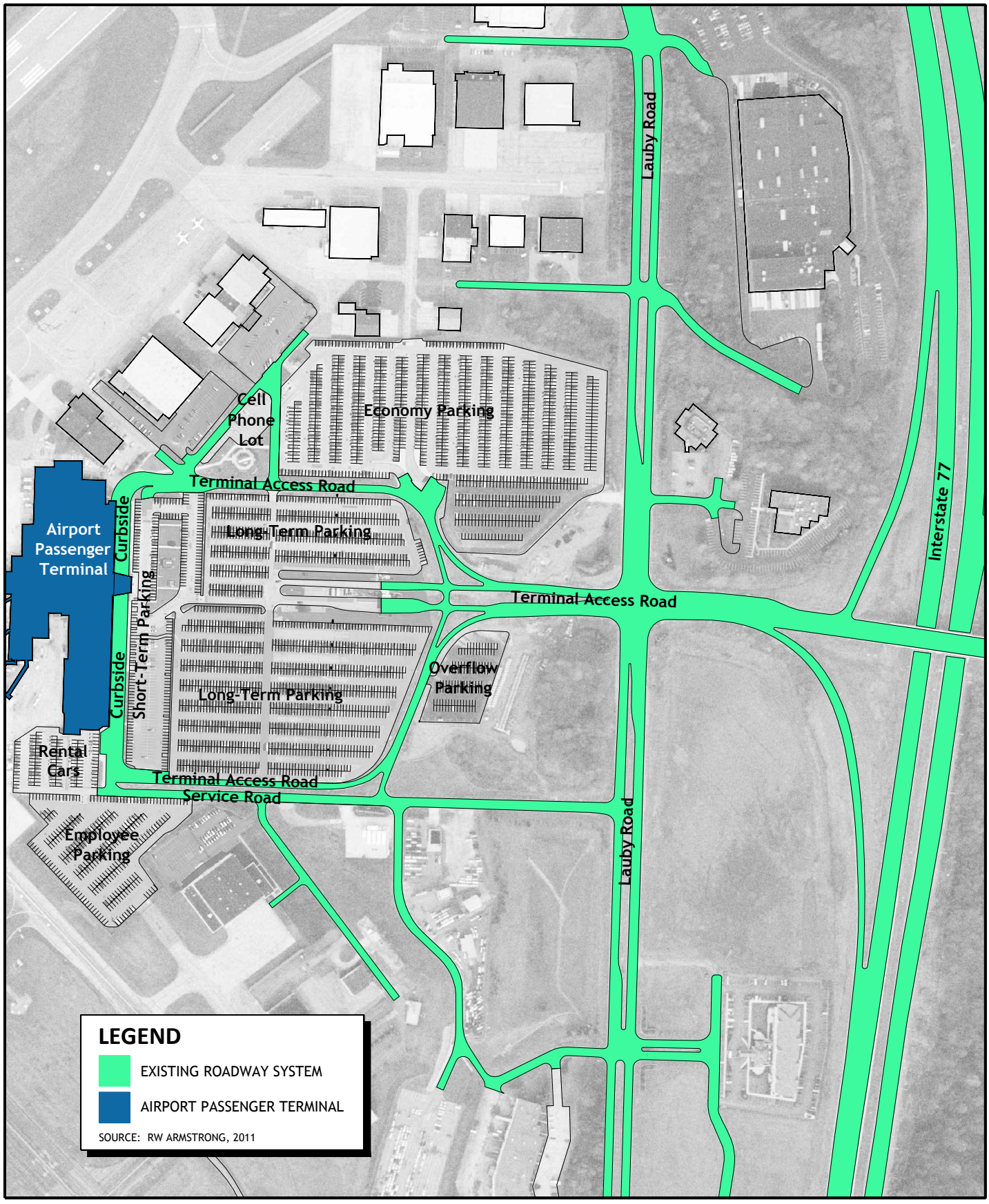
Table 2-10 – Existing Curbside Vehicle Classification and Dwell Times

Vehicle Type	Average Vehicle Length	Average Vehicle Dwell Time	% Curbside Make-up	Peak Hour Make-up
Private Vehicles	22 ft.	3.0 min	80.00%	196
Taxis	22 ft.	2.0 min	1.00%	3
Limousines	50 ft.	2.0 min	0.50%	2
Shuttles	50 ft.	3.0 min	15.00%	35
Trucks/Other	Varies	15.0 min	3.50%	9
Total			**100.00%**	**245**

Source: CAK 2012

The terminal curbside is partially covered by a roof overhang and provides approximately 680 linear feet of passenger loading and unloading. A covered pedestrian cross-walk is provided at the center of the curbside area and connects directly to the short-term parking lot east of curbside. There is also a hotel shuttle and limousine loading and unloading area at the south end of the curbside adjacent to the rental car counters located inside of the passenger terminal building.

Located at the southwest end of the terminal curbside is the rental car ready and return area and an additional entrance to the long-term parking lot on the east side. Rental car ready and return area access is along a two-way service road just south of Terminal Access Road. It connects to Lauby Road to the east and is depicted in **Figure 2-9.**



AKRON-CANTON AIRPORT

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GRAPHIC SCALE (FEET)
0 200 400

Figure 2-9
Terminal Access Road and Curbside

2.3.2 Parking

The Authority contracts with Standard Parking Corporation to operate the airport parking system under a management agreement. Currently the Airport provides approximately 4,738 public parking spaces in five public parking lots. The various parking lots are detailed in **Table 2-11** and illustrated in **Figure 2-10**.

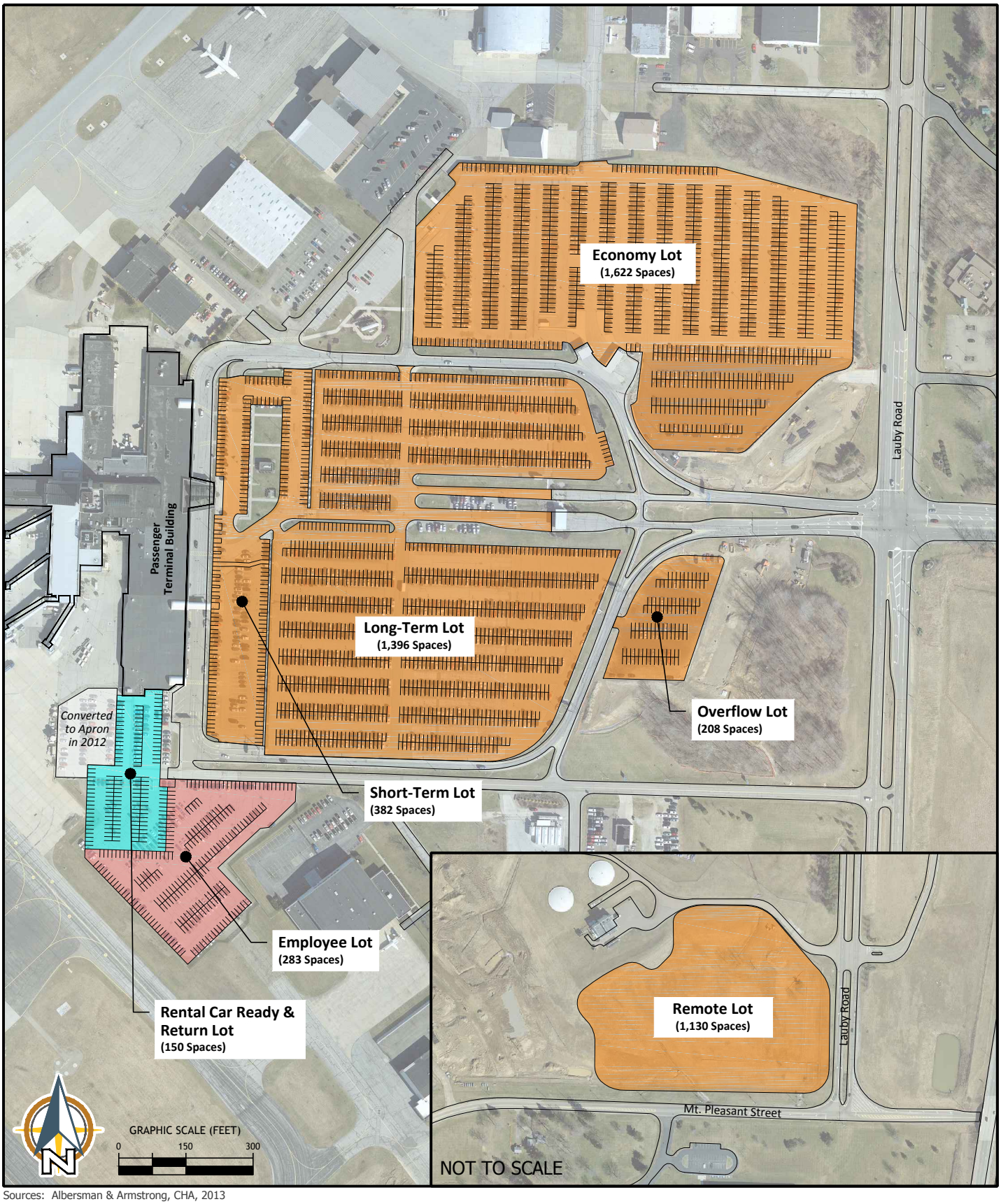
Table 2-11 – On-Airport Parking Inventory

Parking Lot	Spaces
Short Term	382
Long Term	1,396
Economy	1,622
Overflow	208
Remote	1,130
Total	**4,738**

Source: Standard Parking, 2013

The short-term and long-term parking lots are located east of the terminal frontage and inside Terminal Access Road's loop. The economy lot is outside and north of Terminal Access Road, while the overflow lot is outside and east of Terminal Access Road across from the main parking exit plaza. The remote lot is located on the corner of Lauby Road and Mt. Pleasant Street. The Airport provides shuttle service for parkers in the long-term, economy, overflow, and remote lots. According to Standard Parking Corporation, approximately 50 percent of the patrons in the long-term lot use the shuttle service, while approximately 80 percent of the patrons in the economy lot use the shuttles. This varies depending upon the weather conditions.

The overflow lot is used only during peak parking periods. During these times, vehicles entering the long-term parking lot are directed to go around the exit plaza and proceed to Terminal Access Road, turn left, then continue along Terminal Access Road past the passenger terminal to enter the overflow lot on the east. Note that, during peak parking periods, it is common for the overflow lot to reach capacity. A cell phone lot with 53 parking spaces is located north of Terminal Access Road. Since this lot serves only passenger pick-up purposes, it is not included in the parking inventory.



Sources: Albersman & Armstrong, CHA, 2013

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE

Figure 2-10
On-Airport Public Parking

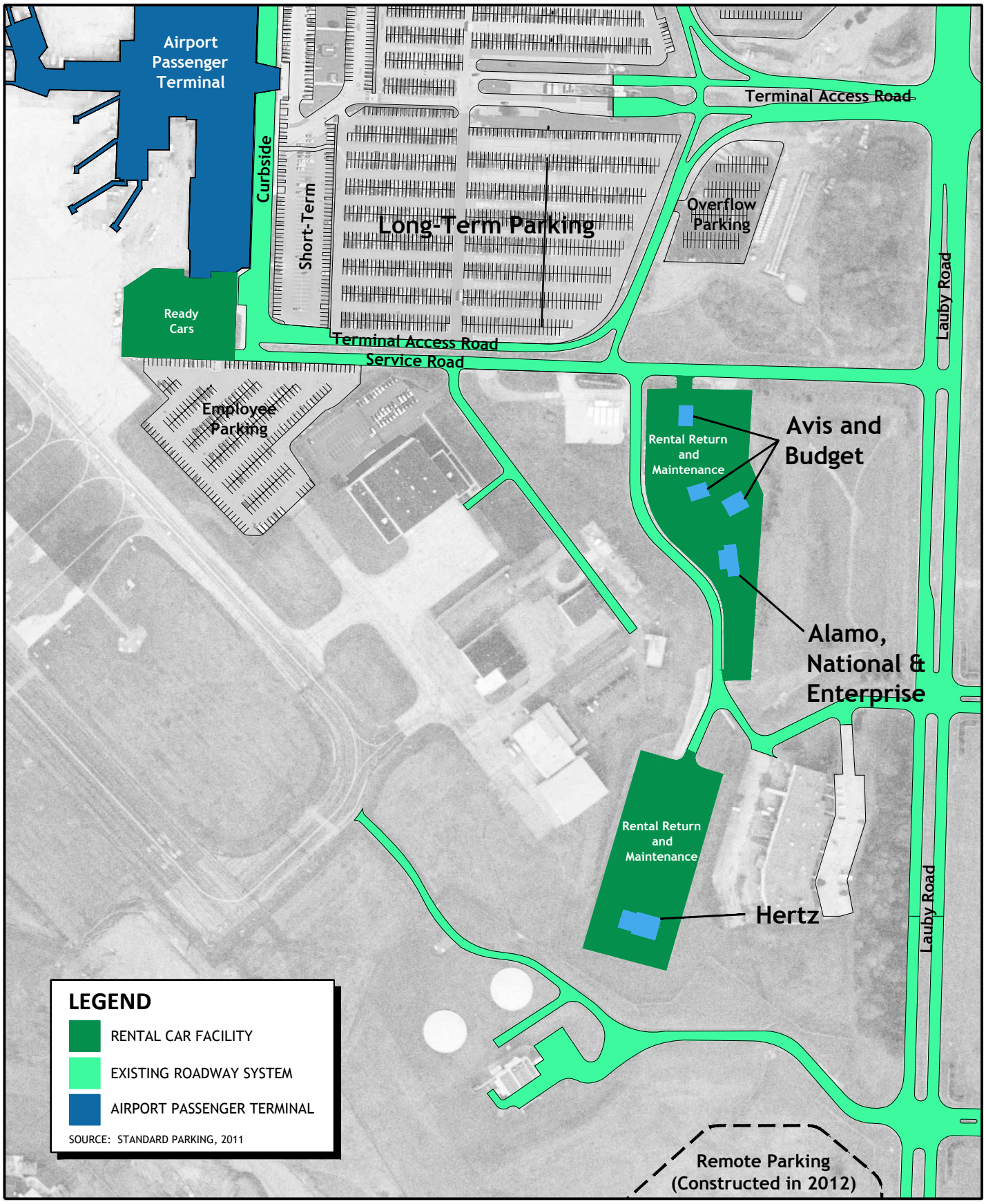
Employee Parking

There are approximately 283 employee parking spaces located in a lot outside of Terminal Access Road, south of the rental car ready and return area. This parking lot is accessed via the service road south of Terminal Access Road; see previous **Figure 2-10**.

Rental Car Facility

The rental car agency customer service counters are located next to the baggage claim area in the south end of the passenger terminal building. Just south of the customer counters and outside of the passenger terminal building is the rental car ready and return lot which contains 150 spaces. This lot is shared by each of the agencies and is accessed from the service road that runs east and west just south of Terminal Access Road and connects to Lauby Road.

The rental car service areas are located remotely but are on airport property south of the service road and west of Lauby Road. The returned vehicles are shuttled to the remote service areas to be refueled, washed and returned to the rental car ready and return area as needed. **Figure 2-11** displays the rental car facilities.



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GRAPHIC SCALE (FEET)

0 150 300

Figure 2-11
Rental Car Facilities

2.3.3 Landside Pavement Condition

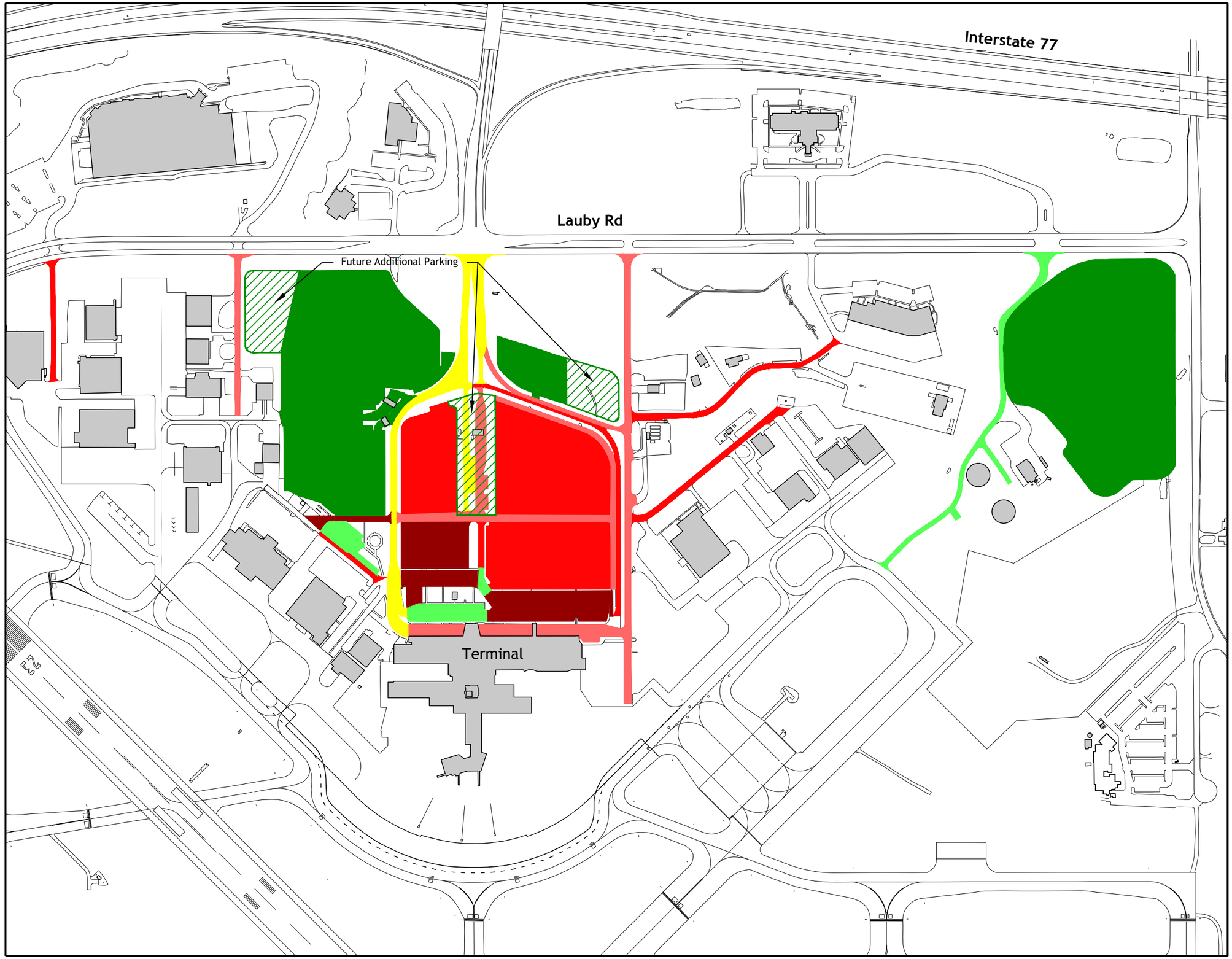
The Authority has not established a pavement management system for the landside pavement areas, including Terminal Access Road, automobile parking lots and other on-Airport roadways. An inspection of the landside pavements was performed at the end of January 2012. As with the airside pavements described in **Section 2.1.4**, logical inspection units were determined and then each section was visually inspected. Existing pavement distresses were quantified and input to MicroPAVER 6.1 software to calculate the PCI for each pavement section.

Based on this evaluation, the majority of the landside pavement areas are bituminous asphalt concrete (APC) material. The PCI values range from "Serious" to "Good," 19 to 83 respectively. Most of the landside roadways and parking areas are in need of maintenance as shown on **Figure 2-12**.

In addition to the terminal area pavements, the airside service roads leading from the taxiway system and airfield access gates to the various NAVAID and equipment shelters at each runway end were evaluated. All of the service roads within the Airfield Operations Area (AOA) consist of asphalt material and are in very good shape. Most of the service roads were constructed or resurfaced within the past two-seven years. However, there are portions of the service roads outside of the AOA that do not appear well-maintained. The Runway 19 portion of the service road outside of the AOA, north of Greensburg Road, is completely deteriorated and consequently has a failed PCI of 4. Runway 23 has two service road sections outside of the AOA. The portion between Lauby Road and I-77 is recent and has a PCI value of 100. The portion east of I-77 is un-surfaced. The data collected from the inventory of pavement conditions is included in **Appendix D**.

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE



GRAPHIC SCALE (FEET)
0 175 350

PCI*

- 0-10 (Failed)
- 10-25 (Serious)
- 25-40 (Very Poor)
- 40-55 (Poor)
- 55-70 (Fair)
- 70-85 (Satisfactory)
- 85-100 (Good)

* Pavement Condition Index

Field inspection completed by
CHA Consulting, Inc. - January, 2012

Figure 2-12
Landside Pavement Conditions

2.4 SUPPORT FACILITIES

Support facilities provide vital functions related to the overall operation of the Airport, and typically include facilities related to: fuel storage, aircraft rescue and firefighting (ARFF), snow and ice control, aircraft maintenance, and Airport storage.

2.4.1 Aircraft Fueling

The primary fuel farm at CAK is located in the terminal area, south of the long-term public parking lot. These facilities include five above-ground storage tanks (four 25,000 gallon Jet-A tanks and one 15,000 gallon 100LL tank), all of which are owned and operated by McKinley Air Transport. McKinley is the contract fueler for the airlines. Numerous other Airport tenants maintain their own fuel tanks and perform their own fueling operations. The most significant of these facilities include Ultimate Air's two 20,000 gallon Jet-A tanks and their 10,000 gallon 100LL tank. All three of these tanks are located underground with the pumps west of the Ultimate Air facilities.

2.4.2 Aircraft Rescue and Fire Fighting (ARFF)

Commercial service airports, with Airport Operating Certificates under 49 CFR Part 139, are required to provide aircraft rescue and firefighting services. Located north of the main terminal facility, the original Aircraft Rescue and Fire Fighting Station (ARFF) is adjacent to the ticketing lobby. This facility was replaced in 2013 as part of the CAK 2018 10-Year Capital Improvement Program. The new 30,000 square-foot facility houses the Airport's two fire fighting vehicles, and it also serves as an airfield management center, weather center, and storage for snow removal equipment and mowers. Once the original facility was vacated, this building was converted for additional storage and a General Aviation Facility (GAF) where Customs and Border Protection (CBP) staff can be accommodated and GA international traffic can be processed.

The ARFF level of service, or index, is determined by the longest scheduled passenger aircraft with at least five daily departures. The Airport currently operates with an ARFF Index of B corresponding to the Boeing 737 aircraft. **Table 2-12** identifies the ARFF Index requirements mandated by the FAA. The Airport currently has two Rosenbauer Panther ARFF trucks, each with the capability of carrying 3,000 gallons of water, 400 gallons of Aqueous Film Forming Foam (AFFF), 500 pounds of dry chemicals and 500 pounds of Halotron. The Airport equipment currently meets the requirements for ARFF Index C, but staff schedules would need to be adjusted if this need should arise.

Table 2-12 – ARFF Index Requirements

Index	Aircraft length (Feet)	Vehicles	Extinguishing Agents
A	<90	1	Either 500 pounds of sodium-based dry chemical, Halon 1211 or clean agent; or 450 pounds of potassium-based dry chemical and water with a commensurate quantity of AFFF to total 100 gallons for simultaneous dry chemical and AFFF application
B	90 to <126	1	500 pounds of sodium-based dry chemical, Halon 1211 or clean agent and 1,500 gallons of water and the commensurate quantity of AFFF for foam production
		2	One vehicle carrying the extinguishing agents as specified for Index A; and one vehicle carrying an amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by both vehicles is at least 1,500 gallons
C	126 to <159	2	One vehicle carrying the extinguishing agents as specified for Index A; and one vehicle carrying water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by both vehicles is at least 3,000 gallons
		3	One vehicle carrying the extinguishing agents as specified for Index A; and two vehicles carrying an amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by all three vehicles is at least 3,000 gallons
D	159 to <200	3	One vehicle carrying the extinguishing agents as specified for Index A; and two vehicles carrying an amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by all three vehicles is at least 4,000 gallons
E	>200	3	One vehicle carrying the extinguishing agents as specified for Index A; and two vehicles carrying an amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by all three vehicles is at least 6,000 gallons

Source: 14 CFR Part 139, Aircraft Rescue and Firefighting, 2011

2.4.3 Snow and Ice Control

During the winter seasons, snow removal personnel at CAK are on-call at all times to ensure adequate response to weather events. Operations and airfield maintenance personnel are cross-trained in the duties of snow removal, including airfield condition reporting, performing runway friction tests and responding to emergencies. The on-duty airfield maintenance/operations staff is responsible for monitoring the current and/or forecast weather conditions. Conditions are monitored throughout the day and/or as often as conditions dictate. Sources of weather information include but are not limited to the internet, television, radio, in-pavement sensor system and the Meterlogix subscription service.

Airfield maintenance/operations personnel are responsible for clearing contaminants from all surfaces located within the Airfield Operations Area (AOA). The objective is to ensure the safe

transition of aircraft, vehicles and personnel at all times. Runways and taxiways are cleared with a combination of rotary high-speed brooms, plows and/or snow blowers. Various methods and techniques are employed at the discretion of the Airport staff (i.e., V-formation, close wing formation, etc.). Runways are cleared both full length and width. Ramp and terminal areas are cleared with a combination of ramp blades, brooms, plows and/or blowers. This equipment is stored in heated indoor facilities in order to ensure proper operations when needed.

2.4.4 Aircraft Maintenance

Aircraft maintenance hangars exist in the GA area north of the terminal facility. PSA Airlines (a subsidiary of The US Airways Group) uses the hangar closest to the terminal, providing maintenance for most of the commercial service providers. Two hangars house McKinley Air Transport's maintenance operations, while several other nearby hangars host maintenance services from Castle Aviation, G-Force Aviation, and Air Camis.

2.4.5 Additional Airport Facilities

The Authority maintains facilities that are not in direct support of aviation activity, but provide support to the Airport itself. These include:

- The Airport's sanitary dump on the south side of the Terminal near the fuel farm complex
- A storage building near MAPS
- Equipment storage and a maintenance facility in the Northwest GA area
- The Airport's pump house located in an unpaved area of the short-term parking lot

2.5 AIRPORT FENCING

The perimeter fencing is approximately 52,000 feet long and 10 feet high in most places with three strands of barbed wire. It circumscribes the entire AOA and has 55 gates that provide access to various points of the airfield.

2.6 UTILITY INFRASTRUCTURE

The Airport is currently supplied with electricity, telecommunications, natural gas, water, and sewer. These utilities were assessed in 2012 as a part of this Master Plan Update. The condition of these utilities and any recommended improvements are discussed in **Chapter 4**. A detailed Utility Layout mapping set was prepared and provided to the Authority in 2012. A half-size version of this set is included in **Appendix C**.

2.7 MILITARY FACILITIES

To the west of West Airport Road is an area that is home to the Ohio Army National Guard's 1484th Transportation Company and the 137th Aviation Regiment. A taxiway extends from the National Guard apron to the west-end of Taxiway K, where it intersects with Taxiway D. Directly west of this intersection is the helicopter pad from which the six based-CH-47 Chinooks operate. West of the helicopter pad is the Army's work area, a field where they perform hover operations and other flight training activities. The three Army facilities include an armory, a motor pool and an aviation support facility.

Also located in the National Guard complex is the Navy Operational Support Center (NOSC) Akron, which was built in October 2011, and is leased by the National Guard. This one-story, 50,000 square-foot facility was constructed under Base Realignment and Closure (BRAC), consolidating NOSC Akron and NOSC Cleveland.

2.8 AIRSPACE ENVIRONMENT

The U.S. National Airspace System (NAS) is an integrated collection of controls, procedures and policies implemented and regulated by the FAA to ensure safe and efficient air operations. The NAS is divided into airspace classes to designate the level of service and operating rules for a given area. The following sections describe the airspace classifications, aeronautical charts and instrument approach capabilities at CAK.

2.8.1 Airspace Classification

The NAS has been divided into airspace classes to designate the level of Air Traffic Control (ATC) service and operating rules for a given area. Classes A, B, C, D and E are the controlled airspaces and Class G is uncontrolled.

Class A airspace is the most restrictive of the airspace classes. It covers the entire nation and is applied to airspace between 18,000 feet above mean sea level (MSL) and 60,000 feet MSL. Within Class A airspace, the aircraft must be operating under instrument flight rules (IFR). This requires the aircraft to have filed a flight plan with the FAA and to operate the aircraft in a certain manner.

Class B airspace surrounds the busiest airports in the nation (either greater than 3.5 million enplanements or operations greater than 300,000 annually, of which 50 percent are air carrier operations). Class B airspace is generally from the surface to 10,000 feet MSL. This airspace is designed to contain arriving and departing commercial air traffic operating under IFR. Any aircraft operating in the Class B airspace must have ATC clearance.

Class C airspace surrounds airports with moderate traffic (greater than 75,000 annual instrument operations or greater than 250,000 enplanements annually). Class C airspace generally ranges from the surface to 4,000 feet MSL. Akron-Canton Airport is located in Class C airspace.

Class D airspace is used for smaller airports that have a control tower and do not meet the criteria established for Class C airspace. It generally ranges from the surface to 2,500 feet MSL.

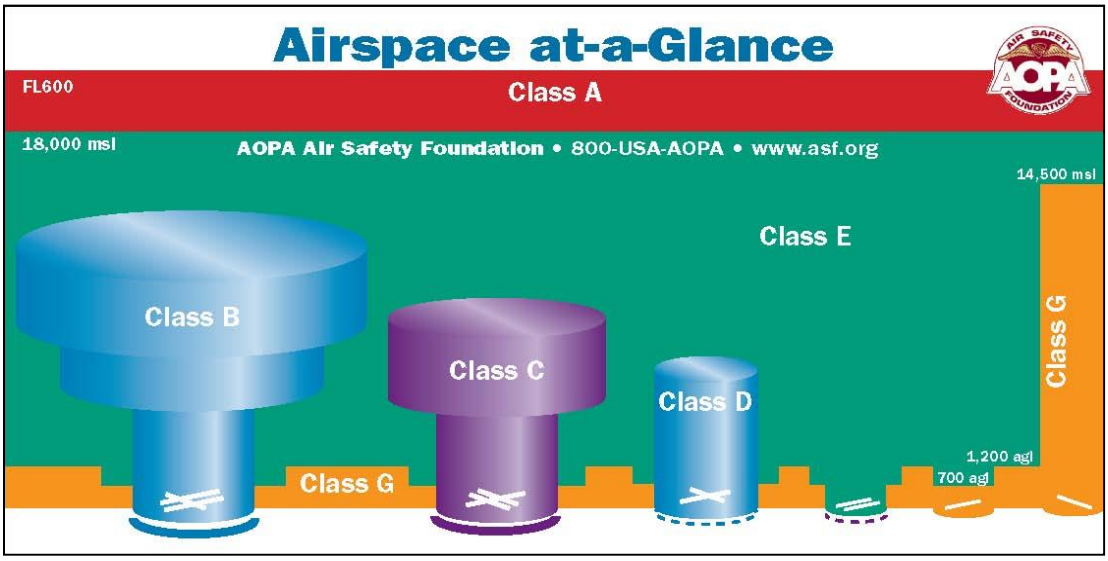
Aircraft operating in Class D airspace must establish two-way radio communication with ATC prior to entering the airspace.

Class E airspace represents all other controlled airspace. This class of airspace ranges from the surface to 18,000 feet above MSL at Class E airports and, when specified, from 700 feet above ground level (AGL) to 18,000 MSL. Airports within this class of airspace do not require a control tower but do have cloud clearance and visibility requirements. Class E airspace can also be considered the "filler" airspace under Class A, above Class G and between Classes B, C and D and has the same operational requirements there as other Class E environments.

Class G airspace is uncontrolled airspace. It represents a mantle of low-lying airspace beginning at the surface up to 700 feet AGL. In very remote areas, it has an upper limit at 14,500 feet MSL.

A graphic of the NAS classification is presented in **Figure 2-13**.

Figure 2-13 – U.S. Airspace Classification



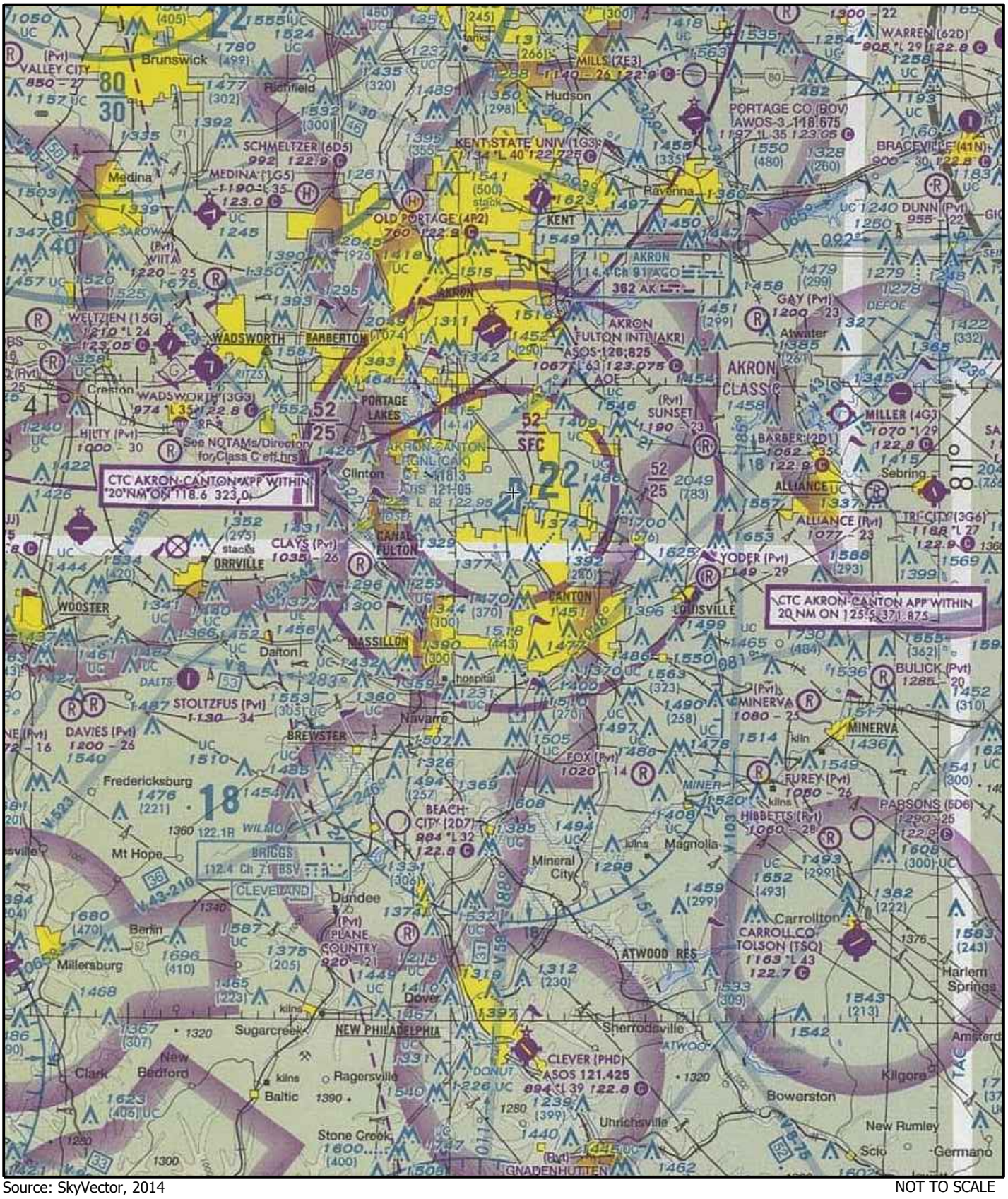
Source: AOPA Online, 2014

CAK's airspace is classified as Class C and is comprised of two airspace shelves centered about the Airport. The innermost shelf has a radius of five nautical miles from the Airport and extends vertically from the ground to 5,200 feet MSL. The outermost shelf has a radius of 10 nautical miles from the Airport and extends vertically from 2,500 feet MSL to 5,200 feet MSL. These shelves are depicted on an aeronautical chart as purple shaded circles. Communication with ATC must be established prior to entering Class C airspace. In addition, aircraft operating in or above Class C airspace must also have a working altitude reporting transponder (i.e., Mode C) on board.

In addition, CAK is located within the Cleveland Air Route Traffic Control Center (ARTCC) boundary. The Cleveland ARTCC is one of 22 FAA Centers responsible for controlling en route IFR traffic within the U.S.

2.8.2 Aeronautical Charts

The National Aeronautical Charting Office (NACO) of the FAA publishes special aeronautical charts used by pilots to navigate through the National Airspace System. These charts are called sectional charts or sectionals. A sectional chart provides detailed information on airspace classes, ground-based NAVAIDS, radio frequencies, longitude and latitude, navigational waypoints and navigational routes. It also offers topographical features, such as terrain elevations and ground features that are important to aviators, such as landmarks that will be identifiable from altitude. Although these charts are used for Visual Flight Rule (VFR) and Instrument Flight Rule (IFR) navigation, they are a VFR pilot's primary navigation tool. **Figure 2-14** displays a segment of the Detroit Sectional Chart, centered on CAK.



Source: SkyVector, 2014

NOT TO SCALE

AKRON-CANTON AIRPORT

MASTER PLAN UPDATE

Figure 2-14
Aeronautical Chart

2.8.3 Instrument Approach Capabilities

Until recently, instrument approach procedures relied on ground-based electronic NAVAIDS and were classified as either precision or non-precision. Non-precision approaches provided only lateral guidance, whereas precision instrument approaches provided lateral and vertical guidance. The NAVAIDS supporting traditional precision approaches are collectively called an instrument Landing System (ILS) and include a Localizer (providing lateral guidance), a Glideslope (providing vertical guidance) and an approach lighting system (providing close-in visual guidance). New advances in Global Positioning System (GPS) -based technology have allowed "vertically-guided instrument approach procedures" and ILS-like approach capability without the need for traditional ground-based ILS NAVAID equipment.

CAK currently has 10 published instrument approach procedures providing precision and non-precision approach capability to each runway end. Of the published instrument approach procedures, four are precision approaches while six are non-precision approaches. ILS and GPS-RNAV approaches are available on all of the runways at CAK, with ceiling and visibility minimums of 200 feet AGL and one-half statute mile respectively in all categorical speeds. VOR approaches can be made on Runways 5 and 23, with ceiling minimums of 500 feet AGL in all categorical speeds, and visibility minimums of one-half statute mile for Categories A and B; three-quarters statute mile for Category C; and one statute mile for Category D. In addition to the instrument approach procedures, Radar approach procedures for each runway end are available upon pilot request. A radar approach procedure is conducted with ATC providing heading and altitude guidance to the runway environment until a visual landing can be completed.

CAK currently has no Standard Terminal Arrival Routes (STARs) or Standard Instrument Departure (SID) procedures, although the FAA is beginning to develop a SID for Runway 1 which will overlay the FAA's current unpublished departure procedure. This SID will help air traffic control ensure avoidance of Cleveland Hopkins International Airport (CLE) airspace.

Table 2-13 – Instrument Approach Procedures

Runway End	Approach Type	Approach Method	Minimums – Ceiling (AGL) / Visibility
Runway 5	Precision	ILS	200' / ½ mile
	Non-Precision	RNAV (GPS)	200' / ½ mile
		VOR	500' / 1 mile
Runway 23	Precision	ILS	200' / ½ mile
	Non-Precision	RNAV (GPS)	200' / ½ mile
		VOR	500' / 1 mile
Runway 1	Precision	ILS	200' / ½ mile
	Non-Precision	RNAV (GPS)	200' / ½ mile
Runway 19	Precision	ILS	200' / ½ mile
	Non-Precision	RNAV (GPS)	200' / ½ mile

Source: AirNav.com, accessed September 2014

2.9 METEOROLOGICAL CONDITIONS

Meteorological conditions affect operations at an airport in many ways. Winds, precipitation and temperature conditions influence decisions pertaining to NAVAIDS, runway orientation and required runway length at an airport. CAK is equipped with an Automated Surface Observation System (ASOS). This is a weather data sensing, processing and dissemination system, designed to support weather forecast activities and aviation operations. Controlled and maintained by the FAA, ASOS observes, formats, archives and transmits observations automatically, and transmits a special report when conditions exceed preselected weather element thresholds through an automated VHF airband radio frequency (126.825 MHz) to pilots operating at or near CAK. These messages are also available by calling 330-724-4237.

2.9.1 Local Climate

The average annual temperature is 51.5 degrees Fahrenheit; the average low is 42.8 degrees Fahrenheit; and the average high is 60.1 degrees Fahrenheit. The mean temperature of the hottest month (July) has an average temperature of 72 degrees Fahrenheit. Average monthly precipitation ranges from 2.01 inches to 3.86 inches, with an annual average of 36.1 inches. Average monthly snowfall ranges from 0.3 inches to 36 inches (October to May), with an annual average of 68.1 inches. This climate data was obtained from the National Oceanic and Atmospheric Administration (NOAA) and the National Weather Service (NWS).

2.9.2 Wind Coverage

In addition to climate data, the ASOS (Station 72521 – Akron/Canton, OH) at CAK collects wind speed and direction data, which can influence airfield development decisions on runway orientation and length at an airfield. Ideally a runway is oriented with the prevailing wind, as landing and flying the aircraft into the wind enhances its performance. It is the recommendation of the FAA that the primary runway at an airport have at least 95 percent wind coverage, which means that 95 percent of the time, the wind at an airport is within certain limits of crosswind. Wind coverage is calculated using the highest crosswind component that is acceptable for the type of aircraft expected to use the runway system. Larger aircraft have a higher tolerance for crosswind than smaller aircraft due to their size, weight and operational speed. **Table 2-14** provides the standard crosswind component by aircraft size.

Table 2-14 – Standard Crosswind Components

Aircraft Category	Maximum Crosswind Component
A-I and B-I aircraft	10.5 knots
A-II and B-II aircraft	13.0 knots
A-III, B-III, C-I through C-III D-I through D-III	16.0 knots
A-IV, B-IV, C-IV through C-VI, D-IV through D-VI	20.0 knots
E-I through E-VI	20.0 knots

Source: FAA AC/5300-13A *Airport Design*

The FAA considers four weather classifications: all weather, visual flight rule (VFR) conditions, instrument flight rule (IFR) conditions[1] and poor visibility conditions (PVC). According to the data collected by the CAK ASOS, VFR conditions occur approximately 87.6 percent of the time, IFR conditions occur approximately 11.5 percent of the time and PVC conditions occur 0.9 percent of the time. **Table 2-15** outlines the weather classification criteria and the number of recorded observations at CAK between 2000 and 2009.

Table 2-15 – Weather Classification Criteria

Weather Class	Criteria	Recorded Observations at CAK (2000-2009)
All Weather	All ceiling and visibility weather conditions	82,953 (100%)
VFR Conditions	Ceiling ≥ 1,000' and visibility ≥ 3 miles	72,678 (87.6%)
IFR Conditions	Ceiling ≥ 200' and < 1,000' *and* Visibility ≥ ½ mile and < 3 miles	9,502 (11.5%)
Poor Visibility Conditions	Ceiling < 200' and/or visibility < ½ mile	773 (0.9%)

Source: NOAA, National Climate Center; Station 72521 (2000-2009)

The combination of the crosswind and the weather classification allows for the calculation of the wind coverage, which for CAK is presented in **Table 2-16**.

[1] Also termed Visual Meteorological Conditions (VMC) and Instrument Meteorological Conditions (IMC)

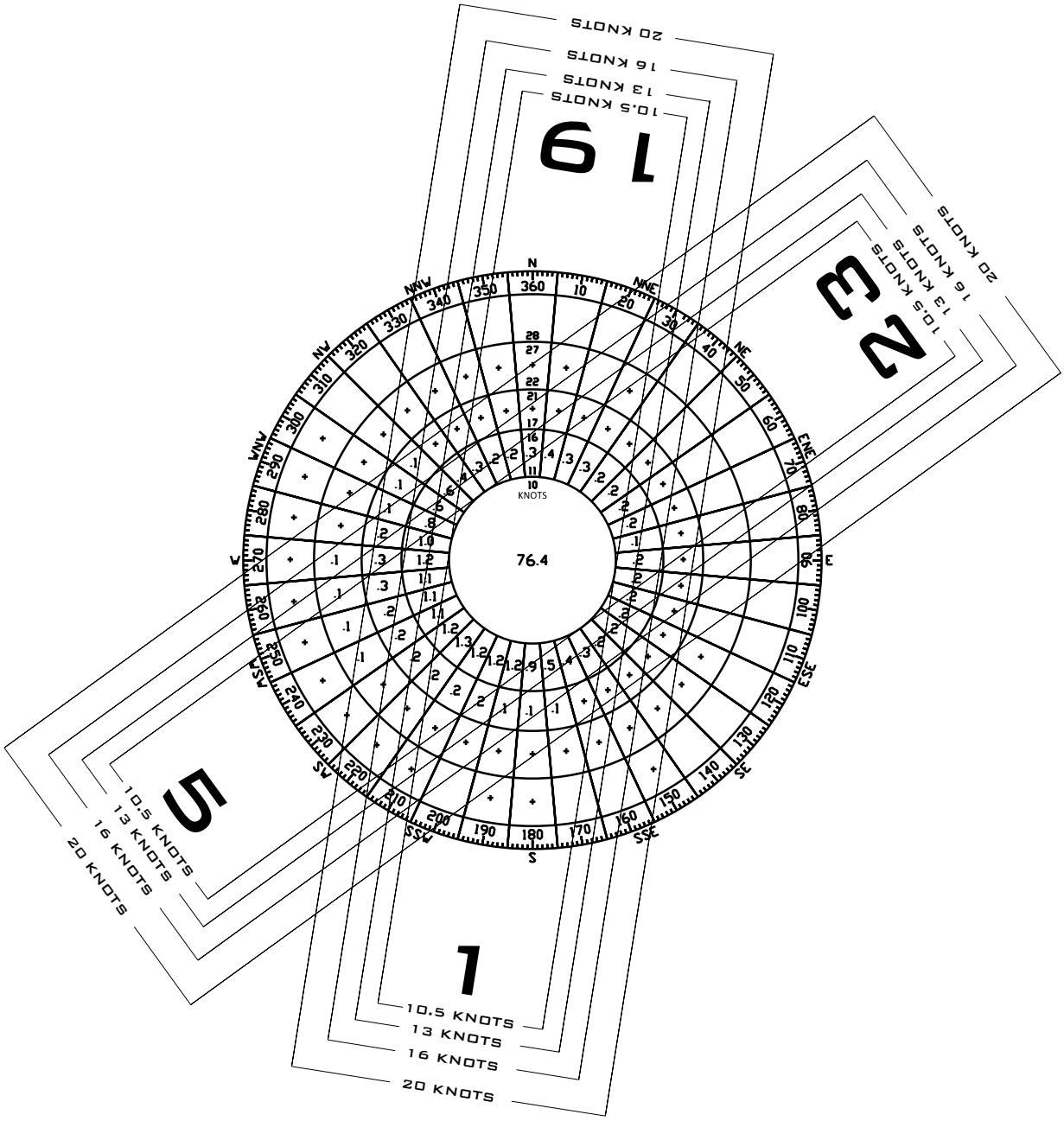
Table 2-16 – CAK Wind Coverage

	Runway	10.5 Knots	13 Knots	16 Knots	20 Knots
AW	5/23	92.31%	96.41%	99.25%	99.49%
	1/19	89.40%	94.06%	98.16%	99.86%
	All Combined	96.22%	98.61%	99.69%	99.95%
VFR	5/23	92.86%	96.73%	99.33%	99.88%
	1/19	89.87%	94.32%	98.22%	99.50%
	VFR Combined	96.53%	98.75%	99.73%	99.91%
IFR	5/23	87.80%	93.83%	98.54%	99.69%
	1/19	85.26%	91.82%	97.64%	99.43%
	IFR Combined	93.77%	97.51%	99.39%	99.72%
PVC	5/23	95.46%	97.73%	99.70%	99.88%
	1/19	96.34%	97.79%	99.20%	99.55%
	PVC Combined	97.77%	99.01%	99.79%	99.88%

Source: NOAA, National Climate Center; Station 72521 (2000-2009)

AW – All Weather
VFR – Visual Flight Rule
IFR – Instrument Flight Rule
PVC – Poor Visibility Conditions

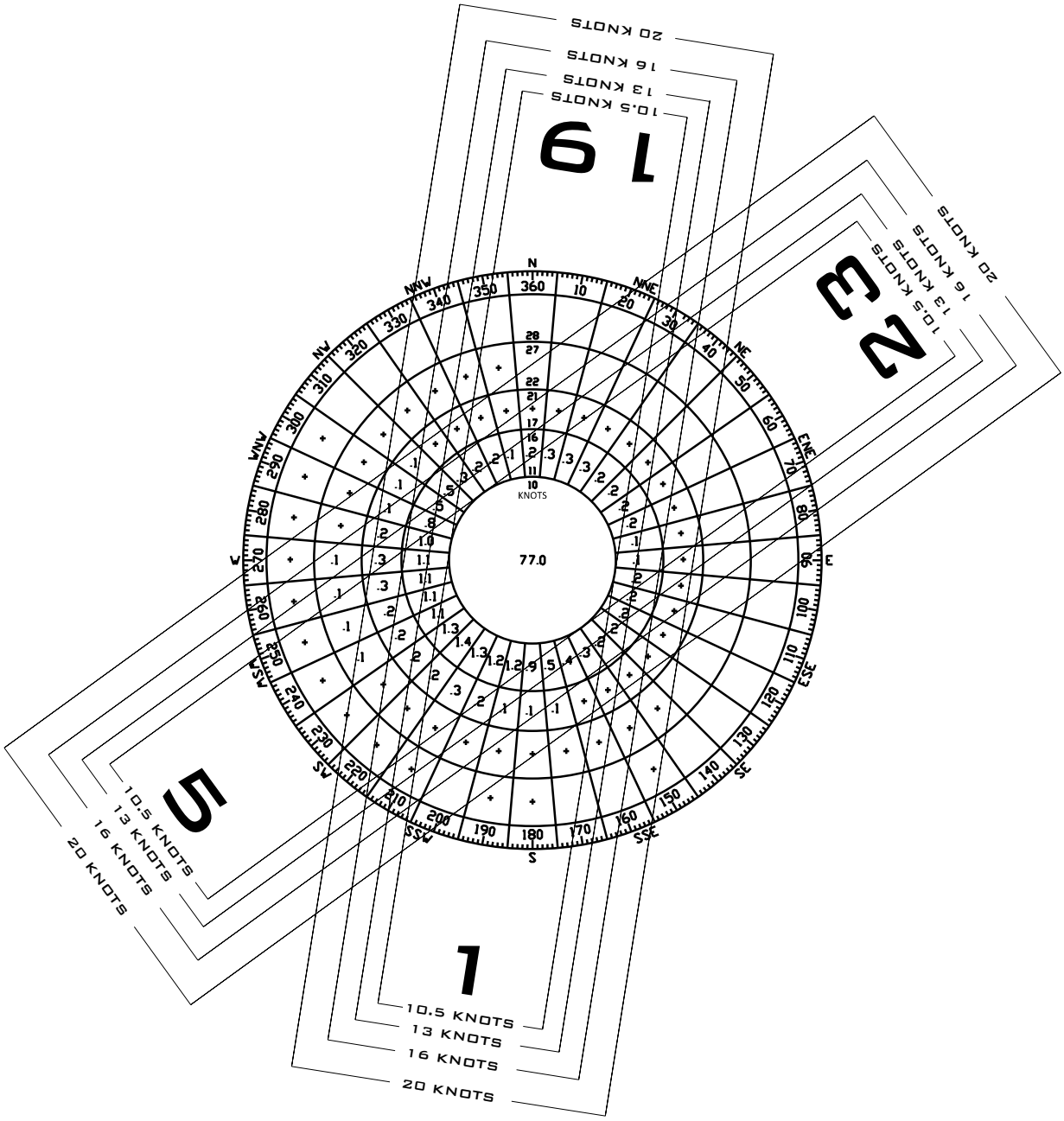
Weather observations are presented in a format that is specifically designed by the FAA to be useful for evaluating weather conditions at an airport. Wind direction is grouped according to a 16-point compass rose (N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW and NNW). Wind speed is tabulated into groups of 0-3, 4-12, 13-15, 16-18, 19-24, 25-31 and 32 knots per hour or greater. This data is typically displayed on a wind rose for each weather classification. The all-weather wind rose is presented in **Figure 2-15**, VFR wind rose in **Figure 2-16,** and IFR wind rose in **Figure 2-17**.



ALL-WEATHER WIND ROSE

SOURCE: NOAA National Climatic Center
Asheville, NC
Akron-Canton Airport
North Canton, OH
Station 72521

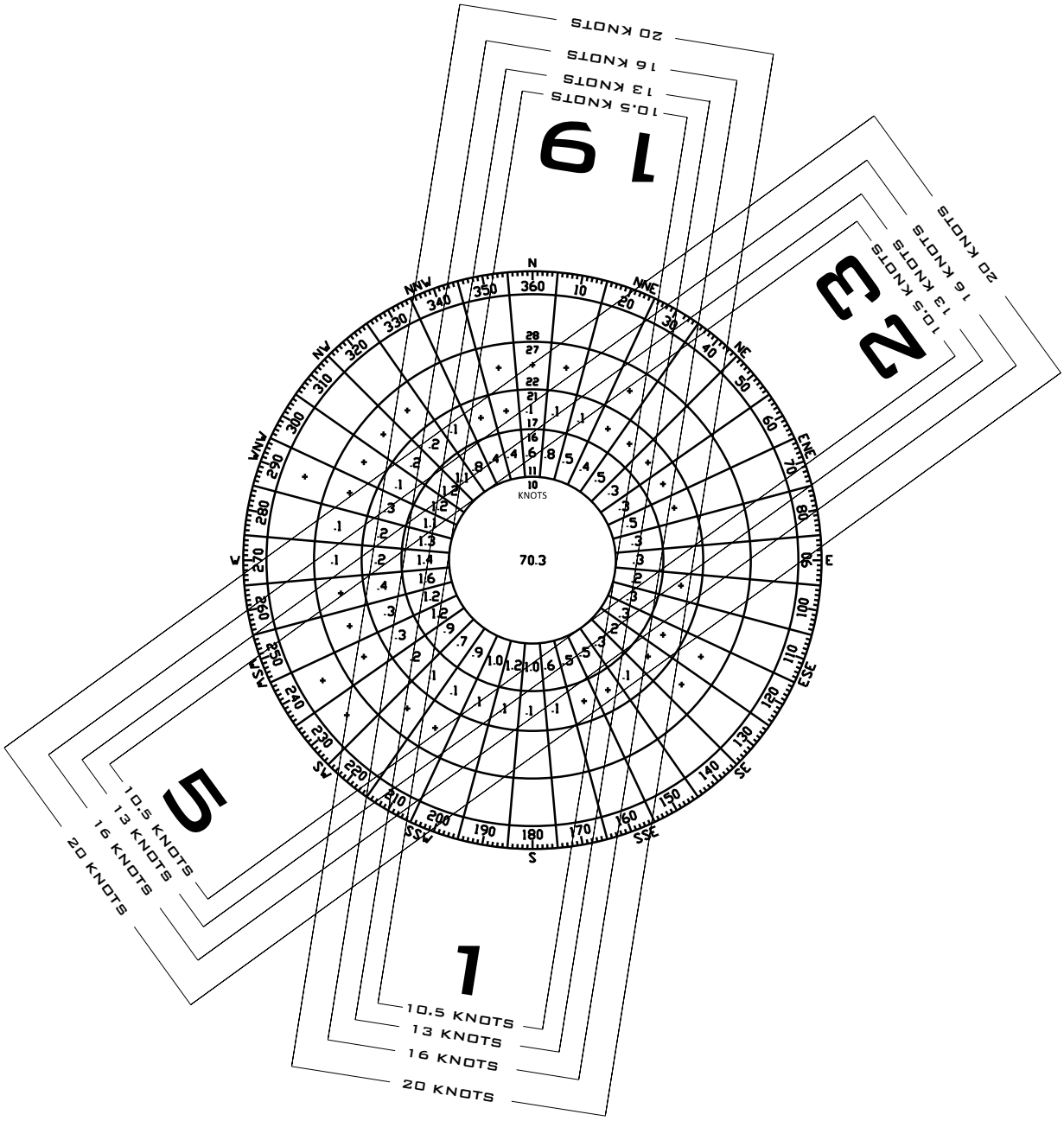
OBSERVATIONS: 82,972 Observations
2000-2009



VFR WIND ROSE

SOURCE: NOAA National Climatic Center
Asheville, NC
Akron-Canton Airport
North Canton, OH
Station 72521

OBSERVATIONS: 72,678 Observations
2000-2009



IFR WIND ROSE

SOURCE: NOAA National Climatic Center
Asheville, NC
Akron-Canton Airport
North Canton, OH
Station 72521

OBSERVATIONS: 9,502 Observations
2000-2009

2.10 ENVIRONMENTAL CONSIDERATIONS

As stated in FAA AC 150/5070-6B, "The purpose of considering environmental factors in airport master planning is to help the sponsor thoroughly evaluate airport development alternatives and to provide information that will help expedite subsequent environmental processing." A detailed environmental overview of potential impacts associated with the recommended development program is included in the Environmental Overview section of this Master Plan Update.

In 1969, the U.S. Congress passed the National Environmental Policy Act (NEPA). The purpose of this act is to establish a national policy for protecting the natural and human environment and overall quality of life. NEPA requires all federal agencies to assess and disclose (to the public) significant environmental impacts relating to federally-funded actions. This process-oriented procedural law guides the FAA when making development decisions for an airport. The FAA has specific environmental orders that guide the agency through the NEPA process, which are FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Projects* and FAA Order 1050.1E, *Policies and Procedures for Considering Environmental Impacts*. Other environmental legislation that an airport sponsor is required to follow are: the Clean Air Act (CAA), the Noise Pollution and Abatement Act, the National Historic Preservation Act (NHPA), the Endangered Species Act, the Farmland Protection Policy Act (FPPA) and various Executive Orders. There are specific environmental impact categories outlined in FAA Order 5050.4B and FAA Order 1050.1E that an airport sponsor is required to analyze when completing a NEPA document for a specific development project. These impact categories are listed below:

- Air Quality
- Biotic Resources
- Coastal Barriers
- Coastal Zone Management
- Compatible Land Use
- Construction Impacts
- Section 4(f)
- Threatened and Endangered Species
- Energy Supplies, Natural Resources and Sustainable Design
- Environmental Justice
- Farmlands
- Floodplains
- Hazardous Materials
- Historic and Archeological Resources
- Induced Socioeconomic Impacts
- Light Emissions and Visual Effects
- Noise
- Social Impacts
- Solid Waste
- Water Quality
- Wetlands
- Wild and Scenic Rivers
- Cumulative Impact

All of these categories are discussed in the Environmental Overview section later in this document in regards to regulatory framework and how the 20-year development plan for CAK might affect these resources. As part of the Airport inventory, previously-documented environmental resources were collected and evaluated – particularly pertaining to aircraft noise, air quality, wetlands, floodplains, historic resources, and endangered species. The data collected was considered in the development of all alternatives and concepts.

2.11 FINANCIAL STRUCTURE

This section presents the financial conditions, provisions and restrictions under which CAK operates. This information will be used in developing the financing alternatives for the future development of CAK.

For financial statement presentation purposes, the Airport has one fund which is categorized as a proprietary fund. The Airport's proprietary fund type is an Enterprise Fund, which is a fund that accounts for operations that are financed and operated in a manner similar to private business enterprises where the intent is that costs - expenses, including depreciation - of providing services to the general public on a continuing basis be financed or recovered primarily through user charges or where it has been decided that periodic determination of revenues earned, expenses incurred and/or net income is appropriate for capital maintenance, public policy, management control, accountability or other purposes.

The accounting and financial reporting treatment applied to the Airport's fund is determined by their measurement focus, which emphasizes the determination of net income. The Airport's statements are prepared on the accrual basis and present all assets and liabilities of CAK, both financial and capital, and short- and long-term. They also present revenues and expenses of CAK during the year, even if cash is received or paid out. Collectively, the statements provide information regarding CAK's financial condition as of December 31 and the results of its operations and cash flows for the year then ended.

A significant portion of day-to-day operations and planning relates to fiscal management. The Airport legally adopts staff-prepared operating and capital budgets. The airlines serving CAK operate under the air carrier lease agreement that was renegotiated in mid-2014. The airline fees and rents are fixed in Schedule A of the air carrier lease agreement; however, according to Section 4.06 Extraordinary Rate/Fee Adjustments of the air carrier lease agreement, they can be adjusted by a maximum of 10 percent in the event that any of the cost or revenue components of CAK's cost centers vary materially from the estimates used in setting the fees and rents included in Schedule A.

CAK distinguishes between operating and non-operating revenues and expenses. Operating revenues and expenses generally result from providing services in connection with the principal ongoing operations and include revenues from space rental and fees, landing fees, parking and other miscellaneous income are reported as operating revenues and expenses from employee wages and benefits, purchases of services, materials and supplies, and other miscellaneous expenses are reported as operating expenses. Transactions that are capital, financing or investing related are reported as non-operating revenues or expenses. This includes items such as federal funds, passenger facility charges (PFCs), interest revenue and expense, and financing costs.

CAK has a five-year capital improvement program (CIP) that details the projects needed to maintain and efficiently operate CAK. The funding sources of the CIP include federal entitlement and discretionary grants, state of Ohio grants, PFCs, revenue bond funds and CAK funds.

In general, the financial operations of CAK are governed by:

- Operating leases with passenger and cargo airlines
- Concession agreements and other leases with other tenants at the airports (including food and beverage, merchandise, car rental, automobile parking, ground transportation and other services)
- Federal Aviation Administration approvals to collect and use PFC collections
- Federal statutory and constitutional provisions, the Airport and Airways Improvement Act, the Transportation Security Administration and the PFC Act of 1990
- Generally accepted accounting principles
- Various policies adopted by CAK