



ST. LOUIS LAMBERT  
INTERNATIONAL AIRPORT.®

## AIRPORT MASTER PLAN

### CHAPTER 2 - INVENTORY OF EXISTING CONDITIONS

FEBRUARY 2023 – FINAL DRAFT



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## 2 INVENTORY OF EXISTING CONDITIONS

Developing an inventory of the Airport's physical, operational, and functional characteristics is the basis for identifying improvements to Airport elements for inclusion in this Airport Layout Plan (ALP) Update. Inventory detail is based on conditions and facilities present as of April 2020.

The Inventory of Existing Conditions is organized under the following section headings:

- General Information
- Airfield and Airspace
- Passenger Terminal and Gates
- Access and Terminal Area Roadways
- Automobile Parking Facilities
- Rental Car Facilities
- Air Cargo Facilities
- Airport Support Facilities
- Airline Support Facilities
- General Aviation Facilities
- Other Aeronautical Facilities
- Vacant Facilities
- Nonaeronautical Facilities
- Utility Infrastructure
- On- and Off-Airport Land Uses
- Sustainability Initiatives
- Existing Capital Improvement Program

The most recent Master Plan for St. Louis Lambert International Airport (STL or the Airport) was completed in 2012, and the accompanying ALP was approved in 2013.

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### 2.1 GENERAL INFORMATION

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#### 2.1.1 AIRPORT HISTORY

Major Albert Lambert, a pharmaceutical tycoon, was the first person in St. Louis, and 61<sup>st</sup> worldwide, to obtain his pilot's license in 1911. In 1920, along with the Missouri Aeronautical Society, he leased 170 acres of land, approximately 13 miles northwest of downtown St. Louis, and created the St. Louis Flying Field.

Major Lambert's vision enabled St. Louis to become key in the growing aviation industry, as he developed the airfield at his own expense, by clearing, grading, and draining the land and erecting hangars. Major Lambert was responsible for bringing the 1923 International Air Races to St. Louis, and the airfield was christened "Lambert St. Louis Flying Field" in recognition of his achievements. In 1925, when the lease ran out, Major Lambert bought the airport property.

In November 1927, Major Lambert offered Mayor Victor Miller and the City Administration the Lambert St. Louis Flying Field for \$68,000, the price he had paid for the field alone. Additional acreage was obtained through passage of a \$2 million bond issue. Finally, on February 7, 1928, the city accepted his offer, contingent upon the passage of the airport bond issue, and Lambert-St. Louis Municipal Airport became the first municipally owned airport in the country. In 1928, STL's airfield was a base for passenger and freight service.

STL's first passenger terminal was constructed for Robertson Airlines, which featured St. Louis to New Orleans service. Next, Marquette Airlines began service from St. Louis to Detroit. Around 1930, 24,133 people arrived and departed from STL. By 1938, that figure increased to 40,000 passengers with approximately 170,000 landings and take-offs of all types of aircraft. Services at and from STL continued to expand. McDonnell Aircraft was established at STL; it was the predecessor to McDonnell Douglas Corporation, which then merged with The Boeing Company, which continues to operate at STL to this day.

In 1956, Minoru Yamasaki's dome-design for STL's main terminal became the forerunner of modern terminal building plans. Both the John F. Kennedy Airport in New York and the Charles De Gaulle Airport in Paris, France followed the lead of the domed design of STL's main terminal. The present four-dome main terminal was built originally with three domes; the fourth followed a few years later.

The "jet transportation era" began at STL with the inauguration of Trans World Airlines' Boeing 707 service in 1959. Around this time, McDonnell Aircraft Corporation started assembling the Mercury series spacecraft at STL. Shortly after that, McDonnell Aircraft merged with Douglas Aircraft Company.

A parallel runway was constructed in the 1960s to separate general aviation from the commercial jets. In 1971, the airport became Lambert-St. Louis International Airport.

By the mid-1970s, both parallel runways were extended, instrument landing systems were added, increasing the operational capacity of the airfield by 50 percent. In addition, new taxiways and aircraft ramp spaces were built. Terminal expansion brought gate capacity to 81 gates. The overall cost of expansion upon completion was approximately \$290 million, with an economic impact of \$2 billion to the St. Louis area. By 1986, STL's traffic figures increased to 458,293 aircraft operations and 20 million passengers.

In the late 1980s, an obvious need arose for further develop the Airport to alleviate delays, especially in bad weather, and to cope with rapidly increasing passenger traffic. The resulting Airport Expansion Program included building a new 9,000-foot parallel runway west of the Airport, which opened in 2006. Also, in 1998, STL opened a new 220,000 square foot East Terminal (Terminal 2), to serve the growing service provided by Southwest Airlines.

In 2000, STL accommodated a peak of over 30 million passengers. In 2001, American Airlines merged with Trans World Airlines, whose main domestic hub was STL. However, as a result of the September 11, 2001, terrorist attacks, American Airlines drew down its hub at STL, and eventually dismantled the hub in 2009. Around the same time, Southwest Airlines started a major expansion at STL.



In 2016, the Airport name was changed to St. Louis Lambert International Airport, to emphasize the geographic location of the Airport. As of 2019, Southwest Airlines was the dominant carrier at STL, carrying approximately 62 percent of the passengers, followed by American Airlines and Delta Airlines.

STL now sits on approximately 3,675 acres of land, with four runways, and the Airport had nearly 16 million passengers in 2019.

## 2.1.2 AIRPORT ACTIVITY DATA AND BASED AIRCRAFT

Approximately 194,000 aircraft operations were conducted at the Airport in 2019, as shown in **Table 2.1-1**. Approximately 73 percent of those operations were conducted by air carrier aircraft, and approximately 26 percent were conducted by general aviation (GA) aircraft, which includes air taxis<sup>1</sup>. Military operations accounted for 1 percent of operations in 2019. As shown in **Table 2.1-2**, there were 22 GA aircraft based at the Airport in April 2020.

**Table 2.1-1: 2019 Aircraft Operations**

	AIR CARRIER	AIR TAXI	GENERAL AVIATION	MILITARY	TOTAL
<b>Number of Aircraft Operations</b>	141,242	43,868	7,046	1,783	193,939
<b>Percentage</b>	72.8%	22.6%	3.6%	0.9%	100%

Note: Rows may not equal to totals shown because of rounding.

Source: Federal Aviation Administration, *Air Traffic Activity Data System (ATADS)*, *STL Airport Operations*, Report from January 1, 2019 to December 31, 2019.

**Table 2.1-2: Based Aircraft**

	2019
<b>Fixed-Wing Aircraft</b>	
Single-Engine Piston	0
Multi-Engine Piston	0
Jet	20
<b>Total Fixed-Wing Aircraft</b>	20
<b>Helicopters</b>	0
<b>Military</b>	2
<b>Total Based Aircraft</b>	22

Source: Federal Aviation Administration, *Form 5010, Airport Master Record*; <https://adip.faa.gov/agis/public/#/airportData/STL>, accessed December 2020.

<sup>1</sup> Air taxi = aircraft designed to have a maximum seating capacity of 60 seats or less or a maximum payload capacity of 18,000 pounds or less, carrying passengers or cargo for hire or compensation (includes small regional jets such as Embraer 145, CRJ 200, ...).

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### 2.1.3 AIRPORT LOCATION

STL is located approximately 13 miles northwest of downtown St. Louis in unincorporated St. Louis County, as depicted on **Figure 2.1-1**.

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### 2.1.4 AIRPORT GOVERNANCE

STL is an enterprise fund, owned and operated by the City of St. Louis, Missouri and the St. Louis Airport Authority (STLAA). It is a Federal Aviation Administration (FAA)-designated Primary, Medium Hub airport.

Other entities playing a significant role at STL are the FAA and the airlines. The role of the FAA at STL includes:

- issuance of grants-in-aid and grant assurances
- regulatory oversight over certain aspects of the Airport (as a 14 Code of Federal Regulations [CFR] Part 139 airport), especially the airfield
- approval of the ALP drawing set
- providing air traffic control services
- providing and maintaining navigational aids (NAVIDs).

Airlines are major tenants who pay rent and certain charges.

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### 2.1.5 EXISTING AIRPORT REFERENCE CODE

The Airport Reference Code (ARC) is a designation used to categorize the airport's existing airfield capability, as determined by a set of design standards prescribed by the FAA. The ARC consists of two components: Aircraft Approach Category (AAC) and the Airplane Design Group (ADG). The AAC and ADG are defined by an aircraft approach speed and a combination of aircraft tail height and wingspan, respectively.

STL's critical aircraft was identified as the Boeing MD-11 in the previous Master Plan, and its ARC is D-IV. The existing critical aircraft will be determined and analyzed during the development of the Forecast and Facility Requirements. All the runways and taxiways and their respective shoulders meet or exceed FAA design standards for ADG IV aircraft, except for Taxiway V2, which meets ADG III standards.





### 2.1.6 METEOROLOGICAL CONDITIONS

Meteorological conditions at an airport are an integral part of the airfield operational strategy, as conditions such as visibility, cloud height, and wind speed and direction affect airport operations daily. Depending on the weather and type of operation, aircraft operate under either Visual Flight Rules (VFR) or Instrument Flight Rules (IFR). The weather conditions for both VFR and IFR are defined in **Table 2.1-3**.

**Table 2.1-3: Visual and Instrument Flight Rules Categories**

WEATHER CONDITION	WEATHER CATEGORY	CLOUD CEILING		VISIBILITY
<b>Visual Meteorological Conditions</b>	Visual Flight Rules (VFR)	>3,000 feet AGL	and	>5 miles
	Marginal Visual Flight Rules (MVFR)	1,000 - 3,000 feet AGL	and/or	3 - 5 miles
<b>Instrument Meteorological Conditions</b>	Instrument Flight Rules (IFR)	500 - 1,000 feet AGL	and/or	1 mile -3 miles
	Low Instrument Flight Rules (LIFR)	<500 feet AGL	and/or	<1 mile

Notes:

Visibility expressed in statute miles

AGL = Above Ground Level

Source: FAA Aeronautical Information Manual (AIM)

A wind and weather analysis were conducted to identify the meteorological conditions and to determine how often wind and weather conditions favor the use of each of the runway at STL. Weather data for a period of ten years was analyzed.

### WEATHER CONDITIONS

Weather conditions are divided into three categories: all-weather, visual meteorological conditions (VMC), and instrument meteorological conditions (IMC). A summary of the historical occurrence for each weather condition at STL is presented in **Table 2.1-4**.

**Table 2.1-4: Percent Occurrence of Weather Conditions**

WEATHER CONDITIONS	DECISION HEIGHT	RUNWAY VISUAL RANGE	OCCURENCE
<b>Visual Meteorological Conditions</b>	≥1,000'	> 3 SM	85.2%
<b>Instrument Meteorological Conditions - CAT I</b>	200-999' AGL	1800' - 3 SM	14.6%
<b>Instrument Meteorological Conditions - CAT II</b>	100-199' AGL	1200-1799'	0.1%
<b>Instrument Meteorological Conditions - CAT III</b>	0-99' AGL	0-1199'	0.1%

Notes:

AGL = Above Ground Level

CAT = Category

SM = Statute Miles

Sources: Federal Aviation Administration, Station WBAN 13994 (1/1/2010-12/31/2019); CMT, April 2020 (analysis).

## WIND COVERAGE BY RUNWAY END

The minimum acceptable wind coverage across all runways at an airport, which is the percent of time crosswind components are at or below an acceptable velocity, is 95 percent. Additionally, when an aircraft is taking off or landing at an airport, the crosswind should not exceed the velocities specified for each Runway Design Code (RDC), which are 10.5 knots, 13 knots, 16 knots and 20 knots, based on the aircraft dimension and approach speed. The wind coverage for each runway at STL is summarized in **Table 2.1-5** and shows that the existing STL runways provide more than 95 percent wind coverage.

## WINDROSES

Hourly weather data, which included 87,626 observations over a ten-year period from January 1, 2010 to December 31, 2019, was used to develop a wind rose for each weather category, VMC, IMC and all weather. The wind roses only include runway alignments along the 6-24 and 12-30 bearings, because these two sets of bearings represent all the existing runway orientations at STL. Runway 12L has an orientation of 122 degrees and Runway 30R has an orientation of 302 degrees, which is the same as Runways 11-29 and 12R-30L.

The three wind roses are depicted in **Figure 2.1-2** through **Figure 2.1-4**.

**Table 2.1-5: Percent Wind Coverage by Runway End**

	CROSSWIND COMPONENT	WEATHER CATEGORY		
		ALL WEATHER	VMC	IMC
<b>RUNWAYS 11 &amp; 12</b>	10.5 kts	49.96%	49.74%	47.84%
	13 kts	51.88%	51.74%	49.14%
	16 kts	53.34%	53.28%	50.08%
	20 kts	53.71%	53.68%	50.32%
<b>RUNWAYS 29 &amp; 30</b>	10.5 kts	51.3%	51.84%	54.32%
	13 kts	53.43%	53.94%	51.9%
	16 kts	55.04%	55.54%	53.71%
	20 kts	55.48%	55.97%	54.32%
<b>RUNWAYS 11-29 &amp; 12-30</b>	<b>10.5 kts</b>	<b>91.9%</b>	<b>91.79%</b>	<b>92.12%</b>
	<b>13 kts</b>	<b>95.93%</b>	<b>95.87%</b>	<b>96.0%</b>
	<b>16 kts</b>	<b>98.98%</b>	<b>98.99%</b>	<b>98.74%</b>
	<b>20 kts</b>	<b>99.79%</b>	<b>99.82%</b>	<b>99.57%</b>
<b>RUNWAY 6</b>	10.5 kts	42.84%	41.26%	53.29%
	13 kts	45.05%	43.25%	57.32%
	16 kts	47.2%	45.22%	60.91%
	20 kts	47.73%	45.71%	61.91%
<b>RUNWAY 24</b>	10.5 kts	52.85%	55.18%	32.41%
	13 kts	56.85%	59.28%	37.88%
	16 kts	60.35%	62.83%	41.34%
	20 kts	61.39%	63.86%	42.59%
<b>RUNWAY 6-24</b>	<b>10.5 kts</b>	<b>86.28%</b>	<b>86.61%</b>	<b>82.57%</b>
	<b>13 kts</b>	<b>92.46%</b>	<b>92.67%</b>	<b>90.03%</b>
	<b>16 kts</b>	<b>98.06%</b>	<b>98.15%</b>	<b>97.04%</b>
	<b>20 kts</b>	<b>99.63%</b>	<b>99.66%</b>	<b>99.27%</b>
<b>ALL RUNWAYS</b>	10.5 kts	96.64%	96.64%	96.47%
	13 kts	99.06%	99.07%	98.93%
	16 kts	99.81%	99.82%	99.70%
	20 kts	99.98%	99.98%	99.96%

Notes:

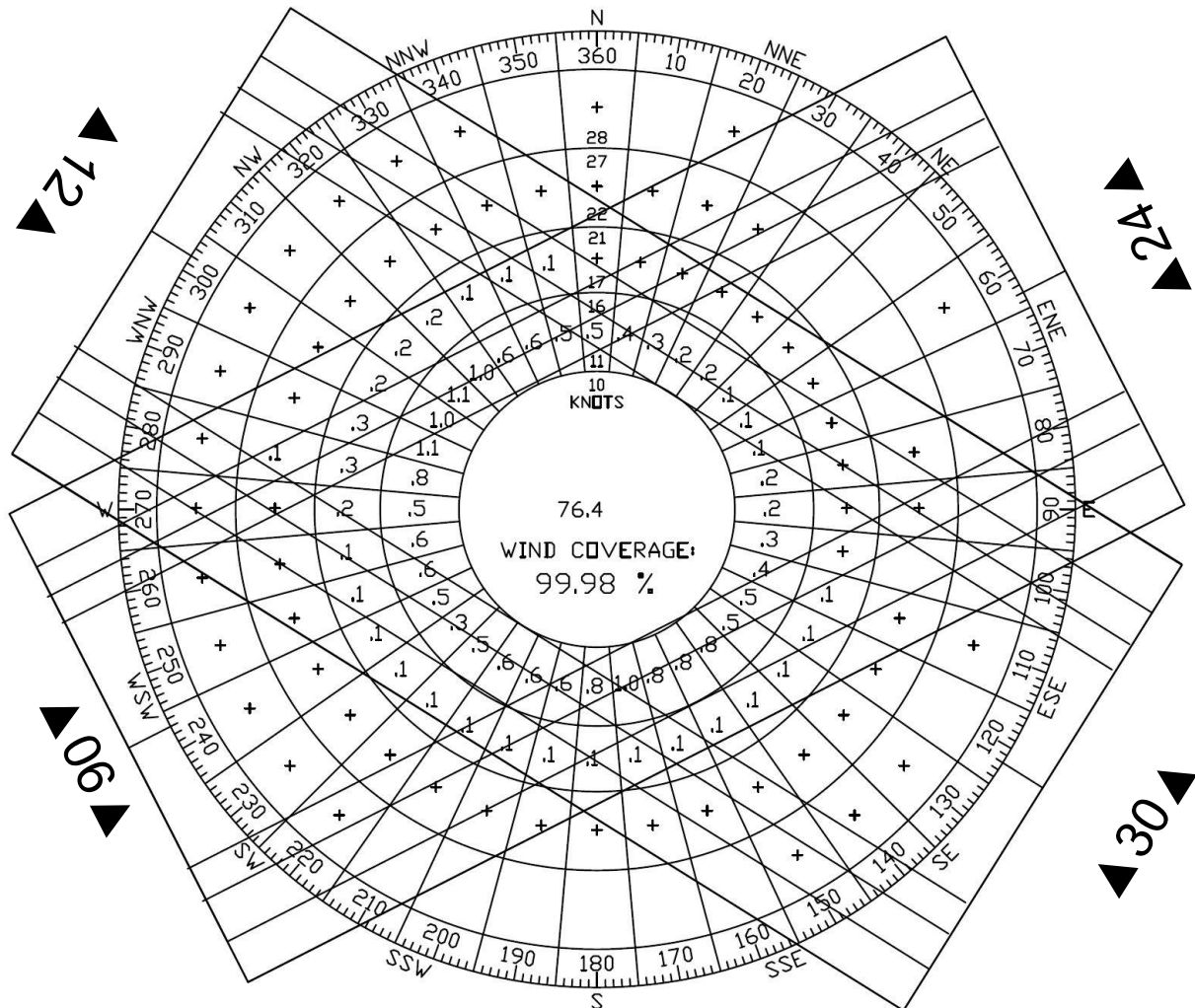
kts = knots

VMC = visual meteorological conditions

IMC = instrument meteorological conditions

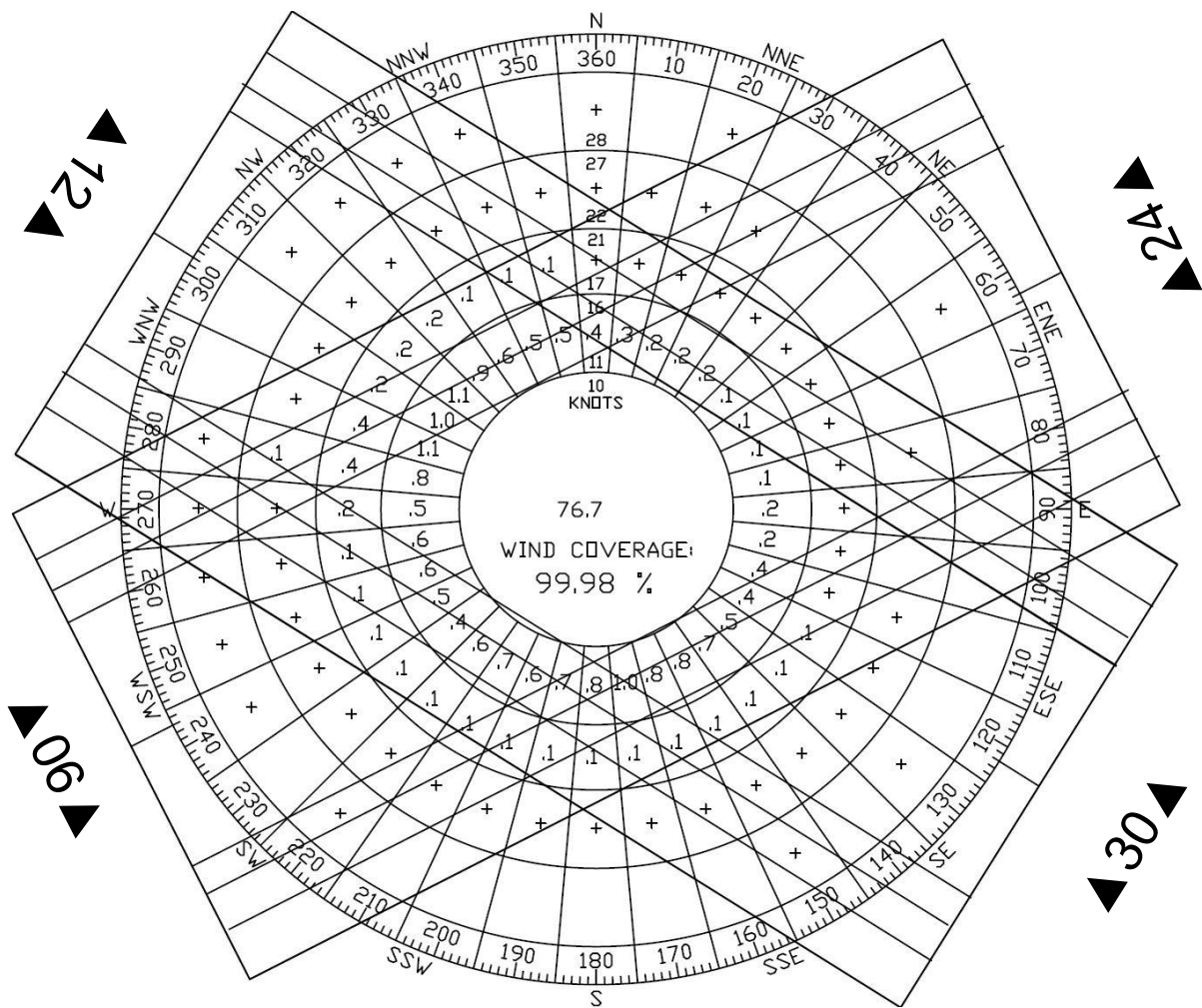
Sources: Federal Aviation Administration, Station WBAN 13994 (1/1/2010-12/31/2019); CMT, April 2020 (analysis).

**Figure 2.1-2: All Weather Windrose**



Sources: Federal Aviation Administration, Station WBAN 13994 (1/1/2010-12/31/2019); CMT, April 2020 (analysis).

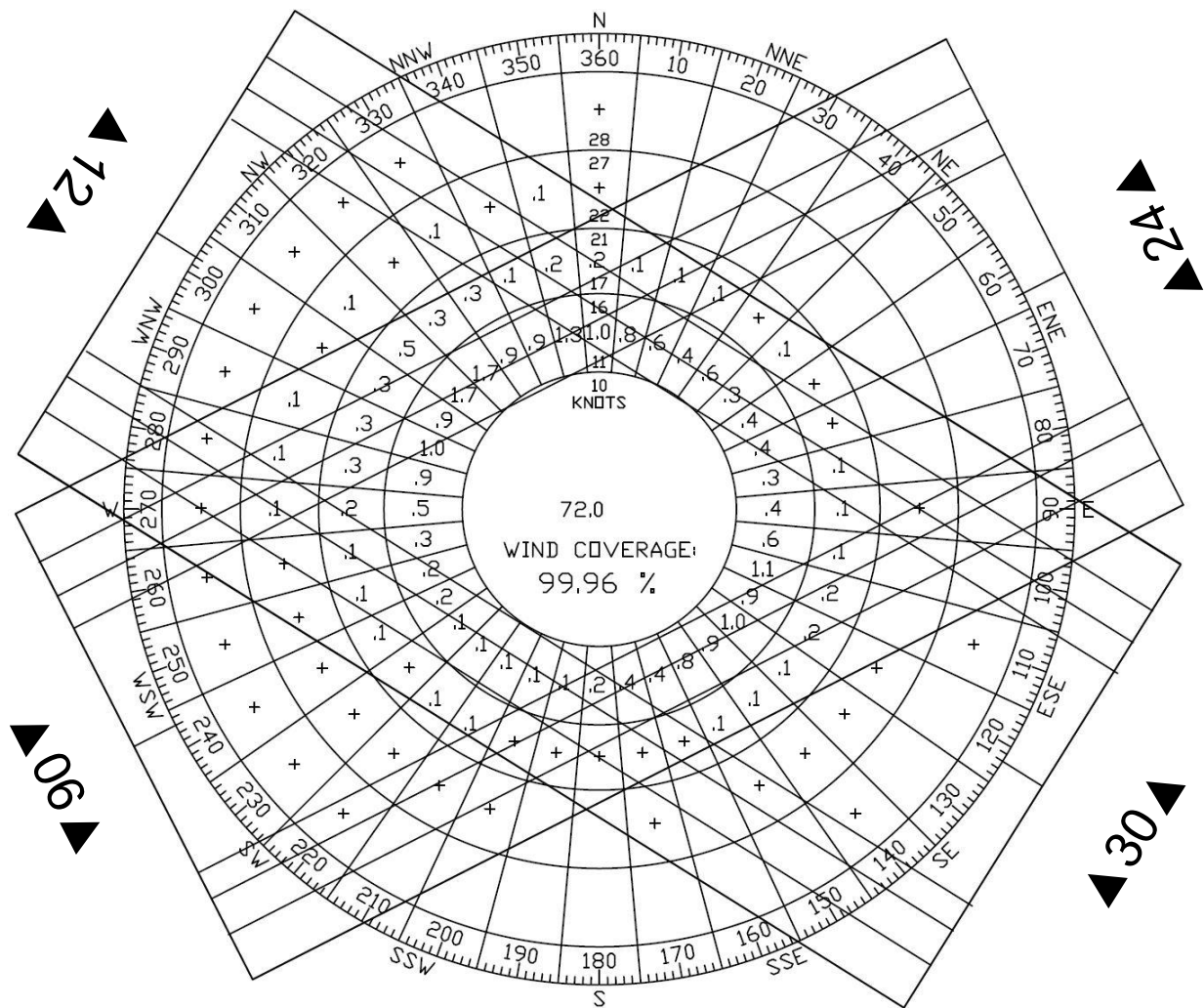
**Figure 2.1-3: Visual Meteorological Conditions Windrose**



Sources: Federal Aviation Administration, Station WBAN 13994 (1/1/2010-12/31/2019); CMT, April 2020 (analysis).



**Figure 2.1-4: Instrument Meteorological Conditions Windrose**



Sources: Federal Aviation Administration, Station WBAN 13994 (1/1/2010-12/31/2019); CMT, April 2020 (analysis).

## 2.2 AIRFIELD AND AIRSPACE

This section provides an overview of the airfield, airspace, and navigational aids at STL. The airfield provides a safe and efficient space for aircraft to maneuver into, out of, and around an airport. A thorough understanding of the existing airfield layout and associated facilities is necessary to fully assess future needs, during the ALP Update process. This section will discuss each of the following airfield and airspace facilities:

- Runways
- Taxiways
- Airfield Safety Hot Spots



- Apron Areas
  - Pavement Condition Index
  - Aircraft Rescue and Firefighting Routes
  - Navigational Aids and Lighting
  - Weather Data Collection Systems
  - Airfield Deviations from Standards
  - Airspace Environment
- 

### 2.2.1 RUNWAYS

STL's existing airfield configuration consists of four runways, three parallel runways and one crosswind runway. **Figure 2.2-1** depicts the current airfield layout.

#### RUNWAY 12R-30L

Runway 12R-30L is one of three parallel runways at STL, and it is 11,019 feet long by 200 feet wide, with a displaced threshold of 467 feet and a blast pad that is 255 feet wide by 180 feet long on the Runway 12R end. The Runway 30L end has a blast pad that is 260 feet long by 200 feet long, and a 201-foot displaced threshold.

Runway 12R-30L is constructed of concrete with a grooved surface and has precision runway markings. Its Runway Design Code (RDC) is D-IV-2400. In addition to the AAC and the ADG, the approach visibility minimum is also included in the RDC, expressed in Runway Visual Range (RVR) values in feet.

Runway 12R-30L has high intensity runway edge lights and centerline lights; a precision approach path indicator (PAPI) and Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) on each end; and Touchdown Zone Lights (TDZ) on the Runway 12R end.

#### RUNWAY 12L-30R

Runway 12L-30R is the second parallel runway at STL and is the primary arrival runway. This runway is 9,003 feet long by 150 feet wide with blast pads on both ends. The Runway 12L end blast pad is 150 feet wide by 200 feet long, and the Runway 30R end blast pad is 200 feet wide by 190 feet long. It has an RDC of D-IV-1200, is constructed of concrete with a grooved surface, and has precision runway markings.

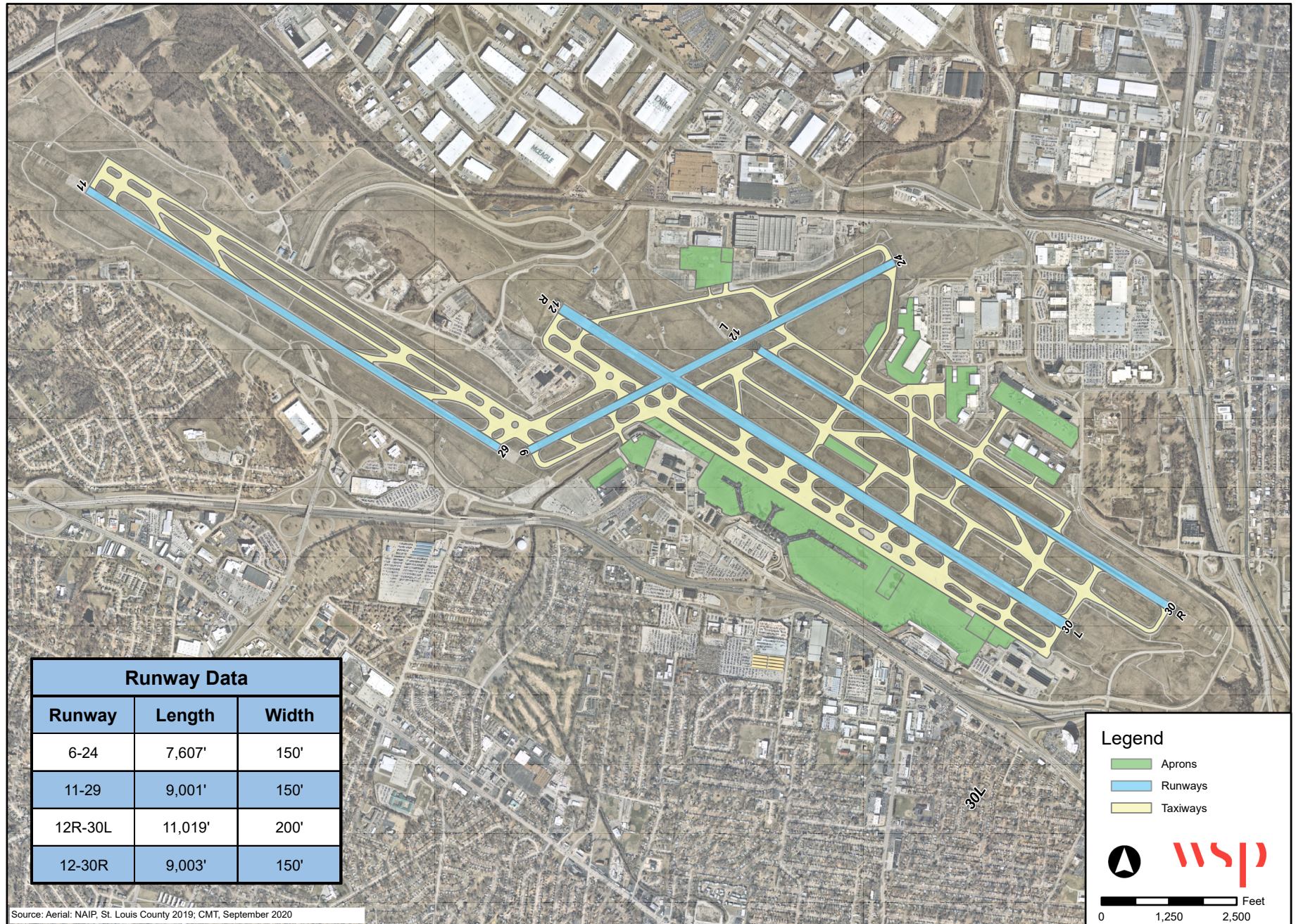
Runway 12L-30R has high intensity edge lights and centerline lights; PAPIs, High Intensity Approach Lighting System with Sequenced Flashing Lights (ALSF-2), and TDZ lights on both ends.

#### RUNWAY 11-29

Runway 11-29 is the third parallel runway at STL. It is 9,001 feet long by 150 feet wide and has an RDC of D-IV-1200. It is constructed of concrete with a grooved surface and has blast pads at each end that are 220 feet wide by 400 feet long.

Runway 11-29 has precision markings, high intensity edge lights and centerline lights, PAPIs, ALSF-2, and TDZ lights on both ends.







## RUNWAY 6-24

Runway 6-24 was originally designed for the four-engine piston transport aircraft of the post-World War 2 era. With the advent of the jet age, the runway was lengthened to accommodate the first-generation turbo-jet transport aircraft. Runway 6-24 is the only crosswind runway at STL and accounts for approximately 1 percent of the Airport's operations. It is 7,607 feet long by 150 feet wide, has an RDC of D-IV-2400 and is constructed of concrete with a grooved surface. The blast pads on each end are 200 feet wide by 100 feet long.

Runway 6-24 has high intensity edge lights and precision markings, along with PAPIs on both ends. There is a MALSR on the Runway 6 end and a Medium Intensity Approach Lighting System (MALSL) on the Runway 24 end. Neither end has TDZ lights.

**Table 2.2-1** displays a summary of runway usage in 2019. Combined, Runway 12R-30L accounted for just over 50 percent of STL's operations.

**Table 2.2-1: Runway Usage (Based on Aircraft Operations)**

RUNWAY END	AIRPORT-WIDE USE	TAKEOFFS	LANDINGS
12R	24%	19%	5%
30L	27%	21%	6%
<b>12R-30L</b>	<b>52%</b>	<b>40%</b>	<b>11%</b>
12L	11%	3%	8%
30R	17%	1%	16%
<b>12L-30R</b>	<b>28%</b>	<b>4%</b>	<b>24%</b>
11	9%	0%	9%
29	11%	6%	5%
<b>11-29</b>	<b>19%</b>	<b>6%</b>	<b>14%</b>
6	0%	0%	0%
24	1%	0%	1%
<b>6-24</b>	<b>1%</b>	<b>0%</b>	<b>1%</b>
<b>Total</b>	<b>100%</b>	<b>50%</b>	<b>50%</b>

Sources: St. Louis Airport Authority, *L3Harris Data for STL*, January 1, 2019 through December 31, 2019; CMT, April 2020 (analysis).

## 2.2.2 TAXIWAYS

The taxiway system at STL allows for the safe and efficient movement of aircraft between the runways, passenger terminal areas, general aviation (GA) areas, air cargo aprons, and other aircraft parking/service areas.

## PARALLEL TAXIWAYS

Three of the four runways have a full-length parallel taxiway, and all are a minimum of 75 feet wide. **Table 2.2-2** presents the characteristics of each of the parallel taxiways at STL. Section 2.2.10 includes information on the operational restrictions that are in place for taxiways.

**Table 2.2-2: Parallel Taxiways**

	RUNWAY 12R-30L	RUNWAY 12L-30R	RUNWAY 11-29	RUNWAY 06-24	RUNWAY 12R-30L	RUNWAY 12L-30R	RUNWAY 11-29
Taxiway Name	D	E	F	A	B	V	S
Taxiway Width (Feet)	75	75	75	75	75	75	75
Number of 90° Entrance/Exit Taxiways	12	6	4	1	1	2	2
Number of High-Speed Exit Taxiways	-	2	-	4	-	-	-

Notes:

All taxiways vary in width along their lengths. The minimum width is 75 feet.

Taxiway F is a partial parallel taxiway. Full-length is planned in the future.

Taxiways E, C, and T are partial parallel taxiways.

Runway 12R-30L has dual parallel taxiway/taxilane – D and C.

Runway 12R-30L is supported by Taxiway E.

Runway 11-29 has dual parallel taxiways – A and B.

Runway 6-24 is supported by partial parallel taxiways – S, V and T.

Sources: St. Louis Lambert International Airport, *Airport Layout Plan*, 2013; CMT, April 2020 (analysis).

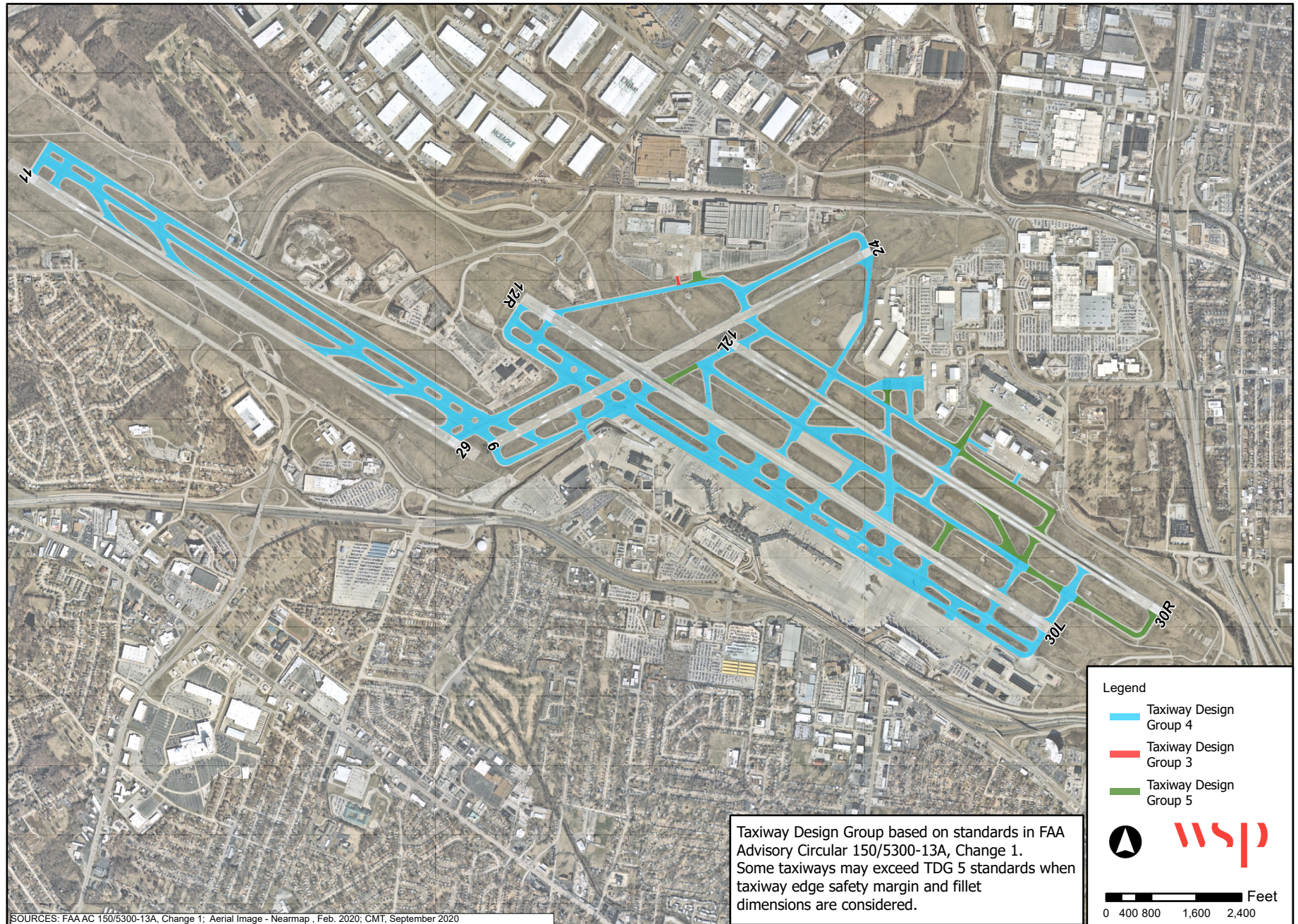
## OTHER TAXIWAYS

All of STL's taxiways are at least 75 feet wide, with the exception of Taxiways K1 and F4, which are 60 feet wide, and Taxiway V2, which is 50 feet wide. All taxiways meet or exceed Taxiway Design Group (TDG) 4 standards, except for Taxiway V2, which meets TDG 3 standards. **Figure 2.2-2** depicts the TDGs.

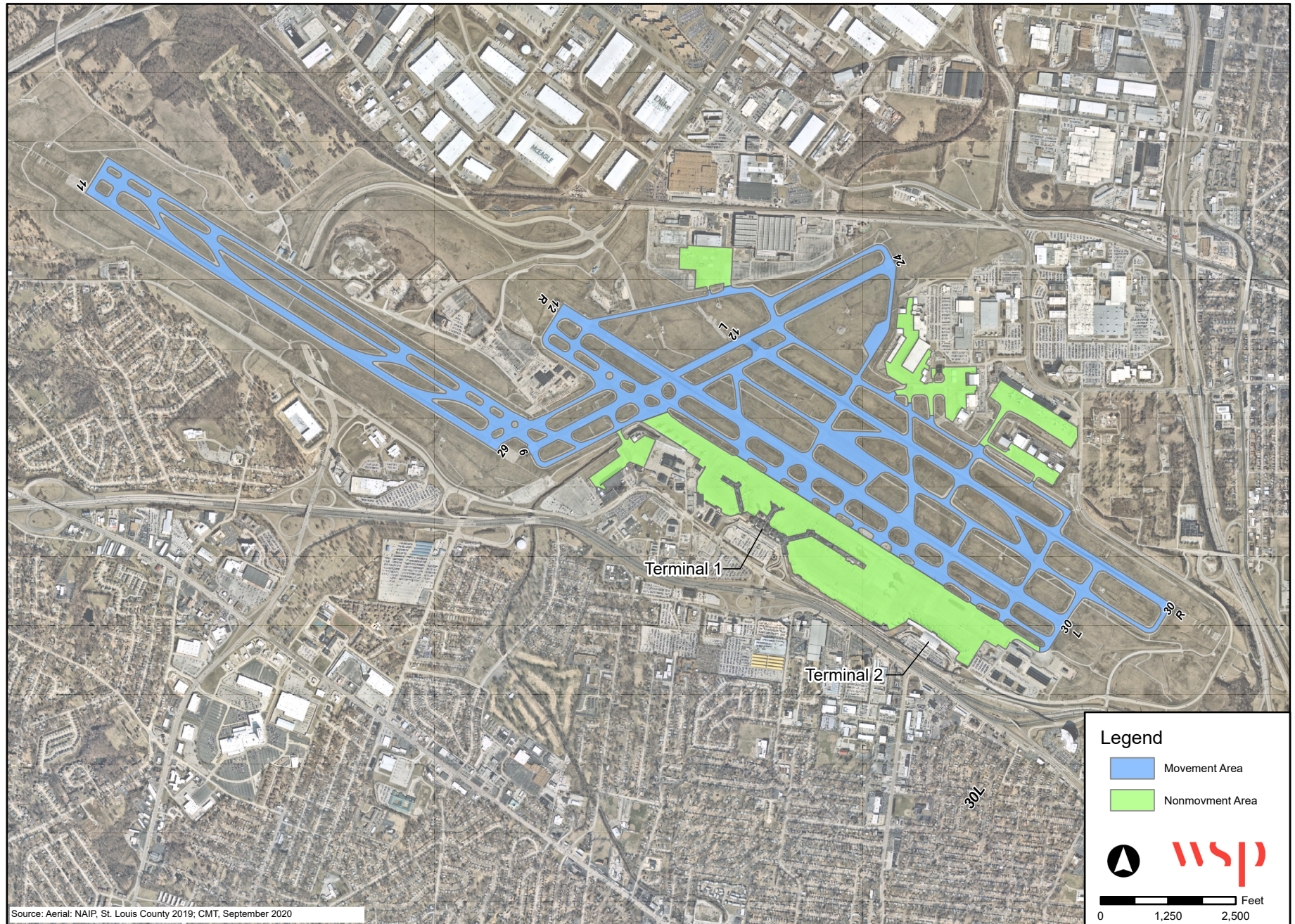
## TAXIWAY CONTROL

The airfield is divided into the movement and nonmovement areas. The movement area primarily consists of the runways and taxiways, while the nonmovement area includes apron areas used for both aircraft loading and aircraft parking. Small portions of some taxiways/taxilanes are located within the nonmovement area. **Figure 2.2-3** depicts these areas at STL.





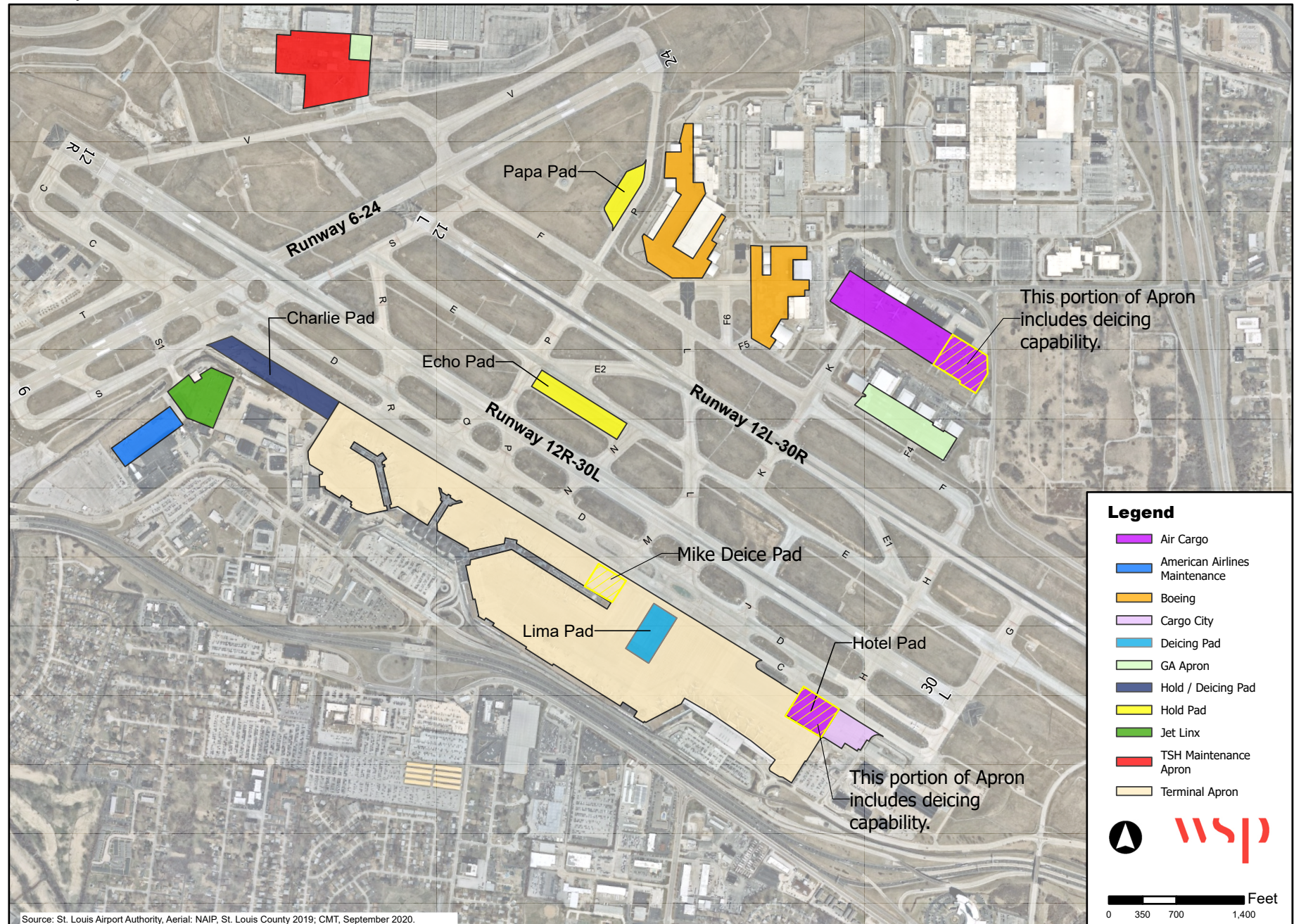












**Table 2.2-3: Apron Sizes**

APRON	SIZE (SQUARE YARDS)
Cargo City/General Aviation Deicing Pad	14,504
American Airlines Maintenance	19,392
Boeing	99,675
St. Louis Air Cargo/Deicing Pad	72,896
Deicing Pads	66,730
General Aviation	32,139
Hold Pads	36,285
Jet Linx	27,105
Trans States Holdings Maintenance/ ATS Jet Center	67,491
Terminal Apron	544,614

Sources: St. Louis Airport Authority, 2020; CMT, June 2020 (analysis)

## AIRCRAFT DEICING

The STL deicing operations and protocols are outlined in the *STL Winter Deicing Season Plan*. Aircraft are deiced at several locations:

- Aircraft parking at Terminal 1:
  - Concourse A aircraft: deicing on Charlie Pad (six spots).
  - Concourse C aircraft: deicing at Mike Deice Pad (two spots parallel to Gates C32 and C34). American Airlines has preferential use of this deicing location.
- Aircraft parking at Terminal 2: deicing on Lima Pad (three spots). Southwest Airlines has preferential use of this pad.
- Aircraft parking at Signature Flight Support: deicing on Hotel Pad, Spots H3 and H4.
- Aircraft parking at St. Louis Cargo:
  - UPS aircraft: deicing on UPS apron.
  - FedEx and Amazon Air aircraft: deicing on Hotel Pad, Spots H1 and H2.

Deicing locations are depicted on Figure 2.2-5. The Echo and Papa Pads are not used for deicing operations.

Glycol fluid, which is used in deicing operations, is stored individually by each airline or applicator. Glycol fluid applications are limited to the exclusive use of propylene-based products (Type I and Type IV). Ethylene glycol products are not allowed. For most of the airfield, a drainage system catches deicing runoff



fluid, and pumps and directs the runoff fluid to an above ground storage tank located east of Interstate 170. The runoff fluid is then metered to the Metropolitan St. Louis Sewer District (MSD) for treatment.

The UPS cargo apron has its own runoff collection and storage system. The runoff fluid from the UPS apron is pumped to two large storage tanks located directly north of the UPS facility. The fluid is stored in these tanks temporarily, until it is discharged to MSD.

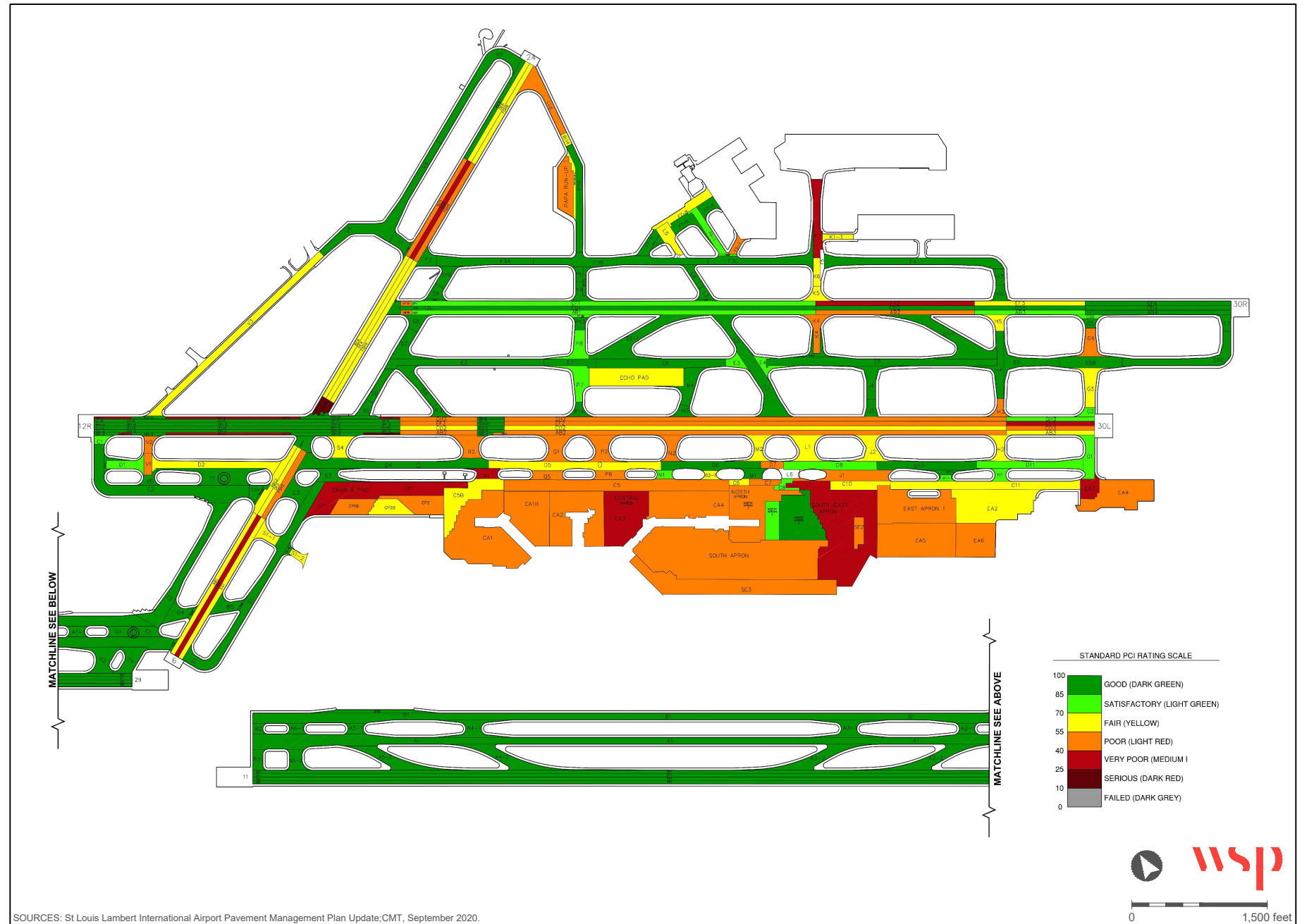
## ENGINE RUN-UPS

Occasional nighttime engine run-ups are conducted after maintenance or to troubleshoot a problem. The Echo Pad, located mid-way between Runways 12L-30R and 12R-30L, is the designated location for night maintenance run-ups. Prior to performing a run-up, the airplane operator must contact the Operations Center and state intentions.

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### 2.2.5 PAVEMENT CONDITION INDEX

A pavement condition survey for STL was last completed in 2019. The airfield and apron pavement condition indices (PCIs) recorded as part of this survey are depicted in **Figure 2.2-6**. Nearly 50 percent of the airfield pavements had a PCI rating of at least 78, and almost 40 percent had a rating of 90 or higher. The average PCI for pavement 20 years old or newer is 83, and the average PCI for pavement older than 20 years is 56. The significant drop in PCI is reached in the 26-30-year age range.



Since the PCI survey was completed, and in the near term, the PCI of several pavements was or will be improved:

- The outer 50 feet of each side of Runway 12L-30R, from Taxiway L to Taxiway H, was reconstructed in 2019, after the PCI survey (the center section was reconstructed before the PCI survey).
- Taxiway K was reconstructed from Taxiway F to the cargo apron in 2020.
- Design of the reconstruction of about three quarters of Runway 12R-30L began in early 2020, and construction is planned to begin in 2022 and conclude in 2023. The keel section of the runway (center 150 feet) from about halfway between Taxiways S and R to the Runway 30L end will be reconstructed, the outer 25 feet of each side of the runway will be removed, and limited geometry improvements will be made to some connecting taxiways.

The vast majority of the terminal apron pavements are in poor or very poor condition based on their PCI. Reconstruction is not currently programmed and will likely not occur in the 10-year timeframe due to the low priority that apron pavements carry in the Airport Improvement Program (AIP) discretionary funding system.

## 2.2.6 AIRCRAFT RESCUE AND FIREFIGHTING ROUTES

There are no specific Aircraft Rescue and Fire Fighting (ARFF) routes or designated emergency access roads at STL. All airport surfaces, paved or turf, are designed and maintained for use by Airport and ARFF vehicles. A gravel service road surrounds the inner perimeter of the Airport and can also be used by ARFF vehicles. Detailed information on ARFF operations can be found in the Airport Certification Manual (ACM).

## 2.2.7 NAVIGATIONAL AIDS AND LIGHTING

Navigational Aids (NAVAIDs) are both ground- and satellite-based and are used by aircraft to assist with both enroute navigation and instrument approaches to an airport. **Figure 2.2-7** shows the location of the ground-based NAVAIDs at STL.

### VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION/ TACTICAL AIR NAVIGATION SYSTEM

There are three very high frequency omnidirectional range (VOR) / Tactical Air Navigation System (TAC) stations located within the vicinity of STL; they provide enroute and terminal navigational guidance to aircraft. The VOR/TAC locations are included in **Table 2.2-4**.

**Table 2.2-4: Very High Frequency Omnidirectional Range Station/ Tactical Air Navigation System**

NAME	DISTANCE FROM AIRPORT (MILES)	DIRECTION FROM AIRPORT
STL	8.5	Northwest
TOY	21.1	East
FTZ	28.3	Southwest

Source: Federal Aviation Administration, eNASR (5/21/20 data cycle).







## **DISTANCE MEASURING EQUIPMENT**

Distance Measuring Equipment (DME) is a navigational aid that provides the distance between the DME facility and an aircraft that is equipped with DME equipment. The CSX DME is located on the airfield between Taxiway F and Runway 6-24.

## **INSTRUMENT LANDING SYSTEM**

An Instrument Landing System (ILS) is a precision approach navigational aid that provides both vertical and horizontal guidance to a pilot on approach to a runway. All runway ends at STL are equipped with an ILS approach, which requires a glide slope antenna and a localizer antenna.

## **TRANSMISSOMETER**

Transmissometers measure Runway Visual Range (RVR) and are located at various locations along the runways. RVR information supports Category II and III ILS operations. All runways are equipped with touchdown and rollout RVRs, while Runways 11-29 and 12L-30R are also equipped with a midpoint RVR.

## **PRECISION APPROACH PATH INDICATOR**

The Precision Approach Path Indicator (PAPI) provides visual vertical guidance to an aircraft on approach to a runway. All runway ends at STL are equipped with a PAPI.

## **APPROACH LIGHTING SYSTEMS**

All approach ends at STL are equipped with approach lighting systems that provide visual information, runway alignment, height perception, roll guidance, and horizon references to assist in the transition from IMC to VMC for landing. The Runway 12L, 30R, 11, 29 ends are equipped with an ALSF-II, which is typically used on CAT II and III precision approach runways. The Runway 12R, 30L and 6 ends are equipped with a MALSR, which is the FAA standard for CAT I precision runways. The Runway 24 end is equipped with a MALSR.

## **AIRPORT SURVEILLANCE RADAR**

The Airport Surveillance Radar (ASR) is used to detect and display azimuth, range, and elevation of aircraft operating within terminal airspace. ASR antennas scan through 360 degrees to present an air traffic controller with the location of all aircraft within 60 nautical miles of the airport. The STL ASR antenna is located south of Runway 11-29 near the intersection of Natural Bridge Road and U.S. Highway 67.

## **RUNWAY LIGHTING**

### **RUNWAY EDGE LIGHTS**

All the runways have High Intensity Runway Lights (HIRL) as edge lights.

### **RUNWAY CENTERLINE LIGHTS**

All runways, except for Runway 6-24, have runway centerline lights.

## RUNWAY END INDICATOR LIGHTS

Runway End Indicator Lights (REIL) provide identification of the end of the runway, especially when the surrounding terrain makes it hard to identify the runway. The Runway 12L and 30R ends are equipped with REILs.

## TOUCHDOWN ZONE LIGHTS

Touchdown Zone Lights (TDZL) are installed on some runways with precision approaches to help identify the touchdown zone when landing in unfavorable visibility conditions. The Runway 12R, 12L, 30R, 11, and 29 ends are equipped with TDZLs.

## LOW LEVEL WINDSHEAR ALERT SYSTEM

The Airport is equipped with a Low-Level Windshear Alert System (LLWAS), which measures wind speed and direction at remote sensor station sites situated around the airfield. There are ten sensors surrounding the Airport, with three additional sensors programmed by the FAA. Current wind data and warnings are displayed for approach controllers in the FAA TRACON facility and for ground controllers in the ATCT. Air traffic controllers relay LLWAS runway-specific alerts to pilots via voice radio communication. LLWAS alerts assist pilots in landing and takeoff decisions in adverse weather conditions.

## TAXIWAY LIGHTING

All taxiways at the Airport are equipped with taxiway edge lights, outlining the edges of taxiways during periods of darkness or restricted visibility conditions.

Taxiway centerline lights are used to facilitate ground traffic under low visibility conditions. Centerline lights are only installed on the high-speed taxiways: Taxiways E1, E2, A4, A5, and the portions of Taxiways A2 and A3 located within the runway safety area.

## LIGHTED WIND CONES

A lighted wind cone shows the prevailing wind direction at a specific location on the airfield. Wind cones are usually located at or near runway ends for pilots to visually verify the wind direction on approach. There are lighted wind cones near all runway ends.

## AIRPORT BEACON

The STL rotating airport beacon emits alternating white and green flashes, indicating a lighted land airport. The beacon is a visual navigational aid during nighttime operations. Operation of the beacon during daylight hours may indicate that ground visibility is less than 3 miles and/or the cloud ceiling is less than 1,000 feet. STL's beacon is located east of the easternmost Signature Flight Support hangar.

## AIRPORT SURFACE DETECTION SYSTEM

An Airport Surface Detection System (ASDE-X) is a surveillance system that allows air traffic controllers to track surface movement of aircraft and vehicles. STL has a series of antennas on the airfield that support this system, as shown on **Figure 2.2-8**.







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### 2.2.8 WEATHER DATA COLLECTION SYSTEMS

An Automated Surface Observing System (ASOS) is co-located with the Runway 12R ILS glide slope antenna. The ASOS provides basic weather elements: sky condition, visibility, present weather information, obstructions to vision, air pressure, ambient temperature, dew point temperature, wind, precipitation accumulation, and selected significant remarks. ASOS observations are updated every minute, 24 hours a day, every day of the year.

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### 2.2.9 AIRFIELD DEVIATIONS FROM STANDARDS

Existing nonstandard airfield conditions were identified. In general, these nonstandard conditions fall into one of three categories:

- Airfield compliance
- Nonstandard geometry
- Operational restrictions

In total, 51 instances of nonstandard airfield conditions exist at STL. These instances include, but are not limited to, nonstandard RSA and ROFA lengths, runway gradient issues, taxiway shoulder width, nonstandard taxiway geometry, and operational restrictions on taxiways.

#### AIRFIELD COMPLIANCE

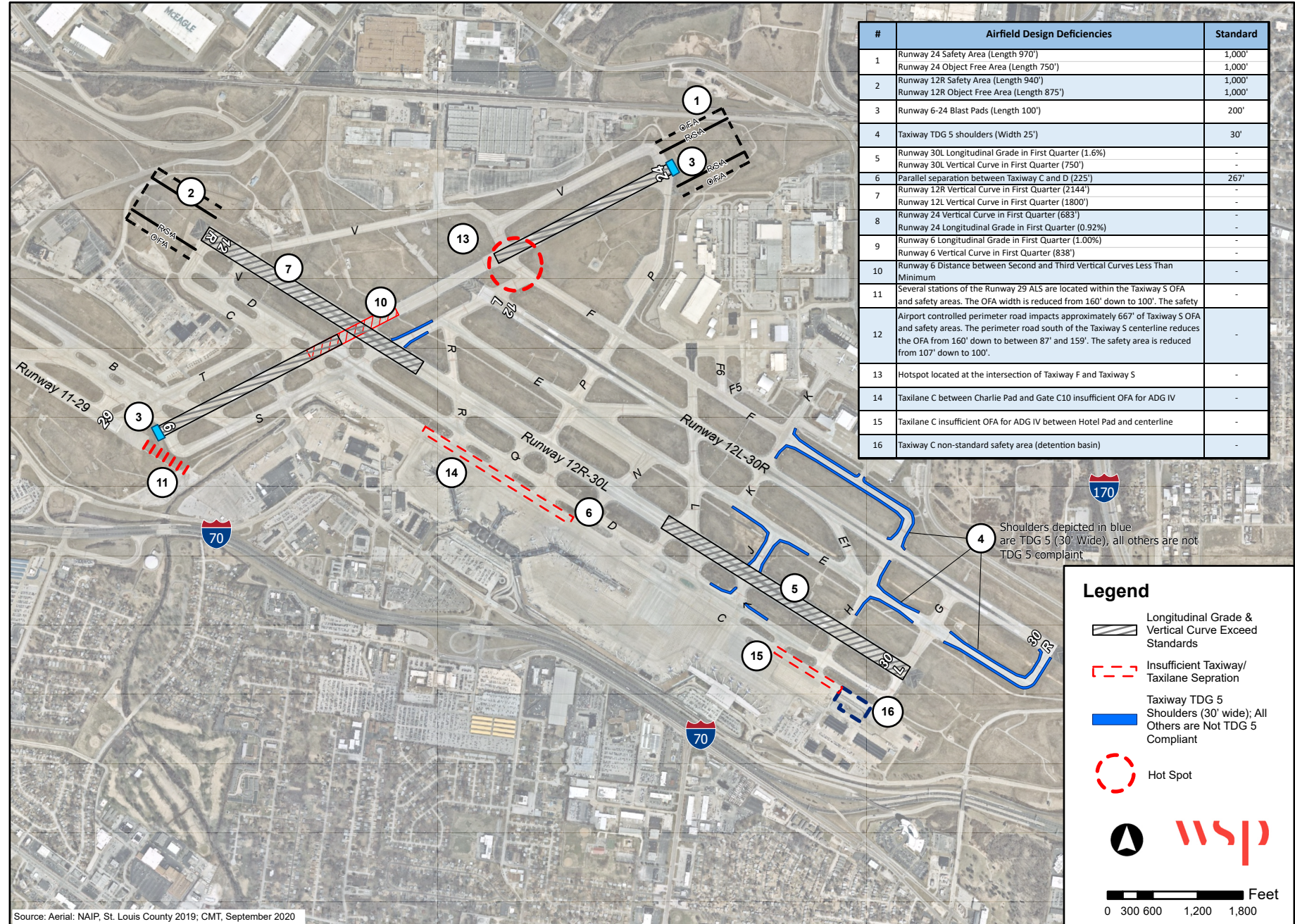
The Airfield Compliance category relates to instances of airfield infrastructure not conforming to current airfield design standards. These instances typically occur due to the evolution of airfield design standards since the respective infrastructure was developed, or a change in air traffic over time to larger aircraft than the specific facility was designed for. **Figure 2.2-9** depicts the 16 areas with noncompliant airfield design.

#### NONSTANDARD GEOMETRY

The Nonstandard Geometry category relates to instances of runway and taxiway geometry not complying to current standards and guidance. Many of these are a result of new FAA guidance on runway and taxiway geometry, developed since the respective infrastructure was built. The intent of these standards is to increase pilot awareness, with the objective of reducing the potential for runway incursions. **Figure 2.2-10** identifies each of the 23 instances of Nonstandard Geometry that exists at STL. The majority of these instances are taxiways providing direct access from aircraft aprons to a runway (i.e., not forcing a turn by the aircraft from the apron to the runway).

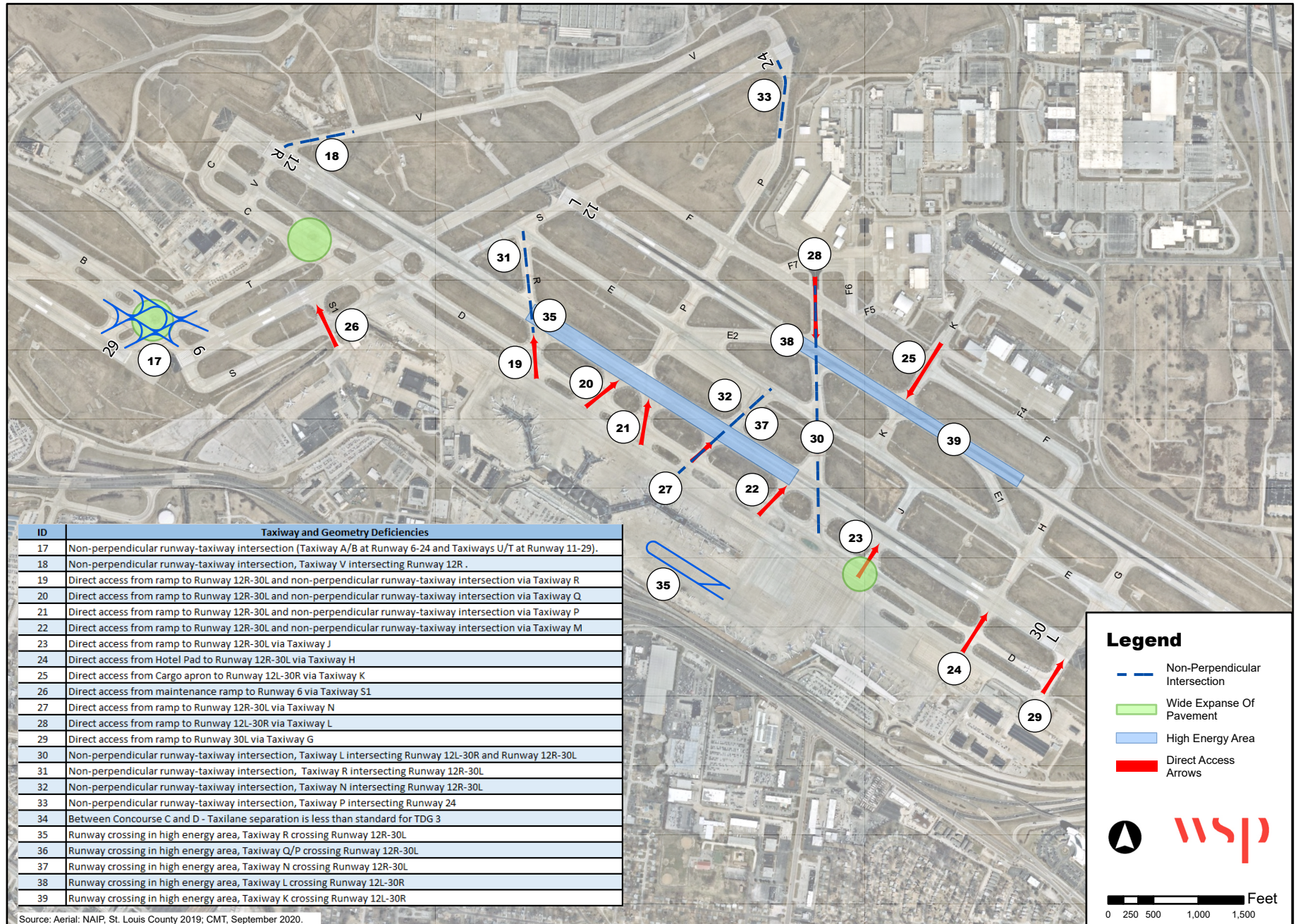
#### OPERATIONAL RESTRICTIONS

The Operational Restrictions category relates to areas on the airfield that do not conform to current airfield design standards for certain types of operations. Therefore, these areas are restricted during times when these operations are occurring. **Figure 2.2-11** identifies each of the 12 instances of Operational Restrictions that exist at STL today.

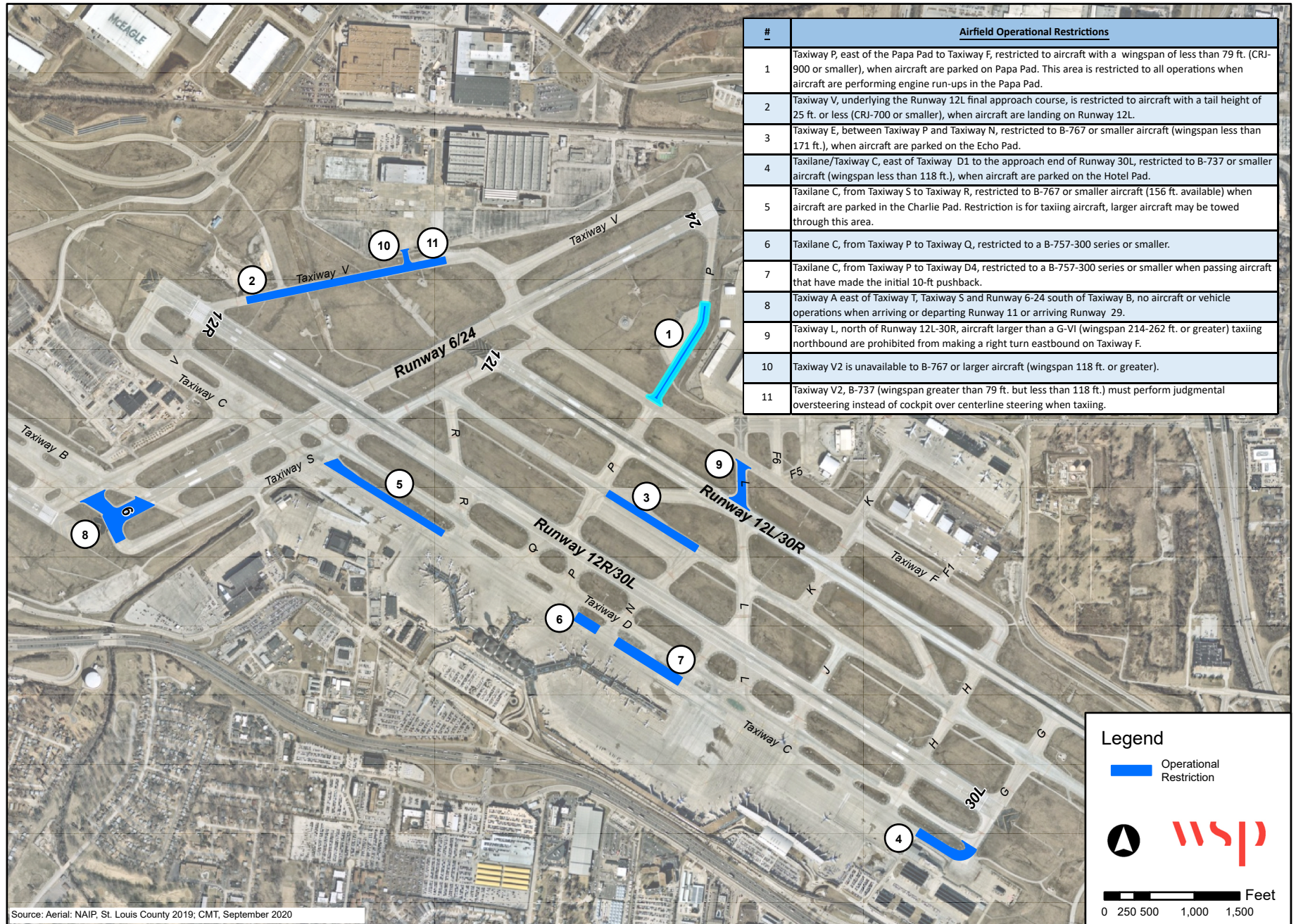




**Figure 2.2-10**  
 Non Standard Geometry







## 2.2.10 AIRSPACE ENVIRONMENT

### AIRSPACE CLASSIFICATION

Airspace in the United States is divided into six classes, which include Classes A, B, C, D, E, and G. STL is located in Class B airspace, which extends from the surface to 8,000 feet above Mean Sea Level (MSL), with the core extending for a six nautical mile radius around the Airport. Spirit of St. Louis (SUS), St. Louis Downtown (CPS), Alton (ALN) and Scott Air Force Base/MidAmerica (BLV) airports are located in Class D airspace located under the STL Class B “shelf”. **Figure 2.2-12** depicts the STL airspace.

### AIR TRAFFIC CONTROL FACILITIES

The Air Traffic Control Tower (ATCT) is located north of the Terminal 1 core at STL, while the Terminal Radar Approach Control (TRACON) is located in Wentzville, Missouri, approximately 17 miles west of the Airport. These facilities provide ATC services for STL and the surrounding airspace.

### INSTRUMENT APPROACHES

Instrument approach procedures help guide pilots in and out of airports during times of inclement weather and poor visibility. **Table 2.2-5** summarizes the instrument approach procedures available at STL by runway end, and their best-case minimums (ceiling/visibility).

**Table 2.2-5: Instrument Approach Procedures**

RUNWAY	NON- PRECISION		PRECISION – GROUND BASED						SATELLITE BASED			
	LOC		ILS - CAT I		ILS - CAT II		ILS - CAT III		RNAV - GPS		RNAV - RNP (0.3)	
	CLG (AGL)	VIS (mi.)	CLG (AGL)	VIS (mi.)	CLG (AGL)	VIS (RVR)	CLG (AGL)	VIS (RVR)	CLG (AGL)	VIS (mi.)	CLG (AGL)	VIS (mi.)
<b>6</b>	500	1	200	1/2	NA	NA	NA	NA	500	1 1/4	NA	NA
<b>24</b>	500	1 3/8	200	3/4	NA	NA	NA	NA	200	3/4	NA	NA
<b>11</b>	400	5/8	200	1/2	100	12	0	06	300	1/2	300	1/2
<b>29</b>	400	3/4	200	1/2	NA	NA	NA	NA	400	3/4	500	1 1/4
<b>12L</b>	400	1	200	1/2	100	12	0	06	400	1	500	1 1/4
<b>30R</b>	500	1	200	1/2	100	12	0	06	200	1/2	400	3/4
<b>12R</b>	400	3/4	200	1/2	NA	NA	NA	NA	200	1/2	400	1 1/4
<b>30L</b>	500	1	200	1/2	NA	NA	NA	NA	200	1/2	400	3/4

Notes:

CAT I = 200' Decision Height (DH), 1800' Runway Visual Range (RVR)

CAT II = 100' DH, 1200' RVR

CAT III = 0' DH, 0-700' RVR

CLG (AGL) = cloud ceiling above ground level

ILS CAT = instrument landing system category

Source: Federal Aviation Administration, St. Louis Lambert International Airport, Instrument Approach Procedures, 3/26/20-4/23/20.

LOC = localizer

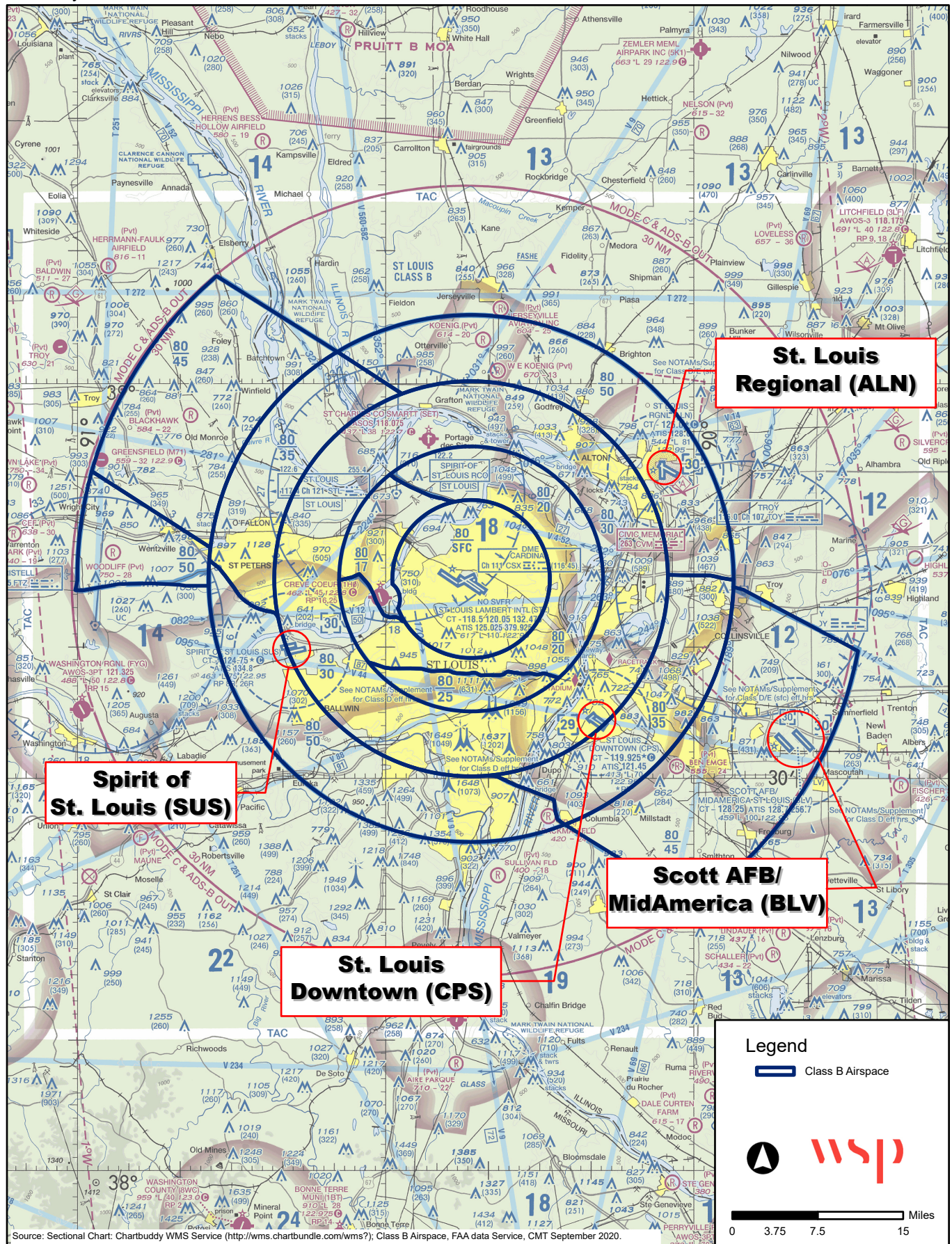
NA = Not Applicable as procedure does not exist

RNAV / GPS = area navigation / ground positioning system

RNAV / RNP = area navigation / required navigation performance

VIS (mi.) = Visibility in miles







## AIRFIELD UTILIZATION

At the time of development of this document, the STL ATCT had recently made several changes in the preferred operation of the airfield. This section presents these new/existing preferred operational flows as described by STL ATCT personnel. **Figure 2.2-13** depicts the existing runway flows at STL, and **Table 2.2-6** presents an overall summary of these flows.

**Table 2.2-6: Existing Runway Utilization**

	RUNWAY 11	RUNWAY 29	RUNWAY 12R	RUNWAY 30L	RUNWAY 12L	RUNWAY 30R
<b>Northwest Flow</b>						
<b>VMC to CAT I IMC</b>	-	Arrivals/ Departures	-	Departures	-	Arrivals/ Departures
<b>CAT II+ IMC</b>	-	Departures	-	Departures (if able)	-	Arrivals
<b>Southeast Flow</b>						
<b>VMC to CAT I IMC</b>	Arrivals	-	Departures	-	Arrivals	-
<b>CAT II+ IMC</b>	Arrivals	-	Departures	-	Departures/ Arrivals (if able)	-

Notes:

VMC = visual meteorological conditions

IMC = instrument meteorological conditions

CAT = category

Source: St. Louis Lambert International Airport, Air Traffic Control Tower, April 2020.

### *Northwest Flow*

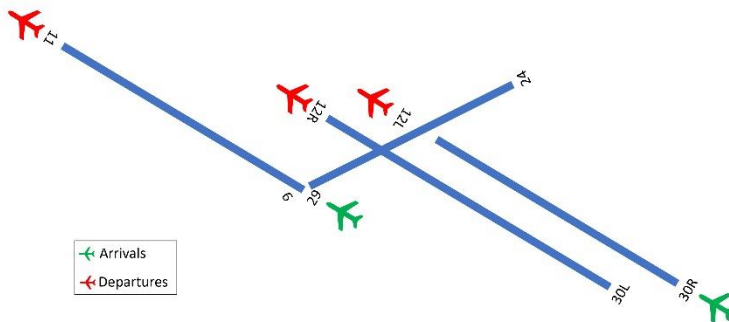
The primary directional flow at STL is anticipated to remain to the Northwest. During weather conditions that meet or exceed the minimums of a CAT I ILS (VMC to CAT I), the preferred operation of the airfield in Northwest Flow is for aircraft to arrive on Runways 29 and 30R, while aircraft depart on Runways 29, 30L and 30R. During periods of inclement weather, where conditions are lower than that of a CAT I ILS approach, the preferred operation of the airfield is for aircraft to arrive on Runway 30R and aircraft to depart on Runway 29. This configuration removes the inter-dependency between arriving and departing aircraft. However, if the sequencing of other arrivals and departures provides for adequate separations, Runway 30L is also capable of accommodating departures.

### *Southeast Flow*

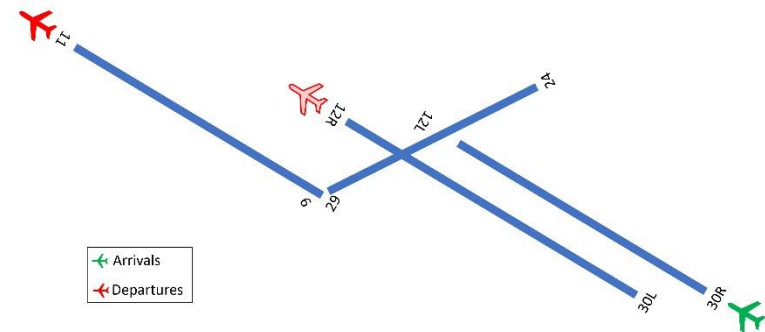
While the primary direction of flow is to the Northwest, there remain periods of time where the Airport operates in a Southeast flow. When weather conditions exist that meet or exceed the minimums of a CAT I ILS (VMC to CAT I), the preferred operation of the airfield in Southeast Flow is for aircraft to arrive on Runways 11 and 12L while aircraft depart on Runway 12R. During periods of inclement weather where conditions are lower than that of a CAT I ILS approach, the preferred operation of the airfield is for aircraft to arrive on Runway 11 and aircraft to depart on Runways 12L and 12R. If separations of other operations are sufficient, Runway 12L is also capable of accommodating some arriving aircraft during these conditions.

**Figure 2.2-13: Existing Runway Use Configurations**

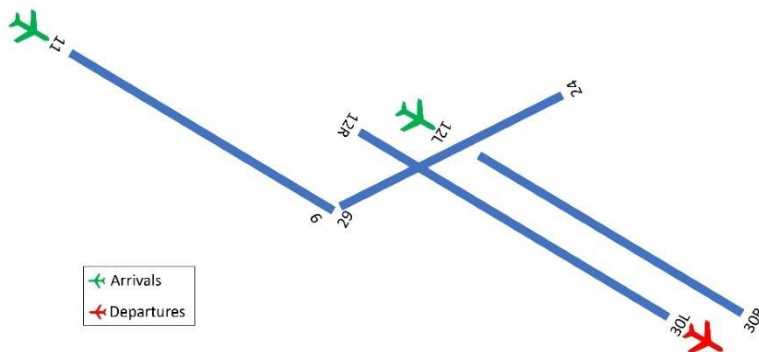
**Northwest Flow (Visual Meteorological Conditions to Category I)**



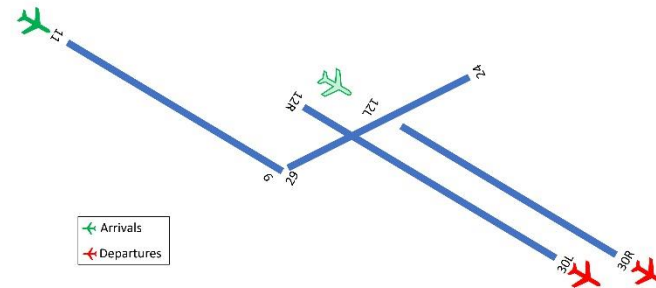
**Northwest Flow (Category II+)**



**Southeast Flow (Visual Meteorological Conditions to Category I)**



**Southeast Flow (Category II+)**



Sources: St. Louis Lambert International Airport, Air Traffic Control Tower, April 2020; CMT, April 2020 (analysis).



## TAXIFLOWS

Equally important to airfield utilization is aircraft ground movements, between the runways and aprons. **Figures 2.2-14 through 2.2-27** present the predominant aircraft taxi flows for each airfield utilization flow. It should be noted that these exhibits present the nominal flows. STL has adequate taxiway infrastructure to accommodate deviations from these flows when needed to prevent excessive aircraft holding for other operations (i.e., pushbacks or aircraft crossings).

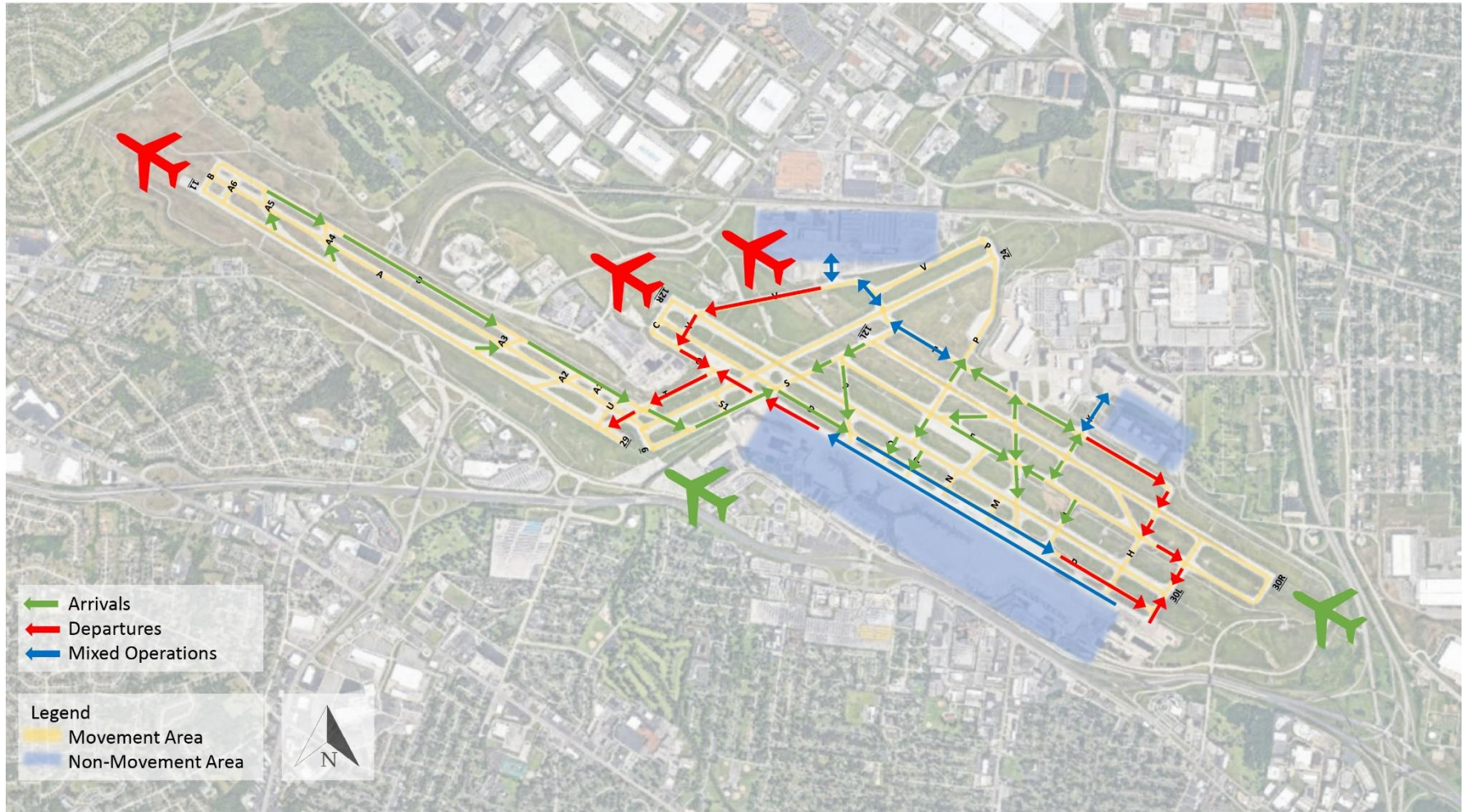
During low visibility conditions STL operates under a Surface Movement Guidance and Control System (SMGCS) Plan. The plan goes into effect when air carriers are conducting either takeoff or landing operations and visibilities of less than 1,200 feet Runway Visual Range (RVR) are present. STL's SMGCS Plan (January 5, 2016, Revision #5) includes the specific routings of aircraft, depending on which runway they are using and whether they are arriving or departing. Departure routings will vary depending on the initial location of the aircraft, whether deicing is required prior to departure, and the departure runway. Arrival routing will depend on the landing runway, destination at the Airport, and the airfield operating configuration.

## NOISE ABATEMENT PROCEDURES

STL's Noise Compatibility Program was approved in August 2011, and includes the following Noise Abatement Procedures:

- The daytime use of Runway 6-24 between the hours of 6 a.m. and 11 p.m., as needed, to prevent air traffic delays.
- Daytime departure corridors between the hours of 6 a.m. and 11 p.m. for commercial airline and military jets.
- Prohibited nighttime full-power aircraft engine run-ups between the hours of 11 p.m. and 6 a.m. without prior authorization from the Airport Operations/Communications Center.
- Prohibited nighttime use of Runway 6-24 between the hours of 11 p.m. and 6 a.m. by commercial airline or military jet operations, except under unusual or extraordinary circumstances.
- Nighttime departure corridors between the hours of 11 p.m. and 6 a.m. for commercial airline and military jets.
- Use of Noise Abatement Departure Procedures (NADP) defined in FAA Advisory Circular 91-53A by commercial airline jets.
- Quiet push-back procedures by commercial airline jets using aircraft tractors; power backs using aircraft engines are not permitted.
- Limiting commercial jet aircraft from intercepting the final approach no closer than four nautical miles from the arrival runway end.
- STLAA will notify airlines concerning the existing practices for full power maintenance run-ups and terminal pushbacks by the air carriers with scheduled service.

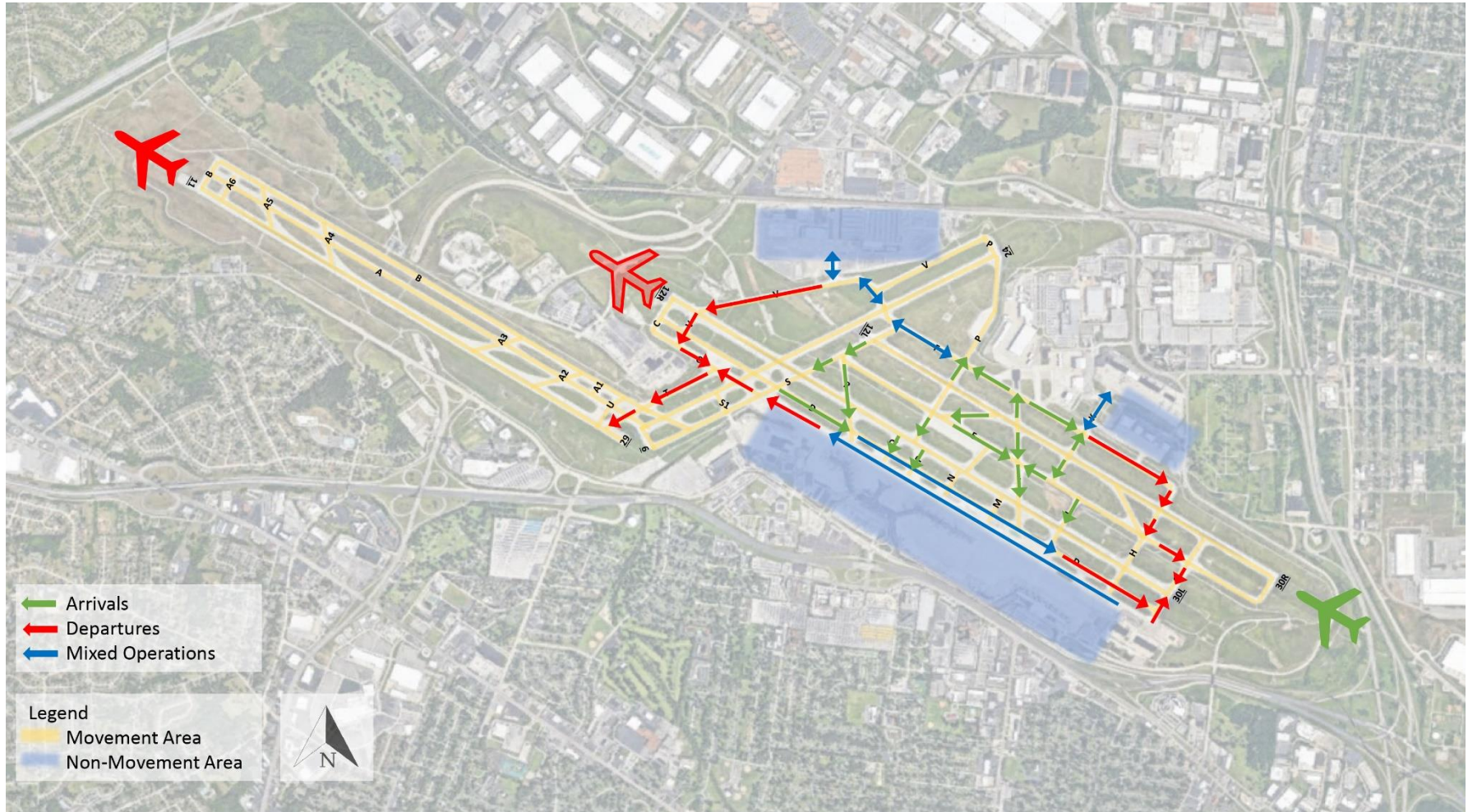
**Figure 2.2-14: Northwest Flow (VMC to IMC-CAT I) Taxiflows**



Sources: St. Louis Lambert International Airport Air Traffic Control Tower Personnel, 2020; CMT, 2020.



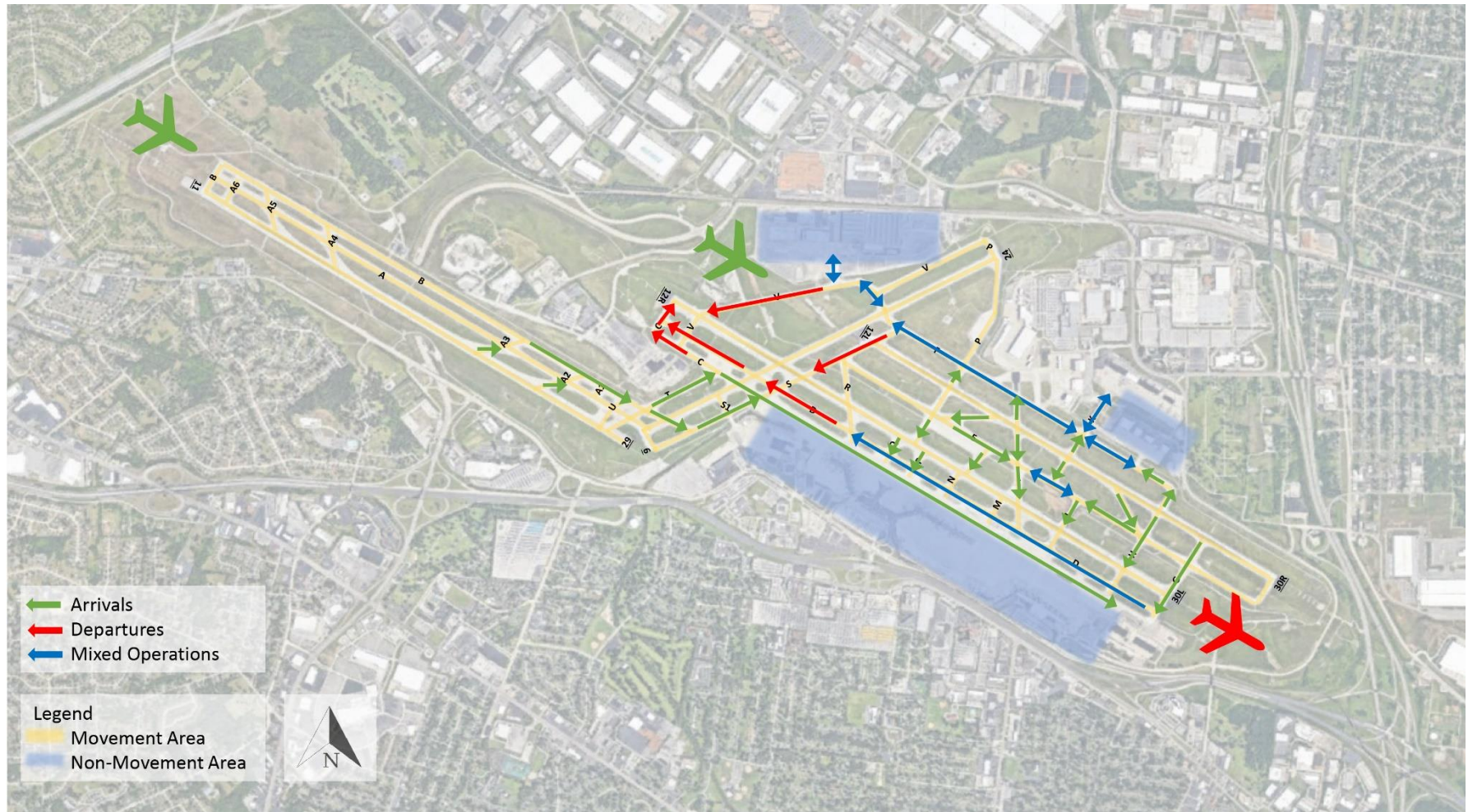
**Figure 2.2-15: Northwest Flow (IMC-CAT II+) Taxiflows**



Sources: St. Louis Lambert International Airport Air Traffic Control Tower Personnel, 2020; CMT, 2020.



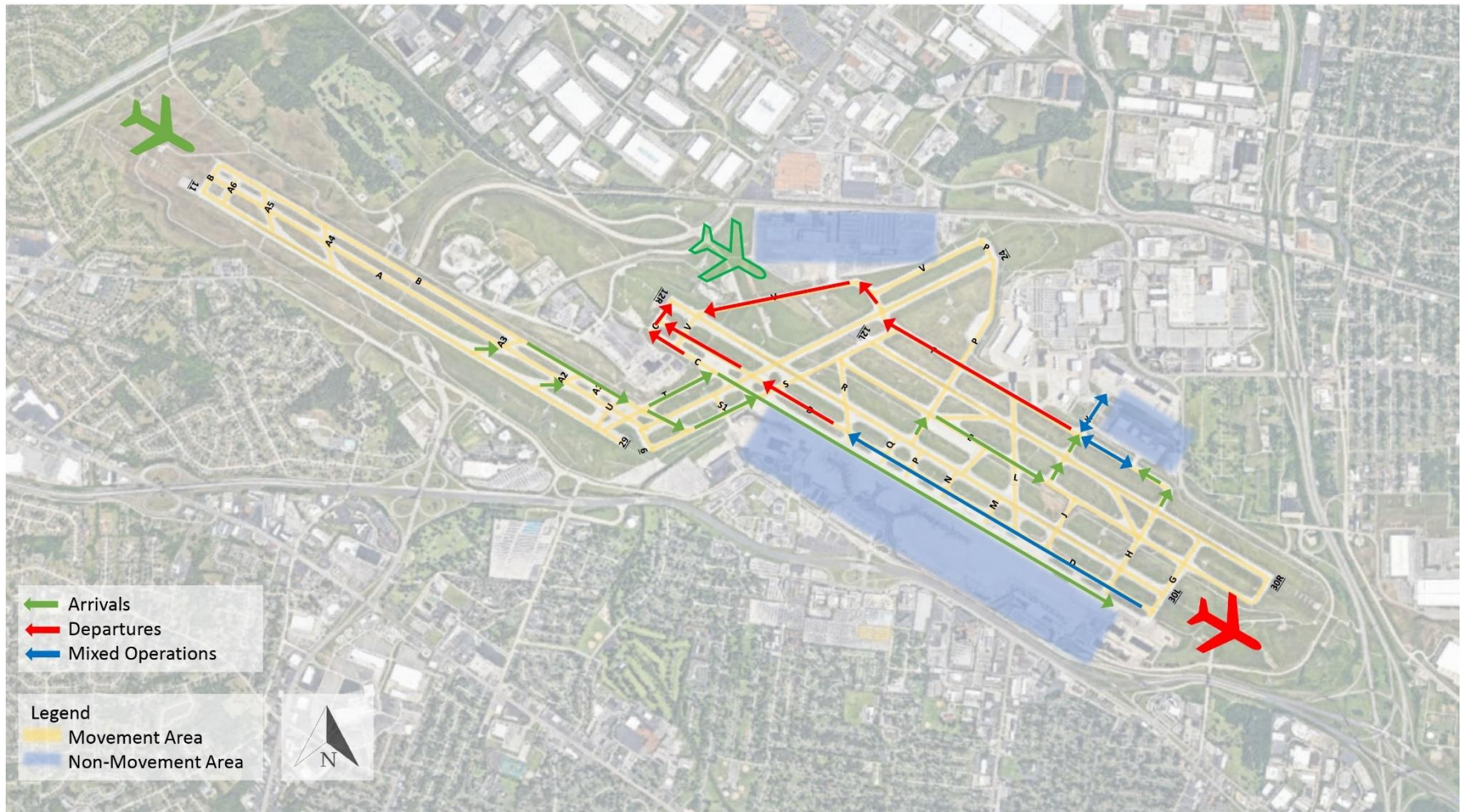
**Figure 2.2-16: Southeast Flow (VMC to IMC-CAT I) Taxiflows**



Sources: St. Louis Lambert International Airport Air Traffic Control Tower Personnel, 2020; CMT, 2020.



**Figure 2.2-17: Northwest Flow (IMC-CAT II+) Taxiflows**



Sources: St. Louis Lambert International Airport Air Traffic Control Tower Personnel, 2020; CMT, 2020.

## UNMANNED AERIAL SYSTEMS

The Boeing Company manufactures the MQ-25 Stingray, an Unmanned Aerial Systems (UAS) aircraft, at STL. The MQ-25 wings are folded before transporting the aircraft by road to MidAmerica St. Louis Airport, east of STL, for flight testing. No other UAS activity occurs at STL at this time.

## AIRSPACE CONFLICTS

There are currently no known airspace or obstruction conflicts at STL. This section will be updated with additional information should any conflicts or issues be discovered when the new obstruction data is collected and analyzed as part of the Airports GIS effort.

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## 2.3 PASSENGER TERMINAL AND GATES

The passenger terminal facilities for commercial flights are depicted in **Figure 2.3-1**. They are located along the southeast edge of the airport property, bordered by Lambert International Blvd to the south, Runway 12R-30L to the north, the MOANG vacant facilities to the west and the Cargo City complex to the east. The main components of the terminal facilities are Terminal 1 (west) and Terminal 2 (south), as well as the apron areas in between the two terminals for deicing and remote overnight parking. The two terminal buildings are separate facilities, with separate access roads and parking facilities.

Terminal observations could not be conducted in person, due to COVID-19 travel restrictions. Information was gathered from STLAA records and through tenant interviews.

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### 2.3.1 TERMINAL 1 FACILITIES

Terminal 1 is the older of the two passenger terminals. The terminal, designed by Minuro Yamasaki, opened in 1956. The terminal's three-domed design was considered a major influence in the design of other terminals in the following decades. Terminal 1 opened as a three-level main terminal, with three single-level concourses, Concourses A, B and C.

Originally, Terminal 1 was a hub for Ozark Airlines and TWA, while also serving other airlines. In 1965, the terminal was expanded with a fourth dome, identical to the other three. In the early 1970s, Concourses A and C were demolished and rebuilt as two-level concourses to accommodate passenger boarding bridges and larger holdrooms, especially for widebody aircraft. Concourse D was added in 1985.

**Figures 2.3-2 through 2.3-13** depict the interior terminal and concourse layouts for the apron, baggage claim and ticketing levels.



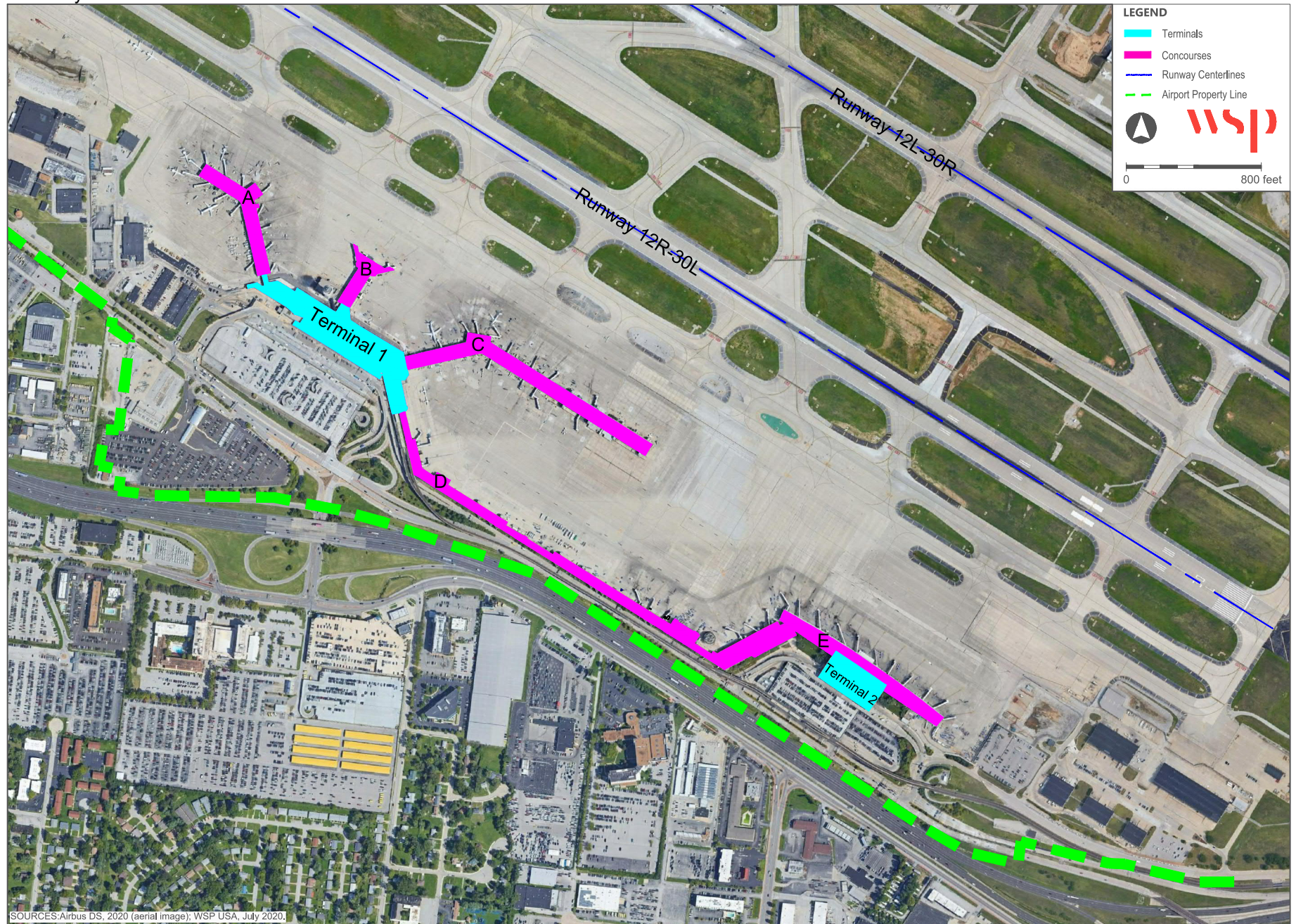
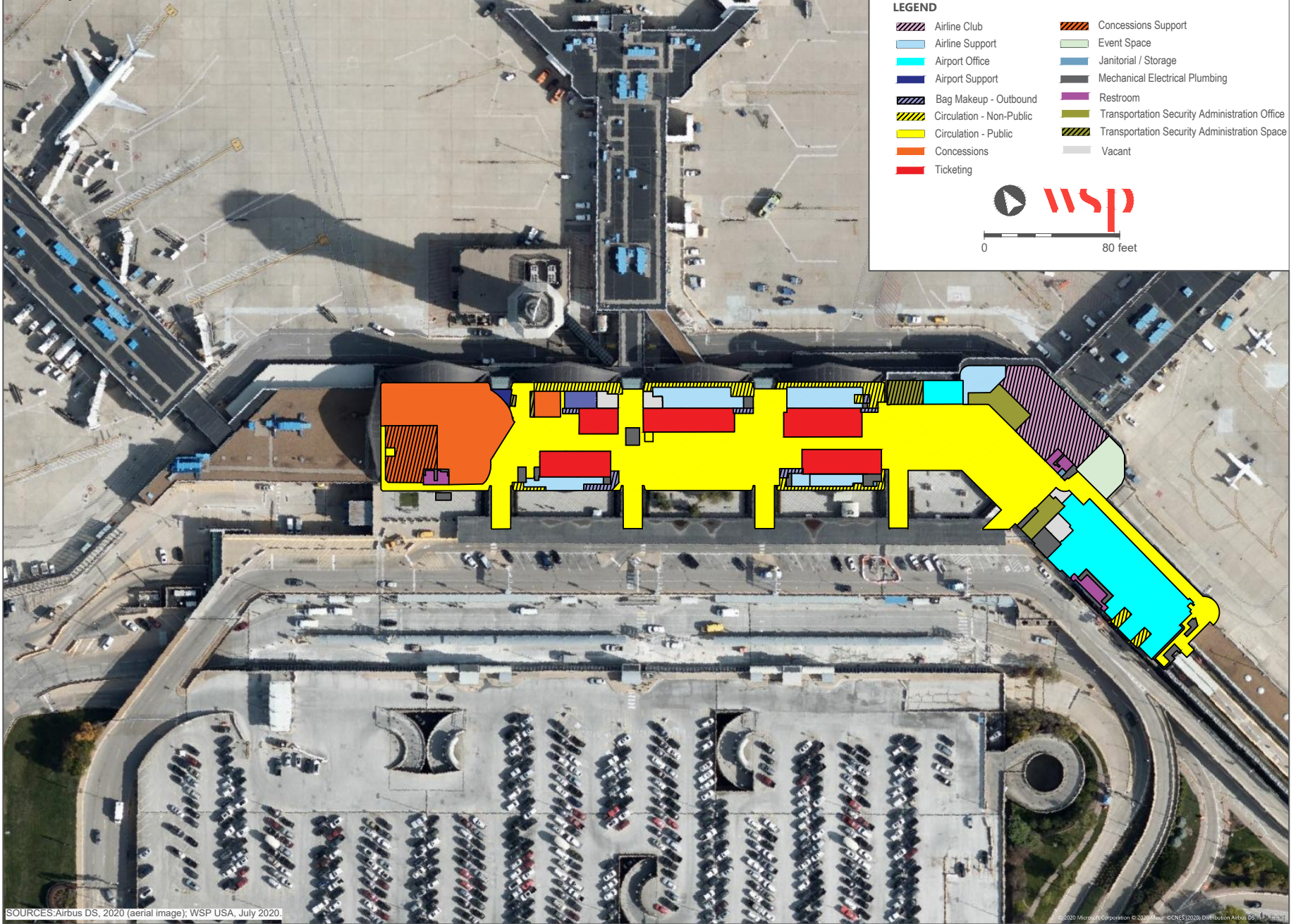




FIGURE 2.3-2  
Terminal 1  
Ticketing Level





**FIGURE 2.3-3**  
 Terminal 1  
 Baggage Claim Level

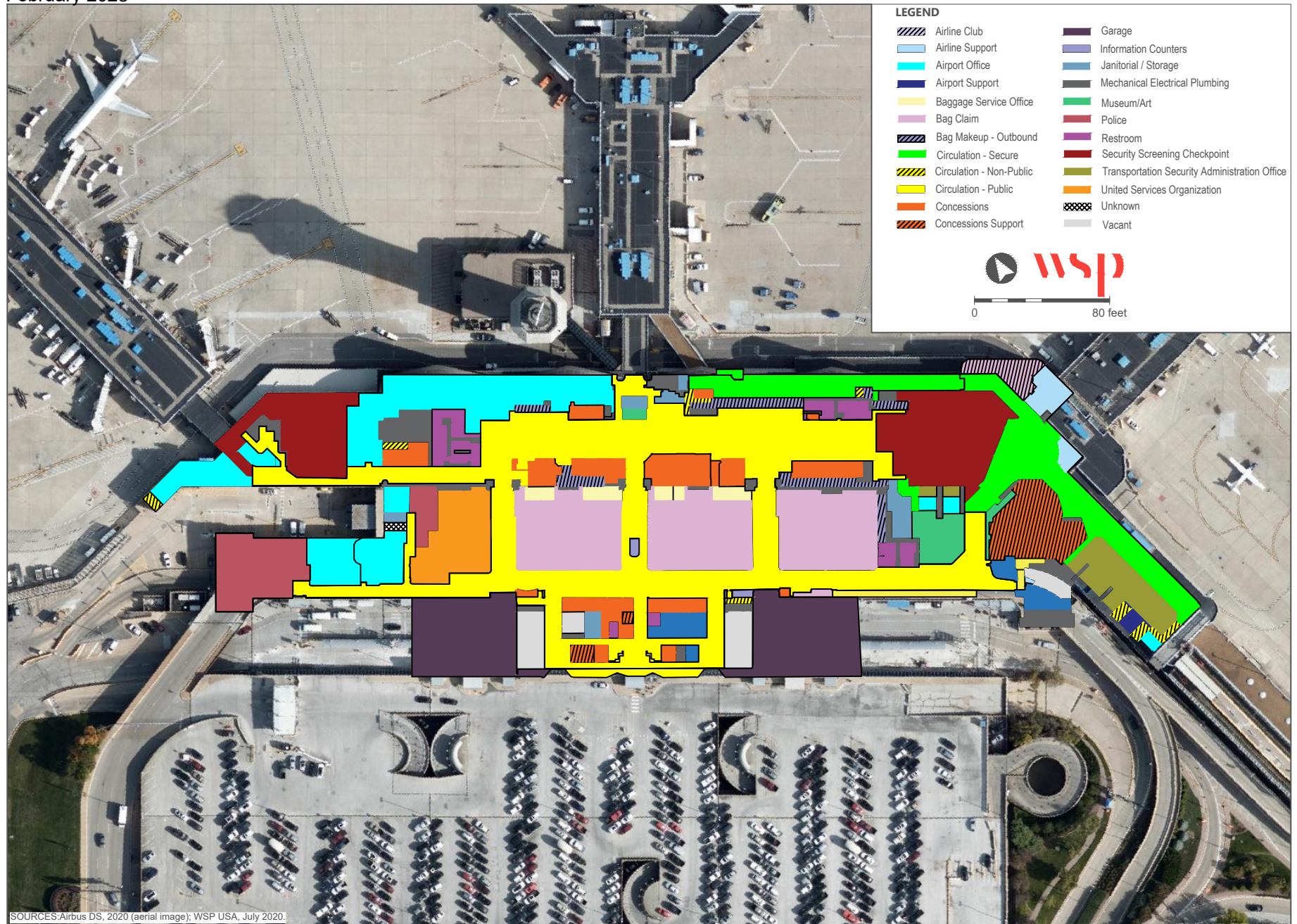
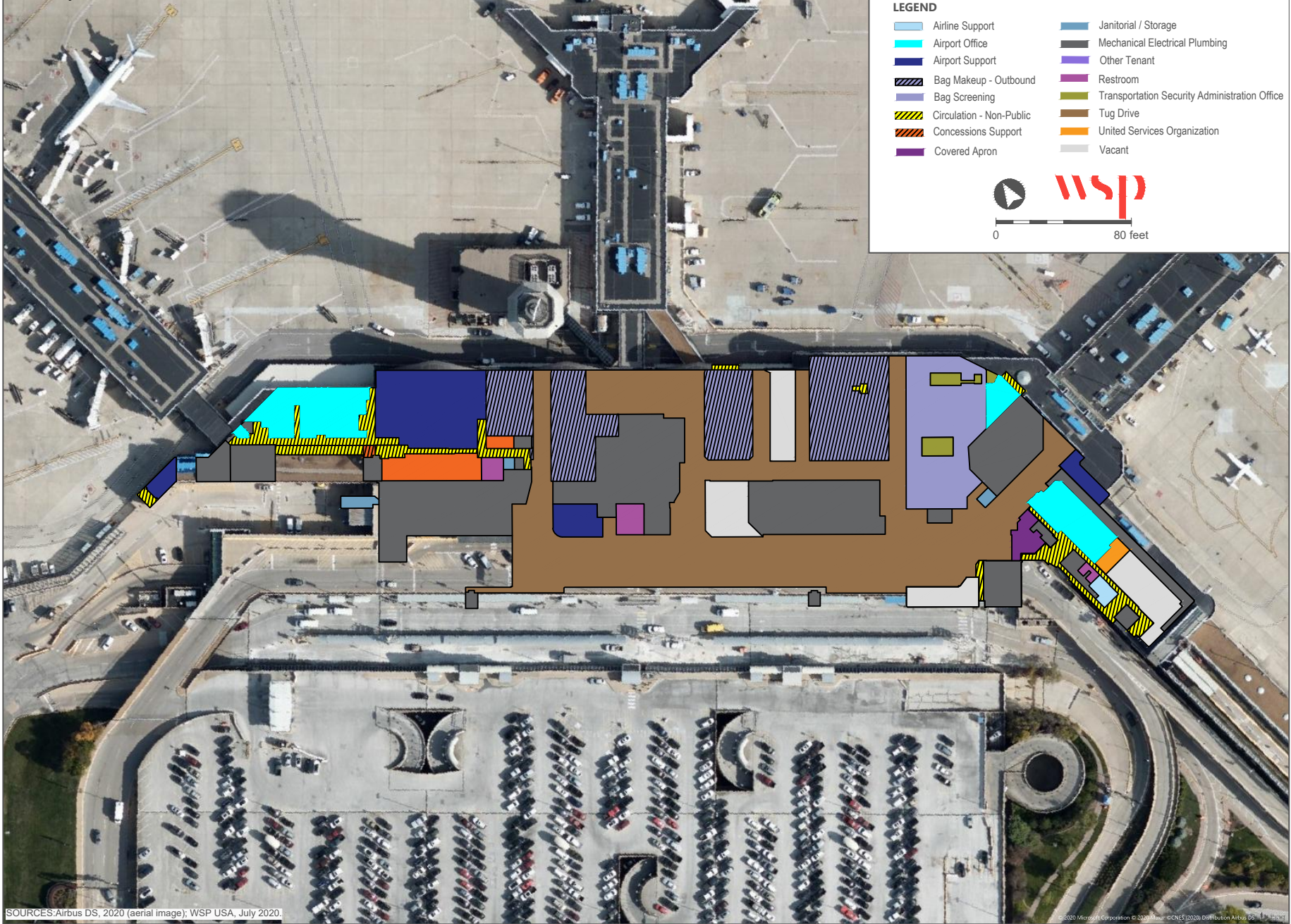


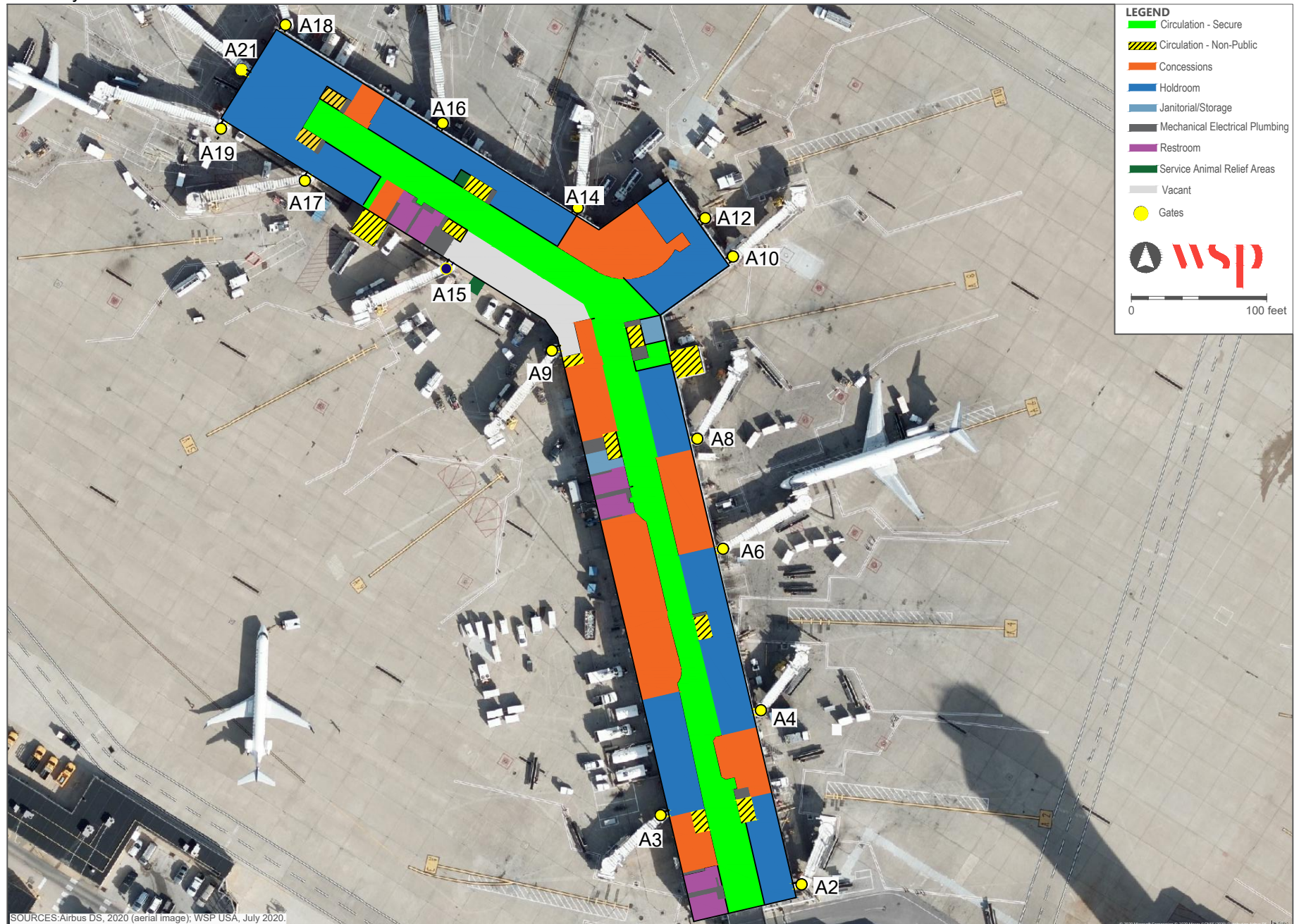


FIGURE 2.3-4  
Terminal 1  
Apron Level



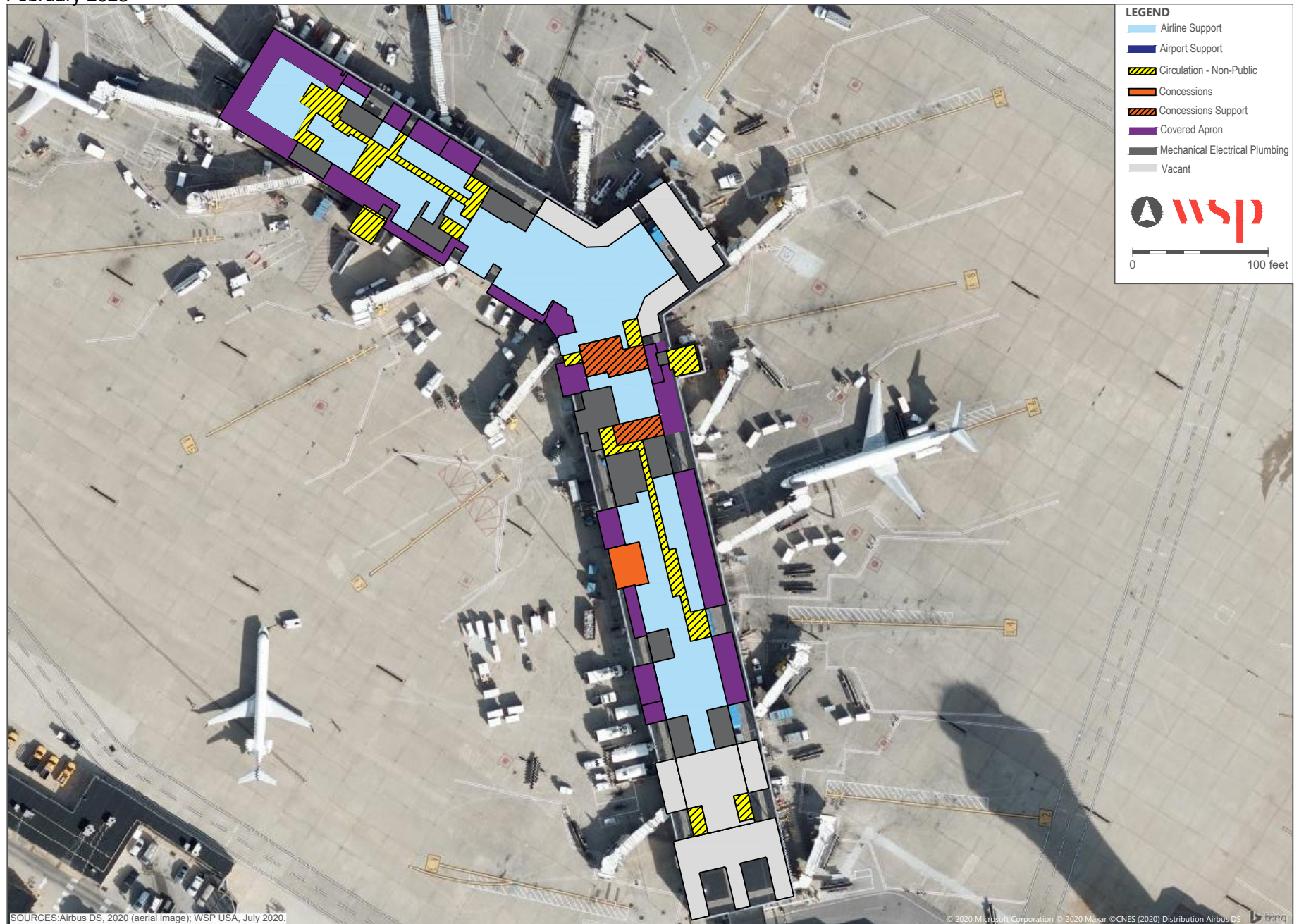


**FIGURE 2.3-5**  
 Concourse A  
 Concourse Level



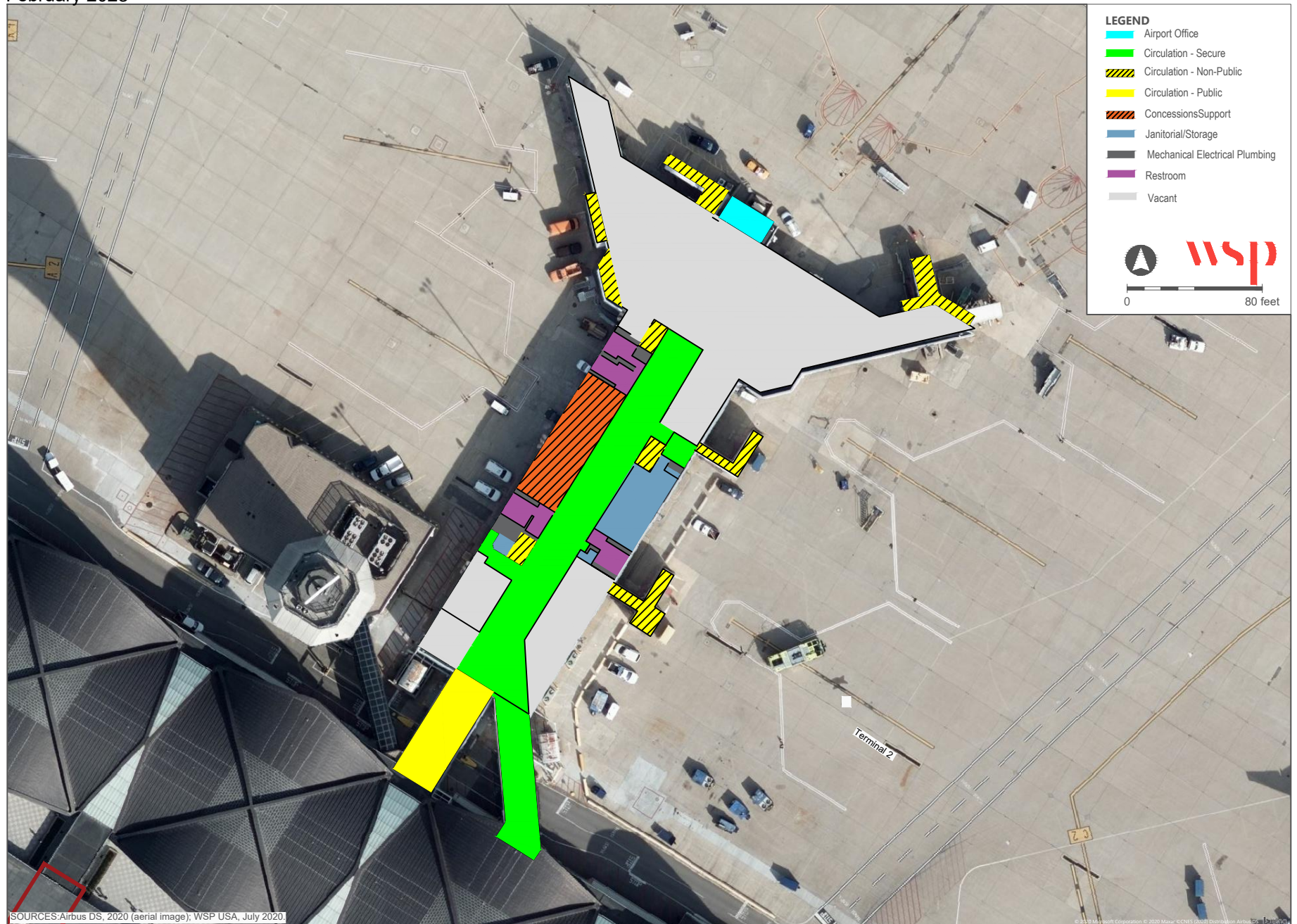


**FIGURE 2.3-6**  
Concourse A  
Apron Level



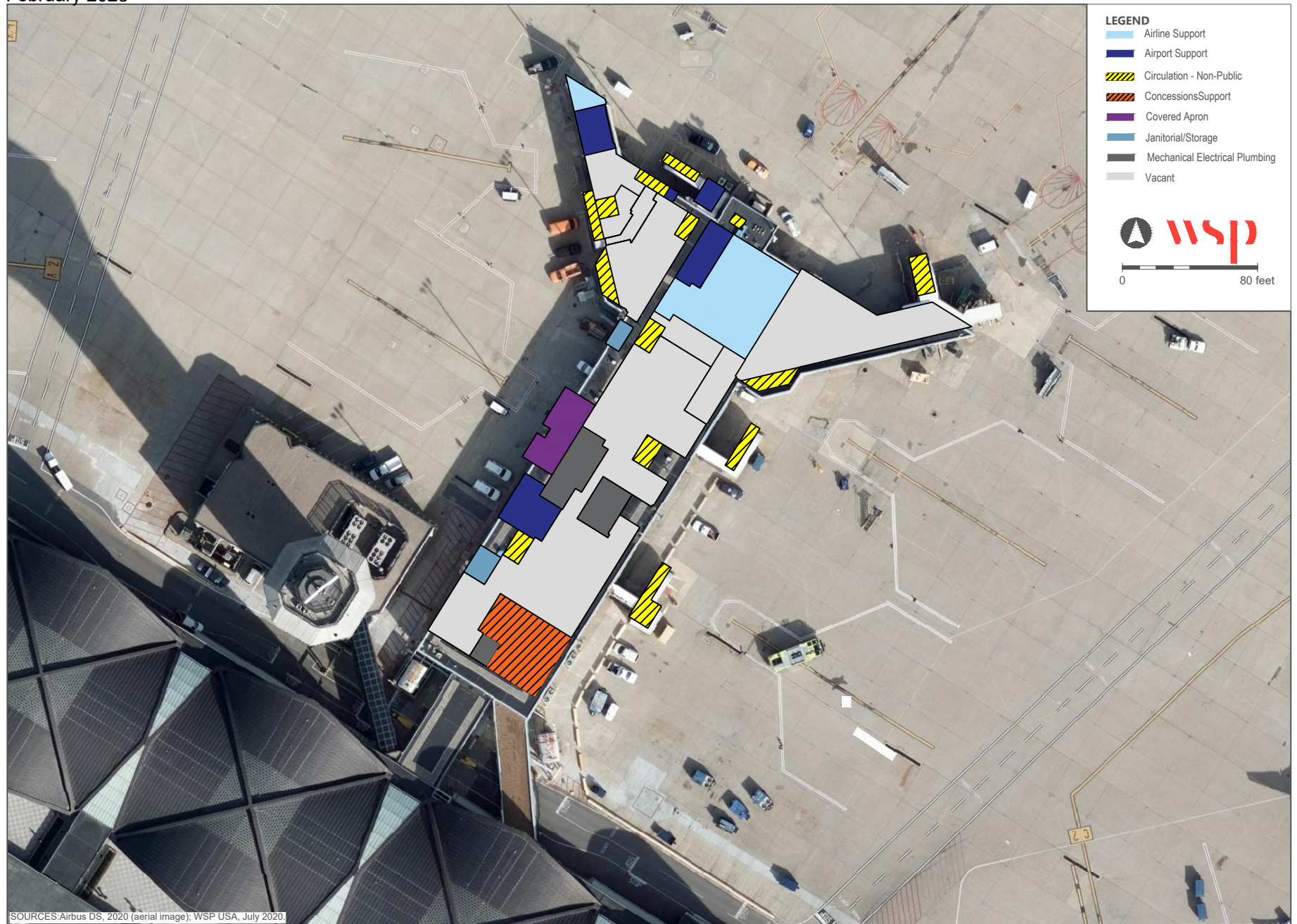


**FIGURE 2.3-7**  
 Concourse B  
 Concourse Level



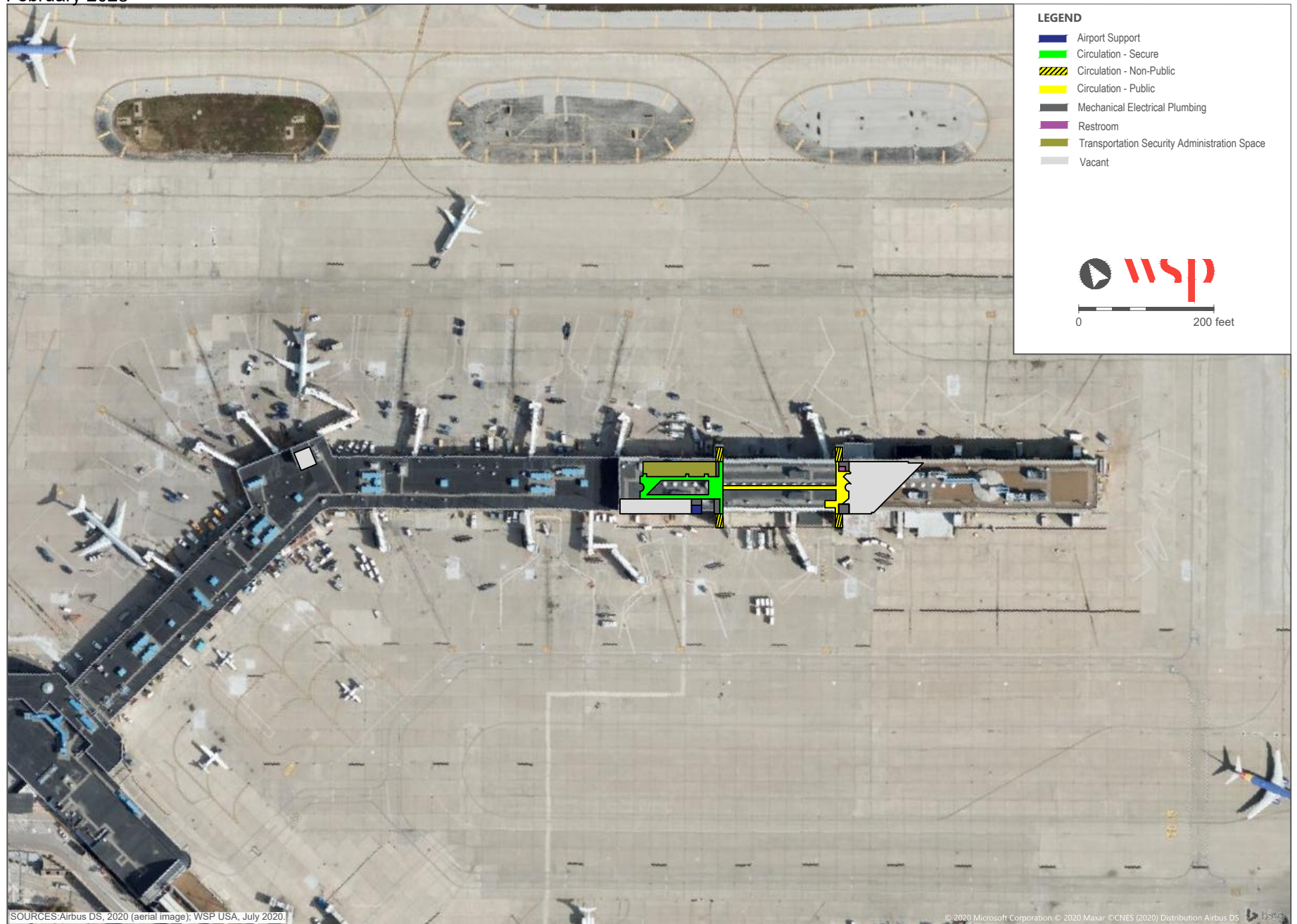


**FIGURE 2.3-8**  
Concourse B  
Apron Level

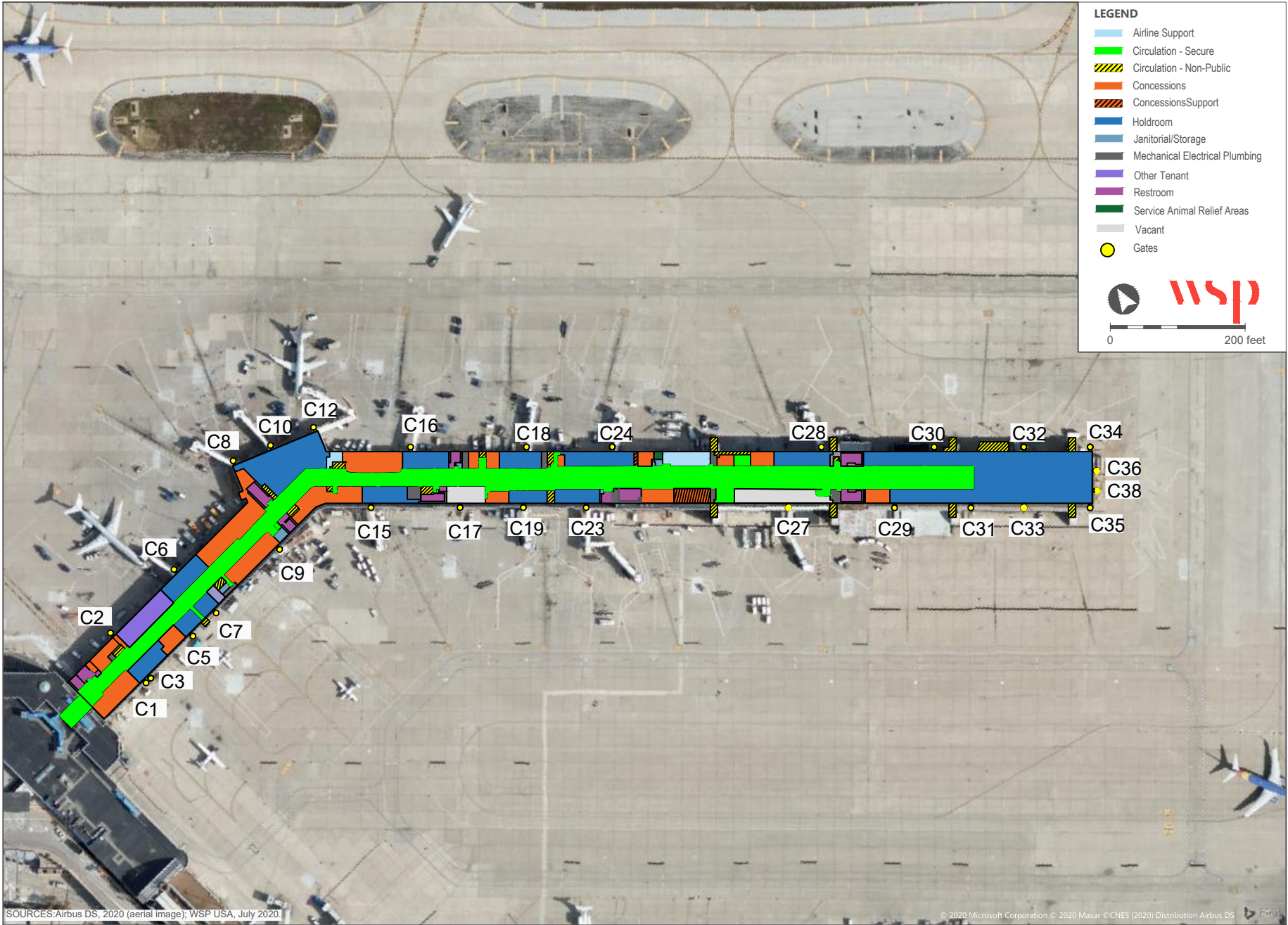




**FIGURE 2.3-9**  
Concourse C  
Upper Level



**FIGURE 2.3-10**  
Concourse C  
Concourse Level





**FIGURE 2.3-11**  
Concourse C  
Apron Level

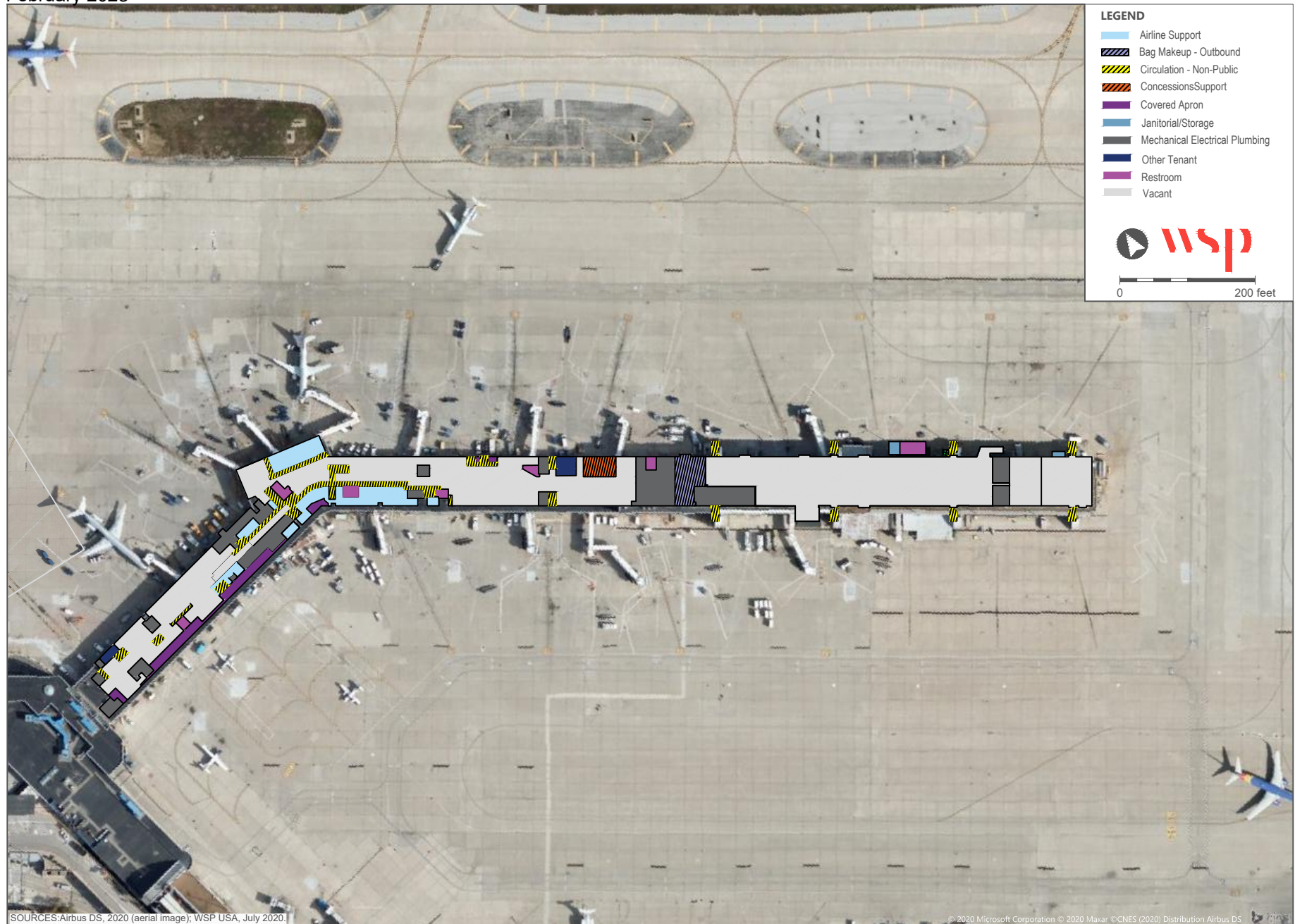




FIGURE 2.3-12  
Concourse D  
Concourse Level



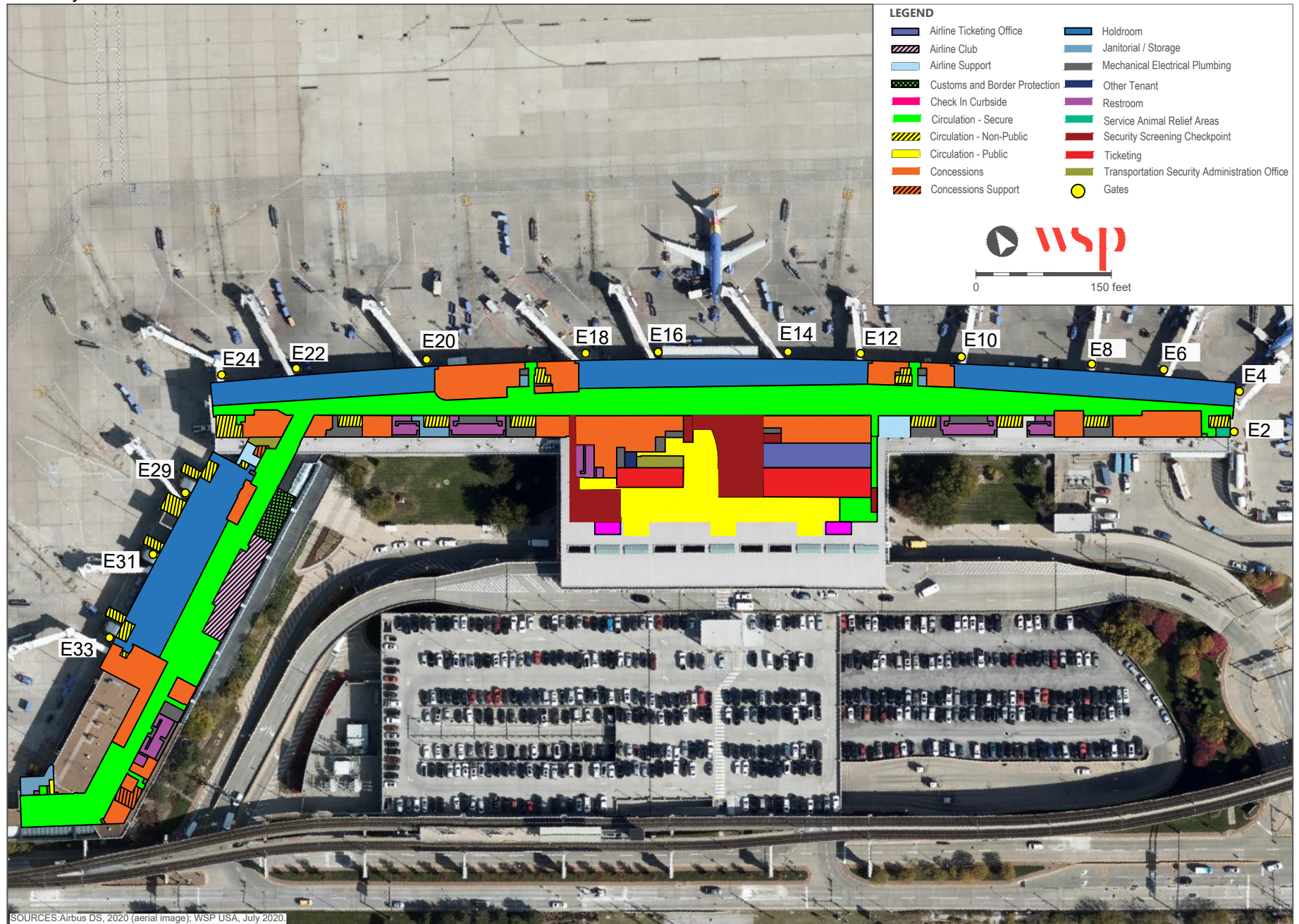


FIGURE 2.3-13  
Concourse D  
Apron Level





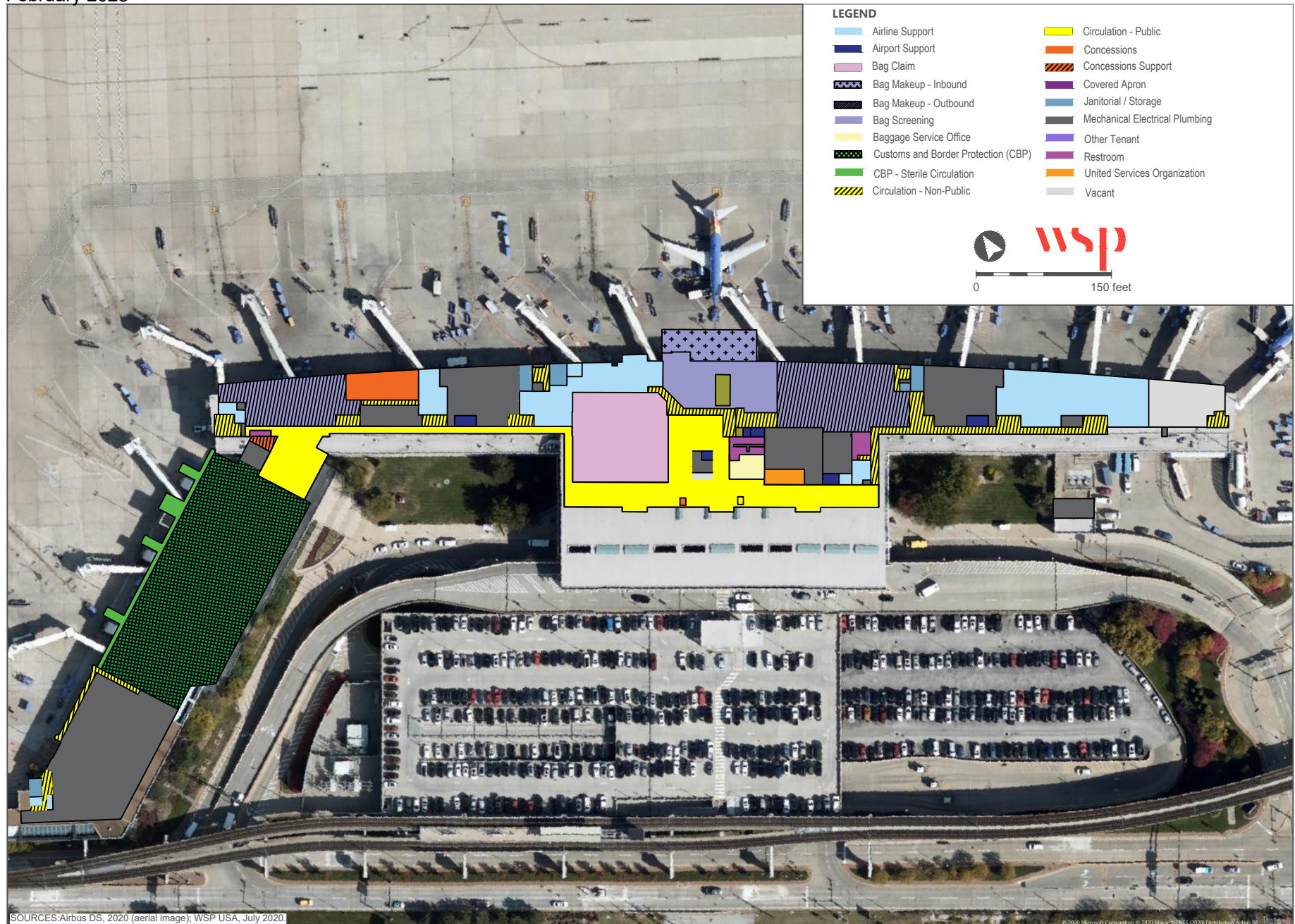
**FIGURE 2.3-14**  
 Terminal 2 / Concourse E  
 Ticketing and Concourse Level





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**FIGURE 2.3-15**  
Terminal 2 / Concourse E  
Baggage Claim and Apron Level



### 2.3.2 TERMINAL 2 FACILITIES

Terminal 2 was built in 1998 as a reliever for Terminal 1 due to the growth of Southwest Airlines. It is a two-level terminal, originally with 12 attached gates. These were also connected to Concourse D. Over the course of the past decade, Concourse E has been expanded from 12 to 18 gates. The additional 6 gates are refurbished gate positions formerly of Concourse D. A new FIS was also added as part of the gate expansion.

### 2.3.3 AIRCRAFT GATES

The Airport has a large number of gates, due to previous hub operations of TWA, later downsized after the acquisition by American Airlines. Many of these gates have been “mothballed” with the holdrooms and related operations areas closed off, and passenger loading bridges (PLBs) removed. Thus, while there is the potential to rapidly expand gate capacity by reactivating these gates, there are costs associated with such a reactivation.

**Table 2.3-1** summarizes the total number of usable aircraft parking positions by terminal. Mothballed gates on Concourses C and D with the potential for re-use total 20 positions, based on the aircraft mix prior to de-activation.

**Table 2.3-1: Aircraft Parking Positions**

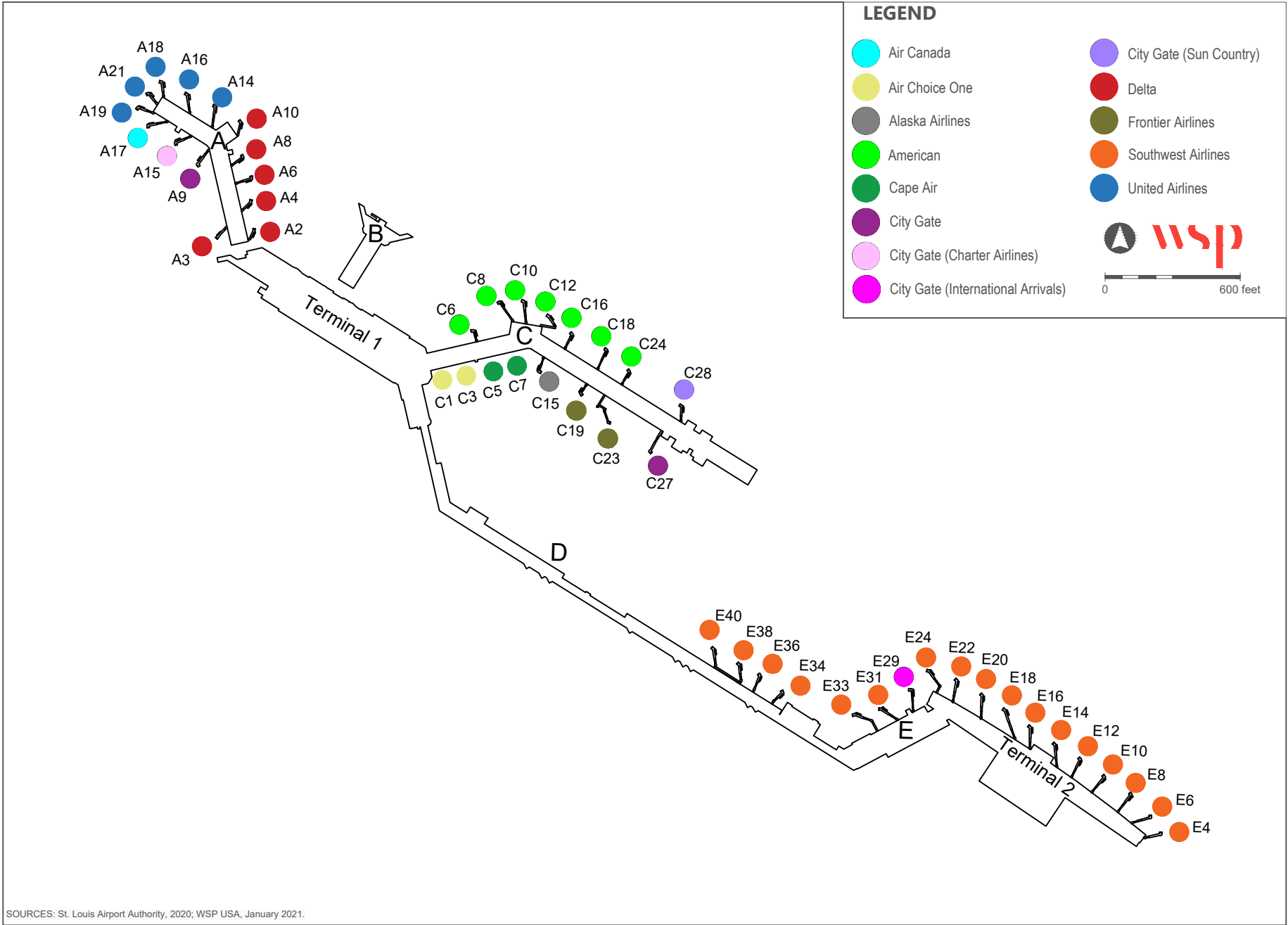
	ACTIVE	INTERNATIONAL CAPABILITY	MOTHBALLED
<b>Terminal 1</b>			
<b>Concourse A</b>	14		
<b>Concourse B</b>	0		
<b>Concourse C</b>	12 + 10 apron		9
<b>Concourse D</b>	0		11
<b>Total Terminal 1</b>	26 + 10 apron		20
<b>Terminal 2</b>			
<b>Concourse E</b>	18	3	
<b>Total Terminal2</b>	18	3	
<b>TOTAL</b>	44 + 10 apron	3	20

Sources: St. Louis Airport Authority, 2020; Hirsh Associates, October 2020.

**Figure 2.3-16** depicts gate allocations.



**FIGURE 2.3-16**  
Terminal Gate Allocation



The breakdown by concourse is as follows:

## CONCOURSE A

Concourse A has 14 usable gates:

- Delta (6 gates)
- United (5)
- Air Canada (1)
- City gates (2). Gate A15 is used primarily for charters. A9 is also available, but rarely used, so Concourse A is considered to have 13 gates for purposes of current gate utilization.
- Gate A12 is vacant and has no PLB. Its holdroom is shared with A10 (Delta)

## CONCOURSE B

The 10-gate concourse is closed for all airline operations, and all PLBs were removed. The holdroom level spaces are used for special functions, and some of the apron level space is used for Airport Operations.

## CONCOURSE C

The concourse has 12 usable gates, as well as 10 apron parking positions used for essential air service:

- Usable gates (with PLB):
  - American (7 gates)
  - Alaska (1 gate)
  - Frontier (2 gates)
  - Contour (1 gate)
  - City gate (1 gate). Gate C28 used by Sun Country.
- Apron positions only (ground loading):
  - Air Choice One/Cape Air (2 gates). These are ground-loaded gates striped for 10 turboprop aircraft.
- Unusable gates:
  - The holdroom for Gate C2 was converted to concessions space.
  - Gate C9 has a PLB, but the gate is not usable with Gates C5 and C7 striped for turboprop operations.
  - Gate C29 also has a PLB, but is located in the closed portion of the concourse.
  - 13 Concourse C gates have been closed, and all but one of the PLBs removed.



## CONCOURSE D

Concourse D has been closed. Some gates have been reactivated as follows:

- Three gates closest to Terminal 1 with old pedestal-style PLBs were active as City gates until a few years ago when no longer needed. These are presently closed.
- Two ground-loaded gates were used by Cape Air until the airline was relocated to Concourse C. These are presently closed.
- Four gates closest to Terminal 2 were reactivated for use by Southwest and renamed as “E” gates.
- Eight gates in the central portion of the terminal are closed and the PLBs removed.

## CONCOURSE E

Concourse E has 18 usable gates, including four on a portion of Concourse D, renamed E Gates:

- Southwest Airlines (17 gates). Two of these gates (E31 and E33) have international arrivals capability.
- City gate (1). This is used for international arrivals other than Southwest Airlines. The gate (E29) was also used for departures when an international carrier (WOW Air) operated from Terminal 2.

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### 2.3.4 REMAIN OVERNIGHT AND REMOTE PARKING POSITIONS

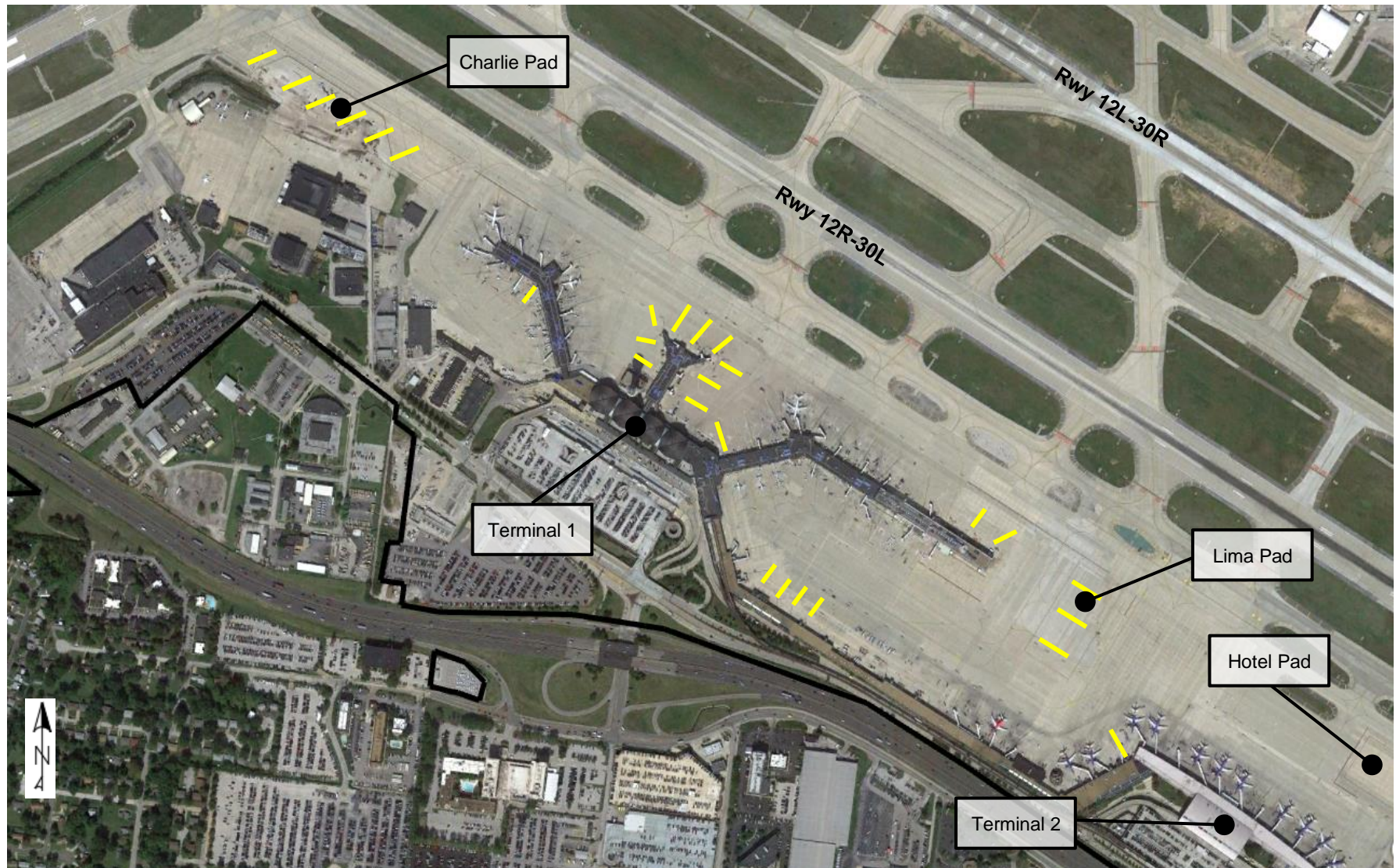
Airlines may need to park their aircraft overnight (RON), or for short-term periods, either at empty contact gates, or at remote parking positions. **Figure 2.3-17** depict available RON and remote parking positions.

The RON needs of the three major carriers, American Airlines, Delta Airlines and United Airlines, routinely exceed their number of leased gates. The following RON positions are used (as of 2019):

- American Airlines:
  - Concourse B North Ramp: 3 ADG III parking positions
  - Concourse B East Ramp: 3 ADG III parking positions
  - Concourse C: Gates C2, C32, C34.
- Delta Airlines:
  - Concourse B North Ramp: 1 ADG III parking position
  - Concourse B West Ramp: 2 ADG III parking positions
  - City Gate: Gate A9
- United:
  - Charlie Pad: 6 ADG III parking positions

Occasionally, Frontier and Alaska RONs park at Concourse D between Gates D6 and D16 (4 ADG III parking positions).

**Figure 2.3-17: Remain Overnight and Remote Positions**



Sources: Google Earth Pro, 2020 (aerial basemap); WSP USA, October 2020 (annotations).



Southwest Airlines RONS are rare, and although Southwest Airlines aircraft could park at the Concourse D gates, the City Gate E29 is preferred.

The Lima Pad has 3 ADG III positions available for RONS, although not preferred by the airlines. The Lima Pad can handle up to ADG V and ADG VI aircraft.

The Charlie Pad can handle up to ADG IV aircraft.

The Hotel Pad is reserved for cargo movement and ADG V and VI aircraft.

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### 2.3.5 RAMP CONTROL TOWER

There is no ramp control tower at present. All aircraft pushbacks are either handled by the ATCT if into a movement area (taxiway) or coordinated by airline staff.

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## 2.4 ACCESS AND TERMINAL AREA ROADWAYS

The Airport has a large catchment area for passengers from Missouri and Southern Illinois, making regional roadways and access an important component of the airport experience. This section inventories the roads, access points, wayfinding, and terminal access. This section also inventories the transit facilities and agencies that support access and connectivity to the Airport.

---

### 2.4.1 REGIONAL ACCESS

STL is located near major interstates and a regional and local roadway system, approximately 13 miles from downtown St. Louis. Access to the Airport occurs from I-70, I-170, and local roads Lindbergh Boulevard-Hwy 61/67, Lambert International Boulevard (LIB), Air Cargo Road, and James S. McDonnell Boulevard. STL is also accessed using MetroLink, the regional light-rail system, MetroBus, and transportation network companies. Local and statewide planning documents were reviewed to understand how any improvements would impact the Airport.

The following data was compiled for this regional roadway access inventory:

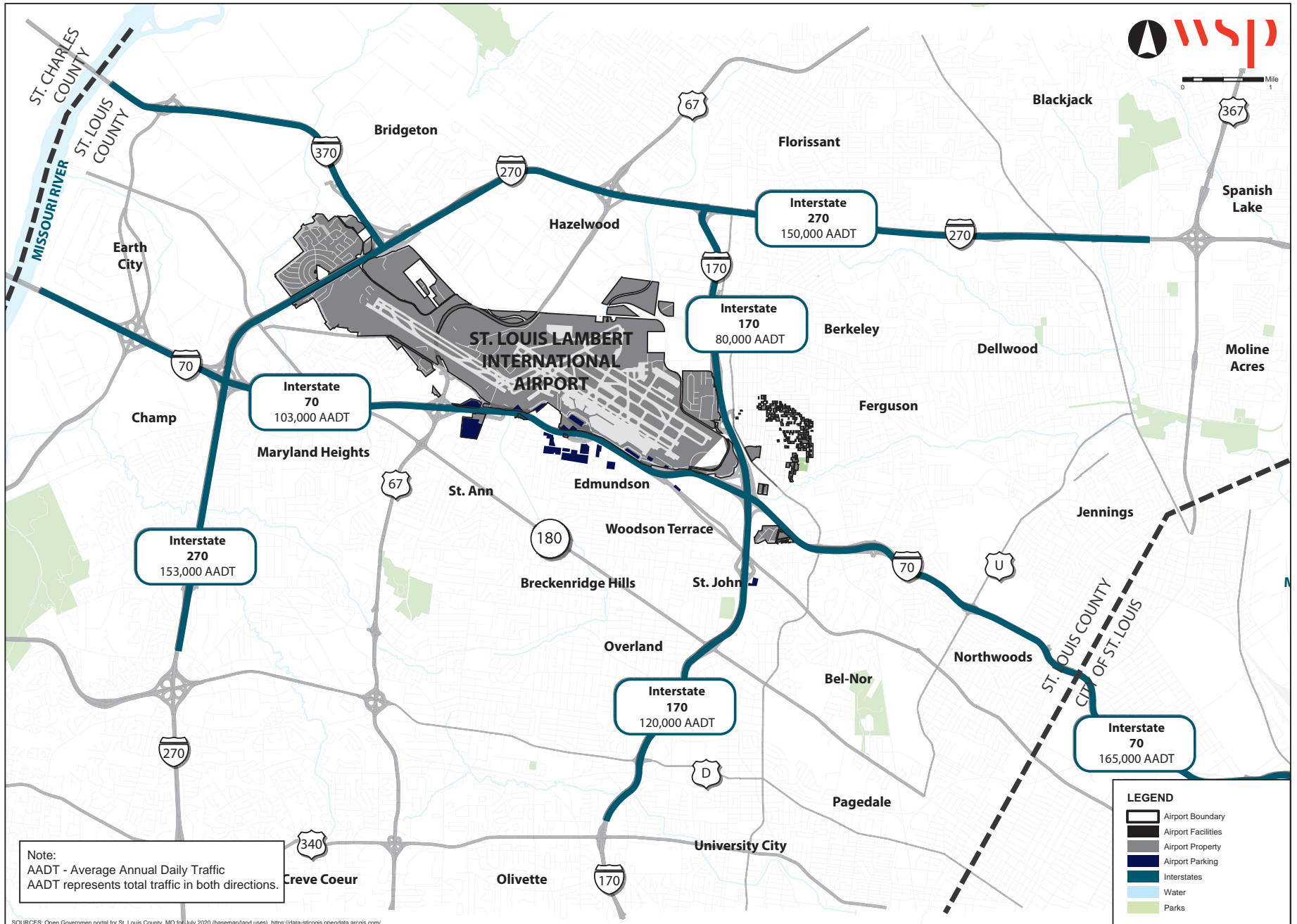
- Major roadways and traffic volumes
- Local roadways
- Transit
- Proposed/planned regional improvement plans

## ROADWAY ACCESS AND TRAFFIC VOLUMES

Three interstate interchanges service the Airport, with connections via local streets, as depicted on **Figure 2.4-1**. Using information from the STLAA, the Missouri Department of Transportation (MoDOT), and St. Louis County Department of Transportation, and conducting field visits, the surrounding road network is described in this section.

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**Figure 2.4-1**  
Regional Access and Traffic Volumes





The Airport entrance to the terminal core is situated along I-70, which is one of the primary east/west regional routes. Along the Airport's eastern edge is I-170, a local north/south interstate with direct access to the Airport. Just a couple of miles west of the Airport lies another north/south route, I-270, which is a loop connection around the St. Louis region.

### *I-70*

This regional east/west interstate connects to downtown St. Louis and into Illinois to the east, and St. Charles County, and west across the state to Kansas City to the west. I-70 is an access-controlled facility and has a posted speed limit of 60 miles per hour (mph). In 2019, I-70 carried between 103,000 and 170,000<sup>2</sup> vehicles a day. This interstate is near capacity, especially during peak hours. Figure 2.4-1 also shows the relative daily traffic volumes near the Airport. The interstate is directly adjacent to the Airport, in some locations less than 200 feet from Airport buildings, and has six lanes, with three lanes in each direction. There are three interchanges that serve as access to the Airport terminal core with direct connection from I-70. There is also an interchange at US 61/67-Lindbergh Boulevard that connects with Airport facilities on the west end and has a tunnel underneath one of the Airport's runways.

### *I-170*

This local north/south interstate connects North St. Louis County to I-64 on the south. I-170 is also an access-controlled facility and has a posted speed limit of 60 mph. In 2019, I-170 carried between 80,000 and 125,000 vehicles a day. The interstate runs along the eastern edge of the Airport property and has direct access from both northbound and southbound lanes to the easternmost interchange connection with Lambert International Boulevard.

### *I-270*

This regional east/west interstate loops around the St. Louis region, connecting to all the major regional interstates, with a connection to I-70 just west of the Airport and I-170 just north of the Airport. I-270 is an access-controlled facility and has a posted speed limit of 60 mph. In 2019, I-270 carried over 150,000 vehicles a day. Though there is no direct connection to the Airport from I-270, there are interchanges at James S. McDonnell Boulevard, US 61/67-Lindbergh Boulevard, I-170 and I-70 that have connections to the Airport.

## AIRPORT ACCESS FROM THE EAST AND NORTH

There are multiple ways to connect to the Airport for drivers coming from the east or northeast/north. Each of these areas have multiple routes a driver could take because of the number of local roadways surrounding the Airport.

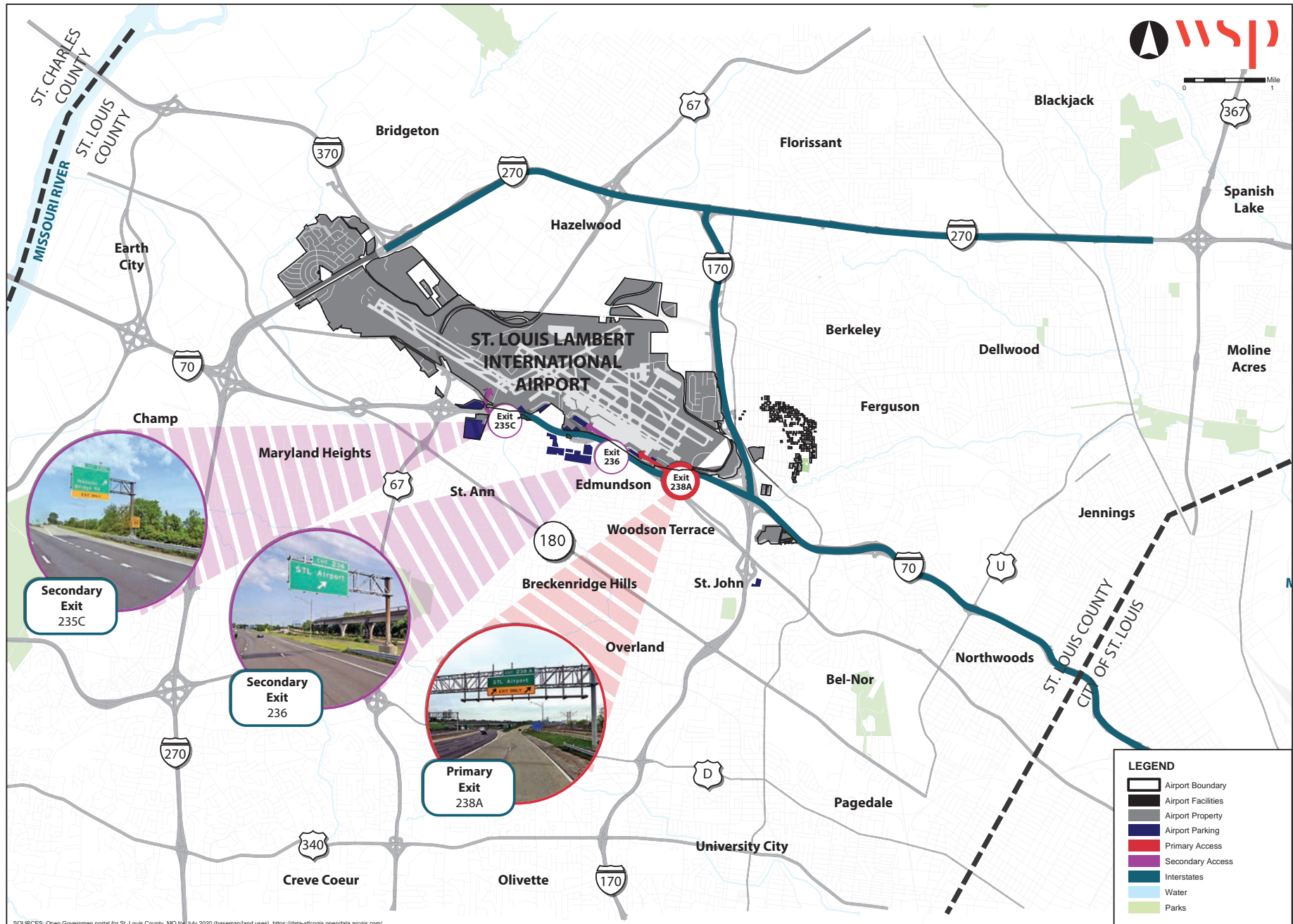
Traffic from the east is coming on I-70 westbound and has multiple access points depending on their parking destination. The primary exit, first access point, is Exit 238A and is labelled "STL Airport", as shown in **Figure 2.4-2**. This exit takes the driver nearest to Terminal 2 on the eastern end of Lambert International Boulevard.

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<sup>2</sup> Missouri Department of Transportation, 2019 Traffic Volume Maps, <https://www.modot.org/traffic-volume-maps>, accessed April 2020.

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Airport Master Plan  
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**Figure 2.4-2**  
Regional Airport Access from East and North





However, depending on where drivers are parking, some may go past this point to secondary exits Exit 236, also labeled “STL Airport” and often referred to as “Airflight Drive”, or Exit 235C, labelled “Natural Bridge”, and sometimes referred to as “Cypress Road”. Traffic from the northeast/north is likely coming from Illinois or North County via I-270 to I-170. Drivers would then take southbound I-170 Exit 7B to westbound I-70. Drivers could also use US 61/67-Lindbergh Boulevard or James S. McDonnell Boulevard from the north to head south and access the passenger terminals.

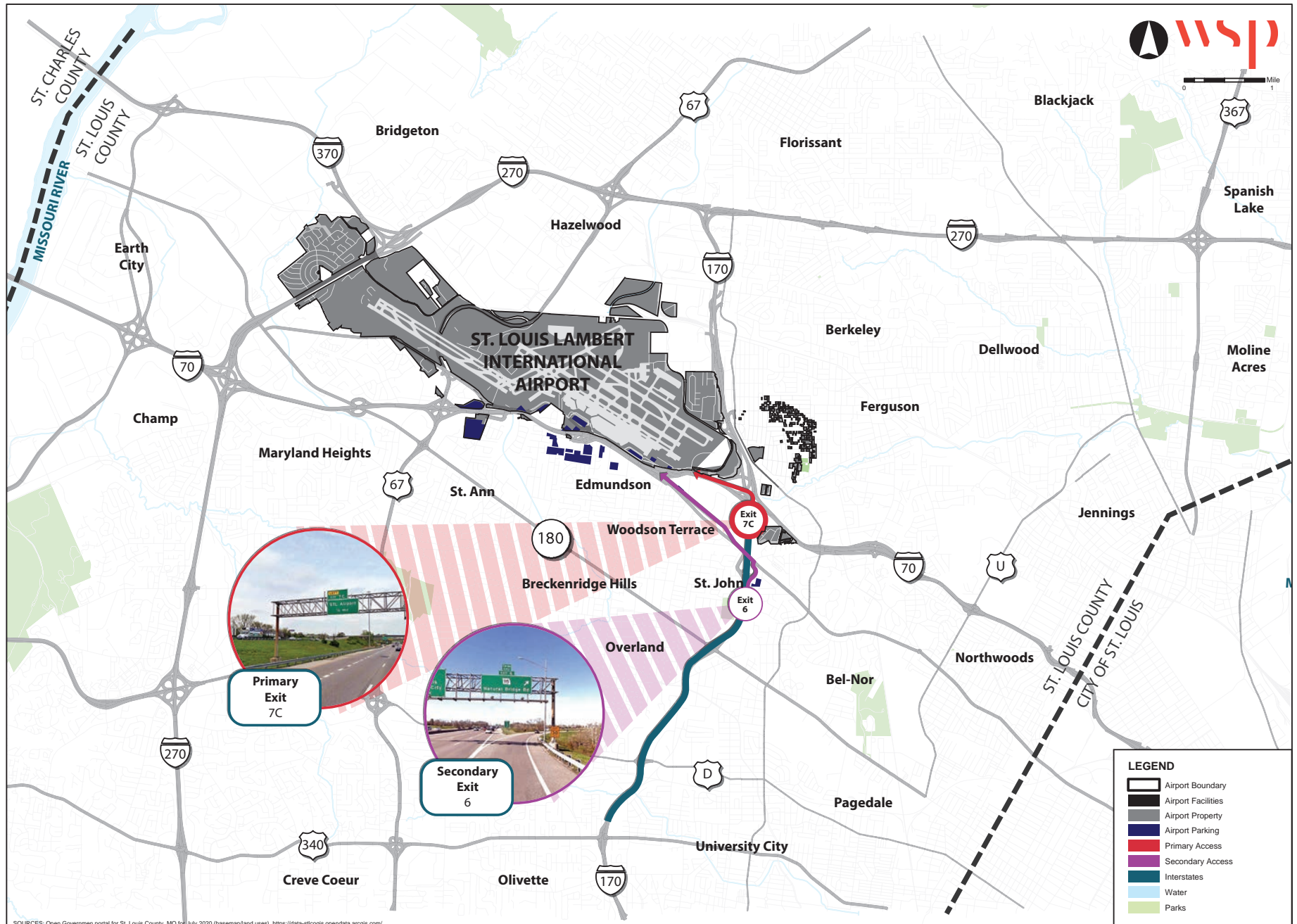
## AIRPORT ACCESS FROM THE SOUTH

Traffic from the southeast is likely using I-170 to I-70 westbound, using Exit 7C, as depicted on **Figure 2.4-3**. This direct ramp connects drivers to Lambert International Boulevard and is separated from westbound I-70 traffic. Other options are using I-170 to Natural Bridge-Route 115 Exit 6. This exit is labelled “Cargo City”.

## AIRPORT ACCESS FROM THE WEST

Traffic from the west takes I-70 eastbound and has multiple exits to access the Airport, as shown on **Figure 2.4-4**, depending on where the driver is parking. The first exit, Cypress Road/Airport Exit 235C, doesn’t provide direct access to the Airport; however, it does provide access to public airport parking (Super Park Lots B, C and D). The next exit, Exit 236, is labelled “STL Airport”, and provides access to the south outer road, Pear Tree Drive, which then provides access to the Airport. The third exit is Natural Bridge-Route 115, Exit 237, and is labeled “Cargo City”. Although this exit appears to not provide direct access to the Airport, passengers sometimes use this exit when returning a rental car.

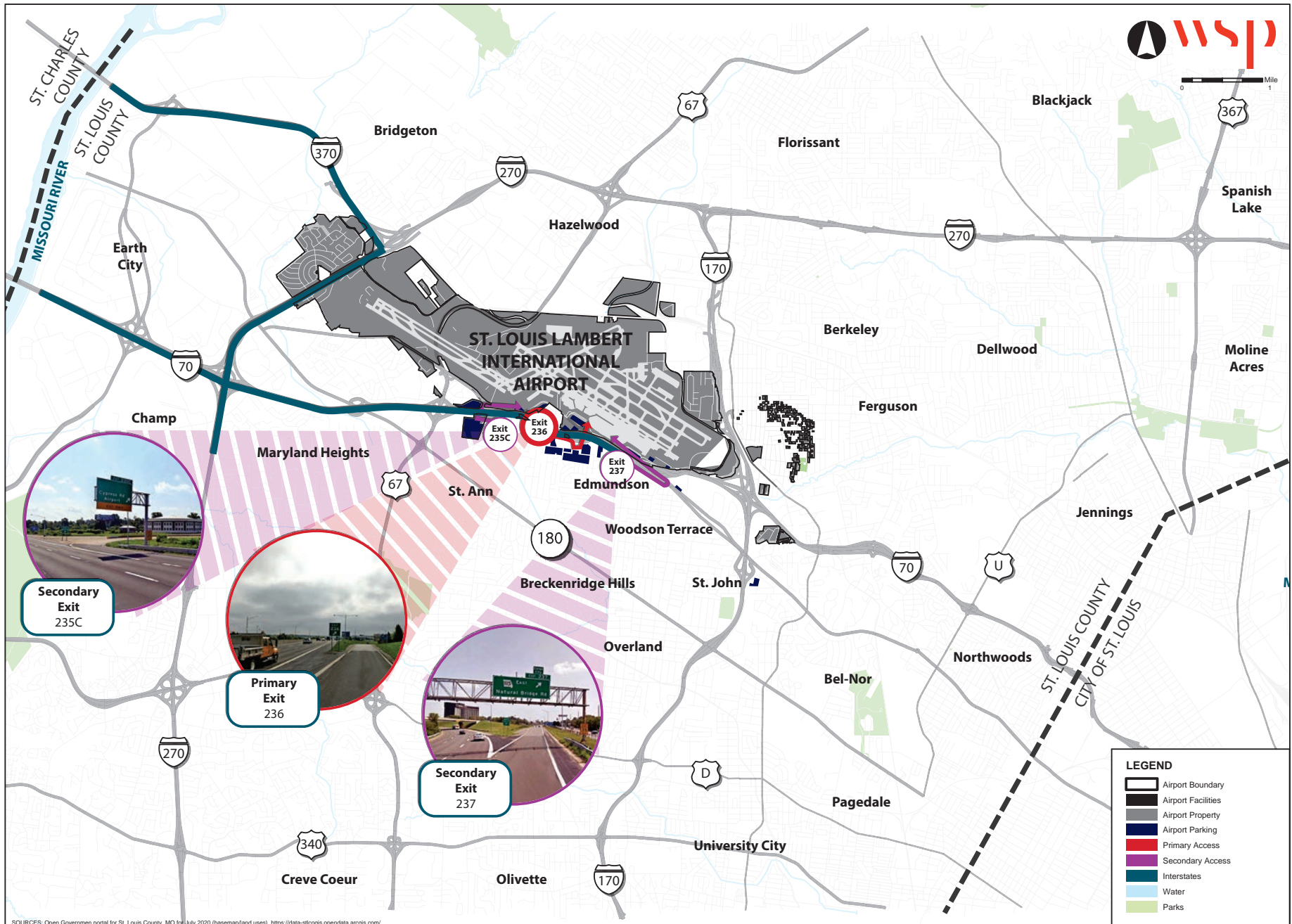
**Figure 2.4-3**  
 Regional Airport Access from the South





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**Figure 2.4-4**  
Regional Airport Access from the West



Both light rail and bus routes offer transit options to STL.

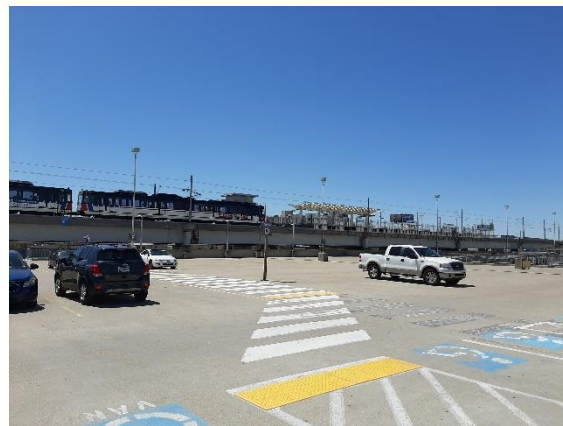
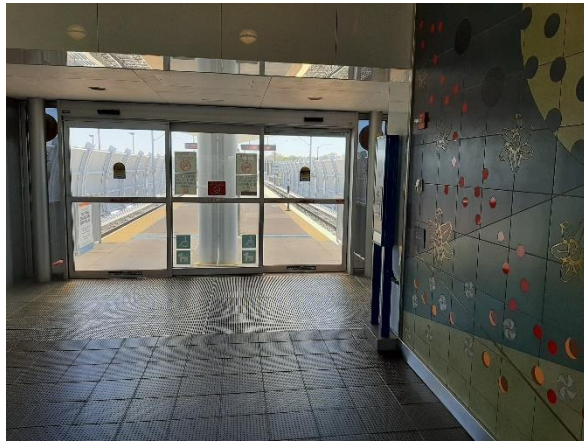
MetroLink serves as the St. Louis metropolitan region's commuter rail system. The Metrolink Red Line's western terminus is at the Airport, with stations at both Terminals 1 and 2. The Metrolink Red Line extends through downtown St. Louis and out to Shiloh-Scott Station in St. Clair County, Illinois. The MetroLink rail stations are shown in **Figure 2.4-5**. MetroLink has a passenger peak capacity of 1,800 single directions per hour and a passenger capacity per vehicle of 70 seated and over 100 standing. MetroLink operates at both STL terminal stops, every 20 minutes, between 4:56 a.m. and 12:58 a.m.

The map illustrates the St. Louis MetroLink commuter rail system, showing the Red Line and Blue Line routes. The Red Line (indicated by a red line with white circles) starts at Lambert Airport Terminal 1 and Terminal 2, travels south through North Hanley, UMSL-North, UMSL-South, Rock Road, Webster, Delmar Loop, Forest Park-DeBaliviere, Central West End, Cortex, 8th & Pine, Laclede's Landing, Stadium, East Riverfront, 5th & Missouri, Emerson Park, Jackie Joyner-Kersey Center, Washington Park, Fairview Heights, Memorial Hospital, Swansea, Belleville, and ends at Shiloh-Scott. The Blue Line (indicated by a blue line with white circles) starts at Shiloh-Scott, travels north through Belleville, Swansea, Memorial Hospital, Fairview Heights, Washington Park, Jackie Joyner-Kersey Center, Emerson Park, 5th & Missouri, East Riverfront, Stadium, Civic Center, Union Station, Grand, Central West End, Skinker, Forest Park-DeBaliviere, Delmar Loop, Webster, Rock Road, UMSL-South, UMSL-North, North Hanley, and ends at Lambert Airport Terminal 1 and Terminal 2. The map also shows major highways (I-70, I-55, I-44, I-270, I-64, I-255, I-240, I-170, I-155, I-140, I-120, I-100, I-90, I-80, I-70, I-60, I-55, I-44, I-35, I-25, I-20, I-15, I-10, I-5, I-4, I-3, I-2, I-1) and the Mississippi River. A legend in the top right corner defines the line colors, station types (Park-Ride, Parking, Parking Long-Term), and the Primary Transfer Station (T). A north arrow is located in the bottom right corner.

At STL Terminal 1, passengers boarding MetroLink exit the terminal through Door MT1, on the upper level, as shown in **Figure 2.4-6** (left photo). Transit access from Terminal 1 is signed well, accessible, and provides shelter for passengers as they wait for trains in the terminal. At STL Terminal 2, passengers boarding MetroLink must walk through the parking garage to access the station, as shown in Figure 2.4-6 (right photo). This connection is not direct and walking between the terminal and the station through the parking lot is a challenge for passengers, especially those who are not from St. Louis.



**Figure 2.4-6: Terminal Access to MetroLink (Terminal 1 and Terminal 2)**

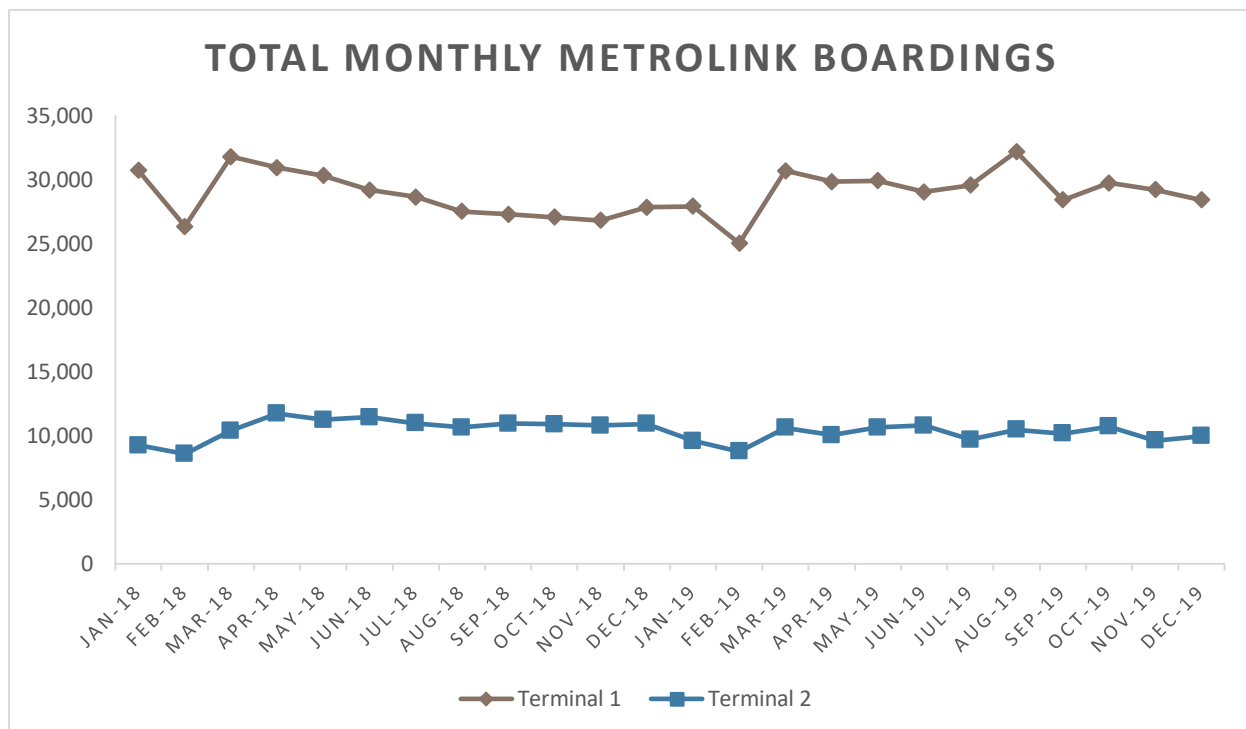


Source: WSP USA, Field Observations, April 2020.

Ridership data for MetroLink shows that monthly and daily boardings for 2018 and 2019 were relatively steady. Monthly MetroLink boardings at Terminals 1 and 2 are shown in **Figure 2.4-7**. Terminal 1 boardings averaged 30,000 per month and Terminal 2 boardings averaged 10,000 per month. **Figure 2.4-8** shows average daily boardings at the terminals. Boardings at Terminal 1 are significantly higher than at Terminal 2.

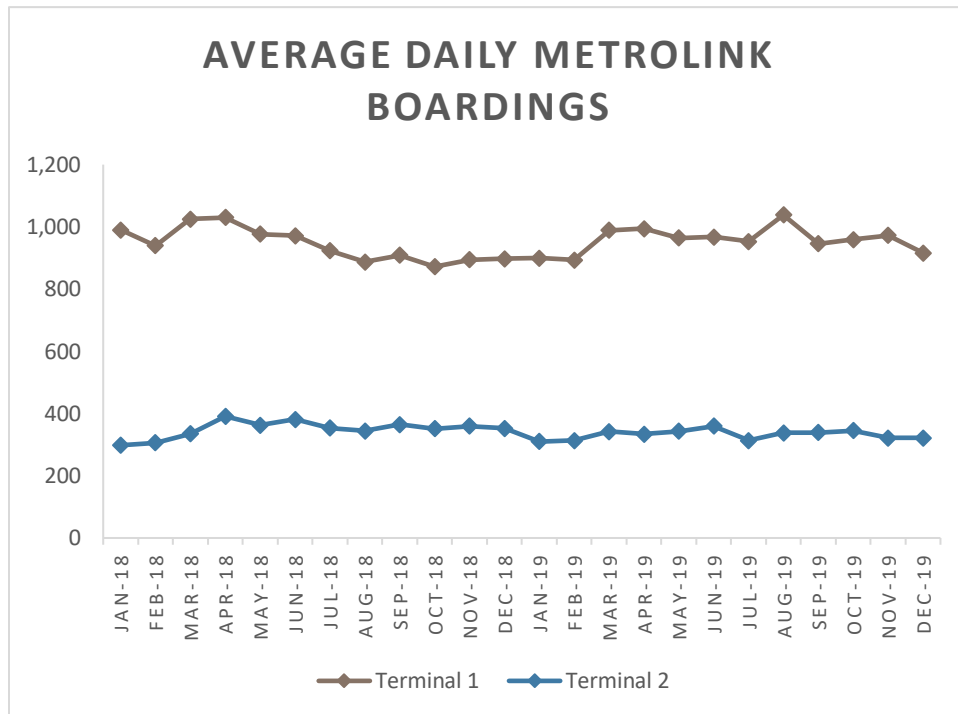
MetroLink is also used between the Airport and downtown St. Louis during sporting events (baseball, hockey games), for its convenience, safety and cost.

**Figure 2.4-7: Monthly MetroLink Boardings at the Airport**



Source: Bi-State Development, MetroLink Ridership Data, January 2018 through December 2019.

**Figure 2.4-8: Daily MetroLink Boardings at the Airport**



Source: Bi-State Development, *MetroLink Ridership Data*, January 2018 through December 2019.

## METROBUS

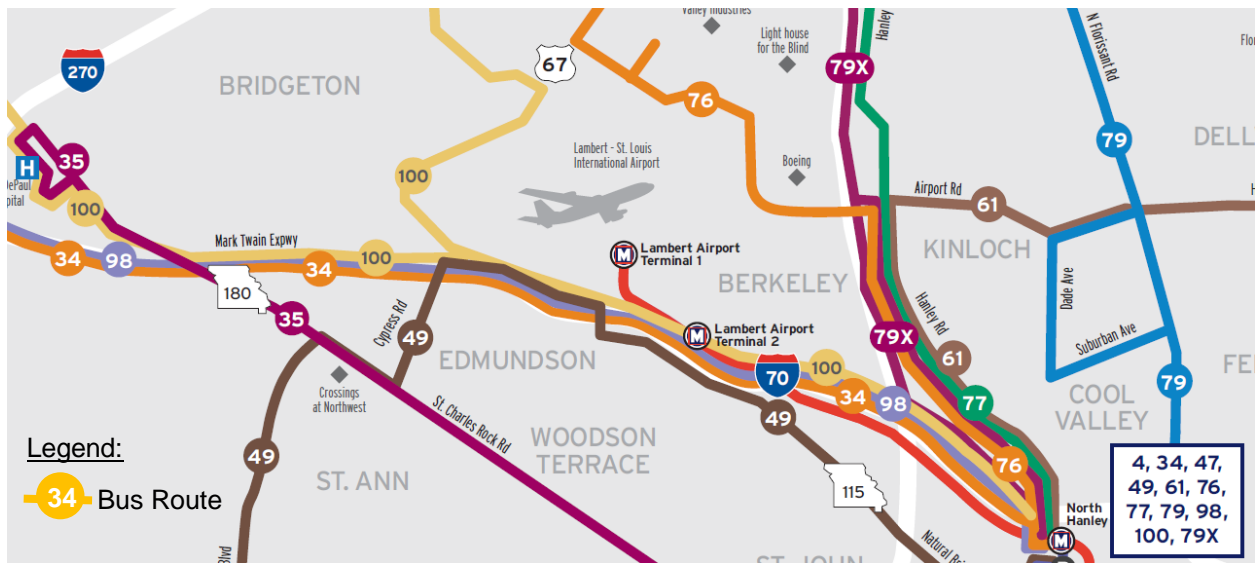
MetroBus is a division of Metro and provides bus transportation services to and around the St. Louis region, including service to STL via the Hanley MetroLink stop. Travelers are recommended to take MetroLink or park at the Hanley metro station and take the train to the terminals. The Hanley MetroLink station is a regional bus route hub, with surface and garage long-term, free parking at the transit center (which serves both MetroLink and MetroBus). MetroLink runs west towards the Airport from the Hanley Station at 20-minute intervals, between the hours of 4:08 a.m. and 12:38 a.m. on weekdays, and 4:40 a.m. and 12:38 a.m. on weekends. The MetroLink ride between Hanley Station and Terminal 2 is 5 minutes, and between Hanley Station and Terminal 1 is 7 minutes.

There are 24 Metro Park-Ride lots and garages in Missouri and Illinois that are free to use, and six free commuter lots served by MetroBus. MetroBus does not have any buses that stop at the Airport, since they updated their bus routes in September 2019. There are four routes that pass the Airport as shown in Figure 2.4-9, however, none stop at the Bus Port, which could handle all bus service if a stop was added on the bus routes that service this area.

The Airport Bus Port is located south of Terminal 1, as depicted on **Figure 2.4-10**. A courtesy shuttle picks up Terminal 1 passengers at Exit Door MT12, and Terminal 2 passengers at Exit Door ET15, to take them to/from the Bus Port. **Figure 2.4-11** pictures the Bus Port. Redesignation of the Bus Port to the “Ground Transportation Center” is a funded Capital Improvement Program (CIP) project, delayed due to COVID-19. The project is likely to be revived in the future.

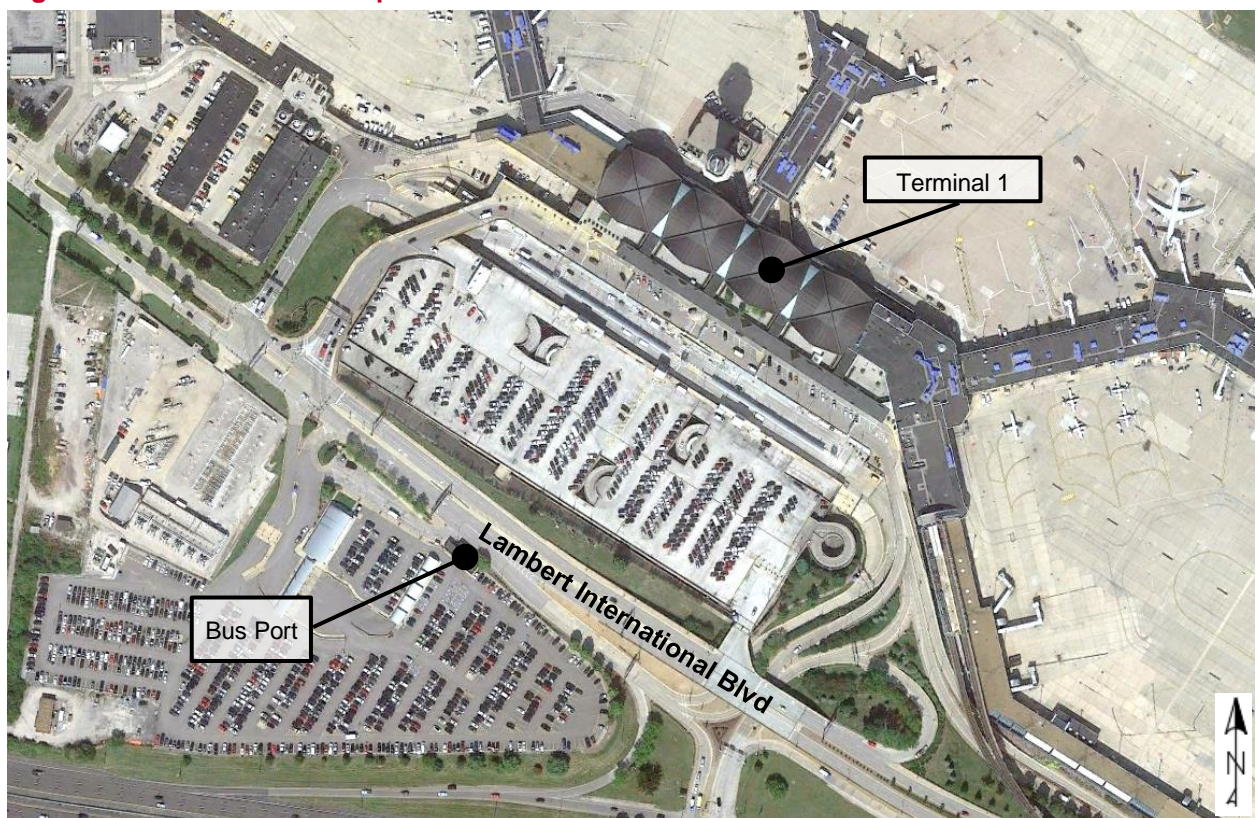


**Figure 2.4-9: MetroBus Stops in Airport Vicinity**



Sources: Google Earth Pro, Street View, April 2020 (basemap); <https://www.metrostlouis.org/>.

**Figure 2.4-10: Location of Airport Bus Port**



Sources: Google Earth Pro, August 2019 (basemap); WSP USA, 2020.

**Figure 2.4-11: Airport Bus Port**



Sources: Google Earth Pro, August 2019 (basemap); WSP USA, 2020.

## CALL-A-RIDE

Metro Call-A-Ride service is available, with advance reservations, to both the general public and to persons whose disabilities prevent them from using the accessible, fixed-route transit services (MetroLink and MetroBus). This service requires passengers to share wheelchair accessible vehicles with other passengers. Priority reservation scheduling is provided to customers with disabilities who qualify for Americans with Disabilities Act (ADA) paratransit services. Metro Call-A-Ride is a great benefit to passengers and provides curb-to-curb service in St. Louis County and St. Louis City.

## GREYHOUND

Greyhound Bus Service provides intercity common carrier service of passengers throughout the entire U.S. Regional and out-of-state bus service is provided by Greyhound Bus. Greyhound operates bus stations in Downtown St. Louis and at STL. Passenger pickup for Greyhound at the Airport is located at the Bus Port.

## SHUTTLES

There are numerous courtesy shuttles to transport passengers between the terminal curbsides and hotels, parking facilities and rental car operators and the Bus Port. Hotel shuttle services pay a monthly fee to the Airport, and there are currently over 25 providers with active permits. The private parking operators have special permits with the Airport.

## PROPOSED/PLANNED REGIONAL IMPROVEMENT PLANS

Multiple plans and projects are underway for the roadways and transportation systems surrounding the Airport. A brief description is shared in the following paragraphs.



## I-70 PLANNING AND ENVIRONMENTAL LINKAGES STUDY

The *Interstate 70 (I-70) Planning and Environmental Linkages Study (PEL)* provides a corridor-level analysis and decision-making framework for a 40-mile portion of the I-70 corridor between the city of St. Louis and Wentzville, Missouri, in St. Charles County. The study was completed in 2018 and included a robust engagement process with stakeholders and the public. The PEL identified the importance of improving and consolidating access points to the Airport on the section of I-70 adjacent to the Airport. The PEL also highlights the need to improve pedestrian access from STL and the MetroLink station to the hotels on the other side of I-70. While no substantial capacity improvements are identified in this section of I-70, the need for reducing conflict points at interchanges and upgrading infrastructure near the Airport were identified as high priority strategies.

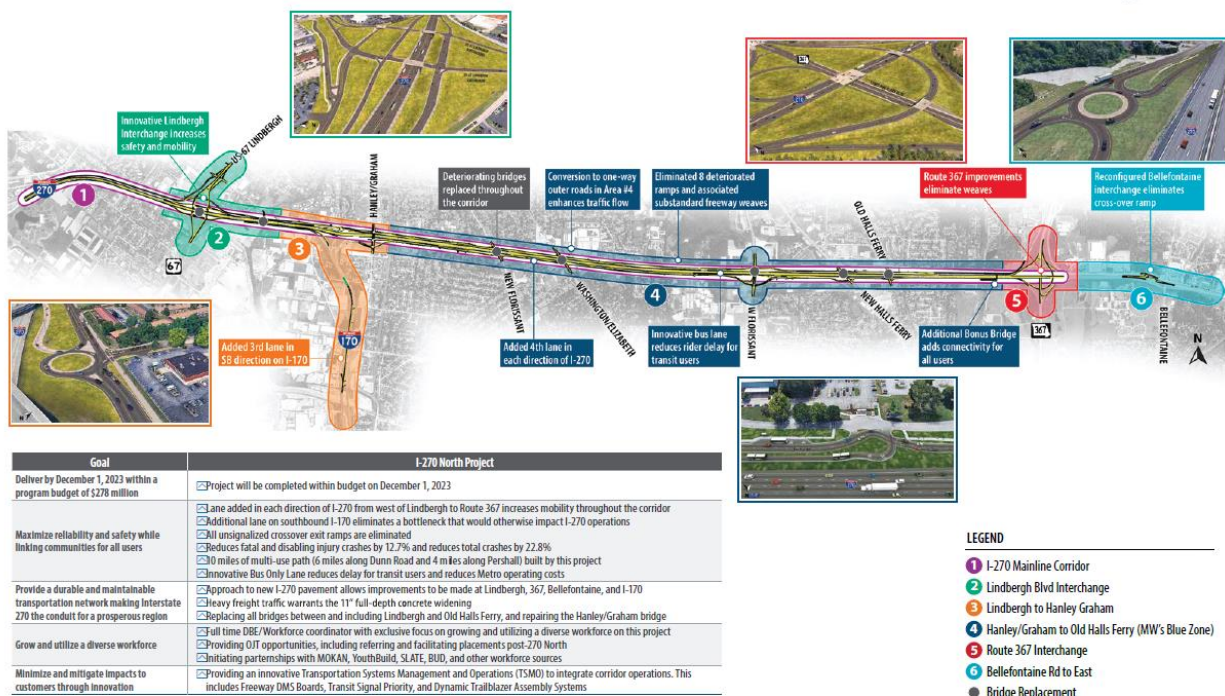
### I-270 NORTH

The *I-270 North Design Build Project* is the next step toward improvements along Interstate 270 North (I-270N) from James S. McDonnell Boulevard to Bellefontaine Road, as shown in **Figure 2.4-12**. The Project will improve safety and reliability within the I-270 corridor, link communities, and enhance traffic operations so the public has a durable and maintainable transportation network. Construction on this Design-Build project starts in April 2020 and will be finished by December 2023. Capacity improvements along I-270 mainline and at some of the interchanges will provide more efficient access to the industrial properties to the northside of the Airport.

**Figure 2.4-12: I-270 North Project**

I-270 North Design-Build Project  
Project Number: J6130208

**I-270 NORTH**  
Build. Progress. Together.



Source: I-270 North Project, [www.I270North.org](http://www.I270North.org), June 2020.

## I-170

MoDOT is implementing capacity improvements as part of the I-270 North project, north of the Airport. The project is adding one more lane southbound to I-170 between I-270 and Frost Avenue. MoDOT has also discussed studying the I-170 corridor in the future, however this is not on the current Statewide Transportation Improvement Plan (STIP).

## WOODSON ROAD AIRPORT CONNECTION/CORRIDOR STUDY

The City of Woodson is conducting a study to look at better ways to connect Woodson Road to the Airport. The *I-70 PEL Study* quickly recognized the importance of connecting Woodson Road better and providing pedestrian and bicycle access north/south across I-70. The *Woodson Road Airport Connection/Corridor Study* considered multiple alternatives to connect Woodson Road to the Airport terminals; the preferred alternative offers a road connection for pedestrians, bicycles, and vehicles.

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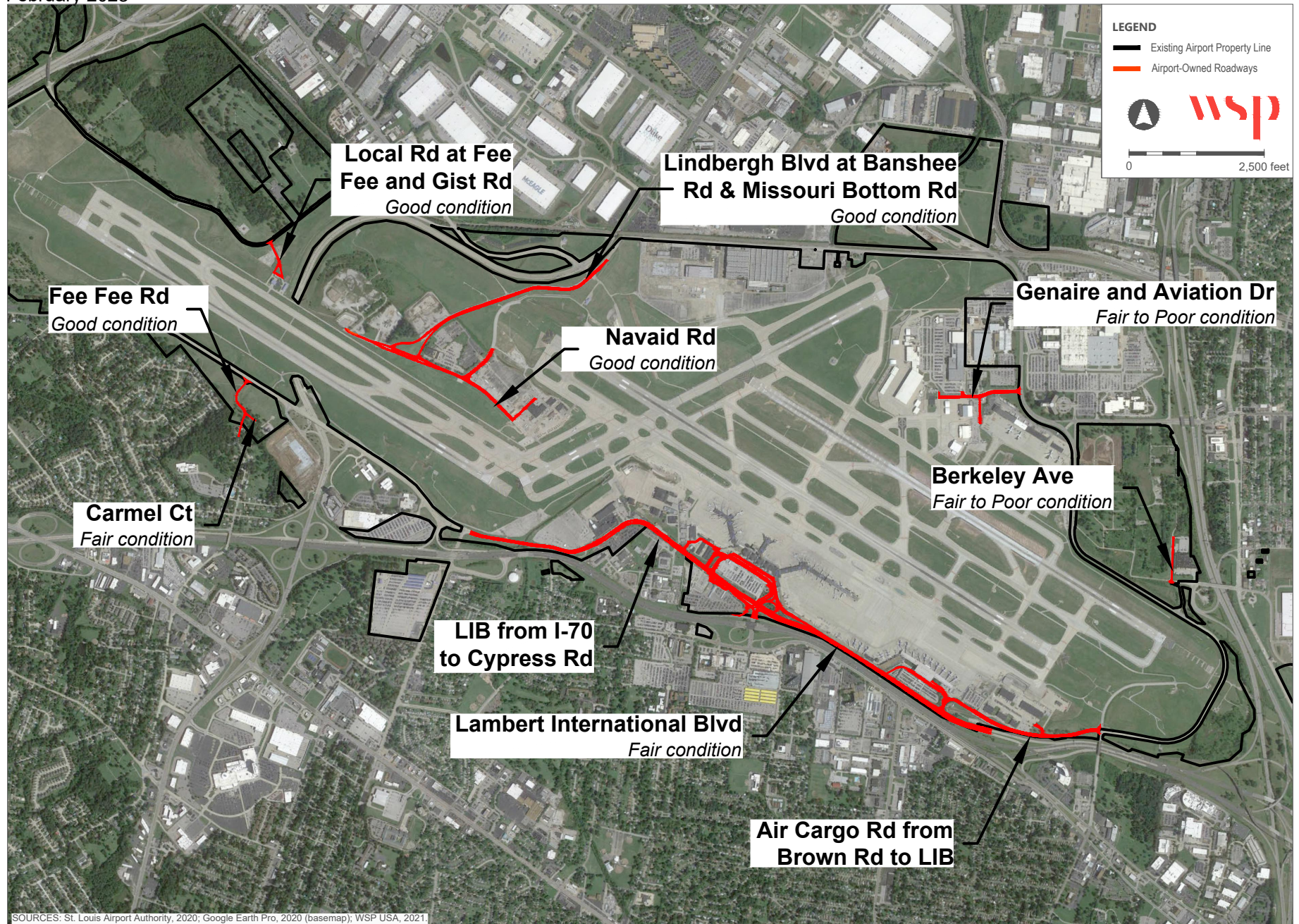
### 2.4.2 AIRPORT-OWNED ROADWAYS

The Airport owns and operate several roadways within the Airport boundary line. These roadways range from poor to good in condition with some requiring some reconstruction in the next five-year timeframe. A description of these roadways and associated pavement condition is listed below:

- Fee Fee Rd off of State Highway B in good condition
- Carmel Ct in fair condition
- Local road at Fee Fee and Gist Rd in good condition
- Navaid Rd in good condition
- Lindbergh at Banshee and Missouri Bottom Rd in good condition
- Genaire and Aviation Dr in fair to poor condition, reconstruction needed in five to ten years
- Berkeley Ave in fair to poor condition, partial reconstruction in the next five years and reconstruction of the other half in ten years
- LIB connecting Terminal 2 and Main Terminal in fair condition, maintained with constant repair (spot slab replacement program)



Airport-Owned Roadways and Pavement Condition





### 2.4.3 *TERMINAL AREA ROADWAYS*

#### **ROADWAYS AND TRAFFIC VOLUMES**

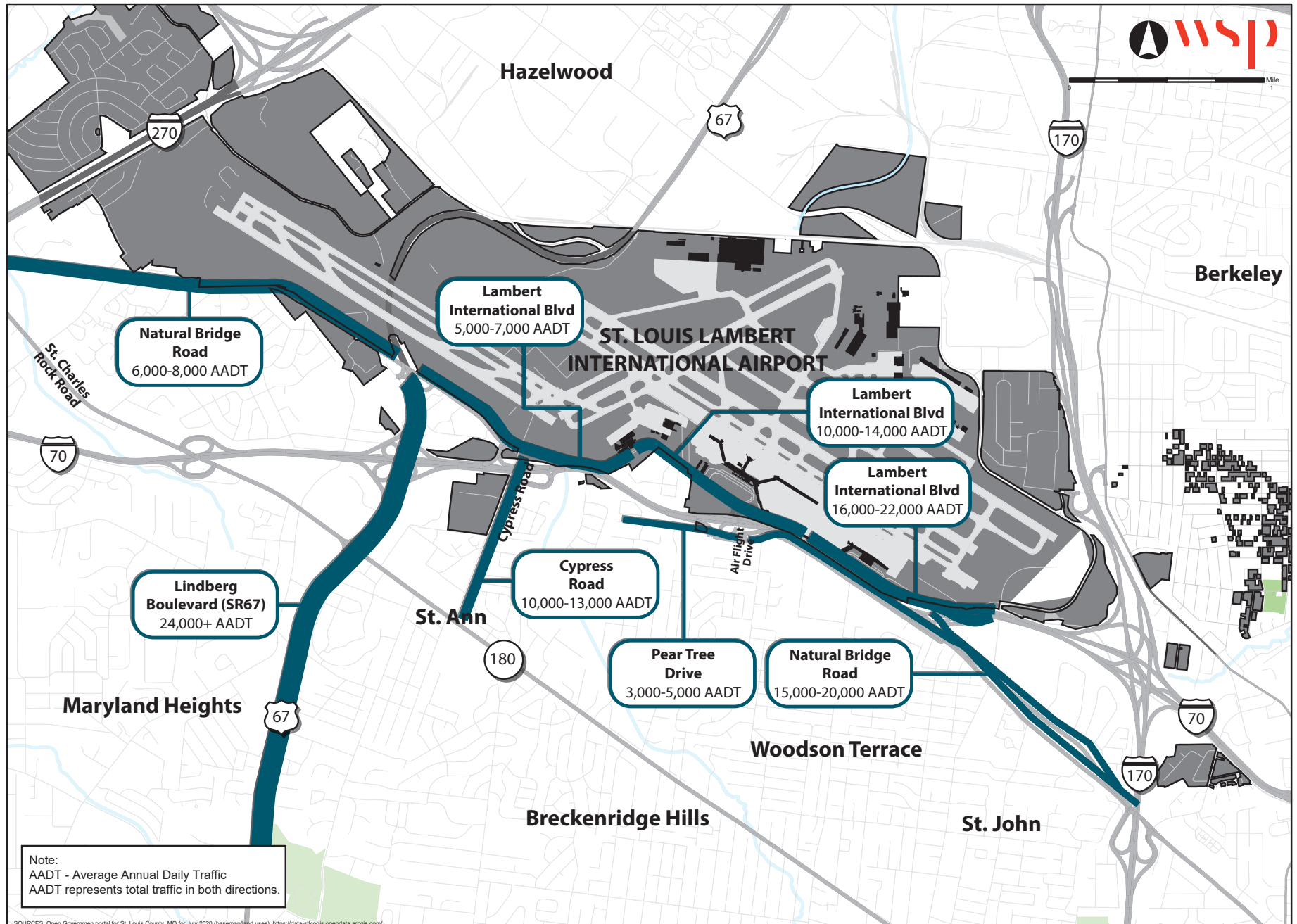
Local roads surrounding and providing access to the Airport are depicted on **Figure 2.4-14**. They include:

- Lambert International Boulevard
- Natural Bridge-Route 115
- Pear Tree Drive
- Cypress Road
- Lindbergh Boulevard

Figure 2.4-14 also depicts traffic volumes for these roads, expressed in average annual daily traffic. Traffic volumes in this area have been relatively steady in previous years, though interstate traffic continues to increase slightly each year. For this inventory and analysis, existing traffic volumes are assumed for future forecasts.

Lambert International Boulevard (LIB) runs in between the Airport and I-70. The “LIB” name only describes the portion of the road between I-70 at Terminal 2 on the east and Cypress Road on the west. For a portion of LIB, MetroLink light rail runs through the center on an elevated track, creating an access-controlled portion of the roadway, as shown in **Figure 2.4-15**. LIB is four lanes, two in each direction, with turn lanes at intersections with a posted speed limit of 35 mph.





**Figure 2.4-15: Elevated MetroLink Track Running Through Center of Lambert International Boulevard**



Sources: WSP USA, Field Observations, April 2020.

LIB traffic volumes range between 5,000 and 22,000 vehicles per day, with a much higher percentage of trucks and shuttles, compared to other roadways:

- LIB between Terminal 2 and I-70: 16,000-22,000 vehicles (expressed in annual average daily traffic [AADT])
- LIB between American Airlines Ground Operations Center and Terminal 2: 10,000-14,000 vehicles (AADT)
- LIB between Lindbergh-61/67 and American Airlines Ground Operations Center: 5,000-7,000 vehicles (AADT)

In the last couple of years, the Airport and City of St. Louis received Surface Transportation Program and Congestion Mitigation and Air Quality Improvement Program (STP/CMAQ) funds to make improvements along this section of LIB and to address some of the congestion and queuing issues. Today, these intersections operate at LOS C during most average peak hours and LOS F during peak air travel hours, specifically near the entrance to the terminals and as cars leave the parking garages. The *Lambert Traffic Management Enhancement Project*, initiated in 2017, improved operations at Terminal 2, where signal operations were regularly at a LOS F throughout the day. LIB, west of the American Airlines Ground Operations Center, experiences LOS C or better during most peak periods.

Natural Bridge-Route 115 is a state arterial road that runs east-west from downtown St. Louis to the Airport. The state route terminates at the Airport, where LIB starts and continues to Air Flight Drive, where it terminates. It is four lanes, two in each direction, and provides access to numerous different commercial buildings, car rental facilities and hotels near the Airport, and carries between 15,000 and 20,000 vehicles



per day. To the west of Cypress Road, LIB becomes Natural Bridge Road; Natural Bridge Road continues west and carries between 6,000 and 8,000 vehicles per day. This section of Natural Bridge Road is also called State Route B and provides connections to other Airport services and industrial uses to the west and north of the Airport.

Pear Tree Drive is a short mall collector/access road between the Air Flight Drive interchange and some commercial and hotel access roads to the west. This half-mile segment of roadway collects people from the eastbound I-70 off-ramp to the Airport and provides connections to parking lots and the Airport. Pear Tree Drive is a two-lane road, with one lane in each direction, and carries between 3,000 and 5,000 vehicles per day.

Cypress Road is a collector road with an I-70 interchange. Cypress Road provides connection to Natural Bridge/LIB to the north and long-term private parking and Route 180 to the south. This section of roadway is five lanes wide, two lanes in each direction with a center turn lane and carries between 10,000 and 13,000 vehicles per day.

Lindbergh Boulevard/US 61-67 is a regional arterial road that connects south St. Louis County to North St. Louis County and is access-controlled in this section near the Airport. It carries over 24,000 vehicles per day and is two lanes in each direction, with a center barrier between northbound and southbound lanes. Lindbergh Boulevard has a tunnel underneath the airfield and provides access to the north side of the Airport.

## INTERSECTION OPERATIONS ANALYSIS

To estimate the roadway system's level of service (LOS) and traffic operations on LIB and at the I-70 interchange, the calculated peak hour traffic volumes from the STP/CMAQ study were used as the existing conditions for the traffic analysis. This evaluation focused on the typical weekday morning, midday and afternoon peak periods since these represent the busiest times for the Airport and surrounding roadway network. The peak hours used for this evaluation include 8:00 a.m. - 9:00 a.m., 12:00 p.m. - 1:00 p.m. and 4:30 p.m. - 5:30 p.m. for the morning, midday and afternoon peak periods, respectively. Existing traffic conditions were evaluated using the SYNCHRO software package for each time period. SYNCHRO is a macroscopic analysis program that utilizes traffic count data, roadway geometrics and signal timing data to calculate intersection capacity using methodologies outlined in the "Highway Capacity Manual" (HCM) published by the Transportation Research Board.

The HCM uses six LOSs to measure traffic flow, with consideration to such factors as speed, delay, driver comfort and convenience. Intersection LOS is based on delay and the type of traffic control used. The LOS range from LOS A (Free Flow conditions) to LOS F (Fully Saturated conditions). LOS C is normally used for design purposes and represents a roadway utilizing 70 to 80 percent of its capacity, however, LOS D is often considered acceptable for peak period conditions in urban and suburban areas. The thresholds for intersection LOS are summarized in **Table 2.4-1**.

**Table 2.4-1: Intersection Level of Service Thresholds**

LEVEL OF SERVICE (LOS)	DELAY PER VEHICLE (SECONDS/VEHICLE)	
	SIGNALIZED	UNSIGNALIZED
<b>A</b>	<10	<10
<b>B</b>	10-20	10-15
<b>C</b>	20-35	15-25
<b>D</b>	35-55	25-35
<b>E</b>	55-80	35-50
<b>F</b>	>80	>50

Source: Transportation Research Board, *Highway Capacity Manual*, 6<sup>th</sup> Edition, 2016.

Intersection turning movement counts and mainline traffic volumes were collected on Lambert International Boulevard in 2017, as part of the *Lambert Traffic Management Enhancement Project*. Near Terminal 1, the AADT on Lambert International Boulevard is approximately 12,000 vehicles per day, with a peak hourly volume of 900 vehicles per hour. Near Terminal 2, the AADT on Lambert International Boulevard is approximately 22,000 vehicles per day, with a peak hourly volume of 1,500 vehicles per hour.

The intersection LOS and delay are summarized in **Table 2.4-2**. Each intersection operates at a LOS C or better during each time period of the day. The LOS and low delay can be attributed to the relatively low cycle length (95 seconds) that each signal operates on throughout the day. The signal timing was optimized as part of the *2017 Lambert Traffic Management Enhancement Project* and provides for efficient intersection operation. Furthermore, the majority of individual intersection movements operate at acceptable LOS throughout the day and no movement is over capacity ( $v/c$  ratio > 1). The southbound left turn movement at Lambert International Boulevard & Air Cargo Rd operates at LOS E throughout the day. However, the volume for this movement is very low and critical movements at the intersection are given priority with signal timing.

The VISSIM model (micro simulation) outputs (Table 2.4-2) were crosschecked with results of the previous Synchro model (macro simulation) analysis performed by CBB as part of the *Lambert Traffic Management Enhancement Project*. The Synchro model analysis was performed after a full signal timing optimization, extension of the eastbound left turn lane at LIB and Air Cargo Drive and curbside improvements. In general, the VISSIM model outputs match the Synchro model analysis for each intersection in regard to total intersection delay and level of service, including intersections at Terminal 2. Small differences are present, as to be expected, due to inherent differences between macro and micro simulation models.



**Table 2.4-2: Airport Existing Traffic Conditions Intersection Level of Service and Delay**

INTERSECTION TIME PERIOD	LOS AND DELAY (SECONDS/VEHICLE)		
	MORNING	MIDDAY	AFTERNOON
LIB at Air Cargo Road	B (18.3)	B (16.3)	B (18.1)
Air Cargo Road at Terminal 2 Arrivals/Departures	A (4.0)	A (4.4)	A (6.5)
LIB at Terminal 2 Garage Exit	A (3.3)	A (4.3)	A (2.2)
LIB at Terminal 2 Departures/Arrivals Exit	C (22.0)	C (21.3)	B (14.1)
LIB at Terminal 1 Departures Exit	B (19.0)	B (16.6)	B (15.8)
LIB at Terminal 1 Arrivals Exit	B (19.5)	C (20.5)	B (19.3)
LIB at Airfield Service Road	A (2.6)	A (4.1)	A (2.3)
LIB at Missouri Air National Guard Entrance	A (3.0)	A (3.0)	A (2.3)
LIB at I-70 Westbound Ramps	A (1.2)	A (2.6)	A (2.6)

Note:

LIB = Lambert International Boulevard

Sources: Lambert Traffic Management Enhancement Project, 2017.

## 2.4.4 TERMINAL CURBSIDE

Both terminals share similar curbside layouts and configurations with grade separated departure and arrival curbs. Specifics about each curbside were obtained through field visits. Field pictures were included, in addition to graphics, to visualize field operations.

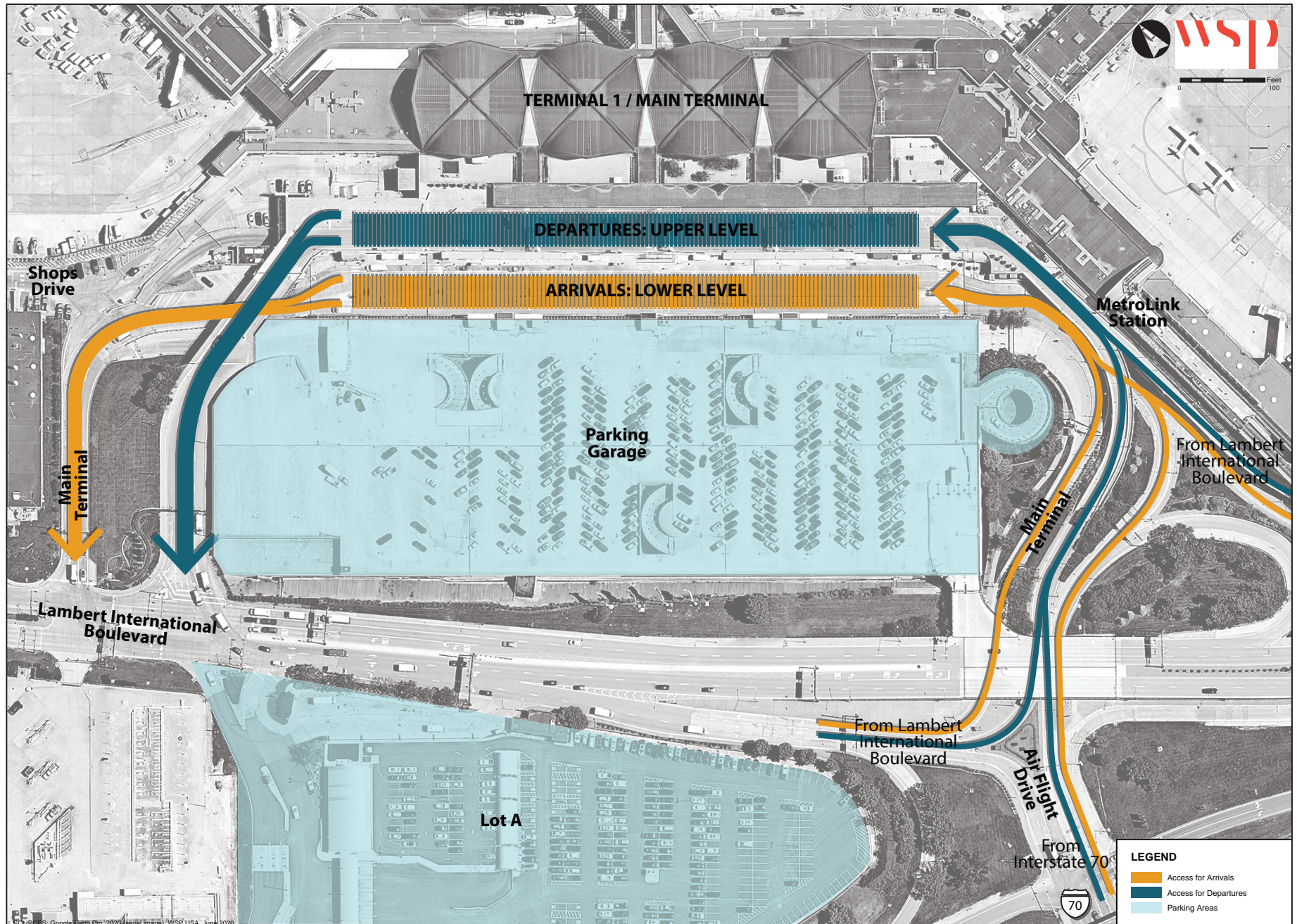
### TERMINAL 1 CURBSIDE

Access and circulation to Terminal 1 occurs from LIB and signalized intersections. **Figure 2.4-16** depicts the Terminal 1 roadway circulation, which illustrates vehicle access and egress between the surrounding roadways and the terminal curbside. Access to the terminal occurs from the signalized intersection on the east and then drivers circulate counterclockwise to egress via the signalized intersection to the west.

The Terminal 1 upper-level departures and lower-level arrivals curbsides allocations are depicted on **Figure 2.4-17**.

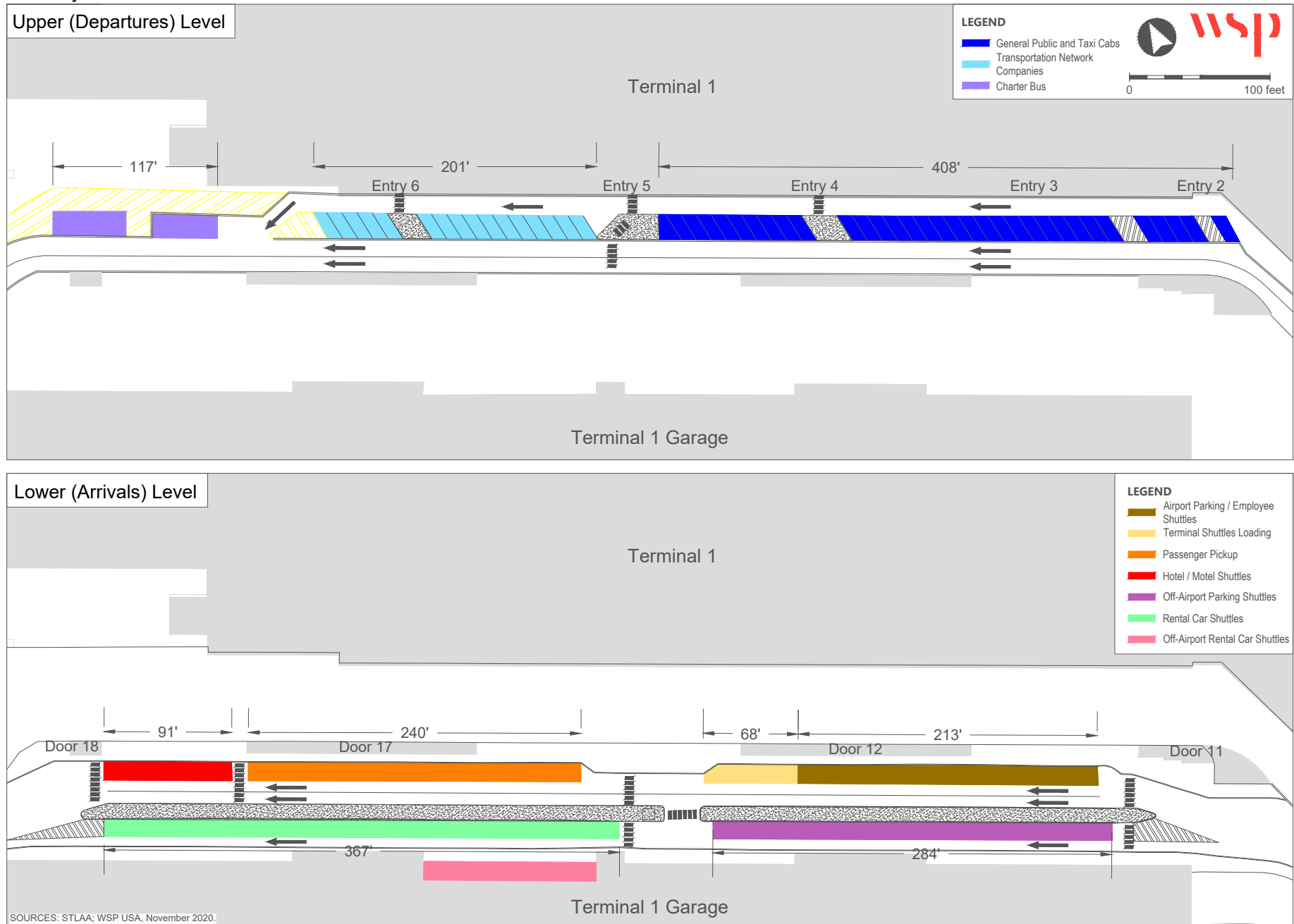
The upper-level departures curb includes two outer lanes for through traffic, 39 pull-through spaces for passenger unloading, and a single lane for vehicles exiting the pull-through spaces. The pull-through spaces accommodate transportation network companies (TNCs), such as Uber and Lyft, as well as private vehicles and taxis, and are pictured in **Figure 2.4-18**. Motor coaches and charter buses use the northwest portion of the Terminal 1 upper-level departures curb for passenger pick-up and drop-off. The upper-level departures curb roadway is located directly over the terminal baggage claim area and across from the ticketing counters. The Terminal 1 upper-level departures curb is often congested.







**FIGURE 2.4-17**  
 Terminal 1  
 Curbside Allocation



**Figure 2.4-18: Terminal 1 Upper-Level Departures Curbside**



Source: WSP USA, Field Observations, April 2020.

Airlines serving Terminal 1 curbside include:

- Air Canada
- Air Choice One
- Alaska Airlines
- American Airlines
- Cape Air
- Contour
- Delta
- Frontier
- Sun Country Airlines
- United

The lower-level curbside consists of three inner lanes and two outer lanes. The length of both the inner and outer curbsides is 711 feet, not including crosswalks. The inner lanes accommodate passenger pick-up by private vehicles, hotel shuttles, on-Airport parking shuttle and airport terminal shuttles. The outer lanes accommodate on-Airport rental car shuttles and off-Airport parking shuttles. There is also a pick-up/drop-off location inside the Terminal 1 Parking Garage (Brown Level) for off-Airport rental car shuttles. Passengers exiting the baggage claim area onto the lower (arrivals) level can also walk across the roadway into the Terminal 1 Parking Garage.



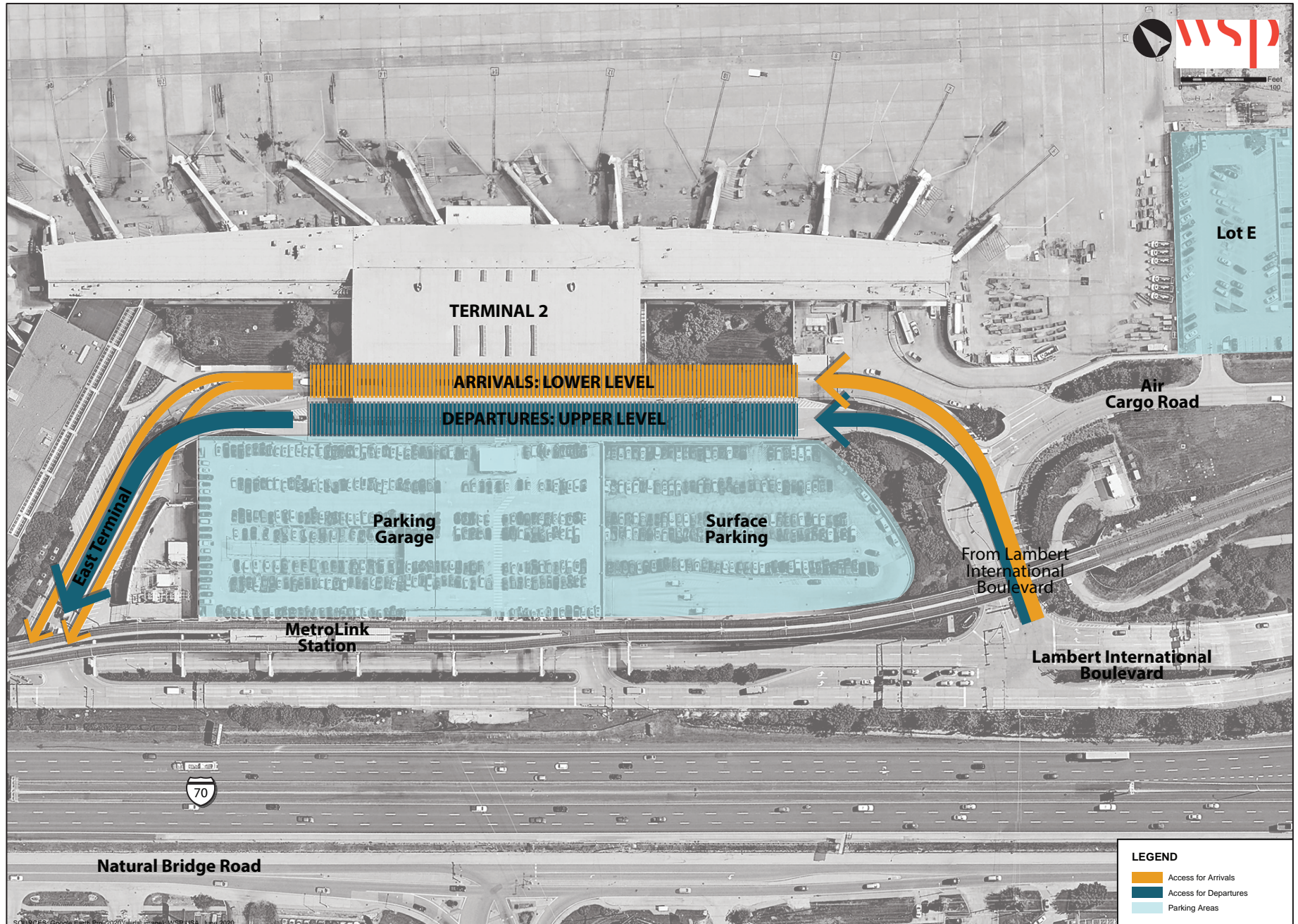
## TERMINAL 2 CURBSIDE

Access and circulation to Terminal 2 occurs from LIB and signalized intersections. **Figure 2.4-19** depicts the Terminal 2 roadway circulation, which illustrates vehicle access and egress between the surrounding roadways and the terminal curbside. Access to the terminal occurs from the signalized intersection on the east and then drivers circulate counterclockwise to egress via the signalized intersection to the west. Both of these signals experience significant delays and congestion during peak hours of the day. The recent CMAQ project improved the traffic operations at these signals, however, other improvements for access and circulation were identified.

**Figure 2.4-20** depicts the Terminal 2 upper-level departures and lower-level arrivals curbsides and space allocation for various modes of transport.

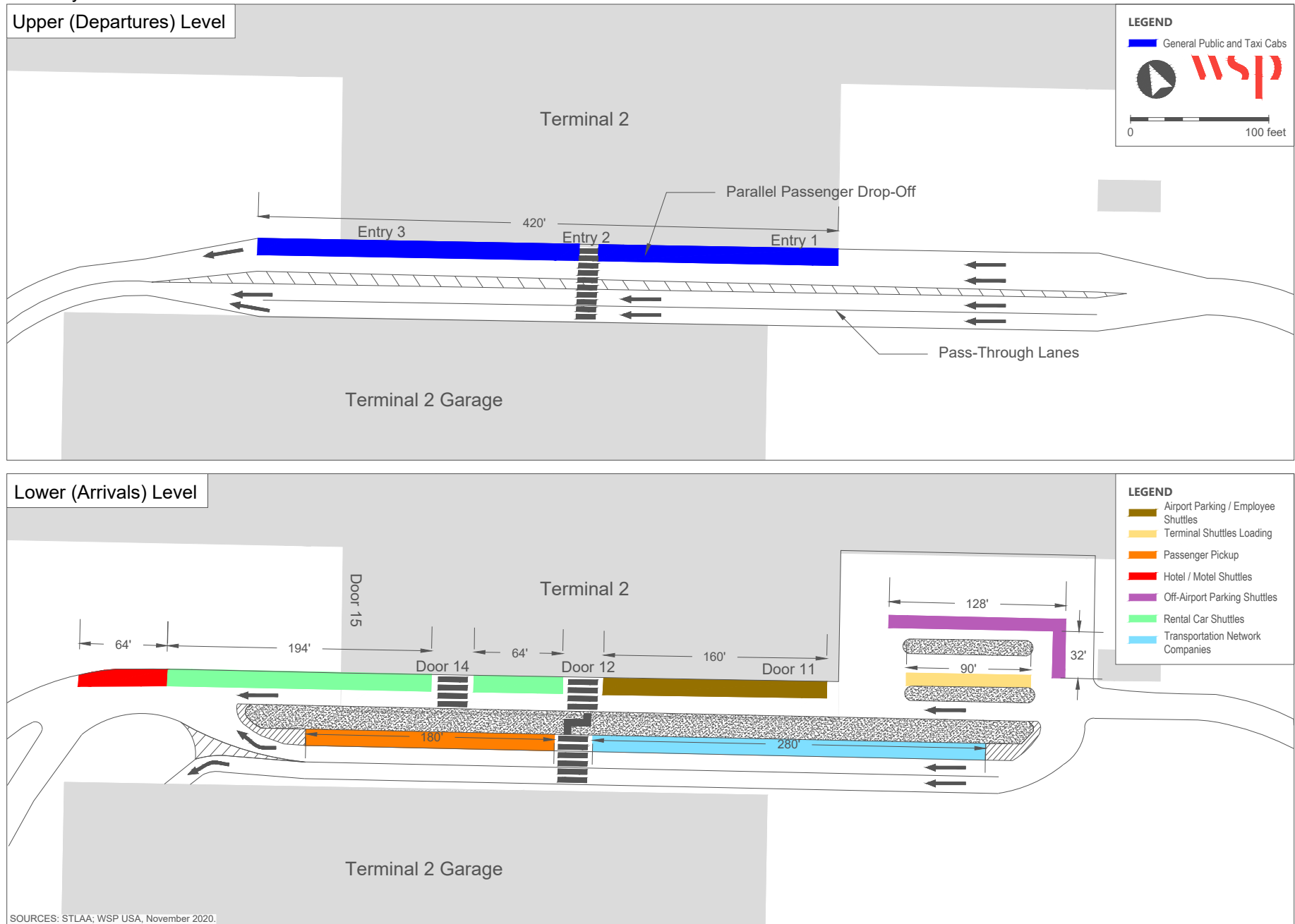
The Terminal 2 upper-level departures curbside is pictured in **Figure 2.4-21** and consists of two outer lanes for through-traffic and two inner lanes for vehicles to unload passengers for departures. The upper-level departures curbside accommodates private vehicles; TNCs, such as Uber and Lyft; limousines; shared-ride shuttles; and hotel shuttles. Airport parking shuttles may drop-off at the Terminal 2 departure level in the zone designated for this activity. Only Southwest Airlines serves Terminal 2 at this time.

The Terminal 2 lower-level arrivals curbside consists of two outer lanes and two inner lanes, which include specific zones for various vehicle classifications. Hotel shuttles, rental car shuttles, and on-Airport parking shuttles utilize the inner curbside, while TNC and private vehicle passenger pick-up occurs on the outer curbside. The length of the inner curbside (starting at Terminal 2 Exit 11 and through the location where charter buses pick up, excluding cross walks) is 761 feet. The outer curbside, excluding crosswalks, is 475 feet. Additionally, a commercial staging area east of Terminal 2 accommodates two airport terminal shuttles and five off-Airport parking shuttles. The Terminal 2 lower-level arrivals curbside is pictured on **Figure 2.4-22**, and the newly constructed commercial area is pictured in **Figure 2.4-23**. The Terminal 2 lower-level arrivals curbside is limited by its relatively short length.





**FIGURE 2.4-20**  
 Terminal 2  
 Curbside Allocation



**Figure 2.4-21: Terminal 2 Departures Curbside**



Source: WSP USA, *Field Observations*, March 2020.

**Figure 2.4-22: Terminal 2 Arrivals Curbside**



Source: WSP USA, *Field Observations*, March 2020.



**Figure 2.4-23: Terminal 2 Arrivals Commercial Area**



Source: WSP USA, *Field Observations*, October 2020.

## 2.5 AUTOMOBILE PARKING FACILITIES

Automobile parking for Airport customers and employees is accommodated in a variety of parking lots, such as public parking facilities (both airport-operated and privately-operated), as well as a cell phone lots for drivers waiting on arriving passengers. On-Airport parking consists of close-in garage parking and remote surface parking. Off-Airport parking consists of privately-operated lots and hotel lots. Additional parking lots are designated for commercial ground transportation providers. Automobile parking facilities are depicted on **Figure 2.5-1**.

### 2.5.1 PUBLIC PARKING FACILITIES

There are approximately 20,000 public car parking spaces at or adjacent to the Airport, with approximately 9,000 operated by the STLAA. These facilities are further categorized into short-term and long-term.

#### AIRPORT-OPERATED PUBLIC PARKING FACILITIES

Airport-operated parking facilities consist of eight public parking facilities providing hourly and daily parking, including a parking garage adjacent to each terminal and six surface parking lots.

**Table 2.5-1** summarizes the capacity, type and acreage of the Airport-operated public parking facilities.

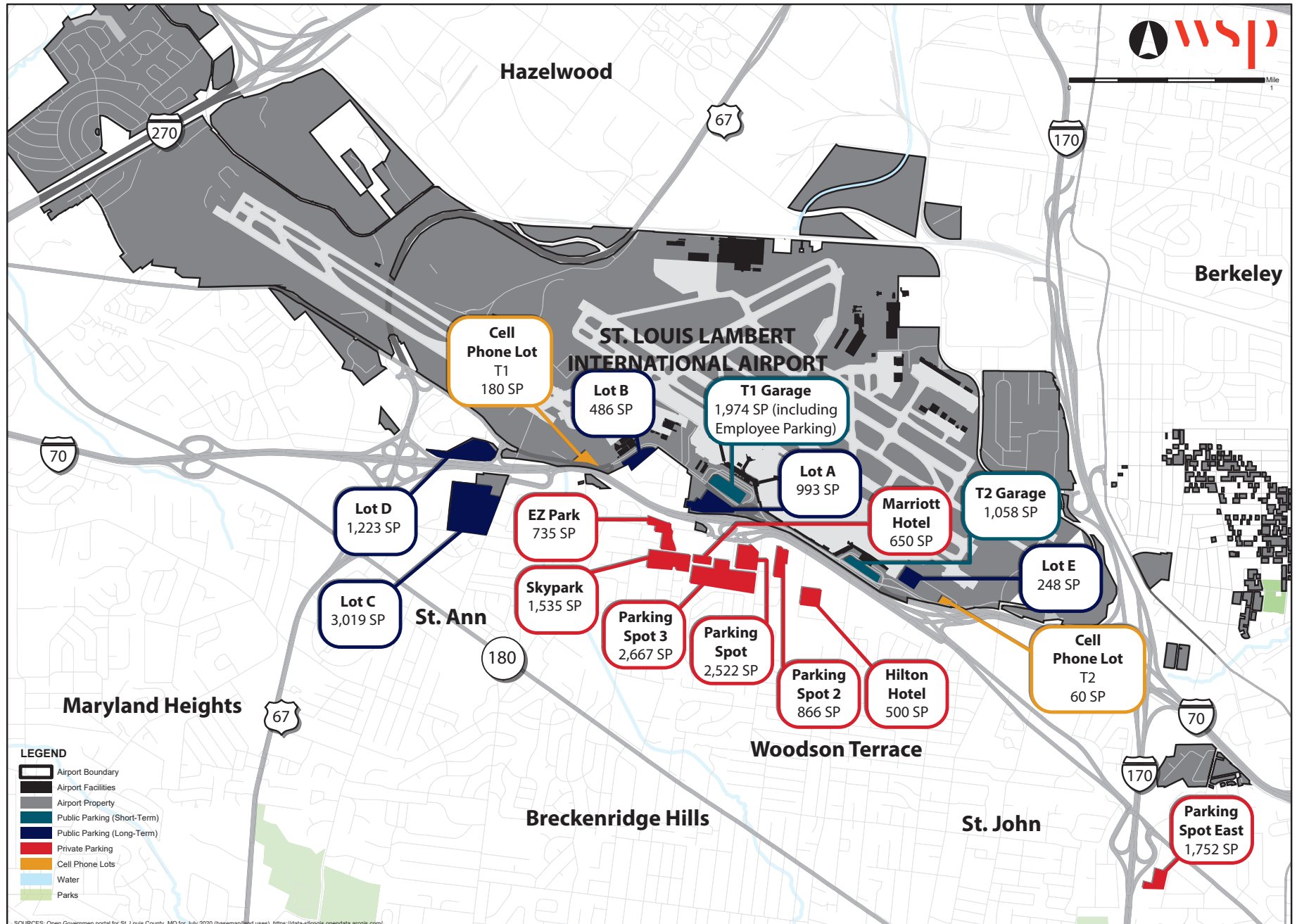
**Table 2.5-1: Airport-Operated Public Parking Facilities**

FACILITY	CAPACITY (SPACES)	PARKING TYPE	GARAGE / LOT TYPE	ESTIMATED LOT SIZE *	DAILY RATE (\$)	RESTRICTED SPACES
<b>Terminal 1 Garage</b>	1,974	Short-term	Four levels	7 acres	\$23	40
<b>Terminal 2 Garage</b>	1,058	Short-term	Three levels	5 acres	\$23	22
<b>Lot A</b>	993	Long-term	Surface parking lot	8 acres	\$15	20
<b>Lot B</b>	486	Long-term	Surface parking lot	4 acres	\$10	9
<b>Lot C</b>	3,019	Long-term	Surface parking lot	20 acres	\$9	57
<b>Lot D</b>	1,223	Long-term	Surface parking lot	12 acres	\$7	23
<b>Lot E</b>	248	Long-term	Surface parking lot	2 acres	\$20	7
<b>Total</b>	<b>9,001</b>			<b>77 acres</b>		<b>178</b>

Sources: St. Louis Lambert International Airport, Airport Website, flystl.com, accessed June 2020; Google Earth Pro, June 2020; WSP USA, June 2020.

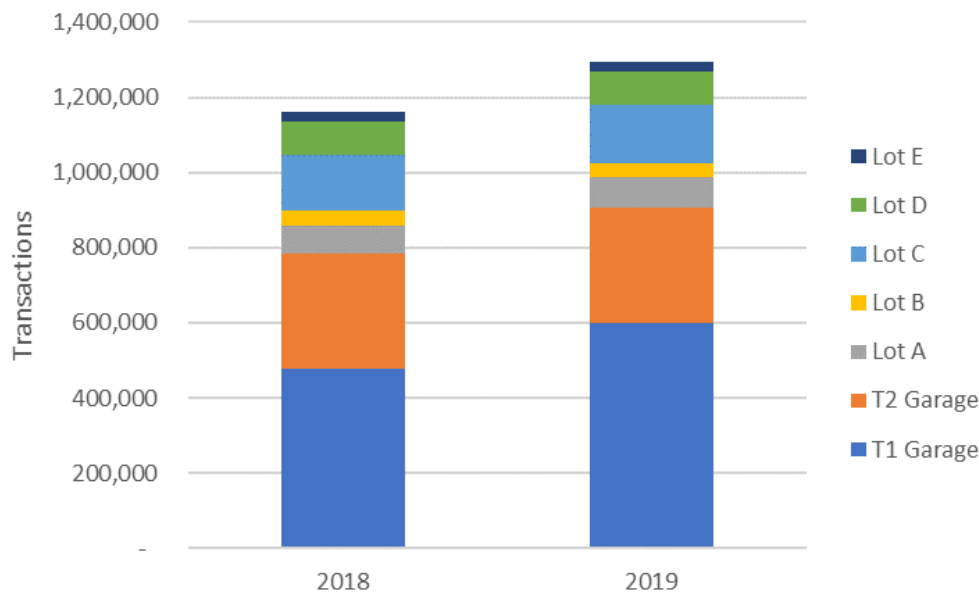
The flystl.com website and a changeable message sign located on the east end of the Airport property provide live parking occupancy for travelers to check parking availability of airport-owned facilities. The website also gives daily rates for public parking facilities and locations for each lot/garage.





**Figure 2.5-2** illustrates the total number of annual parking transactions for 2018 and 2019, for Airport-operated facilities.

**Figure 2.5-2: Parking Transactions by Airport-Operated Parking Product**



Source: St. Louis Airport Authority, 2020.

## PRIVATELY-OPERATED PUBLIC PARKING FACILITIES

As shown in Figure 2.5-1, there are currently eight privately operating parking companies around the Airport for passengers, with over 11,000 spaces available. Each operator's name and capacity are provided in **Table 2.5-2**. These private parking operators offer frequent shuttle service to the terminals, as well as perks for parking in their locations, such as complimentary car washes, bottled water, luggage assistance and even oil changes for purchase. Note that hotel parking spaces serve hotel guests, visitors and airport passengers. No data was collected to estimate the number of spaces typically used by air passengers, and as such, hotel spaces were excluded from the overall private parking capacity for the airport as a conservative assumption.



**Table 2.5-2: Privately-Operated Parking Facilities**

PARKING OPERATOR	PARKING CAPACITY (SPACES)	DAILY RATES (\$)
The Parking Spot	2,522	\$10 and up
The Parking Spot 2	866	<i>Closed at this time</i>
The Parking Spot 3	2,677	\$7 and up
Skypark Airport Parking	1,535	\$8
The Parking Spot East	1,752	<i>Closed at this time</i>
EZ Park	735	\$9
<b>Total Private Operators</b>	<b>10,087</b>	
St. Louis Airport Hilton Hotel	500	\$15 or \$7 for 7+ days
St Louis Airport Marriott	650	\$18
<b>Total Hotel Operators</b>	<b>1,150</b>	
<b>Total Off-Airport Parking Spaces</b>	<b>11,237</b>	

Note:

Hotel parking serves hotel guests, visitors and airport passengers. There is no data collected to estimate spaces typically used by airport users.

Source: WSP USA, June 2020 (field verification).

## 2.5.2 CELL PHONE LOT

STL manages two cell phone lots that serve people waiting to pick up passengers. The Terminal 1 cell phone lot is located about one half-mile east of Cypress Rd, on the north side of LIB. The Terminal 2 cell phone lot is located north of Air Cargo Road, in the southeast corner of the Cargo City complex. These lots are free short-term parking lots and drivers must remain in their vehicle at all times. The Terminal 1 lot is 75,600 sq. ft. and has 182 striped spaces, while the Terminal 2 lot is 36,800 sq. ft. with 60 striped spaces. Overnight parking is not allowed in either lot. Both lots include a flight information display system (FIDS) and portable toilets.

## 2.5.3 EMPLOYEE PARKING FACILITIES

There are no dedicated employee car parking lots at the Airport; employees are directed to take public transit or use passenger parking facilities. As of August 2019, 350 airline employees park in Lot C; 395 TSA employees park in the Terminal 1 Parking Garage; and 61 general airport employees (including tenants and concessionaries) park in the Terminal 1 Parking Garage. These figures may be subject to monthly fluctuations depending on the number of employees at the Airport seeking parking.

The typical peak parking demand for employees generally occurs in the midday period when the morning and afternoon shift workers overlap. On a typical busy day there are 150 employees parked in Lot C and 164 employees parked in the Terminal 1 Garage Red Level at the peak time. TSA employee parking is

managed by Alternative Experts, LLC. (ALEX) and other employee parking is managed by ABM Aviation. ALEX provides employee parking to enrolled TSA employees as the prime contractor for the TSA National Employee Assistance Program.

## 2.5.4 COMMERCIAL VEHICLE STAGING AREAS

Commercial vehicle staging areas are located south of the Airport, generally along I-70, as depicted in **Figure 2.5-3**.

### TAXIS

Only taxi companies that are authorized by the St. Louis Taxi Commission may pick up passengers at STL, with the exception of pre-arranged pick-ups that are authorized for all companies; these pre-arranged pick-ups occur at the TNC curb. As shown in Figure 2.5-3, there are two taxicab staging areas, one for each terminal. Terminal 1 passenger pick-up occurs inside the Terminal 1 Parking Garage on the yellow level, with ten allocated spaces at the taxicab curb. Terminal 2 passenger pick-up occurs inside the Terminal 2 Parking Garage on the red level, with five allocated spaces at the taxicab curb. All taxi drop-offs occur on the upper-level departures curb, where taxis intermingle with private vehicles. Taxicabs stage in the Terminal 1 Pear Tree lot and in the Terminal 2 Air Cargo Road lot, where they remain until called by a taxi starter. **Table 2.5-3** shows the estimated capacity and demand of the busiest travel hour at the airport for the Taxi lots.

**Table 2.5-3: Taxi and Transportation Network Company Staging Area Capacity and Estimated Demand**

	<u>CAPACITY (SPACES)</u>	<u>ESTIMATED PARKING SPACES DEMAND BASED ON PEAK HOUR</u>
<b>Taxi Terminal 1 Staging Lot</b>	82	65
<b>Taxi Terminal 2 Staging Lot</b>	24	41
<b>TNC Hold Lot</b>	50	81

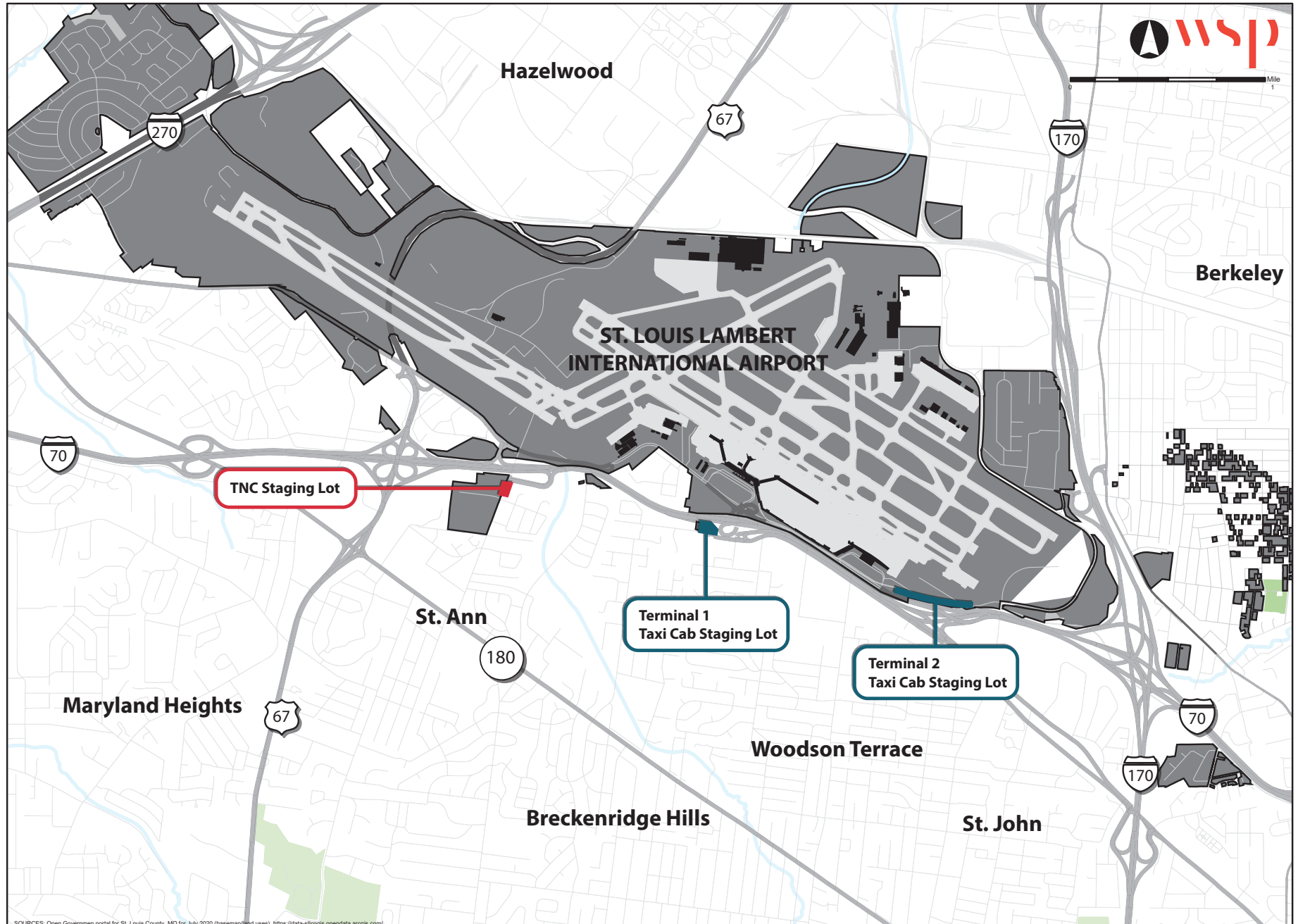
Note: TNC – Transportation Network Company

Sources: St. Louis Airport Authority, October 2020; WSP USA, October 2020 (field observations); Ricondo & Associates, Inc., *St. Louis Lambert International Airport, Vendor Due Diligence Report – FINAL DRAFT*, December 2019.

### LIMOUSINES AND BLACK CARS

Pre-arranged limousine service is authorized by permit. Passenger drop-offs occur anywhere on the upper-level departures curbs. Passenger pick-ups occur in the terminal parking garages, in designated permit spaces (five spaces at each terminal), near the taxi stands. Drivers meet the clients at designated locations in the terminal and escort the passengers to the garage.





## SHUTTLES

There are numerous shuttles that serve both terminals at the Airport, for hotels, parking, bus/greyhound connections, and rental cars. Each provider has their individual shuttles, contributing to roadway and curbside congestion. Terminal 1 arrivals and departures drives, as well as parking garage drives, are height and weight restricted, which places restrictions on shuttle activity. In some cases, this results in greater number of yet smaller shuttles, in turn impacting capacity and congestion at the curbside.

Signs inside the terminal near the baggage claim direct passengers where to go to meet the correct shuttles.

Shuttles pick up and drop off on the lower arrivals level of Terminal 1 and Terminal 2, with the exception of motor coaches/charter buses using the Terminal 1 upper departures level for pick-ups and drop-offs, and airport parking shuttles dropping off at the Terminal 2 upper departures level.

Shuttles utilize that portion of curb designated for the specific type of activity: i.e., rental car, off-airport parking, hotel, ... Curb allocation is on a first come/first serve basis. There is an exception for rental car shuttles, which have zones designated by company. Shuttles may dwell until filled, but must depart when the next company shuttle arrives, regardless of load.

Use of alternative fueled vehicles is encouraged.

## TRANSPORTATION NETWORK COMPANIES

In recent years, TNCs have changed how passengers access the Airport. The Airport signed a contract with TNCs (Uber and Lyft) in 2017 to provide service at the Airport. TNCs use the roadway network like other vehicles and don't have set schedules or routes. TNCs pick up and drop off passengers at the Terminal 1 upper-level departures curb, and at the Terminal 2 lower-level arrivals curb. TNCs are accessed via passengers requesting service on their smartphones and meeting drivers outside the terminals. Trips are self-reported to the Airport Authority Finance Department. In 2019, over 1,135,000 TNC trips (drop-offs and pick-ups) were reported.

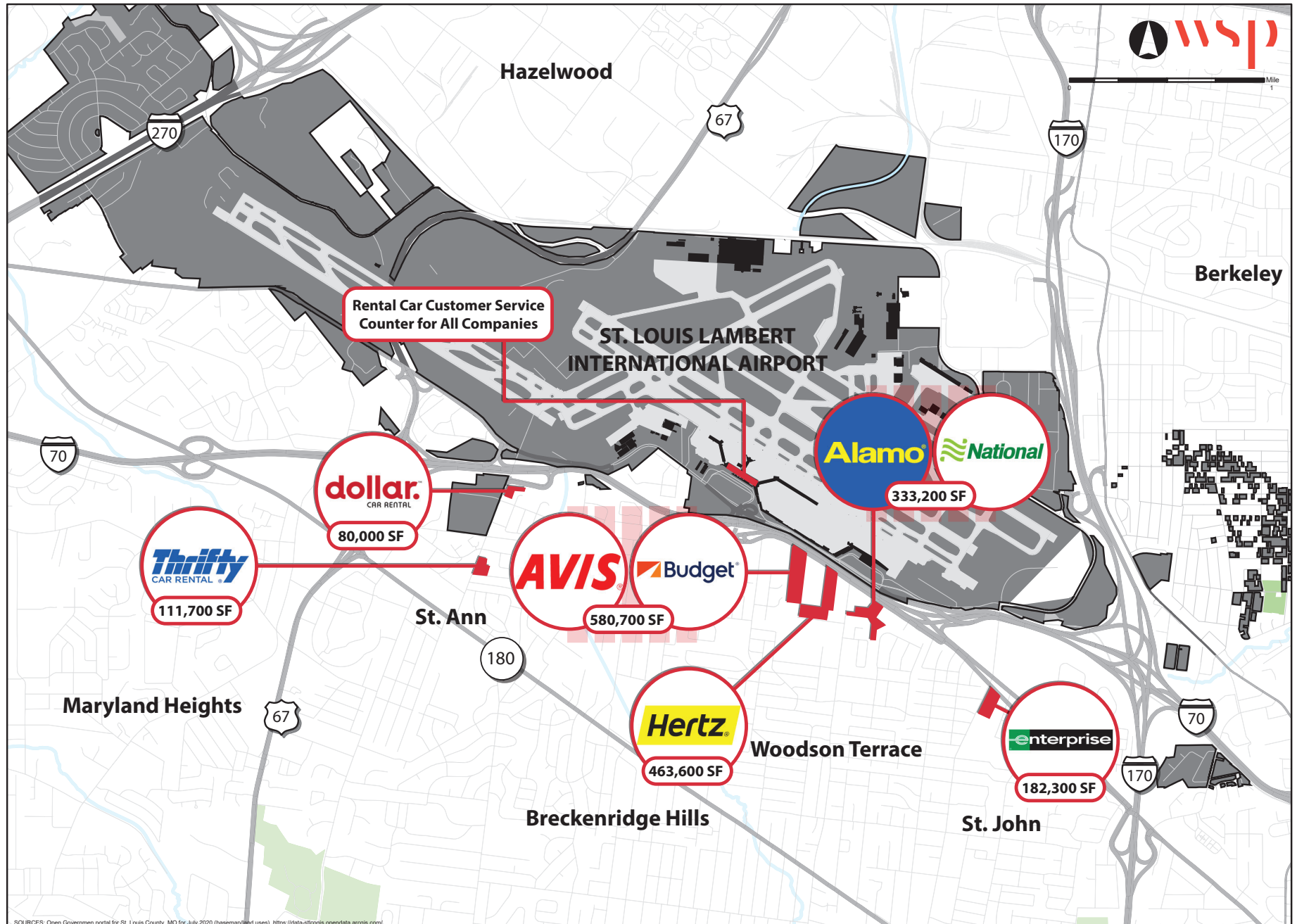
TNCs currently stage in a parking lot located in front of the entrance to Super Park Lot C, where fifty spaces are available. Drivers are instructed to wait in this lot when they come to the Airport to pick up passengers, and operate in a virtual first-in, first-out queue. After dropping off passengers, TNCs may dwell at the curb if there is a pre-arranged pick-up waiting. Cycling around the terminal curb is not allowed, and the terminal area is surrounded by a geofence. As shown in Table 2.5-3, TNC demand in the peak hour is almost double the number of available spaces in the TNC Hold Lot, which suggests that TNCs may also be dispatched from other areas in the vicinity of the Airport, not just when queued in the TNC Staging Lot.

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## 2.6 RENTAL CAR FACILITIES

Three Rent-A-Car (RAC) companies operate eight brands at the Airport. All RAC facilities, except for unmanned customer counters inside Terminal 1, are located off-Airport, south of I-70, as shown in **Figure 2.6-1**. Each company independently operates its own facilities. Hertz Corporation operates the Hertz and Dollar/Thrifty brands, Enterprise Holdings Incorporated operates the Enterprise, Alamo, and National brands, and The Avis Budget Group operates the Avis and Budget brands. Alamo/National and Avis/Budget are co-branded on the same sites, while the remaining brands are located on their own individual sites.





Each of the companies operate their own facility and have service counters at Terminal 1 near Baggage Claim. Passengers arriving at Terminal 2 are directed to the shuttle pick-up area and taken to the remote sites, as there are no rental car counters at this terminal.

**Table 2.6-1** provides an estimate of the rental car lot sizes.

**Table 2.6-1: Rental Car Company Site Estimates**

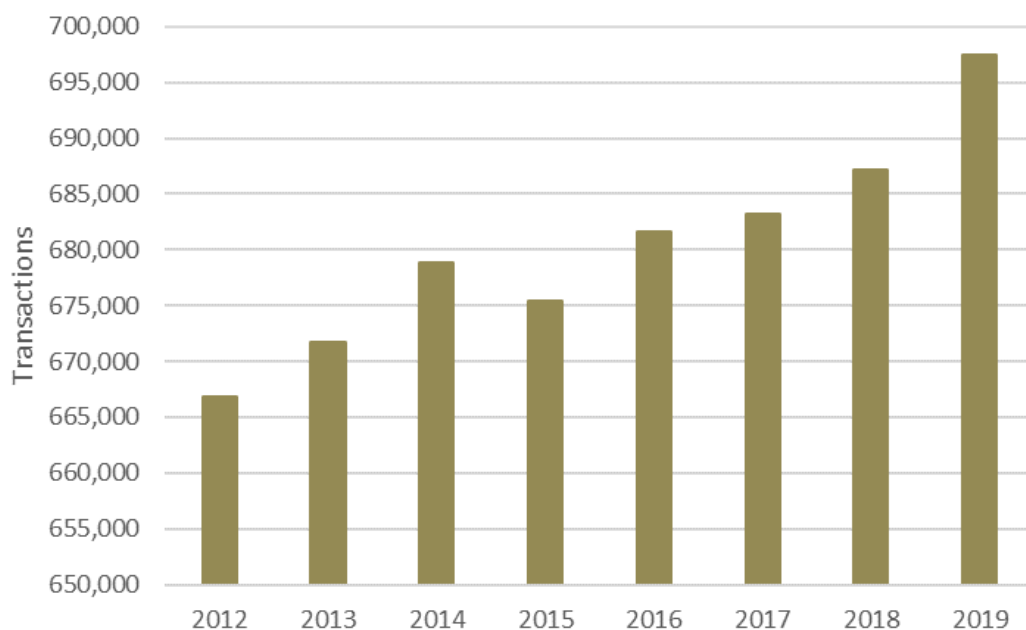
CAR RENTAL COMPANY	ESTIMATED SITE ACREAGE
Enterprise	5 acres
Alamo/National	8 acres
Avis/Budget	13 acres
Hertz	11 acres
Dollar	2 acres
Thrifty	3 acres
<b>Approximate Total</b>	<b>42 acres</b>

Sources: Google Earth Pro, June 2020 (aerial imagery); WSP USA, June 2020.

Each company operates and maintains their own shuttle buses that transport passengers between the terminals and their individual sites. The buses utilize Lambert International Boulevard, stopping at both Terminal 1 and Terminal 2. On each operator's site is a customer service building, including customer counter and administrative area, at-grade ready and return parking spaces, service areas including fueling facilities, wash bays, light maintenance bays, an administrative area, and vehicle storage space.

Rental car transactions at STL have been on a rising trend since 2012, as shown in **Figure 2.6-2**.

**Figure 2.6-2: Historical Rental Car Transactions**



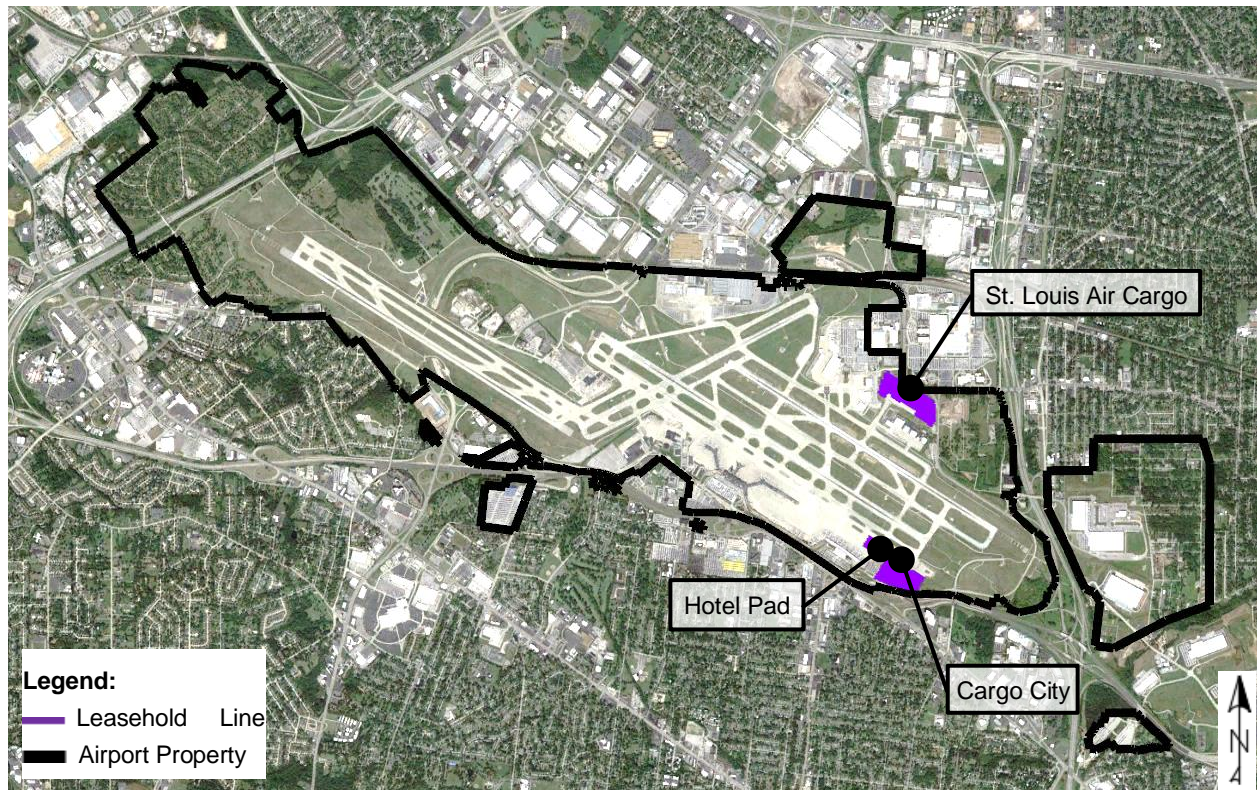
Source: St. Louis Airport Authority, 2020.



## 2.7 AIR CARGO FACILITIES

Air cargo operations at STL are conducted at two main locations, as shown in **Figure 2.7-1**: the St. Louis Air Cargo area, located north of the airfield, off James S. McDonnell Boulevard, serves cargo integrators, while the Cargo City area, located off Air Cargo Road, east of Terminal 2, primarily serves belly cargo.

**Figure 2.7-1: Air Cargo Facilities**



Sources: St. Louis Airport Authority, 2019 (airport property line); Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

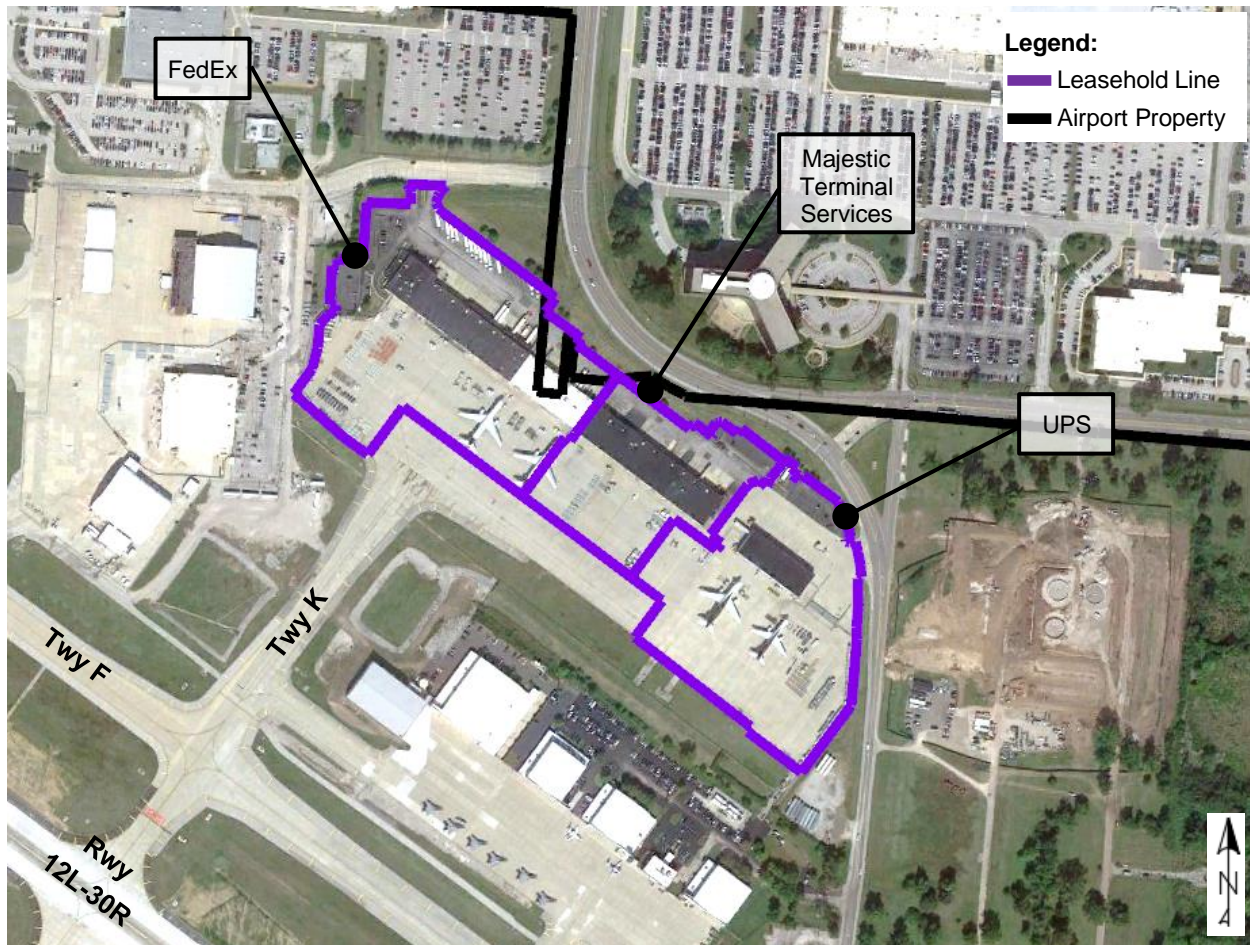
### 2.7.1 ST. LOUIS AIR CARGO

The St. Louis Air Cargo area, shown in **Figure 2.7-2**, serves the following dedicated cargo carriers: FedEx, UPS, and Amazon Air, all utilizing ADG IV aircraft. Landside access is via James S. McDonnell Boulevard on the west. Airfield access to the cargo area is provided via Taxiway K. Aircraft fueling is provided by ATS Jet Center by truck.

FedEx is located at the west end of the facility, with 77,447 sq. ft. of space, including 28 loading docks and 22 truck staging positions. The FedEx facilities have 111 auto parking spaces located north and west of the warehouse. The total vehicle parking area is 57,000 sq. ft. and the truck parking area is 117,800 sq. ft. FedEx has 209,178 sq. ft. of apron space that includes 3 aircraft parking positions. They operate two daily flights to STL, six days per week – Monday through Saturday.



**Figure 2.7-2: St. Louis Air Cargo Facilities**



Sources: St. Louis Airport Authority, 2019 (airport property line and leasehold lines); Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

Majestic Terminal Services occupies the east side of the large building at St. Louis Air Cargo, adjacent to FedEx. Majestic Terminal Services began operating at STL in 2019 and provides all necessary ground handling and cargo sorting for Amazon Air, including breaking down freight from inbound flights and loading and offloading cargo from aircraft. Airborne Express (ABX), Atlas Air and Air Transit International (ATI) are contracted to fly for Amazon Air, although ATI has not yet operated to STL for Amazon Air. The facility has 44,274 sq. ft. of total space, including 22 loading docks. There are 63 auto parking spaces located north of the warehouse and west of St. Louis Air Cargo, with a total area of 24,200 sq. ft. of vehicle parking and 58,200 sq. ft. of truck parking. The Majestic Terminal Services leasehold is comprised of 95,312 sq. ft. of apron space, which accommodates two aircraft parking positions. Amazon Air currently operates one flight a day to STL, seven days per week, utilizing Boeing 767 aircraft, and anticipates returning to two daily flights upon completion of construction on Taxiway K.

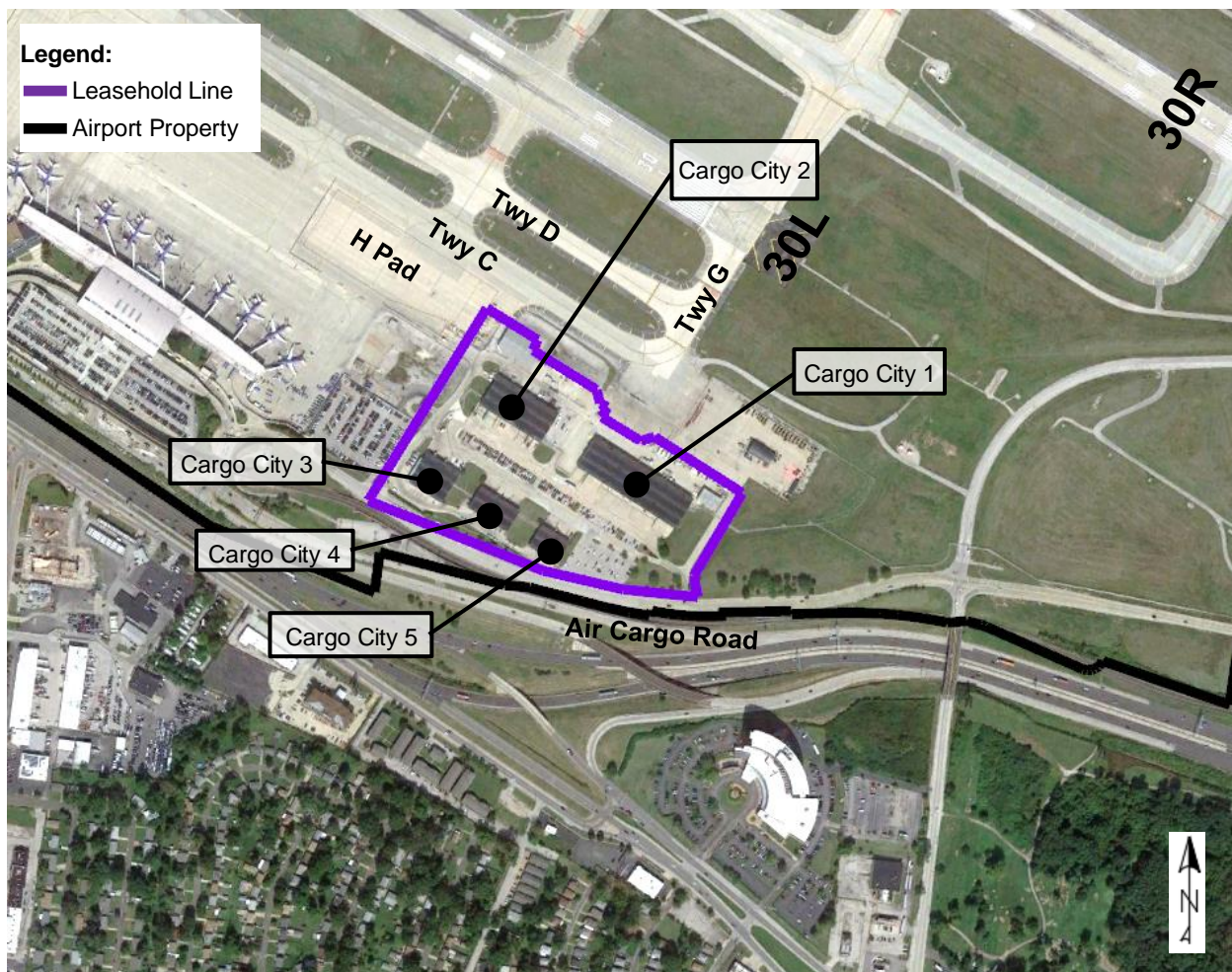
UPS is located in the smaller building at the east of the site. This facility is 17,619 sq. ft. and includes 17 loading docks. There are 58 auto parking spaces located north of the warehouse, with a total of 28,645 sq. ft. for vehicle parking and 69,085 sq. ft. for truck parking. The UPS leasehold includes 255,683 sq. ft. of apron space, which accommodates four aircraft parking positions. UPS operates two flights per day to STL, six days per week, utilizing either Airbus A300-600 or Boeing 757 aircraft.



## 2.7.2 CARGO CITY

The Cargo City area is comprised of five buildings located east of Terminal 2, and primarily serves belly cargo. Roadway access is via Air Cargo Road. Aircraft do not access this area therefore, only vehicle access is required. Auto parking is shared among the entire complex. The complex is shown in **Figure 2.7-3**.

**Figure 2.7-3: Cargo City Facilities**



Sources: St. Louis Airport Authority, 2019 (airport property line and leasehold lines); Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

### CARGO CITY 1

Cargo City 1, previously leased by American Airlines, is currently vacant, except for animal handling activities. In 2017, the US Department of Agriculture designated St. Louis Lambert Airport as a temporary pre-export inspection and port of embarkation for livestock. The airport is certified for the export of ruminant and swine livestock. Inspection pens, holding pens, and container make-up areas occupy 5,000 square feet of the west portion of Cargo City 1.

## CARGO CITY 2

Cargo City 2 houses Air General in the eastern portion of the building, World Flight Services (WFS) in the western portion, and ABC in the center portion. The space between WFS and ABC is vacant.

Air General provides belly cargo ground handling support, as well as handling storage, staging, and maintenance for GSE for American Airlines and Delta Airlines. Air General occupies 15,100 sq. ft. of Cargo City 2 and have 14,100 sq. ft. for equipment staging and storage outside the building. Adjacent to Air General is Airport Bridge Company (ABC), which repairs and maintains passenger loading bridges for Southwest Airlines. ABC occupies 5,238 sq. ft. of the building, along with 5,230 sq. ft. of equipment storage space.

WFS provides cargo ground handling service and storage, staging and maintenance of ground support equipment for DHL, UPS, and USPS. They occupy 7,733 sq. ft. of secured non-climate-controlled space in Cargo City 2. Within this space, 413 sq. ft. is for offices, 6,424 sq. ft. for warehouse, 600 sq. ft. for equipment maintenance, and the 296 sq. ft. for other uses. Of this space, 2,504 sq. ft. is utilized for mail sorting. They currently have 19,500 sq. ft. of outdoor equipment storage and staging. Truck parking area is approximately 4,400 sq. ft. and employees share approximately 32,880 sq. ft. of the shared Cargo City parking lot, south of the Cargo City 2 building.

## CARGO CITY 3

Cargo City 3 is occupied wholly by Southwest Airlines for cabin services and provisioning. The building is 18,324 sq. ft. with 24,600 sq. ft. of outdoor equipment storage space. Southwest Airlines also occupies the west portion of both Cargo City 4 and Cargo City 5.

## CARGO CITY 4

The western portion of Cargo City 4 is occupied by Southwest Airlines and the eastern portion is vacant. Southwest Airlines utilizes the space for belly cargo operations. The space includes 8,160 sq. ft. of building space and 9,105 sq. ft. of equipment storage space.

## CARGO CITY 5

Cargo City 5 is occupied by Southwest Airlines on the west and Textron Technologies on the east. Southwest Airlines utilizes the space for GSE maintenance. The space includes 6,650 sq. ft. of building space and 5,878 sq. ft. of equipment storage space.

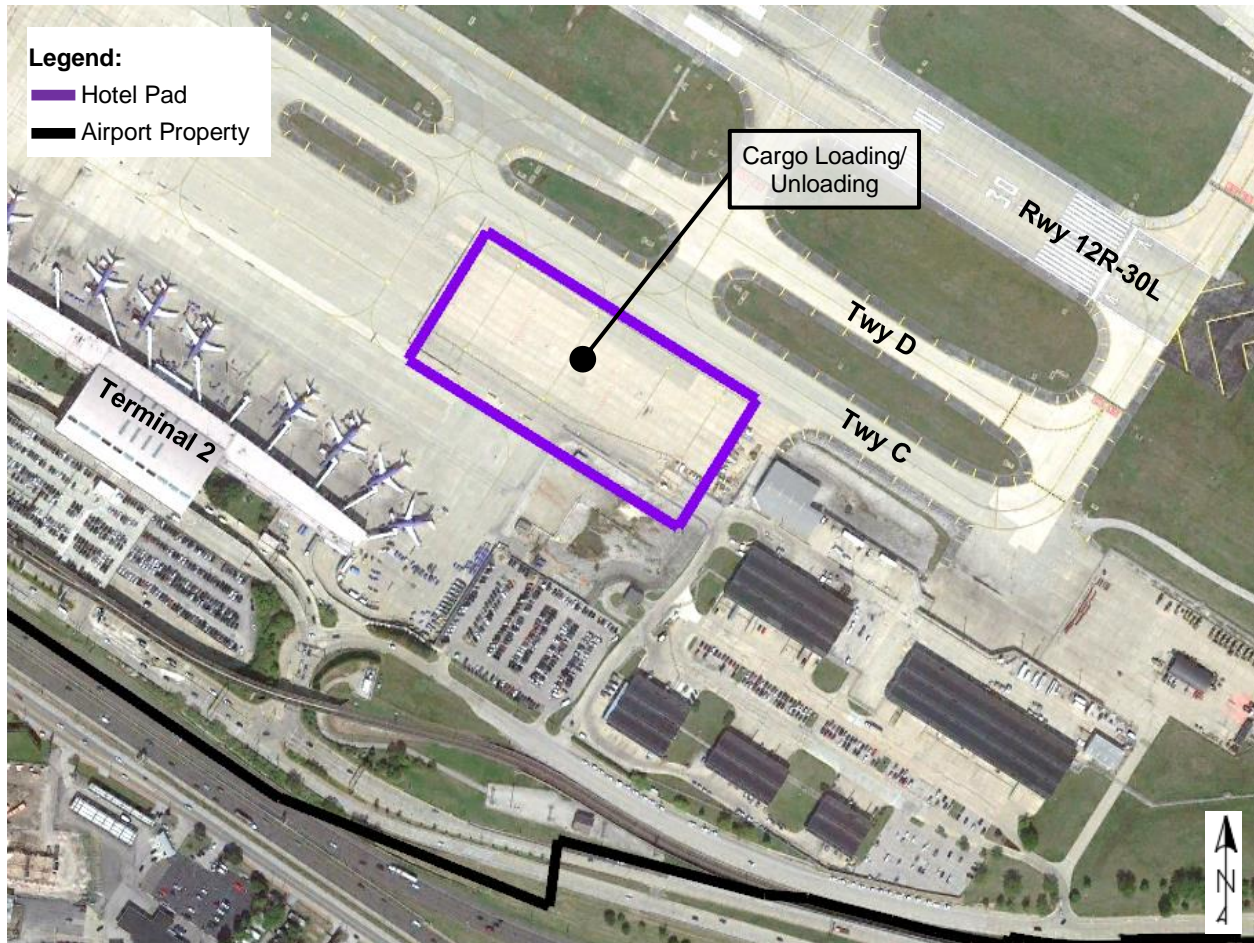
Textron Technologies began occupying the east portion of Cargo City 5 in 2013. They provide ground support equipment maintenance for American Airlines, Cape Air, Air General, Gate Gourmet, and Majestic Terminal Services. They occupy 3,871 sq. ft. of the building, which includes 216 sq. ft. of office space and 3,655 sq. ft. of space for equipment maintenance. They also use 4,004 sq. ft. for outdoor equipment and service truck storage.



### 2.7.3 HOTEL PAD CARGO LOADING/UNLOADING

The Hotel Pad, located northeast of Terminal 2, as shown in **Figure 2.7-4**, accommodates DHL, a dedicated cargo carrier, as well as on-demand cargo charter flights. WFS provides cargo ground handling services for both DHL and charter operators. DHL currently operates two flights per day, 5 days per week, with either B737-400F or B767-200F aircraft.

**Figure 2.7-4: Hotel Pad Cargo Loading/Unloading**



Sources: Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

## 2.8 AIRPORT SUPPORT FACILITIES

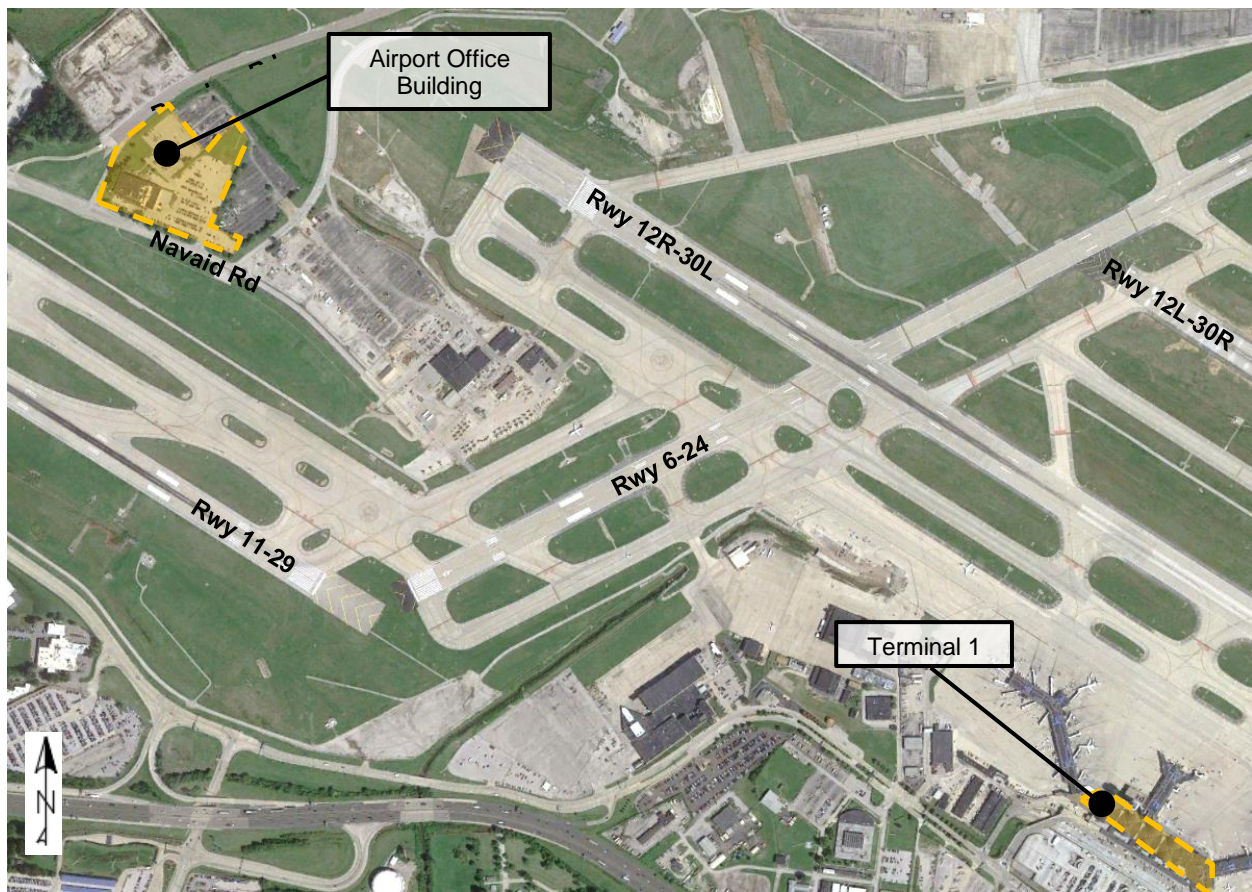
Airport support facilities provide various functions at an airport that ensure the quality and safety of airport operations. Examples of airport support facilities include airport administration, airport operations and maintenance, emergency response and fuel storage. Airport support facilities were identified through maps and tenant lists provided by the STLAA. Functions and existing facilities were verified by staff interviews, internet research, and surveys. The following sections describe the existing conditions of the various STL airport support facilities.



## 2.8.1 AIRPORT ADMINISTRATION

Airport Administration facilities are split between the Airport Office Building (AOB) and Terminal 1, depicted in **Figure 2.8-1**.

**Figure 2.8-1: Airport Administration Facilities**



Sources: Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

The AOB is located north of Runway 11-29 and west of Runway 6-24 and is accessed via Banshee Road and Navaid Road. From the terminal core, access is through the Lindbergh Tunnel or via James S. McDonnell Blvd, around the north side of the airfield. The AOB is a 5-story building and Airport Administration occupies 15,125 square feet of the 4<sup>th</sup> floor. The AOB houses the Planning and Development Department, including Engineering and Environmental Health and Safety, as well as employee training activities. The Airport Administration facilities in the AOB were renovated in 2006 and are in good condition. The AOB also houses simulator bays for TransStates Holdings and The Boeing Company. The AOB surface parking lot is approximately 245,000 sq. ft. and provides adequate parking for all occupants of the AOB. The AOB space occupied by Airport Administration is available for lease. Should the space get leased, the STLAA Airport Administration staff housed in the AOB would be consolidated with other STLAA staff in Terminal 1 or be moved to other surplus space nearer the terminals. Approximately 20,000 sq. ft. of space is estimated to be required for the relocation of STLAA AOB staff.



Airport Administration facilities in Terminal 1 are located both on the lower (arrivals) and upper (departures) levels; detailed locations and functions are provided in Section 2.3. Terminal 1 houses the following Airport Administration functions: Airport executives, Finance and Administration, Properties, Legal, Public Relations, Information Technology (IT), Human Resources, Air Service Development, and Employee Training. Terminal 1 also offers several conference rooms. Airport Administration and Operations Offices encompass approximately 83,000 sq. ft. in Terminal 1, and 2,000 sq. ft. in Terminal 2.

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## 2.8.2 AIRPORT OPERATIONS AND MAINTENANCE

Airport Operations and Maintenance Administrative offices are collocated with Airport Administration staff on the Terminal 1 lower (arrivals) level. An Operations Control Center (OCC) is located in Concourse B and houses 5-6 agents in a small space (approximately 200 sq. ft.). Airport Operations vehicles park at the base of Concourse B, on the northwest end. An emergency operations center (EOC) is currently in design and will be housed on the Terminal 1 apron level, likely in the former HMS Host cafeteria.

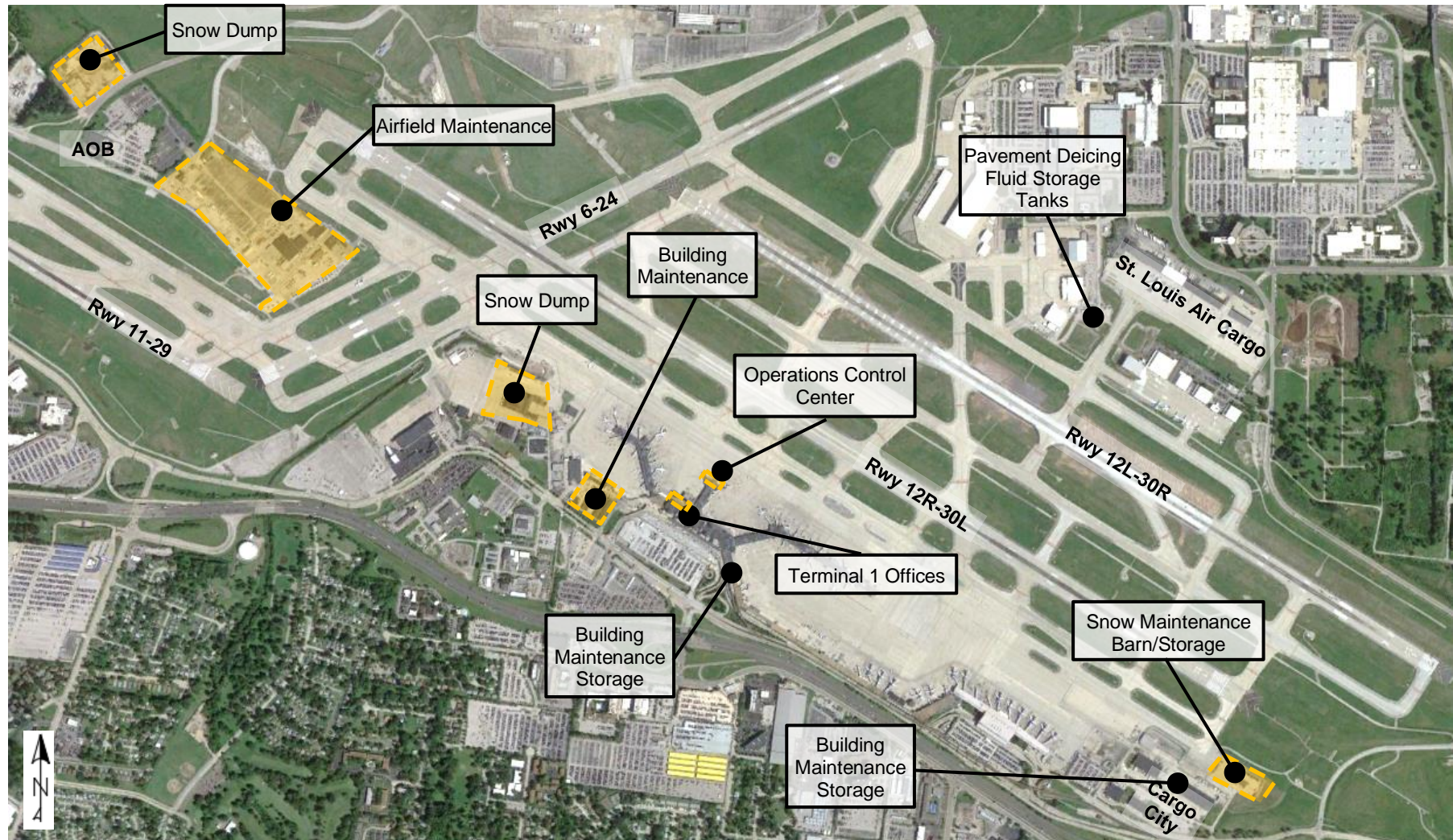
Other Airport Operations and Maintenance facilities are split across several locations, as shown on **Figure 2.8-2**, and include airfield and landside maintenance:

- Terminal 1 (lower (arrivals) level), includes administration offices
- Field Maintenance/Materials Management, located west of Runway 6-24 and accessed via Banshee Road and Navaid Road, occupies approximately 28 acres, and includes:
  - Airfield Maintenance (Buildings #403, #404, #413, and #621)
  - Landscaping offices, equipment storage and warehouse (Building #407)
  - Airport vehicles auto shop (Buildings #402)
  - Sand storage/heater (Buildings #401 and #405)
  - Salt storage (Building #631)
  - Central Stores (Building #409)
  - Automobile fuel pumps (unleaded/diesel/CNG fuel)
  - Snow removal vehicle staging, along Taxiway T
  - Automobile fuel storage tank: northeast corner of field maintenance complex
  - Pavement deicing fluid storage tanks: two tanks south of field maintenance buildings
  - Employee parking (52,800 sq. ft.)
- Building Maintenance (Building #315): located south of Concourse A
- Climate Control/Electric Shop (Building #406)
- Building Maintenance storage areas: Airfield General Building (Building #411), Cargo City 1 (Building #204), apron level west of Gate D2
- Snow Maintenance Barn (Building #216): located northeast of Cargo City, this is a contractor staging area for snow removal equipment used to clear the terminal area and public roads

- Pavement deicing fluid storage tanks:
  - three 30,000-gallon tanks are located southwest of St. Louis Air Cargo
  - two 20,000-gallon tanks and two 25,000-gallon tanks are located on the Field Maintenance campus
- Snow Dump Sites: former MOANG base apron (preferred) and north of the AOB (secondary).



**Figure 2.8-2: Airport Operations and Maintenance Facilities**



Note:

AOB = Airport Office Building

Sources: Google Earth Pro, April 2020 (aerial photography); WSP USA, April 2020 (annotations).

Based on a 2016 study<sup>3</sup>, the majority of Airport Maintenance facilities are in need of renovation and require a larger footprint. Additionally, the existing Field Maintenance/Materials Management campus, west of Runway 6-24, is not configured for storing modern airport equipment, such as large snow and ice removal equipment. Most airport maintenance equipment is stored outdoors, which is not optimal for its function and useful life, although some indoor spaces have been adapted for equipment storage. Exposed to the elements, the fleet is subject to weathering and the vehicles are prone to faster deterioration than would be expected if parked under cover. Some of this equipment is also repaired outdoors, as there is no room to do so indoors. This 2016 study proposed a new Field Maintenance/Materials Management campus north and west of the existing campus.

**Table 2.8-1** summarizes the subdivisions in the Airport Operations and Maintenance Department, and their corresponding number of employees.

**Table 2.8-1: Airport Operations and Maintenance Functions and Employees**

AIRFIELD		LANDSIDE	
Subdivision	Employees	Subdivision	Employees
Airfield Maintenance	70	Building Maintenance	40
Landscaping	4	Housekeeping	34
Auto Shop	24	Climate Control	37
Operations/Communications Center	14	Electric Shop	32
St. Louis Fire Department	62	Airport Police	91
Administrative	10	Security Operations	9
Materials Management	7		

Source: St. Louis Airport Authority, April 2020.

The Airport Operations and Maintenance department has a total of 364 vehicles.

**Table 2.8-2** summarizes location, size and condition of airport maintenance facilities.

<sup>3</sup> Jacobsen Daniels, Task Order No. 6: Airfield Maintenance – Concept Layout, June 16, 2016.



**Table 2.8-2: Airport Maintenance Facilities**

BUILDING NUMBER	USE	LOCATION	SIZE (SQUARE FEET)	CONDITION
401	Materials Management	Field Maintenance	65,390	Fair
402	Office	Field Maintenance	6,642	Fair
403	Auto Shop	Field Maintenance	16,455	Fair
404	Auto Shop	Field Maintenance	17,323	Fair
405	Sand Storage	Field Maintenance	8,288	Fair
407	Landscaping	Field Maintenance	6,800	Fair
409	Storage	Field Maintenance	5,500	Fair
	Employee Parking Lot	Field Maintenance	52,800	Fair
631	Salt Storage	Field Maintenance	3,000	Good
216	Snow Vehicle Maintenance/Storage	North of Cargo City	5,000	Fair
	Snow Dump	MoANG, West of Concourse A	100,000	Fair
	Pavement Deicing Storage Tanks	North of Runway 12L-30R		Fair
	Pavement Deicing Storage Tanks	Field Maintenance		Fair
315	Building Maintenance	South of Concourse A	13,000	Fair
406	Climate Control/Electric Shop	South of Concourse A	28,000	Fair
411	Electrical Storage	South of Concourse A	4,300	Fair
106	Building Maintenance Storage	West of Gate D2, Apron Level	12,000	Fair
204	Building Maintenance Storage	Cargo City 1	21,000	Fair

Note:

MoANG = Missouri Army National Guard

Sources: St. Louis Lambert International Airport Layout Plan, 2012; WSP USA, April 2020.

### 2.8.3 AIRPORT RESCUE AND FIRE FIGHTING

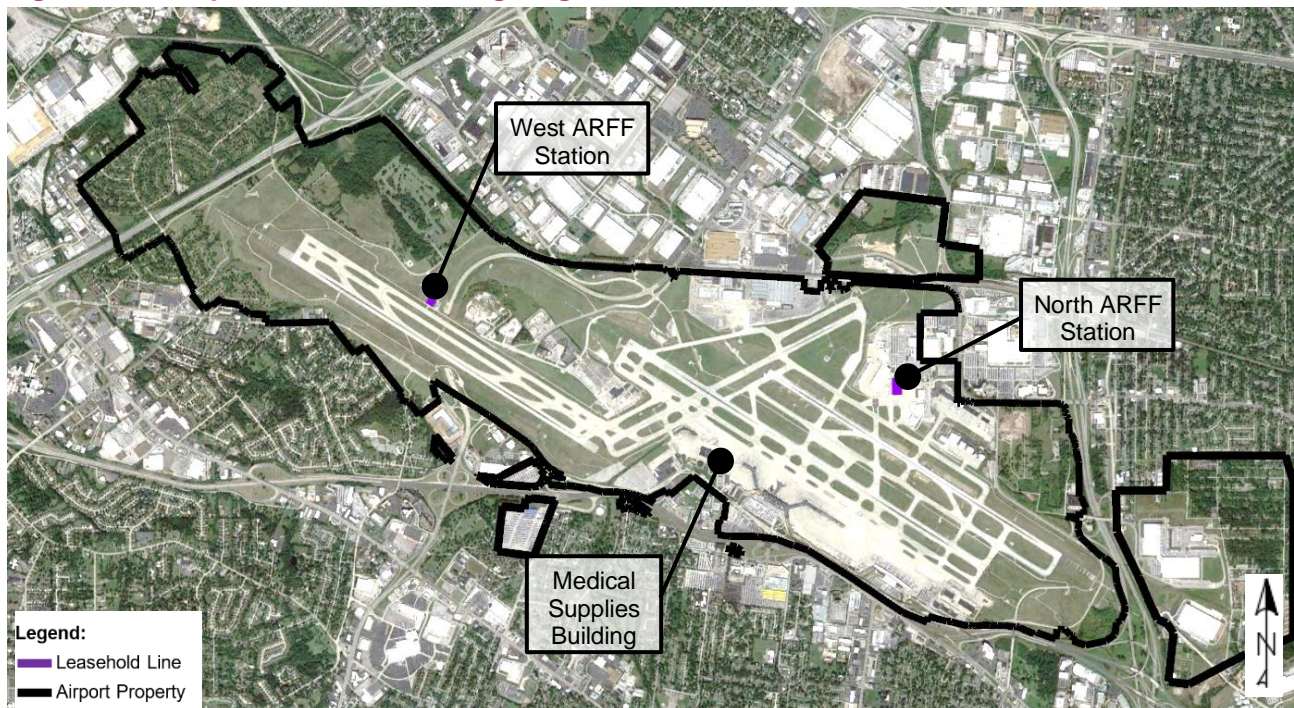
Airport emergency facilities at STL include two Airport Rescue and Fire Fighting (ARFF) facilities, the West and North ARFF Stations, as well as the Medical Services Building, as shown on **Figure 2.8-3**. Per the

Airport Certification Manual<sup>4</sup>, the North ARFF Station is sized to meet FAA requirements for a Part 139 Index E airport, and the West ARFF Station is sized to meet Index D requirements.

Both ARFF Stations house 62 personnel in total, including the Battalion Chief, Training Captain, eight Captains and 52 Firefighters. Typically, there are 12 personnel per shift at the North Station and nine personnel per shift at the West Station, although this varies depending on needs and availability. The staff are employed by the City of St. Louis Fire Department. Functions include handling emergencies on the airfield, terminal, and roadways around the airport.

Minor maintenance for the fire and rescue equipment is performed at the Airport Auto Shop, while major maintenance is performed off-Airport and occasionally at the Auto Shop. Additionally, vehicle maintenance is not performed at the firehouses, unless necessary.

**Figure 2.8-3: Airport Rescue and Firefighting Facilities**



Sources: St. Louis Airport Authority, 2019 (airport property line and leasehold lines); Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

## WEST AIRPORT RESCUE AND FIREFIGHTING STATION

The West ARFF Station (Building #416) is located north of Runway 11-29, off Gist Road, as shown on **Figure 2.8-4**. The facility was commissioned in 2005 with the opening of Runway 11-29, to meet the required ARFF response times. The facility has 6,250 sq. ft. of apparatus space and 5,375 sq. ft. of office and support space, with three double apparatus bays. The facility condition of the West ARFF Station is

<sup>4</sup> St. Louis Lambert International Airport, *Airport Certification Manual*, December 2019.



rated as excellent. Additionally, the facility has a 5,900 sq. ft. parking area with 19 auto parking spaces. The condition of the parking pavement is fair.

## NORTH AIRPORT RESCUE AND FIREFIGHTING STATION

The North ARFF Station (Building #527) is located off Taxiway F7, at the end of Aviation Drive. The facility has 10,200 sq. ft. of apparatus space and 7,050 sq. ft. of office and support space, with five double apparatus bays. The facility condition of the North ARFF Station is rated as good. Additionally, the facility has a 9,700 sq. ft. parking area with 27 auto parking spaces. The condition of the parking pavement is good.

**Table 2.8-3** summarizes the ARFF fleet of vehicles and trailers.

Typically, the North ARFF Station houses two Striker 3000s, one Striker 1500, and one rapid response vehicle. The West ARFF Station typically houses one Striker 3000, one Striker 1500, and two rapid response vehicles. During maintenance cycles, the vehicle locations adjust in order to maintain ARFF index.

**Table 2.8-3: Airport Rescue and Fire Fighting Vehicles**

VEHICLE TYPE	MAKE AND MODEL	YEAR	LOCATION
Truck 40	Simon 110' Aerial Ladder	1989	N ARFF
Truck 42	Ford F450 Rapid Response	2006	Varies based on need
Truck 43	Oshkosh Striker 3000	2014	Varies based on need
Truck 44	Saulsbury Pumper/Aerial1996	1996	N ARFF
Truck 45	Oshkosh Striker 3000	2003	Varies based on need
Truck 46	Oshkosh Striker 3000 Nozzle	2008	N ARFF
Truck 47	Freightliner Hazmat Van	2002	N ARFF
Truck 48	Oshkosh Striker 1500	2013	Varies based on need
Truck 49	Ford F550 Rapid Response	2019	Varies based on need
Truck 50	Ford F550 Mini Rescue	2008	W ARFF
Truck 52	Oshkosh Striker 1500	2006	Varies based on need
Truck 53	Ford F550 Stair Truck	2006	W ARFF
Utility 41	Chevrolet 4x4 Tahoe	2017	Battalion Chief
Utility 51	Chevrolet 4x4 Tahoe	2013	Captain Training

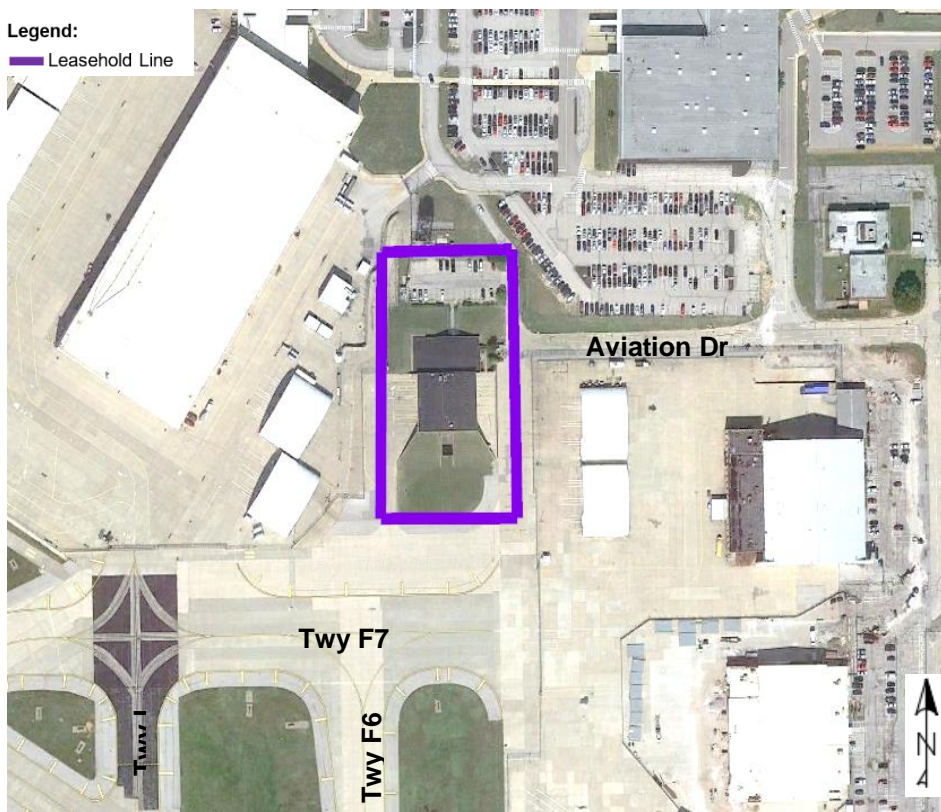
Sources: St. Louis Airport Authority, December 2020.

**Figure 2.8-4: West Airport Rescue and Firefighting Station**



Sources: St. Louis Airport Authority, 2019 (airport property line and leasehold lines); Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

**Figure 2.8-5: North Airport Rescue and Firefighting Station**



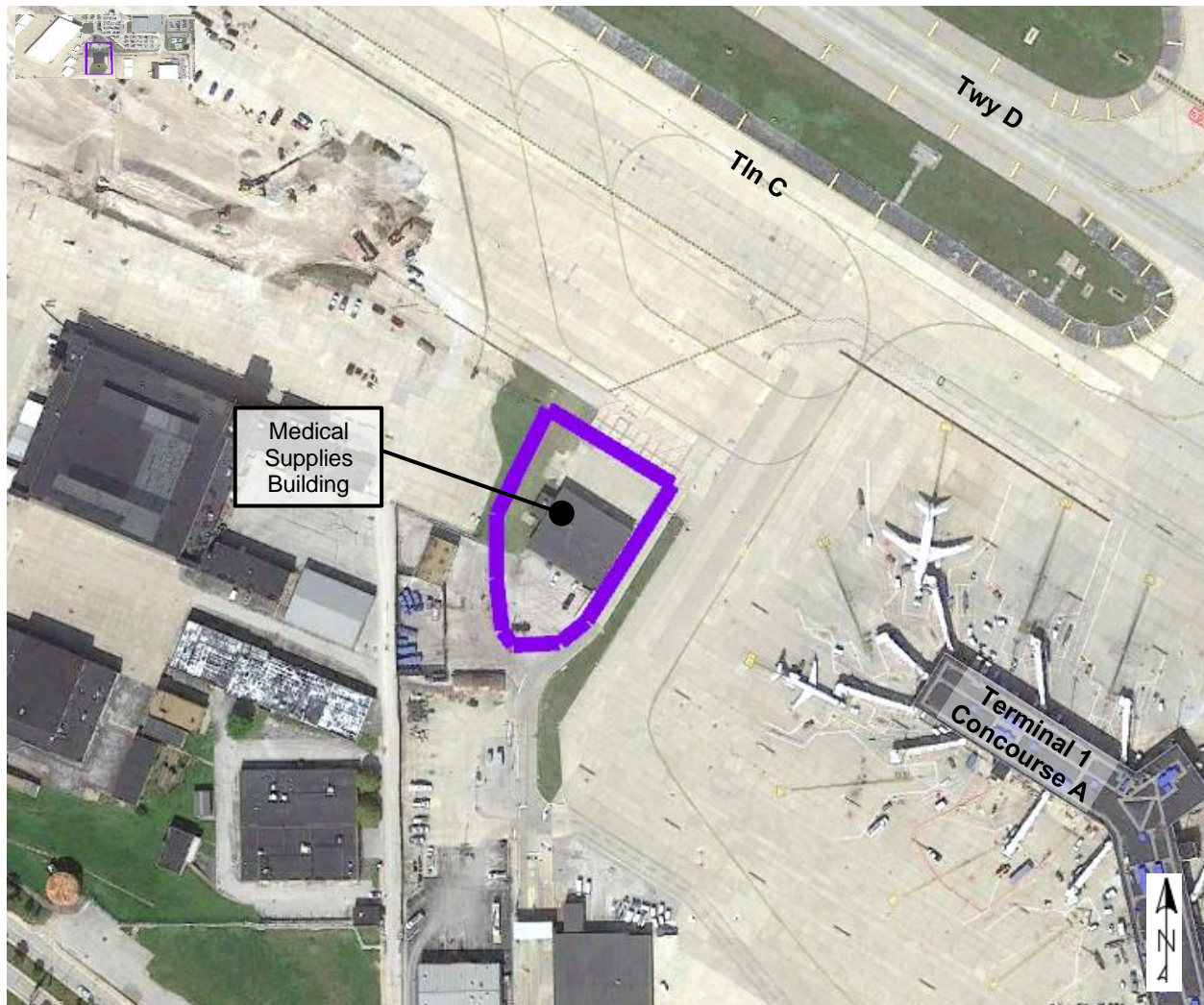
Sources: St. Louis Airport Authority, 2019 (airport property line and leasehold lines); Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).



## MEDICAL SUPPLIES BUILDING

The Medical Supplies Building (Building #410) is located west of Terminal 1, as shown on **Figure 2.8-6**. This building, which was previously the South ARFF Station, now houses medical supplies for use by the Airport emergency services, as well as the Mobile Command Center and other emergency vehicles. It also houses ambulance and EMT staff. It is an Airport-owned facility with 9,580 sq. ft of space, in fair condition.

**Figure 2.8-6: Medical Supplies Building**



Sources: Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

### 2.8.4 AIRPORT POLICE AND SECURITY

Airport Police enforce local, state, and federal laws, and FAA regulations, conduct criminal investigations, canine explosive detection and airport community-oriented policing.

Security Operations is responsible for monitoring all alarm systems, security camera systems, and AOA gate access systems. The unit is also responsible for employee background checks, fingerprinting, issuing Security Identification Display Area badges, and for airport security and traffic control

Airport Police and Security Operations occupy the following spaces:

- Main police station (MTS 2494 – Terminal 1 lower-level west end)
- Badging office (MTS 2520 – Terminal 1 lower-level west end)
- Police substation (ET1009 – Terminal 2 lower-level east end)
- Uniformed crime reporting office (MT 3036, MTN 2002F – Terminal 1 upper level)
- Criminal investigation division (MTS 2554, MTS 2560, MTS 2566, MTS 2572 – Terminal 1 lower level behind USO)
- Canine facility (11935 Natural Bridge Road)
- Male and female locker rooms (MT 1464/MT1440 - Main Terminal apron level)
- Property and records storage (1129B – Terminal 1 ground level)
- Large equipment storage (old remote firehouse inside Gate 17S)
- CDRT equipment storage (B2107 – Terminal 1 Concourse B)
- Police bike storage (B2103 – Terminal 1 Concourse B)
- Blanket/pillow storage room (MT1458 – Main Terminal apron level)

The Airport Police Department has 90 full time employees (including 78 police officers), and Airport Security Operations has 9 employees. Airport Police is a department within the Airport Authority, and airport police personnel are deputized by the Chief Law Enforcement Office of the County of St. Louis.

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### 2.8.5 AIR TRAFFIC CONTROL TOWER FACILITIES

The STL air traffic control tower (ATCT) facilities are located at the base of Terminal 1, next to Concourse B, as shown in **Figure 2.8-7**. The STL ATCT is responsible for safe and efficient management of local air traffic, and provides air traffic control services to include flight data, clearance delivery, metering, ground control, and local control for the area around the Airport's Class Bravo airspace up to 3000' MSL and out to approximately 6 miles.

The facility was built in 1999, and is in good condition, with normal maintenance and updates. Employee parking is in the lower level of the Terminal 1 parking garage.

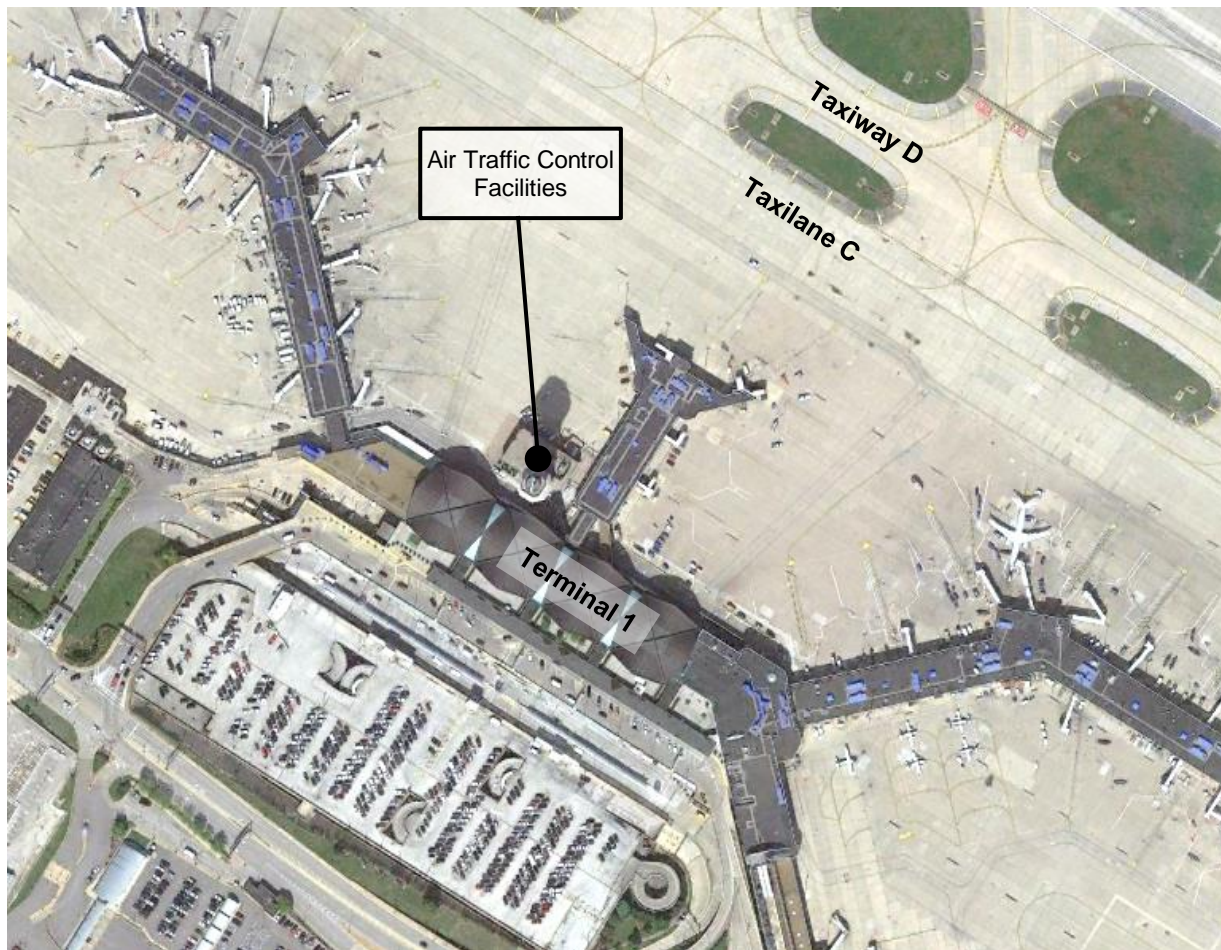
The ATCT size is adequate to accommodate its current functions. The ATCT currently operates four staff positions: one ground control (GC) position, one local control (LC) position, one metering position (ME) and a supervisor/coordinator combined position (SC). The growth of the facility could accommodate a total of 10 positions, consisting of 3 GC positions and 3 LC positions, 2 ME positions, 1 coordinator position and 1 supervisor position. The SC position would be split into 2 separate positions.

The facility ground elevation is 555.50' MSL, with the cab floor elevation at 739.50' MSL or 184.00' AGL. The total height of the tower is at 752.6' MSL or 197.8' AGL. Controller eye level (assuming a height of 5.5') would be at 745' MSL or 189.5' AGL.



The tower has full view of the Airport Operations Area with no line-of-sight issues. However, there are numerous line-of-sight issues in the non-movement area, which are considered minor, as the non-movement area is not controlled by ATC; areas with limited line-of-sight include the American Airlines maintenance base, the Cape Air maintenance base, the end of Concourse C and the St. Louis Air Cargo apron area.

**Figure 2.8-7: Air Traffic Control Facilities**



Sources: Google Earth Pro, September 2019 (aerial photography); WSP USA, April 2020 (annotations).

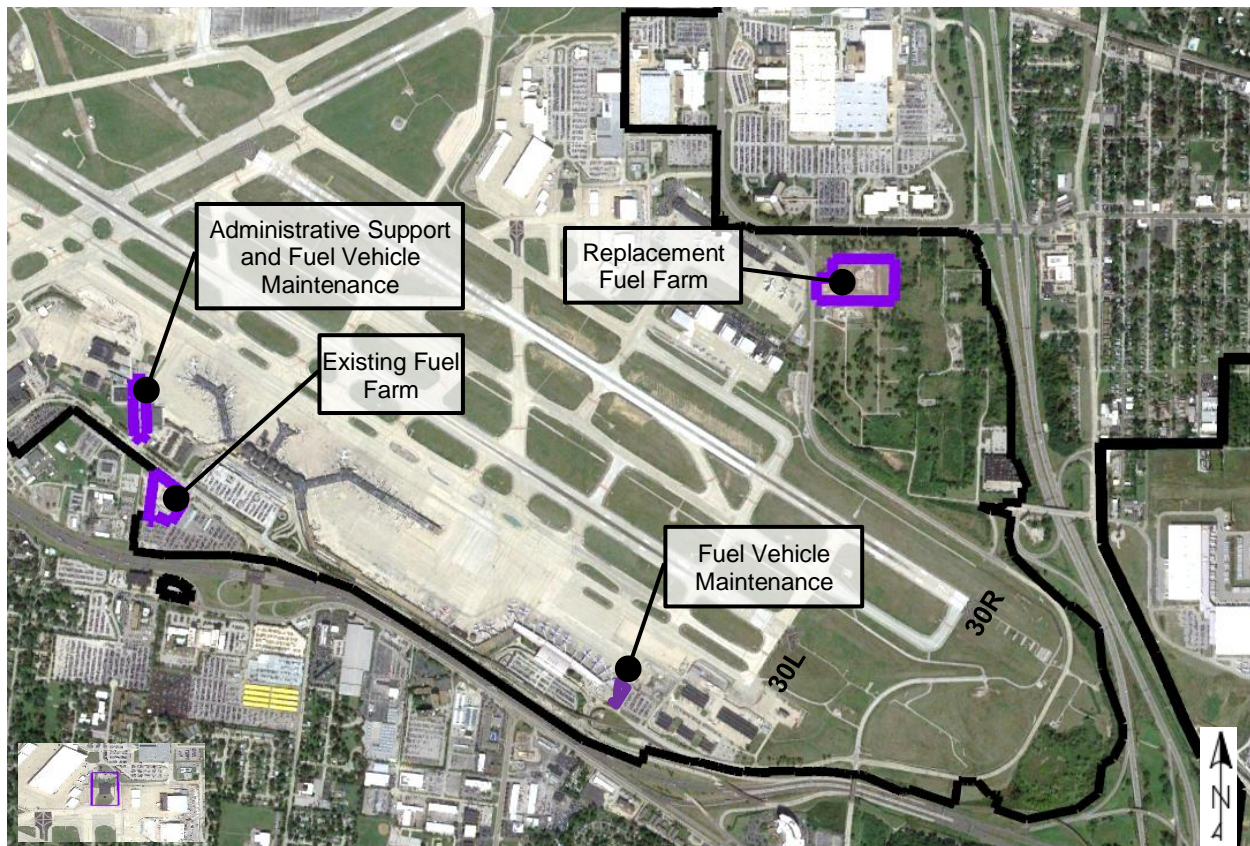
## 2.8.6 AIRPORT FUEL FARM

The existing fuel farm at STL is located off Lambert International Boulevard, adjacent to Lot A, as depicted on **Figure 2.8-8**. It is a below-ground integrated aircraft fueling hydrant system and was built in 1957 on three acres of space. It is leased by STL Fuel Company LLC and operated by Swissport. STL Fuel is a consortium of all the airlines at the Airport. Day-to-day operations are handled by Swissport. The facility contains twelve 60,000-gallon tanks, which are filled by twenty-nine 30,000-gallon tanks, which are directly fueled from two separate underground supply lines. The 60,000-gallon tanks supply the hydrant fueling system, and then fuel carts distribute the fuel to the aircraft.



To meet new environmental regulations and infrastructure needs, the consortium is building a replacement fuel farm on eight acres south of Airport Road and east of James S. McDonnell Boulevard. It is set to open in 2021. The project is sponsored by STL Fuel Company LLC. The site will consist of three one-million gallon above-ground tanks and will have a modern operations and administration building secured by a perimeter fence, surveillance cameras, and security gates. The project also includes building a fuel transfer line from the facility to STL terminals, which then routes the fuel to each airline gate. The site will have additional space for expansion in the future.

**Figure 2.8-8: Fuel Facilities**



Sources: Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

Two areas support fuel vehicle maintenance:

- One area west of Concourse A: STL Fuel Company LLC also leases two buildings located north of Lambert International Blvd and west of Concourse A. One building (Building #309) is 3,239 sq. ft. and houses administrative and operations support for the fuel farm and the fuel vehicles maintenance facility. The second building (Building #308) is 7,092 sq. ft. and is used for fuel service equipment and vehicle maintenance. The area also includes 75,350 sq. ft. of staging space, as well as 60 vehicle parking spaces and 6 truck parking spaces. As part of the construction of the replacement fuel farm, the area north of Building #308 will be reconstructed, to accommodate all fuel and GSE operators.
- One area east of Terminal 2, approximately 10,000 sq. ft. and adjacent to Lot E.



### 2.8.7 CONCESSIONS COMMISSARY

HMS Host leases Building #307, depicted on **Figure 2.8-9**, to use as a commissary for its terminal concession supplies. All concessions deliveries for HMS Host and its sub-tenants are delivered to Building #307, as large trucks are not allowed on the apron. Deliveries are unloaded, sorted, then reloaded on smaller trucks and delivered to each terminal, where they are screened by TSA.

Concessions deliveries for the Hudson Group are received at an off-airport facility. Smaller trucks then deliver food and goods to each terminal.

**Figure 2.8-9: Concessions Commissary**



Sources: Google Earth Pro, August 2019 (aerial photography); WSP USA, October 2020 (annotations).

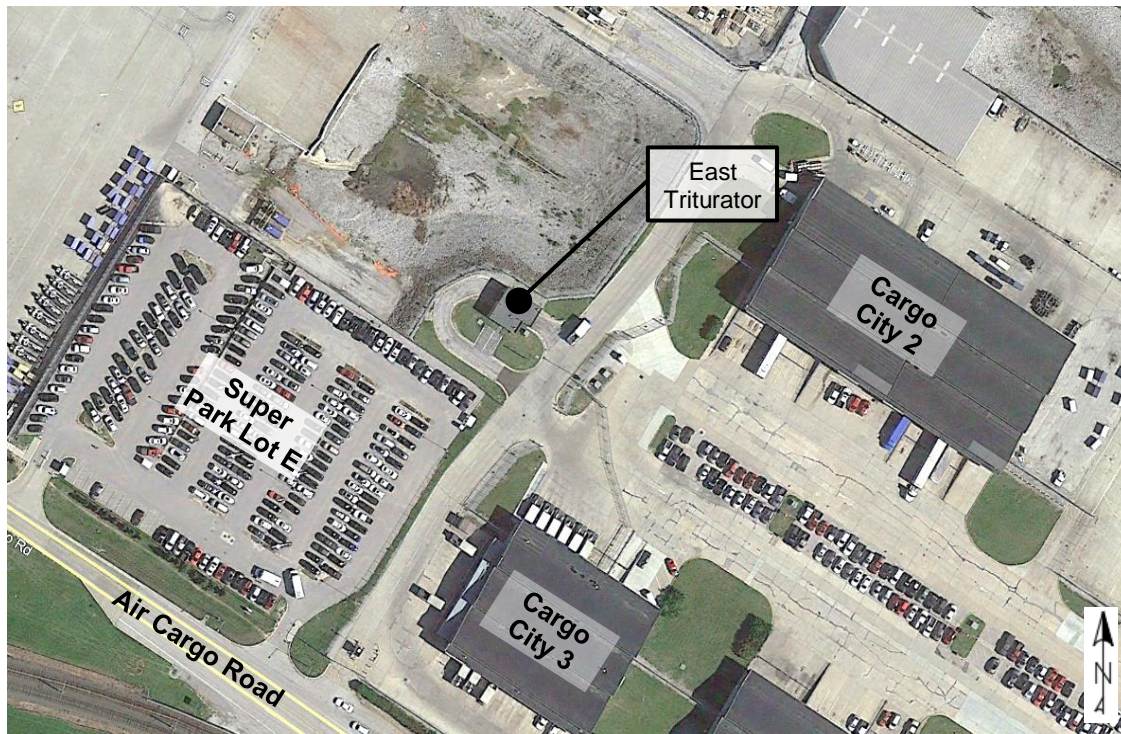
### 2.8.8 WASTE DISPOSAL

Two drive-through triturator buildings allow airline lavatory vehicles to discharge their contents:



- The East Triturator is located west of Cargo City and north of Super Park Lot E, as depicted on **Figure 2.8-10**.
- The West Triturator is located West of Concourse A, and is depicted on **Figure 2.8-11**

**Figure 2.8-10: East Triturator**



Sources: Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

**Figure 2.8-11: West Triturator**



Sources: Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).



## 2.9 AIRLINE SUPPORT FACILITIES

Airline support facilities provide various functions at an airport that ensure the efficiency and safety of airline operations. Examples of airline support facilities include aircraft maintenance facilities, ground support equipment handling and servicing, and flight kitchens. Airline support facilities were identified through maps and tenant lists provided by the STLAA. Functions and existing facilities were verified by staff interviews, internet research, and surveys. The following sections describe the existing conditions of the various STL airline support facilities.

### 2.9.1 AIRCRAFT MAINTENANCE, REPAIR AND OVERHAUL

Five aircraft maintenance facilities operate at STL and are depicted on **Figure 2.9-1**.

**Figure 2.9-1: Aircraft Maintenance Facilities**



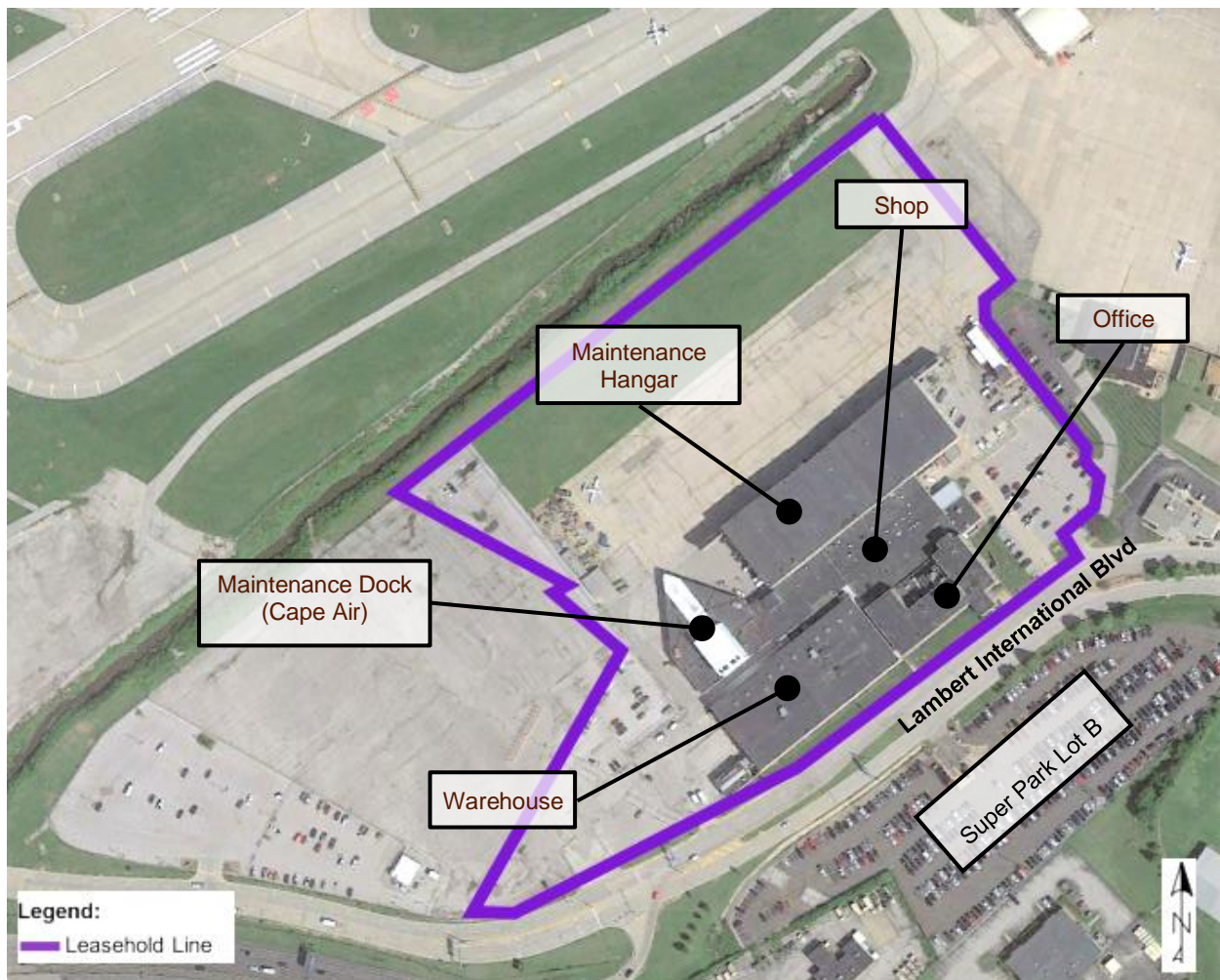
Sources: Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

### AMERICAN AIRLINES

The American Airlines Aircraft Maintenance, Repair and Overhaul (MRO) facility and Ground Operations Center are located north of Lambert International Boulevard, across from Parking Lot B, and depicted in **Figure 2.9-2**. American Airlines aircraft and ground vehicles are serviced in these facilities. The following aircraft services are provided in this facility: airframe, powerplant, avionics, interiors, A checks, and interior customer focus program checks. The facility is 177,276 sq. ft. and includes four buildings. The maintenance hangar building is 52,442 sq. ft. and can accommodate three aircraft such as the Boeing 737. However, the maintenance hangar cannot fully enclose any of the aircraft types American Airlines operates in the STL market (up to ADG III aircraft).

Adjacent to and south of the maintenance hangar is the warehouse building, which is 41,747 sq. ft. and contains six at-grade garage bays for parts shipping and receiving. The maintenance office is located northeast of the warehouse building in a 19,328 sq. ft. building. The maintenance dock, which is subleased to Cape Air, is located west of the maintenance hangar, and is approximately 22,000 sq. ft. The Shop area, which is approximately 41,000 sq. ft., is located between the office and warehouse to the south and the aircraft maintenance hangar to the north. The facility also includes 218,700 sq. ft. of apron with access from Taxiway S, including 52,000 sq. ft. leased to Cape Air. The apron area, which is in fair condition, is also used for maintenance of Boeing 737 and Airbus A320F aircraft. There are 168 employee parking spaces at the facility, in fair condition.

**Figure 2.9-2: American Airlines Aircraft Maintenance Facilities and Ground Operations Center**



Sources: Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

## TRANS STATES HOLDINGS

Trans States Holdings operates a 99,380 sq. ft. MRO facility on the north side of the airfield, to provide aircraft maintenance services for GoJet Airlines, which are subsidiaries of Trans States Airline. Trans States Holdings provides the following services in this facility: airframe, powerplant, avionics, interiors, and

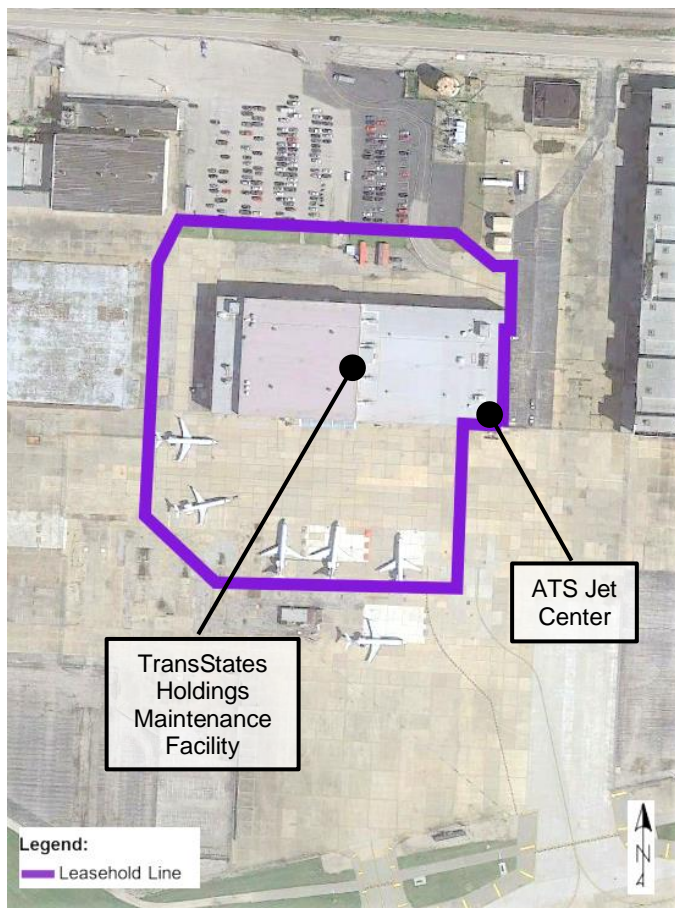


A/B/C/D checks. Approximately 30 percent of the scheduled daily departures at STL require schedule/unscheduled maintenance.

The facility is in good condition, and includes 16,380 sq. ft. of office space, 8,000 sq. ft. of parts storage and 75,000 sq. ft. for aircraft maintenance. Trans States Holdings conducts all aircraft maintenance in the maintenance hangar, which can accommodate seven aircraft, such as the CRJ 550. The 225-vehicle parking spaces north of the facility is in fair condition. Trans States Holdings also leases 220,000 sq. ft. of apron space for aircraft staging/storage; the apron is in fair condition. These facilities are depicted on **Figure 2.9-3**.

ATS Jet Center occupies space in the southeast portion of the Trans States Holdings MRO facility.

**Figure 2.9-3: TransStates Holdings Aircraft Maintenance Facilities**



Sources: Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

## CAPE AIR

Within the American Airlines MRO, Cape Air subleases the maintenance dock, as shown on Figure 2.9-2. In this facility, Cape Air provides the following services: airframe, powerplant, avionics, interiors, landing gear and aircraft inspections (approved aircraft inspection program). This facility is located north of the warehouse building and west of the maintenance hangar and totals approximately 22,000 sq. ft. The maintenance dock can accommodate six aircraft, such as the Cessna 402C or Tecnam P2012. The facility is in fair condition; due to its age, hangar doors and roof heaters break often. Cape Air also conducts

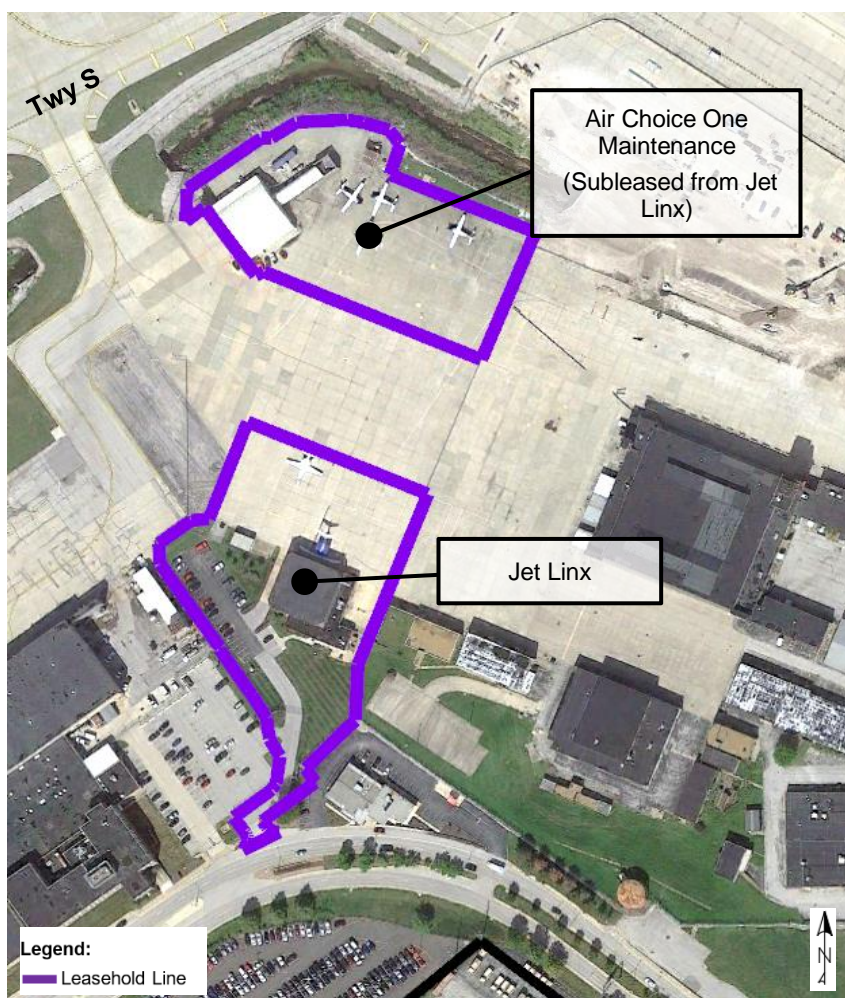
maintenance activities on the adjacent 30,000 -sq. ft. apron and 22,000 sq.ft. staging area, which is in good condition.

Cape Air employees share the American Airlines Shop parking lot, which is in fair condition.

## AIR CHOICE ONE

Air Choice One subleases a hangar and apron space from Jet Linx for aircraft maintenance of its fleet of single-engine Cessna 208s, as depicted on **Figure 2.9-4**. The facility is located adjacent to the American Airlines Maintenance facility, north of Lambert International Boulevard. Airfield access is via Taxiway S. The hangar is a former jet engine hush house.

**Figure 2.9-4: Air Choice One Aircraft Maintenance**



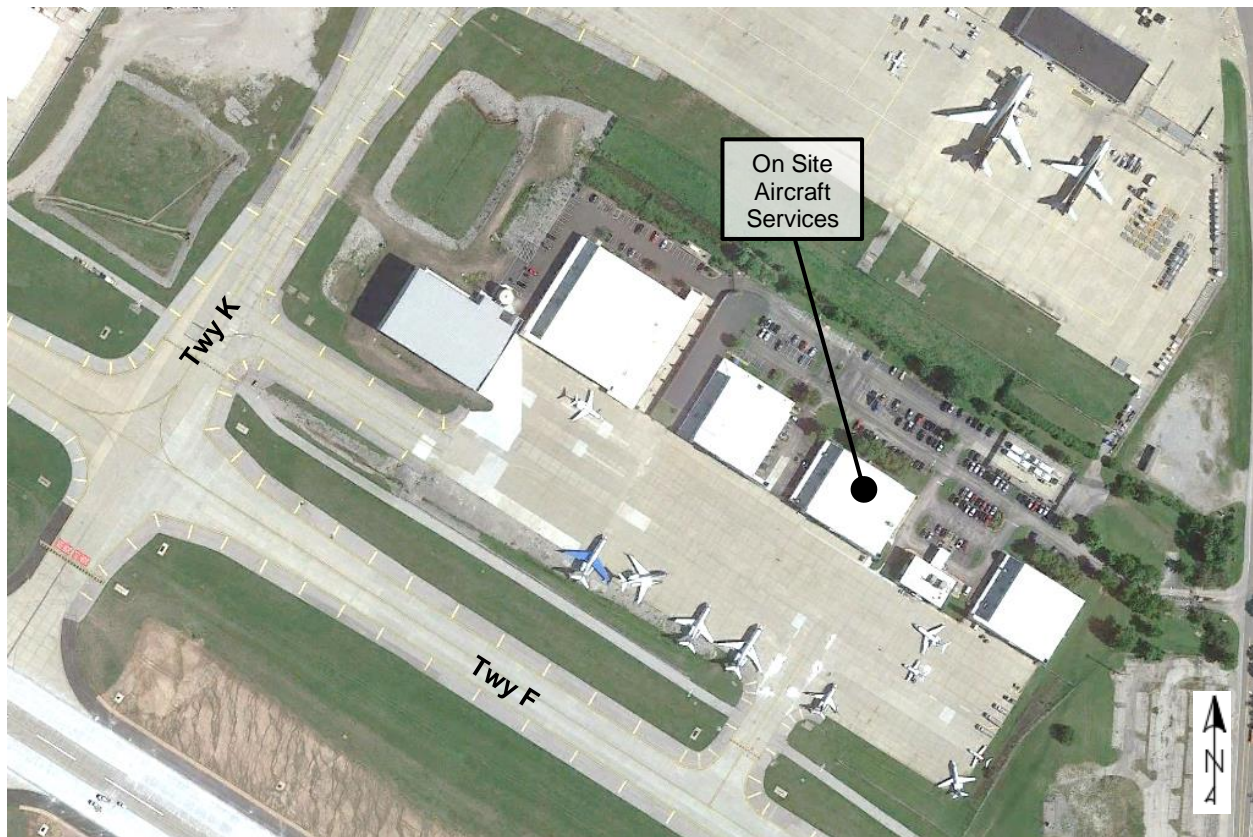
Sources: Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

## ON SITE AIRCRAFT SERVICE

On Site Aircraft Service, Inc., which began operating at STL in 2004, subleases hangar and apron space from Signature Flight Support for aircraft maintenance. They perform line maintenance, routine maintenance, and inspections on Part 91, 135 and 121 aircraft. **Figure 2.9-5** depicts the location of On-Site Aircraft Service.



**Figure 2.9-5: On Site Aircraft Services Aircraft Maintenance Facilities**



Sources: Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

## 2.9.2 GROUND HANDLING AND GROUND SUPPORT EQUIPMENT MAINTENANCE

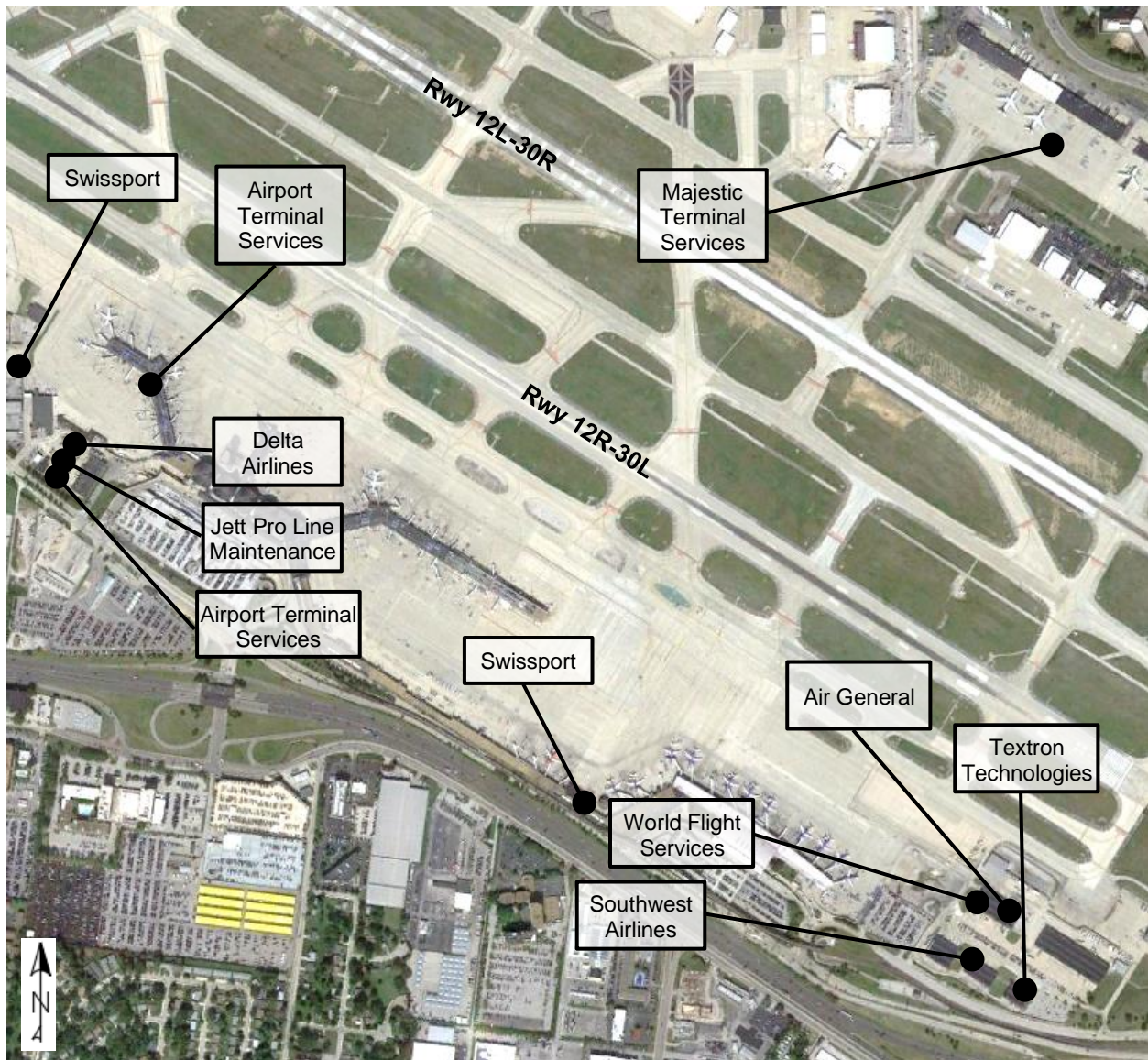
A variety of companies provide ground handling and GSE maintenance services at STL. The location of their facilities is depicted on **Figure 2.9-6**.

### HANDLING

Air General, located in the east portion of the Cargo City 2 building, provides ground handling support for belly cargo for Delta Airlines, Alaska Airlines, and United Airlines. They also provide storage, staging, and maintenance for ground support equipment for Delta Airlines, American Airlines, and United Airlines. They occupy 15,100 sq. ft. of Cargo City 2, including 1,000 sf of office space, 155-sf climate-controlled area, 14,000 sq. ft. for equipment staging and storage. Their facilities are in fair condition. Textron Technologies maintains Air General's GSE. Air General shares the Cargo City parking lot, which is in fair condition.



**Figure 2.9-6: Ground Handling and Ground Support Equipment Maintenance Facilities**



Sources: Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

Majestic Terminal Services, located in the St. Louis Cargo complex adjacent to FedEx, began operating at STL in 2019 and provides all necessary ground handling and cargo sorting, including breaking down freight from inbound flights and loading and offloading cargo from aircraft for Airborne Express (ABX), Atlas Air and Air Transit International (ATI), who are currently contracted to fly for Amazon Air. Their facility has 44,274 sq. ft. of total space containing 22 loading docks. They have 63 auto parking spaces located north of the warehouse, with a total area of 78,000 sq. ft. of vehicle parking; auto parking facilities are in good condition. They have 95,000 sq. ft. of apron space, which can accommodate 2 aircraft parking positions. Majestic Terminal Services currently handles one flight per day, a Boeing 767 operated by ABX. Upon completion of Taxiway Kilo construction, a second daily flight is expected.

World Flight Services (WFS), located in the west portion of the Cargo City 2 building, provides cargo ground handling service and storage, staging and maintenance of ground support equipment for DHL, UPS and



USPS. They occupy 7,733 sq. ft. of space in Cargo City 2, including 413 sq. ft. is for offices, 6,424 sq. ft. for warehouse, 600 sq. ft. for equipment maintenance, and 296 sq. ft. for other uses. Of this space, 2,504 sq. ft. is utilized for mail sorting. They currently have 19,500 sq. ft. of space for equipment storage and staging around and north of the Cargo City 2 building and 800 sq. ft. utilized for equipment maintenance. The shared Cargo City auto parking lot is in fair condition and needs cracks repairs.

Swissport provides into-plane fueling services to Southwest Airlines. Swissport office and fuel vehicle maintenance spaces are located in Building #308 and #309, as well as in Concourse D, on the apron level between Gates E33 and E34.

Airport Terminal Services (ATS) provides a variety of ground handling services for many customers:

- Above wing operations (ticket counters): Frontier Airlines and Sun Country Airlines
- Below wing operations (baggage handling, belly cargo, pushback, ramp services): Sun Country Airlines, Frontier Airlines and United Airlines
- Deicing: ATS provides deicing services to all airport users except Southwest Airlines, American Airlines and Delta Airlines
- Into-plane fueling: ATS provides into-plane fueling services to all airport users (Jet Linx, Delta, Alaska, Contour, Sun Country, Air Choice One, DHL, UPS, Amazon, FedEx...) except Southwest Airlines, United Airlines and Frontier Airlines

ATS office space is located in Concourse A, on the apron level, under Gates A9 and A15.

G2 Secure Staff LLC provides ground handling for Alaska Airlines. G2 leases 1,333 sq. ft. of office space on the Terminal 1 baggage claim level.

## MAINTENANCE

### CARGO CITY

Textron Technologies began occupying the east portion of the Cargo City 5 building in 2013. They provide GSE maintenance for American Airlines, Cape Air, Air General, Gate Gourmet, and Majestic Terminal Services. They occupy 3,871 sq. ft. of the building, which includes 216 sq. ft. of office space and 3,655 sq. ft. of equipment maintenance space. Outdoor areas include 4,000 sq. ft. of equipment and service truck storage area. The shared Cargo City auto parking lot is in good condition.

Southwest Airlines services their GSE equipment at their facilities located in the Cargo City area, in the west portion of the Cargo City 5 building.

### GROUND SUPPORT EQUIPMENT MAINTENANCE BUILDING

The GSE Maintenance Building (Building #310), located north of Lambert International Boulevard and west of Terminal 1, houses several GSE maintenance providers.

Delta Airlines occupies 3,501 sq. ft. of space inside the facility to conduct maintenance of its own GSE fleet. They also use some outdoor areas for GSE staging/storage. Auto parking facilities are in good condition.

ATS occupies 3,059 sq. ft. at the southern end of the building. ATS provides GSE maintenance for Contour Airlines, United Airlines and its own GSE equipment. The space is in good condition, but there is no room for performing maintenance outdoors, and there is insufficient storage space.

Jett Pro Line Maintenance provide aircraft and GSE maintenance services to DHL, Frontier Airlines, Delta Airlines, United Airlines and American Airlines. Auto parking facilities are in fair condition.

### 2.9.3 PASSENGER LOADING BRIDGE MAINTENANCE

There are two passenger loading bridge maintenance providers at STL.

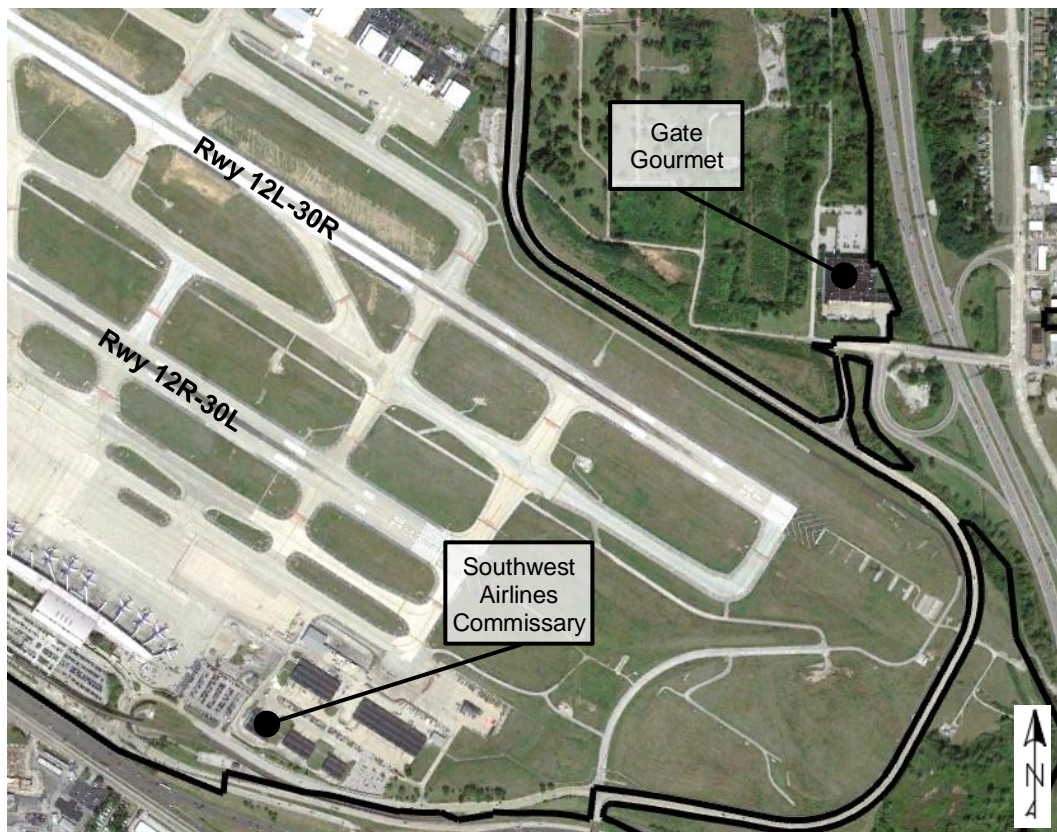
Airport Bridge Company (ABC) is located in the Cargo City 2 building, adjacent to Air General, since 2019. ABC provides passenger loading bridge maintenance services to Southwest Airlines. They occupy 5,238 sq. ft. of indoor space, along with 5,230 sq. ft. of outdoor equipment storage space. Their facilities are in good condition. The shared Cargo City auto parking lot is in good condition.

Professional Business Providers (PBP) is located in a building northeast of Cargo City 1. PBP provides passenger loading bridge maintenance services to all other airlines at STL. They occupy 4,000 sq. ft. of indoor space, along with 6,000 sq. ft. of outdoor equipment storage space. Their facilities are in good condition. The shared Cargo City auto parking lot is in good condition.

### 2.9.4 FLIGHT KITCHEN

Gate Gourmet is the only catering company serving STL. Their facilities are depicted on **Figure 2.9-7**.

**Figure 2.9-7: Flight Kitchen**



Sources: Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).



Gate Gourmet, an in-flight catering service, is located north of the Runway 30R end, in Building #305. The facility was constructed in 2003 to support the TWA hub and is oversized for today's needs; it consists of a two-story building with an 85,640 sq. ft. building. The facility includes a full-service kitchen, office space, dry storage, 25 truck loading docks, and truck maintenance area with six at-grade garage bays. The facility has 65,000 sf. ft. of auto parking, in good condition, including a total of 178 parking spaces.

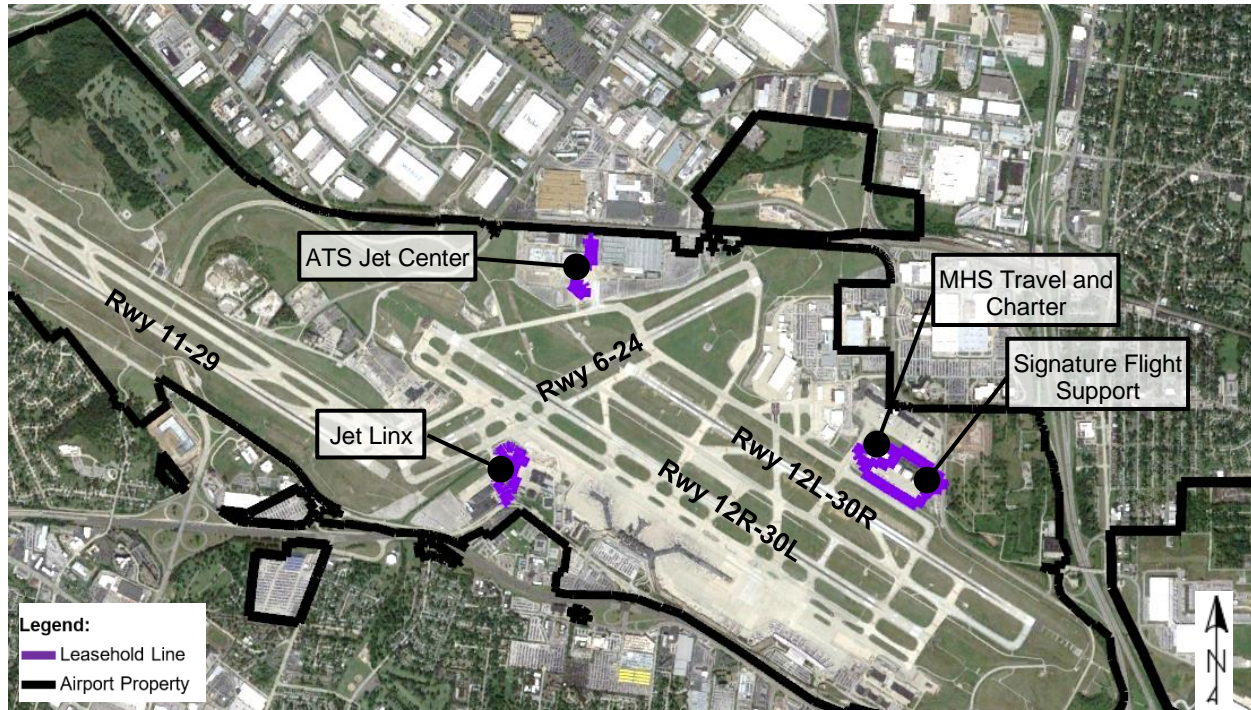
The Southwest Airlines Commissary is housed in Cargo City 3 and handles the airline's aircraft provisioning needs.

## 2.10 GENERAL AVIATION FACILITIES

General aviation (GA) is generally defined as aircraft activity not operated by airlines, charter operators, or the military. GA activity at STL is composed of fixed base operators (FBOs) and corporate aviation. GA facilities at STL are depicted on **Figure 2.10-1**, and include:

- Signature Flight Support
- ATS Jet Center
- MHS Travel and Charter
- Jet Linx

**Figure 2.10-1: General Aviation Locations**



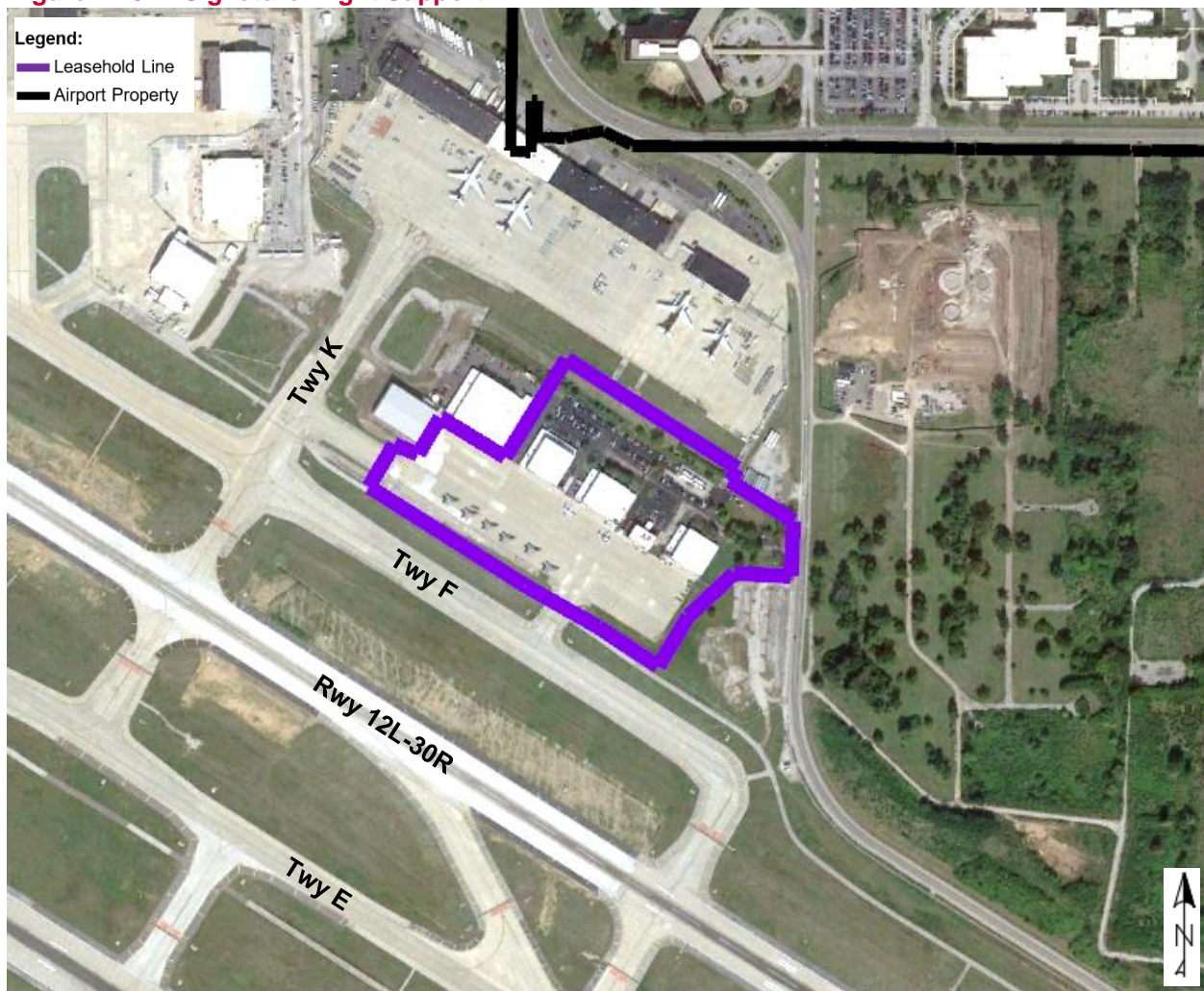
Sources: Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

## 2.10.1 FIXED BASE OPERATORS

### SIGNATURE FLIGHT SUPPORT

Signature Flight Support is a full-service FBO that provides a variety of services for the GA and business community, including catering, crew transportation and crew room, meeting rooms, on-site customs and immigration, fueling, aircraft maintenance services, aircraft support services (including deicing), etc. The Signature Flight Support facilities are located north of the airfield, off James S. McDonnell Boulevard, on a 20-acre site with four buildings, as depicted on **Figure 2.10-2**. Signature Flight Support has been occupying these facilities since 2008.

**Figure 2.10-2: Signature Flight Support**



Sources: Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

The Signature Flight Support campus consists of four buildings, three aircraft hangars in fair condition and a terminal building in good condition. Hangar 1 is 19,200 sq. ft., Hangar 2 is 22,200 sq. ft., and Hangar 3 is 23,075 sq. ft. The 9,250 sq. ft. two-story terminal building is located between Hangars 1 and 2. The site has 335 vehicle parking spaces; the auto parking lot was rehabbed in 2019 and is in excellent condition.



Seven jet aircraft are based at the Signature Flight Support campus. Aircraft maintenance services are provided by On Site Aircraft Services, in one of the Signature Flight Support hangars.

Signature Flight Support utilizes 175,000 sq. ft. of the apron for aircraft parking. Increased aircraft traffic and larger aircraft size occasionally cause congestion on the apron. Airfield access is by Taxiway F and Taxiway K.

Fuel is delivered via tanker trucks and stored in above-ground onsite fuel storage tanks, located in the northeast corner of their campus. Fuel storage capacity and days supply are summarized in **Table 2.10-1**.

**Table 2.10-1: Signature Flight Support Fuel Storage Facilities**

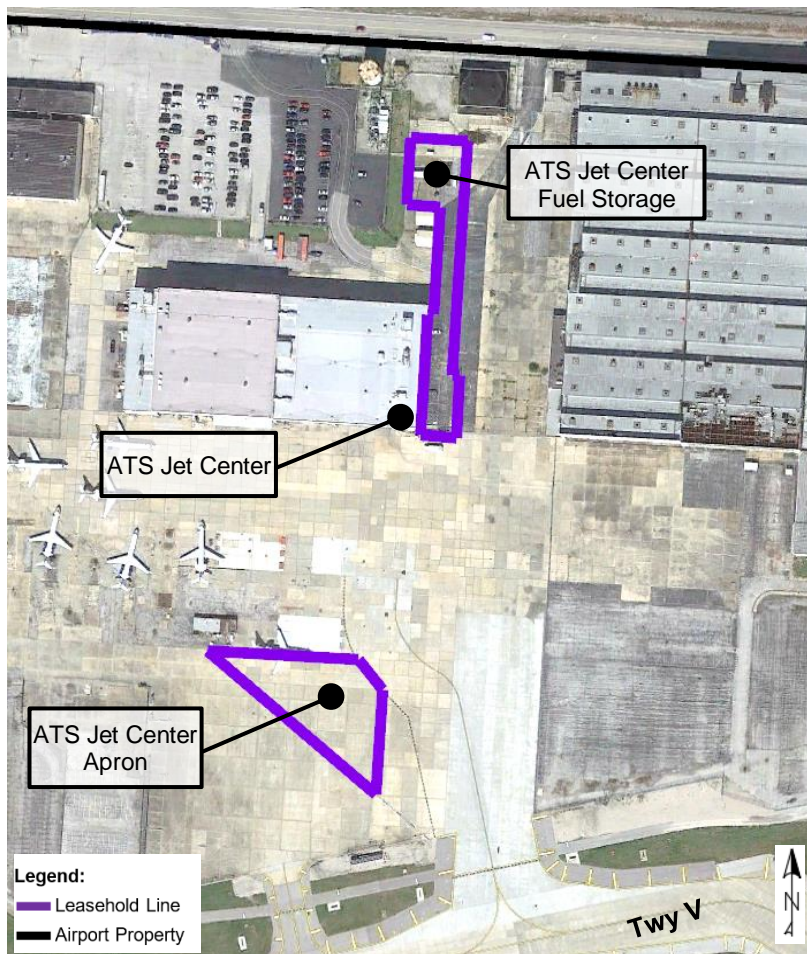
	JET A	AVGAS
<b>Tanks</b>	3 x 20,000 gallons	1 x 20,000 gallons
<b>Trucks</b>	2 x 5,000 gallons 1 x 3,000 gallons	1 x 1,000 gallons
<b>Total</b>	73,000 gallons	21,000 gallons
<b>Days Supply</b>	5-7	30

Source: Tenant Survey, April 2020.

## ATS JET CENTER

ATS Jet Center is an FBO that provides fuel for transient aircraft, along with a pilot lounge and aircraft parking. It occupies 1,929 sq. ft. at the southeast corner of the Trans States Holdings MRO facility, located off Banshee Road. The ATS Jet Center facilities are depicted on **Figure 2.10-3**.

**Figure 2.10-3: ATS Jet Center**



Sources: Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

ATS Jet Center has 75,000 sq. ft. of apron space, which is used for transient aircraft parking. There are no based aircraft at ATS Jet Center. Airfield access is by Taxiway V. The site includes a 25,000-gallon Jet-A fuel storage tank north of the facility.

The ATS Jet Center leasehold also includes a 5,000 sq. ft. area located northwest of Signature Flight Support; this area houses a 25,000-gallon Jet A fuel tank that ATS Jet Center uses to refuel cargo aircraft parked at St. Louis Air Cargo.

Airport Terminal Services also has permit rights for into-plane fueling. This service is considered separate business from the ATS Jet Center.

## 2.10.2 CORPORATE AVIATION

### JET LINX

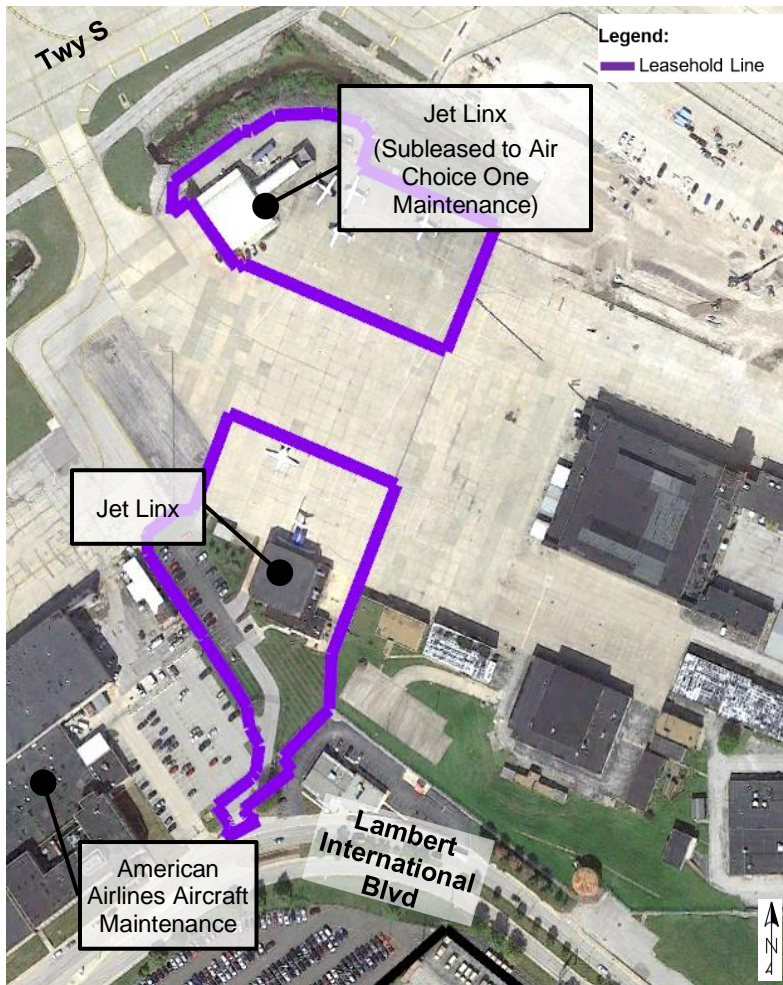
Jet Linx provides private jet travel and aircraft management services and began operating at the Airport in 2013. They lease a 7-acre area west of Terminal 1, adjacent to the American Airlines MRO facility, north of Lambert International Boulevard, depicted on **Figure 2.10-4**. The site has two hangars, one of which is



subleased to Air Choice One for aircraft maintenance. Jet Linx occupies a facility with 7,500 sq. ft of hangar space and 3,500 sq. ft. of office space and a pilot's lounge. Jet Linx has five based jet aircraft, including an Embraer Phenom. Jet Linx has expressed the need to hangar all five aircraft, requiring a minimum 25,000 sq. ft. of added hangar space.

The site includes 47,960 sq. ft. of apron area. There are 35 vehicle parking spaces. Aircraft are fueled by ATS Jet Center via fuel trucks.

**Figure 2.10-4: Jet Linx Facilities**



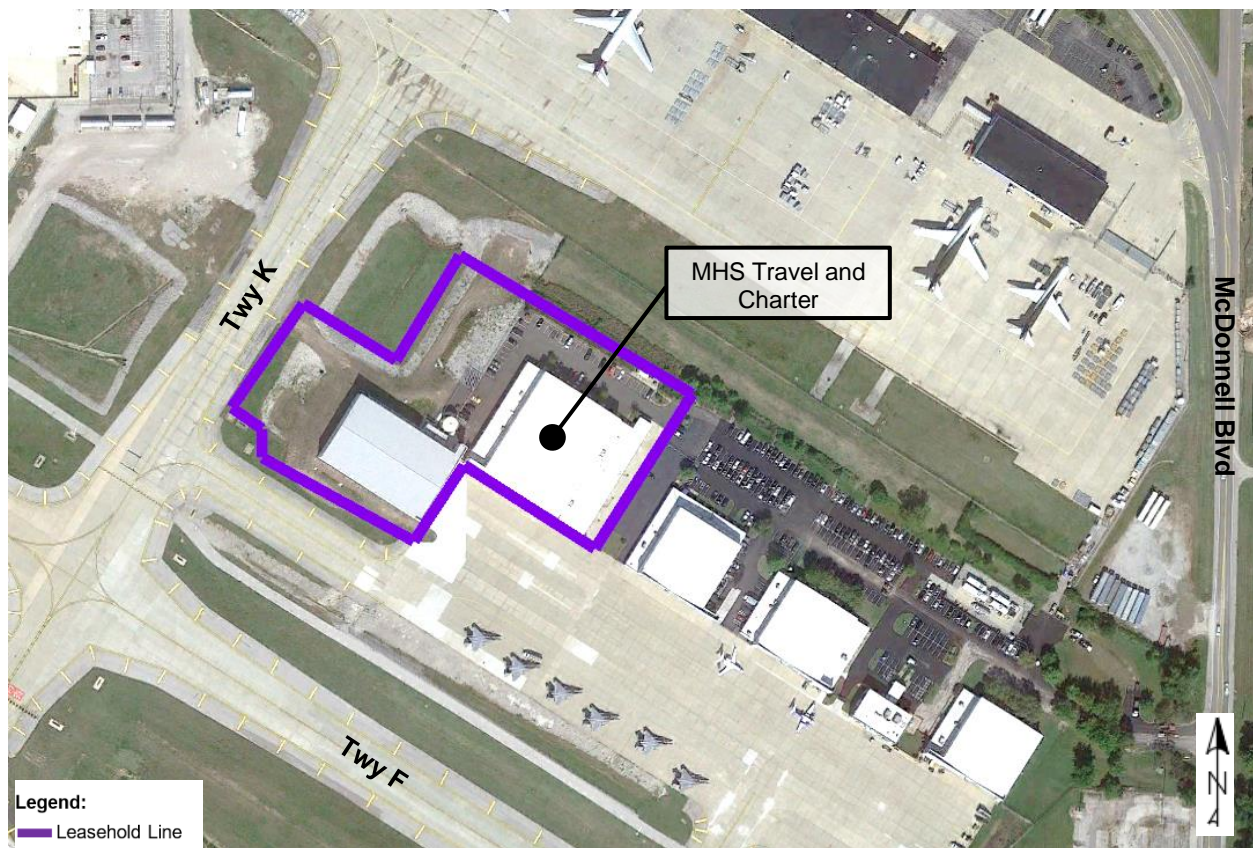
Sources: Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

## MHS TRAVEL AND CHARTER

MHS Travel and Charter provides flight and aircraft management for private companies. MHS Travel and Charter manage their own fleet and perform their own fleet maintenance. MHS Travel and Charter have two hangars located at the west end of the Signature Flight Support campus, as depicted on **Figure 2.10-5**. MHS Travel and Charter began occupying a 41,960 sq. ft. hangar in 2011, and built a second hangar in 2018, which is 26,117 sq. ft. The site also contains 50 vehicle parking spaces, with vehicle access from James S. McDonnell Boulevard. Fuel is provided by Signature Flight Support, using fuel trucks.

Nine aircraft are based at the MHS Travel and Charter facilities.

**Figure 2.10-5: MHS Travel and Charter Facilities**



Sources: Google Earth Pro, August 2019 (aerial photography); WSP USA, April 2020 (annotations).

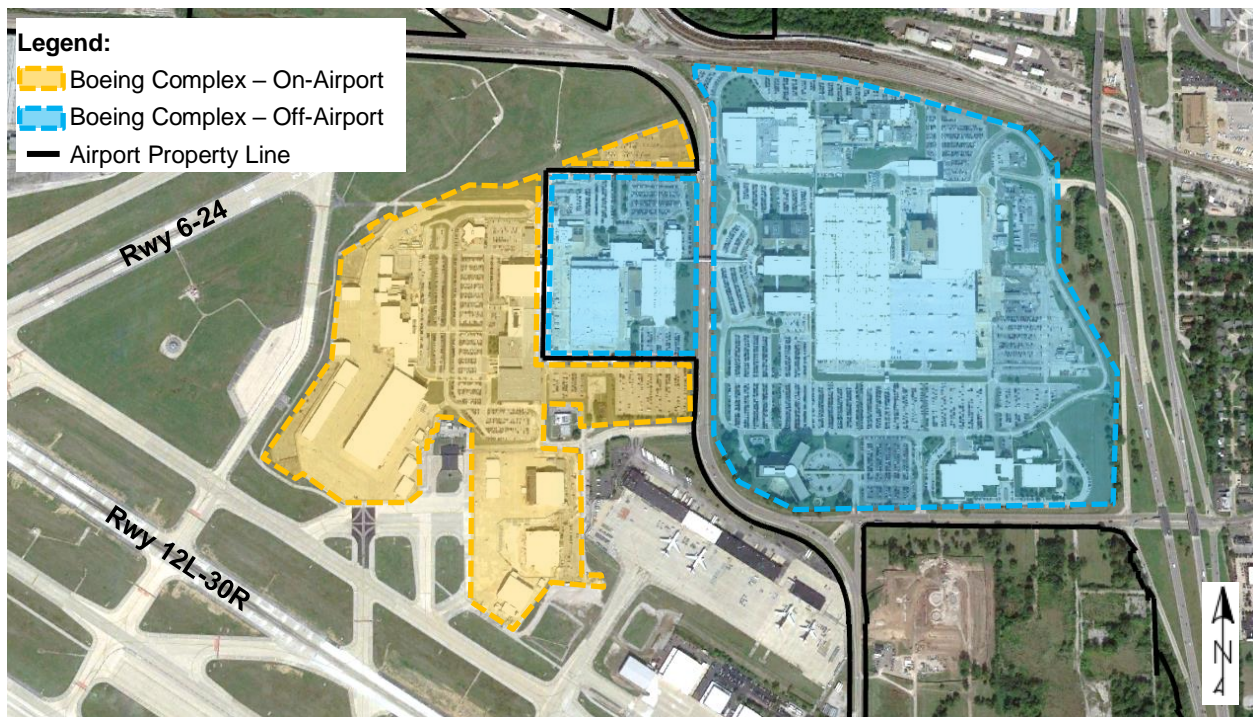
## 2.11 OTHER AERONAUTICAL FACILITIES

Other aeronautical tenants at STL include:

- The Boeing Company occupies two locations on Airport property:
  - In the northeast corner, The Boeing Company operates a manufacturing and testing facility, depicted on **Figure 2.11-1**. The Boeing Company assembles the new U.S. Air Force trainer jet, the T-7A Red Hawk. Approximately 500 units of the jet are anticipated to be produced over the next five years, for both the U.S. Air Force and foreign governments. Boeing also assembles the F/A-18 Super Hornet, the F-15 Eagle and the MQ-25 Stingray at STL. Flight testing of the MQ-25, a U.S. Navy drone for inflight refueling, is currently conducted at nearby MidAmerica Airport (BLV), but is anticipated to be transferred to STL at some future date.
  - On the west side of the Airport, in the AOB, The Boeing Company has two simulator bays.
- Trans States Holdings has one simulator bay in the AOB.



**Figure 2.11-1: The Boeing Company (Northeast Location)**



Sources: Google Earth Pro, September 2019 (aerial photography); WSP USA, July 2020 (annotations).

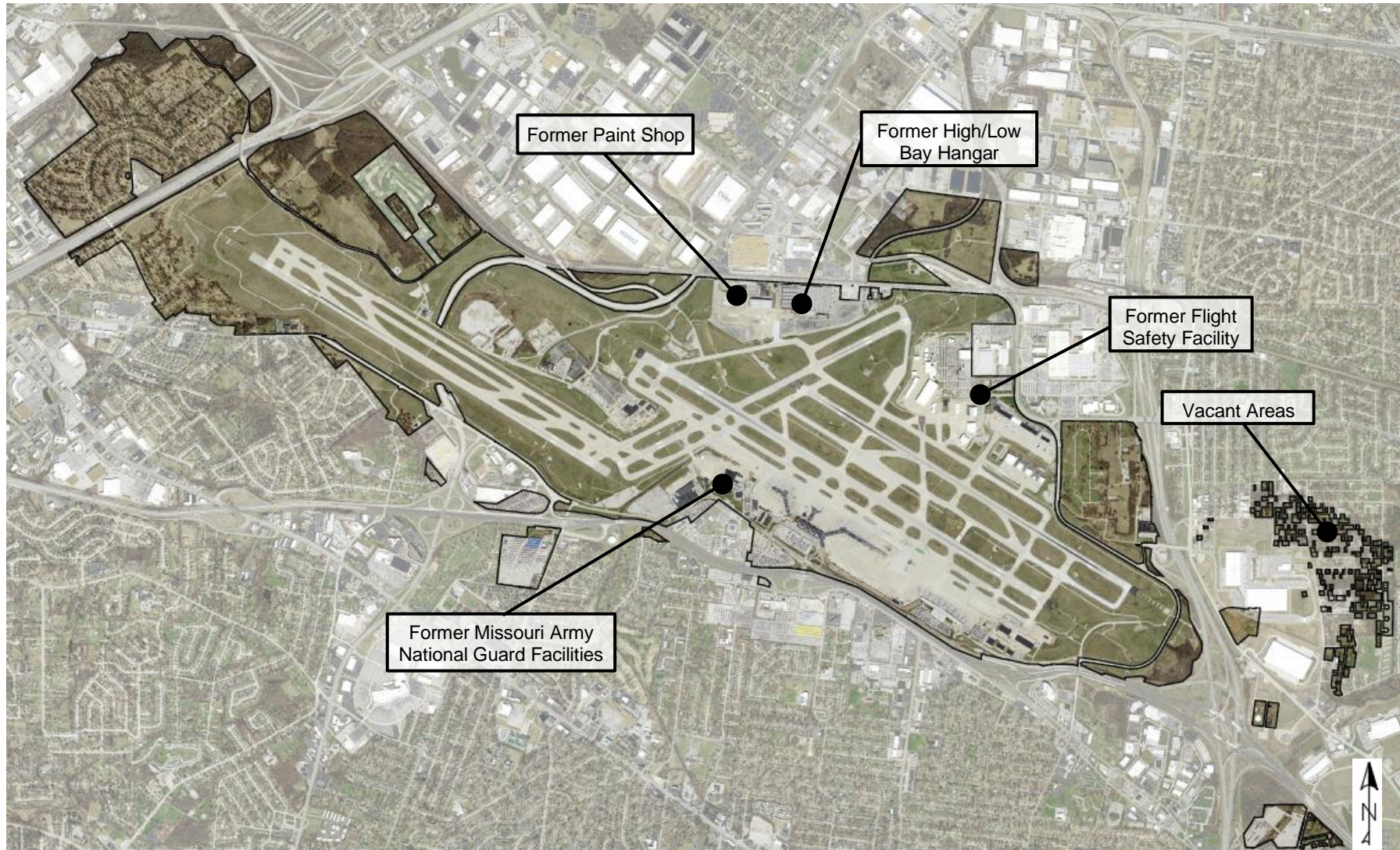
## 2.12 VACANT FACILITIES

The following on-Airport facilities, depicted on **Figure 2.12-1**, are vacant and available for development:

- Building #504: former High/Low Bay Hangar
- Building #506: former Paint Shop
- Building #528: former Flight Safety Int'l Training Center
- Former Missouri Army National Guard site, west of Terminal 1
- 30 to 40 acres east of I-170



**Figure 2.12-1: Vacant Facilities**



Sources: St. Louis Lambert International Airport, *Airport Layout Plan*, 2012 (property line); Google Earth Pro, August 2019 (aerial photography); St. Louis Airport Authority, April 2020 (annotations).



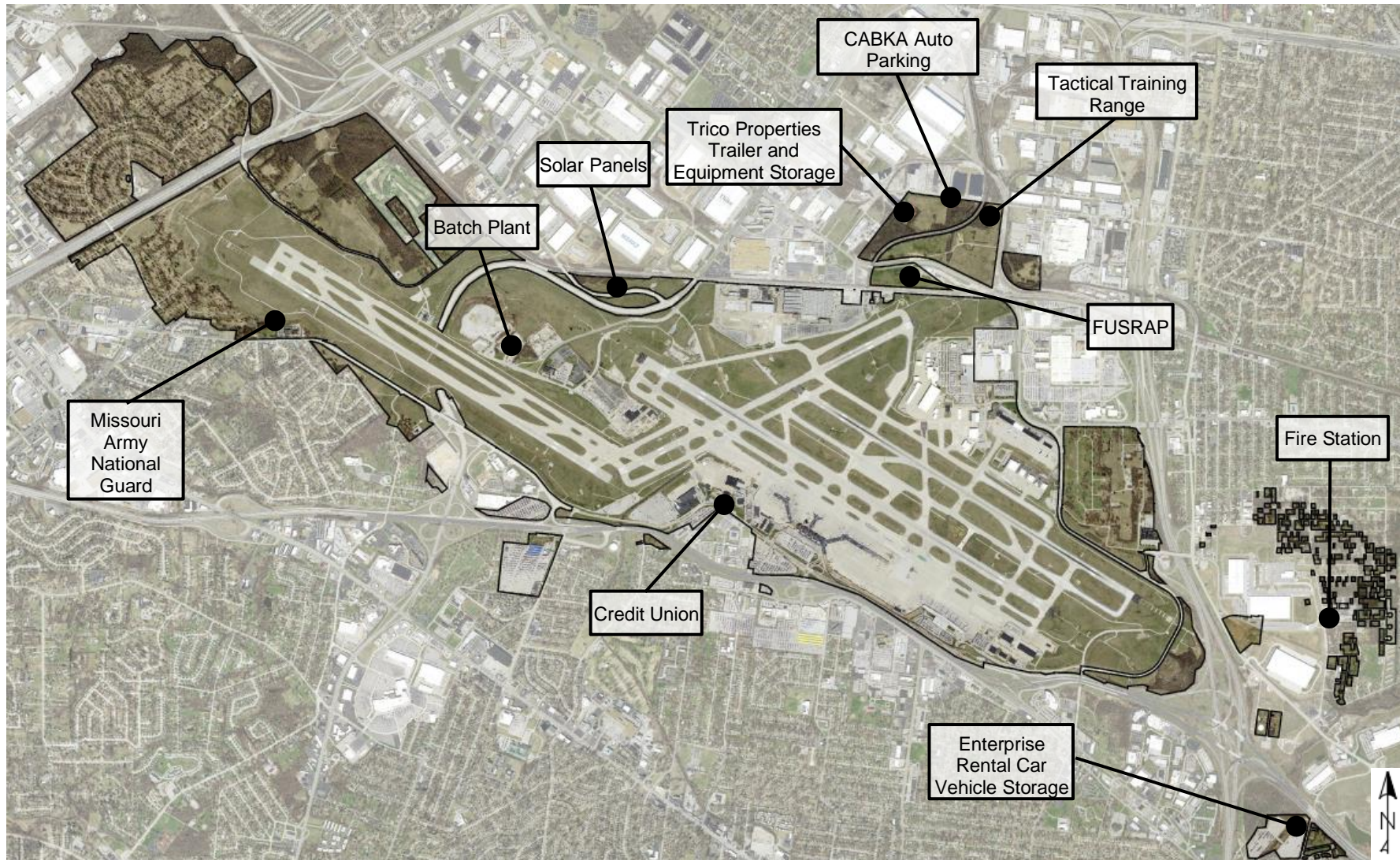
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## 2.13 NONAERONAUTICAL FACILITIES

There are several non-aeronautical tenants at the Airport, listed below and depicted on **Figure 2.13-1**:

- Millstone Weber Batch Plant (Building #418): the batch plant produces concrete for airport construction projects.
- Community Credit Union (Building #306): located east of the American Airlines MRO
- Ameren Missouri solar panels on Missouri Bottom Rd
- Enterprise Holdings Springdale parking lot: located south of I-170/I-70, and used for staging/storage of cars
- MO Army National Guard (Building #511): located in the former Bridgeton City Hall, it includes offices, training facilities and an armory
- City of Kinloch: fire house, located east of I-170 and abeam the Runway 30R end
- US Army Corps of Engineers: the Formerly Utilized Sites Remedial Action Program (FUSRAP) occupies 21.7 acres between Banshee Rd and McDonell Blvd. Several support trailers are on the site.
- City of Berkeley Public Works Department, located at the northeast corner of the Airport property, off Frost Av
- Tactical Training Range: located off Frost Av
- CABKA North America, Inc.: auto parking lot located off Byasee Dr
- Trico Properties: storage of trailers and equipment located off Byasee Dr

**Figure 2.13-1: Nonaeronautical Facilities**



Sources: St. Louis Lambert International Airport, *Airport Layout Plan*, 2012 (property line); Google Earth Pro, August 2019 (aerial photography); St. Louis Airport Authority, April 2020 (annotations)



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## 2.14 UTILITY INFRASTRUCTURE

STL is served by utilities that include potable water distribution, wastewater collection, stormwater drainage, natural gas, aviation fuel (via pipeline and truck shipment), communications, glycol and electric/power. This section describes the major elements of utility infrastructure serving the Airport, and where possible, identifies existing capacity and usage to aid in forecasting for future development considerations. Previous plans, airport GIS files, and staff knowledge were used to determine conceptual locations of utility infrastructure. Coordination and input were requested from the different agencies where feasible for overarching commentary on utility infrastructure on Airport property.

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### 2.14.1 POTABLE WATER DISTRIBUTION

The Missouri American Water Company owns and maintains the potable water lines that serve most of the St. Louis region and the Airport. **Figure 2.14-1** depicts on-Airport potable water utilities.

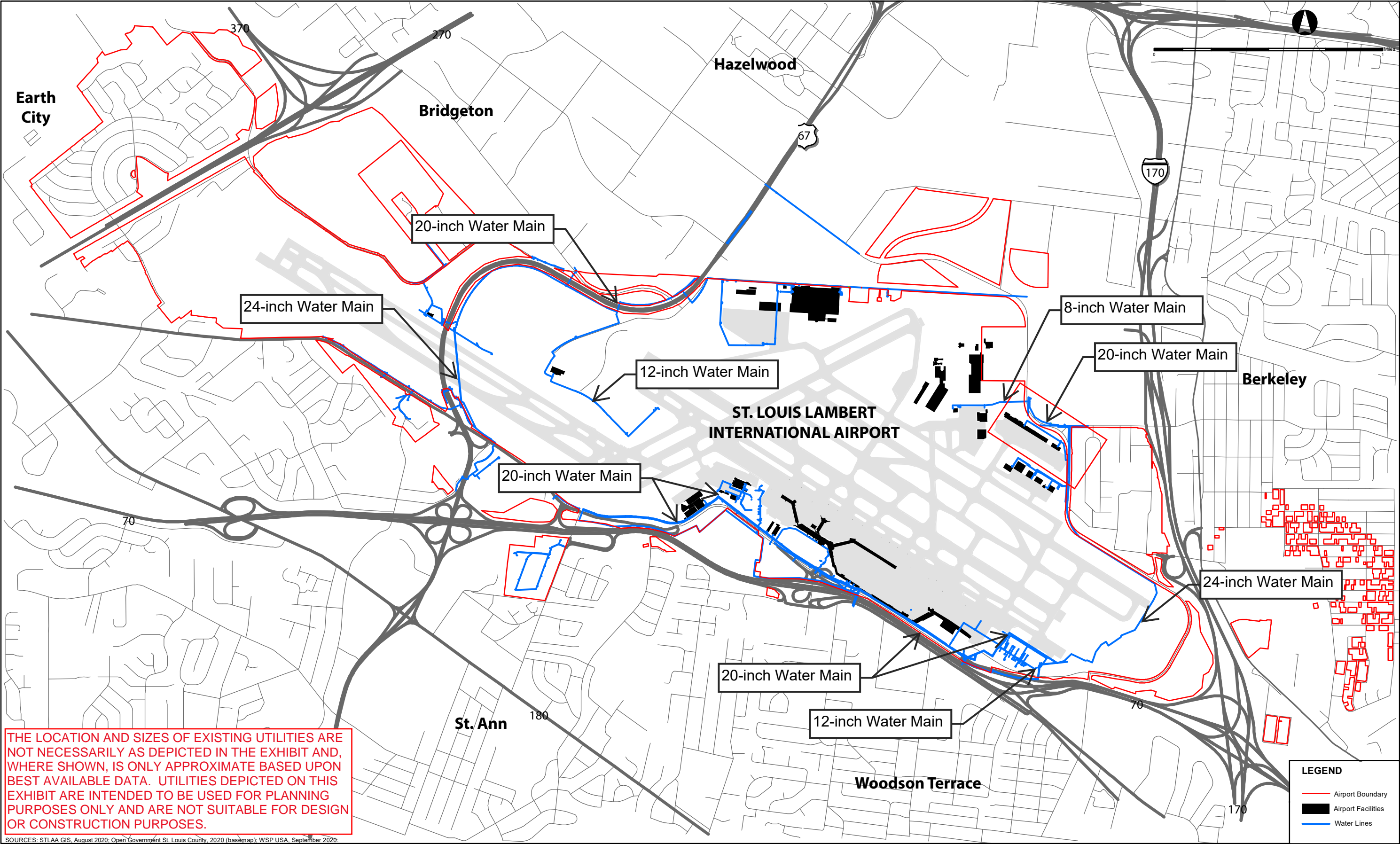
There is a 20-inch waterline located near the Old Lindbergh Boulevard on the north side of the Airport. This waterline increases to 24 inches where it crosses under Runway 11-29, and then decreases again to a 20-inch diameter pipe before reaching Natural Bridge Road. This line connects south of Natural Bridge Road with LIB and continues to run along LIB to serve the terminals. There are numerous water lines that run parallel to LIB serving different areas of the Airport and surrounding uses, including 20-inch, 24-inch, and 30-inch lines. A 24-inch line runs along James S. McDonnell Boulevard and reduces in size opposite the intersections of Taxiways F and J. This pipe continues north to Airport Road and heads east away from the Airport. Paralleling the numerous lines from LIB is a 12-inch pipe which runs south of Banshee Road and decreases to 8-inch pipe 2,200 feet east of Lindbergh Boulevard.

North of the railroad tracks, there is a 20-inch diameter running on Fee Fee Road, an 8-inch pipe on Phantom Drive, a 12-inch pipe on Missouri Bottom Road, a 12-inch pipe on Summit Avenue and a 20-inch pipe on James S. McDonnell Boulevard.

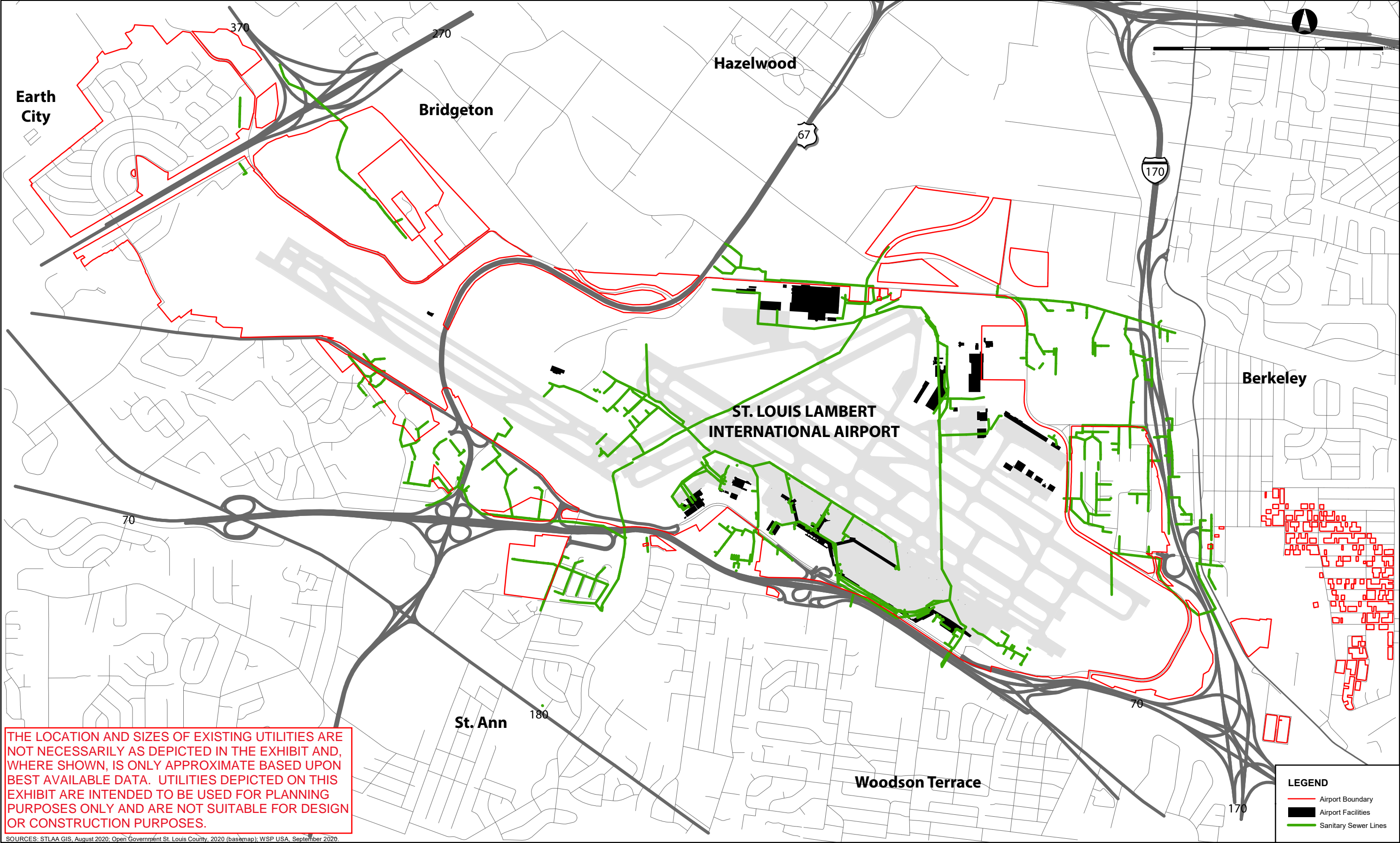
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### 2.14.2 SANITARY SEWER

The St. Louis Metropolitan Sewer District (MSD) provides sanitary a sewer system to the Airport. The Airport is located within three watersheds; Coldwater Creek in the center, where the majority of the Airport falls within the boundary, Cowmire Creek to the west, and Maline Creek to the east. **Figure 2.14-2** shows the locations of the sanitary sewer lines Airport property, which specifically shows the main trunk lines and feeder lines.







The majority of the Airport falls within Coldwater Creek and the biggest contribution to sanitary flow falls within the Coldwater Creek watershed. The Coldwater Creek trunk sewer is parallel and west of Coldwater Creek. This trunk sewer is a 42-inch diameter pipe that crosses under James S. McDonnell Boulevard. The same trunk is a 36-inch diameter pipe as it crosses I-70 upstream of the Airport. The majority of the sewer is located 200 feet west of Runway 6-24. Another 21-inch diameter secondary pipe system ties into this Coldwater Creek trunk sewer, close to where the Coldwater Creek sewer crosses under Taxiway V. This sewer line continues south and serves the Woodson Terrace community. The Cowmire Creek watershed overlaps with the Airport property, with boundaries of Gist Road to the south, the railroad tracks to the north and just west of Fee Road to the east. This sanitary trunk sewer crosses under I-270 as a 12-inch ductile iron pipe and quickly reduces to an 8-inch pipe through the remainder of the watershed.

The Maline Creek watershed overlaps the southern edge of the Airport, near Scudder Road and the east end of Runway 12L-30R. The sewer main line crosses under I-170 south of Scudder Road and all sewer lines are an 8-inch pipe.

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### 2.14.3 STORMWATER DRAINAGE

There are significant storm sewer lines on Airport property, as shown in Figure 2.14-2.

Cowmire Creek has storm sewer lines near the northwestern edge of the Airport boundary. There is a confluence point of this creek that discharges through a box culvert that crosses under the I-270 and Route 370 interchange.

Maline Creek's boundary runs along Taxiway E north-south centerline, which separates it from the Coldwater Creek boundary. Runoff generally flows east from this location and down an embankment towards I-170. Runoff from there enters culverts that carry water under the interstate.

The majority of stormwater runoff from the Airport property drains into the Coldwater Creek, which flows north to south and runs right down the center of the Airport property. Coldwater Creek enters twin 10-foot by 15-foot arch culverts west of the Missouri Air National Guard facility on the south side of the Airport. It then exits twin 10-foot x 15-foot-wide box culverts north of the Airport, immediately upstream of the railroad tracks north of Banshee Road. These twin culverts cross under Runway 6-24. There are numerous other storm sewer lines that feed the creek and these major culverts throughout the Airport property. There are significant laterals serving the airfield and airport that feed into the main culverts to drain out off the property. There are numerous other 48-inch diameter or less storm sewers that connect to this main Coldwater Creek trunk sewer. Storm sewers of notable size include an 84-inch pipe that drains the W1W north detention basin, parallels Taxiway V and discharges to the Coldwater Creek trunk sewer at a point approximately 100 feet downstream of where Coldwater Creek crosses Taxiway V and a 10 foot x 15 foot box culvert that drains the area immediately west of runway 12R-30L. This storm sewer connects to the Coldwater Creek sewer east of Taxiway S and south of Taxiway C. A third major 72-inch diameter storm sewer that drains the W1W south detention basin connects to the Coldwater Creek drainage channel approximately 300 feet south of the centerline of Interstate 70.



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#### 2.14.4 NATURAL GAS

Spire Inc. supplies natural gas to the Airport. There are half a dozen natural gas lines along almost all the perimeter roads surrounding the Airport, as shown in **Figure 2.14-3**, with numerous feeder lines making connections to the airport, airfield, and ancillary buildings. This shows the number of major mains that cross and run along the perimeter roads and that connect with the terminals. There are some major mains that run along James S. McDonnell Boulevard along the northside of the airport and proceed east along Scudder Road crossing I-170. Another major main runs along the east side of the airport with one supply feeder connecting with Terminal 2 and the other feeder line continuing south across I-70. Terminal 1 gets natural gas from a feeder line that crosses I-70 west of the airport exit. Another major main connects across I-70 east of Lindbergh and feeds the western portion of the airport and turns west and crosses the airfield. This line and its feeder lines continue north along Lindbergh Boulevard and go out of airport right-of-way.

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#### 2.14.5 FUEL

The existing Airport fuel farm is served by two Jet-A providers: St. Louis Pipeline Company and Buckeye Partners. A ten-inch aviation fuel pipeline enters the Airport property from the northeast corner of the Airport, near the intersection of James S. McDonnell Boulevard and Airport Road. Upon entering the Airport property, it follows James S. McDonnell Boulevard to the east and parallels the end of the runway before connecting with the terminal hydrant fuel system, as shown in **Figure 2.14-4**.

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#### 2.14.6 TELEPHONE AND COMMUNICATIONS

There are numerous communication and fiber lines on Airport property, including major FAA communication lines, as shown in **Figure 2.14-5**. These lines provide vital communications to different facilities on Airport property.

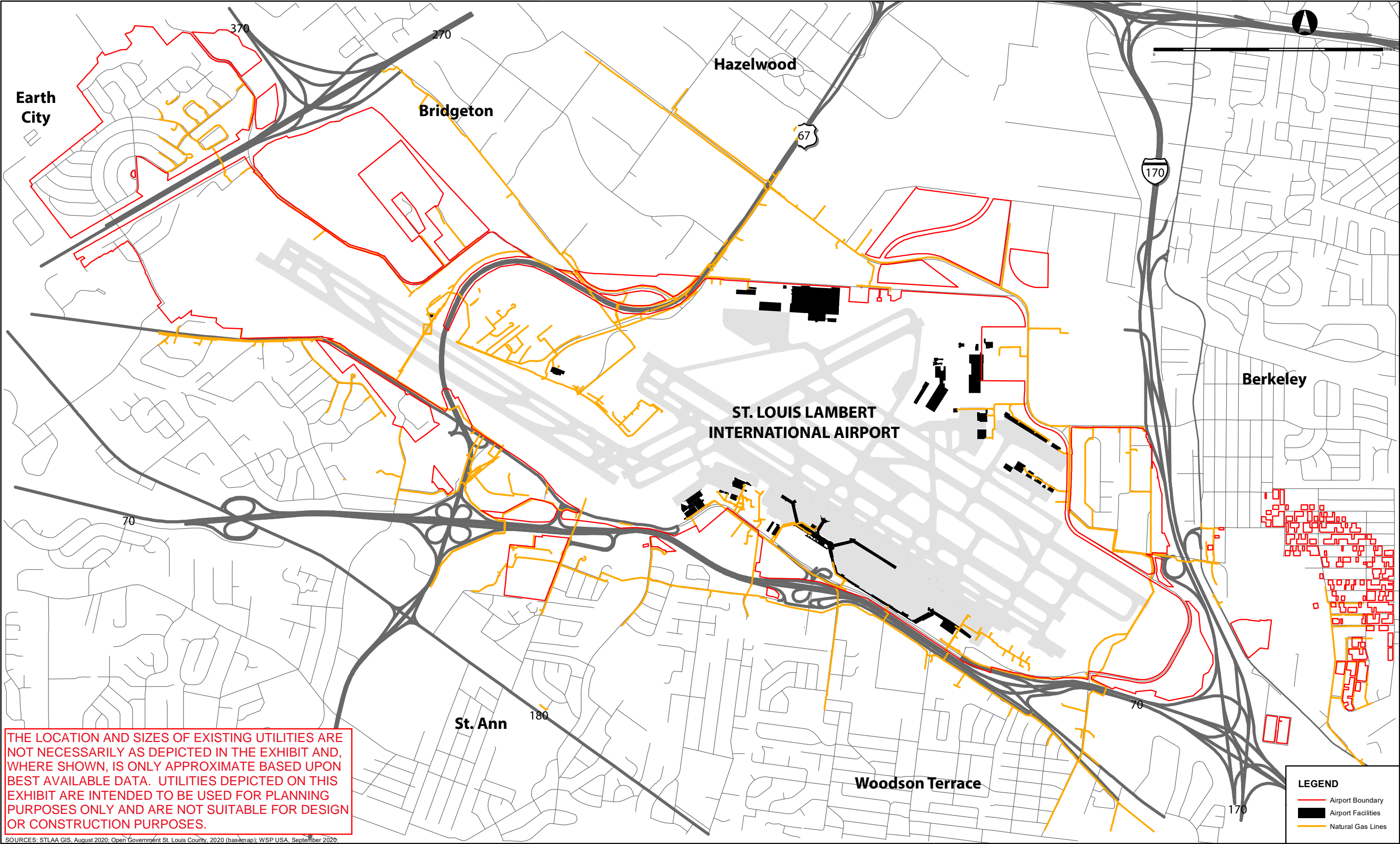
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#### 2.14.7 GLYCOL

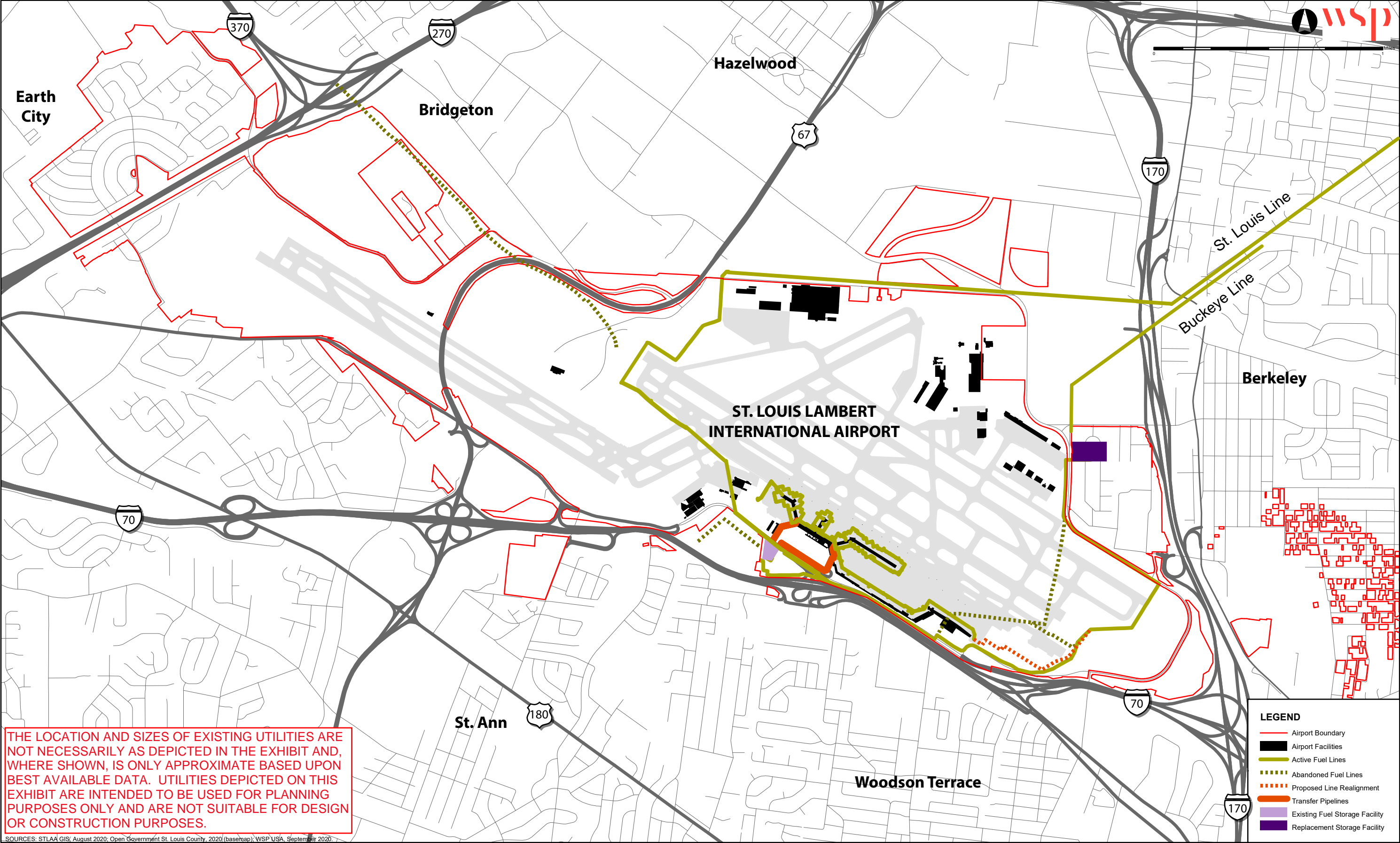
The Airport is served by one main glycol drainage line that exits to the east, under I-170, as shown in **Figure 2.14-6**.

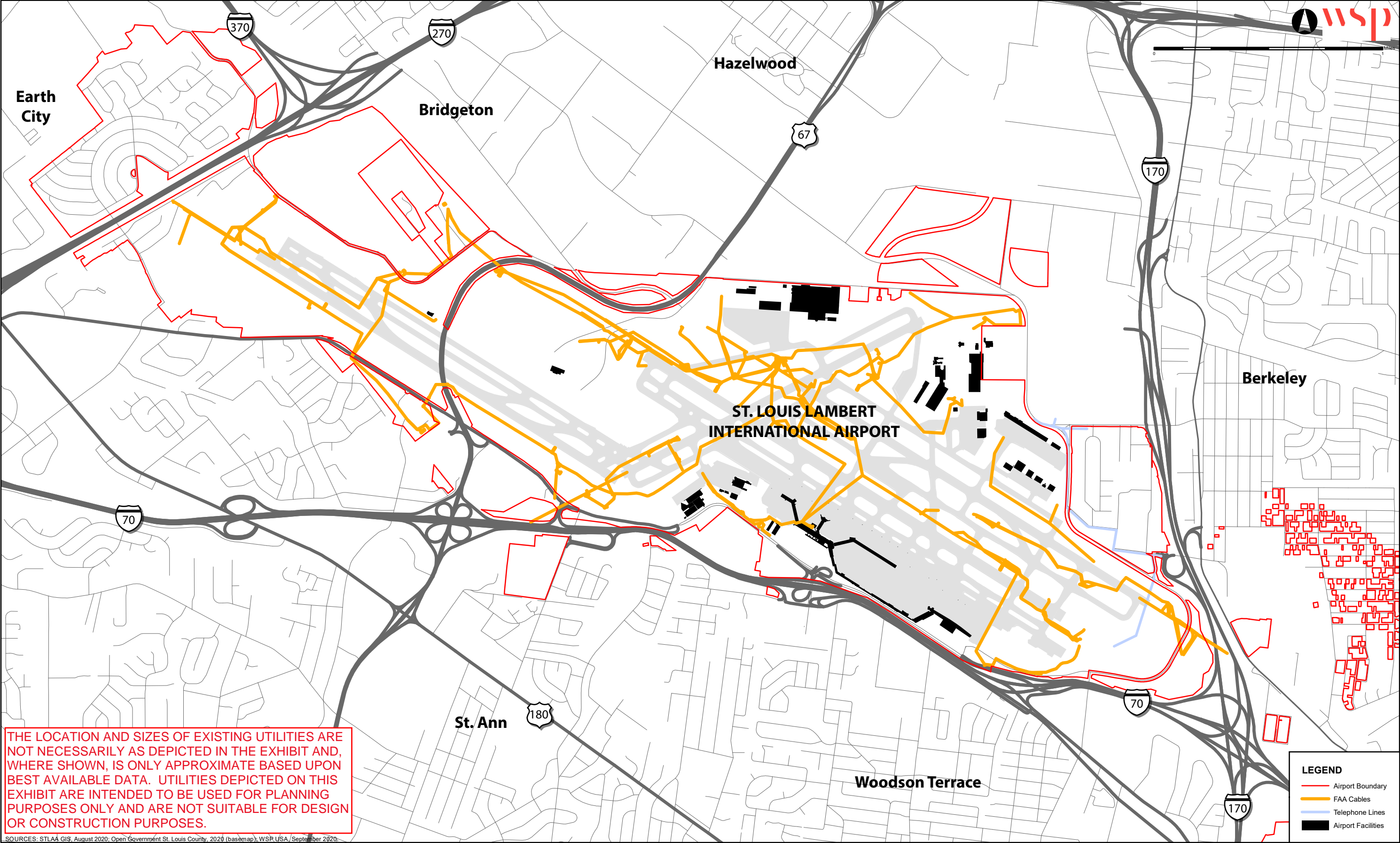
A glycol drainage system catches deicing runoff fluid from most of the Airport's aprons, then pumps and directs the glycol/water runoff to an aboveground storage tank located east of I-170. The runoff is then metered to the Metropolitan St. Louis Sewer District (MSD) for treatment.

The UPS cargo apron has a separate collection system. Runoff is collected from the UPS apron and is pumped into two large storage tanks located directly north of the UPS facility. The fluid is stored there temporarily until it is discarded to MSD.

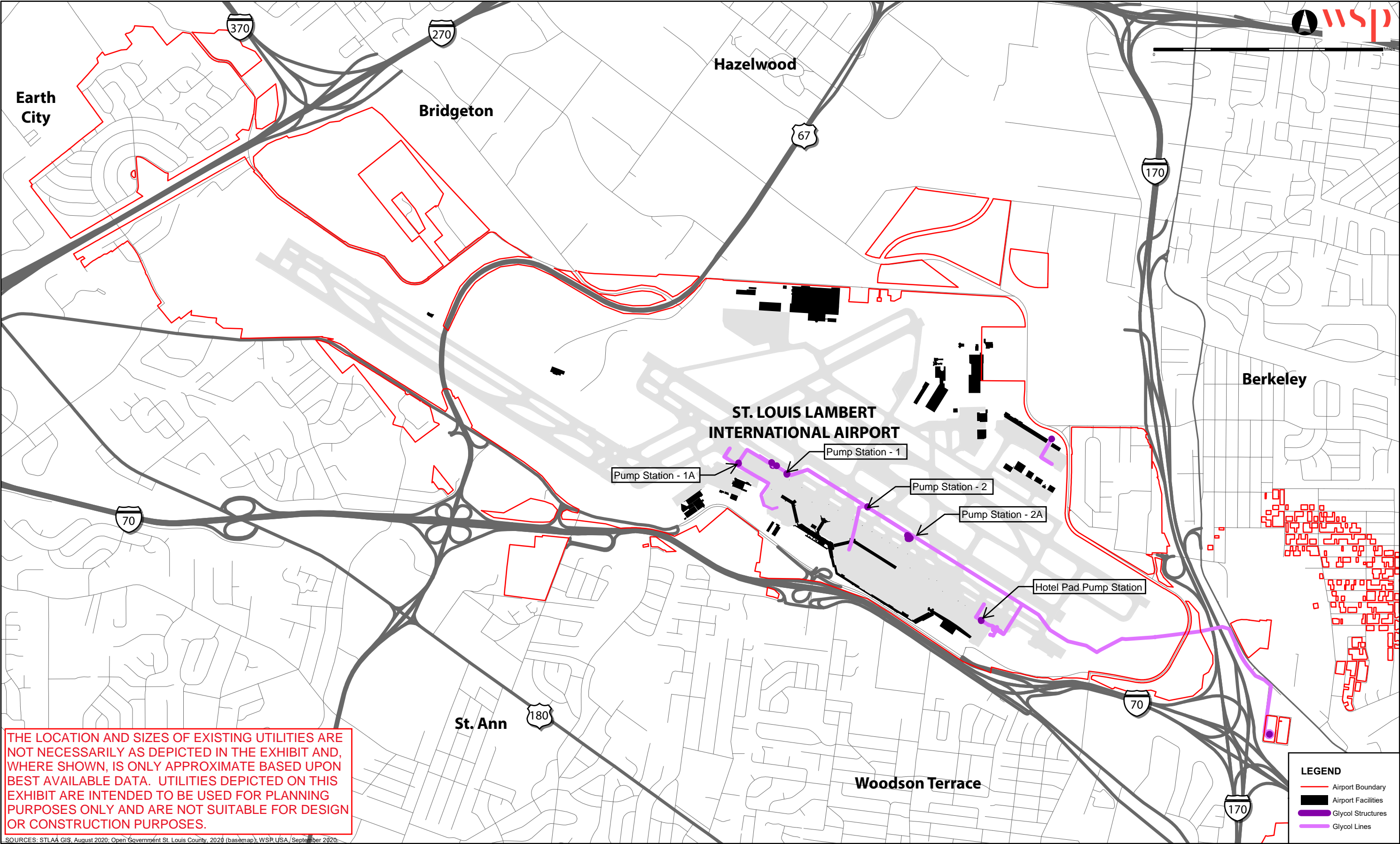












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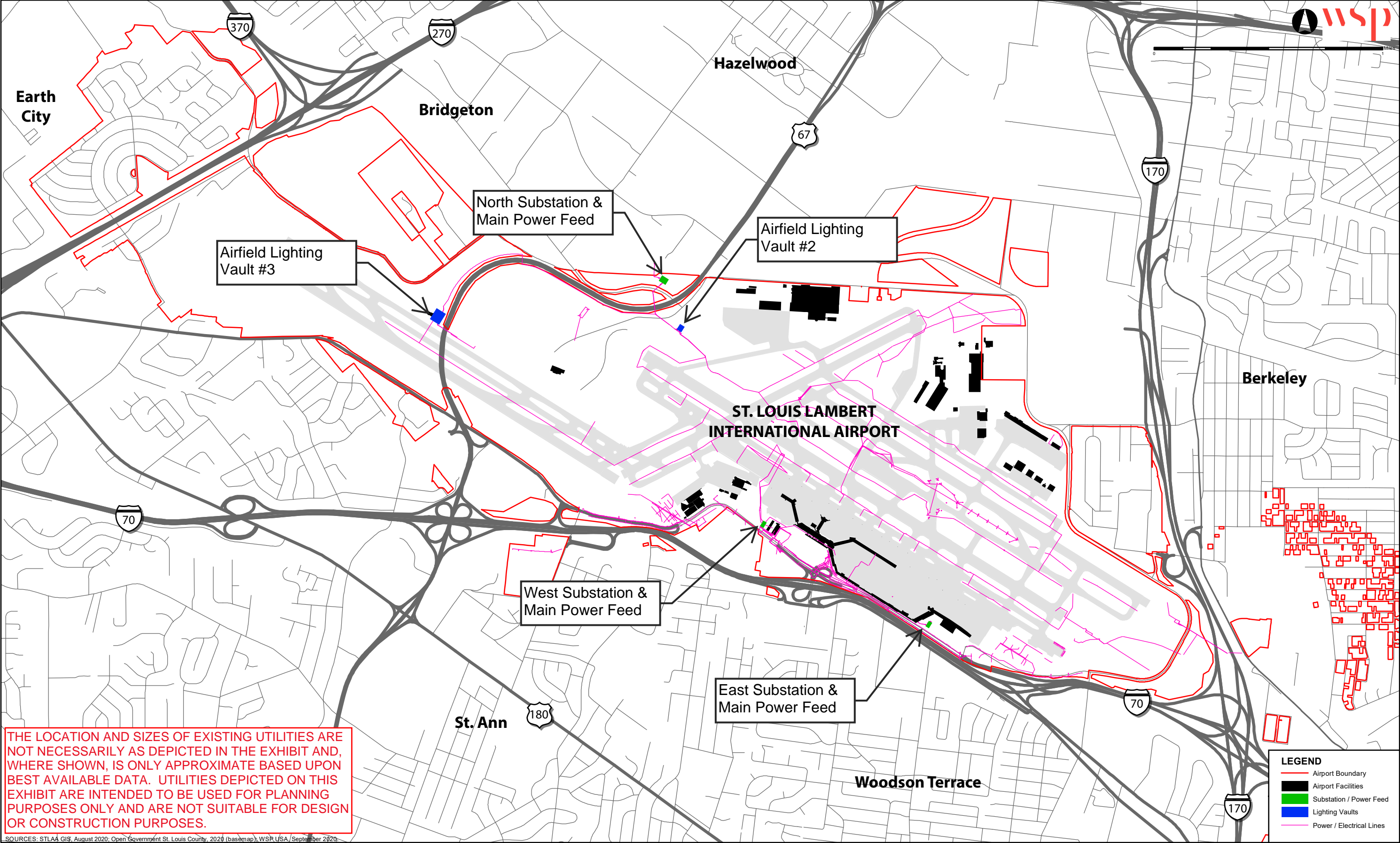
### 2.14.8 ELECTRIC POWER

Ameren UE provides electric service to the Airport and the surrounding communities. STL currently has three substations that serve the two terminals and are billed out separately. Each terminal has its own meter. **Figure 2.14-7** shows the transmission and sub-transmission lines that serve other airport facilities.

The North substation is located north of the intersection of Lindbergh Boulevard and Missouri Bottom Road with a main power feed supply from Ameren at this location. The West Substation is located north of Lambert International Boulevard and west of Terminal 1, near Building #310. The two main feeds at the West Substation feed Concourses A, B, Terminal 1 and Terminal 1 garage, glycol system on switchgear A and the West Climate Control. The East Substation is located north of Lambert International Boulevard and East of Terminal 2. The two main feeds that go into the East Substation from Ameren powers Terminal 2, Concourse D, Terminal 2 garage and the East Climate Control.

There are two airfield lighting vaults; Airfield lighting vault #2 is located south of the intersection of Banshee Road and Missouri Bottom Road while Airfield lighting vault #3 is located northwest of the intersection between Natural Bridge Road and Lindbergh Boulevard.





## 2.15 ON-AND OFF-AIRPORT LAND USES

### 2.15.1 ON-AIRPORT LAND USE

The main on-Airport land uses at STL are airfield, covering approximately 44 percent of the Airport property, and vacant land, covering approximately 32%. Passenger terminal facilities occupy approximately 4% of the Airport property, while Air Cargo and Support Facilities account for approximately 1 percent and 2 percent, respectively. On-Airport land uses are summarized in **Table 2.15-1**.

**Table 2.15-1: On-Airport Land Uses**

LAND USES	ACREAGE	PERCENTAGE
<b>Airfield</b>	1,784	49%
<b>Passenger Terminal</b>	130	4%
<b>Airport/Airline Support</b>		0%
<b>Airport Rescue and Firefighting</b>	6	0%
<b>Airfield Maintenance Base</b>	32	1%
<b>Airline Maintenance Base</b>	13	0%
<b>Ground Support Equipment</b>	5	0%
<b>Air Cargo</b>	31	1%
<b>General Aviation</b>	36	1%
<b>Landside</b>		0%
<b>Public Roadways</b>	72	2%
<b>Airport Parking</b>	96	3%
<b>Long-Term Lease</b>	193	5%
<b>FUSRAP</b>	103	3%
<b>Other</b>	10	0%
<b>Vacant</b>	1,164	32%
<b>Total</b>	<b>3,675</b>	

Notes:

Airfield includes Runway Protection Zones (RPZ).

FUSRAP = Formerly Utilized Sites Remedial Action Program (US Army Corps of Engineers)

Sources: St. Louis Airport Authority, *Airport Property Land Uses*, November 19, 2019; WSP USA, 2020.

### 2.15.2 OFF-AIRPORT LAND USES

The off-Airport land use boundary extends to the 65 dNL noise contours. The St. Louis County geographic information system (GIS) land use map serves as the source for the off-Airport land use map shown on



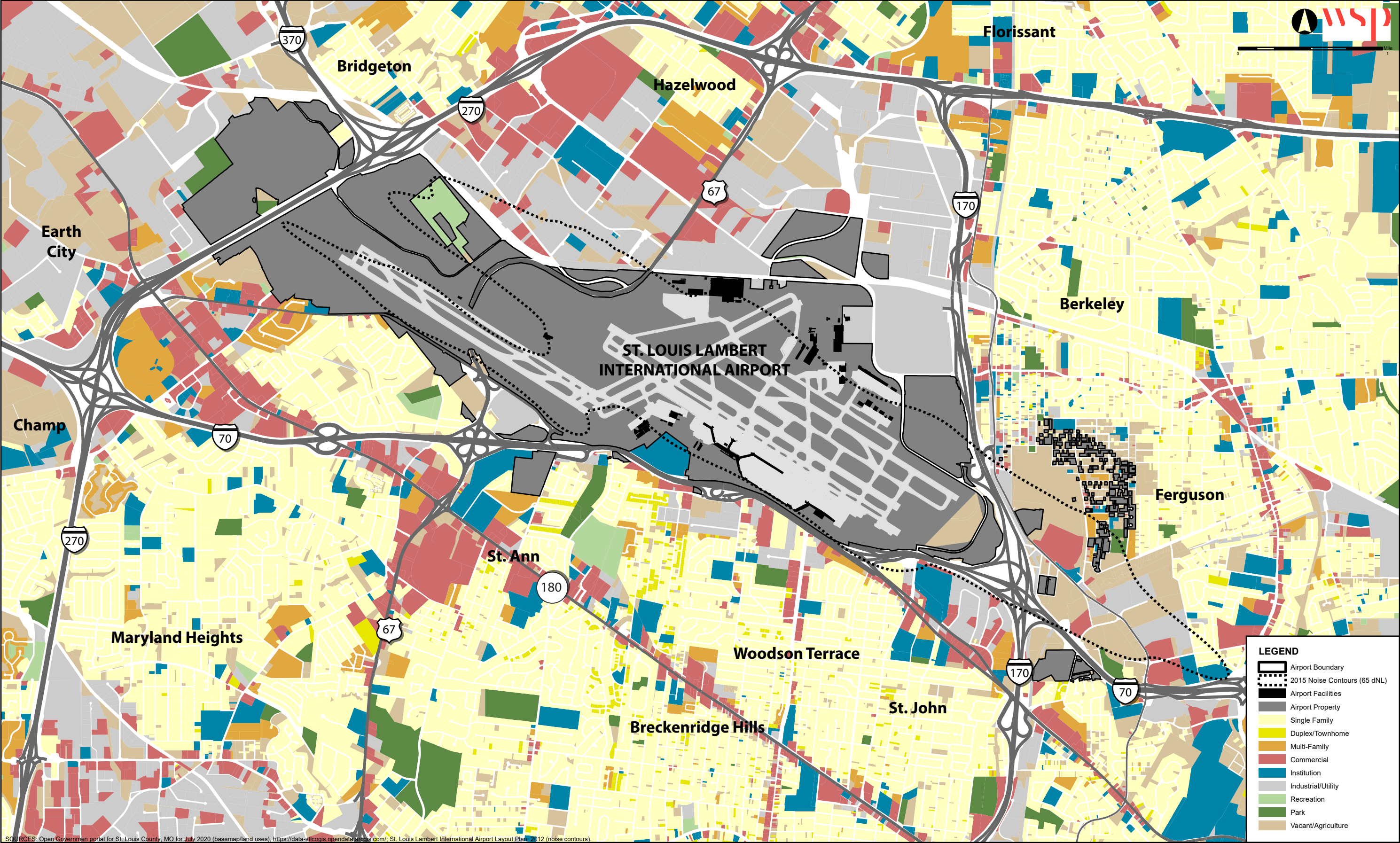
**Figure 2.15-1.** Most of the land uses on the north side of the Airport are industrial and commercial. On the east, south and west sides of the Airport, the main land use is classified as residential.

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## 2.16 SUSTAINABILITY INITIATIVES

In 2012, the Airport developed and implemented an Environmental Management System (EMS) in accordance with the International Organization of Standards (ISO) 14001:2004 standard. The Airport became ISO 14001 self-certified in February 2012. As part of the EMS, the Airport defined an Environmental Policy that supports economic and employment growth, a comprehensive approach and commitment to improve how they address environmental issues, and a commitment to communication with passengers, airlines, communities, tenants, contractors and to other stakeholders. The Airport's sustainability vision and major sustainability initiatives are discussed in **Appendix 2A**.

Figure 2.15-1  
Off-Airport Land Uses



SOURCES: Open Government portal for St. Louis County, MO for July 2020 (basemap/land uses), <https://data-stlcgis.opendata.arcgis.com/>; St. Louis Lambert International Airport Layout Plan, 2012 (noise contours)