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Capital Region International Airport Master Plan





Chapter 2

Inventory of Existing Conditions

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2 Inventory

2.1 Introduction

Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*, outlines federal guidance on required and recommended steps in the development of an airport master plan. The initial step is the identification of existing conditions at an airport. This involves the collection of data relevant to an airport, and the area it serves, with the objective of using background information as a baseline condition during subsequent phases of the study. The information gathered in this chapter will serve as a foundation for identifying facility needs for Capital Region International Airport (CRIA or LAN).

This chapter will discuss the various types of assets included in the inventory, such as airfield facilities, commercial passenger and general aviation buildings, landside roadways and parking lots, and other relevant airport infrastructure.

2.2 Airport Setting and Role

The Capital Region International Airport, also known as CRIA or LAN, is a primary commercial service airport located in Lansing, Michigan – the state capital – roughly 3 miles northwest of city center. LAN lies at 42° 46' 43" North latitude and 84° 35' 10" West longitude at an elevation of 861 feet above Mean Sea Level (MSL) and covers 2,083 acres of land. Airport property sits at the junction of three counties in south central Michigan: Clinton, Ingham, and Eaton.

Several waterways and bodies of water are near the airport. Lake Lansing is about nine miles east of the airport. The Grand River flows through Lansing to Lake Michigan and is the closest body of water to LAN, located approximately 1 mile south of the airfield. Jones Lake is also nearby, to the southeast.

As a primary commercial service airport, LAN ranked fifth in 2021 among Michigan airports for annual passenger enplanements.¹ The airport also plays a crucial role at the regional and national levels by facilitating a significant amount of cargo operations. Specifically, LAN hosts the movement of over 63 million pounds of cargo on an annual basis.² These cargo activities include the transportation of express and regular mail, as well as automotive and other industrial components. LAN is mid-Michigan's only US Port of Entry, meaning US Customs and Border

¹ FAA Enplanements at All Commercial Service Airports, September 2022, Retrieved from https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats, June 23, 2023

² Flylansing.com

Protection services are on-site to clear international passengers and products. LAN also has an established Foreign Trade Zone³ (FTZ #275) covering eight surrounding counties.

In addition to passenger and cargo operations, LAN has an array of general aviation facilities serving business, recreational, and student users, along with extensive non-aeronautical facilities situated near the commercial terminal and business park areas.

2.2.1 Airport History

In 1927, LAN was established on a 300-acre site located just northwest of the city. The development of the airport's initial facilities was a joint effort, with the Chamber of Commerce providing the funds and the Michigan Highway Department leveling the land. The airport was officially opened to the public on July 14th, 1928. Lansing's first airmail service, performed by Transamerican Airlines, took flight on July 17th, 1928. Shortly after, on September 1st, 1929, Kohler Airlines started offering passenger services. In 1934, Pennsylvania Airlines and Transport Inc. acquired Kohler Airlines and expanded their operations to include airmail and passenger services to various locations such as Detroit, Muskegon, Grand Rapids, and across Lake Michigan.

From 1957 to 1959, due to high passenger demand, a new terminal building was constructed replacing the original one built in 1940. The new terminal accommodated three airlines, a restaurant, gift shop, the FAA Air Traffic Control Tower, Michigan Aeronautics Division offices, National Weather Service, and a flight service station. The Capital Region Airport Authority (CRAA) was established in 1970 under Michigan Public Act Number 73, allowing the creation of airport authorities, with certain restrictions, for state-owned airports. The following year, CRAA took control of the formerly named Capital City Airport, previously owned by the State of Michigan.

Over the years, LAN underwent various projects, including the construction of a new aircraft rescue and firefighting (ARFF) building in 1972. During the following years, runway rehabilitation projects were undertaken along with a terminal expansion. The airport reached a significant milestone in 1973 with the installation of its first surveillance radar. A master plan was conducted in 1975 to guide future development at LAN. In 1977, the CRAA was authorized to install an Instrument Landing System (ILS) and approach lighting system on Runway 10R. This achievement would help improve safety and enable aircraft to land in adverse weather conditions.

³ Foreign Trade Zones (FTZs) are designated areas within US Ports of Entry where foreign and domestic products are considered outside US Customs Territory, therefore offering efficiency and tax benefits.

In 1980, LAN constructed a new 5,300 square foot fire station. Additionally, a new firefighting vehicle was purchased to enhance the CRIA safety capabilities. Two years later, in 1982, the air carrier terminal underwent reconstruction, with a specific focus on renovating airline space for Piedmont Airlines. In 1986, LAN built a new 10,000 square foot flight service station southeast of the terminal parking lot, to provide statewide flight services. The airport's master plan was updated in 1987 to align with changing long-term goals and objectives.

Between 1988 and 1990, the CRAA completed various significant projects such as rehabilitating runway and taxiway pavements, constructing a new fuel farm, and establishing temporary ticket counters, baggage makeup areas, and airline offices in the terminal building. Additionally, a FAR Part 150 Noise Compatibility Study was conducted in 1990 to ensure noise regulation compliance and identify potential issues for surrounding land uses.

In 1992, the CRAA expanded and renovated the terminal building by adding 50,000 square feet and renovating another 110,000 square feet to improve functionality and aesthetics. LAN initiated an airport master plan update and environmental study in 1993, identifying potential areas for improvement and ensuring compliance with environmental regulations. The public parking lot was also reconstructed in 1993 to enhance user service and convenience, and a new Airport Surveillance Radar (ASR-9) facility was installed to enhance air traffic control capabilities and increase safety.

In 2001, the CRAA upgraded and expanded the passenger terminal building to increase its area and enhance the baggage facilities, resulting in improved functionality and convenience for passengers. Additionally, in 2003, new boilers were installed to improve heating system efficiency and reliability to help maintain quality service for passengers and stakeholders.

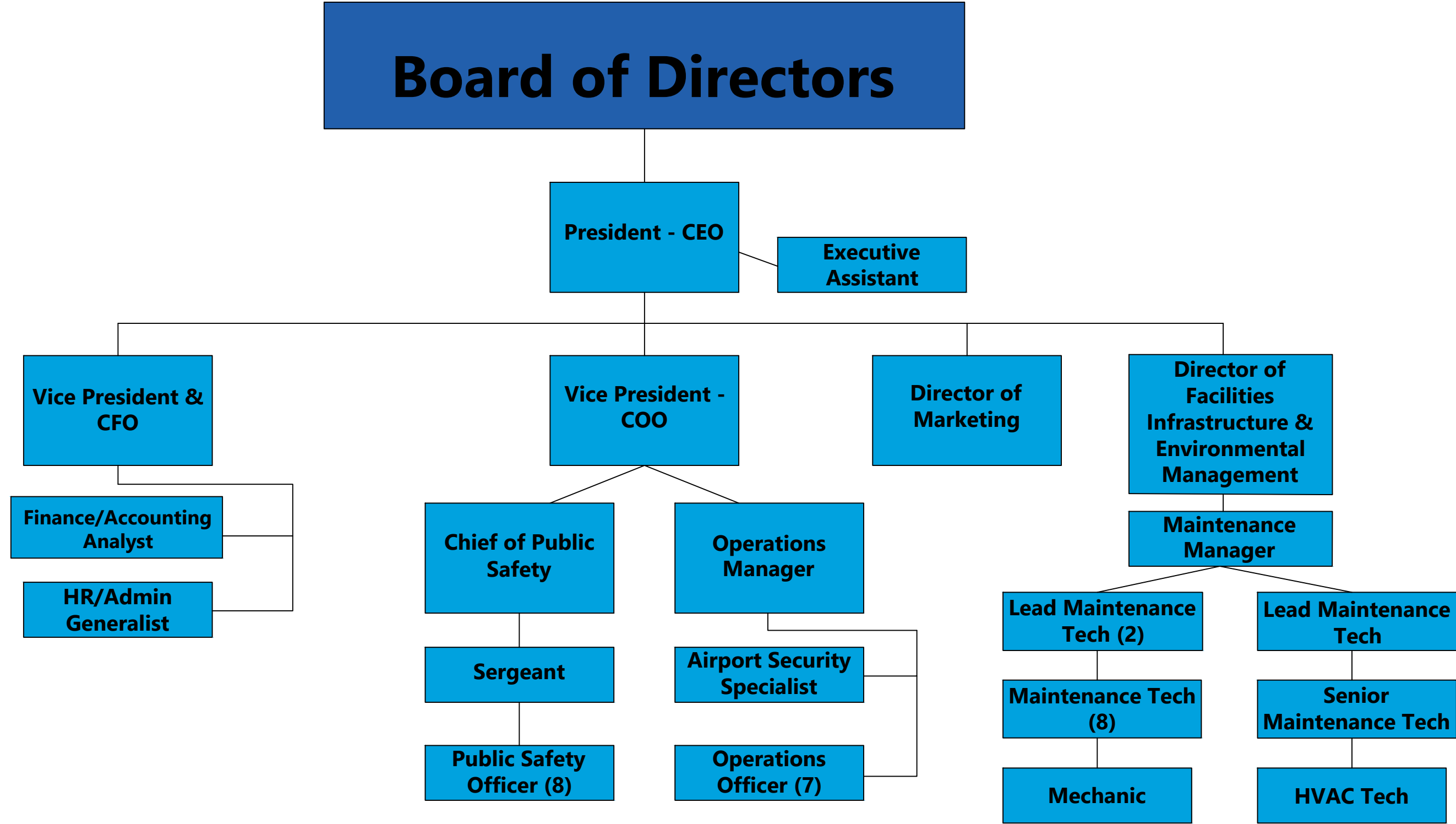
In 2005, Runway 10R-28L was extended by 750 feet to the east and in 2008 it was extended another 500 feet east. Dewitt Road was also rerouted to the east to enable the runway extension. In 2008, LAN also opened Port Lansing as an official international Port of Entry in Customs and Border Patrol services. Soon after, the CRAA opened LAN up to international passengers and freight by constructing a Federal Inspection Station (FIS) with Customs and Border Patrol (CBP) facilities which opened in May 2009.

Between 2007 and 2022, the cargo apron underwent two phases of expansion adding roughly 200,000 square feet of apron and 150,000 square feet of supporting taxilane. The cargo expansion is, at the time of this writing (July 2023) in its third and final expansion phase, adding an additional 375,000 square feet of cargo apron.

2.2.2 Airport Ownership and Control

The Capital Region Airport Authority owns and operates the airport. The CRAA is governed by an eight-member board. Three members of the board represent Ingham County and three members represent the City of Lansing. The remaining two members of the board are ex officio members representing Eaton County and Clinton County. The Airport Authority Board is responsible for overseeing LAN staff, who manage the daily operations and maintenance of the airport. **Figure 2-1** depicts the organizational structure.

Figure 2-1
Capital Region International Airport Organizational Chart



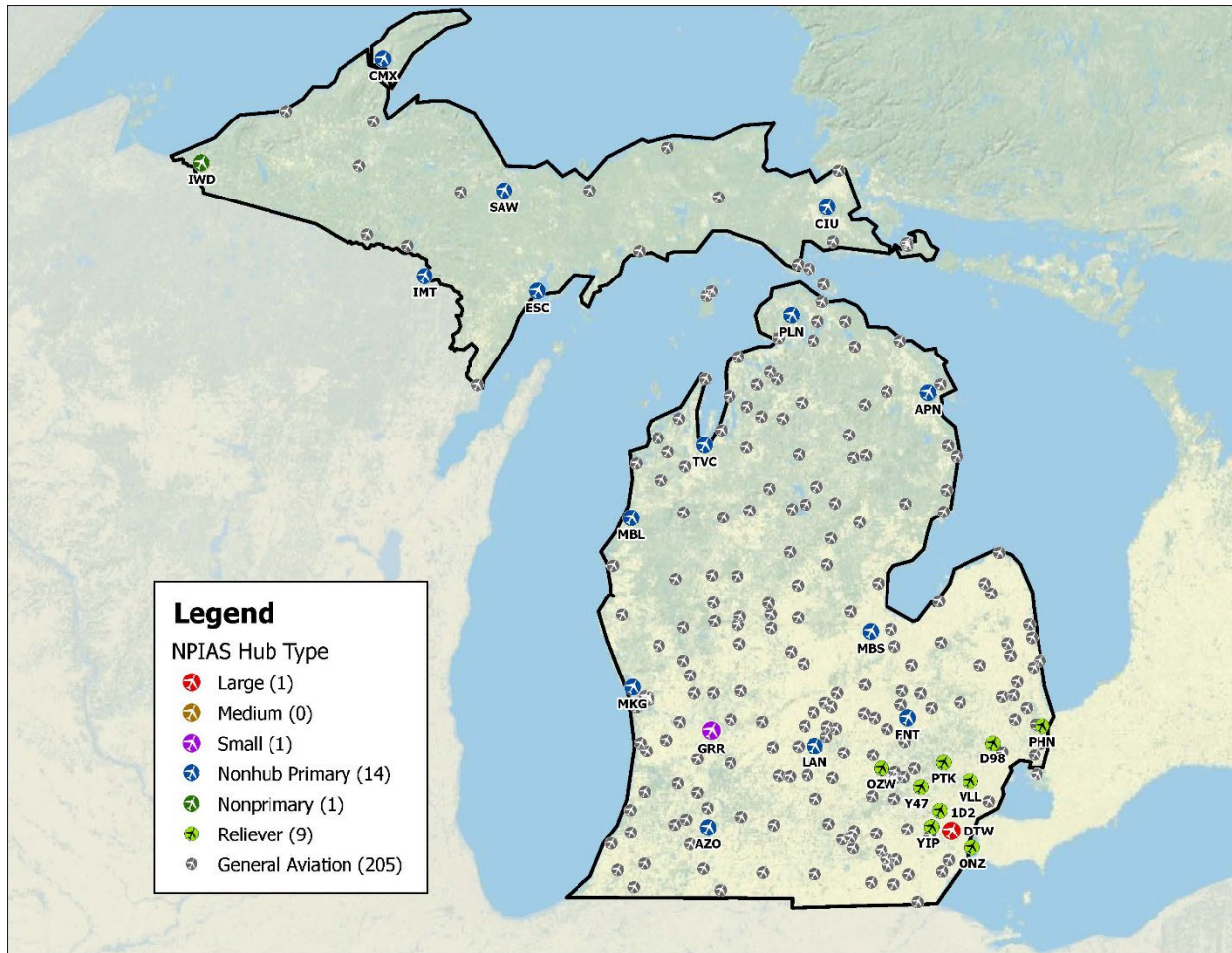
Source: CRAA Records, RS&H, 2023

2.2.3 Airport Role in National System

The FAA maintains the National Plan of Integrated Airports Systems (NPIAS) which lists approximately 3,400 airports in the United States significant to the national air transportation and therefore eligible to receive federal grants under the Airport Improvement Program (AIP). The NPIAS is published by the FAA every two years and an airport must be included in the NPIAS to be eligible for funding under the Airport Improvement Program (AIP).

The Capital Region International Airport is classified by the FAA's NPIAS as a non-hub primary airport. By FAA definition, non-hub primary airports are commercial service airports that have more than 10,000 annual enplanements but account for less than 0.05 percent of all commercial passenger enplanements nationally. **Figure 2-2** depicts the location of LAN along with all other Michigan airports in the FAA NPIAS.

Figure 2-2
NPIAS Airports in Michigan



Source: FAA NPIAS FY 2023-2027, Prepared by RS&H, 2023

2.3 Airport Meteorological Conditions

Prevailing meteorological conditions are evaluated to determine aircraft performance characteristics for supporting airfield operations. Meteorological characteristics used in airport planning analysis include temperature, precipitation, winds, visibility, and cloud ceiling heights. The National Weather Service (NWS), a division of the National Oceanic and Atmospheric Administration (NOAA), provides historical climate, weather, and precipitation information.

Located in the central region of Michigan, Capital Region International Airport experiences moderate rainfall during the warm months and moderate snowfall in the winter months. July is typically the warmest month with an average high temperature of 80.8 degrees Fahrenheit and January is typically the coldest month with an average minimum temperature of 17.2 degrees Fahrenheit. The annual average precipitation for LAN is approximately 33.3 inches with annual

average snowfall of 50.2 inches. **Table 2-1** shows the climate history for the immediate LAN area.

Table 2-1
Climate History for LAN

Month	Maximum Temperature	Minimum Temperature	Average Temperature	Average Precipitation	Average Snow
Jan	30.6° F	17.2° F	23.9° F	2.06"	14.3"
Feb	33.5° F	18.3° F	25.9° F	1.71"	12.9"
Mar	44.4° F	26.0° F	35.2° F	2.13"	5.9"
Apr	57.6° F	36.4° F	47.0° F	3.26"	1.7"
May	69.4° F	47.5° F	58.4° F	3.66"	0.0"
Jun	78.9° F	57.1° F	68.0° F	3.76"	0.0"
Jul	82.8° F	60.9° F	71.8° F	2.94"	0.0"
Aug	80.6° F	59.5° F	70.0° F	3.48"	0.0"
Sep	73.6° F	51.5° F	62.5° F	2.81"	0.0"
Oct	60.5° F	41.2° F	50.8° F	3.16"	0.2"
Nov	47.0° F	31.9° F	39.5° F	2.46"	3.9"
Dec	35.7° F	23.3° F	29.5° F	1.90"	11.3"

Source: NOAA National Centers for Environmental Information, Prepared by RS&H, 2023

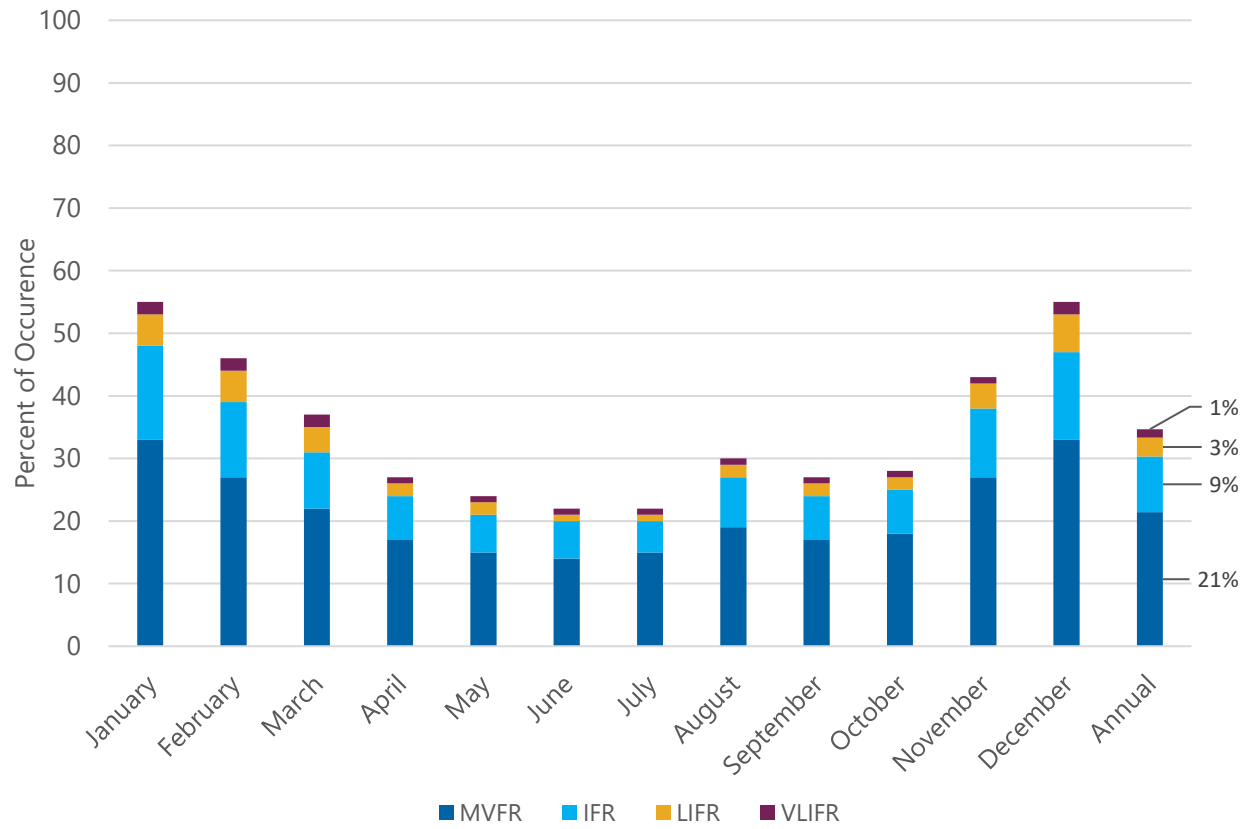
According to NOAA weather data, LAN experiences southwesterly prevailing winds⁴ and its geographically central location within the lower Michigan peninsula minimizes the impacts of lake effect weather events, resulting in increased cloudiness which is typical during late fall and early winter.

Cloud ceilings and visibility determine the type of flight rules that apply in FAA-controlled airspace. In broad terms, Visual Flight Rules (VFR) can apply during clear conditions with high visibility, whereas Instrument Flight Rules (IFR) are required during inclement weather and poor visibility conditions. At LAN, VFR conditions are more prevalent in the warmer months and IFR conditions are more prevalent in the colder months. NOAA weather data tracked between 1973 and 2007 shows VFR conditions persist at LAN 66 percent of the time and IFR conditions are present 34 percent of the time, on average (see **Figure 2-3**).

⁴ NOAA National Weather Service, Retrieved June 26, 2023 from <https://www.weather.gov/grr/laninfo>.

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Figure 2-3
LAN Historical Flight Rules Category (1973 – 2007)



Source: National Weather Service; Prepared by RS&H, 2023

2.4 Airfield Facilities

This section reviews airfield facilities including the runways, taxiways, airfield lighting, and navigational aids. Pavement conditions and airfield hot spots have also been assessed.

2.4.1 Runway System

The LAN runway system includes two parallel runways, 10L-28R and 10R-28L, oriented in an east-west direction, and one crosswind runway, 6-24, oriented in a northeast-southwest direction and crossing the western half of Runway 10R-28L. All runways have an asphalt surface. Runways 10R-28L and 6-24 are grooved but Runway 10L-28R is not. FAA AC 150/5300-13B, *Airport Design, Appendix G* defines runway design standards based on design aircraft approach category (AAC) and airplane design group (ADG). A complete summary of the runway systems is detailed in **Table 2-2**.

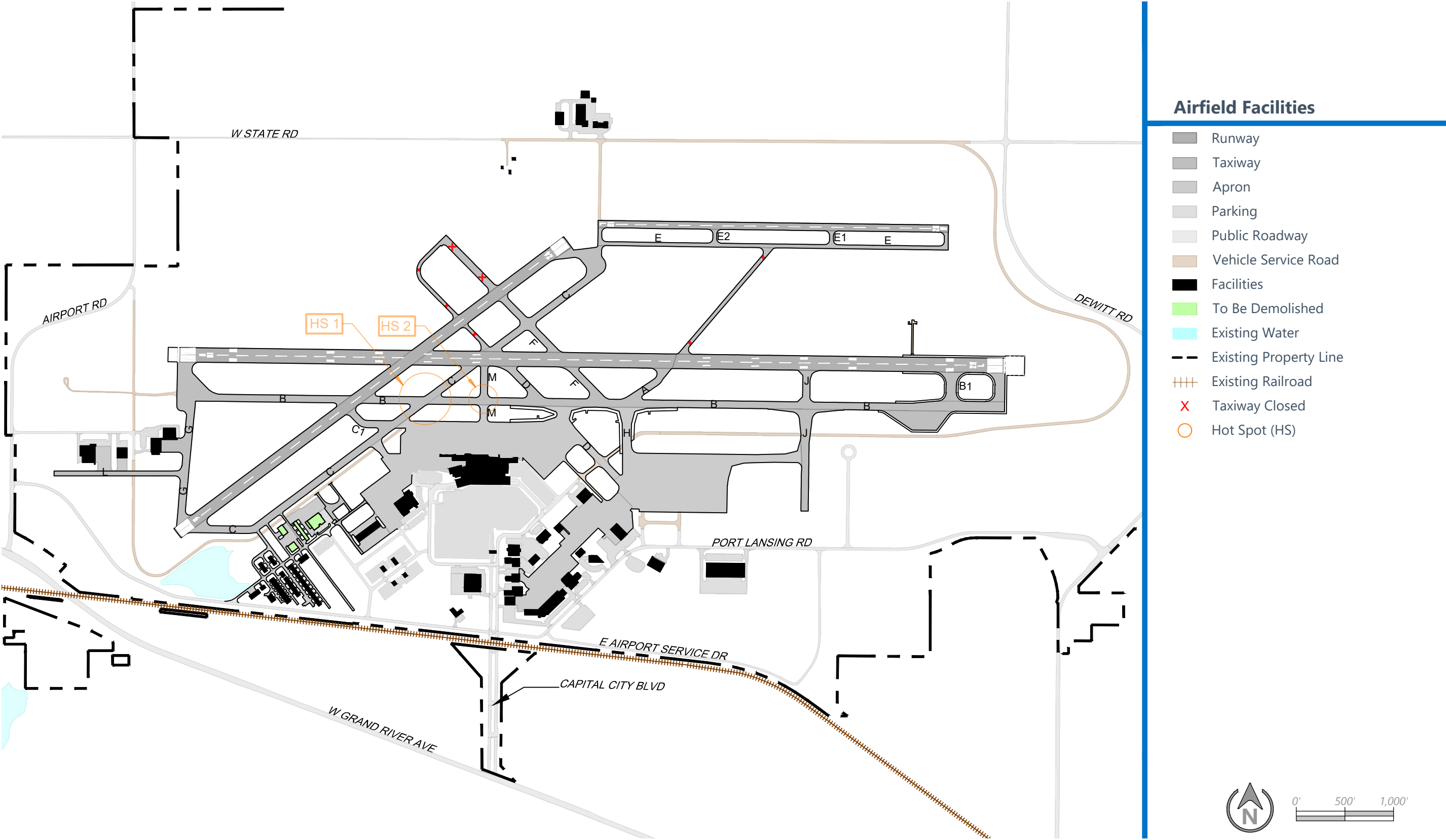
Runway 10R-28L is the primary runway at 8,506 feet long and 150 feet wide. Runway 10R-28L is designed to meet D-IV standards, has precision markings, and is equipped with high-intensity runway lighting (HIRL).

Runway 6-24 is a secondary runway that intersects the west end of Runway 10R-28L. It is 5,003 feet long, 120 feet wide, and designed to meet B-II design standards; however, many safety separations meet C-II standards. Runway 6-24 has non-precision markings and medium intensity runway lighting (MIRL).

Runway 10L-28R, on the north side of the airfield, runs parallel to the primary runway. It measures 3,601 feet in length and 75 feet in width and is designed to B-I standards (width exceeds 60-foot standard). Runway 10L-28R has visual markings and is used by small general aviation aircraft.

Figure 2-4 shows the complete runway system at LAN.

Figure 2-4
Airfield Facilities



Source: RS&H, 2023

Table 2-2
Runway Systems

Attribute	Runway		
	10R-28L	6-24	10L-28R
Length	8,506 ft	5,003 ft	3,601 ft
Width	150 ft	120 ft	75 ft
AAC	D	B	B
Design Group	IV	II	I
Surface Type	Grooved Asphalt	Grooved Asphalt	Asphalt
Weight Capacity	SW – 100,000 lbs	SW – 45,000 lbs	SW – 12,000 lbs
	DW – 175,000 lbs	DW – 65,000 lbs	-
	DT – 300,000 lbs	DT – 100,000 lbs	-
PCN	90/R/B/W/T	45/R/C/X/T	70/F/B/Y/U
Markings	Precision	Non-precision	Visual
Lighting	High Intensity	Medium Intensity	-
REIL	No	Yes	No
Approach Lights	Medium Intensity	No	No

Source: FAA Airport Master Record, ADIP, RS&H Analysis, 2023

2.4.2 Taxiway System

The airfield taxiway system facilitates access between airside facilities and the runways. FAA airfield design standards are required to ensure taxiways safely expedite aircraft departures from the runway to enhance runway capacity and provide efficient aircraft movements around the airfield.

The primary airport taxiway surfaces consist of three parallel taxiways, Taxiway B, C, and E, each on the south side of its respective supported runway. Taxiway B serves aircraft movements along Runway 10R-28L via nine connector taxiways. Taxiway E serves aircraft movements parallel to Runway 10L-28R with access via four connector taxiways. Additionally, Taxiway C parallels Runway 6-24 with four connector taxiways for facilitating movements to/from the runway.

Table 2-3 summarizes the complete taxiway system at LAN.

Table 2-3
Taxiway Systems

Taxiway Designator	Width (feet)	Type
A	75	Connector
B	75	Parallel for RWY 10R-28L
B1	100	Connector
C	75	Parallel for RWY 06-24
C1	75	Connector
D	75	Angled Apron Connector
E	40	Parallel for RWY 10L-28R
E1	40	Connector
E2	40	Connector
F	75	Midfield Taxiway
G	75	Connector
H	75	Apron Connector
J	75	Connector
L	50	Connector
M	75	Midfield Connector

Source: FAA Airport Diagram, RS&H Analysis, 2023

2.4.3 Hot Spots

Airport hot spots are areas on an airport movement area where the potential for collision or runway incursion is elevated due to a variety of factors such as confusing taxiway layouts, unclear or missing signage or markings, or intersections with other taxiways or runways. **Figure 2-4** shows the airfield facilities and FAA-designated hot spots.

The FAA expects airports to address these areas to conform with current standards. Mitigation of hot spots with an explicit or immediate safety deficiency for non-standard condition(s) should be prioritized in an airport's planning process to provide a safe operating environment. Per FAA guidance, inconvenience does not represent an acceptable justification for non-conformance to standards.

Additionally, the FAA provides guidance to pilots, controllers, and airport personnel on how to identify and avoid making mistakes at hot spots, through actions such as regular training and proper communications. The agency also conducts regular safety assessments and audits of airport operations to identify and mitigate potential hot spot risks.

The airport has two hot spots, both in the center of the airfield and near one another. Hot spot number one (HS 1) is nonstandard because it is located at the intersection of Taxiway B and C where the intersecting angled exits from Runway 28L and Runway 6 converge. Previous deviations include pilots accidentally passing a left turn onto Taxiway B when heading northeast along Taxiway C and inadvertently entering Runway 10R-28L. Hot spot number two (HS 2) is immediately east of HS 1 where Taxiways B and M intersect and is nonstandard because it provides direct runway-to-apron access. FAA has expressed support for eliminating the direct apron-runway access created by Taxiway M.

2.4.4 Pavement

Airfield pavement covers roughly 785,000 square yards (162 acres) of airport land and is subject to recurring inspections to ensure safe conditions are maintained. The Michigan Department of Transportation (MDOT) uses FAA Advisory Circular guidance to regularly assess airport pavement conditions using Pavement Condition Index (PCI) inspection ratings and assigns PCI thresholds for maintenance based on the Runway Design Category (RDC).

Airport PCI assessments visually represent the state of the pavement surfaces, as inspected, and set a baseline for projecting values over five years (with a maximum of ten years allowed by MDOT) starting from the inspection year. MDOT defines a range of values for PCI from 0 (unusable pavement) to 100 (excellent condition typical of newly constructed pavement). The most recent LAN inspection was performed in August 2020 and MDOT has an established five-year maintenance and rehabilitation (M&R) plan spanning from 2021 to 2025.⁵ **Figure 2-5** displays the 2020 inspected PCI report for LAN airfield surfaces.

As of the 2020 inspection date, Runway 6-24 had a PCI of 38, which indicates a very poor condition. It is projected that by 2030 this runway will have a PCI of 28, Taxiway C will have a PCI of 12, and Taxiway C1 will have a PCI of 4, indicating very poor and failing conditions.

Runway 10L-28R was evaluated to be in fair condition with a PCI of 61. Projections for the year 2030 anticipate the condition of the runway and Taxiway E to deteriorate with a projected PCI of 56 for the runway and 46 for the taxiway, both of which are categorized as poor.

Runway 10R-28L assessment shows it in good condition, with a PCI of 71. However, projections for the year 2030 indicate a decline with a projected PCI of 48, also classified as poor. Parallel Taxiway B is forecast to be in fair condition in 2030 with a projected PCI of 57.

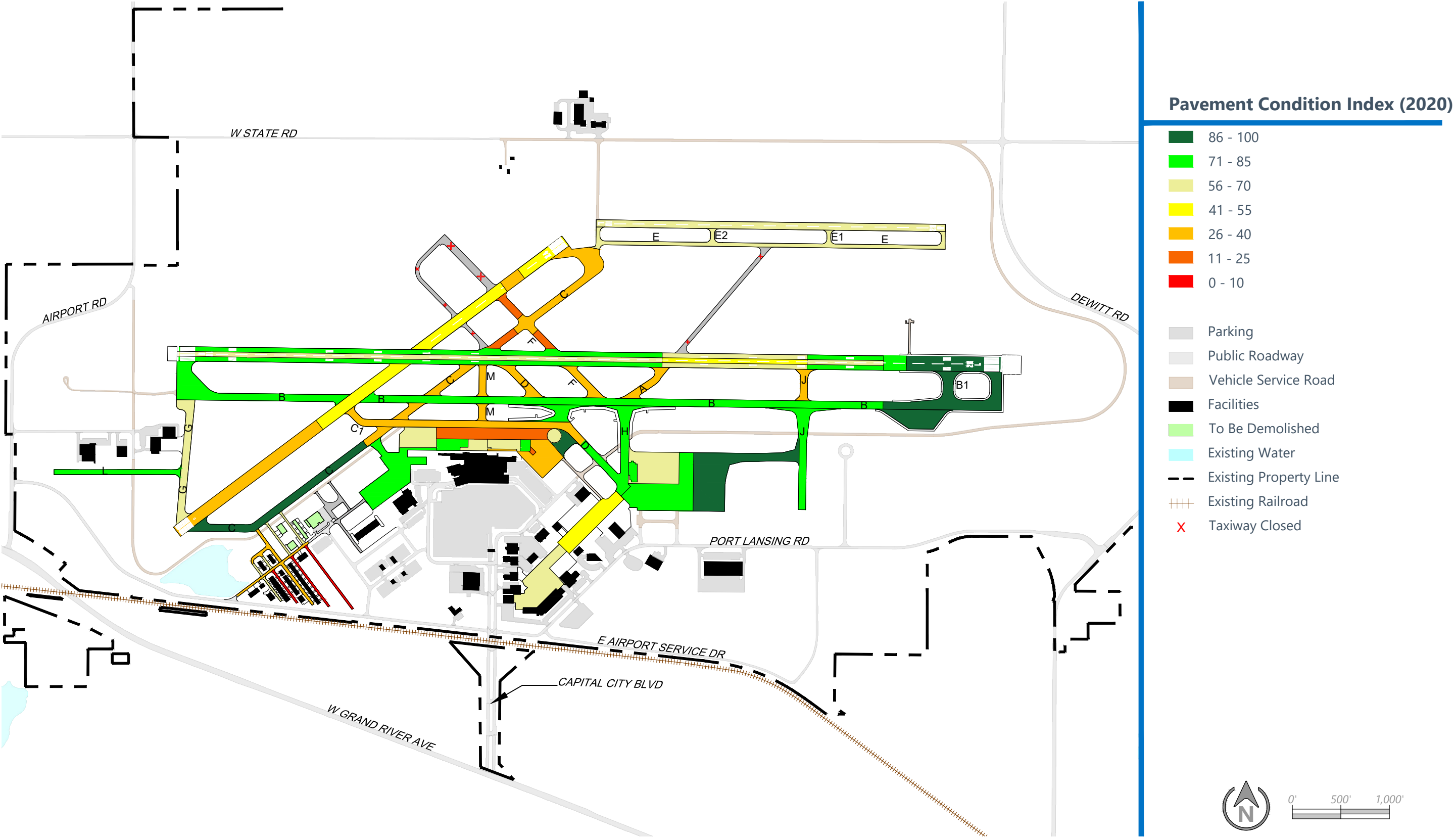
Apron pavement condition at LAN varies from poor to good condition depending on the specific pavement section. 2020 PCI projections suggest that by 2030 the Itinerant Apron,

⁵ MDOT, Retrieved May 3, 2023 from <https://mdotnetpublic.state.mi.us/apms/airport-details/airport-details.html>

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Terminal Apron, and Southeast Apron will have a PCI ranging from 35 to 53, which indicates poor to very poor conditions.

Figure 2-5
Pavement Condition Index



Source: Airport Records, MDOT, RS&H Analysis, 2023
Note: PCI data from 2020

At the time of this writing, the CRAA was undergoing a five-year maintenance and rehabilitation program at LAN that is in its third year. The plan aims to identify and address any pavement sections that are projected to exceed their critical PCI threshold within the five-year duration. As this program concludes, the results will be incorporated into future planning considerations within this Master Plan.

2.5 Navigational Aids

Navigational aids, commonly known as NAVAIDS, are visual, electronic, and meteorological air navigation equipment that facilitate flight operations and enhance flight safety at an airport during instances of inclement weather and/or darkness. Visual aids include pavement markings, signage, and airfield lighting systems. Electronic aids are devices used for aircraft instrument approaches. Meteorological aids provide real-time weather updates for air traffic control personnel and pilots.

2.5.1 Electronic Aids

Currently, LAN employs four types of navigational aids: Very High-Frequency Omni-Directional Range (VOR), Non-Directional Radio Beacon (NDB), Instrument Landing System (ILS), and the space-based Global Positioning System (GPS). LAN flight procedures also use Distance Measuring Equipment (DME) located in Jackson, Michigan.

Some LAN procedures use a two-component facility that consists of a Very High Frequency Omni-Directional Range and Tactical Air Navigation (VORTAC) system. LAN uses the VORTAC located in Flint, MI, at 116.9 MHz, monitored by the air traffic control tower (ATCT), emitting radio beams in all directions for horizontal guidance. There's another VORTAC system in Salem, MI, roughly 49 nautical miles southeast of the LAN airfield. The nearest navigational aid used by LAN is the DME located in Jackson, MI, approximately 32 nautical miles south of LAN, on a frequency of 115.45 MHz. DME uses ground-based and in-aircraft equipment to measure slant-range distance, accounting for aircraft height and ground distance to DME. Another DME is available in Pontiac, MI, about 47 nautical miles east, on a frequency of 111 MHz.

The Knobs NDB serves as the second closest NAVAID to the LAN airport, situated approximately 36 nautical miles towards the west. The Knobs NDB system operates out of Grand Rapids, Michigan, on a frequency of 263 MHz using automatic direction finder (ADF) equipment onboard an aircraft. This allows pilots to navigate without the line-of-sight limitations that some NAVAIDS have, such as the DME. NDB technology is outdated and is gradually being phased out of the National Airspace System (NAS). FAA has been steadily decommissioning NDBs since

2018 as part of the Navigation Programs Strategy. All NDB approaches are expected to be removed from the NAS by 2030.⁶

The Instrument Landing System (ILS) is a precision approach NAVAID made up of two facilities, the localizer (horizontal) and glideslope (vertical), that provide highly accurate location information for landing. The airport has ILS systems located on both ends of Runway 10R-28L. Global Positioning System (GPS) approach leverages a space-based satellite network to determine an aircraft's precise position, distance, bearing, and estimated time enroute to the next waypoint. GPS approaches can replace or complement VOR Runway 6, VOR Runway 24, and NDB Runway 28L instrument approaches as older technologies are phased out.

2.5.2 Visual Aids

Visual aids are crucial in airport flight operations, ensuring pilot safety by providing visual cues in the air and on the ground, especially during low visibility conditions due to night flying or inclement weather. The Capital Region International Airport has a comprehensive range of visual aids installed, including a rotating beacon, Runway End Identifier Lights (REILs), Approach Lighting Systems (ALS), Precision Approach Path Indicators (PAPI), runway edge lighting, and pavement markings.

The airport rotating beacon is composed of alternating white and green lights that serve to identify LAN as a civilian land airport. These beacons are an essential element of providing guidance and aiding pilots in navigation. The LAN airport beacon operates between dusk and dawn as well as being activated during low visibility conditions or otherwise. The beacon usually signifies that the airport is operating under instrument flight rules.

LAN has REILs located at the thresholds of Runway 6 and 24. The REILs are characterized by high-intensity white strobe lights that ensure immediate and distinct identification of the runway threshold.

The ends of Runway 10R-28L have Medium-Intensity Approach Lighting System with runway alignment indicator lights (MALSR). The MALSR is a configuration of signal lights that starts at the landing threshold and extends to the approach area, providing transition from instrument flight to visual flight to aid in landing.

Runways 6-24 and 10R-28L each have a PAPI to guide pilots during approach using four lights that display red and/or white based on the aircraft's vertical height.

⁶ Navigation Programs Strategy, Retrieved June 28, 2023 from https://www.aopa.org/-/media/Files/AOPA/Home/Advocacy/Advocacy/Advocacy-Briefs/Navigation_Programs_Strategy_2018_Final.pdf

Runway edge lighting is also installed for Runways 10R-28L and 6-24. This lighting consists of a single row of lights that outline each side of the runway. Runway edge lighting is classified into three intensity levels: High Intensity Runway Lighting (HIRL), Medium Intensity Runway Lighting (MIRL), and Low Intensity Runway Lighting (LIRL). As stated previously, Runway 10R-28L has HIRL and Runway 6-24 has MIRL.

Runway markings at LAN are determined by the type of approaches available for each specific runway end (visual, non-precision, or precision). Runway 10L-28R, is a visual runway, marked with runway designator numbers and a dashed, white centerline. Runway 6-24 is a non-precision runway featuring markings of a visual runway with the addition of threshold bars and aiming points. Finally, Runway 10R-28L is a precision instrument runway which includes all visual and non-precision marking plus touchdown zone markings.

2.5.3 Meteorological Aids

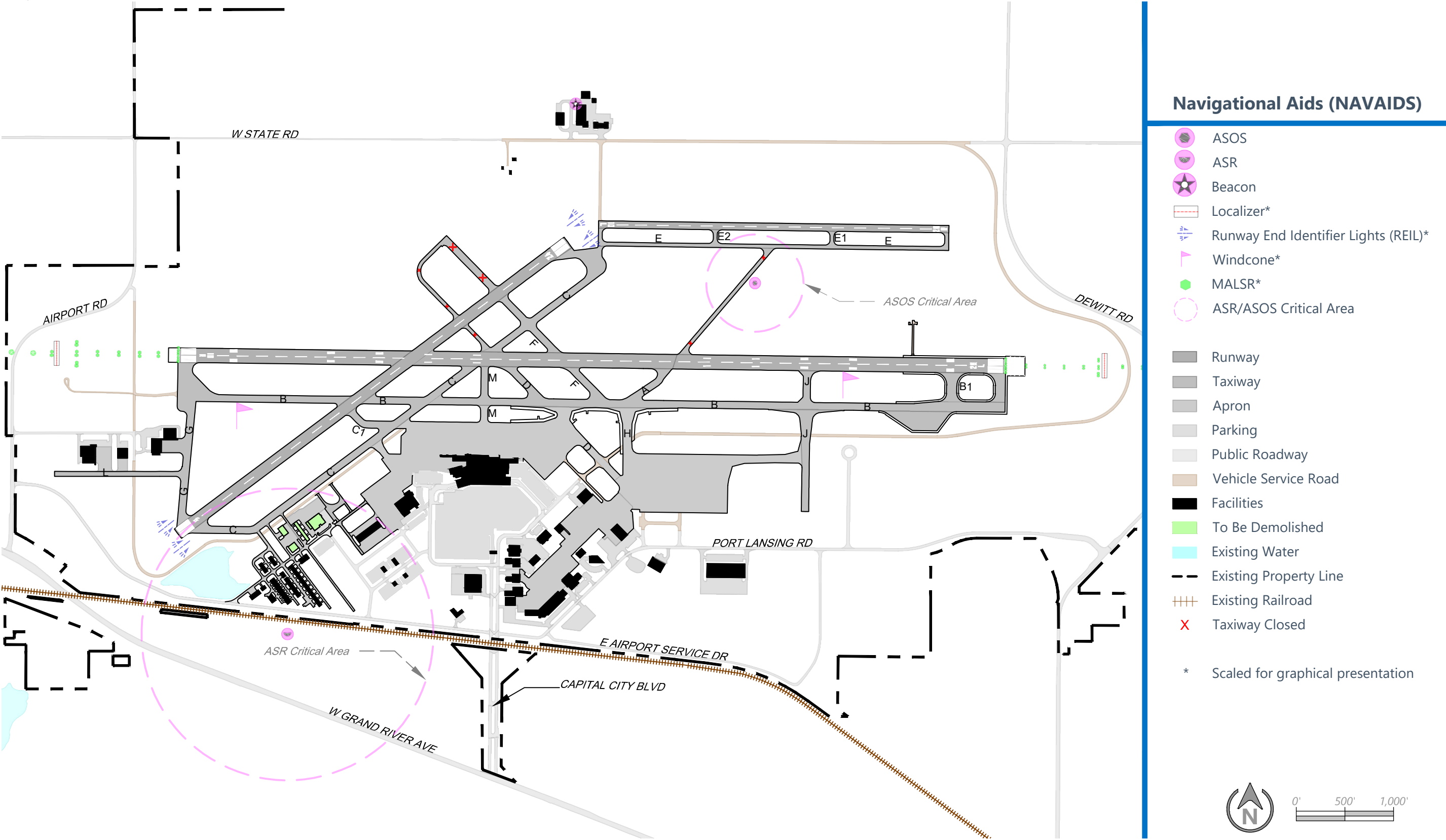
LAN is equipped with an Automated Surface Observing System (ASOS) designed to support both weather forecasting and aviation operations, while also catering to the requirements of various climate research communities. The ASOS system provides hourly observations of various weather elements, such as sky condition, cloud height and amount, visibility, wind, and more. The ASOS is located near the closed taxiway connecting Taxiway E to the primary runway.

In addition, the airport has two windsocks for visual identification of wind direction. One serves Runway 10R and Runway 6 and is located between the two thresholds outside the Runway Safety Areas (RSAs). The second serves approach to Runway 28L and 28R and is located outside the RSA near the intersection of Taxiways B and J. Windsocks are commonly used by pilots during visual flight conditions to determine the wind speed and direction, which can aid in their decision-making regarding the desired runway for takeoff or landing.

Six wind shear detection towers are positioned around the airport that allow ATC to monitor the presence of hazardous conditions such as wind shear, microbursts, gust fronts, and wind shifts.

Figure 2-6 below displays the locations of on-airport navigational aids at LAN.

Figure 2-6
Navigational Aids



Source: RS&H, 2023

2.6 Airspace

The National Airspace System is regulated by the FAA. The objective of this section is to provide an overview of the FAA-controlled airspace encompassing LAN, existing 14 CFR (Code of Federal Regulations) Part 77 obstructions, defined approach procedures.

2.6.1 Airport Traffic Control Procedures

The air traffic control services at LAN are provided by FAA Air Traffic Control (ATC) and include Lansing Tower, Ground Control, and Clearance Delivery. Approach and departure clearances are handled by Great Lakes Approach/Departure Control during daytime operations and Cleveland Center (ZOB) Air Route Traffic Control Center (ARTCC) during nighttime hours. The ATCT is responsible for managing airborne aircraft during takeoff, initial climb, and landing, while ground control assumes control once the aircraft lands.

LAN is located within Class C airspace at an elevation of 861 feet and the ATCT operates continuously (24 hours a day). Class C airspace extends from the surface up to 4,900 feet Mean Sea Level (MSL) above the airport within a five nautical mile radius and 2,100 feet MSL to 4,900 feet MSL from five to 10 nautical miles from LAN. This type of airspace is designated for airports equipped with an active control tower, radar approach control system, and experience a significant number of IFR operations or passenger enplanements.

2.6.2 VFR and IFR Procedures

Air traffic operations occur under one of two regulated rulesets: Visual Flight Rules (VFR) and Instrument Flight Rules (IFR). VFR allows aircraft to operate in good visibility conditions using "see and avoid" practices. Pilots under VFR receive route instructions inside Class C airspace and have some flexibility in choosing altitudes and routes. General aviation aircraft typically operate under VFR, unless weather prohibits it. IFR must be followed when weather conditions exceed VFR conditions. Many types of aircraft, including transport category, charter, and high-performance general aviation aircraft, typically operate under IFR. Aircraft must follow routes and altitudes provided by air traffic controllers during all phases of flight when flying under IFR. This is due to limited visibility resulting from clouds, rain, or snow that make it difficult for pilots to maintain a safe distance from other aircraft. Air traffic controllers ensure adequate separation and safe flight.

During periods of low visibility (IFR conditions), aircraft approaching LAN use predetermined routes known as Standard Instrument Approach Procedures (SIAPs). These procedures enable pilots to land aircraft even without clear visibility of runway markings or landing zones. Several factors, including navigational aids, approach lighting, aircraft equipment, and pilot

qualifications, determine the ability to land safely in these conditions. **Table 2-4** shows existing Instrument Approach Procedures at LAN.

Table 2-4
LAN Instrument Approach Procedures

Instrument Approach	Minimum Visibility	Decision Altitude (AGL)
ILS or LOC Runway 10R	1/2 Statute Mile	200 feet
ILS or LOC Runway 28L	1/2 Statute Mile	200 feet
RNAV (GPS) Runway 6	3/4 Statute Mile	300 feet
RNAV (GPS) Runway 10R	1/2 Statute Mile	200 feet
RNAV (GPS) Runway 24	7/8 Statute Mile	400 feet
RNAV (GPS) Runway 28L	1/2 Statute Mile	200 feet

Source: FAA, retrieved July 5, 2023 from

https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/dtpp/search

Prepared by RS&H, 2023

2.6.3 Local Airspace

The LAN traffic pattern is driven by its parallel runways and intersecting crosswind runway layout. The intersection of Runway 6-24 with the western end of Runway 10R-28L means that no right-hand patterns are allowed. The primary runway, Runway 10R-28L, accommodates commercial airliners, cargo aircraft, and general aviation, while Runway 10L-28R is primarily used for general aviation, and touch-and-go training.

2.6.4 Part 77 Objects Affecting Navigable Airspace

Maintaining clear airspace around LAN is crucial to ensuring the safety of aircraft approaching and departing the airport. To achieve this, Title 14 Code of Federal Regulations (CFR) Part 77, *Objects Affecting Navigable Airspace*, aims to keep the essential airspace free of obstructions that could pose a danger to aircraft. According to CFR Part 77, any object that penetrates any of the five sections of Part 77 airspace surfaces is considered an obstruction. These sections are the Primary Surface, Approach Surface, Transitional Surface, Horizontal Surface, and Conical Surface. The following section will provide a detailed description of these five Part 77 airspace surfaces:

- **Primary Surface** – The Primary Surface is a critical area surrounding the runway, extending 200 feet beyond the runway's edge, and requires a specially prepared hard surface. The width of the primary surface varies depending on the approach of the runway. For instance, for utility runways with visual approaches like Runway 10L-28R and non-precision instrument runways with visibility minimums greater than $\frac{3}{4}$ mile like

Runway 6-24, the width of the primary surface is 500 feet. For precision instrument runways such as Runway 10R-28L at LAN, the primary surface has a width of 1,000 feet.

- **Approach Surface** – The approach surface is a zone that extends outward and upward from each end of the primary surface, along the runway centerline. The width of the approach surface depends on the type of approach the runway is equipped to handle.

For utility runways with only visual approaches, the width of the approach surface at the end of the runway is 1,250 feet. Non-precision instrument runways, which have visibility minimums greater than $\frac{3}{4}$ mile, require a wider approach surface of 3,500 feet. For precision instrument approaches, which require greater precision in navigation, the approach surface is much wider at 16,000 feet.

The approach surface also extends horizontally, forming a slope that indicates the approach path an aircraft must take. No objects are allowed to penetrate this surface during an aircraft's approach or departure.

For utility and visual runways, the approach surface extends 5,000 feet at a slope of 20:1, except for Runway 28R at LAN, which has a slightly steeper clearance slope of 19:1. For non-precision instrument runways, the approach surface extends 10,000 feet at a slope of 34:1, with Runway 24 having a clearance slope of 31:1 and Runway 6 having a clearance slope of 17:1. Precision instrument runway approach surfaces extend 50,000 feet, with the first 10,000 feet at a slope of 50:1 and the remaining 40,000 feet at a slope of 40:1.

- **Transitional Surface** – The transitional surfaces serve as a sloped connection between the primary surfaces and the approach surfaces, with a slope ratio of 7:1. The transitional surface extends outward and upward from the primary surface until it intersects with the horizontal surface.
- **Horizontal Surface** – The horizontal surface is a flat plane located 150 feet above the airport's elevation. It is created by connecting arcs centered on the edges of the primary surface, using defined radii and tangents. At LAN, the radius of the horizontal surface for Runway 10L-28R is 5,000 feet, while for all other runways, it is 10,000 feet. This surface ensures that the airspace above the airport is free of obstacles that could interfere with aircraft operations.

- **Conical Surface** – The conical surface is a three-dimensional space that extends upwards and outwards from the horizontal surface at a slope of 20:1. It starts from the edge of the horizontal surface and extends horizontally to 4,000 feet. The purpose of this surface is to provide clearance for objects that could pose a hazard to aircraft in the vicinity of the airport. It is important that no object penetrates this surface to ensure the safety of aircraft operations.⁷

2.6.5 Obstructions

In the LAN master record, there are several obstructions listed for Runways 6-24 and 10L-28R. The record highlights the most critical obstructions located at each end of the runways, as described in **Table 2-5**.

Table 2-5
Existing LAN Obstructions

Runway	Obstruction	Height Above Runway End	Location	Slope to Clear
6	Trees	42'	950' from end, 300' right of centerline	17:1
24	Trees	82'	2,819' from end, 417' right of centerline	31:1
10L	Trees	77'	2,208' from end, 221' right of centerline	26:1
28R	Road	18'	551' from end, 7' left of centerline	19:1

Source: FAA Airport Master Record, RS&H Analysis, 2023

2.7 Airport Access

Providing safe, efficient, and intuitive access to the passenger terminal is crucial to the operation of the commercial passenger facilities. To ensure a high-quality level of service, arriving and departing passengers must be able to easily locate and access the terminal and supporting landside facilities. To this end, the airport surface access system at LAN is comprised of three key segments: off-airport access roads, on-airport access roads, and parking facilities.

Off-airport access roads provide direct connections to on-airport roads and include highways or other major roadways into/from LAN. These roads are typically maintained by local or state transportation authorities and are designed to facilitate safe and efficient travel. On-airport access roads are those located within the CRAA property boundary and provide direct access to the passenger terminal and other facilities.

⁷ Code of Federal Regulations Title 14 Part 77, Retrieved May 15, 2023 from <https://www.ecfr.gov/current/title-14/chapter-I/subchapter-E/part-77>

Parking facilities are another essential component of the airport surface access system, providing convenient and secure parking options for passengers, airport staff, and other users. These facilities are typically located near the passenger terminal and/or their relative facilities to reduce walking distance and are designed to accommodate high volumes of vehicles.

2.7.1 Regional Access

The Capital Region International Airport has numerous regional access points, making the analysis of regional access an important element of this Master Plan. Decisions made regarding regional access are critically linked to the assessment of the commercial terminal facilities.

Appendix X, Regional Access details the existing conditions related to highway and local access, wayfinding and signage, bicycle and pedestrian pathways, curbside management, and other related factors at LAN.

2.7.1.1 Off-Airport Access Roads

The Capital Region International Airport can be accessed via various local roads connecting with US Interstate 69 (I-69) from the north/west, US Interstate 96 (I-96) from the south/west, and US Interstate 127 from the east. From these interstates, primary access to LAN is via the I-96 Business Loop/Grand River Avenue which leads to Capital City Boulevard, the airport's main access roadway. Access is also available via Airport Road and Dewitt Rd, which both intersect I-69 to the north. There are several local routes that reach LAN from the south and southeast, where the state capitol and downtown Lansing are located.

2.7.1.2 On-Airport Access Roads

The primary access point to the commercial terminal is provided by Capital City Boulevard. This roadway can be accessed from the south, east, and west via numerous roadways including Airport Road via Port Lansing Road to the west, North Grand River Avenue from the south, and Dewitt Road via Port Lansing Road from the east. The lack of a unified entryway to the commercial terminal area is a known challenge to be addressed within the Master Plan.

Capital City Boulevard extends north from North Grand River Avenue for approximately half a mile where it connects to West Circle Drive, also known as the terminal loop roadway. Capital City Boulevard is a four-lane road, consisting of two lanes on each side of a grass median with six cross-connections to allow ingress/egress for vehicles turning into/from facilities with driveways along the road. This road is the key artery for accessing the passenger terminal area, several general aviation facilities, and all associated parking facilities. Along Capital City Boulevard, about midway between Grand River Avenue and West Circle Drive, a CSX railroad line crosses the roadway at grade. Crossing gates were installed at this location in 1993 to restrict vehicles from driving around a barrier. These gates extend across the entire width of the road to ensure safety and prevent accidents. Staff observations of train activity indicated that this rail crossing location can sometimes experience up to 5 trains passing through per day. Longer

trains stopping further down the tracks can back up over Capital City Boulevard and cause extended delays for vehicles attempting to reach LAN; however, this is very rare. Train delays at this location are typically minimal, averaging no more than two to five minutes. In less common instances delays may exceed ten minutes. This rail crossing is one known challenge to accessing the terminal area.

2.8 Landside Facilities

Landside facilities at LAN facilitate intermodal connections between various ground transportation modes and airport passengers/users. These facilities encompass a range of improvements including circulation roadways, the terminal curb area, public and employee parking, rental car facilities (customer-facing and supporting), and commercial ground transportation access for taxis and shuttles.

The circulation roadways should be designed to optimize traffic flow, provide an adequate level of service, maximize volume capacity, and ensure safe and efficient movement of vehicles around the airport. Terminal curb roads provide convenient access for passenger drop-off and pickup and management of vehicles on these roads during peak travel times is critical to maximizing capacity of terminal circulation roads. Public and employee parking facilities should be designed to accommodate high volumes of vehicles during peak periods and strategically located to minimize walking distances for passengers and airport staff.

Rental car facilities are an essential component of landside facilities, providing travelers with easy access to a range of rental car options. Customer ready-return spaces at non-hub airports, such as LAN, are typically located near the terminal to facilitate convenient pick-up and drop-off of rental cars. Commercial ground transportation access points are designed to accommodate taxis and shuttles, providing passengers with safe and efficient transportation options to and from the airport.

2.8.1 Vehicle Parking

Capital Region International Airport has a range of vehicle parking options for travelers and employees. This section will provide an overview of the parking facilities available at LAN and different features of each parking lot. **Table 2-6** provides the capacities and rates of the different parking lots at LAN. **Figure 2-7** shows airport parking facilities.

2.8.1.1 Short-Term and Long-Term Parking

The commercial terminal public parking lot is divided into two paid program tiers, short-term and long-term, and located within the terminal loop roadway. These lots share a parking total paved surface area of approximately 63,000 square yards, with the short-term lot occupying 7,400 square yards closest to the terminal on the north side and the long-term lot covering 55,600 square yards on the south side. In 1999, the long-term parking lot was expanded to its

current capacity of 1,328 parking spaces. The short-term parking lot consists of 166 spaces, 29 of which are designated for handicap parking. As of July 1st, 2023, the long-term parking lot costs \$2.00 per hour or \$12.00 per day maximum, and the short-term parking lot costs \$3.00 per hour with a \$15.00 per day maximum.⁸

Primary vehicle access to the public parking lots is through four collocated entry gates on the east side of the terminal loop road, two for long-term parking and two for short-term parking. Secondary entry gates to long- and short-term parking exist on the west side of the parking lots immediately past the terminal curb.

Parking exit lanes are located at the central portion of the parking lots where vehicles exit in one-way flow to the south through the payment plaza. The vehicles either depart directly onto Capital City Boulevard or circle back to the passenger terminal. In 1999, new payment technology was implemented, featuring a single automated lane that accepts credit card payments at the gate without human intervention. Two additional gates are available for egress with the assistance of airport personnel. One identified challenge for the Master Plan to address is the intersection of Capital City Boulevard and W Commerce Road immediately after exiting the parking payment plaza.

2.8.1.2 Employee Parking

The employee parking area is situated on the east side of the commercial terminal building, providing approximately 153 dedicated employee parking spots. The parking lot is accessed from East Circle Drive via the terminal loop road prior to turning toward the terminal curb area. The entrance and exit lanes are both situated in the east section of the parking lot. To enter the parking lot, magnetic cards are required, which can be obtained from LAN staff upon completion of the employment process. The employee parking lot also includes 36 convenient spaces for important visitors including members of the CRAA, tenant managers, and other relevant business associates.

2.8.1.3 Rental Car Ready-Return Parking

Rental car ready-return spaces are located to the west of the terminal, with vehicle access via West Circle Drive (terminal loop road) immediately after the terminal curb. There is one entrance and one exit lane provided in the lot which serves four rental car companies: Avis, Budget, Hertz, and National/Enterprise. Lot capacity is 98 vehicles, with 24 spaces leased by Avis, Budget, and Hertz (collectively totaling 72 spaces), and 26 spaces leased by Enterprise/National.

⁸ flylansing.com, Retrieved July 1, 2023 from <https://www.flylansing.com/parking-transportation>

Table 2-6
Landside Vehicle Parking Lots

Parking Area	Number of Spaces	Hourly Rate	Daily Maximum
Long-Term	1,328	\$2.00	\$12.00
Short-Term	166	\$3.00	\$15.00
Employee	153	N/A	N/A
Rental Car	98	N/A	N/A

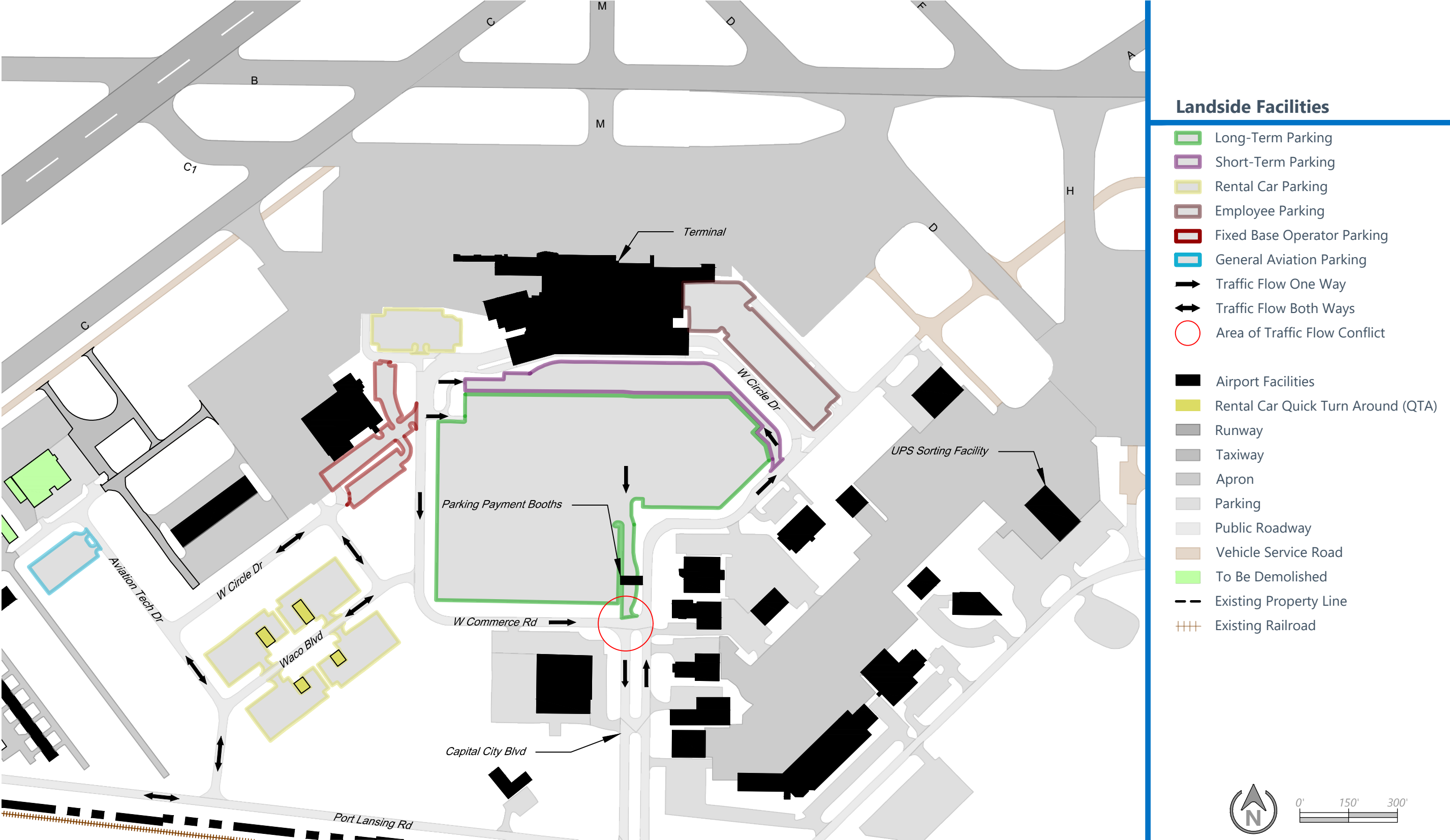
Source: Fly Lansing, RS&H Analysis, 2023

Notes: Rates effective July 1, 2023. N/A = not applicable.

2.8.1.4 Rental Car Facilities

The Capital Region International Airport currently has four rental car companies located on airport property. The four on-airport rental car companies include: Avis, Budget, Hertz, and National Car Rental/Enterprise. Rental car patrons pick up and return their vehicle to a ready-return parking lot located on the west side of the terminal, adjacent to the rental counters and baggage claim area. Each rental car company has additional leased space southwest of the public parking lot along Waco Boulevard for additional rental car storage and quick turn-around facilities (administrative space, light maintenance, and fueling).

Figure 2-7
Vehicle Parking



Source: RS&H, 2023

2.9 Ground Transportation Services

There are many modes of transportation available at LAN for passengers including access to the public transportation system, rideshare applications, and traditional taxi and shuttle services. Currently, there are two taxi and limo services serving LAN with on-demand service available. The Capital Area Transportation Authority (CATA) provides regional public transportation via fixed-route bus service seven days a week on Route 14.⁹

2.9.1 Rideshare (TNC)

The Capital Region International Airport offers transportation through Transportation Network Companies (TNC), sometimes referred to as “rideshares”, which provide on-demand transportation through smartphone applications. Popular services that operate at LAN include Uber and Lyft. These services provide pick up and drop off at the terminal curbside much like privately owned vehicles or traditional taxis.

2.9.2 Public Transportation

People in Greater Lansing and outlying areas have access to the Capital Area Transportation Authority which provides public transportation via buses and paratransit shuttles. The CATA governmental membership comprises the cities of Lansing and East Lansing, and the townships of Delhi, Lansing, and Meridian.¹⁰ CATA's fixed-route bus service operates seven days a week, with Route 14 serving LAN and picking up/dropping off passengers at the terminal building.

Figure 2-8 depicts Route 14.

⁹ Fly Lansing Parking & Transportation, Retrieved July 7, 2023 from <https://www.flylansing.com/parking-transportation>

¹⁰ CATA, Retrieved July 7, 2023 from <https://www.cata.org/About-Contact>

Figure 2-8
CATA Transit Route 14



Source: Capital Airport Transportation Authority, Retrieved July 7, 2023 from <https://www.cata.org/schedules>

2.9.3 Taxi, Limo, and Shuttle Services

Airport taxi services are provided by three companies: DD's Downtown Taxi, Royal Express, and MSU Express Taxi Service. All companies provide on-demand taxi service with pick-ups and drop-offs in front of the terminal building at the terminal curb.

There are also two limo service companies serving LAN: Dean Trailways and Grand Limousine. Both include limo/black car service and require a reservation.

2.10 General Aviation Facilities

The general aviation facilities at LAN include apron space, tie downs, hangars, public parking, and miscellaneous support buildings. The south and west sides of the airfield feature three distinct groupings of general aviation facilities.

The first area, located southwest of the passenger terminal, includes fifteen private hangars. Four of these hangars, as well as a 53 space landside parking lot are owned by Lansing Community College (LCC), and are scheduled for demolition. This area also includes Avflight, the sole fixed-base operator (FBO) at LAN. The FBO has approximately 100,000 square feet of apron space, one large hangar/office building, and one T-hangar building. The FBO also has three landside vehicle parking lots with a combined capacity of 126 spaces. **Figure 2-9** displays the general aviation facilities on the west side of airport.

The second area is the corporate hangar area on the west side of the airfield. This area has facilities for Dart Container (one hangar), Ameriflight (one hangar), and Jackson National Life Insurance (two hangars). Collectively, there are 98 vehicle parking space available. **Figure 2-10** displays these corporate hangars.

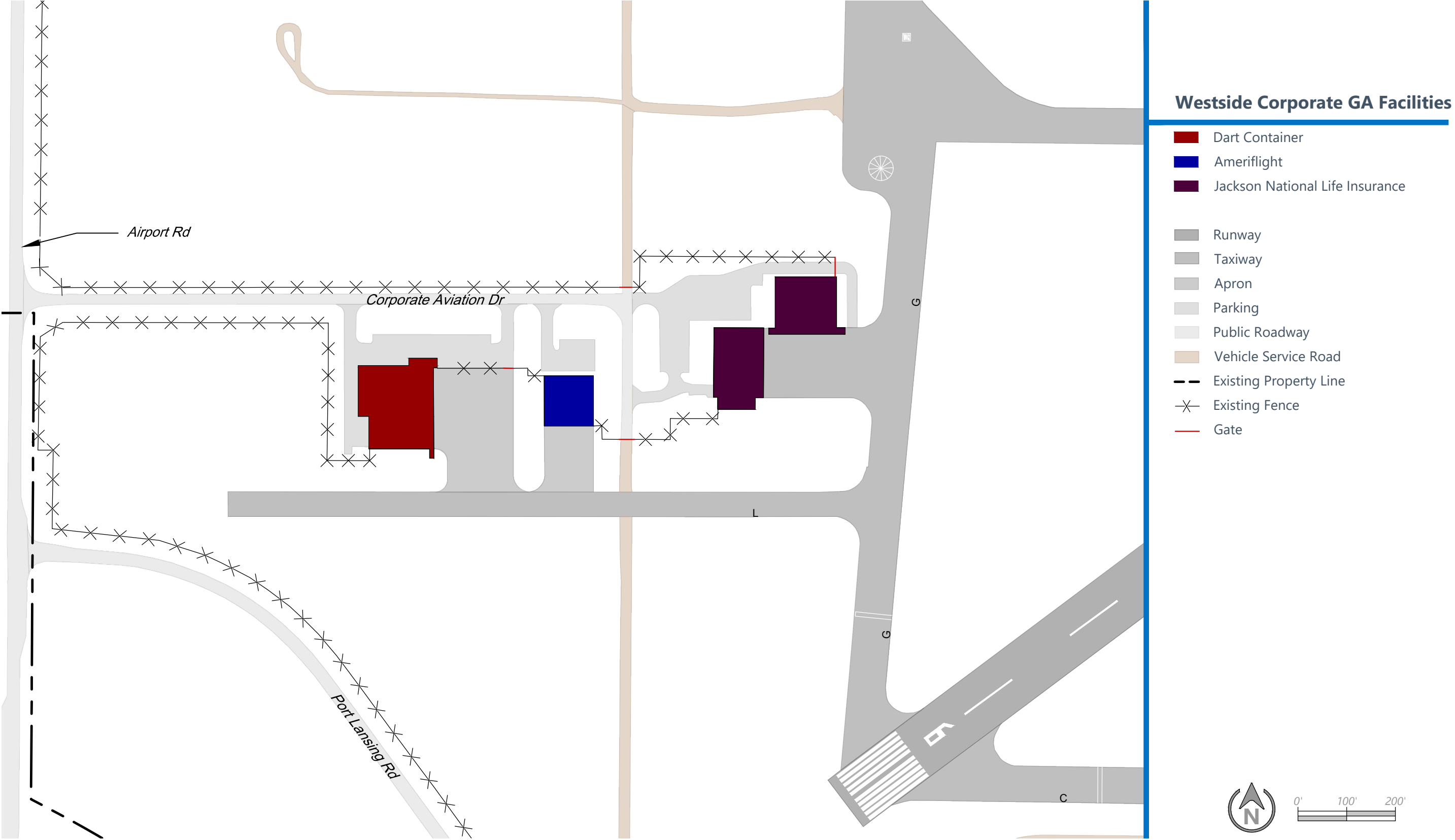
The third area, the southeast apron, contains multiple general aviation facilities that primarily support State government operations. The Michigan State Police (MSP) has three facilities: the Aviation Unit hangar, the Special Operations Unit hangar, and the K-9 (kennel) facility. The Michigan Department of Transportation (MDOT) has a large hangar/office complex, and the Michigan Army National Guard has a hangar at the south end of the ramp. There are three corporate hangar/office buildings located in this area as well. **Figure 2-11** displays the hangars on the Southeast Apron.

Figure 2-9
General Aviation



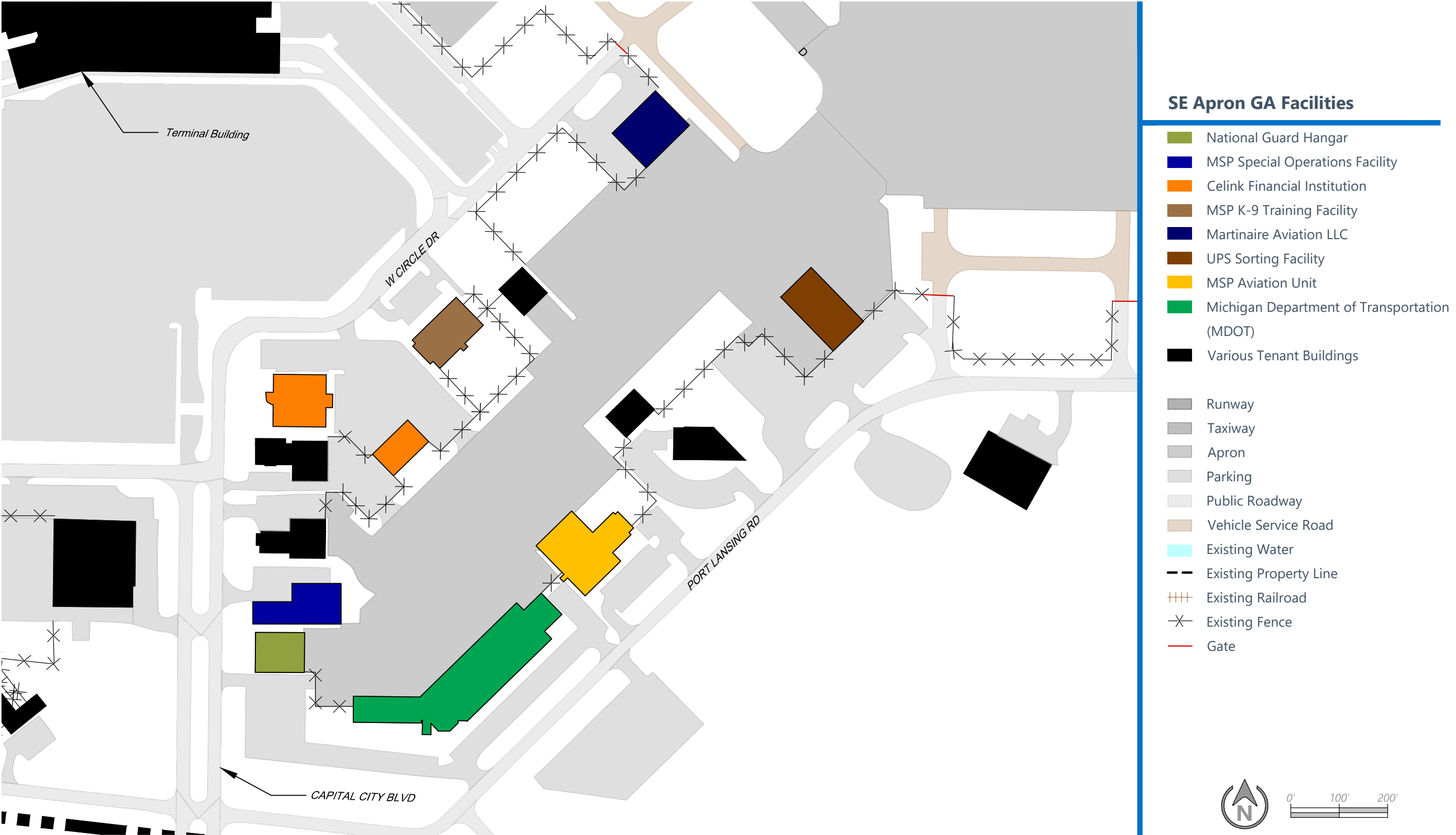
Source: RS&H, 2023

Figure 2-10
Corporate Hangars



Source: RS&H, 2023

Figure 2-11
Southeast Apron GA Facilities



Source: RS&H, 2023

2.10.1 Fixed-Base Operator

A fixed base operator is an airport business serving general aviation users, generally providing aircraft fueling, aircraft tie-downs and hangar storage, minor repairs, and in some cases, major maintenance, aircraft rentals, and charter services. AvFlight Lansing offers FBO services at LAN with 24/7 operations. The FBO provides an extensive range of services including aircraft fueling, oxygen service, parking/storage, maintenance, and other sales and services.¹¹ FBO facilities are located at 3121 West Circle Drive, immediately southwest of the terminal building. AvFlight facilities are comprised of an office building, a large box hangar, and a T-hangar.

2.10.2 General Aviation Apron

The general aviation apron at LAN, which serves as a parking area for both based and transient aircraft, is located next to the FBO, Avflight Lansing. The apron, which is approximately 11,000 square yards in size, is accessible via an unnamed taxilane off Taxiway C.

2.11 Airport Support Facilities and Infrastructure

Airport support facilities and infrastructure at LAN play a vital role in ensuring safe and efficient day-to-day operations. Airport support facilities include Aircraft Rescue and Firefighting (ARFF), aviation fueling and fuel storage, airport maintenance, and necessary utility infrastructure. These facilities are critical to ensure safe operations and uninterrupted service.

2.11.1 Aircraft Rescue and Fire Fighting (ARFF)

The ARFF facility is a critical component of the CRIA emergency response system designed to ensure swift and efficient action in the event of a crisis such as an aircraft crash. The ARFF crew is responsible for providing firefighting, prevention, and rescue services. This includes responding to emergency situations and conducting inspections of fuel farms and fuel trucks. As per the FAA regulations, ARFF operations must adhere to strict safety, equipment, and training standards. ARFF staff are the first medical responders to an airport emergency, playing a vital role in protecting human life and minimizing property damage.

The LAN ARFF facility, located on the north side of the airfield next to the snow removal equipment storage and maintenance facilities, consists of a single 8,500 square foot fire station. The facility is equipped with a fully functional kitchen and three rescue-truck bays, ensuring the crew's readiness for emergency situations. The ARFF facility is also equipped to handle air traffic communications and airport operations in the case of emergency or electrical failure at the terminal building where the ATCT is located.

¹¹ Avflight services, Retrieved June 14, 2023 from <https://www.avflight.com/Network/KLAN>

Access to the ARFF facility is available via the primary emergency exit gate located at the intersection of West State Road and Dewitt Road on the northeast corner of the airfield. To gain entry, an electronic card is required, which is provided only to authorized personnel.

2.11.2 Airport Maintenance

Capital Region International Airport has a diverse range of maintenance equipment used for snow removal, groundskeeping, facility and pavement maintenance, and standard repairs. The maintenance facility, which is approximately 23,000 square feet, is situated on the north side of the airfield adjacent to the ARFF facility. Additionally, smaller-sized maintenance equipment is stored under the terminal building for easy access and convenience. **Figure 2-12** displays the maintenance and support buildings on the north side of the airfield.

2.11.2.1 Deicing

Deicing is the process of removing ice, snow, and frost from the surfaces of airplanes. Ice buildup on the wings, tail, and other critical surfaces of an aircraft disrupts aircraft aerodynamics by increasing drag and reducing the ability to generate lift. Deicing services ensures the safety and reliability of flights during winter weather conditions.

AvFlight and Unifi (ground handler for Delta) offer deicing services for all air carrier and general aviation operations, including corporate flights. UPS performs their own deicing. The two primary deicing fluids used are Type I and Type IV agents, both of which are based on propylene glycol. Type I agent is an aircraft deicer that does not have a minimum rotation speed requirement and has a shorter holdover time (HOT). Type IV agents are an anti-icer used for aircraft with rotation speeds above 100 knots and has a significantly longer HOT. Aircraft deicers are either stored in the FBO hangar area, cargo apron, or adjacent to the Airport Terminal. Runway surface anti-icers are stored in the Snow Removal Equipment (SRE) facility.

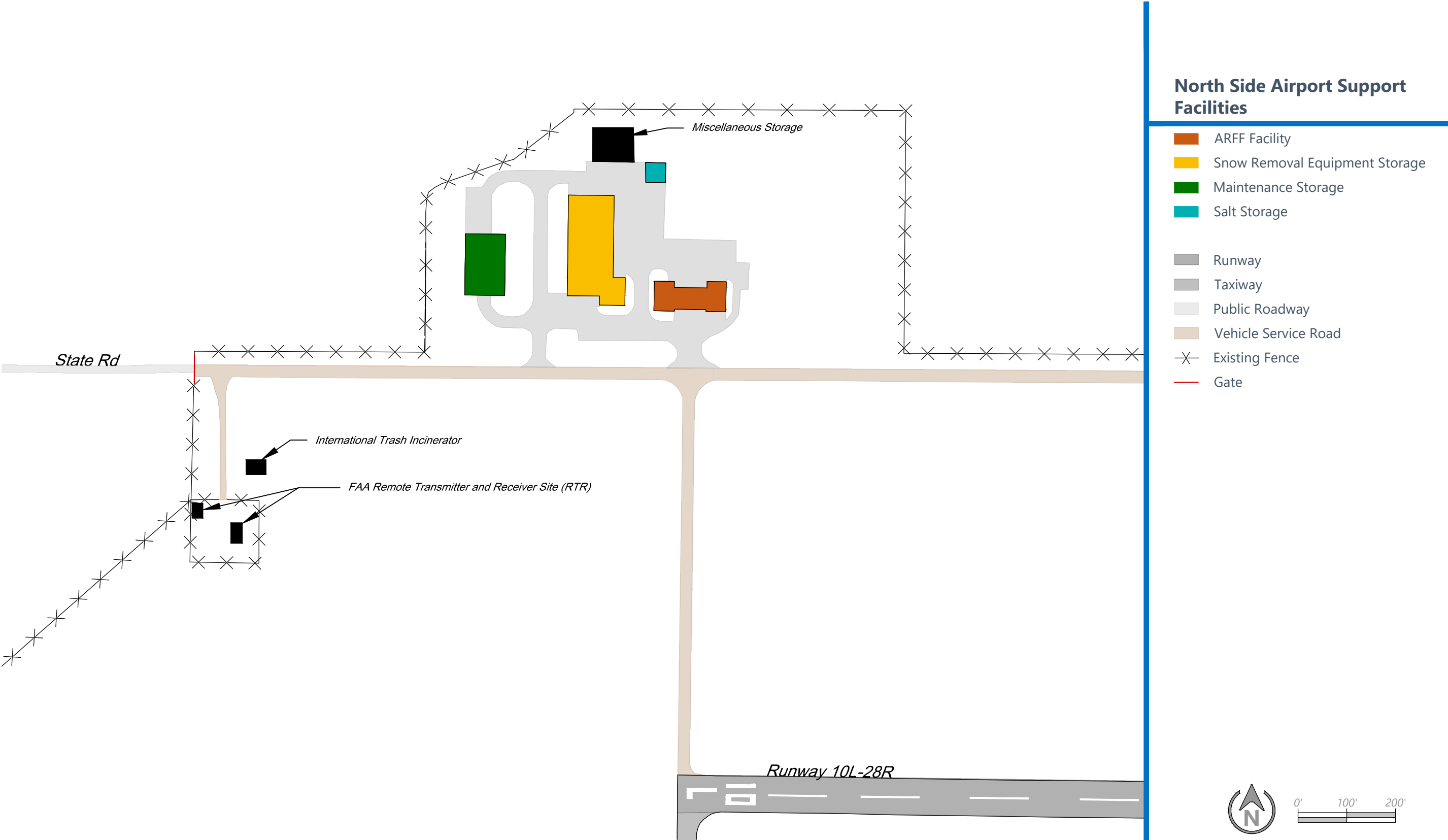
Currently, the main storage location for deicing fluid is situated at the southern end of the cargo apron. However, there is no dedicated facility for storing the deicing agents. Tanks are positioned or stacked on the apron and replaced as needed. In addition to the existing deicing runoff pond south of the cargo apron, LAN intends to construct a second runoff pond for storing additional spent deicing fluid. Stored fluid mixed with collected stormwater is later pumped into the city's stormwater system at allowed times under strict volume limitations set by the City of Lansing.

Since there is no deicing facility located on the airfield, deicing operations typically take place on the apron so the deicing runoff can be captured in the existing runoff pond.

2.11.2.2 Airport Snow Removal Equipment

Snow removal equipment is stored in the maintenance facility on the north end of the airfield. However, the current layout of the building is not the most efficient for daily operations or during winter snow removal activities. Industry trends indicate a shift toward the use of multi-function SRE, which are longer than standard single-function plows and brooms. With the change in equipment size, there is also a changing preference toward storage facilities designed with multiple 'pull-through' style bays where many pieces of equipment can be moved independent of each other. The existing facility at LAN is a long tandem-style drive through aisle meaning equipment must often be moved to access other blocked equipment. Airports that utilize multi-function equipment have found operational benefits from storage buildings with multiple "pull-through" style bays which offer more flexibility in storing large equipment, improved efficiency when conducting snow removal operations, and a safer working environment for staff maneuvering large equipment.

Figure 2-12
Maintenance Facilities



Source: RS&H, 2023

2.11.3 Fuel Storage

Storage tanks for Jet A, 100LL AvGas, diesel, and auto gasoline are located at multiple sites throughout LAN. The main fuel farm is to the south of the existing cargo apron, off Port Lansing Road. **Table 2-7** displays all airport fuel storage facilities at LAN along with their location, capacity, and type of container.

Table 2-7
Fuel Storage Capacity

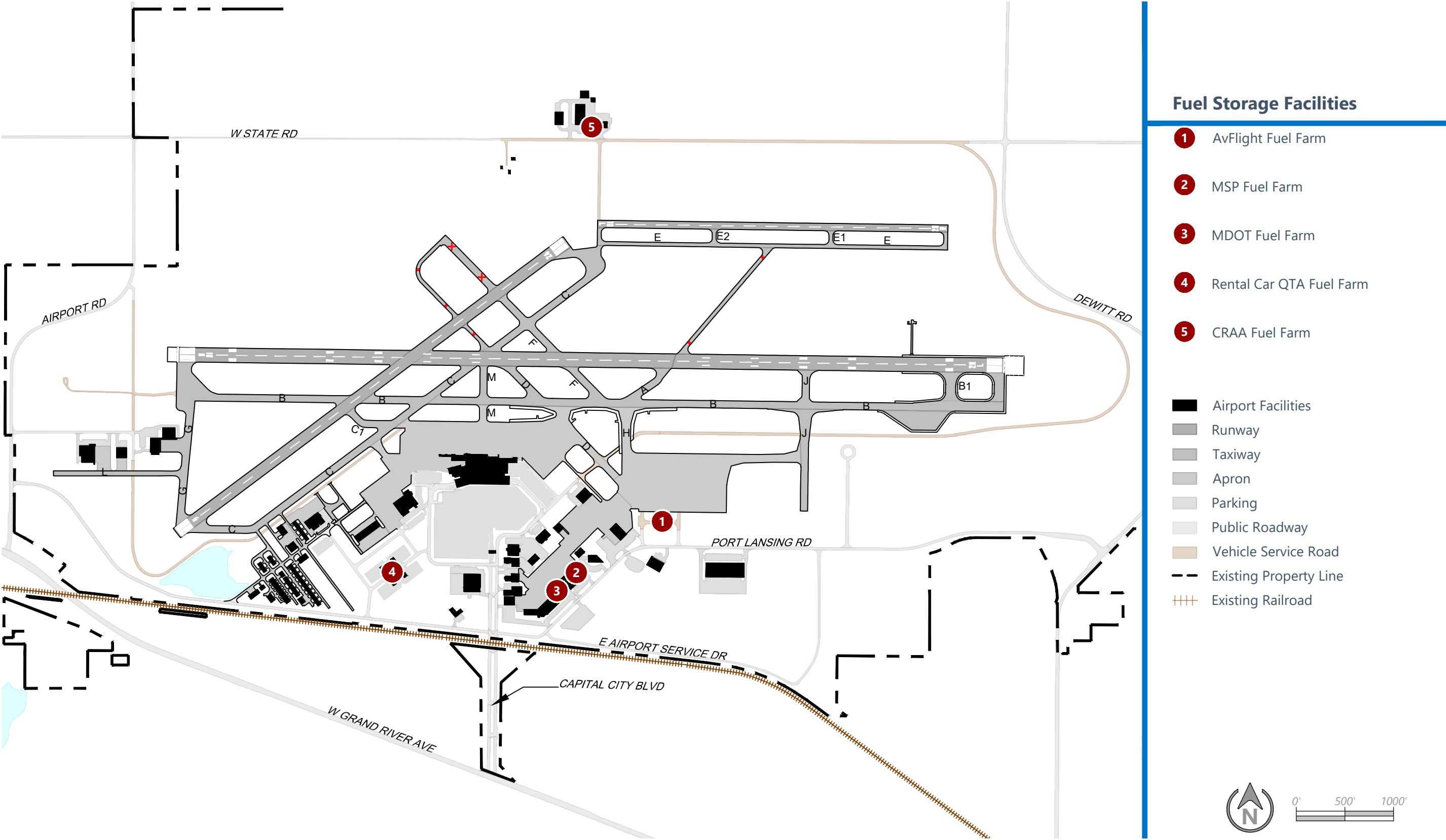
Location	Fuel Type	Number of Tanks	Capacity (Gallons)	Type of Container
AvFlight	Jet Fuel	1	250	AST
AvFlight	Jet Fuel	1	20,000	Double Wall Steel AST
AvFlight	Jet Fuel	1	20,000	AST
AvFlight	Auto Gasoline	2	550	Steel AST
AvFlight	Auto Gasoline	2	500	Steel AST
AvFlight	Diesel Fuel	1	550	Steel AST
AvFlight	Aviation Gasoline	1	15,000	Single Wall Steel UST
CRAA	Auto Gasoline	1	5,000	Double Wall Steel AST
CRAA	Diesel Fuel	1	15,000	Double Wall Steel AST
MSP	Aviation Gasoline	1	6,000	Single Wall Steel UST
MSP	Jet Fuel	1	12,000	Single Wall Steel UST
MDOT	Auto Gasoline	1	300	Steel AST
Rental Car QTA	Auto Gasoline	4	1,000	Single Wall Steel AST

Source: CRAA, RS&H Analysis, 2023

Notes: UST=Underground Storage Tank, AST=Aboveground Storage Tank

Figure 2-13 depicts the location of each fuel farm.

Figure 2-13
Fuel Farms



Source: RS&H, 2023

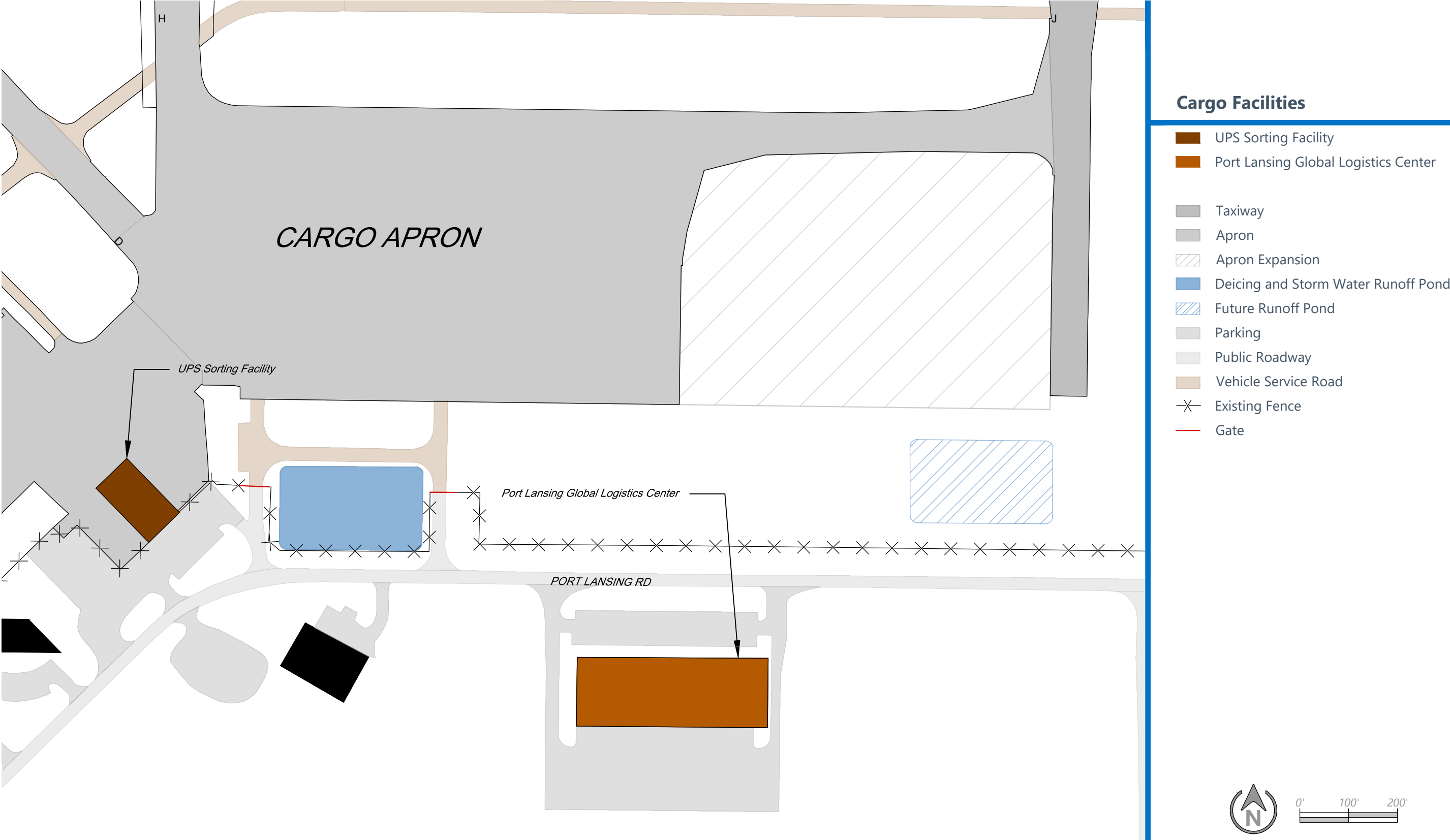
2.11.4 Air Cargo Facilities

Air cargo facilities are located at the southeastern side of the airfield. United Parcel Service (UPS) operates as the sole integrated express carrier at LAN along with other smaller operators. UPS occupies a 15,000 square foot building which includes a sorting facility, and two vehicle parking lots accommodating a total of 43 parking spaces. An air cargo assessment conducted in 2020 projected 30,000 metric tons (MT) of total air cargo for calendar year (CY) 2021. From January of 2018 through July 2021 a 10 percent growth factor was estimated by forecasting. The assessment concluded that the current size of the building is appropriate for the existing levels of activity. The actual cargo tonnage recorded in CY 2022 totaled 28,634 metric tons, with 11,877 metric tons enplaned and 16,757 metric tons deplaned.

According to the 2020 assessment, UPS handles all the pickup and delivery volume in the Lansing metropolitan area. Smaller feeder aircraft are used for transportation across the lower peninsula, except for the Detroit Metro area and the southwest Michigan area near South Bend, Indiana. Although the cargo apron currently spans approximately 65,000 square yards, it falls short of providing sufficient space to accommodate the UPS fleet of MD11, A300, B757, and B767 aircraft during the peak season from November to February. As of summer 2023, the cargo ramp is undergoing the third phase of a long-term cargo apron expansion project to address this limitation. This expansion project will increase the size of the apron by 43,000 square yards, enhancing its capacity to handle cargo operations and accommodate the LAN fleet. Once this expansion is completed, the cargo ramp will be 108,000 square yards.

The Port Lansing Global Logistics Center stands as the largest cargo warehouse facility at LAN. This facility is approximately 48,000 square feet, featuring sixteen evenly distributed trucking bays at the rear and 77 parking spaces at the front. **Figure 2-14** displays existing and future cargo apron along with cargo facilities.

Figure 2-14
Cargo Facilities



Source: RS&H, 2023

2.11.5 Utilities

Electricity, gas, telecommunication, potable water, and sanitary sewer lines are necessary elements to support an airport. Public water distribution and sanitary sewage system upgrades are significant governmental responsibilities and capital investments in new or expanding facilities. Natural gas and electricity services are typically provided by the private sector in most areas. **Figure 2-15** displays landside utility lines at the airport.

2.11.5.1 Electricity and Gas

Consumers Energy supplies electricity to the north side of the airport, including the maintenance and ARFF station areas, and provides gas to the entire airport, while Lansing Board of Water and Light (LBWL) supplies electricity to the south side of the airport.

2.11.5.2 Potable Water and Sanitary Sewer

The City of Lansing provides water through LBWL and sewer services through the Lansing Public Service Department (LPSD) to the airport, supplying water and managing the sewer system for the commercial passenger terminal and general aviation facilities on the southern end of the airport. An on-site well and septic tank serve the ARFF and maintenance facilities at LAN.

2.11.5.3 Stormwater Drainage

Stormwater from the buildings and most paved areas around the buildings at LAN collects through various catch basins and drains into storm sewers, which discharge into two primary drainage systems that traverse through the airport. These drainage systems eventually discharge into the Grand River, located approximately one mile to the south of the airport. Additionally, there is an unnamed stormwater ditch at the northern part of the airport, which captures runoff from grassy areas and the northernmost runway. This unnamed ditch discharges into the wooded areas to the north of the airport.

The airport has one lined retention pond, located south of the cargo apron, for the collection of glycol-containing stormwater during the deicing season, with plans to construct a second pond nearby to store additional spent deicing fluid. Stored fluid, mixed with collected stormwater, is later pumped into the city's sanitary system at designated times, following strict volume limitations set by the City of Lansing.

The CRAA also maintains a Stormwater Pollution Prevention Plan (SWPPP), which applies best management practices to eliminate, prevent, or reduce pollutants in stormwater runoff associated with airport industrial activities.

2.11.5.4 Telecommunications

Telecommunications providers to airport facilities include AT&T and Comcast.

Service providers list:

Electric – Consumers Energy; Lansing Board of Water and Light

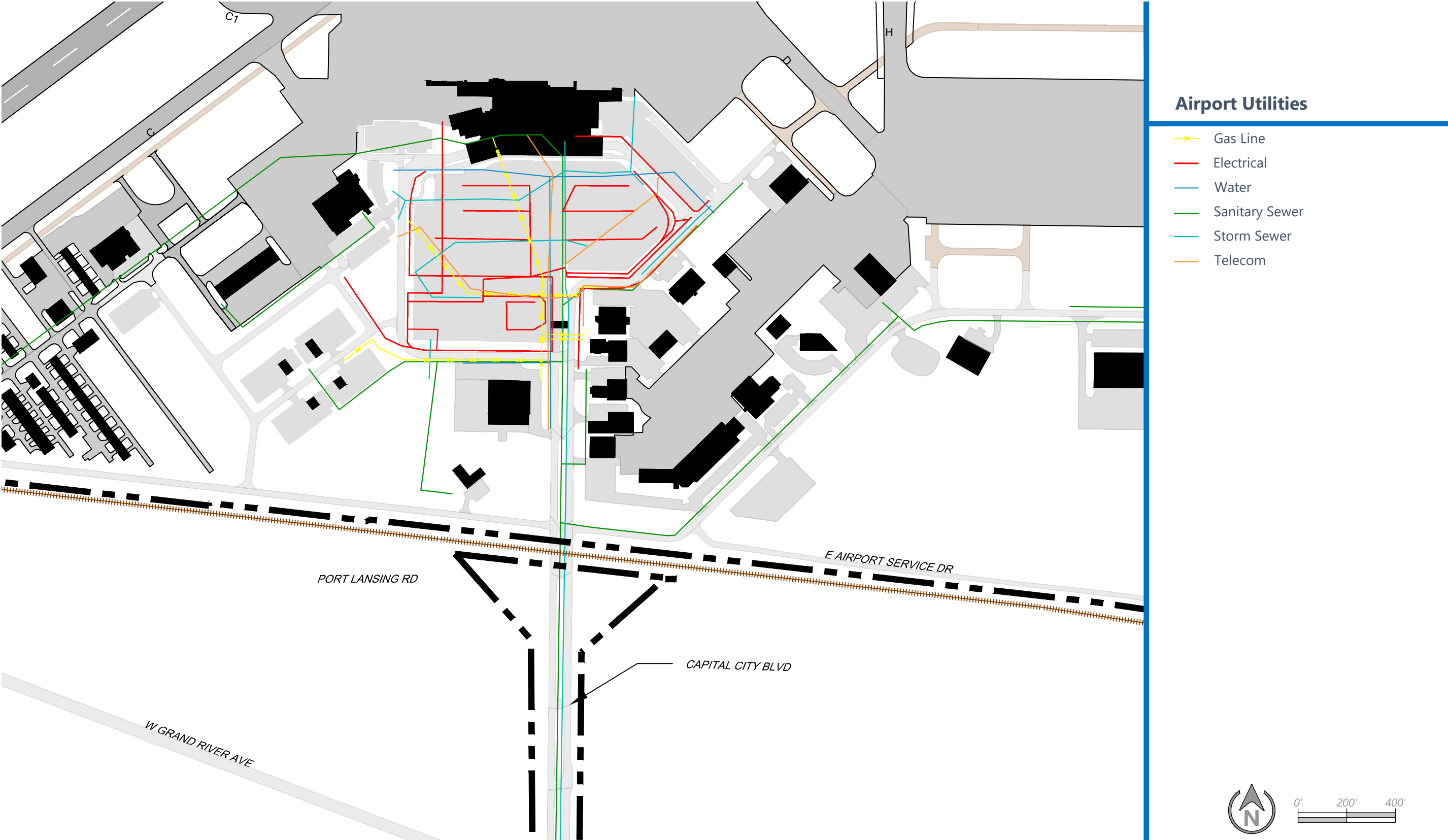
Gas – Consumers Energy

Telecommunications – AT&T; Comcast

Potable water – Lansing Board of Water and Light

Sanitary sewer – Lansing Board of Water and Light; Lansing Public Service Department (LPSD)

Figure 2-15
Utilities



Source: RS&H, 2023

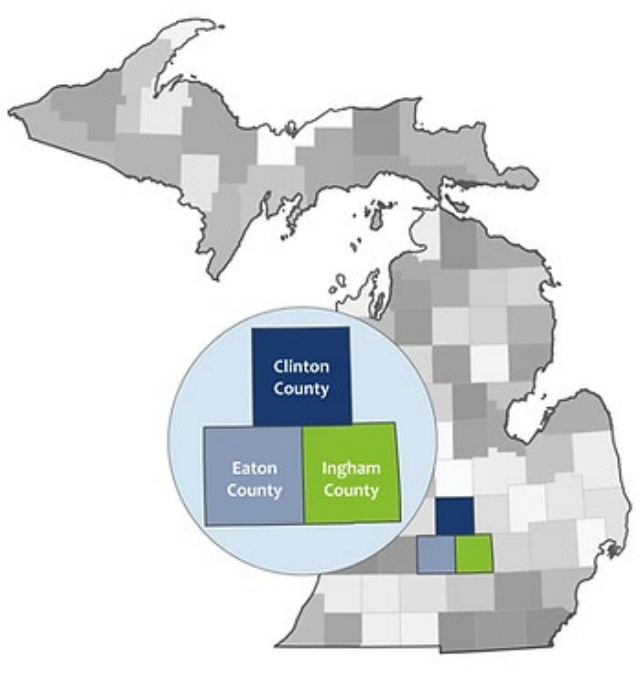
2.12 Airport Environs

The following sections provide an overview of state and regional planning, existing land use, and local zoning pertaining to the area surrounding the Capital Region International Airport. Furthermore, a review of long-range state and regional plans is conducted to ensure that the LAN Airport Master Plan is in alignment with the broader regional context.

2.12.1.1 Regional Planning

The Tri-County Regional Planning Commission was established in accordance with the Regional Planning Act, PA 281 of 1945. Initially adopted by the Board of Supervisors of Clinton, Eaton, and Ingham counties on July 18, 1956, the Act was later expanded in 1974 to include the City of Lansing as a member. **Figure 2-16** shows the three counties included in the Tri-County Regional Planning Commission.

Figure 2-16
Tri-County Regional Planning Commission



Source: Tri-County Regional Planning Commission, Retrieved May 24, 2023 from mitcrpc.org

The Regional Planning Commission plays a key role in the region as the Metropolitan Planning Organization (MPO), coordinating transportation projects funded by the federal government. They are also certified as the Economic Development District (EDD) by the US Department of Commerce, allowing them to support federally funded programs for economic growth,

particularly in terms of infrastructure for businesses. The commission, known as State Planning & Development Regions (SPDRs) in Michigan, offers a broader perspective on planning issues and helps resolve conflicts between local governments, fill service gaps, and access resources.¹² Michigan has established different approaches to regional planning, involving voluntary sub-state units of government. Metropolitan Planning Organizations (MPOs) are responsible for policymaking and planning in urbanized areas, ensuring federal funding for transportation projects. Economic Development Districts (EDDs) bring together multiple jurisdictions to drive regional economic development. The Tri-County Regional Planning Commission is an EDD, enabling them to secure planning grant funding and support various programs for regional growth.¹³ While they no longer undertake reviews of proposed projects seeking federal funds, they encourage coordination with other relevant governments and maintain comprehensive regional plans.

2.12.1.2 State Plans

The Michigan Mobility Plan of 2045 (MM2045) is Michigan states' Long-Range Transportation Plan. Beginning in 2020, this 25-year plan is designed to assist in transforming Michigan's transportation system to address challenges and meet the state's needs through 2045.

The MM2045 reports that the 2017 Michigan Airport System Plan (MASP) established goals for the development and preservation of "Tier 1 and Tier 2 airports",¹⁴ addressing both the essential needs of the Michigan airport system and the communities served. Maintaining runway pavement condition is noted as crucial to ensure connectivity and economic growth in Michigan. However, in 2017, 24 percent of Tier 1 and 2 airports did not meet the goals for the primary runways' pavement condition index.

The rise of e-commerce has contributed to the growth of even the smaller Michigan airports as online shopping and fast delivery services have increased. Shipping companies like FedEx and UPS transport packages from national hubs to Michigan-based air hubs such as Grand Rapids and Lansing, which are then distributed throughout the state. Access to remote areas has become more vital as people rely on e-commerce for essential goods throughout the year.

Additionally, time-sensitive cargo, such as automotive parts, also travels by air, often passing through airports in southern Michigan. Michigan's aviation system has the most significant gap, proportionally, among all the needs identified through MM2045, including preservation and other system development investments. Only 26.4 percent of the projected 25-year, \$7.4 billion aviation needs are expected to be met. The shortfall in meeting these needs has a negative

¹² More Information on The Tri-County Regional Commission at <https://www.mitrpc.org/about>

¹³ Tri-county Regional Planning Commission, Retrieved May 24, 2023 from <https://www.mitrpc.org/about>

¹⁴ Tier one airports have international hubs and larger passenger volumes than tier two airports. Tier two airports are considered regional or secondary and are relatively smaller in infrastructure.

impact on statewide aviation reliability, access to geographically isolated communities year-round, and hinders potential economic development.¹⁵

2.12.1.3 Local Zoning and Land Use

The Capital Region International Airport is situated inside three jurisdictions, The City of Lansing, Dewitt Township, and Watertown Township. Zoning and use for land surrounding the airport is different for each township. **Figure 2-17** displays the zoning for each township.

The Dewitt Township Comprehensive Development Plan (2005)¹⁶ directly acknowledges LAN as a community asset and thusly directs future land uses around the airport in a compatible way. Similarly, the 2016 Watertown Township Master Plan notes the future CRAA LAN Master Plan as influential in its own development and notes a goal of “plan[ning] for appropriate development in proximity to the Capital Region International Airport.”

The 2012 Design Lansing Comprehensive plan for the City of Lansing identifies LAN as an “Industrial Enhancement Area”. Although no formal definition for the term is provided, the plan notes the P.A. 425 agreement¹⁷ between the City of Lansing and Dewitt Township which allows sharing of tax revenue from new development in the business park and acknowledges it as well located for multimodal accessibility. The economic development entity Next Michigan Development Corporation Board, created under the P.A. 425 agreement, is “empowered by state legislation to issue certain tax incentives to spur the development efforts of airport-related properties and the expansion of business.”

The City of Lansing zoning extends as far north as Sheridan Road immediately south of the LAN property line. Most of the land north of the Grand River nearest to the airport is zoned for light industrial and low-density residential, with limited space zoned for parks and mixed-use centers¹⁸. Much of the Dewitt Township zoning surrounds the north and east side of the airport and consists mainly of agricultural and low-density residential zones to the north. The property directly to the east of the airport consists of manufactured home parks, low-density residential, and community commercial zones. Watertown Township zoning (directly west and northwest of LAN) mainly consists of agriculture and agricultural preservation, although small areas of land directly west of the airport are zoned for light industrial and land directly northwest is zoned for single family residential.

¹⁵ The Michigan Mobility Plan of 2045, Retrieved May 24, 2023 from <http://michiganmobility.org>

¹⁶ 2005 Dewitt Township Comprehensive Plan (amended 2012), Retrieved July 10, 2023 from <https://www.dewitttownship.org/194/Comprehensive-Development-Plan>

¹⁷ P.A. 425 Agreement, <https://www.lansingmi.gov/653/Next-Michigan-Development-Corporation>

¹⁸ Mixed use centers are residential areas merged with comfortable pedestrian access to stores restaurants and other businesses.

Figure 2-17
Land Use and Zoning

