

# Chapter 6

## Alternatives

The Alternatives chapter proposes a variety of development scenarios to accomplish the recommended facility improvements identified in Chapter 5, *Facility Requirements*. It evaluates the scenarios against a number of evaluation factors to determine if the recommended improvements enhance the efficiency of an airport, and meet future demand while minimizing environmental and community impacts. The evaluation factors used to compare development options were selected based on specific considerations associated with Niagara Falls International Airport (NFIA, Airport).

Airside alternatives will be considered first, followed by an evaluation of other components including air cargo facilities, the general aviation (GA) area, the terminal, and terminal area facilities. The preferred alternatives are selected based on assessed criteria, as well as their compatibility with one another and the overall airport environment. These individual alternatives combine to create an overall Preferred Airport Development alternative.

The identification and evaluation of the Airport development alternatives are outlined as follows:

- Evaluation Criteria
- Development Constraints
- Airside Alternatives
- Air Cargo Alternatives
- General Aviation Alternatives
- Terminal Alternatives
- Terminal Area Alternatives
- Support Facilities
- Preferred Airport Development Alternative

### 6.1 EVALUATION CRITERIA

A set of evaluation criteria was developed to provide an equal and consistent assessment of each alternative. These criteria pose questions regarding how each alternative addresses issues such as: user needs, the environment, long-term flexibility/expansion, Federal Aviation Administration (FAA) standards, improvements to operational efficiency, and revenue generation. Several criteria are added for landside alternatives and are not utilized for airside alternatives, where noted. The evaluation criteria are as follows:

- **Facility Requirements:** Does the alternative meet the existing and future needs of NFIA?
- **Environmental Impact:** What are the potential environmental impacts associated with implementation of the alternative?

With the goal of streamlining the planning and NEPA process, alternatives will identify the appropriate NEPA categories and applicable key issues with the project. The impacts and consequences of the proposed projects on the Airport will be evaluated. Favorable consideration will be given to projects that avoid or minimize the effect of the Airport on the surrounding environment.

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- **Sustainability:** One of the key goals in completing a Sustainable Airport Master Plan is to review and identify opportunities to implement a sustainable practice or introduce a sustainable design into a project. **Appendix H** in this report identifies sustainable opportunities achievable within the preferred alternative conducted in this analysis. The sustainable review of alternatives will identify opportunities to incorporate sustainable ideas. The following sustainability elements and questions are included:
  - **Natural Resources:** Does the alternative protect and/or conserve natural resources? Does the alternative reduce overall air pollutant and greenhouse gas emissions associated with the Airport?
  - **Waste:** Does the alternative allocate adequate space and facilities to support recycling? If there is construction, does the alternative incorporate waste minimization practices?
  - **Energy and Infrastructure:** Does the alternative reduce overall airport energy use? Does the alternative incorporate energy-saving measures and/or equipment?
  - **Economic Vitality:** Does the alternative maximize aeronautical and/or non-aeronautical revenue generating opportunities? Does the alternative enhance air service?
- **FAA Standards:** Does the alternative meet the design standards of FAA Advisory Circular (AC) 150/5300-13A, *Airport Design*; 14 Code of Federal Regulations (CFR) Part 77, *Objects Affecting Navigable Airspace*; and other applicable FAA planning and design guidance, to the maximum extent feasible? This criterion is utilized in the evaluation of airside alternatives only.
- **Development Flexibility:** To what extent does this alternative leave flexibility for change and future surrounding development? Does this alternative allow flexibility from an operational standpoint?
- **Land Use Compatibility:** Is the alternative compatible with on-airport and off-airport patterns of land use? This criterion will evaluate such things as access to the airside movement areas and the local road network, as well as the degree to which the alternative is compatible with activities occurring in surrounding on and off-airport lands. This criterion is added to the evaluation of air cargo, general aviation, terminal, terminal area, and support facility alternatives.
- **Potential for Expansion:** Does this alternative have the ability to accommodate future unanticipated expansion? This criterion recognizes the fact that site decisions made today will influence future airport development for many years to come. Planning shall consider future development needs beyond the facility requirements of the current planning period. This criterion is added to the evaluation of air cargo, general aviation, terminal, terminal area, and support facility alternatives.
- **Operational Efficiency:** Does this alternative contribute to the development of a smoothly functioning airport with efficient movement of aircraft? This criterion will consider whether the alternative makes the best and most efficient use of airport facilities. This criterion is added to the evaluation of air cargo, general aviation, terminal, terminal area, and support facility alternatives.

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- **Revenue Generation Capability:** Does the alternative afford opportunities for airport management to increase revenue generation thereby improving the financial sustainability and cost effectiveness of NFIA? This criterion is added to the evaluation of air cargo, general aviation, terminal, terminal area, and support facility alternatives.

These evaluation factors have been given a scoring value, as follows:

<b>Facility Requirements:</b>	No	(0)	Some	(1)	Most	(2)	All	(3)
<b>Environmental Impact:</b>	Significant	(0)	Moderate	(1)	Minor	(2)	None	(3)
<b>Sustainability:</b>	Poor	(0)	Fair	(1)	Good	(2)	Excellent	(3)
<b>FAA Standards:</b>	No	(0)	Some	(1)	Most	(2)	All	(3)
<b>Development Flexibility:</b>	Poor	(0)	Fair	(1)	Good	(2)	Excellent	(3)
<b>Land Use Compatibility:</b>	Poor	(0)	Fair	(1)	Good	(2)	Excellent	(3)
<b>Potential for Expansion:</b>	Poor	(0)	Fair	(1)	Good	(2)	Excellent	(3)
<b>Operational Efficiency:</b>	Poor	(0)	Fair	(1)	Good	(2)	Excellent	(3)
<b>Revenue Generation:</b>	Poor	(0)	Fair	(1)	Good	(2)	Excellent	(3)

Alternatives were compared using both a qualitative and quantitative approach and given a value based on the alternative's ability to meet the requirements of the evaluation factor. Selection of a recommended alternative is based on the alternative meeting demand needs, enhancing operations and safety, minimizing environmental and community effects, and providing future flexibility.

## 6.2 DEVELOPMENT CONSTRAINTS

There are several constraints associated with the potential development at NFIA. The constraints considered during the formulation of the development alternatives are described below:

- **Wetlands:** A wetlands and waterways delineation of property owned by the Niagara Frontier Transportation Authority (NFTA) at NFIA was performed by McFarland Johnson in October 2012. The delineation identified 18 wetlands within the NFTA property. Of the wetlands delineated, 11 of the 18 are regulated by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act, while none of the wetlands are regulated by the New York State Department of Environmental Conservation under Article 24 of the Environmental Conservation Law. The U.S. Army Corps of Engineers has also completed delineations on several portions of the Niagara Falls Air Reserve Station. All future projects will be required to take measures in design and construction to avoid, minimize, or mitigate any adverse impacts to wetlands to the degree possible.
- **Endangered Species Habitat:** As described in the environmental overview, the Airport has two endangered species. The presence of Northern harriers at NFIA should be discouraged using non-lethal measures in accordance with existing state and federal depredation permits. NFTA was required to relocate and monitor Devil Crawfish as a result of impacts to Cayuga Creek as part of the Runway 6-24 safety area improvements. In addition, the Northern Long-eared Bat is known to occur within Niagara County, and is currently listed as threatened by the U.S. Fish & Wildlife Service.

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- **Floodplains:** A designated floodway has been determined for Cayuga Creek, which flows parallel to Runway 10L-28R before traversing below the runway near Taxiway A2 and flowing south off Airport property. Cayuga Creek was recently relocated as part of the Runway 24 extension. A floodway has also been identified for the Cayuga Creek West Tributary along the western property boundary of NFIA before flowing into Cayuga Creek near the Runway 10R end, near the southwestern boundary of NFIA property.
- **Farmlands:** According to the 2010 Census, all areas directly to the north, south, and west of NFIA, including all of the Airport property, are within a designated urbanized area. Land east of the railroad tracks near the eastern property boundary is not considered urbanized and is subject to the requirements of Farmland Protection Policy Act should future airport development occur within that area.
- **Public Roads:** Three of the Airport's four runway ends (Runway 10R-28L is recommended for ultimate closure) are constrained by public roads. Porter Road is located approximately 1,000 feet from the approach end of Runway 6 and Walmore Road is located approximately the same distance from the approach ends of Runways 24 and 28R. Additionally, access to the Airport's terminal, general aviation, and potential air cargo areas is from Niagara Falls Boulevard (U.S. 62) and Porter Road (State Route 182). Increased aviation activity has the potential to affect traffic volumes and level of service on these roads, particularly at the intersection of these roads. Coordination with the New York State Department of Transportation (NYSDOT), owner of Niagara Falls Boulevard (U.S. 62) and Porter Road (State Route 182), as well as Niagara County, owner of Walmore Road (County Route 129), will be required when actions resulting in potential impacts to any of these roads are required.
- **Surrounding Land Uses:** The land uses and parcels in the vicinity of NFIA are primarily industrial and office/commercial. Residential uses are also present, primarily in the approach area to Runway 6. A small trailer park and an apartment complex are located across Porter Road from the Runway 6 approach end. In addition, the State Historic Preservation Office (SHPO) determined in 2007 that a former Bell Aircraft manufacturing facility, just east of the Airport, is eligible for listing on the National Register of Historic Places. The facility was further identified by the American Institute of Aeronautics and Astronautics (AIAA) as a historic aerospace site in October 2012. In addition to the former Bell Aircraft facility, the Carborundum building located just north of the former Bell Aircraft facility has been identified as potentially eligible for listing on the National Register of Historic Places by SHPO and would require further review and study prior to any actions that would affect it.

### 6.3 AIRSIDE ALTERNATIVES

Four airside alternatives have been developed, including the no-build alternative. The development alternatives are complete alternatives that include taxiway, runway, and navigational aid (NAVAID) improvements. As the elements of the alternatives are so closely related, separate runway, taxiway, and NAVAID alternatives have not been developed. Each development alternative is intended to meet all the airside facility requirements.

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### 6.3.1 Summary of Airside Facility Requirements

The previous chapters identified and quantified the necessary improvements that should be addressed at NFIA over the 20-year planning period. The airside requirements are primarily concerned with improving access to the runways from the airline terminal, general aviation areas, and the future air cargo area. As the airfield transitions from primarily a United States Air Force (USAF) airfield to one with increased civil and commercial uses, the patterns of runway use and taxi routes have changed and will continue to change in the future. Specific requirements are as follows:

- Extend Runway 6-24 to 7,000 feet, or to the maximum feasible length using existing pavement and declared distances.
- Acquire land or avigation easements within Runway 6, 24, 10L, and 28R runway protection zones.
- Maintain standard markings.
- Widen Taxiway A2 to 75 feet and Taxiway J to 50 feet.
- Construct 20-foot shoulders for all taxiways serving Runway 6-24 and 30-foot shoulders for all taxiways serving Runway 10L-28R.
- Provide improved, safe and efficient taxiway access to both ends of Runway 10L-28R from terminal apron/west ramp areas.
- Extend Taxiway A to provide access to the Runway 24 end.
- Remove closed taxiway pavements to reduce the risk of a runway incursion/aircraft deviation.
- Reclaim excess pavement beyond the Runway 6 end for operational use.
- Reconfigure confusing pavement geometry near Taxiways C and D and Runway 6 threshold.
- Install Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) to improve approach minimums for Runway 24
- Replace Visual Approach Slope Indicator (VASI) on Runway 10L with a Precision Approach Path Indicator (PAPI).

A variety of scenarios at NFIA consider the maximum potential impact. In many cases, airside infrastructure may identify wider taxiways than demand may warrant when it comes time for construction. To preserve long-term flexibility and to avoid any costly reconstruction, this plan identifies the maximum potential outcome. If demand is not justified at the time of construction, this plan recommends incorporating future expansion into the design and construction (i.e. electrical lines for an ultimately wider taxiway) which should be discussed with the NFTA and Federal Aviation Administration (FAA) Airport District Office.

The alternatives identified and evaluated in the following subsections have been created to provide for these requirements, except that each alternative is also measured against a no-build alternative scenario. Airside Alternatives 2, 3, and 4 include the closure of Runway 10R-28L.

### 6.3.2 Airside Alternative Identification

- **Airside Alternative 1: No-Build**
  - The existing airport layout remains the same. There would be no changes to the runways, taxiways, instrumentation, or approach lighting.

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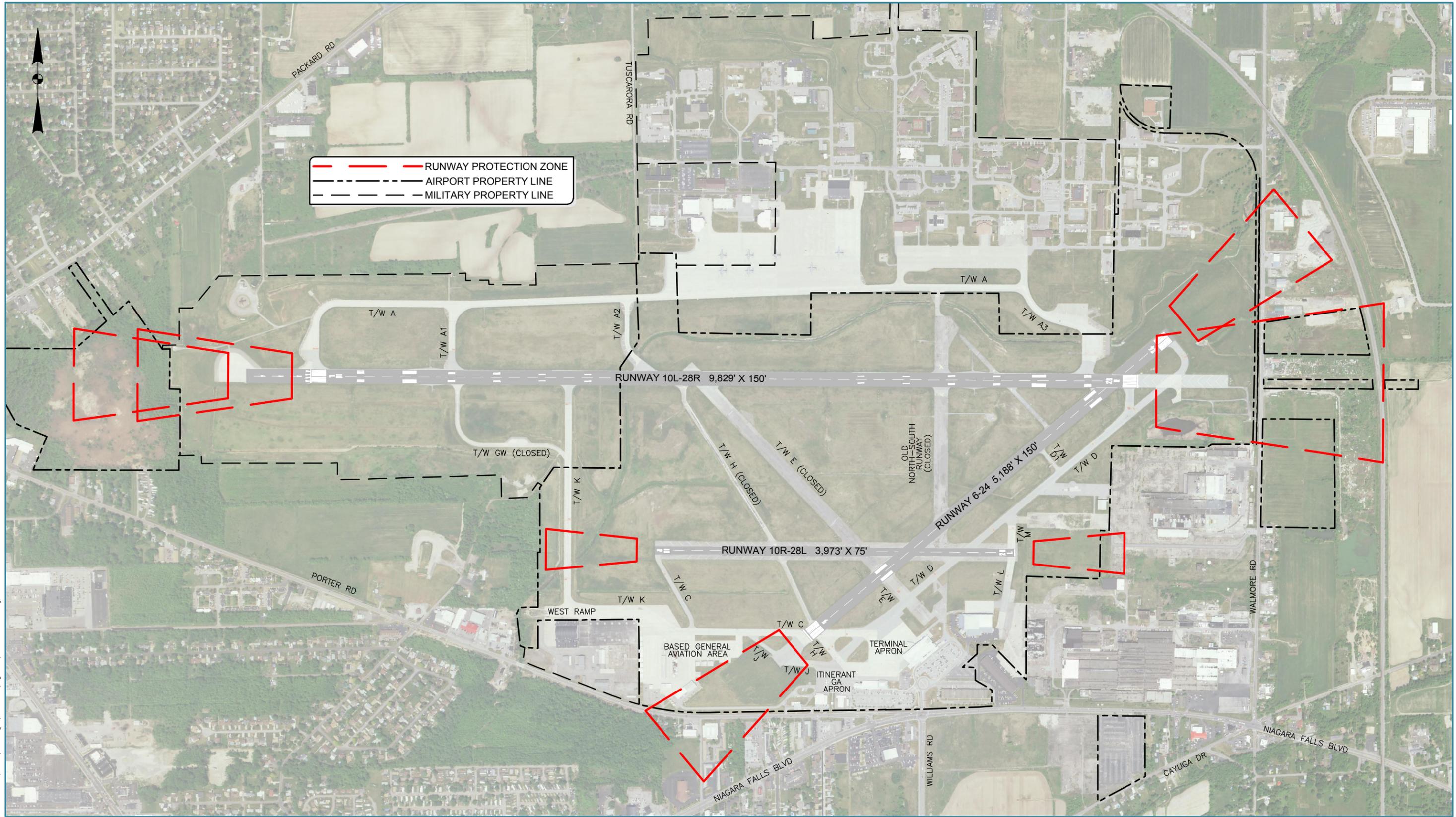
- **Airside Alternative 2: Former Runways**
  - This alternative includes extensions to three runway ends and utilizes several currently abandoned pavements at NFIA to improve taxi routes.
- **Airside Alternative 3: Convert Runway 10R-28L to Taxiway**
  - Airside Alternative 3 includes extensions to Runways 6 and 24, considers conversion of Runway 10R-28L to a taxiway, and provides partial parallel taxiways to Runways 10L-28R and 6-24.
- **Airside Alternative 4: Standard Taxiway Design**
  - Airside Alternative 4 proposes full parallel taxiways for both runways without regard for re-use of existing abandoned pavements. The full parallel taxiways meet standards as defined in AC 150/5300-13A.

### 6.3.3 Airside Alternative 1: No-Build

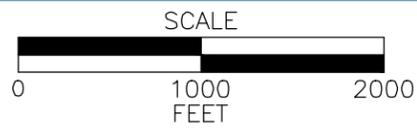
The No-Build Alternative offers no changes to the existing layout at NFIA. The existing airport layout can be seen in **Figure 6-1**.

Airside Alternative 1 was assessed against the six evaluation factors; the results are below:

- **Facility Requirements:** The No-Build Alternative would not meet NFIA's current or future facility requirements related to runways, taxiways, instrumentation, or approach lighting. Over time, this will lead to greater inefficiencies at the Airport as well as reduced capacities. This evaluation factor was given a value of **No (0)** as it does not meet the recommended facility requirements.
- **Environmental Impact:** This alternative would not require any additional construction, thus negating any potential environmental impacts. This evaluation factor was given a value of **None (3)** since the alternative has no environmental, natural resource, and/or air pollutant and greenhouse gas emissions impacts. There are no National Environmental Policy Act (NEPA) processing requirements associated with maintaining the existing airport layout.
- **Sustainability:** The No-Build Alternative proposes no changes to the existing airport layout; therefore, it is assumed that no sustainability practices are initiated at the Airport under this alternative. For instance, no changes would be made that can reduce aircraft taxi times. While some opportunities for implementing sustainable practices are available to the Airport under the No-Build Alternative, these are the same opportunities that are available to the Airport under any alternative (i.e., a recycling program, or replacement of lighting and other mechanical or electrical equipment with high efficiency models). Therefore, because no additional sustainability practices are available under this alternative, this evaluation factor was given a value of **Poor (0)**.
- **FAA Standards:** The No-Build Alternative would not address any of the FAA standards related to current and future facilities requirements as identified in AC 150/5300-13A. These requirements identified include an extension to Runway 6-24, land use control within all runway protection zones (RPZs), the widening of several taxiways, the reconfiguration of several taxiway intersections, and the removal of former airfield



--- RUNWAY PROTECTION ZONE  
--- AIRPORT PROPERTY LINE  
--- MILITARY PROPERTY LINE



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pavements to prevent pilot confusion. The evaluation factor was assigned a value of **No (0)** as it does not meet, or attempt to meet, FAA standards.

- **Development Flexibility:** While this selection would enable some flexibility for surrounding development in the long-term, the choice would limit the operational flexibility of the Airport in the future. One key constraint would be the limited access to development parcels that would result in additional activity at the Airport. This evaluation component was awarded a value of **Fair (1)**.
- **Operational Efficiency:** This alternative would have no impact on the efficient movement of aircraft, and therefore is given a value of **Poor (0)**.

### 6.3.4 Airside Alternative 2: Former Runways

Airside Alternative 2, as illustrated in **Figure 6-2**, incorporates several modifications to the taxiway layout at NFIA. These changes include the reuse of two former runways as taxiways to provide improved access to the Runway 10L and to the existing military facilities. Other significant changes, which will be discussed in detail below, include an extension to Runway 6-24, extension to Runway 10L-28R to alleviate airfield geometry concerns, the installation of a “near-precision” GPS/LPV (not lower than ¾ mile visibility minimums), approach lighting to Runway 24, and the acquisition of aviation easements within the RPZs off four of the runway ends.

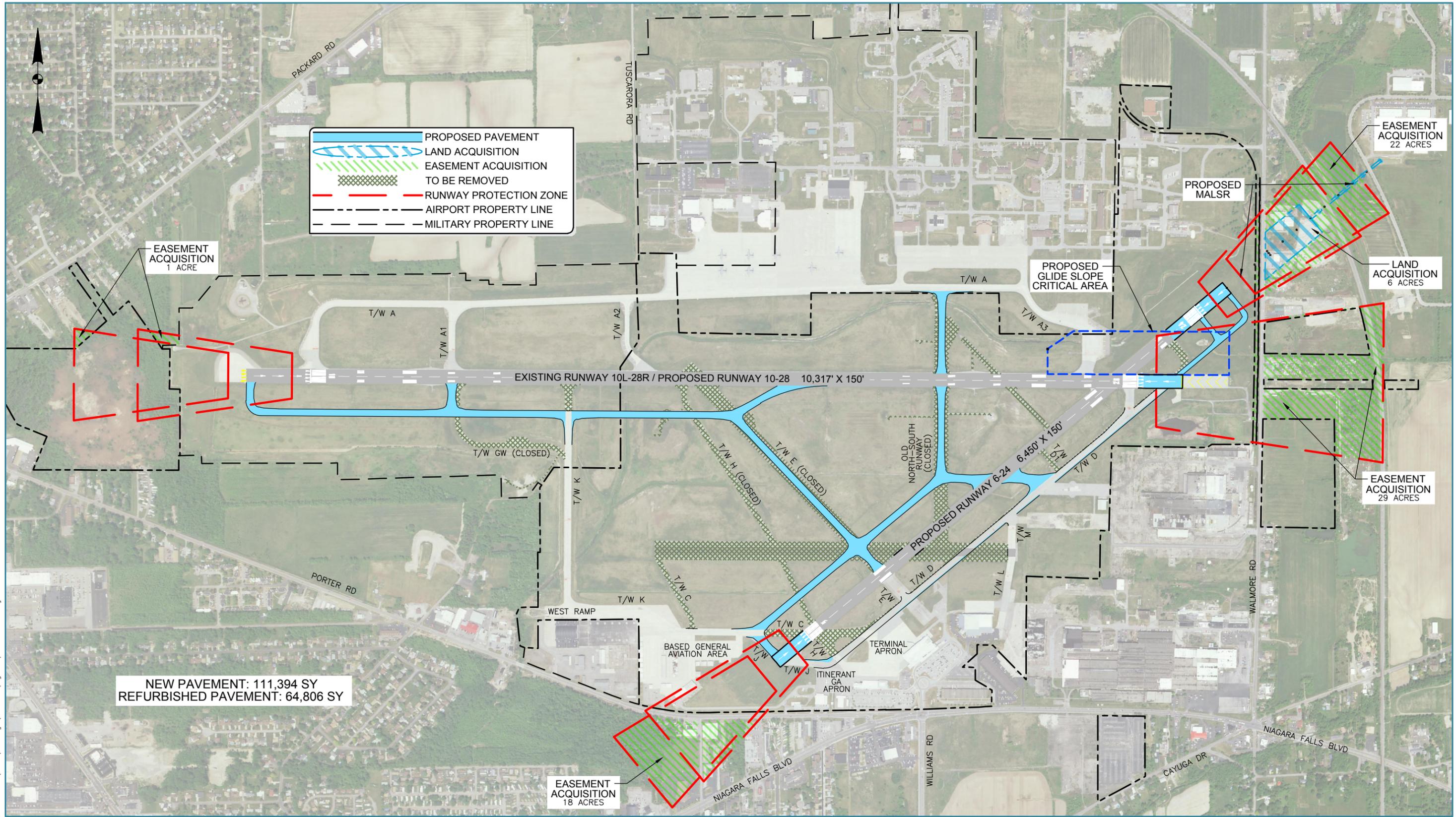
The first elements of this alternative to be discussed are the proposed runway improvements:

- **Extend Runway 6-24 and Taxiway D:** Airside Alternative 2 includes the conversion of the 450-foot inline taxiway to a displaced threshold for Runway 6, and an 812-foot extension to the approach end of Runway 24 to achieve a runway extension of 1,262 feet. Parallel Taxiway D would be extended to the new Runway 24 end, and Taxiway D will be shifted 5 feet to the east to provide a 400’ runway/taxiway centerline separation. The proposed extension will provide an ultimate runway length of 6,450 feet.

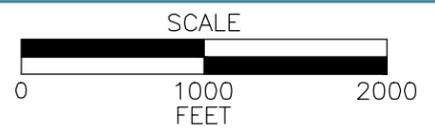
Declared distances would be used to provide the required safety areas for use by C-III aircraft. The Runway 6 threshold would remain in its current location, but the new pavement would increase the takeoff distance available from Runway 6. At the approach end of Runway 24, the landing threshold would be displaced by 412 feet from the new end, but the full 812 feet of new pavement would be available for takeoffs from that runway end. The recommended declared distances are shown below in **Table 6-1**.

**Table 6-1: Runway 6-24 Declared Distances**

Runway	Take-Off Run Available (TORA)	Take-Off Distance Available (TODA)	Accelerate-Stop Distance Available (ASDA)	Landing Distance Available (LDA)
<b>Existing Configuration</b>				
Runway 6	5,188	5,188	5,188	5,188
Runway 24	5,188	5,188	5,108	5,108
<b>Proposed Configuration</b>				
Runway 6	6,450	6,450	5,638	5,188
Runway 24	6,450	6,450	5,920	5,508



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Chapter 5 identifies the need for a crosswind runway capable of supporting aircraft with a RDC of A-II and B-II, where wind coverage under the allowable crosswind component of 13 knots is not available 95% of the time on Runway 10L-28R. The opportunities with the crosswind runway are limited due to the presence of Niagara Falls Boulevard (U.S. 62) and Walmore Road (County Route 129), as well as the railroad tracks located west of Walmore Road. The proposed alternative would maximize the length of runway available within the confines noted above. While the proposed length would not meet the facility requirement of 7,000 feet, it would meet the needs of many users of the Airport and provide opportunities for most existing operations to utilize the runway when weather conditions require.

- Extend Runway 10L-28R:** The proposed extension to Runway 10L-28R would not require the construction of additional pavement but would include the relocation of the Runway 28R end by 489 feet along the existing paved RSA and clearway. The landing threshold for Runway 28R would remain in its current location, resulting in a displacement from the new runway end of 489 feet. The additional pavement would be available for aircraft taking off from Runway 28R. In addition to providing additional runway length, the proposed extension will also provide for the improved conditions for aircraft awaiting takeoff on Runway 28R, while operations may be occurring on Runway 6-24. As noted in Chapter 5, the existing Runway 28R end is located at the Runway 6-24 and 10L-28R intersection. The relocation of the threshold for Runway 28R will enable aircraft departing on Runway 28R to taxi on Taxiway D to the displaced threshold, located 489 feet from the existing threshold and the intersection with Runway 6-24, while removing the aircraft from the pavement of Runway 6-24 and the associated safety area. As noted in **Table 6-2**, declared distances will be utilized for operations occurring on Runway 10L-28R.

**Table 6-2: Runway 10L-28R Declared Distances**

Runway	Take-Off Run Available (TORA)	Take-Off Distance Available (TODA)	Accelerate-Stop Distance Available (ASDA)	Landing Distance Available (LDA)
<b>Existing Configuration</b>				
Runway 10L	9,829	10,829	9,829	9,126
Runway 28R	9,829	10,529	9,129	9,129
<b>Proposed Configuration</b>				
Runway 10L	10,318	10,829	10,099	9,396
Runway 28R	10,318	11,018	9,618	9,129

- Install a “Near-Precision” Approach Procedure to Runway 24:** As discussed in Chapter 5, the installation of approach lighting should be considered for operations to Runway 24, based on favorable wind conditions. As proposed, a MALSR would be installed for operations to Runway 24. The best currently approved approach procedure to Runway 24 includes a RNAV (GPS) approach with a minimum visibility of 1 mile and a decision altitude 408 feet above the elevation of the Runway 24 end. The installation of a MALSR could reduce the minimums to a minimum visibility of  $\frac{3}{4}$  mile and a decision altitude of 200 feet above the elevation of the runway end, as well as to supplement the future publication of a near-precision LPV approach. To accommodate the installation of the MALSR system, approximately seven acres of land acquisition, in fee simple, will be required as the entire system cannot be installed on existing airport property.

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- **Close Runway 10R-28L:** The potential closure of Runway 10R-28L, the shortest and narrowest runway at NFIA with no instrument approaches, was discussed within Chapter 5. Interviews with airport management and airport users all noted a low number of operations on the runway. A parallel runway is not needed based on the forecast airport capacity. The forecast of 60 daily operations in 2040 can easily be accommodated by Runways 10L-28R and 6-24. Additional taxiways to Runway 10L-28R and additional landside development should be prioritized over the cost of maintaining Runway 10R-28L. As a result, closure of Runway 10R-28L and removal of its pavement, as well as the pavement associated with Taxiway C providing access to Runway 10R, is recommended.
- **Acquire Land within Runway Protection Zones (RPZs):** FAA regulations require that airport sponsors maintain sufficient control of land within RPZs to protect against the development of property that is not compatible with an RPZ. These land uses generally include places of public assembly such as homes, apartment complexes, transient lodging, churches, schools, hospitals, and office complexes. Recently, the presence of public roads has also been discouraged within RPZs. While FAA guidance indicates a preference towards the fee-simple ownership of land within RPZs, the acquisition of aviation easements is also acceptable. Presently, there is land within the existing RPZs of Runways 10L-28R and 6-24 that are not under airport control.

On Runway 10L-28R, approximately 1 acre of RPZ off the Runway 10L approach end are not on property owned by either the sponsor or the U.S. Air Force (USAF) and are recommended to be acquired. Off the Runway 28R approach end, a portion of the RPZ is on land owned by the sponsor. The remaining land is privately owned and utilized for industrial or agricultural purposes. This area measures approximately 29 acres and the acquisition of aviation easements is recommended.

The extension to Runway 6-24 will reconfigure the RPZs for both ends of the runway. Off the proposed Runway 24 approach end, approximately seven acres of land will be acquired within the RPZ for the installation of the proposed MALSR. In addition, aviation easements over the remaining approximately 22 acres of the RPZ are recommended for acquisition. Finally, off the proposed Runway 6 end, approximately 18 acres of the RPZ are not under airport control. Land uses within the RPZ vary but include a place of worship, an apartment complex, and a motel. These land uses are not compatible with an RPZ. Land within the RPZ should be acquired and the incompatible uses removed.

In addition to runway improvements, Airside Alternative 2 proposes major changes to the taxiway system.

- **Construct Partial Parallel Taxiway to Runway 10L-28R:** Runway 10L-28R currently does not have a parallel taxiway on the civil side of the Airport. Aircraft taking off from Runway 10L have to back taxi approximately 700 feet to take advantage of the full takeoff length of the runway. As part of Airside Alternative 2, a 5,500-foot long partial parallel taxiway is constructed from the Runway 10L threshold to the former Northwest-Southeast runway. An angled taxiway is also constructed at that location for aircraft arriving on Runway 28R. The exit taxiway is approximately 3,800 feet from the Runway 28R landing threshold and is located to accommodate general aviation aircraft. To connect aircraft to the new parallel taxiway, a portion of former Taxiway E, measuring approximately 2,400 feet in length, will be reconstructed and will again be utilized as an

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active taxiway. It will connect directly with the existing segment of Taxiway E near the terminal area. The new parallel taxiway, as well as all portions of Taxiway E, will have a width of 75 feet and will include 30-foot-wide paved shoulders.

- **Construct Partial Parallel Taxiway to Runway 6-24:** An additional partial parallel taxiway on the west side of Runway 6-24 is also included as part of this alternative. The partial parallel will avoid impacts to the creek located west of the Runway 24 threshold. In addition to supporting GA aircraft landing on Runway 24, this parallel taxiway will reduce the number of Runway 6-24 crossings from the existing GA facilities on the west side. The proposed parallel taxiway will originate at the relocated Runway 6 threshold and will be approximately 4,000 feet long. The parallel taxiway will then cross Runway 6-24 and will connect with Taxiway D. The parallel taxiway would have a width of 75 feet, as segments of the taxiway will be utilized by aircraft in TDG 5 and TDG 6 that are taxiing to and from Runway 10L-28R.
- **Rehabilitate Abandoned Airfield Pavements for Use as Taxiways:** The former Northwest-Southeast Runway would be rehabilitated as a taxiway to provide improved access between the existing military facilities north of Runway 10L-28R and the approach end of Runway 6, as well as provide improved accessibility to the Runway 28R end without requiring back-taxiing. The proposed taxiway will be approximately 3,000 feet long and intersect with the proposed parallel taxiway on the west side of Runway 6-24. It will be 75 feet in width with 30-foot wide paved shoulders. The construction, or reconstruction, of all taxiways will also include the installation of medium intensity taxiway lights (MITLs).
- **Remove Airfield Pavements No Longer in Use:** The presence of pavement on the airfield accessible by aircraft but not suitable for aircraft use can create pilot confusion. To remedy this condition, Airside Alternative 2 recommends removal of the pavement associated with former Taxiways GW, C, H, portions of E, and portions of the former North-South runway not proposed for re-use as a taxiway. In addition, the designations of multiple short taxiways in the terminal area is also a potential source of pilot confusion. The elimination of these pavements will remove impervious surface from the airfield, greatly improving the Airport's stormwater management ability.

Airside Alternative 2 was assessed against the seven evaluation factors; the results are below:

- **Facility Requirements:** Airside Alternative 2 would correct, or improve upon, many of the facility deficiencies previously identified. Further, the proposed alternative is feasible for implementation. This evaluation factor was given a value of **All (3)** as this alternative meets the facility requirements.
- **Environmental Impact:** The overall construction of improvements recommended in Airside Alternative 2 adds approximately 110,000 square yards of new pavement which would provide increased stormwater runoff. In addition, noise impacts, particularly off the Runway 6 end, would need to be considered related to the presence of the nearby residences, transient lodging, and place of worship. There are several wetlands on airport property that have been delineated by the U.S. Fish and Wildlife Service (USFWS), as well as by McFarland Johnson as part of this Master Plan Update. The USFWS delineated wetlands are located on property owned by the USAF. The proposed parallel taxiway to Runway 10L-28R could impact delineated wetlands, as well as

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approximately 158 linear feet (0.07 acres) of regulated streams. The U.S. Federal Emergency Management Act (FEMA) has designed a floodway for Cayuga Creek, as well as an associated 100-year floodplain that could also be impacted by development of the parallel taxiway. Impacts to the 100-year floodplain for Cayuga Creek associated with the extension of Runway 24, as well as the associated extension of Taxiway D, should be considered. The presence of Threatened and Endangered Species must also be considered. According to the New York State Department of Environmental Conservation (NYSDEC), breeding and foraging habitat for the Northern harrier is present at NFIA in the form of grasslands and emergent wetlands. As noted in Chapter 3, the majority of these lands are owned by the USAF on the western side of the Airport and could include land to be utilized for the parallel taxiway. In addition, the Devil crawfish has been observed within the Niagara Falls Air Reserve Station and potential habitat includes drainage ditches, wetlands, and the Cayuga Creek. The proposed parallel taxiway and extension to Runway 6-24 are not anticipated to have an impact on the Cayuga Creek as the runway, taxiway, and associated safety areas will not extend over the creek. During the most recent safety improvements completed for Runway 6-24, the sponsor was required to relocate and monitor Devil crawfish within the Cayuga Creek. This component receives a value of **Minor (2)** based on the anticipated environmental impact.

- **Sustainability:** Airside Alternative 2 is primarily concerned with taxiway and runway development. Opportunities to implement a sustainable practice or introduce a sustainable design under this alternative include a thoughtful approach to pavement construction design that can maximize re-use of site materials and pursuing aeronautical revenue-generating opportunities by developing land made available with the closure of parallel Runway 10R-28L. Finally, this alternative will have a positive impact on air service with the parallel taxiway to Runway 10R-28L and improved geometry at the intersection with Runway 6-24. Therefore, this evaluation factor was given a value of **Good (2)**.
- **FAA Standards:** Airside Alternative 2 leaves many airside components in compliance with FAA AC 150/5300-13A, including significant improvements to the taxiway system at the Airport. All required safety areas will remain on airport through the use of declared distances and the acquisition of land use control within RPZs will occur; however, roads will not be relocated outside of the RPZs. Therefore, this element was given a value of **Most (2)**.
- **Development Flexibility:** This alternative would allow for significantly enhanced flexibility for operations at NFIA, but retains enough space and opportunity to adapt to future changes and developments. While significant space is available, the redevelopment of Taxiway E provides some restrictions to future development that should be considered. This element of the evaluation was given a value of **Excellent (3)**.
- **Operational Efficiency:** This alternative will contribute to the efficient movement of aircraft with the construction of partial parallel taxiways to both runways and therefore is given a value of **Excellent (3)**.

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### 6.3.5 Airside Alternative 3: Convert Runway 10R-28L to Taxiway

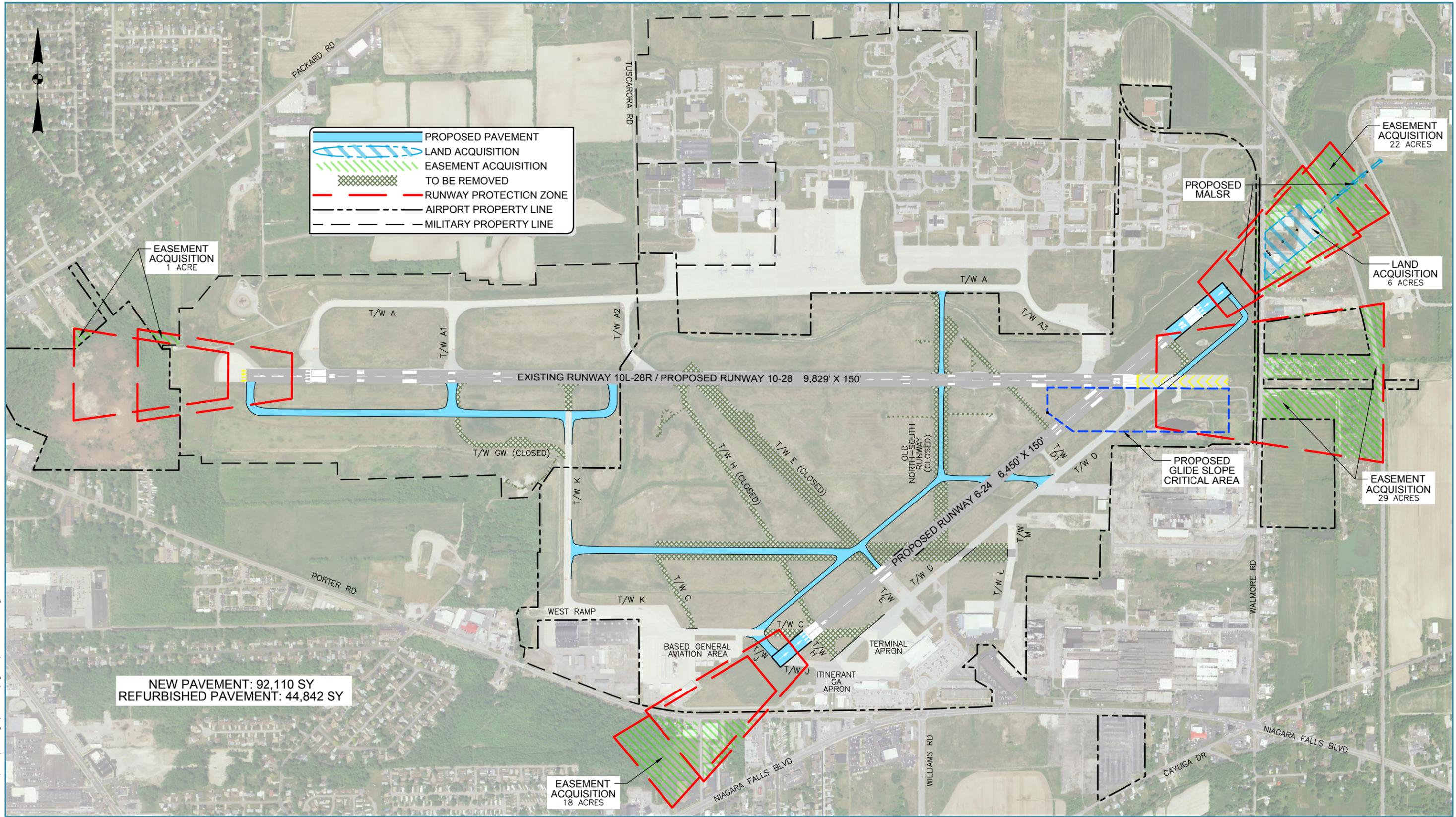
Airside Alternative 3, as illustrated in **Figure 6-3**, has several similar features to Airside Alternative 2, including: an extension to both ends of Runway 6-24, the installation of approach lighting for improved approaches to Runway 6, the closure of Runway 10R-28L, acquisition of land within RPZs, the development of a partial parallel taxiway on the western side of Runway 6-24, and the construction of a new taxiway from the military facilities to the proposed western partial parallel taxiway to Runway 6-24.

Aside from these similar components, other key improvements considered in this alternative include the following:

- **Construct Partial Parallel Taxiway to Runway 6-24:** As with Airside Alternative 2, a partial parallel taxiway on the western side of Runway 6-24 is proposed. Airside Alternative 3, however, proposes that this taxiway, as well as its connector across Runway 6-24 to Taxiway D, be 50 feet wide with 20-foot-wide paved shoulders, rather than the 75-foot width proposed in Alternative 2. The 50-foot width is suitable for most ADG III aircraft including larger business jets utilizing the Airport. All taxiway improvements will include installation of MITLs.
- **Construct Partial Parallel Taxiway to Runway 10L-28R and Connector Taxiway:** Similar to Airside Alternative 2, this alternative also recommends construction of a partial parallel taxiway south of Runway 10L-28R to provide access to the Runway 10L end. The proposed taxiway will be approximately 3,500 feet long and extend from the Runway 10L end to Taxiway K. Civil aircraft landing on Runway 28R and exiting the runway onto the proposed new taxiway will turn south on a widened and strengthened Taxiway K for approximately 3,600 feet prior to turning onto the proposed connector taxiway, which will utilize the pavements of the abandoned Runway 10R-28L and connect to the proposed Runway 6-24 western parallel taxiway. Both taxiway segments would be 75 feet in width with 30-foot-wide paved shoulders, which meet the requirements of most ADG IV and V aircraft, including the Boeing 747-8, 757, and 767.
- **Remove Airfield Pavements No Longer in Use:** As noted in the previous alternative, the presence of pavement on the airfield accessible by aircraft but not suitable for aircraft use can create pilot confusion. In addition to the pavements previously recommended for removal, removal of the entire length of the former Taxiway E west of Runway 6-24 is recommended.

Airside Alternative 3 was assessed against the evaluation factors; the results are below:

- **Facility Requirements:** Airside Alternative 3 would improve upon several of the deficiencies previously identified. The proposed alternative is also feasible for implementation. This evaluation factor was given a value of **All (3)** as this alternative meets the facility requirements.
- **Environmental Impact:** The amount of new impervious surface associated with pavement would be reduced within Airside Alternative 3, with approximately 92,000 square yards of new pavement identified. Wetland impacts are reduced as part of this alternative to approximately 0.02 acres due to the reduced length of the parallel taxiway directly south of Runway 10L-28R. However, additional stream impacts would occur over



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## Sustainable Airport Master Plan

approximately 180 linear feet (0.15 acres) due to the proposed track of the parallel taxiway from Taxiway K to the proposed parallel taxiway west of Runway 6-24. The remaining impacts discussed as part of Airside Alternative 2, including noise as well as threatened and endangered species are still present within Airside Alternative 3. This component receives a value of **Minor (2)** based on the anticipated environmental impact.

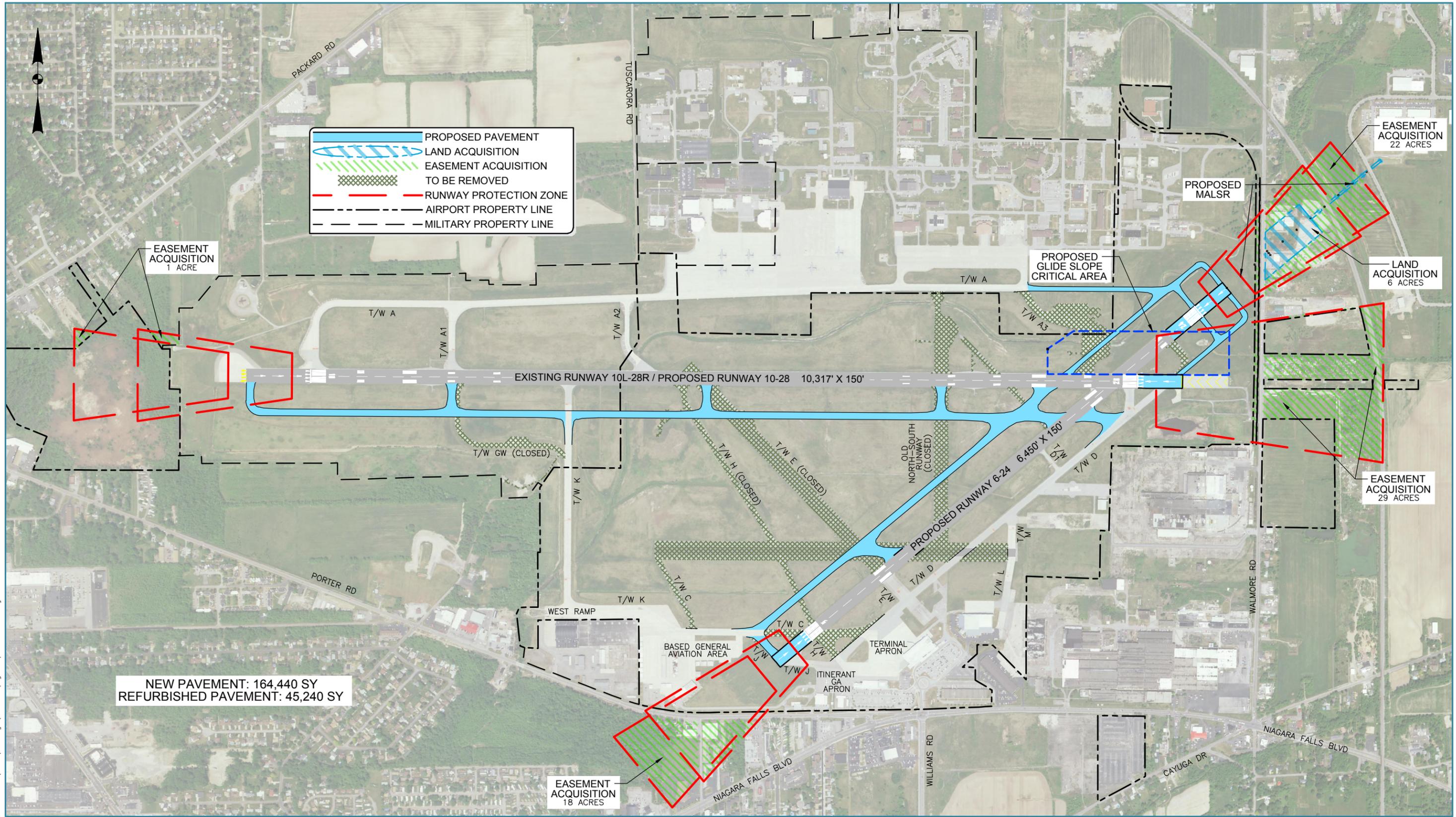
- Sustainability:** Airside Alternative 3 is primarily concerned with taxiway and runway development. Opportunities to implement a sustainable practice or introduce a sustainable design under this alternative are the same as for Airside Alternative 2; however, pursuit of aeronautical revenue-generating opportunities is reduced because parallel Runway 10R-28L is being reused as a parallel taxiway. This alternative will have a positive impact on operations with the parallel taxiway to Runway 10R-28L and improved geometry at the intersection with Runway 6-24, taxi routes are slightly longer compared to Alternative 2 however. For these reasons, this evaluation factor was given a value of **Fair (1)**.
- FAA Standards:** As with the previous alternative, Airside Alternative 3 would improve the airports compliance with FAA AC 150/5300-13A. All required safety areas would remain on airport through the use of declared distances and the acquisition of land use control within RPZs would occur. However, roads would not be relocated outside of the RPZs. As such, this element was given a value of **Most (2)**.
- Development Flexibility:** This alternative would provide additional flexibility for operations at NFIA, particularly through the construction of a partial parallel taxiway and the retention of space and opportunity for additional improvements as a result of future changes and development. However, the presence of the partial parallel taxiway along the current and extended track of Runway 10R-28L limits some future development by restricting access to some areas of the Airport to automobiles in the future. This element of the evaluation was given a value of **Fair (1)** for development potential.
- Operational Efficiency:** Similar to Airside Alternative 2, this alternative would contribute to the efficient movement of aircraft with the construction of partial parallel taxiways to both runways and therefore is given a value of **Excellent (3)**.

### 6.3.6 Airside Alternative 4: Standard Taxiway Design

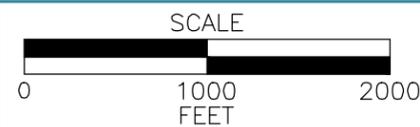
Airside Alternative 4 represents the typical approach to airfield design, whereby full parallel taxiways are constructed to serve both runways at NFIA. Airside Alternative 4 is depicted in **Figure 6-4**. Several features previously identified and discussed as part of Airside Alternative 2 are include within Airside Alternative 4. These include an extension to both ends of Runway 6-24, the closure of Runway 10R-28L, the installation of improved approach lighting for approaches to Runway 24, acquisition of land within RPZs, and the extension of Runway 10L-28R through the establishment of a displaced threshold on the Runway 28R end.

In addition to these similar components noted above, other key improvements considered in this alternative include the following:

- Construct Standard Full Parallel Taxiway South of Runway 10L-28R:** As opposed to the previous alternatives, the parallel taxiway proposed within this alternative would



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follow the standard configuration for a parallel taxiway. The parallel taxiway would be approximately 9,600 feet long and 75 feet wide with 30-foot-wide paved shoulders and MITLs. The taxiway would extend from the Runway 10L threshold to Taxiway D. Access to the new threshold of Runway 28R would be provided via Taxiway D. The proposed parallel taxiway would have a standard runway-taxiway centerline separation of 400 feet and have three additional south entrance/exit connector taxiways. The first connector will be located approximately 2,200 feet east of Runway 10L; the second connector will be located approximately 5,000 feet east of Runway 10L; and, the third connector will be located approximately 2,600 feet west of Runway 28R. These taxiways will also be 75 feet wide with 30-foot-wide paved shoulders and will be equipped with MITLs. Construction of this taxiway would result in displacement of the glideslope antenna serving the Runway 28R ILS. A site on the right side of the runway is proposed as shown on **Figure 6-4**. The exact glideslope site and final configuration will need to be modeled in a separate study.

- Construct Standard Full Parallel Taxiway West of Runway 6-24:** Similar to the previous alternatives, the construction of a parallel taxiway west of Runway 6-24 is recommended. However, Airside Alternative 4 includes the construction of a full parallel taxiway connecting both ends of Runway 6-24. The proposed taxiway will be approximately 6,450 feet long and 75 feet wide with 30-foot paved shoulders from the Runway 6 end to Runway 10L-28R, and will reduce to 50 feet with 20-foot paved shoulders from Runway 10L-28R to the Runway 24 end due to a change in planned taxiway design group (TDG) for that segment to TDG-3 (The Boeing 747-8F is not anticipated to use Runway 6-24.) The runway-taxiway centerline separation will be 400 feet. Two stub taxiways from the proposed parallel taxiway to Runway 6-24 are recommended (in addition to access provided via the proposed parallel taxiway to Runway 10L-28R). The first stub taxiway is proposed approximately 1,500 feet north of Runway 6 and will utilize pavement currently associated with Runway 10R-28L. This stub taxiway will be 75 feet wide with 30 foot paved shoulders and will have MITLs. The second stub taxiway will connect the proposed parallel taxiway with the proposed displaced threshold for Runway 24. This taxiway will be 50 feet wide with 20-foot shoulders and be lit by MITLs.
- Extend Taxiway A to Enable A Connection with the Approach End of Runway 28R:** Taxiway A currently extends from the displaced threshold at the Runway 10L to a point approximately 1,300 feet from the proposed Runway 28R end, where traffic can utilize Taxiway A3 to access Runway 10L-28R approximately 500 feet from the Runway 28R end. The proposed extension of Taxiway A will begin at its current terminus at Taxiway A3 and will extend to the new western parallel taxiway to Runway 6-24. Aircraft can then cross Runway 6-24 at the Runway 24 threshold or the Runway 24 displaced threshold and proceed on Taxiway D to access the extended Runway 28R end. The proposed taxiway extension will be approximately 1,500 feet long and 75 feet wide with 30-foot-wide paved shoulders and lit by MITLs. As a result of the extension to Taxiway A, in combination with the construction of a western parallel taxiway to Runway 6-24, Taxiway A3 would be abandoned and the existing pavement removed.

Airside Alternative 4 was assessed against the seven evaluation factors; the results are below:

- Facility Requirements:** As with the previous alternatives, Airside Alternative 4 would improve upon deficiencies identified in the Facility Requirements and is feasible for implementation. This evaluation factor was given a value of **All (3)** as this alternative meets all facility requirements.

- **Environmental Impact:** The amount of new impervious surface associated with pavement is the greatest in Airside Alternative 4, with approximately 164,000 square yards of new pavement identified. Wetland impacts will also be increased as the proposed parallel taxiway south of Runway 10L-28R will cross several areas of delineated wetlands east of former Taxiway E. The proposed western parallel taxiway to Runway 6-24 will also incur some impacts where the two proposed parallel taxiways would intersect. Approximately 0.98 acres of wetland impacts could occur with Airside Alternative 4. Stream impacts to Cayuga Creek will also be increased associated with the development of the proposed parallel taxiway to Runway 6-24 and the extension of Taxiway A. Approximately 503 linear feet (0.15 acres) of stream impacts are anticipated with Airside Alternative 4. The potential to encounter hazardous materials would also need to be considered as part of the construction of the extension of Taxiway A and the northern segment of the proposed Runway 6-24 parallel taxiway, which will occur within close proximity to an area of known contamination within the Niagara Air Reserve Station as it is within a similar ground water flow area. Further, the entire footprint of those areas is within the 100-year floodplain, the 500-year floodplain, and the floodway for Cayuga Creek. The remaining impacts discussed as part of Airside Alternative 2, including noise as well as threatened and endangered species are still present within Airside Alternative 4. This component receives a value of **Significant (0)** based on the anticipated environmental impact.
- **Sustainability:** Airside Alternative 4 offers an option for standard taxiway design and development. Opportunities to implement a sustainable practice or introduce a sustainable design under this alternative are similar to those for Airside Alternative 2 and include a thoughtful approach to pavement construction design that can maximize re-use of site materials and pursuing aeronautical revenue-generating opportunities by developing land made available with the closure of parallel Runway 10R-28L. Finally, this alternative would have a positive impact on air service with the parallel taxiway to Runway 10R-28L and improved geometry at the intersection with Runway 6-24. Therefore, this evaluation factor was given a value of **Good (2)**.
- **FAA Standards:** As with the previous alternatives, Airside Alternative 4 would improve the airports compliance with FAA AC 150/5300-13A. All required safety areas would remain on airport through the use of declared distances and the acquisition of land use control within RPZs would occur. However, roads would not be relocated outside of the RPZs. Furthermore, all taxiways will meet the required runway-taxiway centerline separation and width requirements. Therefore, this element was given a value of **Most (2)**.
- **Development Flexibility:** Airside Alternative 4 will provide significantly improved flexibility for operations at NFIA by providing full parallel taxiways on both sides of Runway 6-24, as well as nearly full parallel taxiways on both sides of Runway 10L-28R. Furthermore, significant area remains to enable the Airport to construct additional development over the planning period and enable significant land to remain available for the Airport to adapt to changes over time. This element of the evaluation was given a value of **Excellent (3)**.

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- **Operational Efficiency:** Similar to Airside Alternative 3, this alternative will contribute to the efficient movement of aircraft with the completion of full-length parallel taxiways to both runways and therefore is given a value of **Excellent (3)**.

### 6.3.7 Airside Alternatives Summary and Selection of Preferred Alternative

The previous airside alternatives were evaluated based on seven criteria. **Table 6-3** summarizes these alternatives and their related assessments.

**Table 6-3: Airside Alternatives Summary**

Airside Alternative	Meets Facility Needs	Environmental Impact	Sustainability	Meets FAA Standards	Development Flexibility	Operational Efficiency	Score
1	0	3	0	0	1	0	4
2	3	2	2	2	3	3	15
3	3	2	1	2	1	3	12
4	3	0	2	2	3	3	13

The recommended airside alternative for NFIA is Alternative 2. Airside Alternative 2 scores higher than the other alternatives and best balances environmental impacts while offering the highest long-term development and operational flexibility. The most significant difference between Airside Alternatives 2 and 3 is increased impervious pavement surfaces (31,000 square yards of pavement); however, it is assumed that site design can include retention/detention facilities to mitigate runoff impacts. While NEPA impacts are marginally improved with Airside Alternative 3, future development, operational flexibility, and sustainability criteria score lower, which makes Airside Alternative 3 less attractive. Alternative 4 is dismissed due to having the most significant environmental impact of all airside alternatives.

## 6.4 AIR CARGO ALTERNATIVES

As with many of the alternatives to be considered as part of this Sustainable Master Plan Update, the selection of one alternative could have an impact on other areas of the Airport and its associated alternatives. The selection of a specific airside alternative could negate the ability to construct an air cargo alternative and vice-versa. NFIA has several areas available for air cargo development; however, many of the air cargo alternatives considered rely on development in the southwestern portion of the Airport near or on land previously utilized by the U.S. Army or as part of Runway 10R-28L. Five air cargo alternatives have been developed.

### 6.4.1 Summary of Air Cargo Facility Requirements

The previous chapters identified and quantified the necessary improvements that should be addressed at NFIA over the 20-year planning period. Elements that were considered in each alternative are as follows:

- Exact size and infrastructure required for air cargo will be primarily driven by the developer or air cargo provider. While demand for air cargo is currently limited, a significant amount of necessary infrastructure is available at NFIA.
- Accessibility for the Boeing 747-8F (and other aircraft categorized within ADG VI) will be considered for all alternatives. In addition to providing accessibility for air cargo, the

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ability to provide access to, as well as the ability to, taxi and park an Airbus A380 will also be evaluated.

The air cargo alternatives will identify sites suitable should an air cargo operator desire to base at NFIA. The Airport offers a suitable location and adequate infrastructure, including a sufficient runway length, to accommodate air cargo operators. Ultimately, the specific facility needs will be determined by the developer/operator; however, given the existing ample airside facilities, requirements are measured and evaluated up to that of the Boeing 747-8F Freighter. The following requirements will be used for air cargo alternatives:

- Up to 100,000 square feet of hangar and storage facilities to accommodate air cargo service with direct access to a marked U.S. or State Highway and
- Up to 13,500 square yards of aircraft apron with a minimum pavement thickness of 17 inches.

The alternatives identified and evaluated in the following subsections have been created to provide for these requirements, except that each alternative is also measured against a no-build alternative scenario.

### 6.4.2 Air Cargo Alternative Identification

- **Air Cargo Alternative 1: No-Build**
  - The existing airport layout would remain the same. There would be no addition of an air cargo facility.
- **Air Cargo Alternative 2: Acquire Former U.S. Army Parcel**
  - The former U.S. Army parcel, currently vacant, would be acquired by the NFTA for a proposed air cargo facility.
- **Air Cargo Alternative 3: Infield Development**
  - Land on the infield of the Airport, north and east of Taxiway K and on a portion of the current Runway 10R-28L, would be converted for use as an air cargo facility with vehicle access provided through the based general aviation area.
- **Air Cargo Alternative 3a: Infield Development (Reversed)**
  - Similar development as discussed in Air Cargo Alternative 3, however with a reversed layout and different access option.
- **Air Cargo Alternative 4: Air Force Area**
  - All proposed air cargo development would occur on property currently utilized by the USAF. This alternative is presented only for consideration if there is a change in the military presence on the Airport.

The alternatives above are detailed in the next sections.

### 6.4.3 Air Cargo Alternative 1: No-Build

Air Cargo Alternative 1 offers no changes to the existing layout at NFIA. The existing airport layout can be seen in **Figure 6-1**.

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Air Cargo Alternative 1 was assessed against the evaluation factors. The results are below:

- **Facility Requirements:** While the Facility Requirements indicate that the construction of an air cargo facility is not imminently required, several recommendations related to the sizing of potential facilities were provided. It is important to have a potential site identified and reserved for future development. This evaluation factor was given a value of **Some (1)** as it meets the facility requirements noting that an air cargo facility is not imminently required and the Airport has accommodated some type of air cargo previously with existing facilities; however, this alternative does not reserve space for the future development of dedicated facility.
- **Environmental Impact:** As no changes to the Airport are proposed under this alternative, no environmental impacts will occur as a result of this alternative. This alternative was therefore given a value of **None (3)**.
- **Sustainability:** The nature of the No-Build Alternative is such that no changes will be made to the existing airport layout. Therefore, it is assumed that no sustainability practices are initiated at the Airport under this alternative. While some opportunities for implementing sustainable practices are available to the Airport under the No-Build Alternative, these are likely the same opportunities that are available to the Airport under any alternative (i.e., a recycling program, or replacement of lighting and other mechanical or electrical equipment with highly efficient models). Therefore, because no additional sustainability practices are available under this alternative than others, this evaluation factor was given a value of **Poor (0)**.
- **Land Use Compatibility:** The proposed alternative is compatible with adjacent land uses as no new development is proposed that will impact either on or off-airport land use. This evaluation factor was therefore given a value of **Excellent (3)**.
- **Potential for Expansion:** The proposed alternative provides for future potential to expand should the need arise for an air cargo facility. However, while the potential for expansion is available, as no sites are dedicated or reserved for future development of air cargo, this alternative leaves the potential for limited to no available space for future development when demand arises. As such, this alternative has been given a value of **Fair (1)**.
- **Operational Efficiency:** The proposed alternative will not improve the operational efficiency issues that currently exist at the Airport as there would be no improvements to the limited taxiway network. This alternative was given a value of **Poor (0)**.
- **Revenue Generation Capability:** As no new development is proposed as part of the No-Build Alternative, the potential to generate additional revenue is non-existent. This alternative was given a value of **Poor (0)**.

### 6.4.4 Air Cargo Alternative 2: Acquire Former U.S. Army Parcel

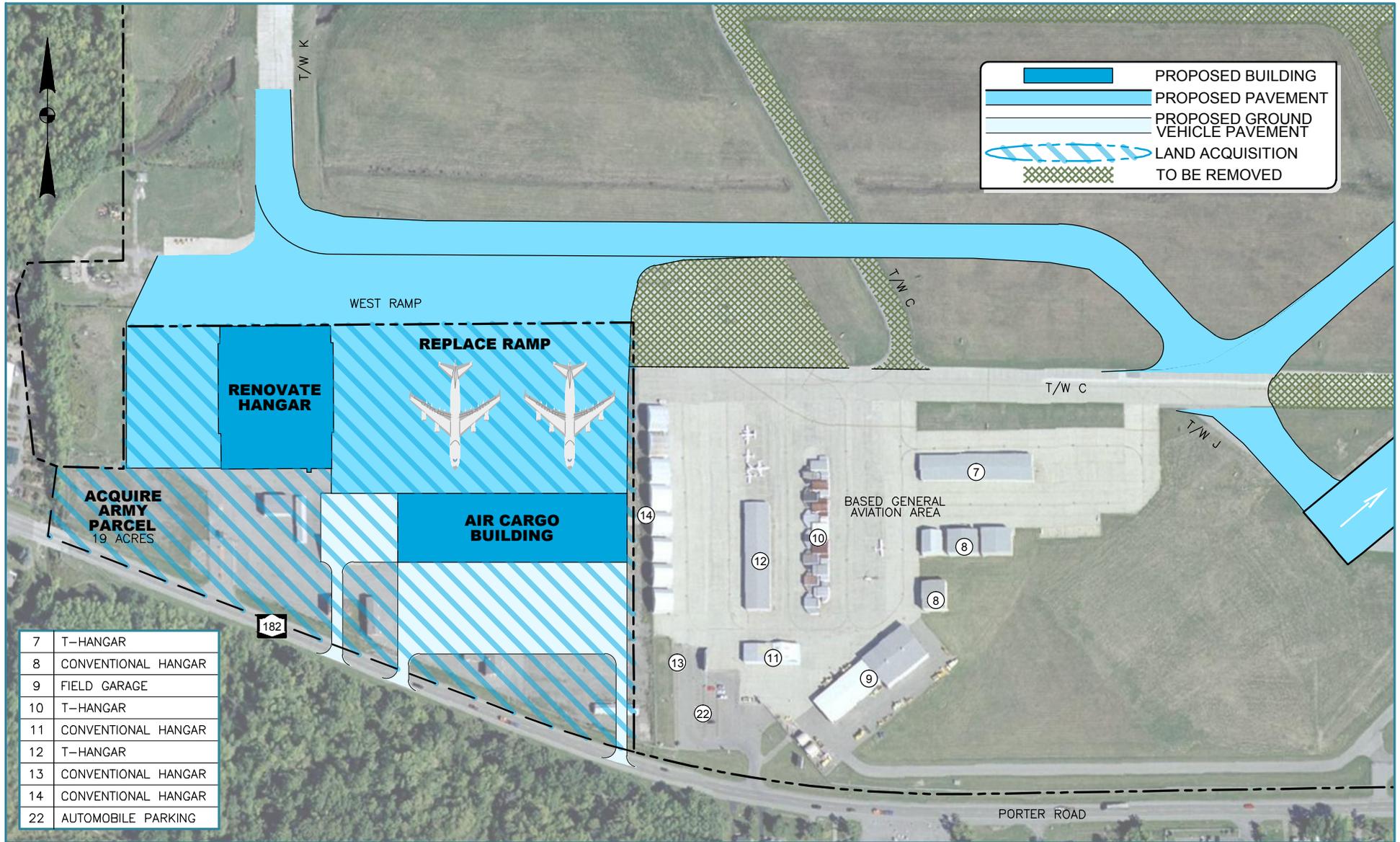
Air Cargo Alternative 2 has been designed to primarily occur on property owned by the U.S. Army. This property is no longer utilized by the military branch and the future ownership of the parcel is in question. Should NFTA have the ability to acquire this parcel and expand the property line of the Airport, Air Cargo Alternative 2 discusses the potential conversion of the site.

The key considerations within this alternative, as depicted in **Figure 6-5**, are discussed below:

- **Demolish Existing Buildings:** Most buildings currently constructed on the site would require demolition in order to enable further development of the overall air cargo facility. The only building that may remain would be the existing Army Hangar, encompassing approximately 77,000 square feet, which would be utilized for hangar storage and could be converted and renovated for air cargo use. The remaining ten buildings that comprise the existing facility would be demolished to make way for additional buildings, aircraft apron, and ground vehicle access.
- **Relocate Taxiways C and K:** To accommodate the proposed development, Taxiways C and K would be redirected and relocated. A new taxiway would begin at the current intersection of Taxiways C and J, and would proceed northwest approximately 330 feet and running essentially parallel to Taxiways C and K for approximately 1,800 feet until intersecting with existing Taxiway K. The relocated taxiway will serve several benefits, including relocating aircraft traffic from the based general aviation apron, but will primarily enable the maneuvering of aircraft on the proposed aircraft apron associated with the air cargo facility.
- **Reutilize Aircraft Apron:** To provide access and aircraft parking at the air cargo facility, the rehabilitation of the existing aircraft apron space is required. As depicted, approximately 49,485 square yards of apron would be provided east of the existing bulk hangar on the site. Whether apron rehabilitation is possible or complete replacement is necessary, pavement will be designed and constructed to accommodate aircraft types anticipated to utilize the facility, including the Boeing 747-8F. The existing apron north of the existing bulk hangar is anticipated to remain in place with rehabilitation and reconstruction completed as necessary to ensure the longevity of the apron.
- **Construct Air Cargo Building:** To accommodate the flow of goods between tractor trailers (or other vehicles) and aircraft, planning for up to a 75,000-square-foot building is recommended. While the actual size and functional design will be determined by an air cargo operator, this building will be located south of the proposed aircraft apron but north of Porter Road to provide access to the necessary vehicles required to ferry air cargo arriving at NFIA.
- **Construct Vehicle Access to Porter Road:** Motor vehicle access to the air cargo site is an important component to the overall facility. Two parking lots are included as part of Air Cargo Alternative 2. The first lot will accommodate trucks, such as tractor-trailers or other large vehicles utilized to transfer cargo. This lot will measure approximately 12,000 square yards and will have two access points to Porter Road. The second parking lot will accommodate passenger cars accessing the facility, most likely associated with employees or customers picking up small packages. This lot, anticipated to be approximately 3,400 square yards, will be located west of the proposed Air Cargo Building and will have a dedicated driveway from Porter Road.

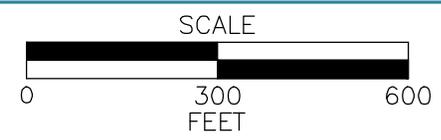
# AIR CARGO - ALTERNATIVE 2

FIGURE 6-5



7	T-HANGAR
8	CONVENTIONAL HANGAR
9	FIELD GARAGE
10	T-HANGAR
11	CONVENTIONAL HANGAR
12	T-HANGAR
13	CONVENTIONAL HANGAR
14	CONVENTIONAL HANGAR
22	AUTOMOBILE PARKING

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Air Cargo Alternative 2 was assessed against the evaluation factors; the results are below:

- **Facility Requirements:** The proposed alternative would meet the future needs of the Airport by providing space for the future development of an air cargo facility. The size of the proposed air cargo building and associated aircraft aprons and vehicle parking lots are adequate to meet the future needs of the Airport. This alternative would be feasible for implementation, but would require acquisition of the former U.S. Army parcel to enable development. The evaluation factor was given a value of **Most (2)**.
- **Environmental Impact:** The environmental impact associated with this alternative is anticipated to be fairly minimal. With the exception of the relocated taxiway, all construction will occur on surfaces that have been previously disturbed. A portion of the proposed air cargo facility, including the relocated taxiway, is located within the 100-year floodplain of Cayuga Creek. Impacts to the floodplain will need to be considered and addressed prior to construction. Increased traffic associated with the cargo facility may also be a consideration. However, due to the significant industrial nature of the area surrounding the airport, impact would be minimal. This evaluation factor was given a value of **Minor (2)** due to the limited impacts anticipated.
- **Sustainability:** The proposed alternative is based upon acquisition of the U.S. Army parcel. Opportunities to implement a sustainable practice or introduce a sustainable design under this alternative include a thoughtful approach to pavement construction design that can maximize re-use of site materials and demolished buildings combined with design and construction of new air cargo buildings that will take advantage of the currently available energy-saving equipment and materials. Additionally, reuse of currently underutilized facilities on this site is a positive sustainability practice. It is assumed that this alternative will have a neutral impact on air service. Considering the elements of sustainability criteria, this evaluation factor was given a value of **Good (2)**.
- **Land Use Compatibility:** The proposed alternative is compatible with both on-airport and off-airport land uses in the vicinity. The proposed use of the former U.S. Army facility is not substantially different from its existing use and land uses adjacent to the site are primarily commercial or forested. This evaluation factor was given a value of **Excellent (3)**.
- **Potential for Expansion:** The proposed alternative provides some potential for future expansion; however, it is limited due to the location of the proposed development in the southwestern corner of the airport. Expansion of the air cargo building and associated aircraft apron could occur to the east; however, that would infringe upon the existing based general aviation apron and would require demolition of at least eight hangars. While not anticipated for initial use for air cargo, the existing U.S. Army bulk hangar could be converted to accommodate air cargo uses. Additional space is available to construct an access road for trucks to service the building. While other land is still available, no supporting infrastructure for additional expansion is constricted with this alternative. This evaluation factor was given a value of **Fair (1)**.
- **Operational Efficiency:** The proposed alternative will assist with the development of a smoothly functioning airport and will significantly assist with the efficient movement of aircraft. The relocation of Taxiways C and K will assist both the air cargo facility and the

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based general aviation aircraft by removing the taxiway from existing apron and potentially enabling expansion into the future. While the U.S. Army property would require acquisition to enable this alternative to occur, this alternative would make efficient use of the facility. This evaluation factor was given a value of **Excellent (3)**.

- **Revenue Generation Capability:** The development of this facility for future use as an air cargo facility will provide additional revenue for the Airport and will enable additional marketing to attract new cargo carriers to the facility. Interim use of the existing U.S. Army bulk hangar for aircraft storage, during periods when the air cargo facility may not be in use or when the hangar is not necessary for air cargo uses, will provide additional revenue to the sponsor. This evaluation factor was given a value of **Excellent (3)**.

### 6.4.5 Air Cargo Alternative 3: Infield Development

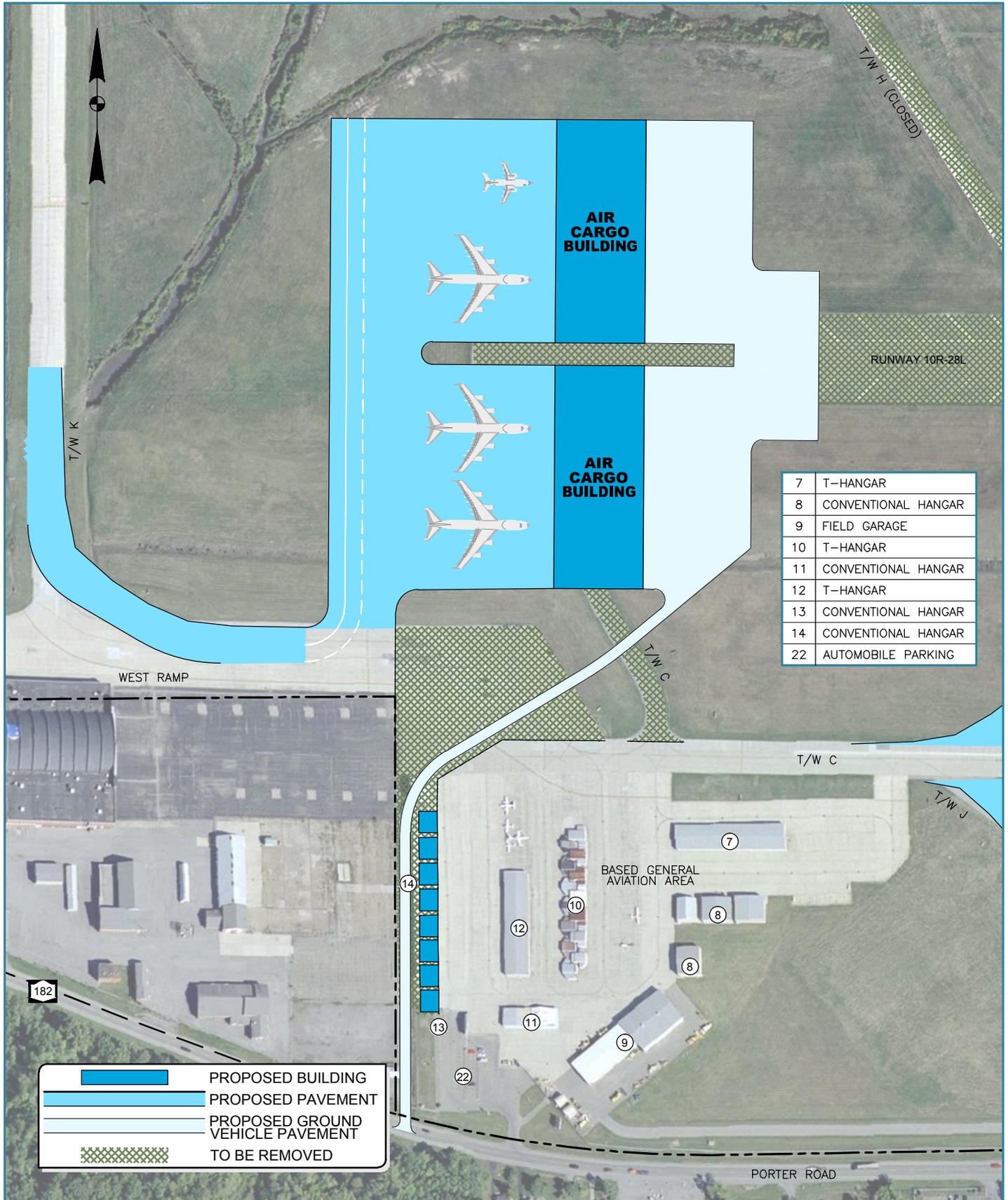
Air Cargo Alternative 3 is proposed north of Air Cargo Alternative 2. This alternative is located entirely on airport property and will primarily consist of the development of new facilities on and within the safety area of the closed Runway 10R-28L.

The key considerations within this alternative, as depicted in **Figure 6-6**, are discussed below:

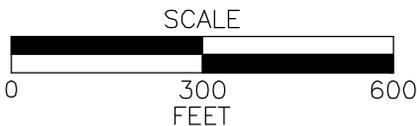
- **Construct Aircraft Aprons:** The proposed aircraft apron for access to the air cargo facility would be located north of Taxiway K, in the vicinity of the based general aviation area. Access to the apron would occur just north of the northeast boundary of the U.S. Army property. Two aprons, comprising approximately 55,000 square yards, would be constructed and connected via a taxilane to Taxiway K. Each apron would accommodate up to two Boeing 747-8F aircraft.
- **Construct Air Cargo Buildings:** Two air cargo buildings are planned as part of Air Cargo Alternative 3. For planning purposes, each building is estimated at approximately 100,000 square feet. The buildings would be located east of the aircraft apron.
- **Construct Vehicle Access to Porter Road and Relocate Hangars:** As indicated within the previous alternative, access to Porter Road is imperative to the development of an air cargo facility. This alternative includes an approximately 1,250 linear-foot long access road connecting Porter Road and parking lot areas. The access road, as depicted, will require relocation of up to eight (8) single unit conventional hangars. The proposed vehicle parking facility would measure approximately 6.75 acres to accommodate both trucks and motor vehicles for employees and customers accessing the cargo facility. Figure 6-6 illustrates an access road that can be shared with General Aviation Alternative 3.

Air Cargo Alternative 3 was assessed against the evaluation factors. The results are as follows:

- **Facility Requirements:** As with the previous alternative, Air Cargo Alternative 3 would meet the future needs of the Airport by providing space for the future development of an air cargo facility. The size of the proposed air cargo building and associated aircraft aprons and vehicle parking lots are adequate to meet the future needs of the Airport. The evaluation factor was given a value of **All (3)**.



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- Environmental Impact:** Consideration was given with Air Cargo Alternative 3 to minimize environmental impacts. As with Air Cargo Alternative 2, aircraft noise and vehicle traffic are not anticipated to experience significant changes. Portions of the proposed development site are located within the 100-year floodplain of Cayuga Creek. In addition, there are approximately 0.62 acres of wetland impact. These potential impacts are minimal and can be mitigated; therefore, an evaluation factor of **Minor (2)** was given.
- Sustainability:** Air Cargo Alternative 3 does not require the acquisition of the U.S. Army parcel and can likely be accomplished more expediently and at a lower cost. It is located in the infield area adjacent to the general aviation area. The opportunity to share an access road with general aviation and other aviation development opportunities helps minimize roadways and utility infrastructure. Opportunities to implement a sustainable practice or introduce a sustainable design under this alternative include a thoughtful approach to pavement construction design that can maximize re-use of site materials, and design and construction of new air cargo buildings that will take advantage of the currently available energy-saving equipment and materials. It is assumed that this alternative will have a neutral impact on air service. Considering the elements of sustainability criteria, this evaluation factor was given a value of **Good (2)**.
- Land Use Compatibility:** Air Cargo Alternative 3 is not along an airport property line and is anticipated to be compatible with off-airport land uses along Porter Road. The proposed access road to the air cargo facility would cut across the existing based general aviation area and requires relocation of several existing hangars. The access road would also sever existing Taxiway K into two segments. Through the consideration of airside alternatives, as discussed in Section 6.3, the introduction of a new taxiway to remove traffic from Taxiway K taxiing from the terminal area to the Runway 10L end could alleviate this land use concern. However, with the recommended closure of Runway 10R-28L, the use of the former runway and safety areas for an air cargo facility is ideal. The evaluation factor was given a value of **Excellent (3)**.
- Potential for Expansion:** Air Cargo Alternative 3 presents opportunities for expansion to the south and west. Depending on the ultimate location of the access road and configuration of air cargo buildings and apron, an optimal layout can offer expansion to the south and west along the access road for building facilities. Considering potential for expansion with this alternative, this evaluation factor was given a value of **Good (2)**.
- Operational Efficiency:** Air Cargo Alternative 3 would offer operational efficiency for air cargo operations as cargo aircraft would benefit from a direct connection to Taxiway K. This access will be segregated from general aviation aircraft taxi routes thereby reducing delays. Additionally, the access road could be shared with development under future general aviation alternatives, which would improve operational efficiency. The selection of an airside alternative to provide additional options for traffic taxiing to and from Runway 10L-28R will be required with the selection of this alternative, which may add additional taxiing time, given winds, for aircraft currently utilizing the based general aviation area. Considering these impacts on operational efficiency, this evaluation factor was given a value of **Good (2)**.
- Revenue Generation Capability:** Air Cargo Alternative 3 would provide additional revenue for the airport through additional fuel sales and landing fees as well as through

## Sustainable Airport Master Plan

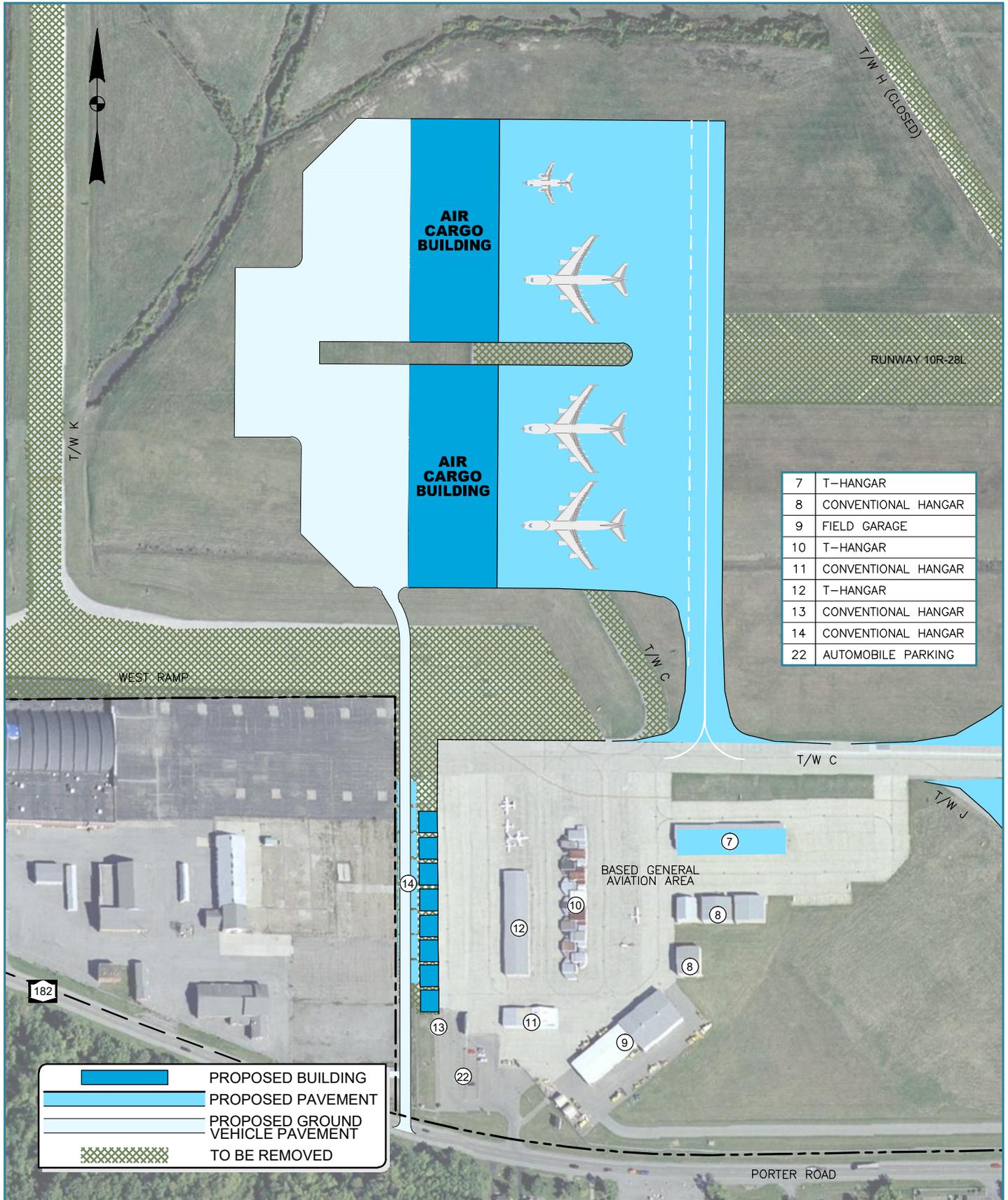
land leases. The construction of the hangars and aircraft apron will not displace any existing tenants. The construction of the proposed access road will displace up to eight single unit hangars, however, it is assumed those hangars will be relocated to accommodate the development of the access road. This evaluation factor was given a value of **Excellent (3)**.

### 6.4.6 Air Cargo Alternative 3a: Infield Development (Reversed)

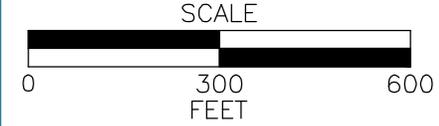
The proposed development of air cargo facilities within Air Cargo Alternative 3a is based off Air Cargo Alternative 3. However, the facilities are reversed as depicted in **Figure 6-7**. The dimensions of the aircraft apron, air cargo hangars, and parking facilities are nearly the same as proposed in Air Cargo Alternative 3. The vehicle parking is located in the western portion of the area and is slightly smaller, measuring approximately 6.5 acres. Vehicles will still approach the site via an access road to Porter Road. The access road would continue to segment Taxiway K into two sections.

Air Cargo Alternative 3a was assessed against the evaluation factors; the results are below:

- **Facility Requirements:** As with Air Cargo Alternative 3, this alternative would also meet the future needs of the airport by providing space for the future development of an air cargo facility. The size of the proposed air cargo building and associated aircraft aprons and vehicle parking lots are adequate to meet the future needs of the airport. The evaluation factor was given a value of **All (3)**.
- **Environmental Impact:** Environmental impacts associated with Air Cargo Alternative 3a are nearly similar to those within Alternative 3. Portions of the proposed development site are located within the 100-year floodplain of Cayuga Creek. In addition, there are approximately 0.62 acres of wetland impact. However, the potential impacts associated with this development are minimal and can be mitigated; therefore, an evaluation factor of **Minor (2)** was given.
- **Sustainability:** Air Cargo Alternative 3a is similar to Alternative 3 and was scored similarly: **Good (2)**.
- **Land Use Compatibility:** The land use compatibility of Air Cargo Alternative 3a is similar to Alternative 3. While the closure of Taxiway K would require aircraft to utilize different routes to taxi; it is similar to the modifications required in other alternatives. The evaluation factor was given a value of **Excellent (3)**.
- **Potential for Expansion:** Expansion opportunities with Air Cargo Alternative 3a are reduced from Alternative 3 by the reversed layout. For example, placing air cargo buildings and apron to the east of the access road may limit the future expansion of air cargo as general aviation area facilities may compete for the same developable land. Therefore, this evaluation factor was given a value of **Poor (0)**.
- **Operational Efficiency:** Air Cargo Alternative 3a would have a negative impact on the operational efficiency of the airport, because both air cargo and general aviation aircraft taxi routes would proceed east along the same portion of Taxiways C and K and Taxiway K would be closed at the western edge of the based aircraft apron and no longer provide taxi access to Runway 10L-28R. Therefore, this evaluation factor was given a value of **Poor (0)**.



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## Sustainable Airport Master Plan

- **Revenue Generation Capability:** The development of the air cargo facility will provide many different opportunities for revenue generation for the airport. This alternative would not propose the removal of any existing hangars, which would continue existing revenue sources and would not require the development of additional hangars to accommodate those displaced under other alternatives. This evaluation factor was given a value of **Excellent (3)**.

### 6.4.7 Air Cargo Alternative 4: Air Force Area

Air Cargo Alternative 4 incorporates the reuse of existing facilities currently owned and occupied by the USAF as part of its Niagara Air Reserve Station. The implementation of this alternative would be limited, as the mission for the Station would need to change to designate these facilities as no longer necessary for military use. Access to the proposed air cargo site would be from Lockport Road, using Entrance Avenue, Wagner Drive, and Guardian Street. The Airport does not desire any change to the military mission; rather, this alternative is included so that issues are explored in case future circumstances warrant further consideration.

The key considerations within this alternative are identified below and detailed in **Figure 6-8**.

Air Cargo Alternative 4 has the following criteria:

- **Convert Three Buildings for Use as Air Cargo Buildings:** Three existing buildings, totaling approximately 96,000 square feet, would be converted in order to accommodate air cargo users. These facilities are currently utilized for aircraft storage and maintenance. Improvements and rehabilitation would be required to provide air cargo services due to the age and current use of the facilities.
- **Utilize Existing Aircraft Apron:** The proposed alternative would not incorporate the addition of any new pavement to accommodate aircraft utilizing the air cargo buildings. Approximately 98,000 square yards of existing aircraft apron would be redesignated for use with the air cargo facility. A study would be required to determine if the pavement area could regularly accommodate aircraft similar to the Boeing 747-8F.

Air Cargo Alternative 4 was assessed against the evaluation factors; the results are below:

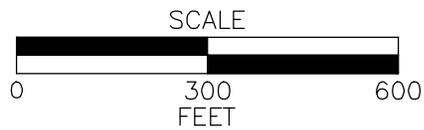
- **Facility Requirements:** The size of the facilities meets the requirements identified in the facility requirements. However, a change in the mission for the Station would be required for this alternative to be viable. If that change were to occur, implementation of this alternative will meet future facility needs. The evaluation factor was given a value of **All (3)**.
- **Environmental Impact:** No wetland, stream, or floodplain impacts are anticipated with Air Cargo Alternative 4 as no new construction is proposed. As with all air cargo alternatives, potential impacts associated with increased vehicle traffic and aircraft noise associated with the facility are not anticipated to be significant. The Station currently has ten Installation Restoration Program sites for several contaminants, including volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs), with the potential for additional contamination sites. However, ground disturbance is expected to be minimal. This evaluation factor was given a value of **None (3)**.

# AIR CARGO - ALTERNATIVE 4

FIGURE 6-8



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- **Sustainability:** Air Cargo Alternative 4 requires the reuse of existing facilities currently owned and occupied by the USAF as part of its Niagara Air Reserve Station. Opportunities to implement a sustainable practice or introduce a sustainable design under this alternative include: a thoughtful approach to design that can maximize re-use of any salvaged site or building materials; and, design and construction of renovated air cargo buildings that take advantage of currently available energy-saving equipment and materials. It is assumed that this alternative will have a neutral impact on air service. Finally, similar to Air Cargo Alternative 2, this alternative would not require existing, limited landside land areas for an air cargo operation. Considering the re-use of existing facilities for air cargo, this evaluation factor was given a value of **Excellent (3)**.
- **Land Use Compatibility:** The compatibility of Air Cargo Alternative 4 with both on and off-airport land uses is very good. Should the mission of the Air Reserve Station change, initial plans for the remaining segments of the station could include redevelopment as a business park, which is compatible with aviation use and, in particular, with an air cargo facility. In addition, the facility is adjacent to a parallel taxiway to Runway 10L-28R. No residential or other non-compatible land uses are present in the vicinity of the proposed air cargo area. The evaluation factor was given a value of **Excellent (3)**.
- **Potential for Expansion:** While other facilities of the Station could be converted to use as a business park, market demand will drive air cargo and all other opportunities for expansion on the site. Should the Station's mission change, additional facilities beyond those identified in this alternative may be available for re-use as air cargo facilities should the demand arise. This evaluation factor was given a value of **Excellent (3)**.
- **Operational Efficiency:** In terms of impact to airport operations, the conversion of the former Station facilities to use as an air cargo facility would not have an impact. Existing facilities would be converted to serve air cargo, including existing aprons that have recently housed KC-135 and C-130 aircraft would instead serve cargo aircraft such as the Boeing 747-8F. This alternative would also further separate the air cargo facilities from other airport users such as general aviation tenants and airline traffic. This evaluation factor was given a value of **Excellent (3)**.
- **Revenue Generation Capability:** The development of the air cargo facility would provide many different opportunities for revenue generation for the airport. This alternative will provide use of facilities that could remain vacant should the Station's mission change, and will add revenue from a portion of the Airport that was not previously under NFTA control. This evaluation factor was given a value of **Excellent (3)**.

### 6.4.8 Air Cargo Alternatives Summary and Selection of Preferred Alternative

The previous air cargo alternatives were evaluated based on the criteria described. **Table 6-4** summarizes these alternatives and their related assessments.

**Table 6-4: Air Cargo Alternatives Summary**

Alternative	Meets Facility Needs	Land Use Compatibility	Environmental Impact	Sustainability	Potential for Expansion	Operational Efficiency	Revenue Generation Capability	Score
1	1	3	3	0	1	3	0	11
2	2	3	2	2	1	3	3	16
3	3	3	2	2	2	2	3	17
3a	3	3	2	2	0	0	3	13
4	3	3	3	3	3	3	3	21*

\*Note: Air Cargo Alternative 4 is not the preferred alternative for the airport; Alternative 4 is presented for consideration should the military mission on the airport change.

The recommended air cargo alternative for NFIA is Alternative 3. Air Cargo Alternative 3 best meets the airport’s facility requirements and best suits the future needs of the airport.

### 6.5 GENERAL AVIATION ALTERNATIVES

As noted in Chapter 5, additional development of general aviation facilities will be required over the planning period. Presently, approximately 86,000 square feet of hangar space is available at NFIA. However, nearly all of this space is privately controlled, on land leased from NFTA, and is not available for use by transient aircraft. The one hangar that could accommodate large, transient aircraft, the FBO hangar, does not have sufficient tail height clearance for many types of jet aircraft, leaving no hangar space available for higher-value business jets that utilize the Airport such as the Gulfstream V, Cessna Citation X, or Bombardier Challenger. Furthermore, there are no dedicated hangars at NFIA for aircraft maintenance, a service that would typically be available at an airport such as NFIA. The existing general aviation terminal within the FBO hangar contains approximately 3,000 square feet of space and provides many services typically associated with a full-service FBO at an international airport. However, the overall terminal is very constrained and is aging. The construction of a new general aviation terminal containing 7,000 square feet was recommended within previous chapters.

#### 6.5.1 Summary of General Aviation Facility Requirements

The previous chapters identified and quantified the necessary improvements that should be addressed at NFIA over the 20-year planning period. The general aviation alternatives explore ways in which the general aviation areas can be expanded and consolidated to meet the expected increase in activity. The expansion of the area dedicated to commercial airline service, possible development of expanded air cargo areas, and changes to the taxiway system are all affecting the areas used by general aviation. Specific needs identified for general aviation include:

- Plan for an additional 10,000 square feet of hangar space
- Plan for up to 4,200 square yards of additional general aviation apron space
- Plan for a general aviation terminal up to 7,000 square feet
- Expand the Maintenance/SRE Building by up to 3,750 square feet

The alternatives identified and evaluated in the following subsections have been created to meet these requirements and will be compared against a no-build alternative scenario. Review of general aviation alternatives will also consider airside and air cargo alternatives because each alternative may have an impact on the selection of a preferred general aviation alternative.

### 6.5.2 General Aviation Alternative Identification

- **General Aviation Alternative 1: No-Build**
  - The existing airport layout would remain the same. There would be no additional general aviation facilities.
- **General Aviation Alternative 2: Co-Locate with Calspan**
  - A new general aviation area would be built northeast of the airline terminal.
- **General Aviation Alternative 3: Infield Development**
  - Land on the infield of the airport, north of Taxiway K and on a portion of the current Runway 10R-28L, would be converted for use as an air cargo facility with vehicle access provided through the existing general aviation area.
- **General Aviation Alternative 4: Acquire Former U.S. Army Parcel**
  - The alternative is a similar development as discussed in Air Cargo Alternative 3, however with a reversed layout and different access option.
- **General Aviation Alternative 4a: Acquire and Construct Within Former U.S. Army Parcel**
  - All proposed general aviation development would occur on property currently owned by the U.S Army.

### 6.5.3 General Aviation Alternative 1: No-Build

General Aviation Alternative 1 offers no changes to the existing layout at NFIA. The existing airport layout can be seen in **Figure 6-1**.

General Aviation Alternative 1 was assessed against the evaluation factors; the results are below:

- **Facility Requirements:** The No-Build Alternative does not provide for the development of any additional general aviation facilities at NFIA. As noted in Chapter 5, additional demand for hangar space, aircraft maintenance space, an expanded general aviation terminal, and aircraft apron for the parking and maneuvering of aircraft will be necessary. With the No-Build Alternative, the FBO hangar would remain the only hangar available for the storage of transient aircraft, as well as the only hangar capable of parking a limited number of jets. This evaluation factor was given a score of **No (0)**.
- **Environmental Impact:** As this alternative does not propose any new general aviation development at NFIA, there would be no associated environmental impact. This evaluation factor was given a score of **None (3)**.
- **Sustainability:** The nature of the No-Build Alternative is such that no changes will be made to the existing airport layout; therefore, it is assumed that no sustainability practices are initiated at the Airport under this alternative. While some opportunities for implementing sustainable practices are available to the Airport under the No-Build Alternative, these are likely the same opportunities (i.e., a recycling program, or replacement of lighting and other mechanical or electrical equipment with highly efficient

## Sustainable Airport Master Plan

models) that are available to the Airport under any alternative. Since no additional sustainability practices are available under this alternative compared to others, this evaluation factor was given a value of **Poor (0)**.

- **Land Use Compatibility:** The No-Build Alternative is generally compatible with off-airport land uses as it does not promote for the development of additional structures or infrastructure at NFIA. However, the current general aviation facilities are not compatible with on-airport land uses. The existing facilities are split into two areas on either side Runway 6-24. Further, the existing itinerant general aviation facilities are located in close proximity to the passenger terminal and the associated security requirements for the terminal area. This evaluation factor was given a score of **Fair (1)**.
- **Potential for Expansion:** This alternative is constrained at existing locations and provides little ability to accommodate future general aviation expansion. The alternative does not provide the minimum facility requirements identified in Chapter 5. This evaluation factor was given a score of **Poor (0)**.
- **Operational Efficiency:** The No-Build Alternative will not have an impact on the operational efficiency of the Airport and will maintain status quo conditions or worse. As previously noted, the Airport does not currently have hangar space available to accommodate many types of large jets. These jets either remain on the apron or will utilize other nearby airports due to hangar availability. Further, the existing general aviation area is already constrained and separated from the FBO hangar, which is located on the opposite side of Runway 6-24. This evaluation factor was given a score of **Poor (0)**.
- **Revenue Generation Capability:** The No-Build Alternative does not incorporate the development of any new facilities which assist the Airport with revenue generation. The addition of new general aviation facilities will not only provide additional revenue to the Airport through leases, but also through other means such as landing fees and fuel sales. The No-Build Alternative does not have any revenue generation capability, and was given a score of **Poor (0)**.

### 6.5.4 General Aviation Alternative 2: Co-Locate with Calspan

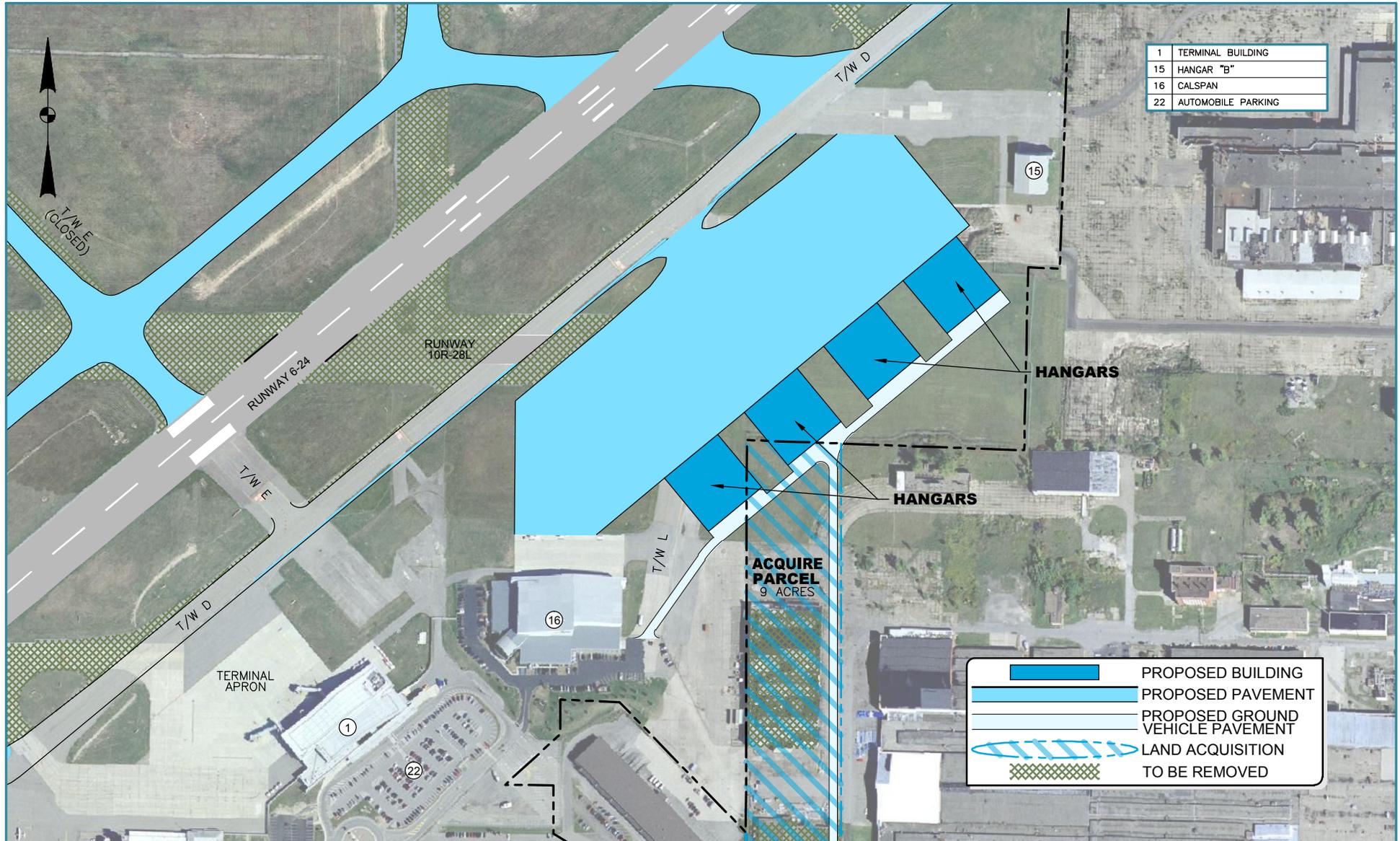
General Aviation Alternative 2 would develop a new general aviation area at NFIA. This new general aviation area would be located northeast of the passenger terminal along Taxiway D and co-located with the Calspan facility. While Calspan primarily focuses on transportation and aerospace testing, it recently took over FBO responsibilities at NFIA. As such, the construction of additional general aviation facilities near their existing hangar may be beneficial into the future.

The key considerations within this alternative, as depicted in **Figure 6-9**, are discussed below:

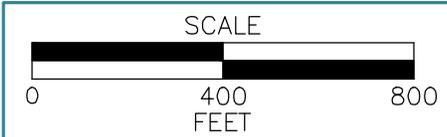
- **Construct Aircraft Apron:** As part of General Aviation Alternative 2, approximately 78,000 square yards of new aircraft apron would be constructed. This apron would extend from the existing Calspan apron to the northeast and would end near the existing Hangar B. Access to Taxiway D would be provided via two taxilanes, one north of the existing intersection between the closed Runway 10R-28L and Taxiway D and a second via the existing taxilane for Hangar B. The proposed apron will encompass significant

# GENERAL AVIATION - ALTERNATIVE 2

FIGURE 6-9



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## Sustainable Airport Master Plan

portions of existing Taxiways L and M, which would close. Remaining pavements associated with Taxiways L and M would be removed. The proposed apron would be utilized for aircraft parking, tie-downs, and the staging and maneuvering of aircraft.

- **Acquire Land:** To develop hangars and provide access to the proposed aircraft apron, approximately 9 acres of land would need to be acquired. This land is located east of the Airport and is currently part of the former Bell Aerospace Facility. This land includes two portions of the proposed hangars within General Aviation Alternative 2, as well as a proposed access road and parking associated with this area.
- **Plan for Four (4) Conventional Hangars:** As noted in Chapter 5, the development of additional hangar space at NFIA is recommended to accommodate additional jet aircraft and to provide aircraft maintenance services. Each hangar would measure approximately 40,000 square feet. One building is anticipated to combine a new general aviation terminal and hangar space.
- **Construct Access Road and Automobile Parking:** Two access roads would be provided to the site. The first access road would be constructed southeast of the proposed hangars. The access road would connect with the existing Calspan parking lot, which is located just off the terminal access road. Parking areas would be constructed on the southeastern wall of each hangar. The second access road would be constructed on the acquired parcel. This road would provide direct access to the site from Niagara Falls Boulevard.

General Aviation Alternative 2 was assessed against the evaluation factors; the results are below:

- **Facility Requirements:** General Aviation Alternative 2 meets or exceeds the requirements. This alternative provides adequate space for the future based aircraft storage, transient aircraft, aircraft maintenance, and general aviation terminal facilities. Land acquisition is required, without which the alternative would not be feasible. This evaluation factor was given a score of **Most (2)**.
- **Environmental Impact:** The area of proposed development within General Aviation Alternative 2 is not anticipated to have a substantial environmental impact. The development area is not within a floodplain, does not affect any delineated streams or wetlands, and is not located in the vicinity of any non-compatible land uses. Further analysis would be required related to the potential for the presence of hazardous materials on a portion of the site. The development area is close to the former Bell Aerospace facility and Saint-Gobain. The former Bell Aerospace facility has 20 identified solid waste management units, with VOCs as the primary contaminant of concern. Records indicate that high concentrations of VOCs and SVOCs have previously been identified at Saint-Gobain. The former Bell Aerospace facility has been identified as eligible for the National Register of Historic Places. While the proposed development would not impact the main structure of the former Bell Aerospace facility, a portion of the former Bell property would be acquired for construction of the access road and hangars. Further coordination with the State Historic Preservation Office would be required. This evaluation factor was given a score of **Fair (1)**.

## Sustainable Airport Master Plan

- **Sustainability:** General Aviation Alternative 2 is based upon acquisition of 13 acres between Calspan and the former Bell Aerospace Facility. Opportunities to implement a sustainable practice or introduce a sustainable design under this alternative include a thoughtful approach to pavement construction design that can maximize re-use of site materials and demolished buildings, and the design and construction of new hangars that take advantage of currently available energy-saving equipment and materials. This alternative capitalizes on the current FBO operation by Calspan. It is assumed that this alternative would have a neutral impact on air service. Considering the elements of sustainability criteria, this evaluation factor was given a value of **Fair (1)**.
- **Land Use Compatibility:** The land use in the vicinity of General Aviation Alternative 2 is compatible with the proposed development. The proposed apron and hangars would be located adjacent to an existing corporate facility. The proposed general aviation facilities would be separated from the passenger terminal and the terminal apron. Off-airport land uses in the vicinity are primarily vacant former industrial facilities. It is anticipated that any future redevelopment of those areas would be compatible with the operations of the Airport. Primary access to the site would be via an existing airport access road used primarily by Calspan, with a secondary access provided directly from Niagara Falls Boulevard. This evaluation factor was given a score of **Excellent (3)**.
- **Potential for Expansion:** General Aviation Alternative 2 would be fairly constrained for future expansions due to the airport property boundary and existing airport facilities. One additional hangar could likely be placed at the northeastern end of the apron, but that would limit any expansions south of the proposed apron due to the lack of airside access, even if additional land was acquired. This evaluation factor was given a score of **Poor (0)**.
- **Operational Efficiency:** This alternative would provide needed hangar space at NFIA capable of accommodating large business jets. The proposed development would be located adjacent to Calspan facility, which may prove beneficial with Calspan's recent FBO role at NFIA. However, the proposed facilities would create a new general aviation area on Airport with the current itinerant general aviation apron reverting to airport operations or passenger terminal support space. This evaluation factor was given a score of **Good (2)**.
- **Revenue Generation Capability:** The potential for additional revenue for the Airport is significant as a result of the proposed alternative. The provision of four 20,000-40,000 square foot hangars will draw additional land lease revenues, as well as landing and fuel flowage fees. The evaluation factor was given a score of **Excellent (3)**.

### 6.5.5 General Aviation Alternative 3: Infield Development

General Aviation Alternative 3 generally incorporates development of a new general aviation area at NFIA. This new general aviation area would be located northeast of the existing general aviation hangar area on land that includes abandoned taxiways and the existing Runway 10R-28L. This alternative co-locates all future general aviation facilities, users and infrastructure (with the exception of the Calspan research division) on to a consolidated quadrant of the airfield on the west side of Runway 6-24. No proposed general aviation facilities would be adjacent to the passenger terminal or military operations at the Airport.

## Sustainable Airport Master Plan

General Aviation Alternative 3 provides an expansion of the existing based general aviation area. The proposed expansion would begin near Taxiway C and extend towards the northeast. Airside access to the area would continue to be provided via Taxiway C, as well as through the future development of a full or partial parallel taxiway to Runway 6-24, as discussed in Section 6.3

The key considerations within this alternative, as depicted in **Figure 6-10**, are discussed below:

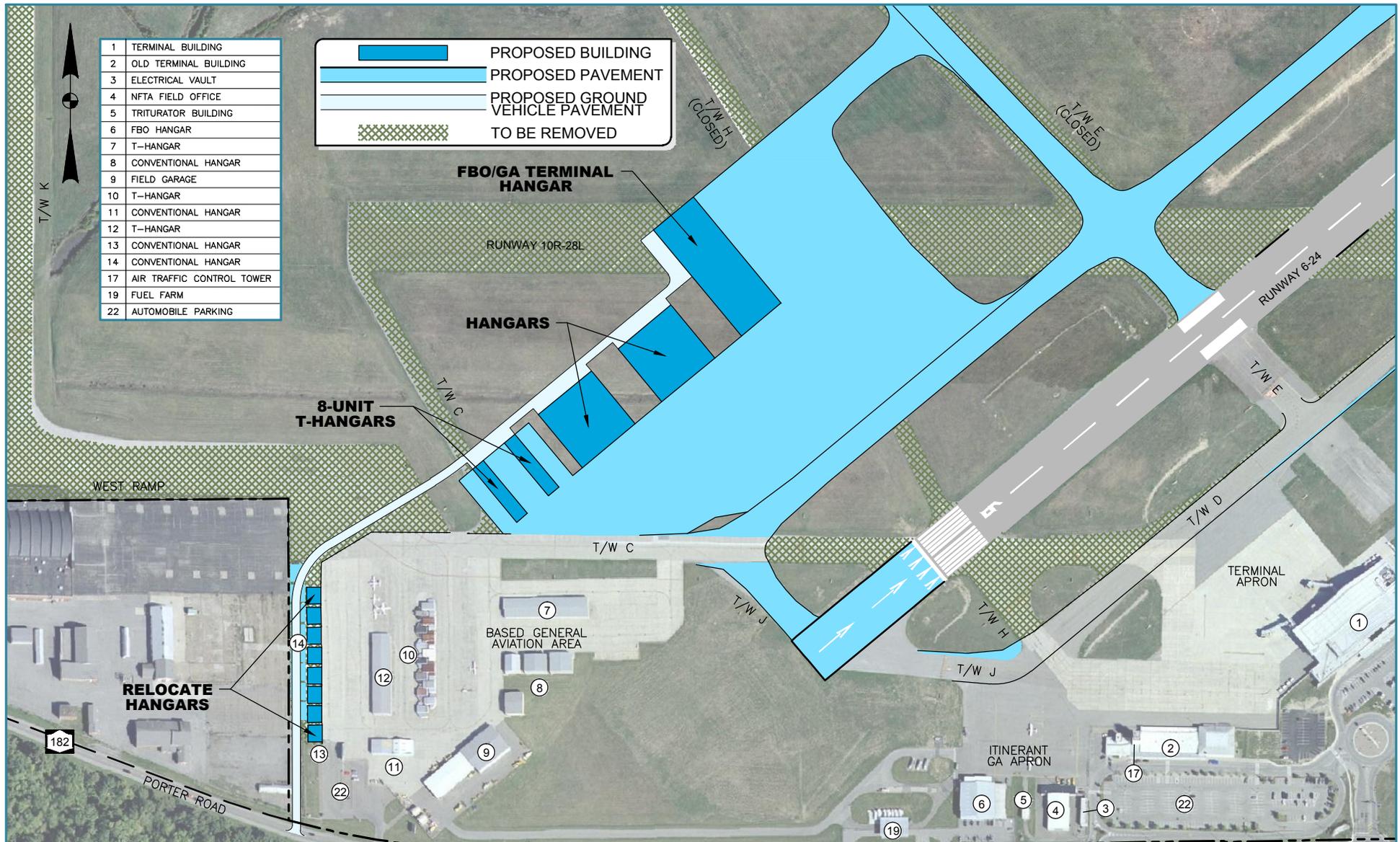
- **Plan for New Hangar Development:** The development of additional large hangars at NFIA is necessary to accommodate large aircraft and for transient aircraft that cannot currently fit into the FBO hangar. The proposed conventional hangars would each span approximately 40,000 square feet and would be constructed parallel with Runway 6-24. The hangars would be anticipated to store based or transient aircraft, but even if one hangar would be used for aircraft maintenance this alternative would still meet requirements identified in Chapter 5. Additional sites for the development of two 8-unit T-hangars have also been identified.
- **Plan for One (1) FBO/GA Terminal Hangar:** An additional building is proposed as part of the new hangar development. This building would span approximately 60,000 square feet and serve as the new FBO/GA Terminal building. The hangar would replace the existing building currently serving as the FBO hangar.
- **Construct Aircraft Apron:** Approximately 72,000 square yards of new aircraft apron would be constructed as part of General Aviation Alternative 3. This apron would include two segments. The first segment would run parallel to Runway 6-24 and serve the three conventional hangars. A second segment would extend towards the northwest and would serve the FBO/GA Terminal Hangar. Taxilanes would provide access to all of the hangars and apron tie-downs for based and transient aircraft.
- **Construct Access Road and Automobile Parking:** An access road from Porter Road would be constructed through the Based General Aviation Area, similar to the access road depicted in Air Cargo Alternative 3. The proposed access road would separate the existing hangars into two areas and would require the relocation of eight (8) single-unit t-hangars and closure of Taxiway K. Parking areas off the proposed access road would be provided for each of the five buildings proposed within this alternative.

General Aviation Alternative 3 was assessed against the evaluation factors; the results are below:

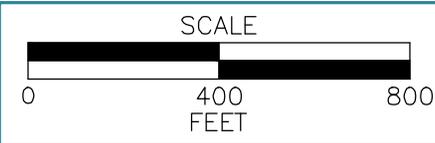
- **Facility Requirements:** General Aviation Alternative 3 meets and exceeds the general aviation facility requirements. The alternative would provide ample space for the development of a new general aviation terminal hangar and four additional hangars. One of these additional hangars could be utilized for aircraft maintenance. General Aviation Alternative 3 is within the existing airport property. This evaluation factor was given a score of **All (3)**.

# GENERAL AVIATION - ALTERNATIVE 3

FIGURE 6-10



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- **Environmental Impact:** General Aviation Alternative 3 is anticipated to result in minor environmental impacts. While aircraft noise and an increase in vehicle traffic patterns surrounding non-compatible land uses are not anticipated, approximately 0.35 acres of wetland impact would occur due to the construction. This evaluation factor was given a score of **Minor (2)**.
- **Sustainability:** General Aviation Alternative 3 expands the existing general aviation based aircraft area with proposed hangars and apron near the Runway 6 approach end. Opportunities to implement a sustainable practice or introduce a sustainable design under this alternative include a thoughtful approach to pavement construction design that can maximize re-use of site materials, and the design and construction of new hangars that take advantage of currently available energy-saving equipment and materials. Additionally, while this alternative would not locate new facilities near the current FBO operation by Calspan, it would support a central location for existing based and transient general aviation aircraft. It is assumed that this alternative would have a neutral impact on air service. Considering the elements of sustainability criteria, this evaluation factor was given a value of **Good (2)**.
- **Land Use Compatibility:** Land use in the vicinity of the proposed development area includes taxiways, runways, and other general aviation facilities. The proposed access road would provide access to Porter Road. The development of the access road through the existing facilities may create some impacts on the traffic patterns within the area and would require the closure of Taxiway K, but are not anticipated to be significant. When combined with several of the airside and air cargo development alternatives, this facility has the potential to be surrounded by other compatible land uses and to share an access road. This evaluation factor was given a score of **Excellent (3)**.
- **Potential for Expansion:** General Aviation Alternative 3 would be an expansion of the existing based general aviation area. A further expansion could be considered but would be heavily dependent on the selected airside alternative and air cargo alternative. The selection of Airside Alternative 2, which would reconstruct and open Taxiway E, would limit any further expansion toward the northeast. There is, however, expansion potential to the northwest, where additional hangars and aircraft apron could be constructed between Taxiways E and K, however, this also would be impacted with the selection of Air Cargo Alternatives 3 or 3a. This evaluation factor was given a score of **Good (2)**.
- **Operational Efficiency:** The proposed alternative would enhance the operational efficiency of NFIA. In addition to providing adequate hangar space for aircraft desiring to utilize NFIA, including large jets which cannot currently be hangared, the FBO would also relocate to the new location. Fuel trucks would need to utilize the existing perimeter road to travel around Runway 6-24 to refuel GA aircraft, but all general aviation facilities would be co-located and separated from traffic associated with the passenger terminal. Further, with the consideration of airside improvements within the vicinity of the proposed general aviation development, access to this site will be ideal for users of both runways. This evaluation factor was given a score of **Excellent (3)**.
- **Revenue Generation Capability:** The potential for additional revenue for the airport sponsor is significant as a result of the proposed alternative. The provision of the four additional hangars and the FBO/GA terminal hangar would draw additional land lease

## Sustainable Airport Master Plan

revenues, landing fees, and fuel flowage fees for aircraft utilizing those facilities. The evaluation factor was given a score of **Excellent (3)**.

### 6.5.6 General Aviation Alternative 4: Acquire Former U.S. Army Parcel

Similar to General Aviation Alternative 3, this alternative includes development of new general aviation facilities adjacent to the based General Aviation area on the western side of Runway 6-24. This alternative would incorporate the acquisition of the parcel formerly utilized by the U.S. Army adjacent to the airport. Within this area, the existing hangar and aircraft apron would be maintained and several additional hangars and aircraft apron would be constructed. This alternative would lead to the closure of Taxiway K.

The key considerations within this alternative, as depicted in **Figure 6-11**, are discussed below:

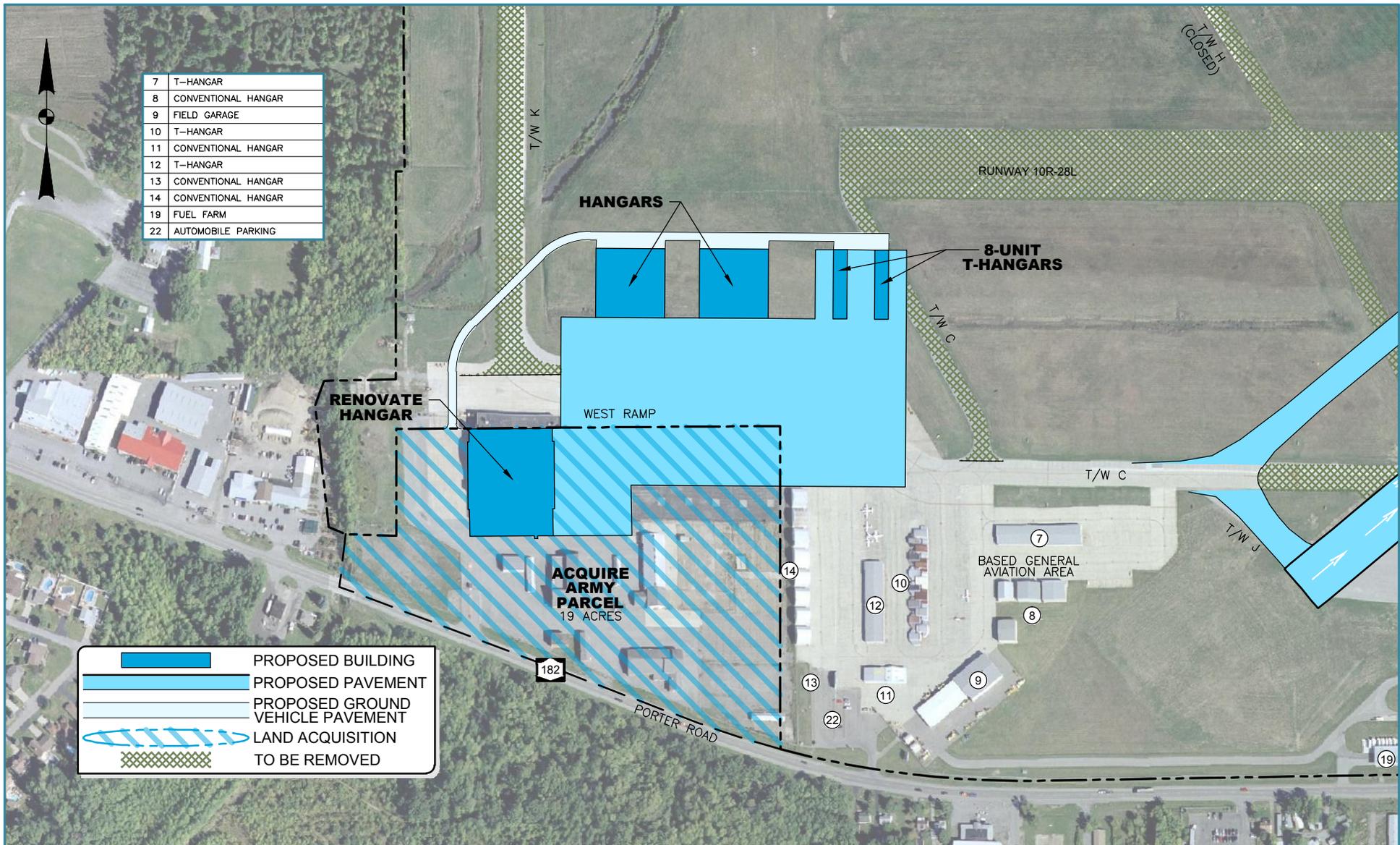
- **Acquire Land:** The success of General Aviation Alternative 4 relies on the acquisition of the U.S. Army parcel and reutilization of the existing hangar for general aviation uses. Due to a change in mission for the U.S. Army, its facilities are no longer necessary. As the U.S. Army studies its next course of action with the parcel, acquisition by NFTA may be possible. The site encompasses approximately 19 acres and is accessible via Porter Road.
- **Plan for New Hangar Development:** In addition to reuse of the existing hangar on the Army parcel, the construction of two new hangars would be recommended. The new hangars would each span approximately 40,000 square feet. The new hangars would be constructed on airport property northeast of the existing Army hangar. This would provide enough space for a new general aviation terminal and aircraft maintenance facility, while also meeting future hangar space requirements. Space is also reserved for the construction of up to two 8-unit T-hangars for the storage of single engine aircraft.
- **Construct Aircraft Apron:** Approximately 58,000 square yards of aircraft apron would be required under this alternative. This apron would begin south of the new hangars and extend towards the based general aviation area. Existing pavement would be used to the extent practical, including existing taxiway and apron pavements, and approximately 18,000 square yards of new pavement would be constructed.
- **Construct Access Road and Automobile Parking:** Current access and parking for the existing Army hangar is provided by Porter Road. Extension of the existing military access would be required. Parking areas off the proposed access road would be provided for each of the new hangars proposed.

General Aviation Alternative 4 was assessed against the evaluation factors; the results are below:

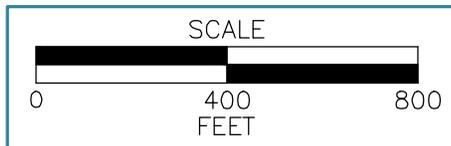
- **Facility Requirements:** General Aviation Alternative 4 would meet or exceed the requirements identified in Chapter 5. While a specific hangar for aircraft maintenance or to serve as a general aviation terminal are not identified, these functions could be served within any of the three new hangars identified while still meeting space requirements for proposed storage of based and/or transient aircraft demands. However, the acquisition of land would be required and without, this alternative would not be feasible. This evaluation factor was given a score of **Some (1)**.
-

# GENERAL AVIATION - ALTERNATIVE 4

FIGURE 6-11



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- **Environmental Impact:** The proposed development included in General Aviation Alternative 4 is not anticipated to result in increased aircraft noise or changes in motor vehicle traffic patterns. The proposed development would occur within the 100-year floodplain of the Cayuga Creek. In addition, this alternative would impact approximately 0.32 acres of wetlands as a result of the construction of the access road and aircraft apron. These impacts are not deemed as significant and this evaluation factor was given a score of **Minor (2)**.
- **Sustainability:** General Aviation Alternative 4 is based on acquisition of the U.S. Army Parcel. Opportunities to implement a sustainable practice or introduce a sustainable design under this alternative include a thoughtful approach to pavement construction design that can maximize re-use of site materials and demolished buildings, and design and construction of new hangars that take advantage of currently available energy-saving equipment and materials. Considering the elements of sustainability criteria, this evaluation factor was given a value of **Good (2)**.
- **Land Use Compatibility:** Land use in the vicinity of the proposed development area would include taxiways, runways, and other general aviation facilities. Off-airport land uses in the area primarily include commercial development along Porter Road. When combined with the preferred airside alternative, this alternative will facilitate future growth and efficiency of general aviation operations at NFIA. This evaluation factor was given a score of **Excellent (3)**.
- **Potential for Expansion:** Significant opportunity for expansion is available as part of this alternative. Expansion could occur through a variety of factors, and is primarily contingent on the airside and air cargo alternatives selected. This could include expansion of additional hangars, as well as the aircraft apron, towards the east. Additionally, utilizing the same access road, new hangars and aircraft apron could be constructed on the north side of the proposed hangars and also extend towards the east. This evaluation factor was given a score of **Excellent (3)**.
- **Operational Efficiency:** The proposed alternative would provide some improvements to the operational efficiency of the Airport. This alternative would provide the required hangar space for aircraft storage, a general aviation terminal, and aircraft maintenance facility. This alternative co-locates all general aviation facilities west of Runway 6-24. Operational efficiencies may be impacted by the closure of Taxiway K and the elimination of an access route to Runway 10L-28R. New access routes to Runway 10L-28R are recommended as part of the Airside Alternatives (except Airside Alternative 1), which would alleviate most impacts associated with this closure. This evaluation factor was given a score of **Good (2)**.
- **Revenue Generation Capability:** The potential for additional revenue for the airport sponsor is significant as a result of the proposed alternative. The provision of the three new hangars would draw additional land lease revenues, landing fees, and fuel flowage fees. The acquisition of the U.S. Army hangar would also provide additional revenue through the lease of space in the existing buildings. The evaluation factor was given a score of **Excellent (3)**.

## Sustainable Airport Master Plan

### 6.5.7 General Aviation Alternative 4a: Acquire and Construct Within Former U.S. Army Parcel

General Aviation Alternative 4a is a variation of General Aviation Alternative 4, including acquisition of the U.S. Army parcel and reuse of the existing U.S. Army hangar. General Aviation Alternative 4a would locate all future general aviation development within the 19 acre acquired parcel. This would limit future development, due to constraints within the existing parcel, but would allow for continued use of Taxiway K and involve no construction of additional aircraft apron.

The key considerations within this alternative, as depicted in **Figure 6-12**, are discussed below:

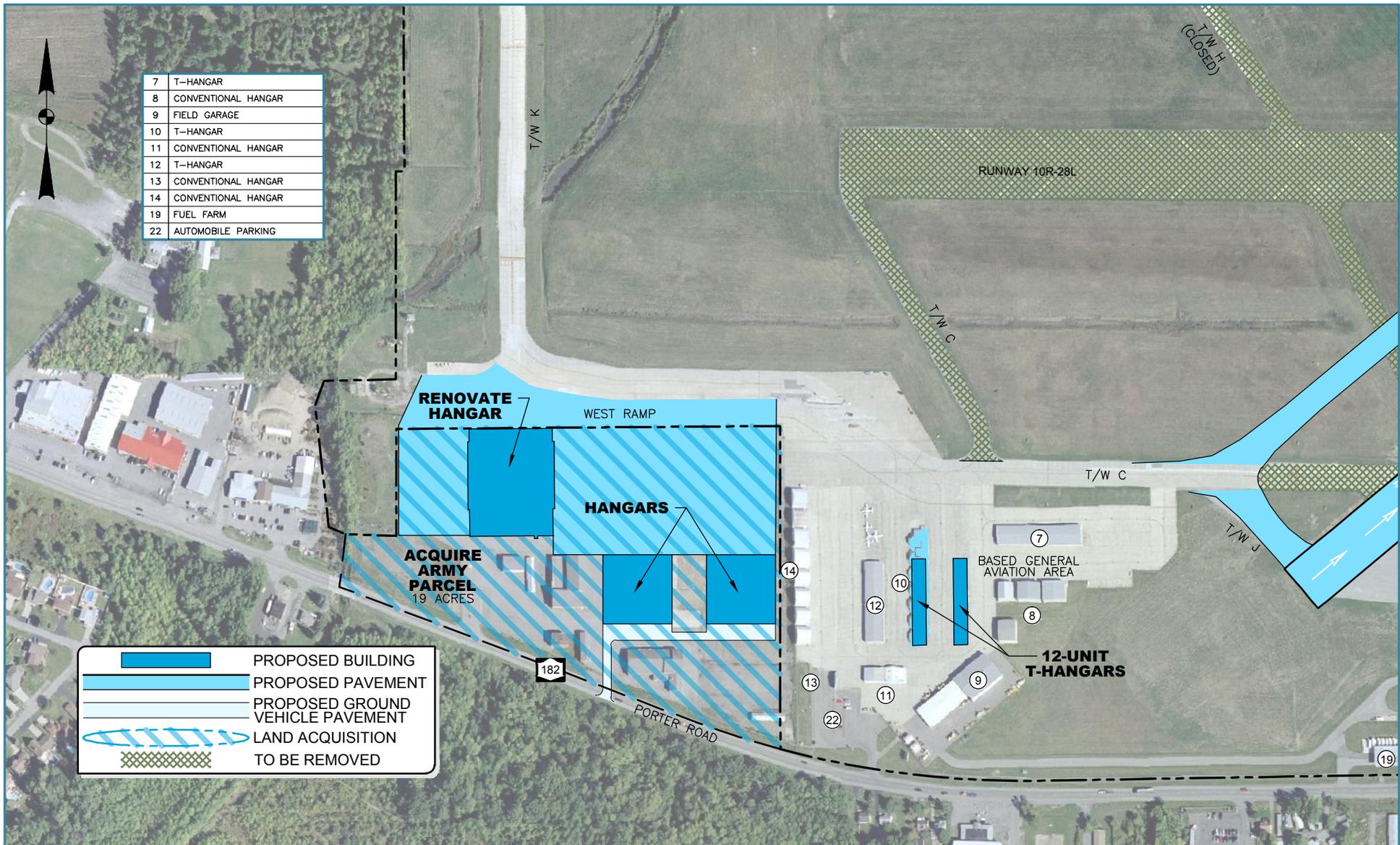
- **Plan for Two (2) Conventional Hangars and Two (2) 12-Unit T-Hangars:** Due to the limited size and dimensions of the U.S. Army Parcel, only two new hangars could be accommodated within this area. These hangars would each span approximately 40,000 square feet and would be constructed near Porter Road. Existing buildings on the site would be demolished. This alternative would also include the reuse of the existing U.S. Army hangar which would require extensive renovation. There is also the proposed development of two 12-unit T-hangars within the based general aviation area, anticipated to accommodate single engine aircraft at the Airport. Between these five buildings, there would be enough hangar space available to accommodate based aircraft, aircraft maintenance, and general aviation terminal needs within the planning period.
- **Construct Access Road and Automobile Parking:** An access road to the two proposed conventional hangars would be constructed from Porter Road. The access road would be separate from the existing access gate utilized by the U.S. Army, which would continue to provide access to the former U.S. Army hangar. Parking facilities would be constructed south of each new hangar for visitor and employee use.

General Aviation Alternative 4a was assessed against the evaluation factors; the results are below:

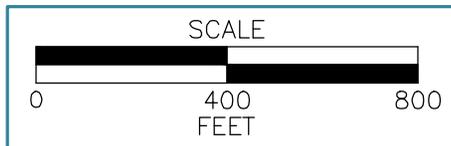
- **Facility Requirements:** General Aviation Alternative 4a meets and exceeds the amount of future additional hangar space required at NFIA for both aircraft storage and maintenance. In addition, enough space is available within the proposed alternative to accommodate a new general aviation terminal while still providing the required hangar space. Similar to Alternative 4, the feasibility of completing this alternative would be dependent on the acquisition of the U.S. Army parcel. All development proposed in General Aviation Alternative 4a requires the use of that parcel. As such, this evaluation factor was given a score of **Some (1)**.
- **Environmental Impact:** The proposed development included in General Aviation Alternative 4a would occur solely within areas that have been previously disturbed as part of the U.S. Army parcel. The proposed development is not anticipated to result in increased aircraft noise, changes in motor vehicle traffic patterns, impacts to streams or wetlands, or impacts to threatened or endangered species. While some aircraft apron improvements may occur within the 100-year and 500-year floodplains of Cayuga Creek, they would not include the construction of any new impervious surface. These impacts are not deemed as significant and this evaluation factor was given a score of **None (3)**.

# GENERAL AVIATION - ALTERNATIVE 4A

FIGURE 6-12



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- **Sustainability:** General Aviation Alternative 4a is materially similar to Alternative 4, and therefore was evaluated the same score for this criteria: **Good (2)**.
- **Land Use Compatibility:** Land use in the vicinity of the proposed development area includes taxiways, runways, and general aviation facilities. Off-airport land uses in the area primarily include commercial development along Porter Road. This alternative would facilitate future growth and efficiency of general aviation operations at NFIA. This evaluation factor was given a score of **Excellent (3)**.
- **Potential for Expansion:** As opposed to General Aviation Alternative 4, this alternative would not incorporate initial development on the north and east sides of Taxiway K. While additional expansion could occur within this area, it would require construction of additional access routes and would result in impacts to Taxiway K. Within the U.S. Army parcel, there would be no space available for the construction of additional hangars. Expansion would need to occur to the north of Taxiway K or at another location on the Airport. This evaluation factor was given a score of **Fair (1)**.
- **Operational Efficiency:** The proposed alternative would provide for operational improvements greater than those identified in in General Aviation Alternative 4. This alternative would provide the required hangar space for aircraft storage, a general aviation terminal, and aircraft maintenance. This alternative would not require closing Taxiway K, which would continue to provide access to Runway 10L-28R. However, while aircraft apron space is provided for the staging and maneuvering of aircraft that are stored within the hangars, additional space for transient aircraft to park is limited within this alternative with reduced availability. This evaluation factor was given a score of **Good (2)**.
- **Revenue Generation Capability:** The potential for additional revenue for the Airport is significant as a result of the proposed alternative. The construction of two new hangars will draw additional land lease revenues, landing fees, and fuel flowage fees. The acquisition and renovation of the U.S. Army hangar would provide additional revenue through the lease of space in an existing building. The evaluation factor was given a score of **Excellent (3)**.

### 6.5.8 General Aviation Alternatives Summary and Selection of Preferred Alternative

The previous GA alternatives were evaluated based on seven criteria. **Table 6-5** summarizes these alternatives and their related assessments.

**Table 6-5: General Aviation Alternatives Summary**

Alternative	Facility Requirements	Environmental Impact	Sustainability	Land Use Compatibility	Potential for Expansion	Operational Efficiency	Revenue Generation Capability	Score
1	0	3	0	1	0	0	0	4
2	2	2	1	3	0	2	3	13
3	3	2	2	3	2	3	3	18
4	1	2	2	3	3	2	3	16
4a	1	3	2	3	1	2	3	15

## Sustainable Airport Master Plan

The recommended general aviation alternative for NFIA is Alternative 3. General Aviation Alternative 3 scores higher than the other alternatives and offers the highest scores for expansion potential, and operational efficiency while meeting facility requirements for the planning period. GA Alternatives 1 does not meet facility requirements and GA Alternatives 2, 4, and 4a only partially meet these requirements. While General Aviation Alternative 2 was not selected, it is complementary to the preferred alternative and could be considered for future development and planned for as an ultimate build-out scenario for NFIA.

### 6.6 TERMINAL ALTERNATIVES

In order to facilitate the growth and efficiency of NFIA, the passenger terminal facilities were reviewed to develop alternatives suited to address present and future needs. Those alternatives are discussed in the following sections.

#### 6.6.1 Summary of Terminal Facility Requirements:

The previous chapters identified and quantified the necessary improvements that should be addressed at NFIA over the 20-year planning period. Terminal needs are the result of increased passenger enplanements since commercial service was reinstated at the Airport and the new terminal was constructed in 2009. The original terminal design anticipated future expansion, and the facility requirements below are compatible with the existing building. Specific needs identified include:

- Expand passenger terminal curb length by 95 to 175 feet
- Add 420 square feet of passenger queue area for staffed counters and up to 390 square feet of passenger queue area for kiosks
- Add up to three additional ticketing kiosks
- Expand baggage screening area by up to 1,935 SF
- Add one additional Explosives Detection System (EDS) for baggage screening
- Provide up to 2,322 square feet of additional baggage make-up area
- Add one additional passenger screening lane
- Expand passenger holdroom by up to 700 square feet
- Provide up to 100 linear feet of additional baggage conveyor frontage in the baggage claim area
- Add up to two additional passenger boarding gates

The alternatives identified and evaluated in the following subsections have been created to provide for these requirements, except that each alternative is also measured against a no-build alternative scenario.

Facility requirements for the terminal were developed in accordance with the forecast and forecast scenarios identified in Chapter 4. These alternatives will satisfy the facility requirements identified at forecasted levels. The forecast for this master plan was conditionally approved with the recommendation that the forecast be revisited by 2025 when the passenger market for NFIA is expected to be more mature.

During the facility requirements and terminal capacity analysis, it was noted that multiple functional areas would become increasingly constrained at levels in excess of 500,000 enplanements (approximately 50% above forecasted levels). As enplanements approach

## Sustainable Airport Master Plan

forecasted levels, an in-depth and comprehensive review of the functional areas of the passenger terminal is recommended to ensure a consistently optimal passenger experience.

### 6.6.2 Identification of Terminal Alternatives

- Alternative 1 - No Build
  - No physical changes to the interior or exterior of the building
- Alternative 2 - Modified Interior
  - Single baggage claim device of larger capacity
  - Secure concessions move to second level providing some security expansion
- Alternative 3
  - Additional boarding bridge flexibility/capability
  - Two baggage claim devices to allow for two simultaneous domestic arrivals or a domestic and international arrival of 200-passenger aircraft.
  - The non-secure concessions would shift to an area near baggage claim and the secure concessions would shift to the upper level to allow for an expansion of the security checkpoint
  - The baggage screening would be expanded to serve larger aircraft

### 6.6.3 Terminal Alternative 1 (No-Build)

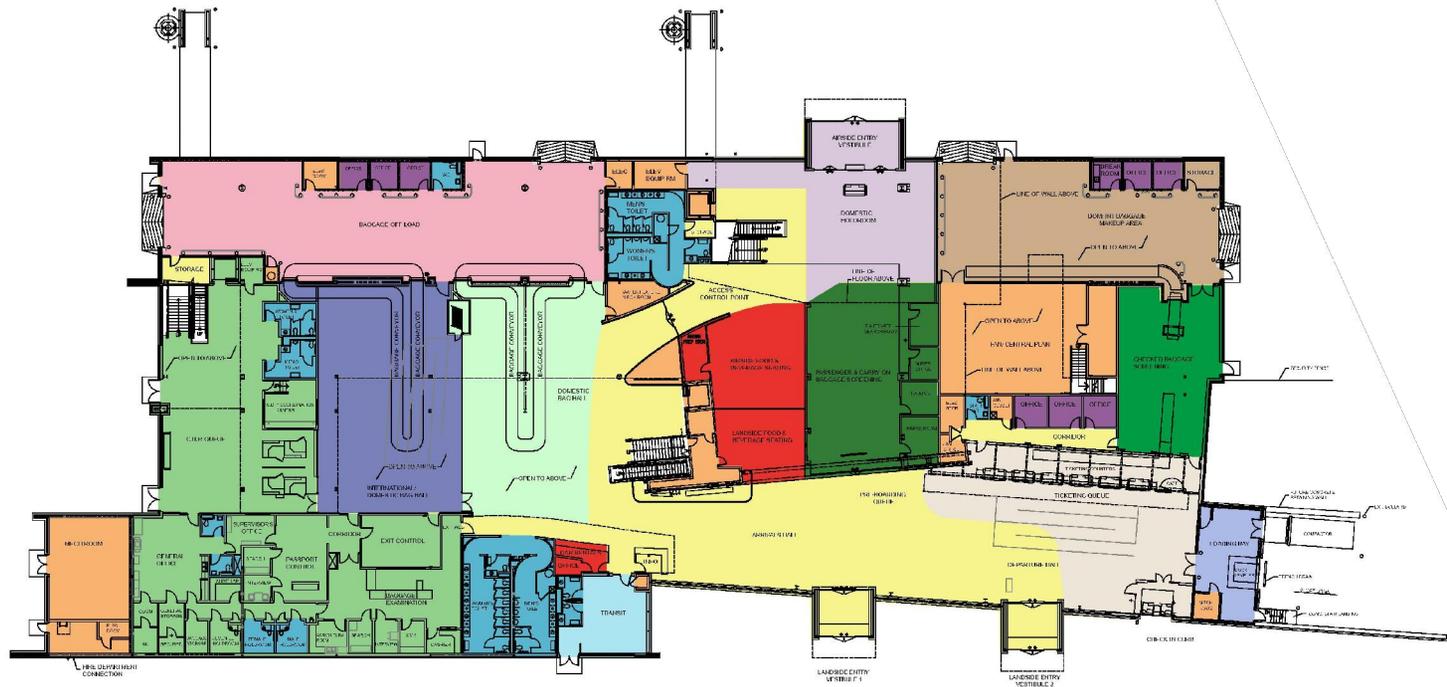
The No-Build Alternative offers no changes to the existing layout at NFIA. The existing terminal layout can be seen in **Figures 6-13 & 6-14**.

Terminal Area Alternative 1 was assessed against the evaluation factors; the results are below:

- **Facility Requirements:** While the passenger terminal operates safely and efficiently today, passenger convenience would gradually decline as result of improvements not made to maintain an efficient operation. This evaluation factor was given a score of **Poor (0)**.
- **Environmental Impact:** The area surrounding the passenger terminal has already been disturbed and there are no known environmental constraints in the immediate vicinity. No modifications to the building are proposed as part of this alternative and existing conditions are proposed to remain into the future. The alternative results in a rating of **None (3)** for this evaluation criteria.
- **Sustainability:** The nature of the No-Build Alternative is such that no changes will be made to the existing airport layout; therefore, it is assumed that no sustainability practices are initiated at the Airport under this alternative. While some opportunities for implementing sustainable practices are available to the Airport under the No-Build Alternative, these are the same opportunities that are available to the Airport under any alternative (i.e., a recycling program, or replacement of lighting and other mechanical or electrical equipment with high efficiency models). Therefore, because no additional sustainability practices are available under this alternative than others, this evaluation factor was given a value of **Poor (0)**.

# TERMINAL MAIN LEVEL - NO BUILD

FIGURE 6-13



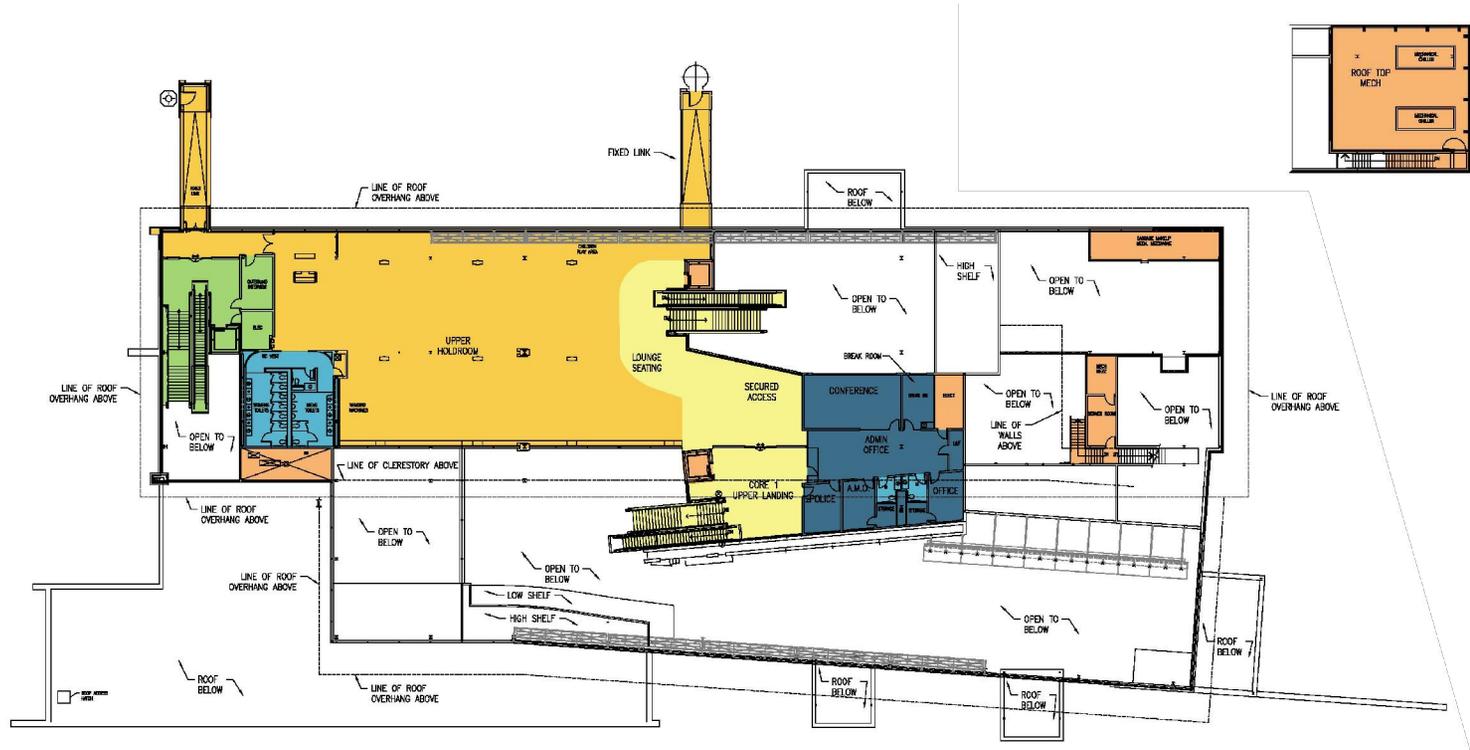
- LEGEND**
- AIRLINES
  - CIRCULATION
  - RESTROOMS
  - MECHANICAL
  - T.S.A. PASSENGER SCREENING
  - T.S.A. HOLD BAGGAGE
  - C.B.P.
  - CONCESSION/RETAIL
  - NFTA TRANSIT
  - BAGGAGE MAKEUP
  - TICKETING
  - HOLDROOM
  - BAGGAGE CLAIM - INTERNATIONAL
  - BAGGAGE CLAIM - DOMESTIC
  - BAGGAGE OFFLOAD
  - LOADING BAY

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# TERMINAL UPPER LEVEL - NO BUILD

FIGURE 6-14



- LEGEND**
- HOLDROOM
  - AIRPORT OFFICES
  - CIRCULATION
  - RESTROOMS
  - MECHANICAL
  - C.B.P.

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- **Land Use Compatibility:** The passenger terminal at NFIA is compatible with the surrounding land uses, as it is located between the airfield, a busy commercial development area, and a highway. This evaluation factor was given a score of **Excellent (3)**.
- **Potential for Expansion:** The facility itself can still be expanded in the future to any of the build alternatives identified, however, by not making necessary facility improvements, construction impacts will be more problematic when the facility is operating near maximum capacity. This evaluation factor was given a score of **Fair (1)**.
- **Operational Efficiency:** With no changes to the existing terminal, the efficiency of the passenger processing operation and the overall passenger experience would gradually decline over the planning period with no means of improvement. This evaluation factor was given a score of **Poor (0)**.
- **Revenue Generation Capability:** Much of the terminal space in the existing terminal consists of public space and circulation area, meaning that overall revenue generating leased space will remain unchanged. With no changes to the terminal from its current layout, the ability for the Airport to generate any further revenue would be limited. This evaluation factor was given a score of **Poor (0)**.

### 6.6.5 Terminal Alternative 2

Terminal Alternative 2 optimizes and reconfigures space within the existing building footprint to meet the facility requirements to the greatest extent possible. Interior functional areas are modified to best accommodate the passenger demand profile that has come to use the Airport since the facility was first constructed.

The key considerations within this alternative, as depicted in **Figures 6-15 & 6-16**, are discussed below:

- **Reconfigured Baggage Claim:** The two smaller, flat plate carousels are consolidated into a single larger sloped plate carousel that recirculates only in the public area. Multiple domestic arrivals can be accommodated on this single carousel, however simultaneous international and domestic baggage operations would not be possible.
- **Expanded Checkpoint:** In order to accommodate a greater number of peak hour passengers, this concept expands the checkpoint area into what is currently utilized as vending and concession space directly adjacent to the checkpoint. Vending and concessions seating would be relocated to other appropriate areas.
- **Enhanced Baggage Screening:** At the commencement of this master plan, all checked baggage was manually screened with a single explosive detection system having been installed since. This alternative contains the provision for either a second device or a larger, more capable device.

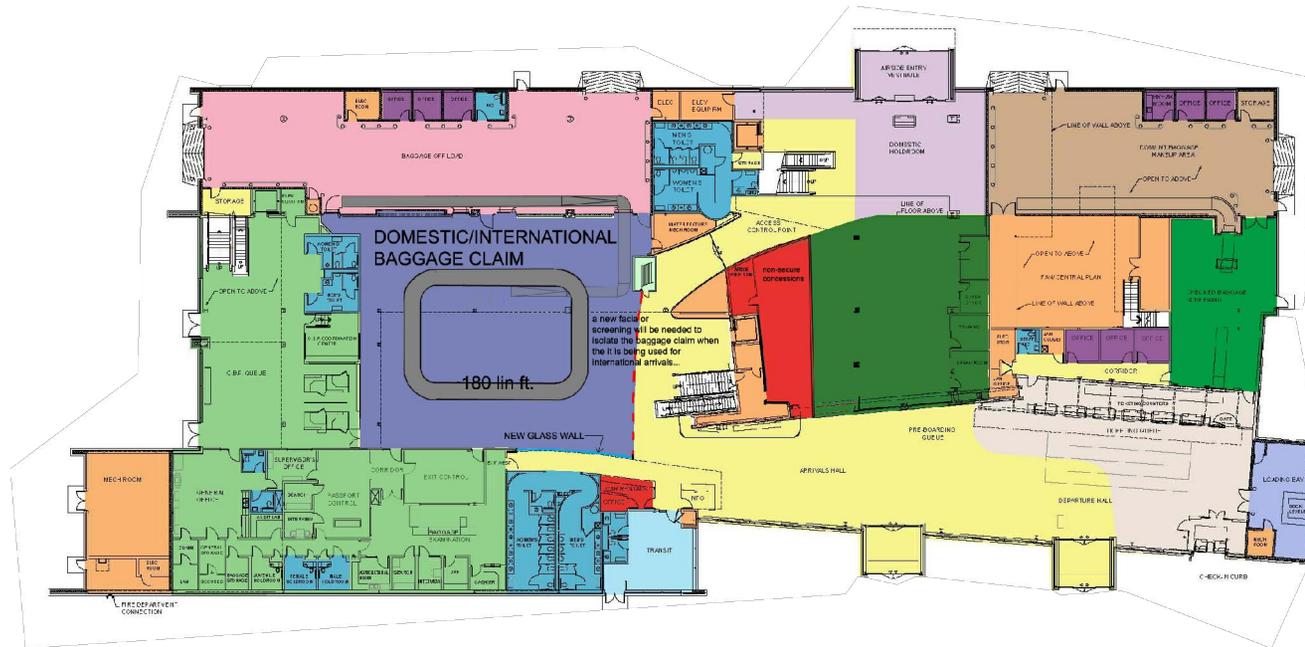
Terminal Alternative 2 was assessed against the evaluation factors; the results are below:

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- **Facility Requirements:** Alternative 2 addresses much of the facility requirements to allow for an overall improved or consistent passenger experience, although outbound baggage operations may become constrained at peak times. Facility requirements did not identify a number of baggage claim carousels, but rather frontage, therefore the consolidation into one carousel meets facility requirements and enhances security at the airport, however there may be operational challenges during an international arrival. This evaluation factor was given a score of **Some (1)**.
- **Environmental Impact:** The area surrounding the passenger terminal has already been disturbed and there are no known environmental constraints in the immediate vicinity. Any expansion beyond the existing walls will require an Environmental Assessment (EA) to measure any environmental consequences resulting from the increased airport activity facilitated by the terminal expansion. The alternative and activity levels identified in this master plan result in a score of **None (3)** for this evaluation criteria.
- **Sustainability:** The alternative representing the conceptual layout does not visually depict specific sustainable initiatives or design. **Appendix H** discusses sustainable strategies for NFIA. The NFTA should consider opportunities to incorporate sustainable elements into the project that offer a reasonable payback period to the increased investment. The actual sustainability score will depend on the degree to which this criteria and sustainable building practices are followed. With a reasonable effort, the score would be considered **Good (2)**.
- **Land Use Compatibility:** All passenger terminal improvements are proposed to be constructed adjacent to the existing facility. The passenger terminal at NFIA is compatible with the surrounding land uses, as it is located between the airfield, a busy commercial development area, and a highway. This evaluation factor was given a score of **Excellent (3)**.
- **Potential for Expansion:** The facility itself can still be expanded in the future, with space for expansion available to the northeast and southwest. This evaluation factor was given a score of **Good (2)**.
- **Operational Efficiency:** While the airport would have a properly sized baggage carousel capable of serving over 300 passengers at once, international and domestic operations could not occur simultaneously due to U.S. Customs and Border Protection operational requirements. Outbound baggage makeup area will also be constrained during peak times resulting in an overall operational efficiency score of **Poor (0)**.
- **Revenue Generation Capability:** Much of the terminal space in the expansion consists of public space and circulation area, meaning that overall revenue generating leased space will remain near existing levels. The improvements however will result in additional capacity which can increase airport revenues through parking, concession sales and PFC revenue. Though direct revenue is minimal, the induced revenue yields a score of **Fair (1)**.

# TERMINAL MAIN LEVEL - ALTERNATIVE 2

FIGURE 6-15



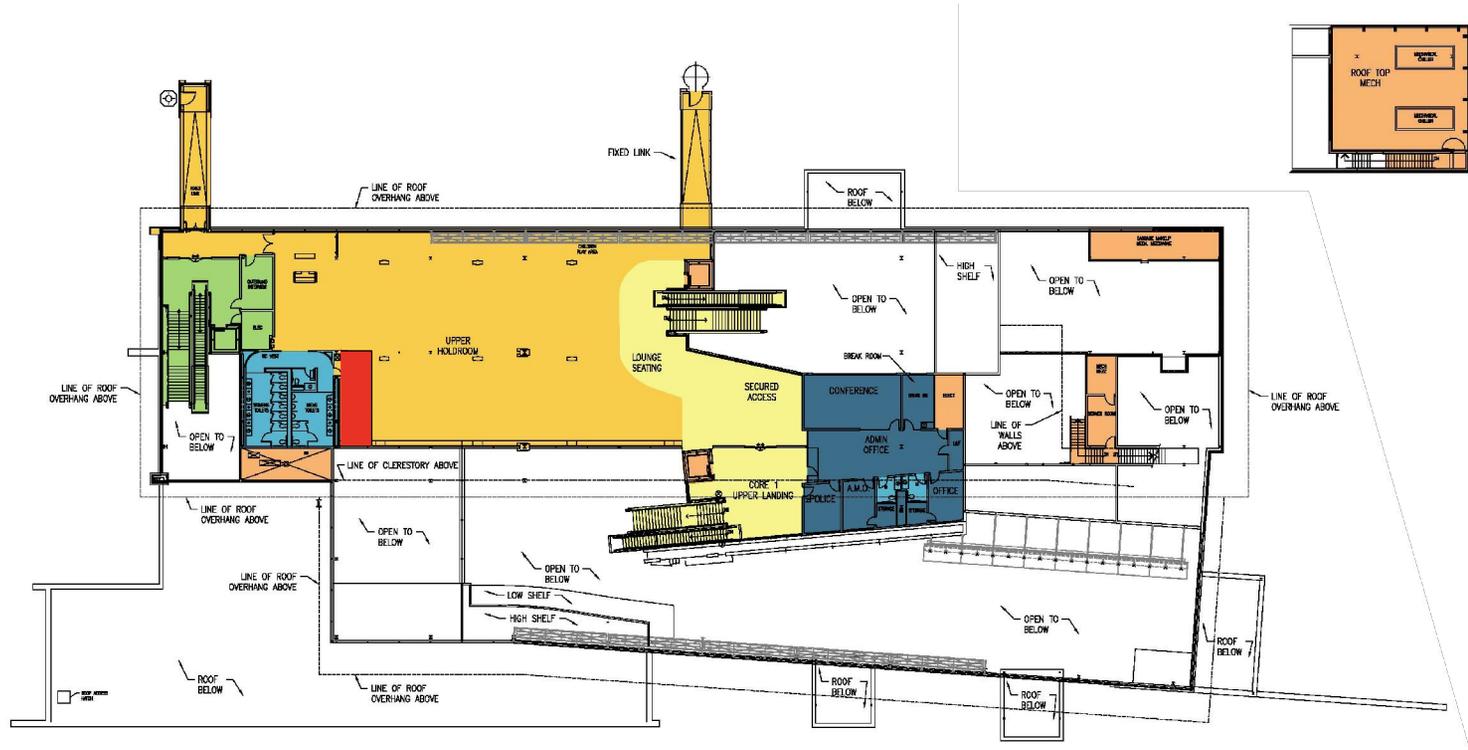
- LEGEND**
- AIRLINES
  - CIRCULATION
  - RESTROOMS
  - MECHANICAL
  - T.S.A. PASSENGER SCREENING
  - T.S.A. HOLD BAGGAGE
  - C.B.P.
  - CONCESSION/RETAIL
  - NFTA TRANSIT
  - BAGGAGE MAKEUP
  - TICKETING
  - HOLDROOM
  - BAGGAGE CLAIM - INTERNATIONAL
  - BAGGAGE CLAIM - DOMESTIC
  - BAGGAGE OFFLOAD
  - LOADING BAY

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# TERMINAL UPPER LEVEL - ALTERNATIVE 2

FIGURE 6-16



- LEGEND**
- HOLDROOM
  - AIRPORT OFFICES
  - CIRCULATION
  - RESTROOMS
  - MECHANICAL
  - C.B.P.
  - CONCESSION/RETAIL

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## Sustainable Airport Master Plan

### 6.6.6 Terminal Alternative 3

Terminal Alternative 3 involves a physical expansion to the terminal to allow for expanded baggage claim facilities while maintaining a similar sized Federal Inspection Station (FIS) and flexible international baggage claim operation similar to the existing configurations. A physical expansion to the north would facilitate improvements to the outbound baggage that would eliminate constraints during peak periods and better position operations for growth beyond the master plan forecasts.

The key considerations within this alternative, as depicted in **Figures 6-17 & 6-18**, are discussed below:

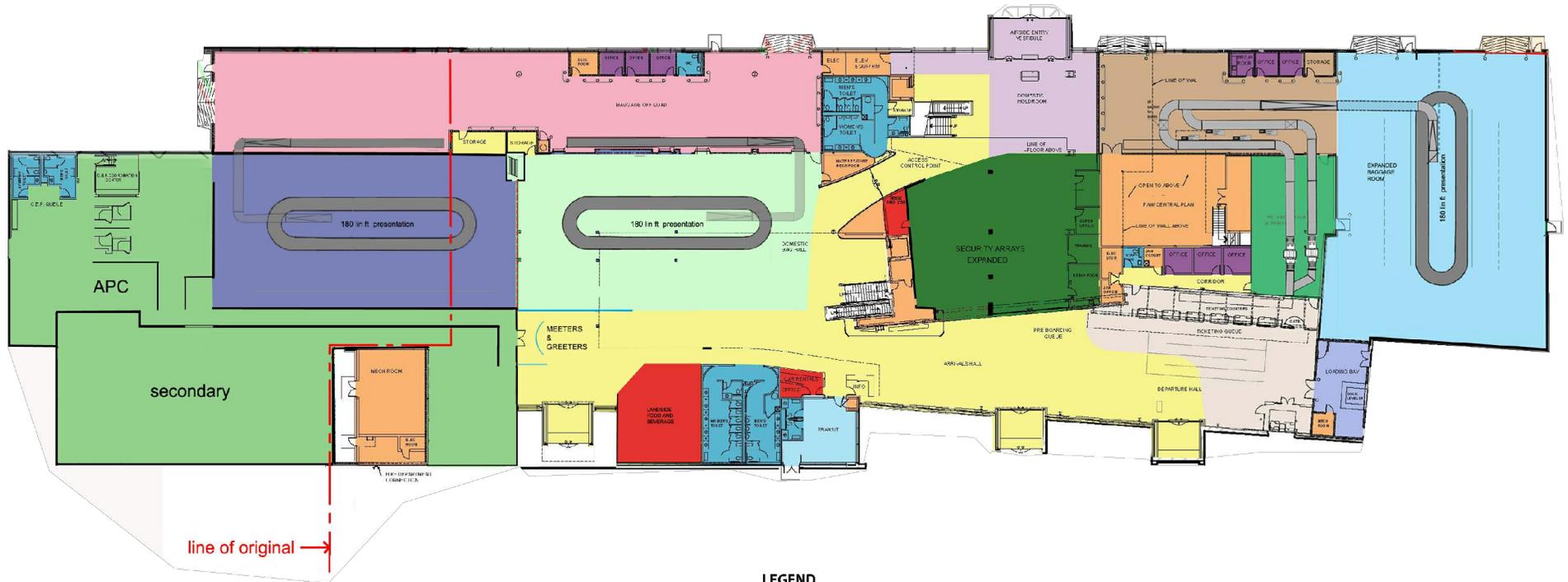
- **Reconfigured Baggage Claim:** Two sloped plate carousels are provided in a similar flexible domestic/international configuration that exists today. The sloped plate carousels are larger and recirculate only on the public side meeting new security recommendations.
- **Expanded Checkpoint:** In order to accommodate a greater number of peak hour passengers, this concept expands the checkpoint area into what is currently underutilized vending and concession space directly adjacent to the checkpoint. Vending and concessions seating would be relocated to other underutilized areas.
- **Outbound Baggage Processing:** At the commencement of this master plan, all checked baggage was manually screened. A single explosive detection system has been installed since. This alternative contains the provision for multiple screening devices that also feed a recirculating outbound baggage belt that would be shared for multiple airlines/departures.
- **Expanded Holdrooms:** Physical expansion of the facility accommodates larger passenger holdrooms which includes the possibility of expanded concession and vending in the departure areas.

Terminal Alternative 3 was assessed against the evaluation factors; the results are below:

- **Facility Requirements:** Alternative 3 addresses much of the facility requirements to allow for an overall improved passenger experience. The expansion of the passenger terminal allows for a second jet bridge with international capability (just not simultaneous boarding). This alternative also improves outbound baggage screening with a circulating carousel that allows for higher outbound baggage screening capacity compared to other alternatives. This evaluation factor was given a score of **All (3)**.
- **Land Use Compatibility:** All passenger terminal improvements are proposed to be constructed adjacent to the existing facility. The passenger terminal at NFIA is compatible with the surrounding land uses, as it is located between the airfield, a busy commercial development area, and a highway. This evaluation factor was given a score of **Excellent (3)**.

# TERMINAL MAIN LEVEL - ALTERNATIVE 3

FIGURE 6-17



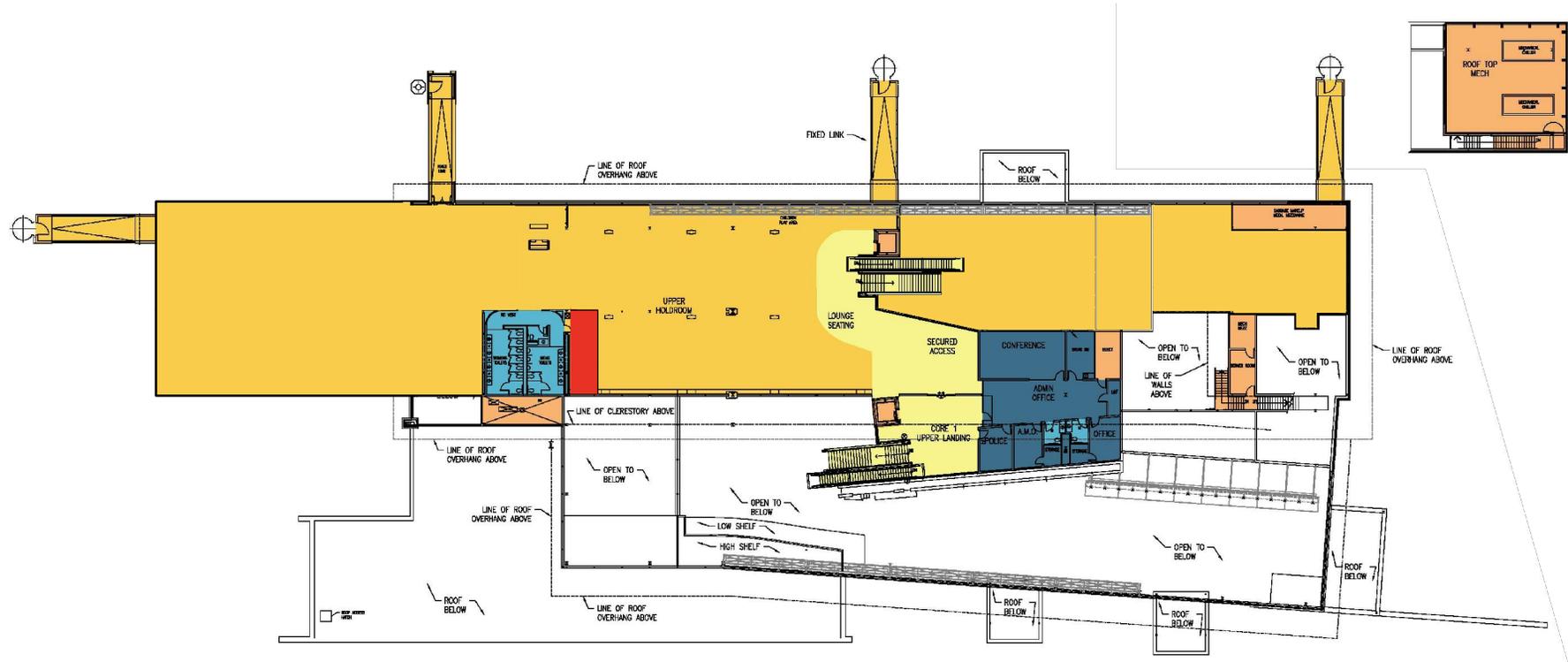
- LEGEND**
- AIRLINES
  - CIRCULATION
  - NFTA TRANSIT
  - BAGGAGE MAKEUP
  - RESTROOMS
  - TICKETING
  - MECHANICAL
  - HOLDROOM
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  - BAGGAGE CLAIM - INTERNATIONAL
  - T.S.A. HOLD BAGGAGE
  - BAGGAGE CLAIM - DOMESTIC
  - C.B.P.
  - BAGGAGE OFFLOAD
  - CONCESSION/RETAIL
  - LOADING BAY

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# TERMINAL UPPER LEVEL - ALTERNATIVE 3

FIGURE 6-18



- LEGEND**
- HOLDROOM
  - AIRPORT OFFICES
  - CIRCULATION
  - RESTROOMS
  - MECHANICAL
  - C.B.P.
  - CONCESSION/RETAIL

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- Environmental Impact:** The area surrounding the passenger terminal has already been disturbed and there are no known environmental constraints in the immediate vicinity. Any expansion beyond the existing walls will require an EA to measure any environmental consequences resulting from the increased airport activity facilitated by the terminal expansion. The alternative and activity levels identified in this master plan result in a score of **None (3)** for this evaluation criteria.
- Sustainability:** The alternative representing the conceptual layout does not visually depict specific sustainable initiatives or design. **Appendix H** discusses sustainable strategies for NFIA. The NFTA should consider opportunities to incorporate sustainable elements into the project that offer a reasonable payback period to the increased investment. The actual sustainability score will depend on the degree to which this criteria and sustainable building practices are followed. With a reasonable effort, the score would be considered **Good (2)**.
- Potential for Expansion:** The facility itself can still be expanded in the future, albeit at a reduced scale compared to the ability to expand as a result of other alternatives. The proposed alternative will provide expansions to the passenger terminal towards the north, east and west to accommodate the existing facilities proposed. While space for future expansion is still available, it is less than is available in other alternatives. This evaluation factor was given a score of **Fair (1)**.
- Operational Efficiency:** In addition to the increase in public use space and expanded baggage claim area, Alternative 3 offers an expanded baggage makeup area that will allow the baggage screening and baggage makeup areas to accommodate peak volumes. In terms of the baggage claim, the two equally sized sloped plate carousels allow for optimum domestic and international flexibility, with the terminal expansion also facilitating an extra passenger loading bridge on the existing apron area. This evaluation factor was given a score of **Excellent (3)**.
- Revenue Generation Capability:** Much of the terminal space in the expansion consists of public space and circulation area, meaning that overall revenue generating leased space will remain near existing levels. The improvements however will result in additional capacity which can increase airport revenues through parking, concession sales and PFC revenue. Though direct revenue is minimal, the induced revenue yields a score of **Fair (1)**.

### 6.6.7 Terminal Alternatives Summary and Selection of Preferred Alternative

The previous terminal area alternatives were evaluated based on criteria, as described above. **Table 6-6** summarizes these alternatives and their related assessments.

**Table 6-6: Terminal Alternatives Summary**

Alternative	Meets Facility Needs	Land Use Compatibility	Environmental Impact	Sustainability	Potential for Expansion	Operational Efficiency	Revenue Generation Capability	Score
1	0	3	3	0	1	0	0	7
2	1	3	3	2	2	0	1	12
3	3	3	3	2	1	3	1	16

The recommended passenger terminal alternative for NFIA is Alternative 3. Terminal Alternative 3 scores notably higher than the other alternatives. Terminal Alternative 3 provides the greatest degree of flexibility, efficiency, and opportunity for expansion while also being sensitive to the overall need to maintain a low-cost facility for the airlines. Most recommendations within Terminal Alternative 3 have the ability to be independently implemented as demand or operational need warrants.

### 6.7 TERMINAL AREA ALTERNATIVES

The provision of adequate terminal area services is important to the operational efficiency of the Airport. As noted in Chapter 5, the existing roadway layout within the terminal area leads to confusion for passengers and is inefficient. The existing terminal access road is utilized by several aviation and non-aviation users while parking associated with the passenger terminal is provided in three separate parking facilities, including a remote lot that requires shuttle service. Presently, the 1,593 existing parking spaces are adequate, but the facility requirements note that an ultimate requirement of 3,426 spaces will be necessary during the peak season. In addition, there is an increasing demand for rental cars at NFIA, as well as greater demand for a tour bus staging area. Four terminal area alternatives have been developed and evaluated. These alternatives are separate from the previous alternatives considered, and are not dependent on the selection, or lack of selection, of any of the discussed airside, air cargo, general aviation, or terminal alternatives.

#### 6.7.1 Summary of Terminal Area Facility Requirements

The previous chapters identified and quantified the necessary improvements that should be addressed at NFIA over the 20-year planning period. Terminal area requirements are primarily concerned with meeting the increased parking and access needs generated by increased commercial airline service. Additional terminal area requirements relate to airfield maintenance facilities and equipment. Considerations include:

- Provide up to 2,351 additional automobile parking spaces for the passenger terminal
- Provide up to 61 parking spaces at general aviation facilities
- Consolidate existing parking lots when possible

The alternatives identified and evaluated in the following subsections have been created to provide for these requirements, except that each alternative is also measured against a no-build alternative scenario.

#### 6.7.2 Terminal Area Alternative Identification

- **Terminal Area Alternative 1: No-Build**
  - The existing airport layout would remain the same. There would be no addition or reconfiguration of the terminal area facilities.
- **Terminal Area Alternative 2: Combine Parking Lots**
  - Parking Lots 1 and 2 would be combined through the demolition of the existing IDA Building and the reconfiguration of the airport access road.

## Sustainable Airport Master Plan

- **Terminal Area Alternative 3: Maximize Lot 1 (Remove Roundabout)**
  - An expansion to Parking Lot 1, and its associated access road, would occur and require elimination of the existing roundabout near the airport entrance.
- **Terminal Area Alternative 4: Expand Lot 1 (Retain Roundabout)**
  - A reduced expansion to Parking Lot 1 to retain the existing roundabout but provide additional parking spaces through the provision of a partially relocated access road.

The alternatives above are detailed in the next sections.

### 6.7.3 Terminal Area Alternative 1 (No-Build)

Terminal Area Alternative 1 offers no changes to the existing layout at NFIA. The existing airport layout can be seen in **Figure 6-1**.

Terminal Area Alternative 1 was assessed against the evaluation factors; the results are below:

- **Facility Requirements:** Terminal Area Alternative 1 does not provide for the development of any additional landside facilities at NFIA. As noted in Chapter 5, additional demand is forecast for automobile parking, tour bus staging, and terminal apron space to accommodate the additional gates recommended within Section 6.6. The existing automobile parking lots at NFIA can accommodate approximately 1,500 cars, which may be adequate in the short to near term, but long-term forecasts indicate a requirement for over 3,400 spaces, which will not be met with this alternative. This evaluation factor was given a score of **No (0)**.
- **Environmental Impact:** This alternative does not require any additional construction, thus negating any potential environmental impacts. This evaluation factor was given a value of **None (3)** since the alternative has no environmental, natural resource, and/or air pollutant and greenhouse gas emissions impacts.
- **Sustainability:** The nature of the No-Build Alternative is such that no changes will be made to the existing airport layout; therefore, it is assumed that no sustainability practices are initiated at the airport under this alternative. While some opportunities for implementing sustainable practices are available to the Airport under the No-Build Alternative, these are likely the same opportunities that are available to the Airport under any alternative (i.e., a recycling program, or replacement of lighting and other mechanical or electrical equipment with highly efficient models). Therefore, because no additional sustainability practices are available under this alternative than others, this evaluation factor was given a value of **Poor (0)**.
- **Land Use Compatibility:** The No-Build Alternative is generally compatible with on and off-airport land uses as it does not promote the development of new, or the reconfiguration of existing, infrastructure at NFIA. This evaluation factor was given a score of **Excellent (3)**.
- **Potential for Expansion:** While the lack of expansion associated with this alternative will leave the ability to accommodate future expansion, the lack of expansion would likely hinder other growth at the Airport due to the inability to accommodate additional aircraft on the terminal apron or automobiles in the terminals parking lots. As the existing

parking lots currently utilize all space available within the existing configuration, significant changes to the roadway layout will be required into the future and the selection of this alternative will hinder any future realignments or relocations. This evaluation factor was given a score of **Fair (1)**.

- Operational Efficiency:** Terminal Area Alternative 1 will have no impact on the operational inefficiencies that currently exist at NFIA. As previously noted, NFIA currently maintains three separate parking facilities. Parking Lot 1 is limited to vehicles under six feet and two inches due to its proximity to the terminal building. This requirement limits the types of vehicles that can park in this lot and hinders snow removal due to the installation of a metal barrier to ensure adherence to this requirement. Parking Lot 2 is located in front of the former terminal building and has a separate entrance off the terminal access road. While larger vehicles can park in this lot, it's farthest spots are located near the existing FBO facilities, with a walking distance difficult during winter in Western New York. Parking Lot 3 is located off-site, across Niagara Falls Boulevard, and requires the use of a shuttle. The use of Parking Lot 3 is discouraged due to the expense of running a shuttle, and is only open during peak periods. The selection of Terminal Area Alternative 1 will maintain this status quo of multiple parking lots with limitations. Further, these parking lots will not be able to accommodate all potential users in the long-term. This evaluation factor was given as score of **Poor (0)**.
- Revenue Generation Capability:** The No-Build Alternative does not incorporate the development of any new facilities, including the expansion of the existing parking facilities. As of June 2016, NFIA charges a flat \$12/day (\$60/week maximum) for parking in all lots. Based on the parking requirements detailed in Chapter 5, over 3,400 spaces will be required to accommodate future demand. This is a growth of nearly 1,800 spaces. If these spaces are only utilized during the peak period, with users parking for an average of seven days, the Airport could generate over \$1 Million in additional revenue during peak periods annually once annual enplanements reach 500,000. Further, the lack of automobile parking may discourage new airlines from selecting NFIA, further leading to additional revenue loss through landing fees, fuel flowage fees, and terminal rental fees. No-Build Alternative does not have any revenue generation capability, and was given a score of **Poor (0)**.

### 6.7.4 Terminal Area Alternative 2 (Combine Parking Lots)

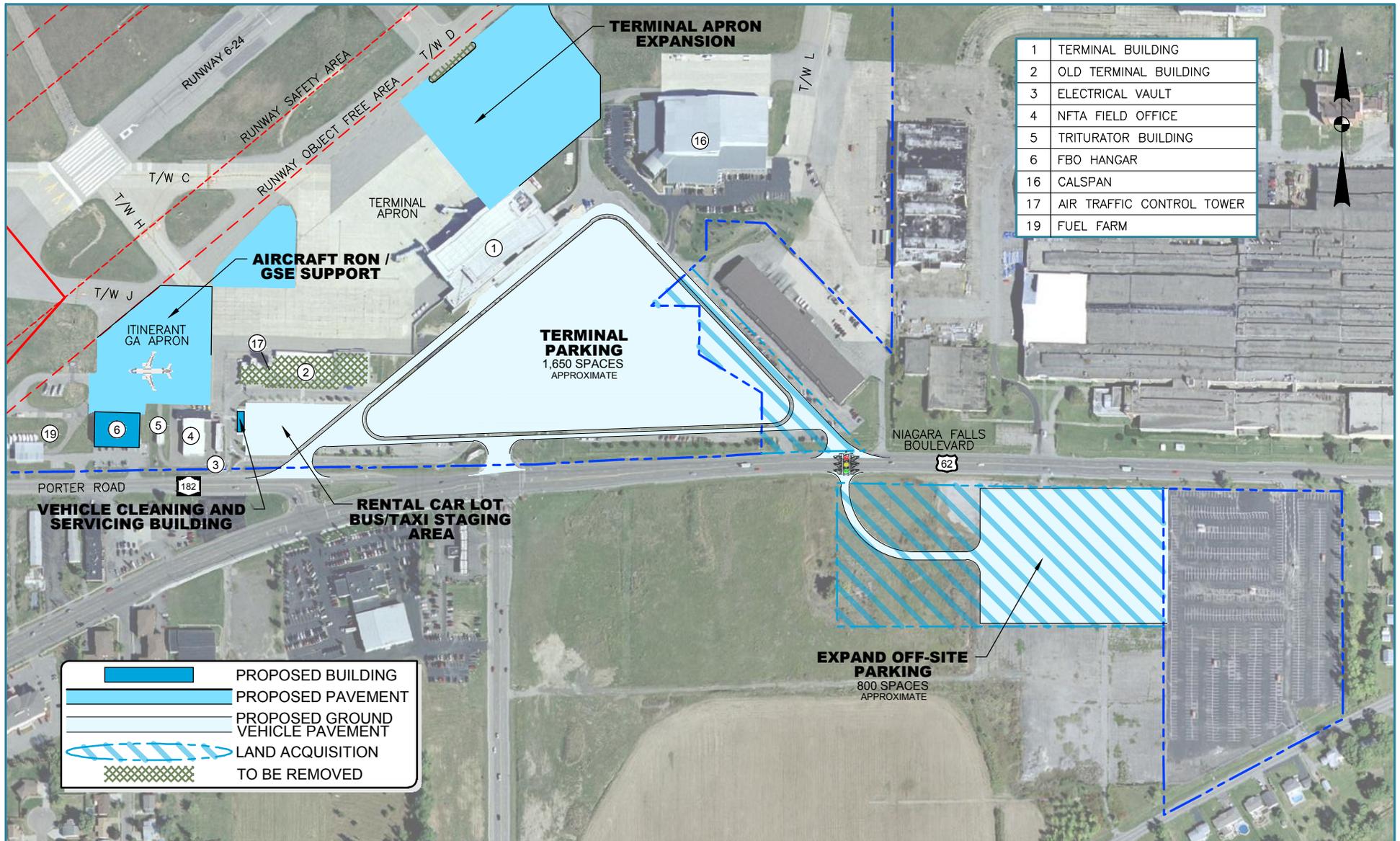
Terminal Area Alternative 2 includes a substantial reconfiguration of Parking Lot 1 and Parking Lot 2, as well as the construction of a new circulation road and three access points to the terminal area from Porter Road and Niagara Falls Boulevard. An expansion of Parking Lot 3, as well as a direct access road from the terminal area, is also proposed to improve access.

The key considerations within this alternative, as depicted in **Figure 6-19**, are discussed below:

- Acquire Land:** Additional land will be required to implement the proposed improvements considered within Terminal Area Alternative 2. Approximately 2.11 acres of land would be required from the Niagara County Industrial Development Agency (NCIDA) associated with a commercial structure located south of Calspan. This land would be utilized to accommodate the proposed terminal circulation road, and will also provide a new access point to the airport on Niagara Falls Boulevard. The acquisition would not include the building, but new parking would be required on the site. Across Niagara Falls

# TERMINAL AREA - ALTERNATIVE 2

FIGURE 6-19



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## Sustainable Airport Master Plan

Boulevard, an additional approximately 5.76 acres of land acquisition will be required to expand Parking Lot 3. A new access to the remote parking lot will be provided at the new four-way intersection created by the new terminal circulation road, Niagara Falls Boulevard, and the new Parking Lot 3 entrance.

- **Demolish IDA Building:** In addition to the acquisition of new land, the NFTA-owned IDA Building, located east of the existing terminal access road, would need to be vacated. The demolition of this facility would be necessary to enable the construction of the access road, as well as to provide the necessary expansion of the terminal parking lot.
- **Construct New Terminal Circulation Road:** Nearly all segments of the existing terminal circulation road would be replaced with the expanded road. This new circulation would enable access at three spots along Niagara Falls Boulevard and Porter Road. The existing entrance at Williams Road, Porter Road, and Niagara Falls Boulevard would remain at the intersection, but once turning into the Airport vehicles will immediately be routed east on the circulation road. As discussed previously, a second entrance will be provided at the eastern end of the terminal area along Niagara Falls Boulevard, providing direct access from the terminal area to Parking Lot 3. A third entrance would be provided near the intersection of Porter Road and Niagara Falls Boulevard. The proposed circulation road will provide access to the terminal parking areas, and will also have the ability to serve Calspan and any additional future development.
- **Combine and Expand Parking Lots 1 and 2:** With the construction of the new circulation road, Parking Lots 1 and 2, currently with a total capacity of approximately 500 parking spaces, would be combined and expanded to provide approximately 1,650 spaces. The new combined parking lot would encompass approximately 48,000 square yards and will extend from the terminal building south to Porter Road and Niagara Falls Boulevard.
- **Expand Parking Lot 3:** As previously noted, the expansion of the existing off-site parking facility, Parking Lot 3, is also recommended within this alternative. The expansion of this lot will include the construction of a new access road, and the provision of approximately 800 additional spots west of the existing lot. The new combined lot will provide approximately 1,900 parking spaces.
- **Designate Rental Car Parking Lot & Bus/Taxi Staging Area:** The proposed new terminal parking lot does not utilize all space currently within Parking Lot 2. The remaining space, measuring approximately 2,500 square yards, would be utilized for the parking of rental cars as well as for the staging of taxis and tour buses. To assist the rental car operators with the cleaning and maintenance of their vehicles, an approximately 1,200 square foot vehicle cleaning and servicing building is proposed along the western boundary of the existing parking lot. Approximately 1,200 square yards of pavement outside of the building would be dedicated solely for vehicles prepared to be cleaned or have maintenance completed.
- **Expand Terminal Apron:** An expansion of the terminal apron is required to accommodate additional aircraft parking spaces necessitated by the addition of new gates within the passenger terminal. The proposed expansion would encompass approximately 12,500 square yards of pavement, including approximately 6,000 square

## Sustainable Airport Master Plan

yards of new impervious surfaces that would be constructed as an expansion to the east.

- **Designate Aircraft Remain-Over-Night (RON) and Maintenance Area:** As noted within Chapter 5, the provision of an area for aircraft maintenance should be considered. The apron adjacent to the existing FBO Hangar is primarily utilized currently for the parking of transient corporate aircraft. With the provision of new FBO and general aviation facilities at the Airport, this area would no longer be necessary to serve transient aircraft and could be redesignated to serve commercial aircraft required to RON at NFIA. The existing FBO Hangar would also be utilized to serve aircraft that RON at NFIA and enable the provision of maintenance services while the aircraft is parked. No new construction would be required as part of this redesignation, however, replacement of the existing hangar may be considered.
- **Demolish Former Terminal Building:** Niagara Falls International Airport opened a new passenger terminal in late 2009. For much of the period since, the former terminal was primarily empty with the exception of the air traffic control tower operated by Midwest ATC. In 2013, the Niagara Aerospace Museum relocated to the site and as of June, 2016 remains within the building. In the future, demolition of the former structure, in conjunction with the relocation of the air traffic control tower and the expansion of the terminal parking facilities, should be considered.

Terminal Area Alternative 2 was assessed against the evaluation factors; the results are below:

- **Facility Requirements:** The proposed improvements identified within Terminal Area Alternative 2 meet or exceed the associated facility requirements identified within Chapter 5. The proposed expansion of parking could provide nearly 3,600 parking spaces at NFIA, which will exceed the identified facility requirement for terminal parking. In addition, the proposed alternative will provide the necessary aircraft apron required to accommodate the expanded number of required gates. However, the feasibility of this alternative is contingent on the acquisition of two parcels, as well as a building currently on airport property. Without these acquisitions, the alternative as depicted could not be constructed. This evaluation factor was given a score of **Some (2)**.
- **Environmental Impact:** While a number of improvements and reconfigurations are proposed as part of Terminal Area Alternative 2, many of the improvements are proposed within areas that have been previously disturbed and are already developed. Consideration related to the ground water flow area associated with an area of known environmental contamination at the former Bell Aerospace facility would be necessary; however, the proposed project area does not include any impacts to delineated wetlands or streams, development within a floodplain, potential impacts to threatened and endangered species, or to agricultural districts. Potential impacts related to increased traffic approaching the Airport in all directions, as well as light impacts associated from the reconfiguration of parking lot lights will be necessary, but are not anticipated to provide significant impact. This evaluation factor was given a score of **None (3)**.
- **Sustainability:** As described, this alternative proposes reconfiguration of terminal passenger parking, airport access, and apron improvements that are within areas that have been previously disturbed and/or are already developed. As such, opportunities to protect or conserve natural resources or address energy usage is limited. Opportunities

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to implement a sustainable practice or introduce a sustainable design under this alternative that may be available include a thoughtful approach to pavement construction design that can maximize re-use of site materials. In terms of maximizing revenue-generating opportunities and enhancing air service, Terminal Area Alternative 2 will significantly expand passenger parking capacity and improve traffic flow for arriving and departing passengers and various modes of ground transport accessing the site. This should have a marked improvement on customer experience for air service passengers. Considering all aspects of this criteria, this evaluation factor was given a value of **Excellent (3)**.

- **Land Use Compatibility:** Terminal Area Alternative 2 is generally compatible with on and off-airport land uses in the vicinity. While the acquisition of a portion of two parcels would be required, the remainder of the parcels, including vacant land and a commercial structure, would be compatible with airport operations and the forecast increase in traffic that will necessitate the terminal area improvements. The existing traffic signal at the intersection of Williams Road, Porter Road, and Niagara Falls Boulevard would remain, and a new signal would also be included at the eastern entrance connecting the terminal parking with the expanded remote lot. There are several residential land uses across Porter Road from NFIA, as well as south of Porter Road; however, it is not anticipated that development proposed in this alternative will have significant impacts. This evaluation factor was given a score of **Excellent (3)**.
- **Potential for Expansion:** Terminal Area Alternative 2 includes several different components that could require expansion into the future. With nearly 3,600 parking spaces, the facility requirement for parking is exceeded as part of the proposed alternative. However, should additional parking be required, space is would be available for expansion of the remote parking lot. This space would be available at minimum between the access road and Niagara Falls Boulevard, but could also be available towards the south should it remain undeveloped or be acquired by NFTA. There is also the availability to expand the rental car lot and tour bus/taxi staging area, particularly with the demolition of the former passenger terminal. This evaluation factor was given a score of **Excellent (3)**.
- **Operational Efficiency:** The proposed alternative will significantly increase the operational efficiency of the landside facilities at NFIA, particularly related to automobile parking. The proposed alternative will combine two separate parking facilities into one and will significantly expand upon those facilities. The expansion of the remote parking facility, combined with the construction of the improved access road providing direct access from the terminal parking area to the remote parking area, will also improve efficiency. An expanded rental car parking area will also increase efficiency, as will the construction of the vehicle cleaning and servicing building. The proposed alternative will provide a significant improvement to the operational efficiency of the terminal area and was given a score of **Excellent (3)**.
- **Revenue Generation Capability:** As noted previous, NFIA currently charges \$12/day (\$60/week maximum) for vehicles to park at the Airport. On average, most vehicles are parked at the airport for at least seven days. The construction of Terminal Area Alternative 2 will increase the number of parking spaces from approximately 1,500 to approximately 3,600, a 140% increase in available spaces. The provision of these additional parking spaces, combined with the additional aircraft apron to accommodate

## Sustainable Airport Master Plan

additional aircraft utilizing the Airport, will lead to increased parking revenue, fuel flowage revenue, landing fees, and terminal rental fees for the Airport. This evaluation factor was given a score of **Excellent (3)**.

### 6.7.5 Terminal Area Alternative 3 (Maximize Lot 1 – Remove Roundabout)

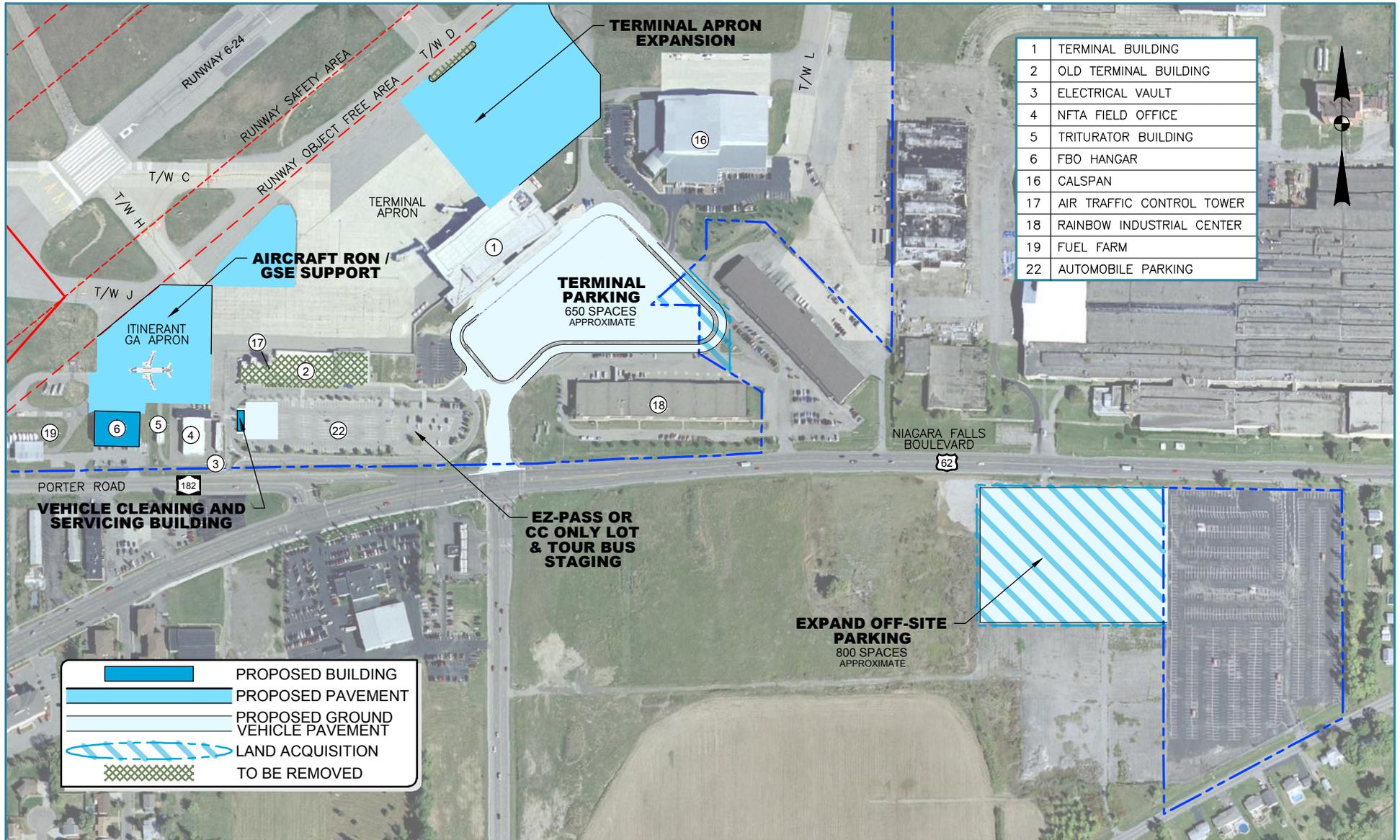
Terminal Area Alternative 3 includes several similar features to Terminal Area Alternative 2, but primarily incorporates an expansion to Parking 1 Lot and would include only minor changes to Parking Lot 2. Other features from Terminal Area Alternative 2 that remain within Terminal Area Alternative 3 include the terminal apron expansion, the removal of the former terminal building, construction of a vehicle cleaning and servicing building, and the designation of the Aircraft RON and Maintenance Area. Other aspects remain, but in a different format.

The key considerations within this alternative, as depicted in **Figure 6-20** and different from Terminal Area Alternative 2, are discussed below:

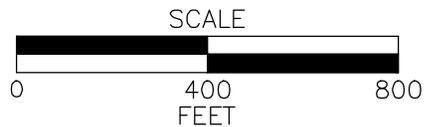
- **Acquire Land:** The acquisition of land is also required as part of Terminal Area Alternative 3, however, the amount of land to be acquired is reduced. To accommodate construction of a new terminal circulation road and an expansion to Parking Lot 1, approximately 0.61 acres of land will need to be acquired. This land is currently utilized for parking, and no buildings or other uses will be displaced through this acquisition. As opposed to Terminal Area Alternative 1, the existing IDA Building on Niagara Falls Boulevard would remain. In addition, approximately 5.04 acres of land would be required to expand Parking Lot 3.
- **Construct New Terminal Circulation Road:** Within this alternative, an expansion and relocation of the terminal circulation road would be required to accommodate an expansion of Parking Lot 1. Access to the new circulation road would primarily occur at the intersection of Niagara Falls Boulevard, Williams Road, and Porter Road. This alternative would include removal of the roundabout that currently provides direct access to Parking Lot 2 and the former passenger terminal building. Access to these areas would be maintained, however, users would travel along the new circulation road, past the new passenger terminal to gain access.
- **Expand Parking Lot 1:** With the construction of a new circulation road, space will be made available to expand Parking Lot 1. An expansion of the lot, to meet the bounds of the new access road, would provide approximately 650 spaces, an increase of over 400 from the existing lot.
- **Reduce Parking Lot 2 & Designate for Credit Card/E-Z Pass Only:** Due to the proposed construction of the Vehicle Cleaning and Servicing Building, the number of available parking spaces within Parking Lot 2 would decrease from 255 to approximately 225. Further, as this lot will have separate ingress and egress from Parking Lot 1, a separate method for payment will be required. The designation of this lot for payment by credit card or with an E-Z Pass would reduce the need to provide a staffed booth within the lot to accept payments. A portion of this area, like along the curb near the former passenger terminal, would also be designated for taxi and bus staging.
- **Expand Parking Lot 3:** An expansion of Parking Lot 3, similar to the expansion proposed within Terminal Area Alternative 2, is proposed. This expansion will include the

# TERMINAL AREA - ALTERNATIVE 3

FIGURE 6-20



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addition of approximately 800 spaces west of the existing lot along Niagara Falls Boulevard. Access to this lot would be via the existing entrance off Niagara Falls Boulevard with an exit to Cayuga Drive Extension. No new access road to the site would be provided as part of this alternative.

Terminal Area Alternative 3 was assessed against the evaluation factors; the results are below:

- **Facility Requirements:** The development identified within Terminal Area Alternative 3 will meet or exceed many of the facility requirements identified within Chapter 5. However, the number of parking spaces proposed within this alternative, approximately 2,775, is less than the 3,421 peak season spaces requirement. The proposed alternative does provide the aircraft apron necessary for the addition of new gates within the terminal, and also provides adequate parking space for aircraft that will remain overnight at NFIA. The feasibility of this alternative, as with Terminal Area Alternative 2, is contingent on the acquisition of a portion of two parcels. However, the acquisition area is reduced within this alternative, but is necessary for construction to occur. This evaluation factor was given a score of **Some (1)**.
- **Environmental Impact:** As with Terminal Area Alternative 2, many of the improvements considered within this alternative are proposed within areas that have been previously disturbed and developed. Consideration related to the ground water flow associated with an area of known environmental contamination at the former Bell Aerospace facility would be necessary; however, the proposed project area does not include any impacts to delineated wetlands or streams, development within a floodplain, potential impacts to threatened and endangered species, or to agricultural districts. Potential impacts related to increased traffic approaching the Airport in all directions, as well as light impacts associated from the reconfiguration of parking lot lights will be necessary, but are not anticipated to provide significant impact. This evaluation factor was given a score of **None (3)**.
- **Sustainability:** Similar to Terminal Area Alternative 2, Alternative 3 also proposes improvements within areas that have been previously disturbed and/or are already developed. As such, opportunities to protect or conserve natural resources or address energy usage is limited. Opportunities to implement a sustainable practice or introduce a sustainable design under this alternative are also similar to Alternative 2. Terminal Area Alternative 3 does not expand passenger parking capacity to meet peak demand levels, nor does it improve airport access or traffic flow for arriving and departing passengers and various modes of ground transport accessing the site. Considering these aspects of this criteria, this evaluation factor was given a value of **Fair (1)** because Terminal Area Alternative 3 does not offer long-term sustainability of scheduled passenger service at the Airport.
- **Land Use Compatibility:** Terminal Area Alternative 3 is generally compatible with on and off-airport land uses in the vicinity. While the acquisition of a portion of two parcels would be required, the remainder of the parcels, including vacant land and a commercial structure, would remain and are compatible with airport operations and the forecast increase in traffic that will necessitate the landside improvements. The existing traffic signal at the intersection of Williams Road, Porter Road, and Niagara Falls Boulevard would remain as part of this alternative, and no new ingresses or egresses to the terminal area, or Parking Lot 3, are recommended as part of this alternative. There are

## Sustainable Airport Master Plan

residential land uses, as well as lodging establishments, along Porter Road, however, much of the proposed development within this alternative is not located near these structures and is not anticipated to have significant impacts. This evaluation factor was given a score of **Excellent (3)**.

- **Potential for Expansion:** Terminal Area Alternative 3 includes several different components that could require expansion into the future. With fewer parking spaces than identified as required within Chapter 5, expansion of the parking facilities may be required in the future to accommodate additional users. With the proposed demolition of the old terminal building, future expansion opportunities exist for Parking Lot 2. In addition, should additional space be necessary, expansion could include acquisition and demolition of the IDA Building adjacent to Niagara Falls Boulevard for the construction of a new parking lot. However, should this occur, a shuttle would be required to provide access to the passenger terminal without requiring passengers to cross the active circulation road. Space is also currently available for expansion of Parking Lot 3. However, this land is privately owned and future development by its owners could occur, which would hinder future acquisition for expansion of the parking facilities. This evaluation factor was given a score of **Fair (2)**.
- **Operational Efficiency:** The proposed alternative will provide important improvements and expansions to several landside facilities at NFIA. However, several inefficient practices at the airport would not be alleviated through the projects included in Terminal Area Alternative 3. Three distinct parking areas, with separate payment stations, would remain in place. While Parking Lot 2 would convert to a Credit Card/EZ-Pass Only lot, the presence of these three unconnected lots can lead to confusion among passengers. Further, Parking Lot 3, located off-site, has no direct connection from the main terminal circulation road. Vehicles would need to utilize the entire circulation road, before leaving the Airport to travel down Niagara Falls Boulevard to the lot. This occurs for shuttle vehicles as well. The removal of the roundabout also eliminates direct access from Niagara Falls Boulevard to Parking Lot 2, requiring all vehicles to traverse the entire circulation road to access Parking Lot 2. This evaluation factor was given a score of **Fair (1)**.
- **Revenue Generation Capability:** As with Terminal Area Alternative 2, this alternative enables significant revenue generation capability for NFIA. The presence of additional parking spaces, combined with increasing enplanements and operations, will enable the Airport to generate additional revenue. However, Terminal Area Alternative 2 does not provide the number of spaces identified as required during the peak season, which could require some passengers to park elsewhere, reducing potential revenue for NFIA. Further, with the reduced number of spaces within the terminal area, reliance on the use of Parking Lot 3 will increase. The operation of Parking Lot 3, including the use of shuttles, increased security presence due to its location off-airport, and staffing of the revenue control stations, adds increasing costs which will reduce gross revenue. This evaluation factor was given a score of **Fair (1)**.

### 6.7.6 Terminal Area Alternative 4 (Expand Lot 1 – Retain Roundabout)

Terminal Area Alternative 4 is a further reduced alternative containing many features previously discussed within Terminal Area Alternatives 2 and 3. The differences within this alternative primarily relate to the terminal circulation road, expansion to Parking Lot 1, and expansion to Parking Lot 3. Other features within this alternative, including the terminal apron expansion,

## Sustainable Airport Master Plan

Aircraft RON and Maintenance Area, demolition of the old terminal building, construction of the vehicle cleaning and servicing building, and designation of Parking Lot 2 for payment with a Credit Card/E-Z Pass only.

The key considerations within this alternative, as depicted in **Figure 6-21** and different from Terminal Area Alternatives 2 and 3 are discussed below:

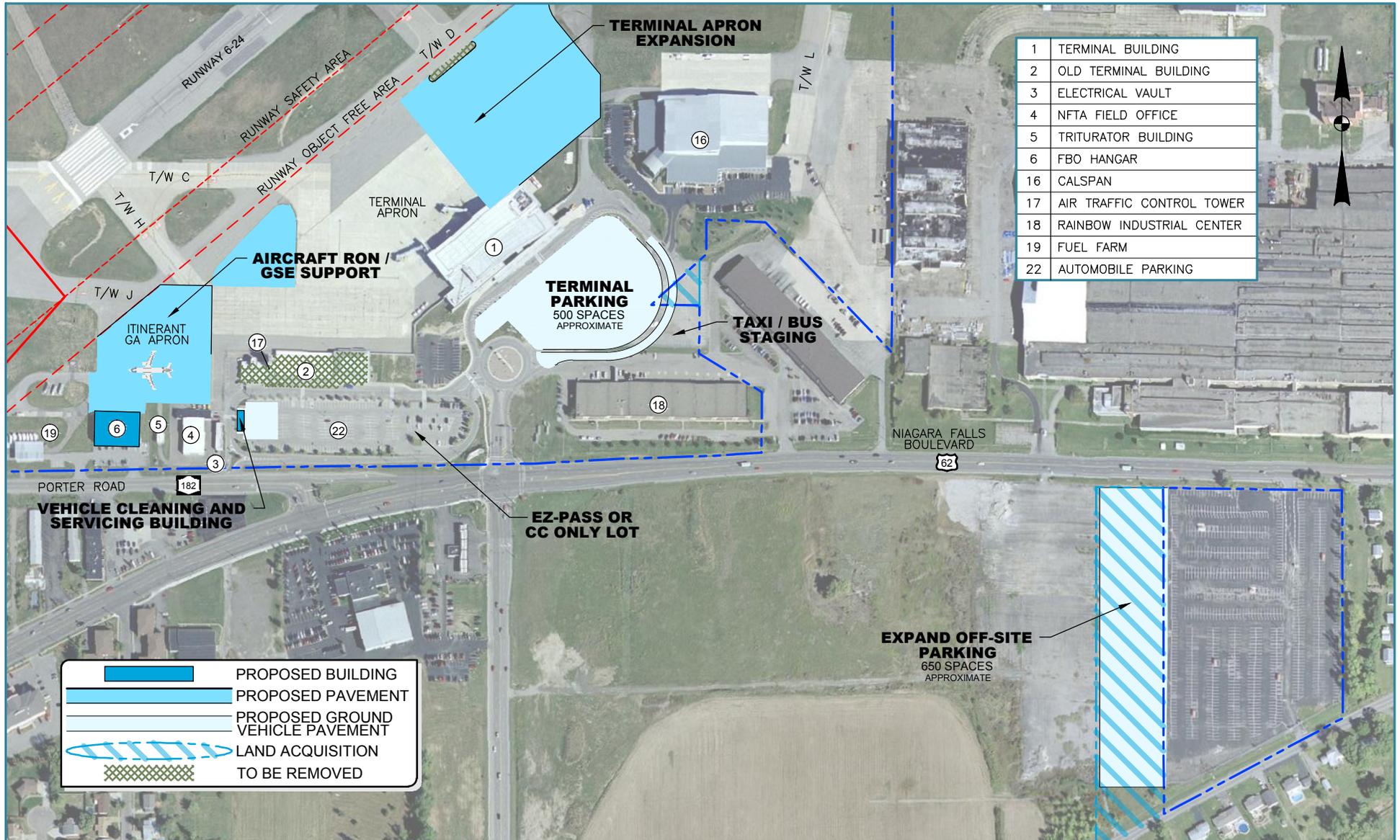
- **Acquire Land:** The acquisition of land to complete all of the proposed development identified within Terminal Area Alternative 4 would be required, however, the amount of land to be acquired would be substantially reduced from the previous alternatives. Approximately 0.24 acres of land would be acquired to accommodate the new terminal circulation road and expansion to Parking Lot 1. In addition, approximately 3.96 acres would be acquired for the expansion of Parking Lot 3.
- **Construct New Terminal Circulation Road:** The construction of a new terminal circulation road is also proposed, but at a reduced scale from previous alternatives. The circulation road would incorporate the existing roundabout, providing direct access to Parking Lot 2 from the airport entrance at the intersection of Niagara Falls Boulevard, Williams Road, and Porter Road. The new circulation road would move the existing road towards the south. Access to the proposed circulation road would occur only through the existing airport access road with no new entrances proposed.
- **Expand Parking Lot 1:** Within the bounds of the new terminal circulation road, an expansion to Parking Lot 1 is proposed. It is anticipated that approximately 500 spaces could be accommodated within the new circulation road, representing an increase of nearly 250 spaces.
- **Designate Taxi/Bus Staging Area:** Within previous alternatives, a new staging area for taxis and tour buses was proposed within the vicinity of the former terminal building and Parking Lot 2. Within Terminal Area Alternative 4, this staging area is proposed off the new terminal circulation road, east of the roundabout and across the road from Parking Lot 1. This location provides direct access to the terminal and would allow vehicles to quickly pull up to the terminal to pick-up passengers, as opposed to other alternatives where these passengers would walk to the awaiting vehicles.
- **Expand Parking Lot 3:** An expansion to Parking Lot 3 is proposed within this alternative to accommodate approximately 650 additional vehicles. This expansion would bring Parking Lot 3 up to a capacity of nearly 1,750 vehicles. The expansion would include an expansion of the existing lot to the west. Access to this lot would be off Niagara Falls Boulevard and vehicles will egress onto Cayuga Drive Extension. No direct access from the Airport, without accessing Niagara Falls Boulevard, would be provided.

Terminal Area Alternative 4 was assessed against the evaluation factors; the results are below:

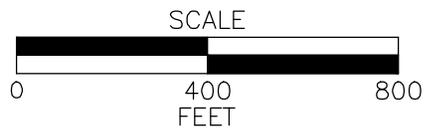
- **Facility Requirements:** The development identified within Terminal Area Alternative 4 will meet or exceed many of the facility requirements identified within Chapter 5. However, with fewer proposed parking spaces than either Terminal Area Alternatives 2 or 3, there is a deficit with future parking requirements. The number of spaces proposed within this alternative is approximately 2,500; this is well less than the 3,421 peak

# TERMINAL AREA - ALTERNATIVE 4

FIGURE 6-21



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season spaces identified as a requirement for NFIA. However, the remaining aspects of the alternative do provide for the necessary improvements to facilitate growth at NFIA. The feasibility of this alternative, as with Terminal Area Alternatives 2 and 3, is contingent on the acquisition of a portion of two parcels. However, the acquisition area is even further reduced within this alternative, but is necessary for construction to occur. This evaluation factor was given a score of **Some (1)**.

- **Environmental Impact:** As with Terminal Area Alternatives 2 & 3, many of the improvements considered within this alternative are proposed within areas that have been previously disturbed and developed. Consideration related to the ground water flow area associated with an area of known environmental contamination at the former Bell Aerospace facility would be necessary; however, the proposed project area does not include any impacts to delineated wetlands or streams, development within a floodplain, potential impacts to threatened and endangered species, or to agricultural districts. Potential impacts related to increased traffic approaching the Airport in all directions, as well as light impacts associated from the reconfiguration of parking lot lights will be necessary, but are not anticipated to provide significant impact. This evaluation factor was given a score of **None (3)**.
- **Sustainability:** Due to the further reductions in development from Terminal Area Alternatives 2 and 3, opportunities to implement a sustainable practice or introduce a sustainable design under this alternative are negligible. As such, Terminal Area Alternative 4 was given a value of **Poor (0)**.
- **Land Use Compatibility:** Similar to Terminal Area Alternative 3, this development is generally compatible with on and off-airport land uses in the vicinity. While the acquisition of a portion of two parcels would be required, the remainder of the parcels, including vacant land and a commercial structure, would remain and are compatible with airport operations and the forecast increase in traffic that will necessitate the landside improvements. The existing traffic signal at the intersection of Williams Road, Porter Road, and Niagara Falls Boulevard would remain as part of this alternative, and no new ingresses or egresses to the terminal area, or Parking Lot 3, are recommended as part of this alternative. There are residential land uses, as well as lodging establishments, along Porter Road, however, much of the proposed development within this alternative is not located near these structures and is not anticipated to have significant impacts. This evaluation factor was given a score of **Excellent (3)**.
- **Potential for Expansion:** Similar to Terminal Area Alternative 3 with fewer parking spaces than the requirement identified within Chapter 5, expansion of the parking facilities may be required in the future to accommodate additional users. With the proposed demolition of the old terminal building, future expansion opportunities exist for Parking Lot 2. In addition, should additional space be necessary, expansion could include acquisition and demolition of the IDA Building adjacent to Niagara Falls Boulevard for the construction of a new parking lot. However, this would require providing additional shuttles or to require passengers to cross the active circulation road to access the terminal. Space is also currently available for expansion of Parking Lot 3, but would require additional acquisition of land to occur. It is unknown if this land will be available for acquisition in the future, and unless purchased in advance, it is unknown if further expansion could occur. This evaluation factor was given a score of **Fair (2)**.

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- Operational Efficiency:** The impacts to the operational efficiency of NFIA are similar to those incorporated into Terminal Area Alternative 3. The proposed alternative will provide important improvements and expansions to several landside facilities at NFIA. However, several inefficient practices at the airport would not be alleviated through the projects included in Terminal Area Alternative 3. Three distinct parking areas, with separate payment stations, would remain in place. While Parking Lot 2 would convert to a Credit Card/EZ-Pass Only lot, the presence of these three unconnected lots can lead to confusion among passengers. Further, Parking Lot 3, located off-site, has no direct connection from the main terminal circulation road. Vehicles would need to utilize the entire circulation road, before leaving the Airport to travel down Niagara Falls Boulevard to the lot. This occurs for shuttle vehicles as well. This evaluation factor was given a score of **Fair (1)**.
- Revenue Generation Capability:** Similar to Terminal Area Alternative 3, this alternative enables significant revenue generation capability for NFIA. The presence of additional parking spaces, combined with increasing enplanements and operations, will enable the Airport to generate additional revenue. However, Terminal Area Alternative 3 does not provide the number of spaces identified as required during the peak season and fewer spaces than identified within Terminal Area Alternatives 2 and 3. Selection of this alternative could require some passengers to park elsewhere, reducing potential revenue for NFIA. Further, with the reduced number of spaces within the terminal area, increasing to nearly 750, reliance on the use of Parking Lot 3 will increase. The operation of Parking Lot 3, including the use of shuttles, increased security presence due to its location off-airport, and staffing of the revenue control stations, adds increasing costs which will reduce gross revenue. This evaluation factor was given a score of **Fair (1)**.

### 6.7.7 Terminal Area Alternative Summary and Selection of Preferred Alternative

The previous terminal area alternatives were evaluated based on six criteria. **Table 6-7** summarizes these alternatives and their related assessments.

**Table 6-7: Terminal Area Alternatives Summary**

Alternative	Meets Facility Needs	Land Use Compatibility	Environmental Impact	Sustainability	Potential for Expansion	Operational Efficiency	Revenue Generation Capability	Score
1	0	3	3	0	1	0	0	7
2	2	3	3	3	3	3	3	20
3	1	3	3	1	2	1	1	12
4	1	3	3	0	2	1	1	11

The recommended terminal area alternative for NFIA is Alternative 2. Airside Alternative 2 scores higher than the other alternatives, and offers the highest combination of scores for sustainability, potential for expansion, operational efficiency, and revenue generation capability while meeting facility requirements. Alternative 1 does not meet long-term facility needs, and Alternatives 3 and 4 only partially meet these needs.

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### 6.8 SUPPORT FACILITIES

This section addresses the facility requirements associated with facilities that fulfill support functions at the Airport. These support functions include the following:

- Aircraft Rescue and Fire Fighting (ARFF)
- Airfield Maintenance Facility and Equipment
- Fuel Facilities
- Air Traffic Control Tower

#### 6.8.1 Summary of Support Facilities Requirements

The last area of consideration in the alternatives section is the support facilities. Alternatives for the airport support facilities were considered last because they are a function of the preceding analysis. The No-Build scenario for each of these facilities is depicted on the existing conditions drawing (**Figure 6-1**).

#### **Airport Rescue and Fire Fighting (ARFF)**

ARFF services are currently provided by the U.S. Air Force Reserve unit located on the Airport as part of an Airport Joint Use Agreement. The current facility is new and designed to accommodate Index E, the highest possible level of ARFF coverage. This new facility is anticipated to serve the Airport through the planning period. In the event of a change in the military mission, the existing ARFF station could be operated by civilians; however, NFIA would need to acquire the necessary equipment to store in the facility.

#### **Airfield Maintenance**

Airfield maintenance responsibilities are shared with the military as part of the Airport Joint Use Agreement. Each entity is responsible for storing and maintaining their own equipment. Much of NFIA's maintenance equipment is stored in the building near the West General Aviation Area, however not all equipment is currently stored indoors. The relocation of the existing FBO facilities to the development area west of Runway 6-24 creates the opportunity to re-use the FBO hangar and corresponding office space for airfield operations and maintenance.

Should there be a change in the military mission, any vacant buildings should be reviewed for use as an airfield maintenance facility.

#### **Fuel Farm**

Under most forecast scenarios, the existing capacity could meet demand with increased deliveries; however, challenges arise with larger aircraft such as the Boeing 747-8 or wide body aircraft from an international tour operator since the fuel upload could involve multiple tanks. Jet-A fuel has a required settling time of approximately 1 hour per foot (tank size) meaning that fueling from multiple tanks has a greater impact on capacity. With the siting of the fuel farm, it is recommended that a relocated site incorporate larger tanks, ideally 30,000 gallons in size, to provide greater fueling flexibility for the potential for larger aircraft. Two 30,000 gallon tanks can replace existing capacity with the fuel farm being configured to accommodate additional tanks as demand warrants. Additional tanks should be between 12,000 and 30,000 gallons in size.

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Should there be improvements to the instrument approach procedures to Runway 6-24, the primary surface will increase, and as result, the airport's fuel farm will need to be relocated. With general aviation facilities relocated, the opportunity exists to relocate the fuel farm to the new GA location (GA Alt 2) or there is an area available for the fuel farm to be shifted to the east of its current location. **Figure 6-22** displays the expanded fuel farm in the existing site (approach greater than  $\frac{3}{4}$  mile for Runway 6-24), with the relocated fuel farm options presented in **Figure 6-23**. Each option is a viable alternative to NFIA, the recommended alternative however should be dictated by associated aviation development, particularly the future FBO facilities.

### Air Traffic Control Tower (ATCT)

The existing ATCT has issues with visibility to Runway 10L and the Runway 28R/24 intersection due to its short height. Additional taxiway infrastructure to the west combined with aviation development west of Runway 6-24 will render the existing tower unusable from a practical standpoint. A No-Build Alternative for the tower combined with a Build Alternative for the airfield and associated facilities is not considered safe or feasible. The development area west of Runway 6-24 associated with the preferred general aviation and air cargo alternatives also presents opportunities and an ideal setting for a relocated ATCT.

The exact location of the ATCT will need to be confirmed with a detailed study from the FAA. Previously, the FAA would conduct a "Shadow Study" as part of the siting process, however they have since expanded the analysis to include human factors and simulations to determine the exact height and location to the tower cab.

The preferred site of the ATCT is shown on the overall preferred alternative for the airport discussed in the next section.

## 6.9 PREFERRED AIRPORT DEVELOPMENT ALTERNATIVE

### 6.9.1 Preferred Alternative Refinement

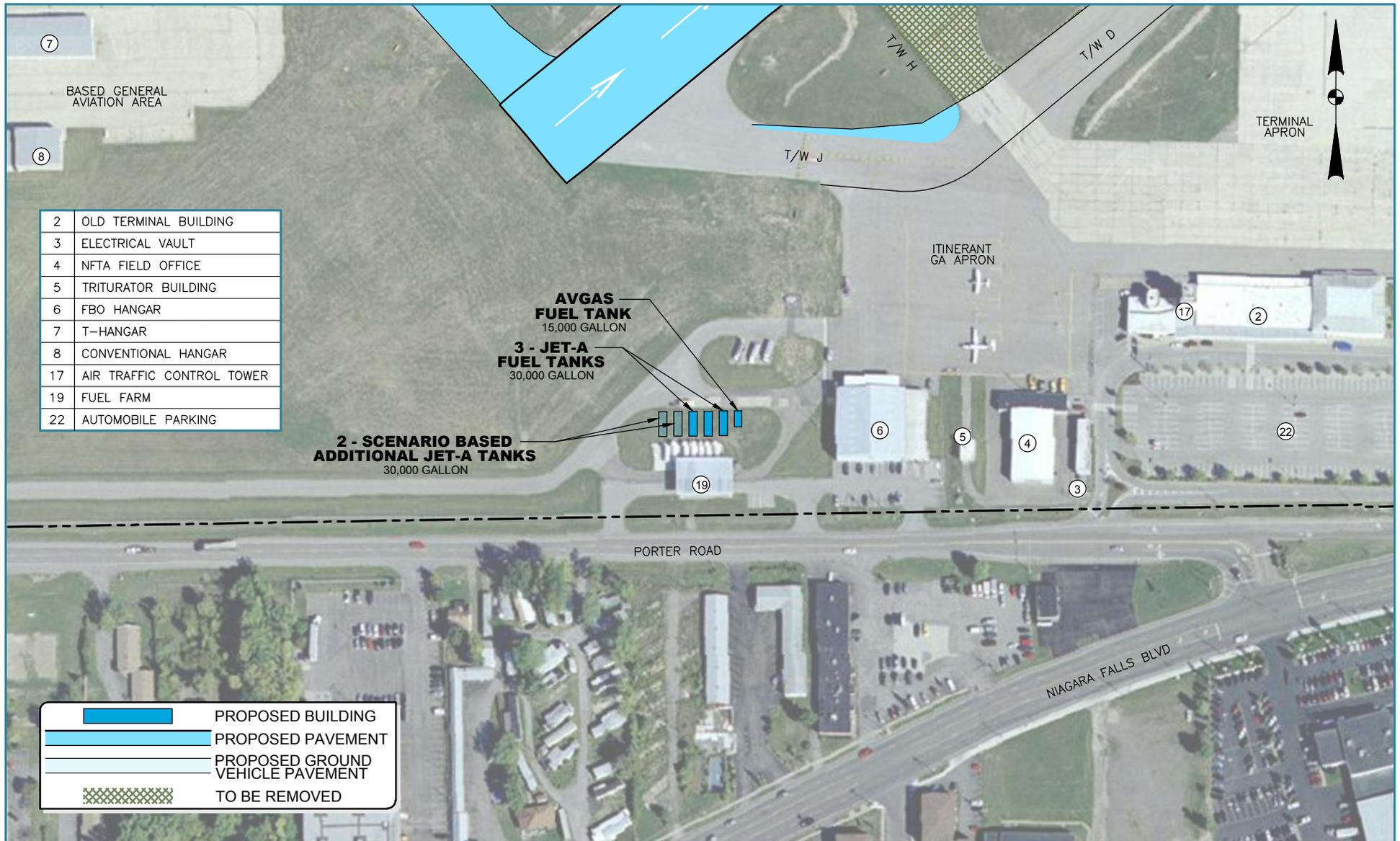
Following the identification of each of the preferred alternatives, the resulting combined preferred alternative was reviewed to ensure overall compatibility, and also for any additional opportunities or potential efficiencies that could result from the proposed development.

The preferred general aviation alternative and preferred air cargo alternative share the same access road and were both compatible with the preferred airside alternative. During the refinement process it was also noted that changing the angle of the preferred air cargo alternative to act as a mirror image of the general aviation alternative would allow for a connection to the new Taxiway E and eliminate any need for Taxiway K to be rehabilitated or maintained into the future. Taxiway K can be removed to offset additional impervious surfaces added to the airport. The area associated with the refined alternative is presented in **Figure 6-24**.

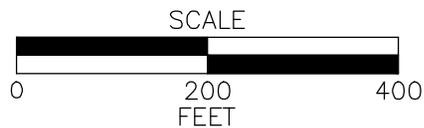
The true size, use, and configuration of the buildings for NFIA are unknown and will be subject to the specific user/owner defined demands. To maximize development potential for the airport, **Figure 6-25** displays the general aviation and air cargo alternatives with the buildings removed and divided up into parcels that can be marketed and developed for any use. This area shares the same landside and airside infrastructure and allows the apron expansion to be phased to keep pace with demand as opposed to constructing the entire apron at once.

# FUEL FARM – EXISTING LOCATION

FIGURE 6-22

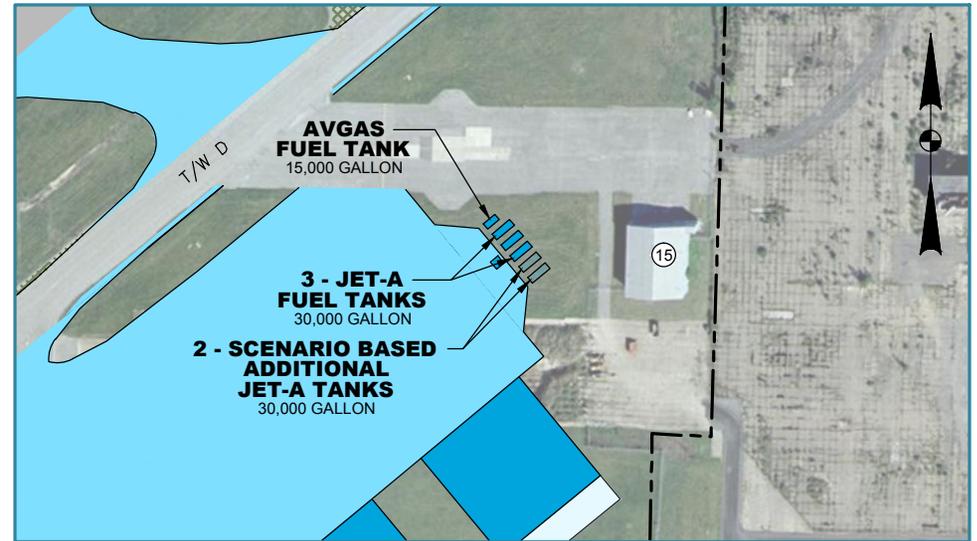
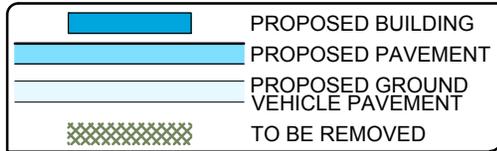


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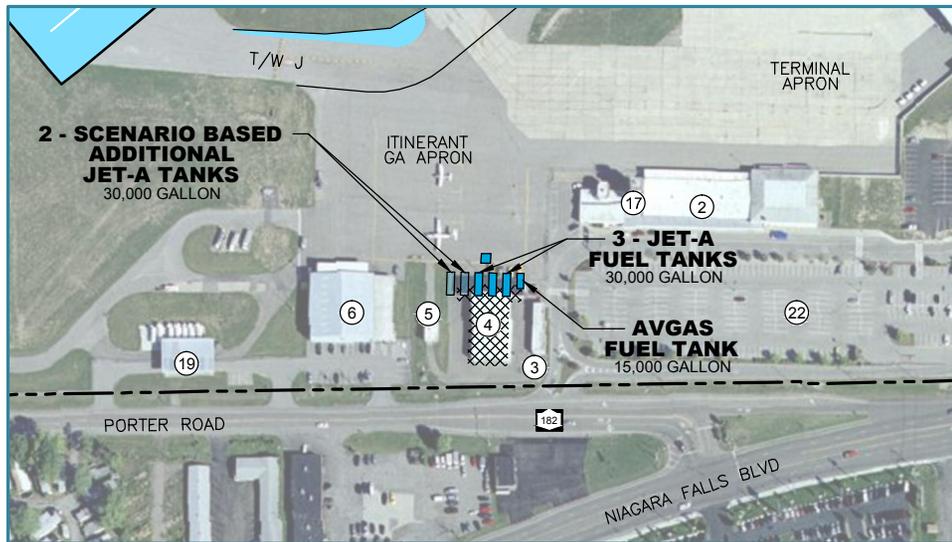


# FUEL FARM - ALTERNATIVES

FIGURE 6-23



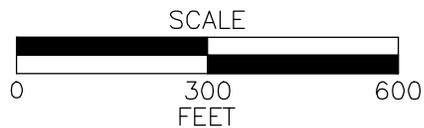
GA ALTERNATIVE 2



RELOCATED FUEL FARM ALTERNATIVE

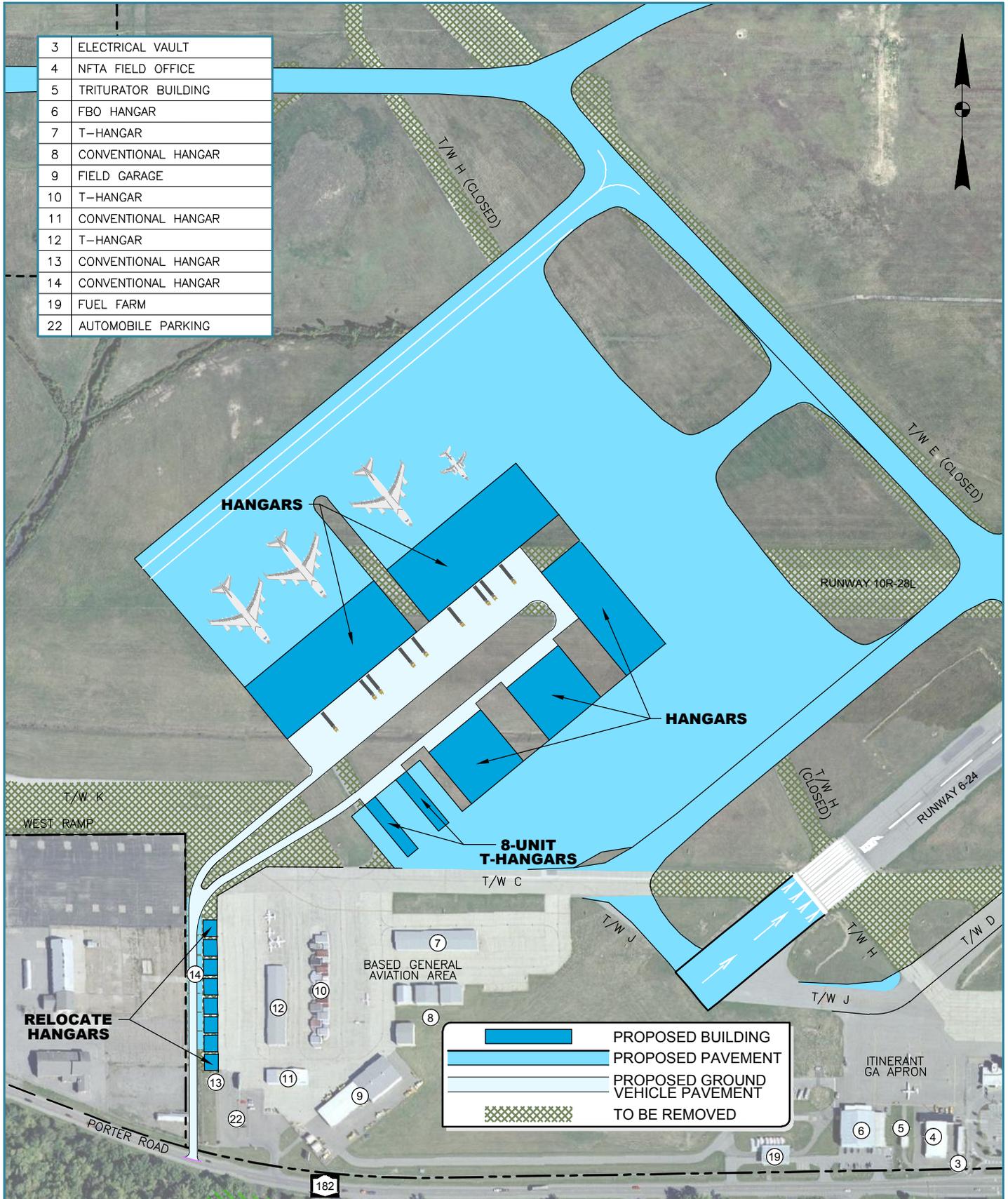
2	OLD TERMINAL BUILDING
3	ELECTRICAL VAULT
4	NFTA FIELD OFFICE
5	TRITURATOR BUILDING
6	FBO HANGAR
15	HANGAR "B"
17	AIR TRAFFIC CONTROL TOWER
19	FUEL FARM
22	AUTOMOBILE PARKING

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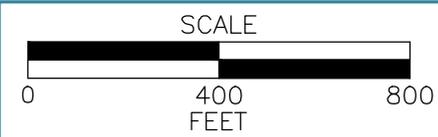


# REFINED CARGO & GA ALTERNATIVE

FIGURE 6-24

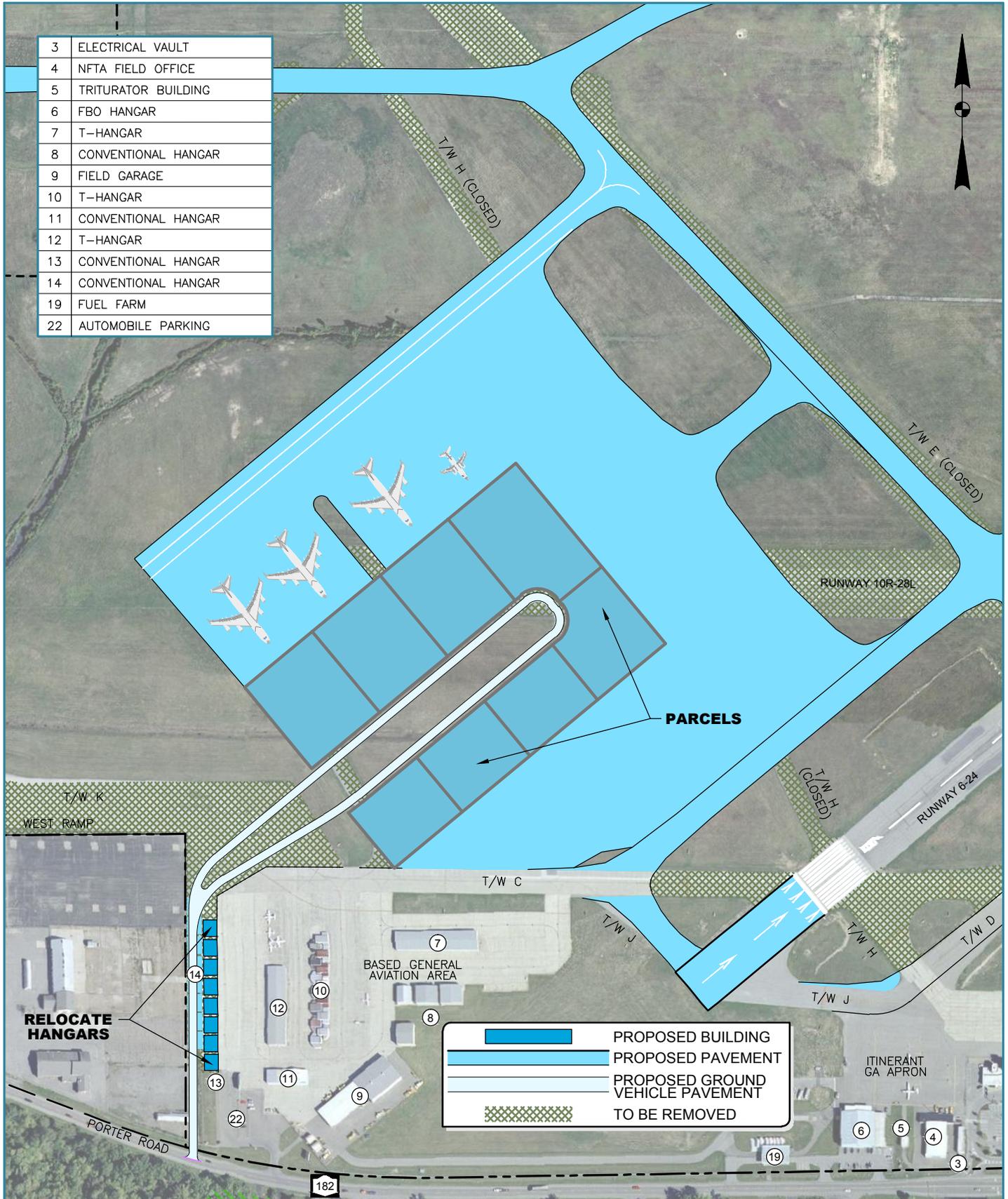


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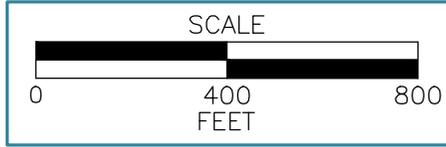


# REFINED CARGO & GA ALTERNATIVE – PARCELS

FIGURE 6-25

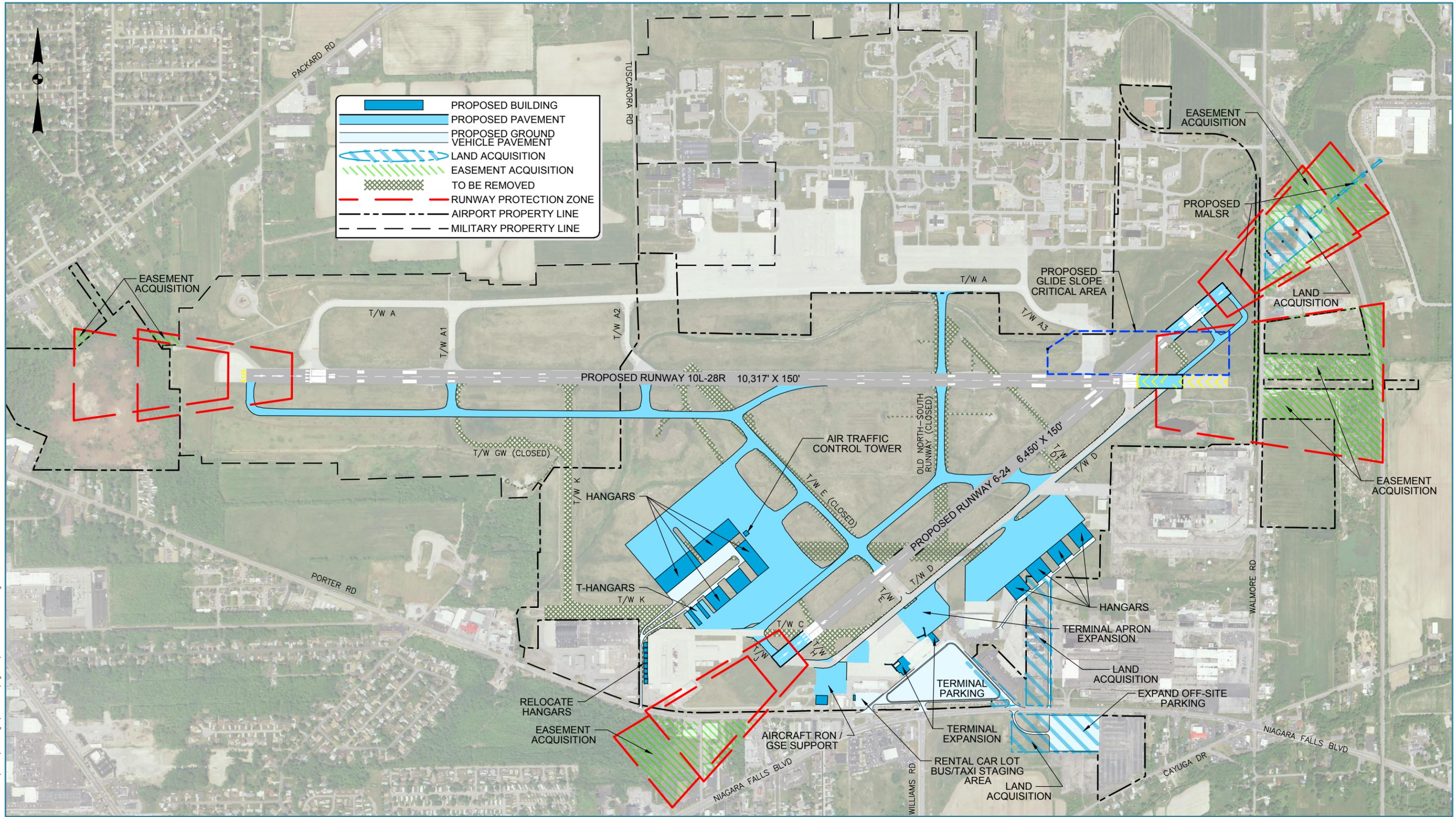


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## Sustainable Airport Master Plan

The refined alternative, remaining preferred alternative elements, and ultimate build out potential for general aviation development are combined in **Figure 6-26** to make up the overall preferred alternative for NFIA. This alternative is incorporated into the capital development plan in Chapter 7 and the airport layout plan drawing set.



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