

CHAPTER 6 - ALTERNATIVES OF AIRPORT DEVELOPMENT

6.01 Background

This chapter deals with the description and evaluation of alternative plans for proposed development at Erie International Airport – Tom Ridge Field. The purpose of this analysis is to develop a complement of airport facilities that can realistically accommodate the demands imposed upon it. The master planning process is one of defining the facility requirements of the airport to handle the forecast demand. After facility requirements have been determined, a series of alternative solutions to satisfy them must be identified and tested.

Alternatives to be considered will include alternatives for providing additional runway length for the primary runway; options for the crosswind runway; landside development opportunities; and general aviation, air cargo, and airline terminal area development plans.

6.02 Primary Runway Development Alternatives

Analysis of various runway configurations at Erie International Airport is a critical element of this Master Plan study. Opportunities for airport development and improvements to airport safety are currently constrained by the existing runway system. Based upon aircraft presently serving the Airport, as well as forecasted usage, the existing runway system is deficient. Following the compilation of data for the inventory and forecast phases of the study effort, as well as selection of a design aircraft, seven runway alternatives were evaluated for the primary runway, Runway 6-24.

Key issues examined for each alternative include airport safety improvements, current and potential aircraft operations, siting navigational equipment, land acquisition, noise impacts, preliminary environmental review, and financial considerations. Selection of a preferred alternative is essential to determine additional airside and landside facility requirements.

This section presents the alternatives under consideration for extending Runway 6-24. A runway length analysis, documented in Appendix E, examines the existing limitations and required facilities for accommodating the Design Aircraft (DC-9-30) at Erie International Airport. The recommended runway length of 7,500 feet will satisfy FAA safety requirements, provide maximum flexibility, and support full use of the airfield.

The analysis of the runway development alternatives will generally include the following:

- Description of each runway alternative identifying the necessary navigational aids that will be required, any required land acquisition, and a recommendation regarding each alternative's suitability for further evaluation.

- Evaluation of the feasible alternatives, including an analysis of impacts associated with each alternative.
- Recommendation and justification for a preferred runway alternative.

The runway extension alternatives for this analysis were prepared in accordance with FAA Advisory Circular 150/5300-13, *Airport Design*, for an Airport Reference Code of C-III (ARC C-III).

The 1990 Airport Master Plan recommended against a westward extension of the runway because of the proximity of homes and potential noise impacts. Thus, most of the scenarios considered in the current study include runway extensions to the east of various lengths. Schematic illustrations of the runway and taxiway extension alternatives are presented as Alternatives 1 through 6 and included at the end of this chapter.

The use of declared distances for airport runway design is normally limited to cases of existing constrained airports where it is impractical to provide the runway safety areas, runway object free areas, or the runway protection zones in accordance with the design standards provided in FAA AC 150/5300-13. At Erie, declared distances will be implemented as necessary to meet FAA required design standards and needed runway lengths.

The implementation of declared distances will require prior FAA coordination and approval, which is granted on a case-by-case basis. Approval of declared distances, if granted, would be shown on the FAA-approved Airport Layout Plan.

Concurrent with this Master Plan, the Airport has undertaken a complete FAR Part 77 surfaces evaluation, to identify obstructions both on and off Airport property. An analysis of the applicable approach surfaces has been completed and the results incorporated into the current master plan. A review of the previous master plan study indicated that some obstructions (trees and structures) may still exist on both ends of Runway 6-24. As part of a runway extension project, the Airport would be required to mitigate all known obstructions to FAR Part 77 surfaces. It does not appear, based on a review of existing data and the completed Obstruction Evaluation, that any obstruction exists that cannot be mitigated. (See Appendix H, Obstruction Evaluation, for the January 2002 draft final report that was prepared for this master plan.)

If known obstructions are to be mitigated on privately owned property, the Airport will be required to obtain control over the obstruction by either acquisition of the property or obtaining avigation easements.

The updated obstruction evaluation will provide in tabular form all the obstructions requiring mitigation. As part of the Capitol Development Plan contained in the upcoming financial chapter of the master plan, a development phasing plan will be presented indicating the costs and timing of the obstruction mitigation plan.

6.03 Description of Runway Alternatives

All of the runway development alternatives (except Alternative 1) include the construction of a parallel taxiway, associated lighting, and required pavement markings, in accordance with FAA AC 150/5300-13, for an Airport Reference Code of C-III. (The graphics depicting Alternatives 1 through 6 are included at the end of this section.)

6.03-1 Alternative 1 (No-Build)

Alternative 1 (Figure 6-1) involves no new runway construction and is generally described as follows:

- Displace threshold approximately 900 feet at the Runway 6 end
- Displace threshold approximately 500 feet at the Runway 24 end
- Implement standard RSA 1,000 feet beyond both runway thresholds
- 6,000-foot runway length available for take-offs on Runway 6
- 5,600-foot runway length available for take-offs on Runway 24

This alternative may require the relocation, construction, and/or the acquisition of the following:

- CAT II Approach Lighting System (R/W 24 end)
- Runway centerline lighting system
- Touchdown zone lighting system (R/W 24 end)
- Avigation easement acquisition

Alternative 1 does not meet the runway length requirements. It is not practical to implement the required runway safety area, runway object free area, or runway protection zones, and also provide the runway length that is needed to satisfy aviation demand for the planning period. Therefore, at this time, Alternative 1 (No-Build) is not considered feasible and it is the consultant's recommendation not to evaluate it further.

6.03-2 Alternative 2

Alternative 2 (Figure 6-2) is generally described as follows:

- Extend Runway 24 end 900 feet
- Displace threshold approximately 900 feet at the Runway 6 end
- Implement standard RSA 1,000 feet beyond both runway thresholds
- 6,500-foot runway length available for take-offs on Runway 24
- 7,400-foot runway length available for take-offs on Runway 6

Alternative 2 may require the relocation, construction, and/or the acquisition of the following:

- CAT II Approach Lighting System (R/W 24 end)
- Runway centerline lighting system
- Touchdown zone lighting system (R/W 24 end)
- Road relocation/closure
- Land acquisition
- Residential/commercial relocation
- Avigation easement acquisition/obstruction removal

With Alternative 2, the runway length requirement for take-off on the Runway 6 end is nearly achieved with the implementation of declared distances. The runway length needed for take-off on the Runway 24 end cannot be achieved, even with the implementation of declared distances. Alternative 2 is considered a reasonable and feasible alternative to evaluate further, since it comes close to satisfying the runway length requirement for taking off on Runway 6.

6.03-3 Alternative 3

Alternative 3 (Figure 6-3) is generally described as follows:

- Extend Runway 24 end 1,900 feet
- Displace threshold approximately 900 feet at the Runway 6 end
- Implement standard RSA 1,000 feet beyond both runway thresholds
- 7,500-foot runway length available for take-offs on Runway 24
- 8,400-foot runway length available for take-offs on Runway 6

This alternative may require the relocation, construction, and/or the acquisition of the following:

- CAT II Approach Lighting System (R/W 24 end)
- Runway centerline lighting system
- Touchdown zone lighting system (R/W 24 end)
- Road relocation/closure
- Land acquisition
- Residential/commercial relocation
- Avigation easement acquisition/obstruction removal

With Alternative 3, the runway length requirement for take-off on the Runway 6 end can be achieved and is exceeded with the implementation of declared distances. The runway length needed for take-off on the Runway 24 end can also be achieved with the implementation of declared distances. Therefore, Alternative 3 is considered a reasonable and feasible alternative to evaluate further.

6.03-4 Alternative 4

Alternative 4 (Figure 6-4) is generally described as follows:

- Extend Runway 24 end 1,100 feet
- Extend Runway 6 end 900 feet
- Displace threshold 1,000 feet at Runway 6 end
- Implement standard RSA 1,000 feet beyond both runway thresholds
- 7,500-foot runway length available for take-offs on Runway 24
- 8,500-foot runway length available for take-offs on Runway 6

Alternative 4 may require the relocation, construction, and/or the acquisition of the following:

- CAT II Approach Lighting System (R/W 24 end)
- Runway centerline lighting system
- Touchdown zone lighting system (R/W 24 end)
- Road relocation/closure
- Land acquisition
- Residential/commercial relocation
- Avigation easement acquisition/obstruction removal

With Alternative 4, the runway length requirement for take-off on the Runway 6 end can be achieved and is exceeded with the implementation of declared distances. The runway length needed for take-off on the Runway 24 end can also be achieved with the implementation of declared distances. However, Alternative 4 affects an additional westerly community and two roads (Asbury Road and Powell Avenue) rather than one (Powell Avenue) as shown in other alternatives. It exceeds the runway lengths requirements in general and only benefits take-offs on Runway 6 (which is not the primary runway end for take-offs and landings). With these reservations, Alternative 4 is considered a reasonable and feasible alternative to evaluate further.

6.03-5 Alternative 5

Alternative 5 (Figure 6-5) includes a new primary runway orientation at the existing site and is generally described as follows:

- Construct a new 7,500-foot runway
- Implement standard RSA 1,000 feet beyond both runway thresholds

This alternative may require the relocation, construction, and/or the acquisition of the following:

- CAT II Approach Lighting System (R/W 24 end)
- Runway centerline lighting system
- Touchdown zone lighting system (R/W 24 end)
- Road relocation/closure
- Land acquisition
- Residential/commercial relocation
- Avigation easement acquisition/obstruction removal

A reorientation of a runway may be considered to provide better wind coverage or additional runway length on a constrained site. Based on the current analysis, it is not practical to reorient Runway 6-24 because the construction of a new runway at a different orientation requires complete new construction of the runway, increasing overall project costs dramatically. In addition, it may require the Airport to be closed for a period of time to accommodate the required construction activity.

Improved wind coverage for a potentially re-oriented runway would make this alternative a more desirable alternative to consider given that the primary runway only meets wind coverage criteria for winds in excess of 16 knots. Based on a review of the wind coverage at the Airport, a re-oriented runway parallel to the existing railroad would not improve wind coverage. A re-orientated runway parallel to the railroad would decrease the wind coverage by approximately one percentage point.

The inconvenience to the traveling public together with the loss of revenue that would result if the Airport were to close during construction, and impacts to residential neighborhoods that were not previously impacted, weighed against any potential benefits, make this alternative not practical or economically feasible.

If it were demonstrated that re-orienting the runway was the best option for meeting the aviation demand for the planning period, relocating the Airport would then become an alternative that should be re-visited and evaluated in detail. At this time, Alternative 5 is not considered feasible and it is the consultant's recommendation not to evaluate it further.

6.03-6 Alternative 6 (for planning purposes only)

Alternative 6 (Figure 6-6) is generally described as follows:

- Extend Runway 24 end 2,500 feet
- Displace threshold approximately 900 feet at the Runway 6 end
- Implement standard RSA 1,000 feet beyond both runway thresholds
- 8,100-foot runway length available for take-offs on Runway 24
- 9,000-foot runway length available for take-offs on Runway 6

This alternative may require the relocation, construction, and/or the acquisition of the following:

- CAT II Approach Lighting System (R/W 24 end)
- Runway centerline lighting system
- Touchdown zone lighting system (R/W 24 end)
- Road relocation/closure
- Land acquisition
- Residential/commercial relocation
- Avigation easement acquisition/obstruction removal

A preliminary analysis indicates that it is impractical to implement the required runway safety area and runway protection zones with a 2,500-foot extension of Runway 24. The purpose and need for a 9,000-foot runway has not been established or subsequently approved by the FAA. This alternative is provided *for planning purposes only* to illustrate the potential impacts associated with an extension as shown. At this time, Alternative 6 is not considered a reasonable and feasible alternative to evaluate further.

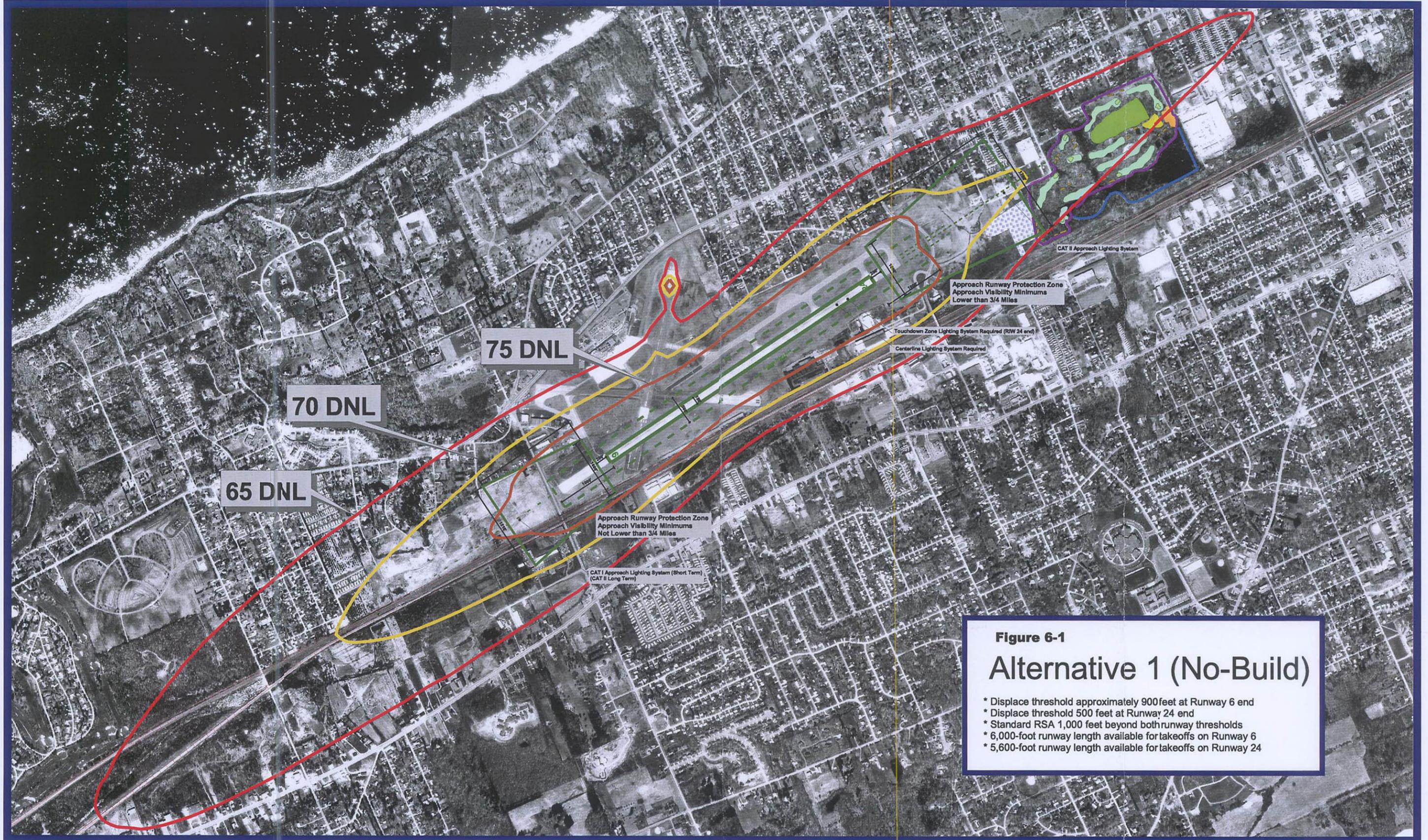


Figure 6-1
Alternative 1 (No-Build)

- * Displace threshold approximately 900 feet at Runway 6 end
- * Displace threshold 500 feet at Runway 24 end
- * Standard RSA 1,000 feet beyond both runway thresholds
- * 6,000-foot runway length available for takeoffs on Runway 6
- * 5,600-foot runway length available for takeoffs on Runway 24



1" = 1,500 ft



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Note:
 1. FAR Part 77 obstruction analysis is required to verify the proposed runway thresholds shown. Actual threshold location may be different than currently shown.
 2. This alternative will include the implementation of declared distances as necessary to meet FAA required design standards and needed runway lengths.
 3. This alternative assumes at this time that no obstructions exist precluding the proposed threshold locations shown.
 4. ARC C-III
 5. Noise contours prepared by HMMH based on operations forecasts (2020) developed specifically for this Master Plan.



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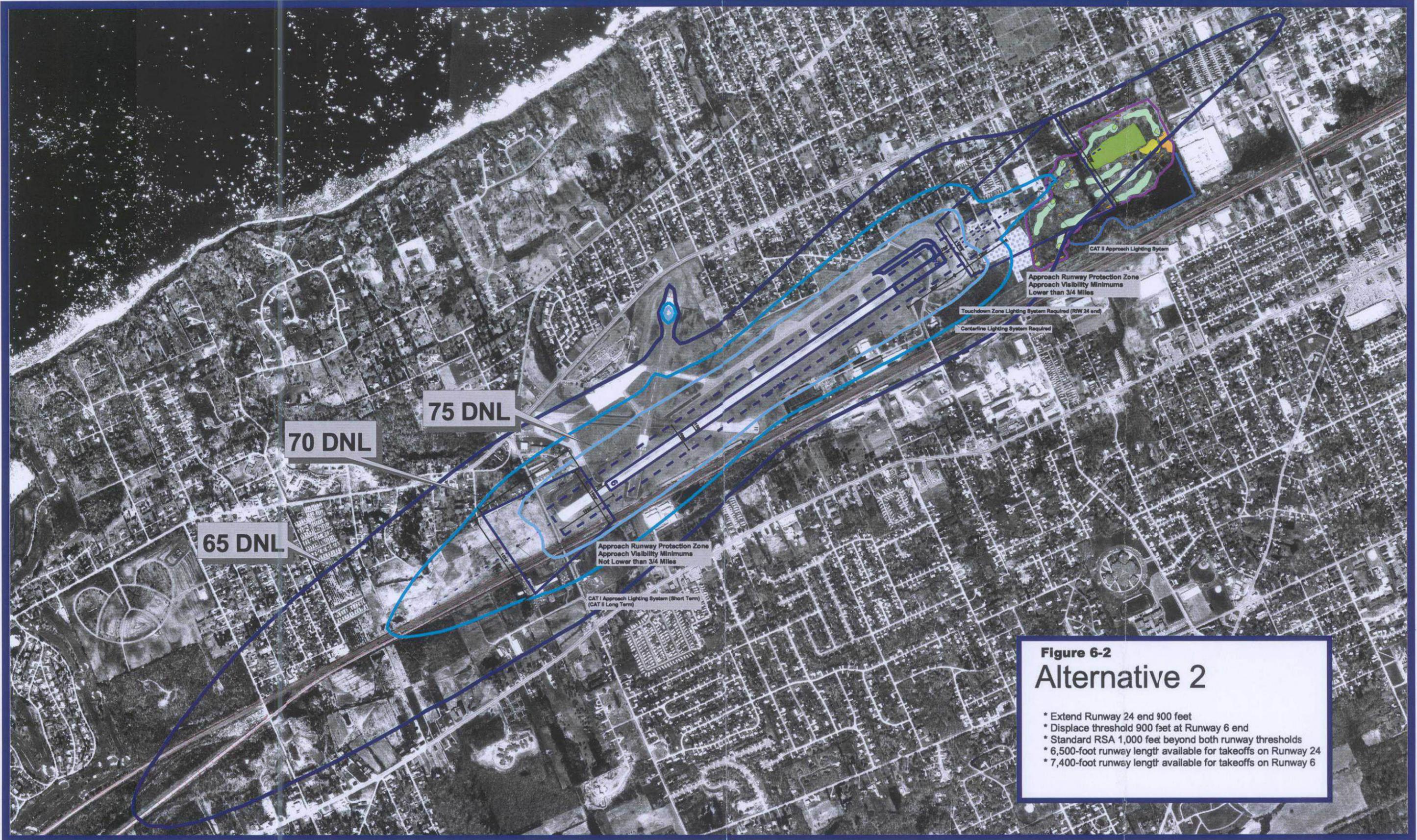


Figure 6-2
Alternative 2

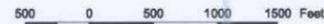
- * Extend Runway 24 end 900 feet
- * Displace threshold 900 feet at Runway 6 end
- * Standard RSA 1,000 feet beyond both runway thresholds
- * 6,500-foot runway length available for takeoffs on Runway 24
- * 7,400-foot runway length available for takeoffs on Runway 6

Note:

1. FAR Part 77 obstruction analysis is required to verify the proposed runway thresholds shown. Actual threshold location maybe different than currently shown.
2. This alternative will include the implementation of declared distances as necessary to meet FAA required design standards and needed runway lengths.
3. This alternative assumes at this time that no obstructions exist precluding the proposed threshold locations shown.
4. ARC C-III
5. Noise contours prepared by HMMH based on operations forecasts (2020) developed specifically for this Master Plan.



1" = 1,500 ft



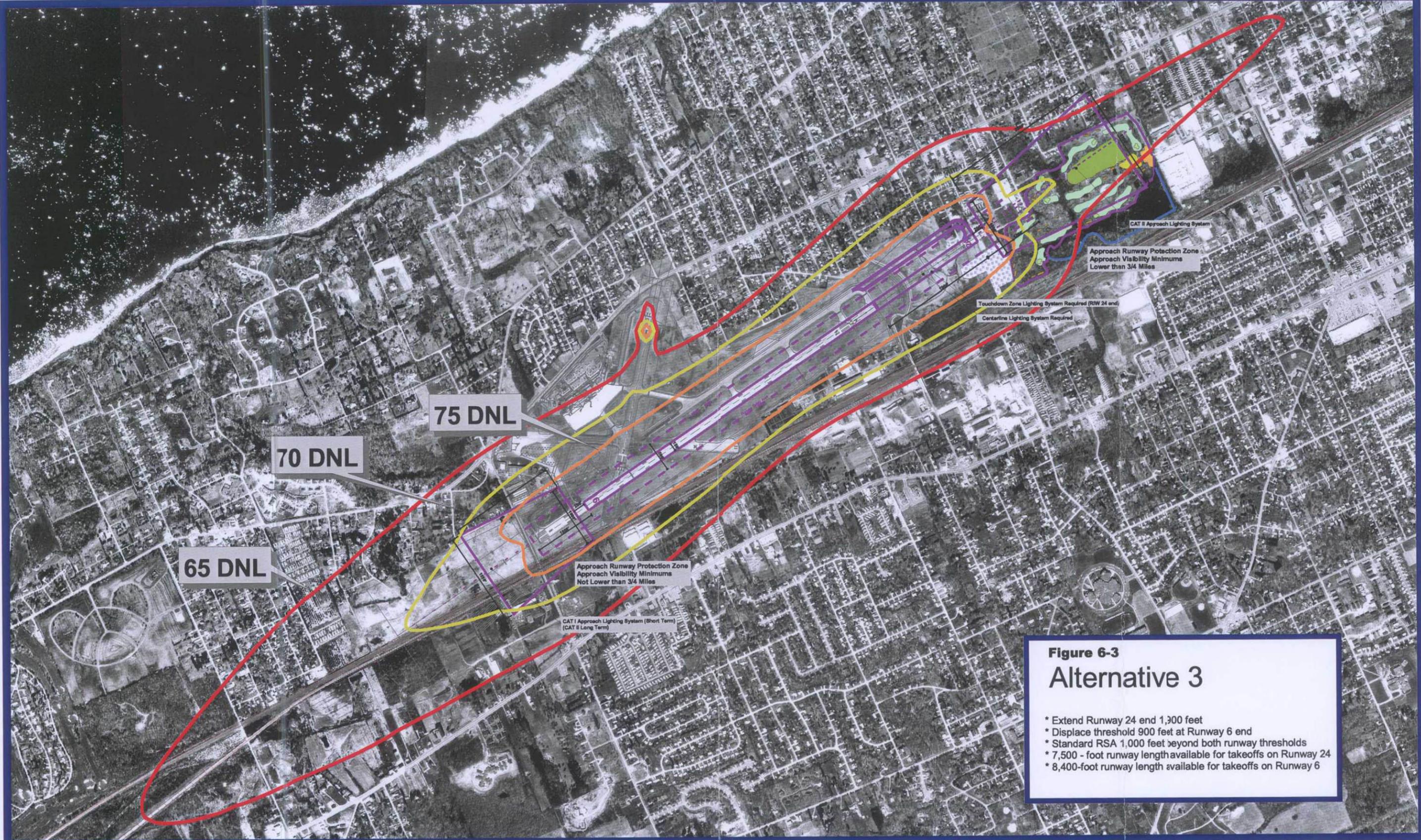


Figure 6-3
Alternative 3

- * Extend Runway 24 end 1,300 feet
- * Displace threshold 900 feet at Runway 6 end
- * Standard RSA 1,000 feet beyond both runway thresholds
- * 7,500 - foot runway length available for takeoffs on Runway 24
- * 8,400-foot runway length available for takeoffs on Runway 6

Note:
 1. FAR Part 77 obstruction analysis is required to verify the proposed runway thresholds shown. Actual threshold location may be different than currently shown.
 2. This alternative will include the implementation of declared distances as necessary to meet FAA required design standards and needed runway lengths.
 3. This alternative assumes at this time that no obstructions exist precluding the proposed threshold locations shown.
 4. ARC C-III
 5. Noise contours prepared by HMMH based on operators forecasts (2020) developed specifically for this Master Plan.

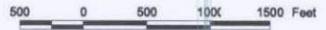


Figure 6-4
Alternative 4

- * Extend Runway 24 end 1,100 - feet
- * Extend Runway 6 end 900 feet
- * Displace threshold 1,000 feet at Runway 6 end
- * Standard RSA 1,000 feet beyond both runway thresholds
- * Declared Distances Applied
- * 7,500-foot runway length available for takeoffs on Runway 24
- * 8,500-foot runway length available for takeoffs on Runway 6



1" = 1,500 ft



Note:
 1. FAR Part 77 obstruction analysis is required to verify the proposed runway thresholds shown. Actual threshold location maybe different than currently shown.
 2. This alternative will include the implementation of declared distances as necessary to meet FAA required design standards and needed runway lengths.
 3. This alternative assumes at this time that no obstructions exist precluding the proposed threshold locations shown.
 4. ARC C-III
 5. Noise contours prepared by HMMH based on operations forecasts (2020) developed specifically for this Master Plan.



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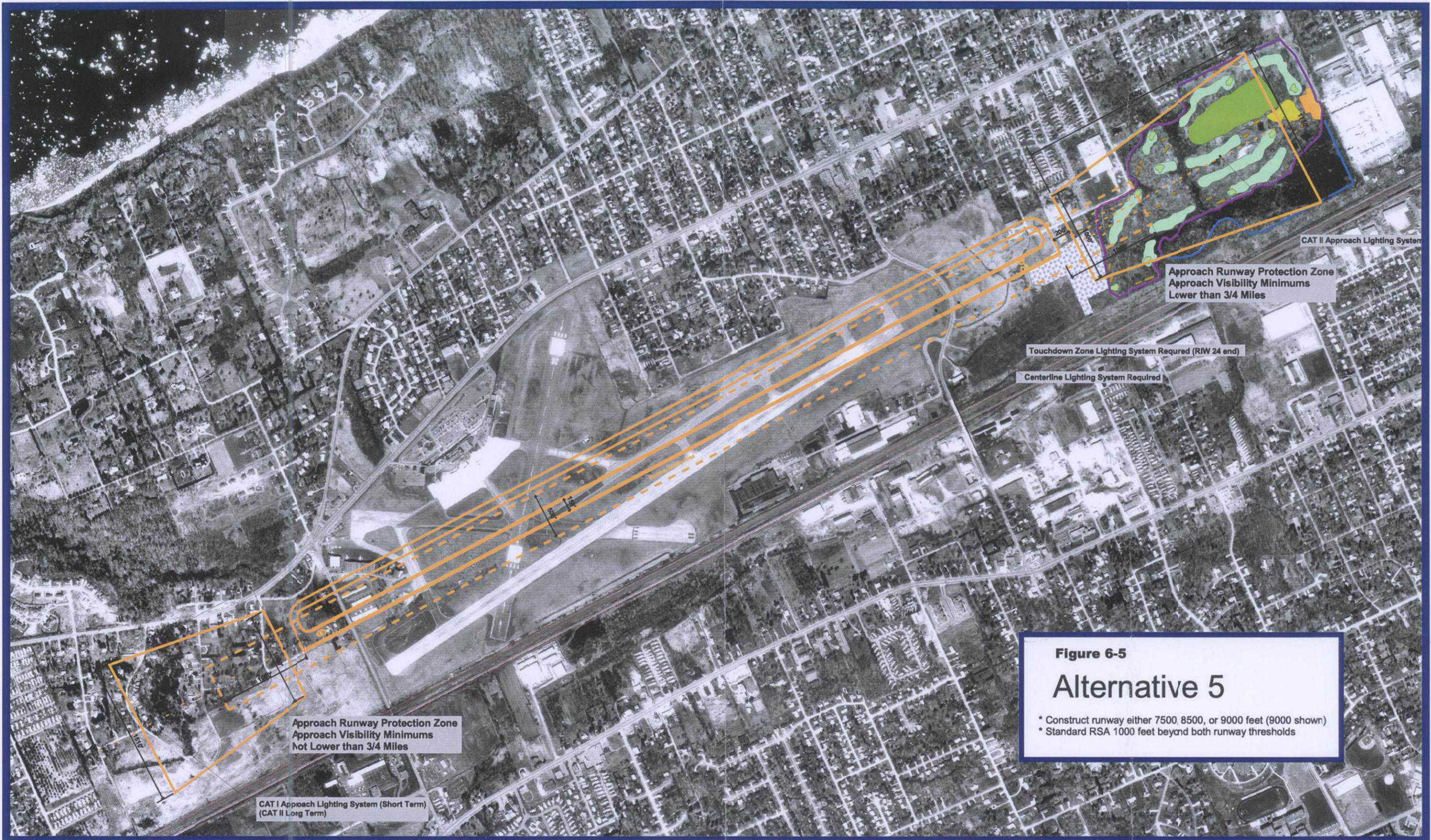


Figure 6-5
Alternative 5

- * Construct runway either 7500, 8500, or 9000 feet (9000 shown)
- * Standard RSA 1000 feet beyond both runway thresholds

Note:
 1. FAR Part 77 obstruction analysis is required to verify the proposed runway thresholds shown. Actual threshold location maybe different than currently shown.
 2. This alternative will include the implementation of declared distances as necessary to meet FAA required design standards and needed runway lengths.
 3. This alternative assumes at this time that no obstructions exist precluding the proposed threshold locations shown.
 4. ARC C-III



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Figure 6-6
Alternative 6
 (For Planning Purposes Only)

- * Extend Runway 24 end 2,500 feet
- * Displace threshold 900 feet at Runway 6 end
- * Standard RSA 1,000 feet beyond both runway thresholds
- * 8,100 - foot runway length available for takeoffs on Runway 24
- * 9,000-foot runway length available for takeoffs on Runway 6

Approach Runway Protection Zone
 Approach Visibility Minimums
 Not Lower than 3/4 Miles

CAT I Approach Lighting System (Short Term)
 (CAT II Long Term)

Touchdown Zone Lighting System Required (RIW 24 end)

Centerline Lighting System Required

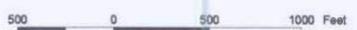
CAT II Approach Lighting System

Approach Runway Protection Zone
 Approach Visibility Minimums
 Lower than 3/4 Miles

Runway Safety Area



1" = 1,000 ft



- Note:
1. FAR Part 77 obstruction analysis is required to verify the proposed runway thresholds shown. Actual threshold location may be different than currently show.
 2. This alternative will include the implementation of declared distances as necessary to meet FAA required design standards and needed runway lengths.
 3. This alternative assumes at this time that no obstructions exist precluding the proposed threshold locations shown.
 4. ARC C-III



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6.03-7 Alternative 7 (not graphically depicted)

Alternative 7 is generally described as follows:

- Relocating the Airport to another location within Erie County.

This alternative may, depending on the site, require the relocation, construction, and/or the acquisition of the following:

- Complete reconstruction of all airside and landside facilities (including runway, taxiways, lighting systems, and terminal)
- CAT II Approach Lighting System
- Land acquisition
- Residential/commercial relocation
- Avigation easement acquisition/obstruction removal

Based upon a review of the findings in the 1990 Airport Master Plan, the conclusions still seem reasonable (i.e., that the time, costs, community support and environmental issues surrounding relocation of the Airport to a different site would not make this alternative feasible for the planning period). It may take a minimum of ten to twenty years to accomplish this alternative, whereas the development needed to meet the aviation demand for the planning period can be achieved at the current site.

6.03-8 Alternatives Suitable for Further Evaluation

Alternatives 2, 3, and 4 are considered reasonable and feasible alternatives for further in-depth evaluation. The remaining alternatives are not considered suitable for evaluation at this time for one or more reasons. They may not satisfy the aviation demand and facility requirements identified in Chapters 4 and 5 of this master plan study. Or they may involve significant economic impacts on the Airport and the local economy, or social impacts on the neighborhoods, and thus are considered unsuitable to evaluate further at this time.

6.04 Evaluation Criteria

Evaluation criteria were developed to determine which development alternatives would best meet Erie International Airport's requirements for the year 2020. These criteria are discussed in the following sections.

6.04-1 Airport Design Standards

FAA Advisory Circular 150/5300-13, *Airport Design*, identifies the design standards to be maintained at the Airport. These design criteria provide a guide for airport designers to assure a reasonable amount of uniformity in airport landing facilities. Any criteria involving widths, gradients, separations of runways, taxiways, and other features of the landing area

must necessarily incorporate wide variations in aircraft performance, pilot technique, and weather conditions. The FAA design standards provide for uniformity of airport facilities and also serve as a guide to aircraft manufacturers and operators with regard to the facilities that may be expected to be available in the future.

SAFETY AREAS

Runways are surrounded by defined rectangular surface areas known as “runway safety areas.” These areas should have slopes ranging from 1% to 5% and, as discussed in FAA AC 150/5300-13, should be graded and free of obstructions to "enhance the safety of airplanes which undershoot, overrun, or veer off the runway, to minimize the probability of serious damage to airplanes accidentally entering the area, and to provide greater accessibility for fire fighting and rescue equipment during such incidents." The applicable runway safety area (RSA) dimensions for Runway 6-24 are shown in Table 6-1.

OBJECT FREE AREAS

Runways are also surrounded by defined rectangular areas known as runway object free areas (ROFA). The ROFA must be clear of objects except those whose location is fixed by function. The purpose of the ROFA is to provide safe and efficient operations at the Airport. The applicable ROFA width for Runway 6-24 is 800 feet centered on the runway centerline and 1,000 feet beyond each runway end.

RUNWAY TO TAXIWAY CENTERLINE SEPARATION DISTANCE

The runway to parallel taxiway centerline separation standard, for a precision instrument runway at an Airport Reference Code C-III airport, is 400 feet. This distance is related to airplane physical characteristics (such as wingspan) and is meant to ensure safe operations of aircraft on or near the active runway.

The specific airport design standards listed below (Table 6-1) have been applied assuming aircraft usage by Airplane Design Group III (wingspans up to but not including 118 feet) for Runway 6-24 and show the existing conditions at the Airport. It should be noted that standard RSAs are “required” by the FAA to the extent practicable while OFAs and RPZs are “recommended” for Sponsor control. The non-standard issues will be addressed as part of project development, and may require an FAA modification of standards.

**TABLE 6-1
AIRPORT DESIGN STANDARDS**

| Item | Design Standards R/W 6-24 | Existing Conditions |
|--------------------------------|--|-----------------------------------|
| | ARC C-III with lower than ¼ mile visibility minimums | |
| Runway Width | 100' | 150' |
| Runway Centerline to | | |
| - Taxiway Centerline | 400' | 375' & 350' |
| - Aircraft Parking Area | 500' | 500' |
| Taxiway Width | 50' | 75' |
| Taxiway Safety Area Width | 118' | 118' |
| Taxiway Object Free Area Width | 186' | 186' |
| Runway Safety Area | | |
| - Width | 500' | 500' |
| - Length (beyond runway end) | 1000' | R/W 6 100' R/W 24 450' |
| Runway Object Free Area - | | |
| - Width | 800' | 650' |
| - Length (beyond runway end) | 1000' | R/W 6 100' R/W 24 450' |

Note: Bold type indicates non-standard conditions.

Source: FAA Advisory Circular 150/5300-13 and C&S Engineers, Inc.

6.04-2 Environmental Impacts

This criterion was used to rate the runway development alternatives on how they would affect the airport environment and the airport community. An environmental review of the possible impacts associated with each of the alternatives was undertaken as part of the rating process. This review included assessing how the environment could be affected by the proposed development, and to what degree (e.g., acres of wetlands impacts). Chapter 3 included a preliminary review of potential areas of environmental concern in the vicinity of the Airport. An on-going Environmental Assessment (EA), undertaken to further analyze the proposed runway extension, will include greater detail of the proposed impacted areas.

6.04-3 Development Costs

This criterion was used to rate each of the runway development alternatives based on probable development cost.

6.04-4 Facility Requirements

This criterion was used to rate the runway development alternatives based on ability to satisfy the facility requirements identified in Chapter 5. Facility requirements are developed from an analysis of the demand and capacity requirements, and from geometric and other standards governing the design of airport components. Specific projects associated with the runway development alternatives that are required to meet existing and future demand at the Airport include:

- Additional runway length
- Full parallel taxiway
- Full RSA standards
- Runway and taxiway edge lighting
- CAT II approach lighting system (R/W 24 end)
- Runway centerline lighting system, and
- Touchdown zone lighting system (R/W 24 end).

(It should be noted that the CAT II ILS is an upgrade to an existing system and not required as part of the runway extension project.)

6.04-5 Implementation Feasibility

This criterion answers the question: What is the likelihood that this alternative will be implemented? The preferred development alternative must have the ability to be implemented through logical phases that meet the Airport's increasing requirements to the year 2020. Therefore, each alternative was rated on its feasibility for implementation, considering both quantitative and qualitative factors. These include factors such as the urgency of the need to address deficiencies and safety concerns, the degree of environmental impacts, community receptiveness, feasibility of needed land acquisition, and the sponsor's willingness to bear the development cost (along with funding from the FAA and the state).

6.05 Evaluation of Alternatives

Each alternative was evaluated based on the five criteria discussed previously: airport design standards, environmental impacts, development costs, facility requirements, and implementation feasibility. The evaluation matrix (Table 6-8) uses a scale of 1 to 3 to rate each alternative for its ability to satisfy each criterion. The alternative ratings are then totaled. This system allows each alternative to be judged on the whole and on each individual criterion. By totaling individual ratings for each of the evaluation criteria, the alternatives can be ranked in order of preference. The following sections provide a discussion of the evaluation of the alternatives based on the specified criteria.

6.05-1 Airport Design Standards

Table 6-2 compares each of the proposed alternative runway extensions to applicable design standards. As summarized by this table, each of the proposed Runway 6-24 alternatives meets FAA design standards. However, compliance with the object free area width standards will require the relocation or removal of obstacles within the object free areas of both runway ends. All obstructions in the OFA may not be able to be mitigated fully and may require an FAA modification of standards.

Required runway safety area lengths beyond runway ends can be provided with displaced thresholds. The fact that two aircraft, one air carrier and one general aviation aircraft, have run off the end of Runway 6 into Asbury Road demonstrates the need for improved runway safety areas.

The Runway 6-24 OFA is currently considered substandard due to the presence of various obstructions within its boundaries. The obstruction locations within the OFA and specific deviations from standards will be detailed in the obstruction evaluation currently underway.

The Runway 6-24 centerline to Taxiway A centerline distance is 375 feet (25 feet short of the standard identified in Table 6-1). The Runway 6 centerline has a 350-foot separation to the centerline of Taxiway G. The Airport received an FAA modification of standards for this deficiency.

As detailed in Table 6-2, Runway 6-24 does not currently meet FAA criteria for runway to taxiway centerline separation, Runway Safety Area (RSA) dimensions, or Runway Object Free Area (ROFA) dimensions for runways serving Airplane Design Group III aircraft with visibility minimums lower than ¾ mile.

**TABLE 6-2
RUNWAY 6-24 DESIGN STANDARDS ANALYSIS**

| Design Item | FAA Design Standard | Existing RW 06-24 | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---------------------|-----------------------------|----------------------------------|----------------------------------|----------------------------------|
| Runway Centerline to - Taxiway Centerline | 400 ft. | 350 ft. to 375 ft. | Will design to meet standards | Will design to meet standards | Will design to meet standards |
| Runway Safety Area - Width | 500 ft. | 500 ft. | Meets standards | Meets standards | Meets standards |
| - Length (beyond RW end) | 1000 ft. | RW 06-100 ft. RW24-450 ft. | Meets standards | Meets standards | Meets standards |
| Runway Object Free Area - Width | 800 ft. | 650 ft. | Requires relocation of obstacles | Requires relocation of obstacles | Requires relocation of obstacles |
| - Length (beyond RW end) | 1000 ft. | RW 06-100 ft. RW 24-450 ft. | Meets standards | Meets standards | Meets standards |

Source: FAA Advisory Circular 150/5300-13

As noted previously, the FAA “requires” RSA standards to the extent possible while “recommending” the ROFA and RPZ be cleared and/or in control of the airport sponsor as reasonable. With regard to land located within the RPZ and forecasted 65 Ldn noise contour there are options other than fee acquisition.

For example the industrial and commercial buildings and golf course within the RPZ may remain in place upon the approval of the FAA. This possibility will depend on further analysis of these parcels regarding FAR Part 77 surfaces, approach limitations, and evaluation of all land around the Airport for compatible land use as described in FAA AC 150/5300-13. However the Airport must obtain, at a minimum, avigation easements over all land within the RPZ.

Table 6-3 describes a proposed land interest summary that is applicable to all of the proposed alternatives contained herein.

**TABLE 6-3
PROPOSED LAND INTERESTS**

| Area | Proposed Land Interest |
|---|--|
| All property within RSA & ROFA | Fee Acquisition |
| Vacant property within RPZ | Fee Acquisition |
| Compatible land uses within RPZ | Avigation Easement |
| Residential property within 65 Ldn | Sound Insulate and Avigation Easements |
| Residential property within an area exposed to noise levels greater than 65 Ldn | Fee Acquisition and Demolition |

Source: C & S Engineers, Inc.

6.05-2 Environmental Impacts

The potential environmental impacts that are addressed for each alternative are listed below:

| | |
|---|--|
| Noise | Flood Plains |
| Compatible Land Use | Coastal Zone Management |
| Social Impacts | Coastal Barriers |
| Induced Socioeconomic Impacts | Wild and Scenic Rivers |
| Air Quality | Prime and Unique Farmland |
| Water Quality | Energy Supply and Natural Resources |
| DOT Act, Section 4(f) Lands | Light Emissions |
| Historic, Architectural, Archeological and Cultural Resources | Hazardous Materials and Solid Waste |
| Biotic Communities/ Endangered and Threatened Species | Construction Impacts |
| Wetlands | Environmental Justice |
| | Protection of Children (Health & Safety Risks) |
| | Cumulative Impacts |

The alternatives were analyzed via agency coordination for their impact in each of the 22 categories. (For preliminary environmental study, see Chapter 3). No detailed analysis has been done for an environmental finding; an EA is taking place to address these concerns. Environmental considerations are weighted as completely and fairly as non-environmental considerations. The objective in planning for the Airport is to enhance environmental quality or minimize environmental impacts while fulfilling the FAA's principal mission to provide for the safety of aircraft operations.

The potential environmental effects of the proposed facility improvements are identified and gauged against the baseline conditions, represented by Alternative 1 or the no-build alternative. When and if a threshold of significance as defined in the FAA Order 5050.4A, *Airport Environmental Handbook*, has been exceeded, further analysis may be required.

The remaining three build alternatives differ in the varying increases in runway lengths and spatial requirements to fulfill FAA airport design standards. A proposed 900-foot extension is identified as Alternative 2. Alternative 3 proposes a 1900-foot extension, and Alternative 4 proposes extension of the runway by 2000 feet, 1100 feet at the Runway 24 end and 900 feet at the Runway 6 end.

Primary differences between alternatives as they relate to this environmental evaluation center around the varying locations of the Runway Protection Zone (RPZ), the Runway Safety Area (RSA), and the Runway Object Free Area (ROFA) according to the alternative runway lengths. Facility improvements associated with all build alternatives include connecting taxiways and parallel taxiway extensions, relocation of NAVAIDs, construction of an extended airport perimeter road, CAT II Approach Lighting System and land and easement acquisition needed to complete these projects and to accommodate the runway protection zone. Because of FAA design requirements for the RSA, construction has the potential to involve extensive earthwork and drainage improvements.

The baseline study/environmental inventory provided in Chapter 3 indicates that development at the Airport has the potential to cause direct or indirect impact in the following environmental categories:

- Noise
- Compatible Land Use
- Socioeconomic
- Water Quality
- Section 4 (f)
- Wetlands
- Hazardous Material
- Construction Impacts
- Cumulative Impacts

An analysis of property affected by each runway alternative was developed using available GIS data obtained from Erie County and augmented by C&S Engineers and McCormick, Taylor & Associates (PennDOT's consultant that is preparing the Environmental Assessment related to the Powell Avenue project). This section summarizes the anticipated environmental impacts under each of the build alternatives and considers impacts both on and off Airport property.

NOISE

Preliminary analysis has indicated that a more detailed noise analysis be conducted in any subsequent environmental assessment for all build alternatives. Noise modeled for the year 2020 resulting from airport development and operations is the only environmental impact category identified that may exceed FAA thresholds of significance in accordance with FAA Order 5050.4A, *Airport Environmental Handbook*. On a comparative basis, Alternative 2, with a 900-foot extension to the north, is likely to result in noise impacts to more residences and other sensitive uses than would be affected by the other alternatives being considered as part of this evaluation. Alternative 4 (with an 1,100-foot extension to the north and a 900-foot extension to the south) affects the least number of homes within the DNL 65 dB contour.

COMPATIBLE LAND USE

Recognizing that low-density residential development may not and most likely should not be eliminated from all areas near the Airport that may be impacted by some level of aircraft sound, a policy of encouraging compatible development is recommended. This includes continued promotion of open land and industrial/commercial development in available vacant areas near the airport. To this end the Airport should make it a goal to own all of the land within the RPZs and additional adjoining land as feasible. Lands currently being considered for purchase by the Airport include the Orchard Estates Mobile Home Park southwest of the Airport. To the extent reasonable, development of appropriate compatible land use controls or proper zoning near the Airport should be encouraged.

SOCIOECONOMIC

Socioeconomic impacts under the proposed alternatives are related to the acquisition and relocation of residents and businesses to accommodate the safety and design requirements of the Runway Protection Zone, Runway Safety Area, and Runway Object Free Area. Other requirements to accommodate airport development are related to soundproofing and/or acquisition of those residences and businesses affected by noise above the DNL 65 dB. All three of the development alternatives involve potential impacts and will require the acquisition and relocation of residences, mobile homes, businesses, and industrial buildings. Alternative 4 affects fewer commercial and residential properties. (However, it affects both Asbury Road and Powell Avenue, whereas other runway extension alternatives affect only Powell Avenue.) Of the three development alternatives, Alternative 2 affects the most properties in both of these categories.

WETLANDS

Potential wetland impacts occur under all three of the development alternatives according to currently available mapping. One federally-mapped wetland area of less than an acre is located north of the Runway 24 end in an area that encompasses the runway safety area for each of the alternatives. This wetland is depicted on the Environmental Inventory Map, Figure 3-2.

SECTION 4 (F)

Additionally, the location of a publicly-owned park within the modeled DNL 65 dB contour (all build Alternatives) indicates that a Section 4(f) evaluation may be required under a constructive use impacts (23 CFR § 771.135). Guidance from 14 CFR 150 (Part 150) is recommended to determine substantial impairment of the use of the park should a more detailed noise study be conducted.

WATER QUALITY AND CONSTRUCTION IMPACTS

Where airport development may create short term impacts, such as those created by construction activity (i.e., air, noise, water), construction and mitigation measures will be taken in accordance with FAA Advisory Circular 150/5370-10A, *Standards for Specifying Construction of Airports*.

Finally, further study is recommended in the environmental impact categories of Air Quality and of Hazardous Material and Solid Waste. Though no air quality analysis is required, it is recommended that any subsequent Environmental Assessment consider an air quality analysis. The location of the Millcreek Dumpsite near the proposed location of the RSAs indicates that further study is needed to determine the limits of the site for more detailed development and consideration of avoidance measures.

CUMULATIVE IMPACTS

The existing or baseline (no build) impacts on the environment plus the incremental direct effect of any proposed development, plus the indirect/secondary impacts should be quantified and assessed to explore the environment's ability to sustain such impact in any subsequent environmental assessment. Therefore, determining the threshold beyond which cumulative effects significantly degrades a resource or ecosystem, should take into account any other proposed airport development that impacts the ability of the environment to sustain its impacts with regard to resources of concern.

Compliance under NEPA requires potential impacts to be mitigated regardless of level of significance. Additionally, should threshold values, as specified in FAA Order 5050.4A, *Airport Environmental Handbook*, paragraph 47e regarding airport related development be exceeded, then cumulative effects should be addressed more substantially within the appropriate NEPA document.

6.05-3 Development Costs

This section of the analysis presents an initial capital development plan to support the proposed development for each alternative evaluated (Alternatives 2, 3 and 4). The plan has been prepared indicating what capital development will be necessary for an extension of Runway 6-24 at the Airport and identifies costs for major items that would be associated with an extension of the runway. The costs presented are not intended to be the full range of costs associated with an extension of the runway. Additional costs such as operating and maintenance will be discussed in more detail as the Master Plan evolves.

Current unit costs for major airside and landside development elements were prepared. The unit costs are an “opinion of probable costs” based upon the consultant's knowledge of contractors, construction material suppliers, and work performed at comparable facilities. The major work items selected for this purpose are presented in Table 6-4 with associated probable unit costs.

The objective of quantifying construction costs was to provide a preliminary cost comparison among the alternatives under consideration (Alternatives 2, 3 and 4). In order to accomplish this in a practical manner, major cost items associated with airside and landside improvements were included in the computations. The construction costs shown for each plan are not to be considered the final total cost of each alternative, but are meant to provide a means of comparison. It is important to note that the costs presented are only for major items contained in the runway alternatives, and do not include costs associated with operating and maintaining the facility.

**TABLE 6-4
DEVELOPMENT COSTS
(2001 DOLLARS)**

| Airport Development Item | Quantity Unit | Unit Cost |
|---|----------------------|------------------|
| Airside Facilities | | |
| Runway Construction (transport) | Square Yard | \$70 |
| Runway Lighting (HIRL) | Linear Foot | \$50 |
| Runway Pavement Marking | Square Foot | \$1.50 |
| Taxiway Construction | Square Yards | \$70 |
| Taxiway Lighting (MITL) | Linear Foot | \$40 |
| Taxiway Pavement Markings | Square Foot | \$1.50 |
| Airfield Signage Installation | Per Sign | \$3,500 |
| Perimeter Fencing | Linear Foot | \$20 |
| ILS Relocation (includes MM/OM)/ Approach Lighting System (CAT II) | Each | \$2,500,000 |
| Landside Facilities | | |
| Land Acquisition | (Estimated Total) | \$3,900,000 |

Note: Land acquisition costs do not include demolition of structures, relocation expenses or restoration of the site. Appraisals will determine actual costs proposed for land acquisition.

Source: C&S Engineers, Inc.

The unit costs shown in Table 6-4 are based on certain assumptions and are considered approximate costs only. The unit costs do not include a contingency for related engineering and construction services. A detailed scope of work for each proposed project is required prior to establishing more accurate probable construction costs and related engineering and construction services.

To allow Erie International Airport to receive FAA AIP grant funds, refined development costs will be prepared for the recommended alternative as part of the airfield's five-year Airport Capital Improvement Program (ACIP). The refined development costs will be provided in greater detail in the financial plan for the 20-year planning period (part of the final document for this Airport Master Plan) and as part of the ACIP, following preliminary review of the ALP by the FAA.

The costs developed as part of this analysis are based on the following assumptions in order to allow for a reasonable comparison of alternatives:

1. The cost of closing relocating Powell Avenue is not included.
2. Demolition and replacement costs for the Powell Avenue Bridge are not included.
3. No hazardous material is encountered.
4. No significant soil conditions exist (unstable soils) escalating the cost of construction.
5. No archeological or historical conditions exist.
6. Reasonable amount of drainage, infrastructure and utilities will be required.
7. Relocation costs associated with the mobile homes, residential houses and commercial businesses are not included.
8. Legal, engineering and construction related services and other ancillary fees are not included.
9. Demolition of structures is not included.
10. Eminent domain costs are not included.
11. Costs for residential sound insulation are not included.
12. Costs for obstruction (FAR Part 77) removal are not included.

Table 6-5 presents a comparison of the probable construction costs associated with each alternative being evaluated. Alternative 1 is the no-build alternative; Alternative 2 considers extending Runway 24 by 900 feet; Alternative 3 considers extending Runway 24 by 1,900 feet; and Alternative 4 considers extending Runway 24 by 1,100 feet and Runway 6 by 900 feet.

TABLE 6-5
ERIE INTERNATIONAL AIRPORT
OPINION OF PROBABLE CONSTRUCTION COSTS (2001 DOLLARS)
PER ALTERNATIVE

| Item | ALT 1 | ALT 2 | ALT 3 | ALT 4 |
|--|------------|---------------------|---------------------|---------------------|
| Earthwork | \$0 | \$500,000 | \$750,000 | \$900,000 |
| Runway Construction | \$0 | \$1,050,000 | \$2,216,000 | \$2,333,000 |
| Runway Lighting (HIRL) | \$0 | \$97,500 | \$197,500 | \$207,500 |
| Runway Pavement Markings | \$0 | \$30,000 | \$40,000 | \$47,000 |
| | | | | |
| Taxiway Construction | \$0 | \$729,000 | \$1,312,000 | \$1,370,000 |
| Taxiway Lighting (MITL) | \$0 | \$100,000 | \$180,000 | \$188,000 |
| Taxiway Pavement Markings | \$0 | \$2,000 | \$2,500 | \$2,700 |
| | | | | |
| Airfield Signage | \$0 | \$27,000 | \$40,000 | \$50,000 |
| Perimeter Fencing | \$0 | \$300,000 | \$300,000 | \$320,000 |
| Service Road | \$0 | \$240,000 | \$320,000 | \$384,000 |
| ILS Relocation (including MM/OM)/ Approach Lighting System (CAT II) | \$0 | \$3,000,000 | \$3,000,000 | \$4,500,000 |
| | | | | |
| Land Acquisition | \$0 | \$9,289,000 | \$9,286,000 | \$9,786,000 |
| | | | | |
| TOTAL | \$0 | \$15,364,500 | \$17,644,000 | \$20,088,200 |

Notes: The costs presented do not include operation and maintenance costs or capital equipment purchases necessary for the continued operation of the facility and are based on the assumptions described herein.

Source: C&S Engineers, Inc.

The final report of the Master Plan presents a recommended financial plan to support capital improvement decisions to serve as a guide for the orderly development of Erie International Airport. (See Chapter 8.) It identifies capital improvement projects, their sequencing, and the possible financial obligations to be assumed by the federal government, state government, the airport sponsor (Erie Municipal Airport Authority) and private sources. The objective of the financial analysis is to identify the most likely plan for funding capital improvement projects to the year 2020.

For a majority of airfield development projects, airport sponsors are eligible for federal financial assistance through the Airport Improvement Program (AIP). The funds for the AIP are distributed in accordance with provisions contained in the Airport and Airway Improvement Act (the Act). The Airport and Airway Trust Fund, which was established by the Act, provides the revenue used to fund AIP projects.

Based on a preliminary cost comparison among the runway alternatives under consideration, Alternative 4, affecting two roads, will be the most costly alternative to develop, even without the inclusion of costs for roadway relocations.

6.05-4 Facility Requirements

Each of the proposed alternatives is in compliance with FAA Airport Design Standards with regard to safety areas and runway protection zones. However, in order to address facility requirements, each alternative provides for different usable runway lengths for aircraft landing and take-off by implementing the concept of Declared Distances. With the exception of Alternative 2, the development alternatives satisfy the runway length requirements for the planning period.

For Alternatives 2 and 3 to achieve the required runway safety area and runway protection zone configurations for the approach end of Runway 6, relocating the threshold of Runway 6 approximately 900 feet to the east is proposed. Table 6-6 summarizes usable runway lengths for take-off for each alternative.

A previous obstruction study is currently being updated as part of this Master Plan. The results will be incorporated later in a threshold siting analysis as part of the Airport System Design section of the Master Plan.

**TABLE 6-6
RUNWAY TAKE-OFF LENGTH AVAILABLE**

| Alternative | Runway Extension Length | Runway 6 Take-Off Length Available | Runway 24 Take-Off Length Available |
|--------------------|---|---|--|
| Alternative 1 | None | 6,000 feet | 5,600 feet |
| Alternative 2 | 900 feet (R/W 24) | 7,400 feet | 6,500 feet |
| Alternative 3 | 1,900 feet (R/W 24) | 8,400 feet | 7,500 feet |
| Alternative 4 | 1,100 feet (R/W 24) 900 feet (R/W 6) | 8,500 feet | 7,500 feet |

Source: C & S Engineers, Inc.

For Alternatives 2 and 3, the localizer associated with the ILS for Runway 6 will be relocated beyond the new Runway 24 end. The glideslope building and antenna will also be relocated for these alternatives. Alternative 4 will require that both localizers and glideslope buildings and antennas be relocated.

In addition, the published approach procedures to the Airport will need to be modified by the FAA to reflect the reduced visibility minimums and extended runway regardless of which alternative is selected and ultimately developed.

As part of the master plan study, the consultant has performed a review of the published approach visibility minimums for runway ends 6 and 24. The analysis consists primarily of reviewing available documentation from the FAA regarding the original establishment of the ILS procedures for both runway ends and making specific recommendations as to what can be done to enhance the visibility minimums at the Airport. This analysis is included as Appendix B of this document.

6.05-5 Implementation Feasibility

Several Airplane Design Group III aircraft cannot operate at maximum gross takeoff weight with the current Runway 6-24 length. Of all the alternatives analyzed, extending Runway 6-24 to 7,500 feet permits the unrestricted operation of most Airplane Design Group III aircraft. In short, the Airport currently serves DC-9 aircraft which are ARC III and the potential for cargo operations including Boeing 727-200 aircraft exists.

Therefore it is only logical to provide a runway length that meets the current demand and considers potential demand. A letter written in 1990 by J.M. Frazier, Senior Director of Operations Support Services, is still relevant. Mr. Frazier states, “The one thousand-foot extension would permit allowable aircraft takeoff and landing weights to increase due to calculations based on 7500 feet of available runway length. The increase of payload lift capability is beneficial, whereas the aircraft will accommodate more passengers and cargo under certain circumstances. The extension would improve reliability in winter months, when the runway has contamination that restricts the operating weight of an aircraft, for both landing and takeoff. This reduction of lift capability can result in reduced passengers and/or cargo capacity, and jeopardizes the quality of air transportation.”

As described previously in this report, the regional planning agencies, specifically the County MPO, through its Erie County Transportation Study (EATS), has developed transportation plans that include recommendations for improving the existing highway network, transit system, rail, and port transportation.

The realization of these plans will complement the efforts of the Airport to develop a potential cargo market. The intermodal potential of rail, port and roadway system along with cargo capacity at the Airport will enhance marketing efforts to attract carriers. Increases in exports to both Canada and Mexico as a result of NAFTA, along with potential future open skies agreement may also enhance cargo opportunities.

The potential growth in E-commerce may eventually require the development of regional distribution facilities. At a recent roundtable discussion in Oneida County, New York, the honorable United States Senator Charles Shumer speculated that E-commerce will lead to the development of regional distribution centers and said, “What better place for these centers than airports.”

Recently the Airport’s acquisition of the former Fenestra Building, adjacent to the airport existing rail, provides a site for potential cargo development, which will be analyzed along with other airport development once a runway alternative is approved.

The comparative feasibility of the runway length alternatives is based on a consideration of the economic potential and facility requirements discussed here, along with relative costs (and availability of funding), degree of environmental impacts (and potential mitigation measures), and the need to address airport design standards. Alternative 3 (1,900-foot extension of Runway 24) received the most favorable evaluation for implementation feasibility because:

- It enhances safety for the Design Aircraft currently serving the Airport.
- It satisfies the facility requirements for runway length.
- It satisfies the requirements of comprehensive design standards.
- It minimizes environmental impacts to the degree possible while still fulfilling other requirements.
- It has fewer impacts on other transportation infrastructure surrounding the Airport.
- It doesn't require relocation of the Runway 24 localizer.
- Airfield construction costs are approximately 24% less than for Alternative 4.

6.05-6 Evaluation Summary

The evaluation of the four alternatives is summarized in Table 6-7. A score of between one (worst) and five (best) is assigned for each of the evaluation criteria and a final ranking is based on the total scores.

**TABLE 6-7
PRIMARY RUNWAY ALTERNATIVE RATINGS**

| Evaluation Criteria | Alternatives | | | |
|------------------------------|--------------|------------|------------|------------|
| | No Build-1 | 2 | 3 | 4 |
| FAA Airport Design Standards | 1 | 5 | 5 | 5 |
| Environmental Impacts | 5 | 3 | 2 | 2 |
| Development Costs | 5 | 3 | 2 | 1 |
| Facility Requirements | 1 | 3 | 5 | 4 |
| Implementation Feasibility | 1 | 2 | 5 | 2 |
| Total | 13 | 16 | 19 | 14 |
| Rank | 4th | 2nd | 1st | 3rd |

Note: Ratings range from 1= worst to 5= best.

Source: C&S Engineers, Inc.

Of the alternatives evaluated, Alternative 3 (1,900-foot runway extension) received the highest overall rating based upon the evaluation criteria. The three alternatives all permit compliance with FAA airport design standards. Alternative 1 (the no-build alternative) received the lowest rating, primarily because it does not satisfy the facility requirements for runway length. Although the preliminary development costs of Alternative 3 are higher than Alternative 2, the overall evaluation scoring favors Alternative 3 over the less costly alternative.

Following consideration of the four runway extension alternatives (the no-build and the three development alternatives) and the impact of each alternative on airport safety, operations, development, environment, and finances, Alternative 3 (1900-foot runway extension) is recommended by the consultant for implementation at Erie International Airport.

6.06 Crosswind Runway Alternatives

Erie Municipal Airport Authority (EMAA) has requested, as part of the on-going Airport Master Plan, that an analysis be prepared evaluating the need to continue operating and investing in improvements to the crosswind Runway 2-20 throughout the planning period. The alternatives that will be considered include closing Runway 2-20 and operating the Airport with a single runway; maintaining Runway 2-20 for use by exclusively small aircraft; and closing Runway 2-20 but reopening Runway 10-28 (currently Taxiway D) for use by small aircraft only.

6.06-1 Crosswind Runway Closed

The FAA recommends that, “When a runway orientation provides less than 95 percent wind coverage for any aircraft forecasted to use the airport on a regular basis, a crosswind runway is recommended,” per AC 150/5300-13. The FAA applies an all-weather wind coverage at 10.5 knots (for A-I/B-I aircraft) to determine wind coverage for primary Runway 6-24 and hence the need for Runway 2-20. The primary Runway 6-24 provides only 85.3% coverage per the wind analysis and does not provide the recommended 95% wind coverage for winds up to or in excess of 10.5 knots for A-I/B-I aircraft. These small aircraft are those most likely to be affected by crosswind components.

Based on this analysis, the FAA generally does not support “abandonment” of any recommended and useful airport pavement that provides enhanced safety for current or future airport operations. However, Section 6.07 identifies other aeronautical and non-aeronautical purposes that may better utilize the areas northeast of the terminal building and south of West 12th Street that are now dedicated to the Runway 20 end.

There are four public-use airports within approximately 25 nautical miles of Erie International Airport - Tom Ridge Field; their locations and runway facilities are identified below. Some or all of these airports may have existing facilities and services that would be able to accommodate small aircraft in 10.5 knot crosswind situations. Two of these GA airports have asphalt runways and two are turf:

- Erie County Airport (Runway 9-27; 3030' x 60'; asphalt; 15 nm SE of ERI)
- Moorhead Airpark (Runway 8-26; 2085' x 200'; turf; 14 nm NE of ERI)
- Pratt's Eastern Divide (Runway 8-26; 2600' x 75'; turf; 23 nm East of ERI)
- Corry-Lawrence (Runway 14-32; 4100' x 75'; asphalt; 26 nm SE of ERI)

Consultation with general aviation users at Erie International Airport has indicated that none of these four airports are desirable alternatives to ERI, at this time, either because of distance from Erie, inadequate facilities, or lack of services. Consultation with the Airport sponsor, users, tenants, and tower personnel at Advisory Committee meetings through the planning process provided valuable guidance as the crosswind runway alternatives (including closure of Runway 2-20) were being considered.

6.06-2 Runway 2-20 Analysis

The analysis of Runway 2-20 will generally (i) review the findings of the previous Airport Master Plan, prepared by Coffman Associates in 1990, as they relate to Runway 2-20; (ii) establish a Design Aircraft and Airport Reference Code (ARC) for the runway; (iii) apply current FAA design standards (including runway length) to the runway; (iv) review the Runway Safety Area (RSA) determinations made by the FAA; and (v) make specific recommendations for continuing aircraft operations and capital improvements to the runway throughout the planning period.

The current FAA Airport Master Record 5010 identifies the length of Runway 2-20 as 3,507 feet and the width of the runway is 150 feet. FAA published data indicates that the Runway 2 threshold is displaced 816 feet and the Runway 20 threshold is displaced 306 feet, due to obstructions to FAR Part 77 surfaces. With runway threshold displacements at both ends, 3,201 feet of runway length is available for take-off on Runway 2, and 2,691 feet of runway length is available for take-off on Runway 20.

The 1990 Master Plan and the associated Airport Layout Plan, approved on October 10, 1990, indicate an Airport Reference Code (ARC) of D-III for the airport and recommend the application of design standards for a B-II aircraft for Runway 2-20. The Runway Protection Zone (RPZ) dimensions depicted on the 1990 ALP for Runway 2-20 are labeled for "Small Aircraft Exclusively." The 1990 Master Plan recommended that the runway pavement in the future be maintained to at least 12,500 pounds pavement strength, appropriate for all small aircraft. The 1990 study concluded that Runway 2-20 should continue in service exclusively for small aircraft (up to 12,500 pounds maximum certified take-off weight) and meeting design standards for a B-II runway. No capital investment was identified other than routine maintenance over the planning period.

RUNWAY USE

There is information that the majority of aircraft operators using the crosswind runway are those flying small single engine aircraft, with approximately 95% of operations occurring on Runway 20 while the remaining 5% use Runway 2 when necessary. Although the Air Traffic Control Tower (ATCT) at Erie controls runway use, it does not keep records of which runway is in use. Interviews with ATCT personnel by Harris Miller Miller & Hanson (HMMH) provided data that was used to develop detailed runway use. According to the data gathered by HMMH in 2000, the annual runway use for both existing and future conditions of the total operations at the airport for Runway 2-20 are as indicated in Table 6-8.

**TABLE 6-8
RUNWAY 2-20 ANNUAL RUNWAY USE**

| Runway | Air Carrier | Air Taxi | Corporate Jet | Twin Turbine | Twin Piston | Single Piston |
|--------|-------------|----------|---------------|--------------|-------------|---------------|
| 2 | 0% | 0% | 0% | 0% | 1% | 1% |
| 20 | 0% | 0% | 0% | 0% | 5% | 5% |

Source: Harris Miller Miller & Hanson, Inc.

DESIGN AIRCRAFT

To be designated as the design aircraft for an airport or a particular runway, an aircraft needs to either conduct at least 500 annual operations at the airport or on a single runway or be anticipated to conduct 500 annual operations during the planning period. At Erie, no one aircraft has historically operated 500 annual operations on Runway 2-20. The design aircraft for Runway 6-24 (DC-9-30, C-III) does not operate at all on Runway 2-20. Our recommendation for a design aircraft on Runway 2-20 is based on the small aircraft that currently use or are anticipated to operate on the runway.

As previously mentioned, the ATCT at Erie controls runway use, it does not keep records of which runway is in use. Discussions with the ATCT personnel and airport representatives indicate the following is a representative sample of the types of aircraft currently using the runway:

**TABLE 6-9
RUNWAY 2-20 AIRCRAFT CHARACTERISTICS**

| Aircraft | Max. T/Off Weight (pounds) | Approach Speed (knots) | Wingspan (feet) | Approach Category | Design Group |
|--------------------|----------------------------|------------------------|-----------------|-------------------|--------------|
| Beech Baron 58 | 6,200 | 101 | 37.8 | B | I |
| Cessna 150 | 1,600 | 55 | 32.7 | A | I |
| Piper PA-31 Navajo | 6,200 | 100 | 40.7 | B | I |

Source: C&S Engineers, Inc.

AIRPORT REFERENCE CODE

The Airport Reference Code (ARC) is a coding system used to relate airport design criteria to the operational and physical characteristics of the airplanes intended to operate at the airport. For airports with two or more runways, it may be desirable and more practical to design some airport elements to standards associated with a less demanding ARC.

Based on the mix of aircraft currently utilizing the runway on a regular basis and expected to use the runway in the future, we recommend that the design standards for an A-I/B-I aircraft (small airplanes exclusively) be applied to Runway 2-20 for the planning period.

DESIGN STANDARDS

FAA design standards for an airport may be applied for either the entire airport or a single runway, as appropriate. At Erie, we apply the design standards to Runway 2-20 based on Aircraft Approach Categories A and B and Airplane Design Group I.

The following are the design standards evaluated for this preliminary analysis:

**TABLE 6-10
RUNWAY 2-20 DESIGN STANDARDS**

| Design Standard | Existing | Planned |
|---|---------------------|--|
| Runway Length | * 3,507' | ** 2,491' (Runway 2 take-off) ** 2,691' (Runway 20 takeoff) |
| Runway Width | 150' | 60' |
| Runway Safety Area Width | 150' | 120' |
| Runway Safety Area Length (beyond the end of the runway) | 300' | 240' |
| Runway Object Free Area Width | 500' | 250' |
| Runway Protection Zone (small aircraft exclusively) | 250' x 450' x 1000' | 250' x 450' x 1000' |
| Threshold (Runway 2) | * 816' (displaced) | 816' (relocated) |
| Threshold (Runway 20) | * 306' (displaced) | 306' (displaced) |

Note: 1) The above is based on runways with not lower than ¾ mile approach visibility minimums.
2) Existing information has been obtained from the current approved ALP dated October 10, 1990.
* Data obtained from FAA Form 5010 and has NOT been verified.
** Declared distances applied, see Figure 6-7.

Source: C&S Engineers, Inc.

RUNWAY LENGTH REQUIRED

According to FAA Form 5010 Runway 2-20 is 3,507 feet in length, and 150 feet in width. Taking into consideration the threshold displacements at both runway ends, the existing usable runway length for take off on Runway 2 is 3,201 feet, and 2,691 feet is available for take-off on Runway 20.

Taking into consideration the planned runway lengths, and applying the proposed runway configuration shown on Figure 6-7, the following table compares the runway length available to the needs for single and multi-engine aircraft currently utilizing the runway:

**TABLE 6-11
AIRCRAFT RUNWAY LENGTH REQUIREMENTS**

| Aircraft | Length Required for Take-Off at MTOW |
|--------------------|---|
| Beech Baron 58 | 2,380 feet |
| Cessna 150 | 1,385 feet |
| Piper PA-31 Navajo | 2,095 feet |

Source: Aircraft manufacturers data

WIND ANALYSIS

Wind data obtained from the 1990 master plan has been used to analyze the wind coverage on Runway 2-20. According to the master plan, thirty years of wind data covering a period from 1948 to 1978 had been summarized for all-weather and instrument flight rules (IFR) conditions at Erie.

All-Weather Wind Coverage

The primary runway orientation provides 85.26 percent wind coverage at 12 mph (10.5 knots) and 92.75 percent coverage at 15 mph (13 knots). The combined coverage for both runways (6-24 & 2-20) is 94.52 percent at 12 mph (10.5 knots); and 96.88 percent coverage at 15 mph (13 knots).

IFR Wind Coverage

The primary runway orientation provides 98.87 percent at 12 mph (10.5 knots); 99.47 percent coverage at 15 mph (13 knots). Because Runway 2-20 is designated as a visual runway, IFR operations would not occur; therefore wind coverage under these conditions is not considered.

As noted earlier, according to FAA AC 150/5300-13, when a runway orientation provides less than 95 percent wind coverage for any aircraft forecasted to use the airport on a regular basis, a crosswind runway is recommended. The 95 percent wind

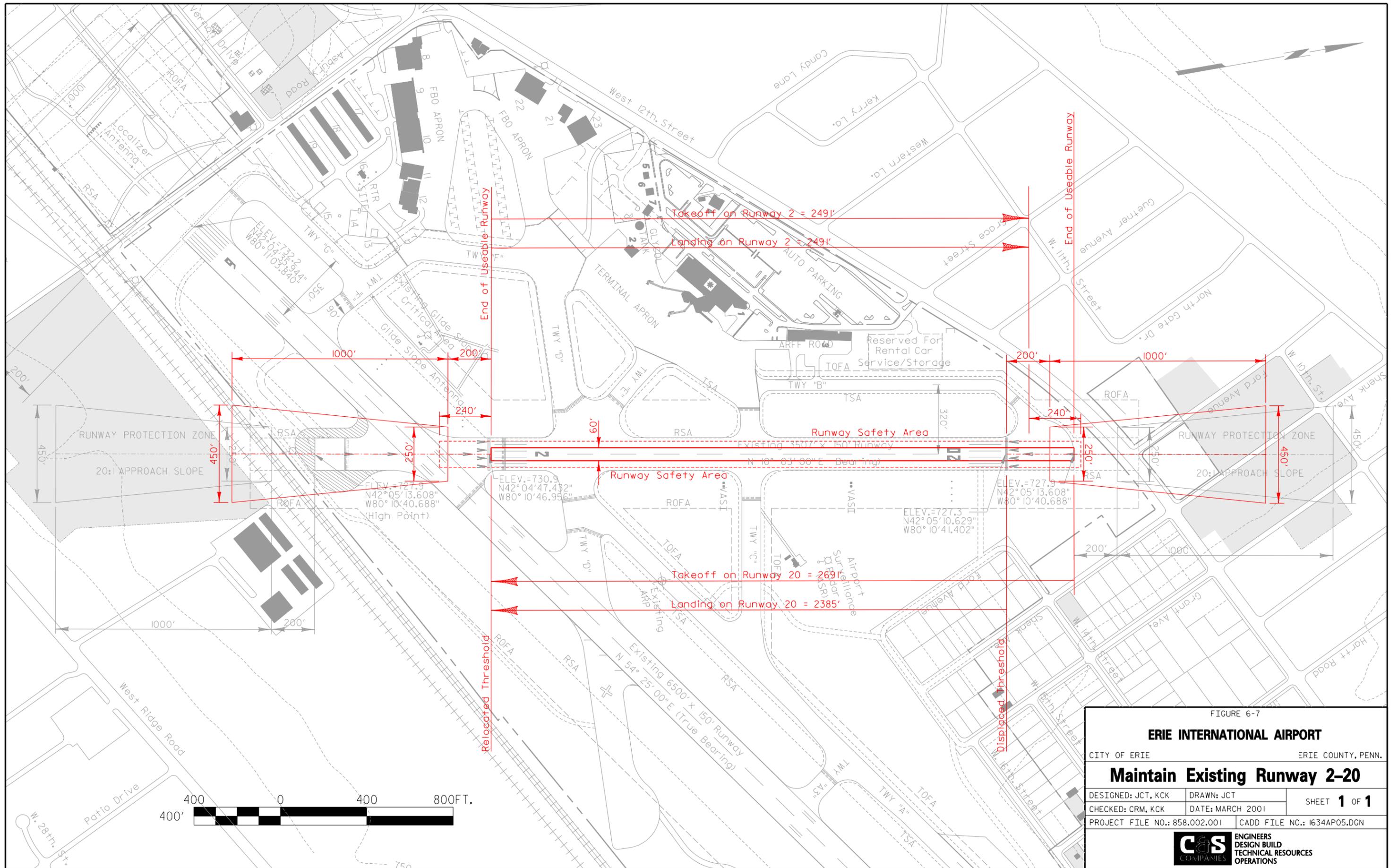


FIGURE 6-7

ERIE INTERNATIONAL AIRPORT

CITY OF ERIE ERIE COUNTY, PENN.

Maintain Existing Runway 2-20

| | | |
|-------------------------------|------------------|-----------------------------|
| DESIGNED: JCT, KCK | DRAWN: JCT | SHEET 1 OF 1 |
| CHECKED: CRM, KCK | DATE: MARCH 2001 | |
| PROJECT FILE NO.: 858.002.001 | | CADD FILE NO.: I634AP05.DGN |



coverage is computed on the basis of the crosswind not exceeding 12 mph (10.5 knots) for ARC A-I and B-I, 15 mph (13 knots) for ARC A-II and B-II, 18 mph (16 knots) for ARC A-III, B-III and C-I through D-III.

During all-weather conditions, the wind coverage on the primary runway (Runway 6-24) exceeds the 95 percent threshold for wind coverage recommended by the FAA for the proposed C-III design aircraft for Runway 6-24. However, operations of smaller aircraft on Runway 6-24 may be constrained to some extent during VFR conditions since crosswind coverage of less than 12 mph (10.5 knots) occur only 85.26% of the time.

RUNWAY SAFETY AREA COMPLIANCE DETERMINATION

A determination of the safety area compliance with FAA standards, dated September 20, 2000, was prepared by the FAA ADO office in Harrisburg. The determination reviewed the characteristics of the runway and provided rationale for runway safety area determinations, and recommendations for handling the non-standard safety areas on Runway 2-20.

The safety area determination acknowledges that “there is adequate wind coverage on Runway 6-24 to provide for the needs of the users of the airport. Also, the airport has no *known* capacity or delay problems and there is no noise benefit to use of Runway 2-20.”

The FAA Safety Area Determination concludes that “at this time, it is the FAA determination that it is not practicable to expend AIP moneys to improve the Runway 2-20 RSA to meet standards and the outcome of the master plan may necessitate a revision to the FAA’s determination.”

OPERATIONAL ISSUES

The design standards for an A-I/B-I runway require a pavement width of 60 feet. Based on the selected Design Aircraft, justification for the current 150-foot runway width does not exist. Therefore, if the runway is to remain open, we recommend that the runway width be decreased to 60 feet and the excess pavement be marked with chevrons in accordance with FAA criteria. We also recommend, based on the age of the existing edge lighting system, replacement of the entire edge lighting system at the location required for the reduced pavement width.

Approximately 5% of all the aircraft using the runway use Runway 2, requiring them to backtaxi and cross Runway 6-24; approximately 95% of the aircraft use Runway 20. Considering that a taxiway connecting to the physical end of Runway 2 cannot be constructed to FAA standards (runway centerline to taxiway centerline separation is inadequate), we recommend that the Runway 2 threshold be relocated north of the Runway 6-24 safety area rather than displaced.

From an operational standpoint, the Airport currently has no *known* capacity or delay problems. With the current airfield configuration, aircraft taking off on Runway 2 must first use Runway 2-20 for taxiing prior to take-off, thus crossing the primary runway for taxiing and then again upon takeoff, resulting in aircraft operations on Runway 6-24 being potentially delayed. The Airport has an Air Traffic Control Tower, operating daily from 6 A.M. to midnight, to provide guidance to Airport users for the combined use of Runways 2-20 and 6-24.

If the Runway 2 threshold were relocated and access to the threshold was available without crossing Runway 6-24 (for taxiing or take-off) operations on Runway 6-24 would not be affected, thereby improving the operational function of the airport and reducing the risk of runway incursions.

FINDINGS AND RECOMMENDATIONS

Based on our analysis we find the following factors contribute to and support our recommendation for Runway 2-20:

- The existing runway is constrained and cannot be extended on either end.
- Access to the Runway 2 threshold is less efficient at certain times (based on increased operations, weather, etc.) and cannot be improved without reducing the length of the runway.
- Operations from the existing Runway 2 threshold may impact operations on primary Runway 6-24 potentially causing delays. (However, the benefit of having an air traffic control tower on the field aids in diminishing this potential.)
- The FAA must concur with the proposed relocated threshold and new access taxiway if it is determined to benefit safe operations and funding reasonableness.
- Runway width can be reduced to 60 feet. (The airport is operating and maintaining 165% more pavement area than justified for Runway 2-20.)
- Runway edge lighting system would need relocation/replacement with reconstruction of Runway 2-20 at a 60-foot width.
- Safety areas need to be modified to meet FAA site grading criteria.
- Obstructions to FAR Part 77 remain and need to be mitigated.
- Significant capital investment is needed to meet FAA design standards.

The following is a summary of the capital investment needed (within the "short term" planning period) to satisfy the FAA design standard requirements for the runway:

| | |
|---|-----------|
| Remarking for runway width (60 feet) | \$70,000 |
| Replacement/relocation of edge lighting | \$450,000 |
| Safety area improvements | \$150,000 |
| Construction costs (2001 dollars) | \$670,000 |
| Engineering/construction administration (20%) | \$134,000 |
| Potential investment during the planning period | \$804,000 |

With historical and future limited use of the runway, closure of the runway will not impact the airport's capacity. However, the proposed increase of larger aircraft may allow the crosswind runway to facilitate some controlled separation of small versus large aircraft operations in the future with coordination by the ATCT personnel. And proposed improvements at the Airport (runway extension, terminal rehabilitation and expansion, and economic development on adjacent properties) may increase the use of the Airport by smaller single and multi-engine aircraft in the future, increasing the need to maintain the crosswind runway. However, if Runway 2-20 is to be closed, it may be advisable to maintain the crosswind runway for some period of time while the main runway is being extended, to relieve some of the operational demand from smaller aircraft during construction. If support exists from local pilots, we recommend the runway be closed and the property be considered for other compatible aviation related purposes that could create revenue for the Airport. The future of the crosswind runway is to ensure maximum safe operations at the Airport for all users and is not a matter of capacity at this time. The increase of operations to more than 60% of the Airport's annual service volume will be the trigger point by which capacity becomes an issue at ERI.

6.06-3 Reopening Runway 10-28 (Taxiway D)

An alternative that would allow closing Runway 2-20 while still providing the benefits of a crosswind runway was considered. This alternative, depicted in Figure 6-8, would reopen Runway 10-28 (currently Taxiway D). This option would provide crosswind coverage for small aircraft, with combined all-weather wind coverage for Runways 6-24 and 10-28 at 12 mph (10.5 knots) of 90.90%, less than the desirable 95%, but better than Runway 6-24 alone (84.26%). At 15 mph (13 knots) the combined coverage is 96.60%. The combination of Runways 6-24 and 10-28 provides desirable coverage for the smallest aircraft less often than combined Runways 6-24 and 2-20, as described above.

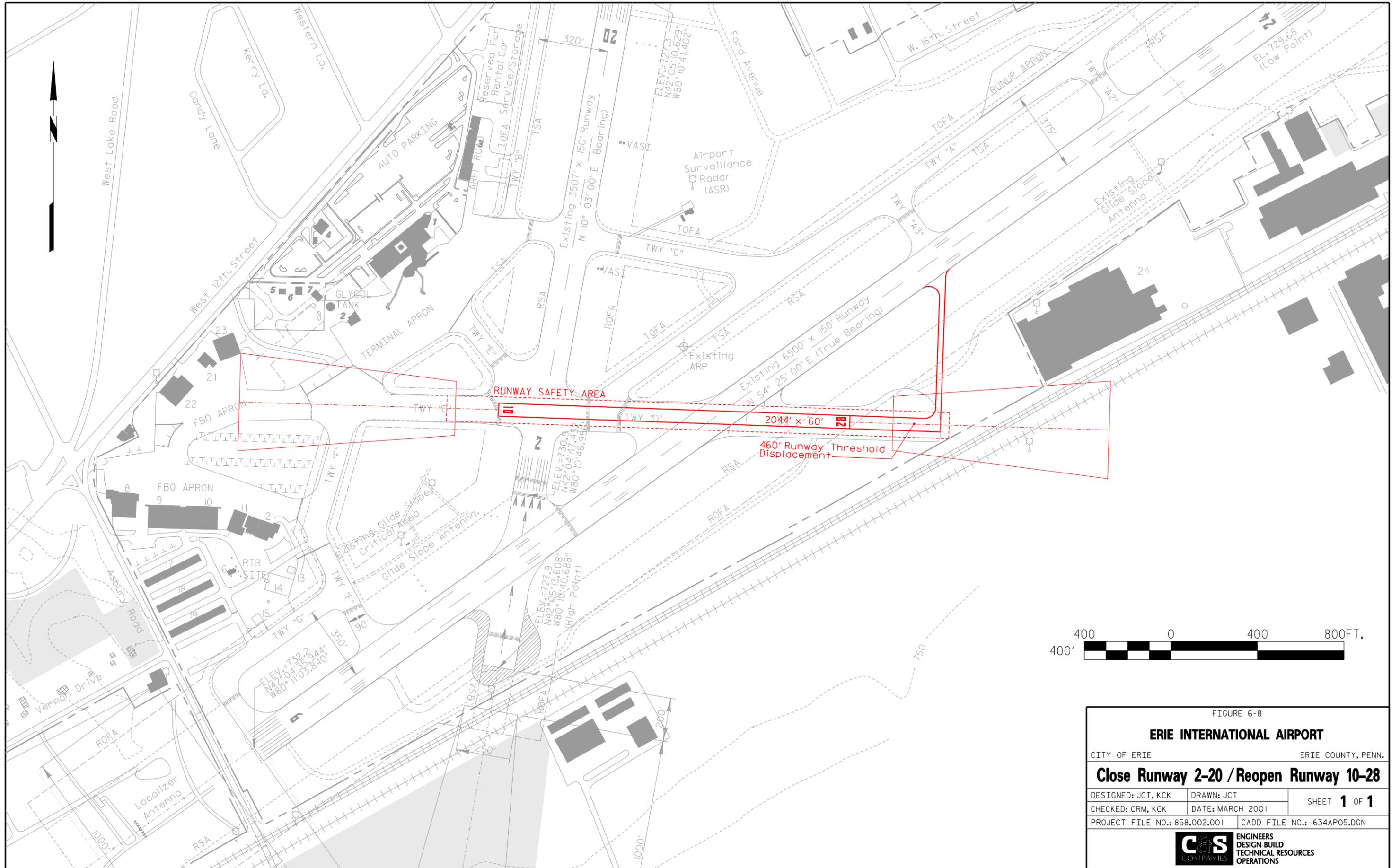


FIGURE 6-8

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Close Runway 2-20 / Reopen Runway 10-28

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Reopening Runway 10-28 in combination with the primary runway would also allow for some controlled separation of small and large aircraft operations with ATCT coordination. And it would permit the location of compatible aviation-related development that could create revenue for the Airport in the area of the Runway 20 end.

The alignment along the existing orientation of Runway 10-28 (Taxiway D) would provide a 2,044-foot runway length for aircraft taking off on Runway 28 and nearly 1,600 feet for landing. (The landing threshold is displaced 460 feet to provide a clear approach surface over the railroad track.) Access to the Runway 28 end is by way of a new taxiway connecting to stub Taxiway A3 and Taxiway A crossing near the midpoint of Runway 6-24.

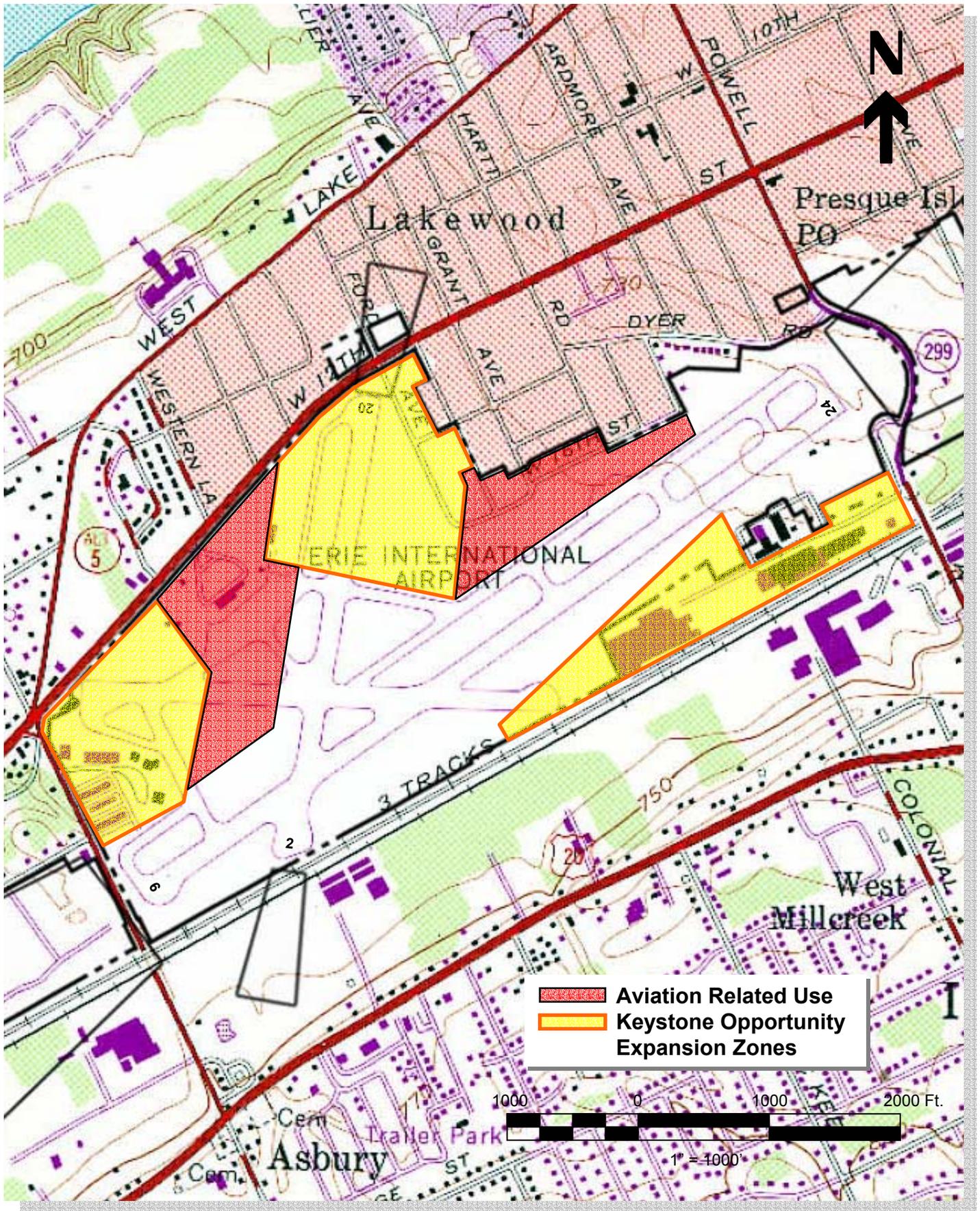
6.07 Landside Development Areas

Erie International Airport enjoys economic benefits from its commercial tenants and these tenants provide substantial tax revenues and employment for the community. Thus it is in the Airport's best interest to accommodate future commercial/industrial uses, in addition to aviation activities, where feasible. The landside aviation activities should be carefully integrated with existing and future commercial/industrial activities to optimize operational efficiency, flexibility, expansion capability, and development opportunities.

A development strategy for the Airport should insure that a mixture of aviation-related activities and commercial and industrial development can be accommodated for the 20-year planning period and beyond. The Keystone Opportunity Expansion Zones surrounding the Airport are depicted on Figure 6-9. These three areas offer opportunities for development funding and need to be considered as aviation-related development is planned. Proposed development for one of these Zones, that includes the Fenestra and Penn Brass sites, is discussed in Section 6.09 below.

As shown on Figure 6-9, the property adjacent to the terminal building and terminal apron and the area fronting along Taxiway A north of Taxiway C would be reserved exclusively for aviation-related use. If Runway 2-20 were to be closed, the property along West 12th Street northeast of the terminal would become available for commercial and/or industrial development. If Runway 2-20 does not close, most of this area would be unavailable but the Zone bordered by Asbury Road and West 12th Street could be used for commercial/industrial development. The general aviation activity currently at that site could be relocated to the site along Taxiway A.

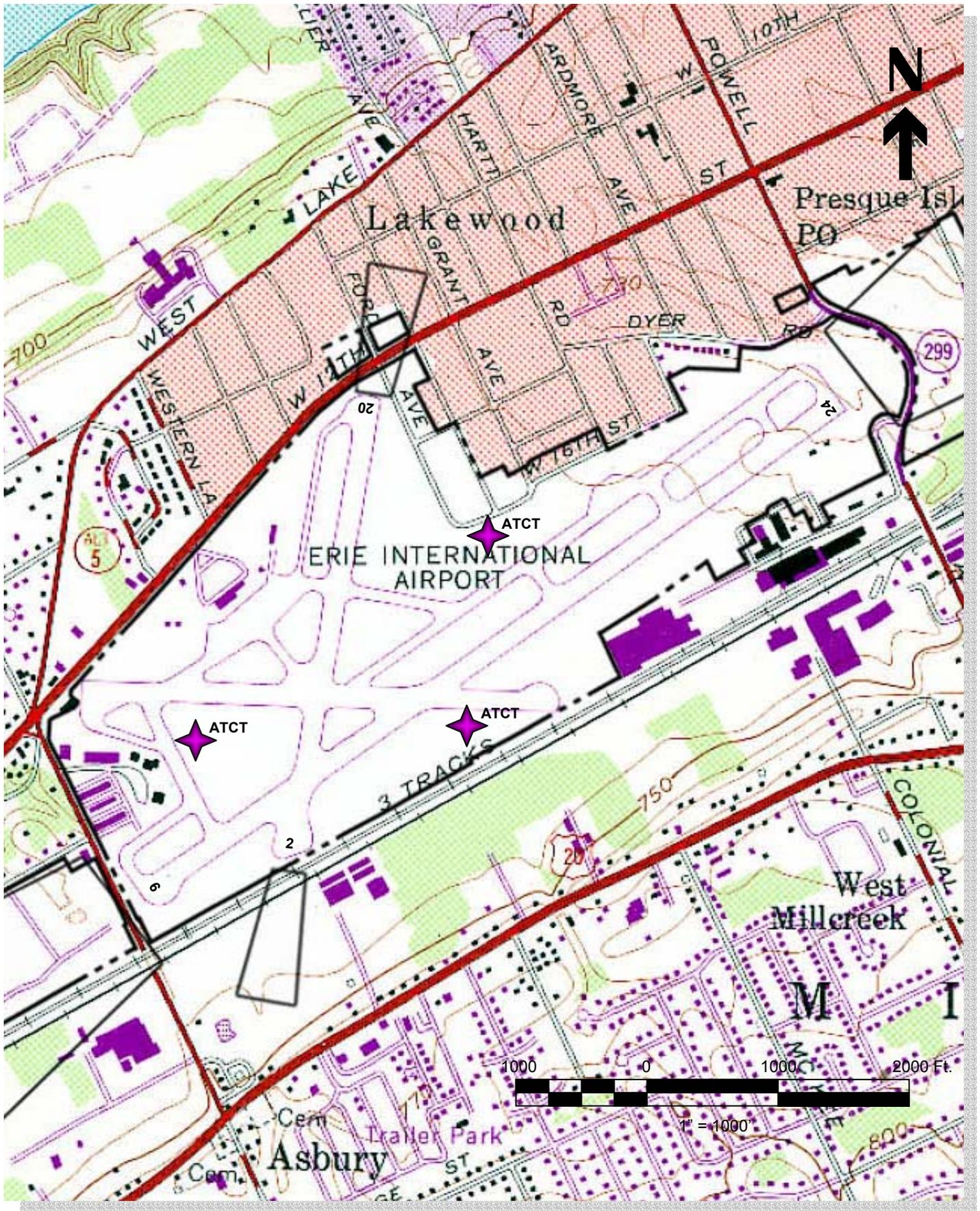
Currently located in the terminal building, a new stand-alone Air Traffic Control Tower (ATCT) has been discussed for Erie. Figure 6-10 identifies three potential locations for the tower that all meet the requirement of providing a full view of operations on the airfield. A new FAA construction lease back program for Air Traffic Control Towers could allow the Airport to construct a tower and then lease it back to the FAA. The requirements of the program are the following:



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**Erie International Airport
Recommended Landside
Development Areas
Figure 6-9**



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Erie International Airport
Potential Locations for
Air Traffic Control Tower
Figure 6-10

1. The FAA must have a replacement need.
2. The FAA can only sign a five-year lease but will provide a Letter of Commitment for the full 20 years.
3. The FAA must have no doubt that the Airport will maintain the facility over the 20-year time period. (The FAA Eastern Region office must approve the maintenance schedule.)
4. The lease cost must be below FAA costs to build a new facility.
5. The FAA must have the right to terminate the lease at any time if the traffic count falls below the required density for an FAA facility.
6. All operational surfaces in the movement area must be visible.

The following sections provide alternative recommendations and development plans for general aviation, intermodal development, and the airline terminal area.

6.08 General Aviation Alternatives

The facility requirements analysis indicated that both conventional hangar and t-hangar space currently available at the Airport would be adequate for the 20-year planning period. However, it was also noted that local weather and the preferences of aircraft owners may require more under cover storage. Figure 6-11 identifies an area, currently used for tie-downs, as suitable for short-term general aviation expansion. Two t-hangars are added with access to Taxiways D and F.

Long term planning has focussed on freeing the existing general aviation area for other types of development, as discussed above, and relocating all general aviation, conventional/corporate hangars, and FBO activity to an area east of Taxiway C with apron fronting on Taxiway A. Shenk Avenue, off of West 12th Street, provides auto access to this area. (To minimize costs, consideration was given to sites that would not require additional taxiway development or new access roads.)

6.09 Intermodal Development Area

A Redevelopment Assistance Application was prepared in August 2000 providing a plan for an intermodal freight center at Erie International Airport. This grant application, submitted to the Commonwealth of Pennsylvania’s Redevelopment Assistance Capital Project funding program, notes that the Erie Municipal Airport Authority (EMAA) is committed to developing the full economic potential of the Airport. This commitment includes using the Airport to create more jobs, increase airline revenues, obtain additional tax revenues, secure new sources of revenue, develop airport real estate, and foster related off-site regional business growth.

With this goal in mind, the EMAA recently purchased two properties on the west side of the airfield directly adjacent to the rail line. The Fenestra building was acquired in May 2000 and the Penn Brass Facility in June 2000. Proposed plans for developing these sites include the relocation of Erie Aviation’s existing aircraft maintenance facility operations from the west side of the airfield to the Fenestra site and an additional potential use such as an air cargo facility.

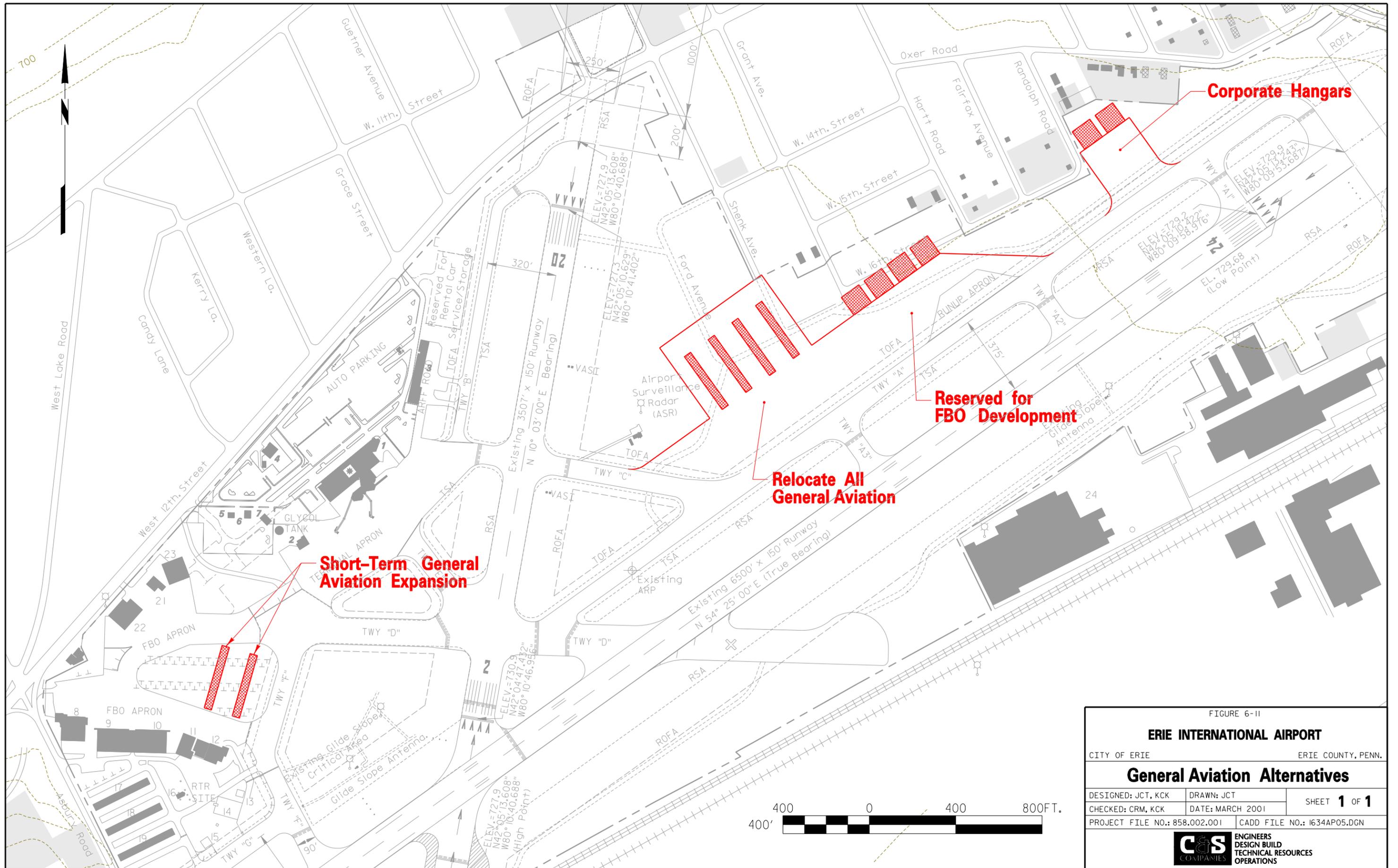


FIGURE 6-11

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General Aviation Alternatives

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The second phase of development would involve the renovation of the Penn Brass Facility to support activities such as intermodal freight operations and light manufacturing. A proposed site plan is presented in Figure 6-12. The only feasible road access to the site is from Powell Avenue; the site needs to be able to accommodate tractor trailers.

Other possible sites for an air cargo facility were considered, including an area along West 12th Street north of the terminal building that could be developed if Runway 2-20 were closed. However, this site is in close proximity to residential areas and concerns about noise and light pollution from an air cargo facility deemed this site inappropriate. The Fenestra/Penn Brass site is remote from residential areas and bordered off the airfield by the railroad and industrial and commercial development.

6.10 Airline Terminal Area Alternatives

A Terminal Expansion Study has recently been completed by Weber Murphy Fox, Inc., and HNTB Corporation. The study was undertaken to determine the ultimate configuration of a terminal complex that will serve to accommodate the needs of the Airport and meet the aviation demand forecast for passenger activity and aircraft operations well in to the 21st century. The final document will be coordinated with the approved aviation demand forecasts contained in the Airport Master Plan. Figure 6-13 depicts the ultimate terminal building footprint.

The Terminal Expansion Study proposes phased development, beginning with the need to address existing deficiencies in an aging facility and the initial rehabilitation/reconfiguration of the terminal building for more efficient operations. Incremental terminal expansion is proposed in order to meet levels of activity at the 5, 10, and 20 year forecast periods. Following the initial rehabilitation of the existing terminal building, an enplanement level would be selected to design the first phase of the proposed expansion. Similarly, enplanement increases would determine the timing of Phase 2 of the proposed expansion.

6.10-1 Terminal and Terminal Apron Area

The following extract from Weber Murphy Fox/HNTB's May 2001 study identifies the specific goals and objectives of the proposed terminal building expansion:

- **New Canopy:** This canopy will provide weather protection during the winter months for passengers at the terminal curb. This is especially important, as the terminal building is located very close to Lake Erie with a northern exposure at the terminal curb.
- **Expanded Administration Offices:** The present Administration Area on the second level of the terminal will be expanded. The expanded area will contain a larger conference/training room, kitchenette, restrooms, storage/file area and one additional office.

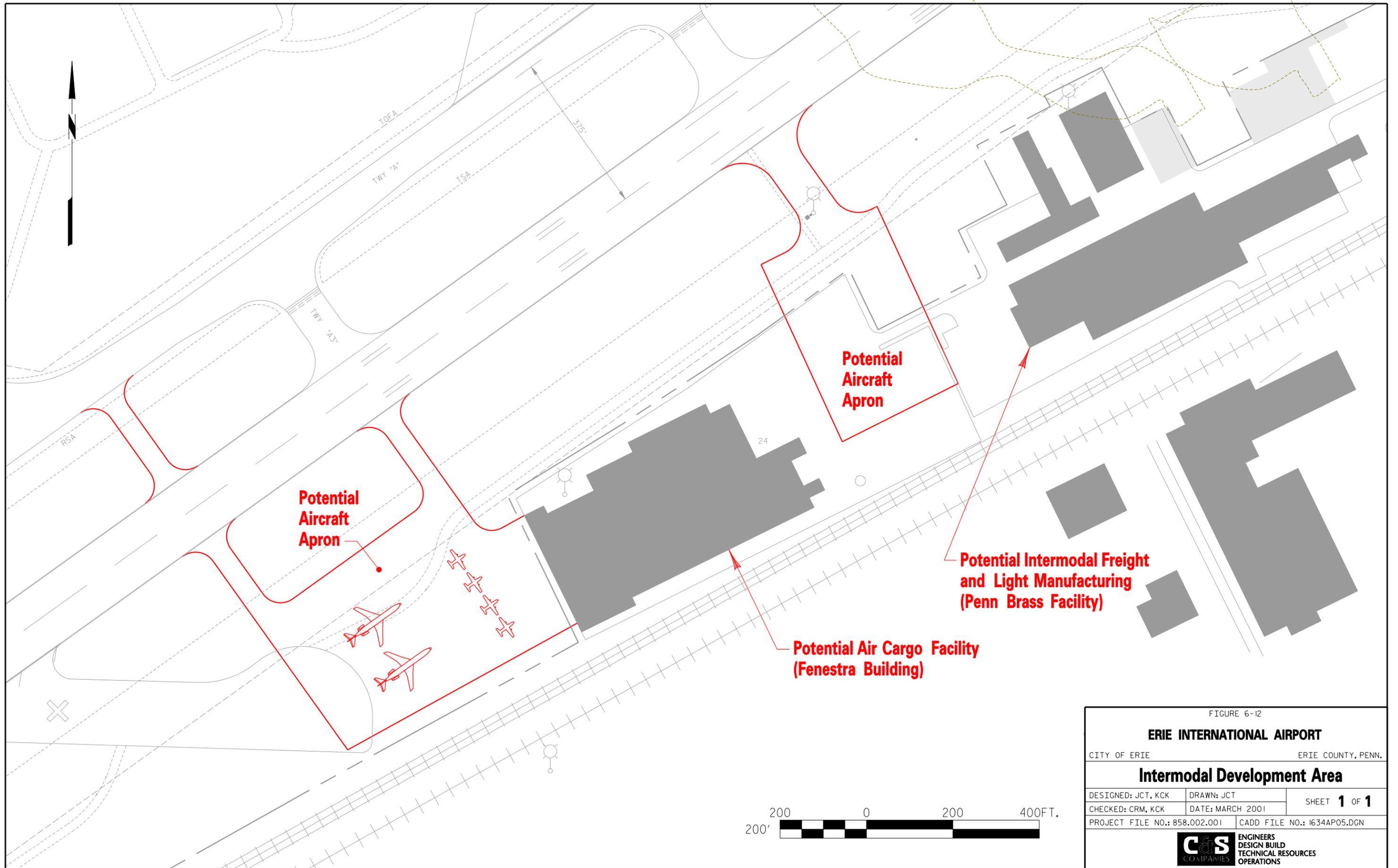


FIGURE 6-12

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Intermodal Development Area

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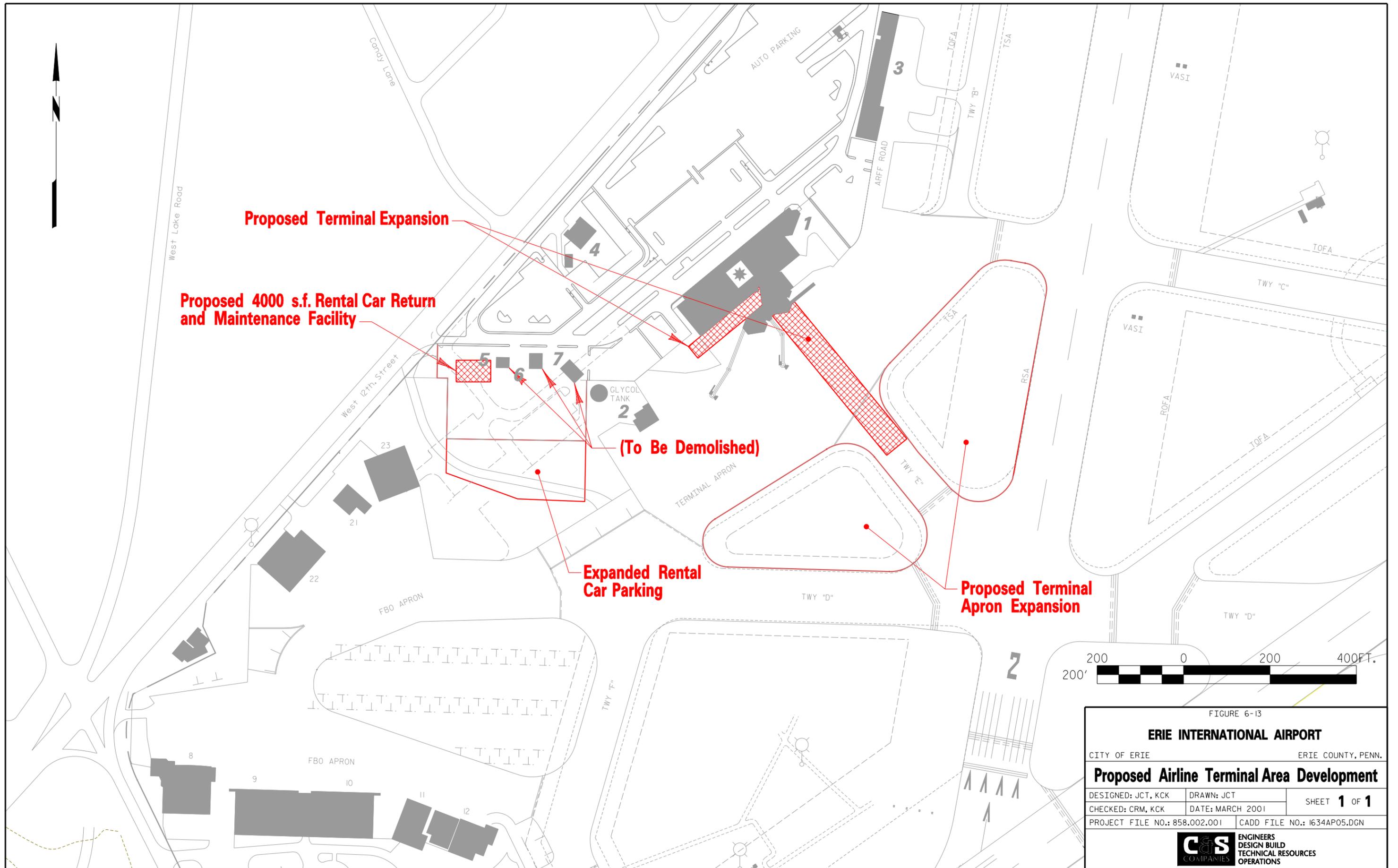


FIGURE 6-13

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Proposed Airline Terminal Area Development

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- **New Public Safety Operations Area:** This is a new and expanded area for the Airport's Public Safety Operations. It will be located within the expanded terminal complex and will contain locker rooms, a holding cell, a badge room, a training room, swing space and offices. The area will be accessible to the aircraft ramp.
- **Reconfigured Restaurant:** The restaurant facility will be designed to accommodate passengers and meeters and greeters with a high level of service. It will be located so those patrons will have a view of the airfield.
- **Additional Aircraft Gates:** Additional gates accessible via passenger loading bridges able to accommodate both regional jet and jet aircraft.
- **New Baggage Handling Area:** This will be an area to accommodate airfreight within the terminal complex. It will be accessible by trucks and the airline operations area.
- **Elimination of Commuter Walkway:** This was constructed in 1996 and will ultimately be removed when turbo-prop commuter aircraft are no longer in service.
- **New Full-Service Concourse:** The existing holdrooms will be replaced by a new full-service concourse. The new holdroom area will be located on a full-service concourse with airline operations areas below convenient to aircraft operations.
- **Increased Public Circulation:** The expanded terminal complex will be able to accommodate public non-secure circulation with a higher level of service.
- **Upgrade of HVAC System:** The existing HVAC system will be replaced or upgraded to accommodate the expanded terminal complex.
- **Expansion of Restrooms:** The existing restrooms in the holdroom area will be expanded and/or replaced.
- **Security Check Relocation:** The existing security check point location will be reconfigured and relocated in order to provide better queuing and flow-through capacity.
- **ADA Compliance:** The proposed terminal expansion will accommodate ADA requirements.

Two unpaved triangular areas on either side of Taxiway E, southeast of the terminal, provide an area suitable for terminal apron expansion of approximately 15,000 square yards.

6.10-2 Car Rental Area

Erie Municipal Airport Authority has proposed the construction of a new Rental Car Return & Maintenance Facility located on airport property. Preliminary contract drawings prepared by Weber Murphy Fox, Inc., are for construction of a facility located on the south side of the airport entrance road leading to the passenger terminal building. This site is depicted on Figure 6-13.

The proposed facility is approximately 4,000 square feet and will be constructed of steel and masonry with a flat built-up roof. The building will have four bays with overhead doors allowing vehicles to be serviced inside. Each bay will have an interior office with an area of approximately 72 square feet. A restroom will be located at the northeast end of the building for personnel.

With the construction of the facility, it is assumed the existing Budget, Avis, and National Car rental facilities located east of the new facility will be demolished. The proposed facility is consistent with the Terminal Area Accessibility Analysis and Terminal Area Master Plan that shows the rental car area remaining where it is for the planning period.

Additional pavement will be constructed as part of the proposed facility, providing approximately 220 vehicle spaces for rental cars (an increase of 33 spaces). Sufficient land exists to the south of the parking lot to expand if needed in the future to accommodate additional rental car parking/storage. Space being considered for expansion appears adequate for the 20-year planning period, with anticipated passenger enplanements of 264,460 in 2020. Additional expansion beyond what is proposed would need to be balanced with the future needs of additional GA apron requirements.

6.10-3 ARFF Facility

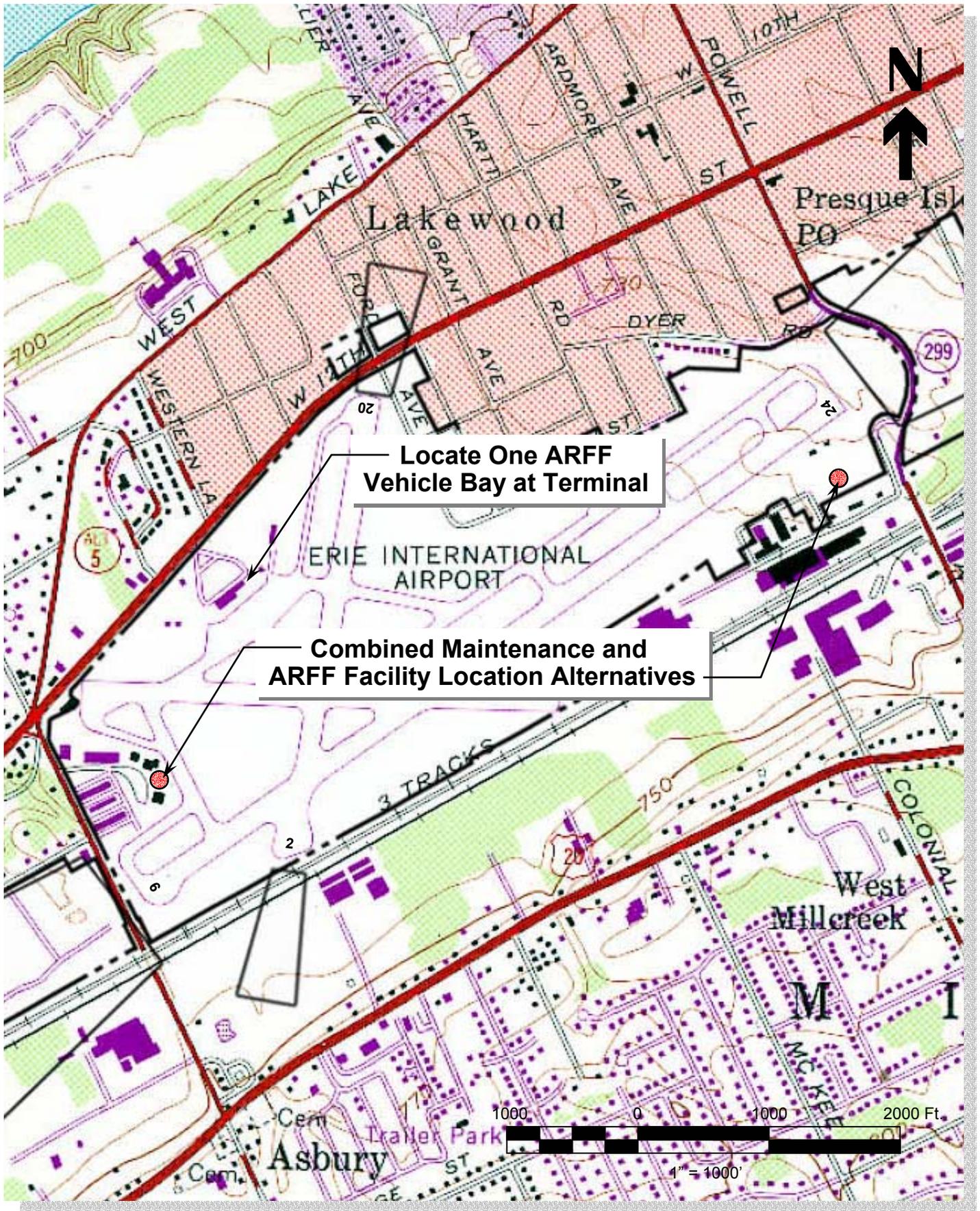
The existing building that houses both airport maintenance and Airport Rescue and Fire Fighting (ARFF) services is not large enough to accommodate all the activities, equipment and supplies that are located there, requiring some equipment and supplies to be stored outside the building. Expansion at its current site is not considered advisable because it would constrain expansion of the terminal building for the future.

Alternatives that have been considered include expanding the ARFF in the existing building and moving maintenance operations elsewhere. Because maintenance and ARFF share staff, this is not considered a viable option. A second alternative considered would involve sharing emergency services with a community fire station located on a site at the airfield. However, the nature of a community fire station, with a large kitchen and a hall for community gatherings is inappropriate for an airport because of airfield security requirements.

A third alternative would involve relocating both maintenance and ARFF services to another site with access to the airfield, while providing one vehicle bay at the terminal for keeping an ARFF vehicle available for immediate use by a public safety officer. Depicted on Figure 6-14 are two potential locations for such a combined facility, one to the east near Powell Avenue and the Runway 24 end, the other to the west near Asbury Road, in the area currently serving general aviation. For the 20-year planning period, a facility housing five ARFF vehicles should be planned.

6.11 Airport Development Recommendations

The preferred alternatives for development of Erie International Airport – Tom Ridge Field, selected after discussions with representatives of the Erie Municipal Airport Authority, the FAA, airport management, the Advisory Committees, and other interested parties, are detailed in Chapter 7.



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Erie International Airport Maintenance and ARFF Facility Alternatives

Figure 6-14