RS&H

OCTOBER 2026

Capital Region International Airport Master Plan



LAN Master Plan
Alternatives Development and Evaluation

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direction of Capital Region Airport Authority

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7 Alternatives Development and Evaluation

7.1 Introduction

This chapter identifies and evaluates facility development alternatives for the Capital Region International Airport (LAN or Airport), based on the goals and objectives described in **Chapter 1**, the facility requirements detailed in **Chapter 5**, and the land use vision outlined in **Chapter 6**. The purpose of identifying development options and selecting a preferred comprehensive development plan is to ensure the Capital Region Airport Authority (CRAA):

- Maintains airport facilities capable of supporting forecasted operations and passenger growth
- Continues delivering uninterrupted, high-quality service to airport users
- Uses airport land efficiently and effectively to generate revenue that supports operations
- Updates the Capital Improvement Program (CIP) with projects that bring non-standard airfield infrastructure into compliance with current FAA design standards

The alternatives presented in this chapter are not intended to be exhaustive. Rather, the most viable options were thoroughly analyzed, refined, and vetted through the stakeholder involvement process to develop a comprehensive development plan that reflects CRAA's priorities, community input, and the unique operational conditions at LAN.

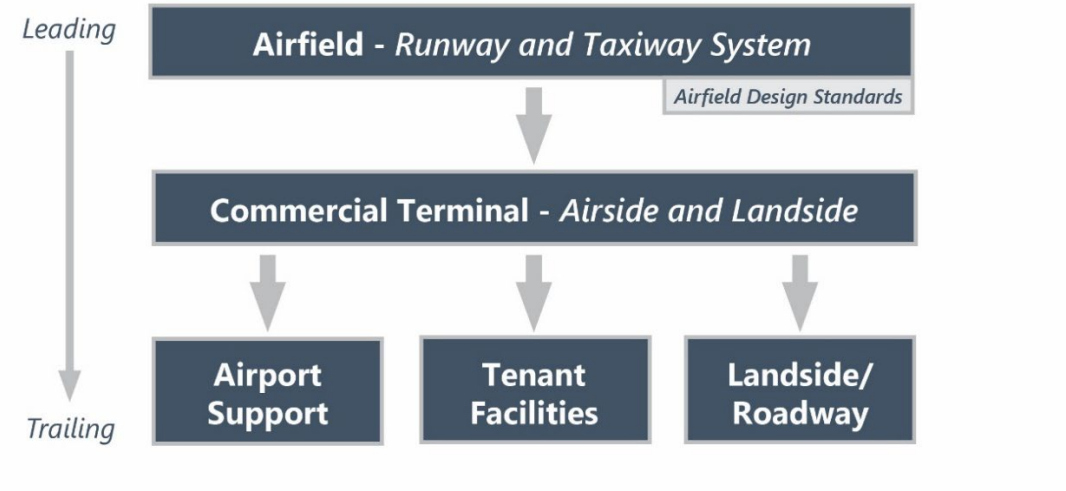
7.2 Alternatives Development Process

The process of identifying, evaluating, and selecting preferred development alternatives is guided by a hierarchy of facilities, categorized as "leading elements" and "trailing elements." Leading elements are primary facilities that demand substantial land or capital investment and have limited flexibility in placement or configuration. At LAN, these include runways, primary taxiways, navigational aids, and passenger terminal facilities. Trailing elements are secondary facilities whose placement depends on the location and configuration of leading elements. At LAN, these include landside roads and parking, tenant facilities, and airport support functions such as maintenance.

The following process was implemented to develop alternatives for LAN:

1.) Describe existing airport conditions and define the preferred future land use vision
2.) Identify development limitations and constraints such as environmental conditions
3.) Establish evaluation criteria for each functional area
4.) Create development alternatives for specific areas of airport operations
5.) Evaluate development alternatives against the established criteria
6.) Analyze development alternatives as part of a comprehensive development plan
7.) Select the preferred comprehensive development plan

Figure 7-1
Leading and Trailing Elements Diagram



Source: RS&H, 2025

7.2.1 Alternatives Evaluation Criteria

The following criteria were established to evaluate the suitability of each development alternative[1]:

- Operational and public safety
- Operational efficiency
- Compliance with FAA airfield design standards
- Resolution of existing issues
- Ability to meet long-term facility needs
- Quality and level of service provided
- Ease of implementation
- Financial feasibility, including capital, operating, and maintenance costs
- Flexibility and potential for future expansion
- Alignment with sustainable development principles

7.3 Airfield Alternatives

Preliminary airfield configuration alternatives were developed to address identified facility needs. These options were evaluated and narrowed to the four most viable for further refinement and analysis.

[1] All facility-related alternatives were weighed against taking no action.

7.3.1 Key Issues for Consideration

The following considerations were identified as key factors that must be considered when shaping long-term airfield planning at LAN:

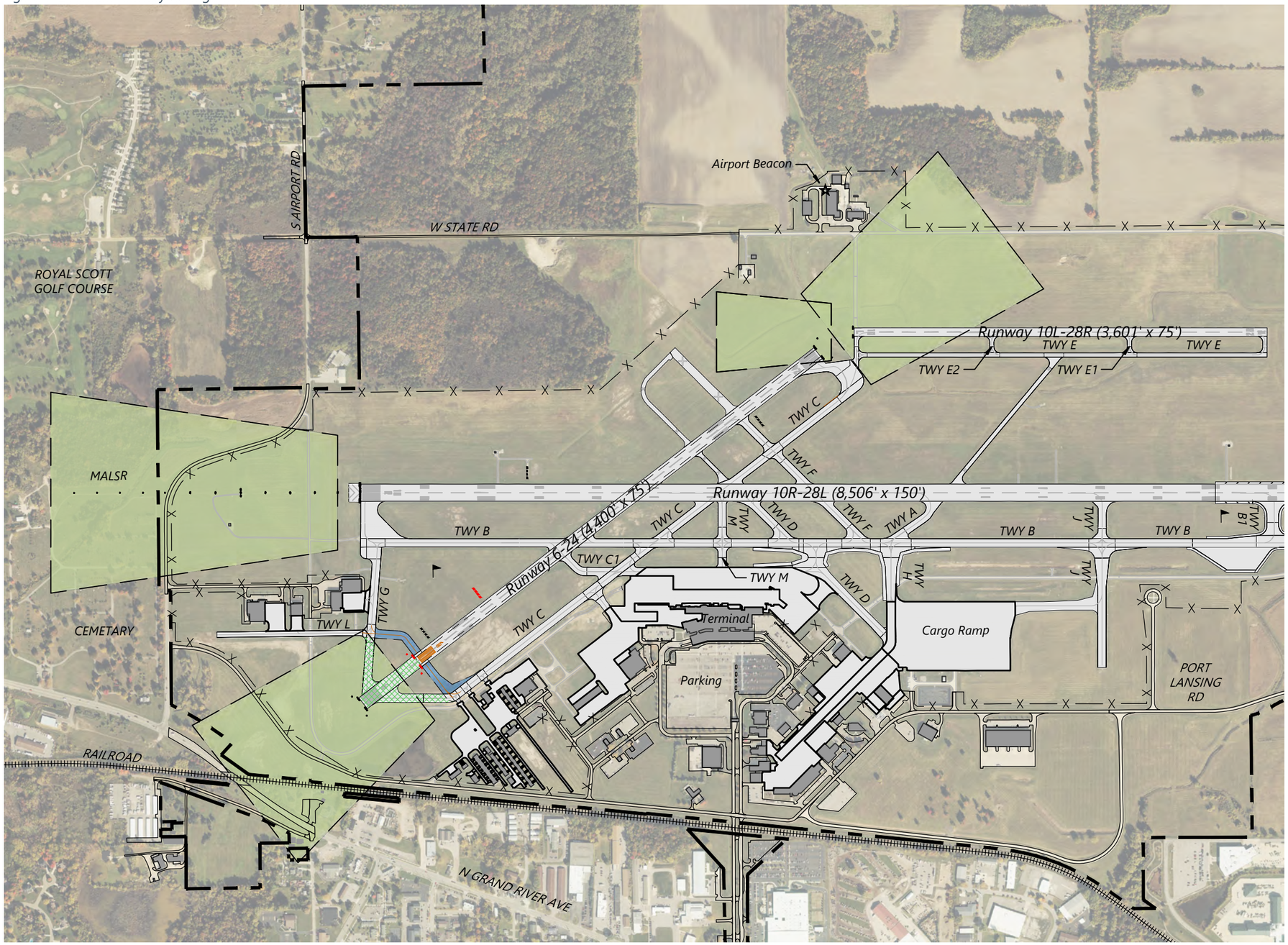
- **Runway capacity:** Runway 10R-28L provides sufficient capacity to accommodate most forecast operations well beyond the planning period.
- **Wind coverage:** Current wind data indicates that Runways 10R/L-28L/R provide adequate coverage for over 95 percent of airport operations. As a result, based on current FAA policy, maintaining Runway 6-24 at a B-II design standard is hard to justify and at this time limits access to federal funding up to B-I design.
- **Airfield non-standard conditions:** The existing layout includes multiple non-standard conditions. Addressing this could increase safety and unlock additional FAA funding opportunities such as discretionary funds.
- **Changing general aviation demand:** Recreational GA traffic is declining, while business aviation is growing. This shift increases demand for facilities and services supporting multi-engine turboprops and small jets, which typically rely on navigational aids like the ILS serving Runway 10R-28L.
- **Protecting land and airspace for future:** Ensuring strategic areas of land and airspace are protected from incompatible development that negatively impacts planned future uses.
- **Providing safe operational continuity:** Runway 6-24 is a defined by FAA as a justified legacy crosswind runway but it also offers critical redundancy to support safe operational continuity if/when Runway 10R-28L is unavailable.

These factors collectively support a need to balance LAN's airfield configuration with safety, efficiency, funding eligibility, and flexible land use that supports both future and ultimate timeframe aeronautical and non-aeronautical development.

7.3.2 Airfield Runway Configuration Alternatives

This section focuses on the overall runway and airfield configuration, examining its effects on airfield safety, operational capacity, and efficiency, along with impacts to adjacent supporting taxiways, including runway connections and parallel taxiways. Other airfield deficiencies will be addressed after the preferred airfield configuration is established. The evaluation of airfield runway configuration alternatives begins with **Figure 7-2** and continues through **Figure 7-12**. A total of eleven alternatives were examined and are discussed in **Section 7.3.3**.

Figure 7-2 Airfield Runway Configuration Alternative 1



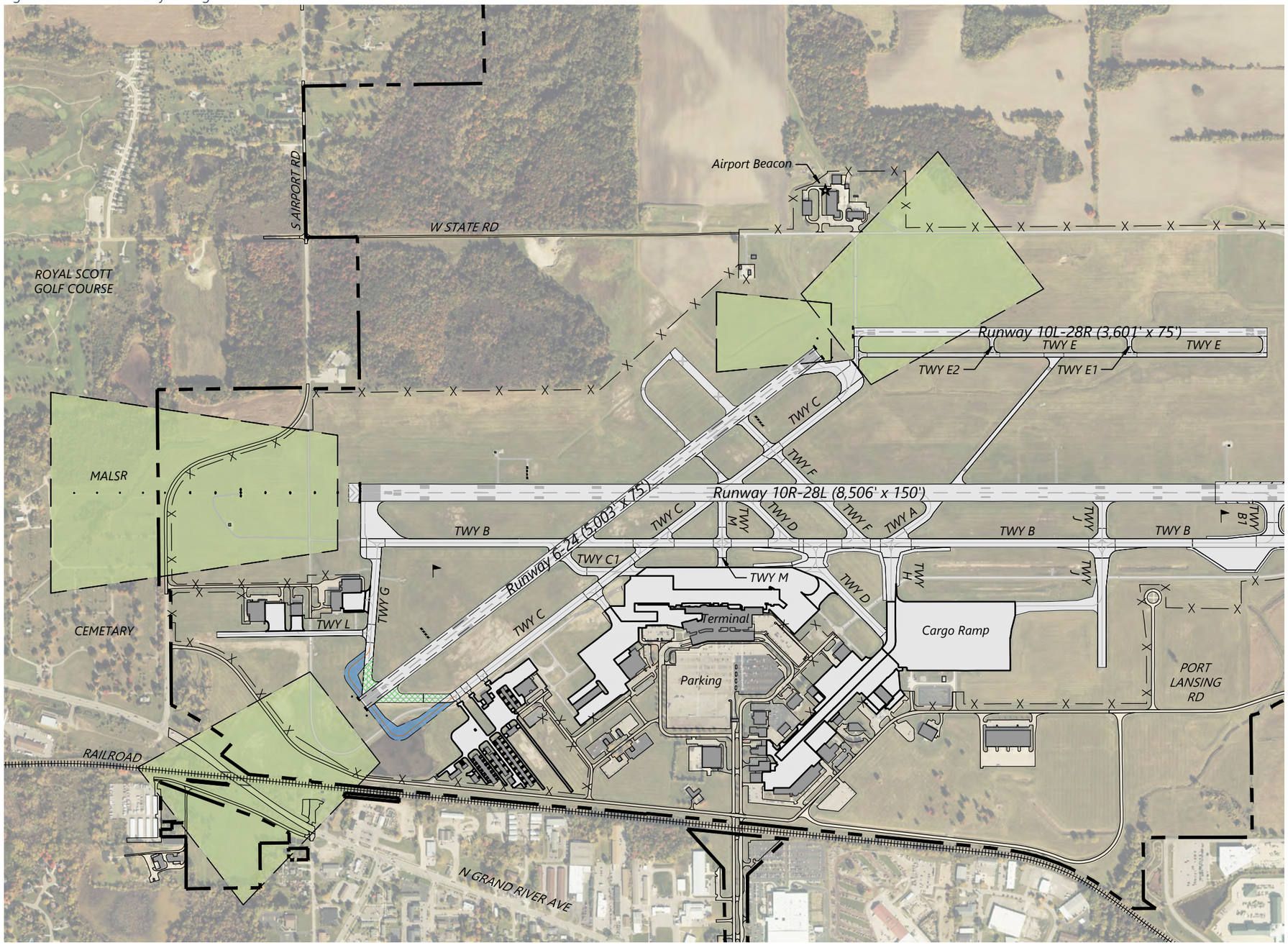
Capital Region International Airport (LAN) Runway Alternative #1

- Existing Airfield Pavement
- Existing Buildings
- Runway Protection Zone (RPZ)
- Future Airfield Pavement
- Future Airfield Marking
- Future Pavement Demolition
- Airport Property Line
- Perimeter Fence
- Lighted Windcone
- Existing Airfield Light
- Future Airfield Light
- Existing PAPI
- Future PAPI

N

0' 475' 950'

Figure 7-3 Airfield Runway Configuration Alternative 2



Capital Region International Airport (LAN) Runway Alternative #2

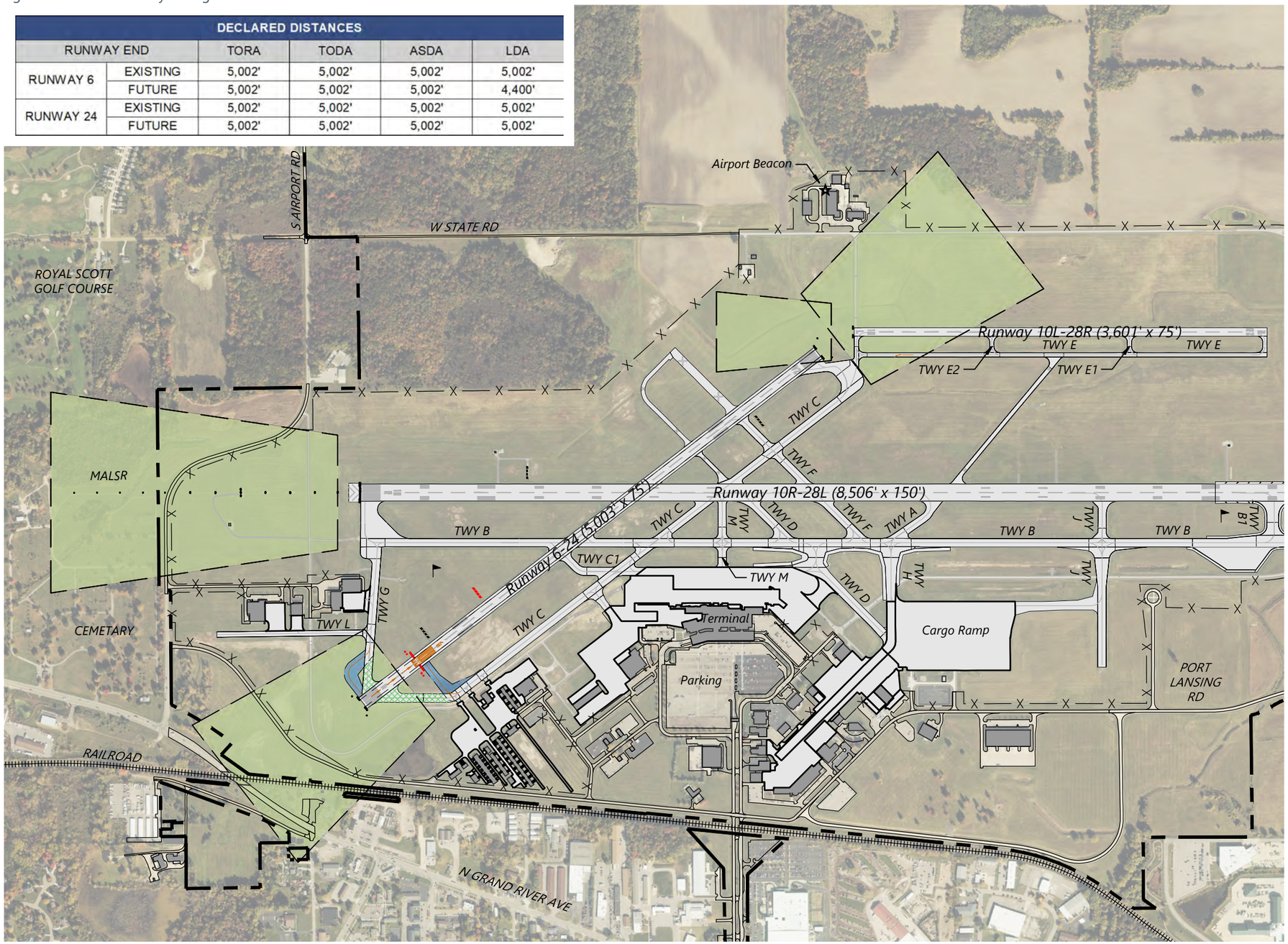
- Existing Airfield Pavement
- Existing Buildings
- Runway Protection Zone (RPZ)
- Future Airfield Pavement
- Future Airfield Marking
- Future Pavement Demolition
- Airport Property Line
- Perimeter Fence
- Lighted Windcone
- Existing Airfield Light
- Existing PAPI

N

0' 475' 950'

Figure 7-4 Airfield Runway Configuration Alternative 3

DECLARED DISTANCES					
RUNWAY END		TORA	TODA	ASDA	LDA
RUNWAY 6	EXISTING	5,002'	5,002'	5,002'	5,002'
	FUTURE	5,002'	5,002'	5,002'	4,400'
RUNWAY 24	EXISTING	5,002'	5,002'	5,002'	5,002'
	FUTURE	5,002'	5,002'	5,002'	5,002'



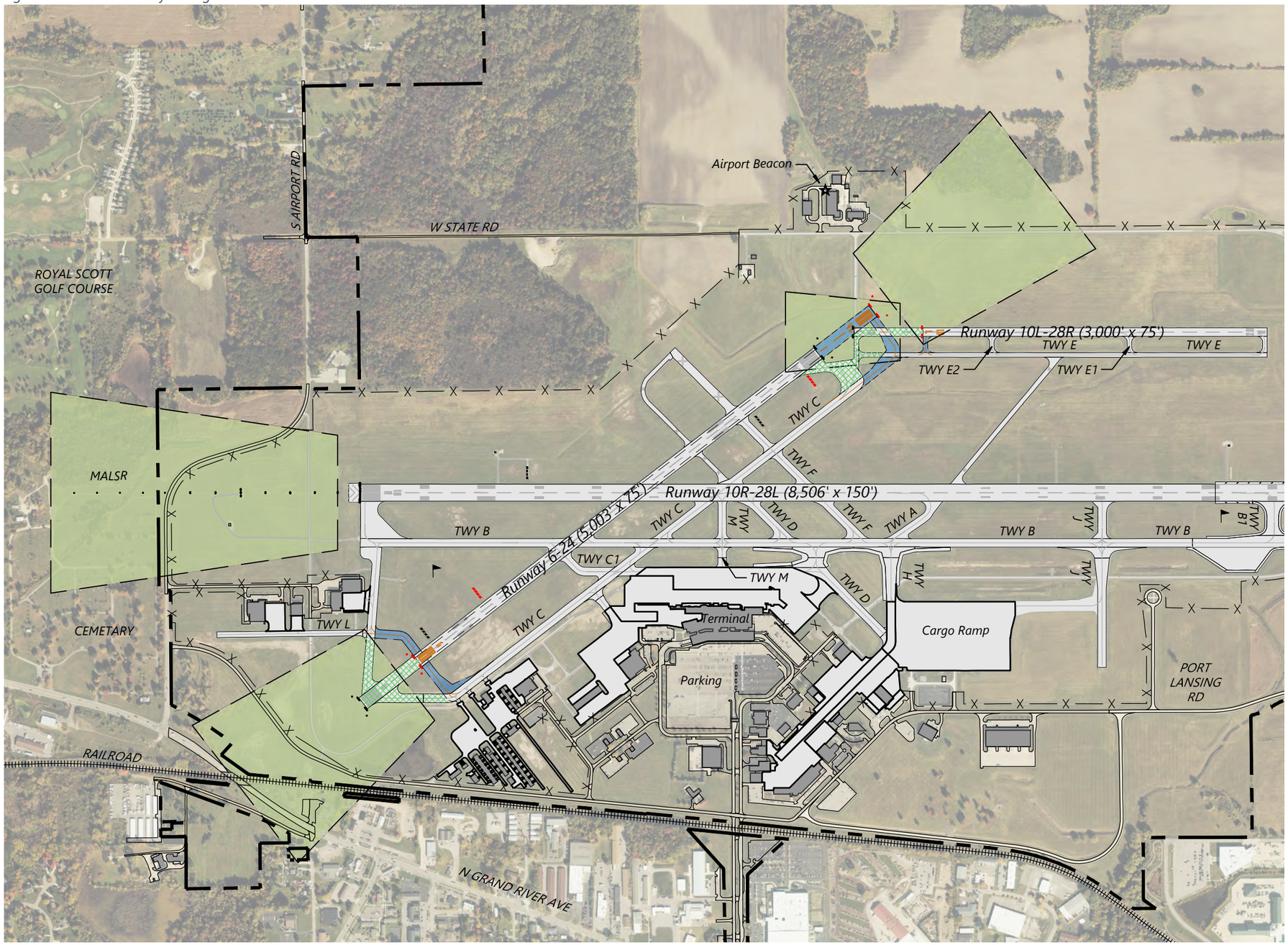
Capital Region International Airport (LAN) Runway Alternative #3

- Existing Airfield Pavement
- Existing Buildings
- Runway Protection Zone (RPZ)
- Future Airfield Pavement
- Future Airfield Marking
- Future Pavement Demolition
- Airport Property Line
- Perimeter Fence
- Lighted Windcone
- Existing Airfield Light
- Future Airfield Light
- Existing PAPI
- Future PAPI

N

0' 475' 950'

Figure 7-5 Airfield Runway Configuration Alternative 4



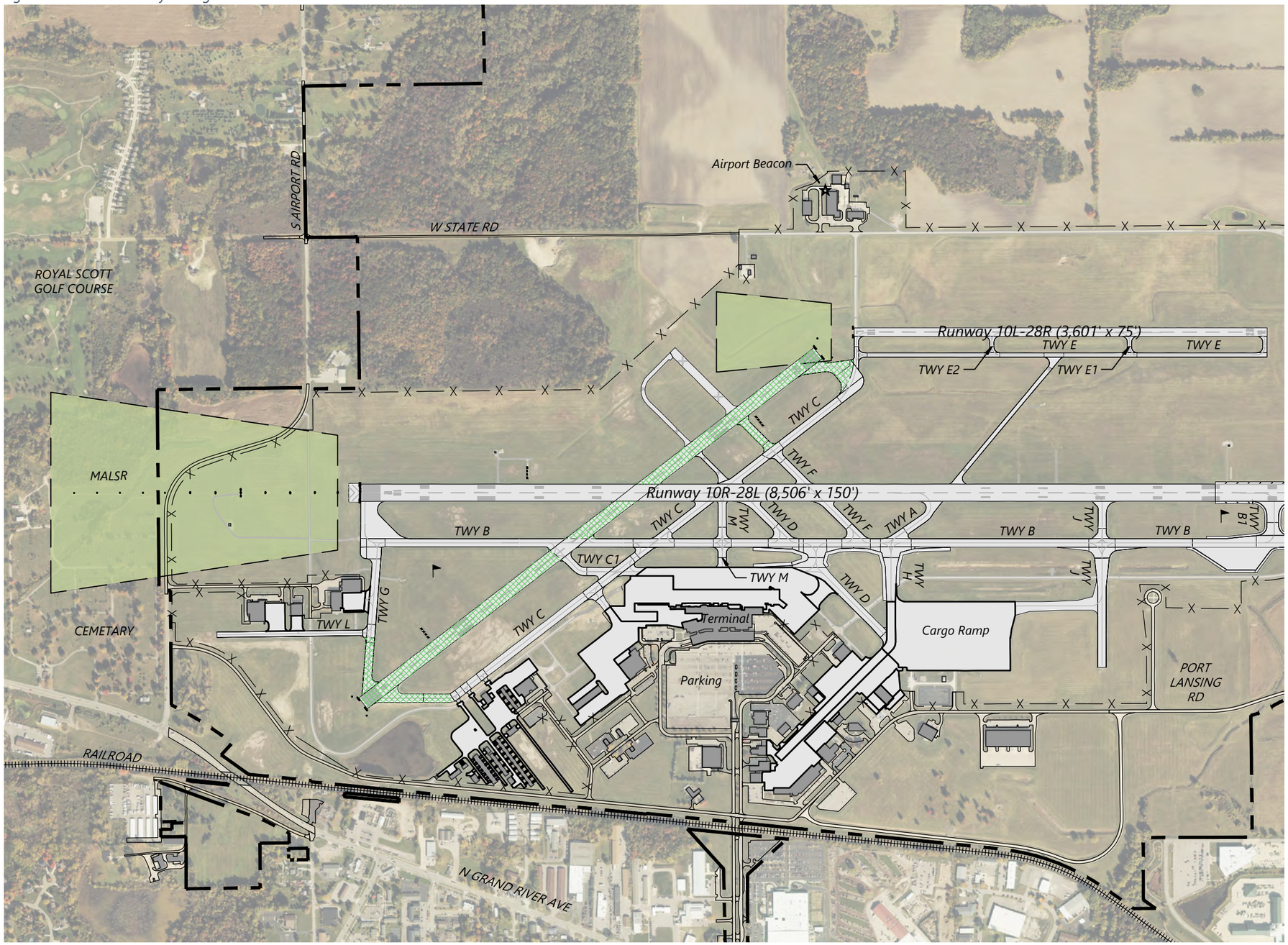
Capital Region International Airport (LAN) Runway Alternative #4

- Existing Airfield Pavement
- Existing Buildings
- Runway Protection Zone (RPZ)
- Future Airfield Pavement
- Future Airfield Marking
- Future Pavement Demolition
- Airport Property Line
- Perimeter Fence
- Lighted Windcone
- Existing Airfield Light
- Future Airfield Light
- Existing PAPI
- Future PAPI

N

0' 475' 950'

Figure 7-6 Airfield Runway Configuration Alternative 5



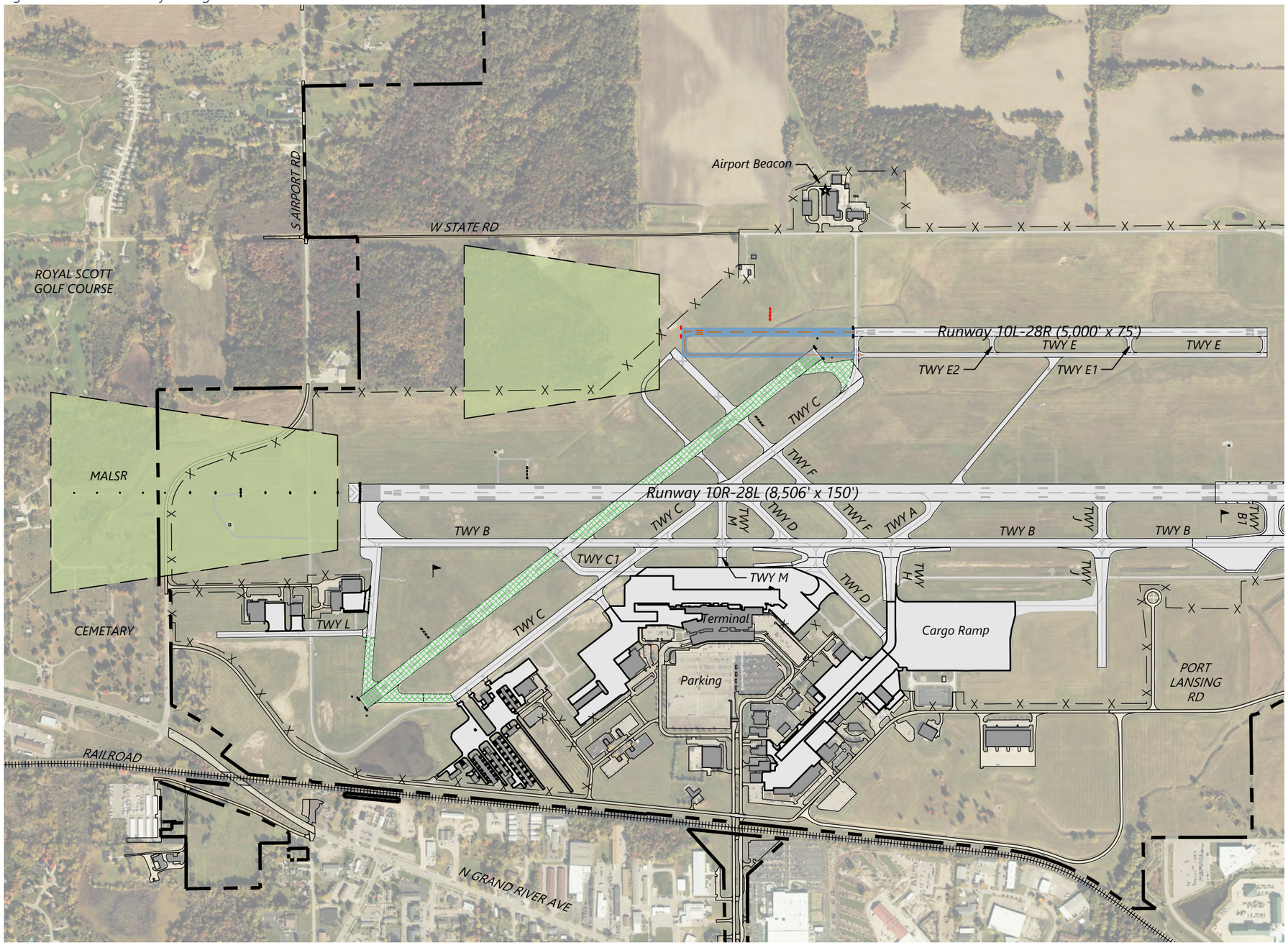
Capital Region International Airport (LAN) Runway Alternative #5

- Existing Airfield Pavement
- Existing Buildings
- Runway Protection Zone (RPZ)
- Future Airfield Pavement
- Future Airfield Marking
- Future Pavement Demolition
- Airport Property Line
- Perimeter Fence
- Lighted Windcone
- Existing Airfield Light
- Existing PAPI

N

0' 475' 950'

Figure 7-7 Airfield Runway Configuration Alternative 6



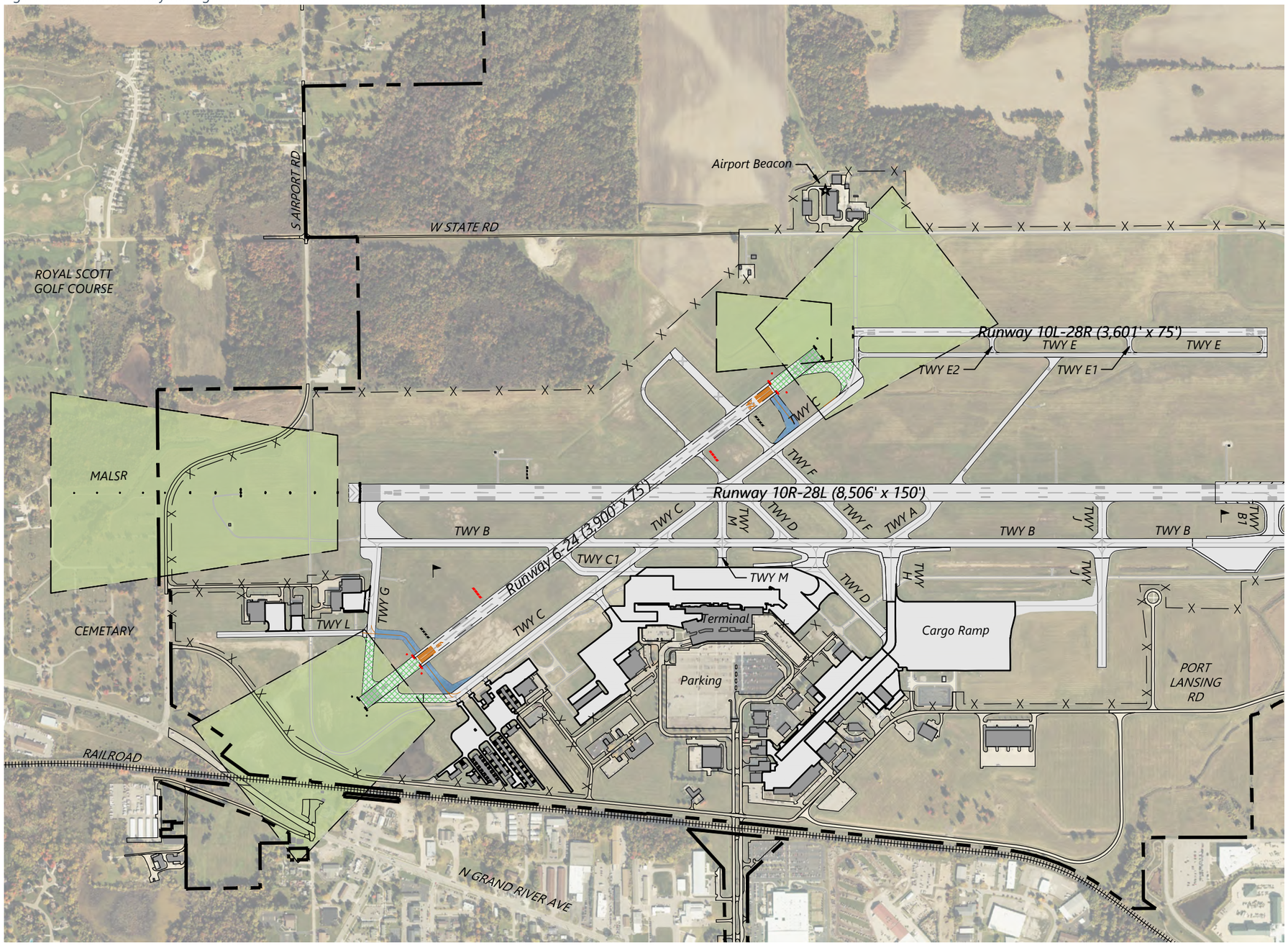
Capital Region International Airport (LAN) Runway Alternative #6

- Existing Airfield Pavement
- Existing Buildings
- Runway Protection Zone (RPZ)
- Future Airfield Pavement
- Future Airfield Marking
- Future Pavement Demolition
- Airport Property Line
- Perimeter Fence
- Lighted Windcone
- Existing Airfield Light
- Future Airfield Light
- Existing PAPI
- Future PAPI

N

0' 475' 950'

Figure 7-8 Airfield Runway Configuration Alternative 7



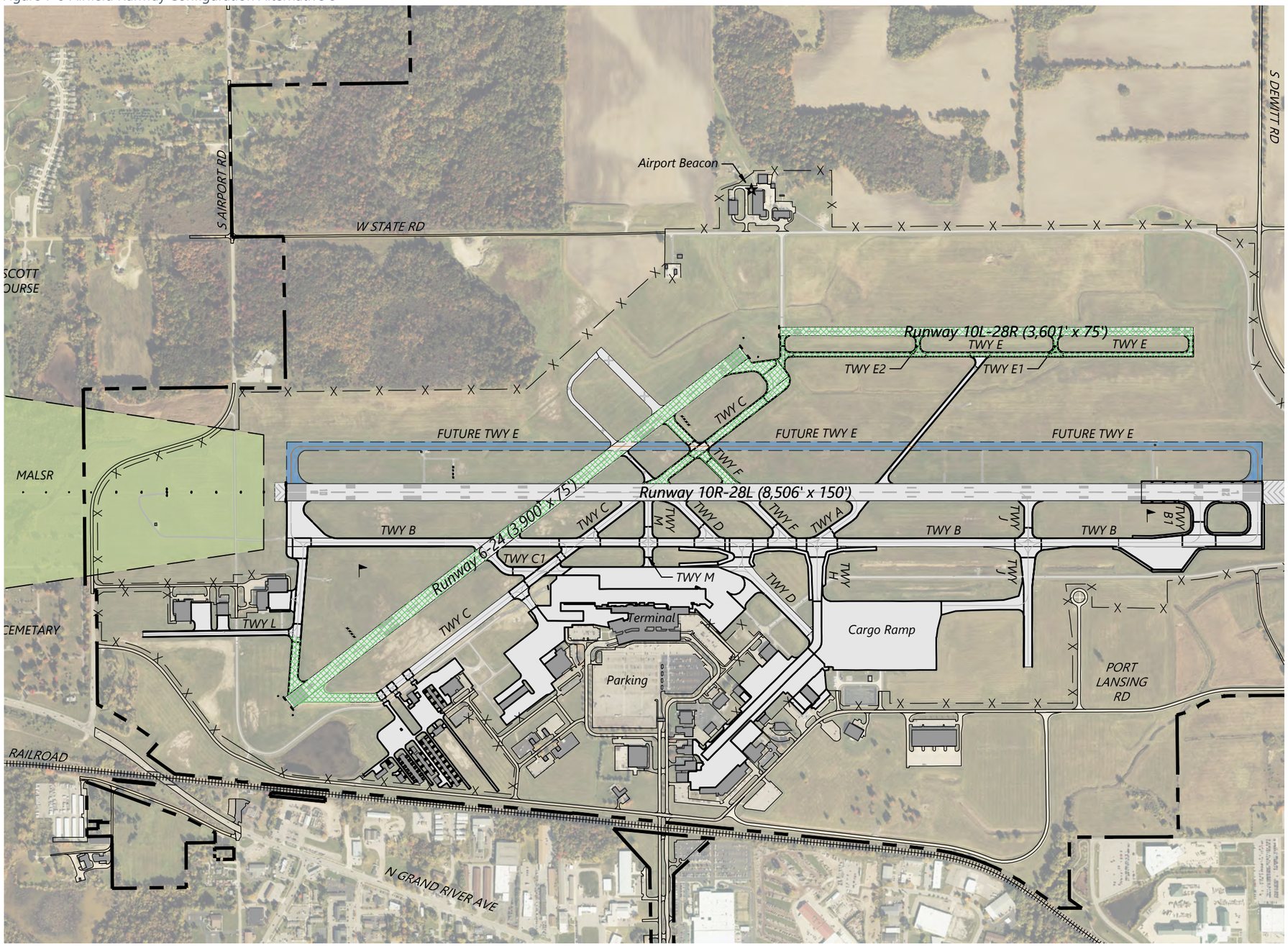
Capital Region International Airport (LAN) Runway Alternative #7

- Existing Airfield Pavement
- Existing Buildings
- Runway Protection Zone (RPZ)
- Future Airfield Pavement
- Future Airfield Marking
- Future Pavement Demolition
- Airport Property Line
- Perimeter Fence
- Lighted Windcone
- Existing Airfield Light
- Future Airfield Light
- Existing PAPI
- Future PAPI

N

0' 475' 950'

Figure 7-9 Airfield Runway Configuration Alternative 8



Capital Region International Airport (LAN) Runway Alternative #8

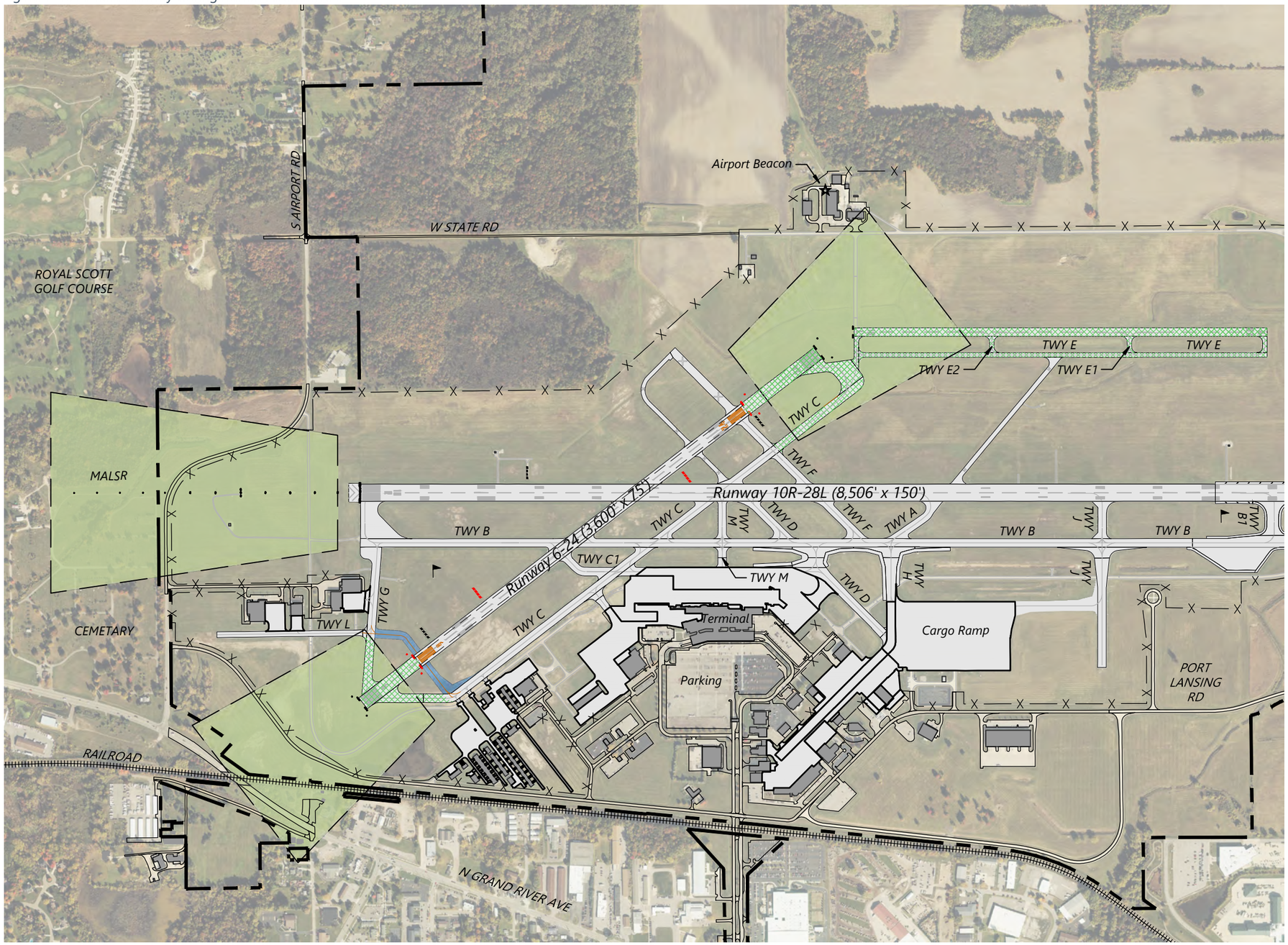
- Existing Airfield Pavement
- Existing Buildings
- Runway Protection Zone (RPZ)
- Future Airfield Pavement
- Future Airfield Marking
- Future Pavement Demolition
- Airport Property Line
- Perimeter Fence
- Lighted Windcone
- Existing Airfield Light
- Existing PAPI

Note: Further study required to determine design and location of taxiway connectors for future Taxiway E.

N

0' 475' 950'

Figure 7-10 Airfield Runway Configuration Alternative 9



Capital Region International Airport (LAN) Runway Alternative #9

- Existing Airfield Pavement
- Existing Buildings
- Runway Protection Zone (RPZ)
- Future Airfield Pavement
- Future Airfield Marking
- Future Pavement Demolition
- Airport Property Line
- Perimeter Fence
- Lighted Windcone
- Existing Airfield Light
- Future Airfield Light
- Existing PAPI
- Future PAPI

N

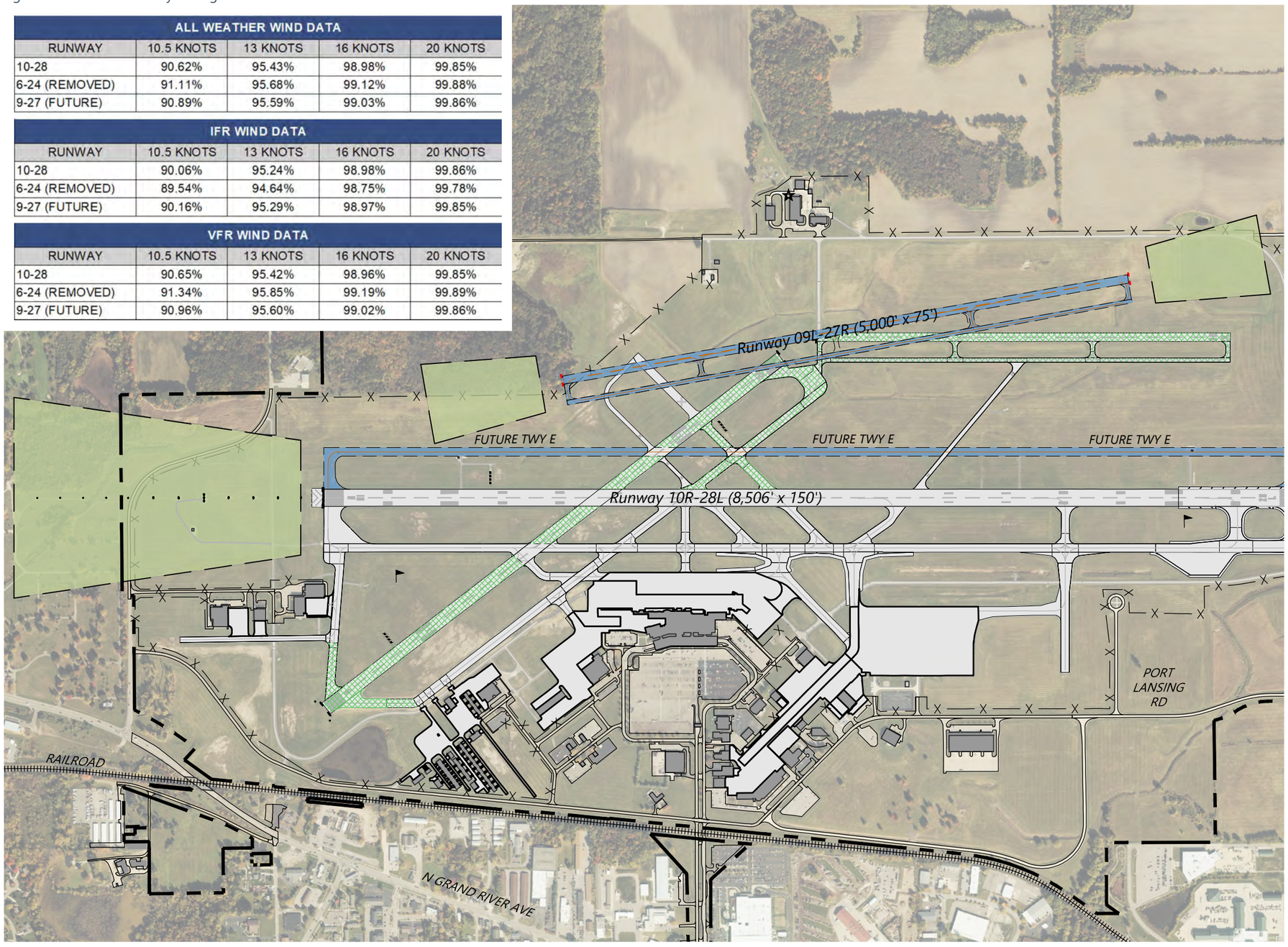
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Figure 7-11 Airfield Runway Configuration Alternative 10

ALL WEATHER WIND DATA				
RUNWAY	10.5 KNOTS	13 KNOTS	16 KNOTS	20 KNOTS
10-28	90.62%	95.43%	98.98%	99.85%
6-24 (REMOVED)	91.11%	95.68%	99.12%	99.88%
9-27 (FUTURE)	90.89%	95.59%	99.03%	99.86%

IFR WIND DATA				
RUNWAY	10.5 KNOTS	13 KNOTS	16 KNOTS	20 KNOTS
10-28	90.06%	95.24%	98.98%	99.86%
6-24 (REMOVED)	89.54%	94.64%	98.75%	99.78%
9-27 (FUTURE)	90.16%	95.29%	98.97%	99.85%

VFR WIND DATA				
RUNWAY	10.5 KNOTS	13 KNOTS	16 KNOTS	20 KNOTS
10-28	90.65%	95.42%	98.96%	99.85%
6-24 (REMOVED)	91.34%	95.85%	99.19%	99.89%
9-27 (FUTURE)	90.96%	95.60%	99.02%	99.86%



Capital Region International Airport (LAN) Runway Alternative #10

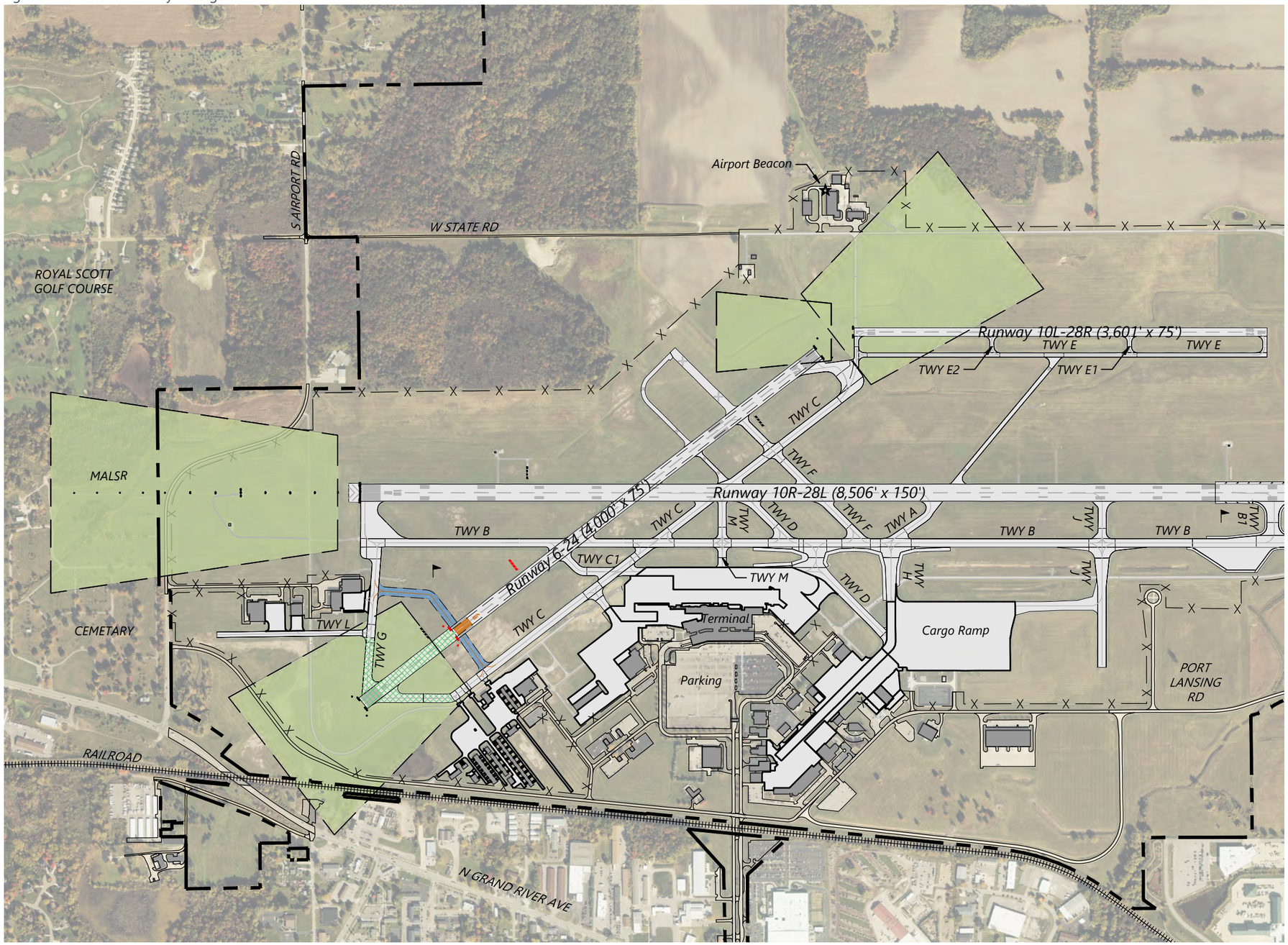
- Existing Airfield Pavement
- Existing Buildings
- Runway Protection Zone (RPZ)
- Future Airfield Pavement
- Future Airfield Marking
- Future Pavement Demolition
- Airport Property Line
- Perimeter Fence
- Lighted Windcone
- Existing Airfield Light
- Future Airfield Light
- Existing PAPI
- Future PAPI

Note: Further study required to determine design and location of taxiway connectors between future Runway 09L-27R and future Taxiway E.

N

0' 475' 950'

Figure 7-12 Airfield Runway Configuration Alternative 11



Capital Region International Airport (LAN) Runway Alternative #11

- Existing Airfield Pavement
- Existing Buildings
- Runway Protection Zone (RPZ)
- Future Airfield Pavement
- Future Airfield Marking
- Future Pavement Demolition
- Airport Property Line
- Perimeter Fence
- Lighted Windcone
- Existing Airfield Light
- Future Airfield Light
- Existing PAPI
- Future PAPI

N

0' 475' 950'

7.3.3 Airfield Runway Configuration Alternatives Evaluation

This section provides a cursory overview of each airfield runway configuration alternative, summarizing the key considerations, advantages, and constraints identified during the evaluation. **Table 7-1** at the end of this section presents the evaluation of these preliminary runway configuration alternatives.

Airfield Runway Configuration Alternative 1

- All runways are retained, but the Runway 6 approach threshold is shifted 603 feet northeast to reduce incompatible land uses within the approach RPZ. While incompatible land within the Runway 24 departure RPZ is eliminated, Port Lansing Road still impacts the area.
- Runway end connector taxiways are brought up to design standards with 90-degree angles.
- All affected navigational aids and lighting for Runway 6-24 are relocated, and pavement markings are updated.

Airfield Runway Configuration Alternative 2

- All runways are retained in their existing condition, but Taxiways C and G are reconfigured at the Runway 6 approach end to meet design standards by introducing 90-degree runway end connections.
- Construction of Taxiway C impacts the detention pond and a portion of the airport vehicle service road near the southeast end of the Runway 6 threshold.

Airfield Runway Configuration Alternative 3

- All runways are retained in their existing condition, but Taxiways C and G are reconfigured to meet design standards at the Runway 6 approach end by creating 90-degree connections to the runway. Taxiway G connects directly to the Runway 6 end, while Taxiway C connects to Runway 6-24 approximately 603 feet northeast at the displaced threshold. Aircraft departing from Runway 6 via Taxiway C would either need to taxi back to the threshold or conduct a mid-field departure using a reduced runway length. Aircraft using Taxiway G would have access to the full runway length.
- Shifting the Taxiway C connection to a 90-degree alignment prior to the existing detention pond helps mitigate potential environmental and cost-related impacts.
- The Landing Distance Available (LDA) for Runway 6 would be reduced to 4,400 feet, requiring updates to declared distances in airport publications.
- All affected navigational aids and lighting for Runway 6-24 are relocated, and pavement markings are updated.

Airfield Runway Configuration Alternative 4

- All runways are retained, but Runway 6-24 is shifted 603 feet northeast. Taxiways C and G are brought up to design standards by creating 90-degree connections at each runway end. The wide pavement area on Taxiway C near the departure end of Runway 24 is removed.
- Shifting the Runway 6 approach threshold 603 feet northeast reduces incompatible land uses within the approach RPZ. While incompatible land within the Runway 24 departure RPZ is eliminated, Port Lansing Road continues to impact the area.
- To avoid creating a direct connection point between the Runway 24 and Runway 10L thresholds, Runway 10L-28R is shortened by 601 feet at the Runway 10L threshold, leaving 3,000 feet remaining. The Taxiway E runway end connector is shifted to align with the shortened Runway 10L-28R.
- All affected navigational aids and lighting for the shifted and shortened runways are relocated, and pavement markings are updated. Lighting for 10L-28R has been decommissioned.

Airfield Runway Configuration Alternative 5

- Runways 10R-28L and 10L-28R are retained in their current conditions, while Runway 6-24 is eliminated. This removal results in a slight reduction in wind coverage; however, the change is not expected to affect the safety or efficiency of operations under existing and forecast operations except for A-I aircraft which may be limited during certain wind conditions. Eliminating Runway 6-24 and its associated taxiway connectors removes multiple non-standard airfield conditions.
- Decommissioning the runway would also open two large areas of aeronautical land for alternative uses. Incompatible land uses near the Runway 6 threshold would no longer be an issue, as the associated approach and departure RPZs would be removed.
- All navigational aids and lighting associated with Runway 6-24 would be removed.

Airfield Runway Configuration Alternative 6

- This alternative shares many similarities with Airfield Runway Configuration Alternative 5, including the following:
    - Removing Runway 6-24 slightly reduces wind coverage for the smallest aircraft (primarily A-I category).
    - Eliminating Runway 6-24 and its associated runway end taxiway connectors removes multiple non-standard airfield conditions.
    - Two large areas of aeronautical land would be opened for other potential uses.

    - Incompatible land uses associated with the Runway 6 threshold would be eliminated, as the approach RPZ would no longer apply.
    - Runway 10R-28L provides sufficient capacity to accommodate most forecast operations based on the FAA's established criteria.
- If Runway 6-24 were removed, Runway 10L-28R could be extended to 5,000 feet, providing a secondary runway with a length comparable to the one eliminated. Taxiway E would also be extended to maintain full parallel taxiway service for Runway 10L-28R.
- All navigational aids and lighting associated with Runway 6-24 would be removed.

Airfield Runway Configuration Alternative 7

- Runway 6-24 is shortened by removing 603 feet from the Runway 6 threshold end and 500 feet from the Runway 24 threshold end, resulting in 3,900 feet of remaining runway length, which is sufficient to accommodate most ADG B-I aircraft and smaller.
- All runway end connector taxiways for Runway 6-24 are reconstructed to meet current design standards with 90-degree angles. Former connectors, including Taxiways C and G, along with the wide pavement area on Taxiway C near the departure end of Runway 24, are removed.
- Shifting the Runway 6 approach threshold 603 feet northeast reduces incompatible land uses within the approach RPZ. Although incompatible land within the Runway 24 departure RPZ is eliminated, the area remains impacted by Port Lansing Road.
- All affected navigational aids and lighting are relocated for the shortened runway, and pavement markings are updated.

Airfield Runway Configuration Alternative 8

- Runway 10R-28L is retained in its current configuration, while Runways 6-24 and 10L-28R are eliminated. Runway 10R-28L provides sufficient capacity and wind coverage to support forecast most operational needs beyond the planning period.
- Removal of Taxiway C (north of Runway 10R-28L) and Taxiway E, along with associated connectors, addresses several non-standard taxiway conditions.
- A new parallel taxiway (Future Taxiway E) would be constructed on the north side of Runway 10R-28L to D-IV design standards, supporting future aeronautical development in that area.
- All navigational aids and lighting associated with Runways 6-24 and 10L-28R would be removed.

Airfield Runway Configuration Alternative 9

- Runways 10R-28L and 6-24 are retained, while Runway 10L-28R is eliminated.
- Runway 6-24 is shortened by removing 603 feet from the Runway 6 threshold end and 500 feet from the Runway 24 threshold end, resulting in 3,900 feet of remaining runway length, which is sufficient for most ADG B-I aircraft and smaller.
- Retaining both Runway 10R-28L and Runway 6-24 maximizes wind coverage for the airfield. However, based on FAA wind coverage criteria, Runway 6-24 is only justified for federal funding support for up to B-I aircraft.
- Taxiway E is completely removed. All runway end connector taxiways for Runway 6-24 are reconstructed to meet current design standards with 90-degree angles. Former connectors, including Taxiways C and G, as well as the segment of Taxiway C north of Taxiway F, are also removed.
- Shifting the Runway 6 approach threshold 603 feet northeast reduces incompatible land uses within the approach RPZ. Although incompatible land within the Runway 24 departure RPZ is eliminated, the area remains impacted by Port Lansing Road.
- All affected navigational aids and lighting are relocated for the shortened runway, and pavement markings are updated.

Airfield Runway Configuration Alternative 10

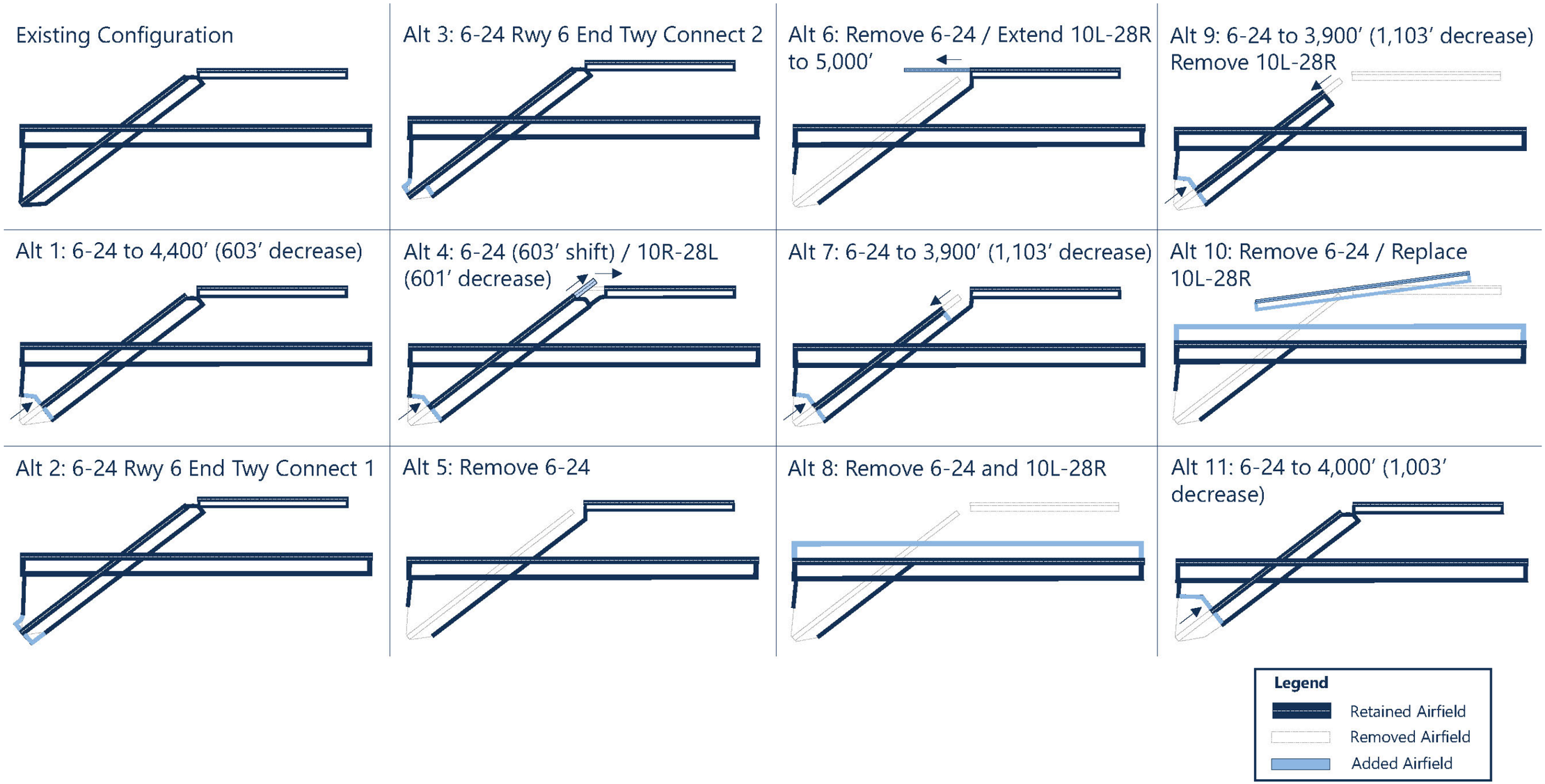
- Runway 10R-28L is retained in its current condition, while Runways 6-24 and 10L-28R are eliminated. Both removed runways are replaced with a new crosswind/secondary runway, designated Runway 9-27.
- Runway 9-27 provides comparable wind coverage to the former Runway 6-24, performing slightly better in some conditions and slightly worse in others.
- Two new full-length parallel taxiways are constructed: a future Taxiway E (built to D-IV standards) serving the north side of Runway 10R-28L, and a new taxiway (built to B-II standards) serving the south side of Runway 9-27.
- All navigational aids and lighting associated with Runways 6-24 and 10L-28R would be removed. New navigational aids and lighting would be installed for Runway 9-27.

Airfield Runway Configuration Alternative 11

- This alternative is a slight variation of Airfield Runway Configuration Alternative 1, with the Runway 6 threshold displaced slightly farther northeast.
- All runways are retained, but the Runway 6 approach threshold is shifted 1,003 feet northeast to reduce incompatible land uses within the approach RPZ. While incompatible land within the Runway 24 departure RPZ is eliminated, the area remains impacted by its intersection with Port Lansing Road.

- Runway end connector taxiways are brought up to design standards by introducing 90-degree angles.
- All affected navigational aids and lighting for Runway 6-24 are relocated, and pavement markings are updated.

Figure 7-13
Airfield Alternative Configuration Diagrams



Source: RS&H Analysis, 2025

Table 7-1
Preliminary Runway Configuration Alternatives Tables

Evaluation Criteria	Alternatives											
	No Action	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 8	Alt 9	Alt 10	Alt 11
Operational / Public Safety												
Operational Efficiency												
Meets FAA Design Standards												
Resolves Current Issues												
Meets Long-Term Needs												
Appropriate Quality/Service												
Ease of Implementation												
Financial Feasibility												
Flexible/Future Expansion												
Sustainability Principles												

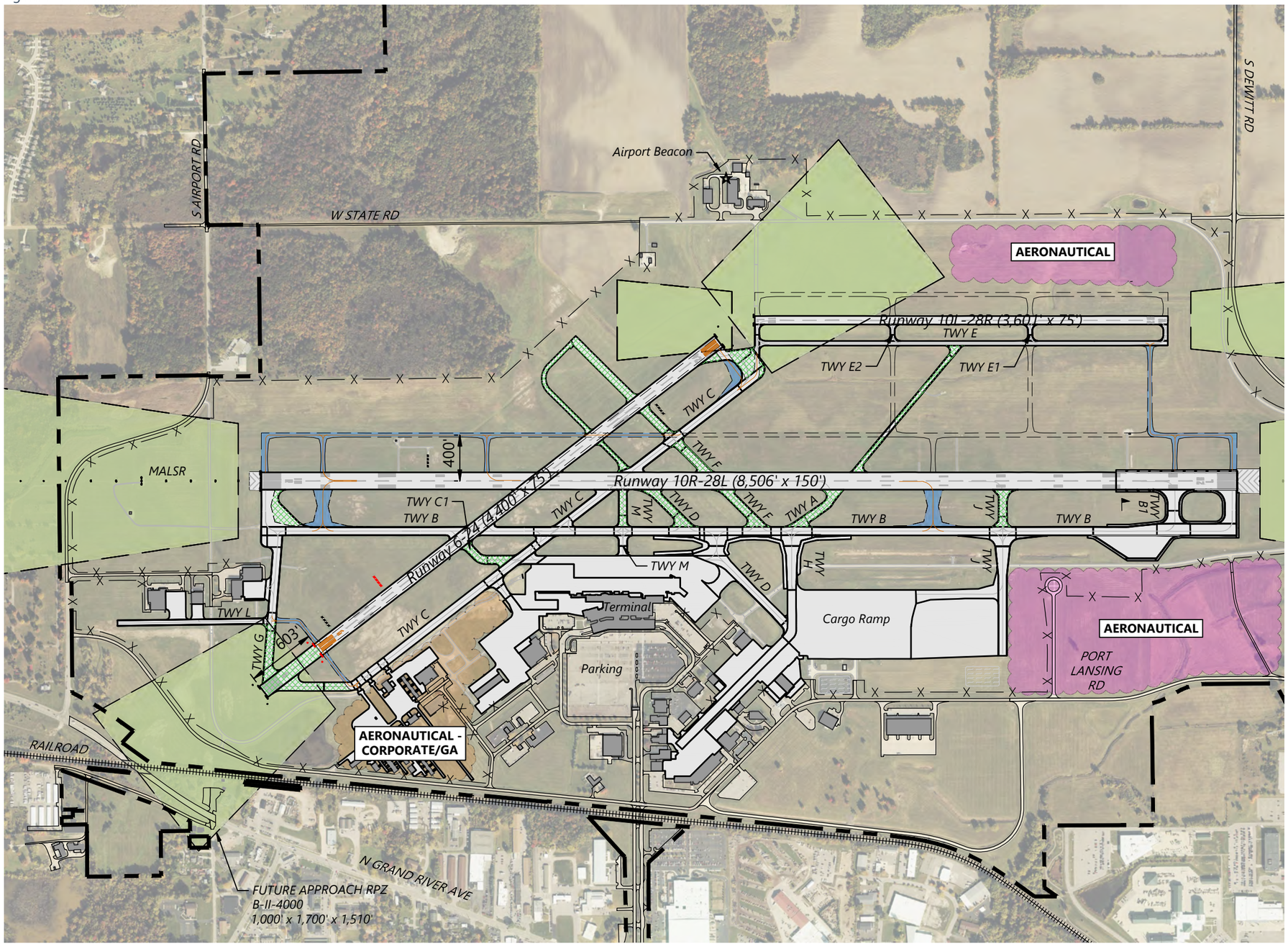
Performance Legend	Good	Fair	Poor

Source: RS&H Analysis, 2025

7.3.4 Runway and Supporting Taxiway System Alternatives

Following review and coordination with Airport staff, the eleven airfield runway configuration alternatives were narrowed to four. Alternatives 1, 6, 8, and 11 were selected for further analysis and development of supporting taxiway system alternatives to address the deficiencies outlined in **Chapter 5, Facility Requirements**. Refined airfield alternatives are illustrated in **Figure 7-14** through **Figure 7-21** and are described and evaluated in **Section 7.3.5**.

Figure 7-14 Refined Airfield Alternatives 1A



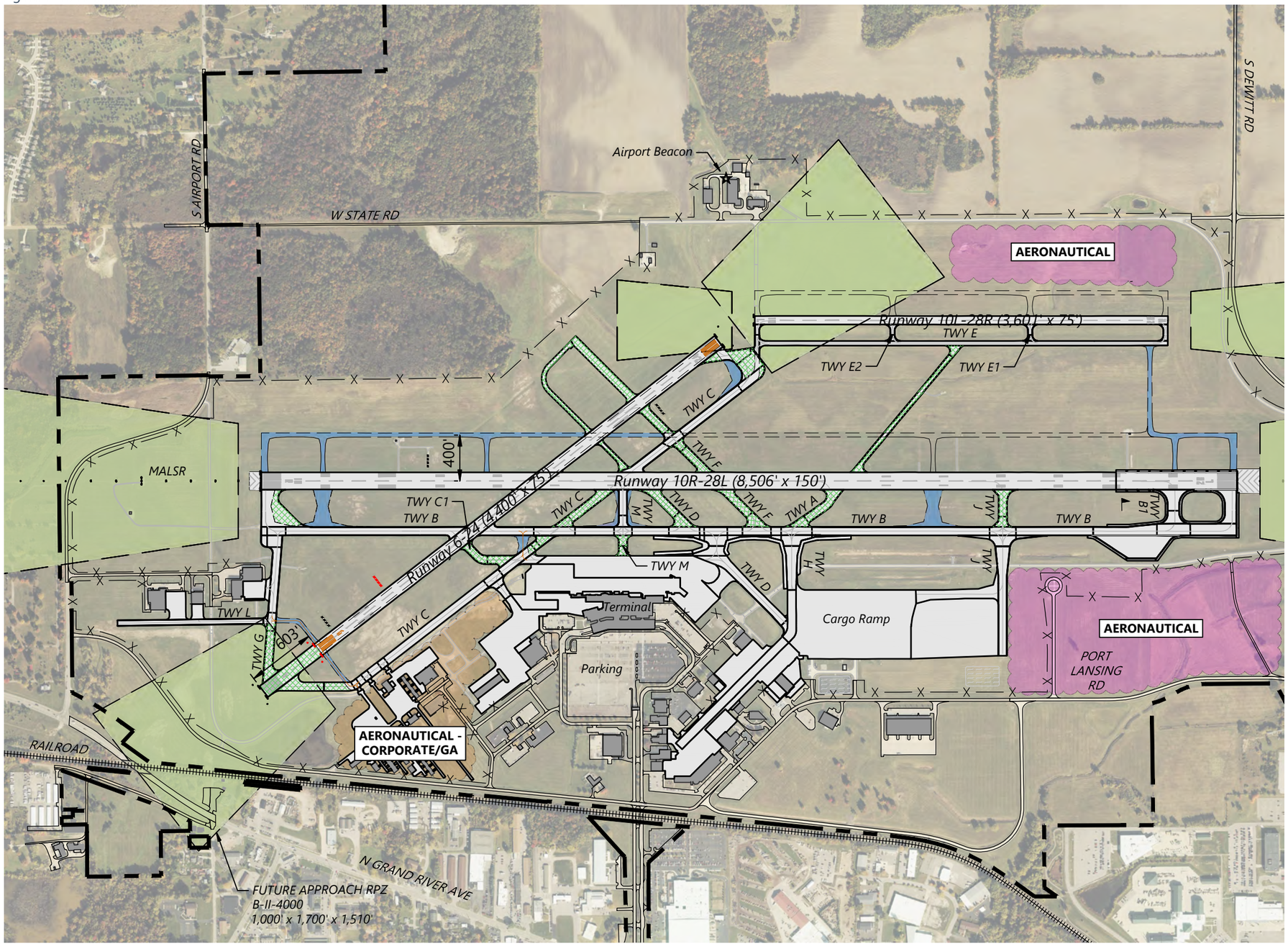
Runway Alternative #1A

- Existing Airfield Pavement
- Existing Buildings
- Runway Protection Zone (RPZ)
- Future Airfield Pavement
- Future Airfield Marking
- Future Pavement Demolition
- Ultimate Airfield Pavement
- Ultimate Airfield Marking
- Airport Property Line
- Perimeter Fence
- Lighted Windcone
- Existing Airfield Light
- Future Airfield Light
- Existing PAPI
- Future PAPI

N

0' 475' 950'

Figure 7-15 Refined Airfield Alternatives 1B



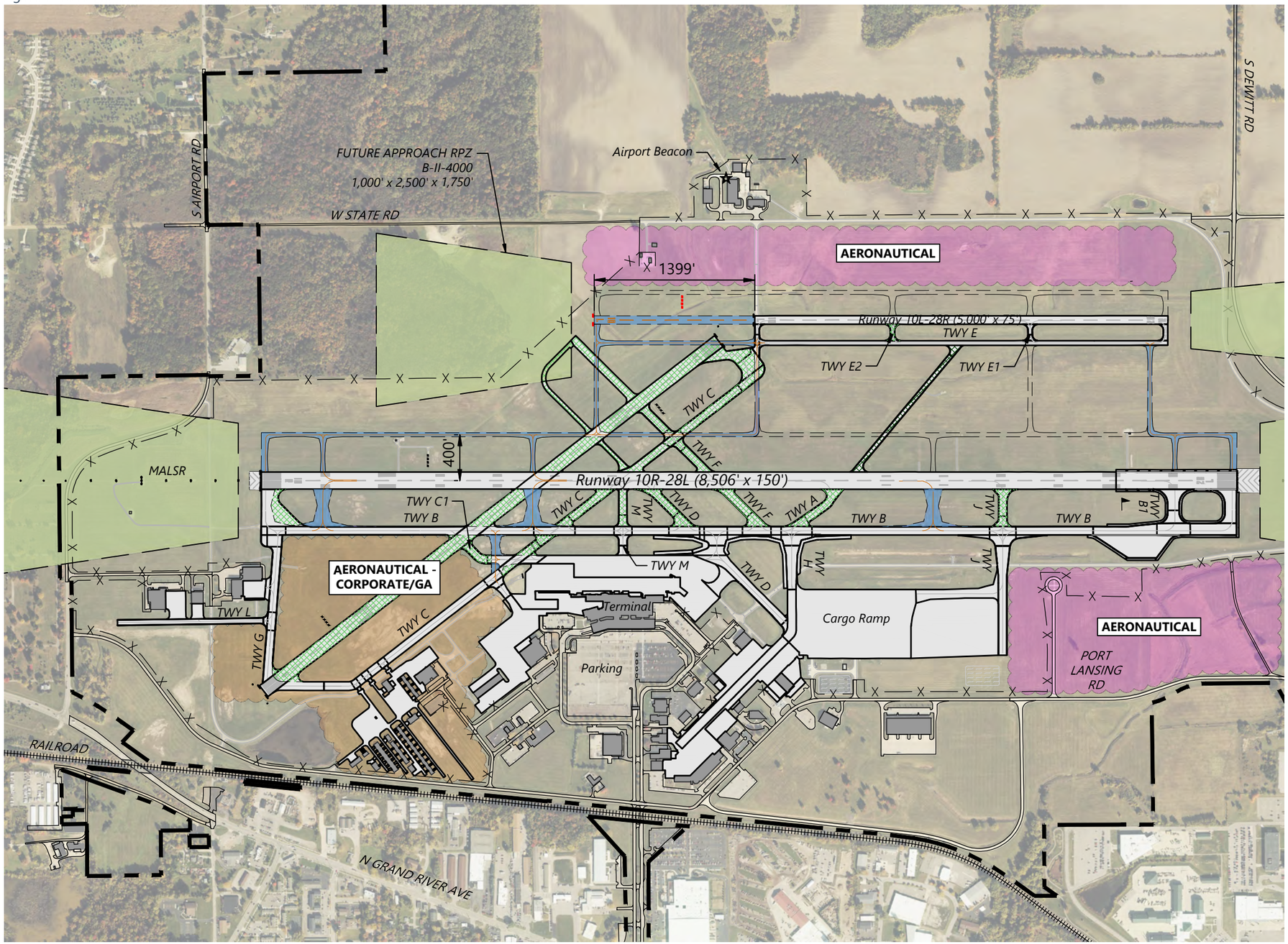
Runway Alternative #1B

- Existing Airfield Pavement
- Existing Buildings
- Runway Protection Zone (RPZ)
- Future Airfield Pavement
- Future Airfield Marking
- Future Pavement Demolition
- Ultimate Airfield Pavement
- Ultimate Airfield Marking
- Airport Property Line
- Perimeter Fence
- Lighted Windcone
- Existing Airfield Light
- Future Airfield Light
- Existing PAPI
- Future PAPI

N

0' 475' 950'

Figure 7-16 Refined Airfield Alternatives 6A



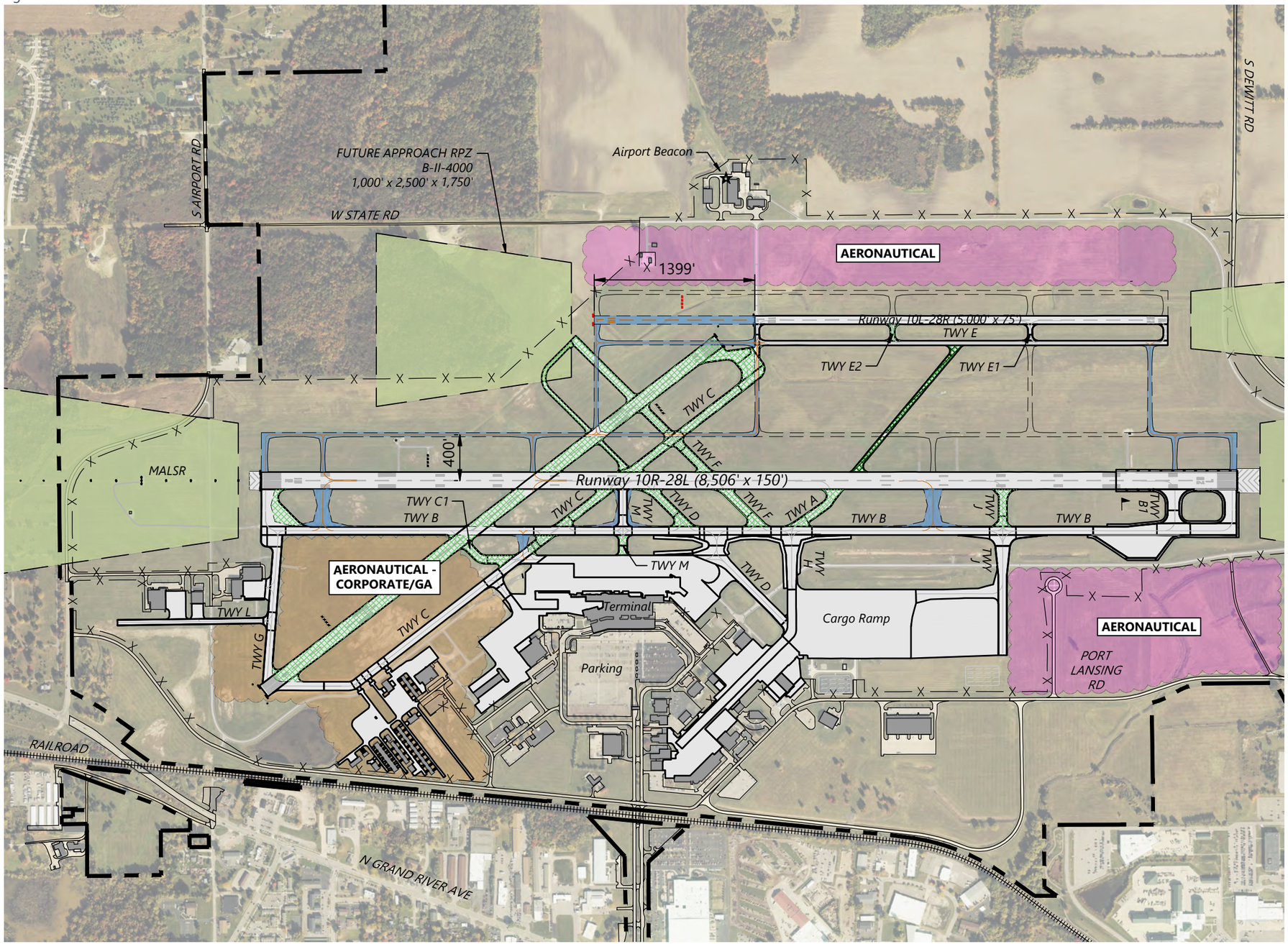
Runway Alternative #6A

- Existing Airfield Pavement
- Existing Buildings
- Runway Protection Zone (RPZ)
- Future Airfield Pavement
- Future Airfield Marking
- Future Pavement Demolition
- Ultimate Airfield Pavement
- Ultimate Airfield Marking
- Airport Property Line
- Perimeter Fence
- Lighted Windcone
- Existing Airfield Light
- Future Airfield Light
- Existing PAPI
- Future PAPI

N

0' 475' 950'

Figure 7-17 Refined Airfield Alternatives 6B



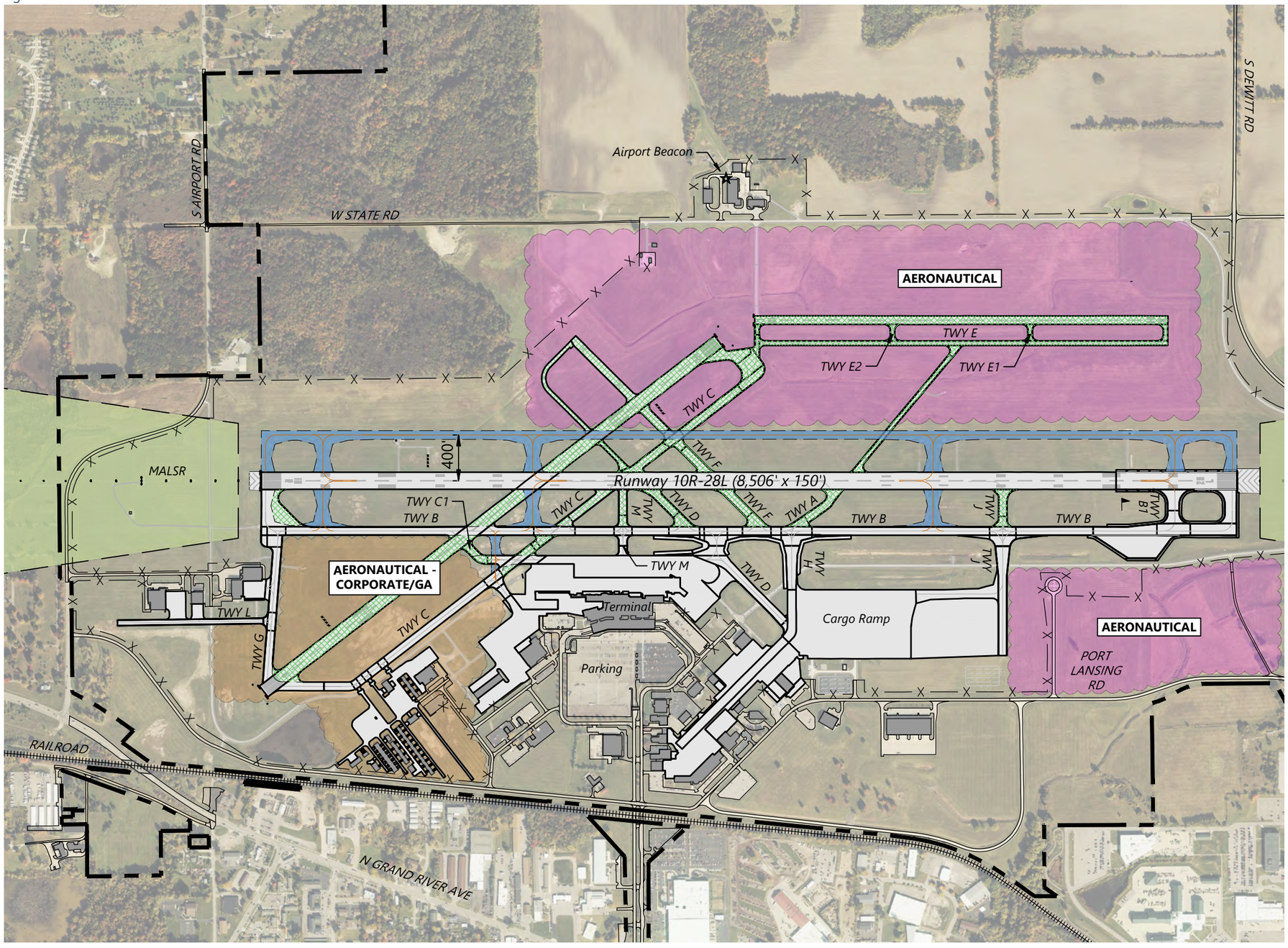
Runway Alternative #6B

- Existing Airfield Pavement
- Existing Buildings
- Runway Protection Zone (RPZ)
- Future Airfield Pavement
- Future Airfield Marking
- Future Pavement Demolition
- Ultimate Airfield Pavement
- Ultimate Airfield Marking
- Airport Property Line
- Perimeter Fence
- Lighted Windcone
- Existing Airfield Light
- Future Airfield Light
- Existing PAPI
- Future PAPI

N

0' 475' 950'

Figure 7-18 Refined Airfield Alternatives 8A



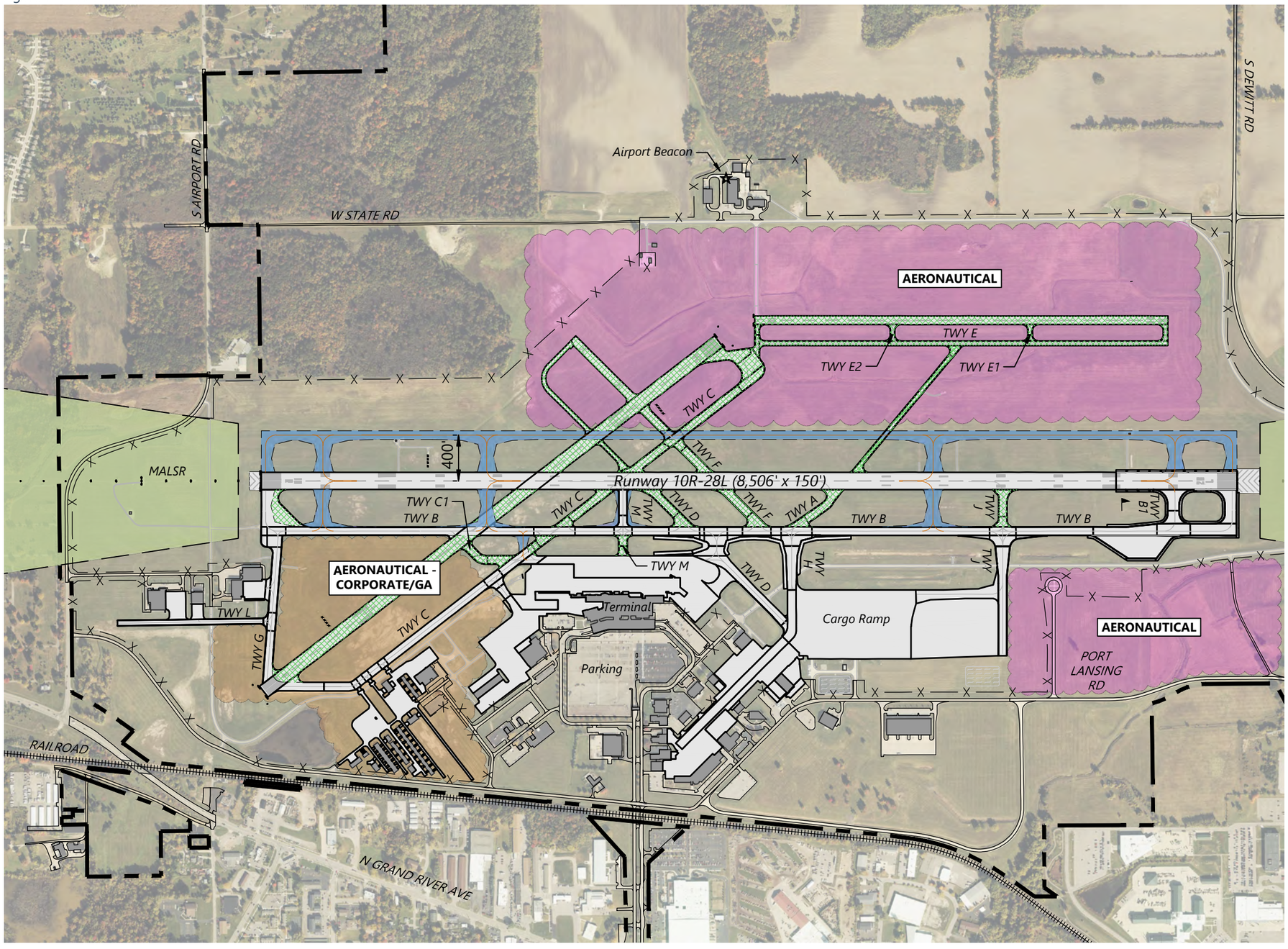
Runway Alternative #8A

- Existing Airfield Pavement
- Existing Buildings
- Runway Protection Zone (RPZ)
- Future Airfield Pavement
- Future Airfield Marking
- Future Pavement Demolition
- Airport Property Line
- Perimeter Fence
- Lighted Windcone
- Existing Airfield Light
- Existing PAPI

N

0' 475' 950'

Figure 7-19 Refined Airfield Alternatives 8B



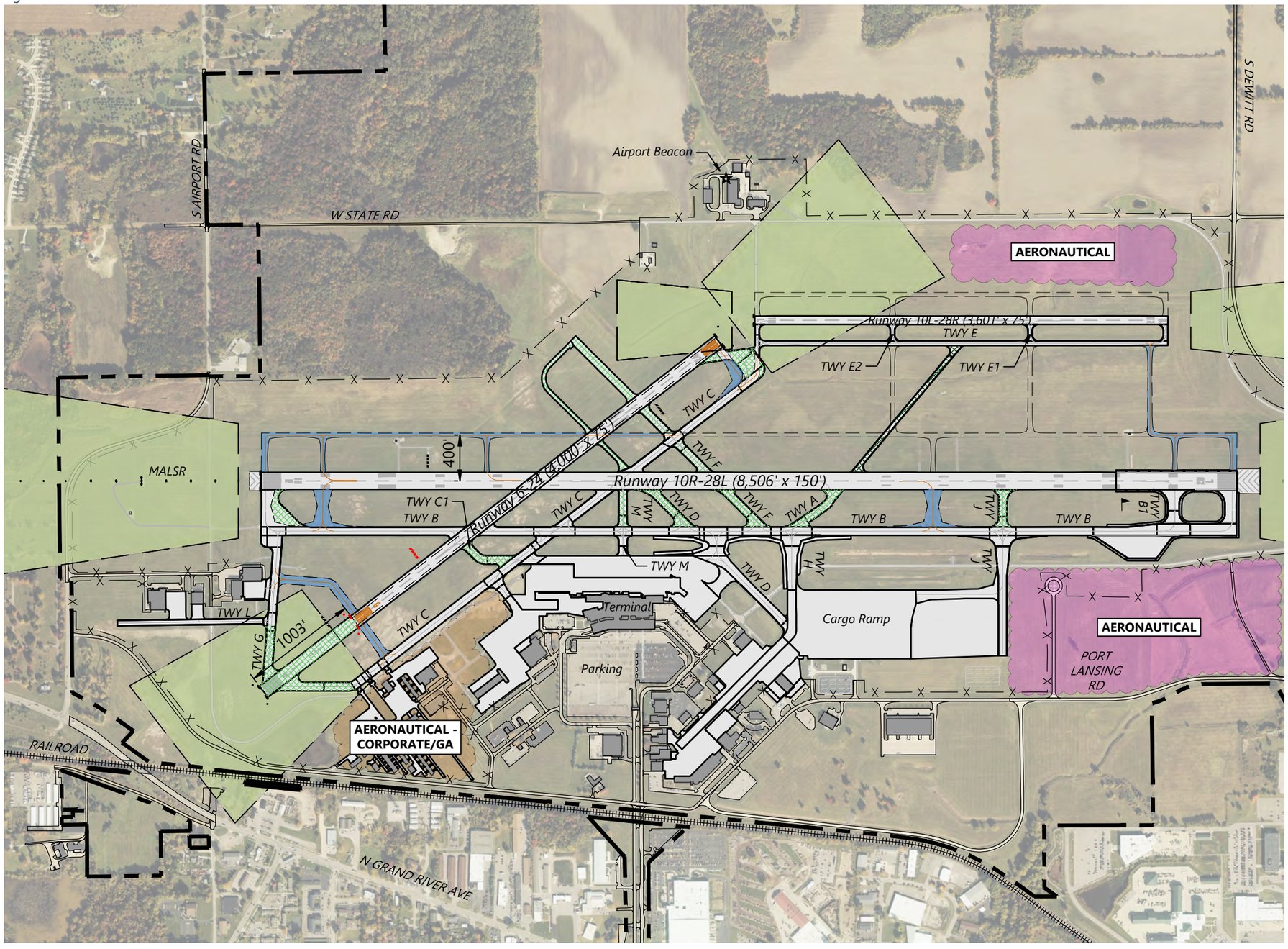
Runway Alternative #8B

- Existing Airfield Pavement
- Existing Buildings
- Runway Protection Zone (RPZ)
- Future Airfield Pavement
- Future Airfield Marking
- Future Pavement Demolition
- Airport Property Line
- Perimeter Fence
- Lighted Windcone
- Existing Airfield Light
- Existing PAPI

N

0' 475' 950'

Figure 7-20 Refined Airfield Alternatives 11A



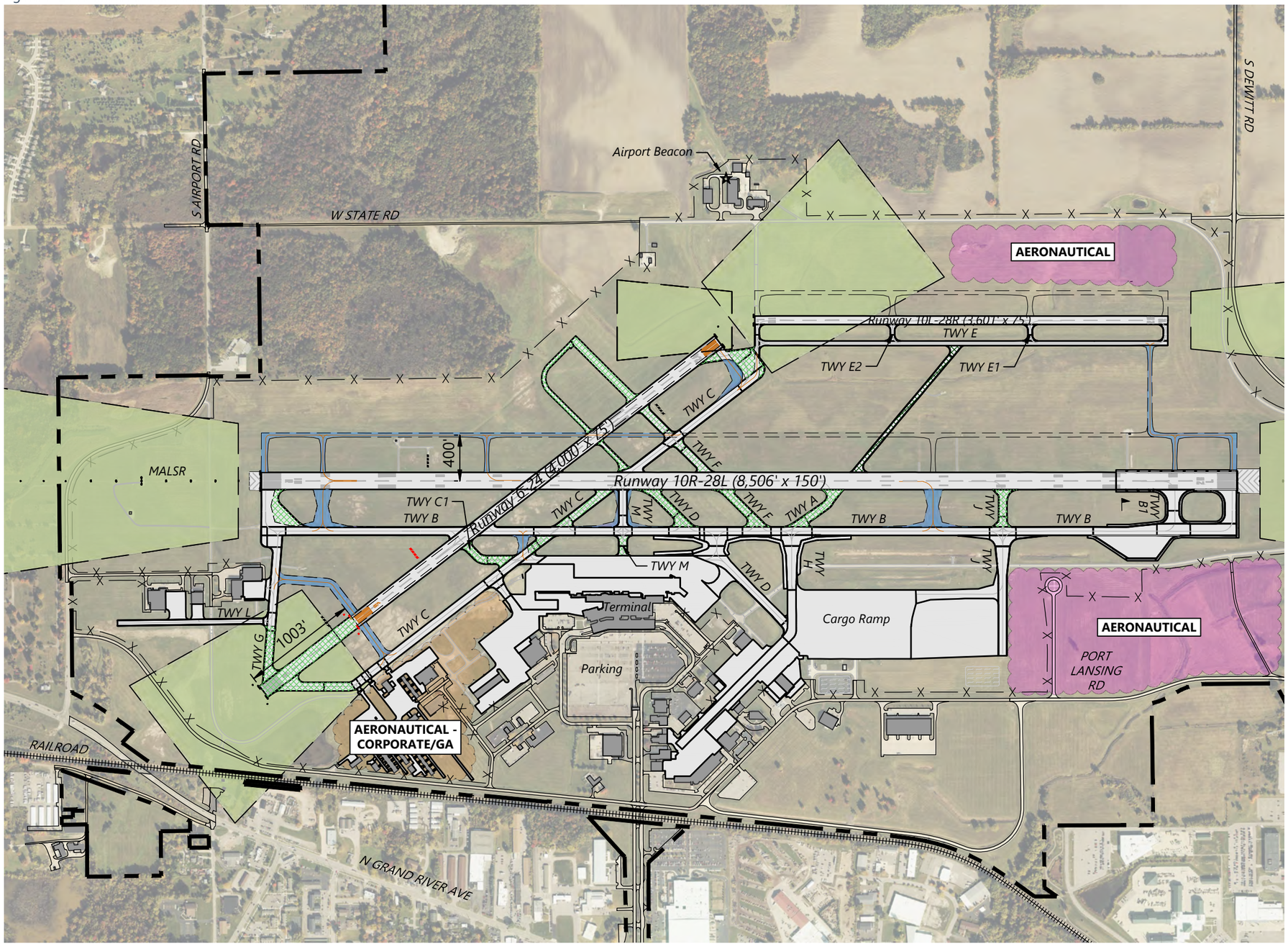
Runway Alternative #11A

- Existing Airfield Pavement
- Existing Buildings
- Runway Protection Zone (RPZ)
- Future Airfield Pavement
- Future Airfield Marking
- Future Pavement Demolition
- Ultimate Airfield Pavement
- Ultimate Airfield Marking
- Airport Property Line
- Perimeter Fence
- Lighted Windcone
- Existing Airfield Light
- Future Airfield Light
- Existing PAPI
- Future PAPI

N

0' 475' 950'

Figure 7-21 Refined Airfield Alternatives 11B



Runway Alternative #11B

- Existing Airfield Pavement
- Existing Buildings
- Runway Protection Zone (RPZ)
- Future Airfield Pavement
- Future Airfield Marking
- Future Pavement Demolition
- Ultimate Airfield Pavement
- Ultimate Airfield Marking
- Airport Property Line
- Perimeter Fence
- Lighted Windcone
- Existing Airfield Light
- Future Airfield Light
- Existing PAPI
- Future PAPI

N

0' 475' 950'

7.3.5 Refined Airfield Alternatives Evaluation

Four refined airfield alternatives were carried forward for additional evaluation: Alternatives 1A and 1B, 6A and 6B, 8A and 8B, and 11A and 11B. Two supporting taxiway alternatives were developed for each of the three refined airfield alternatives except for Alternative 1, which only has one associated taxiway configuration. The preferred taxiway configuration will be selected once a preferred airfield development alternative is identified. These alternatives are described and evaluated in the following sections. While each option fully meets baseline requirements for safety, capacity, and aircraft performance, the evaluation in this section focuses on the criteria outlined in **Section 7.2.1**.

7.3.5.1 Refined Airfield Alternative 1A and 1B

Runway 6-24 is shortened at the Runway 6 approach end to 4,400 feet, representing a 603-foot reduction in length.

Operational and public safety – Shifting the Runway 6 threshold improves compliance with FAA design standards for runway-end taxiways and moves much of the RPZ into airport-controlled property. While Port Lansing Road remains a constraint, the overall safety environment is improved. Final alignment of the southside taxiway connection must consider taxilane access to general aviation hangars to avoid direct runway-to-apron access.

Operational efficiency – Alternative 1A maintains existing three-runway operations, with no major changes to the airfield layout beyond the threshold shift. As a result, operational efficiency remains similar to current conditions in 2025, with minimal gains or losses in taxiing, traffic patterns, or runway availability. Alternatives 1B revises central airfield taxiway connections.

Ability to meet FAA airfield design standards – This alternative improves compliance with FAA design standards by upgrading runway-end taxiways to 90-degree angles and shifting the Runway 6 threshold. However, it does not address the excessive runway-to-taxiway separation on Runway 6-24, which exceeds B-I design standards.

Resolution of current issues – While the alternative addresses some key design standard deficiencies, particularly around runway-end geometry, it does not fully resolve overdesign issues or unlock additional land for development. The wide separations on Runway 6-24 remain and may be ineligible for full funding support. A phased approach to implementation is possible, but the benefits are more limited than in other alternatives.

Shortening Runway 6 helps eliminate many incompatible land uses at the approach end, but a small area of incompatible land remains between the railroad and North Grand River Avenue. The runway shift improves compatibility but does not fully resolve all land use conflicts.

Ability to meet long-term facility requirements – This alternative maintains long-term flexibility by preserving all three runways, but it also retains higher maintenance obligations. While runway availability is maximized, the retention of all pavement reduces the amount of land available for future aeronautical or commercial development.

Appropriate quality and level of service provided – Changes shown in this alternative retains the level of service and user experience at the airport.

Ease of implementation – Implementation of the projects within this alternative can be phased in a way that prevents operational disruptions.

Financially feasible (capital investment, operating, and maintenance) – Pavement and lighting improvements are driven by safety and design standard compliance, which supports eligibility for FAA AIP funding. However, retaining the full extent of Runway 6-24, including overbuilt pavement sections, increases long-term maintenance costs and reduces cost-efficiency. Federal funding eligibility may be limited to only the portions of Runway 6-24 that meet B-I standards.

Flexibility and future expansion potential – The alternative retains maximum runway availability but limits land reuse opportunities. While it preserves airfield capacity, it offers only moderate flexibility for expansion or redevelopment due to the continued presence of extensive pavement.

Supports sustainable development principles – Shifting the threshold of Runway 6-24 eliminates a large area of incompatible land from the RPZ therefore reducing the incompatible area in an incident (however statistically unlikely) for aircraft overrun and undershoot accidents. Removal of pavement means less impervious surfaces, which improves stormwater management by reducing runoff and increasing overall infiltration, resulting in cost savings for constructing/maintaining stormwater management infrastructure.

7.3.5.2 Refined Airfield Alternative 6A and 6B

The removal of Runway 6-24 and the extension of Runway 10L-28R would result in a reconfigured airfield with two parallel runways.

Operational and public safety – Removing Runway 6-24 (the crosswind runway) can enhance safety by simplifying the airfield layout, improving aircraft ground movements, and reducing air traffic complexity. On the ground, crosswind runways that intersect or connect with other runways often create non-standard geometry, which can lead to pilot confusion, especially where line-of-sight is limited. This increases the risk of accidents or runway incursions. In the air, the presence of a crosswind runway can introduce potential runway use conflicts during takeoff and landing operations.

Operational efficiency – Eliminating the crosswind runway simplifies the airfield, which can help streamline landing, takeoff, and taxi operations by reducing the potential for error and

minimizing delays. Air traffic flow is also simplified, with all operations concentrated on two east-west runways. With two active traffic patterns, one to the north and one to the south, aircraft operations can be separated by type. For example, general aviation flight training could use one runway while commercial air carrier operations use the other. One drawback of removing the crosswind runway is that, under specific but infrequent wind conditions, the remaining runway orientation may not support safe/efficient operations for the smallest category aircraft.

Alternatives 6A and 6B differ in the location of two taxiways near the commercial terminal and FBO areas. Alternative 6A relocates Taxiway M to the west, placing it outside the middle third of Runway 10R-28L, and straightens Taxiway C1 into a direct north-south connection with Taxiway B. This layout removes all direct runway-to-apron access points while maintaining three access points to the terminal apron. Taxiway C is removed between Taxiway B and the entrance to the transient apron.

Alternative 6B, a variation of 6A, reconstructs Taxiway M in its current location between Runway 10R-28L and Taxiway B. The connection between Taxiway M and the terminal apron is removed. In this option, Taxiway C1 is removed between Taxiway C and Runway 6-24, and a new segment is constructed in a north-south orientation, connecting to Taxiway B at a standard 90-degree angle.

Ability to meet FAA airfield design standards – All FAA design standards are met.

Resolution of current issues – The primary issues at LAN are related to non-standard taxiway geometry. This alternative provides an opportunity to address those issues through a phased implementation. In addition, decommissioning Runway 6 would eliminate existing incompatible land uses near the runway threshold, since the associated approach and departure Runway Protection Zones would no longer apply.

Ability to meet long-term facility requirements – Forecast demand would be met well beyond the planning period. One advantage of removing Runway 6-24 is that it would free up two large areas of aeronautical land for other uses. If Runway 6-24 were decommissioned, the LAN airfield would still have sufficient capacity to accommodate forecast demand.

Appropriate quality and level of service provided – Simplifying the taxiway environment improves the overall user experience by reducing delays and enabling capital investment to focus on the most heavily used facilities.

Ease of implementation – The removal of Runway 6-24 and the associated taxiway segments shown in **Figure 7-16** and **Figure 7-17** can be completed without causing significant disruption to airport operations. Similarly, any future extension of Runway 10L-28R could be carried out with minimal impact on ongoing airport activity.

Financially feasible (capital investment, operating, and maintenance) – Removal of Runway 6-24 and the correction of all non-standard taxiways would be both eligible and justified for federal funding due to the resulting improvements in airport safety. The extension of Runway 10L-28R would also qualify as an eligible cost under federal funding guidance; however, demonstrating the purpose and need for the project would likely require a supporting justification study.

Although removing airfield pavement is rarely a preferred investment, there are several advantages to doing so. Pavement removal to meet FAA design standards, primarily that within the RSA, is eligible for funding through the Airport Improvement Program (AIP). Reducing the amount of paved surface area also lowers recurring maintenance costs. Additionally, having less impervious surface improves stormwater management by reducing runoff and increasing infiltration, which can decrease the need for costly drainage infrastructure.

Flexibility and future expansion potential – This alternative provides a high degree of flexibility for future expansion by creating new areas of developable land. If Runway 6-24 were removed, Runway 10L-28R would have sufficient space to be extended to 5,000 feet, offering a secondary runway with a length comparable to the one being decommissioned.

Supports sustainable development principles – This airfield configuration supports sustainable development by enhancing CRAA's ability to achieve long-term economic viability through land development and increased revenue generation. Simplifying the airfield layout allows for operational efficiency improvements and may lead to emissions reductions by decreasing aircraft delay. Any development within the Airport Operations Area could be designed to minimize environmental impacts. With the removal of Runway 6-24, aircraft noise associated with its use would be eliminated, although those operations would shift to other existing runways. A future extension of Runway 10L-28R would require NEPA review, as it would alter the current air traffic patterns for that runway.

7.3.5.3 Refined Airfield Alternative 8A and 8B

The removal of Runway 6-24 and Runway 10L-28R results in a single-runway system, supported by a new north parallel taxiway that facilitates aeronautical development on the north side of the airfield.

Operational and public safety – Removing Runway 6-24 (the crosswind runway) and parallel Runway 10L-28R could enhance safety by simplifying the airfield layout, aircraft ground movements, and air traffic management. On the ground, crosswind runways that connect with other runways often create non-standard geometry, which can lead to pilot confusion, particularly when movements are required in areas with limited line-of-sight. Similarly, parallel runways require aircraft to cross active runways, as is currently the case at LAN due to the lack of development on the north side of the airfield. These conditions increase the risk of accidents and runway incursions. In the air, a crosswind runway can also contribute to potential runway

use conflicts during takeoff and landing. Converting the airport to a single-runway configuration with supporting taxiways that meet FAA design standards represents the most favorable scenario for maintaining a safe and efficient airfield environment.

Operational efficiency – Eliminating both the crosswind runway and the parallel runway allows for a greater level of airfield simplification than what is achieved under Alternatives 8A or 8B. Operating as a single-runway airport can streamline landing, takeoff, and taxi operations by reducing the potential for error, which in turn helps minimize delays. Air traffic flow is also simplified under a single-runway configuration. In addition to operational efficiencies for aircraft, support and maintenance demands are reduced, and emergency response procedures are likely simplified as well.

However, there are disadvantages to a single-runway configuration. The most significant is the loss of redundancy. Even a secondary runway limited to smaller or lighter aircraft can provide operational flexibility. Without it, the airport would be essentially closed during periods when the primary runway is unavailable. Another drawback is that, under specific but currently infrequent wind conditions, the single-runway orientation may not support safe operations for all categories of aircraft. A final consideration is that single-runway systems are more vulnerable to congestion and delay during peak activity periods. While LAN is not currently forecast to experience highly peaked operations, such constraints could lead to unforeseen issues in the future.

Alternatives 8A and 8B differ in the layout of two taxiways near the commercial terminal and FBO areas. Alternative 8A relocates Taxiway M to the west, placing it outside the middle third of Runway 10R-28L, and removes the bend in Taxiway C1 by converting it to a straight north-south connection with Taxiway B. This configuration eliminates all direct runway-to-apron access points while retaining three entry points to the terminal apron. Taxiway C is removed between Taxiway B and the entrance to the transient apron.

Alternative 8B, a variation of 8A, reconstructs Taxiway M in its current location between Runway 10R-28L and Taxiway B. The connection between Taxiway M and the terminal apron is removed. In this configuration, Taxiway C1 is removed between Taxiway C and Runway 6-24 and a new reconstructed as a north-south taxiway connecting to Taxiway B at a standard 90-degree angle.

Ability to meet FAA airfield design standards – All FAA design standards are met. segment Resolution of current issues – The primary issues at LAN involve non-standard taxiway geometry and limited access to land available for revenue-generating development. This alternative provides an opportunity to address all design standard deficiencies through a phased implementation. Additionally, if Runway 6 is decommissioned, the associated approach and departure runway protection zones would no longer apply, allowing for the removal of existing incompatible land uses near the runway threshold.

Ability to meet long-term facility requirements – Currently forecast demand can be met well beyond the planning period with only the primary runway. If Runway 6-24 and Runway 10L-28R were decommissioned, the LAN airfield would still have sufficient capacity to accommodate projected demand. While removing Runway 6-24 would slightly reduce wind coverage, the reduction is not expected to impact safe or efficient operations. One advantage of removing both Runway 6-24 and Runway 10L-28R is that it would free up two large areas of aeronautical land, significantly larger than those available under Alternative 6A or 6B, for other potential uses. Although future land uses will be determined as part of the master plan process, it is possible that if the entire area is dedicated to high-demand aeronautical development, a single-runway configuration could eventually become constrained. The extent of any capacity limitation would be difficult to determine without a detailed understanding of the specific types of operations that may emerge.

Appropriate quality and level of service provided – Simplifying the taxiway environment improves the overall user experience by reducing delays and enabling more effective investment in the most frequently used facilities.

Ease of implementation – Eliminating unnecessary pavement is a manageable effort that can be completed without causing significant operational impacts. Temporary measures can be implemented to proactively maintain safety, prevent disruptions, and address environmental concerns.

Financially feasible (capital investment, operating, and maintenance) – While spending money to remove airfield pavement is not typically preferred, there are several advantages to doing so. Pavement removal to meet FAA design standards is eligible for funding through FAA AIP grants. With less airfield pavement, recurring maintenance costs are reduced. A decrease in impervious surface area also improves stormwater management by reducing runoff and increasing infiltration, which lowers the cost of constructing and maintaining drainage infrastructure. In addition, deteriorating pavement can generate foreign object debris (FOD), which poses safety risks and can lead to costly damage if ingested or thrown by jet or propeller wash.

Flexibility and future expansion potential – One critical downside to establishing a single-runway configuration is that ultimately it may constrain the total airfield capacity over the long term, particularly if development occurs north of the runway. It could also limit the potential to construct a second runway in the future. The current operations forecast does not indicate any capacity constraints within or beyond the 20-year planning period and with the projected rate of growth, a single-runway system would provide sufficient capacity for more than 150 years. However, circumstances change and reduction to a single-runway system ultimately make it difficult to correct should the demand levels increase. The existing runway length is also

adequate to accommodate the most demanding aircraft expected during the planning period. Any future runway extension, however, would have significant impacts on adjacent land uses along the extended runway centerline at both ends. These impacts would likely require land acquisition, roadway realignments, and a comprehensive environmental review in accordance with NEPA.

Supports sustainable development principles – This airfield configuration supports sustainable development by enhancing CRAA's ability to achieve long-term economic viability. Simplifying the airfield to a single-runway system improves operational efficiency and could even lead to emissions reductions from shorter taxi distances and reduced delays but this was not studies during the master plan. Any development within the Airport Operations Area can be designed to minimize environmental impacts. With the removal of Runway 6-24 and Runway 10L-28R, aircraft noise associated with those runways would change with those operations being redirected to the primary runway. Opening aeronautical land north of the primary runway also creates opportunities for redevelopment in an area already influenced by airfield activity and supported by existing stormwater infrastructure.

7.3.5.4 Refined Airfield Alternative 11A and 11B

Runway 6-24 is shortened to 4,000 feet at the Runway 6 approach end.

Operational and public safety – Shifting the Runway 6 approach threshold 1,003 feet to the northwest allows FAA design standards to be met for the connecting runway-end taxiways and relocates the Runway Protection Zone almost entirely within airport-controlled property. Final alignment of the southside runway connection taxiway would need to account for taxilane access points in the general aviation hangar area to avoid creating direct runway-to-apron access.

Operational efficiency – The operational efficiency of Alternatives 11A and 11B is similar to current airfield conditions as of 2025. The two alternatives differ in the configuration of taxiways near the commercial terminal and FBO areas. Alternative 11A eliminates Taxiway M and retains Taxiway C between Runway 10R-28L and Taxiway B. In contrast, Alternative 11B reconstructs Taxiway M and removes Taxiway C between Runway 10-28 and Taxiway B. Both alternatives remove Taxiway C1 west of Taxiway C and eliminate all direct runway-to-apron access points. In Alternative 11B, the remaining portion of Taxiway C1 is reconstructed in a north-south orientation, connecting to Taxiway B at a standard 90-degree angle. Alternative 11A maintains three access points to the terminal apron, while Alternative 11B removes the Taxiway M connection to the terminal apron, resulting in two access points.

The two parallel runways in these alternatives allow for simultaneous north and south traffic patterns, enabling operations to be separated by type, such as assigning general aviation flight

training to one runway and commercial air carrier operations to the other. This type of operational separation is not possible when Runway 6-24 is in use.

Ability to meet FAA airfield design standards – All FAA design standards are met or exceeded in these airfield alternatives.

Resolution of current issues – The primary issues at LAN involve non-standard taxiway geometry and limited availability of land for revenue-generating development. This alternative provides an opportunity to address all design standard deficiencies through a phased approach. However, it does not resolve the "overdesign" of Runway 6-24, which has runway-to-taxiway separations that exceed FAA airfield design standards. While this additional separation offers a safety buffer, it complicates efforts to secure funding for small pavement areas that fall outside of eligibility criteria. A case could be made that building entirely new taxiway infrastructure to support a low-utilization crosswind runway may be less cost-effective than maintaining limited ineligible pavement that already exists. Shortening Runway 6 would eliminate most incompatible land uses near the runway threshold. However, a small portion of incompatible land would remain between the railroad tracks and North Grand River Avenue.

Ability to meet long-term facility requirements – Alternatives 11A and 11B meet long-term facility needs but retain some of the existing challenges associated with a three-runway airfield configuration. These challenges primarily include higher maintenance costs and reduced land availability for supporting development.

Appropriate quality and level of service provided – The changes proposed in these alternatives maintain the current level of service and overall user experience at the airport.

Ease of implementation – The projects included in this alternative can be implemented in phases to avoid operational disruptions.

Financially feasible (capital investment, operating, and maintenance) – Most of the pavement work proposed in Alternatives 11A and 11B is driven by FAA design standards intended to enhance operational safety. As a result, much of the work would score highly in terms of eligibility for federal grant assistance. However, from a lifetime capital and maintenance cost perspective, this alternative is less optimal because it retains a significant portion of existing pavement. While Runway 6-24 remains eligible for federal funding, it qualifies only to the standard of a B-I category runway, which may limit the extent of grant funding available for full-width pavement rehabilitation or reconstruction.

Flexibility and future expansion potential – The forecast fleet at LAN does not require any runway extensions during the planning period; however, if an extension became necessary in the future, it would still be feasible. Continued land development around the airport could eventually limit this potential once fully built out. From a land development perspective, this alternative retains a moderate level of flexibility, as there is still vacant land available around the airfield for future facilities.

Supports sustainable development principles – Shifting the threshold of Runway 6-24 removes a large area of incompatible land from the runway protection zone, increasing safety in unlikely event of an aircraft overrun or undershoot. In addition, the removal of pavement reduces impervious surface area, which improves stormwater management by decreasing runoff and increasing infiltration. This can result in cost savings for both the construction and maintenance of stormwater infrastructure.

7.3.5.5 Preferred Future and Ultimate Airfield Configuration

A key objective of the preferred airfield configuration is to ensure that development during the 20-year planning period does not preclude, constrain, or unnecessarily complicate the ultimate extension of Runway 6-24 to accommodate D-IV aircraft. Evaluation of the refined airfield alternatives determined that Alternative 1A provides the most practical foundation for future development. While all refined alternatives improved safety, operational efficiency, and development flexibility, Alternative 1A best balances these objectives while preserving the land, airspace, and infrastructure needed to support the future Runway 6-24 extension. This approach maintains flexibility to accommodate changes in fleet mix, cargo activity, air carrier requirements, and long-term operational demand while minimizing the potential for costly future facility relocations.

The preferred configuration for the 20-year planning period retains Runway 6-24 as a shortened legacy crosswind runway and incorporates targeted taxiway improvements to address non-standard geometry, enhance safety, improve FAA funding eligibility, and support future development. By maintaining crosswind capability, runway redundancy, and compatible land use protections, the plan preserves the corridor necessary for an ultimate D-IV extension of Runway 6-24 and ultimate development north of the airfield. The preferred configuration provides the best overall balance of operational efficiency, financial sustainability, expansion potential, and strategic flexibility for airport development. The preferred airfield configuration is shown in **Figure 7-22.**

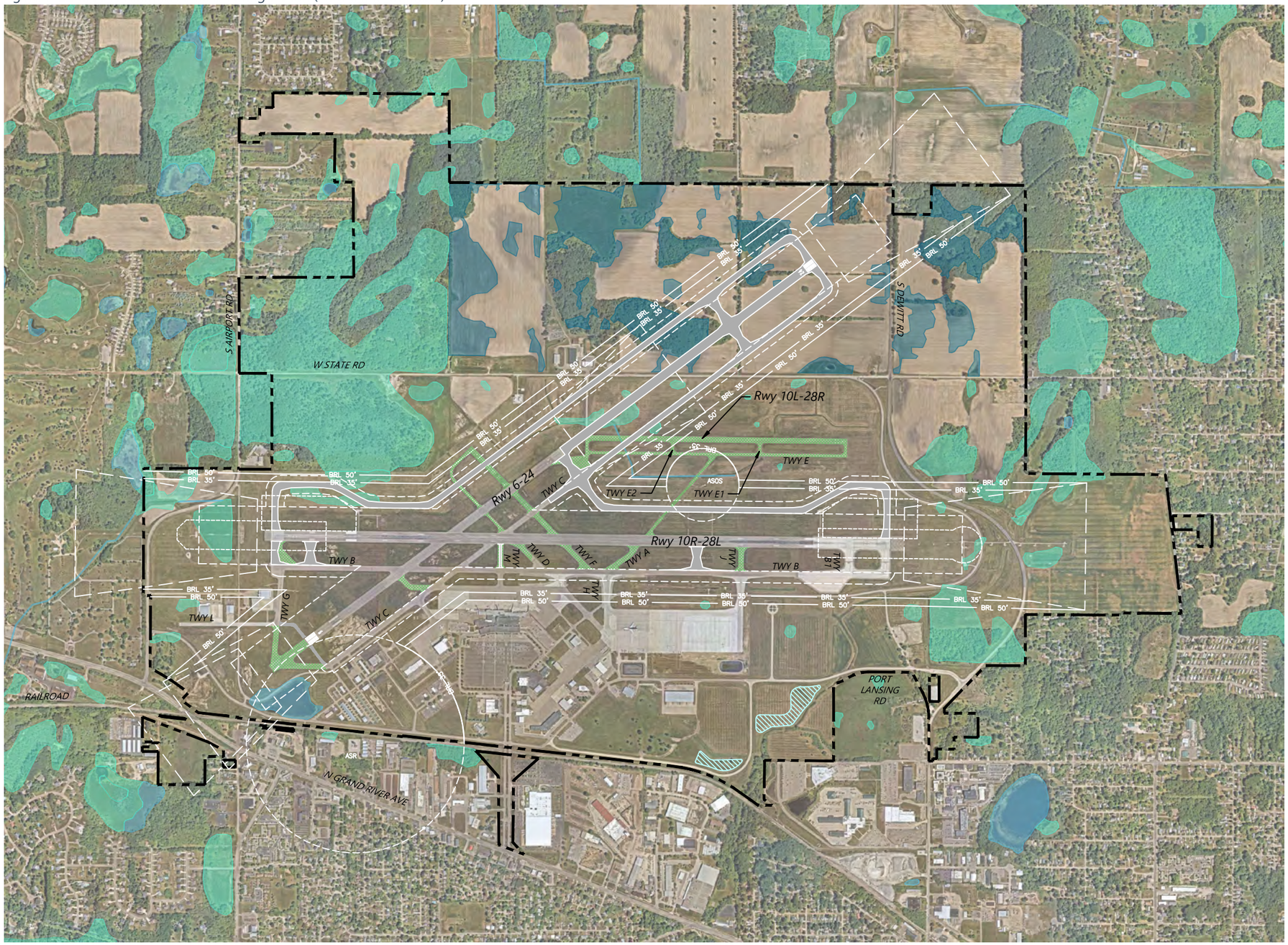
Table 7-2
Refined Airfield Alternatives with Supporting Taxiway Improvements Evaluation

Evaluation Criteria	Alt 1A	Alt 1B	Alt 6A	Alt 6B	Alt 8A	Alt 8B	Alt 11A	Alt 11B
Operational / Public Safety								
Operational Efficiency								
Meets FAA Design Standards								
Resolves Current Issues								
Meets Long-Term Needs								
Appropriate Quality/Service								
Ease of Implementation								
Financial Feasibility								
Flexible/Future Expansion								
Sustainability Principles								

Performance Legend	Good	Fair	Poor

Source: RS&H Analysis, 2025

Figure 7-22 CRAA Preferred Airfield Configuration (Future and Ultimate)



Preferred Airfield Configuration

- Property Boundary
- Future Airfield
- Runway Object Free Area (ROFA)/ Taxiway Object Free Area (TOFA)
- Runway Protection Zone (RPZ)
- USFWS Wetlands
- Delineated Wetlands
- Water/Drainage
- Future Detention Pond
- 35ft Building Restriction Line (BRL)
- 50ft Building Restriction Line (BRL)
- Automated Surface Observing System (ASOS)
- Airport Surveillance Radar (ASR)
- Existing Localizer / Glide Slope Critical Areas
- Pavement Removal

N

0' 750' 1,500'

Source: RS&H, 2025; Nearmap, Image Date 06/14/2024; CRAA, 2024; USFWS, 2023; EGLE, 2022

7.3.6 Navigational Aids

Facility requirements analysis of navigational aids (navaids) and meteorological aids did not find any deficiencies in existing systems. Any updates to navigational aids at LAN would be based on either the future reduction in length of Runway 6-24 or ultimate timeframe improvements to potentially increase total length and develop instrument approaches for the crosswind runway. Reducing the runway length during the planning period facilitates the need to move the existing PAPIs and airfield lighting serving Runway 6.

An extension of crosswind Runway 6-24 is not currently justified by forecast demand within the 20-year planning period and therefore is not analyzed fully within this master plan. Future navaids (i.e., instrument approach systems and lighting) to support this are assumed to match the capabilities of the primary runway (10R-28L). It's worth noting that FAA is gradually moving away from Instrument Landing Systems (ILS) installations for CAT I ILS's at airports[2], and the timing of any anticipated improvements to Runway 6-24 requiring navaid updates are presently unknown. In any case, the instrument approach equipment for a D-IV crosswind runway upgrade should match primary runway capabilities.

7.4 Passenger Terminal Alternatives

Alternatives for terminal and terminal area development are addressed in depth in **Appendix X.**

7.5 Landside Alternatives in the Terminal Area

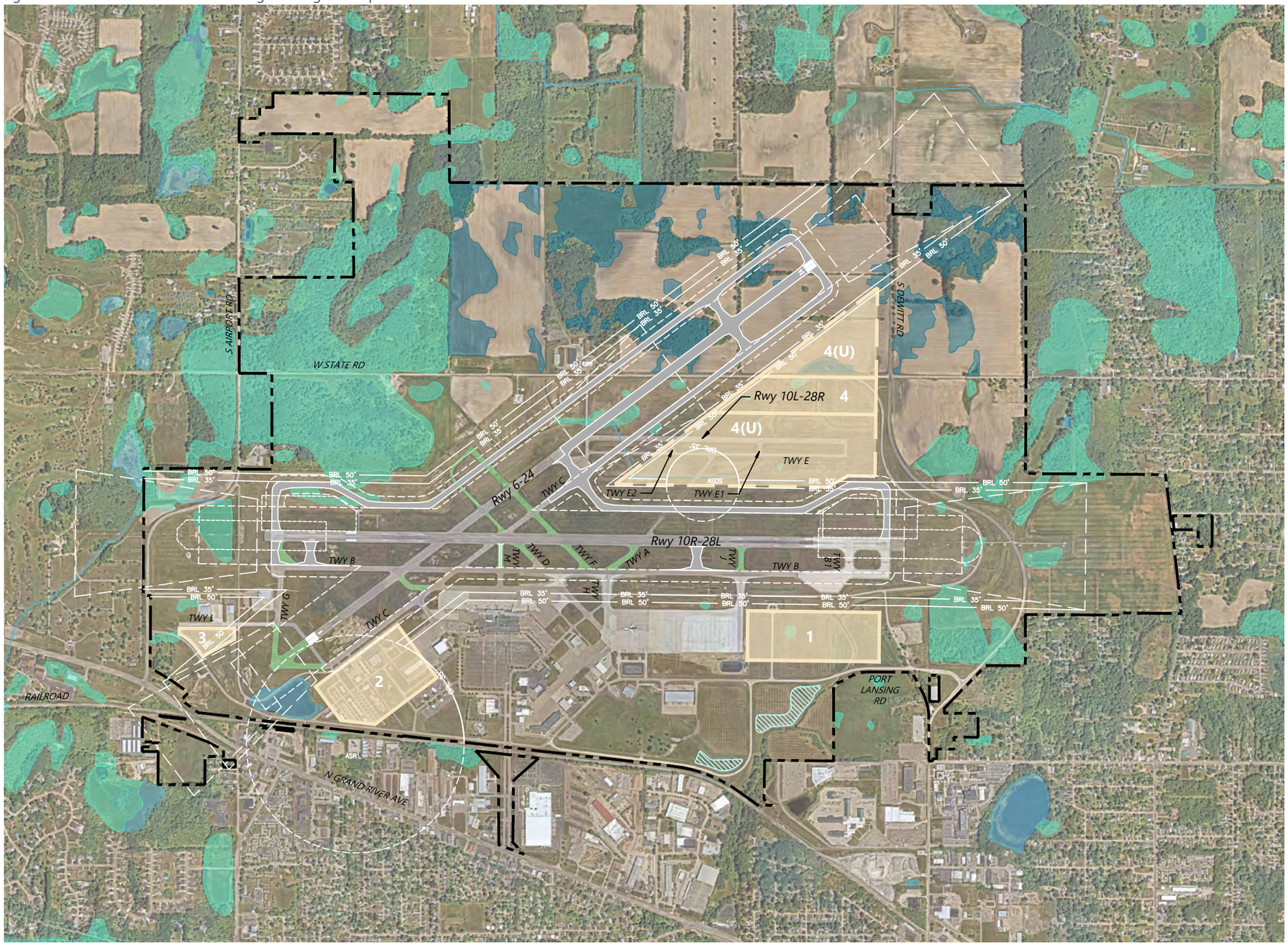
Landside alternatives tie directly into decisions made for the terminal development plan. Landside development is analyzed in depth in **Appendix Y**.

7.6 General Aviation Tenant Facility Alternatives

Alternatives for general aviation facilities focus on optimal location(s) for placement of a variety of infrastructure supporting general aviation aircraft operations. These include based and transient aircraft storage (T-hangars, corporate hangars, box hangars, etc.), fixed base operator facilities, and apron parking with tie-downs. Four areas were evaluated for their ability to fill some or all of these roles, as shown in **Figure 7-23**, and the following section evaluates those areas for highest/best land use to serve GA operations.

[2] As of July 2025, the FAA procures systems to sustain Category-I ILSs at selected sites and to sustain and establish Category-II/III ILSs where needed. As the FAA transitions to performance-based navigation (PBN), ILS systems will continue to provide GPS-independent Category-I/II/III vertically guided approach services. ILS is the only system currently approved for Category II/III operations.
Source: FAA, July 23, 2025, Retrieved from
https://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/navservices/gbng/ils

Figure 7-23 General Aviation Aircraft Hangar Storage and Apron Alternatives



GA Aircraft Hangar Storage and Apron

- Property Boundary
- Future Airfield
- Runway Object Free Area (ROFA)/ Taxiway Object Free Area (TOFA)
- Runway Protection Zone (RPZ)
- USFWS Wetlands
- Delineated Wetlands
- Water/Drainage
- Future Detention Pond
- 35ft Building Restriction Line (BRL)
- 50ft Building Restriction Line (BRL)
- Automated Surface Observing System (ASOS)
- Airport Surveillance Radar (ASR)
- Existing Localizer / Glide Slope Critical Areas
- Pavement Removal

- GA Hangars and Apron
- GA Hangars and Apron (Ultimate)

N

0' 750' 1,500'

Source: RS&H, 2025; Nearmap, Image Date 06/14/2024; CRAA, 2024; USFWS, 2023; EGLE, 2022

7.6.1 General Aviation Site Alternative 1

GA Site Alternative 1 is approximately 26 acres of undeveloped aeronautical use land immediately south of the Runway 28L threshold and east of the cargo ramp. This area is partially occupied by Caravan Drive and the Airport Viewing Area on the western portion of the site. Drainage channels run through the eastern portion of the site.

Operational and public safety – Site 1 is primed for development and the shape of the site would make it relatively simple to define for airside and landside access. Airport security fencing could be adjusted to make the site secure and aircraft/vehicle circulation could be configured to be safe and efficient.

Operational efficiency – This site has airfield and landside access, and pavement/structure configurations could be done in a way that make aircraft and vehicle movements on this site operate very efficiently. This site is a long distance from the existing FBO so fueling operations could be more difficult/cumbersome, however this could be overcome since there is ample space to store fuel trucks and fuel storage is nearby on the cargo ramp.

Ability to meet FAA airfield design standards – All FAA design standards can be met in configuring this site for future aeronautical development.

Resolution of current issues – Providing general aviation facilities at this location could meet demand well beyond the 20-year forecast demand. The most challenging aspects of developing this site for general aviation infrastructure are the distance from existing GA facilities and that other uses, such as maintaining the site for cargo expansion, would be a higher/better use of the land.

Ability to meet long-term facility requirements – Providing general aviation facilities at this location could meet demand well beyond the 20-year forecast demand.

Appropriate quality and level of service provided – Service quality for general aviation customers would be adequate but may require higher operating cost when compared to other site options.

Ease of implementation – The site is primed for development so implementation would not be difficult.

Financially feasible (capital investment, operating, and maintenance) – Initial capital investment would be moderate to construct new GA facilities on this site and operating costs may be higher than other sites due to the distance from existing GA infrastructure.

Flexibility and future expansion potential – This site has flexibility for a variety of hangar types and layouts and the size allows adequate space to develop over a long period of time.

Supports sustainable development principles – This site can support sustainable development.

7.6.2 General Aviation Site Alternative 2

GA Site Alternative 2 is approximately 27 acres of aeronautical use land east of the Runway 6 threshold and southwest of the FBO. This area is a mix of developed land, undeveloped land, and recently cleared structures (previous LCC school and hangars demolished in 2025). As of August 2025, there is preliminary work being performed to redevelop the former LCC site and undeveloped land immediately northeast of those demolished buildings with new GA facilities (buildings and apron). This project is still in the early phases of development at the time of this writing. For the purposes of this analysis, Site 2 is considered a redevelopment site.

Operational and public safety – Site 2 is primed for development/redevelopment and the aging hangars that currently occupy a portion of the site are reaching the end of their useful life. As structures become financially unsustainable to maintain, they should be considered for demolition and possible replacement as warranted by hangar demand. The location of this site is excellent for the development of general aviation facilities and should remain available for that purpose.

Operational efficiency – This site has airfield and landside access and can be redeveloped strategically over time in a way that makes aircraft and vehicle movements on this site operate very efficiently. This site is close to the existing FBO so fueling operations are easier.

Ability to meet FAA airfield design standards – All FAA design standards can be met in configuring this site for future aeronautical development. The taxiway layout for this site may be impacted by changes to Runway 6-24 so taxiway/taxilane configurations need to be addressed to ensure all FAA design standards are met during Runway 6-24 alterations.

Resolution of current issues – Continuing to provide general aviation facilities at this location can accommodate forecast demand well beyond the 20-year planning period. The most challenging aspects of developing this site are the need to redevelop the area for changing market conditions. The site has multiple rows of T-hangars. With the decline of recreational flying and the increase of fractional aircraft ownership, the site may be better redeveloped to support conventional box hangars or even a mix of larger corporate hangars.

Ability to meet long-term facility requirements – Providing general aviation facilities at this location could meet demand well beyond the 20-year forecast demand.

Appropriate quality and level of service provided – Service quality for general aviation customers would be suitable to tenant needs and likely better than other site alternatives under existing airport conditions.

Ease of implementation – The site is primed for development and redevelopment so implementation would not be difficult. Phasing of development/redevelopment should consider replacing occupied facilities before demolition that displaces current tenants.

Financially feasible (capital investment, operating, and maintenance) – Initial capital investment would be moderate to construct new GA facilities on this site and operating costs are expected to be better than other site alternatives.

Flexibility and future expansion potential – This site has flexibility for a variety of hangar types and layouts and the size allows adequate space to develop over a long period of time.

Supports sustainable development principles – This site can support sustainable development.

7.6.3 General Aviation Site Alternative 3

GA Site Alternative 3 has approximately 5 acres of developable aeronautical use land south of Taxiway L and west of the Runway 6 threshold. The Taxiway L area is occupied completely by corporate hangar development and the remaining area of undeveloped land would be difficult or impractical to develop for anything other than another corporate hangar. For these reasons, Site 3 is only being considered for corporate hangar development.

Operational and public safety – Site 3 is well suited for corporate hangar development. No development should be placed within the Runway 6-24 ROFA or future RPZs that result if the runway length is decreased or ultimately increased at equivalent RDC to primary runway

Operational efficiency – This site has airfield and landside access for corporate hangar development.

Ability to meet FAA airfield design standards – All FAA design standards can be met in configuring this site for future aeronautical development. As previously stated, no development should be placed within the Runway 6-24 ROFA or future RPZs that result if the runway length is reduced or ultimately increased at equivalent RDC to primary runway.

Resolution of current issues – Providing general aviation facilities at this location could meet forecast corporate hangar demand for the 20-year planning period.

Ability to meet long-term facility requirements – Providing general aviation facilities at this location could meet forecast corporate hangar demand for the 20-year planning period.

Appropriate quality and level of service provided – Service quality for corporate hangar tenants would satisfactory.

Ease of implementation – The site is primed for development so implementation would not be difficult.

Financially feasible (capital investment, operating, and maintenance) – Initial capital investment would be moderate to construct new corporate GA facilities on this site.

Flexibility and future expansion potential – This site can likely only accommodate two corporate hangar facility and has no space to expand due to safety area constraints.

Supports sustainable development principles – This site can support sustainable development.

7.6.4 General Aviation Site Alternative 4

GA Site Alternative 4 is divided into two phases: 1.) the area that can be developed north of Runway 10L-28R and 2.) the other two areas (4U) that can be developed if/when Runway 10L-28R is closed. Runway 10L-28R is not being proposed to be closed until the time Runway 6-24 is extended, which is anticipated beyond the 20-year planning period (ultimate condition). There are approximately 20 acres of land available for development within the planning period north of Runway 10L-28R. If/when Runway 6-24 is extended and Runway 10L-28R is removed, an additional 100 acres becomes available for additional aeronautical development. This assessment of the land for general aviation development will consider the entire 120 acres.

Operational and public safety – Site 4 is well suited for general aviation facility development. There is adequate space to develop safely configured hangars and apron, as well as supporting elements such as fueling or even a new FBO location.

Operational efficiency – This site has airfield access for development, but developing aircraft hangars and apron can pose operational inefficiencies and costs without providing adequate supporting facilities in the area. Security fence and perimeter road would need to be reconfigured to access the site.

Ability to meet FAA airfield design standards – All FAA design standards can be met in configuring this site for future aeronautical development.

Resolution of current issues – Providing general aviation facilities at this location could meet forecast hangar demand for the 20-year planning period.

Ability to meet long-term facility requirements – Providing general aviation facilities at this location could meet forecast hangar demand for the 20-year planning period.

Appropriate quality and level of service provided – Service quality could be poorer than other site alternatives if operational challenges (access to services and quality of services) are not addressed in development.

Ease of implementation – The site is appropriate for GA facility development but lacks immediate proximity to all necessary utility infrastructure. Utilities should be extended to this area to prime the site if it is the preferred development area for general aviation facilities over the planning period.

Financially feasible (capital investment, operating, and maintenance) – Initial capital investment would be higher than other alternatives based on the need to bring utility infrastructure into the area. Without adequate investment in supporting GA facilities, operating costs for services could be higher as well.

Flexibility and future expansion potential – This site has a high degree of flexibility for future expansion based on the ultimate extension of Runway 6-24 and closure of Runway 10L-28R.

Supports sustainable development principles – This site can support sustainable development.

Table 7-3
General Aviation Aircraft Hangar Storage and Apron Alternatives Evaluation

Evaluation Criteria	Alternatives				
	No Action	Alt 1	Alt 2	Alt 3	Alt 4
Operational / Public Safety					
Operational Efficiency					
Meets FAA Design Standards					
Resolves Current Issues					
Meets Long-Term Needs					
Appropriate Quality/Service					
Ease of Implementation					
Financial Feasibility					
Flexible/Future Expansion					
Sustainability Principles					

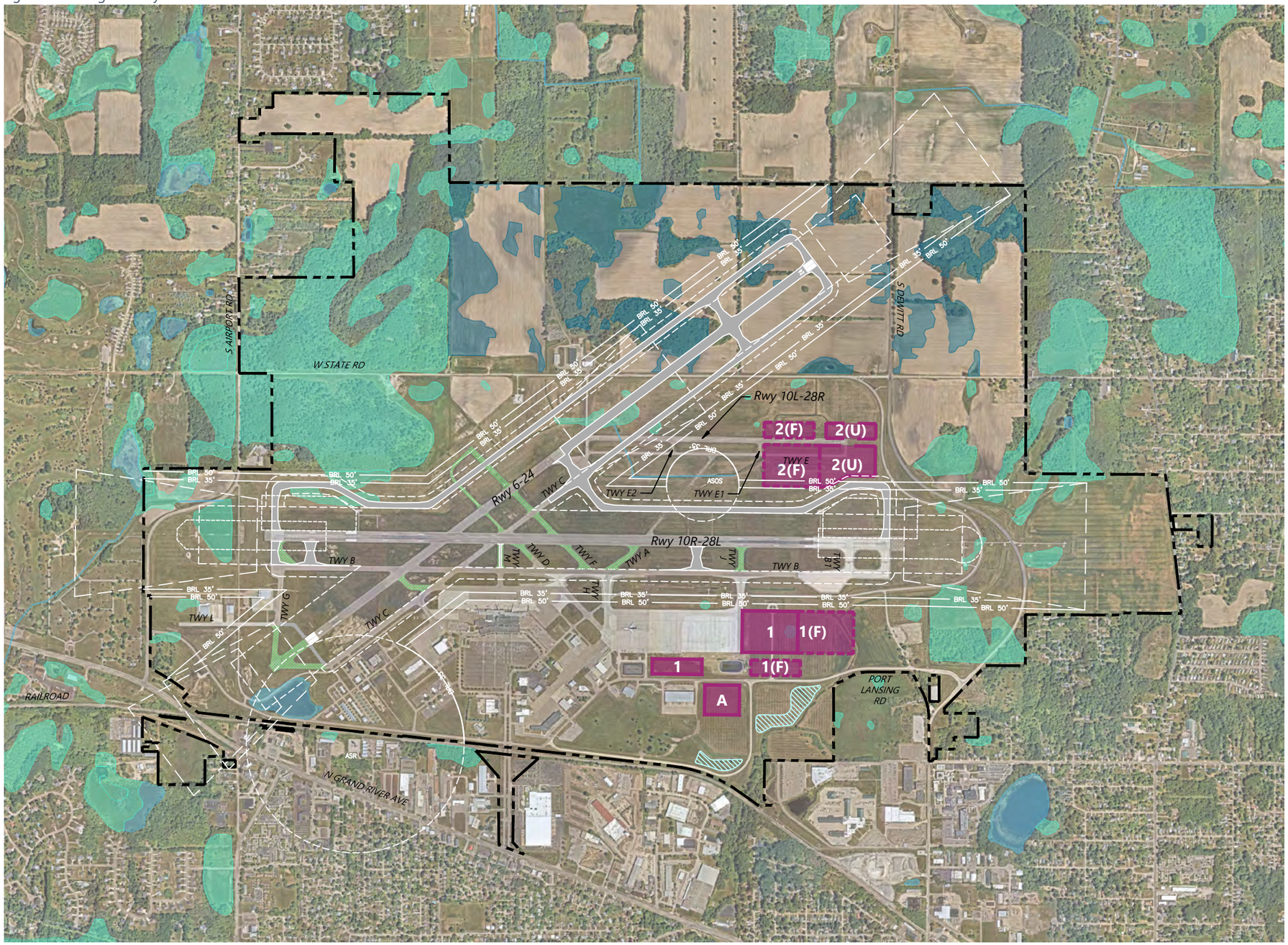
Performance Legend: Good | Fair | Poor

Source: RS&H, 2025

7.7 Cargo Alternatives

Cargo facility alternatives emphasize continuing the progress made in recent years and protecting land for expansion of operations in logical order. This includes both airside- and landside-focused facilities. Two areas were evaluated for their ability to meet future need, as shown in **Figure 7-24**, and the following section evaluates those areas for highest/best land use to serve air cargo operations.

Figure 7-24 Cargo Facility Alternatives



Cargo Facility Alternatives

- Property Boundary
- Future Airfield
- Runway Object Free Area (ROFA)/ Taxiway Object Free Area (TOFA)
- Runway Protection Zone (RPZ)
- USFWS Wetlands
- Delineated Wetlands
- Water/Drainage
- Future Detention Pond
- 35ft Building Restriction Line (BRL)
- 50ft Building Restriction Line (BRL)
- Automated Surface Observing System (ASOS)
- Airport Surveillance Radar (ASR)
- Existing Localizer / Glide Slope Critical Areas
- Pavement Removal

- Cargo Facilities
- Cargo Facilities with Future Expansion
- Cargo Facilities (Ultimate)

N

0' 750' 1,500'

Source: RS&H, 2025; Nearmap, Image Date 06/14/2024; CRAA, 2024; USFWS, 2023; EGLE, 2022

7.7.1 Cargo Facility Site Alternative 1

Cargo Site Alternative 1 (includes 1 and 1F) continues growth uniformly in line with existing cargo facilities.

Operational and public safety – The site is primed for development including cargo apron and facility expansion.

Operational efficiency – The sites are perfectly suited for expansion of cargo facilities in a highly efficient layout and blends seamlessly into existing facilities.

Ability to meet FAA airfield design standards – All FAA design standards can be met in configuring this site for future aeronautical development.

Resolution of current issues – Expanding cargo operations in this area can resolve current facility constraints. Development of new facilities should be done in a manner that preserves continual expansion eastward and does not eliminate flexibility for future expansion.

Ability to meet long-term facility requirements – This site allows adequate space to meeting long-term facility requirements as identified within the FAA-approved forecast.

Appropriate quality and level of service provided – Expanding cargo facilities progressively east from existing facilities ensures continued quality services.

Ease of implementation – Expanding cargo facilities in line with existing facilities is the optimal solution for minimizing implementation challenges.

Financially feasible (capital investment, operating, and maintenance) – Continuing cargo operations in line with existing facilities is the most financially feasible solution from initial investment requirement to minimizing lifetime operating and maintenance costs.

Flexibility and future expansion potential – Site 1 is primarily undeveloped but "shovel ready" land and is therefore the most practical approach to retaining flexibility and the potential to expand beyond the planning period

Supports sustainable development principles – This site can support sustainable development.

7.7.2 Cargo Facility Site Alternative 2

Cargo Site Alternative 2 (includes 2F and 2U) considers space for expansion of cargo operations beyond the planning period. This option is only feasible once Runway 6-24 is extended and Runway 10L-28R is closed. This site is a logical location for future cargo facility expansion at such a time that Alternative 1 land is fully developed. This location should not be considered as the first choice for cargo development, instead acting as preserved land for future development.

7.7.3 Cargo Facility Site Alternative A (Landside Warehousing)

Cargo Site Alternative A does not have direct airfield access and therefore is substantially different than Alternatives 1 and 2. Cargo Site Alternative A focuses on continuing landside warehousing facilities like the existing 48,000 square foot "Global Logistics Center". Site A is perfectly suited for a second Global Logistics Center based on access to the nearby cargo apron gate and the size/layout of the site. It is recommended that this site be preserved for private development of this style facility.

Table 7-4
Cargo Facility Alternatives Evaluation

Evaluation Criteria	Alternatives			
	No Action	Alt 1	Alt 2	Alt A
Operational / Public Safety				
Operational Efficiency				
Meets FAA Design Standards				
Resolves Current Issues				
Meets Long-Term Needs				
Appropriate Quality/Service				
Ease of Implementation				
Financial Feasibility				
Flexible/Future Expansion				
Sustainability Principles				

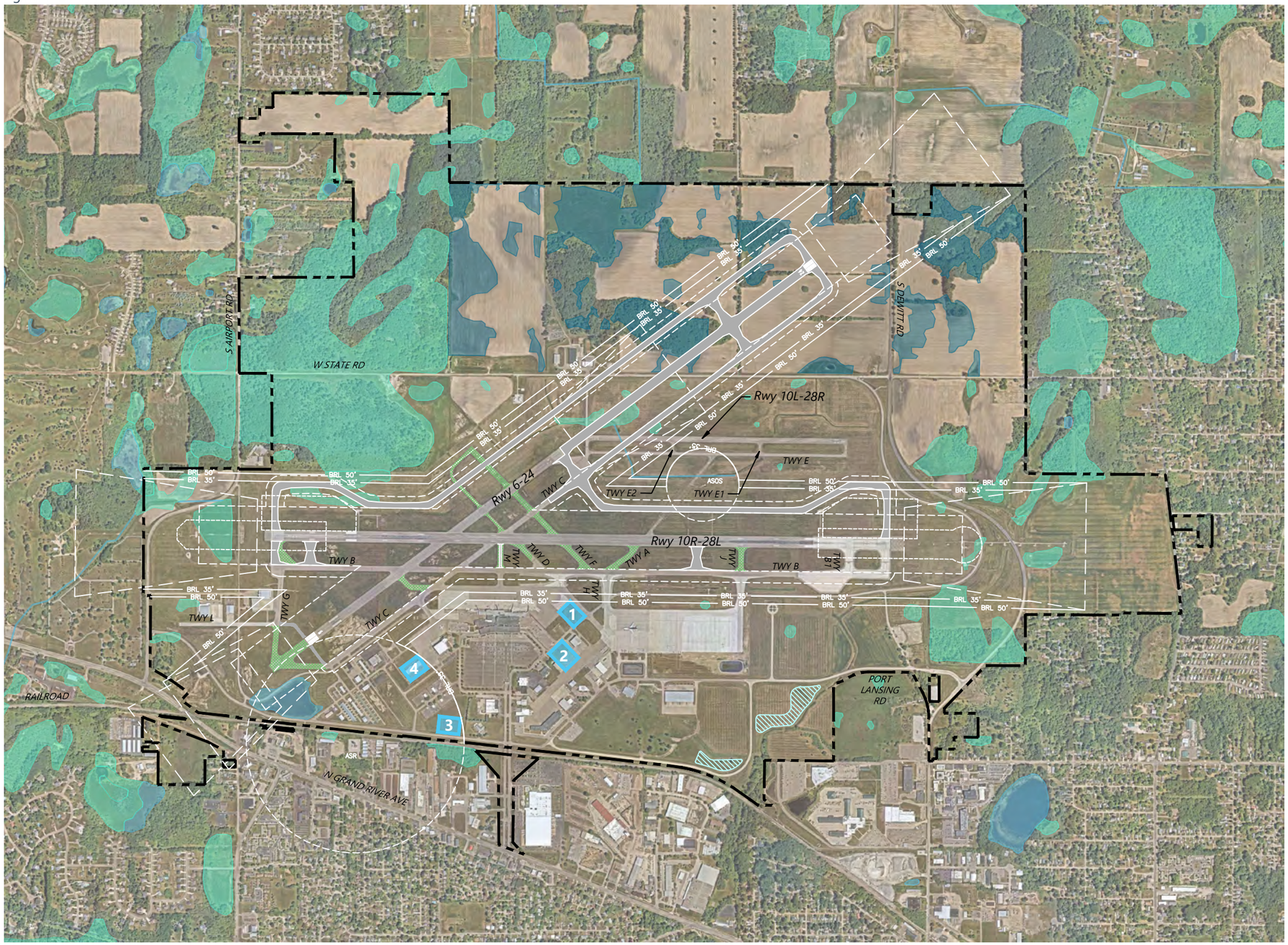
Performance Legend: Good | Fair | Poor

Source: RS&H, 2025

7.8 Electric Vertical Takeoff and Landing (eVTOL)

Electric Vertical Takeoff and Landing (eVTOL) aircraft are one form of Advanced Air Mobility (AAM) that is highly relevant to the future development of LAN airfield facilities. With the 2025 integration of an electric aircraft charging station, LAN is one of the few airports in the state with infrastructure in place to support eVTOL aircraft. In studying alternatives for the locations for future eVTOL pads the analysis splits them into two separate uses: 1.) Passenger and 2.) Cargo. There are still many unknowns in the fledging eVTOL market, however, the most likely use in the near-future is freight logistics and emergency response. This master plan considered locations for dedicated pads supporting both freight and passenger activity.

Figure 7-25 eVTOL Pad Site Alternatives



AAM (eVTOL) Sites

- Property Boundary
- Future Airfield
- Runway Object Free Area (ROFA)/ Taxiway Object Free Area (TOFA)
- Runway Protection Zone (RPZ)
- USFWS Wetlands
- Delineated Wetlands
- Water/Drainage
- Future Detention Pond
- 35ft Building Restriction Line (BRL)
- 50ft Building Restriction Line (BRL)
- Automated Surface Observing System (ASOS)
- Airport Surveillance Radar (ASR)
- Existing Localizer / Glide Slope Critical Areas
- Pavement Removal
- AAM Sites

N

0' 750' 1,500'

Source: RS&H, 2025; Nearmap, Image Date 06/14/2024; CRAA, 2024; USFWS, 2023; EGLE, 2022

7.8.1 eVTOL Site Alternative 1

VTOL Site Alternative 1 serves cargo and freight logistics.

Operational and public safety – This location is safe, having adequate space and separations from existing facilities.

Operational efficiency – This site is located near existing cargo facilities and landside access gates.

Ability to meet FAA airfield design standards – This site can accommodate FAA design standards.

Resolution of current issues – eVTOL pads currently don't exist at LAN.

Ability to meet long-term facility requirements – Long-term requirements for eVTOL aircraft are still uncertain. Development of facilities at this location may limit CRAA ability to expand the terminal concourse east in the future.

Appropriate quality and level of service provided – This location is adjacent to existing cargo facilities and can benefit from nearby gated access to Port Lansing Road.

Ease of implementation – This site is currently undeveloped and could be constructed without disrupting existing operations.

Financially feasible (capital investment, operating, and maintenance) – Site improvements for this alternative are not financially complicated. Utility access is nearby, and site access does not require substantial alteration.

Flexibility and future expansion potential – Expansion of this area is possible on adjacent undeveloped sites.

Supports sustainable development principles – This site can support sustainable development.

7.8.2 eVTOL Site Alternative 2

VTOL Site Alternative 2 serves cargo and freight logistics. Located near Alternative 1, it shares many of the same location benefits.

Operational and public safety – This location is safe, having adequate space and separations from existing facilities.

Operational efficiency – This site is located near existing cargo facilities and landside access gates.

Ability to meet FAA airfield design standards – This site can accommodate FAA design standards.

Resolution of current issues – eVTOL pads currently don't exist at LAN.

Ability to meet long-term facility requirements – Long-term requirements for eVTOL aircraft are still uncertain. This alternative has an advantage over Alternative 1 because it would not conflict with any future terminal concourse expansion to the east.

Appropriate quality and level of service provided – This location is adjacent to existing cargo facilities and can benefit from nearby gated access to Port Lansing Road.

Ease of implementation – This site is currently undeveloped and could be constructed without disrupting existing operations.

Financially feasible (capital investment, operating, and maintenance) – Site improvements for this alternative are not financially complicated. Utility access is nearby, and site access does not require substantial alteration.

Flexibility and future expansion potential – Expansion of this area is possible on nearby undeveloped sites.

Supports sustainable development principles – This site can support sustainable development.

7.8.3 eVTOL Site Alternative 3

VTOL Site Alternative 3 was selected as an option for serving passenger operations. This site is outside of the Airport Operations Area fence located immediately south of the rental car service centers. This option assumes the development of a dedicated arrival path to the eVTOL pad, a secure fenced site, and development of a new on-site FBO-type facility to process passengers.

Operational and public safety – The site can be designed to provide safe operations.

Operational efficiency – This site is very efficient for passengers transitioning from airside facilities to landside facilities.

Ability to meet FAA airfield design standards – FAA design standards can be met in design of this facility.

Resolution of current issues – eVTOL pads currently don't exist at LAN.

Ability to meet long-term facility requirements – Long-term requirements for eVTOL aircraft are still uncertain. This alternative has an advantage over Alternative 1 because it would not take aeronautical land that could be used for traditional aircraft operations. The disadvantage of this site is requirements to develop airspace procedures specific to the landing/takeoff site.

Appropriate quality and level of service provided – Customer service can be high with the development of high quality facilities/operations.

Ease of implementation – Separating the site from the existing airfield adds airspace procedure development requirements because existing arrival/departure procedures cannot be leveraged while new procedures are developed.

Financially feasible (capital investment, operating, and maintenance) – Separating this site from the existing airfield adds new costs that could be avoided by leveraging existing facilities.

Flexibility and future expansion potential – Undeveloped land around this site could allow for future expansion.

Supports sustainable development principles – This site can support sustainable development.

7.8.4 eVTOL Site Alternative 4

eVTOL Site Alternative 4 was selected as an option for serving passenger operations.

Operational and public safety – This location is safe, having adequate space and separations from existing facilities.

Operational efficiency – This site is located directly adjacent to the electric aircraft charging station which opened in July 2025.

Ability to meet FAA airfield design standards – This site can accommodate FAA design standards.

Resolution of current issues – eVTOL pads currently don't exist at LAN.

Ability to meet long-term facility requirements – Long-term requirements for eVTOL aircraft are still uncertain.

Appropriate quality and level of service provided – This location allows access to existing FBO facilities or the development of new supporting facilities on adjacent land.

Ease of implementation – Constructing eVTOL pad facilities in this location have the advantage of existing infrastructure but requires demolition of existing hangars.

Financially feasible (capital investment, operating, and maintenance) – When compared to other alternatives, this location is financially feasible. The hangars it would replace are approaching the end of their useful life, at which time it would be more cost effective to redevelop the land rather than invest the necessary funds to preserve/maintain them.

Flexibility and future expansion potential – Expansion at this site could be possible if the surrounding area (southwest) is preserved of developed with facilities limited to interim use.

Supports sustainable development principles – This site can support sustainable development.

Table 7-5
Electric Vertical Takeoff and Landing (VTOL) Alternatives Evaluation

Evaluation Criteria	Alternatives				
	No Action	Alt 1	Alt 2	Alt 3	Alt 4
Operational / Public Safety					
Operational Efficiency					
Meets FAA Design Standards		1, 2	1, 2	1, 3	1, 3
Resolves Current Issues					
Meets Long-Term Needs					
Appropriate Quality/Service					
Ease of Implementation					
Financial Feasibility					
Flexible/Future Expansion		1	1	1	1
Sustainability Principles					



Source: RS&H Analysis, 2025
Note 1.) eVTOL size dependent. 2.) Cargo serving facility. 3.) Passenger serving facility.

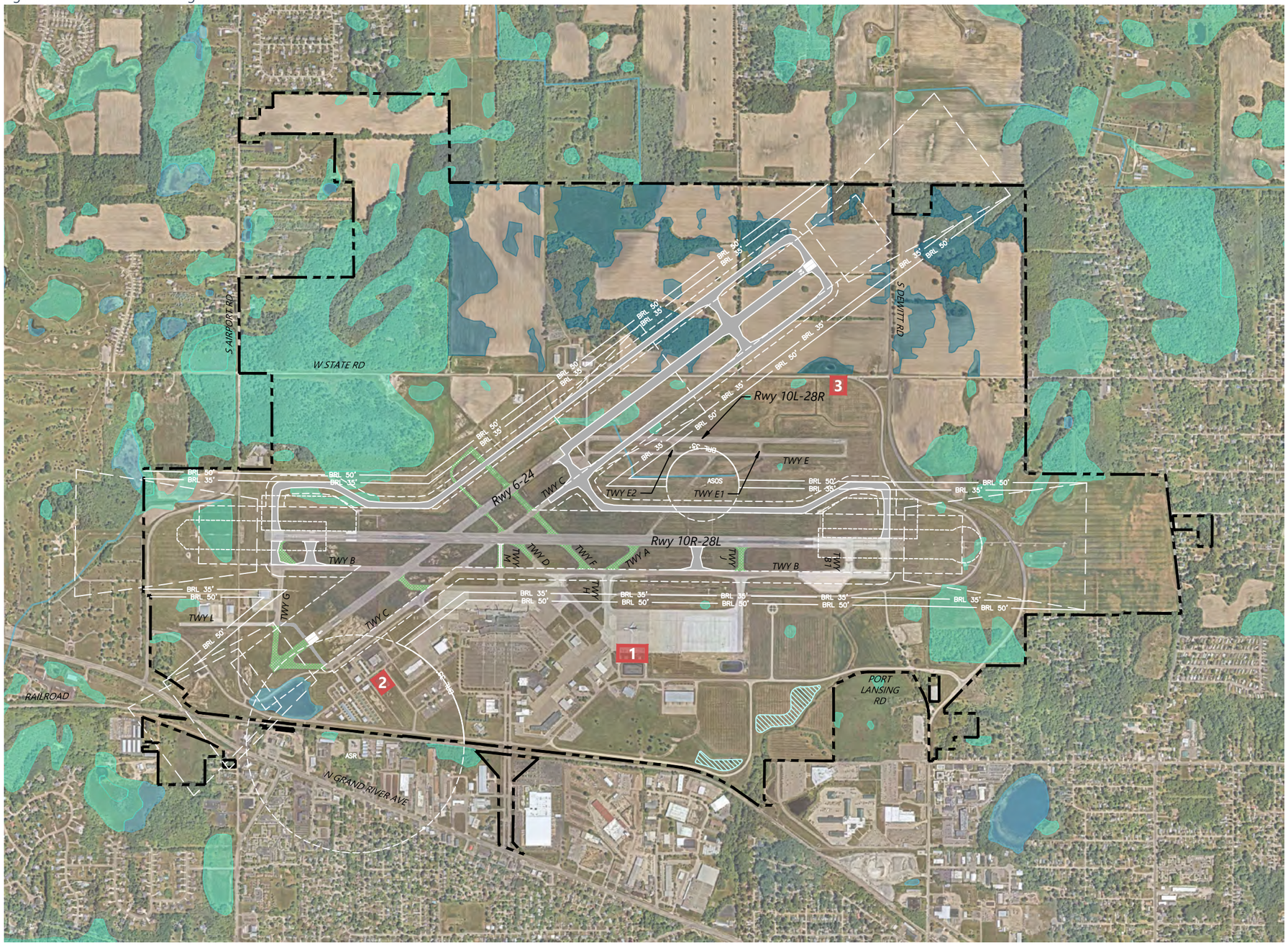
7.9 Airport Support Facility Alternatives

Airport support facility alternatives evaluated include aircraft fueling/storage, airport maintenance and SRE storage with collocated ARFF building, ATCT siting, ARFF training center, and Maintenance, Repair, and Overhaul (MRO) facilities.

7.9.1 Aircraft Fueling Facilities

Three site alternatives were considered for aircraft fuel storage facilities. The first is the existing facility adjacent to the cargo apron. The second is a new location in the general aviation area near the FBO. The third site is intended to complement the development of general aviation facilities north of Runway 10L-28R along State Road. Because each alternative would be developed to serve a unique purpose, the alternatives will be evaluated according to their ability to serve their individual role.

Figure 7-26 Aircraft Fuel Storage Area Alternatives



Aircraft Fuel Storage Area Alternatives

- Property Boundary
- Future Airfield
- Runway Object Free Area (ROFA)/ Taxiway Object Free Area (TOFA)
- Runway Protection Zone (RPZ)
- USFWS Wetlands
- Delineated Wetlands
- Water/Drainage
- Future Detention Pond
- 35ft Building Restriction Line (BRL)
- 50ft Building Restriction Line (BRL)
- Automated Surface Observing System (ASOS)
- Airport Surveillance Radar (ASR)
- Existing Localizer / Glide Slope Critical Areas
- Pavement Removal
- Fuel Storage

N

0' 750' 1,500'

Source: RS&H, 2025; Nearmap, Image Date 06/14/2024; CRAA, 2024; USFWS, 2023; EGLE, 2022

7.9.1.1 Fuel Storage Area Alternative 1

Fuel Storage Area Alternative 1 is at the existing location adjacent to the cargo apron and preserves space that already exists for future fuel storage expansion. Regardless of other alternative site being selected for preserving land, Alternative 1 is recommended to be carried forward as the preferred development over the planning period. Continuing fuel storage facility development in this location to meet materializing demand is a safe, cost effective, and sustainable solution. This option scores well for all evaluation criteria. It was only scored as fair for operational efficiency because it requires fuel trucks from the FBO to cross the terminal apron. This is not preferred, but is safe, and has not created any operational challenges to date.

7.9.1.2 Fuel Storage Area Alternative 2

Fuel Storage Area Alternative 2 considers constructing a new fuel storage area (not intended to replace the existing site on the cargo apron) that is near the FBO. This would eliminate the need for FBO fuel trucks to cross the terminal apron, which would dramatically reduce the possibility for conflicts with large commercial aircraft. Historically, this has not created issues, however, as operations increase, so does the possibility for conflicts. The preferred development plan will consider the need for including a new fuel storage facility in this location dependent upon the overall land use in this area. This location, as well as nearby locations, would perform well in all areas of the evaluation criteria. Implementation, Financial Feasibility, and Sustainability were all scored as fair due to the need to establish a secondary fuel storage area as opposed to utilizing only the existing facilities.

7.9.1.3 Fuel Storage Area Alternative 3

Fuel Storage Area Alternative 3 is only intended to complement any future development of general aviation facilities north of Runway 10L-28R along State Road. If this area does not contain complementary facilities, then there is no need to construct supporting fuel storage facilities. This area performs well in all the criteria evaluated if/when those facilities are developed.

Table 7-6
Fuel Storage Area Alternatives Evaluation

Evaluation Criteria	Alternatives			
	No Action	Alt 1	Alt 2	Alt 3
Operational / Public Safety				
Operational Efficiency				1
Meets FAA Design Standards				
Resolves Current Issues				
Meets Long-Term Needs				
Appropriate Quality/Service				
Ease of Implementation				1
Financial Feasibility				1
Flexible/Future Expansion				
Sustainability Principles				



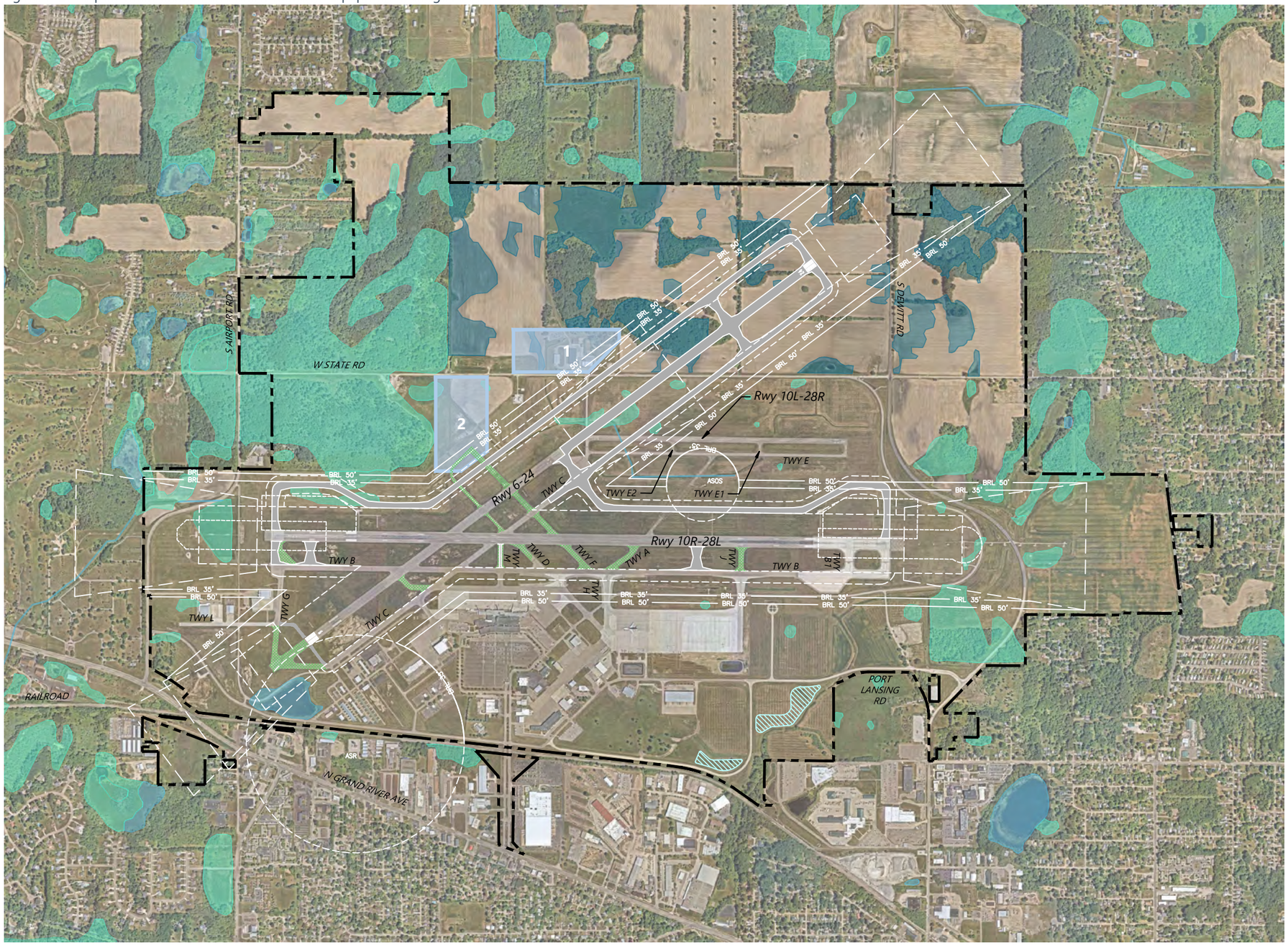
Source: RS&H Analysis, 2025
Note: 1). Development of GA facilities and FBO in this area would make this location highly efficient and create a stronger case for implementation. With complementary facilities, these criteria would be scored as "Fair to Good".

7.9.2 Airport Maintenance and Snow Removal Equipment Storage

Two alternative sites were evaluated for housing airport maintenance and snow removal storage facilities. The first option expands west of the existing campus area. The second option creates a new campus southwest of the existing campus and south of State Road.

Airport Rescue and Fire Fighting (ARFF) facilities are collated with the maintenance and equipment storage campus. The ARFF facilities in there current location allow firefighters meet response times and the airfield changes proposed to not adversely affect response times. Existing ARFF facilities were not identified as a deficiency during the study. Therefore, ARFF facilities are proposed to stay in the current location or move only to an equally or improved effective location if operationally necessary to be collocated with future airport maintenance and storage buildings.

Figure 7-27 Airport Maintenance and Snow Removal Equipment Storage Alternatives



Airport Maintenance and Snow Removal Equipment Storage

- Property Boundary
- Future Airfield
- Runway Object Free Area (ROFA)/ Taxiway Object Free Area (TOFA)
- Runway Protection Zone (RPZ)
- USFWS Wetlands
- Delineated Wetlands
- Water/Drainage
- Future Detention Pond
- 35ft Building Restriction Line (BRL)
- 50ft Building Restriction Line (BRL)
- Automated Surface Observing System (ASOS)
- Airport Surveillance Radar (ASR)
- Existing Localizer / Glide Slope Critical Areas
- Pavement Removal
- Maintenance and SRE

N

0' 750' 1,500'

Source: RS&H, 2025; Nearmap, Image Date 06/14/2024; CRAA, 2024; USFWS, 2023; EGLE, 2022

7.9.2.1 Airport Maintenance and SRE Storage Area (and potential ARFF) Alternative 1

Airport Maintenance and SRE Storage Area Alternative 1 considers an expansion west of the existing campus. ARFF facilities remain in current location.

Operational and public safety – The existing campus is located appropriately relative to having expedient airfield access and meeting ARFF response time requirements. The only safety concern from an operational standpoint is the design of the SRE storage building. The single aisle pull through design requires large equipment to be backed into angled parking positions, which creates the potential for impacting the building, other equipment, and possibly even unaware staff.

Operational efficiency – Expansion of the existing site maintains similar operational efficiencies as what currently exists. The current SRE storage facility design is not optimal for storage of newer multi-functional SRE equipment which is too long to angle park. Multi-functional SRE is best stored within direct pull through bays which allow vehicles to pull straight through.

Ability to meet FAA airfield design standards – This site can accommodate FAA design standards.

Resolution of current issues – Current issues with the SRE building configuration can be resolved by developing a new pull-through bay-style facility at the west end of the existing campus. This would also allow CRAA to continue using the current SRE storage building for housing other maintenance equipment.

Ability to meet long-term facility requirements – Expansion of the existing maintenance and SRE storage campus can meet long-term forecast needs over the planning period.

Appropriate quality and level of service provided – Expanding the existing facilities west maintains the current quality of service necessary for airport maintenance and emergency response.

Ease of implementation – Implementation of Alternative 1 is far easier than development of new facilities as shown in Alternative 2.

Financially feasible (capital investment, operating, and maintenance) – Implementation of Alternative 1 is far more cost-effective than developing new facilities as shown in Alternative 2.

Flexibility and future expansion potential – Expansion of the existing campus is constrained to the east and the north, but land is available for future needs west and northwest.

Supports sustainable development principles – This site can support sustainable development.

7.9.2.2 Airport Maintenance and SRE Storage Area (and potential ARFF) Alternative 2

Airport Maintenance and SRE Storage Area Alternative 2 develops an entirely new campus to serve these functions.

Operational and public safety – Developing new facilities allows CRAA to meet modern design standards and operating needs.

Operational efficiency – Site 2 can be made more efficient than the existing campus but improvements would be relatively minimal. Facilities could be located closer to the primary runway mid-point for ARFF response if ARFF facilities are eventually relocated and new storage facilities could be designed to accommodate new equipment. The site is situated close to existing ARFF, storage, and secondary ATC so that staff can easily move between the two locations.

Ability to meet FAA airfield design standards – This site can accommodate FAA design standards.

Resolution of current issues – Development of Site 2 for maintenance and SRE storage needs could accommodate all existing and proposed facilities.

Ability to meet long-term facility requirements – This option can meet long-term forecast demand.

Appropriate quality and level of service provided – Level of service can ultimately improve as the airfield develops into the ultimate condition.

Ease of implementation – Implementation of this option can be phased to allow all existing facilities to reach end of useful life (requiring replacement). Since the proposed Site 2 is close to existing facilities, staff can move between existing and new facilities with relative ease as facility development is phased over time.

Financially feasible (capital investment, operating, and maintenance) – This option is financially feasible because it allows the ability to transition from Site 1 to Site 2 over time, or even maintain ARFF facilities where they currently exist if preferable.

Flexibility and future expansion potential – Most of Site 2 is undeveloped (some old airfield pavement does exist) and there are undeveloped areas immediately east of this location.

Supports sustainable development principles – This site can support sustainable development.

Table 7-7
Airport Maintenance and SRE Storage Area Alternatives Evaluation

Evaluation Criteria	Alternatives		
	No Action	Alt 1	Alt 2
Operational / Public Safety			
Operational Efficiency			
Meets FAA Design Standards			
Resolves Current Issues			
Meets Long-Term Needs			
Appropriate Quality/Service			
Ease of Implementation			
Financial Feasibility			
Flexible/Future Expansion			
Sustainability Principles			



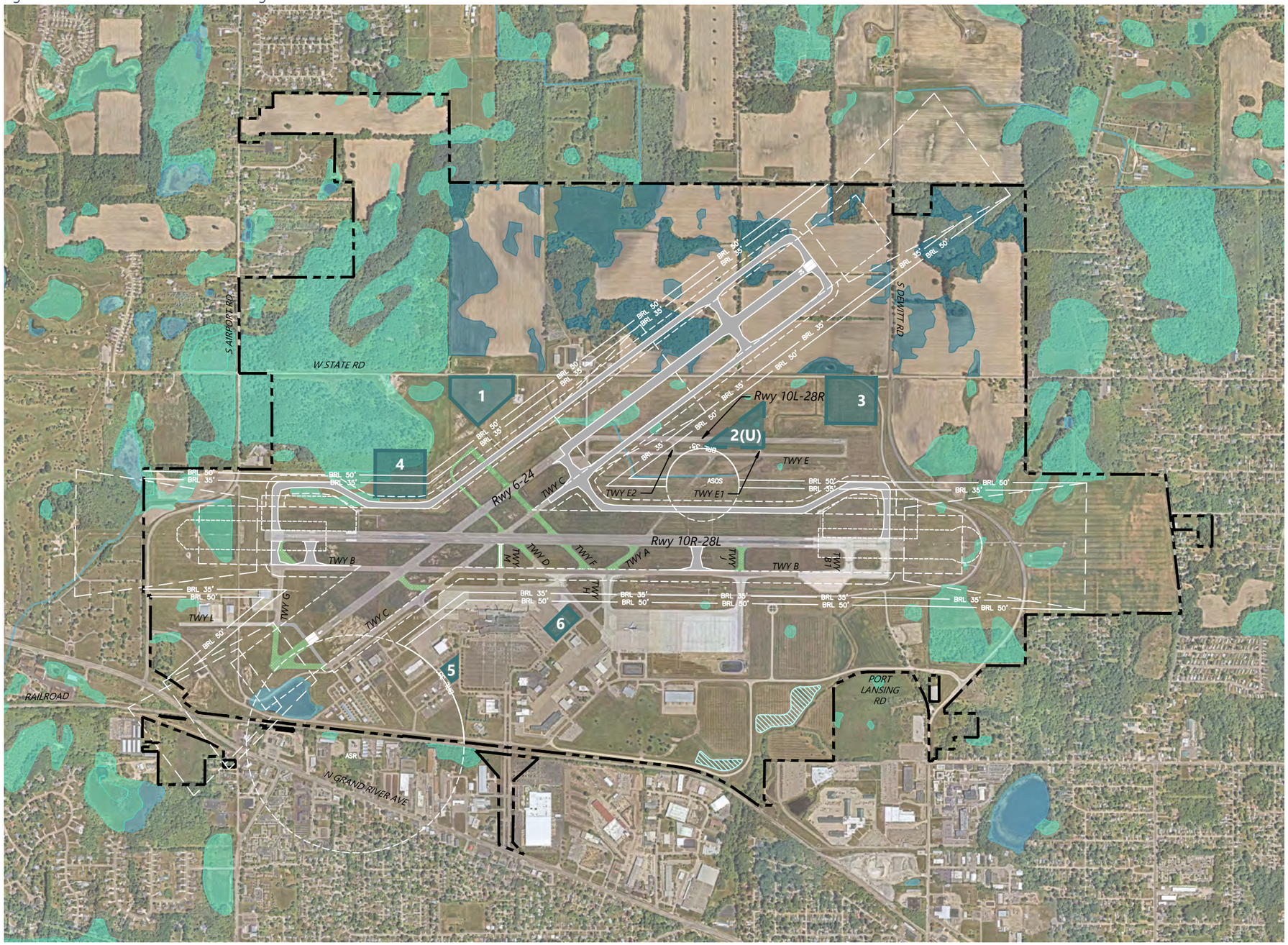
Source: RS&H, 2025

7.9.3 Air Traffic Control Tower Siting Alternatives

The existing tower is structurally part of the terminal building but even so it will eventually reach the end of its useful life. Terminal development options performed as part of this master plan identified terminal renovation as the preferred terminal development plan but specifically sought to avoid impacting the existing tower or its support systems. In support of longer-term planning, this analysis identified six potential future sides (as shown on **Figure 7-28**) that could be considered for an eventual replacement tower. It is important to note that this is only a preliminary analysis, however, because the FAA requires an Air Traffic Control Tower Siting Process which exceeds the scope of this master plan.

An ATCT Tower Siting Study will be programmed into the Capital Improvement Program to serve as a placeholder for future analysis at a time when the ATCT is approaching the end of its useful life.

Figure 7-28 Air Traffic Control Tower Siting Alternatives



Air Traffic Control Tower Siting

- Property Boundary
- Future Airfield
- Runway Object Free Area (ROFA)/ Taxiway Object Free Area (TOFA)
- Runway Protection Zone (RPZ)
- USFWS Wetlands
- Delineated Wetlands
- Water/Drainage
- Future Detention Pond
- 35ft Building Restriction Line (BRL)
- 50ft Building Restriction Line (BRL)
- Automated Surface Observing System (ASOS)
- Airport Surveillance Radar (ASR)
- Existing Localizer / Glide Slope Critical Areas
- Pavement Removal

- ATCT
- ATCT (Ultimate)

N

0' 750' 1,500'

Source: RS&H, 2025; Nearmap, Image Date 06/14/2024; CRAA, 2024; USFWS, 2023; EGLE, 2022

7.9.3.1 ATCT Site Alternative 1

ATCT Site Alternative 1 is located in the northwest portion of the AOA south of State Road.

Operational and public safety – Establishing FAA ATCT facilities with dedicated access separated from nearly all other vehicular traffic (possibly excluding airport operations staff) allows the facilities to be safe and secure from potential threats.

Operational efficiency – FAA ATC operating needs can be met adequately at this site and the central location is anticipated to allow for good visibility of the entire airport, assuming the tower height provides clear line-of-sight to all movement areas.

Ability to meet FAA airfield design standards – This site can accommodate FAA design standards.

Resolution of current issues – Development of a newly designed tower at this site can resolve current issues.

Ability to meet long-term facility requirements – Because the northwest area of the AOA has abundant wetland area and is challenging to develop, this location can rely on no vertical development that impedes tower line-of-sight or creates other issues in the immediate area.

Appropriate quality and level of service provided – This site can allow ATC to provide safe, quality services.

Ease of implementation – This site is undeveloped and already has dedicated right-of-way for vehicular access, making construction of facilities straight-forward. The biggest challenge associated with this site is the need for running new utility lines and paving roadway access.

Financially feasible (capital investment, operating, and maintenance) – This location would require an extension of existing utilities and access roads, making the capital investment higher than Alternative 3. Relative to other options this Alternative requires a modest amount of initial capital investment. The cost to construct the tower building is assumed to be equal for each alternative because a full siting study has not been completed.

Flexibility and future expansion potential – Future expansion is not likely to be an issue with tower development. Regardless, there is undeveloped land adjacent to this location.

Supports sustainable development principles – This site can support sustainable development.

7.9.3.2 ATCT Site Alternative 2 (Ultimate)

ATCT Site Alternative 2 (Ultimate) is located on the middle portion of the existing Runway 10L-28R. This alternative is only feasible if the runway is removed to support the extension of Runway 6-24.

Operational and public safety – This location would need to be configured to be secure while allowing for additional aeronautical development.

Operational efficiency – The central location of this option is anticipated to allow for good visibility of the entire airport, but line-of-sight analysis should be performed.

Ability to meet FAA airfield design standards – This site can accommodate FAA design standards.

Resolution of current issues – Development of a newly designed tower at this site can resolve current issues.

Ability to meet long-term facility requirements – The placement of this site ensures nothing is constructed between the tower and the airfield.

Appropriate quality and level of service provided – This site can allow ATC to provide safe, quality services. This location does present a limiting factor for future aeronautical development in this area.

Ease of implementation – Implementation is not possible until Runway 10L-28R is removed.

Financially feasible (capital investment, operating, and maintenance) – This location would require an extension of existing utilities and access roads, making the capital investment higher than Alternative 3. Relative to other options this Alternative requires a high amount of initial capital investment. The cost to construct the tower building is assumed to be equal for each alternative because a full siting study has not been completed.

Flexibility and future expansion potential – Future expansion is not likely to be an issue with tower development. Regardless, there is undeveloped land adjacent to this location.

Supports sustainable development principles – This site can support sustainable development.

7.9.3.3 ATCT Site Alternative 3

ATCT Site Alternative 3 is in the southwest quadrant of the intersection of Dewitt Road and State Road.

Operational and public safety – This location would need to be configured to be secure while allowing for additional aeronautical development.

Operational efficiency – This site is at the far east end of the AOA and may require a taller tower to provide controller visibility past the terminal building.

Ability to meet FAA airfield design standards – This site can accommodate FAA design standards.

Resolution of current issues – Development of a newly designed tower at this site can resolve current issues.

Ability to meet long-term facility requirements – Development of the terminal area may create visibility issues if the tower is not constructed tall enough to account for future development in the area.

Appropriate quality and level of service provided – This site can allow ATC to provide safe, quality services. This location does present a limiting factor for future aeronautical development in this area.

Ease of implementation – This site is undeveloped and already has dedicated right-of-way for vehicular access, making construction of facilities straight-forward. This site is anticipated to have the lowest capital costs for new utility lines and roadway access.

Financially feasible (capital investment, operating, and maintenance) – This alternative has the lowest initial capital investment required because it is located adjacent to Dewitt Road. Accessing utilities and establishing access would be easier than the other alternatives. The cost to construct the tower building is assumed to be equal for each alternative because a full siting study has not been completed.

Flexibility and future expansion potential – Future expansion is not likely to be an issue with tower development. Regardless, there is undeveloped land adjacent to this location.

Supports sustainable development principles – This site can support sustainable development.

7.9.3.4 ATCT Site Alternative 4

ATCT Site Alternative 4 is located northwest of the intersection of Runway 6-24 and Runway 10R-28L.

Operational and public safety – Establishing FAA ATCT facilities with dedicated access separated from nearly all other vehicular traffic (possibly excluding airport operations staff) allows the facilities to be safe and secure from potential threats.

Operational efficiency – FAA ATC operating needs can be met adequately at this site. The central location is anticipated to allow for good visibility of the entire airport, assuming the tower height provides a clear line-of-sight to all movement areas.

Ability to meet FAA airfield design standards – This site can accommodate FAA design standards.

Resolution of current issues – Development of a newly designed tower at this site can resolve current issues.

Ability to meet long-term facility requirements – Because the northwest area of the AOA has abundant wetland area and is challenging to develop, this location can rely on no vertical development that impedes tower line-of-sight or creates other issues in the immediate area.

Appropriate quality and level of service provided – This site can allow ATC to provide safe, quality services.

Ease of implementation – This site is undeveloped and has no dedicated right-of-way for vehicular access, making construction of facilities the most difficult in means of utilities and road access.

Financially feasible (capital investment, operating, and maintenance) – This location would require an extension of existing utilities and access roads, making the capital investment higher than Alternative 3. Relative to other options this Alternative requires a high amount of initial capital investment. The cost to construct the tower building is assumed to be equal for each alternative because a full siting study has not been completed.

Flexibility and future expansion potential – Future expansion is not likely to be an issue with tower development. Regardless, there is undeveloped land adjacent to this location.

Supports sustainable development principles – This site can support sustainable development.

7.9.3.5 ATCT Site Alternative 5

ATCT Site Alternative 5 is located immediately south of the FBO in the terminal area on the west side of the terminal loop road.

Operational and public safety – Establishing FAA ATCT facilities with dedicated access separated from nearly all other vehicular traffic (excluding FBO traffic) improves access safety.

Operational efficiency – FAA ATC operating needs can be met adequately at this site. The location may require a taller tower to allow line of sight visibility of the entire airport.

Ability to meet FAA airfield design standards – This site can accommodate FAA design standards but the undeveloped area is size constrained and may require alterations to the existing rental car facilities.

Resolution of current issues – Development of a newly designed tower at this site can resolve current issues.

Ability to meet long-term facility requirements – As future terminal area facilities develop, having an ATCT in this location may limit other future development that is required in the terminal area.

Appropriate quality and level of service provided – This site can allow ATC to provide safe, quality services.

Ease of implementation – This site is constrained by existing facilities (roadway, GA apron/hangars, rental car) and may require modification/relocation of existing facilities to meet design/construction needs.

Financially feasible (capital investment, operating, and maintenance) – This location has immediate access to nearby utilities, however, the impact to other adjacent facilities may increase project costs.

Flexibility and future expansion potential – Future expansion would be more challenging than proposed sites on the north side of the airfield.

Supports sustainable development principles – This site can support sustainable development.

7.9.3.6 ATCT Site Alternative 6

ATCT Site Alternative 6 is located immediately east of the terminal building adjacent to employee parking.

Operational and public safety – A facility in this location can be made secure. Access to the site does require FAA staff and visitors to mix with terminal vehicular traffic but this also already occurs with airport staff.

Operational efficiency – FAA ATC operating needs can be met adequately at this site. The location may require a taller tower to allow line of sight visibility of the entire airport. This is especially true if the old (existing) ATCT remains in place.

Ability to meet FAA airfield design standards – This site can accommodate FAA design standards but is size constrained by the airfield and future terminal expansions east.

Resolution of current issues – Development of a newly designed tower at this site can resolve current issues.

Ability to meet long-term facility requirements – As future terminal area facilities develop, having an ATCT in this location may limit other future development that is required in the terminal area, including terminal concourse expansion.

Appropriate quality and level of service provided – This site can allow ATC to provide safe, quality services.

Ease of implementation – This site has immediate access to utilities and would be relatively simple to secure. Construction could be done in a way that does not impact airfield operations.

Financially feasible (capital investment, operating, and maintenance) – This location has immediate access to nearby utilities and would be less expensive than other locations to develop.

Flexibility and future expansion potential – Future expansion would be more challenging than proposed sites on the north side of the airfield.

Supports sustainable development principles – This site can support sustainable development.

Table 7-8
Air Traffic Control Tower Site Alternatives

Evaluation Criteria	Alternatives						
	No Action	Alt 1	Alt 2 (U)	Alt 3	Alt 4	Alt 5	Alt 6
Operational / Public Safety							
Operational Efficiency							
Meets FAA Design Standards		1	1	1	1	1	1
Resolves Current Issues							
Meets Long-Term Needs							
Appropriate Quality/Service							
Ease of Implementation							
Financial Feasibility							
Flexible/Future Expansion							
Sustainability Principles							

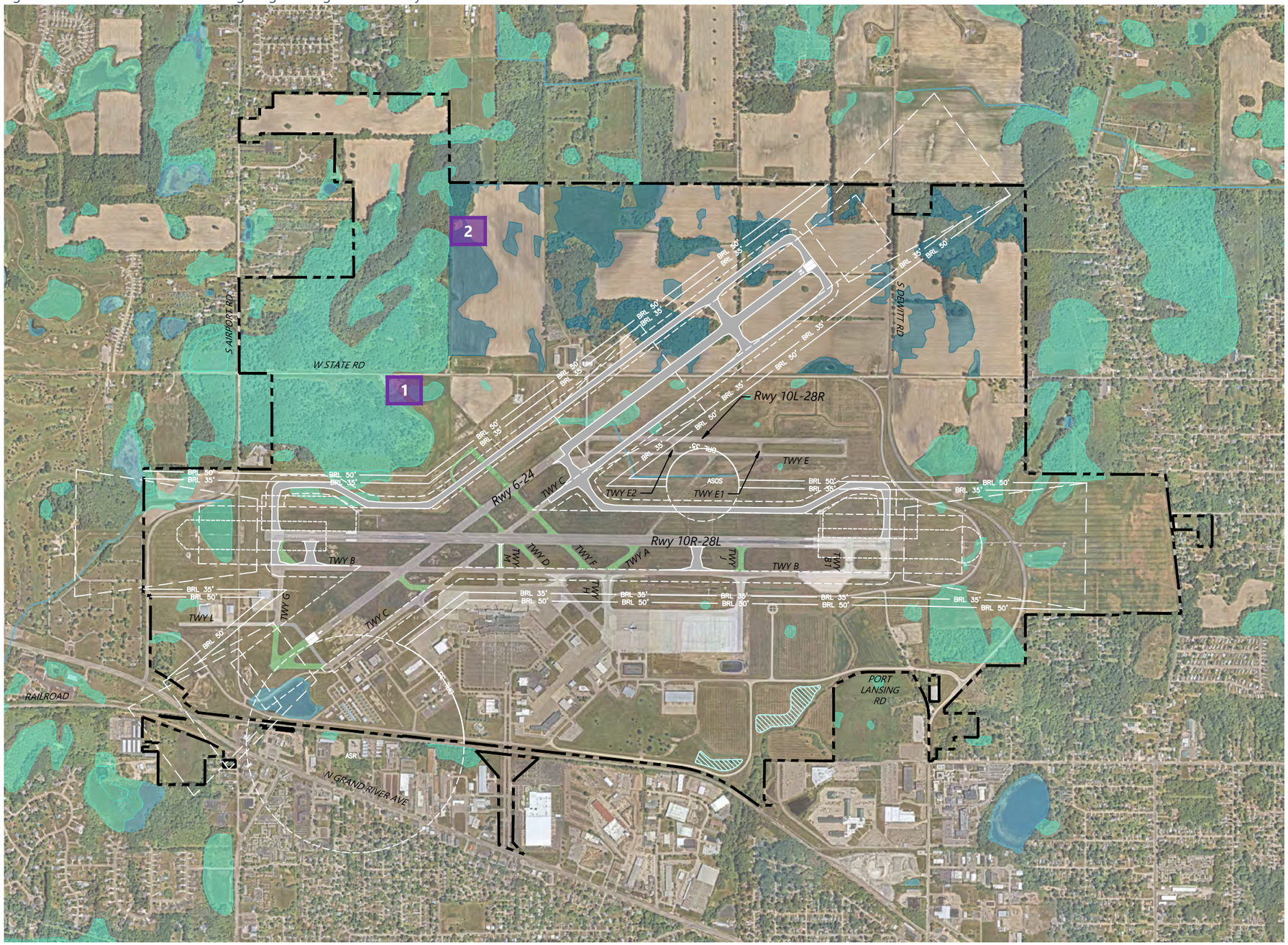
Performance Legend: Good | Fair | Poor

Source: RS&H, 2025
Note: 1.) Siting study required (height, line-of-sight, glare, etc.) per FAA Order 6480.4B, *Air Traffic Control Tower Siting Process.*

7.9.4 ARFF Training Center

Locations were considered for development of an on-airport ARFF training Center to provide staff training and create a new revenue source. FAA guidance on siting and constructing a new ARFF Training Facility is provided in AC 150/5220-17B, *Aircraft Rescue and Fire Fighting (ARFF) Training Facilities*. Site selection criteria include proximity to ARFF stations, maintaining airfield and airspace protections, preventing impacts of possible smoke dispersion, and consideration to noise buffers. In addition to the AC, the National Fire Protection Association (NFPA) provides guidance for planning fire service training centers in NFPA 1402, *Standards on Facilities for Fire Service Training and Associated Props*. Two potential ARFF Training site locations, shown in **Figure 7-29**, were evaluated.

Figure 7-29 Aircraft Rescue and Fire Fighting Training Center Facility Alternatives



ARFF Training

- Property Boundary
- Future Airfield
- Runway Object Free Area (ROFA)/ Taxiway Object Free Area (TOFA)
- Runway Protection Zone (RPZ)
- USFWS Wetlands
- Delineated Wetlands
- Water/Drainage
- Future Detention Pond
- 35ft Building Restriction Line (BRL)
- 50ft Building Restriction Line (BRL)
- Automated Surface Observing System (ASOS)
- Airport Surveillance Radar (ASR)
- Existing Localizer / Glide Slope Critical Areas
- Pavement Removal
- ARFF Training

N

0' 750' 1,500'

Source: RS&H, 2025; Nearmap, Image Date 06/14/2024; CRAA, 2024; USFWS, 2023; EGLE, 2022

Site 1 and Site 2 are both located in the northwest quadrant of airport property. This area is not programmed for future aeronautical development so impacts to airport operations would be reduced or eliminated completely. Site 1 is located relatively close to two of the ATCT alternative sites. ATCT placement and land preservation should take priority over development of an ARFF Training Center. Smoke generation and visibility issues can be overcome by installing propane-fuel simulators that generate realistic flames and heat without emitting excessive smoke associated with traditional liquid fuel fires. However, the training facility should not be constructed immediately adjacent the ATCT.

The predominant winds at LAN are westerly meaning any smoke generated by the facility would often drift east. Site 1 is located upwind of the Runway 24 threshold, which would be used on days when the winds were blowing from the west-southwest. This means that any smoke generated on days when Runway 24 was in use could potentially drift into the approach path. Site 2 is further north and could still see smoke drift toward the approach path of Runway 24, however it would be generated from farther away and more likely to disperse prior to impacting the approach path.

Any noise associated with either site is not anticipated to create an issue for neighboring residences. Each site is approximately ½ mile or more away from the closest home and has a large heavily wooded area in between. The wooded areas are also not planned for development due to the likely presence of wetlands covering much of the area.

Both sites are relatively close to the existing ARFF facility (on State Road) and would be accessed by roads not open to the public. The largest disadvantage of Site 2 relative to Site 1 is the requirements to pave a road to the site. Utilities would need to be brought in to either proposed location.

Table 7-9
ARFF Training Center Alternatives Evaluation

Evaluation Criteria	Alternatives		
	No Action	Alt 1	Alt 2
Operational / Public Safety	N/A		
Operational Efficiency	N/A		
Meets FAA Design Standards	N/A		
Resolves Current Issues	N/A		
Meets Long-Term Needs	N/A		
Appropriate Quality/Service	N/A		
Ease of Implementation	N/A		
Financial Feasibility	N/A		
Flexible/Future Expansion	N/A		
Sustainability Principles	N/A		

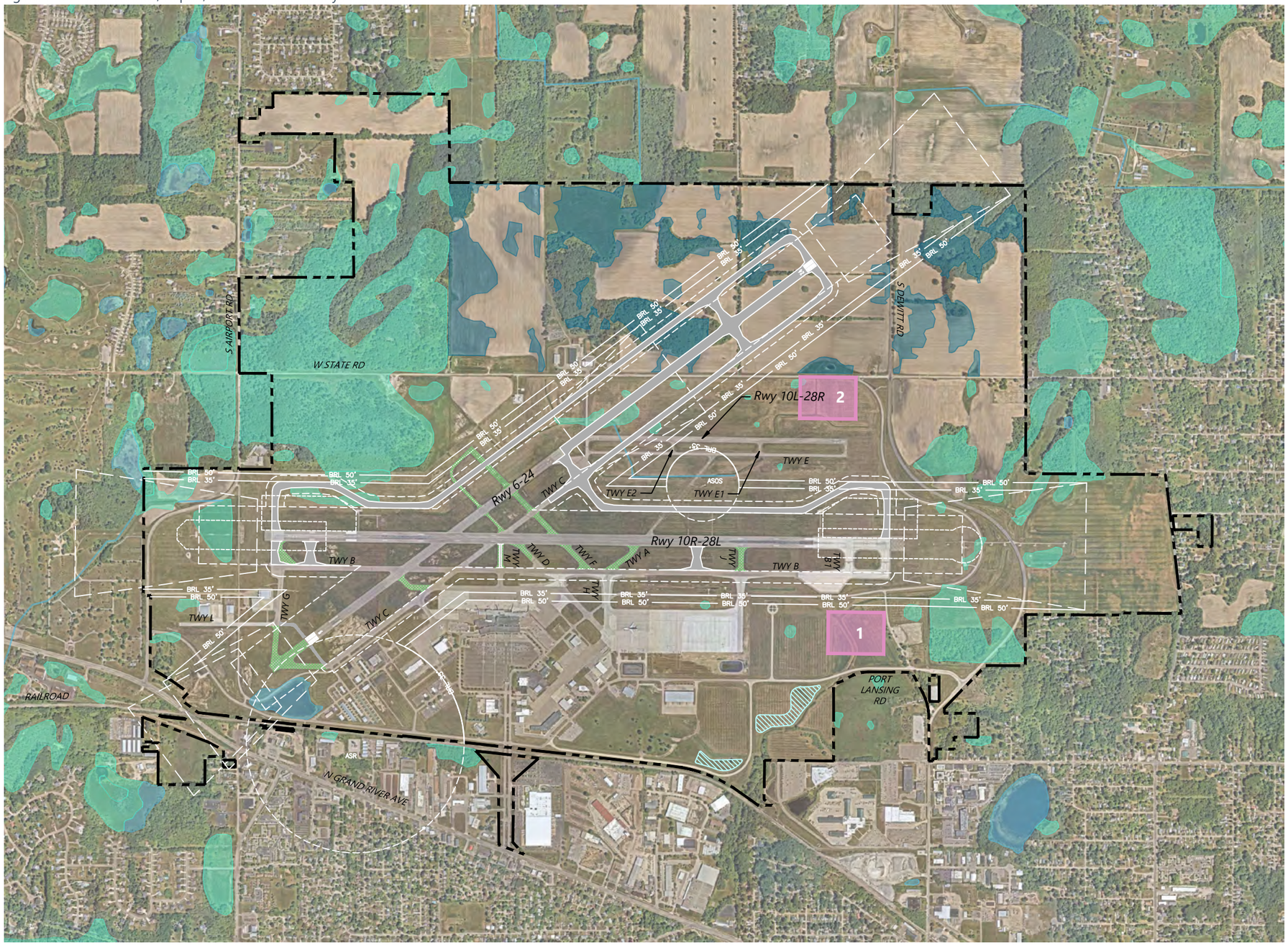
Performance Legend — Good | Fair | Poor

Source: RS&H, 2025

7.9.5 Maintenance, Repair, and Overhaul Facility Alternatives

One area of CRAA and stakeholder interest was consideration for where to preserve land for a future Maintenance, Repair, and Overhaul facility. Two 10-acre sites were evaluated as shown in **Figure 7-30** and **Table 7-10**.

Figure 7-30 Maintenance, Repair, and Overhaul Facility Alternatives



Source: RS&H, 2025; Nearmap, Image Date 06/14/2024; CRAA, 2024; USFWS, 2023; EGLE, 2022

Site 1 is located south of the Runway 28L threshold and east of an area considered for future cargo apron expansion. Site 2 is located near the intersection of Dewitt Road and State Road in an area considered for future GA facility development. Development at Site 1 would be closer to existing utilities but may require site modifications to alter existing drainage channels depending on how large the facility is and how the site is configured. Site 2 is farther from existing utilities and may also require modifications to existing drainage channels. Site 2 has the serious disadvantage of requiring construction of airfield infrastructure to support larger aircraft which may be key to clients making use of the facility. This may be less critical if the facility is developed after extending Runway 6-24 but it's more likely that the MRO will be constructed first.

Table 7-10
Maintenance, Repair, and Overhaul Facility Alternatives Evaluation

Evaluation Criteria	Alternatives		
	No Action	Alt 1	Alt 2
Operational / Public Safety	N/A		
Operational Efficiency	N/A		
Meets FAA Design Standards	N/A		
Resolves Current Issues	N/A		
Meets Long-Term Needs	N/A		
Appropriate Quality/Service	N/A		
Ease of Implementation	N/A		
Financial Feasibility	N/A		
Flexible/Future Expansion	N/A		
Sustainability Principles	N/A		

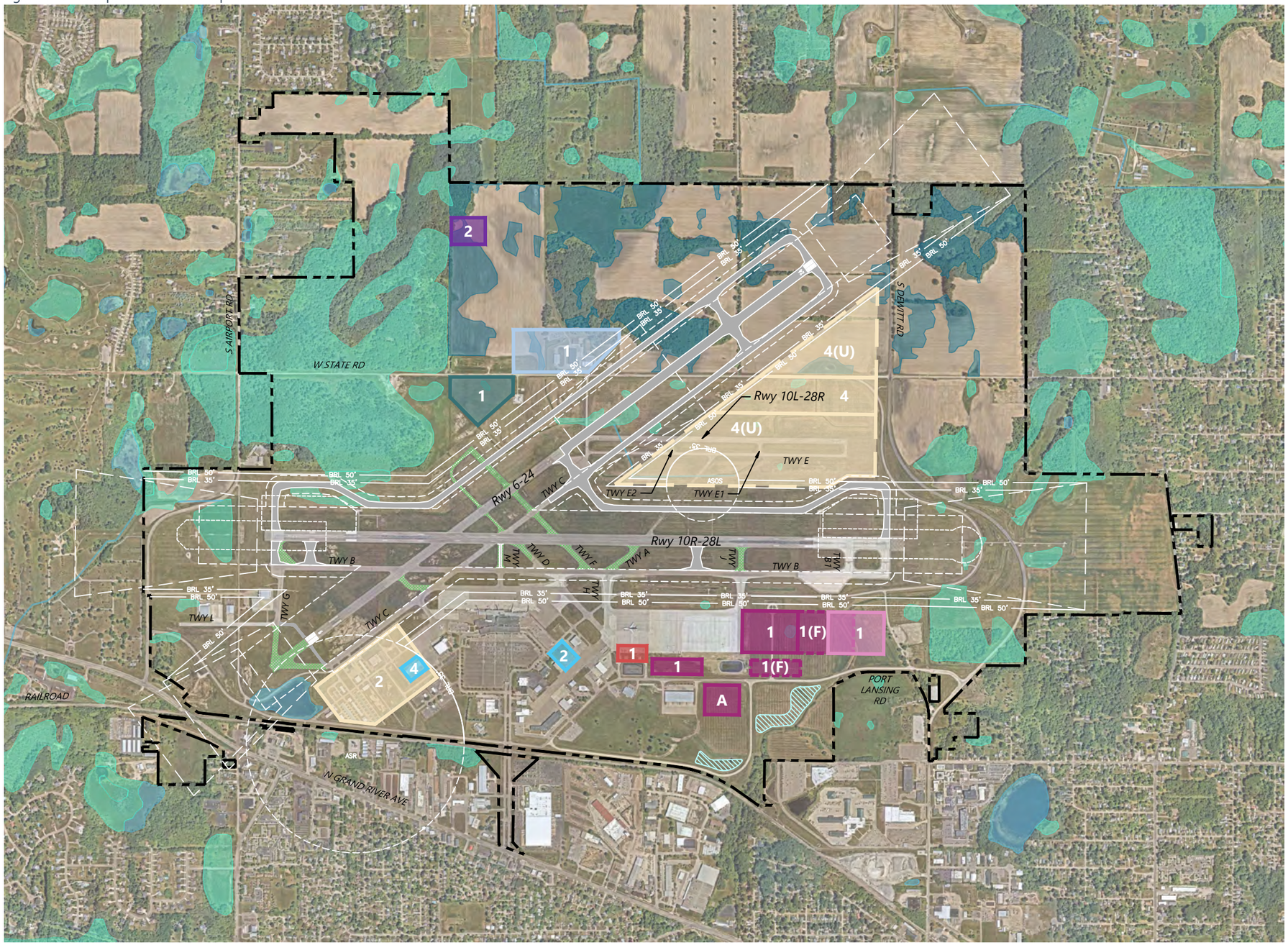


Source: RS&H, 2025

7.10 Comprehensive Preferred Airport Development

The preferred comprehensive plan at LAN coordinates airport facility development to address forecast demand through the 20-year planning period and beyond. This plan optimizes airport land for both aeronautical and non-aeronautical use to remain financially self-sufficient and position CRAA to fulfill its purpose of serving its users and the community. Existing investments are leveraged while still allowing the flexibility needed to accommodate new opportunities.

Figure 7-31 Comprehensive Development Plan - Land Use



Preferred Comprehensive Development

- Property Boundary
- Future Airfield
- Runway Object Free Area (ROFA)/ Taxiway Object Free Area (TOFA)
- Runway Protection Zone (RPZ)
- USFWS Wetlands
- Delineated Wetlands
- Water/Drainage
- Future Detention Pond
- 35ft Building Restriction Line (BRL)
- 50ft Building Restriction Line (BRL)
- Automated Surface Observing System (ASOS)
- Airport Surveillance Radar (ASR)
- Existing Localizer / Glide Slope Critical Areas
- Pavement Removal

- GA Hangars and Apron
- GA Hangars and Apron (Ultimate)
- Cargo Facilities
- Cargo Facilities with Future Expansion
- Maintenance and SRE
- ATCT
- Fuel Storage
- AAM Sites
- ARFF Training
- MRO

N

0' 750' 1,500'

Source: RS&H, 2025; Nearmap, Image Date 06/14/2024; CRAA, 2024; USFWS, 2023; EGLE, 2022

7.11 Detailed Layouts of Preferred Development Areas

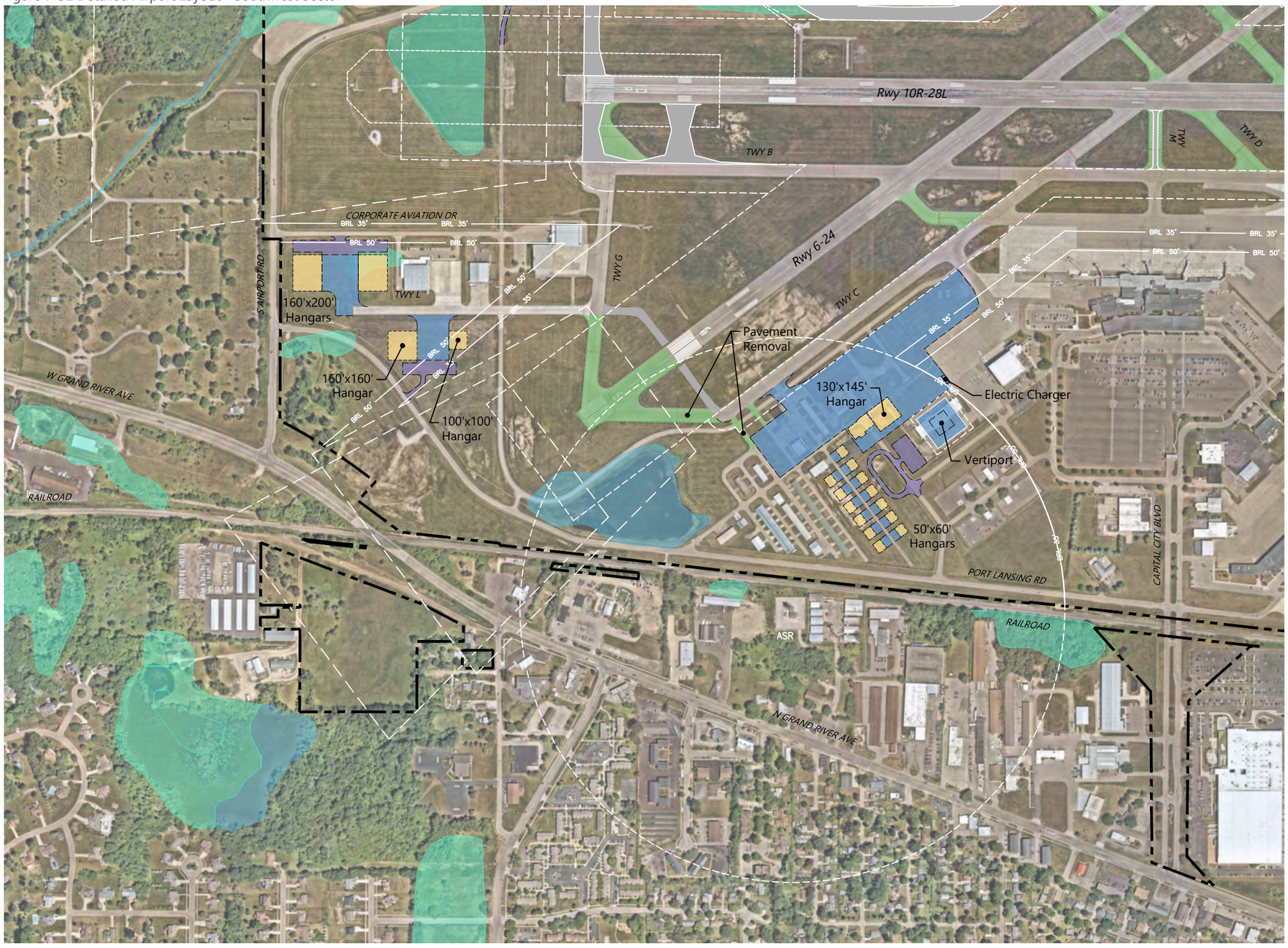
This section will describe and illustrate detailed arrangements of facilities in the locations defined within the Comprehensive Preferred Development Plan.

7.11.1 Detailed Airport Layout – Southwest Quadrant

The plan for the southwest quadrant of LAN (shown in **Figure 7-32)** includes development/redevelopment of general aviation facilities. LCC buildings were removed in 2025 and land opened for redevelopment to meet current market conditions. A new Beta Technologies Level 3 fast charging station was also installed in 2025 near the FBO and this planned layout takes advantage of that installation by positioning for a future eVTOL pad where aging hangars currently stand. The Airport Layout Plan will identify this as one of the sites for a future eVTOL siting study to analyze elements such as the critical eVTOL aircraft, airspace integration, and outwash/downwash impacts. This site is anticipated to be easier to integrate into existing airspace due to its location south of the airfield.

Corporate hangars and supporting facilities currently occupy land immediately west of Taxiway G. A continuation of this development is programmed.

Figure 7-32 Detailed Airport Layout - Southwest Sector



Southwest Quadrant

- Property Boundary
- Future Airfield
- Runway Object Free Area (ROFA)/ Taxiway Object Free Area (TOFA)
- Runway Protection Zone (RPZ)
- USFWS Wetlands
- Delineated Wetlands
- Water/Drainage
- Future Detention Pond
- 35ft Building Restriction Line (BRL)
- 50ft Building Restriction Line (BRL)
- Automated Surface Observing System (ASOS)
- Airport Surveillance Radar (ASR)
- Existing Localizer / Glide Slope Critical Areas
- Pavement Removal
- Future Airfield Development
- Future Building Development
- Future Roadway / Parking Development
- Ultimate Airfield Development
- Ultimate Building Development
- Ultimate Roadway / Parking Development

N

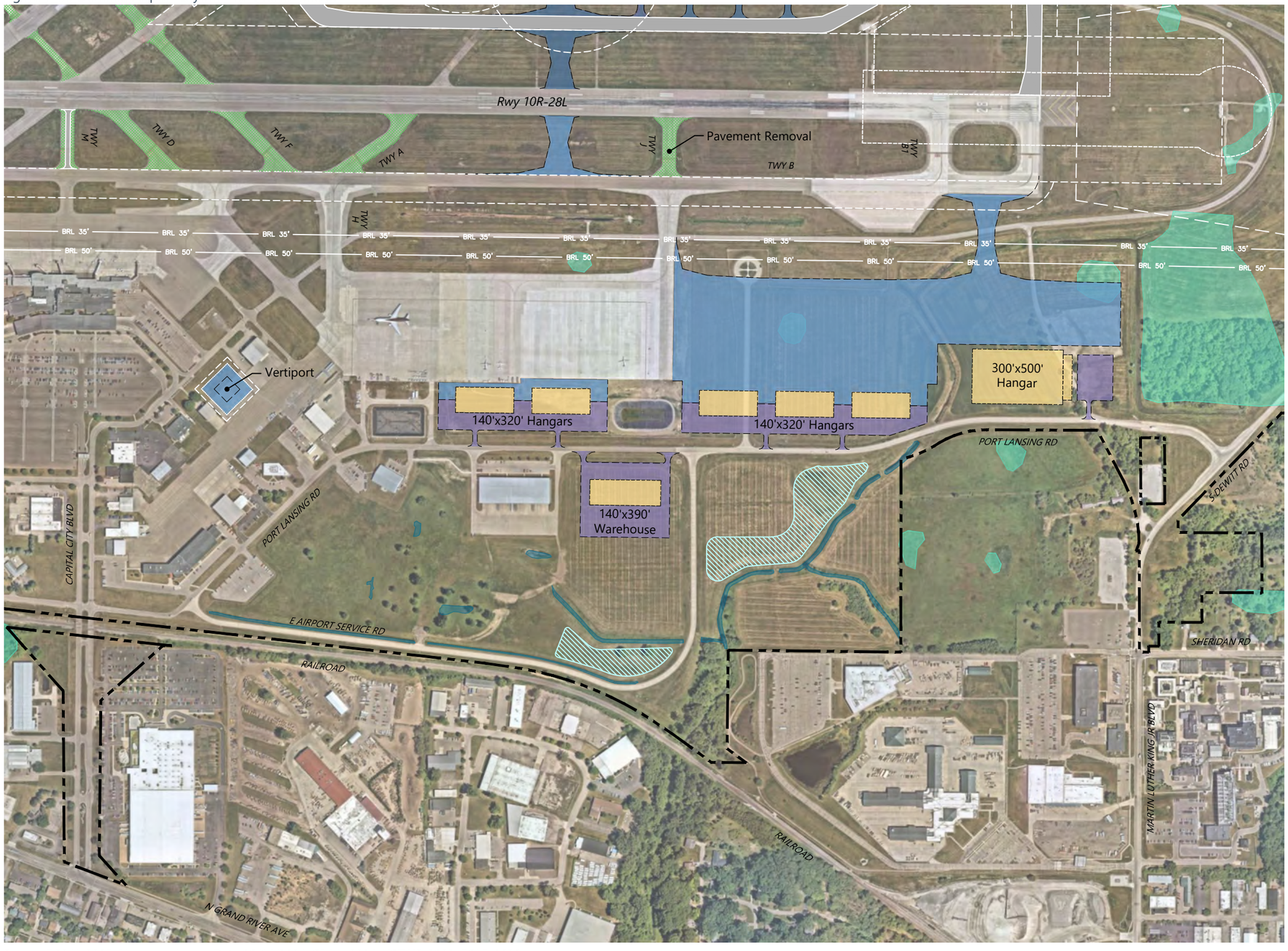
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Source: RS&H, 2025; Nearmap, Image Date 06/14/2024; CRAA, 2024; USFWS, 2023; EGLE, 2022

7.11.2 Detailed Airport Layout – Southeast Quadrant

The southeast quadrant of the airfield is programmed to support expansion of cargo apron and sorting facilities on the airfield and warehousing in the landside Port Lansing Business Park. The land immediately south of the Runway 28L threshold (shown in **Figure 7-33**) is preserved for a Maintenance, Repair, and Overhaul facility.

Figure 7-33 Detailed Airport Layout - Southeast Sector



Southeast Quadrant

- Property Boundary
- Future Airfield
- Runway Object Free Area (ROFA)/ Taxiway Object Free Area (TOFA)
- Runway Protection Zone (RPZ)
- USFWS Wetlands
- Delineated Wetlands
- Water/Drainage
- Future Detention Pond
- 35ft Building Restriction Line (BRL)
- 50ft Building Restriction Line (BRL)
- Automated Surface Observing System (ASOS)
- Airport Surveillance Radar (ASR)
- Existing Localizer / Glide Slope Critical Areas
- Pavement Removal
- Future Airfield Development
- Future Building Development
- Future Roadway / Parking Development
- Ultimate Airfield Development
- Ultimate Building Development
- Ultimate Roadway / Parking Development

N

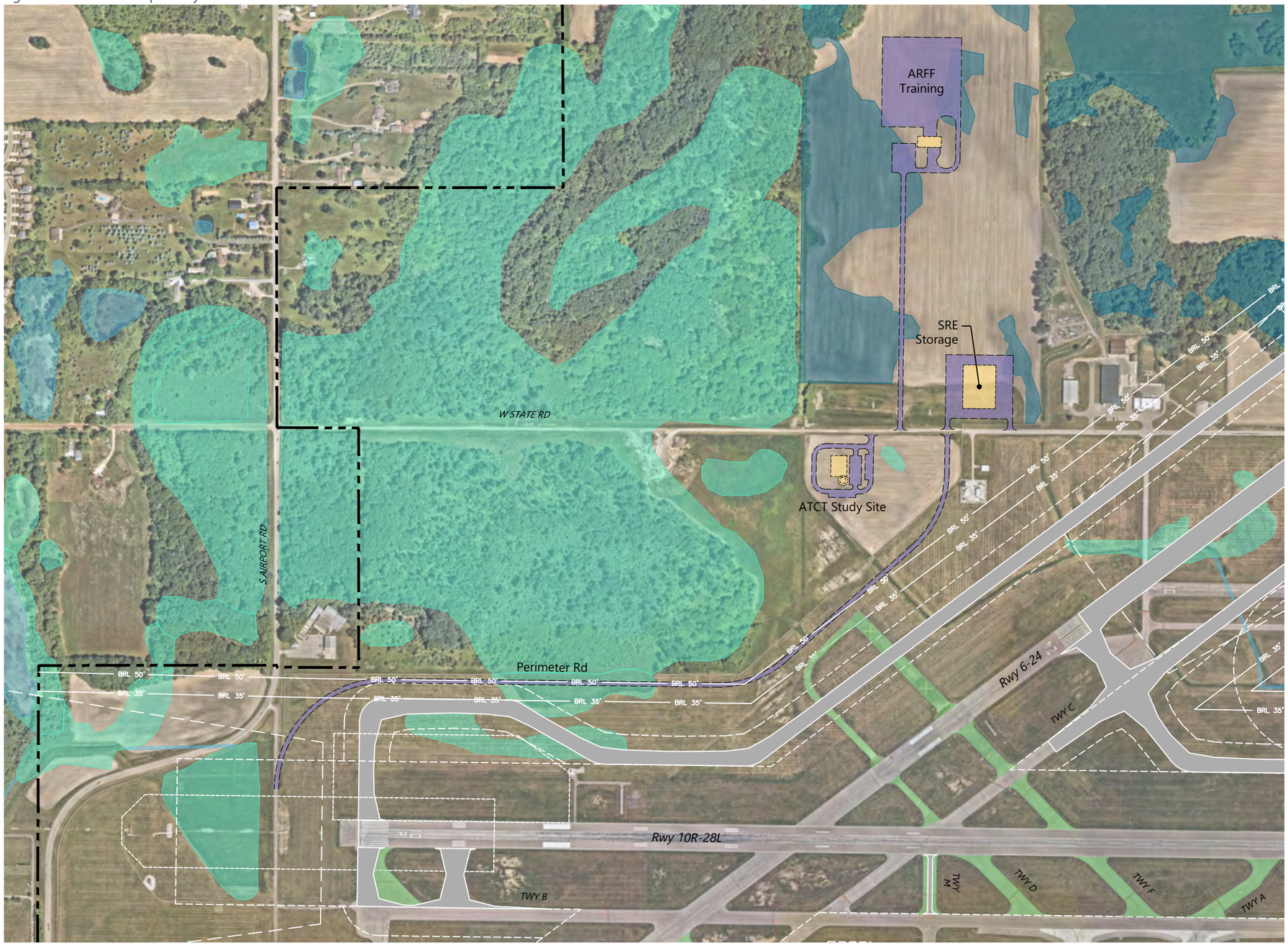
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Source: RS&H, 2025; Nearmap, Image Date 06/14/2024; CRAA, 2024; USFWS, 2023; EGLE, 2022

7.11.3 Detailed Airport Layout – Northwest Quadrant

The northwest quadrant of the airport contains a large amount of wetlands and lacks paved roadway access and utilities. Most of this area is preserved for non-aeronautical development in the airport land use vision. Three aeronautical supporting uses are programmed for this area including airport maintenance/SRE storage building expansion, an ATCT siting study (FAA Order 6280.4C) location, and an ARFF training center location.

Figure 7-34 Detailed Airport Layout - Northwest Sector



Northwest Quadrant

- Property Boundary
- Future Airfield
- Runway Object Free Area (ROFA)/ Taxiway Object Free Area (TOFA)
- Runway Protection Zone (RPZ)
- USFWS Wetlands
- Delineated Wetlands
- Water/Drainage
- Future Detention Pond
- 35ft Building Restriction Line (BRL)
- 50ft Building Restriction Line (BRL)
- Automated Surface Observing System (ASOS)
- Airport Surveillance Radar (ASR)
- Existing Localizer / Glide Slope Critical Areas
- Pavement Removal
- Future Airfield Development
- Future Building Development
- Future Roadway / Parking Development
- Ultimate Airfield Development
- Ultimate Building Development
- Ultimate Roadway / Parking Development

N

0' 300' 600'

Source: RS&H, 2025; Nearmap, Image Date 06/14/2024; CRAA, 2024; USFWS, 2023; EGLE, 2022

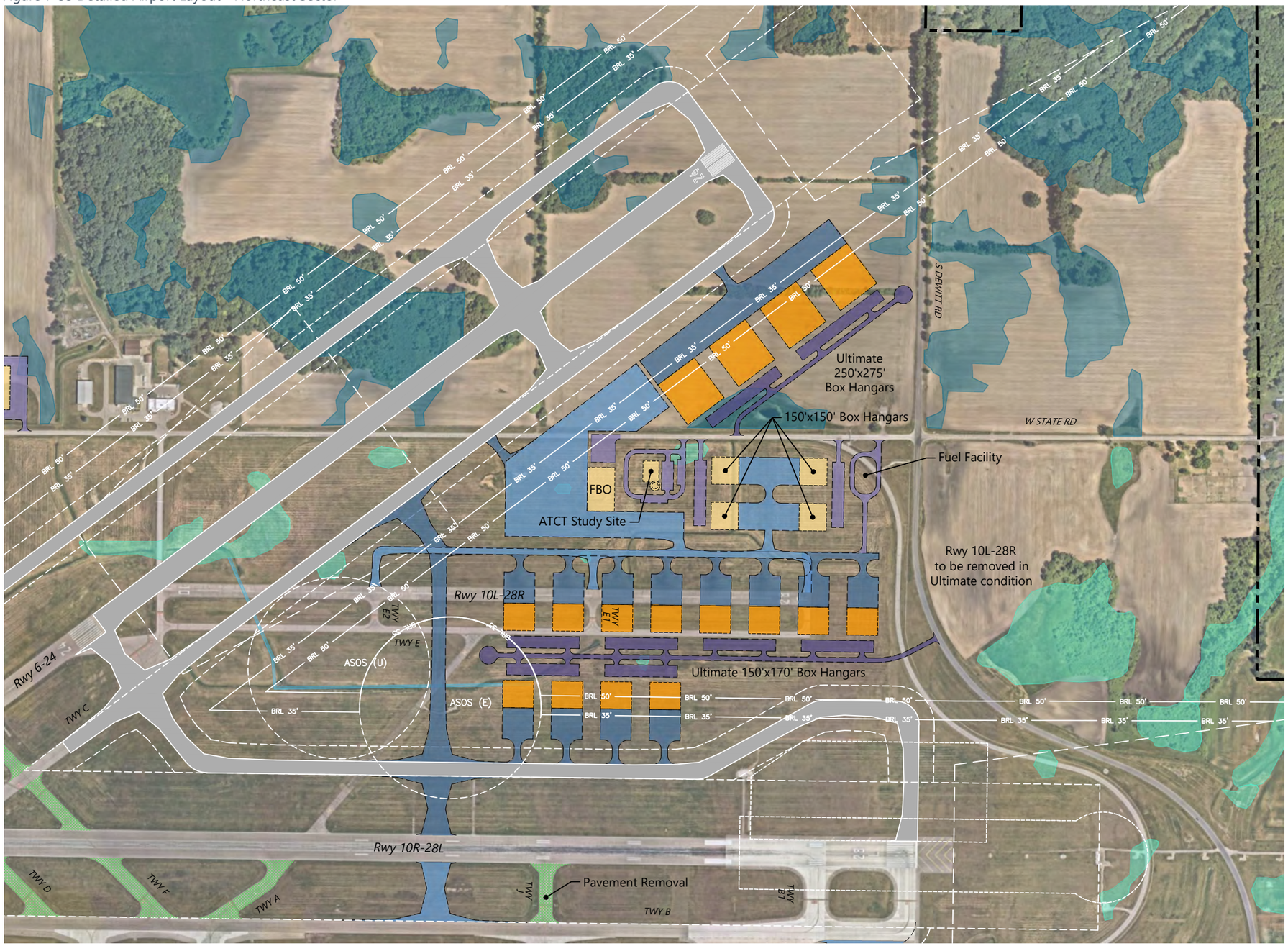
7.11.4 Detailed Airport Layout – Northeast Quadrant

Development plans for the northeast quadrant of the airport are the longest-term and therefore the least clear regarding facility locations, sizes, and layouts of all airport development areas. Much of the land is preserved for a potential future extension of the 6-24 crosswind runway and utilities do not yet exist in this area. These factors make it more expensive to develop and because undeveloped land already exists for hangars on the south side of the airport, any improvements are most likely farther out in the planning period.

This development shown in **Figure 7-35** establishes a new FBO facility, large aeronautical facilities (such as an MRO), large aircraft hangars, and fuel storage. Additionally, a second site to be studied for a potential new ATCT is integrated into the layout. A logical taxiway/taxilane system connects development to the airfield and undeveloped/buffer areas are preserved for stormwater management and meeting code requirements.

This layout can be phased to allow continued use of Runway 10L-28R until such a time that the pavement is removed or repurposed. Any development in this area needs to meet FAA design standards, retain the possibility of an extended crosswind runway, allow a new parallel taxiway north of Runway 10R-28L, and address impacts to existing navaids like the ASOS.

Figure 7-35 Detailed Airport Layout - Northeast Sector



Northeast Quadrant

- Property Boundary
- Future Airfield
- Runway Object Free Area (ROFA)/ Taxiway Object Free Area (TOFA)
- Runway Protection Zone (RPZ)
- USFWS Wetlands
- Delineated Wetlands
- Water/Drainage
- Future Detention Pond
- 35ft Building Restriction Line (BRL)
- 50ft Building Restriction Line (BRL)
- Automated Surface Observing System (ASOS)
- Airport Surveillance Radar (ASR)
- Existing Localizer / Glide Slope Critical Areas
- Pavement Removal
- Future Airfield Development
- Future Building Development
- Future Roadway / Parking Development
- Ultimate Airfield Development
- Ultimate Building Development
- Ultimate Roadway / Parking Development

N

0' 300' 600'

Source: RS&H, 2025; Nearmap, Image Date 06/14/2024; CRAA, 2024; USFWS, 2023; EGLE, 2022

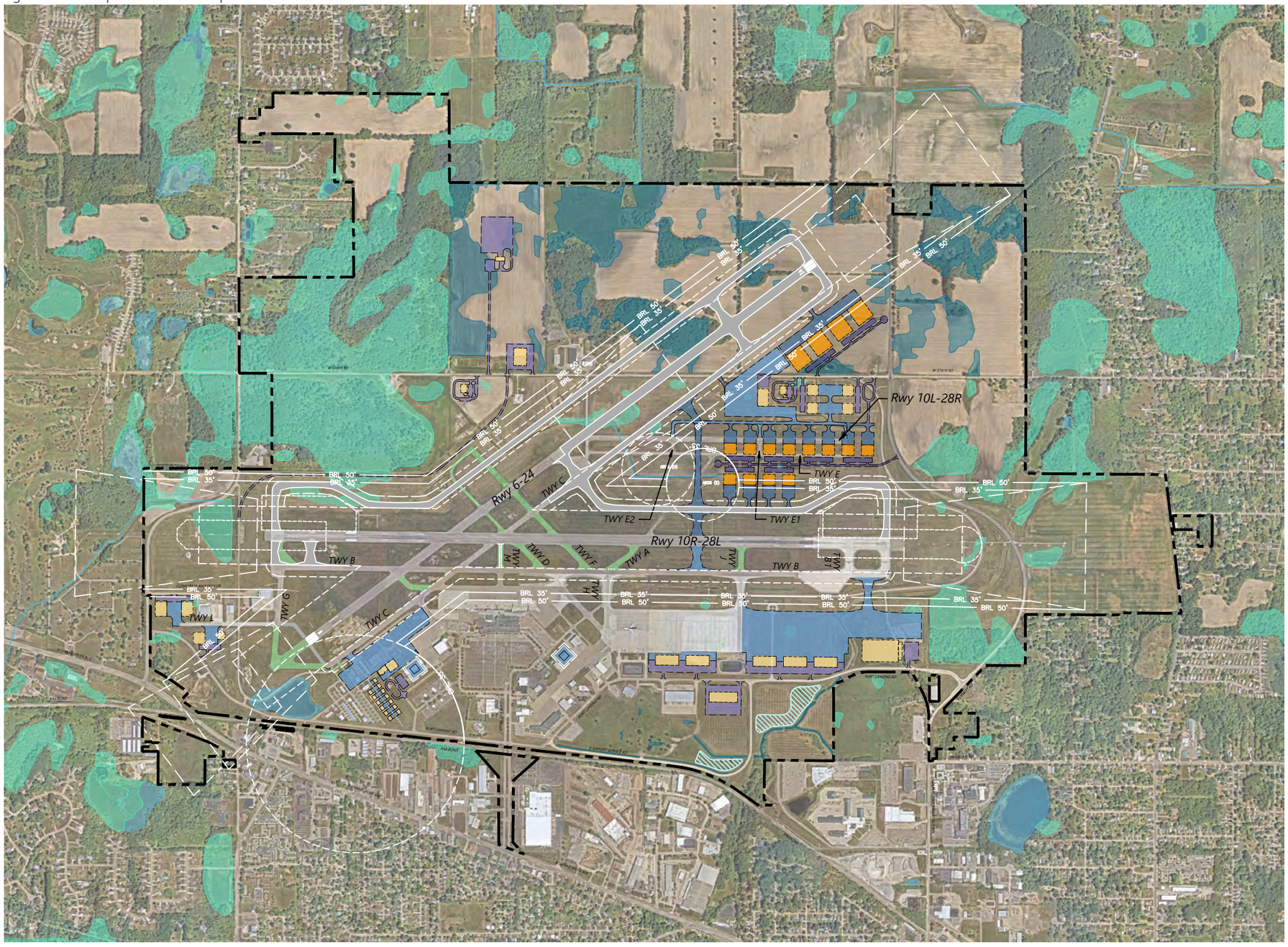
7.12 Detailed Comprehensive Preferred Development Plan

The detailed comprehensive plan (see **Figure 7-36**) illustrates facility layouts and preferred airport land uses. The preferred plan for LAN is structured to optimize airfield safety and operational efficiency while accommodating both forecast demand and longer-term flexibility, however, it does not fully align with the latest FAA design guidance provided by FAA at this time. Airfield elements are configured to provide effective aircraft circulation, mitigate conflicts, and support safe and efficient operations across the airfield environment under existing and future conditions. The plan preserves adequate capacity for projected activity levels while maintaining adaptability to respond to evolving aircraft fleets, operational requirements, and regulatory standards, ensuring that safety and efficiency remain foundational to all airfield-related development decisions.

Land use under the preferred plan is strategically organized to optimize airport property while responding to specific aviation and market-driven demands. Development areas are programmed to support clearly defined uses, with compatible and complementary supporting functions positioned to reinforce operational performance and development efficiency. This approach minimizes land-use/operational conflicts, enhances functional relationships between airside and landside facilities, and ensures that development is aligned with both operational practicality and long-term airport objectives.

The preferred plan is intentionally flexible to accommodate future needs, allowing LAN to adapt to changing aviation trends, tenant requirements, and economic conditions over the planning horizon. Aeronautical uses are prioritized in locations where direct airfield access is practical and operationally advantageous, preserving critical infrastructure for aviation-related activity. Conversely, nonaeronautical development is strategically programmed in appropriate areas to maximize revenue-generating opportunities, supporting the Airport's financial self-sufficiency while maintaining compatibility with aviation operations. This balanced approach reinforces LAN's ability to sustain long-term operational viability while remaining responsive to future development opportunities.

Figure 7-36 Comprehensive Development Plan - Detailed Facilities



Comprehensive Development

- Property Boundary
- Future Airfield
- Runway Object Free Area (ROFA)/ Taxiway Object Free Area (TOFA)
- Runway Protection Zone (RPZ)
- USFWS Wetlands
- Delineated Wetlands
- Water/Drainage
- Future Detention Pond
- 35ft Building Restriction Line (BRL)
- 50ft Building Restriction Line (BRL)
- Automated Surface Observing System (ASOS)
- Airport Surveillance Radar (ASR)
- Existing Localizer / Glide Slope Critical Areas
- Pavement Removal
- Future Airfield Development
- Future Building Development
- Future Roadway / Parking Development
- Ultimate Airfield Development
- Ultimate Building Development
- Ultimate Roadway / Parking Development

N

0' 750' 1,500'

Source: RS&H, 2025; Nearmap, Image Date 06/14/2024; CRAA, 2024; USFWS, 2023; EGLE, 2022

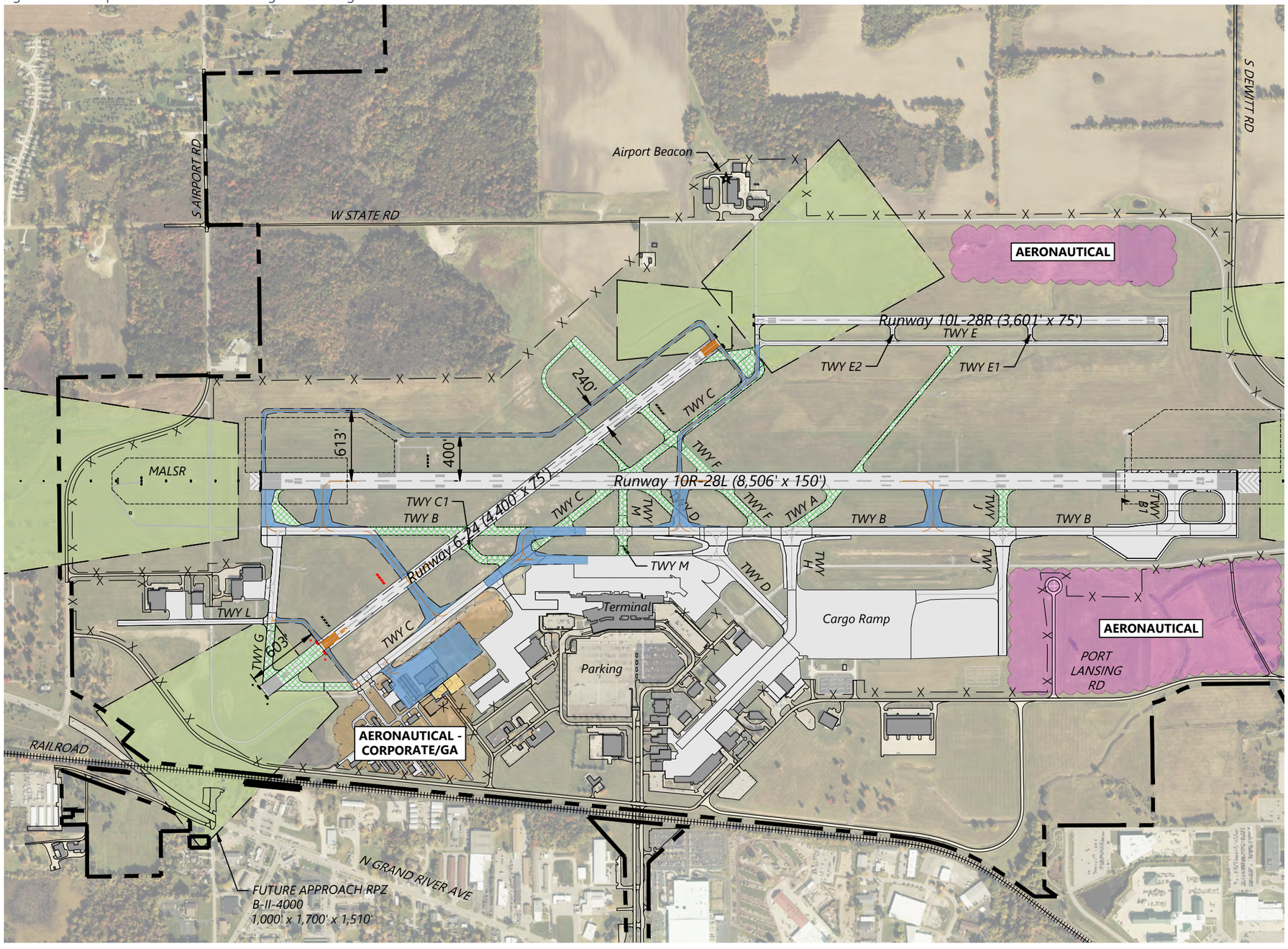
7.13 Comprehensive Development Plan Meeting Full FAA Design Standards

The planning team recognizes that LAN has a somewhat complex airfield geometry and, at the time of this analysis, several airfield pavement intersections do not comply with the most current FAA design standards guidance. The primary challenges for the LAN airfield occur at locations where parallel taxiways B and C cross runways 10R-28L and 6-24. Due to the necessary orientation of the runways, the parallel supporting taxiways cross at acute angles that do not align with FAAs interpretation of its design standards guidance. The planning team recognizes that modifying this airfield geometry would be financially challenging without full commitment of support from FAA funding resources and, in some instances, could induce other operational challenges and inefficiencies (such as dramatically longer taxi routes). Additionally, operational and procedural mitigations could also provide an equivalent level of safety to any large-scale airfield configuration changes made to meet the current FAA design standards.

With this understanding, the planning team was tasked to develop a notional concept for how the airfield geometry could potentially be modified over time to align with existing FAA design standards, should sufficient federal funding be made available to support those projects. **Figure 7-37** shows a future LAN airfield configuration that is fully compliant with FAA 90-degree intersection guidance. Conditions driving project purpose, need, and timing for all proposed projects on the LAN CIP, such as existing pavement conditions at LAN, means that many of the most impactful airfield projects (like major Taxiway B and C runway crossings) would be programmed in late stages of the 20-year CIP or beyond. Project programming and funding will be addressed within **Chapter 8, Capital Program and Financial Feasibility**.

Removing the future north parallel runway from the previous ALP was a key change made within the preferred development plan of this master plan, but equally as important was the decision to keep the crosswind runway (6-24) and plans to position for an ultimate timeframe extension to meet D-IV standards. Leveraging that critical infrastructure to accommodate current needs of the smaller aircraft fleet for crosswind landings while also ensuring redundancy and future expansion potential for operators with larger fleets, such as air carriers and cargo operators, helped drive the decision to retain Runway 6-24 on future/ultimate ALP drawings. Furthermore, during the master planning process, the crosswind runway became justified for FAA AIP support up to B-I design standards as a “legacy crosswind runway”. Both comprehensive plans for LAN ensure necessary land and airspace are preserved and protected from potential obstructions and incompatible land uses while also allowing areas of available land on north side of 6-24 and 10L-28R for airport support facility uses and nonaeronautical development.

Figure 7-37 Comprehensive Airfield Meeting FAA 90-Degree Intersection Guidance



Preferred Taxiway System Meeting FAA 90-Degree Intersection Guidance

- Existing Airfield Pavement
- Existing Buildings
- Runway Protection Zone (RPZ)
- Future Airfield Pavement
- Future Airfield Marking
- Future Pavement Demolition
- Ultimate Airfield Pavement
- Ultimate Airfield Marking
- Airport Property Line
- Perimeter Fence
- Lighted Windcone
- Existing Airfield Light
- Future Airfield Light
- Existing PAPI
- Future PAPI
- Existing Localizer / Glide Slope Critical Areas

N

0' 475' 950'

Source: RS&H, 2025; Nearmap, Image Date 06/14/2024; CRAA, 2024; USFWS, 2023; EGLE, 2022